Specifications for
Architectural Granite

Standard Specifications

1. GENERAL

1.1 Scope
This specification includes fabricated granite components required for the completion of granite work indicated by the contract documents.

1.2 Definition of Terms
The definition of terms used in these specifications shall be those published by the NBQA, Inc.

1.3 Source of Supply
All granite shall be obtained from quarries having adequate capacity and facilities to meet the specified requirements. Fabrication shall be by Structural Stone, LLC, 285 Smith Street, North Kingstown, RI 02852 USA. Tel: 401/667-4969 Fax: 401/667-5969 www.StructuralStoneLLC.com.

1.4 Samples
Sufficient samples of granite shall be submitted to the Design Professional through the General Contractor.

1. Each sample set shall include three samples.

2. Sample set shall show anticipated range of color to be expected in the final installation. Natural variations in grain structure, inclusions or any other visual characteristic should also be included in the samples or depicted in an accompanying photograph. In addition, a dated photograph may be issued to illustrate current quarry conditions.

3. Approved sample sets and/or mock up photographs with meeting minutes shall establish the standard by which stonework will be judged.

1.5 Shop Drawings
The granite supplier, Structural Stone, LLC., shall submit: copies of required shop drawings to the Design Professional for approval. These drawings shall show all bedding, bonding, jointing and anchoring details, and the dimensions of each piece of granite. No final sizing or finishing shall be done until the shop drawings for that part of the work have been approved.

1.6 Defective Work
Any piece of granite showing manufacturing flaws upon receipt at the storage yard or building site shall be referred to the Design Professional for determination as to whether it shall be rejected, patched or redressed for use.

1.7 References
ASTM A 123: Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

ASTM C 97: Test Methods for Absorption and Bulk Specific Gravity of Dimension Stone.
ASTM C 119: Terminology Relating to Dimension Stone
ASTM C 170: Test Method for Compressive Strength of Dimension Stone
ASTM C 615: Specification for Granite Dimension Stone
ASTM C 880: Test Method for Flexural Strength of Dimensional Stone

1.8 Metric Conversions

The following metric conversions shall apply where English measurements are indicated in the text:

1. 1/16 inch (1.5 mm)	6. 3/8 inch (10 mm)	11. 1 1/4 inches (32 mm)	16. 4 inches (102 mm)
2. 1/8 inch (3 mm)	7. 1/2 inch (13 mm)	12. 1 1/2 inches (38 mm)	17. 6 inches (152 mm)
3. 3/16 inch (5 mm)	8. 5/8 inch (16 mm)	13. 1 5/8 inches (41 mm)	18. 8 inches (203 mm)
4. 1/4 inch (6 mm)	9. 3/4 inch (19 mm)	14. 2 inches (51 mm)	19. 12 inches (305 mm)
5. 5/16 inch (8 mm)	10. 1 inch (25 mm)	15. 3 inches (76 mm)	

2. MATERIALS

2.1 Granite

A. Granite Standard: Granite shall comply with ASTM C 615, "Standard Specification for Granite Dimension Stone" for material characteristics, physical requirements, and sampling for selection of granite.

GENERAL: All granite shall be of standard architectural grade, free of cracks, seams, or starts, which may impair its structural integrity or function. Color or other visual characteristics indigenous to the particular material and adequately demonstrated in the sampling or mock-up phases will be accepted provided they do not compromise the structural or durability capabilities of the material. Texture and finish shall be within the range of samples approved by the Design Professional.

