SECTION 08 88 56

BALLISTICS-RESISTANT GLAZING

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\*\* NOTE TO SPECIFIER \*\* Impact Security, LLC; Impact Security LLC is at the forefront of designing and engineering advanced security glazing and building product solutions that seamlessly integrate into architectural designs. Our patented DefenseLite®, BulletShield, and RiotLite systems provide an innovative, retrofit approach to fortifying glass doors, curtain walls, and vision glass-enhancing safety without compromising aesthetics. These solutions, along with Impact's bullet resistant wall panels, transaction windows, doors, and related building products, are engineered to mitigate risks associated with forced entry, ballistic threats, and smash-and-grab crimes, ensuring 24/7 protection for occupants and assets.  
This section is based on the BulletShield products of Impact Security, LLC, which is located at:  
400 Glover Street.  
Marietta, GA 30060.  
Toll Free: 1-888-689-5502.  
Email: info@defenselite.com.  
Web: https://www.defenselite.com/.  
for additional information.Click Here.  
Impact Security is an industry pioneer dedicated to designing and engineering retrofit security glazing solutions. The company's patented DefenseLite® solutions are tailored for existing buildings at risk of illegal breaches and smash-and-grab crimes. This cost-effective approach fortifies doors, windows, curtain wall systems, and interior glazing applications - protecting people and property 24/7.  
Trained and certified dealers across the nation provide easy access to the DefenseLite product portfolio. The company continues to innovate, creating new designs and levels of forced entry protection to meet evolving security challenges. Their commitment to innovation and excellence ensures unparalleled durability and effectiveness, making Impact Security a trusted partner in safeguarding what matters most. As an AIA Continuing Education Provider, architects, school officials, and security professionals can rely on the DefenseLite team to educate and guide the process of determining the best solution for each project based on the assessed threat level.

1. GENERAL
   1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + 1. Bullet Resistant Overglaze System: A retrofit, bullet resistant, clear glazing and custom mounting frame system installed over existing window, door, storefront, and/or curtainwall systems.
    2. Retrofit Framing.
  1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Section 07 91 00 - Preformed Joint Seals.
    2. Section 07 92 00 - Joint Sealants.
    3. Section 08 11 00 - Metal Doors and Frames.
    4. Section 08 12 00 - Metal Frames.
    5. Section 08 13 00 - Metal Doors.
    6. Section 08 14 00 - Wood Doors.
    7. Section 08 15 00 - Plastic Doors.
    8. Section 08 16 00 - Composite Doors.
    9. Section 08 18 00 - Glass Doors.
    10. Section 08 41 00 - Entrances and Storefronts.
    11. Section 08 42 00 - Entrances.
    12. Section 08 43 00 - Storefronts.
    13. Section 08 44 00 - Curtain Wall and Glazed Assemblies.
    14. Section 08 51 00 - Metal Windows.
    15. Section 08 52 00 - Wood Windows.
    16. Section 08 53 00 - Plastic Windows.
    17. Section 08 54 00 - Composite Windows.
    18. Section 08 55 00 - Pressure-Resistant Windows.
    19. Section 08 56 00 - Special Function Windows.
    20. Section 08 80 00 - Glazing.
  1. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.

