

SECTION 031500 – CONCRETE ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections apply to this section.

1.2 SECTION INCLUDES

- A. Construction joints, expansion joints and control joints.
- B. Vapor retarders under all interior concrete slabs on grade.

1.3 RELATED WORK

- A. Section 031100, Concrete Forming.
- B. Section 033000, Cast-In-Place Concrete.

1.4 REFERENCES

- A. ASTM - American Society for Testing and Materials
- B. ASTM A 924 – Specification for General Requirements for Steel Sheet Metallic Coated by the Hot Dip Process
- C. ASTM C 578 - Specification for Preformed, Cellular Polystyrene Thermal Insulation
- D. ASTM E 1745 - Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs.
- E. ASTM E 1643 - Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.

1.5 SUBMITTALS

- A. Manufacturers' Literature: Indicate compliance with product specifications.
- B. Samples: Each type product with accessories, if requested.
- C. Shop Drawings: Indicate proposed locations of all construction joints, and pouring sequence.
- D. Manufacturer's standard labor and material warrantee for all joint sealant and extensible epoxy material which states that the product will be free of all defects (including workmanship) for a period of 5 years from the completion of the project. This includes all future labor and material deemed necessary to repair the sealant if any future cracks or leaks occur.

PART 2 - PRODUCTS

2.1 EXPANSION JOINT FILLERS

A. Expanded Polystyrene: Closed-cell, extruded polystyrene with high density skin.

1. ASTM D-3575
2. Density = 2.0 pcf
3. Compressive Set (25%) = 40 psi.
4. Water Absorption = 1% maximum
5. Manufacturers:
 - a. "Deck-O-Foam" by W.R.Meadows
 - b. "Foamtastic" by Hohmann & Barnard

2.2 JOINT SEALANTS

A. Polyurethane: One or two component, polyurethane joint sealant, Non-Sag conforming to F.S. II-S-227E. Color as selected by the Architect.

1. Manufacturers:
 - a. Sonneborn - Sonolastic NP I
 - b. Sika Chem. Co. - Sikaflex 1a; 2c-NS/SL
 - c. Tremco - Dymeric

2. Locations: All exposed joints in office areas.

B. Extensible epoxy formation with a shore "A" hardness of 60 to 100 and an extensibility of 50 to 100 percent.

1. Manufacturers: Sika Chemical Company - Sikadur 51; Metzger/McGuire - "MM-80".
2. Locations: Exposed joints subjected to vehicle traffic.

2.3 CONTROL JOINTS

A. Joint formed with 2 x 6 lumber and containing smooth steel dowels.

1. Locations: All interior concrete slabs on grade and concrete walls.

B. Sawcut control joints made with a wet saw.

1. Locations: All interior concrete slabs on grade.

2.4 VAPOR RETARDER

- A. Provide vapor retarder cover over prepared base material where needed to prevent rapid escape of moisture into subbase and where indicated. Use only materials which are resistant to decay when tested in accordance with ANSI/ASTM E-154, as follows:
 - 1. Polyethylene sheet not less than 10 mils thick.

PART 3 - EXECUTION

3.1 JOINT ARRANGEMENTS

- A. Location Criteria: Locate as to least impair the strength of the structure, and at locations coincident with designed structural and architectural features (specifically column lines). Maximum horizontal dimensions of a single unit of placement, 30 feet in a straight line (except footings).
 - 1. Locations: All locations are subject to approval.
- B. Joint Design: Follow a plane perpendicular to the principal reinforcement with a bulkhead shaped to produce a keyed surface except of expansion joints.
- C. Pouring Sequence: Continuous pouring between joints; however, do not place concrete in adjacent sections until 48 hours have elapsed from placement of original sections.

