

THE NATIONAL GLASS ASSOCIATION PRESENTS

BEC

CONFERENCE™

25TH
Anniversary

WHERE WE'VE BEEN & WHERE WE'RE GOING

MARCH 5-7, 2023 | LAS VEGAS | GLASS.ORG

NGA INSTALLING COMMITTEE MEETING

March 6, 2023, Las Vegas, NV



Chair:
Matt Kamper,
Woodbridge Glass Inc.



Vice Chair:
Joey Aragon,
Aragon Construction

INSTALLING COMMITTEE MEETING

NGA Antitrust Policy

It is the undeviating policy of the Association to comply strictly with the letter and spirit of all federal, state and applicable international trade regulations and antitrust laws. Any activities of the Association or Association-related actions of its staff, members, officers, directors or chapter officials which violate these regulations and laws are detrimental to the interests of the Association and are unequivocally contrary to Association policy.

Please refer to [NGA Bylaws for SECTION 2. IMPLEMENTATION](#) of the antitrust compliance policy of the Association.

Call to Order

The meeting was called to order by Matt Kamper, Woodbridge Glass, at 8:09 am PT. The meeting was adjourned at 9:15 am CT.

Chair: Matt Kamper, Woodbridge Glass

Vice Chair: Joey Aragon, Aragon Construction

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Administrative Activities

- Sara Neiswanger, NGA Senior Manager, Industry Engagement will act as Recording Secretary

Business Items

Minutes March 28, 2022

A motion was made by Matt Kamper and seconded by Chuck Knickerbocker to approve the minutes as presented. Motion carried without dissent.

Current Installing Committee task groups

- Frameless Shower Enclosure Installation Guide – an overview of the contents of the resource was reviewed; it will act as a supplement to the existing Design Guide
- Specifications – a review of all sections within MASTER SPEC 08 is underway. Security and safety glazing sections have been completed to date.
- Whole Building Design Guide – review and update of the NIBS WBDG is underway. A request for volunteers was made to help process the sizable document.
- Thermal Bridging AIA Presentation – a presentation is being designed based around the existing Design Guide. A meeting will also be held on Oct 19 as a hybrid in person at GlassBuild and online.
- Value Engineering – the newest task group established at the previous meeting, with the goal of overcoming challenges in implementing new high-performance glazing products. A list of project tiers and potential deliverables was brainstormed and still being considered with how to best address various issues related to value engineering and desired outcomes.

New and Revised Publication

- Glazing Manual – newest edition will be published in December 2022 and will include multiple new sections including sustainability, daylighting, photovoltaics, bird-friendly glazing and more.
- NGA Glossary of Architectural Glass & Glazing
- Revised Technical Papers now [available](#)
 - o Bid Considerations for Contract Glazing Proposals
 - o Key Elements of Fenestration System Shop Drawings
 - o Overview of BIM for Glass and Glazing Systems

Minutes of October 18, 2022 Meeting

Fabricating Committee Update – projects related to the Installing Committee were reviewed, including:

- PIB Migration, Edge Grinding, Color Variance, Maintenance of Protective Glazing
- Laminated Glazing Reference Manual is seeking installing volunteers to help update installation, [maintenance](#) and handling of laminated glass products.

Advocacy Committee Update – projects related to the Installing Committee were reviewed, including:

- New ASTM F3561 related to Forced Entry
- Inflation Reduction Act
- Glass & Glazing Advocacy Days event in April 2022

Forming Committee Update – projects related to the Installing Committee were reviewed, including:

- Buy Clean CA Act – in July 2022, awarding authorities began to gauge GWP compliance of eligible materials with the required EPD.
- New Federal Buy Clean Initiative task group within NGA is seeking [volunteers](#)

Education & Industry Collaboration

- MyGlassClass.com and the growing NGA Glazier Apprenticeship Program were reviewed, as well as NGA member benefits available through the NGA collaboration with the American Subcontractor Association (ASA).

Advocacy & Technical Update

- A new NGA Glossary of Architectural Glass & Glazing will be available for download in early May.
- NGA is celebrating the global International Year of Glass 2022 with goals to demonstrate the architectural glass industry is a viable and fulfilling career path and demonstrate how glass going to save the world as the building material of choice for today, for tomorrow (energy/sustainability/ recyclability, daylighting/views, security. A dedicated webpage is available at glass.org/iyog.
- It was noted that the Building Codes Update would be presented later in the BEC Conference programming rather than during the Installing Committee meeting.

New Business

Next Meeting

Building Envelope Contractors Conference (BEC) | March 6, [2023](#) | Las Vegas

Minutes of October 18, 2022 Meeting

INSTALLING COMMITTEE MEETING

Installing Committee Scope

To serve as the hub for all discussion and activities related to installing companies within the glass and glazing industry—to include contract glaziers, building envelope contractors and full-service glass companies—with a focus on advocacy, technical resources, advocacy, education, events, and communication across the supply chain.

How to Participate

- Join the Committee
- Volunteer for a Task Group
- Visit glass.org to find more information on Installing Committee activities

