Purpose

The purpose of this structural glazing guide is to provide guidelines for a coordinated system approach to structural glazing. It is another example of the commitment by Arbo Façade Systems to bring you high quality materials from GE Momentive structural glazing silicones. The information contained in this guide is based on years of successful experience by GE Momentive Silicones which have been used on hundreds of structural glazing applications utilizing silicone structural glazing sealant. It is our commitment to the construction industry to supply the highest quality silicone sealants, and to be an integral member of the building project team.

Definition of Structural Glazing

Structural glazing is a system of bonding glass to a building’s structural framing members utilizing a high strength, high performance silicone sealant specifically designed and tested for structural glazing. In structural glazing applications, dynamic wind loads are transferred from the glass, by the structural silicone sealant, to the perimeter structural support. The net results of this glazing technique are either four-sided systems, which yield an unobstructed glass surface; or two-sided systems, where horizontal or vertical accents can be achieved.

Advantages of Structural Glazing

- Allows for broader architectural design flexibility
- Increases the thermal efficiency of buildings, because the exterior exposure of metal framing is either reduced or eliminated
- Reduces or eliminates water and air infiltration
- Reduces the potential for thermal breakage of glass
General Guidelines

The building industry’s acceptance of structural glazing has led to an increase in the number of new buildings incorporating this technique. Technical expertise in implementing this glazing method must keep pace to ensure the highest quality control is available. In general, three guidelines must be followed:

1. ATTENTION TO DETAIL
   All members of the building team must pay close attention to all details. These details are covered in this structural glazing guide.

2. WORKMANSHIP
   Systems engineering, glazing procedures and quality workmanship are critical factors in the success or failure of a structural glazing system. Only companies that have demonstrated solid experience in this field should be considered for this specialized work.

3. SHOP GLAZING
   Temperature, humidity, lighting and cleanliness of the work environment are all factors that can impact the quality of workmanship. All four-sided structural glazing projects should be shop-glazed.

Responsibilities

All members of the building team must perform specific tasks to ensure a successful structural glazing application. The players and their key responsibilities are:

1. THE ARCHITECT / ENGINEER is the design professional to the building owner for the structure’s adequacy and performance. The architect / engineer:

   ▪ Provides design concepts based on the building owner’s requirements,
   ▪ Establishes all design parameters, such as wind loads, unit
sizes and performance criteria, and
▪ Verifies that all shop drawings are submitted in accordance with structural design requirements.

2. **THE GENERAL CONTRACTOR** has total responsibility for construction of a project, including:

▪ Keeping costs within the contract amount,
▪ Completing the project within established time frame,
▪ Selecting all sub-contractors based on quoted prices and competence,
▪ Coordinating all job-site activities and schedules, and
▪ Overseeing compliance with specifications

3. **THE CURTAINWALL DESIGNER / SUPPLIER** engineers the design, translating it from concept to reality by

▪ Designing the curtain wall system to meet the parameters outlined by the architect or engineer,
▪ Providing a workable system that can be erected with the required structural integrity, and that can be re-glazed in case of glass breakage,
▪ Providing a compatible substrate with sufficient design clearances to allow the proper amount and placement of the structural silicone sealant,
▪ May be responsible for the erection of the curtain wall.

4. **THE GLAZIER**, the key contractor for field assembled structural glazing projects,

▪ Conducts field tests of the structural silicone sealant at the job site,
▪ Performs proper surface preparations,
▪ Installs back-up materials, spacer gaskets and setting blocks, and
5. THE GLASS SUPPLIER takes the windload, glass area and dimensions into account to confirm that the glass type and thickness is adequate for the application.

6. THE METAL FINISHER / SUPPLIER is a key contributor to a structural glazing system’s success, with responsibility for:

- Consistency applying the required metal finish, such as paints or anodizing, and
- Supplying material that meets the structural requirements by the architects/engineer.

7. THE STRUCTURAL SILICONE SEALANT SUPPLIER must:

- Recommend the candidate sealant for the job
- Review shop drawings to confirm the required contact widths of the sealant’s bead,
- Review joint shape and location
- Test all substrates which contact or are in close proximity to the structural sealant, and
- Recommend proper surface preparation procedures.

**Evaluation Assistance Program**

Arbo Façade Solutions will arrange for an evaluation assistance program which is required for each structural glazing project. It is designed to reduce the risks for all project participants.

The Evaluation Project Program includes:

1. **SHOP DRAWING REVIEW** Arbo Façade Solutions working with GE Momentive Silicates will review all shop drawings and
details to confirm the required contact widths of the sealant bead. All requests for drawing review must be accompanied by the following information (go to enquiry page):

- Project name and location
- Name and address of the architect
- Dimensions of the lite (W x L)
- Sealant contact width and joint width dimensions*
- Design wind load (kg/m2) specified by the architect
- Glass type and manufacturer
- Metal framing type, finish and manufacturer
- Spacer and setting block type and manufacturer*
- Formulas for determining sealant contact width and joint width, based on design criteria are outlined in Section II

2. LABORATORY TESTING  Arbo Façade Solutions will arrange laboratory testing of ALL substrates, which either come in contact with or are in close proximity to the structural silicone sealant. Samples of each substrate shall be submitted in the quantities listed below, and shall be an actual production run for the project being evaluated (and shall be specified accordingly). To facilitate testing and minimize delays, the following samples are required:

Metal – 12 pieces minimum, 15 cm long production samples of metal, with specified finish identified

Glass – 6 pieces minimum, 15 x 10 cm minimum production lots of glass, with manufacturer and type identified

Gaskets, Spacers, Setting Blocks – 1 piece minimum, 50 cm long minimum production samples of gaskets, spacers and setting blocks, with manufacturer and type identified.