B. Granite Type: The specifying party shall provide the following information for each different granite or finish required:

1. Granite Variety; Quarry Address; Fabricator:

●Chelmsford-534 Groton Road Westford, MA 01886
Quarried By: GA Stone Holding, LLC Office@GAStoneBlocks.com (401) 799-5370
Fabricated by: Structural Stone, LLC, 285 Smith Street, N. Kingstown, RI 02852
Tel: 401/667-4969 Fax: 401/667-5969 www.StructuralStoneLLC.com
●Coral Grey/Congaree-3587 Twitty Mill Road Heath Spring Lancaster, SC 29058
Quarried By: GA Stone Holding, LLC Office@GAStoneBlocks.com (401) 799-5370
Fabricated by: Structural Stone, LLC, 285 Smith Street, N. Kingstown, RI 02852
Tel: 401/667-4969 Fax: 401/667-5969 www.StructuralStoneLLC.com
●Dakota Mahogany-48325 150th Street Milbank, SD 57352
Quarried By: GA Stone Holding, LLC Office@GAStoneBlocks.com (401) 799-5370

Specifications for Architectural Granite

Fabricated by: Structural Stone, LLC, 285 Smith Street, N. Kingstown, RI 02852
Tel: 401/667-4969 Fax: 401/667-5969 www.StructuralStoneLLC.com
●Deer Isle®-Crotch Island, ME – USA
Quarried By: GA Stone Holding, LLC Office@GAStoneBlocks.com (401) 799-5370
Fabricated by: Structural Stone, LLC, 285 Smith Street, N. Kingstown, RI 02852
Tel: 401/667-4969 Fax: 401/667-5969 www.StructuralStoneLLC.com
●Jet Mist®-Route 615, 25515 Rapidan Road, Rapidan, VA 22733
Quarried By: GA Stone Holding, LLC Office@GAStoneBlocks.com (401) 799-5370
Fabricated by: Structural Stone, LLC, 285 Smith Street, N. Kingstown, RI 02852
Tel: 401/667-4969 Fax: 401/667-5969 www.StructuralStoneLLC.com
●Kershaw Pink- 3548 Flat Rock Kershaw, SC 29067
Quarried By: GA Stone Holding, LLC Office@GAStoneBlocks.com (401) 799-5370
Fabricated by: Structural Stone, LLC, 285 Smith Street, N. Kingstown, RI 02852
Tel: 401/667-4969 Fax: 401/667-5969 www.StructuralStoneLLC.com
●Kershaw®-3823 River Road Heath Spring, SC 29058
Quarried By: GA Stone Holding, LLC Office@GAStoneBlocks.com (401) 799-5370
Fabricated by: Structural Stone, LLC, 285 Smith Street, N. Kingstown, RI 02852
Tel: 401/667-4969 Fax: 401/667-5969 www.StructuralStoneLLC.com
●Kitledge-102A Armory Road Milford, NH 03055
Quarried By: GA Stone Holding, LLC Office@GAStoneBlocks.com (401) 799-5370
Fabricated by: Structural Stone, LLC, 285 Smith Street, N. Kingstown, RI 02852
Tel: 401/667-4969 Fax: 401/667-5969 www.StructuralStoneLLC.com
●Mason-589 Starch Mill Road Mason, NH 03048
Quarried By: GA Stone Holding, LLC Office@GAStoneBlocks.com (401) 799-5370
Fabricated by: Structural Stone, LLC, 285 Smith Street, N. Kingstown, RI 02852
Tel: 401/667-4969 Fax: 401/667-5969 www.StructuralStoneLLC.com
●Midnight Grey/Georgia Grey-273 Loyd Smith Road Lexington, GA 30627
Quarried By: GA Stone Holding, LLC Office@GAStoneBlocks.com (401) 799-5370
Fabricated by: Structural Stone, LLC, 285 Smith Street, N. Kingstown, RI 02852
Tel: 401/667-4969 Fax: 401/667-5969 www.StructuralStoneLLC.com
●Milford Pink-253 Lumber Street Hopkinton, MA 01748
Quarried By: GA Stone Holding, LLC Office@GAStoneBlocks.com (401) 799-5370
Fabricated by: Structural Stone, LLC, 285 Smith Street, N. Kingstown, RI 02852
Tel: 401/667-4969 Fax: 401/667-5969 www.StructuralStoneLLC.com
●Oconee-1540 Liberty Church Road Greensboro, GA 30642
Quarried By: GA Stone Holding, LLC Office@GAStoneBlocks.com (401) 799-5370
Fabricated by: Structural Stone, LLC, 285 Smith Street, N. Kingstown, RI 02852
Tel: 401/667-4969 Fax: 401/667-5969 www.StructuralStoneLLC.com
●Silver Cloud Imperial-4550 GA Highway, 20 NE Conyers, GA 30012
Quarried By: GA Stone Holding, LLC Office@GAStoneBlocks.com (401) 799-5370
Fabricated by: Structural Stone, LLC, 285 Smith Street, N. Kingstown, RI 02852
Tel: 401/667-4969 Fax: 401/667-5969 www.StructuralStoneLLC.com
●Sparta Pink-16456 Higway 16 East Sparta, GA 31087