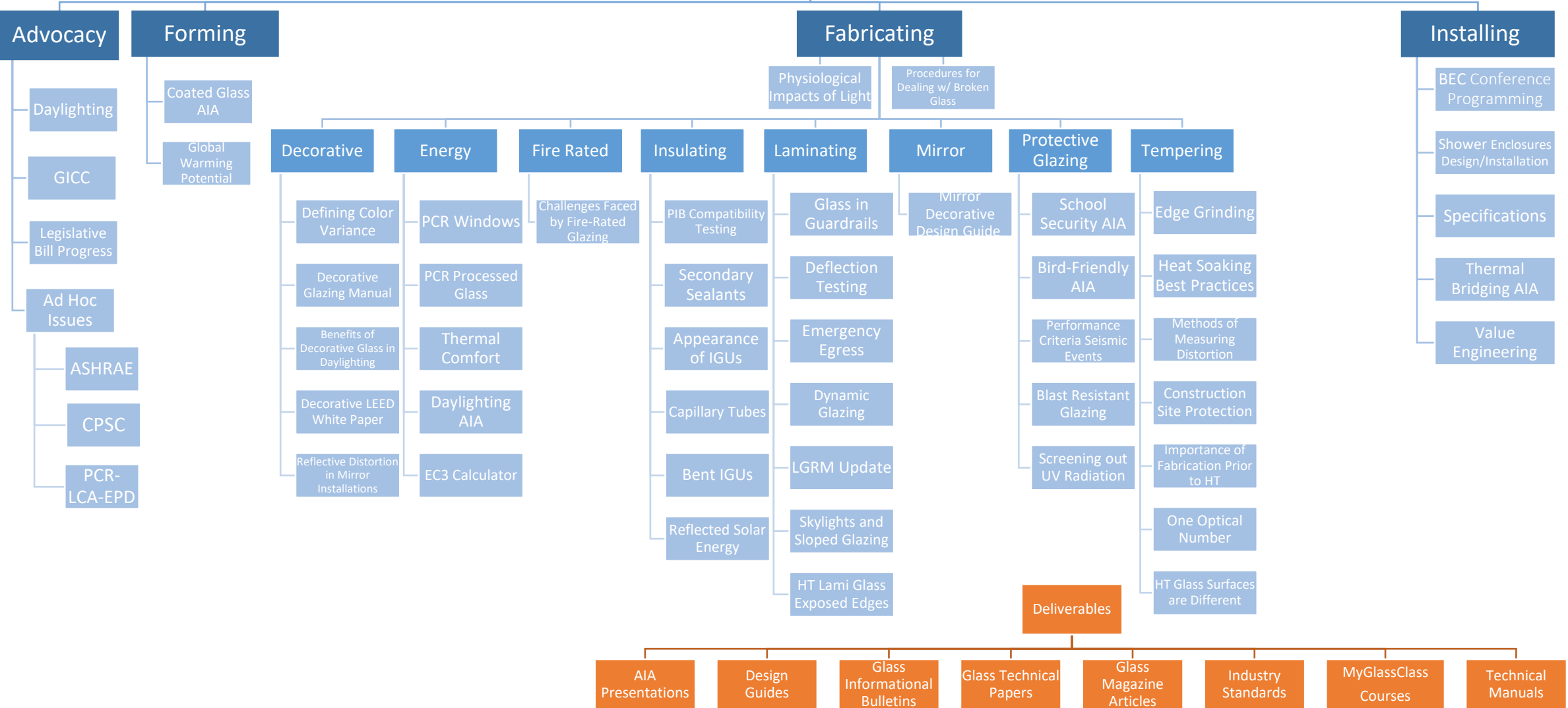


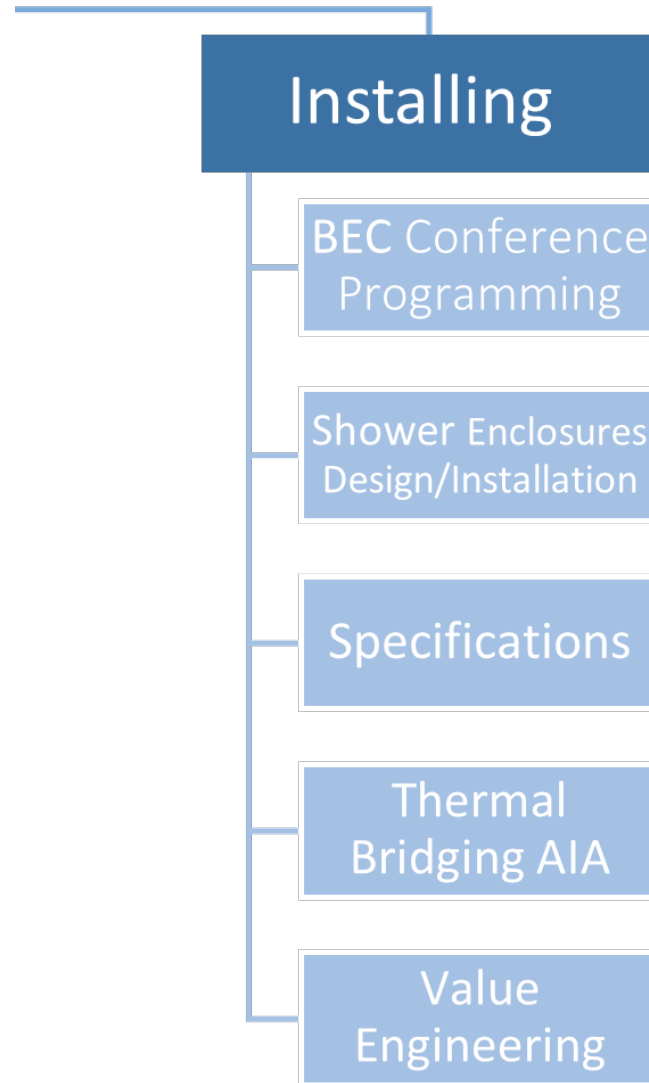
[Volunteer Here](#)

