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For more information, contact Centerline Brackets; Centerline Steel, LLC, 208 W. Davis Industrial Dr., St. Augustine, FL 32084-8413; Phone: (888) 960-3854 | (904) 217-4186; Fax: (904) 429-9450; Website: [www.countertopbracket.com](http://www.countertopbracket.com); Email: [support@countertopbracket.com](mailto:support@countertopbracket.com).

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## SECTION 123640 - STONE COUNTERTOPS

### **TIPS:**

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## PART 1 - GENERAL

### 1.1 SUMMARY

#### A. Section Includes:

1. Stone countertops.
2. Adhesives, grout, sealants, and stone accessories.

#### B. Related Requirements:

1. Section 123661.13 "Cultured Marble Countertops" for cultured-marble countertops.
2. Section 123661.19 "Quartz Agglomerate Countertops" for quartz-agglomerate countertops.

## 1.2 ACTION SUBMITTALS

- A. Product Data: For each [**variety of stone**] stone accessory and manufactured product.
- B. Shop Drawings:
  - 1. Include plans, sections, details, and attachments to other work.
  - 2. Show locations and details of joints.
  - 3. Show direction of veining, grain, or other directional pattern.
- C. Samples for Verification: For each stone type indicated, in sets of Samples not less than **12 inches (300 mm)** square.
  - 1. Include [**two**] [**three**] or more Samples in each set and show the full range of variations in appearance characteristics expected in the completed Work.

## 1.3 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For fabricator.
- B. Material Test Reports:
  - 1. Stone Test Reports: For [**each**] stone variety proposed for use on Project, by a qualified testing agency, indicating compliance with required physical properties, in accordance with referenced ASTM standards. Base reports on testing done within previous [**three**] [**five**] <Insert number> years.
  - 2. Sealant Compatibility and Adhesion Test Report: From sealant manufacturer indicating that sealants will not stain or damage stone.

## 1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For stone countertops. Include product data for stone-care products used or recommended by Installer, and names, addresses, and telephone numbers of local sources for products.

## 1.5 QUALITY ASSURANCE

- A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate stone countertops similar to that required for this Project, and whose products have a record of successful in-service performance.
- B. Installer Qualifications: Fabricator of stone countertops.

## 1.6 MOCKUPS

- A. Build mockups to demonstrate aesthetic effects and to set quality standards for fabrication and execution.

1. Build mockup of typical countertop as indicated on Drawings.
2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

#### 1.7 PRECONSTRUCTION TESTING

- A. Preconstruction Laboratory Testing: Submit to joint-sealant manufacturer, for compatibility and adhesion testing in accordance with sealant manufacturer's standard testing methods and in accordance with Section 079200 "Joint Sealants," Samples of materials that will contact or affect joint sealants.

#### 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store and handle stone and related materials to prevent deterioration or damage due to moisture, temperature changes, contaminants, corrosion, breaking, chipping, and other causes.
  1. Lift stone with wide-belt slings; do not use wire rope or ropes that might cause staining. Move stone, if required, using dollies with cushioned wood supports.
  2. Store stone on wood A-frames or pallets with nonstaining, waterproof covers. Arrange to distribute weight evenly and to prevent damage to stone. Ventilate under covers to prevent condensation.

#### 1.9 FIELD CONDITIONS

- A. Field Measurements: Verify dimensions of construction to receive stone countertops by field measurements before fabrication [**and indicate measurements on Shop Drawings**].

### PART 2 - PRODUCTS

#### 2.1 SOURCE LIMITATIONS

- A. Source Limitations for Stone: Obtain [**each variety of**] stone [**regardless of finish**] from a single quarry [**whether specified in this Section or in another Specification Section**] with resources to provide materials of consistent quality in appearance and physical properties.
  1. For stone types that include same list of varieties and sources, provide same variety from same source for each.
  2. Make stone slabs available for examination by Architect.
    - a. Architect will select aesthetically acceptable slabs [**and will indicate aesthetically unacceptable portions of slabs**].
    - b. Segregate slabs selected for use on Project and mark backs indicating approval.
    - c. Mark and photograph aesthetically unacceptable portions of slabs as directed by Architect.

