CITY OF MESA, ARIZONA

EXISTING BURN BUILDING STRUCTURAL REHABILITATION

PLAN SET "B"

3260 N. 40TH ST., MESA, AZ

PROJECT NO. CP0096

TECHNICAL SPECIFICATIONS

September 2015

TECHNICAL SPECIFICATIONS

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SECTION 00801

CONTRACTOR QUALIFICATIONS
FOR CONCRETE PATCHING & EPOXY REPAIRS

PART 1 GENERAL

1.01 QUALITY ASSURANCE

A. Manufacturing Qualifications: The manufacturer of the specified product shall have in existence a recognized on-going quality assurance program independently audited on a regular basis.

B. Contractor Qualifications: Contractor shall be qualified in the field of concrete repair and protection. Certain products/procedures may require more experience, as specified in the individual sections. Contractor shall maintain qualified personnel who have received product training by a manufacturer's representative.

C. Install materials in accordance with all safety and weather conditions required by the manufacturer, or as modified by applicable rules and regulations of local, state and federal authorities having jurisdiction. Consult Material Safety Data Sheets (MSDS) for complete handling recommendations.

END OF SECTION

SECTION 03111

CONCRETE SURFACE PREPARATION FOR REPAIR AREAS

PART 1 GENERAL

1.01 SCOPE

A. This Section specifies the requirements for surface preparation of existing concrete surfaces for all areas which receive patching materials.

1.02 RELATED SECTIONS

A. Drawings and general provisions of the Contract, including General and Special Conditions apply to this section. Related Specifications include:

03222 Concrete Repair Reinforcing Bar Coatings
03360 Shotcrete
03444 Concrete Finishing and Curing for Repair Areas

1.03 REFERENCES

A. Codes and Standards: Comply with provisions of the following codes, specifications, and standards, except where more stringent requirements are shown or specified.

B. American Concrete Institute (ACI): latest edition

ACI/ICRI Concrete Repair Manual - third edition

ACI Guideline #222 Corrosion of Metals in Concrete

C. International Concrete Repair Institute (ICRI): latest edition

ICRI Guideline #03730 Guide for Surface Preparation for the Repair of Deteriorated Concrete resulting from Reinforcing Steel Corrosion

ICRI Guideline #03732 Selecting & Specifying Concrete Surface Preparation for Sealers, Coatings & Polymer Overlays

1.04 SUBMITTALS

A. Submit electronic copy of manufacturer's literature, to include: Product Data Sheets, appropriate Material Safety Data Sheets (MSDS) and hot and cold weather application requirements.

PART 2 PRODUCTS

2.01 SANDBLASTING

A. All sandblasting shall be done with silica sand or copper slag or garnet.

PART 3 EXECUTION

3.01 SITE VISITS BY MANUFACTURER'S REPRESENTATIVE

A. Contractor shall submit to the Engineer a written weekly report, which includes a written observation by the Manufacturer’s Technical Representative who has visited the job site not less than weekly to observe conditions and application procedures of their products (one written observation per week). Contractor shall coordinate and schedule these site visits.

3.02 SURFACE PREPARATION

A. Removal of Deteriorated Concrete: The existing deteriorated concrete must be mechanically removed to remove all damaged portions of existing concrete down to sound solid concrete. Quantified limits of anticipated repairs may be shown on the drawings in some cases. These limits are anticipated areas only for purposes of quantifying damage for bidding purposes only. Actual concrete removal may extend past the limits shown to get to sound solid concrete. The surface shall be prepared per the manufacturer's recommendations and shall include, but not be limited to, the following:

1. Mechanically remove the existing concrete by chipping to a fractured aggregate substrate removing all existing delaminations, extending past all existing cracks a minimum of 1/2 inch into sound uncracked concrete. Substrate shall have a minimum amplitude of 3/8 inch and comply with ICRI Guidelines 03732, with a minimum concrete surface profile of #6 (CSP #6).

2. The size of chipping hammers shall be limited as follows to reduce micro-fractures: 15 pound maximum for detailing and work within the last 2 inches of the concrete removal area; 30 pound maximum for areas greater than 12 inches square or more than 8 inches in thickness except within 2 inches of the perimeter bond line; larger hammers may only be used when specifically approved for the

specific application by the engineer. Do not maintain contact on reinforcing steel with chipping hammers.

