8/29/2013 Project properties: **Seismic analysis steel frame**

Structure type: Shell

Structure gravity center coordinates:
X = 12.000 *(m)*
Y = 12.000 *(m)*
Z = 7.560 *(m)*
Central moments of inertia of a structure:
Ix = 3481058.164 *(kg*m2)*
Iy = 3479500.434 *(kg*m2)*
Iz = 5936707.254 *(kg*m2)*
Mass = 44127.760 *(kg)*


Coordinates of structure centroid with static global masses considered:
X = 12.000 *(m)*
Y = 12.000 *(m)*
Z = 6.488 *(m)*
Central moments of inertia of a structure with static global masses considered:
Ix = 66009143.174 *(kg*m2)*
Iy = 66007585.444 *(kg*m2)*
Iz = 117253861.492 *(kg*m2)*
Mass = 1147556.270 *(kg)*

Coordinates of structure centroid with dynamic global masses considered:
X = 12.000 *(m)*
Y = 12.000 *(m)*
Z = 6.488 *(m)*
Central moments of inertia of a structure with dynamic global masses considered:
Ix = 66009143.174 *(kg*m2)*
Iy = 66007585.444 *(kg*m2)*
Iz = 117253861.492 *(kg*m2)*
Mass = 1147556.270 *(kg)*

Structure description

| | |
|---|---|
| Number of nodes: | 67 |
| Number of bars: | 132 |
| Bar finite elements: | 132 |
| Planar finite elements: | 0 |
| Volumetric finite elements: | 0 |
| No of static degr. of freedom: | 354 |
| Cases: | 6 |
| Combinations: | 0 |

**Table of load cases / analysis types**

**Case 1** : DL1
**Analysis type: Static - Linear**

**Case 2** : LL1
**Analysis type: Static - Linear**

**Case 3** : SN1
**Analysis type: Static - Linear**

**Case 4** : NBCC 2010 Direction_X
**Analysis type: Static - Seismic**

**Excitation direction:**

| | |
|---|---|
| X = | 1.000 |
| Y = | 0.000 |
| Z = | 0.000 |

**Data:**

| | |
|---|---|
| Soil : | D |
| $I_E$ = | 1.000 |
| $R_d$ = | 1.500 |
| $R_o$ = | 1.300 |

**Spectrum parameters:**

| | |
|---|---|
| Sa(0.2) = | 0.150 |
| Sa(0.5) = | 0.085 |
| Sa(1.0) = | 0.045 |
| Sa(2.0) = | 0.014 |
| Fa = | 1.300 |
| Fv = | 1.400 |

**Fundamental period:**

| | |
|---|---|
| Braced frames | $C_t$ = 0.03 x = 1.00 |
| Fundamental period: | Ta = 0.300 (s) |

**Structure range:**

| | |
|---|---|
| Top story | Story 3 |
| Bottom story | Story 1 |
| Effective height | $H_n$ = 12.00(m) |

**Base shear**

S(Ta) is incorrect, should be 0.169.

Base shear is incorrect due to incorrect S(Ta)

$M_v$ = 1.000
S(Ta) = 0.100
Effective seismic weight W = 1147556.27 (kG)
$V_{min}$ = 40.40
Shear force V = 577.11 (kN)
Force at the top of the building $F_t$ = 0.00 (kN)

**Vertical distribution of seismic forces**

| Story | Height (m) | Weight (kG) | F (kN) | M (kN*m) |
|---|---|---|---|---|
| Story 1 | 4.00 | 525452.08 | 162.48 | 0.00 |
| Story 2 | 4.00 | 525452.08 | 324.97 | 0.00 |
| Story 3 | 4.00 | 96652.12 | 89.66 | 0.00 |

**Case 5** : NBCC 2010 Direction_Y
**Analysis type: Static - Seismic**

**Excitation direction:**

X = 0.000
Y = 1.000
Z = 0.000

**Data:**

Soil : D
$I_E$ = 1.000
$R_d$ = 1.500
$R_o$ = 1.300

**Spectrum parameters:**

Sa(0.2) = 0.150
Sa(0.5) = 0.085
Sa(1.0) = 0.045
Sa(2.0) = 0.014
Fa = 1.300
Fv = 1.400

**Fundamental period:**

Braced frames $C_t$ = 0.03 x = 1.00
Fundamental period: Ta = 0.300 (s)

**Structure range:**

Top story Story 3
Bottom story Story 1
Effective height $H_n$ = 12.00(m)

**Base shear**

$M_v$ = 1.000
S(Ta) = 0.100
Effective seismic weight W = 1147556.27 (kG)
$V_{min}$ = 40.40
Shear force V = 577.11 (kN)
Force at the top of the building $F_t$ = 0.00 (kN)

**Vertical distribution of seismic forces**

| Story | Height (m) | Weight (kG) | F (kN) | M (kN*m) |
|---|---|---|---|---|
| Story 1 | 4.00 | 525452.08 | 162.48 | 0.00 |
| Story 2 | 4.00 | 525452.08 | 324.97 | 0.00 |

| | | | | |
|---|---|---|---|---|
| Story 3 | 4.00 | 96652.12 | 89.66 | 0.00 |

**Case 6** : SDL
**Analysis type: Static - Linear**