SECTION 042100

CLAY UNIT MASONRY

Display hidden notes to the specifier. (Don't know how? [Click Here](https://www.arcat.com/sd/display_hidden_notes.shtml))

\*\* NOTE TO SPECIFIER \*\* The Belden Brick Company; decorative clay masonry building units.

This section is based on the products of The Belden Brick Company, which is located at:

700 Tuscarawas Street W, Canton, OH 44702, PH: 330-456-0031, FX: 330-456-2694

Email: [info@beldenbrick.com](mailto:) Web: <http://www.beldenbrick.com>

The Belden Brick Company, a long-standing pillar in the brick industry, is the largest family-owned brick manufacturer in the United States. Expanding brick's creative versatility while maintaining the material's traditional strengths is something in which we pride ourselves. We continue to meet the changing needs of the construction market by manufacturing over 20 different face brick and clay paver sizes, more than 500 colors, 13 different textures, and endless designs of special shapes. The superior quality of our raw materials leads to the structural integrity and outstanding appearance of our line of world-class architectural brick. Each brick becomes part of a legacy that has set The Standard of Comparison since 1885.

PART 1 GENERAL

* 1. SECTION INCLUDES

NOTE TO SPECIFIER \*\* Delete items below not required for the project.

* + 1. Clay masonry units and accessories, including:
       1. Facing Brick
       2. Hollow Brick
       3. Thin Veneer Brick
       4. Ceramic Glazed Brick
       5. Special Shapes
    2. Steel Reinforcement
    3. Anchors and Ties
    4. Flashing
    5. Expansion Joints
    6. Weepholes
    7. Mortar
  1. PRODUCTS INSTALLED BUT NOT FURNISHED UNDER THIS SECTION
     1. Section 036000 – Grouting
     2. Section 042200 – Concrete Unit Masonry
     3. Section 055000 – Metal Fabrications
     4. Section 072000 – Thermal Insulation
     5. Section 076000 – Flashing and Sheet Metal
  2. RELATED SECTIONS
     1. Section 033000 – Cast-In-Place Concrete
     2. Section 036000 – Grouting
     3. Section 042200 – Concrete Unit Masonry
     4. Section 051200 – Structural Steel
     5. Section 054000 – Cold-Formed Metal Framing
     6. Section 055000 – Metal Fabrications
     7. Section 061000 – Rough Carpentry
     8. Section 071000 – Damp Proofing and Waterproofing
     9. Section 072000 – Thermal Protection
  3. REFERENCES
     1. ASTM International (ASTM):
        1. ASTM A36 – Standard Specification for Carbon Structural Steel
        2. ASTM A82 – Standard Specification for Steel Wire, Plain, for Concrete Reinforcement
        3. ASTM A153 – Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
        4. ASTM A615 – Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
        5. ASTM A775 – Standard Specification for Epoxy-Coated Steel Reinforcing Bars
        6. ASTM A996 – Standard Specification for Rail-Steel and Axle-Steel Deformed Bars for Concrete Reinforcement
        7. ASTM B370 – Standard Specification for Copper Sheet and Strip for Building Construction
        8. ASTM C67 – Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile
        9. ASTM C126 – Standard Specification for Ceramic Glazed Structural Clay Facing Tile, Facing Brick, and Solid Masonry Units
        10. ASTM C216 – Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale)
        11. ASTM C270 – Standard Specification for Mortar for Unit Masonry
        12. ASTM C652 – Standard Specification for Hollow Brick (Hollow Masonry Units Made from Clay or Shale)
        13. ASTM C1088 – Standard Specification for Thin Veneer Brick Units Made from Clay or Shale
        14. ASTM C1405 – Standard Specification for Glazed Brick (Single Fired, Brick Units)
        15. ASTM D1056 – Standard Specification for Flexible Cellular Materials – Sponge or Expanded Rubber
  4. SUBMITTALS
     1. Submit under provisions of Section 013000 – Administrative Requirements.
     2. Clay Brick: Manufacturer's letter of certification, including:
        1. Test reports.
        2. Cleaning recommendations.
     3. Other 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.
     4. Samples: Furnish not less than five individual brick as samples, showing extreme variations in color and texture.

