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SECTION 09306

TILE ADHESIVES, MORTARS AND GROUTS

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PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Tile adhesives, mortars and grouts including the following:
 - 1. Surface preparation materials for setting tile and stone.
 - 2. Waterproofing and membranes.
 - 3. Adhesives.
 - 4. Latex mortar bed.
 - 5. Thin set mortar.
 - 6. Medium bed thin set mortar.
 - 7. Additives.
 - 8. Cementitious grout.
 - 9. Epoxy mortar and grout.
 - 10. Accessories:
 - a. Reinforcing mesh.
 - b. Cleavage membrane.
 - c. Slopes.
 - d. Curbs.
 - e. Niches.
 - f. Shower seats.
 - g. Grout sealer.
 - h. Haze remover.
 - i. Epoxy haze remover.

1.2 RELATED SECTIONS

- A. Section 07140 - Fluid-Applied Waterproofing.
- B. Section 07160 - Cementitious Waterproofing.
- C. Section 07900 - Joint Sealers.
- D. Section 09300 - Tile: Ceramic Tile Materials.
- E. Section 09380 - Cut Natural Stone Tile: Stone Tile Materials.

1.3 REFERENCES

- A. ANSI A108 Series/A118 Series - American National Standards for Installation of Ceramic Tile.
- B. ASTM C 78 - Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading).

- C. ASTM C 109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-inch (50-mm) Cube Specimens).
- D. ASTM C 190 - Method of Test for Tensile Strength of Hydraulic Cement Mortars (Withdrawn 1990, no replacement).
- E. ASTM C 266 - C266 Standard Test Method for Time of Setting of Hydraulic-Cement Paste by Gilmore Needles.
- F. ASTM C 580 - Standard Test Method for Flexural Strength and Modulus of Elasticity of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes.
- G. ASTM C 882 - Standard Test Method for Bond Strength of Epoxy-Resin Systems Used With Concrete By Slant Shear.
- H. ASTM C 1325 - Standard Specification for Non-Asbestos Fiber-Mat Reinforced Cement Substrate Sheets.
- I. ASTM D 226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
- J. ASTM D 4397 - Standard Specification for Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications.
- K. ASTM E 96 - Standard Test Methods for Water Vapor Transmission of Materials.
- L. Federal Specification A-A-1555 - Wind Driven Rain Resistance.
- M. ICRI Guideline No. 03730 - Surface Preparation Guidelines for Repair of Deteriorated Concrete Resulting from Reinforcing Steel Oxidation.
- N. ICRI Guideline No. 03731 - Selecting Application Methods for the Repair of Concrete Surfaces.
- O. ICRI Guideline No. 03732 - Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings and Polymer Overlays.
- P. TCNA (HB) - Handbook for Ceramic Tile Installation; Tile Council of North America.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Manufacturer's printed installation instructions for each product.
- C. Selection Samples: Color charts for selection of grout.
- D. Verification Samples: Actual samples of mortars, grouts and adhesives, tested for compatibility in relationships to be found in project installation.
- E. Maintenance Instructions: Include cleaning and stain removal methods and cleaning solutions recommended.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Firm specializing in manufacture of tile installation materials, including mortars, grouts, and adhesives, with minimum 10 years experience.
- B. Laboratory Testing: For each mortar, grout, and adhesive specified, submit laboratory confirmation using positive analytical methods of:
 - 1. Compatibility of materials to be used together.
 - 2. Proper usage of specified materials.
 - 3. Color matching.
- C. Installer Qualifications: Firm specializing in installation of ceramic and/or stone tile, with minimum 5 years documented experience with projects of similar scope, design, and materials.
- D. Mock-Up: Provide a mock-up of each type of tile installation, using tile specified elsewhere and installation materials specified in this section; include at least one example of each type of accessory material and trim, for approval of quality of workmanship.
 - 1. Size: 36 by 36 inches (915 by 915 mm), minimum.
 - 2. Size: _____.
 - 3. Location: As directed by Architect.
 - 4. Location: As indicated on drawings.
 - 5. Approved mock-ups may remain in the finished work.
 - 6. Mock-ups may not remain in the finished work.
- E. Pre-Installation Meeting: At least three weeks prior to commencing tile work conduct a meeting at the project site to discuss contract requirements and job conditions; require the attendance of tile installers, representative of installation materials manufacturer, and installers of related materials; notify Architect in advance of meeting.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Prevent damage or contamination to materials by water, freezing, foreign matter or other causes.
- B. Store materials subject to damage by freezing or overheating, including latex, organic, and epoxy materials, at room temperature if possible.
- C. Deliver and store materials on site at least 24 hours before work begins.

1.7 PROJECT CONDITIONS

- A. Maintain environmental conditions and protect work during and after installation to comply with referenced standards and manufacturer's printed recommendations.
- B. Vent temporary heaters to exterior to prevent damage to tile work from carbon dioxide build-up.
- C. Maintain temperatures at not less than 50 degrees F (10 degrees C) and not more than 100 degrees F (38 degrees C) in tiled areas 24 hours prior to and during installation and for 7 days after completion, unless other temperatures are required by referenced installation standards or manufacturer's written instructions.
- D. Protect Portland cement based materials from direct sunlight, radiant heat, forced hot and cold ventilation and drafts until cured, to prevent premature evaporation of moisture. When installed at low temperatures allow for longer curing time and

protect from damage until cured.

- E. Do not install epoxy based materials when surface temperature is less than 60 degrees F (16 degrees C) or over 90 degrees F (32 degrees C).

1.8 WARRANTY

- A. Provide manufacturer's standard written 10-year warranty, covering materials and labor for replacement of defective materials.
- B. Provide Contractor's warranty that work will be free of defects in materials and workmanship for 10 years.

1.9 MAINTENANCE MATERIALS

- A. Deliver to Owner minimum of 1 gallon (4 L) of each type of mortar, grout, and adhesive, for use in repair and maintenance; provide color matched materials from same production run or batch as installed materials.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: ProSpec (formerly Bonsal branded products), which is located at: Bonsal American 8201 Arrowridge Blvd. ; Charlotte, NC 28273; Toll Free Tel: 800-738-1621; Tel: 704-525-1621; Fax: 704-529-5261; Email: [request info](#); Web: www.prospec.com
- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01600.
- D. Obtain products from a single manufacturer.

