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## 1. Window Information

**Profile System:** 

**Framing Profile:** Weight: **Transom Profile:** Weight: **Mullion Profile:** Weight:

Glass:

Glass ID Weight Makeup

# 2. Applied Load

Wind pressure (W):

 $kN/m^2$  (when member tributary area  $\leq 1m^2$ ) kN/m Horizontal live load Height: mm Horizontal live load (q<sub>H</sub>): Dead load (D): Density of glass 2500 kg/m<sup>3</sup> Density of aluminum 2700 kg/m<sup>3</sup> Density of thermal break 1270 kg/m<sup>3</sup> (the weight of all other accessories is assumed to be 20% of the weight of thermal break) Κ° Indoor-outdoor temperature difference in summer Climatic conditions: Indoor-outdoor temperature difference in winter K°

Load factors: For wind loads  $\gamma_W =$ 

> For temperature difference  $\gamma_T =$ For horizontal live loads  $\gamma_H =$

Load combinations:

 $\gamma_W$ \*Wind load +  $\gamma_T$ \*Thermal load + 0.7\* $\gamma_H$ \*Live load Load combination 1 (LC1)  $0.6*\gamma_W*Wind load + 0.6*\gamma_T*Thermal load + \gamma_H*Live load$ Load combination 2 (LC2)

Wind load, ambient condition Load combination 3 (LC3)

Load combination 4 (LC4) Gravity



**Project Name:** Date:

Location: By:

# 3. Codes and Specifications

- [1] **DIN EN 1991-1-1**, Actions on structures Part 1-1: General actions Densities, self-weight, imposed loads for buildings, 2010-12.
- [2] **DIN EN 1991-1-1**, National Annex Nationally determined parameters, Actions on structures Part 1-1: General actions Densities, self-weight, imposed loads for buildings, 2010-12.
- [3] **DIN EN 1991-1-4**, Actions on structures Part 1-4: General actions Wind actions, 2010-12.
- [4] **DIN EN 1991-1-4**, National Annex Actions on structures Part 1-4: General actions Wind actions, 2010-12.
- [5] **DIN EN 1999-1-1**, Design of aluminum structures Part 1-1 General structural rules, 2014-03.
- [6] **DIN EN 13830**, Curtain wall product standard, 2015-07.

### 4. Allowable Deflection

In out-of-plane direction (z-direction), allowable deflection d follows

In in-plane direction (y-direction), allowable deflection is the lower value of L/ and 3mm.

#### 5. Materials

#### 5.1 Aluminum -

Young's modulus	E = 70GPa
Poisson's ratio	u = 0.3

0.2% apparent limit of elasticity  $\beta_{0.2} = MPa$  Coefficient of thermal expansion  $\alpha = 23e-06 \ 1/K$ 

### 5.2 Thermal break -

Shear strength	-20°C	$R_{USv\_20} =$	N/m	Elastic constant	-20°C	$C_{-20} =$	N/mm²
Shear strength	+80°C	$R_{USv\_80} =$	N/m	Elastic constant	+20°C	$C_{20} =$	N/mm²
Tensile strength	-20°C	$R_{USt\_20} =$	N/m	Elastic constant	+80°C	$C_{80} =$	N/mm²
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Tensile strength  $+80^{\circ}$ C  $R_{USt~80} = N/m$ 

Reduction factor (A2) for aging and behavior under long period of loading  $A_2 = 1.2$ 



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