

TECHNICAL SPECIFICATIONS
TILE REPLACEMENT AT LRC ENTRY
AT
FULLERTON COLLEGE

321 E. Chapman Avenue
Fullerton, CA 92832

NORTH ORANGE COUNTY COMMUNITY COLLEGE DISTRICT

1830 Romneya Drive
Anaheim, CA 92801-1819



W+W Project No. 15005.00

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**TILE REPLACEMENT AT LRC ENTRY
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SECTION 01 1100
SUMMARY OF WORK

PART 1 GENERAL

1.01 PROJECT DESCRIPTION

- A. Project consists of replacement of exterior tile at LRC entry at Fullerton College for North Orange County Community College District, as shown on Contract Documents prepared by Westberg + White, Inc., Architects.
- B. Work consists of, but is not limited to following:
 - 1. Removal of existing tile and setting beds.
 - 2. Cleaning of existing substrate in preparation for placing new setting beds.
 - 3. Installation of new tile in patterns indicated, including tile expansion/control joints.
 - 4. Installation of sealant in expansion/control joints.

1.02 CONSTRUCTION REQUIREMENTS

- A. Work shall conform to requirements of California Code of Regulations (CCR), Tile 24, Part 2, 2013 California Building Code (CBC), Volumes 1 and 2.
- B. Contract Documents are complementary and what is required by one shall be as binding as if required by all.
 - 1. Errors, inconsistencies, omissions discovered by Contractor shall be reported promptly to Architect as Request For Information (RFI).

1.03 CONTRACTOR USE OF PREMISES

- A. General: Limit use of premises to construction activities in areas indicated.
 - 1. Contractor will determine the time of day for construction work to begin and end based upon local ordinances, site and seasonal.
 - a. Provide parking and staging areas.
 - b. Provide secured storage of materials.
 - 2. Confine operations within Contract limits indicated.
 - a. Portions of Project Site beyond Contract limits indicated are not to be disturbed.

1.04 WORK DURING COLLEGE SESSIONS

- A. Work under this contract will be executed in part during regular session of College.
 - 1. Contractor shall cooperate with College authorities in every way to minimize disturbance.
- B. In entrance and exit of workers and in delivering, storing, and removing equipment, Contractor shall cooperate with those in authority and prevent interference with functioning of College.
 - 1. Observe rules and regulations in force and avoid unnecessary dust, mud or accumulated debris, or undue interference with convenience, sanitation or routine

of departmental activities.

1.05 TEMPORARY PROTECTIONS

- A. Conduct selective demolition operations to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - 1. Ensure safe passage of people around selective demolition area.
 - a. Provide safeguards, including warning signs, lights and barricades, for protection of workers, occupants, and public.
 - 2. Erect temporary protections, including, but not limited to, barriers, coverings, or other types of protection necessary to prevent damage to adjacent existing buildings, and existing site improvements, appurtenances, and landscaping indicated to remain in place.
- B. Remove temporary protections upon completion of Project and acceptance by Owner.

PART 2 PRODUCTS *(Not Applicable)*

PART 3 EXECUTION *(Not Applicable)*

END OF SECTION 01 1100

SECTION 02 4119

SELECTIVE DEMOLITION

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Furnishing labor, materials and equipment necessary for selective Demolition as indicated, specified, or required for completion of Work, including but not limited to following:
 - a. Cleaning existing improvements to remain.
 - b. Removing debris, waste materials, and equipment.
 - c. Removal of items as required for performance of Work.

- B. Related Sections:
 - 1. Section 01 1100: Summary of Work; for protection of existing Buildings and other improvements to remain.
 - 2. Section 09 3000: Tile.

1.02 SUBMITTALS

- A. Shop Drawings: Indicating extent of tile and setting bed to be removed.
 - 1. Indicate items to be protected during selective demolition.

1.03 QUALITY ASSURANCE

- A. Prior to commencement of Work, schedule walkthrough with Owner's Authorized Representative and Architect.
 - 1. Review limits of selective demolition and items indicated on shop drawings.

