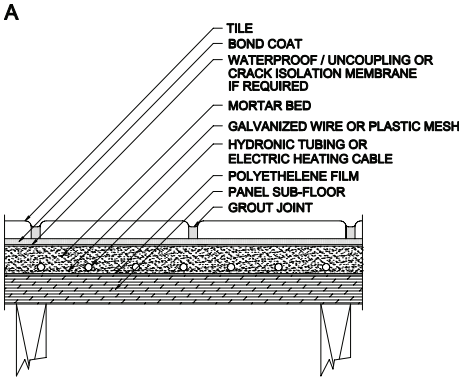
TILE OVER HEATED FLOOR SYSTEMS
314F-2012-2014

DETAIL A - MORTAR BED OVER PLYWOOD (INTERIOR)

A



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 2010 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 2.5.3 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 A 118.1 or ISO C1), latex-Portland cement mortar (minimum acceptable standard ANSI A 118.4 or ISO C2S1), modified epoxy emulsion mortars, 100% solids epoxy mortar, epoxy adhesive (minimum acceptable standard ANSI A 118.3 or ISO R1), or organic adhesives (minimum acceptable standard ANSI A 118.3 or ISO R1). **Exterior:** Single or two component liquid latex-Portland cement mortar (minimum acceptable standard ANSI A 118.4 or ISO C2S1).
- GROUT – **Interior:** Portland cement, latex-Portland cement (minimum acceptable standard A 118.6 or ISO CG1), or epoxy grouts (minimum acceptable standard ANSI A 118.3 or ISO RG). **Exterior:** Latex-Portland cement (minimum acceptable standard ANSI A 118.6 or ISO 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 one edge is 380 mm or larger, surface variation should not exceed 3 mm in 3000 mm. Apply tile to bond coat before bond coat skins over. Use sufficient bond coat to ensure minimum 80% contact. Contact shall be evenly distributed to give full support of the tile. On fresh mortar bed, beat tile into position. On dry-set mortar, slide tile into position. Beat tile into position. Allow bond coat to cure. Force grout into full depth of joint, remove excess grout 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

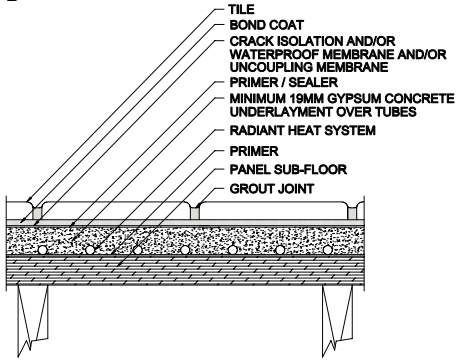
- Where incorporating heating cable on interior or exterior concrete substrates is desired, refer to details 309F-2012-2014 and 310F-2012-2014 and incorporate heating cables in the bottom of the mortar bed. When hydronic heating system is used in mortar bed, increase thickness of mortar bed to achieve 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 be turned on. Verify with manufacturer
- Refer to Notes For The Professional and 301MJ-2012-2014.
- 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.
- Waterproof membrane (ANSI A 118.10) or crack isolation membrane (ANSI A 118.12), if required, must be specified. Follow manufacturer's recommendations.

Continued

TILE OVER HEATED FLOOR SYSTEMS
314F-2012-2014

DETAIL B – GYPSUM CONCRETE OVER PLYWOOD

B



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 2010 and applicable local building codes taking into consideration anticipated live and dead loads.

MATERIALS

- TILE
- 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.o, on joists spaced 406 mm o.c.
- GYPSUM CONCRETE – Underlayment meeting performance requirements of ASTM C627 minimum. Compressive strength of 15 MPa when tested by ASTM C472.
- BOND COAT – Dry-set mortar (minimum acceptable standard ANSI A 118.1 or ISO C1), latex-Portland cement mortar (minimum acceptable standard ANSI 118.4 or ISO C2S1) over gypsum concrete, cured for a minimum of 72 hours or less than 3% residual moisture.
- PRIMER/SEALER – As recommended by manufacturer.
- GROUT - Portland cement, latex-Portland cement (minimum acceptable standard A 118.6 or ISO CG1), or epoxy grouts (minimum acceptable standard ANSI A 118.3 or ISO RG).