- B. Varieties and Sources: Subject to compliance with requirements, provide stone of varieties and from sources complying with Section 044200 "Exterior Stone Cladding."

## 2.2 GRANITE <Insert drawing designation>

- A. Material Standard: Comply with ASTM C615/C615M.
- B. Regional Materials: Stone to be fabricated within **100 miles (160 km)** of Project site from materials that have been extracted, harvested, or recovered within **100 miles (160 km)** of Project site.
- C. Indigenous Materials: Stone to be fabricated within **500 miles (800 km)** of Project site from materials that have been extracted, harvested, or recovered within **500 miles (800 km)** of Project site. If materials are transported by rail or water, the distance transported by rail or water to be multiplied by 0.25 to determine the distance to Project site.
- D. Regional Materials: Stone to be fabricated within **500 miles (800 km)** of Project site from materials that have been extracted, harvested, or recovered within **500 miles (800 km)** of Project site. If materials are transported by rail or water, the distance transported by rail or water to be multiplied by 0.25 to determine the distance to Project site.
- E. Description: Uniform, [**fine**] [**medium**]-grained, [**white**] [**pink**] [**gray**] [**black**] <Insert color> stone [**without veining**].
- F. Varieties and Sources: Subject to compliance with requirements, [**provide the following**] [**provide one of the following**] [**available stone varieties that may be incorporated into the Work include, but are not limited to, the following**]:
1. <Insert, in separate subparagraphs, names of varieties and producers, distributors, or importers>.
- G. Cut: [**Vein**] [**Fleuri**].
- H. Cut stone from contiguous, matched slabs in which natural markings occur.
- I. Finish: [**Polished**] [**Honed**] [**Thermal**] [**As indicated**] [**Match Architect's sample**] <Insert finish>.
- J. Match Architect's samples for color, finish, and other stone characteristics relating to aesthetic effects.

## 2.3 MARBLE <Insert drawing designation>

- A. Material Standard: Comply with ASTM C503/C503M [**Classification I Calcite**] [**Classification II Dolomite**] [**Group A**] [**Group B**] [**Group C**] [**Group D**].
1. Stone Abrasion Resistance: Minimum value of [**10**] <Insert value>, based on testing in accordance with ASTM C241/C241M or ASTM C1353/C1353M.

- B. Regional Materials: Stone to be fabricated within **100 miles (160 km)** of Project site from materials that have been extracted, harvested, or recovered within **100 miles (160 km)** of Project site.
- C. Indigenous Materials: Stone to be fabricated within **500 miles (800 km)** of Project site from materials that have been extracted, harvested, or recovered within **500 miles (800 km)** of Project site. If materials are transported by rail or water, the distance transported by rail or water to be multiplied by 0.25 to determine the distance to Project site.
- D. Regional Materials: Stone to be fabricated within **500 miles (800 km)** of Project site from materials that have been extracted, harvested, or recovered within **500 miles (800 km)** of Project site. If materials are transported by rail or water, the distance transported by rail or water to be multiplied by 0.25 to determine the distance to Project site.
- E. Description: Uniform, fine- to medium-grained, [**white**] **<Insert color>** stone with only slight veining.
- F. Varieties and Sources: Subject to compliance with requirements, [**provide the following**] [**provide one of the following**] [**available stone varieties that may be incorporated into the Work include, but are not limited to, the following**]:
  - 1. **<Insert, in separate subparagraphs, names of varieties and producers, distributors, or importers>**.
- G. Cut: [**Vein**] [**Fleuri**].
- H. Cut stone from contiguous, matched slabs in which natural markings occur.
- I. Finish: [**Polished**] [**Honed**] [**As indicated**] [**Match Architect's sample**] **<Insert finish>**.
- J. Match Architect's samples for color, finish, and other stone characteristics relating to aesthetic effects.

