**SECTION 08 8816**

**VISION CONTROL GLASS**

This section includes editing notes to assist the user in editing the section to suit project requirements. These notes are included as hidden text, and can be revealed or hidden by one of the following methods:

Microsoft Word 2007: Click the OFFICE button, select WORD OPTIONS, select DISPLAY, then select or deselect the HIDDEN TEXT option.

Microsoft Word (earlier versions): From the pull-down menus select TOOLS, then OPTIONS. Under the tab labeled VIEW, select or deselect the HIDDEN TEXT option.

Corel WordPerfect: From the pull-down menus select VIEW, then select or deselect the HIDDEN TEXT option.

This master specification section has been prepared by Unicel Architectural for use in the preparation of a project specification section covering Vision Control and Vision Control Mini glass consisting of an insulated glass unit with adjustable or fixed cordless louvers between the glass panels. Vision control is achieved by rotating the louvers, either manually of by means of an electric motor. Glazing materials can include glass or polycarbonate. Vision Control glass may be installed in a variety of framing systems which can also be provided by Unicel Architectural.

Refer to the following additional specification sections for other Unicel Architectural products:

08 4413 - Glazed Aluminum Curtain Wall

08 6300 - Metal-Framed Skylights

10 7119 - Exterior Sunshades

13 3413 - Solariums

The following should be noted in using this specification:

Hypertext links to specific websites are included after manufacturer names and names of organizations whose standards are referenced within the text, to assist in product selection and further research. Hypertext links are contained in parenthesis and shown in blue, e.g.:

([www.astm.org](http://www.astm.org))

Optional text requiring a selection by the user is enclosed within brackets, e.g.: "Section [09 0000.] [\_\_\_\_\_.]"

Items requiring user input are enclosed within brackets, e.g.: "Section [\_\_\_\_\_ - \_\_\_\_\_\_\_\_]."

Optional paragraphs are separated by an "OR" statement, e.g.:

\*\*\*\* OR \*\*\*\*

"Green" requirements are included for projects requiring LEED certification, and are included as green text. For additional information on LEEDS, visit the U.S. Green Building Council website at [www.usgbc.org](http://www.usgbc.org).

For assistance on the use of the products in this section, contact Unicel Architectural by calling 800-668-1580, by email at [unicel@unicelarchitectural.com,](mailto:unicel@unicelarchitectural.com) or visit their website at [www.unicelarchitectural.com.](http://www.unicelarchitectural.com)

1. **- GENERAL**
   1. SUMMARY

Edit the following paragraphs to include only those items specified in this section.

* + 1. Section Includes:
       1. Vision control glass with [fixed] [adjustable] cordless louvers.
       2. [Manual] [Electric] operators.

Coordinate the following paragraphs with other sections in the project manual.

* + 1. Related Sections:
       1. Division 01: Administrative, procedural, and temporary work requirements.
       2. Section [08 1113 - Hollow Metal Doors and Frames.] [\_\_ \_\_\_\_ - \_\_\_\_\_\_\_.]
       3. Section [08 1116 - Aluminum Doors and Frames.] [\_\_ \_\_\_\_ - \_\_\_\_\_\_\_.]
       4. Section [08 1416 - Flush Wood Doors.] [\_\_ \_\_\_\_ - \_\_\_\_\_\_\_.]
       5. Section [08 1433 - Stile and Rail Wood Doors.] [\_\_ \_\_\_\_ - \_\_\_\_\_\_\_.]
       6. Section [08 1513 - Laminated Plastic Doors.] [\_\_ \_\_\_\_ - \_\_\_\_\_\_\_.]
       7. Section [08 4413 - Glazed Aluminum Curtain Wall.] [\_\_ \_\_\_\_ - \_\_\_\_\_\_\_.]
       8. Section [08 6300 - Metal-Framed Skylights.] [\_\_ \_\_\_\_ - \_\_\_\_\_\_\_.]
       9. Section [13 3413 - Solariums.] [\_\_ \_\_\_\_ - \_\_\_\_\_\_\_.]
  1. REFERENCES

In the following paragraphs, retain only those reference standards that are used elsewhere in this section.

