Gujarat University

TECHNICAL SPECIFICATIONS

CIVIL WORK

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Construction of Centre for Jain Manuscriptology

At Gujarat University , Ahmedabad.

SPECIFICATIONS OF MATERIALS
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GENERAL TECHNICAL SPECIFICATIONS FOR BUILDING WORKS

GENERAL:

1. *In the specifications "as directed" / "approved" shall be taken to mean "as directed" / "approved by the Engineer-in-Charge".*

2. *Wherever a reference to any Indian Standard appears in the specifications, it shall be taken to mean as a reference to the latest edition of the same in force on the date of agreement.*

3. *In "Mode of Measurement" in the specifications wherever a dispute arises in the absence of specific mention of a particular point of aspect the provisions on these particular points, or aspects in the relevant Indian Standards shall be referred to*

4. *All measurements and computations, unless otherwise specified, shall be carried out nearest to the following limits:*

(i)	*Length, width and depth (height)*	*0.01*	*meter*
(ii)	*Areas*	*0.01*	*Sq. Mt.*
(iii)	*Cubic Contents*	*0.01*	*Cut.*

In recording dimensions of work the sequence of length, width and height (depth) or thickness shall be followed.

5. *The distance which constitutes lead shall be determined along the shortest practical route and note necessarily the route actually taken The decision of the Engineer-in-charge in this regard shall be taken as final.*

6. *Where no lead is specific, it shall mean "all leads"*

7. *Lift shall be measured from plinth level.*

8. *Up to "floor two levels" means actual height of floor (Maxi 4 M) up to 3 Mt. above plinth level.*

9. *Definite particulars covered in the items of work, though not mentioned or elucidated in it specifications shall be deemed to be included therein.*

10. *Reference to specifications of materials as made in the detailed specification of the items of works is intheformofadesignationcontainingthemkuberofthespecificationofthematerialandprefix'M' e.g. 'M-5',*

11. *Approval to the samples of various materials given by the Engineer-in-charge shall not absolve the contractor from the responsibility of replacing defective material brought on site or materials used in the work found defective at a later date. The contractor shall have no claim to any payment or compensation whatsoever on account of any such materials being rejected by the Engineer-in-charge.*

12. *The contract rate of the item of work shall be for the work completed in all aspects.*

13. *No collection of materials shall be made before it is got approved from the Engineer-in-charge.*

14. *Collection of approved materials shall be done at site of work in a systematic manner. Materials shall be stored in such a manner as to prevent damage, deterioration or intrusion of foreign matter and to ensure the preservation of their quality and fitness for the work*

15. *Materials, if and when rejected by the Engineer-in-charge, shall be immediately removed from the site of work.*

16. *No materials shall be stored prior to, during and after execution of a structure in such a way as to cause or lead to damage or overloading of the various components of the structure.*

17. *All works shall be carried out in a workmanlike manner as per the best techniques for the particular item.*

18. *All tools, templates, machinery and equipment for correct execution of the work as well as for checking lines, levels, alignment of the works during execution shall kept in sufficient numbers and in good working condition on the site of the work.*

19. *The mode, procedure and manner of execution shall be such that it does not cause damage or over-loading of the various components of the structure during execution or after completion of the structure.*

20. *Special modes of construction not adopted in general Engineering practice if proposed to be adopted by the Contractor, shall be considered only if the contractor provides satisfactory evidence that such special mode Of construction is safe, sound and helps in speedy construction and Completion of work to the required strength and quality. Acceptance of the same by the Engineer-in-Charge shall not, however absolve the contractor of the responsibility of any adverse effects and consequences of adopting the same in the course of execution of completion of the work.*

21. *All installations pertaining to water supply and fixtures there of as well as drainage lines and sanitary fittings shall be deemed to be completed only after giving satisfactory tests by the contractor.*

22. *The contractor shall be responsible for observing the rules and regulations imposed under the "Minor Minerals Act", and such of the laws and rules prescribed by Government form to time.*

23. *All necessary safety measures and precautions {including those laid down in the various relevant Indian Standards) shall be taken to ensure to ensure the safety of men. Materials and machinery on the works as also of the work itself.*

24. *The testing charges of all materials shall be borne by the Contractor.*

25. *Approval to any of the executed items for the work does not in any relieve the contractor of his responsibility for the correctness, soundness and strength of the structure as per the drawings and specifications*

GENERAL

STANDARD TECHNICAL SPECIFICATIONS

Sr. No. of the item in the Schedule 'B' of tender	Sr. No, of applicable Specification	Sr. No. of the item in the Schedule 'B' of tender	Sr. No. of applicable Specification	Sr. No. of the item in the Schedule 'B' of tender	Sr. No. of applicable specification
1		26		51	
2		27		52	
3		28		53	
4		29		54	
5		30		55	
6		31		56	
7		32		57	
8		33		58	
9		34		59	
10		35		60	
11		36		61	
12		37		62	
13		38		63	
14		39		64	
15		40		65	
16		41		66	
17		42		67	
18		43		68	
19		44		69	
20		45		70	
21		46		71	
22		47		72	
23		48		73	
24		49		74	
25		50		75	

Sr. No. of the item in the Schedule 'B' of tender	Sr. No, of applicable Specification	Sr. No. of the item in the Schedule 'B' of tender	Sr. No. of applicable Specification	Sr. No. of the item in the Schedule 'B' of tender	Sr. No. of applicable specification
76		101		126	
77		102		127	
78		103		128	
79		104		129	
80		105		130	
81		106		131	
82		107		132	
83		108		133	
84		109		134	
85		110		135	
86		111		136	
87		112		137	
88		113		138	
89		114		139	
90		115		140	
91		116		141	
92		117		142	
93		118		143	
94		119		144	
95		120		145	
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99		124		149	
100		125		150	

SPECIFICATIONS OF MATERIALS

M-1. Water

1.1. Water shall not be salty brackish and shall be clean, reasonably clear and free objectionable quantities of silt and traces of oil and injurious alkalis, salts, organic matter and other deleterious material which will either weaken the mortar of concrete or cause efflorescence or attack the steel in R.C.C. Container for transport, storage and handling of water shall be clean. Water shall conform to the standard specified in I.S.456-1978.

1.2. If required by the Engineer-in-Charge it shall be tested by comparison with distilled water Comparison shall be made by means of standard cement tests for soundness time of setting and mortar strength as specified in I.S. 269-1976. Any indication of unsoundness charge in time of setting by 30 minutes or more or decrease of more than 10 per cent in strength, of mortar prepared with water sample when compared with the results obtained with mortar prepared with distilled water shall be sufficient cause for rejection of water under test.

1.3. Water for curing mortar, concrete or masonry should not be too acidic or too alkaline.

It shall be free of elements which significantly affect the hydration reaction or otherwise interfere with the hardening of mortar or concrete during curing or those which produce objectionable stains or other unsightly deposits on concrete or mortar surfaces

1.4. Hard and bitter water shall not be used for curing

1.5. Potable water will generally found suitable for curing mortar or concrete.

M-2. Lime

2.1. Lime shall be hydraulic lime as per I.S. 712-1973 Necessary tests shall be carried out as per I.S. 6932
(Parts I to X) 1973

2.2. The following field tests for limes are to be earned out:

(1) A very rough idea can be formed about the type of lime by its visual examination i.e. fat lime bears pure white color, lime in form of porous lumps of dirty white color indicates quick lime, and solid lumps are the un burnt limestone.

(2) Acid tests for determining the carbonate content in lime Excessive amount of impurities and rough determination of class of lime.

2.3. Storage shall comply with J.S. 712-1973 The slaked lime, if stored, shall be kept in a weather proof and damp-proof shed with impervious floor and sides to protect it against rain, moisture, weather and extraneous materials mixing with it. All lime that has been damaged" in any way shall be rejected and all rejected materials shall be removed from site of work.

2.4. Field testing shall be done according to I.S 1624-1974 to show the acceptability of materials.

M-3. Cement

3.1. Cement snail be ordinary Portland slag cement as per I.S.269-1976 or Portland slag cement as per I.S.455-1976

M-4. White Cement

4.1. The white cement shall conform to I S. 8042-E-1978.,

M-5. Colored Cement

5.1. Colored cement shall be with white of grey Portland cement as specified in the item of the work.

5.2. The pigments used for colored cement shall be of approved quality and shall not exceed 10% of cement used in the mix. The mixtures of pigment add cement shall be properly ground to have a uniform color and shade. The pigments shall have such properties to provide for durability underexposure to sunlight and weather.

5.3. The pigment shall have the property such that it is neither affected by the cement nor detrimental to it

M-6 Sand

6.1. Sand shall be natural sand, clean, well graded hard strong, durable and gritty particles free from injurious amounts of dust, clay kankar nodules, soft or flaky particles shale, alkali salts organic matter, loam, mica or other deleterious substances and shall be got approved from the Engineer-in-Charge. The sand shall not contain more contain more than 8 percent of silt as determined by field test, if necessary the sand shall be washed to make it clean.

6.2. ***Coarse Sand*** :The fineness modulus of coarse sand shall not be less than 2.5 and shall not exceed 3 0. The sieve analysis of coarse shall be asunder.

I.S. Sieve Designation	***Percentage by weight Designation***	***I.S. Sieve Designation***	***Percentage by weight passing sieve***
4.75 mm	100	600 micron	30 - 100
2.36 mm	90 to 100	300 micron	50 - 70
1.18 mm	70 to 100	150 micron	0 – 50

6.3. Fine Sand:

The fineness modulus shall not exceed 1.0 The sieve analysis of fine sand shall be asunder.

I.S. Sieve Designation	***Percentage by weight Designation***	***I.S. Sieve Designation***	***Percentage by weight passing sieve***
4.75 mm	100	600 micron	40 - 85
2.36 mm	100	300 micron	5 - 50
1.18 mm	75 to 100	150 micron	0 - 10

M-7. Stone Dust

7.1. This shall be obtained from crushing hard black trap or equivalent. It shall not contain more than 8% of silt as determined by field test will measuring cylinder. The method of determining silt contents by fields test is given as under:

7.2. A sample of stone dust to be tested shall be placed without drying in 200 mm. measuring cylinder. The quantity of the sample shall be such that it fills the cylinder up to 100 mm. mark. The clean water shall be added up to 150 mm. mark. The mixture shall be stirred vigorously and the content allowed settling for 3 hours.

7.3. The height of silt, visible as settled layer above the stone dust shall be expressed as percentage of the height of the stone dust below the stone dust containing more than 8% silt shall be washed so as to bring the content within the allowable limit.

7.4. The fineness modules of stone dust shall not be less than1.80

M-8. Stone Grit

8.1. Grit shall consist of crushed or broken stone and be hard, strong, dense, durable, clean of proper gradation and free from skin or coating likely to prevent proper adhesion of mortar Grit shall generally be cubical in shape and as far as possible flakey elongated pieces shall be avoided. It shall generally comply whit-the provisions of I.S. 383-1970. Unless special stone of particular quarries is mentioned grit shall be obtained from the best black trap or equivalent hard stone as approved by the Engineer-in-charge. The grit shall have no deleterious with cement.

8.2. The grit shall conform to the following gradation as per sieve analysis:

I.S. sieve designation	***Percentage passing through Sieve***	***I.S. Sieve Designation***	***Percentage passing through Sieve***
12,50 mm	100 %	4.75 mm	0-20%
1000 mm	85 - 100%	2.36 mm	0-25%

8.3. The crushing strength of grit will be such as to allow the concrete in which ft used to build-up the specified strength of concrete

8.4. The necessary tests for grit shall be carried out as per the requirements of I.S.2386- (parts-l to VIII} 1963_r as per instructions of the Engineer-in-charge. The necessity of test will be decided by the Engineer-in-charge.

M-9. Cinder

9.1. Cinder is will burnt furnace residue which has been fused or sintered into lumps of varying sizes

9.2. Cinder aggregates shall be well burnt furnace residue obtained from furnace using coal fuel only It shall be sound clean and tree from clay dirt, ash or other deleterious matter

9.3. The average grading for cinder aggregates shall be as mentioned below.

I.S. Sieve Designation	***Percentage by passing***	***I.S. sieve Designation***	***Percentage bypassing***
20 mm	100	4.75mm	70
10 mm	86	2.36mm	52

M-10. Lime Mortar

10.1. Lime : Lime shall confirm to specification M-2, Water : Water shall conform to specification M-1 and Sand: Sand shall conform to specificationM-6

10.2. Proportion of Mix:

10.2.1. mortar shall consist of such proportions of slaked lime and sand as may be specified in item The slaked lime and sand shall be measured by volume

10.3. Preparation of mortar;

10.3.1. Lime mortar shall be prepared by wet process as per I S 1625-1971 .Power driven mill shall be used for preparation of lime mortar. The slaked lime shall be placed in the mill in an even layer and ground for 180 revolutions with sufficient water. Water shall be added as required during grinding (care being taken not to add more water) that will bring the mixed material to a consistency of stiff paste. Thoroughly wetted sand shall then be added evenly and the mixture ground for another 180revolutions.

10.4. Storage:

10.4.1. Mortar shall always be kept damp, protected from sun and ram till used up, covering it by tarpaulin or open sheds.

10.5. Use:

10.5.1. All mortar shall be used as soon as possible after grinding. It should be used on the day on which it prepared, But in no case mortar made earlier than 36 hours shall be permitted for use.

M-11. Cement Mortar

11.1. Water shall conform to specification M-1, Cement : Cement shall conform to specifications M-3 and Sand : Sand shall conform toM-6

11.2. Proportion of Mix

11.2.1. Cement and sand shall be mixed to specified proportion, sand being measured by measuring boxes; the proportion of cement will be by volume on the basis of 50 Kg/Bag of cement being equal to 0.0342 Cu.m. The mortar may be hand mixed of machine mixed as directed.

11.3. Proportion of Mortar:

11.3.1. In hand mixed mortar, cement and sand in the specified proportions shall be thoroughly mixed dry on a clean impervious platform by turning over at least 3 times or more till a homogeneous mixture of uniform color is obtained. Mixing platform shall be so arranged that no deleterious extraneous material shall get mixed with mortar or mortar shall flow out. While mixing, the water shall be gradually added and thoroughly mixed to from a stiff plastic mass of uniform color so that each particle of sand shall be completely covered with a film of wet cement. The water cement ratio shall be adopted as directed

11.3.2. The mortar so prepared shall be used within 30 minutes of adding water. Only such quantity of mortar shall be prepared as can be used within 30minutes

M-12. Stone Coarse Aggregate For Nominal Mix Concrete

12.1. coarse aggregate shall be of machine crushed stone of black trap or equivalent and be hard strong, dense, durable, clean and free from skin and coating likely to prevent proper adhesion of mortar

12.2. The aggregate shall generally be cubical in shape Unless special stones of particular quarries are mentioned aggregates shall be machine crushed from the best black trap or equivalent hard stone as approved Aggregate shall have no deleterious reaction with cement. The size of the coarse aggregate for plain cement and ordinary reinforced cement concrete shall generally be as per the table given below.

However, in case of reinforced cement concrete the maximum limit may be restricted to 6 mm. less than the minimum lateral clear distance between bars or 6- mm. less than the cover whichever is smaller.

TABLE

I S. Sieve Designation	Percentage passing for single Sized aggregates of Nominal size			I S. Sieve Designation	Percentage passing for single Sized aggregates of Nominal size		
	40mm	20mm	16mm		40mm	20mm	16mm
80 mm	-	-	-	12.5 mm	-	-	-
63 mm	100	-	-	10 mm	0.5	0.20	0.30
40 mm	85-100	100	-	4.75 mm	-	0.5	0.5
20 mm	0.20	85-100	100	2.35 mm	-	-	-
16mm	-	-	85-100				

Note : This percentage may be varied somewhat by the Engineer-in-charge when considered necessary for obtaining better density and strength of concrete.

12.3. The grading test shall be taken in the beginning and at the change of source of materials. The necessary tests, indicated in I.S. 383-1970 and 456~197f shall have to be carried out to ensure the acceptability. The aggregates shall be stored separately and handled in such a manner as to prevent the intermixing of different aggregates. If she aggregates are covered with dust, they shall be washed with water to make them clean..

M-13. Black Trap or Equivalent Hard Stone Course

13.1. Aggregate For Design Mix Concrete. Coarse aggregate shall be of machine crushed stone of black trap or equivalent hard stone and be hard, strong, dense, durable, clean and free from skin and coating likely to prevent proper adhesion of mortar.

13.2. The aggregates shall generally be cubical in shape. Unless special stones of particular quarries are mentioned, aggregates shall be machine crushed, from the best, black trap or equivalent hard stones as approved, Aggregate shall have no deleterious with cement

13.3. The necessary tests indicated in I S. 383-1970 and I.S.456-1978 shall have to be carried out to ensure the acceptability of the material.

13.4. If aggregate is covered with dust it shall be washed with water to make it clean.

M-14. Brick Bats Aggregate

14.1. Brick bat aggregate shall be broken from well burnt or slightly over burnt and dense bricks. It shall be homogeneous in texture, roughly cubical in shape, clean and free from dirt of any other foreign material. The brick bats shall be of 40 mm - 50 mm. size unless otherwise specified in the item The under burnt of over burnt brick bats shall not be allowed.

14.2. The brick bats shall be measured by suitable boxes or as directed.

M-15. Bricks

15.1. The bricks shall be hand or machine molded and made from suitable soils and kiln burnt. They shall be free from cracks and flaws and nodules of free lime they shall have smooth rectangular faces with sharp corners and shall be of uniform color.

The bricks shall be- molded with a frog of 100 mm. x 40 mm. and 10 mrn. To 20 mm. deep on one of its flat sides. The bricks shall not break when thrown on the ground from a height of 600mm.

15.2. The size of modular bricks shall be 190 mm.x 90 mm.x 90mm.

15.3. The size of the conventional bricks shall be as under:

(9" x 4.3/8" x 2,3/4") 225 x 110 x 75mm.

15.4. Only bricks of one standard size shall be used on one work. The following tolerances shall be permitted in the conventional size adopted in a particular work.

Length ± 1/8" (3.0 mm.) Width ± 1/16" (1.50 mm.) Height ± 1/16" (1.50 mm.)

15.5. The crushing strength of the bricks shall not be less than 35 Kg/Sq. Cm. The average water absorption shall not be more the 20 percent by weight Necessary tests for crushing strength and water absorption etc. shall be carried out as per I.S. 3495 (Part-l to IV) -1976

M-16. Stone

16.1. The stone shall be of the specified variety such as Granite/Trap Stone/ Quartzite or any other type of good hard stones. The stones shall be only from the approved quarry and shall be hard sound, durable and free from defects like cavities, cracks, sand holes, flaws injurious veins, patches of loose or soft materials etc., and weathered portions and other structural defects Or imperfections tending to affect their soundness and strength. The stone with round surface shall not be used. The percentage of water absorption shall not be more than 5% of day weight. When tested in accordance with I.S. 1124-1974. The minimum crushing strength of stone shall be 200 Kg/.Sq. Cm. unless otherwise, specified

16.2. The samples of the stone to be used shall be got approved before the work is started

16.3. The Khanki facing stone shall be dressed by chisel as specified in the item for khanki facing in required shape and size. The face of the stone shall be-so dressed that the bushing on the exposed face shall not project by more than 40 mm. from the general wall surface and on face to be plastered it shall not project by more than 19 mm. nor shall it have depressions more than 10 mm. from the average wall surface

M-17. Laterite Stone

17.1. Laterite stone shall be obtained from the approved quarry it shall be compacted in texture sound, durable and free from soft patch. It shall have minimum crushing strength of 100 Kg/Sq. Cm. in its dry condition. It shall not absorb water more than 20% of its own weight, when immersed for 24 hours in water. After quarrying, the stone shall be allowed to weather for some time before using in work.

17.2. The stone shall be dressed into regular rectangular blocks so that all faces are free from waviness and unevenness, and the edges true and square

17.3. Those types of stone in which white clay occurs should not be used

17.4. Special corner stones shall be provided where so directed.

M-18. Mild Steel Bars

18.1. Mild steel bars reinforcement for R.C C. work shall conform to I.S. 432 (Part -II) 1966 and shall be of tested quality. It shall also comply with relevant part of I.S.456-1978.

18.2. All the reinforcement shall be clean and free from dirt, paint, grease, mill scale or loose or thick rust at the time of placing

18.3. For the purpose of payment, the bar shall be measured correct up to 10 mm. length and weight payable worked out at the rate specified below:

1.	6mm	0.22 Kg/Rmt.	8.	20 mm.	2 47 Kg/Rmt	
2.	8mm.	0.39 Kg/Rmt.	9	22 mm.	2.98 Kg/Rmt.	
3.	10mm.	0.62 Kg/Rmt.	10.	25 mm.	3.85 Kg/Rmt.	
4.	12mm.	0.89 Kg/Rmt.	11.	28 mm.	4.83 Kg/Rmt.	
5.	14mm	1.21 Kg/Rmt.	12.	32 mm.	6.31 Kg/Rmt.	
6.	16mm	1 58 Kg/Rmt	13.	36 mm.	7 99 Kg/Rmt.	*
7.	18mm.	2.00 Kg/Rmt.	14.	40 mm.	9,86 Kg/Rmt.	

M-19. High Yield Strength Steel Deformed Bars

19.1. High yield strength steel deformed bars shall be either cold twisted other rolled and shall conform to I.S. 1786-1966 and I.S. 1139-1966 respectively.

19.2. Other provisions and requirements shall conform to specification No. M-18 for Mild Steel Bars.

M-20. High Tensile Steel Wires

20.1. The high tensile wires for use in pre stressed concrete work shall conform toI.S, 2090-1962.

20.2. The tensile strength of the high tensile steel bars shall be as specified in the item. In absence of the given strength the minimum strength shall be taken as per Para 6-1 of the I.S. 1785-1962. Testing shall be done as per I.S. requirements.

20.3. The high tensile steel shall be free from loose mill scale, rust, oil, grease, or any other harmful matter.

Cleaning of steel bars may be carried out by immersion in solvent solution, wire brushing or passing through a pressure box containing Carborudum.

20.4. The high tensile wire shall be obtained from manufacturers. in coils having diameter not less then 350 times the diameter of wire itself so that wire springs back straight on being uncoiled.

M-21. Mild Steel Binding Wire

21.1. The mild steel wire shall be of 1.63 mm. or 1.22 mrn. (16 to 18 gauge) diameter and shall conform to I.S. 280-1972.

21.2. The use of black wire will be permitted for binding reinforcement bars. It shall be free from rust oil paint, grease loose mill scale or any other undesirable coating which may prevent adhesion of cement mortar

M-22. Structural Steel

22.1. All structural Steel! Shall conform to I S. 226-1985: The steel shall be free from the defects mentioned in I.S 226-1975 and shall have a smooth finish. The material shall be free from loose mill scale, rust pits or other defects affecting the strength and durability. River bars shall conform to I.S.1148-1973.

22.2. When the steel is supplied by the Contractor test certificate of the manufacturers shall be obtained according to I.S. 226-1975 and other relevant Indian Standards.

M-23. Galvanized Iron Sheets

23.1. The galvanized iron sheets shall be plain or corrugated sheets of gauges as specified in item The G.I. Sheets shall conform to I.S.277-1977. The sheets shall be undamaged in carnage and handling either by rubbing off of zinc coating or otherwise. They shall have clean and bright surface and shall be free from dents, bends, holes, rust or white powdery deposit.

23.2. The length and width of G.I. sheets shall be as directed as per site condition.

M-23.A:G.I. Valleys gutter, ridges

23.A.1. The G.I. ridges and hips shall be of plain galvanized sheets Class - 3 of the thickness as specified in item. These shall be 600 mm. in width and properly bent up to shape without damage to the sheets in process of bending.

23.A.2. Valleys gutters and flashings shall also be of galvanized sheet of thickness as specified in item Valleys Shall be 900 mm. wide overall and flashing shall be 380 mm. wide overall They shall be bent to the required shape without damage to the sheet in the process of bending.

M-24. Asbestos Cement Sheets

24.1. Asbestos cement sheets plain, corrugated of semi-corrugated shall conform to I.S.459-1970 The thickness of the sheets shall be as specified in the item. The sheets shall be free from all defects such as cracks, holes, deformities chipped edges or otherwise damaged.

24.2. Ridges & Hips:

24.2.1. Ridges and hips shall be of same thickness as that of A.C. sheets. The types, of ridges shall be suitable for the type of sheets and location.

24.2.2. Other accessories to be used in roof such as flashing pieces eaves filler pieces, valley gutters, north light, and ventilator curves, barge boards etc, shall be of standard manufacture and shall be suitable for the type of sheets and location.

M-25. Mangalore Pattern Roof Tiles

25.1. The Mangalore pattern tiles shall conform to I S 654-1972 for Class AA or Class A type as specified in item. Samples of the tiles to be provided shall be got approved from the Engineer-m-charge. Necessary tests shall be carried out as directed.

M-26. Shuttering

26.1. The shuttering shall be either of wooden planking of 30 mm. minimum thickness with or without steel lining or of steel plates stiffened by steel angles The shuttering shall be supported on battens and beams and props of vertical bullies properly cross braced together so as to make the centering rigid. In places of bullies props, brick pillar of adequate section built in mud mortar may be used

26.2. The form work shall be sufficiently strong and shall have camber so that it assumes correct shape after deposition of the concrete and shall b-j able to resist forces caused by vibration of live load of men working over it and other incidental leads associated with it. The shuttering shall have smooth and even surface and its joints shall permit leakage of cement grout

26.3. If at any stage of work during or after placing concrete in the structure, the form work sags or bulges out beyond the required shape of the structure, the concrete shall be removed and work redone with fresh concrete and adequately rigid form work The complete from work shall be got inspected by and got approved form the Engineer-in-charge, before the reinforcement bars are placed in position

26.4. The props shall consist to bullies having 100 mm .minimum diameter measured at mid length and 80 mm. at thin end shall be placed as per design requirement. These shall rest squarely on wooden sole plates 40 mm. thick and minimum bearing area of 0-10 sq m lay on sufficiently hard base.

26.5. Double wedges shall further be provided between the sole plate and the wooden props so as to facilitate tightening and easing of shuttering without jerking the concrete

26.6. The timber used in shuttering shall not be so dry as to absorb water from concrete and swell or bulge nor so green or wet as to shrink after erection. The timber shall be properly sawn and planed on the sides and the surface coming in contact with concrete Wooden form work with metal sheet lining or steel plates .stiffened by steel angles shall be permitted

26.7. As far as practicable, clamps shall be used to hold the forms together and use of nails and spikes avoided.

26.8. The surface of timber shuttering that would come in contact with concrete shall be well wetted and coated with soap solution before the concreting is done Alternatively coat of raw linseed oil or oil of approved manufacture may be applied in place of soap solution In case of steel shuttering either soap solution or raw linseed oil shall be applied after thoroughly cleaning the surface. Under no circumstances black or burnt oil shall be permitted.

26.9. The shuttering for beams and slabs shall have camber of 4 mm per meter (1 in 250 } or as directed by the Engineer-in-charge so as to offset the subsequent deflection For cantilevers, the camber at free end shall be 1/50 of the projected length or as directed by the Engineer-in-charge.

M- 27. Expansion Joints - Permoulded filler

27.1. The item provides for expansion joints in R.C C. frame structures for internal joints, as well as exposed joints, with the use of promoulded bituminous joint filler.

27.2. Premoulded bituminous joints filler i.e. performed strip of expansion joints filler shall not get deformed, or broken by twisting bending or other handling when exposed to atmospheric condition. Pieces of joints filler that have been damaged shall be rejected

27.3. Thickness of the per-molded joints filler shall be 25 mm. unless otherwise specified.

27.4. Premoulded bituminous joints filler shall conform to I S1838-1961

M-28. Expansion joints-Copper strips & hold .fasts

28.1. The item provide for expansion joints in R.C.C. frame structure for internal joints, as well as exposed joints, with the use of premoulded bituminous joints filler.

28.2. Copper sheet shall be of 1.25 mm. width and or 1 25 mm. width and the " U " shape in the middle. Copper strip shall have holdfast of 3 mm diameter copper rod fixed to the plate soldered on strip at intervals of about 30 cm or as shown in the drawing or as directed. The width of each flange (horizontal side) of the copper plate Jo be embedded in the concrete work shall be 25 mm depth of "U" to be provided in the expansion joint, in the copper plate shall be of 25mm.

M-29. Teak wood

29.1. The teak wood shall be of good quality as required for the item to be executed. When the kind of wood is not specifically mentioned, good Indian teak wood as approved shall be used.

29.2. Teak wood shall generally be free from large, loose dead or cluster knots, flaws, shakes, warps, twists, bends or any other defects. It shall generally be uniform in substance and of straight fibers as far as possible. It shall be free from rot decay, harmful fungi and other defects of harmful nature which will affect the strength, durability or its usefulness for the purpose for which it is required. The color shall be uniform as for as possible. Any effort like paining using any adhesive materials made to hide the defects shall render the pieces liable to rejection by the Engineer-in-charge.

29.3. All scantlings, planks etc., shall be sawn in straight lines and planes in the direction of grains and of uniform thickness.

29.4. The tolerances-in the dimensions shall be allowed at the rate of 1.5 mm. per face to be planed.

29.5. First class teakwood

29.5.1. First class teak wood shall have no individual hard and-sound knots, more than 6 sq. cm. in size and the aggregate area of such knots shall not be more than 1% of area of piece, The timber shall be closed grained.

29,6. Second Class Teak Wood:

29.6.1. No individual hard and sound knots shall be more than 15 sq. cms. In size and aggregates area of such knots shall be not exceed 2% of the area of piece.

M-29. A Non-teak wood:

The non-teak wood shall be chemically treated, seasoned as per I.S. Specifications and of good quality. The type of wood shall be got approved before collecting the same on site Fabrication of wooden members shall be started only after approval.

For this purpose wood of Bio, Kalai, Sires. Saded, Behda, Jamun, Sisoo will be used for door whereas only Kalai. Sires, Halda. Kalam etc. will be permitted for shutters after proper seasoning and chemical treatment. The non-teak wood shall be free from large loose dead of cluster knots, flows, shakes, warps, bends or any other defects, It shall be uniform in substance and of straight fibers as far as possible It shall be free from rots, decay, harmful fungi and other defects of nature which will affect the strength, durability or its usefulness for the purpose for which it is required. The color of wood shall be uniform as far as possible. The scantlings planks etc. shall be saw in straight lines and planes in the direction of grain and of uniform thickness. The department will use the Agency to produce certificate from Forest Department in event of dispute and the decision of the Department shall be final and binding to the contractor. The tolerance in the dimension shall be allowed at 1.5 mm. per face to be planed.

M-30. Wooden flush door shutters (solid core)

30.1. The solid core type flush door shutters shall be of decorative or non-decorative type as specified in the drawing. The size and thickness of the shutter shall be as specified in drawings or as directed. The timber species for core shall be used as per I.S.2202 (part -I) 1980. The timber shall be free from decay and insect attack Knots and knot holes less than half the width of cross-section of the members in which they occur may be permitted. Pitch pockets, pitch streaks and harmless pin holes shall be permissible except in the exposed edges of the core members. The commercial plywood, cross-bands shall conform to I.S.303-1275

30.2. The face-pane! of the shutters shall be formed by gluing by the hot press process on both faces of the core with either plywood or cross-bands and face veneers. The[1] hopping, rebating. Opening of glazing, venation etc. shall be provided if specified in the drawing.

30.3. All edges of the door shutters shall be square. The shutters shall be free from twist or warp in its plane. Both faces of the shutters shall be sand papered to smooth even texture.

30.4. The shutters shall be tested for-

(1) End immersion test: The test shall be carried out as per I.S.2202 (part-1) 1980 there shall be no delamination at the end of the test.

(2) Knife Test: The face panel when tested in accordance with I.S 1659-1979 shall pass the test.

(3) Glue adhesion test : The flush door shall be tested for glue adhesive test in accordance with I S 2202

(Part -I) 1980. The shutters shall be considered to have passed the test, if no delamination occurs in the glue lines in the plywood and if no single determination more than 80 mm in length and more than 3 mm in depth has occurred in the assembly glue lines between the plywood face and the style and rail. Delamination at the corner shall be measured continuously around the corner Delamination at the knots, knot hole and other permissible wood defectects shall not be considered in assessing the sample.

30.5. The tolerance in size of scud core type flush door shall-be as under:

In Nominal thickness ± 1.2 mm. In Nominal height ±3m

30.6. The thickness of the shutter shall be uniform throughout with a permissible variation of not more than 0.8 mm when measured at any points.

M-31. Aluminum doors, windows, ventilators

31.1. Aluminum alloy used in the manufacture of extruded window sections shall conform to I.S. designation HEA-WP of I.S. 733-1975 and also to I S. Designation WVG-WP of I.S 1285-1975 The section shall be as specified in the drawing and design. The fabrication shall be done as directed

31.2. The hinges shall be cast or extruded aluminum hinges of same type as in window but of larger size.

31.3. The hinges shall normally be of 50 mm. projecting type. Non-projecting type of hinges may also be used if directed. The handles of door shall be of specified design A suitable lock for the door Operable either from outside or inside shall be provided. In double shutter door, the first closing shutter shall have concealed aluminum alloy bolt at top and bottom.

M-32. Rolling Shutters

32.1. The rolling shutters shall conform to I.S.6248-1979 Rolling shutters shall be supplied of specified type with accessories. The size of the rolling shutters shall be specified in the drawings. The shutters shall be specified in the drawings. The shutters shall be constructed with interlocking lath sections formed from cold rolled steel strips not less than 0.9 mm. thick and 80 mm. wide for shutters up to 3.5 m .width not less than 1.25 mm. thick and 80 mm wide for shutters 3.5 m. in width and above unless otherwise specified.

32.2. Guide channels shall be of mild steel deep channel section and of rolled pressed or built up (fabricated) joint less construction The thickness of sheet used shall not be less than 3 15mm.

32.3. Hood covers shall be made of M S. Sheets not less than 0.90 mm. thick. For shutters having width 3.5 Meter and above, the thickness of M.S. sheet for the hood cover shall be not less than 1 25 mm.

32.4. The spring shall be of best quality and shall be manufactured from tested high tensile spring steel wire of strip of adequate strength to balance the shutters in all position. The spring pipe shaft etc. Shall be supported on strong M S of malleable C I. brackets. The brackets shall be fixed on or under the lintel as specified with-raw! Plugs and screws bolts etc.

32.5. The rolling shutters shall be of self-rolling up to 8 Sq. m. clear area without ball bearing and up to 12 Sq.m. clear areas with ball bearing. If the rolling shutters are of larger, then gear operated type shutters shall be used.

32.6. The locking arrangement shall be provided at the bottom of shutter at both ends The shutters shall be opened from outside.

32.7. The Shutters shall be completed with door suspension shafts, looking arrangements, pulling hooks, handles and other accessories.

M-33. Collapsible Steel Gate

33.1. The collapsible steel gate shall be in one or two leaves and size as per approved drawings or as specified. The gate shall be fabricated from best quality mild steel channels, flats etc. Either steel pulleys or ball-bearings shall be provided in every double channel unless otherwise specified the particulars of collapsible gate shall be as under.

(a) Pickets: These shall be of 20 mm. M.S. channels of heavy sections unless otherwise shown on drawings. The distance center to center of pickets shall be 12 cms .with an opening or 10Cms

(b) Pivoted M.S. flats shall be 20 mm x6mm

(c) Top and bottom guides shall be from tee of flat iron of approved size.

(d) The fittings like stoppers fixing, locking cleats, brass handles and cast iron rollers shall be of approved design and size

M-34. Welded Steel Wire Fabric

34.1 Welded steel wire fabric for general purpose shall be manufactured form cold drawn steel wire "as drawn" or galvanized steel conforming to I.S. 226-1975 with longitudinal and transverse wire securely connected at every intersection by a process of electrical resistance welding and conforming to I.S.4948-1974. it shall be fabricated and finished in workmanlike manner and shall be free from injurious defects and shall be rust proof The type of mesh shall be oblong or square as directed The mesh sizes and sizes if wire for square 3b well as oblong welded steel wire fabric shall be as directed The steel wire fabric in panels shall be in one whole piece in each panel as far as stock sizes permit.

M-35 Expanded Metal Sheets

35.1. The expanded metal sheets shall he free from flaws joints broken strands laminations and other harmful surface defects. Expanded metal steel sheet shall confirm to IS-412-1975. except that blank sheets need not be with guaranteed mechanical properties The size of the diamond mesh of expanded metal and dimensions of strands (width and thickness) shall be as specified. The tolerance on nominal weight of expanded metal sheets shall be of ± 10percent.

35.2. Expanded metal in panels shall be in one whole piece in each panel as far as stock sizes permit. The expanded metal sheets shall be coated with suitable protective coating to prevent corrosion.

M-36. Mild Steel Wire (Wire Gauze Jali)

36.1. Mild steel wire may be galvanized as indicated. All finished steel wire shall be well cleanly drawn to the dimensions and size of wire as specified in item. The wire shall be sound free from splits surface flaws, rough jagged and imperfect edges and other harmful surface defects and shall conform to I.S.280-1978.

M-37. Plywood

37.1. The plywood for general purpose shall conform I.S.303-17-1975.

Plywood is made by cementing together than boards or starts of wood into panels. There are always an odd number of layers, 3,5,7,9, ply etc. The piles are placed so that grain of each layer is at right angles to the grain in the adjacent level.

37.2. The chief advantages of plywood a single board of the same thickness is the more uniform strength of the plywood, along the length and width of the plywood and greater resistance to cracking and splitting with charge in moisture content.

37.3. Usually synthetic resins are used to gluing, phenolic resins are usually cured in a hot press which compresses and simultaneously heats the plies between hot plates which maintain a temperature of 90 degree C to 140 degree C and a pressure of 11 to 14 Kg/ Sq. Cm on the wood. The time of heating may be anything from 2 to 60 minutes depending upon thickness

37.4. When water glue is used the wood absorbs so much water that the finished plywood must be dried carefully. When synthetic resigns are used as adhesive the finished plywood must be exposed to an atmosphere of controlled humidity until the proper amount of moisture has been absorbed.

37.5. According to I.S. 303-1975 the plywood for general purpose shall be of the grades namely BWR, WWR and CWR depending up to the adhesives used for bonding the veneers and it will be further classified into six types namely AA, AB, AC, BB, BC and CC based on the quality of the two faces each face being of three kinds namely A, Band C After pressing, the finished plywood should be reconditioned to a moisture content not less than 8 percent and not more than 16percent.

37.6. Thickness of plywood Boards.

TABLE

Board	Thickness	Board	Thickness	Board	Thickness	Board	Thickness
3 ply.	3 mm.	5 ply.	5 mm.	7 ply.	9 mm.	9 ply.	16 mm
	4 mm.		6 mm.		13 mm.		19 mm.
	5 mm.		7 mm.		16 mm.	11 ply.	19 mm.
	6 mm.		8 mm.	9 ply.	13 mm.		25 mm.

M-38. Glass

38.1. All glass shall be of the brief quality, free from specks, bubbles, smokes veins, air holes blisters and other defects. The kind of glass to be used shall be as mentioned in the item or specification or in the special provision or as shown in detailed drawings. Thickness of glass panes shall be uniform. The specifications for different kinds of glass shall be asunder.

38.2. Sheet Glass

38.2.1. In absence of any specified thickness or weight in the item or detailed specifications of the item of work, sheet glass shall be weighing 7.5 Kg/Sq. m for panes up to 600 mm x 600mm.

38.2.2. For panes larger than 600 mm x 600 mm and up to 800 mm x 800 mm the glass weighing not less than 8.75 Kg/Sq m shall be used For bigger panes up to 900 mm x 900 mm. glass weighing not less than 8.75 Kg/Sq. m shall be used. For bigger panes up to 900 mm x 900 mm. glass weighting not less than 11.25 Kg/Sq. m. shall be used

38.2.3. Sheet glass shall be patent flattened glass of best quality and for glazing and framing purposes shall conform to I.S. 1761-1960. Sheet glass of the specified colors shall be used, if so shown, on detailed drawings or so specified For important buildings and for panes with any dimension over 900 mm plate glass of specified thickness shall be used

38.3. Plate-glass:

38.3.1. When plate glass is specified it shall be "polished patent plate glass" of best quality It shall have both the surface ground flat and parallel and polished to obtain clear undisturbed vision and reflection The plate glass shall be of the thickness mentioned in the item or as shown in the detailed drawing or as specified. In absence of any specified thickness, the thickness of plate glass to be supplied shall be 6 mrn. and a tolerance of 0.20 mm shall be admissible

38.4. Obscured Glass:

38.4.1. This type of glass transmits light so that vision is partially or almost completely obscured. Glass shall be plain rolled, figured, ribbed of fluted, or frosted glass as may be specified as required. The thickness and type of glass shall be as per details on drawings or as specified or as directed

38.5. Wired Glass:

38.5.1. Glass shall be with wire netting embedded in a sheet of planet glass. Electrically welded 13 mm Georgian square mesh shall be used Thickness of glass shall not be less than 6 mm Wired glass shall be of type and thickness as specified

M-39. Acrylic Sheets

39.1. Acrylic sheets shall be of thickness as specified in the item and of an specified shape and size as the case may be panels may be flat or curved It should be light in weight it shall be colorless or colored or opaque as specified in the item. Colorless sheet shall be as transparent as the finest optical glass. Its light transmission rate shall be about 95% Transparency shall not be affected for the sheets of larger thickens, it shall be extremely resistant to sunlight weather and low temperatures.

It shall not show any significant yellowing or change in physical properties or loss of light transmission over a longer period of use. The sheet shall be impact resistant also Sheets should be of such quality that they can be cut, bent jointed as desired Solution for the joints shall be used as per the requirement of manufacturer.

M-40. Particle board

40.1. The particle boards used for face panels shall of best quality free from any defects. "I he particle boards shall be made with phenol aldehyde adhesive The particle boards shall conform I S 3087-1905" Specification for wood particle board for general purpose" The size and the thickness shall be as indicated.

M-41. Expanded polystyrene or framed styroper slabs

41.1. The expanded polystyrene ceiling boards and tiles shall be of approved make and shall be of sizes, thickness, finish and color as indicated. It shall be of high density and suitable for use as insulating material. The insulating material shall be like slabs of Thermo Cole etc.

M-42. Resign bonded fiber glass.

42.1. The resign bonded fiber glass tiles or roils shall be of approved make and shall be of sizes. Thickness, and finish as indicated.

42.2. For test of Mineral wool thermal insulation [Blanket I S 3144-1965 shall be followed

42.3. Insulation wool blanks shall be with the following coverings on one or both sides as indicated

(1) Bituminous Hessian Kraft paper suitable for use in position where moisture has to be excluded.

(2) Hessian cloth or Kraft paper for keeping out dust

(3) G.I wire netting, suitable for surfaces to be plaster over

M-43. Fixtures and fastenings

43.1. General:

43.1.1. The fixtures and fastenings that is butt hinges tee and strap hinges sliding door bolts, tower bolts, door latch, and bath-room latch, handles door stoppers, casement window fasteners, casement stays and ventilators catch shall be made of the metal as specified in the item or its specification.

43.1.2. They shall be of iron, brass, aluminum chromium plated iron, chromium plated brass, copper oxidized iron, copper oxidized brass or anodized aluminum as specified

43.1.3. The fixtures shall be heavy medium or light type. The fixtures and fastenings shall be smooth finished and shall be such as will ensue ease of operations.

43.1.4. The samples of fixtures and fastenings shall be got approved as regards, quality and shape before providing them in position

43.1.5. Brass and anodized aluminum fixtures and fastenings shall be bright finished

43.2. Holdfasts:

43.2.1. Holdfasts shall be made from mild steel flat 30 cm length and one of the holdfasts shall be bent at right angle and two nos of 6 mm. diameter holes, shall be made in it for fixing it to the frame with screws. At the other end, the holdfast shall be forked and bent at right angles in opposite directions

43.3. Butt hinges:

43.3.1. Railway standard heavy type butt hinges shall be used when so specified

43.3.2. Tee and strap hinges shall be manufactured from M Sheet

43.4. Siding door bolts(AL drops):

43.4.1. The AL drops as specified in the item shall be used and shall be got approved.

43.5. Tower bolts (Barrel Type):

43.5.1. Tower bolts as specified in the item shall be used and shall be got approved

43.6. Door Latch:

43.6.1. The size of door latch shall be taken as the length of latch.

43.7. Bathroom Latch:

43.7.1. Bathroom latch shall be similar to tower bolt.

43.8. Handle:

The size of the handles shall be determined by the inside grip length of the handles. Handles shall have a base plate of length 50 mm. more than the size" of the handle.

43.9. Door Catch:

43.9.1. Door stoppers shall be either floor door stopper type or door catch type Floor stopper shall be of overall size as specified and-shall have a rubber cushion.

43.10. Door Stoppers:

43.10.1. Door catch shall be fixed at a height to about 900 mm from the floor level such that one part of the catch is fitted on the inside of the shutter and the other part is fixed in the wall with necessary wooden plug arrangements for appropriate fixity The catch shall be fixed 20 mm inside the face of the door for easy operation of catch.

43.11. Wooden Door Stop with hinges:

43.11.1. Wooden door stop of size 100 mm x GO mm x 40 mm shall be fixed on the door frame with a hinges of 75 mm. size and at a height of 900 mm. from the floor level The wooden door stop shall be provided with 3 coats of approved oil paint

43.12. Casement Window Fastener:

43.12.1. Casement window fastener for single leaf window shutter shall be left or right handed as directed

43.13. Casement stays (Straight Red Stay):

43.13.1. The stays shall be made from a channel section having three holes at appropriate position so that the window can be opened either fully or partially as directed. Size of the stay shall be 250 mm to 300 mm. as directed.

43.14. Ventilator Catch:

43.14.1. The pattern and shape of the catch shall be as approved

43.15. Pivot:

43.15.1. The base and socket plate shall be made from minimum 3 mm. thick plate: and projected pivot shall not be less than 12 mm 'diameter and 12 mm. length and shall be firmly riveted to the base plate in case of iron pivot and in single piece plate in the case of brass pivot.

M-44. Paints:

44.1. (A) Oil paints:

44.1.1. Oil paints shall be of the specified color and as approved the ready mixed paints shall only be used. However, if ready mixed paint of specified shade or tint is not available white ready mixed paint with approved stainer will be allowed In such a case the contractor shall ensure that the shade of the paint so allowed shall be uniform.

44.1.2. All the paints shall meet with the following general requirements

(i)Paint shall not show excessive setting in a freshly opened full can and shall easily be ready spread with a paddle to a smooth homogeneous state. The paint shall show no curdling, levering caking or color separation and shall be free from lumps and skins

(ii) The paint as received shall brush easily, possess good leveling properties and show no running or sagging tendencies

(iii)The paint shall not skin within 48 hours in a three quarters filled closed container

(iv) The paint shall dry to a smooth uniform finish free from roughness, grit unevenness and other imperfections

44.1.3. Ready mixed paint shall be used exactly as received horn the manufacturers and generally according to their instructions and without any admixtures whatsoever

44.2. (B) Enamel paints:

44.2.1. The enamel paint shall satisfy in general requirements in specification of oil paints, Enamel paint shall conform to I.S.2933-1975.

M-45. French polish

45.1. The French polish of required tint and shade shall be prepared with the below mentioned ingredients and other necessary materials:

(i) Denatured spirit of approved quality (ii) Chandras (iii) Pigment.

45.2. The French polish so prepared shall conform to I S : 348-19C8.

M-46. Marble chips for marble mosaic terrazzo

46.1. The marble chips shall be of approved quality and shades. It shall be hard, sound, dense and homogeneous in texture with crystalline and coarse grains It shall be uniform in color and free from stains cracks, .decay and weathering.

46.2. The size of various colors of marble chips ranging from the smallest up to 20 mm shall be used where the thickness of top wearing layer is 6 mm size The marble chips of approved quality and colors only as per grading as decided by the Engineer-in-charge shall be used for marble mosaic tiles or works

46.3. The marble chips shall be machine crushed. They shall be free from foreign matter, dust etc. Except as above, the chips shall conform to I S2114-1962

M-47. Flooring Tiles

47.1. (A) Plain Cement tiles;

47.1.1. The plain cement tiles shall be of general purpose type. These are the tiles in the manufacture of which no pigments are used. Cement used in the manufacture of tiles shall be as per Indian Standards.

47.1.2. The tiles shall be manufactured from a mixture of cement and natural aggregates by pressure .process. During manufacture the tiles shall be subjected to pressure of not less than 140 Kg/Sq. Cm. The proportion of cement to aggregate in the backing of the tiles shall be not less than 1 .3 by weight The wearing face, through the tiles are of plain cement, shall be provided with stone chips of 1 to 2 mm. size. The proportions of cement to aggregate in the wearing layer of the tiles shall be three parts of cement to one parts chips by weight. The minimum thickness of wearing layer shall be 3 mm. The colour and texture of wearing layer shall be uniform throughout its face and thickness. On removal from mould, the tiles shall be kept in moist condition continuously at least for seven days and subsequently, if necessary, for such long period as would ensure their conformity to requirements of I.S.1237-1980 regarding strength resistance to wear and water absorption.

47.1.3 The wearing face of the tiles shall he plane, free from projections, depressions and cracks and shall be reasonably parallel to the back face of the tile. All angles shall be right angle and all edges shall be sharp and true.

47.1.4. The size of tiles generally be square shapes 24.85 Cm x24.85 Cm. or 25 Cm x 25 Cm The thickness of tiles shall be 20mm.

47.1.5. Tolerance of length and breadth shall be plus of minus one millimeter Tolerance on thickness shall be plus5mm.

47.1.6. The tiles shall satisfy the tests as regards transverse strength, resistance to wear and water absorption as per I.S1237-1980.

47.2. (B) Plain Coloured Tiles:

47.2.1. The tiles shall have the same specification as for plain cement tiles as per (A) above expect that they shall have a plain wearing surface wherein pigments are used. They shall conform it I.S.1237-1980.

47.2**, 2.The** pigments used for coloring cement shall not exceed 10 percent by weight of cement used in the mix. The pigments, synthetic or otherwise, used for coloring tiles shall have permanent color and shall not contain materials detrimental to concrete

47.2.3 The color of the tiles shall be specified in the item or as directed

47.3. (C) Marble mosaic tiles:

47.3.1. These tiles have same specification as per plain cement tiles except the requirements as stated below

47.3.2. The marble mosaic tiles shall conform to I.S 1237-1980. The wearing face of the tiles shall be mechanically ground and filled. The wearing face of tiles shall be free from projections depressions and cracks and shall be reasonably parallel to the back face of the tiles. All angles shall be right angles and all edges shall be sharp and true.

47.3.3. Chips used in the tiles be from smallest up to 20 mm. size. The minimum thickness of wearing layer of tiles shall be 6 mm. For pattern of chips to be had on the wearing face; a few samples with or without their full size photographs as directed shall be approved by the Engineer-m-charge, for approval.

47.3.4. Any particular samples if found suitable shall be approved by the Engineer-in-charge, or he may ask for a few more samples to be presented The samples hall have of be made by the contractor till a suitable sample is finally approved for use in the work. The Contractor shall ensure that the tiles supplied for, the work shall be in conformity with the approved sample only, in terms of its dimensions, thickness of backing layer and wearing surface, materials, ingredients, colour, shade, chips, distribution etc.required.

47.3.5. The tiles shall be prepared form cement conforming to Indian Standards or coloured port land cement generally depending upon the colour of tiles to be used or asdirected.

47.4. (D) Chequered Tiles:

47.4.1. Chequered tiles shall be plain cement tiles or marble mosaic tiles. The fromer shall have the same specification as per (A) above and the latter as per marble mosaic tiles as per (C) except as mentioned below

47.4.2. The tiles shall be of nominal size of 250 mm. x 250 mm. or as specified. The centre to centre distance of chequer shall not be less then 25 mm. and not more than 50 mm. The overall thickness of the tile shal! be 22mm

47.4.3. The grooves in the chequers shall be uniform and straight. The depth of the grooves shall not be less than 3 mm. The chequered tiles shall be plain coloured or mosaic as specified The thickness of the upper layer measured form the top of the chequers shall not be less than 6 mm. The tiles shall be given the first grinding with machine before delivery tosite

47.4.4. Tiles shall conform or relevant I.S 1237-1980.

47.5. (E) Chequered Tiles For Stair Cases:

47.5.1. The requirements of these tiles shall be the same as chequered tiles as per (D) above except in following respects:

(1) The length of a tile including note shall be 300 mm (2) The minimum thickness shall be 28 mm (3) The nosing shall have also the same wearing layer as at the top. (4) The nosing edge shall be rounded (5) The front portion of the tile for a minimum length of 75 mm. from and including the nosing shall have grooves running parallel to nosing and at centers not exceeding 25 mm Beyond that the tiles shall have normal chequer pattern.

M-48. Rough Kotah Storm

48.1. The Kotah stones shall be hard even, sound, and regular in shape and generally uniform in colour. The colour of the stone shall generally be green Brown coloured shall not be allowed for use They shall be without any soft veins, cranks offlaws.

48.2. The size of the stones to be used for flooring shall be of size 600 mm x 600 mm and/or size 600 mm. x 450 mm as directed However smaller sizes will be allowed to be used to the extent of maintaining required pattern. Thickness shall be asspecified

48.3. The edges of minus 30 mm on accounts of chisel dressing of edges shall be permitted for length as well as breadth. Tolerance in thickness shall be ± 3mm

48.4. The edges of stones shall be truly chiseled and table rubbed with coarse sand before paving. All angles and edges of the stones of shall be true, square and free from chipping and surface shall De true and plain

48.5. When machine cut edges are specified, the exposed and the edges at joints shall be machine cut The thickness of the exposed machine cut edges shall beuniform

M-49. Polished Kotah Stoics

49.1. Polished kotah stone shall have the same specification as per rough kotah stone except as mentioned below

49.2. The stones shall have machine polished surface. When brought on site, the stones-shall be single polished or double polished depending upon its use. The stones for paving shall generally be single polished The stones to be used for dedo, skirting, sink, veneering, sills steps etc. where machine polishing after the stones are fixed in situ is not possible shall be doublepolished

M-50. Dholpur Stone Slab

50.1. Dholpur stone slab shall be of best quality as approve by the Engineer-m-charge The stone slab shall be without my veins, cracks, and flaws The stone slab shall be even sound and durable regular in snaps and of uniformcolour

50.2. The size of the stone shall be as specified in the item or detailed drawing or as approved by the Engineer-in-charge The thickness of the stone shall be as specified in the item of work with the permissible tolerance of plus or minus 2 mm. The provision in respect of .polishing as for polished kotah stone shall apply to polished Dholpur stone also. All angles and edges of the face of the stone slab shall be fine chiseled or polished as specified in the item of work and all the four edges shall be machine cut All angles and edges of the stone slab shall be true andplane

50.3. The sample of stone shall be got approved by the Engineer-in-charge for a particular work It shall be ensured' that the stones to be used in a particular work shall not differ much in shade or tint from the approvedsample

M-51. Marble Slab

51.1. Marble slab shall be white or of other and of best quality as approved by theEngineer-in-charge

51.2. Slabs shall be hard, close, uniform and homogeneous in texture. They shall have even crystalline gram and free from defects and cracks. The surface shall be machine polished to an even and perfect plane surface and edges machine cut true and square. The rear f ice shall be rough to provide key for themortar

51.3. Marble slabs with natural veins, if selected shall have to be laid as per the pattern given by the Engineer-in-charge. Size of the slab shall be minimum 460 mm x450 mm and preferably 600 mm 'x 600 mm. However, smaller sizes will be allowed to be used of the extent of maintaining requiredpattern.

51.4. The slab shall not be thinner than the specified thickness at its thinnest part. A few specimen of finished slab to be used shall be deposited by the Contractor in the office forreference

51.5. Except as above the marble slabs shall conform to I.S.1130-1969

M-52. Granite Stone slab

52.1. Granite shad be of approved colour and quality. The stone shall be hard, even sound and regular in shape and generally uniform in colour. It shall be without any soft veins, cracks offlaws

52.2. The thickness of the stone shall be specified initems

52.3. AH exposed faces shall be double polished to tender truly smooth and even reflecting surface. The exposed edges and corners shall be rounded off as directed The exposed edges shall be machine cut and shall have uniformthickness.

M-53. P.V.C. Flooring

53.1. P.V.C. sheets for P.V.C., floor covering shall be of homogenous flexible type conforming to I S 3462-1966. The P.V.C. covering shall neither develop any toxic effect while put to use nor shall give off any disagreeableodour.

53.2. Thickness of flexible type covering tiles shall be as specified in the description of theitem

53.3. The flexible type shall be backed with Hessian or other woven fabric The following tolerances shall be applicable on the nominal dimensions of the rolls or tiles:

(a) Thickness ± 015mm.

(b) Length orWidth

(1)	300 mm. Square tiles	±0.20mm.	(3)	900 mmSquaretiles	± 0.60mm.
(2)	600 mm. Square tiles	± 040mm.	(4)	Sheetsandroll	± 0.10percent.

53.4. Adhesive:

53.4.1. The adhesive for PVC flooring shall be of the type and make recommended by the manufactures of PVCsheets/tiles.

M-54. Facing Tiles

54.1. The facing tiles (burnt clay facing bricks) shall be free from cracks, and nodules of free lime. They shall be thoroughly burnt and shall have plane rectangular faces with parallel sides and sharp straight right angled faces. The texture of the finished surface that will be exposed when in place shall conform to an approved sample consisting not less than for stretcher bricks each representing the texture desired. The facing tiles shall have a pleasing appearance, sufficient resistance to penetration by ram and greater durability than common bricks. The tiles shall conform to I.S.2691-1972.

54.2. The standard size of facing brick tiles shall be 19 x 9 x 4 cms. The facing brick tiles shall be provided with frog which shall conform to I.S.11077-1976.

54.3. The permissible tolerance in dimensions specified above shall be asfollows:

Size	Tolerancefor	
	1stClassBrick	2nd ClassBrick
19cm.	±6mm.	± 10 mm.
9cm.	±3mm.	± 7mm.
4cm.	±1.5mm.	± 3mm.

The tolerance for distortion or warpage of face or edges of individual brick from a plane surface and from a straight line respectively snail be asfollows:

Facingdimensions	Permissibletolerance
Max. below19cms.	Max. 2.5mm.
-do- above19cms.	Max. 3.0mm.

54.5. The average compressive strength obtained as a sample of five tiles when tested in accordance with the procedure laid as per I S 1077-1976 shall be not less than 175 Kg/Sq Cm. The average compressive strength of any individual bricks shall be not less than 160 Kg /Sq.Cm.

54.6. The average water absorption for five bricks tiles shall not exceed 12 percent of average weight of brick before testing. The absorption for each individual bricks shall not exceed 25percent.

54.7. The brick tiles when tested in accordance with I.S. 1077-1976, the rate of efflorescence shall not'be more than "Slightlyeffloresced"

M-55. White glazed tiles

55.1. The tiles shall be of best quality as approved by the Engineer-in-charge. They shall be flat and true to shape They shall he fee from cracks, crazing sports chipper) edges and corners. The glazing shall be of uniformshade.

55.2. The tiles shall be nominal size of 150 mm x 150 mm unless otherwise, specified. The maximum variation the stated sizes other than the thickness of tile shall be plus or minus 1.5 mm. The thickness of tile snail be 6 mm. Except as above the tiles shall conform to I.S.1977-19/0

M-56. Galavanised from pipes and fittings

56.1. Galavanised iron pipes shall be of the medium type and or required diameter and shall comply with I.S. 1239-1979. The specified diameter of the pipes shall refer to the inside diameter of the bore. Clamps, screw and all galvanised iron fittings shall be of the standard ' R ' or equivalent make

M-57. Bib cock and stop cock

57.1. A bib cock is a draw off tap with a horizontal inlet and free outlet A stop cock is a valve with suitable means of connection for insertion in a pipe line for controlling or stopping theflow

57.2. They shall be of screw down type and or brass chromium plated and of diameter as specified in the description of the item. They shall conform to I S. 781-1977 and they shall be of best Indian make. They shall be polishedbright.

57.3. The minimum finished weight of bib cock and stop cock shall be as givenbelow

Diameter	Bid cock	Stop cock	Diameter	Bid cock	Stop cock
8 mm	0.25 kg.	0.25 kg.	15 mm	0.40 kg.	0.40 kg.
10 mm	0.30 kg.	0.35 kg.	20 mm	0.75 kg.	0.75 kg.

M-58. Gun metal wheel valve

58.1. The gun metal wheel valve shall be of approved quality. These shall be of gun metal fitted with wheel and shall be of gate valve opening full way and of the size specified. These shall conform to I.S. 778-1971.

M-59. White glazed porcelain wash basin

59.1. Wash basin shall be of white porcelain first quality best Indian make and it shall conform to I.S. 2556 (Part -IV)
-1972 and I.S. 771-1979. The size of the wash basin shall be as specified in item. Wash basin shall be of one piece construction with continued over flow arrangements All internal angles shall be designed so as to facilitate cleaning. Wash basin shall have single tap hole as specified. Each basin shall have a circular waste hole which is either riveted or beveled internally with 65 mm. diameter at top and 10 mm. depth to suit the waste fitting. The necessary stud slot to receive the bracket on the under side of the basin shall be provided Basin shall have an internal soap holder which shall fully drain into thebowl.

59.2. White glazed pedestal of the quality and colour as that the basin shall be provided where specified in the item. It shall be completely recessed at the back for reception of supply and wash pipe. It shall be capable of supporting the basin rigidly and adequately and shall be so designed as to make the height from the floor the floor to top of the rim of basin 750 rnrn. to 800 mm. as directed.

M-60. European type water closet/with low flushing

60.1. The European type water closet shall be white glazed porcelain first quality and shall be of wash down type conforming to I.S. 2556-1973 and I.S.771-1979

60.2. 'S' trap shall be provided as required with water seal not than 50 mm. The solid plastic seat and cover shall be of best Indian make conforming to I.S 2548-1980. They shall be made of moulded synthetic materials which shall be tough and hard with high resistance to solvents and shall be free from blisters and surface defects and shall have chromium plated brass hinges and rubber buffer of suitablesize.

M-61. Orrissa type water closet

61.1. The Specification of Orrissa type white glazed water closet of first quality shall conform to I.S. 2256 (Part-III)
-1981 and relevant specification of Indian type water closet except that pan will be with the integral squatting pan of size 580 mm x 400 mm with raised footrest.

M-62. Indian type water closet

62.1. The Indian type white glazed water closet of first quality shall be of size as specified in the item and conforming to I.S. 771-1979 and I.S. 2556 – (Part-II) 1981. Each pan shall have integral flushing. It shall also have an inlet at black an or front for connecting flush pipes as directed. The inside of the bottom of the pan shall have sufficient slope from the front towards the outlet and surface shall be uniform and smooth. Pan shall be provided with 100 mm. diameter 'P' or 's' trap with approximately 50 mm. Water seal and 50 mm. diameter vent horn.

M-62. A. Foot Rests

62.A.1.A pair of whit glazed earthen ware rectangular foot to minimum size 250 mm.x 130 mm. x 20 mm shall be provided with the water closet.

M-63. Glazed Earthen Ware Sink

63.1. The glazed earthen-ware sink shall be of specified size, colour and quality. They sink shall conform, to I.S. 771 part – lI – 1979. The brackets for sinks shall conform to I.S775-1970

63.2. The pipes shall conform to I.S. 1239-part-l 1973 and I.S. 404-1962. for steel and lead pipes respectively. 32 mm. brass waste coupling of standard pattern with brass chain and rubble plug shall be provided withsink.

M-64. Glazed earthen-ware Lipped type flat back urinal/corner type urinal

64.1. The lipped type urinal shall be fiat back or corner type as specified in the item and shall conform to I.S 771-1979. It shall be of best Indian make and size as specified and approved by the Engineer-in-charge. The flat back of corner type urinal must be of 1st quality free from any defects, cracks etc.

M-65. Low level Enamel flushing tank

65.1. The low level enamel flushing tank shall be of 15 liters capacity. It shall conform of I S 774-1971. The flushing cistern shall be of best quality and free from any defects. The flushing tank shall have outlet 32 mm. diameter. The outlet shall be connected with W.C. pan by lead pipe or P.V.C. pipe as specified. The flushing tank shall be provided with inlet and outlet for fixing G.I. inlet pipes and over-flow pipes. The flushing cistern shall be provided with chromium plated handle for flushing The flushing tank shall be provided with bracket of cast iron so that it can be fixed on wall at specified height. The brackets shall conform to I.S.775-1970.

M-66. Cast iron flushing cistern.

66.1. The cast iron flushing cistern shall be of 15 liters capacity. It shall conform to I.S. 774-1971. The flushing cistern shall be of best quality free from any defects. The flushing cistern shall have outlet of 32 mm diameter. The lead pipe shall conform to I.S 404 (Part-l) - 1962; For fixing G.I. inlet pipes and overflow pipe 20 mm. dia. inlet and outlet shall be provided The flushing cistern shall be provided with galvanised iron chain and pull of sufficient length and shall be got approved from the Engineer-in-charge. The cast iron flushing cistern shall be painted with one coat of anticorrosive paint and two coats of paints The flushing cistern shall be fixed on two C I brackets The C [.brackets shall conform to I S775-1970.

M-67. Flush cock.

67.1. Half turn flush cock (Heavy weight) shall be of gun metal chromium plated of diameter as specified in the description of the item. The flush cock shall conform to relevant IndianStandard.

M-68. Cast iron pipes and fittings.

68.1. All soil water, vent and anti syphonage pipes and fitting shall conform to I S.1729-1964. The pipes' shall have spigot and socket ends with head on spigot end. The pipes and fitting shall be true to shape smooth, cylindrical, their inner and outer surfaces being as nearly as' practicable concentric. They shall be sound and nicely cast and shall be free from cracks, laps, pinholes or there imperfection and shall be neatly dressed and carefullyfettled.

68.2. The end of pipes and fittings shall be reasonable square to theiraxis.

68.3. The sand of cast iron pipes shall be of the diameter as specified in the description and shall be in lengths of 1.5 M., 1.8 M. including socket ends of the pipe unless shorter lengths are either specified or required at junctions etc. The pipes and fittings shall be supplied without ears unless specified or directed otherwise.

68.4. Tolerances:

68.4.1. The Standard weights and thickness of pipes shall be as shown in the following table
A tolerance up to minus 10 per cent may however be -allowed against these standardweights

Sr. No.	Nominal dia. of bore	Thickness	Overall 1.5 m. long	Weight of pipe 1.8 m long	excluding ears 2.m long
1.	75 mm.	5.0 mm.	12.38 Kg.	16.52 Kg.	18.37 Kg.
2	100. mm.	5.0 mm.	18.14 Kg.	21.67 Kg.	24.15 Kg.

68.4.2. A tolerance up to minus 15 percent in thickness and 20 mm. length will be allowed For fittings tolerance in lengths shall be plus 25 mm. and minus 10mm.

68.4.3. The thickness of fittings and their socket and spigot dimensions shall conform to the thickness and dimensions specified for the corresponding sizes of straight pipes. The tolerance in weights and thickness shall be the same as for straightpipes.

M-69. Nahni Trap

69.1. Nahni trap shall be of cast iron and shall be sound and free from porosity or other defects which affect serviceability The thickness of the base metal shall not be less than 6.5 mm The surface shall be smooth and free .form craze, chips and other flaws or any other kind of defects which affect serviceability The size of nahni trap shall be specified and shall be of self cleaningdesign.

69.2. The Nahni trap shall be of-quality approved by the Engineer-in-charge and shall generally conform to the relevant IndianStandards.

69.3. The Nahni trap provide shall be with deep seal, minimum 50 mm. except at places where trap with deep seal cannot be accommodated. The cover shall be cast iron perforated cover shall be provided on the trap of appropriatesize.

M-70. Gully Trap

70.1. Gully trap shall conform to I.S. 651-1980. If shall be some, free .from defects such as fire-cracks or hair cracks. The glaze of the traps shall be free from crazing. They shall give a sharp clear note when struck with light hammer. There shall be no brokenblisters.

70.2. The size of the gully trap shall be as specified in theitem.

70.3. Each gully trap shall have one C.I. grating of square size corresponding to the dimensions, of inlet of gully trap. It will also have a water tight C.I. cover with frame inside dimensions 300 mm. x 300 mm. the cover with frame inside dimensions 300 mm. x 300 mm. the cover and weighing not less than 4.53 Kg. and the frame not less than 2.72 Kg. The grating cover and frame shall be of sound and good casting and shall have truly square machined seatingfaces.

M 71. Glazed Stone Ware pipe And Fittings

71.1. The pipes and fittings shall be of best quality as approved, by the Engineer-m-charge. The pipe shall be of best quality manufactured from stone- ware of fire clay, salt glazed thoroughly burnt through the whole thickness, of a close, even texture, free from air blows, fire blisters, cracks and other imperfections, which affect the serviceability. The inner and outer surfaces shall be smooth and perfectly glazed. The pipe shall be capable to withstand pressures or 1.5 M lead without showing sign of leakage. The thickness of the wall shall not be less than 1/12th of the internal dia. The depth of socket shall not be less than 38 mm. The socket shall be sufficiently large to allow a joint of 6 mm. around thepipe.

71.2. The pipes shall generally conform to relevant I S651-1980.

M-72. Wall Peg Rail

72.1. The aluminum wall peg rail shall have three aluminum pegs approved quality and size. It shall be fixed on teakwood plank of size 450 mm x 75 mm x 20 mm. The teakwood shall be French polished or oil painted as specified.

M-73. G.I. Water Spot

73.1. The G.I. pipes of 40 mm dia shall be of medium quality and specials shall be of 'R' brand or equivalent brand of best approvedquality

73.2. The pipe shall have length as required for the thickness of will in which it is fixed and at outside end tee bend cut at half the length shall be provided and at other end coupling shall be provided to have better fixing. The water spout shall be provided as per detailed drawing or asdirected

M-74. Asbestos Cement pipe (A.C. pipe)

74.1. The asbestos cement pipe of diameter as specified in the description of the item shall conform to I.S. 1626-1980. Special like bends, shoes, cowls, etc. shall conform to relevant Indian Standards The intent of pipe shall have is smooth finish, regular surface and regular internal diameter. The tolerance in all dimensions shall be as I.S. 1626-part-I-1980.

M-75. Crydon Ball valve

75.1. Mall valve of screwed type including polythene float and necessary level etc shall be of the size as mentioned in the description of item and shall conform to I.S 1703-1977

M-76. Bitumen Felt For Water proofing And Damp Proofing

76.1. Bitumen felt shall be on the fiber bases and shall be of type 2, self finished felt grade-2 and shall conform to I.S. 1322-1970

M-77. Selected Earth

77.1. The selected earth shall be that obtained from excavated material or shall have to be brought from outside as indicated in the items If item does not indicate anything the selected earth shall have to be brought fromoutside.

77.2. The selected earth shall be good yellow soil and shall be got approved from the Engineer-in-charge. In no case black cotton soil or similar expansive and shrinkable soil shall be used. It shall be clean and free from all rubbish and perishable materials, stones or brick bats. The clods shall be broken to a size of 50 mm or less. Contractor shall make his own arrangement at his own cost for land for borrowing selected earth. The stacking of material shall be done as directed by the Engineer-in-charge in such a way not to interfere with any construction all activities and in properstacks.

77.3. When excavated material is to be used only selected stuff got approved from the Engineer-in-charge shall be used. It shall be stacked separately and shall, comply with all the requirements of selected earth mentionedabove

M-78. Barbed Wire

78.1. The barbed wire shall he of galvanised steel and it shall generally conform to I.S. 278-1978. The barbed wire shall be of types-I whose nominal diameter for line wire shall be 2.5 mm. and point wire 2 24 mm. The nominal distance between two barbs shall be 75 mm unless otherwise specified in the item. The bribed wire shall be formed by twisting together two tine wires. One containing the barbs. The size of the line and point wires and barb spacing shall be as specified above. The permissible deviation from the nominal diameter of the line wire and point wire shall not exceed $\pm$ 0.08mm

78.2. The barbs shall carry four points and shall be formed by twisting two point wires, each two turns tightly round one line wire making altogether four complete turns. The bards shall have a length of notless than 13 mm and not more than 18 mm. The point shall be sharp and cut at an angle not greater than 35 degree of the axis of the wire forming thebarbs.

78.3. The line and point wires shall be circular in section, free from scale and other defects and shall be uniformly galvanized. The line wire shall be in continuous length and shall not contain any welds other than those in the rod before it is drawn. The distance between two successive splices shall not be less than 15meters.

78.4. The lengths per 100 Kg. of barbed wire I.S. type I shall be as under:

Nominal 1000 meter Minimum 934 meter Maximum 1066Meter.

SECTION -4
Excavation

4.0.0. (A) Excavation for foundation up to 1.5 M. depth including sorting out and stacking of useful materials and disposing of the excavated stuff up to 50 meter lead in loose or softsoil.

1.0. General

1.1. Any soil which generally yields to the application of pickaxes and shovels, phawaras rakes or any such ordinary excavating implement or organic soil, gravel silt, sand turf loam, clay, peat etc., fail under thiscategory

2.0. Clearing thesite

2.1. The site on which the structure is to be built shall be cleared, and all obstructions loose stone, materials and rubbish of all kind bush wood and trees shall be remove! as directed The materials so obtained shall be property of the Government and shall be conveyed und stacked as directed within 50 m lead. The roots of the trees coming in the sides shall be cut and coated with a hotasphalt

2.2. The rate of side clearance is deemed to be included in the rate of earth work for which no extra will bepaid.

3.0. Setting out

After clearing the site the centre lines will be given, by the Engineer-in-charge. The contractor shall assume full responsibility for alignment, elevation and dimension of each and all 'parts of the work. Contractor shall supply labours materials, etc. required for setting out the reference marks and bench 'marks and shall maintain them as long as required anddirected.

4.0. Excavation

The excavation in foundation shall be carried out in true line and level and shall have the width and depth as shown in the drawings or as directed. The contractor shall do the necessary shoring and shutting or providing necessary slopes to a safe angle, at his own cost. The payment for such precautionary measures shall be paid separately it not specified. The bottom of the excavated area shall be leveled both longitudinally and transversely as directed by removing and watering as required No. earth filling will be allowed for brining it to level If by mistake or any excavation is made deeper or wider than, that shown on the plan or directed. The extra depth or width shall be made up with concrete of same proportion as specified for the foundation concrete at the cost of the contractor. The excavation up to 1.5 m depth shall be measured under thisitem.

5.0. Disposal of the excavatedstuff

5.1. The excavated stuff of the selected type shall be used in filling the trenches and plinth or leveling the ground in layers including ramming and wateringetc.

5.2. The balance of the excavated quantity shall be removed by the contractor from the site of work to a place as directed with lead up to 50 M. and alllift.

6.0. Mode of measurements &payment

6.1. The measurement of excavation in trenches for foundation shall be made according to the sections of trenches shown on the drawing or as per sections given by the Engineer-m-charge. No payment shall be made for surplus excavation made in excess of above requirements or due to stopping and sloping back as found necessary on account of conditions of soil and requirements ofsafety.

6.2. The rate shall be for a unit of one cubicmeter

4.0.0. (B): Excavation for foundation up to 1.5 M. depth including sorting out and stacking of useful materials and disposing of the excavated stuff up to 50 meter lead in dense or hard soil.

1.0. Dense or Hard Soil

Any soil which generally require close application of picks or jumpers or scarifies to. loosen it stiff clay, gravel and stone etc. fall under this category.

2.0. Workmanship

The relevant specifications of item No. 4.0.0.(A) shall be followed except that the excavation work shall be carried out in dense or hard soil,

3.0. Mode of measurements &payment

3.1. The relevant specifications of item No. 4.0.0. (A) shall befollowed

3.2. The rate shall be for unit of one cubicmeter.

4.0.0.(C): Excavationforfoundationupto1.5M.depthincludingsortingoutandstackingof useful materials and disposing of the excavated stuff up to 50 meter lead in hardmurrum.

