# STRUCTURAL ANALYSIS REPORT

For

# CT1195 (3C)

## WEST HARTFORD – BISHOPS CORNER

345 North Main Street
West Hartford, CT 06107

## Antennas Mounted on Penthouse Roof and on Equipment Shelter Platform on Roof

**Prepared for:**

smartlink at&t

**Dated: May 25, 2016**

**Prepared by:**

Hudson Design Group LLC

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STATE OF CONNECTICUT
DANIEL HAMM
24178
LICENSED
PROFESSIONAL ENGINEER

Hudson Design Group LLC

## SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by AT&T to conduct a structural evaluation of the structure supporting the proposed AT&T equipment located in the areas depicted in the latest HDG construction drawings.

This report represents this office's findings, conclusions and recommendations pertaining to the support of AT&T's proposed equipment.

This office performed an on-site visual survey of the existing building structure on May 20, 2016. Attendees included Christopher Soldi (HDG – Filed Technician).

## CONCLUSION SUMMARY:

Partial Building Plans prepared by Walter J. Douglas dated December 1, 1958 were available and were obtained for our use. A limited visual survey of the structure was completed in or near the areas of the proposed work. The following documents were used for our reference:

- Construction Drawings prepared by URS Greiner, Inc. dated July 21, 1997

Based on our evaluation, we have determined that the existing structure **IS CAPABLE** of supporting the proposed equipment loading.

## PROPOSED APPURTENANCES:

**(2) TPA-65R-LCUUUU-H8 Antennas (96"x14.4"x8.6" Wt. = 75 lbs/each) (Alpha & Gamma)**

**(1) QS66512-3 Antenna (72"x12"x9.6" Wt. = 105 lbs) (Beta)**

**(6) RRUS-32 RRH's (26.7"x12.1"x6.7" Wt. = 60 lbs. /each) (Two per sector)**

**(3) Squid Surge Suppressors (24"x9.7"ø – Wt. = 32.8 lbs. /each)**

Referenced documents are attached.

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**DESIGN CRITERIA:**

1. International Building Code 2003 with 2005 Connecticut Supplement with 2013 Amendments; ASCE 7-05 Minimum Design Loads for Buildings and Other Structures.

   Wind Analysis:

   | | | |
   |---|---|---|
   | Reference Wind Speed: | 100 mph | (Connecticut Supplement) |
   | Category: | B | |

   Roof:

   | | | |
   |---|---|---|
   | Ground Snow, Pg: | 30 psf | (Connecticut Supplement) |

2. EIA/TIA -222- F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures

   | | |
   |---|---|
   | City/Town: | West Hartford |
   | County: | Hartford |
   | Wind Load: | 80 mph |
   | Nominal Ice Thickness: | 1/2 inch |

3. Approximate height above grade to the center of the Antennas:

   56'-6"+/-

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## EXISTING ROOF CONSTRUCTION:

The existing roof construction consists of a roofing membrane over rigid insulation over metal roof decking supported by a system of steel open web bar joists, steel beams, and steel columns.

## ANTENNA SUPPORT RECOMMENDATIONS:

- The new Alpha sector antenna is proposed to be mounted on a new pipe mast secured to an existing steel frame mounted on the penthouse roof.
- The new Beta & Gamma sector antennas are proposed to be mounted on a new vertical steel frame secured to the existing AT&T equipment shelter located on the roof directly over existing steel columns.

## RRH/SURGE ARRESTOR SUPPORT RECOMMENDATIONS:

- The new Alpha sector RRH's and surge suppressor are proposed to be mounted on new unistrut components secured to the existing steel frame hard-mounted to the existing penthouse roof.
- The new Beta and Gamma sector RRH's and surge suppressors are proposed to be mounted on new unistrut components secured to a new steel beam attached to the existing steel-framed equipment platform on the roof.

Limitations and assumptions:

1. Reference the latest HDG construction drawings for all the equipment locations details.
2. Mount all equipment per manufacturer's specifications.
3. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
4. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer requirements.
5. HDG is not responsible for any modifications completed prior to and hereafter which HDG was not directly involved.
6. If field conditions differ from what is assumed in this report, then the engineer of record is to be notified as soon as possible.
7. A condition assessment of the existing roof was not part of the scope of work.

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**FIELD PHOTOS:**

**Photo 1:** Sample photo illustrating the proposed location of the new Alpha sector antenna.

**Photo 2:** Sample photo illustrating the proposed location of the new Beta & Gamma sector antennas.

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# Wind & Ice Calculations

| | | | |
|---|---|---|---|
| **Site Name:** | West Hartford - Bishops Corner | | |
| **Site No.** | CT1195 | | |
| **Done by:** | GH | **Checked by:** | MSC |
| **Date:** | 5/24/2016 | | |

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*References:*

* Structural Standards for Steel Antenna Towers and Antenna Supporting Structures (TIA/EIA-222-F).

*Material Reference Notes:*

## 2.3.1 Wind and Ice Loads

The total design wind load shall include the sum of the horizontal forces applied to the structure in the direction of the wind and the design wind load on guys and discrete appurtenances.

Ice loading, depending on tower height, elevation, and exposure, may be a significant load on the structure in most parts of the United States. If the structure is to be located where ice accumulation is expected, consideration shall be given to an ice load when specifying the requirements for the structure.

## 2.3.2 Horizontal Force Applied to each Section of the Structure

$$F=q_z*G_H\,[C_F*A_E+\sum(C_A*A_A)]$$ (Not to exceed $2*q_z*G_H*A_G$)

where $A_G$ = Gross area of one tower face ($ft^2$)

## 2.3.3 Velocity Pressure ($q_z$) and Exposure Coefficient ($K_Z$)

$q_z=.00256*K_Z*V^2$ — V=Basic Wind Speed for the Structure Location (mph)

$K_Z=(z/33)^{2/7}$ — z=Ht. above avg. ground level to midpoint of section (ft.)

$1.00 \leq K_Z \leq 2.58$ — $A_E$=effective projected area of structural components in one face

## 2.3.4 Gust Response Factors ($G_H$)

*2.3.4.1* For latticed structures , gust response factor ($G_H$) shall be calculated from the equation:

$G_H=0.65+0.60/(h/33)^{1/7}$ (h in (ft.)) $1.0 < G_H < 1.25$

*2.3.4.2* For Tubular pole structures, the gust response factor ($G_H$) shall be 1.69

*2.3.4.3* One gust response factor shall apply for the entire structure.

*2.3.4.4* When Cantilevered tubular or latticed pole structures are mounted on latticed structures, the gust response factor the the pole and the latticed structure shall be based on the height of the latticed structure without the pole. The stresses calculated for the pole structures and their connections to latticed structures shall be multiplied by 1.25 to compensate for the greater gust response for the mounted pole structures.

## 2.3.5 Structure Force Coefficients (Reference Table 1)

**Site Name:** West Hartford - Bishops Corner
**Site No.** CT1195
**Done by:** GH **Checked by:** MSC
**Date:** 5/24/2016

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**Wind Analysis**

V= **80** (mph)
z= **56.6** (ft)

$K_Z$= **1.17**

**Velocity Pressure:** **qz= 19.11 psf** [2.3.3]

Is member analyzing a tube pole structure? If yes, then: Gh= 1.69

If no, then use value below:
Gh= 1.21 [2.3.4.1]

Gh= 1.69

**Determine Cf:**

If lattice structure see manual...

If cantlevered tube pole, then: Use Correct Value from Table 1 Below:

**TABLE 1**
*Coefficients (Cf) for Cantilevered Tubular Pole Structures*

| C (mph ft) | Round | 16 Sided r<0.26 | 16 Sided r≥0.26 | 12 Sides | 8 Sided |
|---|---|---|---|---|---|
| <32 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 |
| 32 to 64 | $130/C^{1.3}$ | 1.78+1.40r-C/91.5-Cr/22.9 | .72+(64-C)/44.8 | $12.5/C^{.6}$ | 1.2 |
| >64 | 0.59 | 1.08-1.40r | 0.72 | 1.03 | 1.2 |

**Derivation of Structure Coefficient (Cf):**

**Dp** = Avg. Diam. or Avg. Least width of Tubular Pole Structure: 0.25 feet

| | | | |
|---|---|---|---|
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**C= $(K_z)^{1/2}$ * V * Dp (for Dp in ft [m]** C= **21.60**

| C (mph ft) | Round Only Member |
|---|---|
| <32 | 1.2 |
| 32 < 64 | 2.39 |
| > 64 | 0.59 |

(Max Cf= 1.2)
(Min Cf= 0.59)

Cf= 1.2

**Determine Ae:** **[2.3.6]**

If tube structure, then use projected area including ice:
If not a tube structure, then see manual.

Ae= 2.96 sf

**Determine Ca:** **[2.3.7]**

**2.3.7** The force coefficient ($C_A$) applied to the projected area ($ft^2$) [$m^2$] of a linear appurtenance ($A_A$) not considered as a structural component shall be determined from Table 3. The force coefficient for cylindrical members may be applied to the additional projected area of radial ice when specified. (Refer to Figure 1.)

| TABLE 3 | | |
|---|---|---|
| Appurtenance Force Coefficients | | |
| **Member Type** | **Aspect Ratio ≤ 7** | **Aspect Ratio ≥ 25** |
| | $C_A$ | $C_A$ |
| **Flat** | 1.4 | 2 |
| | | |
| **Cylindrical** | 0.8 | 1.2 |
| | | |
| Aspect Ratio=Overall length/width ratio in plane normal to wind direction. (Aspect ratio is not a function of the spacing between support points of a linear appurtenance, nor the section length considered to have a uniformly distributed force.) | | |

Note: Linear interpolation may be used to aspect ratios other than shown

**2.3.8** Regardless of location, linear appurtenances not considered as structural components in accordance with 2.3.6.3 shall be included in the term $\Sigma C_A A_A$.

**2.3.9** The horizontal force (F) applied to a section of the structure may be assumed to be uniformly distributed based on the wind pressure at the mid-height of the section.

**Site Name:** West Hartford - Bishops Corner
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**Done by:** GH **Checked by:** MSC
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| | Item #1 | Item #2 | Item #3 | Item #4 |
|---|---|---|---|---|
| Member Length (Inches): | 96 | 72 | 26.7 | 24 |
| Member Width (Inches): | 14.4 | 12 | 12.1 | 9.7 |
| Calculated Aspect Ratio: | 6.7 | 6.0 | 2.2 | 2.5 |

From Table 3 Above:

| | | | | |
|---|---|---|---|---|
| Ca= | 1.4 | 1.4 | 1.4 | 0.8 |

**Determine Aa: (sf)**

| | | Item #1 | Item #2 | Item #3 | Item #4 |
|---|---|---|---|---|---|
| From above: | Aa= | 9.60 | 6.00 | 2.24 | 1.62 |
| Calculated Ca*Aa: | | 13.44 | 8.40 | 3.14 | 1.29 |

**Calculated Sums of Ca*Aa:** 26.27 sf

| | | |
|---|---|---|
| **TPA-65R-LCUUU-H8 Antenna** | Item 1 calculated force F: | 434 lbs. |
| **QS66512-3 Antenna** | Item 2 calculated force F: | 271 lbs. |
| **RRUS-32 RRH** | Item 3 calculated force F: | 101 lbs. |
| **Squid** | Item 4 calculated force F: | 42 lbs. |

## ICE WEIGHT CALCULATIONS

Project: CT1195

| | | |
|---|---|---|
| Thickness of ice: | 0.5 in. | |
| Density of ice: | 56 pcf | |

### TPA-65R-LCUUUU-H8 Antenna

Weight of ice based on total radial SF area:

| | | |
|---|---|---|
| Depth (in): | 8.6 | |
| height (in): | 96 | |
| Width (in): | 14.4 | |
| Total weight of ice on object: | | 79 lbs |
| Weight of object: | 75 lbs | |
| Combined weight of ice and object: | | 154 lbs |

### QS66512-3 Antenna

Weight of ice based on total radial SF area:

| | | |
|---|---|---|
| Depth (in): | 9.6 | |
| height (in): | 72 | |
| Width (in): | 12 | |
| Total weight of ice on object: | | 57 lbs |
| Weight of object: | 105 lbs | |
| Combined weight of ice and object: | | 162 lbs |

### 3x3x1/4 Angle

Weight of ice based on total radial SF area:

| | | |
|---|---|---|
| Depth (in): | 0.25 | |
| height (in): | 12 | |
| Width (in): | 6 | |
| Per foot weight of ice on object: | | 3 plf |

### RRUS-32 RRH

Weight of ice based on total radial SF area:

| | | |
|---|---|---|
| Depth (in): | 6.7 | |
| height (in): | 26.7 | |
| Width (in): | 12.1 | |
| Total weight of ice on object: | | 20 lbs |
| Weight of object: | 60 lbs | |
| Combined weight of ice and object: | | 80 lbs |

### Squid

Per foot weight of ice:

| | | |
|---|---|---|
| diameter (in): | 9.7 | |
| height (in): | 24 | |
| Per foot weight of ice on object: | | 6 plf |
| Total weight of ice on object: | | 12 lbs |

### 6x6 HSS

Weight of ice based on total radial SF area:

| | | |
|---|---|---|
| Depth (in): | 6 | |
| height (in): | 12 | |
| Width (in): | 6 | |
| Per foot weight of ice on object: | | 7 plf |

### 3-1/2" Pipe

Per foot weight of ice:

| | | |
|---|---|---|
| diameter (in): | 3.5 | |
| Per foot weight of ice on object: | | 2 plf |

Date: 05-25-2016
Project Number: CT1195
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## Wind Analysis → Equipment Shelter

Reference Codes:

*-IBC 2003 with 2005 Connecticut Supplement with 2009 amendments*

*-Minimum Design Loads for Buildings and Other Structures (ASCE 7-05)*

| | | | |
|---|---|---|---|
| Structure Classification | II | | (ASCE 7-05 Table 1-1) |
| Basic Wind Speed, V | 100 | mph | (Connecticut Supplement) |
| Importance Factor, I | 1 | | (ASCE 7-05 Table 6-1) |
| Exposure Category | B | | (ASCE 7-05 Section 6.5.6.3) |
| Height Above Ground Level, z | 50 | ft | (Top of Shelter) |
| Exposure Coeficient, $K_z$ | 0.81 | | (ASCE 7-05 Table 6-3) |
| Wind Directionality Coef., $K_d$ | 0.90 | | (ASCE 7-05 Table 6-4) |
| Topographic Facto, $K_{zt}$ | 1.00 | | (ASCE 7-05 Section 6.5.7.2) |
| **Velocity Pressure, $q_z$** | $= 0.00256K_zK_{zt}K_dV^2I$ | | (ASCE 7-05 Equation 6-15) |
| | = **18.66** | **psf** | |

| | | | |
|---|---|---|---|
| Gust Factor, G | 0.85 | | (ASCE 7-05 Section 6.5.8) |
| Net Force Coeficient, $C_f$ | 1.30 | | (ASCE 7-05 Figure 6.21) |
| Projected Area Normal to Wind, $A_f$ | 279 | $ft^2$ | (10.58 ft. H x 26.33 ft W) |
| **Wind Force, F** | $= q_zGC_fA_f$ | | (ASCE 7-05 Equation 6-28) |
| | = **5753.52** | **lbs** | |

Date: 05-25-2016

Project Number: CT1195

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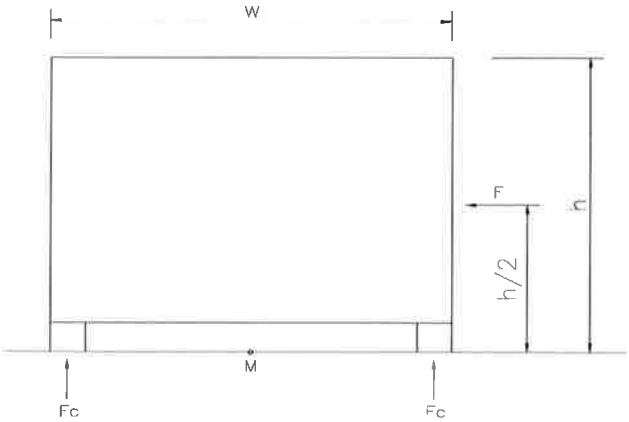
## Calculate Frame Overturning Moment

| Dimensions (ft) | Wide, w | Depth, d | Height, h |
|---|---|---|---|
| | 26.33 | 15.42 | 10.58 |




**Moment, M** = F x h/2

= **30436.15** **lb-ft**

## Calculate Force Couple

**Force Couple, $F_c$** = M / w

= **1973.81** **lbs.**

**Length of Shelter:** 26.33

**Per Foot Load=** **74.96** **plf**

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# Alpha Sector Calculations

Bentley

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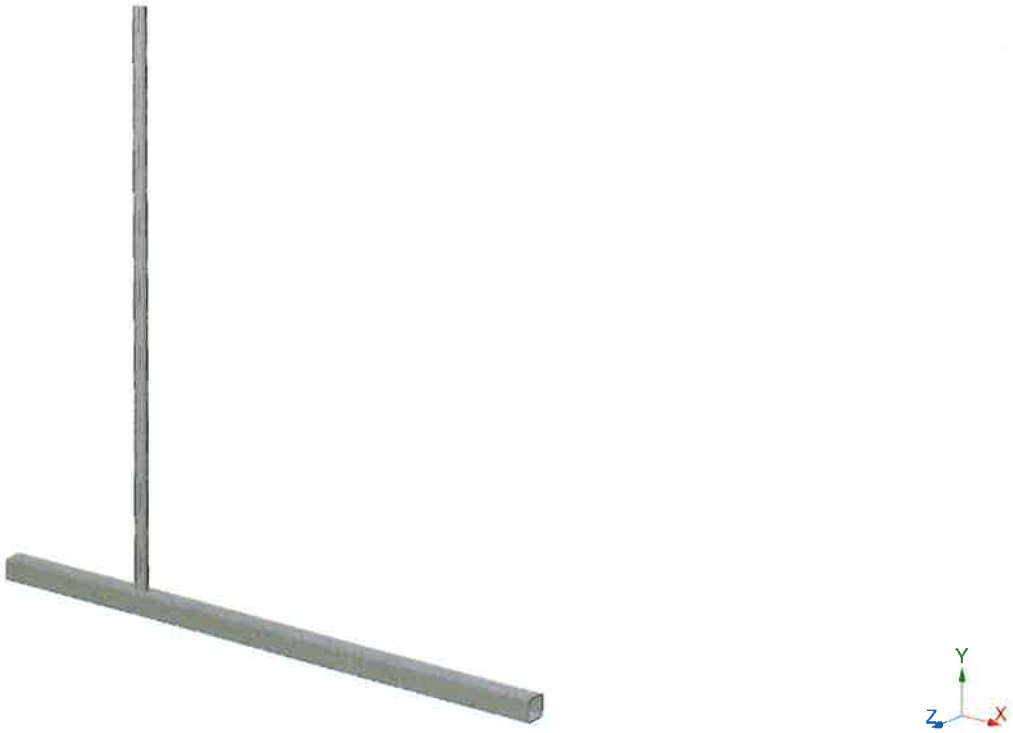


