SECTION 04210

BRICK MASONRY

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Brick Masonry Units.

B. Accessories.

1.2 RELATED SECTIONS

A. Section 04065 - Mortar and Masonry Grout.

B. Section 04220 – Concrete Masonry Units.

C. Section 07620 - Sheet Metal Flashing and Trim: Through-wall masonry flashings.

D. Section 07900 - Joint Sealers: Backing rod and sealant at control joints.

1.3 ALLOWANCES

A. See Section 01210 - Allowances, for cash allowances affecting this section.

B. This allowance includes purchase and delivery of brick masonry. Installation is not included in the allowance but is specified in this section and is part of the Contract Price.

1.4 REFERENCES

A. ACI 530/ASCE 5/TMS 402 - Building Code Requirements for Masonry Structures; American Concrete Institute International; 1995.

B. ACI 530.1/ASCE 6/TMS 602 - Specification For Masonry Structures; American Concrete Institute International; 1995.

C. ASTM A 82 - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement; 1995a.

D. ASTM A 153/A 153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 1995.

E. ASTM A 641 - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire; 1992.

F. ASTM C 62 - Standard Specification for Building Brick (Solid Masonry Units Made From Clay or Shale); 1996.

G. ASTM C 67 - Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile; 1996.

H. ASTM C 780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry; 1996.

I. Brick Institute of America (BIA) - Technical Notes on Brick Construction; Latest Edition.

J. IMIAWC (CW) - Recommended Practices & Guide Specifications for Cold Weather Masonry Construction; International Masonry Industry All-Weather Council; 1993.

K. IMIAWC (HW) - Recommended Practices & Guide Specifications for Hot Weather Masonry Construction; International Masonry Industry All-Weather Council; current edition.

L. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.

1.5 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data for brick masonry units, fabricated wire reinforcement, and mortar. Provide manufacturer's application procedures for masonry cleaning compounds.

C. Samples for Verification: Submit five samples of facing brick units to illustrate color, texture, and extremes of color range.
   1. Full-size units for each different exposed masonry unit required, showing the full range of exposed

colors, textures, and dimensions to be expected in completed construction.

D. Qualification Data: For firms and persons specified in "Quality Assurance" Article.

E. Manufacturer's Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:
   1. Submit certificates from masonry manufacturer prior to delivery of masonry units to project site. Each certificate shall be signed by an authorized officer of the manufacturing company and shall contain the name and address of the Contractor, the project location, and the quantities and date or dates of shipment or delivery to which the certificate applies.
   2. Submit certification from brick manufacturer stating that proposed masonry cleaning compound is suitable for cleaning selected brick, and that masonry cleaning compound will not cause staining nor discoloration of brick.
   3. Each type of masonry unit required.
      a. Include size-variation data for brick, verifying that actual range of sizes falls within specified tolerances.
   4. Each cement product required for mortar and grout, including name of manufacturer, brand type, and weight slips at time of delivery.
   5. Each material and grade indicated for reinforcing bars.
   6. Each type and size of joint reinforcement.
   7. Each type and size of anchor, tie, and metal accessory.

1.6 QUALITY ASSURANCE

A. Comply with provisions of ACI 530/ASCE 5/TMS 402 and ACI 530.1/ASCE 6/TMS 602, except where exceeded by requirements of the contract documents.
   1. Source Control: Obtain exposed masonry units from one manufacturer, with texture and color uniform or of a uniform blend acceptable to the Architect.

1.7 PRE-INSTALLATION MEETING

A. Convene 2 weeks before starting work of this section. Meeting shall be attended by the Architect, the Owner, General Contractor, Subcontractor, and supervising mason.

B. Review all masonry detailing, project conditions, supervision of trades, coordination of related construction, and continuity of workmanship.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

B. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.

1.10 ENVIRONMENTAL REQUIREMENTS

A. Lay no masonry when temperatures of surrounding air has dropped below 45 degrees F., unless it is rising, and at no time when it has dropped below 40 degrees F., except by written permission from the Architect.

