DIVISION 4

MASONRY

BUSHEY FEIGHT MORIN ARCHITECTS INC.
473 NORTH POTOMAC STREET
HAGERSTOWN, MARYLAND 21740
301-733-5600 FAX: 301-733-5612

PART 1 GENERAL

1.1 SUMMARY

A. Section includes mortar and grout for masonry.

B. Related Sections:
1. Section 04810 - Unit Masonry Assemblies: Installation of mortar and grout.
2. Section 08110 - Steel Doors and Frames: Grouting steel door frames.

1.2 REFERENCES

A. American Concrete Institute:
1. ACI 530 - Building Code Requirements for Masonry Structures.
2. ACI 530.1 - Specifications for Masonry Structures.

B. ASTM International:
1. ASTM C5 - Standard Specification for Quicklime for Structural Purposes.
2. ASTM C91 - Standard Specification for Masonry Cement.
3. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete.
4. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic Cement Concrete.
5. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar.
6. ASTM C150 - Standard Specification for Portland Cement.
7. ASTM C199 - Standard Test Method for Pier Test for Refractory Mortars.
8. ASTM C206 - Standard Specification for Finishing Hydrated Lime.
9. ASTM C270 - Standard Specification for Mortar for Unit Masonry.
10. ASTM C387 - Standard Specification for Packaged, Dry, Combined Materials for Mortar and Concrete.
11. ASTM C404 - Standard Specification for Aggregates for Masonry Grout.
12. ASTM C476 - Standard Specification for Grout for Masonry.
13. ASTM C595 - Standard Specification for Blended Hydraulic Cements.
14. ASTM C780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry.
15. ASTM C1019 - Standard Test Method for Sampling and Testing Grout.
16. ASTM C1142 - Standard Specification for Extended Life Mortar for Unit Masonry.
17. ASTM C1314 - Standard Test Method for Constructing and Testing Masonry Prisms Used to Determine Compliance with Specified Compressive Strength of Masonry.
18. ASTM C1329 - Standard Specification for Mortar Cement.
19. ASTM C1357 - Standard Test Method for Evaluating Masonry Bond Strength.

1.3 SUBMITTALS

A. Section 01330 - Submittal Procedures: Submittal requirements.

B. Samples: Submit two samples of mortar, illustrating mortar color and color range.

C. Design Data: Submit design mix when Property specification of ASTM C270 is to be used, required environmental conditions, and admixture limitations.

D. Test Reports:

1. Submit reports on mortar indicating conformance of mortar to property requirements of ASTM C270 and test and evaluation reports to ASTM C780 for aggregate ratio and water content, air content, consistency and compressive strength.
2. Submit reports on grout indicating conformance of grout to property requirements of ASTM C476 and test and evaluation reports to ASTM C1019.

E. Manufacturer's Installation Instructions: Submit premix mortar manufacturer's installation instructions.

F. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 530 and ACI 530.1.

1.5 ENVIRONMENTAL REQUIREMENTS

A. Section 01600 - Product Requirements.

B. Cold Weather Requirements: In accordance with ACI 530.1 when ambient temperature or temperature of masonry units is less than 40 degrees F.

C. Hot Weather Requirements: In accordance with ACI 530.1 when ambient temperature is greater than 100 degrees F or ambient temperature is greater than 90 degrees F with wind velocity greater than 8 mph.

PART 2 PRODUCTS

2.1 MORTAR AND MASONRY GROUT

A. Manufacturers:
1. Essroc
2. Riverton, Product Flamingo
3. Substitutions: Section 01600 - Product Requirements.

2.2 COMPONENTS

A. Mortar Cement: ASTM C1329, Types S.

B. Mortar Aggregate: ASTM C144, standard masonry type.

C. Grout Aggregate: ASTM C404, fine.

D. Water: Clean and potable.

E. Mortar Color: Match existing.

2.3 MIXES

A. Mortar Mixes:
1. Mortar For Structural Masonry: ASTM C270, Type S using Proportion specification.
2. Mortar For Non-Structural Masonry: ASTM C270, Type S using Proportion specification.
3. Pointing Mortar: ASTM C270, Type N using Proportion specification.

B. Mortar Mixing:
   1. Thoroughly mix mortar ingredients in accordance with ASTM C270 in quantities needed for immediate use.
   2. Achieve uniformly damp sand immediately before mixing process.
   3. Add mortar color and admixtures to achieve uniformity of mix and coloration.
   4. Re-temper only within two hours of mixing.

