

Specification of Platicizer.

Specification : Conforms to ASTM C – 494 TYPE A: IS 9103:1999

Usage : At Location with congested reinforcement, thin slender section or any other location, where improves workability is required.

For Pumped concrete as it improves the lubricating properties.

Roof slabs for both residential as well as industrial buildings.

Medium to low grade concrete to improve the cohesively.

Water retaining structure.

Method of application :

Add requires quality of plasticizer / water reducing agent either directly to the wet concrete mix in the concrete mixer under operation or along with gauging water.

Dosage : - 350 ml per 50 kg of cement, for best result conduct site trial.

Item No. 12

Providing and fixing cast iron steps of size 500mm x 150mmx 22.5mm and painting with 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 I.S. 5455-1969. Paint shall conform to M-30.

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 man hole with C.C. 1:3:6 up to 200 mm. 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-corrosive paint.

3.0 Mode of measurements & payment

3.1 The rate includes all labour materials tools and plants etc. required for satisfactory completion of this item.

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

Item No: 60

Synthetic Texture Plaster with Double Coat Smooth plaster : Providing 20mm thick cement plaster in single coat plastering upto floor two level Outside and finished even and smooth in (i) Cement mortar 1:3 (1-cement : 3-sand) as Base Coat and providing 2-3 mm thick synthetic texture plaster of approved texture (Material Shall be Used as Approved By GSPHCL Only) including cost of all materials, labour, conveyance, loading and unloading, taxes, royalties, scaffolding, watering etc. complete for any Height as per Drawing and instructions of Engineer -in-Charge.

Materials: Water shall be conform to M-1.

The cement mortar shall conform to M-11.

Workmanship

Scaffolding: For all plaster work H-frame or double scaffolding independent of the work having two sets of vertical supports shall be provided. The supports shall be sound and strong, tied together with horizontal pieces over which scaffolding planks shall be fixed. In no case scaffolding hole shall be allowed in brick masonry.

Preparation of Back-Ground:

The joints shall be raked out properly. Dust and loose mortar shall be brushed out. Efflorescence if any shall be removed by brushing and scrapping. The surface shall then be thoroughly washed with water, cleaned and kept wet before plastering is commenced. 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 retarder 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 retarders is left on the surface. Trimming of projections on brick/concrete surface where necessary shall be carried out to get an even surface. The raking of joints in case of masonry where necessary shall be allowed to dry out for sufficient period before carrying out plaster work. The work shall be not soaked but only damped evenly before applying the plaster. If the surface become dry, such area shall be moistened again. For external plaster, the plastering operation shall be started from top floor and carried down wards. 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 walls of the floor have been removed. Ceiling plaster shall be completed before starting plaster to walls.

Application plaster:

The plaster about 50 x 50 mm shall be first applied horizontally and vertically at not more than 2 meters intervals over the entire surface to serve as gauge. The surface of these gauge shall be truly in plane of the finished plaster 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 texture is required. Excessive trowelling or overworking the float shall be avoided. All corners, arrises,

angles and junctions shall be truly vertical or horizontal as the case may be and shall be carefully finished. Rounding or chamfering, corners, arriser junctions etc. shall be carried out with proper templates to the size required. Cement mortar 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. 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 nor at the corners or arises. Horizontal joints in plaster work shall not also occur on parapet top and copings as these invariably lead to leakage. No portion of the surface shall be left out initially to be packed up to later on. 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 on the outside of the plaster and keeping them wet. Any cracks which appear in the surface and all portion which sound hollow when tapped or found to be soft otherwise defective, shall be cut out in rectangular shape and redone as directed by engineer in charge. No extra payment shall be made for this redone the plaster work. To prevent surface cracks appearing between junctions of column/beam and walls, 180 mm wide chicken wire mesh or fiber mesh (145 GSM) should be fixed with U nails 150 mm centre to 125 centre before plastering the junction. The plastering of walls and beam/column in one vertical plane should be carried out in one go. For providing and fixing chicken wire mesh or fiber mesh (145 GSM) with U nails payment shall be made separately.

PRODUCT DESCRIPTION

Synthetic Fiber Plaster is trowel applied finish incorporating natural stone chips (1-2.5mm), silica sand quartz (60mesh-150mesh) etc. bonded in a synthetic emulsion medium of pure acrylic with silicone and high performance special additives. S.F.P is available in twin pack system, pack-A contains dry material to be mixed with Pack-B which is a special binding medium made up of pure acrylic.

Synthetic Fiber Plaster is reinforced with fine filaments made up of synthetic organic polymers which forms a web like structure inside the film resulting a peel crack resistant film even under acute dampened conditions. Fiber reinforcement gives better anchoring and strength.

To be used on exterior surface. Can be used on interior surfaces of cement plaster, gypsum board and woodwork. It is easy to apply and provides grooved pattern in varied directions, like vertical/horizontal/jumble up.

SURFACE PREPARATION

1. Surface Preparation is the responsibility of the Contractor and the Applicator. To achieve the indicated performance. It must be carried out according to companies' recommendations.
2. The surface must be free of dirt, dust, grease, oil, mouldreleas agents, bond breakers and any other contaminants that may interfere with adhesion.
3. Fresh cementitious substrates should be left for 14 day before coating.
4. There must be less than 15% moisture Wood Equivalent in the surface at the time of coating to ensure optimum coating performance.
5. Surface preparation Surface should be sound and free from loose and flaking material. All cracks to be filled up with Approved polymerized cement surface filler "patch coat" followed by one coat of polyunder primer (pure acrylic based sealer primer) to ensure a sound non-absorbent surface.

APPLICATION

It is recommended that application be carried out by a skilled applicator, and should be totally conversant with the products and systems to validate full material warranty conditions.

The temperature of the substrate should be 10°C minimum and 40°C maximum. No seepage the surface, and weather must be dry during application

Application Methods:-Stainless Steel Trowel and Fiber Trowel

Application Data:-

Mixing Ratio (volume) Thinner/Cleaner

WateronTwin Pack (Dry S.F.P. & Liquid Bonding Agent)

Drying Time:-Drying times are generally related to air circulation, temperature, film thickness and number of coats, and will be affected correspondingly.

Good Ventilation (Free circulation of air)

Typical film thickness

One coat on top of inert substrate Relative humidity 70%

1. The surface should be dry and free from any contamination prior to application of the Subsequent coat.

PRECAUTIONS

1. These Texture finishes will give maximum water proofing to the structure because of its coating system.
2. This is used to upgrade the appearance of a wide range of cementitious substrates, providing economical and aesthetically pleasing long life protection. The rigor finish has a proven track record having been in use for decades with many thousands of successful projects.
3. The high-build film allows some surface imperfection to be filled, minimizing the degree of surface preparation require.
4. These finishes are water-based for applicator safety and ease of use.
5. To achieve indicated performance, surface preparation must be carried out according to the company recommendations.

6. The surface must be free from dust, dirt, grease, oil and other contaminants that may interfere with adhesion.
7. Fresh cementitious substrates should be left for 14 days before coating.
8. These finishes are available only in single colour systems.

Storage

The product must be stored in accordance with national regulations. The product must be kept in a cool and well-ventilated place, protected from heat and direct sunlight. Containers must be kept tightly closed.

Handling Handle with care.

Scaffolding:

For all Synthetic Fiber Plaster work H-frame or double scaffolding independent of the work having two sets of vertical supports shall be provided. The supports shall be sound and strong, tied together with horizontal pieces over which scaffolding planks shall be fixed. In no case scaffolding hole shall be allowed in brick masonry.

RECOMMENDED SYSYEM FOR APPLICATION

STEP 1		STEP 2	
Texture Coat	Dry min.24 hrs.	Texture Coat Dry 4-6 hrs.	
(1 coat)		(2-3 coats)	in
between coats			

Mode of measurement & payments:

The rate shall include the cost of all materials, labour and scaffolding etc. involved in the operations described under workmanship as well as Plaster work includes all grooves, pattas, pattis, Tapak (Plaster Drip) as may be directed by the engineer in charge and GSPHCL Ltd. All the plastering shall be measured in square meter unless otherwise specified. Length, breadth or height shall be measured correct to a centimeter. Thickness of the plaster shall be exclusive of the thickness of key i.e. grooves or open joints in brick work, stone etc. or space between laths. Thickness of plaster shall be average thickness with minimum 10 mm at any point on this surface. This item includes plastering up to floor two level. 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. Soffits of stairs shall be measured as plastering on ceilings. Flewing soffits shall be measured separately. For jambs, soffits, sills etc. for openings not exceeding 0.5 sq.mt. 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 followings manner:

(a) No deduction 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. For finishing to plaster around ends of joints beams and 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 deduction shall be made for reveals, jambs, soffits, sills etc. of these openings.

(c) When both faces of the all wall are plastered with same plaster, deduction shall be made for one side only.

(d) 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 width 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 may be. (e) For openings having door frames equal to or projecting beyond the thickness of wall, full deduction for opening shall be made each plastered face of the wall. (f) In case of openings of area above 3sq.mt. each deduction shall be made for openings but jambs, soffits and sills shall be measured.

The rate shall be for unit of one Sq. Mt.