National Glass Association Board of Directors

LEGEND

- Committee
- Committee Liaisons
- Task Groups





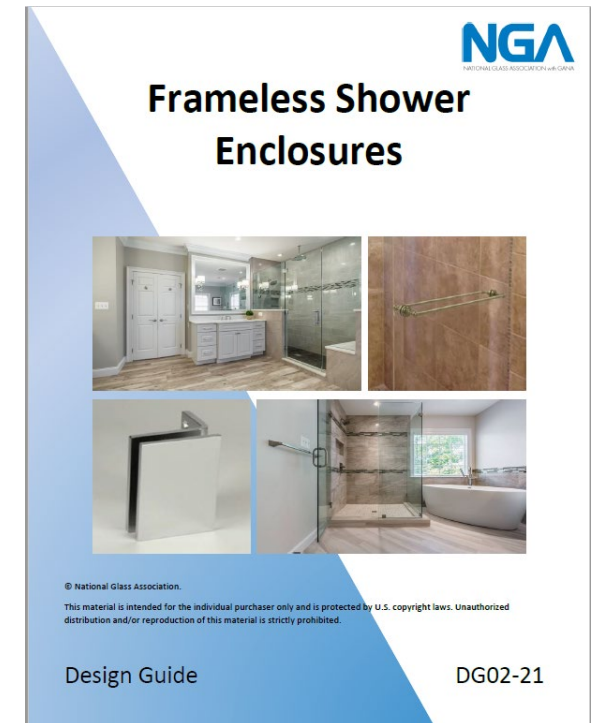
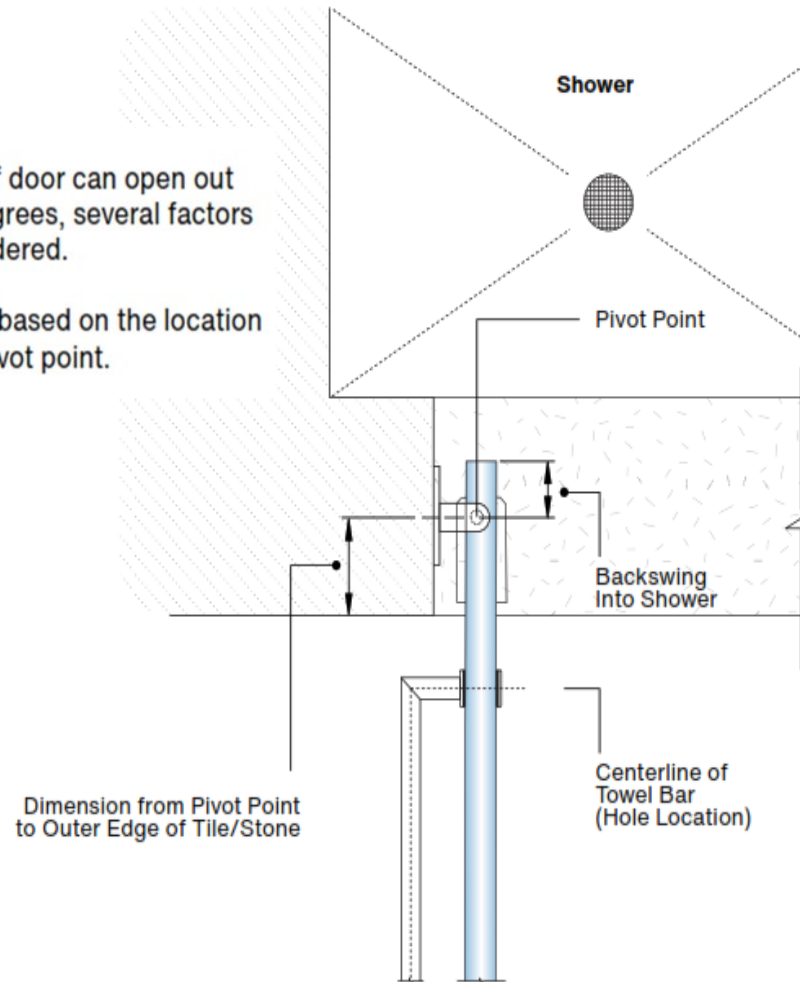
FRAMELESS SHOWER ENCLOSURE DESIGN AND INSTALLATION MANUAL



Task Group Chair
Danny Donahue, FHC

To determine if door can open out to a full 90 degrees, several factors must be considered.

All figures are based on the location of the hinge pivot point.



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Design Guide

DG02-21

SPECIFICATIONS TASK GROUP



Task Group Chair
Steve Dean, Interpane

Deltek.

MasterSpec[®] for
Architecture and
Engineering Firms

The industry's most trusted specification content and cloud-based editing tools.



WHOLE BUILDING DESIGN GUIDE



Task Group Chair
Dudley McFarquhar,
McFarquhar Group Inc



LOGIN CREATE ACCOUNT SEARCH

DESIGN RECOMMENDATIONS PROJECT MANAGEMENT - O & M FEDERAL FACILITY CRITERIA CONTINUING EDUCATION ADDITIONAL RESOURCES

GUIDES & SPECIFICATIONS / BUILDING ENVELOPE DESIGN GUIDE / FENESTRATION SYSTEMS / GLAZING

BUILDING ENVELOPE DESIGN GUIDE

- Introduction
- > Below Grade Systems
- > Wall Systems
- ▼ **Fenestration Systems**
 - Curtain Walls
 - Exterior Doors
 - Glazing**
 - Sloped Glazing
 - Windows
 - Roofing Systems
 - Atria Systems
- > Related Materials

Glazing

by Nik Vigener, PE and Mark A. Brown
Simpson Gumpertz & Heger Inc.

Updated: 05-10-2016

INTRODUCTION

Glass has been used for thousands of years to allow daylight into our buildings, while providing weather protection. The development of the float glass process in the 1950s allowed the economical mass production of high quality flat glass and virtually all architectural glass is now produced by this process. The vast majority of new windows, curtain walls and skylights for commercial building construction have insulating glazing for energy efficiency and comfort. This glazing Chapter is complementary to the other fenestration sections of the Design Guide.

