National Flood Insurance Program

Elevation Certificate

and Instructions

2023 EDITION

FEMA

U.S. DEPARTMENT OF HOMELAND SECURITY
Federal Emergency Management Agency
National Flood Insurance Program

OMB Control No. 1660-0008
Expiration Date: 06/30/2026

ELEVATION CERTIFICATE AND INSTRUCTIONS

PAPERWORK REDUCTION ACT NOTICE

Public reporting burden for this data collection is estimated to average 3.75 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and submitting this form. You are not required to respond to this collection of information unless a valid OMB control number is displayed on this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing the burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 500 C Street SW, Washington, DC 20742, Paperwork Reduction Project (1660-0008). **NOTE: Do not send your completed form to this address.**

PRIVACY ACT STATEMENT

Authority: Title 44 CFR § 61.7 and 61.8.

Principal Purpose(s): This information is being collected for the primary purpose of documenting compliance with National Flood Insurance Program (NFIP) floodplain management ordinances for new or substantially improved structures in designated Special Flood Hazard Areas. This form may also be used as an optional tool for a Letter of Map Amendment (LOMA), Conditional LOMA (CLOMA), Letter of Map Revision Based on Fill (LOMR-F), or Conditional LOMR-F (CLOMR-F), or for flood insurance rating purposes in any flood zone.

Routine Use(s): The information on this form may be disclosed as generally permitted under 5 U.S.C. § 552a(b) of the Privacy Act of 1974, as amended. This includes using this information as necessary and authorized by the routine uses published in DHS/ FEMA-003 – *National Flood Insurance Program Files System of Records Notice* 79 Fed. Reg. 28747 (May 19, 2014) and upon written request, written consent, by agreement, or as required by law.

Disclosure: The disclosure of information on this form is voluntary; however, failure to provide the information requested may impact the flood insurance premium through the NFIP. Information will only be released as permitted by law.

PURPOSE OF THE ELEVATION CERTIFICATE

The Elevation Certificate is an important administrative tool of the NFIP. It can be used to provide elevation information necessary to ensure compliance with community floodplain management ordinances, to inform the proper insurance premium, and to support a request for a LOMA, CLOMA, LOMR-F, or CLOMR-F.

The Elevation Certificate is used to document floodplain management compliance for Post-Flood Insurance Rate Map (FIRM) buildings, which are buildings constructed after publication of the FIRM, located in flood Zones A1–A30, AE, AH, AO, A (with Base Flood Elevation (BFE)), VE, V1–V30, V (with BFE), AR, AR/A, AR/AE, AR/A1–A30, AR/AH, AR/AO, and A99. It may also be used to provide elevation information for Pre-FIRM buildings or buildings in any flood zone.

As part of the agreement for making flood insurance available in a community, the NFIP requires the community to adopt floodplain management regulations that specify minimum requirements for reducing flood losses. One such requirement is for the community to obtain the elevation of the lowest floor (including basement) of all new and substantially improved buildings, and maintain a record of such information. The Elevation Certificate provides a way for a community to document compliance with the community's floodplain management ordinance.

Use of this certificate does not provide a waiver of the flood insurance purchase requirement. Only a LOMA or LOMR-F from the Federal Emergency Management Agency (FEMA) can amend the FIRM and remove the federal mandate for a lending institution to require the purchase of flood insurance. However, the lending institution has the option of requiring flood insurance even if a LOMA/LOMR-F has been issued by FEMA. The Elevation Certificate may be used to support a LOMA, CLOMA, LOMR-F, or CLOMR-F request. Lowest Adjacent Grade (LAG) elevations certified by a land surveyor, engineer, or architect, as authorized by state law, will be required if the certificate is used to support a LOMA, CLOMA, LOMR-F, or CLOMR-F request. A LOMA, CLOMA, LOMR-F, or CLOMR-F request must be submitted with either a completed FEMA MT-EZ or MT-1 application package, whichever is appropriate. If the certificate will only be completed to support a LOMA, CLOMA, LOMR-F, or CLOMR-F request, there is an option to document the certified LAG elevation on the Elevation Form included in the MT-EZ and MT-1 application.

This certificate is used only to certify building elevations. A separate certificate is required for floodproofing. Under the NFIP, non-residential buildings can be floodproofed up to or above the BFE. A floodproofed building is a building that has been designed and constructed to be watertight (substantially impermeable to floodwaters) below the BFE. Floodproofing of residential buildings is not permitted under the NFIP unless FEMA has granted the community an exception for residential floodproofed basements. The community must adopt standards for design and construction of floodproofed basements before FEMA will grant a basement exception. For both floodproofed non-residential buildings and residential floodproofed basements in communities that have been granted an exception by FEMA, a floodproofing certificate is required.

The expiration date on the form herein does not apply to certified and completed Elevation Certificates, as a completed Elevation Certificate does not expire, unless there is a physical change to the building that invalidates information in Section A Items A8 or A9, Section C, Section E, or Section H. In addition, this form is intended for the specific building referenced in Section A and is not invalidated by the transfer of building ownership.

Additional guidance can be found in FEMA Publication 467-1, *Floodplain Management Bulletin: Elevation Certificate*.

Form Instructions

U.S. DEPARTMENT OF HOMELAND SECURITY
Federal Emergency Management Agency
National Flood Insurance Program

OMB Control No. 1660-0008
Expiration Date: 06/30/2026

ELEVATION CERTIFICATE

IMPORTANT: MUST FOLLOW THE INSTRUCTIONS ON INSTRUCTION PAGES 1-11

Copy all pages of this Elevation Certificate and all attachments for (1) community official, (2) insurance agent/company, and (3) building owner.

SECTION A – PROPERTY INFORMATION

FOR INSURANCE COMPANY USE

Policy Number:

Company NAIC Number:

A1. Building Owner's Name: TPI-FMB I, LLC

A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.: 1180 Estero Blvd

City: Fort Myers Beach State: FL ZIP Code: 33931

A3. Property Description (e.g., Lot and Block Numbers or Legal Description) and/or Tax Parcel Number: LOTS 31 THRU 6, BLOCK "B", CRESCENT PARK, STRAP 19-46-24-W4-W0494.2609

A4. Building Use (e.g., Residential, Non-Residential, Addition, Accessory, etc.): Non-Residential

A5. Latitude/Longitude: Lat. 26°27'08"N Long. 81°57'13"W Horiz. Datum: ☐ NAD 1927 ☒ NAD 1983 ☐ WGS 84

A6. Attach at least two and when possible four clear color photographs (one for each side) of the building (see Form pages 7 and 8).

A7. Building Diagram Number: 1B

A8. For a building with a crawlspace or enclosure(s):

a) Square footage of crawlspace or enclosure(s): 1770.00 sq. ft.

b) Is there at least one permanent flood opening on two different sides of each enclosed area? ☐ Yes ☐ No ☒ N/A

c) Enter number of permanent flood openings in the crawlspace or enclosure(s) within 1.0 foot above adjacent grade: Non-engineered flood openings: N/A Engineered flood openings: N/A

d) Total net open area of non-engineered flood openings in A8.c: N/A sq. in.

e) Total rated area of engineered flood openings in A8.c (attach documentation – see Instructions): N/A sq. ft.

f) Sum of A8.d and A8.e rated area (if applicable – see Instructions): N/A sq. ft.

A9. For a building with an attached garage:

a) Square footage of attached garage: N/A sq. ft.

b) Is there at least one permanent flood opening on two different sides of the attached garage? ☐ Yes ☐ No ☒ N/A

c) Enter number of permanent flood openings in the attached garage within 1.0 foot above adjacent grade: Non-engineered flood openings: N/A Engineered flood openings: N/A

d) Total net open area of non-engineered flood openings in A9.c: N/A sq. in.

e) Total rated area of engineered flood openings in A9.c (attach documentation – see Instructions): N/A sq. ft.

f) Sum of A9.d and A9.e rated area (if applicable – see Instructions): N/A sq. ft.

SECTION B – FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

B1.a. NFIP Community Name: Town of Ft. Myers Beach B1.b. NFIP Community Identification Number: 120673

B2. County Name: LEE B3. State: FL B4. Map /Panel No.: 12071C0554 B5. Suffix: F

B6. FIRM Index Date: 11/17/22 B7. FIRM Panel Effective/Revised Date: 11/17/22

B8. Flood Zone(s): AE B9. Base Flood Elevation(s) (BFE) (Zone AO, use Base Flood Depth): 12

B10. Indicate the source of the BFE data or Base Flood Depth entered in Item B9:
☐ FIS ☒ FIRM ☐ Community Determined ☐ Other:

B11. Indicate elevation datum used for BFE in Item B9: ☐ NGVD 1929 ☒ NAVD 1988 ☐ Other/Source:

B12. Is the building located in a Coastal Barrier Resources System (CBRS) area or Otherwise Protected Area (OPA)? ☐ Yes ☒ No
Designation Date: ☐ CBRS ☐ OPA

B13. Is the building located seaward of the Limit of Moderate Wave Action (LiMWA)? ☒ Yes ☐ No

Form Instructions

ELEVATION CERTIFICATE

IMPORTANT: MUST FOLLOW THE INSTRUCTIONS ON INSTRUCTION PAGES 1-11

Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.: 1180 Estero Blvd

City: Fort Myers Beach State: FL ZIP Code: 33931

FOR INSURANCE COMPANY USE

Policy Number:

Company NAIC Number:

SECTION C – BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)

C1. Building elevations are based on: ☐ Construction Drawings* ☐ Building Under Construction* ☒ Finished Construction
*A new Elevation Certificate will be required when construction of the building is complete.

C2. Elevations – Zones A1–A30, AE, AH, AO, A (with BFE), VE, V1–V30, V (with BFE), AR, AR/A, AR/AE, AR/A1–A30, AR/AH, AR/AO, A99. Complete Items C2.a–h below according to the Building Diagram specified in Item A7. In Puerto Rico only, enter meters.
Benchmark Utilized: NGS BM A25-2 Vertical Datum: NAVD88

Indicate elevation datum used for the elevations in items a) through h) below.
☐ NGVD 1929 ☒ NAVD 1988 ☐ Other:

Datum used for building elevations must be the same as that used for the BFE. Conversion factor used? ☐ Yes ☒ No
If Yes, describe the source of the conversion factor in the Section D Comments area.

		Check the measurement used:
a) Top of bottom floor (including basement, crawlspace, or enclosure floor):	6.0	☒ feet ☐ meters
b) Top of the next higher floor (see Instructions):	N/A	☐ feet ☐ meters
c) Bottom of the lowest horizontal structural member (see Instructions):	5.5	☒ feet ☐ meters
d) Attached garage (top of slab):	N/A	☐ feet ☐ meters
e) Lowest elevation of Machinery and Equipment (M&E) servicing the building (describe type of M&E and location in Section D Comments area):	6.0	☒ feet ☐ meters
f) Lowest Adjacent Grade (LAG) next to building: ☐ Natural ☒ Finished	5.4	☒ feet ☐ meters
g) Highest Adjacent Grade (HAG) next to building: ☐ Natural ☒ Finished	5.8	☒ feet ☐ meters
h) Finished LAG at lowest elevation of attached deck or stairs, including structural support:	6.0	☒ feet ☐ meters

SECTION D – SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION

This certification is to be signed and sealed by a land surveyor, engineer, or architect authorized by state law to certify elevation information. *I certify that the information on this Certificate represents my best efforts to interpret the data available. I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.*

Were latitude and longitude in Section A provided by a licensed land surveyor? ☒ Yes ☐ No

☒ Check here if attachments and describe in the Comments area.

Certifier's Name: Thomas Michael Rooks JR., PSM License Number: 6347

Title: Director of Surveying

Company Name: Morris-Depew Associates, Inc.

Address: 2914 Cleveland Avenue

City: Fort Myers State: FL ZIP Code: 33901

Telephone: (239) 337-3993 Ext.: 350 Email: Mrooks@m-da.com

Signature: Digitally signed by Thomas M. Rooks Jr. Date: 2024.01.25 09:55:40 -05'00' Date:

THOMAS M. ROOKS JR. License Number 6347 STATE OF FLORIDA Professional Surveyor and Mapper PSM 6347

Digitally signed by Thomas M. Rooks Jr. Date: 2024.01.25 09:56:01 -05'00'

Place Seal Here

Copy all pages of this Elevation Certificate and all attachments for (1) community official, (2) insurance agent/company, and (3) building owner.

Comments (including source of conversion factor in C2; type of equipment and location per C2.e; and description of any attachments):

A8(b&c) Plans indicate dry flood proofing Spec sheet 4-A201 Sections
A5) Latitude and longitude were obtained by handheld GPS device.
Lowest elevation of equipment referenced by item C2(e) refers to hot water heater

Form Instructions

ELEVATION CERTIFICATE

IMPORTANT: MUST FOLLOW THE INSTRUCTIONS ON INSTRUCTION PAGES 1-11

Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.: 1180 Estero Blvd

City: Fort Myers Beach State: FL ZIP Code: 33931

FOR INSURANCE COMPANY USE

Policy Number: _____

Company NAIC Number: _____

SECTION E – BUILDING MEASUREMENT INFORMATION (SURVEY NOT REQUIRED) FOR ZONE AO, ZONE AR/AO, AND ZONE A (WITHOUT BFE)

For Zones AO, AR/AO, and A (without BFE), complete Items E1–E5. For Items E1–E4, use natural grade, if available. If the Certificate is intended to support a Letter of Map Change request, complete Sections A, B, and C. Check the measurement used. In Puerto Rico only, enter meters.

Building measurements are based on: ☐ Construction Drawings* ☐ Building Under Construction* ☐ Finished Construction

*A new Elevation Certificate will be required when construction of the building is complete.

E1. Provide measurements (C.2.a in applicable Building Diagram) for the following and check the appropriate boxes to show whether the measurement is above or below the natural HAG and the LAG.

a) Top of bottom floor (including basement, crawlspace, or enclosure) is: _____ ☐ feet ☐ meters ☐ above or ☐ below the HAG.

b) Top of bottom floor (including basement, crawlspace, or enclosure) is: _____ ☐ feet ☐ meters ☐ above or ☐ below the LAG.

E2. For Building Diagrams 6–9 with permanent flood openings provided in Section A Items 8 and/or 9 (see pages 1–2 of Instructions), the next higher floor (C2.b in applicable Building Diagram) of the building is: _____ ☐ feet ☐ meters ☐ above or ☐ below the HAG.

E3. Attached garage (top of slab) is: _____ ☐ feet ☐ meters ☐ above or ☐ below the HAG.

E4. Top of platform of machinery and/or equipment servicing the building is: _____ ☐ feet ☐ meters ☐ above or ☐ below the HAG.

E5. Zone AO only: If no flood depth number is available, is the top of the bottom floor elevated in accordance with the community's floodplain management ordinance? ☐ Yes ☐ No ☐ Unknown The local official must certify this information in Section G.

SECTION F – PROPERTY OWNER (OR OWNER'S AUTHORIZED REPRESENTATIVE) CERTIFICATION

The property owner or owner's authorized representative who completes Sections A, B, and E for Zone A (without BFE) or Zone AO must sign here. *The statements in Sections A, B, and E are correct to the best of my knowledge*

☐ Check here if attachments and describe in the Comments area.

Property Owner or Owner's Authorized Representative Name: _____

Address: 1180 Estero Blvd

City: _____ State: _____ ZIP Code: _____

Telephone: Ext.: _____ Email: _____

Signature: _____ Date: _____

Comments:

Form Instructions

ELEVATION CERTIFICATE

IMPORTANT: MUST FOLLOW THE INSTRUCTIONS ON INSTRUCTION PAGES 1-11

Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.: 1180 Estero Blvd

City: Fort Myers Beach State: FL ZIP Code: 33931

FOR INSURANCE COMPANY USE

Policy Number:

Company NAIC Number:

SECTION G – COMMUNITY INFORMATION (RECOMMENDED FOR COMMUNITY OFFICIAL COMPLETION)

The local official who is authorized by law or ordinance to administer the community's floodplain management ordinance can complete Section A, B, C, E, G, or H of this Elevation Certificate. Complete the applicable item(s) and sign below when:

G1. ☐ The information in Section C was taken from other documentation that has been signed and sealed by a licensed surveyor, engineer, or architect who is authorized by state law to certify elevation information. (Indicate the source and date of the elevation data in the Comments area below.)

G2.a. ☐ A local official completed Section E for a building located in Zone A (without a BFE), Zone AO, or Zone AR/AO, or when item E5 is completed for a building located in Zone AO.

G2.b. ☐ A local official completed Section H for insurance purposes.

G3. ☐ In the Comments area of Section G, the local official describes specific corrections to the information in Sections A, B, E and H.

G4. ☐ The following information (Items G5–G11) is provided for community floodplain management purposes.

G5. Permit Number: 231393 G6. Date Permit Issued: 6/12/23

G7. Date Certificate of Compliance/Occupancy Issued:

G8. This permit has been issued for: ☑ New Construction ☐ Substantial Improvement

G9.a. Elevation of as-built lowest floor (including basement) of the building: ☐ feet ☐ meters Datum:

G9.b. Elevation of bottom of as-built lowest horizontal structural member: ☐ feet ☐ meters Datum:

G10.a. BFE (or depth in Zone AO) of flooding at the building site: CAZ 12 ☑ feet ☐ meters Datum: NAVD

G10.b. Community's minimum elevation (or depth in Zone AO) requirement for the lowest floor or lowest horizontal structural member: 13 ☑ feet ☐ meters Datum: NAVD

G11. Variance issued? ☐ Yes ☑ No If yes, attach documentation and describe in the Comments area.

The local official who provides information in Section G must sign here. *I have completed the information in Section G and certify that it is correct to the best of my knowledge. If applicable, I have also provided specific corrections in the Comments area of this section.*

Local Official's Name: Kristin Schumacher Title: Floodplain Manager

NFIP Community Name: T. Fort Myers Beach

Telephone: 239-765-0202 Ext.: Email: Kristin.Schumacher@fmbgov.com

Address: 2525 Estero Blvd

City: Fort Myers Beach State: FL ZIP Code: 33931

Signature: Kt Scll Date: 1/26/24

Comments (including type of equipment and location, per C2.e; description of any attachments; and corrections to specific information in Sections A, B, D, E, or H):

EC OK
Dry floodproofing certificate attached

Form Instructions

ELEVATION CERTIFICATE

IMPORTANT: MUST FOLLOW THE INSTRUCTIONS ON INSTRUCTION PAGES 1-11

Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.: 1180 Estero Blvd

City: Fort Myers Beach State: FL ZIP Code: 33931

FOR INSURANCE COMPANY USE

Policy Number: _____

Company NAIC Number: _____

SECTION H – BUILDING'S FIRST FLOOR HEIGHT INFORMATION FOR ALL ZONES (SURVEY NOT REQUIRED) (FOR INSURANCE PURPOSES ONLY)

The property owner, owner's authorized representative, or local floodplain management official may complete Section H for all flood zones to determine the building's first floor height for insurance purposes. Sections A, B, and I must also be completed. Enter heights to the nearest tenth of a foot (nearest tenth of a meter in Puerto Rico). ***Reference the Foundation Type Diagrams (at the end of Section H Instructions) and the appropriate Building Diagrams (at the end of Section I Instructions) to complete this section.***

H1. Provide the height of the top of the floor (as indicated in Foundation Type Diagrams) above the Lowest Adjacent Grade (LAG):

a) **For Building Diagrams 1A, 1B, 3, and 5–8.** Top of bottom floor (include above-grade floors only for buildings with crawlspaces or enclosure floors) is: _____ ☐ feet ☐ meters ☐ above the LAG

b) **For Building Diagrams 2A, 2B, 4, and 6–9.** Top of next higher floor (i.e., the floor above basement, crawlspace, or enclosure floor) is: _____ ☐ feet ☐ meters ☐ above the LAG

H2. Is **all** Machinery and Equipment servicing the building (as listed in Item H2 instructions) elevated to or above the floor indicated by the H2 arrow (shown in the Foundation Type Diagrams at end of Section H instructions) for the appropriate Building Diagram?

☐ Yes ☐ No

SECTION I – PROPERTY OWNER (OR OWNER'S AUTHORIZED REPRESENTATIVE) CERTIFICATION

The property owner or owner's authorized representative who completes Sections A, B, and H must sign here. *The statements in Sections A, B, and H are correct to the best of my knowledge.* **Note:** If the local floodplain management official completed Section H, they should indicate in Item G2.b and sign Section G.

☐ Check here if attachments are provided (including required photos) and describe each attachment in the Comments area.

Property Owner or Owner's Authorized Representative Name: _____

Address: _____

City: _____ State: _____ ZIP Code: _____

Telephone: _____ Ext.: _____ Email: _____

Signature: _____ Date: _____

Comments:

Form Instructions

ELEVATION CERTIFICATE

IMPORTANT: MUST FOLLOW THE INSTRUCTIONS ON INSTRUCTION PAGES 1-11

BUILDING PHOTOGRAPHS

See Instructions for Item A6.

Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.: 1180 Estero Blvd

City: Fort Myers Beach State: FL ZIP Code: 33931

FOR INSURANCE COMPANY USE

Policy Number:

Company NAIC Number:

Instructions: Insert below at least two and when possible four photographs showing each side of the building (for example, may only be able to take front and back pictures of townhouses/rowhouses). Identify all photographs with the date taken and "Front View," "Rear View," "Right Side View," or "Left Side View." Photographs must show the foundation. When flood openings are present, include at least one close-up photograph of representative flood openings or vents, as indicated in Sections A8 and A9.

Photo One

Photo One Caption: WEST SIDE OF BUILDING

Clear Photo One

Photo Two

Photo Two Caption: SOUTH SIDE OF BUILDING

Clear Photo Two

Form Instructions

ELEVATION CERTIFICATE

IMPORTANT: MUST FOLLOW THE INSTRUCTIONS ON INSTRUCTION PAGES 1-11

BUILDING PHOTOGRAPHS

Continuation Page

Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.: 1180 Estero Blvd

City: Fort Myers Beach State: FL ZIP Code: 33931

FOR INSURANCE COMPANY USE

Policy Number:

Company NAIC Number:

Insert the third and fourth photographs below. Identify all photographs with the date taken and "Front View," "Rear View," "Right Side View," or "Left Side View." When flood openings are present, include at least one close-up photograph of representative flood openings or vents, as indicated in Sections A8 and A9.

Photo Three

Photo Three Caption: NORTHWEST SIDE OF BUILDING

Clear Photo Three

Photo Four

Photo Four Caption: NORTHEAST SIDE OF BUILDING

Clear Photo Four

DEPARTMENT OF HOMELAND SECURITY
Federal Emergency Management Agency
National Flood Insurance Program

OMB Control No. 1660-0008
Expiration Date: 06/30/2026

DRY FLOODPROOFING CERTIFICATE FOR NON-RESIDENTIAL STRUCTURES

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this data collection is estimated to average 3.25 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and submitting this form. You are not required to respond to this collection of information unless a valid OMB control number is displayed on this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing the burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 500 C Street SW, Washington, DC 20742, Paperwork Reduction Project (1660-0008). **NOTE: Do not send your completed form to this address.**

General: This information is provided pursuant to Public Law 96-511 (the Paperwork Reduction Act of 1980, as amended), dated December 11, 1980, to allow the public to participate more fully and meaningfully in the Federal paperwork review process.

Authority: Public Law 96-511, amended; 44 U.S.C. 3507; and 5 CFR 1320.

PRIVACY ACT STATEMENT

Authority: Title 44 CFR § 60.3, 61.7 and 61.8.

Principal Purpose(s): This information is being collected for the primary purpose of estimating the risk premium rates necessary to provide flood insurance for new or substantially improved structures in designated Special Flood Hazard Areas.

Routine Use(s): The information on this form may be disclosed as generally permitted under 5 U.S.C. § 552a(b) of the Privacy Act of 1974, as amended. This includes using this information as necessary and authorized by the routine uses published in DHS/ FEMA-003 – National Flood Insurance Program Files System or Records Notice 79 Fed. Reg. 28747 (May 19, 2014), and upon written request, written consent, by agreement, or as required by law.

Disclosure: The disclosure of information on this form is voluntary; however, failure to provide the information requested may result in the inability to obtain flood insurance through the National Flood Insurance Program or being subject to higher premium rates for flood insurance. Information will only be released as permitted by law.

PURPOSE OF THE DRY FLOODPROOFING CERTIFICATE FOR NON-RESIDENTIAL STRUCTURES

Under the National Flood Insurance Program (NFIP), the dry floodproofing of non-residential buildings may be permitted as an alternative to elevating to or above the Base Flood Elevation (BFE) or for certain flood zones, the natural Highest Adjacent Grade (HAG). A dry floodproofing design certification is required for non-residential structures that are dry floodproofed and the dry floodproofed non-residential portions of mixed-use buildings. This form is to be used for that certification. FEMA Form 206-FY-21-122 NFIP Residential Basement Floodproofing Certificate is required for the residential portions of mixed-use buildings.

A dry floodproofed building is a building that has been designed and constructed to be watertight (substantially impermeable to floodwaters) below the BFE and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy. Before a dry floodproofed building is designed, numerous planning considerations, including flood warning time, uses of the building, mode of entry to and exit from the building and the site in general, floodwater velocities, flood depths, debris impact potential, flood frequency, and any other State and local requirements must be addressed to ensure that dry floodproofing will be a viable floodplain management measure.

The minimum NFIP requirement is to dry floodproof a building to the BFE. However, to be in compliance with the requirements of American Society of Civil Engineers (ASCE) 24, *Flood Resistant Design and Construction*, one foot is subtracted from the dry floodproofed elevation. Therefore, a building must be dry floodproofed to one foot above the BFE to be considered for floodproofing credit. For B, C, D, or X flood zones, the building's dry floodproofed design elevation must be at least two feet above the natural HAG to be considered for floodproofing credit.

Additional guidance can be found in FEMA Publication 936, *Floodproofing Non-Residential Buildings* (2013), and NFIP Technical Bulletin 3, *Requirements for the Design and Certification of Dry Floodproofed Non-Residential and Mixed-Use Buildings* (2021), available on FEMA's Building Science Resource Library website at www.fema.gov/ar/emergency-managers/risk-management/building-science/publications.

Copy all pages of this Dry Floodproofing Certificate and all attachments for 1) community official, 2) insurance agent/ company, and 3) building owner. The dry floodproofing of non-residential buildings and the non-residential portions of mixed-use buildings may be permitted as an alternative to elevating to or above the Base Flood Elevation (BFE); however, a dry floodproofing design certification is required. This form is to be used for that certification. Dry floodproofing of a residential building does not alter a community's floodplain management elevation requirements or affect the insurance rating unless the community has been issued an exception by FEMA to allow dry floodproofed residential basements. The permitting of a dry floodproofed residential basement requires a separate certification specifying that the design complies with the local floodplain management ordinance.

PROPERTY INFORMATION

Building Owner's Name: TPI-FMB I, LLC

Building Street Address (Including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.:
1180 Estero Blvd

City: Fort Myers Beach State: FL ZIP Code: 33931

FOR INSURANCE COMPANY USE
Policy Number:

Company NAIC Number:

Property Description (e.g., Lot and Block Numbers, or Legal Description) and/or Tax Parcel Number:
Building #4,LOTS 31 THRU 6, BLOCK "B", CRESENT PARK, STRAP 19-46-24-W4-W0494.2609

Building Use (e.g., Non-Residential, Mixed Use, Addition, Accessory, etc.): Non-Residential

Latitude/Longitude: Lat. 26°27'08"N Long. 81°57'13"W

Horizontal Datum: ☐ NAD 1927 ☒ NAD 1983 ☐ WGS 84

SECTION I – FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

NFIP Community Name: Town of Fort Myers Beach NFIP Community Identification Number: 120673

County Name: Lee State: FL Map/Panel Number: 12071C0554 Suffix: G

FIRM Index Date: 11/17/2022 FIRM Panel Effective/Revised Date: 11/17/2022 Flood Zone(s): AE

BFE(s) (Zone AO, use Base Flood Depth (BFD)): 12

Indicate the source of the BFE data or BFD entered above: ☐ Flood Insurance Study (FIS) ☒ FIRM

☐ Community Determined ☐ Other:

Indicate elevation datum used for BFE shown above: ☐ NGVD 1929 ☒ NAVD 1988 ☐ Other/Source:

Is a Limit of Moderate Wave Action (LiMWA) shown on the FIRM? ☒ Yes ☐ No

If Yes, is the property located in the Coastal A Zone [area between the LiMWA and Zone V boundary (or shoreline)]? ☒ Yes ☐ No

Is the property located in a floodway? ☐ Yes ☒ No If Yes, provide the velocity at the building location:

Is the property located in an alluvial fan? ☐ Yes ☒ No

If Yes, provide the depth at the building location: and velocity:

SECTION II – DRY FLOODPROOFED DESIGN CERTIFICATION

(By a Registered Professional Engineer or Architect licensed in the State where the building is located)

(**Note**: For insurance rating purposes in all zones except for B, C, D, or X, the building's dry floodproofed design elevation must be at least one foot above the BFE to be considered for floodproofing credit. For B, C, D, or X Zones, the building's dry floodproofed design elevation must be at least two feet above the natural HAG to be considered for floodproofing credit. If the building is not dry floodproofed to the above-mentioned standards, then the building will be ineligible for floodproofing credit. See the Instructions section for information on documentation that must accompany this certificate if being submitted for flood insurance rating purposes.)

Briefly list measures incorporated into the design to meet the performance criteria for dry floodproofing and attach calculations showing the structure is designed with structural components that have the capability of resisting hydrostatic and hydrodynamic loads and the effects of buoyancy and will be watertight and substantially impermeable to the passage of water.

1. Engineered flood panels for all large exterior openings.
2. Sump pump provided per ASCE 24-14 Section 6.2.
3. All exterior walls designed to meet requirements of ASCE 24-14 Section 6.2.2.
4. The piles, grade beams, 16 inch thick slab, and 14 inch thick concrete walls were design to resist the forces associated with flood loading. See attached structural calculations.

Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.: 1180 Estero Blvd

City: Fort Myers Beach State: FL ZIP Code: 33931

FOR INSURANCE COMPANY USE

Policy Number:

Company NAIC Number:

SECTION II – DRY FLOODPROOFED DESIGN CERTIFICATION *(Continued)*

(By a Registered Professional Engineer or Architect licensed in the State where the building is located)

Provide elevations used in design, specifications and construction drawings. In Puerto Rico only, enter meters.

Indicate elevation datum used for the elevations in this section. ☐ NGVD 1929 ☒ NAVD 1988 ☐ Other/Source:

Elevation datum used for building elevations must be the same as that used for the BFE. Conversion factor used? ☐ Yes ☒ No
If Yes, describe the source of the conversion factor in the Comments area of this Section.

A. Dry Floodproofed Design Elevation:			13	☒ feet	☐ meters
B. Lowest Adjacent Grade (LAG) next to the building:	☐ Natural	☒ Finished	5.6	☒ feet	☐ meters
C. Highest Adjacent Grade (HAG) next to the building:	☐ Natural	☒ Finished	5.95	☒ feet	☐ meters

Non-Residential Dry Floodproofed Design Certification:

I certify the structure, based upon development and/or review of the design and specifications for construction, has been designed in accordance with the accepted standards of practice (ASCE 24-05, ASCE 24-14 or their equivalent) and the following provisions.

- *The structure, together with attendant utilities and sanitary facilities will be watertight to the dry floodproofed design elevation indicated above, will be substantially impermeable to the passage of water, and shall perform in accordance with the 44 Code of Federal Regulations (44 CFR 60.3(c)(3)).*
- *All structural components are capable of resisting hydrostatic and hydrodynamic flood forces, including the effects of buoyancy, and anticipated debris impact forces up to the dry floodproofed design elevation. Flood damage-resistant materials are used for all areas where seepage is intended to collect inside the dry floodproofed areas up to at least 4 inches above the floor.*

I certify that the information in Section II on this certificate represents a true and accurate determination by the undersigned using the available information and data. I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.

Certifier's Name: Jeffrey H. Zander License Number (or Affix Seal): 17043

Title: Senior Structural Engineer Company Name: Ramaker Professional Services

Mailing Address: 855 Community Drive

City: Sauk City State: WI ZIP Code: 53583

Phone #1: (608) 643-4100 Ext.: Phone #2: Ext.:

Email: jzander@ramaker.com

JEFFREY ZANDER LICENSE No. 86174 STATE OF FLORIDA PROFESSIONAL ENGINEER

Place Seal Here

Signature: Digitally signed by Jeffrey H Zander Date: 2024.02.15 12:23:27-06'00' Date: 02/15/2024

Comments (including source of conversion factor and description of any attachments):

1. Shop drawing package of engineered flood panels.
2. Cut sheet of sump pump installed including battery backup power.
3. Structural calculations showing compliance with ASCE 24-14 Section 6.2.2.

Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.:	FOR INSURANCE COMPANY USE
1180 Estero Blvd	Policy Number:
City: Fort Myers Beach State: FL ZIP Code: 33931	Company NAIC Number:

SECTION III – DRY FLOODPROOFED ELEVATION CERTIFICATION

(By a Registered Professional Land Surveyor, Engineer or Architect licensed in the State where the building is located)

Benchmark Utilized: NGS BM A25-2 Vertical Datum: NAVD 88

Indicate elevation datum used for the elevations provided in this section:

☐ NGVD 1929 ☒ NAVD 1988 ☐ Other/Source:

Elevation datum used for building elevations must be the same as that used for the BFE. Conversion factor used? ☐ Yes ☐ No
If Yes, describe the source of the conversion factor in the Comments area of this section.

A. Dry floodproofed elevation (must be based on finished construction): 13.3 ☒ feet ☐ meters

B. Lowest Adjacent Grade (LAG) next to the building: ☐ Natural ☒ Finished 5.4 ☒ feet ☐ meters

C. Natural Highest Adjacent Grade (HAG) next to the building: 5.8 ☒ feet ☐ meters

Height of floodproofing on the building above the natural or finished LAG is 7.9 feet.
(In Puerto Rico only: _____ meters.)

(**Note**: For insurance rating purposes in all eligible zones inside the SFHA, the building's dry floodproofed design elevation must be at least one foot above the BFE to be considered for floodproofing credit. For B, C, D, or X Zones, the building's dry floodproofed design elevation must be at least two feet above the natural HAG. If the building is not dry floodproofed to the above-mentioned standards, then the building will not be considered for floodproofing credit. See the Instructions section for information on documentation that must accompany this certificate if being submitted for flood insurance rating purposes.)

Non-Residential Dry Floodproofed Elevation Information Certification:

Section III certification is to be signed and sealed by a land surveyor, engineer, or architect authorized by law to certify elevation information.

I certify that the information in Section III on this Certificate represents a true and accurate interpretation and determination by the undersigned using the available information and data. I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.

Certifier's Name: Thomas Michael Rooks JR., PSM License Number (or Affix Seal): 6347

Title: Director of Surveying Company Name: Morris-Depew Associates, Inc.

Mailing Address: 2914 Cleveland Avenue, Inc.

City: Fort Myers State: FL ZIP Code: 33901

Phone #1: (239) 337-3993 Ext.: _____ Phone #2: _____ Ext.: _____

Email: Mrooks@m-da.com

Place Seal Here

Signature: _____ Date: 02/15/2024

Comments (including source of conversion factor and description of any attachments):

Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.:	FOR INSURANCE COMPANY USE
1180 Estero Blvd	Policy Number:
City: Fort Myers Beach State: FL ZIP Code: 33931	Company NAIC Number:

SECTION IV – DRY FLOODPROOFED CONSTRUCTION CERTIFICATION
(By a Registered Professional Engineer or Architect licensed in the State where the building is located)

Non-Residential Dry Floodproofed Construction Certification:

I certify the structure, based upon development and/or review of the design, specifications, as-built drawings for construction and physical inspection, has been designed and constructed in accordance with the accepted standards of practice (ASCE 24-05, ASCE 24-14 or their equivalent) and any alterations also meet those standards and the following provisions.