* + 1. American National Standards Institute (ANSI) ([www.ansi.org](http://www.ansi.org)) Z97.1 - Safety Performance Specifications and Methods of Test for Safety Glazing Material Used in Buildings.
    2. ASTM International (ASTM) ([www.astm.org](http://www.astm.org)):
       1. C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers.
       2. C920 - Standard Specification for Elastomeric Joint Sealants.
       3. C1048 - Standard Specification for Heat-Treated Flat Glass-Kind HS, Kind FT, Coated and Uncoated Glass.
       4. C1115 - Standard Specification for Dense Elastomeric Silicone Rubber Gaskets and Accessories.
       5. C1172 - Standard Specification for Laminated Architectural Flat Glass.
       6. C1294 - Standard Test Method for Compatibility of Insulating Glass Edge Sealants with Liquid-Applied Glazing Materials.
       7. C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.
       8. E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
       9. E2190 - Standard Specification for Insulating Glass Units Performance and Evaluation.
    3. Consumer Product Safety Commission (CPSC) [(www.cpsc.gov)](http://www.cpsc.gov) 16 CFR 1201 - Safety Standard for Architectural Glazing Materials.
    4. Glass Association of North America (GANA) ([www.glasswebsite.com](http://www.glasswebsite.com)) - Engineering Standards Manual.
    5. National Fire Protection Association (NFPA) ([www.nfpa.org](http://www.nfpa.org)) 80 - Standard for Fire Doors and Fire Windows.
    6. Underwriters Laboratories of Canada (ULC) [(www.ulc.ca](http://www.ulc.ca)) - Product Directories.
       1. Product Directories.
       2. 263 - Fire Tests of Building Construction and Materials.
  1. SUBMITTALS

Limiting submittals to only those actually required helps to minimize liability arising from the review of submittals. Minimize submittals on smaller, less complex projects.

Include the following for submission of shop drawings, product data, and samples for the Architect's review.

* + 1. Submittals for Review:
       1. Product Data: Descriptive data and performance attributes for vision control glass.
       2. Samples: [8-1/2 x 13-1/2] [\_\_ x \_\_] inch vision control glass samples.
    2. Closeout Submittals:
       1. Maintenance Instructions: Manufacturer’s printed instructions for cleaning and maintenance of glazed units, including operators.

Include the following for submission of sustainable design submittals.

* + 1. Sustainable Design Submittals:
       1. Recycled Content: Certify percentages of post-consumer and pre-consumer recycled content.
       2. Regional Products: Indicate location of product manufacturer and distance from manufacturer to project site.
  1. SYSTEM DESCRIPTION

The following paragraph provides a non-proprietary description of the Vision Control glass units. Retain if required, and edit to suit project requirements.

* + 1. Vision Control Glass: Control vision through insulated glass unit assemblies by means of rotating, cordless, interlocking, [horizontal,] [vertical,] extruded aluminum louvers with rotation controlled [manually.] [by means of electric motor.] Rotation of louvers results in reduction in or elimination of vision through glazed assemblies.
  1. QUALITY ASSURANCE
     1. Regulatory Requirements:
        1. Provide [tempered] [laminated] safety glass for locations subject to human impact as required by [Building Code.] [\_\_\_\_.]
        2. Safety glass: Tested and labeled to CPSC 16 CFR 1201.

Include the following for fire rated glazing systems.

* + 1. Fire Rated Glass Assemblies: Conform to ASTM E119 and UL 263.
    2. Perform Work in accordance with GANA Glazing Manual.
    3. 120 Volt Electrical Components: Listed by ULC.

Include the following for full size mockups for review of construction, coordination of work of several sections, testing, or observation of operation.