B. When masonry work is authorized during temperature of below 40 degrees F. but above freezing, provide mortar at temperatures between 70 degrees F. and 100 degrees F.

C. Maintain air temperature above 40 degrees F. on both sides of masonry for at least 72 hours after laying.

D. Cold-Weather Requirements: 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 freezing conditions. 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 (4 deg C) and above and will remain so until masonry has dried, but not less than 7 days after completing cleaning.

E. Hot-Weather Requirements: Protect unit masonry work when temperature and humidity conditions produce excessive evaporation of water from mortar and grout. Provide artificial shade and wind breaks and use cooled materials as required.
   1. When ambient temperature exceeds 100 deg F (38 deg C), or 90 deg F (32 deg C) with wind velocity

greater than 8 mph (13 km/h), do not spread mortar beds more than 48 inches (1200 mm) ahead of masonry. Set masonry units within one minute of spreading mortar.

1.11 JOB CONDITIONS

A. Protection of Work:
   1. During erection, at end of each day or shutdown period, keep walls dry by covering with waterproof material, anchored and overhanging each side of wall at least 2'-0".
   2. Where one wythe of multiwythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches (600 mm) down face next to un constructed wythe and cover in place.

B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least 3 days after building masonry walls or columns.

C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that comes in contact with such masonry.
   1. Protect base of walls from rain-splashed mud and from mortar splatter by covering spread on ground and over wall surface.
   2. Remove misplaced mortar or grout immediately.
   3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
   4. Protect face materials against staining.
   5. Protect sills, ledges, and offsets from mortar droppings during construction.
   6. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry

D. Sequencing and Scheduling:
   1. Do not cover or enclose mechanical or electrical work requiring inspection until such work has been accepted. Coordinate this work with work of other sections required to be built into masonry construction.

PART 2 PRODUCTS

2.1 BRICK MASONRY UNITS

A. General: Provide shapes indicated and as follows for each form of brick required:
   1. Provide units without cores or frogs and with exposed surfaces finished for ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces.
   2. At ends of soldier and rowlock coursing and corbelling, use only solid/holeless brick units.

B. Facing Brick: ASTM C 216, Type FBS, Grade SW.
   1. Efflorescence: Provide brick that has been tested according to ASTM C67 and is rated "not effloresced."
   2. Application: Use where brick is exposed, unless otherwise indicated.

2.2 MORTAR AND GROUT MATERIALS

A. Mortar and grout: As specified in Section 04065 Mortar and Masonry Grout.

2.3 REINFORCEMENT AND ANCHORAGE

A. Joint Reinforcement and Anchorage Materials: Provide materials complying with the following general requirements for joint reinforcement and anchorage devices:
   1. Steel Wire: ASTM A 82.
      a. Hot-dip galvanizing (after fabrication) : ASTM A 153, Class B-2.
   2. Zinc-coated steel sheet: ASTM A 525 carbon steel, with G90 zinc coating.
   3. Hot-dip galvanized steel sheet: ASTM A 635 or ASTM A 366; galvanizing in compliance with ASTM A 153 , Class B.

B. Wall Ties: Corrugated formed sheet metal, adjustable, hot dip galvanized to ASTM A 153/A 153M, Class B-2.
   1. Manufacturers:
      a. Dur-O-Wal.
      b. Heckmann Building Products, Inc.
      c. Hohmann & Barnard, Inc.
      d. Substitutions: See Section 01600 - Product Requirements.

C. Two-Piece Wall Ties: Formed steel wire, adjustable, eye and pintle type, hot dip galvanized to ASTM A 153/A 153M, Class B-2.

1. Manufacturers:
   a. Dur-O-Wal.
   b. Heckmann Building Products, Inc.
   c. Hohmann & Barnard, Inc.
   d. Substitutions: See Section 01600 - Product Requirements.