3.2 CONSTRUCTION JOINTS

- A. Framed Concrete Slab Surfaces: Roughen joint surfaces with a chipping hammer or by another approved method which will remove laitance, loose particles or aggregate, or damage concrete. After the surface of the joint has been cleaned of dust, chips, or other foreign material, an approved bonding agent (as specified in Section 03 3000) shall be placed on the joint surface prior to placing the next lift of concrete.
- B. Slab On Grade Construction Joints: Establish longitudinal and transverse control joints. With elevations checked by instrument stretch line over entire length. Drive stakes 2 ft. o.c. and attached screed to stakes. Provide lateral support where used as a bulkhead. Install smooth dowels and locate joints as specified in the contract documents.
 - 1. Locations: As indicated on the drawings, or if not shown, locate joints at 30'-0" o.c. maximum spacing for all concrete slabs on grade.
- C. Doweling and Keying: All formed construction joints shall be doweled. Provide keys, dowels or other details at construction joints as indicated.

3.3 EXPANSION JOINTS

- A. Exposed slabs on grade: Place joint filler 1/2 inch below the finished surface of the slab and extend to the bottom of the slab. The joint between the top of the filler and the finished slab shall be filled with a joint sealer.
 - 1. Locations: Where indicated. If not shown, divide exterior slabs into areas not exceeding 400 sq. ft. and exterior sidewalks into areas not exceeding 150 sq. ft.
 - 2. Type and Size: Use 1/2" thick expanded polystyrene type expansion joint filler or other thickness indicated for full width of concrete section.

3.4 CONTROL JOINTS

- A. Concrete Slabs: Install control joints in slabs on grade and sidewalks as indicated on the drawings, or if not shown, locate joints at 20'-0" o.c. maximum spacing for slabs on grade and at 5'-0" o.c. for exterior sidewalks.
- B. Type and Size: Concrete slabs shall have 1/8" wide sawcut joints installed 1/4 of the slab depth below the top surface within 8 hours of pouring slab.

3.5 INSTALLATION OF FILM TYPE VAPOR RETARDERS FOR CONCRETE SLABS

- A. Ensure subbase for concrete is compacted; sharp objects and scraps are removed.
- B. Place vapor barrier in widest practical widths with all joints lapped minimum 6 inches. Seal vapor barrier overlap together with Raven Vapor Bond Tape.
- C. Positioning: Maintain in place. Stretch and weight edges and laps to maintain their position until concrete is placed.
- D. Protection and Patching: Protect vapor barrier from rips. Hold patches in readiness during the concrete pouring operation and lay over all rips (beneath wire fabric and reinforcing steel.)
- E. Penetration: (Pipe, anchors, and other items) Seal vapor barrier material to the pipe and other penetrations with an elastomeric sealant that is approved by the vapor barrier manufacturer and architect.

3.6 JOINT SEALANTS

- A. The surfaces to receive the sealant shall be cleaned of any loose materials, dirt, dust, laitance, etc. Cleaning shall be done by power wire brushing followed by blasting with oil-free compressed air. No cleaning solvents shall be used.
- B. Install extensible epoxy sealant flush with the edges of the adjacent concrete and install polyurethane sealant 1/8" below edges of the adjacent concrete per the manufacturer's recommendations. In areas where the joints have been overfilled, remove excess while still fluid or remove after hardening by grinding.
 - 1. The extensible epoxy shall be installed after the concrete has cured a minimum of 180 days, and the temperature of the building is relatively constant. Since the concrete slab on grade will continue to shrink after the extensible epoxy has been installed, the

contractor shall allocate sufficient monies in his bid to refill the extensible epoxy joints if cracking of the extensible epoxy occurs.

- C. Where the depth of the joint appears excessive, the following procedures shall be followed:
 - 1. The depth of the polyurethane sealant may be limited to 0.5" by installing closed cell backer rod and non-bonding tape.
 - 2. The extensible epoxy shall completely fill the entire depth of the joint without adding any filler material in the joints, no matter what the depth or width of the joint may be.
- D. Follow manufacturer's recommendations covering the proper method of curing the sealant. Prevent any contact with sealant before it has cured.
- E. Make test applications to insure that proper adhesion is being attained. If not, determine what additional steps are needed to provide it.
- F. Following the completion of the work, the Architect shall inspect the joints. Where the smoothness of the joint is determined to be unsatisfactory, the contractor shall grind down the surface of the joint to make it acceptable.

END OF SECTION 031500