

3) INSTALLATION
 A. Follow recommendations of SMACNA Sheet Metal Manual. Allow for expansion. Isolate dissimilar materials.
 B. Fabricate coping without excessive oil canning, buckling, and tool marks and true to line and levels indicated, with exposed edges folded back to form flange.
 C. Sealed joints: Form no expansion but movable joints in metal to accommodate elastomeric sealant to comply with SMACNA recommendations.
 D. Expansion Provision: where lapped or bayonet type expansion provisions in the work cannot be used, form expansion joints of intermeshing hooked flanges, not less than one inch deep, filled with sealant concealed within joint.
 E. Conceal fasteners and expansion provisions where possible on exposed to view sheet metal flashing and trim.
 F. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, non-corrosive metal, and in thickness not less than that of metal being secured.
 G. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections.
 H. Restore damaged components and finishes. Clean and protect work from damage.

END OF SECTION
 SECTION 07420 - JOINT SEALANTS
 PART 7 - GENERAL

7.1 SUMMARY
 A. This Section includes joint sealants for the following applications:
 1. Exterior joints in vertical surfaces and horizontal non-traffic surfaces.
 2. Exterior joints in horizontal traffic surfaces.
 3. Interior joints in vertical surfaces and horizontal non-traffic surfaces.
 4. Interior joints in horizontal traffic surfaces.
 B. See Division 8 Section "Glazing" for glazing sealants.

7.2 PERFORMANCE REQUIREMENTS
 A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.

7.3 SUBMITTALS
 A. Product Data: For each joint-sealant product indicated.

7.4 WARRANTY
 A. Special Installer's Warranty: Installer's standard form in which installer agrees to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 B. Special Manufacturer's Warranty: Manufacturer's standard form in which elastomeric sealant manufacturer agrees to furnish elastomeric joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
 1. Warranty Period: 20 years from date of Substantial Completion.

PART 8 - PRODUCTS
 8.1 MANUFACTURERS
 A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 1. Joint substrate, sealants, primers, and other joint fillers, and are approved for applications indicated by sealant manufacturer.
 2. Sealants: Sealants shall be as follows or equal:
 a. One-part Polyurethane: Somborn SONALASTIC NFI
 b. Two-part Polyurethane: Somborn SONALASTIC NFI
 c. Silicone: Dow Chemical SILICONE RUBBER BATHUB CAULK
 8.2 MATERIALS

GENERAL A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing and field experience.
 B. Colors of Exposed Joint Sealants: As selected from manufacturer's full range.

PART 9 - EXECUTION 9.1 PREPARATION
 A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants.

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant. a. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air.
 2. Remove laitance and form-release agents from concrete. a. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.

B. Joint Priming: Prime joint substrates, where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

9.2 INSTALLATION
 A. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

B. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 1. Do not leave gaps between ends of sealant backings.
 2. Do not stretch, twist, puncture or tear sealant backings.
 3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
 C. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
 D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 1. Place sealants so they directly contact and fully wet joint substrates.
 2. Completely fill recesses in each joint configuration.
 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

E. Tooling of Nonrag Sealants: Immediately after sealant application and before skinning or setting sealants according to requirements specified below to form smooth, uniform beads of configuration indicated, to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint.
 1. Remove excess sealant from surfaces adjacent to joints.
 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
 3. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated. b. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

END OF SECTION 07420
 SECTION 08000
 08111 - STEEL DOORS AND FRAMES

PART 1 - GENERAL
 1.1 SUMMARY
 A. This Section includes standard hollow-metal steel doors and frames.

1.2 SUBMITTALS
 A. Product Data: Include construction details, material descriptions, core descriptions, and finishes for each type of steel door and frame specified.
 B. Shop Drawings: Provide a schedule of standard steel doors and frames using same reference numbers for details and openings as those on Drawings.
 C. Product test reports.

1.3 DELIVERY, STORAGE, AND HANDLING
 A. Deliver doors and frames palletized, wrapped, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.

PART 2 - PRODUCTS
 2.1 MANUFACTURERS
 A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 1. Caco Door Products, an ASSA ABLOY Group Company.
 2. CURRIES Company, an ASSA ABLOY Group Company.
 3. Republic Builders Products Company.
 4. Steelcraft, an Ingersoll-Rand Company.