2.2 APPLICATION SYSTEMS

- A. Continuous Water Submersion System:
 - 1. Substrate: As specified in section _____.
 - 2. Bonded Leveling Bed: Bond Coat Bonsal/ProSpec PermaSet Concentrate 330.
 - 3. Bonded Leveling Bed: Bonsal/ProSpec B-710 SBR Mortar Additive mixed with Bonsal/ProSpec Floor Mud.
 - 4. Waterproof Membrane: Bonsal/ProSpec B-6000 Waterproof /Crack Isolation Membrane.
 - 5. Mortar for Walls: Bonsal/ProSpec PermaFlex Lite 525 Thin Set Mortar
 - 6. Mortar for Walls: Bonsal/ProSpec StayFlex 590 Thin-Set Mortar.
 - 7. Mortar for Walls or Floors: Bonsal/ProSpec Superior PermaFlex 600 Thin-Set Mortar.
 - 8. Mortar for Walls or Floors: Bonsal/ProSpec PermaFlex 500 Thin-Set Mortar.
 - 9. Mortar for Floors only: Bonsal/ProSpec Permalastic Thin-Set Mortar.
 - 10. Mortar for Floors only: Bonsal/ProSpec Permalastic Rapid Thin-Set Mortar.
 - 11. Tile: As specified in section 09300.
 - 12. Grout: Bonsal/ProSpec Sanded Tile Grout (700) Polymer Modified.
 - 13. Grout: Bonsal/ProSpec Unsanded Tile Grout (800) Polymer Modified.
 - 14. Sealer: Bonsal/ProSpec Grout Sealer.
- B. Commercial Floor and Wall System:
 - 1. Substrate: As specified in section _____.

2. Bonded Leveling Bed: Bonsal/ProSpec Bond Coat PermaSet Concentrate 330.
3. Bonded Leveling Bed: Bonsal/ProSpec B-710 SBR Mortar Additive mixed with Floor Mud.
4. Unbonded Leveling Bed: Bonsal/ProSpec B-710 SBR Mortar Additive mixed with Bonsal/ProSpec Floor Mud. Wire reinforced with 2 inch by 2 inch (51mm x 51mm) 16 gauge welded wire over a 6 mil thick cleavage membrane.
5. Waterproof Membrane: Bonsal/ProSpec B-6000 Waterproof /Crack Isolation Membrane.
6. Mortar for Walls or Floors: Bonsal/ProSpec PermaFlex Lite 525 Thin-Set Mortar
7. Mortar for Walls or Floors: Bonsal/ProSpec StayFlex 590 Thin-Set Mortar.
8. Mortar for Walls or Floors: Bonsal/ProSpec Superior PermaFlex 600 Thin-Set Mortar.
9. Mortar for Walls or Floors: Bonsal/ProSpec PermaFlex 500 Thin-Set Mortar.
10. Mortar for Floors only: Bonsal/ProSpec Permalastic Thin-Set Mortar.
11. Mortar for Floors only: Bonsal/ProSpec Permalastic Rapid Thin-Set Mortar.
12. Tile, Pavers or Stone: As specified in section 09300.
13. Grout: Bonsal/ProSpec Sanded Tile Grout (700) Polymer Modified.
14. Grout: Bonsal/ProSpec Unsanded Tile Grout (800) Polymer Modified.
15. Sealer: Grout Sealer.

C. Industrial Floor and Wall System:

1. Substrate: As specified in section _____.
2. Bonded Leveling Bed: Bond Coat Bonsal/ProSpec PermaSet Concentrate 330.
3. Bonded Leveling Bed: Bonsal/ProSpec B-710 SBR Mortar Additive mixed with Bonsal/ProSpec Floor Mud.
4. Unbonded Leveling Bed: Bonsal/ProSpec B-710 SBR Mortar Additive mixed with Floor Mud. Wire reinforced with 2 inch by 2 inch (51mm x 51mm) 16 gauge welded wire over a 6 mil thick cleavage membrane.
5. Waterproof Membrane: Bonsal/ProSpec B-6000 Waterproof / Crack Isolation Membrane.
6. Adhesive: Bonsal/ProSpec B-7000 Epoxy Mortar & Grout.
7. Mortar for Floors and Walls: Bonsal/ProSpec PermaFlex Lite 525
8. Mortar for Floors and Walls: Bonsal/ProSpec StayFlex 590 Thin-Set Mortar.
9. Mortar for Floors and Walls: Bonsal/ProSpec Superior PermaFlex 600 Thin-Set Mortar.
10. Mortar for Floors and Walls: Bonsal/ProSpec PermaFlex 500 Thin-Set Mortar.
11. Mortar for Floors only: Bonsal/ProSpec Permalastic Thin-Set Mortar.
12. Mortar for Floors only: Bonsal/ProSpec Permalastic Rapid Thin-Set Mortar.
13. Tile: As specified in section 09300.
14. Grout: Bonsal/ProSpec Sanded Tile Grout (700) Polymer Modified.
15. Grout: Bonsal/ProSpec Unsanded Tile Grout (800) Polymer Modified.
16. Sealer: Bonsal/ProSpec Grout Sealer.

D. Full Bed Directly Adhered Exterior Facade System:

1. Substrate: As specified in section _____.
2. Bonded Leveling Bed: Bonsal/ProSpec B-710 SBR Mortar Additive mixed with Bonsal/ProSpec Floor Mud.
3. Unbonded Leveling Bed: Bonsal/ProSpec B-710 SBR Mortar Additive mixed with Bonsal/ProSpec Floor Mud placed over 3.4 Lb galvanized wire lath and either a 6 mil thick cleavage membrane or 15 Lb builders felt meeting requirements of ASTM D 226.
4. Waterproof Membrane: Bonsal/ProSpec B-6000 Waterproof /Crack Isolation Membrane.
5. Mortar: Bonsal/ProSpec StayFlex 590 Thin-Set Mortar.

6. Mortar: Bonsal/ProSpec PermaFlex Lite 525 Thin-Set Mortar
7. Mortar: Bonsal/ProSpec Superior PermaFlex 600 Thin-Set Mortar.
8. Mortar: Bonsal/ProSpec PermaFlex 500 Thin-Set Mortar.
9. Tile, Pavers or Stone: As specified in section 09300.
10. Grout: Bonsal/ProSpec Sanded Tile Grout (700) Polymer Modified.
11. Grout: Bonsal/ProSpec Unsanded Tile Grout (800) Polymer Modified.

2.3 SURFACE PREPARATION PRODUCTS

- A. Bonsal/ProSpec Floor Mud: Portland cement based mortar for thick setting beds under ceramic or quarry tile and shower receptors. For installation over concrete floors or plywood substrates with a waterproof membrane.
 1. Additive: Clean, Potable Water.
 2. Additive: Bonsal/ProSpec B-710 SBR Mortar Additive.

- B. Bonsal/ProSpec Wall Mud: Portland cement based plaster containing hydrated lime, perlite and sand aggregate; scratch and brown coat over tile lath or concrete masonry for ceramic tile installations using conventional and thin set methods on walls and ceilings; interior or exterior.
 1. Curing: Wet cure for full hydration.

