

LEE'S SUMMIT LOGISTICS BUILDING C LOT 3 LEE'S SUMMIT, MO PROJECT NO. 2220003

STRUCTURAL CALCULATIONS



05/06/2022

JAMES GRANICH, P.E. ENGINEER OF RECORD

> wallace design collective, pc structural - civil - landscape - survey 1703 wyandotte street, suite 200 kansas city, missouri 64108 816.421.8282 - 800.364.5858 wallace.design

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of

Sheet No.

| Date | 4/19/2022 | S |
|---------|----------------|----|
| Job | Project Birkda | le |
| Subject | Roof Loads | |
| | | |

DEAD AND LIVE LOADS ASCE 7-16 Table C3.1-1a and Table 4.3.1

ROOF LOADS

DEAD

| ITEM | DESCRIPTION | UNIT NEIGHT (PSF) | TOTAL |
|---|--|--|---|
| Roof Covering Insulation Deck Ceiling HVAC Sprinklers Fire-Proofing Waterproofing Miscellaneous | EPDM Membrane Polystyrene Foam (per inch thickness) Metal Deck, 22 gage, 1.5" B None HVAC Allowance (except sprinklers) Branch Lines Only | 1.0 x 0.50 3.5 x 0.20 1.0 x 2.00 1.0 x 0.00 | 0.5 0.7 2.0 1.5 2.0 0.00 0.00 1.50 |
| Sub-Total | | | 8.2 |
| Secondary Frai | mi⊧K-Series (30K10) joists at 6'-0" O.C. | | 2.0 |
| Sub-Total | | | 10.2 |
| Primary Framin | g Joist Girders (60' max. span) | | 1.5 |
| Total | | | 11.7 |

ROOF LIVE/SNOW LOADS

| ITEM | LOAD (PSF) |
|-----------------------------|------------|
| Roof Live Load | 20.0 |
| Factored Roof Snow Load, Pf | 20.0 |

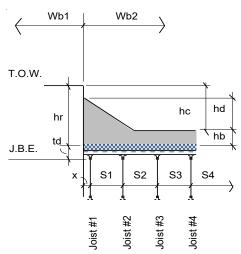
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| Date | 5/5/2022 | Sheet No. | of | |
|---------|--------------------------|---------------|----|--|
| Project | 2220003 Building 3 | | | |
| Subject | Snow Drift Fast/West - 4 | 875ft Parapet | | |

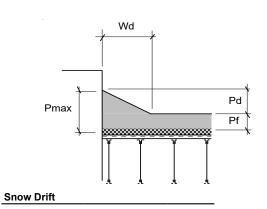
FLAT ROOF SNOW DRIFT - Joists Parallel to Wall

ASCE 7-16



Configuration

Note: For projections, input width of projection for Wb1 and input maximum of leeward and windward drift length for Wb2. For parapets, input the parapet width as Wb1.



1. Input

| 1. Input | | |
|--|---|---|
| Dead Load = Roof Live Load = Pg, Ground Snow Load = Drift for parapet, projection, or upper Risk Categoy (I, II, III, or IV) = Ce, Exposure Factor = Ct, Thermal Factor = Use Pg minimum for drift calc's (Pf = | 20 20 roof? P II 1.0 1.0 | psf psf (P), (PR) or (U) Table 1.5-1 Table 7.3-1 Table 7.3-2 (Y or N) |
| Geometry T.O.W., Top of Parapet Elevation = J.B.E., Joist Bearing Elevation = td, Thickness of Joist, Deck, and Insu Wb1, length of upper roof = Wb2, length of lower roof = x, Joist #1 dist. from wall = S1, First Joist Spacing = S2, Second Joist Spacing = S3, Third Joist Spacing = S4, Fourth Joist Spacing = S5, Fifth Joist Spacing = | 0.80 350.00 6.25 6.25 6.25 6.25 6.25 6.25 | feet inches feet |
| 2. Balanced Snow Load Check | | |
| ls, Importance Factor = Pf = 0.7 Ce Ct Is Pg = Pm = Is Pg = Rain on snow surcharge = Pmin = | 14.00 20.00 | Table 1.5-2 psf (7.3-1) psf (7.3.4) psf (7.10) psf |
| 3. Drifted Snow Load Check | | |
| $Pf = Pg = D = 0.13 Pg + 14.0 \le 30 pcf = hb = Pf/D = Wb = hd = 0.75[0.43 Wb2^1/3 (Pg+10)^1/4 hd + hb = hr = hc = hr - hb = Wd = 4 hd or 4 [hd^2/hc] \le 8 hc = Pmax = D (hd + hb) \le D hr = Pd = D hd \le D hc = Pd = D hd = D hd$ | 1.20 350.00 1.5] Is^1 4.18 5.39 3.48 | pcf (7.7-1) feet feet feet (Fig. 7.6-1) feet feet feet feet feet psf |
| 4. Uniform Load Summary | | |
| Drifted Snow Load w, wall w, Joist #1 w, Joist #2 | Snow Total 170.6 208.1 280.3 355.3 199.3 274.3 | plf * plf * |
| w, Joist #2 w, Joist #3 w, Joist #4 w, Joist #5 | 199.3 274.3 141.9 216.9 125.0 200.0 125.0 200.0 | plf * plf |
| Balanced Load Check | | |
| | (20 psf) Total | |
| w, wall | 62.5 100.0 | |
| w, Joist #1 | 125.0 200.0 | • |
| w, Joist #2 w, Joist #3 | 125.0 200.0 125.0 200.0 | • |
| w, Joist #3 w, Joist #4 | 125.0 200.0 | • |
| w loist #5 | 125.0 200.0 | |

* indicates controlling load (drifted vs. undrifted)

200.0 plf *

125.0

w, Joist #5

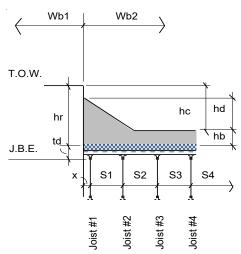
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| Date | 5/5/2022 | Sheet No. | of | |
|---------|--------------------------|---------------|----|--|
| Project | 2220003 Building 3 | | | |
| Subject | Snow Drift Fast/West - 4 | 875ft Parapet | | |

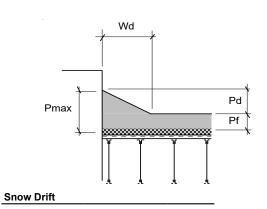
FLAT ROOF SNOW DRIFT - Joists Parallel to Wall

ASCE 7-16



Configuration

Note: For projections, input width of projection for Wb1 and input maximum of leeward and windward drift length for Wb2. For parapets, input the parapet width as Wb1.



1. Input

| 1. Input | | | |
|---|--|--|---|
| Dead Load = Roof Live Load = Pg, Ground Snow Load = Drift for parapet, projection, or uj Risk Categoy (I, II, III, or IV) = Ce, Exposure Factor = Ct, Thermal Factor = Use Pg minimum for drift calc's (| | 20 20 P II 1.0 1.0 | psf psf (P), (PR) or (U) Table 1.5-1 Table 7.3-1 Table 7.3-2 (Y or N) |
| Geometry T.O.W., Top of Parapet Elevatio J.B.E., Joist Bearing Elevation = td, Thickness of Joist, Deck, and Wb1, length of upper roof = Wb2, length of lower roof = x, Joist #1 dist. from wall = S1, First Joist Spacing = S2, Second Joist Spacing = S3, Third Joist Spacing = S4, Fourth Joist Spacing = S5, Fifth Joist Spacing = | | 40.00 34.60 5.00 0.80 350.00 6.25 6.25 6.25 6.25 6.25 6.25 | feet inches feet feet feet feet feet feet |
| 2. Balanced Snow Load Check | | | |
| Is, Importance Factor = Pf = 0.7 Ce Ct Is Pg = Pm = Is Pg = Rain on snow surcharge = Pmin = | | 14.00 20.00 | Table 1.5-2 psf (7.3-1) psf (7.3.4) psf (7.10) psf |
| 3. Drifted Snow Load Check | | | |
| Pf = Pg = D = 0.13 Pg + 14.0 \le 30 pcf = hb = Pf/D = Wb = hd = 0.75[0.43 Wb2^1/3 (Pg+10) hd + hb = hr = hc = hr - hb = Wd = 4 hd or 4 [hd^2/hc] \le 8 hc Pmax = D (hd + hb) \le D hr = Pd =D hd \le D hc = | - | 1.20 350.00 | pcf (7.7-1) feet feet feet (Fig. 7.6-1) feet feet feet feet psf |
| 4. Uniform Load Summary | | | |
| Drifted Snow Load w, wall w, Joist #1 w, Joist #2 w, Joist #3 w, Joist #4 w, Joist #5 | Snow 242.0 384.8 252.6 155.7 125.0 125.0 | Total 279.5 459.8 327.6 230.7 200.0 200.0 | plf * plf * plf * plf * plf |
| Balanced Load Check | | | |
| | Pmin (20 psf) 62.5 125.0 125.0 125.0 125.0 125.0 | Total 100.0 200.0 200.0 200.0 200.0 200.0 | plf plf plf plf |

* indicates controlling load (drifted vs. undrifted)

200.0 plf *

125.0

w, Joist #5

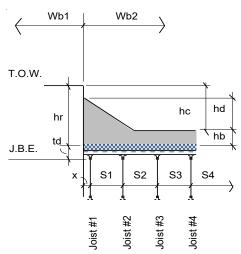
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| Date | 5/5/2022 | Sheet No. | of | |
|---------|--------------------------|---------------|----|--|
| Project | 2220003 Building 3 | | | |
| Subject | Snow Drift Fast/West - 4 | 875ft Parapet | | |

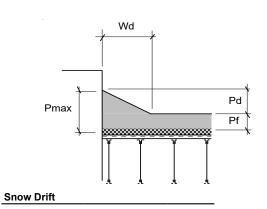
FLAT ROOF SNOW DRIFT - Joists Parallel to Wall

ASCE 7-16



Configuration

Note: For projections, input width of projection for Wb1 and input maximum of leeward and windward drift length for Wb2. For parapets, input the parapet width as Wb1.



1. Input

| 1. Input | | | |
|--|--|--|---|
| Dead Load = Roof Live Load = Pg, Ground Snow Load = Drift for parapet, projection, or u Risk Categoy (I, II, III, or IV) = Ce, Exposure Factor = Ct, Thermal Factor = Use Pg minimum for drift calc's | | 20 20 P II 1.0 1.0 | psf psf (P), (PR) or (U) Table 1.5-1 Table 7.3-1 Table 7.3-2 (Y or N) |
| Geometry T.O.W., Top of Parapet Elevation J.B.E., Joist Bearing Elevation = td, Thickness of Joist, Deck, and Wb1, length of upper roof = Wb2, length of lower roof = x, Joist #1 dist. from wall = S1, First Joist Spacing = S3, Third Joist Spacing = S4, Fourth Joist Spacing = S5, Fifth Joist Spacing = | - | 42.50 36.19 5.00 0.80 350.00 6.25 6.25 6.25 6.25 6.25 6.25 | feet inches feet feet feet feet feet feet |
| 2. Balanced Snow Load Check | | | |
| Is, Importance Factor = Pf = 0.7 Ce Ct Is Pg = Pm = Is Pg = Rain on snow surcharge = Pmin = | | 14.00 20.00 | Table 1.5-2 psf (7.3-1) psf (7.3.4) psf (7.10) psf |
| 3. Drifted Snow Load Check | | | |
| $Pf = Pg = D = 0.13 Pg + 14.0 \le 30 pcf = hb = Pf/D = Wb = hd = 0.75[0.43 Wb2^1/3 (Pg+10) hd + hb = hr = hc = hr - hb = Wd = 4 hd or 4 [hd^2/hc] \le 8 hc Pmax = D (hd + hb) \le D hr = Pd = D hd \le D hc = Pd = D hd = D hd \le D hc = Pd = D hd \le D hc = Pd = D hd \le D hc = Pd = D hd = D $ | , <u>-</u> | 1.20 350.00 | pcf (7.7-1) feet feet feet (Fig. 7.6-1) feet feet feet feet psf |
| 4. Uniform Load Summary | | | |
| Drifted Snow Load w, wall w, Joist #1 w, Joist #2 w, Joist #3 w, Joist #4 w, Joist #5 | Snow 259.3 396.9 234.8 139.4 125.0 125.0 | Total 296.8 471.9 309.8 214.4 200.0 200.0 | plf * plf * plf * plf * plf |
| Balanced Load Check w, wall w, Joist #1 w, Joist #2 w, Joist #3 w, Joist #4 w, Joist #5 | Pmin (20 psf) 62.5 125.0 125.0 125.0 125.0 125.0 | Total 100.0 200.0 200.0 200.0 200.0 200.0 | plf plf plf plf |

* indicates controlling load (drifted vs. undrifted)

125.0

200.0 plf *

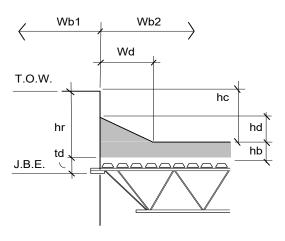
w, Joist #5

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| Date | 5/5/2022 | Sheet No. | of |
|---------|--------------------|-----------|----|
| Project | 2220003 Building 3 | | |
| Subject | | | |

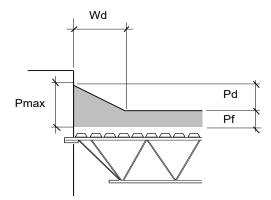
FLAT ROOF SNOW DRIFT - Joists Perpendicular to Wall

ASCE 7-16



Configuration

Note: For projections, input width of projection for Wb1 and input maximum of leeward and windward drift length for Wb2. For parapets, input the parapet width as Wb1.





1. Input

| Dead Load = Roof Live Load = Pg, Ground Snow Load = Drift for parapet, projection, or upper roof? Risk Categoy (I, II, III, or IV) = Ce, Exposure Factor = Ct, Thermal Factor = Use Pg minimum for drift calc's (Pf = Pg)? | 20 20 P II 1.00 1.00 | psf psf (P), (PR) or (U) Table 1.5-1 Table 7.3-1 Table 7.3-2 (Y or N) |
|---|-------------------------------------|---|
| Geometry | | |
| T.O.W., Top of Parapet Elevation = | 37.50 | feet |
| J.B.E., Joist Bearing Elevation = | 33.58 | feet |
| td, Thickness of Joist, Deck, and Insulation = | 5.00 | inches |
| Wb1, length of upper roof = | 0.80 | feet |
| Wb2, length of lower roof = | 220.83 | feet |
| S, Joist Spacing = | 6.25 | feet |
| L, Joist Span = | 60.00 | feet |
| | | |

2. Balanced Snow Load Check

| ls, Importance Factor = | 1.00 Table 1.5-2 |
|--------------------------|--------------------------|
| Pf = 0.7 Ce Ct ls Pg = | 14.00 psf (7.3-1) |
| Pm = ls Pg = | 20.00 psf (7.3.4) |
| Rain on snow surcharge = | 5.00 psf (7.10) |
| Pmin = | 20.00 psf |

3. Drifted Snow Load Check

| Pf = 0.7 Ce Ct Is Pg = | 14.00 psf |
|--|------------------|
| D = 0.13 Pg + 14.0 ≤ 30 pcf = | 16.60 pcf |
| hb = Pf/D = | 0.84 ft |
| Wb = | 220.83 ft |
| hd = 0.75[0.43 Wb2^1/3 (Pg+10)^1/4-1.5] Is^2 | 3.43 ft |
| hd + hb = | 4.27 ft |
| hr = | 3.50 ft |
| hc = hr - hb = | 2.66 ft |
| Wd = 4 hd or 4 [hd^2/hc] ≤ 8 hc = | 17.68 ft |
| Pmax = D (hd + hb) ≤ D hr = | 58.16 psf |
| Pd =D hd ≤ D hc = | 44.16 psf |

4. Uniform Load Summary

Drifted Snow Load

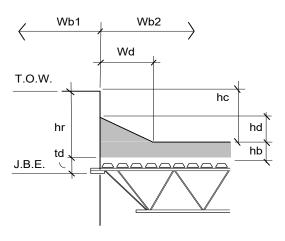
| | Snow | Total |
|---------------------|---------|------------------|
| R left = | 4825.0 | 7075.0 lbs |
| R right = | 2864.6 | 5114.6 lbs |
| M max = | 46892.0 | 80490.5 ft-lbs |
| w base = | 87.5 | 162.5 plf |
| w drift = | 276.0 | 351.0 plf |
| w equiv = | 160.8 | 235.8 plf * |
| Load Without Drift | | |
| | Live | Total |
| w (Live = 20 psf) = | 125.0 | 200.0 plf |

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| Date | 5/5/2022 | Sheet No. | of |
|---------|--------------------|-----------|----|
| Project | 2220003 Building 3 | | |
| Subject | | | |

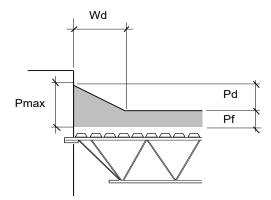
FLAT ROOF SNOW DRIFT - Joists Perpendicular to Wall

ASCE 7-16



Configuration

Note: For projections, input width of projection for Wb1 and input maximum of leeward and windward drift length for Wb2. For parapets, input the parapet width as Wb1.





