

SCOPE OF WORK

Project No. 528A5-18-529

**Replace Windows Building 36 G&A
Canandaigua, VA Medical Center,
400 Fort Hill Avenue
Canandaigua, NY 14424**

The general scope of this project is to replace windows on the ground and first floors of Building 36, at the VA Medical Center, Canandaigua, NY.

EXISTING CONDITIONS:

The Canandaigua VAMC is a campus facility with many (more than 30) buildings located on over 150 acres. Many of the facility buildings are eligible for inclusion on the historic register. Building 36 is a multipurpose building consisting of office space, storage space, vending/food service area as well as areas being renovated for future use. The windows on Building 36 are the original windows and do not meet the current energy efficiency standards.

Previous window replacement projects have found some windows to have asbestos containing materials (ACM) and lead based paint. Every attempt has been made to provide accurate measurements. The contractor is responsible for and encouraged to field verify all dimensions.

Work done under this project must comply with the provided infection control risk assessment (ICRA) including negative air pressure through the use of a HEPA filter and complete isolation of the area including sealing of the area with duct tape. All work area exits are to be HEPA vacuumed and damp mopped with a detergent solution at the end of each daily work shift. The work space is to remain locked and secured at all times.

GENERAL SCOPE:

A. DEMOLITION:

- a. Remove 183 windows, trim, and sealants. Dispose of all materials in accordance with regulations and specifications.
- b. Contractor is to completely remove and dispose of all materials associated with the window replacement. Hazardous materials are to be abated and disposed of in accordance with NYS Code rule 56.
- c. Existing windows are suspected have having lead based paint. Removal and disposal of windows must comply with all state and federal regulations including OSHA 29 CFR 1926.62 and EPA.

- d. Window removal and abatement to take place from the outside unless otherwise approved by the COR.

B. WINDOW INSTALLATION:

- a. Provide all labor, material and equipment to install 183 new aluminum frame windows.
- b. New windows are to meet all current energy requirements.
- c. Windows are to match existing windows in style, functionality and appearance unless otherwise indicated on contract drawings.
- d. All windows will include muntins between the glass unless otherwise indicated.
- e. All windows are to be double hung operable unless otherwise indicated.
- f. New windows are to be aluminum clad inside and out.
- g. Window frame finish to be bronze
- h. Glass to be 1" Sealed unit, Insulated Low E Tempered with Argon Gas
- i. Any existing security screens shall be removed and reinstalled by contractor.

C. WINDOW FINISHING:

- a. Where window is to be replaced in a finished space, contractor is responsible for all exterior and interior finishes associated with a complete window installation.
- b. Where window is installed in an unoccupied, unfinished area contractor is responsible for all exterior finishes and sealants. Interior finishing to be completed by others. Contractor to provide all materials to include aluminum snap trim, clips, fasteners, and sealants that would normally be required if the window were to be completely installed.

D. EXISTING GROUND FLOOR WINDOWS:

- a. Provide and install snap in grids for 12 Ground floor windows not to be replaced.
- b. Snap in grids should match size, and color of grids installed on windows scheduled for replacement.

PHASING

- A. Contractor is to provide a phasing plan that will minimize the impact to occupied areas. Occupied areas of Building 36 and adjacent buildings must be able to maintain operations throughout the project.
- B. Contractor is to complete all work associated with individual window removal and installation in 1 working day. Contractor is responsible to ensure a weather tight seal is completed throughout the process.
- C. Contractor is required to provide two week notice for any window replacement in an occupied area.

CODE REQUIREMENTS:

The installed system must, at a minimum, be in accordance with all applicable codes including Veterans Affairs standards which can be found at <https://www.cfm.va.gov/til/>. This will include, but not be limited to: Department of Veterans Affairs Design Manuals, VA Publications, and Construction Standards, National Fire Protection Code (NFPA), Life Safety Code, Underwriters Laboratory (UL), International Building Code IBC, National Electric Code (NEC), the VA Information Security Handbook 6500.6, Occupational Health and Safety (OSHA), and Environmental Protection Agency (EPA) requirements (to include Mold Remediation in Schools and Commercial Buildings). All work will be completed by certified individuals. All abatement will be in compliance with NYSCR 56.

