



TECHNICAL PROFILE



Revised 1/2019

Glen-Gery Handmade Brick Guide Specification

The following information has been compiled as a Guide Specification for Glen-Gery Handmade Facing Brick, and Building Brick. The numbers and titles used to identify this and related specification sections are in accordance with the 2004 Construction Specifications Institute MasterFormat.

This guide specification is intended to assist the Design Professional/Specifier in selecting appropriate products and

preparing a project specification section for Handmade Brick Masonry and is not intended to be all inclusive. Additional Technical Information related to Glen-Gery Brick and designs utilizing Handmade brick masonry is available upon request. The Design Professional/Specifier is responsible for the use and application of this information.

Confirm and edit guide specifications to ensure conformance to local building

codes. Sections beginning with **“NOTE TO SPECIFIER”** indicate action is required: edit/select/add/delete to suit specific project requirements.

Optional text is indicated by brackets **[]**. Delete unused optional text and brackets in final specification. Coordinate all Sections with other materials and project conditions of the contract.

SECTION 04 21 00 HANDMADE UNIT MASONRY

PART 1: GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 general requirements apply to this section.

1.2 SUMMARY

- A. Handmade brick masonry units and accessories including:

NOTE TO SPECIFIER: Delete items below not required for project.

1. Handmade Facing Brick
2. Building (common) Brick
3. Expansion Joints
4. Embedded Flashing
5. Mortar
6. Cleaning

- B. Related Sections

NOTE TO SPECIFIER: Delete any sections below not relevant to this project; add others as required.

1. Division 04 Section – “Masonry Anchorage, Reinforcement and Accessories”
2. Division 05 Section – “Metal Fabrications”
3. Division 06 Section – “Rough Carpentry”
4. Division 07 Section – “Bituminous Damproofing”
5. Division 07 Section – “Joint Sealants”
6. Division 07 Section – “Thermal Insulation”
7. Division 08 Section – “Wall Vents”

1.3 REFERENCES

NOTE TO SPECIFIER: Delete references from the list below that are not actually required by the text of the edited section.

- A. ASTM A 240 – Standard Specification for Chromium and Chromium Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
- B. ASTM C 62 – Standard Specification for Building Brick (Solid Masonry Units Made From Clay or Shale)
- C. ASTM C 67 – Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile
- D. ASTM C 216 – Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale)
- E. ASTM C 270 – Standard Specification for Mortar for Unit Masonry
- F. ASTM C 476 – Standard Specification for Grout for Masonry
- G. ASTM D 1056 – Standard Specification for Flexible Cellular Materials Sponge or Expanded Rubber
- H. ASTM C 1330 – Standard Specification for Preblended Dry Mortar Mix for Unit Masonry
- I. TMS 602/ACI 530.1/ASCE 6 – Specifications for Masonry Structures

1.4 SUBMITTALS

- A. Submit under provisions of Section 013000
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations
 - 2. Storage and handling requirements and recommendations
 - 3. Installation methods

NOTE TO SPECIFIER: Delete LEED Submittals if not required.

- C. LEED Submittals:
 - 1. Product Certificates for Credit MR 5: For products and materials required to comply with requirements for regional material indicating location and distance from Project of material manufacturer and point of extraction, harvest, or recovery of each raw material. Include statement indicating cost for each regional material and the fraction by weight that is considered regional.
- D. Shop Drawings
 - 1. Indicate masonry sizes, layout, patterns, corbels, racking, coursing, color arrangement, perimeter conditions, shape requirements and location, junctions with dissimilar materials, connections, and other related components.
 - 2. Locate and detail expansion and control joints.
- E. Samples: Furnish not less than five individual brick as samples for each brick specified, showing extreme variations in color and texture.

1.5 QUALITY ASSURANCE

- A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6 unless modified by requirements in the Contract Documents.
- B. Comply with all applicable codes, regulations, and standards. Where provision of applicable codes, regulations, and standards conflict with requirements of this section, the more demanding shall govern.

NOTE TO SPECIFIER: Insert qualifications required. Delete if not required.

A. Manufacturer Qualifications:

1. Obtain materials from one manufacturer to ensure compatibility.
2. Obtain materials from company specializing in manufacturing products specified in this section with a minimum 5 years documented experience.

NOTE TO SPECIFIER: Insert qualifications required. Delete if not required.

