MOVEMENT JOINTS FOR TILE INSTALLATIONS

Expansion and control joints are required in both floors and walls. Expansion joints must extend through both the tile and the substrate on which the tile is applied and are designed to accommodate continuing movement in the structure throughout the life of the building caused by expansion and/or contraction due to thermal or other effects. The installation of control joints in the openings left by the tile contractor are covered in the "Caulking and Sealants" section of the specification.

Control joints are:

- A joint cut or tooled into the concrete surface to control the location of cracks. A control joint in the tile to be located above the control joint in the substrate or above any construction cold joints. Saw cuts to be applied within the first twelve hours of concrete placement.
- A joint in the ceramic tile, extending through the setting materials which is intended to minimize stresses in the bond layer due to differential movement of ceramic tile relative to the substrate, caused by thermal expansion and contraction.
- Saw cuts to penetrate a minimum of 1/3 of the thickness of the slab. Saw cutting of the slab is not the responsibility of the tile contractor.

Control joints to be provided around the perimeter of floors, around columns, where tile abuts other hard materials, at the junction between horizontal and vertical surfaces and at transitions that include corridors and changes in direction, for example T’s, L’s and diagonals.

The location of expansion joints and control joints is the responsibility of the consultant. Exterior expansion or control joints to be caulked with suitable sealants. For interior expansion or control joints, prefabricated expansion joints or double metal or plastic terrazzo strips may be used with a suitable sealant. Some prefabricated expansion joints may be recommended by the manufacturer for exterior use.

Cold Joint – Cold joints are formed primarily between slab pours. A control joint to be installed over all cold joints in the slab. Where conditions do not allow one to install a control joint, the use of a crack isolation membrane may be considered, along with a control joint in the tile surface as close as possible to the cold joint in the substrate. Construction Joint – The plane where two successive placements of concrete meet but do not bond cementitiously. Sometimes dowels or reinforcing steel are used to hold the concrete on both sides together. A control joint to be placed over this joint in the tile. Isolation Joint – A separation between adjoining similar or dissimilar elements of a concrete structure, usually a vertical plane. Its purpose is to prevent movements of the individual parts from causing cracks in the concrete. Also, sometimes called an expansion joint. Structural Joint – An isolation joint intended to allow independent movement between adjoining sections of the building.

Recommended spacings and sizes for expansion joints and control joints are as follows:

- **Interior tile** - control joints 4878 mm to 6098 mm in each direction - minimum 6 mm width. Areas exposed to moisture or direct sunlight - 3659 mm to 4878 mm in each direction- minimum 6 mm width.
- **Exterior tile** - Due to high temperature fluctuations, use minimum 10 mm wide control joints from 2439 mm to 3659 mm in each direction. In areas of extreme temperature variations (over 40ºC) between summer highs and winter lows joint width shall be a minimum 13 mm. The consultant shall specify the required joint width and required distance between joints.

6 mm = 1/4”  
10 mm = 3/8”  
13 mm = 1/2”  
2439 mm = 8’  
3659 mm = 12’  
4878 mm = 16’  
6098 mm = 20’  
40ºC = 104ºF
TILE INSTALLED ON CEMENT MORTAR OVER MASONRY OR CONCRETE WALLS
INTERIOR/EXTERIOR  302W

SUITABLE SUBSTRATES
- Concrete or masonry.

MATERIALS
- TILE - Ceramic, porcelain, mosaic, quarry, agglomerate, precast terrazzo, natural stone.
- Interior and dry areas: All tile types as recommended by the manufacturer.
- Exterior: Frost resistant materials only.
- SCRATCH COAT (7 mm minimum)
  Flextile 57 Scratch Coat (mixed with Flextile 43 for Exterior)
- MORTAR BED (20 mm +)
  Flextile Dry Pack Mortar (mixed with Flextile 43 for Exterior)
- WATERPROOF MEMBRANE (if required)
  Flextile WP980 Waterproof Membrane (ANSI A118.10)
- BOND COAT
  Interior: Flextile 210, 200, 92 or 90 Type 1 Adhesives (ANSI A136.1)
  Flextile 51 or 54 Thin-Set Mortar (ANSI A118.1)
  Flextile 50, 60 or 52 Polymer Modified Thin-Set Mortars (ANSI A118.4)
  Exterior:
  Flextile 51/43 or 44 two-component Latex Mortar System (ANSI A118.4)
  Flextile 58XT Fast Set two-component Latex Mortar System (A118.4)
- GROUT
  Interior: Flextile Polymer Modified Grout (ANSI A118.7)
  Flextile Flex-Epoxy 100 Epoxy Grout (ANSI A118.3)
  Exterior: Flextile Polymer Modified Grout (ANSI A118.7)

APPLICATION
- Apply scratch coat and allow to cure a minimum of 24 hours at 20°C. Apply mortar bed to required thickness in an even plane. Finished tolerance of mortar bed not to exceed 6 mm in 3049 mm or 2 mm in 305 mm. Allow up to 72 hours to cure. Apply bond coat to mortar bed surface. Slide tile firmly into position. Use sufficient bond coat to ensure minimum 95% contact on exterior surfaces and wet areas and minimum 80% on interior dry surfaces. Force grout into full depth of joint, remove excess grout and clean.

LIMITATIONS
- Manufacturer’s recommendations to be followed. Exterior tile installations not to be attempted with a temperature of less than 12°C. Do not use paper-back mounted tile. Mesh-back or dot mounted tile for exterior use or in locations of extreme moisture should not be used unless the manufacturer guarantees that the material is suitable for this type of installation.

OTHER CONSIDERATIONS
- Tile used on exterior applications to be frost resistant.
- Refer to General Requirements, Notes on pages 10-14 and 301MJ-2002.
- Waterproof membrane if required must be specified
  Follow manufacturer’s recommendations.
- 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.

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SUITABLE SUBSTRATES
- Concrete or masonry.

MATERIALS
- TILE - Ceramic, porcelain, mosaic, quarry, agglomerate, precast terrazzo, natural stone.
- Interior and dry areas: All tile types as recommended by the manufacturer.
  Exterior: Frost resistant materials only.
- SLIGHT LEVELLING COAT, if required.
  Interior: Flextile 57 Scratch Coat
  Exterior: Flextile 57 Scratch Coat / 43 Mortar Additive
- WATERPROOF MEMBRANE, if required
  Flextile WP980 Waterproof Membrane (ANSI A118.10)
- BOND COAT
  Interior: Flextile 51 or 54 Thin-set Mortar (ANSI A118.1)
  Flextile 51/43 two-component Latex Mortar System (ANSI A118.4)
  Flextile 50, 60 or 52 Polymer Modified Mortars (ANSI A118.4)
  Exterior: Flextile 51/44 two-component Latex Mortar System (ANSI A118.4)
  Flextile 58XT Fast Set two-component Latex Mortar System (A118.4)
- GROUT
  Interior: Flextile 500 or 600 Polymer Modified Grout (ANSI A118.7)
  Flextile Flex-Epoxy 100 – 100% Solids Epoxy Grout (ANSI A118.3)
  Exterior: Flextile 600 Polymer Modified Grout (ANSI A118.7)

APPLICATION
- Surface variation not to exceed 6 mm in 3049 mm or 2 mm in 305 mm. Apply levelling coat if required. Apply thin-set bond coat according to manufacturer's instructions. Use proper notched trowel to ensure adequate bond. Slide tile firmly into position. Use sufficient bond coat to ensure minimum 95% contact on exterior surfaces and wet areas and minimum 80% on interior dry surfaces. Force grout into full depth of joint, remove excess grout and clean.

LIMITATIONS
- Manufacturer's recommendations to be followed. Exterior tile installations not to be attempted when temperature is less than 12°C. Do not use paper-back mounted tile. Mesh-back or dot mounted tile for exterior use or in locations of extreme moisture should not be used unless the manufacturer guarantees that the material is suitable for this type of installation.

OTHER CONSIDERATIONS
- Tile used on exterior applications to be frost resistant.
- Refer to General Requirements, Notes on pages 10-14 and 301MJ-2002.
- Waterproof membrane if required must be specified. (ANSI A118.10 -1993) Follow manufacturer's recommendations.
- 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.

