



**SECTION 04 23 13
GLASS UNIT MASONRY**

PART 1 - GENERAL

1.01 SUMMARY

- A. Work included:
 - 1. Hollow Glass block, or solid glass brick.
 - 2. Mortar.
 - 3. Integral joint reinforcing and anchors.
 - 4. Expansion and Packing materials.
 - 5. Sealant.

- B. Related Work:
 - 1. Steel Channel or Aluminum framing

1.02 SUBMITTALS

- A. Product Data: For each type of product indicated. Include glass block, cementitious materials, and accessories.
- B. Shop Drawings: Show fabrication and installation details for glass unit masonry, including vertical and horizontal coursing, anchors, reinforcement, and expansion strips.
- C. Samples for Verification: Panels consisting of 8 full-size glass-block units with mortar and sealant joints.
 - 1. Provide Samples for each form, pattern, and color of glass block and color of joint material indicated or selected by the Engineer.

1.03 REFERENCES

- A. ASTM C153, Hot Dipped Zinc Coating.
- B. ASTM C144, Aggregate for Masonry.
- C. ASTM C150, Portland Cement.
- D. ASTM C207, Hydrated Lime for Masonry.
- E. ASTM C270, Mortar for Unit Masonry.
- F. ASTM A82, Cold Drawn Steel Wire
- G. ASTM A580, Stainless Steel Wire
- H. ASTM A167 Stainless Steel Perforated Panel Anchors
- I. ASTM D1187, Type II Asphalt Emulsion for Metal Surfaces
- J. ASTM D1227, Type III Asphalt Emulsion for Porous Surfaces
- K. ASTM E2010 Fire Test for Window Assemblies UL 9 or NFPA 257

1.04 QUALITY ASSURANCE

- A. Source Limitations for Glass Block: Obtain glass block through one source from a single manufacturer.
- B. Source all accessory materials as provided and approved by Glass Block manufacturer

- C. Source Limitations for Accessory Materials: Obtain each cementitious material admixture and components through one source from a single manufacturer and each aggregate from one source or producer.

- D. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Build mockup of typical panel, 48 by 48 inches in size.

2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- E. Use adequate numbers of skilled workmen are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- F. Installation Company must have successfully completed five (5) documented glass block projects of 1,000 square feet minimum in the past 5 years.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store glass block in unopened cartons on elevated platforms, under cover, and in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied.
- B. Store glass-block grid materials in unopened cartons in an enclosed, dry location.
- C. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- D. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- E. Store accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.06 PROJECT CONDITIONS

- A. Weather Limitations
 1. Proceed with installation of glass unit masonry assemblies only when ambient and material temperatures are 40 deg F or higher.
 2. Maintain temperature in installation areas at 40 deg F or above for 48 hours after installing.

1.07 SEQUENCING AND SCHEDULING

- A. Sequence and coordinate completion of glass unit masonry assemblies so sealants can be installed immediately after mortar has attained final set.

PART 2 – PRODUCTS

2.01 Available Manufacturers

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 1. Seves Glass Block Inc.
10576 Broadview Rd, Cleveland, Ohio 44147
440-627-6257 or 877-SEVES11 (877-738-3711)
www.sevesglassblockinc.com inquiry@sevesglassblock.com
 2. Approved equal.

B. GLASS UNITS

1. Glass Block Units ___ X ___ X ___ inch or mm.
2. ___ X ___ X ___ with 45, 60, 90 minute listed UL Fire Ratings.
3. Colors (Clear or Colors) _____
4. Pattern _____
5. Edge Coating – White Latex base or PVB.

2.02 MORTAR MATERIALS

- A. Portland Cement: ASTM C 150, Type I or Type II, natural color, white, or a blend to produce mortar color indicated.
 1. Where joints are indicated to be raked out and pointed, gray cement may be used for setting mortar.
- B. Hydrated Lime: ASTM C 207, Type S.

- C. Portland Cement-Lime Mix: Packaged blend of Portland cement complying with ASTM C 150, Type I or Type III, and hydrated lime complying with ASTM C 207, Type S.
- D. Shall be prepared according to ASTM C270 for Type S Mortar. Mortar to have 1 part Portland Cement (Type 1), ½ part lime and 2-1/2 to 3 parts of fine sand passing No. 20 sieve and free of iron compounds to avoid stains. Use white Portland Cement and silica sand for white joints. Mix mortar drier than normal and only an amount that will be used in ½ to 1 hour. Glass block will not absorb water the same as brick. Do not use re-tempered mortar.
 - 1. Portland Cement: Type I 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: _____
 - 2. Lime: Shall be a dolomitic pressure-hydrated lime, special hydrate, Type S, in accordance with ASTM C207.
 - 3. Sand: A clean, white quartzite or silica type, essentially free of iron compounds, in accordance with ASTM C144, not less than 100% passing a No. 8 sieve.
 - 4. Integral Type Water-repellent. Stearate type by Sonneborn Building Products (Hydrocide powder, 1-800-243-6739), or equal. Add hydrocide powder to dry mortar mix. Do not add powder to wet mortar mix.
 - a. Lehigh Cement,
 - b. SPEC MIX,
 - c. Approved equal.
- E. Water: Potable.

