

SECTION 084413 - UNITIZED CURTAIN WALL & WINDOW WALL SYSTEMS

Part 1 - General

1.1 SUMMARY

A. This Section includes a coordinated curtain wall/ window wall exterior cladding system involving the following:

Unitized aluminum male/female thermally broken framing system.

Vision and spandrel glass glazing panels

Aluminum plate spandrel panels.

Extruded aluminum thermal broken subsill for water collection and evacuation.

Guttered thermally broken window heads for condensation collection and drainage.

Horizontal aluminum sunshades of aluminum plate and extruded blades.

Integral aluminum copings.

Thermal fiber insulation, convection vented to exterior, fastened for rain screen design.

Galvanized steel air barrier.

1.2 SYSTEM DESCRIPTION

Tubular and channel shaped extruded aluminum sections with nylon 66 polyamide thermally broken self supporting framing, including guttered head section and subsill which are required for condensation collection and evacuation, internally re-enforce where required, factory prefinished, assembly, sealing, glazing, integral galvanized steel air barrier, thermal fiber insulation, vision and spandrel glass, sunshades, related glazing accessories, flashings, adjustable anchors, embeds and attachment devices.

System Assembly:

Shop unitized assembly ready for installation without field modifications.

Factory fabricated, assembled, sealed, glaze and unitized with insulation in a space pressure equalized and vented to the exterior.

1.3 TESTING AND PERFORMANCE REQUIREMENTS

Design and size components to withstand dead loads and live loads.

Glazing is physically and thermally isolated from framing members.

System is pressure equalized at the interior face of the glazing system. The glazing pocket shall be wept to the exterior.

System is unitized and benched glazed.

Wind Loads: Provide unitized curtain wall system, including anchorage, capable of withstanding wind-load design pressures calculated according to requirements of authorities having jurisdiction or the American Society of Civil Engineers' ASCE 7, "Minimum Design Loads for Buildings and Other Structures," 6.4.2, "Analytical Procedure," whichever are more stringent.

Deflection of framing members in a direction normal to wall plane is limited to 1/175 of clear span, 3/4 inches maximum.

Deflection of framing members overhanging an anchor point is limited to 2 times the length of the cantilevered member, divided by 175.

Test Performance: Provide unitized curtain wall system that does not evidence material failures, structural distress, or permanent deformation of main framing members exceeding 0.2 percent of clear span when tested according to ASTM E 330.

Test Pressure: 150 percent of inward and outward wind-load design pressures.

Duration: As required by design wind velocity; fastest 1 mile (1.609 km) of wind for relevant exposure category.

F. Dead Loads: Provide unitized curtain wall / window system members that do not deflect an amount which will reduce glazing bite below 75 percent of design dimension when carrying full dead load. Provide a minimum 1/8-inch clearance between members and top of fixed panels, glazing, or other fixed part immediately below. Provide a minimum 1/16-inch clearance between members and operable windows and doors.

G. Live Loads: Provide unitized curtain wall / window system, including anchorages, that accommodates supporting structure's deflection from uniformly distributed and concentrated live loads indicated without failure of materials or permanent deformation.

H. Air Infiltration: Provide glazed components of unitized curtain wall system with permanent resistance to air leakage through system of not more than 0.06 cfm/sq. ft. of fixed wall area when tested according to ASTM E 283 at a static-air-pressure difference of 6.24 lbf/sq. ft.

I. Water Penetration: Provide glazed components of unitized curtain wall system that does not evidence water leakage when tested according to ASTM E 331 at minimum differential pressure of 20 percent of inward acting wind-load design pressure as defined by ASCE 7, "Minimum Design Loads for Buildings and Other Structures," but not less than 10 lbf/sq. ft curtain wall and 8 lbf/sq. ft windows.

J. Thermal Movements: Provide glazed components of unitized curtain wall window system, including anchorage, that accommodates thermal movements of system and supporting elements resulting from the following maximum change (range) in ambient and surface temperatures without buckling, damaging stresses on glazing, failure of joint sealants, damaging loads on fasteners, noise or vibration, and other detrimental effects.