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TILE INSTALLED OVER GYPSUM BOARD - THIN-SET METHOD
INTERIOR DRY AREAS ONLY

SUITABLE SUBSTRATES
- Gypsum board
- Wood or metal strapping, or studs. Maximum 406 mm o.c.

MATERIALS
- TILE - Ceramic, mosaic, porcelain and quarry tile, agglomerate, precast terrazzo, natural stone.
- TAPE – 51 mm drywall tape
- BOND COAT
  - Flextile 210, 200, 92 or 90 Type 1 Adhesives (ANSI A136.1)
  - Flextile 51 or 54 Thin-set Mortars (ANSI A118.1)
  - Flextile 60 Latex Modified Thin-set Mortar (ANSI A118.4)
  - Flextile 52 Versatile Thin-set Mortar (ANSI A118.4)
- GROUT
  - Flextile Polymer Modified Grout (ANSI A118.7)
  - Flextile Flex-Epoxy 100 – Epoxy Grout (ANSI A118.3)

APPLICATION
- Gypsum board (13 mm minimum) to be stable, plumb, square and screwed to studs. All joints to be taped and sanded. Apply bond coat and install tile while bond coat is wet and tacky. Slide tile into position. Use sufficient bond coat to ensure minimum 80% contact. Force grout into full depth of joint. Remove excess grout and clean.

LIMITATIONS
- Organic adhesives are not recommended for use in areas exposed to temperatures above 60°C. Type of organic adhesives to be recommended by the manufacturer.
- Organic adhesives – Manufacturer’s recommendations must be followed for use and suitability with non-absorbent tile.

OTHER CONSIDERATIONS
- Heavy lug tiles are not recommended, but if used, to be set only with latex cement mortars.
- Special care to be taken when installing tile thicker than 13 mm to prevent slippage or debonding.
- Refer to General Requirements, Notes on pages 10-14 and 301MJ-2002.
- This system not to be used in wet or exterior areas such as showers, bath surrounds, steam rooms or exterior installations.

13 mm = 1/2”
51 mm = 2”
406 mm = 16”
60°C = 140°F

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TILE INSTALLED ON CEMENTITIOUS BACKER UNIT (CBU) – THIN-SET METHOD/ WALLS

DETAIL A - INTERIOR WET/DRY AREAS AND EXTERIOR USE

SUITABLE SUBSTRATES

- Wood studs for interior use only or metal studs maximum 406 mm o.c.
- VAPOUR BARRIER - 6 mils polyethylene film - Required in exterior and wet areas.
- CEMENTITIOUS BACKER UNIT (CBU) - minimum 13 mm thick meeting ANSI A118.9-1999 or nominal 11 mm thick fibre-cement backer board meeting ASTM C-1288-1999
- TILE - Ceramic, porcelain, mosaic, quarry, agglomerate, precast terrazzo, natural stone.
- TAPE - 51 mm fibre mesh

INTERIOR: Usually non-vitreous glazed wall tile, but suitable for other types of ceramic tile and mosaic. Consult with manufacturer.

EXTERIOR: Use frost resistant materials only.

SLIGHT LEVELLING COAT, if required

- WATERPROOF MEMBRANE, if required (use Latex Mortar Bond Coat only)
- BOND COAT

INTERIOR:
- Flextile 57 Scratch Coat / 43 Mortar Additive
- Flextile WP980 Waterproof & Crack Isolation Membrane (ANSI A118.10)

EXTERIOR:
- Flextile 58XT Fast Set two-component Latex Mortar System (ANSI A118.4)

GROUT

INTERIOR:
- Flextile Polymer Modified Grout (ANSI A118.7)
- Flextile Flex-Epoxy 100 Epoxy Grout (ANSI A118.3)

EXTERIOR:
- Flextile Polymer Modified Grout (ANSI A118.7)

APPLICATION

- Cementitious backer unit (CBU) must be stable, plumb, square and screwed to studs with corrosion resistant fasteners. Surface variation in the backing not to exceed 6 mm in 3049 mm or 2 mm in 305 mm. Apply levelling coat if required. All joints must be taped with 51 mm fibre-mesh tape, fill with a dry-set or latex mortar and sand. Apply thin-set bond coat to cement board surface using proper notched trowel to ensure adequate bond. Slide tile firmly into position while bond coat is wet and tacky. Use sufficient bond coat to ensure minimum 80% contact. Force grout into full depth of joint, remove excess grout and clean.

LIMITATIONS

- Manufacturer’s recommendations must be followed. Exterior tile installations should not be attempted when temperature is less than 12°C. Do not use paper-back, mesh-back or dot mounted tile for exterior use or in locations of extreme moisture unless the manufacturer guarantees that the material is suitable for this type of installation.
- All requirements for exterior applications as listed on Page 10 must be met.
- Spacing and minimum gauge of steel studs as per instructions of manufacturer of cementitious backer unit (CBU). On exterior installation, drill approximately 6 mm weep holes in grout joints at the bottom of the wall to prevent spalling of cementitious backer unit (CBU) due to freeze-thaw action or follow manufacturers recommendations.
- Waterproof membrane if required must be specified. (ANSI A118.10-1993) Follow manufacturer’s recommendations
- Special care must be taken when installing tile thicker than 13 mm to prevent slippage or debonding.
- Tile used on exterior applications must be frost resistant.
- Refer to General Requirements, Notes on pages 10-14 and 301MJ-2002.
- For high use showers (hotels, gang showers, sports facilities, etc.) a waterproof membrane must be used. Refer to detail 319SR-2002.
- Insulation and vapour barrier location to be specified by consultant.
- Refer to local codes and bylaws with respect to vented drain cavity for exterior applications
- All openings and cuts must be treated to ensure waterproof integrity.
- Latex Portland cement mortars may require 14 – 60 days cure before exposure to water. Refer with the manufacturer the correct cure time required. Alternatively, to reduce the curing time required, a rapid set mortar may be more suitable.
- Sheathing and backing to be designed and detailed by the consultant.

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TILE INSTALLED OVER CEMENTITIOUS BACKER UNIT (CBU)

DETAIL A - ON BATH TUB/WALLS - THIN-SET METHOD

SUITABLE SUBSTRATES
- Wood or metal studs, maximum 406 mm o.c.

MATERIALS
- VAPOUR BARRIER - 6 mils polyethylene film
- CEMENTITIOUS BACKER UNIT (CBU) - Minimum 13 mm thick. (ANSI A118.9-1999) or nominal 11 mm thick fibre-cement backer board meeting ASTM C1288-1999.
- TILE - Glazed wall, porcelain, mosaic, natural stone.
- TAPE - 51 mm fibre mesh
- WATERPROOF MEMBRANE (if required, with Latex Mortar Bond Coat only) Flextile WP980 Waterproof Membrane (ANSI A118.10)
- BOND COAT
  - Flextile 210, 200, 92 or 90 Type 1 Adhesives (ANSI A136.1)
  - Flextile 51 / 43 or 44 Latex Mortar System (ANSI A118.4)
- GROUT
  - Flextile Polymer Modified Grout (ANSI A118.7)
  - Flextile Flex-Epoxy 100 – 100% Solids Epoxy Grout
- SEALANT – Silicone rubber or prefabricated movement joint (PMJ)

APPLICATION
- Surface variation in the backing not to exceed 6 mm in 3049 mm or 2 mm in 305 mm. Attach cementitious backer unit (CBU) to studs with corrosion resistant fasteners 152 mm o.c. Leave 3 mm space around perimeter of each board. Leave 6 mm space between bottom of tile and bath to allow for stud shrinkage and bath deflection during filling or emptying. All joints to be taped with 51 mm fibre-mesh tape. Fill with dry-set or latex mortar and sand. Apply bond coat to cement board using proper notched trowel. **Use sufficient bond coat to ensure a minimum of 95% contact in wet areas and minimum of 80% contact in dry areas.** Slide tile firmly into position before bond coat skins over. Allow bond coat to cure before grouting. Force grout into full depth of joint, remove excess grout and clean.

