

8.01 Providing and laying good quality brickbat coba water proofing of average 115 mm. thick for balcony, terrace and all the floors, cleaning and applying cement slurry with water proofing chemical like Cico no. 1 arranging brick bats in cement mortar 1:5 according to the slope, adding suitable chemical for water-tightness and testing the same after 3 days ponding, providing on top cement mortar 1:3 including waterproofing compound and keeping the top wired finish (to receive china mosaic) / finishing the top with neat cement slurry @ 2.75 kg / m² (if china mosaic is not carried out) as per direction and instructions, complete at all levels and floors, including rounding of the junctions and extending them upto 15 cm. along the wall or beam and furnishing a guarantee bond for 10 years. The work should be carried out through an approved specialized water proofing agency (unfinished wall to wall measurement will be considered only including vata. vata will not be measured and paid separately)

1.0 **Materials :** Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6. Stone grit shall conform to M-8. Brickbats shall conform to M-14. Approved waterproofing compound shall be added in cement mortar as per manufacturer's specification and shall conform to M-67. Cement mortar shall conform to M-11.

2.0 **Workmanship :**

2.1 Unless otherwise specified proprietary waterproofing treatment shall be executed through M/s. India Waterproofing Co. or approved equivalent, who should give a guarantee of 10 years on stamp paper to the employer directly and the tender rate shall be inclusive of the same.

A guarantee bond on appropriately stamp paper shall be given by the contractor to the Institute in the manner form prescribed below:

FORM OF GUARANTEE BOND

"I/We(Contractor) hereby guarantee that work will remain unaffected and will not be in any way damaged by water or any other form of humid condition, for a period of 10 years after completion of the work of water-proofing as per the terms and conditions of the contract and the Contractor hereby indemnifies and agrees to save the Institute from any loss and or damage that might be caused on account of water and or other similar form of humid conditions and hereby guarantees to make good any loss or damage suffered by the Institute and further guarantees to redo the affected work without claiming any extra cost."

2.2 This guarantee shall remain in force for a period of 10 years from the completion of the work under the contract and it shall remain binding to the Contractor for period of 10 years.

2.3 While tendering the contractors should clearly stipulate the type of treatment proposed to be provided by them and the name and particulars of firm through whom they propose to carry out the treatment.

2.4 The surface to be treated shall have a minimum slope of 1 in 120. The grading shall be carried out prior to the application of water proofing treatment by cement mortar. The brickbats of varying size as per requirement shall be arranged in proper gradient using cement mortar 1:5 according to the desired slope. Suitable waterproofing chemical shall be added to make the CM water tight and then cement mortar 1:3 shall again be provided on top of the brickbats, including the waterproofing compound which shall be added in the CM and finishing on top with neat cement @ 2.75 kg/m². The top surface shall be finished rough surface as per the direction so as to receive the next finishing item.

