

## SECTION 085115

### SOUND CONTROL WINDOWS

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

##### 1.2 SUMMARY

- A. Section Includes:

- 1. Steel sound-control windows, noted as Glazing System Type 6 (GS6)

- B. Related Sections:

- 1. Section 083473 "Sound Control Door Assemblies."

##### 1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include sound ratings, construction details, material descriptions, core descriptions, fire-resistance rating, temperature-rise ratings, and finishes.

- B. Shop Drawings: Include the following:

- 1. Elevations of each window design.
- 2. Details of sound-control seals.
- 3. Details of windows, including vertical and horizontal edge details and metal thicknesses.
- 4. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
- 5. Locations of reinforcement and preparations for hardware.
- 6. Details of each different wall opening condition.
- 7. Details of anchorages, joints, field splices, and connections.
- 8. Details of accessories.
- 9. Details of moldings, removable stops, and glazing.
- 10. Details of conduit and preparations for power, signal, and control systems.

- C. Samples for Verification:

- 1. Finishes: For each type of exposed finish required, prepared on Samples of not less than 3 by 5 inches.
- 2. Windows: Include section of vertical-edge, top, and bottom construction; core construction; glazing; and other applied hardware reinforcement.
- 3. Frames: Include profile, corner joint, floor and wall anchors, and seals. Include separate section showing fixed sound panels if applicable.

- D. Schedule: Provide a schedule of sound-control window assemblies prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings.

#### 1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer and manufacturer.
- B. Product Certificates: For each type of sound-control window assembly, from manufacturer.
- C. Product Test Reports: Test Reports: Performed and issued by a qualified independent testing agency including acoustical performance data in the form of up-to-date test reports indicating the windows to be provided will have the specified Sound Transmission Class (STC) rating (per ASTM E-90/ASTM E 413). Refer to window schedule for the required STC ratings.
- D. Field quality-control reports.
- E. Warranty: Samples of special warranty.

#### 1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For sound-control window assemblies to include in maintenance manuals.

#### 1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
- B. Source Limitations: Obtain sound-control window assemblies, including frames, sound-control seals, and other items essential for sound control, from single source from single manufacturer.
- C. Sound Rating: Provide sound-control window assemblies identical to those of assemblies tested as sound-retardant units by a qualified independent acoustical testing agency, and have the following minimum rating:
  - 1. STC Rating: **STC 42 (Addendum 03)**, as determined by ASTM E 413 when tested in an operable condition according to ASTM E 90 and ASTM E 1408.
- D. Preinstallation Conference: Conduct conference at Project site.
  - 1. Review required field quality-control procedures.
  - 2. Review procedures for coordinating frame and anchor installation with wall construction.
  - 3. Review frame grouting procedures.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver windows palletized, wrapped, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.
  - 1. Provide additional protection to prevent damage to finish of factory-finished windows.

- B. Shipping Spreaders: Deliver welded frames with two removable spreader bars across bottom of frames, tack welded or mechanically attached to jambs and mullions.
- C. Store windows under cover at Project site. Place units in a vertical position with heads up, spaced by blocking, on minimum 4-inch-high, wood blocking. Avoid using nonvented plastic or canvas shelters that could create a humidity chamber.
  - 1. If wrappers on windows become wet, remove cartons immediately. Provide a minimum of 1/4-inch space between each stacked window to permit air circulation.

## 1.8 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install sound-control windows until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
- B. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

## 1.9 COORDINATION

- A. Coordinate installation of anchorages for sound-control window assemblies. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

## 1.10 WARRANTY

- A. Performance Warranty: A minimum Noise Isolation Class (NIC) rating (ASTM-E413) within 5 points of the published laboratory STC rating shall be guaranteed against defective workmanship and/or installation for one year from date of acceptance by Owner.
- B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. At a minimum, acoustic window materials and hardware shall be guaranteed against defective workmanship for one year from date of shipment. Manufacturer's warranty is in addition to, and does not limit, other rights the Owner may have under the Contract Documents.

## PART 2 - PRODUCTS

### 2.1 SOUND-CONTROL WINDOWS

- A. Manufacturer: Noise Barriers, LLC, Overly Corp. or equal.
- B. Description: Provide sound-control windows, of seamless construction; with manufacturer's standard sound-retardant core as required to provide STC and fire rating indicated. Construct windows with smooth, flush surfaces without visible joints, seams, or fasteners on exposed faces or stile edges.

C. Materials:

1. Cold-Rolled Steel Sheet: ASTM A653 galvanized steel, suitable for exposed applications.

D. Finishes:

1. Prime Finish: Apply manufacturer's standard primer immediately after cleaning and pretreating.
  - a. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

E. Frame Description: Fabricate sound-control split frames with corners mitered, reinforced, and continuously welded full depth and width of frame. Fabricate according to ANSI/NAAMM-HMMA 865.

1. Weld frames according to NAAMM-HMMA 820.
2. Interior Frames: Fabricate from 14 gauge cold rolled, galvanized steel with an A60 coating weight, or thicker as required to provide STC rating indicated.
3. Jamb Anchors:
  - a. Postinstalled Expansion Type for In-Place Concrete or Masonry: Minimum 3/8-inch-diameter, metallic-coated steel bolts with expansion shields or inserts. Provide pipe spacer from frame to wall, with throat reinforcement plate, welded to frame at each anchor location.