* + 1. Mockup:
       1. Provide mockup of vision control glass unit.
       2. Locate [where directed.] [\_\_\_\_.]
       3. Approved mockup may [not] remain as part of the Work.
  1. DELIVERY, STORAGE AND HANDLING
     1. Deliver and store glass units in upright position, on blocks, in dry and safe location.
     2. Do not place units in direct sunlight.
     3. Handle units using corner protectors.
  2. WARRANTIES

In the following paragraph, a 10-year warranty is available for Vision Control glass in exterior locations, and a 20-year warranty is available for Vision Control glass in interior locations.

* + 1. Vision Control Glass in Exterior Locations: Furnish manufacturer’s 10-year warranty providing coverage against malfunction, mechanism failure and premature wear of internal parts, and material obstruction of glass units by dust or film formation due to failure of hermetic seal.
    2. Vision Control Glass in Interior Locations: Furnish manufacturer’s 20-year warranty providing coverage against malfunction, mechanism failure and premature wear of internal parts, and material obstruction of glass units by dust or film formation due to failure of hermetic seal.

Include the following if fire-rated glass or laminated leaded radiation shielding glass is specified in Part 2.

[Fire-Rated Glass] [Laminated leaded radiation shielding glass]: Furnish glass manufacturer’s 5-year warranty providing coverage against manufacturing defects resulting in material obstruction through the glass area and/or edge separation and changes in properties of the interlayer.

1. **- PRODUCTS**
   1. MANUFACTURERS
      1. Contract Documents are based on [Vision Control] [Vision Control Mini] by Unicel Architectural, 800-668-1580, [www.unicelarchitectural.com.](http://www.unicelarchitectural.com.)

Edit the following to indicate whether or not substitutions will be permitted for the products in this section.

* + 1. Substitutions: [Under provisions of Division 01.] [Not permitted.]
  1. MATERIALS - GLASS

Edit the following paragraphs to indicate type of glass required.

* + 1. Clear Tempered Glass: ASTM C1048, Type 1 transparent flat, Class 1 clear, Quality q3 glazing select, Kind FT fully tempered.
    2. Tinted Tempered Glass:
       1. Type: ASTM C1048, Type 1 transparent flat, Class 2 tinted heat absorbing and light reducing, Quality q3 glazing select, Kind FT fully tempered.
       2. Color: [Blue.] [Green.] [Bronze.] [Gray.] [\_\_\_\_.]

Include the following for fire-rated glass in windows, transoms, doors, and sidelites. Fire-rated frames and stops are not supplied by Unicel.

* + 1. Fire-Rated Glass:
       1. Source: Pilkington Pyrostop manufactured by Pilkington Group and distributed by Technical Glass Products.
       2. Composition: Multiple sheets of Optiwhite high visible light transmission glass laminated with intumescent interlayer.
       3. Fire rating and thickness: [45-minute rating, 3/4 inch-thick.] [60-minute rating, 7/8 inch-thick.] [90-minute rating, 1-7/16 inch-thick.]
       4. Fire-rated frames and stops are not supplied by Unicel Architectural.

Include the following for fire-rated glass in doors only. Fire-rated steel trim for doors are supplied by Unicel.

* + 1. Fire-Rated Glass:
       1. Source: FireLite Plus manufactured by Nippon Electric Glass Company, Ltd., and distributed by Technical Glass Products.
       2. Composition: Fire-rated, impact safety-rated laminated glass ceramic.
       3. Fire rating and thickness: 20-minute rating, 5/16 inch-thick.
       4. Fire-rated steel trims for use in doors are supplied by Unicel Architectural.

Other types of glass are available; contact Unicel Architectural for additional glass types.

* + 1. [\_\_\_\_] Glass: [\_\_\_\_].

Verify exact recycled content with Unicel Architectural.

* + 1. Recycled Content: Minimum [\_\_] percent recycled glass content, classified as post-industrial.
  1. MATERIALS - PLASTIC GLAZING

Edit the following paragraph to indicate type of polycarbonate required. Polycarbonates should only be used in interior locations.

