

**Name of work :** S.R. to New Seva Sadan-1 (PWD) Office, Dist. Bharuch (Repairs to Outer Plaster Work, Colour Work, Plumbing Work, Flooring Work).

### **SPECIFICATIONS**

**Item No.1 :** Removing and scraping of old deteriorated plaster of any thickness from wall / R.C.C member including stacking of serviceable material and disposal of unserviceable from site of work with all lead and lift.

1. This work shall consist of removing, as here in after set forth, **old deteriorated plaster of any thickness from wall / R.C.C. member** etc. which are in place but interfere with the new construction or are not suitable to remain in place, and of salvaging and disposing of the resulting materials and backfilling the resulting trenches and pits.
2. Existing **old deteriorated plaster of any thickness from wall / R.C.C. member** which are within the **building** and which are designed to be removed shall be removed upto the limits and extent specified in the drawings or as indicated by the Engineer-in-charge.
3. Dismantling and removal operations shall be carried out with equipment and in such a manner as to leave undisturbed, adjacent pavement, structure and any other work to be left in place.
4. All operations necessary for the removal of any existing structure which might endanger new construction shall be completed prior to the start of new work.
5. The structures shall be dismantled carefully and the resulting materials so removed as not to cause any damage to the serviceable materials to be salvaged, the part of the structure to be retained and any other properties or structures nearby.

6. Unless otherwise specified, the superstructure portion of culverts/ bridges shall be entirely removed and other parts removed to below the ground level or as necessary depending upon the interference they cause to the new construction. Removal of overlying or adjacent materials if required in connection with the dismantling of the structures shall be incidental to this item.
7. Where existing culverts/ bridges are to be extended or otherwise incorporated in the new work, only such part of the existing structure shall be removed as are necessary to provide a proper connection to the new work. The connecting edges shall be cut, chipped and trimmed to the required lines and grades without weakening or damaging any part of the structure to be retained. Reinforcing bars which are to be left in place so as to project into new work as dowels or ties shall not be injured during removal of concrete.
8. Steel structures shall unless otherwise provided be carefully dismantled in such a manner as to avoid damage to members thereof. If specified in the drawing or directed by the Engineer-in-charge that structure is to be removed in a condition suitable for re-erection, all members shall be match marked by the contractor with white lead paint before dismantling end pins, nuts, loose plates, etc. shall be similarly marked to indicate their proper location, all pins, pin holes and machined surface shall be painted with a mixture of white lead and tallow and all loose parts shall be securely wired to adjacent members or packed in boxes.
9. Timber structures shall be removed in such a manner as to avoid damage to such timber or lumber as is designated to be salvaged by the Engineer-in-charge.

10. In removing pavements, kerbs, gutters and other structures like guard rails, fences, manholes, catch basins, inlets, etc. where portions of the existing construction are to be left in the finished work the same shall be removed to an existing joint or out and chipped to a true line with a face perpendicular to the surface of the existing strata. Sufficient removal shall be made to provide for proper grades and connections with the new work as directed by the Engineer-in-charge.
12. All concrete pavements, base course in carriage way and shoulders etc. designed for removal shall be broken to pieces whose volume shall not exceed 0.02 cubic meter and stockpiled at designated locations if the material is to be used later or otherwise arranged for disposal as directed.
13. Where directed by the Engineer-in-charge holes and depressions caused by dismantling operations shall be backfilled with excavated or other approved materials thoroughly compacted in line with surrounding area.
14. All materials obtained by dismantling shall be the property of Government. Unless otherwise specified, materials having any salvage value shall be placed in neat stacks of like material with the right-of-way as directed by the Engineer-in-charge, for which Contractor will remain responsible for its safe custody and preservation for 60 days after recording measurements of the salvaged materials.
15. Pipe culverts that are removed shall be cleared and neatly piled on the right-of way at points designated by the Engineer-in-charge.

16. Structural steel removal from old structure shall, unless otherwise specified or directed, be stored in a neat and presentable manner. Structures or portions thereof which are specified in the contract for re-erections shall be stored in separate piles.
17. Timber or lumber from old structure which is designated by the Engineer-in-charge as materials to be shall have all nails and bolts removed there from and shall be stored in neat piles locations suitable for loading.
18. All the products of dismantling operations which in the opinion of the Engineer-in-charge cannot be used or auctioned shall be disposed as directed, within 100 metres.
19. The work of dismantling structures shall be paid for in units indicated below by taking measurements before and after as applicable.
 