APPLICATION

- Following installation of electric heating cable or hydronic tubing (by others), apply gypsum concrete to required thickness over primer/sealer as required by manufacturer. Finished tolerance of gypsum concrete not to exceed 6 mm in 3000 mm or 2 mm in 300 mm. For large format tile where one edge is 380 mm or larger, surface variation should not exceed 3 mm in 3000 mm. Apply tile to bond coat before bond coat skins over. Use sufficient bond coat to minimum 80% contact on interior surfaces. Contact shall be evenly distributed to five full support of the tile. Apply dry-set mortar (minimum acceptable standard ANSI A 118.1 or ISO C1) or latex-Portland cement mortar (minimum acceptable standard ANSI A 118.4 or ISO C2S1) over cured gypsum concrete. Slide tile into position. Allow bond coat to cure. Force grout into full depth of joint, remove excess grout and clean.

LIMITATIONS

- Manufacturer's recommendations must be followed.
- The thickness of the gypsum concrete should be 15 mm minimum.
- For residential or light commercial use only.

OTHER CONSIDERATIONS

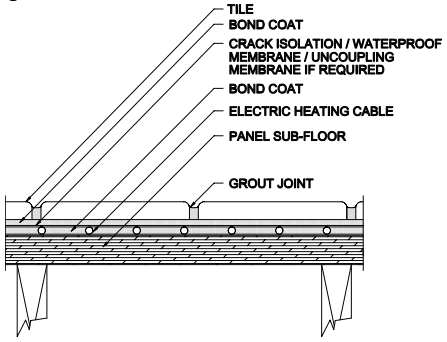
- If an uncoupling system is used, one single layer of plywood minimum thickness of 20 mm is acceptable providing the floor trusses or I – joist are spaced at no more then 480 mm o.c.
- Some gypsum concrete underlayment manufacturers recommend the use of plastic lath for application over wood substrate, follow manufacturers recommendations for best practice.
- Cross bridge floor joist but preferably solid blocking.
- Refer to Notes For The Professional and 301MJ-2012-2014.
- 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 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.
- Consult membrane manufacturer for maximum residual moisture before installation.

Continued

TILE OVER HEATED FLOOR SYSTEMS
314F-2012-2014

DETAIL C – THIN ELECTRIC HEATING CABLE ON PLYWOOD INTERIOR ONLY

C



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 2010 and applicable local building codes taking into consideration anticipated live and dead loads.

MATERIALS

- TILE
- BOND COAT – Dry-set mortar (minimum acceptable standard ANSI A 118.1 or ISO C1), latex-Portland cement mortar (minimum acceptable standard ANSI A 118.4 or ISO C2S1), modified epoxy emulsion mortars, 100% solids epoxy mortar, epoxy adhesive (minimum acceptable standard ANSI A 118.3 or ISO R1), or organic adhesives (minimum acceptable standard ANSI A 118.3 or ISO R1).
- GROUT - Portland cement, latex-Portland cement (minimum acceptable standard A 118.6 or ISO CG1), or epoxy grouts (minimum acceptable standard ANSI A 118.3 or ISO RG).

APPLICATION

- Following installation of electric heating cable or mat (by others) apply tile to bond coat before bond coat skins over. Use sufficient bond coat to ensure minimum 80% contact. Contact shall be evenly distributed to give full support of the tile. Slide tile firmly into position. Allow bond coat to cure.
- Force grout into full depth of joint, remove excess grout and clean.

LIMITATIONS

- Manufacturer's recommendations must be followed.
- Not to be used in wet areas unless recommended by manufacturer.