DESCRIPTION

The following covers brief descriptions of commonly used glass and glazing components:

Architectural glass comes in three different strength categories. **Annealed glass** is the most commonly used architectural glass. Because it is not heat-treated and therefore not subject to distortion typically produced during glass tempering, it has good surface flatness. On the downside, annealed glass breaks into sharp, dangerous shards. Heat-



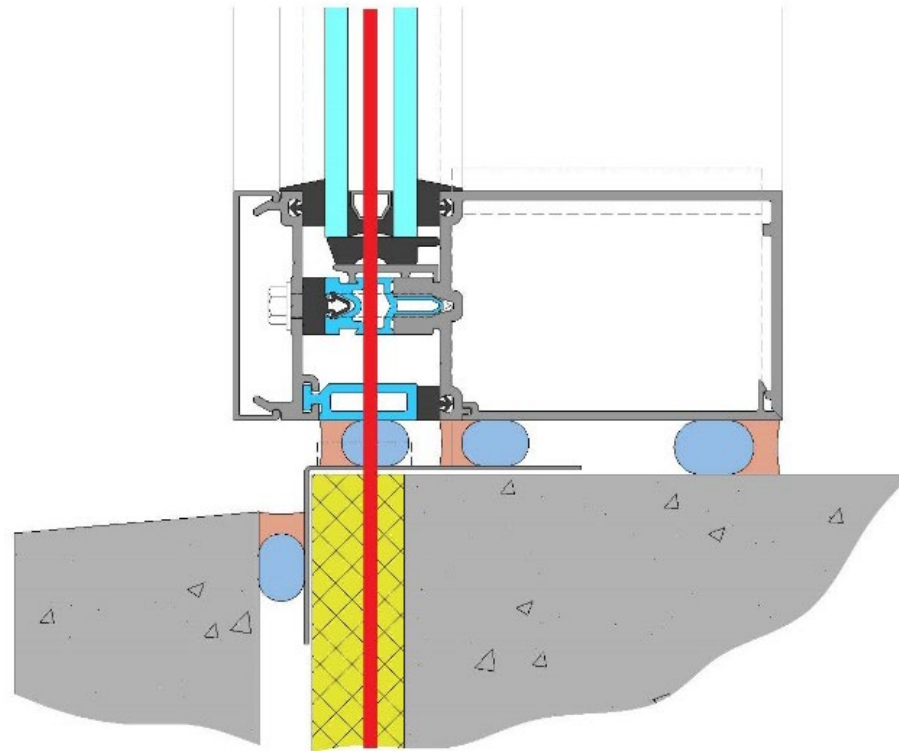
WITHIN THIS PAGE

- Introduction
- Description
- Fundamentals
- Applications
- Details
- Emerging Issues
- Relevant Codes and Standards
- Additional Resources

THERMAL BRIDGING AIA PRESENTATION



Task Group Chair
Stanley Yee, Dow



Learning Objectives

- Define thermal bridging and associated terminology
- Discuss thermal bridging as it pertains to the interface between glazing systems and adjacent construction
- Explain potential strategies to address thermal bridging
- Understand the roles of designers and fenestration suppliers in accounting for thermal bridging

AIA
Continuing
Education
Provider

VALUE ENGINEERING

How to overcome challenges in implementing new high-performance glazing products?

Potential Deliverables:

- Value Engineering Design Guide “playbook” of how to close the gap at each tier in the project. How to get involved early.
- Architect presentation: generalized value & performance of each type (curtainwall, storefront, stick built, unitized, etc.) for comparison
- One-Pager leave-behind with benefits of glazing
- Technical Paper
- Design calculator; Cost-benefit payback calculator; Regional cost calculator
- Template for substitution request- product must meet certain criteria

Project Tiers:

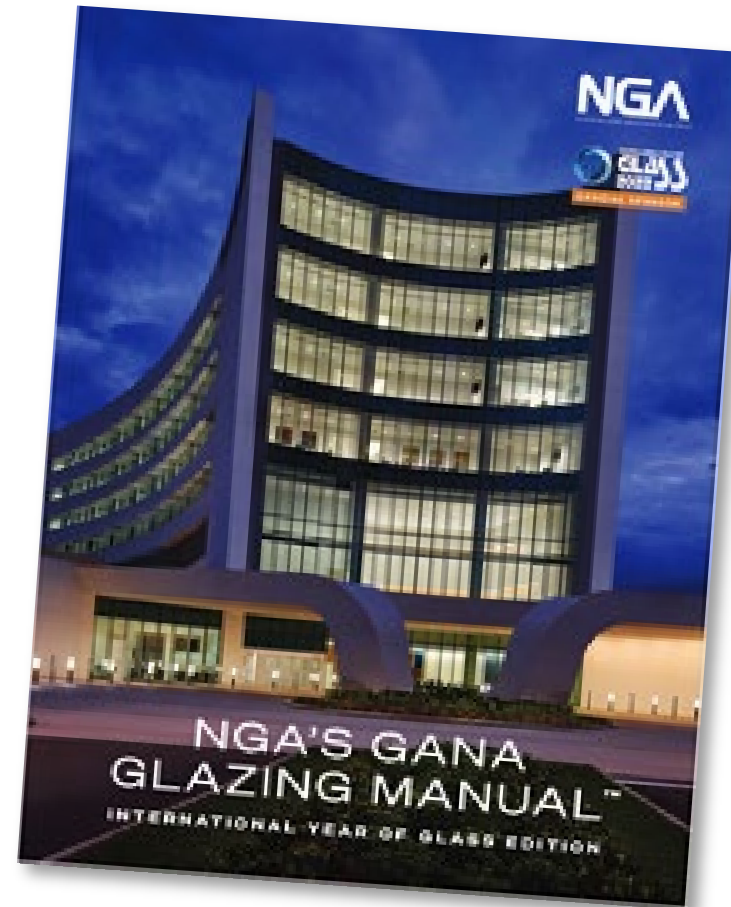
1. Legislative/Code Level
2. Owner/Developer/Property Manager/Cost Consultant Level (Pocketbook); - Strategies to include as much glass as possible
3. Architect/Designer/Specifier- need specs that make sense
4. General Contractor (GC)- concerned with Budget & Timeline
5. Glazing Sub-Contractor (Sends out bid requests to Fabricators and Installs the Glass, Educates the General Contractor)
6. Fabricator
7. Manufacturer/Supplier

NGA'S GANA GLAZING MANUAL - IYOG EDITION

Just Published!