LIMITATIONS
- Manufacturer’s recommendations must be followed.
- Do not use paper-back, mesh-back or dot mounted tile for exterior use or in locations of extreme moisture unless the manufacturer guarantees that the material is suitable for this type of installation.

OTHER CONSIDERATIONS
- This detail may be used with water-resistant gypsum board provided that a suitable waterproof membrane is installed over gypsum board prior to application.
- Prefabricated movement joints (PMJ) may be used in place of sealant, where showing on drawings or where two planes meet.
- Refer to General Requirements, Notes on pages 10-14 and 301MJ-2002.
- For high use showers (hotels, gang showers, sports facilities etc.) a waterproof membrane shall be used.
- All openings and cuts must be treated to ensure waterproof integrity.
- Waterproof membrane if required must be specified. (ANSI A118.10-1993) Follow manufacturer’s recommendations.
- For deflective substrates fill tub with water prior to applying caulking to tub sill.

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SUITABLE SUBSTRATES
- Concrete or masonry.

MATERIALS
- TILES - Non-vitreous, vitreous, porcelain, mosaic, quarry, agglomerate, precast terrazzo, natural stone.
- METAL LATH (optional) – 1.4 kg/m² (ASTM C847-96)
- SCRATCH COAT (7 mm minimum)
  - Flextile 57 Scratch Coat (mixed with 43 Mortar Additive for Exterior Use)
- WATERPROOF MEMBRANE (if required)
  - Flextile WP980 Waterproof Membrane (ANSI A118.10)
- MORTAR BED. (20 mm+)
  - Flextile Dry Pack Mortar
- BOND COAT (on minimum 24 hour cured Mortar Bed)
  - Interior: Flextile 60, 50, 52 Polymer Modified Mortars (ANSI A118.4)
  - Flextile 51, 53/43 two-component Latex Mortar System (ANSI A118.4)
  - Flextile 51, 53/44 two-component Latex Mortar System (ANSI A118.4)
  - Flextile 58XT Fast Set two-component Latex Mortar System (ANSI A118.4)
  - Portland Cement Slurry (on fresh mortar bed only)
  - Exterior: Flextile 51/43, 44 two-component Latex Mortar System (ANSI A118.4)
  - Flextile 58XT Fast Set two-component Latex Mortar System (ANSI A118.4)
- GROUT
  - Interior: Flextile Polymer Modified Grout (ANSI A118.7)
  - Flextile FlexEpoxy 100 – 100% Solids Epoxy Grout (ANSI A118.3)
  - Exterior: Flextile Polymer Modified Grout (ANSI A118.7)

APPLICATION
- Attach metal lath, if required, according to manufacturer’s recommendations.
- Apply scratch coat and cure overnight. Apply mortar bed to required thickness.
- Finished tolerance of mortar bed not to exceed 6 mm in 3049 mm or 2 mm in 305 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 minimum 80% on interior dry surfaces.** 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.
- Do not use paper-back or mesh-back mounted tile for exterior use or in locations of extreme moisture unless the manufacturer guarantees that the material is suitable for this type of installation.

OTHER CONSIDERATIONS
- Latex additive is recommended for modification of scratch coat, mortar bed and Portland cement bond coat. Follow manufacturer’s recommendations. Where job conditions require additional thickness, allow 24 hours cure between coats.
- Tile used on exterior applications must be frost resistant.
- Refer to General Requirements, Notes on pages 10-14 and 301MJ-2002.
- Waterproof membrane if required must be specified. (ANSI A118-10-1993) Follow manufacturer’s recommendations.
- 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.

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SUITABLE SUBSTRATES
- Metal Lath on wood or metal studs, maximum 406 mm o.c.

MATERIALS
- TILE - Ceramic, porcelain, mosaic, quarry, agglomerate, precast terrazzo, natural stone.
- METAL LATH - 1.4 kg/m² (ASTM C847-96)
- SCRATCH COAT - (7 mm minimum) Flextile 57 Scratch Coat (mixed with 43 Mortar Additive for Exterior Use)
- WATERPROOF MEMBRANE (if required) Flextile WP980 Waterproof Membrane (ANSI A118.10)
- MORTAR BED - (20 mm+) See Tile Guide Specification Section Mixes 2.5.3 Flextile Dry Pack Mortar
- VAPOUR BARRIER - Minimum 0.10 mm (6 mils) polyethylene film
- BOND COAT (on minimum 24 hour cured Mortar Bed)
  Interior: Flextile 60, 50, 52 Polymer Modified Mortars (ANSI A118.4) Flextile 51, 53/43 two-component Latex Mortar System (ANSI A118.4) Flextile 51, 53/44 two-component Latex Mortar System (ANSI A118.4) Flextile 58XT Fast Set two-component Latex Mortar System (ANSI A118.4)
  Exterior: Flextile 51/43, 44 two-component Latex Mortar System (ANSI A118.4) Flextile 58XT Fast Set two-component Latex Mortar System (ANSI A118.4)
- GROUT
  Interior: Flextile Polymer Modified Grout (ANSI A118.7) Flextile FlexEpoxy 100 – 100% Solids Epoxy Grout (ANSI A118.3)
  Exterior: Flextile Polymer Modified Grout (ANSI A118.7)

APPLICATION
- Attach metal lath according to manufacturer's recommendations. Apply scratch coat and cure overnight. Apply mortar bed to required thickness. Finished tolerance of mortar bed not to exceed 6 mm in 3049 mm or 2 mm in 305 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 minimum 80% on interior surfaces. 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.
- Do not use paper-back mounted tile. Mesh-back mounted tile for exterior use or in locations of extreme moisture should not be used unless the manufacturer guarantees that the material is suitable for this type of installation.

OTHER CONSIDERATIONS
- Latex additive is recommended for modification of scratch coat, mortar bed and Portland cement bond coat. Follow manufacturer's recommendations. If mortar bed must be applied in multiple coats, allow 24 hours between coats.
- Tile used on exterior applications must be frost resistant.
- Refer to General Requirements, Notes on pages 10-14 and 301MJ-2002.
- Consultant to specify waterproof membrane if required.
- Waterproof membrane if required must be specified. (ANSI A118.10-1993) Follow manufacturer’s recommendations.

For Detail B
- 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. ANSI A118.4-1999 (Latex modified mortar for exterior alternative quick-set) for freeze thaw cycles
- The difference between interior and exterior installations is the placement of the vapour barrier. Placement to be specified by the consultant.

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TILE OVER MORTAR BED WITH CLEAVAGE MEMBRANE INTERIOR ONLY

SUITABLE SUBSTRATES

- Precast concrete floor systems, post tensioned concrete floor systems and other floors subject to movement deflection.

MATERIALS

- TILE - Ceramic, porcelain, mosaic, quarry, pavers, agglomerate, precast terrazzo, natural stone.
- CLEAVAGE MEMBRANE - 0.10 mm (6 mils) polyethylene (optional 15lb felt).
- REINFORCING MESH 51 mm x 51 mm x 1.6 mm—Welded wire/fabric (galvanized square wire mesh) (ASTM A82, ASTM A185-97)
- MORTAR BED
  - Flextile Dry Pack Mortar
- BOND COAT (on fresh mortar bed)
  - Portland cement slurry
- BOND COAT (on minimum 24 hour cured mortar bed)
  - Flextile 52 Versatile Polymer Modified Thin-set Mortar (ANSI A118.11.4)
  - Flextile 58 Versatile Polymer Modified Fast Set Mortar (ANSI A118.4)
  - Flextile 61 PM Full Coverage Mortar (ANSI A118.4)
  - Flextile 62 PM Fast Set Full Coverage Mortar (ANSI A118.4)
  - Flextile 51 / 43 or 44 two-component Latex Mortar System (ANSI A118.4)
  - Flextile 53 / 43 or 44 two-component Latex Mortar System (ANSI A118.4)
  - Flextile 58XT Fast Set – two-component Latex Mortar System (ANSI A118.4)
- BOND COAT (on minimum 7 day cured mortar bed)
  - Flextile Flex-Epoxy 100 – 100% Solids Epoxy Mortar
- GROUT
  - Flextile 600 Polymer Modified Polymer Modified Grout (ANSI A118.7)
  - Flextile Flex-EPOXY 100 – 100% Solids Epoxy Grout (ANSI A118.3)

APPLICATION

- Maintain a minimum of 16 mm of mortar under wire reinforcement. Apply mortar bed (see Tile Guide Specification Section Mixes 2.5.5) to required thickness. Finished tolerance of mortar bed not to exceed 6 mm in 3049 mm or 2 mm in 305 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 mosaic 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 should be 51 mm minimum.