B. The edges of the repair shall be generally square and block-like in shape and shall have a rough profile. Avoid abrupt changes in depth.

C. The perimeter of the repair shall be kept to a simple shape. Avoid re-entrant corners.

D. Not Used.

E. All existing joints shall be maintained.

F. Where reinforcing is encountered:

1. Remove existing concrete 3 lineal inches minimum past any rust or corrosion on the existing reinforcing along the length of the rebar.

2. If more than one-third of the diameter of the reinforcing bar is exposed, continue removing concrete to behind the reinforcing bar. The clear space behind any reinforcing bars to existing concrete surface shall be as follows:

a. #5 Bars and Smaller: 1 inch minimum.

b. #6 and Larger Bars: 1-1/2 inches minimum.

c. Additional depth may be required to get repair materials properly behind and encasing the bar.

3. Do not remove concrete more than 2 inches deeper than what is shown on the drawings without first consulting with Engineer regarding existing conditions and possible shoring requirements.

G. Where reinforcing steel with active corrosion is encountered, comply with the following:

1. Sandblast reinforcing steel to remove rust, scale and contaminants to achieve a white metal finish.

2. Where corrosion has depleted the cross-section area (not diameter) by *15%* or more of the existing reinforcing steel, new reinforcing may be required to be spliced to the existing. Review these conditions with the Engineer for requirements. General splicing requirements are shown on Detail 10/S-1.

H. Sawcut/grind perimeter of the area to be repaired to a minimum depth of 1/2 inch as shown on Detail 3/S-1 to prevent feather-edging of the patching material. Do not cut into existing reinforcing.

I. Thoroughly sandblast the existing concrete surface in repair areas. Inspection of repair area is required by the Engineer prior to sandblasting.

J. After sandblasting, thoroughly clean the existing roughened surface and exposed reinforcing of rust, dirt, loose chips and dust using high pressure, 2500± psi, potable water blast.

K. Allow surface of rebar to thoroughly dry and apply rebar coating in accordance with Specifications, Section 03222, Concrete Repair Reinforcing Bar Coatings.

L. Structural special inspection is required after chipping of repair area is complete and before sandblasting, and after sandblasting is completed, and before bar coatings.

M. Not used.

N. Existing concrete surfaces must be kept continually wet with spray hoses, nozzles, soaker hoses, etc. with potable water for a minimum of two (2) hours prior to applying repair material to achieve a saturated surface dry (SSD) condition. Occasional wetting is not adequate.

O. Remove existing standing water just prior to patching. If forming is used, provide provisions in the bottom surface of the existing concrete surface to be patched as well as holes in the forms to drain standing water.

END OF SECTION

SECTION 03222

CONCRETE REPAIR REINFORCING BAR COATINGS

PART 1 GENERAL

1.01 SCOPE

A. This Section specifies a multi-component, epoxy-modified, cementitious, anti-corrosion coating to be applied to all reinforcing steel in repaired areas.

1.02 RELATED SECTIONS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions apply to this section. Related Specifications include:

03111 Concrete Surface Preparation for Repair Areas
03360 Shotcrete

1.03 PROJECT CONDITIONS

A. Weather Conditions: Apply rebar coatings only when ambient and/or surface temperatures are 45 degrees F. and rising. Do not apply rebar coatings when ambient and/or surface temperatures are 90 degrees F. and above.

B. Follow Manufacturer's recommendations regarding additional installation information (hot weather-drying conditions, or cold weather installation).

1.04 SUBMITTALS

A. Submit electronic copy of Manufacturer's literature, to include: Product Data Sheets, and appropriate Material Safety Data Sheets (MSDS) and hot and cold weather application requirements.

PART 2 PRODUCTS

2.01 APPROVED MATERIALS

A. "SIKA Armatec 110 EPO CEM" as manufactured by SIKA Corporation. Use for all SIKA repair products.

PART 3 EXECUTION

3.01 SITE VISITS BY MANUFACTURER'S REPRESENTATIVE

A. Contractor shall submit to the Engineer a written weekly report, which includes a written observation by the Manufacturer's Technical Representative who has visited the job site not less than weekly to observe conditions and application procedures of their products (one written observation per week). Contractor shall coordinate and schedule these site visits.