65 years of being the definitive resource for
the glass and glazing industry.

Purchase yours today at glass.org/store or
scan the QR Code.



NGA ANNUAL REPORT



“This annual report captures highlights for 2022. You’ll see a through-line framed by our four strategic goals—Educate, Promote, Advocate and Grow—our purpose and our vision as the only glass and glazing trade association in North America.”

—Nicole Harris, NGA President & CEO



Open your cell phone camera app and point it at the QR code above to be directed to the report.

Or visit glass.org/annual-report

UPDATED GLASS TECHNICAL PAPERS



Glass Technical Paper

IN02-09

Bid Considerations for Contract Glazing Proposals

Today's business climate requires glazing subcontractors to take steps to reduce their agreements to writing, clarify those agreements and limit their exposure. The purpose of this document is to list optional inclusions, exclusions and qualifications for glazing subcontractors to consider adopting. This is not a comprehensive list; it is a tool to assist subcontractors in evaluating their bid proposals. Compare it to the standard boiler plate language attached to all bid proposals. If a glazing subcontractor does not have a standard list of conditions it attaches or includes on its bids, he/she should consider doing so. A list of conditions is not a guarantee of protection but it will establish a position describing the scope of the bid. Individual companies might have additional considerations above and beyond these. Consider what points you as a Subcontractor should adapt to your bid proposals and include as terms to a contract. In today's climate, do not assume anything unwritten is agreed upon or that details may be negotiated later.

1. Reference the project name and owner.
2. Reference the General Contractor.
3. Reference the Bid Category.
4. Restate the scope of the Bid Category.
5. Qualify any exclusions or exceptions to the Bid Scope as described in the bidding documents or architectural drawings. (i.e., performance bonds)
6. Itemize changes to the scope that impact the Subcontractor's ability to perform.
7. List critical dates that must be met by the project management team to keep Division 8 on schedule.
8. List critical dates that the Subcontractor knows before bidding cannot be met.
9. List equipment needed to complete the project that are included or excluded from Subcontractor's bid.
10. List the material included in Subcontractor's quote by manufacturer and product name. (It is important to identify any known or potential substitutions of specified manufacturers.)
11. Identify any project specific custom extrusions to be utilized in the work.
12. List insurance specific issues (i.e., excessive limits, OCIP / CCIP, etc.).
13. Specify field labor as non-union, union (trades), prevailing wage, Davis Bacon.
14. List W/M/D/L BE participation.
15. Identify potential Leadership in Energy and Environmental Design (LEED) specific areas covered.
16. List taxes included / not included.
17. List the bonds that Subcontractor includes in the quote (and limitations for maintenance warranties covered by bonds).
18. List any deviation to the product performance values listed in the bidding documents.
19. List equipment required to complete the project that is required to be supplied by others (such as RELI- ABLE electrical power and material hoist (w/operator) to be supplied by the General Contractor (GC)).



Glass Technical Paper

IN03-12

Key Elements of Fenestration System Shop Drawings

Shop drawings are required by subcontractors, whether it is for glazing, metal panels, masonry, precast concrete, or any substrate that makes up the exterior façade of a building. The intent of this document is to focus on the key elements of shop drawings designed for detailing glass and metal curtain wall, window, skylight, and storefront installations. Shop drawings are interpretations made by the glazing contractor or their material suppliers of the architectural contract documents, including drawings and specifications. Shop drawings must clearly represent the product that is being installed, and will be reviewed and approved by architects for coordination with other trades and /or fenestration suppliers. Necessary technical information for approval includes metal and finish types, glass make-up, and overall system performance criteria. The sizes of framing members must be clearly indicated while also illustrating how the system will control secondary water or condensations. Drawings must include details on how the system will be installed while meeting or exceeding the specified performance requirements of air, water, structural, and building movements such as slab live- load. An explanation of the glazing system's interface with other substrates should be provided. Connections to the building structure should include proper dimensions which allow the glazing contractor to properly order materials to fabricate and eventually install the glazing system. This Paper presents a general checklist of items that should be included in shop drawings for fenestration systems and is presented in an "Order of Assembly" format for the documents.

Shop drawings are often prepared for manufacturers' standard and custom systems. Manufacturers typically provide installation and assembly instructions for their standard systems. In most cases, the typical details are delineated in the installation instructions. Many times a custom detail is added to the standard systems such as a corner or some type of transition detail. It is important to include the sealant and joinery details for these new parts with additional drawings. A custom designed system will require sealant and joinery details of all vertical to horizontal mull connections and /or splice details that will indicate proper fabrication and sealant methods whether done in shop or field. Ensuring that this information is included is critical in order to relay the designer's instruction to the shop and installation crews.

Cover Sheet

- I. GENERAL NOTES
 - a. Performance and Design Criteria: List applicable building code; design wind, snow, and seismic loads; air and water infiltration performance criteria; live load and lateral displacement movements. Include impact loads and/or blast load performance criteria if applicable to the project.



