**SECTION 08 88 53 SECURITY GLAZING**

1. **- GENERAL**
	1. **SECTION INCLUDES**
		1. Shooter Attack Certified Security Glazing.
			* 1. Monolithic pane for use in standard 1/4-inch glazing framing assemblies.
				2. Utilized as inboard pane in standard 1-inch insulated glazing units (IGUs).
		2. Door Vision Lite retrofit kit.
	2. **RELATED REQUIREMENTS**
		1. Drawings and general provision of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
	3. **REFERENCED STANDARDS**
		1. American National Standards Institute (ANSI)
			1. ANSI Z97.1 – American National Standard for Safety Glazing Materials Used in Building, Safety Performance Specifications and Methods of Test; Current Version.
		2. American Society for Testing and Materials (ASTM)
			1. ASTM F3561 - Standard Test Method for Forced-Entry-Resistance of Fenestration Systems After Simulated Active Shooter Attack, Current Version.
			2. ASTM C 1036-06 – Standard Specification for Flat Glass; Current Version.
		3. Code of Federal Regulations (CFR)
			1. 16 CFR 1201 – Safety Standard for Architectural Glazing Materials; Consumer Products Commission; current edition.
		4. FILTI Testing and Development
			1. FTD SA – FILTI Shooter Attack Certification Testing
		5. Flat Glass Marketing Association (FGMA) – Glazing Manual; Current Version.
		6. State and local Building Codes, Local Amendments.
	4. **QUALITY ASSURANCE**
		1. Manufacturer Qualifications: Security glazing manufacturer specializing in the manufacture of security glazing units with minimum 5 years’ experience manufacturing products meeting specified requirements.
		2. Installer’s Qualifications: Glazing systems shall be installed by an experienced installer having the necessary experience, staff, and training to install manufacturer's products according to specified requirements.
		3. Pre-installation Conference: Before installing security glazing, conduct conference at Project site. Conduct pre-installation conference in conjunction with installation of mockup.
2. Meet with Owner, Architect, glazing Installer and glazing manufacturer's representative (meeting may be conducted virtually to include glazing manufacturer representative).
3. Review methods and procedures related to installation, including manufacturer's written instructions.
4. Examine substrate conditions for compliance with requirements.
5. Review temporary protection measures required during and after installation.
6. Document proceedings, including corrective measures or actions required, and furnish copy of record to each participant.
	* 1. Field Mockup: Install security glazing in location(s) as directed to verify installation requirements and to demonstrate application effects and qualities of materials and execution.

1. Obtain approval of field samples before continuing with remainder of installation.

2. Maintain field samples during remainder of installation in an undisturbed condition as a standard for judging the completed Work.