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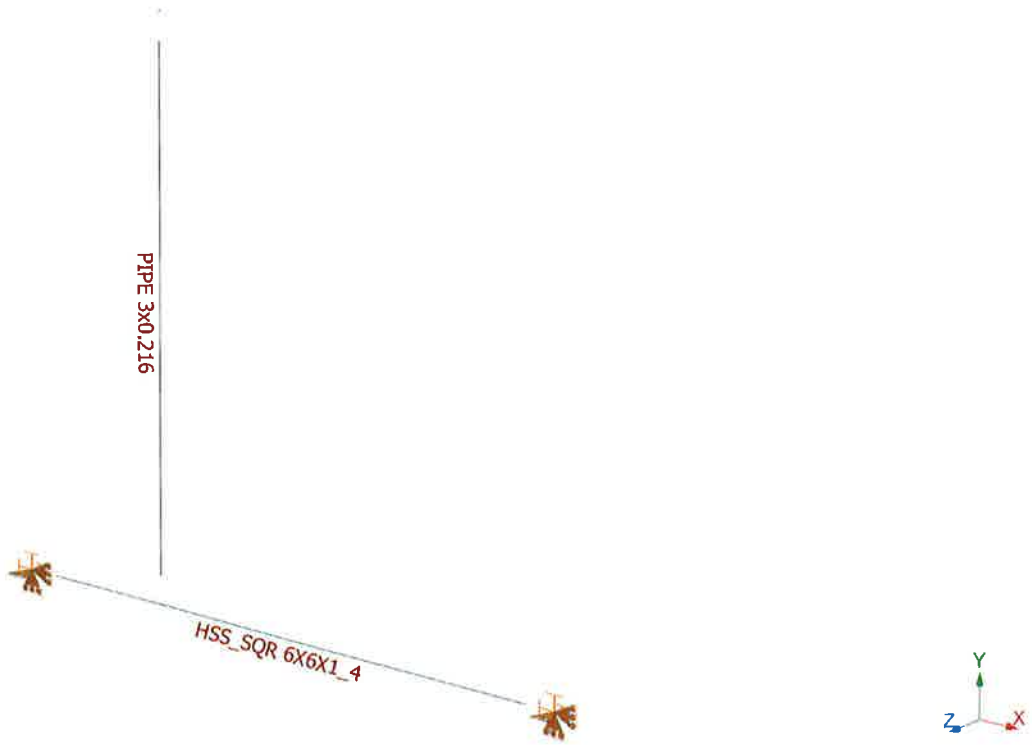


ALPHA

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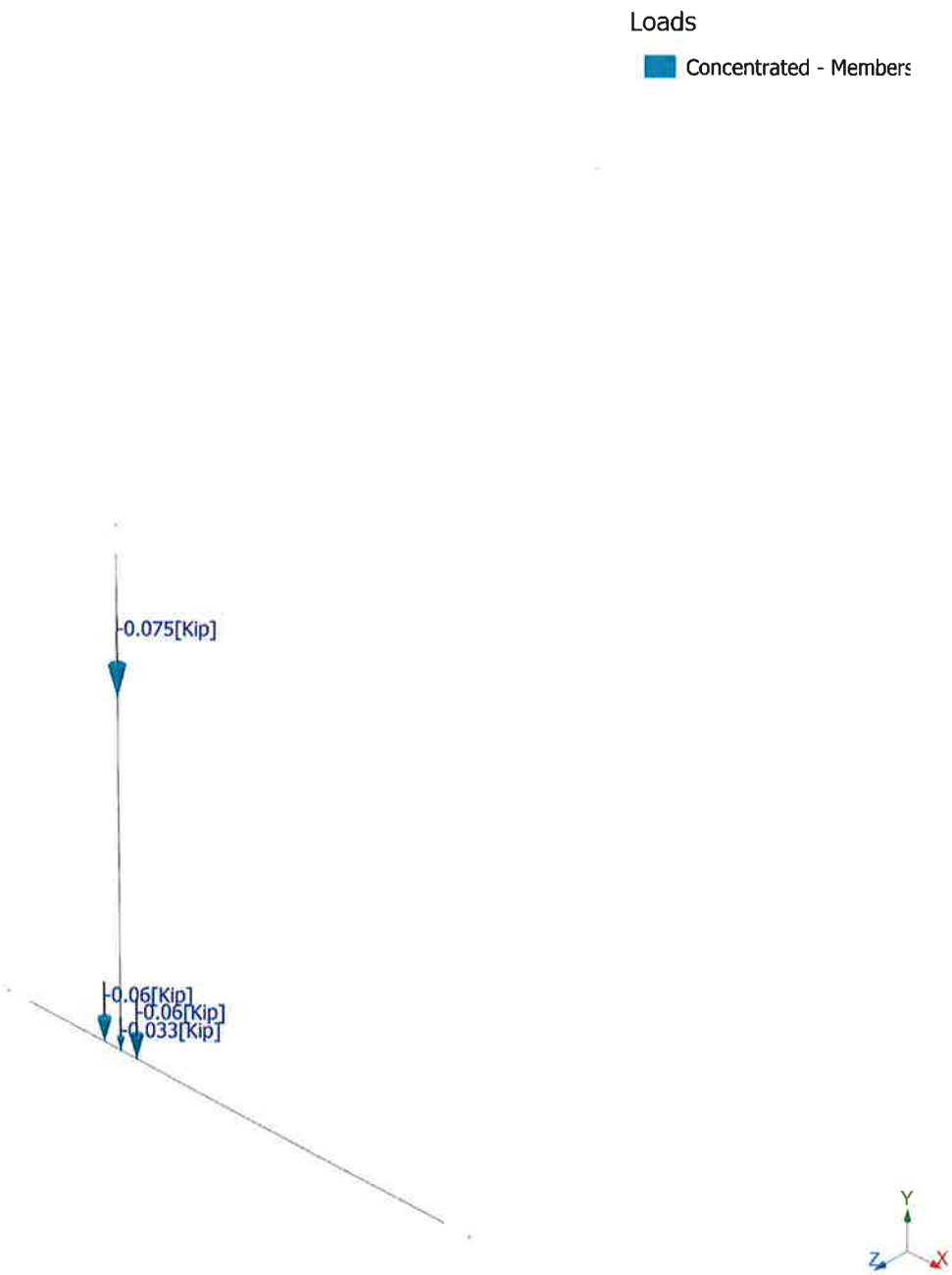
**Load condition:** DL=Dead Load



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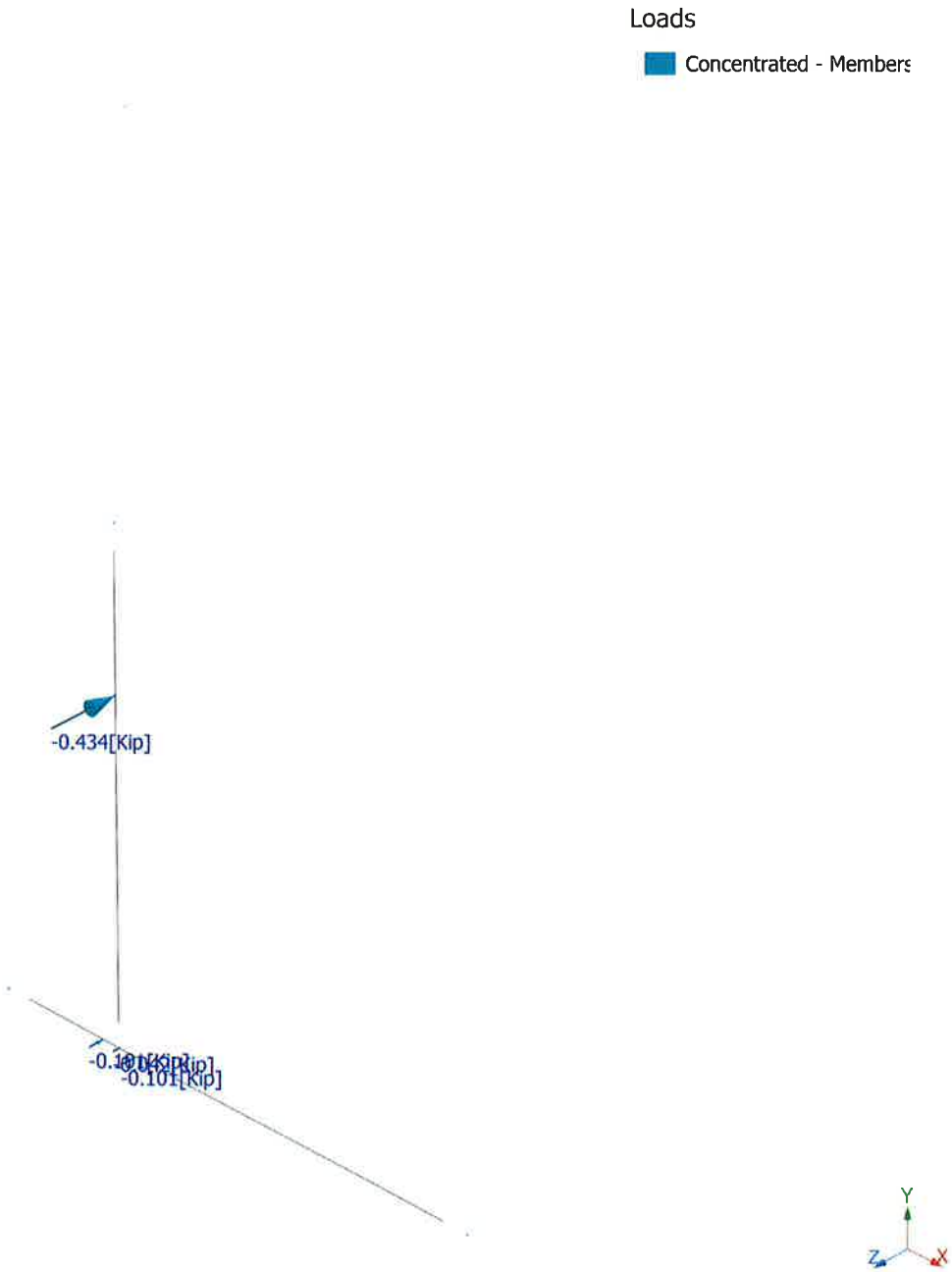
**Load condition:** WL=Wind Load



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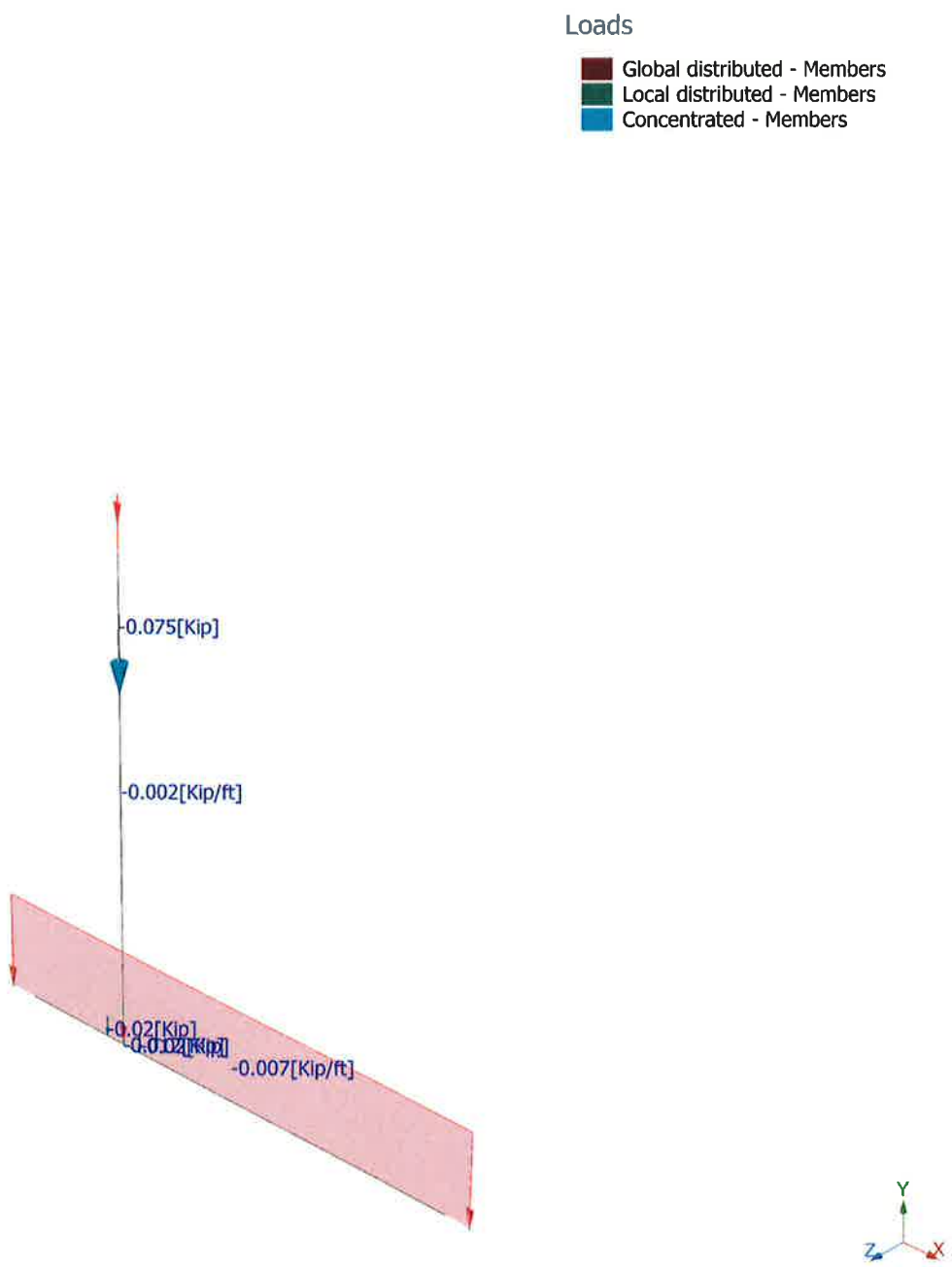
**Load condition:** ICE=Ice Load



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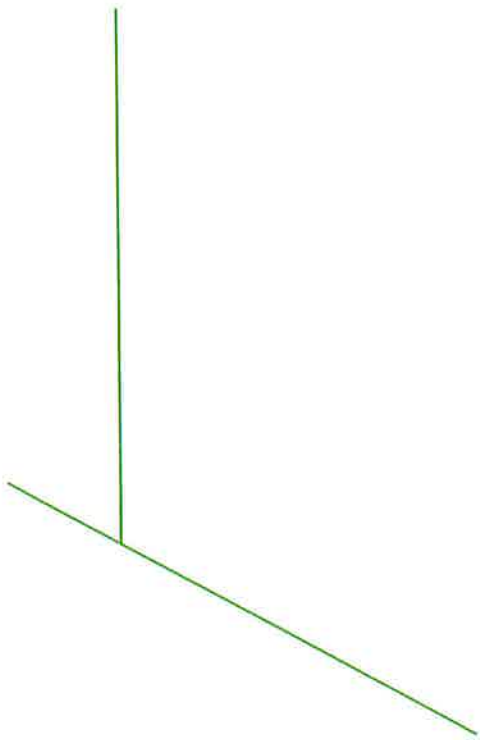
Design status

- Not designed
- Error on design
- Design O.K.
- With warnings



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# Steel Code Check

**Report: Summary - For all selected load conditions**

**Load conditions to be included in design :**

LC1=DL
LC2=DL+0.7ICE
LC3=DL+0.7WL+0.7ICE
LC4=DL+WL
LC5=0.6DL+WL
LC6=0.6DL+0.7WL+0.7ICE

| Description | Section | Member | Ctrl Eq. | Ratio | Status | Reference |
|---|---|---|---|---|---|---|
| | ***HSS_SQR 6X6X1_4*** | **2** | LC1 at 0.00% | 0.02 | OK | Sec. F1 |
| | | | LC2 at 0.00% | 0.03 | OK | Sec. F1 |
| | | | LC3 at 0.00% | 0.09 | OK | |
| | | | LC4 at 0.00% | **0.13** | **OK** | |
| | | | LC5 at 0.00% | 0.13 | OK | |
| | | | LC6 at 0.00% | 0.09 | OK | |
| | ***PIPE 3x0.216*** | **1** | LC1 at 37.50% | 0.00 | OK | Sec. E1 |
| | | | LC2 at 37.50% | 0.01 | OK | Sec. E1 |
| | | | LC3 at 100.00% | 0.70 | OK | Eq. H1-1b |
| | | | LC4 at 100.00% | **0.99** | **OK** | Eq. H1-1b |
| | | | LC5 at 100.00% | 0.99 | OK | Eq. H1-1b |
| | | | LC6 at 100.00% | 0.70 | OK | Eq. H1-1b |

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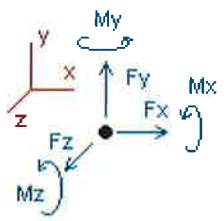
# Analysis result

## Reactions




*Direction of positive forces and moments*

| Node | Forces [Kip] FX | FY | FZ | Moments [Kip*ft] MX | MY | MZ |
|---|---|---|---|---|---|---|
| Condition **LC1=DL** | | | | | | |
| 1 | 0.00000 | 0.18949 | 0.00000 | 0.00000 | 0.00000 | 0.43350 |
| 2 | 0.00000 | 0.03851 | 0.00000 | 0.00000 | 0.00000 | -0.15539 |
| SUM | 0.00000 | 0.22800 | 0.00000 | 0.00000 | 0.00000 | 0.27811 |
| Condition **LC2=DL+0.7ICE** | | | | | | |
| 1 | 0.00000 | 0.29649 | 0.00000 | 0.00000 | 0.00000 | 0.67736 |
| 2 | 0.00000 | 0.08656 | 0.00000 | 0.00000 | 0.00000 | -0.29033 |
| SUM | 0.00000 | 0.38305 | 0.00000 | 0.00000 | 0.00000 | 0.38704 |
| Condition **LC3=DL+0.7WL+0.7ICE** | | | | | | |
| 1 | 0.00000 | 0.29649 | 0.39464 | 1.96907 | -0.90476 | 0.67736 |
| 2 | 0.00000 | 0.08656 | 0.07996 | 0.68918 | 0.32306 | -0.29033 |
| SUM | 0.00000 | 0.38305 | 0.47460 | 2.65825 | -0.58170 | 0.38704 |
| Condition **LC4=DL+WL** | | | | | | |
| 1 | 0.00000 | 0.18949 | 0.56378 | 2.81296 | -1.29252 | 0.43350 |
| 2 | 0.00000 | 0.03851 | 0.11422 | 0.98454 | 0.46152 | -0.15539 |
| SUM | 0.00000 | 0.22800 | 0.67800 | 3.79750 | -0.83100 | 0.27811 |
| Condition **LC5=0.6DL+WL** | | | | | | |
| 1 | 0.00000 | 0.11369 | 0.56378 | 2.81296 | -1.29252 | 0.26010 |
| 2 | 0.00000 | 0.02311 | 0.11422 | 0.98454 | 0.46152 | -0.09323 |
| SUM | 0.00000 | 0.13680 | 0.67800 | 3.79750 | -0.83100 | 0.16687 |
| Condition **LC6=0.6DL+0.7WL+0.7ICE** | | | | | | |
| 1 | 0.00000 | 0.22069 | 0.39464 | 1.96907 | -0.90476 | 0.50396 |
| 2 | 0.00000 | 0.07116 | 0.07996 | 0.68918 | 0.32306 | -0.22817 |
| SUM | 0.00000 | 0.29185 | 0.47460 | 2.65825 | -0.58170 | 0.27579 |

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# Beta & Gamma Sector Calculations

Bentley

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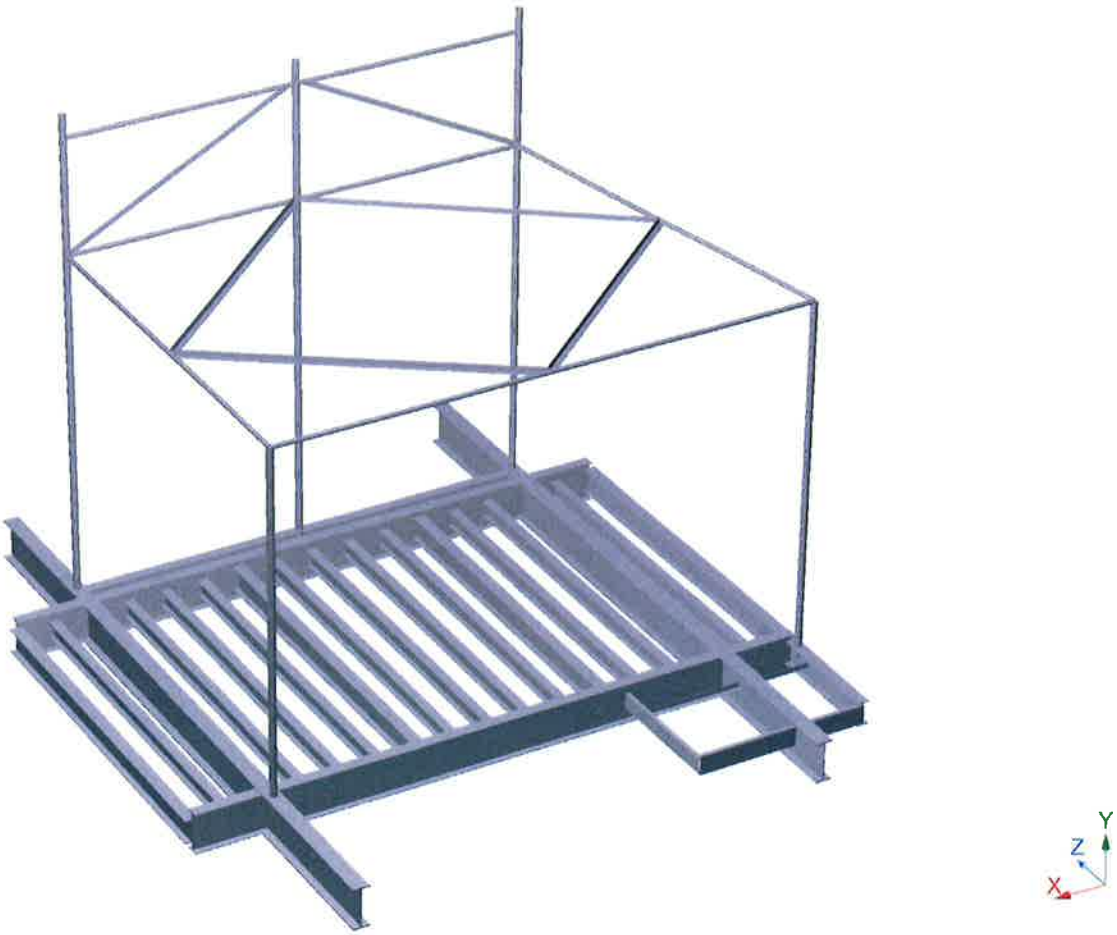
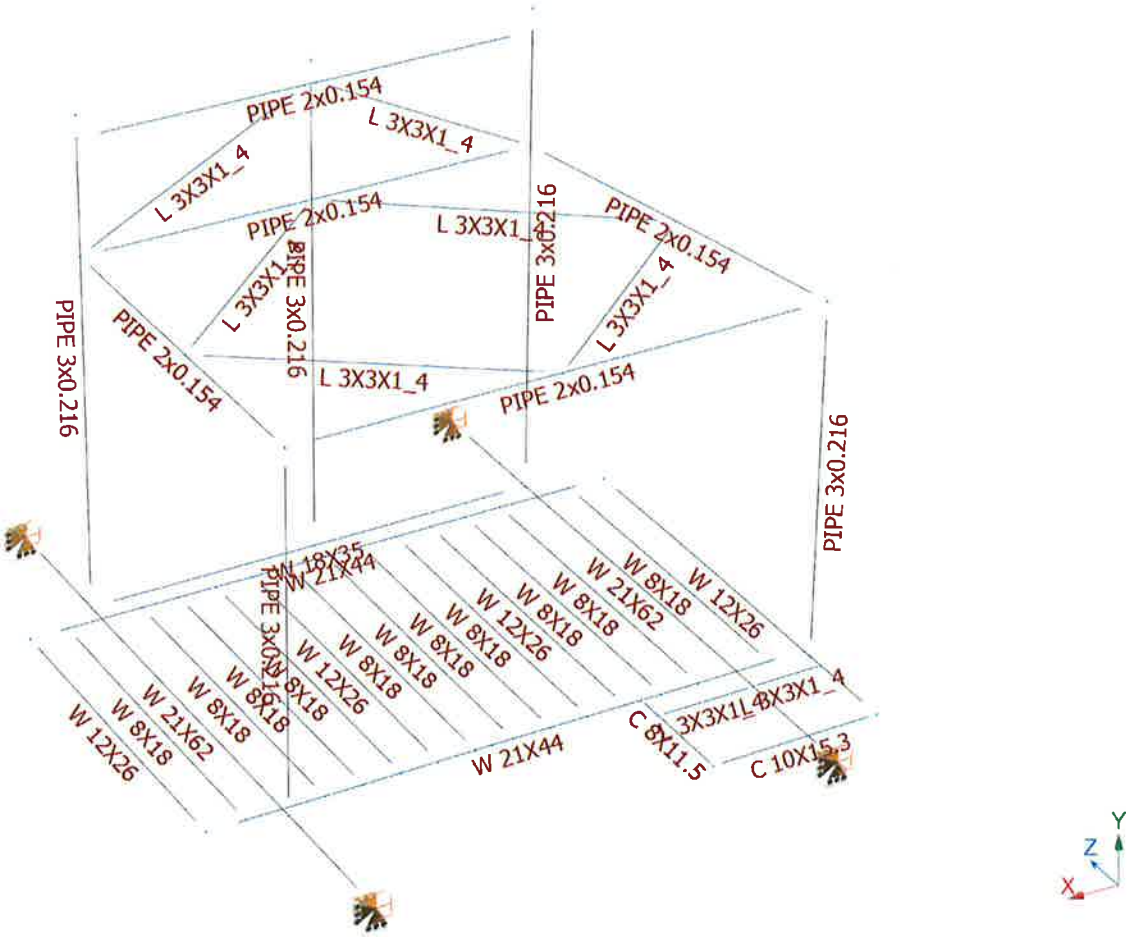
**Units system:** English
**File name:** W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\CT1195.etz\



Bentley

**Current Date:** 5/27/2016 11:53 AM
**Units system:** English
**File name:** W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\CT1195.etz\

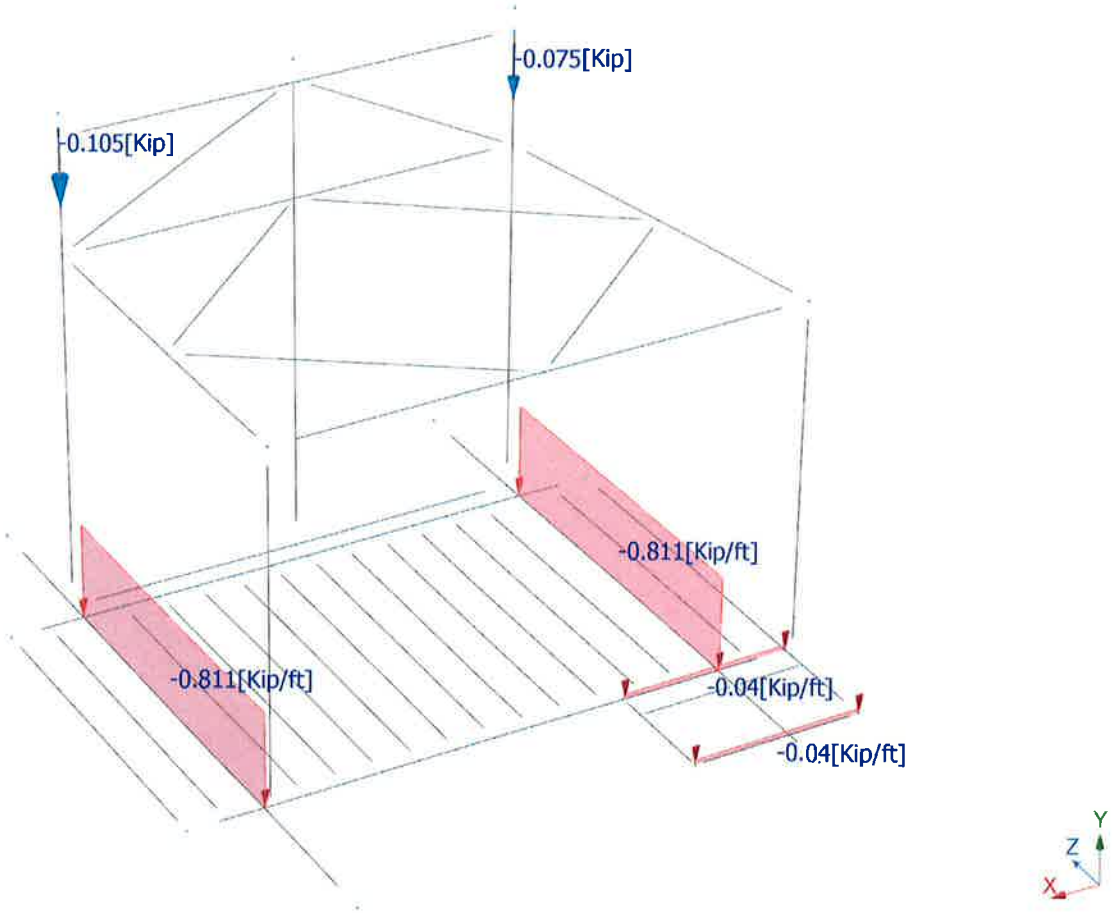


Bentley

**Current Date:** 5/27/2016 11:54 AM
**Units system:** English
**File name:** W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\CT1195.etz\
**Load condition:** DL=Dead Load

Loads

- Global distributed - Members
- Local distributed - Members
- Concentrated - Members



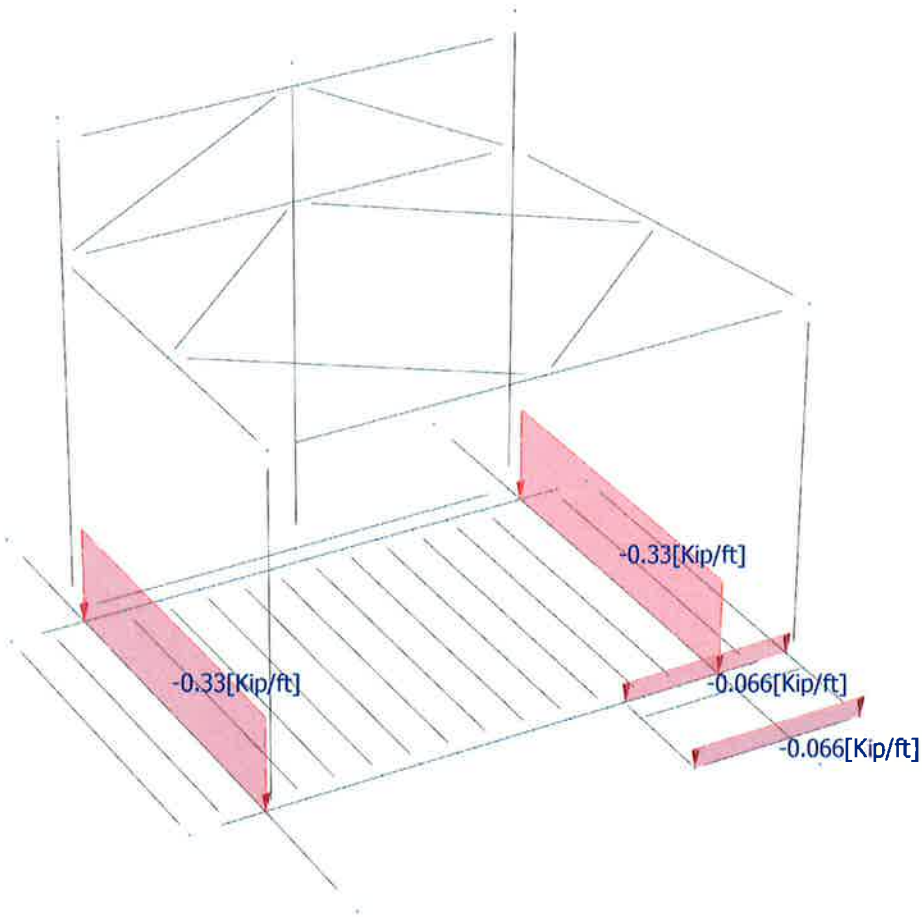

DEAD LOAD:
GRATING = 15 PSF

Bentley

**Current Date:** 5/27/2016 11:55 AM
**Units system:** English
**File name:** W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\CT1195.etz\
**Load condition:** LL=Service Load

Loads

Global distributed - Members
Local distributed - Members



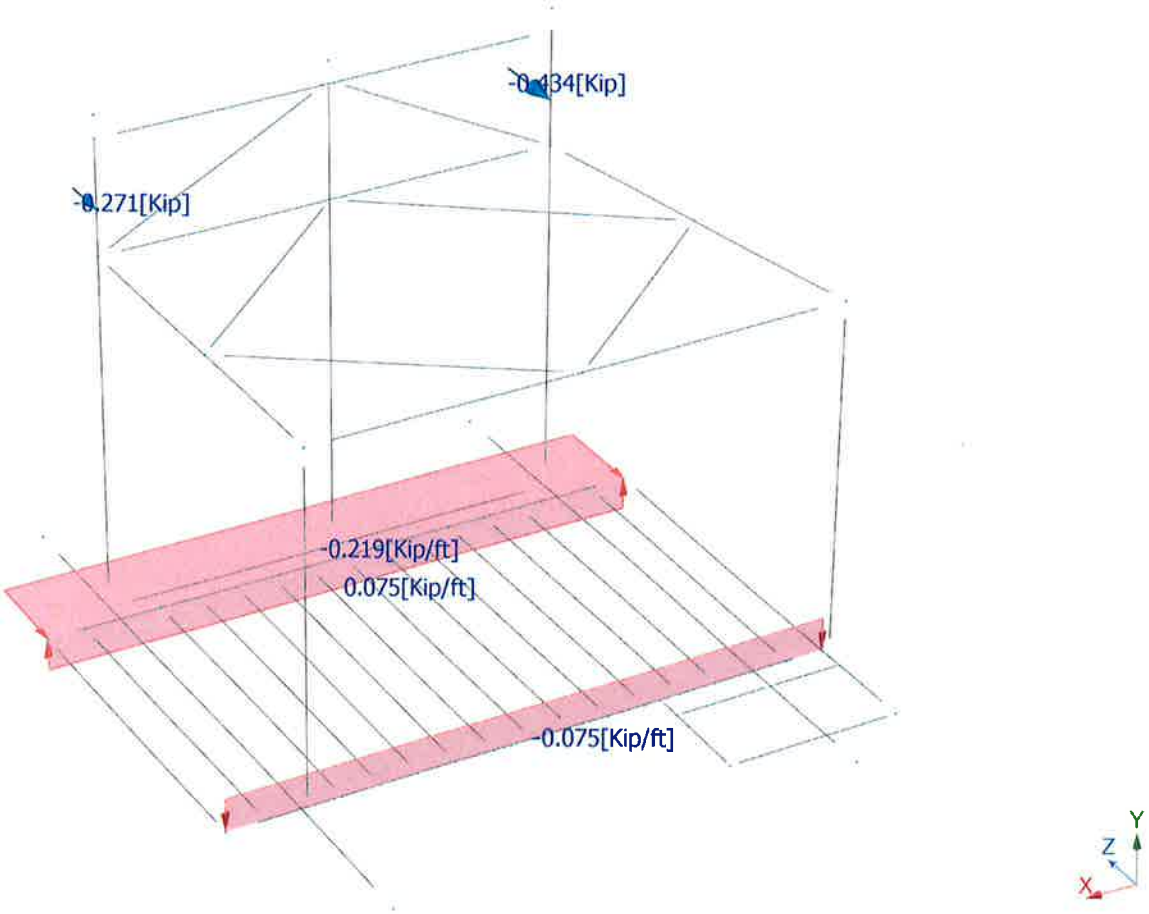

LIVE LOAD:
SERVICE = 25 PSF

Bentley

**Current Date:** 5/27/2016 11:55 AM
**Units system:** English
**File name:** W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\CT1195.etz\
**Load condition:** WL=Wind Load

Loads

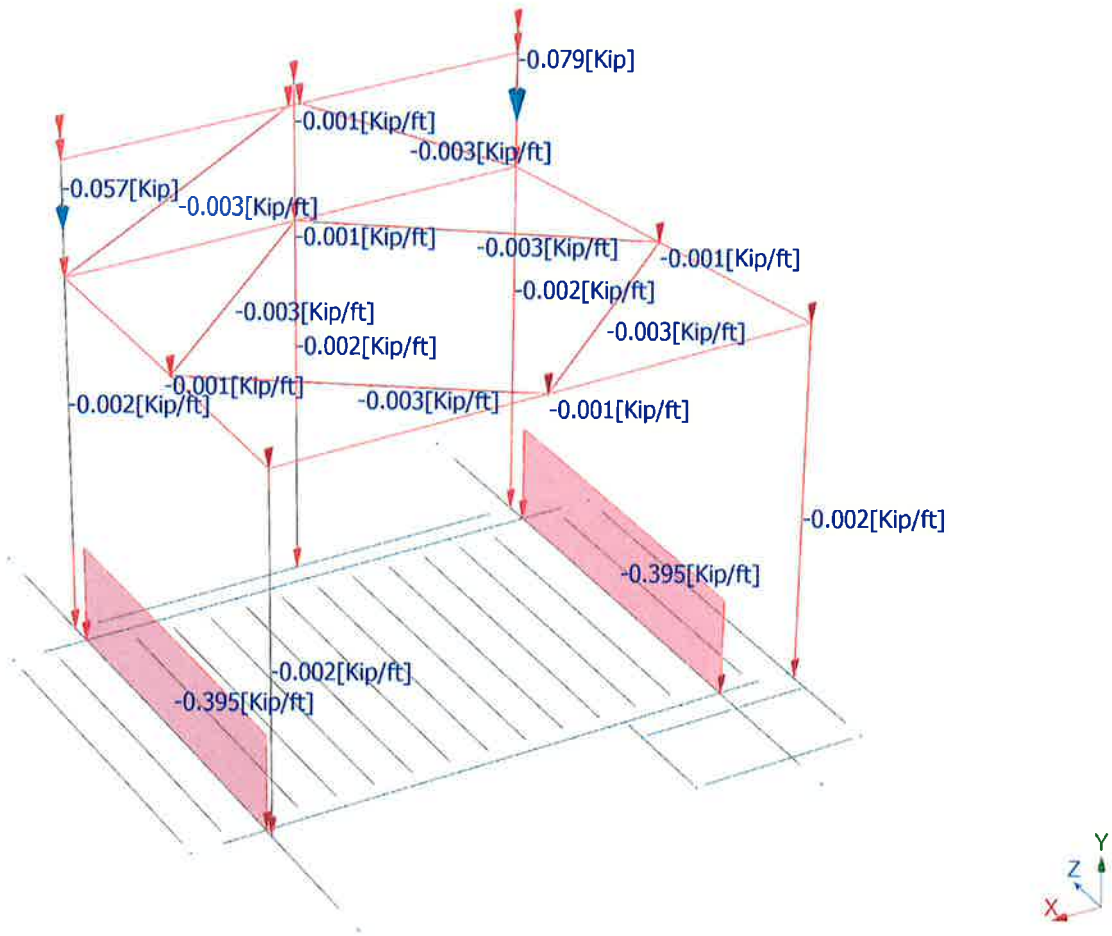
- Global distributed - Members
- Local distributed - Members
- Concentrated - Members




WIND LOAD:
WIND = 18.66 PSF (see wind analysis)

Bentley

**Current Date:** 5/27/2016 11:56 AM
**Units system:** English
**File name:** W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\CT1195.etz\
**Load condition:** SL=Snow Load



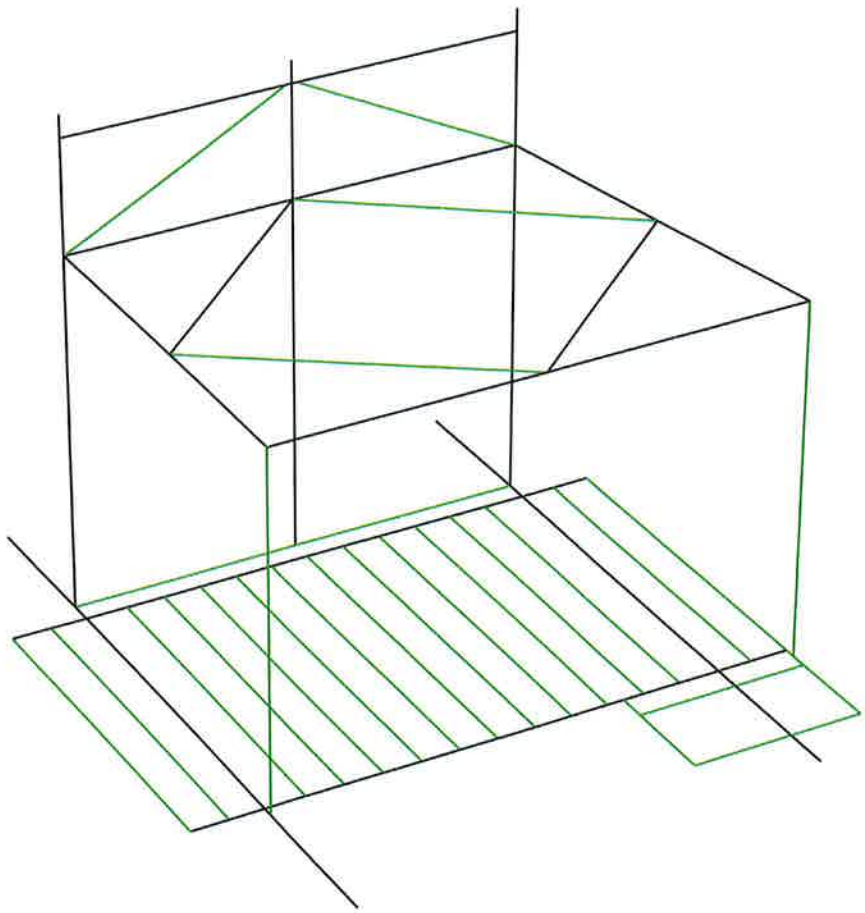

SNOW/ICE LOAD:
SNOW = 30 PSF
ICE THICKNESS = 1/2 IN.