2.4 FLASHINGS

A. Copper/Kraft Paper Flashings: 1 oz./sq. ft. sheet copper bonded to fiber reinforced asphalt treated Kraft paper.

2.5 ACCESSORIES

A. Weepholes:
   1. Weephole Ventilators for full head joint installation at grade level.
      a. Acceptable products:
         1) Dur-O-Wal, Cell-Vent D/A 1006.
         2) Hohman & Barnard, Inc., QV - Quadro-Vent.
   2. Weep Tubes with screens and wicks for all areas other than grade level:
      a. Medium density polyethelene tubing; outside diameter 3/8 inch, with brass screening at face and twisted synthetic rope wicks inserted in tube and extending minimum 6" at back (cavity) side.

2.6 MASONRY CLEANING COMPOUND

A. Masonry Cleaning Compound:
   1. Acceptable Products:
      a. Nova Chemical, Vanex.
      b. ProSoCo, Inc., Sure Kleen Vana Trol.
      c. Diedrich Technologies, Inc., 202V Vana-Stop.
   2. Product Requirements:
      a. Compound shall be certified as acceptable by brick manufacturer, meeting specified requirements, and as recommended by the compound manufacturer for selected brick, to ensure that proposed masonry cleaning compound causes no staining or discoloration of brick.
      b. Products shall be specifically formulated for brick type, color, and material content. Product data shall state whether particular compound is acceptable for dark-colored brick, light colored brick, brick subject to non-metallic staining or brick subject to metallic staining.
   3. Test Panel: Test each type and dilution of cleaning compound on sample panel.
   4. Formulation: Dilutable formula comprised of inorganic acids, wetting agents and inhibitors.
   5. Characteristics:
      a. Compound shall be able to cling to masonry for an average dwell period of two minutes, able to loosen mortar residue for complete removal, and shall be water-washable upon completion.
      b. Compound shall not cause acid burns or streaks.
      c. Compound shall be able to be applied, based on dilution amount, by using a soft masonry brush or low pressure (40psi-50psi) airless sprayer.

PART 3 EXECUTION

3.1 GENERAL

A. Layout: Lay out masonry for accurate pattern bond, for uniform joint widths, and for accurate location of specific features before beginning actual construction. Avoid use of masonry units of less than 1/2 size. Do not use units with less than nominal 4 inch horizontal face dimensions at corners and jambs.

B. Chases and Recesses: Build masonry to accommodate the work of other trades, including chases and recesses as shown or required. Provide not less than 8 inches of masonry between jambs of openings and chases and recesses.

C. Openings for Equipment and Services: Leave openings in masonry as required for subsequent installation of equipment and services. Make openings in designated locations and in exact size required, if known; otherwise, leave rough openings in approximate size required and complete masonry work after installation of equipment, matching adjoining masonry.

D. Structural Framing Anchorage: Anchor masonry to structural framework at points of adjacency, and as follows:
   1. Maintain open space of 1 inch or more between face of framing member and masonry elements.
   2. Fasten anchors to structure and embed in mortar joints as masonry is laid.

3. Space anchors at maximum of 36 inches on center horizontally and 24 inches on center vertically.

E. Veneer Anchorage: Anchor masonry veneer to structural backup with anchors specified, and as follows:
1. Fasten to backup with self -tapping , non corrosive fasteners as recommended by the manufacturer of anchors for substrate conditions.
2. Space plates of two-piece anchors so they will be centered on horizontal movement of ties due to differential movement of veneer and backup.
3. Embed tie sections of two-piece anchors in mortar as masonry is being laid, providing clear air space of at least 2 inches behind veneer wythe.
4. Space anchors at not more than 1.77 square feet per anchor, nor more than 16 inches on center horizontally and vertically. At openings and ends of veneer panels, provide additional anchors so that maximum spacing at perimeter is 8 inches on center.

3.3 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive masonry.

B. Verify that related items provided under other sections are properly sized and located.

C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

3.4 PREPARATION

A. Direct and coordinate placement of metal anchors supplied for installation under other sections.

B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

C. Plan and Coordinate layouts for Drawing dimensions, minimal cutting, alignment of control joints with back-up masonry, and relationships to adjacent work.