OTHER CONSIDERATIONS

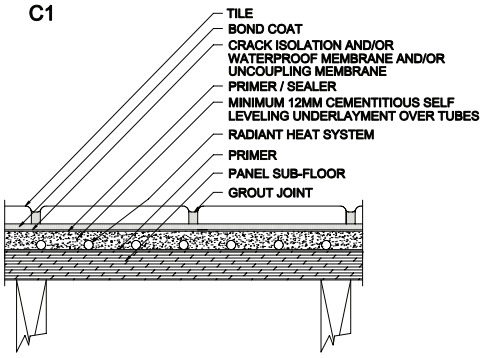
- If waterproof/crack isolation membrane is required follow manufacturer's recommendations (ANSI A 118.10, ANSI A 118.12)
- Heating system - design, installation and inspection by others. Pre heating and testing of the heating system needs to be done prior to the installation of the tile. The tile installation 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 be turned on. Verify with manufacturer.
- Refer to Notes For The Professional and 301MJ-2012-2014.
- Uncoupling system to be placed over heating system. Follow manufacturers' recommendations.
- Insulation layer may be required below plywood subfloor for maximum heating efficiency. Consult heating manufacturer for types and thicknesses.

Continued

TILE OVER HEATED FLOOR SYSTEMS
314F-2012-2014

Please refer to page 8.

DETAIL C1 – THIN ELECTRIC HEATING CABLE WITH CEMENTITIOUS SELF-LEVELING ON PLYWOOD INTERIOR ONLY



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 2010 and applicable local building codes taking into consideration anticipated live and dead loads.

MATERIALS
- TILE
- BOND COAT – Dry-set mortar (minimum acceptable standard ANSI A 118.1 or ISO C1), latex-Portland cement mortar (minimum acceptable standard ANSI A 118.4 or ISO C2S1), modified epoxy emulsion mortars, 100% solids epoxy mortar, epoxy adhesive (minimum acceptable standard ANSI A 118.3 or ISO R1), or organic adhesives (minimum acceptable standard ANSI A 118.3 or ISO R1).
- Crack isolation membrane – ANSI A 118.12 or waterproof membrane – ANSI A 118.10.
- Uncoupling system to manufacturer's recommendations.
- CEMENTITIOUS SELF-LEVELLING UNDERLAYMENT – as per manufacturer's recommendations.
- GROUT – Portland cement, latex-Portland cement (minimum acceptable standard A 118.6 or ISO CG1), or epoxy grouts (minimum acceptable standard ANSI A 118.3 or ISO RG).

APPLICATION
- Install electric heating cable or mat (by others)
- Primer must be used over prepared surface as required by self-leveling manufacturer's recommendations
- Apply thickness of self-leveling to the recommended thickness by manufacturer
- Curing/drying of cementitious self –leveling must be strictly followed as instructed by manufacturer before installation of tile.
- Apply tile to bond coat before bond coat skins over. Use sufficient bond coat to ensure minimum 80% contact. Contact shall be evenly distributed to give full support of the tile. Slide tile firmly into position. Allow bond coat to cure.
- Force grout into full depth of joint, remove excess grout and clean.

LIMITATIONS
- Manufacturer's recommendations must be followed.
- Follow manufacturer's recommendations for manufacturer's maximum applied thicknesses
- Depending on Manufacturer double layer plywood may be required see Detail 313F-A

OTHER CONSIDERATIONS
- If waterproof/crack isolation membrane is required follow manufacturer's recommendations (ANSI A 118.10, ANSI 118.12)
- 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 be turned on. Verify with manufacturer.
- Refer to Notes For The Professional and 301MJ-2012-2014.
- Uncoupling system to be placed over heating system. Follow manufacturers' recommendations.
- Insulation layer may be required below plywood subfloor for maximum heating efficiency. Consult heating manufacturer for types and thicknesses.
- Radiant pipe/tube may be substituted for electric wire radiant heat system
- Electric radiant heat system conforming to UL (CAN/CSA) C22.2 #217

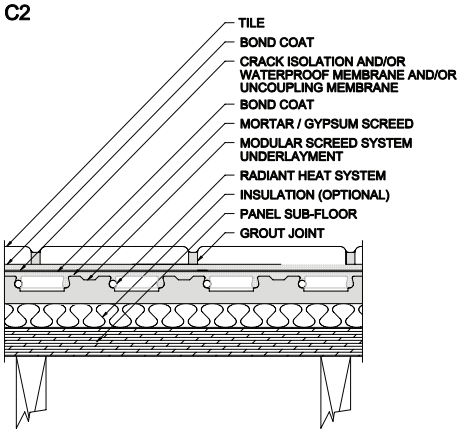
Continued

TILE OVER HEATED FLOOR SYSTEMS
314F-2012-2014

Please refer to page 8.