Item No 76

Providing Supplying and Fixing Single Pipe Bracket System with U Bolt Rubber mounted for Pipe Supporting Clamping System for External Vertical Fixed line with wall distance 3" including nuts, bolts, fasteners etc complete as per detailed Specifications and as directed by Engineer in Charge. (Rain Water Bracket for pipe sizes 75 mm, 90 mm & 110 mm / Mono Bracket for pipe sizes 40 mm & 50 mm)

Pipe Supporting Clamps having Bracket / Clamp of Hot Roll gauge corrected Oil Pickled & Drawn (HROP D) steel material (IS 1079); approx. 3mm thick with Hot Dip Galvanised (IS 2629) + Zinc Aluminium (Zn Al) Flake coated having Salt Spray Test (Test method - ASTM B-117) result - 2000 hrs and U Bolt Zn Al Flake coated having Salt Spray Test (Test method - ASTM B-117) result - 1000 hrs of approx. 7 mm dia. with Zn Al Flake coated Flange (In Built Washer) Nuts (BSW 5/16 x 18 x 8 x 13 with Serration set as per DIN 6923) and Transparent Silicon Rubber [Grade : HS 5272G (Fume Silica)] Sleeve mounted for Vertical Drainage / Rainwater / Water Supply pipes in per unit costing etc. complete for Single Pipe System; Wall Distance 3".

Material:

1.Single Pipe Bracket (Rain Water Bracket (Design Patent No. 373099 – 002) **for pipe sizes 75 mm, 90 mm and 110 mm / Mono Bracket**(Design Patent No. 386382 – 001) **for pipe sizes 40 mm and 50 mm)** having Wall Distance 75 mm (3") made of Low Carbon Hot Roll Gauge Corrected Oil Pickled & Drawn (HROP D) Steel (IS 1079); material size for **a.** Rain Water Bracket with pipe support channel is 32 mm width x 3 mm thickness with ribs and notch and **b.** Mono Bracket is made of strip size 48 mm width x 3 mm thickness with ribs and notch;are Hot Dip Galvanized + Zn Al Flake coated having Salt Spray Test (Test method - ASTM B-117-2019) result 2000 hrs.

2.U bolt Rubber Mounted are made of low carbon mild steel with Rod diameter 7 mm approx.; Zn Al Flake coated having Salt Spray Test (Test method - ASTM B-117-2019) result 1000 hrs with noise absorbing transparent ribbed silicon rubber sleeve; with Hex Flange Nut BSW 5/16 x 18 x 8 x 13 with Serration set as per DIN 6923 - Zn Al Flake coated.

Hot dip Galvanizing: As per IS 2629 (1985) - 610 grams/m² (> 85 microns).

Material Grade: IS 1079 used as per MTC confirms to EN 10204 3.1.

Workmanship:

Providing support to drainage and water supply pipes with Plumbing Pipe support clamping system at a specified distance from the wall for vertical lines fixed at intervals of every 1.5 meter.

1. Prepare a sample plumbing clamping system where the pipes would be running at site area with the types of U bolts of specific pipe od (outer diameter) size to be used with Single Pipe Bracket (Rain Water Bracket for pipe sizes 75 mm, 90 mm & 110 mm / Mono Bracket for 40 mm & 50 mm) + U bolt rubber mounted system

2. Single Pipe Bracket System will be provided & used with respect to the pipe size at per requirement at the site area.

3. Single Pipe bracket shall be fixed at every one and half meter distance on external wall and it's fixing shall be such that the vertical alignment of pipes is maintained.
4. The Single Pipe brackets shall be fixed using frame anchor (10 x 80) or GI coated nails 6.5 mm thick & 63 mm inch long on brick / solid block wall and Stud / Bullet anchor fastener (M8 or M10 size) on RCC member.
5. The U bolt rubber mounted to be used for pipe supporting plumbing solutions shall be confirmed with Outer dia. (OD) of pipes and used to fix the pipe on the Single Pipe Bracket so as it maintains proper vertical alignment.

Mode of measurement and payment

- The rate includes cost of all materials and contractor profit.
- The rate shall be for a unit of one item each.

Item No 77

Providing Supplying and Fixing S4 Channel System (S4 Channel + Profile Bracket + U Bolt Rubber mounted System) for multiple Pipes for External Vertical Fixed line with wall distance 3" including nuts, bolts, fasteners etc complete as per detailed Specifications and as directed by Engineer in Charge.

Supplying & Fixing Pipe Supporting Clamps having Bracket / Clamp made of Hot Roll gauge corrected Oil Pickled & Drawn (HROP D) steel material (IS 1079); approx. 3mm thick with Hot Dip Galvanised (IS 2629) + Zinc Aluminium (Zn Al) Flake coated having Salt Spray Test (Test method - ASTM B-117) result - 2000 hrs and U Bolt Zn Al Flake coated having Salt Spray Test (Test method - ASTM B-117) result - 1000 hrs of approx. 7 mm dia. with Zn Al Flake coated Flange (In Built Washer) Nuts (BSW 5/16 x 18 x 8 x 13 with Serration set as per DIN 6923) and Transparent Silicon Rubber [Grade : HS 5272G (Fume Silica)] Sleeve mounted for Vertical Drainage / Rainwater / Water Supply pipes in per unit costing etc. complete for S4 Channel + Profile Bracket + U Bolt Rubber mounted System ; Wall Distance 3".

Material:

1.Profile Bracket(Design Patent No. 373099 – 001) having Wall Distance 75 mm (3") made of Low Carbon Hot Roll Gauge Corrected Oil Pickled & Drawn (HROP D) Steel (IS 1079); material size 32 mm width x 3 mm thickness with ribs and notch are Hot Dip Galvanized + Zn Al Flake coated having Salt Spray Test (Test method - ASTM B-117-2019) result 2000 hrs with SS304 Hex Flange Bolt with Serration 5/16 x 3/4 (A/F 13mm) as per DIN 6921 and SS304 Hex Flange Nut BSW 5/16 x 18 x 8 x 13 with Serration as per DIN 6923.

2.S4 Channel (Continuous Slotted "C" Channel)(Design Patent No. 373100 – 001) with ribs to be used of size 250 mm (10") made of Low Carbon Hot Roll Gauge Corrected Oil Pickled & Drawn (HROP D) steel (IS 1079); material size 48 mm width x 3 mm thickness with ribs are Hot Dip Galvanized+ Zn Al Flake coated with material thickness of 3mm.

3.U bolt Rubber Mounted are made of low carbon mild steel with Rod diameter 7 mm approx.; Zn Al Flake coated having Salt Spray Test (Test method - ASTM B-117-2019) result 1000 hrs with noise absorbing transparent ribbed silicon rubber sleeve; with Hex Flange Nut BSW 5/16 x 18 x 8 x 13 with Serration set as per DIN 6923 - Zn Al Flake coated.

Hot dip Galvanizing: As per IS 2629 (1985) - 610 grams/m² (> 85 microns).

Material Grade: IS 1079 used as per MTC confirms to EN 10204 3.1.

Workmanship:

Providing support to drainage and water supply pipes with Plumbing Pipe support clamping system at a specified distance from the wall for vertical lines fixed at intervals of every 1.5 meter.

1. Prepare a sample plumbing clamping system where the pipes would be running at site area with the types of U bolts of specific pipe od (outer

diameter) size to be used with S4 channel + Profile Bracket + U bolt rubber mounted system

2. For S4 Channel (Continuous slotted c channel) length above 2.5 feet, an additional profile bracket support needs to be provided for every 1.5 feet increase in channel length.

3. S4 Channel (Continuous slotted c channel) will be provided with pre-cut size and treated as per project requirement.

4. Profile bracket shall be fixed on the horizontal RCC member wherever (floor slab / sunk slab / horizontal beam) available in the duct with stud / bullet anchor fasteners. In between subsequent floor slabs the pipes shall be supported by Profile bracket system at every one and half meter distance on external wall. The type of Profile bracket and it's fixing used shall be such that the vertical alignment of pipes is maintained.

5. The Profile brackets shall be fixed at both ends with its legs facing inside using frame anchor (10 x 80) or GI coated nails 6.5 mm thick & 63 mm inch long on brick / solid block wall and Stud / Bullet anchor fastener (M8 or M10 size) on RCC member.

6. The U bolt rubber mounted to be used for pipe supporting plumbing solutions shall be confirmed with Outer dia. (OD) of pipes and used to fix the pipe on the S4 Channel so as it maintains proper vertical alignment.

Mode of measurement and payment

- The rate includes cost of all materials and contractor profit.
- The rate shall be for a unit of one item each.

Item No : 93

Providing and Fixing Teak wood door frame patti 40mm x 10mm thick as per detail drawing and as directed by engineer in charge. Rates are inclusive of all material, labour and taxes etc. complete

Materials:

It should be 100% Teak wood patti of size 40mm x 10mm of superior finish product.

Workmanship:

A contractor has to check and verify the quality of product in terms of size of the product and finishing.

Teak wood door patti to be fix between door frame and wall with superior finish.

Colour of the teakwood patti should be exactly match with the colour of frame and door.

Mode of measurement and payment:

The rate including cost of all materials, tools, plants and labour involved in satisfactory completion of work including cost of primers & painting etc. The rate shall be for unit of one running meter of teak wood patti as visible. The work shall be carried out as per detailed architectural drawings and as dire

Item No: 94

Providing & Fixing WPC Door Patti 26 mm x 8 mm thick as per detail drawing and as directed by Engineer In charge. Rate are inclusive of all material, Labour, Taxes.

Material:

100% Solid Wood Plastic composite(WPC) Door patti 26mmx8mm thick made from wood plastic composite (single Extruded Process) material with density 780 kg/cbm.

Workmanship:

A Contractor has to check & verify all dimension before execution of the work. WPC Door Patti to be fix between Door frame and wall with Hi bond adhesive. Colour of the WPC Door Patti should be exactly as per colour of WPC Door and Frame.

Mode of measurement of payment:

The rate includes cost of all materials, tools and labour involved in satisfactory completion of work.