C. Grout Mixes:
   1. Grout for Non-Structural Masonry: 2,000 psi strength at 28 days; 8-11 inches slump; mixed in accordance with ASTM C476 Fine or Course grout.
   2. Grout for Structural Masonry: 2,000 psi strength at 28 days; 8-11 inches slump; mixed in accordance with ASTM C476 Fine or Course grout.
   3. Application:
      a. Coarse Grout: For grouting spaces with minimum 4 inches dimension in every direction.
      b. Fine Grout: For grouting other spaces.

D. Grout Mixing:
   1. Thoroughly mix grout ingredients in quantities needed for immediate use in accordance with ASTM C476.
   2. Add admixtures; mix uniformly.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01300 - Administrative Requirements: Coordination and project conditions.

B. Request inspection of spaces to be grouted.

3.2 PREPARATION

A. Apply bonding agent to existing concrete surfaces.

3.3 INSTALLATION

A. Install mortar and grout in accordance with ACI 530.1 Specifications for Masonry Structures.

3.4 FIELD QUALITY CONTROL

A. Section 01400 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.

B. Testing Frequency: One set of specified tests for every 5,000 sf of completed wall area.

C. Testing of Mortar Mix: In accordance with ASTM C780 for aggregate ratio and water content, air content, consistency, and compressive strength.

D. Testing of Grout Mix: In accordance with ASTM C1019 for compressive strength, and in accordance with ASTM C143/C143M for slump.

E. Test flexural bond strength of mortar and masonry units to ASTM C1357; test in conjunction with masonry unit sections specified.

F. Test compressive strength of mortar and masonry to ASTM C1314; test in accordance with masonry unit sections specified.

3.5 SCHEDULES

A. Exterior Cavity Wall: Brick masonry with Type S mortar with Type N pointing mortar.

B. Interior Masonry Walls: Type S mortar.

END OF SECTION

PART 1 — GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the contract, including general and supplementary conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following horizontal and trim quartz surface product types:
   1. Countertops with or without undermount bowls
   2. Reception areas
   3. Vanity tops

B. Related Sections include the following:
   1. Section 06100 - Rough Carpentry: Blocking materials.

1.3 SUBMITTALS

A. Product data:
   1. For each type of product indicated.

B. Shop drawings:
   1. Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices and other components.
      a. Show the following:
         1) Full-size details, edge details, attachments, etc.
         2) Locations and sizes of furring, blocking, including concealed blocking and reinforcement specified in other Sections.
         3) Locations and sizes of cutouts and holes for plumbing fixtures, faucets, soap dispensers, waste receptacle and other items installed in quartz surface.
         4) Seam locations.

C. Samples:
   1. For each type of product indicated:
      a. Submit minimum 6-inch by 6-inch sample in specified color.
      b. Cut sample and seam together for representation of seaming techniques.
      c. Indicate full range of color and pattern variation.
   2. Approved samples will be retained as a standard for work.

D. Product data:
   1. Indicate product description, fabrication information and compliance with specified performance requirements.

F. Product certificates:
   1. For each type of product, signed by product manufacturer.

G. Fabricator/installer qualifications:
   1. Provide copy of certification number.

H. Manufacturer certificates:
   1. Signed by manufacturers certifying that they comply with requirements.

I. Maintenance data:
   1. Submit manufacturer’s care and maintenance data.
      a. Maintenance kit for finishes shall be submitted.

2. Include in project closeout documents.

1.4 QUALITY ASSURANCE

A. Qualifications:
1. Shop that employs skilled workers who custom fabricate products similar to those required for this project and whose products have a record of successful in-service performance.

B. Fabricator/installer qualifications:
1. Work of this section shall be by a certified fabricator/installer, certified in writing by the manufacturer.

C. Applicable standards:
1. Standards of the following, as referenced herein:
a. American National Standards Institute (ANSI)
b. American Society for Testing and Materials (ASTM)
c. National Electrical Manufacturers Association (NEMA)
d. NSF International
2. Fire test response characteristics:
a. Provide with the following Class A (Class I) surface burning characteristics as determined by testing identical products per UL 723 (ASTM E 84) or another testing and inspecting agency acceptable to authorities having jurisdiction.
b. Flame Spread Index: 25 or less.
c. Smoke Developed Index: 450 or less.

