INSTALLATION SPECIFICATION TILESETTERS DIRECT BOND FLOOR SYSTEM

1. SCOPE

1.1 This specification is meant to provide general guidelines for good practice when using the tilesetters direct bond installation method. This method involves first setting the tile into a chemical resistant setting bed with consistent spacing between the tile pieces of at least 3/16” (4.5 mm) in width and then allowing the bed to set hard. Once the tile/bedding can support foot traffic, the workers then fill the open side joints with the appropriate specified grouting compound.

1.2 The setting bed functions as an adhesive as well as a protective barrier over the concrete. The tile functions as a mechanical and thermal barrier. The grout functions as a chemical resistant virtually impermeable jointing barrier. The system offers improved performance over trowel down systems as well as improved aesthetics.

1.3 Consult applicable bedding and grout side jointing technical data sheets for more information. The selection of the adhesive setting bed and side jointing material should be based on a review of the anticipated chemical thermal and mechanical conditions in consultation with Armor and the installation contractor.

1.4 The tilesetters method is best suited for ceramic units less than 1” (25 mm) in thickness. Where thicker ceramic units (pavers or acid brick) are required such as extreme thermal shock or heavy impact, consult specification CES-302 covering the direct bond bricklayers method.

1.5 In some cases such as elevated slabs for example, it may be desirable to specify a separate flexible membrane to insure a liquid tight flooring system. In those cases, it is common practice to first install the membrane on the structural concrete slab. A leveling bed incorporating agreed slope to drain is then installed over the membrane, and the tile is bonded with Thinset™ Adhesive onto the leveling bed. Consult Armor to discuss membrane options and to verify sufficient consideration for elevations is confirmed to allow for the additional leveling layer.

2. CONCRETE SUBSTRATE

2.1 Prior to commencement of any work, the flooring contractor shall thoroughly examine all floor surfaces, and report any conditions which will adversely affect proper floor installation. These conditions may include the presence of birdbaths, irregular slopes and flatness, cracks or chips, and degraded expansion or control joints amongst others. Commencement of work shall be deemed as acceptance of floor finish slope and condition. If there are any disputes, these should be resolved before commencement of work as a tile floor will follow the elevations of the underlying concrete.

2.2 Acid proof floors should be designed to drain completely. To do this, a fall of up to 1/4" (6 mm) to the foot may be considered in the design. However, this amount of slope is very evident when walking across the slope. A 1/8" (3 mm) to the foot slope will still drain if all tile and joints are smoothly laid. A lesser slope should be reviewed with the contractor.

2.3 Prepare the concrete surface in accordance with industry practice as outlined in NACE No. 6/SSPC-SP 13. Criteria for acceptance shall be as noted in section 6, Acceptance Criteria. If moisture testing is not performed in accordance with NACE No. 6/SSPC-SP 13 section 5, then standard industry practice is to allow a 28-day cure on concrete surfaces receiving membranes, epoxy setting beds or monolithic toppings. Consult Armor or review with the installation contractor and the general contractor to resolve. If circumstances are such that the above acceptance criteria cannot be met, work should be halted until resolved. Exact surface preparation method shall be determined by installation contractor based on his experience, personal preferences, equipment, access, job-specific needs and circumstances.

3. ***MATERIALS***

3.1 Pavers and/or tile are available in a variety of sizes and surface textures, and thicknesses depending on the manufacturer. Consult Armor or the installation contractor for full details.

The tile surface may need to be pre-waxed with a wax suitable for aesthetic purposes to prevent adhesion of grout to tile surface and to facilitate cleanup of grout from the tile face upon completion of the tile work. Wax should not carry onto the edge, side or bottom of the tile.

All cuts shall be made with a masonry saw and cuts allowed to dry before use. Slivers of a size typically on the order of 1" or less, whether along the tile length or width shall not be used for both aesthetic and functional reasons. Such slivers are not only unsightly but also can be problematic, especially in critical areas such as along an expansion joint or a transition to an adjoining surface or room where there is an expectation of heavy traffic. If for example, there is an 8.5" (216 mm) gap to fill to complete the floor, it would not be desirable to place an 8" (203 mm) full tile plus a 1/2" (13 mm) sliver part tile. The contractor may choose to use a 5" (1 mm) and 3.5" (87 mm) piece instead, alternating their positions to break bond in the adjoining row to achieve the best aesthetic while maintaining the layout. Consult with the contractor about his plan to address this detail. An experienced contractor can often foresee the need to make minor joint width adjustments as work proceeds to avoid this issue, and this section is noted only as a cautionary point.

3.2 The setting bed material shall be Thinset™ Adhesive, a 100% reactive epoxy adhesive composed of an epoxy resin, chemically curing hardener, and inert silica filler. The adhesion of the epoxy setting bed is greater than the tensile strength of the concrete slab and the tile. For upgraded performance requirements in strong chemical service environments, or high thermal shock areas, Thinset Novolac Adhesive may be specified.