B. Installer Qualifications:

C. Material Certificates: Prior to delivery, submit to Architect/Engineer certificates indicating compliance with the applicable specifications for grades and types included in these specifications.

D. Include Brick Test Reports substantiating compliance with requirements: Sample and test in accordance with ASTM C 67.

1. Testing and reports shall be completed by an independent laboratory.
 - a. Test reports for each type of Handmade Facing Brick and Building Brick shall be submitted to the Architect/Engineer for review.
 - b. Test reports shall indicate:
 - 1) Compressive strength
 - 2) 24-hour cold water absorption
 - 3) 5-hour boil absorption
 - 4) Saturation coefficient
 - 5) Initial rate of absorption
 - 6) Efflorescence

E. Costs of Tests: Cost of tests shall be borne by the purchaser, unless tests indicate that units do not conform to the requirements of the specifications, in which case cost shall be borne by the seller.

F. Shop drawings: Submit individual drawings to be approved by architect for special shaped brick units.

NOTE TO SPECIFIER: Insert value if provision is required. Delete if not required.

G. Prism Tests: Prism Tests shall be required when using engineered masonry ((f'm) = _____ psi).

NOTE TO SPECIFIER: Include a mock-up and/or sample panel if the project size warrants taking such a precaution. The following is one example of how a sample on a large project might be specified.

H. Sample Panel: Mock-up or sample panels will be used to review brick and mortar color and serve as the standard of workmanship for the Project.

1. Build sample panels for each type of exposed unit masonry construction in sizes approximately 4' (1.2 m) long by 3' (0.9 m) high showing the proposed color range, texture, bond, mortar and workmanship. All brick shipped for the sample shall be included in the panel.
2. Do not start work until Architect/Engineer has accepted sample panel.
3. Use panel as standard of comparison for all masonry work built of same material.
4. Where masonry is to match existing, erect panel adjacent and parallel to existing surface.
5. Clean **[one-half of]** exposed faces of panel with masonry cleaner as indicated and approved by manufacturer.
6. Protect accepted panel from the elements with weather-resistant membrane.
7. Approval of panel is for color, texture, and blending of masonry units; relationship of mortar to masonry unit colors;

tooling of joints; and aesthetic qualities of workmanship.

8. Do not destroy or move panel until work is completed and accepted by Architect/Owner.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store products in dry location in manufacturer's unopened packaging until ready for installation.
- B. Store brick off the ground to prevent contamination by mud, dust or other materials likely to cause staining or other defects.
- C. Cover all materials with a nonstaining waterproof membrane material when necessary to protect from elements.
- D. Store different types of materials separately.

1.7 PROJECT CONDITIONS

- A. Comply with requirements of referenced standards and recommendations of material manufacturers for environmental conditions before, during, and after installation.
- B. Protection of Work:
 - 1. Wall Covering:
 - a. During erection, cover top of wall with strong nonstaining waterproof membrane at end of each day or shutdown.
 - b. Cover the masonry and airspace of partially completed walls when work is not in progress to prevent excess moisture penetration and ensure clean cavity.
 - c. Extend cover minimum of 24" (610 mm) – down both sides when applicable.
 - d. Hold cover securely in place.
 - 2. Load Applications:
 - a. Do not apply uniform floor or roof loading for at least 12 hours after building masonry columns or walls.
 - b. Do not apply concentrated loads for at least 3 days after building masonry columns or walls.
 - 3. Stain Prevention:
 - a. Prevent grout or mortar from staining the face of masonry.
 - b. Remove immediately grout or mortar in contact with face of such masonry.
 - c. Protect all sills, ledges and projections from droppings of mortar.
 - d. Protect base of wall from rain-splashed mud and mortar splatter by spreading coverings on ground and over wall surface.
 - e. Turn scaffold boards closest to the wall on edge when work is not in progress to prevent rain from splashing mortar and dirt onto masonry.
- C. Cold Weather Requirements:
 - a. Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

D. Hot Weather Requirements:

- a. Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

PART 2: PRODUCTS

2.1 MASONRY UNITS, GENERAL

- A. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not use units where such defects will be exposed in the completed work.
- B. Fire-Resistance Ratings: Where indicated, provide units that comply with requirements for fire-resistance ratings indicated as determined by equivalent masonry thickness or by other means, as acceptable to authorities having jurisdiction.