- C. Bonsal/ProSpec Wall Float (without perlite aggregate): Portland cement based plaster containing hydrated lime, and sand aggregate; scratch and brown coat over tile lath or concrete masonry for ceramic tile installations using conventional and thin set methods on walls and ceilings; interior or exterior.
 1. Curing: Wet cure for full hydration

- D. Bonsal/ProSpec Self-Leveling Level Set 100 Underlayment: Polymer modified portland cement based self-leveling underlayment for interior applications; pumpable and pourable; crack and spall resistant; shall contain mold inhibitor; self-healing:
 1. Minimum Thickness: 1/4 inch (6 mm). Applications of 1/16 inch permitted only at terminations.
 2. Maximum Thickness: 1 inch (25 mm) in one pour.
 3. Working Time @ 70 degrees F (21 degrees C): 30 minutes
 4. Set Time @ 70 degrees F (21 degrees C) ASTM C 191:
Initial Set – 1 to 1.5 hours / Final Set – 2 to 3 hours
 5. Compressive Strength (ASTM C 109): 1 day - >1,500 psi (10.3 MPa),
7 days - >3,800 psi (26.2 MPa), 28 days - >5,000 psi (34.5 MPa)
 6. Flexural Strength – (ASTM C 348): 28 days - >900 psi (6.2 MPa)
 7. Flexural Strength - (ASTM C 580): 7 days -1,500 psi (10.3 MPa)
28 days – 1,800 psi (12.4 MPa)
 8. Tensile Strength (ASTM C 190): 28 days >600 psi (4.1 MPa)
 9. Wet Density: 128 lbs/cubic foot (2050 kg/cubic meter)
 10. Modulus of Elasticity - (ASTM C 469): 28 days - 1.8×10^{-6} .

- E. Bonsal/ProSpec ProSpec Self-Leveling Level Set 200 Underlayment: Rapid setting, Polymer modified portland cement based self-leveling underlayment for interior applications; pumpable and pourable; crack and spall resistant; shall contain mold inhibitor; self-healing.
 1. Application: Feather edge to 1-1/2 inches (38 mm) without extension with aggregate, and up to 5 inches (127 mm) extended with aggregate.
 2. Working Time at 70 degrees F (21degrees C): 25 to 35 minutes.
 3. Set Time - ASTM C 191 at 70 Degrees F (21 Degrees C):
Initial set 80 minutes, final set 120 minutes.
 4. Compressive Strength ASTM C 109 (air cured): 4 hours - >1000 psi (6.9 MPa), 1 day - >3000 psi (20.7 MPa), 7 days - >3,600 psi (24.8 MPa), 28 days - >5,000 psi (34.5 MPa).

5. Flexural Strength ASTM C 348: 28 days - 1050 psi (7.2 MPa).
 6. Tensile Strength ASTM C 190: 28 days - 525 psi (3.6 MPa).
 7. Wet Density: 120 lbs./ft³ (1922 kg/m³).
 8. Accepts tile/stone installations in 4 hours
- F. Bonsal/ProSpec ProSpec Self-Leveling Level Set 300 Underlayment: Premium, rapid setting, polymer modified portland cement based self-leveling underlayment for interior applications; pumpable and pourable; crack and spall resistant; shall contain mold inhibitor; self-healing.
1. Application: Feather edge to 1-1/2 inches (38 mm) without extension with aggregate, and up to 5 inches (127 mm) extended with aggregate.
 2. Wet Density: 120 lb./ft³ (1922 kg/m³).
 3. Working Time at 70 degrees F (21degrees C): 25 to 35 minutes.
 4. Set Time - ASTM C 191 at 70 degrees F (21 Degrees C): Initial set 80 minutes, final set 120 minutes.
 5. Compressive Strength ASTM C 109 (air cured): 4 hours - >1,500 psi (10.3 MPa), 1 day - >3,500 psi (20.7 MPa), 7 days - >4,500 psi (24.2 MPa), 28 days - >5,500 psi (35.9 MPa).
 6. Flexural Strength ASTM C 348: 28 days >1,100 psi (7.6 MPa)
 7. Tensile Strength ASTM C 190: 28 days – 570 psi (4.0 MPa)
 8. Accepts tile/stone installations in 4 hours
- G. Bonsal/ProSpec Trowel Grade Underlayment: Polymer modified cement based trowel grade underlayment for interior use over concrete, cementitious backer board, where water resistance is not required.
1. Application: Place the mixed material at desired thickness up to 2 inches (51 mm). For repairs greater than 2 inches (51 mm) thick, use ProSpec Acrylic Additive.
 2. Set Time - ASTM C 266 at 70 degrees F (21 degrees C): Initial set 20 to 25 minutes, final set 25 to 30 minutes.
 3. Compressive Strength ASTM C 109: 4 hours - >1,600 psi (11 MPa), 1 day - >2,000 psi (14 MPa), 7 days - >3,600 psi (25 MPa), 28 days - >5,000 psi (34 MPa).
 4. Flexural Strength ASTM C 78: 7 days - >1,500 psi (10. MPa),
28 days - >1,600 psi (11. MPa).
 5. Tensile Strength ASTM C 190: 7 days - >300 psi (2 MPa),
28 days - >500 psi (3. MPa).
 6. Shear Bond Strength ASTM C 882: 28 days - >860 psi (6 MPa).
 7. Accepts tile/stone installations in 3-4 hours.
 8. Additive: For repairs greater than 2 inches (50 mm), add ProSpec Acrylic Additive.
 9. Additive: Bonsal/ProSpec Acrylic Additive or Bonsal/ProSpec Acrylic Additive for installations over exterior grade plywood.
- H. Bonsal/ProSpec Floor Patch: Rapid setting polymer modified unsanded cement based patching and embossing leveler compound for interior or exterior use over concrete, cementitious backerboard, plywood, cementitious terrazzo, Bonsal/ProSpec B-6000 Waterproof /Crack Isolation Membrane, and vinyl flooring.
1. Application: Featheredge to 2 inches (51 mm) in thickness.
 2. Percentage Water: Water ratios differ for skim coat vs. thicker applications. Refer to manufacturers requirements for mixing.
 3. Working Time at 70 degrees F (21degrees C): 30 minutes.
 4. Set Time - ASTM C 191 at 70 degrees F (21degrees C): Initial set 20 to 30 minutes, final set 40 to 50 minutes.
 5. Compressive Strength ASTM C 109: 2 hours - >600 psi (4.1 MPa), 1 day - >1,300 psi (9.0 MPa), 7 days - >1,900 psi (13.1 MPa), 28 days - >2,650 psi (18.3 MPa).