- *The structure, together with attendant utilities and sanitary facilities is watertight to the dry floodproofed design elevation indicated above, is substantially impermeable to the passage of water, and shall perform in accordance with the 44 Code of Federal Regulations (44 CFR 60.3(c)(3)).*
- *All structural components are capable of resisting hydrostatic and hydrodynamic flood forces, including the effects of buoyancy, and anticipated debris impact forces up to the dry floodproofed design elevation.*
- *The floodproofed elevation is in accordance with the design and any alteration(s) to the design.*
- *Flood damage-resistant materials have been incorporated/used in all areas where seepage would collect inside the dry floodproofed areas up to at least 4 inches above the floor.*

I certify that the information in Section IV on this certificate represents a true and accurate determination by the undersigned using the available information and data. I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.

Certifier's Name: Jeffrey H. Zander License Number (or Affix Seal): 17043

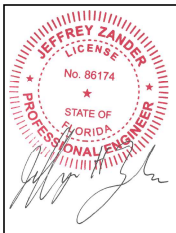
Title: Senior Structural Engineer Company Name: Ramaker Professional Services

Mailing Address: 855 Community Drive

City: Sauk City State: WI ZIP Code: 53583

Phone #1: (608) 643-4100 Ext.: Phone #2: Ext.:

Email: jzander@ramaker.com



Place Seal Here

Signature:  Digitally signed by Jeffrey H Zander
Date: 2024.02.15 12:26:51-06'00' Date: 02/15/2024

Copy all pages of this Dry Floodproofing Certificate and all attachments for: 1) community official, 2) insurance agent/company, and 3) building owner.

REQUIRED DOCUMENTATION

In order to ensure compliance and provide reasonable assurance that due diligence had been applied in designing and constructing dry floodproofing measures, the following information must be provided with the completed Dry Floodproofing Certificate:

1. **Photographs.** All photographs must be clear and in color, identified and include the date taken. Where the building is in the course of construction, provide clear descriptions of any other dry floodproofed components and attachments to be incorporated.
   a. Photographs of all sides and aspects of the floodproofed building.
   b. Photographs of all components used to provide dry floodproofing protections (shields, gates, barriers, sump pumps, backflow (non-return) valves or shutoff valves, etc.).
   c. Photographs of the installed barriers/shields and corresponding clear photographs of openings areas where barriers and shields are deployed without the barriers/shields installed (doors, windows, ventilation intakes, etc.).
   d. Photographs of penetrations through dry floodproofed envelopes (utilities, mechanical).
   e. Photographs of backup power source for sump pumps.

2. **Comprehensive Flood Emergency Operations Plan** for the entire structure to include but not limited to:
   a. The personnel, equipment, tools, and supplies needed to deploy all dry floodproofing system components with sufficient time prior to the onset of flooding or conditions such as high winds that could interfere with efficient deployment of measures.
   b. Clearly defined chain of command and assigned responsibilities for personnel involved in the installation of dry floodproofing measures.
   c. Procedure for notifying personnel responsible for installing dry floodproofing measures, along with a list of duty requirements.
   d. Decision tree that identifies the sequence, timeline, and responsible parties for installing the dry floodproofing components, including the triggers or benchmarks that will initiate procedures.
   e. Written description and map of the storage locations and types of dry floodproofing measures to be installed or deployed (shields, gates, barriers, and components as well as all associated hardware), along with any equipment, tools, and materials required for installation.
   f. Conditions that require the deployment of active dry floodproofing measures (e.g., installation of flood shields, closing of flood doors, closing of manual valves, staging of pumps).
   g. Instructions for installing or deploying each dry floodproofing measure and the order of installation if important for effectiveness.
   h. Instructions for connecting standby (emergency) power source (e.g., generator) for critical equipment such as sump pumps and egress lighting
   i. Contact information for the manufacturer and designer to expedite obtaining replacement parts and support as needed
   j. Evacuation plans for all personnel
   k. Requirements for installation and deployment drills and training program (at least once a year)
   l. Requirement for regular review and update of the plan procedures

3. **Comprehensive Inspection and Maintenance Plan** for the entire structure to include but not limited to:
   a. Exterior envelope of the structure, such as wall and foundation systems, to identify possible structural and waterproofing deficiencies such as cracks, water staining, and penetrations.
   b. All penetrations to the exterior of the structure.
   c. Slabs and wall/slab joints, including structural and drainage deficiencies.
   d. Flood shields, gates, panels, doors, glazing, barriers, and other components designed to provide dry floodproofing protection, including all seals, gaskets, fasteners, and mounting hardware and tools.
   e. Sump pumps (or self-priming pumps) and interior drain system.
   f. Emergency power systems.
   g. Testing of emergency generators, sump pumps, and other drainage measures.
   h. Backflow (non-return) valves or shutoff valves.
   i. Location of all flood shields, gates, panels, and other components including all hardware along with any materials or tools needed to seal the dry floodproofed area.
   j. Contact information for the manufacturer of the shields and other components to determine the availability of replacement gaskets, seals, and other parts and to ask questions.
   k. Cadence of inspection and maintenance plan.

4. **Building owner** acknowledgment that verifies that the owner is aware of the criteria for when the dry floodproofing measures must be installed and that they know how to install all the measures. This would be signed by the owner. Additionally, if the measures are to be installed by a third-party, then the third-party contractor must sign that they know how to install the measures.

DEPARTMENT OF HOMELAND SECURITY
Federal Emergency Management Agency

INSTRUCTIONS FOR COMPLETING THE DRY FLOODPROOFING CERTIFICATE FOR NON-RESIDENTIAL STRUCTURES

To receive credit for dry floodproofing, a completed Dry Floodproofing Certificate for Non-Residential Structures is required for non-residential buildings and the non-residential portions of mixed-use buildings in the Regular Program communities, located in all flood zones, including Zone X. For certification of finished construction, this form is invalid without Sections I through IV.

PROPERTY INFORMATION

This section identifies the building, its location, and its owner. Enter the name(s) of the building owner(s), the building's complete street address, and/or property description. If the building's address is different from the owner's address, enter the address of the building being certified. If the address is a rural route or a Post Office box number, enter the lot and block numbers, the tax parcel number, the legal description, or an abbreviated location description based on distance and direction from a fixed point of reference.

A map may be attached to this certificate to show the location of the building on the property. A tax map, FIRM, or detailed community map is appropriate. If no map is available, provide a sketch of the property location, and the location of the building on the property. Include appropriate landmarks such as nearby roads, intersections, and bodies of water. For building use, indicate whether the building is residential, non-residential, an addition to an existing residential or non-residential building, an accessory building (e.g., garage), or other type of structure. Use the Comments area of the appropriate section if needed or attach additional comments.

Provide latitude and longitude coordinates for the center of the front of the building. Use either decimal degrees (e.g., 39.504322°, −110.758522°) or degrees, minutes, seconds (e.g., 39° 30' 15.52", −110° 45' 30.72") format. If decimal degrees are used, provide coordinates to at least 6 decimal places or better. When using degrees, minutes, seconds, provide seconds to at least 2 decimal places or better. Provide the datum of the latitude and longitude coordinates (FEMA prefers the use of NAD 1983). Indicate the method or source used to determine the latitude and longitude in the Comments area.

SECTION I – FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

Complete the Dry Floodproofing Certificate using the Flood Insurance Study (FIS) and FIRM in effect at the time of the certification.

The information for Section I is obtained by reviewing the FIS and the FIRM panel that includes the building's location. Information about the current FIS and FIRM is available from FEMA by visiting msc.fema.gov or contacting the local floodplain administrator. If a Letter of Map Amendment (LOMA), Letter of Map Revision (LOMR), or LOMR Based on Fill (LOMR-F) has been issued by FEMA, please provide the letter date and case number in the Comments area, as appropriate.

For a building in an area that was mapped in one community but is now in another community due to annexation or dissolution, enter the community name and 6-digit number of the community in which the building is now located in the name of the county or new county, if necessary; and the FIRM index date for the community the building is now located in. Enter information from the actual FIRM panel that shows the building location, even if it is the FIRM for the previous jurisdiction. If the map in effect at the time of the building's construction was other than the current FIRM, and you have the past map information pertaining to the building, provide the information in the Comments area.

Note: Indicate in the Comments Section, if using information based on best available data, such as base-level engineering or advisory flood hazard data (contact the local floodplain administrator to confirm).

NFIP Community Name & Community Identification Number. Enter the complete name of the community in which the building is located, and the associated 6-digit Community Identification Number. For a newly incorporated community, use the name and 6-digit number of the new community. Under the NFIP, a "community" is any State or area or political subdivision thereof, or any Indian tribe or authorized native organization which has authority to adopt and enforce floodplain management regulations for the areas within its jurisdiction. To determine the current community number, see the NFIP *Community Status Book*, available on FEMA's web site at www.fema.gov/national-flood-insurance-program-community-status-book.

County Name. Enter the name of the county or counties in which the community is located. For an unincorporated area of a county, enter the county name and "unincorporated area." For an independent city, enter "independent city."

State. Enter the 2-letter state abbreviation (for example, VA, TX, CA).

Map/Panel Number and Suffix. Enter the 10-character "Map Number" or "Community Panel Number" shown on the FIRM where the building or manufactured (mobile) home is located. For maps in a county-wide format, the sixth character of the "Map Number" is the letter "C" followed by a 4-digit map number. For maps not in a county-wide format, enter the "Community Panel Number" shown on the FIRM.

FIRM Index Date. Enter the effective date or the map revised date shown on the FIRM Index.

FIRM Panel Effective/Revised Date. Enter the effective date shown on the current FIRM panel. The current FIRM panel effective date can be determined by visiting **msc.fema.gov** or contacting the local floodplain administrator. In addition, if the area where the building is located was revised by a LOMR, include the LOMR effective date.

Flood Zone(s). Enter the flood zone, or flood zones, in which the building is located. All flood zones containing the letter "A" or "V" are considered Special Flood Hazard Areas. The flood zones are A, AE, A1–A30, V, VE, V1–V30, AH, AO, AR, AR/A, AR/AE, AR/A1–A30, AR/AH, AR/AO. Each flood zone is defined in the legend of the FIRM panel on which it appears.

BFE(s). Using the appropriate Flood Insurance Study (FIS) Profile, FIS Data Table (e.g., Transect, Floodway, etc.), or FIRM panel, locate the property and enter the BFE (or base flood depth) of the building site to the nearest tenth of a foot (nearest tenth of a meter, in Puerto Rico). If the building is located in more than one flood zone, list all appropriate BFEs.

BFEs are shown in the FIS or on a FIRM for Zones A1–A30, AE, AH, V1–V30, VE, AR, AR/A, AR/AE, AR/A1–A30, AR/AH, and AR/AO; flood depth numbers are shown for Zone AO. Use the AR BFE if the building is located in any of Zones AR/A, AR/AE, AR/A1–A30, AR/AH, or AR/AO.

In unnumbered A or V zones where BFEs are not provided in the FIS or on the FIRM, BFEs may be available from another source. For example, the community may have established BFEs or obtained BFE data from other sources (e.g., Base Level Engineering) for the building site. For subdivisions and other developments of more than 50 lots or 5 acres in Zone A, establishment of BFEs is required per Floodplain Management requirements 44 CFR 60.3(b)(3). If a BFE is obtained from another source, enter the BFE. The BFE entered must be based on hydrologic and hydraulic analyses. In an unnumbered A Zone where BFEs are not obtained from another source, enter N/A.

For areas in which BFEs have not been established, designers can refer to FEMA 265 *Zone A Manual: Managing Floodplain Development in Approximate Zone A Areas* (FEMA 1995), https://www.fema.gov/sites/default/files/documents/fema_approx-zone-a-guide.pdf?id=2215. This guide provides information on obtaining and developing BFEs.

Source of BFE. Indicate the source of the BFE or flood depth that you entered. If the BFE is from a source other than FIS Profile, FIRM, or community, include the name of the study, the agency or company that produced it, and the date when the study was completed. Visit **msc.fema.gov** or contact the local floodplain administrator to access the current FIS and FIRM.

Elevation Datum. Indicate the elevation datum to which the elevations on the applicable FIRM are referenced as shown on the map legend. The vertical datum is shown in the Map Legend and/or the Notes to Users on the FIRM.

Limit of Moderate Wave Action (LiMWA). Indicate if a LiMWA is shown on the FIRM and the location of the building in relation to the LiMWA.

Floodway. Indicate if building is in a floodway and if applicable, the velocity in the area of the building. See FEMA P-936, *Floodproofing Nonresidential Buildings* for more information on determining the velocity.

Alluvial Fan. Indicate if building is in an alluvial fan and if applicable, the depth and velocity in the area of the building.

SECTION II – DRY FLOODPROOFED DESIGN CERTIFICATION

Section II is to be completed by a Registered Professional Engineer or Architect licensed in the State where the building is located to certify the design of the dry floodproofing measures as required by 44 CFR 60.3(c)(4).

SECTION III – DRY FLOODPROOFED ELEVATION CERTIFICATION

Section III is to be completed by a Registered Professional Land Surveyor, Engineer, or Architect licensed in the State where the building is located to provide the surveyed elevations of the as-built construction. To ensure that all required elevations are obtained, it will be necessary to physically enter the building.

SECTION IV – DRY FLOODPROOFED CONSTRUCTION CERTIFICATION

Section IV is to be completed by a Registered Professional Engineer or Architect licensed in the state where the building is located to certify the structure, based upon development and/or review of the design, specifications, as-built drawings for construction and physical inspection, has been designed and constructed in accordance with the accepted standards of practice (ASCE 24-05, ASCE 24-14 or their equivalent) and any alterations also meet those standards and the provisions listed in Section IV.

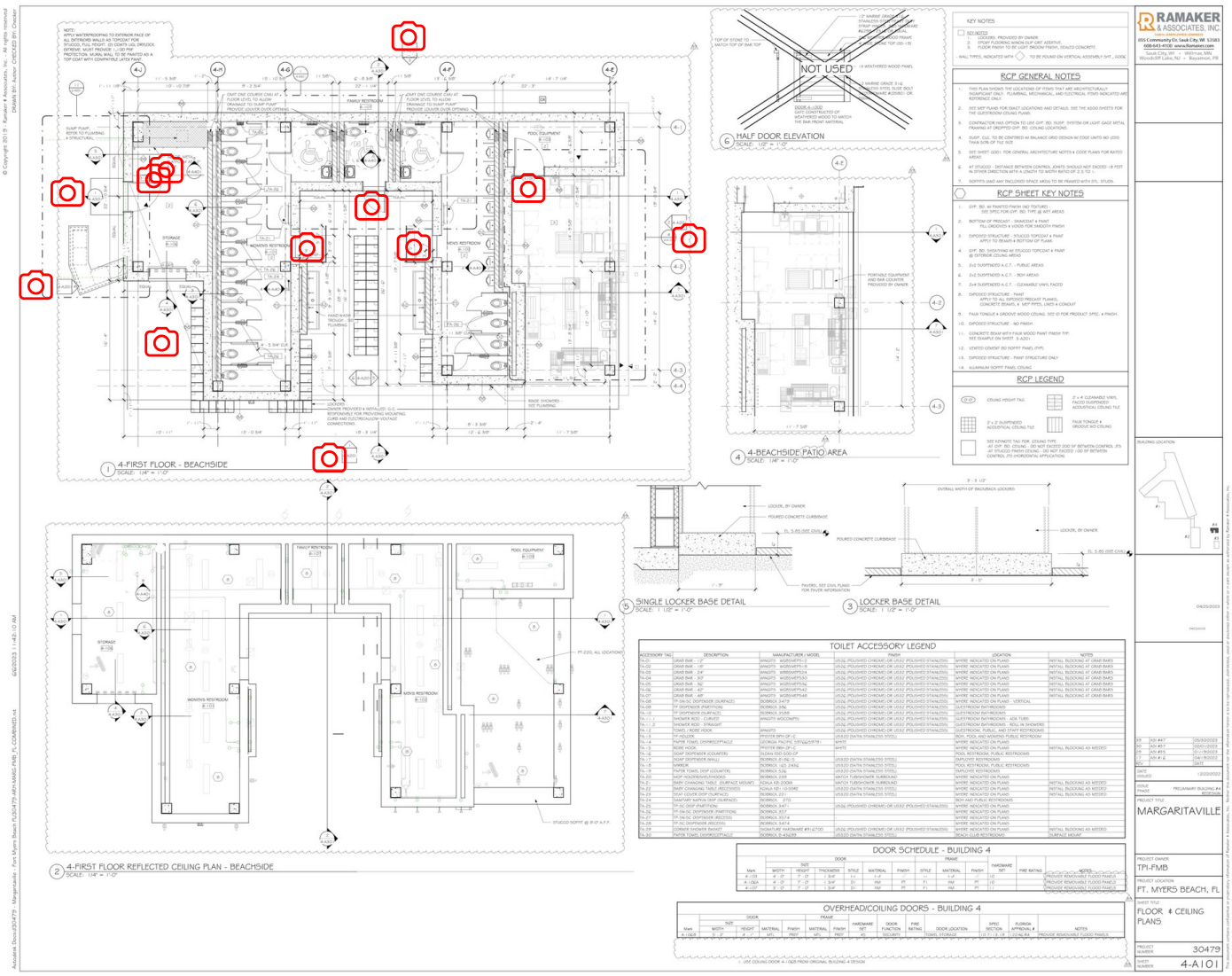
BUILDING 4 DRY FLOODPROOFING PHOTOS

Prepared by : Tablet1 Ramaker & Associates

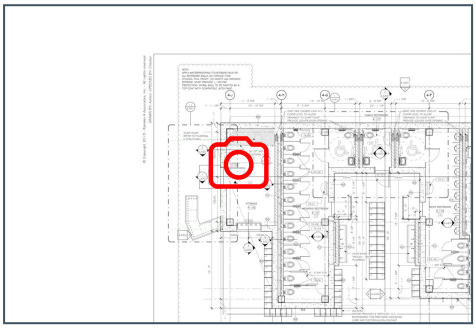
Jan 24, 2024

Description

Issued by tablet1@ramaker.com

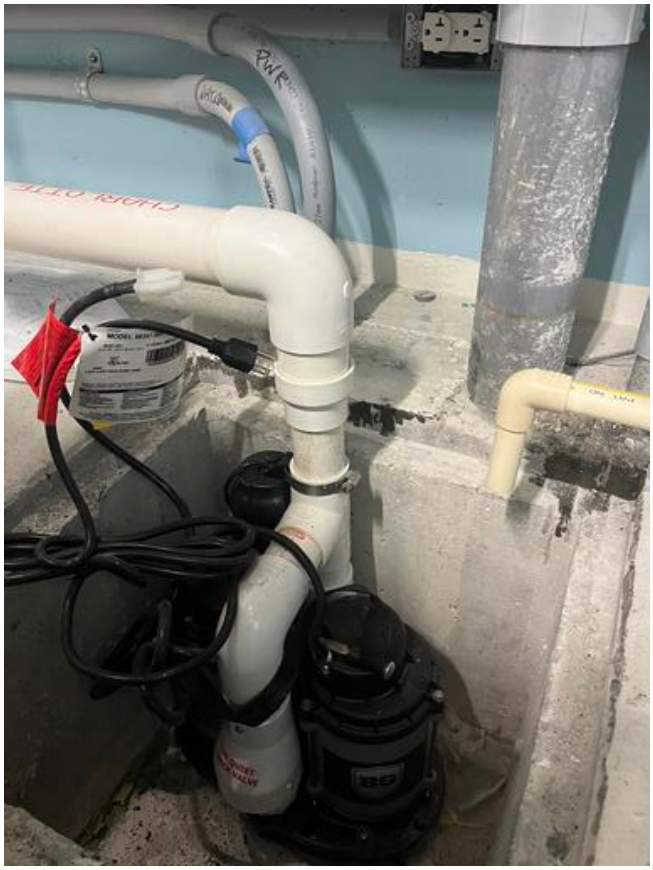

1 4-FIRST FLOOR - BEACHSIDE
SCALE: 1/4" = 1'-0"
2 4-FIRST FLOOR REFLECTED CEILING PLAN - BEACHSIDE
SCALE: 1/4" = 1'-0"
4 4-BEACHSIDE PATIO AREA
SCALE: 1/4" = 1'-0"
5 SINGLE LOCKER BASE DETAIL
SCALE: 1 1/2" = 1'-0"
3 LOCKER BASE DETAIL
SCALE: 1 1/2" = 1'-0"
6 HALF DOOR ELEVATION
SCALE: 1/2" = 1'-0"
NOT USED
KEY NOTES
RCP GENERAL NOTES
RCP SHEET KEY NOTES
RCP LEGEND
TOILET ACCESSORY LEGEND
DOOR SCHEDULE - BUILDING 4
OVERHEAD/COILING DOORS - BUILDING 4
RAMAKER & ASSOCIATES, INC.
MARGARITAVILLE
TPI-FMB
FT. MYERS BEACH, FL
FLOOR + CEILING PLANS
30479
4-A101

Sump Pump Installation



Created:
tablet1@ramaker.com
Jan 18, 2024 12:41 PM

Last Updated:
tablet1@ramaker.com
Jan 18, 2024 1:59 PM



IMG_6704

Taken on:
Jan 18, 2024 11:39 AM

Added on:
Jan 18, 2024 12:39 PM

Added by:
Tablet1 Ramaker & Associates

IMG_6710

Added on:
Jan 18, 2024 1:59 PM

Added by:
Tablet1 Ramaker & Associates

IMG_6709

Added on:
Jan 18, 2024 1:59 PM

Added by:
Tablet1 Ramaker & Associates

IMG_6705

Added on:
Jan 18, 2024 12:42 PM

Added by:
Tablet1 Ramaker & Associates

IMG_6703

Added on:
Jan 18, 2024 12:42 PM

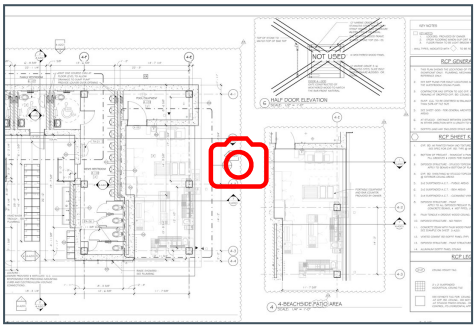
Added by:
Tablet1 Ramaker & Associates

IMG_6671

Added on:
Jan 18, 2024 12:42 PM

Added by:
Tablet1 Ramaker & Associates

NORTH EXTERIOR



Created:
tablet1@ramaker.com
Jan 5, 2024 3:37 PM

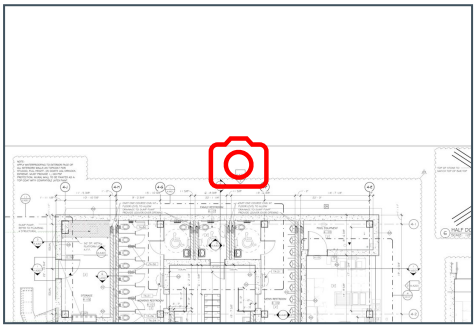
Last Updated:
tablet1@ramaker.com
Jan 5, 2024 3:37 PM

North side of Building

Added on:
Jan 5, 2024 3:37 PM

Added by:
Tablet1 Ramaker & Associates

WEST EXTERIOR



Created:
tablet1@ramaker.com
Jan 5, 2024 3:35 PM

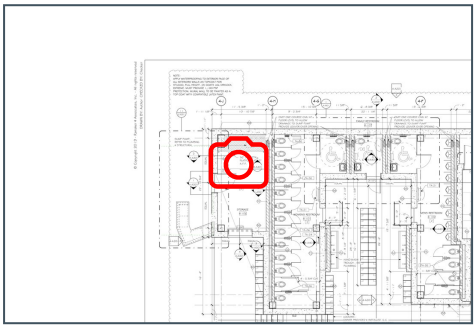
Last Updated:
tablet1@ramaker.com
Jan 5, 2024 3:37 PM

West side of Building

Added on:
Jan 5, 2024 3:37 PM

Added by:
Tablet1 Ramaker & Associates

PANEL STORAGE



Created:
tablet1@ramaker.com
Jan 5, 2024 3:35 PM

Last Updated:
tablet1@ramaker.com
Jan 5, 2024 3:35 PM

Panel Storage 2

Added on:
Jan 5, 2024 3:35 PM

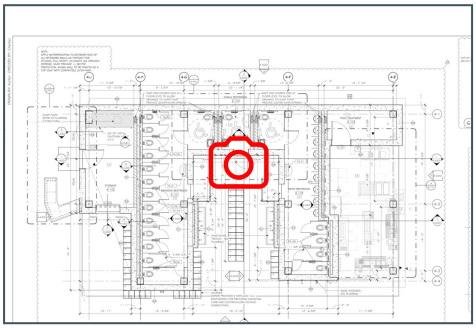
Added by:
Tablet1 Ramaker & Associates

Panel Storage

Added on:
Jan 5, 2024 3:35 PM

Added by:
Tablet1 Ramaker & Associates

DOOR 4-107



Created:
tablet1@ramaker.com
Jan 5, 2024 3:34 PM

Last Updated:
tablet1@ramaker.com
Jan 5, 2024 3:34 PM

B 4-107 Installed

Added on:
Jan 5, 2024 3:34 PM

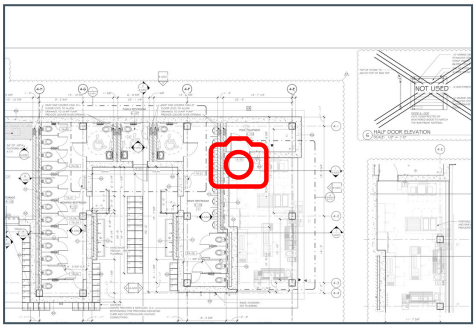
Added by:
Tablet1 Ramaker & Associates

Door 4-107

Added on:
Jan 5, 2024 3:34 PM

Added by:
Tablet1 Ramaker & Associates

DOOR 4-103



Created:
tablet1@ramaker.com
Jan 5, 2024 3:33 PM

Last Updated:
tablet1@ramaker.com
Jan 5, 2024 3:34 PM

B 4-103 Installed

Added on:
Jan 5, 2024 3:34 PM

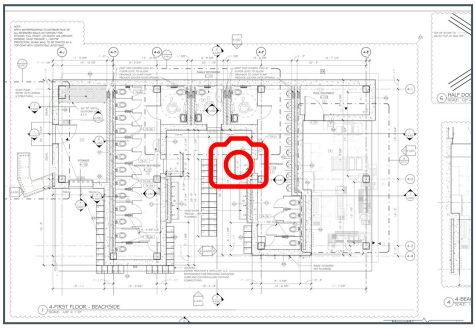
Added by:
Tablet1 Ramaker & Associates

Door 4-103

Added on:
Jan 5, 2024 3:33 PM

Added by:
Tablet1 Ramaker & Associates

OPENING 4-102



Created:
tablet1@ramaker.com
Jan 5, 2024 3:32 PM

Last Updated:
tablet1@ramaker.com
Jan 5, 2024 3:33 PM

B 4-102 Installed

Added on:
Jan 5, 2024 3:33 PM

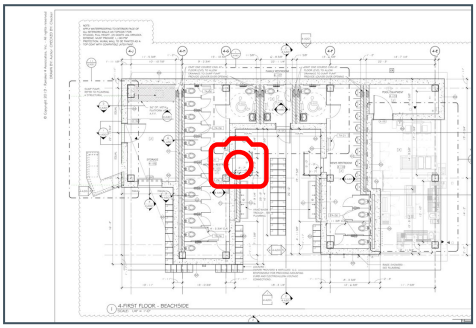
Added by:
Tablet1 Ramaker & Associates

Door 4-102

Added on:
Jan 5, 2024 3:33 PM

Added by:
Tablet1 Ramaker & Associates

OPENING 4-101



Created:
tablet1@ramaker.com
Jan 5, 2024 3:32 PM

Last Updated:
tablet1@ramaker.com
Jan 5, 2024 3:32 PM

B 4-101 Installed

Added on:
Jan 5, 2024 3:32 PM

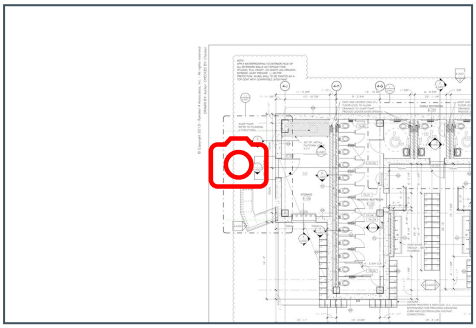
Added by:
Tablet1 Ramaker & Associates

Door 4-101

Added on:
Jan 5, 2024 3:32 PM

Added by:
Tablet1 Ramaker & Associates

DOOR 4-106A



Created:
tablet1@ramaker.com
Jan 5, 2024 3:31 PM

Last Updated:
tablet1@ramaker.com
Jan 5, 2024 3:31 PM

B 4-106A Installed

Added on:
Jan 5, 2024 3:31 PM

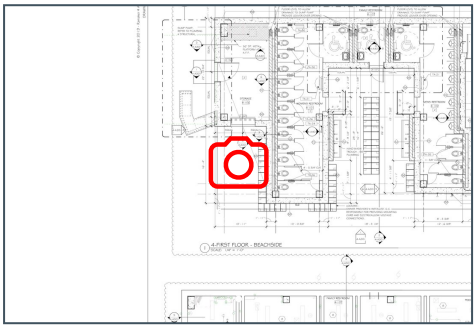
Added by:
Tablet1 Ramaker & Associates

Door 4-106A

Added on:
Jan 5, 2024 3:31 PM

Added by:
Tablet1 Ramaker & Associates

FLOOD PANEL 4-106B



Created:
tablet1@ramaker.com
Jan 5, 2024 3:27 PM

Last Updated:
tablet1@ramaker.com
Jan 5, 2024 3:30 PM

B 4-106B Installed

Added on:
Jan 5, 2024 3:30 PM

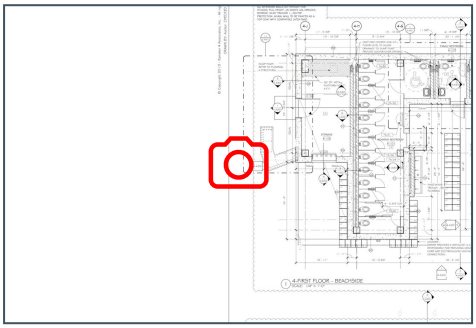
Added by:
Tablet1 Ramaker & Associates

Opening 4-106B

Added on:
Jan 5, 2024 3:30 PM

Added by:
Tablet1 Ramaker & Associates

NORTH EXTERIOR



Created:
tablet1@ramaker.com
Jan 5, 2024 3:38 PM

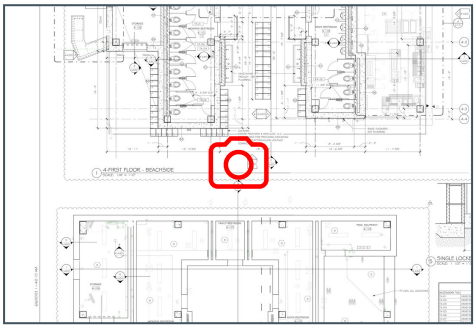
Last Updated:
tablet1@ramaker.com
Jan 5, 2024 3:39 PM

North side of Building

Added on:
Jan 5, 2024 3:39 PM

Added by:
Tablet1 Ramaker & Associates

EAST EXTERIOR



Created:
tablet1@ramaker.com
Jan 5, 2024 3:37 PM

Last Updated:
tablet1@ramaker.com
Jan 5, 2024 3:38 PM

East side (5) of Building

Added on:
Jan 5, 2024 3:38 PM

Added by:
Tablet1 Ramaker & Associates

East side (7) of Building

Added on:
Jan 5, 2024 3:38 PM

Added by:
Tablet1 Ramaker & Associates

East side (3) of Building

Added on:
Jan 5, 2024 3:38 PM

Added by:
Tablet1 Ramaker & Associates

East side (6) of Building

Added on:
Jan 5, 2024 3:38 PM

Added by:
Tablet1 Ramaker & Associates

East side (2) of Building

Added on:
Jan 5, 2024 3:38 PM

Added by:
Tablet1 Ramaker & Associates

East side (1) of Building

Added on:
Jan 5, 2024 3:38 PM

Added by:
Tablet1 Ramaker & Associates

East side (4) of Building

Added on:
Jan 5, 2024 3:38 PM

Added by:
Tablet1 Ramaker & Associates

Margaritaville Comprehensive Flood Emergency Operations Plan

Dry Floodproofing building 4 (Pool Building)

Emergency Organization Team:

- David Cesario – Resort Manager – Mobile 617-244-6165
- Ken DiLorenzo – Director of Engineering – Mobile 914-261-1157
- Frank Wood – Director of Security – Mobile 561-723-6144

Components for dry floodproofing of this building:

- Six opening (5 doorways and 1 window)
- Eleven panels - Each doorway has two panels; the window has one panel.
- One sump pump that operates on normal and battery backup power.
- No additional components

Equipment and tools needed.

- Eleven panels
- Cordless drill with a Slotted Sidewalk driver (9/16 * 3 5/8)

Installation of panels will occur:

- Within 8 hours of a tropical storm warning or hurricane watch notification.

Notification

- Notification will be given via the numbers of the Emergency Organization Team listed above.

Installation of panels; responsibility

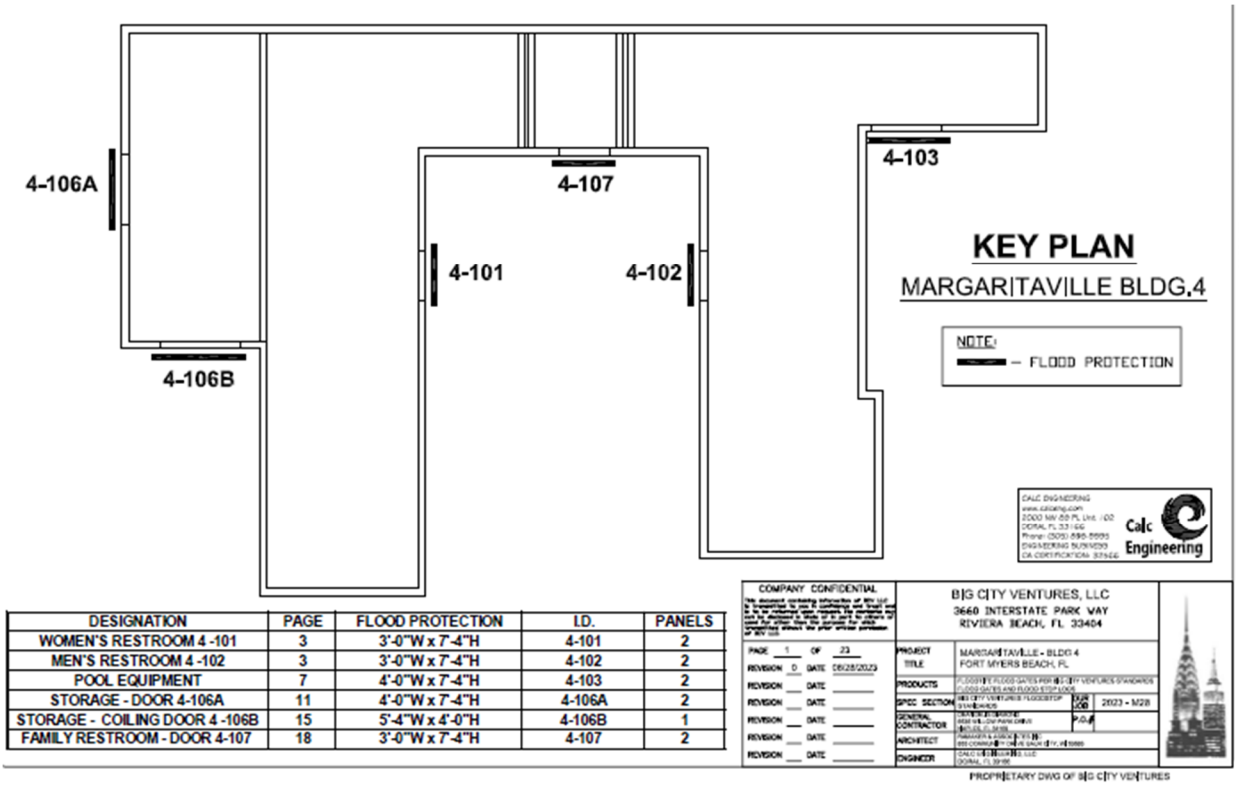
- The Director of Engineering will lead the installation.
    - Installation includes 5 doorways and 1 window panel.
    - DOE will direct personnel to install.
    - Bolts are in place and only require removal of screws, and placement of the panels.
    - Coreless drill with slotted sidewalk driver.