(i)	Dismantling Stone/brick/concrete (Plain and Reinforced) masonry	Cubic Metre
(ii)	Dismantling flexible and cement concrete pavement./RCC pipes	Cubic Metre
(iii)	Dismantling steel structure.	Tonne
(iv)	Dismantling timber structure	Cubic Metre
(v)	Dismantling pipes, guard rails, kerbs, gutters and fencing Linear	Metre
(vi)	Utility poles.	Nos.
20. The contract unit rates for the various items of dismantling shall by payment in full for carrying out the required operations including full compensation for all labour, materials, tools, equipment, safeguards and incidentals necessary to complete the work. These will also include excavation and backfilling where necessary and for handling, salvaging, piling and disposing of the dismantled materials within all lifts and upto all lead and lift.
21. Payment shall be made on **Square Meter** basis.

**Item No.2** : Dismantling tiled of stone floors laid in mortar including stacking of serviceable materials and disposal of unserviceable materials with all lead and lift.

**1.0. Workmanship**

**1.1.** The dismantling tiled of stone floors laid in mortar shall consist of dismantling of one or more parts of the building as specified or shown in the drawings. Dismantling 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 the drawings.

**1.2.** The dismantling tiled of stone floors laid in mortar 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 from the Engineer-in-charge before starting the work.

This however will not absolve the contractor from the responsibility of proper and safe demolition.

**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 adjoining property.

**1.4.** Wherever required, temporary enclosures or partitions shall also be provided. Necessary precautions shall be taken to keep the dust nuisance down as and where necessary.

**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 as directed.

- 1.6. All materials obtained from demolition shall be the property of Government unless otherwise specified and shall be kept in safe custody until handed over to the Engineer-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 the Engineer-in-charge.
- 1.8. On completion of work, the site shall be cleared of all debris rubbish and cleaned as directed.

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 and payment**

- 2.1. Measurements of all work except hidden work shall be taken before dismantling tiled of stone floors laid in mortar and no allowance for increase in bulk shall be allowed. The dismantling tiled of stone floors laid in mortar 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 of work,
- 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 adjoining property and providing temporary enclosures or portions where considered necessary.

The rate shall include staking the unserviceable materials as directed with all lead and lift.

**2.2.** The Rate shall be for a unit of one sq. meter.

**Item No.3** : 20mm thick sand faced cement plaster on walls upto height 10 metre above ground level consisting of 12mm thick backing coat of CM. 1:3 (1-cement : 3-sand) and 8mm thick finishing coat of CM. 1:1 (1 cement: 1-sand) etc. complete extra for scaffolding.

**1.0. Materials**

**1.1.** Water shall conform to M-1. The cement mortar of proportion 1:3 shall conform to M-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 is 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 plaster work.

**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 plastering 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 them wet.

**2.3.5.** 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.

**2.3.6.** The finishing shall be gutkha finishing with 1 cm x 1 cm grooves shall be done as directed.

### **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 a centimeter.

- 3.3.** Thickness of the plaster shall be exclusive of the 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 20 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) No deductions 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 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 reveals, 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 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.

- 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 the wall.
- 3.9.** In case of openings of area above 3 sq. mt. each, deduction shall be made for openings but jambs, soffits and sills shall be measured.
- 3.10.** The rate shall be for a unit of **One Sq. meter.**

**Item No.4** : Applying two coats of (white cement based) or (acrylic lappy (putty) or equivalent and two coats of primer of approved brand and manufacture on new wall surface to give an even shade including thoroughly brushing the surface free from mortar dropping and other foreign matter and sand papered smooth for All floor.

## **1.0. Materials**

Water shall be conform M-1. The acrylic emulsion paint shall conform to I.S.: 5411-1969 (Part-I).

## **2.0. Workmanship**

The painting work shall be of Birla or Asian acrylic lappy (Putty) and two coats of primer of approved brand & manufactures on new wall surface to give an even shade.

**2.1. 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.

**2.2. Preparation of surface** : 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 of distemper.

**2.2.1.** 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 paris mixed with water on entire surface including filling up the undulation and then sand papering the same after it is dry.

### **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 kept uniform.

**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 not be 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 drops etc.

**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, holes etc.
- (c) Splashes on floors etc. shall be cleaned out, without delay as they will be difficult to remove after hardening.

- (d) Washing or surfaces treated with emulsion paint shall not be done within 3 to 4 weeks of application.

**2.6. Protective measures :** 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 shall be cleaned of white wash splashed if any.