\*\* NOTE TO SPECIFIER \*\* Include a mock-up if the project size and/or quality warrant taking such a precaution. The following is one example of how a mock-up of a large project might be specified. When deciding on the extent of the mock-up, consider all the different major types of work on the project.

* + 1. Sample Panel: Mock-up or sample panels shall be used to review brick and mortar color and serve as the standard of workmanship for the project.
       1. Approximately 4 feet (1.2 m) long by 3 feet (1 m) high, showing the proposed color range, texture, bond, mortar, and workmanship. Use all the brick shipped for the sample in assembling the sample panel.
       2. When required, provide a separate sample panel for each type of brick or mortar.
       3. Do not start work until the Architect/Engineer has accepted the sample panel.
       4. Use panel as a standard of comparison for all masonry work built of the same material.
       5. Do not destroy or move the panel until the work is completed and accepted by the Architect.
  1. QUALITY ASSURANCE

\*\* NOTE TO SPECIFIER \*\* Insert qualifications required. Delete if not required.

* + 1. Manufacturer Qualifications: Minimum 5 years manufacturing similar products.

\*\* NOTE TO SPECIFIER \*\* Insert qualifications required. Delete if not required.

* + 1. Installer Qualifications: Minimum 2 years installing similar products.
    2. Brick Tests: Sample and test shall be in accordance with ASTM C67.
    3. Test Reports:
       1. An independent laboratory shall complete testing and reports.
       2. Submit each test report for the type of building and facing brick to the Architect/Engineer for review.
       3. Test reports shall indicate:

\*\* NOTE TO SPECIFIER \*\* Compressive strength is not required for thin brick. Delete if not required.

* + - * 1. Compressive strength.
        2. 24-hour cold-water absorption.
        3. 5-hour boil absorption.
        4. Saturation coefficient.

\*\* NOTE TO SPECIFIER \*\* Initial rate of absorption and efflorescence are optional. Delete if not required.

* + - * 1. Initial rate of absorption.
        2. Efflorescence.
        3. For Glazed Brick:

\*\* NOTE TO SPECIFIER \*\* Include the following where applicable.

Imperviousness.

Resistance to fading.

Resistance to crazing.

Scratch resistance and hardness.

Opacity.

* + 1. Certificates: Before delivery, submit certificates attesting compliance to the Architect/Engineer with the applicable specifications for grades, types, or classes included in these specifications.
    2. Costs of Tests: The cost of tests shall be borne by the purchaser unless tests indicate that units do not conform to the specification’s requirements, in which the seller shall pay the case cost.

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

* + 1. Prism Tests: Prism Tests shall be required when using engineered masonry (f 'm) =\_\_\_\_\_\_\_\_psi).
  1. DELIVERY, STORAGE, AND HANDLING
     1. Store products in manufacturer's unopened packaging until ready for installation.
     2. Store brick off the ground to prevent contamination by mud, dust, or other materials likely to cause staining or other defects.
     3. Cover all materials with a non-staining waterproof membrane material when necessary to protect from elements.
     4. Store different types of materials separately.

\*\* NOTE TO SPECIFIER \*\* Delete allowances if not required for the project.