1. Input

| Dead Load = Roof Live Load = Pg, Ground Snow Load = Drift for parapet, projection, or upper roof? Risk Categoy (I, II, III, or IV) = Ce, Exposure Factor = Ct, Thermal Factor = Use Pg minimum for drift calc's (Pf = Pg)? | 20 20 P II 1.00 1.00 | psf psf (P), (PR) or (U) Table 1.5-1 Table 7.3-1 Table 7.3-2 (Y or N) |
|---|-------------------------------------|---|
| Geometry | | |
| T.O.W., Top of Parapet Elevation = | 37.50 | feet |
| J.B.E., Joist Bearing Elevation = | 33.58 | feet |
| td, Thickness of Joist, Deck, and Insulation = | 5.00 | inches |
| Wb1, length of upper roof = | 0.80 | feet |
| Wb2, length of lower roof = | 220.83 | feet |
| S, Joist Spacing = | 6.25 | feet |
| L, Joist Span = | 60.00 | feet |
| | | |

2. Balanced Snow Load Check

| ls, Importance Factor = | 1.00 Table 1.5-2 |
|--------------------------|--------------------------|
| Pf = 0.7 Ce Ct ls Pg = | 14.00 psf (7.3-1) |
| Pm = ls Pg = | 20.00 psf (7.3.4) |
| Rain on snow surcharge = | 5.00 psf (7.10) |
| Pmin = | 20.00 psf |

3. Drifted Snow Load Check

| Pf = 0.7 Ce Ct Is Pg = | 14.00 psf |
|--|------------------|
| D = 0.13 Pg + 14.0 ≤ 30 pcf = | 16.60 pcf |
| hb = Pf/D = | 0.84 ft |
| Wb = | 220.83 ft |
| hd = 0.75[0.43 Wb2^1/3 (Pg+10)^1/4-1.5] Is^2 | 3.43 ft |
| hd + hb = | 4.27 ft |
| hr = | 3.50 ft |
| hc = hr - hb = | 2.66 ft |
| Wd = 4 hd or 4 [hd^2/hc] ≤ 8 hc = | 17.68 ft |
| Pmax = D (hd + hb) ≤ D hr = | 58.16 psf |
| Pd =D hd ≤ D hc = | 44.16 psf |

4. Uniform Load Summary

Drifted Snow Load

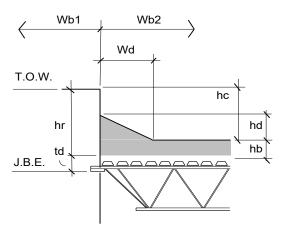
| | Snow | Total |
|---------------------|---------|------------------|
| R left = | 4825.0 | 7075.0 lbs |
| R right = | 2864.6 | 5114.6 lbs |
| M max = | 46892.0 | 80490.5 ft-lbs |
| w base = | 87.5 | 162.5 plf |
| w drift = | 276.0 | 351.0 plf |
| w equiv = | 160.8 | 235.8 plf * |
| Load Without Drift | | |
| | Live | Total |
| w (Live = 20 psf) = | 125.0 | 200.0 plf |

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| Date | 5/5/2022 | Sheet No. | of | |
|---------|--------------------|-----------|----|--|
| Project | 2220003 Building 3 | | | |
| Subject | South Drift 42'-0" | | | |

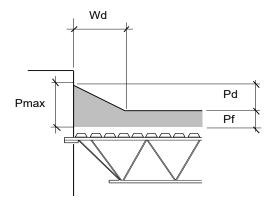
FLAT ROOF SNOW DRIFT - Joists Perpendicular to Wall

ASCE 7-16



Configuration

Note: For projections, input width of projection for Wb1 and input maximum of leeward and windward drift length for Wb2. For parapets, input the parapet width as Wb1.





1. Input

| 20 20 P II 1.00 1.00 | psf psf (P), (PR) or (U) Table 1.5-1 Table 7.3-1 Table 7.3-2 (Y or N) |
|-------------------------------------|---|
| | |
| 42.00 | feet |
| 37.58 | feet |
| 5.00 | inches |
| 0.80 | feet |
| 220.83 | feet |
| 6.25 | feet |
| 53.33 | feet |
| | 20 20 P II 1.00 1.00 N 42.00 37.58 |

2. Balanced Snow Load Check

| ls, Importance Factor = | 1.00 Table 1.5-2 |
|--------------------------|--------------------------|
| Pf = 0.7 Ce Ct ls Pg = | 14.00 psf (7.3-1) |
| Pm = ls Pg = | 20.00 psf (7.3.4) |
| Rain on snow surcharge = | 5.00 psf (7.10) |
| Pmin = | 20.00 psf |

3. Drifted Snow Load Check

| Pf = 0.7 Ce Ct Is Pg = | 14.00 psf |
|--|------------------|
| D = 0.13 Pg + 14.0 ≤ 30 pcf = | 16.60 pcf |
| hb = Pf/D = | 0.84 ft |
| Wb = | 220.83 ft |
| hd = 0.75[0.43 Wb2^1/3 (Pg+10)^1/4-1.5] Is^2 | 3.43 ft |
| hd + hb = | 4.27 ft |
| hr = | 4.00 ft |
| hc = hr - hb = | 3.16 ft |
| Wd = 4 hd or 4 [hd^2/hc] ≤ 8 hc = | 14.88 ft |
| $Pmax = D (hd + hb) \le D hr =$ | 66.46 psf |
| Pd =D hd ≤ D hc = | 52.46 psf |

4. Uniform Load Summary

Drifted Snow Load

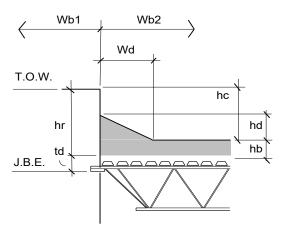
| | Snow | Total |
|---------------------|---------|------------------|
| R left = | 4546.0 | 6546.0 lbs |
| R right = | 2560.3 | 4560.3 lbs |
| M max = | 37456.7 | 63987.5 ft-lbs |
| w base = | 87.5 | 162.5 plf |
| w drift = | 327.8 | 402.8 plf |
| w equiv = | 170.5 | 245.5 plf * |
| Load Without Drift | | |
| | Live | Total |
| w (Live = 20 psf) = | 125.0 | 200.0 plf |

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| Date | 5/5/2022 | Sheet No. | of | |
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| Project | 2220003 Building 3 | | | |
| Subject | South Drift 42'-0" | | | |

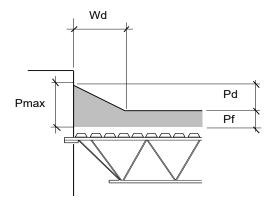
FLAT ROOF SNOW DRIFT - Joists Perpendicular to Wall

ASCE 7-16



Configuration

Note: For projections, input width of projection for Wb1 and input maximum of leeward and windward drift length for Wb2. For parapets, input the parapet width as Wb1.





1. Input

| Dead Load = Roof Live Load = Pg, Ground Snow Load = Drift for parapet, projection, or upper roof? Risk Categoy (I, II, III, or IV) = Ce, Exposure Factor = Ct, Thermal Factor = Use Pg minimum for drift calc's (Pf = Pg)? | 20 20 P II 1.00 1.00 | psf psf (P), (PR) or (U) Table 1.5-1 Table 7.3-1 Table 7.3-2 (Y or N) |
|---|-------------------------------------|---|
| Geometry | | |
| T.O.W., Top of Parapet Elevation = | 40.00 | feet |
| J.B.E., Joist Bearing Elevation = | 37.75 | feet |
| td, Thickness of Joist, Deck, and Insulation = | 5.00 | inches |
| Wb1, length of upper roof = | 0.80 | feet |
| Wb2, length of lower roof = | 220.83 | feet |
| S, Joist Spacing = | 6.25 | feet |
| L, Joist Span = | 53.33 | feet |

2. Balanced Snow Load Check

| ls, Importance Factor = | 1.00 Table 1.5-2 |
|--------------------------|--------------------------|
| Pf = 0.7 Ce Ct Is Pg = | 14.00 psf (7.3-1) |
| Pm = ls Pg = | 20.00 psf (7.3.4) |
| Rain on snow surcharge = | 5.00 psf (7.10) |
| Pmin = | 20.00 psf |

3. Drifted Snow Load Check

| Pf = 0.7 Ce Ct Is Pg = | 14.00 psf |
|--|------------------|
| D = 0.13 Pg + 14.0 ≤ 30 pcf = | 16.60 pcf |
| hb = Pf/D = | 0.84 ft |
| Wb = | 220.83 ft |
| hd = 0.75[0.43 Wb2^1/3 (Pg+10)^1/4-1.5] Is^2 | 3.43 ft |
| hd + hb = | 4.27 ft |
| hr = | 1.83 ft |
| hc = hr - hb = | 0.99 ft |
| Wd = 4 hd or 4 [hd^2/hc] ≤ 8 hc = | 7.92 ft |
| Pmax = D (hd + hb) ≤ D hr = | 30.43 psf |
| Pd =D hd ≤ D hc = | 16.43 psf |

4. Uniform Load Summary

Drifted Snow Load

| | Snow | Total |
|---------------------|---------|------------------|
| R left = | 2719.9 | 4719.9 lbs |
| R right = | 2353.5 | 4353.5 lbs |
| M max = | 31650.2 | 58315.8 ft-lbs |
| w base = | 87.5 | 162.5 plf |
| w drift = | 102.7 | 177.7 plf |
| w equiv = | 102.0 | 177.0 plf |
| Load Without Drift | | |
| | Live | Total |
| w (Live = 20 psf) = | 125.0 | 200.0 plf * |

| | Date 4/29/2022 | | Sheet | | of | |
|--|--|----------------|---|--------------|---------------------------------|----------------------|
| | Job 2220003 Building 3 Subject North Wind TOW: 37.5ft | | | | | |
| | Subject North Wind TOW: 37.5ft | | | | | |
| DANALYSIS: ANALYTICAL - ALL HEIGHTS METHOD | | | | | | |
| E 7-16, Chapters 26, 27 and 30 | 1. Input | | | | | |
| Windward Leeward | Design Parameters | | | | | |
| Window Pressure | Basic Wind Speed, V = | | | | | 6.5, Fig. 1A-2D) |
| of the second seco | Exposure Category (B, C, or D) = Building Risk Category (I, II, III, IV) = | | | | (Section 26.7) (Table 1.5-1) | |
| | Civil finished floor elevation (if unknown input 0) = | | | | feet (Sect. 26.9 | . Table 26.9-1) |
| He He Height | ······································ | | | | | , , |
| | Eave Height, He = | | | 33.58 | | |
| | Max Building Height or Ridge Height above ground le | evel, Hr = | | 34.61 | | |
| | Parapet Height above ground level, Hp = Building Width Perpendicular to Wind, B = | | | 37.50 | feet (max bldg (| dim) |
| L | Building Width Parallel to Wind, L = | | | 220.83 | | |
| | Enclosure Classification = | | | | (Section 26.12) | |
| FER TO FIGURE 27.3-1 | Roof Configuration = Gabled, Hipp | ped or Mond | slope Ro | | | |
| | Angle of Plane of Roof From Horizontal, θ = | | | 1.20 | degrees | |
| I | Is building on or near a hill, ridge, or escarpment? | | | N | (Y or N) (Sectio | n 26.8) |
| | Height of Hill or Escarpment relative to upwind terrain | | | | | i.8, Fig. 26.8-1) |
| x (upwind) x | Horiz. Dist. Upwind to Point Where Elevation = H/2, L | _h = | | | feet (Section 26 | - , |
| | Horiz. Dist. from Crest to Building Site, x = | | | | feet (Section 26 | i.8, Fig. 26.8-1) |
| ► V(z) | 2D Ridge, 2D Escarpment, or Axisymmetrical Hill = | | | | (R, E, or H) | |
| | Is the building site upwind or downwind of the crest? | | | DOWN | (up, down) | |
| | 2. Calculations - Main Wind Force Resisting System | | | | | |
| | Equivalent Allowable Stress Design Wind Speed, Vas | sd = | | 84.43 | mph (IBC 2018 | 1609.3.1) |
| | Mean roof height, h = | | | 33.58 | feet | |
| | Kz, velocity pressure exposure coefficient at hz = 34.6 | 61ft = | | 1.01 | Table 26.10-1 | (use with qz) |
| | Kz, velocity pressure exposure coefficient at hh = 33. | .58ft = | | 1.00 | Table 26.10-1 | (use with qh) |
| | Kz, velocity pressure exposure coefficient at hp = 37.5 | .5ft = | | | Table 26.10-1 | (use with qp) |
| 2-D Ridge or Axisymmetrical Hill | Kzt,topographic factor at hz = 34.61ft = | | | | Figure 26.8-1 | (use with qz) |
| ER TO FIGURE 26.8-1 | Kzt,topographic factor at hh = 33.58ft = | | | | Figure 26.8-1 | (use with qh) |
| | Kzt,topographic factor at hp = 37.5ft = Kd, wind directionality factor = | | | | Figure 26.8-1 Table 26.6-1 | (use with qp) |
| | Ke, ground elevation factor at | | | | Table 26.9-1 | |
| | G, gust factor = | | | 0.85 | Section 26.11.4 | |
| | qz, velocity pressure at hz = 34.61ft = | | | 26 11 | psf (Eq. 26.10-1 | D) |
| | qh, velocity pressure at hh = 33.58ft = | | | 25.85 | psf (Eq. 26.10-' |) |
| | qp, velocity pressure at hp = 37.5ft = | | | 26.63 | psf (Eq. 26.10- |) |
| | Walls: P = q(GCpf-GCpi) Eqn. 27.3-1 | qz | GCp | GCpi | (1.0)P | (0.6)P |
| | Windward pressure | 26.11 | 0.68 | = | 17.8 psf | 10.7 pst |
| | | qh | GCp | GCpi | (1.0)P | (0.6)P |
| | Leeward Pressure | 25.85 | -0.43 | | -11 psf | -6.6 psf |
| | Sidewall pressure | 25.85 | -0.60 | 0.18 | -20 psf | -12 psf |
| | Internal Pressure | 25.85 | | 0.18 | 4.7 psf | 2.8 psf |
| | (1.0)W = (1.0)(Windward + Leeward Pressure) = (0.6)W =(0.6)(Windward + Leeward Pressure) = | | 17.76 psf + 10.99 psf = 10.65 psf + 6.59 psf = | | 28.7 psf 17.2 psf | |
| | Parapets: Pp =qp(GCpn) Eqn. 27.3-3 | qp | GCpn | | (1.0)Pp | (0.6)Pp |
| | Windward parapet pressure | 26.63 | 1.5 | - | 39.9 psf | 24 psf |
| | Leeward parapet pressure | 26.63 | -1.0 | | -26.6 psf | -16 psf |
| | Windward + Leeward Pressure | 26.63 | 2.50 | | 66.6 psf | 39.9 ps |
| | Roof Normal to Ridge (θ≥10 degrees) | qh | GCp | GCpi | (1.0)P | (0.6)P |
| | Windward Pressure case i | 25.85 | -0.60 | 0.18 | -20 psf | -12 psf |
| | case ii | 25.85 | -0.15 | 0.18 | -8.6 psf | -5.2 pst |
| | Leeward Pressure | 25.85 | -0.26 | 0.18 | -11.2 psf | -6.7 pst |
| | D. CALOU. O. I'V. | qh | GCp | GCpi | (1.0)P | (0.6)P |
| | Root All Other Conditions | | -0.77 | 0.18 | -24.4 psf | -14.7 ps |
| | Roof All Other Conditions For 0 to h/2 = 0 ft to 16.79 ft | 25.85 | -0.11 | 0.10 | | |
| | For 0 to h/2 = 0 ft to 16.79 ft h/2 to h = 16.79 ft to 33.58 ft | 25.85 | -0.77 | 0.18 | -24.4 psf | -14.7 ps |
| | For 0 to h/2 = 0 ft to 16.79 ft h/2 to h = 16.79 ft to 33.58 ft h to 2h = 33.58 ft to 67.16 ft | 25.85 25.85 | -0.77 -0.43 | 0.18 0.18 | -24.4 psf -15.6 psf | -14.7 ps -9.4 psf |
| | For 0 to h/2 = 0 ft to 16.79 ft h/2 to h = 16.79 ft to 33.58 ft | 25.85 | -0.77 | 0.18 | -24.4 psf | |
| | For 0 to h/2 = 0 ft to 16.79 ft h/2 to h = 16.79 ft to 33.58 ft h to 2h = 33.58 ft to 67.16 ft | 25.85 25.85 | -0.77 -0.43 | 0.18 0.18 | -24.4 psf -15.6 psf | -14.7 ps -9.4 psf |