6. Tensile Strength ASTM C 190 - 85: 7 days - >260 psi (1.8 MPa).
 7. Flexural Strength ASTM C 348: 7 days - >700 psi (4.8 MPa).
 8. Tensile Adhesion (25 mil/24 hr) ASTM D 4541:
 - a. Plywood: >37 psi (0.3 MPa).
 - b. OSB-chip board: >22 psi (0.2 MPa).
 - c. Concrete: >260 psi (1.8 MPa) substrate failure mode.
 9. Accepts tile/stone installations in 1-2 hours:
- I. Bonsal / ProSpec Feather Edge(feather edge to 1/2"): rapid setting , trowelable underlayment for skim coating, flash patching or applying an ultra thin veneer finish over wide array of subfloors as concrete, wood, ceramic tile, terrazzo; interior use only; Sandable for ultra smooth finish; micro fine aggregates allow ultra thin applications; accepts all VCT, vinyl sheet goods, tile and carpeting coverings in 30 minutes; accepts moisture sensitive adhesives as epoxies and urethanes in 16 hours ;used as embossing leveler or filler when used in conjunction with Bonsal/ ProSpec B-730 Mortar Additive or Bonsal/ ProSpec Acrylic Additive.
- 1.Application: Feather Edge can be applied from feather edge to 1/2 inch (13 mm) in one application without cracking.
 2. Set Time - ASTM C 191at 70 degrees F (21degrees C): Initial set 25 minutes, final set 30 minutes.
 3. Compressive Strength ASTM C 109: 1 day – 2,100 psi (14.5 MPa), 7 days – 2,800 psi (19.3 MPa), 28 days – 4,700 psi (32.4 MPa).
 4. Accepts tile/stone installations in .5 hours and moisture-sensitive floor coverings in 1.5 hours.
 5. Note: If moisture sensitive adhesives (urethanes/epoxies) are used to adhere flooring materials, allow 16 hours curing time before covering areas prepped with Feather Edge.
 6. Note: Feather Edge can be used as an embossing leveler when mixed in conjunction with Bonsal / ProSpec Acrylic Additive or B-730 Mortar Additive - two parts to one part by volume Feather Edge to Acrylic Additive or B-730 Mortar Additive.
- J. Bonsal/ProSpec 118 Primer: Zero VOC concentrated liquid used prior to installation of cementitious toppings, underlayments, repair mortars and stucco to improve bond strength and curing time; interior or exterior; above and below grade.

2.4 WATERPROOFING AND MEMBRANES

- A. Bonsal/ProSpec B-6000 Waterproof / Crack Isolation Membrane: Fabric reinforced fluid-applied latex polymer based membrane for crack suppression and waterproofing with capability of bridging non-structural cracks.
1. Shear Strength -: ANSI A118.10: 12 weeks - 200 psi (1.4 MPa).
 2. Water Immersion ANSI A118.10: 100 days, 150 psi (1.0 MPa).
 3. Fungus and Micro Organism Resistance ANSI A118.10 - Passes
 4. Breaking Strength: ANSI A118.10, 400 psi (2.8 MPa).
 5. Waterproofness: ANSI A118.10: Passes
 6. Permeability: ASTM E 96, 1.68 perms.
 7. Hydrostatic Resistance ASTM D 751, Procedure B : Passes.
 8. Dimensional Stability: ASTM D 638 - 600%.
 9. Thickness: 30 mils, wet.
 10. Testing applications 40 mils wet (resulting in aprx. 20 mils dry)
- B. Bonsal/ProSpec® Flex-Guard Crack Isolation System is a primerless, pressure sensitive, elastomeric crack isolation and anti-fracture system. Used for Exterior and Interior applications.

1. Meets ASTM C627 for Load Bearing “Extra Heavy Service”
 2. Horizontal Movement ANSI 118.12 1/8” – Passes (exceeds 3/8” horizontal movement)
 3. Sound Reduction (ICC)
 - a. 6” concrete with drop ceiling – 71
 - b. Concrete with wood sub – 53
 4. Mold Growth ASTM 118.10: No Mold Growth
 5. Tensile Strength Fabric: 320 PSI
 6. Elongation (adhesive only): 500%
 7. Thickness: 25 mils (+/- 5 mils)
- C. ProSpec® Speed-Flex Crack Isolation System is a primerless, pressure-sensitive, elastomeric, crack isolation and anti-fracture system. For interior use only.
1. Meets ASTM C627 for Load Bearing “Extra Heavy Service”
 2. Horizontal Movement ANSI 118.12 1/8” – Passes (exceeds 3/8” horizontal movement)
 3. Sound Reduction (ICC)
 - a. 6” concrete with drop ceiling – 71
 - b. Concrete with wood sub – 53
 4. Mold Growth ASTM 118.10: No Mold Growth
 5. Tensile Strength Fabric: 320 PSI
 6. Elongation (adhesive only): 500%
 7. Thickness: 15 mils (+/- 4 mils)

2.5 ADHESIVES

- A. Bonsal/ProSpec B-150 Epoxy Adhesive: 100 percent solids, 2- part, chemical resistant tile setting epoxy for setting ceramic tile, quarry tile, pavers, mosaic tile, granite countertops, flat backed natural stone, in food preparation areas and on walls, floors and countertops.
1. Meets ANSI 118.3 for epoxy adhesives Typical Values :
 - a. Compressive Strength: >6500 psi (44.8 MPa)
 - b. Tensile Strength: >2000 psi (13.7 MPa).
 - c. Shear Bond Strength: 2500 psi (17.2 MPa)
- B. Bonsal/ProSpec B-1000 Wall & Floor Adhesive: Acrylic based adhesive for interior installation of ceramic tile, porcelain tile, flat backed natural stone and cork underlayment on walls, floors and countertops.
1. Meets ANSI 136.1 Type I and Type II for organic adhesives as follows:
 - a. 28 Day Shear Strength @70 Degrees F (21 degrees C) and 50% RH: 225 psi (1.5 MPa).
 - b. Shear Strength Wet Type I: 65 psi (0.5 MPa).
 - c. Shear Strength Wet Type II: N/A
 - d. Mold Resistance: No growth.
 - e. Stain Resistance: No penetration.
 - f. Color: White.
- C. Bonsal/ProSpec B-2000 Wall & Floor Adhesive: Acrylic based adhesive for interior installation of ceramic tile, porcelain tile, quarry tile, flat backed natural stone and

cork underlayment on walls, floors and countertops.

1. Meets ANSI 136.1 Type I and Type II for organic adhesives as follows:
 - a. 28 Day Shear Strength @70 Degrees F (21 degrees C) and 50% RH: >250 psi (1.72 MPa).
 - b. Shear Strength Wet Type I: 75 psi (0.5 MPa).
 - c. Shear Strength Wet Type II: >100 psi (0.7 MPa).
 - d. Mold Resistance: No growth.
 - e. Stain Resistance: No penetration.
 - f. Color: White.
- D. Bonsal/ProSpec B-4050 Multi-Purpose Tile Adhesive: Acrylic based adhesive for interior installation of ceramic tile, porcelain tile, quarry tile, flat backed natural stone and cork underlayment on walls, floors and countertops.
1. Meets ANSI 136.1 Type I and Type II for organic adhesives as follows:
 - a. 28 Day Shear Strength @70 Degrees F (21 degrees C) and 50% RH: >300 psi (2.1 MPa).
 - b. Shear Strength Wet Type I: >95 psi (0.7 MPa).
 - c. Shear Strength Wet Type II: >99 psi (0.7 MPa).
 - d. Mold Resistance: No growth.
 - e. Stain Resistance: No penetration.
 - f. Color: White.