Specifications: Please see attached.

General Requirements:

- A. The contractor shall review the contract documents for conflicts. Where conflicts exist work shall not proceed until the COR has been notified and has given direction.
- B. Where incidental work is required to accomplish work shown on the drawings, this work is implied and shall be included as part of the base bid.
- C. Prior to any work commencing in an area, the contractor shall notify the COR of his intention to work in the area and shall schedule a walkthrough with the COR to determine existing conditions.
- D. After the work, the existing work areas shall be returned to their original state before final approval shall be given. After the completion of construction, the contractor shall completely clean all surfaces of construction debris. All surfaces shall be wiped clean of dust, including fixtures, window sills, door frames, etc.
- E. The contractor shall provide a minimum of two (2) hardcopies of operating and service manuals for each device/material installed as part of the project.
- F. The contractor shall receive all deliveries of materials, equipment, tools, or other goods off of station, and bring them to the job site. The Canandaigua VA shall not accept deliveries for project purposes.
- G. The contractor shall prepare and submit an excel spreadsheet listing all submittals required. The worksheet shall be submitted by the contractor and reviewed and re-submitted as necessary.

- H. The contractor shall not proceed with any on-site work until the completion of the submittal process or approval to proceed from the CO and COR without completion of the submittal process. Not less than 14 calendar days shall be planned for COR review of each submittal. Re-submittals shall be provided as required by the COR, and shall be treated as a new, separate submittal.
- I. Any non-lead time materials will only be paid for when installed.
- J. Any items identified as punch list items will be fixed prior to project closeout.
- K. Special care will be taken to secure tools and construction equipment during construction as this facility has patients in it.
- L. Work cleanliness must be adhered to throughout the project.
- M. Sounds and vibrations must be kept to a minimum to avoid patient disruption. The COR reserves the right to stop work if sound and vibrations are impacting patient living.
- N. Off tour work may be required to minimize impact to Veterans and employees.
- O. The contractor shall warranty all work included for 1 year from the date of acceptance. Warranty shall include any labor or parts necessary to ensure complete functionality of the work.

Submittals:

Submittals are required for all items outlined in the specification and include, but are not limited to the submittals as shown in the attached submittal log.

Project Duration:

The total project duration for this project is not to exceed 365 days. This includes all processes starting with submission and approval of all submittals and ending with final punch list completion.

**SECTION 08 80 00
GLAZING**

PART 1 - GENERAL

1.1 DESCRIPTION:

A. This section specifies the following:

- 1. Glass.
- 2. Plastic glazing.
- 3. Glazing materials and accessories for both factory and field glazed assemblies.

1.2 RELATED WORK:

A. Factory glazed by manufacturer in following units:

1. Aluminum Windows: Section 08 51 13, ALUMINUM WINDOWS.

1.3 LABELS:

A. Temporary labels:

1. Provide temporary label on each light of identifying manufacturer or brand and glass type, quality and nominal thickness.
2. Label in accordance with NFRC label requirements.
3. Temporary labels are to remain intact until glass is approved by Contracting Officer Representative (COR).

B. Permanent labels:

1. Locate in corner for each pane.
2. Label in accordance with ANSI Z97.1 and SGCC label requirements.
 - a. Tempered glass.
 - b. Laminated glass or have certificate for panes without permanent label.
 - c. Organic coated glass.
3. Bullet resistance glass or plastic assemblies:
 - a. Bullet resistance glass or plastic assemblies in accordance with UL 752 requirements for power rating specified.
 - b. Identify each security glazing permanently with glazing manufacturer's name, date of manufacture, product number, and DOS Code number inconspicuously located in lower corner on protective side and visible after glazing is framed.
 - c. The "attack (threat) side" is to be identified in bold lettering on each side of glazing with removable label.
4. Fire rated glazing assemblies: Mark in accordance with IBC.