- B. Perform Work of this section using workers skilled in type of selective demolition to be performed.
 - 1. Perform Work of this section under full time direct supervision.

- C. Coordinate selective demolition for correct sequence, limits, and methods.
 - 1. Schedule demolition Work to create least possible inconvenience to public and facility operations.

1.04 PROJECT CONDITIONS

- A. Occupancy: Owner will occupy portions of building immediately adjacent to selective demolition areas.
 - 1. Conduct selective demolition work in manner that will minimize need for disruption of Owner's operations.
 - 2. Provide minimum 72 hours advance notice to Owner of selective demolition activities that will affect Owner's operations.

- B. Drawings may not indicate in detail total amount of selective demolition Work to be performed.

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1. Examine existing conditions to determine the full extent of required selective demolition.
 2. Contractor shall immediately notify Owner and Architect should unidentified conditions be discovered.
- C. Provide measures to avoid excessive damage to substrates from inadequate or improper means and methods.
- D. Should conditions be encountered that vary from those indicated, promptly notify Architect for clarification before proceeding.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.01 GENERAL

- A. Temporary Protections:
1. Do not commence selective demolition until temporary protections specified in Section 01 1100 are installed.

3.02 SELECTIVE DEMOLITION

- A. Remove existing tile work only to extent shown and interfacing with existing construction.
1. Use caution in removing existing tiles and setting beds so as not to disturb adjacent work indicated to remain.
 2. To minimize disturbance of adjacent surfaces, use hand or small power tools designed for sawing or grinding, not hammering and chopping.
- B. Cut finish surfaces such as concrete or tile, by methods to terminate surfaces in straight line at natural point of division, unless otherwise indicated.

3.03 PATCHING

- A. Should existing buildings or other adjacent improvements indicated to remain become damaged due to performance of Work of this Section, comply with following:
1. Notify Architect and Owner prior to performing patching or repairs.
 2. Architect will inspect damage and advise Contractor whether patching or repairs will be allowed, and of specific remedies should they be allowed..
 3. Should patching or repairs be authorized by Architect, finish material and appearance of patch and repair Work shall match existing.

3.04 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations.
1. Return adjacent areas to condition existing before start of selective demolition.
 2. Use appropriate tools and equipment.
- B. Protect existing improvements during cleaning operations.

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- C. Remove and transport debris in manner that will prevent spillage on adjacent surfaces and areas.
 - 1. Continuously clean up and remove items as selective demolition Work progresses.
- D. Debris shall be dampened by fog water spray prior to transporting by truck.
- E. Debris pick-up area shall be kept broom-clean and shall be washed daily with clean water.
- F. Remove and legally dispose of rubbish, debris, and waste materials off Project Site.

END OF SECTION 02 4119

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SECTION 07 9200

JOINT SEALANTS

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Joint sealants required to seal exterior expansion/control joints in horizontal tile.
- B. Related Sections:
 - 1. Section 09 3000: Tile

1.02 REFERENCES

- A. ASTM International (ASTM):
 - 1. ASTM C 920 – Standard Specification for Elastomeric Joint Sealants.
 - 2. ASTM C 1193 – Standard Guide for Use of Joint Sealants.
- B. South Coast Air Quality Management District (SCAQMD):
 - 1. SCAQMD Rule 1168 – Adhesive and Sealant Applications

1.03 QUALITY ASSURANCE

- A. Use only qualified workers thoroughly skilled and specially trained in techniques of installing sealant, who can acceptably demonstrate to Architect their ability to fill joints solidly and neatly.
- B. Compatibility Tests: Prior to start of sealant work, sealant manufacturer and sealant installer shall conduct compatibility tests of sealant for each different sealing condition and substrate for entire Project.
- C. Pre-installation Field Testing:
 - 1. Field test adhesion of joint sealant material to Project substrates.
 - 2. Verify joint sealant materials will satisfactorily adhere to substrates.
 - 3. Arrange field testing with manufacturer or designated representative.
 - 4. Notify parties minimum 7 days prior to field testing.
 - 5. Field test sealants in accordance with ASTM C 1193, Appendix X-1, Method A – Field Applied Sealant Joint Hand-pull Tab, in compliance with manufacturer's recommendations.

