This master should be used by designers working on Port of Portland construction projects and by designers working for PDX tenants (“Tenants”). Usage notes highlight a few specific editing choices, however the entire section should be evaluated and edited to fit specific project needs.

SECTION 079200 – JOINT SEALANTS

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1. GENERAL
   * + 1. DESCRIPTION
          1. This section describes sealant at exterior joints in vertical surfaces and nontraffic horizontal surfaces; exterior joints in horizontal traffic surfaces; and interior joints in vertical and horizontal surfaces.
       2. REFERENCES
          1. ASTM: American Society of Testing and Materials

ASTM C794: Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants

ASTM C834: Standard Specification for Latex Sealants

ASTM C920: Standard Specification for Elastomeric Joint Sealants

* + - 1. SUBMITTALS
         1. Sealants in Exterior Wall Systems: Submit with wall system as coordinated package, clearly identifying where each material is proposed for use.
         2. Submit the following.

Product data from manufacturers for each joint sealer product required with color cards, including instructions for joint preparation and joint sealer application.

Samples for Initial Selection Purposes: Manufacturer’s standard bead samples consisting of strips of actual products showing full range of colors available, for each product exposed to view.

Samples for verification purposes of each type and color of joint sealer required. Install joint sealer samples in 1/2-inch-wide joints formed between two 6-inch-long strips of material matching the appearance of exposed surfaces adjacent to joint sealers.

* + - * 1. Certificates from manufacturers of joint sealers attesting that their products comply with specification requirements and are suitable for the use indicated.
        2. Qualification data complying with requirements specified in “Quality Assurance” article. Include list of completed projects with project name, addresses, names of architects and owners, plus other information specified.
        3. Compatibility and adhesion test reports from elastomeric sealant manufacturer indicating that materials forming joint substrates and joint sealant backings have been tested for compatibility and adhesion with joint sealants. Include sealant manufacturer’s interpretation of test results relative to sealant performance and recommendations for primers and substrate preparation needed to obtain adhesion.
        4. Product test reports for each type of joint sealers indicated, evidencing compliance with requirements specified.
        5. Preconstruction field test reports indicating which products and joint preparation methods demonstrated acceptable adhesion to joint substrates.
      1. QUALITY ASSURANCE
         1. Obtain elastomeric materials only from manufacturers who will, if required, send a qualified technical representative to work site, for the purpose of advising the installer of proper procedures and precautions for the use of the materials.
         2. Installer Qualifications: Engage an installer who has successfully completed within the last 3 years at least 3 joint sealer applications similar in type and size to this work.
         3. Field-Constructed Mock-Ups: Prior to installation of joint sealers, apply elastomeric sealants to the following selected building joints as indicated below for further verification of colors selected from sample submittals and to represent completed work for qualities of appearance, materials and application:

Joints in field-constructed mock-ups of assemblies specified in other sections which are indicated to receive elastomeric joint sealants in this section.

Retain mock-ups during construction as standard for judging completed construction.

* + - 1. SYSTEM PERFORMANCE
         1. Provide joint sealers that have been produced and installed to establish and maintain watertight and airtight continuous seals.
      2. PRODUCT DELIVERY, STORAGE, AND HANDLING
         1. Deliver materials to work site in original unopened containers or bundles with labels containing information about manufacturer, product name and designation, color, expiration period for use, pot life, curing time and mixing instructions for multi-component materials.
         2. Store and handle materials in compliance with manufacturer’s recommendations to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.
      3. WORK SITE CONDITIONS
         1. Pre-Installation Meeting:

Tenants: If desired, after “the Port” add, name of tenant.

Meet with installer, the Port, sealant manufacturer’s technical representative, and other trades involved in coordination with sealant work at the work site to review the procedures and time schedule proposed for installation of sealants and coordination with other work.

Review each major sealant application required for the work.

* + - * 1. Conditions of Other Work:

Examine the joint surfaces, backing, and anchorage of units forming sealant rabbet, and the conditions under which the sealant work is to be performed. Correct conditions detrimental to the proper and timely completion of the work and performance of the sealants.

Do not proceed with the sealant work until unsatisfactory conditions have been corrected.

* + - * 1. Weather Conditions:

Do not proceed with installation of sealants under adverse weather conditions, or when temperatures are below or above manufacturer’s recommended limitations for installation.

Proceed with the work only when forecasted weather conditions are fa­vorable for proper cure and development of high early bond strength.

Wherever joint width is affected by ambient temperature variations, install elastomeric sealants only when temperatures are in the lower third of manufacturer’s recommended installation temperature range, so that sealant will not be subjected to excessive elongation and bond stress at subsequent low temperatures.

Coordinate time schedule to avoid delays.