| | Date 4/29/2022 | | Sheet | | of | |
|---|---|-------------------------|---|----------------------|--------------------------------------|------------------------------------|
| | Date 4/29/2022 Job 2220003 Building 3 | | Sheet | | 01 | |
| | Subject North Wind TOW: 38.5ft | | | | | |
| D ANALYSIS: ANALYTICAL - ALL HEIGHTS METHOD | | | | | | |
| E 7-16, Chapters 26, 27 and 30 | | | | | | |
| Windward Leeward | 1. Input Design Parameters | | | | | |
| Windward Leeward Pressure Pressure | Basic Wind Speed, V = | | | 109 | mph (Section 26 | 5.5, Fig. 1A-2D) |
| Pres | Exposure Category (B, C, or D) = | | | | (Section 26.7) | , , |
| | Building Risk Category (I, II, III, IV) = | | | | (Table 1.5-1) | |
| | Civil finished floor elevation (if unknown input 0) = | | | 0.00 | feet (Sect. 26.9, | Table 26.9-1) |
| | Eave Height, He = | | | 33.58 | faat | |
| | Max Building Height or Ridge Height above ground leve | el Hr= | | 33.50 | | |
| | Parapet Height above ground level, Hp = | , | | 38.50 | | |
| | Building Width Perpendicular to Wind, B = | | | | feet (max bldg d | im) |
| ļļ | Building Width Parallel to Wind, L = Enclosure Classification = | | Enclosed | 220.83 Ruildings | feet (Section 26.12) | |
| | Roof Configuration = Gabled, Hippe | | | | (Section 26.12) | |
| FER TO FIGURE 27.3-1 | Angle of Plane of Roof From Horizontal, $\theta =$ | | | | degrees | |
| | Is building on or poor a bill ridge, or occorrement? | | | N | (Y or N) (Sectior | 26.9) |
| | Is building on or near a hill, ridge, or escarpment? Height of Hill or Escarpment relative to upwind terrain, I | н = | | | feet (Section 26. | , |
| | Horiz. Dist. Upwind to Point Where Elevation = H/2, Lh | | | | feet (Section 26. | |
| x (upwind) x | Horiz. Dist. from Crest to Building Site, x = | | | | feet (Section 26. | |
| | 2D Ridge, 2D Escarpment, or Axisymmetrical Hill = | | | | (R, E, or H) | . , |
| ► V(z) | Is the building site upwind or downwind of the crest? | | | | (up, down) | |
| | | | | | | |
| | 2. Calculations - Main Wind Force Resisting System | - | | 04.40 | mph (IBC 2018, | 1600.2.4) |
| | Equivalent Allowable Stress Design Wind Speed, Vasd | = | | 84.43 33.58 | • • | 1609.3.1) |
| | Mean roof height, h = Kz, velocity pressure exposure coefficient at hz = 34.61 | 1ft = | | | Table 26.10-1 | (use with qz) |
| | Kz, velocity pressure exposure coefficient at hz = 34.54 Kz, velocity pressure exposure coefficient at hh = 33.58 | | | | Table 26.10-1 | (use with qh) |
| | Kz, velocity pressure exposure coefficient at hp = 38.5f | | | | Table 26.10-1 | (use with qp) |
| 2-D Ridge or Axisymmetrical Hill | Kzt,topographic factor at hz = 34.61ft = | | | | Figure 26.8-1 | (use with qz) |
| | Kzt,topographic factor at hh = 33.58ft = | | | 1.00 | Figure 26.8-1 | (use with qh) |
| ER TO FIGURE 26.8-1 | Kzt,topographic factor at hp = 38.5ft = | | | | Figure 26.8-1 | (use with qp) |
| | Kd, wind directionality factor = | | | | Table 26.6-1 | |
| | Ke, ground elevation factor at G, gust factor = | | | | Table 26.9-1 Section 26.11.4 | |
| | | | | | | |
| | qz, velocity pressure at hz = 34.61ft = qh, velocity pressure at hh = 33.58ft = | | | | psf (Eq. 26.10-1 | |
| | qp, velocity pressure at hp = 38.5ft = | | | | psf (Eq. 26.10-1 psf (Eq. 26.10-1 | |
| | Walls: P = q(GCpf-GCpi) Eqn. 27.3-1 | | GCn | GCpi | (1.0)P | (0.6)P |
| | Windward pressure | qz 26.11 | GCp 0.68 | oohi - | 17.8 psf | 10.7 psf |
| | · | | | | • | |
| | Leeward Pressure | qh 25.85 | GCp -0.43 | GCpi | (1.0)P -11 psf | (0.6)P -6.6 psf |
| | Sidewall pressure | 25.85 | -0.43 | 0.18 | -11 psi -20 psf | -0.0 psi -12 psf |
| | Internal Pressure | 25.85 | | 0.18 | 4.7 psf | 2.8 psf |
| | (1.0)W = (1.0)(Windward + Leeward Pressure) = (0.6)W = (0.6)(Windward + Leeward Pressure) = | | 17.76 psf + 10.99 psf = 10.65 psf + 6.59 psf = | | 28.7 psf 17.2 psf | |
| | | | - | pai - | | |
| | Parapets: Pp =qp(GCpn) Eqn. 27.3-3 | qp | GCpn | - | (1.0)Pp | (0.6)Pp |
| | Windward parapet pressure Leeward parapet pressure | 26.63 26.63 | 1.5 -1.0 | | 39.9 psf -26.6 psf | 24 psf -16 psf |
| | | | | | | |
| | Windward + Leeward Pressure | 26.63 | 2.50 | | 66.6 psf | 39.9 psf |
| | Roof Normal to Ridge (θ≥10 degrees) Windward Pressure case i | qh | GCp -0.60 | GCpi | (1.0)P -20 psf | (0.6)P -12 psf |
| | case ii | 25.85 25.85 | -0.60 | 0.18 0.18 | -20 psr -8.6 psf | -12 psr -5.2 psr |
| | | 25.85 | -0.26 | 0.18 | -11.2 psf | -6.7 psf |
| | Leeward Pressure | | | | | |
| | Leeward Pressure | ah | GCn | GCni | (1 0\P | (0 6)P |
| | | qh 25.85 | GCp -0.77 | GCpi 0.18 | (1.0)P -24.4 psf | (0.6)P -14.7 psf |
| | Leeward Pressure Roof All Other Conditions | | | | | -14.7 psf |
| | Leeward Pressure Roof All Other Conditions For 0 to $h/2 = 0$ ft to 16.79 ft h/2 to $h = 16.79$ ft to 33.58 ft h to $2h = 33.58$ ft to 67.16 ft | 25.85 25.85 25.85 | -0.77 -0.77 -0.43 | 0.18 0.18 0.18 | -24.4 psf -24.4 psf -15.6 psf | -14.7 psf -14.7 psf -9.4 psf |
| | Leeward Pressure Roof All Other Conditions For 0 to h/2 = 0 ft to 16.79 ft h/2 to h = 16.79 ft to 33.58 ft | 25.85 25.85 | -0.77 -0.77 | 0.18 0.18 | -24.4 psf -24.4 psf | -14.7 psf -14.7 psf |
| | Leeward Pressure Roof All Other Conditions For 0 to $h/2 = 0$ ft to 16.79 ft h/2 to $h = 16.79$ ft to 33.58 ft h to $2h = 33.58$ ft to 67.16 ft | 25.85 25.85 25.85 | -0.77 -0.77 -0.43 | 0.18 0.18 0.18 | -24.4 psf -24.4 psf -15.6 psf | -14.7 psf -14.7 psf -9.4 psf |

| | Date 4/29/2022 | | Sheet | | of | |
|---|---|--------------------------------------|---------------------------------------|------------------------------|---|--|
| | Job 2220003 Building 3 | | Chect | | 01 | |
| | Subject South Wind TOW: 40.0ft | | | | | |
| ANALYSIS: ANALYTICAL - ALL HEIGHTS METHOD | | | | | | |
| 7-16, Chapters 26, 27 and 30 | 1. Input | | | | | |
| undward (an | Design Parameters | | | | | |
| Winow Pressure Pressure | Basic Wind Speed, V = | | | | mph (Section 26 | 6.5, Fig. 1A-2D) |
| | Exposure Category (B, C, or D) = | | | | (Section 26.7) | |
| | Building Risk Category (I, II, III, IV) = | | | | (Table 1.5-1) | Table 26.0.1) |
| H He Heart | Civil finished floor elevation (if unknown input 0) = | | | 0.00 | feet (Sect. 26.9, | Table 26.9-1) |
| | Eave Height, He = | | | 33.58 | feet | |
| | Max Building Height or Ridge Height above ground leve | el, Hr = | | 37.75 | | |
| | Parapet Height above ground level, Hp = | | | 40.00 | | |
| L | Building Width Perpendicular to Wind, B = Building Width Parallel to Wind, L = | | | 1150.00 220.83 | feet (max bldg d | lim) |
| · | Enclosure Classification = | | Enclosed | | (Section 26.12) | |
| FER TO FIGURE 27.3-1 | Roof Configuration = Gabled, Hipped | | | | , | |
| | Angle of Plane of Roof From Horizontal, θ = | | | 1.20 | degrees | |
| | Is building on or near a hill, ridge, or escarpment? | | | N | (Y or N) (Sectior | n 26.8) |
| | Height of Hill or Escarpment relative to upwind terrain, H | H = | | | feet (Section 26 | , |
| x (upwind) x | Horiz. Dist. Upwind to Point Where Elevation = H/2, Lh | = | | | feet (Section 26 | - , |
| | Horiz. Dist. from Crest to Building Site, x = | | | | feet (Section 26 | .8, Fig. 26.8-1) |
| | 2D Ridge, 2D Escarpment, or Axisymmetrical Hill = | | | | (R, E, or H) | |
| V(z) I | Is the building site upwind or downwind of the crest? | | | DOWN | (up, down) | |
| | 2. Calculations - Main Wind Force Resisting System | | | | | |
| | Equivalent Allowable Stress Design Wind Speed, Vasd | = | | 84.43 | mph (IBC 2018, | 1609.3.1) |
| | Mean roof height, h = | | | 33.58 | feet | |
| | Kz, velocity pressure exposure coefficient at hz = 37.75 | | | | Table 26.10-1 | (use with qz) |
| | Kz, velocity pressure exposure coefficient at hh = 33.58 | | | | Table 26.10-1 | (use with qh) |
| | Kz, velocity pressure exposure coefficient at hp = 40ft = | | | | Table 26.10-1 | (use with qp) |
| 2-D Ridge or Axisymmetrical Hill | Kzt,topographic factor at hz = 37.75ft = Kzt,topographic factor at hh = 33.58ft = | | | | Figure 26.8-1 Figure 26.8-1 | (use with qz) (use with qh) |
| ER TO FIGURE 26.8-1 | Kzt,topographic factor at hp = 40ft = | | | | Figure 26.8-1 | (use with qn) |
| | Kd, wind directionality factor = | | | | Table 26.6-1 | (use with qp) |
| | Ke, ground elevation factor at | | | | Table 26.9-1 | |
| | G, gust factor = | | | 0.85 | Section 26.11.4 | |
| | qz, velocity pressure at hz = 37.75ft = | | | 26.63 | psf (Eq. 26.10-1 |) |
| | qh, velocity pressure at hh = 33.58ft = | | | 25.85 | psf (Eq. 26.10-1 |) |
| | qp, velocity pressure at hp = 40ft = | | | 26.89 | psf (Eq. 26.10-1 |) |
| | Walls: P = q(GCpf-GCpi) Eqn. 27.3-1 | qz | GCp | GCpi | (1.0)P | (0.6)P |
| | Windward pressure | 26.63 | 0.68 | | 18.1 psf | 10.9 psf |
| | | qh | GCp | GCpi | (1.0)P | (0.6)P |
| | Leeward Pressure | 25.85 | -0.43 | | -11 psf | -6.6 psf |
| | Sidewall pressure Internal Pressure | 25.85 25.85 | -0.60 | 0.18 0.18 | -20 psf 4.7 psf | -12 psf 2.8 psf |
| | internet ressure | 20.00 | | 0.10 | ч./ ры | 2.0 psi |
| | (1.0)W = (1.0)(Windward + Leeward Pressure) = (0.6)W =(0.6)(Windward + Leeward Pressure) = | | | 0.99 psf = 6.59 psf = | 29.1 psf 17.5 psf | |
| | Parapets: Pp =qp(GCpn) Eqn. 27.3-3 | qp | GCpn | | (1.0)Pp | (0.6)Pp |
| | Windward parapet pressure | 26.89 | 1.5 | | 40.3 psf | 24.2 psf |
| | Leeward parapet pressure | 26.89 | -1.0 | | -26.9 psf | -16.1 ps |
| | Windward + Leeward Pressure | 26.89 | 2.50 | | 67.2 psf | 40.3 psf |
| | Roof Normal to Ridge (θ≥10 degrees) | qh | GCp | GCpi | (1.0)P | (0.6)P |
| | Windward Pressure case i | 25.85 | -0.60 | 0.18 | -20 psf | -12 psf |
| | case ii | 25.85 25.85 | -0.15 -0.26 | 0.18 0.18 | -8.6 psf | -5.2 psf |
| | | | | | | |
| | Leeward Pressure | 23.05 | -0.20 | 0.10 | -11.2 psf | -0.7 psi |
| | Leeward Pressure Roof All Other Conditions | qh | GCp | GCpi | (1.0)P | (0.6)P |
| | Leeward Pressure Roof All Other Conditions For 0 to h/2 = 0 ft to 16.79 ft | qh 25.85 | GCp -0.77 | GCpi 0.18 | (1.0)P -24.4 psf | (0.6)P -14.7 ps |
| | Leeward Pressure Roof All Other Conditions For 0 to h/2 = 0 ft to 16.79 ft h/2 to h = 16.79 ft to 33.58 ft | qh 25.85 25.85 | GCp -0.77 -0.77 | GCpi 0.18 0.18 | (1.0)P -24.4 psf -24.4 psf | (0.6)P -14.7 pst -14.7 pst |
| | Leeward Pressure Roof All Other Conditions For 0 to $h/2 = 0$ ft to 16.79 ft h/2 to $h = 16.79$ ft to 33.58 ft h to 2h = 33.58 ft to 67.16 ft | qh 25.85 25.85 25.85 | GCp -0.77 -0.77 -0.43 | GCpi 0.18 0.18 0.18 | (1.0)P -24.4 psf -24.4 psf -15.6 psf | -14.7 pst -14.7 pst -9.4 psf |
| | Leeward Pressure Roof All Other Conditions For 0 to $h/2 = 0$ ft to 16.79 ft h/2 to $h = 16.79$ ft to 33.58 ft h to 2h = 33.58 ft to 67.16 ft >2h = >67.16 ft | qh 25.85 25.85 | GCp -0.77 -0.77 | GCpi 0.18 0.18 | (1.0)P -24.4 psf -24.4 psf | (0.6)P -14.7 pst -14.7 pst -9.4 psf -6.7 psf |
| | Leeward Pressure Roof All Other Conditions For 0 to $h/2 = 0$ ft to 16.79 ft h/2 to $h = 16.79$ ft to 33.58 ft h to 2h = 33.58 ft to 67.16 ft | qh 25.85 25.85 25.85 | GCp -0.77 -0.77 -0.43 | GCpi 0.18 0.18 0.18 | (1.0)P -24.4 psf -24.4 psf -15.6 psf | (0.6)P -14.7 ps -14.7 ps -9.4 psf |

