

**GUIDE NOTE:** This master specification section includes guide notes identified as “GUIDE NOTE” for information purposes and to assist the specification writer in making appropriate decisions. The GUIDE NOTE always immediately precedes the text to which it is referring. The section serves as a guideline only and should be edited with deletions and additions to meet specific project requirements.

**GUIDE NOTE:** This Section is written primarily as a Division 04 Masonry Section. However, if the materials are being used in a Landscaping application then it is recommended that the Section number and title be changed to 32 14 41 – Flagstone Paving or 32 14 42 – Cobblestone Paving.

**GUIDE NOTE:** This specification section follows the recommendations of the Construction Specifications Institute, Project Resource Manual including MasterFormat™, SectionFormat™, and PageFormat™. Optional text is indicated by brackets [ ]; delete optional text including brackets in the final copy of the specification. Delete the GUIDE NOTES in the final copy of the specification. Trade/brand names with appropriate product model numbers, styles and types are used in GUIDE NOTES and in the specification text Article or Paragraph titled ΔAcceptable Material@. This Section is written as an inch-pound document with Metric Measurement shown in parenthesis immediately following the inch-pound units.

## **PART 1 GENERAL**

### **1.01 SUMMARY OF WORK**

- A. This Section specifies dimensioned quarried stone veneer masonry, flagstone paving, cobblestone paving and accessories.

### **1.02 RELATED REQUIREMENTS**

**GUIDE NOTE:** Include in this Paragraph only those sections and documents that directly affect the work of this section. If a reader of this section could reasonably expect to find a product or component specified in this section, but it is actually specified elsewhere, then the related section number(s) should be listed in the Paragraph below. Do not include Division 00 Documents or Division 01 Sections since it is assumed that all technical sections are related to all project Division 00 Documents and Division 01 Sections to some degree. Refer to other documents with caution since referencing them may cause them to be considered a legal part of the Contract. Edit the following paragraphs to suit specific project conditions.

- A. Section 04 05 00 – Common Work Results for Masonry.
- B. Section 04 05 13 – Masonry Mortaring.
- C. Section 04 05 19 – Masonry Anchorage and Reinforcing.
- D. Section 31 32 19 – Geotextile Separation Layer.
- E. Section 32 1123 – Aggregate Base Course.

**GUIDE NOTE:** Only include defined terms for items that appear in the final specification section and which are not commonly known terms in the industry or are open to interpretation.

### **1.03 DEFINITIONS**

- A. Argillite: Fine-grained sedimentary rock composed predominantly of indurated clay particles derived from lithified muds and oozes. A highly compacted sedimentary or slightly metamorphic rock consisting primarily of particles of clay or silt that it is not fissile.
- B. Quartzite: Hard metamorphic rock which was originally sandstone but which has been converted into quartzite through heating and pressure usually related to tectonic compression within orogenic belts.
- C. Slate: a fine-grained, foliated, homogeneous metamorphic rock derived from an original shale type sedimentary rock composed of clay or volcanic ash through low grade regional metamorphism.

**GUIDE NOTE:** In the following Article, include only those reference standards which appear in the finished version of the project specification.

#### 1.04 REFERENCE STANDARDS

- A. ASTM International (ASTM).
  - 1. ASTM C97/C97M – 2009, Standard Test Methods for Absorption and Bulk Specific Gravity of Dimension Stone.
  - 2. ASTM C170/C170M – 2009, Standard Test Method for Compressive Strength of Dimension Stone.
  - 3. ASTM C207 - 2006, Standard Specification for Hydrated Lime for Masonry Purposes.
  - 4. ASTM C780 – 2009, Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry.
  - 5. ASTM C847-1995(R2000), Specification for Metal Lath
  - 6. ASTM C933-1996a(2001), Standard Specification for Welded Wire Lath.
  - 7. ASTM A951/A951M - 2006 Standard Specification for Steel Wire for Masonry Joint Reinforcement.
  - 7. ASTM D422 - 1963(2007), Standard Test Method for Particle-Size Analysis of Soils.
- B. US Green Building Council (CaGBC).
  - .1 LEED® NC Version 2.2-2004, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Package For New Construction and Major Renovations.
- C. US Army Corps of Engineers (USACE).
  - 1. USACE – CRD-C 144-[1992], Standard Test Method for Resistance of Rock to Freezing and Thawing.