Glass Technical Paper

IN05-17

Overview of Building Information Modeling (BIM) for Glass and Glazing Systems

Building Information Modeling (BIM) is an intelligent, model-based process that starts in the early stages of planning and design. It is used through construction, and can also be used throughout the operational management stages. BIM can even handle potential adapted reuse and life cycle of the building. The history of technical and architectural drawings began with pen and paper, then evolved to include the use of digital, computer aided drafting (CAD). The early use of CAD was a labor intensive drafting process that required the efficient management of electronic documents. The next version of CAD offered 3D modeling.

BIM is more than simply 3D models. BIM projects can use intelligent objects that display the proper graphics at different scales, represent accurate geometry, and can be rich with manufacturer product data.

Glazing systems are a large portion of the exterior building envelope and may be used in interior application also. The design can often be complex utilizing the services of multiple manufacturers, suppliers, fabricators, glazing contractors, engineers and other material sub-contractors all working together to deliver an integrated solution. BIM models allow that coordination to happen early in the design stages which can identify conflicts and design issues and reduce costly rework or delays.

The power of BIM lies in the information, or the "I" in BIM. BIM is changing the architecture, engineering, and construction (AEC) community by establishing a central tool where design decisions and all information about a project can collectively be stored. Graphical information (visualization and constructability analysis through 3D detailing), non-graphical information (performance and material data, ability to schedule the building and provide digital material takeoffs with increased precision), linked information (manufacturers' websites, warranties, sustainability information) are bringing together architects, engineers, contractors, building owners, specialty consultants, product manufacturers, fabricators and others to look at the information flow differently and assess how each plays a role in the BIM process. Equally important, once a project is completed, BIM can provide building owners and facility managers a complete "as-built" source for a more comprehensive building management solution.

BIM is an acronym commonly used by different AEC users to represent different meanings. First of all, BIM is a concept and is not individual software. There are many platforms that can be integrated together for a BIM- based project approach. There is BIM modeling (process) of a BIM model (building) using generic or project specific manufacturer supplied BIM objects (product). Beyond providing geometry, the BIM model, full of data rich objects, can be leveraged for extractable and measurable data used to analyze spatial relationships, orientation and surrounding site conditions, determine building energy usage, light analysis, and quantities and properties for building material takeoffs.



ABOUT NGA

MEMBERSHIP

RESOURCES

EVENTS



PRODUCT SEARCH

[VIEW ALL PRODUCTS](#) [VIEW CART](#)

Product Name

Type

Topic

- (All)
- Contract Glazing
- Decorative
- Energy
- Fabrication
- Fire-Rated
- Flat Glass
- Insulating
- Laminating/Heat-Strengthened
- Mirror
- Protective Glazing
- Safety
- Tempering



OUR OTHER SITES

- [Glass Magazine](#)
- [GlassBuild America](#)
- [MyGlassClass.com](#)
- [WorldofGlassMap.com](#)



NGA ADVOCACY, FABRICATING & FORMING COMMITTEE ACTIVITIES



NGA Glass Conference: Miramar Beach
January 2023

NGA FABRICATING COMMITTEE UPDATE

- Defining Acceptable Color Variance
- Update of Laminated Glazing Reference Manual
- Heat Soak Testing of Tempered Glass for Architecture Applications
- Post Fabrication Edge Grinding of Laminated Glass Testing Plan

SCAN ME to GET INVOLVED!



NGA ADVOCACY COMMITTEE UPDATE

- **School Security Task Group**

- New ASTM Standard for Forced Entry: www.astm.org/f3561-22
- One-Pager on Glazing for School Security
- New one-pager on Glazing for Building Security

- **Sustainability/Recyclability**

- New task group will develop resources on feasibility and barriers to recycling architectural glass

SCAN ME to GET INVOLVED!



NGA GLASS & GLAZING ADVOCACY DAYS

MARCH 27 – 28, 2023



LEADERS IN GLASS ARE IN WASHINGTON, D.C., FOR #ADVOCACYDAY. HERE IS RICARDO MAIZ (AT LEFT), PRESIDENT OF @VITRO_GLAZINGS, WITH @REPSCHRADER OF OREGON. @GLASSNATION [HTTPS://T.CO/DVURNLAN4I](https://t.co/dvurnlan4i)



GLASS MAGAZINE
TWITTER



glass.org/advocacy/initiatives/priority-issues

NGA FORMING COMMITTEE UPDATE

Resources available at glass.org



NGA Resources at glass.org/legislation

- One-Pager on Global Warming Potential (GWP)
- Building Compliance FAQs
- Links to on-demand webinars about EPDs

NGA Resources at glass.org/advocacy/initiatives/priority-issues

- NGA Responses to Requests for Public Comment
- Advocacy One-Pagers for legislators

NGA Resources at glass.org/ondemand-webinars

- Watch “Impacts and Opportunities of the Inflation Reduction Act”
- Download presentation handouts