* + 1. American Architectural Manufacturers Association (AAMA):
       1. AAMA 607.1 - Voluntary Guide Specifications and Inspection Methods for Clear Anodic Finishes for Architectural Aluminum.
       2. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum.
       3. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
    2. ASTM International (ASTM):
       1. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
       2. ASTM C509 - Standard Specification for Elastomeric Cellular Preformed Gasket and Sealing Material.
       3. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers.
       4. ASTM D635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.
       5. ASTM F1233 - Standard Test Method for Security Glazing Materials and Systems.
       6. ASTM F1915 - Standard Test Methods for Glazing for Detention Facilities.
    3. H.P. White Laboratory, Inc. (HPW):
       1. HPW-TP-0500.03 - Test Procedure for Transparent Materials for Use in Forced Entry or Containment Barriers.
    4. International Code Council (ICC) Evaluation Services:
       1. Evaluation Report ICC-ES ESR-2728.
    5. Miami-Date County, Product Control Section:
       1. Miami-Dade Notice of Acceptance (NOA) #12-0605.05.
       2. Miami-Dade Notice of Acceptance (NOA) #15-1014.01.
    6. National Institute of Justice (NIJ):
       1. NIJ Standard 0108.01 - Ballistic Resistant Protective Materials.
    7. Underwriters Laboratories (UL):
       1. UL 752 - Bullet-Resisting Equipment.
       2. UL File: BP6864.
    8. U.S. State Department:
       1. SD-STD-01.01 - Certification Standard - Forced Entry and Ballistic Resistance or Structural Systems.
  1. SUBMITTALS
     1. Submit under provisions of Section 01 30 00 - Administrative Requirements.
     2. Product Data:
        1. Manufacturer's data sheets on each product to be used.
        2. Preparation instructions and recommendations.
        3. Storage and handling requirements and recommendations.
        4. Typical installation methods.

\*\* NOTE TO SPECIFIER \*\* Delete if not applicable to product type.

* + 1. Verification Samples: Two representative units of each type, size, pattern, and color.
    2. Shop Drawings: Include details of materials, construction, and finish. Include relationship with adjacent construction.
  1. QUALITY ASSURANCE
     1. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with a minimum of five years documented experience.
     2. Installer Qualifications: Company certified by Impact Security, LLC for installation of BulletShield products.
     3. Source Limitations: Provide each type of product from a single manufacturing source to ensure uniformity. Impact Security is the exclusive manufacturer for all products.

\*\* NOTE TO SPECIFIER \*\* Include mock-up if the project size or quality warrant the expense. The following is one example of how a mock-up might be specified. When deciding on the extent of the mock-up, consider all the major different types of work on the project.

* + 1. Mock-Up: Construct a mock-up with actual materials in sufficient time for Architect's review and to not delay construction progress. Locate mock-up as acceptable to Architect and provide temporary foundations and support.
       1. The intent of a mock-up is to demonstrate quality of workmanship and visual appearance.
       2. If the mock-up is not acceptable, rebuild the mock-up until satisfactory results are achieved.
       3. Retain mock-up during construction as a standard for comparison with completed work.
       4. Do not alter or remove mock-up until work is completed or removal is authorized.
  1. PRE-INSTALLATION CONFERENCE
     1. Convene a conference approximately two weeks before scheduled commencement of the Work. Attendees shall include Architect, Contractor and trades involved. Agenda shall include schedule, responsibilities, critical path items and approvals.
  2. DELIVERY, STORAGE, AND HANDLING
     1. Store and handle in strict compliance with manufacturer's written instructions and recommendations.
     2. Protect from damage due to weather, excessive temperature, and construction operations.
  3. PROJECT CONDITIONS
     1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.
  4. WARRANTY
     1. Manufacturer's Warranty: Manufacturer's 1 year standard limited warranty for component parts and labor when installed by manufacturer certified installer.
     2. Overglaze Polycarbonate Shield Warranty: 7 year Limited Product Warranty against coating failure, yellowing, and hazing.

1. PRODUCTS
   1. MANUFACTURERS
      1. Acceptable Manufacturer: Impact Security LLC, which is located at:  
         400 Glover St.  
         Marietta, GA 30060  
         Toll Free Tel: 888-689-5502  
         Fax: 678-547-3138  
         Email: [request info (info@defenselite.com)](https://arcat.com/rfi?action=email&company=Impact%252BSecurity%252BLLC&message=RE%253A%2520Spec%2520Question%2520(08840isy)%253A%2520&coid=52521&spec=08840isy&rep=&fax=678-547-3138);Web: <https://www.defenselite.com>

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.

\*\* NOTE TO SPECIFIER \*\* Delete article if not required.