* 1. ALLOWANCES
     1. Allowance includes the purchase of brick, taxes, delivery, and special handling charges.
     2. Special shaped brick units shall have a separate allowance.
  2. PROJECT CONDITIONS
     1. Protection of Work:
        1. Wall Covering:
           1. During erection, cover the top of the wall with a strong non-staining waterproof membrane at the end of each day or shutdown.
           2. Cover partially completed walls when work is not in progress.
           3. Extend the cover minimum of 24 inches (610 mm) down both sides.
           4. Hold the cover securely in place.
        2. Load Applications:
           1. Do not apply uniform floor or roof loading for at least 12 hours after building masonry columns or walls.
           2. Do not apply concentrated loads for at least three days after building masonry columns or walls.
        3. Stain Prevention:
           1. Prevent grout or mortar from staining the face of the masonry.
           2. Remove grout or mortar immediately in contact with the face of such masonry.
           3. Protect all sills, ledges, and projections from droppings of mortar.
           4. Protect the base of the wall from rain-splashed mud and mortar splatter.
           5. Scaffold boards shall be turned on edge when work is not in progress.
     2. Cold Weather Protection:
        1. Preparation:
           1. When ice or snow has formed on the masonry bed, remove by carefully applying heat not to exceed 120 degrees F (49 degrees C) until the surface is dry to the touch.
           2. Remove all masonry deemed frozen or damaged.
        2. Products:
           1. When brick suction exceeds BIA reference standard, sprinkle with heated water:

When units are above 32 degrees F (0 degrees C), heat water above 70 degrees F (21 degrees C).

When units are below 32 degrees F (0 degrees C), heat water above 130 degrees F (54 degrees C).

* + - * 1. Use dry masonry units.
        2. Do not use wet or frozen units.
      1. Construction Requirements While Work is Progressing:
         1. Air temperature 40 degrees F (4 degrees C) to 32 degrees F (0 degrees C):

Heat sand or mixing water to produce mortar temperatures between 40 degrees F (4 degrees C) to 32 degrees F (0 degrees C).

* + - * 1. Air temperature 32 degrees F (0 degrees C) to 25 degrees F (-4 degrees C):

Heat sand and mixing water to produce temperatures between 40 degrees F (4 degrees C) and 120 degrees F (49 degrees C).

Maintain a temperature of mortar on boards above freezing.

* + - * 1. Air temperatures 25 degrees F (-4 degrees C) to 20 degrees F (-7 degrees C).

Heat sand and mixing water to produce mortar temperatures between 40 degrees F (4 degrees C) and 120 degrees F. (49 degrees C).

Maintain mortar temperatures on boards above freezing.

Use salamanders or other heat sources on both sides of walls under construction.

Use windbreaks when the wind is more than 15 mph (24 kms/h).

* + - * 1. Air temperature 20 degrees F (-7 degrees C) and below:

Heat sand and mixing water to produce mortar temperatures between 40 degrees F (4 degrees C) and 120 degrees F (49 degrees C.).

Provide enclosures and auxiliary heat to maintain air temperature above 32 degrees F (0 degrees C).

Unit minimum temperature when laid: 20 degrees F (-7 degrees C).

* + - 1. Protection requirements for completed masonry and masonry not being worked on:
         1. Mean daily air temperature 40 degrees F (4 degrees C) to 32 degrees F (0 degrees C):

Protect masonry from rain or snow for 24 hours by covering it with a weather-resistive membrane.

* + - * 1. Mean daily air temperature 32 degrees F (0 degrees C) to 25 degrees F (-4 degrees C):

Completely cover masonry with weather-resistive membrane for 24 hrs.

* + - * 1. Mean daily temperature 25 degrees F (-4 degrees C) to 20 degrees F (-7 degrees C):

Completely cover masonry with insulating blankets or equal protection for 24 hours.

* + - * 1. Mean daily air temperature 20 degrees F (-7 degrees C) and below:

Maintain masonry temperature above 32 degrees F (0 degrees C) for 24 hours by:

\*\* NOTE TO SPECIFIER \*\* Delete methods not required or allowed.

Method: Enclosure and supplementary heat.

Method: Electric heating blankets.

Method: Infrared lamps.

Method: Other approved methods.

* + 1. Hot Weather Protection:
       1. When the temperature exceeds 100 degrees F or 90 degrees F with 8 mph wind (above 38 degrees C or 32 degrees C with 13 kms/h wind).
          1. Maintain the temperature of mortar and grout between 70 degrees F and 120 degrees F (21 degrees C and 49 degrees C).

Limit the spread of the mortar bed to 4 feet (1.2 m). Place units within 1 minute of spreading mortar.