1.4 PERFORMANCE REQUIREMENTS:

A. General: Design glazing system consistent with guidance and practices presented in the GANA Glazing Manual, GANA Laminated Glazing Manual, and GANA Sealant Manual, as applicable to project. Installed glazing is to withstand applied loads, thermal stresses, thermal movements, building movements, permitted tolerances, and combinations of these conditions without failure, including loss or glass breakage attributable to defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; unsafe engagement of the framing

system; deflections beyond specified limits; or other defects in construction.

- B. Glazing Unit Design: Design glass, including engineering analysis meeting requirements of authorities having jurisdiction. Thicknesses listed are minimum. Coordinate thicknesses with framing system manufacturers.

1. Design glass in accordance with ASTM E1300, and for conditions beyond the scope of ASTM E1300, by a properly substantiated structural analysis.

2. Design Wind Pressures In accordance with ASCE 7.

3. Wind Design Data: In accordance with ASCE 7.

4. Maximum Lateral Deflection: For glass supported on all four edges, limit center-of-glass deflection at design wind pressure to not more than the structural capacity of the glazing unit, the threshold at which frame engagement is no longer safely assured, 1/100 times the short-side length, or 19 mm (0.75) inch, whichever is less.

- C. Building Enclosure Vapor Retarder and Air Barrier:

1. Utilize the inner pane of multiple pane sealed units for the continuity of the air barrier and vapor retarder seal.

2. Maintain a continuous air barrier and vapor retarder throughout the glazed assembly from glass pane to heel bead of glazing sealant.

1.5 SUBMITTALS:

- A. In accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

- B. Manufacturer's Certificates:

1. Certificate stating that fire-protection and fire-resistive glazing units meet code requirements for fire-resistance-rated assembly and applicable safety glazing requirements.

2. Certificate on solar heat gain coefficient when value is specified.

3. Certificate on "R" value when value is specified.

4. Certificate test reports confirming compliance with specified bullet resistive rating.

5. Certificate that blast resistant glass meets the specified requirements.

C. Manufacturer Warranty.

D. Manufacturer's Literature and Data:

1. Glass, each kind required.
2. Insulating glass units.
3. Transparent (one-way vision glass) mirrors.
4. Elastic compound for metal sash glazing.
5. Putty, for wood sash glazing.
6. Glazing cushion.
7. Sealing compound.
8. Bullet resistive material.
9. Plastic glazing material, each type required.

E. Samples:

1. Size: 305 mm by 305 mm (12 inches by 12 inches).
2. Tinted glass.
3. Reflective glass.
4. Transparent (one-way vision glass) mirrors.

F. Preconstruction Adhesion and Compatibility Test Report: Submit glazing sealant manufacturer's test report indicating glazing sealants were tested for adhesion to glass and glazing channel substrates and for compatibility with glass and other glazing materials.

1.6 DELIVERY, STORAGE AND HANDLING:

A. Delivery: Schedule delivery to coincide with glazing schedules so minimum handling of crates is required. Do not open crates except as required for inspection for shipping damage.

B. Storage: Store cases according to printed instructions on case, in areas least subject to traffic or falling objects. Keep storage area clean and dry.

C. Handling: Unpack cases following printed instructions on case. Stack individual windows on edge leaned slightly against upright supports with separators between each.