1.04 SUBMITTALS

- A. Product Data: Manufacturer's specifications, performance test data, recommendations, handling, installation and curing instructions for each type of sealant, and associated miscellaneous material required.
- B. Samples: Minimum of four, 3 inch long samples of each color required (except black) for each type of sealant exposed to view.

- C. Compatibility Tests: Results of each compatibility test to Architect and Contractor for approval prior to start of sealant Work.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project Site in original unopened containers bearing manufacturer's name, product designation, date of manufacturer and mixing instructions.
 - 1. Store in accordance with manufacturer's recommendations.
 - 2. Provide uniform ambient temperature between 60 and 80 degrees F.

1.06 WARRANTY

- A. Manufacturer shall provide 5 year material warranty.
- B. Installer shall provide 2 year labor warranty.

PART 2 PRODUCTS

2.01 GENERAL

- A. Compatibility: Provide joint sealants, joint fillers and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
- B. VOC Content of Interior Sealants: Provide sealants and sealant primers for use inside building envelope that comply with following limits for VOC content in accordance with SCAQMD Rule 1168:
 - 1. Architectural Sealants: Not more than 250 g/L.
 - 2. Sealant Primers for Nonporous Substrates: Not more than 250 g/L.
 - 3. Sealant Primers for Porous Substrates: Not more than 775 g/L.
- C. Colors: Provide color of exposed joint sealant to match color of grout specified in Section 09 3000.

2.02 MATERIALS

- A. Elastomeric Sealant Standard: Provide manufacturer's standard chemically curing, elastomeric sealant of base polymer indicated which complies with ASTM C 920 requirements, including those referenced for Type, Grade, and Class.
- B. **Sealant No. 2:** Two-Component Polyurethane Sealant; Type M, Grade P, Class 25.
 - 1. Provide one of following products:
 - a. Elasto-Thane 227: Pacific Polymers International, Inc.
 - b. MasterSeal SL 2 Sealant: BASF Corporation, Construction Systems
 - c. Urexpan NR-200: Pecora, Corp.
 - 2. Apply Sealant No. 2 to following exterior joints:
 - a. Horizontal control and expansion joints in exterior tile and between tile and concrete.

2.03 MISCELLANEOUS MATERIALS

- A. Joint Primer: Provide type of joint primer recommended by sealant manufacturer for joint surfaces to be primed or sealed.
- B. Bond Breaker Tape: Polyethylene tape or other plastic tape as recommended by sealant manufacturer to be applied to sealant-contact surfaces where bond to substrate or joint filler must be avoided for proper performance of sealant.
 - 1. Provide self-adhesive tape where applicable.
- C. Sealant Backer Rod: Compressible rod stock of polyethylene foam, polyethylene-jacketed polyurethane foam, neoprene foam or other flexible, permanent, durable nonabsorptive material as recommended by sealant manufacturer for compatibility with sealant.
 - 1. Provide products by one of following, or approved equal.
 - a. Denver Foam by Backer Rod Mfg. Inc.
 - b. Sof-Rod by Nomaco, Inc.
 - c. Sealtight Kool-Rod by W.R. Meadows, Inc.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine joints, with installer present, for compliance with requirements for joint configuration, installation tolerances and other conditions affecting joint sealant performance.
 - 1. Correct improper conditions.