OTHER CONSIDERATIONS

- Latex additive used in place of water is recommended for Portland cement bond coat, and may be used in modification of mortar bed.
- Where required for chemical resistance, 100% solids epoxy setting material and/or grout should be used.
- Refer to General Requirements, Notes on pages 10-14 and 301MJ-2002.
- Refer to note on Crack Isolation Membranes, page 9.
DETAIL A INTERIOR/ EXTERIOR

SUITABLE SUBSTRATES

- Interior/exterior concrete slab where deflection under both dead and live loads does not exceed 1/360 of span.

MATERIALS

- TILE - Ceramic, porcelain, mosaic, quarry, pavers, precast terrazzo and natural stone.
- WATERPROOF MEMBRANE, if required
  - Flextile WP980 Membrane (ANSI A118.10)
- BOND COAT
  - Interior:
    - Flextile 60, 50 or 52 Polymer Modified Thin-Set Mortars (ANSI A118.4)
    - Flextile 58 Versatile Fast Set Mortar (ANSI A118.4)
    - Flextile 61 Full Coverage Mortar (ANSI A118.4)
    - Flextile 62 Fast Set Full Coverage Mortar (ANSI A118.4)
    - Flextile 53, 51 / 43 two-component Latex Mortar System (ANSI A118.4)
    - Flextile 53, 51 / 44 two-component Latex Mortar System (ANSI A118.4)
    - Flextile 58XT Fast Set two-component Latex Mortar System (ANSI AS118.4)
    - Flextile Flex-Epoxy 100 – 100% Solids Epoxy Mortar (ANSI A118.3)
  - Exterior:
    - Flextile 53, 51 / 43, 44 two-component Latex Mortar System (ANSI A118.4)
    - Flextile 58XT Fast Set two-component Latex Mortar System (ANSI AS118.4)
- GROUT
  - Interior:
    - Flextile 600 Polymer Modified Grout (ANSI A118.7)
    - Flextile Flex-Epoxy 100–100% Solids Epoxy Grout (ANSI A118.3)
  - Exterior:
    - Flextile 600 Polymer Modified Grout (ANSI A118.7)

APPLICATION

- 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 minimum of 80% contact on interior dry surfaces. 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.
- Maximum variation of slab should not exceed 6 mm in 3049 mm or 2 mm in 305 mm.
- Provide positive drainage below exterior slabs; use latex-Portland cement mortars on exterior slabs. Use of epoxy mortars and grouts is recommended for interior surfaces only or where improved chemical resistance is required.
- Use method 309F-2002 or crack isolation membrane if recommended by the manufacturer for precast floor systems, post tensioned concrete floor systems and other floors subject to movement or deflection.
- Not a roof assembly (For roof assembly see Detail 325F-2002 Detail A)

OTHER CONSIDERATIONS

- For exterior installations, use a suitable latex-Portland cement mortar. Backbuttering of the tile is required to achieve 95% contact.
- Tile used in exterior applications must be frost resistant.
- Refer to General Requirements, Notes on pages 10-14 and 301MJ-2002.
- Waterproof membrane if required must be specified. (ANSI A118.10-1993) Follow manufacturer’s recommendations
- For exterior use concrete slab must be sloped to provide positive surface drainage and adequate drainage below slab must be provided.

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TILE APPLIED OVER WOOD SUB-FLOOR IN DRY AREAS—THIN-SET METHOD

SUITABLE SUBSTRATES

- Suitable panel subfloors over wood joist at maximum of 406 mm o.c. where deflection under both dead and live loads does not exceed 1/360 of span between spacing of the joints.
- Maximum deflection under both dead and live loads must not exceed 1/720 of span for use with natural stone and some tile larger than 305 mm x 305 mm.
- Deflection for the length of the span not to exceed 1/480 at the midpoint of the span between the joists, not over the joists.

MATERIALS

- TILE - Ceramic, mosaic, porcelain, quarry, pavers, precast terrazzo, natural stone.
- BOND COAT:
  - Flextile 60 PM Thin-Set Mortar (ANSI A118.11)
  - Flextile 50 PM Medium Bed Mortar (ANSI A118.11)
  - Flextile 52 Versatile PM Thin-Set Mortar (ANSI A118.11)
  - Flextile 58 Versatile Fast Set Mortar (ANSI A118.11)
  - Flextile 61 Full Coverage Mortar (ANSI A118.11)
  - Flextile 62 Fast Set Full Coverage Mortar (ANSI A118.11)
  - Flextile 51/43, 44 two-component Latex Mortar System (ANSI A118.4)
  - Flextile 53/43, 44 two-component Latex Mortar System (ANSI A118.4)
  - Flextile 58XT Fast Set two-component Latex Mortar System (ANSI A118.4)
- GROUT
  - Flextile 600 Polymer Modified Grout (ANSI A118.7)
  - Flextile Flex-Epoxy 100 – Epoxy Grout (ANSI A118.3)

DETAIL A - THIN-SET ON PLYWOOD – Suitable Subfloor: Douglas Fir plywood, Canadian Softwood plywood, Poplar plywood, Construction sheathing or 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 152 mm o.c. around perimeter and 203 mm o.c. throughout the body of the panel. Underlayment screws to go through the total thickness of the assembly but should not penetrate the joists or cross bridging/solid blocking. Use sufficient bond coat to ensure minimum 80% contact.

DETAIL B - THIN-SET ON BACKER UNIT/BOARD Suitable Subfloor: Douglas Fir plywood, Canadian Softwood plywood, Poplar plywood, Construction sheathing or 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 C1288-1999 bedded in latex-Portland cement mortar and gapped 3 mm. Fasten underlayment to subfloor with 30 mm galvanized screws 203 mm o.c. throughout the body of the panel. Do not counter sink screws for coated glass mat backer board. Treat joints as per manufacturer’s directions. Apply bond coat, filling gaps in underlayment. 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

- 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 General Requirements, Notes on pages 10-14 and 301 MJ-2002.
- For residential only a 25 mm mortar bed may be used. The sub-floor shall have a minimum thickness of 16 mm.

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TILE OVER HEATED FLOOR SYSTEMS

DETAIL A - MORTAR BED OVER PLYWOOD (INTERIOR)

SUITABLE SUBSTRATES

- Suitable panel subfloor over wood joist in dry areas maximum 406 mm o.c. Deflection criterion includes the total thickness of the assembly prior to the installation of tile.

MATERIALS

- CLEAVAGE MEMBRANE - 6 mils polyethylene film or 15 lbs. felt meeting CAN/CGSB-51.34M, asphalt saturated roofing felt, meeting CSA C123.3-98.
- GALVANIZED DIAMOND METAL LATH - 1.4 kg/m² (ASTM C847-95)
- MORTAR BED (cured minimum of 24 hours)
  Flextile Dry Pack Mortar
- 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 - Ceramic, mosaic, porcelain, quarry, pavers, agglomerate and natural stone.
- BOND COAT
  Flextile S2 Versatile Polymer Modified Thinset Mortar (ANSI A118.4)
  Flextile S8 Versatile Polymer Modified Fast Set Mortar (ANSI A118.4)
  Flextile 51, 53 / 43, 44 – two component Latex Portland Cement Mortar System (ANSI A118.4)
  Flextile S8XT Fast Set - two component Latex Mortar System (ANSI A118.4)
- GROUT
  Flextile 600 Polymer Modified Sanded Grout (ANSI A118.7)
  Flextile 100 – 100% Solids Epoxy Grout (ANSI A118.3)

APPLICATION

- Apply polyethylene film lapped at least 102 mm. Nail galvanized diamond metal lath butted, not overlapped, to the plywood. After electrical contractor has placed the electrical conduit over the metal 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 3049 mm or 2 mm in 305 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 mosaic 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.