The decision tree is as follows; based on the timing above.

- David Cesario – Resort Manager – Mobile 617-244-6165
- Ken DiLorenzo – Director of Engineering – Mobile 914-261-1157
- Frank Wood – Director of Security – Mobile 561-723-6144

Location of the panels

- Panels will be stored in the building, the room with door labeled (4-106A)
- Coreless drill and Slotted Sidewalk bit are also stored in this room with the panels.



DESIGNATION	PAGE	FLOOD PROTECTION	I.D.	PANELS
WOMEN'S RESTROOM 4 -101	3	3'-0"W x 7'-4"H	4-101	2
MEN'S RESTROOM 4 -102	3	3'-0"W x 7'-4"H	4-102	2
POOL EQUIPMENT	7	4'-0"W x 7'-4"H	4-103	2
STORAGE - DOOR 4-106A	11	4'-0"W x 7'-4"H	4-106A	2
STORAGE - COILING DOOR 4 -106B	15	5'-4"W x 4'-0"H	4-106B	1
FAMILY RESTROOM - DOOR 4-107	18	3'-0"W x 7'-4"H	4-107	2

Power source requirements

- None needed.
- After the panels are installed, there is no internal access to the building.

Installations

- Each door requires two panels and a two-person team for installation.
- Two people will be designated for the installation as described above.

Evacuation

- Once the panels are installed the two-person crew leave the area and follow local evacuation procedures.

Training

- Training for the panel installation occurred at the initial installation on 1/2/24, and will be conducted annually.

Plan review

- This plan will be reviewed annually and adjusted as needed.

Margaritaville Comprehensive Inspection and Maintenance Plan

Dry Floodproofing building 4 (Pool Building)

Inspection and Maintenance Team:

- Ken DiLorenzo – Director of Engineering – Mobile 914-261-1157
- Frank Wood – Director of Security – Mobile 561-723-6144

Inspections

- Visual inspection of the building will occur daily by security and pool personnel.
    - Any visual deficiencies will be reported and addressed immediately.
- Monthly structural inspections will be conducted by the Team listed above. This includes structural, penetrations, foundation, walls, slabs, joints, etc.
    - Any deficiencies will be addressed as needed.
- Panel inspection will be conducted monthly and tested during training/installation of the panels.
    - This includes all seals/gaskets, fasteners, mounting hardware and tools.
- Sump pump inspection will be conducted monthly and tested.
    - This includes all testing of backup battery operation.

Sump Pumps

- There is one sump pump in this structure. It is a hybrid model that includes a battery backup to operate during permanent power loss.

Emergency Power

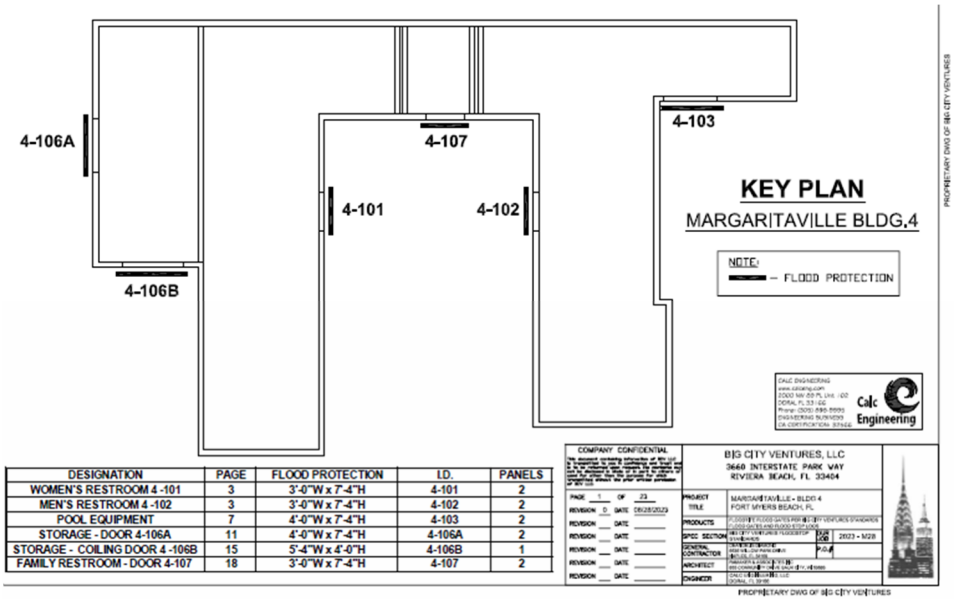
- There is no emergency power to this structure.

Location of panels and tools

- The location for the panels and tools is in the room labeled with door 4-106A. The panels have been evaluated and appropriately seal the openings.

Manufacture information

- Big City Ventures; all replacement gaskets, seals and other parts are available and we have been provided contact information for any questions.



DESIGNATION	PAGE	FLOOD PROTECTION	I.D.	PANELS
WOMEN'S RESTROOM 4 -101	3	3'-0"W x 7'-4"H	4-101	2
MEN'S RESTROOM 4 -102	3	3'-0"W x 7'-4"H	4-102	2
POOL EQUIPMENT	7	4'-0"W x 7'-4"H	4-103	2
STORAGE - DOOR 4-106A	11	4'-0"W x 7'-4"H	4-106A	2
STORAGE - COILING DOOR 4 -106B	15	5'-4"W x 4'-0"H	4-106B	1
FAMILY RESTROOM - DOOR 4-107	18	3'-0"W x 7'-4"H	4-107	2

TPI Hospitality | www.tpihospitality.com
103 15th Ave. NW, Suite 200 | Willmar, MN 56201

January 18, 2024

RE: TPI-FMB, LLC
1192 Estero Boulevard
Fort Myers Beach, FL 33931
Building #4
Parcel No. 19-46-24-W4-U0494.2609

To Whom It May Concern:

TPI-FMB, LLC, the building owner for the above referenced parcel, acknowledges that they are aware of the criteria for when the dry floodproofing measures must be installed and that they know how to install all the measures.

Sincerely,

Thomas R. Torgerson
Manager, TPI-FMB, LLC

DEANGELIS DIAMOND

Submittal #10 7116-1.0
10 7116 - Storm Panels

DeAngelis Diamond Construction HQ
6635 Willow Park Drive
Naples, Florida 34109
Phone: (239) 594-1994
Fax: (239) 594-1995

Project: 21-037 - Margaritaville
1160 Estero Blvd
Fort Myers Beach, Florida 33931

Building 4 Storm Panels - SD

SPEC SECTION:	10 7116 - Storm Panels	**SUBMITTAL MANAGER:**	Drew Davis **(DeAngelis Diamond Construction, LLC)**
STATUS:	Open	**DATE CREATED:**	09/7/2023
ISSUE DATE:	09/7/2023	**REVISION:**	0
RESPONSIBLE CONTRACTOR:	Big City Ventures, LLC	**RECEIVED FROM:**	Mark Loeb
RECEIVED DATE:		**SUBMIT BY:**	
FINAL DUE DATE:	09/21/2023	**LOCATION:**	Building 4
TYPE:	Shop Drawing	**COST CODE:**	
APPROVERS:	Drew Davis **(DeAngelis Diamond Construction, LLC)**, Kevin Hanson **(Ramaker & Associates, Inc.)**, Jodi Kleist **(Ramaker & Associates, Inc.)**		

BALL IN COURT:
Kevin Hanson **(Ramaker & Associates, Inc.)**, Jodi Kleist **(Ramaker & Associates, Inc.)**

DISTRIBUTION:
Zach Whiting **(DeAngelis Diamond Construction, LLC)** , Tom Torgerson **(TPI-FMB, LLC)** , Robert Kisabeth **(TPI-FMB, LLC)** , Max Tyler **(DeAngelis Diamond Construction, LLC)** , Kevin Hanson **(Ramaker & Associates, Inc.)** , Kathy Aamot **(TPI-FMB, LLC)** , Kameren Saffold **(DeAngelis Diamond Construction, LLC)** , Justin Oelke **(DeAngelis Diamond Construction, LLC)** , Joel Finley **(TPI-FMB, LLC)** , Jodi Kleist **(Ramaker & Associates, Inc.)** , Jeffery Miller **(DeAngelis Diamond Construction, LLC)** , Ingrid Arencibia **(DeAngelis Diamond Construction, LLC)** , Drew Davis **(DeAngelis Diamond Construction, LLC)** , Daniel Rohletter **(DeAngelis Diamond Construction, LLC)** , Chris Flagg **(TPI-FMB, LLC)** , Bailey Winfield **(DeAngelis Diamond Construction, LLC)**

DESCRIPTION:

ATTACHMENTS:

SUBMITTAL WORKFLOW

#	NAME	SUBMITTER/ APPROVER	SENT DATE	DUE DATE	RETURNED DATE	RESPONSE	ATTACHMENTS	COMMENTS
1	Mark Loeb	Submitter		9/14/2023	9/7/2023	Submitted	MARGARITAVILLE_BLDG4_REV.0.pdf	
2	Drew Davis	Approver	9/7/2023	9/12/2023	9/7/2023	Approved	MARGARITAVILLE_BLDG4_REV.0.pdf	
3	Kevin Hanson	Approver	9/7/2023	9/21/2023		Pending		
4	Jodi Kleist	Approver	9/7/2023	9/21/2023		Pending		

BY **DATE** **COPIES TO**

21-037 - Margaritaville

1160 Estero Blvd
Fort Myers Beach, Florida 33931
United States

DeAngelis Diamond Construction HQ
6635 Willow Park Drive
Naples, Florida 34109
United States
(239) 594-1994

Title
Building 4 Storm Panels - SD

Submittal Manager
Drew Davis

Spec Section
10 7116 - Storm Panels

Type
Shop Drawing

Number
10 7116-1

Rev
0

Description
None

RAMAKER employee-owned

Reviewed

If Reviewed or Reviewed as Noted above, fabrication may be undertaken. This DOES NOT authorize changes in Contract Sum unless stated in seperate letter or Change Order. If Rejected of Revise & Resubmit above, fabrication MAY NOT be undertaken. Resubmit corrected copies for final review. Correction shall be limited to items marked.

Reviewing is only for conformance with the design concept of the project. The contractor is responsible for compliance with the information given in the Contract Documents and for dimensions to be confirmed and correlated at the site for information that pertains solely to the fabrication processes or to the means, methods, techniques, sequences, and procedures of construction, and for coordination of the Work of all trades.

BY: khanson DATE: 09/07/2023

855 Community Dr. Sauk City, WI 53583 | 1-800-332-7532

ALL DIMENSIONS SUBJECT TI FIELD VERIFICATION.
KMH/09-07-23

DEANGELIS DIAMOND

Reviewed by DeAngelis Diamond Construction, LLC. in accordance with the Contract. Review and approval of this submittal does not relieve the subcontractor from its obligation to perform all Work in accordance with the Subcontract and compliance with the requirements of the Contract Documents.

Job # 21-037 Margaritaville Fort Myers Beach

Submittal 10 7116-1.0 Building 4 Flood Panels - SD

Approved 09-07-23 DD

COMPANY CONFIDENTIAL

BIG CITY VENTURES, LLC

3660 INTERSTATE PARK WAY
RIVIERA BEACH, FL 33404

PAGE 0 OF 23

REVISION 0 DATE 08/28/2023

REVISION ___ DATE _____

REVISION ___ DATE _____

REVISION ___ DATE _____

REVISION ___ DATE _____

REVISION ___ DATE _____

PROJECT TITLE	MARGARITAVILLE - BLDG 4 FORT MYERS BEACH, FL		
PRODUCTS	FLOODTITE FLOOD GATES PER BIG CITY VENTURES STANDARDS FLOOD GATES AND FLOOD STOP LOGS		
SPEC SECTION	BIG CITY VENTURES FLOODSTOP STANDARDS	OUR JOB	2023 - M28
GENERAL CONTRACTOR	DEANGELIS DIAMOND 6635 WILLOW PARK DRIVE NAPLES, FL 34109	P.O.#	
ARCHITECT	RAMAKER & ASSOCIATES INC 855 COMMUNITY DRIVE SAUK CITY, WI 53583		
ENGINEER	CALC ENGINEERING, LLC DORAL, FL 33166		

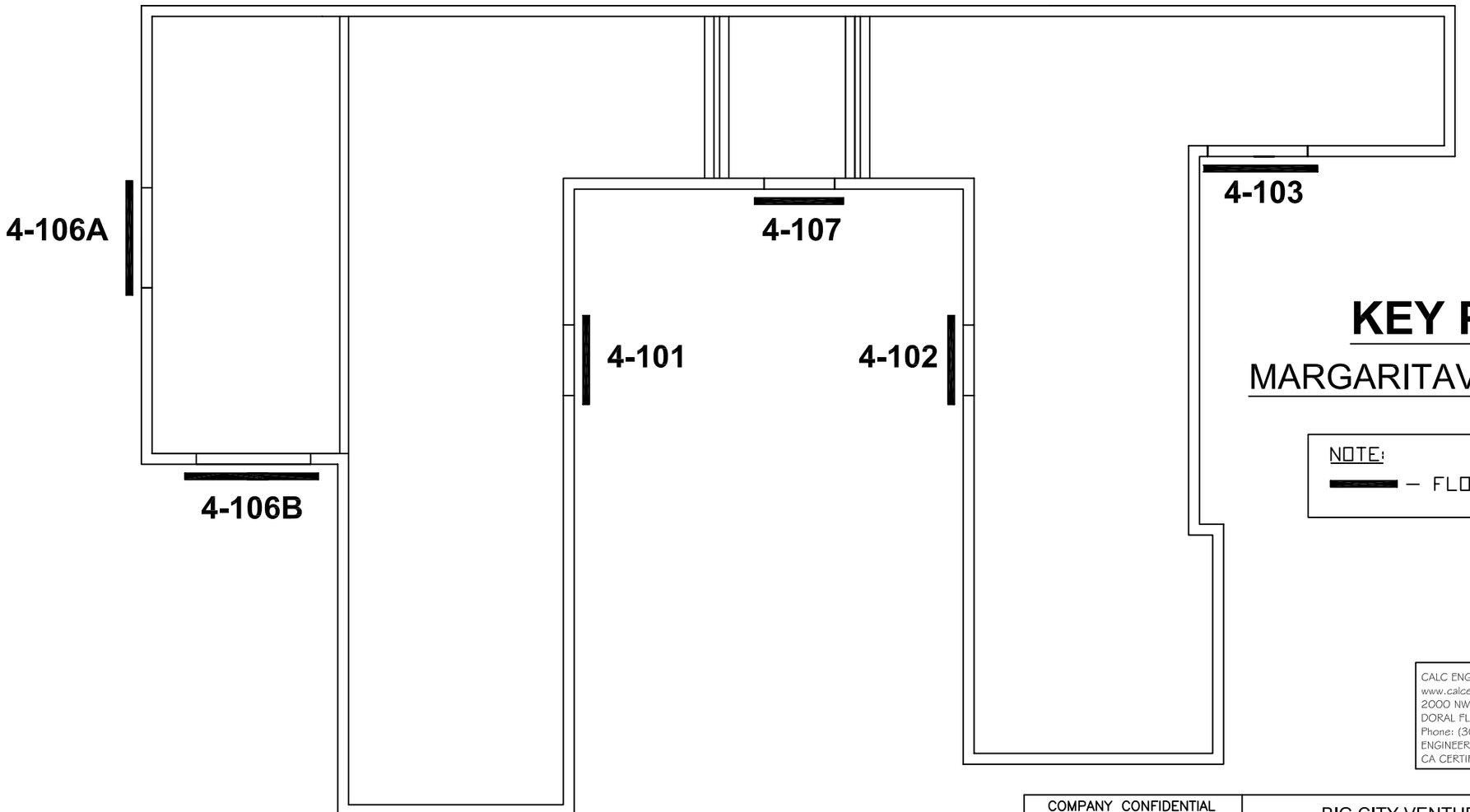
CALC ENGINEERING
www.calceng.com
2000 NW 89 PL Unit 102
DORAL FL 33166
Phone: (305) 898-9995
ENGINEERING BUSINESS
CA CERTIFICATION: 32566

Calc Engineering

PROPRIETARY DWG OF BIG CITY VENTURES

PROPRIETARY DWG OF BIG CITY VENTURES

PROPRIETARY DWG OF BIG CITY VENTURES



KEY PLAN

MARGARITAVILLE BLDG.4

NOTE:
▬ — FLOOD PROTECTION

DESIGNATION	PAGE	FLOOD PROTECTION	I.D.	PANELS
WOMEN'S RESTROOM 4 -101	3	3'-0"W x 7'-4"H	4-101	2
MEN'S RESTROOM 4 -102	3	3'-0"W x 7'-4"H	4-102	2
POOL EQUIPMENT	7	4'-0"W x 7'-4"H	4-103	2
STORAGE - DOOR 4-106A	11	4'-0"W x 7'-4"H	4-106A	2
STORAGE - COILING DOOR 4 -106B	15	5'-4"W x 4'-0"H	4-106B	1
FAMILY RESTROOM - DOOR 4-107	18	3'-0"W x 7'-4"H	4-107	2

CALC ENGINEERING
www.calceng.com
2000 NW 89 PL Unit 102
DORAL FL 33166
Phone: (305) 898-9995
ENGINEERING BUSINESS
CA CERTIFICATION: 32566
Calc Engineering

PAGE 1 OF 23
REVISION 0 DATE 08/28/2023
REVISION ___ DATE ___
REVISION ___ DATE ___
REVISION ___ DATE ___
REVISION ___ DATE ___
REVISION ___ DATE ___

BIG CITY VENTURES, LLC
3660 INTERSTATE PARK WAY
RIVIERA BEACH, FL 33404

PROJECT TITLE	MARGARITAVILLE - BLDG 4 FORT MYERS BEACH, FL		
PRODUCTS	FLOODTITE FLOOD GATES PER BIG CITY VENTURES STANDARDS FLOOD GATES AND FLOOD STOP LOGS		
SPEC SECTION	BIG CITY VENTURES FLOODSTOP STANDARDS	OUR JOB	2023 - M28
GENERAL CONTRACTOR	DEANGELIS DIAMOND 6635 WILLOW PARK DRIVE NAPLES, FL 34109	P.O.#	
ARCHITECT	RAMAKER & ASSOCIATES INC 855 COMMUNITY DRIVE SAUK CITY, WI 53583		
ENGINEER	CALC ENGINEERING, LLC DORAL, FL 33166		

PROPRIETARY DWG OF BIG CITY VENTURES
PROPRIETARY DWG OF BIG CITY VENTURES
PROPRIETARY DWG OF BIG CITY VENTURES

BILL OF MATERIALS FOR STOPLOG

PART #	QUANTITY	PART DESCRIPTION	MATERIAL	COMMENTS
	GATE			
1		GATE / BARRIER PANEL		
1A	1	PANEL	5052 H32	1/4" PLATE (SEE PANEL DWGS.)
1G	AS SHOWN	VERTICAL STIFFENER	ALM 6061-T6	2"x2"x1/4" TUBE
1G-1	AS SHOWN	VERTICAL STIFFENER	ALM 6061-T6	4"x2"x1/4" TUBE
1H	AS SHOWN	HORIZONTAL STIFFENER	ALM 6061-T6	2"x2"x1/4" TUBE
	FRAME & FRAME COMPONENTS			
4B	AS SHOWN	ISOLATION GASKET	RUBBER/EPDM	1/4" THK.
4C	AS SHOWN	COMPRESSION GASKET	SOFT DURO ADHESIVE	1/2" x 2"
5A	3/8" DIA.DROP-IN EXPANSION ANCHOR (SEE PAGE 23)			
5B	1/2" DIA.LDT R-59 ANCHOR (SEE PAGE 22)			
5C	3/8" DIA.DROP-IN EXPANSION ANCHOR (SEE PAGE 22)			

NOTES:

1: MATERIAL : PER TABLE

2. PRESSURE: TO FULL HEIGHT FROM ONE DIRECTION AS SHOWN ON PLAN

3. FINISH : MILL FINISH

4: SWING: N/A

5: OTHERS
1. REMOVE ALL WELD SPATTER PRIOR TO FINAL FINISH.
2. CLEAN ALL EXCESS PAINT OR GALVANIZING.
TIGHTNESS, ALIGNMENT & SWING

6: SKID AND PACK IN ACCORDANCE WITH COMMERCIAL SHIPPING PRACTICES.

7: APPLY APPROPRIATE PRIMER AS PER SPECS (BY INSTALLER) ON ALL METAL FRAME SURFACES IN CONTACT WITH CONCRETE

8: PROVIDE 1 YEARS WARRANTY AGAINST DEFECTS IN MATERIAL & WORKMANSHIP

CALC ENGINEERING
www.calceng.com
2000 NW 89 PL Unit 102
DORAL FL 33166
Phone: (305) 898-9995
ENGINEERING BUSINESS
CA CERTIFICATION: 32566
Calc Engineering

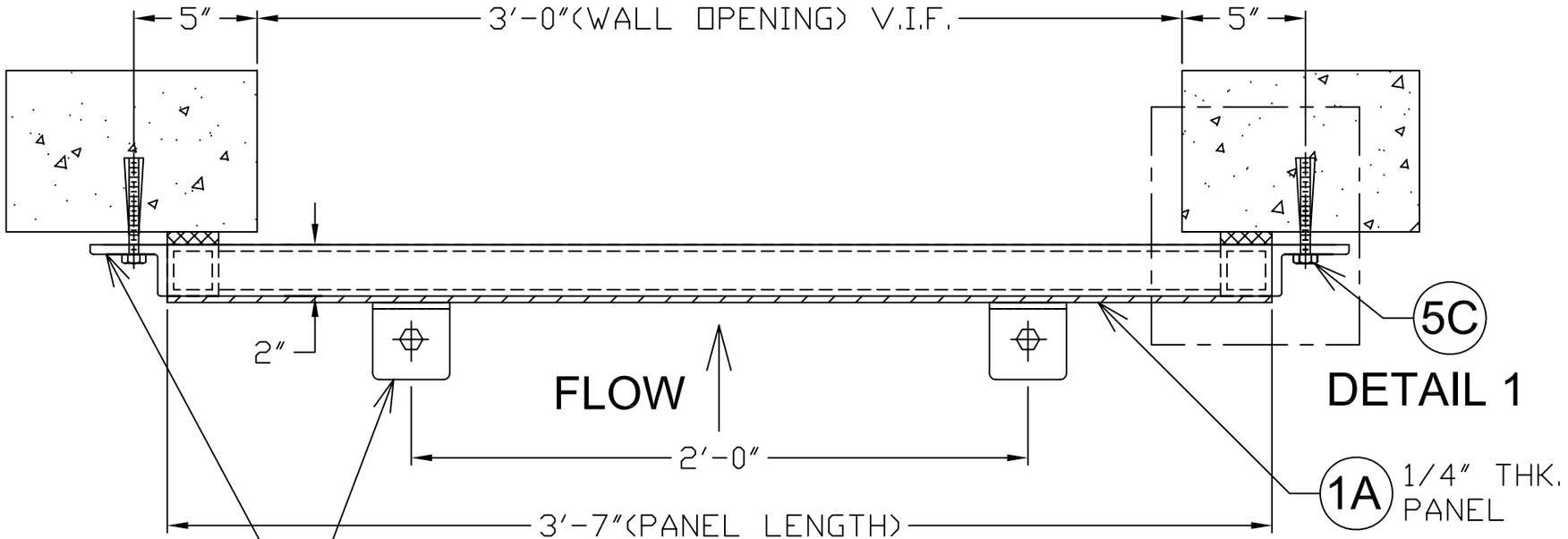
PAGE 2 OF 23
REVISION 0 DATE 08/28/2023
REVISION ___ DATE ___
REVISION ___ DATE ___
REVISION ___ DATE ___
REVISION ___ DATE ___
REVISION ___ DATE ___

BIG CITY VENTURES, LLC
3660 INTERSTATE PARK WAY
RIVIERA BEACH, FL 33404

PROJECT TITLE	MARGARITAVILLE - BLDG 4 FORT MYERS BEACH, FL		
PRODUCTS	FLOODTITE FLOOD GATES PER BIG CITY VENTURES STANDARDS FLOOD GATES AND FLOOD STOP LOGS		
SPEC SECTION	BIG CITY VENTURES FLOODSTOP STANDARDS	OUR JOB	2023 - M28
GENERAL CONTRACTOR	DEANGELIS DIAMOND 6635 WILLOW PARK DRIVE NAPLES, FL 34109	P.O.#	
ARCHITECT	RAMAKER & ASSOCIATES INC 855 COMMUNITY DRIVE SAUK CITY, WI 53583		
ENGINEER	CALC ENGINEERING, LLC DORAL, FL 33166		

PROPRIETARY DWG OF BIG CITY VENTURES

PROPRIETARY DWG OF BIG CITY VENTURES



FACE MOUNTED
FLOOD PROTECTION BARRIERS ASSY
@ WOMEN'S RESTROOM 4 -101 & MEN'S RESTROOM 4 -102
(TYP OF 2)
(3'-0" x 7'-4")
PLAN VIEW

CALC ENGINEERING
www.calceng.com
2000 NW 89 PL Unit 102
DORAL FL 33166
Phone: (305) 898-9995
ENGINEERING BUSINESS
CA CERTIFICATION: 32566
Calc Engineering

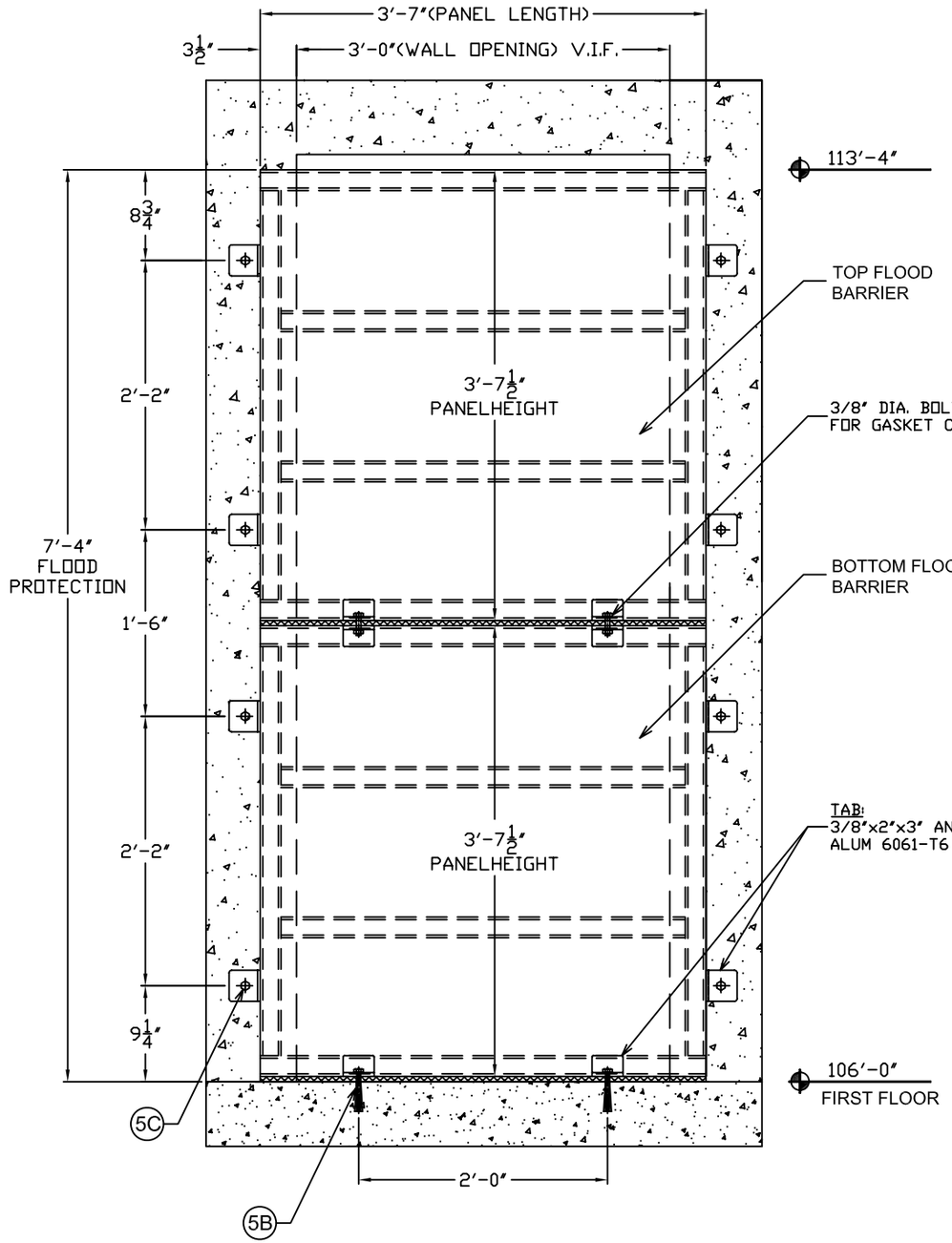
PAGE 3 OF 23

REVISION	0	DATE 08/28/2023
REVISION		DATE
REVISION		DATE
REVISION		DATE
REVISION		DATE
REVISION		DATE

BIG CITY VENTURES, LLC
3660 INTERSTATE PARK WAY
RIVIERA BEACH, FL 33404

PROJECT TITLE	MARGARITAVILLE - BLDG 4 FORT MYERS BEACH, FL		
PRODUCTS	FLOODTITE FLOOD GATES PER BIG CITY VENTURES STANDARDS FLOOD GATES AND FLOOD STOP LOGS		
SPEC SECTION	BIG CITY VENTURES FLOODSTOP STANDARDS	OUR JOB	2023 - M28
GENERAL CONTRACTOR	DEANGELIS DIAMOND 6635 WILLOW PARK DRIVE NAPLES, FL 34109	P.O.#	
ARCHITECT	RAMAKER & ASSOCIATES INC 855 COMMUNITY DRIVE SAUK CITY, WI 53583		
ENGINEER	CALC ENGINEERING, LLC DORAL, FL 33166		

PROPRIETARY DWG OF BIG CITY VENTURES
PROPRIETARY DWG OF BIG CITY VENTURES
PROPRIETARY DWG OF BIG CITY VENTURES



FACE MOUNTED FLOOD PROTECTION BARRIERS ASSY @ 4-101 & 4-102 (TYP OF 2)

(3'-0" x 7'-4")

FRONT VIEW

CALC ENGINEERING
www.calceng.com
2000 NW 89 PL Unit 102
DORAL FL 33166
Phone: (305) 898-9995
ENGINEERING BUSINESS
CA CERTIFICATION: 32566

Calc Engineering

PAGE	4 OF 23
REVISION	0 DATE 08/28/2023
REVISION	DATE
REVISION	DATE
REVISION	DATE
REVISION	DATE
REVISION	DATE

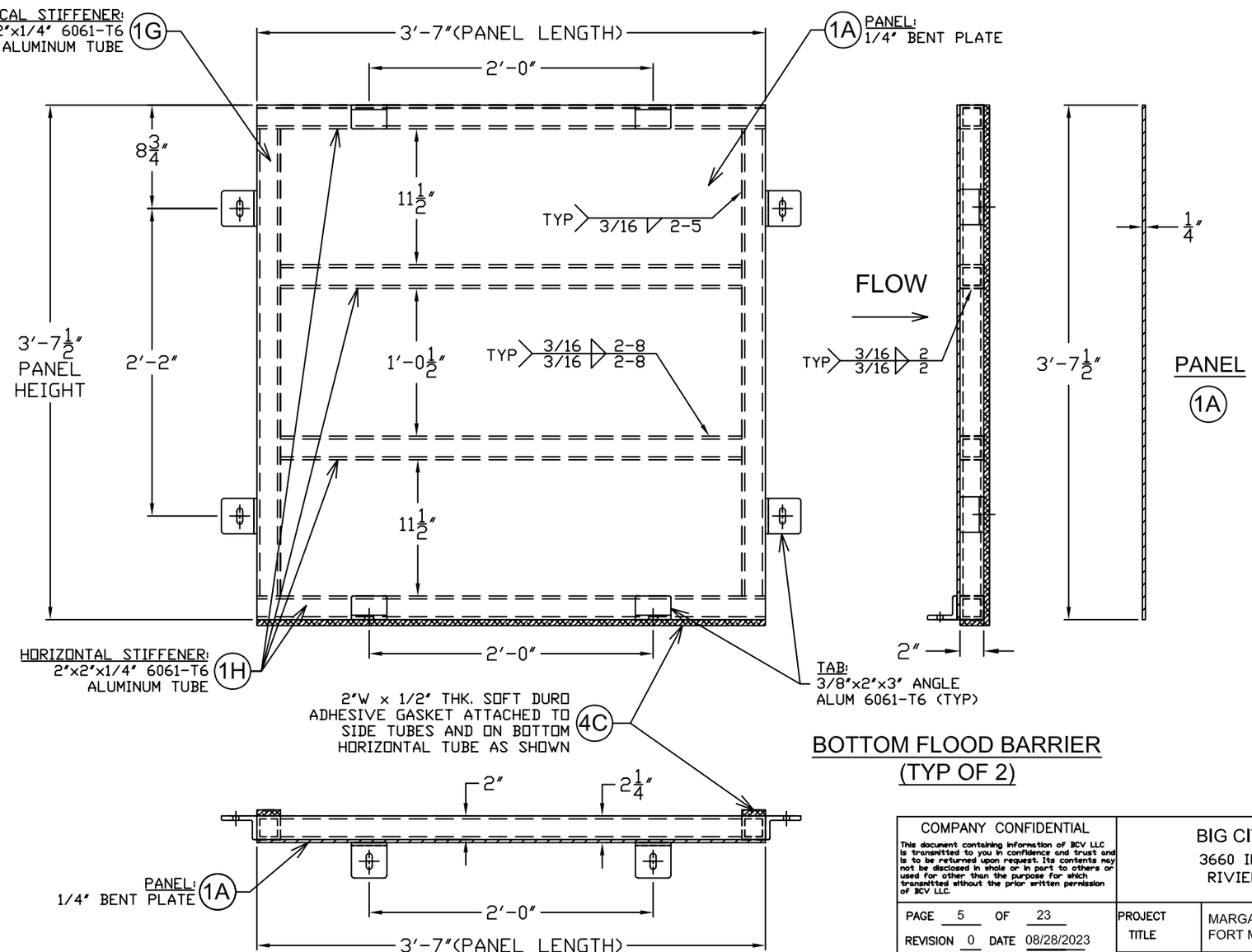
BIG CITY VENTURES, LLC
3660 INTERSTATE PARK WAY
RIVIERA BEACH, FL 33404

PROJECT TITLE	MARGARITAVILLE - BLDG 4 FORT MYERS BEACH, FL		
PRODUCTS	FLOODTITE FLOOD GATES PER BIG CITY VENTURES STANDARDS FLOOD GATES AND FLOOD STOP LOGS		
SPEC SECTION	BIG CITY VENTURES FLOODSTOP STANDARDS	OUR JOB	2023 - M28
GENERAL CONTRACTOR	DEANGELIS DIAMOND 6635 WILLOW PARK DRIVE NAPLES, FL 34109	P.O.#	
ARCHITECT	RAMAKER & ASSOCIATES INC 855 COMMUNITY DRIVE SAUK CITY, WI 53583		
ENGINEER	CALC ENGINEERING, LLC DORAL, FL 33166		