D. Allowable tolerances:
1. Variation in component size: ±1/8" (3 mm) over a 10' length.
2. Location of openings: ±1/8" (3 mm) from indicated location.
3. Maximum 1/8" (3 mm) clearance between quartz surfaces and each wall.

E. Job mock-up:
1. Prior to fabrication of architectural millwork, erect sample unit to further verify selections made under sample submittals and to demonstrate the quality of materials and execution.
2. Build the mock-up to comply with the contract documents and install in a location as directed by the architect.
3. Notify the architect two weeks in advance of the date of when the mock-up will be delivered.
4. Should mock-up not be approved, re-fabricate and reinstall until approval is secured.
a. Remove rejected units from project site.
5. After approval, the mock-up may become a part of the project.
6. This mock-up, once approved, shall serve as a standard for judging quality of all completed units of work.

F. Pre-installation conference:
1. Conduct conference at project site to comply with requirements in Division 1.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver no components to project site until areas are ready for installation.

B. Store components indoors prior to installation.

C. Handle materials to prevent damage to finished surfaces.
1. Provide protective coverings to prevent physical damage or staining following installation for duration of project.

1.6 WARRANTY

A. Provide manufacturer's 10-year warranty against defects in materials.
   1. Warranty shall provide material to repair or replace defective materials.
   2. Damage caused by physical or chemical abuse or damage from excessive heat will not be warranted.

1.7 MAINTENANCE

A. Provide maintenance requirements as specified by the manufacturer.

PART 2 — PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the requirements, provide the following product:
   1. Zodiaq® quartz surfaces from DuPont (basis of design)
   2. Substitutions in accordance with Section 01600.

2.2 MATERIALS

A. Material:
   1. Homogeneous quartz surfaces material.
   2. Material shall have minimum physical and performance properties specified.

B. Thickness:
   1. 3 cm (1 1/8").

C. Edge treatment:
   1. Double eased.

D. Seam width:
   1. <1/8" unless otherwise specified.

E. Sink mounting:
   1. Undermount.

F. Backsplash:
   1. Applied.

G. Endsplash:
   1. Applied.

H. Performance characteristics: Zodiaq® physical properties data sheet:

Property	Typical Result	Test Procedure
Flexural Strength	>5,300 psi	ASTM D 790
Flexural Modulus	5.3–5.7E^{6} psi	ASTM D 790
Flexural Elongation	>0.1%	ASTM D 790
Compression Strength (Dry)	~27,000 psi	ASTM C 170
Compression Strength (Wet)	~24,000 psi	ASTM C 170
Hardness	7	Mohs' Hardness Scale
Thermal Expansion	1.45 x 10^{-5} in./in./°C	ASTM D 696
Gloss (60° Gardner)	45–50	ANSI Z 124
Colorfastness	Passes	ANSI Z 124.6.5.1
Wear and Cleanability	Passes	ANSI Z 124.6.5.3

Stain Resistance	Passes	ANSI Z 124.6 (stain 5.2, chemical 5.5, cigarette 5.4 resistances)
Fungal and Bacterial Resistance	No growth	ASTM G 21 & G 22
High Temperature Resistance (356°F)	None to slight effect	NEMA LD 3.3.6*
Boiling Water Resistance	None to slight effect	NEMA LD 3.3.5*
Freeze-Thaw Cycling	Unaffected	ASTM C 1026
Point Impact	Passes	ANSI Z 124.6.4.2
Ball Impact	164 inches	NEMA LD 3.3.8*
Slip Resistance	Above 0.80 for textured models	ASTM C 1028
Static Coefficient of Friction (as received)	0.89/0.61 (wet/dry)	ASTM C 1028
Static Coefficient of Friction (with renovator)	0.87/0.65 (wet/dry)	ASTM C 1028
Abrasion Resistance	139	ASTM C 501
Specific Gravity	2.44	ASTM D 792
Density	~2400 kg/m3	
Water Absorption	0.12%	ASTM C 373
Long- and Short-Term	<0.04%	ASTM D 570
Moisture Expansion	<0.01% on average	ASTM C 370
Toxicity	Passes, LC50=68–128	Pittsburgh Protocol
Flammability	For all colors tested (Class I and Class A)	ASTM E 84, UL 723 and NFPA 255
Flame Spread Index	FSI <10 for 3 cm and <15 for 2 cm	
Smoke Developed Index	SDI <50 for 3 cm and <100 for 2 cm	
Nominal Thickness	2 cm and 3 cm	
Nominal Weight	10 lb./ft.2 (2 cm) 15 lb./ft.2 (3 cm)	

* NEMA results based on the NEMA LD 3-2000

2.3 ACCESSORY PRODUCTS

A. Joint adhesive:
   1. DuPont-approved adhesive to create color-matched seam.

B. Sink/bowl mounting hardware:
   1. Manufacturer’s approved bowl clips, brass inserts and fasteners for attachment of undermount sinks/bowls.

