

## 15-17 Elm Wall Assembly And Thermal Bridging Package

### EQ Building Performance

Date: August 22, 2022

| Building Enclosure               |  |   |
|----------------------------------|--|---|
| <b>Steel Framed Wall</b>         | Precast panel<br>50mm semi-rigid insulation (R-8.4)<br>100mm metal studs<br><br><b>Effective R-12.5</b>  | (100% of total opaque wall)   |
| <b>Overall effective R-value</b> | <b>Effective R-6.7</b>   | After accounting for thermal bridging effects of balconies, slab edges, window perimeter, terraces and parapets |
| <b>Roof</b>                      | 150mm rigid insulation (R5/in)<br><br><b>Effective R-31.7</b>  |   |
| <b>Glazing</b>                   | Double glazed, low-e coating, double pane windows, argon fill, warm edge spacers and thermally broken aluminum frames<br><b>Total assembly: U-0.33      SHGC: 0.35</b> |   |
| <b>Window Wall Ratio</b>         | Overall: 33.2%   |   |

Scenario Description

Exterior Wall

Enhanced Thermal Performance Spread SP Units

Clear Field Area Method

| Select Area Calculation (Choose One)  | Area                           | Units           |
|---|--------------------------------|-----------------|
| <input checked="" type="checkbox"/> Sum of Active Clear Field Areas (Default) | 60417.82                       | ft <sup>2</sup> |
| <input type="checkbox"/> User Defined Area                                    | Enter User Defined Opaque Area | ft <sup>2</sup> |

Overall Opaque Wall Thermal Performance Values

| Base Building                                 |       | Proposed Building                             |       | % Below Baseline |
|---|-------|---|-------|------------------|
| Opaque U-Value (BTU/hr ft <sup>2</sup> °F)    | 0.080 | Opaque U-Value (BTU/hr ft <sup>2</sup> °F)    | 0.150 | <b>X +87.7%</b>  |
| Effective R-Value (hr ft <sup>2</sup> °F/BTU) | 12.5  | Effective R-Value (hr ft <sup>2</sup> °F/BTU) | 6.7   |                  |

Workspace

|  |  |  |  |  |  |
|--|--|--|--|--|--|
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

Proposed Building Entries

| Add/Remove Detail           | Transmittance Type      | Include                             | Transmittance Description | Area, Length or Amount Takeoff | Units           | Transmittance Value  | Units                       | Totals            |                       |                  |
|-----------------------------|-------------------------|-------------------------------------|---------------------------|--------------------------------|-----------------|----------------------|-----------------------------|-------------------|-----------------------|------------------|
|                             |                         |                                     |                           |                                |                 |                      |                             | Source Reference  | Heat Flow (BTU/hr °F) | %Total Heat Flow |
| Add Clear Field             | Clear Field             | <input checked="" type="checkbox"/> | Solid wall                | 60417.82                       | ft <sup>2</sup> | 0.047                | BTU / hr ft <sup>2</sup> °F |                   | 9072.2                | 100%             |
| Add Linear Interface Detail | Linear Interface Detail | <input checked="" type="checkbox"/> | Slab Edge                 | 25449.24                       | ft              | 0.218                | BTU / hr ft °F              | 7.2.7             | 5543.8                | 61%              |
|                             | Linear Interface Detail | <input checked="" type="checkbox"/> | Balcony                   | 2988.82                        | ft              | 0.117                | BTU / hr ft °F              | 5.2.13            | 350.6                 | 4%               |
|                             | Linear Interface Detail | <input checked="" type="checkbox"/> | Window Perimeter          | 5095.10                        | ft              | 0.053                | BTU / hr ft °F              | 5.2.9             | 270.9                 | 3%               |
|                             | Linear Interface Detail | <input checked="" type="checkbox"/> | Terrace                   | 291.99                         | ft              | 0.059                | BTU / hr ft °F              | Enter Source Here | 17.1                  | 0%               |
|                             | Linear Interface Detail | <input checked="" type="checkbox"/> | Parapet                   | 190.29                         | ft              | 0.125                | BTU / hr ft °F              | 7.5.7             | 23.7                  | 0%               |
| Add Point Interface Detail  | Point Interface Detail  | <input checked="" type="checkbox"/> | Enter Description Here    | Enter Amount Here              | #               | Enter Chi-Value Here | BTU / hr °F                 | Enter Source Here | -                     | -                |

| Notes           |
|-----------------|
|                 |
|                 |
|                 |
|                 |
| Half of balcony |
|                 |
|                 |

**Thermal Bridging Calculation**

| Length (m)   | Balcony    | Slab        | Parapet   | Terrace   | Multiplier |
|--------------|------------|-------------|-----------|-----------|------------|
| 2f           | 16         | 73          |           |           | 1          |
| 3-7f         | 33         | 62          |           |           | 5          |
| 8-9f         | 38         | 60          |           |           | 2          |
| 10f          | 15         | 38          |           | 46        | 1          |
| 11-20f       | 33         | 60          |           |           | 10         |
| 21f          |            | 48          |           | 43        | 1          |
| 22-30f       | 35         | 728         |           |           | 9          |
| MPH          |            | 16          | 58        |           | 1          |
| <b>Total</b> | <b>911</b> | <b>7757</b> | <b>58</b> | <b>89</b> |            |

| Window Perimeter (m) |             |
|----------------------|-------------|
| North                | 481         |
| West                 | 0           |
| South                | 526         |
| East                 | 546         |
| <b>Total</b>         | <b>1553</b> |

| Window Wall Ratio Calc |             |             |              |
|------------------------|-------------|-------------|--------------|
|                        | Total wall  | Glazing     | WWR          |
| North                  | 1861        | 859.5       | 46.2%        |
| West                   | 2218        | 0           | 0.0%         |
| South                  | 1885        | 818.5       | 43.4%        |
| East                   | 2367        | 1040        | 44.0%        |
| <b>Total</b>           | <b>8331</b> | <b>2718</b> | <b>32.6%</b> |

**Precast**                      5613 m2

I certify that these wall assembly and design assumptions for 17 Elm project are representative of the current design. Although the stage of design is early, either these details or details of equivalent performance will be selected for the final design unless otherwise directed by the Client/Builder if the design intent changes.

Architect's Name: Alex Josephson

Date: 2022/08/23

Architect's Signature:  \_\_\_\_\_