



Innovative Tile and Stone
Installation Systems

Animal Health and Wellness Facilities Technical Design Manual



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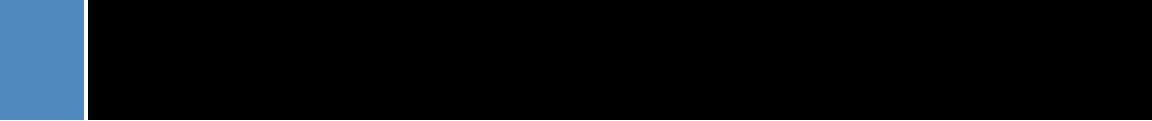
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ANIMAL HEALTH AND WELLNESS FACILITIES

TECHNICAL DESIGN MANUAL

LATICRETE Technical Service Staff



SECTION 1
INTRODUCTION.....3

1.1 Preface.....6

1.2 Overview6

1.3 Why Are These Tile Installations Different?.....6

1.4 Radiant Heating in Animal Boarding Facilities7

1.5 Why Use LATAPOXY® 2000 Industrial Grout8

SECTION 2
SPECIFICATION SECTIONS 1 AND 2 FOR VETERINARY/ANIMAL ARTS/KENNEL – ALL INSTALLATIONS9

SECTION 3
EXECUTION STATEMENTS FOR VETERINARY/ANIMAL ARTS/KENNEL – FLOORS 21

3.1 VF101 – Concrete Slab-On-Grade-Bonded Thick Bed..... 22

3.2 VF114 – Concrete-Unbonded Thick Bed 28

3.3 VF115 – Concrete-Thin Bed 33

3.4 VF133 – Concrete-Chemical Resistant Thin Bed 38

3.5 VF134 – Concrete-Chemical Resistant Thick Bed 43

3.6 VF143 – Exterior Glue Plywood-Chemical Resistant Thin Bed 49

3.7 VF145 – Exterior Glue Plywood-Thick Bed With Metal Lath 56

SECTION 4
EXECUTION STATEMENTS FOR VETERINARY/ANIMAL ARTS/KENNEL – WALLS 61

4.1 VW211 – Concrete-Leveling Bed 62

4.2 VW244 – Cement Backer Board-Steel Framing 68

4.3 VW300 – Concrete Masonry Units/Brick – Thin Bed 74

SECTION 5
EXECUTION STATEMENTS FOR VETERINARY/ANIMAL ARTS/KENNEL – PET HOTELS (RADIANT HEAT) FLOORS79

5.1 VRH115 – Concrete-Electric Radiant Heat-Thin Bed..... 80

5.2 VRH130 – Exterior Glue Plywood-Electric Radiant Heat-Thin Bed 86

5.3 VRH135 – Cement Backer Board-Electric Radiant Heat-Thin Bed..... 93

SECTION 6

DETAIL DRAWINGS101

6.1 Floors

6.1.1 VF101 – Concrete Slab-On-Grade-Bonded Thick Bed..... 102

6.1.2 VF114 – Concrete-Unbonded Thick Bed 103

6.1.3 VF115 – Concrete-Thin Bed..... 104

6.1.4 VF133 – Concrete-Chemical Resistant Thin Bed 105

6.1.5 VF134 – Concrete-Chemical Resistant Thick Bed 106

6.1.6 VF143 – Exterior Glue Plywood-Chemical Resistant Thin Bed 107

6.1.7 VF145 – Exterior Glue Plywood-Thick Bed With Metal Lath 108

6.2 Walls

6.2.1 VW211 – Concrete-Leveling Bed..... 109

6.2.2 VW243 – Gypsum Drywall-Thin Bed 110

6.2.3 VW244 – Cement Backer Board-Steel/Wood Framing..... 111

6.2.4 VW300 – Concrete Masonry Units/Brick-Thin Bed..... 112

6.3 Pet Hotels

6.3.1 VRH115 – Concrete-Electric Radiant Heat-Thin Bed 113

6.3.2 VRH130 – Exterior Glue Plywood-Electric Radiant Heat-Thin Bed..... 114

6.3.3 VRH135 – Cement Backer Board-Electric Radiant Heat-Thin Bed 115

6.4 Miscellaneous

6.4.1 WVP300(F) – Typical Pipe Penetration-Floor 116

6.4.2 WVP300(W) – Typical Pipe Penetration-Wall 117

6.4.3 WVP-302 – Drain Detail – Exploded View..... 118

6.4.4 WVP-303 – Shower Pan 119

6.4.5 Movement Joint Details 120

SECTION 7

QUALITY, PROTECTION AND MAINTENANCE128

7.1 Quality Assurance..... 129

7.2 Preventative and Corrective Maintenance 129

7.3 Protection and Sealing..... 131

7.4 Alternative To Sealing..... 131

SECTION 8

APPENDIX..... 132

8.1 Frequently Asked Questions 133

8.2 Glossary..... 135

8.3 Resource Guide – Trade Organizations and Technical Resources 139

Section 1: Introduction



1.1 Preface

LATICRETE International, Inc., a world leader in the manufacturing of ceramic tile and stone installation systems, has long recognized the need for a technical design manual to provide guidelines and recommendations for the design, specification and installation of tile in veterinary/animal arts/kennel applications. Unique demands placed on veterinary/animal arts/kennel applications require specialized tile installation materials. In keeping with our position as an industry leader, LATICRETE International is publishing Animal Health and Wellness Facilities Technical Design Manual to provide information and guidelines to architects, design professionals, tile installation professionals, and the tile distribution industry. It is the goal of this manual to provide the necessary information to help ensure a proper and long lasting tile installation in an animal health and wellness environment.

1.2 Overview

The ceramic tile industry has the Tile Council of North America (TCNA) Handbook for Ceramic Tile Installation which provides the guide for installation practices. This is an outstanding reference manual which provides information for approximately 100 different types of tile installations and associated applications. For a broad range of applications this information is beneficial and accepted by architects, specification writers, general contractors, and tile contractors.

In a perfect world, tile installations would be the same no matter where the application was going to be placed or for what purpose it would be used. Swimming pools, showers, lobbies, veterinary clinics, commercial kitchen floors, exterior decks, and other tile installations would be easy and straight forward. But, this is not a perfect world and tile installations are definitely not all the same.

The TCNA Handbook provides information for 'Interior Floors – Chemical Resistant'

installations and states that these should be used for areas "where moderate chemical exposure and severe cleaning methods will be used, such as in commercial kitchens, dairies, breweries, food processing plants, etc..." While it is true that these TCNA references should be used in the areas designated, it does not address all of the areas where these application types are best suited.

One such application would be areas where animals have a constant presence and where they are liable to do just about anything. These areas include veterinary clinics and hospitals, kennels, dog grooming establishments, laboratories, pet stores, animal science facilities, and any other area where animals are a continual factor. At any given time these areas can be exposed to dog or cat urine (or any other kind of animal), animal feces, blood, saliva, diarrhea, vomit, chemicals, claws, foot traffic, dirt, water, cleaners, drugs, children and who knows what else. These areas are only taking into account the lobby and examining rooms; you also have x-ray developing rooms, staff lounges, grooming rooms, bathrooms, kennels, and possibly a laundry. This is a very diverse environment, and not friendly for many types of flooring! If installed correctly, and taking into account the extreme environment, then tile can certainly be the answer. Keep in mind that this is an inhospitable environment and that the rules are different when compared to a "normal" tile installation.

1.3 Why are these installations different?

As stated earlier, floors and walls in veterinary clinics, animal hospitals, kennels, etc. are consistently exposed to a wide variety of matter to which a typical tile installation would rarely or never be exposed. Anyone who owns, or has owned a pet, and visits a veterinarian is well aware of the fact that many animals will urinate as soon as they enter the building. Whether this is out of reflex, fear, the need to "go", or another factor is inconsequential; it is

a fact. So taking into account the urine, heavy traffic, and other conditions that the floors and walls see, and couple that with the fact that urine and other matter may sit on the floor for quite a while until it is washed, you can begin to see the problems.

Portland cement grout can easily be stained when animals urinate, vomit or defecate on the floor. The pH of the discharged matter can also play a significant role in the long term performance of the grout. While the pH of urine can range from slightly alkaline to slightly acid, it is typically neutral, the same cannot be said of vomit. Vomit can contain significantly high levels of acid; and cement products do not do well when exposed to acids.

So far we have only talked about exposure to animals and the problems inherent with this exposure. Veterinary labs, clinics and hospitals can also have x-ray developing rooms, dog grooming facilities, surgical rooms, employee lounges, and kennels. Each area has their own unique characteristics, chemical and material exposure, and cleaning procedures. The variety of cleaners, chemicals and other matter is wide ranging and the exposure of these materials is typically frequent.

1.4 Radiant Heating in Animal Boarding Facilities

A growing trend in the animal health and wellness field is Pet Hotels. More and more facilities are opening up around the world that caters to caring for pets in a more upscale manner than a kennel or boarding facility. These pet hotels provide personalized care, individual rooms (some with radiant heated floors), exercise sessions, veterinary services, grooming, and more. The care and comfort of animals is the primary concern of these businesses and some will go to extreme measures to make your pet happy. Included in this design manual are several execution statements for electric radiant heat floors in Pet Hotels (please see Section 6.3 for more information).

Choosing the right setting tile setting materials, including LATAPOXY 2000 Industrial Grout, is very important in a pet hotel environment because of the high turnover of different species and types of animals. Germs and diseases can be spread easily if incorrect setting materials are used and poor continual cleaning and maintenance procedures are not followed.

1.5 Why Use LATAPOXY® 2000 Industrial Grout?

The industry has long looked to epoxies to provide the solution to the large number of potential problems that a veterinary floor or wall can face. But not all epoxies are the same; certain epoxies have cement present in them and these may not be the right type of material when exposed to acids for extended time. Other epoxy grouts are susceptible to degradation by bacterial attack, steam cleaning or strong acid or chemical exposure. The only true answer is an industrial epoxy grout that is manufactured to withstand the most harsh installation environments. LATAPOXY® 2000 Industrial Grout is the solution.

One of the major reasons to use LATAPOXY 2000 Industrial Grout is for health concerns. Not only the health of the animals, but also the health of the people present in the building. Let's remember what comes in contact with a typical veterinary hospital tile installation; urine, feces, blood, diarrhea, vomit, and more. Many of the animals brought in for veterinary care are sick, and like humans carry any number of germs; and germs are transferable and lead to sickness in other animals and humans.

What happens when a sick dog vomits on a tile installation that has cement grout? Hopefully, someone will be along shortly to clean up and sanitize the area! But, the fact that cement based grout is absorptive (up to 7% absorption rate) means that some of the vomit can soak into the grout before it is cleaned. A short while later another dog smells the area in question

and its nose touches the grout. Have some of the germs now been passed to this dog? It is a possibility!

LATAPOXY® 2000 Industrial Grout is a very dense, hard grout that has an extremely low absorption rate ($<.16\%$). This means that any liquid that comes in contact with the grout will stay on top of the grout until it is cleaned. If cleaned and sanitized quickly then there is far less chance of the germs being transferred via contact or eventually getting airborne.

LATAPOXY 2000 Industrial Grout will also stand up to the myriad of chemicals and cleaners that are used in this environment. This grout is also highly stain resistant and the color would not be affected by any of the normal matter that would come in contact with it in a veterinary atmosphere.

Section 2: Specification Sections 1 and 2 for Animal Health and Wellness Facilities Technical Design Manual – All Installations



1.1 Summary

- A. Scope of work – Provide ceramic tile, tile installation materials and accessories as indicated on drawings, as specified herein, and as needed for complete and proper installation.
- B. Related Documents – provisions within General and Supplementary General Conditions of the Contract, Division 1 – General Requirements, and the Drawings apply to this Section.

1.2 Section Includes

- A. Ceramic wall tile and trim units (glazed)
- B. Ceramic floor tile/mosaics and trim units (glazed or unglazed)
- C. Ceramic tile pavers and trim units (glazed or unglazed)
- D. Quarry tile pavers and trim units (glazed or unglazed)
- E. Porcelain tile
- F. Glass mosaics
- G. Special purpose tile
- H. Decorative thin wall tile
- I. Installation Products; adhesives, mortars, grouts and sealants
- J. Waterproofing membranes for ceramic tile work
- K. Anti-fracture membranes for ceramic tile work
- L. Sound control underlayments
- M. Thresholds, trim, cementitious backer units and other accessories specified herein.

NOTE TO SPECIFIER: Edit for applicable procedures and materials.

1.3 Products Furnished But Not Installed Under This Section

NOTE TO SPECIFIER: Edit for applicable products.

1.4 Products Furnished But Not Installed Under This Section

NOTE TO SPECIFIER: Edit for applicable products.

1.5 Environmental Performance Requirements

- A. Environmental Performance Criteria: The following criteria are required for products included in this section.

Refer to Division 1 for additional requirements:

- 1. Products manufactured regionally within a 500 mile radius of the Project site;
- 2. Adhesive products must meet or exceed the VOC limits of South Coast Air Quality Management District Rule #1168 and Bay Area Resources Board Reg. 8, Rule 51.

1.6 Related Sections

- A. Section 03300 Cast-in-Place Concrete (monolithic slab finishing for ceramic tile)
- B. Section 03305 Concrete Curing
- C. Section 03410 Structural Pre-cast Concrete
- D. Section 03532 Concrete Floor Topping
- E. Section 04200 Unit Masonry (CMU wall substrates)
- F. Section 04300 Stone
- G. Section 06100 Rough Carpentry (plywood sub-floors)
- H. Section 07110 Membrane Waterproofing
- I. Section 07920 Elastomeric Joint Sealants
- J. Section 09250 Gypsum Board Assemblies
- K. Section 09385 Stone Tile
- L. Section 10800 Washroom Accessories
- M. Section 15440 Plumbing Fixtures

NOTE TO SPECIFIER: Above are examples of typical broad scope and narrow scope sections related to ceramic tile installation. Edit for applicable related sections.

1.7 Allowances

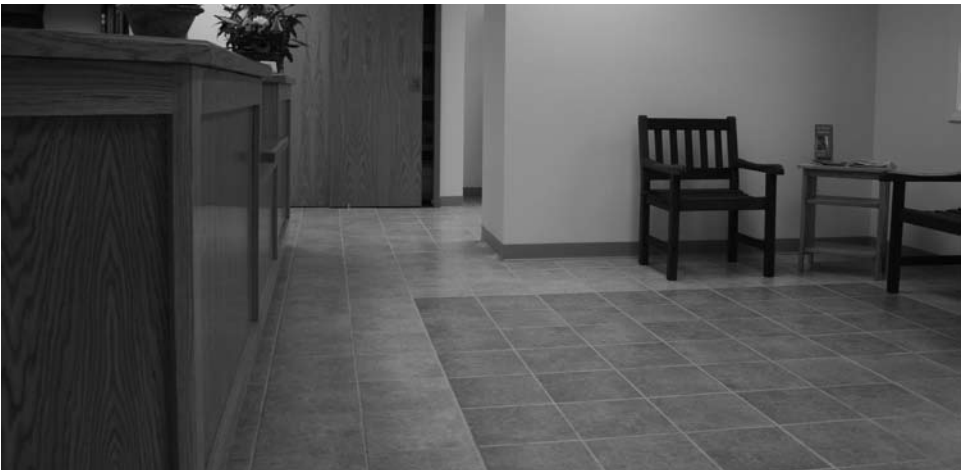
NOTE TO SPECIFIER: Edit for detail of applicable ALLOWANCES; coordinate with Section 01020 Allowances. Allowances in the form of unit pricing are sometimes used when the scope of the tile work at time of bid is undetermined.

1.8 Alternates

NOTE TO SPECIFIER: Edit for applicable ALTERNATES. Alternates may be used to evaluate varying levels of performance of setting systems or to assist in the selection of the tile by economy.

1.9 Reference Standards

- A. American Iron and Steel Institute (AISI) Specification for the Design of Cold-Formed Steel Structural Members
- B. American National Standards Institute (ANSI) A137.1 American National Standard Specifications For Ceramic Tile
- C. American National Standards Institute (ANSI) A108.01 – A108.17 American National Standard Specifications For The Installation Of Ceramic Tile
- D. American National Standards Institute (ANSI) A118.1 – A118.12 American National Standard Specifications For The Installation Of Ceramic Tile
- E. American National Standards Institute (ANSI) A136.1 American National Standard Specifications For The Installation Of Ceramic Tile
- F. American Plywood Association (APA) Y510T Plywood Design Specifications
- G. American Society For Testing And Materials (ASTM) A82 Standard Specification for Steel Wire, Plain, for Concrete Reinforcement
- H. American Society For Testing And Materials (ASTM) A185 Standard Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement
- I. American Society For Testing And Materials (ASTM) C33 Standard Specification for Concrete Aggregate
- J. American Society For Testing And Materials (ASTM) C36 Standard Specification for Gypsum Wallboard
- K. American Society For Testing And Materials (ASTM) C109 Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2" [50 mm] Cube Specimens)
- L. American Society For Testing And Materials (ASTM) C144 Standard Specification for Aggregate for Masonry Mortar
- M. American Society For Testing And Materials (ASTM) C150 Standard Specification for Portland Cement
- N. American Society For Testing And Materials (ASTM) C171 Standard Specification for Sheet Materials for Curing Concrete
- O. American Society For Testing And Materials (ASTM) C241 Standard Test Method for Abrasion Resistance of Stone Subjected to Foot Traffic
- P. American Society For Testing And Materials (ASTM) C267 Standard Test Method for Chemical Resistance of Mortars, Grouts, and Monolithic Surfacings



Section 2: Part 1 General Requirements

- Q. American Society For Testing And Materials (ASTM) C482 Standard Test Method for Bond Strength of Ceramic Tile to Portland Cement
- R. American Society For Testing And Materials (ASTM) C503 Standard Specification for Marble Dimension Stone (Exterior)
- S. American Society For Testing And Materials (ASTM) C531 Standard Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing and Polymer Concretes
- T. American Society For Testing And Materials (ASTM) C627 Standard Test Method for Evaluating Ceramic Floor Tile Installation Systems Using the Robinson-Type Floor Tester
- U. American Society For Testing And Materials (ASTM) C794 Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants
- V. American Society For Testing And Materials (ASTM) C847 Standard Specification for Metal Lath
- W. American Society For Testing And Materials (ASTM) C905 Standard Test Method for Apparent Density of Chemical-Resistant Mortars, Grouts, and Monolithic Surfacing
- X. American Society For Testing And Materials (ASTM) C920 Standard Specification for Elastomeric Joint Sealants
- Y. American Society For Testing And Materials (ASTM) C955 Standard Specification for Load Bearing (Transverse and Axial) Steel Studs, Runners (Tracks), and Bracing or Bridging for Screw Application of Gypsum Board and Metal Plaster Bases
- Z. American Society For Testing And Materials (ASTM) D226 Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing And Waterproofing
- AA. American Society For Testing And Materials (ASTM) D227 Standard Specification for Coal-Tar Saturated Organic Felt Used in Roofing and Waterproofing
- BB. American Society For Testing And Materials (ASTM) D751 Standard Test Method for Coated Fabrics
- CC. American Society For Testing And Materials (ASTM) D751 Standard Test Method for Rubber Property – Durometer Hardness
- DD. American Society For Testing And Materials (ASTM) D1248 Standard Test Method for Staining of Porous Substances by Joint Sealants
- EE. American Society For Testing And Materials (ASTM) D2240 Standard Test Method for Coated Fabrics
- FF. American Society For Testing And Materials (ASTM) D4263 Standard Test Method for Indicating Moisture in Concrete by The Plastic Sheet Method
- GG. American Society For Testing And Materials (ASTM) D4397 Standard Specification for Polyethylene Sheeting for Construction, Industrial and Agricultural Applications
- HH. American Society For Testing And Materials (ASTM) D4716 Standard Test Method for Determining the (In Plane) Flow Rate Per Unit Width and Hydraulic Transmissivity of a Geo-synthetic Using a Constant Head
- II. American Society For Testing And Materials (ASTM) E84 Standard Test Method for Surface Burning Characteristics of Building Materials
- JJ. American Society For Testing And Materials (ASTM) E90 Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions
- KK. American Society For Testing And Materials (ASTM) E96 Standard Test Methods for Water Vapor Transmission of Materials
- LL. American Society For Testing And Materials (ASTM) E413 Standard Classification for Rating Sound Insulation

- MM. American Society For Testing And Materials (ASTM) E492 Standard Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine
- NN. American Society For Testing And Materials (ASTM) E989 Standard Classification for Determination of Impact Insulation Class (IIC)
- OO. American Society of Mechanical Engineers (ASME) – ASME A112.6.3 Floor and Trench Drains
- PP. Canadian Sheet Steel Building Institute (CSSBI) Lightweight Steel Framing Binder {Publication 52M}
- QQ. Federal Housing Administration (FHA) Bulletin No. 750 Impact Noise Control in Multifamily Dwellings
- RR. Housing and Urban Development (HUD) TS 28 A Guide to Airborne, Impact and Structure-borne Noise-Control in Multifamily Dwellings
- SS. Materials And Methods Standards Association (MMSA) Bulletins 1-16
- TT. Metal Lath/Steel Framing Association (ML/SFA) 540 Lightweight Steel Framing Systems Manual
- UU. Steel Stud Manufacturers Association (SSMA) Product Technical Information and ICBO Evaluation Service, Inc. Report ER-4943P
- VV. Terrazzo, Tile And Marble Association Of Canada (TTMAC) Specification Guide 09300 Tile Installation Manual
- WW. Tile Council Of North America (TCNA) Handbook For Ceramic Tile Installation
- XX. United States Green Building Council (USGBC) LEED Reference Guide for Green Building Design and Construction
- YY. United States Green Building Council (USGBC) LEED Schools Reference Guide

NOTE TO SPECIFIER: Edit for applicable reference standards.

1.10 System Description

- A. Ceramic mosaic floor tile installed over concrete floor slabs using latex-modified Portland cement mortar and latex Portland cement grout joints.
- B. Quarry tile and base installed using latex modified Portland cement mortar over a plastic Portland cement mortar bed or over a cured (pre-floated) Portland cement mortar bed with epoxy grouted joints.

NOTE TO SPECIFIER: The above systems are example descriptions; edit for additional applicable systems.

1.11 SUBMITTALS

NOTE TO SPECIFIER: Edit for applicable requirements.

- A. Submittal Requirements: Submit the following “Required LEED Criteria” certification items as listed below. Refer to Division 1 for additional requirements:
 - 1. A completed LEED Environmental Building Materials Certification Form. Information to be supplied generally includes:
 - a. Manufacturing plant locations for tile installation products.
 - b. LEED Credits as listed in Part 1.4B “LEED Credit Submittals”
 - 2. GREENGUARD Environmental Institute certificates or GreenGuard Environmental Institute Children & Schools certificates provided by the tile installation materials manufacturer on GREENGUARD letterhead stating “This product has been GREENGUARD Indoor Air Quality Certified® by the GREENGUARD Environmental Institute under the GREENGUARD Standard for Low Emitting Products” for each tile installation product used to verify Low VOC product information.
 - 3. Contractor’s certification of LEED Compliance: Submit Contractor’s certification verifying the installation of specified LEED Compliant products.

4. Product Cut Sheets for all materials that meet the LEED performance criteria. Submit Product Cut Sheets with Contractor or Subcontractor's stamp, as confirmation that submitted products were installed on Project.
 5. Material Safety Data Sheets for all applicable products.
- B. LEED Credit Submittals for the following;
1. LEED Construction Guide for Green Building Design and Construction, 2009 Edition Credit EQ 4.1: Manufacturer's product data for tile installation materials, including GREENGUARD Certificate on GREENGUARD letterhead stating product VOC content.
 2. LEED Construction Guide for Green Building Design and Construction, 2009 Edition Credit EQ 4.3: Manufacturer's product data for tile installation materials, including GREENGUARD Certificate on GREENGUARD letterhead stating product VOC content.
 3. LEED Construction Guide for Green Building Design and Construction, 2009 Edition Credit MR 2.1: (Divert 50% from Disposal) Manufacturer's packaging showing recycle symbol for appropriate disposition in construction waste management.
 4. LEED Construction Guide for Green Building Design and Construction, 2009 Edition Credit MR 2.1: (Divert 75% from Disposal) Manufacturer's packaging showing recycle symbol for appropriate disposition in construction waste management.
 5. LEED Construction Guide for Green Building Design and Construction, 2009 Edition Credit MR 4.1: Manufacturer's product data showing post-consumer and/or pre-consumer recycled content.
 6. LEED Construction Guide for Green Building Design and Construction, 2009 Edition Credit MR 4.2: Manufacturer's product data showing post-consumer and/or pre-consumer recycled content.
 7. LEED Construction Guide for Green Building Design and Construction, 2009 Edition Credit MR 5.1 (10% Extracted, Processed & Manufactured Regionally): Product data indicating location of material manufacturer for regionally manufactured materials.
 - a. Include statement indicating cost and distance from manufacturer to Project for each regionally manufactured product.
 8. LEED Construction Guide for Green Building Design and Construction, 2009 Edition Credit MR 5.2 (20% Extracted, Processed & Manufactured Regionally): Product data indicating location of material manufacturer for regionally manufactured materials.
 - a. Include statement indicating cost and distance from manufacturer to Project for each regionally manufactured product.
 9. LEED Schools Reference Guide (Educational Projects Only), 2007 Edition Credit EQ 9 (Enhanced Acoustical Performance): Impact noise reduction test reports and product data on sound control product(s).
 10. LEED Schools Reference Guide (Educational Projects Only), 2007 Edition Credit EQ 10 (Mold Prevention): Manufacturer's packaging and/or data showing anti-microbial protection in product(s).
- C. Submit shop drawings and manufacturers' product data under provisions of Section (01300) (01340)
- D. Submit samples of each type/style/finish/size/color of ceramic tile, mosaic, paver, trim unit or threshold under provisions of Section (01300) (01340)
- E. Submit manufacturers' installation instructions under provisions of Section (01300) (01340)
- F. Submit manufacturer's certification under provisions of Section (01405) that the materials supplied conform to ANSI A137.1.

- G. Submit proof of warranty.
- H. Submit sample of installation system demonstrating compatibility/functional relationships between adhesives, mortars, grouts and other components under provision of Section (01300) (01340). Submit proof from tile or stone manufacturer or supplier verifying suitability of tile or stone for specific application and use; including dimensional stability, water absorption, freeze/thaw resistance (if applicable), resistance to thermal cycling, and other characteristics that the project may require. These characteristics must be reviewed and approved by the project design professional(s).
- I. Submit list from manufacturer of installation system/adhesive/mortar/grout identifying a minimum of three (3) similar projects, each with a minimum of ten (10) years service.
- J. For alternate materials, at least thirty (30) days before bid date submit independent laboratory test results confirming compliance with specifications listed in Part 2 – Products.

1.12 Quality Assurance

- A. Tile Manufacturer (single source responsibility): Company specializing in ceramic tile, mosaics, pavers, trim units and/or thresholds with three (3) years minimum experience. Obtain tile from a single source with resources to provide products of consistent quality in appearance and physical properties.
- B. Installation System Manufacturer (single source responsibility): Company specializing in adhesives, mortars, grouts and other installation materials with ten (10) years minimum experience and ISO 9001 certification. Obtain installation materials from single source manufacturer to insure consistent quality and full compatibility.
- C. Submit laboratory confirmation of adhesives, mortars, grouts and other installation materials:

- 1. Identify proper usage of specified materials using positive analytical method.
- 2. Identify compatibility of specified materials using positive analytical method.
- 3. Identify proper color matching of specified materials using a positive analytical method.
- D. Installer qualifications: company specializing in installation of ceramic tile, mosaics, pavers, trim units and thresholds with five (5) years documented experience with installations of similar scope, materials and design.

1.13 Mock-Ups

- A. Provide mock-up of each type/style/finish/size/color of ceramic tile, mosaics, pavers, trim unit and threshold, along with respective installation adhesives, mortars, grouts and other installation materials, under provisions of Section (01400) (01405).

1.14 Pre-Installation Conference

Pre-installation conference: At least three weeks prior to commencing the work attend a meeting at the jobsite to discuss conformance with requirements of specification and job site conditions. Representatives of owner, architect, general contractor, tile subcontractor, Tile Manufacturer, Installation System Manufacturer and any other parties who are involved in the scope of this installation must attend the meeting.

1.15 Delivery, Storage and Handling

- A. Acceptance at Site: deliver and store packaged materials in original containers with seals unbroken and labels, including grade seal, intact until time of use, in accordance with manufacturer's instructions.
- B. Store ceramic tile and installation system materials in a dry location; handle in a manner to prevent chipping, breakage, and contamination.

- C. Protect latex additives, organic adhesives, epoxy adhesives and sealants from freezing or overheating in accordance with manufacturer's instructions; store at room temperature when possible.
- D. Store portland cement mortars and grouts in a dry location.

1.16 Project/Site Conditions

- A. Provide ventilation and protection of environment as recommended by manufacturer.
- B. Prevent carbon dioxide damage to ceramic tile, mosaics, pavers, trim, thresholds, as well as adhesives, mortars, grouts and other installation materials, by venting temporary heaters to the exterior.
- C. Maintain ambient temperatures not less than 50°F (10°C) or more than 100°F (38°C) during installation and for a minimum of seven (7) days after completion. Setting of portland cement is retarded by low temperatures. Protect work for extended period of time and from damage by other trades. Installation with latex portland cement mortars requires substrate, ambient and material temperatures at least 37°F (3°C). There should be no ice in slab. Freezing after installation will not damage latex portland cement mortars. Protect portland cement based mortars and grouts

from direct sunlight, radiant heat, forced ventilation (heat and cold) and drafts until cured to prevent premature evaporation of moisture. Epoxy mortars and grouts require surface temperatures between 60°F (16°C) and 90°F (32°C) at time of installation. It is the General Contractor's responsibility to maintain temperature control.

1.17 Sequencing and Scheduling

- A. Coordinate installation of tile work with related work.
- B. Proceed with tile work only after curbs, vents, drains, piping, and other projections through substrate have been installed and when substrate construction and framing of openings have been completed.

NOTES FOR SPECIFIER: Edit for project specific sequence and scheduling.

1.18 Warranty

The Contractor warrants the work of this Section to be in accordance with the Contract Documents and free from faults and defects in materials and workmanship for a period of 25 years. The manufacturer of adhesives, mortars, grouts and other installation materials shall provide a written twenty five (25) year warranty, which covers materials and labor – reference LATICRETE Warranty Data Sheet 025.0 for complete details and requirements. For exterior facades over steel or wood framing,



the manufacturer of adhesives, mortars, grouts and other installation materials shall provide a written ten (10) year warranty, which covers replacement of LATICRETE products only – reference LATICRETE Warranty Data Sheet 230.15 for complete details and requirements.

1.19 Maintenance

Submit maintenance data under provisions of Section 01730. Include cleaning methods, cleaning solutions recommended, stain removal methods, as well as polishes and waxes recommended.

1.20 Extra Materials Stock

Upon completion of the work of this Section, deliver to the Owner 2% minimum additional tile and trim shape of each type, color, pattern and size used in the Work, as well as extra stock of adhesives, mortars, grouts and other installation materials for the Owner's use in replacement and maintenance. Extra stock is to be from same production run or batch as original tile and installation materials.

PART 2 – PRODUCTS

2.1 Tile Manufacturers

Subject to compliance with paragraphs 1.12 and performance requirements, provide products by one of the following manufacturers:

NOTE TO SPECIFIER: Provide list of acceptable tile manufacturers.

2.2 Wall Tile Materials

NOTE TO SPECIFIER: Edit for each tile type.

- A. Ceramic Tile
- B. Grade:
- C. Size:
- D. Edge
- E. Finish:
- F. Color
- G. Special shapes
- H. Location:

2.3 Floor Tile Materials

NOTE TO SPECIFIER: Edit for each tile type.

- A. Ceramic Tile
- B. Grade:
- C. Size:
- D. Edge
- E. Finish:
- F. Color
- G. Special shapes
- H. Location:

2.4 Ceramic Tile Installation Materials Manufacturer

- A. LATICRETE International, Inc.,
1 Laticrete Park North,
Bethany, CT 06524-3423 USA
Phone: 800.243.4788; +1.203.393.0010
support@laticrete.com, www.laticrete.com;
www.laticrete.com/green

NOTE TO SPECIFIER: Use either the following performance specification or the proprietary specification.

2.5 Performance Specification – Tile Installation Accessories

- A. Waterproofing Membrane to be thin, cold applied, single component liquid and load bearing. Reinforcing fabric to be non-woven rot-proof specifically intended for waterproofing membrane. Waterproofing Membrane to be non-toxic, non-flammable, and non-hazardous during storage, mixing, application and when cured. It shall be certified by IAPMO and ICC approved as a shower pan liner and shall also meet the following physical requirements:
 - 1. Hydrostatic Test (ASTM D4068): Pass
 - 2. Elongation at break (ASTM D751): 20 – 30%
 - 3. System Crack Resistance (ANSI A118.12): Pass (High)
 - 4. 7 day Tensile Strength (ANSI A118.10): >265 psi (1.8 MPa)
 - 5. 7 day Shear Bond Strength (ANSI A118.10) >200 psi (1.4 MPa)

6. 28 Day Shear Bond Strength (ANSI A118.4): >214 psi (1.48 – 2.4 MPa)
 7. Service Rating (TCA/ASTM C627): Extra Heavy
 8. Total VOC Content: < 0.05 mg/m³
- B. Epoxy Waterproofing Membrane to be 3 component epoxy, trowel applied specifically designed to be used under ceramic tile, stone or brick and requires only 24 hours prior to flood testing:
1. Breaking Strength (ANSI A118.10): 450 – 530 psi (3.1 – 3.6 MPa)
 2. Waterproofness (ANSI A118.10): No Water penetration
 3. 7 day Shear Bond Strength (ANSI A118.10): 110 – 150 psi (0.8-1 MPa)
 4. 28 Day Shear Bond Strength (ANSI A118.10): 90-120 psi (0.6 – 0.83 MPa)
 5. 12 Week Shear Bond Strength (ANSI A118.10): 110 – 130 psi (0.8 – 0.9 MPa)
 6. Total VOC Content: <3.4 g/L
- C. Crack Suppression Membrane to be thin, cold applied, single component liquid and load bearing. Reinforcing fabric (if required or used) to be non-woven, rot-proof specifically intended for crack suppression membrane. Materials to be non-toxic, non-flammable, and non-hazardous during storage, mixing, application and when cured. Crack Suppression Membrane shall also meet the following physical requirements:
1. Elongation at break (ASTM D751): 20 – 30%
 2. System Crack Resistance (ANSI A118.12) Pass (High)
 3. 7 day Tensile Strength (ANSI A118.10): 265 – 300 psi (1.8 – 2.0 MPa)
 4. 7 day Shear Bond Strength (ANSI A118.10) 200 – 275 psi (1.4 – 1.9 MPa)
 5. 28 Day Shear Bond Strength (ANSI A118.4): >214 – 343 psi (1.48 – 2.4 MPa)
 6. Service Rating (TCA/ASTM C627): Extra Heavy
 7. Total VOC Content: < 0.05 mg/m³
- D. Wire Reinforcing: 2" x 2" (50 x 50 mm) x 16 ASW gauge or 0.0625" (1.6 mm) diameter galvanized steel welded wire mesh complying with ANSI A108.02 3.7, ASTM A185 and ASTM A82.
- E. Cleavage membrane: 15 pound asphalt saturated, non-perforated roofing felt complying with ASTM D226, 15 pound coal tar saturated, non-perforated roofing felt complying with ASTM D227 or 4.0 mils (0.1 mm) thick polyethylene plastic film complying with ASTM D4397.
- F. Cementitious backer board units: size and thickness as specified, complying with ANSI A118.9.
- G. Thresholds: Provide marble saddles complying with ASTM C241 for abrasion resistance and ASTM C503 for exterior use, in color, size, shape and thickness as indicated on drawings.

NOTE TO SPECIFIER: Edit applicable tile installation accessories.

2.6 Performance Specification – Tile Installation Materials

- A. Sound Abatement and Crack Isolation Mat shall be load bearing, shock and vibration resistant. It shall be certified by independent laboratory testing to meet the specified acoustical performance when installed in a Floor Assembly with a 6" (150 mm) concrete slab, as well as meet the following physical requirements:
1. Service Rating (ASTM C627): Light
 2. Point Load (ANSI A118.12-5.2): >1250 psi (8.6 MPa)
 3. Installed Weight (ASTM C905 Modified): 2.6 lbs/ft² (12.8 kg/m²)
 4. Delta Impact Insulation Class (ΔIIC; ASTM E2179): 20
- B. Sound Abatement and Crack Suppression Adhesive shall comply with ANSI A118.12, provide an Extra Heavy rating and provide a minimum ΔIIC of 15:

1. Service Rating (ASTM C627): Extra Heavy
 2. Delta Impact Insulation Class (Δ IIC; ASTM E2179): 15
 3. Point Load (ANSI A118.12 5.2): >1000 psi (6.9 MPa)
 4. Minimum Shear Bond Strength (ANSI A118.12): 100psi (0.7 MPa)
- C. Moisture Vapor Reduction to be epoxy based and GREENGUARD compliant as well as meet the following physical requirements:
1. Shear Bond to Concrete (ANSI A118.12 – 5.1.5): >285 psi (2.0 MPa)
 2. Alkalinity Resistance (ASTM C267): Pass
 3. Permeability (ASTM F1869): 9.7 lbs/1,000ft²/24 hours down to 0.2 lbs/1,000 ft²/24 hours (248 μ g/s•m² down to 11 μ g/s•m²)
- D. Latex Portland Cement Mortar for thick beds, screeds, leveling beds and scratch/plaster coats to be weather, frost, shock resistant and meet the following physical requirements:
1. Compressive Strength (ANSI A118.4 Modified): >4000 psi (27.6 MPa)
 2. Water Absorption (ANSI A118.6): \leq 5%
 3. Service Rating (TCA/ASTM C627): Extra Heavy
 4. Smoke and Flame Contribution (ASTM E84 Modified): 0
 5. Total VOC Content: < 0.05 mg/m³
- E. Self-Leveling Underlayment shall be mixed with water to produce a pumpable, fast setting, free flowing cementitious underlayment which can be poured from a feather-edge to 1-1/2" (38 mm) thick in one pour.
1. 4 Hour Compressive Strength (ANSI A118.4 Mod.): >1500 psi (10.3 MPa)
 2. 1 Day Compressive Strength (ANSI A118.4 Mod.): >2800 psi (19.3 MPa)
 3. 28 Day Compressive Strength (ANSI A118.4 Mod.): >4300 psi (29.7 MPa)
 4. Tensile Strength (ANSI A118.7): >500 psi (3.5 MPa)
 5. Time To Foot Traffic: 3 – 4 Hours
 6. Total VOC Content: < 0.05 mg/m³
- F. Epoxy Adhesive to be chemical resistant 100% solids epoxy with high temperature resistance and meet the following minimum physical requirements:
1. Compressive strength (ANSI A118.3): >5000 psi (34.4 MPa)
 2. Shear Bond Strength (ANSI A118.3): >1250 psi (8.6 MPa)
 3. Thermal Shock Resistance (ANSI A118.3): >600 psi (4.1 MPa)
 4. Tensile Strength (ANSI A118.3): >1400 psi (9.6 MPa)
 5. Shrinkage (ANSI A118.3): 0 – 0.1%
 6. Total VOC Content: < 0.05 mg/m³
 7. Cured Epoxy Adhesive to be chemically and stain resistant to ketchup, mustard, tea, coffee, milk, soda, beer, wine, bleach (5% solution), ammonia, juices, vegetable oil, detergents, brine, sugar, cosmetics and blood, as well as chemically resistant to dilute food acids, dilute alkalis, gasoline, turpentine and mineral spirits.
- G. Latex Portland Cement Thin Bed Mortar for thin set and slurry bond coats to be weather, frost, shock resistant, non-flammable and meet the following physical requirements:
1. Compressive strength (ANSI A118.4): >2500 psi (17.2 MPa)
 2. Bond strength (ANSI A118.4): >450 psi (3.1 MPa)
 3. Smoke and Flame Contribution (ASTM E84 Modified): 0
 4. Total VOC Content: < 0.05 mg/m³
- H. Organic Adhesive shall be non-flammable, water resistant, latex adhesive and shall meet the following physical requirements:
1. Open Time (ANSI A136.1): 70 minutes at 75°F (24°C)

2. Color: White
3. Density (ANSI A136.1): 13.2 lbs/gal (1.6 kg/l)
- I. Epoxy Grout (Industrial) to be non-flammable, chemical resistant 100% solids epoxy with high temperature resistance and meeting the following physical requirements:
 1. Initial Set Time (ANSI A118.5): Pass (4 hours)
 2. Service Set Time (ANSI A118.5): Pass (< 7 days)
 3. Shrinkage (ANSI A118.3): Pass (0.07%)
 4. Sag (ANSI A118.3): Pass (no sag)
 5. Shear Bond Strength (ANSI A118.3; quarry tile): 1000 psi (6.9 MPa)
 6. Compressive Strength (ANSI A118.3): 15500 psi (107 MPa)
 7. Tensile Strength (ANSI A118.5): 2600 psi (18.0 MPa)
 8. Thermal Shock Resistance (ANSI A118.3): 500 psi (3.4 MPa)
9. Cured Epoxy Grout to be chemically and stain resistant to ketchup, mustard, tea, coffee, milk, soda, beer, wine, bleach (3% solution), ammonia, juices, vegetable oil, detergents, brine, sugar, cosmetics and blood, as well as being chemically resistant to dilute food/mineral acids, gasoline and mineral spirits.
- J. Epoxy Grout (Commercial/Residential) shall be non-toxic, non-flammable, non-hazardous during storage, mixing, application and when cured and shall meet the following physical requirements:
 1. Compressive Strength (ANSI A118.3): 3500 psi (24 MPa)
 2. Shear Bond Strength (ANSI A118.3): 1000 psi (6.9 MPa)
 3. Tensile Strength (ANSI A118.3): 1100 psi (7.6 MPa)
 4. Thermal Shock (ANSI A118.3): >500 psi (3.5 MPa)
 5. Water Absorption (ANSI A118.3): < 0.5 %
 6. Vertical Joint Sag (ANSI A118.3): Pass
 7. Total VOC Content: < 0.05 mg/m³
8. Cured Epoxy Grout to be chemically and stain resistant to ketchup, mustard, tea, coffee, milk, soda, beer, wine, bleach (5% solution), ammonia, juices, vegetable oil, brine, sugar, cosmetics, and blood, as well as chemically resistant to dilute acids and dilute alkalis.
- K. Latex Portland Cement Grout to be weather, frost and shock resistant, as well as meet the following physical requirements:
 1. Compressive Strength (ANSI A118.7): 4500 psi (31 MPa)
 2. Tensile Strength (ANSI A118.7): >500 psi (3.45 MPa)
 3. Flexural Strength (ANSI A118.7): >1250 psi (8.6 MPa)
 4. Water Absorption (ANSI A118.7): < 5%
 5. Linear Shrinkage (ANSI A118.7): < 0.05 %
 6. Smoke and Flame Contribution (ASTM E84 Modified): 0
 7. Total VOC Content: < 0.05 mg/m³
- L. Expansion and Control Joint Sealant to be a one component, neutral cure, exterior grade silicone sealant and meet the following requirements:
 1. Tensile Strength (ASTM C794): 280 psi (1.9 MPa)
 2. Hardness (ASTM D751; Shore A): 25 (colored sealant) /15 (clear sealant)
 3. Weather Resistance (QUV Weatherometer): 10000 hours (no change)
- M. Roof Decks (and other exterior paving applications over occupied/storage spaces) shall consist of a Primary Roofing/Waterproofing Membrane, as specified in Section 0700 (q.v.), and a lightweight, frost/weather resistant installation system for tile, pavers, brick and stone that provides integral subsurface drainage and meets the following physical requirements:

1. Compressive Strength (ASTM C109 Modified): 3000 psi (20.7 MPa)
 2. Hydraulic Transmissivity (ASTM D4716): 1.6 gal/minute (6.1 L/minute)
 3. Service Rating (ASTM C627): Extra Heavy
- N. Spot Bonding Epoxy Adhesive for installing tile, brick and stone over vertical and overhead surfaces shall be high strength, high temperature resistant, non-sag and shall meet the following physical requirements:
1. Thermal Shock Resistance (ANSI A118.3): >1000 psi (6.9 MPa)
 2. Water Absorption (ANSI A118.3): 0.1 %
 3. Compressive Strength (ANSI A118.3): >8300 psi (57.2 MPa)
 4. Shear Bond Strength (ANSI A118.3 Modified): >730 psi (5 MPa)

NOTE TO SPECIFIER: Edit applicable tile installation materials.

2.6 Proprietary Specification – Tile Installation Accessories

Installation accessories as manufactured by LATICRETE International, Inc.,
1 LATICRETE Park North,
Bethany, CT 06524-3423 USA.
Phone: 800.243.4788,
www.laticrete.com

- A. Waterproofing Membrane: LATICRETE® Hydro Ban** as manufactured by LATICRETE International, Inc.
- B. Epoxy Waterproofing Membrane: LATAPOXY® 24hr HydroProofing™ as manufactured by LATICRETE International, Inc.
- C. Crack Suppression Membrane: LATICRETE Blue 92 Anti-Fracture Membrane** as manufactured by LATICRETE International, Inc.

NOTE TO SPECIFIER: Edit applicable tile installation accessories.

2.7 Proprietary Specification – Tile Installation Materials

Installation materials as manufactured by LATICRETE International, Inc.,
1 LATICRETE Park North,
Bethany, CT 06524-3423 USA.
Phone: 800.243.4788,
www.laticrete.com; www.laticrete.com/green

- A. Latex-Portland Cement Mortar for thick beds, screeds, leveling beds and scratch/plaster coats: LATICRETE 3701 Fortified Mortar Bed** as manufactured by LATICRETE International, Inc.
- B. Moisture Vapor Reduction: LATAPOXY 312 VaporReductionMembrane** as manufactured by LATICRETE International, Inc.
- C. Epoxy Adhesive: LATAPOXY 300 Adhesive** as manufactured by LATICRETE International, Inc.
- D. Latex Portland Cement Thin Bed Mortar: LATICRETE 254 Platinum** as manufactured by LATICRETE International, Inc.
- D. Sound & Crack Isolation Adhesive: LATICRETE 125 Sound & Crack Adhesive** as manufactured by LATICRETE International, Inc.
- E. Organic Adhesive: LATICRETE 15 Premium Mastic as manufactured by LATICRETE International, Inc.
- F. Epoxy Grout (Industrial): LATAPOXY 2000 Industrial Grout** as manufactured by LATICRETE International, Inc.
- G. Epoxy Grout (Commercial/Residential): LATICRETE SpectraLOCK® PRO Grout*** as manufactured by LATICRETE International, Inc.
- H. Latex Portland Cement Grout: LATICRETE PermaColor™ Grout^*** as manufactured by LATICRETE International, Inc.
- I. Expansion and Control Joint Sealant: LATICRETE Latasil™ as manufactured by LATICRETE International, Inc.

* United States Patent No.: 6881768 (and other Patents).

^ United States Patent No. 6, 784,229 B2 (and other Patents).

** GREENGUARD Indoor Air Quality Certified® and GREENGUARD for Schools & Children Indoor Air Quality Certified Product

Section 3: Execution Statements for Animal Health and Wellness Facilities Floors



3.1 Substrate Examination

A. Verify that surfaces to be covered with ceramic tile, mosaics, pavers, brick, stone, trim or waterproofing are:

1. Sound, rigid and conform to good design/engineering practices;
2. Systems, including the framing system and panels, over which tile or stone will be installed shall be in conformance with the International Residential Code (IRC) for residential applications, the International Building Code (IBC) for commercial applications, or applicable building codes. The project design should include the intended use and necessary allowances for the expected live load, concentrated load, impact load, and dead load including the weight of the finish and installation materials;
3. Clean and free of dust, dirt, oil, grease, sealers, curing compounds, laitance, efflorescence, form oil, loose plaster, paint, and scale;
4. Thin-set tile installations have a specified subsurface tolerance, for instance 1/4" in 10' (6 mm in 3 m) and 1/16" in 1' (1.5 mm in 300 mm), to conform with the ANSI specifications. Because thin-set is not intended to be used in truing or leveling the work of others, the subsurface typically should not vary by more than 1/16" over 1' (1.5 mm over 300 mm), nor more than 1/32" (0.8 mm) between adjoining edges where applicable (e.g. between sheets of exterior glue plywood or between adjacent concrete masonry units). Should the architect/designer require a more stringent tolerance (e.g. 1/8" in 10' [3 mm in 300mm]), the subsurface specification must reflect that tolerance, or the tile specification must include a specific and separate requirement to bring the 1/8" (6 mm) subsurface tolerance into compliance with the 1/8" (6 mm) tolerance desired;

5. Not leveled with gypsum or asphalt based compounds;

6. Dry as per American Society for Testing and Materials (ASTM) D4263 "Standard Test for Determining Moisture in Concrete by the Plastic Sheet Method."