### **3.0. Mode of measurements and payment**

**3.1.** All the work shall be measured in the decimal system as under:

- (a) Dimensions shall be measured to the nearest 0.01 m.
- (b) Area in individual item shall be worked out to the nearest 0.01 sq.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.** No deductions shall be made for ends of joists, beams, posts, etc. and openings not exceeding 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 of finish.
- (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, sills etc.

3..4 In case of area of openings exceeding 3 sq. mt. each, deductions shall be made for openings but jambs, soffits, sills shall be measured.

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 steel sheets..... 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 general area.

3.8 Extra payment shall be done on ceiling and sloping roofs.

3.9. The rate shall include the cost of ail materials, labour, scaffolding, protective measures etc. involved in all the operations described above.

4.0 The rate shall be for a unit of One sq. meter.

**Item No.5** : Finishing wall with Weather proof exterior acrylic emulsion paint With one coat of primer on wall surface to give an required shape even shade after thoroughly brushing the surface to remove all dirt, and remains of loose powdered materials etc complete for All floor.

## **General**

This work shall consist of painting the walls with **APEX ultima of Asian exterior acrylic emulsion paint** of the shape and dimensions shown on the drawings and conforming to these Specifications or as approved by the Engineer in charge. Read and use apex ultima in place of apex.

## **MATERIALS**

### **1.0 APEX ultima exterior Emulsion Paint**

APEX exterior emulsion paint shall be of specified colour as approved by Engineer in charge the ready mixed APEX exterior emulsion paint shall not be allowed, If however ready mix APEX exterior emulsion paint of specified shade or tint is not available white ready mixed paint with approved Steiner will be allowed in such case the contractor shall ensure that the shade of the paint so allowed shall be uniform APEX exterior emulsion paint shall meet with the following general requirements

1. APEX exterior emulsion paint shall not show excessive setting in freshly opened full can and shall easily be redispersed with a paddle to a smooth homogeneous state. The APEX exterior emulsion paint shall show no curding, livering cracking or colour separation and shall be free from lumps and skins.
2. The APEX exterior emulsion paint as received shall brush easily possess good leveling properties and show no running or sagging tendencies.

3. The APEX exterior emulsion paint shall not skin within 48 hours in a three quarters filled closed container
4. The APEX exterior emulsion paint shall dry to a smooth uniform finish free from roughness grit unevenness and other imperfections
5. Ready mix APEX exterior emulsion paint if allowed for specified shade, shall be used exactly as received from the manufacturers and generally according to their instruction and without any admixtures whatsoever.

## **2.0 WORKMAN SHIP**

### **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 (joola) may be used for distempering. Where ladders are used, pieces of old gunny bags

### **3.0 Application coat :**

The APEX exterior emulsion paint shall be diluted with water or any other prescribed thinner in a manner recommended by the manufacturer only. Sufficient quantity of required for a day's work shall be prepared.

- 3.1 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 APEX exterior emulsion paint, taking care not to rub out the priming coat. All loose particles shall be dusted off after rubbing. Minimum two coats of the APEX exterior emulsion paint 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 preceding coat. The finished surface shall be even and uniform without patches, brush marks, distemper drops etc.

- 3.2** Sufficient quantity of the APEX exterior emulsion paint shall be mixed to finish one room at a time.

**3.0 MODE OF MEASUREMENT & PAYMENT :**

- 3.1.** The unit rate wall painting with APEX exterior emulsion paint shall include the cost of all materials, tools and plant required for mixing, cleaning brushing sand papering & painting with all required specials and Lapi compound, finishing as per direction of the Engineer-in-charge, and all other incidental expenses for producing pipe line work of specified diameter to complete the structure or its components as shown on the drawings and according to these specifications. They shall also include the cost of making, fixing and removing of all scaffolding and forms required for the work.
- 3.2** The rate of Wall painting with APEX exterior emulsion paint shall include the cost of all labour, materials tools and plant scaffolding and all incidental expenses as described herein above.
- 3.3.** The Wall painting with APEX exterior emulsion paint shall be measured for its length and Height limiting dimensions to those specified on plan or as directed. The rate shall be for a unit of one square meter.
- 3.4.** The rate shall be for a unit of **One Sq.Mtr.**

**Item No.6** : P & L 24" x 24" vitrified 8 mm thick tile flooring over 20 mm (average) base of cement mortar 1:6 ( 1 cement: 6 coarse sand) on new surface or fixing on existing flooring by adhesive material including dismantling of existing flooring and jointed with color cement slurry including finished with flush pointing & cleaning the surface etc.

## **1.0. Materials**

Water shall conform to M-1. Cement mortar shall conform to M-11. **24" x 24" Vitrified tiles** (Kajeria, Asian, Bell ceramic, Somani or equivalent standard quality) **8 mm thick** shall conform to relevant Indian standard. The size & colour of vitrified tiles shall be approved by Engineer in charge.