The rate and Measurement shall be in Rmt.

Item No. 95, 96 & 97

Providing, laying, testing & commissioning of 'C' class heavy duty MS pipe conforming to IS 3589/IS 1239 including Welding, fittings like elbows, tees, flanges, tapers, nuts bolts, gaskets etc. and fixing the pipe on the wall/ceiling with suitable clamp/support frame and painting with two or more coats of synthetic enamel paint of required shade complete as required. [B]100mm, [C]80mm, [D]25mm

PIPE, FITTINGS, SUPPORTS AND OTHER ACCESSORIES:

- a) All materials shall be new of the best quality conforming to the specifications and subject to the approval of the Project Manager.
- b) Pipes and fittings shall be fixed truly vertical, horizontal as required in a neat workmanlike manner.
- c) Pipes shall be fixed in a manner as to provide easy accessibility for repair and maintenance and shall not cause obstruction in shafts, passages etc.
- d) Pipes shall be securely fixed to walls and ceilings by suitable clamps at intervals specified. Only approved type of anchor fasteners shall be used for RCC ceilings and walls.
- e) Valves and other appurtenances shall be so located that they are easily accessible for operations, repairs and maintenance.
- Pipes and fittings of following types (depending upon the description of item) and ISI marked only shall be used:

Type of Pipe	Size	Grade	Ends/Fitting	Code
MS/ Galvanized Pipes	Up to 50 mm diameter	Heavy grade	Screwed	IS: 1239 (Part I)
MS/ Galvanized Fittings	- do -	Heavy grade	MS/Galvanized Forged, Screwed ends	IS: 1239 (Part II)
Type of Pipe	Size	Grade	Ends/Fitting	Code

MS/ Galvanized Pipes	65 mm & above diameter and up to 150 mm diameter	Heavy grade	Bevel, Butt Welded, 3 layers forms/screwed for Galvanized	IS: 1239 (Part I)
MS/ Galvanized Fittings	-do-	Heavy, machine formed from IS marked heavy grade pipes	-do-	IS: 1239 (Part III)
MS/ Galvanized Pipes	Above 150 mm diameter	6.0 mm wall thickness up to 200 mm 8.0 mm wall thickness up to 300 mm	Bevel, Butt welded, 3 layers for MS/ screwed for Galvanized	IS: 3589
MS/ Galvanized Fittings	-do-	Schedule 40	-do-	IS: 3589

- For MS/Galvanized pipes up to and including 50 mm diameter screwed jointing shall be adopted, while for pipes 65 mm and above welded connections shall be used for MS and screwed connection for Galvanized. Only Electro Galvanized nuts /bolts shall be used.
- The piping system and components shall be capable of withstanding 150 % of the working pressure including water hammer effects and test pressure up to 16 kg/cm².
- Flanged joints shall be used for connections to vessels, equipment, flanged valves and also on suitable straight lengths of pipeline of strategic points to facilitate erection and subsequent maintenance work.
- Flange thickness shall be as per table below IS: 6392 – 1971.
Table – 17/18.

250 mm dia : 26 mm ;

200 mm dia : 24 mm ;

150 mm dia	:	22 mm ;
125 mm dia	:	22 mm ;
100 mm dia	:	20 mm ;
80 mm dia	:	20 mm ;
65 mm dia	:	18 mm .

- M.S. Fittings for pipes above 65 mm or and up to 150 mm diameter shall be fabricated from seamless pipe pieces of minimum 5 mm wall thickness. For tees and other fittings where seamless sections are not available, the fittings shall be fabricated from Electric resistant welded pipes as given in the approved makes. However Galvanized fitting will be screwed. The fittings shall have a minimum 5 mm wall thickness. The fittings shall with stand pressure of up to 21 kg/cm².
- Fittings below 50 mm or shall be M.S. / Galvanized Forged Screwed ends. The fittings shall be threaded at both ends. The fittings shall withstand pressure of up to 21kg/cm².
- For tapings of 50 mm/40mm/32mm/25mm from headers, half socket connections with one side threading shall be employed. The half socket shall be welded at the center of the header, either on the side or on the top.
- Wherever two horizontal headers are to run side by side, the two headers shall be located at different levels, if possible, so as to avoid unnecessary bends at tapping off from the headers. Accordingly, the supports shall also be staggered to support pipes at two levels.
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PIPE SUPPORT:

- a) All pipe clamps and support shall be mild steel.
- b) Pipe shall be hung by means of expandable anchor fastener of approved make and design (Dash Fasteners or equivalent). The hangers and clamps shall be fastened by means of galvanized nut and bolts. The size/diameter of the anchor fastener and the clamp shall be suitable to carry the weight of water filled pipe and dead load normally uncounted.
- c) Hangers and supports shall be capable of carrying the sum total of all concurrently acting loads. They shall be designed to provide the required supporting effects and allow pipelines movements as necessary. All guides, anchor, braces, dampeners, expansion joints and structural steel to be attached to the building/structure, trenches etc. shall be provided by the contractor. Hangers and components for all piping shall be approved by the

- Client/engineer. Anchoring fasteners shall be rated to take minimum 2 tons load and shall be of approved make.
- d) While all piping shall have clevis type hanger supports from the ceiling with fasteners, for pipe headers of 100 mm diameter and above, additional wall/column mounted supports shall be taken. Clevis type hanger supports shall be at 3.0 m intervals and at every turn, at both ends. MS angle supports at wall and columns shall be at 18 m intervals. The angles shall be cut by gas cutter and evened out by grinder. All welding to angles shall also be cleaned by grinder. Angles shall not be less than 40 x 40 x 6 mm size.
 - e) For fixing clevis hanger and angle support, only dash fasteners shall be used. Exposing of steel reinforcement and welding to them shall not be permitted except in exceptional circumstances.
 - f) Pipes in vertical shafts shall have MS angle brackets at alternate floor level. The bracket shall be mounted behind the pipe. A baseplate of 50 wide x 6 mm thick shall be welded to the bracket. The baseplate shall be fixed to the wall by means of fasteners GI U clamps shall be used to fix the pipe to the bracket.
 - g) Each riser shall also be anchored to the floor slab with MS angles mounted on the slab. The angles shall be 40 x 40 x 5 size, one mounted before the pipes and the other after the pipes. Extra cleat pipe pieces shall be welded to the pipes at this point which shall be welded to the angle iron support.
 - h) Wherever angle type supports are being used, profiled packing materials or wood or materials as approved by the Engineer shall be used. The packing materials shall be at least 25 mm thick, and tight fitted with the pipe.

WORKMANSHIP

Mild steel pipes shall be measured per linear meter of the finished length and shall include all fittings, flanges, painting and welding, jointing, clamps for fixing to walls or hangers, anchor fasteners, painting and testing complete in all respects. Nothing extra shall be payable on this account.

At least 10% of all the welded joints should be radio graphically tested and half of joints radiographed should be field joints. As per IS 15105:2002 Contractor shall include the cost of radiograph test in Item No. 1.0 above.

All pipes shall be adequately supported from ceiling or walls by structural clamps fabricated from M.S. structural e.g. rods, channels, angles and flats. All clamps shall be painted with one coat of primer and two coats of black enamel paint. The contractor shall provide inserts at the time of slab casting or provide suitable anchor fasteners.

The pipe supports or hangers shall be designed to withstand combined weight of pipe, pipes fittings, fluid in pipe and insulation. Pipe supports shall be of

steel and coated with rust preventing paint and finished with two coats black enamel paint.

The underground piping shall be supported with cement concrete blocks of suitable size and strength provided at an interval of 2.5 mtr. The pipes shall be laid at 1 mtr depth (top of the pipe) and trench excavated for sufficient width. The rate for pipe shall include the scope of excavation/refilling the trench. 1:2:4 concrete thrust blocks are also to be provided at turning of pipe. The cost of installation includes concrete pedestals etc. as required and to be included in the item rate.

MS Pipe class 'C' (heavy duty) conforming to IS:1239 including all accessories such as screwed/welded joints, flanges, tees, reducers, structural steel supports and clamps etc. including lift to all heights, welding, jointing, painting and inserted rubber gaskets, nuts, bolts etc. as required. Pipes shall be painted with two coats of primer & two coats of post office red synthetic enamel paint over two coats of red oxide zinc chromate primer. Prior to application of primer surface to be cleaned including painting of legends both direction arrow as per approval of Project Manager and shall be fixed in ceiling, walls, columns for all heights with hangers/supports and fasteners all as per drawing including chasing of walls/columns /ceiling etc. and making good the same as required. G.I. pipe/PVC sleeve of suitable higher size shall be provided whenever the pipes are crossing the walls/floors and sealing the sleeves with glass wool in between & fire sealant compound at either end all as per Project Manager/Consultant requirement.(Standard MS fitting with welded joint shall be used on Pipe) like flanges, tees, elbows, bends junctions, reducers etc. welded or screwed joints, clamps & structural steel supports or as required/directed at site including cutting & making good the walls, floors, RCC work etc. cutting chases & filling the same with cement concrete 1:3:6 (1 cement :3 coarse sand :6 graded stone aggregate 20 mm nominal size) including Providing painting the pipes with 2 coats of desired shade of synthetic enamel paint over 2 coats of Red oxide primer. Prior to application of primer the surface should be cleaned for any dirt, rusts, rough substance etc. including providing painting of legend both direction arrow as per the approval of project manager (For Internal Hydrant system).