3.3 Side jointing is selected based on the anticipated chemical and thermal conditions. Consult with installation contractor or Armor if unsure which mortar to use. The choice of grouts is as follows, consult data sheets for more detail:

Carbon filled furan - Furalac™ Red Panel Grout data sheet CE-130
Quartz filled vinyl ester - Pennchem™ Tile Grout data sheet CE-271
Carbon filled vinyl ester - Pennchem CIP Tile Grout data sheet CE-160
Quartz filled epoxy - EZ Grout 100 data sheet CE-321
Quartz filled high functional epoxy - EZ Grout 200 data sheet CE-330

Note: EZ Grout 100 and EZ Grout 200 do not require pre-waxing of tile outlined in section 3.1 above. Follow their use instructions carefully to make sure cleaning steps are followed in a timely manner.

3.4 Expansion joints are required to accommodate mechanical or thermal stresses in tile flooring. Expansion joints are placed over existing joints in the underlying concrete. Flexjoint U500 Joint Sealant (CE-134), a two component polyurea joint filler shall be used in traffic bearing areas. Consult joint detail drawings CED 1020 for a typical detail.

There are several guidelines that could be followed to determine where the joints are placed. However, not all rules should be followed as there would be redundancy, and it is known that joints are a maintenance item. It is suggested the specified locations be determined on a case-by-case basis after review by the qualified contractor.

4. CONDITIONING OF MATERIALS AND JOBSITE

4.1 All tile work with chemically curing setting beds and grouts should be performed under cover from the elements, and at a minimum temperature of 50˚F (10˚C) and a maximum of 90˚F (32˚C) unless specific arrangements for exceptions are made. The temperature limitations apply not only to the air, but to the substrate the masonry will be in contact with as well as the materials themselves. In addition, the air temperature must be maintained from start of job until cure is initiated at 5˚F (3˚C) or more above the moisture dew point.

All materials including the tile must be kept dry and within this temperature range for not less than 48 hours prior to use to allow sufficient time to acclimate. All work shall be kept dry until the mortar has reached the point of cure designated by the manufacturer. The bedding and grouting materials and chemically setting compounds that are temperature dependent and work best within a temperature range of 70˚F-75˚F (21˚C-24˚C). Higher temperatures will reduce work life and set time, and lower temperatures will increase it.

4.2 The user should be conscious of temperature changes and erratic cures that can result from high winds (chilling or heating, and rapid drying), by direct sunlight during summer months, particularly in hot climates, and changes in temperature for daytime to nighttime. Provide appropriate job protection.

5. APPLICATION OF MATERIALS

5.1 If surface-damp concrete is a concern, it may first be conditioned by applying Penntrowel™ Epoxy Primer (CE-139) or Novocoat™ SC100 Primer. Thinset Adhesive should be placed after primer has dried to touch, but no longer than 48 hours after primer has been installed.

5.2 Mix epoxy setting bed material in accordance with manufacturers recommendations. Read product labels and installation specifications for Thinset™ Adhesive or Thinset Novolac Adhesive for specific mixing instructions.

5.3 Apply the setting bed material in a continuous layer to a thickness of 1/8" (3 mm) directly on the concrete slab by trowel ensuring that there are no voids. Use of a notched trowel to gauge the thickness of the setting bed shall be permitted, provided the bed is continuous and void free, with no areas of underlying concrete remaining exposed. 100% substrate coverage is required. Care must be taken to insure the tile are maintained at the same elevation within reason and not reply on the jointing to make up irregularities.

5.4 Space the tile units with a joint width of 3/16” to ¼” (4.5-6 mm) and allow setting bed to cure so the tiles are set firm and are not disturbed by foot traffic. Use of prespaced spacers is encouraged.

5.5 With a clean trowel squeegee the grout at a 45-degree angle across the faced of the tile, pressing hard to fully fill the side joints with grout. The installed tile floor must be uniform and smooth. Allow the mortar joints to set for a short time before striking to remove extruded grout.

5.6 Tile can be laid in several different patterns such as running bond, broken bond and herringbone. Review with the client before commencement of work to verify aesthetic preferences, including how details such as around piers and columns, perimeter of room, high points, expansion joints and drains are to be handled.

5.7 Steam cleaning to remove wax shall be performed after grout has set hard. Remove all wax and excess material. Under no circumstances shall any acid be used in the cleanup work without prior approval. Attention to potential for clogging drains during cleanup must also be considered.

5.8 Install expansion jointing as required. Provide temporary tape protection along the joint edge to facilitate cleanup of jointing that runs onto the adjacent tile work.

6. CLEANUP

6.1 Consult specific product data sheets for suggested tool cleaning recommendations.

7. SAFETY PRECAUTIONS/DISCLAIMER

7.1 Consult current Safety Data Sheets (SDS's) before commencement of work.

7.2 Mixes and applications of this product present a number of hazards. Read and follow the hazard information, precautions and first aid directions on the individual product labels and safety data sheets before using. While all statements, technical information, and recommendations contained herein are based on information our company believes to be reliable, nothing contained herein shall constitute any warranty, express or implied, with respect to the products and/or services described herein and any such warranties are expressly disclaimed. We recommend that the prospective purchaser or user independently determine the suitability of our product(s) for their intended use. No statement, information or recommendation with respect to our products, whether contained herein or otherwise communicated, shall be legally binding upon us unless expressly set forth in a written agreement between us and the purchaser/user. For all Terms and Conditions of Sale see armor-inc.com.

7.3 Please contact Armor for further information at +1-877-98ARMOR (982-7667) or customerservice@armor-inc.com.