B. Concrete surfaces shall also be:

1. Cured a minimum of 28 days at 70°F (21°C), including an initial seven (7) day period of wet curing;

NOTE TO SPECIFIER: LATICRETE® latex portland cement mortars do not require a minimum cure time for concrete substrates or mortar beds.

2. Woodfloat finished, or better, if the installation is to be done by the thin bed method;

C. Advise General Contractor and Architect of any surface or substrate conditions requiring correction before tile work commences. Beginning of work constitutes acceptance of substrate or surface conditions.

3.2 Surface Preparation

A. Concrete Substrates

(Insert any Special Means of Preparation in addition to the surface preparation requirements listed in § 3.1)

B. (List other Substrates as required and means of preparation as required)

(Insert any Special Means of Preparation in addition to the surface preparation requirements listed in § 3.1)

NOTE TO SPECIFIER: Edit substrate and preparation section based on project specific surfaces and conditions.

3.3 Installation – Accessories

A. Crack Suppression:

NOTE TO SPECIFIER: Ceramic tile, mosaics, pavers, brick and stone installed by the thin bed method can be damaged by shrinkage related substrate cracking. Specify an Anti-Fracture Membrane or Crack Suppression Membrane to reduce crack propagation into veneers or hard finishes. Do not use Anti-Fracture/Crack Suppression Membranes if substrate cracking:

1. Is due to structural movement;
2. Involves vertical and/or differential movement;
3. Involves horizontal movement >1/8" (3 mm).



Install the anti-fracture membrane in compliance with current revisions of ANSI A108.17 (1.0 – 3.0). Review the installation and plan the application sequence. Pre-cut LATICRETE® Waterproofing/ Anti-Fracture Fabric, allowing 2" (50 mm) for overlap at ends and sides. Roll up the pieces for easy handling and placement. Shake or stir LATICRETE Blue 92 Anti-Fracture Membrane Liquid before using. Pre-treat all substrate cracks, cold joints, control joints, coves, corners and penetrations according to manufacturer's specific recommendations. Allow pre-treated areas to dry to the touch. Apply a liberal coat of LATICRETE Blue 92 Anti-Fracture Membrane Liquid with brush or roller over substrate including pre-treated areas. Before the coat dries, unroll LATICRETE Waterproofing/Anti-Fracture Fabric, smooth out any wrinkles and press with brush or roller until LATICRETE Blue 92 Anti-Fracture Membrane Liquid "bleeds" through to surface. Apply another liberal coat of LATICRETE Blue 92 Anti-Fracture Membrane Liquid and allow it to dry to the touch, ~1–3 hours at 70°F (21°C) and 50% RH. For installation of ceramic tile, mosaic, paver, brick or stone, follow Thin Bed Method (§ 3.4C), which may begin as soon as last coat of LATICRETE Blue 92 Anti-Fracture Membrane Liquid has dried to the touch. Allow LATICRETE Blue 92 Anti-Fracture Membrane to cure for

at least 3 days at 70°F (21°C) and 50% RH before exposing installation to rain or other water, even if covered by ceramic tile, mosaics, pavers, brick or stone.

Use the following LATICRETE® System Materials:
LATICRETE Blue 92 Anti-Fracture Membrane

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

B. Waterproofing:

NOTE TO SPECIFIER: Adhesives/mastics, mortars and grouts for ceramic tile, mosaics, pavers, brick and stone are not replacements for waterproofing membranes and will not prevent water penetration into occupied or storage spaces below.

Install the waterproofing membrane in compliance with current revisions of ANSI A108.1 (2.7 Waterproofing) and ANSI A108.13. Review the installation and plan the application sequence. Pre-cut LATICRETE Waterproofing/ Anti-Fracture Fabric (if required), allowing 2" (50 mm) for overlap at ends and sides to fit the areas as required. Roll up the pieces for easy handling and placement. Shake or stir LATICRETE Hydro Ban™ before using.

Pre-Treat Cracks and Joints – Fill all substrate cracks, cold joints and control joints to a smooth finish using a LATICRETE latex-fortified thin-set. Alternatively, a liberal coat* of LATICRETE Hydro Ban applied with a paint brush or trowel may be used to fill in non-structural joints and

cracks. Apply a liberal coat* of LATICRETE® Hydro Ban™ approximately 8" (200 mm) wide over substrate cracks, cold joints, and control joints using a paint brush or heavy napped paint roller.

Pre-Treat Coves and Floor/Wall Intersections –

Fill all substrate coves and floor/wall transitions to a smooth finish and changes in plane using a LATICRETE latex-fortified thin-set. Alternatively, a liberal coat* of LATICRETE Hydro Ban applied with a paint brush or trowel may be used to fill in cove joints and floor/wall transitions <1/8" (3 mm) in width. Apply a liberal coat* of LATICRETE Hydro Ban approximately 8" (200 mm) wide over substrate cracks, cold joints, and control joints using a paint brush or heavy napped paint roller.

Pre-Treat Drains – Drains must be of the clamping ring type, with weepers as per ASME A112.6.3. Apply a liberal coat* of LATICRETE Hydro Ban around and over the bottom half of drain clamping ring. Cover with a second liberal coat of LATICRETE Hydro Ban. When the LATICRETE Hydro Ban dries, apply a bead of LATICRETE Latasil™ where the LATICRETE Hydro Ban meets the drain throat. Install the top half of drain clamping ring.

Pre-Treat Penetrations – Allow for a minimum 1/8" (3 mm) space between drains, pipes, lights, or other penetrations and surrounding ceramic tile, stone or brick. Pack any gaps around pipes, lights or other penetrations with a LATICRETE latex-fortified thin-set. Apply a liberal coat* of LATICRETE Hydro Ban around penetration opening. Cover the first coat with a second liberal coat* of LATICRETE Hydro Ban. Bring LATICRETE Hydro Ban up to level of tile or stone. When LATICRETE Hydro Ban has dried to the touch seal with LATICRETE Latasil.

Main Application – Allow any pre-treated areas to dry to the touch. Apply a liberal coat* of LATICRETE Hydro Ban with a paint brush or heavy napped roller over substrate including pre-treated areas and allow to dry to the touch. Install another liberal coat* of LATICRETE

Hydro Ban over the first coat. Let the top coat of LATICRETE Hydro Ban dry to the touch approximately 1 – 2 hours at 70°F (21°C) and 50% RH. When the top coat has dried to the touch inspect the surface for pinholes, voids, thin spots or other defects. LATICRETE Hydro Ban will dry to an olive green color when fully cured. Use additional LATICRETE Hydro Ban to seal any defects.

Movement Joints – Apply a liberal coat* of LATICRETE Hydro Ban, approximately 8" (200 mm) wide over the areas. Then embed and loop the 6" (150 mm) wide LATICRETE Waterproofing/Anti-Fracture Fabric and allow the LATICRETE Hydro Ban liquid to bleed through. Immediately apply a second coat of LATICRETE Hydro Ban.

* Dry coat thickness is 20 – 30 mil (0.02 – 0.03" or 0.5 – 0.8mm); consumption per coat is approximately 0.01 gal/ft² (approx. 0.4 l/m²); coverage is approximately 100 ft² /gal (approx. 2.5 m²/l). LATICRETE® Waterproofing/Anti-Fracture Fabric can be used to pre-treat cracks, joints, curves, corners, drains, and penetrations with LATICRETE Hydro Ban™.

Protection – Provide protection for newly installed membrane, even if covered with a thin-bed ceramic tile, stone or brick installation against exposure to rain or other water for a minimum of 2 hours at 70°F (21°C) and 50% RH. For temperatures between 45°F and 69°F (7°C to 21°C) allow a minimum 24 hour cure period.

Flood Testing – Allow membrane to cure fully before flood testing, typically a minimum 2 hours at 70°F (21°C) and 50% RH. Cold conditions will require a longer curing time. For temperatures between 50°F and 69°F (10°C to 21°C) allow a minimum 24 hour cure period prior to flood testing. Please refer to LATICRETE TDS 169 "Flood Testing Procedures", available at www.laticrete.com for flood testing requirements and procedures.

Use the following LATICRETE® System Materials:
LATICRETE Hydro Ban

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

3.4 Installation – Tile, Brick and Stone

A. General: Install in accordance with current versions of American National Standards Institute, Inc. (ANSI) “A108 American National Standard Specifications for Installation of Ceramic Tile” and TCNA “Handbook for Ceramic Tile Installation.” Cut and fit ceramic tile, brick or stone neatly around corners, fittings, and obstructions. Perimeter pieces to be minimum half tile, brick or stone. Chipped, cracked, split pieces and edges are not acceptable. Make joints even, straight, plumb and of uniform width to tolerance $\pm 1/16$ " over 8' (1.5 mm in 2.4 m). Install divider strips at junction of flooring and dissimilar materials.

B. Bonded Thick Bed Method (Floor): Verify 1" (25 mm) nominal bed thickness has been allowed. Apply LATICRETE 254 Platinum with flat trowel as a slurry bond coat approximately $1/16$ " (1.5 mm) thick over clean concrete slab in compliance with current revision of ANSI A108.1A (2.2 and 5.2). Place LATICRETE 3701 Fortified Mortar Bed mixed with water over slurry bond coat while LATICRETE 254 Platinum slurry bond coat is wet and tacky. Omit reinforcing wire fabric and fully compact bed by tamping. Spread LATICRETE 254 Platinum with flat trowel over surface of "green"/fresh mortar bed as a slurry bond coat approximately $1/16$ " (1.5 mm) thick. Apply LATICRETE 254 Platinum slurry bond coat to back of ceramic tile, mosaic, paver, brick, stone, trim unit or threshold and place each piece/sheet while slurry bond coats are wet and tacky. Beat with a hardwood block or rubber mallet to level/imbed pieces before mortar bed takes initial set. Clean excess mortar/adhesive from finished surfaces. For installation of tile, brick or stone over cured (pre-floated) latex-portland cement thick bed mortar, follow Thin Bed Method (§ 3.4C).

Use the following LATICRETE System Materials:

LATICRETE 3701 Fortified Mortar Bed

LATICRETE 254 Platinum

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

C. Thin Bed Method: Install latex portland cement mortar in compliance with current revisions of ANSI A108.02 (3.11), A108.1B and ANSI A108.5. Use the appropriate trowel notch size to ensure proper bedding of the tile, brick or stone selected. Work the latex portland cement mortar into good contact with the substrate and comb with notched side of trowel. Spread only as much latex portland cement mortar as can be covered while the mortar surface is still wet and tacky. When installing large format ($>8" \times 8"/200 \text{ mm} \times 200 \text{ mm}$) tile/stone, rib/button/lug back tiles, pavers or sheet mounted ceramics/mosaics, spread latex portland cement mortar onto the back of (i.e. 'back-butter') each piece/sheet in addition to trowelling latex portland cement mortar over the substrate. Beat each piece/sheet into the latex portland cement mortar with a beating block or rubber mallet to insure full bedding and flatness. Allow installation to set until firm. Clean excess latex portland cement mortar from tile or stone face and joints between pieces.

Use the following LATICRETE System Materials:

LATICRETE 254 Platinum

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

D. Grouting or Pointing Joints:

NOTE TO SPECIFIER: The chemical resistance of grouts and pointing mortars for ceramic tile, mosaics, pavers, brick and stone will typically depend on:

1. Reagent composition and/or concentration;
2. Temperature;
3. Duration of exposure.

Review test results conducted in conformance with current revision of ASTM C267 “Standard Test Methods for Chemical Resistance of Mortars, Grouts and Monolithic Surfaces and Polymer Concretes,” and manufacturer’s performance data and recommendations, in the context of expected chemical exposures.

Follow manufacturer’s recommendations for minimum cure time prior to grouting. Store liquid components of epoxy grout for 24 hours at 70 – 80°F (21 – 27°C) prior to use to facilitate mixing and application. Substrate temperature must be 45 – 90°F (7 – 32°C). Verify joints are free of dirt, debris or grout spacers. Sponge or wipe dust/dirt off tile faces and remove water standing in joints. Apply grout release to face of absorptive, abrasive, non-slip or rough textured ceramic tile, pavers, bricks, stone or trim units that are not hot paraffin coated to facilitate cleaning. Pour LATAPOXY® 2000 Industrial Grout Part A and Part B into a clean mixing pail. Mix by hand or with a slow speed (<300 rpm) mixer until liquids are well blended. For vertical installations only, add LATAPOXY Part D Non-Sag Additive. While mixing, then add LATAPOXY Part C Filler Powder and blend until uniform. Immediately pour all of the LATAPOXY 2000 Industrial Grout just mixed out of the pail onto the surface to be grouted

NOTE: leaving epoxy grout in mixing pail will diminish working time.

Spread using a sharp edged, hard rubber float and work grout into joints. Using strokes diagonal (at 45° angle) to the grout lines, pack joints full and free of voids/pits. Hold float face at a 90° angle to grouted surface and use float edge to “squeegee” off excess grout, stroking diagonally to reduce pulling grout out of filled joints. Initial cleaning can begin 5 – 30 minutes after grouting depending on temperature. Spray or fog grouted surfaces with clean water, applying ~8 fl oz/ft² (0.3 l/m²). Using a circular motion, lightly scrub grouted surfaces with nylon pad to dissolve haze/film. Drag a clean towel diagonally over the scrubbed surfaces to remove froth. Rinse towel frequently and

change rinse water at least every 200 ft² (19 m²). Repeat this cleaning sequence again. Wait ~30 – 60 minutes and use a ‘hydra’ sponge and soapy water to ‘slick’/smoothen joint surface. Inspect joint for pinholes/voids and repair them with freshly mixed LATAPOXY 2000 Industrial Grout. After ~12 hours, check for remaining haze and remove it by scrubbing with warm soapy water. Do not use acid cleaners on epoxy grout less than 7 days old.

NOTE TO SPECIFIER: Specify color for each type/color of ceramic tile, mosaic, paver, brick, stone or trim unit.

Use the following LATICRETE® System Materials:
LATAPOXY 2000 Industrial Grout

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

E. Expansion and Control Joints:

Provide control or expansion joints as located in contract drawings and in full conformity, especially in width and depth, with architectural details.

1. Substrate joints must carry through, full width, to surface of tile, brick or stone.
2. Install expansion joints in tile, brick or stone work over construction/cold joints or control joints in substrates.
3. Install expansion joints where tile, brick or stone abut restraining surfaces (such as perimeter walls, curbs, columns), changes in plane and corners.
4. Joint width and spacing depends on application – follow TCNA “Handbook for Ceramic Tile Installation” Detail “EJ-171 Expansion Joints” or consult sealant manufacturer for recommendation based on project parameters.
5. Joint width: $\geq 1/8"$ (3 mm) and $\leq 1"$ (25 mm).
6. Joint width: depth ~2:1 but joint depth must be $\geq 1/8"$ (3 mm) and $\leq 1/2"$ (12 mm).
7. Layout (field defined by joints): 1:1 length: width is optimum but must be $\leq 2:1$. Remove all contaminants and foreign material from joint spaces/surfaces, such

as dirt, dust, oil, water, frost, setting/grouting materials, sealers and old sealant/backer. Use LATICRETE® Latasil™ 9118 Primer for underwater and permanent wet area applications, or for porous stone (e.g. limestone, sandstone etc...) installations. Install appropriate backing material (e.g. closed cell backer rod) based on expansion joint design and as specified in § 07920. Apply masking tape to face of tile, brick or stone veneer. Use caulking gun, or other applicator, to completely fill joints with sealant. Within 5–10 minutes of filling joint, ‘tool’ sealant surface to a smooth finish. Remove masking tape immediately after tooling joint. Wipe smears or excess sealant off the face of non-glazed tile, brick, stone or other absorptive surfaces immediately.

Use the following LATICRETE System Materials:

LATICRETE Latasil™

LATICRETE Latasil 9118 Primer

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

F. Adjusting: Correction of defective work for a period of one (1) year following substantial completion, return to job and correct all defective work. Defective work includes, without limitation, tiles broken in normal abuse due to deficiencies in setting bed, loose tiles or grout, and all other defects which may develop as a result of poor workmanship.

3.5 Cleaning

Clean excess mortar/epoxy from veneer surfaces with water before they harden and as work progresses. Do not contaminate open grout/caulk joints while cleaning. Sponge and wash veneers diagonally across joints. Do not use acids for cleaning. Polish with clean dry cloth. Remove surplus materials and leave premises broom clean.

3.6 Protection

- A. Protect finished installation under provisions of §01500 and §01535. Close areas to other trades and traffic until tile being installed has set firmly. Keep traffic off horizontal portland cement thick bed mortar installations for at least 72 hours at 70°F (21°C)
- B. Keep floors installed with epoxy adhesive closed to foot traffic for 24 hours at 70°F (21°C), and to heavy traffic for 48 hours at 70°F (21°C) unless instructed differently by manufacturer. Use kneeling boards, or equivalent, to walk/work on newly tiled floors. Cure tile work in swimming pools, fountains and other continuous immersion applications for 10 days at 70°F (21°C) for epoxy based grout and 14 days at 70°F (21°C) for latex portland cement based grout before flood testing or filling installation with water. Extend period of protection of tile work at lower temperatures, below 60°F (15°C), and at high relative humidity (>70% RH) due to retarded set times of mortar/adhesives. Replace or restore work of other trades damaged or soiled by work under this section.

Part 4 – Health and Safety

The use of personal protection such as rubber gloves, suitable dust masks, safety glasses and industrial clothing is highly recommended. Discarded packaging, product wash and waste water should be disposed of as per local, state or federal regulations.

PART 3 – EXECUTION

3.1 Substrate Examination

A. Verify that surfaces to be covered with ceramic tile, mosaics, pavers, brick, stone, trim or waterproofing are:

1. Sound, rigid and conform to good design/engineering practices;
2. Systems, including the framing system and panels, over which tile or stone will be installed shall be in conformance with the International Residential Code (IRC) for residential applications, the International Building Code (IBC) for commercial applications, or applicable building codes. The project design should include the intended use and necessary allowances for the expected live load, concentrated load, impact load, and dead load including the weight of the finish and installation materials;
3. Clean and free of dust, dirt, oil, grease, sealers, curing compounds, laitance, efflorescence, form oil, loose plaster, paint, and scale;
4. Thin-set tile installations have a specified subsurface tolerance, for instance 1/4" in 10' (6 mm in 3 m) and 1/16" in 1' (1.5 mm in 300 mm), to conform with the ANSI specifications. Because thin-set is not intended to be used in truing or leveling the work of others, the subsurface typically should not vary by more than 1/16" over 1' (1.5 mm over 300 mm), nor more than 1/32" (0.8 mm) between adjoining edges where applicable (e.g. between sheets of exterior glue plywood or between adjacent concrete masonry units). Should the architect/designer require a more stringent tolerance (e.g. 1/8" in 10' [3 mm in 3 m]), the subsurface specification must reflect that tolerance, or the tile specification must include a specific and separate requirement to bring the 1/4" (6 mm) subsurface tolerance into compliance with the 1/8" (6 mm) tolerance desired;

5. Not leveled with gypsum or asphalt based compounds;

6. Dry as per American Society for Testing and Materials (ASTM) D4263 "Standard Test for Determining Moisture in Concrete by the Plastic Sheet Method."

B. Concrete surfaces shall also be:

1. Cured a minimum of 28 days at 70°F (21°C), including an initial seven (7) day period of wet curing;

NOTE TO SPECIFIER: LATICRETE® latex portland cement mortars do not require a minimum cure time for concrete substrates or mortar beds;

2. Wood float finished, or better, if the installation is to be done by the thin bed method;

Advise General Contractor and Architect of any surface or substrate conditions requiring correction before tile work commences. Beginning of work constitutes acceptance of substrate or surface conditions.

3.2 Surface Preparation

A. Existing Flooring Surfaces

Cement terrazzo, ceramic tiles, pavers, quarry tiles, vinyl, non-cushion vinyl composition floor coverings must be sound, solid, well bonded, stripped clean and free from dust, wax, grease, sealer and all other contamination which may reduce or prevent adhesion per ANSI A108.02 (4.0).

B. Concrete Substrates

(Insert any Special Means of Preparation – In addition to the surface preparation requirements listed above; ...)

C. (List other Substrates as required and means of preparation as required)

(Insert any Special Means of Preparation – In addition to the surface preparation requirements listed above; ...)

3.3 Installation – Accessories

A. Waterproofing:

NOTE TO SPECIFIER: Adhesives/mastics, mortars and grouts for ceramic tile, mosaics, pavers, brick and stone are not replacements for waterproofing membranes and will not prevent water penetration into occupied or storage spaces below.

Install the waterproofing membrane in compliance with current revisions of ANSI A108.1 (2.7 Waterproofing) and ANSI A108.13. Review the installation and plan the application sequence. Pre-cut LATICRETE® Waterproofing/Anti-Fracture Fabric (if required), allowing 2" (50 mm) for overlap at ends and sides to fit the areas as required. Roll up the pieces for easy handling and placement. Shake or stir LATICRETE Hydro Ban™ before using.

Pre-Treat Cracks and Joints – Fill all substrate cracks, cold joints and control joints to a smooth finish using a LATICRETE latex-fortified thin-set. Alternatively, a liberal coat* of LATICRETE Hydro Ban applied with a paint brush or trowel may be used to fill in non-structural joints and cracks. Apply a liberal coat* of LATICRETE Hydro Ban approximately 8" (200 mm) wide over substrate cracks, cold joints, and control joints using a paint brush or heavy napped paint roller.

Pre-Treat Coves and Floor/Wall Intersections – Fill all substrate coves and floor/wall transitions to a smooth finish and changes in plane using a LATICRETE latex-fortified thin-set. Alternatively, a liberal coat* of LATICRETE Hydro Ban applied with a paint brush or trowel may be used to fill in cove joints and floor/wall transitions <1/8" (3 mm) in width. Apply a liberal coat* of LATICRETE Hydro Ban approximately 8" (200 mm) wide over substrate cracks, cold joints, and control joints using a paint brush or heavy napped paint roller.

Pre-Treat Drains – Drains must be of the clamping ring type, with weepers as per ASME A112.6.3. Apply a liberal coat* of LATICRETE Hydro Ban around and over the bottom half of drain clamping ring. Cover with a second liberal coat of LATICRETE Hydro Ban. When

the LATICRETE Hydro Ban dries, apply a bead of LATICRETE Latasil™ where the LATICRETE Hydro Ban meets the drain throat. Install the top half of drain clamping ring.

Pre-Treat Penetrations – Allow for a minimum 1/8" (3 mm) space between drains, pipes, lights, or other penetrations and surrounding ceramic tile, stone or brick. Pack any gaps around pipes, lights or other penetrations with a LATICRETE latex-fortified thin-set. Apply a liberal coat* of LATICRETE Hydro Ban around penetration opening. Cover the first coat with a second liberal coat* of LATICRETE Hydro Ban. Bring LATICRETE Hydro Ban up to level of tile or stone. When LATICRETE Hydro Ban has dried to the touch seal with LATICRETE Latasil.

Main Application – Allow any pre-treated areas to dry to the touch. Apply a liberal coat* of LATICRETE Hydro Ban with a paint brush or heavy napped roller over substrate including pre-treated areas and allow to dry to the touch. Install another liberal coat* of LATICRETE Hydro Ban over the first coat. Let the top coat of LATICRETE Hydro Ban dry to the touch approximately 1 – 2 hours at 70°F (21°C) and 50% RH. When the top coat has dried to the touch inspect the surface for pinholes, voids, thin spots or other defects. LATICRETE Hydro Ban will dry to an olive green color when fully cured. Use additional LATICRETE Hydro Ban to seal any defects.

Movement Joints – Apply a liberal coat* of LATICRETE Hydro Ban, approximately 8" (200mm) wide over the areas. Then embed and loop the 6" (150 mm) wide LATICRETE Waterproofing/Anti-Fracture Fabric and allow the LATICRETE Hydro Ban liquid to bleed through. Immediately apply a second coat of LATICRETE Hydro Ban.

* Dry coat thickness is 20 – 30 mil (0.02 – 0.03" or 0.5 – 0.8 mm); consumption per coat is approximately 0.01 gal/ft² (approx. 0.4 l/m²); coverage is approximately 100 ft²/gal (approx. 2.5 m²/l). LATICRETE® Waterproofing/Anti-Fracture Fabric can be used to pre-treat cracks, joints, curves, corners, drains, and penetrations with LATICRETE Hydro Ban™.



Protection – Provide protection for newly installed membrane, even if covered with a thin-bed ceramic tile, stone or brick installation against exposure to rain or other water for a minimum of 2 hours at 70°F (21°C) and 50% RH. For temperatures between 45°F and 69°F (7°C to 21°C) allow a minimum 24 hour cure period.

Flood Testing – Allow membrane to cure fully before flood testing, typically a minimum 2 hours at 70°F (21°C) and 50% RH. Cold conditions will require a longer curing time. For temperatures between 50°F and 69°F (10°C to 21°C) allow a minimum 24 hour cure period prior to flood testing. Please refer to LATICRETE TDS 169 “Flood Testing Procedures”, available at www.laticrete.com for flood testing requirements and procedures.

Use the following LATICRETE® System Materials:
LATICRETE® Hydro Ban™

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

3.4 Installation – Tile, Brick and Stone

- A. General: Install in accordance with current versions of American National Standards Institute, Inc. (ANSI) “A108 American National Standard Specifications for Installation of Ceramic Tile” and TCNA “Handbook for Ceramic Tile Installation.” Cut and fit ceramic tile, brick or stone neatly around corners, fittings, and obstructions. Perimeter pieces to be minimum half tile, brick or stone. Chipped, cracked, split pieces and edges are not acceptable. Make joints even, straight, plumb and of uniform width to tolerance $\pm 1/16$ " over 8' (1.5 mm in 2.4 m). Install divider strips at junction of flooring and dissimilar materials.
- B. Thick Bed (Wire Reinforced) Method: Minimum bed thickness of 2" (50 mm) must be maintained. Place latex-portland cement thick bed mortar to a depth approximately one-half finished bed thickness in compliance with current revision of ANSI A108.01 (3.2.1.1 and 3.2.4) and A108.1B. Lay 2" x 2" (50 mm x 50 mm), 16 gauge (1.5 mm),

galvanized, welded reinforcing wire fabric, complying with ANSI A108.02 (3.7) and ASTM A185, over mortar. Place additional thick bed mortar over wire fabric and compact mortar by tamping with flat trowel. Screed mortar bed level and provide correct slopes to drains. Spread latex-portland cement thin bed mortar with flat trowel over surface of "green"/fresh mortar bed as a slurry bond coat approximately 1/16" (1.5 mm) thick. Apply latex-portland cement thick bed mortar slurry bond coat to back of ceramic tile, mosaic, paver, brick, stone, trim unit or threshold and place each piece/sheet while slurry bond coats are wet and tacky. Beat with a hardwood block or rubber mallet to level/imbed pieces before mortar bed takes initial set. Clean excess mortar/adhesive from finished surfaces. For installation of tile, brick or stone over cured (pre-floated) latex-portland cement mortar bed, follow Thin Bed Method (§ 3.4C).

Use the following LATICRETE System Materials:

LATICRETE 3701 Fortified Mortar Bed

LATICRETE 254 Platinum

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

C. Thin Bed Method: Install latex portland cement mortar in compliance with current revisions of ANSI A108.02 (3.11), A108.1B and ANSI A108.5. Use the appropriate trowel notch size to ensure proper bedding of the tile, brick or stone selected. Work the latex portland cement mortar into good contact with the substrate and comb with notched side of trowel. Spread only as much latex portland cement mortar as can be covered while the mortar surface is still wet and tacky. When installing large format (>8" x 8"/200 mm x 200 mm) tile/stone, rib/button/lug back tiles, pavers or sheet mounted ceramics/mosaics, spread latex portland cement mortar onto the back of (i.e. 'back-butter') each piece/sheet in addition

to trowelling latex portland cement mortar over the substrate. Beat each piece/sheet into the latex portland cement mortar with a beating block or rubber mallet to insure full bedding and flatness. Allow installation to set until firm. Clean excess latex portland cement mortar from tile or stone face and joints between pieces.

Use the following LATICRETE System Materials:

LATICRETE 254 Platinum

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

D. Grouting or Pointing Joints:

NOTE TO SPECIFIER: The chemical resistance of grouts and pointing mortars for ceramic tile, mosaics, pavers, brick and stone will typically depend on:

1. Reagent composition and/or concentration;
2. Temperature;
3. Duration of exposure.

Review test results conducted in conformance with current revision of ASTM C267 "Standard Test Methods for Chemical Resistance of Mortars, Grouts and Monolithic Surfaces and Polymer Concretes," and manufacturer's performance data and recommendations, in the context of expected chemical exposures.

Follow manufacturer's recommendations for minimum cure time prior to grouting. Store liquid components of epoxy grout for 24 hours at 70–80°F (21–27°C) prior to use to facilitate mixing and application. Substrate temperature must be 45–90°F (7–32°C). Verify joints are free of dirt, debris or grout spacers. Sponge or wipe dust/dirt off tile faces and remove water standing in joints. Apply grout release to face of absorptive, abrasive, non-slip or rough textured ceramic tile, pavers, bricks, stone or trim units that are not hot paraffin coated to facilitate cleaning. Pour LATAPOXY® 2000 Industrial Grout Part A and Part B into a clean mixing pail. Mix by hand or with a slow speed (<300 rpm) mixer until liquids are well blended. For vertical installations only, add LATAPOXY Part D Non-Sag Additive. While mixing, then add

3.2 VF114 – Concrete Unbonded Thick Bed

LATAPOXY Part C Filler Powder and blend until uniform. Immediately pour all of the LATAPOXY 2000 Industrial Grout just mixed out of the pail onto the surface to be grouted.

NOTE: leaving epoxy grout in mixing pail will diminish working time.

Spread using a sharp edged, hard rubber float and work grout into joints. Using strokes diagonal (at 45° angle) to the grout lines, pack joints full and free of voids/pits. Hold float face at a 90° angle to grouted surface and use float edge to "squeegee" off excess grout, stroking diagonally to reduce pulling grout out of filled joints. Initial cleaning can begin 5-30 minutes after grouting depending on temperature. Spray or fog grouted surfaces with clean water, applying ~8 fl oz/ft² (0.3 l/m²). Using a circular motion, lightly scrub grouted surfaces with nylon pad to dissolve haze/film. Drag a clean towel diagonally over the scrubbed surfaces to remove froth. Rinse towel frequently and change rinse water at least every 200 ft² (19 m²). Repeat this cleaning sequence again. Wait ~30–60 minutes and use a 'hydra' sponge and soapy water to 'slick'/smoothen joint surface. Inspect joint for pinholes/voids and repair them with freshly mixed LATAPOXY® 2000 Industrial Grout. After ~12 hours, check for remaining haze and remove it by scrubbing with warm soapy water. Do not use acid cleaners on epoxy grout less than 7 days old.

NOTE TO SPECIFIER: Specify color for each type/color of ceramic tile, mosaic, paver, brick, stone or trim unit.

Use the following LATICRETE® System Materials:
LATAPOXY 2000 Industrial Grout

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

E. Expansion and Control Joints: Provide control or expansion joints as located in contract drawings and in full conformity, especially in width and depth, with architectural details.

1. Substrate joints must carry through, full width, to surface of tile, brick or stone.
2. Install expansion joints in tile, brick or stone work over construction/cold joints or control joints in substrates.
3. Install expansion joints where tile, brick or stone abut restraining surfaces (such as perimeter walls, curbs, columns), changes in plane and corners.
4. Joint width and spacing depends on application – follow TCNA "Handbook for Ceramic Tile Installation" Detail "EJ-171 Expansion Joints" or consult sealant manufacturer for recommendation based on project parameters.
5. Joint width: $\geq 1/8"$ (3 mm) and $\leq 1"$ (25 mm).
6. Joint width: depth ~2:1 but joint depth must be $\geq 1/8"$ (3 mm) and $\leq 1/2"$ (12 mm).
7. Layout (field defined by joints): 1:1 length: width is optimum but must be $\leq 2:1$.

Remove all contaminants and foreign material from joint spaces/surfaces, such as dirt, dust, oil, water, frost, setting/grouting materials, sealers and old sealant/backer. Use LATICRETE® Latasil™ 9118 Primer for underwater and permanent wet area applications, or for porous stone (e.g. limestone, sandstone etc...) installations. Install appropriate backing material (e.g. closed cell backer rod) based on expansion joint design and as specified in § 07920. Apply masking tape to face of tile, brick or stone veneer. Use caulking gun, or other applicator, to completely fill joints with sealant. Within 5–10 minutes of filling joint, 'tool' sealant surface to a smooth finish. Remove masking tape immediately after tooling joint. Wipe smears or excess sealant off the face of non-glazed tile, brick, stone or other absorptive surfaces immediately.

Use the following LATICRETE System Materials:
LATICRETE Latasil
LATICRETE Latasil 9118 Primer



Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

- F. Adjusting: Correction of defective work for a period of one (1) year following substantial completion, return to job and correct all defective work. Defective work includes, without limitation, tiles broken in normal abuse due to deficiencies in setting bed, loose tiles or grout, and all other defects which may develop as a result of poor workmanship.

3.5 Cleaning

Clean excess mortar/epoxy from veneer surfaces with water before they harden and as work progresses. Do not contaminate open grout/caulk joints while cleaning. Sponge and wash veneers diagonally across joints. Do not use acids for cleaning. Polish with clean dry cloth. Remove surplus materials and leave premises broom clean.

3.6 Protection

- A. Protect finished installation under provisions of §01500 and §01535. Close areas to other trades and traffic until tile being installed has set firmly. Keep traffic off horizontal portland cement thick bed mortar installations for at least 72 hours at 70°F (21°C).
- B. Keep floors installed with epoxy adhesive closed to traffic for 24 hrs. at 70°F (21°C), and to heavy traffic for 48 hours at 70°F (21°C) unless instructed differently by manufacturer. Use kneeling boards, or equivalent, to walk/work on newly tiled floors. Cure tile work in swimming pools, fountains and other continuous immersion applications for 10 days for epoxy based grout and 14 days for latex portland cement based grout at 70°F (21°C) before flood testing or filling installation with water. Extend period of protection of tile work at lower temperatures, below 60°F (15°C), and at high relative humidity (>70% RH) due to retarded set times of mortar/adhesives. Replace or restore work of other trades damaged or soiled by work under this section.

Part 4 – Health and Safety

The use of personal protection such as rubber gloves, suitable dust masks, safety glasses and industrial clothing is highly recommended. Discarded packaging, product wash and waste water should be disposed of as per local, state or federal regulations.

PART 3 – EXECUTION

3.1 Substrate Examination

A. Verify that surfaces to be covered with ceramic tile, mosaics, pavers, brick, stone, trim or waterproofing are:

1. Sound, rigid and conform to good design/engineering practices;
2. Systems, including the framing system and panels, over which tile or stone will be installed shall be in conformance with the International Residential Code (IRC) for residential applications, the International Building Code (IBC) for commercial applications, or applicable building codes. The project design should include the intended use and necessary allowances for the expected live load, concentrated load, impact load, and dead load including the weight of the finish and installation materials;
3. Clean and free of dust, dirt, oil, grease, sealers, curing compounds, laitance, efflorescence, form oil, loose plaster, paint, and scale;
4. Thin-set tile installations have a specified subsurface tolerance, for instance 1/4" in 10' (6 mm in 3 m) and 1/16" in 1' (1.5 mm in 300 mm), to conform with the ANSI specifications. Because thin-set is not intended to be used in truing or leveling the work of others, the subsurface typically should not vary by more than 1/16" over 1' (1.5 mm over 300 mm), nor more than 1/32" (0.8 mm) between adjoining edges where applicable (e.g. between sheets of exterior glue plywood or between adjacent concrete masonry units). Should the architect/designer require a more stringent tolerance (e.g. 1/8" in 10' [3 mm in 3m]), the subsurface specification must reflect that tolerance, or the tile specification must include a specific and separate requirement to bring the 1/4" (6 mm) subsurface tolerance into compliance with the 1/8" (6 mm) tolerance desired;

5. Not leveled with gypsum or asphalt based compounds;

6. Dry as per American Society for Testing and Materials (ASTM) D4263 "Standard Test for Determining Moisture in Concrete by the Plastic Sheet Method."

B. Concrete surfaces shall also be:

1. Cured a minimum of 28 days at 70°F (21°C), including an initial seven (7) day period of wet curing;

NOTE TO SPECIFIER: LATICRETE® latex portland cement mortars do not require a minimum cure time for concrete substrates or mortar beds;

2. Wood float finished, or better, if the installation is to be done by the thin bed method;

Advise General Contractor and Architect of any surface or substrate conditions requiring correction before tile work commences. Beginning of work constitutes acceptance of substrate or surface conditions.

3.2 Surface Preparation

A. Existing Flooring Surfaces

Cement terrazzo, ceramic tiles, pavers, quarry tiles, vinyl, vinyl composition floor coverings (other than cushion vinyl) must be sound, solid, well bonded, stripped clean and free from dust, wax, grease, sealer and all other contamination which may reduce or prevent adhesion per ANSI A108.02 (4.0).

B. Concrete Substrates

(Insert any Special Means of Preparation – In addition to the surface preparation requirements listed above; ...)

C. (List other Substrates as required and means of preparation as required)

(Insert any Special Means of Preparation – In addition to the surface preparation requirements listed above; ...)

3.3 Installation – Accessories

A. Waterproofing:

NOTE TO SPECIFIER: Adhesives/mastics, mortars and grouts for ceramic tile, mosaics, pavers, brick and stone are not replacements for waterproofing membranes and will not prevent water penetration into occupied or storage spaces below.

Install the waterproofing membrane in compliance with current revisions of ANSI A108.1 (2.7 Waterproofing) and ANSI A108.13. Review the installation and plan the application sequence. Pre-cut LATICRETE® Waterproofing Membrane Reinforcing Fabric (if required), allowing 2" (50 mm) for overlap at ends and sides to fit the areas as required. Roll up the pieces for easy handling and placement. Shake or stir LATICRETE Hydro Ban™ before using.

Pre-Treat Cracks and Joints – Fill all substrate cracks, cold joints and control joints to a smooth finish using a LATICRETE latex-fortified thin-set. Alternatively, a liberal coat* of LATICRETE Hydro Ban applied with a paint brush or trowel may be used to fill in non-structural joints and cracks. Apply a liberal coat* of LATICRETE Hydro Ban approximately 8" (200 mm) wide over substrate cracks, cold joints, and control joints using a paint brush or heavy napped paint roller.

Pre-Treat Coves and Floor/Wall Intersections – Fill all substrate coves and floor/wall transitions to a smooth finish and changes in plane using a LATICRETE latex-fortified thin-set. Alternatively, a liberal coat* of LATICRETE Hydro Ban applied with a paint brush or trowel may be used to fill in cove joints and floor/wall transitions <1/8" (3 mm) in width. Apply a liberal coat* of LATICRETE Hydro Ban approximately 8" (200 mm) wide over substrate cracks, cold joints, and control joints using a paint brush or heavy napped paint roller.

Pre-Treat Drains – Drains must be of the clamping ring type, with weepers as per ASME A112.6.3. Apply a liberal coat* of LATICRETE Hydro Ban around and over the bottom half of drain clamping ring. Cover with a second liberal coat of LATICRETE Hydro Ban. When the LATICRETE Hydro Ban dries, apply a bead of LATICRETE Latasil™ where the LATICRETE Hydro Ban meets the drain throat. Install the top half of drain clamping ring.

Pre-Treat Penetrations – Allow for a minimum 1/8" (3 mm) space between drains, pipes, lights, or other penetrations and surrounding ceramic tile, stone or brick. Pack any gaps around pipes, lights or other penetrations with a LATICRETE latex-fortified thin-set. Apply a liberal coat* of LATICRETE Hydro Ban around penetration opening. Cover the first coat with a second liberal coat* of LATICRETE Hydro Ban. Bring LATICRETE Hydro Ban up to level of tile or stone. When LATICRETE Hydro Ban has dried to the touch seal with LATICRETE Latasil.

Main Application – Allow any pre-treated areas to dry to the touch. Apply a liberal coat* of LATICRETE Hydro Ban with a paint brush or heavy napped roller over substrate including pre-treated areas and allow to dry to the touch. Install another liberal coat* of LATICRETE Hydro Ban over the first coat. Let the top coat of LATICRETE Hydro Ban dry to the touch approximately 1 – 2 hours at 70°F (21°C) and 50% RH. When the top coat has dried to the touch inspect the surface for pinholes, voids, thin spots or other defects. LATICRETE Hydro Ban will dry to an olive green color when fully cured. Use additional LATICRETE Hydro Ban to seal any defects.

Movement Joints – Apply a liberal coat* of LATICRETE Hydro Ban, approximately 8" (200 mm) wide over the areas. Then embed and loop the 6" (150 mm) wide LATICRETE Waterproofing Membrane Reinforcing Fabric and allow the LATICRETE Hydro Ban liquid to bleed through. Immediately apply a second coat of LATICRETE Hydro Ban.

* Dry coat thickness is 20 – 30 mil (0.02 – 0.03" or 0.5 – 0.8 mm); consumption per coat is approximately 0.01 gal/ft² (approx. 0.4 l/m²); coverage is approximately 100 ft²/gal (approx. 2.5 m²/l). LATICRETE® Waterproofing/Anti-Fracture Fabric can be used to pre-treat cracks, joints, curves, corners, drains, and penetrations with LATICRETE Hydro Ban™.

Protection – Provide protection for newly installed membrane, even if covered with a thin-bed ceramic tile, stone or brick installation against exposure to rain or other water for a minimum of 2 hours at 70°F (21°C) and 50% RH. For temperatures between 45°F and 69°F (7°C to 21°C) allow a minimum 24 hour cure period.

Flood Testing – Allow membrane to cure fully before flood testing, typically a minimum 2 hours at 70°F (21°C) and 50% RH. Cold conditions will require a longer curing time. For temperatures between 50°F and 69°F (10°C to 21°C) allow a minimum 24 hour cure period prior to flood testing. Please refer to LATICRETE TDS 169 “Flood Testing Procedures”, available at www.laticrete.com for flood testing requirements and procedures.

Use the following LATICRETE® System Materials:
LATICRETE Hydro Ban

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

B. Crack Suppression:

NOTE TO SPECIFIER: Ceramic tile, mosaics, pavers, brick and stone installed by the thin bed method can be damaged by shrinkage related substrate cracking. Specify an Anti-Fracture Membrane or Crack Suppression Membrane to reduce crack propagation into veneers or hard finishes. Do not use Anti-Fracture/Crack Suppression Membranes if substrate cracking:

1. Is due to structural movement;
2. Involves vertical and/or differential movement;
3. Involves horizontal movement >1/8" (3 mm).

Install the anti-fracture membrane in compliance with current revisions of ANSI A108.17 (1.0 – 3.0). Review the installation and plan the application sequence. Pre-cut LATICRETE Waterproofing/Anti-Fracture Fabric, allowing 2" (50 mm) for overlap at ends and sides. Roll up the pieces for easy handling

and placement. Shake or stir LATICRETE Blue 92 Anti-Fracture Membrane Liquid before using. Pre-treat all substrate cracks, cold joints, control joints, coves, corners and penetrations according to manufacturer's specific recommendations. Allow pre-treated areas to dry to the touch. Apply a liberal coat of LATICRETE Blue 92 Anti-Fracture Membrane Liquid with brush or roller over substrate including pre-treated areas. Before the coat dries, unroll LATICRETE Waterproofing/Anti-Fracture Fabric, smooth out any wrinkles and press with brush or roller until LATICRETE Blue 92 Anti-Fracture Membrane Liquid “bleeds” through to surface. Apply another liberal coat of LATICRETE Blue 92 Anti-Fracture Membrane Liquid and allow it to dry to the touch, ~1–3 hours at 70°F (21°C) and 50% RH. For installation of ceramic tile, mosaic, paver, brick or stone, follow Thin Bed Method (§ 3.4B), which may begin as soon as last coat of LATICRETE Blue 92 Anti-Fracture Membrane Liquid has dried to the touch. Allow LATICRETE Blue 92 Anti-Fracture Membrane to cure for at least 3 days at 70°F (21°C) and 50% RH before exposing installation to rain or other water, even if covered by ceramic tile, mosaics, pavers, brick or stone.

Use the following LATICRETE System Materials:
LATICRETE Blue 92 Anti-Fracture Membrane

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

3.4 Installation – Tile, Brick and Stone

A. General: Install in accordance with current versions of American National Standards Institute, Inc. (ANSI) “A108 American National Standard Specifications for Installation of Ceramic Tile” and TCNA “Handbook for Ceramic Tile Installation.” Cut and fit ceramic tile, brick or stone neatly around corners, fittings, and obstructions. Perimeter pieces to be minimum half tile, brick or stone. Chipped, cracked, split pieces and edges are not acceptable. Make

joints even, straight, plumb and of uniform width to tolerance $\pm 1/16"$ over 8' (1.5 mm in 2.4 m). Install divider strips at junction of flooring and dissimilar materials.

- B. Thin Bed Method: Install latex portland cement mortar in compliance with current revisions of ANSI A108.02 (3.11) and ANSI A108.5. Use the appropriate trowel notch size to ensure proper bedding of the tile, brick or stone selected. Work the latex portland cement mortar into good contact with the substrate and comb with notched side of trowel. Spread only as much latex portland cement mortar as can be covered while the mortar surface is still wet and tacky. When installing large format ($>8" \times 8"/200 \text{ mm} \times 200 \text{ mm}$) tile/stone, rib/button/lug back tiles, pavers or sheet mounted ceramics/mosaics, spread latex portland cement mortar onto the back of (i.e. 'back-butter') each piece/sheet in addition to trowelling latex portland cement mortar over the substrate. Beat each piece/sheet into the latex portland cement mortar with a beating block or rubber mallet to insure full bedding and flatness. Allow installation to set until firm. Clean excess latex portland cement mortar from tile or stone face and joints between pieces.

Use the following LATICRETE® System Materials:
LATICRETE® 254 Platinum

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

- C. Grouting or Pointing Joints:

NOTE TO SPECIFIER: The chemical resistance of grouts and pointing mortars for ceramic tile, mosaics, pavers, brick and stone will typically depend on:

1. Reagent composition and/or concentration;
2. Temperature;
3. Duration of exposure.

Review test results conducted in conformance with current revision of ASTM C267 "Standard Test Methods for Chemical Resistance of Mortars, Grouts and Monolithic Surfaces and Polymer Concretes," and manufacturer's performance data and recommendations, in the context of expected chemical exposures.

Follow manufacturer's recommendations for minimum cure time prior to grouting. Store liquid components of epoxy grout for 24 hours at 70–80°F (21–27°C) prior to use to facilitate mixing and application. Substrate temperature must be 45–90°F (7–32°C). Verify joints are free of dirt, debris or grout spacers. Sponge or wipe dust/dirt off tile faces and remove water standing in joints. Apply grout release to face of absorptive, abrasive, non-slip or rough textured ceramic tile, pavers, bricks, stone or trim units that are not hot paraffin coated to facilitate cleaning. Pour LATAPOXY® 2000 Industrial Grout Part A and Part B into a clean mixing pail. Mix by hand or with a slow speed ($<300 \text{ rpm}$) mixer until liquids are well blended. For vertical installations only, add LATAPOXY Part D Non-Sag Additive. While mixing, then add LATAPOXY Part C Filler Powder and blend until uniform. Immediately pour all of the LATAPOXY 2000 Industrial Grout just mixed out of the pail onto the surface to be grouted.

NOTE: Leaving epoxy grout in mixing pail will diminish working time.

