EXTERIOR DECKS
325ED-2019-2021

Please refer to page 7.

SUITABLE SUBSTRATES
- Exterior concrete slab.
- Exterior grade plywood over wood joist at maximum of 406 mm o.c. 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
- TILE
- BOND COAT – Single or two component liquid latex-Portland cement mortar (minimum acceptable standard ANSI A118.4 or ISO 13007 C2S1).
- GROUT – Latex-Portland cement (minimum acceptable standard ANSI A118.6 or ISO 13007 CG1).
- Waterproofing membrane ANSI A118.10.

APPLICATION

DETAIL A
- Concrete slab must be sloped a minimum of 2% (approximately 6 mm per 300 mm). If not located over occupied space a waterproofing membrane meeting ANSI A118.10 may be substituted for roofing membrane.
- Finished tolerance of mortar bed not to exceed 6 mm in 3000 mm or 2 mm in 300 mm. Tighter tolerances are required when large format tile will be installed.
- Drainage layer mat is applied to the surface of the waterproofing layer but not bonded. Mortar bed thickness should be not less than 38 mm. Use of latex additive in mortar bed (see Tile Guide Specification Section Mixes 2.9.2.5) and bond coat is mandatory. Contact shall be evenly distributed to give full support of the tile. 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 with back of tile (it may be necessary to back-butter the tile in order to meet this requirement). 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.
- Reinforcing mesh 51 mm x 51 mm x 1.6 mm installed in mortar bed over membrane.

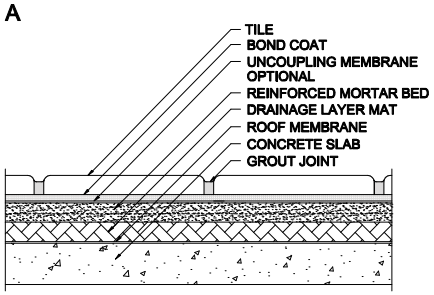
DETAIL B
- Sub-floor – 16 mm exterior grade plywood meeting CSA 0121, sloped as per Detail A. Install roofing membrane and drainage layer in accordance to manufacturer's recommendations. Install mortar be in accordance to Detail A.

DETAIL C
- Sub-floor – 16 mm exterior grade plywood meeting CSA 0121, sloped as per Detail A. Backer unit 13 mm minimum and must be exterior rated. Backer unit bond coat and fasteners as recommended by manufacturer. Backbuttering is recommended to bond tile to achieve 95% mortar contact.
- Apply approved roofing membrane and primer as recommended by manufacturer.

DETAIL D
- Sub-floor – 16 mm exterior grade plywood meeting CSA 0121, sloped as per Detail A. Overlay of plywood and installation as in Detail 313F-2019-2021 Detail A. Overlay of plywood can be substituted with cementitious backer unit (CBU) as in Detail C. Roofing membrane is a self applied modified rubberized asphalt Styrene-Butadiene-Styrene(SBS) membrane or other membrane types as recommended by manufacturer. Uncoupling system is applied directly onto roofing membrane as per manufacturer's instructions. For definition of uncoupling system see Glossary. Backbuttering is recommended to bond tile to achieve 95% mortar contact. NOTE: This system can also be used over a concrete slab instead of plywood especially for areas over living space.

Continued

A



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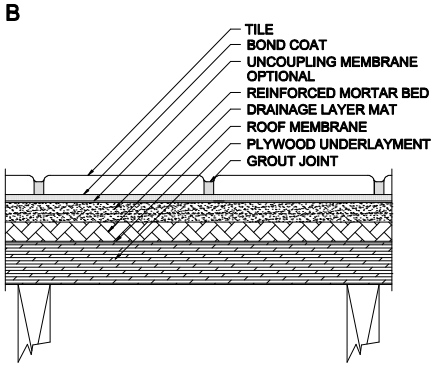

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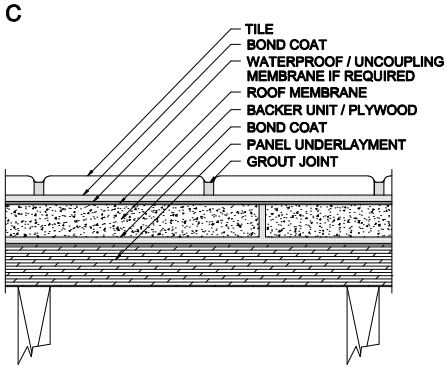