1.0. Hard murrum.

The hard murrum shall be clean of good binding quality and of approved quality obtained from approved quarries of disintegrated rocks which contain sons materials and natural mixture of clay of clarions origin The size of hard murrum shall not be more than 20 mm.

2.0. Workmanship

The relevant specification of item No. 4.0..0.(A) shall be followed except that the excavation work shall be carried in hard murrum.

3.0. Mode of measurements &Payments

3.1. The relevant specifications of item No. 4 0.0. (A) shall befollowed.

3.2. The rate shall be for a unit of one cubicmeter.

4.0.0.(D): Excavation for foundation up to 1.50 M. depth including sorting out and stacking of useful materials and disposing of the excavated stuff up to 50 meter lead-soft rock not requiringblasting.

1.0. Workmanship

1.1. The relevant specifications of item No. 4.0.0.(A) shall be followed except that the excavation shall be earned out for foundation upon 1.5 M lift in soft rock not requiringblasting

1.2. The excavation in soft or disintegrated rock shall be carried out by crow bars, pickaxes or pneumatic drills or any other suitablemeans

1.3. If contractor desires to resort to blasting, he can do so with permission of the Engineer-in-charge but nothing extra shall be paid tohim.

1.4. Thematerialsavailablefromsoftexcavationshallbeproperlystackedwithin50M.leadand15 m. lift and shall be the property of department.

1.5. The classification of strata of the foundation soil shall be done by the Engineer-in-charge and shall be acceptable to thecontractor

1.6. However this shall include the type of rock and boulder which may quarried or split with crow bars. Laterite and conglomerate also come under thiscategory.

2.0. Mode of measurements &Payment

2.1. The relevant specifications of item No. 4.0 0 (A) shall befollowed.

2.2. The rate shall be for a unit of one cubicmetre.

4.0.0.(E): Excavation for foundation up to 1.5 M. depth including sorting out and stacking of useful material and disposing of the excavated stuff up to 50 meter lead in hard rocks.

1.0. Workmanship

1.1. The relevant specification of item No. 4.0.0.(A) shall be followed except that the excavation for foundation work shall be carried our in hardrock.

1.2. Excavation shall be done by blasting to the dimensions shown in the drawings or as directed. The blasting shall be carried out only with written permission of the Engineer-in-charge. All the laws, regulations etc,- pertaining to the precautions, acquisition, transport, landing and use of explosive shall be rigidly followed. The Magazine for the storage for the explosive shall be built to the design and specifications of explosive authority and located at the approved site No unauthorised persons shall be admitted into the magazine and when not in use it shall be kept securely locked No matches or inflammable materials shall be allowed in Magazine. The Magazine shall have an- effective lightning conductor. The rules of explosive 1940 revised from time 10 time shall be followed strictly for obtaining starting, handling, undertaking blastingwork.

1.3. The contractor shall be responsible for damage to property, workmen public due to any accident due to use of explosives andoperations

1.4. Precautions

1.4.1. The blasting operation shall remain in charge of competent and experienced supervisor and workmen who are thoroughly acquainted with the detail of handling explosive and blasting operations. The blasting shall be carried our during fixed hours of the day, preferably during the mid-day lunch hours or at the close of the work as ordered in writing by the Engineer-m-charge. The hours of blasting shall be notified in advance to the people in the vicinity. All the charges shall be prepared by the man in charge only.

1.4.2. Red danger flags shall be displayed prominently in all direction during the blastingoperations.

1.4.3. People except those who actually light the fuse shall be prohibited from entering into this area. The flags shall be stationed at 200 m. from the firing-site in all directions and all persons including workmen shallbe

excluded form the flagged area at least 1.0 minutes before the firing warning whistle being sounded for thispurpose

1.4.4. During excavation in rock by blasting, the lowest 15 cm. of stratus shall be blasted with light charge so as not to shatter or weaken the underlying rock on which the foundation will be actually laid If excavation in rock in done to large widths and length than those shown on the drawings or as directed, no payment shall be made for such over break. If excavation is done to depths greater than shown on the drawings or directed, excess depth shall be made up with foundation grade concrete as directed at the contractor'scost.

1.4.5. The charged hole shall be drilled to the required depth and in suitable places when blasting is done with powder, the fuse cut to the required length shall be inserted in the holes and the powder dropped in. The powder shall be gently tamped with copper rod with rounded ends. The explosive powder shall then be covered with trapping materials which shall be tamped lightly out firmly. When blasting is done with dynamite and other high explosive, dynamite cartridges shall be prepared by inserting the square cut ends of fuse into the detonator, and finished with dippers at the open ends The detonator should be gently pushed into the detonator and finished with dippers at the opened ends. The detonator should be gently pushed explosive. Bore holes shall be of such size that the cartridges can be easily passed down. The holes shall be cleared of all debris and explosive inserted The space for about 20 cams, above the charge shall then be gently filled with dry clay pressed home and rest of tamping is with firmed any convenient materials gently packed with a woodencover.

1.4.6. At a time not more than 10 such charge shall be prepared and fired. The man in charge shall blow a whistle in a recognised manner for cautioning the people. All the people shall then be required to move to number of explosions. He shall satisfy himself that all the charges have been exploded before allowing the workmen to go to the worksite.

1.4.7. The contractor shall be fully responsible to strictly follow the prevailing rules and procedures regarding
blasting procedures

1.5. Misfire

1.5.1. In case of a misfire the following procedure shall be observed:

1.5.2. Sufficient time shall be allowed to account for the delayed blast. The man in charge shall inspect all the charges and determine the missedcharge.

1.5.3. If it is the blasting powder charge it shall be completely flooded with water. A new hole shall be drilled at, about 45 cm. from the old and fired. This should blast the old charge Should^ it not blast the old charge, the procedure shall be repeated till the old charge isblasted.

1.5.4. In case of charge of gelatins, dynamite etc, the man in charge shall gently remove the tamping and the primer with detonator and primer shall then be used to blast the charge. Alternatively the hole may be cleared of one foot of tamping and the direction then ascertained by placing a stick in the hole Another hole may thenbe drilled 15 cm away and parallel to it. The man in charge shall report to the office all cased of misfire and cause of the same and what steps ware taken in connectiontherewith.

1.5.6. If a misfire has been found to he due to defective or dynamite, the whole quantity in the box from which defective article was taken must be sent to authority as directed for inspection to ascertain whether all the remaining materials in the box are also defective or not.

1.6. Accidents:

1.6.1. The contractor shall be solely responsible for any accident during the entire procedure of handling explosive and blasting and shall pay necessary compensation to persons affected or damage to lands or property etc, due to the blasting, without extra claims on thedepartment.

1.7. Account:

1.7.1. A careful and day to day account of explosives shall be maintained by the contractor in an approved manner and shall be open to inspection of the Engineer-in charge Surprise visits may also be paid by the Engineer-in-charge to the storage and in case of any unaccountable shortage or unsatisfactory accounting, the contractor shall be liable to be penalised by forfeiture of part or whole of his Security Deposit or by cancellation of tender in which case he shall not be entitled for any compensation.-

1.8. Disposal of ExcavatedMaterials:

1.8.1 No materials excavated from foundation trenches of whatever kind they may be, are to be placed even temporarily nearer than 1.5 m. or distance prescribed by the Engineer from the outer edge of excavation. All materials excavated shall remain the property of Government. Rate for excavation includes sorting out of useful materials and stacking them separately as directed within the specific lead. Materials suitable and useful for backfilling or other use shall be stacked in convenient places but not in such a way as to obstruct free movement of men, animals and vehicles or encroach upon the area required for constructional purpose. The site shall be left clean of all debris on completion.

1.8.2. Disposal of excavated materials is subject to the following:

Unsuitable materials obtained from clearing site and excavation shall be disposed off within a lead of 50 meters as directed. Useful materials obtained from clearing site and excavation shall be stacked within a lead of 50 M beyond the building areas is directed. Materials suitable for back-filling shall be stacked at convenient places within a lead of 50 M. from the structure for reuse. Useful stones from rock excavation shall be stacked neatly. within a lead of 50 M. and will be allowed to be used by the contractor on payment at rates laid down n the contract or if not so laid down, at scheduled rates of the Division or at a mutually agreed rates if there are no such rates in the schedule ofrates.

1.8.3. If surplus materials are required to be conveyed beyond 50 M, conveyance will be paid for under a separateitem

2.0. Mode of measurements &Payment

2.1. The work shall be measured for the work limited to the dimensions shown on drawings or directed Excavation to dimension in excess of the above will not be measured or paid for and if so ordered by the Engineer the contractor shall have to fill up the excess depth with cement concrete specified forfoundation without extrapayment.

2.2. Driving of sounding bars, drill holes to explore the nature of substratum up to a total length of meter distributed in 2 or 3 places in each foundation if necessary, will be considered incidental work and will not be paid forseparately.

2.3. Removal of slips and blows in the foundation trenches will not be measured or paidfor.

2.4. if it is necessary in the opinion of the Engineer-in-charge to carry foundation below the levels shown on the plans, the excavations for the 1.5 M of addition depth will be included in the quantity for the particular classification and will be paid for as extra at rate to be decided under the general conditions of contract unless, the contractor is willing to accept payment as tenderedrates.

2.5. The rate shad be for a unit of one cubicmeter

4.0.0.1.(A): Excavation for foundation for depth form 1.5 M. to 3.0 M. including sorting our and stacking or useful materials and disposing of the excavated stuff up to 50 M. lead-loose or soft soil.

1.0. Workmanship

1.1. The relevant specifications or item No. 4 0.0. (A) shall be followed except that the excavation work shall be carried out to loose or soft soil with lift 1.5 M. to 3.0M.

2.0. Mode of Measurement &Payment

2.1. The relevant specifications of item No. 4.0 O.(A) shall befollowed.

2.2. The excavation work of from 1.5 M. to 3.0 M. shall be measured under thisitem

2.3. The rate shall be for a unit of one cubicmeter

4.0.0.1.(B): Excavation for foundation for depth from 1.5 M. to 3.0 M. including sorting outand stacking of useful materials and disposing of excavated stuff up to 50 M. lead in Dense or Hardsoil.

1.0. Workmanship

The relevant specifications of item No. 4.0 0.(B) shall be followed except that the excavation work shall be carried out with 1.5 M. to 3.0 M. lift in dense or hard soil.

2.0 Mode of Measurement &Payment

2.1 The relevant specifications of item No.4.0.0.(A) shall befollowed.

2.2. The excavation work from 1.5 to 30M shall be measured under thisitem

2.3. The rate shall be for a unit of one cubicmeter.

4.0.0.1.(C): Excavation for foundation for depth from 1.5 M. to 3.0 M. including sorting out and stacking of useful materials and disposing of excavated stuff up to 50 M. lead in Hard murrum.

1.0. Workmanship

1.1. the relevant specifications of item No. 4.0.0. (A) shall be followed except that the excavation work shall be carried out from 1.5 M. to 3.0 M lift in hardmurrum.

2.0. Mode of Measurement &Payment

2.1. The relevant specifications of item No. 4.0.0. (A) shall befollowed.

2.2. The excavation work from 1.5 M to 3.0 M shall be measuredunder

2.3. The rate shall be for unit of one cubicmeter

4.0.0,1.(D): Excavation for foundation for depth 1.5 M. to 3.0 M. including sorting our and stacking of useful materials and disposing of excavated stuff up to 50 M. lead in soft rock not required blasting.

1.0. Workmanship

The relevant specifications item No. 4.0.0.(D) shall be followed except that the excavation work shall be earned out from 1.5 M. to 3.0 M. lift in soft rock not required blasting.

2.0. Mode of Measurement &Payment

2.1. The relevant specifications of item No 4.0.0.(A) shall befollowed.

2.2. The excavation work from 1 5 M, to 3 0 M lift shall be measured under thisitem.

2.3. The rate shall be for a unit of one cubicmeter

4.0.0.1.(E): Excavation for foundation for depth 1.5 M. to 3.0 M. including sortingoutand stacking of useful materials and disposing of excavated stuff up to 50 M. lead in hardrock

1.0. Workmanship

1.1. The relevant specifications of item No. 4.0.0.(E) shall be followed except that the excavation work shall be carried out from 1.5 M. to 3.0 M. lift in hardrock.

2.0. Mode of Measurement &Payment

2.1. The relevant specifications of item No. 4.0.0. (A) shall befollowed.

2.2. The excavation-work from 1.5 M, to 3.0 lift shall be measured under thisitem

2.3. The rate shall be for a unit of cubicmeter

4.0.0.2. (A): Excavation for foundation for depth from 3.0 M. to 5.0 M. including sorting out and stacking of useful materials and disposing of the excavated stuff Upton 50 M. lead in loose or soft soil.

1.0. Workmanship

1.1. The relevant specifications of item No. 4.0.0.(A) shall be followed except that the excavation work shall be carried out from 3.0 M. to 5.0. M. lift in loose or softsoil.

2.0. Mode of Measurement &Payment

2.1. Relevant specifications of item No. 4.0.0.(A) shall befollowed.

2.2. The excavation work from 3.0 M. to 5.0 M. lift shall be measured under thisitem.

2.3. The rate shall be for a unit of one cubicmeter.

4.0.0.2.(B): Excavation for foundation for depth from 3.0 M. to 5.0 M. including sorting our and stacking of useful materials and disposing of the excavated stuff up to 50 M. lead in Dense or Hard soil.

1.0. Workmanship

1.1. The relevant specifications of item No. 4 0.0.(B) shall be followed except that the excavation work shall be carried out from 3.0.m. to 5.0.m. lift in Dense or Hardsoil.

2.0. Mode of Measurement &Payment

2.1. The relevant specifications of item No. 4.0.0.(A) shall befollowed:

2.2. The excavation work from 3.0. M. to 5,0 M. lift shall be measured under thisitem.

2.3. The rate shall be for a unit of one cubicmetre.

4.0.0.2.(C): Excavation for foundation for depth from 3.0 M. to 5.0 M. including sorting out and stacking of useful material and disposing of the excavated stuff up to 50 M. lead in Hard murrum.

1.0. Workmanship

1.1. The relevant specifications items No. 4 0.0. (C) shall be followed except that the excavation work shall be carried out from 3.0 m to 5 0 M in Hardmurrum.

2.0. Mode of Measurement &Payment

2.1. The relevant specifications of item No. 4.0.0.(A) befollowed.

2.2. The excavation work from 3.0 M. to 5.0. lift shall be measured under thisitem.

2.3. The rate shall be for a unit of one cubicmetre.

4.0.0.2.(D) Excavation for foundation for depth from 3.0 M. to 5.0 M. including sorting out and stacking of useful materials and disposing of the excavated stuff up to 50 M. in soft rock not required blasting.

1.0. Workmanship

1.1. The relevant specification-of item NO 4 0.0.(D) shall be followed except that the excavation work shall be carried out from 3.0. M to 5.0. M soft rock not requiringblasting

2.0. Mode of Measurement &Payment

2.1. The relevant specification of item No. 4.0 O.(A) shall befollowed.

2.2. The excavation work from 30 M. to 5 0 M. lift shall be measured under thisitem.

2.3. The rate shad be for a unit of one cubicmeter

4.0.0.2.(E): Excavation for foundation depth from 3.0 M. to 5.0 M. including sorting out and stacking of useful material land .disposing of the excavated stuff up to 50 M. lead in Hardrock.

1.0. Workmanship

1.1. The relevant specifications of item No 4.0.0.(E) shall be followed except that the excavation work shall be earned out from 3.0. M. to 5.0 M in hardrock

2.0. Mode of Measurement &Payment

2.1. The relevant specification of item No. 4.0.0.(A) shall befollowed.

2.2. The excavation work from 3.0. M to 5.0 M. lift shall be measured under thisitem.

2.3. The rate shall be for a unit of one cubicmeter.

4.0.0.3.(A): Extra for additional depth more than 5.0 M. for excavation for foundationincluding sorting out and stacking of useful material disposing of the excavated stuff up to 50 M. lead in loose or soft soil.

1.0. Workmanship

1.1. The relevant specification of item. No 4 0.0 (A) shall be followed except that the excavation work shall be earned out from more than 5 0 M. lift in loose or softsoil

2.0. Mode of Measurement &Payment

2.1. The relevant specifications of item No. 4.0.0.(A) shall befollowed

2.2. The rate shall be paid extra over and above the rate of item No. 4 0 0.2.(A) for carrying' out excavation work for additional depth from 5.0 M. andabove.

2.3. The rate shall be for a unit of cubic permeter

4.0.0.3.(B): Extra for additional depth more than 5.0 M. for excavation for foundation including sorting and stacking of useful materials disposing of excavated stuff up to 50 M. lead in Dense or Hard soil.

1.0 Workmanship

1.1. The relevant specifications of item No. 4.0.0.(B) shall be followed except that the excavationwork shall be carried out from more than 5.0. M. lift in dense or hardsoil.

2.0. Mode of Measurement &Payment

2.1. The relevant specifications of item No. 4 0.0 (A) shall be followed.

2.2. The rate shall be paid extra over and above the rate of item No 4 0.0 2.(B) for carrying out excavation work for additional depth from 5 0 M. and above.

2.3. The rate shall be for a unit of one cubic meter.

4.0.0.3.(C): Extra for additional depth more than 5.0 M. for excavation for foundation including sorting out and stacking of useful materials disposing of excavated stuff up to 50 M. lead in Hardmurrum.

1.0. Workmanship

1.1. The relevant specification of item No. 4.0.0 (C) shall be followed except that the excavation work shall be carried out from more than 5 0 M. lift in hardrnurrum.

2.0. Mode of Measurements &Payment

2.1. The relevant specification of item No. 4.0.0.(A) shall befollowed.

2.2. The rate shall be paid extra over and above the rate item No 4.0.0 2.{C}for carrying out excavation work for additional depth from 5 0 M. andabove.

2.3. The rate shall be for a unit of one cubicmeter.

4.0.0.3.(D): Extra for additional depth more than 5.0 M. for excavation for foundation including sorting out and stacking of useful materials disposing of excavated stuff up to 50 M. lead in soft rock not requiring blasting.

1.0. Workmanship

1.1. The relevant specifications of Item No. 4.0.0.(D) shall be followed except that the excavation work shall be carried out from more than 5.0 M. lift in soft rock not requiringblasting.

2.0. Mode of Measurement &Payment

2.1. The relevant specifications of item No. 4.0.0.(A) shall befollowed.

2.2. The rate shall be paid extra over and above the rate of item No. 4.0.0.2.(D) for carrying out excavation work for additional depth from 5 0.(M} andabove.

2.3. The rates shall be for a unit of one cubic meter per meter

4.0.0.3.(E): Extra for additional depth more than 5.0 M. for excavation for foundation including sorting out and stacking of useful material disposing of excavated stuff up to 50 M. lead in hard rock.

1.0. Workmanship

1.1. The relevant specification of item No 4.0.0(E) shall be followed except that the excavation work shall be carried out from more than 50 m. lift in hard rock

2.0. Mode of Measurement &Payment

2.1. The relevant specifications of item No.4.0 O.(A) shall be followed.

2.2. The rates shall be paid extra over and above the rate of item No. 4.0.0 2.(E) for carrying out excavation work for additional depth from 5.0. M. and above.

2.3. The rate shall be unit of one cubic meter perimeter

4.12. Filling available excavated earth (excluding rock) in trenches, plinth sides of foundations, etc., in layers not exceeding 20 CM. depth, consolidating each deposited layer by ramming and watering.

1.0. Workmanship

1.1. The earth to be used for filling shall be free from salts, organic or other foreign matter. All clods of earth shall be broken.

1.2. As soon as the work in foundation has been completed and measured the site of foundation shall be cleared of all debris, brick bats: mortar dropping etc., and filled with earth in layers not exceeding 20 cms. Each layer shall be adequately watered, rammed and consolidated before the succeeding layer is laid the earth shall be rammed with iron rammers where feasible and with the but ends of crow-bars, where rammer cannot beused.

1.3. The plinth shall be similarly filled with earth in layers not exceeding 20 cms. Adequately watered and consolidated by ramming with iron or wooden rammers. When filling reaches finished level the surface shall be flooded with water for at least 24 hours and allowed to dry and then rammed and consolidated.

1.4. The finished level of filling shall be kept to shape intended to be given to floor.

1.5. In case off large heavy duty flooring like factory flooring, the consolidation may be done by power rollers, where so specified. The extent of consolidation required, shall also be as specified.

1.6. The excavated stuff of the selected type shall be allowed to be used in filling the trenches and plinth. Under no circumstances black cotton soil be used for filling the plinth.

2.0. Mode of Measurements &Payment

2.1. The payment shall be made for filling in plinth and trenches. No deduction shall be made for shrinkage or voids, if consolidated as instructed above.

2.2. The rate shall be for a unit of one cubic meter.

4.24. Fillinginplinthwithsandunderfloorsincludingwatering, ramming consolidating and Dressing etc. complete.

1.0. Materials

1.1. Sand shall conform to M6

2.0. Workmanship

The relevant specifications of item No. 4.12 shall be followed except that sand shall be filled in under floors, including watering, ramming, consolidating and dressing etc , complete.

3.0. Mode of Measurements &Payment

3.1. The relevant specifications of item No. 4.12 shall be followed.

3.2. The rate includes cost of collecting, carting sand with all lead and labour for filling the same in plinth under floors.

3.3. The rate shall be for a unit of one cubic meter.

4.0.0.4. Filling in foundation arid plinth with murrum or selected soil in layers of20cm. Thicknesses including watering, ramming and consolidating etc., complete.

1.0. Materials

1.1. Murrum shall be clean, of good binding quality and of approved quality obtained from approved pots/ quarries of disintegrated rocks which contain silicon material and natural mixture of clay of clarions origin. The size of murrum shall not be more than 20mm

2.0. Workmanship

2.1. The relevant specifications of item No. 4.12 shall be followed except that the murrum or selected soil shall be filled in foundations and plinth in 20 cms layer including consolidating, ramming, watering, dressing etc. Complete

3.0. Mode of Measurements &Payment

3.1. The relevant specifications of item No. 4.12 shall be followed-.

3.2. The rate includes cost of collecting and carting murrum / or selected earth of approved quality with all lead and labour required for filling in trenches and plinth.

3.3. Rate shall be for a unit of one cubic meter.

4.0.0.5. Filling in foundation and plinth with brick-bats / chhara in layers of 20 cms. Thickness including watering, ramming and consolidating etc. Complete.

1.0. Materials

Brick bats shall conform to M.14

2.0. Workmanship

The relevant specification of item No. 4.12 shall be followed except that brick bats of-burnt bricks shall be filled in foundation and plinth in 20 cms layer including watering, ramming, consolidating etc.,*complete.

3.0. Mode of Measurements &Payment

3.1. The relevant specification item No. 4 12 shall be followed.

3.2. The rate includes cost of collecting and carting brick bats/chhara with all lead and labour required filling in trenches and plinth.

3.3. The rate shall be for a unit of one cubic meter

4.27. Boringholes3.5M.deepinordinarysoil (for cast in situ piles)and getting out the soil disposal of the surplus excavated soil as directed within a lead of 50 M. for following diameter for piles, (i) 200 mm. (ii) 250 mm, (iii) 300mm.

1.0. Workmanship

1.0. The ground shall be roughly leveled and after making the position of piles, the holes shall be bored with a spiral angle to the 3.5 M. depth and specified diameter using boring guide.

2.0. The bore holes shall be truly vertical and uniform bore through out of specified diameter, After boring to the required depth, the bore shall be cleared off the loose soil and disposal of surplus excavated stuff as directed within a lead of 50 M. . 2.0? Mode of Measurement &Payment

2.1. The rate for boring holes shall include:

(a) roughly leveling the ground in positions where piles are to be provided (b) Making the position of piles by pegs and boring guide and also for shifting of boring guide. (c) Bailing out water, if any met with during boring, (d) Disposal or surplus excavated soil within a lead of 50 M and'(e) All tools, plants, equipment's and labour required for satisfactory completion or. Work.

2.2. The rate shall be for a unit of one Number.

4.28. Extraforunderrammінginsidetheboreholesforunderrammedpilesoffollowing nominal diameter :(i) 200 mm. (ii) 250, (iii) 300mm.

1.0. Workmanship

The relevant specifications of item No. 4.27 shall be followed except that after boring to the required depth, the bore shall be enlarged at the bottom by an under rammer 2 to 2 1/2 times the diameter of the bore as directed It shall be ensured that the bore for the pile shall be enlarged to the correct diameter.

2.0. Mode of Measurement &Payment

2.1. The relevant specification of item No. 4.27 for under reaming thepiles.

2.2. The rate shall be paid extra over and above the rate of item No. 4.27 for under ramming the piles.

2.3. The rate shall be for a unit of one number.

SECTION 5
Plain & RCC Work

5.1.6. Providing and laying in foundation and plinth/under floors lime concrete with hard broken aggregate 40 mm. nominal size and 40% mortar comprising of 1 Lime putty : 2 fine sand and curing complete excluding cost of form work.

1.0. Materials

Water shall conform to M-1. Sand shall conform to M-6 Lime shall conform to M-2. Graded aggregate 40 mm nominal size shall conform to M-12

2.1. General

2.1.1. Before staring the concrete the bed of the foundation trenches shall be cleared of all loose materials and watered and rammed as directed.

2.2. Proportion of Mix

2.2.1. The proportion of lime, sand and aggregate shall be specified in the item of the work and shall be measured by volume.

2.2.2. The lime mortar shaft consist of proportion of 1 lime putty : 2 sand by volume. The lime mortar shall be prepared by wet process. Power driven mill shall be used for preparation of lime mortar. The slaked lime shall be placed in the mill in even layer and ground for 180 revolutions with sufficient water. The water shall be added as required during grinding and care shall be taken not to add more water so that it will bring the mixed materials to a consistency of stiff paste, thoroughly wetted sand shall then be added evenly and the mixture ground for another 180revolutions.

2.2.3. Lime mortar shall be kept, protected from sun and rain till used-up, covering it by tarpaulin or open sheds.

2.2.4. All the lime mortar shall be used as soon as possible after grinding. It should be used on the day on which it is prepared but in no case mortar- made earlier than 36 hours shall be permitted for use.

2.3. Mixing:

2.3.1. The concrete shall be mixed in mechanical mixer. Mixing shall be continued until there is uniform distribution of the materials and the mass is uniform is uniform in color and consistency but in no case mixing shall be done for less than 2 to 3minutes.

2.4. Laying &Compacting:

2.4.1. The concrete shall always be used while quite fresh It shall be laid (not thrown) in layers not exceeding 150 mm. in thickness and shall be well and quickly rammed with wooden or iron rammers, till the required compaction is achieved. The concrete laid shall not be of too fluid consistency. After it has been mixed no more water shall be added, but the surface during and after compaction shall be kept damp. In laying consecutive layers, the layer cast shall be well watered and made rough before the upper layer is laid. The concrete shall be kept continuously wet for period of 7 days from the date of placing of until it- is built over whichever is more.

2.5. Mode of Measurement & Payment:

2.5.1. The concrete work shall be measured in length, breadth and depth as specified on drawing or as directed, correct up to nearest centimeter and cubical content shall be worked out nearest up to two places of decimals.

2.5.2. The rate shall be for unit of one cubic meter.

5.1.8. Providing and laying in foundation and plinth/under floors lime concrete with graded bricks aggregate 40 mm. nominal size and 40% mortar comprising of 1 lime putty : 2 fine sand and curing complete, excluding cost of formwork.

1.0. Materials

1.1. Water shall conform to M-1. Lime mortar shall conform to M-10. Brick bats aggregate 40 mm. nominal sizes shall conform toM-14.

2.0. Workmanship

2.1. The relevant specification of item No. 5.1.6. shall be followed except that brick aggregate shall be used instead of graded stone aggregate.

3.0. Mode of Measurements &Payment

3.1. The concrete work shall be measured in length, breadth and depth as specified in drawing or as directed. Correct up to nearest centimeter and cubical content shall be worked out up to two places of decimals.

3.2. The rate shall be for a unit of cubic meter.

5.3.2.(A) Providing and laying cement concrete 1.3.6. (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm. nominal size) and curing complete excluding the cost of form work in foundations and plinth.

1.0. Materials

1.1. Water shall conform to M-1. Cement shall conform to M-3 Sand shall conform to M-6. Stones aggregate 40 mm. nominal size shall conform toM-12.

2.0. Workmanship

2.1. General

2.1.1. Before stating concrete the bed of foundation trenches shall be cleared of all loose materials, leveled, watered and rammed as directed

2.2. Proportion of Mix:

2.2.1. The proportion of cement, sand and coarse aggregate shall be one part of cement. 3 parts of sand and 6 parts of stone aggregates and shall be measured by volume.

2.3. Mixing:

2.3.1. The concrete shall be mixed in a mechanical mixer at the site of work. Hand mixing may however be allowed for smaller quantity of work if approved by the Engineer-in-charge. When hand mixing is permitted by the Engineer-in-charge in case "of break-down of machineries and in the interest of the work, it shall be carried out on a water tight platform and care shall be taken to ensure that mixing is continued until the mass is uniform in colour and consistency, However in such case 10% more cement than otherwise period 1 1/2 to 2 minutes. The quantity of water shall be just sufficient to produce a dense concrete of required workability for the purpose.

2.4. Transporting & Placing the Concrete:

2.4.1. The concrete shall be handed from the place, of mixing to the final position in not more than 15 minutes by the method as directed and shall be placed into its final-position, compacted and finished within 30 minutes of mixing with water i.e. before the setting commences.

2.4.2. The concrete shall be laid in layers of 15 cms. to 20cms.

2.5.1. The concrete shall be crammed with heavy iron rammers and rapidly to get the required compaction and to allow ail the interstices to be filled with mortar.

2.6. Curing:

2.6.1. After the final set, the concrete-shall be kept continuously wet if required by pounding for a period of not less than 7 days from the date of placement.

2.7. Mode of Measurement &Payment:

2.7.1. The concrete shall be measured for its length, breadth and depth, limiting dimensions to those specified on plan or as directed.

2.7.2. The rate shall be for a unit of one cubic meter.

5.3.3.(A) Providing and laying cement concrete 1:4:8 (1 cement: 4 coarse sand : 8 graded stone aggregate 40 mm. nominal size) and curing complete, excluding cost of form work in foundations and plinth.

1.0. Materials

1.1. Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6 stone aggregate 40 mm. nominal size shall conform toM-12.

2.0. Workmanship

2.1. Relevant Specifications of item No. 5.3.2 shall be followed except that cement concrete shall be mixed in the preparation of 1:4:8 instead of 1:3.6 by volume.

3.0. Mode of measurement and payment

3.1. The concrete shall be measured for its length, breadth and depth, limiting dimensions to those specified on plans or as directed

3.2. The rate shall be for a unit of one cubic meter

5.3.14.(A) Providing and laying cement concrete 1.3.6 (1 cement : 3 coarse sand : 6 crushed stone aggregate 20 mm. nominal size) and curing complete including cost of form work in wall caps/coping.

1.0. Material &Workmanship

1.1. The relevant specification of item No. 5.3.2. (A) shall be followed except that the work shall be carried out for coping and wall caps, except the stone aggregate 20 mm. nominal size shall be used. The concrete work of wallcaps/coping.

2.0. Mode of measurements and payment

2.1. The relevant specification of item No. 5.3.2. (A) shall be followed except that the rate includes cost of necessary formwork.

2.2. The rate shall be for a unit of one cubic meter.

5.3.3. Providingandlayingbrickbatscement1:4:8(1cement:4coarsesand:8graded bricks bats), and curing complete excluding the cost of form work in foundation and plinth.

1.0. Materials

1.1. Water shall be conform to M-1 Cement shall conform to M-3. Sand shall conform to M-6 Brick bat shall conform toM-14

2.0. Workmanship

2.1. The specification of this item shall be followed as per item No 5.3.14 (A) except that the proportion of brick bat cement concrete shall be 1 4:8 i e 1 part of cements 4 part of coarse sand and 8 parts of graded brick bat by volume, using graded brick bat as coarse aggregate instead of stone aggregates

3.0. Mode of Measurements &Payment

3.1. The concrete work shall be measured in length, breadth and depth as specified on drawing limiting dimensions to those specified on drawings or as directed.

3.2. The rate shall be for a unit of one cubic meter.

5.3.4.(A) Providing and laying cement concrete 1:5:10 (1 cement : 5 coarse sand : 10 graded stone aggregate 40 mm. nominal size) and curing complete, excluding the cost of form work, for foundation andplinth.

1.0. Materials

1.1. Water shall conform to M-1. Cement shall conform to M-3 Sand shall conform to M-6 Stone aggregate 40 mm nominal size shall conform toM-12.

2.0. Workmanship

2.1. The relevant specification of item No. 5.3.2. (A) shall be followed for the work except that the work is to be carried out in cement concrete1:5:10

3.0. Mode of Measurement &Payment

3.1. The concrete shall be measured for its length, breadth and depth, limiting dimensions to those specified on plans or as directed.

3.2. The rate shall be for a unit of one cubic meter.

5.3.8.(A) Providing and laying cement concrete 1:5:10 (1 cement : 5 coarse sand : 10 graded brick bats 10 mm. nominal size) and curing complete excluding, cost of from work in foundation and plinth.

1.0. Materials

1.1. Water shall conform to M-1 Sand shall conform to M-6 Cement shall conform to M-3. Brick bats shall conform toM-14.

2.0. Workmanship

2.1. The relevant specification of item No 5.3.4 shall followed except that brick bats aggregate shall be used instead of stone aggregate.

3.0. Mode of Measurement &Payment

3.1. The relevant specification of item No 5.3.4 shall be followed

3.2. The rate shall be for a unit of one cubic meter

5.3.2.(B) Providing and laying brick bat cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded-brick bats) and curing complete excluding cost of form work in foundation and plinth.

1.0. The specification of item No 5 3.2 (A) shall be followed except that the brick bats shall be used us coarse aggregate instead of stone aggregates.

2.0. Mode of Measurement &Payment

2.1. The relevant specification of item No 5.3.5 (A) shall be followed for mode of measurements and payment except that it excludes the cost of formwork.

2.2. The rate shall be for a unit or one cubic meter.

5.4.18. Providing throating or plaster drip and molding to R.C.C.Chhajas.

1.0. Materials

Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6 Cement mortar shall conform toM-11

2.0. Workmanship

2.1. The work shall be carried out as directed. The proportion of mix for finishing shall be in C.M. 1:2 by volume. Curing shall be done for not less than 7 days. The work shall be carried our in best workman like manner. The thwarting or plaster drip and mounding shall be one centimeter inthickness.

5.7.5. Extra for providing and mixing Water Proofing material in cement concrete in mix proportions recommended by the manufacturers.

2.0. Workmanship

2.1. The proportions of materials for the cement concrete shall be mentioned with the specifications of that item. The quantity of water proofing materials to be added and the method of addition shall be as specified by manufacturers.

2.2. Mixing:

2.2.1. The mixing of the water proofing materials in cement, water or concrete shall be done according to the specifications of the manufacture.

3.0. Mode of Measurements and Payment

3.1. The payment is extra over and above the rate of concrete for mixing water proofing proper.

3.2. The rate shall be for a unit of one lithe or kg. per quintal of cement in which water proofing material is added.

5.7.1. Providingandlayingdampproofcourse25mm.thickcementconcrete1:2:4(1 cement: coarse sand: 4 stone aggregate 10 mm. nominal size) and curing complete.

1.0. The specifications of item No. 5.3.13. (A) of ordinary concrete with or without reinforcement shall be followed except that the size of the stone aggregate shall be 10 mm nominal size and the concrete work shall be carried out in 25 mm. thick damp proof course

2.0. Mode of measurements &payment

2.1. The rate includes cost of all materials and labor required to complete the item

2.2. The rate shall be for a unit one sq. Meter.

5.3.13. Providingandlayingcementconcrete1:2:4(1cement:2coarsesand:4graded stone aggregate 20 mm. nominal size) and curing complete excluding cost of form work in (A) foundation and plinth, (B) Independent piers, columns and pillars up to floor twolevel.

1.0. Materials

Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6. Grit shall conform to M-8. Graded stone aggregate 20 mm nominal size shall conform to M-12.

2.0. General

2.1. The concrete mix is not required to be designed by preliminary testes. The proportion of the concrete mix shall be 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm. nominal size) by volume concrete work shall have exposed concrete surface or as specified in the item

2.2. The designation ordinary M-100, M-150m M-200, M-250 specified as per I.S. correspond approximately to 1:3:6, 1.2:4, 1:1:1/2:3 and 1:1:2 nominal mix of ordinary concrete by volume respectively

2.3. The ingredients required for ordinary concrete containing one beg of cement of 50 kg. by weight (0.0342 Cu M.) for different proportions of mix shall be asunder:

Grade of concrete	Total quantity of dry aggregate by volume per 50 kgs. of cement to be taken as the sum of individual volume of fine and coarse aggregates, maximum	Proportion of fine aggregate to coarse aggregate	Quantity of water per 50 Kegs. of cement maximum
1	2	3	4
M-100 (1:3:6)	300 Liters	Generally 1:2 for line	34 Liters
M-150 (1:2:4)	220 Liters	aggregate to coarse aggregate	32 Liters
M-200 (1:1.1/2:3)		by volume 160 but subject to	30 Liters
M-250 (1:1:2)	100 Liters	an upper limit of 1:1.1/2 and lower limit	1:3 27 Liters

2.4. The water cement ratios shall not be more than specified in the above table. The cement content of the mix specified in the table shall be increased if the quantity of water in mix has to be met eased to overcome the difficulties of placements and compaction so that the water-cement ratio specified in the table is not exceeded.

2.5. Workability of the concrete shall be controlled by maintaining a water -cement-ratio that is found to give a concrete mix which is just sufficient wet to be placed and compacted without difficulty with the means available.

2.6. The maximum size of course aggregate shall be as large as possible within the limits specified but in no case greater than one fourth of the minimum thickness of the member provided that the concrete can be placed without difficulty so as to surround all reinforcement thoroughly and to fill the corners of the form.

2.7. For reinforced concrete work; coarse aggregates having a nominal size of 20 mm. are generally considered satisfactory.

2.8. For heavily reinforced concrete members as in the case of ribs of main beams, the nominal maximum size of coarse aggregate should usually be restricted to 5 mm. less than the minimum clear distance between the main bar or 5 mm. less than the minimum cover to the reinforcement whichever is smaller.

2.9. Where the reinforcement is widely spaced as in solid slabs, limitations of size of the aggregate may not be so important, and the nominal maximum size may sometimes be as great as or greater than the minimum cover.

2.10. Admixture maybe used in concrete only with approval of Engineer-in-charge based upon the evidence that with the passage of time neither the compressive strength of concrete is reduced not are other requisite qualities of concrete and steel impaired by the use of such admixtures.

3.0. Workmanship

3.1. Proportioning: Proportioning shall be done by volume, except which shall be measured in terms of bags of 50 kg. Weight, the volume of one such bag being taken as 0.0342 cu. meter Boxes of suitable size shall be used for measuring sand aggregate. The size of boxes (internal) shall be 35 x 25 cms. and 40 cms deep while measuring the aggregate and sand the boxes shall be filled without shaking ramming or hammering. The proportioning of sand shall be on the basis of its dry volume and in case of damp saner, allowances for bulk age shall be made.

3.2. Mixing:

3.2.1. For all work, concrete shall be mixed in a mechanical mixed which along with other accessories shall be. kept in first class working condition and so maintained throughout the construction Measured quantity of aggregate, sand and cement required for each batch shall be poured into the claim of the mechanical mixer while it is continuously running. After half a minute of dry mixing measured quantity of water required for each batch of concrete mix shall be added gradually and mixing continued for another one and a half minute Mixing shall be continued till materials are uniformly distributed and uniform colour of the entire mass is obtained and each individual particle of the coarse aggregate shows complete coating of mortar containing its proportionate amount of cement. In no case shall the mixing he done for less than 2 minutes after-oil ingredients have been put into the mixer.

3.2.2. When hand mixing is permitted by the Engineer-in-charge for small jobs or for certain other reasons, it shall be done on the smooth watertight platform large enough to allow efficient tuning over the ingredients of concrete before and after adding water Mixing platform shall be so arranged that no foreign malarial gets mixed with concrete nor does the mixing water flow out. Cement in required number of bags shall be spread in n layer of uniform thickness on the mixing platform. Dry coarse and fine aggregate and cement shall then be mixed thoroughly be turning over to get a mixture to uniform colour. Specified quantity water shall then be added gradually through a rose can and the mass turned over till a mix of required consistency is obtained. In hand mixing quantity of cement shall be increased by 10 percent above that specified

3.2.3. Mixers which has been out of use for more than 30 minutes shall be thoroughly cleaned before putting

in a new batch. Unless otherwise agreed to by the Engineer in-charge the first batch of concrete from the mixture shall contain only two thirds of normal quantity of coarse aggregate Mixing plant shall be thoroughly cleaned before changing from one type of cement to another

3.3. Consistency:

3.3.1. The degree of consistency which shall depend upon the nature of the work and methods of vibration of

concrete, shall be determined by regular slump tests in accordance with I.S. 1199-193. The skimp of 10 mm. to 25 mm shall be adopted when vibrators are used and 80 mm. when vibrators are not used.

3.4. Inspection:

3.4.1. Contractor shall give the Engineer-in-charge due notice before placing any concrete in the forms to permit him to inspect and accept the false work and forms as to their strength, alignment and general fitness but such inspection shall not relieve the contractor of his responsibility for the safely of men machinery materials and for results obtained immediately before concreting all forms shall be thoroughly cleaned.

3.4.2. Centering design and its erection shall be got approved from the engineer-in-charge. One carpenter with helper shall invariably be kept present throughout the period of concreting. Movement of labor and other persons shall be totally prohibited for reinforcement laid in position. For access to different parts suitable mobile platforms shall be provided so that steel reinforcement in position is not disturbed. For ensuring proper cover, mortar blocks of suitable size shall be cast and tied to the reinforcement. Timber kapachi or metal pieces shall not be used for this purpose.

3.5. Transporting and laying:

3.5.1. The method of transporting and placing concrete shall be as approved. Concrete shall be so transported and placed that no contamination, segregation or loss of its constituent material takes place. All from work shall be cleaned and made free from standing water dust, show or ice immediately before placing of concrete. No concrete shall be placed in any part of the structure until the approval of the engineer-in-charge has been obtained.

3.5.2. Concreting shall proceed continuously over the area between construction joints. Fresh concrete proper contraction joint is formed. Concrete shall be compacted in its final position within 30 minutes of its discharge from the mixer. Except where otherwise agreed to by the engineer-in-charge, concrete shall be deposited in horizontal layers to a compacted depth of not more than 0.45 meter when internal vibrators are used and not exceeding 0.30 meter in all other cases.

3.5.3. Unless otherwise agreed to by the Engineer-in-charge concrete shall be dropped in to place from a height exceeding 2 meters. When trucking or chutes are used they shall be kept close and used in such a way as to avoid segregation. When concreting has to be resumed on a surface which has hardened, it shall be roughened, swept clean, thoroughly wetted and covered with a 13 mm. thick layer of mortar composed of cement and sand in the same ratio as in the concrete mix itself. This 13 mm. layer of mortar shall be freshly mixed and placed immediately before placing of new concrete. Where concrete has not fully hardened, all lateness shall be removed by scrubbing the wet surface with wire or bristle brushes, care being taken to avoid dislodgement of any particles of coarse aggregate. The surface shall then be thoroughly wetted, all free water removed and then coated with neat cement grout. The first layer of concrete to be placed on this surface shall not exceed 150 mm. in thickness and shall be well rammed against old work, particular attention being given to corners and close spots.

3.5.4. All concrete shall be compacted to produce a dense homogeneous mass with the assistance of vibrators, unless otherwise permitted by the Engineer-in-charge for exceptional cases, such as concreting under water, where vibrators cannot be used. Sufficient vibrators in serviceable condition shall be kept at site so that spare equipment is always available in the even of breakdowns. Concrete shall be judged to be compacted when the mortar fills the spaces between the coarse aggregate and begins to cream up to form an even surface. Compaction shall be completed before the initial setting stats i.e. within 30 minutes of addition of water to dry mixture. During compaction, it shall be observed that needle vibrators are not applied on reinforcement which is likely to destroy the bond between concrete and reinforcement.

3.6. Curing:

Immediately after compaction, concrete weather including rain, running water, shocks, vibration, traffic, rapid temperature charges, frost and drying out process. It shall be covered with wet sacking has Sian or other similar absorbent material approved, soon after the initial set, and shall be kept continuously wet for a period of not less than 14 days from the date of placement. Masonry work over foundation concrete may be started after 48 hours of its laying but curing of concrete shall be continued for a minimum period of 14days.

3.7. Sampling and testing of concrete:

3.7.1. Samples from fresh concrete shall betaken as per I.S. 1199-1959 and cubes shall be made, cured and

tested at 7 days of 28 days as per requirements in accordance with I.S. 526-1959. A random sampling procedure shall be adopted to ensure that each concrete batch shall have a reasonable chance of being tested i.e. the sampling should be spread over the entire period of concreting and cover all mixing units. The minimum frequency of sampling of concrete of each grade shall be in accordance with following:

Quantity of concrete in the Work.	No of samples	Quantity of concreteinthe works	No of samples
1-5 cmt.	1	16-30cmt.	3
6.15 cmt.	2	31-50cmt.	4
51 and above	4+ one additional for each additional 50 mm. or part thereof.		

Note: At least one simple shall be taken from each shift, Ten test specimens shall be made from each sample, five for testing at 7 days and the remaining five at 28 days. The samples of concrete shall be Taken on each day of concreting as per above frequency. The number of specimens may be suitably increased as deemed necessary by the Engineer-in-charge when procedure of tests given above reveals a poor quality of concrete and in other special cases.

3.7.2. The average of the group of cubes cast for each day shall not be less than the specified cube strength of 150 K/g Cm 2 at 28 days. 20% of the cubes cast for each day may have value less than the

Specified strength provided the lowest value is not less than 85% of the specified strength. If the concrete made in accordance with the proportions given for a particular grade does not yield the specified strength, such concrete shall be classified as belonging to the appropriate lower grade. Concrete made in accordance with the Proportions given for a particular grade shall not, however be placed in a higher grade on the ground that the test strength are higher than the minimum specified.

3.8. Stripping:

3.8.1. The Engineer-in-charge shall be informed in advance by the contractor of hr> intention to strike the form work. While fixing the time of removal of form work, due consideration shall be given to local conditions, character of the structure, the weather and other conditions that influence the setting of concrete and of the materials used in the mix. In normal circumstances (generally where temperatures are above 20.C) and where ordinary concrete is used, forms may be struck after expire or periods specified in item No.9.1 (A) for respective item of formwork.

3.8.2. All form work shall be removed without causing any shock or vibration as would damage the concrete. Before the soft and struts are removed, the concrete surface shall be gradually exposed, where necessary in order to ascertain that concrete has sufficiently hardened. Centering shall be gradually and uniformly lowered in such a manner as to permit the concrete to take stresses due to its own weight uniformly and gradually. Where internal metal tiles are permitted, they or their removable parts shall be extracted without causing any damage to the concrete and remaining holes filled with mortar. No permanently embedded metal part shall have less than 25 mm. cover to the finished concrete surface. Where it is intended to re-use the form work, it shall be cleaned and made good to the satisfaction of the Engineer-in-charge. After removal of form work and shutting, the Executive Engineer shall inspect the work and satisfy by random checks that concrete produced is of good quality.

3.8.3. Immediately after the removal of forms, all exposed bolts etc. passing through the cement concrete member and used for stuttering or any other purpose shall be cut inside the cement concrete member to a depth of at least 25 m. below the surface of the concrete and the resulting holes be filled by cement mortar, all fins, caused by form joints, all cavities produced by the removal of form tiles and all other holes and depressions, honeycomb spots, broken edges or comers and other defects, shall be thoroughly cleaned", saturated with water and carefully pointed an rendered true with mortar of cement and fine aggregate mixed in proportions used in the grade of concrete that is being furnished and of as dry consistency as is possible to use. Considerable pressure shall be applied in filling and pointing to ensure through filling in all voids. Surface which are pointed shall be kept moist for a period of 24 hours. If rock pockets/honeycombs in the opinion of the Engineer-in-charge are of such an extent or character as to effect the strength of the structure materially or to endanger the life of the steel reinforcement, he may declare the concrete defective and require the removal and replacement of the portions of structure affected.

4.0. Mode of Measurement &Payment

4.1. The consolidated cubical contents of concrete work as specified in item shall be measured. No deduction shall be made for

(a) Ends of dissimilar materials such as joints, beams, posts, girders, falters, purling trusses, corbels and steps etc., up to 500 Sq, Cm. in section.

4.2. The rate includes cost of all materials labor, tools and plant required for mixing, placing in position, vibrating and compacting, finishing, as directed, curing and all other incidental expenses for producing center of specified strength. The rate excludes the cost of formwork.

4.3. The rate shall be for a unit of one cubic meter.

5.4.1. Providingandlayingcementconcrete1:2:4(1cement:2coarsesand:4graded stone aggregate 20 mm. nominal size) and curing complete excluding cost of form work and reinforcement for reinforced work in : (A) Foundations, footing base of columns and mass concrete. (C) Slabs, landings, shelves, balconies, lintels, beams, girders and cantilever up to floor two level. (D) Columns, pillars, pots, and struts up to floor up to floor two level (E) Staircase up to floor two level (K) Vertical and horizontal fins up to floor two-level.

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 5.3.13 shall be followed except that the work shall be carried out for reinforced concrete work for work as specified in item 1.2. In addition, the following stipulations shall be followed for:

(a) The bars shall be kept in position by the following methods:

(i) In case of beam and slab construction, sufficient number of precast cover blocks in cement mortar 1:2 (1 cement: 2 coarse sand) about 4 cms. x 4 cms. section and of thickness equal to the specified cover shall be placed between the bars and shattering as to secure and maintain the requisite cover of concrete

over the reinforcement. In case of cantilevered or doubly reinforce beams or slabs, the main reinforcing bars shall be held in position by introducing chain spacers or supports bars at 1.0 to 1.2 meter centers.
(ii) In case of columns and walls, the vertical bars shall be kept in position be means of timber temphtes with slots accurately out in them, the tamphthes shall be removed after concreting has been done below it. The bars may be also be suitably tied by means of annealed steel wires to the shuttering to maintain their position during concreting.
1.2. AH bars projecting form pillars, columns, beams, slabs etc, to which other bars and concrete are to be attached of bounded to later on, shall be protected with a coat of thin neat cement grout, if the bars are not likely to be incorporated with succeeding mass of concrete within the following 10 days. This coat of thin neat cement shall be removed before concreting.

2.0. Mode of Measurement &Payment

2.1. The relevant specifications of item No. 5.3.13 shall be followed.
2.2. The volume Occupied by reinforcement shall not be deducted from R.C.C.work.
2.3. The rate shall be for a unit of one cubic meter.

5.4.4. Providingandlayingcementconcrete1:2:4(1cement:2coarsesand:4graded stone aggregate 20 mm. nominal size) for reinforced concrete chhajas not exceeding 10cms. thickness up to floor two level including finishing the exposed surface with cement mortar 1:3 (1 cement : 3 fine sand) to give a smooth and even surface, centering and form work and curing complete excluding cost of reinforcement.

1.0. Materials &Workmanship

1.1. The cement mortar shall conform tom-11.
1.2. The relevant specification of item No. 5.3.13 and 5.4.1 shall be followed except that the work shall be carried our for reinforced concrete chhajas not exceeding 10 cms. in thickness.
1.3. The specifications for form work and centering shall be as per item No.9.1.
1.4. The finishing work in cement mortar 1:3 (1 cement: 3 fine sand) shall be carried out as per specifications of item No. 17.49 (I), before the plastering is done, the surface of the concrete shall be raked for proper bond.

2.0. Mode of measurements &payment

2.1. The relevant specification of item No. 5.3.13 and 5.4.1 shall be followed except that the work of chhajas up to 10 cms. Shall be earned out including centering form work and finishing the surface with cement mortar 1:3 (1 cement: 3 fine sand).
2.2. The rate shall be for a unit of one cubic meter,

5.4.10. Providing an Mild Steel reinforcement for R.C.C. work including bending binding and placing in position etc. complete up to floor two-level.

1.0. Materials

1.1. Mild Steel bars shall conform to M-18. Mild steel binding wires shall conform toM-21.

2.0. Workmanship

2.1. The work shall consist of furnishing and-placing reinforcement to the shape and dimensions shown as on the drawings or as directed
2.2. Steel shall be clean and free from rust and loose mill scale at the lime of fixing in position and subsequent concreting.
2.3. Reinforcing steel shall conform accurate to the dimensions given in the bar bending schedules shown on relevant drawings. Bars shall be bent cold to specified shape and dimensions or as directed, using a proper bar bender, operated by hand of power to attain proper radius of bends. Bass shall not be bent or straightened in a manner that will injure the material. Bars bent during transport-or handling shall be straightened before being used on the work. They shall not be heated to facilitate bending Unless otherwise specified a "U" type hook at the end of each bar shall invariably be provided to main reinforcement. The radius of the bend shall not be less then twice the diameter of the round bar and the length of the straight part of the bar beyond the end of the curve shall be at least four times the diameter of the round bar. In case of bars which are not round and in case of deformed bars, the diameter shall be taken as the diameter of circle having an equivalent effective area. The hooks shall be suitably encased to prevent any splitting of the concrete.
2.4. All the reinforcement bars shall lie accurately placed m exact position shown on the drawings, and shall be securely held in position miring placing of concrete by annealed binding wire not less than 1 mm in size, and by using stay blocks or metal chair spacers, metal hangers supporting wires or other approved devices at sufficiently close intervals, Bars shall not be allowed to sag between supports nor displaced during concreting or any other operations of the work. All devices used for positioning shall be of non-corrodible material. Wooden and metal supports shall not extend to the surface of concrete, except where shown on drawings. Placing bars on layers of freshly laid concrete as the work progresses for adjusting bar spacing shall not be allowed Pieces of broken stone of brick and wooden blocks shall not be used Layers of bars snailbe

separated by spacer bars, precast mortar blocks or other approved devices Reinforcement after being placed in position shall be maintained in a clean condition until completely embedded in concrete. Special care shall be exercised to prevent any displacement of reinforcement in concrete already placed. To prevent reinforcement form corrosion, concrete cover shall be provided as indicated on drawings. All the bars protruding from concrete and to which other bars are to be sliced and which are likely to be exposed for a period exceeding 10 days shall be protected by a thick coat of neat cement grout.

2.5. Bars crossing each other where required shall be secured by binding wire (annealed) of size not less than 1 mm. in such a manner that they do not slip over each other at the time of fixing and concreting.

2.6. As far possible, bars of full length shall be used. In case this is not possible. Over lapping of bars shall be done as directed When practicable, overlapping bars shall not touch each other, but be kept apart by 25 them. Where not feasible, overlapping bars shall be bound with annealed wires not less than 1 mm. thick twisted tight. The overlaps shall be staggered for different bars and located at points, along the span where neither shear non bending moment ismaximum.

2.7. Whenever indicated on the drawings or desired by the Engineer-in-charge, bars shall be jointed by couplings which shall have a cross-section sufficient to transmit the full stresses of bars. The ends of the bars that are joined by coupling shall be upset for sufficient length so that the effective cross section at the base of threads is not less than the normal cross-section of the bar. Threads shall be standard threads Steel for coupling shall conform to I.S.226.

2.8. When permitted or specified on the drawings, joints of reinforcement bars shall bull- welded so as to transmit their full stresses. Welded joints shall preferably be located at points when steel will not be subject to more than 75 percent of the maximum permissible stresses and welds so staggered that at any one section not more than 20 percent of the rods are welded. Only electric are welding using a pieces which excludes air from the molten metal and conforms to any or all other special provisions for the work shall be accepted. Suitable means shall be provided for holding bars securely in position during welding. It shall be ensured that no voids are left in welding and when welding is done in tow or three stages, previous surface shall be cleaned properly. Ends of the bars shall be cleaned of ell loose scale, rust, stages, paint and other foreign matter before welding. Only competent welders shall be employed on the work. The M.S. electrodes used for welding shall conform to I.S. 814. Welded pieces of reinforcement shall be tested. Specimen shall be taken from the actual site and their number and frequency of test shall be as directed.

3.0. Mode of Measurements &Payment

3.1. For the purpose of calculating consumption, wastage shall not be permitted beyond 5 percent Excess consumption over 5% will be charged at penalrate.

3.2. Reinforcement shall be measured in length including overlaps, separately for different diameters as actually used in the work. Where welding or coupling is resorted to in place lap joints, such joints shall be measured for payment as equivalent length of overlap as per design requirement. From the length so measured, the weight of reinforcement shall be calculated in tones on the same basis of as per M-18 even though steel is supplied to the contractor by the department on actual weight. Length shall include hooks at the ends Wastage and annealed steel wire for binding shall not be measured and the cost of these items shall be deemed to be included in the rate forreinforcement.

3.3. The rate for reinforcement includes cost of steel binding wires. its carting from Department store to work site, cutting, bending, placing, binding and fixing in position as shown on the drawings and as directed It shall also include all devices for keeping reinforcement in approved position, cost of joining as per approved method and all wastage and spacerbars.

3.4. The rate shall be for a unit of OneKg.

5.4.11. High yield deform bars steel reinforcement for R.C.C. work including bending, binding and placing in position complete up to floor twolevel.

1.0. Materials

1.1. Cold twisted steel bars (high yield strength deformed bars) shall conform to M.19 Mild steel binding wires shall conform toM-21.

2.0. Workmanship

2.1. The specifications of item No. 5.4.10 shall he followed except that the cold twisted steel bars shrill be used with or without hooks at the ends. Deformed .bars without hooks shall, however, comply with relevant anchoragerequirements

3.0. Mode of Measurement &Payment

3.1. The relevant specifications of item No. 5.4.10 shall befollowed

3.2. The rate shall be for a unit of Onekg

5.4.13. Extra for additional lift of concrete for all R.C.C. work above floor two level excluding cost of reinforcement.

1.0. Materials & Workmanship

The relevant specifications for item No. 5.4.1 shall be followed for the work except that the R.C.C. work shall be done for ground floor i.e. above plinth level to first floor level.

2.0. Mode of Measurement &Payment

2.1. The relevant specifications of item No. 5.4 1 shall be followed except that rate shall be for extra lift above plinth to floor two level over and above the rate of concrete at floor twolevel.

2.2. The rate shall be for a unit of one cubic meter perfloor.

5.4.13.(A)Extra for additional lift of reinforcement steel for all R.C.C. work above floor two level.

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 5.4.10 as may be applicable, shall be followed except that the work shall be carried out above floor two level for eachfloor

2.0. Mode of measurement &payment

2.1. The relevant specifications of item No. 5.4.10 o4 5.4.11 as may be applicable shall be followed except that the work shall be carried out above floor towlevel.

2.2. The rate shall be for a unit of one kg. perfloor.

5.6.2. Providing up to floor two level precast cement concrete or grill 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 6 mm: nominal size) reinforced with 1.6 mm. dia mild steel size wire including roughening, cleaning fixing and finishing in cement mortar 1:3 and curing complete. (A) 50 mm. thick (B) 40. mm. thick (C) 25. mm. thick (E) 100 mm. thick.

1.0. Materials

1.1. Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6. Mortar shall conform to M-11. Aggregates shall conform to M-12. Mild steel wire shall conform to M-21. Shattering shall conform toM-26.

2.0. Workmanship

It shall be cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 6 mm. nominalsize), reinforced with 1.6. mm. dia mild steel wire unless otherwise specified. The thickness of the jali shall be as specified in the item. The jali shall be set in position true to line and level before the jambs sills and soffits to the opening are. plastered. It shall then be properly cemented with cement mortar 1:3 (1 cement : 3 sand) and rechecked for levels. Finally the jambs, sills and soffits shall be plastered gripping the jali uniformly on allsides.

3.0. Mode of measurement ofpayment

3.1. The item shall be measured in squaremeter.

3.2. The rate shall be for a unit of one squaremeter,

5.8.1. Providing and laying controlled concrete M-150 and curing complete excluding the cost ofform work and reinforcement for reinforced concrete work in:(A) Foundation, footings, base of columns, and mass concrete, (B) Walls from top of foundation/level up to floor two level. (C) Slabs, pillars, posts and struts, up to floor two level (E) Staircase up to floor two level. (F) Vertical and horizontal fins up to floor twolevel.

1.0. Materials

1.1. Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6. Grit shall conform to M-8 Course aggregate shall conformM-12.

2.0. General

2.1. The relevant specification of item No. 5.4.1. of ordinary concrete shall be followed except that the concrete mix shall be designed form preliminary tests. The proportioning of cement and aggregates shall be done by weight and necessary precautions shall be taken in the production to ensure that the required work cube strength is attained and maintained. The controlled concrete shall be in grades of M-100, M-150, M-200, M-250, M-300, M-350 & M-400 with prefix controlled added to it. The letter M refers to mix and the numbers specify 28 days works cube compressive strength of 150 mm. cubes of the mix expressed inKg./Crnt.

2.2. The proportion of cement, sand and coarse aggregate shall be determined of weight. The weight batch machine shall be used for maintaining proper control over the proportion of aggregates as per mix design. The strength requirements of different grades of concrete shall be asunder:

Grade Concrete	Compressive strength of 15 cms. cubes in Kg./Cmt. at 28 days, conducted in accordance with I.S.516-1959. Preliminary test Min.	Work test Min.
M-1 50	200	150
M-200	260	200
M-250	320	250
M-300	380	300
M-350	440	350
M-400	500	400

In all cases, the 28 days compressive strength specified in above be the criteria for acceptance or rejection of the concrete. Where the strength of a concrete mix as indicated by tests, lies in between the strength of any two grades specified in the above table, such concrete shall be classified in for purpose as concrete belonging to the lower of the grades between which its strength lies.

3.0. Workmanship

3.1. The proportions for ingredients chosen shall be such that concrete has adequate workability for conditions prevailing on the work question and can be property compacted with means available except where ft can be shown to the satisfaction of the Engineer-in-charge, that supply of properly graded aggregate of uniform quality can be maintained till the completion of work, grading of aggregate shall be controlled by obtaining the coarse aggregates in different sizes and bending them in the right proportions as required. Aggregates of different sizes shall be stocked in separate stock piles. The required quantity of material shall be stock piled several hours, preferably a day before use. The grading of coarse and fine aggregate shall be checked as frequently as possible, the frequency for a given job being determined by Engineer-in-charge to ensure that the suppliers are maintaining the uniform grading as approved for samples used in the preliminary tests..

3.2. In proportioning concrete, the quantity of both cement and aggregate shall be determined by weight. Where the weight of cement is determined by accepting the maker's weight per bag, a reasonable number of bags shall be weighted separately to check the net weight. Where cement is weighted form bulk stocks at site and not by bags, it shall be weighed separately from the aggregate. Water, shall either be measured by volume in calibrated tanks or weighed. All measuring equipment shall be maintained in clean, and serviceable condition. Their accuracy shall be periodically checked.

3.3. It is most important to keep the specified water cement ratio constant and at its correct value. To this end, moisture content in both fine and coarse aggregates shall be determined by the Engineer-in-charge according to the weather conditions. The amount of mixing water shall then be adjusted to compensate for variations in the moisture content. For the determination of moisture content in the aggregates. I.S. 2386 (Part-Ill) shall be referred to. Suitable adjustments shah also be made in the weights of aggregates due to variation in their moisture content. Minimum quantity of cement to be used in controlled concrete shall not be less than 220 kg./M-3 in plain concrete and not less than 250 kg/M-3 in reinforced concrete.

4.0. Mode of measurement &payment

4.1. TherelevantspecificationsofitemNo.5.4.1shallbefollowed,exceptthatthecontrolledconcrete R.C.C. work as specified in item shall be measured under this item. The rate excludes cost of form work.

5.8.2. **Providing and laying controlled cement concrete M-200and curing complete, excluding the cost of form work and reinforcement for reinforced concrete work in: (A) Foundations, footings base of columns, and mass concrete. (B) walls from top of foundation up to floor two level (C) Slabs, landings, shelves, balconies lintels, beams, girders and cantilever up to floor two level, (D) Columns, pillars, posts and struts upto floor two level (E) Stair cases up to floor two level (K) Vertical and horizontal fins upto floor two-level.**

1.0. Materials & Workmanship

The relevant specifications of item No. 5.8.1 shall be followed except that the grading of concrete shall be controlled concrete M-200 grades for works 35 specified in item.

2.0. Mode of measurement and payment

2.1. The relevant specifications of ite m No, 5.8.1. shall be followed.

2.2. The rate shall be for one cubicmeter.

5.8.3. **Providing and laying controlled cement concrete M-250 and curing complete excluding the cost of reinforcement of reinforced concrete workin: (A) Foundations, footings, bases of columns, and the like and mass concrete (B) Walls from, top of foundation level up to floor two level (C) Slabs, landing, shelves, balconies, beams, girders and cantilever up to floor two level (D) Columns, pillars, struts up to floor two-level.**

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 5.8.1. Shall be followed except the grading of concrete shall be controlled concrete M-250 grades for the works as specified in the item.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 5.8.1. Shall be followed.

2.2. The rate shall be for a unit of one cubic meter.

5.00.1. Providing and laying ordinary concrete 1:2:4 (1 cement : 2 coarse sand :4 graded stone aggregates 20 mm. nominal size) and finishing smooth with curing etc., complete including the cost of form work but excluding the cost of reinforcement for R.C.C. work in: (I) Slabs up to 8 cms. Thickness (II) Slabs having more than 8 cms. and up to (III) Slabs having more than 10 cms. And up to 13 cms. Thickness (IV) Slabs having more than 13 cms. And up to 15 cms.thickness.

1.0. Materials &Workmanship

1.1. The relevant specifications for item No. 5.4.1. shall be followed for concrete work and relevant specifications of item No. 9.1. shall be followed for form work and centering. The concrete surface shall be smooth finished with cement mortar 1:3 (1 cement: 3 fine sand) as per item No. 17.59 (I) The thickness shall be as specified in the item.

2.0. Mode of measurement &payment

2.1. The relevant specification for item No. 5.4.1 shall be followed except that item shall include the item providing from work and centering work as directed.

2.2. The rate shall be for a unit of one cubic meter.

5.00.2. Providing and laying controlled cement M-150 and finishing smooth with curing etc. complete including the cost of form work but excluding the cost of reinforcement for R.C.C. work in : (I) slabs up to 8 cms. thickness (II) Slabs more than 8 cms. 10 cms. (Ill) Slabs more the 10 cms. and up to 13 cms. (IV) Slabs more than 13 cms. and up to 15 cms.

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 5.8.1. shall be followed for concrete work and item No. 9.1. shall be followed for form work and centering. The concrete surface shall be smooth finished with cement mortar 1:3 (1 cement : 3 fine sand) as per No. 17.59 (I) The thickness shall be as specified in theitem.

2.0. Mode of Measurement &Payment

2.1. The relevant of item No. 5.8.1. shall be followed except that the item shall include the cost and fromwork andcentering.

2.2. The rate shall be for a unit of one cubicmeter.

5.00.3. Providing and laying ordinary cement concrete 1:2:4 (1 cement: 2 coarse sand : 4 graded stone aggregates 20 mm. nominal size) exposed work with curing etc. complete. Including the cost of work but excluding the cost of reinforcement for R.C.C. work in : (I) Slabs up to 8 cms. Thickness (II) Slabs having more than 8 cms.-and up to 10 cms. Thickness (HI) Slabs having more than 10 cms. and up to 13 cms. thickness. (IV) Slabs having more than 13 cms. and up to 15 cms. thickness.

1.0. Materials &Workmanship

1.1. There relevant specifications of item No. 5.4.1. shall be followed for concrete work and that of form work and centering work shall be followed as per item No. 9.1. and 9.7. the thickness of the slab shall be as specified in theitem.

2.0. Mode of Measurement &Payment

2.1. The relevant specifications of item No. 5.4.1. shall be followed except that form work and centering work shall be included in theitem.

2.2. The rate shall be for a unit of one cubicmeter.

5.00.4. Providing any laying controlled cement concrete M-150 exposed work with curing ere., complete including the cost of form work but excluding the cost of reinforcement for R.C.C. work in : (l) Slabs up to 8 cms. thickness (II) Slabs having more than 8 cms. and up to 10 cms. thickness (III) Slabs having more than 10 cms. and up to 13 cms. thickness. (IV) Slabs having more than 13cms. and up to 15 cms. thickness.

1.0. Materials &Workmanship

1.1. The relevant specification of item No 5.4.1. shall be followed for controlled concrete and the relevant specifications of item No. 9.7. and 9.1. shall be followed for exposed concrete form work and centering work. The thickness of the stab shall he as specified in theitem.

2.0. Mode of Measurement &Payment

2.1. The relevant specifications of item No. 5.8.1. shall be followed except that the form work and centering work shall be included in theitem.

2.2. The rate shall be for a unit of one cubicmeter.

5.00.5. Providing and laying ordinary cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 grades stone aggregate 20 mm. nominal size) for R.C.C. lintel including finishing smooth with curing etc. complete including the cost of form work but excluding the cost of reinforcement.

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 581. shall be followed for concrete work, relevant specifications of item No. 17.59.(I) for finishing work and relevant specifications of item No. 9.1. shall be followed form work and centering work The concrete work shall be followed for the form work and centering work for exposed concrete work.

2.0. Mode of measurement &payment

2.1. The relevant specification of item No. 5.3.1. shah be followed except that the item includes the cost form work for exposed concretework

2.2. The rate shall be for a unit of one cubic meter.

5.00.6. Providingandlayingcementconcrete1:2:4(1cement:2coarsesand:4gradedstoneaggregate 20 mm. nominal size) and finishing smooth with curing etc., compete, including the cost of form work but excluding reinforcement for R.C.C. work in : (A) Beams : (I) Having cross sectional areas 0.05 to 0.08 Sq. meter. (II) Having cross sectional areamorethan0.08Sq.upto0.12Sq.mt(III)Havingcrosssectionalareamorethan 0.12 Sq. Mt. and up to 0.18 Sq. Mt (B) Column; (I) Having cross sectional area 0.05. to 0.08 Sq. mt. (Ill) Having cross sectional area more than 0.12 Sq.Mt. and up to 0.18 Sq.mt.

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 5.4.1. shall be followed for concrete work and item No. 9.1. shall be followed for form work and centering work. The finishing shall be done in cement mortar 1:3 (1 cement: 3 fine sand) as per item No. 17.59(1). The cross sectional area of beam shall be specified initem.

2.0. Mode of measurement &payment

2.1. The relevant specification of item No. 5.4.1. shall be followed but the from work and centering work shall be included in theitem.

2.2. The rate shall be for a unit of one cubicmeter.

5.00.7. ProvidingandlayingcontrolledcementconcreteM-150exposedworkwithcuringetc.complete, including the cost of form work but excluding the cost of reinforcementfor R.C.C. work in : (A) Beams : (I) Having cross sectional area 0.05 to 0.08 Sq. mt. (II) Having cross sectional area more than 0.08 Sq. mt. up to 0.12 Sq.mt (III) Having cross sectional area more than 0.12 Sq. mt. and up to 0.18 Sq.mt.: (B) Columns; (I) Having cross sectional area of 0.05 to 0.08 Sq.mt (II) Having cross sectional area more than 0.08 sq.mt. and up to 0.12 sq.mt. (Ill) Having cross sectional area more than 0.12 Sq.Mt and up to 0.18 Sq.mt.

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 5.8.1. shall be followed for controlled concrete work as specified in item for M-150 and relevant specifications of item 9.1 shall be followed for the form work centering work for exposed cementwork.

2.0. Mode of measurement &payment

2.1. The relevant specifications of item No. 5.8.1 shall be followed except that the form work and centering work shall be included in theitem.

2.2. The rate shall be for a unit of one cubicmeter.

5.00.8. ProvidingandlayingcontrolledcementconcreteM-200exposedworkwithcuringetc.complete, including the cost of form work but excluding the cost of reinforcementfor R.C.C. work in (A) Beams : (I) Having cross section area 0.05 to 0.08 Sq. mt (II) Having cross sectional area 0.08 Sq.mt and up to 0.12 Sq. mt. (Ill) Having cross sectional area 0.12 Sq, and up to 0.18 Sq. Mt. (B) Columns : (I) Having cross sectional area 0.05 to 0.08 Sq.Mt. (II) Having cross sectional area more than 0.08 Sq.Mt and up to 0.12 Sq.Mt. (Ill) Having cross sectional area more than 0.12 Sq. mt. and up to 0.18 Sq.Mt.

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 5.8.1. shall be followed for controlled concrete work for work as specified in item for M-200 and relevant specifications of item 9.7 and 9.1 shall be followed for the form work and centering work for exposed cementwork.

2.0. Mode of measurements &payment

2.1. The relevant specification of item No. 5.8.1. shall be followed except that the item includes the cost of form work and centering work for exposedwork.

2.2. The rate shall be for a unit one cubicmeter.

5.00.9. ProvidingandlayingcontrolledcementconcreteM-250exposedworkwithcuringetc.completeincludingthecostoffromworkbutexcludingthecostofreinforcementfor R.C.C. work in : (A) Beams : (I) Having cross sectional area 0.05 to 0.08 Sq.mt.(ll) Having cross sectional areas more than 0.08 Sq.mt. and up to 0.12 Sq. mt (III) Having cross sectional area more than 0.12 Sq.mt. and up to 0.18 Sq. Mt. (5) Columns :(l) Having cross sectional area 0.05 to 0.08. Sq.Mt (II) Having cross sectional area more than 0.08 Sq. mt. and up to 0.12 Sq. mt. (Ill) Having cross sectional area more than 0.12 Sq.mt. and up to 0.18 Sq.mt.

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 5.8.1. shall be followed for controlled concrete work for the work as specified in the item for M-250 and the relevant R.C.C. lintels shall be carriedout.

2.0. Mode of measurement &payment

2.1. The relevant specifications of item No. 5.4.1 shall be followed except that the cost of form work finishing and centering shall be included in theitem.

2.2. The rate shall be for a unit of one cubicmeter.

SECTION – 6

Masonry Work

6.12(A) Brickworkusingcommonburntclaybuildingbrickshavingcrushingstrengthnot lessthan35Kg/Sq.Cm.infoundationsandplinthincementmortar1:5 (1cement :5 fine sand) modular bricks.

1.0. Materials

Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6. Brick shall conform to M-15. Cement mortar shall conform to M-11.

2.0. Workmanship

2.1. Proportion:

2.1.1. The proportion of the cement mortar shall be 1:5 (1 cement: 5 fine sand) by volume.

2.2. Wetting of bricks:

2.2.1. The bricks required for masonry shall be thoroughly wetted with clean water for about two hours before use or as directed. The cessation of bubbles, when the bricks are wetted with water is as indication of through wetting of bricks.

2.3. Laying:

2.3.1. Bricks shall be laid in English bond unless directed otherwise. Half or cut bricks shall not be used except when necessary to complete to bond; closures in such case shall be cut to required size and used near the ends of walls.

2.3.2. A layer of mortar shall be spread on full width for suitable length of the lower course. Each brick shall first be property bedded and set home by gently tapping with handle of trowel or wooden mallet. Its inside face shall be flushed with mortar before the next brick is laid and pressed against it. On completion of course, the vertical joints shall be fully filled from the top with mortar.

2.3.3. The walls shall be taken up truly in plumb. All courses shall be laid truly horizontal and all vertical joint shall be truly vertical. Vertical joints in alternate course shall generally be directly one over the other. The thickness of brick course shall be kept uniform.

2.3.4. The brick shall be laid with frog up wards. A set of tools comprising of wooden straight edges, man son's spirit level, square half meter rub, and pins, string and plumb shall be kept on the site of work for frequent checking during the progress of work.