D. Protect laminated security glazing units against face and edge damage during entire sequence of fabrication, handling, and delivery to installation location. Provide protective covering on exposed faces of glazing plastics, and mark inside as "INTERIOR FACE" or "PROTECTED FACE":

1. Treat security glazing as fragile merchandise, packaged and shipped in export wood cases with width end in upright position and blocked together in a mass. Storage and handling to comply with

- manufacturer's directions and as required to prevent edge damage or other damage to glazing resulting from effects of moisture, condensation, temperature changes, direct exposure to sun, other environmental conditions, and contact with chemical solvents.
2. Protect sealed-air-space insulating glazing units from exposure to abnormal pressure changes, as could result from substantial changes in altitude during delivery by air freight. Provide temporary breather tubes which do not nullify applicable warranties on hermetic seals.
 3. Temporary protections: The glass front and polycarbonate back of glazing are to be temporarily protected with compatible, peelable, heat-resistant film which will be peeled for inspections and re-applied and finally removed after doors and windows are installed at destination. Since many adhesives will attack polycarbonate, the film used on exposed polycarbonate surfaces is to be approved and applied by manufacturer.
 4. Edge protection: To cushion and protect glass clad, and polycarbonate edges from contamination or foreign matter, the four (4) edges are to be sealed the depth of glazing with continuous standard-thickness thermoplastic rubber tape. Alternatively, continuous channel shaped extrusion of thermoplastic rubber are to be used, with flanges extending into face sides of glazing.
 5. Protect "Constant Temperature" units including every unit where glass sheet is directly laminated to or directly sealed with metal-tube type spacer bar to polycarbonate sheet, from exposures to ambient temperatures outside the range of 16 to 24 degrees C (60 to 75 degrees F), during the fabricating, handling, shipping, storing, installation, and subsequent protection of glazing.

1.7 PROJECT CONDITIONS:

Field Measurements: Field measure openings before ordering tempered glass products to assure for proper fit of field measured products.

1.8 WARRANTY:

- A. Construction Warranty: Comply with the FAR clause 52.246-21 "Warranty of Construction".
- B. Manufacturer Warranty: Manufacturer shall warranty their glazing from the date of installation and final acceptance by the Government as follows. Submit manufacturer warranty.

1. Bullet resistive plastic material to remain visibly clear without discoloration for 10 years.
2. Insulating glass units to remain sealed for ten (10) years.
3. Laminated glass units to remain laminated for five (5) years.
4. Polycarbonate to remain clear and ultraviolet light stabilized for five (5) years.
5. Insulating plastic to not have more than 6 percent decrease in light transmission and be ultraviolet light stabilized for ten (10) years.

1.9 APPLICABLE PUBLICATIONS:

- A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by basic designation only.
- B. American Architectural Manufacturers Association (AAMA):
 - 800.....Test Methods for Sealants
 - 810.1-77.....Expanded Cellular Glazing Tape
- C. American National Standards Institute (ANSI):
 - Z97.1-14.....Safety Glazing Material Used in Building -
Safety Performance Specifications and Methods
of Test
- D. American Society of Civil Engineers (ASCE):
 - 7-10.....Wind Load Provisions
- E. ASTM International (ASTM):
 - C542-05(R2011).....Lock-Strip Gaskets
 - C716-06.....Installing Lock-Strip Gaskets and Infill
Glazing Materials
 - C794-10.....Adhesion-in-Peel of Elastomeric Joint Sealants
 - C864-05(R2011).....Dense Elastomeric Compression Seal Gaskets,
Setting Blocks, and Spacers
 - C920-14a.....Elastomeric Joint Sealants
 - C964-07(R2012).....Standard Guide for Lock-Strip Gasket Glazing
 - C1036-11(R2012).....Flat Glass
 - C1048-12.....Heat-Treated Flat Glass-Kind HS, Kind FT Coated
and Uncoated Glass.
 - C1172-14.....Laminated Architectural Flat Glass
 - C1349-10.....Standard Specification for Architectural Flat
Glass Clad Polycarbonate
 - C1376-10.....Pyrolytic and Vacuum Deposition Coatings on
Flat Glass

D635-10.....Rate of Burning and/or Extent and Time of
Burning of Self-Supporting Plastic in a
Horizontal Position

D4802-10.....Poly (Methyl Methacrylate) Acrylic Plastic
Sheet

E84-14.....Surface Burning Characteristics of Building
Materials

E119-14.....Standard Test Methods for Fire Test of Building
Construction and Material