D. Control lines: Prior to the installation of brick masonry, apply indelible, plumb, vertical control lines on sheathing substrate or cavity insulation or backup masonry at spacing not to exceed 48 inches on center continuous for full height of the brickwork for the purpose of maintaining plumb head joint alignment in alternate courses for specified brick bond pattern.

3.5 COURSING

A. Establish lines, levels, and coursing indicated. Protect from displacement.

B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.

C. Brick Units:
1. Coursing: Rowlock as indicated on t he drawings.

3.6 INSTALLATION

A. Workmanship: Install no brick units that are cracked, broken or chipped in excess of ASTM allowances.
1. Use abrasive power saws to cut brick.
2. Lay brick plumb, true to line and with level courses, spaced within allowable tolerances.
3. Do not furrow joints.
4. Stop-off horizontal run by racking back in each course; toothing is not permitted.
5. Adjust units to final position while mortar is soft and plastic.
6. If units are displaced after mortar has stiffened, remove, clean joints and units of mortar, and relay with fresh mortar.
7. Cutting and patching of finish masonry to accommodate work of other trades shall be done so as not to mar appearance of finished surface.
8. Adjust shelf angles to keep work level and at proper elevation. Provide a 3/8" joint below shelf angle.
9. Mix units from pallets in work to diminish noticeable variation in color and texture between pallets.
10. Provide brick expansion joints with pressure relieving pads continuous under shelf angles.
11. When joining fresh masonry to set or partially set masonry, remove loose brick and mortar, and clean and dampen exposed surface of set masonry prior to laying fresh masonry.
12. Provide solid brick units free of cores or frogs where such characteristics would be exposed in the finished work.
13. Wet brick with initial rate of absorption exceeding 30 grams/30 square inches/ minute when tested in accordance with ASTM C67-97.

14. Cavity walls: Keep cavity clear of mortar and other materials which project into cavity and decrease cavity clearance to less than minimum dimension indicated.

B. Mortar Beds:
   1. Lay brick with full mortar coverage on horizontal and vertical joints in all courses.
   2. Provide sufficient mortar on ends of brick to fill head joints.
   3. Rock closures into place with head joints thrown against two adjacent bricks in place.
   4. Do not pound corners or jambs to fit stretcher units after setting in place.
   5. Where adjustment to corners or jambs must be made after mortar has started to set, remove mortar and replace with fresh mortar.

C. Mortar Joints:
   1. Nominal thickness: 3/8"
   2. Tool joints exposed to finished work when "thumb print" hard. Joints shall be tooled using jointer at least 2'-0" in length.

D. Joint profiles:
   1. Above or below horizontal recessed courses: Raked.
   2. All other joints: Concave.

E. Trowel point or concave tool joints below grade.

F. Flush-cut joints not to be exposed in finish work.

G. As work progresses, trowel protruding mortar fins in cavity flat to inner face of wythe.

H. Flashing:
   1. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
      a. Clean surface of masonry smooth and free from projections which might puncture flashing material.
      b. Extend flashings full width at such interruptions and at least 6 inches into adjacent masonry or turn up at least 4 inches to form watertight pan at non-masonry construction.
      c. Remove or cover protrusions or sharp edges that could puncture flashings.
      d. Seal lapped ends and penetrations of flashing before covering with mortar.
      e. Lap end joints of flashings at least 4 inches and seal watertight with mastic or elastic sealant.
      f. Place flashings on sloped mortar bed; seal lapped ends and penetrations of flashing before covering with mortar.
         1) Extend metal flashings through exterior face of masonry and turn down to form drip.
      g. Veneer Flashings: Turn flashings up not less than 4 inches at backup. Lap top of flashing with building paper, or otherwise seal to prevent moisture penetration between flashing and backup.
      h. Heads and Sills: Turn up ends of flashing at least 2 inches at heads and sills to form a pan, and seal joints.
      i. Sealing: Seal all joints in flashing to ensure watertight integrity.
         1) Lap end joints on non deformed metal flashings at least 4 inches; seal laps with elastic sealant or mastic.