#### 2.4 SERPENTINE **<Insert drawing designation>**

- A. Material Standard: Comply with ASTM C1526 [**Classification I Exterior**] [**Classification II Interior**].
  - 1. Stone Abrasion Resistance: Minimum value of [**10**] **<Insert value>**, based on testing in accordance with ASTM C241/C241M or ASTM C1353/C1353M.
- B. Regional Materials: Stone to be fabricated within **100 miles (160 km)** of Project site from materials that have been extracted, harvested, or recovered within **100 miles (160 km)** of Project site.
- C. Indigenous Materials: Stone to be fabricated within **500 miles (800 km)** of Project site from materials that have been extracted, harvested, or recovered within **500 miles (800 km)** of Project site. If materials are transported by rail or water, the distance transported by rail or water to be multiplied by 0.25 to determine the distance to Project site.

- D. Regional Materials: Stone to be fabricated within **500 miles (800 km)** of Project site from materials that have been extracted, harvested, or recovered within **500 miles (800 km)** of Project site. If materials are transported by rail or water, the distance transported by rail or water to be multiplied by 0.25 to determine the distance to Project site.
- E. Varieties and Sources: Subject to compliance with requirements, **[provide the following] [provide one of the following] [available stone varieties that may be incorporated into the Work include, but are not limited to, the following]:**
  - 1. **<Insert, in separate subparagraphs, names of varieties and producers, distributors, or importers>.**
- F. Cut stone from contiguous, matched slabs in which natural markings occur.
- G. Finish: **[Polished] [Honed] [As indicated] [Match Architect's sample] <Insert finish>.**
- H. Match Architect's samples for color, finish, and other stone characteristics relating to aesthetic effects.

## 2.5 SLATE **<Insert drawing designation>**

- A. Material Standard: Comply with ASTM C629/C629M **[Classification I Exterior] [, Classification II Interior]**.
  - 1. Stone Abrasion Resistance: Minimum value of **[8] <Insert value>**, based on testing in accordance with ASTM C241/C241M or ASTM C1353/C1353M.
- B. Regional Materials: Stone to be fabricated within **100 miles (160 km)** of Project site from materials that have been extracted, harvested, or recovered within **100 miles (160 km)** of Project site.
- C. Indigenous Materials: Stone to be fabricated within **500 miles (800 km)** of Project site from materials that have been extracted, harvested, or recovered within **500 miles (800 km)** of Project site. If materials are transported by rail or water, the distance transported by rail or water to be multiplied by 0.25 to determine the distance to Project site.
- D. Regional Materials: Stone to be fabricated within **500 miles (800 km)** of Project site from materials that have been extracted, harvested, or recovered within **500 miles (800 km)** of Project site. If materials are transported by rail or water, the distance transported by rail or water to be multiplied by 0.25 to determine the distance to Project site.
- E. Description: **[Black] [Blue-black] [Gray] [Blue-gray] [Green] [Purple] [Mottled purple and green] [Red]** slate with a fine, even grain **[and unfading color,]** from clear, sound stock.
- F. Varieties and Sources: Subject to compliance with requirements, **[provide the following] [provide one of the following] [available stone varieties that may be incorporated into the Work include, but are not limited to, the following]:**