* + 1. Polycarbonate Sheet:
       1. Type: ANSI Z97.1; plastic compound, ultraviolet stabilized, non-yellowing [, abrasion resistant coated].
       2. Color: [Clear.] [Translucent.] [Grey tint.] [Bronze tint.] [Light green tint.] [\_\_\_\_.]

Verify exact recycled content with Unicel Architectural.

* + 1. Recycled Content: Minimum [\_\_] percent recycled glass content, classified as post-industrial.
  1. MATERIALS - LOUVERS, FRAMES, AND OPERATORS

Edit the following paragraphs to indicate types of louvers and operators required. Louver dimensions may be dictated by size limitations; contact Unicel Architectural to determine exact louver sizes based on project requirements.

Include the following for standard Vision Control glass.

* + 1. Louvers: Hollow extruded aluminum, interlocking profile, [1/4] [3/8] [1/2] inch-thick x 1-3/8 inches deep; Duracron [K-1285 Glossy White] [K-20794 Metallic Gray] [\_\_\_\_] finish.

\*\*\*\* OR \*\*\*\*

Include the following for Vision Control Mini glass.

Louvers: Hollow extruded aluminum, interlocking profile, 3/16 inch-thick x 7/8 inch deep; Duracron [K-1285 Glossy White] [K-20794 Metallic Gray] [\_\_\_\_] finish.

* + 1. Manual Operators: [[removable] Hand crank] [Thumbwheel] [[removable] Knob] [Anti-ligature Knob] type.

\*\*\*\* OR \*\*\*\*

Electric Operators:

* + - 1. Motor voltage, motor type, and hardware as determined by manufacturer based on glass opening sizes and number of glass panels per motor.
      2. Switches: [Full span rotation] [Two factory-preset positions, determined by architect] type.

Include the following paragraph for an optional trim kit for standard Vision Control glass installed in hinged or pivoted doors; overall glass thickness cannot exceed frame kit glass pocket depth. Note that Unicel trim kits cannot be used on fire-rated or leaded glass assemblies. Standard finishes are listed below; other colors may be available at additional cost.

* + 1. Glass Frame (Trim Kit): Extruded aluminum, factory glazed, sized to accept 2-1/2 inch-thick glass for insertion into 1-3/4 inch-thick doors; [Duracron [K-1285 Glossy White] [K-20794 Metallic Gray]] [clear anodized] [\_\_\_\_] finish. Corners are cut (45 degree) and mechanically fastened with concealed fasteners.

Include the following paragraph for an optional trim kit for Vision Control Mini glass installed in hinged or pivoted doors; overall glass thickness cannot exceed frame kit glass pocket depth. Note that Unicel trim kits cannot be used on fire-rated or leaded glass assemblies. Standard finishes are listed below; other colors may be available at additional cost.

* + 1. Glass Frame (Trim Kit): Extruded aluminum, factory glazed, sized to accept 1-3/4 inch-thick glass for insertion into 1-3/4 inch-thick doors; [Duracron [K-1285 Glossy White] [K-20794 Metallic Gray]] [clear anodized] [\_\_\_\_] finish. Corners are cut (45 degree) and mechanically fastened with concealed fasteners.

Include the following paragraph for a required Universal trim kit for Vision Control Mini glass installed in sliding doors; overall glass thickness cannot exceed frame kit glass pocket depth. Note that Unicel trim kits cannot be used on fire-rated glass assemblies. Standard finishes are listed below; other colors may be available at additional cost.

* + 1. Glass Frame (Trim Kit): Extruded aluminum, sized to accept 1-7/16 inch-thick glass for insertion into 1-3/4 inch-thick sliding doors; [Duracron [K-1285 Glossy White] [K-20794 Metallic Gray]] [clear anodized] [\_\_\_\_] finish.

Include the following paragraph for a 20-minute fire-rated trim kit for Vision Control Mini glass installed in hinged or pivoted doors. Operator chosen must be aluminum thumbwheel.

* + 1. Glass Frame (Trim Kit): Steel, factory-glazed, sized to accept Vision Control Mini glass with 1-¼ inch airspace for insertion into 1-3/4 inch-thick doors; Duracron [K-1285 Glossy White] [K-20794 Metallic Gray] [\_\_\_\_] finish.