2.3.5. Both the faces of walls of thickness greater than 23 cms. shall be kept in proper place. All the connected brick work shall be kept not more than one meter over the rest of the work. Where this is not possible, the work shall be raked back according to bond (and not left toothed) at an angle not steeper than 45degrees.

2.3.6. All futures, pipes, outlets of water, hold fasts of doors and windows etc. which are required to be built in wall shall be embedded in cement mortar

2.4. Joints:

2.4.1. Bricks shall be so laid that all joints are quite flush with mortar. Thickness of joints shall not exposed 12 mm. The face joints shall be raked out as directed by raking tools daily during the progress of work, when the mortar is still green so as to provide key for plaster or pointing to done.

2.4.2. The face of brick shall be cleaned the very day on which the work is laid and all mortar dropping removed.

2.5. Curing:

2.5.1. Green work shall be protected from rain suitably. Masonry work shall be kept moist on all the faces for a period of seven days. The top of masonry work shall be kept well wetted at the close of the day.

2.6. Preparation of foundation bed:

2.6.1. If the foundation is to be laid directly on the excavated bed, the shall be leveled, cleared of all loose materials, cleaned and wetted before stating masonry, If masonry is to be laid on concrete footing, the top of concrete shall be cleaned and moistened. The contractor shall obtain the engineer's approval for the foundation bed before foundation masonry is started. When pucca flooring is to be provided flush with the top to plinth, the inside plinth offset shall be kept lower than the outside plinth top by the thickness of the flooring.

3.0. Mode measurements &payment

3.1. The measurements of this item shall be taken for the brick masonry fully completed in foundation up to plinth. The limiting dimensions not exceeding those shown on the plinths or as directed shall be final. Battered tapered and curved portions shall be measured net.

3.2. No deduction shall be made from the quantity of brick work, for any extra payment made for embedding in masonry or making holes in respect of following items:

(1) Ends of joists, beams, posts, girders, purlins, trusses, corbel, steps etc. where cross sectional area does not exceed 500Sq.Cm.

(2) Openings not exceeding 1000Sq.Cm.

(3) Wall plates and bed plates, bearing of slabs, chajjas and the like whose thickness does not exceed 10 Cms. And the bearing does not extend to the full thickness of wall.

(4) Drainage holes, and recesses for cement concrete blocks to embed hold fasts for doors, windows etc.

(5) Iron fixtures, pipes up to 300 mm. dia hold fasts, and doors and windows built into masonry and pipes etc. for concealed wiring.

(6) Forming chases of section not exceeding 350 -Sq. Cm. in masonry.

3.3. Apertures for fire places shall not be deducted nor shall be paid for separately.

3.4. The rate shall be for a unit of one cubic meter.

6.12. (B) Brick work using common burnt clay building bricks having crushing strength not less than 35 Kg/Sq. Cm. in foundations and plinth in cement mortar 1:5 (1 cement : 5 fine sand) conventional bricks.

1.0. Materials

Cement mortar of proportion 1:5 shall conform to M-11. Conventional bricks shall conform to M-15.

2.0. Workmanship

The relevant specification of item No. 6.12 (A) shall be followed except that the bricks to be used shall be modular bricks and the proportion of cement mortar is 1:6.

3.0. Mode of measurements &payment

3.1. The relevant specifications of item No. 6.12(A) shall be followed.

3.2. The rate shall be a unit of one cubic meter.

6.13.(A) Bricks work using common burnt clay building bricks having crushing strength not less than 35 Kg/Sq. Cm in foundation and plinth in cement mortar 1:6 (1 cement : 6 find sand) with conventional bricks.

1.0. Materials

Water shall conform to M-1. Cement mortar shall conform to M-11. Bricks shall conform to M-15.

2.0. Workmanship

2.1. The relevant specification of item No. 6.12 (A) shall be followed except that the bricks to be used shall be conventional bricks and proportion of cement mortar shall in C.M.1:6.

3.0. Mode of measurements &payment

3.1. The relevant specification of item No. 6.12(A) shall be followed.

3.2. The rate shall be for a unit of one cubic meter.

6.0.0.1(A) Brick work using common burnt clay building bricks having crushing strength not less than 35 Kg/Sq, Cm. in foundation and plinth in cement mortar 1:8 (1 cement :8 find sand), with Modular bricks.

1.0. Materials

Water shall conform to M-1. Brick shall conform to M-15. Cement mortar shall be conform to M-11.

2.0. Workmanship

2.1. The relevant specification of item No. 6.12(A) shall be followed except that the proportion of cement mortar shall be cement mortar 1:8 and bricks used shall be conventional bricks.

3.0. Mode of measurements &payment

3.1. The relevant specification of item No. 6.12(A) shall be followed.

3.2. The rate shall be for a unit of one cubic meter.

6.00.1.(B) Brick work using common burnt clay building bricks having crushing strength not less than 35 Kg/Sq. Cm. in foundation and plinth in cement mortar 1:8 (1 cement : 8 fine sand), with conventional bricks.

1.0. Materials

Water shall conform to M-1. Brick shall conform to M-15, cement mortar shall be conform to M-11.

2.0. Workmanship

2.1. There relevant specifications of item No. 6.12(A) shall be followed except that the proportion of cement mortar shall be cement mortar1:8.

3.0. Mode of measurement &payment

3.1. The relevant specifications of item No. 6.12(A) shall be followed.

3.2. The rate shall be for a unit of one cubic meter.

6.0.0.1.(A) Brick work using common burnt clay building bricks having crushing strength not less than 35 Kg./Sq. Cm. in foundation and plinth in time mortar 1:1.5 (1 Lime putty : 1.5 find sand) modular bricks.

1.0. Materials

Lime mortar of proportion (1:1.5) shall conform to M-10. Bricks shall conform to M-15.

2.0. Workmanship

2.1. The relevant specification of item No. 6.12(A) shall be followed except that the proportion of cement mortar shall be cement mortar 1:8 and bricks used shall be conventional bricks.

3.0. Mode of measurements &payment

3.1. The relevant specification of item No. 6.12(A) shall be followed.

3.2. The rate shall be for a unit of one cubic meter.

6.001. (B) Brick work using common burnt clay building having crushing strength not less than 35 Kg/Sq. Cm. in foundation and plinth in cement mortar 1:8 (1 cement: 8 fine sand), with conventional bricks.

1.0. Materials

Water shall conform to M-1. Brick shall conform to M-15, Cement mortar shall be conform to M-11.

2.0. Workmanship

2.1. The relevant specifications of item No. 6.12. (A) shall be followed except that the proportion of cement mortar shall be cement mortar1:8.

3.0. Mode of measurements &payment

3.1. The relevant specifications of item No. 6.12. (A) shall be followed.

3.2. The rate shall be for a unit of one cubic meter.

6.0.0.2.(A) Brick work using common burnt clay building bricks having crushing strength not less than 35 Kg./Sq. Cm. in foundation and plinth in lime mortar 1:1.5 (1 Lime putty: 1.5 find sand) modular bricks.

1.0. Materials

Lime mortar of proportion (1:1.5) shall conform to M-10. Bricks shall conform to M-15.

2.0. Workmanship

The relevant specification of item No. 6.12. (A) Shall be followed except the masonry work shall be carried out in lime mortar 1:1.5 (1 lime putty 1.5 fine sand) in foundation and plinth.

3.0. Mode of measurements &payment

3.1. The relevant specification of item No. 6.12. (A) shall be followed.

3.2. The rate shall be for a unit of one cubic meter.

6.0.0.2.(B) Brickworkusingcommonburntclaybuildingbrickshavingcrushingstrengthnot less than 35 Kg/Sq. Cm. in foundation and plinth in lime mortar 1:1.5 (1 Lime putty : 1.5 find sand) conventional bricks.

1.0. Materials & Workmanship

The relevant specification of item No. 6.12(A) and 60.02(A) shall be followed except that the masonry work shall be carried out by using conventional bricks in lime mortar 1:1.5 (1 Lime putty: 1.5 fine sand) in foundation and plinth.

2.0. Mode of measurements &payment

2.1. The relevant specification of item No. 6.12(A) shall be followed.

2.2. The rate shall be for a unit of one cubic meter.

6.0.0.3.(A) Brick work using common burnt clay building brick having crushing strength not less than 35 Kg. Sq. Cm. in foundation and plinth in lime mortar 1:2 (1 lime putty :2 find sand) modular bricks.

1.0. Materials & workmanship

The relevant specification of item No. 6.12(A) and 6.0.0.(A) shall be followed except that the masonry work shall be carried out in lime mortar 1:2 (1 Lime putty : fine sand) in foundation and plinth,

2.0. Mode of measurements &payment

2.1. The relevant specification of item No. 6.12 (A) shall be followed.

2.2. The rate shall be for a one cubic meter.

6.0.0.3(3) Brick work using burnt clay building bricks having crushing strength not less than 35 Kg/Sq. Cm. in foundation and plinth in lime mortar 1:2 (1 Lime Putty : 2 find sand) modular bricks.

1.0. Materials &Workmanship

The relevant specifications of item No. 6.12 A and 6.0.03 shall be followed except that the masonry work shall be carried out in lime mortar 1:2 (1 lime: 2 find sand) using conventional bricks in foundation and plinth.

6.19.(A) Brick work using common burnt clay building brick having crushing strength not less than 35 kg/sq.cm. for super structure above plinth level up to floor two level in cement mortar 1:5 (1 cement: 5 find sand) modular bricks.

1.0. Materials

Bricks shall conform to M-15. Cement mortar shall conform to M-11.

2.0. Workmanship

2.1. The relevant specification of item No. 6.12 (A) shall be followed except that the masonry work shall

be carried out above plinth level to floor two level i.e. for ground floor.

2.2. The frames of doors, windows, cupboards etc. shall be housed into the brick work at the correct location and level as directed. The heavy steel doors, window frames etc. shall be built in with work, but for ordinary steel doors and windows required opening for frames, hold-fasts, etc., shall be in the wall and frame embedded later on in order to avoid damage to the frames.

2.3. Necessary scaffolding shall be provided. The supports of the scaffolding shall be sound and strong tied, together with horizontal pieces over which the scaffolding plunks shall be fixed. Simple scaffolding shall be allowed normally. In this case scaffolding hole shall rest in whole header horizontal course only. Minimum number of holes be left in brick work for supporting horizontal scaffolding poles. The contractor is responsible for providing and maintaining sufficiently strong scaffolding so as to withstand all loads likely to come upon it.

2.4. For the face of brick work, where plastering is to be done, joints shall be racked out to a depth not less than thickness of joints. The face of brick work shall be cleaned and mortar dropping removed on very same day that brick work islaid.

3.0. Mode of measurements &payment

3.1. The masonry work of G.F. i.e. above plinth level to floor two level shall be measured and paid under this item.

3.2. Brick work in parapet shall be included in the corresponding masonry item of store immediately below the floor above which the parapet is built.

3.3. No deduction shall be made from quantity of brick work nor did any extra payment make for embedding in masonry of marking holes in respect of following item.

(1) Ends of joints, beams, posts, girders, rafters, purlins trusses corbel, steps, etc. where cross sectional area does not exceed 500sq.cm.

(2) Opening not exceed in 1000sq.cm.

(3) Wall plate sand bed plates bearing of slab, chhajjas, and like whose thickness does not exceed 10 cms. and the bearing does not extend the full thickness of wall.

(4) Drainage holes and recesses for cement concrete blocks to embed hold fasts for doors, windowed.

(5) Iron fixtures, pipes up to 300 mm. dia. hold fasts of doors, and window built into masonry and pipes etc. for concealed wiring.

(6) Forming charges of section not exceeding 350 sq.cm. in masonry.

(7) Apparatuses for fire places shall not be deducted nor shall extra labor required to make splaying of jumps, throating and making trenches over the aperture be paid for separately.

3.4. The rate shall be for a unit of one cubic meter.

6.19.(B) Brick work using common burnt clay building bricks having crushing strength not less than 35 kg/sq. cm. for super structure above plinth up to floor two level in cement mortar 1:5 (1 cement: 5 fine sand) conventionalbricks.

1.0. Materials & Workmanship

The relevant specification of item No. 6.19(A) shall be followed except that brick masonry work shall be carried out with conventional bricks.

2.0. Mode measurement and payment

2.1. The relevant specification of item No. 6.19 (A) shall be followed.

2.2. The rate shall be for a unit of one cubic meter perimeter.

6.20 Extra for brick in super structure above floor twolevel.

1.0. Materials and workmanship

The relevant specifications of item masonry work to be earned out shall be followed except that this work is for additional lift of one floor above two-level.

2.0. Mode of measurements andpayment

2.1. The relevant specification of item No. 6.19 (A) masonry work shall be followed.

2.2. The extra payment shall be made for additional lift above floor two level to each additional floor over and above the rate of masonry work.

2.3. The rate shall be for a unit of cubic meter per floor.

6.30.I(A) Half brick masonry in common burnt clay building having crushing strength not less than 35 kg/sq.cm. in cement mortar 1:4 {1 cement : 4 coarse sand) for super-structure above plinth level up to floor two level with conventional bricks.

1.0. Materials

Bricks shall conform to M-15. Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6. Cement mortar shall conform to M-11.

2.0. Workmanship

2.1. Relevant specifications of bricks, wetting and laying of bricks, joints, curing etc shall conform to item no. 6.19.(A) except that the brick work of half shall be carried out.

2.2. Cement mortar used in masonry work shall be in proportion of 1 part of cement and 4 parts of sand by volume.

2.3. AH bricks shall be laid stretcher wise, breaking joints with those in the upper and lower courses. The wall shall be taken truly plumb. All courses shall be said truly horizontal and all vertical joints shall be truly vertical. The bricks shall be laid with frogs upwards. A set of masons tools shall be maintained on work as required for frequent checking.

3.0. Mode of measurement and payment

3.1. The half brick masonry work in foundation and plinth shall be measured under this item the limiting dimensions shall not exceed those shown in the plan or as directed. Any work done extra over the specified dimensions shall beignored.

3.2. The relevant specifications of item no. 6.12. shall be followed. The length shall be measured nearest to onecm.

3.3. The rate shall be for a unit of one sq. Meter.

6.30.I.(B) Half brick masonry in common burnt clay building bricks crushing strength not less than 35 kg/sq. cm. in cement mortar 1:4 (1 cement :4 coarse sand) for super-structure above plinth level up to floor two level with conventional bricks.

1.0. Materials and Workmanship

1.1. The relevant specifications of Item No. 6.30.1 (A) shall be followed for bricks, wetting, laying of bricks, joints, curing, curing, except that the bricks to be used shall be conventional bricks instead of modular bricks.

2.0. Mode of measurement and payment

2.1. The limiting dimensions shall not exceed those shown in the plan or as directed. Any work done extra over specified dimensions shall beignored.

6.30.II.(A) Half brick masonry in common burnt clay building bricks having crushing strength not less than 35 kg/sq.cm. in cement mortar 1:5 (1 cement : 5 coarse sand) with modular bricks in foundations and plinth.

1.0. Materials & workmanship

The relevant specifications of item No. 6.30.I (A) shall be followed except the half brick masonry work shall be carried out in cement mortar 1:5 (1 cement: 5 coarse sand) with modular bricks in foundation and plinth.

2.0. Mode of measurement and payment

2.1. The relevant specifications of item no. f, 30. I (A) shall be followed.

2.2. The rate shall be for a unit of one cubic meter.

6.30.II.(B) Half brick masonry on common clay building bricks having crushing strength not less than 35 kg/sq. cm. in cement mortar 1:5 (1 cement : 5 coarse sand) in foundation and plinth using conventional bricks.

1.0. Materials &workmanship

1.1. The relevant specifications of item No. 6.30.I (A) shall be followed for bricks, wetting, laying of bricks, joints, curing, except that the bricks to be used shall be conventional bricks instead of modular bricks.

2.0. Mode of measurement and payment

2.1. The relevant specifications of item No. 6.30.I (A) shall be followed.

2.2. The rate shall be for a unit of one sq. Meter.

6.30 HI.(A) Half brick masonry in common burnt clay building having crushing strength not less than 35 kg/sq. cm. in lime mortar 1:15 (1 lime putty : 1.5 coarse sand) in foundation and plinth with modular bricks.

1.0. Materials & workmanship

The relevant specifications of item No. 6.30 (I)-A shall be followed except that the half bricks work shall be carried out in cement 1:5 (1 cement: 5 coarse sand) in foundation and plinth using conventional bricks.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item no. 6.30 (I)-A shall be followed.

2.2. The rate shall for a unit of one sq. Meter.

6.30.III(A) Half brick masonry in common burnt clay building having crushing strength not less than 35 kg/sq. cm. in lime mortar 1 :1.5 (1 lime putty : 1.5 coarse sand) in foundation and plinth with modular bricks.

1.0. Materials

Modular bricks shall conform to M-15 water shall conform to M-1. Lime mortar or proportion L.M. 1:1.5 (1 Lime putty: 1.5 coarse sand) shall conform to M-10.

2.0. Workmanship

The relevant specifications of item No. 6.30 (I) (A) shall be followed except that the half brick masonry work shall be carried out in lime mortar 1:1.5 (1 Lime putty : 1:1.5 coarse sand) in foundation and plinth using

Modular bricks.

3.0. Mode of measurements &payment

3.1. The relevant specification of item No. 6.30 (I) A shall be followed.

3.2. The rate shall be for a unit of one sq. Meter.

6.30.111(8) Half brick masonry in common burnt clay building bricks having crushing strength not less than 35 kg/sq. cm. in mortar 1: 1.5 (1 Lime putty : 1.5 coarse sand) in foundation and plinth with conventional bricks.

1.0. Materials

Conventional bricks shall conform to M-15, water shall conform to M.1. Lime mortar or proportion L.M. 1:1.5 (1 Lime putty : 1.5 coarse sand) shall conform to M-10.

2.0. Workmanship

The relevant specifications of item No. 6.30 (I)-A shall be followed except that half brick masonry work shall be carried out in Lime Mortar 1:1.5 (1 Lime putty : 1.5 coarse sand) in foundation and plinth using conventional bricks.

3.0. Mode of measurements and payment

3.1. The relevant specifications of item No. 6.30 (I)-A shall be followed.

3.2. The rate shall be for a unit of one sq. Meter.

6.30 II(A) Half brick masonry in common burnt clay building bricks having crushing strength not less than 35 kg/sq. cm. in cement 1:5 (1 cement : coarse sand) with hoop iron 25 mm. x 1.6 mm. or equivalent reinforcement at every third coarse embedded in cement mortar in foundation and plinth with modular bricks.

1.0. Materials

Bricks shall conform to M-15. Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6. Cement mortar shall conform to M-11. M.S. reinforcement shall conform to M-18.

2.0. Workmanship

2.1. Relevant specifications of bricks, wetting and laying of bricks, joints, curing, scaffolding etc. shall conform to item No. 6.30 (l)-A except the following:

2.2. Cement mortar used in masonry work shall be in proportion to 1 part of cement and 5 parts of sand by volume and shall conform to M-11, and this work is for half brick thickness for partitions walls.

2.3. The hoop iron 25 mm x 1.6 or equivalent reinforcement shall be provided at every third course. The ends of reinforcement shall be fully embedded in main walls on both sides as directed. Reinforcement shall be placed on the top of the bottom most course. Laps shall be of 15 cms. of mild steel bars or hoop iron.

2.4. The joints in the course where reinforcement is placed shall admit of mortar cover to the reinforcement.

3.0. Mode of measurements and payment

3.1. The rate shall be for half brick masonry work providing specified reinforcement, the limiting dimensions not exceeding those in the plan or as directed. The length shall be measured nearest to one cm.

3.2. Any work done extra over specified dimensions shall be ignored.

3.3. The rate shall be for a unit one sq.meter.

6.30.II(B) Half brick masonry in common burnt clay building having crushing strength not less than 35 kg/sq.cm. in cement mortar 1:5 (1 cement : 5 coarse sand) with hoop iron 25 mm. x 1.6 mm. or equivalent reinforcement at every third course embedded in cement mortar in foundation and pith, with conventional bricks.

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 6.30 I (A) shall be followed except that the work is to be carried out with conventional bricks instead of Modular bricks.

2.0. Mode of measurements and payment

2.1. The rate shall be for half brick work, including providing specified reinforcement, the limiting dimensions out with conventional bricks instead of Modular bricks.

2.2. The work done extra over specified dimensions shall be ignored.

2.3. The rate shall be for a unit of one sq. Meter.

6.33.(A) Extra for half brick masonry in superstructure above floor two level.Modular bricks.

1.0. Materials &Workmanship

1.1. The relevant specifications for item No. 6.30 A & 6.30. B shall be followed except that this work is for additional lift over and above the payment of work up to floor two level.

1.2. The rate shall be for a unit of one sq. meter per floor.

6.33.(B) Extra for half brick masonry work in superstructure above floor two level. Conventional bricks.

1.0. Materials &Workmanship

1.1. The relevant specifications for item No. 6.30 A & 6.30. B shall be followed except that this work is for additional lift of each floor two level using conventional bricks.

2.0. Mode of measurements and payment

2.1. The relevant specification of item No. 6.33 (A) shall be followed.

2.2. The rate shall be for a unit of one sq. meter per floor

6.55 (1) HalfbrickthickHoney-combbrickworkwithburntworkwithburntclaybuilding bricks having crushing strengths not less than 35 kg/sq.cm. in C.M. 1:4 (1 cement : 4 coarse sand)

1.0. Materials

Bricks shall conform to M-15 Cement mortar of proportion shall conform to M-11.

2.0. Workmanship

The relevant specifications of item No. 6.32(A) shall be followed except that the masonry work shall be carried
out Honey-comb in thickness of half bricks in cement mortar 1:4 (1 cement: 4 coarse sand) and as and where
directed with all lifts.

3.0. Mode of measurements and payment

3.1. The honey-comb work shall be measured in sq. meters. The full area of honey comb work shall be measured without with all lifts.

3.2. The rate shall be for a unit of one square meter of wall surface.

SECTION-7
Rubble Masonry Work

7.6(1) Uncoarsed rubble masonry with hard stone approved quality infoundationsand plinth in cement mortar 1:6 (1 cement : 6 coarse sand) including leveling etc. complete.

1.0. Materials:
The cement mortar shall conform to M-11. Stone shall conform to M-16.

2.0. Workmanship
2.1. Dressing ofstones:
Stone used for un coursed rubble masonry work shall be hammer dressed on the sides, and beds in which such a way as to close with the adjacent stone in the masonry work as strongly as possible. The face stones shall be dressed in such a manner as to give a specified pattern such as polygonal facing etc. The face of the stones shall be so dressed that bushing on the exposed face shall not project by more than 40 mm. from the general wall surface and on the face to be plastered, it shall not project by more than 19 mm., not shall have depressions more than 10 mm. from the average wallsurface.
2.2. Laying:
All the stone shall be sufficiently wetted before laying to prevent absorption of water from mortar. The wall shall be built true to plumb (of true to required batter when so specified). All connected walls in a structure shall be raised up informally and regularly. However if for any specific reason, one part of masonry is required to be left behind the wall shall be racked back at an angle not steeper than 45. Vertical toothed joints in masonry shall not be allowed. The work shall be carried out regularly and masonry of any day wall not be raised by more than 1 meter inheight.
2.3. The stone shall be laid in an uncoarsed fashion, or random facing etc. However the masonry is required to be brought to level at various stages viz. plinth level window still level, roof level and any other level specifically shown in the drawings. This may be done first by adjusting the laying of stone to one level and then by providing leveling coarse of cement concrete 1:6:12 (1 cement: sand : 12 graded stone aggregate 20 mm. nominal size) or as otherwisespecified.
2.4. Proper bonding shall be achieved by closely filling in adjacent stones as well as by using bond stones or through stones as described herein below. Face stones shall extend back sufficiently, and bond well with the masonry. The stone shall be carefully set so as to break joints and avoid formation of vertical joints. The depth of stone from the face of wall inwards shall not be less than weight or breadth at the face. The hearing or interior filling of the wall shall consist of rubble stones which may be of nay shape. Neither the face stone nor the hearing stone shall be so small to pass through circular ring of 150 mm. internal diameter in any direction nor shall any of them shall have minimum thickness 100mm.
2.5. Ail stone shall be carefully laid, hammered down by a wooden mallet into position and solidly embedded in mortar, chips and spawns of stone may be used wherever necessary to avoid thick mortar bends or joints at the same time ensuring that no hollow space is left any where in the masonry. The chips used shall not be more than 20% by volume of masonry. The hearting shall be laid nearly level with face stones except that at about one meter intervals vertical bond stone or plumes projecting about 150 to 200 mm. shall be firmly embedded to from vertical bounding inmasonry.
2.6. Bondstone:
Bond stones or through stones running right across the thickness of the wall shall be provided in wall up to 600 mm. thick. In thicker walls two stones overlapping each other by at least 150 mm. shall be provided across the thickness of the wall to form bond stones. There shall be at least one bond stone for every 0.5 sq. mt of wall surface. The bond stone shall be marked by a distinguishing letter during construction for subsequent verification and shall be laid staggered in sub sequentlayers.
2.7. Quoins:
The quoins or corners stones shall be selected stone neatly dressed with hammer and/or chisel to form the required corner angle and laid header and stretcher alternatively, The bed top surface of quoins shall be chiseled dressed to give horizontal joints. The quoins shall have a uniform chisel draft of at least 25 mm.

width at four edges of each exposed face, all the edges of the same face being in one plane. No quoins stone shall be smaller than 0.025 cum. involume.

2.8. Jamb Stones:

The jamb stone shall be made with stone specified for quoins, that the stone provided on the jambs shall have their length equal to thickness of wall up to 600 mrn. and a line of headers shall be provided forwalls thicker than 600 mm. as specified forbond.

2.9. Joints:

All the joints shall be completely filled with mortar and width shall not exceed 25 mm. when plastering of pointing is not required to be done, the joints shall be struck flush and finished simultaneously while laying the stone. Otherwise the joints shall be racked to a minimum depth of 20 mm. by a racking tools, during progress of laying while the mortar is still green.

2.10. Scaffolding:

Single or double scaffolding shall be used. The scaffolding shall be strong and sound. The holes left in masonry for supporting scaffolding shall be filled and made good before plastering.

2.11. Curing:

Green work shall be protected from rains by covering the same. Masonry shall be kept constantly moist on all the faces for a period of at least 7 days. The top of masonry shall be flooded at close of the day.

3.0. Mode of measurements andpayment

3.1. All work shall be measured on the basis of finished dimensions and measured net except where otherwise specified. Only specified dimensions shall be allowed. Anything extra shall be ignored. The masonry work in foundation and plinth shall be measured under this item. No deduction shall be made, not extra payment made for thefollowing:

(a) Ends of joints, beams, spots, girders, rafters, purloins, trusses, corbles, etc. each up to 500 sq. cm. insection.

(b) Opening each up to 0.1sq.m.

(c) Wall plates and bed plates, bearing of chhaja and like up to 10 cm. depth (bearing of floor and roof slabs shall be deducted frommasonry).

(d) Drain holes and recesses for cement concrete blocks to embed hold fasts for doorswindows.

(e) Building in the masonry iron fixtures pipes up to 300 mm. dia. hole fasts of doors andwindows.

(f) Forming theses in masonry up to section of 350sq.cm.

3.2. The rate shall be for a unit of one cubicmeter.

7.6.(II) Uncoursedrubblemasonrywithhardstoneofapprovedqualityinfoundationand plinth in cement mortar 1:5 (1 cement : 5 coarse sand) including leveling up etc. complete.

1.0. Materials and workmanship

The relevant specification of item No. 7.6(1) shall be followed except that the proportion of cement mortar shall 'be in C.M. 1.5 (1 cement : 5 coarse sand)

2.0. Mode of measurements andpayments

2.1. The relevant specifications of item No. 7.6(1) shallfollowed.

2.2. The rate shall be a unit of one cubicmeter.

7.6.(Ill) Uncoursedrubblemasonrywithhardstoneofapprovedqualityinfoundationand plinth in lime mortar 1:1.5 (1 lime putty : 1.5 coarse sand) including leveling etc. complete.

1.0. Materials:

Lime mortar shall conform to M-10. The rubble shall conform to M-16.

2.0. Workmanship

The relevant specifications of item No. 7.6 (I) shall be followed.

3.0. Mode of measurement andpayment

3.1. The relevant specifications of item No. 7.6 (I) shall befollowed.

3.2. The rate shall be for a unit of one cubicmeter.

7.17(A) Coursed rubble masonry with hard stone of approved quality infoundationand plinth in cement mortar 1:6 (1 cement : 6 coarse sang) etc.complete.

1.0. Materials

Cement mortar shall conform to M-11. The stone shall conform to M-16.

2.0. Workmanship

2.1. Dressing of stones:

The face stone shall be hammer dressed so as to give approximately rectangular blocks. They shall be squared on bed and side joints. The bed joints shall be rough chisel dressed for a depth of at least 50 mm. back from the faces and the side joints shall be so dressed to a depth of at least 40 mm. back from the face, such that no portion of the dressed surface is more than 10 mm. from a straight edge held against the surface. The remaining portions of surface shall not project above the chisel dressed bed and side joints. The bushing on the face shall not project by more than 40 mm. on an exposed face and 10 mm. on a face to be plastered. The hammer dressed stone shall also have a rough tooling for a minimum with of 25 mm. along the four edges of the face of the stone.

2.2. Laying:

2.2.1. All stones shall be wetted before laying. The watt shall be built up truly plumb (or to required better where so specified.)

All connected masonry in a structure shall normally be raised up uniformly and regularly. However, if for any specific reasons one part of wall is required to be left behind, such wall shall be raked back at an angle not steeper than 450. vertical toothed joints in masonry shall not be allowed. The work shall be carried up regularly and masonry on any day shall not be raised by more than 1 meter in height.

2.2.2. All the courses shall be laid truly horizontal. The height of course shall not be less than 150 mm. nor more than 300 mm. Face stone shall be laid in alternate header and stretcher fashion. They shall be so arranged as to break joints by at least 75 mm. Stones shall be laid with grains horizontal so that the load is transmitted along the direction of their maximum crushing strength. The depth of stone shall not be less than the height or breadth. The breadth of a face stone shall also be not less then the breadth. The breadth of a face stone shall also be not less the 150 mm. Each face stone shall be of the same height in any give course. The courses shall be not less the 150 mm. Each face stone shall be of the same height in any give course. The courses shall be built in perpendicular to the pressure which the masonry will bear. In case of battered walls (such as retaining walls) the beds of the stone and the plate of courses shall be laid with their bed perpendicular to the battered face.

2.2.3. The hearting or the interior filling of the wall shall consist of flat bedded stones carefully laid on their proper beds in mortar, chips and spawns of stone being used where necessary to avoid excessive use of mortar, care being taken to see that no hollow space is left anywhere in the masonry. Chips shall not be used below the hearting stone to bring these up to the level of stones. The use of chips shall be restricted to be filling of interstices between the hear tiling stone but the volume of chips shall be limited to 15% of the total volume of the masonry.

2.3. Bond Stones:

The relevant specification of item No. 7.6 (I) Para 2.6 shall be followed except that the bond stone shall be provided for at least 1.8. m. length of every courses.

2.2.4. Quoins:

The quoins, which shall be of the same height as the course to .which it belongs shall be formed from selected stone of at least 400 mm. length. They shall be laid square or beds on stretchers and headers alternatively. The beds shall be rough, chisel dressed to a depth of at least 100 mm. These stones shall have a minimum uniform chisel draft of 25 mm. width at four edges being in the same plane, quoin stone shall not be smaller than 0.025 cum. in volume and it shall also be not less than 300 mm. in length, 25 % of them being not less 500 mm. in length.

2.5. Joints:

All the bed joints shall be horizontal and all shall be vertical. Face joints shall not be more than 10 mm. thick. All joints shall be properly and completely filled with mortar. On faces where no plastering not pointing is required to be done the joint shall be flush and finished simultaneously while laying stones. In other cases the joints shall be raked to a minimum depth of 20 mm. by raking tools during the progress of work while the mortar is still green.

2.6. Curing:

The relevant specification of item No. 7.6 (I) area Para 2.9 shall be followed

3.0. Mode of measurements & payment

3.1. The relevant specification of item No. 7.6 (I) shall befollowed.
3.2. The rate shall be for a unit of one cubicmeter.

7.17.(B) Coursed rubble masonry with stone of approved quality in foundation and plinthin cement mortar 1:5 (1 cement : 5 coarse sand) etc.complete.

1.0. Materials &Workmanship

The relevant specifications of item No. 1.17 (A) shall be followed except that the proportion of cement mortar shall be C.M. 1:4 (1 cement : 5 coarse sand)

2.0. Mode of measurement &payment

2.1. The relevant specification of item No. 7.17 (A) shall befollowed.
2.2. The rate shall be for a unit of one cubicmeter.t

7.17 (C) Coursedrubblemasonrywithstoneofapprovedqualityinfoundationandplinthin C.M. 1:4 (1 cement : 4 coarse sand) etc. complete)

1.0. Materials &workmanship

The relevant specifications of item No. 7.17 (A) shall be followed except that the proportion of mortar shall be C.M. 1:4 (1 cement : 4 coarse sand)

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 7.17 (A) shall befollowed.
2.2. The rate shall be for a unit of one cubicmeter.

7.17(D) Coarsedrubblemasonrywithstoneofapprovedqualityinfoundationandplinthin c.m. 1:3 (1 cement : 3 coarse sand) etc. complete.

1.0. Materials andWorkmanship

1.1. The relevant specification of item No. 7.17 (A) shall be followed except that the proportion of mortar shall be C.M. 1:3 (1 cement : 3 coarsesand)

2.0. Mode of .measurement &payment

2.1. The relevant specification of item No. 7.17 (A) shall befollowed.
2.2. The rate shall be for a unit of one cubicmeter.

7.19(A) Coarsedrubblemasonrywithstoneofapprovedqualityforstructureaboveplinth level up to floor two level in C.M. 1:6 (1 cement : 6 coarse sand) etc.complete.

1.0. Materials &Workmanship

1.1. The relevant specification of item No. 7.17 (A) shall be followed except that the coursed rubble masonry work shall be carried out for superstructure above plinth level up to floor twolevel.
1.2. Single or double scaffolding may be used. The scaffolding shall be strong and sound. In case single scaffolding is used, the holes shall be carefully made good asdirected.

2.0 Mode of measurement &payment

2.1. The relevant specifications of item No. 7.17 (A) shall befollowed.
2.2. The rate shall be for a unit of one cubicmeter.

7.75. Precast concrete block masonry (including quoin block, jamb blocks, closeretc.)with solid concrete blocks of approved size made of cement concrete 1:3:6 Mix. (1cement : 3 coarse sand : 6 granted stone aggregate of 20 mm. and down gauge) in foundation and plinth in cement mortar 1:6.

1.0. Materials

(a) Aggregate shall conform to M-12. (b) Sand shall conform to M-6. (c) Cement shall conform toM-3.
1.1. The solid cement concrete blocks shall be precast with concrete of 1:3:6 mix (1 cement: 3 coarse sand : 6 graded stoneaggregate)
1.2. A block shall be deemed to be solid if the solid materials is not less than 75% of the total volume of the blocks calculated form overalldimensions.
1.3. The concrete mix used for block shall be one of thefollowing:
1.4. The actual size of the block shall be one of thefollowing:
Size : A. 39 x 30 x 19 cms. Size-B 39 x 20 x 19 cms. Size C 39 x 10 2 19 cms.
The size other than those specified above may be used with the approval of Engineer-in-charge.
1.5. The blocks may be either machine made or hand made. The concrete mix, the mixing of concrete the manufacture of blocks, curing and drying shall be in accordance with para-6 to 10 under I.S. : 2185-1967.
1.6. Faces of blocks shall be flat and rectangular Surface finish shall be rendered smooth or plastered with cement mortar 1:3 coarsesand)
1.7. The average compressive strength of eight blocks when determined in the manner described-inI.S.

2185 -1967 shall not be less than 50 Kg/Sq. Cm. of gross area. The strength of lowest individual block shall not be less than 75 percent of average compressive strength of eight blocks.

1.8. Concrete blocks shall be stored and stacked property in such a way as to avoid any contract with moisture at site. They shall be stock plied on planks or other supports free from contract with ground and covered to protect against wetting. Cement mortar of proportion 1:6 shall conform toM-11.

2.0. Workmanship

2.1. The blocks need not wetted before of during laying in the walls. In case climatic conditions so required, the top and the sides of block may only be slightly moistures so as to prevent absorption of water from the mortar and ensure the development of required bond withmortar.

2.2. Operations of laying precast cement concrete block masonry shall be carried out in accordance with instructions detailed in I.S. : 6042 -1952. The mortar shall not be spread so much ahead of theactual laying of the units that it tends to stiffen and loose, its plasticity, thereby resulting in poor bond. For most of the work, the joints, both horizontal and vertical shall be 10 mm. thick except in the case of extended joint, construction, the mortar joints shall be struck off flush with wall surface and when themortar has stated stiffening, it shall be compressed with rounded or U-shaped tool. The mortar shall be pressed against the units with a jointing tool after the mortar has stiffened in effect intimate contract between the mortar and the masonry unit arid obtained a weather tightjoint.

2.3. Quoins andclosures:

Special quoins blocks (with a return face equal to half the length of normal face) shall be cast for ail building blocks and slabs for external work. Proper half closures shall be cast and not cut form full size blocks. The returned ends of blocks for door windows revels and quoins shall be finished with a fair face in the mould.

2.4. Only double scaffolding shall be used. The scaffolding be strong and sound. No holes in the masonry for supporting shall beallowed.

2.5. Curing : The curing of concrete block masonry shall be carried our for 7days.

3.0. Mode of measurements &payment

3.1. The relevant specifications of item No. 7.6 (I) shall befollowed.

3.2. The work of concrete block masonry in foundation and plinth shall be measured under thisitem.

3.3. The rate shall be for a unit of one cubicmeter.

7.82 (A) Precast concrete block masonry in partition walls 10 cms. thick with solid block of approved size (including quoins, blocks, jamb blocks closer etc) made of C.C. 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregates 20 mm. and down gauge) in C.M. 1:4.

1.0. Materials:

1.1. The relevant specification of item No. 7.75 shall be followed except that the precast concrete blocks shall be of size suitable for 10 cms. size partition wall i.e. size c and the proportions of cement mortar shall be in cement mortar 1:4 (1 cement : 4 coarsesand).

2.0. Workmanship

The relevant specifications of item No. 7.75 shall be followed except that the work shall be for precast concrete block partition walls of 10 cms. thickness.

3.0. Mode of measurement &payment

3.1. The relevant specifications of item No. 7.75 shall befollowed.

3.2. The rate shall be for a unit of one cubicmeter.

7.0.0.1. White stone .masonry block in coarse in superstructure with stoneofapproved quality in lime mortar 1:1.5 (1 Lime putty 1:5 find sand) including raking out joints etc.complete.

1.0. Materials:

1.1. The stone or bela shall be white hard sand stone or block. The stone shall be sound hard rough and durable. It shall be free form skin. The thickness of bela or block shall not be less than 15 cms. or as directed. The mortar used shall consist. One part of lime putty and 1.50 parts of fine sand. Lime mortar shall conform toM-10.

2.0. Workmanship

2.1. Dressing ofstone:

Stone shall be chiseled on all the sides so that all six sides shall be in a rectangular shape and all the stones shall be so dressed that the bushing of the exposed face shall not project nor depressions for the

general wall surfaces. The size of bela or block shall be as per thickness of the wall to be constructed or as directed.

2.3. Laying:

All the stone shall be sufficiently wetted before laying to prevent absorption of water from mortar. All connected Walls in a structure shall normally be raised up uniformly and regularly. The vertical joint shall not be allowed and also it shall not be more than 12 mm. in thickness.

2.3. Proper bonding shall be made by laying bela or block side by side each other with lime mortar on bed as well as in between two bela or blockvertically.

2.4. Bondstones:

Bond stones or through stones running right across the thickness of the wall shall be provided in walls up to 450 mm. thick. In thicker walls two bela or blocks or laying each other by at least 150 mm. each other shall be provided across the thickness of the wall to bond stone. Such bond stone shall be at least one for every 1.0 sq. mt. area of the wall surface.

2.5. Joints:

All the joints shall be completely filled up with mortar and their thickness shall not exceed by 12 mm. When plastering or pointing is not required to be done, the joints shall be struck flush and finished, simultaneously while laying the stone. Otherwise the joints shall be raked to a minimum depth of 20 mm. during process of laying while mortar is still green.

2.6. Scaffolding:

Single or double scaffolding shall be used. It shall be strong and sound. The holes left in masonry for supporting
shall be made good before plastering.

2.7. Curing:

Green work shall be cured fir a period of 7 days continuously.

3.0. Mode of measurements &payment

3.1. The work shall be measured on the basis of finished dimensions. No dedication shall be made nor extra payment shall be made for thefollowing:

(a) Ends of joint, beams, posts, girders, rafters, purlins, corbels etc., each up to 500 sq.cms. in section (b) Opening each up to 0.10 Sq.m.(c) Small plates and bed plates, bearing of chhajas and like up to 10 cms. depth (bearing or floor and roof shall" be deducted from masonry), (d) Drain holes and recesses for cement concrete blocks to embedded hold fasts of one cubic meter.

7.0.0.2. White stone bela masonry work in partition walls up to 15 cms. thickness inC.M.1:4 (1 cement : 4 coarsesand.)

1.0. Materials and workmanship

The relevant specifications of item No. 7.0.0.1 as above shall be followed except that the proportion of mortar shah be in C.M. 1:4 (1 cement : 4 coarse sand.)

2.0. Mode of measurement &payment

2.1. The relevant specifications of item No. 7.6 (I) shall befollowed.

2.2. The rate shall be for a unit of one cubicmeter.

7.0.0.3. White stone bela masonry block in coarse in superstructure with stone ofapproved quality in C.M. 1:5 (1 cement: 5 coarse sand) including raking the joints etc. complete.

1.0. Materials and Workmanship

The relevant specifications of item No. 7.0.0 1. as above, except that the proportion of cement mortar shall be in C.M. 1:5 (1 cement : 5 coarse sand)

2.0. Mode of measurement &payment

2.1. The relevant specifications of item No. 7:6 (I) shall be followd

2.2. The rate shall be for a unit of one cubicmeter.

7.0.0.4. White stone bela masonry block in coarse in superstructure with stone ofapproved quality in C.M. 1:6 (1 cement : 6 coarse sand) including raking the joints etc. complete.

1.0. Materials and Workmanship

The relevant specifications of item No. 7.0.0.1 shall be followed except that the proportion of cement mortar shall be 1:6 (1 cement : 6 coarsesand)

2.0. Mode of measurement &payment

2.1. The relevant specifications of item No. 7.6. (I) shall befollowed.

2.2. The rate shall be for a unit of one cubicmeter.

SECTION -9

Centering & Form Work

9.1.(A) Providing form work of ordinary timber planking so as to give a rough finish including centering strutting and propping etc. height of propping and centering below supporting floor to ceiling not exceeding 4 m. and removal of the same for in situ reinforced concrete and plain concrete work in foundation, footings, bases of columns, and massconcrete.

1.0. Materials

1.1. The shuttering to be provided shall be of ordinary timber plank and shall conform toM-26.

1.2. The dimensions of scantlings and battens shall conform to the design. The strength of the wood shall not be less than that assumed in thedesign.

2.0. Workmanship

2.1. The form work shall conform to the shape lines and dimensions as shown on the plans and be constructed as to remain sufficiently rigid during the placing and compacting of the concrete. Adequate arrangements shall be made by the contractor toe safe-guard against any settlement of the form-work during the course of concreting and after concreting. The form work of shuttering, centering, scaffolding, bracing etc. shall be as perdesign.

2.2. Clearing and Treatment offorms:

2.2.1. All rubbish, particularly chipping shaving and saw dust shall be removed from the interior of the form
before the concrete work is placed and the-form in contact with concrete shall be cleaned and thoroughly wetted or treated. The surface shall be then coated with soap solution applied before concreting is done. Soap
solution for the purpose shaft prepared by dissolving yellow soap in water to get consistency of paint. Alternatively a coat of raw linseed oil shall be applied after thoroughly cleaning the surface. Care shall be taken
that the coating does not get on construction joint surface and reinforced bars.

2.3. Strippingtime:

2.3.1. In normal circumstances and where ordinary cement is used forms may be struck after expire of followingperiods.

(a) Sides of walls columns and vertical faces of beams.....24 to 48 hours.
(b) Beam soffits, (props, left under).....7 days.
(c) Removal of propsslabs:
(i) Slabs spanning up to 4.5.m.....7days.
(ii) Spanning over 4.5 mm.....14days.
(d) Removal of props t beams andArches:
(i) Spanning up to 6mm.....14days.
(ii) Spanning over 6 m.....21 days.

2.4. Procedure when removing the formwork:

2.4.1. All form work shall be removed without such shock or vibrations as would damage the reinforced concrete surface. Before the soffits form work and struts are removed, the soffits and the concrete surface shall be exposed where necessary in order to ascertain that the concrete has sufficientlyhardened

2.5. Centering:

2.5.1. The centering to be provided shall be got approved. It shall be sufficiently strong to ensure absolute safety of the form work and concrete work before, during and after pouring concrete. Watch should be kept to see that behavior or centering and form work is satisfactory during concreting. Erection should also he such that it would allow removal of forms in proper sequence without damaging either the concrete or the forms to beremoved.

2.5.2. The props of centering shall be provided on firm foundation or base of sufficient strength to carry the loads without anysettlement.

2.5.3. The centering and form work shall, be inspected and approved by the Engineer-in-charge before concreting. But this will not relieve the contractor of his responsibility for strength,-adequacy and safety of form work and centering. If there is a failure of form work or centering, contractor shall be responsiblefor

the damages to property.

2.6. Scaffolding:

2.6.1. All scaffolding, hoisting arrangements and ladders etc., required for the facilitating of conceding shall be provided and removed on completion of work by contractor at his own expense. The scaffolding, hoisting arrangements and ladders etc. shall be strong enough to with sand all live, dead and impact loads expected to act and shall be subject to the approval of the Engineer-in-charge. However contractor shall be solely responsible for the safety of the scaffolding, hoisting arrangement, ladders, work and workman etc.

2.6.2. The scaffolding, hoisting arrangements and ladder shall allow easy approach to the work spot and afford easyinspection.

2.6.3. The rate is applicable to all condition of working and height up to 4 mts. The rate shall include the cost of materials and labour for various operations involved suchas:

(a) Splayed edges, notching, allowance for overlaps and passing at angles, battens centering, shuttering propping, bolting, wedging easing, striking andremoval.

(b) Filleting to form stop chamfered edges or splayed external angles not exceeding 20 mm: width to beams, columns and thelike.

(c) Temporary openings in the forms for pouring concrete, if required removing rubbishetc.

(d) Dressing with oil to prevent adhesion of concrete with shutteringand.

(e) Raking or circularcutting.

2.7. Re-Use:

2.7.1. Before re-use, all from shall be inspected by Engineer-in-charge and their suitability ascertained. The forms shall be scarred, cleaned and joints are gone over, repaired where required. Inside surface shall be retreated to prevent adhesion ofconcrete.

3.0. Mode of Measurements &Payment

3.1. From work shall be measured as the area in square meters to shuttering in contract with concrete except in the case of inclined member and portion of curved profile and upper side in which case on area of underside shall be measured forpayment.

3.4. From work to secondary beams shall be measured up to the sides of main beams but no deduction shall be made form the form work of the main beam at the inter section point. No deduction shall be made form the form work of a column at inter section ofbeams.

3.5. The rate is for the completeditem

3.6. The rate shall be for a unit of one sq.meter.

9.1.(A) (i) Extra for providing from work of ordinary timber planking so as to give a rough finish including centering, shuttering and propping etc., height of propping and centering below supporting floor to ceiling is between 4 to 5 m. and removal of the same for in situ reinforce or plain concrete work in foundations, footings, bases of columns etc. and massconcrete.

1.0. Materialsworkmanship

1.1. The relevant specification of item No. 9.1. (A) shall be followed except they the height of propping and centering below supporting floor to ceiling exceeding 4 m. but not exceeding 5m.

2.0. Mode of measurements andpayment

2.1. The payment shall be made extra over and above the payment made up to 4 m. height. Therelevant specifications of item No. 9.1.(A) shall be followed. The rate shall be for a unit of one sq. meter. **9.1.(B)(i)**

Providing from work of ordinary timber planking so as to give a rough finish including centering, below supporting floor to ceiling not exceeding 4 m. and removal of the same for in situ reinforced and plain concrete work in flat surface such as soffits of slabs, landing and the like floors etc. up to 200 mm. inthickness.

1.0. Materials &Workmanship

1.1. Relevant specifications of item 9.1. (A) shall be followed except that work is to be carried out for flat surfaces such as soffits of slabs, landings, and the like fop floors etc. up to 200 rnrn, inthickness.

2.0. Mode of measurement andpayment

2.1. The relevant specifications of item No. 9.1 (A) shall befollowed.

2.2. The rate shall be for a unit of one sq.meter.

9.1.(B)(ii) Providing form work of ordinary timber planking so as give a rough finish including centering shuttering, strutting and propping etc. height of propping and centering below supporting floor to ceiling not exceeding 4 m. and removal of the same for in situ reinforced and plain concrete work in flat surface such as soffits of slabs, landings, and the like floors etc. above 200 mm. in thickness.

1.0. Materials andWorkmanship

1.1. Relevant specifications of item No. 9.1 (A) shall be followed except that the work is to be carried out for flat surfaces such as soffits of slabs, landings, and the like for floors etc. up to 200 mm. inthickness.

2.0. Mode of measurement andpayment

2.1. The relevant specifications of item No. 9.1 (A) shall befollowed.

2.2. The rate shall be for a unit of sq.meter.

9.1.(C) Proving form work of ordinary timber planking so as to give a rough finishincluding centering shuttering, strutting and propping etc. height of propping and centering below supporting floor to ceiling not excluding 4 m. and removal of the same for in situ reinforced concrete and plain concrete work in vertical surface such as walls (any thickness)partitions.

1.0. Materials and Workmanship

The relevant specifications of item 9.1 (A) shall be followed except that the form work shall be carried out for vertical surfaces such as walls of any thickness, partitions etc.

2.0. Mode of measurement andpayment

2.1. The relevant specifications of item No. 9.1 (A) shall befollowed"

2.2. The rate shall be for a unit of sq.meter.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item No.9.1 .(A) shall befollowed.

1.2. The rate shall be for a unit on one sq.meter.

9.1.(G)(i) Providing form work of ordinary timber planking so as to-give a rough finish including centering, shuttering and propping etc. height of propping and centering below supporting floor to ceiling not exceeding 4 m. and removal of the same for in situ reinforced and plain concrete work columns, pillars, ports, and struts, square rectangular, polygonal inplan.

1.0. Materials andWorkmanship

1.1. The relevant specification of item No. 9.1. (A) shall be followed except that the work is for columns, pillars, posts and struts, square, rectangular, polygonal inplan.

2.0. Mode of measurement andpayment

2.1. The relevant specification of item No. 9.1. (A) shall befollowed.

2.2. The rate shall be for a unit of one sq.meter.

9.1.(H)(I) Providing form work of ordinary planking so as to give a rough finish including centering, shuttering, strutting and propping etc. height of propping and centering below supporting floor to ceiling not exceeding 4 m. and removal of the same for in situ reinforced and plain concrete work in side and soffits of beam haunchings, cantilevers, girders, bressumers, and lintels not exceeding 1 m.depth.

1.0. Materials andWorkmanship

1.1. The relevant specification of item No. 9.1 (A) shall be followed except that the .work is for sides and soffits of beams, haunting cantilevers girders, bressumers and lintels not exceeding 1 M. indepth.

2.0. Mode of measurement andpayment

2.1. The relevant specifications of item No. 9.1 (A) shall befollowed.

2.2. The rate shall be for a unit of one sq.meter.

9.1.(H)(2) Providing form work of ordinary timber Planking so as to give a rough finish including centering, shuttering, strutting and propping etc. height of propping and centering below supporting floor to ceiling not exceeding 4 m. and removal of the same for in situ reinforced and plain concrete work in sides and soffits of beams, haunchings, cantilevers, girders, bressumers and lintels exceeding 1 m. indepth.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item No. 9.1.(A) shall be followed except that the work is for side and soffits of beam hunchings, girders, bressumers and lintels, exceeding 1 m. indepth.

2.0. Mode of measurement andpayment

2.1. The relevant specifications of item No 9.1.(A) shall be followed except that the work is for side and soffits of beams haunting cantilevers, girder bressumers and lintels, exceeding 1 m. indepth.

2.2. The rate shall for a unit of one sq.meter.

9.1.(i) Providing from work of ordinary timber planking so as to give a rough finish including centering, shuttering and propping etc. height of propping and centering below supporting floor toe ceiling not exceeding 4 m. and removal of the same for situ reinforced and plain concrete work in edges of slabs and breaks in floor andwalls.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item No. 9.1. (A) shall be followed except that the work is for edges of breaks in floors andwalls.

2.0. Mode of measurements andpayment

2.1. The length and breadth shall be measured nearest to oneCm.

2.2. The. rate shall be for a unit of one Sq.meter.

9.1.(K) Providing form work of ordinary timber planking so as to give a rough finish including centering shuttering, strutting and propping etc. height of propping and centering below supporting floor to ceiling not exceeding 4 m. and removal of the same in situ reinforced and plain concrete in small surface such as cantilevers ends, brackets and ends of the steps., caps and bases to pilasters and columns and the like.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item No. 9.1.(A) shall be followed except that work is for small as cantilever ends, brackets and ends of steps, caps and bases to pilasters and columns and thelike.

2.0. Mode of measurement andpayment

2.1. The relevant specification of item No. 9.1.(A) shall befollowed.

2.2. The rate shall be unit of one sq.meter.

9.1.(I) Providing form work of ordinary timber planking so as to give a rough finish including centering, shuttering, strutting and propping .etc. height of propping and centering below supporting floor to ceiling not exceeding 4 m. and removal of the same for in situ reinforced and plain concrete in chullah hoods, weather sheds, chhajas, corbels etc. includingedges.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item No. 9.1 (A) shall be followed except that the work is for chullah hoods, weather-sheds, chhajas, corbels, etc. including edges of thesame.

2.0. Mode of measurements andpayment

2.1. The relevant specification of item No. 9.1. (A) shall befollowed.

2.2. The rate shall be for a unit of one squaremeter.

9.1.(M) Providing from work of ordinary timber planking so as to give a rough finish including centering, shuttering and propping etc. height of propping and centering below supporting floor to ceiling not exceeding 4 m. and removal of the same for in situ reinforced and plain concrete work in staircase with slopping or stepped soffits including risers and stringers excludinglanding.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item No. 9.1.(A) shall be followed except that the work is for staircases, with slopping or stepped including risers and stringers excludinglanding.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 9.1. (A) shall befollowed.

2.2. The rate shall be for a unit of one sq.meter.

9.1.(Q) Providing form work of ordinary timber planking so as to give a rough finish including centering

shuttering, strutting and propping etc. height of propping and centering below supporting floor to ceiling not exceeding 4 m. and removal of the same for In situ reinforced and plain concrete work in vertical fins and vertical sun-breakers.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item No. 9.1. (A) shall be followed except that the work is for vertical fins and vertical sunbreakers.

1.2. The rate shall be for a unit of one sq.meter.

9.7. Extra for providing form work with sweating of steel sheets so as to give a fair finish in :

(A) Foundation, footings, base of columns etc. massconcrete.

(B) Flat surfaces such as soffits, of slab landing and thelike.

(i) Floors etc. up to 200 mm. inthickness.

(ii) Floors etc. above 200 mm. inthickness.

(C) Vertical surfaces such as walls (Any thickness)partitions.

(D) Columns, pillars posts andstruts.

1. Square, rectangular, bressumers, and lintels not exceeding 1 mm.depth.

2. Sides and soffits and beams, beam haunchings, cantilevers, girders, breassumers and lintels exceeding 1 mm. indepth.

(I) Edges of slabs, and breaks in floors and walls.

(K) Small surfaces such as cantilever ends, brackets, and ends of steps, caps and bases to pillars and columns includingedges.

(L) Chollar woods, weather sheds, chhajjas, corrodes etc. and thelike.

(M) Stair cases sloping or stepped soffits, including risers, skinners excludinglanding.

(Q) Vertical fine and vertical sun breakers.

1.0. Materials andWorkmanship

1.1. The relevant specification of item No. 9.1 .(A) to (Q) shall be followed except that the extra rate shall be paid for using sheathing of steel sheets, and plates of steel or plywood instead of ordinary timber plank, to obtain a desired smooth exposed finish of surface. The surface shall be presentable without furthertreatment.

2.0. Mode of measurements andpayment

2.1. The measurement of form work shall be taken for the work done with steel sheathing, extra over and above the rate of form work of respective item ' from work done. The relevant specification of respective item No. 9.1. (A) to (Q) shall befollowed.

2.2. The rate shall be for a unit of one sq.meter.

SECTION 10
Wood Work, Doors & Windows

10.1.(A) Providing wood work in frames of doors, windows, clerestory windowsandother similar work, Wright, framed and fixed in position, Indian Teakwood.

1.0. Materials

Wooed in frames shall conform to M-29.

2.0. Workmanship

2.1. The item covers the requirement of frames for doors, windows, clerestory windows, their supply andfixing.

2.2. Frames:

2.2.1. All members of frames shall be exactly at right angles. The right angle shall be checked from inside surfaces of the-frames of the respectivemembers.

2.2.2. All members of frames shall be straight without any warp of bow and shall have smooth surfaces well planed on the three sides exposed at right angles to each other. The surfaces touching the wall may not be planed unless it is required in order to straighten up the member or to obtain the overall sizes within the tolerances asspecified.

2.2.3. Frame shall have dovetail joins. When clerestory windows in included, it shall be provided by having full length one piece post for door or windows and clerestory window extending the frame on top at the head to the required extent. Horns shall not be provided in the head of the frame. When no sills are provided, the vertical posts of the frame in the ground floor shall be embedded in the sill masonry for 10 cm. on upper floors, the vertical posts shall be fixed in the floor or masonry by forming notches 10 mm. deep. Slight adjustment of spacing as necessary shall be done to have the hold fasts in the joints of masonry; course. The frame shall be erected in position and held plumb with strong support form north sides and built in masonry as it is being built. The transom shall be through tenoned into the mortises of the jamb pot to the full width of the jamb post and the thickness of the tenon shall be not less than 15 mm.

2.3. Tolerance:

Unless specially mentioned otherwise tolerance of + 1.5. mm shall be allowed for each wrought face.

2.4. The tenons shall be closely fitting into the mortises and suitably pinned with wood dowels not less than 10 mm. dia. meter. The depth of rebates for housing the shutter shall be as shown in the detailed drawing or asdirected.

2.5. The concrete surface of tenon and mortise shall be treated before putting together with an adhesive of approvedmake.

2.6. Minimum number of three hold-fasts shall be fixed on each side of door and windows frames, one at the center point and the other two at 30 mm. from the top and bottom of the frames. In case of windows and ventilators frames. The size c. each hold-fast shall be 300 x 25 x 6 mm. and of mild-steel with split end. The hold fasts shall be fixed with screws toframes.

2.7. Mild steel hold fasts shall be protected with a coating of coal asphalt tar. The surface of frame abutting the masonry or concrete faces shall be properly treated by applying a coat of approvedcoating.

3.0. Mode of Measurements andpayment

3.1. The linear dimensions shall be measured correct up to 1 cm. The quantity shall be worked out correct to places of decimals of cu.m.

3.2. The rate shall be for a unit of 10 cu.diameter.

10.4.(A) Providingworkintrusses,purloins,falters,posts,postplates,wallplates,andlike wrought, framed, hoisted and fixed in position, Indian teakwood.

1.0. Materials

The teak wood shall conform M-29.

2.0. Workmanship

2.1. The relevant specifications of item No. 10.1.(A) shall be followed except that wood work shall be carried mi* in trusses, purloins, falters, posts, plates, wall plates and like wroughtframed.

2.2. The work shall be carried out as per detailed drawings supplied by the Department asdirected;

2.3. The length of the each member shall be in one piece or asdirected.

3.0. Mode of measurement and payment

The length, breadth and depth shall be measured nearest to1cm. of unfinished member.The rate shall be for a

unit of 10 cubic Decimeter.

10.5. (A) Providingwoodworkinframesoffalseceilingpartitionetc.swanandputupin position, Indian teakwood.

1.0. Materials

The teak wood shall conform to M-29.

2.0. Workmanship

The relevant specification of item No. 10.1.(A) shall be followed except that the wood work shall be for false, ceiling, partitions, etc. swan and put inposition.

3.0. Mode of measurement andpayment

3.1. The relevant specifications of item No. 10.1.(A) shall befollowed.

3.2. The rate shall be for a unit of Ten cubicDecimeter.

10.12.(A)(i) Providing and fixing 35 mm. thick fully paneled shutters for doors, windows and clerestory windows including anodised aluminum butt hinges with necessary screws. Indian Teak Wood.

1.0. Materials.

1.1. Wood for shutter shall conform to M-29. 2. Glass shall conform to M-38. 3. Anodised aluminum butt hinges shall conform toM-43.

2.0. Workmanship

2.1. The item covers the requirement of preparation of shutters for doors, windows, clerestory windows, their supply andfixing.

2.2. Shutters:

2.2.1. Paneled shutters shall be constructed in the form of timber frame work of styles and rails with panel inserted of type as specified in the detailed drawings. Panel shall be fixed by providing grooves in the style and rails. The styles and rails shall be joined to each other by mortise and tenon joints at right angles.

2.2.2. All members of the shutters shall be straight without any warp or bow and shall have smooth, well planed faces at right angles to eachother.

2.2.3. The size of styles and rails shall be as per drawings or as directed. Styles and rails of shutters shall be made of one pieceonly.

2.3. Timberpaneling:

2.3.1. Thickness of the panel shall be as specified in the item as shown in the drawing or as directed. If the panel is made from more than one piece the pieces shall be finished as shown in the detailed drawings and shall be joined with continuous groove with specified size. The end pieces of the panel and the top and bottom of the panel shall be provided with continuous tongue to frame into groove of the frame shutter. An air space of 1.5 mm. shall be left in the groove of frame of shutter while framing the panels init.

2.3.2. The faces of the panel as well as various pieces of the panel shall be- closely fitted to the sizes of thegrooves.

2.3.3. Finishing of the corners of raised panel edges shall be done as shown in drawings or asdirected.

2.3.4. The thickness specified shall be finished thickness and no tolerance will bepermitted.

2.5. Fixtures andFastenings:

2.5.1. The rate shall include anodised butt hinges including fixing with iron screws. The size and number of hinges shall be as per table given inannexure-1.

3.0. Mode of measurement andpayment

3.1. The rate for shutter includes cost of providing block and cleat for keeping the shutter in open position ifdirected.

3.2. The dimension of the shutter shall be measured clear size of the shutter in close position between the grooves of theframe.

3.3. The rate shall be for a unit of one sq.meter.

19.12.(A)(ll) Providing and fixing 35 mm. thick fully shutters for doors, windows and clear story windows including anodised aluminum but hinges with necessary screws, Indian teak wood.

1.0. Materials

Teak wood shall conform to M-29 Glass shall conform to M-38. Anodised aluminum butt hinges shall conform to M-43.

2.0. Workmanship

2.1. The relevant specifications of item No. 10.12 (A) I shall be followed except that the 35 mm. thick shutters full glazed for doors, windows and clear story windows including anodised aluminum butt hinges with necessaryscrews.

2.2. Glazing:

2.2.1. The glass panels shall be embedded in putty and secured to the rebate by wooden beads, or moulding shape and size as approved with counter sunk screws of suitablesize.

2.2.2. The glass panels shall be properly cut to fit the rebates of he frames and sashes fully with a slight minus margin of about 1.5. mm. on all sides. Before blazing, the frame shall be primed and prepared for painting so that wood may not draw oil out of putty. The rebate shall be putted to an extent to provide bedding all round theglass.

2.2.3. The glass shall then be bedded in putty and fitted to frames with wooden heads or moulding as directed and secured with counter sunk screws. The screws shall be spaced not more than 100 mm. from each corner and not more than 200 mm.apart.

2.2.4. The size of the rebate in the frame and size and shape of beads of moulding shall be as per detailed drawings or as directed. The beads or mouldings shall have miteredcorners.

3.0. Mode of measurement andpayment

3.1. The relevant specifications of item No. 10.12 (A) (I) shall befollowed.

3.2. The rate shall be for a unit of one sq.meter.

10.12(A)(III) Providing and fixing 35 mm. thick partly paneled and party glazed shutters, or doors, windows, including anodized aluminum butt hinges with necessary screws, Indian teak wood.

1.0. Materials

Teak wood shall conform to M-29. Glass shall conform to M-38. Anodised aluminum but hinges shall conform to M-43.

2.0. Workmanship

The relevant specifications of item No. 10.12.(A) (II) shall be followed except that the 35 mm. thick shutter shall be partly paneled and partly glazed for doors, windows, clear story windows etc. as per drawings.

3.0. Mode of measurement andpayment

3.1. The relevant specifications of item No. 10.12 (A) (I) shall befollowed.

3.2. The rate shall be for a unit of one sq,meter,

10.13.(A)(I) Providing and fixing 35 mm. thick full paneled, shutters for doors, windows and clear story windows including black enameled M.S. Butt, hinges with necessary screws, Indian Teak Wood.

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 10.12 (A) (II) shall be followed except that the hinges shall be of black enameled M.S. Butt hinges. The hinges, bolts and other items of iron mongery with moving parts shall be properly oiled by the contractor before handing over thebuilding.

2.0. Mode of measurement andpayment

2.1. The relevant specifications of item No. 10.12 (A) (I) shall befollowed.

2.2. The rate shall be for a unit of one sq.meter.

10.13.(A)(ll) Providing and fixing 35 mm. thick full glazed shutters for doors, windows and clear story windows including black enameled M.S. Butt, hinges with necessary screws, Indian Teak Wood.

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 10.12 (A) (II) shall be followed except that the hinges shall be of black enameled M.S. Butt hinges. The hinges bolts and other items of iron mongery with moving parts shall be properly oiled by the contractor before handing over thebuilding.

2.0. Mode of measurement andpayment

2.1. The relevant specifications of item No. 10.12 (A) (I) shall befollowed:

2.2. The rate shall be for a unit of one sq.meter.

10.13(A)(III) Providing and fixing 35 mm. thick partly paneled and partly glassed shutters for doors, windows, and clearstory windows including black enameled M.S. Butt hinges with necessary screws, Indian TeakWood.

1.0. Materials & Workmanship

The relevant specification of item No. 10.12 (A) (III) shall be followed except that the hinges shall be of black enameled M.S. butt hinges, bolts and other items of ironmongery with moving parts shallbe

properly oiled by the contractor before handing over the building.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 10.12. (A) (I) shall befollowed.

2.2. The rate shall be for a unit of one sq.meter.

10.15.(A)(I) Providingandfixing25mm.thickpaneled,shuttersforcup-boardsetc.including anodised aluminum butt hinges with necessary screws, Indian TeakWood.

1.0. Materials

First class Indian teak wood for shutters shall conform to M-29. Glass shall conform to M-38. Anodised aluminum butt hinges shall conform to M.43.

2.0. Workmanship

2.1. The relevant specification of item No. 10.12. (A) (I) shall apply except that the thickness of shutter shall be 25 mm. forcup-boards.

3.0. Mode of measurement &payment

3.1. The relevant specifications of item No. 10.12 (A) (I) shall befollowed.

3.2. The rate shall be for a unit of one sq.meter.

10.15.(A)(H) Providing and fixing 25 mm. thick fully glazed shutters for cup-boardsetc.including anodised aluminum butt hinges with necessary screws, Indian teakwood.

1.0. Materials & Workmanship

The relevant specifications of item No. 10.12.(A) (I) and 10.12 (A) (II) shall be followed except that the thickness of shutters shall be 25 mm. thick and partly paneled and partly glazed shutters as per drawings for cup-boards.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 10.12 (A)(l) shall befollowed.

2.2. The rate shall be for a unit of one sq.meter.

10.15.(A)(IH) Providing and fixing 25 mm. thick partly paneled and partly shutters for cub-boards etc. including anodised aluminum butt hinges with necessary screws, Indian teak wood.

1.0. Materials & Workmanship

The relevant specifications of item No. 10.12.(A) (I) and 10.12 (A) (II) shall be followed except that the thickness of shutters shall be 25 mm. thick and partly paneled and partly glazed shutters as per drawings for cupboards.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 10.12 (A)(l) shall befollowed.

2.2. The rate shall be for a unit of one sq.meter.

10.16.(A)(I) Providing and fixing 25 mm. thick fully paneled, shutters for cup-boards etc., including black enameled M.S. butt hinges with necessary screws, Indian TeakWood.

1.0. Materials &workmanship

1.1. The relevant specifications of item No. 10.12 (A) (I) shall apply except that the wood for shutters shall be Indian teak wood and black enameled M.S. Butt hinges are to be used instead of anodised aluminum butt hinges and thickness of shutter shall be 25mm.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 10.12. (A) (I) shall befollowed.

2.2. The rate shall be for a unit of one sq.meter.

10.16.(A)(H) Providingandfixing25mm.thickfullyglazedshutters for acup-boardsetc., including black enameled M.S. Butt hinges with necessary screws, Indian TeakWood.

1.0. Materials & Workmanship

The relevant specifications of item No. 10.15.(A) (I) shall be followed except that the fully glazed shutters of 25 mm. thickness shall be of India Teak Wood fixed in position with black enameled butt hinges for cup-boards.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 10.12 (A) (I) shallfollowed.

2.2. The rate shall be for a unit of one sq.meter.

10.16.(A)(lll) Providing and fixing 25 mm. thick partly paneled and partly glazed shutters for cupboards etc., including black enameled M.S. butt hangs with -necessary screws. Indian Teak Wood.

1.0. Materials

The relevant specifications of item No. 10.15 (A) (I) & 10.15 (A) (II) shall be followed except that theshutters shall partly paneled and partly glazed of 25 mm. thickness of Indian Teak Wood fixedwith

black enameled butt hinges for cup-boards.

2.0. Mode of measurement &payment

2.1. The relevant specifications of item No. 10.12 (A)-shall be followed.12. The rate shall be foraunit of one sq.meter.

10.23. Providing and fixing 35 mm. thick paneled glazed or paneled and glazed shuttersfor doors, windows, and clearstory windows including anodised aluminum butt hinges with necessary screws. Indian Teak Wood shutters with (A) Plywood,(B) Particle, (C) Hard Board, (D) Asbestos Sheetpanels.

1.0. Materials

Indian teak wood for shutters shall conform to M-29. Glass shall conform to M-38.

(A) Plywood shall conform toM-37.

(B) Particle board shall conform to M-40. Anodised aluminum butt hinges shall conform toM-43.

(C) Hard board shall of best quality and shall be as approved by Engineer-incharge.

(D) A.C. sheet shall conform toM-24.

2.0. Workmanship

2.1. The relevant specifications of item No. 10.12 (A) (I) shall apply to this item except that the work is shuttered with (A) plywood (B) particle board (C) hard board panels (D) A.C. sheets panels as specified in item.

2.2. The shutter shall be prepared by fittings styles and rails (top, bottom, lock and frieze) as for paneled leaves with simple chamfer on edge only. The styles and rails shall be grooved with just sufficient width for receiving panels and plain panels of specified type panels shall be fitted into thegrooves.

3.0. Mode of measurements &payment

3.1. The relevant specifications of item No. 10.t2 (A) (I) shall befollowed.

3.2. The rate shall be for a unit of one sq.meter.

10.24. Providing and fixing 35 mm. thick paneled, glazed or paneled and glazedshuttersfor doors, windows and clearstory windows including black enameled M.S., butt hinges with necessary screws. Indian Teak Wood shutters with (A) Plywood (B) Particleboard (C) Hard Board (D) Asbestos panels.

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 10.23 shall be followed except that the hinges shall be of back enameled M.S. Butt hinges instead of anodised aluminum butt hinges and shutter with (A) Plywood (B) Particle board (D) Hard Board (D) Asbestos sheet panels as specified in item.

2.0. Mode of measurement &payment

2.1. The relevant specifications of item No. 10.12 (A) (I) shall-befollowed.

2.2. The rate shall be for a unit of one sq.meter.

10.30. Providing & fixing flush door shutters, solid core construction with frame of1st class hard wood with cross band and face veneer or plywood face panels including anodised aluminum butt hinges with necessary screws (B) Non-decorative type and block board core. (2) 35 mm.thick.

1.0. Materials

Flush door shall conform to M-30. Plywood shall conform to M-37. Anodised aluminum butt hinges shall conform to M-43.

2.0. Workmanship

2.1. The relevant specifications of item No. 10.23 shall be followed except that the shutters be non decorative type and block board core with face veneer or plywood with 35 mm.thickness.

2.2. Ready made shutters shall be of correct size and shall fit into the door or other openings without excessive scraping of edges. Adding of battens etc., to make up to the size shall not beallowed.

3.0. Mode of measurement &payment

3.1. The relevant specification of item No. 10.12 A (I) shall befollowed.

3.2. The rate shall be for a unit of one sq.meter.

10.37. Extra for using bright finished M.S. Piano hinges instead of anodised aluminumbutt hinges in flush door shutter (A) Nickel Plated Pianohinges.

1.0. Materials andworkmanship

1.1. The relevant specification of item No. 10.30 shad be followed except that the nickel platedpiano

hinges shall be provided and fixed. It shall conform to the latest Indian Standards and shall be got approved by the Engineer-in-charge.

2.0. Mode of measurement &payment

2.1. The extra payment shall be made on sq. M. basis of door over and above item No. 10.30 for providing finish M.S. planed hinges instead of anodised aluminum butthangs.

2.2. The rate shall be for a unit of one sq.meter.

10.39. Extra for providing vision panel not exceeding 0.1 sq. m. in all types of flush doors. (A) Rectangular square.

1.0. Materials andworkmanship

1.1. The relevant specification of item No. 10.30 shall be followed except that the vision panel not exceeding 0.1 sq. m. shall beprovided.

1.2. The glass panels shall conform to M-38 and this item is extra work of providing vision panel rectangular or square not exceeding 0.1 sq. in all types of flushdoors.

2.0. Mode of measurements &payment

2.1. The payment shall be made over of item No. 10.30 for this extra work on shutter in which visions panels areprovided.

2.2. The rate shall be for a unit of one sq. meter of doorarea.

10.51. Providing and fixing 30 mm. thick wire gauze shutters using galvanised M.S. Wire of I.S. gauze designation 85-G with wire of 0.56 mm. dia butt hinges with necessary screws : Indian Teak Wood.

1.0. Materials

Wire gauze ail shall conform to M-36. The teak shall conform to M-29. Anodised aluminum butt hinges shall conform to M-43.

2.0. Workmanship

2.1. Specification for item No. 10.12 A(l)shall be adopted for shutter and fixtures and fastenings except thru

30. mm. thick wire gauze shutter shall be provided.

2.2. Wire gauzeshuttering:

2.2.1. The finished sizes of the wooden components like styles, rails, mountings, shall be as per the paneled doors. Each leaf shall have 2 panels of wire gauze as per drawings or asdirected.

2.2.2. The styles, rails etc. shall b rebated 12 mm. along the side where they receive the gauze The galvanised iron webbing of 0.56 mm. dia mesh shall be used unless otherwise specified. The webbing shall be at 90 to 12 mm. along both sides of the rebate and fixed securely to the styles and rails and fillets of the size 10 mm x 10 mm, shall be securely and neatly fixed with small screws, spaced about 7.5. cm. centers mound the rebate for each panel of webbing,- After the fillets are pressed well into the angle io hole the gauze hi two faces, the exposed edge of fillets shall be neatly rounded. The gauze shall be tightly stretched during fixing The space between the fillet and the rebate where the webbing is bent shall be neatly finished with putty, so that cut end of webbing may not be visible. Each shutter shall be fitted with a pair of anodised aluminum but! hinges with necessary ironscrews.