#### 1.05 ADMINISTRATIVE REQUIREMENTS

- A. Co-ordination: Co-ordinate work of this Section with work of other trades for proper time and sequence to avoid construction delays.
- B. Pre-installation Meeting: Convene pre-installation meeting after Award of Contract and one week prior to commencing work of this Section to verify project requirements, substrate conditions and coordination with other building sub-trades, and to review manufacturer's written installation instructions.
  - 1. Comply with Section 01 31 19 - Project Meetings and co-ordinate with other similar pre-installation meetings.
  - 2. Notify attendees 2 weeks prior to meeting and ensure meeting attendees include as minimum:
    - a. Owner;
    - b. Contractor;
    - c. Prime Consultant;
    - d. Masonry Sub-contractor;

**GUIDE NOTE:** Include the following Paragraph only if material is being used in a landscaping application.

- e. Landscaping Sub-contractor.
- 3. Ensure meeting agenda includes review of methods and procedures related to installation of work of this Section including co-ordination with related work.
- 4. Record meeting proceedings including corrective measures and other actions required to ensure successful completion of work and distribute to each attendee within 1 week of meeting.

**GUIDE NOTE:** Article below includes submittal of relevant data to be furnished by Contractor.

#### 1.06 ACTION AND INFORMATIONAL SUBMITTALS

- A. Make submittals in accordance with Contract Conditions and Section 01 33 00 - Submittal Procedures
- B. Product Data: Submit product data including manufacturer's literature for stone material and components of indicating compliance with specified requirements and material characteristics.
- C. Shop Drawings: Submit drawings stamped and signed by Professional Engineer registered or licensed in

State of [\_\_\_\_], USA. Include on shop drawings:

1. Full bed ledgerstone wall reinforcement and anchoring details.
2. Include design calculations for stone supports.

**GUIDE NOTE:** Include the following Paragraph if project is located in seismically active zone.

3. Show size and location of seismic restraints. Include seismic design calculations.

D. Samples:

1. Submit two 12 x 12 inches (300 x 300 mm) samples constructed from multiple pieces of masonry stone mounted on plywood base.

**GUIDE NOTE:** Include the following Paragraph only if material is being used in a landscaping application.

2. Submit two, 12 x 12 inches (300 x 300 mm) samples constructed from multiple pieces of flag stone mounted on plywood base.
  3. Submit 1 lb (500 ml) sample of masonry mortar.
- E. Test and Evaluation Reports:
1. Submit test report for strength and color of mortar.
- F. Sustainable Design Submittals (LEED).
1. LEED Submittals: In accordance with Section [01 35 21 – LEED Requirements]
- G. Qualification Submittals:
1. Submit letter verifying installer's experience with work similar to work of this Section.

### 1.07 CLOSEOUT SUBMITTALS

**GUIDE NOTE:** Use the following Paragraph for larger projects only. Delete for small projects.

- A. Operation and Maintenance Data: Supply maintenance data for stone and mortar for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

**GUIDE NOTE:** If LEED is not a part of the project delete the following Paragraph in its entirety.

- B. Sustainable Design Closeout Documentation (LEED).
1. Provide calculations on end-of-project recycling rates, salvage rates, and landfill rates for work of this Section demonstrating percentage of construction wastes which were recycled.
  2. Submit verification from recycling facility showing receipt of materials.
- C. Record Documentation: In accordance with Section 01 78 00 - Closeout Submittals.
1. List materials used in [masonry] [landscaping] work.
  2. Warranty: Submit warranty documents specified.

### 1.08 QUALITY ASSURANCE

- A. Sustainability Standards Certification (LEED).
1. LEED NC Version 2.2 submittals: in accordance with Section 01 35 21 - LEED Requirements.

**GUIDE NOTE:** Consultant may want to construct a Mock-up to establish quality of work for the Project. The Mock-up can be used as a standard to which work on the Project can be compared. For smaller projects that do not have a separate Division 01 Section for quality assurance delete the reference to Section 01 43 00 – Quality Assurance.

- B. Mock-up: Construct mock-up where directed by Consultant [and in accordance with Section 01 43 00 - Quality Assurance].