Include the following for a trim kit for leaded glass. This option is only available if overall glass thickness is roughly equal to door thickness.

* + 1. Glass Trim Kit: Extruded aluminum pressure plate and snap-on cover type, pre-notched to accept louver operating hardware, lead lining excluded. Corners are cut (45 degree) and mechanically fastened with concealed fasteners.

Include the following paragraph for a required interior aluminum frame for Vision Control glass or Vision Control Mini glass installed in interior wall partitions, borrowed lites or sidelites (in lieu of hollow metal frames); Standard finishes are listed below; other colors may be available at additional cost.

* + 1. Glass Framing System: Extruded aluminum, sized to accept Vision Control glass or Vision Control Mini glass, for insertion into interior wall partitions:

Frames:Aluminum tube framing system 1-3/4 inch x [5] [6] inch deep; fabricated, mitered, assembled and ready for installation**;** Duracron [Glossy White K-1285] [Metallic Gray K-20794] [Clear Anodized] [\_\_\_\_] finish.

Glass stops: Aluminum stops (base + snap-on on both sides, screws excluded) [3/4 inch deep x 1-1/8 inch high] [1 inch deep x 1-3/4 inch high] pre-cut and drilled or notched to accept Vision Control or Vision Control Mini operating mechanisms, ready for installation into frames;Duracron [Glossy White K-1285] [Metallic Gray K-20794 ] [Clear Anodized] [\_\_\_\_] finish.

* 1. ACCESSORIES
     1. Setting Blocks: ASTM C864, neoprene or EPDM, or ASTM C1115, silicone; 70 to 90 Shore A durometer hardness.
     2. Spacers: ASTM C864, neoprene or EPDM, or ASTM C1115, silicone; 50 to 60 Shore A durometer hardness.

Include the following paragraph for gasket glazing.

* + 1. Glazing Gaskets: ASTM C864, neoprene or EPDM, or ASTM C1115, silicone or thermoplastic polyolefin rubber, molded or extruded shape to fit glazing channel retaining slot.

Include the following paragraph for sealant glazing.

* + 1. Glazing Sealant:
       1. ASTM C920, Type M, Grade NS, Class 25; two component silicone type, low modulus, non-sag.
       2. Sealant backing: ASTM C1330, Type O, size and density to control glazing sealant depth and produce optimum glazing sealant performance.
       3. Compatible with glass unit edge seals; tested to ASTM C1294.
  1. FABRICATION
     1. Sealed Insulating Glass Units:
        1. Comply with ASTM E2190.
        2. Fabricate spacer bar frame of tubular aluminum filled with desiccant.
        3. Bond spacer bar frame to glass panes.
        4. Fill space outside frame to glass edge with elastomeric sealant.
     2. Laminated Glass:
        1. Comply with ASTM C1172 and ANSI Z97.1.
        2. Laminate glass with laminating film by manufacturer's standard heat and pressure process.

1. **- EXECUTION**
   1. PREPARATION
      1. Clean glazing rabbets; remove loose and foreign matter.
      2. Remove protective coatings on metal surfaces.
      3. Clean glass just prior to installation.
   2. INSTALLATION - GENERAL
      1. Install glass in accordance with glass manufacturer's instructions.
      2. Maintain manufacturer's recommended edge and face clearances between glass and frame members.
   3. INSTALLATION - GASKET GLAZING METHOD
      1. Fabricate gaskets to fit openings; allow for stretching of gaskets during installation.
      2. Set soft compression gasket against fixed stop or frame with bonded miter cut joints at corners.
      3. Set glass centered in openings on setting blocks.
      4. Install removable stops and insert dense compression gaskets at corners, working toward centers of glass, compressing glass against soft compression gaskets to produce weathertight seal.
      5. Seal joints in gaskets.
   4. INSTALLATION - SEALANT GLAZING METHOD
      1. Apply sealant to full depth of permanent stops.
      2. Press glass into sealant with slight lateral movement to ensure adhesion.
      3. Apply sealant to full depth of removable stops. Secure stops in position, forcing contact with sealant bead and completely filling joint.
   5. PROTECTION
      1. After installation, mark glass with an 'X' using removable plastic tape.
   6. SCHEDULE

The following paragraphs provide a framework for specifying Vision Control and Vision Control Mini glass units in various locations. Refer to Unicel Architectural literature or contact Unicel Architectural for assistance in selecting correct components for these various glass unit assemblies.

