

Specifications

FOR ARCHITECTURAL GRANITE

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. The Association does not recommend or endorse any modification which would result in these minimal specifications not being maintained on a particular project. The Association 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. Member companies of the N.B.G.Q.A. have cooperated with the American Institute of Architects Professional Systems Division in updating the Masterspec 04405 "Dimensional Stone" specification section which addresses related items not included in this text. Design Professionals seeking further information about Masterspec should contact the Professional Systems Division at the American Institute of Architects: 1735 New York Avenue N.W., Washington, D.C. 20006, 1800 424 5084

1. GENERAL

1.1 Work Included

The work included in this section includes the furnishing of fully fabricated granite components required for the completion of all granite work indicated by the contract drawings and/or specifications.

1.2 Definition of Terms

The definition of trade terms used in these specifications shall be those published by the National Building Granite Quarries Association, Inc.

1.3 Source of Supply

All granite shall be obtained from quarries having adequate capacity and facilities to meet the specified requirements. Cutting and finishing shall be done by a firm equipped to process the material promptly on order and in strict accord with specifications. Evidence to this effect shall be provided by the supplier if required by the Design Professional. (a)

1.4 Samples

Sufficient samples of granite shall be submitted to the Design Professional through the General Contractor to show the texture, finish, and anticipated range of color to be supplied.

1.5 Shop Drawings

The granite supplier shall submit..... Copies of all necessary shop drawings to the Design Professional for

approval. These drawings shall show all bedding, bonding, jointing and anchoring details, and the dimensions and identifying number 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 flaws or imperfections 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 re-dressed for use.

1.7 Allowable Patching

Chips at the edges or corners may be patched providing the structural integrity of the stone is not affected and providing the patch matches the color and finish of the natural stone so that the patch does not detract from the appearance.

2. MATERIALS

2.1 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.

Continuous Kerfs-Width:	+/- 1/16"
Continuous Kerfs-Depth	+/- 1/16"
Rebated Kerf-Elevation of Bearing Surface	+/- 1/16"
Bearing Checks– Elevation of Bearing Surface	+/- 1/16"
Bearing/Clearance Checks-Lateral Location	+/- 1/2"
Bearing/Clearance Checks-Setback from Face	+/- 1/16"

Schedule: Granite shall be provided as follows:

- A) For _____ (state location on building)
 _____ (State name and color) (c) granite with
 _____ (d) finish, supplied by _____
 _____ (name company or list of several approved suppliers)
 B),C) etc. _____ (Give same information as in (1)
 _____ for each different granite or finish required).

FINISHES: Finishes listed in the above schedule shall be defined by the National Building Granite Quarries Association, Inc.

3. FABRICATION

3.1 Dimensional Tolerance (e)

Panel Thickness 3/8" or 1/2" (10 or 13 mm)	+/- 1/32" (+/- 0.8mm)
Panel Thickness 3/4" to 1-5/8" (20 to 41 mm)	+/- 1/8" (+/- 3mm)
Panel Thickness Greater than 1-5/8" (41 mm)	+/- 1/4" (+/- 6mm)
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"
Location of Back Anchors	+/- 1/8" (+/- 3mm)
Depth of Back Anchors	-0; +1/16" (-0, +1.5 mm)
Location of Holes for Precast Anchors	+/- 1/4"
Hole Depth for precast anchors	+/- 1/16"
Anchor Slots—from face to c/l of Slot:	+/- 1/16"
Anchor Slots—Lateral Placement:	+/- 1/4"
Anchor Slots—Width:	+/- 1/16"
Anchor Slots—Depth @Maximum :	+/- 1/8"
Anchor Holes - from face to c/l of Hole:	+/- 1/16"
Anchor Holes—Lateral Placement:	+/- 1/8"
Anchor Holes-Diameter	+/- 1/16"
Anchor Holes—Depth	+/- 1/8"
Anchor Sinkages—Depth	-0, +1/8"
Continuous Kerfs—from face	

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"
Sawn, 4-cut, 6-cut, and 8-cut finishes 1/8"
Thermal and coarse stippled finishes 3/16"
Pointed or other rough cut finishes 1"
Split face Dependent on piece size & stock

3.3 Beds and Joints (f)

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

(Three optional specifications:
 choose one or more depending on design criteria
 and types of pieces utilized.)