3.02 JOINT PREPARATION

- A. Preparation of surfaces to receive sealant shall conform to the sealant manufacturer's specifications.
- B. Perform preparation in accordance with ASTM C 804 for solvent release sealants, and ASTM C 962 for elastomeric sealants.
- C. Clean joint surfaces immediately before installation of sealant.
 - 1. Remove dirt, insecure coatings, moisture and other substances which could interfere with bond of sealant.
 - a. Surfaces shall be thoroughly dry before application of sealants.
 - 2. Etch concrete joint surfaces as recommended by sealant manufacturer to remove excess alkalinity, unless sealant manufacturer's printed instructions indicate that alkalinity does not interfere with sealant bond and performance.
 - a. Etch with 5 percent solution of muriatic acid; neutralize with dilute ammonia solution, rinse thoroughly with water and allow to dry before sealant installation.
- D. Prime joint surfaces where recommended by sealant manufacturer.
 - 1. Protect elements surrounding Work of this section from damage or disfiguration
 - 2. Do not allow primer to spill or migrate onto adjoining surfaces.
 - 3. Use air pressure or other methods to achieve required results.
 - 4. Use masking tape to keep sealants off surfaces that will be exposed in finished Work.

3.03 INSTALLATION OF SEALANT

- A. Comply with manufacturer's printed instructions except where more stringent requirements are shown or specified, and except where manufacturer's technical representative directs otherwise.
- B. Set joint filler units at proper depth or position in joint to coordinate with other work, including installation of bond breakers, backer rods and sealant.
 - 1. Do not leave voids or gaps between ends of joint filler units.
- C. Install sealant backer rod for sealants, except where recommended to be omitted by sealant manufacturer for application indicated.
- D. Install bond breaker tape where required by manufacturer's recommendations to ensure that elastomeric sealants will perform properly.
- E. Employ only proven installation techniques, which will ensure that sealants are deposited in uniform, continuous ribbons without gaps or air pockets, with complete wetting of joint bond surfaces equally on opposite sides.
 - 1. Except as otherwise indicated, fill sealant rabbet to slightly concave surface, slightly below adjoining surfaces.
 - 2. Where horizontal joints are between a horizontal surface and vertical surface, fill joint to form slight cove, so that joint will not trap moisture and dirt.
 - 3. Tool joints to form smooth, uniform beads with slightly concave surfaces, with finished joints straight, uniform, smooth and neatly finished.
 - 4. Remove excess sealant from adjacent surfaces of joint, leaving work in neat, clean condition.
 - 5. Do not use tooling agents unless recommended by sealant manufacturer.
- F. Seal joints before adjacent surfaces are waterproofed or painted.
- G. Install sealant to depths recommended by sealant manufacturer but within following general limitations, measured at center (thin) section of bead:
 - 1. For sidewalks, pavements and similar joints sealed with elastomeric sealant and subject to traffic and other abrasion and indentation exposures, fill joints to depth equal to 75 percent of joint width, but neither more than 1/2 inch deep nor less than 3/8 inch deep.
 - 2. For normal moving joints sealed with elastomeric sealant but not subject to traffic, fill joints to depth equal to 50 percent of joint width, but neither more than 1/2 inch deep nor less than 1/4 inch deep.
 - 3. For joints sealed with non-elastomeric sealants, fill joints to depth in range of 75 percent to 125 percent of joint width.
- H. Where irregular surface or sensitive joint border exists apply masking tape at edge of joint to insure joint neatness and protection.
 - 1. Remove masking tape after sealant is applied.
- I. Spillage: Do not allow sealants or compounds to overflow or spill onto adjoining surfaces, or to migrate into voids of adjoining surfaces.
 - 1. Clean adjoining surfaces by whatever means may be necessary to eliminate evidence of spillage.

- J. Recess exposed edges of exposed joint fillers slightly behind adjoining surfaces, unless otherwise shown, so that compressed units will not protrude from joints.
- K. Bond ends of joint filler together with adhesive or join by other means as recommended by manufacturer to ensure continuous watertight performance.

3.04 MISCELLANEOUS WORK

- A. Install sealants to depths as indicated or, when not indicated, as recommended by sealant manufacturer but within following general limitations:
 - 1. For joints in tile paving subject to traffic, fill joints to depth equal to 75 percent of joint width, but not more than 3/4 inch deep or less than 3/8 inch deep, depending on joint width.

3.05 CLEANING

- A. Remove and legally dispose of rubbish, debris, and waste materials off Project Site.