3.0. Mode of measurement &payment

3.1. The relevant specifications of item No. 10.12 shall befollowed.

3.2. The rate shall be for a unit of one sq.meter.

10.53. Providing and fixing 30 mm. thick wire gauze shutters using galvanised M.S. wireof wire gauze designation 85 G with wire of 0.56 mm. dia. for doors, windows, and clerestory windows including bright finished or/and black enameled M.S. butt hinges with necessary screws. Mango wood or equivalent quality.

1.0. Materials & workmanship

The relevant specification of item No. 10.51 shall be followed except that the hinges to be used shall be bright finish or/and black enameled M.S. butt hinges with screws and the wood shall be used of Mango wood or equivalent quality of non teak wood.

2.0. Mode of measurement andpayment

2.1. The relevant specification of item No. 10.12 shall befollowed.

2.2. The rate shall be for a unit of one sq.meter.

10.54. Extra for providing and fixing galvanised M.S. gauze of I.S. gauge designation 140 G. to doors windows and clerestory windows with wire of dia 0.71 mm. instead of I.S.gauge

designation 85 G. with wire of dia. 0.56 mm.

1.0. Materials &workmanship

1.1. The relevant specification for item no. 10,51 & 10.53 shall be followed for this item except that the diameter of wire shall be 0.71 mm. of I.S. gauge designation 140 G. instead of 596 G. diameter I.S. gauge designation 85G.

2.0. Mode of measurements andpayment

2.1. The payment shall be made extra over and above the payment for galvanised M S wiregauge.

2.2. The rate I.S. gauge designation 85 G. shall of one sq. mt of size of doors and windowsshuttles.

10.74. Providing and fixing 12 mm. thick and 100 mm. wide pellet of flat pressed 3layer veneered particle board solid core with 25 mm. diameter aluminum curtain rod brackets including fixing with 25 mm. x 3 m. M.S. flat 10 long and plug etc.comp.

1.0. Materials

(1) 3 layers veneered particle board solid core snail-conform to M-40 25. mm. diameter aluminum curtain rod and 25 mm. x 3 mm. x 10 cms. long M.S. flat and plugs shall of best approved quality as directed.

2.0. Workmanship

The work shall be done as per drawing and description given in the item of work. The wooden planks shall be planed smooth and oven on the exposed surface.

The pellet shall be fixed Jo level by means of 10 cms. long x 25 mm. x 3 mm. M.S. flat brackets lent in the form of angle and wooden plug fixed in the walls using wood screws. For pelmet up to 1.5 meter long two such brackets shall be used and additional bracket provided for longer pelmet at the rate of one per meter length extra. The curtain rods be fixed by suitable brackets at the ends to the pelmet as directed.

3.0. Mode of measurement andpayment

3.1. Pelmets shall be measured in running meters along the sides andface.

3.2. The rate shall be for a unit of one runningmeter.

10.84. Providing and fixing 40 mm. paneled, glazed or paneled and glazed partitionsfixedto frames with iron screws etc., complete with India teak wood (Frames to be paid separately)

1.0. Materials

Indian Teak wood shall conform to M-29. Glass shall conform to M-38. Iron screws on shall of best approved quality. Plywood asbestos shall conform to relevant specification of materials.

2.0. Workmanship

The work shall be done as per detailed drawing or as directed. The wooden frames shall be of sizes as indicated in the drawing and description of item. They shall be planed and finished smooth and even. The vertical styles and rails shall be framed by tenon and mortise joints.

The panels which may be of planks, asbestos, plywood, glass or any other materials specified shall be fixed in the grooves made in styles and rails or by means of rebate and beading fixed by suitable screws. When glazing is used as panels the glass shall be fixed by using putty in addition to beading, (he putty shall be used before applyingmaterial.

3.0. Mode of measurement and payment

Partitions shall be measured in square meters of the net area of the tiller materials provided. The rate shad be for a unit of one sq.meter.

10.85. Providing and fixing decorative plywood 4 mm. thick in portions including fixingto frames with screws etc., complete with 50 mm. x 12 mm. teak wood beading (Frames to be paidseparately)

1.0. Materials

4 mm. thick decorative plywood shall be of best approved quality. Teakwood beading and screws shall of best approved quality asdirected.

2.0. Workmanship

The relevant specifications shall be same, as per that of item No. 10.84 expect that partitions shall be with 4 rnm. thick decorative plywood and with teakwood beading.

3.0. Mode of measurements and payment

The specifications shall be same as that of item No. 10.84. The rate shall be for a unit of one square meter.

10.86. Providing an fixing plain Asbestos cement sheet 6 mm. thick in partition including fixing to frames with screws etc., complete with 50 mm. x 12 mm. deodar wood beading (Frames to be paid separate)

1.0. Materials

Plain A.C. Sheets shall conform to M-24. Deodar wood beading shall conform to M-29. A.

2.0. Workmanship

The relevant specification of item No. 10.84 shall be followed same except that plain asbestos cement sheet 6 mm. thick shall be used in partition and Deodar wood beading of size 50 x 12 mm. size shall be used.

3.0. Mode of measurement andpayment

3.1. The relevant specifications of item No. 10.84 shrill pp followed except that the rate excludes cost of framework.

3.2. The rate shall be for a unit of one squaremeter.

10.88. Providingandfixinginpartition4mm.thickmediumhardboardapprovedquality including fixing to frames with screws etc., complete with 50 x 12 mm. Teak wood beading (Frame to paidseparated)

1.0. Materials

The hard board shall be 4 mm. thick and of best quality and made as approved. Teak wood beading shall conform to M-29.

2.0. Workmanship

The relevant specifications of item No. 18.84 shall he followed except that the hard board of 4 mm. thickness shall be used in partition and teak wood beading 50 x 12 mm. size shall be used.

3.0. Mode of measurements andpayment

3.1. The relevant specifications of item No. 10.84 shall be followed except that the rate excludes cost of framework.

3.2. The rate shall be for a unit of one squaremeter.

10.96. 26 mm. thick wooden shelves supported on 40 x 40 x 6 mm. T or Ironbracketsfixed at suitable distances not exceeding 75 cms. apart with Mango wood or equivalent quality.

1.0. Materials

The mango wood shall conform to M-29-A. Structural steel shall conform to M-22

2.0. Workmanship

The mango wood or equivalent quality not) teak wood shelves shall be prepared form 25 mm. thick planks. The planks shall be planed smooth. The planks shall be used in single piece up to 30 cms. width. The shelves shall be fitted in potion by fixing 40 x 40 x 6 mm. T or L Iron brackets. The spacing of brackets shall not be more than 75 cms. The 40 x 40 x 6 mm. T or L from brackets shall be fixed firmly in position buy imbibing the same in concrete. The shelves shall be fixed as directed. The season teak wood buttons of size 35 x 12 mm. shall be fixed on open side asdirected.

3.0. Mode of measurements andpayment

3.1. The shelves shall be measured in Sq. meter. The length and breadth of shelves shall be measured net.

3.2. The rate is inclusive of buttonprovided:

3.3. The rate shall be for a unit of one sq.meter.

10.97. 40 mm. thick wood shelves supported on 40 x 40 x 6 mm. T or L Iron bracketsfixed at suitable distance but not exceeding 75 cms. apart with mango wood or equivalent quality.

1.0. Materials & Workmanship

The relevant specifications of item No. 10.96 shall be followed except that the thickness of shelves shall be 40 mm Thick teak wood buttons shall be provided of 50 x 12 mm. on all open sides.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item NO. 10.96 shall be followed.

2.2. The rate shall be for a unit of one square meter.

10.99. Providing and fixing M.S. round or square bars with M.S. flats at required spacing in wooden frames of windows and clerestory windows.

1.0. Materials

M.S. bars and flats shall conform m. 18 and M-22 respectively.

2.0. Workmanship

2.1. The M.S. bars shall be fabricated as shown in the drawing or as directed. It shall conform to I.S. 226-1975 and I.S. 96 and I.S. 1977-1975. The M.S. bars shall be fixed at the requited spacing in mild steel flats, after drilling holes in the latter. The diameter and spacing of these bars shall be as mentioned in the drawing or as directed. The bars shall be passed through drill holes drilled into the mild steels fiats, fixed in the recess in frames. The flats shall be fixed with iron screws.

3.0. Mode of measurements &payment

3.1. The rate shall be for the M.S. round or square bars with M.S. flats provided and fixed in position as per the specifications for the completed item.

3.2. The rate shrill be for a unit of one Kg

10.100.(A) Providing and fixing M.S. Grills of required pattern to wooden frames of windows etc., with M.S. flats at required spacing and frame around, square, or round bars with round headed bolts and nuts or by screws : plain Grill.

1.0. Materials

The structural steel shall conform to M-22

2.0. Workmanship

2.1. The M.S. Grill shall be prepared as per the drawing or as directed for fixing to wooden frames of windows etc.

2.2. The grill shall be fabricated to the designs and patterns shown in the drawings and the weight shall be as directed, and the joints shall be reverted or welded as shown in the plan or as directed. The grill so formed shall be fixed into the frames of the windows etc. before they are erected in position. The outside strip frame of the grill shall be housed to its full thickness into the recess cut into the frame of the windows etc. The grill shall be fixed to the frame with number of bolts and nuts or screws viz. bolt nut/screw per 30 cm. of the length of outer strip subject to minimum of 2 Nos. on each side of the frame or as indicated in the drawing or as directed.

2.3. The bolts and nuts or screws shall be counter sunk and shall be fixed with the top of their heads flush with the face of the frame strips.

3.0. Mode of measurements &payment

3.1. No payment shall be made for weight of screws, bolts nuts etc. only weight of grill shall be paid.

3.2. The rate shall be for a unit of one kg.

10.100.(B) Providing and fixing M.S. Grill of required pattern to wooden frames of windows etc. with" M.S. plates, at required spacing and frame around, square or round bars with round headed bolts and nuts or by screws and with ornamental grill.

1.0. Materials &Workmanship

1.1. The relevant specification of item no. 10.100 (A) shall be followed except that the work is for of ornamental grill.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 10.100 (A) shall be followed.

2.2. The rate shall be for a unit of one Kg.

10.102. Providingandfixingharddrawnsteelwirefabric75x25mm.meshofweightnot less than 7.75 kg. Per sq. M to window frames etc, including 60 x 20 mm. beading of teakwood.

1.0. Materials

Hard drawn steel wire of 75 x 25 mm. mesh shall conform to M-34. Teak wood beading shall conform to M-29.

2.0. The steel wire fabric 75 x 25 mm. mesh of weight of not less than 7.75 kg per Sq.M. to windows frames etc. shall be fabricated as per detail drawings. The wire fabric shall be fixed to windows frame by teak wood beading of 60 x 20 mm. size be by means of screws.

3.0. Mode of measurements &payment

3.1. The wire mesh (Hard drawn) shall be measured net clear opening of frame of windows in which mesh is fitted. Nothing shall be paid extra for fixing mesh in groove below teakwood's-beading.

3.2. The rate shall be for a unit of one sq. Meter.

10.103. Providing and fixing fly proof galvanized M.S. Wire gauge of I.S, Gauge designation85 G. with wire of dia. 0.56 mm. to windows and clerestory windows including 60 x 20 mm. beading of Indian Teak Wood.

1.0. Materials

The fly proof galvanized M.S. wire gauge shall conform to M-36. Teak wood .beading shall conform to M-29. 2.0. Workmanship

The relevant specifications of item No. 10.102 Shall be followed except that fly proof galvanized M.S. wire gauge of I.S. gauge designation 85-G with wire of 0.56 mm. shall be provided.

3.0. Mode of measurement &payment

3.1. The relevant specifications of item No. 10.102 shall be followed.

3.2. The rate shall be for a unit of one square meter.

10.120. Providing and fixing first class Indian teak wood, 75 x 60 mm. molded hand rails in straight lengths completed.

1.0. Materials

First class Indian teak wood shall conform to M-29.

2.0. Workmanship

The teak wood hand rail shall be of size 75 x 60 mm. The hand rail shall be prepared from first class Indian teak wood. The hand rail shall be molded as per detail drawings. The hand rail shall be fixed in straight length as per detail drawings with screws. The relevant specifications of item No. 10.4 shall be followed except that the teak wood work shall be for a railing of specified size.

3.0. Mode of measurements &payment

3.1. The hand rail shall be measured in running meter.

3.2. The rate shall be for a unit of one running meter.

10.0.0.(I) Providing and fixing glazed louvered Glass windows and ventilators with teak wood frame 10 x 75 mm. size including 3 coats of oil painting to wood work etc. complete,

1.0. Materials

Indian teak wood shall conform to M-29. Glass shall conform to M-38.

2.0. Workmanship

The relevant specifications of item No. 10.1 (A) shall be followed for frame work except that the frame work of 10 x7 cms. size of required size ventilators shall be provided with glazed glass louvers. The glass louvers shall be provided as directed. In the groove of 1.25 cms. depth made in frames, the thickness of glass shall be 5 mm. and glass shall be glass of best quality. The ventilation blades shall slope done towards the outside at an angle of 450.

3.0. Mode of measurements and payment

3.1. The area of opening within the frame in which louvers are fixed shall be measured in sq. Meters.

3.2. The rate included painting 3 coats to wood work with ready mix paint.

3.3. The rate shall be far a unit of one square meter.

10.0.0.(II) Providing & fixing with wooden louvers plank 12 mm. thick windows and ventilators with teak wood frame 10x7 cms. size including 3 coats of oil painting to wood etc complete.

1.0. Materials & Workmanship

The relevant specifications of item No. 10.00 (I) shall be followed except that the teak wood planks 12.00 thick louvers shall be provided.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 10.00 (I) shall be followed.

2.2. The rate shall be for a unit of one square meter

SECTION-11
Steel Shutters, Windows, Ventilators]

11.2. (A) Steel work riveted, in built up sections, framed work including cutting, hosting fixing in position and applying a priming coat of red lead paint. In beam and joints, channels, angles tees, flats, with connecting plates or Angle cleats as in main & cross beams, Hop and jack falters, pralines connected to common rafters and the like.

1.0. Materials

The structured steel work shall conform to M-22. Red lead paint shall conform to I.S : 102-1962.

2.0. Workmanship

2.1. The steel sections as specified or required, shall be cut, square and to correct lengths, as per drawings and design. The .cut ends exposed to view shall be finished smooth. No two pieces shall be welded or otherwise jointed to make up the required length of member, except as indicated in the drawing or as directed. All straightening and shaping to form shall be done by application of pressure and not by hammering. Any bending or cutting shall be carried out in suet] a manner as not to impair the strength of the metal. All operations shall be done in cold state unless otherwise directed/permitted.

2.2. Steel riveted or bolted in built up sections, framework.

2.2.1. The steel structure as shown in the drawings or as per direction of the Engineer-in-charge shall be laid out on a level platform to full scale and to full size in parts. A steel tape shall be used for measurements to ensure maximum accuracy.

2.2.2. Wooden templates 12 mm. to 19 mm. thick or metal sheet template shall be made to correspond to each connecting gussets plate and rivet holes shall be accurately marked on them and drilled. The templates shall be laid on the steel members and holes of the steel members shall also be marked for curing. The base of steel column and the .position of Anchor bolts shall be carefully setout

2.2.3. Ail stiffeners shall be formed by pressure and where practicable the metal shall not to be cut and welded in making these. In major work', or whore so specified, shop drawings giving complete details and information for the fabrication of the component parts of the structure including location, type, size, (origin and details or rivets, bolts or weld shall be prepared in advance of the actual fabrication and as distinctly marked or stenciled with paint with the identification mark as given in the stop drawings. The bars shall be thickened at the ends, so as to provide for screwed threads and gradually tapered off to meet their normal section.

Great accuracy shall be observed in fabrication of various member, so that these can be assembled without being unduly packed, stained, or forced into position and when build up, shall be true and tree from twists, brinks, buckles, or open joints.

Before making holes in individual members for fabrication the steel work intended to be riveted or belted together shall be as ambled or clamped properly and tightly so as to ensure close abutting or lapping or the surfaces of the different members. All softeners shall bear tightly both at top and bottom without being drawn or caulked. The abutting joints shall be cut or crossed true and straight and fitted close together. Web splice plates and tillers under stiffened shall be cut to fit within 3 mm. or flange Angles Web plates of Girders shall have no cover. Plates shall have their ends flush with the top of angles forming the flanges unless otherwise required. The web plates when spiced ^.hall have clearance of not more than 6 mm. The erection, clearance for created ends of members connecting steel shall preferably be not greater than i.5 mm. The erection clearance at the ends o' beams without web cleats shall not be more than 3 mm. at each end but where for a practical reason greater clearance is necessary, suitably designed seating shall be provided.

Pains and rollers shall be accurately tuned to gauge. These straight and smooth and free from flows. The roller bearing shall be provided with adequate arraignments fur holding the girders or truss resting on it. In columns caps and bases, the ends of shifts together with the attached gussets Angles, channels etc after riveting together shah be accurately mechanized so that the parts connected Butt against each other over the entire surfaces of contact connecting angles or channels shall he fabricated and placed in position with greater accuracy so that they are nut unduly reduced in thickness by machining. The ends of bearing stiffeners shall be mechanized or ground to tit tightly both at the top and bottom, Alt holes shall generally be drilled to the required size and at required, position. Sub punching shall be permitted provided it is done 3 mm. or less in diameter and reamer thereafter to the require size. The holes for rivets and bolts shall be larger by 0 4. to 6 mm. than the nominal diameter of rivets or black holts depending upon me diameter ofrivets.

Holes shall have their axis perpendicular to the surface bored through. The drilling or remarrying shall be free

from burrs, and the holes should be clean and accurate holes for counter sunk bolts shall be made in such a mariner that their heads fit flush with the surface after fixing. The fabrication work shall be completed in workshop as far as it is practicable to do so. Site joints shall be done with rivets and fitted bolts or black bolts, as shown in the drawings or as directed. Generally the following principles shall govern the use of reverts turned and fitted bolts, and block bolts.

(i) Rivets and turned and fitted bolts shall be used where the connections is such that slip under load has to be avoided.

(ii) Black bolts may be used very sparingly where a force is carried through a connection without impact, vibration or reversal or stresses.

2.2.4. Riveting:

The parts assembled for riveting shall be in close contact with each other and the bearing stiffeners shall bear tightly both at top and bottom without being drawn or caulked. Members to be riveted shall be properly pinned or bolted and rigidly held to gather while riveting. Drifting of holes shall no! be permitted Except to draw the parts together and the drifting tools so used shall have maximum diameter not exceeding, the nominal diameter of rivets or bolls. Drifting done during assembling shall not distort the metal 01 enlarge theholes.

The shanks of rivets shall project beyond the plate-surface sufficiently so as to fill hole thoroughly and form the required head after riveting.

The riveting shall be done by hydraulic or pneumatic process. However, where such facilities air not available, hand riveting may be permitted. The rivet shall be heated red hot, care being taken to control the temperature of heating so as not to burn the steel. Rivers of diameter less than 10 mm. may be fitted cold. Rivets shall be of heat finish with heads full and of equal size. All loose, burnt or badly formed reverts with concentric or deficient heads shall be cut out and replaced. The heads of rivets shall be central to shanks and shall grip the assembled member firmly. In cutting out rivets, care shall be taken so as not be injure assembled members, caulking or reequipping shall not bepermitted.

For testing rivets, a hammer weighing approximately 0 25 kg shall be used. Both heads of the rivets shall be tapped, slack rivets will give a hollow sound and a jar.

All rivet heads shall be painted with red lead paint within a week of their fixing.

2.2.5. All bolt heads and nuts shall be hexagonal arid of equal size unless specified otherwise. The screwed heads shall conform to I.S. 1363-1960 and the threaded surface shall not be tapered. The bolts shall be of such length so as to project two clear threads beyond the nuts when fixed in position and these shall lit in the holes without any shakes. The nut shall be fit in the threaded ends of bolts properly.

Where turned and fitted bolts are required to be used in place of rivets shall be provided with washers not less than 6 mm. thick so that the nut when tightened shall not bear on the unthreaded body of the bolt Tapered washers shall be provided for all heads and nuts bearing on leveled surfaces. The threaded portion of the bolt shall not be within the thickness of the parts bolted together, the faces of the bolt heads and nuts abutting against steel members shall be machine finished. Where there is a risk of the nut being removed or becoming loose due to vibrations or reversal of stresses, these shall be secured from slackening by me use of locknuts, spring washers, cross-cutting or hammering down of threads as directed.

Bolts, nuts, and-washers shall be thoroughly cleaned and dipped m double boiled linseed oil before use. The whole steel work shall be painted with a coat of priming coat of red lead, as per relevant specification of painting.

3.0 Mode of measurements & payment

3.1. The steel work shall be measured in general asunder:

(a) All work shall be measured on the basis of finished dimensions as fixed at site and measured net unless specified otherwise.

(b) The weight of steel sections, steel rods, and steel strips in finished work shall be calculated Hum standard weight on the same basis on which steel is supplied to Contractor by department or those given in relevant I S : if steel is arranged by the contractor.

(c) The weight of steel plates and strips shall be taken from relevant I.S. based on 7.35 kg./ sq. meter fur every millimeter sheet thickness if steel is supplied to the contractor by department.

(d) Unless otherwise specified, weight of cleats, brackets, packing pieces, bolts, nuts, washer, distance pieces, separators, diaphragm gusset (taking overall square dimensions) fish plates etc. shall lie added to the weight of respective items.

(e) In riveted work allowance is to be made for weight of rivet hands. No deductions shall be made for rivet or bolts holes excluding holes for anchor or holding down bolts.

(f) For forged steel and steel castings, weight shall be calculated on the basis of 7850kg./cum.

(g) Unless otherwise specified, no allowance shall be made for the weld metal in case of welded steelstructure.

(i) Dimensionsotherthancrosssectionsandthicknessofplatesshallbemeasuredtonearest 0.001m

(j) Mill tolerance shall be ignored when weight is determined by calculation.

3.2. The rate includes cost of all material, labour, erection, hoisting scaffolding, protective measure, required for proper completion of the item of work. This shall also include conveyance and delivery handling, loading, unloading and storing etc. required for completing the item described above including necessary wastageinvolved.

3.3. The rate shall be for a unit of onequintal.

11.2.(D) Steel work riveted in built up section, framed work including cutting, hoisting, fixing in position and applying a priming coat of red lead paint in trusses, and trussed, purlins, upto 25 m. span and 15 m. overallheight.

1.0. Materials & Workmanship

The relevant specifications of item No. 11.2 (A) shall be followed except that the work shall be for trusses and trussed purlins up to 25 m. span and 1 5 m. overallheight.

2.0. Mode of measurement &payment

2.1. The relevant specifications of item No. 11.2. (A) shall befollowed.

2.2. The rate shall be for a unit of onequintal.

14.4.(A) Steel work welded, in built up sections frame work including, cutting, hoisting, fixing in position and applying a priming coat of red lead paint. In beams and joints, channels, angles tees, flats, with connecting plates or angle cleats as in main and cross beams. Hip and jack rafters, purlins, connected to common falters and thelike.

1.0 Materials & Workmanship

1.1. The relevant specification of item No. 11.2 (A) shall be followed except that the steel work shall be done bywelding.

1.2. Welding shall generally be done by electric process. Gas welding shall be resorted to, using oxyacetylene flame with specific prior approval. Gas welding shall not be permitted for structural steel work.

1.3. The work shall be done as shown in the shop drawings which should clearly indicate various details of the joints to he welded, shop and site welded as well as type of electrodes to be used, symbol for welding on plans and shop drawings shall be according to I.S. 813-1961. As far as possible every effort shall be made to limit the welding that must be done after improper welding that is likely to be done due to heights and difficult positions on scaffoldings etc. The welding work shall conform to I.S. 816-1969.

1.4. Preparation of surfaces : Surfaces which are to be welled together shall be free from loose mill scale, rust, paint, grease or other foreign matter. A coating of boiled linseed oil shall bepermitted.

1.5. Assembly for welding : Before welding is commenced, the plates shall first be brought together and firmly clamped or spot welded at specified distance. This temporary connection has to be strong enough to hold the plates accurately in place withoutdisplacement.

1.6. Precautions : All operations connected with welding and cutting equipment shall conform to safety requirement given in I.S.818-1968.

The following paints shall be borne in mind during the process of welding:

(b) Are length voltage and amperage shall be suited to the thickness of material type of groove and other circumstances of thework.

(c) The segments of welding shall be such that where possible the members which offer. the greatest resistance to compression are weldedfirst.

1.7. The defective welds which shall be considered harmful to the structural strength shall cut out andrewarded.

1.8. Finished welds and adjacent parts shall be protected with clean boiled linseed oil and after all stag has been removed. Welds and adjacent parts shall l*o painted after the same areapproved.

1.9. All the members shall be thoroughly cleaned of rust-scales, dust etc. and given a priming coat of red lead paint before fixing them inposition.

Testing of welding to be added in the specification I.N. 12.2.2.12-(i) to (viii)

2.0. Mode of measurements &payment

2.1. The relevant, specification of item No. 11.2 (I) shall befollowed.

2.2. The rate shall be for unit of onequintal.

11.4.(D) Steel work welded in built up section framed work, cutting, hoisting,fixingin position and applying a priming coat a red lead paint in trusses and trusses purlins up to 25 m. span and 15 m. overallheight.

1.0. Materials & Workmanship

The relevant specification of item No. 11.4.(A) shall be followed except that the work shall be for trusses and trussed purlines up to 25 m. span and 15 m. overall height.

2.0. Mode of measurement &payment

2.1. The relevant specifications of item No. 11.4 (A) shall befollowed.

2.2. The rate **shall** be for unit for onequintal.

11.6. Providing and fixing in position collapsible steel shutters with vertical channels 20 x 10x2 mm. braced with flat iron diagonals 20 x 5 mm. size with top andbottom rails of T Iron 40 x 40 x 6 mm. with 38 mm. dia steel pulleys complete with bolts, nuts, locking arrangements, stoppers, handles, including applying a priming coat red leadpaint.

1.0. Materials

The collapsible steel gate shall conform to M-33.

2.0. Workmanship

J-rails shall be fixed to the floor and to the lintel at top by means of Anchor bolls, embedded in cement concrete-of floor and lintel. The anchor bolts shall be placed approximately at 45 mm. centers alternatively in groove shall be formed along the runner for the purpose. The collapsible gate shall fixed at the sites by fixing the double channels in the T-iron rail and also by hold fasts bolted to the end double channel and fixed in the masonry of the side walls or the otherwise.

In case where the collapsible gate is not required to the lintel beams or slop above, a toe iron suitably designed may be fixed at the top embedded in masonry and provided with necessary clamps and roller arrangement at the top.

All the adjoining work damaged while fixing of gate shall be made good to match the existing work without any extra payment.

All the members of the collapsible gate including. T-iron shall be thoroughly cleaned of rust, scales dust etc., and given a priming coat of red lead, before fixing them in position.

3.0. Mode of measurement andpayment

3.1. The collapsible gate shall be measured in sq. meter. The height of the gate shall be measured as the length of double channels and breadth from outside to outside of the end fixed double channels in open position of the gate. The rate includes providing handles, arrangements stoppersetc.

3.2. The rate -shall be for a unit of one sq.meter.

11.7. Providing and fixing 1 mm. thick M.S. sheet sliding shutters bothframeand diagonal braces of 40 x 40 x 6 mm. Angle iron 3.15. M.S.S. gusset plates at junctions and comers, 25 mm. dia. pulley 40 x 40 x 6 mm. angle and T-iron guide rail at top and bottom respectively with handles, stoppers and locking arraignments etc. including applying priming coat of red leadpaint.

1.0. Materials

M.S. sliding shutters shall be fabricated of M.S. component as given in the description of item M.S. sheets 1 mm. thick shall be fixed to the frame with rivets of weld as approved. The shutters shall he provided with top and bottom guide rails of Angles or T-iron as specified and 25 mm. dia. steel pulleys at the-bottom guide black with steel pulleys at the top. The frame shall be riveted and /or welded and wherever riveting shall be done 3.15 mm. gussets plates shall be provided at thejunctions.

2.0. Workmanship

2.1. The shutters shall be single or double leaf shutters as specified. The guide rails shall be sufficiently long and continued along the wall on the both ends so that the sliding shutters can rest against walls, living full opening when sorequired.

2.2. The guide rails shall be fixed to the floor by means of anchor bolts embed in the cement concrete floor. The steel section at the top shall be suitably supported from the walls. Two channel section shall suitably fixed vertically below the extreme clamps in the wall and floor to avoid theshutters from going out of the supports at the top and bottom. A suitable clamping arrangement will be provided at either end of the opening to avoid the shutters from rolling back intoopening.

2.3. All the adjoining work damaged while fixing shall be made good to match the existingwork.

2.4. All members of the sliding shutter including T-iron shall be thoroughly cleaned of nisi scales dust etc. and given a priming coat of red lead before fixing them inposition

3.0. Mode of measurements &payment

3.1. The sliding doors shall be measured on sq. meter. The height of the shutters shall be measured form outside to outside of the guide, rail and width outside of shutters including vertical channels in sides. The rate includes providing handles stopped and locking arrangement etc.complete.

3.2. The rate shall be for a unit of one sq.meter.

SECTION-12
Labour for fixing fixtures & fastening

12.4. Fixing metallic tower bolts of sizes with necessary screws etc. complete(tower bolts and screws to be paid under separateitems:)

1.0. Workmanship

1.1. This item provides for labour for fixing metallic tower bolts of any size with screws, mittsetc,

1.2. The tower bolts shall be fixed in proper position as shown in the drawings or as directed. There shall be fixed truly vertical or horizontal as the case maybe.

1.3. The screws shall be driven home with screw driver. In no case the screws shall be hammeredin.

1.4. All recesses and seats shall be cut to the exact size for counter sinking etc. where sorequired.

1.5. Care shall be taken to see that no gaps are left between the fitting and the surface meant to receive thefittings.

1.6. The fittings shall be properly cleaned and left in original finish afterfixing.

2.1. Mode of measurements &payment

(1) Cutting of holes, recesses, and seats involved in process offixing.

(2) Cost of filling and cushioning materials where so required for proper seating of newfittings.

(3) Cost of nails etc. for temporary positioning offitting.

(4) Cost of cleaning materials like old washed dhoti stain removeretc.

(5) Cost of making good the over cut recesses or holes ifany.

(6) Cost of making hole of required size on the wooden frame for housing the bolt forlocking.

2.2. The rate includes cost of labour involved in all operations required for proper completion of the items including carriage, handling, fixing etc.complete.

2.3. The rate shall be of unit of onenumber.

12.5. Fixing metallic flush bolts of size with .necessary screws etc., complete(flushbolts and screws shall be paid under separate items):

1.0. Workmanship

1.1. The relevant specifications shall be followed as per item No. 12.4. except for fixing metallic flush bolts instead of towerbolts.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 124. shall befollowed.

2.2. The rate shall be for a unit of onenumber.

12.8. Fixing metallic or plastic door handles of sizes with necessary screwsetc.complete (door handles and screws to be paid under separateitems)

1.0. Workmanship

1.1. The relevant specifications of item No. 124. shall be followed except fixing door handles instead of towerbolts.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 12.4. shall befollowed.

2.2. The rate shall be for a unit of onenumber

12.10. Fixing metallic gate and shutter hooks and eyes of sizes (hooks and eyes tobepaid under separateitems)

1.0. Workmanship

1.1. The relevant specifications shall be followed as per item No. 12.4 except that fixing of eye and hooks instead of towerbolts.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 12.4 shall befollowed.

2.2. The rate shall be for a unit of one number (Hook &Eye)

12.11. Fixing metallic door latches of size with necessary screws (door latches and screws to be paid under separate items):

1.0. Workmanship

1.1. The relevant specifications of item No. 12.4 shall be followed except that fixing metallic door latches instead of towerbolts.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 12.4 shall befollowed.
2.2. The rate shall be for a unit of oneNumber.

12.12. Fixing metallic mortise night latches with necessary screwsincludingmaking necessary crews holes in wooden door shutters etc., complete (mortise night latches and screws to be paid under separateitems):

1.0. Workmanship
1.1. The relevant specifications of item No. 12.4 above shall be followed except that the fixing of mortise night latches instead of towerbolts.
2.0. Mode of measurements &payment
2.1. The relevant specifications of item No. 12.4 shall befollowed.
2.2. The rate shall be for a unit of onenumber.

12.18. Fixing metallic ball catchers 100 mm. dia. (Ball catches to be paid underseparate item):

1.0. Workmanship
1.1. The relevant specifications of item No. 12.4 shall be followed same except fixing of ball catchers 100 mmdia.
2.0. Mode of measurements andpayment
2.1. The relevant specification of item No. 12.4 shall befollowed.
2.2. The rate shall be for a unit of onenumber.

12.20. Fixing metallic casement window fasteners with necessary etc. complete. (Casement window fasteners and screws to be paid under separate items):

1.0. Workmanship
1.1. The relevant specifications of item No. 12.4. shall be followed except fixing metallic casement windowsfasteners.
2.0. Mode of measurements &payment
2.1. The relevant specifications of item No. 12.4 shall befollowed.
2.2: The rate shall be for a unit of onenumber.

12.21. Fixing metallic casement stays of sizes with necessary screwsetc., complete. (Casement stays and screws to be paid under separateitems)

1.0. Workmanship
1.1. The relevant specifications of item No. 12.4 shall be followed except fixing of metallic casement stays.
2.0. Mode of measurements &payment
2.1. The relevant specifications of item No. 12.4 shall befollowed.
2.2. The shall be for unit of one number.

12.24. Fixing metallic cupboard of ward robe locks of sizes withnecessary screwsetc. complete (Locks and screws to be paid separately) :

1.0. Workmanship
1.1. The relevant specifications of item No. 12.4 shall be followed except that fixing metallic cupboard or ward robe locks of size with necessary screws etc.complete.
2.0. Mode **of measurements &payment**
2.1 The relevant specifications of item No. 12.4 shall befollowed.
2.2. The shall be for a unit of onenumber

12,25. Fixingmetallicorplasticcupboardorwardrobeknobsofsizewithnecessary screws/ bolts etc., (knobs and screws/bolts to be paid separately) :

1.0. Workmanship

1.1. The relevant specifications of item No. 12.4 shall be followed except that fixing metallicorplastic cupboard or ward robe knobs of sizes with necessary screws/bolts etc.complete.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 12.4 shall befollowed.

2.2. The shall be for a unit of onenumber.

12.26. Fixing metallic floor stoppers of sizes with rubber cushion, screws etc., tosuit shutter thickness complete, (floor door stopper with rubber cushion and screws to be paid under separate items):

1.0. Workmanship

1.1. The relevant specifications of item No. 12.4 shall be followed except that fixing metallic floor stoppers.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 12.4 shall befollowed.

2.2. The shall be for a unit of onenumber.

12.28. Fixing metallic door handles or knobs for mortise jocks with necessary screwsetc. complete (doors, handles/knobs and screws to be paid separately):

1.0. Workmanship

The relevant specifications of item No. 12.4 shall be followed except that fixing metallic door handles or knobs for mortise with necessary screws etc. complete.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 12.4 shall befollowed.

2.2. The rate shall be for a unit of onenumber.

SECTION-13
Glazing

13.1.(I) Providing and fixing sheet glass, selected quality (type-C) bedded in puttyandfixed with wooden beading including cost of wooden beading of first class teak wood and necessary cutting of glass 5 mm.thick.

1.0. Materials

The glass shall conform to M-38. The wood beading shall conform to M-29, Putty shall conform to I.S. 419-1967.

2.0. Workmanship

The glass shall be sheet glass of selected quality of 5 mm. thick.

2.1. The size of glass for glazing shall allow a clearance of 2.5 mm. between the edges of glass and the wood or metal surrounds. The clearance may be increased, provided the depth of the rebate of groove is sufficient to provide not less than 1.5 m. cover to the glass. The detailed process of glazing shall be as specified in I.S.3548-1966.

2.2. All stains from the surface of glass shall be removed and cleaned with thinner or spirit without any extrapayment.

2.3. Wooden beading:

2.3.1. The size of the wood beads for glass panes shall be 1.5 cms. x 3 cms unless otherwise specified. Beads shall be secured to wooden frames with either panels pins or screws and to metal frames in the way provided for in theframe.

2.3.2. Sufficient putty compound shall be applied to the rebate so that when the glass has been pressed into the rebate, a bed of compound not less than 1.5 mm. thick will remain between the glass and the rebate. There should also be surplus of compound squeezed out above the rebate which should be stripped at an angle not under cut to prevent water accumulating. Beads should be bedded with compound against the glass and wood beads should also be bedded against the rebate. Care should be taken to see that no viols are left between the glass and thebead.

3.0. Mode of measurement &payment

3.1. All measurements of cutting shall, unless otherwise stated, be held to include the consequent waste.

3.2. Each pane' of glass shall be measured to the neatest 0.5 cms. both in width andheight/length.

3.3. Irregular shaped or circular panes shall be measured as the smallest rectangular area from which the irregular or circular pane can becut.

3.4. The rate includes cost of materials, labour required for completion of the item including hoisting, carriage, temporary erections like scaffoldingetc.

3.5. The rate also includes :

(i) The wastages and breakage involved in theprocess.

(ii) Straight cutting on glass and glazingsheets.

(iii) Cost of subsidiary materials required for proper fixing and functioning of glass i.e. nails, spirit, putty, teak wood beading glass, pins, etc.complete.

3.6. The rate shall be for a unit of sq.meter.

13.1.(M) Providing and fixing sheet glass selected quality (Type-C) bedded in putty and fixed with wooden beading including cost of wooden beddings 6f first class teak wood, and necessary cutting of glass 6 mm. thick.

1.0. Materials andworkmanship

1.1. The relevant specifications of item No. 13.1 (I) shall be followed except that the sheet glass of selected quality shall be 6 mm.thick.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 13.1.(I) shall befollowed.

2.2. **The** rate shall be for a unit of one sq.meter.

13.3.(C) Providing and fixing rough cast wired glass 6 mm. thick bedded in putty and fixed with wooden beading including' the cost of wooden beadings of Indian teak wood and necessary cutting of glass wired figuresglass.

1.0. Materials :

Wire figure glass shall conform to M-38. Wooden beading shall conform to M-29, Putty shall conform to I.S. 419-1967.

2:0. Workmanship

The relevant specification of item No. 13.1(1) shall be followed except that the wired figured glass of 6 mm. thick shall beused.

3.0. Mode of measurements andpayment

3.1. The relevant specifications of item No. 13.1(1) shall befollowed.

3.2. The rate shall be for a unit of one sq.nit.

3.5.(3) Providing and fixing sheet glass ordinary quality bedded in putty and fixedwith wooden beading including the cost of wooden beadings of first class teak wood and necessary cutting of glass 3 mm.thick.

1.0. Materials

Glass shall conform to M-38. Wooden beading shall conform to M-29. Putty shall conform to I.S. 419-1967.**2.0 Workmanship**

The relevant specification of item No. 13.1 (I) shall be followed except that the wired figured glass of 6 mm. thick shall beused.

3.0. Mode of measurements andpayment

3.1. The relevant specifications of item No. 13.1 (I) shall befollowed.

3.2. The rate shall be for a unit of one sq.mt.

13.5.(3) Providing and fixing sheet glass ordinary quality bedded in putty and fixedwith wooden beading including the cost of wooden beadings of first class teak wood and necessary cutting of glass 3 mm.thick.

1.0. Materials

Glass shall conform to M-38. Wooden beading shall conform to M-29. Putty shall conform to I.S. 419-1967.

2.0. Workmanship

2.1. The specification of this item shall be followed as per item No. 13.1(1) except that the sheet glass of ordinary quality shall be used and thickness of sheet glass shall be 3 mrn.thick.

3.0. Mode of measurements andpayment

3.1. **The** relevant specifications of item No. 13.1(1) shall befollowed.

3.2. The rate shall be for a unit of one sq.meter.

13.5.(4) Providingandfixingsheetglassordinaryquality,beddedinputtyandfixedwith wooden beadings including the cost of wooden beadings of first class teak wood and necessary cutting of glass 4 mm.thick.

1.0. Materials andWorkmanship

The relevant specifications of item No. 135 (3) shall be followed, except that the thickness of ordinary sheet glass shall be 4 mm.

2.0. Mode of measurements andpayment

2.1. The relevant specification of item No. 13.1(1) shall befollowed.

2.2. The rate shall be for *a* unit of one sq.meter,

13.7. Extra for using ground glass (Frosted or obscured on one side) instead of plainglass.

1.0. Materials

Glass shall conform to M-38. Wooden beading shall conform to M-29. Putty shall conform to I.S. 419-1967.

2.0. Workmanship

The specifications of this item shall be followed as per item No. 13.1 except that ground glass (Frosted or obscured on one side) shall be used.

3.0. Mode of measurements andpayment

3.1. The payment shall be made on sq. mt. basis extra over and above the payment for plain glass for using ground glass [Routed ofobscured).

3.2. The relevant specifications of item No. i3.5 (III) shall befollowed.

3.3. The rate shall be for a unit of one sq.meter.

13.11.(A) Difference in cost of material and labour involved in method of glazings ifchanged in item No. 13.1 to front and back puttied and sprigged 01 fixed with glazing pins:

1.0. Materials andWorkmanship

1.1. The relevant specification of item No. 13.1 shall be followed except that the glazing is to be done by front and back puttied and sprigged or fixed with glazingpins.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 13.1 (I) and 13.1 (II) shall befollowed.

2.2. The extra rate for extra cost involved shall be paid over and above item No. 13.1(1) & 13.1(II).

2.3. The rate shall be for a unit of one sq.meter.

13.12. Grinding, polishing and round of edges or glazingsheets.

1.0. Materials

The glass shall conform to M-38.

2.0. Workmanship

The edges of glass or glazing sheets shall be grained, polished and rounded of such that it renders uniform look throughout the length and shall be neatly finished. The work shall be carried out in best workman's like manner.

3.0. Mode of measurements &payment

3.1. The edges of glass round, polished and rounded off shall be measured inmeter.

3.2. The rate shall be for a unit of one runningmeter.

SECTION-14
Paving & Floor Finishing

14.2.(A) 40 mm. thick marble chips flooring rubbed and polished (i.e. Terrazzo) to granolithic-finish with under layer 30 mm. thick cement concrete (1:2:4:) (1 cement :2 coarse sand : 4 graded stone aggregate 10 mm. and down gauge) and top layer, 10 mm. thick with white, black or white and black marble chips of required sizes from 1 mm. 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): Dark shade pigment with ordinary cement (in top layeronly).

1.0. Materials

Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-G. Stone grit shall conform to M-8.

The pigment incorporated in terrazzo shall be of permanent colour and shall conform to requirement mentioned in Appendix-A in IS: 2114-1962. Marble chips shall conform to M-46. The marble powder shall pass through I.S. SieveTerrazzo-30.

2.0. Workmanship

2.1. Terrazzo finish shall be laid over a layer of base concrete in case of ground floor. When the terrazzo floor is laid over R.C.C. slabs a cushioning layer consisting of 75 rnm. thick lime concrete shall be provided below the terrazzo floor. The terrazzo flooring shall consist of an under layer of cementconcrete and layer of terrazzo which shall be paidmonolithically.

2.2. Under Layer :

2.2.1. The under layer shall be of cement concrete mix 1:2:4. The maximum size of aggregate used shall not exceed 10 rnm. Specification for cement concrete shall be followed as per item No.5.4.1.

2.3. Terrazzo Topping:

2.3.1. The topping shall have mix of ordinary cement, and marble powder in proportion 3:1 (3 cement : 1 marble powder by weight) and marble aggregate shall be mixed in proportion 4:7 (4 cement marble powder : 7 marble chips by volume). The thickness of concrete and cushioning layer shall not be less than 10 cms. and 7.5 cms. respectively. The minimum thickness of under layer and topping shall be 40 mm.

2.4. Panels:

2.4.1. The floor both while laying the under layer and topping shall be divided into panels not exceeding 2 sq. m. in area so as to reduce the risk of cracking due to differential shrinkage or expansion of terrazzo and sub-floor. The joints be so located that the layer dimensions of any panel do not exceed 2 M. The panels shall preferably be separately. However where the butt joint are provided, the bays shall be laid alternatively allowing for an interval of at least 24 hours between the laying of adjacentbays.

2.5. Mixing of materials:

2.5.1. With a view to avoid variation in colour, mixing shall be done in trough or tub, and the complete quantities of cement and pigment required for one unit shall be mixed at the beginning of the work. Colour cement or cement and pigment mix shall be dry mixed with marble powder. The mix thus obtained shall be mixed with aggregate. Cart> shall be taken not to get the materials into a heap as this would result in coarser aggregates moving on the sides and cement to the centre. To the dry mix thus prepared, water shall be added in small quantities while materials are being worked to get a mix of proper consistency. The mixture shall be plastic but not so wet as to flow. The wet mix shall be used within half an hour mix of addition of wafer during preparationlaying.

2.6. Laying:

2.6.1. The base shall be divided into panels with the help of dividing strips including the strips required for decorative design up to the finished surface level of the floor. Screeds strips shall be used where the dividing strips are no* used. The base shall be cleaned of all dust, dirt laitance and any loose materials. It shall be then wetted with water mopped and smeared*with cement slurry at 2.75 kg./sq.mt. Under layer shall be then be spread and leveled with a screening board. The top surface shall be left rough to provide a good bond to dieterrazzo.

2.6.2. The terrazzo topping shall be (aid while the under layer is still plastic but has hardened enough to prevent cement from rising to the surface. This is normally achieved between 18 to 24 hours after laying of under layer. A cement slurry preferably of the same colour as the topping shall be brushed on the surface immediately before laying the topping. The terrazzo mix shall be laid to a uniform thickness on the screed bed and be completed thoroughly by taping or rolling and trowel led smooth. Excessive troweling or rolling in early stages shall be avoided as it results in working up cement to the surface which will produce a surface liable to cracking and will require more grinding to expose marble chips. The terrazzo surface shall be tamped, trowel led, and brought true to required level by s straight edge and steel floats in such a manner .that the maximum amount of marble chips come up and are spread uniform over the surface and no part of the surface is left withoutchips.

2.7. Curing:

2,7.1. The surface shall be left dry for air curing for a period of 12 to 18 hours. Thereafter water shall be allowed to stand overnight in pools for period of minimum of four days. The floor shall be prevented from being subjected to extremetemperature.

2.8. Grinding and finishing:

2.8.1. Grinding and finishing shall be done either by hand or by machine. In case of manual grinding, the process of grinding shall begin after two days, while in case of machine grinding, the process shall be striated after seven days, after completion oflaying.

2.8.2 First grinding shall be done by carborundum stones of 60-grit size. The surface shall then be washed clean and grouted with a grout of cement or /and coloring matter in the same mix and proportion as the topping in order to fill any pin holes that appear. It shall be allowed to dry for 24 hours and wet cured for four days in the same manner as mentioned in Para 2.7above.

2.8.3. The second grinding shall be done with carborundum stone of 80 grit size. The surface shall then be prepared as after first grinding. The third grinding shall be done with carborundum stone of 120 to 150 grit size. The surface shall then be washed again and allowed to dry for 12 hours, and wet cured for four days as before. The fourth grinding shall be done with carborundum stone of 320 to 400 grit size. The surface shall again be washed clean and rubbed hard with felt and slightly moistened Oxalic acid powder @ 5 gms. per sq. meter of floor surface. After the finishing work is over, the surface shall be washed with dilute oxalic acid solution and dried for floor polishing, machine fitted with felt or Hessian bobs shall then be run over it until floor shines. In case wax-polished surface is required, wax-polished shall be applied on the surface with the help of soft linen over a clean and dry surface. The polishing machine fitted with bobs shall be run over it, clean saw dust shall be spread over the floor surface and polishing machine again operated which will remove excess wax and leave glossy surface. Floor shall not be leftslippery.

3.0. Mode of measurements andpayment

3.1. Terrazzo flooring shall be measured as laid in sq. meters. Length and breadth shall be measured for visible area of work done. No deduction shall be made for nor extra for any opening in floor or area up to 0.10 sq. meter The rate shall cover laying the floor at different levels in the same room or court-yard and nothing extra shall be paid on thataccount.

3.2. The rate includes the cost of all materials and labour involved in all operations described above. The rate shall also not include divingstrip.

3.3. The rate shall be for a unit of one sq.meter.

14.2.(B) 40 mm. thick marble chips, flooring rubbed and polished (i.e. Terrazzo) to granolithic finish with under layer 30 mm. thick cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 10 mm. and down gauge) and top layer 10 mm. thick with white, black or white and black marble chips of required sizes form 1 mm. 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) light shade pigment with white cement (in top layeronly).

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 14.2 (A) shall be followed except that light shade pigment with white cement shall be used in toplayer

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 14.2 (A) shall befallowed.

2.2. The rate shall be for a unit of one sq.meter.

14.2.(C) 40 mm. thick marble chips, flooring rubbed and polished (i.e. Terrazzo) to granolithic finish with under layer 30 mm. thick cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 10 mm. and down gauge) and top layer 10 mm. thick with white, black or white and black marble chips of required sizes from 1 mm. to 4 mm. nominal size laid in cement marble powder mix 3:1 (3 cement : 1 marble power by weight) in proportion of 4:7 (4 cement : marble powder mix : 7 marble chips by volume). Medium shade pigment with approx, 50% white cement and 50% ordinary cement (In top layeronly).

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 14.2. (A) shall be followed except that medium shade pigment with approximately 50% white cement and 50% ordinary cement in top layer only shall be used.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 14.2. (A) shall befollowed.

2.2. The rate shall be for a unit of one sq.meter.

14.2.(D) 40 mm. thick marble chips, flooring rubbed and polished (i.e. Terrazzo) to granolithic finish with under layer 30 mm. thick cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 10 mm. and down gauge) and top layer 10 mm, thick with white, black or white and black marble chips of required sizes from 1 mm. to 4 mm. nominal size laid in cement marble powder mix 3:1 (3 cement : 1 marble power by weight) in proportion of 4:7 (4 cement : marble powder mix : 7 marble chips by volume). White cement without any pigment (in top layer only).

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 14.2.(A) shall be followed except that white cement without any pigment in top layer only shall beused.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 14.2.(A) shall befollowed.

2.2. The rate shall be for a unit of one sq.meter.

14.2.(E) 40 mm. thick marble chips, flooring rubbed and polished (i.e. Terrazzo) to granolithic finish with under layer 30 mm. thick cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 10 mm. and down gauge) and top layer 10 mm. thick with white, black or white and black marble chips of required sizes from 1 mm. to 4 mm. nominal size laid in cement marble powder mix 3:1 (3 cement :1 marble power by weight) in proportion of 4:7 (4 cement : marble powder mix : 7 marble chips by volume), light < de pigment with ordinary cement (in top layeronly).

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 14.2(A) shall be followed except that the light shade pigment with ordinary cement (in top layer only) shall beused.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 14.2 (A) shall befollowed.

2.2. The rate shall be for a unit of one sq.meter.

14.4.(A) Marble chips skirting (Terrazzo) or dodo rubbed and polished to granolithic finish top layer 6 mm. thick with white black or white and black marble chips of sizes from smallest to 4 mm. nominal size laid in cement marble powder mix 3:1 (3 cement : 1 marble by weight) in proportion of 4:7 (4 cement : 7 marble chips by volume) 20 mm. thick with under layer 14 mm. thick in cement plaster 1:3 (1 cement : 3 coarse sand) : Dark shade pigment with ordinary cement (in top layer only).

1.0. Materials

1.1. The relevant specifications of item No. 14.2 (A) shall befollowed.

2.0. Workmanship

2.1. Under layer: The under layer for terrazzo on vertical surfaces like skirting and dedos shall be ofstiff

cement mortar 1:3 (1 cement : 3 coarse sand) finished rough so as to give a good bond to the topping.

2.2. Terrazzo topping shall not be Hess than 6 mm. thick and the combined thickness ofunderlayer and

topping shall be less than 20 mm. The other details shall be followed same as per specifications of item No. C 24 except that the light shade pigment with white cement in top layers shall be used.

3.0. Mode of measurements &payment

3.1. The skirting and dedo shall be measured in square meters correct to two places of decimals. The height shall be measured from the finished level offloor.

3.2. The rate shall be for a unit of one sq.meter.

14.4.(B) Marble chips skirting (Terrazzo) or dedo rubbed and polished to granolithic finish top layer 6 mm. thick with white black or white and black marble chips of sizes from smallest to 4 mm. nominal size laid in cement marble powder mix 3:1 (3 cement : 1 marble by weight) in proportion of 4:7 (4 cement : 7 marble chips by volume) 20 mm. thick with under layer 14 mm. thick in cement plaster 1:3 (1 cement : 3 coarse sand) : light shade pigment with white cement (In top layer only).

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 14.4 (A) shall be followed except that the light shade pigment with white cement in top layers only shall beused.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 14.4(A) shall befollowed.

2.2. The rate shall be for a unit of one sq.meter.

14.4.(C) Marble chips skirting (Terrazzo) or dedo rubbed and polished to granolithic finish top layer 6 mm. thick with white black or white and black marble chips of sizes from smallest to 4 mm. nominal size laid in cement marble powder mix 3:1 (3 cement : 1 marble by weight) in proportion of 4:7 (4 cement : marble powder mix 7 marble chips by volume) 20 mm. thick with under layer 14 mm. thick in cement plaster 1:3 (1 cement : 3 coarse sand) *:* medium shade pigment with approximate 50% white cement and 50% ordinary cement (In top layeronly).

1.0. Materials andworkmanship

1.1. The relevant specifications of item No. 14.4(A) shall be followed except that the medium shade pigment with approximate 50% white cement and 50% ordinary cement in top layers only shall beused.

2.0. Mode of measurement &payment

2.1. The relevant specifications of item No. 14.4 (A) shall befollowed.

2.2. The rate shall be for a unit for one sq.meter.

14.4.(D) Marble chips skirting (Terrazzo) or dodo rubbed and polished to granolithic finish top layer 6 mm. thick with white black or white and black marble chips of sizes from smallest to 4 mm. nominal size laid in cement marble powder mix 3:1 (3 cement : 1 marble by weight) in proportion of 4:7 (4 cement : marble powder mix 7 marble chips by volume) 20 mm. thick with under layer 14 mm. thick in cement plaster 1:3 (1 cement : 3 coarse sand) : White cement without any pigment (In top layeronly).

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 14.4 (A) shall be followed except that the white cement without any pigment in top layers shall beused.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 14.4 (A) shall befollowed.

2.2. The rate shall be for a unit of one sq.meter.

14.4.(E) Marble chips skirting (Terrazzo) or dedo rubbed and polished to granolithic finish top layer 6 mm. thick with white black or white and black marble chips of sizes from smallest to 4 mm. nominal size laid in cement marble powder mix 3:1 (3 cement : 1 marble by weight) in proportion of 4:7 (4 cement : marble powder mix 7 marble chips by volume) 20 mm. thick with under layer 14 mm. thick in cement plaster 1:3 (1 cement : 3 coarse sand) : light shade pigment with ordinary cement (In top layeronly).

1.0. Materials &workmanship

1.1. The relevant specifications of item No. 14.4 (A) shall be followed and except that the light shade pigment with ordinary cement in top layers only shall beused.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 14.4 (A) shall be followed and except that the light shade pigment with ordinary cement in top layers only shall beused.

2.2. The rate shall be for a unit of one sq.meter.

4.16 Providing and laying cushioning layer on R.C.C. slab consisting of 75 rnm.thick lime concrete using brick aggregate of 20 mm. nominal size 50% mortar comprising of 1 lime : 2 finesand.

1.0. Materials

1.1. Water shall conform to M-1. Lime mortar or proportion 1:2 shall conform to M-10. Brick aggregate 20 mm. nominal size shall conform toM-14.

2.0. Workmanship

2.1. The relevant specifications of item No. 1.8 shall be followed except that the proportion of mix shall be 50% mortar comprising of 1 lime : 2 coarse sand and the size of brick aggregate shall be 20 mm. nominal size. The lime concrete work shall be carried out in 7.5 Cms. average thickness as a cushioning layer on R.C.C.stab.

3.0. Mode of measurements andpayment

3.1. The lime concrete work shall be measured for visible area of workdone.

3.2. The rate shall be for a unit of one sq.meter.

14.19.(A) Precast terrazzo (Mosaic) tiles 20 mm. thick with white, black or white and black marble chips of sizes up to 6 mm. laid in floors, treads of steps and landings on a bed of 25 mm. average thickness of lime mortar 1:1.5 (1 lime putty : 1.5 fine sand) or C.M. 1:6 jointed with neat cement slurry mixed with pigment to match the shade of the tiles including rubbing and polishing complete with precast files of light shades, using whitecement.

1.0. Materials

1.1. Water shall conform to M-1. Cement shall conform to M-3. Lime Mortar shall conform to M-10 cement mortar shall conform to M-1. The precast terrazzo tiles of 20 mm. thick shall be light shade using white cement and conform toM-47.

2.0. Workmanship

2.1. The work shall be carried out as per I.S.1443-1972.

2.2. Bedding :

2.2.1. Before spreading the mortar, the sub-base of the floor shall be cleaned of all dirt, scum and loose materials and then well wetted without forming any pools of water on thesurface.

2.2.2. In case; of R.C.C. floors, the top shall be left a little rough, all points of level for the finished surface shall be marked out. The lime mortar of proportion 1:1.5 (1 lime putty : 15 fine sand) or cement mortar of proportion C.M. 1 : as directed shall be then evenly and smoothly spread over the base. Bedding layer of mortar shall be not less than 10 mm. and average thickness of bedding shall be 25 mm.

2.3. Laying:

2.3.1 Before laying the terrazzo (Marble/Mosaic) tiles, the tiles shall be thoroughly wetted with water. Neat cement grout of required-consistency at 4.4. Kg. cement/sq. mt. shall be spread on the mortar bed. The tiles shall be laid on the neat cement float and shall be evenly and firmly bedded to the required level and slope, There shall be no hollows left. The joints shall be uniform thickness and in straight line as per the pattern.

2.3.2 The surface of flooring shall be checked frequently with a straight edge at least two meters long so as to obtain a true surface with requiredslope.

2.3.3. The tiles which are fixed in the floor adjoining the wall shall go about 10 mm. under plaster. Skirting or dedo shall be left unfinished for about 50 mm. above finished floor level and unfinished strip then left earlier shall befinished.

2.3.4. In places where full tiles cannot be fixed, the tiles shall be cut to the size and smoothened at edges to give straight and truejoints.

2.3.5. After the tiles have been laid, the surplus cement slurry and the joints shall be cleaned and washed fairly deep before cementhardens.

2.3.6. The day after tiles have been laid, the joints shall be cleaned or gray cement grout with a wire brush to a depth of about 5 mm. and then grouted with white cement with or without pigment to match the shade of the topping of tiles. The same cement slurry shall then be spread over the whole surface in a thin coat to protect the surface from abrasive damage and to fill pin holes that may exist on the surface.

2.4.1. The flooring shall be kept wet with damp sand or water for seven days. It shall be kept undisturbed at least for 14 days. The grinding shall normally be commenced after 14 days.

2.5. Polishing:

2.5.1. After the tiles are properly cured, first grinding shall be done with carborundum stone of 48.to 60 grade grit fitted in machine. Water shall be properly used during grinding. When the chips show up and the floor has been uniformly rubbed, it shall be cleaned with water, baring all pin holes. It shall then be covered with a thin coat of white cement mixed with or without pigments to match the colour of the topping of the tiles. Pin holes if any shall thus be filled. This grout shall be kept .moist for a week. Thereafter second grinding shall be done when other works are finished The machine shall be fitted with carborundum of grit 220 to 350 using water in abundance. The floor shall then be washed clean withwater. Oxalic acid powder shall then be dusted at 33 grams per square meter on the surface and the surface rubbed with machine fitted with Hessian bobs or rubbed hard with pad of woolen rags. The floor shall then be washed clean and dried with a soft cloth or linen. The finished floor shall not sound hollow when tapped withmallet.

2.5.2. If any tile is disturbed or damaged it shall be refitted or replaced properly jointed andpolished.

2.5.3. Testing of the tiles shall be carried out by the contractor at his own cost as per I.S. requirement for requiredtest.

3.0. Mode of measurements &payment

3.1. The terrazzo tiles flooring shall be measured in sq. meters for visible area of workdone.

3.2. No deductions shall be made nor extra paid for any opening in the floor area up to 0.1 sq. mt. Nothing extra shall be paid for use of cut tiles or for laying the floors at different levels in the same room or court yard. Mosaic tiles laid in floor boarders and bands etc.-shall be measured in the same item and nothing extra shall be payable on account of these or similar bonds formed of half or multiples of half size, standard tiles or other uncuttiles.

3.3. The treads of stairs and steps paved with tiles without nosing shall also be measured under this item.

3.4. Extra rate shall however be paid for such area where width of treads does not exceed 30cms.

3.5. The rate shall be include the cost of all materials, labour involved in all the operations as describedabove.

3.6. The rate shall be for a unit of one sq.meter.

14.19.(B) Precast Terrazzo (Marble/Mosaic) tiles 20 mm. thick with white, black or white and black marble chips of size up to 6 mm. laid in floors treads of steps and landing on a bed of 25 mm. average thickness of lime mortar 1:1.5 (1 lime putty :1.5 fine sand) or C.M. 1:6 jointed with neat cement slurry mixed with pigment to match the shade of the tiles, including rubbing and polishing complete with precast tiles of medium shades using approximately 50% white cement and 50% ordinarycement.

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 14.19(A) shall be followed except that the precast terrazzo (marble mosaic) tiles shall be of medium shades using approximately 50% white cement and 50% ordinarycement.

2.0. Mode of measurement andpayment

2.1. The rate shall be for a unit of one sq.meter.

14.19.(B) Precast Terrazzo (Marble/Mosaic) tiles 20 mm. thick with white, black or white and black marble chips of size up to 6 mm. laid in floors treads of steps and landing on a bed of 25 mm. average thickness of lime mortar 1:1.5 (1 lime putty :1.5 fine sand) or C.M. 1:6 jointed with neat cement slurry mixed with neat cement slurry mixed with pigment to match the shade of tiles including rubbing and polishing complete with precast tiles of dark shade using ordinarycement.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item No. 14,19 (A) shall be followed except that the precast tiles shall be of Dark shade using ordinary Portlandcement.

2.0. Mode of measurements &payment

2.1. The mode of measurement and payment shall be same as item No. 14.19(A)

2.2. The rate shall be for a unit of one sq,meter,

14.21.(A) Precast terrazzo (Marble Mosaic) tiles 20 mm. thick with marble chips of sizes up to 6 mm. in skirting and risers of steps not exceeding 30 cms. in height on 10 mm. thick cement plaster 1:3 C1 cement :3 coarse sand) jointed with neat cement slurry rubbing and polishing complete with tiles of light shades using white cement.

1.0. Materials

Water shall conform to M-1. Cement Mortar shall conform to M-11. The precast terrazzo (Marble/Mosaic) tiles of light shades using white cement tiles 20 mm. thick shall conform to M-47.

2.0. Workmanship

2.1. Laying:

The work shall be carried out for skirting or dedo. Before fixing precast Terrazzo (Mosaic marble) tiles of shade and size as specified, the surface shall be prepared by heavy scraping, making joints etc, to the required line, level and plumb. The surface shall be thoroughly wetted before commencing the laying work. Thereafter about 10 mm. thick backing of cement mortar in specified proportion shall be applied on the surface in true line and level generally as per specifications of plasteritem.

2.2. Fixing:

The back of each tile to be fixed shall be smeared with cement paste of matching colour and the mosaic tiles shall then be gently tapped against the surface, with a wooden mallet. The skirting shall be done only after the flooring is completed. Any pipes coming out of the wall through the dedo or skirting shall only be at the intersection of the horizontal and vertical joints. The tiles shall not have staggered joints. The joints shall be true to entire line both ways and vertical joints shall be in line with joints or flooring. Tiles shall be fixed as close as possible to the adjoining tiles and any difference in the thickness of the mosaic tiles shall be evened out in the cement paste so that all the tiles faces are set in conformity with one another. The skirting shall project uniformly and not more than 6 mm, thickness beyond the finished surface above. Top of skirting or dedo shall be truly horizontal. The risers of steps, skirling or dedo shall rest on top of treads of flooring. Wherever required the tiles shall be cut (sawn) and thin edges smoothened beforeuse.

2.3. Curing:

Curing shall be done for 7 days continuously.

2.4. Finishing:

Skirting and dedo shall be hand polished to have an even smooth and shining surface. In case of skirting only 10 mm. x 10 mm. groove shall be provided at the junction of cement plaster and cement tiles.

3.0. Mode of measurements &payment

3.1. The terrazzo tiles with light shade using white cement base shall be paid under this item. The length shall be measured along finished surface of the riser, skirting or dedo, correct to a centimeter heightmeasuredfromfinishedlevelof treads,orfloortothetop (underside of treadsincaseofsteps).

3.2. The rate shall include all materials and labour required for all the operations involved and describedabove.

3.3. The rate shall be for a unit of one sq.meter.

14.21.(B) Precast terrazzo tiles 20 mm. thick with marble chips of sizes up to 6 mm. in skirting and risers of strips not exceeding 30 cms. in height on 10 mm. thick cement plaster C.M. 1:3 (1 cement :3 coarse sand) jointing with neat cement slurry including rubbing and polishing complete with tiles of : medium shades using approximately 50% white cement and 50% ordinarycement.

1.0. Materials andworkmanship

1.1. The relevant specifications of item No, 1*1 21 (A) shall be followed except that the work is for using tiles of medium shades using approximately 5C^{i}/o white cement and 50% ordinarycement.

2.0. Mode of measurements &payment

2.1. The mode of measurements and payment shall be followed same as item No. 14.21(A).

2.2. The rate shall be for a unit of one sq.meter.

14.21.(C) Precast terrazzo tiles 20 mm. thick with marble chips of sizes up to 6 mm. in skirting and risers of steps not exceeding 30 cms. in height on 10 mm. thick cement plaster in C.M. 1:3 (1 cement :3 coarse sand) jointing with neat cement slurry including and polishing complete, with tiles of Dark shade using ordinary cement.

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 14.21 (A) shall be followed except that the tiles of dark shade using Portland cement shall beused.

2.0. Mode of measurements andpayment

2.1. The mode of measurements and payment shall be followed as per item No. 14.21(A).

2.2. The rate shall be for a unit of one sq.meter.

14,25.(A) Chequeredterrazzotiles22mm.thickwithmarblechipsofsizeupto6mm.in flooron25mm.thickbedoflimemortar1:1.5(1limeputty:1.5coarsesand)or C.M. 1:6 jointed with neat cement slurry mixed with pigment to match the shade of the tiles including rubbing and polishing etc. complete, light shade using white cement.

1.0. Materials

Water shall conform to M-1. White cement shall conform to M-4. Lime mortar of proportion 1:1.5 shall conform to M-10. Cement mortar shall conform to M-11. Chequered tiles shall conform to M-47 D.

2.0. Workmanship

2.1. The relevant specifications of Item No. 14.21 (A) shall be followed except that chequered tiles of light shade using white cement shall beused.

3.0. Mode of measurement &payment

3.1. The relevant specifications of item No. 14.21 (A) shall befollowed.

3.2. The rate shall be for a unit of one sq.meter.

14.25.(B) Chequeredterrazzotiles22mm.thickwithmarblechipsofsizeupto6mm.in flooron25mm.thickbedoflimemortar1:1.5(1limeputty:1.5coarsesand)or C.M. 1:6 painted with neat cement slurry mixed with pigment to match the shade of the tiles including rubbing and polishing etc. complete, medium shade using approximate 50% the cement and 50% ordinarycement.

1.0. Materials andworkmanship

1.1. The relevant specification of item No. 14.25 (A) shall be followed except that chequered tiles of medium shade approximate 50% white cement and 50% ordinary cement shall beused.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 14.25 (A) shall befollowed.

2.2. The rate shall be for a unit of one sq.meter.

14.25.(C) Chequeredterrazzotiles25mm.thickwithmarblechipsofsizeupto6mm.in flooron25mm.thickbedoflimemortar1:1.5(1limeputty:1.5coarsesand)or C.M. 1:6 jointed with neat cement slurry mixed with pigment to match the shade of the tiles including rubbing and polishing etc, complete, : Dark shade using ordinary cement.

1.0. Materials andworkmanship

1.1. The relevant specification of item No. 14.25 (A) shall be followed except that chequered tiles of dark shade using ordinary cement shall beused.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 14.25 (A) shall befollowed.

2.2. The rate shall be for a unit of one sq.meter.

14.27.(A) Chequered terrazzo tiles 28 mm. thick with marble chips of size up to 6 mm. in treads of stairs and staircases in 12 mm. thick bed of lime mortar 1:5 coarse sand) to C.M. 1:6 jointed with neat cement slurry mixed with pigment to match the shade of the tiles including rubbing and polishing etc. complete, Dark shade using ordinarycement.

1.0. Materials andworkmanship

1.1. The relevant specification of item No. 14.25 (A) shall be followed except that chequered tiles 28 mm. thick of light shade using white cement shall be used in trades, stair casesetc.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 14.25 (A) shall befollowed.

2.2. The rate shall be for a unit of one sq.meter.

14.27(B) Chequeredterrazzotiles22mm.thickwithmarblechipsofsizeupto6mm.in floor in on 25 mm. thick bed of lime mortar 1:1.5 (1 lime putty : 1.5 coarsesand)

or C.M. 1:6 jointed with neat cement slurry mixed with pigment to match the shade of the tiles including rubbing and polishing etc. complete : Medium shade of using approximately 50% white cement and 50% ordinarycement.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item No. 14.25(A) shall be followed except that the chequered tiles 28 mm. thick of medium shade using approximately 50% white cement and 50% ordinary cement shall be used in treads of stair, staircases etc.**2.0. Mode of measurement andpayment**

2.1. The relevant specifications of item No. 14.25 (A) shall befollowed.

2.2. The rate shall be for a unit of one sq.meter.

14.27.(C) Chequered terrazzo tiles 28 mm. thick with marble chips of sizes up to 6 mm. in treads of stairs and staircases in 12 mm. thick bed of lime mortar 1:1.5 (1 Lime putty: 1.5 coarse sand) or c.m. 1:6 jointed with neat cement slurry mixed with pigment to match the shade of tiles including rubbing and polishing complete : Dark shade using ordinarycement.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item No. 14.25 (A) shall be followed except that chequered tiles 28 mm. thick of dark shade using ordinary cement shall be used in treads of stair, staircaseetc.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 14.25 (A) shall befollowed.

2.2. The rate shall be for a unit of one sq.meter,

14.29 Whiteglazedtiles6mm.thickinflooring,treadsofstepsandlandingslaidona bed of 12 mm. thick cement mortar 1:3 (1 cement : 3 coarse sand) finished with flush pointing in whitecement.

1.0. Materials

Water shall conform to M-1 Cement mortar shall conform to M-11 White glazed tiles shall conform to M-55

2.0. Workmanship

2.1. Bedding :

2.1.1. The sub grade shall be cleaned, wetted and mopped. The bedding shall then be laid evenly over the surface tamped and corrected to desired level and allowed to harden enough to offer a rigid cushion to tiles and to enable the monsoon to place wooden planks across and squat onit.

2.1.2. The white glazed tiles shall be laid on cement mortar bedding of 12 mm. thick in C.M. 1:3. The mortar shall have sufficient plasticity for laying and there shall be no hard lumps that would interfere with the evenness of bedding. The base shall be cleared and well wetted. The mortar shall then be spread in thickness not less than 10 mm. at any place and average 12 mm. thickness. The proportion of the cement mortar shall be as specified in theitem.

2.2. Fixing tiles:

2.2.1. The tiles before laying shall be soaked in water for at least tow hours. Neat gray cement grout at 33 kg/Cement/Sq. mt. of honey like consistency shall be spread over the mortar bedding as directed. The edges of the tiles shall be smeared with neat cement slurry. The tiles shall be well pressed andgently tapped with a wooden mallet till they are properly bedded and in level with the adjoining tiles. There shall be. no hollows in bed or joints. The joints between the tiles shall be as thin as possible in straight line or as perpattern.

2.2.2. The tiles shall not have staggered joints. The joints shall be true to centre line both ways. The Nahni trap coming in the flooring shall be so positioned that its grating shall replace only one tile as far as possible. Where full size tiles cannot be fixed they shall be cut (Swan) to the required size and the edges rubbed smooth to ensure straight and true joints. The joints shall be filled with grey cement grout with wire brush or trowel to a depth of 5 mm. and loose material removed. White cement shall be used for pointing the joints. After fixing the tiles finally in an even plane the flooring shall be kept wet and allowed to nature undisturbed for 7days.

2.3. Cleaning:

2.3.1. The surplus cement grout that may have come out of the joints shall be cleaned off before it sets. Once the floor has set, it shall be carefully washed, cleared by dilute acid and dried. Proper precautions and measures shall be taken to ensure that the tiles are not damaged in any way till the completion of the.construction.

3.0. Mode of measurements &payment

3.1. The work done shall be measured in sq. mt. for visible area of work done. The length and width of the flooring shall be measured not between the faces of skirting or dedos or plastered face of wall as the case may be. The paving under dedo or skirting shall not be measured. No deduction shall be made not extra paid for any opening in the floor of area-up to 0.1 sq.mt. Nothing extra shall be paid for laying the floors at different levels in the samerooms.

3.2. The rate shall be for a unit of one sq.meter.

14.32. White glazed tiles 6 mm. thick in skirting, risers of steps and dedo on 10mm.thick cement plaster 1:3 (1 cement :3 coarse sand) and jointed with white cementslurry.

1.0. Materials

Water shall conform to M-1 Cement mortar shall conform to.M-11 White glazed tiles shall conform to M-55

2.0. Workmanship

2.1. Preparation ofSurface:

In case of brick masonry wall, the joints shall be raked out to a depth of least 15 mm. while the masonry is being laid. In case of concrete wall the surface shall be chiseled and roughed with wire brushes. The surface shall be cleaned and wetted thoroughly before commencing the laying work.

2.2. Laying;

2.2.1. The wall surface shall be covered with 10 mm. thick plaster of cement mortar 1:3 mix and allowed to harden. The plaster shall be roughened with wire brushes both way. The back of tiles shall be floated with grey cement slurry set and edges with white cement slurry in bedding mortar. The tiles shall be gently tapped in position on after the other keeping the joints as thin as possible. Top of skirting ordedo shall be truly horizontal and the joints vertical or as per requiredpattern.

2.2.2. Risers of steps, skirting and dedo shall rest on top of treads or flooring. Where full size tiles cannot be fixed, They shall be cut to the required size and the edges besmoothened.

2.2.3. The joints shall be cleaned and flush pointed with white cement. The surface shall be kept wet for seven days. After curing the surface shall be washedclean.

3.0. Mode of measurements andpayment

3.1. The rate shall include the cost of all materials and labour required for various operations described above. Risers of steps: skirting and dedo shall be measured in square meters, length andheight shall be measured along the finished face of the skirting or dedo including curves, where special such as covers. internal and external angles, etc., used. The length and height shall be measured correct lothe centimeterexceptincase ofrisersandskirtingwhereheightshallbemeasuredcorrectto3mm

3.2. The rate shall be for a unit of one sq.meter.

14.34. Providing and fixing 50 mm. internal or external -angles of white glazedtiles.

1.0. Materials

Water shall conform to M-1. Cement mortar shall conform M-11. Glazed tiles shall conform to M-55.

2.0. Workmanship

2.1. The relevant specifications of item No. 14.32 shall be followed except that the internal or external angles of glazed tiles shall be of thickness not less than the tiles with which they are used. The fixing shall be done as perdirections.

