

NEXIUS

Accelerating Network and Business Transformation

APRIL 10, 2017

Verizon Wireless
400 Friberg Parkway
Westborough, MA 01581

RE: PORTLAND 8 ME
44 Bedford street, Portland ME 04101

To whom it may concern:

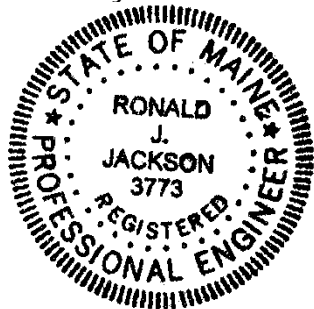
Nexius, Inc. has performed the structural analysis for new proposed steel framing modification as shown to support new Verizon Wireless (VZW) equipment. VZW equipment includes panel antennas and other appurtenances and their attachments that will support the Verizon Wireless proposed equipment. The analysis was conducted using Maine Uniform Building and Energy Code Amendments to the International Building Code 2009.

The proposed Verizon Wireless equipment will consist of one (2) COMMSCOPE-SBNHH-1D65A and related cables and hardware.

Base on the structural analysis performed for the aforementioned site (see attached document), it is our opinion that the proposed steel modification is adequate to resist the applicable loads (based on IBC 2009). It is assumed that the existing structure has been well maintained and is in good condition. In addition, it is assumed that all proposed equipment will be installed in accordance with manufacturers' specifications.

If you have any questions or need further assistance, please contact this office.

Sincerely Yours,



A handwritten signature in black ink that reads "Ronald J. Jackson".

Ronald J, Jackson, P.E.
National Director of A&E Services
(774) 266-5050

NEXIUS MA Office: 7 A Lyberty Way, Westford, MA 01886



Accelerating Network and Business Transformation

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SUBJECT : STRUCTURAL ANALYSIS
 SITE NAME: Portland 8
 NEXIUS PROJECT NO.

ORIGINATOR : JC
 CHECKER :
 DATE : 4/7/2017

The purpose of this calculation is to analyze the proposed steel modification steel frame on the roof top located on 44 Bedford Street, Portland ME 04101. This steel frame is mainly to support fiberglass panel (by others).

Preliminary assumptions used in the analysis

- The mount is built and installed in accordance with manufacturer’s specifications.
- The analysis was performed for the steel framing subject to wind load only.

Applicable Codes:

- Maine Uniform Building and Energy Code (based on IBC 2009)
- ASCE 7-05 Minimum Design Loads for Buildings and Other Structures
- TIA 222 G Structural standard for antenna supporting structures and antennas
- AISC Steel Construction Manual (13th Ed.)

Scope of Calculation:

to design steel framing to support fiberglass panel

Design Criteria:

Basic Wind Velocity,	V = 99 MPH
Exposure category	B
Occupancy Category	II
Importance Factor	I = 1.0
Structure Height	h = 118.5’ (AGL)

Wind load at vertical wall of enclosure

- Wind speed V = 99 mph (Ref. ASCE 7-05 Fig. 6-1)
- Velocity pressure exposure coefficient $K_z = 1.17$ (Ref. ASCE 7-05 Table 6-3)
- Wind directionality factor $K_d = 0.85$ (Ref. ASCE 7-05 Table 6-4)
- Topographic factor $K_{zt} = 1.0$ (Ref. ASCE 7-05 Fig. 6-4)
- Gust Factor $G = 0.85$
- Importance Factor $I = 1.0$
- Force coefficient $C_f = 1.6$ (Ref. ASCE 7-05 Fig. 6-22)
- Velocity pressure at mean roof height, q_z
 $q_z = 0.00256(kz)(K_{zt})(K_d)V^2(I)$ (Ref. ASCE 7-05 Eq. 27.3-1)
 $q_z = 25 \text{ psf}$
- Design wind pressure
 $P = q_z (G)(C_f)$
 $P = (25)(0.85)(1.6)$
 $P = 34 \text{ psf}$

