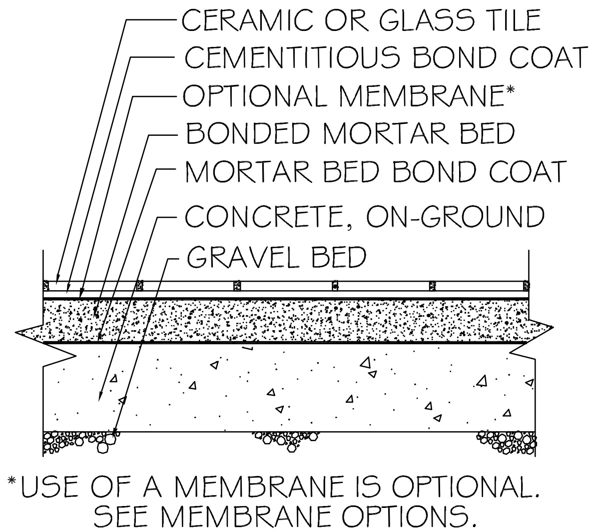
F101-19

- **On-Ground Concrete**
- **Bonded Mortar Bed**
- **Ceramic Tile, Glass Tile**



Recommended Uses

- For exterior slab-on-ground construction where no bending stresses occur and positive drainage below slab is provided, for example, floors, decks, or patios.
- For areas where leveling, flattening, or contouring of finish floor height is required.
- For areas where floor flatness is critical, such as when tiles with any edge longer than 15" are specified or where accessibility is a concern.

Service Rating

- Extra heavy.
- When glass tile is used, service rating may be lower.

Environmental Exposure Classifications

- Res6; Com6.
- For installations that may be exposed to staining, specify tile and grout suitable for exposure. Consult product manufacturers; see also "Product Selection Guides."

Typical Weight of Tile Installation

- 15 pounds/square foot with ¾" mortar bed. Add 3 pounds/square foot for each additional ¼" of mortar bed.
- Does not include weight of substrate. See "Appendix B" for assumptions, included materials, and their individual weights.

Limitations

- Where the installation will be subjected to freeze-thaw cycles, snow and ice accumulation, and/or snow melting chemicals, degradation can occur over time.

Membrane Options

- A waterproof membrane (A118.10) may be specified to prevent moisture intrusion and reduce the need for below-slab drainage. Specifier shall indicate if complete waterproofing is required, including if/how membrane connects to drain assembly, if base flashing is required, and treatment at other termination points.
- Check with membrane manufacturer for suitability for applicable conditions, as not all membranes are suitable for steam, high temperature, and/or chemical exposure, exterior use, use over above-ground structural slabs, use over pourable underlayments, use with radiant heat, or use over concrete with excessive moisture vapor transmission and/or alkalinity. Membrane may also affect service rating.
- When glass tile is used, consult glass tile manufacturer for membrane options and recommendations.

Requirements

- Slab to be well cured, dimensionally stable, and free of cracks, waxy or oily films, and curing compounds.
- When bond coat is portland cement paste, cover completed tilework and allow to cure.
- Seal edges of mortar bed with a trowelable membrane/sealant when water intrusion is expected.
- Mortar beds in excess of 2" thick shall be detailed by the architect.
- Mortar bed thickness—¾" minimum to 2" maximum.

Materials

- **Multiple options exist for membranes, mortars, grouts, and other materials and *must be clearly specified* to be included. If not specifically indicated, optional materials are not included and mortar/grout choice defaults to minimum performance specification indicated. Consider each system component and intended use to determine minimum requirements and to specify options.**
- Ceramic tile—ANSI A137.1.
- Glass tile, when used—ANSI A137.2; see also "Glass Tile Selection and Installation Guide," and consult tile manufacturer for service rating and environmental exposure classification recommendations. Not all glass tiles are suitable.
- Cementitious grout—ANSI A118.6 or better or ISO CG1 or better. When glass tile is used, specify grout designated by tile and grout manufacturers.
- Cementitious bond coat—portland cement paste on a mortar bed that is still workable. For a cured mortar bed, follow recommendations below to select appropriate bonding mortar:
  - When a waterproof membrane is not used—ANSI A118.4 or better or ISO C2 or better.

  - When a waterproof membrane is used—ANSI A118.4 or better or ISO C2S1 or better unless ANSI A118.1 or ISO C1 is recommended by membrane manufacturer.
  - When glass tile is used, specify mortar designated by tile and mortar manufacturers. Bond coat color will impact the final appearance of translucent glass tile. Specifier shall confirm bond coat color is acceptable.
- Waterproof membrane, when used—ANSI A118.10.
- Mortar bed—ANSI A108.1A.
- Mortar bed bond coat—portland cement slurry.

Materials for Green/Sustainable Design

- See "Green Building Standards and Green Product Selection Guide" and consult manufacturers and suppliers for product sustainability and contribution to green building design.
- Consider specifying tile and installation materials that meet ANSI A138.1, the *American National Standard Specifications for Sustainable Ceramic Tiles, Glass Tiles, and Tile Installation Materials.*

Preparation by Other Trades

- Gravel bed or other means of drainage below slab.
- Slope slab for complete drainage.
- Slab to have steel trowel and fine broom finish with no curing compounds used. When used, mechanical scarifying is necessary.
- Maximum allowable variation in the installation substrate (concrete)—¼" in 10' from the required plane.

Movement Joint (architect must specify type of joint and show location and details on drawings)

- Movement joints—mandatory according to EJ171.
- When glass tile is used, adhere to more frequent placement recommendations within the ranges listed in EJ171.

Installation Specifications

- Tile—ANSI A108.1A, .1B, or .1C. A108.1B required if membrane to be used.
- Glass tile—ANSI A108.14, .15, .16, or manufacturer's directions.
- Cementitious grout—ANSI A108.10.
- Waterproof membrane—ANSI A108.13.
- Movement Joints—EJ171 and ASTM C1193.

Notes

- Not all bonding mortars are suitable for exterior use.
- Protection of installation may be required to prevent premature exposure of setting materials to moisture.
- If a waterproof membrane is not used, positive drainage below slab must be provided.
- When glass tile is used, see "Glass Tile Selection and Installation Guide," and consult manufacturer for recommendations and requirements.