1. **<Insert, in separate subparagraphs, names of varieties and producers, distributors, or importers>.**
  - G. Finish: [**Honed**] [**Sand rubbed**] [**Natural cleft**] [**As indicated**] [**Match Architect's sample**] **<Insert finish>.**
  - H. Match Architect's samples for color, finish, and other stone characteristics relating to aesthetic effects.
- 2.6 OTHER STONE **<Insert drawing designation>**
- A. Material Standards:
    1. Maximum Absorption per ASTM C97/C97M: **<Insert value>.**
    2. Minimum Compressive Strength per ASTM C170/C170M: **<Insert value>.**
    3. Minimum Flexural Strength per ASTM C880/C880M: **<Insert value>.**
    4. Minimum Stone Abrasion Resistance per ASTM C241/C241M or ASTM C1353/C1353M: [**10**] **<Insert value>.**
  - B. Regional Materials: Stone to be fabricated within **100 miles (160 km)** of Project site from materials that have been extracted, harvested, or recovered within **100 miles (160 km)** of Project site.
  - C. Indigenous Materials: Stone to be fabricated within **500 miles (800 km)** of Project site from materials that have been extracted, harvested, or recovered within **500 miles (800 km)** of Project site. If materials are transported by rail or water, the distance transported by rail or water to be multiplied by 0.25 to determine the distance to Project site.
  - D. Regional Materials: Stone to be fabricated within **500 miles (800 km)** of Project site from materials that have been extracted, harvested, or recovered within **500 miles (800 km)** of Project site. If materials are transported by rail or water, the distance transported by rail or water to be multiplied by 0.25 to determine the distance to Project site.
  - E. Varieties and Sources: Subject to compliance with requirements, [**provide the following**] [**provide one of the following**] [**available stone varieties that may be incorporated into the Work include, but are not limited to, the following**]:
    1. **<Insert, in separate subparagraphs, names of varieties and producers, distributors, or importers>.**
  - F. Finish: [**Polished**] [**Honed**] [**Sand rubbed**] [**Natural cleft**] [**As indicated**] [**Match Architect's sample**] **<Insert finish>.**
  - G. Match Architect's samples for color, finish, and other stone characteristics relating to aesthetic effects.

## 2.7 ADHESIVES, GROUT, SEALANTS, AND STONE ACCESSORIES

- A. General: Use only adhesives formulated for stone and ceramic tile and that are recommended by their manufacturer for the application indicated.
1. Adhesives to have a VOC content of [65] <Insert value> g/L or less.
  2. Adhesive to comply with testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
  3. Adhesive to comply with testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers." Formaldehyde emissions to not exceed 9 mcg/cu. m or 7 ppb, whichever is less.
  4. Adhesive to comply with testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
  5. Adhesive to comply with testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers." The building concentration of formaldehyde will not exceed half of the indoor recommended exposure limit, or 33 mcg/cu. m, and that of acetaldehyde will not exceed 9 mcg/cu. m.
- B. Water-Cleanable Epoxy Adhesive: ANSI A118.3.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Atlas Minerals & Chemicals, Inc.
    - b. Bostik, Inc.
    - c. C-Cure.
    - d. Custom Building Products.
    - e. H. B. Fuller Construction Products Inc./TEC.
    - f. Jamo Inc.
    - g. Laticrete International, Inc.
    - h. MAPEI Corporation.
    - i. Merkrete; a Parex USA, Inc. brand.
    - j. Sakrete; CRH Americas, Oldcastle APG.
    - k. Southern Grouts & Mortars, Inc.
    - l. Summitville Tiles, Inc.
    - m. <Insert manufacturer's name>.
- C. Water-Cleanable Epoxy Grout: ANSI A118.3, chemical-resistant, water-cleanable, tile-setting and -grouting epoxy.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Atlas Minerals & Chemicals, Inc.
    - b. Boiardi Products Corporation; a QEP company.
    - c. Bostik, Inc.