**GUIDE NOTE:** Edit the following Paragraph to meet the project requirements. If mock-ups for more than one application of the materials is required repeat the Paragraph as necessary.

1. Construct 10 x 10 feet (3 x 3 m) mock-up of [masonry wall] [flagstone paving] [cobblestone

paving] using proposed procedures, materials and quality of work.

- a. Purpose: To judge quality of work and material application.
- b. Do not proceed with work prior to receipt of written acceptance of mock-up by Consultant.
- c. When accepted, mock-up will demonstrate minimum standard of quality required for work of this Section.
- d. Approved mock-up will remain part of finished work.

**GUIDE NOTE:** The following Article although not part of Quality Assurance, can be used to enhance the quality of materials by ensuring that they are delivered and handled properly at the work site.

## 1.09 DELIVERY STORAGE AND HANDLING

- A. Delivery and Acceptance Requirements:
  1. Deliver stone material in accordance with Section 01 61 00 - Common Product Requirements.
  2. Deliver mortar materials in manufacturer's original packaging with identification labels intact and in sizes to suit project.
- B. Storage and Handling Requirements: Store packaged materials off ground and protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
  1. Store stone materials on pallets until used.
- C. Packaging Waste Management:

**GUIDE NOTE:** For smaller projects that do not have a separate Section for waste management and disposal, delete the following paragraph.

1. Separate and recycle waste materials in accordance with Section 01 74 19 - Construction Waste Management And Disposal.
2. Remove from site and dispose of packaging materials at appropriate recycling facilities.
3. Collect and separate for disposal paper and plastic material in appropriate on-site storage containers for recycling in accordance with Waste Management Plan.
4. Return pallets to stone quarry for recycling.

## PART 2 PRODUCTS

### 2.01 MANUFACTURER

- A. Manufacturer: K2 Stone Montana LLC, 3154 Hwy 2 East, Kalispell, MT 59901, Phone:(406) 755-7714 or FAX: (406) 752-0368,, URL: [www.K2Stone.ca](http://www.K2Stone.ca) .

### 2.02 DESCRIPTION

**GUIDE NOTE:** Retain one only of the following three paragraphs to suit project requirements. The argillite and argillite/quartzite rocks come as blends of color. It is difficult to predict exactly what colors will be included in the rock. However, good communication with the stone manufacturer and quarry may be able to assist in having stone delivered which predominantly leans towards a particular blend of color.

- A. Argillite: Fine-grained sedimentary, precambrian metasedimentary rock, indurated with clay particles and colored blend of chocolate brown, dark grey, and pale orange.
  1. Density: [166 lbs/ft<sup>3</sup> (2654 kg/m<sup>3</sup>)].
  2. Hardness: [7] Mohs minimum.
  3. Average Moisture Absorption: To ASTM C970, [0.36] %.
  4. Freeze-Thaw: To USACE – CRD-C 144, [0.01] %.
  5. Compressive Strength: To ASTM C170/C170M, [21,000 psi (146.5 MPa)].
- B. Argillite/quartzite composite: Fine-grained, hard metamorphic, precambrian metasedimentary silica rock colored blend of gold, tan, earth toned, dark red, brown, grey, and copper.
  1. Density: [165 lbs/ft<sup>3</sup> (2639 kg/m<sup>3</sup>)].
  2. Hardness: [7] Mohs minimum.

3. Average Moisture Absorption: To ASTM C97, [0.40] %.
  4. Freeze-Thaw: To USACE – CRD-C 144, [0.03] %.
  5. Compressive Strength: To ASTM C170/C170M, [20,500 psi (141.2 MPa)].
- C. Slate: Fine-grained, foliated, homogeneous, metamorphic, colored dense blue-grey with green, brown and gold highlights and liberally veined with quartz.
1. Density: [169 lbs/ft<sup>3</sup> (2707 kg/m<sup>3</sup>)].
  2. Hardness: [7] Mohs minimum.
  3. Average Moisture Absorption: To ASTM C97, [0.1] %.
  4. Freeze-Thaw: To USACE – CRD-C 144.
  5. Compressive Strength: To ASTM C170/C170M, [17,900 psi (124 MPa)].