Specifications for
Architectural Granite

Quarried By: GA Stone Holding, LLC Office@GAStoneBlocks.com (401) 799-5370
Fabricated by: Structural Stone, LLC, 285 Smith Street, N. Kingstown, RI 02852
Tel: 401/667-4969 Fax: 401/667-5969 www.StructuralStoneLLC.com
●Tapestry-102A Armory Road Milford, NH 03055
Quarried By: GA Stone Holding, LLC Office@GAStoneBlocks.com (401) 799-5370
Fabricated by: Structural Stone, LLC, 285 Smith Street, N. Kingstown, RI 02852
Tel: 401/667-4969 Fax: 401/667-5969 www.StructuralStoneLLC.com
●Texas Rose-7434 East Ranch Road Fredonia, TX 76842
Quarried By: GA Stone Holding, LLC Office@GAStoneBlocks.com (401) 799-5370
Fabricated by: Structural Stone, LLC, 285 Smith Street, N. Kingstown, RI 02852
Tel: 401/667-4969 Fax: 401/667-5969 www.StructuralStoneLLC.com

2. Location (use or application on the building)

3. Nominal Thickness: (identify the nominal thickness of each application in inches or mm)

4. Finish: (select one of the following):

a. Polished	d. Sawn	g. Shot Ground	j. 4-cut	m. Thermal	p. Bush Hammered
b. Honed	e. Rub and Sand	h. Sandblasted Fine Stippled	k. 6-cut	n. Split	
c. Fine Rubbed	f. Waterjet	i. Sandblasted Coarse Stippled	l. 8-cut	o. Rock Face	

Comment: Commonly available finishes are defined as follows:

Polished: A highly reflective, smooth finish that magnifies the stone's natural appearance by illuminating the vibrant colors.
Honed: Non-reflective, smooth finish draws out the stone's natural colors and variations.
Fine Rubbed: Smooth and free from scratches; no sheen.
Shot Ground: A course surface that is slightly rough to the touch, this finish mutes the appearance of the stone's natural color and grain structures.
Sawn: The process of sawing leaves slight grooves, swirl marks and lines on the stone's surface, softening its natural traits.
Rub and Sand: Semi-smooth and light in appearance, this finish creates a subtle contrast between the stone's color and crystals.
Waterjet: A high water pressure treatment reveals the natural crystal structure of the stone through a course textured finish.
Sand Blasted Fine Stippled: Rough, flat surface produced by blasting with an abrasive revealing crystal structure, less pronounced texture than coarse stippled.
Sand Blasted Coarse Stippled: Rough, flat surface produced by blasting with an abrasive revealing crystal structure, less pronounced texture than fine stippled.
Bush Hammered: Crystals are uniformly fashioned to create a light-on-dark "stippled" effect across this finish's coarse surface.
4-cut: Coarse bush-hammered finish with same characteristics as 6¬cut, but with markings not more than 7/32" apart.

6-cut: Medium bush-hammered finish, similar to but coarser than 8¬cut, with markings not more than 1/8" apart.
8-cut: Fine bush-hammered; interrupted parallel markings not over 3/32" apart; a corrugated finish, smoother near arris lines and on small surfaces.
Thermal: Rough to the touch, this finish showcases the stone's sparkling crystals against a lightened background.
Split: A natural, jagged cleft-face design permeates this finish, with untrimmed edges that create a rugged effect throughout. Faces can be convex, concave or flat.
Rock Face: Similar to split face with bolder projections from the plane of the arris lines.