2.4 FACTORY FABRICATION

A. Shop assembly
   1. Fabricate components to greatest extent practical to sizes and shapes indicated, in accordance with approved shop drawings and manufacturer’s printed instructions and technical bulletins.
   2. Form joints between components using manufacturer’s standard joint adhesive joints.
      a. Reinforce as required.
   3. Provide factory cutouts for plumbing fittings and bath accessories as indicated on the drawings.
   4. Rout and finish component edges with clean, sharp returns.
      a. Rout cutouts, radii and contours to template.
      b. Smooth edges.

2.5 FINISHES

A. Select from the manufacturer’s standard color chart.
   1. Color: As selected by Owner/ Architect.

PART 3 — EXECUTION

3.1 INSTALLATION

A. Install components plumb and level, in accordance with approved shop drawings and product installation details.
   1. Tops:
      a. Flat and true to within 1/8" (3 mm) of a flat surface over a 10' length.
      b. Allow a minimum of 1/16" to a maximum of 1/8" (3 mm) clearance between surface and each wall.

B. Form field joints using manufacturer's recommended adhesive, with joint widths no greater than 1/8" (3 mm) in finished work.
   1. Keep components and hands clean when making joints.

C. Sinks:
   1. Adhere undermount sinks/bowls to countertops using manufacturer's recommended adhesive and mounting hardware.
   2. Adhere drop-in sinks/bowls to countertops using manufacturer-recommended adhesives and color-matched silicone sealant.

D. Provide backsplashes and endsplashes as indicated on the drawings.
   1. Adhere to countertops using manufacturer's standard color-matched silicone sealant.

E. Keep components and hands clean during installation.
   1. Remove adhesives, sealants and other stains.
   2. Components shall be clean on date of substantial completion.

F. Connections:
   1. Make plumbing connections in accordance with Division 15.
   2. Make electrical connections in accordance with Division 16.

3.2 CLEANING AND PROTECTION

A. Keep components clean during installation.
   1. Remove adhesives, sealants and other stains.

B. Protect surfaces from damage until date of substantial completion.
   1. Replace damaged work.

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

A. Section includes brick and concrete masonry units; pre-faced brick concrete masonry units; reinforcement, anchorage, and accessories; and parged masonry surfaces, and glass block.

B. Related Sections:
1. Section 04100 - Masonry Mortar and Grout: Mortar and grout.
2. Section 05120 - Structural Steel: Product requirements for steel anchors for placement by this section.
3. Section 05210 - Steel Joists: Product requirements for steel bearing pads for joists for placement by this section.
4. Section 05500 - Metal Fabrications: Product requirements for loose steel lintels and fabricated steel items for placement by this section.
5. Section 07210 - Thermal Insulation: Insulation for cavity spaces.
6. Section 07272 - Fluid-Applies Membrane Air Barriers.
7. Section 07840 - Firestopping: Firestopping at penetrations of masonry work.
8. Section 07900 - Joint Sealers: Rod and sealant at control and expansion joints.

1.2 REFERENCES

A. American Concrete Institute:
1. ACI 530 - Building Code Requirements for Masonry Structures.
2. ACI 530.1 - Specifications for Masonry Structures.

B. ASTM International:
1. ASTM A153/A153M - Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
2. ASTM A240/A240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
3. ASTM A307 - Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.
4. ASTM A615/A615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
5. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
6. ASTM A951 - Standard Specification for Masonry Joint Reinforcement.
7. ASTM B370 - Standard Specification for Copper Sheet and Strip for Building Construction.
8. ASTM B695 - Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel.
9. ASTM C55 - Standard Specification for Concrete Brick.
10. ASTM C62 - Standard Specification for Building Brick (Solid Masonry Units Made From Clay or Shale).
11. ASTM C67 - Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile.
12. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units.
13. ASTM C129 - Standard Specification for Nonloadbearing Concrete Masonry Units.
14. ASTM C140 - Standard Test Methods of Sampling and Testing Concrete Masonry Units.
15. ASTM C216 - Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale).