- 2.5 The testing shall be done by ponding for atleast 48 hours.
- 2.6 Well defined cracks other than hair cracks in the treated structure shall be cut to 'V' section, cleaned and then filled up flush with cement sand slurry or with bitumen conforming to IS : 702-1961.
- 2.7 The surface under treatment, part of parapet (incase of balcony or terrace) and gutters, drain mouths etc. over which the water proofing treatment is to be applied, shall be cleaned of all foreign matter such as fungus, moss and dust by wire brushing and dusting.
- 2.8 Drain outlet shall be suitably placed with respect to the surface gradient to ensure rapid drainage and prevention of local accumulation of water on the treated surface. Masonry drain mouth, shall be widened sufficiently and rounded with cement mortar.
- 2.9 For cast iron drain outlets, a groove shall be cut all around to touch the treatment.
- 2.10 When a pipe passes through a roof on which water proofing treatment is to be laid, a cement concrete angle fillet shall be built round it and the water proofing treatment shall be taken over the fillet.
- 2.11 In case of parapet wall over 450 mm. in height, for tucking in the water proofing treatment, a horizontal groove 75 mm. wide and 65 mm. deep at minimum height of 300 mm. above terrace level shall be left in the vertical face at the time of construction, the horizontal face of the groove shall be shaped with cement mortar 1:4.
- 2.12 In case of low parapet where the height does not exceed 450 mm., no groove shall be provided and the water proofing treatment shall be carried right over the top.
- 2.13 In case of existing R.C.C. and stone wall cutting the chase for tacking in the water proofing treatment is not recommended.
- 2.14 At the junction between the roof and vertical face of the parapet wall, a fillet 75 mm. in radius shall be constructed.
- 2.15 At the drain mouths the fillet shall be suitably cut back and rounded off for each application of water proofing treatment and easy flow of water.
- 2.16 Outlet at every low dividing wall about less than 300 mm. in height, shall be rounded smooth and corners rounded off for easy application of water proofing treatment.
- 3.0 Mode of Measurements and Payment :**
- 3.1 The rate shall include providing water proof cement concrete terracing of adequate thickness to give desired slope for drainage of rain water from terraces.
- 3.2 The measurements for this item shall be taken as under:
- (a) Water proofing of roof shall be measured in m², plan area of treated surface shall be measured correct to a centimeter.
 - (b) Measurement shall be taken for the plan area of roofing/terrace. Flashing treatment including flashing over the parapet wall up to 300 mm from terrace. Low dividing walls and expansion joints and at the pipe projections etc. Overlapping and tucking into flashing grooves shall not be

measured extra.

(c) In measurements, no deduction shall be made for either openings or recess for chimney stacks, roof lights etc. having areas upto 0.4 m². Deduction shall be made in measurements for full opening but nothing extra shall be paid for extra labour and materials in forming such openings.

- 3.3 The rate includes cost of all materials and labour required to carry the works as per the above specifications. The rate also includes cleaning of surface and treating the cracks shall not be paid separately. Cutting of horizontal grooves in parapet walls for tucking in water proofing treatment shall not be measured or paid separately.
- 3.4 Measurements shall be based on the drawings or as executed on site, the lesser of the two shall be given. No extra payment shall be made for rounding and vata at the junction of slab & parapet. A deposit at the rate of 50% of the cost of this item from the running and final bills shall be recovered and retained for the first one year after completion of the work and 10% of the same shall be retained for the balance of the guarantee period and shall be refunded only after the completion of the guarantee period.
- 3.5 This item shall be measured and paid in m².

H01

WATER PROOFING WORKS:

Providing and laying water proofing treatment over RCC roof in 3 courses, as specified below, after thoroughly cleaning surface of the roof slab with wire brush, cleaning of dust and foreign matters, raking and cleaning of construction joints if any etc., complete to make the surface suitable for receiving water proofing treatment.

I COURSE : The existing covering on slab to be removed and the surface of the RCC slab exposed. Construction joints if any are to be raked and cleaned. A coat of cement slurry at the rate of 4.4kg/sqm mixed with acrylic water proofing compound (as per manufacturers specification) is spread uniformly over the RCC roof area and ensuring that the slurry penetrates into the RCC slab below and fills all micro cracks and all other porous areas. Over this a layer of 15mm thick cement mortar 1:5, mixed with acrylic water proofing compound as per manufacturers specifications shall be laid to place the II course.

II COURSE : a layer of Brick on edge with 15mm wide gaps filled with CM 1:5 mixed with acrylic water compound is laid (i.e., bricks placed vertically on its 75 x 115mm side or 75 x 230mm side as the case may be, to suit the required thickness of course), when the bottom layer (I course) is still green and laid to slope of 1 in 60 as per roof drainage scheme using approved well burnt bricks (water absorption not more than 20%) with minimum thickness of 65mm at outer edge including the top and bottom plastering (I & III course) to get required gradient, laying the bricks with not less than 15mm gap around, which shall be properly filled completely and compacted with CM 1:5 mixed with acrylic water proofing compound as per manufacturers specification using full bricks or bricks cut to required size to lay the course with single layer with gradient said above for adequate drainage.

III COURSE : 20mm thick cement mortar 1:4 mixed with acrylic water proofing compound with a layer of chicken mesh 12mm x 26G and marked with 300mm x 300mm false squares including curing etc., for not less than 7 days, complete all as per specifications and directions of Engineer in charge. The 20mm thick layer shall be carried out in two layers of 10mm thick with an inter layer of chicken mesh of 12mm x 26G laid in between the two layers of cement mortar.

NOTE : The acrylic water proofing compound to be used shall be (a) CHEMSEAL - manufactured by M/s.

Overseas Water Proofing Corporation, Mumbai. The proportion of CHEMSEAL shall be 2% by weight of cement. OR CONPLAST X 421 IC - integral water proofing compound manufactured by M/s. FOSROC Chemicals (India) Ltd., Bangalore. The proportion of CONPLAST X 421 IC shall be 130ml per 50 kgs of cement. OR ROFFE HYPROOF manufactured by M/s Pidiite Industries Ltd. (Erstwhile M/s. ROFFE Construction Chemicals Pvt. Ltd.), liquid integral water proofing compound at 140ml per 50kg of cement OR Equivalent. (b) The second course of the treatment shall be laid in using full bricks / cut bricks as may be required for laying the course in 1 in 60 slope. (c) The rate to include all labour, material and contingent coats for execution of work in a workman like manner including curing, etc., complete for respective courses. (d) The plane horizontal measurements of roof slab only shall be measured for payment. (e) The theoretical cement consumption required for the above work will be worked out based on co-efficient for each layer of work as per specification. (f) The work shall be got executed through specialised water proofing agency. (g) The contractor should finish a guarantee bond in the prescribed format for satisfactory water proofing performance for 10 years.

Relevant specification of item no. 8.01 to be followed.

- 8.02 Providing and laying cement water proofing of average 115 mm. thick (average) for terraces, balcony and at all floors using water proofing compound of approved make in three layers first layer / base coat of 15mm cement mortar using CM 1:3 (1 cement : 3 coarse sand) second layer of arranging brick bats in CM 1:3 according to the slope and third layer of 20mm thickness in CM 1:3 (1 cement : 3 coarse sand) including addition of water proofing compound and finishing the top with neat cement @ 2.75kg / m² and wired finish, including laid to proper slope to drain of water entirely, including rounding of the junctions and extending them upto 30 cm. including curing, scaffolding for all leads and lifts for all heights / all levels all as per specifications and direction of Engineer - in - charge. The contractor should give a guarantee bond for 10 years as per the format. The work should be carried out through an approved specialized water proofing agency (unfinished wall to wall measurement will be considered only including vata. vata will not be measured and paid seperately).**

The relevant specification of item no. 8.01 shall be followed except that the top finish to be wired finish.

- 1) Waterproofing treatment with brickbats shall be carried out as described above in item no 8.01.

A guarantee bond on appropriately stamped paper shall be given by the contractor to the Institute in the manner form as described in item no. 8.01.

- 8.03.a Providing & laying Box type waterproofing treatment through The India waterproofing Co. or equivalent to floors and vertical surfaces of under ground structures. The treatment comprises of 'Cetroof' waterproofing layer, average 120 mm. thick , using two layers of kotah stones placed diagonally with cut joints.**

1.0 Material and Workmanship :

- 1.1 Rough kotah stone shall conform to M-48. The relevant specification of other materials shall be as in item no. 8.01.
- 1.2 75 mm. thick 'Cetroof' layer shall consist of the following layers :-

- 1) Bottom layer of 12 mm. thick 1:4 CM bedding with approved waterproofing chemical.
- 2) 20 mm. thick rough kotah stone laid diagonally above the 1st layer with cut joints. Joints shall be sealed by 1:1 CM with approved waterproofing chemical.
- 3) The above two layers shall be laid again, in the same manner as described above.
- 4) On top of the 4th layer, a final layer of 20 mm. thick I.P.S. shall be laid.

1.3 A guarantee bond on appropriate stamp paper shall be given by the contractor to the Institute in the manner form as described in item no. 8.01.

2.0 **Mode of Measurements and Payment :** The relevant specifications of item no. 8.01 shall be followed.

8.03.b Providing & laying Box type waterproofing treatment through The India Waterproofing Co. or equivalent to external surfaces of under ground structures. The treatment comprise of 'Cetroof' waterproofing layer, average 35 mm. thick for walls, using one layer of kotah stones placed diagonally with cut joints.

The relevant specification of item no. 8.03.a shall be followed except that 35 mm. thick waterproofing layer shall be done instead of 75 mm. thick layer.

35 mm. thick 'Cetroof' layer shall consist of the following layers :-

- 1) Bottom layer of 12 mm. thick 1:4 CM bedding with approved waterproofing chemical.
- 2) 20 mm. thick rough kotah stone laid diagonally above the 1st layer with cut joints. Joints shall be sealed by 1:1 CM with approved waterproofing chemical. Then the surface shall be finished smooth with neat cement slurry.

A guarantee bond on appropriate stamp paper shall be given by the contractor to the Institute in the manner form as described in item no. 8.01.

8.04 Providing 15 mm. thick water proof cement plaster in single coat on any surface, at all heights, finished even and smooth/rough wired finish in CM 1:3 (1 cement : 3 sand), including providing and mixing water proofing materials of approved make in cement mortar in proportion recommended by the manufacturer. (rates shall be inclusive of cleaning and hacking the RCC surfaces). Rate shall be inclusive of scaffolding, curing for all heights / all floors / all levels / all shapes or size all as per specifications and direction of Engineer - in - charge. The contractor should give a guarantee bond for 10 years as per the format. For all civil, plumbing & electrical works.

1.0 **Materials & Workmanship :** The relevant specifications of item No. 7.01 shall be followed except that the water proofing materials of approved make as per item description or equivalent shall be added to the cement at the rate specified or as directed by the Engineer-in-charge. The proportion of water proofing materials to be mixed with 50 kg. bags shall be as recommended by the manufacturer of the water proofing material, used. The thickness of plaster shall be 15 mm. thick instead of 10 mm.

2.0 **Mode of Measurements and Payment:**

2.1 The payment shall be made for 15 mm. thick water proof plaster work, as per the relevant specifications of item no. 7.01.

2.2 The rate shall be for an unit of one m², for plaster work using water proofing material per bag of

cement weighing 50 kg.

- 2.3 Measurements shall be based on the drawings or as executed on site, the lesser of the two shall be given. No extra payment shall be made for rounding and vata at the junction of slab & parapet & at vertical corners.

- 8.04.a Providing 20 mm. thick water proof cement plaster in two coats on any surface, at all heights, finished even and smooth/rough wired finish, first coat of avg thickness of 12 to 15mm in CM 1:3 (1cement : 3 coarse sand) and second coat of avg 6mm thickness in CM 1:3 (1 cement : 3 sand), including providing and mixing water proofing materials of approved make in cement mortar in proportion recommended by the manufacturer. (rates shall be inclusive of cleaning and hacking the RCC surfaces). Rate shall be inclusive of scaffolding, curing for all heights / all floors / all levels / all shapes or size all as per specifications and direction of Engineer - in - charge. The contractor should give a guarantee bond for 10 years as per the format. For all civil, plumbing & electrical works.**

Materials & Workmanship : The relevant specifications of item No. 7.01 shall be followed except that the water proofing materials of approved make, conforming to M-67, shall be added to the cement at the rate specified or as directed by the Engineer-in-charge. The proportion of water proofing materials to be mixed with 50 kg. bags shall be as recommended by the manufacturer of the water proofing material, used. The thickness of plaster shall be 20 mm. thick instead of **thickness specified**. Work shall be carried out through specialized agency approved by consultant& engineer in charge .A 10 years guarantee bond on required amount stamp paper shall be furnished by contractor on completion of the work

2.0 Mode of Measurements and Payment:

- 2.1 The payment shall be made for 20 mm. thick water proof plaster work, as per the relevant specifications of item no. 7.01.

- 2.2 The rate shall be for an unit of one m², for plaster work using water proofing material per bag of cement weighing 50 kg.

- 2.3 Measurements shall be based on the drawings or as executed on site, the lesser of the two shall be given. No extra payment shall be made for rounding and vata at the junction of slab & parapet & at vertical corners. **A deposit at the rate of 50% of the cost of this item from the running and final bills shall be recovered and retained for the first one year after completion of the work and 10% of the same shall be retained for the balance of the guarantee period and shall be refunded only after the completion of the guarantee period.**

- 8.05.a Providing and laying cement water proofing of minimum 25 mm. thickness, using bitumen, 6 mm. thick stone grit and cement mortar 1:6 laying Permaguard, finishing the top with 25 mm. screed concrete/cement concrete or any other material as per the choice of the Engineer-in-charge, etc. complete, including furnishing of a guarantee for 10 years. The work should be carried out as per the instructions of the manufacturer of Permaguard, M/s. India foils Ltd., for terraces and under roof gardens.**

1.0 Materials :

- 1.1 Permaguard is an aluminium foil/strip laminated with polythene film on both sides. The edges of the strips are overlapped and sealed by a heat-sealer or hot molten bitumen to make it a

continuous sheet. At present Permaguard is marketed by M/s. India Foils Ltd. It shall conform to M-86.

- 1.2 Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6. Stone grit shall conform to M-8. Cement mortar shall conform to M-11. Bitumen of grade 85/25 or 95/15 shall conform to IS : 73.

2.0 Workmanship :

- 2.1 The relevant specification of item no. 8.01 shall be followed.

- 2.2 The work of waterproofing shall be carried in terraces and under roof garden, comprising of :

1) A layer of cement plaster in CM 1:4 or screed concrete by adding 10% 6 mm. stone grit to the above mentioned cement plaster. This layer shall be applied after cleaning the base surface of all debris with water. The thickness of the layer must be maintained between 12 mm. to 75 mm. depending on the length of the terrace and the desired gradient.

This layer may however be omitted if necessary gradient is already provided in the RCC slab and the slab is smooth and evenly finished.

2) A coat of molten bitumen of desired temperature is then applied on the area equal to the width of the Permaguard strip to be laid subsequently.

If the Permaguard strips are to be heat-sealed, then the overlaps are kept free of bitumen. Otherwise, molten bitumen is also applied over the overlaps before pressing the strips together.

3) Permaguard strips are laid so that the first strip of Permaguard is laid along the bottom of the slope. The subsequent strips are laid in the same manner, ensuring that the lower edge of the second strip overlaps on the upper edge of the first strip, overlap width being min. 50 mm. wide. These overlaps are sealed with heat-sealer or molten bitumen to make a continuous sheet of Permaguard.

4) When there is a parapet wall, a groove/niche shall be made (50 mm. in depth & 125mm above roof level) all along the parapet. While laying Permaguard, leave an extra 175 mm. (both lengthwise and widthwise) after the end of the roof. Apply molten bitumen all along the parapet wall covering the area upto the groove and the groove itself. Insert the 50 mm. (of 175 mm.) of Permaguard into the groove and press the remaining 125 mm. onto the wall. Seal the groove with cement concrete 1:2:4.

5) For laying Permaguard near/around drain pipes, make a circular tube of Permaguard overlapping one end over the other. The tube should approximately be of the same dia. as that of the pipe. Insert this tube into the pipe leaving 100 mm. projection out, keeping the lap joint of the tube on top. Cut this 100 mm. at right angles to each other to make 4 strips. 3 of these are flushed on the parapet wall and the 4th into the roof with hot molten bitumen. The 125 mm. Permaguard pressed onto the parapet wall shall have a hole cut slightly smaller than the opening of the drain pipe so that the pipe is not blocked and the material is flushed into the pipe over the already laid Permaguard tube with hot molten bitumen. Lastly brush the mouth of the pipe liberally with hot molten bitumen.

6) Over the Permaguard apply molten bitumen using sprinkler and brush. Sprinkle coarse sand evenly on top of the bitumen layer. This will help to bond the Permaguard to the top finishing layer of either screed concrete or any other desired finish.

CW 8	Water Proofing works
2.3	A guarantee bond on appropriately stamped paper shall be given by the contractor to the Institute in the manner form described in item no. 8.01.
3.0	Mode of Measurements and Payment : The relevant specifications of item no. 8.01 shall be followed.
8.05.b	Providing and laying cement water proofing of minimum 25 mm. thickness, using bitumen, 6 mm. thick stone grit and cement mortar 1:6 laying Permaguard, finishing the top with 25 mm. screed concrete/cement concrete or any other material as per the choice of the Engineer-in-charge, etc. complete, including furnishing of a guarantee for 10 years. The work should be carried out as per the instructions of the manufacturer of Permaguard, M/s. India foils Ltd., for sunken floors of toilets, swimming pools, around basements and swimming pools. The relevant specifications of item no. 8.05.a shall be followed except that the water-proofing shall be for sunken floors of toilets, swimming pools, around basements and swimming pools.
8.05.c	Providing and laying cement water proofing of minimum 25 mm. thickness, using bitumen, 6 mm. thick stone grit and cement mortar 1:6 laying Permaguard, finishing the top with 25 mm. screed concrete/cement concrete or any other material as per the choice of the Engineer-in-charge, etc. complete, including furnishing of a guarantee for 10 years. The work should be carried out as per the instructions of the manufacturer of Permaguard, M/s. India foils Ltd., behind ward-robres and cupboards. The relevant specifications of item no. 8.05.a shall be followed except that the water-proofing shall be done behind ward-robres and cupboards.
8.05.d	Providing and laying cement water proofing of minimum 25 mm. thickness, using bitumen, 6 mm. thick stone grit and cement mortar 1:6 laying Permaguard, finishing the top with 25 mm. screed concrete/cement concrete or any other material as per the choice of the Engineer-in-charge, etc. complete, including furnishing of a guarantee for 10 years. The work should be carried out as per the instructions of the manufacturer of Permaguard, M/s. India foils Ltd., as lining to canals, tanks, ponds, etc. The relevant specifications of item no. 8.05.a shall be followed except that the water-proofing shall be done to give lining to canals, tanks, ponds etc.
8.06	Supplying and mixing with cement for cement concrete/cement mortar, water-proofing compound such as Fosroc, Sika, Cico or any other approved equivalent, as per the requirement and manufacture's specifications.
1.0	Material : Water-proofing compound such as Fosroc, Sika, Cico or any other approved equivalent shall be used. It shall conform to M-67.
2.0	Workmanship : The water proofing materials of approved make shall be added to the cement at the rate specified or as directed by the Engineer-in-charge. The proportion of water proofing materials to be mixed with 50 kg. bags shall be as recommended by the manufacturers of the water proofing material.
3.0	Mode of Measurements and Payment : The rate shall be for an unit of 1 Kg./Litre of water proofing materials used in 1 bag of cement, weighing 50 kg.
Construction of Neutronics Laboratory Building and allied works at Institute for Plasma Research (IPR), Bhat, Gandhinagar. CW 8 - Page 8 of 10	

8.07 Providing and laying, modified bitumen based water proofing system, Thermolay, including top coat of bitumen finished with grit or coarse sand etc. complete, as per manufacturer's instructions and as directed by the Engineer-in-charge.