DETAIL C2 MODULAR SCREED SYSTEM OVER PLYWOOD INTERIOR ONLY

C2



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 2010 and applicable local building codes taking into consideration anticipated live and dead loads

MATERIALS

- TILE
- BOND COAT – Dry-set mortar (minimum acceptable standard ANSI A 118.1 or ISO C1 or C2F).
- MODULAR SCREED PANEL – Expanded polystyrene panel with density no less than 32 kg/m3.
- GROUT – Portland cement, latex-Portland cement (minimum acceptable standard A 118.6 or ISO CG1), or epoxy grouts (minimum acceptable standard ANSI A 118.3 or ISO RG).

APPLICATION

- Apply mortar bed (see Tile Guide Specification Section 2.5.5) to required thickness (see Tile Guide Specification Section 2.5.2). Finished tolerance of mortar bed not to exceed 6 mm in 3000 mm or 2 mm in 300 mm. For large format tile where one edge is 380 mm or larger, surface variation should not exceed 3 mm in 3000 mm. Apply membrane to mortar bed as recommended by manufacturer. Apply tile to bond coat before bond coat skins over. Use sufficient bond coat to ensure a minimum 80% contact on tile back. If 95% coverage is specified refer to 3.3.10. Contact shall be evenly distributed to give full support of the tile. Allow bond coat and grout to cure as recommended by the manufacturer for the type of environment and exposure anticipated. Force grout into full depth of joint, flush with tile surface. Remove excess grout by using fl oat at a 90º angle and clean with a sponge and plenty of water.

LIMITATIONS

- Thickness of the mortar bed should not exceed more than 25 mm above the top of the pedestals of the modular screed panel.
- Verify with manufacturer maximum weight capacity.

OTHER CONSIDERATIONS

- Refer to Notes For The Professional and 301MJ-2012-2014.
- Insulation layer may be required between joists or on top of subfloor for maximum heating efficiency. Consult manufacturer for type and thickness
- 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 be turned on. Verify with manufacturer.
- Movement joints to be installed only at the tile surface at a maximum of 3600 mm for radiant heated floors. Width and spacing to be determined by consultant or manufacturer.
- Gypsum cement may be substituted for cementitious mortar bed
- Modular screed panel can be used without radiant heat.

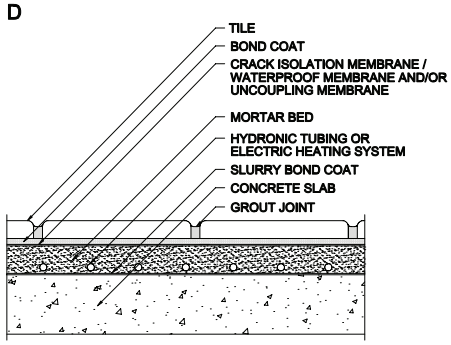
Continued

TILE OVER HEATED FLOOR SYSTEMS
314F-2012-2014

Please refer to page 8.

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

D



SUITABLE SUBSTRATES

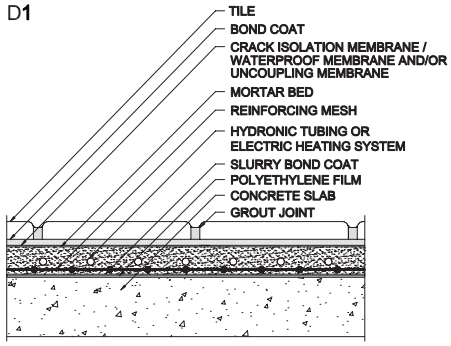
- Floor systems over which the tile will be installed shall be in conformance with the Canadian National Building Code 2010 and applicable local building codes taking into consideration anticipated live and dead loads.