PROPRIETARY DWG OF BIG CITY VENTURES

PROPRIETARY DWG OF BIG CITY VENTURES

PROPRIETARY DWG OF BIG CITY VENTURES



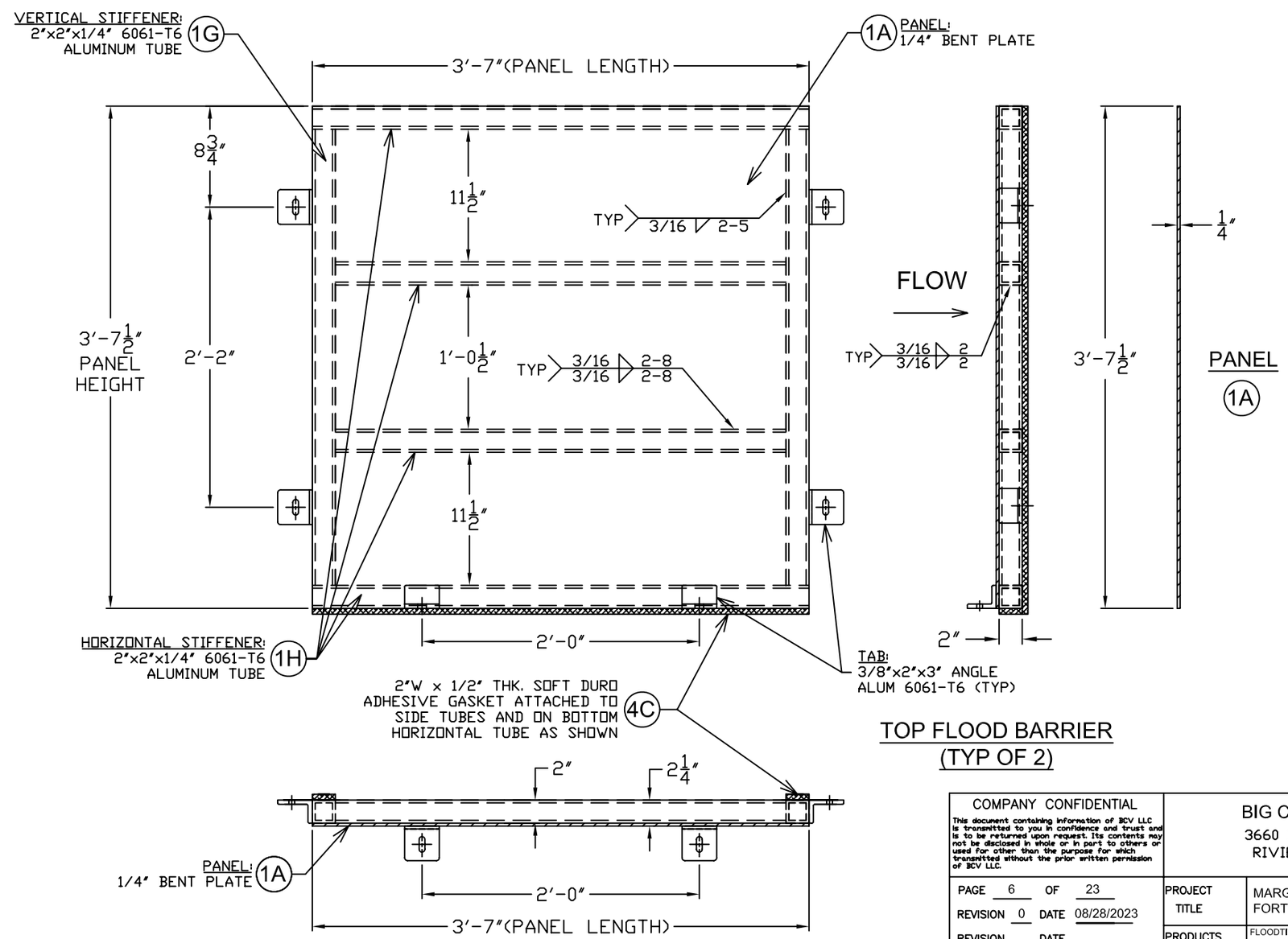
BOTTOM FLOOD BARRIER
(TYP OF 2)

CALC ENGINEERING
www.calceng.com
2000 NW 89 PL Unit 102
DORAL FL 33166
Phone: (305) 898-9995
ENGINEERING BUSINESS
CA CERTIFICATION: 32566
Calc Engineering

PAGE	5 OF 23
REVISION	0 DATE 08/28/2023
REVISION	DATE
REVISION	DATE
REVISION	DATE
REVISION	DATE
REVISION	DATE

BIG CITY VENTURES, LLC
3660 INTERSTATE PARK WAY
RIVIERA BEACH, FL 33404

PROJECT TITLE	MARGARITAVILLE - BLDG 4 FORT MYERS BEACH, FL		
PRODUCTS	FLOODTITE FLOOD GATES PER BIG CITY VENTURES STANDARDS FLOOD GATES AND FLOOD STOP LOGS		
SPEC SECTION	BIG CITY VENTURES FLOODSTOP STANDARDS	OUR JOB	2023 - M28
GENERAL CONTRACTOR	DEANGELIS DIAMOND 6635 WILLOW PARK DRIVE NAPLES, FL 34109	P.O.#	
ARCHITECT	RAMAKER & ASSOCIATES INC 855 COMMUNITY DRIVE SAUK CITY, WI 53583		
ENGINEER	CALC ENGINEERING, LLC DORAL, FL 33166		

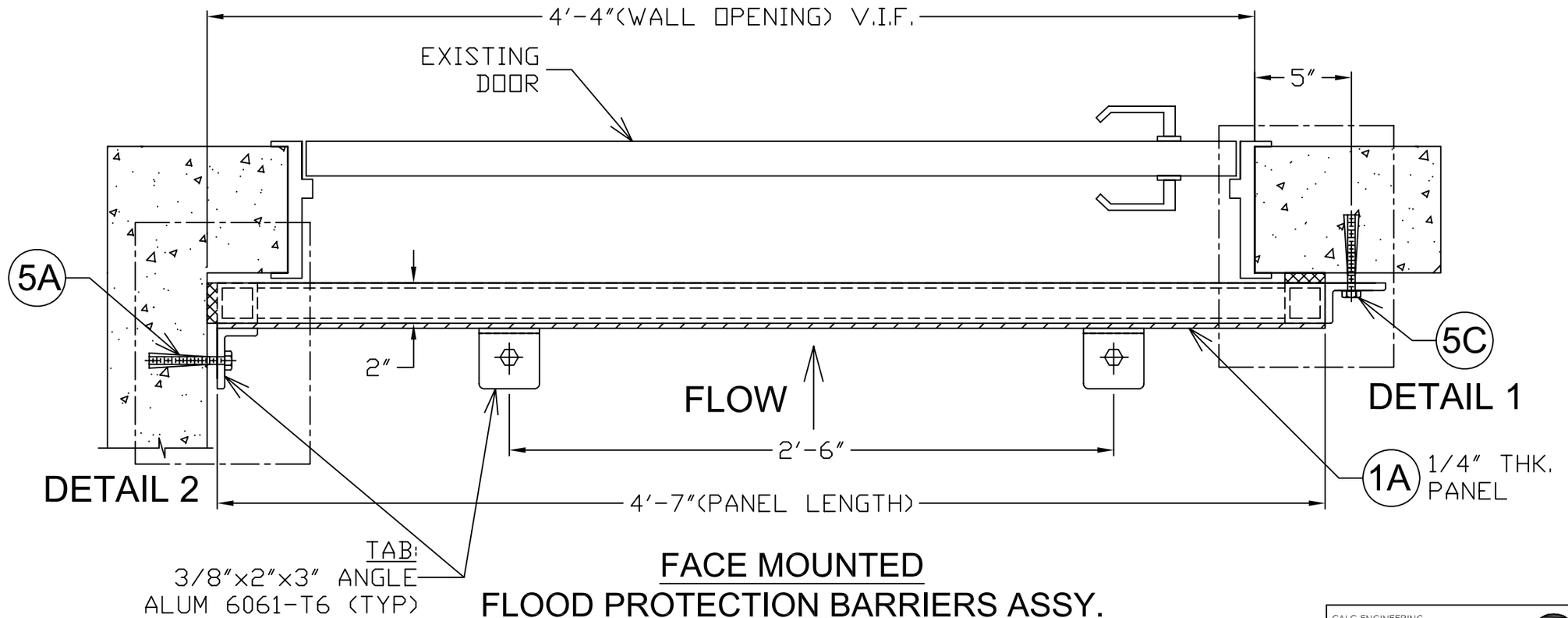


TOP FLOOD BARRIER
(TYP OF 2)

CALC ENGINEERING
www.calceng.com
2000 NW 89 PL Unit 102
DORAL FL 33166
Phone: (305) 898-9995
ENGINEERING BUSINESS
CA CERTIFICATION: 32566
Calc Engineering

BIG CITY VENTURES, LLC
3660 INTERSTATE PARK WAY
RIVIERA BEACH, FL 33404

PAGE 6 OF 23	PROJECT TITLE	MARGARITAVILLE - BLDG 4 FORT MYERS BEACH, FL	
REVISION 0 DATE 08/28/2023	PRODUCTS	FLOODTITE FLOOD GATES PER BIG CITY VENTURES STANDARDS FLOOD GATES AND FLOOD STOP LOGS	
REVISION ___ DATE ___	SPEC SECTION	BIG CITY VENTURES FLOODSTOP STANDARDS	OUR JOB 2023 - M28
REVISION ___ DATE ___	GENERAL CONTRACTOR	DEANGELIS DIAMOND 6635 WILLOW PARK DRIVE NAPLES, FL 34109	P.O.#
REVISION ___ DATE ___	ARCHITECT	RAMAKER & ASSOCIATES INC 855 COMMUNITY DRIVE SAUK CITY, WI 53583	
REVISION ___ DATE ___	ENGINEER	CALC ENGINEERING, LLC DORAL, FL 33166	



FACE MOUNTED FLOOD PROTECTION BARRIERS ASSY. @ POOL EQUIP. DOOR 4 -103 (ONE EACH)

(4'-0" x 7'-4")

PLAN VIEW

CALC ENGINEERING
www.calceng.com
2000 NW 89 PL Unit 102
DORAL FL 33166
Phone: (305) 898-9995
ENGINEERING BUSINESS
CA CERTIFICATION: 32566
Calc Engineering

PAGE 7 OF 23

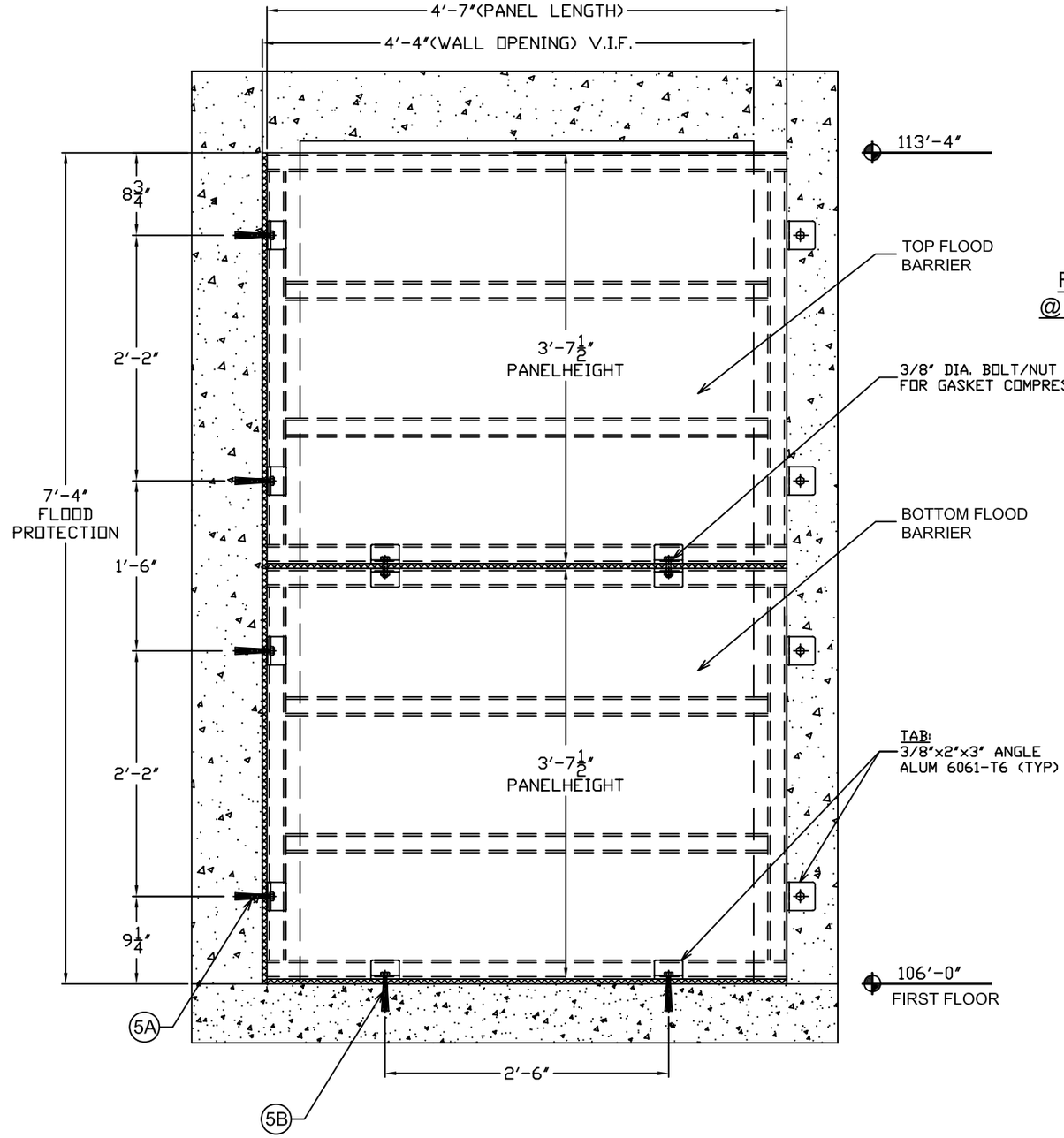
REVISION	0	DATE 08/28/2023
REVISION		DATE
REVISION		DATE
REVISION		DATE
REVISION		DATE
REVISION		DATE

BIG CITY VENTURES, LLC
3660 INTERSTATE PARK WAY
RIVIERA BEACH, FL 33404

PROJECT TITLE	MARGARITAVILLE - BLDG 4 FORT MYERS BEACH, FL		
PRODUCTS	FLOODTITE FLOOD GATES PER BIG CITY VENTURES STANDARDS FLOOD GATES AND FLOOD STOP LOGS		
SPEC SECTION	BIG CITY VENTURES FLOODSTOP STANDARDS	OUR JOB	2023 - M28
GENERAL CONTRACTOR	DEANGELIS DIAMOND 6635 WILLOW PARK DRIVE NAPLES, FL 34109	P.O.#	
ARCHITECT	RAMAKER & ASSOCIATES INC 855 COMMUNITY DRIVE SAUK CITY, WI 53583		
ENGINEER	CALC ENGINEERING, LLC DORAL, FL 33166		

PROPRIETARY DWG OF BIG CITY VENTURES

PROPRIETARY DWG OF BIG CITY VENTURES



FACE MOUNTED
FLOOD PROTECTION BARRIERS ASSY.
@ POOL EQUIP. DOOR 4 -103 (ONE EACH)
(4'-0" x 7'-4")
FRONT VIEW

CALC ENGINEERING
www.calceng.com
2000 NW 89 PL Unit 102
DORAL FL 33166
Phone: (305) 898-9995
ENGINEERING BUSINESS
CA CERTIFICATION: 32566

Calc Engineering

PAGE	8 OF 23
REVISION	0 DATE 08/28/2023
REVISION	DATE
REVISION	DATE
REVISION	DATE
REVISION	DATE
REVISION	DATE

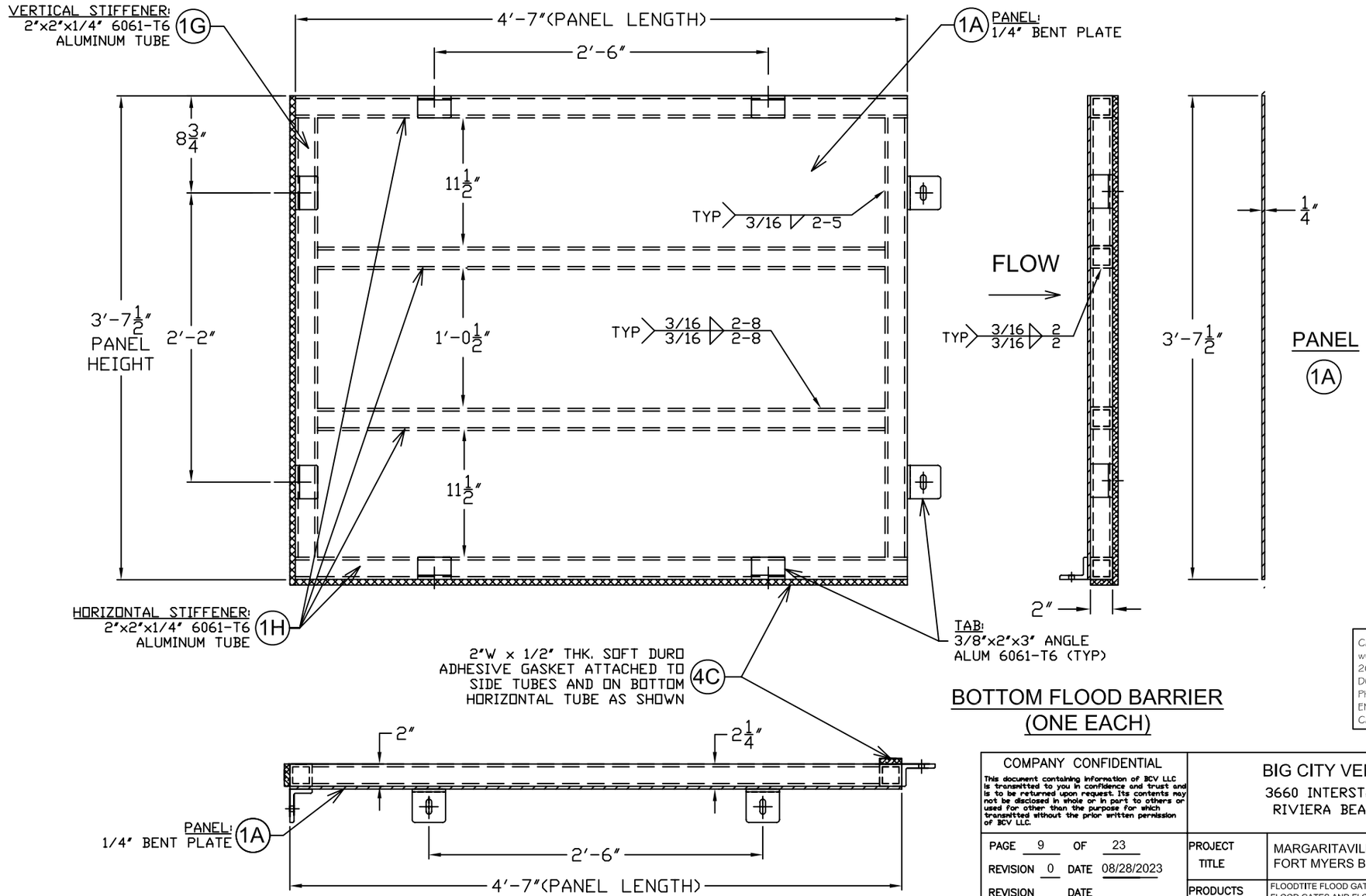
BIG CITY VENTURES, LLC
3660 INTERSTATE PARK WAY
RIVIERA BEACH, FL 33404

PROJECT TITLE	MARGARITAVILLE - BLDG 4 FORT MYERS BEACH, FL		
PRODUCTS	FLOODTITE FLOOD GATES PER BIG CITY VENTURES STANDARDS FLOOD GATES AND FLOOD STOP LOGS		
SPEC SECTION	BIG CITY VENTURES FLOODSTOP STANDARDS	OUR JOB	2023 - M28
GENERAL CONTRACTOR	DEANGELIS DIAMOND 6635 WILLOW PARK DRIVE NAPLES, FL 34109	P.O.#	
ARCHITECT	RAMAKER & ASSOCIATES INC 855 COMMUNITY DRIVE SAUK CITY, WI 53583		
ENGINEER	CALC ENGINEERING, LLC DORAL, FL 33166		

PROPRIETARY DWG OF BIG CITY VENTURES

PROPRIETARY DWG OF BIG CITY VENTURES

PROPRIETARY DWG OF BIG CITY VENTURES



BOTTOM FLOOD BARRIER (ONE EACH)

CALC ENGINEERING
www.calceng.com
2000 NW 89 PL Unit 102
DORAL FL 33166
Phone: (305) 898-9995
ENGINEERING BUSINESS
CA CERTIFICATION: 32566
Calc Engineering

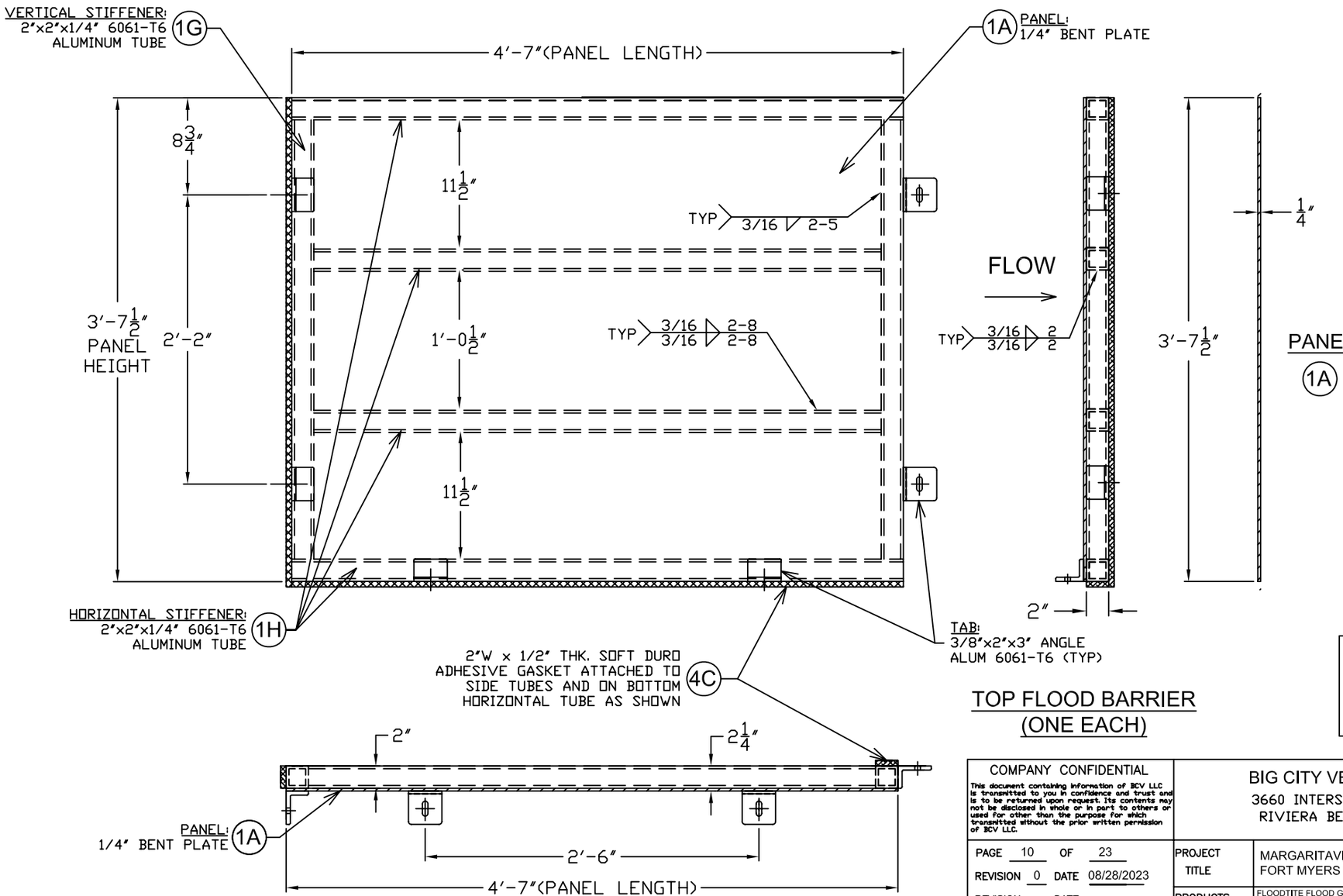
PAGE 9 OF 23

REVISION 0	DATE 08/28/2023	
REVISION	DATE	
REVISION	DATE	
REVISION	DATE	
REVISION	DATE	
REVISION	DATE	

BIG CITY VENTURES, LLC
3660 INTERSTATE PARK WAY
RIVIERA BEACH, FL 33404

PROJECT TITLE	MARGARITAVILLE - BLDG 4 FORT MYERS BEACH, FL		
PRODUCTS	FLOODTITE FLOOD GATES PER BIG CITY VENTURES STANDARDS FLOOD GATES AND FLOOD STOP LOGS		
SPEC SECTION	BIG CITY VENTURES FLOODSTOP STANDARDS	OUR JOB	2023 - M28
GENERAL CONTRACTOR	DEANGELIS DIAMOND 6635 WILLOW PARK DRIVE NAPLES, FL 34109	P.O.#	
ARCHITECT	RAMAKER & ASSOCIATES INC 855 COMMUNITY DRIVE SAUK CITY, WI 53583		
ENGINEER	CALC ENGINEERING, LLC DORAL, FL 33166		

PROPRIETARY DWG OF BIG CITY VENTURES
PROPRIETARY DWG OF BIG CITY VENTURES
PROPRIETARY DWG OF BIG CITY VENTURES



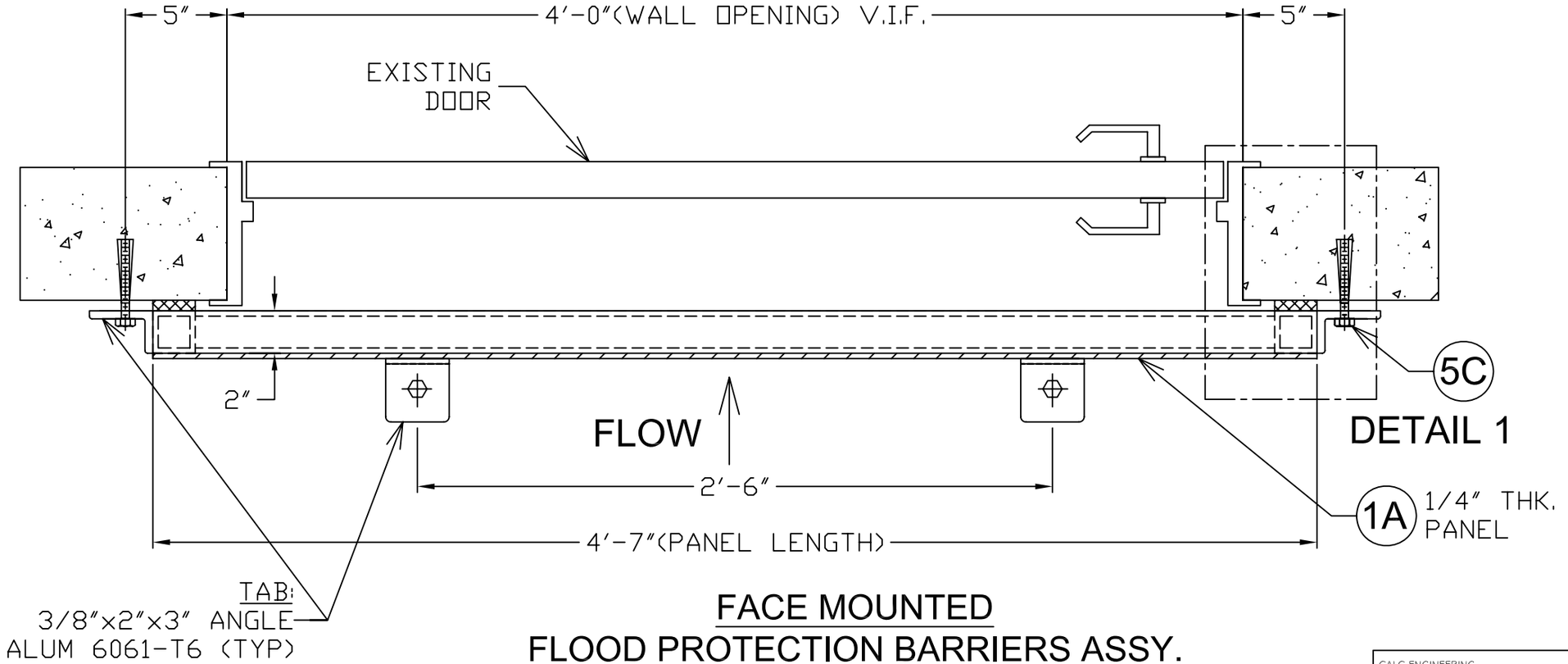
TOP FLOOD BARRIER (ONE EACH)

CALC ENGINEERING
www.calceng.com
2000 NW 89 PL Unit 102
DORAL FL 33166
Phone: (305) 898-9995
ENGINEERING BUSINESS
CA CERTIFICATION: 32566
Calc Engineering

BIG CITY VENTURES, LLC
3660 INTERSTATE PARK WAY
RIVIERA BEACH, FL 33404

PAGE 10 OF 23	PROJECT TITLE	MARGARITAVILLE - BLDG 4 FORT MYERS BEACH, FL	
REVISION 0 DATE 08/28/2023	PRODUCTS	FLOODTITE FLOOD GATES PER BIG CITY VENTURES STANDARDS FLOOD GATES AND FLOOD STOP LOGS	
REVISION ___ DATE ___	SPEC SECTION	BIG CITY VENTURES FLOODSTOP STANDARDS	OUR JOB 2023 - M28
REVISION ___ DATE ___	GENERAL CONTRACTOR	DEANGELIS DIAMOND 6635 WILLOW PARK DRIVE NAPLES, FL 34109	P.O.#
REVISION ___ DATE ___	ARCHITECT	RAMAKER & ASSOCIATES INC 855 COMMUNITY DRIVE SAUK CITY, WI 53583	
REVISION ___ DATE ___	ENGINEER	CALC ENGINEERING, LLC DORAL, FL 33166	

PROPRIETARY DWG OF BIG CITY VENTURES
PROPRIETARY DWG OF BIG CITY VENTURES
PROPRIETARY DWG OF BIG CITY VENTURES



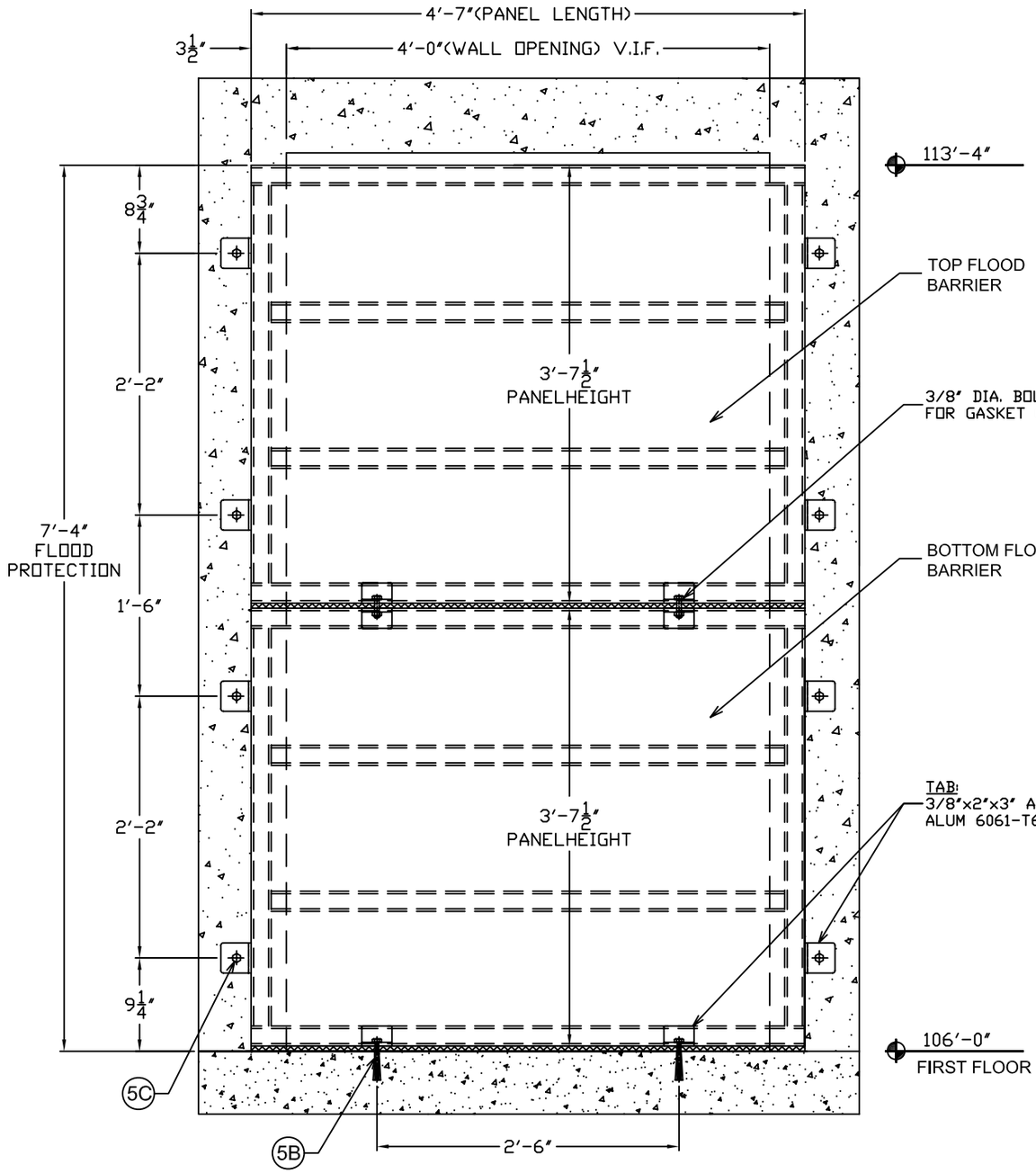
FACE MOUNTED
FLOOD PROTECTION BARRIERS ASSY.
@ STORAGE DOOR 4 -106A (ONE EACH)
(4'-0" x 7'-4")
PLAN VIEW

CALC ENGINEERING
www.calceng.com
2000 NW 89 PL Unit 102
DORAL FL 33166
Phone: (305) 898-9995
ENGINEERING BUSINESS
CA CERTIFICATION: 32566
Calc Engineering

PAGE	11 OF 23
REVISION	0 DATE 08/28/2023
REVISION	DATE
REVISION	DATE
REVISION	DATE
REVISION	DATE
REVISION	DATE

BIG CITY VENTURES, LLC
3660 INTERSTATE PARK WAY
RIVIERA BEACH, FL 33404

PROJECT TITLE	MARGARITAVILLE - BLDG 4 FORT MYERS BEACH, FL		
PRODUCTS	FLOODTITE FLOOD GATES PER BIG CITY VENTURES STANDARDS FLOOD GATES AND FLOOD STOP LOGS		
SPEC SECTION	BIG CITY VENTURES FLOODSTOP STANDARDS	OUR JOB	2023 - M28
GENERAL CONTRACTOR	DEANGELIS DIAMOND 6635 WILLOW PARK DRIVE NAPLES, FL 34109	P.O.#	
ARCHITECT	RAMAKER & ASSOCIATES INC 855 COMMUNITY DRIVE SAUK CITY, WI 53583		
ENGINEER	CALC ENGINEERING, LLC DORAL, FL 33166		