### 2.03 DESIGN CRITERIA

- A. General: Design, fabricate and install stonework to withstand normal loads from wind, gravity, movement of building structure, and thermally induced movement, as well as to resist deterioration under conditions of normal use including exposure to weather.
- B. Engineering Calculations: Base calculations on design loads, material properties, and applicable safety factors. Include as part of calculation information as follows:
1. Stone loads and allowable loads;
  2. Stone thicknesses;
  3. Support and anchorage loads, stresses, safety factors, design loads, and allowable loads;
  4. Support and anchorage sizes;
- C. Control of Corrosion: Prevent galvanic and other forms of corrosion by insulating metals and other materials from direct contact with non-compatible materials, or by suitable coating.

GUIDE NOTES: Include the following Paragraph if project is located in a seismically active zone.

- D. Seismic Anchorage and Restraint: Design masonry anchorage and seismic restraints to meet project location and usage requirements.
- E. Ensure design calculations including seismic are made by Professional Engineer licensed to practice in State of [\_\_\_\_], USA.

GUIDE NOTE: Use the following Article ONLY when stone is used for flagstone paving.

### 2.04 FLAGSTONE

- A. Select Flagstone: [Irregular] [Random rectangular] shape, 3/8 to 5 inches (9.5 to 127 mm) thick with [split] [sawn] [planer] finish face top, [sawn] [split] bottom and [sawn] [split] edges.
1. Area per flagstone: [2] [3] ft<sup>2</sup> ([0.18] [0.28] m<sup>2</sup>) minimum.
  2. Acceptable material: K2 Stone Inc., Stand-up [Autumn Flame] [Ocean Pearl] (Select) Flagstone.
- B. Patio Flagstone: [Irregular] [Random rectangular] shape, 3/8 to 5 inches (9.5 to 127 mm) thick with [split] [sawn] [planer] finish face top, [sawn] [split] bottom and [sawn] [split] edges.
1. Area per flagstone: 1 to 4 sq ft (0.3 m<sup>2</sup> to 1.2 m<sup>2</sup>).
  2. Acceptable material: K2 Stone Inc., [Lay-down] [Autumn Flame] [Ocean Pearl] (Patio) Flagstone.

GUIDE NOTE: Use the following Article ONLY when stone is used for cobble paving.

### 2.05 COBBLES

- A. Full Bed Cobbles: Rectangular, tumbled, [4 x 8 inches (100 x 200 mm)] [6 x 8 inches (150 x 200 mm)] [8 x 8 inches (200 x 200 mm)] x 2.25 to 2.75 inches (58 to 70 mm) thick.
1. Acceptable material: K2 Stone Inc., Full Bed Cobbles.

- B. Thin Veneer Cobbles: Rectangular, tumbled, [4 x 8 inches (100 x 200 mm)] [6 x 8 inches (150 x 200 mm)] [8 x 8 inches (200 x 200 mm)] x 1 to 1.25 inches (25 to 32 mm) thick. .
  - 1. Acceptable material: K2 Stone Inc., Thin Veneer Cobbles.

GUIDE NOTE: Use the following Article ONLY when stone is used for ledgerstone veneer masonry applications.

#### **2.06 VENEER MASONRY TYPE 1**

- A. Ledgerstone: Flat edge grain, 3 to 6 inches (75 x 150 mm), cut back 0.75 to 1.25 inches (19 to 32 mm) thick.

GUIDE NOTE: Autumn Flame and Autumn Gold are largely a ledgerstone although there is a mix of face and edge grain. They are laid like a ledgerstone. Elk Ridge is also a mix of both. Grain is less obvious than in slate products.

- B. Acceptable Material: K2 Stone Inc., Thinstone Ledgerstone Veneer Flats, Type [Natural] [Ocean Mist] [Black Pearl] [Autumn Gold] [Autumn Flame].[Elk Ridge].

GUIDE NOTE: Use the following Article ONLY when stone is used for fieldstone veneer masonry applications.

#### **2.07 VENEER MASONRY TYPE 2**

- A. Fieldstone: Flat face grain, 6 x 6 inches (150 x 150 mm), cut back 0.75 to 1.25 inches (19 to 32 mm) thick.
- B. Acceptable Material: K2 Stone Inc., Thinstone Ledgerstone Veneer Flats, Type [Arbutus] [Tofino Sky] [Carmanah Cobbles] [Autumn Gold] [Autumn Flame].[Elk Ridge].