3.02 SPECIAL INSPECTION

A. Structural special inspection is required prior to the application of reinforcing bar coatings.

3.03 MIXING

A. Mix components per Manufacturer's printed recommendations with a low speed drill with a mixing paddle until a lump free homogenous compound is obtained.

B. Mix only the quantity that can be applied within its pot life. Pot life of material will vary dramatically with temperature.

3.04 APPLICATION

A. All reinforcing, new or existing, shall be completely coated with reinforcing coating.

B. All reinforcing shall be rigidly securely tied and supported in place.

C. All exposed reinforcing steel shall be free of all rust, scale, grease, oil and other bond inhibiting materials. Prepare reinforcing steel using acceptable mechanical means such as sandblasting to remove all contaminants.

D. Apply two (2) coats to prepared and steel surface with a stiff-bristle brush. Properly coat the underside of the totally exposed steel. Allow to dry, then apply a second coat. Allow drying again before placing repair materials.

E. Minimum application thickness:

1. SIKA Armatec 110 - apply at 20 mils per coat wet thickness.

F. Apply material all around bar up to face of existing concrete. Do not allow coating material to extend more than 1/4 inch on to the concrete surface where each bar enters or is encased in concrete.

G. Adhere to all limitations and cautions for the coating adhesive in the Manufacturer's current printed literature.

H. Time from application of coating to application of repair materials will be dependant upon ambient air temperature. The following are minimum and maximum times before application of second coat or repair material.

Air Temp.	SIKA Armatec		
	2nd Coat Application Min.	Repair Material Application Min.	Max.
90°	Dry to Touch	3 Hrs.	7 Days
40°	Dry to Touch	12 Hrs.	7 Days

3.05 SPECIAL INSPECTION

A. Structural special inspection is required after the reinforcing bar coating is applied prior to application of repair materials.

END OF SECTION

SECTION 03360

SHOTCRETE

PART 1 GENERAL

1.01 SCOPE

A. This Section describes the patching exterior horizontal, vertical and overhead surfaces with a pneumatically placed cementitious, high strength shrinkage compensated Portland cement mortar using shotcrete dry mix process.

1.02 RELATED SECTIONS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions apply to this section. Related Specifications include:

03111 Concrete Surface Preparation for Repair Areas
03222 Concrete Repair Reinforcing Bar Coatings
03444 Concrete Finishing and Curing for Repair Areas

1.03 QUALITY CONTROL

A. Manufacturing Qualifications: The Manufacturer of the specified product shall have been in the business of manufacturing similar products for over 10 years.

B. Contractor Qualifications:

1. Work in this section shall be provided only by a Contractor specializing in and possessing the equipment, knowledge, and skilled operators for application of shotcrete.

2. Contractors shall be an Approved Contractor of the Manufacturer of the specified product, who has completed a program of instruction in the use of pneumatically placed Portland cement mortar/concrete or overlaying interior and exterior vertical and overhead surfaces, and provide a certification from the Manufacturer attesting to their Approved Contractor status. The necessary training to become an Approved Contractor of the Manufacturer shall be complete before the repair work commences.

3. Furnish evidence to Engineer that Contractor conforms to above requirements, has been specializing in this work for a period of at least five (5) years, and will use only experienced shotcrete foremen, nozzlemen and delivery equipment operators on the work.

4. Nozzlemen shall be ACI certified in accordance with ACI 506.3R or provide documentation that he has 3,000 hours experience as the nozzleman applying material in previous projects which are similar.

5. Conform to ACI 506R-90, Paragraphs 4.2 and 4.3, for qualifications and duties of craftsmen.

C. Tolerances:

1. Cover of reinforcement shall be 2 inch minimum. Increase thickness of patched area if required to achieve minimum specified cover. If patch thickness is increased, taper back to original plane of repair surface by tapering 1 inch in thickness in 12 inch length.

