

INTERIOR FLOORS OVER CONCRETE

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—see Glass Tile Selection and Installation Guide, and consult tile manufacturer for service rating and environmental classification recommendations. Not all glass tiles are suitable.
- Cementitious grout—ANSI A118.6 or better or ISO CG1 or better.
- Cementitious bond coat (on-ground)—portland cement paste on a mortar bed that is still workable; or on a cured mortar bed, use portland cement mortar—ANSI A118.1 or better or ISO C1 or better.
- Cementitious bond coat (above-ground)—portland cement paste on a mortar bed that is still workable; or on a cured mortar bed use portland cement mortar—ANSI A118.4 or better or ISO C2S1 or better. Must also be recommended by manufacturer for above-ground use.
- When a waterproof membrane is used, specify latex-portland cement mortar—ANSI A118.4 or better or ISO C2S1 or better unless ANSI A118.1 or ISO C1 is recommended by membrane manufacturer. For above-ground use, must also be recommended by manufacturer.
- When porcelain tile is used, specify latex-portland cement mortar—ANSI A118.4 or better or ISO C2 or better. For above-ground use, must also be recommended by manufacturer.
- When glass tile is used, specify mortar and grout designated by tile and grout/mortar manufacturers. For translucent glass, use white mortar.
- Waterproof membrane, when used—ANSI A118.10.
- Mortar bed—ANSI A108.1A.
- Mortar bed bond coat—portland cement slurry.

Preparation by Other Trades

- Floor systems over which tile will be installed shall be in conformance with the IRC for residential applications, the IBC for commercial applications, or applicable building codes. Maximum allowable substrate deflection under live load not to exceed $l/360$. See also Substrate Requirements.
- When concentrated loads (scissor lifts, pallet jacks, automobiles, forklifts, etc.) will be used on an above-ground tiled floor, the engineer and/or specifier shall specify a substrate to accommodate the concentrated loads. Owner/specifier is responsible for protecting the tilework from damage, including allowing sufficient time for installed materials to cure properly.
- Slab to have steel trowel and fine broom finish with no curing compounds used. When used, mechanical scarifying is necessary.
- Slope, when required, to be in subfloor.
- Maximum allowable variation in the installation substrate (concrete)— $1/4"$ 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. For above-ground installations, additional movement joints are required.
- When glass tile is used, adhere to more frequent placement recommendations within the ranges listed in EJ171.

Installation Specifications

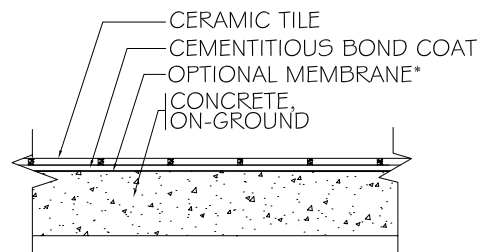
- Tile—ANSI A108.1A, .1B, or .1C. A108.1B required if membrane to be used.
- Glass tile—ANSI A108.14, .15, .16, or manufacturer's directions.
- Cementitious grout—ANSI A108.10.
- Waterproof membrane—ANSI A108.13.

Notes

- F111 is preferred over above-ground structural slabs and other floors subject to movement and/or deflection.
- Above-ground—not all mortars, grouts, and membranes are suitable for above-ground use. Check manufacturer recommendations.
- For hydronic tubing on top of the slab when using a mortar bed, see RH117.
- For waterproofing below mortar bed (unbonded), see F121.
- When glass tile is used, see Glass Tile Selection and Installation Guide, and consult manufacturer for recommendations and requirements.

On-Ground Concrete Ceramic Tile

F113-11



*USE OF A MEMBRANE IS OPTIONAL. SEE MEMBRANE OPTIONS.

Recommended Uses

- For slab-on-ground construction where no bending stresses occur and thin-bed installation of tile is desired.

Service Rating

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

Environmental Classifications

- Res1, 2, 3, 5; Com1, 2, 3, 5.
- May be suitable for exterior applications in areas not subject to freeze/thaw cycling when appropriate precautions are taken, including expansion joint placement, proper slope, waterproofing, and material selection.
- For installations that may be exposed to staining, specify tile and grout suitable for exposure. Consult product manufacturers; see also Product Selection Guides.
- For installations that may be exposed to staining and/or chemical attack, see also F115, F131, and F133.

Typical Weight of Tile Installation

- 5 pounds/square foot.
- Does not include weight of substrate. See Appendix B for assumptions, included materials, and their individual weights.

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Limitations

- Not for use over above-ground structural slabs and other floors subject to movement and/or deflection. See F113A.

Membrane Options

- A crack isolation membrane may be specified to treat existing in-plane cracks (F125-partial) or for protection against future in-plane cracking (F-125 full). See F125 for more information.
- An uncoupling membrane may be specified to accommodate subfloor movement. Check with membrane manufacturer for recommendations and requirements.
- Check with membrane manufacturers 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.

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—see Glass Tile Selection and Installation Guide, and consult tile manufacturer for service rating and environmental classification recommendations. Not all glass tiles are suitable.
- Cementitious grout—ANSI A118.6 or better or ISO CG1 or better.
- Cementitious bond coat—ANSI A118.1 or better or ISO C1 or better.
- When an uncoupling membrane is used, check with membrane manufacturer; an unmodified mortar may be required.
- When a crack isolation membrane is used, specify latex-portland cement mortar—ANSI A118.4 or better or ISO C2S1 or better.
- When porcelain tile is used, specify latex-portland cement mortar—ANSI A118.4 or better or ISO C2 or better.
- When glass tile is used, specify mortar and grout designated by tile and grout/mortar manufacturers. For translucent glass, use white mortar.
- Crack isolation membrane, when used—ANSI A118.12.
- Uncoupling membrane, when used—recommended by manufacturer.

Preparation by Other Trades

- Slab to have steel trowel and fine broom finish free of curing compounds. When used, mechanical scarifying is necessary.

- Slope, when required, to be in subfloor.
- Maximum allowable variation in the tile substrate—for tiles with all edges shorter than 15", maximum allowable variation is 1/4" in 10' from the required plane, with no more than 1/16" variation in 12" when measured from the high points in the surface. For tiles with at least one edge 15" in length, maximum allowable variation is 1/8" in 10' from the required plane, with no more than 1/16" variation in 24" when measured from the high points in the surface.

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 A108.5.
- Glass tile—manufacturer's directions.
- Cementitious grout—ANSI A108.10.
- Crack isolation membrane—ANSI A108.17.
- Uncoupling membrane—manufacturer's directions.

Notes

- For waterproof application where thin-bed installation is desired, see F122.
- For electric radiant in-floor heat application, where thin-bed installation is desired, see RH115.
- For in-slab hydronic tubing, see RH110.
- For young concrete, see F128.
- When glass tile is used, see Glass Tile Selection and Installation Guide, and consult manufacturer for recommendations and requirements.