3. Approved field mockup may become part of the completed Work.

* + 1. Glass Product Testing: Obtain glass test results for product test reports in “Submittals” Article from a qualified independent agency.
	1. **SUBMITTALS**
		1. Submit under provisions of Division 01.
		2. Product Data: Manufacturers data sheets of each product to be used, including:
			1. General composition of glazing pane and whether product includes surface applied films to achieve stated performance criteria.
			2. Preparation instructions and recommendation
			3. Storage and handling requirements and recommendations
			4. Installation methods.
		3. Samples:
			+ 1. One 6-inch by 6-inch sample of each glass type specified.
		4. Glazing Schedule:
			1. Use same designations indicated on Drawings.
			2. List types and thicknesses for each size, opening and location.
			3. Clearly identify any fire-resistance rated glazing assemblies and the required rating needed.
		5. Test Reports: Detailed reports of full-scale chamber tests to specified criteria, using assemblies identical to those required for this project.
		6. Specimen Warranty
	2. **DELIVERY, STORAGE AND HANDLING**
		1. Deliver materials in manufacturer’s unopened and undamaged packaging, with manufacturer’s labels intact.
		2. Protect glass and glazing materials from damage in ordinance with manufacturer’s recommendations.
	3. **WARRANTY**
		1. Non-Rated Glass Units: Warrant for 10 years from date of Delivery to be free from delamination and failure of seals and not to develop material obstruction of vision, as a result of dust, moisture, or film formation on internal glass surfaces.
1. **- PRODUCTS**
	1. **MANUFACTURERS**
		1. Acceptable Manufacturer: Armoured One, LLC., 386 North Midler Ave. Syracuse, NY 13206. Tel: 315-720-4186; Email: info@armouredone.com; Web: [www.armouredone.com](http://www.armouredone.com).
			1. Basis of Design: Armoured One Shooter Attack Glass.
		2. Substitutions: Must provide demonstrated equality to specified basis of design product.
	2. **MATERIALS**
		1. Shooter/ Attack Resistant Security Glass
			1. Laminated glass comprised of proprietary interlayer sandwiched by two panes of optically clear, tempered glass.
			2. Laminated glass assembly can be fabricated to fire-rating resistance of 20-, 45-, 60-, and 90-minute rating as required.
			3. Laminated glass assembly shall contain NO polycarbonate materials.
			4. Only surface applied films clearly identified to achieve a specified level of performance may be considered and must be fully disclosed in submittal process.
			5. Overall Laminated Pane Thickness: 5/16-inch.
				1. Glazing can be retrofitted to existing 1/4-inch glazing channels common in glazed construction assemblies for monolithic application.
				2. Glazing can be utilized as an inboard pane in assembled insulated glazing units (IGUs). Insulated glazing units are specified elsewhere for overall IGU assembly, component parts, and performance criteria.
				3. Maximum Pane Size: Up to forty (40) square feet, within overall maximum width dimension of 72-inches or overall maximum height dimension up to 96-inches.
				4. Thicker glazing units can be custom fabricated for greater Active Shooter Attack Resistance Level, if required. Consult with manufacturer for available customization options.
		2. Tested and Certified Performance Requirements
			1. FTD-SA Standard for Shooter Attack certification Class 6.
			2. ASTM F3561 Standard Test Method for Forced-Entry-Resistance of Fenestration Systems After Simulated Active Shooter Attack Resistance Level 3.
		3. Glazing Components And Miscellaneous Materials
			1. General: Comply with manufacturer's recommendations for applications and conditions at time of installation.
			2. Cleaners, Primers and Sealers: Type recommended by sealant or gasket manufacturer.
			3. Setting Blocks: Neoprene, silicone or EPDM, 70-90 durometer hardness, with proven compatibility with glazing materials used.
			4. Spacers: Neoprene, silicone or EPDM, 40-50 durometer hardness with proven compatibility with glazing materials used.
			5. Compressible Fillers: Closed-cell or waterproof-jacketed rod stock of synthetic rubber or plastic foam, proven to be compatible with sealants used, flexible and resilient, with 5-10 psi compression strength for 25% deflection.
	3. **GLASS FABRIATION**
		* 1. Cut glass to full fit and play, consistent with glass and glazing material manufacturers' recommendations and the requirements of the Drawings and Referenced Standards.
			2. Follow code requirements and glass manufacturer's recommendations for minimum bite and edge and face clearances.
			3. Cut lights to smooth straight edges, clean, free of nicks and flares; nipping not permitted. Follow glass manufacturer's directions exactly for tinted and Low-E glass.
			4. Glass Identification:
			5. Manufacturer's and UL identifications for glazing shall be permanently etched to be visible after glass has been set in place and glazed.
	4. **DOOR VISION LITE KIT**
		1. Complete replacement retrofit door vision lite kit for replacing standard glass and frame in existing doors with heavy gauge frame and shooter attack glass.
		2. Frame construction shall be fully welded, minimum 18-gauge, through bolt attachment, factory primed for final finish (by others).
		3. Glass shall be specified approved security glazing.
		4. Accessories
			1. Ultra High Bonding (UHB) glazing tape to adhere and anchor glass to vision light kit.
				1. Acceptable product: Any UHB tape tested and approved for bonding glass to metal forming permanent bond once cured.
				2. 0.060-inch thick by 1/2-inch wide, black, waterproof, double sided UHB glazing tape with strippable film to prevent adhesion until ready for installation.
			2. Intumescent glazing tape for fire-rated applications.
				1. Acceptable product: Pemko Fire Glazing Tape FG3000, in 20-, 45-, 60-, and 90-minute rating as required, or approved equal.
			3. Screws: standard crosshead (Philips) head full thread machine screw.
				1. Provide tamper resistant screw if Owner requests and provides specific information on tamper resistant head configuration.

**PART 3 - EXECUTION**

* 1. **GENERAL**

#### Each glazing installation must withstand normal temperature changes, and impact loading without failure of glass, failure of sealants or gaskets, deterioration of glazing materials and other defects in the work.

* + 1. Protect glass from damage during handling and installation, and subsequent operation of glazed components of the work. Discard units with edge damage or other imperfections.

#### Glazing channel dimensions are intended to provide for necessary bite on glass, minimum edge clearance, and adequate tape or sealant thicknesses, with reasonable tolerances.