2. Alignment and thickness of shotcrete shall be controlled by installing ground wires.

D. Project Conditions

1. Weather Conditions: Apply repair mortar only when ambient and surface temperatures are 40 degrees F. and rising. Do not make the repair if the ambient temperature is expected to fall below 40 degrees F. within 24 hours after placement. Do not apply repair mortar when ambient and surface temperatures are 100 degrees F. and above. Maximum substrate and material temperature shall not exceed 90 degrees F.

2. Submit and comply with Manufacturer's recommendations regarding additional installation requirements for hot weather or cold weather installation.

1.04 SUBMITTALS

A. Submit six (6) copies of Manufacturer's literature, to include: Product Data Sheets, appropriate Material Safety Data Sheets (MSDS) and hot and cold weather application requirements.

B. Shop Drawings: Reinforcing steel.

C. Certificates: Contractor's qualifications and nozzlemen's certification as specified.

1.05 DELIVERY, HANDLING AND STORAGE

A. All materials must be delivered in original, unopened containers with the Manufacturer's name, labels, produce identification, and batch numbers. Damaged material must be removed from the site immediately.

B. Store all materials off the ground and protect from rain, freezing or excessive heat until ready for use.

C. Store admixtures properly to prevent contamination, evaporation, freezing, or other damage.

D. Condition the specified product as recommended by the Manufacturer.

PART 2 MATERIALS

2.01 SHOTCRETE MATERIALS

A. The concrete repair material shall be “Five-Star Structural Concrete High Temperature Repair HTR Shotcrete” as manufactured by Fire Star Products, Inc. of Fairfield, Connecticut. The material shall not contain any chlorides or lime other than amounts contained within the hydraulic cement composition. The Manufacturer shall have a least ten (10) years experience in the manufacture of concrete repair materials. The Manufacturer shall offer technical services and provide a technical representative at the job site for product training prior to product installation upon five (5) days advance notice.

2.02 APPROVED MATERIALS (Ref. ACI 506.2)

A. Dry Process Shotcrete:

1. “HTR Shotcrete” as manufactured by Fire Star Products, Inc.

2. Minimum Compression Strengths f'c: (ASTM C 109 & C 42)
   1 Day - 3,500 psi
   3 Day - 5,900 psi
   28 Day - 8,500 psi

PART 3 EXECUTION

3.01 SITE VISITS BY MANUFACTURER'S REPRESENTATIVE

A. Contractor shall submit to the Engineer a written weekly report, which includes a written observation by the Manufacturer's Technical Representative who has visited the job site not less than weekly to observe conditions and application procedures of their products (one written observation per week). Contractor shall coordinate and schedule these site visits.

3.02 SURFACE PREPARATION

A. Requirements are specified in Specifications, Section 03111, Concrete Surface Preparation for Repair Areas.

3.03 PROPORTIONING, DELIVERY AND MIXING

A. Mixing Processes:

1. Mixing, General: Strength of mix is specified herein. Use dry mix process. Discharge entire batch before recharging. Clean mixer at least once every eight (8) hour shift or portion thereof.

a. Shoot all dry process shotcrete within 45 minutes of pre-dampening. If pre-dampened material sits for more than 45 minutes, it shall be discarded.

2. Dry Mix Process: Conform to ACI 506R, Paragraph 1.6.1.

3.04 EQUIPMENT, DRY MIX PROCESS

A. Batching and Mixing Equipment: Batch by weighing, use rotating mixer or adequate capacity for dry-mixing aggregate and cement for continuous supply of material to gun, all conforming to ACI 506R, Paragraph 3.5.

B. Pre-dampening of material is required for all dry process applications, by automated pre-dampener equipment prior to materials being placed into the hopper.

C. Delivery Equipment:

1. Gun and Nozzle: Pre-mixing type conforming to the requirements of ACI 506R, Paragraphs 3.2 and 3.7 designed for material delivery and water injection.

2. Air Compressor and Hoses: Standard type, of capacity to provide without interruption, pressures and volume of air necessary for longest hose delivery; conform to ACI 506R, Table 3.1. Provide a separate blow pipe oil free air hose with operator for use in blowing away rebound, cleaning reinforcing and incidental uses.

