

**SECTION 04 23 13
GLASS UNIT MASONRY**

1.01 REFERENCE STANDARDS

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- B. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2018.
- C. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2018.
- D. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2019a, with Editorial Revision.
- E. ASTM C780 - Standard Test Methods for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry; 2023.

PART 1.00 – GENERAL

2.01

A. GENERAL REQUIREMENTS

- 1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications Sections, apply to this Section.

B. Work Included

- 1. The Work of this Section includes all labor, materials, equipment and services necessary to complete the glass unit masonry work as shown on the drawings and/or specified herein, including but is not necessarily limited to the following:
 - a. Interior hollow glass block unit masonry assembly complete with cast glass units set in stainless steel frames.
 - b. Integral Joint Reinforcement
 - c. Mortar

C. Related Work

A. MISCELLANEOUS METALS – SECTION 05 50 00

B. JOINT SEALERS - SECTION 07 90 00

A. References

- B. ASTM A123/A123M- Standard Specification for Zinc (Hot-Dip Galvanized)Coatings on Iron and Steel Products; 1997a.
 - 1. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 1999b
 - 2. ASTM C780 – Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry; 1996
 - 3. IMIABC (CW) – Recommended Practices & Guide Specifications for Cold Weather Masonry Construction; International Masonry Industry All Weather Council ; 1993
 - 4. IMIABC (HW) – Recommended Practices & Guide Specifications for Hot Weather Masonry Construction; International Masonry Industry All Weather Council ; Current Edition

C. SUBMITTALS

- 1. Product Data

SUBMIT TWO (2) COPIES OF MANUFACTURER’S LITERATURE AND TWO (2) COPIES OF MANUFACTURER’S INSTALLATION INSTRUCTIONS.

- 1. Samples
 - a. Submit two (2) glass block units of each type specified showing size, design and pattern of faces.
 - b. Submit representative samples of panel reinforcing, panel anchors, expansion strips, and sealant.

2. Test Reports
3. Fire Tests:
 - a. Submit documents verifying glass block units are classified for a ¾, 1 or 1½-hour fire exposure according to ASTM E163, UL® 9 "Fire Tests of Window Assemblies." All such glass block unit cartons shall carry appropriate UL® labels.

D. SHOP DRAWINGS: SUBMIT FOR:

ANCHORING DETAILS.

CONTROL JOINT LOCATIONS AND DETAILS.

SHOP DRAWINGS AND LOAD CALCULATIONS FOR ANCHORAGE DETAILS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW YORK.

PANEL REINFORCING, ANCHORS, AND EXPANSION STRIPS DETAILS AND PLACEMENT

- A. 1.05 quality assurance
 1. Maximum deflection of structural members supporting glass block masonry shall not exceed L/600. General Contractor is required to coordinate work with the structural engineer of this project to assure himself that the existing concrete slab and the supporting structure at First Floor level meets this criteria, and submit it in writing to NYCHA of such verification and assurance before starting work.
 2. Job Mock-Up

BUILD MOCK-UP AT THE SITE, OF SIZE AND LOCATION AS DIRECTED BY NYCHA, INDICATING THE PROPOSED WORKMANSHIP TO BE EXPECTED IN THE COMPLETED WORK. OBTAIN NYCHA'S ACCEPTANCE OF VISUAL QUALITIES OF THE MOCK-UP BEFORE START OF GLASS UNIT MASONRY WORK. RETAIN MOCK-UP DURING CONSTRUCTION AS A STANDARD FOR JUDGING COMPLETED WORK. DO NOT ALTER, MOVE OR DESTROY MOCK-UP UNTIL WORK IS COMPLETED AND ACCEPTED BY NYCHA. MOCK UP SHALL REMAIN ON SITE FOR THE DURATION OF CONSTRUCTION AS A CONTROL SAMPLE.

- A. product handling
 1. General: Deliver, store, handle and protect all materials from damage, moisture, dirt and intrusion of foreign matter. Store all glass masonry units and mortar materials on raised platforms and under ventilated and waterproof cover. Store packaged materials in manufacturer's unopened containers, marked with manufacturer's name and product brand name. Immediately reseal containers after partial use. Remove and replace damaged materials.
 2. Masonry Units: Pack, deliver and store to prevent breakage, cracking, chipping, spalling or other damage. Store, protect and ventilate units at project site.
 3. Aggregate: Store with provisions for good drainage.
 4. Reinforcement and Anchors: Store and protect so that when placed, joint reinforcement and anchors will be free of soil, dirt, ice, loose rust, scale, or other coatings which would destroy or reduce bond with mortar and will not be disfigured or bent out of shape.
- B. code requirements
 1. Work of this Section shall conform to all applicable requirements of the New York City Building Code.
 - a. Fire rated masonry partitions shall have MEA or BSA number.
 - b. Seismic connections and loads shall comply with Local Law 17-95 (NYC).

