

TILE OVER HEATED FLOOR SYSTEMS

314F-2019-2021

GENERAL GUIDELINES UNDER-FLOOR HEATING

- The under-floor heating system should be installed according to the instructions of the supplier. An incorrectly installed under-floor heating system can cause the screed to become unfastened or the floor covering to lose shape.
- Damage to the floor or the under-floor heating pipes or heating cables resulting from incorrect installation and causing the finish layers to show incomplete covering, is beyond the liability of the installer of the floor and his suppliers.
- After the application of the screed, wait for a minimum of 28 days, then gradually heat up the under-floor heating system by a maximum of 5°C per day.
- Next, make sure the under-floor heating system is switched on uninterruptedly for a period of 14 days, so that the floor can set and any residual moisture can quickly evaporate.
- Switch off the heating system at least 24 hours prior to levelling/applying floor covering.
- Switch on the heating system at least 24 hours after levelling/applying floor covering and gradually raise the water temperature by a maximum of 5°C per day.

DETAIL A - MORTAR BED OVER PLYWOOD (INTERIOR)

SUITABLE SUBSTRATES

- Floor systems, including the framing system and subfloor panels, 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

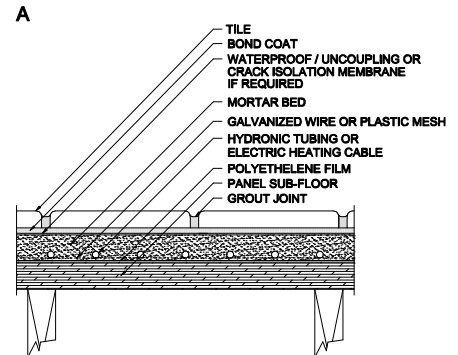
- CLEAVAGE MEMBRANE – 6 mils polyethylene film or 6.8 kg meeting CAN/CGSB-51.34M, asphalt saturated roofing felt, meeting CSA A123.3-98.
- GALVANIZED DIAMOND METAL LATH – 1.4 kg/m² (ASTM C847-95).
- MORTAR BED – See Tile Guide Specification Section Mixes 2.9.2.5 or cementitious self-levelling underlayment. Primer/Sealer as recommended by manufacturer.
- SUITABLE PANEL SUB-FLOOR – Douglas Fir plywood, Canadian Softwood plywood, Poplar plywood, Construction Sheathing or OSB. Minimum 16 mm exterior grade plywood meeting CSA 0121 or oriented strandboard meeting CSA 0437.0 or CSA 0325.0, on joists spaced 406 mm o.c.
- TILE
- BOND COAT – **Interior:** 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), modified epoxy emulsion mortars, 100% solids epoxy mortar, epoxy adhesive (minimum acceptable standard ANSI A118.3 or ISO 13007 R1), or organic adhesives (minimum acceptable standard ANSI A118.3 or ISO 13007 R1). **Exterior:** Single or 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 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

- Apply polyethylene film lapped at least 100 mm. Nail galvanized diamond metal lath butted, not overlapped, to the plywood. After the heating/electrical contractor has placed the heating element over the metal or plastic lath, apply mortar bed to required thickness of 32 mm min. Allow mortar bed to cure. Apply bond coat to cured mortar bed. 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. 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 80% contact 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 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 to be 32 mm minimum interior.
- For residential or light commercial use only.
- Do not use lightweight aggregate in mortar bed.
- If using electric heating cable/conduit, plastic mesh should be used.



OTHER CONSIDERATIONS

- 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 system is used in mortar bed, increase thickness of mortar bed to achieve a minimum 32 mm thickness over heating tubing.
- Certain proprietary systems may allow thin-set installation with latex-Portland cement.
- 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
- Refer to Notes For The Professional and 301MJ-2019-2021.
- Movement joints shall be installed at a maximum 3600 mm for radiant heated floors. Width and spacing of joints to be specified by consultant.
- Insulation layer may be required between joists or on top of subfloor for maximum heating efficiency. Consult heating manufacturer for type and thickness.
- Waterproofing membrane (ANSI A118.10) or crack isolation membrane (ANSI A118.12), if required, must be specified. Follow manufacturer's recommendations.
- Uncoupling Membrane – follow manufacturer's recommendations. Please see page 31 for more information.

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