Spread using a sharp edged, hard rubber float and work grout into joints. Using strokes diagonal (at 45° angle) to the grout lines, pack joints full and free of voids/pits. Hold float face at a 90° angle to grouted surface and use float edge to "squeegee" off excess grout, stroking diagonally to reduce pulling grout out of filled joints. Initial cleaning can begin 5–30 minutes after grouting depending on temperature. Spray or fog grouted surfaces with clean water, applying $\sim 8 \text{ fl oz/ft}^2$ (0.3 l/m^2). Using a circular motion, lightly scrub grouted surfaces with nylon pad to dissolve haze/film. Drag a clean towel diagonally over the scrubbed surfaces to remove froth. Rinse towel frequently and

change rinse water at least every 200 ft² (19 m²). Repeat this cleaning sequence again. Wait ~30–60 minutes and use a ‘hydra’ sponge and soapy water to ‘slick’/smoothen joint surface. Inspect joint for pinholes/voids and repair them with freshly mixed LATAPOXY 2000 Industrial Grout. After ~12 hours, check for remaining haze and remove it by scrubbing with warm soapy water. Do not use acid cleaners on epoxy grout less than 7 days old.

NOTE TO SPECIFIER: Specify color for each type/color of ceramic tile, mosaic, paver, brick, stone or trim unit.

Use the following LATICRETE System Materials:
LATAPOXY 2000 Industrial Grout

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

D. Expansion and Control Joints: Provide control or expansion joints as located in contract drawings and in full conformity, especially in width and depth, with architectural details.

1. Substrate joints must carry through, full width, to surface of tile, brick or stone.
2. Install expansion joints in tile, brick or stone work over construction/cold joints or control joints in substrates.

3. Install expansion joints where tile, brick or stone abut restraining surfaces (such as perimeter walls, curbs, columns), changes in plane and corners.
4. Joint width and spacing depends on application – follow TCNA “Handbook for Ceramic Tile Installation” Detail “EJ-171 Expansion Joints” or consult sealant manufacturer for recommendation based on project parameters.
5. Joint width: $\geq 1/8"$ (3 mm) and $\leq 1"$ (25 mm).
6. Joint width: depth ~2:1 but joint depth must be $\geq 1/8"$ (3 mm) and $\leq 1/2"$ (12 mm).
7. Layout (field defined by joints): 1:1 length: width is optimum but must be $\leq 2:1$. Remove all contaminants and foreign material from joint spaces/surfaces, such as dirt, dust, oil, water, frost, setting/grouting materials, sealers and old sealant/backer. Use LATICRETE® Latasil™ 9118 Primer for underwater and permanent wet area applications, or for porous stone (e.g. limestone, sandstone etc...) installations. Install appropriate backing material (e.g. closed cell backer rod) based on expansion joint design and as specified in § 07920.



Apply masking tape to face of tile, brick or stone veneer. Use caulking gun, or other applicator, to completely fill joints with sealant. Within 5–10 minutes of filling joint, ‘tool’ sealant surface to a smooth finish. Remove masking tape immediately after tooling joint. Wipe smears or excess sealant off the face of non-glazed tile, brick, stone or other absorptive surfaces immediately.

Use the following LATICRETE® System Materials:

LATICRETE Latasil

LATICRETE Latasil 9118 Primer

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

E. Adjusting: Correction of defective work for a period of one (1) year following substantial completion, return to job and correct all defective work. Defective work includes, without limitation, tiles broken in normal abuse due to deficiencies in setting bed, loose tiles or grout, and all other defects which may develop as a result of poor workmanship.

3.5 Cleaning

Clean excess mortar/epoxy from veneer surfaces with water before they harden and as work progresses. Do not contaminate open grout/caulk joints while cleaning. Sponge and wash veneers diagonally across joints. Do not use acids for cleaning. Polish with clean dry cloth. Remove surplus materials and leave premises broom clean.

3.6 Protection

- A. Protect finished installation under provisions of §01500 and §01535. Close areas to other trades and traffic until tile being installed has set firmly. Keep traffic off horizontal portland cement thick bed mortar installations for at least 72 hours at 70°F (21°C).
- B. Keep floors installed with epoxy adhesive closed to traffic for 24 hrs at 70°F (21°C), and to heavy traffic for 48 hours at 70°F (21°C) unless instructed differently by manufacturer. Use kneeling boards, or equivalent, to walk/work on newly tiled floors. Cure tile work in swimming pools, fountains and other continuous immersion applications for 10 days for epoxy based grout and 14 days for latex portland cement based grout at 70°F (21°C) before flood testing or filling installation with water. Extend period of protection of tile work at lower temperatures, below 60°F (15°C), and at high relative humidity (>70% RH) due to retarded set times of mortar/adhesives. Replace or restore work of other trades damaged or soiled by work under this section.

Part 4 – Health and Safety

The use of personal protection such as rubber gloves, suitable dust masks, safety glasses and industrial clothing is highly recommended. Discarded packaging, product wash and waste water should be disposed of as per local, state or federal regulations.

PART 3 – EXECUTION

3.1 Substrate

A. Verify that surfaces to be covered with ceramic tile, mosaics, pavers, brick, stone, trim or waterproofing are:

1. Sound, rigid and conform to good design/engineering practices;
2. Systems, including the framing system and panels, over which tile or stone will be installed shall be in conformance with the International Residential Code (IRC) for residential applications, the International Building Code (IBC) for commercial applications, or applicable building codes. The project design should include the intended use and necessary allowances for the expected live load, concentrated load, impact load, and dead load including the weight of the finish and installation materials;
3. Clean and free of dust, dirt, oil, grease, sealers, curing compounds, laitance, efflorescence, form oil, loose plaster, paint, and scale;
4. Thin-set tile installations have a specified subsurface tolerance, for instance 1/2" in 10' (6 mm in 3 m) and 1/16" in 1' (1.5 mm in 300 mm), to conform with the ANSI specifications. Because thin-set is not intended to be used in truing or leveling the work of others, the subsurface typically should not vary by more than 1/16" over 1' (1.5 mm over 300 mm), nor more than 1/32" (0.8 mm) between adjoining edges where applicable (e.g. between sheets of exterior glue plywood or between adjacent concrete masonry units). Should the architect/designer require a more stringent tolerance (e.g. 1/8" in 10' [3 mm in 3 m]), the subsurface specification must reflect that tolerance, or the tile specification must include a specific and separate requirement to bring the 1/4" (6 mm) subsurface tolerance into compliance with the 1/8" (3 mm) tolerance desired;

5. Not leveled with gypsum or asphalt based compounds;

6. Dry as per American Society for Testing and Materials (ASTM) D4263 "Standard Test for Determining Moisture in Concrete by the Plastic Sheet Method."

B. Concrete surfaces shall also be:

1. Cured a minimum of 28 days at 70°F (21°C), including an initial seven (7) day period of wet curing;

NOTE TO SPECIFIER: LATICRETE® latex portland cement mortars do not require a minimum cure time for concrete substrates or mortar beds;

2. Wood float finished, or better, if the installation is to be done by the thin bed method;

Advise General Contractor and Architect of any surface or substrate conditions requiring correction before tile work commences. Beginning of work constitutes acceptance of substrate or surface conditions.

3.2 Surface Preparation

A. Existing Flooring Surfaces

Cement terrazzo, ceramic tiles, pavers, quarry tiles, vinyl, vinyl composition floor coverings (other than cushion vinyl) must be sound, solid, well bonded, stripped clean and free from dust, wax, grease, sealer and all other contamination which may reduce or prevent adhesion.

B. Concrete Substrates

(Insert any Special Means of Preparation – In addition to the surface preparation requirements listed above;)

C. (List other Substrates as required and means of preparation as required)

(Insert any Special Means of Preparation – In addition to the surface preparation requirements listed above;)

3.3 Installation – Accessories

A. Waterproofing:

NOTE TO SPECIFIER: Adhesives/mastics, mortars and grouts for ceramic tile, mosaics, pavers, brick and stone are not replacements for waterproofing membranes and will not prevent water penetration into occupied or storage spaces below.

Install the waterproofing membrane in compliance with current revisions of ANSI A108.1 (2.7 Waterproofing) and ANSI A108.13. Review the installation and plan the application sequence. Pre-cut LATICRETE® Waterproofing/Anti-Fracture Fabric (if required), allowing 2" (50 mm) for overlap at ends and sides to fit the areas as required. Roll up the pieces for easy handling and placement. Shake or stir LATICRETE Hydro Ban™ before using.

Pre-Treat Cracks and Joints – Fill all substrate cracks, cold joints and control joints to a smooth finish using a LATICRETE latex-fortified thin-set. Alternatively, a liberal coat* of LATICRETE Hydro Ban applied with a paint brush or trowel may be used to fill in non-structural joints and cracks. Apply a liberal coat* of LATICRETE Hydro Ban approximately 8" (200 mm) wide over substrate cracks, cold joints, and control joints using a paint brush or heavy napped paint roller.

Pre-Treat Coves and Floor/Wall Intersections – Fill all substrate coves and floor/wall transitions to a smooth finish and changes in plane using a LATICRETE latex-fortified thin-set. Alternatively, a liberal coat* of LATICRETE Hydro Ban applied with a paint brush or trowel may be used to fill in cove joints and floor/wall transitions <1/8" (3 mm) in width. Apply a liberal coat* of LATICRETE Hydro Ban approximately 8" (200 mm) wide over substrate cracks, cold joints, and control joints using a paint brush or heavy napped paint roller.

Pre-Treat Drains – Drains must be of the clamping ring type, with weepers as per ASME A112.6.3. Apply a liberal coat* of LATICRETE Hydro Ban around and over the bottom half of drain clamping ring. Cover with a second liberal coat of LATICRETE Hydro Ban. When

the LATICRETE Hydro Ban dries, apply a bead of LATICRETE Latasil™ where the LATICRETE Hydro Ban meets the drain throat. Install the top half of drain clamping ring.

Pre-Treat Penetrations – Allow for a minimum 1/8" (3 mm) space between drains, pipes, lights, or other penetrations and surrounding ceramic tile, stone or brick. Pack any gaps around pipes, lights or other penetrations with a LATICRETE latex-fortified thin-set. Apply a liberal coat* of LATICRETE Hydro Ban around penetration opening. Cover the first coat with a second liberal coat* of LATICRETE Hydro Ban. Bring LATICRETE Hydro Ban up to level of tile or stone. When LATICRETE Hydro Ban has dried to the touch seal with LATICRETE Latasil.

Main Application – Allow any pre-treated areas to dry to the touch. Apply a liberal coat* of LATICRETE Hydro Ban with a paint brush or heavy napped roller over substrate including pre-treated areas and allow to dry to the touch. Install another liberal coat* of LATICRETE Hydro Ban over the first coat. Let the top coat of LATICRETE Hydro Ban dry to the touch approximately 1 – 2 hours at 70°F (21°C) and 50% RH. When the top coat has dried to the touch inspect the surface for pinholes, voids, thin spots or other defects. LATICRETE Hydro Ban will dry to an olive green color when fully cured. Use additional LATICRETE Hydro Ban to seal any defects.

Movement Joints – Apply a liberal coat* of LATICRETE Hydro Ban, approximately 8" (200 mm) wide over the areas. Then embed and loop the 6" (150 mm) wide LATICRETE Waterproofing/Anti-Fracture Fabric and allow the LATICRETE Hydro Ban liquid to bleed through. Immediately apply a second coat of LATICRETE Hydro Ban.

* Dry coat thickness is 20 – 30 mil (0.02 – 0.03" or 0.5 – 0.8 mm); consumption per coat is approximately 0.01 gal/ft² (approx. 0.4 l/m²); coverage is approximately 100 ft²/gal (approx. 2.5 m²/l). LATICRETE® Waterproofing/Anti-Fracture Fabric can be used to pre-treat cracks, joints, curves, corners, drains, and penetrations with LATICRETE Hydro Ban™.

Protection – Provide protection for newly installed membrane, even if covered with a thin-bed ceramic tile, stone or brick installation against exposure to rain or other water for a minimum of 2 hours at 70°F (21°C) and 50% RH. For temperatures between 45°F and 69°F (7°C to 21°C) allow a minimum 24 hour cure period.

Flood Testing – Allow membrane to cure fully before flood testing, typically a minimum 2 hours at 70°F (21°C) and 50% RH. Cold conditions will require a longer curing time. For temperatures between 50°F and 69°F (10°C to 21°C) allow a minimum 24 hour cure period prior to flood testing. Please refer to LATICRETE TDS 169 “Flood Testing Procedures”, available at www.laticrete.com for flood testing requirements and procedures.

Use the following LATICRETE® System Materials:
LATICRETE® Hydro Ban™

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

B. Crack Suppression:

NOTE TO SPECIFIER: Ceramic tile, mosaics, pavers, brick and stone installed by the thin bed method can be damaged by shrinkage related substrate cracking. Specify an Anti-Fracture Membrane or Crack Suppression Membrane to reduce crack propagation into veneers or hard finishes. Do not use Anti-Fracture/Crack Suppression Membranes if substrate cracking:

1. Is due to structural movement;
2. Involves vertical and/or differential movement;
3. Involves horizontal movement >1/8" (3 mm).

Install the anti-fracture membrane in compliance with current revisions of ANSI A108.17 (1.0 –3.0). Review the installation and plan the application sequence. Pre-cut LATICRETE Waterproofing/Anti-Fracture Fabric, allowing 2" (50 mm) for overlap at ends and sides. Roll up the pieces for easy handling and placement. Shake or stir LATICRETE Blue 92 Anti-Fracture Membrane Liquid before using. Pre-treat all substrate cracks, cold joints, control joints, coves, corners and penetrations according to manufacturer's

specific recommendations. Allow pre-treated areas to dry to the touch. Apply a liberal coat of LATICRETE Blue 92 Anti-Fracture Membrane Liquid with brush or roller over substrate including pre-treated areas. Before the coat dries, unroll LATICRETE Waterproofing/Anti-Fracture Fabric, smooth out any wrinkles and press with brush or roller until LATICRETE Blue 92 Anti-Fracture Membrane Liquid “bleeds” through to surface. Apply another liberal coat of LATICRETE Blue 92 Anti-Fracture Membrane Liquid and allow it to dry to the touch, ~1–3 hours at 70°F (21°C) at 50% RH. For installation of ceramic tile, mosaic, paver, brick or stone, follow Thin Bed Method (§ 3.4B), which may begin as soon as last coat of LATICRETE Blue 92 Anti-Fracture Membrane Liquid has dried to the touch. Allow LATICRETE Blue 92 Anti-Fracture Membrane to cure for at least 3 days at 70°F (21°C) and 50% RH before exposing installation to rain or other water, even if covered by ceramic tile, mosaics, pavers, brick or stone.

Use the following LATICRETE System Materials:
LATICRETE Blue 92 Anti-Fracture Membrane

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

3.4 Installation – Tile, Brick and Stone

A. General: Install in accordance with current versions of American National Standards Institute, Inc. (ANSI) “A108 American National Standard Specifications for Installation of Ceramic Tile” and TCNA “Handbook for Ceramic Tile Installation.” Cut and fit ceramic tile, brick or stone neatly around corners, fittings, and obstructions. Perimeter pieces to be minimum half tile, brick or stone. Chipped, cracked, split pieces and edges are not acceptable. Make joints even, straight, plumb and of uniform width to tolerance +/- 1/16" over 8' (1.5 mm in 2.4 m). Install divider strips at junction of flooring and dissimilar materials.

B. Thin Bed Method: Install epoxy adhesive in compliance with current revisions of ANSI A108.02 (3.14) and ANSI A108.6. Use the appropriate trowel notch size to ensure proper bedding of the tile or stone selected. Work the epoxy adhesive into good contact with the substrate and comb with notched side of trowel. Spread only as much epoxy adhesive as can be covered while the adhesive surface is still wet and tacky. When installing large format (>8" x 8"/200 mm x 200 mm) tile/stone, rib/button/lug back tiles, pavers or sheet mounted ceramics/mosaics, spread epoxy adhesive onto the back of (i.e. 'back-butter') each piece/sheet in addition to trowelling epoxy adhesive over the substrate. Beat each piece/sheet into the epoxy adhesive with a beating block or rubber mallet to insure full bedding and flatness. Allow installation to set until firm. Clean excess epoxy adhesive from tile or stone face and joints between pieces.

Use the following LATICRETE System Materials:

LATAPOXY® 300 Adhesive

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

C. Grouting or Pointing Joints:

NOTE TO SPECIFIER: The chemical resistance of grouts and pointing mortars for ceramic tile, mosaics, pavers, brick and stone will typically depend on:

1. Reagent composition and/or concentration;
2. Temperature;
3. Duration of exposure.

Review test results conducted in conformance with current revision of ASTM C267 "Standard Test Methods for Chemical Resistance of Mortars, Grouts and Monolithic Surfaces and Polymer Concretes," and manufacturer's performance data and recommendations, in the context of expected chemical exposures.

Follow manufacturer's recommendations for minimum cure time prior to grouting. Store liquid components of epoxy grout for 24 hours at 70–80°F (21–27°C) prior to use to facilitate

mixing and application. Substrate temperature must be 45–90°F (7–32°C). Verify joints are free of dirt, debris or grout spacers. Sponge or wipe dust/dirt off tile faces and remove water standing in joints. Apply grout release to face of absorptive, abrasive, non-slip or rough textured ceramic tile, pavers, bricks, stone or trim units that are not hot paraffin coated to facilitate cleaning. Pour LATAPOXY 2000 Industrial Grout Part A and Part B into a clean mixing pail. Mix by hand or with a slow speed (<300 rpm) mixer until liquids are well blended. For vertical installations only, add LATAPOXY Part D Non-Sag Additive. While mixing, then add LATAPOXY Part C Filler Powder and blend until uniform. Immediately pour all of the LATAPOXY 2000 Industrial Grout just mixed out of the pail onto the surface to be grouted.

NOTE: Leaving epoxy grout in mixing pail will diminish working time.

Spread using a sharp edged, hard rubber float and work grout into joints. Using strokes diagonal (at 45° angle) to the grout lines, pack joints full and free of voids/pits. Hold float face at a 90° angle to grouted surface and use float edge to "squeegee" off excess grout, stroking diagonally to reduce pulling grout out of filled joints. Initial cleaning can begin 5–30 minutes after grouting depending on temperature. Spray or fog grouted surfaces with clean water, applying ~8 fl oz/ft² (0.3 m³). Using a circular motion, lightly scrub grouted surfaces with nylon pad to dissolve haze/film. Drag a clean towel diagonally over the scrubbed surfaces to remove froth. Rinse towel frequently and change rinse water at least every 200 ft² (19 m²). Repeat this cleaning sequence again. Wait ~30–60 minutes and use a 'hydra' sponge and soapy water to 'slick'/smoothen joint surface. Inspect joint for pinholes/voids and repair them with freshly mixed LATAPOXY 2000 Industrial Grout. After ~12 hours, check for remaining haze and remove it by scrubbing with warm soapy water. Do not use acid cleaners on epoxy grout less than 7 days old.

Section 3: 3.4 VF133 – Concrete Chemical Resistant Thin Bed

NOTE TO SPECIFIER: Specify color for each type/color of ceramic tile, mosaic, paver, brick, stone or trim unit.

Use the following LATICRETE® System Materials:
LATAPOXY® 2000 Industrial Grout

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

D. Expansion and Control Joints:

NOTE TO SPECIFIER: The chemical resistance of joint sealants for ceramic tile, mosaics, pavers, brick and stone will typically depend on:

1. Reagent composition and/or concentration;
2. Temperature;
3. Duration of exposure.

Review manufacturer's performance data and recommendations, in the context of expected chemical exposures.

Provide control or expansion joints as located in contract drawings and in full conformity, especially in width and depth, with architectural details.

1. Substrate joints must carry through, full width, to surface of tile, brick or stone.
2. Install expansion joints in tile, brick or stone work over construction/cold joints or control joints in substrates.
3. Install expansion joints where tile, brick or stone abut restraining surfaces (such as perimeter walls, curbs, columns), changes in plane and corners.
4. Joint width and spacing depends on application – follow TCNA "Handbook for Ceramic Tile Installation" Detail "EJ-171 Expansion Joints" or consult sealant manufacturer for recommendation based on project parameters.
5. Joint width: $\geq 1/8"$ (3 mm) and $\leq 1"$ (25 mm).
6. Joint width: depth ~2:1 but joint depth must be $\geq 1/8"$ (3 mm) and $\leq 1/8"$ (12 mm).
7. Layout (field defined by joints): 1:1 length: width is optimum but must be $\leq 2:1$. Remove all contaminants and foreign material from joint spaces/surfaces, such as dirt,

dust, oil, water, frost, setting/grouting materials, sealers and old sealant/backer. Use LATICRETE Latasil™ 9118 Primer for underwater and permanent wet area applications, or for porous stone (e.g. limestone, sandstone etc...) installations. Install appropriate backing material (e.g. closed cell backer rod) based on expansion joint design and as specified in § 07920. Apply masking tape to face of tile, brick or stone veneer. Use caulking gun, or other applicator, to completely fill joints with sealant. Within 5–10 minutes of filling joint, 'tool' sealant surface to a smooth finish. Remove masking tape immediately after tooling joint. Wipe smears or excess sealant off the face of non-glazed tile, brick, stone or other absorptive surfaces immediately.

Use the following LATICRETE System Materials:
LATICRETE Latasil

LATICRETE Latasil 9118 Primer

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

E. Adjusting: Correction of defective work for a period of one (1) year following substantial completion, return to job and correct all defective work. Defective work includes, without limitation, tiles broken in normal abuse due to deficiencies in setting bed, loose tiles or grout, and all other defects which may develop as a result of poor workmanship.

3.5 Cleaning

Clean excess mortar/epoxy from veneer surfaces with water before they harden and as work progresses. Do not contaminate open grout/caulk joints while cleaning. Sponge and wash veneers diagonally across joints. Do not use acids for cleaning. Polish with clean dry cloth. Remove surplus materials and leave premises broom clean.

3.6 Protection

- A. Protect finished installation under provisions of §01500 and §01535. Close areas to other trades and traffic until tile being installed has set firmly. Keep traffic off horizontal portland cement thick bed mortar installations for at least 72 hours at 70°F (21°C).
- B. Keep floors installed with epoxy adhesive closed to traffic for 24 hrs at 70°F (21°C), and to heavy traffic for 48 hours at 70°F (21°C) unless instructed differently by manufacturer. Use kneeling boards, or equivalent, to walk/work on newly tiled floors. Cure tile work in swimming pools, fountains and other continuous immersion applications for 10 days for epoxy based grout and 14 days for latex portland cement based grout at 70°F (21°C) before flood testing or filling installation with water. Extend period of protection of tile work at lower temperatures, below 60°F (15°C), and at high relative humidity (>70% RH) due to retarded set times of mortar/adhesives. Replace or restore work of other trades damaged or soiled by work under this section.

Part 4 – Health and Safety

The use of personal protection such as rubber gloves, suitable dust masks, safety glasses and industrial clothing is highly recommended. Discarded packaging, product wash and waste water should be disposed of as per local, state or federal regulations.

PART 3 – EXECUTION

3.1 Substrate Examination

A. Verify that surfaces to be covered with ceramic tile, mosaics, pavers, brick, stone, trim or waterproofing are:

1. Sound, rigid and conform to good design/engineering practices;
2. Systems, including the framing system and panels, over which tile or stone will be installed shall be in conformance with the International Residential Code (IRC) for residential applications, the International Building Code (IBC) for commercial applications, or applicable building codes. The project design should include the intended use and necessary allowances for the expected live load, concentrated load, impact load, and dead load including the weight of the finish and installation materials;
3. Clean and free of dust, dirt, oil, grease, sealers, curing compounds, laitance, efflorescence, form oil, loose plaster, paint, and scale;
4. Thin-set tile installations have a specified subsurface tolerance, for instance 1/4" in 10' (6 mm in 3 m) and 1/16" in 1' (1.5 mm in 300 mm), to conform with the ANSI specifications. Because thin-set is not intended to be used in truing or leveling the work of others, the subsurface typically should not vary by more than 1/16" over 1' (1.5 mm over 300 mm), nor more than 1/32" (0.8 mm) between adjoining edges where applicable (e.g. between sheets of exterior glue plywood or between adjacent concrete masonry units). Should the architect/designer require a more stringent tolerance (e.g. 1/8" in 10' [3 mm in 3 m]), the subsurface specification must reflect that tolerance, or the tile specification must include a specific and separate requirement to bring the 1/4"

(6 mm) subsurface tolerance into compliance with the 1/8" (6 mm) tolerance desired;

5. Not leveled with gypsum or asphalt based compounds;
6. Dry as per American Society for Testing and Materials (ASTM) D4263 "Standard Test for Determining Moisture in Concrete by the Plastic Sheet Method."

B. Concrete surfaces shall also be:

1. Cured a minimum of 28 days at 70°F (21°C), including an initial seven (7) day period of wet curing;

NOTE TO SPECIFIER: LATICRETE® latex portland cement mortars do not require a minimum cure time for concrete substrates or mortar beds;

2. Wood float finished, or better, if the installation is to be done by the thin bed method;

Advise General Contractor and Architect of any surface or substrate conditions requiring correction before tile work commences. Beginning of work constitutes acceptance of substrate or surface conditions.

3.2 Surface Preparation

A. Existing Flooring Surfaces

Cement terrazzo, ceramic tiles, pavers, quarry tiles, vinyl, vinyl composition floor coverings (other than cushion vinyl) must be sound, solid, well bonded, stripped clean and free form dust, wax, grease, sealer and all other contamination which may reduce or prevent adhesion.

B. Concrete Substrates

(Insert any Special Means of Preparation – In addition to the surface preparation requirements listed above; ...)

C. (List other Substrates as required and means of preparation as required)

(Insert any Special Means of Preparation – In addition to the surface preparation requirements listed above; ...)

3.3 Installation – Accessories

Waterproofing:

NOTE TO SPECIFIER: Adhesives/mastics, mortars and grouts for ceramic tile, mosaics, pavers, brick and stone are not replacements for waterproofing membranes and will not prevent water penetration into occupied or storage spaces below.

Install the waterproofing membrane in compliance with current revisions of ANSI A108.1 (2.7 Waterproofing) and ANSI A108.13. Review the installation and plan the application sequence. Pre-cut LATICRETE® Waterproofing/Anti-Fracture Fabric (if required), allowing 2" (50 mm) for overlap at ends and sides to fit the areas as required. Roll up the pieces for easy handling and placement. Shake or stir LATICRETE Hydro Ban™ before using.

Pre-Treat Cracks and Joints – Fill all substrate cracks, cold joints and control joints to a smooth finish using a LATICRETE latex-fortified thin-set. Alternatively, a liberal coat* of LATICRETE Hydro Ban applied with a paint brush or trowel may be used to fill in non-structural joints and cracks. Apply a liberal coat* of LATICRETE Hydro Ban approximately 8" (200 mm) wide over substrate cracks, cold joints, and control joints using a paint brush or heavy napped paint roller.

Pre-Treat Coves and Floor/Wall Intersections–

Fill all substrate coves and floor/wall transitions to a smooth finish and changes in plane using a LATICRETE latex-fortified thin-set. Alternatively, a liberal coat* of LATICRETE Hydro Ban applied with a paint brush or trowel may be used to fill in cove joints and floor/wall transitions <1/8" (3 mm) in width. Apply a liberal coat* of LATICRETE Hydro Ban approximately 8" (200 mm) wide over substrate cracks, cold joints, and control joints using a paint brush or heavy napped paint roller.

Pre-Treat Drains – Drains must be of the clamping ring type, with weepers as per ASME A112.6.3. Apply a liberal coat* of LATICRETE Hydro Ban around and over the bottom half of drain clamping ring. Cover with a second

liberal coat of LATICRETE Hydro Ban. When the LATICRETE Hydro Ban dries, apply a bead of LATICRETE Latasil™ where the LATICRETE Hydro Ban meets the drain throat. Install the top half of drain clamping ring.

Pre-Treat Penetrations – Allow for a minimum 1/8" (3 mm) space between drains, pipes, lights, or other penetrations and surrounding ceramic tile, stone or brick. Pack any gaps around pipes, lights or other penetrations with a LATICRETE latex-fortified thin-set. Apply a liberal coat* of LATICRETE Hydro Ban around penetration opening. Cover the first coat with a second liberal coat* of LATICRETE Hydro Ban. Bring LATICRETE Hydro Ban up to level of tile or stone. When LATICRETE Hydro Ban has dried to the touch seal with LATICRETE Latasil.

Main Application – Allow any pre-treated areas to dry to the touch. a liberal coat* of LATICRETE Hydro Ban with a paint brush or heavy napped roller over substrate including pre-treated areas and allow to dry to the touch. Install another liberal coat* of LATICRETE Hydro Ban over the first coat. Let the top coat of LATICRETE Hydro Ban dry to the touch approximately 1 – 2 hours at 70°F (21°C) and 50% RH. When the top coat has dried to the touch inspect the surface for pinholes, voids, thin spots or other defects. LATICRETE Hydro Ban will dry to an olive green color when fully cured. Use additional LATICRETE Hydro Ban to seal any defects.

Movement Joints – Apply a liberal coat* of LATICRETE Hydro Ban, approximately 8" (200 mm) wide over the areas. Then embed and loop the 6" (150 mm) wide LATICRETE Waterproofing/Anti-Fracture Fabric and allow the LATICRETE Hydro Ban liquid to bleed through. Immediately apply a second coat of LATICRETE Hydro Ban.

* Dry coat thickness is 20 – 30 mil (0.02 – 0.03" or 0.5 – 0.8 mm); consumption per coat is approximately 0.01 gal/ft² (approx. 0.4 l/m²); coverage is approximately 100 ft²/gal (approx. 2.5 m²/l). LATICRETE® Waterproofing/Anti-Fracture Fabric can be used to pre-treat cracks, joints, curves, corners, drains, and penetrations with LATICRETE Hydro Ban™.

Protection – Provide protection for newly installed membrane, even if covered with a thin-bed ceramic tile, stone or brick installation against exposure to rain or other water for a minimum of 2 hours at 70°F (21°C) and 50% RH. For temperatures between 45°F and 69°F (7°C to 21°C) allow a minimum 24 hour cure period.

Flood Testing – Allow membrane to cure fully before flood testing, typically a minimum 2 hours at 70°F (21°C) and 50% RH. Cold conditions will require a longer curing time. For temperatures between 50°F and 69°F (10°C to 21°C) allow a minimum 24 hour cure period prior to flood testing. Please refer to LATICRETE TDS 169 “Flood Testing Procedures”, available at www.laticrete.com for flood testing requirements and procedures.

Use the following LATICRETE® System Materials:
LATICRETE® Hydro Ban™

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

3.4 Installation – Tile, Brick and Stone

A. General: Install in accordance with current versions of American National Standards Institute, Inc. (ANSI) “A108 American National Standard Specifications for Installation of Ceramic Tile” and TCNA “Handbook for Ceramic Tile Installation.” Cut and fit ceramic tile, brick or stone neatly around corners, fittings, and obstructions. Perimeter pieces to be minimum half tile, brick or stone. Chipped, cracked, split pieces and edges are not acceptable. Make joints even, straight, plumb and of uniform width to tolerance +/- 1/16" over 8' (1.5 mm in 2.4 m). Install divider strips at junction of flooring and dissimilar materials.

B. Bonded Thick Bed Method: Verify 1" (25 mm) nominal bed thickness has been allowed. Apply LATICRETE 254 Platinum with flat trowel as a slurry bond coat approximately 1/16" (1.5 mm) thick over clean concrete

slab in compliance with current revision of ANSI A108.1A (2.2 and 5.2). Place LATICRETE 3701 Fortified Mortar Bed mixed with water over slurry bond coat while LATICRETE 254 Platinum slurry bond coat is wet and tacky. Omit reinforcing wire fabric and fully compact bed by tamping. Spread LATICRETE 254 Platinum with flat trowel over surface of "green"/fresh mortar bed as a slurry bond coat approximately 1/16" (1.5 mm) thick. Apply LATICRETE 254 Platinum slurry bond coat to back of ceramic tile, mosaic, paver, brick, stone, trim unit or threshold and place each piece/sheet while slurry bond coats are wet and tacky. Beat with a hardwood block or rubber mallet to level/imbed pieces before mortar bed takes initial set. Clean excess mortar/adhesive from finished surfaces. For installation of tile, brick or stone over cured (pre-floated) latex-portland cement thick bed mortar, follow Thin Bed Method (§ 3.4D).

Use the following LATICRETE System Materials:

LATICRETE 3701 Fortified Mortar Bed

LATICRETE 254 Platinum

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

C. Chemical Resistant Waterproofing:

NOTES TO SPECIFIER:

1. Adhesives/mastics, mortars and grouts for ceramic tile, mosaics, pavers, brick and stone are not replacements for waterproofing membranes and will not prevent water penetration into occupied or storage spaces below.
2. The chemical resistance of membranes for ceramic tile, mosaics, pavers, brick and stone will typically depend on:
 - a. Reagent composition and/or concentration;
 - b. Temperature;
 - c. Duration of exposure.

Review manufacturer's performance data and recommendations, in the context of expected chemical exposures.

Install the waterproofing membrane in compliance with current revisions of ANSI A108.1 (2.7 Waterproofing) and ANSI A108.13.

Review the installation and plan the application sequence. Pre-cut LATICRETE Waterproofing/Anti-Fracture Fabric (if required), allowing 2" (50 mm) for overlap at ends and sides to fit the areas as required. Roll up the pieces for easy handling and placement. Shake or stir LATICRETE Hydro Ban before using.

Pre-Treat Cracks and Joints – Fill all substrate cracks, cold joints and control joints to a smooth finish using a LATICRETE latex-fortified thin-set. Alternatively, a liberal coat* of LATICRETE Hydro Ban applied with a paint brush or trowel may be used to fill in non-structural joints and cracks. Apply a liberal coat* of LATICRETE Hydro Ban approximately 8" (200 mm) wide over substrate cracks, cold joints, and control joints using a paint brush or heavy napped paint roller.

Pre-Treat Coves and Floor/Wall Intersections – Fill all substrate coves and floor/wall transitions to a smooth finish and changes in plane using a LATICRETE latex-fortified thin-set. Alternatively, a liberal coat* of LATICRETE Hydro Ban applied with a paint brush or trowel may be used to fill in cove joints and floor/wall transitions <1/8" (3 mm) in width. Apply a liberal coat* of LATICRETE Hydro Ban approximately 8" (200 mm) wide over substrate cracks, cold joints, and control joints using a paint brush or heavy napped paint roller.

Pre-Treat Drains – Drains must be of the clamping ring type, with weepers as per ASME A112.6.3. Apply a liberal coat* of LATICRETE Hydro Ban around and over the bottom half of drain clamping ring. Cover with a second liberal coat of LATICRETE Hydro Ban. When the LATICRETE Hydro Ban dries, apply a bead of LATICRETE Latasil™ where the LATICRETE Hydro Ban meets the drain throat. Install the top half of drain clamping ring.

Pre-Treat Penetrations – Allow for a minimum 1/8" (3 mm) space between drains, pipes, lights, or other penetrations and surrounding ceramic tile, stone or brick. Pack any gaps around pipes, lights or other penetrations with

a LATICRETE latex-fortified thin-set. Apply a liberal coat* of LATICRETE Hydro Ban around penetration opening. Cover the first coat with a second liberal coat* of LATICRETE Hydro Ban. Bring LATICRETE Hydro Ban up to level of tile or stone. When LATICRETE Hydro Ban has dried to the touch seal with LATICRETE Latasil™.

Main Application – Allow any pre-treated areas to dry to the touch. Apply a liberal coat* of LATICRETE Hydro Ban with a paint brush or heavy napped roller over substrate including pre-treated areas and allow to dry to the touch. Install another liberal coat* of LATICRETE Hydro Ban over the first coat. Let the top coat of LATICRETE Hydro Ban dry to the touch approximately 1 – 2 hours at 70°F (21°C) and 50% RH. When the top coat has dried to the touch inspect the surface for pinholes, voids, thin spots or other defects. LATICRETE Hydro Ban will dry to an olive green color when fully cured. Use additional LATICRETE Hydro Ban to seal any defects.

Movement Joints – Apply a liberal coat* of LATICRETE Hydro Ban, approximately 8" (200 mm) wide over the areas. Then embed and loop the 6" (150 mm) wide LATICRETE Waterproofing/Anti-Fracture Fabric and allow the LATICRETE Hydro Ban liquid to bleed through. Immediately apply a second coat of LATICRETE Hydro Ban.

* Dry coat thickness is 20 – 30 mil (0.02 – 0.03" or 0.5 – 0.8 mm); consumption per coat is approximately 0.01 gal/ft² (approx. 0.4 l/m²); coverage is approximately 100 ft²/gal (approx. 2.5 m²/l). LATICRETE® Waterproofing/Anti-Fracture Fabric can be used to pre-treat cracks, joints, curves, corners, drains, and penetrations with LATICRETE Hydro Ban™.

Protection – Provide protection for newly installed membrane, even if covered with a thin-bed ceramic tile, stone or brick installation against exposure to rain or other water for a minimum of 2 hours at 70°F (21°C) and 50% RH. For temperatures between 45°F and 69°F (7°C to 21°C) allow a minimum 24 hour cure period.

Flood Testing – Allow membrane to cure fully before flood testing, typically a minimum 2 hours at 70°F (21°C) and 50% RH. Cold conditions will require a longer curing time. For temperatures between 50°F and 69°F (10°C to 21°C) allow a minimum 24 hour cure period prior to flood testing. Please refer to LATICRETE TDS 169 “Flood Testing Procedures”, available at www.laticrete.com for flood testing requirements and procedures.

Use the following LATICRETE® System Materials:
LATICRETE® Hydro Ban™

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

D. Thin-Bed Method: Install epoxy adhesive in compliance with current revisions of ANSI A108.02 (3.14) and ANSI A108.6. Use the appropriate trowel notch size to ensure proper bedding of the tile or stone selected. Work the epoxy adhesive into good contact with the substrate and comb with notched side of trowel. Spread only as much epoxy adhesive as can be covered while the adhesive surface is still wet and tacky. When installing large format (>8" x 8"/200 mm x 200 mm) tile/stone, rib/button/lug back tiles, pavers or sheet mounted ceramics/mosaics, spread epoxy adhesive onto the back of (i.e. ‘back-butter’) each piece/sheet in addition to trowelling epoxy adhesive over the substrate. Beat each piece/sheet into the epoxy adhesive with a beating block or rubber mallet to insure full bedding and flatness. Allow installation to set until firm. Clean excess epoxy adhesive from tile or stone face and joints between pieces.

Use the following LATICRETE System Materials:
LATAPOXY® 300 Adhesive

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

E. Grouting or Pointing:

NOTE TO SPECIFIER: The chemical resistance of grouts and pointing mortars for ceramic tile, mosaics, pavers, brick and stone will typically depend on:

1. Reagent composition and/or concentration;
2. Temperature;
3. Duration of exposure.

Review test results conducted in conformance with current revision of ASTM C267 “Standard Test Methods for Chemical Resistance of Mortars, Grouts and Monolithic Surfaces and Polymer Concretes,” and manufacturer’s performance data and recommendations, in the context of expected chemical exposures.

Follow manufacturer’s recommendations for minimum cure time prior to grouting. Store liquid components of epoxy grout for 24 hours at 70–80°F (21–27°C) prior to use to facilitate mixing and application. Substrate temperature must be 45–90°F (7–32°C). Verify joints are free of dirt, debris or grout spacers. Sponge or wipe dust/dirt off tile faces and remove water standing in joints. Apply grout release to face of absorptive, abrasive, non-slip or rough textured ceramic tile, pavers, bricks, stone or trim units that are not hot paraffin coated to facilitate cleaning. Pour LATAPOXY® 2000 Industrial Grout Part A and Part B into a clean mixing pail. Mix by hand or with a slow speed (<300 rpm) mixer until liquids are well blended. For vertical installations only, add LATAPOXY Part D Non-Sag Additive. While mixing, then add LATAPOXY Part C Filler Powder and blend until uniform. Immediately pour all of the LATAPOXY 2000 Industrial Grout just mixed out of the pail onto the surface to be grouted.

NOTE: leaving epoxy grout in mixing pail will diminish working time.

Spread using a sharp edged, hard rubber float and work grout into joints. Using strokes diagonal (at 45° angle) to the grout lines, pack joints full and free of voids/pits. Hold float face at a 90° angle to grouted surface and use float edge to “squeegee” off excess grout, stroking

diagonally to reduce pulling grout out of filled joints. Initial cleaning can begin 5–30 minutes after grouting depending on temperature. Spray or fog grouted surfaces with clean water, applying ~8 fl oz/ft² (0.3 l/m²). Using a circular motion, lightly scrub grouted surfaces with nylon pad to dissolve haze/film. Drag a clean towel diagonally over the scrubbed surfaces to remove froth. Rinse towel frequently and change rinse water at least every 200 ft² (19 m²). Repeat this cleaning sequence again. Wait ~30–60 minutes and use a ‘hydra’ sponge and soapy water to ‘slick’/smoothen joint surface. Inspect joint for pinholes/voids and repair them with freshly mixed LATAPOXY 2000 Industrial Grout. After ~12 hours, check for remaining haze and remove it by scrubbing with warm soapy water. Do not use acid cleaners on epoxy grout less than 7 days old.

NOTE TO SPECIFIER: Specify color for each type/color of ceramic tile, mosaic, paver, brick, stone or trim unit.

Use the following LATICRETE System Materials:
LATAPOXY 2000 Industrial Grout

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

F. Expansion and Control Joints:

NOTE TO SPECIFIER: The chemical resistance of joint sealants for ceramic tile, mosaics, pavers, brick and stone will typically depend on:

1. Reagent composition and/or concentration;
2. Temperature;
3. Duration of exposure.

Review manufacturer’s performance data and recommendations, in the context of expected chemical exposures.

Provide control or expansion joints as located in contract drawings and in full conformity, especially in width and depth, with architectural details.

1. Substrate joints must carry through, full width, to surface of tile, brick or stone.
2. Install expansion joints in tile, brick or stone work over construction/cold joints or control joints in substrates.

3. Install expansion joints where tile, brick or stone abut restraining surfaces (such as perimeter walls, curbs, columns), changes in plane and corners.
4. Joint width and spacing depends on application – follow TCNA “Handbook for Ceramic Tile Installation” Detail “EJ-171 Expansion Joints” or consult sealant manufacturer for recommendation based on project parameters.
5. Joint width: $\geq 1/8"$ (3 mm) and $\leq 1"$ (25 mm).
6. Joint width: depth ~2:1 but joint depth must be $\geq 1/8"$ (3 mm) and $\leq 1/2"$ (12 mm).
7. Layout (field defined by joints): 1:1 length: width is optimum but must be $\leq 2:1$. Remove all contaminants and foreign material from joint spaces/surfaces, such as dirt, dust, oil, water, frost, setting/grouting materials, sealers and old sealant/backer. Use LATICRETE® Latasil™ 9118 Primer for underwater and permanent wet area applications, or for porous stone (e.g. limestone, sandstone etc...) installations. Install appropriate backing material (e.g. closed cell backer rod) based on expansion joint design and as specified in § 07920. Apply masking tape to face of tile, brick or stone veneer. Use caulking gun, or other applicator, to completely fill joints with sealant. Within 5–10 minutes of filling joint, ‘tool’ sealant surface to a smooth finish. Remove masking tape immediately after tooling joint. Wipe smears or excess sealant off the face of non-glazed tile, brick, stone or other absorptive surfaces immediately.

Use the following LATICRETE System Materials:
LATICRETE Latasil

LATICRETE Latasil 9118 Primer

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

G. Adjusting: Correction of defective work for a period of one (1) year following substantial completion, return to job and correct all defective work. Defective work includes, without limitation, tiles broken in normal abuse due to deficiencies in setting bed, loose tiles or grout, and all other defects which may develop as a result of poor workmanship.

3.5 Cleaning

Clean excess mortar/epoxy from veneer surfaces with water before they harden and as work progresses. Do not contaminate open grout/caulk joints while cleaning. Sponge and wash veneers diagonally across joints. Do not use acids for cleaning. Polish with clean dry cloth. Remove surplus materials and leave premises broom clean.

3.6 Protection

- A. Protect finished installation under provisions of §01500 and §01535. Close areas to other trades and traffic until tile being installed has set firmly. Keep traffic off horizontal portland cement thick bed mortar installations for at least 72 hours at 70°F (21°C).
- B. Keep floors installed with epoxy adhesive closed to traffic for 24 hrs. at 70°F (21°C), and to heavy traffic for 48 hours at 70°F (21°C) unless instructed differently by manufacturer. Use kneeling boards, or equivalent, to walk/work on newly tiled floors. Cure tile work in swimming pools, fountains and other continuous immersion applications for 10 days for epoxy based grout and 14 days for latex portland cement based grout at 70°F (21°C) before flood testing or filling installation with water. Extend period of protection of tile work at lower temperatures, below 60°F (15°C), and at high relative humidity (>70% RH) due to retarded set times of mortar/adhesives. Replace or restore work of other trades damaged or soiled by work under this section.

Part 4 – Health and Safety

The use of personal protection such as rubber gloves, suitable dust masks, safety glasses and industrial clothing is highly recommended. Discarded packaging, product wash and waste water should be disposed of as per local, state or federal regulations.

PART 3 – EXECUTION

3.1 Substrate Examination

A. Verify that surfaces to be covered with ceramic tile, mosaics, pavers, brick, stone, trim or waterproofing are:

1. Sound, rigid and conform to good design/ engineering practices;
2. Systems, including the framing system and panels, over which tile or stone will be installed shall be in conformance with the International Residential Code (IRC) for residential applications, the International Building Code (IBC) for commercial applications, or applicable building codes. The project design should include the intended use and necessary allowances for the expected live load, concentrated load, impact load, and dead load including the weight of the finish and installation materials;
3. The actual weight of materials and construction assemblies, including concentrated dead loads of fixed service and other equipment, shall be utilized as prescribed by state and local building codes to estimate dead loads for the purpose of structural design;
4. Thin-set tile installations have a specified subsurface tolerance, for instance 1/4" in 10' (6 mm in 3 m) and 1/16" in 1' (1.5 mm in 300 mm), to conform with the ANSI specifications. Because thin-set is not intended to be used in truing or leveling the work of others, the subsurface typically should not vary by more than 1/16" over 1' (1.5 mm over 300 mm), nor more than 1/32" (0.8 mm) between adjoining edges where applicable (e.g. between sheets of exterior glue plywood or between adjacent concrete masonry units). Should the architect/designer require a more stringent tolerance (e.g. 1/8" in 10' [3 mm in 3 m]), the subsurface specification must reflect that tolerance, or the tile specification must include a specific and

separate requirement to bring the 1/4" (6 mm) subsurface tolerance into compliance with the 1/8" (6 mm) tolerance desired;

5. Lateral and other bracing must be constructed as prescribed by code and/or engineered wood manufacturers' literature to achieve specified design deflection values;
6. Clean and free from dust, dirt, oil, grease, sealers, curing compounds, laitance, efflorescence, form oil, loose plaster, paint, and scale;
7. Level and true to within 1/4" in 10' (6 mm in 3 m), and no more than 1/16" in 1' (1.5 mm in 0.3 m) variation from substrate high points, for applications by the thin bed method over substrate, thin waterproofing membrane or thin crack suppression membrane;
8. Not leveled with gypsum or asphalt based compounds;

Dry as per American Society for Testing and Materials (ASTM) D4263 "Standard Test for Determining Moisture in Concrete by the Plastic Sheet Method."

B. Plywood and other engineered wood products are not a suitable subsurface for the installation of ceramic tile brick or stone in exterior installations, or interior locations where exposed to excessive moisture or humidity, such as steam rooms, showers, pools, fountains, or damp basements.

C. Fire-retardant or preservative treated plywood, Masonite®, hardwood floors, strip wood floors, "yellow pitch pine" plywood, composite panels, luan, wafer board, particleboard, oriented strand board/OSB, or similar engineered or reconstructed wood panels are not suitable substrates for the adhesive installation of ceramic tile, stone or brick. However, some of these materials, such as oriented strand board/OSB or fire retardant plywood, may

be used as a structural sub-floor when 1. The material meets sub-floor deflection criteria listed in § 3.2.A.2.a and § 3.2.A.2.b; 2. Are identified with an APA trademark as a performance rated structural-use panel, and 3. An underlayment suitable for adhesion of ceramic tile, stone or brick is provided over the sub-floor.

- D. Engineered wood structural framing may be subject to increased in-service deflection due to moisture exposure and long span conditions.
- E. Advise General Contractor and Architect of any surface or substrate conditions requiring correction before tile work commences. Beginning of work constitutes acceptance of substrate or surface conditions.

3.2 Surface Preparation

A. Wood Substrates

1. Structural Framing

Joist spacing in conventional sawn lumber and engineered wood structural framing systems shall not exceed 16" (0.4 m) o.c.