* + 1. Comply with recommendations by manufacturers of glass and glazing products, except where more stringent requirements are indicated, including those of referenced glazing standards.
	1. **PREPARATION**
		1. Do not begin installation until substrates have been properly prepared.
		2. Clean glazing channel and other framing members to receive glass, immediately before glazing. Remove coatings which are not firmly bonded to substrate.
		3. Where sealants are used, apply primer or sealant to joint surfaces where recommended by sealant manufacturer.
	2. **INSTALLATION**
		1. Set units of glass in each series with uniformity of pattern, draw, bow and similar characteristics.
		2. Where sealants are used at butt joints, apply sealant in thin continuous clear bead. Tool sealant to a uniform, continuous, even profile.
		3. Apply glazing stops and clean up any excess structural sealants from finished surfaces.
		4. Conform to recommendations of glass manufacturer where such covers points not shown on Drawings or specified herein.
		5. Remove "loose" stops furnished with the units and reinstall as a part of the glazing operation.
		6. Handle glass so as to prevent nicks and flares on glass edges.
		7. Install glass exceeding 1/8-inch thickness on identical setting blocks permanently mounted and centered at 1/4 points. If necessary to reduce deflection of horizontal supporting member, blocks may be placed at 1/8 points or with the nearest end 6-inches (whichever is greater) from edge of glass unit. Ensure that blocks are equidistant from centerline of glass. Do not obstruct weep holes.
		8. Provide permanently mounted edge blocks at head and jambs of dry-glazed lights to prevent damage to glass edges during installation and lateral shifting of glass due to thermal and seismic loads and vibrations. Follow recommendations of Flat Glass Marketing Association Glazing Manual.
		9. Set glass to maintain bite, edge and face clearance stipulated by code and the glass manufacturer.
		10. Take special precautions to protect laminated glass edges from deterioration of interlayer by wicking moisture.
		11. Glaze dry-glazed aluminum doors and frames as per manufacturer's directions using glazing gaskets and seals furnished with the units.
		12. Miter gaskets at corners and install so as to prevent pulling away at corners. Gaskets with gaps or other visible irregularities on door and window units shall be corrected by manufacturer or fabricator at no additional cost to Owner.
	3. **DOOR VISION LITE KIT INSTALLATION**
		1. Verify and door rating by locating and observing tag on hinge side of door leaf. If no tag is provided, the door is not considered fire rated. Proceed with vision lite kit replacement based on specific instruction for various rating designations below.
		2. General installation procedure:
			1. Remove existing door lite frame and glazing, using care not to damage existing door finish.
			2. Verify the existing opening is plumb and square and dry fit new vision lite kit to ensure proper fit and coverage within existing opening.
			3. Prepare the opening for installation.
				1. Using the vision frame mounting hole as a template, drill holes in the door for the thru-bolts.
				2. For UL compliance in 3-hour applications, the vision kit opening must be channeled prior to vision kit installation.
			4. Carefully inspect the glass edges. Superficial chips smaller than 5/32” (4mm) are acceptable, however, deeper chips (with V profile) are not acceptable and should not be installed.
			5. Install glazing tape to vision lite kit frame and/or glass per required application.
				1. For non-fire-rated door installation: Apply glazing tape to full perimeter of glass on both sides.
				2. For fire-rated door installation: In addition to glazing tape to full perimeter of glass on both sides, apply intumescent glazing tape around perimeter edge of glass.
				3. Do not leave gaps in perimeter tape nor overlap tape creating varying thicknesses.
			6. Insert the corridor side frame in the vision opening, squaring the frame to the door. Install frame so that the fasteners are located on the more private side of the door.
			7. Remove glazing strippable film on one side and insert glass into frame, seating firmly against frame with tape adhesive. Use setting blocks as needed. Install so that any required and appropriate markings on the glass remain permanently visible.
			8. Once glass is set, remove strippable film from glazing tape and loosely set other side of frame into opening, not adhering to tape until aligned and squared to opening, frame, and mounting holes.
			9. Once aligned and ready to secure, insert two (2) screws into the countersunk mounting holes, carefully align the rooms side of the frame to the holes in the corridor side of the frame. Loosely tighten to hold frame in place for alignment, then loosely insert the remaining screws. Tighten the screws alternately in a crisscross pattern to avoid putting uneven pressure on the frame and glass. Do not tighten to the point of deflecting the frame.
	4. **CLEANING**
		1. Comply with glass manufacturer's recommendations for final cleaning.
		2. Clean installed glass with approved cleaners only.
	5. **PROTECTION**
		1. Protect installed products until completion and final acceptance of project.
		2. Remove and replace damaged products before Substantial Completion.

**END OF SECTION 08 8853**