2.6 LATEX MORTAR BED

- A. Bond Coat: Bonsal/ProSpec PermaSet Concentrate 330.
 1. Meets ANSI A.118.1.
 2. Color: White.
- B. Mortar Bed: Bonsal/ProSpec Floor Mud mixed with Bonsal/ProSpec B-710 SBR Mortar Additive.
 1. Portland cement mortar made of factory-blended cement and aggregates requiring only the addition of Bonsal/ProSpec B-710 SBR Latex Mortar Additive.
 2. Weather, frost, and shock resistant.
 3. Applications: Shower receptors and thick setting beds under ceramic or quarry tiles; interior or exterior.

2.7 THIN-SET MORTAR

- A. Bonsal/ProSpec StayFlex 590: Portland cement based, dispersible powdered polymer modified thin-set mortar with maximum non-sag performance on interior and exterior walls, ceilings and floors. Water substituting admixes may not be used with this product.
 1. Meets ANSI A118.4 for polymer modified mortar and A118.11 for EGP Latex Portland Cement Mortar as follows:
 - a. Shear Strength to Glazed Wall Tile, 7 Day Dry: 320 psi (2.2 MPa).
 - b. Shear Strength to Impervious Tile, 28 Day Dry: 490 psi (3.4 MPa).
 - c. Shear Strength to Porcelain Tile, 28 Day Dry: >450 psi (3.1 MPa).
 - d. Shear Strength to Quarry Tile, 7 Day Dry: 270 psi (1.9 MPa).
 - e. Shear Strength to Quarry Tile to EGP plywood, 7 Day Dry: 140 psi (0.97 MPa) in accordance with ANSI A118.11.
 2. Color: Gray.
 3. Color: White.
 4. C2-E-T-S1-P1 Performance per ISO 13007.
- B. Bonsal/ProSpec PermaFlex Lite 525: Specifically designed non-sag applications for large format tiles. Used on floors, walls and ceilings. Portland based, polymer

modified formula in a 25# bag providing same coverage as a 50# conventional bag of mortar.

1. Meets ANSI A118.4 for polymer modified mortar and ANSI A118.11 for EGP Latex Portland Cement Mortar as follows:
 - a. Shear Strength to Porcelain Tile: 28 days dry – 325-350 psi (2.2-2.4 MPa)
 - b. Shear Strength of Quarry to EGP Plywood: 28 days dry – 200-225 psi (1.4-1.6 MPa)
 2. Color: Gray.
 3. Color: White.
 4. C2-E-T-S1-P1 Performance per ISO 13007.
- C. Bonsal/ProSpec Quick PermaFlex 570: Portland cement based, dispersible powdered polymer modified thin-set mortar; quick setting; for interior and exterior walls, ceilings and floors. Bonds ceramic tile and natural stone to vinyl tile, cutback adhesive, interior applications over exterior grade plywood, and other difficult to bond substrates. Water substituting admixes may not be used with this product.
1. Meets ANSI A118.4 and A118.11 for polymer modified mortar as follows:
 - a. Compressive Strength: 5142 psi (35.5 MPa).
 - b. Shear Strength to Glazed Wall Tile, 28 Day Dry: 472 psi (3.3 MPa).
 - c. Shear Strength to Impervious Tile, 28 Day Dry: 300 psi (2.1 MPa).
 - d. Shear Strength to Porcelain Tile, 28 Day Dry: >350 psi (2.4 MPa).
 - e. Shear Strength to Quarry Tile, 28 Day Dry: 521 psi (3.6 MPa).
 - f. Shear Strength to Quarry Tile to EGP Plywood, 7 Day Dry: 190 psi (1.3 MPa) in accordance with ANSI A118.11.
 2. Color: Gray.
 3. C2-F-S1-P1 Performance per ISO 13007.
- D. Bonsal/ProSpec Superior PermaFlex 600: Portland cement. Bonds ceramic tile and natural stone to non-cushion backed vinyl tile, cutback adhesive, interior applications over exterior grade plywood, and other difficult to bond substrates. Water substituting admixes may not be used with this product.
1. Meets ANSI A118.4 for polymer modified mortar and ANSI A118.11 for EGP Latex Portland Cement Mortar as follows:
 - a. Shear Strength to Glazed Wall Tile, 28 Day Dry: 850 psi (5.9 MPa).
 - b. Shear Strength to Impervious Tile, 28 Day Dry: 400 psi (2.8 MPa).
 - c. Shear Strength to Porcelain Tile, 28 Day Dry: 420 psi (2.9 MPa).
 - d. Shear Strength to Quarry Tile, 28 Day Dry: 380 psi (2.6 MPa).
 - e. Shear Strength to Quarry Tile to EGP Plywood, 7 Day Dry: 260 psi (1.8 MPa) in accordance with ANSI A118.11.
 2. Color: Gray.
 3. Color: White.
 4. C2-E-S1-P2 Performance per ISO 13007.
- E. Bonsal/ProSpec PermaFlex 500: Portland cement based, dispersible powdered polymer modified thin-set mortar with maximum non-sag performance on interior and exterior walls, ceilings and floors. Bonds ceramic tile and natural stone to concrete, cutback adhesive, waterproof membrane, interior applications over exterior grade plywood, and other difficult to bond substrates. Water substituting admixes may not be used with this product.
1. Meets ANSI A118.4 for polymer modified mortar and ANSI A118.11 for EGP Latex Portland Cement Mortar as follows:
 - a. Shear Strength to Glazed Wall Tile, 28 Day Dry: 767 psi (5.3 MPa).