* 1. BULLET RESISTANT OVERGLAZE SYSTEM
     1. BulletShield, 3/8 inch (9.53 mm) containment grade sheet.
        1. Performance Requirements:
           1. Ballistics: SD-STD-01.01.
           2. Combustibility: ASTM D635, Combustibility Class CC1.
           3. Forced Entry and Containment:

Body Passage: ASTM F12330.08, Class 2.8.

Contraband Passage: ASTM F12330.08, Class 1.4.

Forced Entry: H.P. White TP 0500.03 Level I, Sequence 15.

Security Rating for Glazing Materials: ASTM F19150.03, Grade 3.

* + - * 1. Other: Miami-Dade NOA #15-1014.01.
      1. Physical Properties:
         1. Gauge / Tolerance: 0.39 inch (9.91 mm) plus/minus 5 percent.
         2. Light Transmission: 88 percent.
         3. Shading Coefficient: 0.92.
         4. Sheet Size: As indicated in drawings.
         5. U-Value: 0.84.
         6. UV stabilized.
         7. Weight: 2.4 lbs per sq ft (4.88 kg per sq m).
      2. Material: 2-ply, clear DefenseLite polycarbonate laminate sheet constructed as follows:
         1. 3/16 inch (4.76 mm) DefenseLite AR-1 abrasion resistant surface.
         2. Polyurethane bonding interlayer.
         3. 3/16 inch (4.76 mm) DefenseLite AR-1 abrasion resistant surface.
    1. BulletShield, 1/2 inch (12.7 mm) containment grade sheet.
       1. Performance Requirements:
          1. Ballistics:

ASTM F12330.08, Level HG1.

HPW-TP-0500.03, Level A.

SD-STD-01.01.

* + - * 1. Combustibility: ASTM D635, Combustibility Class CC1.
        2. Forced Entry and Containment:

Body Passage: ASTM F12330.08, Class 2.8.

Contraband Passage: ASTM F12330.08, Class 1.4.

Forced Entry: H.P. White TP 0500.03 Level I, Sequence 15.

Security Rating for Glazing Materials: ASTM F19150.03, Grade 1.

* + - * 1. Other: Miami-Dade NOA #15-1014.01.
      1. Physical Properties:
         1. Gauge / Tolerance: 0.522 inch (13.26 mm) plus/minus 5 percent.
         2. Light Transmission: 83 percent.
         3. Shading Coefficient: 0.90.
         4. Sheet Size: As indicated in drawings.
         5. U-Value: 0.74.
         6. UV stabilized.
         7. Weight: 3.3 lbs per sq ft (16.11 kg per sq m).
      2. Material: 3-ply, clear DefenseLite polycarbonate laminate sheet constructed as follows:
         1. 1/8 inch (3.18 mm) DefenseLite AR-1 abrasion resistant surface.
         2. Polyurethane bonding interlayer.
         3. 1/4 inch (6.35 mm) DefenseLite polycarbonate sheet.
         4. Polyurethane bonding interlayer.
         5. 1/8 inch (3.18 mm) DefenseLite AR-1 abrasion resistant surface.
    1. BulletShield, 3/4 inch (19.05 mm) ballistic grade sheet.
       1. Performance Requirements:
          1. Ballistics:

SD-STD-01.01.

UL 752, Level 1.

* + - * 1. Combustibility: ASTM D635, Combustibility Class CC2.
        2. Other:

Miami-Dade NOA #15-1014.01.

UL File: BP6864.

* + - 1. Physical Properties:
         1. Gauge / Tolerance: 0.78 inch (19.81 mm) plus/minus 5 percent.
         2. Light Transmission: 88 percent.
         3. Shading Coefficient: 0.89.
         4. Sheet Size: As indicated in drawings.
         5. U-Value: 0.65.
         6. UV stabilized.
         7. Weight: 5.1 lbs per sq ft (24.9 kg per sf m).
      2. Material: 3-ply, clear DefenseLite polycarbonate and acrylic laminate sheet constructed as follows:
         1. 1/8 inch (3.18 mm) DefenseLite AR-1 abrasion resistant surface.
         2. Polyurethane bonding interlayer.
         3. 1/2 inch (12.7 mm) acrylic sheet.
         4. Polyurethane bonding interlayer.
         5. 1/8 inch (3.18 mm) DefenseLite AR-1 abrasion resistant surface.
    1. BulletShield, 1 inch (25.4 mm) ballistic grade sheet.
       1. Performance Requirements:
          1. Ballistics:

SD-STD-01.01.