* + - 1. WARRANTY
         1. Extend period during which installer of work of this section is required to return to job to make corrections for four additional years beyond the one-year warranty period.
         2. Repair or replace sealants which fail to perform as air-tight and water-tight joints; or fail in joint adhesion, cohesion or abrasion resistance, weather resistance, extrusion resistance, migration resistance, stain resistance, or general durability; or appear to deteriorate in another manner not clearly specified by submitted manufacturer’s data as an inherent quality of the material for the exposure indicated.

1. PRODUCTS
   * + 1. MATERIALS, GENERAL

Tenants: Delete “Port” and replace with name of tenant.

* + - * 1. Colors: For exposed materials, provide color as indicated, or if not indicated, as selected by the Port from manufacturer’s standard colors. For concealed materials, provide the natural color which has the best overall performance characteristics.
        2. Hardness: As recommended by manufacturer for application shown, unless otherwise indicated.
        3. Modulus of Elasticity: Provide the lowest available modulus of elasticity which is consistent with exposure to weathering, indentation, vandalism, abrasion, support of loading, and other requirements.
        4. Compatibility: Before purchase of each required material, confirm its compatibility with each other material it will be exposed to in the joint system.
        5. Size and Shape: As shown or, if not shown, as recommended by the manufacturer for the type and condition of joint, and for the indicated joint performance or movement.
        6. Grade of Sealant: For each application, provide the grade of sealant (non-sag, self-leveling, no-track, knife grade, preformed, etc.) as recommended by the manufacturer for the particular condition of installation (locations, joint shape, ambient temperature, and similar conditions), to achieve the best possible overall performance. Grades specified herein are for normal conditions for installation.
      1. SEALANT AND CALKING MATERIALS
         1. Elastomeric Sealant: Provide at joints in the exterior of the building.

Provide silicone rubber based, one-part, non-sag, elastomeric sealant, complying with ASTM C920 Type S, Grade NS, Class 40, uses NT, M, G, A and O; recommended by manufacturer (also tested for compatibility and materials warranted for 20 years by manufacturer) for exterior joint surfaces shown. The following are acceptable products and manufacturers.

Silicone Building Sealant 795 manufactured by Dow Corning Corp.

Silglaze / Silpruf Construction Sealant manufactured by General Electric Co.

Proglaze Construction Sealant manufactured by Tremco, Inc.

Or equal.

At traffic-bearing surfaces where joint movement is anticipated, provide polyurethane-based, 2-part elastomeric sealant, complying with ASTM C920 Type M, Grade P (pourable, self-leveling) unless Grade NS (non-sag) is recommended by manufacturer for application shown, Class 25, Use T. The following are acceptable products and manufacturers.

MasterSeal SL2 manufactured by BASF Master Builder.

Vulkem 245 manufactured by Tremco.

Sika 2C manufactured by Sika Chemical Corp.

Chem-Calk 550 manufactured by Bostik. (can stain stone)

Or equal.

* + - * 1. Acrylic Latex Joint Sealants: Provide where calking is indicated at interior locations.

Provide one-part, non-sag, mildew-resistant, sealant complying with ASTM C834, formulated to be paintable and recommended for exposed interior applications involving joint movement of not more than 7.5 percent from installed dimension.

Acceptable Manufacturers and Products:

Chem-Calk 600 manufactured by Bostik.

Tremco Acrylic Latex Calk manufactured by Tremco.

MasterSeal NP 520manufactured by BASF Master Builder.

Or equal.

* + - 1. MISCELLANEOUS MATERIALS
         1. Joint Cleaner: Provide the type of joint cleaning compound recommended by the sealant or calking compound manufacturer, for the joint surfaces to be cleaned.
         2. Joint Primer/Sealer: Provide the type of joint primer/sealer recommended by the sealant manufacturer, for the joint surfaces to be primed or sealed.
         3. Bond Breaker Tape: Polyethylene tape or other plastic tape as recommended by the sealant manufacturer, to be applied to sealant-contact surfaces where bond to the substrate or joint filler must be avoided for proper performance of sealant. Provide self-adhesive tape wherever applicable.
         4. Sealant Back-Up Rod: Compressible rod stock of polyethylene foam, polyethylene jacketed polyurethane foam, butyl rubber foam, neoprene foam or other flexible, permanent, durable non-absorptive material as recommended for compatibility with sealant by the sealant manufacturer. Provide size and shape of rod which will control the joint depth for sealant placement, break bond of sealant at bottom of joint, from optimum shape of sealant bead on back side, and provide a highly compressible backing to minimize the possibility of sealant extrusion when joint is compressed.