FACE MOUNTED FLOOD PROTECTION BARRIERS ASSY. @ DOOR 4 -106A (ONE EACH)

(4'-0" x 7'-4")

FRONT VIEW

CALC ENGINEERING
www.calceng.com
2000 NW 89 PL Unit 102
DORAL FL 33166
Phone: (305) 898-9995
ENGINEERING BUSINESS
CA CERTIFICATION: 32566

Calc Engineering

PAGE 12 OF 23

REVISION 0 DATE 08/28/2023

REVISION ___ DATE ___

REVISION ___ DATE ___

REVISION ___ DATE ___

REVISION ___ DATE ___

REVISION ___ DATE ___

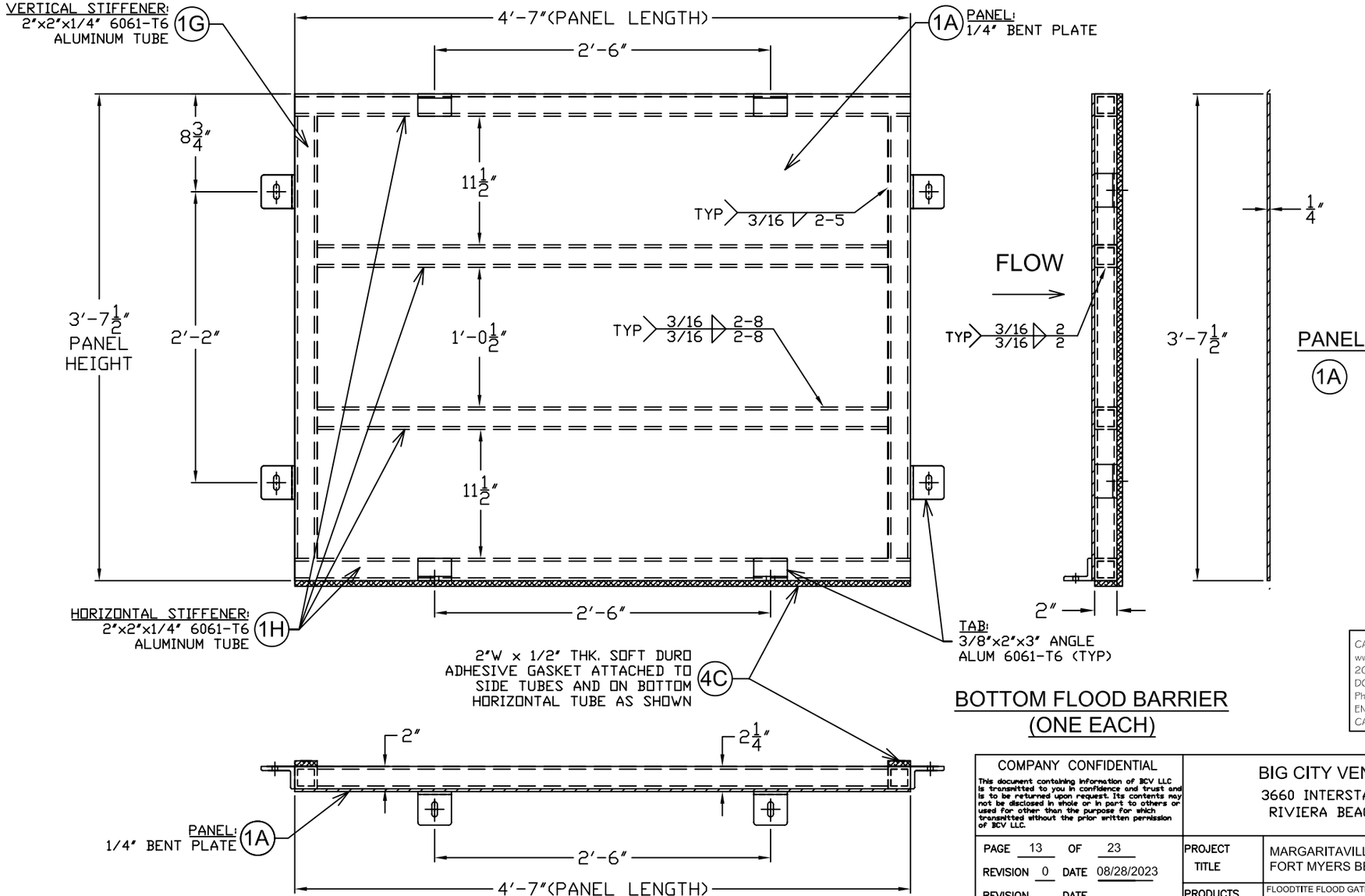
BIG CITY VENTURES, LLC
3660 INTERSTATE PARK WAY
RIVIERA BEACH, FL 33404

PROJECT TITLE	MARGARITAVILLE - BLDG 4 FORT MYERS BEACH, FL		
PRODUCTS	FLOODTITE FLOOD GATES PER BIG CITY VENTURES STANDARDS FLOOD GATES AND FLOOD STOP LOGS		
SPEC SECTION	BIG CITY VENTURES FLOODSTOP STANDARDS	OUR JOB	2023 - M28
GENERAL CONTRACTOR	DEANGELIS DIAMOND 6635 WILLOW PARK DRIVE NAPLES, FL 34109	P.O.#	
ARCHITECT	RAMAKER & ASSOCIATES INC 855 COMMUNITY DRIVE SAUK CITY, WI 53583		
ENGINEER	CALC ENGINEERING, LLC DORAL, FL 33166		

PROPRIETARY DWG OF BIG CITY VENTURES

PROPRIETARY DWG OF BIG CITY VENTURES

PROPRIETARY DWG OF BIG CITY VENTURES



BOTTOM FLOOD BARRIER (ONE EACH)

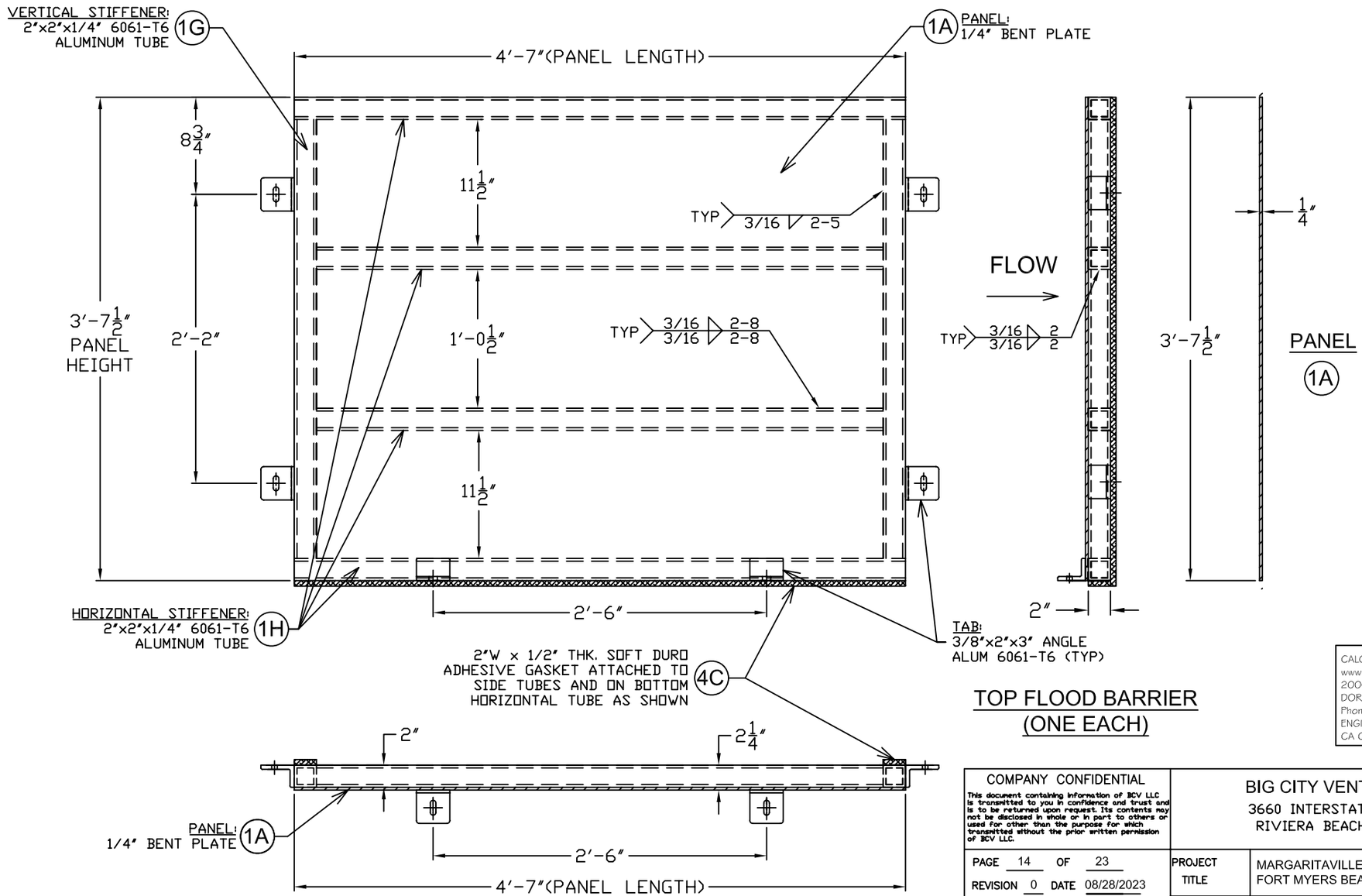
CALC ENGINEERING
www.calceng.com
2000 NW 89 PL Unit 102
DORAL FL 33166
Phone: (305) 898-9995
ENGINEERING BUSINESS
CA CERTIFICATION: 32566
Calc Engineering

PAGE	13 OF 23
REVISION	0 DATE 08/28/2023
REVISION	DATE
REVISION	DATE
REVISION	DATE
REVISION	DATE
REVISION	DATE

BIG CITY VENTURES, LLC
3660 INTERSTATE PARK WAY
RIVIERA BEACH, FL 33404

PROJECT TITLE	MARGARITAVILLE - BLDG 4 FORT MYERS BEACH, FL		
PRODUCTS	FLOODTITE FLOOD GATES PER BIG CITY VENTURES STANDARDS FLOOD GATES AND FLOOD STOP LOGS		
SPEC SECTION	BIG CITY VENTURES FLOODSTOP STANDARDS	OUR JOB	2023 - M28
GENERAL CONTRACTOR	DEANGELIS DIAMOND 6635 WILLOW PARK DRIVE NAPLES, FL 34109	P.O.#	
ARCHITECT	RAMAKER & ASSOCIATES INC 855 COMMUNITY DRIVE SAUK CITY, WI 53583		
ENGINEER	CALC ENGINEERING, LLC DORAL, FL 33166		

PROPRIETARY DWG OF BIG CITY VENTURES
PROPRIETARY DWG OF BIG CITY VENTURES
PROPRIETARY DWG OF BIG CITY VENTURES



TOP FLOOD BARRIER
(ONE EACH)

CALC ENGINEERING
www.calceng.com
2000 NW 89 PL Unit 102
DORAL FL 33166
Phone: (305) 898-9995
ENGINEERING BUSINESS
CA CERTIFICATION: 32566
Calc Engineering

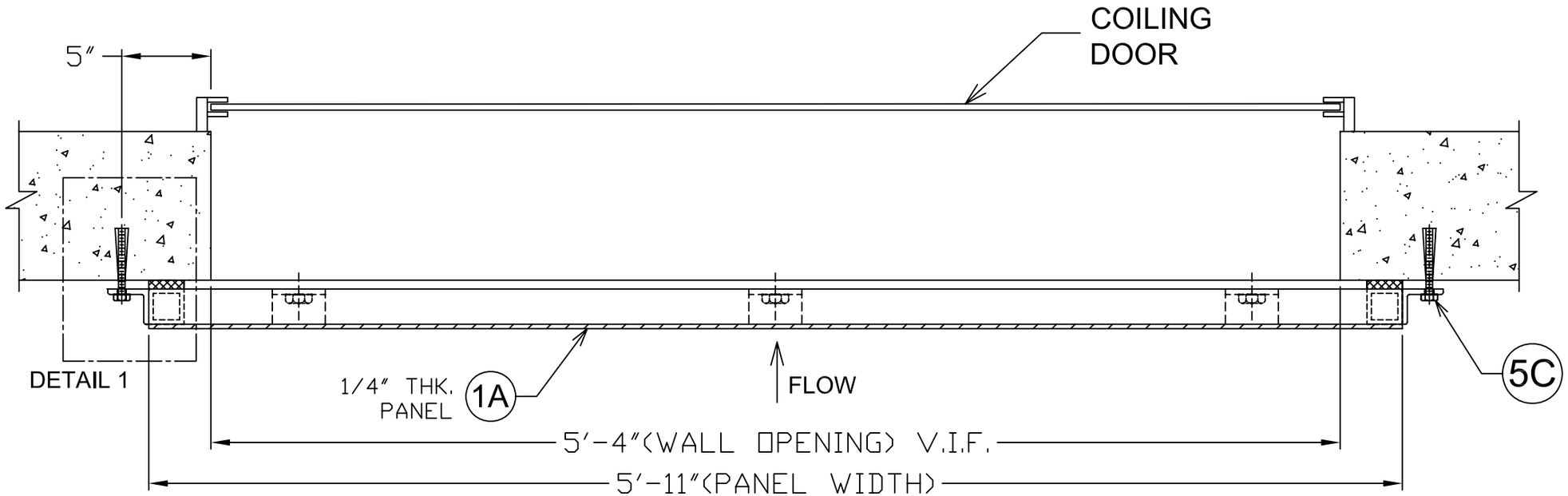
PAGE 14 OF 23

REVISION 0	DATE 08/28/2023	
REVISION	DATE	
REVISION	DATE	
REVISION	DATE	
REVISION	DATE	
REVISION	DATE	

BIG CITY VENTURES, LLC
3660 INTERSTATE PARK WAY
RIVIERA BEACH, FL 33404

PROJECT TITLE	MARGARITAVILLE - BLDG 4 FORT MYERS BEACH, FL		
PRODUCTS	FLOODTITE FLOOD GATES PER BIG CITY VENTURES STANDARDS FLOOD GATES AND FLOOD STOP LOGS		
SPEC SECTION	BIG CITY VENTURES FLOODSTOP STANDARDS	OUR JOB	2023 - M28
GENERAL CONTRACTOR	DEANGELIS DIAMOND 6635 WILLOW PARK DRIVE NAPLES, FL 34109	P.O.#	
ARCHITECT	RAMAKER & ASSOCIATES INC 855 COMMUNITY DRIVE SAUK CITY, WI 53583		
ENGINEER	CALC ENGINEERING, LLC DORAL, FL 33166		

PROPRIETARY DWG OF BIG CITY VENTURES
PROPRIETARY DWG OF BIG CITY VENTURES
PROPRIETARY DWG OF BIG CITY VENTURES



FACE MOUNTED
FLOOD PROTECTION BARRIER
@ STORAGE ROOM COILING DOOR 4 -106B (ONE EACH)
(5'-4" x 4'-0")
FRONT VIEW

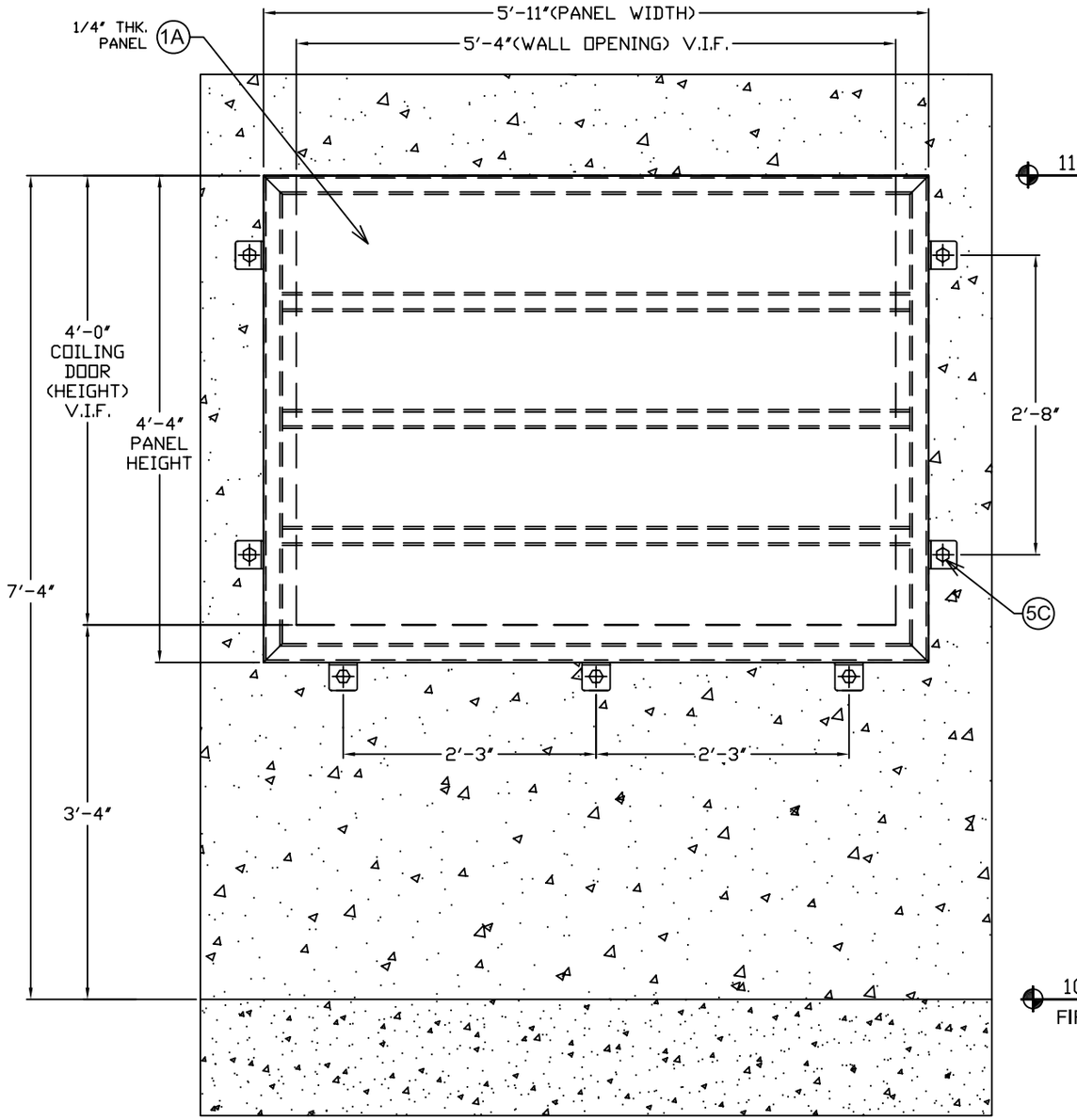
CALC ENGINEERING
www.calceng.com
2000 NW 89 PL Unit 102
DORAL FL 33166
Phone: (305) 898-9995
ENGINEERING BUSINESS
CA CERTIFICATION: 32566
Calc Engineering

PAGE	15 OF 23
REVISION	0 DATE 08/28/2023
REVISION	DATE
REVISION	DATE
REVISION	DATE
REVISION	DATE
REVISION	DATE

BIG CITY VENTURES, LLC
3660 INTERSTATE PARK WAY
RIVIERA BEACH, FL 33404

PROJECT TITLE	MARGARITAVILLE - BLDG 4 FORT MYERS BEACH, FL		
PRODUCTS	FLOODTITE FLOOD GATES PER BIG CITY VENTURES STANDARDS FLOOD GATES AND FLOOD STOP LOGS		
SPEC SECTION	BIG CITY VENTURES FLOODSTOP STANDARDS	OUR JOB	2023 - M28
GENERAL CONTRACTOR	DEANGELIS DIAMOND 6635 WILLOW PARK DRIVE NAPLES, FL 34109	P.O.#	
ARCHITECT	RAMAKER & ASSOCIATES INC 855 COMMUNITY DRIVE SAUK CITY, WI 53583		
ENGINEER	CALC ENGINEERING, LLC DORAL, FL 33166		

PROPRIETARY DWG OF BIG CITY VENTURES
PROPRIETARY DWG OF BIG CITY VENTURES
PROPRIETARY DWG OF BIG CITY VENTURES



FACE MOUNTED
FLOOD PROTECTION BARRIER
@ STORAGE ROOM COILING DOOR 4 -106B
(ONE EACH)
(5'-4" x 4'-0")
FRONT VIEW

CALC ENGINEERING
www.calceng.com
2000 NW 89 PL Unit 102
DORAL FL 33166
Phone: (305) 898-9995
ENGINEERING BUSINESS
CA CERTIFICATION: 32566

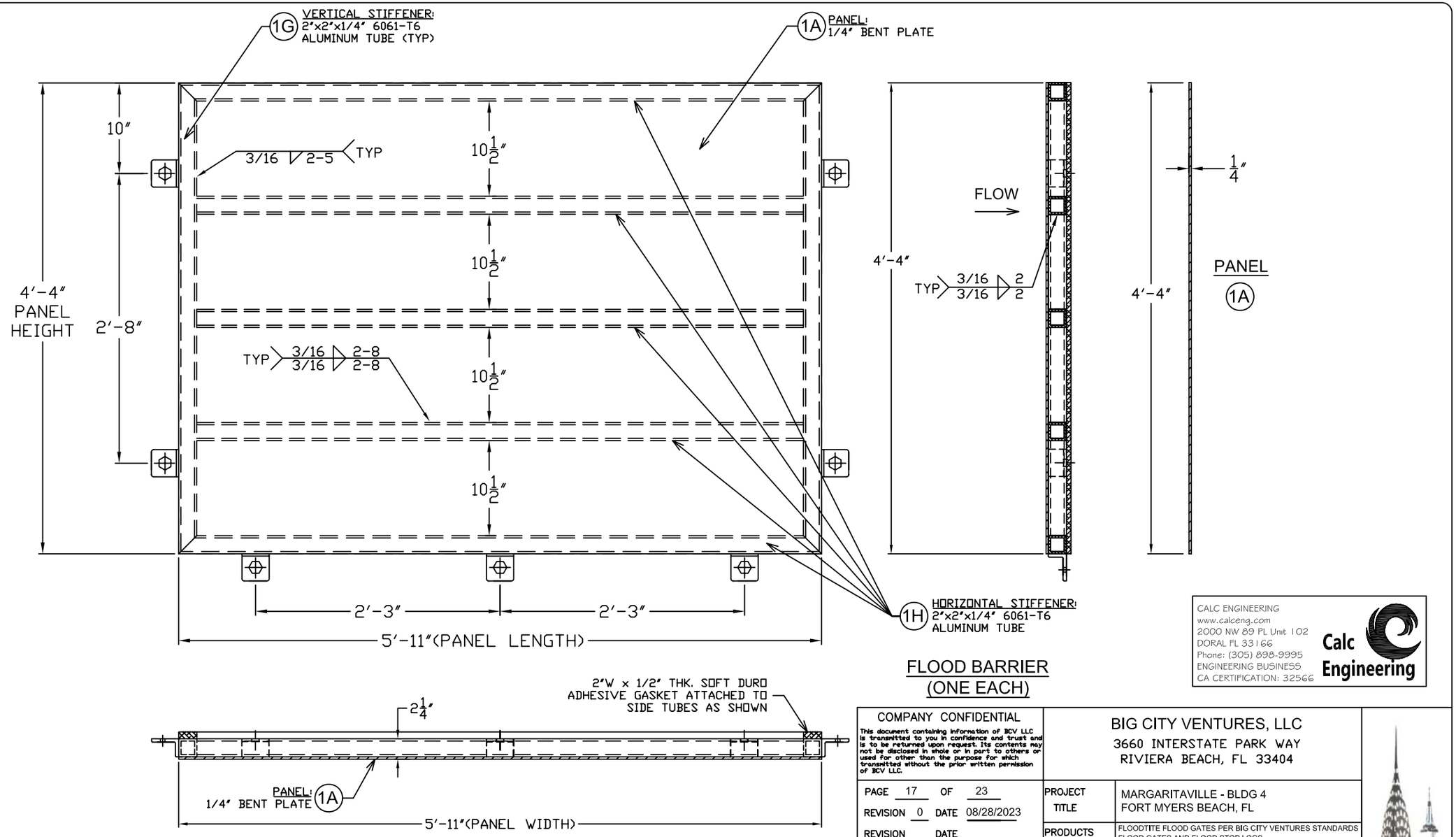
Calc Engineering

PAGE 16 OF 23

REVISION	0	DATE 08/28/2023
REVISION		DATE
REVISION		DATE
REVISION		DATE
REVISION		DATE
REVISION		DATE

BIG CITY VENTURES, LLC
3660 INTERSTATE PARK WAY
RIVIERA BEACH, FL 33404

PROJECT TITLE	MARGARITAVILLE - BLDG 4 FORT MYERS BEACH, FL		
PRODUCTS	FLOODTITE FLOOD GATES PER BIG CITY VENTURES STANDARDS FLOOD GATES AND FLOOD STOP LOGS		
SPEC SECTION	BIG CITY VENTURES FLOODSTOP STANDARDS	OUR JOB	2023 - M28
GENERAL CONTRACTOR	DEANGELIS DIAMOND 6635 WILLOW PARK DRIVE NAPLES, FL 34109	P.O.#	
ARCHITECT	RAMAKER & ASSOCIATES INC 855 COMMUNITY DRIVE SAUK CITY, WI 53583		
ENGINEER	CALC ENGINEERING, LLC DORAL, FL 33166		



FLOOD BARRIER (ONE EACH)

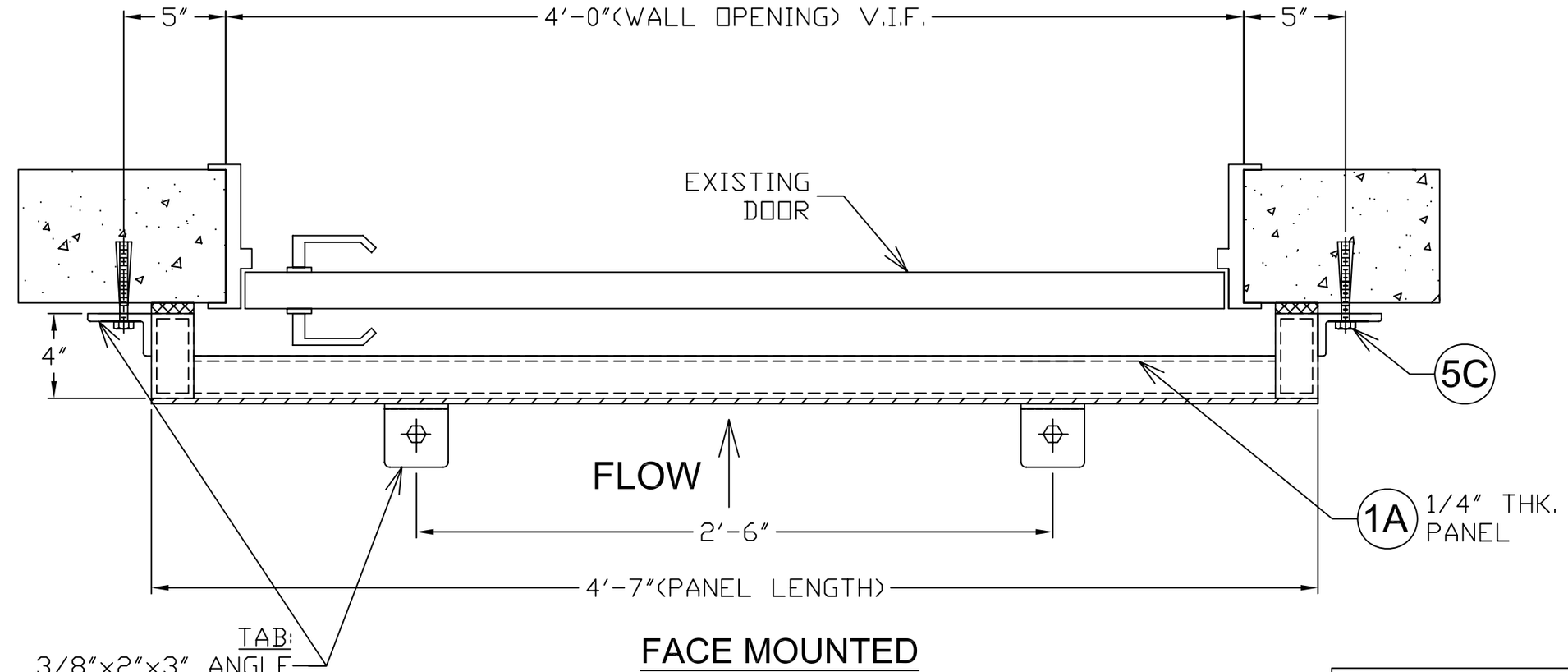
CALC ENGINEERING
www.calceng.com
2000 NW 89 PL Unit 102
DORAL FL 33166
Phone: (305) 898-9995
ENGINEERING BUSINESS
CA CERTIFICATION: 32566
Calc Engineering

PAGE 17 OF 23
REVISION 0 DATE 08/28/2023
REVISION ___ DATE ___
REVISION ___ DATE ___
REVISION ___ DATE ___
REVISION ___ DATE ___
REVISION ___ DATE ___

BIG CITY VENTURES, LLC
3660 INTERSTATE PARK WAY
RIVIERA BEACH, FL 33404

PROJECT TITLE	MARGARITAVILLE - BLDG 4 FORT MYERS BEACH, FL		
PRODUCTS	FLOODTITE FLOOD GATES PER BIG CITY VENTURES STANDARDS FLOOD GATES AND FLOOD STOP LOGS		
SPEC SECTION	BIG CITY VENTURES FLOODSTOP STANDARDS	OUR JOB	2023 - M28
GENERAL CONTRACTOR	DEANGELIS DIAMOND 6635 WILLOW PARK DRIVE NAPLES, FL 34109	P.O.#	
ARCHITECT	RAMAKER & ASSOCIATES INC 855 COMMUNITY DRIVE SAUK CITY, WI 53583		
ENGINEER	CALC ENGINEERING, LLC DORAL, FL 33166		

PROPRIETARY DWG OF BIG CITY VENTURES
PROPRIETARY DWG OF BIG CITY VENTURES
PROPRIETARY DWG OF BIG CITY VENTURES



FACE MOUNTED
FLOOD PROTECTION BARRIERS ASSY.
@ FAMILY RESTROOM DOOR 4 -107 (ONE EACH)
(3'-0" x 7'-4")
PLAN VIEW

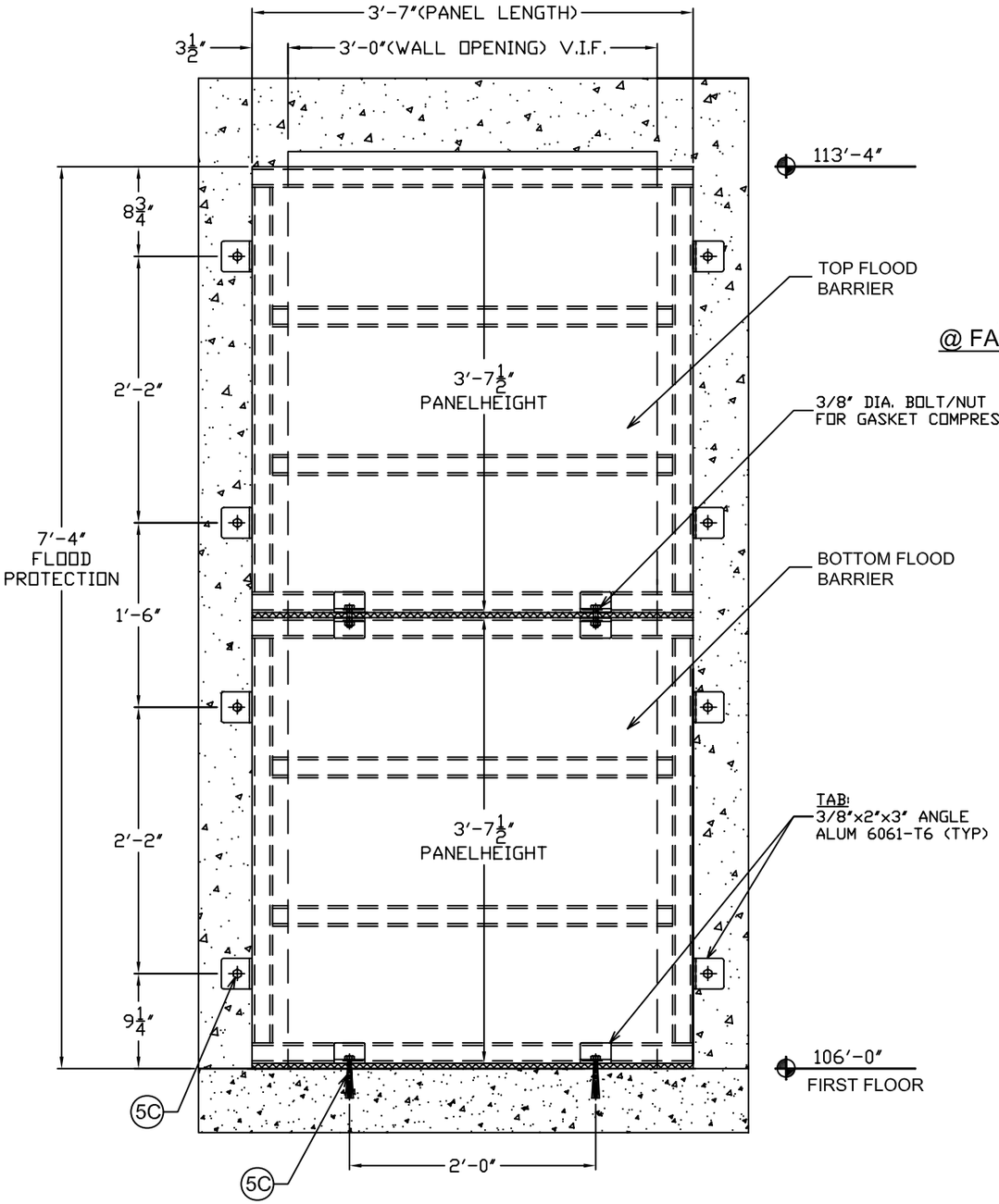
CALC ENGINEERING
www.calceng.com
2000 NW 89 PL Unit 102
DORAL FL 33166
Phone: (305) 898-9995
ENGINEERING BUSINESS
CA CERTIFICATION: 32566
Calc Engineering

PAGE 18 OF 23

REVISION	0	DATE 08/28/2023
REVISION		DATE
REVISION		DATE
REVISION		DATE
REVISION		DATE
REVISION		DATE

BIG CITY VENTURES, LLC
3660 INTERSTATE PARK WAY
RIVIERA BEACH, FL 33404

PROJECT TITLE	MARGARITAVILLE - BLDG 4 FORT MYERS BEACH, FL		
PRODUCTS	FLOODTITE FLOOD GATES PER BIG CITY VENTURES STANDARDS FLOOD GATES AND FLOOD STOP LOGS		
SPEC SECTION	BIG CITY VENTURES FLOODSTOP STANDARDS	OUR JOB	2023 - M28
GENERAL CONTRACTOR	DEANGELIS DIAMOND 6635 WILLOW PARK DRIVE NAPLES, FL 34109	P.O.#	
ARCHITECT	RAMAKER & ASSOCIATES INC 855 COMMUNITY DRIVE SAUK CITY, WI 53583		
ENGINEER	CALC ENGINEERING, LLC DORAL, FL 33166		



FACE MOUNTED
FLOOD PROTECTION BARRIERS ASSY.
@ FAMILY RESTROOM DOOR 4 -107 (ONE EACH)
(3'-0" x 7'-4")
FRONT VIEW

CALC ENGINEERING
www.calceng.com
2000 NW 89 PL Unit 102
DORAL FL 33166
Phone: (305) 898-9995
ENGINEERING BUSINESS
CA CERTIFICATION: 32566