GUIDE NOTE: Use the following Article ONLY when stone is used for ashlar masonry applications.

#### **2.08 ASHLAR MASONRY**

- A. Cut top and bottom, random lengths maximum 24 inches (610 mm), 0.75 to 1.25 inches (19 to 32 mm) thick and [2] [4] [6] [8] inches ([50] [100] [150] [200] mm) high.
- B. Acceptable Material: K2 Stone Inc., Thinstone Pacific Ashlar Flats.

#### **2.09 ACCESSORIES**

- A. Wall Cap: To match stone wall material, 1.5 to 2.5 inches (38 to 63 mm) thick with width and length to suit project requirements and as indicated.
  - 1. Acceptable Material: K2 Stone Inc., Wall Cap.
- B. Corner Units: To match wall materials and as indicated.
  - 1. Acceptable Material: K2 Stone Inc., Thinstone Veneer Corner.

GUIDE NOTE: For small projects delete the reference to Section 04 05 13 – Masonry Mortaring.

- C. Mortar: To ASTM C270, Type S with acrylic bonding agent [in accordance with Section 04 05 13 – Masonry Mortaring].

GUIDE NOTE: For small projects delete the reference to Section 04 05 19 – Masonry Anchors.

- D. Masonry Anchors, Cramps and Dowels: [Yellow brass] [Commercial bronze] [Stainless steel, Type [304] [316] ] [in accordance with Section 04 05 19 – Masonry Anchors].
- E. Wall Ties: To [ASTM A951/A951M], [steel wire] [corrugated strap] type, [hot dip galvanized] [stainless] steel.
- F. Fasteners: [Hot dip galvanized] [Stainless] steel.
- G. Metal Lath: 2.5 lbs (1.13 kg) galvanized steel with rust inhibiting coating to ASTM [C847] [C933].
- H. Flashing Materials:

**GUIDE NOTE:** The following Paragraphs indicate several types of through-wall or drip flashing. Select type on basis of intended function and to meet project requirements.

1. Flexible Flashing: air barrier sheet membrane, in accordance with Section [07 27 00 - Air Barriers.
  2. Flexible Flashing: Sheet [polyvinyl chloride] [polyethylene] [0.01] [0.02] inches ([0.25] [0.5] mm) thick.
  3. Sheet Metal: [Galvanized steel] [Stainless steel] in accordance with Section 07 62 00 – Sheet Metal Flashing and Trim.
- I. Joint and Bedding Sand: To ASTM A951/A951M, hard, durable, angular particles, free from clay lumps, cementation, organic material, frozen material and other deleterious materials.
  - J. Geotextile Filter: In accordance with Section 31 32 19 – Geotextile Separation Layer.
  - K. Granular Base: In accordance with Section 32 11 23 – Aggregate Base Courses.

### **PART 3 EXECUTION**

#### **3.01 INSTALLERS**

- A. Use only installers with 2 years minimum experience in work similar to work of this Section.

#### **3.02 EXAMINATION**

- A. Verification of Conditions: Verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for stone installation in accordance with stone suppliers written instructions.
  1. Visually inspect substrate in presence of Consultant.
  2. Inform Consultant of unacceptable conditions immediately upon discovery.
  3. Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.

#### **3.03 PREPARATION FOR FLAGSTONE AND COBBLE INSTALLATION**

- A. Ensure that subgrade preparation conforms to levels and compaction required to allow for installation of granular base.
- B. Install geotextile separation layer as indicated.
- C. Granular Base: Spread and compact crushed stone or gravel base in uniform layers not exceeding 4 inches (100 mm) compacted thickness.
  1. Shape and roll alternately to obtain smooth, even and uniformly compacted granular base. Ensure conformity of grades with finish surface.
  2. Apply water as necessary during compaction to obtain specified density. If granular base is excessively moist, remove it and install more granular material to rid it of moisture content.
  3. In areas not accessible to rolling equipment, compact to specified density with approved mechanical tampers.
  4. Ensure top of granular base does not exceed plus or minus 0.4 inches (10 mm) over 10 feet (3 m) straightedge.
- D. Bedding Sand: Place and spread bedding sand to 1 inch (25 mm) maximum compacted thickness.
  1. Use material other than bedding sand to compensate for depressions that exceed specified tolerances in surface of base.