- b. Shear Strength to Impervious Tile, 28 Day Dry: 330 psi (2.3 MPa).
 - c. Shear Strength to Porcelain Tile, 28 Day Dry: 350 psi (2.4 MPa).
 - d. Shear Strength to Quarry Tile, 28 Day Dry: 570 psi (3.9 MPa).
 - e. Shear Strength to Quarry Tile to EGP plywood, 7 Day Dry: 212 psi (1.5 MPa) in accordance with ANSI A118.11.
 2. Color: Gray.
 3. Color: White.
 4. C2-E-S1-P1 Performance per ISO 13007.
- F. Bonsal/ProSpec PermaFlex 400: Portland cement based polymer modified thin set mortar to be mixed with water for the installation of ceramic tile, clay bodied tile, pavers, quarry tiles, high bottom lugged tile, and waterproof membranes; interior and exterior use.
1. Meets ANSI A118.4 for polymer modified mortar and ANSI A118.11 for EGP Latex Portland Cement Mortar as follows:
 - a. Shear Strength to Glazed Wall Tile, 28 Day Dry: 510 psi (3.5 MPa).
 - b. Shear Strength to Impervious Tile, 28 Day Dry: 250 psi (1.7 MPa).
 - c. Shear Strength to Porcelain Tile, 28 Day Dry: 300 psi (2.1 MPa).
 - d. Shear Strength to Quarry Tile, 28 Day Dry: 217 psi (1.5 MPa).
 2. Color: Gray.
 3. Color: White.
 4. C2-P1 Performance per ISO 13007.
- G. Bonsal/ProSpec PermaFlex 300: Modified thin set mortar to be mixed with water for thin-set method of installation of ceramic tile, porcelain, clay bodied tile, pavers, quarry tiles, high bottom lugged tile; interior and exterior use.
1. Meets ANSI 118.4 for polymer modified mortar as follows:
 - a. Shear Strength to Glazed Wall Tile, 28 Day Dry: 460 psi (3.2 MPa).
 - b. Shear Strength to Impervious Tile, 28 Day Dry: 321 psi (2.2 MPa).
 - c. Shear Strength to Porcelain Tile, 28 Day Dry: >330 psi (2.3 MPa).
 - d. Shear Strength to Quarry Tile, 28 Day Dry: 195 psi (1.3 MPa).
 2. Color: Gray.
 3. Color: White.
 4. C2 Performance per ISO 13007.
- H. Bonsal/ProSpec PermaSet 275: Cementitious powder to be mixed with latex admixtures for thin set installation of ceramic tile, clay bodied tile, pavers, quarry tiles, high bottom lugged tile; interior and exterior use.
1. Meets ANSI 118.1 for unmodified, dryset mortar as follows:
 - a. Shear Strength to Glazed Wall Tile, 28 Day Dry: >380 psi (2.6 MPa).
 - b. Shear Strength to Porcelain Tile, 28 Day Dry: >250 psi (1.7 MPa).
 - c. Shear Strength to Quarry Tile, 28 Day Dry: >260 psi (1.8 MPa).
 2. Meets A118.11 for interior applications over exterior grade plywood with the addition of Bonsal/ProSpec B-730 Acrylic Additive.
 3. Meets A118.4 with the addition of Bonsal/ProSpec B-710 SBR Mortar Additive.
 4. Color: Gray.
 5. Color: White.
 6. C2-P1 (P1 with B-730 Acrylic Additive) Performance per ISO 13007.

- I. Bonsal/ProSpec PermaSet 200: Cementitious powder to be mixed with water for dryset, thin-set installation of ceramic tile, cement tile, pavers, quarry tiles, and tile backerboard as leveling bed; interior and exterior use on horizontal surfaces.
 - 1. C1 Performance per ISO 13007.

- J. Bonsal PermaSet 200: Cementitious powder to be mixed with specified admixtures for thin set installation of ceramic tile, cement tile, pavers, quarry tiles, tile backerboard as leveling bed; interior and exterior use on horizontal surfaces.
 - 1. Meets A118.4 with the addition of Bonsal/ProSpec B-710 SBR Mortar Additive.
 - 2. Meets A118.11 for interior applications over EGP plywood with the addition of Bonsal/ProSpec B-730 Acrylic Additive.
 - 3. Color: Gray.
 - 4. Color: White.
 - 5. C2-P1 (P1 with B-730 Acrylic Additive) Performance per ISO 13007.

2.8 MEDIUM BED (FULL CONTACT) MORTAR

- A. Bonsal/ProSpec Medium Bed PermaFlex 550: Portland cement based, dispersible powdered polymer modified medium bed mortar for use on interior and exterior walls, ceilings and floors. Bonds 12 inch by 12 inch or larger ceramic tile and natural stone to concrete, cementitious backerboard, Bonsal/ProSpec B-6000 Waterproofing/Crack Isolation membrane, and other difficult to bond substrates.
 - 1. Meets ANSI A118.4 for polymer modified mortar and A118.11 for EGP Latex Portland Cement Mortar as follows:
 - a. Shear Strength to Glazed Wall Tile, 28 Day Dry: 569 psi (3.9 MPa).
 - b. Shear Strength to Impervious Tile, 28 Day Dry: 248 psi (1.7 MPa).
 - c. Shear Strength to Porcelain Tile, 28 Day Dry: 350 psi (2.4 MPa).
 - d. Shear Strength to Quarry Tile, 28 Day Dry: 199 psi (1.4 MPa).
 - e. Shear Strength to Quarry Tile to EGP Plywood, 7 Day Dry: 225 psi (1.6 MPa).
 - 2. Shear Strength to Quarry Tile to EGP Plywood, 7 Day Dry: 225 psi (1.6 MPa).
 - 3. Color: Gray.
 - 4. Color: White.
 - 5. C2-E-S1-P1 Performance per ISO 13007.

- B. Bonsal/ProSpec Permalastic Full Contact Mortar: Portland cement based, dispersible powdered polymer modified medium bed mortar for use on interior and exterior walls, ceilings and floors. Bonds 12 inch by 12 inch or larger ceramic tile and natural stone to concrete, cementitious backerboard, Bonsal/ProSpec B-6000 Waterproofing/Crack Isolation membrane, and other difficult to bond substrates.
 - 1. Meets ANSI A118.4 for polymer modified mortar and A118.11 for EGP Latex Portland Cement Mortar as follows:
 - a. Shear Strength to Glazed Wall Tile, 28 Day Dry: 569 psi (3.9 MPa).
 - b. Shear Strength to Impervious Tile, 28 Day Dry: 248 psi (1.7 MPa).
 - c. Shear Strength to Quarry Tile, 28 Day Dry: 199 psi (1.4 MPa).
 - d. Shear Strength to Quarry Tile to EGP Plywood, 7 Day Dry: 225 psi (1.6 MPa).
 - 2. Shear Strength to Quarry Tile to EGP Plywood, 7 Day Dry: 225 psi (1.6 MPa).
 - 3. Color: Gray.
 - 4. Color: White.
 - 5. C2-E-S2-P2 Performance per ISO 13007.

- C. Bonsal/ProSpec Permalastic Rapid Full Contact Mortar: Portland cement based, dispersible powdered polymer modified medium bed mortar for use on interior and exterior walls, ceilings and floors. Bonds 12 inch by 12 inch or larger ceramic tile and natural stone to concrete, cementitious backerboard, Bonsal/ProSpec B-6000 Waterproofing/Crack Isolation membrane, and other difficult to bond substrates.
1. Meets ANSI A118.4 for polymer modified mortar and A118.11 for EGP Latex Portland Cement Mortar as follows:
 - a. Shear Strength to Glazed Wall Tile, 28 Day Dry: 569 psi (3.9 MPa).
 - b. Shear Strength to Impervious Tile, 28 Day Dry: 248 psi (1.7 MPa).
 - c. Shear Strength to Quarry Tile, 28 Day Dry: 199 psi (1.4 MPa).
 - d. Shear Strength to Quarry Tile to EGP Plywood, 7 Day Dry: 225 psi (1.6 MPa).
 2. Shear Strength to Quarry Tile to EGP Plywood, 7 Day Dry: 225 psi (1.6 MPa).
 3. Color: Gray.
 4. Color: White.
 5. C2-F-S2-P2 Performance per ISO 13007.