Bentley

**Current Date:** 5/27/2016 11:57 AM
**Units system:** English
**File name:** W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\CT1195.etz\

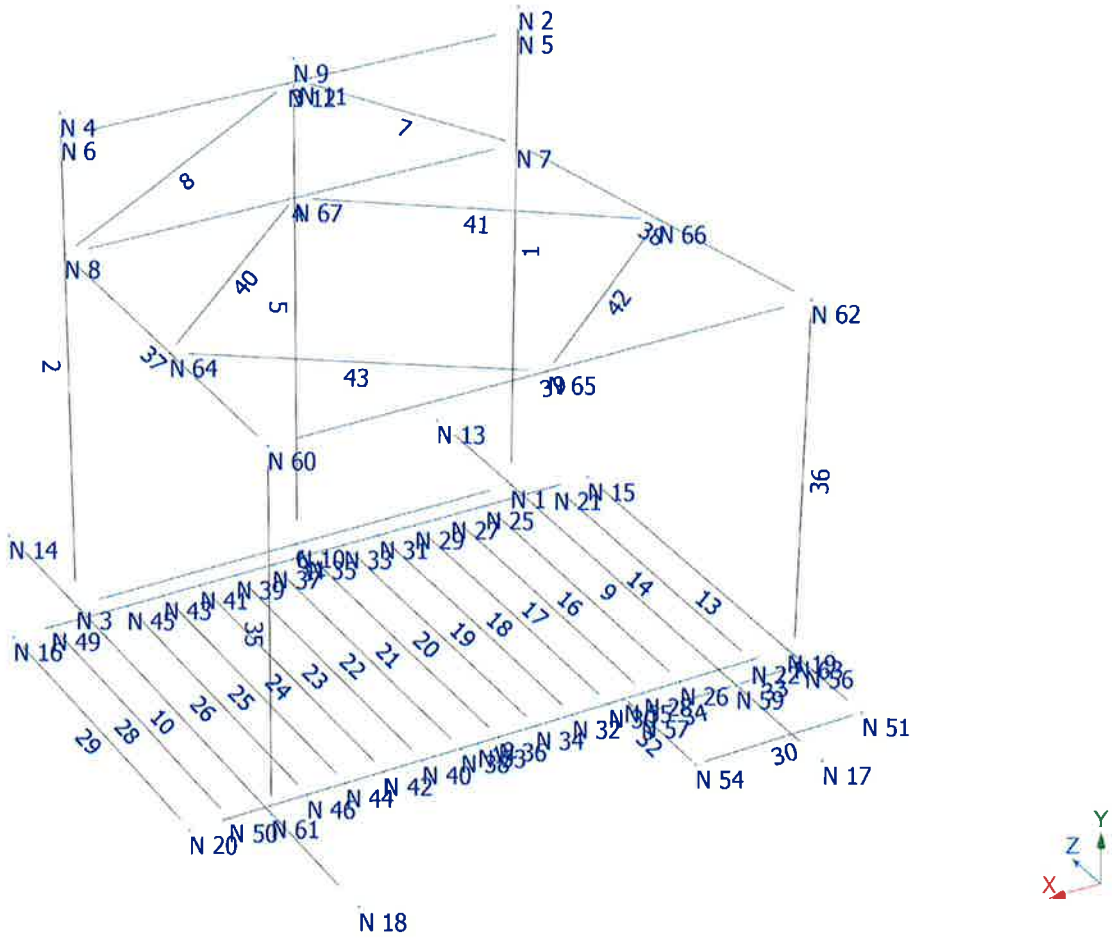
Design status

- Not designed
- Error on design
- Design O.K.
- With warnings



Bentley

**Current Date:** 5/27/2016 11:54 AM
**Units system:** English
**File name:** W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\CT1195.etz\



**Current Date:** 5/27/2016 11:57 AM
**Units system:** English
**File name:** W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\CT1195.etz\

# Steel Code Check

**Report: Summary - For all selected load conditions**

**Load conditions to be included in design :**

LC1=DL
LC2=DL+0.7SL
LC3=DL+0.7WL+0.7SL
LC4=DL+WL
LC5=0.6DL+WL
LC6=0.6DL+0.7WL+0.7SL
D1=DL
D2=DL+SL
D3=DL+0.75SL
D4=DL+WL
D5=DL+0.75WL+0.75SL
D6=0.6DL+WL
D7=DL+LL
D8=DL+0.75LL
D9=DL+0.75LL+0.75SL
D10=DL+0.75WL+0.75LL
D11=DL+0.75WL+0.75LL+0.75SL

| Description | Section | Member | Ctrl Eq. | Ratio | Status | Reference |
|---|---|---|---|---|---|---|
| | *C 10X15.3* | **30** | D1 at 40.63% | 0.03 | OK | Eq. H1-1b |
| | | | D10 at 43.75% | 0.11 | OK | Eq. H1-1b |
| | | | D11 at 43.75% | 0.11 | OK | Eq. H1-1b |
| | | | D2 at 40.63% | 0.03 | OK | Eq. H1-1b |
| | | | D3 at 40.63% | 0.03 | OK | Eq. H1-1b |
| | | | D4 at 43.75% | **0.11** | **OK** | Eq. H1-1b |
| | | | D5 at 43.75% | 0.09 | OK | Eq. H1-1b |
| | | | D6 at 43.75% | 0.10 | OK | Eq. H1-1b |
| | | | D7 at 40.63% | 0.05 | OK | Eq. H1-1b |
| | | | D8 at 40.63% | 0.05 | OK | Eq. H1-1b |
| | | | D9 at 40.63% | 0.05 | OK | Eq. H1-1b |
| | | | LC1 at 40.63% | 0.03 | OK | Eq. H1-1b |
| | | | LC2 at 40.63% | 0.03 | OK | Eq. H1-1b |
| | | | LC3 at 43.75% | 0.09 | OK | Eq. H1-1b |
| | | | LC4 at 43.75% | 0.11 | OK | Eq. H1-1b |
| | | | LC5 at 43.75% | 0.10 | OK | Eq. H1-1b |
| | | | LC6 at 43.75% | 0.08 | OK | Eq. H1-1b |
| | *C 8X11.5* | **32** | D1 at 78.13% | 0.01 | OK | Eq. H1-1b |
| | | | D10 at 100.00% | 0.15 | OK | Eq. H1-1b |
| | | | D11 at 100.00% | 0.16 | OK | Eq. H1-1b |
| | | | D2 at 100.00% | 0.02 | OK | Eq. H1-1b |
| | | | D3 at 100.00% | 0.01 | OK | Eq. H1-1b |
| | | | D4 at 100.00% | **0.20** | **OK** | Eq. H1-1b |
| | | | D5 at 100.00% | 0.16 | OK | Eq. H1-1b |
| | | | D6 at 100.00% | 0.19 | OK | Eq. H1-1b |
| | | | D7 at 100.00% | 0.01 | OK | Eq. H1-1b |
| | | | D8 at 100.00% | 0.01 | OK | Eq. H1-1b |
| | | | D9 at 100.00% | 0.02 | OK | Eq. H1-1b |
| | | | LC1 at 78.13% | 0.01 | OK | Eq. H1-1b |
| | | | LC2 at 100.00% | 0.01 | OK | Eq. H1-1b |
| | | | LC3 at 100.00% | 0.15 | OK | Eq. H1-1b |

| | | | | | |
|---|---|---|---|---|---|
| | | LC4 at 100.00% | 0.20 | OK | Eq. H1-1b |
| | | LC5 at 100.00% | 0.19 | OK | Eq. H1-1b |
| | | LC6 at 100.00% | 0.14 | OK | Eq. H1-1b |
| ***L 3X3X1_4*** | **7** | D1 at 0.00% | 0.08 | OK | Eq. H1-1b |
| | | D10 at 0.00% | 0.15 | OK | Eq. H1-1b |
| | | D11 at 0.00% | 0.16 | OK | Eq. H1-1b |
| | | D2 at 0.00% | 0.11 | OK | Eq. H1-1b |
| | | D3 at 0.00% | 0.10 | OK | Eq. H1-1b |
| | | D4 at 0.00% | **0.18** | **OK** | Eq. H1-1b |
| | | D5 at 0.00% | 0.16 | OK | Eq. H1-1b |
| | | D6 at 0.00% | 0.16 | OK | Eq. H1-1b |
| | | D7 at 0.00% | 0.08 | OK | Eq. H1-1b |
| | | D8 at 0.00% | 0.08 | OK | Eq. H1-1b |
| | | D9 at 0.00% | 0.10 | OK | Eq. H1-1b |
| | | LC1 at 0.00% | 0.08 | OK | Eq. H1-1b |
| | | LC2 at 0.00% | 0.10 | OK | Eq. H1-1b |
| | | LC3 at 0.00% | 0.15 | OK | Eq. H1-1b |
| | | LC4 at 0.00% | 0.18 | OK | Eq. H1-1b |
| | | LC5 at 0.00% | 0.16 | OK | Eq. H1-1b |
| | | LC6 at 0.00% | 0.13 | OK | Eq. H1-1b |
| | **8** | D1 at 0.00% | 0.09 | OK | Eq. H1-1b |
| | | D10 at 37.50% | 0.08 | OK | Eq. H1-1b |
| | | D11 at 0.00% | 0.10 | OK | Eq. H1-1b |
| | | D2 at 0.00% | **0.12** | **OK** | Eq. H1-1b |
| | | D3 at 0.00% | 0.11 | OK | Eq. H1-1b |
| | | D4 at 25.00% | 0.10 | OK | Eq. H1-1b |
| | | D5 at 0.00% | 0.10 | OK | Eq. H1-1b |
| | | D6 at 6.25% | 0.09 | OK | Eq. H1-1b |
| | | D7 at 0.00% | 0.09 | OK | Eq. H1-1b |
| | | D8 at 0.00% | 0.09 | OK | Eq. H1-1b |
| | | D9 at 0.00% | 0.11 | OK | Eq. H1-1b |
| | | LC1 at 0.00% | 0.09 | OK | Eq. H1-1b |
| | | LC2 at 0.00% | 0.11 | OK | Eq. H1-1b |
| | | LC3 at 0.00% | 0.09 | OK | Eq. H1-1b |
| | | LC4 at 25.00% | 0.10 | OK | Eq. H1-1b |
| | | LC5 at 6.25% | 0.09 | OK | Eq. H1-1b |
| | | LC6 at 0.00% | 0.07 | OK | Eq. H1-1b |
| | **33** | D1 at 0.00% | 0.03 | OK | Eq. H1-1b |
| | | D10 at 100.00% | 0.05 | OK | Eq. H1-1b |
| | | D11 at 100.00% | 0.05 | OK | Eq. H1-1b |
| | | D2 at 0.00% | 0.04 | OK | Eq. H1-1b |
| | | D3 at 0.00% | 0.04 | OK | Eq. H1-1b |
| | | D4 at 100.00% | **0.05** | **OK** | Eq. H1-1b |
| | | D5 at 100.00% | 0.04 | OK | Eq. H1-1b |
| | | D6 at 100.00% | 0.04 | OK | Eq. H1-1b |
| | | D7 at 0.00% | 0.03 | OK | Eq. H1-1b |
| | | D8 at 0.00% | 0.03 | OK | Eq. H1-1b |
| | | D9 at 0.00% | 0.04 | OK | Eq. H1-1b |
| | | LC1 at 0.00% | 0.03 | OK | Eq. H1-1b |
| | | LC2 at 0.00% | 0.04 | OK | Eq. H1-1b |
| | | LC3 at 100.00% | 0.04 | OK | Eq. H1-1b |
| | | LC4 at 100.00% | 0.05 | OK | Eq. H1-1b |
| | | LC5 at 100.00% | 0.04 | OK | Eq. H1-1b |
| | | LC6 at 100.00% | 0.03 | OK | Eq. H1-1b |
| | **34** | D1 at 100.00% | 0.02 | OK | Eq. H1-1b |
| | | D10 at 100.00% | 0.16 | OK | Eq. H1-1b |
| | | D11 at 100.00% | 0.16 | OK | Eq. H1-1b |
| | | D2 at 100.00% | 0.02 | OK | Eq. H1-1b |
| | | D3 at 100.00% | 0.02 | OK | Eq. H1-1b |

| | | | | |
|---|---|---|---|---|
| | D4 at 100.00% | **0.20** | **OK** | Eq. H1-1b |
| | D5 at 100.00% | 0.15 | OK | Eq. H1-1b |
| | D6 at 100.00% | 0.19 | OK | Eq. H1-1b |
| | D7 at 100.00% | 0.03 | OK | Eq. H1-1b |
| | D8 at 100.00% | 0.03 | OK | Eq. H1-1b |
| | D9 at 100.00% | 0.03 | OK | Eq. H1-1b |
| | LC1 at 100.00% | 0.02 | OK | Eq. H1-1b |
| | LC2 at 100.00% | 0.02 | OK | Eq. H1-1b |
| | LC3 at 100.00% | 0.15 | OK | Eq. H1-1b |
| | LC4 at 100.00% | 0.20 | OK | Eq. H1-1b |
| | LC5 at 100.00% | 0.19 | OK | Eq. H1-1b |
| | LC6 at 100.00% | 0.14 | OK | Eq. H1-1b |
| **40** | D1 at 12.50% | 0.16 | With warnings | Eq. H1-1b |
| | D10 at 43.75% | 0.41 | With warnings | Eq. H1-1b |
| | D11 at 37.50% | 0.46 | With warnings | Eq. H1-1b |
| | D2 at 12.50% | 0.25 | With warnings | Eq. H1-1b |
| | D3 at 12.50% | 0.23 | With warnings | Eq. H1-1b |
| | D4 at 56.25% | **0.52** | **With warnings** | Eq. H1-1b |
| | D5 at 37.50% | 0.46 | With warnings | Eq. H1-1b |
| | D6 at 81.25% | 0.50 | With warnings | Eq. H1-1b |
| | D7 at 12.50% | 0.16 | With warnings | Eq. H1-1b |
| | D8 at 12.50% | 0.16 | With warnings | Eq. H1-1b |
| | D9 at 12.50% | 0.23 | With warnings | Eq. H1-1b |
| | LC1 at 12.50% | 0.16 | With warnings | Eq. H1-1b |
| | LC2 at 12.50% | 0.22 | With warnings | Eq. H1-1b |
| | LC3 at 31.25% | 0.44 | With warnings | Eq. H1-1b |
| | LC4 at 56.25% | 0.52 | With warnings | Eq. H1-1b |
| | LC5 at 81.25% | 0.50 | With warnings | Eq. H1-1b |
| | LC6 at 43.75% | 0.39 | With warnings | Eq. H1-1b |
| **41** | D1 at 100.00% | 0.20 | OK | Eq. H1-1b |
| | D10 at 18.75% | 0.39 | OK | Eq. H1-1b |
| | D11 at 18.75% | 0.45 | OK | Eq. H1-1b |
| | D2 at 100.00% | 0.32 | OK | Eq. H1-1b |
| | D3 at 100.00% | 0.29 | OK | Eq. H1-1b |
| | D4 at 25.00% | **0.48** | **OK** | Eq. H1-1b |
| | D5 at 18.75% | 0.45 | OK | Eq. H1-1b |
| | D6 at 31.25% | 0.43 | OK | Eq. H1-1b |
| | D7 at 100.00% | 0.20 | OK | Eq. H1-1b |
| | D8 at 100.00% | 0.20 | OK | Eq. H1-1b |
| | D9 at 100.00% | 0.29 | OK | Eq. H1-1b |
| | LC1 at 100.00% | 0.20 | OK | Eq. H1-1b |
| | LC2 at 100.00% | 0.28 | OK | Eq. H1-1b |
| | LC3 at 18.75% | 0.43 | OK | Eq. H1-1b |
| | LC4 at 25.00% | 0.48 | OK | Eq. H1-1b |
| | LC5 at 31.25% | 0.43 | OK | Eq. H1-1b |
| | LC6 at 18.75% | 0.38 | OK | Eq. H1-1b |
| **42** | D1 at 31.25% | 0.10 | With warnings | Eq. H1-1b |
| | D10 at 100.00% | 0.15 | With warnings | Eq. H1-1b |
| | D11 at 100.00% | 0.19 | With warnings | Eq. H1-1b |
| | D2 at 37.50% | 0.17 | With warnings | Eq. H1-1b |
| | D3 at 37.50% | 0.15 | With warnings | Eq. H1-1b |
| | D4 at 0.00% | 0.16 | With warnings | Eq. H1-1b |
| | D5 at 100.00% | 0.19 | With warnings | Eq. H1-1b |
| | D6 at 0.00% | **0.19** | **With warnings** | Eq. H1-1b |
| | D7 at 31.25% | 0.10 | With warnings | Eq. H1-1b |
| | D8 at 31.25% | 0.10 | With warnings | Eq. H1-1b |
| | D9 at 37.50% | 0.15 | With warnings | Eq. H1-1b |
| | LC1 at 31.25% | 0.10 | With warnings | Eq. H1-1b |
| | LC2 at 31.25% | 0.15 | With warnings | Eq. H1-1b |
| | LC3 at 100.00% | 0.18 | With warnings | Eq. H1-1b |