UL 752, Level 2.

* + - * 1. Combustibility: ASTM D635, Combustibility Class CC1.
        2. Forced Entry and Containment:

Body Passage: ASTM F12330.08, Class 5.

Contraband Passage: ASTM F12330.08, Class 2.4.

Forced Entry: H.P. White TP 0500.03 Level IV, Sequence 43.

Security Rating for Glazing Materials: ASTM F19150.03, Grade 1.

* + - * 1. Other:

Miami-Dade NOA #12-0605.05.

UL File: BP6864.

* + - 1. Physical Properties:
         1. Gauge / Tolerance: 1.05 inches (26.67 mm) plus/minus 5 percent.
         2. Light Transmission: 72 percent.
         3. Shading Coefficient: 085.
         4. Sheet Size: As indicated in drawings.
         5. U-Value: 0.60.
         6. UV stabilized.
         7. Weight: 6.5 lbs per sq ft (31.74 kg per sq m).
      2. Material: 4-ply, clear DefenseLite polycarbonate laminate sheet constructed as follows:
         1. 1/8 inch (3.18 mm) DefenseLite AR-1 abrasion resistant surface.
         2. Polyurethane bonding interlayer.
         3. 3/8 inch (9.53 mm) DefenseLite polycarbonate sheet.
         4. Polyurethane bonding interlayer.
         5. 3/8 inch (9.53 mm) DefenseLite polycarbonate sheet.
         6. Polyurethane bonding interlayer.
         7. 1/8 inch (3.18 mm) DefenseLite AR-1 abrasion resistant surface.
    1. BulletShield, 1-1/4 inch (31.75 mm) ballistic grade, Level 3 sheet.
       1. Performance Requirements:
          1. Ballistics:

NIJ Standard 0108.01, Level II, Level IIIA.

SD-STD-01.01.

UL 752, Level 3.

* + - * 1. Combustibility: ASTM D635, Combustibility Class CC1.
        2. Forced Entry and Containment:

Body Passage: ASTM F1233.08, Class 5.

Contraband Passage: ASTM F1233.08, Class 2.5.

Forced Entry: H.P. White TP 0500.03 Level IV, Sequence 43-44.

Security Rating for Glazing Materials: ASTM F1915.03, Grade 1.

* + - * 1. Other:

ICC-ES ESR-2728.

Miami-Dade NOA #15-1014.01.

UL File: BP6864.

* + - 1. Physical Properties:
         1. Gauge / Tolerance: 1.3 inches (33.02 mm) plus/minus 5 percent.
         2. Light Transmission: 72 percent.
         3. Shading Coefficient: 0.81.
         4. Sheet Size: As indicated in drawings.
         5. U-Value: 0.51.
         6. UV stabilized.
         7. Weight: 8.1 lbs per sq ft (39.55 kg per sq m).
      2. Material: 4-ply, clear DefenseLite polycarbonate laminate sheet constructed as follows:
         1. 1/8 inch (3.18 mm) DefenseLite AR-1 abrasion resistant surface.
         2. Polyurethane bonding interlayer.
         3. 1/2 inch (12.7 mm) DefenseLite polycarbonate sheet.
         4. Polyurethane bonding interlayer.
         5. 1/2 inch (12.7 mm) DefenseLite polycarbonate sheet.
         6. Polyurethane bonding interlayer.
         7. 1/8 inch (3.18 mm) DefenseLite AR-1 abrasion resistant surface.
    1. BulletShield, 1-1/4 inch (31.75 mm) ballistic grade, multi shot protection sheet.
       1. Performance Requirements:
          1. Ballistics:

SD-STD-01.01.