* + - * 1. Partially or recently completed walls may be fog sprayed and/or covered with opaque plastic, canvas, or both to control moisture evaporation.

1. PRODUCTS
   1. MANUFACTURERS
      1. Acceptable Manufacturer for Clay Unit Masonry: The Belden Brick Company, located at 700 Tuscarawas Street W, Canton, OH 44702; Phone: 330-456-0031; Fax: 330-456-2694; Email: [info@beldenbrick.com](mailto:info@beldenbrick.com); Web: [www.beldenbrick.com](http://www.beldenbrick.com).

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs. Coordinate with the requirements of the Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
    2. Requests for substitutions will be considered in accordance with provisions of Section 016000 – Product Requirements.
    3. For all other products in this section, specify the desired manufacturer.
  1. CLAY MASONRY UNITS

\*\* NOTE TO SPECIFIER \*\* Insert product name required for the project.

* + 1. All brick specified and shown on drawing shall be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as manufactured by The Belden Brick Company.

\*\* NOTE TO SPECIFIER \*\* Delete brick types not required.

* + - 1. Facing Brick: ASTM C216, Grade SW,

\*\* NOTE TO SPECIFIER \*\* Delete brick types not required.

* + - * 1. Type FBS.
        2. Type FBX.
        3. Type FBA.

\*\* NOTE TO SPECIFIER \*\* Insert size required for the project.

* + - * 1. Size (wxhxl): \_\_\_ x \_\_\_ x \_\_\_ inches (\_\_\_ x \_\_\_ x \_\_\_ mm).
      1. Hollow Brick: ASTM C652, Grade SW,

\*\* NOTE TO SPECIFIER \*\* Delete types not required.

* + - * 1. Type HBS.
        2. Type HBX.
        3. Type HBA.

\*\* NOTE TO SPECIFIER \*\* Insert size required for project.

* + - * 1. Size (wxhxl): \_\_\_ x \_\_\_ x \_\_\_ inches (\_\_\_ x \_\_\_ x \_\_\_ mm).
      1. Thin Veneer Brick: ASTM C1088,

\*\* NOTE TO SPECIFIER \*\* Delete grade not required.

* + - * 1. Grade Exterior.
        2. Grade Interior.

\*\* NOTE TO SPECIFIER \*\* Delete types not required.

* + - * 1. Type TBS.
        2. Type TBX.
        3. Type TBA.

\*\* NOTE TO SPECIFIER \*\* Insert size required for the project. The Belden Brick Company manufactures thin brick in two thicknesses. Extruded thin brick is available in 5/8 inch thickness with flat backs and 3/4 inch thickness with back geometry. Molded thin brick is available in 3/4 inch thickness with flat backs.

* + - * 1. Size (wxhxl): \_\_\_ x \_\_\_ x \_\_\_ inches (\_\_\_ x \_\_\_ x \_\_\_ mm).

NOTE TO SPECIFIER \*\* Belden Glazed Brick is available as double-fired and single-fired units. The combination of ASTM C216 and C126 provides for proper specification of double-fired units of glossy and satin glazes on smooth body textures, citing ASTM C126 for properties of glaze only. ASTM C1405 is the proper specification for single-fired units of glossy and satin glazes on smooth body textures. ASTM C216 is the proper specification for other glazes on other body textures.

* + - 1. Ceramic Glazed Brick: ASTM C216, Grade SW, and C126 or ASTM C1405, Class Exterior.
         1. Grade S.

\*\* NOTE TO SPECIFIER \*\* Delete types not required.

* + - * 1. Type FBS.
        2. Type FBX.
        3. Type FBA.

\*\* NOTE TO SPECIFIER \*\* Insert size required for the project.

* + - * 1. Size (wxhxl): \_\_\_ x \_\_\_ x \_\_\_ inches (\_\_\_ x \_\_\_ x \_\_\_ mm).

\*\* NOTE TO SPECIFIER \*\* Delete if not using shapes. Glazed brick quoins (corners) are considered special shapes.