- d. C-Cure.
  - e. Custom Building Products.
  - f. H. B. Fuller Construction Products Inc./TEC.
  - g. Jamo Inc.
  - h. Laticrete International, Inc.
  - i. MAPEI Corporation.
  - j. Merkrete; a Parex USA, Inc. brand.
  - k. Sakrete; CRH Americas, Oldcastle APG.
  - l. Sauereisen.
  - m. Southern Grouts & Mortars, Inc.
  - n. Summitville Tiles, Inc.
  - o. **<Insert manufacturer's name>**.
- D. Stone Adhesive: Two-part epoxy adhesive, formulated specifically for bonding stone to stone, with an initial set time of not more than two hours at **70 deg F (21 deg C)**.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Akemi North America.
    - b. Axson North America, Inc.
    - c. Bonstone Materials Corporation.
    - d. **<Insert manufacturer's name>**.
  2. Color: **[Clear] [Match stone]**.
- E. Stone Adhesive: Two-part polyester adhesive, formulated specifically for bonding stone to stone, with an initial set time of not more than two hours at **70 deg F (21 deg C)**.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Akemi North America.
    - b. Axson North America, Inc.
    - c. Bonstone Materials Corporation.
    - d. **<Insert manufacturer's name>**.
  2. Color: **[Clear] [Match stone]**.
- F. Sealant for Countertops: Manufacturer's standard sealant that complies with applicable requirements in Section 079200 "Joint Sealants" and that will not stain the stone it is applied to.
1. Mildew-Resistant Joint Sealant: **[Mildew resistant, single component, nonsag, neutral curing, silicone] [Single component, nonsag, mildew resistant, acid curing, silicone] <Insert joint sealant>**.
  2. Joint Sealant: **[Latex] [Single component, nonsag, neutral curing, silicone; Class 25] <Insert joint sealant>**.
  3. Color: **[Clear] [As selected by Architect from manufacturer's full range]**.

- G. Stone Joint Splines: Stainless steel or brass washers approximately **1 inch (25 mm)** in diameter and of thickness to fit snugly in saw-cut kerf in edge of stone units.
- H. Particleboard Subtops: ANSI A208.1, [**Grade M-2**] [**Grade M-2-Exterior Glue**].
1. Particleboard to be made without urea formaldehyde.
  2. Particleboard to have formaldehyde emission rates not greater than 0.09 ppm when tested in accordance with ASTM D 6007 or ASTM E 1333.
  3. Particleboard to be made without urea formaldehyde.
- I. Plywood Subtops: Exterior softwood plywood complying with DOC PS 1, Grade C-C Plugged, touch sanded.
- J. Stone Cleaner: Specifically formulated for stone types, finishes, and applications indicated, as recommended by stone producer [**and, if a sealer is specified, by sealer manufacturer**]. Do not use cleaning compounds containing acids, caustics, harsh fillers, or abrasives.
- K. Stone Sealer: Colorless, stain-resistant sealer that does not affect color or physical properties of stone surfaces, as recommended by stone producer for application indicated.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Bostik, Inc.
    - b. Custom Building Products.
    - c. Hillyard, Inc.
    - d. HMK Stone Care System; ACI International.
    - e. Miracle Sealants Company.
    - f. Stone Care International Inc.
    - g. Summitville Tiles, Inc.
    - h. **<Insert manufacturer's name>**.
- L. Bracket Supports: ASTM A36 hot-rolled, carbon-formed steel brackets bent or welded to shapes described; ADA compliant.
1. Basis-of-Design Product: Subject to compliance with requirements, provide Centerline Brackets; Centerline Steel, LLC; [**Center Levered Bar Support**] [**Countertop Island Support Bracket**] [**Floating Wall Mount**] [**Forward L Granite Countertop Support Bracket**] [**Front Mounting Countertop Support**] [**Front Mounting Plus Countertop Support**] [**Hidden Countertop Support Bracket - Commercial**] [**Island Support System**] [**Spanning Support Bracket**] [**Standard Granite Countertop Support Bracket**] [**Standard Plus Countertop Support Bracket**] or comparable product by one of the following:
    - a. Federal Brace; Short Run Pro, LLC.
    - b. Rakks Shelving; Rangine Corporation.
    - c. **<Insert manufacturer's name>**.
  2. Shape:

- a. **1/2-inch- (13-mm-)** thick by **2-1/2-inch- (64-mm-)** wide, flat bar for knee-wall installation [**with 1/4-by-1-1/2-inch (6-by-38-mm) rear flange welded to end**] [**with 1/4-by-2-1/2 inch (64 mm) rear flange**].
  - b. **1/2-inch- (13-mm-)** thick by **2-1/2-inch- (64-mm-)** wide, flat bar for installing off base cabinet with **1/2-by-4-inch (13-by-102-mm)** welded end plate flange.
  - c. **3/8-inch- (10-mm-)** thick by **2-1/2-inch- (64-mm-)** wide, formed L-shape bar for island knee-wall installation on[ **with 1/4-inch- (6-mm-) thick, steel gusset welded at 35 degrees between vertical and horizontal legs**].
  - d. **1/2-inch- (13-mm-)** thick by **2-1/2-inch- (64-mm-)** wide, flat bar with **2-1/2-by-8-inch (64-by-203-mm)** vertical flange for floating countertop mounted to vertical stud within wall.
  - e. **1/2-inch- (13-mm-)** thick by **2-1/2-inch- (64-mm-)** wide, flat bar with two **2-1/2-by-4-inch (64-by-102-mm)** legs for double overhanging countertop installed on knee wall.
  - f. **1/4-inch- (6-mm-)** thick by **3-1/2-inch- (89-mm-)** wide, laser cut plate for installation on base cabinet.
  - g. **1/2-inch- (13-mm-)** thick by **2-1/2-inch- (64-mm-)** wide, flat bar for double overhanging countertop installed on base cabinets.
  - h. Three pieces of **1/2-inch- (13-mm-)** thick by **2-1/2-inch- (64-mm-)** wide, flat bar for perpendicular countertop overhang installed on base cabinets.
  - i. Length: [**As indicated on Drawings**] **<Insert dimension>**.
  - j. Edge: Beveled front edge free of sharp corners.
3. Fasteners: No. 12 wood screws for countersunk holes.
  4. Finish: Textured, polyester TGIC powder coat suitable for interior or exterior applications.
    - a. Color: [**Black**] [**White**] [**Match Architect's sample**] [**As selected from manufacturer's full range**] **<Insert color>**.

## 2.8 STONE FABRICATION, GENERAL

- A. Select stone for intended use to prevent fabricated units from containing cracks, seams, and starts that may impair structural integrity, function, or appearance.
  1. Repairs that are characteristic of the varieties specified are acceptable provided they do not impair structural integrity or function and are not aesthetically unpleasing, as judged by Architect.
- B. Grade and mark stone for final locations to produce assembled countertop units with an overall uniform appearance.
- C. Fabricate stone countertops in sizes and shapes required to comply with requirements indicated.
  1. Clean sawed backs of stones to remove rust stains and iron particles.
  2. Dress joints straight and at right angle to face unless otherwise indicated.
  3. Cut and drill sinkages and holes in stone for anchors, supports, and attachments.
  4. Provide openings, reveals, and similar features as needed to accommodate adjacent work.

5. Fabricate molded edges with machines having abrasive shaping wheels made to reverse contour of edge profile to produce uniform shape throughout entire length of edge and with precisely formed arris slightly eased to prevent snipping, and matched at joints between units. Form corners of molded edges as indicated with outside corners slightly eased unless otherwise indicated.
  6. Finish exposed faces of stone to comply with requirements indicated for finish of each stone type required and to match approved Samples and mockups. Provide matching finish on exposed edges of countertops, splashes, and cutouts.
- D. Carefully inspect finished stone units at fabrication plant for compliance with requirements for appearance, material, and fabrication. Replace defective units.