3.0. Mode of measurements andpayment

3.1. Rate shall be including the cost of materials and labour involved in all the operation described above. Internal or external angles of glazed tiles shall be measured in running meters correct tip to a centimeter. length being measured on the exposed face of the special at its centre line. No extra payment shall be made for corner places at angles junctions of cover beads and cornices for using cut length of special.

3.2. The rate shall be for a unit on one runningmeter.

14.36.(A) Providing and laying marble stone slab flooring over 20 mm. (Average) base of cementmortar1:6 (1 cement : 6 coarse sand) or L. M. 1:1.5 laid and jointed with gray cementslurry

including rubbing and polishing compete : Marbles slab 25 mm. thick.

1.0. Materials

Water shall conform to M-1. Lime mortar shall conform to M-10. Cement mortar shall conform to M-1). Marble stone slab 25 mm. thick shall conform to M-51.

2.0. Workmanship

2.1. Dressing of slabs:

Every stone shall be cut to required size and fine chisel dressed to give a smooth and even surface on all sides to full depth. A straight edge laid along the sides of the stone shall be fully in contact with it Chisel dressing shall also be done on top surface to remove any waviness. The sides and top surface of marble slabs shall be machine rubbed or table rubbed with coarse sand before using. All angles andedges or slabs shall be true, square and free fromchipping.

2.2 The thickness of stone shall be 25 mm. The allowable tolerance shall be 2 mm. allowable. The 'tolerance shall ± 5 mm. in length and breadth.

2.3. Bedding:

Bedding of marble slabs shall either be time mortar 1:1.5 (1 lime putty : 1.5 coarse sand) or cement mortar 1:6 (1 cement : 6 coarse sand) of average thickness 20 mm. thick as given in description of item. Minimum thickness at any place shall not be less than 10 mm.

2.4. Laying

The surface of sub-grade shall be cleared, wetted and mopped. Mortar of specified mix and thickness shall then be spread on an area sufficient to receive one marble slab. The slab be washed clean before laying. It tie laid on top pressed and tapped gently to bring it in level with other slabs. It shall then be lifted and a side. The top surface of the mortar shall then be corrected by adding fresh mortar at hollows, or depressions. The mortar shall then be allowed to harden it over this surface cement slurry or honey like consistency at 4.4 Kg. of cement per sq. meter. The edges of slabs already paved shall be buttered with gray cement. The slab shall then be gently placed in position and tapped with wooden mallet till it is properly bedded in level with and close to the adjoining slab. The joints shall be as fine as possible. Surplus cement on the surface of the slab shall be removed. The slab fixed in the floor adjoining the walls shall enter not less than 10 mm. under the plaster skirting or dedo. The junction between the walls and floors shall be finished neatly. The finished surface shall be true to level and slopes asdirected.

2.5. Curing : The floor shall be cured for a minimum period of sevendays.

2.6. Polishing andfinishing:

Unevenness at the meting edges of slab shall be removed by fine chiseling. Finishing etc. shall be done as per relevant specifications of item No. 14.21 (A) or terrazzo tiles flooring except that cement slurry with/or without pigments shall not be applied on the surface before each polishing.

3.0. Mode of measurements andpayment

3.1. Marbles stone flooring with various kinds of marble shall be measured in sq. meter. The length and breadth shall be measured between-the finished face of skirting or dedo or wall plaster No deduction shall fie made nor extra shall be paid for nay opening in the floor or area up to 0.05 sq. mt. Nothing extra shall be paid for laying stone at different levels in the same room. Treads and steps of stairs paved with marble stone slabs shall be also be measured underflooring.

3.2. The rate shall be for a unit of one sq.meter.

14 43.(A) Kota stone slab (Polished, Green colour) flooring over 20 mm. (avenge) thick base of cement mortar 1:6 (1 cement : 6 coarse sand, or lime mortar 1:1.5 laid over and jointed with gray cement slurry including rubbing and polishing complete 25 mm. thick.

1.0. Materials

1.1. Water shall conform to M-1. Lime mortar shall conform to M-10. Cement mortar shall conform to M-11 Polished kota stone shall conform toM-49,

2.0. Workmanship

2.1. Each slab shall be cut to the required size and shape and fine chisel dressed at all the edges. The sides trust dressed shall have a full contract if a straight edge is laid along. The sides shall be table rubbed with coarse sand before paving. All angles and edges of the slabs shall be true square and free from chippings and giving a plane surface. The thickness shall be 25 mm. (Average) as specified in the item but not less than 20 mm. at any place of theslab.

2.2. Bedding for the Kota stone slabs shall be of cement mortar 1:6 (1cement:6coarse sand)or L.M. 1:1.5 of average thickness 20 mm given in the description of the item. Sub grade shall be cleaned, wetted and mopped Mortar of the specified mix and thickness shall then be spread on an area sufficientto

receive one kota stone slab. The slab shall be washed clean before laying. It shall be laid on top, pressed, tapped gently to bring it in level with the other slabs. If shall then be lifted and laid aside. Top surface of the mortar shall then be corrected by adding fresh mortar at hollows or depressions. The mortar shall then be allowed to harden bit. Over this surface, cement slurry of honey-like consistency shall be applied. The slab shall then be gently placed in position and tapped with wooden mallet till it is properly padded in level with and close to the adjoining slab. The joint shall be as fine as possible. The slabs fixed in the floor adjoining, the walls shall enter not less than 10 mm. under the plaster, skirting or dedo. The junction between the wan and floor shall be finished neatly. The finished surface shall be true to levels and slopes asdirected

2.3. The floor shall be kept wet for a minimum period of 7 days so that bedding and joints set properly

2.4. Polishing shall be normally commenced after 14 days of laying the stone slab. First polishing shah be done with carborundum stones of 120 grade grit fitted in the heavy machine and then second polishing shall be done with carborundum stone of 220 to 350 grade grit fitted in heavy machine. Water shall be properly used during polishing. The stone shall then be washed clean with water When directed by the Engineer-in-charge, wax polish of approved quality shall be applied on the surface with the help of soft cloth over a clean and dry surface. Then the polishing machine fitted with bobs shall be run overit.

2.5. The holes required for Nahni traps, pipes and any other fittings shall be made, without any extracost.

3.0. Measurement &payment

3.1. The rate shall include the cost of all materials and labour involved in ail the operations described above. The kota stone flooring shall be measured in square meters correct to two places decimal, length and breadth shall be measured correct to a centimeter and between the finished face of skirting dedo plaster and no deduction shall be made nor extra paid for any opening in floor of areas up to 0 1sq

3.2. The rate shall be for a unit of one sq.meter

14.43.(B) Kota stone slab flooring over 20 mm. (average) thick base of cement mortar 1:6 (1 cement :6 coarse sand) or L.M. 1:1.5 laid over and jointed with gray cement slurry including and polishing complete : 30 mm. thick.

1.0. Materials andworkmanship

1.1. The relevant specifications of item No 14 43 (A) shall be followed except that the thickness of stone shall be 30mm.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No 14.43 (A) shall befollowed.

2.2. The rate shall be for a unit of one sq.meter.

14.44. Kotastoneslab25mm.thickinriserofstepsdedoandpillarslaidon10mm. thick cement mortar 1:3 (1 cement : 3 coarse sand) and jointed with gray cement slurry including rubbing and polishing etc.complete.

1.0. Materials

Water shall conform to M-1. Cement mortar shall conform to M-11. Kota stone slab 25 mm thick shall conform to M-49.

2.0. Workmanship

2.1. The relevant specifications of item No. 14.43(A) shall be followed except that the kota stout-fixed for risers of steps, dedo or skirting in C.M. 1:3 and the polishing shall be done manually instead of machinepolishing.

3.0. Mode of measurements andpayment

3.1. The risers of steps, skirting or dedo shall be measured in sq. meter Length shall be measured along the finished faces of risers, skirting or dedo. Height shall be measured from finished level of treads of floor to top. Lining of pillars shall be measured under thisitem.

3.2. The rate shall be for a unit of one sq.meter.

14.46.(A) Rough chiseled dressed (Kota stone green) stone flooring over 20 mm. thick base of cement mortar 1:5 (1 cement :5 coarse sand), or L.M. 1:1.5 including pointing wit cement mortar 1:2 (1 cement : 2 stone dust) etc. complete 25 mm.thick.

1.0. Materials

Water shall conform to M-1. Lime mortar shall conform to M-10. Cement mortar shall conform to M-11 Rough chisel dressed stone shall conform to M-48.

2.0. Workmanship

2.1. The relevant specifications of item No. 14.43 (A) shall be followed except that the rough chisel

dressed stone of 25 mm.thickness.

2.2. Dressing of stone slab:

Every stone slab shall be cut to the required size and shape and rough chisel- dressed on top, if required, so that the dressed surface shall not be more than 6 mm, from straight edge placed on it. The sides shallalso he chisel-dressed to a minimum depth of 20 mm. so that the dressed edge shall at no place be more then 30 mm. from straight edge butted against it. Beyond this depth, the sides may be dressed slightly splayed so as to form an inverted V shaped joint with adjoining also. The surface shall be reasonable true and plane and all the angles and edges shall be square and free from chippings. Where the stone slabs are to be used for nosing, exposed edges shall be rough chisel-dressed to full depth and cut to the uniform thickness.

2.3. Thickness of the stone slab shall be 25 mm. with permissible tolerance of ± 2nun.

2.4. Laying:

The surface of the sub-grade concrete shall be cleaned, wetted and mopped. The bedding of specified mortar mix shall he spread under each slab to the specified thickness. The slab shall be washed clean before laying. It shall be than laid on top. pressed and so that all hollows underneath filled surplus mortar works up through the joints. The top shall be tapped and brought level to the adjoining slab. The thickness of the joints shall not exceed 5 mm. Subsequent slabs shall be laid in the samemanner

2.5. Curing & Finishing:

Any surplus mortar on the surface of the slab shall be cleaned off and joints-finished flush. The joints shall be raked out uniformly to a minimum depth of 12 mm. under the plaster, skirting or dedo. The junctions between wall plasters and floor shall .be finished neatly and without wavirless. The pointing shall be done with C.M. 1:2. The pointing shall be cured for a minimum period of seven days. The finished floor shall not sound hollow when tapped with wooden mallet and the finished surface shall be true to level and slopes as directed.

3.0. Mode of measurements &payment

3.1. The relevant-specifications of item No. 14.43 (A) shall befollowed.

3.2. The rate shall be for a unit of one sq.meter.

14.46.(B) Rough chisel dressed (Kota stone green) stone flooring over 20 mm. thick base of cement mortar 1:5 (1 cement : 5 coarse sand) or Lime Mortar 1:1.5 including pointing with cement 1:2 (1 cement : 2 stone dust) etc., complete-40 mm. thick.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item No. 14.46 (A) shall be followed except that the thickness of stone slabs shall be 40 mm.thick.

2.0. Mode **of measurements &payment**

2.1. The relevant specifications of item No 14.46(A) shall befollowed.

2.2. The rates shall be for a unit of one sq.meter.

14.71.(A) Cement concrete flooring for I.P.S, 1:2:4 (for Indian Patent Stones) (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm. nominal size) laid in one layer finished with a floating coat of neat cement 40 mm.thick.

1.0. Materials

Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6. Stone aggregate 20 mm. nominal size shall conform to M-12. Cement concrete of 1:2:4 proportion measured by volume shall conform to relevant specifications of ordinary grade 1:2:4 concrete.

2.0. Workmanship

2.1. The cement concrete flooring of 40 mm thick (Average) is to be laid as per the site condition. The concrete shall be mixed in a mechanical mixer at the work. Hand mixing may however be allowed for smaller quantities of work and in case of failure of machineries or as permitted by the Engineer-in-charge. It shall be carried out on a water tight platform and care shall be taken to ensure that mixing is continued until the mass is uniform in colour and consistency. However is such cases 10% more cement than otherwise required shall have to be used without any extra cost. The mechanical mixing shall be done for period of 1.1/2 to 2 minutes. The quantity of water shall be just sufficient to produce a dense concrete of required workability for the purpose, Flooring or specified thickness shall be laid in accordance with approved pattern or as directed. Finishing operation shall depending upon the emperature and atmospheric conditions. The surface shall be left for some time till moisture disappears form it. Fresh quantity of cement shall be mixed with water to form a thick slurry and spread over the surface while the concrete is still green. Use of dry cement or cement and sand mixturesprinkled

on this surface to stiffen the concrete or absorb excessive moisture shall not be permitted. The cement slurry shall then be properly pressed twice by means of iron floats, once when the slurry is applied and he second time when cement setting and finished floated smooth The surface shall be marked with string or B.R.C. fabric jali to make the surface non-slippery as and when directed. The junction of floors with wall plaster, dedo or skirting shall be rounded off where sorequired up to 25 mm. radius. Flooring in lavatories and bath rooms shall be laid after fixing of water closet and squatting pans and floor traps which shall be plugged while laying the floors and opened after the floors are completed. Any damage done to water supply or sanitary fittings during execution of work shall be made good.

2.2. After the final set, the concrete shall be kept continuously wet. if required by ponding for a period of not less than 7 days from the date ofplacement.

2.3. The form work shall be provided if necessary as directed by Engineer-in-charge. Concreting shall be done as per alternate bay method with necessary centering either by mastic or cement mortar asdirected

3.0. Mode of measurements &payment

3.1. The rate shall include the cost of all materials and labour involved in all the operations described above. No deduction shall be made or extra paid for any opening up to 0.1 sq. mt. In area in the floor, nothing extra shall be paid for laying the floor at different levels in the same room or the counteryard.

3.2. ("he rate shall be for a unit of one sq.meter.

14.71.(B) Cement concrete flooring (Indian patent stone) 1:2:4 coarse sand 4: graded stone aggregate 20 mm. nominal size) laid in one layer finished with floating coat of neat cement : 50 mm.thick.

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 14.71 (A) shall be followed except that the thickness of concrete flooring shall be50mm.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 14.71. (A) shall befollowed.

2.2. The rate shall be for a unit of one sq.meter.

14.74. Cement concrete payment (25 mm. to 50 mm. thick) with 1:2:4 (1 cement:2 coarse sand : 4 stone aggregate 20 mm. nominal size) including finishing with a floating coat of neat cementcomplete.

1.0. Materials andworkmanship

1.1. The relevant specifications of item No. 14.71 (A) shall be followed except that the thickness of concrete flooring vary form 25 mm. to 50mm.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No.14.71 (A) shall be followed except that thickness shall be measured correct up to 1 mm. flooring laid in boarders, margins and treads of steps, shall be measured under item of flooring in respective ofwidth.

2.2. The rate shall be for a unit of one cubicmeter.

14.81.(C) 20 mm. thick precast concrete tile with aggregate of sizes up to 6 mm. laid in floors, treads of steps and landings on 20 mm. thick bed of cement mortar 1:6 (1 cement : 6 coarse sand) or L.M. 1:1.5 jointed with neat cement slurry with pigment to match the shade of the titles complete with precast tiles of Dark Shades ordinarycement.

1.0. Materials

Water shall conform to M-1. Cement shall conform to M-2. Sand shall conform to M-6. Lime mortar 1:1.5 shall conform to M-10. Cement shall conform to M-11. Tiles shall conform to M-47 (A) cement concrete tiles shall conform to I.S. 1237-1959 and pigments to be admixed with mortar or for grouting shall conform to I.S. 2114-1962

2.0. Workmanship

2.1. The tiles shall be laid on the sub-grade of concrete of the R C.C. slab. Bedding shall be in the mortar 1:1.5 or cement mortar (1:6). The amount of water added shall be minimum required for sufficient plasticity and workability C.M. or lime mortar where the ingredients shall be thoroughly mixed dry hard lumps removed and water added lo give a goodworkability.

2.2. The base shall be cleaned of all dust, dirt and scum and properly wetted without allowing water pools. For a bedding of cement mortar shall be then spread evenly over the base of two rows of tiles and three to five meters in length. The top shall be kept rough so that cement slurry can be absorbed. The thickness of the bedding shall be not less than 10 mm. at any place. The laying of tiles shall be commenced

with neat cement slurry of honey-like consistency and shall be spread over the mortar bed over an area sufficient to receive about 20 tiles. The tiles shall then De fixed in this grout one after the other, each tile being gently tapped and properly bedded in line and level with the adjoining tiles. The joints shall be as narrow as possible and normally shall not exceed 1.5 mm. After the day's work the excess cement slurry on top shall be cleaned as also the joints with a broom struck and washed before the slurry sets hard. Next day the joints shall be filled with the cement grout of the same shade as the matrix of the tiles. Tiles which are fixed in the floor adjoining the wall shall go a minimum of 10 mm. under the wall plaster, skirting or dedo. For the purpose, plaster etc. may be left unfinished by about 50 mm. above the proposed finished level of the floor. The unfinished strip shall be plastered after laying the floor tiles. Where full tile cannot be used, tile shall be cut to the size to beused.

2.3. The flooring shall be cured for 7days.

3.0. Mode of measurements andpayment

3.1. The rate shall include the cost of all materials and labour involved in all the operations describedabove.

3.2. The rate shall be for unit of one sq.meter.

14.86. Chequered precast cement concrete tiles 22 mm. thick with aggregate of sizesup to 6 mm. in floors, treads of steps and landings on 20 mm. thick bed of C.M. of 1:6 (1 cement : 6 sand) or lime mortar 1:1.5 (1 Lime putty : 1.5 coarse sand) jointed with cement slurry with pigment to match the shade oftiles.

1.0. Materials

1.1. The relevant specifications of item No. 14.25 (A) shall befollowed.

2.0. Workmanship

2.1. The relevant specifications of item No 14.21 (A) shall be followed except that chequered precast cement concrete tiles 22 mm. thick shall be used in floors, treads of steps and landings on average 20 mm. thick bed of C.M. 1:6 or L.M.1:1.5.

3.0. Mode of measurements andpayment

3.1. The relevant specifications of item No. 14.21 (A) shall befollowed.

3.2. The rate shall be for unit of one sq.meter.

14.87. Extraforpolishingandpolishingtheprecastcementconcretetilesinflooring, skirting ordedo.

1.0. Workmanship

1.1. Grinding and rubbing shall normally be commenced after 14 days of laying the tiles, except for skirting or small areas, machine shall be used for thepurpose.

1.2. First grinding shall be done with carborundum stones of 48 to 60 grade grit fitted in machine. Water shall be properly used during grinding. When the chips show up and the floor has been uniformly rubbed, it shall be cleaned with water baring all pin holes It shall then be covered with a thin coat of gray or white cement mixed with or without pigments to match the colour of the topping of the tiles Pin holes if any shall thus be filled. This grout shall be kept moist for sufficient period as directed. Thereafter, second grinding shall be started with carborundum of 120 grit. Grouting and curing shall be followed again. Final grinding shall be done when other works are finished. The machine shall be fitted with carborundum of grit 220 to 350 using water in abundance. The floor shall then be washed clean with water Oxalic acid powder shall then be dusters as needed on the surface and the surface rubbed with machine fitted with Hessian bobs 01 rubbed hard with pad of woolen rags. The floor shall then be washed, cleaned and dried with a soft cloth of linen. The finished floor shall not sound hollow when tapped with amallet.

1.3. If any tile is disturbed or damaged it shall be refitted or replaced properly jointed and polished. 1,4. For skirting, dedo or small areas where it is not possible to do machine polishing all the above operations are to be donemanually.

2.0. Mode of measurements andpayment

2.1. The rate shall include the cost of all materials and labour involved to all the operations as describedabove.

2.2. The rate shall be for a unit of one sq,meter.

14.90. Providing and laying brick on edge flooring laid dry, grouted with C.M. 1:6(1 cement : 6 coarse sand) including finishing the joints flush, curing etc.complete.

1.0. Materials

Water shall conform to M-1. Cement mortar shall conform to M-11. Burnt bricks shall conform to M-15.

2.0. Workmanship

2.1. The flooring shall be laid on concrete sub grade where so provided. The slope in the floor shall be provided in the sub-grade. Where sub-grade is not provided, the earth below shall be properly sloped, watered, rammed and consolidated. Before laying the flooring it shall be moisture. Plinth masonry off-eta shall be depressed so as to allow the sub grade concrete to rest onit.

2.2. Laying:

The brick shall be laid in plain, diagonal herring bond, or other pattern as directed. The bricks shall be dry laid properly and set home by gently tapping. On completion of the portion of flooring the vertical joints shall be grouted with C.M. 1:6 and all joints shall be finished flush. The joints shall be as fine as possible and not exceeding 5 mm. These points shall be filled with cement mortar 1:6.

2.3. Curing:

The brick paving shall be cured for 7 days.

3.0. Mode of measurements andpayment

3.1. The length and breadth shall be measured correct to a centimeter between skirting dedo or wail plaster. No deductions shall be made nor extra paid for any opening up to 0.1 sq.mt. in area in the floor Nothing extra shall be paid for laying the floors at different levels in the same room orcourtyard.

3.2. The rate shall be for unit of one sq.meter.

SECTION-15
Roof Covering

15.1. ProvidingcorrugatedG.I.sheetsroofingfixedwithgalvanizediron1J'or1L'hook bolts and nuts 8 mm. dia. with bitumen and G.I. limpet washers filled with white lead complete excluding the cost of purline, rafters and trusses (1) 0.8 mm. thick sheet.

1.0. Materials :

Corrugated G.I. sheets shall conform to M-23.

2.0. Workmanship

2.1. Spacing of purlines : One purline shall be provided at the ridge and one at the eaves. The spacing of other purlines for 0.8 mm. thick G.I. sheets shall not exceed 1.80 meters. The purline shall coincide with the centre line of the end lap. The ridge purlines shall be placed in such a way that the ridges can be fixed properly. The portion overhanging the wall support shall' not be more than one fourth of the'spacing ofpurlins.

2.2. The top surfaces of the purlines shall be painted before the sheets are fixed over them. Embedded portions of purlins shall be finished with tow coats ofcoal-tar.

2.3. Laying of sheets:

2.3.1. The sheets shall be laid in purlins to a true plane with the line of corrugations truly parallel ornormal to the sides of area to be covered. The sheets shall not generally be built into gables and parapets. They shall be bent up along their side edges close to !he wall, and the junction shall be protected by suitable flushing or by projecting dripcourse.

2.3.2 The laps at end shall be provided 150 mm. minimum for roof slopes 1 in 2 (1 vertical : two horizontal) and steeper but 200 mm. shall be provided for flatter slopes than those above. The side lap shall be provided two ridges of corrugations at each side.

2.3.3. The sheets shall be cut to the dimensions or the shape of the roof either along their lengths or their width or in slant across the line of corrugations at hips and valleys. The sheets shall be cut carefully with a straight edge and chisel to give straight finish. The sheets shall be laid such that the laps are turned away from the usual direction of local heavyrain.

2.3.4. Fixing of sheets:

2.3.4.1. Sheets shall be fixed to the purlins or other roof members such as hips or valley rafter etc. with 1J' or 1L' galvanized hook bolts, and galvanized nuts 8 mm. dia. with bitumen limpet washers and G.I. washers. Limpet washers with white lead shall be used. Length of hook bolt shall be varied to suit the site requirement. Bolts shall be sufficiently long so that after fixing the project above the top of their nuts by not less than 12 mm the grip of 1J' or 1L' book bolts on the sides of purlins shall not be less than 25 mm. There shall be minimum of three hooks bolts placed at the ridge of corrugations in each sheet inevery purlin and their spacing shall not exceed 300 mm. Coach screw shall not be used for fixing the sheets to purlin, where the slopes of roof are not less than 2.1/2 degree (1 vertical and 2.1/2 horizontal). Sheets shall be jointed together at the side laps by galvanized iron boils and nuts 25 mm. x 6 mm. size each bolt with a bitumen and G.I. limpet washer filled with white lead. Where the overlaps at the sides extend to two corrugations, these bolts shall be placed zigzag over lapping corrugations, so that the ends of the overlapping sheets are drawn tightly towards each other. The spacing of same bolts shall notexceed 600 mm. along each of the staggeredrows.

2.3.5. Holes for all bolts shall be drilled and not punched in the ridges of the corrugations from theunder side, while the sheets are on the ground. The holes in the sheets shall be at least 50 mm. from the edge. ' Sheets drilled wrongly shall be rejected. The holes in the washers shall be of the exact diameter of the hook bolts or the beam bolts. The nuts shall be tightened from above to give a leak-proofroot

3.0. Mode of measurements andpayment

3.1. The measurements of the C.G.L sheet roof shall be taken for finished work in superficial area in general plane (not girthed on the roof). The laps between the C.G.I. Sheets both at their ends and along the side edges shall not be measured. The overlaps of C.G.I, sheets over the valley piece and their under lap under the ridge, hip and flashing piece shall be included in themeasurements.

3.2. No deductions in measurements shall be made for openings for chimney stacks, sky light etc., of area up to 0.40 sq. mt. nor extra be paid for labour in cutting and for wastage etc. in forming such openings.

3.3. The rate of roof shall include the cost of all materials and labour involved in all operations described above. The rate also includes the cost of provision, erection and removal of the .scaffolding, benching, ladders, templates and tools required for the proper execution and erection of the work. The rate includes the cost of purlins, rafters andtrusses.

3.4. The rate shall be for a unit of one sq.meter.

15.7. Providing ridges of hips 600 mm. overall in plain G.I. sheets fixed with G.I. 'J'or 'L' hooks bolts and nuts 8 mm. dia. G.I. limpet and bitumen washer etc. complete. 0.80 mm. thick sheet.

1.0. Material

The G.I. valley gutters and ridges shall conform M-23 A.

2.0. Workmanship

2.1. The relevant specification of item No. 15.1 shall be followed except that the work shall be carried out for ridges or hips. The overlaps for ridges and hips or either side over the C.G.I, sheets and end legs shall be minimum 225 width of the ridges and hips shall be as described in theitem.

2.2. Ridges shall be fixed to the purlins with same 8 mm. dia. G.I. hook bolts and nuts and bitumen and G.I. limpet washers, which fix the sheets for the pureline. Hips shall be fixed to the roof members with the same 8 mm. dia G.I. hook bolts and nuts and bitumen and G.I. limpet washers which fixed the sheets. At least one of the fixing bolts shall pass through the end laps of the ridges and hips on other sides. If this is not possible, extra hook bolt shall be provided. End laps of ridges and lips shall be jointed together by galvanized iron seam bolts and G.I. Washers. There shall be at least two such bolts in each endlap.

2.3. Ridges and hips shall fit in squarely on thesheets.

3.0. Mode of measurements andpayment

3.1. The measurements of ridges or hips shall be taken for finished work in length along their centre lines.

3.2. No laps shall bemeasured.

3.3. The payment for ridges and hips shall be made in a similar way as in case of C.G.I, sheet roofing.

3.4. The rate shall be for a unit of one runningmeter.

15.8. Providing valleys 900 mm. overall in plain 1.6 mm. thick G.I. Class-3 fixed with'J' or 'L' hook bolts and nuts galvanized from 'J' or 'L' hook bolts and 8 mm. dia. G.I. limpet and bitumen washerscomplete.

1.0. Materials

1.1. The G.I. valleys 900 mm. overall in galvanized plain sheet of 1.6 mm. thickness shall be ofclass-3. The valleys shall be 900 mm. wide overall and flashing shall be 380 mm. wide overall. There shall be bent to the required shape without damage to the sheets in the process of bending.

2.0. Workmanship

2.1. The relevant specifications of item NO. 15.1. shall be followed except that the work shall be carried out for G.I. valleys 900 mm. overall with G.I. sheets 1.6 mm.thickness.

2.2. Wherever the edge of a roof sheeting or valley gutter is turned up against a wall, the edge shall be weather proofed with a flashing. Flashing 'shall be bent to shape and fixed. Lap over the sheet shall be not less than 150 mm. over the roofing sheets. The end between the flashing sheets shall not less than 225 mm.

2.3. The flashing shall be inserted into brick work or masonry joints to a depth of 50 mm. These joints shall be filled with cement mortar (1:3). The flashing shall be well secured to the masonry. Whenever flashing has to be laid at a slope, it shall be stepped at each course of masonry, the step being out back at angle or not less than 30 degrees to thevertical.

2.4. Valleys shall be bent to shape and shall have end lap projection on either side under C.G.I, sheet not less than 225 mm. Valleys shall be fixed to the roof member below, with same 8 mm. dia. G.I. hook, bolts and nuts and bitumen and G.I. limpet washer which fix the sheets to these members. At least one of the fixing bolts shall pass through the end laps of the valley piece. If necessary extra bolts shall be provided for thispurpose.

3.0. Mode of measurements andpayment

3.1. The measurements for valley shall be taken for finished work in length along their centrelines.

3.2. No laps shall bemeasured.

3.3. The rate excludes the cost of boarding underneath which shall be paidseparately.

3.4. The rate of flashing includes the cost of mortar for fixing in wall and other labour and materials required forit.

3.5. The rate shall be for a unit of one runningmeter.

15.10.(I) Providing and fixing 150 mm. wide 450 mm. overall semicircular plain, G.I. sheets clas-3 Gutter with iron brakes 40 mm. x 3 mm. size bolts nuts, washers etc. including making necessary connections with rain water pipes : 0.80 mm.thick.

1.0. Materials

1.1. These shall be of plain galvanized sheets Class-3 of 0.80 mm. thickness. The gutter shall be designed to carry the maximum discharge from the roof without flowing over and shall be constructed wherever possible with sunk channel orgutter.

2.0. Workmanship

2.1. The longitudinal edges shall be turned back to the extent of 12 mm. and beaten to form a rounded edge. The ends of the sheets at junctions of pieces shall be hooked into each other and beaten flush to avoidleakages.

2.2. The size of gutters shall be as specified in theitem.

2.3. The gutter shall be laid with a minimum fall in 120. Gutter shall be true to line and slope and shall be supported on fixed M.S. Flat iron brackets bent to shape or any other suitablebracket.

3.0. Mode of measurements andpayment

3.1. The measurements of gutters shall be taken for finished work in length along their centre lines. No. laps shall bemeasured.

3.2. The rate gutter shall include the cost of all labour and materials specified above including all specials such as angles, junctions, drop ends or funnel shaped connecting pieces, stop ends etc. flat iron brackets and bolts and nuts required for fixing the latter to the roofmembers.

3.3. The rate shall be for a unit of one runningmeter.

15.20.(A)(I) Providing asbestos cement sheets, roofing fixed with G.I. plain and bitumen washers complete excluding cost of purlins, fakers and trusses : 7 mm. thick, corrugatedsheet.

1.0. Materials :

1.1. Asbestos cement sheets shall conform toM-24.

2.0. Workmanship

2.1. The maximum spacing of purlins shall be 1.6 meters in case of 7 mm. thick A.C. sheets and 1.4 meters for 6 mm. thick A.C.sheets.

2.2. Laying & fixing ofSheets

The sheets shall be laid on the purlins and other roof members as per cods practice. The top bearing surfaces of all purlins and other roof members shall be is one plane so that the sheets when being fixed shall not be required to be forced down to rest on the purlins. The finished roof shall present uniform slope and the line of corrugation shall be straight and true. The sheets shall be laid with smooth side upwards. Corrugated sheets shall be valid starting at the eaves either from left to right or right to left depending upon the direction of wind. Before actual laying of the sheets is started, the purlins spacing and the size of sheets shall be checked to ensure that the arrangements shall provide the laps required and the specified overhang at the eaves. In case the sheets are laid from right to left, the first sheet shall be laid uncut but the remaining sheets in the bottom row shall have the top left hand corners cut or mitered. The sheets in the second and other immediate rows shall have bottom right and corner of the first sheet cut. All other sheets except the last sheets shall have both bottom right hand corner of the first sheet cut. All other last sheet shall have only top left hand corner cut. The last of the top row sheets shall have the bottom right hand corner cut with exception of the last sheet which shall be left uncut. If the sheets are laid from left to right, the first sheet shall be laid and cut and the remaining procedure shall bereversed.

2.3. The free overhang of the sheets at the eaves shall not exceed 400 mm. in case of 7 mm. thick sheets and 300 mm. in case of 6 mm. thicksheets.

2.4. The meter described above is necessary to provide snug fit. Where 4 sheets meet at a lap the length of meter shall be 150 mm. and the width of miter shall be equal the width of the side lap. The cutting may be done with ordinary wood-saw atsite.

2.5. Laps :

The sheets shall be laid with an end lap of 150mm. minimum. In case of roof with a' pitch flatter than 1 vertical to 2.1/2 horizontal (Approx. 22) or in the case of very exposed situations appropriate larger Taps may be provided. The sheets shall be laid with side lap of half a corrugation.

2.6. Fixing Accessories : The sheets shall be secured to the purlins and other roof members by means of 8 mm. dia galvanized iron bolts (J) type hook bolts in case of angle iron purlins and 'L' type bolts in case of R.S. joints, precast concrete, or timber purelin, and nuts bearing on galvanized iron washers .and bitumen washers. The grip of 'J' or 'L' bolts on the side of purlins shall not be less than 25 mm, Each galvanised iron 'J' or 'L hook bolts shall have bitumen washer and galvanised iron washer placed over the sheets before the nuts is screwed down from above. On each purelin there shall be one hook bolt on the crown adjacent to the side lap on either side bitumen washer shall be of approved quality. The G.I. flat washer shall be 25 mm. in diameter and 1.60 mm. thick and bitumen water shall be 35 mm. in dia. and 1.5 mm. thick with hole to suit the required size of fixing accessory. Each nut shall be screwed lightly at first. After a dozen or more sheets are laid, the nuts shall be tightened to ensure a leak proof joint and also nuts tightened only to extent so as to prevent damage 1o the sheets. The length of the 'J' bolts or crank bolts shall be 75 mm. more than the depth or purlins for single sheet fixing and 90 mm. more where two sheets overlap or where ridges or other accessories are to be fixed. The minimum length of coach screw for timber purlins shall be 110mm.

2.7. Holes :

The holes fo fixing the sheet shall be drilled in the centre of end lap to sheets to suit the purlins i.e. on the centre line of the purline, if these are of timber and square head coach screws are used, or as close as possible to the back of purlins if 'J' or 'J' bolts are used as with steel angles or precast concrete or timber purlins. Holes for hook bolts etc. shall be 2 mm. more than diameter of the fixing bolts. No holes shall be nearer than 40 mm. to any edge of sheet or accessory.

3.0. Mode of measurement &payment

3.1. The relevant specifications of item 15.1 shall be followed, except that the over lap of the corrugated sheets over valley gutters, roof lights, caves, filler piece sand underlay of the corrugated sheets below ridges, hips north light curves, flashing pieces, roof light sheets and large board shall be included in the measurement. No deduction shall be made for holes cut for extractor or cowl type ventilators. Deductions shall be made for roof lightsheets.

3.2. The rate shall be for a unit of one sq.meter.

15.20.(A)(lll) Providing asbestos cement sheets roofing fixed with G.I. plain and bitumen washers complete excluding the cost of purlins, rafters and trusses: 6 mm. thick corrugatedsheets.

1.0. Materials and Workmanship

The relevant specifications of item No. 15.20 (A)(l) shall be followed except that the thickness of A.C. sheets shall be 6 mm.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 15.20 (A)(l) shall befollowed.

2.2. The rate shall be for a unit of one sq.meter.

15.25.(D) Providing and fixing ridges and hips in asbestos cement sheets roofing with G.I. 'J' or 'L' hook, bolts and nuts 8 mm. dia. G.I. plain and bitumen washers complete. North tight adjustableridges.

1.0. Materials

1.1. The ridges and hips of Asbestos cement sheets roofing shall conform toM-24.

2.0. Workmanship

2.1. The relevant specifications of item 15.20 (A) (I) shall be followed except that the work is to be carried out for ridges and hips in A.C. sheetroofing.

2.2. The ridges shall be laid as per manufacturer's instructions with rolls of the two wings in case of adjustable ridges, fitting closely and with a separation of serrated ridges registering correctly with the sheet underneath. The staggered lapping of two wings of adjustable ridge section and the lap between the adjustment pieces on the same wing of ridges shall be as per manufacturer's instructions. The end portion of the wing of the adjustable ridges which project beyond the verges of the roof shall be cut and trimmed offneatly.

2.3. Hips:

In laying hip pieces, serrations to suit the corrugations in the sheets below should be cut in them so that they shall be snug fit over the sheets. The wings of ridges shall be fixed to the sheet below with seam bolts and nuts 8 mm. dia. G.I. 'J' or '!_' hook bolts and bitumen and G.I. washers which fix the sheets to the purlins. In addition, in north light adjustable ridges, the roll of the two wings shall be jointed together at their crown, with 8 mm. dia G.I. seam bolts and nuts at the rate of two numbers per pair wings. Each seam bolt shall be provided with one bitumen and a pair of G.I. washers. Where the plain wing angular or plain C.C. (1.2:4) up to a full length of the overlaps. The exposed face shall be finished perpendicular to the sheeting. Wings of hips shall be fixed to the roof members below with the same 8 mm. dia. G.I. 'J' or'L' bolts end nuts which fix the sheets to the member. In addition, they shall be secured to the sheet below with 8 mm. dia G.I. seam bolts, nuts and washers so that taken together with hook bolts, there shall be bolt on each wing at least at every fifth Corrugation of the sheets below in case of corrugated and at least every second corrugation of the sheet below in case of semi corrugated sheets. Each seam bolt shall be provided with one bitumen and pair of G.I.washers.

3.0. Mode of measurements &payment

3.1. Measurements of ridges, hips and other accessories shall be for finished work and the length shall be taken along the centre line. The lap shall not be measured. The under lap of ridges under expansion joint pieces shall bemeasured.

3.2. The rate of ridges and hips shall not include the cost of expansion joint pieces, closing of gap, between plain ridge and the sheet corrugation withconcrete.

3.3. The rate shall be for a unit of one runningmeter.

15.26. Filling cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 12.5 mm. nominal size) in gaps of A.C. sheet corrugation and wing of ridges.

1.0. Materials

Water shall conform to M-1. Cement shall conform to M-3. Coarse sand shall conform to M-6. Stone grit shall conform to M-8.

2.0. Workmanship

2.1. The relevant specifications of item No. 5.4.1 of C.C. shall be followed except that the work shall be for filling gaps of A.C. sheet corrugation and wings ofridges.

3.0. Mode of measurements &payment

3.1. The measurements of filling gaps in ridges, hips of A.C. sheet corrugation and wings of ridges shall be for finished work. The length shall be measured along the centreline.

3.2. The rate shall be for a unit of one runningmeter.

15.27 (III) Providing and fixing asbestos cement roofing accessories with galvanised iron 'J' or 'L' hook bolts and nuts, G.I. plain and bitumen washer etc. complete : North light and ventilatorcurves.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item No. 15.10 (I) shall be followed except that the work is carried out for accessories for asbestos cement roofing north light and ventilatorcurves.

1.2. The accessories such as north light and ventilator curves shall be laid and secured with same G.l. hook bolt to secure the sheets to the roof, or with separate G.I. hook bolts to the roof members below and/ or with 8 mm. dia. G.I. bolts nuts and washers to the sheeting, generally as per manufacturer's writteninstructions.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 15.25 (D) shall befollowed.

2.2. The rate shall be for a unit of one runningmeter.

15.29.(I) Providing and fixing asbestos cement socketed half eaves gutter with bolts, nuts, bitumen washer etc. and flat iron brackets 40'mm. x 3 mm. size including asbestos rope and plastic roofing compound in joints complete : 150 mm. nominalsize.

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 15.10(f) shall be followed except that the asbestos cement socketed half round eaves gutter shall be provided. The size of gutter shall be 150 mm.nominal.

1.2. Gutters shall be laid with a minimum fall of 1 in 120 which should be increased where possible. Gutters shall be true to line and slope and shall be laid with requisite accessories such as drop ends, stop ends, nozzles, m angles and union slips, as directed. The size of outlet of drop ends and nozzles shall be the same as the size of rain water pipe into which they discharge water. Gutters and their accessories shall be supported by m.s. fiat/ iron bracket. Where these are required to be fixed to the side of rafter they shall be fixed with 40 mm. by 3 mm. section bent to shape and fixed rigidly to the sides of the rafter with 3 Nos. of 10 mm. dia. bolts, nuts and washers. The brackets shall overlap the rafter not less than 300 mm. sand connecting bolts be 115 mm.centers.

1.3. Where the brackets are to be fixed with purlins, these shall consist of 40 x 3 mm. M.S. flat iron bent to shape with one/and turned at a right angle and fixed to the purlins face with a 10 mm. dia bolt, nut and washer. The perpendicular overhang portion of 40 mm. x 3 mm. bracket shall be stiffened by another 40 x 3 mm. flat bent to right angle shape with its longer leg connected to the bracket with two numbers of 6 mm. dia. M.S. Bolts nuts and washers and its shorter legs fixed to the face of purlins with one number 10 mm. dia bolt nuts and washers. The overhang of the vertical portion of the flat iron bracket from the face of the purlin shall not exceed 225mm.

1.4. Requisite slope in the gutter shall be given in the line of bracket. The brackets shall be places at not more than 900 mm.centers.

1.5. The gutters shall be fixed to the brackets with 2 Nos. 8 mm. G.I. seam bolts and nuts, each bolt and nut being equipped with a pair of bitumen and G.I. washers. These connection bolts shall normally be above the water line of the gutter..

1.6. Spigot and socket end of gutters of socketed half round gutter and their accessories shall be connected together at their laps with one row of 8 mm. dia. G.I. bolts and nuts. Each of the bolts and nuts shall be provided with a pair of bitumen and a pair of G.I. washers. The gap between socket and spigot shall be packed with approved plastic roofing compound and flanked on the both sides with 6.35 mm. dia asbestos rope. The connecting G.I. Bolt shall be then tightened so that the lapped joint becomes leak-proof. The outer face of packed asbestos rope shall not be further than 6 mm. from the edges of the spigot and socketed ends. Where both ends of gutters and / or their accessories to be connected together are spigot ends, they shall be laid as butt jointed with 1.5 mm. gap in between over union clips. The union clips connected to the two butt ends of the gutter or other sections with two rows. The gap between union clips and ends of gutter sections or accessories shall be packed with plastic roofing compound flanked with edges of 6.35 mm. dia asbestos ropes as before. The whole joint shall be made leak-proof by tightening thebolts.

2.0. Mode of measurements &payment

2.1. The asbestos socketed half round eaves gutter shall be measured for finished work and the length shall be measured along the centre line.-

2.2. The rate of gutters shall include the cost of providing and fixing accessories such as drops ends, stop ends, nozzles, and fixing union clips together with bolts, nuts andwashers.

2.3. The rate shall be for a unit of one runningmeter.

15.29.(II) Providing and fixing Asbestos cement socketed half round eaves gutters with bolts, nuts, bitumen washers etc. and flat iron brackets 40 mm x 3 mm. size including Asbestos rope and plastic roofing compound in joint etc. complete. 300 mm. nominal size.

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 15.29 (I) shall be followed except that the size of the Asbestos socketed eaves half round gutter shall be 300 mm. nominalsize.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 15.29(1) shall befollowed.

2.2. The rate shall be for a unit of one runningmeter.

15.51. TiledroofingwithMangalorepatternrooftilesincludingteakreefersofsize50 mm. x 25 mm.

1.0. Materials

(1) Mangalore pattern roof tiles shall conform to M-25, (2) Teak wood batten shall conform toM-29.

2.0. Workmanship

2.1. Laying

The maximum distance between centre to centre of rafters shall be not more than 500 mm. Teak wood reapers 50 mm. x 25 mm. be nailed to each rafter at central distances suited to the size of the tiles by means of nails 50 mm. long. The reapers shall bje of well-seasoned teak wood and shall be straight pieces of uniform size and colour and not shorter than the length necessary to cover at least four rafter. The under face and sides of the reapers shall be planned before fitting up. Joints shall come over the rafter. The joints of two adjacent rows of reapers shall not come over the same rafter. At the eaves, there shall be two reapers of such thickness and shape that the uniformity of the top slope of the roof shall be preserved.

2.2. The work of valleys shall be executed as under:

Galvanized iron sheet 1200 mm. wide and 1.25 mm. thick shall be used for valleys. The sheet shall be extended by about 450 mm. under the tiles on either side in a depth of 100 mm. at centre. The sheet shall be carried 75 mm. into the wall and set with cement mortar unless flushing is specified. The laps, if any, on the slope shall be 300 mm. The sheets shall be laid over the reapers and nailed. Two reapers 50 mm x 25 mm. each shall be fixed over the galvanized iron sheet 150 mm. away from the centre line of the valley, on either side to keep the tiles and mortar from falling into the gutter of thevalley.

2.3. Laying:

The tiles shall be laid from the eaves towards the fudges after fitting of the reapers, the rebate of the tiles resting fully against the reapers. The joints of the hips and ridges tiles and also those between them and the plain tiles shall be set in and well grouted with lime mortar and the mortar surface painted and finished off with a mixture of red paint and port land cement or preserve informality of colour. The finished slope of roof shall be uniform from ridges to eaves. The eaves line shall be perfectly straight, horizontal and parallel to each other. The end over gales shall be protected by lime borders and neatlyfinished.

2.4. At the side of valleys and for 230 mm. on either side of the roof at valleys cement plastering 12 mm. thick shall be done to prevent the rain water from the gutter leaking by the sides ofvalleys.

2.5. At the eaves, wide tie shall be placed over the ends of the last tiles and secured by means of galvanized iron washers and screws 25 mm. into the rafter to prevent tiles from being blow up. Care shall be taken to put the screws in the, ridges and not in the gutter or the tiles, Where full tiles are not necessary, half tiles manufactured for the purpose shall beused.

3.0. Mode of measurements andpayment

3.1. The measurement of the roof shall be taken for finished work for superficial area flat in the plane, of the roof and not girthed. Laps shall not bemeasured.

3.2. No deduction in measurements of roofed shall be made for openings of area up to 0.40 sq. mt. nor shall any extra be paid for labour and wastage in forming suchopenings.

3.3. The rate includes the cost of all materials and labour including ridges, hips, eaves andbottoms.

3.4. The rate shall be for a unit of one squaremeter.

15.75 Providing and fixing five courses water proofing treatment with bitumen felt consisting/ of second and fourth course of blown bitumen or/and residual bitumen applied hot 1.20 kg./sq. mt. of area for each course and first course with fiber base bitumen saturated underlay type and third course with fiber base self finished felt type 2 Grade-l, fifth and final course of stone grit 6 mm. and down size or pea sized gravel spreaded at 0.008 cum/sq.mt. including preparation of surface, excluding gradingcomplete.

1.0. Materials

The tar felt shall conform to M-76. The bitumen primer shall conform to I.S. 3388-1965. The bitumen shall conform to I.S. 702-1961. The grit or gravel shall conform to M-8.

2.0. Workmanship

2.1. Preparation of surface:

2.1.1. Well defined cracks other than hair cracks in the roof structure shall be cut to V section cleaned and filled up flush with cement sand slurry or with bitumen conforming to I.S. 702-1961. The surface to be treated shall have minimum slope of 1 in 120. The grading shall be carried out prior to the application of water proofing treatment by cement mortar or line surkhi mortar or as specified in description ofitem.

2.1.2. The surface or room, part of parapet and gutters, drain mouths etc. over which the water proofing

Treatment is to be applied shall be cleaned or all foreign matter such as funguses, moss and dust by wire brushing and dusting.

2.1.3. Drain outlet shall suitably place with respect to the roof gradient to ensure rapid drainage and prevent local accumulation of water on the roof, surface, masonry drain mouth shall be widen sufficiently
and rounded with cement mortar.

2.1.4. For cast iron drain outlets, a groove shall be cut all round to touch thetreatment.**2.1.5.** When a pipe passes through a roof on which water proofing treatment is to be laid a cement concrete angle fillet shall be built round it and the water proofing treatment taken over the fillet.

2.1.6. In case of parapet wall over 450 mm. in height for trucking in the water proofing treatment a horizontal groove 75 mm. wide and 65 mm. deep at minimum height of 150 mm. above roof level shall be left in the vertical face at the time of construction. The horizontal face of the groove shall be shaped with cement mortar1:4.

2.1.7. In case of low parapet where the height does not exceed 450 mm. no groove shall be provided and the water proofing treatment shall be carried right over thetop.

2.1.8. In case of existing R.C.C. and stone and vertical face of the parapet wall, a fillet 75 mm. in radius shall beconstructer.

2.1.10. At the drain months the fillet shall be suitably cu back and rounded off for easy application of water proofing treatment and easy flow ofwater.

2.1.11. Outlet at every low dividing wall about less than 300 mm. in height cut open to full depth and the
bottom and the sides shall be rounded smooth and corners rounded off for easy application of water proofing treatment.

2.2. Primingcoat:

2.2.1. Bitumen primer shall conform to I.S. 3335-1965. A priming coat consisting of bituminous solution of low viscosity shall be applied with brush on the roof and wall surface at specified weight per unit area to assist adhesion to bonding materials as specified in the description of theitem.,.

2.2.2. Where a floating treatment to water proofing with self finished bitumen felt is required i.e. where water proofing treatment is required to be isolated from the roof structure, a layer of bitumen saturated felt (under lay) shall be spread over the roof surface and tucked into the flashing grooves. To keep the underlay free from the structure nonbonding materials shall be used below underlay. Overlapping to the adjoining strip of underlay shall be minimum of 75 mm. as sides and 10 mm. at ends, and shall be sealed with the same bonding materials, m as used for self finished felt treatment. The underlay shall be of type I saturated felt conforming to I.S.1322-1970.

2.3. Laying of Felt:

2.3.1. The self finished tar felt shall be cut to the required lengths, brushed clean to dusting materials, laid out flat on the roof to eliminate curls and subsequent sketching. The felt shall be laid in lengths running at right angles to the direction of run off gradient commencing at the lowest level and working up to crest, so that the lower laps of the adjacent felt layer offer minimum obstruction to the flow of water. The felt shall not be laid in a single piece of very long lengths as it is likely to shrink. 6 to 8 meters are suitable length. The roof shall be cleaned and dried before the felt treatment is begun. Each length shall be laid in position and rolled up for a distance of half its-lengths. The hot bonding materials heated to correct working temperature as specified by manufacturer shall be poured on the roof across the full width of the felt as the letter is steadily unfolded and pressed down. The excess of bonding materials which squeezes out at the ends shall be removed as the laying proceeds. The pouring shall be so regulated that the correct weight of the bonding materials as per unit area is spread uniformly over the surface. When the fists half of the tar felt has been bonded to the roof, the other half shall be rolled up and then unrolled on the hot bonding materials in the same watt. Subsequent strips shall also be laid in the same manner. Each strip shall overlap the proceeding one by at least 75 mm. at the longitudinal edges and 100 mm. at the ends. All overlaps shall be firmly bonded with hot bitumen. Streaks and trailing of bitumen near edges or laps shall be leveled by heating the overlaps with blow lamp and leveling downunevenness.

2.3.2. Third layer of bonding materials in four course treatment shall be carried out in similar out in manner after the flashing has beencomplete.

2.3.3. Water proofing treatment shall be carried out in the drain pipe or out-lets by at least 100 mm. The Water proofing treatment laid on the surface shall over-lap the upper edge of waterproofing

treatment in the drain outlets by latest 100 mm. Flashing felts shall be laid as flashing. Wherever junction of vertical horizontal surfaces occurs longitudinal laps shall be 100 mm. The lower layer of flashing felt shall overlap the roofing felt by 100 mm on vertical and sloping faces. Last course of flashing should not be of stone grit or pea sized gravel but it shall be replaced by providing two coats of bitumen solution of approvedquality.

2.3.4. The lower edge of flashing shall overlap the flat portion for the roof and the upper edge of the flashing shall be trucked into the horizontal groove 75 mm. thick wide, 65 mm. deep provided at minimum height of 150 mm. from top of the roof surface. The flashing treatment shall be firmly held in place in the grooves with wooden wedges at intervals and the grooves shall be filled with cement mortar 1:4 (1 cement : 4 coarse sand) or cement concrete (1:2:4) (1 cement : 2 coarse sand : 4 graded stone aggregate 6 mm. nominal size) and surface finished smooth with the rest of wall. The cement work shall be cured of bituminous solution shall be applied on the vertical and sloping surface offlashing.

2.3.5. After the top flashing felt layer has been laid, the penultimate layer of bonding material shall be applied over the roofing felt and horizontal overlap, and vertical and sloping surfaces of flashing shall be spread uniformly over the hot bounding materials on the horizontal roof surface and pressed into it with woodenroller.

2.3.6. The material for surface finish shall be spread as described in the item over toplayer.

2.3.7. If ballooning occurs the defects may be rectified asunder.

2.3.8. Remove the gravel on the ballooned surface. The cut open and squeeze out the trap vapor by firm pressure applied by hand, seal the bitumen felt so lifted back on the surface by applying additional bitumen, finally seal the cut with piece of bitumen felt with bitumenapplication.

3.0. Mode of measurements &payment

3.1. The measurements for this item shall be taken asunder:

(a) Water proofing of roof with bitumen shall be measured in sq. mt. length and breadth shall be measured correct tocentimeter.

(b) Measurement shall be taken for the superficial area of roofing and flashing treatment including flashing over the parapet wall, low dividing walls and expansion joints and at the pipe projection etc. Overlapping and tucking into flashing grooves shall not bemeasured.

(c) Slopping and vertical surface of water proofing treatment shall be measured under the four or five course treatment as the case may be irrespective of the fact that the final course of grit or grave! is replaced by bitumenprimer.

(d) In measurements, no deductions shall be made for either openings or recesses for chimney stacks, roof lights etc. for areas up to 0.40 sq. mt. not anything extra shall be paid for extra labour and materials in forming such openings. For similar area exceeding 0.04 sq. mt. deduction shall be made in measurements for full opening but nothing extra shall be paid for extra labour and materials in forming suchopenings.

(e) The grading (coba bedding) shall be paid separately but cleaning of surface and treatment shall not be measured or paidseparately.

3.2. The rate includes cost of all materials andlabour.

3.3. The rate shall be for a unit of one sq.meter.

15.87(A) Providing and fixing on wall face C.I rain water pipe including filling the joints with spun yarn soaked in neat cement slurry and cement mortar 1:2 (1 cement : 2 fine sand) 75 mm. dia.

1.0. Materials

Water shall conform to M-1. The C.I. rain water pipes and fittings shall conform to M-68. Cement mortar shall conform to M-11.

2.0. Workmanship

2.1. C.I. rain water pipes shall be of the specified diameter and shall be in full lengths of 1.8 meters including socket ends of the pipes unless shorter lengths are required at junction withfittings.

2.2. Fixing:

The pipe and fittings shall be fixed in vertical alignment unless otherwise specified and shall be secured to the walls at joints with M.S. clamps. The clamps shall be M.S. sheet 30 mm. bent to required shape

and size so as to fit tightly on the socket of pipe when tightened with screw bolts. It shall be formed out of two semi-circular pieces, hinged with 6 mm. dia M.S. pin on one side and provided flanged ends on the other side with holes to fit in the screw bolt and nut 40 mm. long. The clamps shall be provided with hook made out of 275 mm. long, 10 mm. dia M.S. bar invested to the ring at the centre of one semicircular piece. The clamps shall be fixed to the walls. The clamps shall be kept above 25 mm. clear of finished face of wall so as to facilitate cleaning and painting thepipes.

2.3. The pipe shall be fixed vertically. The spigot of the upper pipe shall be properly fitted in the socket of the lower pipe such that there is uniform annular space filling with the jointing material. The annular space between the spigot and socket shall be filled with, a few turns of spun yam soaked in cement slurry or with stiff cement mortar 2:1 (1 cement : 2 fine sand) well pressed with caulking tools and finished smooth at top at an angle of 450, shopping up. The joint shall be kept we at least for 7 days by tying four fold of gunny bag to pipe and keeping it moistconstantly.

3.0. Mode of measurements &payment

3.1. The relevant specifications of item No. 15.93(B) of A.C. rain water pipes shall be followed exceptthat the C.I. rain water pipe shall befixed.

3.2. The rate shall be for a unit of one runningmeter.

15.88.(A) Providing and fixing M.S. Holder bat clamps of approved design to C.I. or S.C.I, pipes embedded and including cement concrete blocks (108 mm. x 100 mm. size) in 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm. nominal size) and cost of cutting holes and making good the wall etc. complete : 75 mm.dia.

1.0. Materials ofWorkmanship

1.1. The relevant specifications of item no. 15.94(6) shall be followed except that the M.S. holder bat clamps of approved design shall be C.I. rain water pipe-75dia.

1.2. The bat clamps shall be fixed as directed with C.C. blocks of 100 mm. x 100 mm. The relevant specification of item No. 5.4.1 shall be followed for concretework.

2.0. Mode of measurements andpayment

2.1. The bat clamps of M.S. bolder suitable for 75 mm. dia shall be measured for finisheditem.

2.2. The rate includes cost of all materials and labour etc. required for satisfactory completion of this item.

2.3. The rate shall be for a unit of onenumber.

15.90(A) Providing arid fixing and embedding sand C.I. rain water pipe in the mason surrounded with 12 mm. thick cement mortar of the same mix as that of masonry : 75 mm. dia.pipe.

1.0. Materials

Water shall conform to M-1. Cement mortar shall conform to M-11. The C.I. pipe and fittings shall conform to M-68.

2.0. Workmanship

2.1. The relevant specifications of item No. 15.87 (A) shall be followed except that C.I. pipe 75 mm. dia shall be embedded in masonry surrounded with 12 mm. thick cementmortar.

2.2. The pipes shall be fixed in the masonry work as it proceeds. The pipe shall be kept vertical or to the line as directed. The pipe shall have minimum surroundings of 12 mm. thick cement mortar at every portion of external surface. The length shall be caulked with spun yarn and cement mortar as soon as the next length of pipe is placed in position. The socket end of the pipe of shall be kept closed till thenext length of pipe is fitted and jointed to prevent any brick-bats or concrete or pieces of wood falling in and cocking thepipes.

3.0. Mode of measurements andpayment

3.1. The relevant specifications of item No. 15.87 (A) shall befollowed.

3.2. The rate shall be for a unit of one runningmeter.

15.93(6) Providing and fixing on wall face asbestos cement rain water pipe including jointing with spun yarn soaked in bitumen and cement mortar 1:2 (1 cement : 2 coarse sand) complete : 80 mm.dia.

1.0. Materials

1.1. Asbestos cement pipes of 80 mm. dia shall conform to I.S. 1626-1960 for pipes fixed on wall face. AC. pipe shall conform toM-74.

2.0. Workmanship

2.1. Asbestos cement rain water pipes and fittings shall be of the diameter, size and type specified in the item. The pipe shall be full lengths of 2 meter as far as possible. All the pipes shall be fixed on wall face at locations indicated on drawings or as ordered by the Engineer-in-charge. Pipe shall be secured to face of wall below all joints by M.S. clamps with wooden gutties.

2.2. The spigot of the upper pipe shall be properly fitted into the socketof the lower pipe such that there is uniform annular space for fitting with the jointing materials. One third depth of annular space between the item. The pipe shall be full lengths of 2 meter as far as possible. All the pipes shall be fixed on wall face at locations indicated on drawings or as ordered by the Engineer-in-charge. Pipe shall be secured to face of wall below all joints by M.S. clamps with wooden gutties.

2.2. The spigot of the upper pipe shall be properly fitted into the socket of the lower pipe such that there is uniform annular space for fitting with the jointing materials. One third depth of annular space between the socket and the spigot shall be filled with spun-yarn soaked in bitumatic jointing compound and shall be pressed home by means of caulking tool. The remaining 2/3 depth of the joints shall be filled in with stiff cement mortar 1:2 and shall be pressed with caulking tool and finished smooth at top at an angle of 45 slopingup.

3.0. Mode of measurements andpayment

3.1. The pipe shall be measured including all fittings along its length in running meter. No allowance shall be made for the portion of pipe length entering the sockets of the adjacent pipe orfittings.

3.2. The rate includes the cost of all materials and labour involved in all the operations including jointing.

3.3. The rate shall be for a unit of one runningmeter.

15.93.(C) Providing and fixing on wall face asbestos cement rain water pipe including jointing with spun yarn soaked in bitumen and cement mortar 1:2 (1 cement : 2 coarse sand) complete : 100 mm.dia.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item No. 15.93 (B) shall be followed except that the diameter of pipes shall be 100mm.

2.0. Mode of measurements &payment

2.1. The pipe shall be measured including all fittings along its length in running meter. No allowance shall be made for the portion of pipe length entered into the sockets of the adjacent pipe orfittings.

2.2. The rate includes the cost of all materials and labour involved in all the operations including jointing.

2.3. The rate shall be for a unit of one runningmeter.

15.94.(B) Providing and fixing for A.C. pipe on wall plugs and standard holder bat clamps comprising of two semi circular halves of flat iron and cast iron base screwed on wooden plugs : 80 mm. dia.

1.0. Materials andworkmanship

1.1. The bat clamps shall consist of a iron base with a projecting 1 shaped lay, teeth web of which the semicircular halves of the flat iron clamps are bolted. The base on the holder bat clamp shall be screwed on a pair of wooden plugs fixed in the wall with screw slotted driven through the holes in the base. The ' screws shall be not less than 75 mm. long-for 80 mm. diameter pipes and 100 mm. diameter pipes. The plugs shall be fixed in the wall to a depth of 150 mm. in cement mortar, 1:2 centrally to the holes in the base of the bat clamps and with their front face projecting to such a length' from the brick face that when the bat clamps is fixed, the outer base of its base shall be flush with the plaster face of the wall. The plugs shall be 110 mm. x 50 mm. wide at face increasing to 160 mm. x 70 mm. width at rear and shall be 70 mm. deep throughout.

2.0. Mode of measurement &payment

2.1. The work shall be measured on number basis of clamps prescribed with accessories including cost of all materials and labour involved in all the operation including jointing etc. complete fixing in position etc.complete.

2.2. The rate shall be for a unit of onenumber.

15.94 (C) Providing and fixing for A.C. pipe on wall plugs and standard holder bat clamps comprising of two semi circular halves of flat iron and cast iron base screwed on wooden plugs : 100 mm. dia.

1.0. Materials andworkmanship

1.1. The relevant specifications of item No. 15.94 (B) shall be followed except that the standard holder bat damps shall be for A.C. pipe of 100 mm.dia.

2.0. Mode of measurements andpayment

2.1. The work shall be measured on number basis of clamps including cost of all materials and labour involved in all the operation including jointing, fixing in position etc.complete.

2.2. The rate shall be for a unit of OneNumber.

15.95.(A) Providing and fixing on wall face asbestos cement fittings for rain water pipe including jointing with spun yarn socked in bitumen and cement mortar 1:2 {1 cement : 2 coarse sand). Bend of required degree. 80 mm. dia without door. 100 mm. dia. withoutdoor.

1.0. Materials

1.1. The bend of required degree and size as specified in item shall be of best quality and made as approved by the Engineer-in-charge. The fittings shall conform to I.S,1626-1960.

2.0. Workmanship

2.1. Thefitting(bendofrequireddegree)shallbefixedasperrelevantspecificationsofitemNo. 15.93 (B), except that the A.C. bends of required degree shall be provided instead of pipe.

3.0. Mode of measurements and payment.

3.1. The rate shall be for a unit of OneNumber.

15.95.(B) Providing and fixing on wall face asbestos cement fittings for rain water pipe including jointing with spun yarn soaked in bitumen and cement mortar 1:2 (1 cement: 2 coarse sand) off set 50 mm. (2) 80 mm. dia. (3) 100 mm.dia.

1.0. Materials &Workmanship

1.1. The relevant specification of item No. 15.95 (A) shall be followed except the off set 50 mm. of specified size of A.C. pipe shall be used instead ofbends.

2.0. Mode of measurements &payment

2.1. The rate shall be for a unit of OneNumber

15.95.(J) Providing and fixing on wall face Asbestos cement fittings for rain water pipe including jointing with spun yarn soaked in bitumen and cement mortar 1:2 (1 cement : 2 coarse sand) junction equal angle. (3) 80 mm. dia without door (5) 100 mm. dia. without-door.

1.0. Materials andworkmanship

The relevant specificationsofitem 15.95(A)shallbefollowedthatjunctionofequalofangleof specified size of A.C. pipe shall be provided instead of bends.

2.0. Mode of measurements &payment

2.1. The rate shall be for a unit of OneNumber.

15.95.(K) Providing and fixing on wall face Asbestos cement fittings for rain water pipe including jointing with spun yarn soaked in bitumen and cement mortar 1:2 (1 cement : 2 coarse sand) : junction of equal double angle. (3) 80 mm. dia. without door (5) 100 mm. dia. withoutdoor.

1.0. Materials andworkmanship

1.1. The relevant specification of item 15.95 (A) shall be followed except that junction of equal double angles of A.C. rain water pipe of specified size shall be provided instead of A.C,Bend.

2.0. Mode of measurement &payment

2.1. The rate shall be for a unit of OneNumber.

15.95.(L) Providing and fixing on wall face Asbestos cement fittings for rain water pipe including jointing with spun yarn soaked in bitumen and cement mortar 1:2 (1 cement : 2 coarse sand) : Standard shoe. (2) 80 mm. dia. (3) 100 mm. dia.

1.0. Materials andworkmanship

1.1. The relevant specification of item No. 15.95 (A) shall be followed except that the standard shoe of A.C. pipe of specified size shall be provided instead ofbend.

2.0. Mode of measurement &payment

2.1. The rate shall be for a unit of Onenumber.

SECTION-16
Ceiling Lining

16.3.(A) Providing and fixing wooden planks ceiling with long Lied and grooved jointing and Wood screws (Frame work and cover fillets tobe measured and paid separately) : Indian Teak Wood (i) 12 mm. thick (ii) 20 mm. thick (iii) 25 mm. thick.

1.0. Materials

1.1. The Indian Teak wood shall conform toM-29.

2.0. Workmanship

2.1. General

The planks shall be clean sawn in the direction of the grain, cut square and straight. Each plank shall have
tongued and grooved jointing. On exposed faces, it shall be planed for full face.

2.2. The frame for supporting the ceiling may be wooden or metal and the size and the other details of frame work shall be as directed, Suspenders of M.S. angles or other sections may be used for suspending the frame. Use of wooden suspenders shall be permitted. The bottom surface of the frame shall be checked and corrected to true surface andslope.

2.3. Fixing:

Planks of a specified timber and thickness shall be used. The width of the planks shall not be more than 100 mm. up to 20 mm. thick planks and 150 mm. for planks above 20 mm. thick and length shall not exceed 3 meters. The planks shall be of uniform width except in the first and last lines of planks adjacent to the two walls where remaining additional odd width shall be adjusted equally on both sides. The minimum, length of planks in finished work shall be such that it will span at least two spacing of the supporting frame work except where shorten lengths are unavoidable. The planks shall be planed true on the exposedsides.

2.4. The longitudinal edges of the planks shall be jointed with tongued and grooved type joints as described in theitem.

2.5. The outer lines of planks shall be accurately fixed parallel and close to be wall. Each subsequent plank shall be carefully jointed up. The plank shall be fixed to the frame above with two screws at each and joints of frame and one at every intermediate joint. (The screws shall not be thinner than designations 8 and of a length not less then twice the thickness of the boards). The screws shall be counter sunk and the screw holes filled with putty or-sloping out way. The unexposed face of planks shall be treated with wood preservative before the board isfixed.

3.0. Mode of measurement &payment

3.1. The supporting frame, cover fillets, and suspenders shall not be included in rate ofceiling.

3.2. No deductions in measurements shall be made for opening not exceeding 0.46 sq. m. and no extra payment shall be made for forming suchopenings.

3.3. Each type of work in ceiling shall be measuredseparately.

3.4. The rate shall be for a unit of One sq.meter.

16.4. Providing and fixing Fiber insulation board lining with butt jointingandnails (Frame work and cover fillets to be measured and paid separately) (i) 12 mm.thick (ii) 18 mm. thick (iii) 25 mm.thick.

1.0. Materials

1.1. The fiber insulation board of specified thickness shall conform to l.S.3348-1965.

2.1. Fixing:

The work shall be carried out as per detailed drawings for panel arrangements.

2.2. All boards are subject to slight movements due to moisture and temperature changes, and this shall be allowed for in fixing. Preferably the board shall be stored up for at least 24 hours before use in the same environment as the one in which they are to befixed.

2.3. Frame work:

The studs and grounds for fixing the boards shall be spaced at 300 mm. to 450 mm. centers both ways the .actual spacing selected depending on the width of the cut board in the panel arrangements. All edges of the boards shall be supported. Intermediate supports shall be provided at dedo heights for picture rails and cornices etc.

2.4. Planked battens 40 mm. x 20 mm. shall toe used for grounds on solid walls. The batten shall be plugged to wall as described-under. The batten snail be fixed on tapering plugs with 50 mm. long wood screws. The tapering plug shall be trapezoidal in shape having base 50 x 50 mm. at bottom 38 x 38 mm.attopwithdepthof50mm.PlugsshallbeembeddedinC.M.1:3andshallbeplacedat450x
500 mm. centers. The plugs shall treated with coal tar and battens shall be treated with wood preservative before use. On uneven wall faces the battens shall be plugged and fitted with packing pieces at the back where necessary. The frame shall be treated with wood preservative before boards are nailedon.

Nailing shall be done by nails having a shank diameter of 2.5 mm. and head diameter of about 8 mm. Nails shall have length as per requirements. The nails shall be placed at supports at 100 mm. to 150 mm centre to centre and at edges 75 mm. centers. Minimum clearance for nails from edges shall be 10 mm. The nails shall be rustles where the nail heads are exposed. Where the joints are to be covered with beading, felt headed (clout) nails shall be used instead of lost head nails.

3.0. Mode of measurements and payment

3.1. The relevant specifications of item No. 16.3.(A) shall befollowed.

3.2. The rate shall be for a unit of One sq.meter.

16.13(1) providing and fixing plywood lining with butt jointing and nails (frame work and cover fillets to be measured and paid for separately) 6 mm. thick play.

1.0. Materials:

6 mm. thick plywood shall conform to M-37.

2.0. Workmanship

The relevant specifications of item 16.4 shall be followed except that 6 mm. thick plywood shall be fixed in lining.

3.0. Mode of measurements and payment

3.1. The relevant specifications of item 16.4 shall be followed.

3.2. The rate shall be for a unit of One sq. meter,

16.13(11) providing and fixing plywood lining with but jointing and nails (frame work and cover fillets to be measured and paid for separately) 9 mm. thickply.

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 16 13 (I) shall be followed except that the thickness of plywood to be fixed shall be 9mm.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 16.4 (I) shall be followed.

2.2. The rate shall be for a unit of One sq.meter.

16.21(1) Providing and fixing plain asbestos sheet lining with butt jointing andwoodscrews (frame work and cover fillets to be paid for separately), Class-A-6.5 mm.thick.

1.0. Materials

1.1. Plain A.C. Sheets 6.5. mm. Thick shall be conform toM-24.

2.0. Workmanship

2.1. The relevant specifications of item No. 16.4. shall be. Followed except that the plain A.C. sheets class A of 6.5 mm. thicknesses shall be fixed in lining.

2.2. In fixing asbestos cement sheets, care shall be taken to avoid rigid fixing as this may cause cracking if the supporting structure expands or shrinks. The sheet shall be fixed with wood screws to wooden ground and the screw holes shall be drilled slightly longer than the screws. Asbestos sheet may alsobe

Advantageously fixed on to walls with cement plaster backing. The screws shall be fixed at 150 mm. to 200 mm. at supports. The boards shall be fitted either with wooden cover fillets or asbestos strips as described in item.

3.0. Mode of measurement andpayment

3.1. The relevant specifications of item No. 16.4 shall befollowed.

3.2. The rate shall be for a unit One sq.meter.

18.21(II) providing and fixing plain asbestos sheet lining with butt jointing to woodscrews (frame work and cover fillets to be paid for separately), Class-B-5 mm.thick.

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 16.21 (I) shall be followed except that the plain A.C. Sheet of Class-B 5 mm. thick shall be fixing inlining.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 16.21 (I) shall befollowed.

2.2. The rate shall be for a unit of One sq.meter.

SECTION-17

Plastering and Paints

17.58 (I) 10 mm. thick cement plaster in single coat on fair side of brick concrete walls for interior plastering up to floor two level and finished even and smooth in (i) C. M. 1:3.

1.0. Materials

1.1. Water shall conform to M-1. The cement mortar of proportion 1:3 shall conform toM-13.

2.0. Workmanship

2.1. Scaffolding:

Wooden bullies, bamboos, planks, trestles and other scaffolding shall be sound. These shall be properly examined before erection and use. Stage scaffolding shall be provided for ceiling plaster which shall be independent of the walls.

2.2. Preparation of back-ground:

2.2.1. The surface shall be cleaned of all dust, loose mortar droppings, traces of algae, efflorescence and other foreign matter by water or by brushing. Smooth surface shall be toughened by wire brushing if it is not hard and by hacking if it is hard. In case of concrete surface, if a chemical retarded has been applied to the form work, the surface shall be roughened by wire brushing and all the resulting dust and loose particles cleaned off and care shall be taken that none of the readers if left on the surface. Trimming of projections on brick/concrete surfaces where necessary shall be carried out to get an even surface.

2.2.2. Raking of joints in case of masonry where necessary shall be allowed to dry out for sufficient period before carrying out the plasterwork.

2.2.3. The work shall not be soaked but only damped evenly before applying the plaster. If the surface becomes dry, such area shall be moistened again.

2.2.4. For external plaster, the pestering operation shall be started from top floor and carried downwards. For internal plaster, the plastering operations may be-started wherever the building frame and cladding work are ready and the temporary supports of the ceiling resting on the wall of the floor have been removed. Ceiling plaster shall be completed before starting plaster to walls.

2:3. Application of plaster:

2.3.1. The plaster about 15x15 cms. shall be first applied horizontally and vertically at not more than 2 meters intervals over the entire surface to serve as gauge. The surfaces of these gauges shall be truly in plane of the finished plastered surface. The mortar shall then be applied in uniform surface slightly more than the specified thickness, then brought to a true surface by working a wooden straight edge reaching across the gauges with small upward and sideways movements at a time. Finally, the surface shall be finished off true with a trowel or wooden float according as a smooth or a smooth or a sandy granular texture is required Excessive troweling or overworking the float shall be avoided. All corners, arises, angles and junctions shall be truly vertical or horizontal as the case may be and shall be carefully finished. Hounding or chamfering, corners, arises junctions etc. shall be carried out with proper templates to be size required.

2.3.2. Cement plaster shall be used within half an hour after addition of water. And mortar or plaster which is partially set shall be rejected and removed forthwith from the site.

2.3.3. In suspending the work at the end of the day, the plaster shall be left out clean to the line both horizontally and vertically, when recommencing the plaster, the edges of the old work shall be scraped clean and wetted with cement putty before plaster is applied to the adjacent areas to enable the two to properly join together. Plastering work shall be closed at the end of the day on the body of the wall and nearer than 15 cm. to any corners or arises. It shall not be closed on the body of features such as plaster bands and cornices not at the corners or arises. Horizontal joints in plaster work shall not also occur on parapet tops and copings as these invariably lead to leakage. No portion of the surface shall be left out initially to be packed up later on.

2.3.4. Each coat shall be kept damp continuously till the next coat is applied or for a minimum period of 7 days. Moistening shall commence as soon as plaster is hardened sufficiently. Soaking of walls shall be avoided and only as much water as can be readily absorbed shall be used, excessive evaporation on the sunny or windward side of building in hot air or dry weather shall be prevented by hanging matting or gunny bags oh the outside of the plaster and keeping themwet.

3.0. Mode of measurements &payment

3.1. The rate shall include the cost of all materials, labour and scaffolding etc. involved in the operations described under workmanship.

3.2. All plastering shall be measured in square meters unless otherwise specified. Length breadth or height shall be measured correct to centimeter.

