

TYPICAL PRODUCT SPECIFICATION

NOTES TO SPECIFIER

1. Specify KERALASTIC®/KERABOND® Deformable acrylic latex Portland cement mortar system or KER 318/GRANI/RAPID® fast-setting Deformable latex 'HCT' mortar system for INTERIOR or EXTERIOR FLOOR or WALL installation of ALMATEC PORCELAIN STONE TILE over properly prepared and cured concrete, masonry, cementitious backer unit, and Exterior Glue Plywood (For interior residential floors and countertops in dry areas only.) (Refer to Large Unitary Size Limitation Note 2 and Special Conditions note 10.2)
OR
Specify ULTRACONTACT® full-contact polymer –modified mortar or ULTRACONTACT®-RS fast-setting full-contact polymer –modified 'HCT' mortar for INTERIOR FLOOR installation only of ALMATEC PORCELAIN STONE TILE over properly prepared and cured concrete, cementitious backer unit and Exterior Glue Plywood (For interior residential floors and countertops in dry areas only.) (Refer to Large Unitary Size Limitation Note 2 and Special Conditions note 10.2)
OR
Specify ULTRALITE® Mortar for INTERIOR WALL installation only and for Exterior cladding not exceeding Two stories [6 m (20'-0")] high. .
2. Specify ONLY KER 318/ GRANI/RAPID® deformable fast-setting latex 'HCT' mortar system and/or or ULTRACONTACT®-RS fast-setting full-contact polymer –modified 'HCT' mortar for the installation of LARGE UNITARY SIZE [406 x 406 mm (16" x 16") and larger] ALMATEC PORCELAIN STONE TILE.
3. When specifying KERALASTIC®/KERABOND® deformable acrylic latex mortar system and/or ULTRACONTACT® full-contact polymer-modified mortar, specify that the tiles be grouted no sooner than 24 hours after installation.
4. When specifying KER 318/ GRANI/RAPID® deformable fast-setting latex 'HCT' mortar system and/or or ULTRACONTACT®-RS fast-setting full-contact polymer –modified 'HCT' mortar, specify that the tiles be grouted no sooner than 3 to 4 hours after installation.
5. DO NOT specify any of these mortar systems over presswood, particle board, chipboard, masonite, lauan, Asbestos board, metal, gypsum base patching and leveling compounds and similar dimensionally unstable materials which are not suitable substrates to receive ALMATEC PORCELAIN STONE TILE.
6. Structural requirements for porcelain tile installation require that all floor and wall surfaces be rigid and conform to secure and good engineering practices. The Maximum allowable deflection of the Tile assembly system is L/360 when tested to 136 kg (300 lb) concentrated live and dead loads in accordance with ASTM C 627 Standard test method. Deflection and curvature should be uniform over the length of the span.
7. Specify KER-700 ULTRA/COLOR® fast-curing, high early strength, polymer-modified 'HCT' sanded tile grout (or KERACOLOR®-S polymer-modified sanded grout) mixed with water for grouting joints 1/8" (3 mm) to 5/8" (16 mm) wide. Specify joints to be 3/16" (5 mm) to 5/8" (15 mm) wide for all EXTERIOR installations. Specify joints to be thoroughly compacted and tooled. DO NOT ALLOW BUTT JOINTS.
8. Specify KER 400 KERAPOXY® stain-free grout for use on countertops or where stain and chemical resistance is required. Specify joints to be 1/8" (3 mm) to 3/8" (10 mm) wide.
9. **Caution:** Pigmented color grouts may cause picture framing or permanent staining of certain types of porous or textured tiles, natural and composite stone and marble. Before finalizing and closing the selection and specification of tile installation systems and pigmented and/or sanded grouts, specify that a complete mock-up test sample be installed and grouted in a separate area and be formally approved before any work is allowed to proceed to ascertain that the proposed installation and grouting products and procedure will achieve the correct performance and the desired aspect of the finished tile work.
10. SPECIAL CONDITIONS
 - 10.1 LIMITED DOWNTIME REQUIREMENTS: When short downtime limitations are required, specify KER 318/ GRANI/RAPID® deformable fast-setting latex 'HCT' mortar system and/or or ULTRACONTACT®-RS fast-setting full-contact polymer –modified 'HCT' mortar for the installation of ALMATEC PORCELAIN STONE TILE. In this case, specify that tiles be grouted only 3 to 4 hours after installation and allow foot traffic and general traffic on floors 3 to 4 hours after installation under normal room temperature and humidity conditions. Prohibit HEAVY COMMERCIAL and EQUIPMENT traffic for at least 48 hours after installation.
 - 10.2 RESIDENTIAL FLOORS AND COUNTERTOPS IN DRY AREAS OVER PLYWOOD:
Specify only A.P.A. rated GROUP 1 EXTERIOR plywood conforming to US Product Standard PS 1-95 or CANPLY rated EXTERIOR SELECT or (SEL TF) CSA-0121 Douglas fir plywood for sub-floor and underlayment. (See Surface Preparation data sheet and ANSI A108.12 Requirements A.N.-3.4.3 for Carpentry for EGP (Exterior Glue Plywood).)
 - 10.3 WATERPROOFING
ALMATEC PORCELAIN STONE TILE, setting mortars and grouts do not constitute a waterproof barrier and should not be considered in lieu of a waterproof membrane. For information concerning MAPELASTIC®-315 thin, load-bearing waterproof membrane or MAPELASTIC®-HPG flexible waterproofing and crack isolation membrane, contact your local MAPEI representative.
11. This is a total system. Specify all materials by name, number, and application as herein described to ensure that specifications do not differ from the manufacturer's instructions.
12. **INSERT THE FOLLOWING SPECIFICATION IN SECTION 03 35 00 for CONCRETE FINISHING (Omit this paragraph when the substrate is CBU)**
 - 12.1 No sealer or curing compound shall be used on concrete to be covered with ALMATEC PORCELAIN STONE TILE. Concrete shall be completely cured prior to the installation of ALMATEC PORCELAIN STONE TILE. Concrete surfaces that are to receive ALMATEC PORCELAIN STONE TILE shall be finished with a profile equal to a CSP 3 on the ICRI scale and shall be left level and true to a tolerance in plane of 1/4" in 10'-0" (6 mm in 3 m) in accordance with ANSI A 108.5 Standard requirements. Pitch floors to drains where required. Areas requiring filling, patching or leveling shall be prepared using MAPEI cementitious levelers and patching materials. No gypsum base levelers shall be permitted.
 - 12.2 All surfaces to receive ALMATEC PORCELAIN STONE TILE shall be left clean, and free of dust, oil, grease, paint, tar, wax, curing agent, primer, sealer, form release agent or any other deleterious substance and debris which may prevent or reduce adhesion.
 - 12.3 The general contractor shall be responsible for the removal of any such contaminant prior to the execution of the work.