2.2 MATERIALS
 A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
 B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

C. Supports and Anchors: After fabricating, galvanize units to be built into exterior walls according to ASTM A 153/A 153M, Class B.
 D. Inserts, Bolts, and Fasteners: Provide items to be built into exterior walls, hot-dip galvanized according to ASTM A 153/A 153M.
 E. Fastener-Activated Fasteners in Concrete: Fastener system of type suitable for application indicated; fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching standard steel door frames of type indicated.
 F. Grout: Comply with Division 4 Section "Unit Masonry Assemblies."

2.3 STANDARD STEEL DOORS
 A. General: Provide doors of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces. Comply with ANSI A250.6.

1. Core Construction: Manufacturer's standard kraft-paper honeycomb, polystyrene, polyurethane, mineral-board, or vertical steel-stiffener core that produces doors complying with ANSI A250.6.
 2. Vertical Edges For Single-Acting Doors: Square edge.
 3. Top and Bottom Edges: Closed with flush or inverted 0.042-inch- (1.0-mm-) thick and closures or channels of same material as face sheets.
 B. Exterior Doors: Face sheets fabricated from metallic-coated steel sheet. Provide doors complying with requirements indicated below by referencing ANSI A250.6 for level and model and ANSI A250.4 for physical-endurance level.

1. Level 3 and Physical Performance Level A (Extra Heavy Duty), Model I (Full Flush).

2.4 STANDARD STEEL FRAMES
 A. General: Comply with ANSI A250.6 and with details indicated for type and profile.
 B. Exterior Frames: Fabricated from metallic-coated steel sheet.
 1. Fabricate frames with mitered or coped and welded face corners.
 2. Frames for Level 3 Steel Doors: 0.067-inch- (1.7-mm-) thick steel sheet.
 C. Supports and Anchors: Fabricated from electrolytic zinc-coated or metallic-coated steel sheet.
 D. Floor Anchors: Formed from same material as frames, not less than 0.042 inch (1.0 mm) thick.

2.5 FABRICATION
 A. General: Fabricate standard steel doors and frames to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.
 B. Standard Steel Doors:
 1. Exterior Doors: Provide weep-hole openings in bottom of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.
 C. Standard Steel Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
 1. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.
 2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners, unless otherwise indicated.
 3. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
 4. Jamb Anchors: Locate anchors not more than 18 inches (457 mm) from top and bottom of frame. Space anchors not more than 32 inches (813 mm) o.c.
 D. Hardware Preparation: Factory prepare standard steel doors and frames to receive templated mortised hardware, including cylinders, reinforcement, mortising, drilling, and tapping, according to the Door Hardware Schedule and templates furnished as specified in Division 8 Section "Door Hardware."

1. Comply with applicable requirements in ANSI A250.6 and ANSI/DHI A15 Series specifications for door and frame preparation for hardware. Locate hardware as indicated on Shop Drawings or, if not indicated, according to ANSI A250.6.

2.6 FINISHES
 A. Steel Finish: Factory priming for field-painted finish.
 1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI A250.10 acceptance criteria.

PART 3 - EXECUTION
 3.1 INSTALLATION
 A. Provide doors and frames of size, thicknesses, and designs indicated. Install standard steel doors and frames plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.
 B. Standard Steel Frames: Install standard steel frames for doors, of size and profile indicated. Comply with SD1 105.
 1. Frames: Assemble and install in position, plumb, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
 C. Standard Steel Doors: Fit hollow-metal doors accurately in frames. Shim as necessary.
 D. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Repair and replace defective work, including standard steel doors or frames that are warped, bowed, or otherwise unacceptable.
 E. Prime-Coat Touchup: Immediately after erection, sand smooth, tested or damaged areas of prime coat and apply touchup of compatible air-drying primer.

END OF SECTION 08111
 SECTION 08211 - FLUSH WOOD DOORS

PART 4 - GENERAL
 4.1 SUMMARY
 A. This Section includes solid-core doors as follows:
 1. Doors with wood-veneer faces.
 4.2 SUBMITTALS
 A. Product Data: For each type of door.

PART 5 - PRODUCTS
 5.1 MANUFACTURERS
 A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 1. Aarco Hardwoods
 2. Bell Door Company
 3. Maple Door Company
 4. Mohawk Door Company
 5. Meyer-Lusser Company.

5.2 DOOR CONSTRUCTION
 A. Adhesives: Do not use adhesives containing urea formaldehyde.
 B. Particleboard: Do not use particleboard made with binder containing urea-formaldehyde resin.
 C. Doors for Transparent Finish:
 1. Color & Species: Premium, Maple.