MODE OF MEASUREMENT OF PAYMENT:

The rate includes cost of all materials, tools, plants, transportation and labor involved in satisfactory completion of work. The rate shall be for unit of meter. Measurement shall be in meter. The rate includes cost of materials and other operations mentioned as above. The work shall be carried out as per detailed drawings

Item No. 98 & 99

Providing and fixing of CI Sluice/ Butterfly valve ISI marked with gunmetal working parts with stainless steel spindle with necessary jointing materials fitting etc. complete as directed.

(B) 100 mm dia CI Sluice/ Butterfly Valve

(C) 80mm Dia CI Sluice/ Butterfly Valve

Sluice gate valve shall be of best quality and of approved make and shall confirm the relevant IS-780. All working parts shall be gun metal. Few turns of fine hamp yarn dipped in white zinc shall be taken over threaded end of the pipe and socket ends of the sluice valve shall be screwed even the pipe with necessary appliances or as directed.

Workmanship:-

The workmanship shall be as per the specification of the It no 28(23.99) P.no-115 para 2.00 of general technical specification for building work booklet. Except that is for C.I slave or butterfly valve instead of Gun metal check or non-return valve & Item is for 100mm / 80mm dia or as directed.

Mode of measurement & payment:-

Item shall be measured & paid on number basis.

Item No. 100 to 101

Providing, fixing, testing and commissioning of non-return valve of following sizes conforming to IS: 5312 complete with rubber gasket, GI bolts, nuts, washers etc. as required.

(B) 100 mm dia-Non Return valve

(C) 80 mm dia-Non Return valve

Non return valve shall be of best quality and of approved make as per IS-5312 latest additional. All working parts shall be gun metal a few turn of fine hemp yarn dipped in white Zink shall be taken over the threaded ends of pipe and socket ends of valve or as directed. Non return valve shall be screwed over the pipe with necessary appliances or as directed.

Workmanship:-

Non return valve shall be fixed as directed by the engineer in charge.

Mode of measurement & payment:-

Item shall be measured & paid on number basis.

Item No. 102

Providing, fixing, testing and commissioning of Gun metal /SS single headed ISI marked oblique pattern hydrant landing valves as per IS:5290 with 80mm dia flanged inlet and 63mm dia female outlet complete with gun metal cap.

20mm dia gun metal/ SS Single headed ISI marked oblique pattern hydrant landing valves as per the IS-903 with 80mm dia flanged inlet & 63 mm dia female outlet completed with instantaneous coupling of gun metal best quality & make shall be fixed or as directed.

All working parts shall be of gun metal/ SS, the hard wheel shall be operated in clock wise and anti clock wise direction or as directed.

Mode of measurement & payment:-

Item shall be measured & paid on number basis.

Item No. 103

Providing, fixing, testing and commissioning of Standard Gun /SS metal branch pipe with nozzle of 20 mm nominal bore outlet as per IS:903 suitable to fit with standard instantaneous type 63 mm dia coupling.

20 mm dia gun metal/ SS Single headed ISI marked oblique pattern hydrant landing valves as per the IS-903 with 80mm dia flanged inlet & 63 mm dia female outlet completed with instantaneous coupling of gun metal best quality & make shall be fixed or as directed.

All working parts shall be of gun metal /SS, the hand wheel shall be operated in clock wise and antic lock wise direction or as directed.

Mode of measurement & payment:-

Item shall be measured & paid on number basis.

Item No. 104

Providing and fixing 63 mm dia reinforced rubber lined RRL RRL fire hose of approved brand conforming to IS 636 type A having bursting pressure of 37.20 Kg/cm² and 2 Nos of ISI marked of 15 mtr length fitting with necessary gun metal 63 mm delivery hose pipe with 63 mm dia. Male and female gun metal couplings duly banded with GI wire, rivets etc. conforming to IS 636 (type-A) as required.

63mm dia reinforced rubber lined RRL rubber lined R.B fire made of approved brand conforming to IS-636 type A having bursting pressure of 37.20 Kg/cm² and 2.00 nos of ISI marked of 15.00m length, fitting with necessary gun metal 63mm delivery hose pipe with 63mm dia male & female gunmetal coupling duly banded with G.I. wire rivets etc conforming to IS 636 type-A completed or as directed.

Mode of measurement & payment:-

Item shall be measured & paid on number basis.

Item No. 105

Providing, fixing, testing and commissioning of Weather proof standard fire hose cabinet having single opening with M.S. Fabricated Stand, necessary locking arrangement by Allen key suitable for housing 2 nos. hose pipe, 1 No. Branch pipe & nozzle spanner.

Weather proof M.S. hose cabinet of suitable size and made of suitable M.S sheet as directed painted fire red having 5mm thick clear glass single opening with necessary locking arrangement by Allen key suitable for housing 1.00 no hose pipe 1.00 no branch pipe & nozzle spanner or as directed.

The entire unit shall be provided and fixed as per the requirement and the work shall be carried out to the entire satisfaction of the engineer in charge. The work shall be carried out in the best workman like manner and all damage to the existing work shall be made good without any extra cost.

Mode of measurement & payment:-

Item shall be measured & paid on number basis.

Item No. 106

Supplying and fixing orifice plate made out of 6 mm thick stainless steel (Grade 304) with orifice of required size to be fitted between flange & landing valve of external and internal hydrants to reduce pressure at the outlet to the level of 3.5 kg/cm² complete as required.

Providing & fixing orifice plate on fire hydrant valve including jointing materials having suitable base for reducing the pressure hydrant outlet etc. as directed. The orifice plate of suitable dia with bolt holes same hydrant shall be made of copper having a suitable orifice size in center to reduce the pressure to 3.20 kg/cm²

Workmanship:

The plate shall be installed before the hydrant valve with best workmanship to achieve the coerces pressure of hydrant valve without any leakage.

Mode of measurement & payment:

Item shall be measured & paid on number basis.

Item No. 107

Supplying and fixing First Aid hose reel with MS construction spray painted in post office red, conforming to IS 884 with up -to date amendments, complete with the following as required. 30m long 25mm (nominal internal) dia water hose thermoplastic (textile reinforced) type-2 as per IS: 12585 25mm (nominal internal) dia S.S. Shut up valve & nozzle. Drum and brackets for fixing the equipment's on wall. Connections from riser with stop valve (GM) & M.S. pipe.

First aid hose reel should be made of aluminum along with M.S sheet side with spray painted in post office red conforming to IS-884 with up to date amendments. Complete with 30.00 long 25mm nominal internal dia water hose thermoplastic (textile reinforced) type-2 as per IS-12585 or as directed 25mm nominal internal diameter S.S shut up valve & nozzle

Entire assemble of drum and baskets shall be installed on the wall with connections from riser with stop valve & M.S. pipe or as directed.

Mode of measurement & payment:-

Item shall be measured & paid on number basis.

Item No. 108

Providing & erecting connection of siemens connection with necessary fitting at our required place of the fire hydrant system as directed. Gate connection

25mm dia gunmetal S.S gate valve with 25mm dia nipple shall be of best quality and of approved make and shall confirm the relevant IS

All working parts shall be gun metal / SS few turns of fine hemp yarn dipped in white zink shall be taken over threaded ends of the pipe and socket ends of the gate valve with nipple shall be screwed even the pipe with necessary appliances

Workmanship:-

The workmanship shall be as per specification of Item no 28(23.99) P.115 para 2.00 of general specification for building work booklet except that is for 25mm dia gun metal ISI mark SS Gate valve with 25mm dia nipple instead of gun metal check or non-return valve or as directed.

Mode of measurement & payment:-

Item shall be measured & paid on one set basis.

Item No. 109**Supply, Installation, Testing & commissioning of 25 mm dia gun metal ISI mark Gate Valve with 15 mmdia nipple as complete as directed.**

25mm dia gunmetal S.S gate valve with 25mm dia nipple shall be of best quality and of approved make and shall confirm the relevant IS

All working parts shall be gun metal / SS few turns of fine hemp yarn dipped in white zink shall be taken over threaded ends of the pipe and socket ends of the gate valve with nipple shall be screwed even the pipe with necessary appliances

Workmanship:-

The workmanship shall be as per specification of Item no 28(23.99) P.115 para 2.00 of general specification for building work booklet except that is for 25mm dia gun metal ISI mark SS Gate valve with 15mm dia nipple instead of gun metal check or non-return valve or as directed.

Mode of measurement & payment:-

Item shall be measured & paid on one set basis.

Item No. 110

Providing & fixing emergency escape signs printed on rigid PVC sheet / acrylic sheet 4 mm thick photo luminescent auto glow type of approved quality including fixing on door, wall, ceiling complete with installation as directed.

(A)Escape signs

Emergency escape signs printed on rigid PVC sheet/Acrylic sheet 4 mm thick photo luminescent auto glow type of approved quality or as directed.

Emergency escape signs shall be fixed on door,wall,ceiling with necessary fixing accessories or as directed.

The entire work shall be carried out as per the requirement & satisfaction of the engineer in charge. The work shall be carried out in the best workman like manner or as directed.

Mode of measurement & payment:-

Item shall be measured & paid on square inch basis.

(B)Fire signs

Emergency Fire Signs printed on rigid PVC sheet/Acrylic sheet 4 mm thick photo luminescent auto glow type of approved quality or as directed.

Emergency Fire signs shall be fixed on door,wall,ceiling with necessary fixing accessories or as directed.

The entire work shall be carried out as per the requirement & satisfaction of the engineer in charge. The work shall be carried out in the best workman like manner or as directed.

Mode of measurement & payment:-

Item shall be measured & paid on square inch basis.

Item No. 112

Providing and fixing fire-resistance Barrier in Duct openings at Slab level with fire Stop Sealant, having minimum 2-hour fire rating in Compliance with NBC 2016 Code.