PART 1 GENERAL

1.01 SUMMARY

- A. Work performed under the requirements of this section shall be subject to all conditions set forth under PART 1 "GENERAL CONDITIONS" as applicable to this portion of the work.

1.02 RELATED SPECIFICATION SECTIONS *(Select applicable sections, indicate the appropriate sub-section numbers, delete non-applicable items)*

03 35 00	Concrete Finishing
03 45 13	Tile faced architectural precast concrete
03 54 16	Hydraulic Cement Underlayment
07 44 19	Tile faced Panels
09 28 00	Tile Backing Boards and Underlayments
09 30 00	Tiling
09 31 00	Thin-set Tiling
09 32 00	Mortar-Bed Tiling
09 34 00	Waterproofing-Membrane Tiling
09 35 00	Chemical-Resistant Tiling
12 11 26	Ceramic Tile Murals
13 21 00	Special Purpose Rooms

1.03 REFERENCES

- A. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
 - .1 A-118.3 Standard for chemical resistant water-cleanable, tile-setting and grouting epoxy.
 - .2 A-118.4 Standard for Fast-setting latex thin-set mortar and latex Portland cement mortar
 - .3 A-118.6 Standard for Ceramic tile grouts
 - .4 A-118.7 Standard for Polymer-modified cement grouts for tile installation
 - .5 A-118.9 Standard for Cementitious backer units (C.B.U.)
 - .6 A-118.10 Standard for Thin, Load bearing, bonded, waterproof membranes
 - .7 A-118.11 Standard for EGP (Exterior Glue Plywood) Latex Portland Cement Mortar
 - .8 A-108.5 Standard for the Installation of ceramic tile with latex thin-set mortar
 - .9 A-108.6 Standard for the Installation of ceramic tile with chemical resistant tile-setting and grouting epoxy.
 - .10 A-108.10 Standard for the Installation of grout in tile work
 - .11 A-108.11 Standard for Interior installation of cementitious backer units
 - .12 A-108.12 Standard for the installation of ceramic tile with EGP (Exterior Glue Plywood) Latex Portland Cement Mortar
 - .13 A-108.13 Standard for the Installation of load bearing, bonded, water-proof membranes for thin-set ceramic tile and dimension stone.
- B. AMERICAN SOCIETY FOR TESTING & MATERIALS (ASTM)
 - ASTM C 627 Standard Method of Evaluating Ceramic Floor Tile Systems using the Robinson-Type Floor Tester.
 - ASTM C 955 Standard for non-Corrosive "Load-Bearing" C-Type Steel Studs
 - ASTM F 1869 Calcium Chloride Moisture Vapor Emission Test
- C. AMERICAN CONCRETE INSTITUTE (ACI)
 - ACI 503 R –(Appendix A) procedure –“Direct Tensile Cohesive Strength of Concrete”
- D. INTERNATIONAL CONCRETE REPAIR INSTITUTE (ICRI)
 - CSP –3 Concrete Standard Profile (# 3)
- E. TILE COUNCIL OF AMERICA INC.
 - 1. Handbook for Ceramic Tile Installation *(Current Edition)*
- F. TERRAZZO TILE & MARBLE ASSOCIATION OF CANADA (TTMAC)
 - 1. Specification Guide 09300 Tile Installation Manual *(Latest Edition)*
- G. THE ENGINEERED WOOD ASSOCIATION (Formerly A.P.A.)
 - 1. Voluntary Product Standard PS 1-95
- E. CANADIAN STANDARD ASSOCIATION (CSA)
 - 1. CSA 0121 Standard for Douglas Fir Plywood