## 2.9 STONE COUNTERTOPS

- A. General: Comply with recommendations in MIA's "Dimension Stone - Design Manual VII."
- B. Nominal Thickness: Provide thickness indicated, but not less than **[3/4 inch (20 mm)] [7/8 inch (22 mm)] [1-1/4 inches (32 mm)]**. Gage backs to provide units of identical thickness.
- C. Edge Detail: **[Straight, slightly eased at top] [3/8-inch (10-mm) bevel] [3/4-inch (20-mm) full bullnose] [1-1/4-inch (20-mm) full bullnose] [3/8-inch (10-mm) radius with 2-inch (50-mm) apron] [1-1/2-inch (40-mm) laminated bullnose] [As indicated]**.
- D. Splashes: Provide **3/4-inch- (20-mm-)** thick **[backsplashes] [and] [end splashes]** unless otherwise indicated.
1. Height: **[4 inches (100 mm)] [As indicated] <Insert dimension>**.
  2. Top-Edge Detail: **[Straight, slightly eased at corner] [3/8-inch (10-mm) bevel] [3/4-inch (20-mm) radius] [3/8-inch (10-mm) radius] [As indicated]**.
- E. Joints: Fabricate countertops without joints.
- F. Joints: Fabricate countertops in sections for joining in field **[with joints at locations indicated]**.
1. Joint Locations: Not within **18 inches (450 mm)** of a sink or cooktop and not where a countertop section less than **36 inches (900 mm)** long may result, unless unavoidable.
  2. Joint Type: Bonded, **1/32 inch (0.8 mm)** or less in width.
  3. Joint Type: Grouted, **1/16 inch (1.5 mm)** in width.
  4. Joint Type: Sealant-Filled, **1/16 inch (1.5 mm)** in width.
  5. Splined Joints: Accurately cut kerfs in edges at joints for insertion of metal splines to maintain alignment of surfaces at joints **[where indicated]**. Make width of cuts slightly more than thickness of splines to provide snug fit. **[Provide at least three splines in each joint.]**
- G. Cutouts and Holes:
1. Undercounter Fixtures: Make cutouts for undercounter fixtures in shop using template or pattern furnished by fixture manufacturer. Form cutouts to smooth, even curves.

- a. Provide vertical edges, slightly eased at juncture of cutout edges with top and bottom surfaces of countertop and projecting **3/16 inch (5 mm)** into fixture opening.
  - b. Provide vertical edges, rounded to **3/8-inch (10-mm)** radius at juncture of cutout edges with top surface of countertop, slightly eased at bottom, and projecting **3/16 inch (5 mm)** into fixture opening.
  - c. Provide **3/4-inch (20-mm)** full bullnose edges projecting **3/8 inch (10 mm)** into fixture opening.
2. Counter-Mounted Fixtures: Prepare countertops in shop for field cutting openings for counter-mounted fixtures. Mark tops for cutouts and drill holes at corners of cutout locations. Make corner holes of largest radius practical.
  3. Fittings: Drill countertops in shop for plumbing fittings, undercounter soap dispensers, and similar items.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates to receive stone countertops and conditions under which stone countertops will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of stone countertops.
- B. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of stone countertops.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Advise installers of other work about specific requirements for placement of inserts and similar items to be used by stone countertop Installer for anchoring stone countertops. Furnish installers of other work with Drawings or templates showing locations of these items.
- B. Before installing stone countertops, clean dirty or stained stone surfaces by removing soil, stains, and foreign materials. Use only mild cleaning compounds that contain no caustic or harsh materials or abrasives and rinse with clear water. Allow stone to dry before installing.

### 3.3 CONSTRUCTION TOLERANCES

- A. Variation from Level: Do not exceed **1/8 inch in 96 inches (3 mm in 2400 mm)**, **1/4 inch (6 mm)** maximum.
- B. Variation in Joint Width: Do not vary joint thickness more than one-fourth of nominal joint width.

- C. Variation in Plane at Joints (Lipping): Do not exceed **1/64-inch (0.4-mm)** difference between planes of adjacent units.
- D. Variation in Line of Edge at Joints (Lipping): Do not exceed **1/64-inch (0.4-mm)** difference between edges of adjacent units, where edge line continues across joint.