UL 752, Level 6.

* + - * 1. Combustibility: ASTM D635, Combustibility Class CC2.
        2. Other:

Miami-Dade NOA #15-1014.01.

UL File: BP6864.

* + - 1. Physical Properties:
         1. Gauge / Tolerance: 1.3 inches (33.02 mm) plus/minus 5 percent.
         2. Light Transmission: 78 percent.
         3. Shading Coefficient: 0.98.
         4. Sheet Size: As indicated in drawings.
         5. U-Value: 0.56.
         6. UV stabilized.
         7. Weight: 8.1 lbs per sq ft (39.55 kg per sq m).
      2. Material: 4-ply, clear DefenseLite polycarbonate and acrylic laminate sheet constructed as follows:
         1. 1/8 inch (3.18 mm) DefenseLite AR-1 abrasion resistant surface.
         2. Polyurethane bonding interlayer.
         3. 1/2 inch (12.7 mm) acrylic sheet - must be installed facing ballistic attack side.
         4. Polyurethane bonding interlayer.
         5. 1/2 inch (12.7 mm) DefenseLite polycarbonate sheet.
         6. Polyurethane bonding interlayer.
         7. 1/8 inch (3.18 mm) DefenseLite AR-1 abrasion resistant surface.
  1. RETROFIT FRAMING
     1. Custom engineered and extruded aluminum mounting frame includes the manufacturer's patented "Moore Vent" condensation relief system consisting of venting of dead air space into interior conditioned space. Venting by climate zone required.
     2. Structural security framing systems with equal or greater forced entry and/or ballistics ratings as the selected BulletShield laminate are recommended.
     3. Frame Size: As indicated in drawings.
  2. FABRICATION
     1. Shields and Hardware:
        1. Fabricate security and ballistic shields from pre-determined sheet sizes as manufactured.
        2. Cut and fabricate security panels and mounting frames and hardware to surveyed sizes.
        3. Apply sacrificial protective layers at factory and prior to shipment of completed product to maintain system integrity.
     2. Finish work neatly and free from defects per ASTM and standards.
     3. Tolerances: Plus or minus 1/16 inch (1.6 mm) for frame opening width, height, diagonal dimensions, and overall width and height, outside to outside.
  3. MATERIALS
     1. Extruded Aluminum: ASTM B221, 6063 alloy.
     2. Neoprene Glazing Gaskets:
        1. Interior Glazing Gaskets: Closed cell cellular neoprene conforming to ASTM C509, Type II, Option 1, 40-50 Shore A Durometer.
        2. Exterior Glazing Gaskets: Solid neoprene conforming to ASTM C864, 65-75 Shore A Durometer.
     3. Weatherstripping: Entrance manufacturer's standard types to suit application.
     4. Fasteners: Stainless steel or corrosion resistant steel. Security fasteners only.
     5. Glazing Sealants and Adhesives:
        1. Exterior Applications: Dow 995 or Dow 795.
        2. Interior Applications: Dow 995, Dow 795, or 3M IPA.
  4. ACCESSORY COMPONENTS
     1. Finish Trim: Available in a broad range of anodized and painted finishes to make the system virtually invisible.
     2. Custom Powder Coat: As specified by owner.
     3. Aluminum Frame Standoffs: Designed to keep protected glass from breaking upon physical attack.
     4. Entombed Desiccant Within Bottom Frame Member: Eliminates moisture to prevent fogging and moisture damage during installation of overglaze.
     5. DefenseLite Super Bond: Secures the system to existing glazing (proprietary fasteners, tapes, and structural caulk integrated system).
     6. Sacrificial, clear surface protective film on overglazed doors to remain post installation to protect shields.

\*\* NOTE TO SPECIFIER \*\* Branded graphics and vinyl film products can be applied over exterior surface of DefenseLite. Consult Impact Security LLC for further details and applications under consideration.