1.04 SUBMITTALS

- A. **Product data:** Submit manufacturer’s technical information and installation instructions for all specified materials.
- B. **SAMPLES**
 - Prior to commencing the work, submit for approval six (6) representative tile samples of adequate size of each type, color and finish of the selected ALMATEC PORCELAIN STONE TILE mounted on a piece of cementitious backer unit using the specified mortar or adhesive and grouted with the specified grout. These samples shall be of current production, properly identified, clean and representative of the standard range of shade variation of the tiles in the finished work.

1.0.5 QUALITY ASSURANCE

- A. SOURCE : Adhesives, additives, mortars, installation and grouting materials shall be from the same manufacturer.
- B. PRE-INSTALLATION MEETINGS AND MOCK-UP:
 - a. In coordination with the architect, engineer, owner representative, general contractor, job superintendent, finishing product manufacturers and/or suppliers, setting and grouting materials manufacturer and/or supplier, installation contractor and owner's designated maintenance personnel shall meet to select and block-off a floor or wall area as the case may be of at least 100 sq. ft. (9 sq. meters), cleaned, properly prepared in preparation for building a mock-up of the ALMATEC PORCELAIN STONE TILE using the specified setting and grouting materials in strict accordance with specifications, product instructions and discussions of the meeting. During the sample area installation, all participants shall be present to observe the substrate preparation, installation, grouting and cleaning procedures.
 - b. A second meeting shall be convened after the mock-up has cured and has been inspected. All pertinent remarks, observations and recommendations shall be discussed in the presence of all participants, including the participants of the first meeting, and recorded in the minutes of the meeting. The project superintendent shall ensure adequate and complete distribution of the minutes.
 - c. The mock-up sample area, once accepted, including the recorded remarks and recommendations of the meetings, shall serve as the quality standard for the project stone/tile installation. Protect mock-up area from dirt, dust, damage and abuse until substantial completion of the work is achieved and accepted.
- C. SITE VISITS
 - a. To ensure that all proprietary materials are used in strict accordance with state of the art trade standards and manufacturer's instructions, the materials manufacturers and/or suppliers shall, in addition to furnishing the appropriate directions, make regular site visits prior to and during the installation.
 - b. The frequency and number of such site visits shall be determined through prior agreement between the architect, general contractor, trade contractor and the materials and setting materials manufacturers and/or suppliers designated representatives.
 - c. Easy access to the site by these representatives shall be ensured at all times.
 - d. After each visit, the material manufacturer and /or supplier's designated representative shall report his (or her) current observations concerning work conditions and progress in writing to the construction superintendent for inclusion into the minutes of the construction work.
 - e. Any condition, work or part of the work reported as unacceptable or in non-conformity to trade standard requirements following these observations, shall be rectified or removed and replaced at the trade contractor's sole expense and responsibility.

1.0.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store and handle ALMATEC PORCELAIN STONE TILE in a manner to avoid chipping, breakage, staining or any other damage.
- B. Deliver and store packaged materials in their original bags and containers clearly identified; keep containers sealed and labels intact until time of use. Prevent damage or contamination to materials by water, moisture, freezing, excessive heat, foreign matter or other causes. If materials have frozen, do not stir liquids or mix materials until they are completely thawed.
- C. Provide secure heated and dry storage facilities on site.
- D. Deliver and store all materials on site at least 24 hours before work begins.
- E. Comply with material manufacturer's ordering instructions and lead-time requirements to avoid construction delays.