5.3 FABRICATION
 A. Fabricate doors in sizes indicated for Project-site fitting.
 B. Factory fit doors to suit frame-opening sizes indicated. Comply with clearance requirements of referenced quality standard for fitting. Comply with requirements in NFPA 80 for fire-rated doors.
 PART 6 - EXECUTION
 6.1 INSTALLATION
 A. Install doors to comply with manufacturer's written instructions, referenced quality standard, and as indicated.
 1. Install fire-rated doors in corresponding fire-rated frames according to NFPA 80.
 B. Job-Fitted Doors: Align and fit doors in frames with uniform clearances and bevels; do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors. Machine doors for hardware. Seal out surfaces after fitting and machining.
 1. Comply with NFPA 80 for fire-rated doors.

END OF SECTION 08211
 SECTION 08411 - ALUMINUM-FRAMED WINDOWS AND STOREFRONTS

PART 7 - GENERAL
 7.1 SUMMARY
 A. This Section includes the following:
 1. Exterior aluminum-framed storefronts.
 a. Glazing is retained mechanically with gaskets on four sides.
 2. Exterior manual-swing aluminum doors.

7.2 PERFORMANCE REQUIREMENTS
 A. General: Provide aluminum-framed systems, including anchorage, capable of withstanding, without failure, the effects of the following:
 1. Structural loads.
 2. Thermal movements.
 3. Movements of supporting structure indicated on Drawings including, but not limited to, story drift and deflection from uniformly distributed and concentrated live loads.
 4. Dimensional tolerances of building frame and other adjacent construction.
 5. Failure includes the following:
 a. Deflection exceeding specified limits.
 b. Thermal stresses transferred to building structure.
 c. Framing members transferring stresses, including those caused by thermal and structural movements, to glazing.
 d. Noise or vibration created by wind and thermal and structural movements.
 e. Loosening or weakening of fasteners, attachments, and other components.
 f. Sealant failure.
 g. Failure of operating units to function properly.
 B. Structural Loads:
 1. Wind Loads: As indicated on Drawings.
 C. Temperature Change (Range): Systems accommodate 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.
 D. Air Infiltration: Maximum air leakage through fixed glazing and framing areas of systems of 0.06 cfm/sq. ft. (0.03 L/s per sq. m) of fixed wall area when tested according to ASTM E 283 at a minimum static-air-pressure difference of 6.24 lbf/sq. ft. (300 Pa).
 E. Water Penetration Under Static Pressure: Systems do not evidence water penetration through fixed glazing and framing areas when tested according to ASTM E 331 at a minimum static-air-pressure difference of 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft. (300 Pa).
 F. Condensation Resistance: Fixed glazing and framing areas of systems have condensation-resistance factor (CRF) of not less than 58 when tested according to AAMA I503.
 G. Average Thermal Conductance: Fixed glazing and framing areas of systems have average U-factor of not more than 0.61 Btu/sq. ft. x h x deg F (0.92 W/sq. m x K) when tested according to AAMA I503.

7.3 SUBMITTALS
 A. Product Data: For each type of product indicated.
 B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
 1. For entrances, include hardware schedule and indicate operating hardware types, functions, quantities, and locations.
 C. Samples: For each exposed finish.
 D. Product test reports.

7.4 QUALITY ASSURANCE
 A. Installer Qualifications: Acceptable to manufacturer and capable of preparation of data for aluminum-framed systems including Shop Drawings based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for the Project.
 B. Testing Agency Qualifications: An independent agency qualified according to ASTM E 694 for testing indicated.

7.5 WARRANTY
 A. Special Assembly Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of aluminum-framed systems that do not comply with performance and other requirements or that deteriorate as defined in the Section with specified warranty period.
 1. Failures include, but are not limited to, the following:
 a. Structural failures including, but not limited to, excessive deflection.
 b. Noise or vibration caused by thermal movements.
 c. Deterioration of metals and other materials beyond normal weathering.
 d. Adhesive or cohesive sealant failures.
 e. Water leakage through fixed glazing and framing areas.
 f. Failure of operating components to function properly.
 2. Warranty Period: Two years from date of Substantial Completion.
 B. Special Finish Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of finishes that do not comply with performance and other requirements or that deteriorate as defined in the Section with specified warranty period. Warranty does not include normal weathering.
 1. Warranty Period: 20 years from date of Substantial Completion.