### 3.4 INSTALLATION OF COUNTERTOPS

- A. Fasten subtops to cabinets by screwing through subtops into cornerblocks of base cabinets. Shim as needed to align subtops in a level plane.
- B. Install countertops over subtops with full spread of water-cleanable epoxy adhesive.
- C. Install countertops by adhering to supports with water-cleanable epoxy adhesive.
- D. Do not cut stone in field unless otherwise indicated. If stone countertops or splashes require additional fabrication not specified to be performed at Project site, return to fabrication shop for adjustment.
- E. Do necessary field cutting as stone is set. Use power saws with diamond blades to cut stone. Cut lines straight, true, and at right angles to finished surfaces unless beveling is required for clearance. Ease edges slightly to prevent snipping.
- F. Set stone to comply with requirements indicated. Shim and adjust stone to locations indicated, with uniform joints of widths indicated and with edges and faces aligned in accordance with established relationships and indicated tolerances. **[Install anchors and other attachments indicated or necessary to secure stone countertops in place.]**
- G. Bond joints with stone adhesive and draw tight as countertops are set. Mask areas of countertops adjacent to joints to prevent adhesive smears.
  - 1. Install metal splines in kerfs in stone edges at joints **[where indicated]**. Fill kerfs with stone adhesive before inserting splines and remove excess immediately after adjoining units are drawn into position.
  - 2. Clamp units to temporary bracing, supports, or each other to ensure that countertops are properly aligned and joints are of specified width.
- H. Space joints with **1/16-inch (1.5-mm)** gap for filling with **[grout] [sealant]**. Use temporary shims to ensure uniform spacing.
  - 1. Install metal splines in kerfs in stone edges at joints **[where indicated]**. Fill kerfs with **[setting adhesive] [sealant]** before inserting splines and remove excess immediately after adjoining units are drawn into position.
  - 2. Clamp units to temporary bracing, supports, or each other to ensure that countertops are properly aligned and joints are of specified width.
- I. Complete cutouts not finished in shop. Mask areas of countertops adjacent to cutouts to prevent damage while cutting. Use power saws with diamond blades to cut stone. Make cutouts to

accurately fit items to be installed, and at right angles to finished surfaces unless beveling is required for clearance. Ease edges slightly to prevent snipping.

- J. Install backsplashes and end splashes by adhering to countertops with stone adhesive. Mask areas of countertops and splashes adjacent to joints to prevent adhesive smears. Leave **1/16-inch (1.5-mm)** gap between splashes and wall for filling with sealant. Use temporary shims to ensure uniform spacing.
- K. Install backsplashes and end splashes by adhering to wall with water-cleanable epoxy adhesive. Leave **1/16-inch (1.5-mm)** gap between countertop and splashes for filling with sealant. Use temporary shims to ensure uniform spacing.
- L. Grout joints to comply with ANSI A108.10. Remove temporary shims before grouting. Tool grout uniformly and smoothly with plastic tool.
- M. Apply sealant to **[joints] [and] [gaps specified for filling with sealant]**; comply with Section 079200 "Joint Sealants." Remove temporary shims before applying sealant.

### 3.5 ADJUSTING AND CLEANING

- A. In-Progress Cleaning: Clean countertops as work progresses. Remove adhesive, grout, mortar, and sealant smears immediately.
- B. Remove and replace stone countertops of the following description:
  - 1. Broken, chipped, stained, or otherwise damaged stone. Stone may be repaired if methods and results are approved by Architect.
  - 2. Defective countertops.
  - 3. Defective joints, including misaligned joints.
  - 4. Interior stone countertops and joints not matching approved Samples and mockups.
  - 5. Interior stone countertops not complying with other requirements indicated.
- C. Replace in a manner that results in stone countertops matching approved Samples and mockups, complying with other requirements, and showing no evidence of replacement.
- D. Clean stone countertops no fewer than six days after completion of **[sealant installation] [installation]**, using clean water and soft rags. Do not use wire brushes, acid-type cleaning agents, cleaning compounds with caustic or harsh fillers, or other materials or methods that may damage stone.
- E. Sealer Application: Apply stone sealer to comply with stone producer's and sealer manufacturer's written instructions.

END OF SECTION 123640