1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

K. Structural Support Movement: Provide unitized curtain wall / window system that accommodates structural movements including, but not limited to, sway, twist, column shortening, long-term creep, and deflection.

L. Condensation Resistance: Provide glazed components of unitized window system with condensation-resistance factor CRF of not less than 65 when tested according to AAMA 1503.1.

M. Average Thermal Conductance: Provide unitized aluminum curtain wall system with an average U-value of not more than 0.55 Btu/sq. ft. x h x deg F and CRF of 55 when tested according to AAMA 501 latest addition.

1.4 SUBMITTALS

Shop Drawings showing fabrication and installation of unitized curtain wall / window wall system components including plans, elevations, sections, details of components, and attachments to other units of Work, and show all interface construction detail accurately by communicating with other trades. For installed products indicated to comply with certain design loadings, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 QUALITY ASSURANCE

Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in the jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated.

Installer Qualifications: Engage an experienced installer to assume installation responsibility and perform work of this Section who has specialized in installing unitized curtain wall / window systems similar to those required for this Project.

1.6 WARRANTY

Special Warranty: Submit a written warranty executed by the manufacturer agreeing to repair or replace components of the unitized curtain wall system that fail in materials or workmanship.

1. Warranty Period: 5 years from date of Substantial Completion.

Part 2 - Product

2.1 MANUFACTURERS

Architectural Wall Systems Co. Des Moines, Iowa

2.2 COMPONENTS

Frame Units: Factory assemble, glaze, seal, and install, galvanized steel air barrier, insulation, gaskets completing frame units according to Shop Drawings to greatest extent possible. Rigidly secure nonmovement joints. Seal joints watertight, unless otherwise indicated.

Steel Reinforcement: ASTM A 36 for structural shapes, plates, and bars; ASTM A 611 for cold-rolled sheet and strip; or ASTM A 570 for hot-rolled sheet and strip.

Glass and Glazing Materials: Refer to Division 8 Section "Glazing".

Framing system gaskets and joint fillers as recommended by manufacturer for joint type.

Insulating materials: U. S. Gypsum CW 70 Thermal Fiber or equal. Minimum value of "U" 0.08.

Air Barrier: 22 gauge galvanized steel sheet.

Air Barrier Seal: Continuous butyl seal and fasten galvanized air barrier to unitized aluminum thermally broken framing.

Thermal Breaks: Nylon 66 polyamide, non shrinking, structural thermal breaks to separate all exterior and interior aluminum.

Brackets and Reinforcements: Provide manufacturer's standard high-strength aluminum brackets and reinforcements. Provide nonstaining, nonferrous shims for aligning system components.

Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials. Finish exposed portions to match glazed aluminum curtain wall.

Anchors: 6-way adjustable anchors that accommodate fabrication and installation tolerances in material and finish compatible with adjoining materials and recommended by manufacturer..

Concrete Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts complying with ASTM A 123 or ASTM A 153 requirements.

Mullion anchors to structure are inside the male/female mullion coming through the back to avoid interruption of the galvanized air barrier.

2.3 FABRICATION

General: Fabricate assemble, glaze and seal unitized thermally broken curtain wall rain screen wall system and thermally broken window wall system at the manufacturers facility (factory bench glaze) under their direct control with regular quality control inspections that are documented and according to Shop Drawings. Fabricate components that, when assembled, will have accurately fitted joints with ends coped or mitered to produce hairline joints free of burrs and distortion. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

Corners of unitized curtain wall / window wall system will be mitered, blocked, small joint seals to be air tight. Straight cut ends butted and assembled leaving holes created by the glazing pockets are NOT acceptable.

Fabricate components to drain water passing joints, condensation occurring in glazing channels, condensation occurring within framing members, and moisture migrating within the system to the exterior. Glazing Pockets: Provide minimum clearances for thickness and type of glass indicated according to FGMA's "Glazing Manual."