3. Water Supply: Use only potable water for mixing. Conform to ACI 506R, Paragraph 3.8.1, with adequate capacity to maintain water pressure approximately 15 pounds higher than highest air pressure required, both air and water pressure uniformly steady, non-pulsating.

3.05 ALIGNMENT CONTROL

A. General: To establish thickness and surface planes or shotcrete build-up provide ground wires, taut, secure, true to line and plane, conforming to ACI 506R, Paragraph 5.6. Depth gauges shall be plastic, not metal.

B. Reinforcing Positioning: Check that reinforcing is positioned and sized all in accordance with ACI 506R, Paragraph 5.4.

3.06 SHOOTING

A. General: ACI 506R, Paragraph 8.5.7. Shoot and fill corners first, with continuous uniform material flow from nozzle held approximately 3 to 6 feet from the work for dry process at angle perpendicular to the receiving surface.

1. Shoot around reinforcing with nozzle close to encase reinforcement as illustrated in ACI 506R, Figure 8.4, left column.

2. If flow is not uniform and slugs, sand spots or wet sloughs result, turn nozzle away until faulty work is cut out and repaired.

3. Do not shotcrete work if temperature is below 40 degrees F. without providing continuous heat and adequate protection from freezing.

B. Preparation of Surfaces to Receive Shotcrete: See Specifications, Section 03111, Concrete Surface Preparation for Repair Areas.

C. Overspray: Remove overspray from dry process shotcrete with a pneumatic blowpipe and blowpipe operator in advance of nozzlemen. Remove any hardened overspray prior to shooting.

D. Rebound: ACI 506R, Paragraph 8.5.10. Do not work rebound into construction nor salvage rebound for subsequent batching.

E. Suspend application if:

1. High wind prevents nozzlemen from proper application of material.

2. Weather approaches freezing and shotcrete cannot be protected.

3. Rain, other than a very light sprinkle, occurs which would wash cement out of freshly placed material.

F. Time Between Coats:

1. In sloping, vertical or overhanging work, allow interval of time sufficient for initial, but not final, set to develop.

2. At development of initial set, lightly broom or scratch surface to remove any latents to provide better bond with succeeding applications.

G. Construction Joints: Will not be allowed.

1. This applies to joints between adjacent shotcrete areas.

2. ACI 506R, Paragraph 5.7, tapering over a width of 1 foot to a 1-inch edge from board laid flat.

3. Before proceeding with additional shotcrete work, thoroughly clean joint and adjacent shotcrete, then scratch or broom surface to receive future shotcrete.

4. Avoid applying curing compounds to the surface of the joint.

5. Surface of joint shall be saturated surface dry prior to application of future shotcrete.

H. Surface Finish: Bring final surfaces of shotcrete to an even plane, well formed square corners with chamfer, working up to ground wires using somewhat lower placing velocity than normal.

1. Remove ground wires to 3/4 inch back from surface and fill holes with shotcrete to adjacent surface elevations.

2. Surfaces shall be steel troweled to provide a smooth true finish.

3.07 CURING

A. See Specifications, Section 03444, Concrete Finishing and Curing for Repair Areas.

3.08 HOT WEATHER SHOTCRETING

A. At air temperatures over 90 degrees F., time from pre-dampening to gunning shall not exceed 20 minutes.

B. Shotcrete material temperature in place immediately after shooting shall not exceed 90 degrees F.

C. Surface temperature of existing concrete or reinforcing to receive shotcrete shall not exceed 90 degrees F. at time of placement.

3.09 COLD WEATHER SHOTCRETING

A. Minimum Air Temperatures: 40 degrees F. and rising. Protect newly placed shotcrete for 24 hours if temperatures are expected to fall below 40 degrees F.

B. Shotcrete material temperatures in place immediately after shooting shall not be less than 45 degrees F.

C. Shotcrete shall not be placed against surfaces which are frozen or contain frost.

3.10 PROTECTION AND CLEAN-UP

A. Protection: Protect adjacent surfaces, grounds, and vegetation from damage by shotcreting, rebound and dust.

B. Clean-Up: Continuously remove rebound material to ensure that base, intermediate, and finish surfaces are clean and ready for bonding layers.