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Load Combination

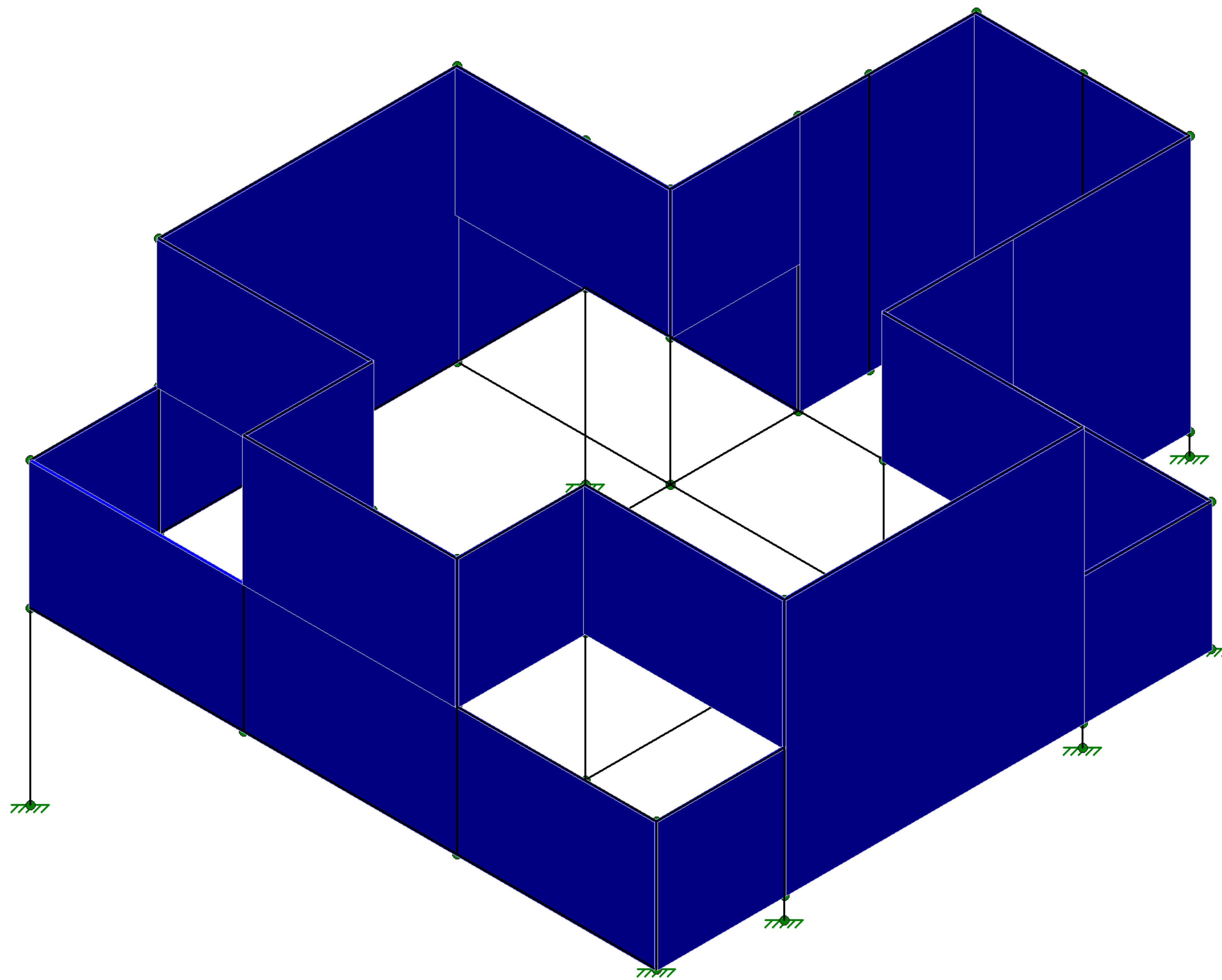
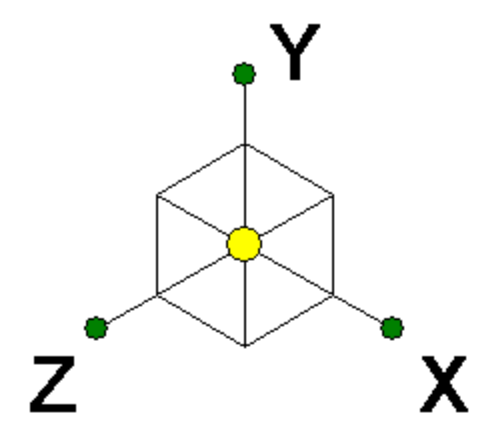
- LC 1 = 1.2D + 1.6W (Ref. ASCE 7-05 Section 2.3.2)
- LC 2 = 0.9D + 1.6W (Ref. ASCE 7-05 Section 2.3.2)

Calculation

See Risa 3D for structural analysis and unity check.