2.9 ADDITIVES

- A. Bonsal/ProSpec Acrylic Additive: Acrylic polymer emulsion admixture for Portland cement based materials; for interior or exterior applications. Additive shall reduce shrinking, increase bond strength and improves abrasion and water resistance, freeze-thaw resistance, flexibility, elongation, workability, corrosion resistance, and curing.
- B. Bonsal/ProSpec B-710 SBR Mortar Additive: Synthetic rubber polymer emulsion additive to improve dry curing, bond and durability in thin set mortars, floor mud and other cement based materials; for setting marble, cement, quarry, slate, stone, ceramic, and porcelain tile, precast terrazzo, pavers, tile in commercial kitchen and tile in steam rooms and swimming pools; interior and exterior, vertical and horizontal surfaces.
1. Bonsal/ProSpec B-710 SBR Mortar Additive mixed with non-modified thin set mortar meets ANSI A118.4 for polymer modified mortar as follows:
 - a. Compressive Strength: 3430 psi (23.6 MPa).
 - b. Shear Strength to Glazed Wall Tile, 28 Days: 507 psi (3.5 MPa).
 - c. Shear Strength to Impervious Tile, 28 Days: 310 psi (2.1 MPa).
 - d. Shear Strength to Quarry Tile, 28 Days: 315 psi (2.2 MPa).
- C. Bonsal/ProSpec B-730 Acrylic Additive: Acrylic polymer emulsion additive for higher bond strength, flexibility and adhesion when mixed with non-modified sanded thin set mortar and unsanded grout; for setting ceramic, quarry, porcelain, glass and cement tile, high bottom lugged tile, pavers, and some natural stone on interior and exterior, walls, floors and ceilings.
1. Bonsal/ProSpec B-730 Acrylic Additive added to non-modified sanded thin set mortar meets ANSI A118.4 for polymer modified mortar as follows:
 - a. Compressive Strength: 3300 psi (22.8 MPa).
 - b. Modulus of Elasticity: 1.39 x 10⁶ psi.
 - c. Water Absorption: 1.15 percent.
 - d. Shear Strength to Glazed Wall Tile, 28 Days Dry: 900 psi (6.2 MPa).
 - e. Shear Strength to Impervious Tile, 28 Days Dry: 590 psi (4.1 MPa).
 - f. Shear Strength to Quarry Tile, 28 Days Dry: 440 psi (3.0 MPa).
 2. Meets A118.11 for installation over EGP plywood when Bonsal/ProSpec B-730 Acrylic Additive is added to non-modified sanded thin set mortar.

2.10 CEMENTITIOUS GROUT

- A. Bonsal/ProSpec Sanded Tile Grout (700) Polymer Modified: Portland cement based, polymer modified sanded grout for quarry, ceramic, mosaics, slate, and other vitreous tiles on interior or exterior walls or floors with joints from 1/8 to 1/2 inch (3 mm to 13 mm).
1. Sanded Grade:
 2. Meets ANSI A118.6 and A118.7 for polymer modified mortar as follows:
 - a. Compressive Strength, 28 day: 5500 psi (37.9 MPa),.
 - b. Tensile Strength, 7 day: >450 psi (3.1 MPa),
 - c. Flexural Strength, 7 day: 1100 psi (7.6 MPa),.
 - d. Linear Strength, 7 day: <0.08%,.
 - e. Water Absorption, 28 day: 1.8%, maximum.
 - f. Water Absorption, 50% RH to Immersion - Immersion to Dry, 28 day: 3.6%, maximum.
 3. Color: Select from manufacturer's full range of Standard colors.
 4. Color: Select from manufacturer's full range of Designer colors.
 5. Color: _____.
- B. Bonsal/ProSpec Unsanded Tile Grout (800) Polymer Modified: Portland cement based, polymer modified unsanded grout for marble, ceramic, mosaic, glass mosaic, porcelain, and non-vitreous tiles on interior or exterior walls or floors with joints up to inch (3 mm) wide.
1. Meets ANSI A118.6 for dry set grouts as follows:
 - a. Compressive Strength, 28 day: >3100 psi (21.4 MPa),.
 - b. Tensile Strength, 28 day: >450 psi (3.1 MPa),.
 - c. Flexural Strength, 7 day: >850 psi (6.9 MPa),
 - d. Shear Strength, 7 day: Bisque to Bisque - 290 psi (2 MPa); Glaze to Glaze - 90 psi (0.62 MPa); Vitreous to Vitreous - 270 psi (1.9 MPa).
 - e. Stain Resistance: Pass.
 - f. Water Absorption, 50% RH / Immersed: 12.1%, maximum.
 2. Initial Set Time: 4 hours in accordance with ASTM C-266.
 3. Final Set Time: 5 hours in accordance with ASTM C-266.
 4. Color: Select from manufacturer's full range of Standard colors.
 5. Color: Select from manufacturer's full range of Designer colors.
 6. Color: _____.

2.11 EPOXY MORTAR AND GROUT

- A. Bonsal/ProSpec B-7000 Epoxy Mortar & Grout: 100 percent solids, chemical-resistant, water cleanable, tile setting epoxy (Part A - Resin; Part B - Hardener; Part C - thin set mortar or ProSpec Sanded grout, sold separately; Part D - Thickener for vertical applications); for interior or exterior use on ceramic tile, or stone, including green marble (not recommended for grouting absorptive or light colored stone or tile); use in vertical or horizontal applications.
1. Meets ANSI A118.3 for Chemical Resistant Water Cleanable Tile Setting and Grouting Epoxy as follows:
 - a. Compressive Strength, 7 day: 9180 psi (63.3 MPa), minimum.
 - b. Tensile Strength: 2160 psi (14.9 MPa), minimum.
 - c. Shear Strength to Quarry Tile, 1100 psi (7.6 MPa).
 - d. Shrinkage: 0.12%, maximum.
 2. Color: Select from manufacturer's full range of Standard colors.
 3. Color: Select from manufacturer's full range of Designer colors.
 4. Color: _____.
- B. Bonsal/ProSpec B-7000 Epoxy Mortar & Grout: 100 percent solids stain resistant, acid- and chemical-resistant, water cleanable, tile grouting epoxy (Part A - Resin;

Part B - Hardener; Part C - Bonsal/ProSpec Sanded Tile Grout (700) Polymer Modified, sold separately; Part D - Thickener for vertical applications); for interior use on non-absorptive ceramic tile or stone in vertical or horizontal applications.