1. EXECUTION
   * + 1. PREPARATION
          1. Clean joint surfaces immediately before installation of sealant or calk­ing compound. Remove dirt, insecure coatings, moisture and other sub­stances which would interfere with bond of sealant or calking compound.
          2. For elastomeric sealants, do not proceed with installation of sealant over joint surfaces which have been painted, lacquered, waterproofed or treated with water repellent or other treatment or coating unless a laboratory test for durability (adhesion), in compliance with ASTM C794 has successfully demonstrated that sealant bond is not impaired by coating or treatment. If laboratory test has not been performed, or shows bond interference, remove coating or treatment from joint surfaces before installing sealant.
          3. Etch masonry and stonework joint surfaces to remove excess alkalinity, unless sealant manufacturer’s printed instructions indicate that alkalinity does not interfere with sealant bond and performance. Etch with 5 percent solution of muriatic acid; neutralize with dilute ammonia solution, rinse thoroughly with water and allow to dry before sealant installation.
          4. Roughen joint surfaces on vitreous coated and similar non-porous materials, where sealant manufacturer’s data indicates lower bond strength than for porous surfaces. Rub with fine abrasive to produce a dull sheen.
       2. INSTALLATION
          1. Comply with sealant manufacturer’s printed instructions except where more stringent requirements are shown or specified and except where manufacturer’s technical representative directs otherwise.
          2. Prime or seal the joint surfaces wherever shown on the drawings or recommended by the sealant manufacturer. Do not allow primer/sealer to spill or migrate onto adjoining surfaces.
          3. Install sealant backup rod for elastomeric sealants, except where shown to be omitted or recommended to be omitted by sealant manufacturer for the application shown.
          4. Clean joint surfaces as recommended by sealant manufacturer. Provide bond-breaker or separator between sealant and joint filler, wherever recommended by manufacturer and wherever sealant is not compatible with joint filler.
          5. Install bond breaker tape where shown on the drawings and where required by manufacturer’s recommendations to ensure that elastomeric sealants will perform properly.
          6. Employ only proven installation techniques which will ensure that sealants will be deposited in uniform, continuous ribbons without gaps or air pockets, with complete “wetting” of joint bond surfaces equally on opposite sides.

Except as otherwise indicated, fill sealant rabbet to a slightly concave surface, slightly below adjoining surfaces.

Where horizontal joints are between a horizontal surface and a vertical surface, fill joint to form a slight cove, so that joint will not trap moisture and dirt.

* + - * 1. Install sealants to depths as shown on the drawings or, if not shown, as recommended by sealant manufacturer but within the following general limitations, measured at center (thin) section of bead.

For normal moving joints sealed with elastomeric sealants, but not subject to traffic, fill joints to a depth equal to 50 percent of joint width, but neither more than 1/2-inch-deep nor less than 1/4 inch deep.

For joints sealed with non-elastomeric sealants and calking compounds, fill joints to a depth in the range of 75 percent to 125 percent of joint width.

* + - * 1. Spillage:

Do not allow sealants or compounds to overflow or spill onto adjoining surfaces, or to migrate into voids of adjoining surfaces including exposed aggregate panels and similar rough textures. Use masking tape or other precautionary devices to prevent staining of adjoining surfaces, by either primer/sealer or the sealant/calking compound.

Remove excess and spillage of compounds promptly as work progresses. Clean the adjoining surfaces by whatever means may be necessary to eliminate evidence of spillage.

* + - * 1. Where exposed, install with surface profile within plus or minus 1/16 inch from dimension shown except over 8 feet above floor plus or minus 1/8 inch, with surface uniformly smooth and free of wrinkles.
      1. CURE AND PROTECTION
         1. Cure sealants and calking compounds in compliance with manufacturer’s instructions and recommendations, to obtain high early bond strength, internal cohesive strength and surface durability. Do not cure in a manner which would significantly alter material’s modulus of elasticity or other characteristics.
         2. Follow manufacturer’s procedures required for curing and protection of sealants and calking compounds during construction period, so that they will be without deterioration or damage (other than normal wear and weathering) at time of completion.
      2. TESTS FOR PERFORMANCE
         1. After nominal cure of exterior joint sealants which are exposed to weather, test for water leaks. Flood joint exposure with water directed from a 3/4-inch garden hose held perpendicular to wall face, 2'-0" from joint, connected to a water system with 30 psi minimum static water pressure at the nozzle. Move stream of water along joint at an approximate rate of 20 feet per minute.
         2. Test approximately 5 percent of total joint system in locations which are typical of every joint condition, and which can be inspected easily for leakage on opposite face. Conduct test in presence of the Port who will determine actual percentage of joints to be tested and actual period of exposure to water from hose, based upon extent of observed leakage, or lack thereof. Repair sealant installation at leaks or, if leakage is excessive, replace sealant installation as directed.
         3. Where nature of observed leakage indicates possibility of inadequate joint bond strength, the Port will direct that additional testing be performed at a time when joints have been fully cured, followed by natural exposure through both extreme temperatures, and returned to lowest range of temperature in which it is feasible to conduct testing. Repair or replace work as required. Perform testing at a reasonable time within 24 months of installation date, as directed.

END OF SECTION 079200