| | Date | 4/29/202 | | | Sheet | | of | |
|---|--|--|--|--|---|---------------|---|--|
| | Job Subject | | Building 3 ind TOW: 40.0ft | | | | | |
| | | Codar W | 1011.40.01 | | | | | |
| ND ANALYSIS: ANALYTICAL - ALL HEIGHTS METHOD CE 7-16, Chapters 27 and 30 | | | | | | | | |
| | 3. Input - Compon | | | | | 4000.00 | guara faat | |
| | | | Components, 1 = Components, 2 = | | | | square feet square feet | |
| | | | pet Components, 1 = | | | | square feet | |
| | | | pet Components, 2 = | | | | square feet | |
| | | | Components, 1 = | | | | square feet | |
| | | | Components, 2 = | | | | square feet | |
| | | | hangs or Canopies, 1 | = | | | square feet | |
| (5) h | | | hangs or Canopies, 2 | | | | square feet | |
| | | | | | | | | |
| | | | and Cladding Eleme | | | | | |
| | | | xposure coefficient at xposure coefficient at | | | | Fable 26.10-1 Fable 26.10-1 | (use with qh (use with qp |
| <u>(3</u> (5) | | | at hh = 33.58ft = | np – 4011 – | | | Figure 26.8-1 | (use with qh |
| La Ver | | | at hp = 40ft = | | | | Figure 26.8-1 | (use with qp |
| | | irectionality fa | | | | | Table 26.6-1 | (use min qp |
| ELEVATION | | l elevation fa | | | | | Table 26.9-1 | |
| | G, gust fac | | olor at | | | | Section 26.11.4 | |
| | qh, velocity | / pressure at | hh = 33.58ft = | | | 25.85 p | osf (Eq. 26.10-1 |) |
| A (1 | qp, velocity | / pressure at | hp = 40ft = | | | 26.89 p | osf (Eq. 26.10-1 |) |
| | Walls: trib. Are | | | qh | GCp | GCpi | (1.0)P | (0.6)P |
| | Zone 4 | Interior Z | | 25.85 | -0.72 | 0.18 | -23.3 psf | -14 psf |
| | Zone 5 | End Zon | e | 25.85 | -0.72 | 0.18 | -23.3 psf | -14 psf |
| | Zone 4 and | 15 | | 25.85 | 0.63 | -0.18 | 20.9 psf | 12.6 ps |
| 0.2h | Walls: trib. Are | ea = 500 sq. | ft. | qh | GCp | GCpi | (1.0)P | (0.6)P |
| | Zone 4 | Interior Z | lone | 25.85 | -0.72 | 0.18 | -23.3 psf | -14 psf |
| | Zone 5 | End Zon | e | 25.85 | -0.72 | 0.18 | -23.3 psf | -14 psf |
| | Zone 4 and | 15 | | 25.85 | 0.63 | -0.18 | 20.9 psf | 12.6 ps |
| 0.6h | Parapets: trib. | Area = 100 | 0 og ft | 610 | GCp | GCpi | (1.0)P | (0.6)P |
| | Case A | Zone 4 | Interior Zone | qp 26.89 | 1.89 | 0.00 | 50.8 psf | 30.5 ps |
| 0 <u>.6h'</u> | Case A | Zone 5 | End Zone | 26.89 | 1.89 | 0.00 | 50.8 psf | 30.5 ps |
| | | Zone o | End Zone | 20.00 | 1.00 | 0.00 | 00.0 por | 00.0 p3 |
| \bigcirc | Case B | Zone 4 | Interior Zone | 26.89 | 1.35 | 0.00 | 36.3 psf | 21.8 pst |
| | | Zone 5 | End Zone | 26.89 | 1.35 | 0.00 | 36.3 psf | 21.8 ps |
| PLAN | Parapets: trib. | | | qp | GCp | GCpi | (1.0)P | (0.6)P |
| | Case A | Zone 4 Zone 5 | Interior Zone End Zone | 26.89 26.89 | 1.89 1.89 | 0.00 0.00 | 50.8 psf 50.8 psf | 30.5 psi 30.5 psi |
| | | | | | | | - | - |
| | Case B | Zone 4 Zone 5 | Interior Zone End Zone | 26.89 26.89 | 1.35 1.35 | 0.00 0.00 | 36.3 psf 36.3 psf | 21.8 ps 21.8 ps |
| | | 2010 0 | End Zono | 20.00 | 1.00 | 0.00 | 00.0 por | 21.0 p5 |
| | Roofs: trib. Ar | | . ft. | qh | GCp | GCpi | (1.0)P | (0.6)P |
| \backslash | Corner Zor | | | 25.85 | -1.61 | 0.18 | -46.2 psf | -27.7 ps |
| 10- | End Zone (| · / | | 25.85 | -1.50 | 0.18 | -43.5 psf | -26.1 ps |
| θ | Interior Zor | | | 25.85 | -1.08 | 0.18 | -32.6 psf | -19.5 ps |
| | Interior Zor | | | 25.85 25.85 | -0.65 0.20 | 0.18 -0.18 | -21.4 psf | -12.8 ps |
| | Positive (A | 1 20103) | | 20.00 | 0.20 | -0.10 | 16 psf | 9.6 ps |
| | | | | | | | | |
| | - Roofs trib Ar | rea = 10 sq. 1 | ft. | qh | GCp | GCpi | (1.0)P | (0.6)P |
| ELEVATION | | | | 25.85 | -3.20 | 0.18 | -87.4 psf | -52.4 ps |
| ELEVATION | Corner Zor | | | | | 0.18 | -64.1 psf | -38.5 ps -29.2 ps |
| | Corner Zor End Zone (| (2) | | 25.85 | -2.30 | | 10 F | |
| ELEVATION REFER TO FIGURE 30.3-2A | Corner Zor End Zone (Interior Zor | (2) ne (1) | | 25.85 25.85 | -1.70 | 0.18 | -48.6 psf | |
| | Corner Zor End Zone (| (2) ne (1) ne (1') | | 25.85 | | | -48.6 psf -27.9 psf 16 psf | -16.8 ps |
| | Corner Zor End Zone (Interior Zor Interior Zor | (2) ne (1) ne (1') | | 25.85 25.85 25.85 | -1.70 -0.90 | 0.18 0.18 | -27.9 psf | -16.8 ps |
| | Corner Zor End Zone (Interior Zor Interior Zor | (2) ne (1) ne (1') Il Zones) |) sq. ft. | 25.85 25.85 25.85 25.85 | -1.70 -0.90 | 0.18 0.18 | -27.9 psf | -16.8 ps 9.6 ps |
| | Corner Zor End Zone (Interior Zor Interior Zor Positive (A | (2) he (1) he (1') Il Zones) ib. Area = 50 |) sq. ft. | 25.85 25.85 25.85 | -1.70 -0.90 0.30 | 0.18 0.18 | -27.9 psf 16 psf | -16.8 ps 9.6 psf (0.6)Pp |
| | Corner Zor End Zone (Interior Zor Interior Zor Positive (A Overhangs: tri | (2) ne (1) ne (1') Il Zones) ib. Area = 50 ne (3) |) sq. ft. | 25.85 25.85 25.85 25.85 9 | -1.70 -0.90 0.30 GCpn | 0.18 0.18 | -27.9 psf 16 psf (1.0)Pp | -16.8 ps 9.6 ps (0.6)Pp -36.2 ps |
| | Corner Zor End Zone (Interior Zor Positive (A Overhangs: tri Corner Zor End Zone (Interior Zor | (2) he (1) he (1') II Zones) ib. Area = 5(he (3) (2) he (1) |) sq. ft. | 25.85 25.85 25.85 25.85 9 9 9 9 9 9 1 9 1 1 1 1 1 1 1 1 1 1 | -1.70 -0.90 0.30 GCpn -2.34 -1.81 -1.63 | 0.18 0.18 | -27.9 psf 16 psf (1.0)Pp -60.4 psf -46.7 psf -42.1 psf | -16.8 ps 9.6 ps (0.6)Pp -36.2 ps -28 ps -25.3 ps |
| | Corner Zor End Zone (Interior Zor Positive (A Overhangs: tri Corner Zor End Zone (| (2) he (1) he (1') II Zones) ib. Area = 5(he (3) (2) he (1) |) sq. ft. | 25.85 25.85 25.85 25.85 qh 25.85 25.85 | -1.70 -0.90 0.30 GCpn -2.34 -1.81 | 0.18 0.18 | -27.9 psf 16 psf (1.0)Pp -60.4 psf -46.7 psf | -16.8 ps 9.6 ps (0.6)Pp -36.2 ps -28 ps -25.3 ps |
| | Corner Zor End Zone (Interior Zor Positive (A Overhangs: tri Corner Zor End Zone (Interior Zor Interior Zor | (2) he (1) he (1') II Zones) ib. Area = 5(he (3) (2) he (1) |) sq. ft. | 25.85 25.85 25.85 25.85 25.85 25.85 25.85 25.85 25.85 | -1.70 -0.90 0.30 GCpn -2.34 -1.81 -1.63 -1.63 | 0.18 0.18 | -27.9 psf 16 psf (1.0)Pp -60.4 psf -46.7 psf -42.1 psf -42.1 psf | -16.8 ps 9.6 ps (0.6)Pp -36.2 ps -28 ps -25.3 ps |
| | Corner Zor End Zone (Interior Zor Positive (A) Overhangs: tri Corner Zor End Zone (Interior Zor Interior Zor Overhangs: tri | (2) The (1) The (1') Il Zones) ib. Area = 50 the (3) (2) The (1) The (1') ib. Area = 10 | | 25.85 25.85 25.85 25.85 25.85 25.85 25.85 25.85 25.85 25.85 25.85 | -1.70 -0.90 0.30 -2.34 -1.81 -1.63 -1.63 GCpn | 0.18 0.18 | -27.9 psf 16 psf (1.0)Pp -60.4 psf -46.7 psf -42.1 psf -42.1 psf (1.0)Pp | -16.8 ps 9.6 ps (0.6)Pp -36.2 ps -28 ps -25.3 ps -25.3 ps -25.3 ps -25.3 ps (0.6)Pp |
| | Corner Zor End Zone (Interior Zor Positive (A Overhangs: tri Corner Zor End Zone (Interior Zor Interior Zor Overhangs: tri Corner Zor | (2) The (1) The (1') Il Zones) ib. Area = 5((2) The (1) The (1') ib. Area = 1(The (3) | | 25.85 25.85 25.85 25.85 25.85 25.85 25.85 25.85 25.85 qh 25.85 | -1.70 -0.90 0.30 GCpn -2.34 -1.81 -1.63 -1.63 GCpn -3.20 | 0.18 0.18 | -27.9 psf 16 psf (1.0)Pp -60.4 psf -46.7 psf -42.1 psf -42.1 psf -42.1 psf -42.1 psf -42.1 psf -42.1 psf -42.1 psf -42.1 psf -42.1 psf | -16.8 ps 9.6 ps 9.6 ps -36.2 ps -28 ps -25.3 ps -25.3 ps (0.6)Pp -49.6 ps |
| | Corner Zor End Zone (Interior Zor Positive (A) Overhangs: tri Corner Zor End Zone (Interior Zor Interior Zor Overhangs: tri Corner Zor | (2) te (1) te (1) te (1) II Zones) ib. Area = 5(te (3) (2) te (1) te (1) te (1') ib. Area = 1(te (3) (2) (2) | | 25.85 25.85 25.85 25.85 25.85 25.85 25.85 25.85 qh 25.85 25.85 | -1.70 -0.90 0.30 -2.34 -1.81 -1.63 -1.63 GCpn -3.20 -2.30 | 0.18 0.18 | -27.9 psf 16 psf (1.0)Pp -60.4 psf -46.7 psf -42.1 psf -42.1 psf -42.1 psf -42.2 psf -42.7 psf -59.5 psf | -16.8 ps 9.6 ps -36.2 ps -28 ps -25.3 ps |
| | Corner Zor End Zone (Interior Zor Positive (A Overhangs: tri Corner Zor End Zone (Interior Zor Interior Zor Overhangs: tri Corner Zor | (2) te (1) te (1') Il Zones) ib. Area = 5(te (3) (2) te (1) te (1') ib. Area = 1(te (3) (2) te (1) | | 25.85 25.85 25.85 25.85 25.85 25.85 25.85 25.85 25.85 qh 25.85 | -1.70 -0.90 0.30 GCpn -2.34 -1.81 -1.63 -1.63 GCpn -3.20 | 0.18 0.18 | -27.9 psf 16 psf (1.0)Pp -60.4 psf -46.7 psf -42.1 psf -42.1 psf -42.1 psf -42.1 psf -42.1 psf -42.1 psf -42.1 psf -42.1 psf -42.1 psf | (0.6)Pp -36.2 ps -25.3 ps -25.3 ps -25.3 ps -25.3 ps -25.3 ps -25.3 ps -25.3 ps -25.3 ps -25.4 ps -35.7 ps -26.4 ps -26.4 ps |

a, end zone width = Min. of 10% L and .4H but not < 4% L or 3' =

13.4 feet (Fig. 30.3-1)