MATERIALS

- TILE
- MORTAR BED – See Tile Specification Section Mixes 2.5.3 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 A 118.1 or ISO C1), latex-Portland cement mortar (minimum acceptable standard ANSI A 118.4 or ISO C2S1), or modified epoxy emulsion mortars (minimum acceptable standard ANSI A 118.3 or ISO 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 A 118.4 or ISO C2S1).
- GROUT – **Interior:** Portland cement, latex-Portland cement (minimum acceptable standard ANSI A 118.6 or ISO CG1) or epoxy grouts (minimum acceptable standard ANSI A 118.3 or ISO RG). **Exterior:** latex-Portland cement (minimum acceptable standard ANSI A 118.6 or ISO CG1).

Please refer to page 8.

D1



APPLICATION

- Following installation of electric heating cable or hydronic tubing (by others), apply mortar bed (see Tile Guide Specification Section Mixes 2.5.3) to required thickness over fresh slurry bond coat (see Tile Guide Specification Section
- Mixes 2.5.2). Finished tolerance of mortar bed not to exceed 6 mm in 3000 mm or 2 mm in 300 mm. For large format tile where one edge is 380 mm or larger, surface variation should not exceed 3 mm in 3000 mm. Apply tile to bond coat before bond coat skins over. Use sufficient bond coat to ensure minimum 95% contact on exterior surfaces and wet areas and a minimum 80% contact on interior surfaces. Contact shall be evenly distributed to give full support of the tile. 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, slide tile into position. Allow bond coat to cure. Force grout into full depth of joint, remove excess grout 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. eg. 1.36K per 93m2 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-2012-2014.
- Where incorporating heating cable on interior or exterior concrete substrates is desired, refer to details 309F-2012-2014 and 310F-2012-2014 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 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 A 118.4 or ISO 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 C1F or C2F) may be more suitable.

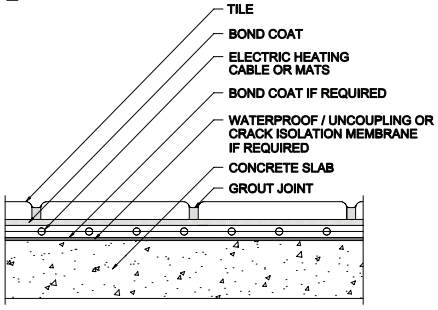
Continued

TILE OVER HEATED FLOOR SYSTEMS
314F-2012-2014

Please refer to page 8.

DETAIL E – THIN-SET ON CONCRETE SLAB INTERIOR ONLY

E



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 2010 and applicable local building codes taking into consideration anticipated live and dead loads.

MATERIALS

- TILE
- BOND COAT – Dry-set mortar (minimum acceptable standard ANSI A 118.1 or ISO C1), latex-Portland cement mortar (minimum acceptable standard ANSI A 118.4 or ISO C2S1), modified epoxy emulsion mortars, 100% solids epoxy mortar, epoxy adhesive (minimum acceptable standard ANSI A 118.3 or ISO R1), or organic adhesives (minimum acceptable standard ANSI A 118.3 or ISO R1).
- GROUT – Portland cement, latex-Portland cement (minimum acceptable standard A 118.6 or ISO CG1), or epoxy grouts (minimum acceptable standard ANSI A 118.3 or ISO RG).

APPLICATION

- Following installation of electric heating cable or mat (by others) apply tile to bond coat before bond coat skins over. Use sufficient bond coat to ensure minimum 80% contact. Contact shall be evenly distributed to give full support of the tile. Slide tile firmly into position. Allow bond coat to cure.
- Force grout into full depth of joint, remove excess grout and clean.

LIMITATIONS

- Manufacturer's recommendations must be followed.