Note the following:

- For Vision Control units mounted in 1-3/4 inch-thick hinged or pivoted doors, overall unit thickness cannot exceed 2-1/2 inches when using Unicel glass trim kit.

- For Vision Control Mini units mounted in 1-3/4 inch-thick hinged or pivoted doors; overall thickness cannot exceed 1-3/4 inches when using Unicel glass trim kit.

- For Vision Control Mini glass mounted in 1-3/4 inch-thick sliding doors; overall thickness cannot exceed 1-7/16 inches when using Unicel glass trim kit.

- When selecting fire-rated or radiation shielding glass, only one lite needs to be fire-rated or radiation shielding.

- For exterior units, outer and inner lites must be of equal thickness.

- Polycarbonates should only be used in interior locations.

Glass types for both inner and outer lites may include any of the following:

- Nominally [5/32] [1/4] [3/8] [\_\_] inch-thick [clear] [tinted] [hard-coat low-E] tempered glass.

- Nominally [5/32] [1/4] [3/8] [\_\_] inch-thick [clear] [tinted] polycarbonate.

- Nominally [7/16] [9/16] [\_\_] inch-thick [clear] [tinted] glass-clad polycarbonate.

- Nominally [1/4] [5/16] [3/8] [\_\_] inch-thick [clear] [tinted] [hard-coat low-E] [tempered] laminated glass with [0.030] [0.060] [0.090] inch-thick PVB interlayer. Note that 0.030 inch interlayer is not available in 1/4 inch tempered laminated.

- Nominally [3/4 inch-thick, 45-minute] [7/8 inch-thick, 60-minute] [1-7/16 inch-thick, 90-minute] fire-rated glass.

- Nominally 5/16 inch-thick 20-minute fire-rated glass ceramic.

- Nominally [1/4 inch-thick clear leaded radiation shielding glass with 1.6mm lead equivalency.] [3/8 inch-thick clear leaded radiation shielding glass with 2.0mm lead equivalency.] [9/16 inch-thick clear leaded radiation shielding glass with 3mm lead equivalency.] [11/16 inch-thick clear leaded radiation shielding glass with 3.2mm lead equivalency.]

- Nominally [7/16 inch-thick clear laminated leaded radiation shielding glass with 1.6mm lead equivalency.] [1/2 inch-thick clear laminated leaded radiation shielding glass with 2.0mm lead equivalency.]

Edit the following paragraphs to indicate type of vision glass units desired. Refer to Unicel Architectural literature for available glass assemblies. For exterior Vision Glass units, exterior and interior lites must be of equal thickness. Polycarbonates should only be used in interior locations.

Include the following for standard Vision Control Glass. For units mounted in 1-3/4 inch-thick hinged or pivoted doors.