Notes:
1. The gust factor of 0.85 is based on a building with a natural frequency of > 1 Hz. For other buildings, the gust factor must be calculated.
2. GCp for walls include a 10% reduction when angle of roof is 10 deg or less. (Figure 30.3-1, Footnote 5)
3. If a parapet equal to 3 ft or higher is provided around the perimeter of a roof with a slope of ≤ 7°, the roof corner zones may be treated as end zones. (Fig. 30.3-2A, Footnote 5)

| | Date 4/29/2022 | | Sheet | | of | |
|---|--|--|--|--|--|---|
| | Job 2220003 Building 3 | | oncer | | 01 | |
| | Subject South Wind TOW: 42.0ft | | | | | |
| D ANALYSIS: ANALYTICAL - ALL HEIGHTS METHOD | | | | | | |
| E 7-16, Chapters 26, 27 and 30 | 1. Input | | | | | |
| Windward Leeward | Design Parameters | | | | | |
| Window Pressure | Basic Wind Speed, V = | | | | mph (Section 26 | i.5, Fig. 1A-2D) |
| | Exposure Category (B, C, or D) = | | | | (Section 26.7) | |
| | Building Risk Category (I, II, III, IV) = | | | | (Table 1.5-1) | Table 26.0.1) |
| He H | Civil finished floor elevation (if unknown input 0) = | | | 0.00 | feet (Sect. 26.9, | Table 26.9-1) |
| | Eave Height, He = | | | 33.58 | feet | |
| | Max Building Height or Ridge Height above ground lev | el, Hr = | | 37.75 | | |
| | Parapet Height above ground level, Hp = | | | 42.00 | | |
| L L | Building Width Perpendicular to Wind, B = Building Width Parallel to Wind, L = | | | 1150.00 220.83 | feet (max bldg d | im) |
| | Enclosure Classification = | I | Enclosed | | (Section 26.12) | |
| FER TO FIGURE 27.3-1 | Roof Configuration = Gabled, Hippe | | | | | |
| | Angle of Plane of Roof From Horizontal, θ = | | | 1.20 | degrees | |
| | Is building on or near a hill, ridge, or escarpment? | | | N | (Y or N) (Section | n 26.8) |
| | Height of Hill or Escarpment relative to upwind terrain, | H = | | | feet (Section 26 | , |
| x (upwind) x | Horiz. Dist. Upwind to Point Where Elevation = H/2, Lh | 1 = | | | feet (Section 26 | , |
| | Horiz. Dist. from Crest to Building Site, x = | | | | feet (Section 26 | .8, Fig. 26.8-1) |
| | 2D Ridge, 2D Escarpment, or Axisymmetrical Hill = | | | | (R, E, or H) | |
| | Is the building site upwind or downwind of the crest? | | | DOWN | (up, down) | |
| | 2. Calculations - Main Wind Force Resisting System | | | | | |
| | Equivalent Allowable Stress Design Wind Speed, Vasc | d = | | 84.43 | mph (IBC 2018, | 1609.3.1) |
| | Mean roof height, h = | | | 33.58 | feet | |
| | Kz, velocity pressure exposure coefficient at hz = 37.7 | | | | Table 26.10-1 | (use with qz) |
| | Kz, velocity pressure exposure coefficient at hh = 33.5 | | | | Table 26.10-1 | (use with qh) |
| | Kz, velocity pressure exposure coefficient at hp = 42 ft | = | | | Table 26.10-1 | (use with qp) |
| 2-D Ridge or Axisymmetrical Hill | Kzt,topographic factor at hz = 37.75ft = Kzt,topographic factor at hh = 33.58ft = | | | | Figure 26.8-1 Figure 26.8-1 | (use with qz) (use with qh) |
| ER TO FIGURE 26.8-1 | Kzt,topographic factor at hp = 42ft = | | | | Figure 26.8-1 | (use with qn) |
| | Kd, wind directionality factor = | | | | Table 26.6-1 | (use min qp) |
| | Ke, ground elevation factor at | | | | Table 26.9-1 | |
| | G, gust factor = | | | 0.85 | Section 26.11.4 | |
| | qz, velocity pressure at hz = 37.75ft = | | | 26.63 | psf (Eq. 26.10-1 |) |
| | qh, velocity pressure at hh = 33.58ft = | | | 25.85 | psf (Eq. 26.10-1 |) |
| | qp, velocity pressure at hp = 42ft = | | | 27.15 | psf (Eq. 26.10-1 |) |
| | Walls: P = q(GCpf-GCpi) Eqn. 27.3-1 | qz | GCp | GCpi | (1.0)P | (0.6)P |
| | Windward pressure | 26.63 | 0.68 | | 18.1 psf | 10.9 psf |
| | | qh | GCp | GCpi | (1.0)P | (0.6)P |
| | Leeward Pressure | 25.85 | -0.43 | 0.40 | -11 psf | -6.6 psf |
| | Sidewall pressure Internal Pressure | 25.85 25.85 | -0.60 | 0.18 0.18 | -20 psf 4.7 psf | -12 psf 2.8 psf |
| | internal i ressure | 20.00 | | 0.10 | ч. гры | 2.0 psi |
| | (1.0)W = (1.0)(Windward + Leeward Pressure) = (0.6)W =(0.6)(Windward + Leeward Pressure) = | | 18.11 psf + 10.99 psf = 10.86 psf + 6.59 psf = | | 29.1 psf 17.5 psf | |
| | Parapets: Pp =qp(GCpn) Eqn. 27.3-3 | qp | GCpn | | (1.0)Pp | (0.6)Pp |
| | Windward parapet pressure | 27.15 | 1.5 | = | 40.7 psf | 24.4 psf |
| | Leeward parapet pressure | 27.15 | -1.0 | | -27.1 psf | -16.3 ps |
| | | | | | 67.9 psf | |
| | Windward + Leeward Pressure | 27.15 | 2.50 | | 07.5 par | 40.7 pst |
| | Roof Normal to Ridge (θ≥10 degrees) | qh | GCp | GCpi | (1.0)P | (0.6)P |
| | Roof Normal to Ridge (θ≥10 degrees) Windward Pressure case i | qh 25.85 | GCp -0.60 | 0.18 | (1.0)P -20 psf | (0.6)P -12 psf |
| | Roof Normal to Ridge (θ≥10 degrees) | qh | GCp | | (1.0)P | (0.6)P -12 psf -5.2 psf |
| | Roof Normal to Ridge (θ≥10 degrees) Windward Pressure case i case ii Leeward Pressure | qh 25.85 25.85 25.85 | GCp -0.60 -0.15 -0.26 | 0.18 0.18 0.18 | (1.0)P -20 psf -8.6 psf -11.2 psf | (0.6)P -12 psf -5.2 psf -6.7 psf |
| | Roof Normal to Ridge (θ≥10 degrees) Windward Pressure case i case ii Leeward Pressure Roof All Other Conditions | qh 25.85 25.85 25.85 qh | GCp -0.60 -0.15 -0.26 GCp | 0.18 0.18 0.18 GCpi | (1.0)P -20 psf -8.6 psf -11.2 psf (1.0)P | (0.6)P -12 psf -5.2 psf -6.7 psf (0.6)P |
| | Roof Normal to Ridge (θ≥10 degrees) Windward Pressure case i case ii Leeward Pressure | qh 25.85 25.85 25.85 | GCp -0.60 -0.15 -0.26 | 0.18 0.18 0.18 | (1.0)P -20 psf -8.6 psf -11.2 psf | (0.6)P -12 psf -5.2 psf -6.7 psf (0.6)P -14.7 ps |
| | Roof Normal to Ridge (θ≥10 degrees) Windward Pressure case i Leeward Pressure Roof All Other Conditions For 0 to h/2 = 0 ft to 16.79 ft h/2 to h = 16.79 ft to 33.58 ft h to 2h = 33.58 ft to 67.16 ft | qh 25.85 25.85 25.85 qh 25.85 25.85 25.85 | GCp -0.60 -0.15 -0.26 GCp -0.77 -0.77 -0.43 | 0.18 0.18 0.18 0.18 0.18 0.18 0.18 0.18 | (1.0)P -20 psf -8.6 psf -11.2 psf (1.0)P -24.4 psf -24.4 psf -24.4 psf -15.6 psf | (0.6)P -12 psf -5.2 psf -6.7 psf (0.6)P -14.7 ps -14.7 ps -9.4 psf |
| | Roof Normal to Ridge (θ≥10 degrees) Windward Pressure case i case ii Leeward Pressure Roof All Other Conditions For 0 to h/2 = 0 ft to 16.79 ft h/2 to h = 16.79 ft to 33.58 ft | qh 25.85 25.85 25.85 qh 25.85 25.85 | GCp -0.60 -0.15 -0.26 GCp -0.77 -0.77 | 0.18 0.18 0.18 0.18 0.18 0.18 0.18 | (1.0)P -20 psf -8.6 psf -11.2 psf (1.0)P -24.4 psf -24.4 psf | -12 psf -5.2 psf -6.7 psf |
| | Roof Normal to Ridge (θ≥10 degrees) Windward Pressure case i Leeward Pressure Roof All Other Conditions For 0 to h/2 = 0 ft to 16.79 ft h/2 to h = 16.79 ft to 33.58 ft h to 2h = 33.58 ft to 67.16 ft | qh 25.85 25.85 25.85 qh 25.85 25.85 25.85 | GCp -0.60 -0.15 -0.26 GCp -0.77 -0.77 -0.43 | 0.18 0.18 0.18 0.18 0.18 0.18 0.18 0.18 | (1.0)P -20 psf -8.6 psf -11.2 psf (1.0)P -24.4 psf -24.4 psf -24.4 psf -15.6 psf | (0.6)P -12 psf -5.2 psf -6.7 psf (0.6)P -14.7 pst -14.7 pst -9.4 psf |

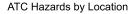
| | Date | 4/29/202 | | | Sheet | | of | |
|--|--|--|-----------------------------------|---|---|-----------------|---|--|
| | Job Subject | | Building 3 ind TOW: 42.0ft | | | | | |
| | | oounn | | | | | | |
| D ANALYSIS: ANALYTICAL - ALL HEIGHTS METHOD E 7-16, Chapters 27 and 30 | | | | | | | | |
| | 3. Input - Compone Tributary A | | dding Elements Components, 1 = | | | 1000 00 9 | square feet | |
| | | | Components, 2 = | | | | square feet | |
| | | | pet Components, 1 = | | | | square feet | |
| | Tributary A | rea for Para | pet Components, 2 = | | | 500.00 s | square feet | |
| | Tributary A | rea for Roof | Components, 1 = | | | 300.00 | square feet | |
| | Tributary A | rea for Roof | Components, 2 = | | | 10.00 | square feet | |
| | | | hangs or Canopies, 1 | | | | square feet | |
| | Tributary A | rea for Overl | hangs or Canopies, 2 | 2 = | | 10.00 | square feet | |
| | 4. Calculations - C | omponent a | and Cladding Eleme | nts | | | | |
| | | | posure coefficient at | | | 1.00 | Table 26.10-1 | (use with gh |
| | | | posure coefficient at | hp = 42ft = | | 1.05 | Table 26.10-1 | (use with q |
| | | | at hh = 33.58ft = | | | | Figure 26.8-1 | (use with q |
| All and a second s | | | at hp = 42ft = | | | | Figure 26.8-1 | (use with q |
| ELEVATION | | rectionality fa | | | | | Table 26.6-1 | |
| | | elevation fa | ctor at | | | | Table 26.9-1 | |
| | G, gust fac | lor = | | | | 0.85 | Section 26.11.4 | |
| | | r pressure at pressure at | hh = 33.58ft = hp = 42ft = | | | | osf (Eq. 26.10-1 osf (Eq. 26.10-1 | , |
| 0.6h | Walls: trib. Are | a = 1000 sc | , ft | qh | GCp | GCpi | (1.0)P | (0.6)P |
| | Zone 4 | Interior Z | | 25.85 | -0.72 | 0.18 | -23.3 psf | -14 ps |
| 3 | Zone 5 | End Zon | | 25.85 | -0.72 | 0.18 | -23.3 psf | -14 ps |
| | Zone 4 and | | | 25.85 | 0.63 | -0.18 | 20.9 psf | 12.6 ps |
| 0.2h | Walls: trib. Are | a = 500 sq. | ft. | qh | GCp | GCpi | (1.0)P | (0.6)P |
| | Zone 4 | Interior Z | | 25.85 | -0.72 | 0.18 | -23.3 psf | -14 ps |
| | Zone 5 | End Zon | | 25.85 | -0.72 | 0.18 | -23.3 psf | -14 ps |
| | Zone 4 and | 15 | | 25.85 | 0.63 | -0.18 | 20.9 psf | 12.6 ps |
| 0.6h | Parapets: trib. | Area = 100 | 0 sa ft | qp | GCp | GCpi | (1.0)P | (0.6)P |
| 0.6h | Case A | Zone 4 | Interior Zone | 27.15 | 1.89 | 0.00 | 51.3 psf | 30.8 ps |
| | | Zone 5 | End Zone | 27.15 | 1.89 | 0.00 | 51.3 psf | 30.8 ps |
| 3 | | | | | | | | |
| | Case B | Zone 4 Zone 5 | Interior Zone End Zone | 27.15 27.15 | 1.35 1.35 | 0.00 0.00 | 36.6 psf 36.6 psf | 22 psf 22 psf |
| PLAN | Dense star trib | | | | | GCpi | - | |
| | Parapets: trib. Case A | Zone 4 | Interior Zone | qp 27.15 | GCp 1.89 | 0.00 | (1.0)P 51.3 psf | (0.6)P 30.8 ps |
| | | Zone 5 | End Zone | 27.15 | 1.89 | 0.00 | 51.3 psf | 30.8 ps |
| | Case B | Zone 4 | Interior Zone | 27.15 | 1.35 | 0.00 | 36.6 psf | 22 psf |
| | | Zone 5 | End Zone | 27.15 | 1.35 | 0.00 | 36.6 psf | 22 ps1 |
| | Roofs: trib. Ar | | . ft. | qh | GCp | GCpi | (1.0)P | (0.6)P |
| $\mathbf{\lambda}$ | Corner Zon | | | 25.85 | -1.64 | 0.18 | -46.9 psf | -28.2 ps |
| | End Zone (| , | | 25.85 | -1.52 | 0.18 | -43.9 psf | -26.3 p |
| θ | Interior Zor Interior Zor | | | 25.85 25.85 | -1.09 -0.66 | 0.18 0.18 | -32.9 psf -21.8 psf | -19.7 p: -13.1 p: |
| | Positive (Al | . , | | 25.85 | -0.00 | -0.18 | -21.6 psi 16 psf | 9.6 ps |
| / h | | , | | | | | | 270 00 |
| | | | _ | | | | | |
| ELEVATION | Roofs: trib. Ar | | n. | qh | GCp | GCpi | (1.0)P | (0.6)P |
| | Corner Zon End Zone (| | | 25.85 25.85 | -3.20 -2.30 | 0.18 0.18 | -87.4 psf -64.1 psf | -52.4 ps -38.5 ps |
| REFER TO FIGURE 30.3-2A | Interior Zor | | | 25.85 | -2.30 | 0.18 | -48.6 psf | -38.5 ps |
| REFER TO TROUTE 00.0-2A | Interior Zor | | | 25.85 | -0.90 | 0.18 | -27.9 psf | -16.8 p |
| | | ll Zones) | | 25.85 | 0.30 | -0.18 | 16 psf | 9.6 ps |
| | Positive (Al | | | | | | | |
| | Positive (Al | | | | | | | |
| | Overhangs: tri | |) sq. ft. | qh | GCpn | - | (1.0)Pp | |
| | Overhangs: tri Corner Zon | ie (3) |) sq. ft. | 25.85 | -2.34 | - | -60.4 psf | -36.2 ps |
| | Overhangs: tri | ie (3) 2) |) sq. ft. | | - | - | -60.4 psf -46.7 psf | -36.2 ps -28 ps |
| | Overhangs: tri Corner Zon End Zone (Interior Zor Interior Zor | ne (3) 2) ne (1) |) sq. ft. | 25.85 25.85 25.85 25.85 | -2.34 -1.81 -1.63 -1.63 | _ | -60.4 psf | -36.2 ps -28 ps -25.3 ps |
| | Overhangs: tri Corner Zon End Zone (Interior Zor | ne (3) 2) ne (1) |) sq. ft. | 25.85 25.85 25.85 | -2.34 -1.81 -1.63 | _ | -60.4 psf -46.7 psf -42.1 psf | -36.2 ps -28 ps -25.3 ps |
| | Overhangs: tri Corner Zon End Zone (Interior Zor Interior Zor | ne (3) 2) ne (1) ne (1') | | 25.85 25.85 25.85 25.85 | -2.34 -1.81 -1.63 -1.63 | - | -60.4 psf -46.7 psf -42.1 psf | -36.2 ps -28 ps -25.3 ps -25.3 ps -25.3 ps |
| | Overhangs: tri Corner Zon End Zone (Interior Zor Interior Zor Overhangs: tri Corner Zon | ne (3) 2) ne (1) ne (1') b. Area = 10 ne (3) | | 25.85 25.85 25.85 25.85 qh 25.85 | -2.34 -1.81 -1.63 -1.63 GCpn -3.20 | - | -60.4 psf -46.7 psf -42.1 psf -42.1 psf (1.0)Pp -82.7 psf | -36.2 ps -28 ps -25.3 ps -25.3 ps -25.3 ps |
| | Overhangs: tri Corner Zon End Zone (Interior Zon Interior Zon Overhangs: tri Corner Zon End Zone (| ne (3) 2) ne (1) ne (1') b. Area = 1(ne (3) 2) | | 25.85 25.85 25.85 25.85 qh 25.85 25.85 | -2.34 -1.81 -1.63 -1.63 GCpn -3.20 -2.30 | - | -60.4 psf -46.7 psf -42.1 psf -42.1 psf (1.0)Pp -82.7 psf -59.5 psf | (0.6)Pr -36.2 ps -28 ps -25.3 |
| | Overhangs: tri Corner Zon End Zone (Interior Zor Interior Zor Overhangs: tri Corner Zon | ne (3) 2) ne (1) ne (1') b. Area = 10 ne (3) 2) ne (1) | | 25.85 25.85 25.85 25.85 qh 25.85 | -2.34 -1.81 -1.63 -1.63 GCpn -3.20 | - | -60.4 psf -46.7 psf -42.1 psf -42.1 psf (1.0)Pp -82.7 psf | -36.2 ps -28 ps -25.3 ps -25.3 ps -25.3 ps (0.6)Pp -49.6 ps |

a, end zone width = Min. of 10% L and .4H but not < 4% L or 3' =

13.4 feet (Fig. 30.3-1)