* + - 1. Special Shapes: Provide shapes as indicated on drawings.

\*\* NOTE TO SPECIFIER \*\* Insert value required for the project. Not applicable to thin brick confirming with ASTM C1088.

* + 1. Minimum Compressive Strength: \_\_\_\_\_\_.

\*\* NOTE TO SPECIFIER \*\* Insert value required for the project.

* + 1. Maximum Initial Rate of Absorption (IRA): \_\_\_\_\_\_\_.

\*\* NOTE TO SPECIFIER \*\* Delete if brick allowance is required for the project.

* + 1. Provide brick similar in texture, color, and physical properties to those available for inspection at the Architect/Engineer's office and as supplied on the approved sample panel.
    2. All brick supplied shall be pre-blended by the manufacturer.

\*\* NOTE TO SPECIFIER \*\* Delete if steel reinforcement is not required. Typically retain all reinforcing bar types, except epoxy coated rebar is generally more corrosion-resistant and costly. Delete epoxy-coated billet steel if not required.

* 1. STEEL REINFORCEMENT
     1. Reinforcing Bars:
        1. Billet Steel Deformed Bars: ASTM A 615.
        2. Rail Steel Deformed Bars: ASTM A 616 or A996.
        3. Axle Steel Deformed Bars: ASTM A 617 or A996.
        4. Epoxy Coated Billet Steel: ASTM A 615 and ASTM A 775.

\*\* NOTE TO SPECIFIER \*\* Several types are typically required for a project. Delete types not required.

* 1. ANCHORS AND TIES

\*\* NOTE TO SPECIFIER \*\* Corrugated ties are only recommended on 1 to 3-story residential or commercial buildings. Delete if not required.

* + 1. Corrugated Ties: ASTM A 1008, 20 Gage, Width: \_\_\_\_\_\_\_\_\_\_ inch, length: \_\_\_\_\_\_\_\_\_\_\_ inches, Galvanized: ASTM A 153, Class B-2.

\*\* NOTE TO SPECIFIER \*\* Delete joint reinforcement not required.

* + 1. Truss Joint Reinforcement: ASTM A 82 (ASTM A 666), Size\_\_\_\_\_\_\_\_, Galvanized: ASTM A 153, Class B-2.
    2. Ladder Joint Reinforcement: ASTM A 82 (ASTM A 666), Size\_\_\_\_\_\_\_\_, Galvanized: ASTM A 153, Class B-2.
    3. Wire Wall Ties: ASTM A 82, Wire Size: \_\_\_\_\_\_\_\_, Shape: \_\_\_\_\_\_\_\_, Length: \_\_\_\_\_\_\_\_ inches, Galvanized: ASTM A 153, Class B-2.
    4. Dovetail Anchors: ASTM A 1008, Gage: \_\_\_\_\_\_, Length: \_\_\_\_\_\_\_ inches, Galvanized: ASTM A 153, Class B-2.
    5. Anchors:

\*\* NOTE TO SPECIFIER \*\* Delete anchors not required.

* + - 1. Plate Bent Bar Anchors: ASTM A 36, Diameter: \_\_\_\_\_\_\_\_inch, Length: \_\_\_\_\_\_\_\_ inches, Galvanized: ASTM A 153, Class B-2.
      2. Plate Header Bar Anchors: ASTM A 36, Diameter: \_\_\_\_\_\_\_\_ inch, Length: \_\_\_\_\_\_\_\_ inches, Galvanized: ASTM A 153, Class B-2.

\*\* NOTE TO SPECIFIER \*\* Several types are typically required for a project. Delete types not required.

* 1. FLASHING
     1. Copper: ASTM B 370, 5 oz.
     2. Copper: ASTM B 370, 7 oz.
     3. Stainless Steel: ASTM A 666, Grade\_\_\_\_\_\_\_, Type 304.
     4. Plastic: PVC, 30 mil (0.75 mm) thick.
     5. Copper/Fabric: 5 oz.
     6. Plastic/Copper: 5 oz.
     7. Asphalt-Coated Copper: 5 oz.