| | | | | | |
|---|---|---|---|---|---|
| | | LC4 at 0.00% | 0.16 | With warnings | Eq. H1-1b |
| | | LC5 at 0.00% | 0.19 | With warnings | Eq. H1-1b |
| | | LC6 at 100.00% | 0.14 | With warnings | Eq. H1-1b |
| | **43** | D1 at 0.00% | 0.15 | OK | Eq. H1-1b |
| | | D10 at 0.00% | 0.28 | OK | Eq. H1-1b |
| | | D11 at 0.00% | **0.34** | **OK** | Eq. H1-1b |
| | | D2 at 0.00% | 0.23 | OK | Eq. H1-1b |
| | | D3 at 0.00% | 0.21 | OK | Eq. H1-1b |
| | | D4 at 0.00% | 0.33 | OK | Eq. H1-1b |
| | | D5 at 0.00% | 0.34 | OK | Eq. H1-1b |
| | | D6 at 0.00% | 0.27 | OK | Eq. H1-1b |
| | | D7 at 0.00% | 0.15 | OK | Eq. H1-1b |
| | | D8 at 0.00% | 0.15 | OK | Eq. H1-1b |
| | | D9 at 0.00% | 0.21 | OK | Eq. H1-1b |
| | | LC1 at 0.00% | 0.15 | OK | Eq. H1-1b |
| | | LC2 at 0.00% | 0.21 | OK | Eq. H1-1b |
| | | LC3 at 0.00% | 0.33 | OK | Eq. H1-1b |
| | | LC4 at 0.00% | 0.33 | OK | Eq. H1-1b |
| | | LC5 at 0.00% | 0.27 | OK | Eq. H1-1b |
| | | LC6 at 0.00% | 0.27 | OK | Eq. H1-1b |
| ***PIPE 2x0.154*** | **3** | D1 at 50.00% | 0.29 | With warnings | Eq. H1-1a |
| | | D10 at 50.00% | 0.31 | With warnings | Eq. H1-1a |
| | | D11 at 50.00% | 0.34 | With warnings | Eq. H1-1a |
| | | D2 at 50.00% | **0.37** | **With warnings** | Eq. H1-1a |
| | | D3 at 50.00% | 0.35 | With warnings | Eq. H1-1a |
| | | D4 at 50.00% | 0.35 | With warnings | Eq. H1-1a |
| | | D5 at 50.00% | 0.34 | With warnings | Eq. H1-1a |
| | | D6 at 50.00% | 0.22 | With warnings | Eq. H1-1b |
| | | D7 at 50.00% | 0.30 | With warnings | Eq. H1-1a |
| | | D8 at 50.00% | 0.30 | With warnings | Eq. H1-1a |
| | | D9 at 50.00% | 0.35 | With warnings | Eq. H1-1a |
| | | LC1 at 50.00% | 0.29 | With warnings | Eq. H1-1a |
| | | LC2 at 50.00% | 0.35 | With warnings | Eq. H1-1a |
| | | LC3 at 50.00% | 0.33 | With warnings | Eq. H1-1a |
| | | LC4 at 50.00% | 0.35 | With warnings | Eq. H1-1a |
| | | LC5 at 50.00% | 0.22 | With warnings | Eq. H1-1b |
| | | LC6 at 50.00% | 0.17 | With warnings | Sec. E1 |
| | **4** | D1 at 50.00% | 0.05 | With warnings | Eq. H1-1b |
| | | D10 at 0.00% | 0.08 | With warnings | Eq. H1-1b |
| | | D11 at 0.00% | 0.08 | With warnings | Eq. H1-1b |
| | | D2 at 50.00% | 0.07 | With warnings | Eq. H1-1b |
| | | D3 at 50.00% | 0.07 | With warnings | Eq. H1-1b |
| | | D4 at 0.00% | **0.10** | **With warnings** | Eq. H1-1b |
| | | D5 at 0.00% | 0.08 | With warnings | Eq. H1-1b |
| | | D6 at 0.00% | 0.08 | With warnings | Eq. H1-1b |
| | | D7 at 50.00% | 0.05 | With warnings | Eq. H1-1b |
| | | D8 at 50.00% | 0.05 | With warnings | Eq. H1-1b |
| | | D9 at 50.00% | 0.07 | With warnings | Eq. H1-1b |
| | | LC1 at 50.00% | 0.05 | With warnings | Eq. H1-1b |
| | | LC2 at 50.00% | 0.07 | With warnings | Eq. H1-1b |
| | | LC3 at 0.00% | 0.08 | With warnings | Eq. H1-1b |
| | | LC4 at 0.00% | 0.10 | With warnings | Eq. H1-1b |
| | | LC5 at 0.00% | 0.08 | With warnings | Eq. H1-1b |
| | | LC6 at 0.00% | 0.07 | With warnings | Eq. H1-1b |
| | **37** | D1 at 100.00% | 0.20 | With warnings | Eq. H1-1b |
| | | D10 at 100.00% | 0.73 | With warnings | Eq. H1-1b |
| | | D11 at 100.00% | 0.81 | With warnings | Eq. H1-1b |
| | | D2 at 100.00% | 0.30 | With warnings | Eq. H1-1b |
| | | D3 at 100.00% | 0.27 | With warnings | Eq. H1-1b |

| | | | | | |
|---|---|---|---|---|---|
| | | D4 at 100.00% | **0.93** | **With warnings** | Eq. H1-1b |
| | | D5 at 100.00% | 0.80 | With warnings | Eq. H1-1b |
| | | D6 at 100.00% | 0.85 | With warnings | Eq. H1-1b |
| | | D7 at 100.00% | 0.20 | With warnings | Eq. H1-1b |
| | | D8 at 100.00% | 0.20 | With warnings | Eq. H1-1b |
| | | D9 at 100.00% | 0.28 | With warnings | Eq. H1-1b |
| | | LC1 at 100.00% | 0.20 | With warnings | Eq. H1-1b |
| | | LC2 at 100.00% | 0.27 | With warnings | Eq. H1-1b |
| | | LC3 at 100.00% | 0.76 | With warnings | Eq. H1-1b |
| | | LC4 at 100.00% | 0.93 | With warnings | Eq. H1-1b |
| | | LC5 at 100.00% | 0.85 | With warnings | Eq. H1-1b |
| | | LC6 at 100.00% | 0.68 | With warnings | Eq. H1-1b |
| | **38** | D1 at 50.00% | 0.23 | With warnings | Eq. H1-1b |
| | | D10 at 100.00% | 0.79 | With warnings | Eq. H1-1b |
| | | D11 at 100.00% | 0.86 | With warnings | Eq. H1-1b |
| | | D2 at 50.00% | 0.34 | With warnings | Eq. H1-1b |
| | | D3 at 50.00% | 0.31 | With warnings | Eq. H1-1b |
| | | D4 at 100.00% | **0.99** | **With warnings** | Eq. H1-1b |
| | | D5 at 100.00% | 0.86 | With warnings | Eq. H1-1b |
| | | D6 at 100.00% | 0.92 | With warnings | Eq. H1-1b |
| | | D7 at 50.00% | 0.22 | With warnings | Eq. H1-1b |
| | | D8 at 50.00% | 0.22 | With warnings | Eq. H1-1b |
| | | D9 at 50.00% | 0.31 | With warnings | Eq. H1-1b |
| | | LC1 at 50.00% | 0.23 | With warnings | Eq. H1-1b |
| | | LC2 at 50.00% | 0.31 | With warnings | Eq. H1-1b |
| | | LC3 at 100.00% | 0.82 | With warnings | Eq. H1-1b |
| | | LC4 at 100.00% | 0.99 | With warnings | Eq. H1-1b |
| | | LC5 at 100.00% | 0.92 | With warnings | Eq. H1-1b |
| | | LC6 at 100.00% | 0.74 | With warnings | Eq. H1-1b |
| | **39** | D1 at 0.00% | 0.22 | With warnings | Eq. H1-1b |
| | | D10 at 0.00% | 0.28 | With warnings | Eq. H1-1b |
| | | D11 at 0.00% | **0.36** | **With warnings** | Eq. H1-1b |
| | | D2 at 0.00% | 0.33 | With warnings | Eq. H1-1b |
| | | D3 at 0.00% | 0.30 | With warnings | Eq. H1-1b |
| | | D4 at 0.00% | 0.30 | With warnings | Eq. H1-1b |
| | | D5 at 0.00% | 0.36 | With warnings | Eq. H1-1b |
| | | D6 at 0.00% | 0.21 | With warnings | Eq. H1-1b |
| | | D7 at 0.00% | 0.22 | With warnings | Eq. H1-1b |
| | | D8 at 0.00% | 0.22 | With warnings | Eq. H1-1b |
| | | D9 at 0.00% | 0.30 | With warnings | Eq. H1-1b |
| | | LC1 at 0.00% | 0.22 | With warnings | Eq. H1-1b |
| | | LC2 at 0.00% | 0.29 | With warnings | Eq. H1-1b |
| | | LC3 at 0.00% | 0.35 | With warnings | Eq. H1-1b |
| | | LC4 at 0.00% | 0.30 | With warnings | Eq. H1-1b |
| | | LC5 at 0.00% | 0.21 | With warnings | Eq. H1-1b |
| | | LC6 at 0.00% | 0.26 | With warnings | Eq. H1-1b |
| ***PIPE 3x0.216*** | **1** | D1 at 29.17% | 0.09 | With warnings | Eq. H1-1b |
| | | D10 at 100.00% | 0.41 | With warnings | Eq. H1-1b |
| | | D11 at 100.00% | 0.41 | With warnings | Eq. H1-1b |
| | | D2 at 29.17% | 0.13 | With warnings | Eq. H1-1b |
| | | D3 at 29.17% | 0.12 | With warnings | Eq. H1-1b |
| | | D4 at 100.00% | **0.55** | **With warnings** | Eq. H1-1b |
| | | D5 at 100.00% | 0.42 | With warnings | Eq. H1-1b |
| | | D6 at 100.00% | 0.55 | With warnings | Eq. H1-1b |
| | | D7 at 100.00% | 0.09 | With warnings | Eq. H1-1b |
| | | D8 at 100.00% | 0.09 | With warnings | Eq. H1-1b |
| | | D9 at 29.17% | 0.12 | With warnings | Eq. H1-1b |
| | | LC1 at 29.17% | 0.09 | With warnings | Eq. H1-1b |
| | | LC2 at 29.17% | 0.12 | With warnings | Eq. H1-1b |
| | | LC3 at 100.00% | 0.39 | With warnings | Eq. H1-1b |

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|---|---|---|---|---|
| | LC4 at 100.00% | 0.55 | With warnings | Eq. H1-1b |
| | LC5 at 100.00% | 0.55 | With warnings | Eq. H1-1b |
| | LC6 at 100.00% | 0.38 | With warnings | Eq. H1-1b |
| **2** | D1 at 100.00% | 0.09 | With warnings | Sec. E1 |
| | D10 at 100.00% | 0.36 | With warnings | Eq. H1-1b |
| | D11 at 100.00% | 0.35 | With warnings | Eq. H1-1b |
| | D2 at 29.17% | 0.11 | With warnings | Eq. H1-1b |
| | D3 at 29.17% | 0.11 | With warnings | Eq. H1-1b |
| | D4 at 100.00% | **0.48** | **With warnings** | Eq. H1-1b |
| | D5 at 100.00% | 0.36 | With warnings | Eq. H1-1b |
| | D6 at 100.00% | 0.48 | With warnings | Eq. H1-1b |
| | D7 at 100.00% | 0.09 | With warnings | Eq. H1-1b |
| | D8 at 100.00% | 0.09 | With warnings | Sec. E1 |
| | D9 at 29.17% | 0.11 | With warnings | Eq. H1-1b |
| | LC1 at 100.00% | 0.09 | With warnings | Sec. E1 |
| | LC2 at 29.17% | 0.10 | With warnings | Eq. H1-1b |
| | LC3 at 100.00% | 0.33 | With warnings | Eq. H1-1b |
| | LC4 at 100.00% | 0.48 | With warnings | Eq. H1-1b |
| | LC5 at 100.00% | 0.48 | With warnings | Eq. H1-1b |
| | LC6 at 100.00% | 0.33 | With warnings | Eq. H1-1b |
| **5** | D1 at 29.17% | 0.04 | With warnings | Eq. H1-1b |
| | D10 at 27.08% | 0.08 | With warnings | Eq. H1-1b |
| | D11 at 27.08% | 0.07 | With warnings | Eq. H1-1b |
| | D2 at 29.17% | 0.07 | With warnings | Eq. H1-1b |
| | D3 at 29.17% | 0.06 | With warnings | Eq. H1-1b |
| | D4 at 27.08% | 0.10 | With warnings | Eq. H1-1b |
| | D5 at 27.08% | 0.08 | With warnings | Eq. H1-1b |
| | D6 at 27.08% | **0.11** | **With warnings** | Eq. H1-1b |
| | D7 at 29.17% | 0.04 | With warnings | Eq. H1-1b |
| | D8 at 29.17% | 0.04 | With warnings | Eq. H1-1b |
| | D9 at 29.17% | 0.06 | With warnings | Eq. H1-1b |
| | LC1 at 29.17% | 0.04 | With warnings | Eq. H1-1b |
| | LC2 at 29.17% | 0.06 | With warnings | Eq. H1-1b |
| | LC3 at 27.08% | 0.07 | With warnings | Eq. H1-1b |
| | LC4 at 27.08% | 0.10 | With warnings | Eq. H1-1b |
| | LC5 at 27.08% | 0.11 | With warnings | Eq. H1-1b |
| | LC6 at 27.08% | 0.07 | With warnings | Eq. H1-1b |
| **35** | D1 at 0.00% | 0.13 | OK | Eq. H1-1b |
| | D10 at 100.00% | 0.55 | OK | Eq. H1-1b |
| | D11 at 100.00% | 0.58 | OK | Eq. H1-1b |
| | D2 at 0.00% | 0.20 | OK | Eq. H1-1b |
| | D3 at 0.00% | 0.18 | OK | Eq. H1-1b |
| | D4 at 100.00% | **0.69** | **OK** | Eq. H1-1b |
| | D5 at 100.00% | 0.57 | OK | Eq. H1-1b |
| | D6 at 100.00% | 0.65 | OK | Eq. H1-1b |
| | D7 at 0.00% | 0.14 | OK | Eq. H1-1b |
| | D8 at 0.00% | 0.14 | OK | Eq. H1-1b |
| | D9 at 0.00% | 0.18 | OK | Eq. H1-1b |
| | LC1 at 0.00% | 0.13 | OK | Eq. H1-1b |
| | LC2 at 0.00% | 0.18 | OK | Eq. H1-1b |
| | LC3 at 100.00% | 0.54 | OK | Eq. H1-1b |
| | LC4 at 100.00% | 0.69 | OK | Eq. H1-1b |
| | LC5 at 100.00% | 0.65 | OK | Eq. H1-1b |
| | LC6 at 100.00% | 0.50 | OK | Eq. H1-1b |
| **36** | D1 at 0.00% | 0.13 | OK | Eq. H1-1b |
| | D10 at 100.00% | 0.52 | OK | Eq. H1-1b |
| | D11 at 100.00% | 0.54 | OK | Eq. H1-1b |
| | D2 at 0.00% | 0.20 | OK | Eq. H1-1b |
| | D3 at 0.00% | 0.18 | OK | Eq. H1-1b |

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| | | D4 at 100.00% | **0.67** | **OK** | Eq. H1-1b |
| | | D5 at 100.00% | 0.54 | OK | Eq. H1-1b |
| | | D6 at 100.00% | 0.65 | OK | Eq. H1-1b |
| | | D7 at 0.00% | 0.13 | OK | Eq. H1-1b |
| | | D8 at 0.00% | 0.13 | OK | Eq. H1-1b |
| | | D9 at 0.00% | 0.18 | OK | Eq. H1-1b |
| | | LC1 at 0.00% | 0.13 | OK | Eq. H1-1b |
| | | LC2 at 0.00% | 0.18 | OK | Eq. H1-1b |
| | | LC3 at 100.00% | 0.50 | OK | Eq. H1-1b |
| | | LC4 at 100.00% | 0.67 | OK | Eq. H1-1b |
| | | LC5 at 100.00% | 0.65 | OK | Eq. H1-1b |
| | | LC6 at 100.00% | 0.48 | OK | Eq. H1-1b |
| ***W 12X26*** | **13** | D1 at 42.19% | 0.02 | OK | Eq. H1-1b |
| | | D10 at 75.00% | 0.03 | OK | Eq. H1-1b |
| | | D11 at 75.00% | 0.03 | OK | Eq. H1-1b |
| | | D2 at 43.75% | 0.02 | OK | Eq. H1-1b |
| | | D3 at 43.75% | 0.02 | OK | Eq. H1-1b |
| | | D4 at 75.00% | 0.05 | OK | Eq. H1-1b |
| | | D5 at 75.00% | 0.04 | OK | Eq. H1-1b |
| | | D6 at 75.00% | **0.06** | **OK** | Eq. H1-1b |
| | | D7 at 48.44% | 0.03 | OK | Eq. H1-1b |
| | | D8 at 46.88% | 0.03 | OK | Eq. H1-1b |
| | | D9 at 48.44% | 0.03 | OK | Eq. H1-1b |
| | | LC1 at 42.19% | 0.02 | OK | Eq. H1-1b |
| | | LC2 at 43.75% | 0.02 | OK | Eq. H1-1b |
| | | LC3 at 75.00% | 0.03 | OK | Eq. H1-1b |
| | | LC4 at 75.00% | 0.05 | OK | Eq. H1-1b |
| | | LC5 at 75.00% | 0.06 | OK | Eq. H1-1b |
| | | LC6 at 75.00% | 0.04 | OK | Eq. H1-1b |
| | **18** | D1 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | | D10 at 100.00% | 0.05 | OK | Eq. H1-1b |
| | | D11 at 100.00% | 0.05 | OK | Eq. H1-1b |
| | | D2 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | | D3 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | | D4 at 100.00% | **0.06** | **OK** | Eq. H1-1b |
| | | D5 at 100.00% | 0.05 | OK | Eq. H1-1b |
| | | D6 at 100.00% | 0.06 | OK | Eq. H1-1b |
| | | D7 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | | D8 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | | D9 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | | LC1 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | | LC2 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | | LC3 at 100.00% | 0.04 | OK | Eq. H1-1b |
| | | LC4 at 100.00% | 0.06 | OK | Eq. H1-1b |
| | | LC5 at 100.00% | 0.06 | OK | Eq. H1-1b |
| | | LC6 at 100.00% | 0.05 | OK | Eq. H1-1b |
| | **23** | D1 at 50.00% | 0.01 | OK | Eq. H1-1b |
| | | D10 at 100.00% | 0.03 | OK | Eq. H1-1b |
| | | D11 at 100.00% | 0.03 | OK | Eq. H1-1b |
| | | D2 at 50.00% | 0.01 | OK | Eq. H1-1b |
| | | D3 at 50.00% | 0.01 | OK | Eq. H1-1b |
| | | D4 at 100.00% | 0.04 | OK | Eq. H1-1b |
| | | D5 at 100.00% | 0.03 | OK | Eq. H1-1b |
| | | D6 at 100.00% | **0.04** | **OK** | Eq. H1-1b |
| | | D7 at 50.00% | 0.01 | OK | Eq. H1-1b |
| | | D8 at 50.00% | 0.01 | OK | Eq. H1-1b |
| | | D9 at 50.00% | 0.01 | OK | Eq. H1-1b |
| | | LC1 at 50.00% | 0.01 | OK | Eq. H1-1b |
| | | LC2 at 50.00% | 0.01 | OK | Eq. H1-1b |
| | | LC3 at 100.00% | 0.03 | OK | Eq. H1-1b |