As per Guidelines of NBC/GDCR, providing & fixing fire resistant barrier with appropriate sealant & having minimum 2 hour fire rating in duct area at slab level. Fire resistant barrier & sealant are as per requirement of NBC 2016 code and as per requirement of local fire authority.

Mode of measurement & payment:-

Item shall be measured & paid on Sqm. basis

Item No : 116 :- Supplying of graded stone aggregate of following sizes (for W.B.M. Road) (3) Crushed stone aggregate for Hard Quality up to 63mm size.

Item No : 117 :- Spreading the stone aggregate for soling and W.B.M incl. filling the interstics forming the surface to required camber and gradient (ii)40 mm to 63 mm .Size aggregate M/c.

1 The stone metal shall be obtained from quarries approved by the Executive Engineer prior to collections. The metal shall be of approved quality with all leads and lift. The metal shall be obtained from hard tough, sound durable stone of close texture as is locally available and reasonably free from decay and weathering. Pieces of the stone shall be angular and roughly cubical in shape and round elongated or flaky materials shall be allowed. The size of metal shall be 25mm to 90 mm and shall be hand broken. All unsound weathered or disintegrated stone obtained from the upper surface layer of the quarry or other layers of boulders shall be rejected.

2 The samples of metal collected from approved quarries shall be got tested at Government recognized laboratory as may be directed to the contracted at his own cost. The test results shall conform to the standard requirements laid down for metal to be used for W.B.M. work.

3 The physical requirement for standard size metal shall conform to the test results indicated in the Table below

Type of const.	Test	Test method	Requirement
Base	[a] Los Angeles abrasion value Aggregate impact value [b] Flakiness index	IS 2386 Part IV IS 2386 Part IV or IS 5640 IS 2386 Part-I	50% maximum 40% maximum 15% maximum

Frequency of test shall be as per Ministry of surface transport specifications.

4. The grading requirements of the metal to be used for W.B.M. shall be under :

Sr.No	Size Range	Sieve designation	Percentage by weight passing through the sieve
1	25mm to 90 mm	100mm 90 mm 50 mm 25 mm 20 mm	100 90-100 40-60 0-10 0-5

The size of metal for W.B.M. shall be 25mm to 90mm wherein tolerance limit for oversize shall be upto 10% and that for lower size should be up to 10%.

5 Wherever any doubt exists as to whether the above requirements are satisfied, in whole or any part of the collection, metal shall be got screened by the contractor at his own cost, if so ordered by Engineerin-charge.

6 Stacking shall be done by filling in the standard steel boxes of 2 m x 1.5m x 0.5 m size which shall be deduction for voids shall be made from the gross measurements. Where any doubt exists as to whether the quantity of stacks of metal in any hectometer is not confirming with the cubical content of the standard pharas (2 m x 1.5m x 0.5m) shall be got corrected by the contractor, if so ordered by the Engineer-in-charge for which no extra payment shall be claimed by the contractor. If the quantity of metal in any stack in a particular Hectometre shall be paid on the basis of the quantity so found. Regular stacks shall be done by the contractor on a fairly level ground. Stacking of the metal shall be done in a manner as directed by the Engineer-in-charge. Collection of metal shall be completed in two hectometer wise as per the final requirement and measurement shall be recorded two hectometer-wise. Until the quantity of metal as per the final requirement is not collected in any two consecutive HM and std. boxes are not filled in completely in two hectometers, measurements shall not be recorded and payments shall not be done.

7 For road work complete staking of metal as per requirement shall be carried out in 2 km length before spreading. The metal stacks shall be measured and recorded and got cross checked by other Deputy Executive Engineer as per rules before spreading. The collection shall always, commence at one end of the km. and be carried continuously towards the other end unless the Engineer-in-charge shall direct otherwise.

8 The payment shall be on cubic metre basis without deduction for voids. The contractor shall maintain all stacks in regular and proper size till the whole materials shall not measured and finally accepted by the department. The spreading of materials shall not be allowed till the materials are fully stacked and completed kilometer wise.

9 The rate includes cost of collection, conveyance to the site with all lead and lift and filling the boxes including all labour tools, equipment and other incidental expenses. The rates quoted are inclusive of all such tools, duties, fees, royalties, taxes etc.

[b]

1 Metal shall not be spread without permission of the Engineer-in-charge. Metal should be spread under careful supervision by trained collies. Contractor shall see that uniform spreading as per collection of metal is done. The contractor shall spread the metal fully from the stacks without keeping any balance

unless directed by the Engineer-in-charge to keep some stack in balance for making good unevenness or depressions during rolling works. To ensure that the material is spread to the required thickness, the road surface shall be marked out in to length over which the contents of heaps are to be spread, the bounds of earth or murrum (one on either side) shall be laid with a distance between them equal to the width of road to be metaled and shall be enough to prevent the loose metal from spreading during consolidation as well as to

retain water used for consolidation. Payment for bunds will be made in the respective item.

2 The metal (including old metal) shall be screened and rubbish dust, grass shall be removed and spread evenly on the prepared surface in grade and camber by using camber board etc. so as to ensure that the surface is true to camber and grade. At least two camber by using camber boards shall be in use at site.

The surface shall be checked at every 50 ft. by means of template while the correctness of the camber in between shall be tested by string and corrected as required. Between the straight lengths and the curves in camber of road to superelevation shall be made very gradually as may be directed by the Engineer-incharge.

3 The spreading of metal shall proceed only 200 mt. (max) advance of the rolling operations. The collection and spreading of the metal shall not be carried out in one and the same kilometer.

4 At the time of rolling all surface irregularities, hollows, depressions, humps etc. shall be straight. The spreading of metal in required layer shall be done by the contractor. The rate for this item shall be paid on cmt., basis and includes all the above operations with all lead and lift except consolidation.

Item No. 118

Supplying of murrum binding materials upto any lead.

1. Material for the purpose shall be approved quality. Any material which is found inferior shall be rejected and the contractor shall remove such rejected material from the site at his own cost. The material shall be collected from quarries approved by the Executive Engineer. The material shall be granular gritty.
2. The material shall be got approved by the Executive Engineer prior to collection on site. It shall be free from all rubbish, dust and any organic materials as well as clods of black cotton soils. Materials shall not be allowed to be collected from within the road boundary. Material to be used as crust and for side shoulders shall be as per C.B.R. report and that to be use bindage in W.B.M. road construction shall have P.I. value of less than 6 as determined in accordance with IS 2720 (Part-V). The material to be used should be got tested prior to its use in road construction. Testing charges shall be borne by the contractor.
3. River or nala or sea sand required for the work shall be clear, sound, properly, graded, free from organic materials silt clay etc. and shall be got approved by the Engineer-in-charge. The sand shall be obtained and brought from the source approved by the Engineer-in-charge. The payment shall be made on cubic metre basis.
4. Stacking shall be done by filling in the standard steel boxes of 2m x 1.5m size which shall be supplied by the Department if available on rent, otherwise contractor shall make his own arrangement. No deduction for voids shall be made from the grade measurements. Where any doubt exists as to whether the quantity of stacks of murrum in an hectometer is not confirming with the cubic content of the standard pharas (2 x 1.5 x 0.5m) the same shall be got corrected by the contractor if so ordered by the Engineerin- charge for which no extra payment shall be go claimed by the contractor. If the quantity of murrum in any stack in a particular hectometer is found to be less than the standard measurements viz. 1.5 cmt the entire collection in the hectometer shall be paid on the basis of the quantity so found. Regular stacks shall be done by the Contractor on a fairly level ground stacking of the murrum shall be done in a manner as directed by the Engineer-in-charge.
5. For road work completed stacking of murrum as per requirement shall be carried out in 2 km length before spreading. The collection shall always, be commenced at one end of the k.m. and be carried continuously toward the other end unless the Engineer-in-charge shall direct otherwise.
6. The payment shall be made on cubic metre basis without deduction for voids. The contractor shall maintain all stacks in regular and proper size till the whole materials are collected, measured and finally accepted by the Department. The spreading of materials shall be not be allowed till the materials are fully stacked and completed kilometer wise.
7. The rate includes cost of collection, conveyance to the site with all lead and lift and filling the boxes including all labour, tools, equipment and other incidental expenses.
8. The rate quoted are inclusive of all shall such tools, duties, fees, royalties, taxes etc.

[b] Spreading of material shall be started after the full supply in a particular K.M. is collected, measured and recorded in the measurement books. Permission of the Engineer-in-charge shall be obtained before spreading. It shall be seen that the formation is dressed to the required camber and grade. If the murrum is to be spread over the metalled surface then the spreading shall be uniform and as it has to act as binding surface, it shall be used for filling the interstices of metal and forming a smooth running surface as far as possible. Murrum blindage shall be used then specified as blindage shall be spread evenly with a twisting motion of the baskets. No more murrum shall be used then specified as blindage. The rate is for gross measurements and no deduction of voids shall be made. If the murrum is to be spread over earthen embankment as a sub-base or for side shoulders or as blindage, it shall be spread in a manner as directed by the Engineer-in-charge and as per required width and thickness. The contractor shall make good all unevenness, depression, projections etc. during consolidation work. Rate of this item includes all these operations except consolidation. The payment shall be made on cmt.Basis.

Item No. 119

Spreading blindage or road crust filling the gapes in metal and levelling to camber and gradient as directed (I) Murrum.