Calc Engineering

COMPANY CONFIDENTIAL

PAGE 19 OF 23

REVISION	0	DATE 08/28/2023
REVISION		DATE
REVISION		DATE
REVISION		DATE
REVISION		DATE
REVISION		DATE

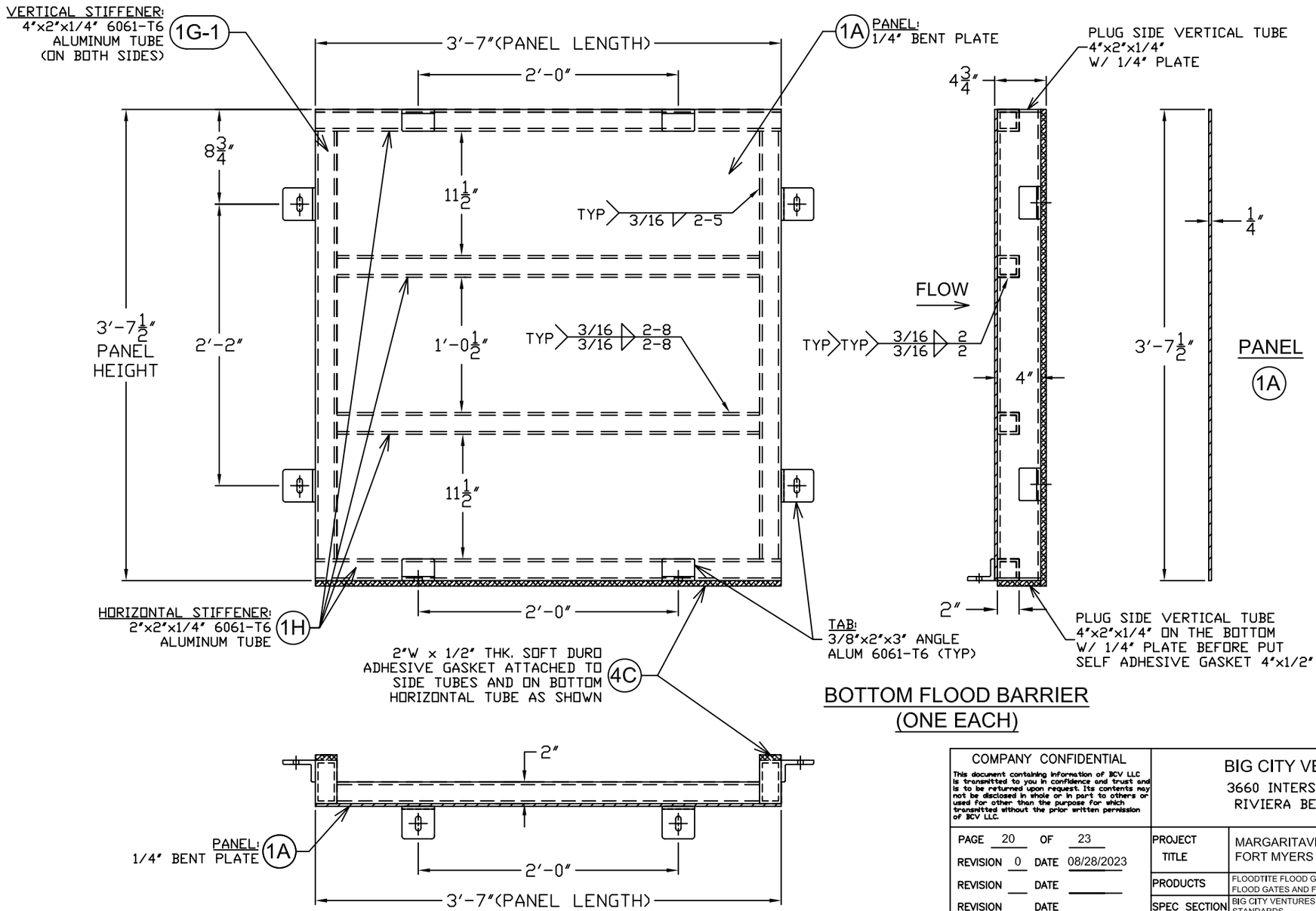
BIG CITY VENTURES, LLC
3660 INTERSTATE PARK WAY
RIVIERA BEACH, FL 33404

PROJECT TITLE	MARGARITAVILLE - BLDG 4 FORT MYERS BEACH, FL		
PRODUCTS	FLOODTITE FLOOD GATES PER BIG CITY VENTURES STANDARDS FLOOD GATES AND FLOOD STOP LOGS		
SPEC SECTION	BIG CITY VENTURES FLOODSTOP STANDARDS	OUR JOB	2023 - M28
GENERAL CONTRACTOR	DEANGELIS DIAMOND 6635 WILLOW PARK DRIVE NAPLES, FL 34109	P.O.#	
ARCHITECT	RAMAKER & ASSOCIATES INC 855 COMMUNITY DRIVE SAUK CITY, WI 53583		
ENGINEER	CALC ENGINEERING, LLC DORAL, FL 33166		

PROPRIETARY DWG OF BIG CITY VENTURES

PROPRIETARY DWG OF BIG CITY VENTURES

PROPRIETARY DWG OF BIG CITY VENTURES



BOTTOM FLOOD BARRIER (ONE EACH)

CALC ENGINEERING
www.calceng.com
2000 NW 89 PL Unit 102
DORAL FL 33166
Phone: (305) 898-9995
ENGINEERING BUSINESS
CA CERTIFICATION: 32566
Calc Engineering

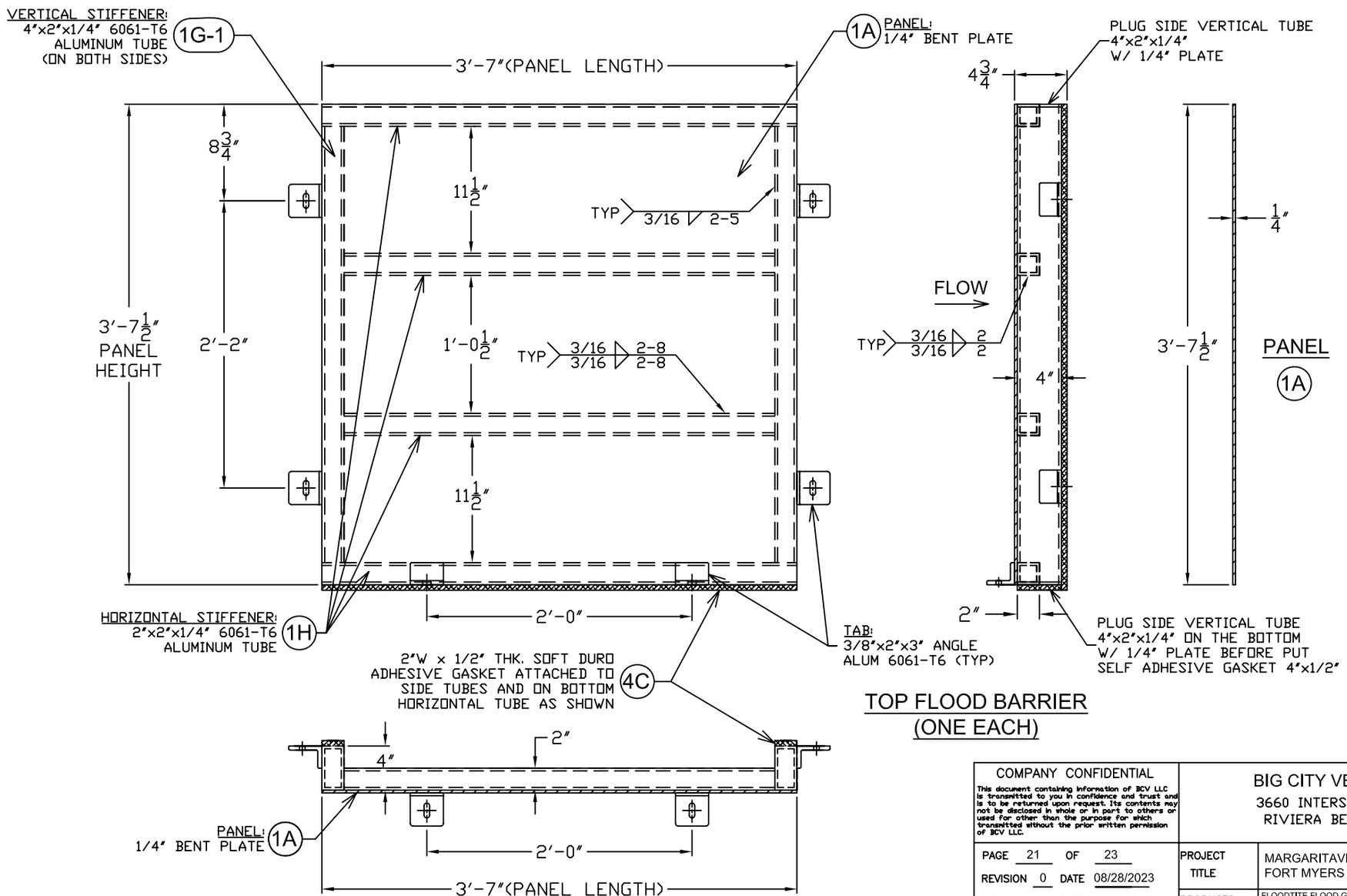
PAGE 20 OF 23

REVISION 0	DATE	08/28/2023
REVISION	DATE	
REVISION	DATE	
REVISION	DATE	
REVISION	DATE	
REVISION	DATE	

BIG CITY VENTURES, LLC
3660 INTERSTATE PARK WAY
RIVIERA BEACH, FL 33404

PROJECT TITLE	MARGARITAVILLE - BLDG 4 FORT MYERS BEACH, FL		
PRODUCTS	FLOODTITE FLOOD GATES PER BIG CITY VENTURES STANDARDS FLOOD GATES AND FLOOD STOP LOGS		
SPEC SECTION	BIG CITY VENTURES FLOODSTOP STANDARDS	OUR JOB	2023 - M28
GENERAL CONTRACTOR	DEANGELIS DIAMOND 6635 WILLOW PARK DRIVE NAPLES, FL 34109	P.O.#	
ARCHITECT	RAMAKER & ASSOCIATES INC 855 COMMUNITY DRIVE SAUK CITY, WI 53583		
ENGINEER	CALC ENGINEERING, LLC DORAL, FL 33166		

PROPRIETARY DWG OF BIG CITY VENTURES
PROPRIETARY DWG OF BIG CITY VENTURES
PROPRIETARY DWG OF BIG CITY VENTURES



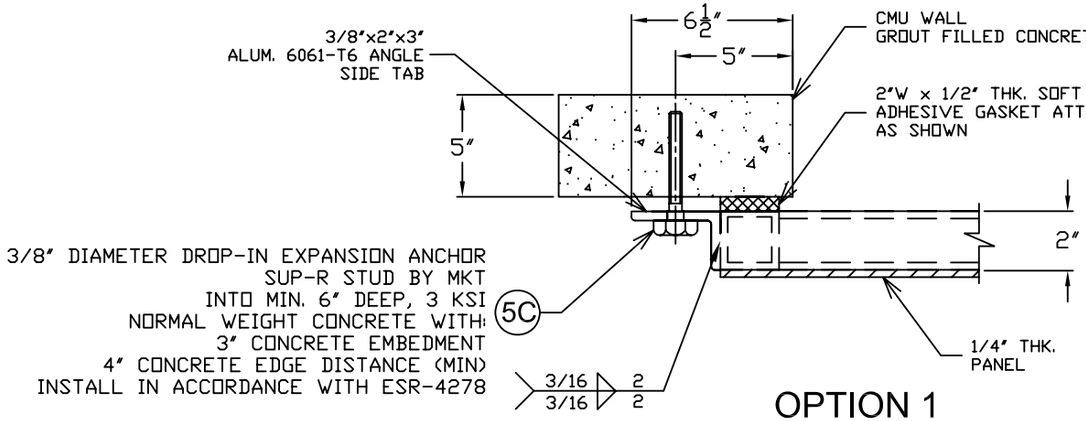
TOP FLOOD BARRIER (ONE EACH)

CALC ENGINEERING
www.calceng.com
2000 NW 89 PL Unit 102
DORAL FL 33166
Phone: (305) 898-9995
ENGINEERING BUSINESS
CA CERTIFICATION: 32566
Calc Engineering

BIG CITY VENTURES, LLC
3660 INTERSTATE PARK WAY
RIVIERA BEACH, FL 33404

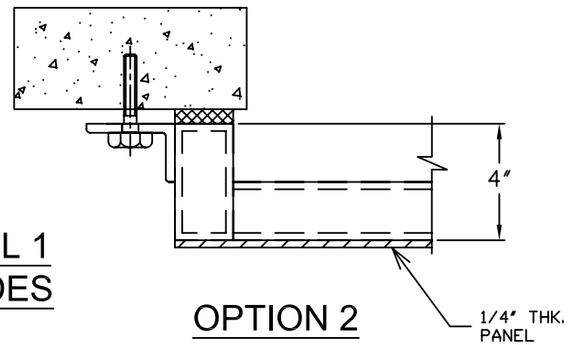
PAGE 21 OF 23	PROJECT TITLE	MARGARITAVILLE - BLDG 4 FORT MYERS BEACH, FL	
REVISION 0 DATE 08/28/2023	PRODUCTS	FLOODTITE FLOOD GATES PER BIG CITY VENTURES STANDARDS FLOOD GATES AND FLOOD STOP LOGS	
REVISION ___ DATE ___	SPEC SECTION	BIG CITY VENTURES FLOODSTOP STANDARDS	OUR JOB 2023 - M28
REVISION ___ DATE ___	GENERAL CONTRACTOR	DEANGELIS DIAMOND 6635 WILLOW PARK DRIVE NAPLES, FL 34109	P.O.#
REVISION ___ DATE ___	ARCHITECT	RAMAKER & ASSOCIATES INC 855 COMMUNITY DRIVE SAUK CITY, WI 53583	
REVISION ___ DATE ___	ENGINEER	CALC ENGINEERING, LLC DORAL, FL 33166	

FLOOD BARRIER
IN DEPLOYED POSITION

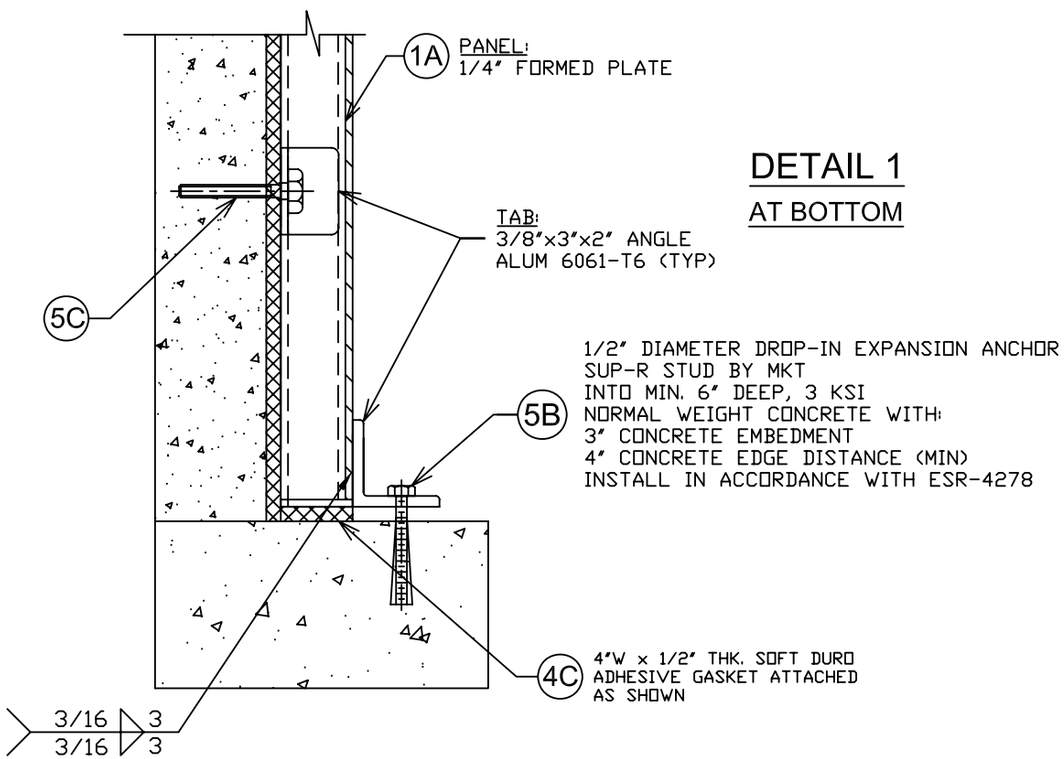


OPTION 1

DETAIL 1
AT SIDES

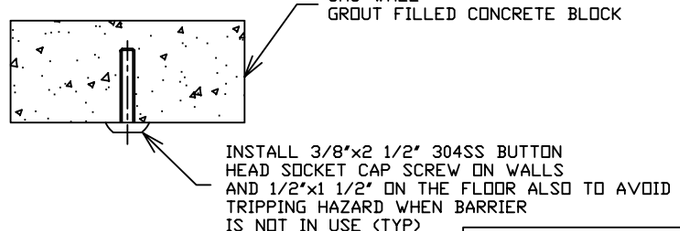


OPTION 2



DETAIL 1
AT BOTTOM

FLOOD BARRIER
IN STORED POSITION



CALC ENGINEERING
www.calceng.com
2000 NW 89 PL Unit 102
DORAL FL 33166
Phone: (305) 898-9995
ENGINEERING BUSINESS
CA CERTIFICATION: 32566
Calc Engineering

BIG CITY VENTURES, LLC
3660 INTERSTATE PARK WAY
RIVIERA BEACH, FL 33404

PAGE 22 OF 23	PROJECT TITLE	MARGARITAVILLE - BLDG 4 FORT MYERS BEACH, FL	
REVISION 0 DATE 08/28/2023	PRODUCTS	FLOODTITE FLOOD GATES PER BIG CITY VENTURES STANDARDS FLOOD GATES AND FLOOD STOP LOGS	
REVISION ___ DATE ___	SPEC SECTION	BIG CITY VENTURES FLOODSTOP STANDARDS	OUR JOB 2023 - M28
REVISION ___ DATE ___	GENERAL CONTRACTOR	DEANGELIS DIAMOND 6635 WILLOW PARK DRIVE NAPLES, FL 34109	P.O.#
REVISION ___ DATE ___	ARCHITECT	RAMAKER & ASSOCIATES INC 855 COMMUNITY DRIVE SAUK CITY, WI 53583	
REVISION ___ DATE ___	ENGINEER	CALC ENGINEERING, LLC DORAL, FL 33166	
REVISION ___ DATE ___			

PROPRIETARY DWG OF BIG CITY VENTURES

PROPRIETARY DWG OF BIG CITY VENTURES

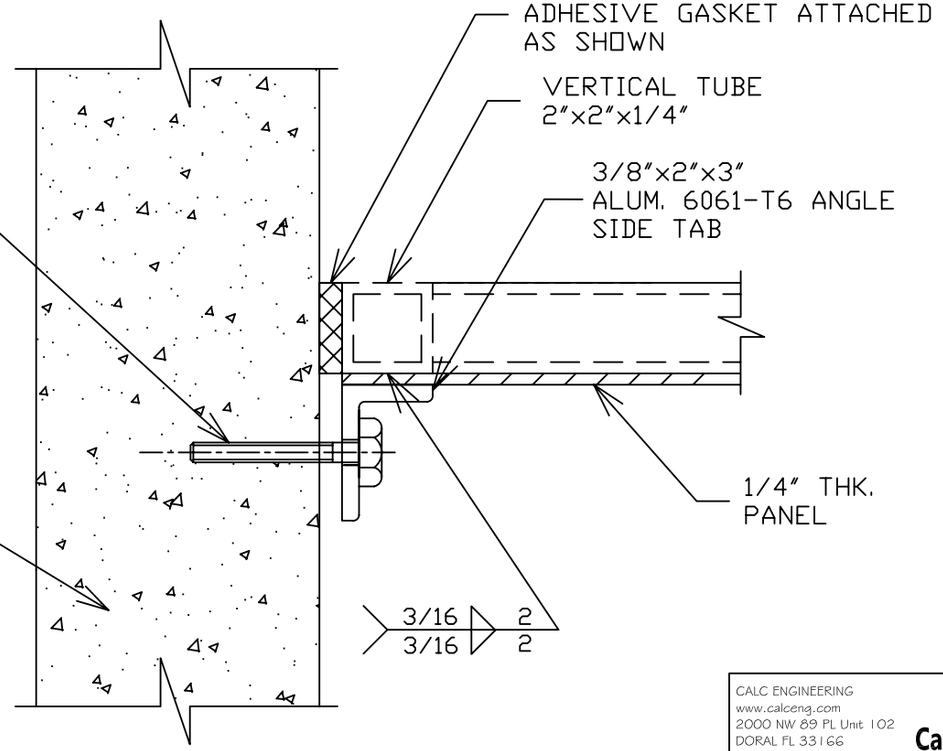
PROPRIETARY DWG OF BIG CITY VENTURES

1/2" DIAMETER DROP-IN EXPANSION ANCHOR
SUP-R STUD BY MKT
INTO MIN. 6" DEEP, 3 KSI
NORMAL WEIGHT CONCRETE WITH:
4 1/2" CONCRETE EMBEDMENT
4" CONCRETE EDGE DISTANCE (MIN)
INSTALL IN ACCORDANCE WITH ESR-4278

5A

DETAIL 2

CMU WALL
GROUT FILLED CONCRETE BLOCK



CALC ENGINEERING
www.calceng.com
2000 NW 89 PL Unit 102
DORAL FL 33166
Phone: (305) 898-9995
ENGINEERING BUSINESS
CA CERTIFICATION: 32566
Calc Engineering

PAGE 23 OF 23
REVISION 0 DATE 08/28/2023
REVISION ___ DATE ___
REVISION ___ DATE ___
REVISION ___ DATE ___
REVISION ___ DATE ___
REVISION ___ DATE ___

BIG CITY VENTURES, LLC
3660 INTERSTATE PARK WAY
RIVIERA BEACH, FL 33404

PROJECT TITLE	MARGARITAVILLE - BLDG 4 FORT MYERS BEACH, FL		
PRODUCTS	FLOODTITE FLOOD GATES PER BIG CITY VENTURES STANDARDS FLOOD GATES AND FLOOD STOP LOGS		
SPEC SECTION	BIG CITY VENTURES FLOODSTOP STANDARDS	OUR JOB	2023 - M28
GENERAL CONTRACTOR	DEANGELIS DIAMOND 6635 WILLOW PARK DRIVE NAPLES, FL 34109	P.O.#	
ARCHITECT	RAMAKER & ASSOCIATES INC 855 COMMUNITY DRIVE SAUK CITY, WI 53583		
ENGINEER	CALC ENGINEERING, LLC DORAL, FL 33166		

PROPRIETARY DWG OF BIG CITY VENTURES
PROPRIETARY DWG OF BIG CITY VENTURES
PROPRIETARY DWG OF BIG CITY VENTURES

RAMAKER & ASSOCIATES, INC.
855 Community Drive, Sauk City, WI 53583
Phone: 608-643-4100 Fax: 608-643-7999
www.Ramaker.com

STRUCTURAL CALCULATIONS

for

Margaritaville
Fort Myers Beach

Fort Myers Beach, FL
June, 2023

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am duly Licensed Professional Engineer under the laws of the State of Wisconsin

Reviewed By: Jeffrey H. Zander

Prepared By: KLM

Project Number 30479

RAMAKER & ASSOCIATES, INC.
855 Community Drive, Sauk City, WI 53583
Phone: 608-643-4100 Fax: 608-643-7999
www.Ramaker.com

TABLE OF CONTENTS

Building 4 Design Criteria & Loading 3
- Design Criteria
- Wind Loads
- Coastal Design

Building 4 Gravity Designs 14
- Steel Beam Design
- Grade Beam Design

Building 4 Lateral Design 67
- Steel Beam Design
- Concrete Column Design
- Concrete Wall Design

Building 4 Foundation Design 158
- Deep Foundation Design
- Structural Slab Design

Building 4 Miscellaneous Designs 181
- Equipment Platform

Building 4 Design Criteria & Loading

1.DESIGN CODE DATA

2020 FLORIDA BUILDING CODE - BUILDING
ASCE 7-16: MINIMUM DESIGN LOADS AND ASSOCIATED CRITERIA FOR BUILDINGS AND OTHER STRUCTURES.
AISC 360-16: SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS
ACI 318-14: BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
TMS 402-2016: BUILDING CODE FOR MASONRY STRUCTURES
ANSI/AWC NDS-2018: NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION
AWC SDPWS-2015: SPECIAL DESIGN PROVISION FOR WIND AND SEISMIC
ASCE 24 -14: FLOOD RESISTANT DESIGN AND CONSTRUCTION

2.THIS BUILDING IS DESIGNED IN ACCORDANCE WITH ASCE 24 REQUIREMENTS FOR FLOOD RESISTANCE. IT INCLUDES ALL STRUCTURES BELOW BFE + 1 FOOT BE BREAKAWAY OR DESIGNED TO RESISTS THE FLOOD LOADING.

3.BUILDING OCCUPANCY CATEGORY= II (PER ASCE 7-16 TABLE 1.5-1)

4.DEAD LOADS:

PRECAST PLANK ROOF:35 PSF (NOT INCLUDING PLANK OR 4" TOPPING)
INCLUDING
5 PSF FUTURE SOLAR PANELS FLAT TO THE ROOF
(MUST BE ANCHORED TO THE ROOF)
15 PSF (ROOFING, CEILING, INSULATION, MEP, ETC.)
15 PSF INSULATING CONCRETE
(SEE GC FOR POSSIBLE ALTERNATE)
(INSULATING CONCRETE MAX DENSITY = 50 PCF WITH MAXIMUM THICKNESS OF 3.5".)
FLOORS:15 PSF (NOT INCLUDING PLANK OR TOPPING)
PLAZA SLABS:SEE LOADING PLAN

5.ROOF LIVE LOAD:

LESS THAN 200 SF20 PSF
200 SF TO 600 SFLINEAR INTERPOLATE
GREATER THAN 600 SF12 PSF

6.SNOW LOADS: NOT APPLICABLE

7.WIND DESIGN CRITERIA

WIND SPEED = 150 MPH
(REMOVABLE LIGHT CONSTRUCTION DESIGN WIND SPEED = 105 MPH FBC 3105.4)
EXPOSURE = D
ENCLOSURE CLASSIFICATION = ENCLOSED
Kd= 0.85
Kzt= 1.0
BASE VELOCITY PRESSURE, Qh=50.4 PSF

Ramaker & Associates, Inc.
855 Community Drive
Sauk City, WI 53583
608-643-4100

JOB TITLE Fort Myers Beach - Margaritaville

JOB NO. 30479 **SHEET NO.**
CALCULATED BY KLM **DATE**
CHECKED BY **DATE**

Wind Loads : ASCE 7- 16

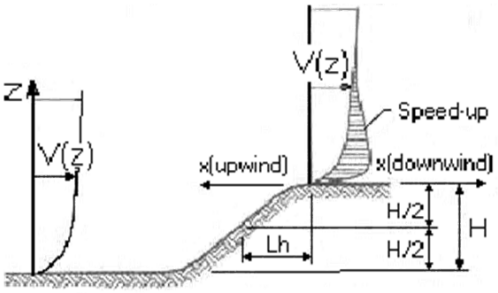
Ultimate Wind Speed	150 mph
Nominal Wind Speed	116.2 mph
Risk Category	I
Exposure Category	D
Enclosure Classif.	Enclosed Building
Internal pressure	+/-0.18
Directionality (Kd)	0.85
Kh case 1	1.030
Kh case 2	1.030
Type of roof	Monoslope

Topographic Factor (Kzt)

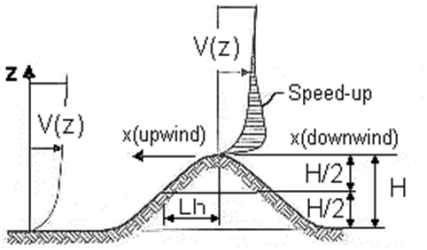
Topography		Flat
Hill Height	(H)	80.0 ft
Half Hill Length (Lh)		100.0 ft
Actual H/Lh	=	0.80
Use H/Lh	=	0.50
Modified Lh	=	160.0 ft
From top of crest: x =		50.0 ft
Bldg up/down wind?		downwind

H/Lh= 0.50 K_1 = 0.000
x/Lh = 0.31 K_2 = 0.792
z/Lh = 0.09 K_3 = 1.000

At Mean Roof Ht:
Kzt = $(1+K_1K_2K_3)^2$ = 1.00



ESCARPMENT



2D RIDGE or 3D AXISYMMETRICAL HILL

Gust Effect Factor

h = 11.7 ft
B = 37.0 ft
/z (0.6h) = 7.0 ft

Flexible structure if natural frequency < 1 Hz (T > 1 second).
If building h/B>4 then may be flexible and should be investigated.
h/B = 0.32 Rigid structure (low rise bldg)

G = 0.85 Using rigid structure default

Rigid Structure

$\bar{e}$ =	0.13	
ℓ =	650 ft	
z_{min} =	7 ft	
c =	0.13	
g_Q, g_v =	3.4	
L_z =	535.5 ft	
Q =	0.94	
I_z =	0.16	
G =	0.90	use G = 0.85

Flexible or Dynamically Sensitive Structure

34 ncy (η_1) =	0.0 Hz			
Damping ratio (β) =	0			
/b =	0.80			
/α =	0.11			
Vz =	148.2			
N_1 =	0.00			
R_n =	0.000			
R_h =	28.282	η =	0.000	h = 11.7 ft
R_B =	28.282	η =	0.000	
R_L =	28.282	η =	0.000	
g_R =	0.000			
R =	0.000			
Gf =	0.000			

Enclosure Classification

Ramaker & Associates, Inc.
855 Community Drive
Sauk City, WI 53583
608-643-4100

JOB TITLE Fort Myers Beach - Margaritaville

JOB NO. 30479 **SHEET NO.**
CALCULATED BY KLM **DATE**
CHECKED BY **DATE**

Test for Enclosed Building: Ao < 0.01Ag or 4 sf, whichever is smaller

Test for Open Building: All walls are at least 80% open.
Ao ≥ 0.8Ag

Test for Partially Enclosed Building: Predominately open on one side only

	Input			Test	
Ao	500.0	sf	Ao ≥ 1.1Aoi	NO	
Ag	600.0	sf	Ao > 4' or 0.01Ag	YES	
Aoi	1000.0	sf	Aoi / Agi ≤ 0.20	YES	Building is NOT
Agi	10000.0	sf			Partially Enclosed

Conditions to qualify as Partially Enclosed Building. Must satisfy all of the following:
Ao ≥ 1.1Aoi
Ao > smaller of 4' or 0.01 Ag
Aoi / Agi ≤ 0.20
Where:
Ao = the total area of openings in a wall that receives positive external pressure.
Ag = the gross area of that wall in which Ao is identified.
Aoi = the sum of the areas of openings in the building envelope (walls and roof) not including Ao.
Agi = the sum of the gross surface areas of the building envelope (walls and roof) not including Ag.

Test for Partially Open Building: A building that does not qualify as open, enclosed or partially enclosed.
(This type building will have same wind pressures as an enclosed building.

Reduction Factor for large volume partially enclosed buildings (Ri) :

If the partially enclosed building contains a single room that is unpartitioned , the internal pressure coefficient may be multiplied by the reduction factor Ri.

Total area of all wall & roof openings (Aog): 0 sf
Unpartitioned internal volume (Vi) : 0 cf
Ri = 1.00

Ground Elevation Factor (Ke)

Grd level above sea level = 0.0 ft Ke = 1.0000
Constant = 0.00256 Adj Constant = 0.00256

Ramaker & Associates, Inc.
855 Community Drive
Sauk City, WI 53583
608-643-4100

JOB TITLE Fort Myers Beach - Margaritaville
JOB NO. 30479 **SHEET NO.**
CALCULATED BY KLM **DATE**
CHECKED BY **DATE**

Wind Loads - MWFRS all h (Except for Open Buildings)

Kh (case 2) =	1.03	h =	11.7 ft	GCpi =	+/-0.18
Base pressure (q_h) =	**50.4 psf**	ridge ht =	12.1 ft	G =	0.85
Roof Angle (θ) =	1.2 deg	L =	68.0 ft	qi = qh	
Roof tributary area - (h/2)*L:	397 sf	B =	37.0 ft		
(h/2)*B:	216 sf				

Ultimate Wind Surface Pressures (psf)

	Wind Normal to Ridge				Wind Parallel to Ridge				
	B/L = 0.54		h/L = 0.32			L/B = 1.84		h/L = 0.17	
Surface	Cp	q_hGC_p	w/+q_iGC_{pi}	w/-q_hGC_{pi}	Dist.*	Cp	q_hGC_p	w/ +q_iGC_{pi}	w/ -q_hGC_{pi}
Windward Wall (WW)	0.80	34.3	see table below			0.80	34.3	see table below	
Leeward Wall (LW)	-0.50	-21.4	-30.5	-12.4		-0.33	-14.3	-23.3	-5.2
Side Wall (SW)	-0.70	-30.0	-39.1	-20.9		-0.70	-30.0	-39.1	-20.9
Leeward Roof (LR)		**				Included in windward roof			
Neg Windward Roof: 0 to h/2*	-0.90	-38.6	-47.7	-29.5	0 to h/2*	-0.90	-38.6	-47.7	-29.5
h/2 to h*	-0.90	-38.6	-47.7	-29.5	h/2 to h*	-0.90	-38.6	-47.7	-29.5
h to 2h*	-0.50	-21.44	-30.52	-12.36	h to 2h*	-0.50	-21.4	-30.5	-12.4
> 2h*	-0.30	-12.86	-21.94	-3.78	> 2h*	-0.30	-12.9	-21.9	-3.8
Pos/min windward roof press.	-0.18	-7.7	-16.8	1.4	Min press.	-0.18	-7.7	-16.8	1.4

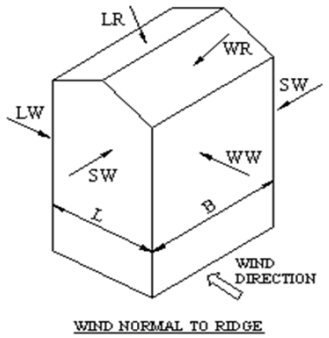
**Roof angle < 10 degrees. Therefore, leeward roof is included in windward roof pressure zones.

*Horizontal distance from windward edge

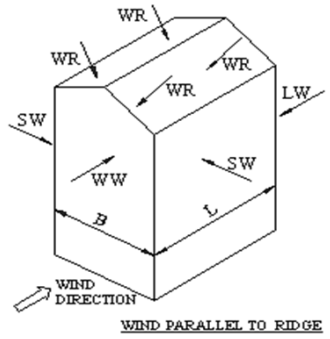
For monoslope roofs, entire roof surface is either windward or leeward surface.

Windward Wall Pressures at "z" (psf)

	z	Kz	Kzt	Windward Wall q_zGC_p	Windward Wall w/+q_iGC_{pi}	Windward Wall w/-q_hGC_{pi}	Combined WW + LW Normal to Ridge	Combined WW + LW Parallel to Ridge
h=	0 to 15'	1.03	1.00	34.3	25.2	43.4	55.7	48.6



WIND NORMAL TO RIDGE



WIND PARALLEL TO RIDGE

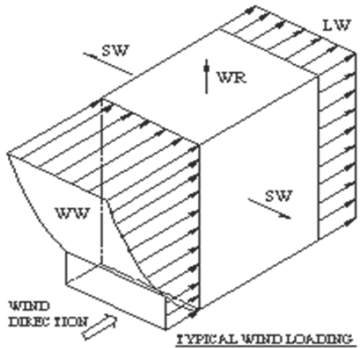
NOTE:
See figure in ASCE7 for the application of full and partial loading of the above wind pressures. There are 4 different loading cases.

