

DEPARTMENT OF TRANSPORTATION

STATE OF GEORGIA

SPECIAL PROVISION

ATLANTA BELTLINE

NORTHEAST TRAIL SEGMENT 2, PHASE 2

Section 999 – Granite Facing

Add the following:

999.1 General Description

Section includes the following application of stone masonry:

1. Anchored to concrete backup.

999.1.01 Definitions

General Provisions 101 through 150.

999.1.02 Related References

A. Standard Specifications

1. Section 834- Masonry materials
2. Section 833- Joint fillers and sealers

B. Referenced Documents

1. ACI 530.1
2. ASCE 6
3. ASTM A 240
4. ASTM A 666
5. ASTM C 144
6. ASTM C 150
7. ASTM C 207
8. ASTM C 270
9. ASTM C 615
10. ASTM D 1227
11. ASTM D 4479
12. TMS 602

999.1.03 Submittals

Section 999 – Granite Facing

- A. Comply with submittal requirements of General Provisions 101 through 150 – Working Drawing, Shop Drawings, Data on Materials and Equipment, Samples, and Licenses.
- B. Shop Drawings: Indicate concrete structural core wall and reinforcing; elevations at footing, concrete shelf, top of concrete core wall, and top of finished wall indicating stepping as required; anchorage material; embeds; surface pattern(s), mortar joints; and cap stone. Shop drawings should show full elevations of walls, including inside and outside corner conditions with embed plates, safety rails, and other information that relates to granite facing. Shop drawings for site metal items requiring accurate dimensional relationships to newly built or as-built construction, shall be prepared following a review and confirmation of existing conditions to remain. Provide same for existing or as-built measurements and conditions for areas scheduled to receive miscellaneous metal items by the installer. Fabricator of materials is responsible for verifying the accuracy of the measurements prior to fabrication.
- C. Product Data: For each type of product indicated.
- D. Samples:
 - 1. For each stone type indicated.
 - 2. For each color of mortar required.
- E. Material Test Reports:
 - 1. Sealant Compatibility and Adhesion Test Report: From sealant manufacturer indicating that sealants will not stain or damage stone. Include interpretation of test results and recommendations for primers and substrate preparation needed for adhesion.

999.1.04 Quality Assurance

- A. Mockups: Build a mockups for each pattern of stone masonry shown on Drawings, in a vertical orientation simulating a wall face; not less than 72 inches by 72 inches (30 inches by 72 inches for seat wall); to demonstrate typical joints, surface color, pattern, and texture, and standard of workmanship.
 - 1. Include stone coping at top of mockup.
 - 2. Include a sealant-filled joint at least 16 inches long in each mockup.
 - 3. Include stainless steel safety rail in the mockup.
- B. Preinstallation Conference: Conduct conference at Project site.

999.1.05 Project Conditions

- A. Protection of Stone Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work.
- B. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.
 - 1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and above and will remain so until masonry has dried.
- C. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

999.2 Materials

Ensure that materials meet the requirements of the following specifications:

<u>Material</u>	<u>Section</u>
Stone for Masonry	834
Mortar and Grout	834

Section 999 – Granite Facing

A. Granite

1. Granite: Comply with ASTM C 615.
 - a. Products: Subject to compliance with requirements, provide the following, or an approved equal:
 - i. Elberton Granite thick stone ashlar veneer; 3” nominal thickness; height and length as shown on Drawings; Finish A – thermal or polished, as shown on drawings.
 - ii. Elberton Granite thick stone ashlar veneer; 3” nominal thickness; height and length as shown on Drawings; Finish B – split-face finish.
 - iii. Elberton Granite cap stone; 4” thickness; height and length as shown on Drawings; thermal finish.

B. Mortar Materials

1. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
2. Hydrated Lime: ASTM C 207, Type S.
3. Aggregate: ASTM C 144 and as follows.
 - a. For pointing mortar, use aggregate graded with 100 percent passing No. 16 sieve.
4. Water: Potable

C. Veneer Anchors

1. Materials:
 - a. Stainless-Steel Sheet: ASTM A 240 or ASTM A 666, Type 304.
2. Metal Anchors: Not less than 0.030-inch-thick by 7.8-inch-wide stainless-steel sheet with corrugations having a wavelength of 0.3 to 0.5 inch and an amplitude of 0.06 to 0.10 inch.
 - a. Dovetail Masonry Anchor – utilize product of one of the following, or an approved equal:
 - i. Manufacturer: Hohmann and Barnard, Inc. Product: 315 Flexible Dovetail Brick Tie.
 - ii. Manufacturer: Wire-Bond. Product: #2102 Dovetail Triangular Tie.
 - iii. Manufacturer: Heckmann Building Products, Inc. Product: #103-C Dovetail Triangular Veneer Anchor.