2. Sub-Floor

a. The deflection of the structural sub-floor panels spanning structural framing components (beams and joists) shall not exceed:

- i. $1/360$ of the span where a ceramic tile or brick finish is adhered to the underlayment and structural sub-floor;
- ii. $1/480$ of the span for spans up to 14' (4.3 m), and no greater than $7/32$ " (6 mm) for spans over 14' (4.3 m), where a stone finish is adhered to an underlayment and a structural sub-floor.

b. Thickness of plywood, oriented strand board/OSB or composite/COM-PLY sub-floor panels: $5/8$ " (16 mm) or $19/32$ " (15 mm) thick for 16" (0.4 m) o.c. joist spacing;

c. For all other structural sub-floor materials, such as wood planks, minimum thickness

must be as prescribed by building code and deflection must be verified by a qualified professional to comply with requirements in § 3.2.A.2.a;

d. Sub-floor panels of other thickness with APA-Engineered Wood Association trademark grade span ratings that are commensurate with joist spacing are acceptable.

e. All sub-floor panels must be APA Exterior or Interior Exposure 1 exposure durability with any APA grade designation. APA Sturd-I-Floor performance rated panels are not acceptable for adhesive installation of ceramic tile, stone or brick without an underlayment due to moisture expansion of tongue and groove panel edges or by moisture sensitivity of oriented strand board/ OSB type APA Sturd-I-Floor.

f. Installation:

- i. Face grain across supports;
- ii. Panel continuous over two or more spans;
- iii. End joints must occur over framing members;
- iv. Must be tongue and groove, or if not available, all edges must be blocked;
- v. Fasten 6" (152 mm) o.c. along all edges and 8" (203 mm) o.c. in panel field with 8d ring-shank, coated or hot-dip galvanized nails for $19/32$ " (15 mm) and $3/4$ " (19 mm) thick panels or screw them in place;
- vi. Glue sub-floor panels to joists with construction adhesive to increase stiffness.

3. Underlayment

a. The underlayment may not be used in whole or part as a structural panel to achieve minimum deflection requirements of the sub-floor but may be used to provide increased stiffness to meet deflection requirements specified in § 3.1.A.2;

- b. Use APA Exterior structural-use sub-floor panel grade designations A-A, A-B, A-C, B-B, B-C, C-C and C-C Plugged and all Structural I panel grades;

NOTE TO SPECIFIER: Interior plywood with exterior glue exposure durability is not acceptable.

- c. The minimum recommended thickness for plywood underlayment panels is 5/8" (16 mm) or 19/32" (15 mm).
- d. Installation:
 - i. Protect underlayment from damage or contamination by other trades;
 - ii. Stagger end joints of underlayment panels;
 - iii. Offset joints between underlayment panels from joints between sub-floor panels;
 - iv. Allow minimum 1/8" (3 mm) between panels and 1/4" (6 mm) between panel and wall for expansion;
 - v. Fasten 6" (150 mm) o.c. along all edges and 8" (203 mm) o.c. in both directions in panel field with 8d ring-shank, coated or hot-dip galvanized nails for 5/8" (16 mm) or screw them in place;
 - vi. Glue underlayment to sub-floor with construction adhesive to increase stiffness.

B. Other Substrates

(List as required. Insert any Special Means of Preparation in addition to the surface preparation requirements listed in § 3.1)

NOTE TO SPECIFIER: Edit substrate and preparation section based on project specific surfaces and conditions.

3.3 Installation – Accessories

A. Waterproofing:

NOTE TO SPECIFIER: Adhesives/mastics, mortars and grouts for ceramic tile, mosaics, pavers, brick and stone are not replacements for waterproofing membranes and will not prevent water penetration into occupied or storage spaces below.

Install the waterproofing membrane in compliance with current revisions of ANSI A108.1 (2.7 Waterproofing) and ANSI A108.13.

Review the installation and plan the application sequence. Pre-cut LATICRETE® Waterproofing/Anti-Fracture Fabric (if required), allowing 2" (50 mm) for overlap at ends and sides to fit the areas as required. Roll up the pieces for easy handling and placement. Shake or stir LATICRETE Hydro Ban™ before using.

Pre-Treat Cracks and Joints – Fill all substrate cracks, cold joints and control joints to a smooth finish using a LATICRETE latex-fortified thin-set. Alternatively, a liberal coat* of LATICRETE Hydro Ban applied with a paint brush or trowel may be used to fill in non-structural joints and cracks. Apply a liberal coat* of LATICRETE Hydro Ban approximately 8" (200 mm) wide over substrate cracks, cold joints, and control joints using a paint brush or heavy napped paint roller.

Pre-Treat Coves and Floor/Wall Intersections – Fill all substrate coves and floor/wall transitions to a smooth finish and changes in plane using a LATICRETE latex-fortified thin-set. Alternatively, a liberal coat* of LATICRETE Hydro Ban applied with a paint brush or trowel may be used to fill in cove joints and floor/wall transitions <1/8" (3 mm) in width. Apply a liberal coat* of LATICRETE Hydro Ban approximately 8" (200 mm) wide over substrate cracks, cold joints, and control joints using a paint brush or heavy napped paint roller.

Pre-Treat Drains – Drains must be of the clamping ring type, with weepers as per ASME A112.6.3. Apply a liberal coat* of LATICRETE Hydro Ban around and over the bottom half of drain clamping ring. Cover with a second liberal coat of LATICRETE Hydro Ban. When the LATICRETE Hydro Ban dries, apply a bead of LATICRETE Latasil™ where the LATICRETE Hydro Ban meets the drain throat. Install the top half of drain clamping ring.

Pre-Treat Penetrations – Allow for a minimum 1/8" (3 mm) space between drains, pipes, lights, or other penetrations and surrounding ceramic tile, stone or brick. Pack any gaps around pipes, lights or other penetrations with a LATICRETE latex-fortified thin-set. Apply a

liberal coat* of LATICRETE® Hydro Ban™ around penetration opening. Cover the first coat with a second liberal coat* of LATICRETE Hydro Ban. Bring LATICRETE Hydro Ban up to level of tile or stone. When LATICRETE Hydro Ban has dried to the touch seal with LATICRETE Latasil.

Main Application – Allow any pre-treated areas to dry to the touch. Apply a liberal coat* of LATICRETE Hydro Ban with a paint brush or heavy napped roller over substrate including pre-treated areas and allow to dry to the touch. Install another liberal coat* of LATICRETE Hydro Ban over the first coat. Let the top coat of LATICRETE Hydro Ban dry to the touch approximately 1 – 2 hours at 70°F (21°C) and 50% RH. When the top coat has dried to the touch inspect the surface for pinholes, voids, thin spots or other defects. LATICRETE Hydro Ban will dry to an olive green color when fully cured. Use additional LATICRETE Hydro Ban to seal any defects.

Movement Joints – Apply a liberal coat* of LATICRETE Hydro Ban, approximately 8" (200 mm) wide over the areas. Then embed and loop the 6" (150 mm) wide LATICRETE Waterproofing/Anti-Fracture Fabric and allow the LATICRETE Hydro Ban liquid to bleed through. Immediately apply a second coat of LATICRETE Hydro Ban.

* Dry coat thickness is 20 – 30 mil (0.02 – 0.03" or 0.5 – 0.8 mm); consumption per coat is approximately 0.01 gal/ft² (approx. 0.4 l/m²); coverage is approximately 100 ft²/gal (approx. 2.5 m²/l). LATICRETE® Waterproofing/Anti-Fracture Fabric can be used to pre-treat cracks, joints, curves, corners, drains, and penetrations with LATICRETE Hydro Ban™.

Protection – Provide protection for newly installed membrane, even if covered with a thin-bed ceramic tile, stone or brick installation against exposure to rain or other water for a minimum of 2 hours at 70°F (21°C) and 50% RH. For temperatures between 45°F and 69°F (7°C to 21°C) allow a minimum 24 hour cure period.

Flood Testing – Allow membrane to cure fully before flood testing, typically a minimum 2 hours at 70°F (21°C) and 50% RH. Cold conditions will require a longer curing time. For temperatures between 50°F and 69°F (10°C to 21°C) allow a minimum 24 hour cure period prior to flood testing. Please refer to LATICRETE TDS 169 "Flood Testing Procedures", available at www.laticrete.com for flood testing requirements and procedures.

Use the following LATICRETE® System Materials:
LATICRETE Hydro Ban

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

B. Crack Suppression:

NOTE TO SPECIFIER: Ceramic tile, mosaics, pavers, brick and stone installed by the thin bed method can be damaged by shrinkage related substrate cracking. Specify an Anti-Fracture Membrane or Crack Suppression Membrane to reduce crack propagation into veneers or hard finishes. Do not use Anti-Fracture/Crack Suppression Membranes if substrate cracking:

1. Is due to structural movement;
2. Involves vertical and/or differential movement;
3. Involves horizontal movement >1/8" (3 mm).

Install the anti-fracture membrane in compliance with current revisions of ANSI A108.17 (1.0 – 3.0). Review the installation and plan the application sequence. Pre-cut LATICRETE Waterproofing/Anti-Fracture Fabric, allowing 2" (50 mm) for overlap at ends and sides. Roll up the pieces for easy handling and placement. Shake or stir LATICRETE Blue 92 Anti-Fracture Membrane Liquid before using. Pre-treat all substrate cracks, cold joints, control joints, coves, corners, and penetrations according to manufacturer's specific recommendations. Allow pre-treated areas to dry to the touch. Apply a liberal coat of LATICRETE Blue 92 Anti-Fracture Membrane Liquid with brush or roller over substrate including pre-treated areas. Before the coat dries, unroll LATICRETE Waterproofing/Anti-Fracture Fabric, smooth out any wrinkles and press with brush or roller until LATICRETE Blue 92 Anti-Fracture

Membrane Liquid “bleeds” through to surface. Apply another liberal coat of LATICRETE Blue 92 Anti-Fracture Membrane Liquid and allow it to dry to the touch, ~1–3 hours at 70°F (21°C) and 50% RH. For installation of ceramic tile, mosaic, paver, brick or stone, follow Thin Bed (Epoxy Adhesive) Method (§ 3.4B), which may begin as soon as last coat of LATICRETE Blue 92 Anti-Fracture Membrane Liquid has dried to the touch. Allow LATICRETE Blue 92 Anti-Fracture Membrane to cure for at least 3 days at 70°F (21°C) and 50% RH before exposing installation to rain or other water, even if covered by ceramic tile, mosaics, pavers, brick or stone.

Use the following LATICRETE System Materials:
LATICRETE Blue 92 Anti-Fracture Membrane

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

3.4 Installation – Tile, Brick and Stone

A. General: Install in accordance with current versions of American National Standards Institute, Inc. (ANSI) “A108 American National Standard Specifications for Installation of Ceramic Tile” and TCNA “Handbook for Ceramic Tile Installation.” Cut and fit ceramic tile, brick or stone neatly around corners, fittings, and obstructions. Perimeter pieces to be minimum half tile, brick or stone. Chipped, cracked, split pieces and edges are not acceptable. Make joints even, straight, plumb and of uniform width to tolerance +/- 1/16" over 8' (1.5 mm in 2.4 m). Install divider strips at junction of flooring and dissimilar materials.

B. Thin Bed (Epoxy Adhesive) Method: Install epoxy adhesive in compliance with current revisions of ANSI A108.02 (3.14) and ANSI A108.6. Use the appropriate trowel notch size to ensure proper bedding of the tile or stone selected. Work the epoxy adhesive into good contact with the substrate and comb with notched side of trowel. Spread only as much epoxy adhesive as can be

covered while the adhesive surface is still wet and tacky. When installing large format (>8" x 8"/200 mm x 200 mm) tile/stone, rib/button/lug back tiles, pavers or sheet mounted ceramics/mosaics, spread epoxy adhesive onto the back of (i.e. ‘back-butter’) each piece/sheet in addition to trowelling epoxy adhesive over the substrate. Beat each piece/sheet into the epoxy adhesive with a beating block or rubber mallet to insure full bedding and flatness. Allow installation to set until firm. Clean excess epoxy adhesive from tile or stone face and joints between pieces.

Use the following LATICRETE System Materials:
LATAPOXY® 300 Adhesive

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

C. Grouting or Pointing Joints:

NOTE TO SPECIFIER: The chemical resistance of grouts and pointing mortars for ceramic tile, mosaics, pavers, brick and stone will typically depend on:

1. Reagent composition and/or concentration;
2. Temperature;
3. Duration of exposure.

Review test results conducted in conformance with current revision of ASTM C267 “Standard Test Methods for Chemical Resistance of Mortars, Grouts and Monolithic Surfaces and Polymer Concretes,” and manufacturer’s performance data and recommendations, in the context of expected chemical exposures.

Follow manufacturer’s recommendations for minimum cure time prior to grouting. Store liquid components of epoxy grout for 24 hours at 70–80°F (21–27°C) prior to use to facilitate mixing and application. Substrate temperature must be 45–90°F (7–32°C). Verify joints are free of dirt, debris or grout spacers. Sponge or wipe dust/dirt off tile faces and remove water standing in joints. Apply grout release to face of absorptive, abrasive, non-slip or rough textured ceramic tile, pavers, bricks, stone or trim units that are not hot paraffin coated to facilitate cleaning. Pour LATAPOXY® 2000

Industrial Grout Part A and Part B into a clean mixing pail. Mix by hand or with a slow speed (<300 rpm) mixer until liquids are well blended. For vertical installations only, add LATAPOXY® Part D Non-Sag Additive. While mixing, then add LATAPOXY Part C Filler Powder and blend until uniform. Immediately pour all of the LATAPOXY 2000 Industrial Grout just mixed out of the pail onto the surface to be grouted.

NOTE: leaving epoxy grout in mixing pail will diminish working time.

Spread using a sharp edged, hard rubber float and work grout into joints. Using strokes diagonal (at 45° angle) to the grout lines, pack joints full and free of voids/pits. Hold float face at a 90° angle to grouted surface and use float edge to "squeegee" off excess grout, stroking diagonally to reduce pulling grout out of filled joints. Initial cleaning can begin 5–30 minutes after grouting depending on temperature. Spray or fog grouted surfaces with clean water, applying ~8 fl oz/ft² (0.3 l/m²). Using a circular motion, lightly scrub grouted surfaces with nylon pad to dissolve haze/film. Drag a clean towel diagonally over the scrubbed surfaces to remove froth. Rinse towel frequently and change rinse water at least every 200 ft² (19 m²). Repeat this cleaning sequence again. Wait ~30–60 minutes and use a 'hydra' sponge and soapy water to 'slick'/smoothen joint surface. Inspect joint for pinholes/voids and repair them with freshly mixed LATAPOXY 2000 Industrial Grout. After ~12 hours, check for remaining haze and remove it by scrubbing with warm soapy water. Do not use acid cleaners on epoxy grout less than 7 days old.

NOTE TO SPECIFIER: Specify color for each type/color of ceramic tile, mosaic, paver, brick, stone or trim unit.

Use the following LATICRETE® System Materials:
LATAPOXY 2000 Industrial Grout

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

D. Expansion and Control Joints: Provide control or expansion joints as located in contract drawings and in full conformity, especially in width and depth, with architectural details.

1. Substrate joints must carry through, full width, to surface of tile, brick or stone.
2. Install expansion joints in tile, brick or stone work over construction/cold joints or control joints in substrates.
3. Install expansion joints where tile, brick or stone abut restraining surfaces (such as perimeter walls, curbs, columns), changes in plane and corners.
4. Joint width and spacing depends on application – follow TCNA "Handbook for Ceramic Tile Installation" Detail "EJ-171 Expansion Joints" or consult sealant manufacturer for recommendation based on project parameters.
5. Joint width: $\geq 1/8"$ (3 mm) and $\leq 1"$ (25 mm).
6. Joint width: depth ~2:1 but joint depth must be $\geq 1/8"$ (3 mm) and $\leq 1/2"$ (12 mm).
7. Layout (field defined by joints): 1:1 length: width is optimum but must be $\leq 2:1$.

Remove all contaminants and foreign material from joint spaces/surfaces, such as dirt, dust, oil, water, frost, setting/grouting materials, sealers and old sealant/backer. Use LATICRETE Latasil™ 9118 Primer for underwater and permanent wet area applications, or for porous stone (e.g. limestone, sandstone etc...) installations. Install appropriate backing material (e.g. closed cell backer rod) based on expansion joint design and as specified in § 07920. Apply masking tape to face of tile, brick or stone veneer. Use caulking gun, or other applicator, to completely fill joints with sealant. Within 5–10 minutes of filling joint, 'tool' sealant surface to a smooth finish. Remove masking tape immediately after tooling joint. Wipe smears or excess sealant off the face of non-glazed tile, brick, stone or other absorptive surfaces immediately.

Use the following LATICRETE System Materials:

LATICRETE Latasil™

LATICRETE Latasil 9118 Primer

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

E. Adjusting: Correction of defective work for a period of one (1) year following substantial completion, return to job and correct all defective work. Defective work includes, without limitation, tiles broken in normal abuse due to deficiencies in setting bed, loose tiles or grout, and all other defects which may develop as a result of poor workmanship.

3.5 Cleaning

Clean excess mortar/epoxy from veneer surfaces with water before they harden and as work progresses. Do not contaminate open grout/caulk joints while cleaning. Sponge and wash veneers diagonally across joints. Do not use acids for cleaning. Polish with clean dry cloth. Remove surplus materials and leave premises broom clean.

3.6 Protection

A. Protect finished installation under provisions of §01500 and §01535. Close areas to other trades and traffic until tile being installed has set firmly. Keep traffic off horizontal portland cement thick bed mortar installations for at

least 72 hours at 70°F (21°C).

B. Keep floors installed with epoxy adhesive closed to traffic for 24 hrs. at 70°F (°C), and to heavy traffic for 48 hours at 70°F (21°C) unless instructed differently by manufacturer. Use kneeling boards, or equivalent, to walk/work on newly tiled floors. Cure tile work in swimming pools, fountains and other continuous immersion applications for 10 days for epoxy based grout and 14 days for latex portland cement based grout at 70°F (21°C) before flood testing or filling installation with water. Extend period of protection of tile work at lower temperatures, below 60°F (15°C), and at high relative humidity (>70% RH) due to retarded set times of mortar/adhesives. Replace or restore work of other trades damaged or soiled by work under this section.

Part 4 – Health and Safety

The use of personal protection such as rubber gloves, suitable dust masks, safety glasses and industrial clothing is highly recommended. Discarded packaging, product wash and waste water should be disposed of as per local, state or federal regulations.



PART 3 – EXECUTION

3.1 Substrate Examination

A. Verify that surfaces to be covered with ceramic tile, mosaics, pavers, brick, stone, trim or waterproofing are:

1. Sound, rigid and conform to good design/engineering practices;
2. Systems, including the framing system and panels, over which tile or stone will be installed shall be in conformance with the International Residential Code (IRC) for residential applications, the International Building Code (IBC) for commercial applications, or applicable building codes. The project design should include the intended use and necessary allowances for the expected live load, concentrated load, impact load, and dead load including the weight of the finish and installation materials;
3. The actual weight of materials and construction assemblies, including concentrated dead loads of fixed service and other equipment, shall be utilized as prescribed by state and local building codes to estimate dead loads for the purpose of structural design;
4. Thin-set tile installations have a specified subsurface tolerance, for instance $1/4"$ in $10'$ (6 mm in 3 m) and $1/16"$ in $1'$ (1.5 mm in 300 mm), to conform with the ANSI specifications. Because thin-set is not intended to be used in truing or leveling the work of others, the subsurface typically should not vary by more than $1/16"$ over $1'$ (1.5 mm over 300 mm), nor more than $1/32"$ (0.8 mm) between adjoining edges where applicable (e.g. between sheets of exterior glue plywood or between adjacent concrete masonry units). Should the architect/designer require a more stringent tolerance (e.g. $1/8"$ in $10'$ [3 mm in 3 m]), the subsurface specification must reflect that tolerance, or the tile specification must include a specific and

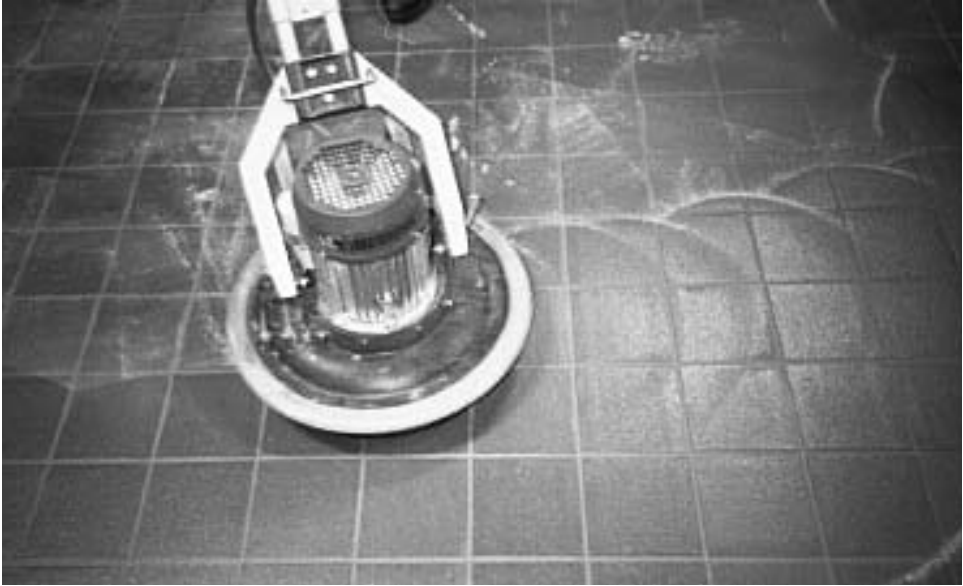
separate requirement to bring the $1/4"$ (6 mm) subsurface tolerance into compliance with the $1/8"$ (6 mm) tolerance desired;

5. Lateral and other bracing must be constructed as prescribed by code and/or engineered wood manufacturers' literature to achieve specified design deflection values;
 6. Clean and free of dust, dirt, oil, grease, sealers, curing compounds, laitance, efflorescence, form oil, loose plaster, paint, and scale;
 7. Level and true to within $1/4"$ in $10'$ (6 mm in 3 m), and no more than $1/16"$ in $1'$ (1.5 mm in 0.3 m) variation from substrate high points, for applications by the thin bed method over substrate, thin waterproofing membrane or thin crack suppression membrane;
 8. Not leveled with gypsum or asphalt based compounds;
 9. Dry as per American Society for Testing and Materials (ASTM) D4263 "Standard Test for Determining Moisture in Concrete by the Plastic Sheet Method."
- B. Advise General Contractor and Architect of any surface or substrate conditions requiring correction before tile work commences. Beginning of work constitutes acceptance of substrate or surface conditions.

3.2 Surface Preparation

A. Wood Substrates

1. Joist spacing in conventional sawn lumber and engineered wood structural framing systems shall not exceed $16"$ (0.4 m) o.c. However, the actual requirements for the spacing of joists are governed by the thickness and type of the sub-floor panel relative to the joist or beam spacing (see § 3.2.A.2).
2. Thickness of plywood, oriented strand board/OSB or composite/COM-PLY sub-floor panels: $3/4"$ (19 mm) or $23/32"$ (18 mm) thick for $16"$ (0.4 m) o.c. joist spacing.



3. For all other structural sub-floor materials, such as wood planks, minimum thickness must be as prescribed by building code and deflection must be verified by a qualified professional to comply with requirements in § 3.1.A.2.;
4. Sub-floor panels of other thickness with APA-Engineered Wood Association trademark grade span ratings that are commensurate with joist spacing are acceptable.

B. Other Substrates

(List as required. Insert any Special Means of Preparation in addition to the surface preparation requirements listed in § 3.1)

NOTE TO SPECIFIER: Edit substrate and preparation section based on project specific surfaces and conditions.

3.3 Installation – Accessories

A. Waterproofing:

NOTE TO SPECIFIER: Adhesives/mastics, mortars and grouts for ceramic tile, mosaics, pavers, brick and stone are not replacements for waterproofing membranes and will not prevent water penetration into occupied or storage spaces below.

Install the waterproofing membrane in compliance with current revisions of ANSI A108.1 (2.7 Waterproofing) and ANSI A108.13. Review the installation and plan the application sequence. Pre-cut LATICRETE® Waterproofing/Anti-Fracture Fabric (if required), allowing 2" (50 mm) for overlap at ends and sides to fit the areas as required. Roll up the pieces for easy handling and placement. Shake or stir LATICRETE Hydro Ban™ before using.

Pre-Treat Cracks and Joints – Fill all substrate cracks, cold joints and control joints to a smooth finish using a LATICRETE latex-fortified thin-set. Alternatively, a liberal coat* of LATICRETE Hydro Ban applied with a paint brush or trowel may be used to fill in non-structural joints and cracks. Apply a liberal coat* of LATICRETE Hydro Ban approximately 8" (200 mm) wide over substrate cracks, cold joints, and control joints using a paint brush or heavy napped paint roller.

Pre-Treat Coves and Floor/Wall Intersections –

Fill all substrate coves and floor/wall transitions to a smooth finish and changes in plane using a LATICRETE® latex-fortified thin-set. Alternatively, a liberal coat* of LATICRETE Hydro Ban™ applied with a paint brush or trowel may be used to fill in cove joints and floor/wall transitions <1/8" (3 mm) in width. Apply a liberal coat* of LATICRETE® Hydro Ban™ approximately 8" (200 mm) wide over substrate cracks, cold joints, and control joints using a paint brush or heavy napped paint roller.

Pre-Treat Drains – Drains must be of the clamping ring type, with weepers as per ASME A112.6.3. Apply a liberal coat* of LATICRETE Hydro Ban around and over the bottom half of drain clamping ring. Cover with a second liberal coat of LATICRETE Hydro Ban. When the LATICRETE Hydro Ban dries, apply a bead of LATICRETE Latasil™ where the LATICRETE Hydro Ban meets the drain throat. Install the top half of drain clamping ring.

Pre-Treat Penetrations – Allow for a minimum 1/8" (3 mm) space between drains, pipes, lights, or other penetrations and surrounding ceramic tile, stone or brick. Pack any gaps around pipes, lights or other penetrations with a LATICRETE latex-fortified thin-set. Apply a liberal coat* of LATICRETE Hydro Ban around penetration opening. Cover the first coat with a second liberal coat* of LATICRETE Hydro Ban. Bring LATICRETE Hydro Ban up to level of tile or stone. When LATICRETE Hydro Ban has dried to the touch seal with LATICRETE Latasil.

Main Application – Allow any pre-treated areas to dry to the touch. Apply a liberal coat* of LATICRETE Hydro Ban with a paint brush or heavy napped roller over substrate including pre-treated areas and allow to dry to the touch. Install another liberal coat* of LATICRETE Hydro Ban over the first coat. Let the top coat of LATICRETE Hydro Ban dry to the touch approximately 1 – 2 hours at 70°F (21°C) and 50% RH. When the top coat has dried to the touch inspect the surface for pinholes, voids, thin spots or other defects. LATICRETE Hydro

Ban will dry to an olive green color when fully cured. Use additional LATICRETE Hydro Ban to seal any defects.

Movement Joints – Apply a liberal coat* of LATICRETE Hydro Ban, approximately 8" (200mm) wide over the areas. Then embed and loop the 6" (150 mm) wide LATICRETE Waterproofing/Anti-Fracture Fabric and allow the LATICRETE Hydro Ban liquid to bleed through. Immediately apply a second coat of LATICRETE Hydro Ban.

* Dry coat thickness is 20 – 30 mil (0.02 – 0.03" or 0.5 – 0.8 mm); consumption per coat is approximately 0.01 gal/ft² (approx. 0.4 l/m²); coverage is approximately 100 ft²/gal (approx. 2.5 m²/9 pt). LATICRETE® Waterproofing/Anti-Fracture Fabric can be used to pre-treat cracks, joints, curves, corners, drains, and penetrations with LATICRETE Hydro Ban™.

Protection – Provide protection for newly installed membrane, even if covered with a thin-bed ceramic tile, stone or brick installation against exposure to rain or other water for a minimum of 2 hours at 70°F (21°C) and 50% RH. For temperatures between 45°F and 69°F (7°C to 21°C) allow a minimum 24 hour cure period.

Flood Testing – Allow membrane to cure fully before flood testing, typically a minimum 2 hours at 70°F (21°C) and 50% RH. Cold conditions will require a longer curing time. For temperatures between 50°F and 69°F (10°C to 21°C) allow a minimum 24 hour cure period prior to flood testing. Please refer to LATICRETE TDS 169 "Flood Testing Procedures", available at www.laticrete.com for flood testing requirements and procedures.

Use the following LATICRETE® System Materials:
LATICRETE Hydro Ban

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

3.4 Installation – Tile, Brick and Stone

A. General: Install in accordance with current versions of American National Standards Institute, Inc. (ANSI) “A108 American National Standard Specifications for Installation of Ceramic Tile” and TCNA “Handbook for Ceramic Tile Installation.” Cut and fit ceramic tile, brick or stone neatly around corners, fittings, and obstructions. Perimeter pieces to be minimum half tile, brick or stone. Chipped, cracked, split pieces and edges are not acceptable. Make joints even, straight, plumb and of uniform width to tolerance $\pm 1/16"$ over 8' (1.5 m m in 2.4 m). Install divider strips at junction of flooring and dissimilar materials.

B. Thick Bed (Lath Reinforced) Method: Install cleavage membrane complying with current revision of ANSI A108.02 (3.8 Membrane or cleavage membrane). Install metal lath complying with the current revision of ANSI A108.02 (3.6 Metal Lath) and ANSI A108.1A (1.2 and 5.2). Apply latex-portland cement mortar as scratch/leveling coat over wire lath, concrete or masonry in compliance with current revision of ANSI A108.1A (6.0). Float surface of scratch/leveling coat plumb, true and allow mortar to set until firm. For installation of tile, brick or stone, follow Thin Bed Method (§ 3.4C).

Use the following LATICRETE System Materials:
LATICRETE 3701 Fortified Mortar Bed

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

C. Thin Bed Method: Install latex portland cement mortar in compliance with current revisions of ANSI A108.02 (3.11), A108.1B and ANSI A108.5. Use the appropriate trowel notch size to ensure proper bedding of the tile, brick or stone selected. Work the latex portland cement mortar into good contact with the substrate and comb with notched side of trowel. Spread only as much latex portland cement mortar as can

be covered while the mortar surface is still wet and tacky. When installing large format ($>8" \times 8"/200 \text{ mm} \times 200 \text{ mm}$) tile/stone, rib/button/lug back tiles, pavers or sheet mounted ceramics/mosaics, spread latex portland cement mortar onto the back of (i.e. ‘back-butter’) each piece/sheet in addition to trowelling latex portland cement mortar over the substrate. Beat each piece/sheet into the latex portland cement mortar with a beating block or rubber mallet to insure full bedding and flatness. Allow installation to set until firm. Clean excess latex portland cement mortar from tile or stone face and joints between pieces.

Use the following LATICRETE System Materials:
LATICRETE 254 Platinum

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

D. Grouting or Pointing Joints:

NOTE TO SPECIFIER: The chemical resistance of grouts and pointing mortars for ceramic tile, mosaics, pavers, brick and stone will typically depend on:

1. Reagent composition and/or concentration;
2. Temperature;
3. Duration of exposure.

Review test results conducted in conformance with current revision of ASTM C267 “Standard Test Methods for Chemical Resistance of Mortars, Grouts and Monolithic Surfaces and Polymer Concretes,” and manufacturer’s performance data and recommendations, in the context of expected chemical exposures.

Follow manufacturer’s recommendations for minimum cure time prior to grouting. Store liquid components of epoxy grout for 24 hours at 70–80°F (21–27°C) prior to use to facilitate mixing and application. Substrate temperature must be 45–90°F (7–32°C). Verify joints are free of dirt, debris or grout spacers. Sponge or wipe dust/dirt off tile faces and remove water standing in joints. Apply grout release to face of absorptive, abrasive, non-slip or rough textured ceramic tile, pavers, bricks, stone

or trim units that are not hot paraffin coated to facilitate cleaning. Pour LATAPOXY® 2000 Industrial Grout Part A and Part B into a clean mixing pail. Mix by hand or with a slow speed (<300 rpm) mixer until liquids are well blended. For vertical installations only, add LATAPOXY Part D Non-Sag Additive. While mixing, then add LATAPOXY Part C Filler Powder and blend until uniform. Immediately pour all of the LATAPOXY 2000 Industrial Grout just mixed out of the pail onto the surface to be grouted.

NOTE: leaving epoxy grout in mixing pail will diminish working time.

Spread using a sharp edged, hard rubber float and work grout into joints. Using strokes diagonal (at 45° angle) to the grout lines, pack joints full and free of voids/pits. Hold float face at a 90° angle to grouted surface and use float edge to "squeegee" off excess grout, stroking diagonally to reduce pulling grout out of filled joints. Initial cleaning can begin 5–30 minutes after grouting depending on temperature. Spray or fog grouted surfaces with clean water, applying ~8 fl oz/ft² (0.3 l/m²). Using a circular motion, lightly scrub grouted surfaces with nylon pad to dissolve haze/film. Drag a clean towel diagonally over the scrubbed surfaces to remove froth. Rinse towel frequently and change rinse water at least every 200 ft² (19 m²). Repeat this cleaning sequence again. Wait ~30–60 minutes and use a 'hydra' sponge and soapy water to 'slick'/smoothen joint surface. Inspect joint for pinholes/voids and repair them with freshly mixed LATAPOXY® 2000 Industrial Grout. After ~12 hours, check for remaining haze and remove it by scrubbing with warm soapy water. Do not use acid cleaners on epoxy grout less than 7 days old.

NOTE TO SPECIFIER: Specify color for each type/color of ceramic tile, mosaic, paver, brick, stone or trim unit.

Use the following LATICRETE® System Materials:
LATAPOXY 2000 Industrial Grout

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

E. Expansion and Control Joints: Provide control or expansion joints as located in contract drawings and in full conformity, especially in width and depth, with architectural details.

1. Substrate joints must carry through, full width, to surface of tile, brick or stone.
2. Install expansion joints in tile, brick or stone work over construction/cold joints or control joints in substrates.
3. Install expansion joints where tile, brick or stone abut restraining surfaces (such as perimeter walls, curbs, columns), changes in plane and corners.
4. Joint width and spacing depends on application – follow TCNA "Handbook for Ceramic Tile Installation" Detail "EJ-171 Expansion Joints" or consult sealant manufacturer for recommendation based on project parameters.
5. Joint width: $\geq 1/8"$ (3 mm) and $\leq 1"$ (25 mm).
6. Joint width: depth ~2:1 but joint depth must be $\geq 1/8"$ (3 mm) and $\leq 1/2"$ (12 mm).
7. Layout (field defined by joints): 1:1 length: width is optimum but must be $\leq 2:1$.

Remove all contaminants and foreign material from joint spaces/surfaces, such as dirt, dust, oil, water, frost, setting/grouting materials, sealers and old sealant/backer. Use LATICRETE® Latasil™ 9118 Primer for underwater and permanent wet area applications, or for porous stone (e.g. limestone, sandstone etc...) installations. Install appropriate Backing Material (e.g. closed cell backer rod) based on expansion joint design and as specified in § 07920. Apply masking tape to face of tile, brick or stone veneer. Use caulking gun, or other applicator, to completely fill joints with sealant. Within 5–10 minutes of filling joint, 'tool' sealant surface to a smooth finish. Remove masking tape immediately after tooling joint. Wipe smears or excess sealant off the face of non-glazed tile, brick, stone or other absorptive surfaces immediately.

Use the following LATICRETE System Materials:

LATICRETE Latasil

LATICRETE Latasil 9118 Primer

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

F. Adjusting: Correction of defective work for a period of one (1) year following substantial completion, return to job and correct all defective work. Defective work includes, without limitation, tiles broken in normal abuse due to deficiencies in setting bed, loose tiles or grout, and all other defects which may develop as a result of poor workmanship.

3.5 Cleaning

Clean excess mortar/epoxy from veneer surfaces with water before they harden and as work progresses. Do not contaminate open grout/caulk joints while cleaning. Sponge and wash veneers diagonally across joints. Do not use acids for cleaning. Polish with clean dry cloth. Remove surplus materials and leave premises broom clean.

3.6 Protection

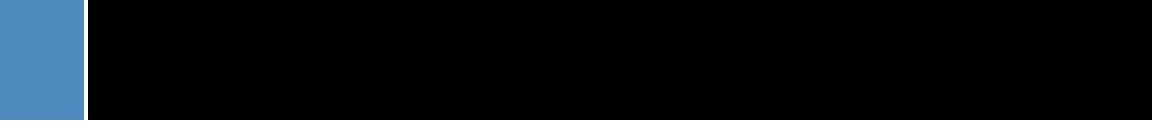
A. Protect finished installation under provisions of §01500 and §01535. Close areas to other trades and traffic until tile being installed has set firmly. Keep traffic off horizontal portland cement thick bed mortar installations for at least 72 hours at 70°F (21°C).

B. Keep floors installed with epoxy adhesive closed to traffic for 24 hrs. at 70°F (21°C), and to heavy traffic for 48 hours at 70°F (21°C) unless instructed differently by manufacturer. Use kneeling boards, or equivalent, to walk/work on newly tiled floors. Cure tile work in swimming pools, fountains and other continuous immersion applications for 10 days for epoxy based grout and 14 days for latex portland cement based grout at 70°F (21°C) before flood testing or filling installation with water. Extend period of protection of tile work at lower temperatures, below 60°F (15°C), and

at high relative humidity (>70% RH) due to retarded set times of mortar/adhesives. Replace or restore work of other trades damaged or soiled by work under this section.

Part 4 – Health and Safety

The use of personal protection such as rubber gloves, suitable dust masks, safety glasses and industrial clothing is highly recommended. Discarded packaging, product wash and waste water should be disposed of as per local, state or federal regulations.



Section 4: Execution Statements for Animal Health and Wellness Facilities Technical Design Manual – Walls



PART 3 – EXECUTION

3.1 Substrate Examination

A. Verify that surfaces to be covered with ceramic tile, mosaics, pavers, brick, stone, trim or waterproofing are:

1. Sound, rigid and conform to good design/engineering practices;
2. Systems, including the framing system and panels, over which tile or stone will be installed shall be in conformance with the International Residential Code (IRC) for residential applications, the International Building Code (IBC) for commercial applications, or applicable building codes. The project design should include the intended use and necessary allowances for the expected live load, concentrated load, impact load, and dead load including the weight of the finish and installation materials;
3. Clean and free of dust, dirt, oil, grease, sealers, curing compounds, laitance, efflorescence, form oil, loose plaster, paint, and scale;
4. Thin-set tile installations have a specified subsurface tolerance, for instance 1/4" in 10' (6 mm in 3 m) and 1/16" in 1' (1.5 mm in 300 mm), to conform with the ANSI specifications. Because thin-set is not intended to be used in truing or leveling the work of others, the subsurface typically should not vary by more than 1/16" over 1' (1.5 mm over 300 mm), nor more than 1/32" (0.8 mm) between adjoining edges where applicable (e.g. between sheets of exterior glue plywood or between adjacent concrete masonry units). Should the architect/designer require a more stringent tolerance (e.g. 1/8" in 10' [3 mm in 3 m]), the subsurface specification must reflect that tolerance, or the tile specification must include a specific and separate requirement to bring the 1/4" (6 mm) subsurface tolerance into compliance with the 1/8" (6 mm) tolerance desired;

5. Not leveled with gypsum or asphalt based compounds;

6. Dry as per American Society for Testing and Materials (ASTM) D4263 "Standard Test for Determining Moisture in Concrete by the Plastic Sheet Method."

B. Concrete surfaces shall also be:

1. Cured a minimum of 28 days at 70°F (21°C), including an initial seven (7) day period of wet curing;

NOTE TO SPECIFIER: LATICRETE® latex portland cement mortars do not require a minimum cure time for concrete substrates or mortar beds;

2. Wood float finished, or better, if the installation is to be done by the thin bed method;

Advise General Contractor and Architect of any surface or substrate conditions requiring correction before tile work commences. Beginning of work constitutes acceptance of substrate or surface conditions.

3.2 Surface Preparation

A. Concrete Substrates

(Insert any Special Means of Preparation in addition to the surface preparation requirements listed in § 3.1)

B. (List other Substrates as required and means of preparation as required)

(Insert any Special Means of Preparation in addition to the surface preparation requirements listed in § 3.1)

NOTE TO SPECIFIER: Edit substrate and preparation section based on project specific surfaces and conditions.

3.3 Installation – Accessories

A. Waterproofing:

NOTE TO SPECIFIER: Adhesives/mastics, mortars and grouts for ceramic tile, mosaics, pavers, brick and stone are not replacements for waterproofing membranes and will not prevent water penetration.

Install the waterproofing membrane in compliance with current revisions of ANSI A108.1 (2.7 Waterproofing) and ANSI A108.13. Review the installation and plan the application sequence. Pre-cut LATICRETE® Waterproofing/

Anti-Fracture Fabric (if required), allowing 2" (50 mm) for overlap at ends and sides to fit the areas as required. Roll up the pieces for easy handling and placement. Shake or stir LATICRETE Hydro Ban™ before using.

Pre-Treat Cracks and Joints – Fill all substrate cracks, cold joints and control joints to a smooth finish using a LATICRETE latex-fortified thin-set. Alternatively, a liberal coat* of LATICRETE Hydro Ban applied with a paint brush or trowel may be used to fill in non-structural joints and cracks. Apply a liberal coat* of LATICRETE Hydro Ban approximately 8" (200 mm) wide over substrate cracks, cold joints, and control joints using a paint brush or heavy napped paint roller.

Pre-Treat Coves and Floor/Wall Intersections – Fill all substrate coves and floor/wall transitions to a smooth finish and changes in plane using a LATICRETE latex-fortified thin-set. Alternatively, a liberal coat* of LATICRETE Hydro Ban applied with a paint brush or trowel may be used to fill in cove joints and floor/wall transitions <1/8" (3 mm) in width. Apply a liberal coat* of LATICRETE Hydro Ban approximately 8" (200 mm) wide over substrate cracks, cold joints, and control joints using a paint brush or heavy napped paint roller.

Pre-Treat Drains – Drains must be of the clamping ring type, with weepers as per ASME A112.6.3. Apply a liberal coat* of LATICRETE Hydro Ban around and over the bottom half of drain clamping ring. Cover with a second liberal coat of LATICRETE Hydro Ban. When the LATICRETE Hydro Ban dries, apply a bead of LATICRETE Latasil™ where the LATICRETE Hydro Ban meets the drain throat. Install the top half of drain clamping ring.

Pre-Treat Penetrations – Allow for a minimum 1/8" (3 mm) space between drains, pipes, lights, or other penetrations and surrounding ceramic tile, stone or brick. Pack any gaps around pipes, lights or other penetrations with a LATICRETE latex-fortified thin-set. Apply a liberal coat* of LATICRETE Hydro Ban around penetration opening. Cover the first coat with a second liberal coat* of LATICRETE Hydro Ban. Bring LATICRETE Hydro Ban up to level of tile or stone. When LATICRETE Hydro Ban has dried to the touch seal with LATICRETE Latasil™.

Main Application – Allow any pre-treated areas to dry to the touch. Apply a liberal coat* of LATICRETE Hydro Ban with a paint brush or heavy napped roller over substrate including pre-treated areas and allow to dry to the touch.



Install another liberal coat* of LATICRETE® Hydro Ban™ over the first coat. Let the top coat of LATICRETE Hydro Ban dry to the touch approximately 1 – 2 hours at 70°F (21°C) and 50% RH. When the top coat has dried to the touch inspect the surface for pinholes, voids, thin spots or other defects. LATICRETE Hydro Ban will dry to an olive green color when fully cured. Use additional LATICRETE Hydro Ban to seal any defects.

Movement Joints – Apply a liberal coat* of LATICRETE Hydro Ban, approximately 8" (200 mm) wide over the areas. Then embed and loop the 6" (150 mm) wide LATICRETE Waterproofing/Anti-Fracture Fabric and allow the LATICRETE Hydro Ban liquid to bleed through. Immediately apply a second coat of LATICRETE Hydro Ban.

* Dry coat thickness is 20 – 30 mil (0.02 - 0.03" or 0.5 – 0.8mm); consumption per coat is approximately 0.01 gal/ft² (approx. 0.4 l/m²); coverage is approximately 100 ft²/gal (approx. 2.5 m²/l). LATICRETE Waterproofing/Anti-Fracture Fabric can be used to pre-treat cracks, joints, curves, corners, drains, and penetrations with LATICRETE® Hydro Ban™.

Protection – Provide protection for newly installed membrane, even if covered with a thin-bed ceramic tile, stone or brick installation against exposure to rain or other water for a minimum of 2 hours at 70°F (21°C) and 50% RH. For temperatures between 45°F and 69°F (7°C to 21°C) allow a minimum 24 hour cure period.

Flood Testing – Allow membrane to cure fully before flood testing, typically a minimum 2 hours at 70°F (21°C) and 50% RH. Cold conditions will require a longer curing time. For temperatures between 50°F and 69°F (10°C to 21°C) allow a minimum 24 hour cure period prior to flood testing. Please refer to LATICRETE TDS 169 "Flood Testing Procedures", available at www.laticrete.com for flood testing requirements and procedures.

Use the following LATICRETE® System Materials:
LATICRETE Hydro Ban

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

3.4 Installation – Tile, Brick and Stone

A. General: Install in accordance with current versions of American National Standards Institute, Inc. (ANSI) "A108 American National Standard Specifications for Installation of Ceramic Tile" and TCNA "Handbook for Ceramic Tile Installation." Cut and fit ceramic tile, brick or stone neatly around corners, fittings, and obstructions. Perimeter pieces to be minimum half tile, brick or stone. Chipped, cracked, split pieces and edges are not acceptable. Make joints even, straight, plumb and of uniform width to tolerance $\pm 1/16"$ over 8' (1.5 mm in 2.4 m). Install divider strips at junction of flooring and dissimilar materials.

B. Pre-float Method: Over clean, dimensionally stable and sound concrete or masonry substrates, apply thick-bed mortar, or, thin-set mortar as scratch/leveling coat in compliance with current revision of A108.1A (1.0, 1.4 and 5.1). Float surface of scratch/leveling coat plumb, true and allow mortar to set until firm. For installation of ceramic tile, mosaic, paver, brick or stone, follow Thin Bed Method (§ 3.4E).

Use the following LATICRETE System Materials:

LATICRETE 3701 Fortified Mortar Bed

LATICRETE 254 Platinum

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

C. Thin Bed Method: Install latex portland cement mortar in compliance with current revisions of ANSI A108.02 (3.11), A108.1B and ANSI A108.5. Use the appropriate trowel notch size to ensure proper bedding of the tile, brick or stone selected. Work the latex portland cement mortar into good contact with the substrate and comb with notched side of trowel. Spread only as much latex portland cement mortar as can be covered while the mortar surface is still

wet and tacky. When installing large format (>8" x 8"/200 mm x 200 mm) tile/stone, rib/button/lug back tiles, pavers or sheet mounted ceramics/mosaics, spread latex portland cement mortar onto the back of (i.e. 'back-butter') each piece/sheet in addition to trowelling latex portland cement mortar over the substrate. Beat each piece/sheet into the latex portland cement mortar with a beating block or rubber mallet to insure full bedding and flatness. Allow installation to set until firm. Clean excess latex portland cement mortar from tile or stone face and joints between pieces.