PART 8 - PRODUCTS
 8.1 MANUFACTURERS
 A. Available Manufacturers: As indicated on construction documents.

PART 9 - EXECUTION
 9.1 INSTALLATION
 A. General:
 1. Fit joints to produce hairline joints free of burrs and distortion.
 2. Temporarily secure non-movement joints.
 3. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration.
 4. Seal joints watertight, unless otherwise indicated.
 B. Metal Protection:
 1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape or installing nonconductive spacers as recommended by manufacturer for this purpose.
 2. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
 C. Install components to drain water passing joints, condensation occurring within framing members, and moisture migrating within the system to exterior.
 D. Set continuous sill members and flashing in full sealant bed to produce weathertight installation.
 E. Install components plumb and true in alignment with established lines and grades, without warp or rack.
 F. Install glazing as specified in Division 8 Section "Glazing."
 G. Entrances: Install to produce smooth operation and tight fit at contact points.
 1. Exterior Entrances: Install to produce tight fit at weather stripping and weathertight closure.
 2. Field-Installed Hardware: Install surface-mounted hardware according to hardware manufacturer's written instructions with corrosion fasteners to greatest extent possible.
 H. Install perimeter joint sealants to produce weathertight installation.
 1. Erection Tolerances: Install aluminum-framed systems to comply with the following maximum tolerances:
 1. Location and Plane: Limit variation from true location and plane to 1/8 inch in 12 feet (9 mm in 3.7 m); 1/4 inch (6 mm) over total length.
 2. Alignment:
 a. Where surfaces abut in line, limit offset from true alignment to 1/16 inch (1.5 mm).
 b. Where surfaces meet at corners, limit offset from true alignment to 1/32 inch (0.8 mm).
 3. Diagonal Measurements: Limit difference between diagonal measurements to 1/8 inch (3 mm).

9.2 FIELD QUALITY CONTROL
 A. Repair or remove work where test results and inspections indicate that it does not comply with specified requirements.

END OF SECTION 08411
 SECTION 08710 - DOOR HARDWARE

PART 10 - GENERAL
 10.1 SUMMARY
 A. This Section includes the following:
 1. Commercial door hardware.

10.2 SUBMITTALS
 A. Product Data: For each type of product indicated.
 B. Other Action Submittals:
 1. Door Hardware Sets: Prepared by or under the supervision of Architectural Hardware Installer, detailing fabrication and assembly of door hardware, as well as procedures and diagrams.
 a. Format: Use same scheduling sequence and format and use same door numbers as in the Contract Documents.
 b. Content: Include the following information:
 1) Identification number, location, hand, fire rating, and material of each door and frame.
 2) Type, style, function, size, quantity, and finish of each door hardware item. Include description and function of each lockset and exit device.
 3) Complete designations of every item required for each door or opening including name and manufacturer.

10.3 QUALITY ASSURANCE
 A. Supplier Qualifications: An employer of workers trained and approved by lock manufacturer.
 1. Responsibilities include supplying door hardware and providing a qualified Architectural Hardware Consultant available during the course of the Work to consult with Contractor, Architect, and Owner about door hardware and keying.

10.4 COORDINATION
 A. Templates: Distribute door hardware templates for doors, frames, and other work specified to be factory prepared for installing door hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

10.5 WARRANTY
 A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
 1. Warranty Period: Three years from date of Substantial Completion, except as follows:
 a. Manual Closers: 10 years from date of Substantial Completion.

PART 11 - PRODUCTS
 11.1 SCHEDULED DOOR HARDWARE
 A. General: Provide door hardware for each door to comply with requirements in this Section and door hardware sets indicated in door and frame schedule of construction documents.
 1. Door Hardware Sets: Provide quantity, item, size, finish, or color, indication and products equivalent in function and comparable in quality to those indicated on Drawings.
 B. Designations: Requirements for design, type, material, finish, size, and other distinctive qualities of each type of door hardware are indicated in the Schedule and the hardware schedule. Products are identified by using door hardware designations, as follows:
 1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements.