* + 1. Unit Configurations:
       1. Outer lite: Nominally [5/32] [1/4] [3/8] [\_\_] inch-thick [clear] [tinted] [hard-coat low-E] tempered glass.
       2. Outer lite: Nominally [5/32] [1/4] [3/8] [\_\_] inch-thick [clear] [tinted] polycarbonate.
       3. Outer lite: Nominally [7/16] [9/16] [\_\_] inch-thick [clear] [tinted] glass-clad polycarbonate
       4. Outer lite: Nominally [1/4] [5/16] [3/8] [\_\_] inch-thick [clear] [tinted] [hard-coat low-E] [tempered] laminated glass with [0.030] [0.060] [0.090] inch-thick PVB interlayer.
       5. Airspace: [2] [2-1/2] inch.
       6. Inner lite: Nominally [5/32] [1/4] [3/8] [\_\_] inch-thick [clear] [tinted] [hard-coat low-E] tempered glass.
       7. Inner lite: Nominally [5/32] [1/4] [3/8] [\_\_] inch-thick [clear] [tinted] polycarbonate.
       8. Inner lite: Nominally [7/16] [9/16] [\_\_] inch-thick [clear] [tinted] glass-clad polycarbonate
       9. Inner lite: Nominally [1/4] [5/16] [3/8] [\_\_] inch-thick [clear] [tinted] [hard-coat low-E] [tempered] laminated glass with [0.030] [0.060] [0.090] inch-thick PVB interlayer.

Include the following for Vision Control Mini glass mounted in 1-3/4 inch-thick hinged or pivoted doors; overall thickness cannot exceed 1-3/4 inch.

* + 1. Unit Configurations:
       1. Outer lite: Nominally [5/32] [1/4] [3/8] [\_\_] inch-thick [clear] [tinted] [hard-coat low-E] tempered glass.
       2. Outer lite: Nominally [5/32] [1/4] [3/8] [\_\_] inch-thick [clear] [tinted] polycarbonate.
       3. Outer lite: Nominally [7/16] [9/16] [\_\_] inch-thick [clear] [tinted] glass-clad polycarbonate
       4. Outer lite: Nominally [1/4] [5/16] [3/8] [\_\_] inch-thick [clear] [tinted] [hard-coat low-E] [tempered] laminated glass with [0.030] [0.060] [0.090] inch-thick PVB interlayer.
       5. Outer lite: Nominally 5/16 inch-thick 20-minute fire-rated glass ceramic.
       6. Airspace: [1] [1-1/4] inch.
       7. Inner lite: Nominally [5/32] [1/4] [3/8] [\_\_] inch-thick [clear] [tinted] [hard-coat low-E] tempered glass.
       8. Inner lite: Nominally [5/32] [1/4] [3/8] [\_\_] inch-thick [clear] [tinted] polycarbonate.
       9. Inner lite: Nominally [7/16] [9/16] [\_\_] inch-thick [clear] [tinted] glass-clad polycarbonate
       10. Inner lite: Nominally [1/4] [5/16] [3/8] [\_\_] inch-thick [clear] [tinted] [hard-coat low-E] [tempered] laminated glass with [0.030] [0.060] [0.090] inch-thick PVB interlayer.

Include the following for Vision Control Mini glass mounted in 1-3/4 inch-thick sliding doors; overall thickness cannot exceed 1-7/16 inch.

* + 1. Unit Configurations:
       1. Outer lite: Nominally [5/32] [1/4] [3/8] [\_\_] inch-thick [clear] [tinted] [hard-coat low-E] tempered glass.
       2. Outer lite: Nominally [5/32] [1/4] [3/8] [\_\_] inch-thick [clear] [tinted] polycarbonate.
       3. Airspace: 1 inch.
       4. Inner lite: Nominally [5/32] [1/4] [3/8] [\_\_] inch-thick [clear] [tinted] [hard-coat low-E] tempered glass.
       5. Inner lite: Nominally [5/32] [1/4] [3/8] [\_\_] inch-thick [clear] [tinted] polycarbonate.

Include the following for standard Vision Control or Vision Control Mini glass mounted in Interior Glazed Wall Openings.