E1300-12a.....Load Resistance of Glass in Buildings

E1886-13a.....Standard Test Method for Performance of
Exterior Windows, Curtain Walls, Doors, and
Impact Protective Systems Impacted by
Missile(s) and Exposed to Cyclic Pressure
Differentials

E1996-14a.....Standard Specification for Performance of
Exterior Windows, Curtain Walls, Doors, and
Impact Protective Systems Impacted by Windborne
Debris in Hurricanes

E2141-12.....Test Methods for Assessing the Durability of
Absorptive Electrochromic Coatings on Sealed
Insulating Glass Units

E2190-10.....Insulating Glass Unit

E2240-06.....Test Method for Assessing the Current-Voltage
Cycling Stability at 90 Degree C (194 Degree F)
of Absorptive Electrochromic Coatings on Sealed
Insulating Glass Units

E2241-06.....Test Method for Assessing the Current-Voltage
Cycling Stability at Room Temperature of
Absorptive Electrochromic Coatings on Sealed
Insulating Glass Units

E2354-10.....Assessing the Durability of Absorptive
Electrochromic Coatings within Sealed
Insulating Glass Units

E2355-10.....Test Method for Measuring the Visible Light
Transmission Uniformity of an Absorptive
Electrochromic Coating on a Glazing Surface

- F1233-08.....Standard Test Method for Security Glazing
Materials and Systems
- F1642-12.....Test Method for Glazing and Glazing Systems
Subject to Airblast Loadings
- E. Code of Federal Regulations (CFR):
 - 16 CFR 1201-10.....Safety Standard for Architectural Glazing
Materials
- F. Glass Association of North America (GANA):
 - 2010 Edition.....GANA Glazing Manual
 - 2008 Edition.....GANA Sealant Manual
 - 2009 Edition.....GANA Laminated Glazing Reference Manual
 - 2010 Edition.....GANA Protective Glazing Reference Manual
- G. International Code Council (ICC):
 - IBC.....International Building Code
- H. Insulating Glass Certification Council (IGCC)
- I. Insulating Glass Manufacturer Alliance (IGMA):
 - TB-3001-13.....Guidelines for Sloped Glazing
 - TM-3000.....North American Glazing Guidelines for Sealed
Insulating Glass Units for Commercial and
Residential Use
- J. Intertek Testing Services - Warnock Hersey (ITS-WHI)
- K. National Fire Protection Association (NFPA):
 - 80-16.....Fire Doors and Windows
 - 252-12.....Fire Tests of Door Assemblies
 - 257-12.....Standard on Fire Test for Window and Glass
Block Assemblies
- L. National Fenestration Rating Council (NFRC)
- M. Safety Glazing Certification Council (SGCC) 2012:
Certified Products Directory (Issued Semi-Annually).
- N. Underwriters Laboratories, Inc. (UL):
 - 9-08(R2009).....Fire Tests of Window Assemblies
 - 263-14.....Fire Tests of Building Construction and
Materials
 - 752-11.....Bullet-Resisting Equipment.
- O. Unified Facilities Criteria (UFC):
 - 4-010-01-03(R2007).....DOD Minimum Antiterrorism Standards for
Buildings
- P. U.S. Veterans Administration:

Physical Security Design Manual for VA Facilities (VAPSDG); Life Safety Protected

Physical Security Design Manual for VA Facilities (VAPSDG); Mission Critical Facilities

Architectural Design Manual for VA Facilities (VASDM)

Q. Environmental Protection Agency (EPA):

40 CFR 59(2014).....National Volatile Organic Compound Emission Standards for Consumer and Commercial Products

PART 2 - PRODUCT

2.1 GLASS:

A. Provide minimum thickness stated and as additionally required to meet performance requirements.

1. Provide minimum 6 mm (1/4 inch) thick glass units unless otherwise indicated.

B. Obtain glass units from single source from single manufacturer for each glass type.

C. Clear Glass:

1. ASTM C1036, Type I, Class 1, Quality q3.

D. Tinted Heat reflective and low emissivity coated glass:

1. ASTM C1036, Type I, Class 2, Quality q3.

2.2 HEAT-TREATED GLASS:

1.