OTHER CONSIDERATIONS

- If waterproof/crack isolation membrane is required follow manufacturer's recommendations (ANSI A 118.10)
- 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 be turned on. Verify with manufacturer.
- Refer to Notes For The Professional and 301MJ-2012-2014.
- Uncoupling system to be placed over heating system. Follow manufacturers recommendations.
- Insulation layer may be required below concrete slab for maximum heating efficiency. Consult heating manufacturer for types and thicknesses.
- Radiant pipe/tube may be substituted for electric wire radiant heat system
- Electric radiant heat system conforming to UL (CAN/CSA) C22.2 #217

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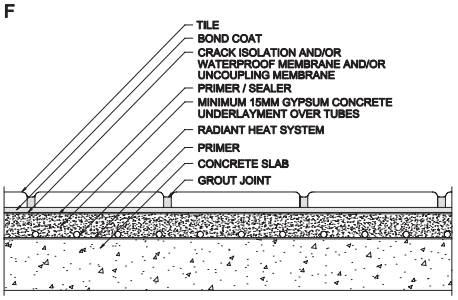
TILE OVER HEATED FLOOR SYSTEMS
314F-2012-2014

Please refer to page 8.

DETAIL F – GYPSUM UNDERLAYMENT OVER CONCRETE SLAB

F



SUITABLE SUBSTRATES

- Interior concrete slabs, steel trowel or fine broom finish where no moisture intrusion occurs.
- 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 2010 and applicable local building codes taking into consideration anticipated live and dead loads.

MATERIALS

- TILE
- BOND COAT – Latex-Portland cement mortar (minimum acceptable standard ANSI A 118.4 or ISO C2), modified epoxy emulsion mortar (minimum acceptable standard ANSI A 118.3 or ISO R1).
- Gypsum concrete underlayment meeting performance requirements of ASTM C627. Minimum compressive strength of 15 MPa when tested by ASTM C472.
- Primer/sealer as per gypsum manufacturer recommendations.
- Crack isolation membrane – ANSI A 118.12 or waterproof membrane – ANSI A 118.10.
- Uncoupling system to manufacturer's recommendations.
- Radiant heat system (by others).
- GROUT – Latex-Portland cement (minimum acceptable standard ANSI A 118.6 or ISO CG1), epoxy (minimum acceptable standard ANSI A 118.3 or ISO RG).

APPLICATION

- Concrete slab to be well cured, dimensionally stable, free of contaminants such as oil, sealers, hardening or curing chemicals applied to the surface or incorporate in the mix. Following installation of radiant heat system, apply a minimum of 19 mm gypsum concrete underlayment over heating tubes, consult the manufacturer for specific recommendations when used with floor heating system. Maximum variation of screed should not exceed 6 mm in 3000 mm. For large format tile where one edge is 380 mm or larger, surface variation should not exceed 3 mm in 3000 m Gypsum underlayment must be fully dry /cured prior to installation of primer / sealer, crack isolation membrane, waterproof membrane or uncoupling membrane, follow manufacturer's recommendations. Primer / sealer must be compatible with setting material. Apply tile to bond coat before bond coat skims over. Use sufficient bond coat to ensure minimum of 80% contact. Contact shall be evenly distributed to give full support of the tile. Slide tile firmly into position. Allow bond coat to cure. Force grout into full depth of joints, remove excess grout and clean.

LIMITATIONS

- Manufacturers recommendations must be followed.
- For residential or light commercial use only.
- Not recommended for below – grade installations and areas subject to extreme moisture.
- Thickness of gypsum concrete should be 15 mm minimum
- Prior to application of gypsum concrete underlayment consult with waterproof membrane manufacturer.
- Consult with gypsum concrete manufacturer for proper curing time prior to application of tile and to the minimal time required before heat system is activated.
- Gypsum concrete underlayment installation only by a manufacturer qualified installer in accordance with the manufacturer's instructions and recommendations.