Parapet

z	Kz	Kzt	qp (psf)
13.5 ft	1.03	1.00	50.4

Windward parapet: 75.7 psf (GCpn = +1.5)
Leeward parapet: -50.4 psf (GCpn = -1.0)

Windward roof overhangs (add to windward roof pressure) : 34.3 psf (upward)



TYPICAL WIND LOADING

Ramaker & Associates, Inc.
855 Community Drive
Sauk City, WI 53583
608-643-4100

JOB TITLE Fort Myers Beach - Margaritaville
JOB NO. 30479 **SHEET NO.**
CALCULATED BY KLM **DATE**
CHECKED BY **DATE**

Ultimate Wind Pressures

Wind Loads - Components & Cladding : h ≤ 60'

Kh (case 1) =	1.03	h =	11.7 ft	0.2h = 2.3 ft
Base pressure (qh) =	**50.4 psf**	0.6h =	7.0 ft	
Minimum parapet ht =	1.7 ft	GCpi =	+/-0.18	
Roof Angle (θ) =	1.2 deg	qi = qh =	50.4 psf	
Type of roof =	Monoslope			

Roof

	Surface Pressure (psf)								User input	
Area	10 sf	20 sf	50 sf	100 sf	200 sf	350 sf	500 sf	1000 sf	40 sf	300 sf
Negative Zone 1	-94.8	-88.6	-80.3	-74	-67.8	-62.7	-59.5	-59.5	-82.3	-64.1
Negative Zone 1'	-54.5	-54.5	-54.5	-54.5	-46.9	-40.8	-36.8	-29.3	-54.5	-42.4
Negative Zone 2	-125.1	-117	-106.4	-98.4	-90.3	-83.8	-79.7	-79.7	-109.0	-85.6
Negative Zone 3	-170.5	-154.4	-133.1	-117	-101.0	-88.0	-79.7	-79.7	-138.3	-91.5
Positive All Zones	24.2	22.7	20.7	19.2	19.2	19.2	19.2	19.2	21.2	19.2
Overhang Zone 1&1'	-85.7	-84.2	-82.2	-80.7	-67.7	-57.1	-50.4	-50.4	-82.7	-60.0
Overhang Zone 2	-116	-105.3	-91.1	-80.4	-69.7	-61.0	-55.5	-55.5	-94.6	-63.4
Overhang Zone 3	-161.4	-142.6	-117.8	-99.1	-80.3	-65.1	-55.5	-55.5	-123.9	-69.3

Overhang pressures in the table above assume an internal pressure coefficient (Gcpi) of 0.0
Overhang soffit pressure equals adj wall pressure (which includes internal pressure of 9.1 psf)

Parapet

qp = 50.4 psf

		Surface Pressure (psf)						User input
Solid Parapet Pressure		10 sf	20 sf	50 sf	100 sf	200 sf	500 sf	40 sf
CASE A:	Zone 2 :	161.4	151.0	137.1	126.7	116.2	102.4	140.5
	Zone 3 :	206.8	188.3	163.8	145.3	126.8	102.4	169.8
CASE B :	Interior zone :	-95.3	-90.5	-84.1	-79.3	-74.5	-68.1	-85.7
	Corner zone :	-109.0	-101.7	-92.1	-84.9	-77.7	-68.1	-94.5

Walls

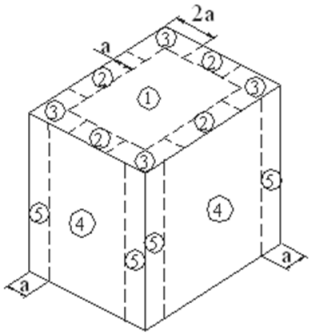
	GCp +/- GCpi				Surface Pressure at h				User input	
Area	10 sf	100 sf	200 sf	500 sf	10 sf	100 sf	200 sf	500 sf	66 sf	200 sf
Negative Zone 4	-1.17	-1.01	-0.96	-0.90	-59.0	-51.0	-48.6	-45.4	-52.4	-48.6
Negative Zone 5	-1.44	-1.12	-1.03	-0.90	-72.6	-56.6	-51.8	-45.4	-59.5	-51.8
Positive Zone 4 & 5	1.08	0.92	0.87	0.81	54.5	46.5	44.0	40.9	47.9	44.0

Note: GCp reduced by 10% due to roof angle <= 10 deg.

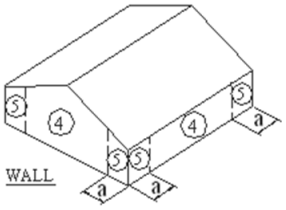
Ramaker & Associates, Inc.
855 Community Drive
Sauk City, WI 53583
608-643-4100

JOB TITLE	Fort Myers Beach - Margaritaville		
JOB NO.	30479	**SHEET NO.**	
CALCULATED BY	KLM	**DATE**	
CHECKED BY		**DATE**	

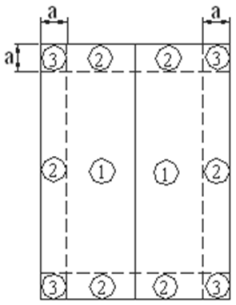
Location of C&C Wind Pressure Zones - ASCE 7-10 & earlier



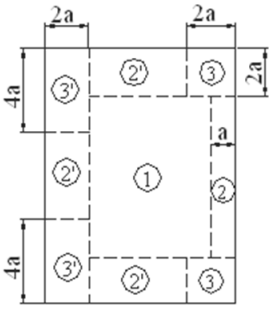
Roofs w/ θ ≤ 10°
and all walls
h > 60'



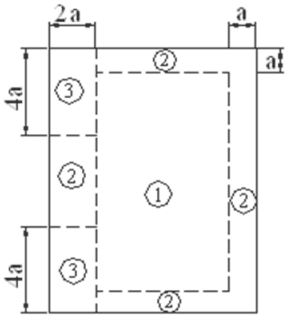
Walls h ≤ 60'
& alt design h<90'



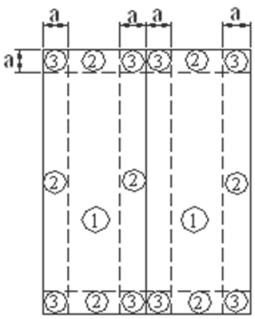
Gable, Sawtooth and
Multispan Gable θ ≤ 7 degrees &
Monoslope ≤ 3 degrees
h ≤ 60' & alt design h<90'



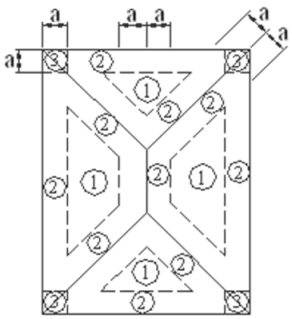
Monoslope roofs
3° < θ ≤ 10°
h ≤ 60' & alt design h<90'



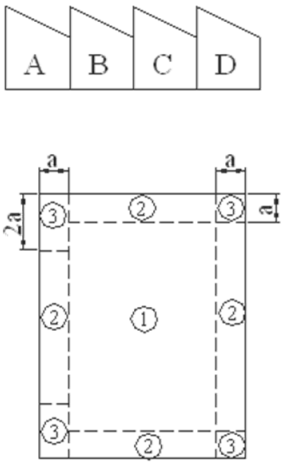
Monoslope roofs
10° < θ ≤ 30°
h ≤ 60' & alt design h<90'



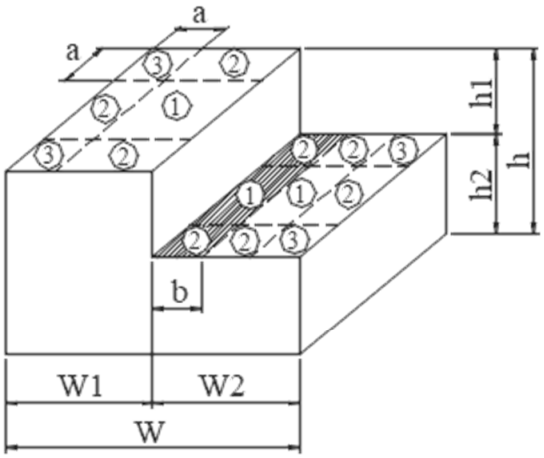
Multispan Gable &
Gable 7° < θ ≤ 45°

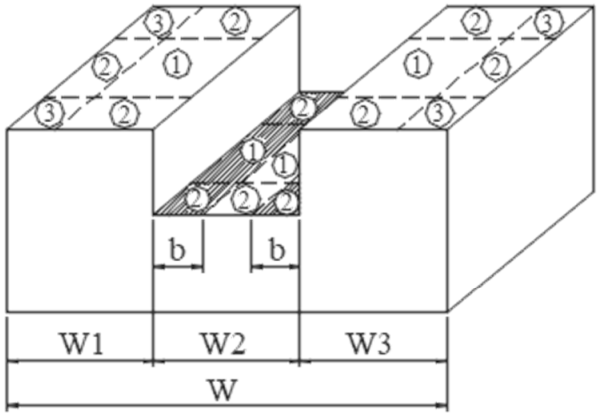


Hip 7° < θ ≤ 27°



Sawtooth 10° < θ ≤ 45°
h ≤ 60' & alt design h<90'



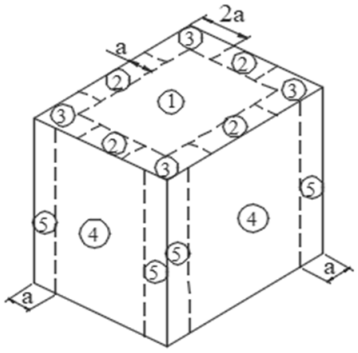


Stepped roofs θ ≤ 3°
h ≤ 60' & alt design h<90'

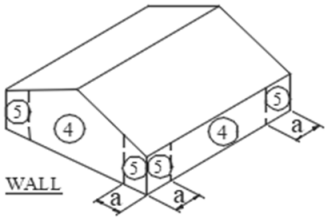
Ramaker & Associates, Inc.
855 Community Drive
Sauk City, WI 53583
608-643-4100

JOB TITLE	Fort Myers Beach - Margaritaville		
JOB NO.	30479	**SHEET NO.**	
CALCULATED BY	KLM	**DATE**	
CHECKED BY		**DATE**	

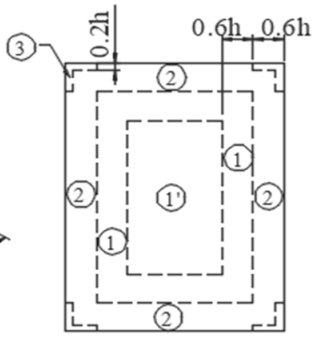
Location of C&C Wind Pressure Zones - ASCE 7-16



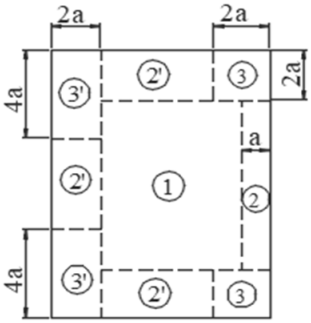
Roofs w/ θ ≤ 10°
and all walls
h > 60'



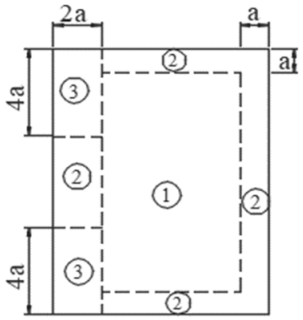
Walls h ≤ 60'
& alt design h<90'



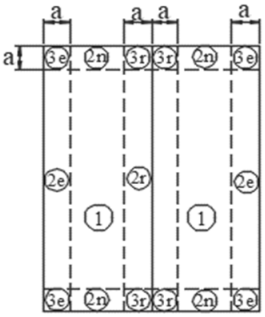
Gable, Sawtooth and
Multispan Gable θ ≤ 7 degrees &
Monoslope ≤ 3 degrees
h ≤ 60' & alt design h<90'



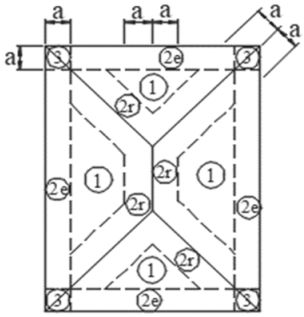
Monoslope roofs
3° < θ ≤ 10°
h ≤ 60' & alt design h<90'



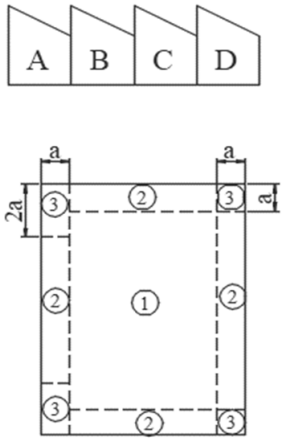
Monoslope roofs
10° < θ ≤ 30°
h ≤ 60' & alt design h<90'



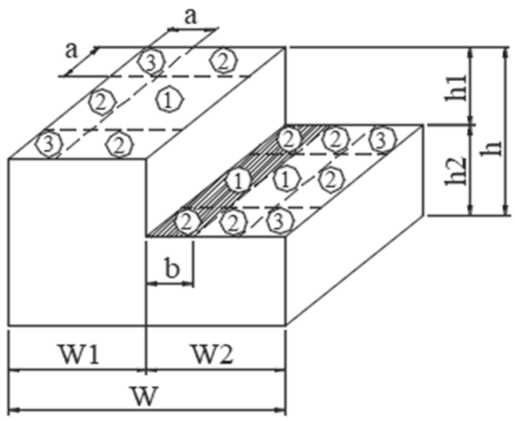
Multispan Gable &
Gable 7° < θ ≤ 45°

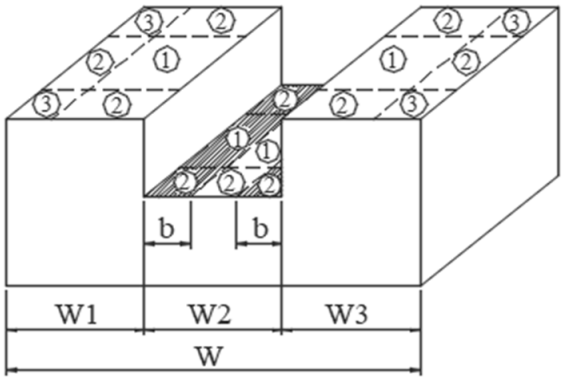


Hip 7° < θ ≤ 27°



Sawtooth 10° < θ ≤ 45°
h ≤ 60' & alt design h<90'





Stepped roofs θ ≤ 3°
h ≤ 60' & alt design h<90'

Roof Height	11.7 ft
BFE	12.0 ft
G	6.0 ft
Cp	2.8
γw	64.0 pcf
W	2000.0 lbs
CD	1.00
CB	1.00
CSTR	0.80
α	45 °

Table 5.4-1 Value of Dynamic Pressure Coefficient, C_p

Risk Category[a]	C_p
I	1.6
II	2.8
III	3.2
IV	3.5

[a]For Risk Category, see Table 1.5-1.

ds 3.90 ft

$$d_s = 0.65(\text{BFE} - \text{G}) \qquad (5.4\text{-}3)$$

Pmax 998.4 psf

$$P_{max} = C_p\gamma_w d_s + 1.2\gamma_w d_s \qquad (5.4\text{-}5)$$

Ft 4848 plf applied near still water

V 5.6 ft/sec

V = velocity of water (ft/sec), approximated by $1/2(gd_s)^{1/2}$

Fi 8.96 kips at ds

RAMAKER
employee-owned
855 Community Drive, Sauk City, WI 53583
Phone: 608-643-4100 Fax: 608-643-7999
www.Ramaker.com

JOB # 30479 BLDG 4
SHEET # 1 OF
CALCULATED BY KLM DATE 12/2/22
CHECKED BY DATE
SCALE

COASTAL 24-14 BASIC VALUES

BFE = 12'

ASCE 24

EQN 5.4-3

$d_s = .65(BFE - G)$ $d_s = .65(12-6)$

$= 3.9'$

EQN 5.4-2

BREAKING WAVE HEIGHT

$H_b = .78 d_s$ $H_b = (.78)3.9'$

$= 3.04'$

CREST OF WAVE ELEVATION

$G + (1.55 d_s)$ $6 + 1.55(3.9')$

$= 12.045'$

$DFE = BFE + 1'$ $= 13'$

WAVE ON COLUMN

EQN 5.4-4 $= .5(\gamma_w)(C_D)(D)H_b^2$

$F_D =$?

$F_D = (.5)(64)(2.25)(1.4)(1.33)(3.04)^2$

$F_D = 1.24$ kips

DEBRIS IMPACT

$F_i = WVC_DC_BC_{str}$

$V = \frac{1}{2}(32.2 \times 3.9)^{1/2} = 5.6$ M/sec $F_i = (4,000)(5.6)(1)(1)(.4)$

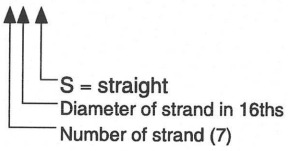
$= 8.9$ kips

3.6 Hollow-Core Load Tables (cont.)

3

Strand Pattern Designation

76-S

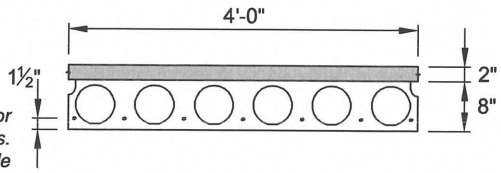


Safe loads shown include dead load of 10 lb/ft² for untopped members and 15 lb/ft² for topped members. Remainder is live load. Long-time cambers include superimposed dead load but do not include live load.

Capacity of sections of other configurations are similar. For precise values, see local hollow-core manufacturer.

Key
385– Safe superimposed service load, lb/ft²
0.1 – Estimated camber at erection, in.
0.2 – Estimated long-time camber, in.

4'-0" × 8"
Normalweight Concrete



f'_c = 5000 psi

f_{pu} = 270,000 psi

Section Properties

		No Topping		2 in. topping	
A	=	215	in.²	-	
I	=	1666	in.⁴	3071	in.⁴
y_b	=	4.00	in.	5.29	in.
y_t	=	4.00	in.	4.71	in.
S_b	=	417	in.³	581	in.³
S_t	=	417	in.³	652	in.³
wt	=	224	lb/ft	324	lb/ft
DL	=	56	lb/ft²	81	lb/ft²
V/S	=	1.92	in.		

4HC8

Table of safe superimposed service load, lb/ft², and cambers, in. — **No Topping**

Strand designation code	Span, ft																												
	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
66-S												124	110	98	87	77	69	61	54	48	43	38	33	29						
												0.3	0.2	0.2	0.2	0.2	0.1	0.0	0.0	−0.1	−0.2	−0.3	−0.5	−0.6						
												0.3	0.2	0.2	0.1	0.0	−0.1	−0.2	−0.3	−0.5	−0.7	−0.9		−1.4						
76-S												149	133	119	106	95	86	77	69	62	55	50	44	39	35	31	26			
												0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.1	0.0	−0.1	−0.2	−0.4	−0.5	−0.7	−0.9			
												0.4	0.4	0.3	0.3	0.2	0.1	0.0	−0.1	−0.2	−0.4	−0.6	−0.8	−1.1	−1.4	−1.7	−2.0			
58-S												179	169	160	144	130	118	107	97	88	80	72	66	60	54	48	42	37	32	28
												0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.4	0.3	0.2	0.1	0.0	−0.4	−0.3	−0.5	−0.7	−0.9
												0.7	0.7	0.7	0.7	0.6	0.6	0.5	0.4	0.3	0.2	0.0	−0.2	−0.4	−0.6	−0.9	−1.2	−1.6	−2.0	−2.4
68-S												209	200	180	165	153	142	132	121	110	101	92	84	77	70	63	56	51	45	40
												0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.6	0.5	0.4	0.2	0.1	−0.1	−0.3
												0.9	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.8	0.7	0.6	0.4	0.2	0.0	−0.2	−0.5	−0.8	−1.1	−1.5
78-S	488	442	402	370	341	318	295	275	259	241	229	215	203	195	180	168	157	144	135	126	118	110	101	92	84	77	70	64	58	52
	0.3	0.3	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.9	0.9	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	0.9	0.8	0.7	0.6	0.5	0.3
	0.4	0.5	0.5	0.6	0.7	0.8	0.8	0.9	1.0	1.0	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.1	1.0	0.8	0.7	0.5	0.3	0.0	−0.3	−0.7

ROOF:
50 PSF TOPPING
15 PSF SUPER DL
15 PSF INSULATING CONC.
5 PSF FUTURE SOLAR
20 PSF LL
105 PSF TOTAL

4HC8 + 2

Table of safe superimposed service load, lb/ft², and cambers, in. — **2 in. Normalweight Topping**

Strand designation code	Span, ft																												
	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
66-S	400	365	333	308	282	256	224	197	173	153	135	119	105	93	82	68	56	45	36	26									
	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.0	−0.0	−0.1	−0.2	−0.3									
	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.0	−0.1	−0.2	−0.3	−0.4	−0.6	−0.7	−0.9	−1.2	−1.4									
76-S	474	435	396	366	340	304	267	235	208	184	164	146	130	116	103	88	74	62	51	41	31								
	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.1	−0.0	−0.1	−0.2								
	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.1	0.0	−0.1	−0.2	−0.4	−0.5	−0.7	−0.9	−1.2	−1.4								
58-S	445	405	374	342	318	298	275	260	243	228	217	196	177	159	143	126	110	95	82	70	59	49	40	32					
	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.1	0.3	0.2	0.1	0.0	−0.1					
	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.4	0.3	0.3	0.3	0.2	0.1	−0.1	−0.2	−0.4	−0.6	−0.9	−1.2	−1.5	−1.8						
68-S		463	426	393	366	342	319	299	282	267	251	239	216	195	177	158	140	124	110	97	84	73	62	53	44	36	28		
		0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.6	0.5	0.4	0.2	0.1	−0.1		
		0.4	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.6	0.6	0.6	0.5	0.4	0.3	0.2	0.0	−0.2	−0.4	−0.6	−0.9	−1.2	−1.6	−2.0	−2.4		
78-S		472	435	402	375	348	325	305	288	273	257	245	232	220	207	186	167	149	133	119	106	94	83	73	64	55	46	38	
		0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.9	0.9	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	0.9	0.9	0.7	0.6	0.5	0.3	
		0.5	0.6	0.6	0.7	0.7	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.8	0.8	0.7	0.7	0.6	0.4	0.3	0.1	−0.1	−0.3	−0.6	−0.9	−1.3	−1.7	−2.2	

Strength is based on strain compatibility; bottom tension is limited to $7.5\sqrt{f'_c}$; see pages 3–8 through 3–11 for explanation.
See item 3, note 4, Section 3.3.2 for explanation of vertical line.

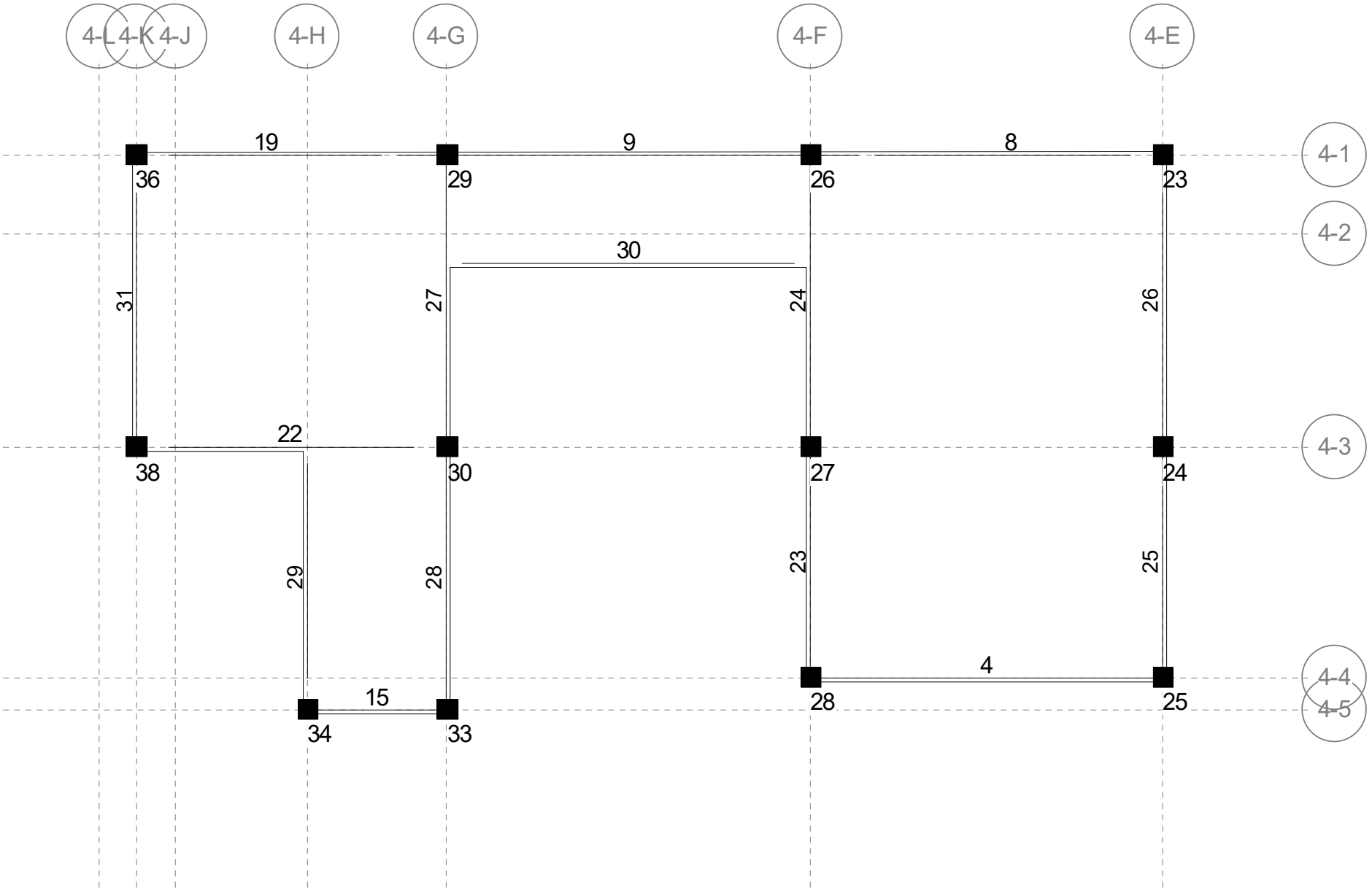
Building 4 Gravity Design

Floor Map

RAM Steel 17.04.02.12
DataBase: 30479 Building 4
Building Code: IBC

01/23/23 13:59:36
Steel Code: AISC 360-16 LRFD

Floor Type: ROOF **Beam Numbers**



Gravity Beam Design

RAM Steel 17.04.02.12
DataBase: 30479 Building 4 — 01/23/23 13:59:36
Building Code: IBC — Steel Code: AISC 360-16 LRFD

Floor Type: ROOF **Beam Number = 8**

SPAN INFORMATION (ft): I-End (42.67,0.00) J-End (61.67,0.00)

Beam Size (User Selected) = W10X33 Fy = 50.0 ksi
Total Beam Length (ft) = 19.00
Mp (kip-ft) = 161.67

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	11.670	0.080	0.000	0.0%	Red	0.000
	19.000	0.080	0.000			0.000
2	0.000	0.016	0.000	---	NonR	0.000
	19.000	0.016	0.000			0.000
3	0.000	0.015	0.005	0.0%	Roof	0.000
	19.000	0.015	0.005			0.000
4	0.000	0.033	0.000	---	NonR	0.000
	19.000	0.033	0.000			0.000

SHEAR (Ultimate): Max Vu (1.4DL) = 1.53 kips 1.00Vn = 84.65 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.4DL	5.7	11.2	19.0	1.14	0.90	115.97
Controlling		1.4DL	5.7	11.2	19.0	1.14	0.90	115.97

REACTIONS (kips):

	Left	**Right**
DL reaction	0.73	1.09
Max +LL reaction	0.05	0.05
Max +total reaction (factored)	1.02	1.53

DEFLECTIONS: **Ratio**

Dead load (in)	at 9.78 ft = -0.054	L/D = 4249			
Live load (in)	at 9.78 ft = -0.003	L/D = 7471	>	360	0.00
Net Total load (in)	at 9.78 ft = -0.057	L/D = 4021	>	240	0.06

Floor Type: ROOF **Beam Number = 19**

SPAN INFORMATION (ft): I-End (-2.50,-0.00) J-End (14.00,0.00)

Beam Size (User Selected) = W10X33 Fy = 50.0 ksi
Total Beam Length (ft) = 16.50
Mp (kip-ft) = 161.67

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	16.500	0.016	0.000			0.000
2	0.000	0.015	0.005	0.0%	Roof	0.000
	16.500	0.015	0.005			0.000
3	0.000	0.033	0.000	---	NonR	0.000
	16.500	0.033	0.000			0.000

SHEAR (Ultimate): Max Vu (1.4DL) = 0.75 kips 1.00Vn = 84.65 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.4DL	3.1	8.3	16.5	1.14	0.90	126.09
Controlling		1.4DL	3.1	8.3	16.5	1.14	0.90	126.09

REACTIONS (kips):

	Left	**Right**
DL reaction	0.54	0.54
Max +LL reaction	0.04	0.04
Max +total reaction (factored)	0.75	0.75

DEFLECTIONS:

									Ratio
Dead load (in)	at	8.25 ft	=	-0.022	L/D	=	9072		
Live load (in)	at	8.25 ft	=	-0.002	L/D	=	1139	> 360	0.00
							54		
Net Total load (in)	at	8.25 ft	=	-0.024	L/D	=	8403	> 240	0.03

Floor Type: ROOF **Beam Number = 22**

SPAN INFORMATION (ft): I-End (-2.50,-18.33) J-End (17.00,-18.33)

Beam Size (User Selected) = W10X33 Fy = 50.0 ksi
Total Beam Length (ft) = 19.50
Mp (kip-ft) = 161.67

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
10.830	4.89	0.00	0.0	0.00	0.00	0.0	0.75	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	10.571	0.016	0.000			0.000
2	0.000	0.015	0.005	0.0%	Roof	0.000
	10.571	0.015	0.005			0.000
3	10.572	0.016	0.000	---	NonR	0.000
	10.830	0.000	0.000			0.000
4	10.572	0.015	0.005	0.0%	Roof	0.000
	10.830	0.000	0.000			0.000
5	0.000	0.033	0.000	---	NonR	0.000
	19.500	0.033	0.000			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 4.45 kips 1.00Vn = 84.65 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	37.1	10.8	10.8	1.60	0.90	145.50
Controlling		1.2DL+1.6LL	37.1	10.8	10.8	1.60	0.90	145.50

REACTIONS (kips):

	Left	**Right**
DL reaction	2.75	3.13
Max +LL reaction	0.37	0.43
Max +total reaction (factored)	3.89	4.45

DEFLECTIONS: **Ratio**

Dead load (in)	at 10.04 ft = -0.293	L/D = 799			
Live load (in)	at 10.04 ft = -0.042	L/D = 5622	>	360	0.06
Net Total load (in)	at 10.04 ft = -0.334	L/D = 700	>	240	0.34

Floor Type: ROOF **Beam Number = 29**

SPAN INFORMATION (ft): I-End (8.33,-34.67) J-End (8.33,-18.33)

Beam Size (User Selected) = W10X33 Fy = 50.0 ksi
Total Beam Length (ft) = 16.34
Mp (kip-ft) = 161.67

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	16.081	0.016	0.000			0.000
2	0.000	0.015	0.005	0.0%	Roof	0.000
	16.081	0.015	0.005			0.000
3	16.082	0.016	0.000	---	NonR	0.000
	16.340	0.000	0.000			0.000
4	16.082	0.015	0.005	0.0%	Roof	0.000
	16.340	0.000	0.000			0.000
5	0.000	0.275	0.000	---	NonR	0.000
	16.340	0.275	0.000			0.000
6	0.000	0.260	0.087	0.0%	Roof	0.000
	16.340	0.260	0.087			0.000
7	0.000	0.033	0.000	---	NonR	0.000
	16.340	0.033	0.000			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 7.08 kips 1.00Vn = 84.65 kips

MOMENTS (Ultimate):

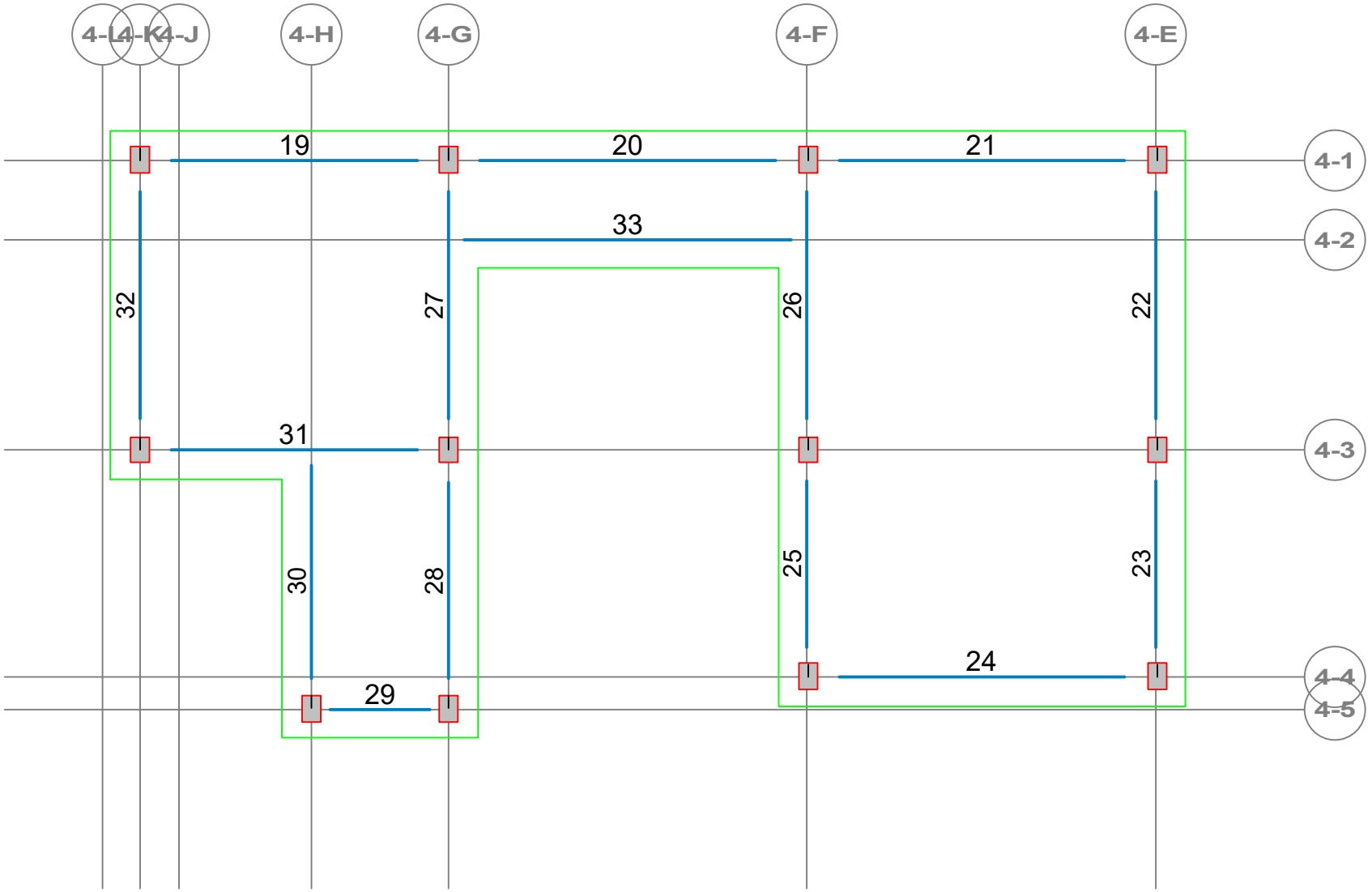
Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	28.9	8.2	0.0	1.00	0.90	145.50
Controlling		1.2DL+1.6LL	28.9	8.2	0.0	1.00	0.90	145.50