Comment: SPECIAL FINISHES of many kinds are also offered by members of the Association to meet special design requirements. Information and samples will gladly be supplied upon request.

3. FABRICATION

3.1 Dimensional Tolerance

Panel Thickness 3/8" or 1/2" (10 or 13 mm).....±1/32" (± 0.8 mm)
Panel Thickness 3/4" to 1 5/8" (19 to 41 mm).....±1/8" (± 3 mm)
Panel Thickness Greater than 1 5/8" (41 mm) .....±1/4" (± 6 mm)
Panel Face Dimension.....±1/16" (± 1.5 mm)
Face Variation from Rectangular (Maximum out of Square) (Non-Cumulative) .....±1/16" (± 1.5 mm)
Heads / Calibrated Edges.....±1/16" (± 1.5 mm)
Quirk Miters (Width of Nose) up to 1/4".....-0, +25% of dim)
Quirk Miters (Width of Nose) over 1/4".....-0, +1/16"(–0, +1.5 mm)
Location of Back Anchors .....±1/8" (± 3 mm)
Depth of Back Anchors .....-0, +1/16" (-0, +1.5 mm)
Location of Holes for Precast Anchors .....±1/4" (±6 mm)
Hole Depth for Precast Anchors .....±1/16" (±1.5 mm)
Anchor Slots - From Face to Centerline of Slot .....±1/16" (±1.5 mm)
Anchor Slots - Lateral Placement .....±1/4" (±6 mm)
Anchor Slots - Width.....±1/16" (±1.5 mm)
Anchor Slots - Depth at Maximum .....±1/8" (±3 mm)
Anchor Holes - From Face to Centerline of Hole.....±1/16" (±1.5 mm)
Anchor Holes - Lateral Placement... .....±1/8" (±3 mm)
Anchor Holes - Diameter.....±1/16" (±1.5 mm)
Anchor Holes - Depth .....±1/8" (±3 mm)
Anchor Sinkages - Depth .....-0, +1/8" (-0, +3 mm)
Continuous Kerfs - From Face to Centerline of Kerf .....±1/16" (±1.5 mm)
Continuous Kerfs - Maximum Bow in 4'-0" (1.2m) .....±1/16" (±1.5 mm)
Continuous Kerfs - Width... .....±1/16" (±1.5 mm)
Continuous Kerfs - Depth .....-1/16", +1/8" (-1.5 mm, +3 mm)
Rebated Kerf Elevation of Bearing Surface .....±1/16" (±1.5 mm)
Bearing Checks – Elevation of Bearing Surface .....±1/16" (±1.5 mm)
Bearing / Clearance Checks – Lateral Location .....±1/2" (±13 mm)
Bearing / Clearance Checks – Setback from Face .....±1/16" (±1.5 mm)

Comment: TOLERANCES AND THICKNESSES: The suggested minimum nominal thickness for exterior veneer is as follows:

Bush hammered finish.....4" (102 mm)

Pointed finish.....4” (102 mm)
For all other finishes a minimum nominal thickness of granite panel is to be determined pending analysis of the following criteria:

A. Piece Size
B. Face Finish
C. Anchoring Method & Location
D. Structural Design Load Requirements

Comment: It is more economical if the granite panel thickness coincides with one of the industry standard nominal thicknesses of 4” (102 mm), 3” (76 mm), 2” (51 mm), 1 5/8” (41 mm) or 1 1/4” (32 mm).

3.2 Flatness Tolerances

Variation from true plane, or flat surfaces, shall be determined by a 4’ dimension in any direction on the surface.

Such variations on polish, hone, and fine rubbed surfaces shall not exceed tolerances listed below or 1/3 of the specified joint width, whichever is greater. On surfaces having other finishes, the maximum variation from true plane shall not exceed the tolerance listed below or 1/2 of the specified joint width, whichever is greater.