Frame Units: Factory assemble frame units according to Shop Drawings to greatest extent possible. Rigidly secure nonmovement joints. Seal joints watertight, unless otherwise indicated. Assemble components to drain water passing joints, condensation occurring in glazing channels, condensation occurring within framing members, and moisture migrating within the system to the exterior.

2.4 ALUMINUM FRAMING FINISHES

General: Comply with NAAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations relative to applying and designating finishes.

Exposed Finish for System Framing and Entrance Assemblies: Comply with NAAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations relative to applying and designating finishes. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturer's written instructions.



3800 T Curtain Wall System



6601 Westown Parkway, Suite 100 | West Des Moines, IA | 50266

Phone: 515.255.1556 | Fax: 515.255.1510 | Web: archwall.com

3800 T Curtain Wall System

The AWS 3800 T Curtain Wall System is the perfect system to meet the aesthetic and performance requirements for your building envelope. Designed with a polyamide thermal break for superior performance and comfort, the 3800 T system is unitized system that is ready for installation without need for field modifications. This approach allows the building envelope to be enclosed with higher quality and efficiency than conventional systems.

This efficient system features a self-supporting frame that includes guttered heads and subsills to handle condensation collection and evacuation. All components of this curtain wall including internal reinforcements, air barrier, insulation, vision and spandrel glass, are unitized, prefinished, assembled, sealed and glazed in an environmentally controlled plant to ensure the highest quality.

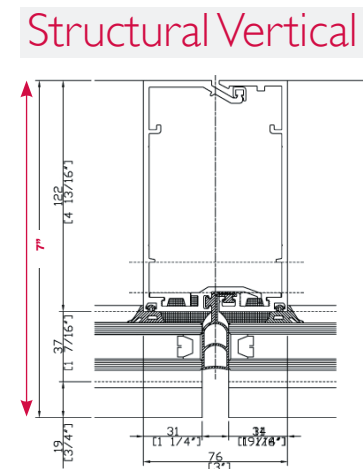
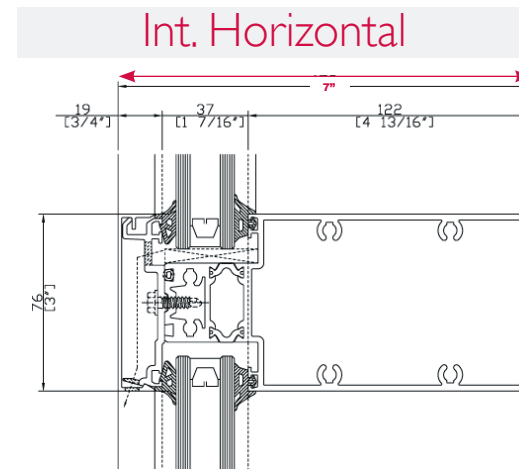
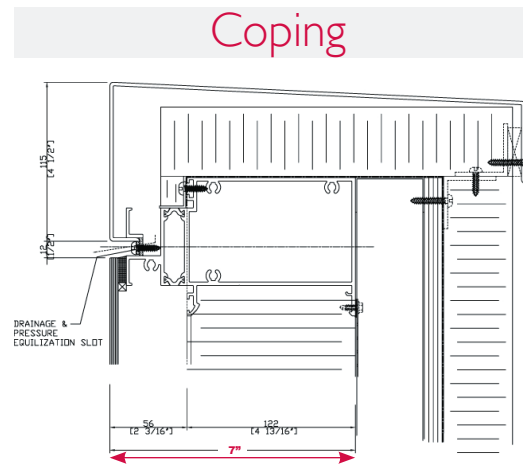
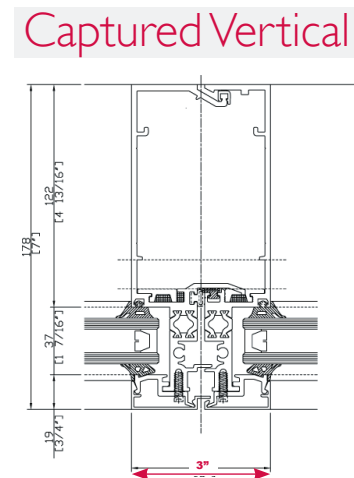
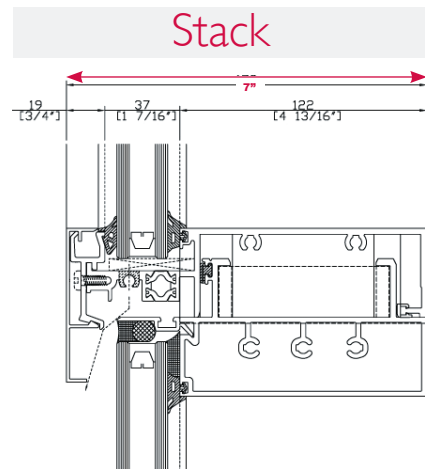
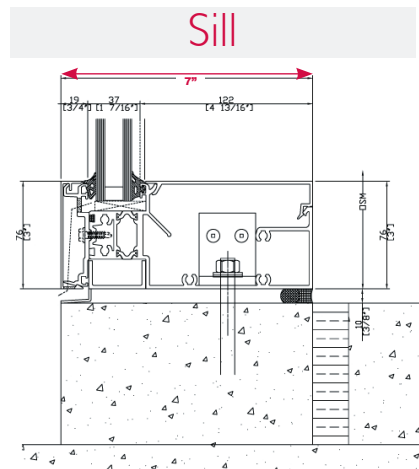
The 3/8 inch polyamide glass-reinforced nylon 6/6 thermal break offers superior strength and maximum resistance to heat transfer. This revolutionary insulating system with over 20 years of proved performance world wide is the strongest thermal barrier available, has the same coefficient of thermal expansion as aluminum, does not dry shrink over time, and has an offset design to prevent "ponding" on flush surfaces.