END OF SECTION

SECTION 03444

CONCRETE FINISHING AND CURING FOR REPAIR AREAS

PART 1 GENERAL

1.01 SCOPE

A. This Section specifies the requirements for finishing and curing for all areas which receive shotcrete materials.

1.02 RELATED SECTIONS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions apply to this section. Related Specifications include:

03360 Shotcrete

1.03 REFERENCES

A. Codes and Standards: Comply with provisions of the following codes, specifications, and standards, except where more stringent requirements are shown or specified.

B. American Concrete Institute (ACI): latest edition

ACI 308 Standard Practice for Curing Concrete

ACI 305 Hot Weather Concreting

ACI 305.1 Specification for Hot Weather Concreting

ACI/ICRI Concrete Repair Manual-third edition

1.04 SUBMITTALS

A. Submit electronic copy of Manufacturer's literature, to include: Product Data Sheets, appropriate Material Safety Data Sheets (MSDS) and hot and cold weather application requirements.

B. Submit a statement from the Manufacturer or Manufacturer’s Representative stating that they have reviewed the repair contract documents, specified use of their materials, and compatibility with adjacent specified materials and that it meets their products intended purpose.

PART 2 MATERIALS

2.01 SURFACE EVAPORATION RETARDANT

A. Special formulated material to be sprayed on fresh concrete to prevent rapid drying. Sprayed over plastic concrete, the surface evaporation retardant produces a monomolecular film that holds the water in until the next finishing operation. Note: This is essential for finishing! Product shall contain a yellow, orange or pink fluorescent color tint to easily identify the areas covered.

B. Dilute raw material with water at a rate of up to nine parts water to one part raw material, and apply the dilute mixture at a rate of 2,000 $ft.^2$ per gallon per coat to the concrete repair surface.

1. "Confilm" as manufactured by BASF Construction Chemicals. Use for all corrosion inhibiting cast-in-place concrete and all BASF Construction Chemicals repair products.

2. "SIKA Film" as manufactured by SIKA Corporation. Use for all SIKA repair products.

3. "EUCOBAR" as manufactured by the Euclid Chemical Company. Use for all Euclid repair products.

2.02 CURING COMPOUND

A. "Kure 1315" as manufactured by BASF Construction Chemicals. Apply at a rate of 200 sq. ft. per gallon per coat.

B. "KUREZ W VOX" as manufactured by The Euclid Chemical Company. Apply at a rate of 200 sq. ft. per gallon per coat.

PART 3 EXECUTION

3.01 SITE VISITS BY MANUFACTURER'S REPRESENTATIVE

A. Contractor shall submit to the Engineer a written weekly report, which includes a written observation by the Manufacturer's Technical Representative who has visited the job site not less than weekly to observe conditions and application procedures of their products (one written observation per week). Contractor shall coordinate and schedule the site visits.

3.02 FINISHING

A. Final finish shall be smooth steel troweled.

3.03 CURING

A. Concrete Repair Areas:

1. Immediately, or within one-half (1/2) hour after finishing operations are completed or forms are removed, a liquid membrane-forming curing compound shall be applied. Apply two (2) heavy coats at perpendicular directions. The coverage shall be sufficient so that the moisture loss is less than 0.03 gms/cm^2. Allow the curing compound to dry for one (1) hour. Cover the surface promptly with a layer of wet burlap and plastic sheeting other than black in color. The plastic sheeting shall be sealed to the concrete edges except at the bottom. Burlap shall be maintained continuously wet for a minimum of seven (7) days. This shall be accomplished by manual sprinkling. In cold weather the wetting system may be delayed for twenty-four (24) hours, but the surface must be properly and promptly covered with burlap and plastic the same day the repair materials are installed.

3.04 CURING COMPOUND COMPATIBILITY WITH OTHER MATERIALS

A. Curing compounds may inhibit the adhesion of other materials, such as paint, waterproofing, stucco, floor coatings, etc., and require removal. If other finish materials will be applied to the surface which has received the curing compound, the contractor shall verify with the finish material manufacturer, if removal of the curing compound is required, and follow their recommendations. Curing compound shall not be removed within the first seven (7) days after casting.

3.05 DEFECTIVE WORK

A. Epoxy inject any cracks that develop within seven (7) days which are larger than 0.007 inches in width.

B. All repaired areas, regardless of material or placement method, shall be free from irregularities, fins, rock pockets, or other imperfections. If sounding with hammer reveals unbonded work, or cores fail to meet specified strengths, or finishes are unsatisfactory, the area shall be repaired. Repairs to defective surfaces shall be reviewed by the Engineer and performed in accordance with the patching requirements of these Specifications.

END OF SECTION

SECTION 07900

SEALANTS

PART 1 GENERAL

1.01 WORK

A. Provide everything required completing the work as shown on the Drawings and specified herein.

1.02 QUALITY STANDARDS

A. Provide experienced, well-trained workers competent to complete the work as specified.

1.03 SUBMITTALS

A. Submit list of materials to be provided for this work including Manufacturer's data required to prove compliance with these Specifications, Manufacturer's installation instructions, shop drawings as required with complete details and assembly instructions.

B. Submit samples as required for approval.

1.04 MATERIALS HANDLING

A. Provide all materials required completing the work as shown on Drawings and specified herein. Deliver, store, and transport materials to avoid damage to the products or to any other work.

1.05 PRECONSTRUCTION AND PREPARATION

A. Examine and verify that job conditions are satisfactory for speedy and acceptable work.

1.06 WARRANTY

A. Provide three (3) year warranty, in writing and signed jointly by the installer and Sealant Manufacturer, to replace sealants which fail at no additional cost to the Owner because of loss of cohesion or adhesion, or do not cure, and which fail to achieve airtight and watertight seal.

PART 2 PRODUCTS

2.01 PRODUCTS

A. Manufacturers:

1. Furnish products of one of the following Manufacturers, except as approved by the Engineer, subject to compliance with Specifications requirements:

a. Dow Corning Corp.

b. Pecora

c. Tremco

d. General Electric

e. Sika Corp.

f. 3-M

g. Specified Technologies, Inc.

2. Single source responsibility for joint sealer materials:

a. Obtain joint sealer materials from a single manufacturer for each different product required.

b. If sealants from separate manufacturers must be used and could come in contact with each other, provide written certification from every Manufacturer involved that the sealants are compatible and will adhere to each other.

B. Materials:

1. General: Sealants, primers, back-up materials, pre-formed joint fillers, bond breakers and related materials shall be compatible with adjoining materials.

2. Sealant:

a. General: The selection of proper sealant for a particular joint shall be in accordance with current published recommendations of the Manufacturer.

b. Types: See schedule in Part 3 for the location where each type of sealant is to be provided.

(1) Type “A”: 2-part or 3-part (self-leveling) urethane, conforming to ASTM C920, Type M, Grade P, Class 25, Use T; Pecora NR-200 Urexpan Sealant or Dynatred, Tremco THC-900/901 and Sikaflex 2c SL (self-leveling).

(2) Type “B”: 3-part chemically curing polyurethane sealant conforming to ASTM C920, Type M, Grade NS, Class 25, Use NT, M, A, O, and capable of withstanding movement of 50% in extension and compression, and sustained temperatures of 250 degrees F. in service. Tremco Dymeric 511 Sealant, Pecora Dynatrol II and Sikaflex 2c NS (non-sag).

(3) Type “C-1”: One-part low modulus moisture cure silicone rubber sealant confirming to FS TT-S-001543A, Class A, FS TT-S-00230C, Type II, Class A and ASTM C920, Type S, Grade NS, Class 25, Use NT, M, G, A and O, and capable of withstanding movement of 100% in extension and 50% in compression in service. Dow Corning 790 Silicone Glazing Sealant, Tremco Spectrem 1 and Pecora 890.

(4) Type “C-2”: One-part medium modulus neutral cure silicone rubber sealant conforming to FS TT-S-001543A, Class A, FS TT-S-00230C, Type II, Class A and ASTM C920, Type S, Grade NS, Class 25, Use NT, M, G, A, and O, and capable of withstanding movement of 50% in extension and 50% in compression in service. Dow Corning 795, Tremco Spectrem 2 and Pecora 895.