I. Weepholes:
   1. Provide weepholes in exterior wythe of masonry at 2'-0" o.c. horizontally at heads and sills of openings, in exterior walls at grade and in other locations where flashing is indicated.
   2. Weephole ventilators:
      a. Provide weephole ventilators at grade level.
      b. Install weephole ventilator in open head joint, flush with low edge of adjacent brick.
      c. Install pea gravel fill in cavity behind ventilators. Install continuously at grade.
   3. Install weep tubes at all weepholes except at grade level where weephole ventilators are installed. Install weep tubes at bottom of head joint with screening to exterior; lay extra length of wick horizontally in cavity.
   4. Keep weepholes and area above flashing free of mortar droppings.

J. Sealant Joints: Retain 1/2" wide sealant joint around outside perimeter of exterior doors, window frames and other wall openings.

K. Pointing: Cut out defective mortar joints and holes in exposed work. Repoint with new mortar.

L. Dry Cleaning: Brush brick surfaces with stiff bristle brush. Do not allow mortar droppings to harden on exposed surfaces.

3.7 MASONRY FLASHINGS

A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.

B. Extend metal flashings to within 1/4 inch of exterior face of masonry.

C. Veneer Flashings: Turn flashings up not less than 4 inches at backup. Lap top of flashing with building paper, or otherwise seal to prevent moisture penetration between flashing and backup.

D. Heads and Sills: Turn up ends of flashing at least 2 inches at heads and sills to form a pan, and seal joints.

E. Sealing: Seal all joints in flashing to ensure watertight integrity.
   1. Lap end joints on non deformed metal flashings at least 4 inches; seal laps with elastic sealant or mastic.

3.8 BRICK EXPANSION JOINTS

A. Make joint 3/8" wide, unless otherwise indicated. Where indicated, align joints in concrete unit masonry backup with brick expansion joints.

B. Stop horizontal joint reinforcement 1-inch from expansion joint.

C. Expansion joints may be build in or sawcut, in accord with PCA Handbook.

D. Space pressure-relieving pads at expansion joints indicated on the drawings.

E. Build in movement joints where indicated or recommended by the PCA Handbook and field located by the Architect, or as a minimum as follows:
   1. In running walls spaced maximum 30'-0" o.c.
   2. At corners, joint located one header or stretcher unit from corner.
   3. At intersecting walls, either of which is more than 10'-0" long.
   4. Above joints in foundations and floors and below joints in roofs and floors that bear on masonry walls.
   5. At all abrupt changes in wall height.
   6. At all changes in wall thickness, such as those at pipe or duct chases and those adjacent to columns or pilasters.
   7. At a distance of not over one-half of the allowable joint spacing from bonded intersections or corners.
   8. At door and window openings unless other crack control measures are used, such as joint reinforcement or bond beams.
      a. At one side of openings less than 6'-0" wide.
      b. At both sides of openings greater than 6'-0" wide.
   9. Leave expansion joint open and clean for backer rod and caulking in accord with Joint Sealers section. Caulk joints exterior and interior.

F. Size control joint in accordance with Section 07900 for sealant performance.

G. Form joint as detailed.

3.9 BUILT-IN WORK

A. As work progresses, install built-in metal door frames, fabricated metal frames, anchor bolts, and plates and other items to be built into the work and furnished under other sections.

B. Install built-in items plumb, level, and true to line.

C. Bed anchors of metal door frames in adjacent mortar joints. Fill frame voids solid with grout.
   1. Fill adjacent masonry cores with grout minimum 12 inches from framed openings.

D. Do not build into masonry construction organic materials that are subject to deterioration.

3.10 TOLERANCES

A. Acceptable Tolerances:
   1. Maximum variation from plumb:
      a. In lines and surfaces of walls and arises:
         1) 1/4" in 10'-0".
         2) 3/8" in any story or 20'-0" maximum.
         3) 1/2" in 40'-0" or more.
      b. For external corners, expansion joints and other conspicuous lines:

1) 1/4" in any story or 20'-0" maximum.
2) 3/8" in 40'-0" or more.