Unitized Panel Installation
Wells Fargo Home Mortgage West Campus



Wells Fargo Home Mortgage West Campus | West Des Moines, IA
Architect: SVPA Architects, Inc.
General Contractor: Weitz/Dunn



Testing

Air Infiltration: not more than 0.06 cfm/sq. ft. of fixed wall area when tested according to ASTM E 283 at a static-air-pressure difference of 6.24 lbf/sq. ft.

Water Penetration: tested according to ASTM E 331 at minimum differential pressure of 20 percent of inward acting wind-load design pressure as defined by ASCE 7, "Minimum Design Loads for Buildings and Other Structures," but not less than 10 lbf/sq. ft curtain wall and 8 lbf/sq. ft windows.

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Structural Support Movement: accommodates structural movements including, but not limited to, sway, twist, column shortening, long-term creep, and deflection.

Condensation Resistance: condensation-resistance factor CRF of not less than 65 when tested according to AAMA 1503.1.

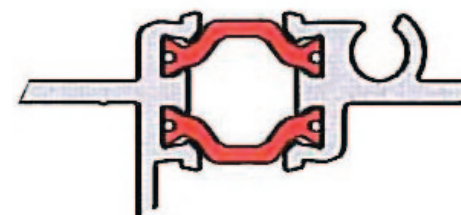
Average Thermal Conductance: average U-value of not more than 0.55 Btu/sq. ft. x h x deg F and CRF of 55 when tested according to AAMA 501 latest addition.



System Testing at Independent Testing Laboratory

Insulbar® System

Using Insulbar® Thermal Break provides increased strength. The bond between Insulbar® and the aluminum extrusion retains it's mechanical integrity through a wide range of temperature fluctuations.



Insulbar® Thermal Break is the strongest structural thermal barrier available. It delivers better insulation strength than PVC or poured and debridged polyurethane and has a coefficient of thermal expansion close to that of aluminum.

Insulbar® is a registered trademark of Ensinger Industries Inc.