2.2 MANUFACTURERS

- A. Acceptable Manufacturer: Glen-Gery Corporation located at 1166 Spring Street • P.O. Box 7001, Wyomissing, PA 19610-6001 • Tel: 610-562-3076 • Web: www.glengery.com
- B. Substitutions: Not permitted.

2.3 HANDMADE MASONRY UNITS

NOTE TO SPECIFIER: Delete Regional Materials if not desired and LEED submittals are not required.

- A. Regional Materials: Handmade Facing Brick shall be manufactured within 500 miles (800 km) of Project site from materials that have been extracted, harvested, or recovered, as well as manufactured, within 500 miles (800 km) of Project site.
- B. General: Provide shapes indicated and as follows:
 1. For ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces, provide units without cores or frogs and with exposed surfaces finished.

NOTE TO SPECIFIER: Revise three subparagraphs below to suit Project. Drawings should show details of special conditions and special shapes required.

2. Provide special shapes for applications where stretcher units cannot accommodate special conditions, including those at corners, movement joints, bond beams, sashes, shelf angles and lintels.
3. Provide special shapes for applications requiring brick of size, form, color, and texture on exposed surfaces that cannot be produced by sawing.
4. Provide special shapes for applications where shapes produced by sawing would result in sawed surfaces being exposed to view.

NOTE TO SPECIFIER: Insert product name(s) required for project.

- C. Handmade Facing Brick specified and shown on drawings shall be **[Add brick product name(s) here]** as manufactured by the Glen-Gery Corporation.
 1. Handmade Facing Brick: ASTM C 216, Grade SW
 - a. Type FBA
 - b. Size (actual dimensions listed)

NOTE TO SPECIFIER: Delete size options not required for project. Size availability varies by product and may be available in additional sizes not listed below. Verify availability with local suppliers.

- 1) Modular Size: 3-5/8" (92.1 mm) thick, 2-1/4" (57.2 mm) high, 7-5/8" (193.7 mm) long
- 2) Handmade Oversized: 4" (101.6 mm) thick, 2-3/4" (95.2 mm) high, 8-1/2" (215.9 mm) long

NOTE TO SPECIFIER: Delete first paragraph and subparagraphs below if no Building Brick are required. Building Brick are typically utilized in concealed locations and have no requirements related to appearance.

- D. Building (Common) Brick: ASTM C 62, Grade SW
- a. Size (actual dimensions listed)

NOTE TO SPECIFIER: Delete size options not required for project. Seize availability varies by product and may be available in additional sizes not listed below. Verify availability with local suppliers.

- 1) Modular Size: 3-5/8" (92.1 mm) thick, 2-1/4" (57.2 mm) high, 7-5/8" (193.7 mm) long
- 2) Handmade Oversized: 4" (101.6 mm) thick, 2-3/4" (95.2 mm) high, 8 1/2" (215.9 mm) long

NOTE TO SPECIFIER: Insert value if required. Note that the compressive strength of Handmade facing bricks does not typically exceed 4,000 psi.

- E. Minimum Compressive Strength: *[add minimum strength when required]*
- F. Provide brick similar in texture, color and physical properties to those available for inspection at the Architect/Engineer's office and/or as supplied on the approved sample panel.
- G. Shapes: Special shapes are required to be used per architectural detail(s).

2.4 EMBEDDED FLASHING MATERIALS

NOTE TO SPECIFIER: Delete flashing options not required for project or if referenced in specification Division 7.

- A. Metal Flashing:
1. Stainless Steel: ASTM A 240/A 240M, Type 304, 0.016" (0.40 mm) thick.
 2. Copper: ASTM B 370, Temper H00, cold-rolled copper sheet, 16-oz./sq. ft. (4.9-kg/sq. m) weight or 0.0216" (0.55 mm) thick or ASTM B 370, Temper H01, high-yield copper sheet, 12-oz./sq. ft. (3.7-kg/sq. m) weight or 0.0162" (0.41 mm) thick.
 3. Fabricate continuous flashings in sections 96" (2400 mm) long minimum, but not exceeding 12' (3.7 m). Provide splice plates at joints of formed, smooth metal flashing.
 4. Fabricate through-wall flashing with snaplock receiver on exterior face where indicated to receive counterflashing.
 5. Fabricate through-wall flashing with drip edge *[where] [unless otherwise]* indicated. Fabricate by extending flashing 1/2" (13 mm) out from wall, with outer edge bent down 30 degrees *[and hemmed]*.
 6. Fabricate through-wall flashing with sealant stop *[where] [unless otherwise]* indicated. Fabricate by bending metal back on itself 3/4" (19 mm) at exterior face of wall and down into joint 1/4" (6 mm) to form a stop for retaining sealant backer rod.