Conclusion

The steel framing is adequate to support new proposed steel modification.



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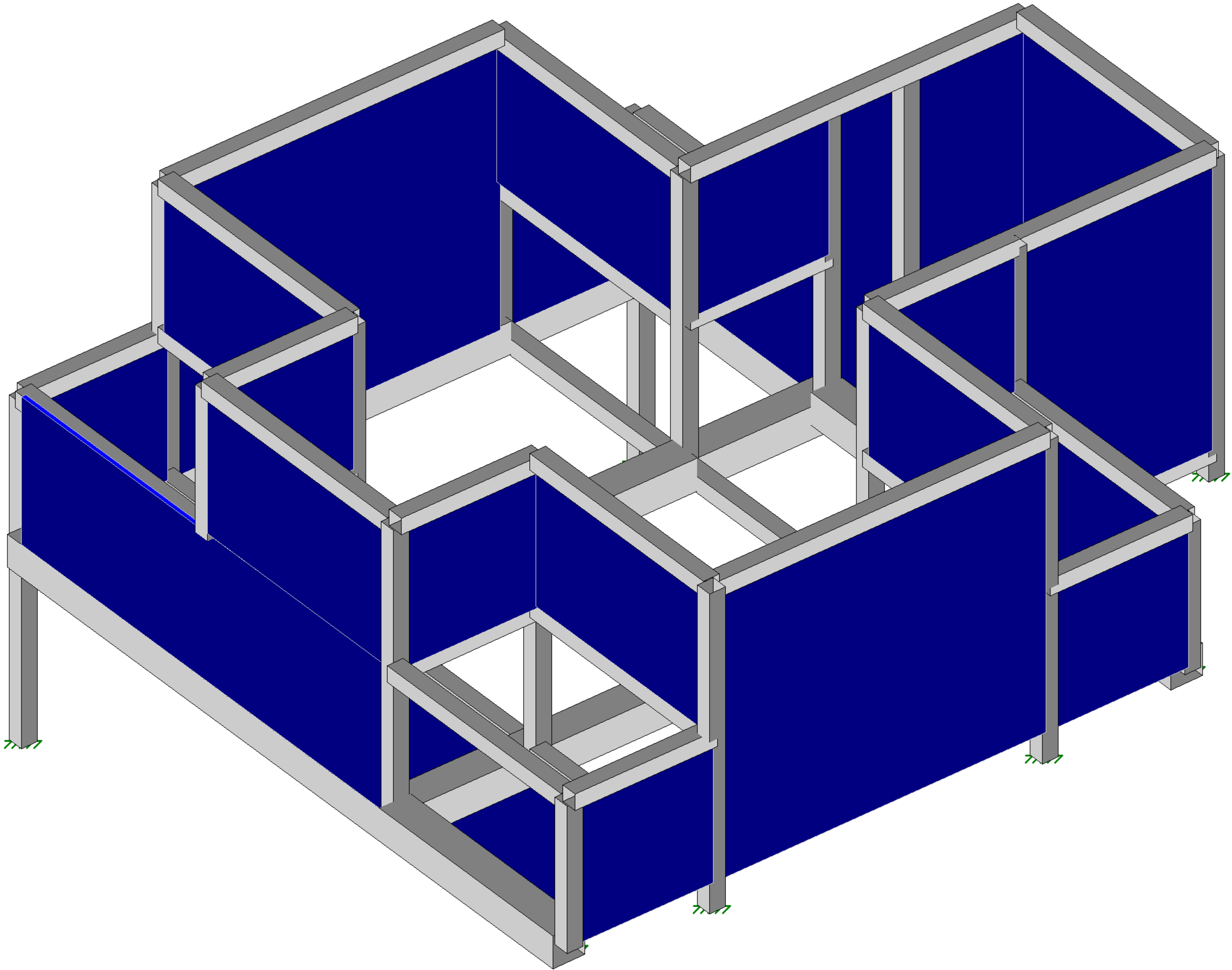
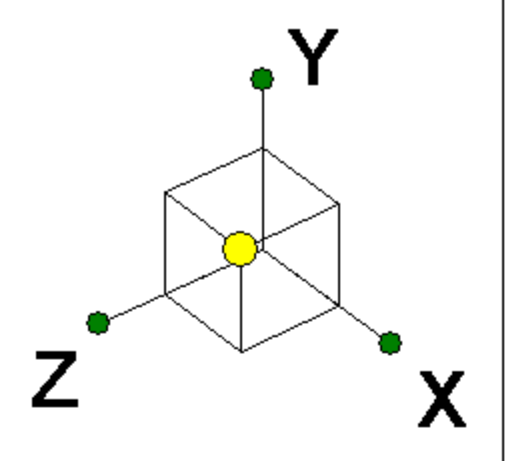
JC