PART 2.00 - PRODUCTS

12.01 -----

- A. Acceptable Manufacturers
- B. Glass Block Units shall be as manufactured by
 1. Pittsburgh Corning Corporation.
 2. Circle Redmont, Inc.

3. Nippon Electric Glass Company
4. Or approved Equal

C. 2.02 materials

A. GLASS BLOCK UNITS

1. Glass block units, nominally 4 inch x 8 inch x 4 inch thick and 8 inch x 8 inch x 4 inch thick shall be partially evacuated hollow units made of clear, colorless glass with a polyvinyl butyral edge coating. Pattern type: VUE as manufactured by Pittsburgh Corning Corporation or approved equal.
 - a. ACCESSORIES
- B. Panel Reinforcing: two parallel 9-gauge wires 2 inch on center with electrically butt-welded cross-wires spaced at regular intervals, galvanized after welding, by Pittsburgh Corning Corporation or approved equal.
- C. Panel Anchors: 20 gauge perforated steel strips 24 inches long by 1¾ inches wide, hot-dipped galvanized after perforation, by Pittsburgh Corning Corporation or approved equal.
 1. Expansion Strips: made of polyethylene foam with a thickness of 3/8 inch, by Pittsburgh Corning Corporation or approved equal.
- D. Asphalt Emulsion: a water-based asphalt emulsion, by Karnak Chemical Corp. (Karnak 100, 1-800-526-4236), or equal.
 1. Sealant (caulk): non-staining, waterproof mastic, silicone type.
- E. Packing (Backer Rods): polyethylene foam, neoprene, fibrous glass or equal as approved by sealant manufacturer.

2.04 MORTAR MATERIALS

1. Mortar: Type S in accordance with ASTM C270. Mortar shall be 1 part Portland Cement, 1/2 part lime, and sand equal to 2¼ to 3 times the amount of cementitious material (cement plus lime), all measures by volume.
 - a. No antifreeze compounds or accelerators allowed.
 - 1) Portland Cement: Type 1 in accordance with ASTM C150. If a waterproof Portland Cement is used, the integral type waterproofer shall be omitted. (Masonry Cement is not recommended.) Color to be selected by the Architect.
 - 2) 2. Lime: Type S, in accordance with ASTM C207. Shall be a pressure-hydrated dolomitic lime, provided that not less than 92% of all the active ingredients are completely hydrated.
 - 3) 3. Sand: A clean, white quartzite or silica type, essentially free of iron compounds, for thin joints, in accordance with ASTM C144, not less than 100% passing a No. 20 sieve.
 - 4) 4. Integral Type Waterrepellent: Stearate type by Sonneborn Building Products (Hydrocide Powder, 1-800-243-6739), or approved equal. Note: Add hydrocide powder to dry mortar mix. Do not add powder to wet mortar mix.
 - 5) 5. External Type Waterproofer: Water based silane sealer type by Harris Specialty Chemicals, Inc. (ENVIROSEAL™ 20 or HYDROZO CLEAR 20, 1-800-327-1570) or approved equal. Remove excess sealer from glass surfaces soon after application.

PART 3.00 - EXECUTION

16.01

- A. preparation
 1. A. Verify all field conditions, including vertical dimensions, prior to starting work. Report any discrepancies between drawings and field conditions to the Architect.
 2. B. Coordinate all glass unit masonry work with miscellaneous supports and metal channels. Verify that metal channels and supports follow all radii shown on the drawings prior to installation. Verify that (channels), (panel anchors) have been provided at head

