**SECTION 08 88 53**

**TSS BR GLAZING - GLASS-CLAD POLYCARBONATE - LOW SPALL**

(**Specifier Note**: The purpose of this guide specification is to assist the Specifier in correctly specifying bullet resistant aluminum framing assemblies with their installation as security windows.

The Specifier must edit this guide specification to fit the needs of each specific project. References have been made within the text of the specification to MasterFormat section numbers and titles. The Specifier must coordinate these numbers and titles with sections included for the specific project.

Throughout the guide specification, there are Specifier Notes to assist in the editing of the file. Brackets have been used to indicate when a selection is required. Contact a TSS representative for further assistance with appropriate product selections.)

**PART 1 – GENERAL**

#### SECTION INCLUDES

##### Bullet resistant glass-clad polycarbonate low spall glass, UL levels 2 through 5 and 7 through 8.

#### 1.2 REFERENCES

##### Underwriters Laboratory UL 752-Standard for Bullet Resisting Equipment.

##### ASTM C 1172 - Standard Specification for Laminated Architectural Flat Glass.

#### 1.3 ACTION SUBMITTALS

##### Refer to Section[01 33 00 Submittal Procedures] [Insert section number and title].

##### Product Data: Including manufacturer recommended installation instructions.

##### Shop Drawings: Include plans, elevations, sections, details, attachment to other work.

##### Samples: For each exposed glazing type.

#### INFORMATION SUBMITTALS

##### Product Test Reports: Indicating compliance with requirements

##### Warranty: Sample of warranty

#### CLOSEOUT SUBMITTALS

* + - * 1. Refer to Section [01 78 00 Closeout Submittals] [Insert section number and title].
				2. Maintenance data.

1.6 DELIVERY, STORAGE AND HANDLING

* + - * 1. Refer to Section [01 60 00 Product Requirements] [Insert section number and title].
				2. Deliver materials to the project site with the manufacturer’s UL Listed Labels intact and legible. Handle the materials with care to prevent damage. Store materials inside and under cover, stack flat and off floor. Project conditions (temperature, humidity, and ventilation) shall be within the maximum limit recommendations provided by manufacturer. Do not install products stored in conditions outside manufacturer’s recommended limits.

1.7 WARRANTY

* + - * 1. Workmanship Warranty: All materials shall be warranted against defects for a period of[1] year for the date of receipt at the project site. Provide certificates of manufacturer’s standard limited warranty with closeout documents.
				2. Finish Warranty: Manufacturer’s warranty against deterioration of factory finishes for the period of [5] [10] years from the date of Substantial Completion.

(**Specifier Note**: Product information is proprietary to TSS. If additional products are required for competitive procurement, contact TSS for assistance in listing competitive products that may be available.)

**PART 2 - PRODUCTS**

2.1 MANUFACTURED UNITS

* + - * 1. Basis of Design:

Subject to compliance with requirements, provide products by the following:

1. Total Security Solutions, Inc., 935 Garden Lane, Fowlerville, MI 48836, 866 734-6277. Attn: Sales Department, sales@tssbulletproof.com. Web: [www.tssbulletproof.com](http://www.tssbulletproof.com).

Subject to compliance with requirements, manufacturers of products of equivalent design may be acceptable if approved in accordance with [Section 01 25 00 Substitution Procedures] [Insert section number and title].

* 1. BULLET-RESISTANT GLASS-CLAD POLYCARBONATE GLAZING - LOW SPALL
		+ - 1. Through the design, manufacturing techniques and material application the TSS Bullet Resistant Glass-Clad Polycarbonate Low Spall Glass shall be constructed of multiple layers of glass/polycarbonate sheets and PVB resin interlayers.
				2. Glass shall be tested to allow for glass spall.
				3. Spall shall be tested to not pass through 1/8” paper test material that is spaced 5 inches from glass when tested with projectiles.
				4. Glass shall meet a UL Standard 752 Level 2 thru 5 or 7 through 8 rating.
				5. Thickness of glass shall range from 1” to 2-1/2” thick.

2.3 FABRICATION

* + - * 1. Tolerances: All joints and connections shall be tight, providing hairline joints and true alignment of adjacent members
				2. Product to be meet UL level 2 to 5 or 7 through 8 protection:
1. TSS 002 L/S shall be 1” thickness.
2. TSS 002 L/S shall be 1-1/4” thickness.
3. TSS 003 L/S shall be 1-1/4" thickness.
4. TSS 004 L/S shall be 1-1/4" thickness.
5. TSS 004 L/S shall be 1-1/2" thickness.
6. TSS 005 L/S shall be 1-5/8” thickness.
7. TSS 007 L/S shall be 2-3/16” thickness.
8. TSS 0008 L/S shall be 2-1/2" thickness.

**PART 3 - EXECUTION**

* 1. PREPARATION

A. Prior to beginning installation, verify that areas have been prepared as required by the

 Contract Documents and architectural drawings, and Shop Drawings have been

 approved.

B. Notify Architect of any unsatisfactory preparation that is responsibility of others.

C. Clean and prepare all surfaces per manufacturers recommendations as required for

 achieving the best results for the substrate under the project conditions.

D. Do not begin installation of material until all unsatisfactory conditions have been

 resolved and approved by Architect.

3.2 INSTALLATION

* + - * 1. Do not begin installation until areas have been verified and surfaces properly prepared in accordance with Drawings.
				2. Install in accordance with manufacturer’s instructions and UL 752. Set all equipment plumb.
				3. Apply sealant in accordance with manufacturer's recommendations as indicated in installation instructions.
				4. Remove excess sealant and leave exposed surfaces clean and smooth

3.3 PROTECTION

* + - * 1. Clean and protect material from damage during ongoing construction operations. If damage occurs, remove and replace as required to provide voice ports in their original, undamaged condition.
				2. Inspection and Cleaning: Verify installation is complete and complies with manufacturer’s requirements.
				3. Provide final cleaning of product and accessories, removing excess sealant, labels and protective covers.
				4. Touch-up, repair or replace damaged products prior to Substantial Completion.

**END OF SECTION**