* + 1. Unit Configurations :
       1. Outer lite: Nominally [5/32] [1/4] [3/8] [\_\_] inch-thick [clear] [tinted] tempered glass.
       2. Outer lite: Nominally [5/32] [1/4] [3/8] [\_\_] inch-thick [clear] [tinted] polycarbonate.
       3. Outer lite: Nominally [7/16] [9/16] [\_\_] inch-thick [clear] [tinted] glass-clad polycarbonate
       4. Outer lite: Nominally [1/4] [5/16] [3/8] [\_\_] inch-thick [clear] [tinted] [tempered] laminated glass with [0.030] [0.060] [0.090] inch-thick PVB interlayer.
       5. Outer lite: Nominally [3/4 inch-thick, 45-minute] [7/8 inch-thick, 60-minute] [1-7/16 inch-thick, 90-minute] fire-rated glass.
       6. Airspace: [1] [1-1/4] [2] [2-1/2] inch.
       7. Inner lite: Nominally [5/32] [1/4] [3/8] [\_\_] inch-thick [clear] [tinted] tempered glass.
       8. Inner lite: Nominally [5/32] [1/4] [3/8] [\_\_] inch-thick [clear] [tinted] polycarbonate.
       9. Inner lite: Nominally [7/16] [9/16] [\_\_] inch-thick [clear] [tinted] glass-clad polycarbonate
       10. Inner lite: Nominally [1/4] [5/16] [3/8] [\_\_] inch-thick [clear] [tinted] [tempered] laminated glass with [0.030] [0.060] [0.090] inch-thick PVB interlayer.
       11. Inner lite: Nominally [1/4 inch-thick clear leaded radiation shielding glass with 1.6mm lead equivalency.] [3/8 inch-thick clear leaded radiation shielding glass with 2.0mm lead equivalency.] [9/16 inch-thick clear leaded radiation shielding glass with 3mm lead equivalency.] [11/16 inch-thick clear leaded radiation shielding glass with 3.2mm lead equivalency.]
       12. Inner lite: Nominally [7/16 inch-thick clear laminated leaded radiation shielding glass with 1.6mm lead equivalency.] [1/2 inch-thick clear laminated leaded radiation shielding glass with 2.0mm lead equivalency.]

Include the following for standard Vision Control or Vision Control Mini glass mounted in Exterior Glazed Openings.

* + 1. Unit Configurations:
       1. Outer lite: Nominally [5/32] [1/4] [3/8] [\_\_] inch-thick [clear] [tinted] [hard-coat low-E] tempered glass.
       2. Outer lite: Nominally [7/16] [9/16] [\_\_] inch-thick [clear] [tinted] glass-clad polycarbonate
       3. Outer lite: Nominally [1/4] [5/16] [3/8] [\_\_] inch-thick [clear] [tinted] [hard-coat low-E] [tempered] laminated glass with [0.030] [0.060] [0.090] inch-thick PVB interlayer.
       4. Outer lite: Nominally [3/4 inch-thick, 45-minute] [7/8 inch-thick, 60-minute] [1-7/16 inch-thick, 90-minute] fire-rated glass.
       5. Airspace: [1-1/4] [2] [2-1/2] inch.
       6. Inner lite: Nominally [5/32] [1/4] [3/8] [\_\_] inch-thick [clear] [tinted] [hard-coat low-E] tempered glass.
       7. Inner lite: Nominally [5/32] [1/4] [3/8] [\_\_] inch-thick [clear] [tinted] polycarbonate.
       8. Inner lite: Nominally [7/16] [9/16] [\_\_] inch-thick [clear] [tinted] glass-clad polycarbonate
       9. Inner lite: Nominally [1/4] [5/16] [3/8] [\_\_] inch-thick [clear] [tinted] [hard-coat low-E] [tempered] laminated glass with [0.030] [0.060] [0.090] inch-thick PVB interlayer.
       10. Inner lite: Nominally [1/4 inch-thick clear leaded radiation shielding glass with 1.6mm lead equivalency.] [3/8 inch-thick clear leaded radiation shielding glass with 2.0mm lead equivalency.] [9/16 inch-thick clear leaded radiation shielding glass with 3mm lead equivalency.] [11/16 inch-thick clear leaded radiation shielding glass with 3.2mm lead equivalency.]
       11. Inner lite: Nominally [7/16 inch-thick clear laminated leaded radiation shielding glass with 1.6mm lead equivalency.] [1/2 inch-thick clear laminated leaded radiation shielding glass with 2.0mm lead equivalency.]

END OF SECTION