3.06 CURING

- A. Sealants shall cure in accordance with manufacturer's printed recommendations.
 - 1. Do not disturb seal until completely cured.

3.07 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Substantial Completion.
 - 1. When, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealant immediately and reseal joints with new materials to produce joint sealant installations with repaired areas indistinguishable from original Work.

END OF SECTION 07 9200

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SECTION 09 3000

TILE

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Surface preparation of concrete slab substrate.
 - 2. Setting and Installation Materials:
 - a. Mortar bed bond coat.
 - b. Cured mortar bed.
 - c. Cleavage membrane
 - d. Thin set mortar.
 - e. Colored grout.
 - 3. Furnishing and installing unglazed porcelain tile.

- B. Related Sections:
 - 1. Section 01 1100: Summary of Work; Project scope.
 - 2. Section 02 4199: Selective Demolition; removal of existing tile and setting bed.
 - 3. Section 07 9200: Joint Sealants; for horizontal control, contraction, and expansion joints.

1.02 REFERENCES

- A. Tile Council of North America (TCNA):
 - 1. 2016 TCNA Handbook for Ceramic, Glass, and Stone Tile Installation.

- B. American National Standards Institute, Inc. (ANSI):
 - 1. ANSI A137.1 – Standard Specifications for Ceramic Tile.
 - 2. ANSI A108 Series and ANSI A118 Series Standards for Installation of Ceramic Tile, including grouting.

- C. ASTM International (ASTM):
 - 1. Standards as referenced in this Section.

1.03 QUALITY ASSURANCE

- A. Source of Material: Provide materials obtained from one source for each type and color of tile, grout, and setting materials.

1.04 SUBMITTALS

- A. Product Data: Manufacturer's technical information and installation instructions for materials required.
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.

- B. Shop Drawings: Indicate tile patterns and locations and widths of control, contraction, and expansion joints in tile substrates and finished tile surfaces.

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- C. Samples for Verification Purposes:
 - 1. Minimum of four samples, or four sample sets for each type of tile and for each color and texture required, not less than 12 inches square, on plywood or hardboard backing and grouted as required.
 - a. Provide minimum of four board-mounted tiles for 12 inch by 12 inch size tile.
- D. Certificates:
 - 1. Manufacturer's certification that grout materials being provided are suitable for intended use, meet or exceed referenced standards.
 - 2. DCOF AcuTest friction test reports for floor tile.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use.
 - 1. Comply with requirements of ANSI A137.1 for labeling sealed tile packages.
- B. Prevent damage or contamination to materials by water, foreign matter, and other causes.
- C. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.06 PROJECT CONDITIONS

- A. Maintain environmental conditions within limits recommended by manufacturer for optimum results.
 - 1. Do not install products under environmental conditions outside manufacturer's absolute limits.
 - 2. Protect Work during and after installation to comply with referenced standards and manufacturer's printed recommendations.
 - 3. Do not install mortar, set, or grout exterior tile when inclement weather conditions are expected within 48 hours after work is completed unless properly protected.
- B. Shade work area from direct sunlight during installation as needed to prevent rapid evaporation caused by excessive heat.
- C. Protection:
 - 1. Protect adjacent surfaces during progress of Work of this Section.

PART 2 PRODUCTS

2.01 PRODUCTS – GENERAL

- A. Comply with ANSI A137.1 for types, compositions, and grades of tile indicated.
 - 1. Furnish tile complying with "Standard Grade" requirements unless otherwise indicated.
- B. Comply with ANSI standard referenced with products and materials indicated for setting and grouting

- C. Dynamic Coefficient of Friction (DCOF): Provide floor tiles with coefficient of friction equal to or greater than 0.42 when tested in accordance with provisions of ANSI A137.1, Section 9.6 – DCOF AcuTest.
- D. Condition of Surfaces to Receive Tile:
 - 1. Verify that surfaces to receive mortar setting bed and tile are firm, dry, clean, and free from oily or waxy films and curing compounds.