## **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 mason to place wooden planks across and squat on it.

**2.1.2.** The **vitrified flooring tiles** shall be laid on cement mortar bedding of 12 mm. thick in CM. 1:6. 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 8 mm. at any place and average 20 mm. thickness. The proportion of the cement mortar shall be as specified in the item.

### **2.2. Fixing tiles :**

**2.2.1.** The tiles before laying shall be soaked in water for at least two 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 and gently 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 per pattern.

**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 7 days. The pattern shall be approved by Engineer in charge.

### **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 upto 0.1 sq.mt. Nothing extra shall be paid for laying the floors at different levels in the same rooms.

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

**Item No.7** : Providing and laying BITUMAT SYNROOF HI-BUILD, an elastomeric , premium quality acrylic coating on terrace in two layers total of avg. 1 mm th. waterproofing membrane finished which consist coat of SYNROOF primer and middle layer of 80 GSM geotextile with ultra violet resistance and working up to any height with the 5 ears of guaranty against New Construction and 3 years for Old buildings for any leakage etc. complete as per detail specification and as directed by Engineer In Charge.

#### **GENERAL : -**

BITUMAT SYNROOF HI-BUILD an elastomeric premium quality acrylic coating, may be applied by brush, roller, squeegee or spray equipment depending on site conditions. To spray, select nozzle size of at least 0.028 in first checking the spray equipment to ensure suitability. All surface to be coated must be clean, dry, free from dust, dirt, oil and other contaminates. Coverage varies depending on factors such as type and quality of substrates i.e. surface regularly and application method.

Apply in separate coats each at the right angle to the one before. The final coating thickness to be achieved depends on the requirements of the individual roof. A final dry film thickness between 0.5 and 1.2 mm may be built-up.

#### **PREPARATION : -**

Surface preparation is a very vital issue and this influence the integrity of the waterproofing system. Hence, care must be exercised when the preparation done. This is very important when re-roofing over an existing old roof.. Instructions should be followed strictly. All surface to be coated must be clean, dry, free from dust, rust and laitance. Concrete and cementations subtracts must be well completed with a wood float type



finish. Be at least 28 days old and well dried. Uncured concrete surface will have moisture trapped inside and will turn gaseous when temperature rises. This will lead to blistering and even delaminating from the surface. Wooden or metal panels to be firmly fixed in position.

Terrazo roof tiles : Clean and repair damaged joints. Ensure that the tiles are firmly grouted.

Remove all loose material, Metal roofs. Wire brush to remove moss, mildew, loose paint, and rust areas, then clean surfaces with a broom before priming. High pressure water brooming may be used, if necessary.

#### **PRIMING : -**

Old asphalts and bituminous roofing felt. Cut felt blisters crosswise, dry and rebond with suitable adhesive. Allow to cure. Then prime cleaned surface with BITUMAT SYNROOF HI-BUILD diluted with 20% water. Concrete & Terrazo tile roofs. Following removal of all loose and other alien material, prime with Synroof High-Build diluted with 20% water greater dilution may lead to weaker bonding with substrates.

Metal roofs, Clean and remove all rust and apply a rust inhibitive primer. Follow this by applying metal primer to all corroded surfaces. Other roofs should be the roof be affected by algae or fungal growth, use a stiff bristled broom to remove this before treating the cleaned surface with suitable fungicide, and apply primer coat by diluting BITUMAT SYNROOF HI-BUILD with 20% water.

#### **APPLICATION : -**

Primer must be completely dry before the coat is applied Old asphalts BITUMAT SYNROOF HI-BUILD may be applied by soft brush, roller or

spray gun. For spraying, BITUMAT SYNROOF HI-BUILD may be slightly diluted with water. To great a dilution may lead to sedimentation and blocking of spray gun. Apply two coats , each at the approximate rate of 0.8 kg/sqm. (excluding the BITUMAT SYNROOF HI-BUILD prime coat). Where substantial movement is anticipated in the substructure, a mesh reinforcement (60/80 gsm thermobonded anticipated as part of a “ sandwich” membrane system is used. Lay this wet first coat before application of subsequent coats. All detailing to pipes, upstands, drains, projected lin etc. should be mesh re-inforced in this way.

#### **CURING : -**

Allow 24 Hours between coats. A final curing time of 48 Hours is adequate at normal working temperature. Ensure curing is completed before laying thermal insulation boards, mechanical protect and other coverings. Low temperature and High atmospheric humidity will slow down the curing rate, and vice versa.