3.3. Thickness of the plaster shall be exclusive of he thickness of the key i.e. grooves or open joints in brick work, stone work etc. or space between laths. Thickness of plaster shall be average thickness with minimum 10 mm. at any point on this surface.

3.4. This item includes plastering up to floor two-level.

3.5. The measurement of wall plastering shall be taken between the walls or partition (dimensions before plastering being taken) for length and from the top of floor or skirting to ceiling for height. Depth of cover of cornices if any shall be deducted.

3.6. Soffits of stairs shall be measured as plastering on ceilings, following soffits shall be measured separately.

3.7. For jambs, soffits, sills etc. for openings not exceeding 0.5 sq. met each in area for ends of joints beams, posts, girders, steps etc. not exceeding 0.5 sq. mt each in area and for openings exceeding 0.5. sq. mt and not exceeding 3.00 sq. mt. in each area deductions and additions shall be made in the following manners.

(a) Nodeductionsshallbemadeforendsofjoints,beams,postsetc.andopeningsnotexceeding 0.5 sq. mt each and no addition shall be made for reveals, jambs, soffits, sils etc. of these openings, for finish to plaster around ends of joints, beams posts etc.

(b) Deduction for openings exceeding 0.5 sq. mt but not exceeding 3 sq.mt. each shall be made as follows and no addition shall be made for ravels, jambs, soffits, sills etc. of these openings, (i) When both faces of all wall are plastered with same plaster, deduction shall be made for one face only, (ii) When two faces of wall are plastered with different types of plasters or if one face is plastered and the other pointed, deductions shall be made from the plaster or pointing on the side of frame for door, window etc. on which width of reveals is less than that on the other side but no deductions shall be made on the other side. Where widths of reveals on both faces of all are equal, deductions of 50% of area of opening on each face shall be made from areas of plaster and / or pointing as the case maybe.

3.8. For openings having door frames equal to or projecting beyond the thickness of wall, full deduction for opening shall be made from each plastered face of thewall.

3.9. tn case of openings of area above 3 sq. mt. each, deduction shall be made for openings but jambs, soffits sand sills shall be measured.

3.10. The rate shall be for a unit of one sq. Meter.

17.58(II) 10 mm. Cement plaster in single coat on fair side of brick/concrete walls for interior plastering up to floor two level and finished even and smooth in C.M.1:4.

1.0. Materials &workmanship

1.1. The relevant specifications of item No. 17.58 (I) shall be followed except that the proportion of mortar is C.M. 1 :4 instead of C.M.1:3.

2.0. Mode of measurements &payment

2.1. The mode of measurements and payment shall be the same as for item No. 17.58(I)

2.2. The rate shall be for a unit of one sq. Meter.

17.58(III) 10 mm. Cement plaster in single coat on fair side of brick/concrete walls for interior plastering' up to floor two level and finished even and smooth in C.M.1:6.

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 17.58 (I) shall be followed except that the proportion of mortar is cement mortar1:6.

2.0. Mode of measurements &payment

2.1. The mode of measurement and payment shall be followed same as item No.17.58(1)

2.2. The rate shall be for a unit of one square meter.

17.61.(I) 20 mm. thick cement plaster in single coat on rough side of single or half brick wall for interior plastering up to floor two level, finished even and smooth in cement mortar 1:3 (1 cement : 3sand).

1.0. Materials &workmanship

1.1. The relevant specifications of item No. 17.59 (I) shall be followed except that the thickness of cement plaster shall be 20 mm. The plastering work shall be in single coat on rough side of half brick wall for interior plastering up to floor two level, finished even and smooth in C.M.1:3.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 17.59(1) shall befollowed.

2.2. The rate shall be for a unit of One sq.meter.

17.61.(II) 20 mm. thick cement plaster in single coat on rough side of single or half brick wall for interior

plastering up to floor two level, finished even and smooth in cement mortar 1:4 (1 cement : 4 sand).

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 17.59. (II) shall be followed except that the thickness of plastering shall be 20 mm. in C.M1:4.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 17.59 (I) shall befollowed.

2.2. The rate shall be for a unit of one sq.meter

17.61 (III) 20 mm. thick cement plaster in single coat on rough side of single or half brick wall for interior plastering up to floor two level, finished even and smooth in C.M. **1:6 (1 cement : 6sand).**

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 17.59 (III) shall be followed except that thickness of plaster shall be 20 mm. C.M1:6.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 17.59 (I) shall befollowed.

2.2. The rate shall be for a unit of One sq.meter.

17.69 Extra over items 51 to 65 for finishing with a floating coat of neat cementslurry.

1.0. Materials &workmanship

1.1. The relevant specification of item No. 17.58 and 1761 shall be followed for materials and workmanship except that this work is only providing smooth cement finish with floating coat of neat cementslurry

1.2. The coat of cement and fine sand mortar of proportion V1 (1 5 mm thick about) shall be applied to the plastered surface with a trowel to provide uniform texture while the bas;. coat is still plastic.

1.3. In any continuous face of wall the finishing treatment should be carried out continuously and day lo day breaks made to coincide with architectural breaks in order to avoid unsightly Junctions

1.4. Curing : All the plaster work shall be kept damp continuously for a period 7days

2.0. Mode of measurements and payment

2 **1.** Thepaymentshallbemadeforaunitof1.0sq.mtofworkdoneoveranabovethefinishingof work of basecoat.

2.2. The relevant specifications of item of base coat shall be followed for measurements and payment.

2.3. The rate shall be for a unit of One sq.meter.

17.70. Extra over item 17.58 to 17.61 for providing and mixing water proofingmaterials m cement mortar in proportion recommended by themanufacturers.

1.0. Materials and Workmanship

The relevant specification of item No 17.58 to 1761 shall be fallowed except that the water proofing materials of approved made shall be added to the cement at the rate specified or as directed by The Engineer-in-charge. The proportion proofing materials of water to be mixed with 50 kg bags shall be as recommended by the manufacturers of the water proofing material

2.0. Mode of measurements &payment

2.1. The payment shall he made extra for this work over and above the plasterwork

2.2. The rate shall he for a unit or 1 Kg of water proofing materials used in 1 bag of weighing 50 Kg cement used extra over the rate of plastering work

17.91. Extra over item No. 17.59 to 17.61 for plastering on ceiling and soffits of stairup to floor two level instead of plastering onwalls.

1.0. Materials and Workmanship

1.1. The relevant specifications of item No 17.59 (1) shall no followed except that this work is for ceiling, soffits of stairs up lo two floor

1.2. The smooth concrete surface shall be suitable roughened to provide bond before plastering.

2.0. Mode of measurement and payment

2.1. The payment shall be made for a unit of One sq meter of work done extra over and above the payment of plaster work on wall surfaces.

2.2. The rate shall be for a unit of one sq. Meter.

17.94(1) Extra over item No. 1 to 69, 71 to 87 and 90 for interior plastering above floor two level for every additional storey height (i) Single coat plaster.

1.0 Materials and Workmanship

1.1 The relevant specification of Item No. 17.59 (1) shall be followed except that the whole work is to be carried out above floor two-level.

2.0. Mode of measurements and payment

1.2. The mode of measurement and payment shall be same as item No. 17.59(1).

2.2. The extra payment shall be made over and above the floor two level rate for every additional floor height.

17.94(II) Extra over item1to69, 71to87and90 for interior plastering above floor two levels for every additional story height. Tow coat plaster.

1.0. Materials &workmanship

1.1. The relevant specifications of item No. 17.94 (I) shall be followed except that extra payment for work shall be for a two coat plaster.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 17.94(1) shall be followed.

2.2. The rate shall be for a unit of one sq. Meter.

17.94(111) Extraoveritem1to69, 71to87and90 for interior plastering above floor two level for every additional storey height. Floating coat of neat cement.

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 17.94 (I) shall be followed except that the extra payment shall be made for work of floating coat of neat cement slurry.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 17.59 (I) shall befollowed.

2.2. The rate shall be for a unit of One sq.meter.

17.95. 20 mm. thick sand face cement plaster on walls up to height of 10 mm. andabove ground level consisting of 12 mm. thick backing coating of C.M. 1:3 (1 cement : 3 sand) and 8 mm. thick finishing coat in C.M. 1:1 (1 cement : 1 sand) etc. complete.

1.0. Materials

1.1. Water shall conform to M-1. Cement mortar shall conform toM-11.

2.0. Workmanship

2.1. The work shall be carried out in the coats. The backing coat (base coat) shall be 12 mm. thick in C.M. 1:3. The relevant specifications of item No. 17.58(I) shall be followed except that the thickness of back coat shall be 12 mm. average. Before the first coat hardens its surface shall be beaten up by edges of wooden tapers and close dents shall be made on the surface. The subsequent coat shall be applied after this coat has been allowed to set for 3 to 5 days, depending upon the weather conditions. The surface shall not be allowed to dry during this period.

2.2. The second coat shall be completed to 8 mm. thickness in C.M. 1:1 as described above, including raising sand facing by bushing. The sample of sand face shall be got approved before the work is started. The whole work shall be carried out uniformly as per sampleapproved.

2.3. Curing:

The curing shall be started overnight after finishing of plaster. The plaster shall be kept wet for a period of 7 days. During this period, it shall be protected from all damages.

3.0. Mode of measurement &payment

3.1. The relevant specifications of item No. 17.58 shall be followed except that the sand face plaster on outside up to 10 m. above ground level shall be measured under thisitem.

3.2. The rate shall be for a unit of One sq.meter.

17.116(A) Pointingonbrickworkwithcementmortar1:3(1cement:3coarsesand)flush pointing.

1.0. Materials

1.1. Water shall conform to M-1. Cement mortar shall conform toM-11.

2.0. Workmanship

2.1. The flush pointing work shall be carried out with cement mortar of proportion 1:3(1 part of cement and 3 part of coarse sand) byvolume.

2.2. Preparation ofsurface.

2.2.1. The joints shall be raked to such a depth that the average of new mortar measured from either the sunk surface to finished pointing or from the -edge of the brick shall be average 10mm.

2.3. Application of Mortar and Finishing:

2.3.1. The mortar shall, be pressed in to the raked out joints with a pointing trowel according to the types of pointing specified in item. The mortar shall not spread over the corner edges or surface of the masonry. The pointing shall then be finished with the pointedtools.

2.4. Curing:

2.4.1. The pointing shall be kept wet for 7 days. During this period, it shall be suitably protected from alldamages.

3.0. Mode of measurements &payment

3.1. Nodeductionsshallbemadeendofjoints,beamsandpostsetc.andopeningsnotexceeding 0.5 s. mt. each and no addition shall be made for reveals, jambs, soffits, sills etc. of these openings.

3.2. Deductions for openings exceeding 0.5 sq. mt. but not exceeding 3 sq. mt. each shall be paid as follows and no addition shall be made for reveals, jambs, soffits, sills etc. of these openings : (i) When both faces of walls are pointed with same type of pointing, deduction shall be made for one face only, (ii) When two faces of walls are pointed with different type of pointing or if one face is plastered and the other is pointed, deduction shall be made in the plaster or pointing on the side of frame for door, windows etc. on which the width of reveals is less than that on the other side but no deduction shall be made from plaster or pointing on the other side.

(iii) When only one face is treated and the other face is not rested, full deduction shall be made, if the width of the reveals on the treated side is less than on the untreated side, but if the width of the reveal is more then no deduction shall be made nor any addition shall be made for reveals/jambs, soffits, sills etc. **3.3.** In case of openings of area above 3 sq. mt each deduction shall be made for opening but jambs, sills, and soffits, shall be measured.

3.4. The rate shall be for a unit of One sq. meter.

17.116(8) Pointing on brick work with cement mortar 1:3 (1 cement : coarse sand)Ruled pointing.

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 17.116 (A) shall be followed except that the pointing to be done ruled pointing as under:

1.2. The joints shall be initially formed as for flush pointing and then while the mortar is still green, a groove of specified shape shall be formed by running forming tool straight along the centre line of joints till a smooth and hard surface is obtained. The vertical joints shall also be finished in a similar way. The pointing lines shall be uniform in width and truly horizontal and parallel in case of floor and ceiling.

2.0. Mode of measurements &payment

2.1. The mode of measurements and payment shall be the same as per item No.17.116 (A).

2.2. The rate shall be for a unit of One sq. Meter.

17.117(A) Pointing on brick work with cement mortar 1:4 (1 cement: 4 sand) Flush pointing.

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 17.116 (A) shall be followed.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item-No. 17.116 (A) shall be followed.

2.2. The rate shall be for a unit of One sq. Meter.

17.117(6) Pointing on brick work with cement mortar 1:4 (1 cement : 4 sand) Ruled pointing.

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 17.116(6) shall be followed except that the proportion of C.M. 1:4 shall used for ruled pointing.

2.0. Mode of measurements and payment

2.1. The relevant specifications of item No. 17.115 (A) shall be followed.

2.2. The rate shall be for a unit of One sq.meter.

17.140.(A) Pointingoncoursedstonemasonrywithcementmortar1:3(1cement:3sand) flush pointing.

1.0. Materials and workmanship

1.1. The relevant specifications of item No. 17.116 (A) shall be followed except that the pointing shall be done on coursed stone masonry with C:M. 1:3 and the mortar shall be simply struck off with a trowel and the work left showing the natural irregularities in line and the surface of the stones themselves.

2.0. Mode of measurement and payment

2.1. The relevant specifications of item No.17.116 (A) shall be followed.

2.2. The rate shall be favor a unit of One sq. Meter.

17.140(B) Pointingoncoursestonemasonrywithcementmortar1:3(1cement; 3sand) Ruled pointing.

1.0. Materials and Workmanship

1.1. The relevant specifications of item No. 17.140 (A) and 17.116 (B) shall be followed.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 17.116(A) shall be followed.

2.2. The rate shall be for a unit of One sq.meter.

17.44.(A) Pointing on uncoarsed stone masonry with cement mortar 1:3 (1 cement : 3sand) Flushing pointing.

1.0. Materials &Workmanship

1.1. The relevant specifications of item No 17 116(A) shall be followed except that the flush pointing shall fie done on uncoarsed rubble masonry work if C.M 1 3 and the mortar shall De simply Struck off with a trowel and the work left showing the natural irregularities in line and the surface of the stone themselves.

2.0. Mode of measurements and payment

2.1. The relevant specifications of item No. 17.116(A) shall befollowed.

2.2. The rate shall be for a unit of One sq.meter.

17.144.(B) Pointingonuncoarsedstonemasonrywithcementmortar1:3(1cement:sand) Ruled pointing.

1.0. Materials &Workmanship

1.1. The relevant specification of item No 17 116 (Aj and 17 144 (A) shall be followed except that the ruled pointing work -shall be carried out on uncoarsed rubble masonry work in CM1.3.

2.0. Mode of measurements and payment

2.1. The relevant specifications of item No. 17.116{A) shall be followed.

2.2. The rate .shall be for a unit of One sq.meter

17.0.0.1 Providing cement vata (10 cms x 10 cms) size quarter round in cementmortar1:1 including neat cement finishing, watering, etc. Complete.

1.0. Materials

1.1. Water shall conform to M-1 .Cement mortar shall conform toM-11.

2.0. Workmanship

2.1. The work of cement vata of 10 cms x 10 cms. size shall be earned out at Functions of parapets and terraces as directed. The vata shall he finished in quarter round shape. The work shall be earned out in the nest workman like manner. The inter portion of rain water pipe shall be rounded off properly during constructing the vata. The work shall be cured for 7days.

3.0. Mode of measurements and payment

3.1. The work shall be measured for finished item in running meter.

3.2. The rate shall be for a One running meter.

SECTION-18

White Washing & Distempering

18.11. White washing with lime on undecorated wall surfaces (two coats) to give aneven shade including thoroughly brooming the surface to remove alt dirt, dust, mortar drops and other foreignmatter.

1.1. Materials

1.1. The clear Cole shall be made from glue and boiling water by mixing 1 Kg. mixture shall be suitably
tinted where required for use under coloured distemper it directed. Glue shall conform to I.S. 352-1959 (Specifications for animal give)

1.2. Lime used shall be Freshly burnt class 'C' Lime (fat lime) and white in colour conforming to I S. 712-1973. Water shall conform to M-1. Best quality of gum shall be used in (he preparations of white wash. Ultramarine blue or Indigo : This shall conform to I.S. 55-1970 for points, and shall be used for preparation of white was, Pigments. Mineral colours, not affected by lime shall be used in preparing colourwash.

2.0. Workmanship

2.1. Preparation of white wash solution Surface already white or colour. The fat lime shall be slaked as site and shall be mixed and stirred with about five liters of water for 1 kg. of unslaked lime to made a trim cream This shall be allowed to stand for d period of 24 hours and then shall be screened through a clean coarse cloth, 4 Kg. of gum dissolves in hot water shall be added to each cubic meter of lime cream Small quantity of ultramarine blue (Up to 3 gins, per kg. of lime) shall also-be added to the last two coats of white wash solution and the whole solution shall be stirred thoroughly beforeuse.

2.2. Preparation ofsurface:

2.2.1. The surface shall be thoroughly cleaned of all dust, dirt, mortar cropping and other foreign matter before white wash is to beapplied.

2.2.2. The surface spoiled by smoke soot shall be scrapped with steel wire brushes or steel scrapers 01 shall be rubbed with over-burnt surkhi or brick bats. The surface shall be then broomed to remove all dust dirt and shall he washed with cleanwater.

2.2.3. Oil or grease spots shall be removed by suitable chemical and smooth surface shall be rubber with wireCrushes.

2.2.4. All unsound portion of the surface plaster shall be removed to full depth of plaster in rectangular patches and plastered again after raking the masonry joints properly. Such portion shall he wetted and allowed to dry. They shall then be given one coat of whitewash

2.2.5. All unnecessary nails shall be removed the holes, cracks, patches etc. shall be made good with material similar in composition to the surface to beprepared

2.3. Scaffolding:

Wherever scaffolding is necessary it shall be erected in such a way that as far as possible on part of scaffolding shall rest against the surface to be white or colour washed A properly secured strong and well tied suspended platform (Zoola) may be used for white washing. Where ladders are used pieces of old gunny bags shall be tied at top and bottom to prevent scratches to the floors and walls. For white washing of ceilings, proper stage scaffolding shall be erected where necessary.

2.4. Application of white wash:

2.4.1. On the surface so prepared the white wash shall be applied with 'Moon' brush. The first stroke of the brush shall be from top downwards, another from bottom upwards over the first stroke and similarly one stoke from the right another from the left, over the first stroke brush before it dries. This will form one coat each coat shall be allowed to dry before and uniform finish free from brush marks and it should not come oft easily when rubbed withfinger

2.4.2. Splashing and dropping if any on the doors and windows, ventilators etc shall be removed and the surfacecleaned.

2.4.3. Priming and Alkali resistant treatments, scraping of surface washing etc. surface spoiled by smoke soot removed of oil and grease spots, treatment for infection with efflorescence moulds moos, fungi, algae and lichen and patch repairs to plaster wherever done shall not be paidextra.

3.0. Mode of measurement &payment

3.1. All the work shall be measured in the decimal system asunder:

(a) Dimensions shall be measured to the nearest 0.01m.

(b) Area in individual item shall be worked out to the nearest 0.01sq.m.

All the work shall be measured in sq. mt. Deductions for jambs, soffits, sills etc. for openings not exceeding 0.5 sq. mt. each

in area, for ends of joists, posts, beams, girders, steps etc. not exceeding 0.5 sq mt. each in area and for openings exceeding 0.5 sq. mt. and not exceeding 3.0. sq. mt. each in area, deductions and additions shall be made as under.

3.2. Nodeductionsshallbemadeforendsofjoists,beams,posts,etc.andopeningsnotexceeding 0.5 sq mt. each. No addition shall be made for reveals, jambs, soffits, sills etc. of these openings not for finish around ends of joints, beams, posts etc.

3.3. No deductions for openings exceeding 0.5 sq.mt. but not exceeding 3 sq. mt. each shall be made as follows and no addition will be made for reveals, jambs, soffits etc. of these openings:

(a) When both the faces of walls are provided with finish, deduction shall be made for one face only.

(b) When each face of wall is provided with different finish, deduction shall be made for that side of frame for door, windows, etc. on which width of reveals is less than that of the other side. Where width of reveals on both faces of wall are equal, deduction of .50% of area of opening on each face shall be made from total area offinish.

(c) When only one face of wall is treated and the other face is not treated, full deduction shall be made if the width of reveal on the treated side is less than that on the untreated side, but if the width of the reveal is equal or more than on the untreated side neither deductions nor additions to be made for reveals, jambs, soffits, sillsetc.

3..4 In case of area of openings exceeding 3 sq. mt. each, deductions shall be made foropeningsbut jambs, soffits, sills shall bemeasured.

3.5. No deductions shall be made for attachment such as casing, conducts, pipe, electric wiring and the like.

3.6. Corrugated surfaces shall be measured flat as fixed and not girth. The quantities so measured shall be increased by the following percentage and the resultant shall be included with the general areas:

(a) Corrugated steelsheets.....14%
(b) Corrugated A.C. sheets.....20%
(c) Semi corrugated A.C. Sheets.....10%
(d) Nainital pattern roof (Plain sheeting sheets).....10%
(e) Naintial pattern roof (with corrugated sheets).....25%

3.7. Cornices and other wall features, when they are not picked out in a different finish/colour shall be girthed and included in the generalarea.

3.8. The rate shall include the cost of ail materials, labour, scaffolding, protective measures etc. involved in all the operations describedabove.

3.9. The rate shall be for a unit of One sq.meter.

18.12. Whitewashingwithlimeondecoratedwallsurface(Onecoat)togiveaneven shade including thoroughly brooming in the surface to remove dust, mortar, drops and loose scales of lime wash and other foreignmatter.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item No. 18.11 shall be followed except that the white washing work shall be carried out on decorated wall surface singlecoat.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 18.11 shall befollowed.

2.2. The rate shall be for a unit of One sq.meter

18.13 Extra over items 18.11 and 18.12 for every subsequent coat of whitewashingwith lime on wallsurfaces.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item No. 18.11 shall be followed except that this work is for extra coat over and above two coats on wallsurface.

2.0. Mode of measurements andpayment.

2.1. The relevant specifications of item No. 18.11 shall be followed except that the payment of subsequent coat snail be made extra over and above the item No, 18.11 for every subsequent coat applied.

2.2. The rate shall be for a unit of One sq.meter.

18.14. Extra over item 18.11 for white washing with the lime on ceiling and / orsloping roof.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item No. 18.11 above shall be followed except that this work is for ceiling and / or slopingroof.

2.0. Mode of measurements andpayment.

2.1. The relevant specifications of item No. 18.11 shall be followed except that extra payment for white washing on ceiling and/or slopping roof shall be made over and above the payment of item No. 18.11

2.2. The rate shall be for a unit of One sq.meter.

18.15 Extra over 18.12 for white washing with lime on decorateddealings andsloping roofs.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item No. 18.12 shall be followed except that the white washing work shall be carried out on decorated ceilings and/or slopingroofs.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 18.52 shall be followed except that extra payment for white washing on ceiling and/or sloping roof shall be made over and above the payment of item No. 18.12.

2.2. The rate shall be for a unit of one sq.meter.

18.16. Extra over the item No. 18.13 for every subsequent coat of white washingwithlime on ceiling and /or slopingroofs.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item No. 18.11 and 18.13 shall be followed except that this work is for extra coat over and above two coats of ceiling and / or slopingroofs.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 18.11 and 18. 13 shall be followed except that the extra payment for white washing shall be made for sloping roof or/and ceiling for every subsequent coat applied over and above item 18.11 and18.13.

2.2. The rate shall be for a unit of one sq.meter.

18.17. Colour washing with lime on undecorated wall surfaces (Two coats) over and including priming coat of white washing to give even shade including thoroughly brooming the surface to remove all dirt, dust, mortar drops and other foreign matter. The relevant specifications for the materials and workmanship 18.11 shall be followed except that it shall be for colourwash.

1.0. Materials

1.1. Clear-Cole : This shall be made from glue and boiling water by mixing 1 kg. of glue to every 15 liters of water. The mixing shall be suitably tinted to match with colour of colour washing as directed. Glue shall conform to l.S.852-1969.

1.2. Lime : Lime used shall be freshly burnt class 'C' lime (Fat lime) and white in colour conforming to I.S.712-1973.

1.3. Water : Water shall conform toM-1.

1.4. Gum ; Best quality of gum shall be used in the preparation of white or colour wash. The colour pigment of required tint and shade shall be mixed in lime cream. The mineral colour not affected by lime shall be used in preparing the colourwash.

2.0. Workmanship

2.1. Sufficient quantity of colour wash enough for the complete job shall be prepared in one operation to avoid any difference in shade. Thebasic white wash solution shall be prepared in accordance withitem

18.11 Mineral colours not affected by lime shall be added to the white wash solution. No colour wash shall be done until a sample of the colour has been approved. It shall be rioted that small samples of colour appeals lighter in shade than when the same shades are applied precisely to large surface. The colour shallbe of event, tint, over the colour shall be of event tint, over the whole surface. If it is patchy or otherwise badly applied, it shall be rejected. Preparation of the colour wash with pigment shall be as under:

(a) With Yellow and Red Ocher:

Solid lumps if nay in the powder shall be crushed to powder and solution in water prepared and then added to white wash sieving it through a coarse cloth, mixed evenly and thoroughly to white wash in-small quantities till required shade is obtained.

(b) With Blue Vitriol:

Fresh crystals of hydrous copper sulfate (i.e. vitriol) shall be ground to fine power and dissolved in small quantity of water. Sufficient quantity of solution enough to produce the colour wash of required shade shall be strained through a clean cloth, the filtrate being mixed evenly and thoroughly to the white wash.

(c) Colour wash from other colouring pigment shall be prepared in accordance with the instructions of themanufacturer.

2.2. Preparation of Surface:

The surface shall be prepared by removing mortar dropping and foreign matter and thoroughly cleaned with wire of fiber brush or any other suitable means as directed by the Engineer-in-charge. All loose pieces and scales shall be scrapped off and holes filled with mortar.

2.2.1. For scaffoldings and application of colour wash, relevant specification of item No. 18.11. above shall be followed. The colour wash shall be applied asunder:

The colour wash shall be applied in accordance with the procedure given in item No. 18.11. "Application of white wash for colour washing on undercoated surface after the surface has been prepared. The first primary coat shall be of white wash and subsequent coats (minimum two) shall be colour wash and the entire surface shall represent a smooth and uniform finish. To star with, patch of 0.1 sq. mt. onprepared surface shall be colour washed with first coat of white wash and subsequent coats of colour wash solution entire work of cofour washing is taken up in hand, ft shall be noted that small areas of colour wash will appear lighter than when the same shade is applied to the largesurface.

2.2.2. For colour washing on decorated surfaces, after (he surface has been prepared, a coat of white wash-shall be applied for the patches and repairs. Then one coat or more of colour wash shall be applied over the entire surface, such that the colour washed surface shall present a uniform colour shade. No primary coat is needed for a decorated surface bearing colour of same shade on surface required change of colour after the surface has been prepared as described above. Two coats of white wash shall be applied before application of specified number (minimum TWO) of coats of colour wash of the newshade.

2.3. Protective measure:

The surface of doors, windows, floors, articles, of furniture etc. and such other parts of the building not to be white washed shall be protected from being splashed upon. Such surfaces snail be cleaned of white wash splashed ifany.

3.0. Mode of measurements andpayment

3.1. The relevant specifications of item No. 18 11 shall befollowed.

3.2. The rate shall be for a unit of One sq.meter.

18.18. Colour washing with lime on decorated wall surfaces (one coat) to give evenshade including thoroughly brooming the surface to remove all dirt, dust, mortar drops and loose scales of lime wash and other foreignmatter.

1.0. mortals and Workmanship

The relevant specifications item No 18.17 shall be followed except that the colour washing shall be carried out on decorated wall surface in one coat

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No 18.7 shall befollowed.

2.2. The rate shall be for a unit of One sq.meter.

18.19. Exira overitemNo 13.17 and 18.18 for every subsequent coat of colour wash with lime on wallsurfaces.

1.0 Materials andWorkmanship

1.1 The relevant specifications item No. 18.17 shall he followed except that this work is for extra coat of colour wash over and above two coats on wallsurface.

2.0. Mode of measurement andpayment

2.1. The relevant specifications of item No. 18.17 shall be followed except that the extra payment for every subsequent coat of white wash shall be made over and above the rate of item. 18.17 and18.18.

2.2. The rate shall be for a unit of one sq.meter.

18.20. Extra over item 18.17 for colour washing on ceilings and /or slopingroofs.

1.0. Materials andworkmanship

1.1. The relevant specifications of item No. 18.17 shall be followed except that this work is for colour washing on ceiling and/or slopingroofs.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 18.17 shall be followed except that the-rate shall be paid extra over and above the rate of item No. 18.17 for providing colour washing on ceiling and /or sloping roof.

2.2. The rate shall be for a unit of One sq.meter.

18.29. Cement washing with port land cement slurry on undecorated wall surfaces, (one coat) to give a smooth finish including thoroughly brooming the surface to remove all dirt, dust, mortar

drops and other foreign matter.

1.0. Materials

1.1. Water shall conform to M-1. Part land cement shall conform toM-3.

2.0. Workmanship

2.1. The re;3vant specification of item No. 18.11 for preparation of surface, scaffolding, application of wash etc. shall be followed except that the cement wash shall be applied, instead of white wash. Cement applied with brushes to form a smooth bodied opaquesurface.

3.0. Mode of measurements andpayment

3.1. The relevant specifications of item No. 18.11 shall befollowed.

3.2. The rate shall be for a unit of one sq.meter.

18.30. Extra over item No. 18.29 for every subsequent coat of cement washing withport land cementslurry.

1.0. MaterialsWorkmanship

1.1. The relevant specifications of item No. 18.29 shall be followed except that the work of cement slurry wash shall be provided for every subsequent coat above item No. 18.29 to beapplied.

2.0. Mode of measurements andpayment

2.1. The relevant specification of item No. 18.29 shall be followed except that the extra rate shall be paid for every subsequent coat and above the rate of item No.18.29.

2.2. The rate shall for a unit of One sq.meter.

18.33. Removingdryoroilbounddistemperbywashingscrapingandsandpaperingthe wall surface smooth including necessary repairs to scratchescomplete.

1.0. Materials andWorkmanship

1.1. All loose places and scaled shall be removed by sand papering and surface shall be cleared of all greascay, dust, dirt, etc. on decorated wall surfaces. Where heavy scaling has taken place, the entire surface shall be scrapped by means of steel scrappers so as to remove all accumulated distemper, leaving clean surfaces. Necessary repairs to the scratches shall be made asdirected.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 18.11. shall befollowed.

2.2. The rate shall be for a unit of One sq.meter,

13.34. ExtraoveritemNo.18.33.forremovingdryoilbounddistemperonceilingand sloping androofs.

1.0. Workmanship

1.1. The relevant specifications of item No. 18.33 shall be followed except that removing dry/oil bound distemper from sloping roof/ceiling is to be carriedout.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 18.33 shall be followed except that the payment shall be made for removing dry/oil bound distemper from ceiling/sloping roof over and above the rate of item No. 18.33.

2.2. The rate shall be for unit of one Sq.meter.

18.38. Distempering with dry (water bound) Distemper of approved brandandmanufacture (two coats) and of required shade on undecorated wall surfaces to give an even shade, over and including a priming coat of white washing after thoroughly brooming the surface free from mortar droppings and other foreignmatters.

1.0. Materials

1.1. The dry distemper and primer shall be of approved brand and manufacture. The dry distemper shall be of required colour and shade and the same shall conform to I.S. 427-1965. Writing shall conform to I.S.63-1964.

2.0. Workmanship

2.1. Scaffolding : Where scaffolding is required it shall be erected in such a way that as far as possible no part of scaffolding shall rest against the surface to be distempered. A properly secured strong and well tied suspended platform (Joolas) may be used for distempering. Where ladders are used- pieces of old gunny bags shall be tied at top and bottom to prevent scratches to the walls and floors. \For distempering to ceiling, proper stage scaffolding shall be erected wherenecessary.

2.2. Preparation ofSurface.

2.2.1. The undecorated surface to be distempered shall be thoroughly brushed free from dust, dirt, grease, mortar, droppings and other foreign matter and sand papered smooth. New plaster surface shall be allowed to dry at least 2 months before application ofdistemper.

2.2.2. All unnecessary nails shall be removed. Pitting in plaster shall be made good with plaster of Paris mixed with dry distemper of the colour to be used. The surface shall then be rubbed down again with a fine grades and paper and made smooth. The surface affected by moulds, moss, fang, algae lichens, efflorescence etc. shall be treated in accordance with I.S. 2395 (Part-l) 1966 before applying distemper. Any unevenness shall be made good by applying putty made of plaster of Paris mixed with water on entire surface including filling up the undulations and then sand papering the same after it is dry.

2.3. Priming coat:

2.3.1. A priming coat of whiting shall be applied as per item No. 18.11 over the prepared surface in case of new work on undecorated surface. No coat of white washing with lime shall be used as a priming coat fordistemper.

2.3.2. Application of plaster shall be done asunder:

The primer shall be applied with a brush on the clean dry and smooth surface. Horizontal strokes shall be given first and vertical stokes shall be applied immediately afterwards. This entire operation will constitute one coat. The surface shall be finished as uniformly as possible leaving no brush marks. It shall be allowed to one coat. The surface shall be finished as uniformly as possible leaving no brush marks. It shall be allowed to dry for at least 48 hours before oil bound distemper or paint is applied.

2.3.3. Distemper is not recommended to be applied within six months of the completion of wallplaster.

2.4. Proportion of Distemper : The distemper shall be diluted with water or any other prescribed thinner in a manner recommended by the manufacturers only. Sufficient quantity of distemper required for one day's work shall beprepared.

2.5. Application of Distemper coat:

2.5.1. For undecorated surfaces after the primer coat is dried for at least 48 hours, the surfaces shall be lightly sand papered to make them smooth for receiving the distemper, taking care not to rub out the priming coat. All loose particles shall be dusted off after rubbing. Minimum two coats of distemper shall be applied with brushes in horizontal strokes followed immediately by vertical strokes which together shall constitute one coat. The subsequent coats shall be applied after a time interval strokes which together shall constitute one coat. The subsequent coats shall be applied after a time interval of at least 24 hours between consecutive coals to permit proper drying of the proceeding coat. The finished surface shall be even and uniform without patches, brush marks, distemper dropsetc.

2.5.2. Sufficient quantity of distemper shall be mixed to finish on room at a time. The application of a coat in each room snail be finished in one operation and no work shall be started in any room which cannot be completed, on the sameday.

2.5.3. 15 cm. double bristle distemper brush shall be used. After the day's work, brushes shall be thoroughly washed in hot water with soap solution and hang down to dry. Old brushes which are dirty and caked with distemper shall not be used on thework.

2.6. Protective Measures : The surfaces of doors, windows, floors, articles of furniture etc. and such other parts of the building as are not to be distempered shall be a plashed form being splashed upon. Such surfaces shall be cleaned of distemper a plashes ifany.

3.0. Mode of measurements andpayment

3.1. Pruning coal of distemper primer, scraping of surface spoiled by smoke soot, removal of oil and grease spots, treatment for infraction of effloresces, mould moss, fungi, algae and lichens and patch repairs to plaster shall be included in this item for which nothing extra shall bepaid.

3.2. AH the work shall be measured net in the decimal system as in places subject to the following limits unless otherwise statedhereinafter:

(a) Dimensions shall be measured to the nearest 0.01m.

(b) Area in individual items shall be worked out to the nearest 0.01 sq. m. All work shall be measured in sq. meter. No deductions shall be made for ends of joints, beams, posts, etc. of these openings nor for finish around the ends of joints, beams, postsetc.

3.3. Deductions of openings exceeding 0.5 sq.m. but not exceeding 3 sq. m. each shall be made as follows and no addition shall be made for reveal, jambs, soffits etc. of theseopenings:

(a) When both the faces of wails are provided with the same finish decutions shall be made for one faceonly.

(b) Wren each face of wail is provided with different finish, deduction shall be made for that of frame fordoor,windows etc. on which width of reveal is less than that of the other side but no deductionsshall

be made on the other side. Where the width of reveals on the both the faces of wall are equal, deduction of 50% of area of opening on each face shall be made from area of finish.

(c) When only one face of wall is treated and the other face is not treated, full deductions shall be made if the width of the reveal on treated side is less than that on untreated side but if the width of the reveals is equal or more than that of untreated side neither deductions nor additions to be made for reveals, jambs, sills and soffits shall bemeasured

3.4. In case of openings of area exceeding 3 sq.m. each, deduction shall be made for openings, but jambs, sills and soffits shall bemeasured.

3.5. No deductions shall be made for attachments such as casing, conduits, pipes, electric wiring and thelike.

3.6. Item includes removing nails, making good holes, cracks, patches with materials similar in composition to thedistemper.

3.7. The rate includes cost of all materials, labour, scaffolding, protective measures etc. involved in all the operations described above This shall also include conveyance, delivery, bundling, unloading storingetc.

3.8. The rate shall be for a unit of One sq.meter.

18.39. Distempering with dry (wafer **bound) distemper of approved brandandmanufacture (one coat) and of required shade, on decorative wall surface to give an even shade after thoroughly brushing the surface clean of all grease dirt, loose pieces of scales including preparing the surfaces and even sand paperedsmooth.**

1.0. Materials and workmanship

The relevant specifications of Kern No. 18,38 shall be followed except that the dry distemper shall applied on decorative wall surface in oncoat.

2.0. Mode of measurements and payment

2.2. The rate shall be for a unit of One sq. meter.

18.40. Extra over item 38 and 39 for every subsequent coat of distemper with dry distemper of approved brand andmanufacture.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item No. 18.38 shall be followed except that the extra work for applying subsequent coat of dry distemper is to be carried out over and above the work of item No. 18.38 and 18.39.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 18.38 shall be followed except that extra rate shall be paid for every subsequent coat applied over and above the rate of item No. 18.38 and18.39.

2.2. The rate shall be for a unit of One sq.meter.

18.41. Extraoveritem38fordistemperingwithdrydistemperonceilingandsloping roofs.

1.0. Materials andworkmanship

1.1. The relevant specifications of item No. 18.38 shall be followed except that the dry distempering shall carried out on ceiling and sloping roofs of undercoatssurface.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 18.38 shall be followed except that extra rate shall be paid for carrying outwork on ceiling/sloping roof on undecorated surface over and above the rate of item 18.38.

2.2. The rate shall be for a unit of One sq.meter.

18.42. Extra over item 39 and 40 for distempering with dry distemper onceiling/sloping roofs.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item No. 18.39 shall be followed except that the work shall be carried out on ceiling/sloping roofs on decoratedsurfaces.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 18.39 shall be followed except that the extra rate shall be paid for the distempering work carried out by dry distempered on ceiling/sloping roofs with decorated surfaces over and above the raw of item N.18.39.

2.2. The rate shall be for a unit of One sq.meter.

18.44. Distempering (two coats) with oil bound distemper of approved brandand manufactureand of required shade on undecorated wall surface s to give an even shade, over and includinga

priming coat with distemper primer of approved brand and manufacture after thoroughly brushing the surface free from mortar droppings and other foreign matter and also including preparing the surface even and sand papered smooth.

1.0. Materials

1.1. Oil bound washable distemper and primer shall be of approved brand and manufacture. The distemper shall be of required colour and shade and the same shall conform to I.S. :428-1969.

2.0. Workmanship

2.1. Scaffolding

Where scaffolding is required, it shall be erected in such a way that as far as possible no pail of scaffolding shall rest against the surface to be distempered. A properly secured and well tied suspended platform (Joola) may be used for distempering. Where ladders are used, pieces of old gunny bags shall be tied at top and bottom to prevent scratches to the walls and floors. For distempering to ceiling, proper stage scaffolding shall be erected wherenecessary.

2.2. Preparation of surface:

2.2.1. The undecorated surface to be distempered shall be thoroughly brushed from dust, dirt, grease, mortar dropping and other foreign matter and sand papered smooth. New plaster surface shall be allowed to dry for at least 2 months before applications ofdistemper.

2.2.2. All unnecessary nails shall be removed. Pitting in plaster shall be made good with plaster again with a fine grade sand paper and made smooth. A coat of distemper shall be applied over the patches. The surface shall be allowed to dry thoroughly before the regular coat of distemper is allowed. The surface affected by moulds, moss, fungi, algae lichens, efflorescence etc. shall be treated in accordance with I.S; 2395 (Part 01) 1966. Before applying distempering, any unevenness shall be made good by applying putty made of plaster of pairs mixed with water on entire surface including filling up the undulation and then sand papering the same after it isdry.

2.3. Priming coat:

2.3.1. A priming coat of distemper primer of approved manufacture and shade shall be applied over the
papered surface in case of new work on undecorated surface. If the distemper priming is done after the wall surface dries completely, the distemper primer shall be applied.

2.3.2. Application of primer shall be done as under: The primer shall be applied with a brush on the clean dry and smooth surface. Horizontal strokes shall be given first and vertical strokes shall be applied immediately afterwards. This entire operation will constitute on coat. The surface shall be finished as uniformly as possible leaving no brush marks. It shall be allowed to dry for at least 48 hours before oil bound distemper or paint isapplied.

2.3.3. Oil bound distemper is not recommended to be applied within six months of the completion of wall
plaster.

2.4. Preparation of oil bound distemper:

2.4.1. The distemper shall be diluted with water or any other prescribed thinner in a manner recommended by the manufacturer only. Sufficient quantity of distemper required for a days work shall beprepared.

2.5. Application of Distempercoat:

2.5.1. For undecorated surfaces, after the primer coat is dried for at least 48 hours, the surface shall be lightly sand papered to make it smooth for receiving the distemper, taking care not to rub out priming coat. All loose particles shall be dusted of after rubbing. Minimum tow coats of distemper shall be applied with brushes in horizontal strokes followed immediately by vertical strokes which together shall constitute one coat. The subsequent coats shall be applied after a time interval of at least 24 hours between consecutive coats to permit proper drying of the proceeding coat. The finished surface shall be even and inform without patches, brush marks, distemper dropsetc.

2.5.2. Sufficient quantity of distemper shall be mixed to finish one room at a time. The application of a coat in each room shall be finished in one operation and no work shall be striated in any room which cannot be completed on the sameday.

2.5.3. 15 cm. double bristled distemper brush shall be used. After day's work brushes shall be thoroughly washed in hot water with soap solution and hung down to dry. Old brushes which are dirty and caked with distemper shall not be used on thework.

2.6. Protective measurements : The surfaces of doors, windows, floors, articles of furniture etc. and such other parts of the buildings as are not to be distempered shall be protected form being splashed upon. Such surfaces shall be cleaned of distemper splashes ifany.

3.0. Mode of measurements and payment

3.1. Priming coat of distemper primer, scraping of surface spoiled by struck roots, removal of oil and grease spots, treatment for infraction of effloresces., mould moss, fungi, algae and litchen and patch repairs to plaster shall be included in this item for which nothing extra shall bepaid.

3.2. All the work shall be measured net in the decimal system as in place subject to the following limits unless otherwise statedhereinafter:

(a) Dimensions shall be measured to the nearest 0.01m.

(b) Area in individual items shall be worked out to the nearest 0.01 sq. m. All work shall be made for ends of joints, beams, posts etc., and openings, not exceeding 0.5 sq.mt. each and no addition shall be made for reveals, jambs, soffits, sills etc. of these openings not for finish around ends of joints, beams, postsetc.

3.3. Deductions of opening exceeding 0.5 sq.m. but not exceeding 3 sq. m. each shall be made as follows and net addition shall be made for reveals, jambs, soffits etc. of these openings:

(a) When both the faces of wall are provided with same finish, deductions shall be made for one faceonly.

(b) When each face of wall is provided with different finish, deduction shall be made for that side of frame for doors, windows etc. on which width of reveals is less than that of the other side but no deduction shall be made on the other side. Where the width of reveals on the both the fates of wall are equal, deduction of 50% of area of opening on each face shall be made from area offinish.

(c) When only one face of wall is treated and the other face is not treated, full deductions shall be made if the width of the reveal on treated side is less than that on untreated side but if the width of the reveal is equal or more than that on untreated side neither deductions nor additions to be made for reveals, jambs, soffits, sillsetc.

3.4. In case of opening of area exceeding 3 sq. m. each deduction shall be made for openings but jambs, sills and soffits shall bemeasured.

3.5. Mo deductions shall be made for attachments such as casings, conduits, pipes, electric wiring and thelike.

3.6. Item includes removing nails, making good holes, patches with materials similar in composition ofdistemper.

3.7. The rate includes cost of ail materials, labours, scaffolding, protective measures etc. involved in all the operations described above. This shall also include conveyance, delivery, handing , unloading, storing worketc

2.8. The rate shall be for a unit of one sq. meter

18.45. Distempering (two coats) with oil bound washable distemper of approvedbrand and manufacture and of shade required on undecorated wall surfaces to give an even shade, over and including a priming coat with alkali resistance primer of approved brand and manufacture after thoroughly brushing the surface free from mortar droppings and other foreign matter and also including preparing the surface even and sand paperedsmooth.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item No. 13.44 shall be followed except that the primer of alkali resistance primer of approved brand and manufacture shall be used instead of distemperprimer.

2.0. Mode of measurements andpayment

2.1. The mode of measurements and payment shall be the same as for item No. 18.44above.

2.2. The rate shall be for a unit of One sq.meter.

18.46. Distempering (one coat) with oil bound washable distemper of approved brandof required shade on decorated wall surfaces to give an even shade after thoroughly brushing the surfaces clean of all grease, dirt, loose pieces of scales and also including distempering with oil bound washable distemper of preparing the surface even andsmooth.

1.0. Materials and Workmanship

The relevant specifications of item No. 18.44 shall be followed except that the distempering with oil bound washable distemper shall be carried out on decorated wall surfaces in on coat.

2.0. Mode of measurement andpayment

2.1. The relevant specification of item No. 18.44 shall hefollowed.

2.2. The rate shall be for a unit of one sqmeter.

18.47. Extra over item 18.44 to 18.46 for every subsequent coat of distempering withoil bound washable distemper of approved brand andmanufacture.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item No. 18 44 shall be followed except that this work is for providing

extra coat of oil bound distempering over and above two coats of distempering.

2.0. Mode of measurements andpayment

2.1. The relevant specification of item No, IS K shall be followed except that the extra rate shall be paid over and above the rate for every subsequent coats over two coats of item 18.44 and18.46.

2.2. The rate shall be for a unit of one sq.meter.

18.48. Extra over item 18.44. and 18.45 for distempering with oil bound washable distemper on ceiling and slopingroofs.

1.0. Materials and Workmanship

The relevant specifications of item No. 18.44 shall be followed except that the distempering shall be carried out on ceiling/sloping roofs.

2.0. Mode of measurements and payment

2.1.1. The relevant specifications of item No. 18.44 shall be followed except that the extra rate shall be paid for carrying our distempering work on ceiling/sloping roofs over and above the rate of item No. 18.44 and 18.45.

2.2. The rate shall be for a unit of one sq. meter.

18.49. Extraoveritem18.46and18.47foreverysubsequentcoatofdistemperingon ceiling and slopingroofs.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item No. 18.44 shall be followed except that the distempering work shall be carried out for subsequent coats over item No. 18.46 and18.47.

2.0. Mode of measurements and payments

2.1. The relevant specifications of item No. 18.46 shall be followed except that the extra rate shall be paid for every subsequent coat of distemper applied over and above the rate of item No. 18.46 and 18.47.

18.51. Finishing wall with water proofing cement paint of an undecorated wallsurfaces (two coats) to give an approved brand and manufacture and of required shape, even shade after thoroughly brushing the surface toremove.

1.0. Materials

1.1. The water shall conform to M-1. Cement water proofing paint shall conform to I.S.5410-1969.

2.0. Workmanship

2.1. Scaffolding : The relevant, specifications of item No. 18.11 shall befollowed.

2.2. Preparation of surface:

The relevant specifications of item No. 18.11 shall be followed except that the word white wash colour wash shall be substituted with water proofing cement paint. The surface shall be thoroughly wetted with clean water before cement water proofing paint is applied.

2.3. Preparation of paint: Portland cement paint shall be prepared by adding paint powder to water and stirring to obtain a thick paste, which shall then be diluted to a brush able consistency. Generally, equal volumes of paint powder and water make a satisfactory paint. In all cases, The manufacture's instructions shall Site followed. The paint shall be mixed in such quantities as can used up within an hour of mixing as otherwise the mixture will set and thickness, affecting flowing and finish. The lids of cement paint drums shall be kept tightly when not inuse.

2.4. Application ofPaint:

2.4.1. No painting shall be done when the paint is-likely to be exposed to a temperature of below 7^0 c within 48 hours afterapplication.

2.4.2. When weather conditions are such as to cause be carried out in the shadow as far as possible. This helps the proper hardening of the paint film by keeping the surface moist for a longerperiod.

2.4.3. To maintain the uniform mixture and to prevent segregation, the paint shall be stirred frequently in thebucket.

2.4.4. For undecorated surfaces, the surface shall be treated with minimum two coats of water proof cement paint. Not less than 24 hours shall be allowed between two coats. Next coat shall not be started until the proceeding coat has become sufficiently hard to resist marking by the brush being used. !n hot dry weather, the proceeding coat shall be slightly moistened before applying the subsequentcoat.

2.4.5. The finished surface shall be even and uniform in shade, without patches, brush masks, paint dropsetc.

2.4.6. The cement paint shall be applied with a brush with relatively short stiff hog or fiber bristles. The paint shall be brushed in uniform thickness and shall be free from excessively heavy brush marks. The lamps shall be brushedout.

2.4.7. Water proof cement paint shall not be applied on surface already treated with white wash, colour wash, distemper dry or oil bound varnishes, paint etc. It shall not be applied on gypsum, wood and metalsurfaces.

2.5. Curing : Painted surfaces shall be sprinkled with water two or three times a day. This shall be done between coats and for at least two days following the final coat. The curing shall be started as soon as the point has hardened so as not be damaged by the sprinkling of water say about 12 hours after theapplication.

2.6. Protection measures shall be taken as per item No. 18.11 Para2.6.

3.0. Mode of measurements andpayment

3.1. The relevant specifications of item No. 18.11. shall befollowed.

3.2. The rate shall be for a unit of One sq.meter.

18.53. Extra over item 18.51 for every subsequent coat of water proofing cement paint of approved brand and manufacture.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item No. 18.51 shall be followed except that the work is for applying subsequent coat of cement water proofingpaint.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 18.51 shall be followed except that the extra rate shall be paid for applying every subsequent coat of cement water proofing paint over and above the rate of item No.18.51.

2.2. The rate shall be for a unit of One Sq.meter.

18.54. Extra over item 18.51 for finishing with cement paint on ceiling/slopingroofs.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item No. 18.51 shall be followed except that the cement water proofing paint shall applied on ceiling and slopingroofs.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 18.51 shall be followed except the extra shall be paid for applying cement water proofing paint on ceiling and sloping roofs, over and above the rate of item No. 18.51.

2.2. The rate shall be for a unit of One sq.Meter.

18.56. Extra over 18.53 for every subsequent coat of finishing with cement painton ceiling and slopingroofs.

1.0. Materials andWorkmanship

1.1. The relevant specification of item No. 18.51 shall be followed except that the work shall be carried out for subsequent coat on ceiling and slopingroofs.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 18.53. shall be followed except that extra rate shall be paid for every subsequent coat applied with cement water proofing paint over and above the rate of item No.18.53.

18.57. Wall painting (two coats) with plastic emulsion paint of approved brand of manufacture on undecorated wall surfaces to give an even shade including thoroughly brushing the surface free from mortar droppings and other foreign matter and sand papersmooth.

1.0. Materials

Water shall be conform M-1. The plastic emulsion shall conform to I.S.: 5411-1969 (part-l).

2.0. Workmanship

2.1. Scaffolding : The relevant specifications of item-No. 18.11 Para 2.1 shall befollowed.

2.2. Preparation of surface : The relevant specification of item No. 18.44 Para 2.2 shall befollowed.

2.3. Preparation of Mix:

This shall be done as per manufacture's instructions. The thinning of emulsion is to be done with water and not with turpentine. The quantity of thinner to be added shall be as per manufacturer instructions.

2.4. Application :

2.4.1. Before pouring into small containers for use, the paint shall be stirred thoroughly in item container. When applying also, the paint shall be continuously stirred in the smaller container, so that its consistency is keptuniform.

2.4.2. The paint shall be laid on evenly and smoothly by means of crossing and laying off the crossing and consist of covering the area over with paint, brushing the surface hard for the first time over and then, brushing alternately in opposite direction two or three times and then finally brushing lightly in direction at right angles to the same. In this process, no brush Marks shall be left after the laying off is finished. No hair marks from the brush or clogging of paint puddles in the corners of panels, angles of moldings, etc. shall be left on the work. The full process of crossing and laying off will constitute one coat.

2.4.3. The paint shall be applied with brush or rollers. For undecorated surfaces, the surface shall be treated with minimum two coats of cement water proofing paint. The second or subsequent coat shall notbe started until the proceeding coat as become sufficiently hard to resist marking by brushing being used.

2.4.4. The surface on finishing shall present a flat velvety smooth finish. It shall be even and uniform in shade without patches, brush marks, paint dropsetc.

2.5. Precautions :

(a) Old brushes if they are to be used with emulsion paints, shall be completely dried of turpentine or oil paint by washing in warm soap water. Brushes shall be quickly washed in water immediately after use and kept immersed in water fusing break periods to prevent the paint from hardening on the brush.

(b) In the preparation of wall for plastic emulsion painting, no oil base petals shall be sued in filling cracks, holesetc.

(c) Splashes on floors etc. shall be cleaned out without delay as they will be difficult to remove afterhardening.

(d) Washing or surfaces treated with emulsion paint shall not be done within 3 to 4 weeks of application

2.6. Protective payment : The relevant specifications of item No. 18.11 shall befollowed.

3.0. Mode of measurements andpayment

3.1. The relevant specifications of item No. 18.11 shall befollowed.

3.2. The rate shall be for a unit of One sq.meter.

18.59. Extra over item No. 18.57 for every subsequent coat of wall painting withplastic emulsion paint of approvedbrand.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item No. 18.57 shall be followed except that the painting work shall be for subsequent coat of plastic emulsionpaint.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 18.57 shall be followed except that the extra payment shall be done on ceiling and slopingroofs.

2.2. The rate shall be for a unit of One sq.meter.

18.60. Extra over item 18.57 for painting with plastic emulsion paint of approvedbrand on ceiling and slopingroofs.

1.0. Materials and Workmanship

1.1. The relevant specifications of item No. 18.57 shall be followed except that the painting shall be done on ceiling and slopingroofs.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 18.57 shall be followed except that the extra payment shall be made for applying plastic emulsion paint on ceiling and sloping roofs over and the rate of item No.18.57.

2.2. The rate shall be for a unit of One sq.meter.

18.62. Extra over item 18.59 for paint ceiling and slopingroofs.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item No. 18.57 shall be followed except that the work for subsequent coat of plastic emulsion paint shall be carried out on ceiling and slopingroofs.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 18.57 shall be followed except that the extra rate shall be paid for carrying out painting on sloping roofs and ceiling with plastic emulsion paint over and above the rate of item No. 1859

2.2. The rate shall be a unit of One sq.meter.

SECTION-19
Paintings & Polishing

19.7. Painting two coats (excluding priming coat) on new steel and other metalsurfaces with enamel paint, brushing, interior to give an even shade including cleaning the surface of all dirt, dust and other foreignmatter.

1.0. Materials

The enamel pain shall conform to M-44 B.

2.0. Workmanship

2.1. General : The materials required for work of painting work shall be obtained directly from approved manufactures or approved dealer and brought to the site in maker's drums; kegs. etc. with sealunbroken.

2.1.2. All materials not in actual use shall be kept properly protected, lids of containers shall be kept closed and surface of paint in open or partially open containers covered with a thin layer of turpentine to prevent formation of skin. The materials which have become state or flat due to improper and long storage shall not be used. The paint shall be stirred thoroughly in its container before pouring into small containers. While applying also, the paint shall be continuously stirred in smaller container. No left over paint shall be put back into stock tins. When not in use the containers shall be kept properlyclosed.

2.1.3. If for any reasons, things is necessary, the brand of thinner recommended by the manufacturer shall beused.

2.1.4. The surface to be painted shall be thoroughly cleaned and dusted. All rust, dirt and grease shall be thoroughly removed before painting is started. No painting on exterior or other exposed part o thework shall be carried out in wet, damp or otherwise unfavorable weather and all the surfaces shall be thoroughly dry before painting work isstarted.

2.2. Application ofpaint:

2.2.1. Brushing operations are to be adjusted to the spreading capacity advised by the manufacture of particular paint. The paint shall be applied evenly and smoothly by means of crossing and laying off. The crossing and laying off consists of covering the area over with paint, brushing the surface hard for the first time over and then brushing alternately in opposite directions two or three times and then finally brushing lightly in a direction at right angles to the same. In this process, no brush marks shall be left after the -laying off is finished. The full process of crossing and laying off will constitute onecoat.

2.2.2. Each coat shall be allowed to dry completely and lightly rubbed with very fine grade of sand-paper and loose particles brushed off before next coat is applied. Each coat shall vary slightly in shade and shall be got approved from Engineer-in-charge before next coat isstarted.

2.2.3. Each coat the last shall be lightly rubbed down with sand paper of fine pumice stone and cleaned of dust before the next coat is applied. No hair marks from the brush of clogging of paint puddles in the corners of panels, angles of moldings etc. shall be left on thework.

2.2.4. Special care shall be taken while painting over bolts, nuts, rivets, overlaps etc. Approved best quality brushes shall beused.

3.0. Mode of measurements andpayment

3.1. The relevant specifications of item No. 19.12 shall be followed for mode of measurements and payment. The rate is excluding primingcoat.

3.4. The rate shall be for a unit of One sq. meter.

19.15. Extra over item No. 19.7 and 19.11 for every subsequent coat ofpaint.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item No. 19.7 shall be followed except that the work of painting shall be carried out for subsequentcoat.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 19.7 shall be followed except that the extra rate shall be paid for every subsequent coat of paints applied over and above the rate of item No. 19.7 and19.11.

2.2. The rate shall be for a unit of One sq.meter.

19.11. Painting one coats Excluding priming coat) on previously painted steel and other metal surface with enamel paint, brushing to give and even shade including cleaning the surface of all dirt, dust and other foreignmatter.

1.0. Materials andWorkmanship'

1.1. The relevant specification of item No 19.7 shall be followed except that painting shall be carried out in one coat with enamel paint on previously painted steel and metalsurface.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No, 19.7 shall befollowed.

2.2. The rate shall be for a unit of one sq.meter.

19.12. Applying priming coat over new steel and other metal surfaces after andincluding preparing the surface by thoroughly cleaning oil, grease, dirt and other foreign matter and secured with brushes, fine steel, wool scrapers and sand paper, with ready mixed priming paint, brushing redlead.

1.0. Materials

1.1. The ready mixed primer, brushing red shall conform to I.S.102-1962.

1.2. The thinner (linseed oil) shall conform to I.S. 75-1973. If for any reason, thinning is necessary*m* case of ready mix paint the brand of thinner recommended by manufacture shall be used.

2.0. Workmanship

2.1. Preparation of surfaces : The surfaces painting shall be cleaned of all rust, scale, dirt and other foreign matter sticking to it with wire brushes, steel wool, scrapers, sand paper etc. This surface shall then be wiped finally with mineral turpentine which shall also remove grease and perspiration of hand marks. The surface shall then be allowed todry.

2.2. Application of primer:

2.2.1. After the preparation of the surface, the priming coat shall be applied immediately. The brushing operations are to be adjusted to the spreading capacity advised by the manufacturer of the particular primer. The paint shall be applied evenly and smoothly by means of crossing and laying off. The crossing and laying off consists of covering the area over with paint, brushing alternately in opposite directions, two or three times and then finally brushing lightly in a direction at right angles to the same. In this process, no brush marks shall be left after the laying off is finished. The full process of crossing and laying off wall constitute onecoat.

2.2.2. During painting, every time, after the priming coat has been worked out of the brush bristles or after the brush has been unloaded, the bristles of the brush shall be opened up by striking the brush against portion of the unpainted surface with the end of the bristles, held at right angles to the surface, so that bristles thereafter will collect the correct amount of paint when dipped again in to a paint container The prima/y coat shall be allowed to dry completely before painting isstarted.

2.2.3. No hair marks from the brush or clogging at pain puddles in the corner of panels angles of molding etc. shall be left on thework

2.2.4. Special care shall be taken while painting over bolts, nuts, rivets, overlapsetc.

2.2.5. The container when not in use shall be kept close and free from air so that paint does not thickness and also shall be kept guarded fromdust.

3.0. Mode of measurements &payment

3.1. The new steel and other metal surface shall be measured under thisitem.

3.2. All the work shall be measured net in the decimal system, as executed subject to the following limits unless otherwise statedhereinafter.

(a) Dimensions shall be measured to the nearest 0.01meter.

(b) Areas shall be worked out to the nearest 0.01 sq.meter.

3.3. No deductions shall be made for openings not exceeding 0.5 sq. mt. each and no addition shall be made for painting to beddings, moldings, edges, jambs, soffits, sills etc. ofsuch opening.

3.4. In case of fabricated structural steel and iron work, priming coat of paint shall be included with frabation. In case of trusses if measured in sq. m. compound girders, stanchions, lattices, grader and similar work, actual area shall be measured in sq. m. and no extra shall be paid for painting on bolts heads,

nuts, washers etc. No addition shall be made to 1 he weight calculated for the purpose of measurements of steel and iron works for paint applied on shop or atsite.

3.5. The different surfaces shall be grouped into one general item, areas of uneven surfaces being converted into equivalent plain areas in accordance with the table given as per Annexure-ll for payment.

3.6. The rate shall be for a unit of One sq,meter.

19.19. Painting two coats (excluding priming coat) on new steel and other metalsurfaces with synthetic enamel paints, brushing to give an even shade including cleaning the surface of all dirt, dust and other foreignmatter.

1.0. Materials

Synthetic enamel paint shall conform to I.S. 1932-1964.

2.0. Workmanship

2.1. The relevant specifications of item No. 19.7 shall be followed except that the painting shall be carried out with synthetic enamelpaint.

3.0. Mode of measurements &payment

3.1. The relevant specifications of item No. 19.7 shall befollowed.

3.2. The rate shall be for a unit of One sq.meter.

19.21. Painting one coat (excluding priming coat) on previously painted steel andother metal surfaces with synthetic enamel paint brushing to give an even shade including cleaning the surface of all dirt, dust and other foreignmatter.

1.0. Materials and Workmanship

2.1. The relevant specifications of item No. 19.19 shall be followed except that the painting shall be carried out on previously painted steel and other metal surfaces using synthetic enamel paint in one coat.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 19.19 shall befollowed.

2.2. The rate shall be for a unit of One sq.meter.

19.13. Extra over item No. 19.19 and 19.21 for every subsequent coat ofpaint.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item No. 19.19 shall be followed except that the extra rate shall be paid for out for subsequent coat ofpoint.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 19.19 shall be followed except-that the work shall be paid for applying subsequent coat of oil paint over and above the item No. 19.19 and19.21.

19.50.(B) Painting two coat (excluding priming coat) on external of new rain water, soil, waste and vent pipe and fittings with ready mixed bituminous paint, brushing, black anticorrosive to give an even shade including cleaning of all dirt, dust and other foreign matter (75 mm.dia.)

1.0. Materials

1.1. Ready mixed bituminous pain shall conform to I.S. 158 :1968.

2.0. Workmanship

2.1. The relevant specifications of item No. 19.7 shall be followed except that the paining work of external surfaces of 75 mm. dia rain water pipe, soil, waste, and vent pipe and fittings with ready mixed bituminous paint snail be earnedout.

3.0. Mode of measurements andpayment

3.1. The rate is excluding the cost o priming coat but including painting of all fittings coming inline.

3.2. The rate shall be for a unit of one runningmeter,

19.50.(C) Painting two coats (excluding priming coat) on external of rain water, soil, waste and vent pipe and fittings with ready mixed bituminous paint brushing black anticorrosive to give an even shade including cleaning off all dirt, dust and other foreign matter : 100 mm. dia.1.0. Materials &Workmanship

1.1. TherelevantspecificationsofitemNo.19.50(B)shallbefollowedexceptthatthepipestobe painted on is 100 mm. dia.meter.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 19.50(B) shall be followed. The rate is excluding the cost of priming coat but including cost of painting all fittings coming inline.

2.2. The rate shall be for a unit of one runningmeter.

19.59.(B) Applying priming coat over wood and wood based surfaces after and including preparing the surface by thoroughly oil, grease, dirt and other foreign matter, sand papering and knotting : Ready mixed paint, brushing wood primer pink.

1.0. Materials

1.1. The ready mixed paint, brushing, wood primer pink shall conform to I.S.3536-1966

2.0. Workmanship

2.1. Preparation of Surfaces:

2.2.1. AH wood work shall be dry and free from any foreign matter incidental to building operations. Nails shall be punched well below the surface to provide a film key for stopping. Moldings shall be carefully smoothened with abrasive paper and projecting fibers shall be removed. Flat portions shall be smoothened off with abrasive paper used across the grain prior to painting prior to painting and with the grain prior to staining or if the wood is to be left in its natural colour, wood work which is to be stained may be smoothened by scraping instead of by glass papering if sorequired.

2.2.2. Any knots, resinous, streaks or bluefish sap wood that are not large enough to justify cutting out shall be treated with two coats of pure shellac knotting applied thinly and extended about 25 mm. beyond the actual area requiringtreatment.

2.2. Application of primer:

2.2.1. The relevant specifications of item No. 19.12(A) shall be followed for application ofprimer.

3.0. Mode of measurements &payment

3.1. The relevant specifications of item No. 19.12 shall be followed except that work done on wood and wood based surfaces shall be paid under thisitem.

3.2. The rate shall be for a unit of One sq.meter.

19.59.(D) Applying priming coat over new wood and wood based surface after and including preparing the surface by thoroughly cleaning oil, grease, dirt and other forging matter sand papering and knotting : Ready mixed paint brushing priming, for enamel.

1.0. Materials

1.1. The ready mixed paint for brushing priming for enamels wood shall conform to I.S.106-1962.

2.0. Workmanship

2.1. The relevant specifications of item No. 19.59 (B) shall be followed except that ready mixed paint brushing priming for enamel shall be used instead of ready mixed paint brushing wood primerpink.

3.0. Mode of measurements andpayment

3.1. The relevant specifications of item No. 19.12 shall befollowed.

3.2. The rate shall be for a unit of One sq.meter.

19.62.(B) Extraoveritem59.59(B)foreverysubsequentcoatofprimingcoat.Readymix paint, brushing wood primerwork.

1.0. Materials and workmanship

1..1. The relevant specifications of item No. 19.59 (B) shall be followed except that the paintingwork shall

be carried out with ready mix paint instead of wood primer pink for subsequent coat.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 19.59 (B) shall be followed except that the extra rate shall be paid for every subsequent coat applied with Ready mix paint, brushing wood primer pink over and above the rate of item No. 19.59(B).

19.62.(D) ExtraoveritemNo.19.59foreverysubsequentcoatofprimingcoatreadymix paint brushing priming forenamel.

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 19.59(D) shad be followed except that the painting work shall be carried out with ready mix paint brushing priming forenamel.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 19.59(D) shall be followed except that the extra rate shall be paid for every subsequent coats of priming coat with ready mixed paint, brushing priming forenamel.

2.2. The rate shall be for a unit of One sq.meter.

19.71. Painting two coats (excluding priming coat) on new wood and wood basedsurfaces with enamel paint interior to give an even shade including the surface off all dist, dust and other foreign matter and papering andstopping.

1.0. Materials

1.1. The enamel paint shall conform to I.S.133-1975.

2.0. Workmanship

2.1. The relevant specifications of 19.7 shall be followed for general and application of paint, except that the enamel paint shall be used for painting on new wood/wood basedsurfaces.

2.2. In painting doors and windows, the putty, round the glass panes also be painted but care shall be taken to see that no paint, stain etc. are left on the glass. Top of shutters and surfaces in similar hidden locations shall not be left out inpainting.

3.0. Mode of measurements andpayment

3.1. The relevant specifications of item No. 19.12 shall be followed, for mode of measurements and payments. The rate excludes cost of primingcoat.

3.2. The rate shall be for a unit One sq.meter.

19.73. Paintingonecoat(excludingprimingcoat)onpreviouslypaintedwoodandwood based surfaces with enamel paint to give even shade including cleaning of all dirt, dust and other foreignmatter.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item No. 19.71 shall be followed except that the painting work shall be carried out on previously painted wood and wood based surfaces with enamel paint to give even shade in onecoat.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 19.7t shall befollowed

2.2. The rate shall be for a unit of One sqmeter.

19.75. Extra over item 19.71 arid 19.73 for every subsequent coat ofpaint.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item 19.71 shall be followed except that painting work shall be for subsequent coat withpaint.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 13.71 shall be followed except that the extra rate shall be paid.

2.2. The rate shall be for a unit of One sq.meter.

19.77. Painting two coats (excluding priming coat) on new wood and wood basedsurfaces with ready mixed paint brushing, oil gloss, semi-gloss, to give an even shade including cleaning of all dust, dirt and other foreign matter sand papering and stopping.

1.0. Materials

The ready mixed paint shall conform to M-44. The ready mixed paint brushing gloss, semi-gloss shall

conform to KS. 129-1962 and I.S. 117-1364.

2.0. Workmanship

2.1. The relevant specification of item 19.71 shall be followed for general and application of paint, except that ready mixed paint brushing, oil gloss and semi-gloss shall be used of approved colour and shade instead of enamelpaint.

3.0. Mode of measurements andpayment

3.1. The relevant specifications of item 19.12 shall be followed for measurements and payment. The rate excludes cost of primingcoat.

3.2. The rate shall be for a unit of One sq.meter.

19.84. Varnishing two coats (excluding priming coat) on new wood and wood based surfaces undercoating with flatting varnish and finishing coat with varnish to give an even surface cleared of all dirt, dust and sand papering so as to produce a smooth drysurface.

1.0. Materials

The varnish shall conform to I.S. 338-1962.

2.0. Mode of measurements & payment

2.1.1. The surface to be varnished shall be prepared to produce a smooth, dry neat surface. The previous coat of paint, if any shall be allowed to dry and rubbed down slightly whipped off and allowed todry.

2.1.2. '"he operation of varnishing calls for careful attention to cleanliness. A?! dust and dirt shall be removed from the surface to be varnished and also from the neighborhood. If surfaces are dampened to avoid razing of dust, they shall be allowed to[1] dry thoroughly before varnishing is commenced. Damp Exposure to extreme of heat or cold, or to a damp atmosphere will spoil thework.

2.1.3. In handling and applying varnish care should be taken to avoid forming forth or air bubbles. Brushes and containers shall be kept scrupulouslyclean.

2.2. Application

2.2.1. The varnish shall be applied liberally with a brush an spread evenly over a portion of the surface with a short light strokes to avoid for froth in. It shall be allowed to flow out while the next section is being laid in. Excess varnish then be scrapped out of the brush and the first section be crossed, re crossed and the laid of lightly. Two much or too little varnish left on the surface will mar the appearance of the finish. The varnish, once it has begun to set, shall not be retouched. If a mistake is made, the varnish shall be removed and the work startedafresh.

2.2.2. In case of two coats of varnish work, the first shall be hard drying, under coating or flatting varnish, this shall be allowed to dry hard and then be flatted down before applying the finishing coat. If two coats are applied, sufficient time shall be allowed between twocoats.

2.2.3. When flat varnish is used for finishing a preparatory coat of hard drying under coating of flatting varnish shall be first applied and shall be allowed to harden thoroughly, !t shad then be lightly rubbed down before the flat varnish is applied. Section of the work such as panels, shall be cut in clearly, so as to avoid any overlapping during applications, as this is likely Jo impart some measure, of gloss to partially dried area, worked up in lapping. On larger area the flat varnish shall be applied rapidly and the edges of each patch applied shall not be allowed to set but shall be followed up whilst in free workingconditions-

3.0. Mode of measurements &payment

3.1. The relevant specifications of item 19.71 shall befollowed.

3.2. The rate shall be for a unit of One sq.meter.

13.86. Extra over item No. 19.84 for every subsequent coat ofvarnish.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item No.19.84 shall be followed except that the work shall be for subsequent coat ofvarnishing.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item 19.84 shall b€ followed except that the extra rate shall be paid for every subsequent coat of varnishing done over and above the rate of item No.19.84.

2.2. The rate shall be for a unit of One sq.meter.

19.87. Polishing with polish on new wood and wood based surface to give an evensurface including cleaning the surface of all dirt, dust and sand papered smooth and including a coat of woodfiller.

1.0. Materials

1.1. The French polish required tint and shade shall be prepared with the below mentioned ingredients and other necessary materials : (i) Chandra (ii) Shellac (ic) Pigment. The French polish so prepared shall conform to I.S.348-1968.

2.0. Workmanship

2.1. Preparation of surface:

2.1.1. All unevenness shall be rubbed down to smoothness with sand paper and the surface shall be well dusted. The proper in the wood shall be filled up with a filler made of a paste of whiting in water or methylated spirit (with a suitable pigment like burnt sienna or umber if required) : otherwise the French polish will get absorbed and a good gloss will be difficult toobtain.

2.2. Application

2.2.1. A pad of wooden cloth covered by a fine cloth shall be used to apply the polish. The pad shall be moistened with polish and rubbed hard on the surface in a series of overleaping circles applying the polish sparingly but uniformly over the entire area to give an even surface. A trace of linseed oil on the face of the pad may be added which shall facilitate this operation. The surface shall be allowed to dry and the remaining coats applied in the same way. To finish off, the pad shall be covered with a fresh pieces of clean fine cloth, slightly damped with methylated spirit and rubbed lightly and quickly with circular motions. The finished surface shall present a uniform texture and highloose.

3.0. Mode of measurements andpayment

3.1. The relevant specification of item 19.12 shall be followed for mode of measurements and payment.

3.2. The rate includes cost of wood filler etc.complete.

3.3. The rate shall be for a unit of One sq.meter.

19.88. Polishing with French polish on previously polished wood and wood basedsurface to give an even surface including cleaning the surface of all dirt, dust and sand papered smooth including a coat of woodfiller.

1.0. Materials &Workmanship

1.1. The relevant specifications of item No. 19.87 shall be followed that the French polish shall be applied on previously polished wood and wood basedsurface.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 19.87 shall befollowed.

2.2. The rate shall be for a unit of One sq.meter.

19.91. Applyingwaxpolishonnew**Woodworkandwoodbasedsurfaceswithbeeswax polish in proportion 2 : 1.5 : 1 : 0.5 (2 Bees Wax : 1.5 linseed oil: 1 Turpentine oil: 0.5 Varnish by weight) by give an surface including cleaning the surface of all dist, dust and sand papered smooth.**

1.0. Materials

Bee's Wax shall conform to I.S. : 1504-1968. Linseed oil shall conform to I.S. : 75-1967. Turpentine shall
conform to I.S. 83-1950. Varnish shall conform in I.S. 337-1952.

2.0. Workmanship

2.1. Preparation of bees wax:

2.1.1. In case of, bees wax it shall be prepared locally with followingspecification.

2.1.2. Pure bees wax free from paraffin on strain adulterants shall be used. The polish shall be prepared from mixture of bees wax, linseed oil, turpentine, and varnish in proportion 2:1:5:1:0.5 by weight. The bees wax and boiled linseed oil shall be heated of a slow fire, when the wax is completely dissolved the mixture shall be cooled till it is just warm and turpentine and varnish added to it in the required proportions and entire mixture shall be wellstirred.