16. ASTM C652 - Standard Specification for Hollow Brick (Hollow Masonry Units Made From Clay or Shale).
17. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.
18. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.

C. National Fire Protection Association:
1. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials.

D. Underwriters Laboratories Inc.:
1. UL 723 - Tests for Surface Burning Characteristics of Building Materials.

1.3 SUBMITTALS

A. Section 01330 - Submittal Procedures: Submittal requirements.

B. Product Data:
1. Submit data for concrete masonry units and fabricated wire reinforcement, wall ties, anchors, and other accessories.
2. Indicate initial rate of absorption for face brick.

C. Samples: Submit four samples of face brick, units to illustrate color, texture and extremes of color range.

D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 530 Building Code Requirements for Masonry Structures and ACI 530.1 Specification for Masonry Structures.

B. Fire Rated Wall Construction: Rating as indicated on Drawings.
1. Tested Rating: Determined in accordance with ASTM E119.

C. Surface Burning Characteristics:
1. Foam Insulation: Maximum 75/450 flame spread/smoke developed index when tested in accordance with ASTM E84.

D. Apply label from agency approved by authority having jurisdiction to identify each foam plastic insulation insert.

1.5 QUALIFICATIONS

A. Installer: Company specializing in performing Work of this section with minimum three years documented experience.

1.6 MOCKUP

A. Section 01400 - Quality Requirements: Mockup requirements.

B. Construct composite cavity masonry wall mockup, 8 feet long by 4 feet high, including masonry, accent masonry, cast stone accents, mortar and accessories, structural backup, flashings, wall insulation, air and vapor membrane, parging, and ,mortar net with weeps.

C. Locate where directed by Architect/Engineer.

D. Remove mockup when directed by Architect/Engineer.

1.7 PRE-INSTALLATION MEETINGS

A. Section 01300 - Administrative Requirements: Pre-installation meeting.

B. Convene minimum one week prior to commencing work of this section.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Section 01600 - Product Requirements: Product storage and handling requirements.

B. Accept pre-faced units on site. Inspect for damage.

1.9 ENVIRONMENTAL REQUIREMENTS

A. Section 01600 - Product Requirements.

B. Cold Weather Requirements: In accordance with ACI 530.1 when ambient temperature or temperature of masonry units is less than 40 degrees F.

C. Hot Weather Requirements: In accordance with ACI 530.1 when ambient temperature is greater than 100 degrees F or ambient temperature is greater than 90 degrees F with wind velocity greater than 8 mph.

1.10 COORDINATION

A. Section 01300 - Administrative Requirements: Coordination and project conditions.

B. Coordinate masonry work with installation of window and door anchors.

1.11 EXTRA MATERIALS

A. Section 01700 - Execution Requirements: Spare parts and maintenance products.

B. Supply 20 of each size, color, and type of pre-faced units.

PART 2 PRODUCTS

2.1 UNIT MASONRY ASSEMBLIES

A. Manufacturers (Brick):
   1. Redland Brick
   2. Glen-Gery Brick
   3. Substitutions: Section 01600 - Product Requirements.

2.2 COMPONENTS

A. Facing Brick: ASTM C216, Type FBS, Grade SW. Match existing color and texture.

B. Building Brick: ASTM C62, Grade SW; solid units.

C. Hollow Brick: ASTM C652, Grade SW.

D. Brick Size and Shape: Nominal size of 4 x 4 x 8 inches. Furnish special units for 90 degree corners, lintels, and bullnosed corners.

E. Special Brick Shape: Shaped to profile indicated; surface texture on four sides and ends.

F. Hollow Load Bearing Concrete Masonry Units (CMU): ASTM C90; normal weight.

G. Solid Load-Bearing Concrete Masonry Units (CMU): ASTM C90; normal weight.

H. Hollow Non-Load Bearing Concrete Masonry Units (CMU): ASTM C129 light weight.

I. Concrete Brick Units: ASTM C55, Grade S; same weight as block units.

J. Concrete Masonry Unit Size and Shape: Nominal modular size of 8 x 8 x 16 inches. Furnish special units for 90 degree corners, bond beams, lintels, and bullnosed corners.

K. Stone Masonry Units: ASTM C-140, equal to Prairie Stone Nominal 4x8x24 rockface and 4x16x24 ground face. Color: Buff.

2.3 ACCESSORIES

A. Single Wythe Joint Reinforcement: ASTM A951; truss type; steel; 0.188 inch diameter side rods with 0.148 inch diameter cross ties; hot dip galvanized.