OTHER CONSIDERATIONS

- Where incorporating heating cable on interior or exterior concrete substrates is desired, refer to details 309F-2002 and 310F-2002 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.
- Refer to General Requirements, Notes on pages 10-14 and 301MJ-2002.
- Expansion joints shall be installed at a maximum 3659 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 A118.10-1993) or crack isolation membrane if required must be specified. Follow manufacturers recommendations.

DETAIL B - MORTAR BED BONDED TO CONCRETE SLAB INTERIOR/EXTERIOR

SUITABLE SUBSTRATES

- Interior concrete slab where deflection under both dead and live loads does not exceed 1/360 of span to a maximum of 7 mm.

MATERIALS

- TILE - Ceramic, porcelain, mosaic, quarry, pavers, agglomerate, precast terrazzo, natural stone.
- MORTAR BED (cured for a minimum of 24 hours)
  Flextile Dry Pack Mortar
- BOND COAT
  Interior: Flextile 52 Versatile Polymer Modified Thinset Mortar (ANSI A118.4)
  Flextile 58 Versatile Polymer Modified Fast Set Mortar (ANSI A118.4)
  Flextile 51, 53 / 43, 44 – two component Latex Mortar System (ANSI A118.4)
  Flextile S8XT Fast Set – two component Latex Mortar System (ANSI A118.4)
  Exterior: Flextile 51, 53 / 43, 44 – two component Latex Mortar System (ANSI A118.4)
  Flextile S8XT Fast Set – two component Latex Mortar System (ANSI A118.4)
- GROUT
  Interior: Flextile 600 Polymer Modified Sanded Grout (ANSI A118.7)
  Flextile 100 – 100% Solids Epoxy Grout (ANSI A118.3)
  Exterior: Flextile 600 Polymer Modified Sanded Grout (ANSI A118.7)

DETAIL B CONTINUED NEXT PAGE
SUITABLE SUBSTRATES
- Minimum 16 mm exterior-grade plywood over wood joist, maximum 406 mm o.c. covered with waterproof membrane.

MATERIALS
- TILE - Ceramic, mosaic, porcelain.
- METAL LATH 1.4 kg/m² (ASTM C847-95)
- SCRATCH COAT
  Flextile 57 Scratch Coat (mixed with 43 Mortar Additive in Wet Areas)
- MORTAR BED
  Flextile Dry Pack Mortar (mixed with 43 Mortar Additive in Wet Areas)
- WATERPROOF MEMBRANE
  Flextile WP980 Waterproof & Crack Isolation Membrane (ANSI A118.10)
- BOND COAT
  Flextile 52 Versatile Polymer Modified Mortar (ANSI A118.4)
  Flextile 53 / 43, 44 – two component Latex Mortar System (ANSI A118.4)
  Flextile 58XT Fast Set two-component Latex Mortar System (ANSI A118.4)
- GROUT
  Flextile Polymer Modified Grout (ANSI A118.7)
  Flextile Flex-Epoxy 100 – 100% Solids Grout (ANSI A118.3)

APPLICATION
- Install waterproof membrane over plywood following manufacturers’ recommendations. Installation of drainage fittings and testing for leaks by others prior to tile work. Install metal lath attaching only to substrate above water line. Apply scratch coat. Let cure 24 hours minimum. Apply mortar bed to required thickness and let cure minimum of 48 hours. Finished tolerance of mortar bed not to exceed 6 mm in 3049 mm or 2 mm in 305 mm. Slope floor to drain. Apply bond coat to mortar bed in sufficient quantity to provide minimum 95% contact with back of tile. Slide tile firmly into position. Beat mosaic into position. Contact should be evenly distributed to give full support of the tile. Allow bond coat to cure minimum 7 days before grouting. Force grout into full depth of joint, remove excess grout and clean.

LIMITATIONS
- For use on interior applications only.

OTHER CONSIDERATIONS
- Under conditions of low temperatures or high humidity, required drying time before grouting can vary from 14 to 60 days. Where job conditions permit, longer drying time is recommended.
- Drains should be designed to permit drainage of water at the tile surface and the surface of the waterproof membrane. For drainage see Detail 326DR-2002.
- Where necessary provide a control joint around perimeter of curb.
- Shorter curing times may be achieved with specific products as recommended by the manufacturer.
- For installation of waterproof membrane follow manufacturer’s recommendations (ANSI A118.10-1993)
- Refer to General Requirements, Notes on pages 10-14 and 301MJ-2002.
- For high use showers (hotels, gang showers, sports facilities, etc.) refer to Detail 319SR-2002 Detail A & B.
- All openings and cuts must be treated to ensure waterproof integrity
- 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.
- If required, an underbed may be installed over a fresh scratch coat.

2 mm = 1/16”
6 mm = 1/4”
7 mm = 5/16”
16 mm = 5/8”
20 mm = 3/4”
32 mm = 1 1/4”
305 mm = 12”
3049 mm = 10’

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TILE INSTALLED OVER CONCRETE IN SWIMMING POOLS OR TANKS

SUITABLE SUBSTRATES
- Interior or exterior: cured concrete designed for no deflection when pool or tank is full.

MATERIALS
- TILE – Ceramic, porcelain, mosaic (suitable for use in pools)
- SCRATCH COAT
  Flextile 57 Scratch Coat mixed with Flextile 43 or 44 Mortar Additive
- MORTAR BED
  Flextile Dry Pack Mortar mixed with Flextile 43 or 44 Mortar Additive
- WATERPROOF MEMBRANE
  Flextile WP980 Waterproof & Crack Isolation Membrane (ANSI A118.10)
- BOND COAT
  Flextile 51 or 53 / 44 - Two component Latex Mortar System (ANSI A118.4)
  Flextile 58XT Fast Set two-component Latex Mortar System (ANSI A118.4)
- GROUT
  Flextile Polymer Modified Sanded Grout (ANSI A118.7)
  Flextile Flex-Epoxy 100 – 100% Solids Epoxy Grout (ANSI A118.3)

APPLICATION
- Apply slight levelling coat as required. Install waterproof membrane over concrete according to manufacturers’ recommendations. Installation of fittings and testing for leaks by others prior to tile work. Apply bond coat and grout as per detail 316B-2002. For detail (B), install scratch coat (see Tile Guide Specification Section Mixes 2.5.1) and mortar bed (see Tile Guide Specification Section Mixes 2.5.3 and 2.5.5) in accordance with 302W-2002 and 310F-2002 and cure minimum of seven days. Finished tolerance of mortar bed not to exceed 6 mm in 3049 mm or 2 mm in 305 mm. Apply bond coat in sufficient quantity to provide minimum 95% contact with back of tile. Contact should be evenly distributed to give full support of the tile. Slide tile firmly into position. Beat mosaic tile into position. Allow bond coat to cure minimum of seven days before grouting. Force grout into full depth of joint, remove excess grout and clean.

LIMITATIONS
- Ensure bond coat is compatible with waterproof membrane.
- Manufacturer’s recommendations must be followed. Exterior tile installations should not be attempted with a temperature of less than 12°C. Do not use paper-back or mesh-back mounted tile. Dot mounted tile may be used providing manufacturer guarantees that the material is suitable for this type of installation.

OTHER CONSIDERATIONS
- Under conditions of low temperature or high humidity, drying time before grouting can vary from 14 to 60 days. Where job conditions permit, longer drying time is recommended. Swimming pools used in competition must have accurate dimensions, which may require use of detail (B) to meet tolerances. Waterproof membrane may be eliminated if concrete tank is constructed to be watertight or if tank is installed in ground with suitable drainage provided. Provide drains to permit drainage of water at the tile surface and the surface of the waterproof membrane. For drainage see Detail 326DR-2002.
- Tile must be moisture resistant.
- Tile used on exterior applications must be frost resistant.
- Shorter curing times may be achieved with specific products as recommended by the manufacturer.
- Refer to General Requirements, Notes on pages 10-14 and 301MJ-2002.
- All pipes and protrusions must be treated to ensure waterproof integrity.