2.2. Preparation of surfaces.

2.2.1. The surface to be waxed shall he prepared to produce a smooth, dry, matt surface. Previous coat of paint of stain if any shall be allowed to dry and be rubbed down lightly wiped off and allowed to dry ail dust and dirt shall be removed from the surface to waxed and also from the neighborhood. Damp atmosphere and draughts shall be avoided, for waxing, normal dry day snail bechosen.

2.3. Application :

2.3.1. The polish shall be applied evenly with clean soft pad of cotton cloth in such a w«y that the surface is completely and fully covered. The surface shall then be rubbed continuously for half an hour After well rubbing in one coat of wax polish, the work shall be covered with dust proof sheet. (Cloth for preventing dust falling on the work). Subsequent coat shall be applied after the surface is quite dry arid shall be rubbed off with soft flannel until the surface has assumed a uniform gloss and in dry showing no sign ofStickiness.

2.3.2. The final polish depends on the amount of rubbing which shall be continuous and with uniform pressure with frequent changes in the direction.

3.0. Mode of measurements &payment

3.1. The relevant specifications of item No. 19.12 shall befollowed.

3.2. The rate shall be for a unit of One sq.meter.

19.92. Applying wax polish on previous wax polished wood and wood based surfaceswith bees wax polish in proportion of 2:1.5;1:.0.5 (2 Bees wax 1.5 linseed oil : 1 Turpentine : 0.5 Varnish by weight) to give an even surface including cleaning the surface of all dirt, dust and sand paperedsmooth.

1.0. Materials andworkmanship

1.1. The relevant specifications of item No. 19.91 shall be followed except that the wax polishing shall be carried out on previously wax polished wood and owed based surfaces with bees waxpolish.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 19.91 shall befollowed.

2.2. The rate shall be for a unit of One sq.meter.

19.98. Coat tarring two coats on new wood and wood based surfaces using 0.15 and0.12 liters of coal tar per sq. m. in the first and second coat respectively to give an even shade including cleaning of all dirt, dust and other foreign matter;

1.0. Material : The coal tar shall conform to I.S. 290-1961.

2.0. Workmanship

2.1. 200 cms. of unslaked lime shall be added to every liter of coat tar and heated till it begins to boil. It shall then be taken off the fire and kerosene oil added to it slowly the rate of 1 part kerosene old and 6 parts or more parts of coal tar by volume and stirred thoroughly. The addition of lime is for preventing the tar fromrunning.

2.2. Preparation of Surface:

2.2.1. The surface to be painted shall be allowed to dry sufficiently. Any existing fungus or mould growth shall be completely removed. All major cracks or defects in the plaster shall be cut out and made good. Before primer is applied holes and undulations shall be filled up with plaster of parish and rubbedsmooth.

2.3. Application ofpaint:

2.3.1. The coat tar shall be applied as per relevant specifications of applying mixed paint item No. 19.7 except coat tarring is used instead of enamelpaint.

3.0. Mode of measurements &payment

3.1. The relevant specifications of item No. 19.12 shall befollowed.

3.2. The rate shall be for a unit of One sq.meter.

19.119.(I) Writing letter of figures on any surface with black Japan paint (stops, comas, hyphens and the like not to be measured and paid for separately) : block (Letters/figures).

1.0. Materials

1.1. Ready mixed the black Japan paint shall conform to I.S.341-1952.

2.0. Workmanship

2.1. The letters and figures shall be to the heights and widths as per approved drawings or as directed. These shall be stenciled or drawn in pencil and got approved before painting. They shall be of uniform size and finished neatly. The edges shall be straight or in pleasant smoothcurves,

3.0. Mode of measurements andpayment

3.1. Letters, figures and similar items etc. stops, commas, hyphens and the like shall be deemed to be included in the item.9

3.2. The rate per cm. height of letter shall hold good irrespective of width of the letters of figures or the thickness of the lettering.

3.3. The rate shall be for a unit of per letter cm.height.

19.119(II) Writing letter of figure? on any surface with black Japan pain (stops,commas,hypes and the like not to be measured and paid for separately ; Indian(Letters/figures).

1.0. Materials and Workmanship

The relevant specifications of item No. 19.119 (I) shall be followed except the writing of letter shall be Indian letters/figures.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 19.119 (I) shall befollowed.

2.2. The rate shall be for a unit of per letter per cm.height.

19.126(1) Painting lines, dashes, arrows, letters etc. on roads, airfields and like in two coats with road marking paint, brushing including cleaning the surface of all dirt, dust and other foreign matter : Over 10 cms. inwidth.

1.0. Materials

1.1. The road marking paint shall conform to. I.S.164-1951.

2.0. Workmanship

2.1. The relevant specifications item No. 19.119(1) shall be followed except that the painting lines, dashes, arrows and letters on roads, air fields and like shall be carried out with road marking paint in two coats : over 10 cms. inwidth.

3.0. Mode of measurements andpayment

3.1. The relevant specifications of item No. 19.119 (I) shall befollowed.

3.2. The rate shall be for a unit of One sq.meter.

19.126.(II) Painting lines, dashes, arrows, letters etc. on roads, fields and like in two coats with road marking paint brushing including cleaning the surface of all dirt, dust and other foreign matter: Up to 10 cms. inwidth.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item No. 19.126 (I) shall be followed except that painting work shall be up to 10 cms.width.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 19.119 (I) shall befollowed.

2.2. The rate shall be for a unit of one runningmeter.

19.127.(A) Painting lines, dashes, arrows letters etc. on roads, airfields, and like in one coat with road marking paint, brushing including cleaning the surface of all dirt, dust and other foreign matter : over 10 cms. inwidth.

1.0. Materials and workmanship

The relevant specifications of item No. 19.126(1) shall be followed except that the painting shall be done in one coat over 10 cms. in width.

2.0. Mode of measurement andpayment

2.1. The relevant specifications of item No. 19.126 (I) shall befollowed.

2.2. The rate shall be for a unit of One Sq.meter.

19.127. (B) Painting lines, dashes, arrows, letters etc. on roads, air fields and like in one coat with road marking paint, brushing including cleaning the surface of all dirt, dust and other foreign matter : Up to 10 cms. inwidth.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item No. 19.126 (I) shall be followed except that the painting shall be done in one coat upon 10 cms. inwidth.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 19.126 (I) shall befollowed.

2.2. The rate shall be for a unit of one runningmeter.

SECTION-20

Demolition & Dismantling

20.1.(i) Demolition and disposal of unserviceable materials with all leads andlifts :Lime Concrete.

1.0. Workmanship

1.1. The demolition shall consist of demolition of one or more parts of the building as specified orshown in the drawings. Demolition implies taking up or down or breaking up. This shall consist of demolishing whole or part of work including all relevant items as specified or shown in thedrawings.

1.2. The demolition shall always be planned before hand shall be done in reverse order to the one in which the structure was constructed. This scheme shall be got approved form the Engineer-in-charge before starting the work. This however will not absolve the contractor from the responsibility of proper and safedemolition.

1.3. Necessary propping, shoring and under pinning shall be provided for the safety of the adjoining work or property, which is to be left intact, before dismantling and demolishing is taken up and the work shall be carried out in such a way that no damage is caused to the adjoiningproperty.

1.4. Wherever required, temporary enclosures orpartitions shall also be provided. Necessary precautions shall be taken to keep the dust nuisance down as and wherenecessary.

1.5. Dismantling shall be commenced in a systematic manner. All materials which are likely to be damaged by dropping from a height or demolishing roof, masonry etc. shall be carefully dismantled first. The dismantled articles shall be properly stacked asdirected.

1.6. All materials obtained from demolition shall be the property of Government unless otherwise specified and shall bee kept in safe custody until handed over to theEngineer-in-charge.

1.7. Any serviceable materials, obtained during dismantling or demolition shall be separated out and stacked properly as directed with all lead and lift. All unserviceable materials, rubbish etc., shall be stacked as directed' by theEngineer-m-charge.

1.8. On completion of work, the site shall be cleared of all debris rubbish and cleaned asdirected.

2.0. Mode of measurements andpayment

2.1. Measurements of all work except hidden work shall be taken before demolition or dismantling and no allowance for increase in bulk shall be allowed. The demolition of lime concrete shall be measured under this item. Specification for deduction for voids, openings etc. shall be on same basis as that employed for construction ofwork,

2.2. All work shall be measured in decimal system as fixed in its place subject to the following limits; unless otherwise stated hereinafter : (a) Dimensions shall be measured to the nearest 0.01 mt. (b) Area shall be worked out to the nearest 0.01 sq. mt.(c) Cubical contents shall be worked out to the nearest 0.01 Cu.m.

2.3. The rate shall include cost of all labour involved and tools used in demolishing and dismantling including scaffolding. The rate shall also include the charges for separating out and stacking the serviceable materials properly and disposing the unserviceable materials with all lead and lift. The rate also includes for temporary shoring for the safety of the portion not required to be pulled down or of adjoiningpropertyaridprovidingtemporaryenclosuresorportionswhereconsiderednecessary.

2.4. The rate shall be for a unit of one cubicmeter.

20.1,(ii) Demolition and disposal of unserviceable materials with all leads and lifts:Un reinforced cementconcrete.

1.0. Workmanship

The relevant specifications of item 20.1.(i) shall be followed except that the un reinforced cement concrete work is to be demolished instead of lime concrete.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item 20.1(i) shall befollowed.

2.2. The rate shall be for a unit of one cubicmeter.

20.3. Demolition including of serviceable materials and disposal ofunserviceable materials with ail leads and lifts : R.C.C.work.

1.0. Workmanship

1.1. The relevant specifications of item 20.1 (i) shall be followed except that demolition of R.C.C. work is to be done.

2.0. Mode of measurements and payment

2.1. The relevant specifications of item 20.(i) shall be followed except that the demolition of reinforced concrete structure is to be clone. The unserviceable materials shall be disposed of at all leads and lifts. The rate excludes scraping straightening of reinforcement but includes cutting ofreinforcement.

2.2. The rate shall be for a unit of one cubicmeter.

20.11 (ii) Demolition of brick work and stone masonry including stacking of serviceable materials and disposal of unserviceable materials with all leads and lift : in lime mortar.

1.0. Workmanship

1.1. The relevant specifications of item No. 20.1.(i) .shall be followed except that demolition of brick or stone masonry in lime mortar is to bedone.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 20.1(i) shall be followed except that the wall and independent piers or columns of brick or stone masonry shall be measured in cubic meters. All copings, corbels, comics and other projections shall be included with the wallmeasurements.

2.2. In measuring thickness of plastered walls, the thickness of plaster shall be included. The unserviceable materials shall be disposed off with all lead and lift. Ashlars face stones dressed stone etc., if required to be taken down intact shall be dismantled and measured separately in cubicmeters.

2.3. The rate is exclusive of cleaning of bricks or stones. Honey comb works or hollow block walling shall be measured assolid.

2.4. The rate shall be for a unit of one cubicmeter.

20.11. (iii) Demolition of brick work and stone masonry including stacking of serviceable materials and disposal of unserviceable materials with all leads and lift : in cement mortar.

1.0. Workmanship

1.1. The relevant specifications of item 20.1.(i) shall be followed except demolition of brick or stone masonry in cement mortar is to be done.

2.0. Mode measurements andpayment

2.1. The relevant specifications of item 20.11 (ii) shall be followed. The unserviceable materials shall be stacked as directed by Engineer-in-charge with all leads andlifts.

20.22. Demolition in terrace including stacking or serviceable materials anddisposalof unserviceable materials with all lead and lift : Brick tilescovering.

1.0. Materials

1.1. The relevant specifications of item No. 20.1 (i) shall be followed except that the demolition of terrace brick tiles is to bedone.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No'. 20.1(i) shall be followed except that the brick tiles covering of terrace shall be measured in sq. mt. The unserviceable materials shall be stacked as directed at all leads andlifts.

2.2. The rate shall be for a unit of one sq.meter.

20.23. Dismantling tiled or stone floors laid in mortar including stacking ofserviceable materials and disposal of unserviceable materials with **all lead andlifts.**

1.0. Workmanship

1.1. The relevant specification of item 20.1 (i) shall be followed except the dismantling of tiled or stone floors laid on mortar shall be done. Dismantling implies carefully taking up or down or removing without ^damage. The articles shall be passed by hand where necessary and lowered and where these are fixed by nail, screws, bolts etc., these shall be taken out with proper tools.

2.0. Mode of measurements andpayment

2.1. The supporting materials such as joints, beams if any etc. shall be measured separately. The relevant specifications of item No. 20.1 (i) shall be followed, The rate shall include staking the unserviceable materials as directed with all lead andlift.

2.2. The late shall be for a unit of one sq.meter.

20.25. Dismantling of wooden floors, including, stacking of serviceable materials and disposal of unserviceable materials with all lead andlifts.

1.0. Materials

1.1. The specifications of item 20.1(i) shall be followed except that wooden floors shall bedismantled**.**

2.0. Mode of measurements and payment

2.1. The relevant specifications of item 20.1 (i) same shall be followed. The supporting members such as joints, beams etc. shall be measured separately. The rate shall include disposal of unserviceable materials as directed for and with all lead andlift.

2.2. The rate shall be for a unit of one sq.meter.

20.27.(i) Dismantling of sheet including ridges, hips, valleys gutters etc. stacking of serviceablematerialsanddisposalofunserviceablematerialswithleadswithlifts: G.I. sheet roofing.

1.0. Materials

1.1. The relevant specifications of item 20.1.(i) shall be followed except that G.I. sheet roofing shall be dismantled instead of concretework.

2.0. Mode of measurements andpayment

2.1. The area of G.I. sheets roofing shall be measured in sq. meter. Ridges, hips and valleys shall be girded and included with roof area. Corrugated and semi-corrugated surfaces shall be measured flat and not girthed.

2.2. Supporting members such as rafters, purlins, beams, joints, trusses etc. shall be measured separately.

2.3. The rate shall include disposal of unserviceable materials with all leads and lifts and stacking the serviceable materials asdirected.

2.4. The rate shall be for a unit of one sq.meter.

20.27(ii) Dismantling of sheet roofing including ridges, hips, valleys gutters etc. stackingof serviceable materials and disposal of unserviceable materials with all leads and lifts: A.C. Sheet roofing.

1.0. Workmanship

1.1. The relevant specifications of item 20.27 (i) shall be followed except that dismantling work of A.C. sheet roofing is to bedone.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item 20.27 (i) shall be followed except that the A.C. sheets .roofing shall be measured in thisitem.

2.2. The rate shall be for a unit of one sq.meter.

20.28. Dismantling Manglore or country tile roofing with battens, boarding etc.including stacking of serviceable materials and disposal of unserviceable materials with all lead and lifts.

1.0. Workmanship

1.1. The relevant specifications of item 20.1 (i) shall be followed except that the country tile roof or Mangalore roof shall bedismantled.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item 20.1 (1) shall befollowed.

2.2. The supporting members shall be measured separateitem.

2.3. The rate includes labour required for disposal of unserviceable item with ail leads andlifts.

2.4. The rate shall be for a unit of one sq.meter.

20.30. Dismantling cement asbestos/hard board in ceiling or partition walls, woodentrellis work including frames, stacking of to serviceable material and disposal of unserviceable materials with all leads andlifts.

1.0. Workmanship

1.1. The relevant specifications of item 20.1 (i) shall be followed except that the cement asbestos hard board in ceiling or partition walls, wooden trellis, work etc. shall bedismantled.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item 20.1 (i) shall be followed. The serviceable materials shall be stacked as and where directed and the unserviceable materials shall be disposed off with leads andlifts.

2.2. The rate shall be for a unit of one sq.meter.

20.35 Dismantlingwoodwrought,framedandfixedinframes,trussesincludingstacking the materials with all lead andlift.

1.0. Workmanship

1.1. The relevant specifications of item No. 20.1 (i) shall be followed except that the wood work, wrought framed and fixed in frames, trusses etc. shall bedismantled.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 20.1 (i) shall befollowed.

2.2. The materials shall be stacked as and where directed with all leads and lifts.

2.3. The rate shall be for a unit of one cubicmeter.

20.39. Dismantling expanded metal or I.R.C. fabric with necessary battens andbeading including frame work and stacking the serviceable materials with all lead andlift.

1.0. Workmanship

The relevant specifications of item No. 20.1 (i) shall be followed except that the dismantling of expanded metal or I.R.C. fabric shall be done

2.0. Mode of measurements &payment

2.1. The relevant specifications of in item No. 20.1 (i) shall befollowed.

2.2. The rate shall be for a unit of one sq.meter.

20.43. Dismantling steel work including dismembering and stacking the materials withair leads andlifts.

1.0. Materials

1.1. The relevant specifications of item No. 20.1 (i) shall be followed except that the dismantling of steel work shall be carriedout.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 20.1 (i) shall befollowed.

2.2. The weight of the member shall be computed from standard table unless the actual weight can be readilydetermined.

2.3. Riveted works where rivets are required to be cut. the same shall be carried out under this item arid nothing extra shall bepaid.

2.4. In framed still gate, the weight of any covering material or filling such as iron sheets and expanded metal shall be added to the weight of the main articles if such covering is not ordered to be taken out separately.

2.5. The rate includes stacking the materials as and where directed with all leads andlifts.

2.6. The rate shall be for a unit of oneKg.

20.49.(i) Dismantling doors, windows, ventilators etc. (wood or steel) shutters including chowkhats, Architraves, hold fasts and other attachments etc. complete and stacking them within all leads & lift. No exceeding 3 sq. meters inarea.

1.0. Workmanship

The relevant specifications of item No. 20.1 (i) shall be followed except that the door, windows, ventilators etc. (wood or steel) shutters including chowkhats, architraves, hold fasts and other attachments etc. are to be dismantled.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 20.1 (i) shall befollowed.

2.2. The doors, windows, ventilator etc. not exceeding 3 sq. mt. in area (each) including shutters and chowkhats. Architraves, hold fasts and other attachments to frames etc. will be-^mantled and measured under thisitem.

2.3. The rate includes stacking the serviceable materials as and where directed with all leads andlifts.

2.4. The rate shall be for a unit of Onenumber.

20.49.(II) Dismantling doors, windows, ventilators etc. (wood or steel) shutters including chowkhats. Architraves, hold fasts and other attachments etc. complete and stacking them within all leads and lift : Exceeding 3 sq. meters inarea.

1.0. Workmanship

The relevant specifications of item No. 20.49(I) shall be followed except that the area of doors, windows, ventilators, exceeding 3 sq. meters are to be dismantled under this item.

2.0. Mode of measurements ofpayment

2.1. The relevant specifications of item No. 20.49 (I) above shall befollowed.

2.2. The rate shall be for a unit of Onenumber.

20.51. Dismantling barber wire fencing including making rolls and also including dismantling facing posts including all earth work, concrete in the base and making good the disturbed ground stacking useful materials as directed and disposing all the unserviceable materials with all leads andlifts.

1.0. Workmanship

The relevant specifications of item No. 20.1 (i) shall be followed, except that the dismantling of barbed wire fencing shall be carried out.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 20.1. (i) shall befollowed.

2.2. The rate includes making rolls of dismantled wires and including dismantling fencing posts, concrete work, in base and making good the disturbed ground etc.complete.

2.3. The serviceable materials shall be stacked as and where directed and end unserviceable materials shall be disposed with all leads andlifts.

2.4. The rate shall be for a unit of One runningmeter.

20.56. Dismantling(C.I.Pipes,G.S.W.PipesandA.C.rainwaterpipeswithfittingsand clamps, including stacking the materials with all lead and lift, (for any dia. ofpipe).

1.0. Workmanship

The relevant specifications of item No. 20.23 shall be followed except that the dismantling work of pipes lines of C.I., G.S.W. & A.C. Pipes with fitting shall be carried out.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of No. 20.1 (i) shall befollowed.

2.2. Water pipe lines, including rain water pipes, with clamps and specials, swear pipe lines, (Salt glazed ware or concrete) etc. shall be measured in running meter inclusive of joints. (The measurements shall be taken along the centre line of pipe andfittings).

2.3. The rate shall be for a unit of One runningmeter.

20.00.I. Dismantling sanitary fittings like wash basin, W.C. Pan, Indian &EuropeanType flushing tank, etc. including stacking the materials with all leadlift.

1.0. Workmanship

The relevant specifications of item No. 23.23 shall be followed except that the dismantling work of sanitary fittings such as wash basin, W.C. Pan (all type of pans), Flushing tanks etc. shall be carried out.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 20.1 (i) shall befollowed.

2.2. The rate shall be for a unit of onenumber.

20.00.2. Scraping oil paint steel and other metal surfaces and making the surface even(with handscraping).

1.0. Workmanship

The old paint from steel and other surface shall be scraped thoroughly with hand scraper followed by wire brushing (first with coarse and then with fine brushes) and finally sand papering with coarse and paper (No.3) steel wood (No.2) or emery paper (No.3) or with emery clothes. This shall then be wiped finally with mineral turpentine to remove grease and perspiration of hand marks etc. and allowed to dry. The surface shall be made even and smooth.

2.0. Mode of measurements andpayment

2.1. The work shall be measured in actual area of workdone.

2.2. The rate shall be for a unit of one sq.meter.

SECTION-21

Repairs to Buildings

21.8. Providing and fixing M.S. fan clamps of shape and size as specified in existingR.C.C. slab including cutting chase and makinggood.

1.0. Materials

1.1. M.S. Bar shall conform toM-18.

2.0. Workmanship

2.1. The shape and size of fan clamp shall bedirected!

2.2. The fixing M.S. fan clamp in existing R.C.C. slab a chase of size 150 mm. x 75 mm. shall be cut from th,e ceiling so as to expose the reinforcement and up to 25 mm. clear round the reinforcement bar. This shall be done without any damage to adjoining portion of ceiling. The two arms of the ends of theclamp shall be passed through the space over reinforcement bar from the bottom of the slab. Then the two arms shall be bent down about 15 mm. by means of crow bar. The clamp shall be held in position and the chase in ceiling filled with cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm. nominal size). The ceiling shall be then finished to match the existing surface and properlycured.

3.0. Mode of measurements andpayment

3.1. The rate includes cost of all materials and lobour required for satisfactory completion of this item as describedabove.

3.2. The rate shall be for a unit of Onenumber.

21.23. Cutting our cracks, of roof terrace to V. section, Cleaning out, wetting,groutingwith cement and sand slurry 1:3 (1 cement : 3sand)

1.0. Materials

(1) Water shall conform to M-1. (2) Cement shall conform to M-3. (3) Sand shall conform to M-6.

2.0. Workmanship

2.1. The cracks shall be cleaned out and trimmed to V shaped cuts at least 6 mm wide on top. The cracks shall be cleaned off and then cracks shall be thoroughly flooded with water, water allowed to a soak in cracks, and then grouted with cement and sand slurry in proportion 1:3. The required cracks shall be cured at least 7days.

3.0. Mode of measurements andpayment

3.1. The rate shall includes cost of all materials and labour required for satisfactory completion of item as describedabove.

3.2. The rate shall be for a unit of One runningmeter.

21.24. Cutting out cracks of roof terrace to V-Section out, and filling solidly with ahot mixtures of bitumen and clean dry sand (1:1weight).

1.0. Materials

(1) Bitumen shall be 85/25 penetration (2) Sand shall conform to M-6.

2.0. Workmanship

2.1. The relevant specifications of item No. 21.23 shall be followed for opening cracks andcleaning.

2.2. The cracks shall be absolutely dried and cleaned and filled solidly with a hot mixtures of 85/25 penetration and sand in ratio of 1; 1 by weight. The filler shall be well filled into cracks with the edges of a trowel and left flush with surface of roof. Repaired cracks shall cause no ridges the direction of the slope of roof.

3.0. Mode of measurements &payment

3.1. The relevant specifications of item No. 21.23 shall befollowed.

3.2. The rate shall be for a unit of One runningmeter.

SECTION-22

Misc. Building Items

22.20. Providing and fixing 1.20 meter fencing with 2 meter long M.S. angle posts 40mm.x 40 mm. x 6 mm. and oil painting 3 coats fixed at 2.5 M C/C with five horizontal lines, and two diagonals of galvanised steel barbed wire weighing 9.38 Kg. per 100 meter. (Min.) stained and fixed to posts with G.I. staples including fixing the posts in ground with 0.5 x 0.5 x 0.5 M block in C.C. 1:5:10 (cement : 5 sand : 10 graded brick aggregate 40 mm. nominal size) etc.complete.

1.0. Materials

(1) Water shall conform to M-1. (2) Cement shall conform to M-3. (3) Sand shall conform to M-6. (4) Brick bats aggregate shall conform to M-.14, (5) Oil paint shall conform to M-44. (6) Barbed wire shall conform toM-78.

2.0. Workmanship

2.1. The pits of the size O.5 x 0.5 m. x 0.5 shall fist be excavated, true to line and level to receive the post at 2.5 C/ C. The relevant specifications of item 4.00.1 shall be followed for excavationwork.

2.2. The pits shall be filled with a layer 0.15 m. thick with lean concrete 1:5:10 (1 cement: 5 sand : 10 graded brick bat aggregate 40 mm. nominal size). The M.S. angles 40 mm. x 40 mm. x6 mm shall be filled in with lean concrete 1:5:10 and rammed properly so as to form total 0.5 m. x 0.5 m. x 0.5 m, concrete block. The concrete shall be cured for 7 days to allow it toset.

2.3. The barbed wire shall be stretched and fixed in 5 horizontal rows and two diagonals. The bottom row shall be 140 mm. above ground and the rest at 125 mm. centre to centre. The diagonal shall be stretched between adjacent post from top wire of one post to the bottom wire of2nd post. The wires shall be fixed to posts by means of staples. The M.S. Angle posts shall be painted with 3 coats of old paint of approved tint and shade.

3.0. Mode of measurements andpayment

3.1. The work shall be measured for the finished work from centre to centre of theposts.

3.2. The rate shall include the cost of labour and materials involved in the operations describedabove.

3.3. The rate shall be for a unit of One runningmeter.

22.00.1. Construction of B.B. masonry paniara 23 cm x 75 mm wall including fixing pre cast R.C.C. marble Mosaic (Terrazzo) slab of 75 mm. thickness on top and smooth finishing to walls in cement plaster in C.M. 1:3 curing etc. complete including drainage out, waste water arraignments.

1.0. Materials

(1) Water shall conform to M-1. (2) Cement shall conform to M-3. (3) Sand shall conform to M-6. (4) Brunt bricks shall conform to M-15. 95) Pre cast marble mosaic terrazzo paniara of 75 mm thickness shall be of best quality. The width of paniara shall be directed. .

2.0. Workmanship

2.1. The brick masonry shall be constructed for paniara for the size as directed in C.M. 1 :6. The thickness of wall shall be 23 cms. thick and height shall be 75 cms. The relevant specifications of B.B. masonry at item 6.13 (b) shall be followed for B.B. masonrywork.

2.2. The B.B. masonry shall be covered with pre cast marble terrazzo paniara at top, of width and length as specified or as directed. The terrazzo mosaic paniara shall be T'S mm,thickness.

2.3. The whole masonry work shall be finished smooth with C.M. 1:3 on both sides the relevant specifications of item No. 1.7.59 (I) shall befollowed.

2.4. The drainage outlet and water arrangement shall be made asdirected.

3.0. Mod& of measurements andpayment

3.1. The work shall be measured for the finishedwork.

3.2. The rate shall be include the cost of labour and materials involved in the operations described above.

3.3. The rate shall be for a unit of One Runningmeter.

22.00.2. Constructing a chowkadi with C.Q. over 12 cm. thick B.B. masonry in front and dwarf wall 1 M high and 23 cms. thick cement plaster to masonry in C.M. (1:3) and cement concrete flooring in 1:2:4 with 5 cm. dia. A.C. Drain pipe etc.complete

1.0. Materials

1.1. Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6. Burnt bricks shall conform to M-15. Stone aggregate 20 mm. nominal size shall conform to M-2. (a) A.C. Drain pipe of 5 cms. dia shall conform toM-74.

2.0. Workmanship

2.1. The chowkadi shall be constructed of specified size and as directed. The slab shall be cast on B.B. masonry wall 12 cms. thick and dwarf wall 1 M high and 23 cms, thick shall be constructed in proportion ofC.M.1:6.Therelevantspecificationsofitem6.3.(I)shallbefollowedformasonrypartitionworkand 5.4.1. (c) shall be followed for reinforced concrete work.

2.2. The whole masonry work shall be finished with cement mortar 1:3 and finished smooth. The relevant specifications of item No. 17.59 (I) shall be followed for plasteringwork,.

2.3. The A.C. pipe of 5 cms. dia shall be fixed as drainage pipe. The bottom shall be finished with C.C. 1:2:4 finished with cementslurry.

3.0. Mode of measurements andpayment

3.1. The work shall be measured for finishedwork.

3.2. The rate includes cost of all materials, labour etc. required for carrying out satisfactory completion of work.

3.3. The rate shall be for a unit of one squaremeter.

22.00.3.(I) Constructing cooking platform 60 cm. width and 70 cm. height resting on B.B. Masonry wall 23 cms. thick in C.M. 1:6 with fixing of pre cast 1:2:4. R.C.C. 0.0 M.thick slab with marble mosaic chips set in GM. (Terrazzo) with plastering on exposed faces to wall in C.M. 1:4 etc.complete.

1.0. Materials

Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6. Burnt brick shall conform to M-15. Marble Mosaic chips shall conform to M-46. Stone aggregate 20 mm. nominal size shall conform to M-12. (a) M.S. Bars shall conform to M-18.

2.0. Workmanship

2.1. The cooking platform of size as directed shall be constructed in 60 cms. width and 70 cms. height. The brick masonry wall, in C.M. 1 :6 shall be constructed in 23 cms. thickness up to full depth. The relevant specifications of item 6.13 (B) shall be followed for masonrywork.

2.2. The R.C.C. slab of 8 cms. thickness and of adequate design and size shall be precast and the same shall be put up on the B.B. masonrywork.

2.3. The tap and exposed sides of the R.C.C. slab shall be finished with marble mosaic terrazzo 8 mm. thick with required colour pigment. The work of terrazzo shall be carried out as per relevant specifications of item 14.4(E).

2.4. The whole masonry work shall be finished with cement mortar in C.M. 1 :4. The relevant specification of item 17.59 (II) shall befollowed.

3.0. Mode of measurements and payments

3.1. The work of cooking platform shall be measured for finishedwork.

3.2. The rate includes cost of all labour and materials, etc. required for satisfactory completion of this item as describedabove.

3.3. The rate shall be for a unit of One runningmeter.

22.00.3.(ll) Constructing cooking platform of 60 cm. width and 70 cms. height resting on B.B. masonry walls 23 cm thick in C.M. 1:1 with fixing black kadapa stone surface laid on pre cast R.C.C. slab 1:2:4 with plastering on exposed faces to wall in C.M. 1:4 etc. complete.

1.0. Materials andWorkmanship

1.1. The relevant specification of item No. 22.00.3 (I) shall be followed except that the cooking platform shall be constructed by providing black kadapa stone of 25 mm. to 30 mm. thickness on pre cast R.C.C. 1:2:4 slab 8 cms. thick. The black stone shall be provided in single piece up to 1.8 M in length and specified width. AH the exposed **edges** of stone shall be machinecut.

2.0. Mode of measurement andpayment

2.1. The relevant specifications of item 22.00.3.(I) shall befollowed.

2.2. The rate includes providing machine cut edges on exposed face of kadapastone.

2.3. The rate shall be for a unit of One runningmeter.

22.00.4. Providing and fixing Rajula stone 75 mm. thick 60 cm x 45 cms. sizeincludingfixing in cement mortar asdirected.

1.0. Materials

Water shall conform to M-1. Cement mortar shall conform to M-11. Rajula stone of specified, size shall be of best quality and free from any defects. The stone shall not be less than 75 mm in thickness.

2.0. Workmanship

2.1. The Rajula stone of size 60 x 45 cms. size shall be fixed as and where directed in cement mortar in 1:3. All the edges of the stone shall be fixed with cement mortar in C.M. 1:3 and sloped at 45° and finished smooth. The work shall be cured for 7 days afterfixing.

3.0. Mode of measurements andpayment

3.1. The work shall be measured for finishedwork.

3.2. The rate includes cost of all labour and materials required for satisfactory completion of thisitem.

3.3. The rate shall be for a unit of onenumber.

22.00.5. Providing and laying Bilimora type brick facing in C.M. 1:1 laid over bedding of cement mortar 1:3 (13 mm. thickness) including cleaning, watering, scaffolding etc. complete.

1.0. Materials

1.1. Water shall conform to M-1. Cement mortar of specified proportion shall conform to M-11. Bilimora type bricks shall be approved before collection the same onsite.

2.0. Workmanship

2.1. The surface on which the Bilimora type bricks is to be provided shall be cleaned of all dust, dirt, etc. and finished with CM 1:3 in 13 mm, thickness. The relevant specifications of item 17.59 (I) shall be followed except that the thickness of finishing shall be 13 mm. The top surface shall be roughened by wire brushes to give proper grip to the tiles to befixed.

2.2. The Bilimora type bricks shall be fixed with CM 1:1. The tiles shall be properly wetted before fixing. The horizontal and vertical joints shall be maintained in true line and level by providing 12 mm or 20 mm. sq. bars as directed. The tiles shall be tamped by trowel so that there shall not be nay hollows left behind the tiles.

2.3. The tiles shall be cut to the required size on ends of at top bottom of beams in best workman like manner.

2.4. The whole work shall be cured for 7days.

3.0. Mode of measurements andpayment

3.1. The work shall be measured as per relevant specification of item No.17.58(1)

3.2. The rate includes cost of all materials, wastage etc. occurring due to cutting of tiles and ends as top and bottom of beams etc. including basecoat.

3.3. The rate shall be for unit of One sq.meter.

22.00.6. Providing and fixing teakwood rail of 60 mm. x 20 mm. size and 50 cms. lengthincl. 3 coats of oil paint to wood work with set of 3pegs.

1.0. Materials:Teakwoodbattensofspecifiedsizeshallconformto M-29.Oilpaintshallconformto M-44. Wall pegs of aluminum 3 Nos. of approved quality and make shall beprovided.

2.0. Workmanship

2.1. The teakwood battens of size 60 mm. x 20 mm. and 50 cms. long be planed on all sides. The anodized aluminum wall pegs of approved 'make shall be fixed on wooden batten prepared with screws as directed. The waif pegs unit shall be fixed on wall with wooden gut ties and screws as directed. The wooden battens shall be painted with 3 coats of ready mix paint of approved colour andshade.

3.0. Mode of measurements andpayment

3.1. The work shall be measured for finishedwork.

3.2. The rate shall be for a unit of onenumber.

22.00.7. Treating the bottom and sides (up to a height of 300 mm.) of the excavations made for the masonry foundations and basement with chemical emulsion at the rate of 5 liters per Sq. meter of the surfacearea.

1.0. Materials : The chemicals used for the soil treatment shall be only one of the following with concentration shown against each in aqueousemulsion.

	Chemicals	Concentration
1.	Aldrin	0.50% (by weight)
2.	Heptachlor	0.50% (by weight)
3.	Chlordane	1.00% (by weight)

2.0. Workmanship

2.1. The chemicals barrier shall be complete and continuous under whole of the structure to be protected.

2.2. The bottom and the sides of foundations up to a height of 30 cms. from the bottom of excavation made for masonry foundation and for basement column pits shall be treated with the chemical emulsion at
the rate 5 liters/ sq. meter of the surface area..

2.3. The chemical treatment shall be-carried out when the surfaces is quite dry. Chemical treatment shall not be carried out when it is raining or when the soil wet with rain or sub soilwater.

2.4. Once formed, treated soil berries shall be not disturbed. If by chance, treated soil barriers are disturbed, immediate steps shall be taken to restore the continuiting and compactness of the barrier system

2.5. The treatment against termite infection shall remain fully effective for a period not less than 10 years from date of issue of the final certificate to completion of work. If at any time during this period, any defects in treatment are revealed or any evidence of infection in any part of the building or structure is noticed, the contractor shall be rectify the concerned defects within 14 days on receipt of notice from Engineer-in-charge. On contractor's failure to do so, the Engineer-in-charge may get the same rectified through any other agency at contractor's risk and cost, and decision of Engineer-in-charge as to the cost payable by contractor for the same shall be final and binding to thecontractor.

2.6. A guarantee bond on appropriately stamped paper shall be given by the contractor to the department in the manner and form prescribedbelow:

FORM OF GUARANTEE BOND

I/We..... (Contractor) hereby guarantee that work will remain unaffected and will not be any way damaged by termite or any other germs of similar types, for a period for 10 years after completion of the work of anti-termite as per the terms and conditions of the contract and or damage that might be caused on account of termite and or other similar type of germs and hereby Guarantees to make good any loss of damages suffered by the Government of Gujarat and further guarantee to redo effective work without claiming any extra cost.

2.7. This guarantee shall remain in force for the period of 10 years from the completion of the work under the contract and it shall remain binding to the contractor for period of 10years.

2.8. The deposit at the rate of 50% of the cost of this item from the running and final bills shall be recovered and retained for the first one year after completion of the work and 10% shall be retained for the balance of guarantee period and shall be refunded only after the completion of the guaranteeperiod.

3.0. Mode of measurements &payment

3.1. The length and breadth shall be measured correct to a cm. as per the dimensions of sanctioned plans. No deduction shall be made nor extra paid for any opening for pipes etc. up to 0.1.sq. mt. The rate shall include the cost of all labour and materials required for the operation involved for satisfactory completion of this item. The sides of the trenches 30 cms, each side and bottom shall be measured under thisitem.

3.2. The rate shall be for a unit of One sq.meter.

22.00.8. Treating the backfill immediately in contact with foundation structure with chemical emulsion at the rate 7.5 liters per sq. mt. of vertical surface of the sub structure of each side (In case of R.C.C. columns, breams and R.C.C. basement walls, treating the sides of 50 cms. from ground level with chemical emulsion at the rate of 7.5 Liters/sq. meter).

1.0. Materials

1.1. The specifications of the item 22.00.7. shall befollowed.

2.0. Workmanship

2.1. After masonry foundations and retaining walls of basement come up , the backfill immediate in contact with foundation shall be treated with the chemical emulsion at the rate of 7.5 liters per sq. m. of the vertical surface of the sub structure for each side. The filling of earth is usually carried out in layers and the treatment shall be directed towards the concrete or masonry surfaces of the columns and walls so that the earth contact with these surfaces is well treated withchemical.

2.2. In case of R.C.C. framed structure with columns and plinth beams and R.C.C. basements the treatments shall start at the depth of 50 cms. below ground level from this depth backfill around the columns, beams, and R.C.C. basement walls shall be treated at 7.5 lit/sq. m. of vertical surface. The relevant specifications shall be followed same as item 22.00.7.

3.0. Mode of measurements andpayment

3.1. The area of substructure in contact with backfill to be measured. The length and breadth shall be measured correct to a cm. dimension of sanctioned plans for the surfaces in contact withbackfill.

3.2. No deduction shall be made nor extra paid for any opening for pipes, etc. up to 0.1 sq.m.

3.3. The rate includes cost of all labour, materials required for satisfactory completion of thisitem.

3.4. The rate shall be for a unit of One sq.meter.,

22.00.9. Treating the top surface of the plinth filling with chemical emulsion at rateof5 liters sq. meter, before the sand bed or sub grade islaid.

1.0. Materials : The relevant specifications of item 22.00.7. shall be followed.

2.0. Workmanship

2.1. The relevant specifications of item 22.00.7 shall be followed that the top surface of the consolidated earth within the walls, shall be treated with the chemical emulsion at the rate of 5 liters/sq. metre of the surface before the sand bed or sub-grade is laid. If the filled earth has been well rammed and the surface does not allow the emulsion to seep through, holes up to 50 to 75 mm. deep at 150 mm. centers both ways may be made with 12 mm. dia. M.S. road on the surface to facilitate absorption of the emulsion.

3.0. Mode of measurements &payment

3.1. The length and breadth shall be measured clean for the area actuallytreated.

3.2. No deduction shall be made nor extra paid for any opening for pipes, etc. up to 0.1 sq.m.

3.2. The rate shall be for a unit of One sq. meter.

22.00.10. Treating the junctions of wall and floor area with chemical emulsion at the rate of 7.5 liter/sq. mt. by making holes at junction of walls, and columns, with the floor before laying sub grade to a depth to 15 cms. by making holes.

1.0. Materials : The relevant specifications of item 22.00.7 shall be followed,

2.0. Workmanship

2.1. The relevant specifications of item 22.00.7 shall be followed except that the junction of walls columns with floor shall be treated with the chemical emulsion at the rate 7.5 liters/sq. meter. Special care shall be taken to establish continuity of the vertical chemical barrier on inner wall surface form the ground level be taken to establish continuity^ of the vertical chemical berries on inner wall surfaces form the ground level up to the level of filled earth surface. To achieve this, a small channel 3x3 cm. shall be made at the junctions of the wall and columns with floor (before laying the sub 2 grade) and road holes made in the channels up to the ground level 15 cms. apart and the rod moved backs ward and forward to breakup the earth an chemical emulsion poured along the channel at the rate of 7.5 liters per sq. m, of the vertical wall or column surfaces of sub-structures so as to soak the soil right to the bottom. The soil should be tamped back into place after thisoperation.

3.0. Mode of measurements andpayment

3.1. The relevant specifications of the item 22,00.7. shall befollowed.

3.2. The vertical area of sub-structure in contact with filled up earth above ground level to top filled up earth shall be measured forpayment.

3.3. The rate shall be for a unit of One sq.meter.

22.00.11. Treating the earth along the external perimeter of the building by making holes 15 cms., apart up to a depth of 30 cms. with chemical emulsion at the rate of 7.5 liters per sq. meter along thewall.

1.0. Materials : The relevant specification of item 22.00.7 shall be followed.

2.0. Workmanship

2.1. The relevant specifications of the item 22.00.7. shall be followed except that the external perimeter of the building shall be treated with chemical emulsions. After building is complete, the earth along the . external perimeter of the building should be treated at intervals of 15 cms. and to a depth of 30 cms. The rods shall be moved backward and forward parallel to the wall to breakup the earth and chemical emulsion poured along the wall at the rate of 7.5 liters per sq. meter of vertical surfaces. After the treatment the earth shall be tamped back into place the earth out side of the building should be graded on compaction of building, this treatment shall be carried out on the completion of such grading. In event of filling being more than 30 cms. the external perimeter and treatment shall be extended to the full depth of filling up to ground level so as to ensure continuity of the chemicalbarrier.

3.0. Mode of measurements andpayment

3.1. The relevant specifications of item No. 22.00.7 shall befollowed.

3.2. The vertical surfaces area so sub-structure 30 cms. in depth from finished ground level in external periphery only shall be measured and paid under this item. The depth of wall treated under back filled shall not be included in thisitem.

3.3. The rate shall be for a unit of One sq.meter.

22.0.12. Providing treatment along outside of foundation using chemical emulsion at7.5 liters per sq. m. of vertical surface (for each side) ofsub-structure.

1.0. Materials : The chemical used for the soil treatment shall be any one of the following with concentration shown against each in aqueous emulsion:

	Chemicals	Concentration
1.	Aldrin	0.50% (by weight)
2.	Heptachlor	0.50% (by weight)
3.	Chlordane	1.00% (by weight)

2.0. Workmanship

2.1. The surface of consolidated earth around the existing building shall be treated with chemical emulsion at the rate 7.5 liters/sq. m. of vertical surface of sub-structure. The minimum height to sub-structure shall be considered 60 cms. for treatment. If the earth along the perimeter does not allow emulsion to seep through, holes up to 300 mm. deep at 150 mm. centers both ways be made by 12 mm. dia. mild steel rod on the surface to facilitate saturation of the soil with chemicalemulsion.

2.2. The chemical barrier shall be complete and continuous under whole on the structure to be protected.

2.3. The chemical treatment shall be carried out when the surface quite dry. Chemical treatment shall not be carried out when it is raining or when the soil is wet with rain or sub soilwater.

3.0. Mode of measurements andpayment

3.1. Thelengthshallbemeasuredalongtheperipheryofthesub-structure.Thedepthshallbetaken 0.60 m.

3.2. No deduction shall be made not extra paid for any opening for pipes etc. up to 0.1 sq.m.

3.3. The rate includes cost of all labour and material required for the operations involved for satisfactory completion of thisitem.

3.4. The rate shall be for a unit of One sq.meter.

22.0.13. Providing treatment along external wall perimeter below concrete or masonryapron using chemical at 5. lit/linear including drilling and pluggingetc.

1.0. Materials : The relevant specifications of item No. 22.0.12 shall be followed.

2.0. Workmanship

2.1. The relevant specification of item No. 22.0.12 shall be followed except that the treatment shall be carried out along external wall perimeter below concrete or masonry apron, using chemical at rate of 5 lit/ runningmeter.

3.0. Mode of measurements andpayment

3.1. The relevant specifications of item No. 22.0,12 shall befollowed.

3.2. The rate including drilling and plugging holes in apron etc.complete.

3.3. The rate shall be for a unit of One runningmeter.

22.0.14. Treatment of soil below existing floor using chemical at 1 liter per hole at 300mm.a part including drilling plugging holesetc.

1.0. Materials : The relevant specifications of item No. 22.0.12. shall be followed.

2.0. Workmanship

2.1. The relevant specifications of item No. 22.00.9. shall be followed except that the termite control treatment shall be carried out in soil below existingfloors.

2.2. The holes of 12 mm. dia rod shall be drilled in floor up to 150 mm. depth at 300 mm. part both ways. The chemical shall be then injected with pressure at the rate of 1 liters/hole of the surfacearea.

3.0. Mode of measurements &payment

3.1. The relevant specifications of item 22.0.9 shall befollowed.

3.2. The rate shall includes cost of drilling holes andplugging.

3.3. The rate shall be for a unit of One sq.meter.

22,0.15. Treatment of voids is masonry using chemical at 1 Lit/hole at 300mm.apart including drilling holes andplugging.

1.0. Materials : The relevant specifications of item 22.0.12 shall be followed.

2.0. Workmanship

2.1. The walls affected by termite shall be cleaned off all live forms binding inside and the holes of voids in masonry wall surface shall be treated by chemical emulsion at rat 1 Lit. hole. The holes in cracks in surface of wall shall be drilled at 300 mm.apart.

3.0. Mode of measurement &payment

3.1. The rate shall be for a unit of One number of voidstreated.

22.0.16. Treatment to wood work by chemical emulsion in oil or kerosene based including 6 mm. dia downward slanted holes 150 mm. C/C. and plugging the same with cement mortar.

1.0. Materials : The relevant specifications of item No. 22. 00.7 shall be followed.

2.0. Workmanship

2.1. The wood work effected by Ants shall be cleaned of lives form hiding inside. The whole wood surface shall be then treated with oil or kerosene based chemical emulsion. The holes in 6 mm. dia. shall be drilled slanted downwards at 150 mm. centers to centers and chemical emulsion shall be poured into holes by means of funnels specifically prepared for the same and allowed to seep. After finales become emptily, another dose of chemicals shall be poured in them. This process shall be done repeatedly till the whole wood work is fully saturated withchemical.

2.2. The holes drilled in wood work shall be filled in with putty and other similar materials as directed and the whole wooden surface shall be made good asbefore.

3.0. Mode of measurements &payment

3.1. The work shall be measured for the finished work in sq. meter, includingframe.

3.2. The out of frame shall be measured as width ad form top of flooring to top of frame shall be as height. This area includes for treating frame and shuttersboth.

3.3. The rate includes cost of all labours and materials, required for satisfactory completion of this item.

3.4. The rate includes drilling holes plugging the same after treatment completed and making good as before.

3.5. The rate shall be for a unit One sq.meter.

SECTION-23

Water Supply, Plumbing and Sanitary Fittings

23.2. Providingandfixingtowall,ceilingadfloorgalvanisedmildsteeltube(Medium grade) of the following nominal bore, tube fittings and clamps including making good the wall ceiling and floor (A) 15 mm. dia (B) 20 mm. dia (C) 25 mm. (D) 32 mm. (E) 40mm. (F) 50mm.

1.0. Materials

1.1. Galvanised mild steel tubes of specified dia nominal bore shall conform to I.S.1239-1968.

1.2. The galvanised fittings, clamps, etc. required for specified dia. bore pipes shall be of best quality and makes as approved by theEngineer-in-charge.

2.0. Workmanship

2.1. Cutting, Laying &Jointing

2.1.1. When the tubes are to be cut or rethreaded, the ends shall be carefully filed out so that no obstruction to bore in offered. The ends of the tubes shall then be threaded conforming to the requirements of I.S. 554-1955 with pipe dies and taps carefully in such a manner that it will not result in slackness of joints when the two pieces are screwedtogether.

2.1.2. The taps and dies shall be used only for straightening screw threads which have becoming bent or damaged and shall not be used for turning of the threads so as to make them slack as the latter procedure may not result in the watertight joint. The screw threads for tube and fitting shall be protected form edge until they arefitted.

2.1.3. In jointing the tubes, the inside of the socket and the screwed end of the tubes shall be oiled and smeared with white or red lead and wrapping around with a few turns of fine spun yarn round thescrewed end of the tube. The end shall then be tightly screwed in the socket, tees, etc. with a pipe wrench. Care shall be taken that all times free from dust, and dirt during fixing. Burr from the joints shall be removed after screwing. After laying the open ends of the pipes shall be temperately plugged to prevent access of water, soil, or any other foreignmatter.

2.1.4. Any threads exposed after jointing shall be painted or in the case of underground piping thickly coated with approved anti-corrosive paint to preventcorrosion.

2.2. Fixing of tube fittings to wall ceiling &floors.

2.2.1. In case of fixing of tubes and fittings to the walls or ceilings, these shall run on the surface of the wall, or ceiling (not in chase) unless otherwise specified. The fixing shall be done by means of standard pattern, holder clamps keeping the pipes about 15 mm. clear of the wall. When it is found necessary to pattern, holder clamps keeping the pipes about 15 mm. clear of the .wall. When it is found necessary to conceal the pipes and when specified so, chasing may be adopted or pipe fixed inducts or recesses etc. provided that there is sufficient space to work on the pipe with usual tools. The pipe shall not ordinarily be buried in walls or solid floors, where unavoidable, pipe may be buried for short distances provided that adequate protection is given against damage and where so required joints are not buried. Where required M.S. tube sleeve shall be fixed at a place a pipe is peasant through a wall or floor for expansion andcontraction and other movements. In case the pipe is embedded in walls or floors, it should be painted with anti-corrosive bitumastic paint of approved quality. The pipe should not come in contact with lime mortar or lime concrete as the pipe is affected by lime. Under the floors, the pipe shall be laid in layer of sandfilling.

2.2.2. All pipes and fittings shall be fixed truly vertical and horizontal unless unavoidable. The pipes shall be fixed to walls with standard pattern clamps of required size and shape, one end of which shall be properly plugged or cemented into walls with cement mortar 1:3 (1 cement : 3 coarse sand) and the other tightened round the pipes to hold it securely. These clamps shall be spaced at regular intervals in straight lengths at 2 MC/C interval in horizontal run and 2.5 m. interval in vertical run. For pipe of 15 mm. dia. up to 25 mm. dia the holes in the walls and floors shall be made by drilling with chisel or jumper and not by dismantling the brick work or concrete. However for bigger diameter pipes the holes shall be carefully made cement : 3 coarse sand), and properly finished to match the adjacentsurface.

2.3. Testing of joints:

2.3.1. After laying and jointing, the pipes and fillings shall be inspected under working conditions of pressure and flow. Any joints found liken shall be redone, and ail leaking pipes removed and replaced without extracost.

2.3.2. The pipes and fittings after they are laid shall be tested to hydraulic pressure of 6 Kg./Sq cm. The pipe shall be slowly and carefully charged with water allowing all air to escape and avoiding all shocks and water hammer. The draw off takes and stop cock shall then be closed and specified hydraulic pressure shall be applied gradually The pressure gauge must be accurate. The pipes and fittings shall be tested in sections as the work laying proceeds, keeping, the joints exposed for inspection during thetesting.

3.0. Mode of measurements andpayment

3.1. The description of e, item shall, unless otherwise stated be held to include where necessary. conveyance, and delivery, handling, unloading, storing fabrication, hoisting, all labour for finishing to required shape and size, setting, fitting in position straight, cutting and waste return of packingetc.

3.2. The length shall be measured on running meter basis of finished work. The length shall be taken along the centre line of the pipe and fittings. The pipes fixed to wall, ceiling. floors etc shall be measured and paid under thisitem.

3.3. All the work shall be measured in decimal system as fixed in its place, subject to tolerance given below unless otherwisestated.

(i) Dimension shall be measured to the nearest 0 01 meter. (ii) Area shall be worked out to the nearest 0.01 sq. meter.

3.4. All measurements of cutting shall unless otherwise stated by held to include the consequentwaste

3.5. In case of fitting of unequal bore, the targets bore shall be measured for thetest.

3.6. Testing of pipe lines fittings, and joints include for providing all plant appliances necessary for obtaining access to the work to be tested an carrying out thetests

3.7. The rate includes galvanised steel tubing with .screwed socket joints. to gather with all fittings (such as bends, sockets springs, elbows, test, crosses, short pieces, clamps and plugs, unions etc.) and fixing complete with clamping wall hooks, wooden plug etc. and also curing, screwing and waste and for making forged (or hand made) bends on piping as required. Connector shall be inserted where required or directed. The rate also includes cutting through walls, floors etc. and their making good and painting exposed threads with anti-corrosive paint as above and testing where tubes are to be fixed to wall ceiling and flooring, the rates shall not include painting of pipes, providing sleeves and sand filling under floor for which separate payment shall bemade.

3.8. The rate shall be for a unit of one runningmeter.

23.4. Providingandlayingintrenchesgalvanisedmildsteeltubes(Mediumgrade)ofthe following nominal bore and tube fittings-earth work in trenches to be measured and paid for separately ; (A) 15 mm. dia. (B) 20 mm. (C) 25 mm. (D) 40 mm. (E) 60 mm. (F) 80mm.

1.0. Materials

1.1. Galvanised mild steel lube of specified dia. nominal bore and fittings shall conform to I.S. 1239-1968

2.0. Workmanship

2.1. The relevant specifications of Hem 23.2 (A) shall be followed for cutting laying an j jointing testing of joints except that the fixing of tube shall be done intrenches,

2.2. The width and depth of the trenches for different diameters of tht, tubes shall he is under, For 15 to 80 mm. dia tube width of trenches shall be 30 cms. and depth of trenches 60cms,

2.3. All joints, the trench width, shall be widened where necessary. The work of excavation and refilling shall be done true to line, and gradient in accordance with general specifications of earth work in trenches

2.4. The pipes shall *be* painted with two coats of anti-corrosive bitumastic paint of approved quality. The pipe shall be laid on a layer of 75 mm. sand filled upto 150 mm. above the pipe of so specified. The remaining portion of trench shall be then filled with excavated earth. The surplus shall be disposed off as directed.

2.5. When the excavation is done in rock the bottom shall be cut deep enough to permit the pipe to be laid and cushion of sand 75 mm. in case of bigger diameter of tube where the pressure is very high thrust block of cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 grade stone aggregates of 20 mm nominal size) shall be constructed on all bends to transmit the hydraulic thrust without impairing the ground and spreading it over a sufficient area if so specified.

3.0. Mode ofmeasurement

3.1. The relevant specifications of item No. 23.2 (A) shall be followed. The authorised quantities shallbe

3.2. For purpose of calculating cubic content cross section shall normally be taken at suitableintervals i.e. at manhole of wall chamber intervals except in abnormal cases like sudden change in strata or undulating ground etc., when they may be taken at closer intervals as approved by the Engineer-in charge whose decision shall be final, conclusive and binding.

3.3. Authorised width:

(a) Up to the meter depth, the width of the trenches for the purpose of measurements of excavation shall be arrived at by adding 40 cms. to the external diameter of the tube (not the socket) where a pipe is laid on concrete bed/ Cushing layer, the authorised width shall be the external diameter of tube plus 40 cms. or the width of the concrete bed cushioning layer whichever ismore.

(b) For depths exceeding one meter an allowance of 5 cms. per meter of depth for each side of the trench shall be added to the authorised width (i.e. external diameter of pipe of plus 40 cms) This allowance shall apply to the entire depth of the trench. The authorised width in such cases shall therefore be, equal to the depth of trench, plus external diameter or tube plus 40cms.

(c) Where more then one tube is laid, the diameter shall be reckoned as the horizontal distance of outside to outside of the outermostpipes.

(d) Where sheeting etc. has been provided the authorised width of the trenches at bottom shall be increased to accommodate for sheeting etc. so that the clear width available between faces of sheeting is as per previous ness of (a), (b) & (c)above.

(e) If the sides of the trench are not vertical, the tones of side slopes shall end at the top of the pipe and vertical sided trench of authorised width as per (a), (b), (c) and (d) above shall be excavated from these down to the bed oftrenches.

3.4. Where the tubes are laid in trenches, the work of excavation and refilling and round tubes for which separate payment shall be made, the length shall be measured on running meter,basis.

3.5. The rate shall be-for a unit of One runningmeter.

23.6. Marking connection of galvanised M/S. distribution branch withgalvanisedmild steel main 80 mm. nominal bore by providing and fixing tee including, cutting and threading the pipes etc. complete.

1.0. Materials The fittings required of specified dia. of pipe shall conform to I.S. 1237-1986.

2.0. Workmanship

2.1. A pit of suitable dimensions shall be dug at the point where the connection is to be made with the main and earth removed up to 150 mm. below the main. The flow of water in water main shall also be disconnected by closing the sluice or wheel valves on the main. The main shall first be cut. Water if any, collected in the pit shall be bailed out and ends of the pipethreaded.

2.2. The connections of distribution pipe shall be made by fixing malleable galvanised mild steel tee of the required size and fitting such as jam nut, socket, connecting pieceetc,

2.3. The testing of the joints shall be done as per relevant specifications of item No. 23.2(A).

3.0. Mode of measurements andpayment

3.1. The rate includes cost of all labour, materials, tool and plant required for satisfactory completion of 'thisitem.

3.2. The rate shall be for a unit of Onenumber.

23.8. Providing and fixing to wall ceiling and floor 6 Kgs/Sq. Cm. working pressure polythene pipes of the following outside diameter, low density complete with special flag compression type fittings wall clips etc. including making good the wall/ceiling and floor. (A) 20 mm. dia. (B) 25 mm. dia (C) 32 mm. dia. (D) 40 mm. dia. (E) 50 mm. dia.

1.0. Materials

1.1. The low density polythene pipe of specified diameter with 6 Kg/Sq. Cm, working pressure shall conform to I.S. 3076-1968. The specials and fittings required shall be of bestquality.

2.0. Workmanship

2.1. The P.V.C. pipes of specified diameter shall be fixed as directed. Due to thermal expansion of rigid' P.V.D. pipes, due allowance shall be made particularly in over ground pipe lines for any change in length

of pipe line which may occur during installation or when pipe line which may occur during installation or when pipe line is in service.

2.2. Above ground installation of rigid P.V.C. pipe should be under taken after preparations are observed for their protection against direct sun rays and mechanicaldamage.

2.3. The rigid P.V.C. pipe lines should not be kept exposed above ground when it passes through public places, railway lines, road side and footpaths.

2.4. P.V.C. pipes shall be supported at the following intervals:

-20 mm. dia 500 mm.-25 mm.dia750.mm. -32 mm. dia.900mm.

2.5. Closer support spacing shall be provided if recommended by themanufacture.

2.6. The guide lines indicated by the manufacturer regarding handling, transportation, storing, laying and jointing pf pipes shall be kept in view duringexecution.

2.7. P.V.C. pipes shall be fixed on wall with wooden plugs and suitable plasticclamps.

2.8. Jointing the pipes:

2.8.1. The pipes and sockets shall be accurately cut. The ends of the pipes and fittings should be absolutely free from dirt and dust. The outside surface of the pipes and the inside of the fittings shall then beroughenedwithemerypaper,andthensolventcementjoint.SincesolventcementisaggressivetoP V.C. care must be taken to avoid applying excessive cement to the inside of pipe sockets as any surplus cement cannot be wiped of after jointing. Empty solvent cement tins, brushes, rags, or paper impregnated with cement should not be buried in the trenches. They should be gathered not left scattered about, as-they can prove to be a hazard to animals, which may chew them.

2.8.2. If any manufacturer recommends its own methods of jointing the same shall be adopted after necessary approval from theEngineer-in-charge.

2.9. Laying pipes in Trenches:

2.9.1. The pipes shall be laid over uniform relatively soft fine trained soil found to be free of presence of hard object such as large flints, rocky projections, large tree roots etc. The width of the trenches shall be minimum width required forworking.

2.9.2. The pipes laid underground shall not be less than one meter from the ground level. The pipe shall be positioned in the trenches so as to avoid any induced stressed due to deflection. Any deviation required shall be obtained by using proper type of rubber ringjoints.

3.0. Mode of measurements &payment

3.1. The relevant specifications of item 23.2. (A) shall be followed except that the P.V.C. pipes of specified dia. shall be paid under thisitem.

3.2. The unit rate shall be for a unit of One runningmeter.

23.111.(A)(l) Providing and fixing water closet squatting pan (Indian type W.C. Pan) size 580 mm. (Earth work, bed concrete, foot-rests and trap to be measured and paid for separately). Vitreous china. Long pattern whitecolour.

1.0. Materials

1.1. Water closet squatting pan (Indian type W.C. Pan) shall conform to M-62. Cement mortar shall conform toM-11

2.0. Workmanship

2.1. The pan shall be sunk into the floor and embedded in a cushion of average 15 cm. cement concrete 1:5:10 (1 cement : 10 graded stone aggregate or brick aggregate 40 mm. nominal size) or and its bed concrete, the floor should be left 115 mm.-below the top level of the pan so as to allow for flooring and its bed concrete. The floor should be suitably stopped so that the .waste water is drained into the pan. The shall be provided with 100 mm. 'P' or 'S' trap as specified in the item No. 23.113 with approximately 50 mm seal-The joints between the pan and the trap shall be made leak-proof with cement mortar 1:1 (1 cement : 1 finesand).

3.0. Mode of measurements andpayment

3.1. The rate shall include the cost of all materials and labours involved in the operations described underworkmanship.

3.2. The rate shall be for a unit of Onenumber.

3.3. The 'P' or S^1 trap unit of Onenumber.

23.70. Providing and fixing cast spigot and sockets soil, waste, and ventilating pipes ofthe following normal size (B) 75 mm. dia. (C) 100 mm.dia.

1.0. Materials

1.1. The specified dia. C.I. Spigot and socket soil or waste pipe shall conformM-68.

2.0. Workmanship

2.1. The fixing of C.f. spigot and sockets soil, waste and ventilating pipe shall be carried out as per relevant specifications of item 15.93 (B) except the C.I. spigot and socket shall he fixed. The joints shall be filled with cement mortar 1:2 (1 cement : 2 sand) span spun yarn. The joints shall be filled with cement mortar 1.2 (1 cement : 2 sand) and spurn yarn. The pipes without care shall be fixed to wall with M.S. clamps The pipes will earns shall be secured with 40 mm before steel or iron barrel distance pieces or boils and stout galvanised iron nails 10 cms long into hand wool plug fixed in walls. Access doors to fittings shall be provided with 3 mm. rubber insertion packing and secured without screws to made air and water tight

2.2. All soil pipes shall be earned up above the roof and shall have a wire ball on guarded or acowl.

2.3. The ventilating pipe or shaft shall be carried out to a height of at least one meter above the outer covering of the roof of the building or in the case of windows in a gable wall or a dormer windows, it shall t carried up to a ridge of the roof or at least tow meters above the top of the windows. In case of flat roof to which access for use is provided, it shall be carried out up to a height of at least on meter above the parapet or two meters measured vertically from the top of any windows or opening which any exist up to a horizontal distance of five meters from the vent pipe into such building and in no case shall be carried out to a height less then threemeters.

2.4. Where ventilating pipes are carried in pipe shafts, the shaft shall be of a minimum size of one meter. If !he shells are also used to give fight and air to rooms, the ventilating pipes must be carried out to a horizontal distance at root level not loss than five meter from the site of theshaft.

2.5. The sand cast iron pipes above parapet shall be fixed with M.S. clamps and stays. The clamps shall be made from 1.5 mm. thick MS flat or 3 mm. width band to the required shape and size to fit tightly one the sockets when tightened with screw bolts. It shall be formed of two semi circular pieces with flanged ends on both sides, with holes to fit in the screw bolts and nuts 40 mm. dia. M.S. Bars, One end of the stay shall be bent to form a hook to be fixed with clamps by means of bolts and the other end shall be bent for embedding in wall in cement concrete block of size 200 mm. x 100 mm. x 100 mm. in 1:2:4 mix. The concrete shall be finished to match the surroundingsurfaces.

2.6. The connection between the main pipe and branch pipes shall be made by using branches and bends with access doors forcleaning

2.7. The waste from lavatories, kitchens basins, sinks, baths and other floor traps shall be separately connected to respective stacks of upper floor. The waste stack of lavatories shall be connected directly to main hole while the waste stack of other shall be separately discharged over gulleytrap.

3.0. Mode of measurements andpayment

3.1. The length of pipe shall be measured including all fittings along its length in running meters correct to a centimeter. No allowance shall be made for the portion of pipe length entered in the sockets of the adjacent pipe offittings.

3.2. The rate includes all labour, and materials, tools and plant etc. required for satisfactory completion of thisitem.

3.3. The rate shall be for a unit of One runningmeter.

23.87. Providing and fixing cast iron (spun) Nahni trap of the following nominal diameterof self cleaning design with C.I. Screwed down or hinged grating including cost of cutting and making good the waifs and floors : 100 mm. Inlet and 50 mm.outlet.

1.0. Materials

1.1. The cast iron (spun) Nahni trap shall conform to M-69. The C.I. hinged or screwed down cover shall be of bestquality

2.0. Workmanship

2.1. The Nahni trap with 100 mm. dia inlet and 50 mm. dia. outlet shall be fixed as per drawing or as directed.

2.2. The Nahni trap shall be jointed with C.I. Pipe, 75 mm. dia. with lead joints. The lead joints shall be done in conformation with I.S.782.-1976.

3.0. Mode of measurements andpayment

3.1. The rate includes cost of all labour, materials, tools and plants etc. required for satisfactory completion of this item including lead, jointing andtesting.

3.2. The rate shall be for a unit of onenumber.

23.112.(A)(I) Providing and fixing wash down water closet (European type W.C. Pan) with integral 'P' or 'S' trap including jointing the trap with soil pipe in C.M. 1:1 (1 cement : < fine sand) (seat and cover to be measured and paid for separately) ; Vitreous china pattern : In whitecolour,.

1.0. Materials

Wash down water closet (European type W.C. Pan) shall conform to M-60. Cement mortar shah conform to M-11.

2.0. Workmanship

2.1. The closet shall be fixed to the floor by means of 75 mm. long 6.5 mm. diameter counter sunk bolts and nuts embedded in the floor concrete using rubber or before washers so as not to allow anylateral displacement The joint between the trap of W.C. and soil pipe shall ho made with C M. 1:1 (1 cement : 1 finesand).

3.0. Mode of measurements andpayment

3.1. The rate shall includes the cost of all materials and labour involved in all the operations described underworkmanship.

3.2. The rate includes cost of all labour for fixing pans and sent and cover, inlet, connections etc. complete including testing the same. The payment of seat and cover shall be madeseparately.

3.3. The rate shall be for a unit of Onenumber.

23.113.(A) Providing and fixing 100 mm. size 'P' or 'S' trap for water closetsquattingpan including jointing the trap with the pan arid soil pipe **in cement mortar 1:1 (1cement : 1 fine sand) Vitreous China.**

1.0. Materials : The 100 mm. size 'P' or 'S' trap for water closet shall confirm to M-62. Cementmortar shall conform toM-11.

2.0. Workmanship

2.1. The 'P' or 'S' trap shall be fixed with pan cast iron pipe with C.M. 1.1. The pan shall be provided with a 100 nun. 'P' or 'S' trap as specified in the item with an approximately 50 mm. seal The joint between the pan and the trap shall be made leak-proof with cement mortar 1:1(1 cement : 1 finesand).

3.0. Mode of measurements andpayment

3.1. The rate shall include the cost of all materials and labour involved in the operations described under workmanship includingtesting.

3.2. The rate shall be for a unit of onenumber.

23.114. ProvidingandfixinginC.M.1:3(1cement:coarsesand)apairofwhitevitreous china 250 mm. x 130 mm. 30 mm. foot rest for long pattern squatting pan water closet.

1.0. Materials

1.1. The pair of white vitreous china foot-rests shall conform to M-62 Cement mortar shall conform to M-11.

2.0. Workmanship

2.1. After laying the floor, the floor shall be suitably sloped so that the waste water is drained into the pan A pair of foot-rests of size 250 mm. x 130 mm. x 30 mm. of white vitreous china shall be set in cement mortar 1:3 (1 cement ; 3 coarse sand). The foot-rests shall be fixed at a distance of 175 mm. from the inner edge of the back side of the pan and shall be fixed at convenientangle.

3.0. Mode of measurements &payment

3.1. The rate shall include the cost of all materials and labours involved in all the operations described underworkmanship.

3.2. The rate shall be for a unit of Onepair.

23.115.(A)(I) Providing and fixing 12.5 liters low level flushing cistern with a pair of C.I. or mild steel brackets complete with fittings such as lead valve less syphon, 15 mm. nominal size brass ball valve with polythene float, C.P. brass ball handle, unions and couplings for connections with inlet, outlet and overflow pipes, 40 mm. dia. porcelain enameled flush bend including cutting holes in walls and making good the same and connecting the flush bend with cistern and closet (overflow pipe to be measured and paid for separately) : Vitreous China. In whitecolour.

1.0. Materials

1.1. The low level vitreous china (Enamel) flushing tank shall conform to M-65 except that theflushing

cistern shall be 12.5 liters low level type as mentioned in the item.

2.0. Workmanship

2.1. The low level cistern shall be firmly fixed on two C.I. or mild steel, brackets which shall be firmly embedded in the wall in C.M. 1:4 (1 cement : 4 finesand).

2.2. The height of the bottom of the cistern from the top of the pan shall be 30 cms of low level flushing cistern shall be connected to the closet by means of 40 mm. dia, white porcelain enameled flush bend using Indian rubber adapts joints. The flush pipe shall be securely connected to the cistern outlet by means of coupling nut made of any non-corrosive materials, non-ferrous metal or galvanised steel. The flush pipe from the cistern shall be connected to the closet by means of cement ofred-lead.

3.0. Mode of measurements &payment

3.1. The rate shall include the cost of all materials fitting and labour involved in al! the operations described under workmanship includingtesting.

3.2. The rate shall be for a unit of Onenumber.

23.116. Providing and fixing 12.5 liters level C.I. flushing with a pair C.I. ormildsteel brackets, complete with fittings such as syphonic arrangement, 15 mm. nominal size brass ball valve with polythene flat, lever. G.I. China (60 cms.) and pull unions and couplings for connections with inlet, outlet and overflow pipes etc. including cutting holes in walls and making good the same (overflow pipe to be measured and paid for separately).

1.0. Materials

1.1. The high level C.i. flushing cistern shall conform to M-66, except that the flushing cistern shall be of 12.5 liters high level C.I. cistern as mentioned in theitem.

2.0. Workmanship

2.1. The cistern shall be fixed on two C.I. or mild steel brackets which shall be firmly embedded in the wall in cement mortar 1:4 (1 cement : 4 finesand).

2.2. The height of the bottom of the cistern from the top of the pan shall be twometers.

2.3. The W.C. Pan shall be connected to the cistern by galvanised steel flush pipes of 32 mm. nominal internal diameter. The flush pipe shall be fixed to wall by using clamps. The flush pipe from the cistern shall be connected to the closet by means of cement of red-lead. The flush pipe shall be securely connected to the cistern outlet by means of coupling nut made of any non-corrosive materials non-ferrous metal or galvanisedsteel.

2.4. The chain and the pull union shall be fixed to the protruding level arm of the flushingcistern.

2.5. The whole installation shall be tested for leak-proof joints and satisfactoryfunctioning.

3.0. Mode of measurements &payment

3.1. The rate shall include the cost of all materials, fittings, and lobour involved in all the operations described under workmanship includingtesting.

3.2. The rate shall be for a unit of Onenumber.

23.117. Providing and fixing in position with clamps etc. 32 mm. nominalinternaldia. galvanised steel tube flush pipe for high level flushing cistern including connecting the flush pipe with cistern and closet and making good the walls andfloors.

1.0. Materials

1.1. The 32 mm. nominal internal dia, galvanised steel tube flush pipe shall conform toM-56.

2.0. Workmanship

2.1. The W.C. pan shall be connected to the cistern by galvanised steel flush pipe of 32 mm nominal internal diameter. The flush pipe shall be fixed to wall by usingclamps.

2.2. The flush pipe from the cistern shall be connected to the closet by means of cement orred-lead.

2.3. The flush pipe shall be securely connected to the cistern outlet by means of coupling nut made of any non-corrosive materials, non-ferrous metal or galvanisedsteel.

3.0. Mode of measurements andpayment

3.1. The rate shall include the cost of all materials, fittings and labour involved in all the operations described under workmanship includingtesting.

3.2. The rate shall be for a unit of One running meter.

23.120. Providing and fixing G.I. inlet connection for flush pipe with W.C.Pan.

1.0. Materials

1.1. The G.I. inlet connection for flush pipe shall conform toM-56.

2.0. Workmanship

2.1. The flush pipe from the cistern shall be connected to the closet by means of cement orred-lead.

3.0. Mode of measurements &payment

3.1. The rate shall include the cost of all materials, fittings and labour involved in all the operations described under workmanship includingtesting.

3.2. The rate shall be for a unit of Onenumber.

23.127. Providing and fixing wash basin with single hole for pillar top white C.I. orM.S, brackets painted white including cutting holes, and making good the same but excluding fittings, vitreous china flat back wash basin 550 mm. x 400 mm. in white colour.

1.0. Materials

1.1. The white glazed earthenware wash basin shall be 550 mm. x 400mm. of 1st quality and make as approved by the Engineer-in-charge. The wash basin shall-conform toM-59.

2.0. Workmanship

2.1. The washbasin shall be fixed on the wall as and where directed. The wash basin shall be supported on a pair of M.S. or C.I. brackets fixed in C.M. 1:3 (1 cement : 3 sand). The bracket shall conform to I.S. : 775-1962. The wall plaster on the rear shall be cut to rest the top edge of the washbasin. After fixing the basing, plaster shall be made good and surface finished to match the existingone.

2.2. The brackets shall be painted white with ready-mixedpaint.

2.3. The C.I. brass trap and union shall be connected to 32 mm. dia. waste pipe which shall be suitably bent towards the wall and which shall discharge into an open drain leading to a gully trap or direct in to gully-trap on the ground floor and shall be connected to a waste pipe through a floor trap on the upper floors. C.P. brass trap and union may not be provided where the surface drain or a floor trap is placed directly under the basin and the waste is discharged in tovertically.

2.4. The height of the front edge to the wash basin from the floor level shall be 80cms.

2.5. The necessary inlet, outlet connections and fittings such as pillar cocks, CP dress waste trap waste pipe, stop cock, chain wish rubber plug etc. shall befixed.

2.6. The payment of fittings shall be made separately under separateitems.

3.0. Mode of measurements &payment

3.1. The rate includes cost of all labour, materials, tool3 and plant etc. required for satisfactory completion of this item as specified inworkmanship.

3.2. The rate shall be for a unit of Onenumber.

23.130.(C) Providing and fixing kitchen sink with C.I. or M.S. brackets painted white including cutting holes in walls and making good the same of but excluding fittings. Vitreous china sink 600 mm. x 450 mm. x 150 mm. size.