2.02 TILE PRODUCTS

- A. Porcelain Tile: **PT-1**
 - 1. Porcelain Floor Tile – Field
 - 2. Face Size: Nominal 12 inches by 12 inches.
 - 3. Nominal Thickness: 1/4 inch
 - 4. Surface/Texture: Unglazed
 - 5. Series: Alta Vista
 - 6. Color: Sunset Gold – AV51.
 - 7. Manufacturer: Daltile, Inc.
- B. Porcelain Tile: **PT-2**
 - 1. Colorbody Porcelain Floor Tile – Field
 - 2. Face Size: Nominal 12 inches by 12 inches.
 - 3. Nominal Thickness: 5/16 inch
 - 4. Surface/Texture: Unglazed
 - 5. Series: Cliff Pointe
 - 6. Color: Earth – CP86.
 - 7. Manufacturer: Daltile, Inc.
- C. Porcelain Tile: **PT-3**
 - 1. Colorbody Porcelain Floor Tile – Field
 - 2. Face Size: Nominal 12 inches by 12 inches.
 - 3. Nominal Thickness: 1/4 inch
 - 4. Surface/Texture: Unglazed
 - 5. Series: Terra Antica
 - 6. Color: Celeste/Grigio – TA04.
 - 7. Manufacturer: Daltile, Inc.
- D. Porcelain Tile: **PT-4**
 - 1. Porcelain Floor Tile – Field
 - 2. Face Size: Nominal 2 inches by 2 inches.
 - 3. Nominal Thickness: 1/4 inch
 - 4. Surface/Texture: Unglazed
 - 5. Series: Keystones
 - 6. Color: Elemental Tan – D166.
 - 7. Manufacturer: Daltile, Inc.
- E. Porcelain Tile: **PT-5**
 - 1. Porcelain Floor Tile – Field
 - 2. Face Size: Nominal 2 inches by 2 inches.
 - 3. Nominal Thickness: 1/4 inch
 - 4. Surface/Texture: Unglazed
 - 5. Series: Keystones
 - 6. Color: Deep Purple – D044.

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- 7. Manufacturer: Daltile, Inc.
- F. Porcelain Tile: **PT-6**
- 1. Porcelain Floor Tile – Field
 - 2. Face Size: Nominal 2 inches by 2 inches.
 - 3. Nominal Thickness: 1/4 inch
 - 4. Surface/Texture: Unglazed
 - 5. Series: Keystones
 - 6. Color: Red – D017.
 - 7. Manufacturer: Daltile, Inc.

2.03 INSTALLATION MATERIALS

- A. Portland Cement: ASTM C 150, Type I, or Quikrete Deck Mud conforming to ASTM C150.
- B. Hydrated Lime: ASTM C 206 or C 207, Type S.
- C. Mortar Admixture: Thinset Mortar Admix by Custom Building Products, or approved equal.
- D. Sand: ASTM C 144.
- E. Reinforcing Wire Fabric: Install in cured mortar beds.
 - 1. Galvanized, welded wire fabric, 2 by 2 inches by 0.062-inch diameter.
 - 2. Comply with ASTM A 185 and ASTM A 82 except for minimum wire size.

2.04 ANTI-FRACTURE MEMBRANE

- A. Anti-Fracture Membrane/Cleavage Membrane:
 - 1. Where indicated, and as required for isolating tile installation from cracking due to minor substrate movement and normal structural deflections as specified in ANSI A108.17 and complying with ANSI A118.12.
 - 2. Fabric Reinforced Liquid Applied Membrane:
 - a. Custom 9240 Waterproofing and Anti-Fracture Membrane by Custom Building Products, or approved equal.
 - 3. Install cleavage membrane over cured mortar bed in accordance with TCNA Method F101 at concrete slab substrate.