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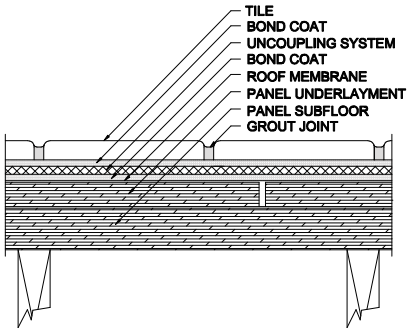

EXTERIOR DECKS
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DETAIL E

- Exterior Deck Over Occupied Space – concrete slab and finished surface to be sloped a minimum of 2% (approximately 6 mm per 300 mm). See Detail 326 DR-2019-2021 (B).
- A waterproofing membrane meeting ANSI A118.10 may be under the tile. A roofing membrane must be installed over the structural slab.
- Drainage layer mat must be applied to the roofing membrane but not bonded. Mortar bed thickness should not be less than 38 mm.
- Heavy or extra heavy duty tile to be used.
- Finished tolerance of mortar bed not to exceed 6 mm in 3000 mm or 2 mm in 300 mm.
- Rigid insulation must be Type 4 polystyrene.

LIMITATIONS

- DETAILS B & C – are effective methods of installation for exterior applications that can have a relatively long life span. It should however be recognized that plywood by its own nature will age and be affected by the elements. Consequently, some maintenance and/or repair may be required over time. Examine each manufacturers system and be advised of the expected life span and guarantee so that the best system for the installation in question can be chosen. i.e. regions under extreme freeze/thaw or high rainfall conditions.
- Detail C – Verify with roofing membrane manufacturer if tile or stone can be direct bonded to membrane.

OTHER CONSIDERATIONS

- As of 2005/2006 changes to the Canadian National Building Code require exterior decks,(regardless of over living space or not), are deemed to be roofs and require an approved roofing material Section 9.26 Roofing and Section 9.26.4.1.and 9.27.3.8.) if they are not flow-through.
- It is essential that movement joints be incorporated into the tiled surface as per Detail 301MJ-2019-2021.
- Water must not be added to latex and Portland cement bonding material.
- Care must be taken in flashing the waterproofing against all perpendicular surfaces, 150 mm minimum.
- Finishing around the outer edges of the deck should be considered for esthetical appearance.
- For Detail A and B the thin-set method is recommended in areas subject to freeze/thaw conditions. Mortar bed may be subject to failure under these conditions.
- For Detail B, C and D a vapour retarder may be applied underneath wood sub-floor. Consultant to specify location.
- For Detail A & B a drainage modular screed system can be used to eliminate wire lath and to drain any moisture that may have penetrated the screed. See 314F Detail G page 69
- Refer to Notes For The Professional and 301MJ-2019-2021.
- Drains should be designed to permit drainage of water at the tile surface and the surface of the waterproofing membrane. For drainage see Detail 326DR-2019-2021. Latex-Portland cement mortars may require 14 – 60 days cure before exposure to water. Verify with the manufacturer the correct cure time required. Alternatively, to reduce the curing time required, a rapid set mortar may be more suitable.
- Waterproofing membrane if required must be specified. (ANSI A118.10) Follow manufacturers' recommendations.
- Uncoupling Membrane – follow manufacturer's recommendations for appropriate mortars: membrane must achieve 0.3 N/mm^2 (50 PSI or greater) shear bond strength after 7 days per the test method in ANSI A118.12 section 5.1.3.
- Bond Coat to Uncoupling membrane- Dry-set mortar (minimum acceptable standard ANSI A118.1 or ISO C1, Latex Portland cement mortar (minimal acceptable standard ANSI A118.4 or ISO 13007 C2S1) or Improved Modified Dry-set cement mortar (minimal acceptable standard ANSI A118.15 or ISO 13007 C2 F and/or T, and/or S1, modified epoxy emulsion mortars or 100% solids epoxy mortars (minimum acceptable standard ANSI A118.3 or ISO 13007 RG).

E