OTHER CONSIDERATIONS

- Gypsum concrete underlayment may also be used over wood floors providing that two layers of plywood are used. See detail 313F-2012-2014 drawing (A).
- If an uncoupling system is used, one single layer of plywood minimum thickness of 20 mm is acceptable providing the floor trusses or I – joist are spaced at no more then 480 mm o.c.
- Some gypsum concrete underlayment manufacturers recommend the use of plastic lath for application over wood substrate, follow manufacturers recommendations for best practice.
- Cross bridge floor joist but preferably solid blocking.
- Refer to Notes For The Professional.
- Uncoupling system to be placed over heating system. Follow manufacturers recommendations
- Control joints as per detail 301MJ-2012-2014 and gypsum concrete manufacturer recommendations.
- 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 be turned on. Verify with manufacturer.

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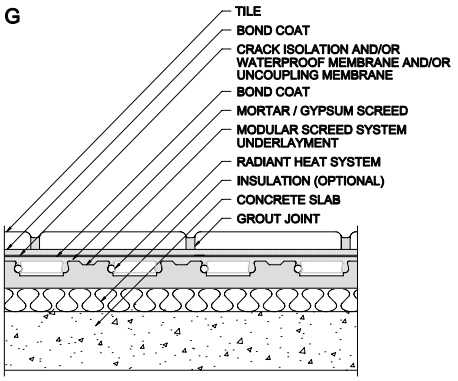
TILE OVER HEATED FLOOR SYSTEMS
314F-2011/2013

DETAIL G – MODULAR SCREED SYSTEM



SUITABLE SUBSTRATES

- Interior or exterior concrete slabs. Floor systems over which the tile is installed shall be in conformance with the Canadian National Building Code 2010 and applicable local building codes taking into consideration anticipated live and dead loads.

MATERIALS

- TILE
- BOND COAT – **Interior:** Dry-set mortar (minimum acceptable standard ANSI A 118.1 or ISO C1), latex-Portland cement mortar (minimum acceptable standard ANSI A 118.4 or ISO C2). **Exterior:** Two component liquid latex-Portland cement mortar (minimum acceptable standard ANSI A 118.4 or ISO C2S1) or follow uncoupling manufacturer's recommendations.
- UNCOUPLING MEMBRANE – following manufacturer's recommendations
- MODULAR SCREED PANEL – Expanded polystyrene panel with density no less than 32 kg/m3.
- GROUT – **Interior:** Portland cement, latex-Portland cement (minimum acceptable standard ANSI A 118.6 or ISO CG1) or epoxy (minimum acceptable standard ANSI A 118.3 or ISO RG). **Exterior:** Latex-Portland cement (minimum acceptable standard ANSI A 118.6 or ISO CG1).

APPLICATION

- Apply mortar bed (see Tile Guide Specification Section 2.5.5) to required thickness (see Tile Guide Specification Section 2.5.2). Finished tolerance of mortar bed not to exceed 6 mm in 3000 mm or 2 mm in 300 mm. For large format tile where one edge is 380 mm or larger, surface variation should not exceed 3 mm in 3000 m. Apply membrane to mortar bed as recommended by manufacturer. Apply tile to bond coat before bond coat skins over. Use sufficient bond coat to ensure a minimum 80% contact on tile back. If 95% coverage is specified refer to 3.3.10. Contact shall be evenly distributed to give full support of the tile. Allow bond coat and grout to cure as recommended by the manufacturer for the type of environment and exposure anticipated. Force grout into full depth of joint, flush with tile surface. Remove excess grout by using fl oat at a 90º angle and clean with a sponge and plenty of water.

LIMITATIONS

- Thickness of the mortar bed should not exceed more than 25 mm above the top of the pedestals of the modular screed panel.
- Verify with manufacturer maximum weight capacity.

OTHER CONSIDERATIONS

- Refer to Notes For The Professional and 301MJ-2013/2013. Extra insulation layer may be required between concrete slab and Modular screed panel. Consult manufacturer for type and thickness.
- 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 be turned on. Verify with manufacturer.
- Movement joints to be installed only at the tile surface at a maximum of 3600 mm for radiant heated floors. Width and spacing to be determined by consultant or manufacturer.
- Gypsum cement may be substituted for cementitious mortar bed.
- Modular screed panel can be used without radiant heat.