2.03 GLASS UNIT MASONRY ACCESSORIES

- A. Panel Reinforcement: Ladder-type units, butt welded, not lapped and welded; complying with ASTM A 951 in straight lengths of not less than 10 feet, and as follows:
 - 1. Stainless Steel wire.
 - 2. Wire Size: W1.7 or 0.148-inch diameter.
 - 3. Width: 1-5/8 inches.
 - 4. Spacing of Cross Rods: Not more than 16 inches apart.
- B. Fasteners, General: Unless otherwise indicated, provide Type 304 or Type 316 stainless-steel fasteners at exterior walls and zinc-plated fasteners with coating complying with ASTM B 633, Class Fe/Zn 5, at interior walls. Select fasteners for type, grade, and class required.
- C. Asphalt Emulsion: Cold-applied asphalt emulsion complying with ASTM D 1187 or ASTM D 1227.
- D. Sealants: Manufacturer's standard chemically curing, elastomeric sealants that comply with applicable requirements in Section 079200 "Joint Sealants."
 - 1. Single-component, non-sag urethane sealant.
 - 2. Provide interior sealants that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- E. Sealant Accessories: Provide sealant accessories, including primers, bond-breaker tape, and cylindrical sealant backing, that comply with applicable requirements in Section 079200 "Joint Sealants", and as follows:
- F. Expansion Strips / Compressible Filler: 3/8 inch by ___ inches polyethylene foam or glass fiber.
- G. Panel Anchors: 20 gauge X 1-5/8" X 16" stainless steel with staggered perforations.
- H. (Optional) Weld-On Rod Anchor: Stainless Steel Type 316: ¼ inch Wire Diameter: 3/8 inch Offset, 4 inch Vertical Adjustment and ___ inches overall Length. Triangular Anchors: Stainless Steel Triangular wire tie type. 3/16 inch, lengths as indicated on the Drawings.

PART 3 – EXECUTION

3.01 Preparation

- A. Verify that (channels), (panel anchors) have been provided at head and jambs for the Purpose of providing panel support within the opening.
- B. 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.**
- C. 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.

3.02 Installation

- A. Cover sill area with a heavy coat of asphalt emulsion. Allow emulsion to cure at least 2 hours before placing mortar.
- B. 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 starting after first course) where panel reinforcing will be laid. Panel anchors are to be embedded a minimum of 12 inches into the mortar joints.
- C. Place or adhere expansion strips to jambs and head. Make certain expansion strip extends to sill and covers leg of panel anchor that is attached to jambs and head.
- D. Set a full mortar bed joint, applied to sill.
- E. Set lower course of block. Maintain a uniform joint width of $\frac{1}{4}$ or $\frac{3}{8}$ inch plus or minus $\frac{1}{8}$ inch. 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. For VISTABRIK® Solid Glass Block units, typical mortar joint is $\frac{3}{8}$ inch. Special VISTABRIK® spacers that provide a $\frac{3}{8}$ -inch-thick mortar joint are available.
- F. Install SS panel reinforcing every 16 inches O.C. maximum (starting after the first course) in the horizontal mortar joints. 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. For VISTABRIK® Solid Glass Block, use 1 5/8" inch wide reinforcing (same as Thinline® Series glass block). Do not bridge expansion joints with reinforcing. Install reinforcing as follows:
 - Place lower half of mortar in bed joint. Do not furrow.
 - Press panel reinforcing into place.
 - Cover panel reinforcing with upper half of mortar bed and trowel smooth.Do not furrow.
- G. Place full mortar bed for joints not requiring panel reinforcing- do not furrow. Maintain uniform joint width.
- H. Set succeeding courses of block. Spaces at head of panel and jambs must remain free of mortar for caulking with sealant.
- I. Use only wooden or rubber tipped tools when tapping glass blocks into place.
- J. Strike joints smooth while mortar is still plastic and before final set. Remove surplus mortar from faces of glass blocks and wipe dry. (See Sect on 3.03). Tool joints smooth and concave before mortar takes final set. At this time, remove and clean out all excess mortar from jambs, head and other locations.
- K. After final mortar set (approximately 24 hours), install packing tightly between glass block panel and jamb and head locations. Leave space for sealant.
- L. Apply sealant evenly to the full depth of recesses as indicated on the drawings and in accordance with the manufacturers' published application manual and instructions.
- M. All exterior glass block panels shall be well sealed at all head and jamb locations to prevent water entry.

3.03 Cleaning

- A. 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 household scrub brush with stiff bristles.
- B. **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.**

- C. 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.
- D. After all sealants, caulking, etc., have been applied, remove excess caulking materials with commercial solvents such as xylene, toluene, mineral spirits or naphtha and follow with normal wash and rinse. Be careful not to damage caulking by overgenerous application of strong solvents. Comply with solvent manufacturers' printed directions on label for toxicity and flammability warnings.
- E. 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. Try this first in an unobtrusive area.

3.04 External sealer

- A. Apply External Type Waterproofing: Water based silane sealer type by Sonneborn Building Products (HYDROZO ENVIROSEAL™ 40, 1-800-243-6739).

END OF SECTION 04 23 13