A. Roller Wave Limits for Heat-Treated Glass: Orient all roller wave distortion parallel to bottom surface of glazing, and provide units complying with the following limitations:

1. Measurement Parallel to Line: Maximum peak to valley 0.203 mm (0.008 inch).

2. Measurement Perpendicular to Line: Maximum 0.0254 mm (0.001 inch).

3. Bow/Warp: Maximum 50 percent of bow and warp allowed by ASTM C1048.

B. Clear Heat Strengthened Glass:

1. ASTM C1048, Kind HS, Condition A, Type I, Class 1, Quality q3.

C. Tinted Heat Strengthened Glass:

1. ASTM C1048, Kind HS, Condition A, Type I, Class 2, Quality q3.

D. Clear Tempered Glass:

1. ASTM C1048, Kind FT, Condition A, Type I, Class 1, Quality q3.

E. Tinted Tempered Glass.

1. ASTM C1048, Kind FT, Condition A, Type I, Class 2, Quality q3.

2.3 COATED GLASS:

A. Reflective-Coated Low-E Coated Tempered Glass:

1. ASTM C1376 and ASTM C1048, Kind FT, Condition C, Type I, Class 1, Quality q3 with reflective metallic coating.

2.4 GLAZING ACCESSORIES:

A. As required to supplement the accessories provided with the items to be glazed and to provide a complete installation. Ferrous metal accessories exposed in the finished work are to have a finish that will not corrode or stain while in service. Fire rated glazing to be installed with glazing accessories in accordance with the manufacturer's installation instructions.

B. Setting Blocks: ASTM C864:

1. Silicone type.
2. Channel shape; having 6 mm (1/4 inch) internal depth.
3. Shore A hardness of 80 to 90 Durometer.
4. Block lengths: 50 mm (2 inches) except 100 to 150 mm (4 to 6 inches) for insulating glass.
5. Block width: Approximately 1.6 mm (1/16 inch) less than the full width of the rabbet.
6. Block thickness: Minimum 4.8 mm (3/16 inch). Thickness sized for rabbet depth as required.

C. Spacers: ASTM C864:

1. Channel shape having a 6 mm (1/4 inch) internal depth.
2. Flanges not less 2.4 mm (3/32 inch) thick and web 3 mm (1/8 inch) thick.
3. Lengths: 25 to 76 mm (1 to 3 inches).
4. Shore A hardness of 40 to 50 Durometer.

D. Glazing Tapes:

1. Semi-solid polymeric based closed cell material exhibiting pressure-sensitive adhesion and withstanding exposure to sunlight, moisture, heat, cold, and aging.
2. Shape, size and degree of softness and strength suitable for use in glazing application to prevent water infiltration.
3. Complying with AAMA 800 for the following types:

- a. AAMA 810.1, Type 1, for glazing applications in which tape acts as the primary sealant.
 - b. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.
- E. Spring Steel Spacer: Galvanized steel wire or strip designed to position glazing in channel or rabbeted sash with stops.
- F. Glazing Clips: Galvanized steel spring wire designed to hold glass in position in rabbeted sash without stops.
- G. Glazing Points (Sprigs): Pure zinc stock, thin, flat, triangular or diamond shaped pieces, 6 mm (1/4 inch) minimum size.
- H. Glazing Gaskets: ASTM C864:
 - 1. Firm dense wedge shape for locking in sash.
 - 2. Soft, closed cell with locking key for sash key.
 - 3. Flanges may terminate above the glazing-beads or terminate flush with top of beads.
- I. Lock-Strip Glazing Gaskets: ASTM C542, shape, size, and mounting as indicated.
- J. Glazing Sealants: ASTM C920, silicone neutral cure:
 - 1. Type S.
 - 2. Class 25 or 50 as recommended by manufacturer for application.
 - 3. Grade NS.
 - 4. Shore A hardness of 25 to 30 Durometer.
- K. Neoprene, EPDM, or Vinyl Glazing Gasket: ASTM C864.
 - 1. Channel shape; flanges may terminate above the glazing channel or flush with the top of the channel.
 - 2. Designed for dry glazing.
- L. Color:
 - 1. Color of glazing compounds, gaskets, and sealants used for aluminum color frames to match color of the finished aluminum and be nonstaining.
 - 2. Color of other glazing compounds, gaskets, and sealants which will be exposed in the finished work and unpainted are to be black, gray, or neutral color.