Notes:
1. The gust factor of 0.85 is based on a building with a natural frequency of > 1 Hz. For other buildings, the gust factor must be calculated.
2. GCp for walls include a 10% reduction when angle of roof is 10 deg or less. (Figure 30.3-1, Footnote 5)
3. If a parapet equal to 3 ft or higher is provided around the perimeter of a roof with a slope of ≤ 7°, the roof corner zones may be treated as end zones. (Fig. 30.3-2A, Footnote 5)

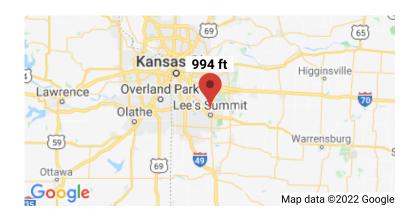
Site Class:



Hazards by Location

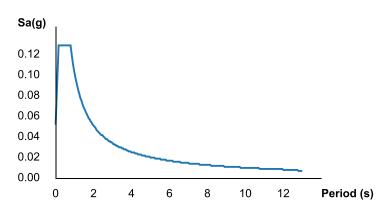
Search Information

| Address: | NE Tudor Rd & NW Main St, Lee's Summit, MO 64086, USA |
|------------------------|--|
| Coordinates: | 38.9307532, -94.3853697 |
| Elevation: | 994 ft |
| Timestamp: | 2022-01-05T13:53:22.471Z |
| Hazard Type: | Seismic |
| Reference Document: | ASCE7-16 |
| Risk Category: | II |

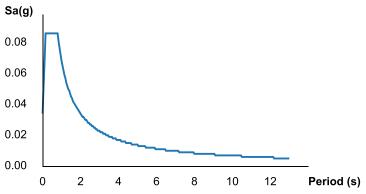


MCER Horizontal Response Spectrum

С



Design Horizontal Response Spectrum



Basic Parameters

| Name | Value | Description |
|-----------------|-------|--|
| S _S | 0.099 | MCE _R ground motion (period=0.2s) |
| S ₁ | 0.068 | MCE _R ground motion (period=1.0s) |
| S _{MS} | 0.129 | Site-modified spectral acceleration value |
| S _{M1} | 0.102 | Site-modified spectral acceleration value |
| S _{DS} | 0.086 | Numeric seismic design value at 0.2s SA |
| S _{D1} | 0.068 | Numeric seismic design value at 1.0s SA |

Additional Information

| Name | Value | Description | |
|------|-------|-----------------------------------|--|
| SDC | В | Seismic design category | |
| Fa | 1.3 | Site amplification factor at 0.2s | |
| Fv | 1.5 | Site amplification factor at 1.0s | |

| 1/6/22, 8:02 AI | М | ATC Hazards by Location |
|------------------|-------|--|
| CR_S | 0.927 | Coefficient of risk (0.2s) |
| CR ₁ | 0.877 | Coefficient of risk (1.0s) |
| PGA | 0.047 | MCE _G peak ground acceleration |
| F _{PGA} | 1.3 | Site amplification factor at PGA |
| PGA _M | 0.061 | Site modified peak ground acceleration |
| TL | 12 | Long-period transition period (s) |
| SsRT | 0.099 | Probabilistic risk-targeted ground motion (0.2s) |
| SsUH | 0.107 | Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years) |
| SsD | 1.5 | Factored deterministic acceleration value (0.2s) |
| S1RT | 0.068 | Probabilistic risk-targeted ground motion (1.0s) |
| S1UH | 0.078 | Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years) |
| S1D | 0.6 | Factored deterministic acceleration value (1.0s) |
| PGAd | 0.5 | Factored deterministic acceleration value (PGA) |

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Disclaimer

Hazard loads are provided by the U.S. Geological Survey Seismic Design Web Services.

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| | Date Job | 3/10/2022 2220003 | Sheet No. | of |
| | Subject | Building 3 | | |
| | | | | |
| SEISMIC LOAD SUMMARY 2018 IBC (Ch: 16) and ASCE 7-16 (Ch: 11 to 13) | | | | |
| | | | | |
| 1. Input | | | | |
| Spectral Response Acceleration for Short Periods, Ss = | | 0.099 | | |
| Spectral Response Acceleration for 1-second Periods, S1 = | | 0.068 | : | |
| Risk Category = | | | (IBC Table 1604.5 & | |
| Site Classification (A,B,C,D,E,F) = | | C | (ASCE 7 Ch.20 Tabl | le 20.3-1) |
| Basic Structural System STRUCTURAL STEEL SYSTEMS NOT SPECIFICALLY DETAILE | D FOR SEISMIC | RESISTANCE | (Table 12.2-1) | |
| | hear Walls and | | | |
| | s either 1.0 or 1.3 | | (ASCE 7 Section 12 | |
| ρy, redundancy in y-dir.= (Redundancy is r, =1.0 for Seismic Design Category B and C, RE: ASCE 7 Section 12.3.4.1 for additional exceptions. | s either 1.0 or 1.3 | i) 1.00 | (ASCE 7 Section 12 | .3.4) |
| le Structure regular with a pariod < E coo? | | Vee | 0/N 4005 7 | 0 |
| Is Structure regular with a period < .5 sec? Is Structure short period with a rigid diaphragm? | | | (Yes or No, ASCE 7 (Yes or No, ASCE 7 | |
| Is Structure short period w/ non-rigid diaphragm & vertical elements of seismic force-resisting system | spaced at 40' oc | | (Yes or No, ASCE 7 | |
| Does Structure have a flexible diaphragm? | | | (Yes or No, ASCE 7 | |
| (For Wall anchorage requirements per Section 12.11.2.1) | | | | |
| Span length of flexible diaphragm -x dir. = | | 220.8333333 | feet (input 0 for rig | id diaphragm) |
| Span length of flexible diaphragm -y-dir. = | | 1134 | feet | |
| 2. Determine Design Spectral Response Accelerations and Seismic Design Category, Section 11.6: | | | | |
| | | | | |
| Response Modification Factor, R = | | | (Table 12.2-1) | |
| Overstrength Factor, $\Omega o =$ (refer to footnote b for .5 reduction for Flexible Diaphragms) Deflection Amplification Factor, Cd = | | | (Table 12.2-1) (Table 12.2-1) | |
| Denection Amplification Factor, Cd = | | 3 | (Table 12.2-1) | |
| Acceleration for Short Period | | | | |
| Site Coefficient, Fa = | | | | (1), ASCE 7 Table 11.4-1) |
| Site Adjusted Spectral Response Acceleration for Short Periods, Sms = Acceleration for 1-Second Period | | 0.129 | (IBC Section 1613.2 | .3, ASCE 7 Section 11.4.4 |
| Site Coefficient, Fv = | | 1.50 | (IBC Table 1613 2 3 | (2), ASCE 7 Table 11.4-2) |
| Site Adjusted Spectral Response Acceleration for 1-second Periods, Sm1 = | | | | .3, ASCE 7 Section 11.4.4 |
| Design Spectral Response Acceleration for Short Periods, Sds = | | 0.096 | (IBC Section 1612.2 | 4 and APCE 7 Section 11 |
| Seismic Design Category based on short period = | | 0.080 A | | .4 and ASCE 7 Section 11 |
| Design Spectral Response Acceleration for 1-second Periods, Sd1 = | | | | .4 and ASCE 7 Section 11 |
| Seismic Design Category based on 1-second period = | | В | | |
| Design Response Spectrum, Ts = | | 0 793 | seconds (Section 11 | 4.6) |
| Approximate Fundamental Period, Ta = | | | seconds (Section 12 | |
| Fundamental Period, T, shall not exceed Ta * Cu = | | | seconds (Section 12 | |
| Can the Seismic Design Category be based on the short period alone? | | | | .5.1, ASCE 7 Section 11.6 |
| Seismic Design Category = | | в | (Most severe case e | xcept as allowed by Sect |
| 3. Seismic Base Shear for the Lateral Force Resisting System using the Equivalent Lateral Force P | rocodura Sacti | on 12 8· | | |
| | rocedure, Secti | 011 12.0. | | |
| a. Calculation of Seismic Base Shear Coefficient: | | | | |
| Seismic Importance Factor, I _a = | | | (ASCE 7 Table 1.5-2 | |
| $Cs = (Sds/(R / I_e)) =$ | | 0.029 | (ASCE Equation 12. | 8-2, Section 12.8.1.3) |
| b. Seismic Base Shear, Section 12.8.1: | | Strength (1.0E) | ASD (0.7E) | |
| V = Cs W = | | 0.029 W | . , | |
| c. Horizontal Seismic Load, Section 12.4.2.1= | | Strength (1.0E) | ASD (0.7E) | |
| For the X-direction: Eh= | | 0.029 W | | |
| For the Y-direction: Eh= | | 0.029 W | 0.020 W | |
| d Vertical Science Load Component - Section 12 (2.2) | | | | |
| d. Vertical Seismic Load Component, Section 12.4.2.2: Ev = 0.2 Sds D = | | 0.017 D | 0.012 D | |
| For structures in SDC B and for the design of foundations using ASD, Ev may be taken as zero. (Sect | tion 12.4.2.2) | 5.01.1 D | | |
| | | o | 100 (| |
| e. Find the Design Seismic Shear for the Diaphragm, Section 12.10.1.1: | | Strength (1.0E) | | |
| Force shall not be less than 0.2*Sds*le*wpx = | | 0.017 W 0.034 W | 0.012 W | |
| | | | | |
| For a one story building, Fpx = | | 0.029 W | 0.020 W | |
| f. For collector elements in Seismic Design Categories C through F, Section 12.10.2 | | | | |
| Emb = $\Omega \circ V$ = | | 0.072 W | 0.050 W | |
| | | | | |
| Notes: | | | | |

Notes: 1 A building that is low rise (one or two story) building with a short period is assumed for calculation of Seismic Response Coefficient, Cs. 2 The values for design spectral response acceleration assume a regular structure of 5 stories or less with a period, T < 0.5 seconds 3 The values for design forces for the diaphragm assume no offsets or changes in the stiffness of the vertical components 4 Section 1613.1 of 2018 IBC excludes the detailing requirements of Chapter 14 of ASCE 7. 5 Per Section 1613.2.2 and 11.4.3, if site investigations performed per ASCE 7 Chpt 20 reveal rock conditions consistent with Site Class B, but site-specific velocity measurements are not made, Fa and Fv shall = 1.0.