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| | | LC4 at 100.00% | 0.04 | OK | Eq. H1-1b |
| | | LC5 at 100.00% | 0.04 | OK | Eq. H1-1b |
| | | LC6 at 100.00% | 0.03 | OK | Eq. H1-1b |
| | **29** | D1 at 50.00% | 0.01 | OK | Eq. H1-1b |
| | | D10 at 50.00% | 0.01 | OK | Eq. H1-1b |
| | | D11 at 50.00% | 0.01 | OK | Eq. H1-1b |
| | | D2 at 50.00% | 0.01 | OK | Eq. H1-1b |
| | | D3 at 50.00% | 0.01 | OK | Eq. H1-1b |
| | | D4 at 50.00% | **0.01** | **OK** | Eq. H1-1b |
| | | D5 at 50.00% | 0.01 | OK | Eq. H1-1b |
| | | D6 at 50.00% | 0.01 | OK | Eq. H1-1b |
| | | D7 at 50.00% | 0.01 | OK | Eq. H1-1b |
| | | D8 at 50.00% | 0.01 | OK | Eq. H1-1b |
| | | D9 at 50.00% | 0.01 | OK | Eq. H1-1b |
| | | LC1 at 50.00% | 0.01 | OK | Eq. H1-1b |
| | | LC2 at 50.00% | 0.01 | OK | Eq. H1-1b |
| | | LC3 at 50.00% | 0.01 | OK | Eq. H1-1b |
| | | LC4 at 50.00% | 0.01 | OK | Eq. H1-1b |
| | | LC5 at 50.00% | 0.01 | OK | Eq. H1-1b |
| | | LC6 at 50.00% | 0.01 | OK | Eq. H1-1b |
| ***W 18X35*** | **6** | D1 at 46.88% | 0.03 | OK | Eq. H1-1b |
| | | D10 at 46.88% | 0.03 | OK | Eq. H1-1b |
| | | D11 at 50.00% | 0.04 | OK | Eq. H1-1b |
| | | D2 at 46.88% | **0.04** | **OK** | Eq. H1-1b |
| | | D3 at 46.88% | 0.04 | OK | Eq. H1-1b |
| | | D4 at 46.88% | 0.03 | OK | Eq. H1-1b |
| | | D5 at 50.00% | 0.04 | OK | Eq. H1-1b |
| | | D6 at 46.88% | 0.02 | OK | Eq. H1-2 |
| | | D7 at 46.88% | 0.03 | OK | Eq. H1-1b |
| | | D8 at 46.88% | 0.03 | OK | Eq. H1-1b |
| | | D9 at 46.88% | 0.04 | OK | Eq. H1-1b |
| | | LC1 at 46.88% | 0.03 | OK | Eq. H1-1b |
| | | LC2 at 46.88% | 0.04 | OK | Eq. H1-1b |
| | | LC3 at 50.00% | 0.04 | OK | Eq. H1-1b |
| | | LC4 at 46.88% | 0.03 | OK | Eq. H1-1b |
| | | LC5 at 46.88% | 0.02 | OK | Eq. H1-2 |
| | | LC6 at 50.00% | 0.02 | OK | Eq. H1-1b |
| ***W 21X44*** | **11** | D1 at 50.00% | 0.09 | With warnings | Eq. H1-1b |
| | | D10 at 87.89% | 0.11 | With warnings | Eq. H1-1b |
| | | D11 at 87.89% | 0.11 | With warnings | Eq. H1-1b |
| | | D2 at 50.00% | 0.09 | With warnings | Eq. H1-1b |
| | | D3 at 50.00% | 0.09 | With warnings | Eq. H1-1b |
| | | D4 at 87.89% | **0.14** | **With warnings** | Eq. H1-1b |
| | | D5 at 87.89% | 0.11 | With warnings | Eq. H1-1b |
| | | D6 at 87.89% | 0.13 | With warnings | Eq. H1-1b |
| | | D7 at 50.00% | 0.09 | With warnings | Eq. H1-1b |
| | | D8 at 50.00% | 0.09 | With warnings | Eq. H1-1b |
| | | D9 at 50.00% | 0.09 | With warnings | Eq. H1-1b |
| | | LC1 at 50.00% | 0.09 | With warnings | Eq. H1-1b |
| | | LC2 at 50.00% | 0.09 | With warnings | Eq. H1-1b |
| | | LC3 at 87.89% | 0.10 | With warnings | Eq. H1-1b |
| | | LC4 at 87.89% | 0.14 | With warnings | Eq. H1-1b |
| | | LC5 at 87.89% | 0.13 | With warnings | Eq. H1-1b |
| | | LC6 at 87.89% | 0.10 | With warnings | Eq. H1-1b |
| | **12** | D1 at 50.00% | 0.09 | With warnings | Eq. H1-1b |
| | | D10 at 50.00% | 0.16 | With warnings | Eq. H1-1b |
| | | D11 at 50.00% | 0.16 | With warnings | Eq. H1-1b |
| | | D2 at 50.00% | 0.08 | With warnings | Eq. H1-1b |
| | | D3 at 50.00% | 0.08 | With warnings | Eq. H1-1b |

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| | | D4 at 50.00% | **0.18** | **With warnings** | Eq. H1-1b |
| | | D5 at 50.00% | 0.15 | With warnings | Eq. H1-1b |
| | | D6 at 50.00% | 0.14 | With warnings | Eq. H1-1b |
| | | D7 at 50.00% | 0.09 | With warnings | Eq. H1-1b |
| | | D8 at 50.00% | 0.09 | With warnings | Eq. H1-1b |
| | | D9 at 50.00% | 0.09 | With warnings | Eq. H1-1b |
| | | LC1 at 50.00% | 0.09 | With warnings | Eq. H1-1b |
| | | LC2 at 50.00% | 0.08 | With warnings | Eq. H1-1b |
| | | LC3 at 50.00% | 0.15 | With warnings | Eq. H1-1b |
| | | LC4 at 50.00% | 0.18 | With warnings | Eq. H1-1b |
| | | LC5 at 50.00% | 0.14 | With warnings | Eq. H1-1b |
| | | LC6 at 50.00% | 0.11 | With warnings | Eq. H1-1b |
| ***W 21X62*** | **9** | D1 at 0.00% | 0.27 | With warnings | Eq. H1-1b |
| | | D10 at 100.00% | 0.34 | With warnings | Eq. H1-1b |
| | | D11 at 100.00% | **0.41** | **With warnings** | Eq. H1-1b |
| | | D2 at 0.00% | 0.36 | With warnings | Eq. H1-1b |
| | | D3 at 0.00% | 0.34 | With warnings | Eq. H1-1b |
| | | D4 at 100.00% | 0.28 | With warnings | Eq. H1-1b |
| | | D5 at 100.00% | 0.35 | With warnings | Eq. H1-1b |
| | | D6 at 100.00% | 0.18 | With warnings | Eq. H1-1b |
| | | D7 at 100.00% | 0.35 | With warnings | Eq. H1-1b |
| | | D8 at 100.00% | 0.33 | With warnings | Eq. H1-1b |
| | | D9 at 100.00% | 0.40 | With warnings | Eq. H1-1b |
| | | LC1 at 0.00% | 0.27 | With warnings | Eq. H1-1b |
| | | LC2 at 0.00% | 0.33 | With warnings | Eq. H1-1b |
| | | LC3 at 100.00% | 0.34 | With warnings | Eq. H1-1b |
| | | LC4 at 100.00% | 0.28 | With warnings | Eq. H1-1b |
| | | LC5 at 100.00% | 0.18 | With warnings | Eq. H1-1b |
| | | LC6 at 100.00% | 0.24 | With warnings | Eq. H1-1b |
| | **10** | D1 at 0.00% | 0.26 | With warnings | Eq. H1-1b |
| | | D10 at 100.00% | 0.33 | With warnings | Eq. H1-1b |
| | | D11 at 100.00% | **0.40** | **With warnings** | Eq. H1-1b |
| | | D2 at 0.00% | 0.35 | With warnings | Eq. H1-1b |
| | | D3 at 0.00% | 0.33 | With warnings | Eq. H1-1b |
| | | D4 at 100.00% | 0.28 | With warnings | Eq. H1-1b |
| | | D5 at 100.00% | 0.34 | With warnings | Eq. H1-1b |
| | | D6 at 100.00% | 0.18 | With warnings | Eq. H1-1b |
| | | D7 at 0.00% | 0.34 | With warnings | Eq. H1-1b |
| | | D8 at 0.00% | 0.32 | With warnings | Eq. H1-1b |
| | | D9 at 0.00% | 0.39 | With warnings | Eq. H1-1b |
| | | LC1 at 0.00% | 0.26 | With warnings | Eq. H1-1b |
| | | LC2 at 0.00% | 0.33 | With warnings | Eq. H1-1b |
| | | LC3 at 100.00% | 0.34 | With warnings | Eq. H1-1b |
| | | LC4 at 100.00% | 0.28 | With warnings | Eq. H1-1b |
| | | LC5 at 100.00% | 0.18 | With warnings | Eq. H1-1b |
| | | LC6 at 100.00% | 0.23 | With warnings | Eq. H1-1b |
| ***W 8X18*** | **14** | D1 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | | D10 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | | D11 at 50.00% | **0.02** | **OK** | Eq. H1-1b |
| | | D2 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | | D3 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | | D4 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | | D5 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | | D6 at 50.00% | 0.01 | OK | Eq. H1-1b |
| | | D7 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | | D8 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | | D9 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | | LC1 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | | LC2 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | | LC3 at 50.00% | 0.02 | OK | Eq. H1-1b |

| | | | | |
|---|---|---|---|---|
| | LC4 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | LC5 at 50.00% | 0.01 | OK | Eq. H1-1b |
| | LC6 at 50.00% | 0.01 | OK | Eq. H1-1b |
| **16** | D1 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D10 at 6.25% | 0.04 | OK | Eq. H1-1b |
| | D11 at 12.50% | 0.04 | OK | Eq. H1-1b |
| | D2 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D3 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D4 at 0.00% | 0.05 | OK | Eq. H1-1b |
| | D5 at 6.25% | 0.04 | OK | Eq. H1-1b |
| | D6 at 0.00% | **0.05** | **OK** | Eq. H1-1b |
| | D7 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D8 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D9 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | LC1 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | LC2 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | LC3 at 12.50% | 0.04 | OK | Eq. H1-1b |
| | LC4 at 0.00% | 0.05 | OK | Eq. H1-1b |
| | LC5 at 0.00% | 0.05 | OK | Eq. H1-1b |
| | LC6 at 0.00% | 0.04 | OK | Eq. H1-1b |
| **17** | D1 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D10 at 100.00% | 0.05 | OK | Eq. H1-1b |
| | D11 at 100.00% | 0.05 | OK | Eq. H1-1b |
| | D2 at 50.00% | 0.03 | OK | Eq. H1-1b |
| | D3 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D4 at 100.00% | **0.06** | **OK** | Eq. H1-1b |
| | D5 at 100.00% | 0.05 | OK | Eq. H1-1b |
| | D6 at 100.00% | 0.06 | OK | Eq. H1-1b |
| | D7 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D8 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D9 at 50.00% | 0.03 | OK | Eq. H1-1b |
| | LC1 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | LC2 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | LC3 at 93.75% | 0.04 | OK | Eq. H1-1b |
| | LC4 at 100.00% | 0.06 | OK | Eq. H1-1b |
| | LC5 at 100.00% | 0.06 | OK | Eq. H1-1b |
| | LC6 at 100.00% | 0.04 | OK | Eq. H1-1b |
| **19** | D1 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D10 at 81.25% | 0.03 | OK | Eq. H1-1b |
| | D11 at 81.25% | 0.03 | OK | Eq. H1-1b |
| | D2 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D3 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D4 at 100.00% | 0.04 | OK | Eq. H1-1b |
| | D5 at 81.25% | 0.03 | OK | Eq. H1-1b |
| | D6 at 100.00% | **0.04** | **OK** | Eq. H1-1b |
| | D7 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D8 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D9 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | LC1 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | LC2 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | LC3 at 81.25% | 0.03 | OK | Eq. H1-1b |
| | LC4 at 100.00% | 0.04 | OK | Eq. H1-1b |
| | LC5 at 100.00% | 0.04 | OK | Eq. H1-1b |
| | LC6 at 100.00% | 0.03 | OK | Eq. H1-1b |
| **20** | D1 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D10 at 68.75% | 0.03 | OK | Eq. H1-1b |
| | D11 at 68.75% | 0.03 | OK | Eq. H1-1b |
| | D2 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D3 at 50.00% | 0.02 | OK | Eq. H1-1b |

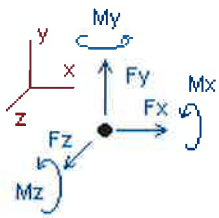
| | | | | |
|---|---|---|---|---|
| | D4 at 75.00% | **0.03** | **OK** | Eq. H1-1b |
| | D5 at 68.75% | 0.03 | OK | Eq. H1-1b |
| | D6 at 93.75% | 0.02 | OK | Eq. H1-1b |
| | D7 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D8 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D9 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | LC1 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | LC2 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | LC3 at 68.75% | 0.03 | OK | Eq. H1-1b |
| | LC4 at 75.00% | 0.03 | OK | Eq. H1-1b |
| | LC5 at 93.75% | 0.02 | OK | Eq. H1-1b |
| | LC6 at 81.25% | 0.02 | OK | Eq. H1-1b |
| **21** | D1 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D10 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D11 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D2 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D3 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D4 at 50.00% | **0.02** | **OK** | Eq. H1-1b |
| | D5 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D6 at 50.00% | 0.01 | OK | Eq. H1-1b |
| | D7 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D8 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D9 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | LC1 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | LC2 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | LC3 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | LC4 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | LC5 at 50.00% | 0.01 | OK | Eq. H1-1b |
| | LC6 at 50.00% | 0.01 | OK | Eq. H1-1b |
| **22** | D1 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D10 at 37.50% | 0.02 | OK | Eq. H1-1b |
| | D11 at 37.50% | 0.02 | OK | Eq. H1-1b |
| | D2 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D3 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D4 at 31.25% | **0.03** | **OK** | Eq. H1-1b |
| | D5 at 37.50% | 0.02 | OK | Eq. H1-1b |
| | D6 at 18.75% | 0.02 | OK | Eq. H1-1b |
| | D7 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D8 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D9 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | LC1 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | LC2 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | LC3 at 37.50% | 0.02 | OK | Eq. H1-1b |
| | LC4 at 31.25% | 0.03 | OK | Eq. H1-1b |
| | LC5 at 18.75% | 0.02 | OK | Eq. H1-1b |
| | LC6 at 31.25% | 0.02 | OK | Eq. H1-1b |
| **24** | D1 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D10 at 100.00% | 0.04 | OK | Eq. H1-1b |
| | D11 at 100.00% | 0.04 | OK | Eq. H1-1b |
| | D2 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D3 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D4 at 100.00% | **0.06** | **OK** | Eq. H1-1b |
| | D5 at 100.00% | 0.04 | OK | Eq. H1-1b |
| | D6 at 100.00% | 0.06 | OK | Eq. H1-1b |
| | D7 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D8 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D9 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | LC1 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | LC2 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | LC3 at 93.75% | 0.04 | OK | Eq. H1-1b |

| | | | | |
|---|---|---|---|---|
| | LC4 at 100.00% | 0.06 | OK | Eq. H1-1b |
| | LC5 at 100.00% | 0.06 | OK | Eq. H1-1b |
| | LC6 at 100.00% | 0.04 | OK | Eq. H1-1b |
| **25** | D1 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D10 at 0.00% | 0.05 | OK | Eq. H1-1b |
| | D11 at 0.00% | 0.05 | OK | Eq. H1-1b |
| | D2 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D3 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D4 at 0.00% | 0.06 | OK | Eq. H1-1b |
| | D5 at 0.00% | 0.05 | OK | Eq. H1-1b |
| | D6 at 0.00% | **0.06** | **OK** | Eq. H1-1b |
| | D7 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D8 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D9 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | LC1 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | LC2 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | LC3 at 0.00% | 0.04 | OK | Eq. H1-1b |
| | LC4 at 0.00% | 0.06 | OK | Eq. H1-1b |
| | LC5 at 0.00% | 0.06 | OK | Eq. H1-1b |
| | LC6 at 0.00% | 0.05 | OK | Eq. H1-1b |
| **26** | D1 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D10 at 6.25% | 0.04 | OK | Eq. H1-1b |
| | D11 at 6.25% | 0.04 | OK | Eq. H1-1b |
| | D2 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D3 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D4 at 0.00% | **0.06** | **OK** | Eq. H1-1b |
| | D5 at 6.25% | 0.04 | OK | Eq. H1-1b |
| | D6 at 0.00% | 0.05 | OK | Eq. H1-1b |
| | D7 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D8 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D9 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | LC1 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | LC2 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | LC3 at 6.25% | 0.04 | OK | Eq. H1-1b |
| | LC4 at 0.00% | 0.06 | OK | Eq. H1-1b |
| | LC5 at 0.00% | 0.05 | OK | Eq. H1-1b |
| | LC6 at 0.00% | 0.04 | OK | Eq. H1-1b |
| **28** | D1 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D10 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D11 at 50.00% | **0.02** | **OK** | Eq. H1-1b |
| | D2 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D3 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D4 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D5 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D6 at 50.00% | 0.01 | OK | Eq. H1-1b |
| | D7 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D8 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | D9 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | LC1 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | LC2 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | LC3 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | LC4 at 50.00% | 0.02 | OK | Eq. H1-1b |
| | LC5 at 50.00% | 0.01 | OK | Eq. H1-1b |
| | LC6 at 50.00% | 0.01 | OK | Eq. H1-1b |

**Current Date:** 5/27/2016 11:57 AM
**Units system:** English
**File name:** W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\CT1195.etz\

# Analysis result

## Reactions




*Direction of positive forces and moments*

| Node | Forces [Kip] FX | FY | FZ | Moments [Kip*ft] MX | MY | MZ |
|---|---|---|---|---|---|---|
| Condition **LC1=DL** | | | | | | |
| 13 | 0.00376 | 9.87891 | -0.01213 | 61.58935 | -0.00847 | 0.00246 |
| 14 | -0.00021 | 9.78473 | -0.01159 | 60.85384 | 0.00020 | -0.00257 |
| 17 | -0.00307 | 10.15085 | 0.00741 | -61.46159 | -0.00290 | -0.04947 |
| 18 | -0.00048 | 9.26039 | 0.01630 | -58.99347 | -0.00116 | 0.00366 |
| SUM | 0.00000 | 39.07489 | 0.00000 | 1.98813 | -0.01234 | -0.04593 |
| Condition **LC2=DL+0.7SL** | | | | | | |
| 13 | 0.00511 | 12.14399 | -0.01621 | 76.74642 | -0.01153 | 0.00267 |
| 14 | -0.00030 | 12.02639 | -0.01543 | 75.91872 | 0.00026 | -0.00279 |
| 17 | -0.00438 | 12.34499 | 0.00980 | -76.30503 | -0.00406 | -0.06933 |
| 18 | -0.00043 | 11.45060 | 0.02184 | -73.87092 | -0.00071 | 0.00593 |
| SUM | 0.00000 | 47.96598 | 0.00000 | 2.48918 | -0.01603 | -0.06353 |
| Condition **LC3=DL+0.7WL+0.7SL** | | | | | | |
| 13 | -0.04508 | 11.46972 | 1.21923 | 74.76374 | 0.12148 | 0.00250 |
| 14 | 0.05153 | 11.40311 | 1.16491 | 73.87153 | -0.10163 | -0.00271 |
| 17 | 0.15253 | 13.01854 | 1.10435 | -79.08619 | 0.18695 | -0.09098 |
| 18 | -0.15898 | 12.07461 | 1.04193 | -75.95431 | -0.42663 | 0.01316 |
| SUM | 0.00000 | 47.96598 | 4.53041 | -6.40522 | -0.21983 | -0.07802 |
| Condition **LC4=DL+WL** | | | | | | |
| 13 | -0.06794 | 8.91567 | 1.75279 | 58.75695 | 0.18153 | 0.00223 |
| 14 | 0.07383 | 8.89432 | 1.67460 | 57.92928 | -0.14535 | -0.00245 |
| 17 | 0.22108 | 11.11306 | 1.57105 | -65.43466 | 0.26997 | -0.08040 |
| 18 | -0.22697 | 10.15183 | 1.47357 | -61.96973 | -0.60963 | 0.01399 |
| SUM | 0.00000 | 39.07489 | 6.47201 | -10.71816 | -0.30348 | -0.06663 |

Condition **LC5=0.6DL+WL**

| | | | | | | |
|---|---|---|---|---|---|---|
| 13 | -0.06944 | 4.96411 | 1.75764 | 34.12121 | 0.18492 | 0.00124 |
| 14 | 0.07392 | 4.98043 | 1.67924 | 33.58775 | -0.14543 | -0.00142 |
| 17 | 0.22231 | 7.05272 | 1.56809 | -40.85003 | 0.27113 | -0.06061 |
| 18 | -0.22678 | 6.44767 | 1.46705 | -38.37235 | -0.60916 | 0.01253 |
| SUM | 0.00000 | 23.44493 | 6.47201 | -11.51342 | -0.29854 | -0.04826 |