WORKFORCE DEVELOPMENT UPDATE

MyGlassClass.com Has Courses for Everyone



FOR GLAZIERS



FOR FABRICATORS

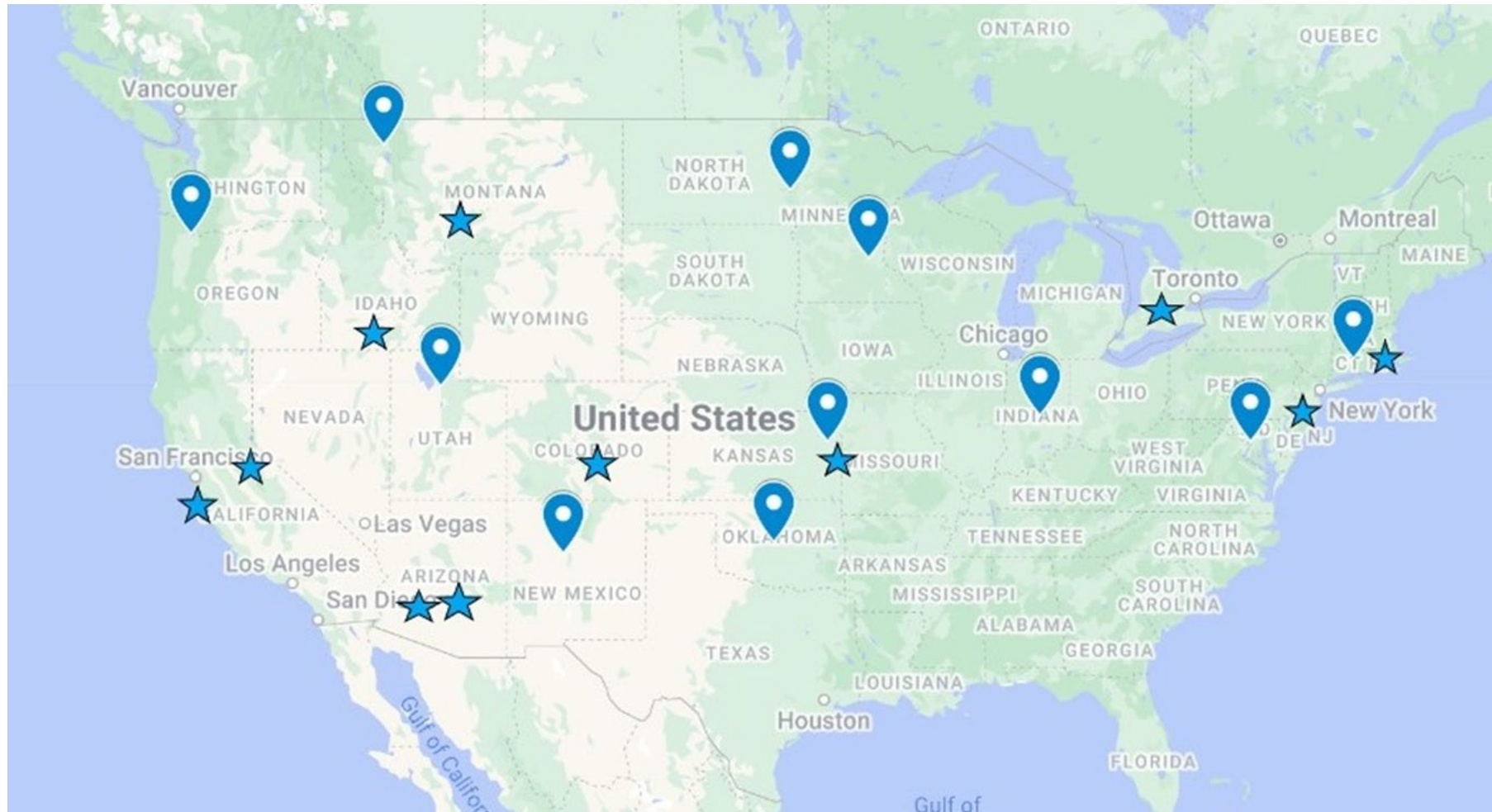


**FOR SALES AND
CUSTOMER SERVICE
REPS**



**PARA
HISPANOHABLANTES**

WORKFORCE DEVELOPMENT UPDATE: GLAZIER APPRENTICESHIP





▼ Job Seekers

Workers

▼ Businesses

▼ Researchers

Workforce Boards

Find a Job

Apprenticeship



BECOME A
GLAZIER

NEW BUSINESS & FEEDBACK

**SCAN ME &
GET INVOLVED!**



INDUSTRY CLEANING PROCEDURES TO AVOID GLASS DAMAGE

- NGA FB02-02 Heat-Treated Glass Surfaces are Different
- NGA/IWCA FB01-00 Proper Procedures for Cleaning Architectural Glass Products
- NGA/IWCA FB03-03 Construction Site Protection and Maintenance of Architectural Glass

Spanish Versions:

- NGA FB02-02 Las superficies de vidrio tratadas térmicamente son diferentes
- NGA/IWCA FB01-00 Procedimientos adecuados para la limpieza de productos de vidrio arquitectónico
- NGA/IWCA FB03-03 Protección de la zona de construcción y mantenimiento de vidrios arquitectónicos



Glass Technical Paper



FB01-00 (2020)

Proper Procedures for Cleaning Architectural Glass Products

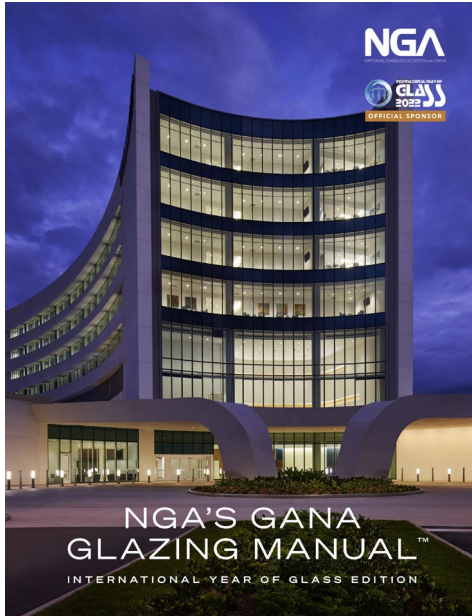
Architectural glass products play a major role in the comfort of the living and working environment of today's homes and commercial office spaces by providing natural daylight, views of the surroundings, thermal comfort and design aesthetics. Glass usage and condition often affect our selection of where we live, work, shop, play and seek education. This document describes procedures that generally apply to most architectural glass products. Certain glass types may require different procedures and care. Glass can be clear or tinted and have pyrolytic or sputtered Low-E or reflective coatings, some of which may be on the exposed surface of the glass. Glass products can be monolithic (single lites), laminated glass or insulating glass units. (See Glass Technical Paper FB15-07 Describing Architectural Glass Constructions). Glass can be of various strengths, i.e., annealed, heat-strengthened or fully tempered. There are also other decorative and functional glass types including spandrel, silk-screened, patterned, acid etched, and sandblasted. Architectural glass products should be properly cleaned and protected throughout the construction process using a program of regularly scheduled maintenance designed to maintain visual clarity and prevent glass surface damage. Since glass products can be permanently damaged if infrequently or improperly cleaned, glass producers and fabricators recommend strict compliance with the following procedures for cleaning glass surfaces.

