Part 1 GENERAL

1.1 GENERAL REQUIREMENTS

1. Conform to Sections of Division 1 as applicable.

2. Related Work

   1. Read other Sections of Specifications for extent of sealing specified in those Sections. Do all other sealing indicated, specified or required.

3. References

   CAN/CGSB-19.13-M87-Sealing Compound, One-Component, Elastomeric, Chemical Curing
   CAN/CGSB-19.17-M90-Sealing Compound, One-Component Acrylic Emulsion Base
   CAN/CGSB-19.22-M89-Mildew-Resistant Sealing Compound for Tubs and Tiles
   CAN/CGSB-19.24-M90-Multicomponent, Chemical-Curing Sealing Compound

4. Description

   1. Provide joint sealant work required to seal building tightly from exterior and interior, to withstand action of elements and to complete building envelope, air and vapour barriers, and all other joint sealant work, unless specified to be included under other Sections.

1.2 SUBMITTALS

1. Samples: Provide cured, colour samples of manufacturer's standard range of colours in each type of sealing and caulking compound for colour selection by Architect. Submit samples of primer, bond breaker tape and joint backing material, if requested.

2. Submittals: Submit product information from sealant manufacturers prior to commencement of work of this Section verifying:

   1. selected sealant materials are from those specified;

   2. composition and physical characteristics;

   3. surface preparation requirements;

   4. priming and application procedures;

   5. suitability of sealants for purposes intended and joint design;

   6. test report on adhesion, compatibility and staining effect on samples of materials used on Project;

   7. sealants compatibility with other materials and products with which they

come in contact including but not limited to sealants provided under other Sections, insulation adhesives, bitumens, brick, stone, concrete, masonry, metals and metal finishes, ceramic tile, plastic laminates, paints;

1. suitability of sealants for temperature and humidity conditions at time of application.

1.3 QUALITY ASSURANCE

1. Qualifications: Perform work of this Section by recognized and established sealant applicator having experience using skilled mechanics trained in use of sealing equipment and specified materials. Submit proof of experience upon Architect's request.

2. Review Specification for work included under this Section and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials, materials to be used, installation of materials, sequence and quality control, Project staffing, restrictions on areas of work and other matters affecting construction, to permit compliance with intent of this Section. Consider also following items:

- Weather conditions under which work will be done;
- Anticipated frequency and extent of joint movement;
- Joint design;
- Suitability of durometer hardness and other properties of material to be used;
- Recommendations of manufacturer for mixing of multi-component sealants;
- Number of beads to be used in sealing operation and priming operation if required.

1.4 MOCK-UP

1. At Site, in area(s) designated by Architect, erect sample panels 1 m (39") long for each type of sealant joint design, showing location, size, shape and depth of joint complete with backup materials, primer, caulking and sealant, bond, colour and quality of installation work. Construct additional samples if required to obtain approval. Do no sealing work until samples have been approved. Approved samples shall become standard of comparison for sealing and caulking work on Site and shall become part of Work.

1.5 DELIVERY, STORAGE AND HANDLING

1. Deliver caulking and sealing materials to Site in original, unopened containers with manufacturers labels and seals intact. Labels shall identify manufacturer's name, brand name of product, grade and type, application directions and shelf life or expiry date of product.

2. Handle and store materials in accordance with manufacturer's printed directions. Store flammable materials in safe, approved containers to eliminate fire hazards.

3. Do not use caulking and sealing materials that has been stored for period of time exceeding maximum recommended shelf life of materials.

1.6 PROJECT CONDITIONS

1. Environmental Requirements: Do not apply any sealant under adverse weather conditions, when joints to be sealed are damp, wet or frozen or when at ambient temperatures below 5 deg C (40 deg F). Maintain minimum temperature of application during application and for 8 hours after application. Consult manufacturer for specific instructions before proceeding and obtain Architect's approval.

1.7 WARRANTY

1. Warrant work of this Section against defects and deficiencies in accordance with General Conditions of the Contract. Promptly correct to satisfaction of Architect and at no expense to Owner, any defects or deficiencies which become apparent within warranty period. Defects include, but are not limited to cracking, crumbling, melting, shrinkage, sag, failure in adhesion, cohesion or reversion, air and moisture leakage, marbling or streaking due to improper mixing, discolouration due to dirt pick-up during curing and staining of adjacent materials.

Part 2 PRODUCTS

2.1 MATERIALS

1. Colours: Selected by Architect from manufacturer's standard range to match colour of predominant materials to which sealant is applied.

2. Formulation: non-bleeding, non-migrating, capable of supporting their own weight. Use self levelling type for horizontal surfaces and non-sag type at vertical and soffit applications. Use 1 manufacturer's product for each Type specified.

3. Sealant Type

1. Sealant Type A: Non-sag type, 1 component ultra low-modulus, pre-pigmented, elastomeric silicone sealant conforming to ASTM C920, Type S, Grade NS, Class 100/50, Use NT, G, M, A and O. Supply in standard colours as selected. Supply 1 of following:

1. “DOWSIL™ 790 Silicone Building Sealant” by The Dow Chemical Company.
2. “GE SCS2700 SilPruf* LM” by Momentive Performance Materials.
3. “Pecora 890NST” by Pecora Corporation
4. “Sikasil® WS-290” by Sika Canada Inc.
5. “Spectrem® 1" by Tremco Canada.