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TILE INSTALLED ON INTERIOR/ EXTERIOR STAIRS

(A) STEEL PAN
- Steel rod and reinforcing mesh approximately 13 mm above pan bottom. Application as per detail 309F-2002 but omit cleavage membrane or vapour barrier.

(B) STEEL STAIRS
- Metal lath fastened to metal stair on steel treads and risers by tie wires or spot welded by steel fabricator. Application as per detail 308W-2002 but omit cleavage membrane or vapour barrier.

(C) WOOD STAIRS - INTERIOR ONLY
- Nail galvanized metal lath to wood substrate over cleavage membrane (vapour barrier). Install mortar bed and tile according to detail 308W-2002 but increase thickness of mortar bed on horizontal surface to a minimum of 32 mm.

(D) Application of materials as per detail 310F-2002 (A) for treads and 302W-2002 for risers.

(E) Application of material as per detail 303W-2002 and 311F-2002 but apply slight levelling coat to substrate if required and cure a minimum of 24 hours before application of tile.

LIMITATIONS
- Organic adhesives are not acceptable for these applications.

OTHER CONSIDERATIONS
- For easy maintenance, use cove base tile or cove movement profile at junction of riser and tread. Wood stairs not recommended for exterior applications. On exterior stairs, a slight slope on treads is preferred to provide drainage. Provide tactile surface prior to stairs where required for visually handicapped. Where required, use a 51 mm strip of contrasting colour at edge of first and last step.
- Precast terrazzo and natural stone tile may be used providing that slip resistant properties are acceptable.
- For detail B and C, mortar bed may be installed over fresh scratch coat.
- Prefabricated stair nosings or carborundum inserts should be used for increased safety precautions.
- Slip resistance for stair treads must be a minimum of 0.6 wet or dry.
- Tile used in exterior applications must be frost resistant.
- To minimize the potential for cracking use a sealant or prefabricated movement joint at the junction between the riser and tread.
- For exterior applications a waterproof membrane is recommended. Follow manufacturer’s recommendations. (ANSI A118.10-1993)
- A bevelled or radius edge between 8 mm and 13 mm in horizontal dimensions is required on stair edges.
- Stair risers to be not less than 125 mm and not more than 180 mm.
- Treads & risers must have uniform rise and run in any one flight.
- Treads must have run not less than 280 mm between successive steps.
- Stair nosing cannot be canter levered over the riser and edge. The leading edge of the stair tread shall have either a radius or a bevel between 8 mm and 13 mm in horizontal dimensions.
- Refer to General Requirements, Notes on pages 10-14 and 301MJ-2002.
- For Detail A, B, D, and E use sufficient bond coat to ensure a minimum 95% contact on exterior surfaces and wet areas and minimum 80% on interior surfaces.
- For Detail C use sufficient bond coat to ensure minimum 80% contact.

For 318S-2002 Detail C, D, and E see next page.

318S-2002
MATERIALS

- SCRATCH COAT
  Flextile 57 Scratch Coat Mortar
- MORTAR BED
  Flextile Dry Pack Mortar
- MORTAR & SCRATCH COAT ADDITIVE (for exterior applications)
  Flextile 43 or 44 Mortar Additive
- WATERPROOF MEMBRANE (for exterior applications)
  Flextile WP980 Waterproof & Crack Isolation Membrane (ANSI A118.10)
- BOND COAT (Interior)
  Flextile 52 Versatile Polymer Modified Mortar (ANSI A118.4)
  Flextile 58 Versatile Fast Set Polymer Modified Mortar (ANSI A118.4)
  Flextile 61 Full Coverage Polymer Modified Mortar (ANSI A118.1.4)
  Flextile 62 Fast Set Full Coverage Polymer Modified Mortar (ANSI A118.4)
  Flextile 51 or 53 / 43 or 44 – two component Latex Mortar System (ANSI A118.4)
  Flextile 58XT Fast Set two-component Latex Mortar System (ANSI A118.4)
  Flextile Flex-Epoxy 100 – 100% Solids Epoxy Mortar (ANSI A118.3)
- BOND COAT (Exterior)
  Flextile 51 or 53 / 43 or 44 – two component Latex Mortar System (ANSI A118.4)
  Flextile 58XT Fast Set two-component Latex Mortar System (ANSI A118.4)
- GROUT (Interior)
  Flextile Polymer Modified Sanded Grout (ANSI A118.7)
  Flextile Flex-Epoxy 100 – 100% Solids Epoxy Grout
- GROUT (Exterior)
  Flextile Polymer Modified Sanded Grout (ANSI A118.7)

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TILE ON SHOWER RECEPTORS

DETAIL A - ON SOLID BACKING OR MORTAR BED OVER WOOD OR METAL STUDS

SUITABLE SUBSTRATES
- Shower pan or waterproof membrane over structural base.

MATERIALS
- TILE - Ceramic, porcelain, mosaic.
- SHOWER PAN OR MEMBRANE - Installed over sloped base.
  Flextile WP980 Waterproof Membrane (ANSI A118.10)
- MORTAR BED - Minimum of 32 mm to 51 mm sloped to drain.
  Flextile Dry Pack Mortar / 43 Mortar Additive
- BOND COAT – on mortar bed cured for minimum of 24 hours.
  Flextile 51 / 43 or 44 two-component Latex Mortar System (ANSI A118.4)
  Flextile 53 / 43 or 44 two-component Latex Mortar System (ANSI A118.4)
  Flextile 58XT Fast Set two component Latex Mortar System (ANSI A118.4)
- GROUT
  Flextile Polymer Modified Grout (ANSI A118.7)

OTHER CONSIDERATIONS
- Provide 6 mm in 305 mm slope to drain in floor. For heavy duty installations, wall constructed according to detail 303W-2002, 307W-2002 or 308W-2002 is recommended. Carry membrane or pan at least 75 mm above shower curb, or 152 mm above floor in showers without curbs. Latex additive use in place of water is recommended for Portland cement bond coat, and may be used in modification of mortar bed.
- Drains should be designed to permit drainage of water at the tile surface and the surface of the waterproof membrane. For drainage see Detail 326DR-2002. A drainage layer may be incorporated over the waterproof membrane as recommended by the manufacturer if a traditional double weep hole drain is used.
- When using a shower pan, a waterproof membrane is recommended below bond coat.
- Tile should be moisture resistant. Type MR1 or some MR2. Refer to page 11.
- For high use showers (hotels, gang showers, sports facilities, etc.) a waterproof membrane shall be used.
- Waterproof membrane if required must be specified. (ANSI A118.10-1993) Follow manufacturer’s recommendations.
- All openings and cuts must be treated to ensure waterproof integrity.
- Refer to General Requirements and Notes on pages 10–14.
- If waterproof membrane is not specified a slurry bond coat must be applied to concrete slab.
TILE INSTALLED IN STEAM ROOMS

DETAIL A - CONCRETE OR MASONRY CONSTRUCTION

SUITABLE SUBSTRATES
- Frame construction, masonry or concrete backing.

MATERIALS
- TILE - Ceramic, porcelain, mosaic, quarry.
- MORTAR BED
  - Flextile Dry Pack Mortar mixed with Flextile 43 Mortar Additive
- WATERPROOF MEMBRANE
  - Flextile WP980 Waterproof & Crack Isolation Membrane (ANSI A118.10)
- BOND COAT
  - Flextile 51 or 53 / 43 or 44 - two component Latex Mortar System (ANSI A118.4)
  - Flextile 58XT Fast Set, two-component Latex Mortar System (ANSI A118.4)
- GROUT
  - Flextile Polymer Modified Grout (ANSI A118.7)

APPLICATION
- Tie wire spaced at 305 mm vertically and 406 mm to 610 mm horizontally.
- Attach to 6 mm steel pencil rods vertically over insulation; attach metal lath to pencil rods. Install scratch coat (see Tile Guide Specification Section Mixes 2.5.1), mortar bed (see Tile Guide Specification Section Mixes 2.5.3 and 2.5.5) and bond coat as per detail 307W-2002 or 308W-2002 (walls), Detail 310F-2002 A (floors) and 315C-2002 (ceilings)

LIMITATIONS
- Waterproof membrane must be suitable for operating temperatures. Slope ceilings 152 mm per 1000 mm and floors 20 mm per 1000 mm.