1.0.7 ENVIRONMENTAL REQUIREMENTS

- A. Maintain environmental conditions and protect work during and after installation. Comply with trade standards and manufacturer's product instructions. Follow product MSDS and label instructions concerning safety, health and other related precautionary and environmental protection. Comply with all applicable federal, provincial, local and statutory regulations.
- B. Close all doors and windows and turn off direct forced ventilation systems and apparatus. Turn off radiant floor heating systems and protect work area from direct draft, sun and heat exposure during installation and for at least 72 hours after completion.
- C. When necessary, build a temporary shelter and use indirect auxiliary heaters to maintain an adequate temperature level in the working environment.
- D. Exhaust temporary heaters to building exterior to prevent health hazards and damage to work from toxic fumes and emanations.
- E. Maintain temperature in tiled areas at not less than 50°F (10°C) or more than 95°F (35°C) during installation and for 7 days after completion unless otherwise indicated in the product instructions and/or in ANSI A 108 INSTALLATION STANDARD PROCEDURE requirements.

PART 2 PRODUCTS *(Select appropriate product or products, delete all others)*

2.0.1 MATERIALS

- A. **STEEL FRAMING:** Non-Corrosive "Load-Bearing" C-Type Steel Studs conforming to ASTM C955 and Rigid furring channels for screw application of Cementitious Backer Unit. Minimum base metal thickness and individual measurement shall be not less than 20 Gauge (.033") (.84 mm). *(For fabricated tile/brick faced panels, refer to the panel manufacturer's specifications)*
- B. **CEMENTITIOUS BACKER UNIT:** *(Specify Brand, size, thickness)*. The C.B.U. shall be conform to the quality standard requirements of ANSI A118.9, be from a reputable manufacturer and composed of stable Portland cement, aggregates and reinforcements suitable and recommended by the manufacturer for INTERIOR *(and/or EXTERIOR)* Wall Installation.

- C. EXTERIOR GLUE PLYWOOD** (*Specify only for interior residential floors and countertops in dry areas only*)
Plywood substrate and underlayment shall be (EGP) Exterior Glue Plywood A.P.A. rated GROUP 1 EXTERIOR - C.C. plugged or better, conforming to U.S. Voluntary Product Standard PS 1-95 or 'CAN/PLY'- rated EXTERIOR "SELECT" or (SEL TF) CSA 0121 Douglas Fir plywood in accordance with ANSI A 118.11 Standard requirements for (EGP) Exterior Glue Plywood. Presswood, particle board, chipboard, masonite, gypsum floor patching and leveling compounds, asbestos board, Lauan and similar dimensionally unstable materials are not acceptable substrates.
- D. IMPERVIOUS PORCELAIN TILES:** ALMATEC PORCELAIN STONE TILE: (*specify type, style, finish, size, and color*)... as provided by STONE TILE INTERNATIONAL, 1451 Castlefield Avenue, Toronto, Ontario, Canada M6M 1Y3. Tel.: (416) 515-9000, Fax: (416) 534-1782. Website: www.stone-tile.com

2.0.2 SETTING MATERIALS

- A. DEFORMABLE ACRYLIC LATEX PORTLAND CEMENT MORTAR:** (*See Notes To Specifier 1, 2, 3, 5, 6, 10, 11 and 12*) KERALASTIC®/KERABOND® mortar system by MAPEI, two component deformable acrylic mortar system conforming to ANSI A118.4 and ANSI A 118.11 standard requirements for latex Portland cement mortar and EGP Latex Portland cement mortar. (*Specify color: Gray or White*)
- B. FULLCONTACT POLYMER-MODIFIED MORTAR:** (*See Notes To Specifier 1, 2, 3, 5, 6, 10, 11 and 12*) ULTRACONTACT® by MAPEI single component "Full Contact" polymer-modified mortar conforming to ANSI A118.4 and ANSI A 118.11 standard requirements for latex Portland cement mortar and EGP Latex Portland cement mortar. (*Specify color: Gray or White*)
- C. FAST-CURING DEFORMABLE LATEX 'HCT' MORTAR SYSTEM:** (*See Notes To Specifier 1, 2, 4, 5, 6, 10, 11 and 12*) KER 318-GRANI/RAPID® system by MAPEI, two component fast-setting deformable acrylic 'HCT' mortar system conforming to ANSI A118.4 and ANSI A 118.11 standard requirements for fast-setting latex cement mortar and EGP Latex cement mortar. (*Specify color: Gray or White*)
- D. FAST-CURING FULLCONTACT POLYMER-MODIFIED 'HCT' MORTAR:** (*See Notes To Specifier 1, 2, 4, 5, 6, 10, 11 and 12*) ULTRACONTACT RS by MAPEI single component fast-setting "Full Contact" polymer-modified mortar conforming to ANSI A118.4 and ANSI A 118.11 standard requirements for fast-setting latex cement mortar and EGP Latex cement mortar. (*Specify color: Gray only*)
- E. NON-SAG POLYMER-MODIFIED TILE SETTING MORTAR FOR WALLS:** (*See Notes To Specifier 1, 2, 3, 5, 6, 10, 11 and 12*) ULTRALITE® by MAPEI single component extra-light non-sag polymer-modified tile-setting thin-set mortar conforming to ANSI A 118.4 Standard requirements for latex Portland cement mortar. (*Specify color: Gray or White*)
- F. WATER:** Clean, cool potable water.
- G. ACCESSORIES**
- GYPSUM DRYWALL LATEX PRIMER:** PLANICRETE® AC, by MAPEI.
 - WATERPROOF MEMBRANE:** MAPELASTIC® 315 by MAPEI, two component thin, load-bearing, trowel-applied waterproof membrane system (or MAPELASTIC® HPG Flexible waterproofing membrane) conforming to ANSI A-118.10 standard requirements.
 - CRACK ISOLATION MEMBRANE:** MAPELASTIC® SM by MAPEI.
 - CONCRETE TOPPING, SLOPING AND SCREEDING:** MAPECEM® -PREMIX by MAPEI
 - SELF-LEVELING UNDERLAYMENT:** ULTRA/PLAN® series levelers and ULTRAPLAN® primer by MAPEI

2.0.3 GROUTING MATERIALS

- A. FAST-SETTING POLYMER-MODIFIED SANDED TILE GROUT:** (*See Notes To Specifier 3, 4, 7, 8, 9 and 11*) KER-700 ULTRA/COLOR® by MAPEI, fast-curing, high early strength, polymer-modified 'HCT' sanded tile grout conforming to ANSI A118.7 standard for polymer-modified tile grout. Color: (*specify color or*) as selected by the architect.
- B. SANDED CEMENT TILE GROUT:** (*See Notes To Specifier 1, 2, 5, 6, 10, 11 and 12*) KERACOLOR®-S by MAPEI, polymer-modified sanded Portland cement grout conforming to ANSI A118.6 standard. Color: (*specify color or*) as selected by the architect.
- C. STAIN FREE 100% SOLIDS EPOXY GROUT:** (*See Notes To Specifier 3, 4, 8, 9 and 11*) KER 400 KERAPOXY® by MAPEI, two component stain and chemical resistant water-cleanable, 100% solids reactive resin epoxy tile grout conforming to ANSI A118.3 standard requirements. Color: (*specify color or*) as selected by the architect.
- D. WATER:** Clean, cool and potable water.

2.0.4 MIXING SETTING AND GROUTING MATERIALS

- Use only clean mixing containers
- Use a low speed mixer (approximately 300 RPM).
- Mix KERALASTIC and GRANI/RAPID systems only with their respective UNDILUTED Acrylic latex polymer liquid additive supplied together with the powder as complete unit systems in strict accordance with product MSDS and mixing instructions. For complete details, refer to the MAPEI website: www.mapei.com. Latex dilution in all cases will void the manufacturer's warranty.
- Mix KER-700 ULTRA/COLOR grout with clean, cool potable WATER ONLY in strict accordance with product MSDS and mixing instructions. DO NOT mix ULTRA/COLOR with a grout additive. For complete details, refer to the MAPEI website: www.mapei.com
- Mix KERACOLOR-S polymer-modified sanded cement tile grout with clean, cool potable WATER ONLY in strict accordance with product MSDS and mixing instructions. DO NOT mix KERACOLOR-S with a grout additive. For complete details, refer to the MAPEI website: www.mapei.com
- KER 400 KERAPOXY is a proportionately pre-measured two-component reactive resin system; wear Rubber gloves and eye-protection glasses. Mix ALL the liquid and paste (parts A & B) together in the larger (part A) pail as a complete unit in accordance with product MSDS and mixing and handling instructions. Do not part mix. For complete details, refer to the MAPEI website: www.mapei.com

PART 3 EXECUTION

3.0.1 EXAMINATION

Before work commences, examine the substrate, site and ambient conditions. Report all deficiencies and non-conformities in writing to the general contractor, architect, engineer, owner or project superintendent. Do not proceed with any of the work until surfaces and conditions comply with the requirements of the manufacturer's instructions and of ANSI A108 Standard installation procedures. For more details see "TCA HANDBOOK FOR CERAMIC TILE INSTALLATION" and the TTMAC Specification Guide 09300 Tile Installation Manual.

3.0.2 PRE-INSTALLATION MATERIAL SELECTION AND PREPARATION

- A. Prior to installation, set aside for further inspection and replacement on a tile for tile basis by STONE TILE INTERNATIONAL INC., all sub-standard tiles, fractured tiles or tiles with chipped corners, pinholes or voids that are unusable for cuts. The installer shall replace at his own expense, without any charge against the architect, owner, tile supplier or manufacture, all sub-standard and/or pre-damaged tiles once installed.
- B. Carefully select, set aside and shade-mix ALMATEC PORCELAIN STONE TILE to a homogeneous blend throughout. During Installation, provide supplementary lighting equipment if necessary to easily identify shade differences, which are normally very slight, and provide a standard even aesthetic blend effect. This is best achieved by using a strong floodlight or spotlight fitted to a movable pole stand immediately over the work area.
- C. Before setting, examine tile backs for possible dust or other contaminants. If necessary, use a slightly damp towel and wipe the tile backs to remove any such dust or contaminant residue.

3.0.3 SURFACE PREPARATION

[If more stringent subsurface tolerances other than the standard tolerances indicated herewith are required, the subsurface specification must reflect this tight tolerance requirement or the tile specification must include a specific and separate requirement to bring the subsurface standard [e.g. 6 mm (¼") in 3 m (10'-0")] tolerance into compliance with the more stringent [e.g. 3 mm (1/8") in 3 m (10'-0")] tolerance. See TCA HANDBOOK 'Notes and definitions - Subsurface Tolerance' and ANSI Guidelines for details.]

A. GENERAL

- .1 All sub-surfaces shall be structurally sound, solid, stable, level, plumb and true to a tolerance in plane of 1/4" in 10'-0" (6 mm in 3 m) in accordance with ANSI A108 Specification requirements. They shall be clean and free of dust, oil, grease, paint, tar, wax, curing agent, primer, sealer, form release agent or any deleterious substance and debris which may prevent or reduce adhesion.
- .2 Mechanically sand, shot blast or scarify the substrate as required to completely remove all paint, loosely bonded topping, loose particles and contaminants. Surface etching or contaminant removal by chemical means is not permitted. When sanding or scarifying surfaces that may contain silica sand, wear an approved dust mask. Surfaces containing asbestos must be handled in accordance with current EPA regulations. Contact your local EPA office.
- .3 All substrates shall be dry
- .4 In all cases, the structural design of the substrate shall not allow a deflection greater than L/360 when tested to 136 kg (300 lb) concentrated loads in accordance with ASTM C 627 Standard test method. Deflection and curvature should be uniform over the length of the span.

B. CONCRETE

- .1 The concrete substrate shall be completely cured, solid, sound and shall have a direct tensile cohesive strength greater than 175 psi (1.2 MPa) when tested in accordance with ACI 503 R –(Appendix A) procedure.
- .2 On grade or below grade concrete slabs must be installed over an effective vapor barrier. The on-going presence of free water under the bottom of the surface of the tile must be avoided in order to prevent the unleashing of potentially damaging chemical reaction.
- .3 The concrete substrate shall be dry, free of hydrostatic conditions and/or extreme moisture problems. Perform a calcium chloride moisture emission test as per ASTM F-1869 procedure on the concrete substrate before proceeding with the installation of the floor preparation primer, floor leveler or tile-setting product to ensure that the moisture vapor emission of the concrete does not exceed 2,26 kg per 93 m² (5 lb per 1 000 sq. ft.) per 24 hours when tested in accordance with this procedure.
- .4 New concrete surfaces shall be wood floated or light- broom-finished to achieve a finish profile equal to a CSP 3 on the ICRI scale.
- .5 If the concrete is excessively dry or porous, keep the concrete substrate continuously moist for at least 24 hours before work begins. Remove all excess water or standing water allowing the surface to become saturated surface dry (SSD) before installing the leveling coat or setting mortar.

C. CEMENTITIOUS BACKER UNITS (C.B.U.)

1. Install the cementitious Backer unit (CBU) panels as specified to framing with the long dimension across framing in strict accordance with ANSI A108.11 standard procedure for INTERIOR (or EXTERIOR) INSTALLATION OF CEMENTITIOUS BACKER UNITS. Center end or edge joints on framing and stagger joints in adjacent rows. Space ends and edges in accordance with manufacturer's instructions
2. Use Corrosive resistant sheet metal screws with a sufficient head diameter to achieve a minimum 125 lb (56.7 kg) fastener pull through and pull out resistance. Screw length must provide a minimum ¼" (6 mm) thread engagement. Fasten panels to steel framing placing screws at a maximum 6" (150 mm) C.C. spacing.
3. Provide additional blocking where required to permit proper attachment. Edges or ends of unit parallel to framing shall be continuously supported.
4. Hold CBU firmly in contact with framing while driving fasteners. Do not overdrive screws and replace any screws that are stripped.
5. When installed by others the CBU shall be as specified and installed according to the C.B.U. manufacturer's instructions in strict accordance with ANSI A108.11 standard procedure for INTERIOR (or EXTERIOR) INSTALLATION OF CEMENTITIOUS BACKER UNITS.

6. Fill all CBU panel joints with the tile setting material (or waterproofing material) and tape according to manufacturer's requirements and recommendations.
7. For Exterior wall and shower enclosure installation, flat-trowel apply a coat approximately 1/16" (1,5 mm) thick of MAPELASTIC® 315 two component, thin load-bearing waterproof membrane or, when surface waterproofing is not required, a thin leveling coat of KERALASTIC® / KERABOND® deformable acrylic Portland cement mortar system approximately 1/16" (1,5 mm) to 1/8" (3 mm) thick to cover the entire C.B.U. substrate. Allow to dry and cure for at least 24 hours prior to installing tiles. (For complete details, refer to the respective product data sheets on the MAPEI website: www.mapei.com)

D. GYPSUM WALL SURFACES *(Interior dry areas only)*

- .1 Prime all drywall and plaster wall surfaces with PLANICRETE AC multi-purpose acrylic latex primer and additive and let dry completely before applying the mortar.

E. RESURFACING OLD SURFACES *(Interior installation only)*

- .1 Old cement terrazzo, ceramic tile, paver and quarry tile shall be sound, solid, well bonded, flawless, stripped clean and free of dust, wax, grease, sealer, soap residue and all other deleterious substances and contaminants which may reduce or prevent adhesion. (See the most recent TCA HANDBOOK DETAILS TR-712 and TR-713 or TTMAC Specification Guide 9300 Tile Installation Manual Details 323 RW and 324 RF)

F. PLYWOOD *(Specify only for residential floors and counters in dry areas) (See Note to Specifier 10.2 and ANSI A118.11 for Exterior Glue Plywood latex Portland Cement mortars.)*

- .1 Plywood panels shall be installed smooth face-up. Offset joints of sub-floor and underlayment layers. Use exclusively new plywood.
- .2 When on joists 16" (40 cm) O.C. plywood sub-floors shall consist of 2 layers each 5/8" (16 mm) thick, and gapped 1/4" (6 mm) between sheets and between all materials which they abut such as walls, drains and posts. The plywood shall be screwed 6" (15 cm) O.C. around the perimeter and 8" (20 cm) O.C. throughout the body of the panel in each direction.
- .4 Plank or board floors shall be covered over with one layer of 3/4" (19 mm) thick exterior grade plywood, each sheet to be fastened with screws 8" (20 cm) O.C. in all directions and around the perimeter. Leave 1/4" (6 mm) spacing between each plywood sheet and between all materials they abut such as walls, drains, columns and posts.
- .5 The adjacent edges of the plywood sheets shall not be more than 1/32" (0,75 mm) above or below each other.
- .6 All wood sub-floors shall be properly heated and vented from under.

3.0.4 INSTALLATION

- A. For heavy duty floors, exterior decks and claddings and wet areas such as pools, fountains and shower enclosures, back-butter each tile immediately prior to laying using the flat edge of the trowel and applying sufficient setting material to achieve at least 95% mortar contact and as close as possible to a void-free solid support. Simultaneously apply the mortar to the substrate with a notched trowel with the appropriate profile and deep enough grooves to achieve a continuous supporting bed.
- B. Lay tiles while mortar is fresh *(or both mortar surfaces are fresh)*. Edges and corners must be fully backed with mortar when set. Do not allow mortar to dry or skin over on either surfaces before laying the tiles. For large projects, notched trowels shall be replaced every 5000 tiles to ensure application gauge is accurate.
- C. Press tiles firmly while laying into the fresh mortar with a slight back and forth movement across mortar ridges to cause the ridges to flatten out and come together into a continuous void free bed and to force the mortar up partially into the joint spaces to approximately 1/3 the thickness of the tile. Gently tamp tiles repeatedly while the mortar is fresh. Remove excess setting material immediately from joints spaces so that 2/3 the depth of the tile thickness is left empty for grouting.
- D. Install tiles according to the manufacturer's strict recommendations as to the particulars of the appropriate respective mortar system and accordingly following the applicable general outline procedure set forth in ANSI A108.5, ANSI A108.6 and ANSI A108.12 SPECIFICATIONS FOR THE INSTALLATION OF CERAMIC TILES.
- E. For Exterior Cladding and large wall installation, start installing at the lowest portion of the wall. Support the tiles with wedges, pegs or ropes to prevent sagging.
- F. For commercial floors, pools, exterior cladding and decks, install tiles leaving regular even spacing of at least 3/16" (5 mm) between tiles. For all other Interior floor and wall installation, the tile spacing available for grouting shall be at least 1/8" (3mm) wide. *(specify joint width if wider joints are desired)*. NO BUTT JOINTS SHALL BE PERMITTED.