\*\* NOTE TO SPECIFIER \*\* Several types are typically required for a project. Delete types not required or retain all.

* 1. EXPANSION JOINTS
     1. Premolded Foam: ASTM D 1056, Type 2, Class A, Grade 1.
     2. Neoprene: ASTM D 1056, Type 2, Class A, Grade 1.
     3. Backer Rod: Extruded, Closed Cell Polyethylene.
  2. ACCESSORIES
     1. Weepholes:

\*\* NOTE TO SPECIFIER \*\* Typically delete three of the four following types of weephole material.

* + - 1. Rope Wicks: Cotton Sash Cord, 12 inches long with end laid in a cavity.
      2. Plastic Tubes: 1/4 inch (6 mm) minimum inside diameter by 4 inches (102 mm) long.
      3. Aluminum Weep/Vents.
      4. Plastic Weep/Vents.
  1. MORTAR
     1. Mortar shall conform to ASTM C 270 under the guidelines provided in BIA Technical Notes No. 8 Series.

1. EXECUTION
   1. EXAMINATION
      1. Do not begin installation until substrates have been properly prepared.
      2. If substrate preparation is the responsibility of another installer, notify the Architect of inadequate preparation before proceeding.
   2. PREPARATION
      1. Clean surfaces thoroughly before installation.
      2. Cleaning Reinforcement: Remove mud, loose rust, ice, and other coatings from reinforcement that would interfere with the bond.
      3. Prepare surfaces using the methods recommended by the manufacturer to achieve the best result for the substrate under the project conditions.
   3. INSTALLATION
      1. For thin brick, install following the manufacturer’s thin brick system or adhesive manufacturer's instructions.
   4. BONDING
      1. Lay masonry in bond pattern as indicated on drawings or general notes – reference BIA Technical Note 30 for additional requirements.
   5. LAYING MASONRY
      1. Lay masonry with full head and bed joints.
      2. Lay all brick plumb and true to lines.
      3. Where fresh mortar joins partially set mortar, remove loose brick and mortar, and lightly wet exposed surface of set masonry.
      4. Toothing shall be subject to approval by the Architect/Engineer.
      5. When adjustment is necessary after the mortar begins to harden, remove it, and replace it with fresh mortar.
   6. TOOLING AND POINTING

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

* + 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.
    4. Tool exposed joints when "thumb-print" hard.
    5. Flush cut all joints not tooled.
    6. When pointing, rake mortar joints to a depth of not less than 1/2 inch (12 mm). Fill solidly with pointing mortar. Tool joints.
  1. FLASHING
     1. Clean surface of masonry from projections that might puncture flashing.
     2. Place through-wall flashing on the bed of mortar. Cover flashing with mortar.
     3. Lap flashing a minimum of 6 inches (152 mm).
     4. Leave flashing project from the face of the wall approximately 1/4 inch (6 mm) to form a drip. Flashing shall be cut back to the face of the wall after inspection if the drip is deemed objectionable by Architect.
  2. WEEPHOLES
     1. Provide weepholes in the head joints of the first brick course immediately above flashing by placing weeps no more than 24 inches (610 mm) on the center horizontally.
     2. Keep the cavity free from mortar droppings.
  3. EXPANSION JOINTS
     1. Keep clean from all mortar and debris. Locate as shown on drawings. Install neoprene pre-molded foam pad, backer rod, and sealant. Prime surfaces if necessary.
  4. CLEANING
     1. Cut out all defective mortar joints and holes in exposed masonry and provide new mortar.
     2. Clean pre-selected sample wall area. Do not proceed with cleaning until approved by Architect.
     3. Clean brick as outlined in BIA Technical Note 20.
     4. All cleaning practices and products used shall follow the cleaning products manufacturer's printed instructions.
     5. For waxed thin brick, clean with 130 degrees F water using clean water and a low-pressure washer.

END OF SECTION