(5) Type “D”: ASTM C920, Type S, Grade NS, Class 25, Use NT, M, A, O. Sika Sikaflex 1A, Pecora Dynatrol 1, Tremco DyMonic and Pecora 345.

(6) Type “E”: Silicone rubber sealant with mold inhibitor. General Electric Sanitary 1700, Tremco Proglaze, Dow Corning 999 and Pecora 863 or 898.

(7) Type “F”: Tremco Acoustical Sealant and Pecor BA-98.

(8) Type “G”: Fire protection/stops: use Tremco systems, including packing materials for UL Numbers C-AJ-1064, 1448 or 8134 as directed by the City of Phoenix Fire Department.

c. Color: Provide standard or custom colors as selected by Engineer. In general, colors shall match adjacent materials.

3. Primer: Non-staining type, recommended by Sealant Manufacturer to suit application.

4. Joint Cleaner: Non-corrosive and non-staining type, recommended by Sealant Manufacturer; compatible with joint forming materials.

5. Joint Filler (Backer) at Concrete: ASTM D1565; round closed cell polyethylene, urethane or neoprene foam road; oversized 30 to 50%; “SofRod” as manufactured by A.E.T. or Mile High Foam as manufactured by Backer Rod Manufacturing, Inc.

6. Joint Filler (Backer Rod) at Concrete Panels: ASTM D1622; round open cell polyurethane foam oversized 25%; Denver Foam as manufactured by Backer Rod Manufacturing, Inc.

7. Bond Breaker: Pressure sensitive tape recommended by Sealant Manufacturer to suit application.

8. Gloss Reducer: Silica sand No. 20, color to match adjacent surface. Gloss reducer shall be provided at traffic sealant applications.

9. At non-painted finishes, provide colored sealant to match adjacent materials or as noted on Drawings.

PART 3 CONSTRUCTION AND INSTALLATION

3.01 APPLICATION

A. Construct vertical and horizontal joints at locations and sizes shown in the Drawings. Clean and prepare work surfaces strictly as instructed by the Sealant Manufacturer. Clean mortar or other debris from movement joints prior to application of backing and sealant.

B. Apply materials strictly as instructed by the Sealant Manufacturer.

C. Use only a primer approved by the Sealant Manufacturer. Apply exactly as instructed by the Primer Manufacturer.

D. Use only a bond breaker approved or manufactured by the Sealant Manufacturer. Apply exactly as instructed by the Primer Manufacturer.

E. Apply strictly as per instructions of the Manufacturer. Apply sealant under pressure as required to completely fill the joints. Carefully mask around joints where sealant might discolor or stain finish surfaces. Tool joints to a smooth, consistent profile.

F. Follow instruction for fire protection/stops for Tremco systems, including packing materials for UL Numbers C-AJ-1064, 1448 or 8134 as directed by the City of Phoenix Fire Department. Installation requires inspection by the City of Mesa Fire Department.

3.02 CLEAN-UP AND REPAIR

A. Remove masking immediately after joints are tooled. Clean adjacent surfaces as instructed by the Sealant Manufacturer. Remove all debris and empty containers from the job site.

B. Repair or reseal defective work as directed by the Engineer.

3.03 SCHEDULE

A. Expansion and Control Joints:

1. Horizontal traffic: Type “A” or “B”. Provide gloss reducer.

2. Glass (except insulating glass or special coated glass), aluminum and plastics: Type “C-1”.

3. Masonry, concrete to concrete, stucco, steel and wood: Type “C-2”.

B. Non-Expanding Joints:

1. Glass and plastics: Type “C”.

2. Concrete to concrete, stucco, masonry, aluminum, steel and wood: Type “D”.

C. Mechanical (ductwork and air conditioning): Type “D”.

D. Plumbing Fixtures (around toilet, bath, kitchen fixtures, and food service equipment): Type “E”.

E. Acoustical (acoustical applications where sealant is required): Type “F”.

F. Fire Rated Wall Joints and at Penetrations: Type “G”.

END OF SECTION