OTHER CONSIDERATIONS
- Detail 311F-2002 may be used for floor installation provided that proper slope to drain is in the substrate.
- Drains should be designed to permit drainage of water at the tile surface and the surface of the waterproof membrane. A drainage layer may be incorporated over the waterproof membrane as recommended by the manufacturer. For drainage see Detail 326DR-2002.
- Refer to General Requirements, Notes on pages 10-14 and 301MJ-2002.
- For high use showers and wet areas (hotels, gang showers, sports facilities etc.) a waterproof membrane shall be used.
- All openings and cuts must be treated to ensure waterproof integrity.
- Refer to Detail 319B-2002 for drainage detail.
- If waterproof membrane is not specified a slurry bond coat must be applied to concrete slab.

DETAIL B - FRAME CONSTRUCTION

SUITABLE SUBSTRATE
- Wood or metal studs maximum 406 mm o.c.

MATERIALS
- 13 mm minimum thickness cementitious backer unit (CBU) as per detail 305W-2002. Detail A
- MORTAR BED
  - Flextile Dry Pack Mortar mixed with Flextile 43 Mortar Additive
- WATERPROOF MEMBRANE
  - Flextile WP980 Waterproof & Crack Isolation Membrane (ANSI A118.10)
- BOND COAT
  - Flextile 51 or 53 / 43 or 44 - two component Latex Mortar System (ANSIA118.4)
  - Flextile 58XT Fast Set, two-component Latex Mortar System (ANSI A118.4)
- GROUT
  - Flextile Polymer Modified Grout (ANSI A118.7)

APPLICATION
- If tile being installed directly: use detail 305W-2002 Detail A on walls; if tile is being set over a waterproof membrane follow manufacturer’s recommendations.

OTHER CONSIDERATIONS
- Detail 311F-2002 may be used provided that proper slope to drain is in the substrate.
- Drains should be designed to permit drainage of water at the tile surface and the surface of the waterproof membrane. A drainage layer may be incorporated over the waterproof membrane as recommended by the manufacturer. For drainage see Detail 326DR-2002.
- Refer to General Requirements, Notes on pages 10-14 and 301MJ-2002.
- For high use showers and wet areas (hotels, gang showers, sports facilities etc.) a waterproof membrane shall be used.
- All openings and cuts must be treated to ensure waterproof integrity.
- Refer to Detail 319S-2002 Detail B for drain.
- If waterproof membrane if required must be specified. (ANSI A118.10-1993) Follow manufacturer’s recommendations.
- If waterproof membrane is not specified a slurry bond coat must be applied to concrete slab.
- If required an insulation layer should be used made of rigid polystyrene. Consult with manufacturer.

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SUITABLE SUBSTRATES
- 19 mm exterior grade plywood

MATERIALS
- Extra duty glazed tile, unglazed porcelain tile, natural stone tile.
- Cleavage Membrane - minimum 6 mils polyethylene film (detail C).
- Metal lath 1.4 kg/m² (detail C) (ASTM C847-96)
- SCRATCH COAT: Flextile 57 Scratch Coat
- 25+ mm MORTAR BED: Flextile Dry Pack Mortar
- WATERPROOF MEMBRANE, if required (ANSI A118.10) Flextile WP980 Waterproof & Crack Isolation Membrane
- Cementitious backer unit (CBU) minimum 13 mm thick (ANSI A118.9-1999) or coated glass mat backer board (detail B) minimum 13 mm. (ASTM C1178-96)
- BOND COAT
  Flextile 50, 52 or 60 Polymer Modified Mortar (ANSI A118.4, 11)
  Flextile 51 or 53 / 43 two-component Latex Mortar (ANSI A118.4, 11)
  Flextile Flex-Epoxy 100 – 100% Solids Epoxy Mortar (ANSI A118.3)

GROUT
- Flextile Polymer Modified Grout (ANSI A118.7)
- Flextile Flex-Epoxy 100 – 100% Solids Epoxy Grout (ANSI A118.3)

APPLICATION
- Detail A - gap plywood 6 mm and support joint with cross bridging. Fill gap between plywood with setting materials. Random cuts spaced approximately at 6” and 6” in length should be cut into the plywood to relieve the strains and to permit the plywood to remain relatively equal in moisture content on both sides.
- Detail B - Attach cementitious backer unit (CBU) or nominal 11 mm thick fibre-cement backer meeting ASTM C1288-1999 or coated glass mat backer board over membrane with 30 mm galvanized screws or non pull-out nails. Gap cementitious backer unit (CBU) 3 mm. Tape joint with fibreglass tape set in latex-Portland cement mortar. Set tiles to achieve minimum 95% contact with bonding materials and let cure before grouting. Provide 100% contact with bonding material under bullnose tile at the apron.
- Detail C - Apply polyethylene film over lapped at least 102 mm. Nail galvanized diamond metal lath butted, not overlapped, to the plywood. Apply mortar bed to required thickness of 32 mm min. Allow mortar bed to cure. Apply bond coat to cured mortar bed. 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 mosaic tile into position. Allow bond coat to cure. Force grout into full depth of joint, remove excess grout and clean.

LIMITATIONS
- Latex-Portland cement grouts are absorbent, can stain and contribute to bacterial growth. A water based grout sealer is recommended.

OTHER CONSIDERATIONS
- Details A and B are most commonly used, particularly in residential construction. Epoxy grout is recommended for optimum stain resistance and hygienic purposes. An alternate method for finishing counter top edges is the use of prefabricated trim at the apron. Where ceramic tile is used to cover apron, full support must be provided behind tile using one of the methods shown. Where cut outs in counter tops are provided for appliances, provide cross bridging under counter tops within 51 mm of opening.
- A control joint may be provided between the backsplash and the counter. A caulking sealant or a prefabricated movement joint may be used.
- Waterproof membrane if required must be specified. (ANSI A118.10-1993) Follow manufacturer’s recommendations.
- Refer to General Requirements and Notes on pages 10-14.

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TILE INSTALLED OVER EXISTING TILE
INTERIOR WALLS ONLY

SUITABLE SUBSTRATES
- Existing tile on frame or masonry construction where existing tile is well bonded.

MATERIALS
- TILE- Ceramic, porcelain, mosaic, quarry, precast terrazzo, agglomerate and natural stone.
- GALVANIZED METAL LATH 1.4 kg/m² (ASTM C847-96)
- MORTAR BED
  - Flextile Dry Pack Mortar
  - SCRATCH COAT MORTAR
    - Flextile 57 Scratch Coat Mortar
  - BOND COAT
    - Flextile 200, 90, 92 Type 1 Organic Mastic Adhesives (ANSI A136.1)
    - Flextile 52 Versatile Polymer Modified Mortar (ANSI A118.4)
    - Flextile 58 Versatile Fast Set Polymer Modified Mortar (ANSI A118.4)
    - Flextile 51/43, 44 two-component Latex Mortar System (ANSI A118.4)
    - Flextile 58XT Fast Set two-component Latex Mortar System (ANSI A118.4)

PREPARATION
- Remove soap scum, sealers, dirt or other contaminants from existing tile. Mechanically abrade surfaces of existing glazed tile with a carborundum disc or by other means. Rinse abraded surface to remove dust. Apply levelling material and reinforce joint between levelling materials and existing tile with 51mm fibre mesh tape set in latex-Portland cement mortars.
- For non-glazed or textured surfaces use an appropriate stripper as recommended by manufacturer.

APPLICATION
- Apply tile using latex-Portland cement mortar, epoxy or organic adhesive ANSI A136.1-1999 Type 1 only. Organic adhesives can be used for absorbent bisquet tile. Organic adhesives require complete evaporation of water in the adhesive in order to obtain cure and are not recommended for commercial use. Refer to 304W-2002 for installations with organic adhesive and detail 305W-2002 for installations using latex-Portland cement mortars or dry-set mortars. Use sufficient bond coat to ensure minimum of 95% contact on wet areas.

LIMITATIONS
- Acid washing will not remove wax, sealers and oils.
- For commercial use a cementitious bonding material may be more suitable than organic adhesives to obtain a higher impact resistance and to improve bond strength.

