

TILE OVER HEATED FLOOR SYSTEMS

314F-2019-2021



Please refer to page 7.

DETAIL D – MORTAR BED BONDED TO CONCRETE SLAB – INTERIOR/EXTERIOR

SUITABLE SUBSTRATES

- Floor systems over which the tile will be installed shall be in conformance with the Canadian National Building Code 2015 and applicable local building codes taking into consideration anticipated live and dead loads.

MATERIALS

- TILE
- MORTAR BED – See Tile Specification Section Mixes 2.9.2.5 or cementitious self-levelling underlayment.
- BOND COAT – **Interior:** Portland cement slurry on concrete slab and on fresh mortar bed. Dry-set mortar (minimum acceptable standard ANSI A118.1 or ISO 13007 C1), latex-Portland cement mortar (minimum acceptable standard ANSI A118.4 or ISO 13007 C2S1), or modified epoxy emulsion mortars (minimum acceptable standard ANSI A118.3 or ISO 13007 R1), over mortar bed, cured for minimum of 24 hours. 100% solids epoxy mortar on mortar bed, cured a minimum of 7 days. **Exterior:** Two component liquid latex-Portland cement mortar (minimum acceptable standard ANSI A118.4 or ISO 13007 C2S1).
- GROUT – **Interior:** Portland cement, latex-Portland cement (minimum acceptable standard ANSI A118.6 or ISO 13007 CG1) or epoxy grouts (minimum acceptable standard ANSI A118.3 or ISO 13007 RG). **Exterior:** latex-Portland cement (minimum acceptable standard ANSI A118.6 or ISO 13007 CG1).

APPLICATION

- Following installation of electric heating cable or hydronic tubing (by others), apply mortar bed (see Tile Guide Specification Section Mixes 2.9.2.5) to required thickness over fresh slurry bond coat (see Tile Guide Specification Section Mixes 2.9.2.2). Finished tolerance of mortar bed not to exceed 6 mm in 3000 mm or 2 mm in 300 mm. For large format tile where any side is greater than 380 mm, surface variation should not exceed 3 mm in 3000 mm and 1.5 mm in 600 mm. For tile with any edge longer than 380 mm use sufficient bond coat to ensure minimum 95% contact, with the corners and edges fully supported. Apply Portland cement paste on fresh mortar bed, and dry-set mortar or latex-Portland cement mortar over mortar bed cured for minimum of 24 hours. On fresh mortar bed, beat tile into position. On cured mortar bed, Apply bond coat to mortar bed surface. Use proper notched trowel to ensure adequate bond. With pressure, apply a coat of mortar by using the trowel's flat side to key the mortar into the substrate. Apply additional mortar, combing it in a single direction parallel to the tile's shortest dimension, with the trowel's notched side. Place the tiles firmly into the wet bond coat. Push the tiles back and forth in a direction perpendicular to trowel lines, to collapse the mortar ridges and to help achieve maximum coverage. Ensure proper contact between mortar, tile and substrate by periodically lifting a few tiles to check for acceptable coverage. Use sufficient bond coat to ensure minimum 95% contact on exterior installations and wet areas (it may be necessary to back-butter the tile in order to meet this requirement) and minimum 80% on interior dry areas. Remove excess mortar from the joint areas so that at least 2/3 of the tile depth is available for grouting. Allow bond coat and grout to cure as recommended by the manufacturer for the type of environment and exposure anticipated. Allow bond coat to cure. Force grout into the joints with a rubber grout float. Make sure all joints are well-compacted and free of voids and gaps. Remove excess grout from the tile surface and clean.

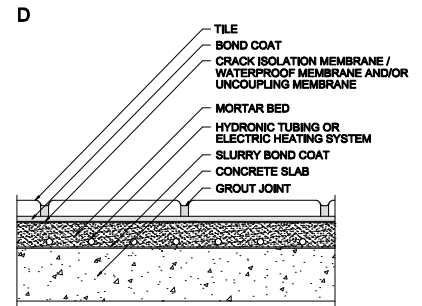
LIMITATIONS

- Manufacturer's recommendations must be followed.
- The thickness of the mortar bed / cementitious self levelling underlayment should be 32 mm minimum interior and 38 mm minimum exterior above heating pipes.
- Follow manufacturers requirements for maximum moisture content in concrete slab prior to application of underlayment. For example 1.36 kg per 93 m² per 24 hours.
- Do not use light weight aggregate in mortar bed.
- For residential or light commercial use only.

OTHER CONSIDERATIONS

- Latex additive is recommended for Portland cement bond coat and may be used in modification of mortar bed. Follow manufacturer's recommendations. Use of latex additive in mortar bed and bond coat is mandatory in exterior applications.
- Tile used on exterior applications must be frost resistant.
- Refer to Notes For The Professional and 301MJ-2019-2021.
- Where incorporating heating cable on interior or exterior concrete substrates is desired, refer to details 309F-2019-2021 and 310F-2019-2021 and incorporate heating cables in the bottom of the mortar bed. When hydronic heating is used in mortar bed, increase thickness of mortar bed to give minimum 32 mm of mortar bed over heating tubing.
- Certain proprietary systems may allow thin-set installation with latex-Portland cement as per Detail C and Detail E.
- Heating system: design, installation and inspection by others. Pre heating and testing of the heating system needs to be done prior to the installation of the tile. The tile installation cannot be done when floor heat is in use and may need a minimum of 7 days after tile installation before the radiant heating system can be turned on. Verify with manufacturer.
- Movement joints shall be installed at a maximum 3600 mm for radiant heated floors. Width and spacing of joints to be specified by consultant.
- Latex-Portland cement mortars (minimum acceptable standard ANSI A118.4 or ISO 13007 C2S1) may require 14-60 days cure before exposure to water. Verify with the manufacturer the correct time required. Alternatively, to reduce curing time required, a rapid set mortar (ISO 13007 C1F or C2F) may be more suitable.
- Uncoupling Membrane – follow manufacturer's recommendations. Please see page 31 for more information.

Continued



Please refer to page 7.