#### **3.04 FLAGSTONE INSTALLATION**

- A. Install flagstone units with butt, 2 inches (50 mm) maximum joints.

- B. Fill joint spaces to full depth by sweeping in sand.
- C. Sweep surface course clean.

### 3.05 COBBLE INSTALLATION

- A. Install cobbles with butt, 0.125 to 0.25 inch (3 to 6 mm) joints.
- B. Fill joint spaces to within 0.125 inches (3 mm) from top surface of cobbles by sweeping in sand.
- C. Sweep surface course clean.

**GUIDE NOTE:** Use the following Article for installation of veneer masonry (ledgestone or fieldstone) for the construction of exterior self-supporting walls in a landscaping application.

### 3.06 PREPARATION FOR VENEER MASONRY INSTALLATION

**GUIDE NOTE:** K2 Stone publishes an Application Guide which includes recommendations for preparation of substrates required before installation of stone veneer.

- A. Exterior Framed Wall: Apply exterior sheathing and metal lath in accordance with stone manufacturer's written instructions.
- B. Interior Framed Wall: Apply wallboard and metal lath in accordance with stone manufacturer's written instructions.
- C. Existing Concrete Masonry Wall: Clean substrate in accordance with stone manufacturer's written instructions.
- D. New Concrete Masonry Wall: Ensure new substrate is clean and free of deleterious materials in accordance with stone manufacturer's written instructions.
- E. Insulated Concrete Forms: Apply vapour barrier and metal lath in accordance with stone manufacturer's written instructions.

### 3.07 VENEER MASONRY INSTALLATION

- A. Mortar preparation:
  - 1. Thoroughly mix mortar ingredients in quantities needed for immediate use to [ASTM C270].
  - 2. Add mortar color and admixtures to requirements of mortar manufacturer's written instructions.
  - 3. Provide uniformity of mix and coloration.
  - 4. Take representative samples for testing consistency of strength and color according to [ASTM C780].
  - 5. Use mortar within 2 hours after mixing at temperatures of [79] °F ([26] °C), or 2-1/2 hours at temperatures under [50] °F ([10] °C).

**GUIDE NOTE:** Delete the following Paragraph for small masonry projects.

- B. Do masonry work in accordance with Section 04 05 00 – Common Work Results for Masonry.

**GUIDE NOTE:** Use the following Paragraph for small masonry projects.

- C. Do masonry work in accordance with good trade practices acceptable to [Masonry Contractor's Association of America] [Masonry Institute of Washington] [Masonry and Ceramic Tile Institute of Oregon].
- D. Trowel apply 0.5 inches (13 mm) minimum thick mortar scratch coat to substrate.
  - .1 Ensure thickness of scratch coat is consistent over whole surface to receive veneer masonry.
  - .2 Allow scratch coat to dry for 24 hours before applying stone veneer.
- E. Slightly dampen scratch coat to ensure suction bond effect between mortar and stone veneer.



- F. Apply thin coat of mortar to back side of each stone before placing.
- G. Use rotating motion to press stone evenly into mortar and allow mortar to squeeze out freely beyond finished joint.
  - 1. Remove excess mortar from joints.
- H. Set stones in full bed of mortar with vertical joints buttered and placed full, except where otherwise specified.
  - 1. Completely fill anchor, dowel and lifting holes.