1. Material for the purpose shall be approved quality. Any material which is found inferior shall be rejected and the contractor shall remove such rejected material from the site at his own cost. The material shall be collected from quarries approved by the Executive Engineer. The material shall be granular gritty.
2. The material shall be got approved by the Executive Engineer prior to collection on site. It shall be free from all rubbish, dust and any organic materials as well as clods of black cotton soils. Materials shall not be allowed to be collected from within the road boundary. Material to be used as crust and for side shoulders shall be as per C.B.R. report and that to be used as bindage in W.B.M. road construction shall have P.I. value of less than 6 as determined in accordance with IS 2720 (Part-V). The material to be used should be got tested prior to its use in road construction. Testing charges shall be borne by the contractor.
3. River or nala or sea sand required for the work shall be clear, sound, properly, graded, free from organic materials silt clay etc. and shall be got approved by the Engineer-in-charge. The sand shall be obtained and brought from the source approved by the Engineer-in-charge. The payment shall be made on cubic metre basis.
4. Stacking shall be done by filling in the standard steel boxes of 2m x 1.5m size which shall be supplied by the Department if available on rent, otherwise contractor shall make his own arrangement. No deduction for voids shall be made from the grade measurements. Where any doubt exists as to whether the quantity of stacks of murrum in an hectometer is not confirming with the cubic content of the standard pharas (2 x 1.5 x 0.5m) the same shall be got corrected by the contractor if so ordered by the Engineer-in-charge for which no extra payment shall be go claimed by the contractor. If the quantity of murrum in any stack in a particular hectometer is found to be less than the standard measurements viz. 1.5 cmt the entire collection in the hectometer shall be paid on the basis of the quantity so found. Regular stacks shall be done by the Contractor on a fairly level ground stacking of the murrum shall be done in a manner as directed by the Engineer-in-charge.
5. For road work completed stacking of murrum as per requirement shall be carried out in 2 km length before spreading. The collection shall always, be commenced at one end of the k.m. and be carried continuously toward the other end unless the Engineer-in-charge shall direct otherwise.
6. The payment shall be made on cubic metre basis without deduction for voids. The contractor shall maintain all stacks in regular and proper size till the whole materials are collected, measured and finally accepted by the Department. The spreading of materials shall be not be allowed till the materials are fully stacked and completed kilometer wise.
7. The rate includes cost of collection, conveyance to the site with all lead and lift and filling the boxes including all labour, tools, equipment and other incidental expenses.

8. The rate quoted are inclusive of all shall such tools, duties, fees, royalties, taxes etc.

[b] Spreading of material shall be started after the full supply in a particular K.M. is collected, measured and recorded in the measurement books. Permission of the Engineer-in-charge shall be obtained before spreading. It shall be seen that the formation is dressed to the required camber and grade. If the murrum is to be spread over the metaled surface then the spreading shall be uniform and as it has to act as binding surface, it shall be used for filling the interstices of metal and forming a smooth running surface as far as possible. Murrum blindage shall be used then specified as blindage shall be spread evenly with a twisting motion of the baskets. No more murrum shall be used then specified as blindage. The rate is for gross measurements and no deduction of voids shall be made. If the murrum is to be spread over earthen embankment as a sub-base or for side shoulders or as blindage, it shall be spread in a manner as directed by the Engineer-in-charge and as per required width and thickness. The contractor shall make good all unevenness, depression, projections etc. during consolidation work. Rate of this item includes all these operations except consolidation. The payment shall be made on cmt. Basis.

Item no : 122

Providing and fixing CAPCELL HD 100 pre- moulded compressible filler board in black colour confirming to MORT&H Specifications (Clause 1015).

12 To 20 mm thickness of SILFLEX (CAPCELL HD - 100) pre-moulded compressible filler board in black colour confirming to MORT&H Specifications (Clause 1015)

Minimum density 95kg/cum.metre, non-staining with less than 1% water absorption & compression recovery of 93% minimum as per specification for 20 mm wide & 100 mm deep Expansion Joint finished or sealed with two component pre-packed capable of + or -20% of joint movement sealing compound of elastic PU coal tar .

Mode of payment & Measurement :

Rate shall be paid on Unit of Sq. mtr. Area basis. Rate including all labours materials and operations.

Item no : 123

Providing and fixing 25 mm diameter backup rod having minimum density 22 kg per cum (ASTMD - 3575) & compression strength of 0.40 kg per sqm (ASTM 5249) and finishing with polysulphide sealant etc. complete. For 20 mm wide expansion joint

Materials for Joint Sealing**Joint Sealing**

The joint sealing compound shall be of hot poured, elastomeric type or cold polysulphide type having flexibility, durability and resistance to age hardening.

Manufacturer's certificate shall be produced by the contractor for establishing that the sealant is not more than six months old and stating that the sealant complies with the relevant standard mentioned below.

The material for cold poured joint sealant shall conform the following:
Polysulphide IS:11433(Part I)-1985(Reaffirmed 2020), BS:5212 (Part II)

Steel Forms

All side forms shall be of mild steel. The steel forms shall be of M.S. Channel sections and their depth shall be equal to the thickness of the pavement.

The use of bent, twisted or worn out forms shall not be permitted.

Mode of payment & Measurement :

Rate shall be paid on Unit of running metres . Rate including all labours materials and operations.

Item no : 124

Providing Groove cutting in C.C. Road in cluing cleaning etc. complete as per direction of Engineer in charge

Groove Cutting is cutting the laid concrete providing grooves of size 5mm wide and one third of the thickness of the concrete (or as required at site) within 48 hours of laying of the concrete.

Form bays of 3Mtrs X 3Mtrs using heavy duty cutting machine with diamond cutting wheel and filling of the grooves with appropriate sealant.

Cleaning the groove with air compressor.

Mode of payment & Measurement :

Rate shall be paid on Unit of running metres . Rate including all labours materials and operations.

Item No. 125**Providing pre-moulded asphalt filler joints as per drawings (A)12 mm**

1. Open joints shall be constructed at the loations as directed by the Engineer-in charge using a wood strip, metal plate, other suitable material which is subsequently removed. When removing the material, care shall be exercised to avoid chipping or breaking the corners of the concrete. The edge of the concrete at the joints shall be edge finished. Reinforcement shall not extend across as open joint.
2. When performed filler is to be provided the filler shall be placed in correct position before concrete is placed against the filler. The filler material shall form part of the joint and while concreting the slab, care shall be taken to prevent the former from bring displaced. After the work is completed, the exposed face of the joint shall be cleaned of all loose material sticking to it.
3. The material used for filling expansion joint shall be bitumen impregnated felt which shall conform to the requirements of IS: 1838, and shall be got approved from the Engineer in-charge. The joint shall consist of large pieces and assembly of small pieces to make up the required size shall be avoided.

Mode of payment & Measurment :

The expansion joint shall be measured in Sqmt. Thickness of the expansion joint will be 12 to 20 mm. Width of the expansion joint shall be equal to full depth of the slab.

The rate shall include the cost of all materials, labour, equipments and other incidental charges for fixing the joints complete in all respect as per these specifications.

Item No. 141

Providing & Fixing Precast R.C.C Frame with cover MD 10 Ton (Rubber Mould Finish) inner size 600 x 450mm with all necessary fittings.

Materials

Precast RCC cover size of 0.60 x 0.45 m. with Frame. Frame size 0.60m x 0.80m (out to out), and Mixing proportion M200 (1: Cement; 1.5: Coarse Sand and 3: 20mm Nominal size Agregate of best quality.

Workmanship

Precast RCC frame fixing on IC with Cement mortar 1:4, If necessary outer side plaster finish with plaster in 1:4 finish smooth. cover shall be fixed on Precast RCC frame.

Mode of measurements & payment

The rate includes cost of all labour and materials required for satisfactory completion of this item.

The rate shall be for a unit of one number.

Item No.142

Job Work of Geohydrological ground water investigation including water sample chemical analysis including Pin-Point survey. [with Veichel Charges]

The Job of Geohydrological ground water investigation shall be carried out as Per G.W.S.S.B. manual and pin point survey shall be contractor all the liason work for the Geohydrological & pin point marking at site with GWSSB Shall be carried out by contractor at his own cost and finally report of Geohydrological and pin point survey shall be submitted to the Engineer-in-Charge of GSPHC limited.

The quality of water shall be tested for all the physical, chemical and Bacteriological parameters as normally done for any drinking water sample. The water sample for bacteriological analysis shall be collected from the Representative of the public health Engineering laboratory/GWSSB Laboratory or the laboratory as directed by the Engineer-in charge of GSPHC Limited.

The rate shall be for entire job.

Item No. 143

Drilling of 215mm. dia. bore hole in overburden strata by DTH rig upto required depth including fixing of 200 mm dia. PVC pipe further drilling of 165mm dia bore hole in soft/hard rock by DTH drilling method upto total depth 150 Mtr. (0 to 150 Mtr.)

Drilling of 215mm dia bore hole for 175mm dia PVC pipe upto required depth in over burden strata (maximum upto 30 meters) and further drilling of 165mm dia. bore hole in remaining rocky and sand stone strata upto 0 to 500 mtr depth or as per the recommendation of Geologist. The drilling shall be done by the hole type drilling Rig. payment for supplying 175mm dia. PVC pipes and bore plug will be done separately. The carting of pipes and other materials etc. should be carried out by contractor from market to site of work at his own cost.

Drilling work shall be carried out at the sites by the Department. The diameter of the hole should be 215mm dia. in over burden strata and 165mm dia in rocky and sand stone strata upto over all specified depth of 0 to 500 mtr. The drilling shall be carried out in over burden strata upto maximum 30 meters as per the actual site requirement or the recommendation of Geologist. If further drilling cannot be done due to over burden upto 30 meter or in rocky or sand stone strata due to mechanical failure upto specified depth the drilling shall have to be stopped in consultation with Engineer-In-charge and no payment shall be made for the drilling carried out by the contractor.