* + 1. Branded Graphics and Vinyl Film Products: Static cling and surface mounted.
  1. FINISHES
     1. Aluminum Finishes:

\*\* NOTE TO SPECIFIER \*\* Delete finish options not required.

* + - 1. Anodized Finish: AAMA 611, Architectural Class I anodized, clear.
      2. Anodized Finish: AAMA 611, Architectural Class I anodized, bronze.
      3. Anodized Finish: AAMA 611, Architectural Class I anodized, black.
      4. Anodized Finish: AAMA 611, Class II, Clear Anodic Finish: AA-M10C22A31 Mechanical Finish: As fabricated; Chemical Finish: Etched, Medium Matte; Anodic Coating: Architectural Class II, Clear Coating 0.40 mils (0.01 mm) minimum complying with the following:
         1. AAMA 607.1.
         2. Applicator must be fully compliant with all applicable environmental regulations and permits, including wastewater and heavy metal discharge.
      5. Powder Coat Finish: Manufacturer's standard polyester powder coat, sprayed and baked:
         1. PPG Duranar with resin containing 70 percent fluoropolymer; thermosetting; alternative finishes will not be acceptable, conforming to AAMA 2605.
         2. Pretreatment: Five-stage; zinc chromate conversion coating.
         3. Application: Electrostatic spray and oven bake by approved applicator.
         4. Coating quantity: Minimum one primer coat and one color coat.
         5. Dry film thickness: Minimum 1.2 mils (0.03 mm) on exposed surfaces, except inside corners and channels.

\*\* NOTE TO SPECIFIER \*\* Delete color options not required.

* + - * 1. Color: \_\_\_\_\_.
        2. Color: To be selected by Architect from Manufacturer's full range.
        3. Color: Custom color.
    1. Stainless Steel Finish: No. 3 brushed finish.

1. EXECUTION
   1. EXAMINATION
      1. Do not begin installation until the substrates have been properly constructed and prepared.
      2. If substrate preparation is the responsibility of another installer, notify Architect in writing of unsatisfactory preparation before proceeding.
   2. PREPARATION
      1. Clean surfaces thoroughly prior to installation.
      2. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
   3. INSTALLATION
      1. System must be installed by a BulletShield certified installer.
      2. Bullet resistant overglaze system and custom frame mounted to exterior or interior of existing glazing system per manufacturer's instructions.
      3. Install in accordance with manufacturer's instructions, approved submittals, and in proper relationship with adjacent construction.
      4. Cut BulletShield laminate to allow for a minimum of 1 inch (25.4 mm) edge engagement in the frame, with sufficient rabbet depth for material expansion (approx. 1/16 inch per ft (5.21 mm per m)).
      5. Use wet or dry sealants/gaskets that are compatible with polycarbonate.
      6. Remove protective masking after glazing operations are completed and before prolonged exposure to direct sunlight, moisture, or high temperature.
      7. Install plumb, level, square, true to line, and without warp or rack.
      8. Provide all fasteners and/or adhesives required for installation.
      9. Anchor frames securely in place to support. Use attachment methods permitting adjustment for construction tolerances, irregularities, alignment, and expansion and contraction.
   4. FIELD QUALITY CONTROL
      1. Field Inspection: Coordinate field inspection in accordance with appropriate sections in Division 01.

\*\* NOTE TO SPECIFIER \*\* Include if manufacturer provides field quality control with onsite personnel for instruction or supervision of product installation, application, erection, or construction. Delete if not required.

* + 1. Manufacturer's Services: Coordinate manufacturer's services in accordance with appropriate sections in Division 01.
  1. CLEANING AND PROTECTION
     1. Clean products in accordance with the manufacturers recommendations.
     2. Remove excess joint sealant in accordance with sealant Manufacturer's instructions.
     3. Do not use harsh cleaning materials or methods that would damage glazing or finish.
     4. Protect installed products until completion of project.
     5. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION