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Hard finishes installation guidelines and specifications

Method statement for installation of marbles and granites

This policy is a must read for all the members of CM team and also other concerned departments like Design, Procurement, Cost Management, etc.

Finishing protection policy (dated: 24 Nov, 2011) is a must follow up read for this policy.

Objective:

The objective of this policy is to lay down uniform and standard process for preparation of surface, preparation of tile and installation of marble / granite for flooring / cladding.

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Natural stone usage guidelines:

Natural Stones: Any material which is quarried from a natural stone including marble, granite, kotah, etc.

Objectives:

- To ensure high degree of aesthetic elegance
- To minimize wastage of material
- To minimize processing at site
- To ensure ease of handling at site at site

Guidelines:

- Prescribed size of natural stones cannot exceed 5 sq. ft. in any one direction size. Of this at least one dimension should be 2 ft (600 mm). Rectangular pieces are preferable over square pieces
- Skirting - 75mm minimum pre-polishing may be considered.
- Flexible flooring pattern / size depending upon the slab sizes.

Processes and best practices for various types of stones:

Type of stone/ Process	White colored imported marble (Floor+Wall)	Other imported marble (Floor+Wall)	Agglomerated marble – Cladding	Granite – wet fixing (e.g. kitchen slabs,etc)
Preparation of surface	Floor bedding shall consist of white Portland cement and Gujarat river sand inthe proportion (Ratio 1:4 for dado & 1:6 for flooring, ratio by volume). Sealer coat to be applied before marble laying on 5 surfaces & final sealer coat to be applied after final polishing.	For Marble the bedding to be prepared in river sand and grey cement in proportion 6:1 by volume.	River sand and cement (1:4 ratio by volume) for cladding work. Scratch coat plaster shall be applied on the wall before cladding.	For granite, use river sand and cement (inratio of 1:6 for horizontal surface; in ratio of 1:4 for vertical surface)
Preparationn of tile	A coat of aqua seal or similar sealant shall be applied to the marble (on the bottom surface andall the four edges) before installation to avoid stains.	A skim coat of cement shall be applied on the marble tile (on the bottom and edges) immediately after removing fiber marble backing to avoid color change or any sand impurities.		
Laying	Only Port land whitecement slurry shall be used for laying the marble.	Marble shall be fixed using cementslurry.	Flush Tank area - Cladding shall be done using epoxy adhesive. Without wire mesh a coat of araldite + sand to be applied.	

Protection	After penultimate polishing of surface, entire surface shall be covered with bubble wrap or thick plastic in case of horizontal surfaces and adhesive plastic sheet or bubble wrap or ply for vertical surfaces (in order of preference). Any cutting for nahani trap or switch plates shall be done using a pre-made 'farma' to ensure cutting in proper shape; rotary cutters with carbon or tungsten bits areideal for these cutting procedures.

Guidelines for cutting of marbles / granites:

Following precautions shall be taken while cutting marble / granite slabs:

- Ensure that the blades are new in order to reduce the loss of dimension due to cutting and to avoid any damage to the edges
- Adequate clean water supply shall be available for cooling in order to avoid any stains
- After cutting, the slabs shall be kept on a soft surface so that the edges of the cut tiles are not damaged
- For fine work machine, the edges shall be slightly champhered and sanded

General guidelines:

Following guidelines shall be followed while installing marble / granite slabs:

- It shall be ensured that the marble or granite bedding is laid on proper reference level before commencing the work
- For large area flooring, expansion and contraction joints shall be left between marble/granite tiles at proper distance
- A small gap (~6mm) shall be left between the top face of the flooring and underside of skirting
- Grouting shall not commence until slabs/tiles have been laid for a period of 2-3 days
- Excess grout shall be removed using a wet sponge with soap water
- It shall be ensured that the mason always uses the protection cover attached with the handheld marble cutter machine
- Masons shall be instructed to wear safety groves and safety goggles at the time of cutting or grinding any marble / granite stone
- Stone selection to be done considering following criteria
    - Stone grains should not be too busy.
    - Stone thickness to be 16mm.
    - Stone slab selection should have major color variant or any impurities.
    - Slab sizes & shapes to be consistent.

Specification of tiles:

Vitrified tiles:

Vitrified tiles are also ceramic tiles but made with a special Vitrification process. Vitrified tiles are a mixture of Clay, Silica, and Feldspar & Quartz. In a process of manufacturing, it pressed with very high hydraulic pressing and high temperature, which make it very low porous in nature.
Vitrified tiles are the modern alternatives of Marble, Granite, and Wooden flooring with attractive designs. Vitrified tiles are often used in high commercial traffic areas.
In a specification, Vitrified tiles are Stronger in strength, less water-absorbent, Strain resistance, Scratch resistant, Dustproof surface, Smoother surface.

Double charged Vitrified tiles:

As the name suggest it have Double layers, one for printing & one for strength. Upper layer is of 3 to 4 mm thick which permits print on whole thickness. Lower layer permits high strength. This allows less complex pattern but long lasting and less noticeable scratches surface. They are also polished which gives a smoother surface.

Full body Vitrified tiles:

These are type of vitrified tiles which have design-pigment in entire body across its full thickness of the tile, which helps it to become less noticeable to scratches and chips. It mainly use in Heavy traffic commercial area.

Glazed Vitrified tiles:

These tiles are having glazed surface in addition to vitrified body. Which offers a plenty of option for design like Marble, Granite, Stone, Wood, Texture etc.

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Method statement for installation of tiles:

Vitrified tiles installation with adhesive for toilets:

Tile adhesive is ready-mixed and specially formulated from OPC, selected fine sand, and additives to improve its essential properties for laying tiles. High-performance tile adhesive can be used to lay tiles on existing tiles, on polished cement, on wooden substrates or other special substrates. It can hold the tiles tightly in place for decades to come. This makes it especially reliable for installing wall tiles.

Optimum setting time of tile adhesive allows tiles to be easily adjusted within a certain period. It makes tiles being laid in line and gives the aesthetic final look. Applying tile adhesive with notched trowel provides full spread on the back of tiles and will reduce many problems like broken tiles esp. on the corner, water seeping, and stain or efflorescent. Full contact of the adhesive on tiles' back and substrate provides strong bonding strength and long-lasting tiling work.

Laying tiles by using tile adhesive with notched trowel requires less amount of material. The adhesive layer is a lot thinner than the mixture of sand-cement, and this leads to a lighter load to the building structure. A good quality tile adhesive is a premixed cement-based powder that is easy to apply and requires no curing. This does away the curing need and saves time in tiling work.

Surface Preparation:

Tile may be installed over most structurally-sound substrates. Make sure all surfaces to be tiled are clean, smooth, dry and free of wax, soap scum and grease. Any damaged, loose or uneven areas must be repaired, patched, and levelled. Remove all mouldings, trims, appliances, etc. which may interfere with the installation. Door jambs may be undercut for tiles to slip under.

Grouting Joints:

Before grouting joints, the tile should be well-set to prevent breaking the bond. Refer to the adhesive package for specific time. Generally, you should wait about 24 hours before grouting. Remove all the spacers used for setting. Determine the grout color of your choice. For best results, choose on the color-coordinates with the tile. Remove excess grout from the surface immediately with edge of float. Tilt float at a 90 degree angle and scrape it diagonally across the tiles. Continue the process of compacting, then scraping off excess, until you have grouted for approximately 30 minutes or when the mixture begins to stiffen.

Vitrified/Ceramic tiles installation with Cement mortar for all other areas:

Surface Preparation and Bull Marks:

Clean the floor from dust and debris. This would ensure proper bonding of tiles with the cement mortar. Place the bull marks or the button marks at minimum intervals, up to the required floor level (excluding the tile thickness) so as to ensure cement mortar is laid up to the bull level.

Preparation of Mix (Cement Mortar):

Using sand, cement and water, prepare cement mortar of appropriate ratio; 1:3 cement-sand mix is usually recommended for tiling (vitrified, ceramic or Italian marble) . Proportions for mixing to be taken by a measuring box, and prepare the mix in limited quantities, so as to ensure that the whole mortar is consumed within one hour post mixing.

Laying of Cement Mortar:

When the mortar is ready, begin working from one side of the floor. Wet the surface and spread the mixture on the floor and use a trowel to obtain an even layer of mortar against bull marks laid. Suggest to work in small areas, to keep the mortar from drying before the tile is laid in its position.

Note: Thickness of cement mortar should not exceed the limit.

Placing of tiles:

Before the tile installation, please read the manufacturer's instructions/manuals for proper installation guidelines. Soak the tiles in water, if suggested by the manufacturer. Pour cement slurry before placing the tile on the cement mortar and use a trowel to create friction grooves, for proper bonding between the mortar and the tile. Place the tiles as per design and in level using a soft mallet or vibrator, comparing it against the adjacent tiles or required floor levels. Also, ensure that there are no voids/air pockets after levelling the tile. If this is done properly, will prevent hollowness in tiles which is a common observation during the tile laying. Simultaneously, the alignment of the tiles should be done by the use of specified spacers.

Curing:

Allow the laid tiles to cure, up to the specified time (generally, a week or so) based on the type of materials used. Curing is usually done by sprinkling water on the tile joints to ensure sufficient strength and bonding of cement mortar.