F. Glazing: ***As indicated by window manufacturer to meet STC performance (Addendum 03).***

G. Materials:

1. Cold-Rolled Steel Sheet: ASTM A653 galvanized steel, suitable for exposed applications.
2. Supports and Anchors: After fabricating, galvanize units to be built into exterior walls according to ASTM A 153/A 153M, Class B.
3. Inserts, Bolts, and Fasteners: Provide items to be built into exterior walls, hot-dip galvanized according to ASTM A 153/A 153M or ASTM F 2329.
4. Powder-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching sound-control window frames of type indicated.
5. Mineral-Fiber Insulation: Insulation composed of rock-wool fibers, slag-wool fibers, or glass fibers.

H. Finishes:

1. Prime Finish: Apply manufacturer's standard primer immediately after cleaning and pretreating.
  - a. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

## 2.2 FABRICATION

- A. The entire manufactured assembly shall be shipped to the job site ready to install and operate
- B. Sound-Control Steel Window Fabrication: Sound-control windows to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal.
  - 1. Seamless Edge Construction: Fabricate windows with faces joined at vertical edges by welding; welds shall be ground, filled, and dressed to make them invisible and to provide a smooth, flush surface.
- C. Sound-Control Frame Fabrication: Fabricate sound-control frames to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.
  - 1. Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible. Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated from same thickness metal as frames.
  - 2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
  - 3. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
  - 4. Jamb Anchors: Provide number and spacing of anchors as follows:
    - a. Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
      - 1) Three anchors per jamb up to 60 inches in height.
      - 2) Four anchors per jamb from 60 to 90 inches in height.
      - 3) Five anchors per jamb from 90 to 96 inches in height.
      - 4) Five anchors per jamb plus one additional anchor per jamb for each 24 inches or fraction thereof more than 96 inches in height.
      - 5) Two anchors per head for frames more than 42 inches wide and mounted in metal stud partitions.
    - b. Postinstalled Expansion Type: Locate anchors not more than 6 inches from top and bottom of frame. Space anchors not more than 26 inches o.c.
  - 5. Head Reinforcement: For frames more than 48 inches wide, provide continuous head reinforcement for full width of opening, welded to back of frame at head.
  - 6. Tolerances: Fabricate frames to tolerances indicated in ANSI/NAAMM-HMMA 865.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of sound-control window assemblies.

- B. Examine roughing-in for embedded and built-in anchors to verify actual locations of sound-control window frame connections before frame installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.
- B. Prior to installation and with installation spreaders in place, adjust and securely brace sound-control window frames to the following tolerances:
  - 1. Squareness: Plus or minus 1/16 inch.
  - 2. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
  - 3. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
  - 4. Plumbness: Plus or minus 1/16 inch, measured at jambs on a perpendicular line from head to floor.

### 3.3 INSTALLATION

- A. General: Install sound-control window assemblies plumb, rigid, properly aligned, and securely fastened in place; comply with manufacturer's written instructions.
- B. Frames: Install sound-control window frames in sizes and profiles indicated.
  - 1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set.
    - a. At fire-rated openings, install frames according to NFPA 80.
    - b. At openings requiring smoke and draft control, install frames according to NFPA 105.
    - c. Where frames are fabricated in sections due to shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, and dress; make splice smooth, flush, and invisible on exposed faces.
    - d. Install sound-control frames with removable glazing stops located on secure side of opening.
    - e. Remove temporary braces only after frames or bucks have been properly set and secured.
    - f. Check squareness, twist, and plumbness of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
  - 2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor and secure with postinstalled expansion anchors.
    - a. Floor anchors may be set with powder-actuated fasteners instead of postinstalled expansion anchors, if so indicated and approved on Shop Drawings.
  - 3. In-Place Concrete Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.

4. Ceiling Struts: Extend struts vertically from top of frame at each jamb to supporting construction above, unless frame is anchored to masonry or to other structural support at each jamb. Bend top of struts to provide flush contact for securing to supporting construction above. Provide adjustable wedged or bolted anchorage to frame jamb members.
  5. Installation Tolerances: Adjust sound-control window frames for squareness, alignment, twist, and plumbness to the following tolerances:
    - a. Squareness: Plus or minus 1/16 inch, measured at window rabbet on a line 90 degrees from jamb perpendicular to frame head.
    - b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
    - c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
    - d. Plumbness: Plus or minus 1/16 inch, measured at jambs on a perpendicular line from head to floor.
- C. Thresholds: Set thresholds in full bed of sealant complying with requirements in Section 079200 "Joint Sealants."

### 3.4 FIELD QUALITY CONTROL

- A. Upon completion of this portion of work, and prior to its acceptance by the Owner, a qualified representative of the manufacturer of the acoustical window system(s) shall visit the jobsite to confirm that installation is in conformance with the manufacturer's recommendations.
- B. Windows may be selected for in situ verification testing of the acoustical performance (ASTM E-336). Provide in-situ adjustments and modifications as required to achieve a minimum Noise Isolation Class (NIC) rating (ASTM-E413) within 5 points of the published laboratory STC rating. Contractor shall remedy all defects without expense to the Owner. Any additional testing required to verify that repaired/adjusted window assemblies perform as specified above, will be at the expense of the contractor.

### 3.5 ADJUSTING AND CLEANING

- A. Remove and replace defective work, including defective or damaged sound seals and frames that are warped, bowed, or otherwise unacceptable.
  1. Adjust gaskets, gasket retainers, and retainer covers to provide contact required to achieve STC rating.
- B. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying primer.
- C. Metallic-Coated Surfaces: Clean abraded areas of windows and repair with galvanizing repair paint according to manufacturer's written instructions.

**END OF SECTION**

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