1. Meets ANSI A118.3 for Chemical Resistant Water Cleanable Tile Setting and Grouting Epoxy as follows:
 - a. Compressive Strength, 7 day: 9180 psi (63.3 MPa), minimum.
 - b. Tensile Strength: 2160 psi (14.9 MPa), minimum.
 - c. Shear Strength to Quarry Tile, 1100 psi (7.6 MPa).
 - d. Shrinkage: 0.12%, maximum.
2. Color: Select from manufacturer's full range of Standard colors.
3. Color: Select from manufacturer's full range of Designer colors.
4. Color: _____.

2.12 CEMENTITIOUS BACKER UNITS

- A. PermaBase Cement Board: Comply with ASTM C 1325, consisting of double-wrapped edge with EdgeTech technology, fiberglass mesh and cementitious core.
 1. Thickness: 1/4 inch (6 mm).
 2. Thickness: 1/2 inch (12 mm).
 3. Thickness: 5/8 inch (16 mm).
 4. Water Absorption: Less than 8 percent by weight in 24 hours in accordance with ASTM C 473.
 5. Compressive Strength (Indentation): 2250 psi (17.9 MPa) in accordance with ASTM D 2394.
 6. Flame Spread / Smoke Developed: 0/0 in accordance with ASTM E 84.
 7. Installation Accessories: PermaBase Tape and PermaBase Screws.

2.13 ACCESSORY MATERIALS

- A. Reinforcing Mesh: galvanized steel welded wire mesh complying with ASTM A 185 and ASTM A 82 except for minimum wire size; 2 by 2 inch (50 by 50 mm) by 16 ASW gauge or 0.0625 inch (1.5 mm) diameter wires.
- B. Cleavage Membrane: ASTM D 226 15 pound asphalt saturated non-perforated roofing felt; or ASTM D 4397 polyethylene plastic film 0.004 inch (0.1 mm) thick.
- C. Bonsal/ProSpec Slopes: Cut-to-fit panels for installation under pan liner; sloped 1/4 inch per foot. Extruded polystyrene foam panels are waterproof, rot resistant, and reduce the growth of molds and fungi.
- D. Bonsal/ProSpec Curbs: Rigid cellular foam curb for use with traditional PVC pan liners, or hot-tarred and leaded-in shower pan waterproof membranes. Curbs can be sloped to industry standards.
- E. Bonsal/ProSpec Niches: Recessed design allows niche to be tiled with the same tile as the surrounding walls. One-piece construction prevents leaks; material will not rot or degrade.
- F. Bonsal/ProSpec Shower Seats: High-density materials coated with waterproof membrane. Contains no wood or cellulose fibers.
 1. Seat Height: 20 inches (508 mm).
 2. Size: 16 inch triangle (16 by 16 by 22-3/8 inches)
 3. Size: 12 inch square (12 inches by 12 inches).
 4. Size: 16 inch triangle convex (16 by 16 inches).
 5. Size: 23 inch triangle (23 by 23 by 32.53 inches).
- G. Bonsal/ProSpec Grout Sealer: Seals polymer modified and non-polymer modified grouts. Low gloss; water based; shall not change appearance of grout; for interior or

exterior use.

1. VOC: Zero pounds per gallon (Zero grams per liter.)
- H. Bonsal/ProSpec Grout Haze Remover: Citric acid based product for removal of grout haze and latex film. Cleans interior and exterior ceramic, porcelain, quarry, and slate tiles. Not for use on marble or agglomerate tiles.
1. VOC: Zero pounds per gallon (Zero grams per liter.)
- I. Bonsal/ProSpec Epoxy Haze Remover: For removal of epoxy grout haze and urethane and latex films. Cleans interior and exterior glazed ceramic, porcelain, slate and quarry tiles.
1. VOC: Zero pounds per gallon (Zero grams per liter.)

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine surfaces to receive tile work and conditions under which tile will be installed.
- B. Do not proceed with tile work until surfaces and conditions comply with requirements indicated in reference tile installation standard and manufacturer's printed instructions.

3.2 PREPARATION OF EXISTING FLOOR SURFACES

- A. Remove existing floor coverings that are not sound, solid, well bonded, clean and free of dust, wax, grease, sealers, and other contaminants that may reduce or prevent adhesion.
- B. Do not install tile over cushioned vinyl flooring.

3.3 INSTALLATION

- A. Install tile in accordance with manufacturer's printed instructions and the applicable requirements of ANSI A108 Series for the materials being used.
- B. Install tile using current TCNA methods specified on the drawings.
- C. Floor Tile at ____: Install by thick bed method in accordance with TCA method ____.
- D. Floor Tile at ____: Install by thin bed method in accordance with TCA method ____.
- E. Wall Tile at ____: Install thick bed method in accordance with TCA method ____.
- F. Wall Tile at ____: Install thin bed method in accordance with TCA method ____.
- G. Tile on Soffits at ____: Install in accordance with TCA method C311.
- H. Tile Countertops: Install in accordance with TCA method ____.
- I. Tile in Tubs and Fountains: Install in accordance with TCA method B417.
- J. Tile in Refrigerated Rooms: Install in accordance with TCA method R612.
- K. Tile in Steam Rooms: Install in accordance with TCA method SR613.
- L. Tile on Stairs: Install in accordance with TCA method S151.

- M. Install expansion and control joints in accordance with TCA method EJ171, located as indicated on drawings but not more than 24 feet (8 m) on center in interior spaces and not more than 12 feet (3.7 m) on center on exterior and wherever tile abuts restraining surfaces such as perimeter walls, curbs, columns, corners, and directly over cold joints and control joints in structural substrates. Interior Tile work exposed to direct sunlight or moisture must follow same guidelines as exterior installations.

3.4 GROUTING

- A. Grout joints in accordance with manufacturer's instructions and ANSI A108.10.
- B. Clean and remove standing water, dust, and foreign substances from joints to be grouted.
- C. Clean and dry tile surfaces.
- D. After grouting, remove all grout residues promptly.

3.5 CLEANING

- A. Clean excess mortar from surfaces with water as work progresses while mortar is fresh and before it hardens.
- B. Remove grout haze promptly.
- C. Acid use not permitted without written authorization from material's manufacturer or Architect.

3.6 PROTECTION

- A. Floors: Protect from all traffic for at least 72 hours after installation.
 - 1. Do not step on floor for at least 24 hours; if traffic is unavoidable after that, use plywood stepping boards.
 - 2. Protect from heavy traffic for at least 7 days after installation.
 - 3. When fast-setting materials are used to allow faster occupancy, comply with the manufacturer's recommendations.
- B. Walls: Protect from impact, vibration and heavy hammering on adjacent and opposite walls for at least 14 days after installation, unless manufacturer's instructions allow a shorter period.
- C. Protect from food products and chemicals which can cause staining for at least 14 days.
- D. Protect from freezing and total water immersion for at least 21 days after installation.

END OF SECTION