- M. Smoke Removal Unit Targets: Adhesive targets affixed to glass to identify glass units intended for removal for smoke control. Comply with requirements of local Fire Department.

PART 3 - EXECUTION

3.1 EXAMINATION:

- A. Verification of Conditions:
1. Examine openings for glass and glazing units; determine they are proper size; plumb; square; and level before installation is started.
 2. Verify that glazing openings conform with details, dimensions and tolerances indicated on manufacturer is approved shop drawings.
- B. Review for conditions which may adversely affect glass and glazing unit installation, prior to commencement of installation. Do not proceed with installation until unsatisfactory conditions have been corrected.
- C. Verify that wash down of adjacent masonry is completed prior to erection of glass and glazing units.

3.2 PREPARATION:

- A. For sealant glazing, prepare glazing surfaces in accordance with GANA Sealant Manual.
- B. Determine glazing unit size and edge clearances by measuring the actual unit to receive the glazing.
- C. Shop fabricate and cut glass with smooth, straight edges of full size required by openings to provide GANA recommended edge clearances.
- D. Verify that components used are compatible.
- E. Clean and dry glazing surfaces.
- F. Prime surfaces scheduled to receive sealants, as determined by preconstruction sealant-substrate testing.

3.3 INSTALLATION - GENERAL:

- A. Install in accordance with GANA Glazing Manual, GANA Sealant Manual, IGMA TB-3001, and IGMA TM-3000 unless specified otherwise.
- B. Glaze in accordance with recommendations of glazing and framing manufacturers, and as required to meet the Performance Test Requirements specified in other applicable sections of specifications.
- C. Set glazing without bending, twisting, or forcing of units.
- D. Do not allow glass to rest on or contact any framing member.
- E. Glaze doors and operable sash, in a securely fixed or closed and locked position, until sealant, glazing compound, or putty has thoroughly set.

- F. Tempered Glass: Install with roller distortions in horizontal position unless otherwise directed.
- G. Laminated Glass:
 - 1. Tape edges to seal interlayer and protect from glazing sealants.
 - 2. Do not use putty or glazing compounds.
- H. Insulating Glass Units:
 - 1. Glaze in compliance with glass manufacturer's written instructions.
 - 2. When glazing gaskets are used, they are to be of sufficient size and depth to cover glass seal or metal channel frame completely.
 - 3. Do not use putty or glazing compounds.
 - 4. Do not grind, nip, cut, or otherwise alter edges and corners of fused glass units after shipping from factory.
 - 5. Install with tape or gunnable sealant in wood sash.

3.4 INSTALLATION - WET/DRY METHOD (PREFORMED TAPE AND SEALANT)

- A. Cut glazing tape to length and set against permanent stops, 5 mm (3/16 inch) below sight line. Seal corners by butting tape and dabbing with butyl sealant.
- B. Apply heel bead of butyl sealant along intersection of permanent stop with frame ensuring full perimeter seal between glass and frame to complete the continuity of the air and vapor seal.
- C. Place setting blocks at 1/4 points with edge block no more than 152 mm (6 inches) from corners.
- D. Rest glazing on setting blocks and push against tape and heel bead of sealant with sufficient pressure to achieve full contact at perimeter of pane or glass unit.
- E. Install removable stops, with spacer strips inserted between glazing and applied stops, 6 mm (1/4 inch) below sight line. Place glazing tape on glazing pane or unit with tape flush with sight line.
- F. Fill gap between glazing and stop with sealant to depth equal to bite of frame on glazing, but not more than 9 mm (3/8 inch) below sight line. Sealant type is to be compatible with glazing tape.
- G. Apply cap bead of sealant along void between the stop and the glazing, to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.5 INSTALLATION - WET METHOD (SEALANT AND SEALANT) :

- A. Place setting blocks at 1/4 points and install glazing pane or unit.

- B. Install removable stops with glazing centered in space by inserting spacer shims both sides at 600 mm (24 inch) intervals, 6 mm (1/4 inch) below sight line.
- C. Fill gaps between glazing and stops with sealant to depth of bite on glazing, but not more than 9 mm (3/8 inch) below sight line to ensure full contact with glazing and continue the air and vapor seal.
- D. Apply sealant to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.6 INSTALLATION - INTERIOR WET/DRY METHOD (TAPE AND SEALANT) :

- A. Cut glazing tape to length and install against permanent stops, projecting 1.6 mm (1/16 inch) above sight line.
- B. Place setting blocks at 1/4 points with edge block no more than 150 mm (6 inches) from corners.
- C. Rest glazing on setting blocks and push against tape to ensure full contact at perimeter of pane or unit.
- D. Install removable stops, spacer shims inserted between glazing and applied stops at 600 mm (24 inch) intervals, 6 mm (1/4 inch) below sight line.
- E. Fill gaps between pane and applied stop with sealant to depth equal to bite on glazing, to uniform and level line. Sealant type is to be compatible with glazing tape.
- F. Trim protruding tape edge.

3.7 INSTALLATION - INTERIOR WET METHOD (COMPOUND AND COMPOUND) :

- A. Install glazing resting on setting blocks. Install applied stop and center pane by use of spacer shims at 600 mm (24 inch) centers, kept 6 mm (1/4 inch) below sight line.
- B. Locate and secure glazing pane using glazers' clips.
- C. Fill gaps between glazing and stops with glazing compound until flush with sight line. Tool surface to straight line.

3.8 REPLACEMENT AND CLEANING:

- A. Clean new glass surfaces removing temporary labels, paint spots, and defacement after approval by COR.
- B. Replace cracked, broken, and imperfect glass, or glass which has been installed improperly.
- C. Leave glass, putty, and other setting material in clean, whole, and acceptable condition.

3.9 PROTECTION:

- A. Protect finished surfaces from damage during erection, and after completion of work. Strippable plastic coatings on colored anodized finish are not acceptable.

3.10 LAMINATED GLASS SCHEDULE:

- A. Glass Type : Clear laminated glass with two (2) lites of fully tempered float glass.
 - 1. Minimum Thickness of Each Glass Lite: 3 mm (0.12 inch).
 - 2. Interlayer Thickness: 1.52 mm (0.060 inch).
 - 3. Safety glazing label required.
 - 4. Application: Interior glazing of units unless otherwise scheduled.

3.11 INSULATING GLASS SCHEDULE:

- A. Glass Type : Low-E-coated, clear insulating glass.
 - 1. Overall Unit Thickness: 25 mm (1 inch).
 - 2. Minimum Thickness of Each Glass Lite: 4 mm (0.16 inch).
 - 3. Outdoor Lite: Annealed float glass, except heat-strengthened float glass where required, and fully tempered float glass where indicated.
 - 4. Interspace Content: Argon.
 - 5. Indoor Lite: Fully tempered float glass.
 - 6. Low-E Coating: Sputtered on second surface.
 - 7. Visible Light Transmittance: 68 percent minimum.
 - 8. Solar Heat Gain Coefficient: 0.38 maximum.
 - 9. Safety glazing label required.

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