PART 12 - EXECUTION
 12.1 INSTALLATION
 A. Steel Doors and Frames: Comply with DHI A15 Series. Drill and tap doors and frames for surface-gleed door hardware according to ANSI A250.6.
 B. Mounting Heights: Mount door hardware units at heights indicated on Drawings or as follows unless otherwise indicated or required to comply with governing regulations.
 1. Standard Steel Doors and Frames: DHI's Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames.
 2. Install door hardware item to comply with manufacturer's written instructions. Where conflicting instructions are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
 D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."
 E. Keying: All cylinders to be master keyed. Supply 6 master keys and supply 2 change keys for each lock. Tag keys and provide to owner at substantial completion.
 F. Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

1. Door Closers: Unless otherwise required by authorities having jurisdiction, adjust sweep period so that, from an open position of 70 degrees, the door will take at least 5 seconds to move to a point 3 inches (75 mm) from the latch, measured to the leading edge of the door.

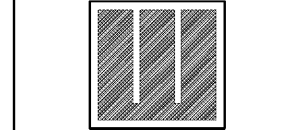
END OF SECTION 08710
 SECTION 08800 - GLAZING

PART 13 - GENERAL
 13.1 SUMMARY
 A. This Section includes glazing for the following products and applications, including those specified in other Sections where glazing requirements are specified by reference to this Section:
 1. Storefront Entrance and windows.

13.2 DEFINITIONS
 A. Interspace: Space between lites of an insulating-glass unit that contains dehydrated air or a specified gas.
 B. Deterioration of Insulating Glass: Failure of hermetic seal under normal use that is attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.
 13.3 PERFORMANCE REQUIREMENTS
 A. General: Provide glazing systems capable of withstanding normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, and installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.
 B. Glass Design: Glass thickness designations indicated are minimums and are for detailing only. Confirm glass thicknesses by analyzing Project loads and in-service conditions. Provide glass lites in the thickness designations indicated for various size openings, but not less than thicknesses and in strengths (annealed or heat treated) required to meet or exceed the following criteria:
 1. Glass Thicknesses: Select minimum glass thicknesses to comply with ASTM E 880, according to the following requirements:
 a. Specified Design Wind Loads: As indicated.
 b. Probability of Breakage for Vertical Glazing: 8 lites per 1000 for lites set vertically or not more than 15 degrees off vertical and under wind action.
 1. Load Duration: 60 seconds or less.
 c. Minimum Glass Thickness for Exterior Lites: Not less than 6.0 mm.
 C. Thermal Movements: Provide glazing that allows for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures acting on glass framing members and glazing components. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.
 D. Thermal and Optical Performance Properties: Provide glass with performance properties specified based on manufacturer's published test data, as determined according to procedures indicated below.
 1. For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite 6.0 mm thick and a nominal 1/2-inch- (12.7-mm-) wide interspace.
 2. Center-of-Glass Values: Based on using LBL-44789 WINDOW 5.0 computer program for the following methodologies:
 a. U-Factors: NFRC 100 expressed as Btu/sq. ft. x h x deg F (W/sq. m x K).
 b. Solar Heat Gain Coefficient: NFRC 200.
 c. Solar Optical Properties: NFRC 300.

13.4 SUBMITTALS
 A. Product Data: For each glass product and glazing material indicated.
 B. Samples: 12-inch- (300-mm-) square, for each type of glass product indicated.

13.5 QUALITY ASSURANCE
 A. Safety Glazing Products: Comply with testing requirements in 16 CFR 1201.
 B. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.
 1. ISMA Publication for Insulating Glass: ISMA TM-3000, "Glazing Guidelines for Sealed Insulating Glass Units."
 C. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of the Insulating Glass Certification Council or Associated Laboratories, Inc.

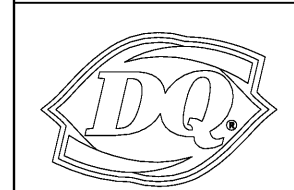


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BUILDING TYPE:
 DAIRY QUEEN GRILL & CHILL
 CORE66
 STORE NO. 45961

DRAWN, CHECKED, & APPROVED BY: ADQ
 DESIGN-ARCHITECTURE-CONSTRUCTION
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THIS IS "PLAN" NORTH
 FOR ACTUAL BUILDING
 ORIENTATION REFER TO
 SITE PLAN (BY OTHERS)

ISSUE DATE: 10/30/2020

| REVISION DATE: | ISSUE FOR CONSTRUCTION |
|----------------|------------------------|
| 10/30/2020 | ▲ |
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SPECIFICATIONS
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 SHEET NUMBER:

A8.5