2. Type B Sealant: Non-sag type, 1 component, mildew resistant silicone containing non-toxic fungicidal agents sealant conforming to ASTM C920, Type S, Grade NS, Class 25, Use NT. Supply in clear or white as selected. Supply 1 of following:

1. “DOWSIL™ 786" by The Dow Chemical Company

2. "DOWSIL™ Tub, Tile & Ceramic Silicone Sealant" by The Dow Chemical Company.
3. "GE Sanitary SCS1701 or SCS1702" by Momentive Performance Materials
4. "Sikasil®-GP" by Sika Canada Inc.
5. "Tremsil® 200" by Tremco Canada.

3. Type C Sealant: Non-sag type, 1 component, acrylic latex sealant conforming to ASTM C834, Type OP, Grade -18°C. Supply in standard colours as selected. Supply 1 of following:

   1. "GE RCS20" by Momentive Performance Materials.
   2. "AC-20® +Silicone" by Pecora Corporation.
   3. "Tremflex® 834" by Tremco Canada.

4. Type D Sealant: Non-sag type, 1 component polyurethane sealant conforming to ASTM C920, Type S, Grade NS, Class 25, Use NT, M, A and O. Supply in standard colours as selected. Supply 1 of following:

   1. "MasterSeal® NP 1™" by BASF
   2. "Eucolastic 1NS" by Euclid Chemical Canada Ltd
   3. "Sikaflex® 1a" by Sika Canada Inc
   4. "Dymonic® FC" or "Dymonic® 100" or "Vulkem 116" by Tremco Canada

5. Type D Sealant: Pour grade, 1 component polyurethane sealant conforming to ASTM C920, Type S, Grade P, Class 25, Use T, M, A, I and O. Supply in standard colours as selected. Supply 1 of following:

   1. "MasterSeal® SL 1™" by BASF
   2. "Eucolastic 1SL" by Euclid Chemical Canada Ltd
   3. "Sikaflex® Self-Leveling Sealant" by Sika Canada Inc.
   4. "Vulkem® 45SSL" by Tremco Canada.

6. Type E Sealant: Pour grade, multi-component, polyurethane sealant conforming to ASTM C920, Type M, Grade P, Class 25, Use T, M, A, I and O. Supply 1 of following:

   1. "MasterSeal® SL 2™" by BASF
   2. "Sikaflex® 2c SL" by Sika Canada Inc
   3. "THC-901 or Vulkem® 245" by Tremco Canada

7. Type F Sealant: Self-levelling type, epoxy modified joint sealant, cold-applied, 2-component, pour grade, grey colour filled full depth. Supply 1 of following:

   1. "CPD Joint-Flex P.E." by CPD Construction Products
   2. "Eco 700" by Euclid Chemical Canada Ltd
   3. "Loadflex" by Sika Canada Inc
   4. "Rezi-Weld™ Flex" by W.R. Meadows of Canada

4. Joint Primer: Non-staining, suitable for substrate surfaces, compatible with joint forming materials and as recommended by sealant manufacturer for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests

5. Joint Backing: preformed, compressible, resilient, non-waxing, non-extruding, non-staining strips of closed cell polyethylene or urethane foam. Sizes and shapes to suit various conditions, diameter 25% greater than joint width. Backing shall be compatible with sealant, primer and substrate.

6. Bond Breaker Tape: as recommended by sealant manufacturer.

7. Joint Primer: non-staining, suitable for substrate surfaces, compatible with joint forming materials and as recommended by sealant manufacturer.

8. Cleaning material: non-corrosive, non-staining, solvent type, xylol, methyl-ethyl-ketone (MEK), toluol, isopropyl alcohol (IPA) or as recommended by sealant manufacturer and acceptable to material or finish manufacturers for surfaces adjacent to sealed areas.

Part 3 EXECUTION

3.1 EXAMINATION

1. Ensure joints are suitable to accept and receive sealants. Commencement of work implies acceptance of surfaces and conditions.

2. Do not apply sealant to masonry until mortar has cured.

3. Before any sealing work is commenced, test materials for indications of staining or poor adhesion.

3.2 PREPARATION

1. Remove existing caulking and/or sealant from all joints (where indicated on drawings). Ensure that all joint interfaces are clean.

2. Clean joints and spaces which are to be sealed and ensure they are dry and free of dust, loose mortar, oil, grease, oxidation, coatings, form release agents, sealers and other foreign material.

3. Clean porous surfaces such as concrete, masonry or stone by wire brushing, grinding or sandblasting as required to obtain clean and sound surfaces.