3.0.5. EXPANSION AND CONTROL JOINTS

- A. Carry existing movement joints all the way through from the substrate surface layer to the tile surface.
- B. Install control joints where tiles abut restraining surfaces, around the perimeter of the work (and or panel) and at the base of columns and curbs.
- C. Install and space expansion and control joints in all directions in accordance with the Tile Council of America Detail #EJ-171 recommendations, as described in the latest edition the TCA HANDBOOK FOR CERAMIC TILE INSTALLATION or with TTMAC Movement Joint recommended Detail # 301 MJ set forth in the latest edition of the TTMAC SPECIFICATION GUIDE 09300 TILE INSTALLATION MANUAL.
- D. **CAUTION:** Under no circumstances shall control joints be cut in after the tiles have been installed. Install tiles up to the control joint and stop. If required, cut the tile and resume setting from the opposite side of the joint. Before continuing, rake the joint clean.
- E. Install an approved compressible bead and the specified sealant to caulk expansion and control joints. Follow the sealant manufacturer's installation instructions. *(Alternatively, preformed proprietary brand control joint profiles may be specified.)*

3.0.6. FLASHING & WEEP HOLES *(Specify for all Exterior Walls and Claddings)*

- A. Install an effective Non-Corrosive Metal flashing and watertight protection at top and bottom of the tilework (and or panel) and at all openings, windows and doors.
- B. Provide weep holes in all vertical grout joints at the bottom of the exterior tile wall (and/or panel) to drain out any excess penetrated water or moisture from behind or from within the tile-work.

3.0.7 GROUTING

- A. Where tiles are installed with KERALASTIC SYSTEM, grout no sooner than 24 hours after installation.
- B. Where tiles are installed with ULTRACONTACT MORTAR, grout no sooner than 24 hours after installation.
- C. Where tiles are installed with GRANI/RAPID SYSTEM, grout no sooner than 3 to 4 hours after installation.
- D. Where tiles are installed with ULTRACONTACT RS, grout no sooner than 3 to 4 hours after installation.
- E. Where tiles are installed with ULTRALITE MORTAR, grout no sooner than 24 hours after installation.
- F. Install grouts in strict accordance with product instructions and the applicable standard outline procedure ANSI A108.6 or ANSI A108.10, respectively for epoxy or cement tile grouts

3.0.8 CLEANING

- A. Remove all grout and mortar residue immediately while work progresses and before materials harden on the tile surface.
- B. Clean tiles/bricks completely leaving no apparent cement laitance on the surface. DO NOT ACID WASH especially where pigmented grouts are specified.

3.0.9 PROTECTION

- A. **Normal setting polymer-modified mortars and deformable Latex mortar installation systems:**
 - 1. Protect finished work from weather, freezing and complete water immersion for at least 14 days after completion of the work.
 - 2. **Walls:** protect walls from impact, vibration and hammering on adjacent and opposite walls for at least 7 days after installation.
 - 3. **Floors:** protect floors from FOOT traffic for at least 24 to 48 hours after installation with KERALASTIC SYSTEM or 24 hours after installation with ULTRACONTACT MORTAR. In all cases Prohibit HEAVY COMMERCIAL and EQUIPMENT traffic for at least 7 days.
 - 4. **Fabricated Faced Panels** (with the KERALASTIC system): Do not disturb or move panels for at least 7 days and allow setting mortar to cure for at least 28 days before shipping and installing panels on site.
- B. **Fast-setting polymer-modified 'HCT' mortar and deformable Latex –added 'HCT' mortar systems:**
 - 1. Protect finished work from weather, freezing and complete water immersion for at least 72 hours after completion of the work.
 - 2. **Walls:** protect walls from impact, vibration and hammering on adjacent and opposite walls for at least 24 hours after installation.
 - 3. **Floors:** protect floors from FOOT traffic for at least 3 to 4 hours after installation. Prohibit HEAVY COMMERCIAL and EQUIPMENT traffic for at least 48 hours.
 - 4. **Fabricated Faced Panels:** Do not disturb or move panels for at least 72 hours and allow setting mortar to cure for at least 7 days before shipping and installing panels on site.
- C. Since temperature and humidity conditions during and after installation affect the final curing time of all cement based and epoxy materials, allow for extended periods of cure and protection when ambient and/or substrate temperatures drop below 60°F (15°C) and/or when the relative humidity is higher than 70%.
- D. Protect the finished work from damage by other trades and general abuse until substantial work completion and acceptance.

END OF SECTION