D. Miscellaneous Masonry Accessories

1. Asphalt Dampproofing: Cut-back asphalt complying with ASTM D 4479, Type I or asphalt emulsion complying with ASTM D 1227, Type III or IV.

E. Masonry Cleaners

1. Proprietary Acidic Cleaner: Manufacturer’s standard-strength cleaner designed for removing mortar and grout stains, efflorescence, and other new construction stains from stone masonry surfaces without discoloring or damaging masonry surfaces; expressly approved for intended use by cleaner manufacturer and stone producer.
 - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following, or an approved equal:
 - i. Diedrich Technologies, Inc.
 - ii. Dominion Restoration Products.
 - iii. EaCo Chem, Inc.
 - iv. Hydrochemical Techniques, Inc.
 - v. Prosoco, Inc.

Section 999 – Granite Facing

F. Granite

1. Granite: Comply with ASTM C 615.
 - a. Products: Subject to compliance with requirements, provide the following, or an approved equal:
 - i. Elberton Granite thick stone ashlar veneer; 3” nominal thickness; height and length as shown on Drawings; Finish B – split-face finish.
 - ii. Elberton Granite cap stone; 4” thickness; height and length as shown on Drawings; thermal finish.

G. Mortar Materials

5. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
6. Hydrated Lime: ASTM C 207, Type S.
7. Aggregate: ASTM C 144 and as follows.
 - a. For pointing mortar, use aggregate graded with 100 percent passing No. 16 sieve.
8. Water: Potable

H. Veneer Anchors

3. Materials:
 - a. Stainless-Steel Sheet: ASTM A 240 or ASTM A 666, Type 304.
4. Metal Anchors: Not less than 0.030-inch-thick by 7.8-inch-wide stainless-steel sheet with corrugations having a wavelength of 0.3 to 0.5 inch and an amplitude of 0.06 to 0.10 inch.
 - a. Dovetail Masonry Anchor—utilize product of one of the following, or an approved equal:
 - i. Manufacturer: Hohmann and Barnard, Inc. Product: 315 Flexible Dovetail Brick Tie.
 - ii. Manufacturer: Wire-Bond. Product: #2102 Dovetail Triangular Tie.
 - iii. Manufacturer: Heckmann Building Products, Inc. Product: #103-C Dovetail Triangular Veneer Anchor.

I. Miscellaneous Masonry Accessories

2. Asphalt Dampproofing: Cut-back asphalt complying with ASTM D 4479, Type I or asphalt emulsion complying with ASTM D 1227, Type III or IV.

J. Masonry Cleaners

2. Proprietary Acidic Cleaner: Manufacturer’s standard-strength cleaner designed for removing mortar and grout stains, efflorescence, and other new construction stains from stone masonry surfaces without discoloring or damaging masonry surfaces; expressly approved for intended use by cleaner manufacturer and stone producer.
 - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following, or an approved equal:
 - i. Diedrich Technologies, Inc.
 - ii. Dominion Restoration Products.
 - iii. EaCo Chem, Inc.
 - iv. Hydrochemical Techniques, Inc.
 - v. Prosoco, Inc.

K. Mortar Mixes

Section 999 – Granite Facing

1. General: Do not use admixtures unless otherwise indicated.
 - a. Do not use calcium chloride.
2. Mortar for Stone Masonry: Comply with ASTM C 270, Proportion Specification.
 - a. Mortar for Setting Stone: Type N.
 - b. Mortar for Pointing Stone: Type O.

L. Fabrication

1. Cut stone to produce pieces of thickness, size, and shape indicated, including details on Drawings. Dress joints (bed and vertical) straight and at right angle to face unless otherwise indicated.
2. Shape stone for type of masonry (pattern) as follows:
 - a. Sawed-bed, range ashlar with uniform course heights and uniform lengths as shown on Drawings.
3. Finish exposed faces and edges of stone to comply with requirements indicated for finish and to match approved samples and mockups.
 - a. Face Finish A: Thermal or Polished, as shown on Drawings.
 - b. Face Finish B: Split-face.
 - c. Finish for Copings: Thermal.
 - i. Finish exposed ends of copings same as other exposed faces.