Polished, honed or fine rubbed finishes.....1/16” (1.5 mm)
Sawn, 4-cut, 6-cut, and 8-cut finishes.....1/8” (3 mm)
Thermal and coarse stippled finishes.....3/16” (5 mm)
Pointed or other rough cut finishes .....1” (25 mm)

3.3 Beds and Joints

Comment: BED AND JOINT WIDTH: The minimum recommended joint width is 3/8” for pieces with sawn beds and joints. Larger joint widths are required if pieces have split or otherwise rough cut beds and/or joints.

Pieces shall be bedded and jointed as shown on the approved shop drawings, and bed and joint surfaces shall be cut as follows:

1. Bed and joint surfaces shall be sawn through the full thickness of the granite piece. Bed and joint surfaces shall be within ±3° of 90° to the face of the piece unless otherwise specified.

Comment: This specification is recommended for most applications where a 3/8” bed or joint width specification is used.

2. Beds and joints shall be sawn or cut full square 2” back from the face and from that point may fall under square not more than 1” in 12”. Both beds and joints shall be reasonably free of large depressions.

Comment: This or similar specification is recommended for pieces 4” or more in thickness when cost savings may be achieved by eliminating the above full sawn specification)

3. Beds and joints shall be split or rough sawn generally square with the face and may fall under square with the face not more than 2” in 12”.

Comment: This or similar specification is recommended only for projects with bed and joint widths of 3/4” or more where a split face or other rough sawn appearance is specified.

3.4 Backs of Pieces

Comment: SAWN BACKS: Because of physical characteristics, most granite cannot be split to a thickness less than one-third the lesser face dimension. Consequently, sawn backs (the first specification) should be specified for most veneers, and are frequently specified also for thicker ashlar, because of design considerations.

A. Installer’s Option of one of the following:

1. Backs of all pieces shall be sawn to approximately true planes.

Comment: Recommended for most building granite specifications.

2. Backs of all pieces may be either rough or natural quarry split to provide surfaces, which vary not more than 1” in 12” from true plane and not more than 2” from their specified thickness.

Comment: Recommended for structural bridge piers, 4” or more split face pieces, or other installations of thicker pieces where a sawn back is not required.

B. Fabricate stone to maintain minimum clearance of 1” between backs of stone units and surfaces behind stone.

C. All tolerances listed assume panels 4” or less in thickness, not more than 5’ x 5’, and sawn on all six sides.

Comment: For thicker pieces, very large pieces, or pieces with split, pointed or rough sawn faces, backs, beds or joints, tolerances generally must be increased. Consult with suppliers on tolerances for special pieces.

D. A minimum cavity void of approximately 1” (25 mm) shall be maintained behind ashlar or dimensional granite used as a veneer. This cavity should be adequately ventilated and wept to eliminate the accumulation of moisture behind the granite veneer.

Comment: The NBGQA recommends a minimum factor of safety of 3.0 to 1 for granite panels and a minimum factor of safety of 4.0 to 1 for all anchorage assemblies.

3.5 Fabrication, General Requirements

A. Mouldings, washes and drips shall be constant in profile throughout their length, in strict conformity with details shown on approved shop drawings.
B. Dress joints straight and at 90 degree angle to face. Shape beds to fit supports.
C. Anchor Provision: Cut and drill sink provisions and holes in stone for anchors, fasteners, supports, and lifting devices as indicated or needed to set stone in place.
D. Allow room for expansion of the anchoring devices where necessary.
E. Where liners are required on the back of panels, secure by means of mechanical anchors. Comply with referenced standards.
F. Finish exposed faces and edges of stone, except sawed reveals, to comply with requirements indicated for finish and to match final samples and mockups.
G. Joint Width: Cut stone to produce uniform joints 3/8" or as shown on Drawings.
H. Provide chases, reveals, reglets, openings, and similar features as required to accommodate adjacent work.
I. Grade and mark stone to achieve uniform appearance when installed. Inspect finished stone units at fabrication plant. Replace defective units.