Routine Cleaning & Maintenance

For routine maintenance, interior and exterior glass surfaces should be thoroughly cleaned as dirt and residue appear.

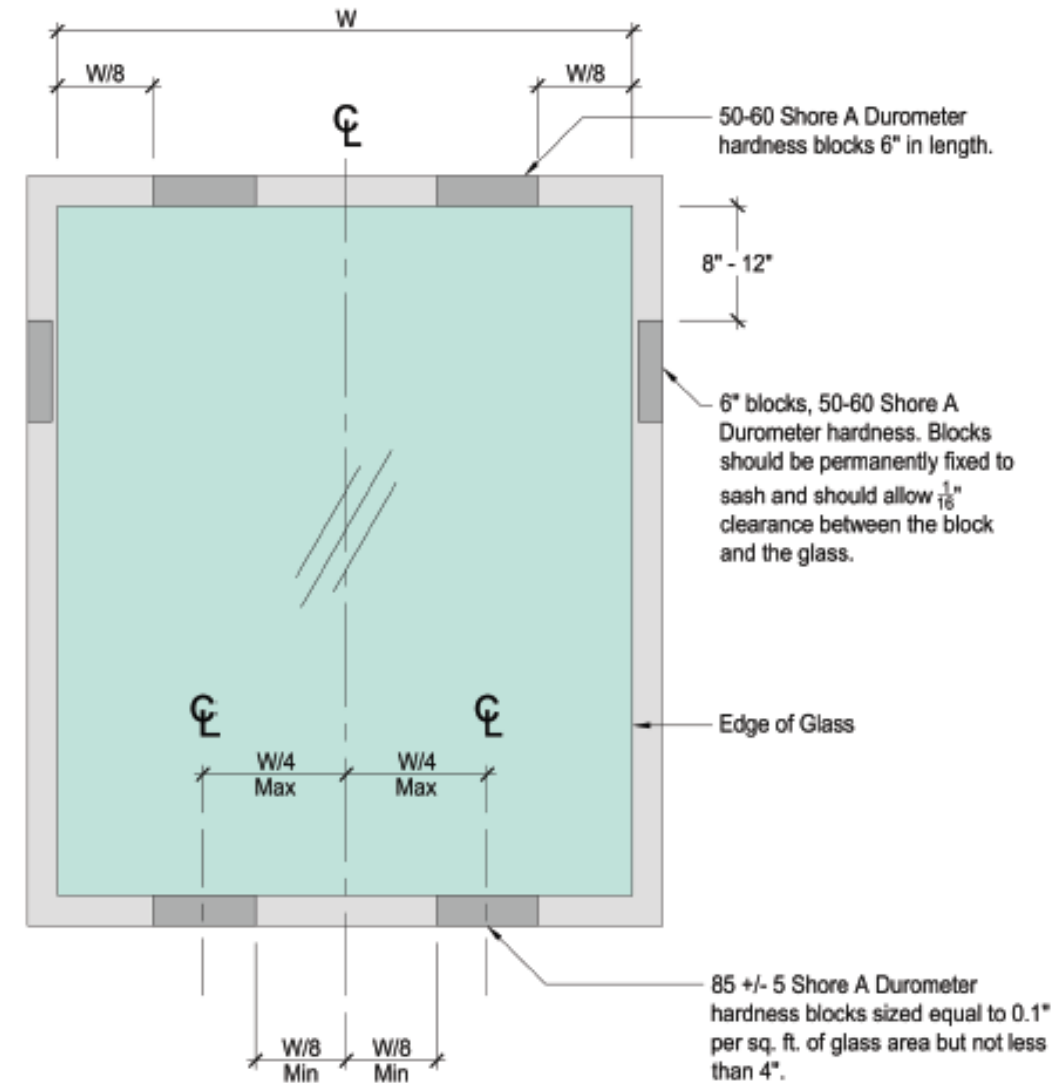


PEER REVIEW OF RECOMMENDED SETTING BLOCK LOCATIONS



“Blocking on the top of glass likely is not recommended since it can cause the glass to get “pinched” if the overhead structure deflects.”

“...glass setting on blocks at or nearer the corners less than the eighth-points? A lot of fabricators are allowing this, or glaziers are installing IGU's and monolithic glass this way...”



UPCOMING NGA EVENTS

SAVE THE DATE

Upcoming NGA conferences and events for 2023 and early 2024.

Learn more at glass.org!



**NGA Glass & Glazing
Advocacy Days**
March 27-28, 2023
Washington, DC

**NGA Glass Conference:
Tacoma**
July 25-27, 2023
Marriott Tacoma Downtown
Tacoma, WA

**GlassBuild America:
The Glass, Window & Door Expo**
Oct. 31-Nov. 2, 2023
Georgia World Congress Ctr.
Atlanta, GA

Glazing Executives Forum
Oct. 31, 2023
Georgia World Congress Ctr.
Atlanta, GA

**NGA Glass Conference:
Charleston 2024**
Feb. 6-8, 2024
Wild Dunes Resort
Isle of Palms, SC

**Building Envelope Contractors
(BEC) Conference**
March 3-5, 2024
Omni Nashville Hotel
Nashville, TN

**Glass Processing
Automation Days (GPAD)**
March 5-6, 2024
Omni Nashville Hotel
Nashville, TN