2.05 BONDING MORTARS

- A. Composition: Modified dry-set mortar, consisting of proprietary blend of Portland cement, inorganic aggregates, copolymers and chemicals.
 - 1. Exceeds requirements of ANSI Standards A118.4TE, A118.15TE and A118.11
 - 2. Apply over properly prepared substrates as required for setting tile as specified by ANSI A108.5. 2.
 - 3. Physical Properties:

Property:	Test Method:	Requirement:	Typical Results:
Pot Life			4 Hours
Open Time (E)	A118.15 Section 5.3	E = 30 Minutes	Pass

4 Week Shear Bond Strength:

Porcelain Tile	A118.15 Section 7.2.5	> 400 psi	650 - 725 psi
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4. MegaLite Ultimate Crack Prevention Large Format Tile Mortar by Custom Building Products, or approved equal.

2.06 GROUT

- A. Tile Grout: Where indicated, and as required for filling joints between tiles.
 1. Polymer-Modified Portland Cement Grout:
 - a. Complying with ANSI A108.10 – Installation of Grout in Tilework.
 2. Prism SureColor Tile Grout by Custom Building Products, or approved equal, conforming to ANSI A118.7 for joints 1/8 inch to 1/2 inch.
 3. Color: No. 165 – Delorean Gray, by Custom Building Products, or approved equal.

2.07 MISCELLANEOUS MATERIALS

- A. Provide other materials, not specifically described but required for complete and proper installation, as selected by Contractor subject to acceptance of Architect.

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine areas and conditions under which work of this section will be performed.
 1. Correct conditions detrimental to timely and proper completion of work.
 2. Do not proceed until unsatisfactory conditions are corrected in accordance with ANSI A108.3
- B. Coordinate with other trades as needed to assure that proper substrata are provided to receive work of this Section.
- C. Where Portland cement mortar setting bed will be installed, do not commence installation of setting bed until substrata are within following tolerances:
 1. Horizontal Surfaces: Level within 1/4 inch in 10 feet indirections.
- D. Condition of Surfaces to Receive Tile:
 1. Verify that surfaces to receive mortar setting bed and tile are firm, dry, clean, and free from oily or waxy films and curing compounds.

3.02 SUBSTRATA AND SETTING BEDS

- A. General:
 1. Comply with pertinent provisions of referenced standards, except as otherwise directed by Architect or as specified.
 2. Maintain minimum temperature limits and installation practices recommended by materials manufacturers.
- B. Provide cleavage membranes, waterproof membranes, and setting beds as called for on Drawings or specified herein.

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1. Install membranes in strict accordance with manufacturers' recommendations.
 2. Where such items are not specifically called for on Drawings, but are required for complete and proper installation, notify Architect and provide as directed.
- C Bonding to Concrete Surfaces:
1. Concrete must be fully cured and must accept water penetration.
 - a. Test by sprinkling water on various areas of substrate.
 - b. When water penetrates, then good bond can be achieved.
 - c. When water beads, surface contaminants are present, and loss of adhesion may occur.
 2. Contaminants should be mechanically removed before installation.
 3. Concrete must be free of efflorescence and not subject to hydrostatic pressure.
 4. Concrete slabs should have coarse finish to enhance bond.
 - a. Smooth concrete slabs must be mechanically abraded to achieve proper bond.

3.03 INSTALLING TILE

- A. General:
1. Comply with pertinent provisions of referenced standards, except as otherwise directed by Architect or specified.
 2. Ensure tile is clean, dry, and free from contaminants that may affect proper adhesion of tile to substrate.
 3. Maintain minimum temperature limits and installation practices recommended by materials manufacturers.
 4. Mix and use proprietary materials in strict accordance with manufacturers' printed instructions.
 5. Prepare surfaces, set, fit, grout, and clean Work of this Section in strict accordance with referenced standards and manufacturers' recommendations.
- B. Placement Method: Install tile using following setting beds as shown or scheduled.
1. Where not otherwise indicated, use Portland cement mortar where thickness and substrate permits.
 2. Portland Cement Mortar Bed Installations
 - a. Latex-Portland cement mortar over cured mortar bed complying with ANSI A 108.5.
 3. Thin-Set Installations:
 - a. Latex-Portland cement mortar complying with ANSI A 108.5.
 4. Install grout in accordance with ANSI A108.10, Specifications, and manufacturer's directions.
 - a. Nominal centerline of grout joints shall be straight.
- C. Install tile in accordance with pertinent provisions of specified ANSI standards, pressing and beating tile into place to obtain 95 percent coverage by mortar on back of each tile.
1. Back-butter tiles necessary to achieve 95 percent coverage and to accommodate differences in thickness between tiles.
- D. Limits of Tile:
1. Extend tile into recesses and under equipment and fixtures to form a complete covering without interruptions.
 2. Terminate tile neatly at obstructions, edges, and corners, without disruption of pattern or joint alignment.