STEEL TOWER MOD
ISO VIEW

SK - 1 3

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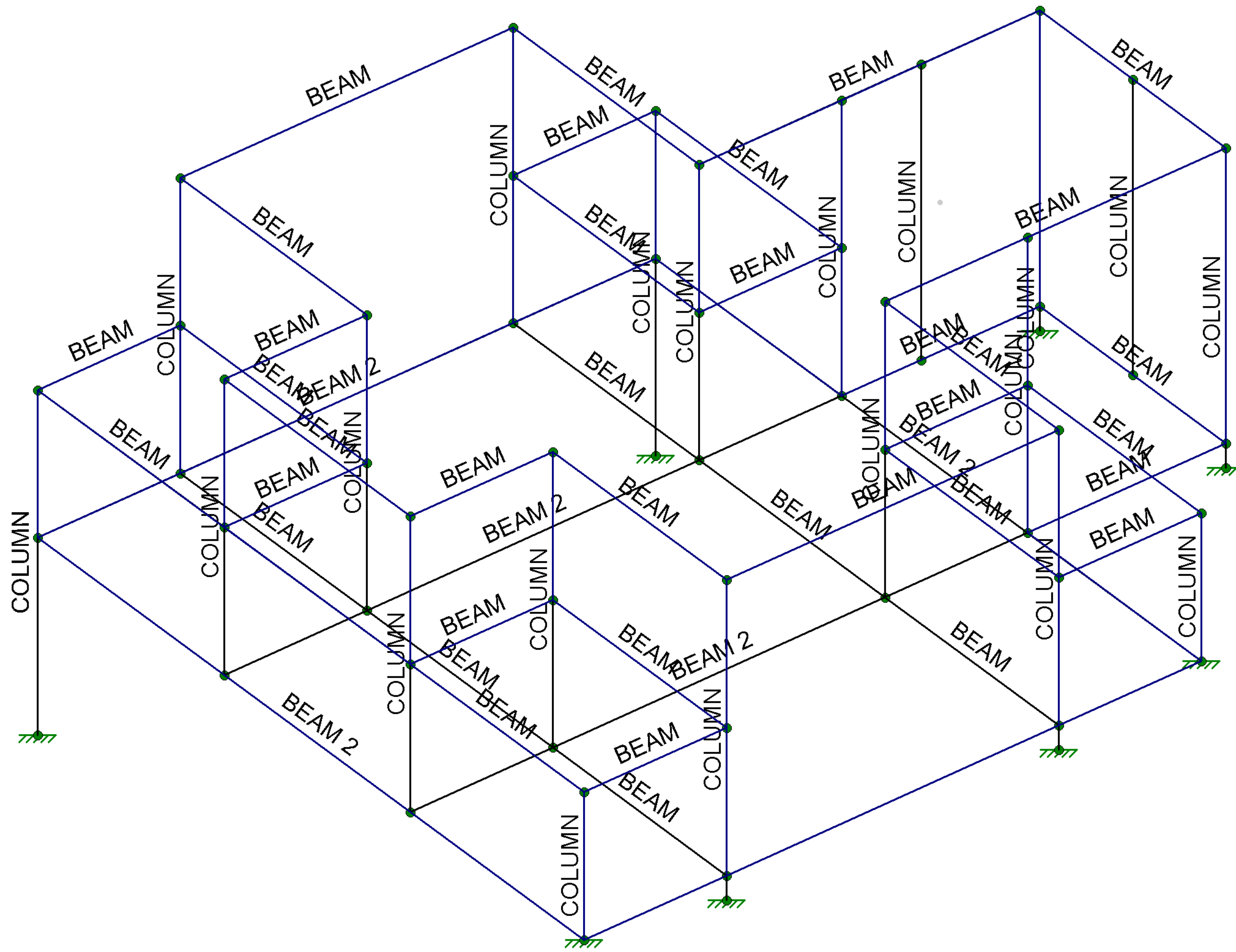
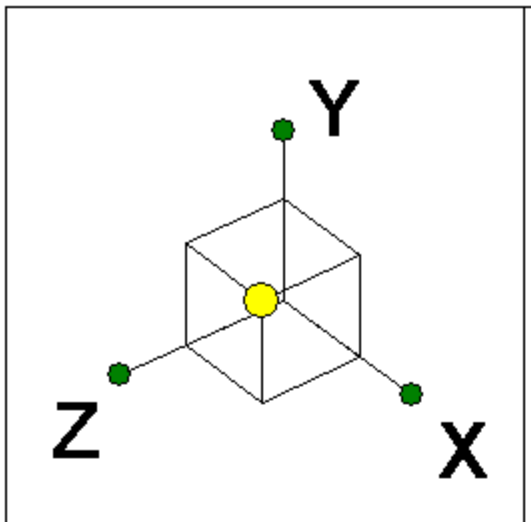
Tower Steel mod.r3d