1.0 Material : Thermolay shall conform to M-87. Bitumen shall conform to IS : 702-1971 and M-P22.

2.0 Workmanship : The subgrade shall be made smooth, even and free from local depressions, loose dirt and other foreign matter. If the subgrade is wetted for cleaning, it shall be allowed to dry thoroughly before it is primed with bituminous primer. The primer is allowed to cure as per the manufacturer's instructions. Then thermolay is laid by torching with a pressure regulated gas torch. A top coat of bitumen finished with grit or coarse sand is lastly applied. However, as application method shall also depend on the site conditions, end use and design characteristics of the structure under consideration, the manufacturer's instructions shall be taken into consideration.

3.0 Mode of Measurements and Payments : The relevant specifications of item no. 8.01 shall be followed except that the work shall be for water proofing using Thermolay. The rate shall be for an unit of one m².

8.08 Providing and laying 50 mm. thick water proof cement concrete flooring for IPS in 1:2:2 (1 Cement : 2 Sand : 2 Graded Aggregate 20mm nominal size) on RCC swimming pool / water tank floor, at all heights in line, level and gradient, including mixing water proofing materials of approved make in cement concrete in proportion recommended by the manufacturer and leaving the surface smooth finish / rough wired finish to receive the glass mosaic tiles etc complete, including curing, scaffolding for all leads and lifts for all heights / all levels all as per specifications and direction of Engineer - in - charge. The contractor should give a guarantee bond for 10 years as per the format. The work should be carried out through an approved specialized water proofing agency (unfinished wall to wall measurement will be considered only including vata. vata will not be measured and paid separately). For all civil, plumbing & electrical works.

Materials & Workmanship : The relevant specifications of item No. 9.12a & 8.01 shall be followed except that the water proof IPS as per item described shall be carried out through specialized approved by consultant & Engineer In Charge agencies.

2.0 Mode of Measurements and Payment:

2.1 The payment shall be made as per the relevant specifications of item no. 7.01.

2.2 The rate shall be for an unit of one m².

2.3 Measurements shall be based on the drawings or as executed on site, the lesser of the two shall be given. No extra payment shall be made for rounding and vata at the junction of slab & parapet & at vertical corners. **A deposit at the rate of 50% of the cost of this item from the running and final bills shall be recovered and retained for the first one year after completion of the work and 10% of the same shall be retained for the balance of the guarantee period and shall be refunded only after the completion of the guarantee period.**

Providing and laying 115mm over deck insulation over terrace water proofing of ex-foliated vermiculite of Porosile / BASF/ MYK as per approved make for roof insulation in the ratio

of 1 :6 (1 cement : 6 Ex foliated vermiculite (by volume)). Density of Ex foliated vermiculite shall be 212 kg/cum. The cement shall be mixed with the ex foliated vermiculite in dry stage & then minimum qty of water shall be added. After screeding the ready mixed material in specified thickness, curing shall be carried out at least for 7 days by sprinkling of required quantity of water so that surface remains damp and not to be done by ponding or flooding. The work includes cleaning of the surface with wire brush thoroughly necessary scaffolding finishing the top surface as best workmanship like manner as per the manufacturers specifications and as directed by Engineer In charge.

a) Thickness 100mm

b) Thickness 75 mm

1.0 Material

1.1 Cement

1.1.1 Cement shall conform to M-3.

1.2 Exfoliated Vermiculite

1.2.1 Exfoliated Vermiculite shall conform to M-32.

2.0 Workmanship

2.1 Surface Preparation

2.1.1 After water proofing work, thorough cleaning of surface is to be completed. Before commencement of insulation work the work is to be inspected and approved by the engineer-in-charge.

2.2 Application of EFV (Ex foliated Vermiculite)

2.2.1 Application of EFV (Ex foliated Vermiculite) is to be done as per manufacture's specification. Mix (1 cement: 6 Exfoliated Vermiculite) is to be thoroughly mixed with water and mix is to be uniformly screeded on the surface / slab. Screeding of the mix should be done in uniform thickness as per drawing and as directed by engineer-in-charge.

2.3 Curing

2.3.1 After application of mix (cement and ex-foliated vermiculilite) curing for minimum 7 days is required.

3.0 Mode of measurement

3.1 The item shall be measured and paid in sqm.