OTHER CONSIDERATIONS
- Install new tile so that grout joint is over transition point between levelling material and existing ceramic tile where possible.
- Refer to General Requirements and Notes on pages 10-14.
- Special care must be taken when installing tile thicker than 13 mm to prevent slippage or debonding.
- Waterproof membrane if required must be specified. (ANSI A118.10-1993) Follow manufacturer’s recommendations.

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SUITABLE SUBSTRATES

- Existing well bonded tile, cementitious or epoxy terrazzo, marble, granite and slate, free of cracks.

MATERIALS

- TILE – Ceramic, porcelain, mosaic, quarry, agglomerate, precast terrazzo, natural stone.
- LEVELLING COAT, if required
  Flextile 57 Scratch Coat mixed with Flextile 43 Mortar Additive
  Flextile 59 Flex Flo Self Levelling Mortar
- CRACK ISOLATION MEMBRANE, if required
  Flextile WP980 Waterproof & Crack Isolation Membrane (ANSI A118.10)
- BOND COAT
  Flextile 52 Versatile Polymer Modified Mortar (ANSI A118.4)
  Flextile 61 Full Coverage Mortar (ANSI A118.4)
  Flextile 62 Fast Set Full Coverage Mortar (ANSI A118.4)
  Flextile 58 Versatile Fast Set Mortar (ANSI A118.4)
  Flextile 51, 53 / 43 two-component Latex Mortar System (ANSI A118.4)
  Flextile 51, 53 / 44 two-component Latex Mortar System (ANSI A118.4)
  Flextile 58XT Fast Set, two-component Latex Mortar System (ANSI A118.4)
  Flextile Flex-Epoxy 100 – 100% Solids Epoxy Mortar (ANSI A118.3)
- GROUT
  Flextile 600 Polymer Modified Grout (ANSI A118.7)
  Flextile Flex-Epoxy 100 – 100% Solids Epoxy Grout (ANSI A118.3)

PREPARATION

- Remove soap scum, sealers, dirt or other contaminants from existing tile. Mechanically abrade surfaces of existing glazed tile with a shot blast, scarifier or by other means. Rinse abraded surface to remove dust
- For non-glazed or textured surfaces use an appropriate stripper as recommended by the manufacturer.
- Prefill any voids in the existing grout joints, chipped tile and/or missing tile.

APPLICATION

- Apply tile using a two component liquid latex Portland cement mortar or epoxy mortar. Refer to detail 311F-2002.

LIMITATIONS

- Acid washing will not remove wax, sealers and oils.

OTHER CONSIDERATIONS

- Existing installations must be sound, well bonded and free of structural cracks. If existing installation is not structurally sound, consider use of detail 309F-2002 or the use of crack isolation membrane.
- Refer to General Requirements and Notes on pages 10-14.
- Existing movement joints must be respected and carried through to new tile work.
- Increase in height may require adjustments to threshold or the use of a prefabricated reducer profile to meet adjacent floors.

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**EXTERIOR DECKS**

**SUITABLE SUBSTRATES**
- Exterior concrete slab.
- Exterior grade plywood over wood joist at maximum of 406 mm o.c. where deflection under both live and dead loads does not exceed 1/360 of span. (See deflection page 12) Deflection criteria of 1/720 should be used for stone tile and for some tile larger than 305 mm x 305 mm.

**MATERIALS**
- TILE – Ceramic, porcelain, quarry, pavers and some natural stone. Must be frost resistant as qualified by Table 1 on page 11
- BOND COAT (ANSI A118.4)
  - Flextile 51 or 53 / 44 two-component Latex Mortar System
  - Flextile 58XT Fast Set, two-component Latex Mortar System
- GROUT
  - Flextile 600 Polymer Modified Sanded Grout (ANSI A118.7)
- WATERPROOF MEMBRANE
  - Flextile WP980 Waterproof & Crack Isolation Membrane (ANSI A118.10)

**APPLICATION**

**DETAIL A**
- Concrete slab must be sloped a minimum of 2% (approximately 6 mm per 305 mm). If not located over occupied space a waterproof membrane meeting ANSI A118.10-1993 may be substituted for roofing membrane.
- Finished tolerance of mortar bed not to exceed 6 mm in 3049 mm or 2 mm in 305 mm.
- 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 2.6.5) and bond coat is mandatory.** Use sufficient bond coat to ensure minimum 95% contact. Contact shall be evenly distributed to give full support of the tile. On fresh mortar, beat tile into position. On dry-set mortar, slide tile into position. Allow bond coat to cure. Force grout into full depth of joint, remove excess grout 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.

**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-2002 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 page 60. 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.

**DETAIL E**
- Exterior Deck Over Occupied Space – concrete slab and finished surface to be sloped a minimum of 2% (approximately 6 mm per 305 mm). See Detail 326 DR-2002 (B).
- A waterproof membrane meeting ANSI A118.10-93 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, see page 14.
- Finished tolerance of mortar bed not to exceed 6 mm in 3049 mm or 2 mm in 305 mm.
- Rigid insulation must be Type 4 polystyrene.

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*Detail 325ED-2002 continued next page*
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 – not recommended where living area is located below, as a roofing membrane must be used and typically cannot be bonded directly with tile or stone. This detail is only recommended for residential applications. See Page 14.

OTHER CONSIDERATIONS

- It is essential that control joints be incorporated into the tiled surface as per Detail 301MJ-2002.
- Water must not be added to latex and Portland cement bonding material.
- Care must be taken in flashing the waterproofing against all perpendicular surfaces, 152 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 barrier may be applied underneath wood sub-floor. Consultant to specify location.
- Refer to General Requirements and Notes on pages 10-14.
- Drains should be designed to permit drainage of water at the tile surface and the surface of the waterproof membrane. For drainage see Detail 326DR-2002.
- 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.
- Waterproof membrane if required must be specified. (ANSI A118.10-1993) Follow manufacturers recommendations.

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SUITABLE SUBSTRATES
- Concrete or masonry
- Exterior grade plywood
- Shower pan or waterproof membrane over structural base
- Exterior deck over steel pan or suspended slab

MATERIALS
- Tile – ceramic, porcelain, mosaic, quarry, agglomerate, precast terrazzo, or natural stone
- WATERPROOF MEMBRANE (ANSI A118.10)
  Flextile WP980 Waterproof Membrane
- MORTAR-BED: minimum 20 mm to 51 mm sloped to drain.
  Flextile Dry Pack Mortar mixed with Flextile 43 Mortar Additive
- BOND COAT (ANSI A118.4)
  Flextile 51 or 53 / 43 or 44, two-component Latex Mortar System
  Flextile 58XT Fast Set, two-component Latex Mortar System
- GROUT (ANSI A118.7)
  Flextile Polymer Modified Grout
- Tape – 51 mm wide fibre mesh tape
- Drain – with integrated bonding flange complying with CSA B-79-94 or double weep drain complying with equivalent CSA standard.

APPLICATION
- Slope mortar bed a minimum of 2% (approximately 6 mm per 305 mm).
  Mortar bed thickness should not be less than 20 mm in thickness.
  Waterproof membrane must turn up wall at least 152 mm for exterior applications and up the wall to showerhead level for interior applications. Waterproof membrane must completely cover integrated bonding flange. Drain grate to be set flush with the surface of the tile.

LIMITATIONS
- Requires integrated bonding flange for bonded waterproof membranes
- Interior applications waterproof membrane must be used to the anticipated level of moisture exposure
- Detail 304W-2002 and 305W-2002 (B) are not for exterior use
- Detail 304W-2002 must have waterproof membrane installed on surface (ANSI A118.10-1999)

OTHER CONSIDERATIONS
- For high use showers and wet areas (hotels, gang showers, sports facilities etc.) a waterproof membrane to be used.
- All openings and cuts must be treated to ensure waterproof integrity.
- For Detail B a drainage layer may be incorporated over the waterproof membrane as recommended by manufacturer.
- Tile should be moisture resistant. Type MR1 or some MR2. Refer to page 11.
- Refer to General Requirements and Notes on pages 10-14.

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