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STEEL TOWER MOD
RENDER VIEW

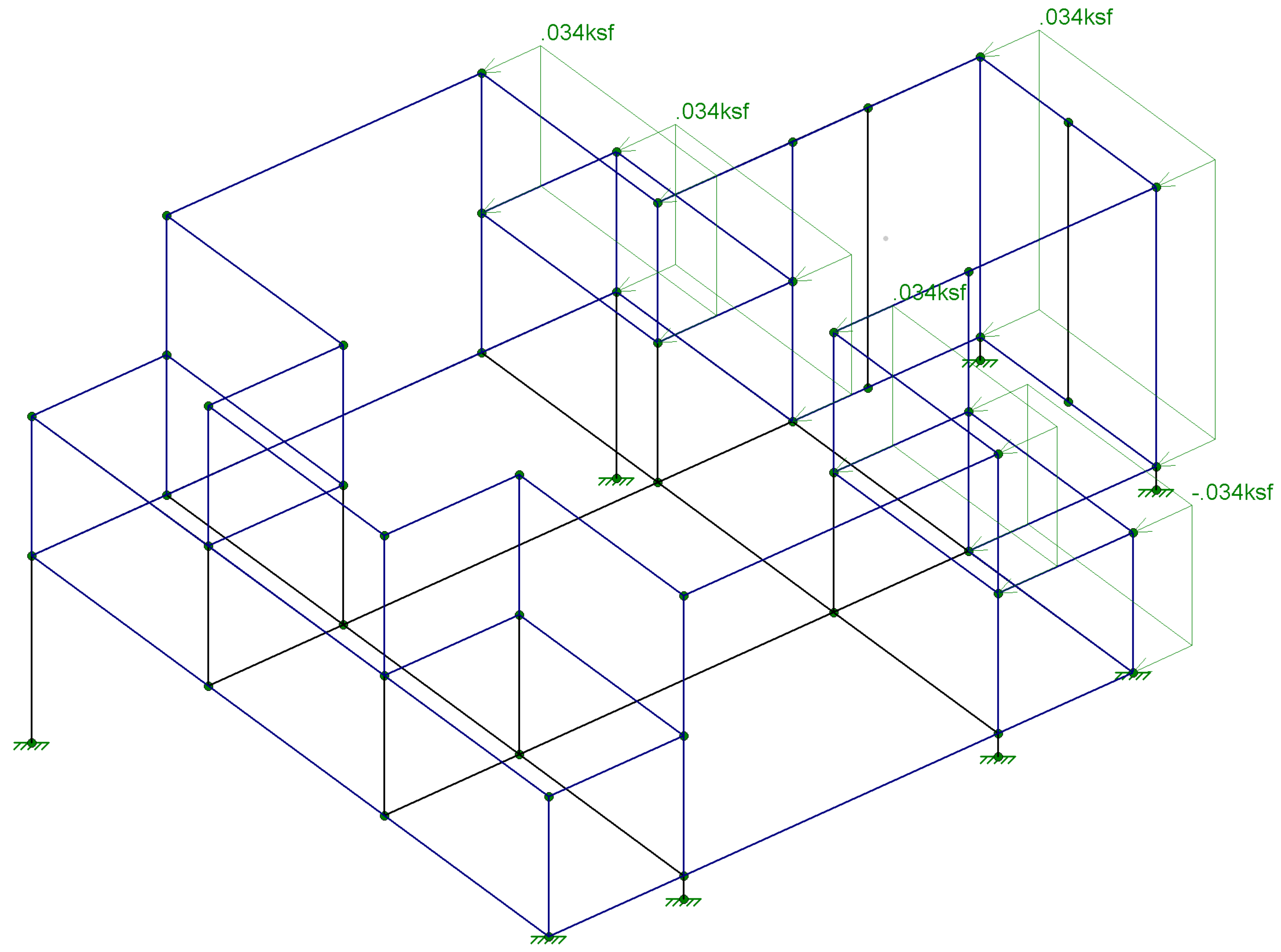
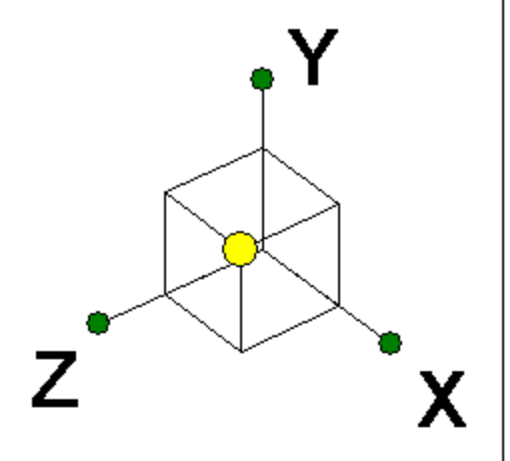
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Tower Steel mod.r3d