| WALLACE DESIGN PROGRAM | | | | | | | | |
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| | | | | | Job | 0/10/2022 | Chectrici | 01 |
| | | | | | Subject | | | |
| SEISMIC LOAD SUMMARY | | | | | | | | |
| 2018 IBC (Ch: 16) and ASCE 7-16 (Ch: 11 to 13 | 3) | | | | | | | |
| | 5) | | | | | | | |
| 4. Minimum Continuous Load Path, Interconne | ection and Connection to sup | pports | , Section 12 | .1.3 and 1 | 2.1.4: | | | |
| a. Continuous Load Path and Interconnectio $F_{p}{=}~0.133~S_{ds}~W_{p}$ or .05 W_{p} min. = | ns, Section 12.1.3: | | | | | Strength (1.0E 0.050 W | | (Section 12.1.3) |
| b. Connection to Supports, Section 12.1.4 : F_{p} = .05 * dead + live reaction = | | | | | | 0.050 Rd+ | l 0.035 Rd+l | (Section 12.1.4) |
| 5. Structural Walls and Anchorage, Section 12. | .11 | | | | | Strength (1.0E |) ASD (0.7E) | |
| a. Minimum Out-of-Plane Forces on Structur $F_p= 0.40$ le Sds wp or .10 wp min = | al Walls, Section 12.11.1: | | | | | 0.100 W | | (Section 12.11.1) |
| | | | | | | | | (, |
| b. Minimum anchorage connection of struct | | | ion, Section | 12.11.2.1 | and 12.11.2: | | | |
| For loading in the x-direction: $k_a = 1.0+L_t/100$ or max 2.0 = | Per 12.11.2.2, the strengtl design force for steel elements with the exception | - 1 | 2.00 | | | Strength (1.0E |) ASD (0.7E) | |
| $Fp= 0.4 S_{ds} k_a I_e W_p \text{ or } .2 k_a I_e Wp \text{ min.} = F_p^* 1.4 \text{ for steel elements per 12.11.2.2.2}$ | of anchor bolts and reinforcing steel shall be | - | | at Flexible | Diaphragms | 0.400 Wi 0.560 Wi | | |
| $k_a = 1.0$ $Fp= 0.4 S_{ds} k_a I_e W_p \text{ or } .2 k_a I_e Wp \text{ min.} =$ | increased by 1.4 times. | | nantiana nat | ot Elovible | Dianhranna | | - | |
| $Fp = 0.4 \text{ Sd}_{s} \text{ k}_{a} \text{ I}_{e} \text{ Wp of } 2 \text{ k}_{a} \text{ I}_{e} \text{ Wp find.} =$ $Fp * 1.4 \text{ for steel elements per 12.11.2.2.2}$ | FC | or Con | inections not | at Flexible | Diaphragms | : 0.200 Wj 0.280 Wj | | |
| For loading in the y-direction: | | | | | | | | |
| k _a = 1.0+L _i /100 or max 2.0 = | | | 2.00 | | | | | |
| $Fp=0.4 S_{ds} k_a I_e W_p \text{ or } .2 k_a I_e Wp \text{ min.} =$ $Fp * 1.4 \text{ for steel elements per 12.11.2.2.2}$ | | For | Connections | at Flexible | Diaphragms | : 0.400 Wi 0.560 Wi | | |
| k _a = 1.0 Fp= 0.4 S _{ds} k _a l _e W _p or .2 k _a l _e Wp min. = | F. | | neations not | ot Flovible | Dianhranna | . 0 200 W/ | 0.140 Wm | |
| $Fp = 0.4 3_{ds} R_a 1_e W_p 01.2 R_a 1_e W_p 111.2 2.2 2$ | FC | | inections not | at Flexible | Diaphragms | : 0.200 Wr 0.280 Wr | | |
| The minimum well encharge load for concre | to or maconry walls is 0.2* ti | howo | ll woight or | Encfnor | | | | |
| The minimum wall anchorage load for concre | ete or masonry wans is 0.2" ti | ne wa | il weight or : | o psi per | 1.4.4. | | | |
| 6. Horizontal Seismic Design Force on Nonstru | uctural Architectural Compor | nents, | Section 13. | 3: | | Factor 4.0 | Factor 4.5 | |
| Fp max = 1.6 Sds lp Wp= | | | | | | For lp =1.0 0.137 W | For lp=1.5 | (Equation 13.3-2) |
| Fp min = 0.3 Sds Ip Wp= | | | | | | 0.026 W | | (Equation 13.3-3) |
| | | | | | | | | |
| The Seismic Design Force is based on Equation Fp= 0.4 ap Sds Wp (1 + 2 z/h)/(Rp/lp) | on 13.3-1, with the minimum ar | nd ma | ximum limits | noted abo | ve. | | | |
| Seismic Design Force Summary on Architect | ural Components. Section 13 | 3.5: | | | | | | |
| ······, ·····, ······, ······, ·······, ······ | ·····, ····· | | ap= | Rp= | Ip= | z/h= | Strength (1.0E) | ASD (0.7E) |
| 1. Cantilevered (Unbraced) Parapets and Chimi | neys | | 2.50 | 2.50 | 1.00 | 1.00 | 0.103 Wp | 0.072 Wp (Table 13.5-1) |
| 2. Braced Interior Non-masonry walls and partiti | ions | | | | | | | |
| Fp at floor= | | | 1.00 | 2.50 | 1.00 | 0.00 | 0.026 Wp | 0.018 Wp (Table 13.5-1) |
| Fp at roof= Fp average at roof and floor: | | | 1.00 | 2.50 | 1.00 | 1.00 | 0.041 Wp 0.033 Wp | 0.029 Wp (Table 13.5-1) 0.023 Wp |
| T p average at tool and hoor. | | | | | | | 0.033 WP | 0.023 Wp |
| 3. Braced Interior Unreinforced masonry walls a | ind partitions | | | | | | | |
| Fp at floor= | | | 1.00 | 1.50 | 1.00 | 0.00 | 0.026 Wp | 0.018 Wp (Table 13.5-1) |
| Fp at roof= Fp average at roof and floor: | | | 1.00 | 1.50 | 1.00 | 1.00 | 0.069 Wp 0.047 Wp | 0.048 Wp (Table 13.5-1) 0.033 Wp |
| r p arolago arrool and hool. | | | | | | | 0.047 110 | 0.000 Mp |
| 4. Cantilevered (Unbraced) Interior Nonstructura | al walls | | 2.50 | 2.50 | 1.00 | 0.00 | 0.034 Wp | 0.024 Wp (Table 13.5-1) |
| 5. Braced Parapets and Chimneys | | | 1.00 | 2.50 | 1.00 | 1.00 | 0.041 Wp | 0.029 Wp (Table 13.5-1) |
| 6. Exterior Nonstructural Wall Elements | | | | | | | | |
| Fp at floor= Fp at roof= | | | 1.00 1.00 | 2.50 2.50 | 1.00 1.00 | 0.00 1.00 | 0.026 Wp 0.041 Wp | 0.018 Wp (Table 13.5-1) 0.029 Wp (Table 13.5-1) |
| Fp average at roof and floor: | | | | 2.00 | | | 0.033 Wp | 0.023 Wp |
| For the Body of the Wall Panel Connection: | | | | | | | | |
| Fp at floor= | | | 1.00 | 2.50 | 1.00 | 0.00 | 0.026 Wp | 0.018 Wp (Table 13.5-1) |
| Fp at roof= | | | 1.00 | 2.50 | 1.00 | 1.00 | 0.041 Wp | 0.029 Wp (Table 13.5-1) |
| For the fasteners of the connecting system: | | | | | | | | |
| Fp at floor= | | | 1.25 | 1.00 | 1.00 | 0.00 | 0.043 Wp | 0.030 Wp (Table 13.5-1) |
| Fp at roof= | | | 1.25 | 1.00 | 1.00 | 1.00 | 0.129 Wp | 0.090 Wp (Table 13.5-1) |
| 7. Appendages and Ornamentation | | | 2.50 | 2.50 | 1.00 | 1.00 | 0.103 Wp | 0.072 Wp (Table 13.5-1) |

Notes: 1. Refer to Section 13.4.2 for additional requirements for anchors in concrete and masonry. 2. Section 1613.1 of 2018 IBC excludes the detailing requirements of Chapter 14 of ASCE 7.

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SEISMIC LOAD SUMMARY 2018 IBC (Ch: 16) and ASCE 7-16 (Ch: 11 to 13)

| Table 11.4-1 and IBC 1613.2.3(1) | |
|----------------------------------|--|
| Site Coefficient En | |

| | | Site Co | efficient, Fa | | | | |
|-------|-----------|--------------|---------------|----------------|-------------|---------|----------|
| Site | Mapped Sp | ectral Respo | nse Accelerat | ion at Short P | eriods (Ss) | | Distance |
| Class | Ss<=0.25 | 0.5 | 0.75 | 1 | 1.25 | Ss>=1.5 | Value |
| Α | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| В | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| С | 1.30 | 1.30 | 1.20 | 1.20 | 1.20 | 1.20 | 1.30 |
| D | 1.60 | 1.40 | 1.20 | 1.10 | 1.00 | 1.00 | 1.60 |
| E | 2.40 | 1.70 | 1.30 | 1.20 | 1.20 | 1.20 | 2.40 |
| F | | | | | | | |

Minimum of 1.2 per Section 11.4.4 considered. Exceptions per Section 11.4.8 included.

Table 11.4-2 and IBC 1613.2.3(2)

| | | Site Co | efficient, Fv | | | | |
|-------|------------|--------------|----------------|---------------|-------------|---------|----------|
| Site | Mapped Spe | ctral Respon | se Acceleratio | n at 1 Second | Period (S1) | | Distance |
| Class | S1<=0.1 | 0.2 | 0.3 | 0.4 | 0.5 | S1>=0.6 | Value |
| A | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| В | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| С | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.40 | 1.50 |
| D | 2.40 | 2.20 | 2.00 | 1.90 | 1.80 | 1.70 | 2.40 |
| E | 4.20 | 3.30 | 2.80 | 2.40 | 2.20 | 2.00 | 4.20 |
| F | | | | | | | |

IBC Table 1613.2.5(1) and 11.6-1

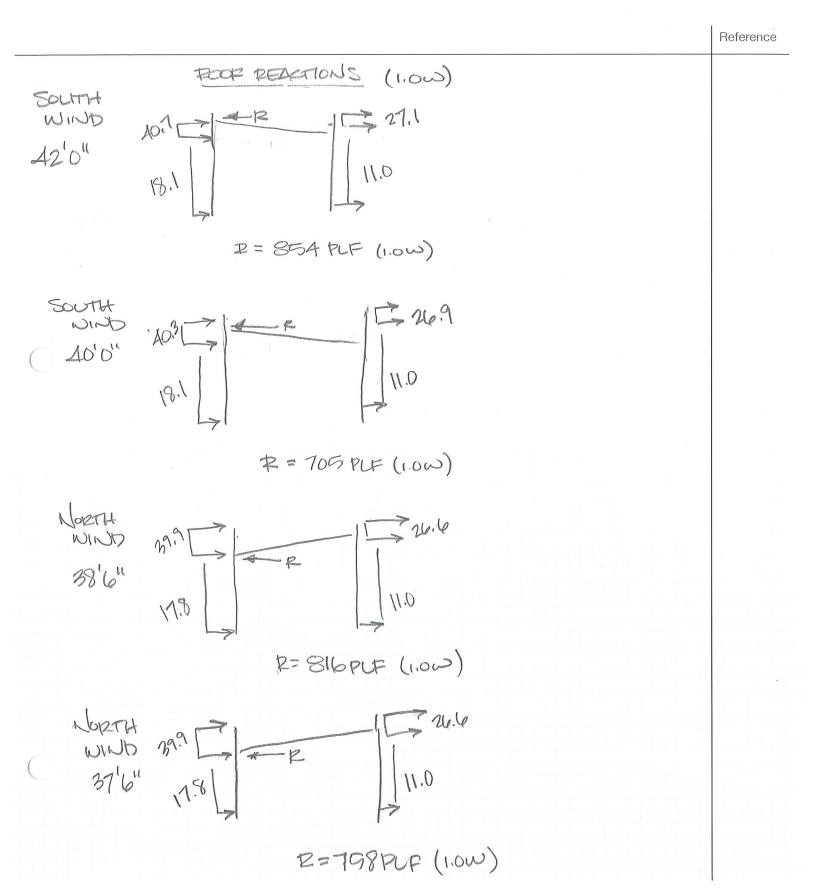
| eismic Design Catego | ory based or | Short Perio | od Response Acceleratio | |
|----------------------|--------------|--------------|-------------------------|-------------------|
| Value of | Occ | upancy Cateo | gory | Design |
| Sds | l or ll | III | IV | Category Category |
| Sds <= 0.167 | A | A | A | A A |
| 0.167 <= Sds < 0.33 | В | В | С | В |
| 0.33 <= Sds < 0.5 | С | С | D | С |
| 0.5 <= Sds | D | D | D | D |
| S1 >= 0.75 | E | E | F | E |

Table 1613.2.5(2) and 11.6-2 - D-

| Table 1613.2.5(2) and 11.6-2 | | | | | | |
|------------------------------|--|---------------|------|--|------------|---------|
| Seismic Design Cate | Seismic Design Category Based on 1-Second Period Response Acceleration | | | | | |
| Value of | Oco | cupancy Categ | lory | | Design | |
| Sd1 | l or ll | Ш | IV | | Category C | ategory |
| Sd1 <= 0.067 | A | A | A | | A | в |
| 0.067 <= Sd1 < 0.133 | В | В | С | | В | |
| 0.133 <= Sd1 < 0.2 | С | С | D | | С | |
| 0.2 <= Sd1 | D | D | D | | D | |
| S1 >= 0.75 | E | E | F | | E | |

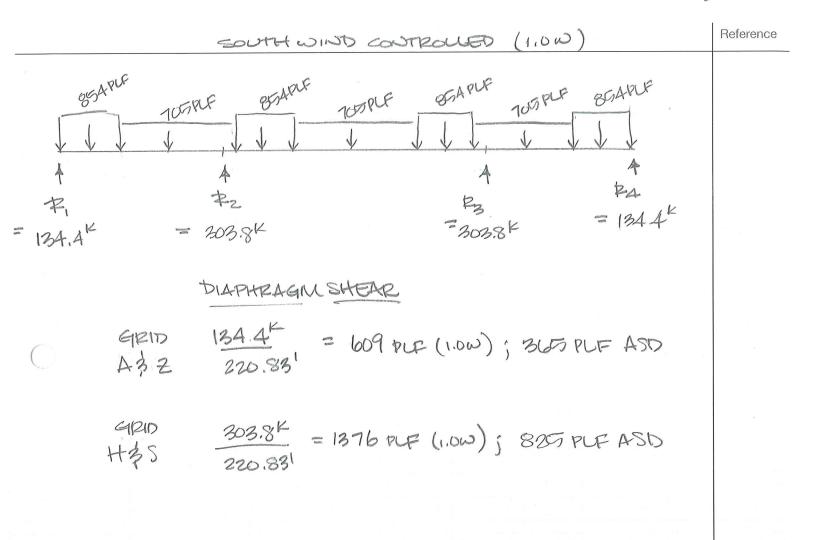


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|-------|----|---------|------|----------|----|
| Job | 22 | 2003-BL | LILP | INH3 | |
| Subje | ct | MWFIZS | | NIS | |





Date 4/26/22 Sheet No. of Job 222003-BLDG 3 Subject DIAPHRAGMSHEAR (N/S)



BIEKDALE

$$\frac{\text{DIAPHEAGM CHORD}}{\text{M} = 11,609 \text{ K.ft}} \quad \frac{\text{M}}{\text{e}} = \text{Fmax} = \frac{11,609 \text{ K.ft}}{220.83'} = 52.6 \text{ K} \text{ (UPFD)}$$

$$\frac{\text{TENSION}}{\text{FSrcq.}} = \frac{\text{P.SC}}{\text{Fg}} = \frac{31.55^{\text{K}}.167}{36 \text{ KS}^{\text{K}}} = 1.46 \text{ m}^{2} \text{ CAXA} \times 36$$

$$\begin{aligned} & COMPRESSION \\ & FL = G' - O'' \\ & LAXA \times 3/8 \quad \frac{F_{1}}{2} = 39.3^{K} 7 31.5^{K} \\ & 1.5^{K} \end{aligned}$$

$$SPLICE = \frac{Areq}{1001574} = \frac{1.46m^{2}}{5"} = 0.292", SAY 3/8"$$

$$WELD = \frac{31.55^{k}}{(0.928 \times 3 \times 2)} = 5.666" - 6" WELD$$

$$\frac{1}{14PHEAM} (1000) = (11000E SPAN)$$

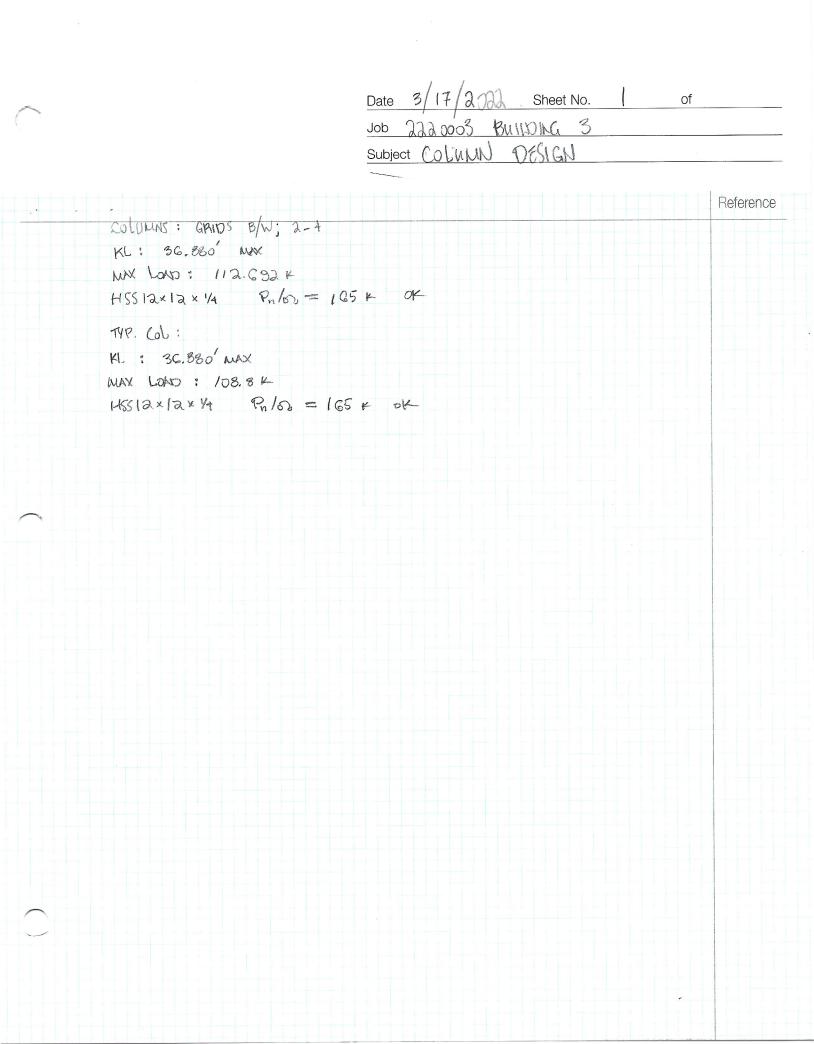
$$\frac{1}{14PHEAM} (1000) = (19330 K-H (1.000)) = (19330 K-H (1.000)) = (19330 K-H = 87.53 K (1000)); (52.532 K (ASD)) = (1000 K K = 1000); (52.532 K (ASD)) = (1000 K K = 1000); (52.532 K (ASD)) = (1000 K K = 1000); (1000 K = 2.44in^{2}) = (1000 K K = 1000); (1000 K = 1000 K = 1000); (1000 K = 1000 K = 1000); (1000 K = 1000 K = 1000 K = 1000); (1000 K = 1000 K = 10000 K = 1000 K = 1000 K = 100$$