Condition **LC6=0.6DL+0.7WL+0.7SL**

| | | | | | | |
|---|---|---|---|---|---|---|
| 13 | -0.04658 | 7.51816 | 1.22408 | 50.12800 | 0.12486 | 0.00152 |
| 14 | 0.05161 | 7.48922 | 1.16954 | 49.52999 | -0.10171 | -0.00168 |
| 17 | 0.15376 | 8.95820 | 1.10138 | -54.50155 | 0.18811 | -0.07119 |
| 18 | -0.15878 | 8.37045 | 1.03541 | -52.35692 | -0.42617 | 0.01170 |
| SUM | 0.00000 | 32.33603 | 4.53041 | -7.20048 | -0.21489 | -0.05965 |

Condition **D1=DL**

| | | | | | | |
|---|---|---|---|---|---|---|
| 13 | 0.00376 | 9.87891 | -0.01213 | 61.58935 | -0.00847 | 0.00246 |
| 14 | -0.00021 | 9.78473 | -0.01159 | 60.85384 | 0.00020 | -0.00257 |
| 17 | -0.00307 | 10.15085 | 0.00741 | -61.46159 | -0.00290 | -0.04947 |
| 18 | -0.00048 | 9.26039 | 0.01630 | -58.99347 | -0.00116 | 0.00366 |
| SUM | 0.00000 | 39.07489 | 0.00000 | 1.98813 | -0.01234 | -0.04593 |

Condition **D2=DL+SL**

| | | | | | | |
|---|---|---|---|---|---|---|
| 13 | 0.00569 | 13.11474 | -0.01796 | 83.24231 | -0.01284 | 0.00275 |
| 14 | -0.00034 | 12.98711 | -0.01707 | 82.37509 | 0.00029 | -0.00289 |
| 17 | -0.00494 | 13.28534 | 0.01082 | -82.66651 | -0.00456 | -0.07784 |
| 18 | -0.00041 | 12.38926 | 0.02422 | -80.24697 | -0.00051 | 0.00690 |
| SUM | 0.00000 | 51.77645 | 0.00000 | 2.70392 | -0.01762 | -0.07108 |

Condition **D3=DL+0.75SL**

| | | | | | | |
|---|---|---|---|---|---|---|
| 13 | 0.00521 | 12.30578 | -0.01651 | 77.82907 | -0.01175 | 0.00268 |
| 14 | -0.00031 | 12.18651 | -0.01570 | 76.99478 | 0.00027 | -0.00281 |
| 17 | -0.00447 | 12.50172 | 0.00997 | -77.36528 | -0.00414 | -0.07075 |
| 18 | -0.00043 | 11.60705 | 0.02224 | -74.93360 | -0.00067 | 0.00609 |
| SUM | 0.00000 | 48.60106 | 0.00000 | 2.52497 | -0.01630 | -0.06479 |

Condition **D4=DL+WL**

| | | | | | | |
|---|---|---|---|---|---|---|
| 13 | -0.06794 | 8.91567 | 1.75279 | 58.75695 | 0.18153 | 0.00223 |
| 14 | 0.07383 | 8.89432 | 1.67460 | 57.92928 | -0.14535 | -0.00245 |
| 17 | 0.22108 | 11.11306 | 1.57105 | -65.43466 | 0.26997 | -0.08040 |
| 18 | -0.22697 | 10.15183 | 1.47357 | -61.96973 | -0.60963 | 0.01399 |
| SUM | 0.00000 | 39.07489 | 6.47201 | -10.71816 | -0.30348 | -0.06663 |

Condition **D5=DL+0.75WL+0.75SL**

| | | | | | | |
|---|---|---|---|---|---|---|
| 13 | -0.04857 | 11.58335 | 1.30718 | 75.70477 | 0.13076 | 0.00251 |
| 14 | 0.05522 | 11.51871 | 1.24894 | 74.80136 | -0.10890 | -0.00271 |
| 17 | 0.16364 | 13.22337 | 1.18270 | -80.34509 | 0.20051 | -0.09395 |
| 18 | -0.17030 | 12.27563 | 1.11519 | -77.16580 | -0.45702 | 0.01384 |
| SUM | 0.00000 | 48.60106 | 4.85401 | -7.00475 | -0.23465 | -0.08032 |

Condition **D6=0.6DL+WL**

| | | | | | | |
|---|---|---|---|---|---|---|
| 13 | -0.06944 | 4.96411 | 1.75764 | 34.12121 | 0.18492 | 0.00124 |
| 14 | 0.07392 | 4.98043 | 1.67924 | 33.58775 | -0.14543 | -0.00142 |
| 17 | 0.22231 | 7.05272 | 1.56809 | -40.85003 | 0.27113 | -0.06061 |
| 18 | -0.22678 | 6.44767 | 1.46705 | -38.37235 | -0.60916 | 0.01253 |
| SUM | 0.00000 | 23.44493 | 6.47201 | -11.51342 | -0.29854 | -0.04826 |

Condition **D7=DL+LL**

| | | | | | | |
|---|---|---|---|---|---|---|
| 13 | 0.00389 | 12.53044 | -0.01265 | 79.75138 | -0.00875 | 0.00241 |
| 14 | -0.00008 | 12.34253 | -0.01240 | 78.32940 | -0.00009 | -0.00262 |
| 17 | -0.00302 | 13.57059 | 0.00764 | -81.30620 | -0.00300 | -0.06016 |
| 18 | -0.00079 | 11.84583 | 0.01740 | -76.57762 | -0.00233 | 0.00345 |
| SUM | 0.00000 | 50.28939 | 0.00000 | 0.19696 | -0.01417 | -0.05692 |

Condition **D8=DL+0.75LL**

| | | | | | | |
|---|---|---|---|---|---|---|
| 13 | 0.00386 | 11.86756 | -0.01252 | 75.21088 | -0.00868 | 0.00242 |
| 14 | -0.00011 | 11.70308 | -0.01220 | 73.96051 | -0.00002 | -0.00261 |
| 17 | -0.00303 | 12.71565 | 0.00759 | -76.34505 | -0.00298 | -0.05748 |
| 18 | -0.00071 | 11.19947 | 0.01713 | -72.18159 | -0.00204 | 0.00350 |
| SUM | 0.00000 | 47.48576 | 0.00000 | 0.64476 | -0.01371 | -0.05417 |

Condition **D9=DL+0.75LL+0.75SL**

| | | | | | | |
|---|---|---|---|---|---|---|
| 13 | 0.00530 | 14.29442 | -0.01690 | 91.45059 | -0.01196 | 0.00264 |
| 14 | -0.00021 | 14.10486 | -0.01631 | 90.10145 | 0.00005 | -0.00285 |
| 17 | -0.00443 | 15.06652 | 0.01014 | -92.24874 | -0.00422 | -0.07876 |
| 18 | -0.00066 | 13.54613 | 0.02306 | -88.12171 | -0.00155 | 0.00594 |
| SUM | 0.00000 | 57.01194 | 0.00000 | 1.18160 | -0.01767 | -0.07303 |

Condition **D10=DL+0.75WL+0.75LL**

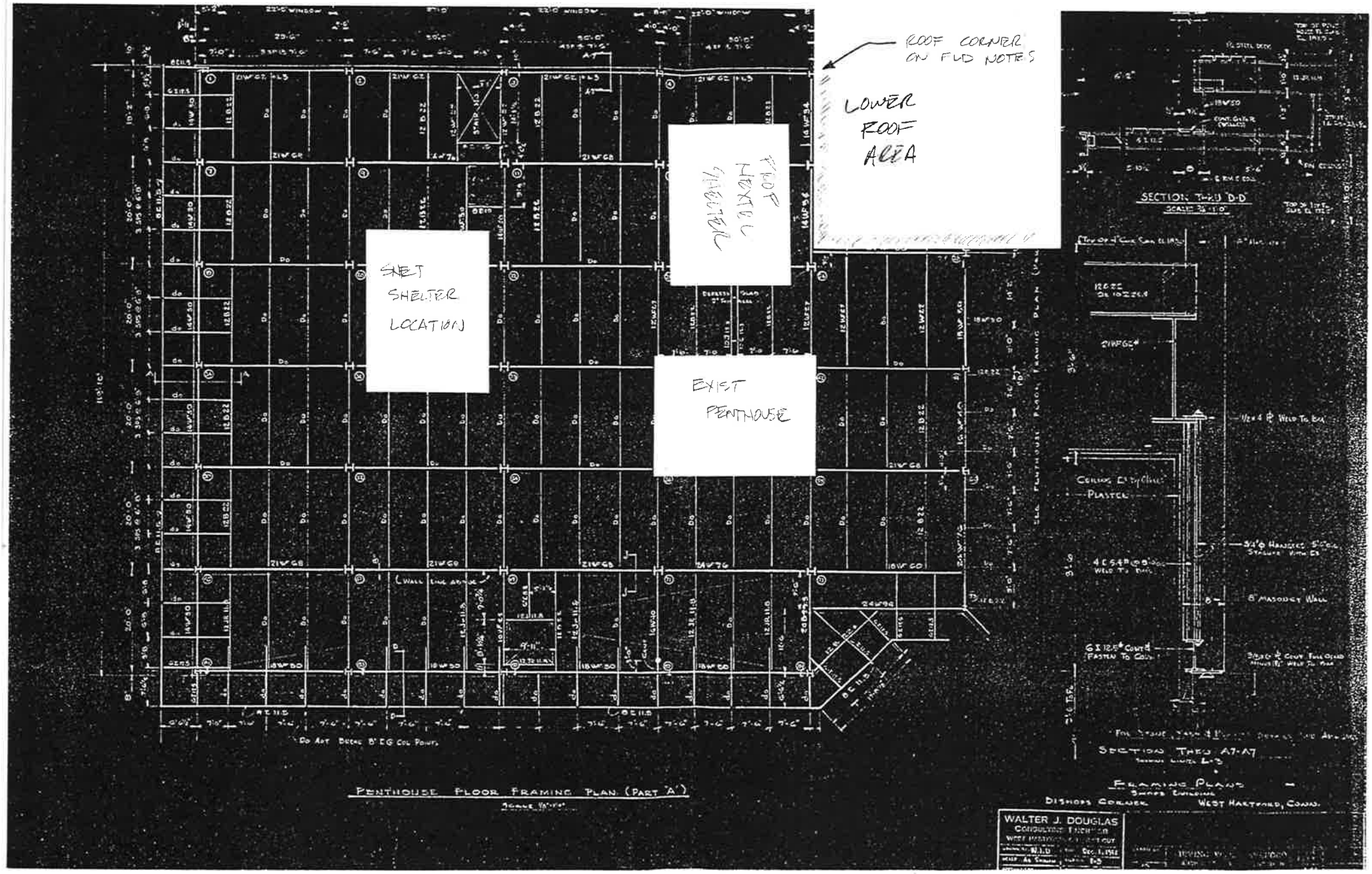
| | | | | | | |
|---|---|---|---|---|---|---|
| 13 | -0.04992 | 11.14512 | 1.31117 | 73.08658 | 0.13382 | 0.00225 |
| 14 | 0.05542 | 11.03528 | 1.25245 | 71.76709 | -0.10918 | -0.00252 |
| 17 | 0.16508 | 13.43731 | 1.18031 | -79.32485 | 0.20168 | -0.08068 |
| 18 | -0.17058 | 11.86805 | 1.11008 | -74.41378 | -0.45839 | 0.01126 |
| SUM | 0.00000 | 47.48576 | 4.85401 | -8.88497 | -0.23207 | -0.06970 |

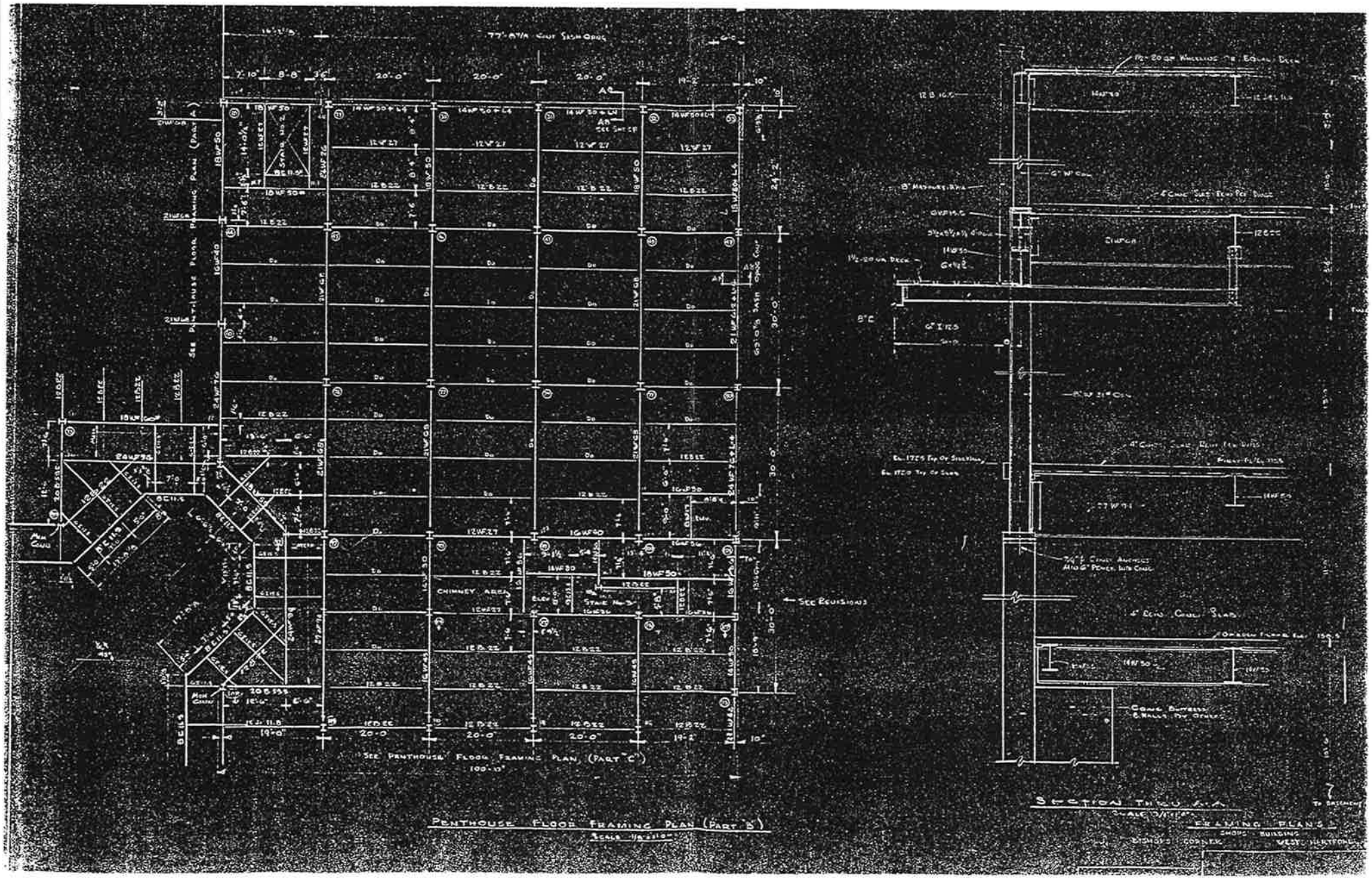
Condition **D11=DL+0.75WL+0.75LL+0.75SL**

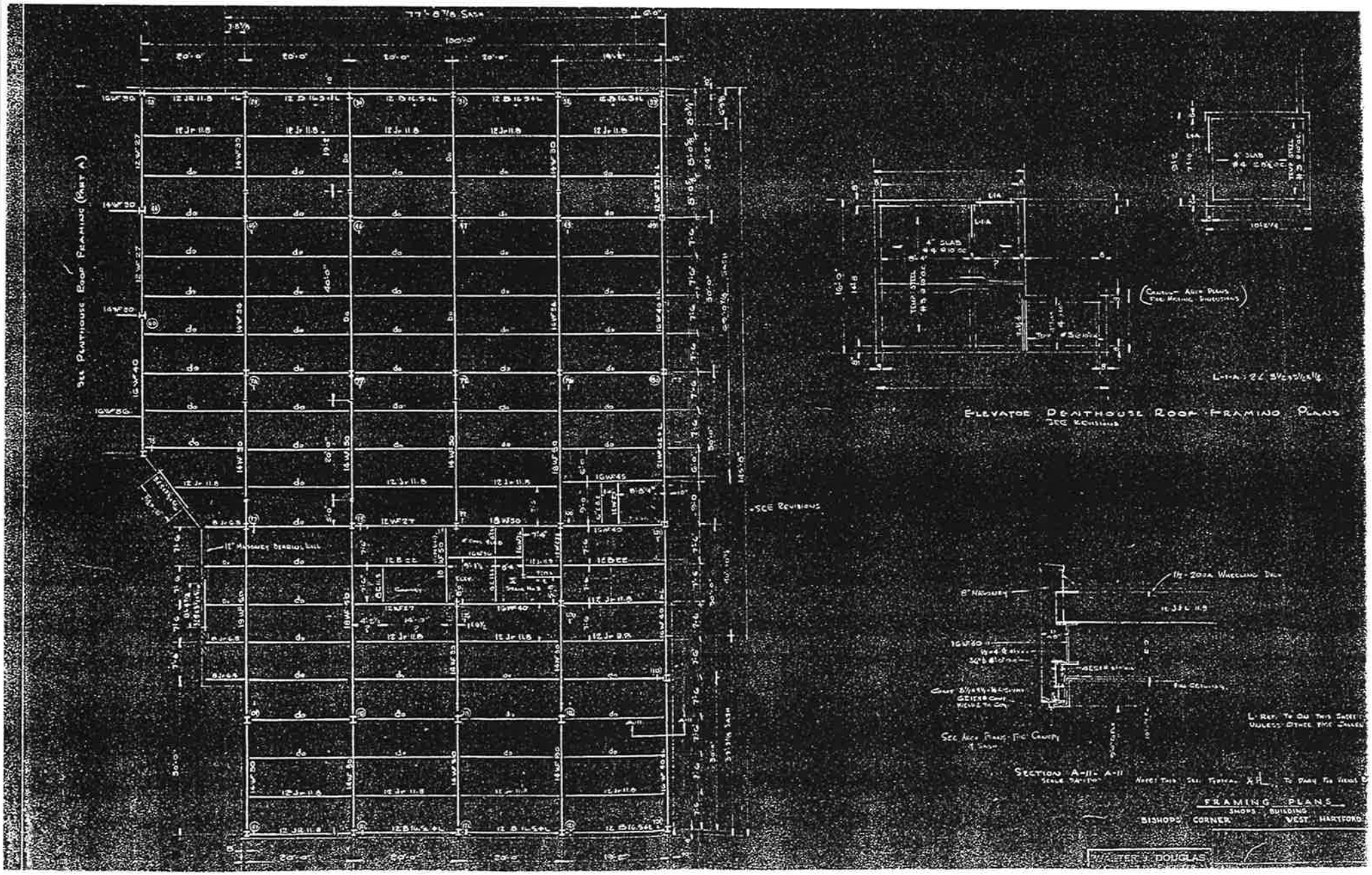
| | | | | | | |
|---|---|---|---|---|---|---|
| 13 | -0.04848 | 13.57199 | 1.30679 | 89.32629 | 0.13055 | 0.00247 |
| 14 | 0.05532 | 13.43706 | 1.24833 | 87.90804 | -0.10912 | -0.00275 |
| 17 | 0.16369 | 15.78818 | 1.18287 | -95.22854 | 0.20044 | -0.10196 |
| 18 | -0.17053 | 14.21471 | 1.11602 | -90.35391 | -0.45790 | 0.01369 |
| SUM | 0.00000 | 57.01194 | 4.85401 | -8.34812 | -0.23603 | -0.08856 |