3.6 Incidental Cutting and Drilling

Panels in excess of 100 pounds (45 kg) may include, at installer's option, lifting clamp dimples, Lewis holes, or other provisions as required to accommodate the lifting device(s) utilized by the installing contractor. Lifting holes in the top beds of panels or other locations where moisture collection is likely to occur shall be filled with non-expanding grout or high-modulus elastomeric sealant after installation and final alignment.

4. SHIPPING AND HANDLING

4.1 Packing and Loading

Finished granite shall be carefully packed and loaded for shipment using all reasonable and customary precautions against damage in transit. No material which may cause staining or discoloration shall be used for blocking or packing.

Comment: STAINING: Granite is highly resistant to staining, but should be protected from certain elements, such as wet (green) wood, oils, mud, rust, construction waste, and asphalt compounds. Contact supplier for proper remedies to staining problems that occur.

4.2 Site Storage

Upon receipt at the building site or storage yard, the granite shall be stacked on timber or platforms at least 3" above the ground, and extreme care shall be taken to prevent staining during storage. If storage is to be for a prolonged period, polyethylene or other suitable plastic film shall be placed between any wood and finished surfaces and shall be used also as an overall protective covering. All holes shall be plugged during freezing weather to prevent the accumulation of water. Salt shall not be used for melting of ice formed in Lewis holes or on pieces, or for any purpose involving its contact with the granite.

Specifications for Architectural Granite

5. STONE INSTALLATION

Proceed with the installation of the stonework in accordance with Drawings and using skilled mechanics capable of proper handling of the setting of the stone and able to field cut where necessary with sharp and true edges.

Set stone with joints uniform in appearance and stone edges and faces aligned to tolerances indicated. Clean surfaces that are dirty or stained. Scrub with fiber brushes, and then rinse with clear water. Provide expansion, control, and pressure-relieving joints of widths and at locations shown on Drawings.

6. CLEANING AND PROTECTION

6.1 Cleaning

Granite shall be shop cleaned at the time of final fabrication. After installation and pointing or caulking are completed, the contractor shall carefully clean the granite, removing all dirt, excess mortar, weld splatter, stains, and/or other site incident defacements.

Stainless steel wire brushes or wool may be used, but the use of other wire brushes or of acid or other solutions which may cause discoloration is expressly prohibited. Fabricator should be contacted before cleaners other than detergents are used.

6.2 Protection of Finished Work

After the granite work is installed, the granite shall be properly and adequately protected from damage. Boxing or other suitable protection shall be provided wherever required, but no lumber which may stain or deface the granite shall be used. All nails used shall be non-corrosive.

All granite work in progress shall be protected at all times during construction by use of a suitable strong, impervious film or fabric securely held in place.

It is common practice in the industry to classify architectural granite as either of two types:

1.) Building granite: Granite used either structurally or as a veneer for exterior or interior wall facings, steps, paving, copings or other building features.

2.) Masonry granite: Granite used in larger blocks for retaining walls, bridge piers, abutments, arch stones and similar purposes.

Text throughout the specification labeled "Comment" is not part of the reference standard but is provided for information only. The specification identifies certain information that should be provided by the specifying agency or purchaser.

These specifications were current at the time of publication but are subject to change. Please confirm the accuracy of these specifications with Structural Stone, LLC for technical assistance and/or information pertaining to the products and services provided.

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These specifications, which supersede previous editions, are intended to provide standardization within the industry based on practices deemed to be acceptable from the standpoint of appearance, durability and safety. Structural Stone, LLC does not recommend or endorse any modification which would result in these minimal specifications not being maintained on a particular project. Structural Stone, LLC makes no representations or warranties with respect to appearance, durability or safety in the event of any variation from or failure to comply with these standards. As industry standards, the following information must also at all times be considered subject to architectural modifications in light of specific requirements of a particular project which may require more than these minimal specifications to achieve appropriate levels of appearance, durability and safety. These specifications are intended to address the practices and performance criteria applicable to the supply of fabricated architectural granite products. It is beyond the scope of this document to address materials and procedures related to the granite supply such as installation, anchorage hardware, moisture control, etc.