Date 3/14/2022 Sheet No. 1 of JOB 2220003 BUILDING 3 Subject ROOF DECK

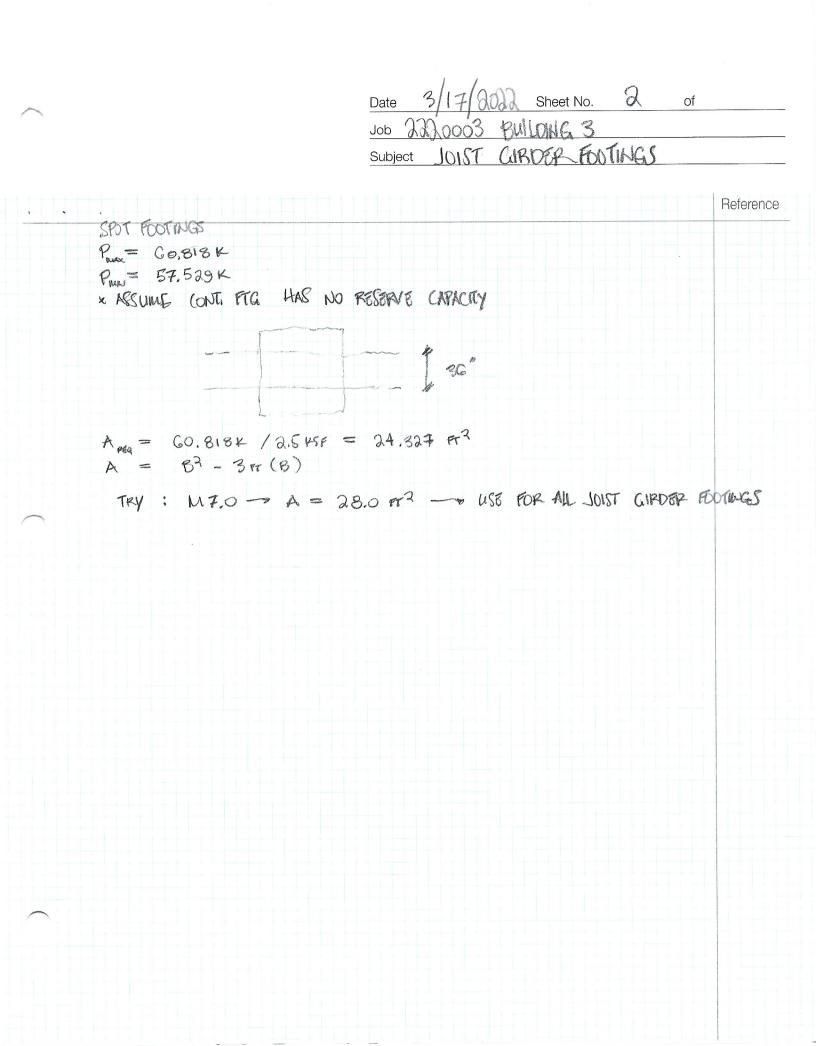
1%" DECK x 22 GA TYPE B $F_{y} = 50$ KSI (GGO) L = G'-J" TRIPLE SPAN $M_{Hac} = 87$ TSF $M_{0L} = 3.2$ FSF $M_{0L} = 3.2$

2 Sheet No. 2 of Date 20003 BUILDING 3 Job Subject RDOF STRUCTURE

TYP. PLOUF JOIRTS SPACING G'-O' 24 = 11.7 PSF - USE 12.0 PSF 25L = 20 PSF WIL = (12.0+20 PSF) (G.O') = 1.92.0 PLF ~ = [1.2(12.0 PSF) + 1.G (20 PSF)] (G.O') = 273.4 PLF JOIST REACTIONS L = GO -- V = NL/2 = 5.760 + (ND), 8.352 + (LAFD) L = 53'-4" -> V = ~L/2 = 5.120 K (ASD), 7.424 K (LAFD) TYP. GIRDER POINT LONDS (ACD) END BAY NORTH P = CO'[192.0 HF] = 11.520 K ELD BAY SOUTH P = 53.33'[192.0 PH] = 10.240 K $P = 4.859 \text{ ks} + \frac{52.33}{2} [192.0 \text{ plf}] = 9.979 \text{ k(NO)}.$ AT SPI AT SP2 P = 4.404 LBS + 53.33/2 [192.0 PLF] = 9.524 K (ASD) AT SP3 P = 4.914 LBS + 53.3% [192.0 PLF] = 10.03+ K ASD



| | Date 3/17/2022 Sheet No. 1 of Job 2220003 BUILDING 3 Subject LOAD BEARING FOOTING |
|---|---|
| AT $40'-0''$ WALL w = 228.9 pLF + (4041) AT $38'-G''$ WALL w = 209.0 PLF + (385+1) .FROM JOIST BEARING COND AT CORNER SPI, GRID 2 w = (81.768+/54 FT) + TYP. NORTH, SP3, GRID 2 w = (70.794+/54 FT) + AT CORNER SP2, GRID 4 w = (110.24 F/84 FT) + TYP. SOUTH, GRID 4, | (9.25/12)(150 Psr) = 5196.68 Pdr (9.25/12)(150 Re) = 4969.53 Pdr (9.25/12)(150 Re) = 4.776.19 ITION 38'-6'' WALL (38.5+1)(9.25/12)(150 Re) = G081.41 Pdr 37'-6'' WALL + 5' (37.5+5)(9.25/12)(150 Psr) = G225.06 Pdr 42'-0'' WALL (42.0+1)(9.25/12)(150 Psr) = G284.20 Pdr |
| $B_{P40} = \frac{36''}{-7}$ | $f_{c}' = 300 \text{ psi}$ $= 2500 \text{ psi}$ $B_{MD} = 24^{\circ}$ WIDTH ALLOW LOADS $BFT \qquad 7.5 \text{ HF}$ CHECK FTG PREQUIPTEMENTS $h_{g}p = 36^{\circ} - 3^{\circ} = 33^{\circ}$ MOMENT (APACITY $dM_{h} = 0.c (5) - f_{5000} (36^{\circ} (33^{\circ})^{2}) M_{h} = 894705 \text{ HF}$ $SHEAR (APACITY dM_{h} = 0.c (5) - f_{5000} (36^{\circ} (33^{\circ})^{2}) M_{h} = 894705 \text{ HF} SHEAR (APACITY dM_{h} = 0.c (5) - f_{5000} (36^{\circ} (33^{\circ})^{2}) M_{h} = 894705 \text{ HF} SHEAR (APACITY dM_{h} = 0.c (5) - f_{5000} (36^{\circ} (33^{\circ})^{2}) M_{h} = 894705 \text{ HF} SHEAR (APACITY dM_{h} = 0.c (5) - f_{5000} (36^{\circ} (33^{\circ})^{2}) M_{h} = 894705 \text{ HF} SHEAR (APACITY dM_{h} = 0.c (5) - f_{5000} (36^{\circ} (33^{\circ})^{2}) M_{h} = 894705 \text{ HF} SHEAR (APACITY dM_{h} = 0.c (5) - f_{5000} (36^{\circ} (33^{\circ})^{2}) M_{h} = 52.1 \text{ HF} (HECK SPAN) M_{h} = 1.6 (6.284 \text{ H}) = 10.054 \text{ H} - VEPY CONSERVATIVE M_{h} = -\int_{0.47}^{0} (9.47(9) = 8.4875 \text{ FT} \int_{0.054}^{0} (9.476) = 8.4875 \text{ FT}$ |





| Date 3/18/22 | Sheet No. | of | | |
|---------------------|-----------|----|--|--|
| Job 2220003 BLD 6 3 | | | | |
| Subject NET DP | LIFT | | | |

 POOF UPLIET

 a=0.6h = 20.146

 DECK

 Ar=10ft²

 DL=3psf

 ZONE 1'

 16.3 psf

 ZONE 1

 29.2 psf

 20NE 2

 38.5 psf

524psf

| 0.10N - 0.10D |
|-----------------------|
| 0.601-0.60 14.5psf |
| 27.21 psf |
| 36.7psf |
| 50.6psf |
| |

ZONE 3 POSITIVE

ROOF SOISTS

DL=10psf

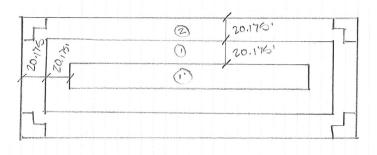
A.= MAX(6'.0", 53'.4", (53'.4")2/3)= 94892

| Desit | 0.(01) 12.8psf | 0.6W-0.6D |
|----------|-------------------|-----------|
| ZONE I' | 12. 8psf | 11. Opst |
| ZONE | 19.0pst | 17.7psf |
| ZONE 2 | 26.1psf | 24.3 psf |
| ZONE 3 | 27.7 psf | 26.9 psf |
| POSITIVE | | - |

ROOF GIRDERS

DL=12psf

Ar = MAX (624:63:4", (64:32/3) = 2880 ft2 0 to 33.63 33.63 to 67.26 -6.64 -0.62 -



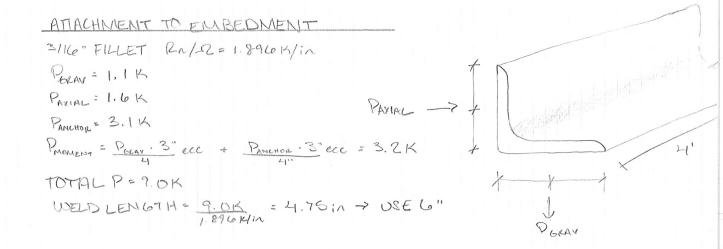


| Date 3/18/22 | Sheet No. | of |
|--------------|-----------|----|
| Job 2220063 | BLDG3 | |
| Subject MALL | ANCHORAGE | |
| | | |

PANEL ANCHORAGE P=MAX (0.2W, Spor) EODEF=WALL WEIGHT WI= 0.2. 150 PCf. (9.25"/12) = 23.125psf 9"4+1" = WALL THICKNESS P=23.1250sf WIND WALL PRESSURE A. = 500 ft2 WWALL = 14.2psf 783 DIF WEL WPARA = 43.9psf 331 WO ONLY LATERAL LOADS (WALL PULDUT) WIND = 306 PIF (N/S WIND CORNER) 111 = 331 PIF (EIW WIND MIDDLE) 829 pif WEL 306 WONLY SEISMIC = GRAVITY LOADS JOIST PARALLEL - 265 PIF SOIST PERPENDICULAR - SEE PLAN JOIST BEARING CONDITION -MAX SPACING - 6'-0" -MAX DIAPHRAGH SHEAR - 127pif (GRIDG). 6.0" = 0.76K -ANCHORAGE OF WALLS - 829 pif (CORNER). 6.0"= 5.0K - STD SEAT WELD R= S. TLEK Kn/SZ= 0.928.2.2.2.7.4K OK JOIST PARALLEL CONDITION ·ANCHORAGE EMBEDMENT - 41-0" MAX FOR L4X4X318 WORAV = 265 pif WAXIAL . 410plf WANCHOR = 783pif >LAXAX 38 GOOD



| Date | 3/18/22 | Sheet No. | of | |
|------------------------|---------|-----------|----|--|
| Job | 2220003 | BLDGS | | |
| Subject WALL ANCHORAGE | | | | |





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wallace design collective

| Date 3/21/22 | Sheet No. | of |
|------------------|------------|------|
| Job 2220003 | BLD63 | |
| Subject BRACE FE | LAME GRADE | BEAM |

| WEIGHT ON SYSTEM |
|--|
| 13) IOXIOX3 FTD |
| - (150pcf SC10'SC10'SC3') = 135.0K (1.00) 81.0K (0.60) |
| SLAB ABOVE -7" |
| - (71,2)(150pcF)(1,2)=122.5psf |
| Oll n= D. 6 (5, 1. D.) 4.000ps;) (12.62) = 9486.816-in= 0.79 K-H |
| -LALLOWS = (1.79 K.H.Z = 3.69) 122.5 psf |
| -3(10'+3.59'.2)2 (7/12")(150)=77.5K (1.0D) 416.5K (0.60) |
| COL LOADS |
| - RISALCIS D. 60+ D. 600-76.6K |
| PASSINE PRESSURE |
| $-(12)(3)(10)(250psf) \cdot 3 = 11.3K$ |
| TOTAL RESISTANCE |
| 81.0K + 46.5K - 76.6K + 11.3K = 2K.4K |
| TOTAL SHEAR |
| V=182.11K |
| WEIGHT REOD |
| $F = \mu N \doteq V_{\mu}$ |
| 6.30(20+1.1K)+ 11.3K = 12.63K |
| 182.0K-72.B3K=1091.5K 2EQ |
| 109.5K = 3641.9 K = 0.15KCF.3'.2.43.33.X |
| 0.3 X=9.361 =91-616B |
| 이 물건 같은 것이 집에서 집에 걸려 가지 않는 것이 같다. |



| Date 3/21/22 | Sheet No. | of |
|----------------|-----------|-------------|
| Job 2220003 | BLDG 3 | |
| Subject BRACED | FRAME | GRADE BEANI |

| | WEIGHT ADDED NUCLUDE SLAB AROVE GRADE BEAM . ASSUME 11-6" |
|----|--|
| | NOLUDE SLAB ABOVE GRADE BEAM. ASSUME 1-6" |
| | - (63.331-10'-3,69'.2)= 3(.16' |
| | - (150pcf)(7/12")(8.7))(36.15) = 27.5K (1.00) 1000 16.5K (0.00) |
| _ | NEW WEIGHT |
| | 81.0K+H6KK+76.6K+16.5K=220.6K |
| PP | 11.3K |
| | WEIGHT READ |
| | 0.30 (220, 6K) + 11.3K = 77.481K |
| | 180.7 K-77.5K=102.7K |
| | 102.7K = 342,3K = 0.16KCF · 3' · 2 · 43.33 · × |
| | 8.48'= x = 9'- D'' |
| | DOWEL INTO CONC |
| | V= 102.74 |
| | TRY #4 BARS - A: 0.2:n2 - fy = 3(eks: |
| | M = D(6(36 ke)(0-2) + 1.3 K) |
| | |
| | <u>93.5K</u> = 23.9 BARS 4.3K/BAR |
| | USE #4 POWELS AT 3'-6" |
| | |
| | |
| | |
| | |
| | |
| | |



| CONCOUVE | Date 21/4/22 | Sheet No. | of |
|--------------------|------------------|--|--------|
| | Job 2220003 | | |
| | Subject BLD6 3 | GB/FND D | DOWELS |
| | | | |
| | | | |
| DOWELS FOR SHE | AR SLIDING | Gantagen Reference and the Symposium and the | |
| 342.3K = 3(0.15)(3 | 5.2'.43.33') + X | | |
| 342.38 - 116.991 | K= 225.3K | | |
| #4 DOWELS - 4.3 | SK | | |
| 2.25.3K = 52.3 | 9 DOWELS | | |
| (4510' FDN) = 167 | 2/FT = 16.4 = 6 | 4 DOWELS | |

NO DOWERS IN 6B