4. Remove laitance by grinding or mechanical abrading.

5. Remove oils by sandblast cleaning.

6. Remove loose particles present or resulting from grinding, abrading or sandblast cleaning by thorough brushing.

7. Clean ferrous metals of rust, mill scale and foreign materials by wire brushing, grinding or sanding.

8. Wipe non-porous surfaces such as metal and glass to be sealed, except pre-coated metals, with cellulose sponges or clean rags soaked with ethyl alcohol, ketone solvent, xylol or toluol and wipe dry with clean cloth. Where joints are to be sealed with silicone based sealants clean joint with methyl-ethyl-ketone (MEK) or xylol. Do not allow solvent to air-dry without wiping. Clean pre-coated metals with solutions or compounds which will not injure finish and which are compatible with joint primer and sealant. Check ferrous metal surfaces are painted before applying sealant.

9. Examine joint sizes and where depth of joint exceed required depth of sealant correct to achieve proper following width/depth ratio:

    1. maintain 2:1 width/depth ratio: minimum joint size shall be 6 mm (1/4") x 6 mm (1/4"), maximum depth of sealant to be 13 mm (1/2").

    2. Install joint backing material to achieve correct and uniform joint profile.

    3. Where joint design or depth of joint prevents use of joint backing material, apply bond breaker tape to prevent three-sided adhesion.

    4. Do not stretch, twist, puncture or tear joint backing. Butt joint backing at intersections. Install bond breaker tape at back of joint where joint backing is not required or cannot be installed.

    5. On horizontal traffic surfaces, support joint filler against vertical movement which might result from traffic loads, including foot traffic.

    6. Where surfaces adjacent to joints are likely to become coated with sealant during application, mask them prior to priming and sealing.

    7. Do not exceed shelf life and pot life of materials, and installation times, as stated by manufacturers.

    8. Be familiar with work life of sealant to be used. Do not mix multiple component materials until required for use.

    9. Use materials as received from manufacturer, without additions, deletions and adulterations of materials.

    10. Mix multiple component sealants and bulks sealants using mechanical mixer capable of mixing without mixing air into material, strictly in accordance with manufacturer=s directions and recommendations. Continue mixing until material is homogeneously blended, uniform in colour and free from streaks of unmixed material. Install compound prior to start of hardening or curing cycle.

    11. Seal joints in surfaces to be painted before surfaces are painted. Where surfaces to be sealed are prime painted in shop before sealing check to

make sure prime paint is compatible with primer and sealant. If they are incompatible, inform Architect and change primer and sealant to compatible types approved by Architect.

12. Where irregular surface or sensitive joint border exists, apply masking tape at edge of joint to ensure joint neatness and protection.

13. Prime sides of joints for type of surface being sealed prior to application of joint backing, bond breaker or sealant as recommended by sealant manufacturer.

3.3 APPLICATION

1. Apply sealant using hand operated guns or pressure equipment fitted with suitable nozzle size and equipment approved by sealant manufacturer. Apply in accordance with manufacturer's directions and recommendations.

2. Force sealant into joint and against sides of joints to obtain uniform adhesion. Use sufficient pressure to completely fill all voids in joint regardless of variation in joint widths and to proper joint depth as prepared. Ensure full firm contact with interfaces of joint. Superficial pointing with skin bead shall not be acceptable.

3. Finish face of compound to form smooth, uniform beads. At recesses in angular surfaces, finish compound with flat face, flush with face of materials at each side. At recesses in flush surfaces, finish compound with concave face flush with face of materials at each side.

4. Compound may be tooled, provided that such tooling does not damage seal or tear compound. Avoid pulling of sealant from sides.

5. Tool surfaces as soon as possible after sealant application or before any skin formation has occurred, particularly when using silicone sealants.

6. Joint surfaces shall be straight, neatly finished, free from ridges, wrinkles, sags, dirt, stains, air pockets and embedded foreign matter or other defacement and be uniform in colour, free from marbling and/or colour streaking due to improper mixing or use of out of shelf life products.

7. Drawings do not show all locations to be sealed. This Section to seal all locations except those indicated in other Sections of Work, required to create and ensure continuous enclosure.

3.4 FIELD QUALITY CONTROL

1. Independent inspection and testing company may be appointed and paid for by Owner to carry out inspection and testing as directed by Architect. Tests may include sampling of installed product where adhesion, cohesion or reversion failure is suspected.

2. Where work or materials fail to meet requirements as indicated by test results, pay costs of additional inspection and testing required for new replacement work or materials.

3. Confirm in writing by Manufacturers Representative to be on site throughout construction period work to inspect application of sealant and surface preparation.

3.5 REPAIR

1. Remove any compounds not complying with requirements specified herein. Exercise care in removal operations not to mar or damage finishes adjacent to joints. Repeat preparation, priming and installation of new material as specified to provide finished work complying with specified requirements, and acceptable to Architect. Do such repair work at no extra cost to Owner.

3.6 CLEANING

1. Immediately clean adjacent surfaces which have been soiled and leave Work in neat, clean condition. Remove excess materials, compounds smears or other soiling resulting from application of sealants. Use recommended cleaners and solvents.

3.7 PROTECTION OF COMPLETED WORK

1. Provide approved, non-staining means of protection for completed joint sealant installations where required to protect work from mechanical, thermal, chemical and other damage by construction operations and traffic.

2. Maintain protection securely in place until completion of Work. Remove protection when so directed by Architect.

End of Section 07 90 00