2. Maximum variation from level or grades for exposed lintels, sills, parapets, horizontal grooves and other conspicuous lines:
   a. 1/4" in any bay or 20'-0".
   b. 1/2" in 40'-0" or more.
3. Maximum variation of linear building line from established position in plan and related portions of columns, walls and partitions.
   a. 1/4" in any bay or 20'-0".
   b. 3/4" in 40'-0" or more.
4. Maximum variation in cross-sectional dimensions of columns and thickness of walls:
   a. Not less than 1/4" smaller nor more than 1/2" larger than indicated.

3.11 CUTTING AND FITTING

A. Where cutting is required, use power saws to provide clean, sharp, unchipped edges.

B. Cut and fit for pipes, conduit, and sleeves. Coordinate with other sections of work to provide correct size, shape,and location.

C. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

D. Remove and replace masonry where appearance is unacceptable.

3.12 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01400.

B. Mortar Tests: Test each type of mortar in accordance with ASTM C 780, testing with same frequency as masonry samples.

3.13 REPAIRING MASONRY

A. Replacement: Carefully remove areas of damaged masonry and replace with matching , undamaged units using mortar which matches original work.

B. Pointing: As joints are tooled, remove mortar with visible holes or mortar which cannot be compacted properly because of hidden voids, and replace with fresh mortar , filling each joint completely and tooling to match adjacent work.

3.14 CLEANING

A. At least 21 days prior to application of specified cleaning solution to brick work, apply solution on half of the surface of the sample panel. Should discoloration of brick or mortar joints, staining or efflorescence appear on sample panel, notify the Architect for further instructions before proceeding with final surface cleaning.

B. No wet cleaning shall take place within seven days of placing masonry.

C. Apply manufactured cleaning compound on brick masonry as tested on sample panel in accordance with manufacturer's product data. Flush with clean water.

D. At least two hours prior to application of cleaning solution to brick work, saturate mortar joints with clean water and brush off loose debris.

E. Begin cleaning operation at highest point of wall, working downward in areas of 20 S.F. maximum. As cleaning progresses, flush wall to prevent accumulation of loosened residues. Do not allow wetted walls below level of cleaning to dry and leave previously diluted residues from cleaning.

F. Safely discard solutions containing debris and residue.

G. Do not scrub mortar joints with cleaning solution.

H. Do not use high pressure water streams to clean any brick surfaces.

I. Protect materials adjacent to brick work which are subject to corrosion from contact with cleaning solution.

J. Remove stains in accordance with recommendations of the Brick Institute of America, Technical Notes #20,

1990 edition. Use cleaning agents only after pretesting on sample panel.

K. Remove excess mortar and mortar smears on clay masonry as work progresses.

L. Replace defective mortar. Match adjacent work.

M. Clean soiled surfaces with cleaning solution and as recommended by the material manufacturer for the surface to be cleaned.

3.15 PROTECTION OF FINISHED WORK

A. Without damaging completed work, provide protective boards at exposed external corners which are subject to damage by construction activities.

B. Institute other protective measures as necessary to ensure that unit masonry work will be clean, free of staining from adjacent soils, and undamaged at substantial completion. Reclean any brick work soiled or stained after initial cleaning and prior to Substantial Completion.

3.16 MASONRY WASTE DISPOSAL

A. Recycling: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.

B. Disposal as Fill Material: Dispose of clean masonry waste, including broken masonry units, waste mortar, and excess or soil-contaminated sand, by crushing and mixing with fill material as fill is placed.
   1. Crush masonry waste to less than 4 inches (100 mm) in each dimension.
   2. Mix masonry waste with at least two parts of specified fill material for each part of masonry waste. Fill materials is specified in Division 2 Section "Earthwork."
   3. Do not dispose of masonry waste as fill within 18 inches (450 mm) of finished grade.

C. Excess Masonry Waste: Remove excess, clean masonry waste that cannot be used as fill, as described above, and other masonry waste, and legally dispose of off Lumpkin County's property.

END OF SECTION