WILLIAM C. ANDERSON
ADV. CURTAIN WALL DESIGN
COLUMBIA GSAPP SPRING 2020
FINAL SUBMITTAL DRAWINGS
05-04-2020

Building Use: Commercial Office / Public Institution
Curtain Wall Concept - Pre-weathered Sculptural Bronze Alloy

18 6th Ave Brooklyn, NYC 11217

Nathan Slate Joseph
Venezia’s Child, 2000

Pigment on Steel
Tension between painting & sculpture, old & new

Essential Abstractions
Grid & proportions
weathering & texture
light play across the surface
PROJECT EASTERN ELEVATION

4'-6" TYP. SPACING

15'-0" TYP. SPACING

MASS TIMBER
STRUCTURAL CURTAIN WALL
REGULATING GRID

"GREEN BRONZE ALLOY"

VISION GLASS

73'-0"

170'-0"
This design and specification statement is intended solely as a means of introducing the project client to the general aesthetic objectives, specific technical conditions, and rationale governing the conceptual design scope and services for the requested custom curtain wall system for the project. As requested by the client, the general aesthetic shall mimic, emulate, and or quote qualities of the work of art, "Venezia’s Child". Inspirations taken from the artwork include: the subtle grid and the compositions respected proportions, tensions between sculpture and painting, and the natural weathered effect.

SCOPE:
The 10,500 square foot, Freres Mass Timber supported, curtain wall utilizes an undulating exterior grade self oxidizing bronze alloy cladding to capture, express, and take advantage of local environmental contaminants for the express use of creating the aesthetic qualities found in the aforementioned artwork. Wherein, this ¼” sculptural bronze armature is a self supporting (80 unique piece) module which is mounted to stainless steel plate attached to the timber mullions. The system is composed of a rationalized engineered Freres Mass Plywood framing fitted with extruded stainless steel components for system gaskets and glazing, and high performance glazing. The insulating glass (IGU) is composed of an inner light of laminated with a Low-e coating applied to the #2 surface of the heat strengthened outer light glass. This IGU is attached and secured by 4-side structural silicone glazing. The intention of these two systems, both vision glass & opaque wall, is expressed in high performance semi reflective vision glass helping to serve as a minimal threshold between the inside and outside of the facade as well as a means for daylight illumination. The Exterior Bronze Sculptural panels are configured to trap air contaminants and water to enhance natural weathering, as well as filtering sunlight in order to emphasize the sculpture quality of the facade. At vision areas behind the bronze panels, units are fitted with a 4 inch rockwool insulating layer and opaque 1 inch plywood concealing panel.

MATERIALS:
Freres Mass Plywood (MT): Structural Material
Stainless Steel: For all extrusions and structural armaments.
Structural Silicone Glazing: For the structural attachment of all vision glass in the system.
Non Corrosive Fasteners: Fasteners will be required to perform in minimizing thermal bridging.
¼” Perforated copper alloy (bronze), formulated to enhance the natural weathering desired, and custom formed in 80 configurations.
Rockwool and Fire Safing: All to be compliant with Underwriting Laboratories (UL) code spec.
Sealants and Gaskets: Selection requires utmost quality and superior lifetime warranty.
IGU: high performance insulating glass with low-e coating and a perimeter ceramic frit mask to obscure stainless extrusions behind the glazing.
Curtain Wall Anchoring: ½” Structural and Corrosion protected steel brackets lag bolted to (MT)

Due to NYC not having adopted IBC 2021, the timber structure of this curtain wall has been designed with a 2x safety factor for wind loads and mullion sizing.
<table>
<thead>
<tr>
<th>Data Point</th>
<th>Assumption: Mullion</th>
<th>Location</th>
<th>Data Point</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mullion Spacing</td>
<td>54&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mullion Dimension</td>
<td>2 5/8&quot;</td>
<td></td>
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<tr>
<td>Vertical Deflection</td>
<td>1.08&quot;</td>
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<td></td>
</tr>
<tr>
<td>Horizontal Deflection</td>
<td>1.02&quot;</td>
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</tbody>
</table>

### Mullion Spacing and Dimension
- **Mullion Spacing**: 54"
- **Mullion Dimension**: 2 5/8"

### Vertical Deflection
- **Vertical Deflection**: 1.08"

### Horizontal Deflection
- **Horizontal Deflection**: 1.02"

### Material Properties

<table>
<thead>
<tr>
<th>Material</th>
<th>Modulus of Elasticity</th>
<th>psi</th>
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<tbody>
<tr>
<td>Wood</td>
<td>1,700,000</td>
<td>psi</td>
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</tbody>
</table>

### Maximum Moment (Bending)
- **Maximum Moment (bending)**: 57,650 lb-in

### Section Modulus (S)
- **Section Modulus, S (required)**: 24.65 in³
- **Section Modulus, S (computed)**: 17.02 in³

### Calculated Deflection and Moment of Inertia, I, Required
- **Deflection, Δ, at (W/2) from top (computed)**: 0.58 inch
- **Deflection, Δ, at (W/4) from top (computed)**: 0.47 inch

### Calculated Deflection and Moment of Inertia, I, Required
- **Deflection, Δ, at (W/2) from top (computed)**: 0.70 inch
- **Deflection, Δ, at (W/4) from top (computed)**: 0.56 inch

### Load Case 1

<table>
<thead>
<tr>
<th>Load Case</th>
<th>Condition</th>
<th>Material</th>
<th>Calculation</th>
<th>Units</th>
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<tbody>
<tr>
<td>Mullion Load</td>
<td>Uniform</td>
<td>Wood</td>
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