B. Flexible Flashing:

1. Copper-Laminated Flashing: *[5-oz./sq. ft. (1.5-kg/sq. m)] [7-oz./sq. ft. (2-kg/sq. m)]* copper sheet bonded between 2 layers of glass-fiber cloth. Use only where flashing is fully concealed in masonry.
2. Asphalt-Coated Copper Flashing: *[5-oz./sq. ft. (1.5-kg/sq. m)] [7-oz./sq. ft. (2-kg/sq. m)]* copper sheet coated with flexible asphalt. Use only where flashing is fully concealed in masonry.
3. Rubberized-Asphalt Flashing: Composite flashing product consisting of a pliable, adhesive rubberized-asphalt compound, bonded to a high-density, cross-laminated polyethylene film to produce an overall thickness of not less than *[0.030" (0.76 mm)] [0.040" (1.02 mm)]*.
4. EPDM Flashing: Sheet flashing product made from ethylene-propylene-diene-monomer, complying with ASTM D 4637, 0.040" (1.0 mm) thick.

2.5 EXPANSION JOINTS

NOTE TO SPECIFIER: Delete expansion joint types not required.

- A. Compressible Filler: pre-Handmade filler strips complying with ASTM D 1056, Type 2, Class A, Grade 1 formulated from *[neoprene] [urethane] [or] [PVC]*.
- B. Backer Rod: Non-gassing polyethylene or flexible polyurethane foam rod 25% wider than width of joint to be filled.

2.6 ACCESSORIES

- A. Weepholes/Vents:

NOTE TO SPECIFIER: Delete weephole types not required. Wicks are not recommended for weeps or vents in Glazed Brick applications.

1. Rope Wicks: Cotton Sash Cord, 12" long with end laid in cavity
2. Aluminum Weep/Vents (painted)
3. Vinyl Weep/Vents

2.7 MASONRY CLEANERS

- A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by manufacturer of Handmade masonry units being cleaned.

NOTE TO SPECIFIER: Contact a Glen-Gery representative to determine cleaning solution and procedure for brick specified. Verify acceptability of cleaner for cleaning masonry with pigmented mortar joints. Delete solution(s) not recommended.

1. Diedrich Technologies, Inc.
 - a. 202 New Masonry Detergent
 - b. 202V Vana-Stop®

2.8 MORTAR AND GROUT

NOTE TO SPECIFIER: Delete mortar not required. Add Project specific requirements.

- A. Mortar

1. Mortar shall conform to ASTM C 270 Standard Specification for Mortar for Unit Masonry under the guidelines provided in BIA Technical Notes #8 Series.
 - a. Type *[N] [or] [S]*

2. Mortar shall conform to ASTM C 1330 – Standard Specification for Preblended Dry Mortar Mix for Unit Masonry.

a. Type *[N] [or] [S]*

B. Grout

1. Grout shall conform to ASTM C 476 – Standard Specification for Grout for Masonry.

2. Use grout of type indicated or, if not otherwise indicated, of type *[fine] [or] [coarse]* that will comply with TMS 602/ACI 530.1/ASCE 6 requirements.

PART 3: EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates and foundations as well as rough-in and built-in construction have been properly prepared.
- B. Verify reinforcing dowels are properly placed.
- C. If substrate, foundation or reinforcement preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Cleaning Reinforcement:
 - 1. Remove mud, loose rust, ice and other coatings from reinforcement which would interfere with bond.
- C. Wetting of Brick: Wet brick before laying if initial rate of absorption exceeds 30 g/30 sq. in. (30 g/194 sq. cm) per minute when tested per ASTM C 67. Allow units to absorb water so they are damp but not wet at time of laying.

3.3 INSTALLATION

- A. Install in accordance with Handmade facing brick manufacturer's instructions.
- B. Select and arrange Handmade facing brick units for exposed unit masonry to produce a uniform blend of color and texture.
- C. Comply with tolerances in TMS 602/ACI 530.1/ASCE 6.