- (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 degrees to the face of the piece unless otherwise specified.
 (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 reasonable free of large depressions.
 (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 cut generally square with the face and may fall under square with the face not more than 2" in 12".
 (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 cut appearance is specified.)

3.4 Backs of Pieces (g)

(Two recommended options—choose one):

- (1) Backs of all pieces shall be sawn to approximately true planes.
(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.
(recommended for structural bridge piers, 4" or more split face pieces, or other installations of thicker pieces where a sawed back is not required)

Wherever clearly shown and detailed on the approved shop drawings, pieces shall be backed off to clear structural and mechanical components or other obstructions.

3.5 Mouldings, Washes and Drips

Mouldings, washes and drips shall be constant in profile throughout their length, in strict conformity with details shown on approved shop drawings.

3.6 Incidental Cutting and Drilling

Panels in excess of 100 pounds (45 kg) may include 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 3.4(h) or discoloration shall be used for blocking or packing.

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 3.4(h) 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.

5. CLEANING AND PROTECTION

5.1 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.

5.2 Protection of Finished Work

After the granite work is installed, it shall be the responsibility of the General Contractor to see that it is properly and adequately protected from damage.

Boxing or other suitable protection shall be provided whenever 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.

Notes:

- (a) The “Design Professional” may be an architect, an engineer, a contracting officer or other specifying authority.
 - (b) To expedite the work, it is essential that shop drawings be checked, approved or marked for correction and returned to the supplier promptly.
 - (c) Granite is a natural material and may have variations in color and other characteristics. Depending on granite selected and quantity required, a range mock-up may be used to further define the characteristics of the material.
The scope of responsibility of the granite supplier typically does not include items such as determination of dead or live loads, design or engineering of the granite attachment system, details or specifications of related system components, or verification of site conditions and dimensions. It is left to the discretion of the Design Professional to clarify whether the completion and coordination of these tasks are the responsibility of the general contractor, installing contractor, or a third party.
 - (d) FINISHES commonly available are defined as follows:
 - Polished: Mirror gloss, with sharp reflections
 - Honed: Dull sheen, without reflections
 - Fine rubbed: Smooth and free from scratches; no sheen
 - Rubbed: Plane surface with occasional slight “trails” or scratches
 - Shot ground: Plane surface with pronounced circular markings or trails having no regular pattern
 - Thermal: Finish produced by application of high temperature flame to the surface. Large surfaces may have shadow lines caused by overlapping of the torch.
 - Sand Blasted, coarse stippled: Coarse plane surface produced by blasting with an abrasive; coarseness varies with type of preparatory finish and grain structure of the granite.
 - Sand blasted, fine stippled: Plane surface, slightly pebbled, with occasional slight trails or scratches.
 - 8-cut: Fine bush-hammered; interrupted parallel markings not over 3/32” apart; a corrugated finish, smoother near arris lines and on small surfaces.
 - 6-cut: Medium bush-hammered finish, similar to but coarser than 8-cut, with markings not more than 1/8” apart.
 - 4-cut: Coarse bush-hammered finish with same characteristics as 6-cut, but with markings not more than 7/32” apart
 - Split Face: Surface resulting from breaking stone along a natural cleavage plane. Surface has projections and depressions; edges are not true.
 - Rock Face (or Rock Pitch): Similar to split face except face of stone at edge is pitched to achieve trued arris lines, thus creating bolder projections from the plane of the arris lines.
 - Pointed, Rough Cut: A rough and uneven surface resulting from splitting, pointing and/or rough cutting the granite.
- SPECIAL FINISHES of many kinds are also offered to meet special design requirements.
- (e) 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)
 - All other finishes: 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
- NOTE: 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)
- All tolerances listed assume panels 4” or less in thickness, not more than 5’ x 5’, and sawn on all six sides. For thicker pieces, very large pieces, or pieces with split, pointed or rough cut faces, backs, beds or joints, tolerances generally must be increased. Consult with suppliers on tolerances for special pieces.
- 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.
- (f) 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.
 - (g) SAWN BACKS: Because of physical characteristics, most granites 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
 - (h) STAINING: Granite is highly resistant to staining, but should be protected from certain elements, such as wet (green) wood, oils, mud, construction waste, and asphalt compounds. Contact supplier for proper remedies to staining problems that occur.