B. Multiple Wythe Joint Reinforcement: ASTM A951; truss type; steel; with moisture drip; adjustable type; 0.188 inch diameter side rods with 0.148 inch diameter cross ties; hot dip galvanized.

C. Reinforcing Steel: ASTM A615/A615M, 60 ksi yield grade, deformed billet bars, uncoated finish.

D. Strap Anchors: bent steel shape, 1 1/2 x 24 inch size x 1/4 inch thick; ASTM A153/ A153M hot dip galvanized.

E. Wall Ties (CMU): Corrugated formed sheet metal, 7/8 x 7 inch size x 16 gage thick; ASTM A153/A153M hot dip galvanized.

F. Wall Ties (Metal Studs): ASTM A82; steel wire 3/16 inch diameter, adjustable; ASTM A153/A153M hot dip galvanized, designed to span specified cavity.

G. Anchor Rods: ASTM A307; Grade C; J-shaped or L-shaped; complete with washers and heavy hex nuts; sized for minimum 15 inch embedment; galvanized finish.
   1. Hot-Dipped Galvanizing: ASTM A153/A153M.

H. Mortar and Grout: As specified in Section 04100.

I. Copper/Kraft Paper Flashings: Equal to York Manufacturing 5 oz. CDA alloy cooper sheet with 060 temper conforming to ASTM B-370-98 bonded between two layers of fabric weighing not less than $0.3 oz/ft^2$ with a minimum of 20 x 10 threads per inch.

J. Stainless Steel Drip Edge Flashing: ASTM A240, Type 304; 26 gage x 1 ½" wide with 3/8" hemmed edge.

K. Preformed Control Joints: Polyvinyl chloride material. Furnish with corner and tee accessories, heat fused joints.

L. Joint Filler: Closed cell polyvinyl chloride; oversized 50 percent to joint width; self expanding; 3/8 inch wide x by maximum lengths.

M. Cavity Drain Material (Mortar Net): Open polyethylene dovetail mesh thickness required to fill cavity space, and shaped to ensure moisture drainage to cavity weeps.
   1. Advanced Building Products, Inc.
   2. CavClear/Archovations Inc.

3. Mortar Net USA, Ltd.
4. Dur-O-Wall, Inc.
5. Substitutions: Section 01600 - Product Requirements.

N. Building Paper: ASTM D226; Type I, No. 15 unperforated asphalt felt.

O. Nailing Strips: Softwood, preservative treated for moisture resistance, dovetail shape, sized to masonry joints.

P. Weeps: Equal to mortar net's weep vents fabricated from 90% open weave polyester mesh. Color as selected.

Q. Foundation Damp Proofing: Equal to Sonneborn Hydrocide 700 applies at a rate of 12.5 sf per gallon.

R. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.

S. Precast Concrete Lintels: Type, size, as indicated on Drawings 3,000 psi strength at 28 days.

T. Steel Lintels: size as indicated on Drawings, hot-dip galvanized.

2.4 SOURCE QUALITY CONTROL

A. Section 01400 - Quality Requirements: Testing, inspection and analysis requirements.

B. Test brick efflorescence in accordance with ASTM C67. Brick rated greater than "slightly effloresced" is not acceptable.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01300 - Administrative Requirements: coordination and project conditions.

B. Verify field conditions are acceptable and are ready to receive work.

C. Verify items provided by other sections of work are properly sized and located.

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

3.2 PREPARATION

A. Direct and coordinate placement of metal anchors supplied to other sections.

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

C. Wet clay and shale brick before laying when initial rate of absorption is greater than 30 grams when tested in accordance with ASTM C67.

3.3 INSTALLATION

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

B. Maintain masonry courses to uniform dimension. Form bed and head joints of uniform thickness.

C. Coursing of Concrete Masonry Units:
   1. Bond: Running.
   2. Coursing: One unit and one mortar joint to equal 8 inches.
   3. Mortar Joints: Concave.

D. Coursing of Brick Units:
   1. Bond: Running.
   2. Coursing: Three units and three mortar joints to equal 8 inches.
   3. Mortar Joints: Concave.