999.3 Construction Requirements

A. Preparation

1. Coat concrete backup with asphalt dampproofing. Refer to Section 531.

B. Setting of Stone Masonry, General

1. Perform necessary field cutting and trimming as stone is set.
 - a. Use power saws to cut stone that is fabricated with saw-cut surfaces.
 - b. Use hammer and chisel to split stone that is fabricated with split surfaces.
2. Sort stone before it is placed in wall to remove stone that does not comply with requirements relating to aesthetic effects, physical properties, or fabrication, or that is otherwise unsuitable for intended use.
3. Arrange stones in range ashlar pattern with uniform course heights, uniform lengths, and uniform joint widths as shown on the Drawings.
4. Arrange stones with finish variations uniformly dispersed for an evenly patterned appearance.
5. Maintain uniform joint widths except for variations due to different stone sizes and where minor variations are required to maintain bond alignment if any. Lay walls with joints not less than 3/8 inch at narrowest points or more than 1/2 inch at widest points.
6. Provide sealant joints of widths and at locations indicated.
 - a. Keep sealant joints free of mortar and other rigid materials.
 - b. Materials and procedures for sealing joints are specified in Section 833 "Joint Fillers and Sealants."

C. Construction Tolerances

1. Variation from Plumb: For vertical lines and surfaces, do not exceed 3/8 inch in 20 feet or more. For external corners, expansion joints, control joints, and other conspicuous lines, do not exceed 1/4 inch in 20 feet or 1/2 inch in 40 feet or more.

Section 999 – Granite Facing

2. Variation from Level: For bed joints, horizontal grooves, and other conspicuous lines, do not exceed $\frac{1}{4}$ inch in 20 feet or $\frac{1}{2}$ inch in 40 feet or more.
3. Variation of Linear Layout Line: For position shown in plan, do not exceed $\frac{1}{2}$ inch in 20 feet or $\frac{3}{4}$ inch in 40 feet or more.

D. Installation of Anchored Stone Masonry

1. Anchor stone masonry to concrete with corrugated-metal veneer anchors unless otherwise indicated. Secure anchors by inserting dovetailed ends into dovetail slots in concrete.
2. Embed veneer anchors in mortar joints of stone masonry at least halfway, but not less than 1-1/2 inches, through stone masonry and with at least 5/8-inch cover on outside face.
3. Provide two (2) anchors per stone positioned 9 inches from ends on alternating horizontal courses of stone masonry. Install additional anchors within 12 inches of sealant joints and at perimeter of wall at intervals not exceeding 12 inches.
4. Set stone in full bed of mortar with full head joints unless otherwise indicated. Build anchors into mortar joints as stone is set.
5. Rake out joints for pointing with mortar to depth of not less than $\frac{3}{4}$ inch. Rake joints to uniform depths with square bottoms and clean sides.

E. Pointing

1. Prepare stone-joint surfaces for pointing with mortar by removing dust and mortar particles. Where setting mortar was removed to depths greater than surrounding areas, apply pointing mortar in layers not more than $\frac{3}{8}$ inch deep until a uniform depth is formed.
2. Point stone joints by placing and compacting pointing mortar in layers not more than $\frac{3}{8}$ inch deep. Compact each layer thoroughly and allow to become thumbprint hard before applying next layer.
3. Tool joints, when pointing mortar is thumbprint hard, with a smooth jointing tool to produce the following joint profiles:
 - a. Vertical Joint Profile: Smooth, flat face flush with edges of stone.
 - b. Horizontal Joint Profile: Smooth, flat face recessed $\frac{1}{4}$ inch below edges of stone (raked joint.)

F. Adjusting and Cleaning

1. In-Progress Cleaning: Clean stone masonry as work progresses. Remove mortar fins and smears before tooling joints.
2. Final Cleaning: After mortar is thoroughly set and cured, clean stone masonry as follows:
 - a. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
 - b. Test cleaning methods on mockup; leave one-half of panel uncleaned for comparison purposes.
 - c. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent, polyethylene film, or waterproof masking tape.
 - d. Wet wall surfaces with water before applying cleaner; remove cleaner promptly by rinsing thoroughly with clear water.
 - e. Clean stone masonry with proprietary acidic cleaner applied according to manufacturer's written instructions.

G. Excess Materials and Waste

1. Disposal as Fill Materials: Dispose of clean masonry waste, including mortar and excess or soil-contaminated sand, by crushing and mixing with fill material as fill is placed.
 - a. Do not dispose of masonry waste as fill within 48 inches of finished grade.

Section 999 – Granite Facing

The accepted granite facing quantities are measured per square foot of granite facing. Per each square foot in place in the completed work. The unit price includes the cost of the wall coping.

999.5 Payment

Granite facing is paid for at the unit price bid per each unit complete and in place as specified, and includes the cost of wall coping. The payment is full compensation for all excavation, furnishing, and installation of each square foot of wall, including preparation of concrete footings and core walls, concrete reinforcement, and grout. Also includes disposal of excavated materials, and the cost of furnishing all tools, safety devices, labor, equipment and all other necessary items to complete the work.

Payment will be under:

Item No. 999	Granite Facing	Square Foot
--------------	----------------	-------------