**GUIDE NOTE:** Use the following Paragraph for full bed stone material with 65 mm (2.5 inches) bed depth or greater.

- I. Lay stone veneer in [random] [coursed] ashlar bond.
  - 1. Connect stone veneer to structural back-up with approved wall ties, spaced 405 mm (16 inches) maximum horizontally and 24 inches (610 mm) maximum vertically.
- J. Make joints [0.25] [0.375] [0.5] inches ([6] [10] [13] mm) thick.
- K. Embed only ends of lugged sills and steps in mortar.
  - 1. Leave balance of joint open for final pointing.
- L. Place setting buttons or soft-wood wedges under stones to maintain joint thickness.
  - 1. Set heavy stones and projecting courses after mortar in courses below has hardened sufficiently to support weight.
- M. Brace and anchor projecting stones until wall above is set.
- N. Use soaked softwood wedges to support stone in proper alignment until mortar has set.
  - 1. Remove wedges when dry and without breaking them off, fill voids with pointing mortar.
- O. Install through-wall flashing membranes at continuous shelf angles, steel lintels, ledges and similar obstructions to downward flow of water.
- P. Install weep hole vents at 24 inches (610 mm) on centre horizontally where indicated.
- Q. Install cavity vents at top of cavity space at 24 inches (610 mm) on centre horizontally.
- R. Tool joints after initial set has occurred.
- S. Rake out joints to 1 inch (25 mm) depth and make ready for pointing.
  - 1. Sponge stone face along joints and remove droppings and splashed mortar immediately.
- T. Set [cornices,] [copings,] [projecting belt courses,] [steps] [platforms] with vertical joints unfilled.
- U. Grouting: Wet ends of stone and pack exposed joints with plastic foam joint filler. Fill joint with grouting mortar to within 0.75 inches (19 mm) of top.
  - 1. Grout vertical joints of [cornices,] [copings,] [projecting belt courses,] [steps] [and] [platforms].
  - 2. After grout has set, remove packing for pointing.
- V. Pointing: Remove dirt and loose mortar from joints by using pressurized airstream.
  - 1. Wet joints for mortar pointing. Dry joints for sealant pointing.
  - 2. Point joints with pointing mortar in [two] [three] stages. Rub smooth with appropriate tool to slightly concave joint.

### 3.08 FIELD QUALITY CONTROL

**GUIDE NOTE:** For small projects where field tests are not required, delete the following Paragraph.

- A. Field Tests, Inspection: Coordinate [field] [site] test with Section [01 45 00 - Quality Control].

B. Site Tolerances:

1. Variation from plumb: Plus or minus 0.25 inches per 10 feet (6 mm per 3 metres) maximum.
2. Variation from level: Plus or minus 0.5 inches per 20 feet (13 mm per 6 metres) maximum.

**GUIDE NOTE:** Specify requirements if manufacturers are to provide field quality control with onsite personnel for instruction or supervision of product installation, application, erection or construction. Manufacturer field reports are included under PART 1, Action and Informational Submittals.

C. Manufacturer's Services:

**GUIDE NOTE:** Use the following Paragraphs only when manufacturer's field services are provided and are required to verify the quality of the installed components. Establish the number and duration of periodic site visits required by manufacturer and specify below. Consult manufacturer for services required. Delete if field services are not required.

1. Co-ordinate manufacturer's services with Section [01 45 00 - Quality Control]. Have manufacturer review work involved in handling, installation/application, protection, and cleaning of products and submit written reports in acceptable format to verify compliance of work with Contract.
2. Manufacturer's Field Services: Provide manufacturer's field services consisting of product use recommendations and periodic site visits for product installation inspection in accordance with stone manufacturer's written instructions.
3. Schedule site visits to review work at stages listed:
  - a. After delivery and storage of products, and when preparatory work on which work of this Section depends is complete, but before installation begins.
  - b. Twice during progress of work at 25% and 60% complete.
  - c. Upon completion of work, after cleaning is carried out.
4. Obtain reports within three days of review and submit immediately to Consultant.

### 3.09 CLEANING

**GUIDE NOTE:** For smaller projects that do not have a separate Division 01 Section for cleaning, delete the reference to Section 01 74 00 – Cleaning in the following two Paragraphs.

- A. Progress Cleaning: Perform cleanup as work progresses [in accordance with Section 01 74 00 - Cleaning and Waste Management].
  1. Leave work area clean end of each day.
- B. Final Cleaning: Upon completion, remove surplus materials, rubbish, tools, and equipment [in accordance with Section 01 74 00 – Cleaning and Waste Management].
- C. Waste Management:

**GUIDE NOTE:** For smaller projects that do not have a separate Division 01 Section for waste management and disposal, delete the following Paragraph.

1. Co-ordinate recycling of waste materials with 01 74 19 - Construction Waste Management and Disposal.
2. Collect recyclable waste and dispose of or recycle field generated construction waste created during construction or final cleaning related to work of this Section.
3. Remove recycling containers and bins from site and dispose of materials at appropriate facility.

### 3.10 PROTECTION

- A. Protect installed products and components from damage during construction.
- B. Repair damage to adjacent materials caused by work of this Section.

**END OF SECTION**