- and jambs for the purpose of providing panel support within the opening and that all supports and channels align vertically.
3. Mix all mortar components to a consistency that is drier than mortar for ordinary masonry. Retempering the mortar after it has taken its initial set shall not be permitted. Do not use antifreeze compounds or accelerators.
 4. Freshly mixed mortar may create skin irritation. Avoid direct contact where possible and wash exposed skin areas promptly with water. If any mortar gets into the eyes, rinse immediately with water and get prompt medical attention.
- B. 3.02 installation
1. Cover sill area with a heavy coat of asphalt emulsion. Allow emulsion to dry at least 2 hours before placing mortar.
 2. Where panel anchors are used at jambs and heads in lieu of channel or chase surrounds, install panel anchors in the same joints (16 inches o.c. maximum) where panel reinforcing will be laid. EXCEPT THAT, at panel corners, anchors shall be placed in each mortar joint, both at the jamb and head, 24 inches on each side of the corner. Install panel anchors across head joint spaced 16 inches o.c. maximum.
 3. Adhere expansion strips to jambs and head. Make certain expansion strip extends to sill and covers leg of panel anchor which is attached to jambs and head.
 - 1) Set a full mortar bed joint, applied to sill.
 4. Set lower course of block. Maintain a uniform horizontal joint width of $\frac{1}{4}$ " at the exposed face of the wall for the full length of the wall. For vertical joints, maintain a uniform joint width for the full height of the wall from $\frac{1}{8}$ " to $\frac{5}{8}$ ", as determined by the location of the joint along the wall. Any deviations from these joint dimensions must be approved by the Authority prior to installation of the block. All mortar joints must be full and not furrowed. Steel tools must not be used to tap blocks into position. (Place a rubber crutch tip on end of trowel to tap block into position). Do not realign, tap or otherwise move block after initial placement.
 5. Install panel reinforcing every 16 inches o.c. maximum in the horizontal mortar joint and in joints immediately above and below all openings within panels. Run reinforcing continuously from end to end of panels. Lap reinforcing not less than 6 inches whenever it is necessary to use more than one length. NOTE: In corrosive atmospheres, (i.e. saline air, chlorine air, etc.), the use of stainless steel channels, reinforcing and panel anchors should be considered.
 - a. Place lower half of mortar in bed joint. Do not furrow.
 - b. Press panel reinforcing into place.
 6. Cover panel reinforcing with upper half of mortar bed and trowel smooth. Do not furrow.
- C. Place full mortar bed for joints not requiring panel reinforcing-do not furrow. Maintain uniform joint width.
- D. Set succeeding courses of block. Space at head of panel and jambs must remain free of mortar for caulking with sealant.
1. Use only wooden or rubber tipped tools when tapping glass blocks in place.
- E. Install special cast glass block units set in stainless steel frames at locations as shown.
- F. Strike joints smooth while mortar is still plastic and before final set. Remove surplus mortar from faces of glass blocks and wipe dry. (See Section 3.03). Tool joints smooth and concave before mortar takes final set. At this time, remove and clean out all excess mortar from jamb, head and other locations.
- G. After final mortar set (approximately 24 hours), install packing tightly between glass block panel and jamb and head construction. Leave space for sealing.
- H. Apply sealant evenly to the full depth of recesses as indicated on the drawings and in accordance with the manufacturer's application manual and instructions.

3.03 CLEANING

1. Remove surplus mortar from the faces of the glass block at the time joints are struck or tooled. Mortar should be removed while it is still plastic using a clean, wet sponge or an ordinary house hold scrub brush having stiff bristles.
2. Do not use harsh cleaners, acids (of any strength), abrasives or alkaline materials while cleaning glass block. Never use a wire brush to remove mortar from glass block surfaces. All exposed block surfaces shall be completely clean and smooth before acceptance by the Authority.
3. Final mortar removal is accomplished with a clean, wet sponge or cloth. Rinse sponge or cloth frequently in clean water to remove abrasive particles that could scratch glass surfaces. Allow any remaining film on the block to dry to a powder.
4. After all organic sealants, caulking, etc., have been applied, remove excess caulking materials with commercial solvents such as xylene, toluene, mineral spirits or naptha and follow with normal wash and rinse. Be careful not to damage caulking by over generous application of strong solvents. Comply with solvent manufacturer's directions on label for toxicity and flammability warnings.
5. Final cleaning of glass block panels is accomplished after they are completely installed. Wait until panels are not exposed to direct sunlight. Start at the top of the panel and wash with generous amounts of clean water. Dry all water from the glass block surface. Change cloth frequently to eliminate dried mortar particles or aggregate that could scratch the glass surface. To remove the dry powder from the glass surfaces, use a clean, dry, soft cloth. For stubborn or hard to remove powder or stains, the use of an "extra fine" steel wool (grades 000 or 0000) is suggested. This shall be tested on a sample area of the mock-up, or in a location of the wall approved by the Authority.

END OF SECTION 04 23 13