3.4 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Lay masonry in bond pattern as indicated on drawings or general notes.
 - 1. Reference BIA Technical Note #30 for additional requirements.
- C. Lay all Handmade brick plumb and true to lines.
- D. Where fresh mortar joins partially set mortar, remove loose brick and mortar. Wet brick if required before laying fresh masonry.
- E. Do not tooth unless specifically approved by the Architect/Engineer.
- F. When adjustment is necessary to be made after mortar begins to harden, remove hardened mortar and replace with fresh mortar.
- G. Keep cavity/airspace clean of mortar droppings and other materials during construction.

3.5 MORTAR BEDDING AND JOINTING

- A. Lay Handmade facing brick with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.

NOTE TO SPECIFIER: *Delete joint profiles not required.*

- B. Tool exposed joints when thumbprint hard to joint profile listed below:
 - 1. Joint Profile: Tool mortar joints to a concave appearance.
 - 2. Joint Profile: Tool mortar joints to a concave V-shaped appearance.
 - 3. Joint Profile: Tool mortar joints to a concave grapevine appearance.
- C. When pointing, rake mortar joints to a depth of not less than 1/2" (12 mm). Fill solidly with pointing mortar. Tool mortar joints.

3.6 FLASHING

- A. Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated.
- B. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.
- C. Carry flashing vertically as detailed, but not less than 6" (150 mm) above horizontal plane.
- D. Lap flexible flashing a minimum of 6" (152 mm)
- E. Seal all flashing laps with compatible lap cement.
- F. Extend head and sill flashings not less than 6" (150 mm) beyond edges of openings and turn up to form watertight pan; seal with mastic.
- G. All discontinuous flashing shall be turned up minimum 1" into the head joint at flashing ends to form an end dam.
- H. Project flashing from face of wall approximately 1/4" (6 mm) to form a drip. Flexible flashing shall be cut back to the face of the wall after inspection, if the drip is deemed objectionable by Architect or if the flashing is subject to UV degradation.

3.7 WEEPHOLES

- A. Install specified *[weep holes] [or] [open head joints]* in head joints of the first brick course immediately above through wall flashing by placing weeps 24" (610 mm) on center for standard modular Handmade facing bricks and 27" (685 mm) for Handmade Oversized facing bricks unless otherwise indicated.
- B. Keep airspace/cavity free from mortar.

3.8 EXPANSION JOINTS

- A. Keep clean from all mortar and debris.
- B. Install expansion joint materials in Handmade unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.
 - 1. Provide vertical and horizontal pressure-relieving joints where indicated by inserting a compressible filler of width required for installing backer rod and sealant specified in Division 07 Section "Joint Sealants," but not less than 1/2" (12.7 mm).

3.9 REINFORCED HANDMADE UNIT MASONRY INSTALLATION

- A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
 - 1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
 - 2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other temporary loads that may be placed on them during construction.
- B. Placing Reinforcement: Comply with requirements in TMS 602/ACI 530.1/ASCE 6.
- C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
 - 1. Comply with requirements in TMS 602/ACI 530.1/ASCE 6 for cleanouts and for grout placement, including minimum grout space and maximum pour height.

3.10 CLEANING

NOTE TO SPECIFIER: *Some Handmade bricks should not be cleaned. Consult Glen-Gery for recommended procedures.*

- A. In progress cleaning: Clean Handmade unit masonry as work progresses by dry brushing to remove mortar fins and spears before tooling.
 - 1. Do not use wire brushes, ice scrapers, other metal tools, or stiff brushes.
- B. Final cleaning: After mortar has set and cured, clean exposed masonry as follows:
 - 1. Cut out all defective mortar joints and holes in exposed masonry and provide new mortar.
 - 2. Clean preselected sample wall area. Do not proceed with cleaning until approved by Architect.
 - 3. Clean Handmade brick in accordance with manufacturer's written instructions.
 - 4. Do not use wire brushes, ice scrapers, other metal tools, or stiff brushes.
 - 5. If a pressure washer is used to wet or rinse Handmade unit masonry, limit the pressure at the pump to 100 psi.
 - 6. Protect adjacent stone and nonmasonry surfaces from contact with cleaner.
 - 7. All cleaning practices and products used shall be in accordance with cleaning products manufacturer's printed instructions.

For further information contact:
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