The 175mm dia PVC pipes should be lowered by the contractor in overburden strata. The jointing of pipes will be carried out by the contractor as desired by the Engineer-In-Charge. Necessary jointing materials, PVC coupler & jointing materials of solvent etc. should be provided by the contractor at the own cost.

DRILLING OPERATION :

The drilling operation for construction of tube well should be carried out by suitable rig to satisfy following.

[A] For Drilling through over burden :

[1] The diameter of the bore in the over burden shall be sufficient for insertion of 175mm dia PVC pipe casing pipes with the joints and leaving sufficient annular space for grouting the casing pipe with sticky clay or local soil etc. Annular space between bore hole and casing pipes should be filled up with sticky clay or local materials etc. by the contractor with out any extra cost, i.e. at his own cost.

[2] The boring in the over burden should be contained through the rock / sand stone at least up to 0.15 Mtrs. So, that casing pipes can be properly embedded in the rocky / sand stone formation.

[3] After the casing pipes embedded in the rock / sand stone, the same is to be grouted with materials like sticky clay or local materials etc. So, as to avoid leaking of drain water in the bore.

[4] Drilling of 215mm dia. in over burden strata, upto 30 Mtrs. are compulsory, if required.

[B] FOR DRILLING THROUGH ROCK :

Boring through rocks shall be of 165mm dia. and the total depth from the ground level of the bore shall upto 0 to 500Mtr. or as per the recommendation of the hydrologist / Jr. Geologist./ Engineer-In-Charge of GSPHC Limited.

Lowering of Casing Pipes :

[1] Casing pipes shall be properly socketed, jointed & screwed, so as to ensure a continuous length lowered through the over burden, so as to reach at least 0.15 Mtr. inside the hard rock. The length of casing pipes should be kept such that at least 0.30 Mtr. remains projected above the ground level. After completion of the work at site, the top of the casing pipes shall have to be closed either by a screwed or by PVC cap plug unless power is fitted immediately after completion of the bore.

[2] The casing pipe shall be lowered in such a manner so that it remains vertical so as to ensure installation of power pump.

[3] All the tools and plants and other suitable machinery required for work for al drilling, developing, etc. for the tube well shall be provided by the contractor at his own cost at the site of work.

[4] In case of any item not covered by the specification stated herein such work shall be carried out by the contractor strictly, according to the written instructions of In Charge Engineer, which will be binding to the contractor and shall have to carry out such work at departmental schedule. The rates shall be mutually agreed upon. However, the decision of the Executive Engineer will be final.

[5] During the drilling operation if the water bearing strata found at a depth lesser than estimated depth the Executive Engineer or his representative shall have authority to instruct the contractor to stop the work, for reduction in the quantity of the work, the contractor shall not be eligible for any compensation.

[6] If the bore is required to be drilled above the specified depth, the contractor shall be bound to carry out such additional work, including drilling providing and lowering of casing pipes as may be necessary. The relevant specifications regarding drilling providing and lowering pipes, taking yield test and strata sample etc. Shall also apply in case of such additional work. The rates for additional work will be paid as per the rate fixed.

[7] Lowering and fixing of housing and casing shall be carried out in workman like manner. The contractor shall be responsible for workman compensation in case of any accident. In case of dispute or over items the decision of the Executive Engineer shall be final and binding to contractor.

[8] No further drilling if tube wells allowed, if more than two bores will remains untested at a time. This clause will be applicable without any prejudice (i.e. compensation for delay)

[9] The contractor shall clear the site before starting of the work and after completion of the work and shall hand over the bore with final finishing of the work. As directed by the Executive Engineer-In-Charge which shall have to be done by the contractor at his own cost.

[10] The approach roads to site of work, may be kachha roads and contractor shall have to make his own arrangement for repairing of the road and maintaining the same for transporting his materials and equipment at his cost which shall be utilized by the department for inspection etc. purpose.

[11] The contractor will have to make arrangement at his own for cleaning of bore hole, if filled – up by clay, sand, dust & boulders etc.

[12] If bore is not completed upto designed / recommended depth due to mechanical failure or any other reason on payment shall be made for such abandoned bore.

[13] The contractor will have to make arrangement at his own cost for :

- A.** Rig Vehicle, Machineries etc.
- B.** Facilities for moving bulky materials.
- C.** Releasing the transporting materials.
- D.** Keeping in custody department materials until finally taken over by the Office-In-Charge of the work.
- E.** Repairing to the damage caused in the process of the executing the works.
- F.** Approach road to the site.
- G.** The rate shall be paid per running meter of work done.

Item No. 144

Supplying & jointing 200mm dia size slotted PVC 10Kg./ Sq.cm pipe of approved quality at site including jointing materials etc. completed by Engineer In Charge.

Slotted PVC casing pie shall be of required specified dia with 10Kg./ Sq.cm working pressure shall be confirm to relevant I.S. The specials and fitting required shall be of best quality. The pipe shall be in random length of 6.0m to 7.0m.

For jointing of pipes the pipes and socket shall be accurately cut. The ends of pipes and fitting shall be absolutely free from dirt and dust. The out side surface of the pipe and inside of the fitting shall than be roughed with Emery paper and then solvent cement joint. Since solvent cement is aggressive to PVC care must be taken to avoid applying excessive cement to the inside to pipe sockets as any surplus cement cannot be wiped off after jointing. It any manufacturer recommended its own methods of jointing the same shall be adopted after necessary approval from the Engineer-In-Charge.

Rate shall be paid per running meter of pipe supplied and lowered. The materials required for jointing casing pipe shall be supplied by the contractor. After drilling of bore has been upto certain depth or upto hard strata casing pipe or required length shall be lowered as directed necessary jointing materials shall be brought by contractor, casing pipe shall be fixed in true vertical position.

Rate shall be paid per running meter of casing pipe fixed as directed.

Item No. 145**Providing and fixing 200mm dia MS Plate cap with locking arrangement.**

M.S. plate shall be of required outside dia. It shall be of good quality and suitable for capping the bore. The plate cap shall be fixed with nut bolt, at the end of pipe. The casing pipe shall be closed with plug tightly. At top of casing pipe locking arrangement shall be made by the contractor after testing of bore.

The payment shall be made on Number basis M.S. plate cap provided and fixed.

Item No. 146**Providing and fixing 200mm dia PVC cap.**

PVC Cap shall be of required outside dia. It shall be of good quality and suitable for capping the bore. The PVC cap shall be fixed with nut bolt, at the end of pipe. The casing pipe shall be closed with plug tightly. At top of casing pipe locking arrangement shall be made by the contractor after testing of bore.

The payment shall be made on Number basis PVC cap provided and fixed.

Item No.147

Pumping test of the Bore well by submersible pump of adequate capacity & with necessary pumping machinery & pipe line running minimum for 24 hours including submission of Bore chart & discharge of Bore.

Submersible pump set of adequate capacity shall be lowered at required depth and run for minimum 24 hours arrangement of providing, lowering and running of suitable pumping machinery including electric power for this test shall have to be done by contractor at his own cost, for electric power supply, temporary arrangement shall be done by contractor at his own cost, details of discharge with provided pumping machinery, details shall be submitted to the Engineer-in-charge.

The Rate shall be for a Unit of 1 Job lump sum basis.

Item No. 150

Steel work, welded in built up sections framed work fabrication & erection including cutting, hoisting, fixing in position and applying a priming coat of 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, purling connected to common rafters and the like. Rate is inclusive of welding with grinding and applying of mild steel putty into groove to have smooth surface, two coats of oil paint and one coat of yellow zinc chromate primer coat of approved brand only. Oil paint shall be Luxol Enamel paint of Berger paint India limited or Asian paint Apcolite premium gloss Enamel of Asian paint or Dulux premium gloss Enamel of Dulux paint and Nerolac Synthetic Enamel of Nerolac Paint for all floor and at any height only.

Material:

All Structural Steel should be as per to IS: 226-1975. The Steel shall be free from the defects mentioned in IS: 226-1975 and shall have a smooth finish. The material shall be from loose mill scale, rust pits or other defects affecting the strength and durability. Round bars shall conform to IS: 1148-1973. When the steel is supplied by the contractor test certificate of the manufactures shall be obtained according to IS: 226-1975 and other relevant Indian standard.

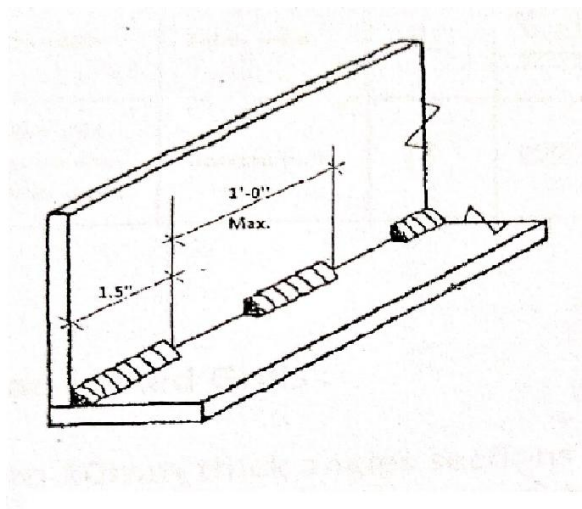
Workmanship:

The Steel work, welded in built up sections framed work shall be prepared as per the drawings and installed as directed. The Steel work, welded in built up sections. shall be fabricated to the consigns and patterns shown in the drawings and the weight shall be directed and the joints shall be welded as shown in the plan of as directed. In beams and joints, channels angles Tees, flats, with connecting plates or angle cleats as in main and cross beams. Hip and jack rafters, purling connected to common rafters and the like.