E. Placing And Bonding:
   1. Lay solid masonry units in full bed of mortar, with full head joints.
   2. Lay hollow masonry units with face shell bedding on head and bed joints.
   3. Buttering corners of joints or excessive furrowing of mortar joints are not permitted.
   4. Remove excess mortar as work progresses.
   5. Interlock intersections and external corners.
   6. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment is required, remove mortar and replace.
   7. Perform job site cutting of masonry units with proper tools to assure straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
   8. Cut mortar joints flush where wall tile is scheduled, cement parging is required, resilient base is scheduled, cavity insulation vapor retarder adhesive is applied, or bitumen dampproofing is applied.
   9. Isolate masonry from vertical structural framing members with movement joint using ½ inch polystrene insulation or expansion joint mortar.
   10. Isolate top of masonry from horizontal structural framing members and slabs or decks with compressible joint filler.

F. Weeps and Vents: Furnish weeps and vents in outer wythe at 24 inches oc horizontally above through-wall flashing, above shelf angles and lintels, and at bottom of walls.

G. Cavity Wall: Do not permit mortar to drop or accumulate into cavity air space or to plug weeps. Build inner wythe ahead of outer wythe to receive cavity insulation and air/vapor retarder adhesive.
   1. Install cavity drain material continuously at bottom of each cavity above through wall flashing and at all flashing locations.

H. Joint Reinforcement And Anchorage - Single Wythe Masonry:
   1. Install horizontal joint reinforcement 16 inches oc.
   2. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
   3. Place joint reinforcement continuous in first and second joint below top of walls.
   4. Lap joint reinforcement ends minimum 6 inches.
   5. Reinforce joint corners and intersections with strap anchors 16 inches oc.

I. Joint Reinforcement And Anchorage - Masonry Veneer:
   1. Install horizontal joint reinforcement 16 inches oc.
   2. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
   3. Place joint reinforcement continuous in first [and second] joint below top of walls.
   4. Lap joint reinforcement ends minimum 6 inches.
   5. Embed wall ties in masonry backing to bond veneer at maximum 16 inches oc vertically and 16 inches oc horizontally. Place wall ties at maximum 8 inches oc vertically within 8 inches of jamb of wall openings.

J. Joint Reinforcement And Anchorages - Cavity Wall Masonry:
   1. Install horizontal joint reinforcement 16 inches oc.

2. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
3. Place joint reinforcement continuous in first and second joint below top of walls.
4. Lap joint reinforcement ends minimum 6 inches.
5. Attach to structural steel members. Embed anchorages in every second block, sixth brick joint.
6. Reinforce joint corners and intersections with strap anchors 16 inches oc.

K. Reinforcement And Anchorages - Multiple Wythe Unit Masonry:
1. Install horizontal joint reinforcement 16 inches oc.
2. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
3. Place joint reinforcement continuous in first and second joint below top of walls.
4. Lap joint reinforcement ends minimum 6 inches.
5. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.
6. Embed anchors attached to structural steel members. Embed anchorages in every second block, sixth brick joint.
7. Reinforce stack bonded unit joint corners and intersections with strap anchors 16 inches oc.

L. Masonry Flashings:
1. Extend flashings horizontally on top of drip edge flashing through outer wythe at foundation walls, above ledge or shelf angles and lintels, under parapet caps, at bottom of walls, and trim flush with mortar joint.
2. Turn flashing up minimum 8 inches and bed into mortar joint of masonry, seal to concrete, seal to sheathing over wood or steel stud framed backing.
3. Lap end joints minimum 6 inches and seal watertight using manufactures recommended adhesive and sealer.
4. Turn flashing, fold, and seal at corners, bends, and interruptions.

M. Lintels:
1. Install loose steel or precast concrete lintels over openings sized per structural drawings.
2. Install reinforced unit masonry lintels over openings where steel or precast concrete lintels are not scheduled or indicated.
3. Do not splice reinforcing bars.
4. Support and secure reinforcing bars from displacement.
5. Place and consolidate grout fill without displacing reinforcing.
6. Allow masonry lintels to attain specified strength before removing temporary supports.
7. Maintain minimum 8 inch bearing on each side of opening.

N. Grouted Components:
1. Reinforce bond beam as indicated on structural drawings.
2. Lap splices bar diameters required by code.
3. Support and secure reinforcing bars from displacement.
4. Place and consolidate grout fill without displacing reinforcing.
5. At bearing locations, fill masonry cores with grout for minimum 12 inches both sides of opening.

O. Reinforced Masonry:
1. Lay masonry units with cells vertically aligned and clear of mortar and unobstructed.
2. Place reinforcement bars as indicated on Drawings.
3. Splice reinforcement in accordance with Section 03200.
4. Support and secure reinforcement from displacement.
5. Place and consolidate grout fill without displacing reinforcing.

