

# TILE APPLIED OVER WOOD SUBFLOOR IN DRY AREAS

## THIN-SET METHOD

### 313F-2019-2021

#### SUITABLE SUBSTRATES

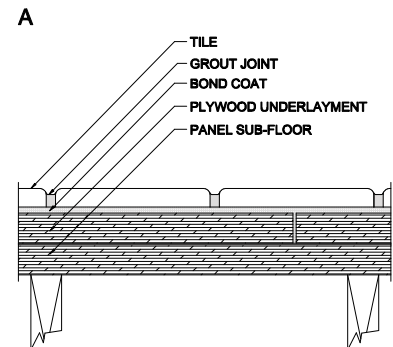
- Floor systems, including the framing system and subfloor panels, over which the tile will be installed shall be in conformance with the Canadian National Building Code 2015 and applicable local building codes taking into consideration anticipated live and dead loads.

#### MATERIALS

- TILE
- BOND COAT – Latex-Portland cement mortars (minimum acceptable standard ANSI A118.11 or ISO 1307 C2S1), modified epoxy emulsion mortars or 100% solids epoxy mortars (minimum acceptable standard ANSI A118.3 or ISO 1307 R1).
- 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).

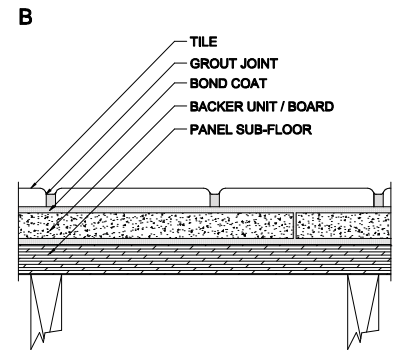
#### ✦ DETAIL A – THIN-SET ON PLYWOOD

Suitable Sub-floor: Douglas Fir plywood (CSA 0121), Canadian Softwood plywood (CSA 0151), Poplar plywood (CSA 0153), Construction sheathing or APA Sturd-I-Floor, Exposure 1 OSB. Joists to be spaced 406 mm o.c. Apply both layers of panel with top grain at right angles to joist, and with top layer staggered to give 50% overlap of sheets of sub-floor. Gap the top layer of plywood 6 mm between sheets. Underlayment: Only 16 mm or thicker Douglas Fir exterior-grade plywood Select Tight-faced, meeting CSA-0121. Attach underlayment with 30 mm screws or ring shank nails placed 150 mm o.c. around perimeter and 200 mm o.c. throughout the body of the panel. Underlayment screws or ring shank nails to go through the total thickness of the assembly but should not penetrate the joists or cross bridging/solid blocking. 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% on interior dry areas. 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. 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.



#### ✦ DETAIL B – THIN-SET ON BACKER UNIT/BOARD

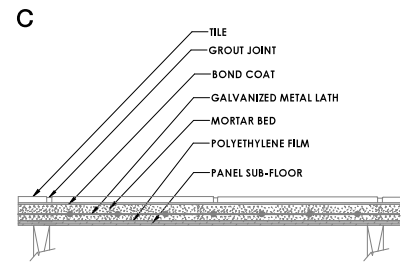
Suitable Sub-floor: Douglas Fir plywood (CSA 0121), Canadian Softwood plywood (CSA 0151), Poplar plywood (CSA 0153), Construction sheathing or APA Sturd-I-Floor, Exposure 1 OSB. Underlayment: Minimum 13 mm cementitious backer unit (CBU) or coated glass mat backer board or nominal 11 mm thick fibre-cement backer board meeting ASTM C1288 bedded in latex-Portland cement mortar (minimum acceptable standard ANSI A118.4 or ISO 13007 C2) and gapped 3 mm. Fasten underlayment to sub-floor with 30 mm galvanized screws 200 mm o.c. throughout the body of the panel. Do not countersink screws for coated glass mat backer board. Treat joints as per manufacturer's directions. Apply bond coat, filling gaps in underlayment. Apply bond coat to mortar bed surface. Use proper notched trowel to ensure adequate bond. 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% on interior dry areas. 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. 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.



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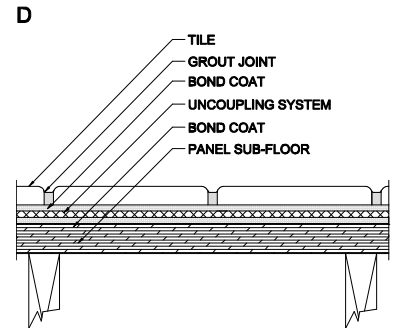
#### ✦ DETAIL C – MORTAR BED WITH CLEAVAGE MEMBRANE

Install polyethylene film, place mortar bed (see Tile Guide Specification Section Mixes 2.9.5) at a minimum of 32 mm and a maximum of 51 unless stated otherwise by the manufacture. Place 51 mm x 51 mm x 1.6 mm galvanized wire mesh approximately in the middle of the mortar bed as it's being placed (do not place the galvanized wire mesh immediately over or to near the polyethylene film). Finished tolerance of mortar bed not to exceed 6 mm in 3000 mm or 2 mm in 300 mm. More stringent tolerances apply for tiles where any side is greater than 380 mm. Allow mortar to cure. 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. Allow mortar bed to cure. Apply bond coat to cured mortar. 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. 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. 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.



#### ✦ DETAIL D – THIN-SET ON UNCOUPLING SYSTEM

Suitable Subfloor: Minimum 15 mm Douglas Fir plywood, Canadian Softwood plywood, Poplar plywood, Construction sheathing or APA Sturd-I-Floor, Exposure 1 OSB for joists spaced 406 mm o.c. For floor trusses or I-joists spaced 480 mm o.c., subfloor minimum 20 mm meeting CSA as indicated above. For floor trusses or I-joists spaced 600 mm o.c. subfloor minimum 20 mm with overlay of 10 mm minimum of plywood meeting CSA 0121 or APA Sturd-I-Floor, Exposure 1 OSB, with 3 mm gap between sheets. Underlayment screws or ring shank nails to go through the total thickness of the assembly but should not penetrate the joists or cross bridging/solid blocking. Install uncoupling system to manufacturer's recommendations. 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% on interior dry areas. 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. 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. 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. Uncoupling system to be placed over heating system, follow manufacturer's recommendations. For definition of uncoupling system see Glossary.



#### LIMITATIONS

- For use on interior floors in dry areas. For residential or light commercial use only.
- Waferboard, particleboard and similar products should not be used for subfloors or underlayment.

#### OTHER CONSIDERATIONS

- Local practice sometimes incorporates an expanded metal lath attached to the plywood. This is an acceptable method of installation, providing that two layers of plywood is used as per detail (A) and the material used to fill the metal lath is one of the bond coats listed above.
- Cross bridge floor joists but preferably solid blocking.
- Refer to Notes For The Professional and 301MJ-2019-2021.
- When using detail (C), recess floor joist with respect to adjacent areas to accommodate the thickness of the finished tile installation, or use transition strip where tile work abuts other floor coverings.
- For natural stone and some tile larger than 300 mm x 300 mm deflection must not exceed L/720 of span.
- Some thicker uncoupling membranes can be applied on floor trusses and
- I-joists spaced at 600 mm on a single layer subfloor 20 mm minimum thickness.
- Uncoupling Membrane – follow manufacturer's recommendations. Please see page 31 for more information.