#### **MECHENICAL PROTECTION : -**

Accessible roofs. The installed Bitumat Synroof Hi-Build can either be covered by insitu concrete screed or by thermal insulation. Place a non-woven polyester separation layer over the acrylic waterproofing membrane followed by appropriate thermal insulation boards. Then lay kraft paper or polyethylene sheets as separation layer over the insulation board and place the topping screed of 4 to 5 cms thickness or suitable cement tiles. Non-accessible roofs. Place a non-woven polyester separation layer over the acrylic waterproofing membranes followed by appropriate thermal insulation boards. Cover the insulation with another layer of woven

polyester separation layer and place 15/30 gauge washed gravel to a minimum depth of 5cm. For thicker insulation boards, the gravel depth should be at least equal to that of board thickness.

#### **PRECAUTIONS : -**

Bitumen or asphalt surfaces to receive a coating of Accessible roofs. The installed Bitumat Synroof Hi-Build can either be covered by insitu concrete screed or by thermal, BITUMAT SYNROOF HI-BUILD should be totally dry. Trapped moisture can lead to severe problems later, Never apply if rain is imminent. Application of thick coat at temperature below +5°C may result in incomplete film formation, with reduce elasticity and the possibility of crack forming . BITUMAT SYNROOF HI-BUILD is resistance to light foot traffic. However, heavy traffic, high heel shoes, furniture, etc. will cause damage. In these cases the membrane should be protected by tiles, slabs etc.

Do not clean the cured BITUMAT SYNROOF HI-BUILD coating with brooms that have hard bristles. These may cause damage. Do not use BITUMAT SYNROOF HI-BUILD on areas that will be constantly submerge in water.

#### **CLEAN-UP : -**

As good roofing practice, flush all hoses, equipment and tools with water immediately after use.

#### **STORAGE : -**

Keep away from direct sunlight and preferably store below 30°C and above +5°C. Protect from frost. When stored in unopened containers. Expect a minimum shelf life of one year.

## **HEALTH AND SAFETY : -**

**Toxicity** – non toxic and odourless.

**Flammability** – Non flammable when wet. The cured film will burn but is not a fire hazard.

**Skin Contact** – Prolonged contact is to be avoided. Use of a barrier cream or gloves will protect sensitive skins.

**Cleaning** – Remove with water when wet and proprietary hand cleaner when dry.

**Medical assistance** – This Should be sought if BITUMAT SYNROOF HI-BUILD is ingested or comes into contact with eyes. Eyes should be rinsed with copious amount of clean water. Ventilation to the working areas is desirable.

## **TECHNICAL DATA**

<b>Property</b>	<b>Typical Value</b>	<b>Test Method</b>
1. Solid Content, %	64 (+/-1)	ASTM-D-1076
2. Viscosity, CPS	50,000 - 70,000	Brookfield
3. Density, Kg/l	1.30 (+/0.05)	ASTM-D-1475-16
4. Applicatin Temp, °C	+5 (minimum)	In -House test

5. Curing Time, at 25°C	Approx. 8 hr. for touch dry	In -House test
6. Service Temp, °C	Approx. -5 to 100	In -House test
7. Tensile Strength, N/CM <sup>2</sup>	480	ASTM-D-412
8. Elongation, at Break %	440	ASTM-D-412
9. Hardness, Shore A	68	ASTM-D-2240
10. Permeability	Pass	ASTM-E-398
11. Dry Peel Adhesion, lb/sq.in.	65	ASTM-E-297
12. Flexibility	No cracking of film after 1000hrs accelerated weathering conditions and flexed 180 degrees	In -House test
13. UV Resistance	2000 hrs. No deterioration, no color fade	ASTM-D-822
14. Colours	Satin White & Grey, other colours by request	
15. Coverage	For 1 mm thick dry film allow approx. 2kg/m <sup>2</sup> .	

#### **Mode of measurement & payment :-**

The entire work will be measured in Square Meter basis and rate will be paid on per square meter basis only. The Entire work is to be carried out up

to the satisfaction of architect /Engineer in charge. The rate is inclusive of all tools, tackles, fabrication, wastage, overlapping, scaffolding and necessary civil work and all lead and lift up to any height and everything to complete the work in perfect manner. The 2.5% of the total completed project cost should be withheld with the GSBSTB as a special deposit for guaranty warranty against any leakage, seepage from waterproofing treated surface and release only after the 5 year.

Note : For small work of less than 50.0 Sq.Mt. The surface should be prepared by the owner as per requirement of treatment.