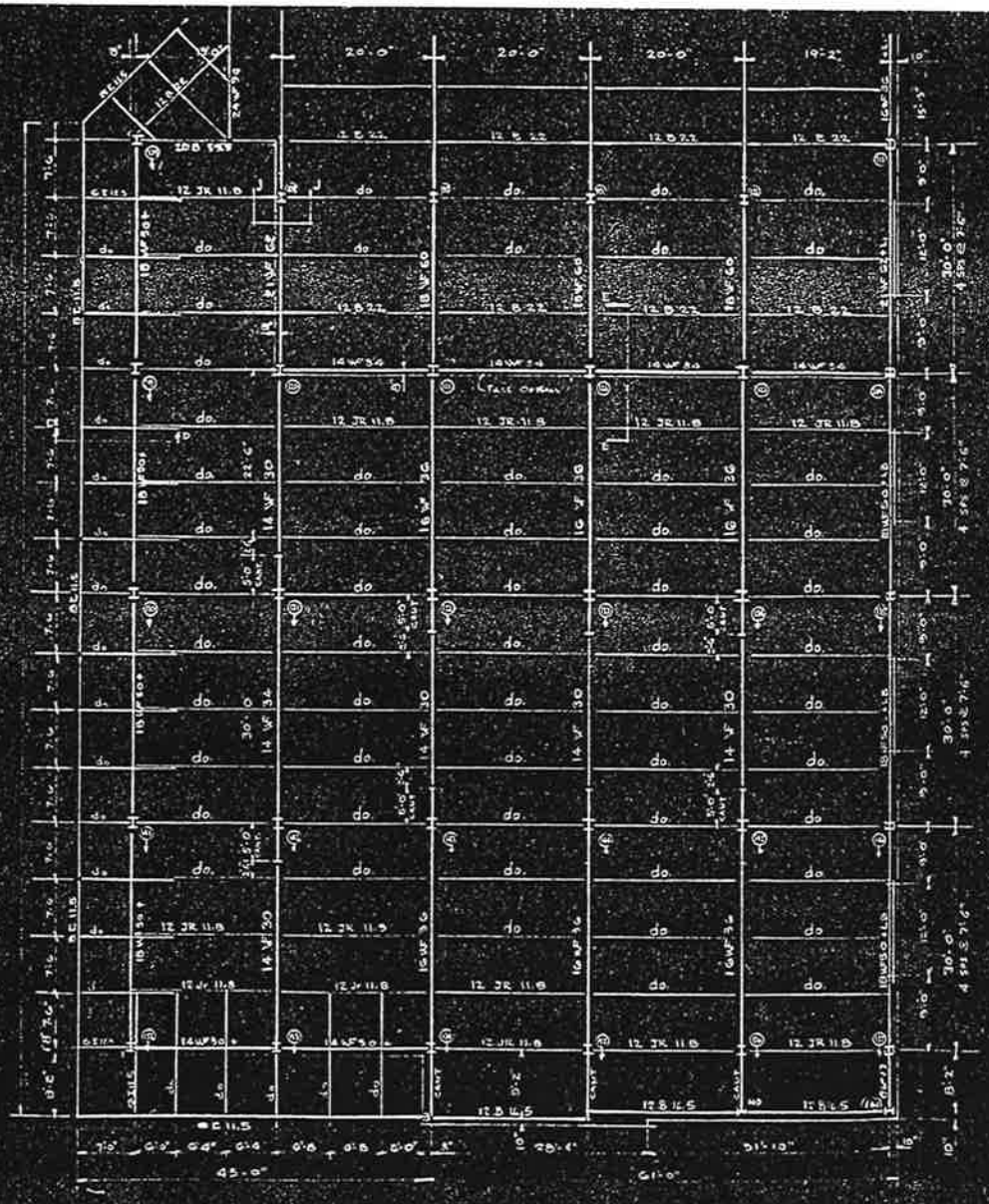
Hudson Design Group LLC

# Referenced Documents


ROOF CORNER ON FLD NOTES
LOWER ROOF AREA
FLOOR HEXTOL
SNET SHELTER LOCATION
EXIST PENTHOUSE
PENTHOUSE FLOOR FRAMING PLAN (PART 'A')
SECTION THRU D-D
SECTION THRU A7-A7
FRAMING PLANS
DISHOS CORNER
WEST HARTFORD, CONN.
WALTER J. DOUGLAS

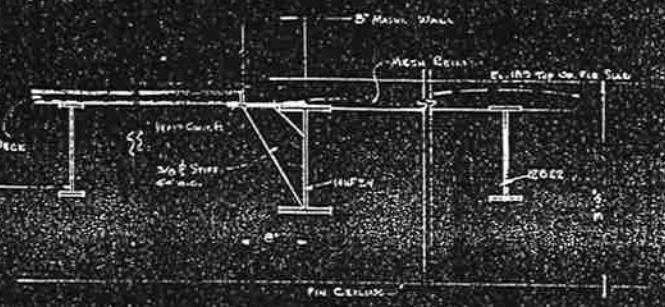

PENTHOUSE FLOOR FRAMING PLAN (PART "B")
SCALE 1/8"=1'-0"
SEE PENTHOUSE FLOOR FRAMING PLAN (PART "A")
SEE PENTHOUSE FLOOR FRAMING PLAN (PART "C")
CHIMNEY AREA
SEE REVISIONS
SECTION THRU A-A
SCALE 3/4"=1'-0"
FRAMING PLANS
SHOPS BUILDING
GOODYEAR
WEST HARTFORD


See Penthouse Roof Framing (Part A)
See Revisions
Elevator Penthouse Roof Framing Plans
See Revisions
Section A-11 - A-11
Framing Plans
Shops - Building
Bishops Corner
West Hartford
Walter J. Douglas



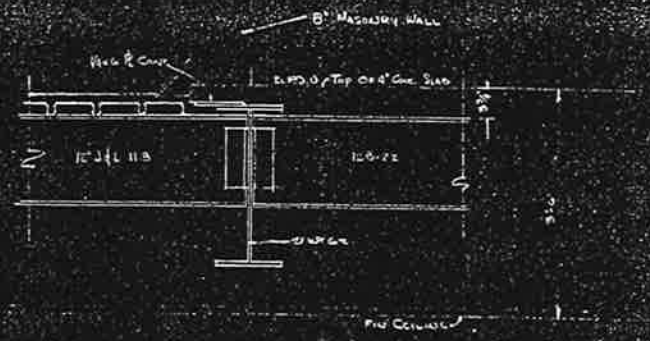
PENTHOUSE FLOOR FRAMING PLAN (PART C)

SCALE: 1/8" = 1'-0"



SECTION THRU E-E

SCALE: 1/4" = 1'-0"



SECTION THRU J-J

SCALE: 1/4" = 1'-0"

FRAMING PLANS

SHOPS BUILDING

BISHOPS CORNER WEST HARTFORD, CONN.

WALTER J. DOUGLAS

CONSULTING ENGINEER

WEST HARTFORD, CONNECTICUT

## STRUCTURAL NOTES

1. PREFABRICATED MODULAR BUILDING SHALL BE DESIGNED AND MANUFACTURED TO MEET ALL STATE AND LOCAL CODES. ITS LAYOUT SHALL BE COORDINATED WITH SNET MOBILITY, INC.

2. PROVIDE A STAIR/GUARD AS INDICATED. STAIR/GUARD SHALL BE OPEN GALVANIZED STEEL WITH AN 11" TREAD AND A 7" (MAXIMUM) RISER. PROVIDE HANDRAILS, GUARDS AND ALL REQUIRED MATERIALS TO SECURE STAIR/GUARD TO STRUCTURE. ALL STEEL, RAILINGS, HARDWARE AND CONNECTIONS SHALL BE HOT DIPPED GALVANIZED STEEL AFTER FABRICATION. STAIR, HANDRAIL AND GUARD SHALL BE DESIGNED BY CONTRACTOR'S ENGINEER IN ACCORDANCE WITH THE STATE OF CONNECTICUT EDOC REQUIREMENTS. SUBMIT SHOP DRAWINGS FOR REVIEW.

3. NOTE SPACES BELOW EXISTING ROOF MAY BE OCCUPIED DURING CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL USE CAUTION TO AVOID UNNECESSARY DISTURBANCE TO OCCUPANTS. CONTRACTOR SHALL SCHEDULE AND COORDINATE THE WORK TO COMPLY WITH THIS REQUIREMENT.

| | |
|---|---|
| DESIGN BASIS | STATE OF CONNECTICUT |
| GOVERNING CODE | STATE BUILDING CODE CURRENT EDITION |
| FLOOR LIVE LOAD | 200 PSF |
| ROOF SNOW LOAD | 30 PSF |
| PLUS SNOW DRIFT | |

GENERAL NOTES

SHOP DRAWINGS ARE TO BE CHECKED BY THE CONTRACTOR AND BEAR THE CHECKER'S INITIALS BEFORE BEING SUBMITTED TO THE ARCHITECT FOR REVIEW.

THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS BEFORE PROCEEDING WITH ANY WORK.

THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING BUILDING AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.

WHERE DETAILS ARE NOT INDICATED, THEY SHALL BE CONSIDERED TYPICAL AND APPLY AT SAME AND SIMILAR CONDITIONS.

COORDINATION WORK: DRAWINGS WITH MECHANICAL AND ELECTRICAL DRAWINGS FOR LOCATIONS OF OPENINGS, RECESSES, BUILT-IN WORK, ETC. STRUCTURAL STEEL

MATERIALS

| | |
|---|---|
| STRUCTURAL STEEL, PLATES, ANGLES | ASTM A36 |
| PIPE COLUMNS | ASTM A53 GRADE B |
| TUBE COLUMNS | ASTM A500 |
| BOLTS | ASTM A325 |
| WELDING ELECTRODE | ASTM E 70 |

SHOP AND ERECTION DRAWINGS SHALL BE SUBMITTED FOR ALL STRUCTURAL STEEL WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. SUBMIT 6 SETS OF PRINTS TO THE ARCHITECT FOR REVIEW.

THE OMISSION OF ANY MATERIAL THAT WAS SHOWN ON THE CONTRACT DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR OF PROVIDING SAME.

STRUCTURAL STEEL SHALL CONFORM TO THE CURRENT "AISC SPECIFICATION FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS", AND THE "AISC CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES".

ALL WELDING SHALL BE DONE BY A CERTIFIED WELDER IN ACCORDANCE WITH A.W.S. STANDARDS.

CONNECTIONS

CONNECTIONS SHALL CONFORM TO ALL REQUIREMENTS OF THE "AISC SPECIFICATION FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS", LATEST EDITION, AND THE "SPECIFICATION FOR STRUCTURAL STEEL JOINTS USING ASTM A325 OR A490 BOLTS" APPROVED APRIL 24, 1978.

CONNECTIONS TO TUBE COLUMNS SHALL BE STANDARD 3/8" THRU PLATE CONNECTIONS UNLESS OTHERWISE NOTED.

CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 3/16 INCHES.

CONNECTIONS SHALL HAVE A MINIMUM OF TWO BOLT ROWS.

SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.

CONNECTIONS AND SEAT STIFFENERS SHALL CLEAR ARCHITECTURAL FINISHES.

UNLESS SPECIFICALLY NOTED BOLTS SHALL BE 3/4" TYPE A325-N.

THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER THE WORK IS FULLY COMPLETED. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING BUILDING AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, TEMPORARY BRACING, GUYS OR TIEDOWNS, WHICH MIGHT BE NECESSARY.

THE CONTRACTOR SHALL PROVIDE CLOSURE ANGLES, CELL CLOSURES AND ALL OTHER ACCESSORIES REQUIRED FOR A COMPLETE INSTALLATION.

SHOP PRIMER SHALL BE TNEMEC 10-99 WEATHER ALKYD RUST INHIBITIVE RED PRIMER. SURFACE PREPARATION SHALL BE IN ACCORDANCE WITH STRUCTURAL STEEL PAINTING COUNCIL SPECIFICATION SP-6" COMMERCIAL BLAST CLEANING. MINIMUM DRY FILM THICKNESS OF SHOP PRIMER 2.0 MILS.

MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.

BOLT HOLES SHALL BE PUNCHED OR DRILLED. FLAME CUT HOLES ARE NOT ACCEPTABLE.

FABRICATE BEAMS WITH MILL CAMBER UP.

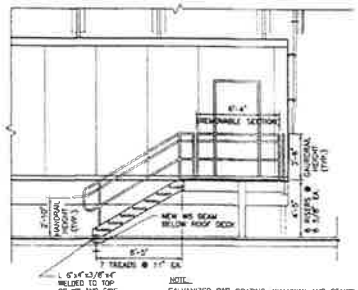
LEVEL AND PLUMB INDIVIDUAL MEMBERS OF THE STRUCTURE TO AN ACCURACY OF 1:500, BUT NOT TO EXCEED 1/4" IN THE FULL HEIGHT OF THE COLUMN.

COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.

INSPECTION AND TESTING OF ALL WELDING AND HIGH STRENGTH BOLTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY, BE PAID BY THE CONTRACTOR AND APPROVED BY THE ENGINEER. THE INSPECTOR SHALL OBSERVE INSTALLATION OF BOLTS AND TEST WITH A CALIBRATED TORQUE WRENCH NOT LESS THAN ONE OF THE BOLTS AND NOT LESS THAN TWO BOLTS, SELECTED AT RANDOM, IN EACH CONNECTION.

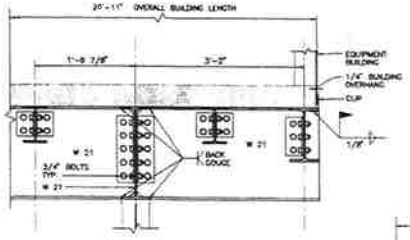
FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE ARCHITECT WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

PROVIDE SPRAYED-ON FIREPROOFING ON ALL STEEL FRAMING AND CONNECTIONS AND ANY AREAS DAMAGED BY CONSTRUCTION.

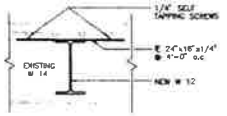



NOTE:
GALVANIZED BAR GRATING, WALKWAY AND STAIRS: MC NICHOLS CO. GW-125 1 1/4"x3/16" BRG BAR
ALL EXPOSED METAL TO BE PAINTED WITH SPECIFIED MATERIAL-NOXIDE BY MATHY'S WATERPROOFING OR EQUAL.

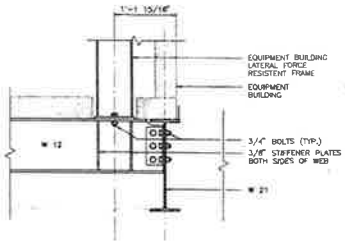
11 S-1 **STAIR DETAIL**
SCALE: 1/4" = 1'-0"



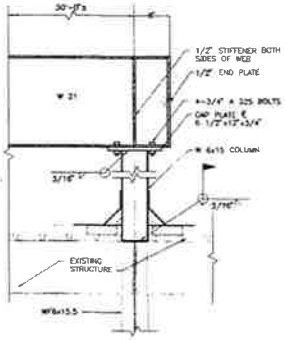

10 S-1 **CONNECTION DETAIL**
SCALE: 1" = 1'-0"



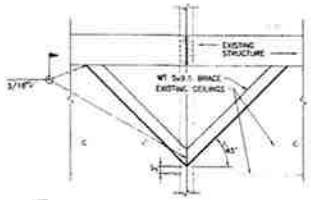

9 S-1 **CONNECTION DETAIL**
SCALE: 1" = 1'-0"




6 S-1 **CONNECTION DETAIL**
SCALE: 1" = 1'-0"

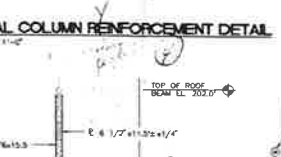



5 S-1 **CONNECTION DETAIL**
SCALE: 1" = 1'-0"

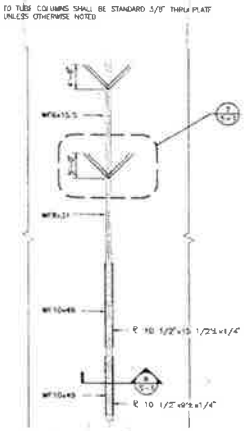



NOTE:
REMOVE AND REINSTALL EXISTING CEILING SYSTEM FINISH TO MATCH EXISTING. SPRAY ON FIREPROOFING AT EXPOSED STEEL BRACING AS REQUIRED TO PROVIDE A 2 HR. RATING.

7 S-1 **TYPICAL COLUMN BRACING DETAIL**
SCALE: 1/2" = 1'-0"

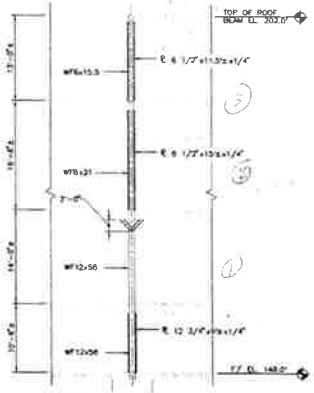



8 S-1 **TYPICAL COLUMN REINFORCEMENT DETAIL**
SCALE: 1" = 1'-0"



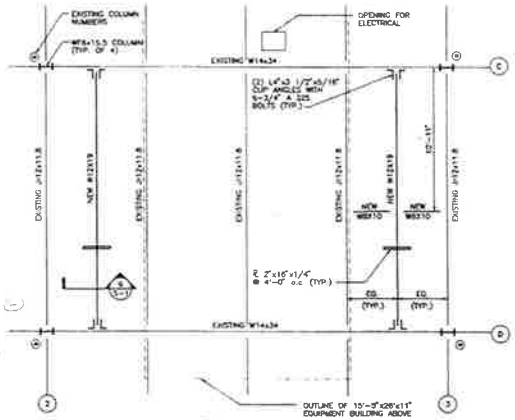

NOTE:
TYPICAL FOR COLUMNS 20, 26 AND 28

4 S-2 **EXISTING COLUMN REINFORCEMENT**
SCALE: 1/8" = 1'-0"

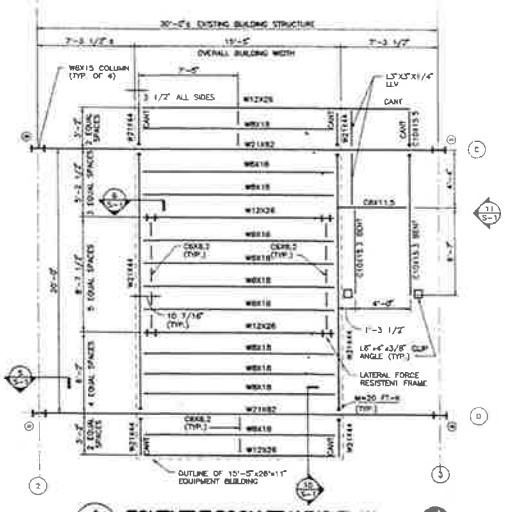



NOTE:
TYPICAL FOR COLUMN 30

3 S-2 **EXISTING COLUMN REINFORCEMENT**
SCALE: 1/8" = 1'-0"




2 S-1 **ROOF FRAMING**
SCALE: 1/8" = 1'-0"




1 S-1 **EQUIPMENT ROOM FRAMING PLAN**
SCALE: 1/4" = 1'-0"

NORTH

| REV. | DATE | DESCRIPTION |
|---|---|---|
| | | |

Job No. 1301049.31 | File No. S-1.DWG

2533 ALBANY AVE
(BETWEEN GORMAN WEST #110)
AND ROCKY HILL, CONNECTICUT
WEST HARTFORD, CONNECTICUT

FRAMING PLAN, DETAILS AND NOTES
SNET MOBILITY, INC.

URS Gardner, Inc. A·E·S
500 ENTERPRISE DRIVE
ROCKY HILL, CONNECTICUT

Designed by: DJR/TCM/JHJ
Drawn by: RGD
Checked by:
Approved by:

Scale: AS NOTED

Date: 7/21/97

Drwg. 7 Of 14

Drwg. No. S-1