6. Place grout in accordance with ACI 530.1 Specification for Masonry Structures.

P. Control and Expansion Joints:
1. Install control joints at the following maximum spacings, unless otherwise indicated on Drawings:
   a. Exterior Walls: 20 feet on center and within 24 inches on one side of each interior and exterior corner.
   b. Interior Walls: 30 feet on center.
   c. At changes in wall height.
2. Do not continue horizontal joint reinforcement through control and expansion joints.
3. Form control joint with sheet building paper bond breaker fitted to one side of hollow contour end of block unit. Fill resultant core with grout fill. Rake joint at exposed unit faces for placement of backer rod and sealant.
4. Size control joint in accordance with Section 07900 for sealant performance.
5. Form expansion joint by omitting mortar and cutting unit to form open space.

Q. Built-In Work:
1. As work progresses, install built-in metal door and glazed frames, fabricated metal frames, window frames, wood nailing strips, anchor bolts, plates, and other items to be built-in the work and furnished by other sections.
2. Install built-in items plumb and level.
3. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout or mortar. Fill adjacent masonry cores with grout minimum 12 inches from framed openings.
4. Do not build in materials subject to deterioration.

R. Cutting And Fitting:
1. Cut and fit for chases, pipes, conduit, sleeves, and grounds. Coordinate with other sections of work to provide correct size, shape, and location.
2. Obtain Architect/Engineer's approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

S. Parging:
1. Dampen masonry walls prior to parging.
2. Scarify each parging coat to ensure full bond to subsequent coat.
3. Parge masonry walls in two uniform coats of mortar to total thickness of 3/4 inch.
4. Steel trowel surface smooth and flat with maximum surface variation of 1/8 inch per foot.
5. Strike top edge of parging at 45 degrees.

3.4 ERECTION TOLERANCES

A. Section 01400 - Quality Requirements: Tolerances.

B. Maximum Variation From Alignment of Columns: 1/4 inch.

C. Maximum Variation From Unit to Adjacent Unit: 1/32 inch.

D. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.

E. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.

F. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.

G. Maximum Variation of Joint Thickness: 1/8 inch in 3 ft.

H. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

I. Maximum Variation for Steel Reinforcement:
1. Install reinforcement within the tolerances specified in ACI 530.1 for foundation walls.
2. Plus or minus 1/2 inch when distance from centerline of steel to opposite face of masonry is 8 inches or less.
3. Plus or minus 1 inch when distance is between 8 and 24 inches.
4. Plus or minus 1-1/4 inch when distance is greater than 24 inches.
5. Plus or minus 2 inches from location along face of wall.

3.5 FIELD QUALITY CONTROL

A. Section 01400 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.

B. Brick Units: Test each type in accordance with ASTM C67, 5 random units for each 50,000 units installed.

C. Concrete Masonry Units: Test each type in accordance with ASTM C140.

3.6 CLEANING

A. Section 01700 - Execution Requirements: Final cleaning.

B. Remove excess mortar and mortar smears as work progresses.

C. Replace defective mortar. Match adjacent work.

D. Clean soiled surfaces with cleaning solution.

E. Use non-metallic tools in cleaning operations.

3.7 PROTECTION OF FINISHED WORK

A. Section 01700 - Execution Requirements: Requirements for protecting finished Work.

B. Protect exposed external corners subject to damage.

C. Protect base of walls from mud and mortar splatter.

D. Protect masonry and other items built into masonry walls from mortar droppings and staining caused by mortar.

E. Protect tops of masonry work with waterproof coverings secured in place without damaging masonry. Provide coverings where masonry is exposed to weather when work is not in progress.

3.8 SCHEDULES

A. Exterior Wall (Masonry Back Up): Composite masonry with exterior wythe of face brick veneer, bonded with wire ladder reinforcement to inner wythe of interior concrete block masonry (CMU) with nominal 3 inch space for insulation. Air and vapor barrier membrane per Section 07272.

B. Exterior Wall (Stud Back Up): Exterior wythe of face brick veneer bonded with adjustable anchors to metal stud back up with a 4-3/4 inch space for insulation. Air and vapor barrier membrane per Section 07272.

C. Interior Partitions: Single wythe concrete masonry units.

D. Interior Fire Walls: One and two hour walls of grout filled concrete masonry with locations identified on Drawings.

END OF SECTION