- E. Joining Pattern:
 - 1. Lay tile in pattern indicated on Drawings or directed by Architect.
 - 2. Layout tile work, and center tile fields in both directions.
 - 3. Adjust to minimize tile cutting.
 - 4. Provide uniform joint widths; 3/16 inch nominal, unless otherwise indicated.

- F. Allowable variations in finished work.
 - 1. Do not exceed following deviations from level and plumb, and from elevations, locations, slopes, and alignments shown:
 - a. Horizontal surfaces: 1/8 inch in 10 feet indirections.
 - b. Vertical surfaces: 1/8 inch in 8 feet indirections.

3.04 EXPANSION/CONTROL JOINTS

- A. Comply with TCNA Handbook, Method EJ171 .
 - 1. Provide expansion/control joints where indicated and as follows:
 - a. Exterior: 8 feet to 12 feet in each direction
 - 2. Where tile abuts restraining surfaces such as perimeter walls, curbs, columns, and where changes occur in backing materials.

- B. Extend openings for joints completely through tile, mortar, mortar bed, and reinforcing.
 - 1. Make openings for joints same width as tile joints.
 - 2. Keep joints open and free from mortar and grout until filled with sealant.
 - 3. Apply joint primer in wet areas, and apply elsewhere as recommended by sealant manufacturer.
 - 4. Make joint edges free from dirt, oils, wax, and other contaminants.

- C. Seal between tile and penetration and restraining surfaces with sealant matching color of grout/joint filler.

- D. Perform sealant installation in accordance with pertinent provisions of Section 07 9200.

3.05 GROUTING

- A. General:
 - 1. Do not begin grouting floor tiles until they are firmly set and, in no case, in less than 48 hours after they have been installed.
 - 2. Remove spacers, ropes, glue, and similar foreign matter prior to grouting.
 - 3. When using proprietary grout, adhere strictly to manufacturer's directions unless otherwise specified or approved in advance by Architect.

- B. Installation:
 - 1. Mix grout by hand or with slow-speed drill motor not exceeding 300 rpm, achieving stiff non-slumping consistency, and using minimum amount of liquid to achieve workable mix.
 - 2. Force maximum amount of approved grout into joints in accordance with pertinent recommendations contained in ANSI A 108.10.
 - 3. Fill joints of cushion-edge tile to depth of cushion.
 - 4. Fill joints of square-edge tile flush with surface.
 - 5. Fill gaps and skips.
 - a. Do not permit mortar or mounting mesh to show through grouted joints.

**TILE REPLACEMENT AT LRC ENTRY
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- b. Provide hard finished grout which is uniform in color, smooth, and without voids, pin holes, or low spots.
- c. Leave tile clean.

3.06 CURING

- A. Damp cure tile installations, including Portland cement grouts, for 72 hours minimum.
 - 1. Cover with 40 lb. kraft paper.
 - 2. Do not use polyethylene sheets directly over tile on horizontal surfaces.

3.07 CLEANING

- A. After completion of setting and grouting, thoroughly clean tile.
 - 1. Do not use acid or acid cleaners to clean tile.

3.08 REPLACEMENT

- A. Replace cracked, chipped, broken, and otherwise defective tiles.
- B. Remove Work not in compliance with requirements of Contract Documents or referenced standards, and promptly replace with Work which does comply.

END OF SECTION 09 3000