1.0. Materials

1.1. White glazed vitreous china sink 600 mm. x 450 mm. x 150 mm. size shall conform toM-63.

2.0. Workmanship

2.1. The kitchen sink shall be supported on a pair of M.S. or C.I. brackets fixed in cement mortar 1:3 (1 cement : 3 coarse sand). The M.S. or C.I. brackets shall conform to I.S. 775-1962. The wall plaster on the rear shall be cut to rest over the top edge of the sink. After fixing the sink, plaster shall be made good and he surface finished to match with the existingone.

2.2. The C.P. brass trap and union shall be connected to 40 mm. nominal bore galvanised mild steel waste pipe which shall be suitably bent towards the wall and which shall discharge into an open drain leading to gully-trap or direct into the gully-trap on the ground on floor and shall be connected to a waste pipe through a floor trap on the upper floors. C.P. brass trap and union may not be provided where surface drain or a floor trap is placed directly under the sink and the waste is discharged to itvertically.

2.3. The height of front edge of the wash basin from the floor, level shall be 80 cms.

3.0. Mode of measurements &payment

3.1. The rate includes cost of all labour, materials, tools and plant and other equipment required for satisfactory completion of this item as described inworkmanship.

3.2. The rate shall be for a unit of Onenumber.

23.135 (A) Providing and fixing 32 mm, dia. C.P. brass waste for wash basin or sink.

1.0. Materials

1.1. The C.P. brass trap and unions shall be of 32 mm. dia. and of best quality and make as approved by theEngineer-in-charge

2.0. Workmanship

2.1. C.P. brass waste trap and union shall be connected to 32 mm dia waste pipe which shall be suitably bent towards the wail which shall discharge into drain through a floor trap The C.P brass waste trap shall be provided for wash basin or sink as the case maybe.

3.0. Mode of measurement &payment

3.1. The rate includes all labours and providing C.P. brass waste trap and union including waste couplings of 32 nun fin. The rate excludes the cost of waste pipe of 32 mm. dia.

3.2. The idle shall be for a unit of Onenumber.

23.135.(B) Providing and fixing 40 mm dia. C.P. Brass waste for wash basin or sink.

1.0. Materials &Workmanship

1.1. The relevant specifications of item 23.135 (A) shall be followed except that the diameter of C.P. brass waste is 40 mm dia.

2.0. Mode **of measurements &payment**

2.1. Thu rate shall be for a unit of Onenumber.

23.136.(A) Providing and fixing 32 mm. dia. M.I. union for wash basin or sink.

1.0. Materials

1.1. Tho 32 mm dia M.1. Fisher union shall be of best quality and made as approved by the Engineer-in-charge.

2.0. Workmanship2.1. The 32mm **dia** M I. Fisher union shall be fixed to wash basin or sinkin best workman likemanner.

3.0. Mode of measurements andpayment

3.1. The rate includes all labours .and materials, tools and plants etc. required for satisfactory completion of theitem.

23.136.(B) Providing and fixing 40 mm, dia. M.I. fisher union for wash basin or sink.

1.0. Materials andWorkmanship

1.1. The relevant specifications of item No. 23, 136 (A) shall be followed except that the diameter of M I fisher union shall be 40 mm.dia.

2.0. Mode of measurements ofpayment

2.1. The rate shall be for a unit of Onenumber

23.139. Providing and fixing 100 mm. dia, sand cast iron grating for gulley floor orNahni tarp.

1.0. Materials

1.1. The- 100 mm. dia. sand cast iron gratings for gulley, floor or Nahni trap shall be of best quality and make asapproved.

2.0. Workmanship

2.1. The CAST IRON grating shall he provided to gulley trap floor or Nahni trap as the case may be in best workmen likemanner.

3.0. Mode of measurements andpayment

3.1. The rate shall includes cost of all labour, materials, tools and plants, etc. required for satisfactory completion of thisitem.

3.2. The rate shall be for a unit of One number.

23:141.(A) Providing and fixing 100 mm. dia, C.P, brass shower rose with 15 mm or 20mm. inlet.

1.0. Materials

1.1. 100 mm. dia C P. brass shower lose shall confirm to I S. 2556-1972 part - XI and of best quality and makes as approved by engineer-in-charge. The inlet of shower rose shall be 15 mm dia. or 20 mm dia. asdirected.

2.0. Workmanship

2.1. The C.P. brass shower rose shall be fixed as directed with 15 mm. dia. or 20 mm. dia. G.I. inlet pipe as the case maybe.

3.0. Mode of measurements andpayment

3.1. The rate includes all labours and materials, tools and plant etc. required for satisfactory completion of thisitem

3.2. The rate shall be for a onenumber.

23.143. Providingandfixing600mm.x450mm.bevelededgeminorofsuperiorglass mounted on 6 mm. thick A.C. Sheet or plywood sheet and fixed to wooden plugs with C.P brass screws and washers,

1.0. Materials

1.1. The 600 mm. x 450 mm. size mirror snail be of superior glass with edge rounded offer beveled as specified. It shall be free from flaws specks, or bubbles and its thickness shall riot be less than 6 mm. The glass for the mirror shall be uniformly silver plated at the back and shall be free from silvering defects Silvering shall have a protective uniform covering of red load paint. The 6 mm thick ply wood shall conform to M-37. The 6 mm. thick A.C. sheets shall conform toM-24.

2.0. Workmanship

2.1. The mirror of 600 mm. x 450 mm. size mounted on A.C. Sheet or plywood 6 mm thick with C.P. brass clips shall be fixed as directed, by fixing wooden plugs in wall and C.P brass screws and washers. The work shall be carried out in best workman likemanner.

3.0. Mode of measurements &payment

3.1. The rate includes cost of all labour and materials, tools and plant etc. required for satisfactory completion of this item. The rate shall be for a .unit of Onenumber.

23.144.(B) Providing and fixing 600 x 20 mm. C.P. brass towel rail complete with**C.P.brass brackets fixed to wooden plugs with and C.P. brassscrews.**

1.0. Materials

1.1. The C.P. brass towel rail shall be 600 x 20 mm. of best quality as approved by the Engineer-in-charge The brackets shall be of C.P. brass. The rail shall conform to I.S.1068-1958.

2.0. Workmanship

2.1. The brackets of the towel rail shall be fixed by means of C.P. brass screws to wooden firmly embedded in the wall with C.M. 1:3 (1 cement : 3 coarse sand). The **towel** rail shall be fixed as and where directed.

3.0. Mode of measurements andpayment

3.1. The rate includes cost of all labour and materials, tools and plant etc. required for satisfactory completion of thisitem.

3.2. The rate shall be for a unit of Onenumber.

23.145. Providing and fixing 600 mm. x 120 mm. glass shelf with C.P. brass bracketsand guard rail complete, fixed to wooden plugs with C.P. brassscrews.

1.0. Materials:Theglassshelfof600mm.x120mm.size-shallbeof5mm.thickplateglass.The edge of the glass shall be grounded. The C.P. over brass guard rail shall be best quality andmake.

2.0. Workmanship

2.1. The C.P. brass brackets of the glass shelf shall be fixed with C.P. screws to wooden plug firmly embedded in the wall C.M. 1:3 (1 cement : 3 coarse sand). The C.P. guard rail shall be fixed to glass shelf asdirected.

3.0. Mode of measurement andpayment

3.1. The rate includes all labour and materials tools and plant etc. required for satisfactory completion of thisitem,

3.2. The rate shall be for a unit of Onenumber.

23.146.(A) Providing and fixing C.P. brass toilet paperholder.

1.0. Materials : The toilet paper holder shall be of best quality and make, chromium plating shallbeof grade 'B' type conforming to I.S.1068-2958.

2.0. Workmanship

2.1. The toilet paper holder shall be fixed in position be means of screws and wooden plugs embedded in wall with cement 1:3 (1 cement : 3 coarsesand).

3.0. Mode of measurements andpayment

3.1. The rate includes cost of all labour and material, tools and plant etc. required for satisfactory completion of thisitem.

3.2. The rate shall be for a unit of Onenumber.

23.92.(A)(I) Providing and fixing brass screw down bib taps of following size. Polished bright :14 mm. dia.

1.0. Materials : 15 mm. dia. brass screw down with bright polished finished shall conform to I.S.781-1977. The bib cock shall be best Indian make andquality.

2.0. Workmanship

2.1. The screw down bib cock 15 mm. as specified above shall be fixed as directed. The threaded portion shall be smeared with white or red lead and around with a few turns of fine spun yarn round the screwed end of the pipe. The bib cock shall be then screwed and fixed to water tightposition.

3.0. Mode of measurements andpayment

3.1. The rate includes cost of all labour, materials, tools and plant etc. required for satisfactory completion of thisitem.

3.2. The rate shall be for a unit of OneNumber.

23.92.(A)(II) Providing and fixing brass screw down bib taps of following size : Polished bright:20 mm. dia.

1.0. Materials andWorkmanship

The relevant specifications of item 23.92 (A) (i) shall be followed except that the bib taps of 20 mm. dia shall be fixed.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item 23.92 A(i) shall befollowed.

2.2. The rate shall be for a unit of Onenumber.

23.92.(B)(I) Providing and fixing chromium platted brass screw down bib taps ofthefollowing size : 15 mm.dia.

1.0. Materials andworkmanship

The relevant specification of item No. 23.92 (A) (I) shall be followed except that the brass chromium plated screw down tap of 20 mm. dia. shall be fixed.

2.0. Mode of measurements &payment

2.1. The rate of shall be for a unit of Onenumber.

23.92.(B)(ll) Providingandlayingchromiumplatedbrassscrewdownbibtapsoffollowingsize: 20 mm.dia.

1.0. Materials andworkmanship

The relevant specifications of item No. 23.92 (A) shall be followed except that the brass chromium plated screw down tap of 20 mm. dia. shall be fixed.

2.0. Mode of measurements &payment

2.1. The rate shall be for a unit of Onenumber

23.92.(C)(I) Providingandfixinggunmetalscrewdownbibtapsofthefollowingsize:15mm. dia.

1.0. Materials andworkmanship

1.1. The relevant specification of item No. 23.9*3 (A) (I) shall be followed except that the 15 mm. dia. gun metal screw down bib tap shall befixed.

2.0. Mode of measurements &payment

2.1. The rate shall be for a unit of Onenumber,

23.92.(C)(ll) Providing and fixing gun metal screw down bib taps of following size : 20 mm. dia.

1.0. Materials &Workmanship

1.1. The relevant specifications of item 23.92 (A) (i) shall be followed except that the 20 mm. dia. gun screw down bib tap shall befixed.

2.0. Mode of measurements &payment

2.1. The rate shall be for a unit of Onenumber.

23.95(A) Providingandfixingpillartapcapstanheadscrewdownhighpressurewithscrew shank and back nuts : (A) 14 mm. dia. (B) 20 mm.dia.

1.0. Materials : The capstan head pillar tap of specified dia. of C.R over brass shall be bestqualityand shall conform to I.S. : 1975 - 1961. The pillar taps shall be testedquality.

2.0. Workmanship

2.1. The capstan head pillar tap of specified dia. shall be fixed as directed with required washers of selected leather or rubber asbestos composition or of plastic as directed. The cock shall fixed with pipe line white Zink end spun yarn, to make joint water tight. The work shall be carried out in best workman likemanner.

3.0. Mode of measurements andpayment

3.1. The rate shall be for a unit of onenumber.

23.96(A) Providing and fixing brass screw down stop cock (A) 15 mm. dia. (B) 20 mm. dia. (C) **25 mm. dia.**

1.0. Materials:ThebrassscrewdownstopcockofspecifieddiashallconformtoIS.:781-1977The stop cock shall be of testedquality.

2.0 Workmanship

The stop cock shall be fixed in position by means of Jam nut and socket. The stop cock shall be fixed near the inlet of the water meter or as directed. The joints shall be done with white zinc and spun yarn. The joint shall be tested for leakproofing.

3.0. Mode of measurements andpayment

3.1. The rate includes cost of all labours, materials, tools and plant etc. required for satisfactory completion of thisitem.

23.99. Providing and fixing gunmetal check or non-return valve. (A) 15 mm. dia. (B) 20mm. dia. (C) 25 mm. dia. (D) 32 mm. dia. (E) 40 mm.dia.

1.0. Materials : The gun metal check or not return full way wheel valve or specified dial,shallconform to I.S. : 778-1964. The non-return valve shall be of testedquality.

2.0. Workmanship

2.1. The gun metal check or non return valve shall be fully cleared of all foreign matter before fixing. The fixing of shall be done by means of bolts nuts and 3 mm. rubber insertions with flags of spigot and socketed tail pieces, drilled to the same specifications as in case of socket and spigot flanges in case of flanged pipes. The joining shall be done leakproof.

3.0. Mode of measurements andpayment

3.1. The rate includes all labours, **materials, tools and plant etc. required for** satisfactory completion of thisitem.

3.2. The rate shall be for a unit of **Onenumber.**

23.00. Providing and fixing chromium plated brass half turn flush cock of approvedquality including fixing in pipe line etc. complete (1) 20 mm. dia. (II) 25 mm. dia. (Ill) 32 mm.dia.

1.0. Materials : Chromium plated brass half turn flush cock shall conform to M-67.

2.0. Workmanship

The hall turn flush cock of specified diameter shall be fixed as directed. The flush cock shall be fixed in G.I. pipe line with necessary fittings. The joints shall be made leak proof by using spun yarn and white Zink. The fixing work shall be carried out as per relevant specifications of item No. 23.2(4).

3.0. Mode of measurements andpayment

3.1. The rate includes cost of all materials and lobour required for satisfactory completion of this item includingfittings.

3.2. The rate shall be for a unit of One number.

23.00.4. Providing and fixing chromium plated bottle trap with necessary coupling of approved quality for washbasin.

1.0. Materials: Thechromiumplatedbottletrapshallbeapprovedmakeandofbestquality.The bottle trap shall be provided witcoupling.

2.0. Workmanship

The bottle trap shall be fixed on wash hand basin with wooden gullies and screws as directed. The work shall be carried out in best workman like manner.

3.0. Mode of measurements andpayment

3.1. The rate includes cost of all materials and labour involved for satisfactory completion of thisitem.

3.2. The rate shall be for a unit of Onenumber.

23.122.(A) Providing and fixing urinal of approved quality including connecting the urinal with waste pipe trap etc. complete : whit earthenware flat back or corner type size 430 mm. x 260 mm. x 350 mm.

1.0. Materials: The white earthenware flat back or comer type urinal of size 4'30 mm. x 260 mm.x350 mm. shall conform toM-64.

2.0. Workmanship

2.1. The urinals shall be fixed in position by using wooden plugs and screws and shall be at a height 65 cms. from the Moor level to the top of the lip of urinal, unless otherwise directed. The wooden plugs shall be of 50 mm. x 50 mm. at base tapering to 38 mm. x 38 mm. at top 50 mm. in length shall be fixed in wall in steel waste pipe which shall discharge in the channel or floor a tap. The connection between the urinal and flush or waste pipe shall be made by means of putty or white lead mixed with choppedhemp.

3.0. Mode of measurements andpayment

3.1. The rate shall includes cost all labours, materials, tools and plants etc. required for satisfactory completion of thisitem.

3.2. The rate shall be for a unit of Onenumber.

23.124.(A) Providing and fixing urinal of approved quality including connection with trap and with integral longitudinal flush pipe squatting plate pattern white earthenware 550 mm. x 300mm.

1.0. Materials:Thesquattingplatepattern,whiteglazedearthenwareurinalof550mmx300mm shall conform to I.S. 771-1063. It shall be test Indiamake.

2.0. Workmanship

2.1. The squatting plate urinal shall be fixed asdirected.

2.2. The top edge of the squatting plate shall be flush with the finished floor level adjacent to it. It shall be embedded on a layer of 25 mm. thick cement mortar 1:8 (1 cement: 8 find sand) laid over a bed of brunt brickbat cement 1:5 :10(1 cement: 5 fine sand, 10 graded brick aggregate 20 mm. nominal size). There shall be 100 mm. dia. glazed earthenware or vitreous china channel as specified with stop andoutlet pieces suitably fixed in floor in cement mortar 1:3 (1 cement: 3 coarse sand) and joint finished with white cement. The earthenware vitreous china shall discharge into 65 mm. C.P. brass outlet grating. The trap and fitting shall be fixed asdirected.

3.0. Mode or measurements andpayment

3.1. The rate includes .cost of all materials, tools and plants and labour required for satisfactory completion of thisitem.

3.2. The rate shall be for a unit of Onenumber

23.134 Providing and fixing rubber plug for sink or washbasin.

1.0. Material: The rubber plug for sink or wash hand, basin shall be best quality andmakeas approved by the Engineer-in-charge.

2.0. Workmanship-

2.1. The rubber plug with plain shall be fixed in wash basin or sink asdirected.

3.0. Mode of measurements andpayment

3.1. The rate shall be for a unit of Onenumber.

23.00.5.(A) Providing and fixing ball cock of approved quality as directed {Copper metal) : (I)25 'mm. dia. (II) 50 mm.dia;

1.0. Materials :

The ball cock of specified diameter shall conform to M-75

2.0. Workmanship

The ball cock of specified diameter shall be fixed as directed. The fixing of ball cock shall be carried out as per relevant specification of item No. 23 (A) for joints etc.

3.0. Mode of measurement &payment

3.1. The rate includes-cost of all materials and labour involved for carrying out satisfactorywork.

3.2. The rate shall be for a unit of Onenumber.

23.00.5.(B) Providingandfixingballcockofapprovedqualityasdirected:Ebonite.(I)25mm. dia. (II) 50 mm.dia.)

1.0. Materials&Workmanship: TherelevantspecificationsofitemNo.23.00.5(A)shallbefollowed except that the ball cock of specified dia of Ebonite shall befixed.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item NO. 23.00.5 (A) shall befollowed.

2.2. The rate shall be for a unit of Onenumber.

23.00.6. Providing and fixing C.I. Manhole cover 0.60 C.M. x 0.45 C.M. size havingweightnot less than 35kg.

1.0. Materials

C. l. Manhole cover of 0.60 x 0.45 Cms. size shall be of best quality. The eight of C.I. cover and frame shall into be less than 35 Kg. The C.I. manhole cover shall be of light duty and conform relevant I.S.

2.0. Workmanship

2.1. The C.I. Manhole cover shall be fixed as per relevant specifications of item No. 24.44 except that the C.I. cover shall be fixed ad and wheredirected.

3.0. Mode of measurements andpayment

3.1. The rate includes cost of all laobur and materials required for satisfactory completion of thisitem.

3.2. The rate shall be for a unit of Onenumber.

23.00.7. Providing and fixing G.I. water spout of 50 mm. dia. and 30 cms length.

1.0. Materials : G.I.M.S. type of 50 mm. dia. shall conform to M-56.

2.0. Workmanship

2.1. The G.I. pipe of 30 cms. fixed as rain water pipe as directed. The pipe shall be fixed about 1/4 dia. below the floor level so as to make approach of water easy. The inlet of pipe shall be rounded off for easy entry of rain water pipe. The pipe shall be fixed in C.M.1:3.

3.0. Mode of measurements &payment

3.1. The rate includes of all labour and materials required for satisfactory completion of thisitem.

3.2. The rate shall be for a unit of Onenumber.

23.8. Providing and fixing to wall ceiling and floor 6 Kg/ Sq. cm, working pressureoutside diameter, low density completion with special flange compression type fittings wall clips etc. including making good the wall, ceiling and floor. (A) 20 mm. dia. (B) 25 mm. dia. (C) 32 mm. dia. (D) 40 mm. dia. (E) 50 mm.dia.

1.0. Materials: Thelow.densitypolythenepipeofspecifieddiameterwith56Kg/f.Sq.Cm.working pressure shall conform to I.S. 3076-1968. The specials and fittings required shall be of bestquality.

2.0. Workmanship

2.1. The P.V.C Pipes of specified diameter shall be fixed as directed. Due to thermal expansion of rigid P-V.C. Pipes, due allowances shall be made particularly in over-ground pipe line for any change in length of pipe line which may occur during installation or when pipe fine is inservice.

2.2. Above ground installation of rigid P.V.C. pipe should be undertaking after precautions are

observed for their protection again dirt, sun rays and mechanical damage.

2.3. The rigid P.V.C. tines should not be kept exposed above ground when it passes through public places, railway lines, roads, road side and footpaths.

2.4. P.V.C. pipe shall be supported at the following intervals;

-20 mm dia 500 mm. -25 mm. dia.750mm. -32 mm. dia. 900mm.

2.5. Close support spacing shall be provided if recommended by themanufacturer.

2.6. The guide lines indicated by the manufacturer regarding handling, transportation, storing, laying and jointing of pipes shall be kept in view duringexecution.

2.7. P.V.C. pipes shall be fixed on wall with wooden plugs suitable plasticclamps.

2.8. Jointing the pipes:

2.8.1. The pipes and socket s shall be accurately cut. The ends of the pipes and fittings should be absolutely free from dirt and dust. The outside surface of the pipes and the inside of the fittings shall then be roughened with emery paper, and then solvent cement shall be applied to the matching surface and pushed home and joint. Since solvent cement is aggressive to P.V.C. care must be taken to avoid applying excessive cement to the inside of pipe sockets as any surplus cement cannot be wiped off after jointing. Empty solvent cement tins, brushes, rags of paper impregnated with cement should not be buried in the trenches. They should be gathered, not left scattered about, as they can prove to be a hazard to animals, which may chewthem.

2.8.2. If any manufacturer recommends its own methods of jointing the same shall be adopted after necessary approval from theEngineer-in-charge.

2.9. Laying pipes intrenches:

2.9.1. The pipes shall be laid over uniform relatively soft fine grained solid found to be free of presence of hard object such as large feints, rocky projections, large tree roots etc. The width of the trenches shall be minimum width required forworking.

2.9.2. The pipes laid underground shall not be less than one meter from the ground level. The pipe shall be positioned in the trenches so as to avoid any inducted stresses due to retraction. Any deviation required shall be obtained by using proper type of rubber ringjoints.

3.0. Mode of measurements &payment

3.1. The relevant specifications of item No. 23.2. (A) shall be followed except that the P.V.C. pipes of specified dia. shall be paid under thisitem.

3.2. The unit rate shall be for a unit of One runningmeter.

SECTION-24

24.1.(A) Providing any laying (two level or slopes) and jointing with stiff mixture of cement mortar in proportion 1:1 salt glazed stone-ware pipes, following nominal internal diameters including testing of pipes and joints complete : 100 mm.dia.

1.0. Materials

(I) Water shall conform to M-1(2) Cement mortar of proportion 1:1 shall conform to M-11. (3) 100 mm. dia. glazed stoneware pipe shall conform toM-71.

2.0. Workmanship

2.1. The trenches for stoneware pipe drains shall be carried out as per relevant specifications of item No. 23.4 (A) except that the work is for stoneware pipes of 100 mm.dia.

2.2. Laying:

2.2.1. The pipes shall be laid accurately and perfectly true to line, levels and gradients, Great care shall be taken to prevent sand etc. from entering the pipes. The pipes between two manholes shall be laid truly in a straight line without vertical or horizontal undulation. All junctions and changes in direction and diameter shall be made inside manholes by means of curved tapered channels formed in Cement concrete finished smooth and benched on both sides. The body of the pipe shall rest for its entire length, on a even level bed grips being made or left on the bed to receive the sockets of thepipes.

2.3. Jointing:

2.3.1. Tarred gask in or yarn soaked in neat cement slurry shall first be placed around the spigot to each pipe and the spigot shall then be placed well home into the socket of the pipe previously laid. The pipe shall then be adjusted and fixed in the correct position and gaskin caulked home so as to fill not more than 1/4th of the total depth or (13 mm. in depth) of thesocket.

2.3.2. The remainder of the sockets shall be filled with stiff mixture of cement mortar in proportion of one part of cement and one part of sharp sand. When the socket is fillet, a filled shall be formed round the joints with a trowel, forming an angle of 450 with the barrel of thepipe.

2.3.3. The mortar shall be mixed as necessary for immediateuse.

2.3.4. After the joint is made, any extraneous materials shall be removed form the inside of the joints with a suitable scraper or "badger". The newly made joints shall be protected, until set, from the sun, dry winds, rain or frost, sacking or other suitable materials which shall be used for thepurpose.

2.3.5. The mortar shall be cured for 10days.

2.4. Testing ofJoints:

2.4.1. If nay leakage is visible the defective part of the work shall be made good at no extra cost. The pipe line shall be tested asdirected.

2.4.2. A slight amount of sweating which is uniform may be overlooked, but excessive sweating from a particular pipe or joints shall be watched for and taken as indicating a defect to be madegood.

3.0. Mode of measurements andpayment

3.1. Pounding or buttering of the fit trenches bed to the lower part of the pipe and "Grips" dug to take socket, collars etc. are included in the rate of laying thepipes.

3.2. The measurements shall be net without any allowance for cutting, and waste. The length of bends, junctions, and other connections shall be included in the total length of the drain pipes. Nothing extra shall be paid for the same. The rate includes necessary excavation refilling trenches etc.complete,

3.3. The rate shall be for a unit of One runningmeter.

24.1.(B) Providing and laying and jointing salt glazed stoneware pipes with lime concrete 1:2:4 (1 lime :2 fine sand : 4 graded brick aggregate 40 mm, nominal size)bedding with necessary form work and curing etc. complete : 150 mm.dia.

1.0. Materials & Workmanship : The relevant specifications of item 24.1.(A) shall be followed except that the that diameter of pipe shall be 150 mm.dia.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No, 24.1. (A) shall befollowed.

2.2. The rate shall be for a unit of One runningmeter.

24.2.(A) Providing and laying cement concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone : aggregate 40 mm. nominal size) bedding for stoneware pipe of following internal diameter with necessary form work and curing complete : 100 mm. dia. 300 mm. width (112 mm. average bedthickness).

1.0. Materials : (1) Water .shall conform to M-1 (2) Cement shall conform to M-3. (3) Sand shall conform
to M-6 (4) Stone aggregate 40 run nominal size shall conform to M-12.

2.0. Workmanship

2.1. The relevant specifications of item 5.3.4. shall be followed except that the concrete work shall be carried out in trenches as bedding for stoneware pipes. The width of concrete shall be 300 mm. and average thickness of bedding shall be 112 mm The concrete shall be brought up attest to the invert level of the pipe to form a cradle and to avoid line contact between the pipe and thebed.

3.0. Mode of measurements &payment

3.1. The rate includes cost of all labour and materials required for satisfactory completion of thisitem.

3.2. The rate includes cost of necessary form work required ifany

3.3. The rate shall be for a unit of One runningmeter.

24.2.(B) Providing and laying cement concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40 mm. nominal size) bedding for stoneware pipe of following internal diameter with necessary form work and curing complete : 150 mm. dia. 450 mm. width (166 mm. average bedthickness),

1.1. Materials & Workmanship : The relevant specifications of item 24.2 (A) shall be followed except that the cement concrete work shall be carried out for bedding of stoneware pipe of 150 mm. dia. The average thickness of bedding shall be- 166 mm. and width shall be 450mm.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item 24.2 (A) snail befollowed.

2.2. The rate shall be for a unit of One runningmeter.

24.19(1) Providing and fixing S.W. gully trap with C.I. grating brick masonry chamber and watertight C.I. cover with frame of 300 mm. x 300 mm. size (Inside) with standard weight : (A) square mount taps 100 mm. x 100 mm. size P.type

1.0. Materials : (t) Water shall conform to M-1. (2) Cement mortar of proportion 1:5 shall conform to M-11. (3) Burnt brick shall conform to M-15. (4} The S.W. Galley trap of 100 mm. x 100 mm. size shall confirm to.M-70.

2.0. Workmanship

2.1. Excavation for gulley trap shall be done true to dimensions and levels as indicated on plans or as directed. The excavation work shall generally be done as per relevant specifications of item 4.0.0.of earth work.

2.2. Fixing:

2.2.1. The gully trap shall be fixed over cement concrete 1:5:10 (I cement : 5 sand : 10 graded brick bats aggregate 40 mm nominal size) foundation. 650 square and 100 mm. thick The depth of top of concrete below the ground level shall be 675 mm. The jointing of gulley outlet to the branch drain shall be done similar to jointing of S.W. pipe ac; described in item No. 24.1(A).

2.3. Brick masonry chamber : After fixing and testing gulley and branch drain, a brick masonry 300 x 330 mm. inside with bricks in CM 1:5 (1 cement : 5 sand) shall be built with a 100 mm. brick work round OH; gulley trap from the top of bed concrete up to ground level. The space between the chamber walls and

the trap shall be filled with cement concrete 1:5:10. The upper portion of the chamber i.e. above the top level of the trap shall be plastered inside with cement mortar 1:3 (1 cement: 3 sand) finished with floating coat of neat cement. The corners and bottom of the chamber shall be rounded of so as to slope towards thegrating.

2.4. C.I. cover with frame 300 mm, x 300 mm. (inside) size shall then be fixed on the top of the brick masonry with C.c. 1:2:4 (1 lent : 2 coarse sand : 4 graded aggregate 20 mm. nominal size) 40 mm. thick and rendered smooth. The finished top of the cover shall be left about 40 mm. above the adjoining ground level so as to exclude the surface water from entering the gulleytrap.

3.0. Mode of measurements &payment

3.1. The rate includes cost of all labour, materials, tools and plant etc. required for satisfactory completion of this item as describedabove.

3.2. The rate shall be for a unit of one numberbasis.

24.22. Providingandlaying(tolevelorslopes)andjointingreinforcedconcretelightduty non-pressure pipes I.S. class N.P. 2 of the following internal diameters with collars and butt ends prepared for collar joints including testing of joints etc. complete. (B) 150mm. (C) 250 mm. (D) 300 mm. (E) 450 mm. (F) 500 mm. (G) 600 mm. (H) 900 mm.(K) 1000mm. (M) 1200mm.

1.0. Materials : The reinforced concrete light duly non-pressure pipes of specified diameter shall conform to I.S.458-1971.

2.0. Workmanship

2.1. The relevant specifications of item No. 24.1. A shall be followed for work of trenches except that the excavation in trenches shall be for. reinforced concrete pipes of specifieddiameter.

2.2. Laying

2.2.1. The pipes shall be lowered into the trenches carefully. Mechanical appliances may be used. Where necessary pipe shall be laid in straight lines or with easy curves and true to line and gradient as specified. The laying of pipe shall proceed upgrade of a slope. In the pipe spigot and socket joints, the socket ends shall face upstream. In case of pipes with joints to be made with loose collars, the collars shall be slipped on before the next pipe islaid.

2.2.2. In case where the foundation conditions are unusual such as the proximity of trees or holes, under existing or proposed all round in 150 mm. thick cement concrete 1:5; 10 (1 cement: 5 fine sand : 10 graded stone aggregate 40 mm. nominal size) or compacted sand orgravel:

2.2.3. In case where the natural foundation is inadequate the pipes shall be laid either in concrete cradle, supported on proper foundations or on any other suitably designed structure. If concrete bedding is used, the depth of concrete below bottom of the pipe shall be at least 1/4th of the internal diameter of the pipe subject to a minimum of 100 mm. and a maximum 300 mm. The concrete shall be extended up the sides of the pipe at least to a distance of 1/4th of the outside diameter for pipes 300 mm. and over in diameter.

2.2.4. The pipes shall be laid in the concrete bedding before the concrete has set. Pipes laid in trenches in earth shall be bedded evenly and firmly and as far as up to the haunches of the pipe as to safely transmit the load expected from the back fill through the pipe to the bed. This shall be done either by excavating the bottom of the trenches to fit the curve of the pipe or by compacting the earth under a round curve of the pipe to form an even bed, Necessary provision shall be made for joints whereverrequired.

2.3. Jointing

2.3.1. The joints shall be done by slipping the collar over and clear of the end of the pipe. The recess of the end of the pipe shall be filled with jute braiding in hot bitumen. The new pipe shall then be brought forwarded until the bitumen ring in recess of first pipe is set into the recess of the second pipe. The process shall be repeated for two or three pipes which shall then jacked up so as to thoroughly compress the bitumen. The quantity of jute and bitumen shall be just enough to fill the recess when pressed hard by jacking, care being taken that no offset of the jute braiding shall be visible either outside or inside of pipe. The collar shall then be set up over the joints covering equally both the pipe and leaving, an even caulking space all round. Cement and sand mortar: 1: 1.1/2 shall then be well punched or pressed home with a caulking tool within this caulking space. Care shall be taken that the underside of the joints is properly filled withmortar.

2.4. Curing

2.4.1. Every joints shall be kept wet for about 10 days for maturing. The section of the pipe line laid and jointed shall be covered immediately to protect from weather effects. Minimum bore of 100 mm. is consideredadequate.

2.4.2. The joints shall be left exposed for observation.

2.5. Testing of Joints:

2.5.1. ThetestingofjointsshallbedoneasperrelevantspecificationsofitemNo.24.1(A)**exceptthat** the testing of reinforced concrete pipes shall be done.

3.0. Mode of measurements &payment

3.1. The relevant specifications of item 24.1 .(A) shall be followed except that the rate includes for laying to level or slope in trenches etc. (measured separately), making the joints a; Seated and testing to stand the watertest.

3.2. The measurements shall be net without any allowance for cutting and waste. The length of bends, junctions and other connections (measured along the centre line) shall be included in the total length of the pipes, the connections being numbered afterwards and paid for extra overpipes.

3.3. The size of bend, junctions, etc, shall suit the size of pipe. The bore (internal diameter of pipe) shall be the criterion forpayment.)(

3.4. Nothing extra shall be paid separately for the use of mechanical appliances, where necessary, as describedabove.

3.5. The rate shall be for a unit of One runningmeter.

2.4.27. CostingManholewithR.C.C.Topslabin1:2:4mix(1cement:2coarsesand:4 graded stone aggregate 20 mm. nominal size) foundation concrete 1:3:6 (1 cement : 3 coarse sand : 6 bricks bats 40 to 50 mm. size) inside plastering 15 mm. thick with C.M. 1:5 (1 cement : 5 coarse sand) finished with floating coat of neat cement and making channels in C.C. 1:2:4 mix (1 cement : 2 coarse sand : 4 stone aggregate 20 mm. nominal size) finished smooth complete including curing and testing (I) inside size 900 mm. x 120 mm. and 1.5 mm. deep, including C1 cover with frame size 560 mm. diameter, total weight of cover and frame to be not less than 128 Kgs. (Wt. of cover 64 Kg. and Wt. of frame 64 Kg.) (A) With 230 mm. thick walls of brick masonry using bricks having crushing strength not less than 35 kg/sq. cm. in C.M. 1:5 (1 cement : 5 coarsesand)

i.	A typedepth	0.90meterfor	150 mm.sewer
ii.	Btypedepth	1.50meterfor	150 mm.sewer
iii.	Ctypedepth	2.25meterfor	150 mm.sewer
iv.	Dtypedepth	3.15meterfor	150 mm.sewer

1.0. Materials : Water shall conform to M-1. Cement shall conform to M-6. Burnt bricks shall conform to M-15. Brick bats of 40 to 50 mm. size shall conform to M-14. Stone coarse aggregate of 20 mm. nominal size shall conform to M-12. Grit shall conform to M-8. Cement mortar of specified proportion shall conform to M-11. The cast iron manhole cover of 560 mm. dia. with frame shall conform to I.S. 1726-1966.

2.0. Workmanship

2.1. The manholes of different types and sizes as specified shall be constructed in sewer line at such places and to such levels and dimension as shown in drawings of as directed.

2.2. The manholes shall be built on a bed of cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 brick bats) (40) to 50 mm. nominal size) to the thickness of the bed concrete shall be 15 cms. for manhole upto 1. M. depth and 20 cms. for manholes over meter and up to over meter and up to 2 meters, depth and 30 cms. for manholes o greater depth.

2.2.2. Projection of bed concrete beyond the masonry wall shall be 15 cms.

2.3. Walls

2.3.1. The walls of manhole shall be carried out with burnt bricks using having bricks. crushing strength not less than 35 Kg/Cms in C.M. 2 in C.M. 1:5 (1 cement : 5 coarse sand). The thickness of brick masonry wall shall be 230 mm. The jointing face of such .brick shall be well buttered with cement mortar before laying so as to ensure a fulljoints.

2.4. Plaster

2.4.1. The inside of waits shall be plastered 15 mm. thick with C.M. 1:5 (1 cement : 5 coarse sand) and finished with floating coat of neat cement. All angles shall be rounded to 7.50 cms. radius and all rendered internal surfaces shall have hard impervious finish obtained by using a steel trowel. The external joints of masonry shall be finishedsmooth.

2.5. Channels & Benching:

2.5.1. Channels shall be semicircular in the bottom half and of diameter equal to the sewer. Above the horizontal diameter, the sides shall be extended vertically to the same level as the crown of the out going pipe and the top edge shall be suitably rounded off. The branch channels snail also be similarly constructed with respect to the benching but at their junction with the main channel an appropriate fall suitably rounded off in the direction of flow 'he main channel shall begiven.

2.5.2. The channel and benching shall be done in C.C. 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm. nominal size) rising at a slop in line from edges of channel. The channels of the bottom of the chamber shall be plastered with C.M. 1:2 (1 cement : 2 coarse sand) and steel troweledsmooth.

2.6. Coverslab:

2.6.1. The cover slab of R.C.G. 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 20 mm. nominal size) 15 cms. thick reinforced with 10 mm. bars at 15 cms. C/C both ways, surface and edges finished fair. Full bearing equal to the width to the width of wall shall be given to the slab on all sides. The frame of manhole cover shall be embedded firmly in R.C.C. slab so that the top of the frame remains flush with the top of R.C.C.slab.

2.7. Testing:

2.7.1. Manhole shall be tested by filling with water to a depth not exceeding 1.2 M. asdirected.

2.7.2. After completion of work, manhole cover shall be sealed by means of thickgrease.

3.0. Mode of measurements andpayment

3.1. The depth of manholes shall be distance between the top of the manhole cover and the invert level of the main drain. The rate includes all labours, materials, tools, and plant etc. required for satisfactory completion of this item as directedabove.

3.2. The rate shall be for a unit of the Onenumber.

24.28.(I) Extra rate for constructing B.B. masonry for every additional depth of 0.1 M. orpart thereof over item 24.47 (I) for depth from 0.90 to 1.5M.

1.0. Materials and Workmanship

The relevant specifications of item No. 24.27 (I) shall be followed for excavation same, except that thedepth of manhole shall be done 0.1 M. or part there of more then 0.90 meter up to 1.5 M. The extra payment shall be made for additional depth of 0.1 M. or part thereof manhole done over and above the depth 0.90meter.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 24.27 (I) shall be followed except that the extra rate shall be paid for every additional depth of 0.1. M. and part there of shall be paid over and above the rate of item No. 24.27(I)

2.2. The rate shall be for a unit of Onenumber.

24.28.(II) Extra rate for constructing B.B. masonry for every additional depth of 0.1 M.and Part thereof over item 24.27 (II) for depth from 1.5 M. to 2.25M.

1.0. Materials and Workmanship : The relevant specifications of item No. 24.27 (II) shall be followed except that the depth of manhole shall be done 0.1 M. or part thereof more than 1.5 M. up to 2.25 M. The extra payment shall be made for additional depth of 0.1 M. or part thereof manhole done over and above the depth 1.50 M. up to 2.25 M.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No. 24.27 (II) shall be followed except that the extra rate shall be paid for 0.1 M. or part thereof additional depth of manhole provided over and above item *4.27*(II).

2.2. The rate shall be for a unit of Onenumber.

24.28.(Ill) Extra rate for constructing B.B. masonry for every additional depth of 0.1 M. orpart thereof over item 24.27 (III) for depth from 2.25 to 3.15M.

1.0. Materials and Workmanship : The relevant specifications of item No. 24.27 (III) shall be followed except that the depth of manhole shall be done 0.1 M. or part thereof more than 2.25 M. up to 3.15 M. Extra payment shall be made for additional depth of 0.1. M. or part thereof manhole done over and above depth 2.25 M. up to 3.15 M.

2.0. Mode of measurements &payment

2.1. The relevant specifications of time No. 24.27 (III) shall be followed except that the extra rate shall be paid for every addition 0.1 M. or part thereof depth provided over and above it -m 24.27(III).

2.2. The rate shall be for a unit of Onenumber.

24.28.(IV) Extra rate for constructing B.B. masonry for every additional depth of 0.1 M. orpart thereof over item 24.27 (IV) for depth above 3.15M.

1.0. Materials and Workmanship : The relevant specifications of item No. 24. 27 (IV) shall be followed except that the depth of manhole shall be done 0.1 M. or part thereof more than 3.15 M above. 1.2. Extra payment shall be made for additional depth of manhole 0.1 M. or part thereof done above 3.15 M. and abovedepth.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item 24.27 (IV) shall be followed except that extra rate shall be paid for every additional 0.1 M. or part thereof depth provided for an above item 24.27(IV).

2.2. The rate shall be for a unit of Onenumber.

24.33. ProvidingandfixingC.I.stepsofsizes500x150mm.22.5mm.andpaintingwith two coats of anti-corrosive paint etc.complete.

1.0. Materials : The C.I. steps of size 500 x 150 x 22.5 mm. size shall conform J.S. 5455-1969. Paint shall confirm toM-44.

2.0. Workmanship

2.1. The C.I. steps of size 500 x 150 x 22.5 mm. size shall be fixed in manhole as and where directed. The steps shall be staggered in vertical runs 380 mm. apart horizontally. The top step shall be 450 mm. below the. manhole cover and lowest not more than 300 mm. above the benching. The steps shall be embedded in wall of manhole with C.C. : 1:3:6 up to 200 m. depth and the surface finished with cement plaster 15 mm. thick in C.M. 1:5. The steps shall be painted with two coats of anti-corrosivepaint.

3.0. Mode of measurements &payment

3.1. The rate includes all labour, materials, tools and plants etc. required for satisfactory completion of thisitem.

3.2. The rate shall be for a unit of Onenumber.

24.39. Providinganderectingatthesiteofworksteelventilatingcolumnof150mm. internal dia. and 12.20 M. high from G.L. to bottom of top grill, including C.I. grill and base plate, bolts and nuts etc. and excavation in foundation of size 120 x 120 x 165 cms. and filling the pit with 1st layer of cement concrete 1:3:6 mix (1 cement: 3 coarse sand : 6 graded stone aggregate 20 mm. nominal size) of size 120 x 120 x 90 cm. and remaining pit with B.B,C.C. 1:3:6 mix (1 cement : 3 coarse sand : 6 brick bats 40 to 50 mm. size) and providing filled in cement concrete : 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm. nominal size) at G.L. and 3 coats of silver paint etc.complete.

1.0. Materials :

The steel ventilating column internal dia. 150 mm. 12.20 m. high shall be of standard many and best quality as approved. Stone aggregate of 20 mm. nominal size shall conform to M-12. Brick-bats-40 to 50 mm. nominal size shall conform to M-4. Cement shall conform to M-3. Water shall conform to M-1. Silver (Aluminum) paint shall conform to I.S. 2339-1963.

2.0. Workmanship

2.1. The vent shaft shall be provided at the starting point of main sewer and at such points where the flow of sewerage is disturbed i.e. at falls, siphons etc. As far as possible, the location shall be at such a place where it receive Sundays for the maximum period of theday.

2.2. A pit of 120 x 120 x 165 ms. size shall be dug The cement concrete of 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm. nominal size) shall be first laid in the pit to form 90 cms. thick concrete foundation which shall be allowed to set for 24 hours. The vent shaft shall then be erected atthecentreofthepittrulyinplumbbymeansofsuchasshearlegs,pullies,backlessandropeetc.

2.3. The connection with sewer man-hole shall be made using 150 mm. diameter cement concrete pipe. After the connection is completed, the pit shall be filled with cement concrete : 1:3:6 (1 cement: 3 coarse sand : 6 brick bats 40 to 50 mm. nominal size) round the vent shaft up to ground level except top 150 mm. which shall be filled with C.C. 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm. nominal size) and rendered smooth. The junction of ve.nl shaft with cement concrete shall be grouted with cement mortar 1:1 (1 cement : 1 sand). The concrete work shall be cured for 7days.

2.4. The steel shaft shall be painted with silver paint (aluminum paint) 3 coats. The relevant specifications of item of painting shall be followed forpainting.

3.0. Mode of measurements andpayment

3.1. The rate shall include the cost of all labours and materials, tools and plant etc. required for satisfactory completion of this item as directedabove.

3.2. The rate shall be for a unit of Onenumber.

24.00.1.(A) Providing and laying lime concrete 1:2:4 (1 Lime Putty : 2 fine sand : 4 graded brick aggregate 40 mm. nominal size) bedding for stoneware pipes of following internal diameters with necessary form work and curing complete : 100 mm. dia (112 mm. average, bed thickness).

1.0. Materials : Water shall conform M-1. Lime mortar shall conform to M-10. Brick aggregate40mm. nominal size shall conform toM-14.

2.0. Workmanship

The relevant specifications of item No 5.1.8 shall be followed except that the proportion of mix shall be 1:2:4 (1 Lime Putty : 2 fine sand : 4 graded brick bats aggregate 40 mm. nominal size) and the concrete work shall be done in trenches for bedding of stoneware pipes of 100 mm. dia. The width of concrete shall be 300 mm. and the thickness of bedding shall be 112 mm. average.

3.0. Mode of measurements andpayment

3.1. The relevant specifications of item 24.2 (A) shall befollowed.

3.2. The rate shall be for a unit of One runningmeter.

24.00.1(B) Providing and laying lime concrete 1:2:4 (1 Lime Putty : 2 fine sand : 4 graded brick aggregate 40 mm. nominal size) bedding for stoneware pipes of following internal diameters with necessary form work and curing complete :150 mm. dia. (166 mm. average bed thickness).

1.0. Materials and workmanship : The relevant specifications of 24.00.1 (A) shall be followed except that the concrete bedding shall be carried out for 150 mm. dia. stoneware pipe. The width of concrete bedding shall be 450 mm. and the average thickness shall be 166mm.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 24.2 (A) shall befollowed.

2.2. The rate shall be for a unit of One runningmeter.

24.27(1) Extra over item 24.1 for providing salt glazed stoneware fittings : Bends ofrequired degree (Any Radius) of following internal diameters : A-100 mm. dia. B-150 mm.dia.

1.0. Materials & Workmanship

The relevant specifications of item 24.1 (A) shall be followed that the salt glazed stoneware bends of any degree of specified diameter shall be provided.

2.0. Mode of measurement &payment

2.1. The relevant specifications of item No. 24.1 (A) shall be followed except that extra payment shall be made for providing salt glazed stoneware bend of specified diameter or required degree of any radius over above the of item No.24.1.

2.2. The rate shall be for a unit of Onenumber.

24.17.(I)(A) Extraoveritem24.1forprovidingsaltglazedstonewarefittings:Taperbendof required degree of following internal diameter. 100 mm. x 150mm.

1.0. Materials&Workmanship: Therelevantspecificationsofitem24.1(A)shallbefollowedexcept that the salt glazed stoneware taper bend of required degree of 100 mm. x 150 mm. shall befixed.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item No, 24.1 (A) shall be followed except that extra payment shall be made for providing salt stoneware taper bend of required degree of 100 mm. x 150 mm. size over and above the rate of item No.24.1.

2.2. The rate shall be for a unit of Onenumber.

24.17.(Ill) Extra over item 24.1 for providing salt glazed stoneware fittings : Single junctionof required angle of following internal diameter (A) 100 mm. dia. (B) 150 mm.dia.

1.0. Materials & Workmanship

The relevant specification of item 24.1 (A) shall be followed except that the salt glazed stoneware single of junction required angle of specified diameter shall be fixed.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item 24.1 (A) shall be followed except that the extra rate shall be paid for providing salt glazed stoneware single junction of required angle for specified diameters over and above the rate of item24.1.

2.2. The rate shall be for a unit of Onenumber.

24.18. Providing and laying, jointing and jointing and pointing with stiff mixture of C.M. 1: 1 (1 cement : 1 find sand) 150 mm. internal diameter salt glazed stoneware half roundchannels.

1.0. Materials and Workmanship : The relevant specifications of item 24.1 shall be followed except that the half round channels of 150 mm. internal diameters shall be fixed in cement mortar1:1.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item 24.1 (A) shall befollowed.

2.2. The rate shall be for a unit of One runningmeter.

24.35. Supplying and fixing C.I. cover 300 x 300 mm. without frame for gullytrap(Standard pattern), weight of cover shall not be less than 4.53Kg.

2.0. Workmanship

The C.I. cover 300 x 300 mm. size without frame shall be fixed on top of the brick masonry with cement concrete : 1:2:4 (1 cement : 2 sand : 4 graded stone aggregate 20 mm. nominal size) 40 mm. thick andrendered smooth. The finished top of the cover shall be left about 40 mm. above the adjoining ground level so as to exclude the surface water from entering the gully trap.

3.0. Mode of measurements andpayment

3.1. The relevant specifications of item No, 24.19 shall befollowed.

3.2. The rate shall be for a unit of Onenumber.

24.40. Constructing brick masonry road gully chamber 500 mm. x 450 mm. x 600mm. including 500 mm. x 450 mm C.I. horizontal grating with framecomplete.

1.0. Materials : Water shall conform to M-1. Cement shall conform to M-3. Sand shall confirm to M-6. Brick shall conform to M-15. C.I. Grating of 500 x 450 mm. size of standard make shall be of approved quality. Stone aggregate 40 mm. nominal size shall conform to M-12. coal tar shall conform to relevant M-5.

2.0. Workmanship

2.1. The chamber shall be of size 500 mm. x 450 mm. internal clear dimensions between the masonry wall faces. The height of 500 mm. shall be measured from the top of the bed concrete to the top of the C.I. frame. The size of grating indicate the clear internal dimensions of the C.I. frame of thegrating.

2.2. The excavation shall be done to true dimensions andlevels.

2.3. The foundation concrete shall consist of 150 Cms x 100 Cms x 15 cms thick C.C. 1:5:10(1 cement : 5 sand : 10 graded stone aggregate 40 mm. nominal size).

2.4. The wall of the chamber shall be constructed in brick work C.M. 1:5 and 23 Cms. thick as per relevant specifications of item6.12(8).

2.5. The walls and the bed concrete of chamber shall be plastered inside with 12 mm. thick cement plaster 1 : 3 (1 cement : 3 coarse sand) finishedsmooth.

2.6. The gully grating cover shall be hinged to frame to facilitate its opening for cleaning and repairs. The frames of the gully grating g shall be fixed on the top of masonry wall of the chamber in 15 cms.thick C.C. 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm. nominal size) laid over the full thickness of walls..

2.7. The chamber shall have connection pipe, the length of which in meter between the road gully chamber and the manhole of the drain shall not be less than 1/40 times the nominal diameter of the pipe in MM. i.e. for 150 mm* connection pipe the length shall not be cement plaster on the bedconcrete.

2.8. Painting : After the completion of the work of exposed surface of the grating of the frame shall be painted with a thick coat of coaltar.

3.0. Mode of measurements andpayment

3.1. The cost of connection pipes is not included in the item and shall be paid separately. However, fixing the connection pipes in the walls of gully chamber is included in the rate for gully chambers andnothing extra shall be paid for thisseparately.

3.2. The rate shall be for a unit of Onenumber.

24.41. Constructing brick masonry road gully chamber 450 mm. x 450 mm. x 775mm.with vertical gratingcomplete.

1.0. Materials and Workmanship : The relevant specifications of item 24.40 shall be followed except size of road gully chamber is 450 mm x 775 mm. with vertical gratingcomplete.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item 24.40 shall befollowed.

2.2. The rate shall be for a unit of onenumber.

24.42. Constructing brick masonry road gully chamber 1100 mm. x 500 mm. x 775mm. including 500 mm. x 450 mm. C.I. horizontal grating with frame and vertical grating complete.

1.0. Materials and Workmanship : The relevant specifications of item 24.40 shall be followed except that the size of road gully chamber shall be 1100 mm. x 500 mm. x 775 mm. including 500 mm. x 450 mm. C.I. horizontal grating with frame and vertical gratingcomplete.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item No. 24.40 shall befollowed.

2.2. The rate shall be for a unit of one sq.meter.

24.44(1) Constructing brick masonry chamber for underground C.I. inspection chamberand bendswithbrickhavingcrushingstrengthnotlessthan35Kg/Cm.2inC.M/1:5
C.I. cover with frame (light duty) 455 x 610 mm. internal dimensions, total weight of cover with frame to be not less than 38 Kg. (Wt of cover 23 Kg. and Wt of frame 15 Kg.) R.C.C. top slab C.C. 1:2:4 mix (1 cement : 2 coarse sand : 4 graded aggregate 20 mm. size) foundation concrete 1:5:10, inside plaster 15 mm. thick with C.M. 1:3 finished smooth with a finishing coat of neat cement on walls and bed concrete etc. complete : Inside dimensions 455 mm. x 610 mm. and 45o mm. deep for single pipe-line.

1.0. Materials : Water shall conform to M-1. Cement shrill conform to M-3. Coarse sandshall conform to M-5. Brick shall conform to M-15. Stone aggregate shall conform to M-12. Brick bat shall conform to M-14 M.S. bar shall conform toM-18.

2.0. Workmanship

2.1. C.I. inspection chamber with provision of C.I. bends of specified size with bolts, nuts and felt washers for underground drain shall be enclosed in masonry chamber which shall be constructed as under:

2.2. The excavation shall be done true to dimensions and level shown in one the plans or asdirected.

2.3. Bed concrete shall be 15. Cms, thick C.C. 1:5:10 (1 cement : 5 coarse sand : 10 graded brick bat aggregates. The projection of bed concrete beyond the masonry waifs shall be 7.5cms.

2.4. Masonry walls and plaster work shall be carried out as per relevant specifications of item24.40.

2.5. The cover slab shall be constructed as per relevant specifications of 24.27(I).

3.0. Mode of measurements andpayment

3.1. The earth work in excavation, providing and laying C.I. inspection chamber and bends shall be measured and paid forseparately.

3.2. The rate shall be for a unit of Onenumber.

24.44.(II) Constructing brick masonry chamber for underground C.I. inspection chamber and bends with brick having crushing strength not less than 35 Kg/ Cm. 2 in C.M/ 1:5 C. cover with frame (light duty) 455 x 610 mm. internal dimensions, total weight of cover with frame to b;> not less than 38 Kg. (Wt of cover 23 Kg. and Wt of frame 15 Kg.) R.C.C. top slab with 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm size} foundation concrete 1:5:10, inside plaster 15 mm. thick with C.M. 1:3 finished smooth with a floating coat of neat cement on walls and bed concrete etc. complete : Inside dimensions 500 mm. x 700 mm. and 450 mm. deep for pipe the with one or two inlets.

1.0. Materials and Workmanship : The relevant specifications of item 24.24 (I) shall be followed except that the inside dimension of brick masonry chamber shall be 500 mm. x 700 mm. and 450 mm. deep for pipe the with on two inlets.

2.0. Mode of measurement andpayment

2.1. The relevant specifications of item 24.44 (I) shall be followed.2.2 The rate shall be for a unit of one number.

24.44.(Ill) Constructing brick masonry chamber for underground C.I. inspection chamberand bendswithbrickhavingcrushingstrengthnotlessthan35Kg/Cm.2inC.M/1:5
C.I. cover with frame (light duty) 455 x 610 mm. internal dimensions, total weight of cover with frame to be not less than 38 Kg. (Wt of cover 23 Kg. and Wt of frame 15 Kg.) R.C.C. top slab with 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm. size) foundation concrete 1:5:10, inside plaster 15 mm. thick with C,M. 1:3 finished smooth with a floating coat of neat cement on walls and bed concrete etc. complete : Inside dimensions 600 mm. x 850 mm. and 450 mm. deep for pipes line with three or more inlets.

1.0. Materials and workmanship : The relevant specifications of item No. 24 .44 (I) shall be followed except that the inside dimensions of chamber shall be 600 mm, x 850 mm. and depth 450 mm. for pipe lines with three or more inlets.

2.0. Mode of measurements &payments

2.1. The relevant specifications of item 24.44(1) shall befollowed.

2.2. The rate shall be for a unit Onenumber.

24.46. Extra over item 24.44 for every additional depth of 1 M. or part thereof beyond 450 mm. depth for brick masonry chamber, (i) For 455 mm. x 610 mm. size (ii) For 500 mm. x 700 mm. size (iii) For 600 mm. x 850 mm. size.

1.0. Materials & Workmanship : The relevant specifications of item 24.44 (i),(ii) (iii) shall **be followed** same except that **extra** depth of 0.1 M. or part thereof shall be constructed over and above the depth of respective items.

2.0. Mode of measurements &payment

2.1. The relevant specifications of item 24.44 (I) shall be followed except that the extra shall be paid for, providingadditionaldepthof0.1M.orM.orparttherefoverandabovetheitemNo24.44.(I)24.44(II)
24.44 (III) as the case may be.

2.2. The rate shall be for a unit of Onenumber.

24.00.2.(A) Providing soak pit of 2 cum. volume including excavating and filling brick bats with dry masonry work at top for 450 cms. height including covering, the top with stone including providing Vatas in C.M. 1:3 with finishing curing etc. complete asdirected.

1.0. Materials : Water shall conform to M-1. Cement mortar con form to M-11. Burnt Bricks shall conform to M-15. Rough stone slab 40 x 50 mm. thick shall conform to M-48. Brick bat shall conform to M-14.

2.0. Workmanship

2.1. The excavation for soak pit shall be carried out as. per relevant specifications of item. 4.G0.1 (A) except that the size of soak pit such that the cleat volume 'Shall* remain 2 cum. The diameter and depth shall be asdirected.

2.2. The periphery of the sock pit shall be provided with dry masonry wall with burnt bricks in 23 cms. thick. The masonry wall shall be done with best workman like manner in true line andplumb.

2.3. The soak pit shall be filled in with brick bats of burn brick 40 mm. nominal size in 45 cms. height. The work of filling brick-bats shall be done in such a way that no dry masonry shall be damaged during filling of brickbats.

2.4. The top of the soak pit shall be covered with rough kotah stone slab 40 to 50 mm. thickness. The length of the stone shall be in single piece inlength.

2.5. The cement mortar 1:3 shall be used to fill up the joints and preparing vata asdirected.

2.6. The cement work shall be cured for 4days.

3.0. Mode of measurements andpayment

3.1. The rate includes costs of all labour and material required for satisfactory completion o this item as describedabove.

24.00.2.(B) Providing soak-pit of 5 cum. Volume inc. excavating and filling brick bats with dry masonry work at top for 45 cms. height including covering the top with stone including providing vatas in C.M. 1:3 with finishing curing etc. complete as directed.

1.0. Materials and workmanship : The relevant specifications of item 24.00.2 (A) shall be followed except that the volume of soak pit shall be 5 cum.clear.

2.0. Mode of measurements andpayment

2.1. The relevant specifications of item 24.00.2 (A) shall befollowed.

2.2. The rate shall be for a unit of Onenumber.

EQUIVALENT PLAIN AREAS OF UNEVEN SURFACES
(Vide specifications for items relating to : Painting & Polishing)

Sr. No.	Descriptionofwork	Howmeasured	MultiplyingFactor
1.	Paneled or framed and braced on ledged and battened or ledged and bracedjoinery.	Measured flat (not girthed) including chowkhat or frame edges, chocks clients etc. shall be deemed to be included in item.	1.30 (For each said)
2.	Flushjoinery	Measured flat (not girthed) including chowkhat or frame. Edges, Chocks, cleats, etc. shall be deemed to be included in the item.	1.20 (For each side)
3.	Fully glazed orgauzedjoinery	Measured flat (not girthed) including chowkhat or frame. Edges, Chocks, cleats, etc. shall be deemed to be included in the item.	0.80 (For each side)
4.	Partly paneled and partly glazed or gauzedjoinery	Measured flat (not girthed)including chowkhat or frame. Edges, Chocks, cleats, etc. shall be deemed to be included in the item.	1.00 (For each side)
5.	Fully venetioned or louvered joinery.	Measured flat (not girthed) including chowkhat or frame. Edges, Chocks, cleats, etc. shall be deemed to be included in the item.	1.80 (For each side)
6.	Weatherboarding	Measured flat (not girthed) supporting frame work shall not be measured separately.	1.20.(For each side)
7.	Wood singleroofing	Measured flat(notgirthed)	1.10(For eachside)
8.	Boarding with cover fillets at match boarding	Measured flat(notgirthed)	1.05 (For eachside)
9.	Tile andSlatebattening	Measured flat, overall, no deductionshall be made for open space over	0.80 (For painting all over)
10.	Trellis (or Jafri) work one way or twoway	Measured flat, over all, no deduction shall be made for the open spaces supporting members shall not be measured separately)	1.00 (For painting all over)
11.	Guard, bars, balustrades, gates, graying, grills, expanded metal andrailings.	Measured flat over all, No deduction shall be made for the open spaces, over)supporting members shall not be measured separately.	1.00 (For painting all over)

12.	Gates and open palisade fencing includingstandards	Measured flat over all No. deduction shall be made of open spaces : supporting members shall not be measured separately, (see note).	1.00 painting all over
13.	Curved orenrichedwork	Measuredflat	2.0 (For eachside)
14.	Steelrollershutter	Measured flat (size of opening)over alljamb, guides bottom rails and locking arrangement etc., shall be included in the item (top cover shall be measured separately).	1.10 (For each side)
15.	Plain sheet doorandwindows	Measured flat (notincluding)frame	1.10 (For eachside)
16.	Full glazed or gauze steel door andwindows	Measured flat (not girthed) including Frame edges etc.	0.50 (For each side)
17.	Partly paneled and partly glazed or gauzed steeldoors	Measured flat (not girthed) including frame edges etc.	0.08 (For each side)
18.	Collapsiblegate	Measured flat (size of opening) noseparate measurements shall be taken for the top and bottom guide rails, rollers, fittings,etc.	1.50 (For painting all over

Note : The height shall be taken from the bottom of the lowest of rail if the palisades do not go below it (or from the lower end of palisades, if they protect below the lower rail) up to the top of palisades, but not upto the top of standards if they are higher then thepalisades.

Sr.No.	Particulars of fixtures&fastenings	Sizeinmm	Da.S.1:B-900-T-38	Da.S.1:B-900-T-38	Da.S.1:B-900-T-38	Da.S.1:B-900-T-38	Da.S.2:B-900-T-38	Da.S.2:B-900-T-38	Da.S.2:B-900-T-38	Da.S.2:B-900-T-38
1.	Holdfast	300 x 40x3	6	6	6	6	6	6	6	6
2.	HoldFasts	200 x 40 x 36	-	-	-	-	-	-	-	-
3.	Coach \screws (Hexagonal Head)		-	-	-	-	-	-	-	-
4.	Butt Hinges	125	-	-	-	3	-	-	-	6
5.	Bun Hinges	100	3	3	3	-	6	6	6	-
6.	Butt Hinges	75	-	-	-	-	-	-	-	-
7.	Butt Hinges	75-A	-	-	-	-	-	-	-	-
8.	Butt Hinges	50	-	-	-	-	-	-	-	-
9.	Non projecting type Hinges (Box type)	22	-	-	-	-	-	-	-	-
10.	Tee & Strap Hinges	300	-	-	-	-	-	-	-	-
11.	Tee & Strap Hinges	200	-	-	-	-	-	-	-	-
12.	Sliding Door Bolts	250 x 16	1	1	1	1	1	1	1	1
13.	Tower Bolts (Barrel Type)	200 x 10	1	1	1	1	2	2	2	2
14.	Tower Bolts (Barrel Type)	150 x 10	-	-	-	-	-	-	-	-
15.	Tower Bolts (Barrel Type)	100 x 10	-	-	-	-	-	-	-	-
16.	Tower Bolts (Barrel Type)	75 x 10	-	-	-	-	-	-	-	-
17.	Tower Bolts (Barrel Type)	50 x 6	-	-	-	-	-	-	-	-
18.	Door Latch	200 x 16 x 5	1	1	1	1	1	1	1	1
19.	A Hooks and Eye	20 mm	-	-	-	-	-	-	-	-
20.	Bathroom Latches	60 x 12	-	-	-	-	-	-	-	-
21.	Casement window fasteners	-	-	-	-	-	-	-	-	-
22.	Casement Stays (Straight Peg Stay O	-	-	-	-	-	-	-	-	-
23.	Ventilator Catch Lug.	-	-	-	-	-	-	-	-	-
24.	Handles	100	2	2	2	2	2	2	2	2
25.	Handles	75	-	-	-	-	-	-	-	-
26.	Doorstopper	75	1	1	1	1	2	2	2	2
27.	Wooden Door Stop with Hinges	-	-	-	-	-	-	-	-	-
28.	Continuous Piano Hinges 30 width	30 width	-	-	-	-	-	-	-	-
29.	Haps and Staples (Safety types)	115 x 40	-	-	-	-	-	-	-	-
30.	Haps and Staples (Safety types)	90 x 40	-	-	-	-	-	-	-	-
31.	Cupboard Lock (6 Levers)	-	-	-	-	-	-	-	-	-
32.	Cupboard Knob	-	-	-	-	-	-	-	-	-

Sr.No.	Db:S.1	Dc:S.1:900	Dc:S.1:B:900	Dd:S.1:B:900	Dd:S.1:B:900	De:S.1:B:900	De:S.1:B:900	Wa:S.1:H:1200	Wa:S.1:B:1200	Wa:S.2:H:1200	Wa:S.2:H:1200	Va:Ind.	S.W.	Sv-Ind	Wardrobe-S.2	Showcase:CC:S.2	General:CB:S.2	Kitchen:CB:S.2	Platform:CB:S.2	CountersunkWood Screw	SizeofScrewsinmm	andNo.ofScrewsper	Unitoffixture fastenings	
1.	6	6	6	-	6	6	6	4	6	4	6	-	-	-	-	-	-	-	-	2	-	-	-	-
2.	-	-	-	-	-	-	-	4	-	-	-	4	4	4	-	-	-	-	-	2	-	-	-	-
3.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	8	8	8	8	4	-	-	-	-
4.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-
5.	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-
6.	-	-	-	-	-	-	-	2	3	4	6	2	-	-	-	-	-	-	-	-	6	-	-	-
7.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	4	8	-	-	-	6	-	-
8.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	4	-	-
9.	-	-	-	-	-	-	-	-	-	-	-	-	2	2	-	-	-	-	-	-	-	-	-	-
10.	-	-	3	-	3	-	3	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-	-
11.	-	3	-	3	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	7	-	-	-	-
12.	-	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16 12	-	-
13.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-
14.	-	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-
15.	-	-	-	-	-	-	-	2	2	3	3	-	-	-	-	-	-	-	-	-	-	6	-	-
16.	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-
17.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	4	-	-	-	-	6
18.	-	-	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-
19.	-	-	-	-	-	-	-	1	1	2	2	1	2	1	-	-	-	-	-	-	-	-	-	-
20.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6/4
21.	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
22.	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-
23.	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
24.	2	2	2	2	2	2	2	-	-	-	-	-	-	-	2	-	-	2	-	-	-	-	4	-
25.	-	-	-	-	-	-	-	1	1	2	2	1	-	-	-	-	-	2	4	2	-	-	4	-
26.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8 4	-
27.	-	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-
28.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	2	-	-	-	-	-	-	2
																							Per 75 mm. length	
29.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	-	-	-	-	-	-	7
30.	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	7
31.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
32.	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-

CODE OF PRACTICE C-13 (B) SCHEDULE OF FIXTURES AND FASTENINGS FOR DOORS, WINDOWS, VENTILATORS, WARDROBES AND CUPBOARDS

NOTATIONS

Da..... Teakwood doors fully paneled or fully glazed or partly paneled : and glazed

Db.....Bathroom and W.C. door with single shutter

Dc..... Doors plying planked

Dd.....Doors battened framed and braced

Wa..... Teakwood windows fully paneled or fully glazed or partly paneled and glazed

Va-lnd..... Teakwood ventilator (independent)

S.W..... Steel Windows

SV-lnd.....Steel ventilators (independent)

CB..... Cupboard

S.1..... Single shutter

S.2..... Double shutter

S.4..... Four shutter

B..... Breadth of door shutter

T..... Thickness of door shutter

H.....Height of window shutter.

900..... 900 mm & below

900..... above 900 mm

1200..... 1200 mm & below

1200..... above

NOTE : PLEASE READ CAREFULLY :

(1) Where detailed specification of an item provides for specific size of nay fixture or fastening that shall prevail over the provisions in thisschedule.

(2) Fixtures and fastenings (except hold fasts which shall be of M.S. plate only) shall be of Brass, copper, oxidised brass, chromium plated brass, Iron, copper oxidised iron, or chromium plated iron as specified in the item of the work or dalliedspecifications.

(3) External door and door failing in staircase excepting the door in balcony shall have sliding door bolt of size 300 mm. x 18 mm. in place of 250 mm. x 16 mm- as shown in thisschedule.

(4) The length of tower old shown is for a door having shutter height up to 2100 mm. only. For door having shutter height more than 2100 mm. the length of tower bolts to be increased to the extend of increase of door shutter height beyond 2100mm.

(5) 150 mm. x 150 mm. size glass vision panel shall be provided in the doors of Officers chamber in addition to the scheduled provision if so directed by the Engineering incharge.

(6) Diamond shape chromium plated brass peeping plate of approved quality shall be provided in one entrance door in residential building in addition to the scheduledprovisions.

(7) Drawer up a wardrobe shall be provided with one furniture handle and one drawer lock (4 levers) in addition to its scheduledprovision.

(8) For door and window with steel frame, 75 mm. size screws, shall be provided both in top bottom frame for fixity as shownbelow:

(a) For width up to 1200 mm.....2Nos.

(b) For width above 1200 mm. and up to 1800 mm.....3Nos.

(c) For every additional width of 500 mm. over and above 1800 mm.....1No.

(9) When the mortise lock (6 levers) and latch is specified to be provided to a door either in the item of work itself or by a separate amity, the requirement of providing sliding door bolt, door latch and handles as per his schedule shall be dispensedwith.

(10) For door/window with ventilator at top, fixtures and fastenings of door/window plus those of ventilator (excluding hold fasts) shall beused.

(11) Where the item of the work, or its specification provides for anodised aluminum fixtures, all the fixtures except hinges and screws will be of anodised aluminum and chromium plated iron hinges and screws shall beused.

(12) For door, window, or cupboard frame abutting concrete section, instead of hold fasts as shown in the schedule-, coach screws of size mentioned below shall beused:

(a) Teak wood frame..... 125mm.

(b) Steel frame.....75mm.

(13) The locking etc. in the door latch shall be so positioned that the can be properly rocked even if part of the latch, when fully slided, remains in the frame ormasonry.

(14) Showcase cupboards having single shutter shall be provided with all catcher instead of tower bolt (barrel type) as perschedule.

(15) The size of the handle shown in the schedule indicts griplength.

(16) Door stopper shall be shown in the schedule indicates griplength.

(17) Piano hinges shall be for the full height of theshutter.

(18) Shutter with pivot arrangements shall be pivot arrangement shall be provided with two pivots of approved size instead of hinges as per theschedule.

(19) For butt hinges, only lengths are indicated in the schedule. The width of each flap being 5 mm. less than the thickness of the shutter to which they are to. be fixed and the thickness of the flap shall be as specified in the relevant I.S. for heavy, medium or light as specified in the detailed specifications of the item ofwork.

SCHEDULE FOR TESTING OF MATERIALS(BUILDING)

For ensuring quality control and workmanship, various test prescribed below corresponding to the material concerned shall be taken as periodic intervals as stipulated below..

The Material shall be got tested at GERI or Govt. recognized Laboratory or field Laboratory of GERI for which 1 % of the estimated amount put to tender shall be recovered from the contractor from the R.A. Bill and Final Bills as the testing charges shall be paid by the Govt. to the Laboratory. However if the charges increase over 1 % no excess recovery shall be made from the contractor as per resolution of B&C department dated 10th May 1985, vide TNC/1085 (4) S.

Item No. as per Sch. B	Brief Description of Materials to be tested	Qty. of Material	Prescription of test which shall be carried out	Frequency @ which test shall be carried out	Total No. of Test to be carried out
	Coarse Aggregate (Metal, Kapchi, Gravel etc.)		- Gradationtest - ImpactValue - FlakinessIndex - Waterabsorption - Stripping Value	1 to 100 Cum – 1 test 100 to 500 – 3 tests 500 to 1500 – 5 tests 1500 to 5000 – 7 tests	
	Grit		- Stripping Value	One test per work	
	Sand		- Gradation - FinenessModulus - Specificgravity - Waterabsorption - Silt –Content	One test per 150 Cum or as per requirement of relevant specification	
	Tiles		- DimensionTest - Transversestrength - WaterAbsorption - AbrasionTest	One test per 2000 tiles	
	Teakwood		- AnatomyTest - DensityTest - Moisture ContentTest	One test per work	
	Bricks		- Dimension andtolerance - Waterabsorption - Effluence - CompressiveStrength	1 Test @ 50,000 Bricks	
	Cement		- Consistency - SettingTime - CompressiveStrength - Fineness - Chemicalanalysis - Soundness	Up to50MT 1Test 50 –100MT 2Test 100 –200MT 3Test 200 –300MT 4Test 300 –500MT 5Test 500 –800MT 6Test 800 –1300Mt 7Test and 8 test for larger consignment	
	Steel		- TensileStrength - YieldStress - Elongation - Size	One test/40 tonnes/per category	
	C.C. Cube test 1:2:4		- Compressive Strength	1 to5Cum. 1 Test. 6 to15Cum. 2 Test. 16 to 30 Cum. 3 Test. 31 to 50 Cum. 4 Test 51 &AboveCum. 4 + 1 for each additional 50Cum or part thereof	
	Aluminum Sections		- Gauge, Section	One Test for each section	

Testing Charges shall be born by Govt. No refund be made or extra charge over 1 % shall be recoverable form the contractor.

SIGN OFCONTRACTOR **EXECUTIVE ENGINEER**

WATRPROOFING SPECIFICATIONS

Item:

Waterproofing Membrane:- Providing and applying 2 coats of WPM 004, two components acrylic modified flexible cementitious waterproof coating using brush / roller over well prepared dry surface, including sandwiching WPM Deck Web at all corners, cracks, construction joints and pipe penetrations, grinding all sharp edges, cleaning all surfaces to make them free from all contaminants, etc and complete as per manufacturer's specification.

Materials & Workmanship

Surface preparation: All sharp edges and protrusions shall be grinded to make them flush with the surface. All floor and wall surfaces up to required height shall be cleaned to make it free from dirt, dust, loose particles, wax polish, efflorescence, laitance, curing compound and other contaminants by mechanical means and wire brushing.

Note: All new surfaces shall be allowed to cure and dry completely according to standard practice. The proper slope shall be provided to the outlet pipes. Any other miscellaneous items like covings, if required, shall be installed using polymer modified mortar admixed with E 135 (SBR, multipurpose concentrated liquid polymer additive and bonding agent), vertical bore packing shall be treated using B 30 (non shrink cementitious structural grout), horizontal bore packing shall be treated using polymer modified mortar admixed with E 135, cracks or construction joints, if found, shall be treated using polymer modified mortar admixed with E 135, etc.

Waterproofing membrane: WPM 004 (two component acrylic modified flexible cementitious waterproof coating) product consisting of part A and part B, which needs to be mixed together with adding 50% of water to part A in suitable size mixing vessel, using heavy duty slow speed drilling machine fixed with mixing paddle to obtain a uniform mix. Two coats of WPM 004 are required to achieve the correct thickness of 0.8 - 1.0 mm. Apply the first coat over well prepared surface. Install the WPM Deck Web (non-woven polyester glass filament reinforced reinforcing cloth) at all corners and pipe penetrations over the wet surface of WPM 004 by ensuring the WPM Deck Web is completely embedded in the coat of WPM 004 and allowed to dry completely. Apply the second coat of WPM 004 in opposite direction to the first coat and allow it to drycompletely.

The rate shall be for a unit of one sq. meter.