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STEEL TOWER MOD
SECTION

SK - 4 8
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Tower Steel mod.r3d

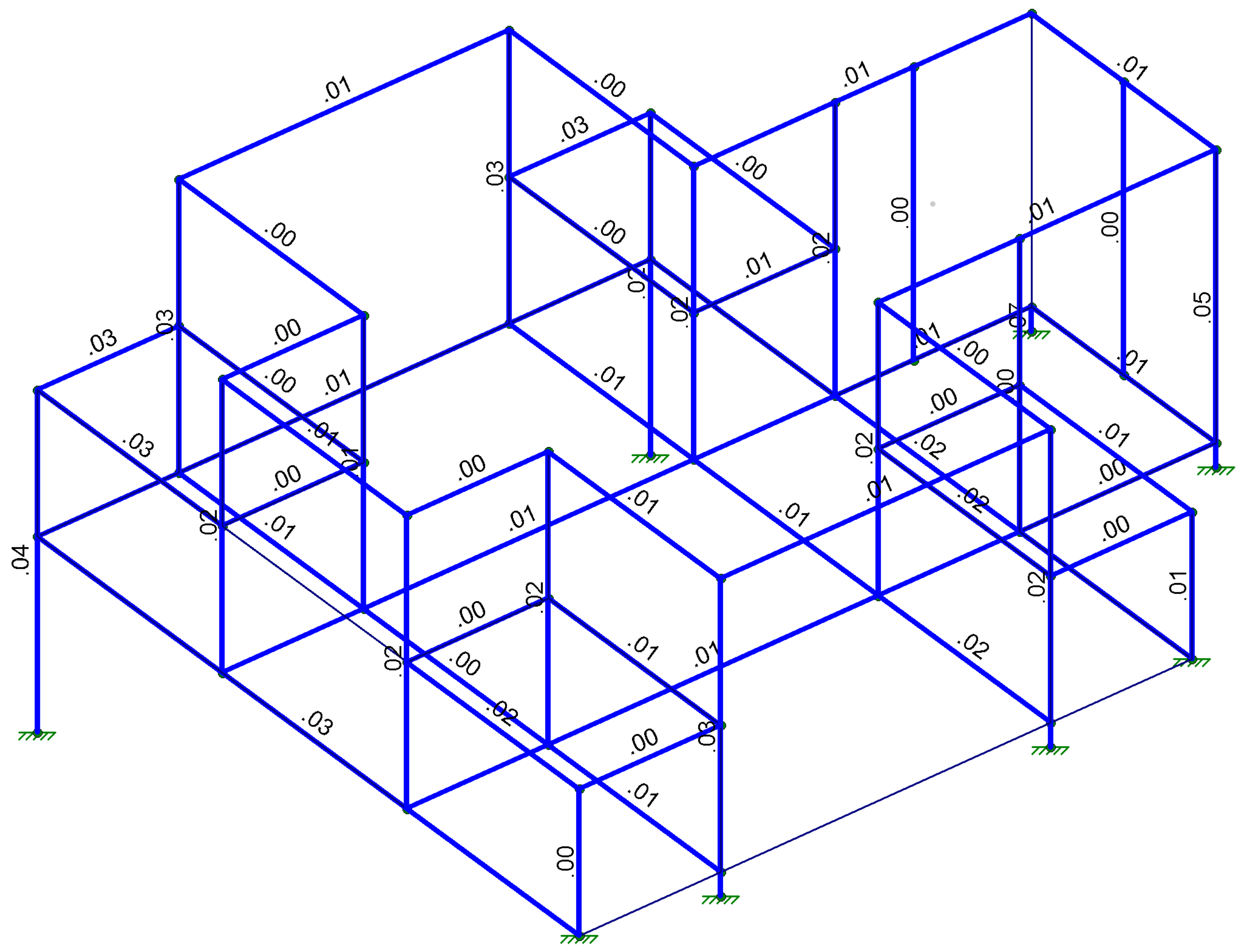
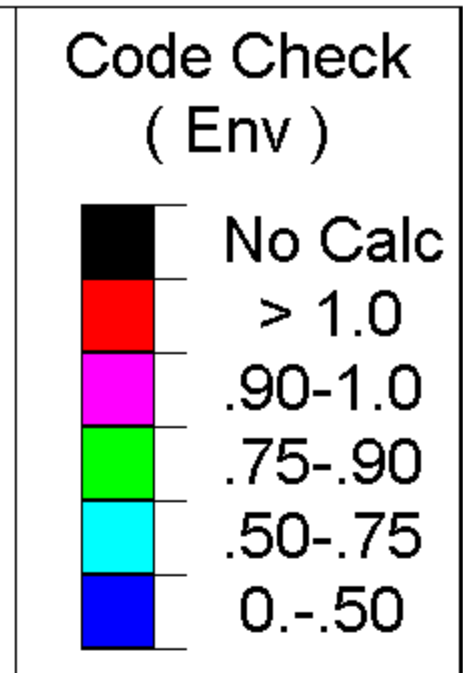
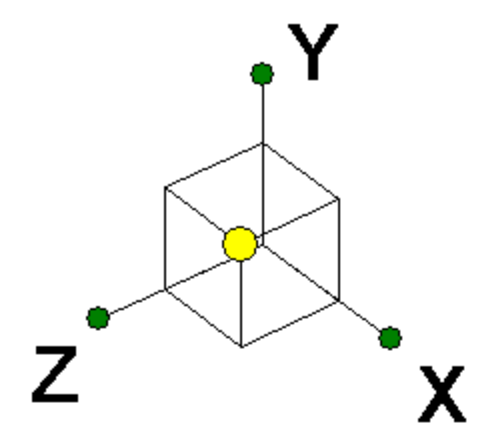


Loads: BLC 2, WIND LOAD

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STEEL TOWER MOD
WIND LOAD

SK - 5 9
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Tower Steel mod.r3d



Member Code Checks Displayed (Enveloped)
Results for LC 1, LC 1

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STEEL TOWER MOD CODE CHECK

SK - 2 6
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Tower Steel mod.r3d