Design Guideline 093000
Ceramic Tile and Waterproofing

Scope

Scope: Material selection, substrate selection, waterproofing choice, and installation.

Related Sections

U-M Design Guideline Technical Section:
6.0 DG 092116 Gypsum Board Assemblies

U-M Master Specification Sections: (A digitally accessible version is pending; please email AEC-Digital Accessibility Support if assistance is needed)
7.0 MS 092116 Gypsum Board Assemblies
7.0 MS 093000 Tiling

Reference Documents:
TCNA "Tile Council of North America" for tile installation and guidelines.

Design and Installation Requirements

Material selection -

When selecting tile for installation consider the intended use, long-term installation, cleanability and application. Special attention is necessary in areas such as food service, toilet rooms, showers, and serveries. In areas with a presence of water or grease evaluate appropriate slip resistance factors.

Tile Size – Larger format tiles shall be considered to minimize grout lines. Also consider consistent floor level when considering large format tile as they can be challenging to meet slope to toilet room floor drains.

Grout – Consider dark grout lines to minimize the appearance of stains. White or light grey grout is not acceptable.

Grout Sealing – Polyurethane seal is recommended for tile and grout installations in toilet rooms. Grout sealing eliminates odor build up in grout. Consider Finish Line Floors or similar material. Verify compatibility with tile and grout.

Tile Substrate Application –

- Cementitious Backer Unit – Backing and underlayment material that can be installed in wet or dry locations. Suitable for floor, wall and ceiling applications. Cement board is recommended in high moisture (not submerged in water) areas to receive full height ceramic tile.

    - Typically installed in community toilet rooms, housing toilet rooms, and shower rooms. Cement boards are more expensive and durable than gypsum based products. Although cement board is more costly than gypsum board products it provides a higher performance as a tile substrate.

- Coated Glass Mat Water-Resistant Gypsum Backer Board – Backing substrate for wet and dry applications. Suitable for floor, wall and ceiling applications.

- Fiber-Cement Underlayments – A dispersed fiber-reinforced cement backer and underlayment that can be installed in wet or dry areas. Suitable for floor, wall and ceiling applications.

- Fiber Reinforced Water Resistant Gypsum Backer Board/ Underlayment – Backer board/ underlayment conforming to ASTM C1278, can be installed in wet or dry areas. Suitable for floor, wall and ceiling applications.

Waterproof membranes- Membranes may be single or multi component liquid applied or a sheet membrane.

- ANSI A118.10 Compliant

- Liquid applied is preferred in areas with multiple corners and drains for increased coverage and ease of installation.

- Utilize under tile in toilet rooms, laundry rooms, dining facilities, shower rooms, any area that is near a water source that could flood or over flow. Install in areas that receive frequent mopping and cleaning.

- In shower areas and areas to be frequently power washed install waterproofing full height behind tile.

Crack Isolation membranes- Install crack isolation membranes in areas of existing slab on grade or concrete on metal deck. Utilize in areas with existing cracks in slabs. Refer to manufacturer recommendations for size of cracks that can be accommodated. Membrane isolates tile from in-plane substrate cracking.

- ANSI A118.12

<u>Installation Requirements: Specify the Following</u>

Water Testing – A water test is required to be performed at completion of waterproofing installation and again at completion of tile application. Drains shall be plugged and the room flooded with minimum 2” of water for minimum 24 hours. If no leakage is evident from underside of slab or adjacent floor areas continue with the next stage in construction. Note, water testing is required at every shower/ drain location.

Waterproofing installation at wall location – Waterproofing from floor application shall return up wall 6” and overlap wall waterproofing by minimum 4”.

In all cases where spillage or flooding is possible, caulk around all new and existing through-floor pipe and sleeve penetrations. Coordinate sealing requirements with mechanical engineers.

Specification Format

In specifications include a tile installation schedule to include the type of installation, tile, grout mortar and specific information for each type of tile. One source documentation that includes everything the contractor will need to bid, purchase and install each type of tile included within a project.

When specifying ceramic tile follow format below:

3._ Interior Tile Installation Schedule

A. Type of installation (Interior Floor Installations, Concrete Subfloor, wall installation etc.):

1. (description: wall, floor, ceiling etc.) Tile Installation (insert TCNA # if applicable):
Description

a. Tile Type: utilize same abbreviation as shown on finish schedule

b. Thin-Set Mortar: type of mortar

c. Grout: Type of Grout

d. Other specific information about tile install, i.e., pattern, membrane installation etc.