Use the following LATICRETE System Materials:
LATICRETE 254 Platinum

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

NOTE TO SPECIFIER: Select one of following and specify color for each type/color of ceramic tile, mosaic, paver, trim unit:

1. Chemical Resistant, Water Cleanable Tile-Grouting Epoxy (ANSI A118.3): Follow manufacturer's recommendations for minimum cure time prior to grouting. Store liquid components of LATICRETE SpectraLOCK® PRO Grout* for 24 hours at 70–80°F (21–27°C) prior to use to facilitate mixing and application. Substrate temperature must be 40–95°F (4–35°C). Verify joints are free of dirt, debris or grout spacers. Sponge or wipe dust/dirt off tile faces and remove water standing in joints. Apply grout release to face of absorptive, abrasive, non-slip or rough textured ceramic tile, pavers, bricks, stone or trim units that are not hot paraffin coated to facilitate cleaning. Cut open pouch and pour LATICRETE SpectraLOCK PRO Grout Part A Liquid into a clean mixing pail. Then open pouch and pour LATICRETE SpectraLOCK PRO Grout Part B Liquid into the mixing pail. Mix by hand or with a slow speed (<300 rpm) mixer until the two liquids are well blended. Then, while mixing, add LATICRETE SpectraLOCK PRO Grout Part C Powder and blend until uniform. Install LATICRETE

SpectraLOCK PRO Grout in compliance with current revisions of ANSI A108.02 (3.13) and ANSI A108.6 (3.0 – 4.0). Spread using a sharp edged, hard rubber float and work grout into joints. Using strokes diagonal (at 45° angle) to the grout lines, pack joints full and free of voids/pits. Then hold float face at a 90° angle to grouted surface and use float edge to "squeegee" off excess grout, stroking diagonally to avoid pulling grout out of filled joints. Once excess grout is removed, a thin film/haze will be left. Initial cleaning of the remaining film/haze can begin approximately 20–30 minutes after grouting (wait longer at colder temperatures). Begin by mixing cleaning additive packet with 2 gallons (7.6 L) of clean water in a clean bucket to make cleaning solution. Dip a clean sponge into the bucket and then wring out cleaning solution until sponge is damp. Using a circular motion, lightly scrub grouted surfaces with the damp sponge to dissolve grout film/haze. Then drag sponge diagonally over the scrubbed surfaces to remove froth. Rinse sponge frequently and change cleaning solution at least every 50 ft² (4.7 m²). Discard sponges as they become "gummy" with residue. Within one (1) hour of finishing first cleaning, clean the same area again following the same procedure but utilizing a clean white scrub pad and fresh cleaning solution. Rinse scrub pad frequently. Drag a clean sponge diagonally over the scrubbed surfaces to remove froth. Use each side of sponge only once before rinsing and change cleaning solution at least every 50 ft² (4.7 m²). Allow cleaned areas to dry and inspect tile/stone surface. For persistent grout film/haze (within 24 hours), repeat scrubbing procedure with undiluted white vinegar and clean pad. Rinse with clean water and allow surface to dry. Inspect grout joint for pinholes/voids and repair them with freshly mixed LATICRETE® SpectraLOCK® PRO Grout†. **CAUTIONS:** Do not use undiluted white vinegar on polished marble or limestone unless a test spot in an

inconspicuous area indicates no change in finish appearance; do not use acid cleaners on epoxy grout less than 7 days old.

Use the following LATICRETE® System Materials:
LATICRETE® SpectraLOCK® PRO Grout†

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

2. Grouting or Pointing Joints:

NOTE TO SPECIFIER: The chemical resistance of grouts and pointing mortars for ceramic tile, mosaics, pavers, brick and stone will typically depend on:

1. Reagent composition and/or concentration;
2. Temperature;
3. Duration of exposure.

Review test results conducted in conformance with current revision of ASTM C267 “Standard Test Methods for Chemical Resistance of Mortars, Grouts and Monolithic Surfaces and Polymer Concretes,” and manufacturer’s performance data and recommendations, in the context of expected chemical exposures.

Follow manufacturer’s recommendations for minimum cure time prior to grouting. Store liquid components of epoxy grout for 24 hours at 70–80°F (21–27°C) prior to use to facilitate mixing and application. Substrate temperature must be 45–90°F (7–32°C). Verify joints are free of dirt, debris or grout spacers. Sponge or wipe dust/dirt off tile faces and remove water standing in joints. Apply grout release to face of absorptive, abrasive, non-slip or rough textured ceramic tile, pavers, bricks, stone or trim units that are not hot paraffin coated to facilitate cleaning. Pour LATAPOXY® 2000 Industrial Grout Part A and Part B into a clean mixing pail. Mix by hand or with a slow speed (<300 rpm) mixer until liquids are well blended. For vertical installations only, add LATAPOXY Part D Non-Sag Additive. While mixing, then add LATAPOXY Part C Filler Powder and blend until uniform. Immediately pour all of the LATAPOXY 2000 Industrial Grout just mixed out of the pail onto the surface to be grouted.

NOTE: leaving epoxy grout in mixing pail will diminish working time.

Spread using a sharp edged, hard rubber float and work grout into joints. Using strokes diagonal (at 45° angle) to the grout lines, pack joints full and free of voids/pits. Hold float face at a 90° angle to grouted surface and use float edge to “squeegee” off excess grout, stroking diagonally to reduce pulling grout out of filled joints. Initial cleaning can begin 5–30 minutes after grouting depending on temperature. Spray or fog grouted surfaces with clean water, applying ~8 fl oz/ft² (0.3 L/m²). Using a circular motion, lightly scrub grouted surfaces with nylon pad to dissolve haze/film. Drag a clean towel diagonally over the scrubbed surfaces to remove froth. Rinse towel frequently and change rinse water at least every 200 ft² (19 m²). Repeat this cleaning sequence again. Wait ~30–60 minutes and use a ‘hydra’ sponge and soapy water to ‘slick’/smoothen joint surface. Inspect joint for pinholes/voids and repair them with freshly mixed LATAPOXY 2000 Industrial Grout. After ~12 hours, check for remaining haze and remove it by scrubbing with warm soapy water. Do not use acid cleaners on epoxy grout less than 7 days old.

NOTE TO SPECIFIER: Specify color for each type/color of ceramic tile, mosaic, paver, brick, stone or trim unit.

Use the following LATICRETE System Materials:
LATAPOXY 2000 Industrial Grout

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

- E. Expansion and Control Joints: Provide control or expansion joints as located in contract drawings and in full conformity, especially in width and depth, with architectural details.
1. Substrate joints must carry through, full width, to surface of tile, brick or stone.
 2. Install expansion joints in tile, brick or stone work over construction/cold joints or control joints in substrates.
 3. Install expansion joints where tile, brick or stone abut restraining surfaces (such as perimeter walls, curbs, columns), changes in plane and corners.

4. Joint width and spacing depends on application – follow TCNA “Handbook for Ceramic Tile Installation” Detail “EJ-171 Expansion Joints” or consult sealant manufacturer for recommendation based on project parameters.
5. Joint width: $\geq 1/8"$ (3 mm) and $\leq 1"$ (25 mm).
6. Joint width: depth ~2:1 but joint depth must be $\geq 1/8"$ (3 mm) and $\leq 1/2"$ (12 mm).
7. Layout (field defined by joints): 1:1 length: width is optimum but must be $\leq 2:1$. Remove all contaminants and foreign material from joint spaces/surfaces, such as dirt, dust, oil, water, frost, setting/grouting materials, sealers and old sealant/backer. Use LATICRETE Latasil™ 9118 Primer for underwater and permanent wet area applications, or for porous stone (e.g. limestone, sandstone etc...) installations. Install appropriate Backing Material (e.g. closed cell backer rod) based on expansion joint design and as specified in § 07920. Apply masking tape to face of tile, brick or stone veneer. Use caulking gun, or other applicator, to completely fill joints with sealant. Within 5–10 minutes of filling joint, ‘tool’ sealant surface to a smooth finish. Remove masking tape immediately after tooling joint. Wipe smears or excess sealant off the face of non-glazed tile, brick, stone or other absorptive surfaces immediately.

Use the following LATICRETE System Materials:

LATICRETE Latasil

LATICRETE Latasil 9118 Primer

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

- G. Adjusting: Correction of defective work for a period of one (1) year following substantial completion, return to job and correct all defective work. Defective work includes, without limitation, tiles broken in normal abuse due to deficiencies in setting bed, loose tiles or grout, and all other defects which may develop as a result of poor workmanship.

3.5 Cleaning

Clean excess mortar/epoxy from veneer surfaces with water before they harden and as work progresses. Do not contaminate open grout/caulk joints while cleaning. Sponge and wash veneers diagonally across joints. Do not use acids for cleaning. Polish with clean dry cloth. Remove surplus materials and leave premises broom clean.

3.6 Protection

- A. Protect finished installation under provisions of §01500 and §01535. Close areas to other trades and traffic until tile being installed has set firmly. Keep traffic off horizontal portland cement thick bed mortar installations for at least 72 hours at 70°F (21°C).
- B. Keep floors installed with epoxy adhesive closed to traffic for 24 hrs. at 70°F (21°C), and to heavy traffic for 48 hours at 70°F (21°C) unless instructed differently by manufacturer. Use kneeling boards, or equivalent, to walk/work on newly tiled floors. Cure tile work in swimming pools, fountains and other continuous immersion applications for 10 days for epoxy based grout and 14 days for latex portland cement based grout at 70°F (21°C) before flood testing or filling installation with water. Extend period of protection of tile work at lower temperatures, below 60°F (15°C), and at high relative humidity (>70% RH) due to retarded set times of mortar/adhesives. Replace or restore work of other trades damaged or soiled by work under this section.

Part 4 – Health and Safety

The use of personal protection such as rubber gloves, suitable dust masks, safety glasses and industrial clothing is highly recommended. Discarded packaging, product wash and waste water should be disposed of as per local, state or federal regulations.

PART 3 – EXECUTION

3.1 Substrate Examination

A. Verify that surfaces to be covered with ceramic tile, mosaics, pavers, brick, stone, trim or waterproofing are:

1. Sound, rigid and conform to good design/engineering practices;
2. Systems, including the framing system and panels, over which tile or stone will be installed shall be in conformance with the International Residential Code (IRC) for residential applications, the International Building Code (IBC) for commercial applications, or applicable building codes. The project design should include the intended use and necessary allowances for the expected live load, concentrated load, impact load, and dead load including the weight of the finish and installation materials;
3. Clean and free of dust, dirt, oil, grease, sealers, curing compounds, laitance, efflorescence, form oil, loose plaster, paint, and scale;
4. Thin-set tile installations have a specified subsurface tolerance, for instance 1/4" in 10' (6 mm in 3 m) and 1/16" in 1' (1.5 mm in 300 mm), to conform with the ANSI specifications. Because thin-set is not intended to be used in truing or leveling the work of others, the subsurface typically should not vary by more than 1/16" over 1' (1.5 mm over 300 mm), nor more than 1/32" (0.8 mm) between adjoining edges where applicable (e.g. between sheets of exterior glue plywood or between adjacent concrete masonry units). Should the architect/designer require a more stringent tolerance (e.g. 1/8" in 10' [3 mm in 3 m]), the subsurface specification must reflect that tolerance, or the tile specification must include a specific and separate requirement to bring the 1/4" (6 mm) subsurface tolerance into compliance with the 1/8" (6 mm) tolerance desired;

5. Not leveled with gypsum or asphalt based compounds;

6. Dry as per American Society for Testing and Materials (ASTM) D4263 "Standard Test for Determining Moisture in Concrete by the Plastic Sheet Method."

B. Concrete surfaces shall also be:

1. Cured a minimum of 28 days at 70°F (21°C), including an initial seven (7) day period of wet curing;

NOTE TO SPECIFIER: LATICRETE® latex portland cement mortars do not require a minimum cure time for concrete substrates or mortar beds;

2. Wood float finished, or better, if the installation is to be done by the thin bed method;

C. Advise General Contractor and Architect of any surface or substrate conditions requiring correction before tile work commences. Beginning of work constitutes acceptance of substrate or surface conditions.

3.2 Surface Preparation

A. Cementitious Backer Unit (CBU) Fiber Cement Underlayment Over Steel Framing

1. All designs, specifications and construction practices shall be in accordance with industry standards. Refer to latest editions of:

American Iron and Steel Institute (AISI) "Specification for the Design of Cold-Formed Steel Structural Members" [www.steel.org];

Canadian Sheet Steel Building Institute (CSSBI) "Lightweight Steel Framing Binder {Publication 52M}" [www.cssbi.ca];

Steel Stud Manufacturers Association (SSMA) "Product Technical Information" and "ICBO Evaluation Service, Inc. Report ER-4943P" [www.ssma.com];

Metal Lath/Steel Framing Association "Steel Framing Systems Manual."

Section 4: 4.2 VW244 – Cement Backer Board – Steel or Wood Framing (Interior)

2. Prior to commencing work, installer must submit to Architect/Structural Engineer for approval, shop drawings showing wall/façade construction and attachment details. All attachments must be designed to prevent transfer of building or structural movement to the wall/façade.
3. Construct all framing with galvanized or other rust resistant steel studs and channels; minimum requirements:

Stud Gauge: 16 gauge (1.5 mm);

Stud Steel: conforming to ASTM A570 – latest edition with a minimum yield point of 50 ksi;

Stud Spacing: not to exceed 16" (400 mm) on center;

Stud Width: 6" (150 mm);

Horizontal Bridging: Not to exceed 4' (1.2 m) on center; 16 gauge CR channel typical or as specified by structural engineer.

4. Studs shall be seated squarely in the channel tracks with the stud web and flange abutting the track web, plumbed or aligned, and securely attached to the flanges or web of both the upper and lower tracks by welding. Similarly connect horizontal bridging/purlins and anti-racking diagonal bracing as determined by structural engineer. Grind welds smooth and paint with rust inhibiting paint. Finished frame and components must be properly aligned, square and true.
5. Provide adequate support of framing elements during erection to prevent tracking, twisting or bowing. Lay out the CBU/Fiber Cement Underlayment installation so all board edges are supported by metal framing (studs vertically and purlins horizontally). Cut/fit CBU/Fiber Cement Underlayment and add additional framing elements as required to support board edges. Stagger boards in courses to prevent continuous vertical joints and allow 1/8–3/16" (3–5 mm) between sheets.

6. Fasten the CBU/Fiber Cement Underlayment with 7/8" (22 mm) minimum length, non-rusting, self-imbedding screws for metal studs (BUILDEX® Catalog item 10–24 17/16 Wafer T3Z or equivalent). Fasten the boards every 6" (150 mm) at the edges and every 8" (200 mm) in the field. Stagger placement of screws at seams. Place screws no less than 3/8" (9 mm), and no more than 1" (25 mm), from board edges.

7. Tape all the board joints with the alkali resistant 2" (50 mm) wide reinforcing mesh provided by the CBU/Fiber Cement Underlayment manufacturer imbedded in the same mortar used to install the ceramic tile, mosaic, pavers, brick or stone.

8. Compliance with design criteria and state and local building codes must be approved and certified by a qualified structural engineer. Use more stringent design criteria when necessary to comply with state and local building code stiffness requirements for thin veneers.

- B. (List other Substrates as required and means of preparation as required)

(Insert any Special Means of Preparation – In addition to the surface preparation requirements listed above; ...)

NOTE TO SPECIFIER: The above are example surface categories; edit for project specific surfaces and conditions.



3.3 Installation – Accessories

A. Waterproofing:

NOTE TO SPECIFIER: Adhesives, mortars and grouts for ceramic tile, mosaics, pavers, brick and stone are not replacements for waterproofing membranes and will not prevent penetration by moisture.

Install the waterproofing membrane in compliance with current revisions of ANSI A108.1 (2.7 Waterproofing) and ANSI A108.13. Review the installation and plan the application sequence. Pre-cut LATICRETE® Waterproofing/Anti-Fracture Fabric (if required), allowing 2" (50 mm) for overlap at ends and sides to fit the areas as required. Roll up the pieces for easy handling and placement. Shake or stir LATICRETE Hydro Ban™ before using.

Pre-Treat Cracks and Joints – Fill all substrate cracks, cold joints and control joints to a smooth finish using a LATICRETE latex-fortified thin-set. Alternatively, a liberal coat* of LATICRETE Hydro Ban applied with a paint brush or trowel may be used to fill in non-structural joints and cracks. Apply a liberal coat* of LATICRETE Hydro Ban approximately 8" (200 mm) wide over substrate cracks, cold joints, and control joints using a paint brush or heavy napped paint roller.

Pre-Treat Coves and Floor/Wall Intersections – Fill all substrate coves and floor/wall transitions to a smooth finish and changes in plane using a LATICRETE latex-fortified thin-set. Alternatively, a liberal coat* of LATICRETE Hydro Ban applied with a paint brush or trowel may be used to fill in cove joints and floor/wall transitions $<1/8"$ (3 mm) in width. Apply a liberal coat* of LATICRETE Hydro Ban approximately 8" (200 mm) wide over substrate cracks, cold joints, and control joints using a paint brush or heavy napped paint roller.

Pre-Treat Drains – Drains must be of the clamping ring type, with weepers as per ASME A112.6.3. Apply a liberal coat* of LATICRETE Hydro Ban around and over the bottom half of drain clamping ring. Cover with a second liberal coat of LATICRETE Hydro Ban. When

the LATICRETE Hydro Ban dries, apply a bead of LATICRETE Latasil™ where the LATICRETE Hydro Ban meets the drain throat. Install the top half of drain clamping ring.

Pre-Treat Penetrations – Allow for a minimum $1/8"$ (3 mm) space between drains, pipes, lights, or other penetrations and surrounding ceramic tile, stone or brick. Pack any gaps around pipes, lights or other penetrations with a LATICRETE latex-fortified thin-set. Apply a liberal coat* of LATICRETE Hydro Ban around penetration opening. Cover the first coat with a second liberal coat* of LATICRETE Hydro Ban. Bring LATICRETE Hydro Ban up to level of tile or stone. When LATICRETE Hydro Ban has dried to the touch seal with LATICRETE Latasil.

Main Application – Allow any pre-treated areas to dry to the touch. Apply a liberal coat* of LATICRETE Hydro Ban with a paint brush or heavy napped roller over substrate including pre-treated areas and allow to dry to the touch. Install another liberal coat* of LATICRETE Hydro Ban over the first coat. Let the top coat of LATICRETE Hydro Ban dry to the touch approximately 1 – 2 hours at 70°F (21°C) and 50% RH. When the top coat has dried to the touch inspect the surface for pinholes, voids, thin spots or other defects. LATICRETE Hydro Ban will dry to an olive green color when fully cured. Use additional LATICRETE Hydro Ban to seal any defects.

Movement Joints – Apply a liberal coat* of LATICRETE Hydro Ban, approximately 8" (200 mm) wide over the areas. Then embed and loop the 6" (150 mm) wide LATICRETE Waterproofing/Anti-Fracture Fabric and allow the LATICRETE Hydro Ban liquid to bleed through. Immediately apply a second coat of LATICRETE Hydro Ban.

* Dry coat thickness is 20 – 30 mil (0.02 – 0.03" or 0.5 – 0.8 mm); consumption per coat is approximately 0.01 gal/ft² (approx. 0.4 l/m²); coverage is approximately 100 ft²/gal (approx. 2.5 m²/l). LATICRETE® Waterproofing/Anti-Fracture Fabric can be used to pre-treat cracks, joints, curves, corners, drains, and penetrations with LATICRETE Hydro Ban™.

Protection – Provide protection for newly installed membrane, even if covered with a thin-bed ceramic tile, stone or brick installation against exposure to rain or other water for a minimum of 24 hours at 70°F (21°C) and 50% RH. For temperatures between 45°F and 69°F (7°C to 21°C) allow a 3 day cure period.

Flood Testing – Allow membrane to cure fully before flood testing, typically a minimum 2 hours at 70°F (21°C) and 50% RH. Cold conditions will require a longer curing time. For temperatures between 50°F and 69°F (10°C to 21°C) allow a minimum 24 hour cure period prior to flood testing. Please refer to LATICRETE TDS 169 “Flood Testing Procedures”, available at www.laticrete.com for flood testing requirements and procedures.

Use the following LATICRETE® System Materials:
LATICRETE Hydro Ban

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

3.4 Installation – Tile, Brick and Stone

A. General: Install in accordance with current versions of American National Standards Institute, Inc. (ANSI) “A108 American National Standard Specifications for Installation of Ceramic Tile” and TCNA “Handbook for Ceramic Tile Installation.” Cut and fit ceramic tile, brick or stone neatly around corners, fittings, and obstructions. Perimeter pieces to be minimum half tile, brick or stone. Chipped, cracked, split pieces and edges are not acceptable. Make joints even, straight, plumb and of uniform width to tolerance +/- 1/16" over 8' (1.5 mm in 2.4 m). Install divider strips at junction of flooring and dissimilar materials.

B. Thin Bed Method: Install latex portland cement mortar in compliance with current revisions of ANSI A108.02 (3.11), A108.1B and ANSI A108.5. Use the appropriate trowel notch size to ensure proper bedding of the tile, brick or stone selected. Work the latex portland cement mortar into good

contact with the substrate and comb with notched side of trowel. Spread only as much latex portland cement mortar as can be covered while the mortar surface is still wet and tacky. When installing large format (>8" x 8"/200 mm x 200 mm) tile/stone, rib/button/lug back tiles, pavers or sheet mounted ceramics/mosaics, spread latex portland cement mortar onto the back of (i.e. ‘back-butter’) each piece/sheet in addition to trowelling latex portland cement mortar over the substrate. Beat each piece/sheet into the latex portland cement mortar with a beating block or rubber mallet to insure full bedding and flatness. Allow installation to set until firm. Clean excess latex portland cement mortar from tile or stone face and joints between pieces.

Use the following LATICRETE System Materials:
LATICRETE 254 Platinum

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

NOTE TO SPECIFIER: Select one of following and specify color for each type/color of ceramic tile, mosaic, paver, trim unit:

1. Chemical Resistant, Water Cleanable Tile-Grouting Epoxy (ANSI A118.3): Follow manufacturer’s recommendations for minimum cure time prior to grouting. Store liquid components of LATICRETE SpectraLOCK® PRO Grout[†] for 24 hours at 70–80°F (21–27°C) prior to use to facilitate mixing and application. Substrate temperature must be 40–95°F (4–35°C). Verify joints are free of dirt, debris or grout spacers. Sponge or wipe dust/dirt off tile faces and remove water standing in joints. Apply grout release to face of absorptive, abrasive, non-slip or rough textured ceramic tile, pavers, bricks, stone or trim units that are not hot paraffin coated to facilitate cleaning. Cut open pouch and pour LATICRETE SpectraLOCK PRO Grout Part A Liquid into a clean mixing pail. Then open

pouch and pour LATICRETE® SpectraLOCK® PRO Grout† Part B Liquid into the mixing pail. Mix by hand or with a slow speed (<300 rpm) mixer until the two liquids are well blended. Then, while mixing, add LATICRETE SpectraLOCK PRO Grout Part C Powder and blend until uniform. Install LATICRETE SpectraLOCK PRO Grout in compliance with current revisions of ANSI A108.02 (3.13) and ANSI A108.6 (3.0 – 4.0). Spread using a sharp edged, hard rubber float and work grout into joints. Using strokes diagonal (at 45° angle) to the grout lines, pack joints full and free of voids/pits. Then hold float face at a 90° angle to grouted surface and use float edge to "squeegee" off excess grout, stroking diagonally to avoid pulling grout out of filled joints. Once excess grout is removed, a thin film/haze will be left. Initial cleaning of the remaining film/haze can begin approximately 20–30 minutes after grouting (wait longer at colder temperatures). Begin by mixing cleaning additive packet with 2 gallons (7.6 l) of clean water in a clean bucket to make cleaning solution. Dip a clean sponge into the bucket and then wring out cleaning solution until sponge is damp. Using a circular motion, lightly scrub grouted surfaces with the damp sponge to dissolve grout film/haze. Then drag sponge diagonally over the scrubbed surfaces to remove froth. Rinse sponge frequently and change cleaning solution at least every 50 ft² (4.7 m²). Discard sponges as they become "gummy" with residue. Within one (1) hour of finishing first cleaning, clean the same area again following the same procedure but utilizing a clean white scrub pad and fresh cleaning solution. Rinse scrub pad frequently. Drag a clean sponge diagonally over the scrubbed surfaces to remove froth. Use each side of sponge only once before rinsing and change cleaning solution at least every 50 ft² (4.7 m²). Allow cleaned areas to dry and inspect tile/

stone surface. For persistent grout film/haze (within 24 hours), repeat scrubbing procedure with undiluted white vinegar and clean pad. Rinse with clean water and allow surface to dry. Inspect grout joint for pinholes/voids and repair them with freshly mixed LATICRETE SpectraLOCK PRO Grout. CAUTIONS: Do not use undiluted white vinegar on polished marble or limestone unless a test spot in an inconspicuous area indicates no change in finish appearance; do not use acid cleaners on epoxy grout less than 7 days old.

Use the following LATICRETE® System Materials:
LATICRETE SpectraLOCK PRO Grout

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

2. Grouting or Pointing Joints:

NOTE TO SPECIFIER: The chemical resistance of grouts and pointing mortars for ceramic tile, mosaics, pavers, brick and stone will typically depend on:

1. Reagent composition and/or concentration;
2. Temperature;
3. Duration of exposure.

Review test results conducted in conformance with current revision of ASTM C267 "Standard Test Methods for Chemical Resistance of Mortars, Grouts and Monolithic Surfaces and Polymer Concretes," and manufacturer's performance data and recommendations, in the context of expected chemical exposures.

Follow manufacturer's recommendations for minimum cure time prior to grouting. Store liquid components of epoxy grout for 24 hours at 70–80°F (21–27°C) prior to use to facilitate mixing and application. Substrate temperature must be 45–90°F (7–32°C). Verify joints are free of dirt, debris or grout spacers. Sponge or wipe dust/dirt off tile faces and remove water standing in joints. Apply grout release to face of absorptive, abrasive, non-slip or rough textured ceramic tile, pavers, bricks, stone or trim units that are not hot paraffin coated to facilitate cleaning. Pour LATAPOXY® 2000

Industrial Grout Part A and Part B into a clean mixing pail. Mix by hand or with a slow speed (<300 rpm) mixer until liquids are well blended. For vertical installations only, add LATAPOXY Part D Non-Sag Additive. While mixing, then add LATAPOXY Part C Filler Powder and blend until uniform. Immediately pour all of the LATAPOXY 2000 Industrial Grout just mixed out of the pail onto the surface to be grouted.

NOTE: leaving epoxy grout in mixing pail will diminish working time.

Spread using a sharp edged, hard rubber float and work grout into joints. Using strokes diagonal (at 45° angle) to the grout lines, pack joints full and free of voids/pits. Hold float face at a 90° angle to grouted surface and use float edge to "squeegee" off excess grout, stroking diagonally to reduce pulling grout out of filled joints. Initial cleaning can begin 5–30 minutes after grouting depending on temperature. Spray or fog grouted surfaces with clean water, applying ~8 fl oz/ft² (0.3 l/m²). Using a circular motion, lightly scrub grouted surfaces with nylon pad to dissolve haze/film. Drag a clean towel diagonally over the scrubbed surfaces to remove froth. Rinse towel frequently and change rinse water at least every 200 ft² (19 m²). Repeat this cleaning sequence again. Wait ~30–60 minutes and use a 'hydra' sponge and soapy water to 'slick'/smoothen joint surface. Inspect joint for pinholes/voids and repair them with freshly mixed LATAPOXY 2000 Industrial Grout. After ~12 hours, check for remaining haze and remove it by scrubbing with warm soapy water. Do not use acid cleaners on epoxy grout less than 7 days old.

NOTE TO SPECIFIER: Specify color for each type/color of ceramic tile, mosaic, paver, brick, stone or trim unit.

Use the following LATICRETE System Materials:
LATAPOXY 2000 Industrial Grout

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

D. Expansion and Control Joints: Provide control or expansion joints as located in contract drawings and in full conformity, especially in width and depth, with architectural details.

1. Substrate joints must carry through, full width, to surface of tile, brick or stone.
2. Install expansion joints in tile, brick or stone work over construction/cold joints or control joints in substrates.
3. Install expansion joints where tile, brick or stone abut restraining surfaces (such as perimeter walls, curbs, columns), changes in plane and corners.
4. Joint width and spacing depends on application – follow TCNA "Handbook for Ceramic Tile Installation" Detail "EJ-171 Expansion Joints" or consult sealant manufacturer for recommendation based on project parameters.
5. Joint width: $\geq 1/8"$ (3mm) and $\leq 1"$ (25 mm).
6. Joint width: depth ~2:1 but joint depth must be $\geq 1/8"$ (3 mm) and $\leq 1/2"$ (12 mm).
7. Layout (field defined by joints): 1:1 length: width is optimum but must be $\leq 2:1$.

Remove all contaminants and foreign material from joint spaces/surfaces, such as dirt, dust, oil, water, frost, setting/grouting materials, sealers and old sealant/backer. Use LATICRETE Latasil™ 9118 Primer for underwater and permanent wet area applications, or for porous stone (e.g. limestone, sandstone etc...) installations. Install appropriate backing



material (e.g. closed cell backer rod) based on expansion joint design and as specified in § 07920. Apply masking tape to face of tile, brick or stone veneer. Use caulking gun, or other applicator, to completely fill joints with sealant. Within 5–10 minutes of filling joint, ‘tool’ sealant surface to a smooth finish. Remove masking tape immediately after tooling joint. Wipe smears or excess sealant off the face of non-glazed tile, brick, stone or other absorptive surfaces immediately.

Use the following LATICRETE® System Materials:

LATICRETE® Latasil™

LATICRETE Latasil 9118 Primer

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

E. Adjusting: Correction of defective work for a period of one (1) year following substantial completion, return to job and correct all defective work. Defective work includes, without limitation, tiles broken in normal abuse due to deficiencies in setting bed, loose tiles or grout, and all other defects which may develop as a result of poor workmanship.

3.5 Cleaning

Clean excess mortar/latex portland cement mortar from veneer surfaces with water before they harden and as work progresses. Do not contaminate open grout/caulk joints while cleaning. Sponge and wash veneers diagonally across joints. Do not use acids for cleaning. Polish with clean dry cloth. Remove surplus materials and leave premises broom clean.

3.6 Protection

- A. Protect finished installation under provisions of §01500 and §01535. Close areas to other trades and traffic until tile being installed has set firmly.
- B. Extend period of protection of veneer work at lower temperatures, below 60°F (15°C), and at high relative humidity (>70% RH) due to retarded set times of mortar/adhesives. Replace or restore work of other trades damaged or soiled by work under this section.

Part 4 – Health and Safety

The use of personal protection such as rubber gloves, suitable dust masks, safety glasses and industrial clothing is highly recommended. Discarded packaging, product wash and waste water should be disposed of as per local, state or federal regulations.



PART 3 – EXECUTION

3.1 Substrate Examination

A. Verify that surfaces to be covered with ceramic tile, mosaics, pavers, brick, stone, trim or waterproofing are:

1. Sound, rigid and conform to good design/engineering practices;
2. Systems, including the framing system and panels, over which tile or stone will be installed shall be in conformance with the International Residential Code (IRC) for residential applications, the International Building Code (IBC) for commercial applications, or applicable building codes. The project design should include the intended use and necessary allowances for the expected live load, concentrated load, impact load, and dead load including the weight of the finish and installation materials;
3. Clean and free of dust, dirt, oil, grease, sealers, curing compounds, laitance, efflorescence, form oil, loose plaster, paint, and scale;
4. Thin-set tile installations have a specified subsurface tolerance, for instance 1/4" in 10' (6 mm in 3 m) and 1/16" in 1' (1.5 mm in 300 mm), to conform with the ANSI specifications. Because thin-set is not intended to be used in truing or leveling the work of others, the subsurface typically should not vary by more than 1/16" over 1' (1.5 mm over 300 mm), nor more than 1/32" (0.8 mm) between adjoining edges where applicable (e.g. between sheets of exterior glue plywood or between adjacent concrete masonry units). Should the architect/designer require a more stringent tolerance (e.g. 1/8" in 10' [3 mm in 3 m]), the subsurface specification must reflect that tolerance, or the tile specification must include a specific and separate requirement to bring the 1/4" (6 mm) subsurface tolerance into compliance with the 1/8" (6 mm) tolerance desired;

5. Not leveled with gypsum or asphalt based compounds;

6. Dry as per American Society for Testing and Materials (ASTM) D4263 "Standard Test for Determining Moisture in Concrete by the Plastic Sheet Method."

B. Concrete surfaces shall also be:

1. Cured a minimum of 28 days at 70°F (21°C), including an initial seven (7) day period of wet curing;

NOTE TO SPECIFIER: LATICRETE® latex portland cement mortars do not require a minimum cure time for concrete substrates or mortar beds;

2. Wood float finished, or better, if the installation is to be done by the thin bed method;

Advise General Contractor and Architect of any surface or substrate conditions requiring correction before tile work commences. Beginning of work constitutes acceptance of substrate or surface conditions.

3.2 Surface Preparation

A. Concrete Substrates

(Insert any Special Means of Preparation in addition to the surface preparation requirements listed in § 3.1)

B. (List other Substrates as required and means of preparation as required)

(Insert any Special Means of Preparation in addition to the surface preparation requirements listed in § 3.1)

NOTE TO SPECIFIER: Edit substrate and preparation section based on project specific surfaces and conditions.

3.3 Installation – Accessories

A. Waterproofing:

NOTE TO SPECIFIER: Adhesives/mastics, mortars and grouts for ceramic tile, mosaics, pavers, brick and stone are not replacements for waterproofing membranes and will not prevent water penetration.

Install the waterproofing membrane in compliance with current revisions of ANSI A108.1 (2.7 Waterproofing) and ANSI A108.13. Review the installation and plan the application

sequence. Pre-cut LATICRETE® Waterproofing/Anti-Fracture Fabric (if required), allowing 2" (50 mm) for overlap at ends and sides to fit the areas as required. Roll up the pieces for easy handling and placement. Shake or stir LATICRETE Hydro Ban™ before using.

Pre-Treat Cracks and Joints – Fill all substrate cracks, cold joints and control joints to a smooth finish using a LATICRETE latex-fortified thin-set. Alternatively, a liberal coat* of LATICRETE Hydro Ban applied with a paint brush or trowel may be used to fill in non-structural joints and cracks. Apply a liberal coat* of LATICRETE Hydro Ban approximately 8" (200 mm) wide over substrate cracks, cold joints, and control joints using a paint brush or heavy napped paint roller.

Pre-Treat Coves and Floor/Wall Intersections – Fill all substrate coves and floor/wall transitions to a smooth finish and changes in plane using a LATICRETE latex-fortified thin-set. Alternatively, a liberal coat* of LATICRETE Hydro Ban applied with a paint brush or trowel may be used to fill in cove joints and floor/wall transitions <1/8" (3 mm) in width. Apply a liberal coat* of LATICRETE Hydro Ban approximately 8" (200 mm) wide over substrate cracks, cold joints, and control joints using a paint brush or heavy napped paint roller.

Pre-Treat Drains – Drains must be of the clamping ring type, with weepers as per ASME A112.6.3. Apply a liberal coat* of LATICRETE Hydro Ban around and over the bottom half of drain clamping ring. Cover with a second liberal coat of LATICRETE Hydro Ban. When the LATICRETE Hydro Ban dries, apply a bead of LATICRETE Latasil™ where the LATICRETE Hydro Ban meets the drain throat. Install the top half of drain clamping ring.

Pre-Treat Penetrations – Allow for a minimum 1/8" (3 mm) space between drains, pipes, lights, or other penetrations and surrounding ceramic tile, stone or brick. Pack any gaps around pipes, lights or other penetrations with a LATICRETE latex-fortified thin-set. Apply a

liberal coat* of LATICRETE Hydro Ban around penetration opening. Cover the first coat with a second liberal coat* of LATICRETE Hydro Ban. Bring LATICRETE Hydro Ban up to level of tile or stone. When LATICRETE Hydro Ban has dried to the touch seal with LATICRETE Latasil.

Main Application – Allow any pre-treated areas to dry to the touch. Apply a liberal coat* of LATICRETE Hydro Ban with a paint brush or heavy napped roller over substrate including pre-treated areas and allow to dry to the touch. Install another liberal coat* of LATICRETE Hydro Ban over the first coat. Let the top coat of LATICRETE Hydro Ban dry to the touch approximately 1 – 2 hours at 70°F (21°C) and 50% RH. When the top coat has dried to the touch inspect the surface for pinholes, voids, thin spots or other defects. LATICRETE Hydro Ban will dry to an olive green color when fully cured. Use additional LATICRETE Hydro Ban to seal any defects.

Movement Joints – Apply a liberal coat* of LATICRETE Hydro Ban, approximately 8" (200 mm) wide over the areas. Then embed and loop the 6" (150 mm) wide LATICRETE Waterproofing/Anti-Fracture Fabric and allow the LATICRETE Hydro Ban liquid to bleed through. Immediately apply a second coat of LATICRETE Hydro Ban.

* Dry coat thickness is 20 – 30 mil (0.02 – 0.03" or 0.5 – 0.8mm); consumption per coat is approximately 0.01 gal/ft² (approx. 0.4 l/m²); coverage is approximately 100 ft²/gal (approx. 2.5 m²/l). LATICRETE Waterproofing/Anti-Fracture Fabric can be used to pre-treat cracks, joints, curves, corners, drains, and penetrations with LATICRETE Hydro Ban.

Protection – Provide protection for newly installed membrane, even if covered with a thin-bed ceramic tile, stone or brick installation against exposure to rain or other water for a minimum of 2 hours at 70°F (21°C) and 50% RH. For temperatures between 45°F and 69°F (7°C to 21°C) allow a minimum 24 hour cure period.

Flood Testing – Allow membrane to cure fully before flood testing, typically a minimum 2 hours at 70°F (21°C) and 50% RH. Cold conditions will require a longer curing time. For temperatures between 50°F and 69°F (10°C to 21°C) allow a minimum 24 hour cure period prior to flood testing. Please refer to LATICRETE TDS 169 “Flood Testing Procedures”, available at www.laticrete.com for flood testing requirements and procedures.

Use the following LATICRETE® System Materials:
LATICRETE® Hydro Ban™

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

3.4 Installation – Tile, Brick and Stone

A. General: Install in accordance with current versions of American National Standards Institute, Inc. (ANSI) “A108 American National Standard Specifications for Installation of Ceramic Tile” and TCNA “Handbook for Ceramic Tile Installation.” Cut and fit ceramic tile, brick or stone neatly around corners, fittings, and obstructions. Perimeter pieces to be minimum half tile, brick or stone. Chipped, cracked, split pieces and edges are not acceptable. Make joints even, straight, plumb and of uniform width to tolerance +/- 1/16" over 8' (1.5 mm in 2.4 m). Install divider strips at junction of flooring and dissimilar materials.

B. Pre-float Method: Over clean, dimensionally stable and sound concrete or masonry substrates, apply thick-bed mortar, or, thin-set mortar as scratch/leveling coat in compliance with current revision of A108.1A (1.0, 1.4 and 5.1). Float surface of scratch/leveling coat plumb, true and allow mortar to set until firm. For installation of ceramic tile, mosaic, paver, brick or stone, follow Thin Bed Method (§ 3.4E).

Use the following LATICRETE System Materials:
LATICRETE 3701 Fortified Mortar Bed
LATICRETE 254 Platinum

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

C. Thin Bed Method: Install latex portland cement mortar in compliance with current revisions of ANSI A108.02 (3.11), A108.1B and ANSI A108.5. Use the appropriate trowel notch size to ensure proper bedding of the tile, brick or stone selected. Work the latex portland cement mortar into good contact with the substrate and comb with notched side of trowel. Spread only as much latex portland cement mortar as can be covered while the mortar surface is still wet and tacky. When installing large format (>8" x 8"/200 mm x 200 mm) tile/stone, rib/button/lug back tiles, pavers or sheet mounted ceramics/mosaics, spread latex portland cement mortar onto the back of (i.e. ‘back-butter’) each piece/sheet in addition to trowelling latex portland cement mortar over the substrate. Beat each piece/sheet into the latex portland cement mortar with a beating block or rubber mallet to insure full bedding and flatness. Allow installation to set until firm. Clean excess latex portland cement mortar from tile or stone face and joints between pieces.

Use the following LATICRETE System Materials:
LATICRETE 254 Platinum

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

D. Grouting or Pointing:

NOTE TO SPECIFIER: Select one of following and specify color for each type/color of ceramic tile, mosaic, paver, trim unit:

1. Chemical Resistant, Water Cleanable Tile-Grouting Epoxy (ANSI A118.3): Follow manufacturer's recommendations for minimum cure time prior to grouting. Store liquid components of LATICRETE SpectraLOCK® PRO Grout† for 24 hours at 70–80°F (21–27°C) prior to use to facilitate mixing and application. Substrate temperature must be 40–95°F (4–35°C).

Verify joints are free of dirt, debris or grout spacers. Sponge or wipe dust/dirt off tile faces and remove water standing in joints. Apply grout release to face of absorptive, abrasive, non-slip or rough textured ceramic tile, pavers, bricks, stone or trim units that are not hot paraffin coated to facilitate cleaning. Cut open pouch and pour LATICRETE SpectraLOCK PRO Grout Part A Liquid into a clean mixing pail. Then open pouch and pour LATICRETE SpectraLOCK PRO Grout Part B Liquid into the mixing pail. Mix by hand or with a slow speed (<300 rpm) mixer until the two liquids are well blended. Then, while mixing, add LATICRETE SpectraLOCK PRO Grout Part C Powder and blend until uniform. Install LATICRETE SpectraLOCK PRO Grout in compliance with current revisions of ANSI A108.02 (3.13) and ANSI A108.6 (3.0 – 4.0). Spread using a sharp edged, hard rubber float and work grout into joints. Using strokes diagonal (at 45° angle) to the grout lines, pack joints full and free of voids/pits. Then hold float face at a 90° angle to grouted surface and use float edge to "squeegee" off excess grout, stroking diagonally to avoid pulling grout out of filled joints. Once excess grout is removed, a thin film/haze will be left. Initial cleaning of the remaining film/haze can begin approximately 20–30 minutes after grouting (wait longer at colder temperatures). Begin by mixing cleaning additive packet with 2 gallons (7.6 L) of clean water in a clean bucket to make cleaning solution. Dip a clean sponge into the bucket and then wring out cleaning solution until sponge is damp. Using a circular motion, lightly scrub grouted surfaces with the damp sponge to dissolve grout film/haze. Then drag sponge diagonally over the scrubbed surfaces to remove froth. Rinse sponge frequently and change cleaning solution at least every 50 ft² (4.7 m²). Discard sponges as they become "gummy" with residue. Within one

(1) hour of finishing first cleaning, clean the same area again following the same procedure but utilizing a clean white scrub pad and fresh cleaning solution. Rinse scrub pad frequently. Drag a clean sponge diagonally over the scrubbed surfaces to remove froth. Use each side of sponge only once before rinsing and change cleaning solution at least every 50 ft² (4.7 m²). Allow cleaned areas to dry and inspect tile/stone surface. For persistent grout film/haze (within 24 hours), repeat scrubbing procedure with undiluted white vinegar and clean pad. Rinse with clean water and allow surface to dry. Inspect grout joint for pinholes/voids and repair them with freshly mixed LATICRETE SpectraLOCK PRO Grout. **CAUTIONS:** Do not use undiluted white vinegar on polished marble or limestone unless a test spot in an inconspicuous area indicates no change in finish appearance; do not use acid cleaners on epoxy grout less than 7 days old.

Use the following LATICRETE System Materials:
LATICRETE SpectraLOCK PRO Grout

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

2. Grouting or Pointing Joints:

NOTE TO SPECIFIER: The chemical resistance of grouts and pointing mortars for ceramic tile, mosaics, pavers, brick and stone will typically depend on:

1. Reagent composition and/or concentration;
2. Temperature;
3. Duration of exposure.

Review test results conducted in conformance with current revision of ASTM C267 "Standard Test Methods for Chemical Resistance of Mortars, Grouts and Monolithic Surfaces and Polymer Concretes," and manufacturer's performance data and recommendations, in the context of expected chemical exposures.

Follow manufacturer's recommendations for minimum cure time prior to grouting. Store liquid components of epoxy grout for 24 hours

Section 4: 4.3 VW300 – Concrete Masonry Units/Brick – Thin Bed

at 70–80°F (21–27°C) prior to use to facilitate mixing and application. Substrate temperature must be 45–90°F (7–32°C). Verify joints are free of dirt, debris or grout spacers. Sponge or wipe dust/dirt off tile faces and remove water standing in joints. Apply grout release to face of absorptive, abrasive, non-slip or rough textured ceramic tile, pavers, bricks, stone or trim units that are not hot paraffin coated to facilitate cleaning. Pour LATAPOXY® 2000 Industrial Grout Part A and Part B into a clean mixing pail. Mix by hand or with a slow speed (<300 rpm) mixer until liquids are well blended. For vertical installations only, add LATAPOXY Part D Non-Sag Additive. While mixing, then add LATAPOXY Part C Filler Powder and blend until uniform. Immediately pour all of the LATAPOXY 2000 Industrial Grout just mixed out of the pail onto the surface to be grouted.

NOTE: leaving epoxy grout in mixing pail will diminish working time.

Spread using a sharp edged, hard rubber float and work grout into joints. Using strokes diagonal (at 45° angle) to the grout lines, pack joints full and free of voids/pits. Hold float face at a 90° angle to grouted surface and use float edge to "squeegee" off excess grout, stroking diagonally to reduce pulling grout out of filled joints. Initial cleaning can begin 5–30 minutes after grouting depending on temperature. Spray or fog grouted surfaces with clean water, applying ~8 fl oz/ft² (0.3 l/m²). Using a circular motion, lightly scrub grouted surfaces with nylon pad to dissolve haze/film. Drag a clean towel diagonally over the scrubbed surfaces to remove froth. Rinse towel frequently and change rinse water at least every 200 ft² (19 m²). Repeat this cleaning sequence again. Wait ~30–60 minutes and use a 'hydra' sponge and soapy water to 'slick'/smoothen joint surface. Inspect joint for pinholes/voids and repair them with freshly mixed LATAPOXY 2000 Industrial Grout. After ~12 hours, check for remaining haze and remove it by scrubbing with warm soapy water. Do not use acid cleaners on epoxy grout less than 7 days old.

NOTE TO SPECIFIER: Specify color for each type/color of ceramic tile, mosaic, paver, brick, stone or trim unit.

Use the following LATICRETE® System Materials:
LATAPOXY 2000 Industrial Grout

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

- E. Expansion and Control Joints: Provide control or expansion joints as located in contract drawings and in full conformity, especially in width and depth, with architectural details.
1. Substrate joints must carry through, full width, to surface of tile, brick or stone.
 2. Install expansion joints in tile, brick or stone work over construction/cold joints or control joints in substrates.
 3. Install expansion joints where tile, brick or stone abut restraining surfaces (such as perimeter walls, curbs, columns), changes in plane and corners.
 4. Joint width and spacing depends on application – follow TCNA "Handbook for Ceramic Tile Installation" Detail "EJ-171 Expansion Joints" or consult sealant manufacturer for recommendation based on project parameters.
 5. Joint width: $\geq 1/8"$ (3 mm) and $\leq 1"$ (25 mm).
 6. Joint width: depth ~2:1 but joint depth must be $\geq 1/8"$ (3 mm) and $\leq 1/2"$ (12 mm).
 7. Layout (field defined by joints): 1:1 length: width is optimum but must be $\leq 2:1$.

Remove all contaminants and foreign material from joint spaces/surfaces, such as dirt, dust, oil, water, frost, setting/grouting materials, sealers and old sealant/backer. Use LATICRETE® Latasil™ 9118 Primer for underwater and permanent wet area applications, or for porous stone (e.g. limestone, sandstone etc...) installations. Install appropriate backing material (e.g. closed cell backer rod) based on expansion joint design and as specified in § 07920. Apply masking tape to face of tile, brick or stone veneer. Use caulking gun, or other applicator, to completely fill joints with

sealant. Within 5–10 minutes of filling joint, ‘tool’ sealant surface to a smooth finish. Remove masking tape immediately after tooling joint. Wipe smears or excess sealant off the face of non-glazed tile, brick, stone or other absorptive surfaces immediately.

Use the following LATICRETE System Materials:

LATICRETE Latasil

LATICRETE Latasil 9118 Primer

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

G. Adjusting: Correction of defective work for a period of one (1) year following substantial completion, return to job and correct all defective work. Defective work includes, without limitation, tiles broken in normal abuse due to deficiencies in setting bed, loose tiles or grout, and all other defects which may develop as a result of poor workmanship.

3.5 Cleaning

Clean excess mortar/epoxy from veneer surfaces with water before they harden and as work progresses. Do not contaminate open grout/caulk joints while cleaning. Sponge and wash veneers diagonally across joints. Do not use acids for cleaning. Polish with clean dry cloth. Remove surplus materials and leave premises broom clean.

3.6 Protection

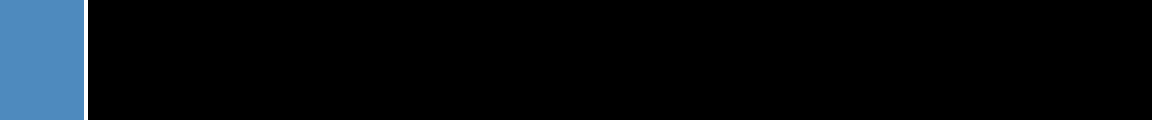
A. Protect finished installation under provisions of §01500 and §01535. Close areas to other trades and traffic until tile being installed has set firmly. Keep traffic off horizontal portland cement thick bed mortar installations for at least 72 hours at 70°F (21°C).

B. Keep floors installed with epoxy adhesive closed to traffic for 24 hrs. at 70°F (21°C), and to heavy traffic for 48 hours at 70°F (21°C) unless instructed differently by manufacturer. Use kneeling boards, or equivalent, to walk/work on newly tiled floors. Cure tile work in swimming pools,

fountains and other continuous immersion applications for 10 days for epoxy based grout and 14 days for latex portland cement based grout at 70°F (21°C) before flood testing or filling installation with water. Extend period of protection of tile work at lower temperatures, below 60°F (15°C), and at high relative humidity (>70% R.H.) due to retarded set times of mortar/adhesives. Replace or restore work of other trades damaged or soiled by work under this section.

Part 4 – Health and Safety

The use of personal protection such as rubber gloves, suitable dust masks, safety glasses and industrial clothing is highly recommended. Discarded packaging, product wash and waste water should be disposed of as per local, state or federal regulations.



Section 5: Execution Statements for Animal Health and Wellness Facilities Technical Design Manual – Radiant Heat Floors



PART 3 – EXECUTION

3.1 Substrate Examination

A. Verify that surfaces to be covered with ceramic tile, mosaics, pavers, brick, stone, trim or waterproofing are:

1. Sound, rigid and conform to good design/engineering practices;
2. Systems, including the framing system and panels, over which tile or stone will be installed shall be in conformance with the International Residential Code (IRC) for residential applications, the International Building Code (IBC) for commercial applications, or applicable building codes. The project design should include the intended use and necessary allowances for the expected live load, concentrated load, impact load, and dead load including the weight of the finish and installation materials;
3. Clean and free of dust, dirt, oil, grease, sealers, curing compounds, laitance, efflorescence, form oil, loose plaster, paint, and scale;
4. Thin-set tile installations have a specified subsurface tolerance, for instance 1/4" in 10' (6 mm in 3 m) and 1/16" in 1' (1.5 mm in 300 mm), to conform with the ANSI specifications. Because thin-set is not intended to be used in truing or leveling the work of others, the subsurface typically should not vary by more than 1/16" over 1' (1.5 mm over 300 mm), nor more than 1/32" (0.8 mm) between adjoining edges where applicable (e.g. between sheets of exterior glue plywood or between adjacent concrete masonry units). Should the architect/designer require a more stringent tolerance (e.g. 1/8" in 10' [3 mm in 3 m]), the subsurface specification must reflect that tolerance, or the tile specification must include a specific and separate requirement to bring the 1/4" (6 mm) subsurface tolerance into compliance with the 1/8" (6 mm) tolerance desired;

5. Dry as per American Society for Testing and Materials (ASTM) D4263 "Standard Test for Determining Moisture in Concrete by the Plastic Sheet Method."

B. Concrete surfaces shall also be:

1. Cured a minimum of 28 days at 70°F (21°C), including an initial seven (7) day period of wet curing;

NOTE TO SPECIFIER: LATICRETE® latex portland cement mortars do not require a minimum cure time for concrete substrates or mortar beds;

2. Wood float finished, or better, if the installation is to be done by the thin bed method;

C. Advise General Contractor and Architect of any surface or substrate conditions requiring correction before tile work commences. Beginning of work constitutes acceptance of substrate or surface conditions.

3.2 Surface Preparation

A. Existing Flooring Surfaces

Cement terrazzo, ceramic tiles, pavers, quarry tiles, vinyl, non-cushion vinyl composition floor coverings must be sound, solid, well bonded, stripped clean and free from dust, wax, grease, sealer and all other contamination which may reduce or prevent adhesion per ANSI A108.02 (4.0).

B. Concrete Substrates

(Insert any Special Means of Preparation – In addition to the surface preparation requirements listed above; ...)

C. (List other Substrates as required and means of preparation as required)

(Insert any Special Means of Preparation – In addition to the surface preparation requirements listed above; ...)

3.3 Installation – Accessories

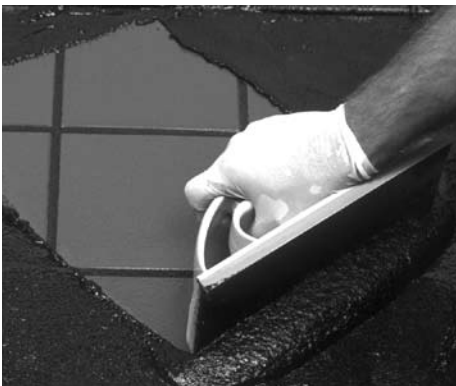
A. Waterproofing:

NOTE TO SPECIFIER: Adhesives/mastics, mortars and grouts for ceramic tile, mosaics, pavers, brick and stone are not replacements for waterproofing membranes and will not prevent water penetration into occupied or storage spaces below.

Install the waterproofing membrane in compliance with current revisions of ANSI A108.1 (2.7 Waterproofing) and ANSI A108.13. Review the installation and plan the application sequence. Pre-cut LATICRETE® Waterproofing/Anti-Fracture Fabric (if required), allowing 2" (50 mm) for overlap at ends and sides to fit the areas as required. Roll up the pieces for easy handling and placement. Shake or stir LATICRETE Hydro Ban™ before using.

Pre-Treat Cracks and Joints – Fill all substrate cracks, cold joints and control joints to a smooth finish using a LATICRETE latex-fortified thin-set. Alternatively, a liberal coat* of LATICRETE Hydro Ban applied with a paint brush or trowel may be used to fill in non-structural joints and cracks. Apply a liberal coat* of LATICRETE Hydro Ban approximately 8" (200 mm) wide over substrate cracks, cold joints, and control joints using a paint brush or heavy napped paint roller.

Pre-Treat Coves and Floor/Wall Intersections – Fill all substrate coves and floor/wall transitions to a smooth finish and changes in plane using a LATICRETE latex-fortified thin-set. Alternatively, a liberal coat* of LATICRETE Hydro Ban applied with a paint brush or trowel may be used to fill in cove joints and floor/wall transitions <1/8" (3 mm) in width. Apply a liberal coat* of LATICRETE Hydro Ban approximately 8" (200 mm) wide over substrate cracks, cold joints, and control joints using a paint brush or heavy napped paint roller.



Pre-Treat Drains – Drains must be of the clamping ring type, with weepers as per ASME A112.6.3. Apply a liberal coat* of LATICRETE Hydro Ban around and over the bottom half of drain clamping ring. Cover with a second liberal coat of LATICRETE Hydro Ban. When the LATICRETE Hydro Ban dries, apply a bead of LATICRETE Latasil™ where the LATICRETE Hydro Ban meets the drain throat. Install the top half of drain clamping ring.

Pre-Treat Penetrations – Allow for a minimum 1/8" (3 mm) space between drains, pipes, lights, or other penetrations and surrounding ceramic tile, stone or brick. Pack any gaps around pipes, lights or other penetrations with a LATICRETE latex-fortified thin-set. Apply a liberal coat* of LATICRETE Hydro Ban around penetration opening. Cover the first coat with a second liberal coat* of LATICRETE Hydro Ban. Bring LATICRETE Hydro Ban up to level of tile or stone. When LATICRETE Hydro Ban has dried to the touch seal with LATICRETE Latasil.

Main Application – Allow any pre-treated areas to dry to the touch. Apply a liberal coat* of LATICRETE Hydro Ban with a paint brush or heavy napped roller over substrate including pre-treated areas and allow to dry to the touch. Install another liberal coat* of LATICRETE Hydro Ban over the first coat. Let the top coat of LATICRETE Hydro Ban dry to the touch approximately 1 – 2 hours at 70°F (21°C) and 50% RH. When the top coat has dried to the touch inspect the surface for pinholes, voids, thin spots or other defects. LATICRETE Hydro Ban will dry to an olive green color when fully cured. Use additional LATICRETE Hydro Ban to seal any defects.

Movement Joints – Apply a liberal coat* of LATICRETE Hydro Ban, approximately 8" (200 mm) wide over the areas. Then embed and loop the 6" (150 mm) wide LATICRETE Waterproofing/Anti-Fracture Fabric and allow the LATICRETE Hydro Ban liquid to bleed through. Immediately apply a second coat of LATICRETE Hydro Ban.

* Dry coat thickness is 20 – 30 mil (0.02 – 0.03" or 0.5 – 0.8 mm); consumption per coat is approximately 0.01 gal/ft² (approx. 0.4 l/m²); coverage is approximately 100 ft²/gal (approx. 2.5 m²/l). LATICRETE® Waterproofing/Anti-Fracture Fabric can be used to pre-treat cracks, joints, curves, corners, drains, and penetrations with LATICRETE Hydro Ban™.

Protection – Provide protection for newly installed membrane, even if covered with a thin-bed ceramic tile, stone or brick installation against exposure to rain or other water for a minimum of 2 hours at 70°F (21°C) and 50% RH. For temperatures between 45°F and 69°F (7°C to 21°C) allow a minimum 24 hour cure period.

Flood Testing – Allow membrane to cure fully before flood testing, typically a minimum 2 hours at 70°F (21°C) and 50% RH. Cold conditions will require a longer curing time. For temperatures between 50°F and 69°F (10°C to 21°C) allow a minimum 24 hour cure period prior to flood testing. Please refer to LATICRETE TDS 169 “Flood Testing Procedures”, available at www.laticrete.com for flood testing requirements and procedures.

Use the following LATICRETE® System Materials:
LATICRETE Hydro Ban

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

B. Crack Suppression:

NOTE TO SPECIFIER: Ceramic tile, mosaics, pavers, brick and stone installed by the thin bed method can be damaged by shrinkage related substrate cracking. Specify an Anti-Fracture Membrane or Crack Suppression Membrane to reduce crack propagation into veneers or hard finishes. Do not use Anti-Fracture/Crack Suppression Membranes if substrate cracking:

1. Is due to structural movement;
2. Involves vertical and/or differential movement;
3. Involves horizontal movement >1/8" (3 mm).

Install the anti-fracture membrane in compliance with current revisions of ANSI A108.17 (1.0 – 3.0). Review the installation and plan the application sequence. Pre-cut LATICRETE Waterproofing/Anti-Fracture Fabric, allowing 2" (50 mm) for overlap at ends and sides. Roll up the pieces for easy handling and placement.

Shake or stir LATICRETE Blue 92 Anti-Fracture Membrane Liquid before using. Pre-treat all substrate cracks, cold joints, control joints, coves, corners and penetrations according to manufacturer's specific recommendations. Allow pre-treated areas to dry to the touch. Apply a liberal coat of LATICRETE Blue 92 Anti-Fracture Membrane Liquid with brush or roller over substrate including pre-treated areas. Before the coat dries, unroll LATICRETE Waterproofing/Anti-Fracture Fabric, smooth out any wrinkles and press with brush or roller until LATICRETE Blue 92 Anti-Fracture Membrane Liquid “bleeds” through to surface. Apply another liberal coat of LATICRETE Blue 92 Anti-Fracture Membrane Liquid and allow it to dry to the touch, ~1–3 hours at 70°F (21°C) and 50% RH. For installation of ceramic tile, mosaic, paver, brick or stone, follow Thin Bed Method (§ 3.4C), which may begin as soon as last coat of LATICRETE Blue 92 Anti-Fracture Membrane Liquid has dried to the touch. Allow LATICRETE Blue 92 Anti-Fracture Membrane to cure for at least 3 days at 70°F (21°C) and 50% RH before exposing installation to rain or other water, even if covered by ceramic tile, mosaics, pavers, brick or stone.

Use the following LATICRETE System Materials:
LATICRETE Blue 92 Anti-Fracture Membrane

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

3.4 Installation – Tile, Brick and Stone

A. General: Install in accordance with current versions of American National Standards Institute, Inc. (ANSI) “A108 American National Standard Specifications for Installation of Ceramic Tile” and TCNA “Handbook for Ceramic Tile Installation.” Cut and fit ceramic tile, brick or stone neatly around corners, fittings, and obstructions. Perimeter pieces to be minimum half tile, brick or stone. Chipped, cracked, split pieces and edges are not acceptable. Make joints even, straight, plumb and of uniform width to tolerance +/- 1/16" over 8' (1.5 mm

in 2.4 m). Install divider strips at junction of flooring and dissimilar materials.

Electric Radiant Heating: Install in compliance with latest revisions of UI (US) 1693, UL (CAN/CAS) C22.2 #217; NEC Article 424 IX by a licensed electrician. All electrical connections must be made by a licensed electrician. A qualified tile installer is responsible for the placement and encapsulation of the LATICRETE Floor HEAT Mat. Carefully inspect and clean surface to receive LATICRETE Floor HEAT mat before the installation. Remove any sharp edges or pointed objects that might damage the heating elements. Plan and install LATICRETE Floor HEAT following the manufacturer's instructions. Fully test LATICRETE Floor HEAT during the various stages of the installation to verify correct functioning. Do not install over expansion and control joints. Fully cover and encapsulate LATICRETE Floor HEAT elements with LATICRETE 254 Platinum. Allow mortar to harden prior to the installation of waterproofing (see § 3.3A), crack suppression (see § 3.3B) or ceramic tile, mosaics, pavers, brick or stone. Do not turn the LATICRETE Floor HEAT on until the entire tile installation (including grout) has cured for a minimum of 48 hours at 70°F (21°C); cooler temperatures require longer cure times.

Use the following LATICRETE System Materials:

LATICRETE Floor HEAT

LATICRETE 254 Platinum

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

B. Thin Bed Method: Install latex portland cement mortar in compliance with current revisions of ANSI A108.02 (3.11), A108.1B and ANSI A108.5. Use the appropriate trowel notch size to ensure proper bedding of the tile, brick or stone selected. Work the latex portland cement mortar into good contact with the substrate and comb with notched side of trowel. Spread only as much latex portland cement mortar as can be covered while the mortar surface is still wet and tacky. When installing large format

(>8" x 8"/200 mm x 200 mm) tile/stone, rib/button/lug back tiles, pavers or sheet mounted ceramics/mosaics, spread latex portland cement mortar onto the back of (i.e. 'back-butter') each piece/sheet in addition to trowelling latex portland cement mortar over the substrate. Beat each piece/sheet into the latex portland cement mortar with a beating block or rubber mallet to insure full bedding and flatness. Allow installation to set until firm. Clean excess latex portland cement mortar from tile or stone face and joints between pieces.

Use the following LATICRETE System Materials:

LATICRETE 254 Platinum

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

D. Grouting or Pointing Joints:

NOTE TO SPECIFIER: The chemical resistance of grouts and pointing mortars for ceramic tile, mosaics, pavers, brick and stone will typically depend on:

1. Reagent composition and/or concentration;
2. Temperature;
3. Duration of exposure.

Review test results conducted in conformance with current revision of ASTM C267 "Standard Test Methods for Chemical Resistance of Mortars, Grouts and Monolithic Surfaces and Polymer Concretes," and manufacturer's performance data and recommendations, in the context of expected chemical exposures.

Follow manufacturer's recommendations for minimum cure time prior to grouting. Store liquid components of epoxy grout for 24 hours at 70–80°F (21–27°C) prior to use to facilitate mixing and application. Substrate temperature must be 45–90°F (7–32°C). Verify joints are free of dirt, debris or grout spacers. Sponge or wipe dust/dirt off tile faces and remove water standing in joints. Apply grout release to face of absorptive, abrasive, non-slip or rough textured ceramic tile, pavers, bricks, stone or trim units that are not hot paraffin coated to facilitate cleaning. Pour LATAPOXY® 2000 Industrial Grout Part A and Part B into a clean

mixing pail. Mix by hand or with a slow speed (<300 rpm) mixer until liquids are well blended. For vertical installations only, add LATAPOXY Part D Non-Sag Additive. While mixing, then add LATAPOXY Part C Filler Powder and blend until uniform. Immediately pour all of the LATAPOXY 2000 Industrial Grout just mixed out of the pail onto the surface to be grouted.

NOTE: Leaving epoxy grout in mixing pail will diminish working time.

Spread using a sharp edged, hard rubber float and work grout into joints. Using strokes diagonal (at 45° angle) to the grout lines, pack joints full and free of voids/pits. Hold float face at a 90° angle to grouted surface and use float edge to "squeegee" off excess grout, stroking diagonally to reduce pulling grout out of filled joints. Initial cleaning can begin 5–30 minutes after grouting depending on temperature. Spray or fog grouted surfaces with clean water, applying ~8 fl oz/ft² (0.3 l/m²). Using a circular motion, lightly scrub grouted surfaces with nylon pad to dissolve haze/film. Drag a clean towel diagonally over the scrubbed surfaces to remove froth. Rinse towel frequently and change rinse water at least every 200 ft² (19 m²). Repeat this cleaning sequence again. Wait ~30–60 minutes and use a 'hydra' sponge and soapy water to 'slick'/smoothen joint surface. Inspect joint for pinholes/voids and repair them with freshly mixed LATAPOXY 2000 Industrial Grout. After ~12 hours, check for remaining haze and remove it by scrubbing with warm soapy water. Do not use acid cleaners on epoxy grout less than 7 days old.

NOTE TO SPECIFIER: Specify color for each type/color of ceramic tile, mosaic, paver, brick, stone or trim unit.

Use the following LATICRETE® System Materials:
LATAPOXY 2000 Industrial Grout

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

E. Expansion and Control Joints: Provide control or expansion joints as located in contract drawings and in full conformity, especially in width and depth, with architectural details.

1. Substrate joints must carry through, full width, to surface of tile, brick or stone.
2. Install expansion joints in tile, brick or stone work over construction/cold joints or control joints in substrates.
3. Install expansion joints where tile, brick or stone abut restraining surfaces (such as perimeter walls, curbs, columns), changes in plane and corners.
4. Joint width and spacing depends on application – follow TCNA "Handbook for Ceramic Tile Installation" Detail "EJ-171 Expansion Joints" or consult sealant manufacturer for recommendation based on project parameters.
5. Joint width: $\geq 1/8"$ (3 mm) and $\leq 1"$ (25 mm).
6. Joint width: depth ~2:1 but joint depth must be $\geq 1/8"$ (3 mm) and $\leq 1/2"$ (12 mm).
7. Layout (field defined by joints): 1:1 length: width is optimum but must be $\leq 2:1$.

Remove all contaminants and foreign material from joint spaces/surfaces, such as dirt, dust, oil, water, frost, setting/grouting materials, sealers and old sealant/backer. Use LATICRETE® Latasil™ 9118 Primer for underwater and permanent wet area applications, or for porous stone (e.g. limestone, sandstone etc..) installations. Install appropriate Backing Material (e.g. closed cell backer rod) based on expansion joint design and as specified in § 07920. Apply masking tape to face of tile,



brick or stone veneer. Use caulking gun, or other applicator, to completely fill joints with sealant. Within 5–10 minutes of filling joint, ‘tool’ sealant surface to a smooth finish. Remove masking tape immediately after tooling joint. Wipe smears or excess sealant off the face of non-glazed tile, brick, stone or other absorptive surfaces immediately.

Use the following LATICRETE System Materials:
LATICRETE Latasil

LATICRETE Latasil 9118 Primer

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

F. Adjusting: Correction of defective work for a period of one (1) year following substantial completion, return to job and correct all defective work. Defective work includes, without limitation, tiles broken in normal abuse due to deficiencies in setting bed, loose tiles or grout, and all other defects which may develop as a result of poor workmanship.

3.5 Cleaning

Clean excess mortar/epoxy from veneer surfaces with water before they harden and as work progresses. Do not contaminate open grout/caulk joints while cleaning. Sponge and wash veneers diagonally across joints. Do not use acids for cleaning. Polish with clean dry cloth. Remove surplus materials and leave premises broom clean.

3.6 Protection

A. Protect finished installation under provisions of §01500 and §01535. Close areas to other trades and traffic until tile being installed has set firmly. Keep traffic off horizontal Portland cement thick bed mortar installations for at least 72 hours at 70°F (21°C).

B. Allow the installation to cure for a minimum of 48 hours at 70°F (21°C) before turning on LATICRETE Floor HEAT.

C. Keep floors installed with epoxy adhesive closed to traffic for 24 hrs. at 70°F (21°C), and to heavy traffic for 48 hours at 70°F (21°C) unless instructed differently by manufacturer. Use kneeling boards, or equivalent, to walk/work on newly tiled floors. Cure tile work in swimming pools, fountains and other continuous immersion applications for 10 days for epoxy based grout and 14 days for latex Portland cement based grout at 70°F (21°C) before flood testing or filling installation with water. Extend period of protection of tile work at lower temperatures, below 60°F (15°C), and at high relative humidity (>70% RH) due to retarded set times of mortar/adhesives. Replace or restore work of other trades damaged or soiled by work under this section.

Part 4 – Health and Safety

The use of personal protection such as rubber gloves, suitable dust masks, safety glasses and industrial clothing is highly recommended. Discarded packaging, product wash and waste water should be disposed of as per local, state or federal regulations.

PART 3 – EXECUTION

3.1 Substrate Examination

A. Verify that surfaces to be covered with ceramic tile, mosaics, pavers, brick, stone, trim or waterproofing are:

1. Sound, rigid and conform to good design/engineering practices;
2. Systems, including the framing system and panels, over which tile or stone will be installed shall be in conformance with the International Residential Code (IRC) for residential applications, the International Building Code (IBC) for commercial applications, or applicable building codes. The project design should include the intended use and necessary allowances for the expected live load, concentrated load, impact load, and dead load including the weight of the finish and installation materials.;
3. Clean and free of dust, dirt, oil, grease, sealers, curing compounds, laitance, efflorescence, form oil, loose plaster, paint, and scale;
4. Thin-set tile installations have a specified subsurface tolerance, for instance 1/4" in 10' (6 mm in 3 m) and 1/16" in 1' (1.5 mm in 300 mm), to conform with the ANSI specifications. Because thin-set is not intended to be used in truing or leveling the work of others, the subsurface typically should not vary by more than 1/16" over 1' (1.5 mm over 300 mm), nor more than 1/32" (0.8 mm) between adjoining edges where applicable (e.g. between sheets of exterior glue plywood or between adjacent concrete masonry units). Should the architect/designer require a more stringent tolerance (e.g. 1/8" in 10' [3 mm in 3 m]), the subsurface specification must reflect that tolerance, or the tile specification must include a specific and separate requirement to bring the 1/4" (6 mm) subsurface tolerance into compliance with the 1/8" (6 mm) tolerance desired;

5. Lateral and other bracing must be constructed as prescribed by code and/or engineered wood manufacturers' literature to achieve specified design deflection values;

6. Clean and free of dust, dirt, oil, grease, sealers, curing compounds, laitance, efflorescence, form oil, loose plaster, paint, and scale;

7. Level and true to within 1/4" in 10' (6 mm in 3 m), and no more than 1/16" in 1' (1.5 mm in 0.3 m) variation from substrate high points, for applications by the thin bed method over substrate, thin waterproofing membrane or thin crack suppression membrane;

8. Not leveled with gypsum or asphalt based compounds;

Dry as per American Society for Testing and Materials (ASTM) D4263 "Standard Test for Determining Moisture in Concrete by the Plastic Sheet Method."

B. Plywood and other engineered wood products are not a suitable subsurface for the installation of ceramic tile brick or stone in exterior installations, or interior locations where exposed to excessive moisture or humidity, such as steam rooms, showers, pools, fountains, or damp basements.

C. Fire-retardant or preservative treated plywood, Masonite®, hardwood floors, strip wood floors, "yellow pitch pine" plywood, composite panels, luan, wafer board, particleboard, oriented strand board/OSB, or similar engineered or reconstructed wood panels are not suitable substrates for the adhesive installation of ceramic tile, stone or brick. However, some of these materials, such as oriented strand board/OSB or fire retardant plywood, may be used as a structural sub-floor when 1) the material meets sub-floor deflection criteria listed in § 3.2.A.2.a and § 3.2.A.2.b, 2) are identified with an APA trademark as a performance rated structural-use panel, and 3) an underlayment suitable for adhesion of

ceramic tile, stone or brick is provided over the sub-floor.

- D. Engineered wood structural framing may be subject to increased in-service deflection due to moisture exposure and long span conditions.
- E. Advise General Contractor and Architect of any surface or substrate conditions requiring correction before tile work commences. Beginning of work constitutes acceptance of substrate or surface conditions.

3.2 Surface Preparation

A. Wood Substrates

1. Structural Framing

Joist spacing in conventional sawn lumber and engineered wood structural framing systems shall not exceed 16" (0.4 m) o.c. However, the actual requirements for the spacing of joists are governed by the thickness and type of the sub-floor panel relative to the joist or beam spacing [see § 3.2.A.2.b].

2. Sub-Floor

- a. The deflection of the structural sub-floor panels spanning structural framing components (beams and joists) shall not exceed:
 - i. $1/360$ of the span where a ceramic tile or brick finish is adhered to the underlayment and structural sub-floor;
 - ii. $1/480$ of the span for spans up to 14' (4.3 m), and no greater than $7/32$ " (6 mm) for spans over 14' (4.3 m), where a stone finish is adhered to an underlayment and a structural sub-floor.
- b. Thickness of plywood, oriented strand board/OSB or composite/COM-PLY sub-floor panels: $5/8$ " (16 mm) or $19/32$ " (15 mm) thick for 16" (0.4 m) o.c. joist spacing;
- c. For all other structural sub-floor materials, such as wood planks, minimum thickness must be as prescribed by building code and deflection must be verified by a qualified professional to comply with requirements in § 3.2.A.2.a;

- d. Sub-floor panels of other thickness with APA-Engineered Wood Association trademark grade span ratings that are commensurate with joist spacing are acceptable.

- e. All sub-floor panels must be APA Exterior or Interior Exposure 1 exposure durability with any APA grade designation. APA Sturd-I-Floor performance rated panels are not acceptable for adhesive installation of ceramic tile, stone or brick without an underlayment due to moisture expansion of tongue and groove panel edges or by moisture sensitivity of oriented strand board/ OSB type APA Sturd-I-Floor.

f. Installation:

- i. Face grain across supports;
- ii. Panel continuous over two or more spans;
- iii. End joints must occur over framing members;
- iv. Must be tongue and groove, or if not available, all edges must be blocked; v. Fasten 6" (150 mm) o.c. along all edges and 8" (200 mm) o.c. in panel field with 8d ring-shank, coated or hot-dip galvanized nails for $19/32$ " (15 mm) and $3/4$ " (18 mm) thick panels or screw them in place;
- vi. Glue sub-floor panels to joists with construction adhesive to increase stiffness.

3. Underlayment

- a. The underlayment may not be used in whole or part as a structural panel to achieve minimum deflection requirements of the sub-floor but may be used to provide increased stiffness to meet deflection requirements specified in § 3.1.A.2;
- b. Use APA Exterior structural-use sub-floor panel grade designations A-A, A-B, A-C, B-B, B-C, C-C and C-C Plugged and all Structural I panel grades;

NOTE TO SPECIFIER: Interior plywood with exterior glue exposure durability is not acceptable.

- c. The minimum recommended thickness for plywood underlayment panels is 5/8" (16 mm) or 19/32" (15 mm).
- d. Installation:
 - i. Protect underlayment from damage or contamination by other trades;
 - ii. Stagger end joints of underlayment panels;
 - iii. Offset joints between underlayment panels from joints between sub-floor panels;
 - iv. Allow minimum 1/8" (3 mm) between panels and 1/4" (6 mm) between panel and wall for expansion;
 - v. Fasten 6" (150 mm) o.c. along all edges and 8" (200 mm) o.c. in both directions in panel field with 8d ring-shank, coated or hot-dip galvanized nails for 19/32" (15 mm) and 3/4" (18 mm) thick panels or screw them in place;
 - vi. Glue underlayment to sub-floor with construction adhesive to increase stiffness.

B. Other Substrates

(List as required. Insert any Special Means of Preparation in addition to the surface preparation requirements listed in § 3.1)

NOTE TO SPECIFIER: Edit substrate and preparation section based on project specific surfaces and conditions.

3.3 Installation – Accessories

A. Waterproofing:

NOTE TO SPECIFIER: Adhesives/mastics, mortars and grouts for ceramic tile, mosaics, pavers, brick and stone are not replacements for waterproofing membranes and will not prevent water penetration into occupied or storage spaces below.

Install the waterproofing membrane in compliance with current revisions of ANSI A108.1 (2.7 Waterproofing) and ANSI A108.13. Review the installation and plan the application sequence. Pre-cut LATICRETE® Waterproofing/Anti-Fracture Fabric (if required), allowing 2"

(50 mm) for overlap at ends and sides to fit the areas as required. Roll up the pieces for easy handling and placement. Shake or stir LATICRETE Hydro Ban™ before using.

Pre-Treat Cracks and Joints – Fill all substrate cracks, cold joints and control joints to a smooth finish using a LATICRETE latex-fortified thin-set. Alternatively, a liberal coat* of LATICRETE Hydro Ban applied with a paint brush or trowel may be used to fill in non-structural joints and cracks. Apply a liberal coat* of LATICRETE Hydro Ban approximately 8" (200 mm) wide over substrate cracks, cold joints, and control joints using a paint brush or heavy napped paint roller.

Pre-Treat Coves and Floor/Wall Intersections – Fill all substrate coves and floor/wall transitions to a smooth finish and changes in plane using a LATICRETE latex-fortified thin-set. Alternatively, a liberal coat* of LATICRETE Hydro Ban applied with a paint brush or trowel may be used to fill in cove joints and floor/wall transitions <1/8" (3 mm) in width. Apply a liberal coat* of LATICRETE Hydro Ban approximately 8" (200 mm) wide over substrate cracks, cold joints, and control joints using a paint brush or heavy napped paint roller.

Pre-Treat Drains – Drains must be of the clamping ring type, with weepers as per ASME A112.6.3. Apply a liberal coat* of LATICRETE Hydro Ban around and over the bottom half of drain clamping ring. Cover with a second liberal coat of LATICRETE Hydro Ban. When the LATICRETE Hydro Ban dries, apply a bead of LATICRETE Latasil™ where the LATICRETE Hydro Ban meets the drain throat. Install the top half of drain clamping ring.

Pre-Treat Penetrations – Allow for a minimum 1/8" (3 mm) space between drains, pipes, lights, or other penetrations and surrounding ceramic tile, stone or brick. Pack any gaps around pipes, lights or other penetrations with a LATICRETE latex-fortified thin-set. Apply a liberal coat* of LATICRETE Hydro Ban around penetration opening. Cover the first coat with a second liberal coat* of LATICRETE Hydro Ban.

Bring LATICRETE Hydro Ban up to level of tile or stone. When LATICRETE Hydro Ban has dried to the touch seal with LATICRETE Latasil.

Main Application – Allow any pre-treated areas to dry to the touch. Apply a liberal coat* of LATICRETE® Hydro Ban with a paint brush or heavy napped roller over substrate including pre-treated areas and allow to dry to the touch. Install another liberal coat* of LATICRETE Hydro Ban over the first coat. Let the top coat of LATICRETE Hydro Ban dry to the touch approximately 1 – 2 hours at 70°F (21°C) and 50% RH. When the top coat has dried to the touch inspect the surface for pinholes, voids, thin spots or other defects. LATICRETE Hydro Ban will dry to an olive green color when fully cured. Use additional LATICRETE Hydro Ban to seal any defects.

Movement Joints – Apply a liberal coat* of LATICRETE Hydro Ban, approximately 8" (200 mm) wide over the areas. Then embed and loop the 6" (150 mm) wide LATICRETE Waterproofing/Anti-Fracture Fabric and allow the LATICRETE Hydro Ban liquid to bleed through. Immediately apply a second coat of LATICRETE Hydro Ban.

* Dry coat thickness is 20 – 30 mil (0.02 – 0.03" or 0.5 – 0.8 mm); consumption per coat is approximately 0.01 gal/ft² (approx. 0.4 l/m²); coverage is approximately 100 ft²/gal (approx. 2.5 m²/l). LATICRETE® Waterproofing/Anti-Fracture Fabric can be used to pre-treat cracks, joints, curves, corners, drains, and penetrations with LATICRETE Hydro Ban™.

Protection – Provide protection for newly installed membrane, even if covered with a thin-bed ceramic tile, stone or brick installation against exposure to rain or other water for a minimum of 2 hours at 70°F (21°C) and 50% RH. For temperatures between 45°F and 69°F (7°C to 21°C) allow a minimum 24 hour cure period.

Flood Testing – Allow membrane to cure fully before flood testing, typically a minimum 2 hours at 70°F (21°C) and 50% RH. Cold conditions will require a longer curing time. For temperatures between 50°F and 69°F (10°C to 21°C) allow a minimum 24 hour

cure period prior to flood testing. Please refer to LATICRETE TDS 169 "Flood Testing Procedures", available at www.laticrete.com for flood testing requirements and procedures.

Use the following LATICRETE® System Materials:
LATICRETE Hydro Ban

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

B. Crack Suppression:

NOTE TO SPECIFIER: Ceramic tile, mosaics, pavers, brick and stone installed by the thin bed method can be damaged by shrinkage related substrate cracking. Specify an Anti-Fracture Membrane or Crack Suppression Membrane to reduce crack propagation into veneers or hard finishes. Do not use Anti-Fracture/Crack Suppression Membranes if substrate cracking:

1. Is due to structural movement;
2. involves vertical and/or differential movement;
3. horizontal movement >1/8" (3 mm).

Install the anti-fracture membrane in compliance with current revisions of ANSI A108.17 (1.0 – 3.0). Review the installation and plan the application sequence. Pre-cut LATICRETE Waterproofing/Anti-Fracture Fabric, allowing 2" (50 mm) for overlap at ends and sides. Roll up the pieces for easy handling and placement. Shake or stir LATICRETE Blue 92 Anti-Fracture Membrane Liquid before using. Pre-treat all substrate cracks, cold joints, control joints, coves, corners and penetrations according to manufacturer's specific recommendations. Allow pre-treated areas to dry to the touch. Apply a liberal coat of LATICRETE Blue 92 Anti-Fracture Membrane Liquid with brush or roller over substrate including pre-treated areas. Before the coat dries, unroll LATICRETE Waterproofing/Anti-Fracture Fabric, smooth out any wrinkles and press with brush or roller until LATICRETE Blue 92 Anti-Fracture Membrane Liquid "bleeds" through to surface. Apply another liberal coat of LATICRETE Blue 92 Anti-Fracture Membrane Liquid and allow it to dry to the touch, ~1–3 hours at 70°F (21°C) and 50% RH. For installation of ceramic tile, mosaic, paver, brick or stone, follow Thin Bed Method (§ 3.4C), which may begin as soon as

last coat of LATICRETE® Blue 92 Anti-Fracture Membrane Liquid has dried to the touch. Allow LATICRETE Blue 92 Anti-Fracture Membrane to cure for at least 3 days at 70°F (21°C) and 50% RH before exposing installation to rain or other water, even if covered by ceramic tile, mosaics, pavers, brick or stone.

Use the following LATICRETE® System Materials:
LATICRETE Blue 92 Anti-Fracture Membrane

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

3.4 Installation – Tile, Brick and Stone

A. General: Install in accordance with current versions of American National Standards Institute, Inc. (ANSI) “A108 American National Standard Specifications for Installation of Ceramic Tile” and TCNA “Handbook for Ceramic Tile Installation.”

Cut and fit ceramic tile, brick or stone neatly around corners, fittings, and obstructions. Perimeter pieces to be minimum half tile, brick or stone. Chipped, cracked, split pieces and edges are not acceptable. Make joints even, straight, plumb and of uniform width to tolerance +/- 1/16" over 8' (1.5 mm in 2.4 m). Install divider strips at junction of flooring and dissimilar materials.

B. Electric Radiant Heating: Install in compliance with latest revisions of UI (US) 1693, UL (CAN/CAS) C22.2 #217; NEC Article 424 IX by a licensed electrician. All electrical connections must be made by a licensed electrician. A qualified tile installer is responsible for the placement and encapsulation of the LATICRETE Floor HEAT. Carefully inspect and clean surface to receive LATICRETE Floor HEAT before the installation. Remove any sharp edges or pointed objects that might damage the heating elements. Plan and install LATICRETE Floor HEAT following the manufacturer's instructions. Fully test LATICRETE Floor HEAT during the various stages of the installation to verify

correct functioning. Do not install over expansion and control joints. Fully cover and encapsulate LATICRETE Floor HEAT elements with LATICRETE 254 Platinum. Allow mortar to harden prior to the installation of waterproofing (see § 3.3A), crack suppression (see § 3.3B) or ceramic tile, mosaics, pavers, brick or stone. Do not turn the LATICRETE Floor HEAT on until the entire tile installation (including grout) has cured for a minimum of 48 hours at 70°F (21°C); cooler temperatures require longer cure times.

Use the following LATICRETE System Materials:
LATICRETE Floor HEAT

LATICRETE 254 Platinum

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

C. Thin Bed Method: Install latex portland cement mortar in compliance with current revisions of ANSI A108.02 (3.11), A108.1B and ANSI A108.5. Use the appropriate trowel notch size to ensure proper bedding of the tile, brick or stone selected. Work the latex portland cement mortar into good contact with the substrate and comb with notched side of trowel. Spread only as much latex portland cement mortar as can be covered while the mortar surface is still wet and tacky. When installing large format (>8" x 8"/200 mm x 200 mm) tile/stone, rib/button/lug back tiles, pavers or sheet mounted ceramics/mosaics, spread latex portland cement mortar onto the back of (i.e. ‘back-butter’) each piece/sheet in addition to trowelling latex portland cement mortar over the substrate. Beat each piece/sheet into the latex portland cement mortar with a beating block or rubber mallet to insure full bedding and flatness. Allow installation to set until firm. Clean excess latex portland cement mortar from tile or stone face and joints between pieces.

Use the following LATICRETE System Materials:
LATICRETE 254 Platinum

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

D. Grouting or Pointing:

NOTE TO SPECIFIER: The chemical resistance of grouts and pointing mortars for ceramic tile, mosaics, pavers, brick and stone will typically depend on:

1. Reagent composition and/or concentration;
2. Temperature;
3. Duration of exposure.

Review test results conducted in conformance with current revision of ASTM C267 "Standard Test Methods for Chemical Resistance of Mortars, Grouts and Monolithic Surfaces and Polymer Concretes," and manufacturer's performance data and recommendations, in the context of expected chemical exposures.

Follow manufacturer's recommendations for minimum cure time prior to grouting. Store liquid components of epoxy grout for 24 hours at 70–80°F (21–27°C) prior to use to facilitate mixing and application. Substrate temperature must be 45–90°F (7–32°C). Verify joints are free of dirt, debris or grout spacers. Sponge or wipe dust/dirt off tile faces and remove water standing in joints. Apply grout release to face of absorptive, abrasive, non-slip or rough textured ceramic tile, pavers, bricks, stone or trim units that are not hot paraffin coated to facilitate cleaning. Pour LATAPOXY® 2000 Industrial Grout Part A and Part B into a clean mixing pail. Mix by hand or with a slow speed (<300 rpm) mixer until liquids are well blended. For vertical installations only, add LATAPOXY Part D Non-Sag Additive. While mixing, then add LATAPOXY Part C Filler Powder and blend until uniform. Immediately pour all of the LATAPOXY 2000 Industrial Grout just mixed out of the pail onto the surface to be grouted.

NOTE: Leaving epoxy grout in mixing pail will diminish working time.

Spread using a sharp edged, hard rubber float and work grout into joints. Using strokes diagonal (at 45° angle) to the grout lines, pack joints full and free of voids/pits. Hold float face at a 90° angle to grouted surface and use float edge to "squeegee" off excess grout, stroking

diagonally to reduce pulling grout out of filled joints. Initial cleaning can begin 5–30 minutes after grouting depending on temperature. Spray or fog grouted surfaces with clean water, applying ~8 fl oz/ft² (0.3 l/m²). Using a circular motion, lightly scrub grouted surfaces with nylon pad to dissolve haze/film. Drag a clean towel diagonally over the scrubbed surfaces to remove froth. Rinse towel frequently and change rinse water at least every 200 ft² (19 m²). Repeat this cleaning sequence again. Wait ~30–60 minutes and use a 'hydra' sponge and soapy water to 'slick'/smoothen joint surface. Inspect joint for pinholes/voids and repair them with freshly mixed LATAPOXY 2000 Industrial Grout. After ~12 hours, check for remaining haze and remove it by scrubbing with warm soapy water. Do not use acid cleaners on epoxy grout less than 7 days old.

NOTE TO SPECIFIER: Specify color for each type/color of ceramic tile, mosaic, paver, brick, stone or trim unit.

Use the following LATICRETE System Materials: LATAPOXY 2000 Industrial Grout

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

- E. Expansion and Control Joints: Provide control or expansion joints as located in contract drawings and in full conformity, especially in width and depth, with architectural details.
1. Substrate joints must carry through, full width, to surface of tile, brick or stone.
 2. Install expansion joints in tile, brick or stone work over construction/cold joints or control joints in substrates.
 3. Install expansion joints where tile, brick or stone abut restraining surfaces (such as perimeter walls, curbs, columns), changes in plane and corners.
 4. Joint width and spacing depends on application – follow TCNA "Handbook for Ceramic Tile Installation" Detail "EJ-171 Expansion Joints" or consult sealant manufacturer for recommendation based on project parameters.

5. Joint width: $\geq 1/8"$ (3 mm) and $\leq 1"$ (25 mm).
6. Joint width: depth ~2:1 but joint depth must be $\geq 1/8"$ (3 mm) and $\leq 1/2"$ (12 mm).
7. Layout (field defined by joints): 1:1 length: width is optimum but must be $\leq 2:1$.

Remove all contaminants and foreign material from joint spaces/surfaces, such as dirt, dust, oil, water, frost, setting/grouting materials, sealers and old sealant/backer. Use LATICRETE® Latasil™ 9118 Primer for underwater and permanent wet area applications, or for porous stone (e.g. limestone, sandstone etc...) installations. Install appropriate Backing Material (e.g. closed cell backer rod) based on expansion joint design and as specified in § 07920. Apply masking tape to face of tile, brick or stone veneer. Use caulking gun, or other applicator, to completely fill joints with sealant. Within 5–10 minutes of filling joint, 'tool' sealant surface to a smooth finish. Remove masking tape immediately after tooling joint. Wipe smears or excess sealant off the face of non-glazed tile, brick, stone or other absorptive surfaces immediately.

Use the following LATICRETE® System Materials:
LATICRETE Latasil

LATICRETE Latasil 9118 Primer

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

- F. Adjusting: Correction of defective work for a period of one (1) year following substantial completion, return to job and correct all defective work. Defective work includes, without limitation, tiles broken in normal abuse due to deficiencies in setting bed, loose tiles or grout, and all other defects which may develop as a result of poor workmanship.

3.5 Cleaning

Clean excess mortar/epoxy from veneer surfaces with water before they harden and as work progresses. Do not contaminate open grout/caulk joints while cleaning. Sponge and wash veneers diagonally across joints. Do not

use acids for cleaning. Polish with clean dry cloth. Remove surplus materials and leave premises broom clean.

3.6 Protection

- A. Protect finished installation under provisions of §01500 and §01535. Close areas to other trades and traffic until tile being installed has set firmly. Keep traffic off horizontal portland cement thick bed mortar installations for at least 72 hours at 70°F (21°C).
- B. Allow the installation to cure for a minimum of 48 hours at 70°F (21°C) before turning on LATICRETE Floor HEAT.
- C. Keep floors installed with epoxy adhesive closed to traffic for 24 hrs at 70°F (21°C), and to heavy traffic for 48 hours at 70°F (21°C) unless instructed differently by manufacturer. Use kneeling boards, or equivalent, to walk/work on newly tiled floors. Cure tile work in swimming pools, fountains and other continuous immersion applications for 10 days for epoxy based grout and 14 days for latex portland cement based grout at 70°F (21°C) before flood testing or filling installation with water. Extend period of protection of tile work at lower temperatures, below 60°F (15°C), and at high relative humidity (>70% RH) due to retarded set times of mortar/adhesives. Replace or restore work of other trades damaged or soiled by work under this section.

Part 4 – Health and Safety

The use of personal protection such as rubber gloves, suitable dust masks, safety glasses and industrial clothing is highly recommended. Discarded packaging, product wash and waste water should be disposed of as per local, state or federal regulations.

PART 3 – EXECUTION

3.1 Substrate Examination

A. Verify that surfaces to be covered with ceramic tile, mosaics, pavers, brick, stone, trim or waterproofing are:

1. Sound, rigid and conform to good design/engineering practices;
2. Systems, including the framing system and panels, over which tile or stone will be installed shall be in conformance with the International Residential Code (IRC) for residential applications, the International Building Code (IBC) for commercial applications, or applicable building codes. The project design should include the intended use and necessary allowances for the expected live load, concentrated load, impact load, and dead load including the weight of the finish and installation materials.;
3. Clean and free of dust, dirt, oil, grease, sealers, curing compounds, laitance, efflorescence, form oil, loose plaster, paint, and scale;
4. Thin-set tile installations have a specified subsurface tolerance, for instance $1/4"$ in $10'$ (6 mm in 3 m) and $1/16"$ in $1'$ (1.5 mm in 300 mm), to conform with the ANSI specifications. Because thin-set is not intended to be used in truing or leveling the work of others, the subsurface typically should not vary by more than $1/16"$ over $1'$ (1.5 mm over 300 mm), nor more than $1/32"$ (0.8 mm) between adjoining edges where applicable (e.g. between sheets of exterior glue plywood or between adjacent concrete masonry units). Should the architect/designer require a more stringent tolerance (e.g. $1/8"$ in $10'$ [3 mm in 3 m]), the subsurface specification must reflect that tolerance, or the tile specification must include a specific and separate requirement to bring the $1/4"$ (6 mm) subsurface tolerance into compliance with the $1/8"$ (6 mm) tolerance desired;

5. Lateral and other bracing must be constructed as prescribed by code and/or engineered wood manufacturers' literature to achieve specified design deflection values;

6. Clean and free of dust, dirt, oil, grease, sealers, curing compounds, laitance, efflorescence, form oil, loose plaster, paint, and scale;

7. Level and true to within $1/4"$ in $10'$ (6 mm in 3 m), and no more than $1/16"$ in $1'$ (1.5 mm in 0.3 m) variation from substrate high points, for applications by the thin bed method over substrate, thin waterproofing membrane or thin crack suppression membrane;

8. Not leveled with gypsum or asphalt based compounds;

9. Dry as per American Society for Testing and Materials (ASTM) D4263 "Standard Test for Determining Moisture in Concrete by the Plastic Sheet Method."

B. Plywood and other engineered wood products are not a suitable subsurface for the installation of ceramic tile brick or stone in exterior installations, or interior locations where exposed to excessive moisture or humidity, such as steam rooms, showers, pools, fountains, or damp basements.



- C. Fire-retardant or preservative treated plywood, Masonite®, hardwood floors, strip wood floors, "yellow pitch pine" plywood, composite panels, luan, wafer board, particleboard, oriented strand board/OSB, or similar engineered or reconstructed wood panels are not suitable substrates for the adhesive installation of ceramic tile, stone or brick. However, some of these materials, such as oriented strand board/OSB or fire retardant plywood, may be used as a structural sub-floor when 1) the material meets sub-floor deflection criteria listed in § 3.2.A.2.a and § 3.2.A.2.b, 2) are identified with an APA trademark as a performance rated structural-use panel, and 3) an underlayment suitable for adhesion of ceramic tile, stone or brick is provided over the sub-floor.
- D. Engineered wood structural framing may be subject to increased in-service deflection due to moisture exposure and long span conditions.
- E. Advise General Contractor and Architect of any surface or substrate conditions requiring correction before tile work commences. Beginning of work constitutes acceptance of substrate or surface conditions.
- i. 1/360 of the span where a ceramic tile or brick finish is adhered to the underlayment and structural sub-floor;
- ii. 1/480 of the span for spans up to 14' (4.3 m), and no greater than 7/32" (6 mm) for spans over 14' (4.3 m), where a stone finish is adhered to an underlayment and a structural sub-floor.
- b. Thickness of plywood, oriented strand board/OSB or composite/COM-PLY sub-floor panels: 5/8" (16 mm) or 19/32" (15 mm) thick for 16" (0.4 m) o.c. joist spacing;
- c. For all other structural sub-floor materials, such as wood planks, minimum thickness must be as prescribed by building code and deflection must be verified by a qualified professional to comply with requirements in § 3.2.A.2.a;
- d. Sub-floor panels of other thickness with APA-Engineered Wood Association trademark grade span ratings that are commensurate with joist spacing are acceptable.
- e. All sub-floor panels must be APA Exterior or Interior Exposure 1 exposure durability with any APA grade designation. APA Sturd-I-Floor performance rated panels are not acceptable for adhesive installation of ceramic tile, stone or brick without an underlayment due to moisture expansion of tongue and groove panel edges or by moisture sensitivity of oriented strand board/ OSB type APA Sturd-I-Floor.

3.2 Surface Preparation

A. Wood Substrates

1. Structural Framing

Joist spacing in conventional sawn lumber and engineered wood structural framing systems shall not exceed 16" (0.4 m) o.c. However, the actual requirements for the spacing of joists are governed by the thickness and type of the sub-floor panel relative to the joist or beam spacing [see § 3.2.A.2.b].

2. Sub-Floor

- a. The deflection of the structural sub-floor panels spanning structural framing components (beams and joists) shall not exceed:

f. Installation:

- i. Face grain across supports;
- ii. Panel continuous over two or more spans;
- iii. End joints must occur over framing members;
- iv. Must be tongue and groove, or if not available, all edges must be blocked;
- v. Fasten 6" (150 mm) o.c. along all edges and 8" (200 mm) o.c. in panel field with 8d ring-shank, coated or hot-dip

galvanized nails for 19/32" (15 mm) and 3/4" (19 mm) thick panels or screw them in place;

- vi. Glue sub-floor panels to joists with construction adhesive to increase stiffness.

3. Underlayment

- a. The underlayment may not be used in whole or part as a structural panel to achieve minimum deflection requirements of the sub-floor but may be used to provide increased stiffness to meet deflection requirements specified in § 3.1.A.2;
- b. The minimum recommended thickness for Cementitious Backer Units (CBU) or Fiber Cement Underlayment used as underlayment is 1/2" (12 mm);
- c. CBU shall comply with current revisions of ANSI A118.9 and ASTM C 1325, and Fiber Cement Underlayment shall comply with current revision ASTM C 1288;
- d. CBU and Fiber Cement Underlayment shall be installed in conformance with current revision of ANSI A108.11;
- e. Lay out the CBU or Fiber Cement Underlayment so that the long side of each board runs perpendicular to joints between sub-floor panels, offset joints between CBU or Fiber Cement Underlayment boards from joints between sub-floor panels and stagger end joints of CBU or Fiber Cement Underlayment boards. Allow minimum 1/8" (3 mm) between boards and 1/4" (6 mm) between boards and wall, or other restraining surfaces, for expansion;
- f. Remove sawdust, dirt, dust or other contaminants from the wood sub-floor.

Over clean exterior glue plywood sub-floor panels, apply latex portland cement mortar or epoxy adhesive as a bond coat. Lay the CBU or Fiber Cement Underlayment into the bond coat while the surface is still wet and

tacky. Spread only as much bond coat as can be covered in 15–20 minutes. Remove any latex portland cement mortar or epoxy adhesive that has “skinned over” and re-apply fresh material;

- g. Over clean hardwood strip or Oriented Strand Board (OSB) sub-floor panels, make a “full spread” application of construction adhesive as a bond coat. Lay the CBU or Fiber Cement Underlayment into the bond coat while the surface is still wet and tacky. Spread only as much bond coat as can be covered in 15–20 minutes. Remove any construction adhesive that has “skinned over” and re-apply fresh material. Recommended construction adhesive: Liquid Nails® PL2000 or equivalent;
- h. Over all wood sub-floors, also fasten CBU or Fiber Cement Underlayment every 6" (150 mm) o.c. along all edges and 8" (200 mm) o.c. in board field (both directions) with screws recommended by CBU or Fiber Cement Underlayment manufacturer or 3/4" (18 mm) hot-dip galvanized roofing nails;
- i. Tape all the board joints with the alkali resistant 2" (50 mm) wide reinforcing mesh provided by the CBU or Fiber Cement Underlayment manufacturer imbedded in the same latex portland cement mortar or epoxy adhesive used to install the ceramic tile, stone or brick (see § 3.4C);

B. Other Substrates

(List as required. Insert any Special Means of Preparation in addition to the surface preparation requirements listed in § 3.1)

NOTE TO SPECIFIER: Edit substrate and preparation section based on project specific surfaces and conditions.

3.3 Installation – Accessories

A. Waterproofing:

NOTE TO SPECIFIER: Adhesives/mastics, mortars and grouts for ceramic tile, mosaics, pavers, brick and stone are not replacements for waterproofing membranes and will not prevent water penetration into occupied or storage spaces below.

Install the waterproofing membrane in compliance with current revisions of ANSI A108.1 (2.7 Waterproofing) and ANSI A108.13. Review the installation and plan the application sequence. Pre-cut LATICRETE® Waterproofing/Anti-Fracture Fabric (if required), allowing 2" (50 mm) for overlap at ends and sides to fit the areas as required. Roll up the pieces for easy handling and placement. Shake or stir LATICRETE Hydro Ban™ before using.

Pre-Treat Cracks and Joints – Fill all substrate cracks, cold joints and control joints to a smooth finish using a LATICRETE latex-fortified thin-set. Alternatively, a liberal coat* of LATICRETE Hydro Ban applied with a paint brush or trowel may be used to fill in non-structural joints and cracks. Apply a liberal coat* of LATICRETE Hydro Ban approximately 8" (200 mm) wide over substrate cracks, cold joints, and control joints using a paint brush or heavy napped paint roller.

Pre-Treat Coves and Floor/Wall Intersections – Fill all substrate coves and floor/wall transitions to a smooth finish and changes in plane using a LATICRETE latex-fortified thin-set. Alternatively, a liberal coat* of LATICRETE Hydro Ban applied with a paint brush or trowel may be used to fill in cove joints and floor/wall transitions <1/8" (3 mm) in width. Apply a liberal coat* of LATICRETE Hydro Ban approximately 8" (200 mm) wide over substrate cracks, cold joints, and control joints using a paint brush or heavy napped paint roller.

Pre-Treat Drains – Drains must be of the clamping ring type, with weepers as per ASME A112.6.3. Apply a liberal coat* of LATICRETE Hydro Ban around and over the bottom half of drain clamping ring. Cover with a second liberal coat of LATICRETE Hydro Ban. When

the LATICRETE Hydro Ban dries, apply a bead of LATICRETE Latasil™ where the LATICRETE Hydro Ban meets the drain throat. Install the top half of drain clamping ring.

Pre-Treat Penetrations – Allow for a minimum 1/8" (3 mm) space between drains, pipes, lights, or other penetrations and surrounding ceramic tile, stone or brick. Pack any gaps around pipes, lights or other penetrations with a LATICRETE latex-fortified thin-set. Apply a liberal coat* of LATICRETE Hydro Ban around penetration opening. Cover the first coat with a second liberal coat* of LATICRETE Hydro Ban. Bring LATICRETE Hydro Ban up to level of tile or stone. When LATICRETE Hydro Ban has dried to the touch seal with LATICRETE Latasil.

Main Application – Allow any pre-treated areas to dry to the touch. Apply a liberal coat* of LATICRETE Hydro Ban with a paint brush or heavy napped roller over substrate including pre-treated areas and allow to dry to the touch. Install another liberal coat* of LATICRETE Hydro Ban over the first coat. Let the top coat of LATICRETE Hydro Ban dry to the touch approximately 1 – 2 hours at 70°F (21°C) and 50% RH. When the top coat has dried to the touch inspect the surface for pinholes, voids, thin spots or other defects. LATICRETE Hydro Ban will dry to an olive green color when fully cured. Use additional LATICRETE Hydro Ban to seal any defects.

Movement Joints – Apply a liberal coat* of LATICRETE Hydro Ban, approximately 8" (200 mm) wide over the areas. Then embed and loop the 6" (150 mm) wide LATICRETE Waterproofing/Anti-Fracture Fabric and allow the LATICRETE Hydro Ban liquid to bleed through. Immediately apply a second coat of LATICRETE Hydro Ban.

* Dry coat thickness is 20 – 30 mil (0.02 – 0.03" or 0.5 – 0.8 mm); consumption per coat is approximately 0.01 gal/ft² (approx. 0.4 l/m²); coverage is approximately 100 ft²/gal (approx. 2.5 m²/l). LATICRETE Waterproofing/Anti-Fracture Fabric can be used to pre-treat cracks, joints, curves, corners, drains, and penetrations with LATICRETE Hydro Ban™.

Protection – Provide protection for newly installed membrane, even if covered with a thin-bed ceramic tile, stone or brick installation against exposure to rain or other water for a minimum of 2 hours at 70°F (21°C) and 50% RH. For temperatures between 45°F and 69°F (7°C to 21°C) allow a minimum 24 hour cure period.

Flood Testing – Allow membrane to cure fully before flood testing, typically a minimum 2 hours at 70°F (21°C) and 50% RH. Cold conditions will require a longer curing time. For temperatures between 50°F and 69°F (10°C to 21°C) allow a minimum 24 hour cure period prior to flood testing. Please refer to LATICRETE TDS 169 “Flood Testing Procedures”, available at www.laticrete.com for flood testing requirements and procedures.

Use the following LATICRETE® System Materials:
LATICRETE Hydro Ban

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

B. Crack Suppression:

NOTE TO SPECIFIER: Ceramic tile, mosaics, pavers, brick and stone installed by the thin bed method can be damaged by shrinkage related substrate cracking. Specify an Anti-Fracture Membrane or Crack Suppression Membrane to reduce crack propagation into veneers or hard finishes. Do not use Anti-Fracture/Crack Suppression Membranes if substrate cracking:

1. Is due to structural movement;
2. Involves vertical and/or differential movement;
3. Involves horizontal movement >1/8" (3 mm).

Install the anti-fracture membrane in compliance with current revisions of ANSI A108.17 (1.0 – 3.0). Review the installation and plan the application sequence. Pre-cut LATICRETE Waterproofing/Anti-Fracture Fabric, allowing 2" (50 mm) for overlap at ends and sides. Roll up the pieces for easy handling and placement. Shake or stir LATICRETE Blue 92 Anti-Fracture Membrane Liquid before using. Pre-treat all substrate cracks, cold joints, control joints, coves, corners and penetrations according to manufacturer's specific recommendations. Allow pre-treated areas to dry to the touch.

Apply a liberal coat of LATICRETE Blue 92 Anti-Fracture Membrane Liquid with brush or roller over substrate including pre-treated areas. Before the coat dries, unroll LATICRETE Waterproofing/Anti-Fracture Fabric, smooth out any wrinkles and press with brush or roller until LATICRETE Blue 92 Anti-Fracture Membrane Liquid “bleeds” through to surface. Apply another liberal coat of LATICRETE Blue 92 Anti-Fracture Membrane Liquid and allow it to dry to the touch, ~1–3 hours at 70°F (21°C) and 50% RH. For installation of ceramic tile, mosaic, paver, brick or stone, follow Thin Bed Method (§ 3.4C), which may begin as soon as last coat of LATICRETE Blue 92 Anti-Fracture Membrane Liquid has dried to the touch. Allow LATICRETE Blue 92 Anti-Fracture Membrane to cure for at least 3 days at 70°F (21°C) and 50% RH before exposing installation to rain or other water, even if covered by ceramic tile, mosaics, pavers, brick or stone.

Use the following LATICRETE System Materials:
LATICRETE Blue 92 Anti-Fracture Membrane

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

3.4 Installation – Tile, Brick and Stone

A. General: Install in accordance with current versions of American National Standards Institute, Inc. (ANSI) “A108 American National Standard Specifications for Installation of Ceramic Tile” and TCNA “Handbook for Ceramic Tile Installation.” Cut and fit ceramic tile, brick or stone neatly around corners, fittings, and obstructions. Perimeter pieces to be minimum half tile, brick or stone. Chipped, cracked, split pieces and edges are not acceptable. Make joints even, straight, plumb and of uniform width to tolerance +/-1/16" over 8' (1.5 mm in 2.4 m). Install divider strips at junction of flooring and dissimilar materials.

Electric Radiant Heating: Install in compliance with latest revisions of UI (US) 1693, UL (CAN/CAS) C22.2 #217; NEC Article 424 IX by a licensed electrician. All electrical connections must be

made by a licensed electrician. A qualified tile installer is responsible for the placement and encapsulation of the LATICRETE® Floor HEAT. Carefully inspect and clean surface to receive LATICRETE Floor HEAT before the installation. Remove any sharp edges or pointed objects that might damage the heating elements. Plan and install LATICRETE Floor HEAT following the manufacturer's instructions. Fully test LATICRETE Floor HEAT during the various stages of the installation to verify correct functioning. Do not install over expansion and control joints. Fully cover and encapsulate LATICRETE Floor HEAT elements with LATICRETE 254 Platinum. Allow mortar to harden prior to the installation of waterproofing (see § 3.3A), crack suppression (see § 3.3B) or ceramic tile, mosaics, pavers, brick or stone. Do not turn the LATICRETE Floor HEAT on until the entire tile installation (including grout) has cured for a minimum of 48 hours at 70°F (21°C); cooler temperatures require longer cure times.

Use the following LATICRETE® System Materials:
LATICRETE Floor HEAT

LATICRETE 254 Platinum

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

Thin Bed Method: Install latex portland cement mortar in compliance with current revisions of ANSI A108.02 (3.11), A108.1B and ANSI A108.5. Use the appropriate trowel notch size to ensure proper bedding of the tile, brick or stone selected. Work the latex portland cement mortar into good contact with the substrate and comb with notched side of trowel. Spread only as much latex portland cement mortar as can be covered while the mortar surface is still wet and tacky. When installing large format (>8" x 8"/200 mm x 200 mm) tile/stone, rib/button/lug back tiles, pavers or sheet mounted ceramics/mosaics, spread latex portland cement mortar onto the back of (i.e. 'back-butter') each piece/sheet in addition to trowelling latex portland cement mortar over the substrate. Beat each piece/sheet into the

latex portland cement mortar with a beating block or rubber mallet to insure full bedding and flatness. Allow installation to set until firm. Clean excess latex portland cement mortar from tile or stone face and joints between pieces.

Use the following LATICRETE System Materials:
LATICRETE 254 Platinum

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

D. Grouting or Pointing:

NOTE TO SPECIFIER: The chemical resistance of grouts and pointing mortars for ceramic tile, mosaics, pavers, brick and stone will typically depend on:

1. Reagent composition and/or concentration;
2. Temperature;
3. Duration of exposure.

Review test results conducted in conformance with current revision of ASTM C267 "Standard Test Methods for Chemical Resistance of Mortars, Grouts and Monolithic Surfaces and Polymer Concretes," and manufacturer's performance data and recommendations, in the context of expected chemical exposures.

Follow manufacturer's recommendations for minimum cure time prior to grouting. Store liquid components of epoxy grout for 24 hours at 70–80°F (21–27°C) prior to use to facilitate mixing and application. Substrate temperature must be 45–90°F (7–32°C). Verify joints are free of dirt, debris or grout spacers. Sponge or wipe dust/dirt off tile faces and remove water standing in joints. Apply grout release to face of absorptive, abrasive, non-slip or rough textured ceramic tile, pavers, bricks, stone or trim units that are not hot paraffin coated to facilitate cleaning. Pour LATAPOXY® 2000 Industrial Grout Part A and Part B into a clean mixing pail. Mix by hand or with a slow speed (<300 rpm) mixer until liquids are well blended. For vertical installations only, add LATAPOXY Part D Non-Sag Additive. While mixing, then add LATAPOXY Part C Filler Powder and blend until uniform. Immediately pour all of the LATAPOXY 2000 Industrial Grout just mixed out of the pail onto the surface to be grouted.

NOTE: leaving epoxy grout in mixing pail will diminish working time.

Spread using a sharp edged, hard rubber float and work grout into joints. Using strokes diagonal (at 45° angle) to the grout lines, pack joints full and free of voids/pits. Hold float face at a 90° angle to grouted surface and use float edge to "squeegee" off excess grout, stroking diagonally to reduce pulling grout out of filled joints. Initial cleaning can begin 5–30 minutes after grouting depending on temperature. Spray or fog grouted surfaces with clean water, applying ~8 fl oz/ft² (0.3 l/m²). Using a circular motion, lightly scrub grouted surfaces with nylon pad to dissolve haze/film. Drag a clean towel diagonally over the scrubbed surfaces to remove froth. Rinse towel frequently and change rinse water at least every 200 ft² (19 m²). Repeat this cleaning sequence again. Wait ~30–60 minutes and use a 'hydra' sponge and soapy water to 'slick'/smoothen joint surface. Inspect joint for pinholes/voids and repair them with freshly mixed LATAPOXY 2000 Industrial Grout. After ~12 hours, check for remaining haze and remove it by scrubbing with warm soapy water. Do not use acid cleaners on epoxy grout less than 7 days old.

NOTE TO SPECIFIER: Specify color for each type/color of ceramic tile, mosaic, paver, brick, stone or trim unit.

Use the following LATICRETE System Materials:
LATAPOXY 2000 Industrial Grout

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

E. Expansion and Control Joints: Provide control or expansion joints as located in contract drawings and in full conformity, especially in width and depth, with architectural details.

1. Substrate joints must carry through, full width, to surface of tile, brick or stone.
2. Install expansion joints in tile, brick or stone work over construction/cold joints or control joints in substrates.

3. Install expansion joints where tile, brick or stone abut restraining surfaces (such as perimeter walls, curbs, columns), changes in plane and corners.
4. Joint width and spacing depends on application – follow TCNA "Handbook for Ceramic Tile Installation" Detail "EJ-171 Expansion Joints" or consult sealant manufacturer for recommendation based on project parameters.
5. Joint width: $\geq 1/8"$ (3 mm) and $\leq 1"$ (25 mm).
6. Joint width: depth ~2:1 but joint depth must be $\geq 1/8"$ (3 mm) and $\leq 1/2"$ (12 mm).
7. Layout (field defined by joints): 1:1 length: width is optimum but must be $\leq 2:1$.

Remove all contaminants and foreign material from joint spaces/surfaces, such as dirt, dust, oil, water, frost, setting/grouting materials, sealers and old sealant/backer. Use LATICRETE Latasil™ 9118 Primer for underwater and permanent wet area applications, or for porous stone (e.g. limestone, sandstone etc...) installations. Install appropriate backing material (e.g. closed cell backer rod) based on expansion joint design and as specified in § 07920. Apply masking tape to face of tile, brick or stone veneer. Use caulking gun, or other applicator, to completely fill joints with sealant. Within 5-10 minutes of filling joint, 'tool' sealant surface to a smooth finish. Remove masking tape immediately after tooling joint. Wipe smears or excess sealant off the face of non-glazed tile, brick, stone or other absorptive surfaces immediately. Remove masking tape immediately after tooling joint. Wipe smears or excess sealant off the face of non-glazed tile, brick, stone or other absorptive surfaces immediately.

Use the following LATICRETE System Materials:

LATICRETE Latasil

LATICRETE Latasil 9118 Primer

Please visit www.laticrete.com for the most recent copies of Product Data Sheets, Material Safety Data Sheets, Detail Drawings, and Technical Data Sheets.

F. Adjusting: Correction of defective work for a period of one (1) year following substantial completion, return to job and correct all defective work. Defective work includes, without limitation, tiles broken in normal abuse due to deficiencies in setting bed, loose tiles or grout, and all other defects which may develop as a result of poor workmanship.

3.5 Cleaning

Clean excess mortar/epoxy from veneer surfaces with water before they harden and as work progresses. Do not contaminate open grout/caulk joints while cleaning. Sponge and wash veneers diagonally across joints. Do not use acids for cleaning. Polish with clean dry cloth. Remove surplus materials and leave premises broom clean.

3.6 Protection

- A. Protect finished installation under provisions of §01500 and §01535. Close areas to other trades and traffic until tile being installed has set firmly. Keep traffic off horizontal portland cement thick bed mortar installations for at least 72 hours at 70°F (21°C).
- B. Allow the installation to cure for a minimum of 48 hours at 70°F (21°C) before turning on LATICRETE Floor Warming.
- C. Keep floors installed with epoxy adhesive closed to traffic for 24 hrs. at 70°F (21°C), and to heavy traffic for 48 hours at 70°F (21°C) unless instructed differently by manufacturer. Use kneeling boards, or equivalent, to walk/work on newly tiled floors. Cure tile work in swimming pools, fountains and other continuous immersion applications for 10 days for epoxy based grout and 14 days for latex portland cement based grout at 70°F (21°C) before flood testing or filling installation with water. Extend period of protection of tile work at

lower temperatures, below 60°F (15°C), and at high relative humidity (>70% RH) due to retarded set times of mortar/adhesives. Replace or restore work of other trades damaged or soiled by work under this section.

Part 4 – Health and Safety

The use of personal protection such as rubber gloves, suitable dust masks, safety glasses and industrial clothing is highly recommended. Discarded packaging, product wash and waste water should be disposed of as per local, state or federal regulations.

"As a professional courtesy, LATICRETE offers technical services free of charge. The user maintains all responsibility for verifying the applicability and suitability of the technical service or information provided."

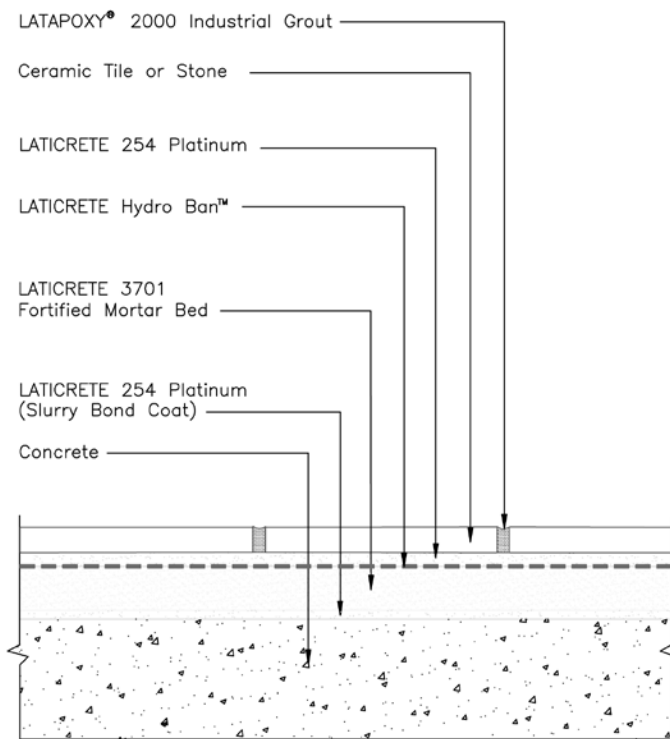
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Section 6: Animal Health and Wellness Facilities Detail Drawings





6.1.1 Concrete Slab-on-Grade-Bonded Thick Bed VF-101



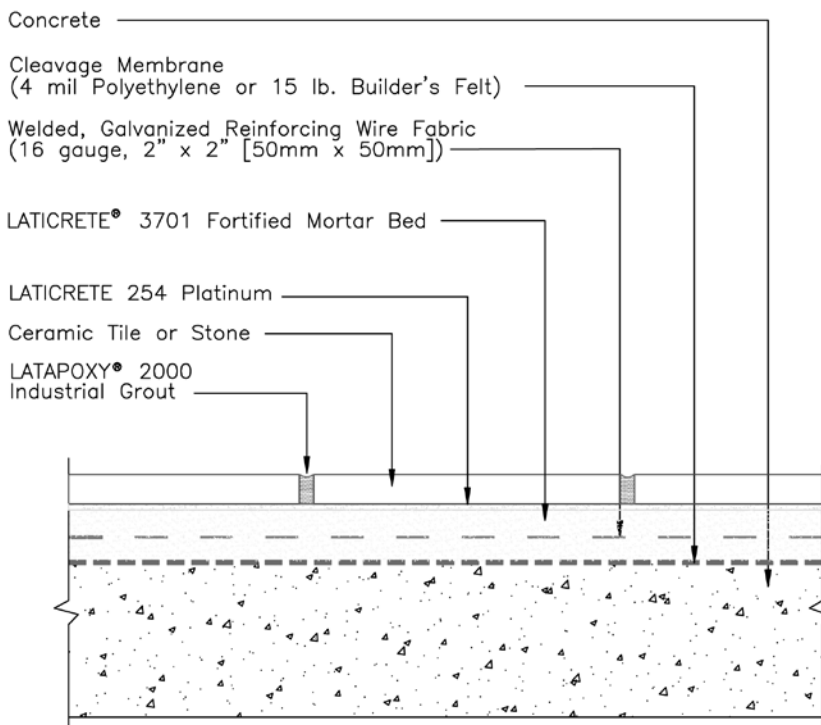
Revision Date: 09/09
Scale: NTS

NOTE: For complete application information and limitations consult related Product Data Sheets and Execution Statements related to this detail and applicable industry standards.

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6.1.2 Concrete-Unbonded Thick Bed VF114



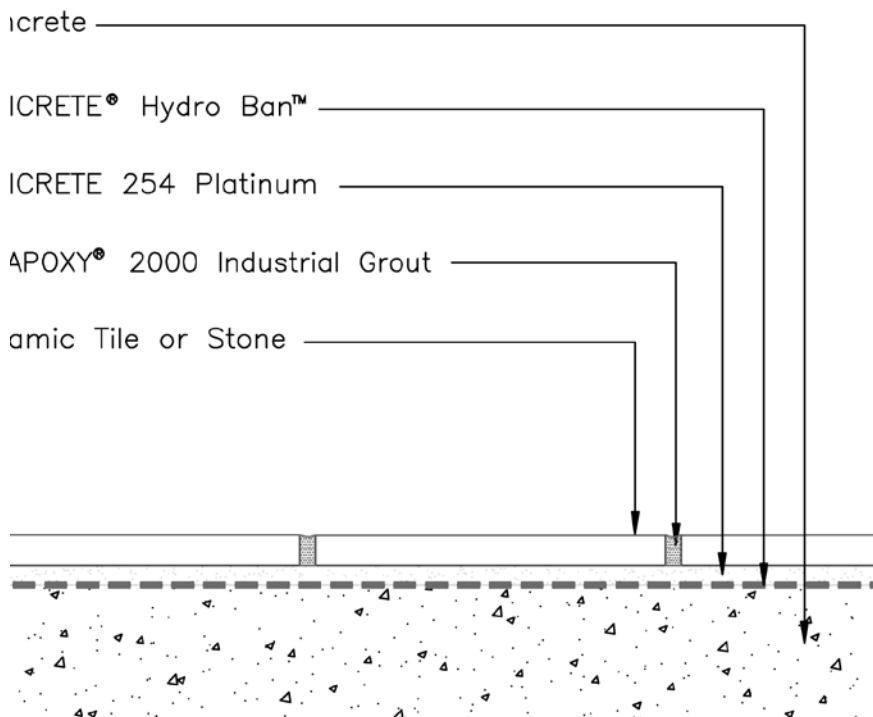
Revision Date: 09/09
Scale: NTS

NOTE: For complete application information and limitations consult related Product Data Sheets and Execution Statements related to this detail and applicable industry standards.

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6.1.3 – Concrete–Thin Bed VF115



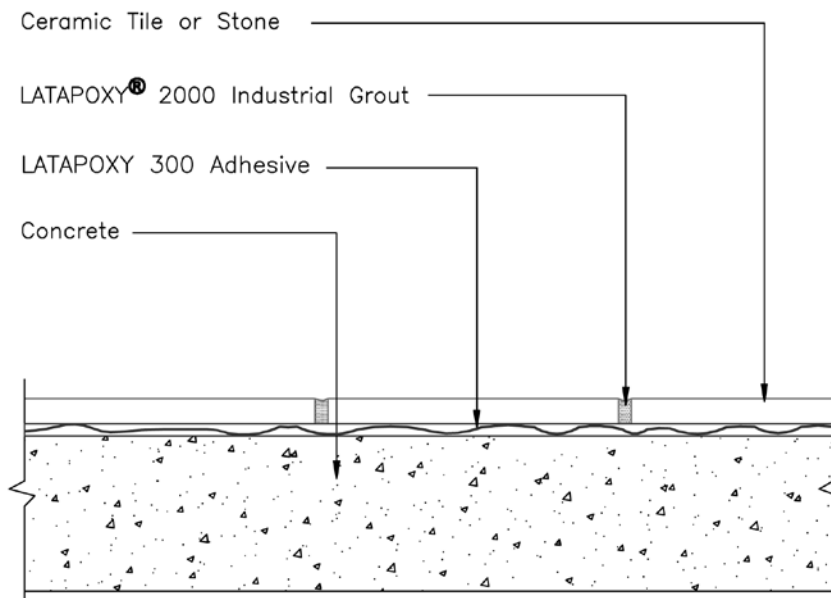
Revision Date: 09/09
Scale: NTS

NOTE: For complete application information and limitations consult related Product Data Sheets and Execution Statements related to this detail and applicable industry standards.

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6.1.4 – Concrete–Chemical Resistant Thin Bed VF133



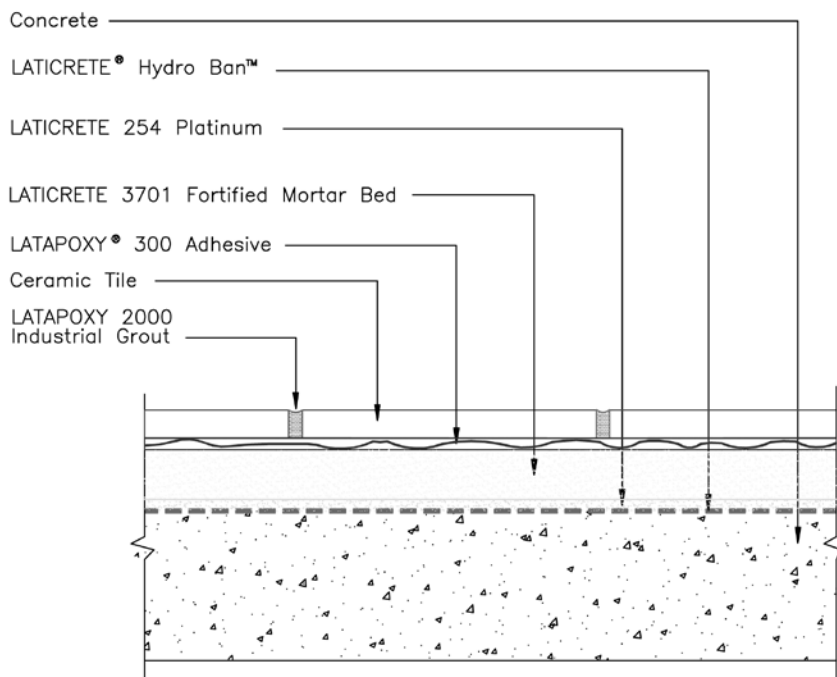
Revision Date: 09/09
Scale: NTS

NOTE: For complete application information and limitations consult related Product Data Sheets and Execution Statements related to this detail and applicable industry standards.

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6.1.5 – Concrete–Chemical Resistant Thick Bed VF134



Revision Date: 09/09

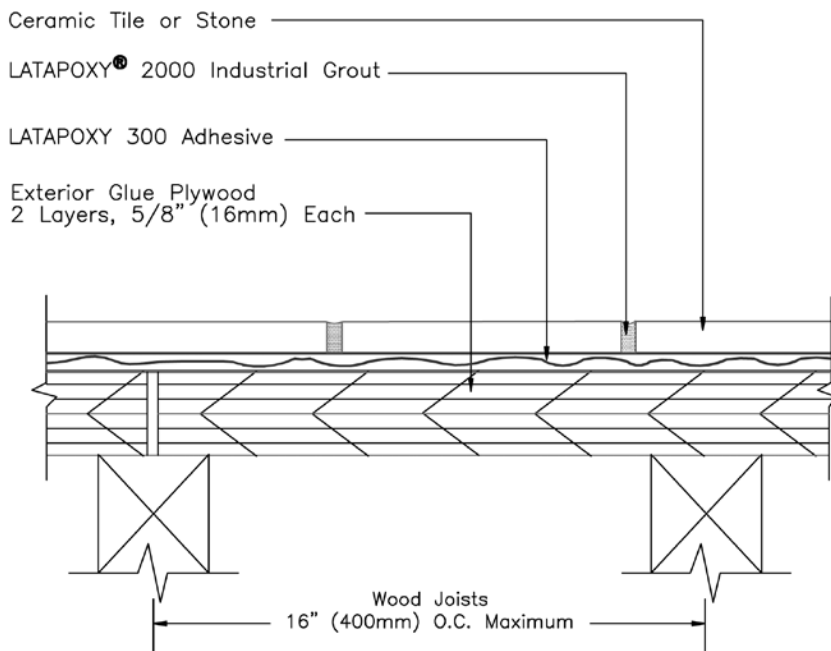
Scale: NTS

NOTE: For complete application information and limitations consult related Product Data Sheets and Execution Statements related to this detail and applicable industry standards.

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6.1.6 – Exterior Glue Plywood–Chemical Resistant Thin Bed VF143



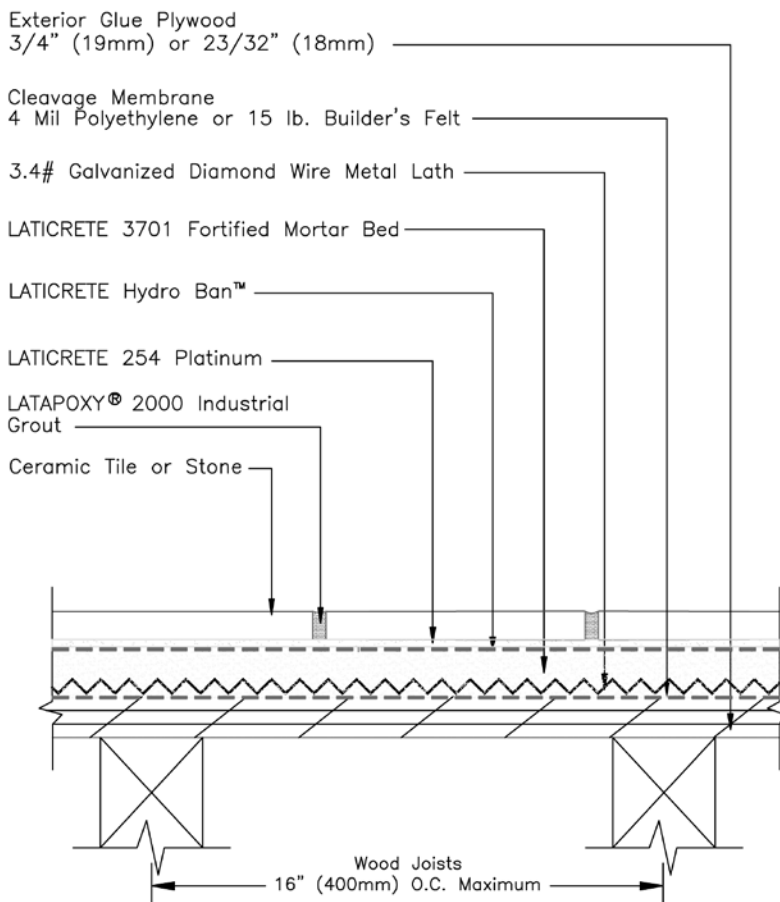
Revision Date: 09/09
Scale: NTS

NOTE: For complete application information and limitations consult related Product Data Sheets and Execution Statements related to this detail and applicable industry standards.

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6.1.7 – Exterior Glue Plywood–Thick Bed With Metal Lath VF145



Revision Date: 09/09

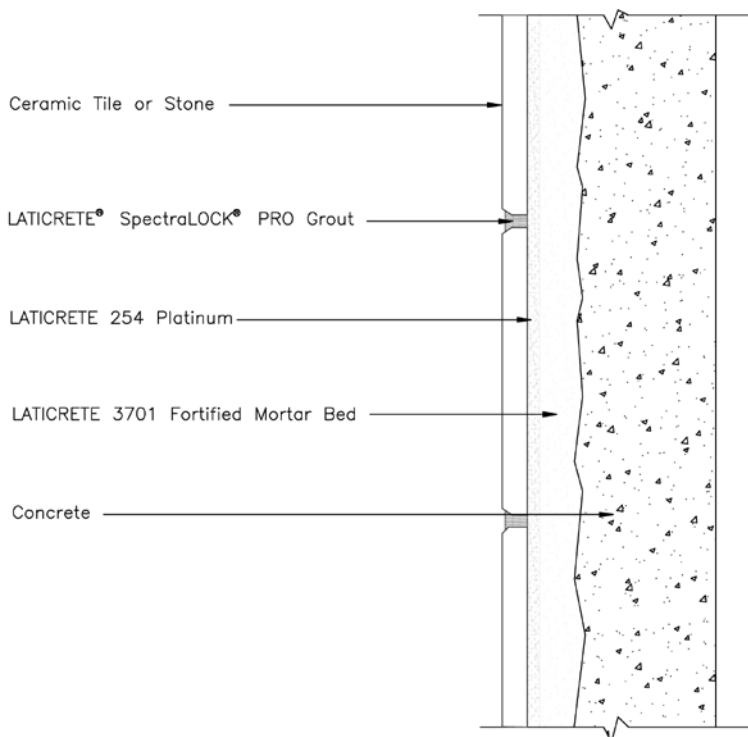
Scale: NTS

NOTE: For complete application information and limitations consult related Product Data Sheets and Execution Statements related to this detail and applicable industry standards.

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6.2.1 – Concrete-Leveling Bed VW211



Revision Date: 09/09
Scale: NTS

NOTE: For complete application information and limitations consult related Product Data Sheets and Execution Statements related to this detail and applicable industry standards.

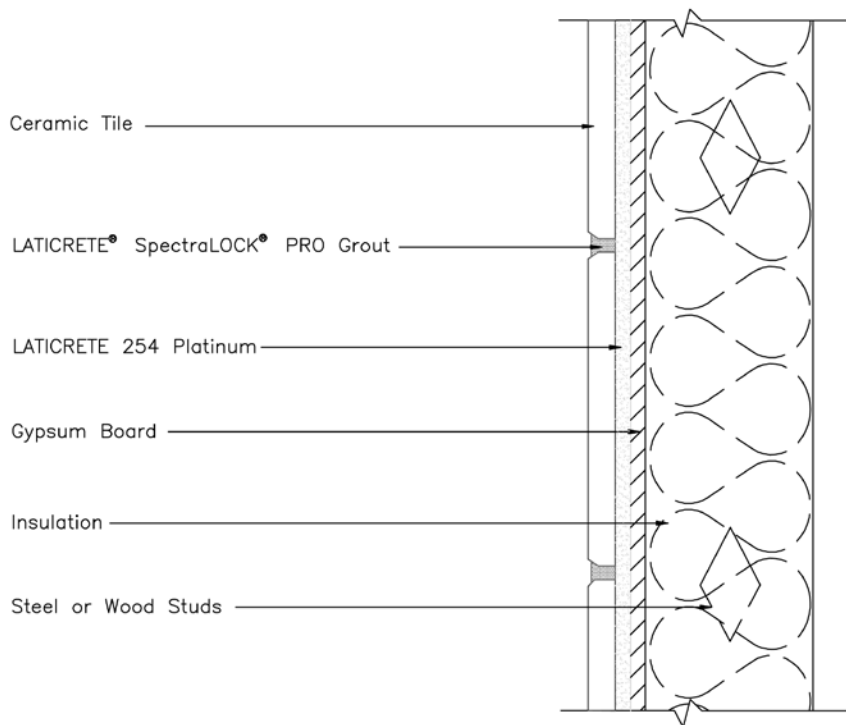
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* United States Patent No.: 6881768 (and other Patents).

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6.2.2 – Gypsum Drywall–Thin Bed VW243



Revision Date: 09/09
Scale: NTS

NOTE: For complete application information and limitations consult related Product Data Sheets and Execution Statements related to this detail and applicable industry standards.

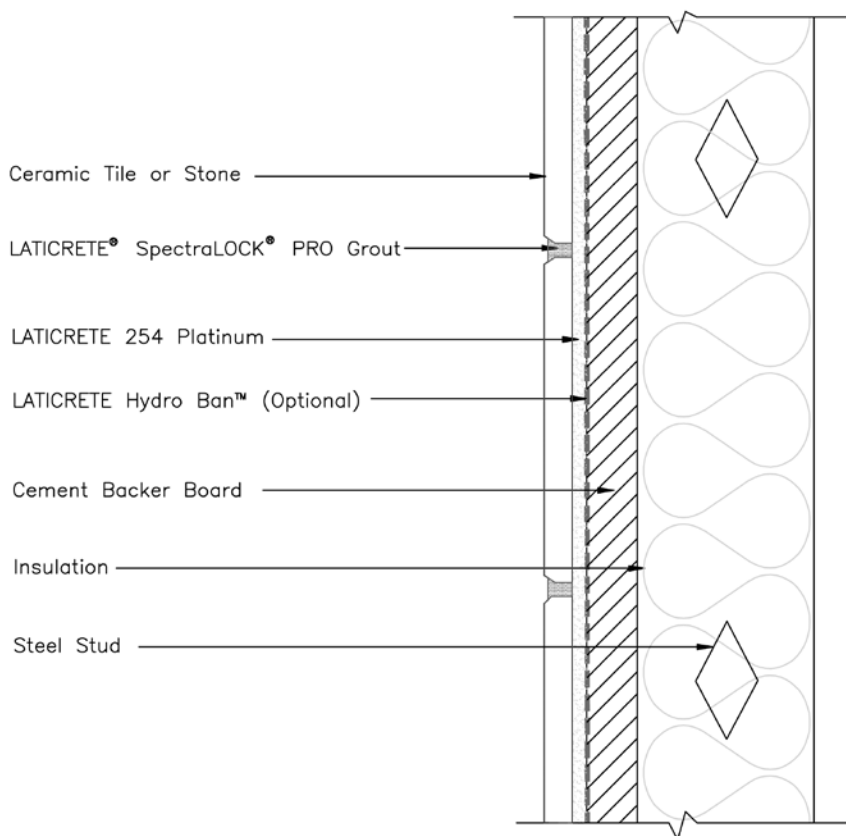
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* United States Patent No.: 6881768 (and other Patents).

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6.2.3 – Cement Backer Board–Steel/Wood Framing VW244



Revision Date: 09/09
Scale: NTS

NOTE: For complete application information and limitations consult related Product Data Sheets and Execution Statements related to this detail and applicable industry standards.

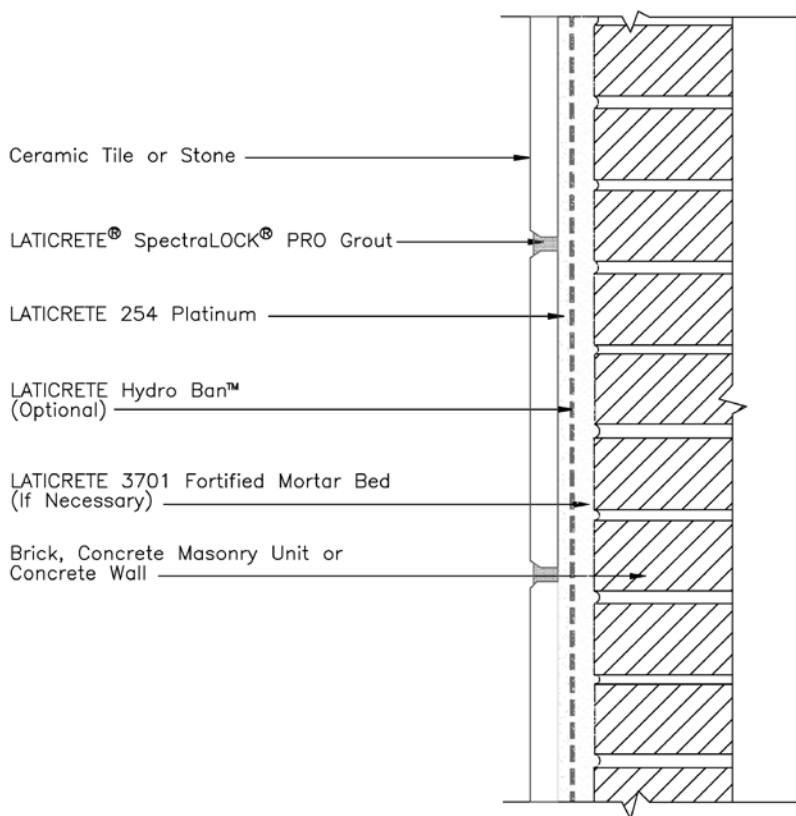
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* United States Patent No.: 6881768 (and other Patents).

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6.2.4 – Concrete Masonry Units/Brick–Thin Bed VW300



Revision Date: 09/09

Scale: NTS

NOTE: For complete application information and limitations consult related Product Data Sheets and Execution Statements related to this detail and applicable industry standards.

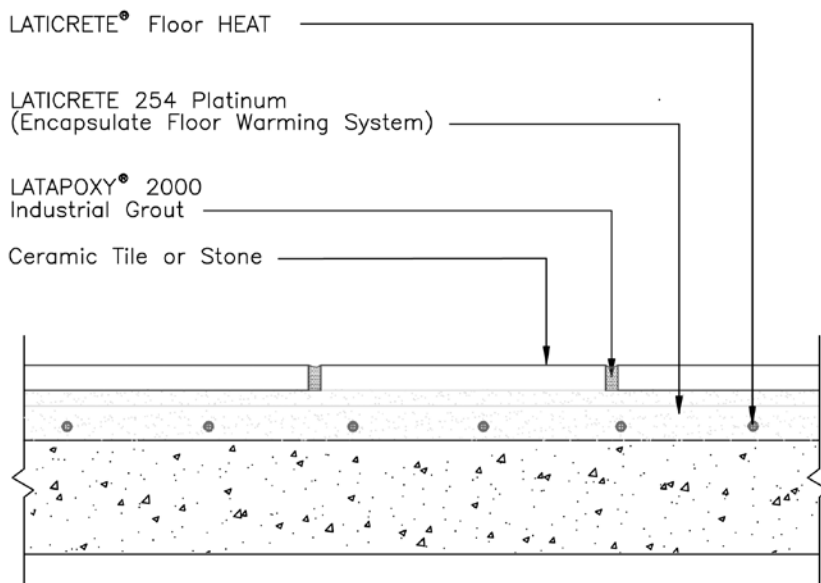
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6.3.1 – Concrete–Electric Radiant Heat–Thin Bed VRH115



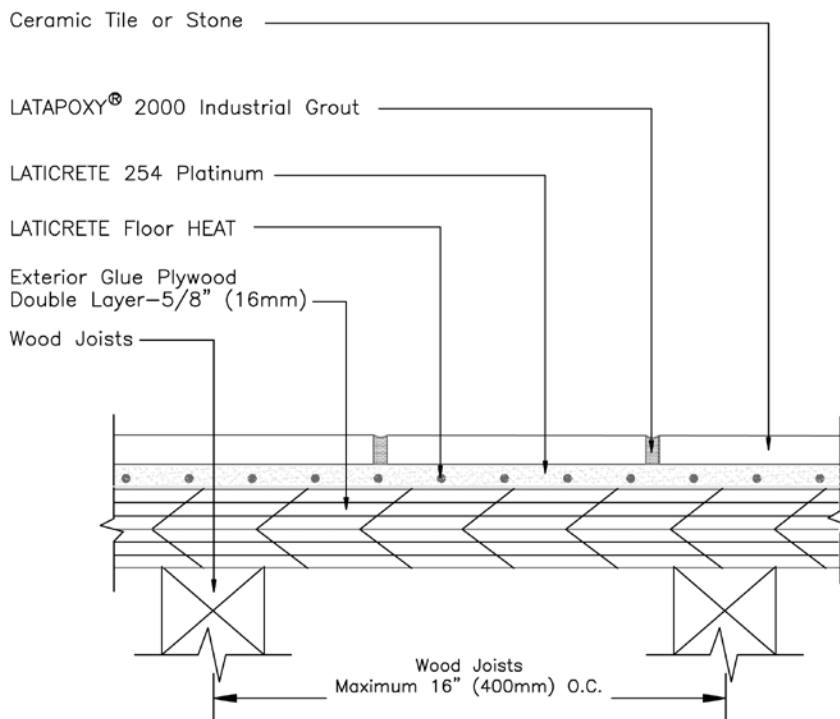
Revision Date: 09/09
Scale: NTS

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6.3.2 – Exterior Glue Plywood–Electric Radiant Heat–Thin Bed VRH130



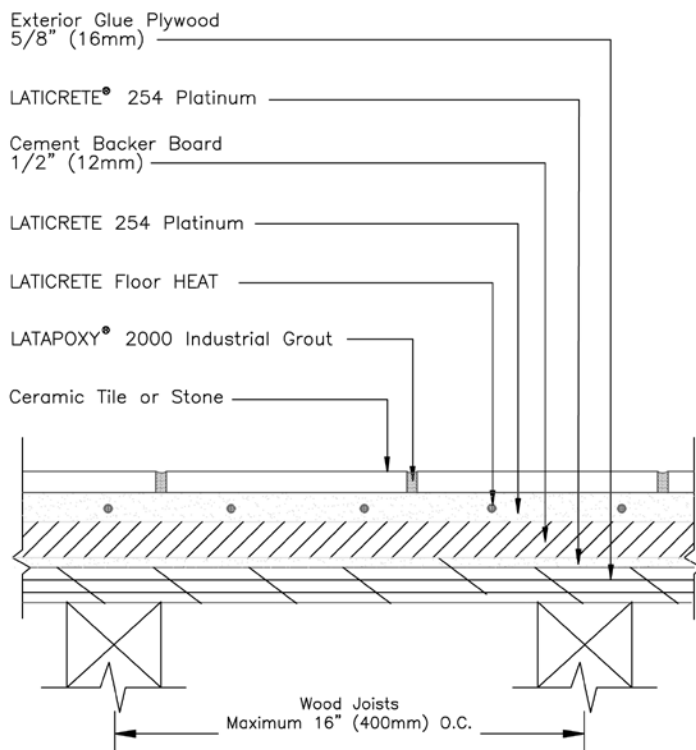
Revision Date: 09/09
Scale: NTS

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6.3.3 – Cement Backer Board–Electric Radiant Heat–Thin Bed VRH135



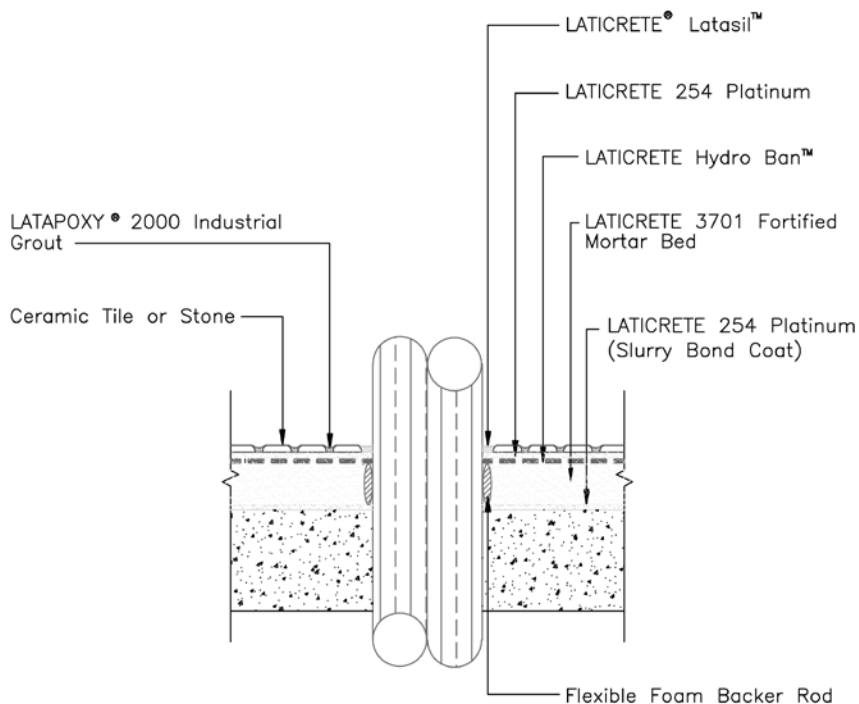
Revision Date: 09/09
Scale: NTS

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6.4.1 – Typical Pipe Penetration–Floor VWP300(F)



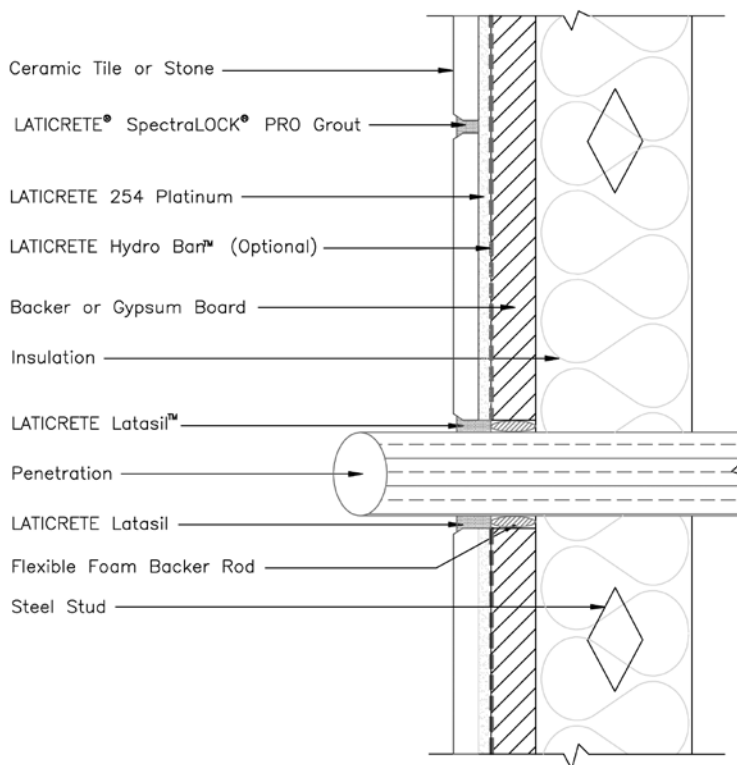
Revision Date: 09/09
Scale: NTS

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6.4.2 – Typical Pipe Penetration–Wall VWP300(W)



Revision Date: 09/09

Scale: NTS

NOTE: For complete application information and limitations consult related Product Data Sheets and Execution Statements related to this detail and applicable industry standards.

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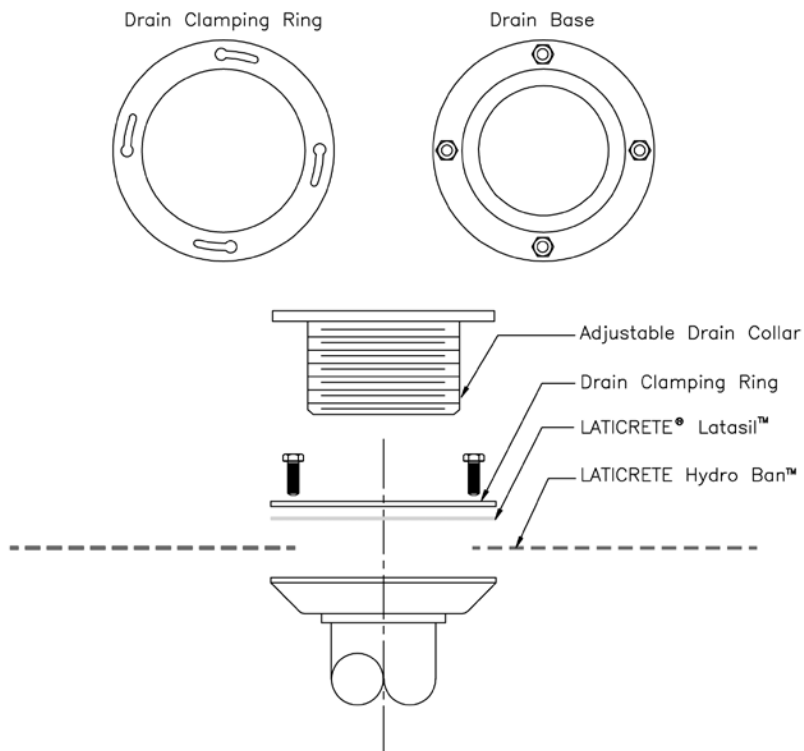
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6.4.3 – Drain Detail – Exploded View

VWP-302



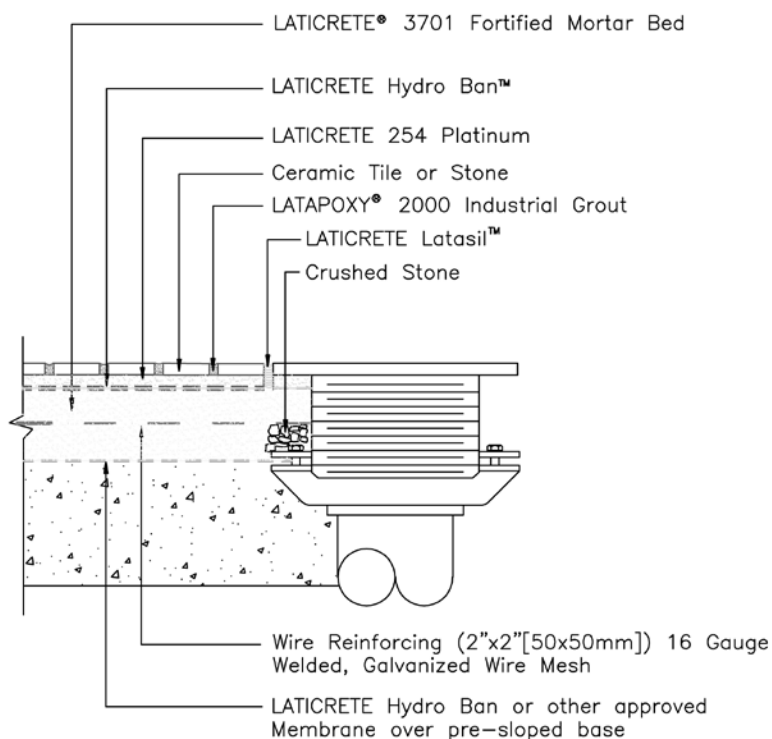
Revision Date: 09/09
Scale: NTS

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6.4.4 – Shower Pan VWP-303



Revision Date: 09/09
Scale: NTS

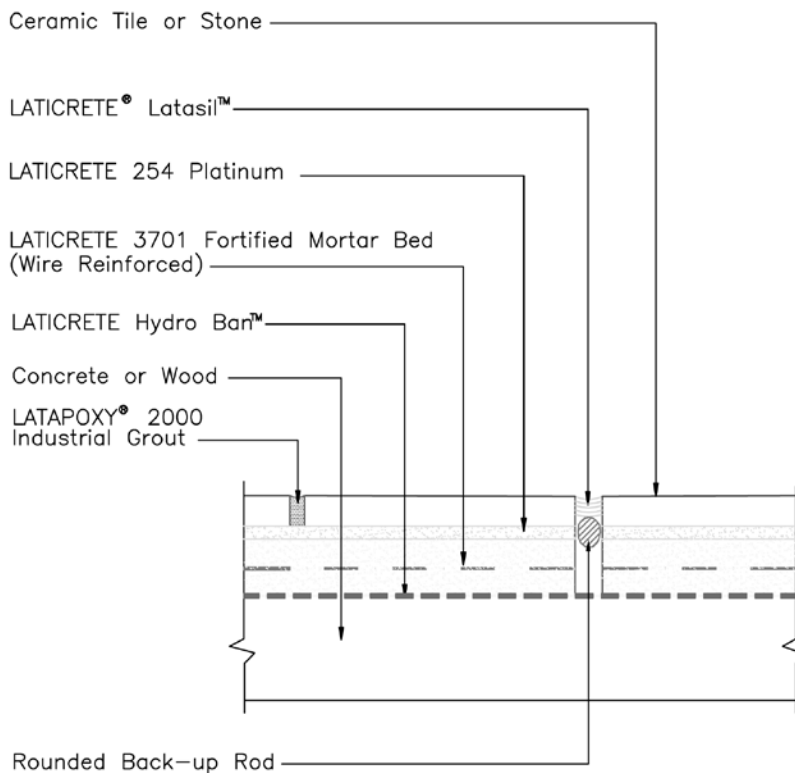
NOTE: For complete application information and limitations consult related Product Data Sheets and Execution Statements related to this detail and applicable industry standards.

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6.4.5 – Movement Joints

VEJo1



Revision Date: 09/09

Scale: NTS

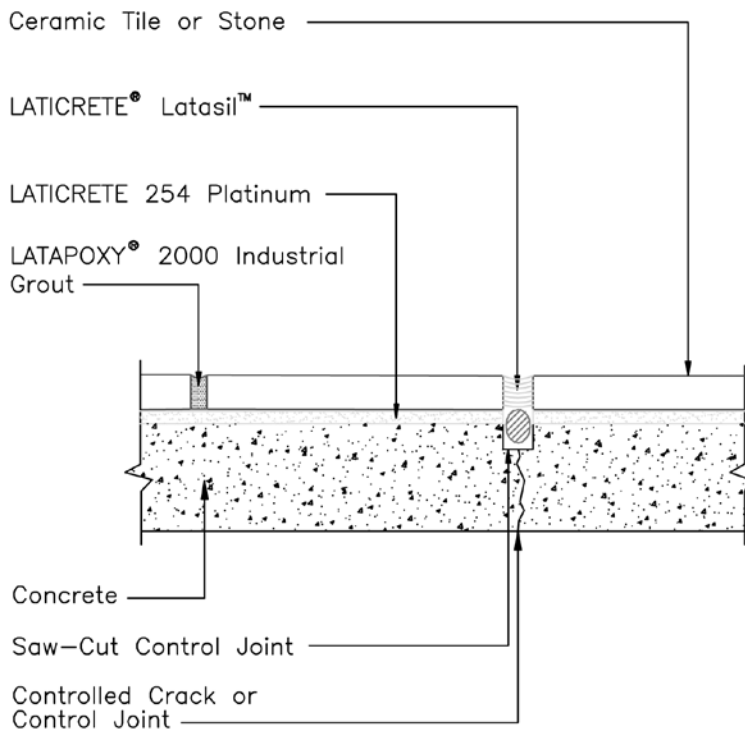
NOTE: For complete application information and limitations consult related Product Data Sheets and Execution Statements related to this detail and applicable industry standards.

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Detail Name **ES-VEJo4**



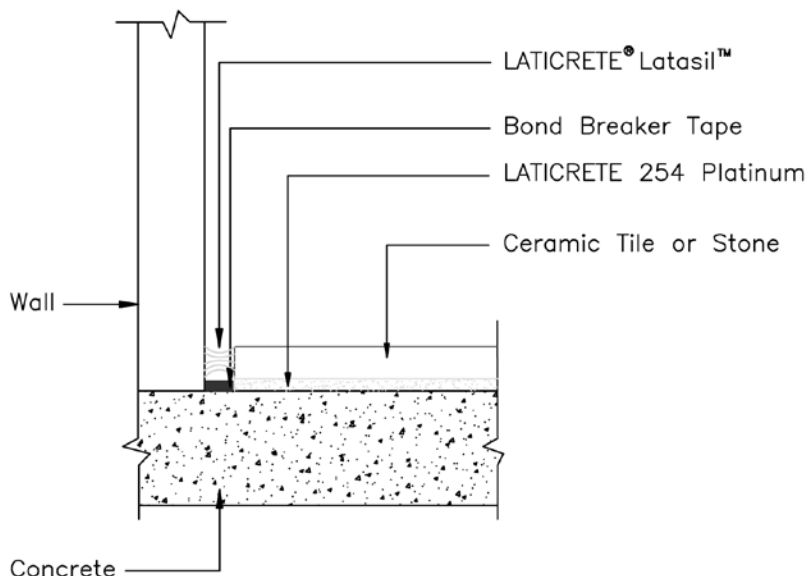
Revision Date: 09/09
Scale: NTS

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Detail Name
ES-VEJ05



Revision Date: 09/09
Scale: NTS

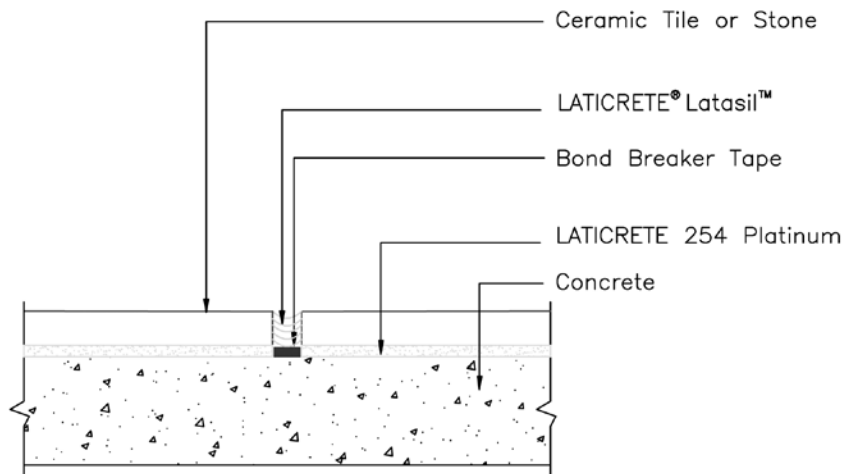
NOTE: For complete application information and limitations consult related Product Data Sheets and Execution Statements related to this detail and applicable industry standards.

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Detail Name
ES-VEJo6



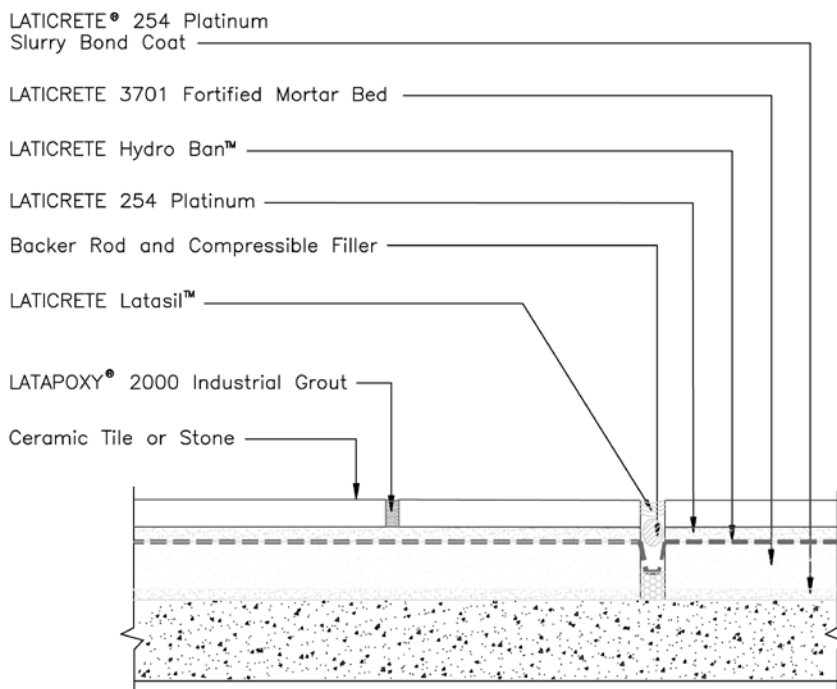
Revision Date: 09/09
Scale: NTS

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Detail Name ES-VEJ10



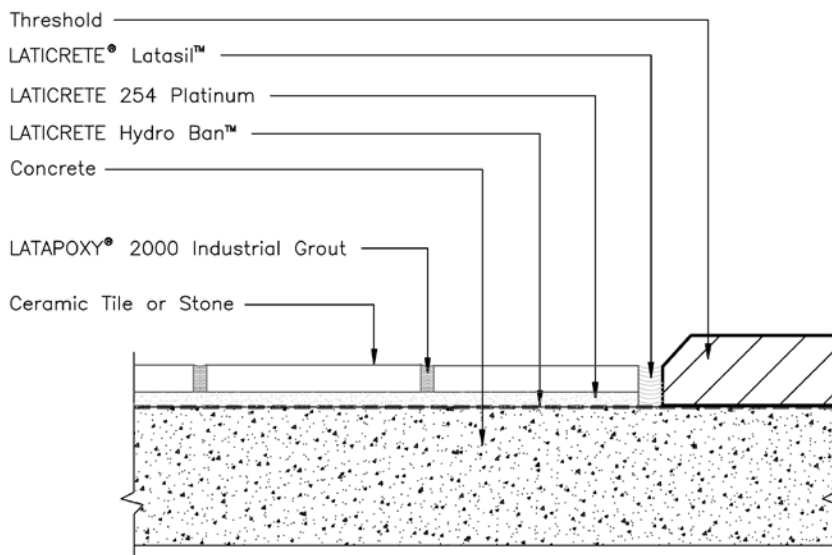
Revision Date: 09/09
Scale: NTS

NOTE: For complete application information and limitations consult related Product Data Sheets and Execution Statements related to this detail and applicable industry standards.

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Detail Name **ES-VEJ13**



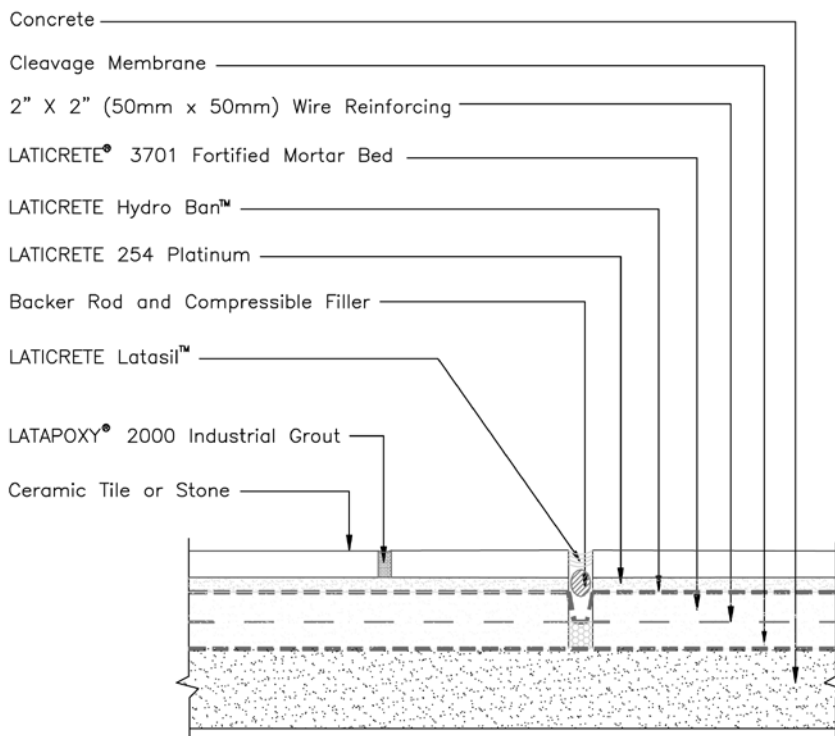
Revision Date: 09/09
Scale: NTS

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6.4.5 – Movement Joints VEJ15



Revision Date: 09/09
Scale: NTS

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Section 7: Quality, Protection and Maintenance



7.1 Quality Assurance

The success of a tile installation in an animal health and wellness installation depends entirely on a good quality assurance program implemented at all levels of the project. Unfortunately, comprehensive quality assurance programs remain the most overlooked and ignored process in the design and construction of both the facility and the tile installation.

There is an important distinction between the terms “quality assurance” and “quality control”. The distinction is that quality assurance is preventative in nature and encompasses all of the procedures necessary to ensure a quality job. Quality control is typically corrective in nature, implemented during or after a procedure, and is only one component of a more comprehensive and planned quality assurance program.

A quality assurance program should include quality checks during the design, specification and bidding phases as well as during and after construction. One factor of tile used in animal health and wellness facilities is that the quality of the installation is only as good as each component, and its installation, within the system. So choosing the proper products and installing them correctly is critical to the long term performance of the installation.

A comprehensive quality program for the design and construction of tile installations in animal health and wellness facilities should involve, but not be limited to the following:

Owner

- Define Scope of Work
- Organizational Requirements
- Quality Objectives

Design Professional

- Tile Installation System Product Component Design, Specification, Installation, and Inspection Procedure Training
- Pre-Installation Conference on Materials and Methods

- Identification of Construction Progress and Post Installation Inspection, Testing and Evaluation Requirements; Identify Resolution Methods for Non-Compliant Conditions
- Develop and Specify Post Installation Preventative Maintenance Programs

Construction Professional

- Substrate Preparation
- Control of Materials (Evaluation of Contract Document Performance Requirements, Material Suppliers, Delivery, Handling, and Records)
- Product Use Monitoring and Documentation (Pot Life, Curing, Protection and Batch Mixing)
- Setting or Fixing all Tile-Adhesion Monitoring (Spreading, Thickness, Open Time, Tackiness, Beat-In, and Coverage)

7.2 Preventative and Corrective Maintenance

A systematic maintenance plan is a critical required final step in an animal health and wellness facility which is often overlooked. An animal health and wellness facility tile installation can be subjected to animal urine, feces, vomit, harsh chemical cleaners, sanitizers, heavy foot traffic, and much more and without regular maintenance any normal deterioration or degradation of a standard grout would be accelerated. The end result would be a loss of performance and shortening of the expected service life.

Maintenance of animal health and wellness facilities is categorized according to how and when maintenance actions are taken. Preventative maintenance is planned and proactive action, which maintains specified performance, and prevents potential defects or failures. Preventative maintenance includes both anticipated routine actions and repairs, such as application of protective sealers or deteriorated sealant replacement, as well as unexpected repairs such as replacement of cracked tile or fixing water leaks that may manifest into structural problems later.

The benefits of preventative maintenance are well documented; prevention has been proven; prevention has been proven to increase expected service life, and cost a fraction of more extensive remedial action typically required once a problem occurs.

Corrective maintenance is remedial action which repairs a defect after occurrence. Corrective maintenance is necessary to prevent further deterioration or total failure of a tile installation in an animal health and wellness facility. Corrective action typically involves evaluation with either a non-destructive or destructive test procedure.

The use of LATAPOXY® 2000 Industrial Grout aids in the performance and maintenance of the installation. LATAPOXY 2000 Industrial Grout reduces the amount of time to clean and provide general upkeep of the system and eliminates the requirement for sealing the grout. Make sure that the LATAPOXY 2000 Industrial Grout is protected from traffic, exposure to animals (i.e. urine, feces, claws, hair, vomit, etc...), chemicals, cleaners, other trades, and anything else that may affect the grout until it has hardened sufficiently to support exposure. For more information please refer to the product data sheet for LATAPOXY 2000 Industrial Grout (634.0) at www.laticrete.com.

LATICRETE® SpectraLOCK® PRO Grout* and LATAPOXY 2000 Industrial Grout are extremely low in absorption (<.5%). Liquids will not penetrate the surface of these grouts due to the low absorption rate. Dirty grout can always be cleaned down to the original color - not so with cement based grouts, latex modified cement grouts or modified epoxy grouts. Stains become part of cement-based grouts.

Protect grouted areas from traffic and other trades for at least 24 hours after installation or until the grout is hard and no longer tacky. For areas that must have traffic during curing time, cover installation with plastic sheeting and plywood or other temporary load bearing course. Protect grout from dirt and dust for

72 hours at 70°F (21°C). Please note that temperatures lower than 70°F (21°C) will require protection from traffic for a longer period of time.

LATICRETE SpectraLOCK PRO Grout reaches maximum hardness in 14 days and maximum stain resistance in 7 days at 70°F (21°C).

LATICRETE SpectraLOCK PRO Grout and LATAPOXY 2000 Industrial Grout are both stain resistant when properly installed and allowed to cure fully. It is, unfortunately, not self-cleaning. Routine maintenance can be done with detergents and a sponge or mop. For tough or difficult to remove soil, a bleaching cleaner (e.g. Soft Scrub®, Comet®, Ajax®, etc. or electric dish washing detergent) on a nylon scrubbing pad or a long handled stiff bristle brush can be used.

PLEASE NOTE: Prior to using any cleaning material on a tile, etc. installation, test a discrete area or scrap piece of tile to insure desired results.

LATAPOXY 2000 Industrial Grout can be steam cleaned when allowed to reach full cure. Mechanical cleaning can also be done with a floor cleaning machine such as a “Tennant” floor machine or power buffing machine with nylon pads and a commercial tile cleaner. A “Grout Hog” which is basically a motorized brush for fast aggressive cleaning may also be used.

Tennant Company Grout Hog Floor Cleaner Windsor Industries

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1351 West Stanford Avenue
Minneapolis, MN 55440
Englewood, CO 80110
+1.612.540.1200
+1.303.762.1800

LATAPOXY 2000 Industrial Grout exposed to grease, oil, and areas of potential bacteria accumulation (floor drains, equipment supports, etc.) should be cleaned daily using degreasing materials, disinfecting cleaning agents, and a commercial floor washing machine, and then thoroughly

rinsed. LATAPOXY® 2000 Industrial Grout is recommended for high abuse areas such as these.

7.3 Protection and Sealing – Water Repellent Sealers and Coatings

The purpose and performance of these materials is widely misunderstood by design and construction professionals. Generally, clear water repellent coatings can aid in retarding surface water absorption of porous materials, and reduce adhesion of staining materials. However, these sealing materials often give a false sense of security due to the lack of understanding of their suitability, compatibility and performance. Water repellents can reduce water leakage and deterioration in normally porous tile, stone and grouting materials, but they are not a cure to abnormal leakage caused by fundamental defects in detailing and construction.

There are several general principles for use and application of sealers. Water repellent sealers are not waterproof, and generally cannot bridge gaps or hairline cracks in grout joints or building material, so these materials are useless when used over cracks or very porous surfaces. Sealers suitable for use over slab-on-grade concrete must be vapor permeable and allow the floor to “breathe” to allow vapor to pass through the system. Sealers can also create functional or aesthetic defects that are intended to be prevented or corrected by their application.

As sealers age, wear out or weather, several other problems can occur. Effectiveness is typically reduced over time, so periodic re-application (depending on the manufacturers formulation and recommendations) is necessary, and effective service life ranges from 1 – 5 years. Sealers may also allow variable wetting of a cement grout or tile from poor application or weathering; this can produce a blotchy appearance. In some cases the sealer can be re-applied; in others it may be necessary to

allow it to completely weather off, or be removed chemically to restore a uniform appearance. Check with the sealer manufacturer for complete information on their products.

Compatibility of sealers is also important, not only with the materials to be sealed but also with adjacent and underlying components of the system. The appearance of certain tile or grout can be affected by sealers. Poor application or poor quality products can darken or change the appearance of the tile or grout. Application (or overspray) of sealers onto non-porous tile, such as porcelain, will result in visible residue or a dripping, wet appearance from sealers that do not absorb (e.g. urethanes or acrylics). Sealant joints, waterproofing membranes and metal are some of the system components which might be affected by solvents in some formulations.

7.4 Alternative To Using Sealers

Use a low absorption tile (e.g. porcelain or quarry tile) and LATAPOXY 2000 Industrial Grout. These installation system materials never require sealing and can greatly lower the long-term, overall cost usually required to maintain the tile installation.

Section 8: Appendix



Q: Why is tile a good choice for use in Animal Health and Wellness facilities?

Commonly used materials found in animal health and wellness facilities (e.g. vinyl tile and epoxy coatings) typically last several years and then have to be replaced. As these surfaces wear away they can be difficult to keep clean and sanitary, making it difficult to guarantee the safety and health of animals and people alike. Tile can last a lifetime and never wear away or become unsanitary as long as regular and proper maintenance is performed.

Q: Why use an industrial epoxy grout like LATAPOXY® 2000 Industrial Grout?

Cement grouts, by their very nature are absorbent, even if sealed with a high quality sealer on a regular basis. This means that they can easily be stained and become saturated with all manner of matter. Exposure to this type of matter can have an effect on the health and safety of humans and animals alike. Lesser epoxy grouts may be affected by exposure to harsh chemical cleaners needed to properly maintain sanitary conditions or by exposure to all manner of matter. LATAPOXY® 2000 Industrial Grout can withstand exposure to harsh chemicals, high temperature, sharp claws, urine, fecal matter, and pretty much anything else you can throw at it. An extremely low absorption rate means that any material on the surface of the grout stays on the grout and does not absorb into the grout.

Q: Is regular maintenance of the LATAPOXY 2000 Industrial Grout required?

Yes. Regular cleaning is required to maintain health and safety and to keep consistent appearance of your tile installation. For more information please refer to LATICRETE® TDS 400 “Grout Selection and Maintenance Guide” at www.laticrete.com.

Q: Can I use LATICRETE® SpectraLOCK®† PRO Grout on walls?

Yes. Because grout on walls is not subjected to the same type of exposure as floor grout means that LATICRETE SpectraLOCK®† PRO Grout can be used on walls. We would recommend though that LATAPOXY 2000 Industrial Grout (with the LATAPOXY Part D Non-Sag Additive) be used on cove base tile.

Q: Do I need to seal LATAPOXY 2000 Industrial Grout?

No. LATAPOXY 2000 Industrial Grout does not require sealing. Because it is an epoxy grout it has an extremely low absorption rate, which means that any sealer applied to the surface of the grout will just sit on top and come off on shoes, paws, and so on.

Q: What thin-sets can be used in animal health and wellness facilities?

LATICRETE manufactures several thin-sets that would be ideal for the installation of tile in animal health and wellness facilities. For installations that can be exposed to extremely harsh chemicals or conditions (e.g. operating rooms or dog washing rooms) then LATAPOXY 300 Adhesive would be perfect. For tile installations in common areas and examining rooms then LATICRETE 254 Platinum would be an ideal choice.

Q: Why install LATICRETE Floor HEAT in an animal boarding facility or “pet hotel”?

How many times have you seen cats and dogs lying in the sun near a window, or in front of a fireplace? Animals love to feel warm. So to help pets feel more at home at a boarding facility it only makes sense to help keep them warm on a floor that emits its own heat. LATICRETE Floor HEAT is a perfect way to make sure that pets are as comfortable as they can be.

Q: Will animal urine or vomit affect my tile installation?

No. If LATAPOXY 2000 Industrial Grout has been used then simply clean the area to maintain sanitary conditions and the grout will not be stained or damaged in any way.

Q: Can the claws of animals affect LATAPOXY 2000 Industrial Grout?

No. Once fully cured, LATAPOXY 2000 Industrial Grout is so hard and dense that the claws of cats, dogs and other animals will have no affect on the grout.

Q: What tile would be the best choice for installation in an animal health and wellness facility?

Porcelain tile, glazed or unglazed would be an excellent choice for use in this environment. The extremely low absorption rate and high density of porcelain tile is ideal for this installation type. Quarry tile may also be used, but the choice of designer options would be somewhat limited.

Q: Can LATAPOXY 2000 Industrial Grout be steam cleaned?

Yes. LATAPOXY 2000 Industrial grout can withstand exposure up to 360°F (182°C) intermittently or a constant 185°F (80°C).

Q: How long does it take for LATAPOXY 2000 Industrial Grout to cure?

At 70°F (21°C) LATAPOXY 2000 Industrial grout will be ready in approximately 5 hours for light foot traffic, 10 hours for heavy foot traffic and 5 days for full cure. The floor must be protected from exposure to claws, urine, vomit, hair, other trades, and other factors that may damage the grout until allowed to set firm. Lower temperatures will slow cure times and higher temperatures will accelerate cure times. Please refer to LATICRETE DS 634.0 for more information.



Section 8: Glossary

ABSORPTION – the relationship of the weight of water absorbed to the weight of the dry specimen, expressed in percentages

AGGLOMERATE TILE – a man-made stone product generally consisting of either crushed marble, granite or quartz chips with a matrix of resins and mineral pigments. Usually available in assorted sizes as well as large slabs.

ANSI – American National Standards Institute

APA – American Plywood Association

ASME – American Society of Mechanical Engineers

ASTM – American Society for Testing and Materials

BACK-BUTTER – the spreading of a bond coat to the back of ceramic tile and stone just before the tile is placed

BACK MOUNTED MOSAIC TILE – mosaic tile which may have perforated paper, fiber mesh, resin or other suitable material bonded to the back of each tile which becomes an integral part of the tile installation

BICOTTURA – method for producing tile by firing it twice (first fire is for body, second is to fuse glazes or patterns in glaze onto the body).

BISQUE – the refined mixture of clay, water and additives that has been shaped into the body of a tile

BODY – the structural portion of a ceramic tile

BOND COAT – a material used between the back of a tile and the substrate. Suitable bond coats for a steam room application include latex cement mortar and epoxy adhesive.

BOND STRENGTH – a bond coat's ability to resist separating from the tile and underlayment, measured in pounds per square inch (psi).

BROWN COAT – the second coat in a three-coat render or mortar application

BULLNOSE – a trim tile with a convex radius on one edge

CAULK – see sealant

CEILING SLOPE – steam rooms require ceilings to be pitched 2" per foot (150mm per m) to prevent condensation from dripping on steam room occupants

CEMENT – binding component of mortars and concrete (usually cement)

CEMENT BACKER BOARD – a backer board, usually composed of cement, fillers and fiberglass mesh, designed for use with ceramic tile in wet areas

CEMENT GROUT – a cementitious mixture of cement, sand or other ingredients, pigments and water, to produce a water resistant, uniformly colored material used to fill the joints between tile units

CEMENTITIOUS – having the properties of cement

CERAMIC TILE – a surfacing unit, usually relatively thin in relation to facial area, made from clay or a mixture of clay and other materials called the body of the tile, and having either a glazed or unglazed face

CHEMICAL RESISTANCE – the resistance offered by products to physical or chemical reactions as a result of contact with or immersion in various solvents, acids, alkalis, salts, etc...

CLEAVAGE MEMBRANE – a membrane that provides a separation and slip sheet between a mortar bed and the substrate

COLD JOINT – any point in concrete construction where a pour is terminated and the surface lost plasticity before work continued

COMPACTION – the process where a freshly placed mortar is reduced to the minimum practical space to form a stronger, denser mass

COMPRESSIVE STRENGTH – a material's ability to withstand a load force, measured in pounds per square inch (psi)

CONTROL JOINTS – a joint physically cut into concrete to help control cracking during the curing of the concrete

CRAZING – the cracking that occurs in fired glazes or other ceramic coatings due to critical tensile stresses

CURING – maintenance of humidity and temperature of freshly placed mortar or grout to assure satisfactory hydration of cement and proper hardening of mortar or grout

CUSHIONED EDGED TILE – tile on which the facial edges have a distinct curvature that results in a slightly recessed grout joint

DEFLECTION – a variation in the position or shape of a structure element due to the effect of loads or volume change

DOT MOUNTED MOSAICS – tile packaged in sheets and held together by plastic or rubber dots between tiles

EFFLORESCENCE – the residue deposited on the surface of a material (usually cement grout) by crystallization of soluble salts

EPOXY ADHESIVE – an adhesive system that employs epoxy hardening portions

EPOXY GROUT – a mortar system that employs epoxy hardening portions

EXPANSION JOINT – a joint through tile, mortar and substrate to allow for excessive movement

FACE-MOUNTED MOSAICS – mosaic tile sheets that have paper or other suitable material applied to the face of the mosaic sheets, usually with water soluble adhesives for easy removal after installation and prior to grouting

GLASS MOSAIC TILE – tile made of glass, usually not over 2" x 2" (50 mm x 50 mm) and 1/4" (6 mm) thick and mounted on sheets. Sheets are typically 12" x 12" (300 mm x 300 mm)

GLAZED TILE – tile with a fused impervious facial finish composed of ceramic materials fused to the body of the tile

GROUT – a material used for filling the joints between tile

GROUTING – the process of filling tile joints with grout

IAPMO – International Association of Plumbing and Mechanical Officers

LATEX- CEMENT GROUT – a mixture of cement grout with a latex additive or polymer

LATEX CEMENT MORTAR – a mixture of cement, sand and a latex additive

MARBLE TILE – marble cut into tiles and available in various finishes

MEDIUM BED – tile setting material that has a finished thickness between 3/8" (9 mm)

METAL LATH – expandable diamond metal lath material which is mechanically fastened to a surface and onto which a mortar bed is applied

MONOCOTTURA – method of producing tile by a single firing

MORTAR BED – the final coat of mortar on a wall, floor or ceiling before the installation of tile

Section 8: Glossary

MOSAIC TILE – any tile (ceramic, porcelain or stone) with a facial dimension of less than 6 in² which usually comes in sheets (paper face mounted, dot mounted, back mounted, etc...).

MUD – see mortar bed

NON-VITREOUS TILE – tile with an absorption rate greater than 7.0%

NOTCHED TROWEL – a trowel with a serrated or notched edge which is used to gauge the amount of mortar or adhesive to a specific thickness when setting tile

OPEN TIME – the period of time that a bond coat retains its ability to adhere to the tile and bond the tile to the substrate

PENCIL ROD – reinforcing rod with a diameter no greater than 1/4" (6 mm)

PINHOLES – imperfections in the surface of tile or grout

PLASTER – a cementitious material and aggregate that, when mixed with a gauging liquid, forms a plastic mass or paste which when applied to a surface, adheres to it and subsequently hardens, preserving in a rigid state the form or texture imposed during installation

PLUMB – perpendicular to a true level

PORCELAIN TILE – a ceramic tile that is dense, impervious and has an absorption rate of $\leq 0.5\%$

POT LIFE – the period of time during which a material maintains its workable properties after it has been mixed

SCRATCH COAT – a mortar bed, applied as the first coat of a mortar on a wall or ceiling, whose surface is scratched or roughened so that subsequent mortar coats will bond properly

SEALANT – an elastomeric material used to fill and seal expansion and control joints, prevents the passage of moisture and does not allow horizontal and lateral movement to affect the tile installation

SELF-SPACING TILE – tile with lugs, spacers or protuberances on the sides which automatically space the tile for the grout joint

SEMI-VITREOUS TILE – tile with an absorption rate between 3.0 – 7.0%

SHELF LIFE – the maximum period of time that an item can be stored before it is used

SHOWER PAN – a waterproof shower floor membrane which is specifically recognized for use in this application – required for steam rooms as well as showers per local building code

SLAKE – the process of mixing a cementitious mortar or grout, allowing it to stand for 5–10 minutes and then remixing. This process makes sure that the moisture in the mix penetrates lumps in the dry components, making it easier to complete the mixing procedure.

SLOPE TO DRAIN – a pitch placed in a floor used to evacuate water. 1/4" per foot (6 mm per 300 mm) is the industry recognized standard for floors

SLURRY COAT – a coat of thin-set used to bond a mortar bed to a cementitious substrate

SPACERS – plastic or rubber units used to separate and provide consistent spacing between tiles

STATIC COEFFICIENT OF FRICTION (COF) – the degree of slip resistance presented in a quantitative number that expresses the degree of slip resistance on the face of tile

STEAM GENERATOR – mechanism that turns water into steam and pumps the steam into the steam room under pressure

SUBFLOOR – a rough floor, plywood or boards, laid directly on joists and to which an underlayment or substrate is installed

SUBSTRATE – the underlying material to which a tile installation is bonded

TCNA – Tile Council of North America

THICK BED MORTAR – a thick layer of mortar that is used for leveling (see mortar bed)

THIN-SET – tile setting material that has a final thickness not greater than $\frac{3}{8}$ " (9 mm)

VAPOR BARRIER – an impervious sheet material that is placed under the substrate to prevent moisture vapor from transgressing through a wall, ceiling or floor

VITREOUS TILE – tile with an absorption rate of between 0.5 – 3.0%

WALL TILE – a glazed tile with a body that is suitable for interior use only and has an absorption rate of greater than 7.0%

WATERPROOFING MEMBRANE – a material applied to a substrate before tiling to protect the substrate and supporting structure from damage by water

WET AREA – surfaces that are either soaked, saturated, or regularly and frequently subjected to moisture or liquids (usually water), such as saunas, steam rooms, showers, swimming pools, and more

Section 8: Resource Guide

Ceramic Tile Materials and Methods

Tile Council of North America, Inc. (TCNA)
100 Clemson Research Blvd.
Anderson, SC 29625
864.646.8453
www.tileusa.com

Terrazzo, Tile & Marble Association of Canada (TTMAC)
30 Capston Gate, Unit 5
Concord, Ontario, Canada L4K 3E8
905.660.9640
www.ttmac.com

Ceramic Tile Institute of America, Inc.
12061 West Jefferson
Culver City, CA 90230-6219
310.574.7800
www.ctioa.org

Tile Contractors Association of America (TCAA)
4 East 113th Terrace
Kansas City, MO 64114
800.655.8453
www.tcaainc.org

National Tile Contractors Association (NTCA)
P.O. Box 13629
626 Lakeland East Dr.
Jackson, MS 39236
601.939.2071
www.tile-assn.com

International Masonry Institute (IMI)
The James Brice House
42 East St.
Annapolis, MD 21401
410.280.1305
www.imiweb.org

Natural Stone Methods and Materials

Marble Institute of America (MIA)
28901 Clemens Rd.
Westlake, OH 44145
440.250.9222
www.marble-institute.com

Masonry Institute of America
22815 Frampton Ave.
Torrance, CA 90501-5034
800.221.4000
www.masonryinstitute.org

Thin Brick Masonry Materials and Methods

Brick Institute of America (BIA)
11490 Commerce Park Dr.
Suite 300
Reston, VA 22091
703.620.0010
www.bia.org

International Masonry Institute (IMI)
The James Brice House
42 East St.
Annapolis, MD 21401
410.280.1305
www.imiweb.org

Masonry Institute of America
22815 Frampton Ave.
Torrance, CA 90501-5034
800.221.4000
www.masonryinstitute.org

National Concrete Masonry Association (NCMA)
13750 Sunrise Valley Dr.
Herndon, VA 20171-4662
703.713.1900
www.ncma.org

Concrete, Pre-Cast Concrete

Cement Association
5420 Old Orchard Rd.
Skokie, IL 60077
847.966.6200
www.cement.org

Precast/Prestressed Concrete Institute (PCI)
209 West Jackson Blvd.
Chicago, IL 60606
312.786.0300
www.pci.org

Wire Reinforcement Institute (WRI)
942 Main St.
Hartford, CT 06103
800.542.4974
www.wirereinforcement.org

American Concrete Institute (ACI)
P.O. Box 9094
Farmington Hills, MI 48333-9094
248.848.3700
www.concrete.org

Test Standards and Building Codes

American Society for Testing & Materials
International (ASTM)
100 Barr Harbor Dr.
P.O. Box C700
West Conshohocken, PA 19428-2959
610.832.9585
www.astm.org

Materials and Methods Standards Association
(MMSA)
P.O. Box 350
Grand Haven, MI 49417-0350
616.842.7844
www.mmsa.ws

International Code Council (ICC)
4051 West Flossmoor Rd.
Country Club Hills, IL 60478-5795
888.422.7233
www.iccsafe.org

United States Green Building Council (USGBC)
1015 18th St., NW
Suite 508
Washington DC 20036
202.828.7422
www.usgbc.org

American National Standards Institute (ANSI)
1819 L St., NW 6th Floor
Washington, DC 20036
202.293.8020
www.ansi.org

International Organization for Standardization (ISO)
1, rue de Varembe, Casa postale 56
CH-1211 Geneva 20, Switzerland
41 22 749 01 11
www.iso.org

National Institute of Building Sciences (NIBS)
1090 Vermont Ave., NW
Suite 700
Washington, DC 20005-4905
202.289.7800
www.nibs.org

Sealants, Waterproofing and Adhesives

Sealant, Waterproofing & Restoration Institute
(SWRI)
14 West 3rd St.
Suite 200
Kansas City, MO 64105
816.472.7974
www.swrionline.com

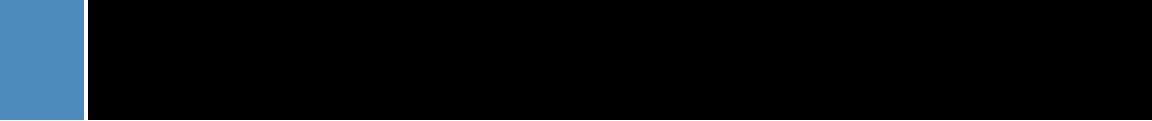
Adhesive & Sealant Council, Inc.
7979 Old Georgetown Rd.
Suite 500
Bethesda, MD 20814
301.986.9700
www.ascouncil.org

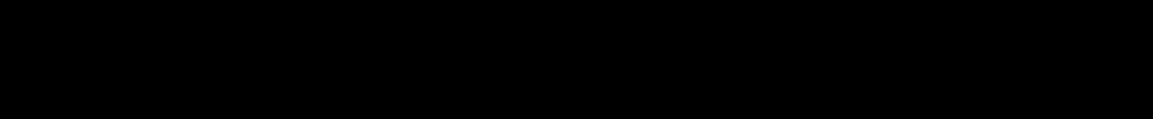
Cement Plaster/Render

International Institute for Lath & Plaster
P.O. Box 3922
Palm Desert, CA 92260-3922
760.837.9094
www.iilp.org

Expansion Joints

Expansion Joints Manufacturers Association
25 North Broadway
Tarrytown, NY 10591
Fax: 914.332.1541
www.ejma.org







**Innovative Tile and Stone
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Eastern Europe: +790.9661.1644

Europe: +34.96.649.1908

India: +91.40.3041.3100

Latin America: +1.203.393.0010

Middle East: +971.7.244.6396

South East Asia: +65.6515.3028

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GREENGUARD Indoor Air Quality Certified[®] Product.