The joints shall be welds in following manners/ as shown in the drawing of as per IS 816-1969 & SP: 6 (7) - 1972

Welded in built up sections framed work:

- As up to 10mm thick MS Flats are used to build angle section, fillet weld of leg-length 3mm is required and so Size of weld required is 5.4mm; for economy can provide tack weld as fillet weld with single tack length of minimum 1.5 inch at maximum 1'-0" feet centre to centre staggered or both face of joint as shown in figure below



IS : 816 - 1969

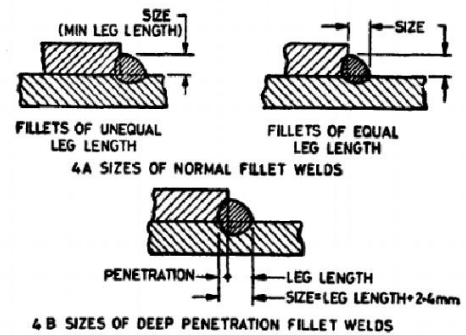
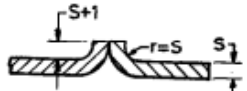
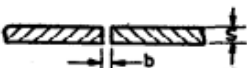


FIG. 4 SIZES OF FILLET WELDS

- MS Gate's built-up frames with angle sections are covered with 2mm thick plates, through weld to plate with frame internally is not possible as plate is too thin. Fillet weld of leg-length 3mm shall be provided with size of weld as 5.00mm internally; for economy can provide tack weld as fillet weld with single tack length of minimum 1.5 inch at maximum 1'-0" feet centre to centre as shown in figure above.
- For 2mm plate's weld of external faces on built-up frames with angle section, through weld to plates with frame externally is not possible, square edges of plates will get damaged due to overheating, here tack weld is suggested without grinding as grinding will reduce size of weld and capacity of joint will be affected.
- According to availability of size of plate, a horizontal joint is provided in 2mm thick plates at nearly sill level to all the gates, here to have smooth surface for esthetic grinding is done externally. It is suggested to provide square butt weld joint on one side of plates with spacing of 2mm between plates and locating joint on MS angle section as baking; here 3.0mm weld size is required and grinding can be done after welding to have smooth surface for esthetic before applying paints. As shown in below Table.

TABLE 10 DETAILS OF JOINTS FOR MANUAL METAL ARC WELDING OF STEEL




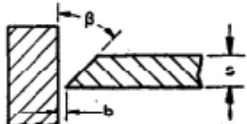
(Clause 4.3.1)

PLATE THICKNESS s mm	EXECUTION OF WELD	TYPE OF WELD	SYMBOL	SECTIONAL REPRESENTATION OF WELD PREPARATION	α DEGREE	b^* mm	e mm	h mm
Up to 2	One side	Stitch weld	JL		—	—	—	—
Up to 3	One side	Square butt	Π		—	≈ 3	—	—
Up to 6	Both sides				—	$\frac{s}{2}$	—	—

MS Gates and Fixed Grills:

- Up to 10mm thick angles sections are used to build box sections, it is better to use readily available square hollow sections rather than built-up box sections on site with angles; with use of box sections, can optimize thickness as per requirement and will result into economy.
- For fixed grills and entry gates to barracks, angles sections are used to build box sections, here single bevel butt through weld of leg-length 3.5mm is required and so Size of weld required is 6.0mm as shown in table below. Required grinding can be done for esthetics before applying paints and after applying mild steel putty to have smooth surface.

TABLE 10 DETAILS OF JOINTS FOR MANUAL METAL ARC WELDING OF STEEL — Contd

PLATE THICKNESS s mm	EXECUTION OF WELD	TYPE OF WELD	SYMBOL	SECTIONAL REPRESENTATION OF WELD PREPARATION	α DEGREE	b^* mm	e mm	h mm
Over 30	Both sides	Double-U butt			≈ 10	0-3	≈ 3	$s \frac{1}{2}$
3 to 16	One side	Single bevel butt			45-60	0-3	—	—
6 to 16	Both sides							

10

- Here if, esthetics is not an issue for economy can provide tack weld as single bevel butt weld with single tack length of minimum 1.5 inch at maximum 1'-0" feet center to center staggered at both flange joints. After welding and before applying paints, application of mild steel putty in to flange grooves can be done to have smooth surface.

- 20mm dia. Mild steel roads are fixed in to box frames to form grills for doors and ventilators. Intermediate welding to roads with frame is not necessary for strength purpose, shall be done at ends only.

Welding with grinding and applying of mild steel putty into groove to have smooth surface, two coats of oil paint and one coat of yellow zinc primer coat of approved brand only. Oil paint shall be Luxol Enamel paint of Berger paint India limited or Asian paint Apcolite premium gloss Enamel of Asian paint or Dulux premium gloss Enamel of Dulux paint only.

Mode of Measurement and Payments :

- i) No payment shall be made for weight of screws, bolts, nuts etc. Only weight of built-up section shall be paid. coat
- ii) Rates inclusive of applying one coat of yellow zinc primer and two oil paint of oil paint of approved brand.
- iii) The rate shall be for a unit to be One Kg. actual measured at Site

Item No. 170

Providing and Fixing SS cloth hanger (5 hook) as per detail drawing and as directed by Engineer in charge. Rate are inclusive of all material, labour and taxes etc complete Samrat Brand Only

Materials:

It should be 100% Teak stainless steel of samrat brand only.

Workmanship:

A contractor has to check and verify the quality of product in terms of size of the product and finishing.

Cloth hanger to be fix on wall or door as directed by Engineer in charge with screws and plug.

Colour of the cloth hanger shall be uniform.

Mode of measurement and payment :

The rate including cost of all materials, tools, plants and labour involved in satisfactory completion of work including cost of plug and screw etc. The rate shall be for unit of one numbers. The work shall be carried out as per detailed architectural drawings and as directed by E.I.C.

Item No. 171

Making 3 nos. Groove in Kota Stone Stair trade complete as per Drawing or Direction of Engineer in Charge.

Workmanship

Polished kota stone of Stair making 3 nos. Groove in stair strade to the required size and shape as per the drawing or instruction by Engineer in Charge.

Mode of measurements and payment

The rate shall include the cost of all material and labour involved in all the operations described above. The measurement shall be paid on for unit of one running meter for the Making 3 Nos. Groove in kota Stair Trade.

Item No. 172

Molding of Kota Stone Stair trade complete as per Drawing or Direction of Engineer in Charge.

Workmanship

Polished kotah stone of Stair shall moulding to the required size and shape as per the drawing or instruction by Engineer in Charge. The sides and the open edge is machine polished and rounded as directed by Engineer in Charge.

Mode of measurements and payments

The rate shall include the cost of all material and labour involved in all the operations described above. The measurement shall be paid on for unit of one running metre for the moulding edge of Kotah Stone.

Item No. 174

Providing & Fixing Stainless Steel logo size 28" x 21.88" Printed on 3 M Vinyl with SS Plate size of 5ft x 3Ft and 1mm thick having chamfer edge rates are inclusive of all labour, scaffolding, material, finishing etc complete as per drawing or as directed by Engineer in charge

304 grade with spraying colour on surface etc. complete as directed. Size of the S.S. letters etc...

1. Letter of required size shall be prepared out of stainless steel metal
2. Font pattern shall be as directed by Engineer – In – Charge.
3. Letter Size as per specify in Description
4. letters shall be prepared in English and or Gujarati as required by Engineer – In – Charge.
5. Letters shall be fixed on SS Plate size of 5ft x 3ft as per required building with required screws and at any height as shown by the Engineer – In – Charge.
6. Payment shall be made as per Job.
7. Rates are inclusive of all materials labour for fixing & Finishing etc complete.
8. In Gujarati Rates are inclusive of Punctuation marks.

Item No : 176

Providing & fixing 3mm acrylic sheet with Vinyl letter colour-2073 - Dark Grey for back ground and colour - 2199- white letter with Required screw.... etc. as per required sizes complete etc. as per specification & Instruction of Engineer In Charge.

Letter / Matter of required size shall be prepared out of PVC Radium material.

Font pattern shall be as directed by Engineer – In – Charge.

Letter / Matter Shall be of 10cm wide.

letters / Matter shall be prepared in English and or Gujarati as required by Engineer – In – Charge.

Letters / Matter shall be glued properly on acrylic sheet of 60cm wide x 15 cm height and 3mm thickness.

In Gujarati Rates are inclusive of Punctuation marks.

Rates are inclusive of all materials labour for fixing & Finishing etc complete.

Payment shall be made per No of complete acrylic sheet with letter / matter.

Item No. 177

Providing, supplying & fixing Stainless steel letters

32.50cm Height & 4.50cm wide,

304 grade with spraying colour on surface etc. complete as directed. Size of the S.S. letters etc...

9. Letter of required size shall be prepared out of stainless steel metal
10. Font pattern shall be as directed by Engineer – In – Charge.
11. Letter Size as per specify in Description
12. letters shall be prepared in English and or Gujarati as required by Engineer – In – Charge.
13. Letters shall be fixed on ACP panel of size as per SS Letter required building with required screws and at any height as shown by the Engineer – In – Charge.
14. Payment shall be made per No of each letters.
15. Rates are inclusive of all materials labour for fixing & Finishing etc complete.
16. In Gujarati Rates are inclusive of Punctuation marks.

Ex Engineer
G.S.P.H.C.Ltd
Junagadh