REACTIONS (kips):

	Left	**Right**
DL reaction	4.90	4.89
Max +LL reaction	0.75	0.75
Max +total reaction (factored)	7.08	7.07

DEFLECTIONS: **Ratio**

Dead load (in)	at	8.17 ft	=	-0.194	L/D	=	1011		
Live load (in)	at	8.17 ft	=	-0.030	L/D	=	6599	> 360	0.05
Net Total load (in)	at	8.17 ft	=	-0.224	L/D	=	877	> 240	0.27


4-L
4-K
4-J
4-H
4-G
4-F
4-E
4-1
4-2
4-3
4-4
4-5
19
20
21
33
32
27
26
22
31
30
28
25
23
24
29

BEAM INFORMATION:

Story Level FIRST FLOOR
Beam Number 19 Grid Location (-2.50ft--0.00ft)-(17.00ft-0.00ft)
Beam Line Number 2 Span Number 1

Geometry

Size: **42Hx22B**

Depth (in)	42.00	Web Width (in)	22.00
Flange Width (in)	NA	Flange Thickness (in)	NA
Length c-c (ft)	19.50	Clear Length (ft)	18.17
Left Support Length (in)	16.00	Right Support Length (in)	16.00
Left Support Width (in)	32.00	Right Support Width (in)	16.00

MATERIAL PROPERTIES:

f'c (ksi)	5.00	fy Longitudinal (ksi)	60.00
fct (ksi)	0.00	fyt Transverse (ksi)	60.00
Conc. Weight (pcf)	145.00	Conc. Type	NWC
Conc. Modulus (ksi)	4074.28	Reinf. Modulus (ksi)	29000.00

TOP LONGITUDINAL REINFORCEMENT:

					Start		End		End-Condition	
Set	**Size**	**Num**	**Depth (in)**	**Layer**	**Supp.**	**Loc. (ft)**	**Supp.**	**Loc. (ft)**	**Start**	**End**
1	#6	3	39.500	Upper	1	0.000	1	10.000	Hooked	Splice
2	#6	3	39.500	Upper	2	-9.500	2	0.000	Splice	Hooked

Max. Bar Depth Limit (in): 39.625 Clear Bar Cover (in): Top: 1.500 Side: 1.500

BOTTOM LONGITUDINAL REINFORCEMENT:

					Start		End		End-Condition	
Set	**Size**	**Num**	**Depth (in)**	**Layer**	**Supp.**	**Loc. (ft)**	**Supp.**	**Loc. (ft)**	**Start**	**End**
1	#6	3	39.500	Lower	1	0.000	1	19.500	Hooked	Hooked

Max. Bar Depth Limit (in): 39.625 Clear Bar Cover (in): Bot.: 1.500 Side: 1.500

LONGITUDINAL BAR DESIGN DETAILS:

	Positive Moment				Negative Moment			
Loc. (ft)	**Mu (kip-ft)**	**øMn (kip-ft)**	**As req. (in²)**	**As (in²)**	**Mu (kip-ft)**	**øMn (kip-ft)**	**As req. (in²)**	**As (in²)**
0.000	0.00	232.11	0.00	1.32	0.00	-232.11	0.00	1.32
0.667	0.00	232.11	0.00	1.32	0.00	-232.11	0.00	1.32
1.623	11.99	232.11	0.09	1.32	0.00	-232.11	0.00	1.32
2.579	22.27	232.11	0.17	1.32	0.00	-232.11	0.00	1.32
3.535	30.85	232.11	0.23	1.32	0.00	-232.11	0.00	1.32

Loc.	Mu	øMn	As req.	As	Mu	øMn	As req.	As
4.491	37.73	232.11	0.28	1.32	0.00	-232.11	0.00	1.32
4.873	40.00	232.11	0.30	1.32	0.00	-232.11	0.00	1.32
4.877	40.02	232.11	0.30	1.32	0.00	-232.11	0.00	1.32
5.447	42.91	232.11	0.32	1.32	0.00	-232.11	0.00	1.32
6.404	46.38	232.11	0.35	1.32	0.00	-232.11	0.00	1.32
7.360	48.15	232.11	0.36	1.32	0.00	-232.11	0.00	1.32
8.316	48.22	232.11	0.36	1.32	0.00	-232.11	0.00	1.32
9.272	46.59	232.11	0.35	1.32	0.00	-232.11	0.00	1.13
9.748	45.14	232.11	0.34	1.32	0.00	-232.11	0.00	1.35
9.752	45.13	232.11	0.34	1.32	0.00	-232.11	0.00	1.35
10.228	43.25	232.11	0.32	1.32	0.00	-232.11	0.00	1.35
11.184	38.22	232.11	0.29	1.32	0.00	-232.11	0.00	1.32
12.140	31.48	232.11	0.24	1.32	0.00	-232.11	0.00	1.32
13.096	23.03	232.11	0.17	1.32	0.00	-232.11	0.00	1.32
14.053	12.89	232.11	0.10	1.32	0.00	-232.11	0.00	1.32
14.623	6.03	232.11	0.05	1.32	0.00	-232.11	0.00	1.32
14.627	5.97	232.11	0.04	1.32	0.00	-232.11	0.00	1.32
15.009	1.04	232.11	0.01	1.32	0.00	-232.11	0.00	1.32
15.965	0.00	232.11	0.00	1.32	-12.51	-232.11	0.09	1.32
16.921	0.00	232.11	0.00	1.32	-27.76	-232.11	0.21	1.32
17.877	0.00	232.11	0.00	1.32	-44.72	-232.11	0.34	1.32
18.833	0.00	232.11	0.00	1.32	-63.37	-232.11	0.48	1.32
19.500	0.00	232.11	0.00	1.32	-63.37	-232.11	0.48	1.32

TRANSVERSE REINFORCEMENT:

				Start		End		Stirrup	
Set	Size	Spacing	Num	Supp.	Loc. (ft)	Supp.	Loc. (ft)	Legs	Type
1	#4	18.00	13	1	0.833	1	18.667	2	Closed

TRANSVERSE BAR DESIGN DETAILS AND TORSION FORCE:

Loc. (ft)	Vu (kip)	øVn (kip)	Tu (kip-ft)	Av req. (in²)	Av prv. (in²)
0.000	13.43	92.17	1.21	0.00	0.00
0.667	13.43	92.17	1.21	0.00	0.00
1.623	11.65	131.67	1.21	0.23	0.27
2.579	9.87	131.67	1.21	0.23	0.27
3.535	8.08	131.67	1.21	0.23	0.27
3.958	7.30	131.67	1.21	0.23	0.27
4.491	6.30	131.67	1.21	0.23	0.27
4.873	5.59	131.67	1.21	0.23	0.27
4.877	5.59	131.67	1.21	0.23	0.27
5.447	4.52	131.67	1.21	0.23	0.27
6.404	2.74	131.67	1.21	0.23	0.27

Loc.	Vu	øVn	Tu	Av req.	Av prv.
7.360	0.96	131.67	1.21	0.23	0.27
8.316	0.82	131.67	1.21	0.23	0.27
9.272	2.60	131.67	1.21	0.23	0.27
9.748	3.48	131.67	1.21	0.23	0.27
9.752	3.49	131.67	1.21	0.23	0.27
10.228	4.38	131.67	1.21	0.23	0.27
11.184	6.16	131.67	1.21	0.23	0.27
12.140	7.94	131.67	1.21	0.23	0.27
13.096	9.72	131.67	1.21	0.23	0.27
14.053	11.50	131.67	1.21	0.23	0.27
14.623	12.56	131.67	1.21	0.23	0.27
14.627	12.57	131.67	1.21	0.23	0.27
15.009	13.28	131.67	1.21	0.23	0.27
15.542	14.27	131.67	1.21	0.23	0.27
15.965	15.06	131.67	1.21	0.23	0.27
16.921	16.84	131.67	1.21	0.23	0.27
17.877	18.62	131.67	1.21	0.23	0.27
18.833	20.40	92.17	1.21	0.00	0.00
19.500	20.40	92.17	1.21	0.00	0.00

TORSION CAPACITY:

0.75 Tn (kip-ft) _____ 29.48 Tu (kip-ft) _____ 1.21

DEFLECTIONS: (Camber = 0.000 in)

Type	Distance (ft)	Delta (in)	Ieff (in4)	Ieff/Ig	Ln/d	Status
Dead Load	8.98	0.003	135828.0	1.00	66673.0	
Live Load	12.06	0.000	135828.0	1.00	119086048.0	**OK**
Long Term + LL	8.98	0.006	135828.0	1.00	35903.6	**OK**
Net Total Load	8.98	0.009	135828.0	1.00	23336.7	

Mcr Tension Bot (kip-ft) = 285.85 Mcr Tension Top (kip-ft) = 285.85
Ig (in4) = 135828.00 λ = 1.86
Controlling Deflection Ratio (Long Term + LL) = 0.007 **OK**

Span Moments For Ieff

	Mlt (kip-ft)	Mmid (kip-ft)	Mrt(kip-ft)
Dead Load	0.01	32.24	-45.25
LL down defl	0.00	0.01	0.03
LL up defl	0.00	0.00	0.00

BEAM INFORMATION:

Story Level FIRST FLOOR
Beam Number 21 Grid Location (39.67ft-0.00ft)-(61.67ft-0.00ft)
Beam Line Number 4 Span Number 1

Geometry

Size: **42Hx22B**

Depth (in)	42.00	Web Width (in)	22.00
Flange Width (in)	NA	Flange Thickness (in)	NA
Length c-c (ft)	22.00	Clear Length (ft)	20.67
Left Support Length (in)	16.00	Right Support Length (in)	16.00
Left Support Width (in)	16.00	Right Support Width (in)	16.00

MATERIAL PROPERTIES:

f'c (ksi)	5.00	fy Longitudinal (ksi)	60.00
fct (ksi)	0.00	fyt Transverse (ksi)	60.00
Conc. Weight (pcf)	145.00	Conc. Type	NWC
Conc. Modulus (ksi)	4074.28	Reinf. Modulus (ksi)	29000.00

TOP LONGITUDINAL REINFORCEMENT:

					Start		End		End-Condition	
Set	**Size**	**Num**	**Depth (in)**	**Layer**	**Supp.**	**Loc. (ft)**	**Supp.**	**Loc. (ft)**	**Start**	**End**
1	#6	3	39.500	Upper	1	0.000	1	11.000	Hooked	Splice
2	#6	3	39.500	Upper	2	-11.000	2	0.000	Splice	Hooked

Max. Bar Depth Limit (in): 39.625 Clear Bar Cover (in): Top: 1.500 Side: 1.500

BOTTOM LONGITUDINAL REINFORCEMENT:

					Start		End		End-Condition	
Set	**Size**	**Num**	**Depth (in)**	**Layer**	**Supp.**	**Loc. (ft)**	**Supp.**	**Loc. (ft)**	**Start**	**End**
1	#6	3	39.500	Lower	1	0.000	1	22.000	Hooked	Hooked

Max. Bar Depth Limit (in): 39.625 Clear Bar Cover (in): Bot.: 1.500 Side: 1.500

LONGITUDINAL BAR DESIGN DETAILS:

	Positive Moment				Negative Moment			
Loc. (ft)	**Mu (kip-ft)**	**øMn (kip-ft)**	**As req. (in²)**	**As (in²)**	**Mu (kip-ft)**	**øMn (kip-ft)**	**As req. (in²)**	**As (in²)**
0.000	0.00	232.11	0.00	1.32	-79.87	-232.11	0.60	1.32
0.667	0.00	232.11	0.00	1.32	-79.87	-232.11	0.60	1.32
1.651	0.00	232.11	0.00	1.32	-58.04	-232.11	0.44	1.32
2.635	0.00	232.11	0.00	1.32	-38.00	-232.11	0.28	1.32
3.619	0.00	232.11	0.00	1.32	-19.77	-232.11	0.15	1.32

Loc.	Mu	øMn	As req.	As	Mu	øMn	As req.	As
4.603	0.00	232.11	0.00	1.32	-3.34	-232.11	0.03	1.32
5.498	10.03	232.11	0.08	1.32	0.00	-232.11	0.00	1.32
5.502	10.09	232.11	0.08	1.32	0.00	-232.11	0.00	1.32
5.587	11.28	232.11	0.08	1.32	0.00	-232.11	0.00	1.32
6.571	24.11	232.11	0.18	1.32	0.00	-232.11	0.00	1.32
7.556	35.12	232.11	0.26	1.32	0.00	-232.11	0.00	1.32
8.540	44.34	232.11	0.33	1.32	0.00	-232.11	0.00	1.32
9.524	51.75	232.11	0.39	1.32	0.00	-232.11	0.00	1.32
10.508	57.36	232.11	0.43	1.32	0.00	-232.11	0.00	0.98
10.998	59.47	232.11	0.45	1.32	0.00	-232.11	0.00	1.35
11.002	59.49	232.11	0.45	1.32	0.00	-232.11	0.00	1.35
11.492	61.16	232.11	0.46	1.32	0.00	-232.11	0.00	0.98
12.476	63.16	232.11	0.47	1.32	0.00	-232.11	0.00	1.32
13.460	63.36	232.11	0.48	1.32	0.00	-232.11	0.00	1.32
14.444	61.75	232.11	0.46	1.32	0.00	-232.11	0.00	1.32
15.429	58.34	232.11	0.44	1.32	0.00	-232.11	0.00	1.32
16.413	53.12	232.11	0.40	1.32	0.00	-232.11	0.00	1.32
16.498	52.59	232.11	0.39	1.32	0.00	-232.11	0.00	1.32
16.502	52.56	232.11	0.39	1.32	0.00	-232.11	0.00	1.32
17.397	46.11	232.11	0.35	1.32	0.00	-232.11	0.00	1.32
18.381	37.29	232.11	0.28	1.32	0.00	-232.11	0.00	1.32
19.365	26.66	232.11	0.20	1.32	0.00	-232.11	0.00	1.32
20.349	14.23	232.11	0.11	1.32	0.00	-232.11	0.00	1.32
21.333	0.00	232.11	0.00	1.32	0.00	-232.11	0.00	1.32
22.000	0.00	232.11	0.00	1.32	0.00	-232.11	0.00	1.32

TRANSVERSE REINFORCEMENT:

				Start		End		Stirrup	
Set	Size	Spacing	Num	Supp.	Loc. (ft)	Supp.	Loc. (ft)	Legs	Type
1	#4	18.00	15	1	0.833	1	21.167	2	Closed

TRANSVERSE BAR DESIGN DETAILS AND TORSION FORCE:

Loc. (ft)	Vu (kip)	øVn (kip)	Tu (kip-ft)	Av req. (in²)	Av prv. (in²)
0.000	23.11	92.17	0.59	0.00	0.00
0.667	23.11	92.17	0.59	0.00	0.00
1.651	21.27	131.67	0.59	0.23	0.27
2.635	19.44	131.67	0.59	0.23	0.27
3.619	17.61	131.67	0.59	0.23	0.27
3.958	16.98	131.67	0.59	0.23	0.27
4.603	15.78	131.67	0.59	0.23	0.27
5.498	14.11	131.67	0.59	0.23	0.27
5.502	14.10	131.67	0.59	0.23	0.27

Loc.	Vu	øVn	Tu	Av req.	Av prv.
5.587	13.94	131.67	0.59	0.23	0.27
6.571	12.11	131.67	0.59	0.23	0.27
7.556	10.28	131.67	0.59	0.23	0.27
8.540	8.45	131.67	0.59	0.23	0.27
9.524	6.61	131.67	0.59	0.23	0.27
10.508	4.78	131.67	0.59	0.23	0.27
10.998	3.87	131.67	0.59	0.23	0.27
11.002	3.86	131.67	0.59	0.23	0.27
11.492	2.95	131.67	0.59	0.23	0.27
12.476	1.12	131.67	0.59	0.23	0.27
13.460	0.72	131.67	0.59	0.23	0.27
14.444	2.55	131.67	0.59	0.23	0.27
15.429	4.38	131.67	0.59	0.23	0.27
16.413	6.21	131.67	0.59	0.23	0.27
16.498	6.37	131.67	0.59	0.23	0.27
16.502	6.38	131.67	0.59	0.23	0.27
17.397	8.05	131.67	0.59	0.23	0.27
18.042	9.25	131.67	0.59	0.23	0.27
18.381	9.88	131.67	0.59	0.23	0.27
19.365	11.71	131.67	0.59	0.23	0.27
20.349	13.54	131.67	0.59	0.23	0.27
21.333	15.38	92.17	0.59	0.00	0.00
22.000	15.38	92.17	0.59	0.00	0.00

TORSION CAPACITY:

0.75 Tn (kip-ft) _____ 29.48 Tu (kip-ft) _____ 0.59

DEFLECTIONS: (Camber = 0.000 in)

Type	Distance (ft)	Delta (in)	Ieff (in4)	Ieff/Ig	Ln/d	Status
Dead Load	11.87	0.006	135828.0	1.00	44555.0	
Live Load	8.39	0.000	135828.0	1.00	174588752.0	**OK**
Long Term + LL	11.87	0.010	135828.0	1.00	23998.1	**OK**
Net Total Load	11.87	0.016	135828.0	1.00	15597.2	

Mcr Tension Bot (kip-ft) = 285.85 Mcr Tension Top (kip-ft) = 285.85
Ig (in4) = 135828.00 λ = 1.86
Controlling Deflection Ratio (Long Term + LL) = 0.010 **OK**

Span Moments For Ieff

	Mlt (kip-ft)	Mmid (kip-ft)	Mrt(kip-ft)
Dead Load	-57.04	42.49	0.01
LL down defl	0.02	0.01	0.00
LL up defl	0.00	0.00	0.00

BEAM INFORMATION: **(Check Design Warnings)**

GRADE BEAM LENGTH CLASSIFIES IT AS A DEEP BEAM

Story Level: FIRST FLOOR
Beam Number: 23 Grid Location: (61.67ft--32.67ft)-(61.67ft--18.33ft)
Beam Line Number: 5 Span Number: 1

Geometry

Size: **42Hx22B**

Depth (in)	42.00	Web Width (in)	22.00
Flange Width (in)	NA	Flange Thickness (in)	NA
Length c-c (ft)	14.34	Clear Length (ft)	13.01
Left Support Length (in)	16.00	Right Support Length (in)	16.00
Left Support Width (in)	16.00	Right Support Width (in)	16.00

MATERIAL PROPERTIES:

f'c (ksi)	5.00	fy Longitudinal (ksi)	60.00
fct (ksi)	0.00	fyt Transverse (ksi)	60.00
Conc. Weight (pcf)	145.00	Conc. Type	NWC
Conc. Modulus (ksi)	4074.28	Reinf. Modulus (ksi)	29000.00

General Warning(s):

Section must be designed as a Deep Beam per ACI 318-11 for shear. Section must be designed as a Deep Beam per ACI 318-11 for flexural design.

TOP LONGITUDINAL REINFORCEMENT:

					Start		End		End-Condition	
Set	**Size**	**Num**	**Depth (in)**	**Layer**	**Supp.**	**Loc. (ft)**	**Supp.**	**Loc. (ft)**	**Start**	**End**
1	#6	3	39.500	Upper	1	0.000	1	7.000	Hooked	Splice
2	#6	3	39.500	Upper	2	-7.340	2	9.660	Splice	Splice

Max. Bar Depth Limit (in): 39.625 Clear Bar Cover (in): Top: 1.500 Side: 1.500

BOTTOM LONGITUDINAL REINFORCEMENT:

					Start		End		End-Condition	
Set	**Size**	**Num**	**Depth (in)**	**Layer**	**Supp.**	**Loc. (ft)**	**Supp.**	**Loc. (ft)**	**Start**	**End**
1	#6	3	39.500	Lower	1	0.000	1	14.000	Hooked	Splice

Max. Bar Depth Limit (in): 39.625 Clear Bar Cover (in): Bot.: 1.500 Side: 1.500

LONGITUDINAL BAR DESIGN DETAILS:

	Positive Moment				Negative Moment			
Loc. (ft)	**Mu (kip-ft)**	**øMn (kip-ft)**	**As req. (in²)**	**As (in²)**	**Mu (kip-ft)**	**øMn (kip-ft)**	**As req. (in²)**	**As (in²)**
0.000	0.00	232.11	0.00	1.32	0.00	-232.11	0.00	1.32

Loc.	Mu	øMn	As req.	As	Mu	øMn	As req.	As
0.667	0.00	232.11	0.00	1.32	0.00	-232.11	0.00	1.32
1.596	19.35	232.11	0.14	1.32	0.00	-232.11	0.00	1.32
2.525	34.44	232.11	0.26	1.32	0.00	-232.11	0.00	1.32
3.454	45.26	232.11	0.34	1.32	0.00	-232.11	0.00	1.32
3.583	46.43	232.11	0.35	1.32	0.00	-232.11	0.00	1.32
3.587	46.46	232.11	0.35	1.32	0.00	-232.11	0.00	1.32
4.383	51.82	232.11	0.39	1.32	0.00	-232.11	0.00	1.32
5.312	54.11	232.11	0.41	1.32	0.00	-232.11	0.00	1.32
6.241	52.13	232.11	0.39	1.32	0.00	-232.11	0.00	1.14
7.168	45.91	232.11	0.34	1.32	0.00	-232.11	0.00	1.35
7.170	45.89	232.11	0.34	1.32	0.00	-232.11	0.00	1.35
7.172	45.87	232.11	0.34	1.32	0.00	-232.11	0.00	1.35
8.099	35.38	232.11	0.27	1.32	0.00	-232.11	0.00	1.32
9.028	20.61	232.11	0.15	1.32	0.00	-232.11	0.00	1.32
9.957	1.57	232.11	0.01	1.32	0.00	-232.11	0.00	1.32
10.753	0.00	232.11	0.00	1.32	-18.13	-232.11	0.14	1.32
10.757	0.00	232.11	0.00	1.32	-18.24	-232.11	0.14	1.32
10.886	0.00	232.11	0.00	1.32	-21.73	-232.11	0.16	1.32
11.815	0.00	232.11	0.00	1.32	-49.30	-232.11	0.37	1.32
12.744	0.00	232.11	0.00	1.32	-81.13	-232.11	0.61	1.32
13.673	0.00	232.11	0.00	1.35	-117.23	-232.11	0.88	1.32
14.340	0.00	232.11	0.00	1.35	-117.23	-232.11	0.88	1.32

TRANSVERSE REINFORCEMENT:

				Start		End		Stirrup	
Set	**Size**	**Spacing**	**Num**	**Supp.**	**Loc. (ft)**	**Supp.**	**Loc. (ft)**	**Legs**	**Type**
1	#4	18.00	10	1	0.833	1	13.500	2	Closed

TRANSVERSE BAR DESIGN DETAILS AND TORSION FORCE:

Loc. (ft)	Vu (kip)	øVn (kip)	Tu (kip-ft)	Av req. (in²)	Av prv. (in²)
0.000	23.13	92.17	0.67	0.00	0.00
0.667	23.13	92.17	0.67	0.00	0.00
1.596	18.53	131.67	0.67	0.23	0.27
2.525	13.94	131.67	0.67	0.23	0.27
3.454	9.35	131.67	0.67	0.23	0.27
3.583	8.71	131.67	0.67	0.23	0.27
3.587	8.69	131.67	0.67	0.23	0.27
3.958	6.86	131.67	0.67	0.23	0.27
4.383	4.76	131.67	0.67	0.23	0.27
5.312	0.17	131.67	0.67	0.23	0.27
6.241	4.42	131.67	0.67	0.23	0.27
7.168	9.00	131.67	0.67	0.23	0.27

Loc.	Vu	øVn	Tu	Av req.	Av prv.
7.170	9.01	131.67	0.67	0.23	0.27
7.172	9.02	131.67	0.67	0.23	0.27
8.099	13.60	131.67	0.67	0.23	0.27
9.028	18.20	131.67	0.67	0.23	0.27
9.957	22.79	131.67	0.67	0.23	0.27
10.382	24.89	131.67	0.67	0.23	0.27
10.753	26.72	131.67	0.67	0.23	0.27
10.757	26.74	131.67	0.67	0.23	0.27
10.886	27.38	131.67	0.67	0.23	0.27
11.815	31.97	131.67	0.67	0.23	0.27
12.744	36.56	131.67	0.67	0.23	0.27
13.673	41.15	92.17	0.67	0.00	0.00
14.340	41.15	92.17	0.67	0.00	0.00

TORSION CAPACITY:

0.75 Tn (kip-ft) _____ 29.48 Tu (kip-ft) _____ 0.67

DEFLECTIONS: (Camber = 0.000 in)

Type	Distance (ft)	Delta (in)	Ieff (in4)	Ieff/Ig	Ln/d	Status
Dead Load	5.85	0.002	135828.0	1.00	89008.8	
Live Load	8.87	0.000	135828.0	1.00	29619938.0	**OK**
Long Term + LL	5.85	0.003	135828.0	1.00	47859.0	**OK**
Net Total Load	5.85	0.005	135828.0	1.00	31124.0	

Mcr Tension Bot (kip-ft) = 285.85 Mcr Tension Top (kip-ft) = 285.85
Ig (in4) = 135828.00 λ = 1.86
Controlling Deflection Ratio (Long Term + LL) = 0.005 **OK**

Span Moments For Ieff

	Mlt (kip-ft)	Mmid (kip-ft)	Mrt(kip-ft)
Dead Load	0.01	32.78	-83.71
LL down defl	0.00	0.08	0.15
LL up defl	0.00	0.00	0.00

BEAM INFORMATION:

Story Level FIRST FLOOR
Beam Number 22 Grid Location (61.67ft--18.33ft)-(61.67ft-0.00ft)
Beam Line Number 5 Span Number 2

Geometry

Size: **42Hx22B**

Depth (in)	42.00	Web Width (in)	22.00
Flange Width (in)	NA	Flange Thickness (in)	NA
Length c-c (ft)	18.33	Clear Length (ft)	17.00
Left Support Length (in)	16.00	Right Support Length (in)	16.00
Left Support Width (in)	16.00	Right Support Width (in)	16.00

MATERIAL PROPERTIES:

f'c (ksi)	5.00	fy Longitudinal (ksi)	60.00
fct (ksi)	0.00	fyt Transverse (ksi)	60.00
Conc. Weight (pcf)	145.00	Conc. Type	NWC
Conc. Modulus (ksi)	4074.28	Reinf. Modulus (ksi)	29000.00

TOP LONGITUDINAL REINFORCEMENT:

					Start		End		End-Condition	
Set	**Size**	**Num**	**Depth (in)**	**Layer**	**Supp.**	**Loc. (ft)**	**Supp.**	**Loc. (ft)**	**Start**	**End**
2	#6	3	39.500	Upper	2	-7.340	2	9.660	Splice	Splice
3	#6	3	39.500	Upper	3	-8.670	3	-0.003	Splice	Hooked

Max. Bar Depth Limit (in): 39.625 Clear Bar Cover (in): Top: 1.500 Side: 1.500

BOTTOM LONGITUDINAL REINFORCEMENT:

					Start		End		End-Condition	
Set	**Size**	**Num**	**Depth (in)**	**Layer**	**Supp.**	**Loc. (ft)**	**Supp.**	**Loc. (ft)**	**Start**	**End**
2	#6	3	39.500	Lower	2	-0.340	2	18.327	Splice	Hooked

Max. Bar Depth Limit (in): 39.625 Clear Bar Cover (in): Bot.: 1.500 Side: 1.500

LONGITUDINAL BAR DESIGN DETAILS:

	Positive Moment				Negative Moment			
Loc. (ft)	**Mu (kip-ft)**	**øMn (kip-ft)**	**As req. (in²)**	**As (in²)**	**Mu (kip-ft)**	**øMn (kip-ft)**	**As req. (in²)**	**As (in²)**
14.340	0.00	232.11	0.00	1.35	-127.91	-232.11	0.96	1.32
15.007	0.00	232.11	0.00	1.30	-127.91	-232.11	0.96	1.32
16.006	0.00	232.11	0.00	1.32	-80.87	-232.11	0.61	1.32
17.006	0.00	232.11	0.00	1.32	-38.76	-232.11	0.29	1.32
18.006	0.00	232.11	0.00	1.32	-1.60	-232.11	0.01	1.32

Loc.	Mu	øMn	As req.	As	Mu	øMn	As req.	As
18.920	28.07	232.11	0.21	1.32	0.00	-232.11	0.00	1.32
18.925	28.19	232.11	0.21	1.32	0.00	-232.11	0.00	1.32
19.006	30.63	232.11	0.23	1.32	0.00	-232.11	0.00	1.32
20.006	57.91	232.11	0.43	1.32	0.00	-232.11	0.00	1.32
21.005	80.26	232.11	0.60	1.32	0.00	-232.11	0.00	1.32
22.005	97.66	232.11	0.73	1.32	0.00	-232.11	0.00	1.32
23.005	110.13	232.11	0.83	1.32	0.00	-232.11	0.00	1.29
23.503	114.49	232.11	0.86	1.32	0.00	-232.11	0.00	0.98
23.507	114.52	232.11	0.86	1.32	0.00	-232.11	0.00	0.98
24.005	117.65	232.11	0.89	1.32	0.00	-232.11	0.00	1.35
25.005	120.24	232.11	0.90	1.32	0.00	-232.11	0.00	1.30
26.005	117.88	232.11	0.89	1.32	0.00	-232.11	0.00	1.32
27.004	110.58	232.11	0.83	1.32	0.00	-232.11	0.00	1.32
28.004	98.35	232.11	0.74	1.32	0.00	-232.11	0.00	1.32
28.085	97.14	232.11	0.73	1.32	0.00	-232.11	0.00	1.32
28.090	97.07	232.11	0.73	1.32	0.00	-232.11	0.00	1.32
29.004	81.17	232.11	0.61	1.32	0.00	-232.11	0.00	1.32
30.004	59.06	232.11	0.44	1.32	0.00	-232.11	0.00	1.32
31.004	32.00	232.11	0.24	1.32	0.00	-232.11	0.00	1.32
32.003	0.00	232.11	0.00	1.32	0.00	-232.11	0.00	1.32
32.670	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

TRANSVERSE REINFORCEMENT:

				Start		End		Stirrup	
Set	Size	Spacing	Num	Supp.	Loc. (ft)	Supp.	Loc. (ft)	Legs	Type
2	#4	18.00	13	2	0.827	2	17.493	2	Closed

TRANSVERSE BAR DESIGN DETAILS AND TORSION FORCE:

Loc. (ft)	Vu (kip)	øVn (kip)	Tu (kip-ft)	Av req. (in²)	Av prv. (in²)
14.340	49.53	92.17	0.44	0.00	0.00
15.007	49.53	92.17	0.44	0.00	0.00
16.006	44.58	131.67	0.44	0.23	0.27
17.006	39.64	131.67	0.44	0.23	0.27
18.006	34.70	131.67	0.44	0.23	0.27
18.298	33.26	131.67	0.44	0.23	0.27
18.920	30.18	131.67	0.44	0.23	0.27
18.925	30.16	131.67	0.44	0.23	0.27
19.006	29.76	131.67	0.44	0.23	0.27
20.006	24.82	131.67	0.44	0.23	0.27
21.005	19.88	131.67	0.44	0.23	0.27
22.005	14.94	131.67	0.44	0.23	0.27
23.005	10.00	131.67	0.44	0.23	0.27

Loc.	Vu	øVn	Tu	Av req.	Av prv.
23.503	7.54	131.67	0.44	0.23	0.27
23.507	7.52	131.67	0.44	0.23	0.27
24.005	5.06	131.67	0.44	0.23	0.27
25.005	0.11	131.67	0.44	0.23	0.27
26.005	4.83	131.67	0.44	0.23	0.27
27.004	9.77	131.67	0.44	0.23	0.27
28.004	14.71	131.67	0.44	0.23	0.27
28.085	15.11	131.67	0.44	0.23	0.27
28.090	15.13	131.67	0.44	0.23	0.27
28.712	18.21	131.67	0.44	0.23	0.27
29.004	19.65	131.67	0.44	0.23	0.27
30.004	24.59	131.67	0.44	0.23	0.27
31.004	29.53	131.67	0.44	0.23	0.27
32.003	34.47	92.17	0.44	0.00	0.00
32.670	34.47	92.17	0.44	0.00	0.00

TORSION CAPACITY:

0.75 Tn (kip-ft) _____ 29.48 Tu (kip-ft) _____ 0.44

DEFLECTIONS: (Camber = 0.000 in)

Type	Distance (ft)	Delta (in)	Ieff (in4)	Ieff/Ig	Ln/d	Status
Dead Load	9.89	0.008	135828.0	1.00	26649.6	
Live Load	6.99	0.000	135828.0	1.00	24491038.0	**OK**
Long Term + LL	9.89	0.015	135828.0	1.00	14065.1	**OK**
Net Total Load	9.89	0.022	135828.0	1.00	9206.2	

Mcr Tension Bot (kip-ft) = 285.85 Mcr Tension Top (kip-ft) = 285.85
Ig (in4) = 135828.00 λ = 1.89
Controlling Deflection Ratio (Long Term + LL) = 0.017 **OK**

Span Moments For Ieff

	Mlt (kip-ft)	Mmid (kip-ft)	Mrt(kip-ft)
Dead Load	-91.34	81.79	0.02
LL down defl	0.14	0.07	0.00
LL up defl	0.00	0.00	0.00

BEAM INFORMATION:

Story Level FIRST FLOOR
Beam Number 24 Grid Location (39.67ft--32.67ft)-(61.67ft--32.67ft)
Beam Line Number 6 Span Number 1

Geometry

Size: **42Hx22B**

Depth (in)	42.00	Web Width (in)	22.00
Flange Width (in)	NA	Flange Thickness (in)	NA
Length c-c (ft)	22.00	Clear Length (ft)	20.67
Left Support Length (in)	16.00	Right Support Length (in)	16.00
Left Support Width (in)	16.00	Right Support Width (in)	16.00

MATERIAL PROPERTIES:

f'c (ksi)	5.00	fy Longitudinal (ksi)	60.00
fct (ksi)	0.00	fyt Transverse (ksi)	60.00
Conc. Weight (pcf)	145.00	Conc. Type	NWC
Conc. Modulus (ksi)	4074.28	Reinf. Modulus (ksi)	29000.00

TOP LONGITUDINAL REINFORCEMENT:

					Start		End		End-Condition	
Set	**Size**	**Num**	**Depth (in)**	**Layer**	**Supp.**	**Loc. (ft)**	**Supp.**	**Loc. (ft)**	**Start**	**End**
1	#6	3	39.500	Upper	1	0.000	1	11.000	Hooked	Splice
2	#6	3	39.500	Upper	2	-11.000	2	0.000	Splice	Hooked

Max. Bar Depth Limit (in): 39.625 Clear Bar Cover (in): Top: 1.500 Side: 1.500

BOTTOM LONGITUDINAL REINFORCEMENT:

					Start		End		End-Condition	
Set	**Size**	**Num**	**Depth (in)**	**Layer**	**Supp.**	**Loc. (ft)**	**Supp.**	**Loc. (ft)**	**Start**	**End**
1	#6	3	39.500	Lower	1	0.000	1	22.000	Hooked	Hooked

Max. Bar Depth Limit (in): 39.625 Clear Bar Cover (in): Bot.: 1.500 Side: 1.500

LONGITUDINAL BAR DESIGN DETAILS:

	Positive Moment				Negative Moment			
Loc. (ft)	**Mu (kip-ft)**	**øMn (kip-ft)**	**As req. (in²)**	**As (in²)**	**Mu (kip-ft)**	**øMn (kip-ft)**	**As req. (in²)**	**As (in²)**
0.000	0.00	232.11	0.00	1.32	0.00	-232.11	0.00	1.32
0.667	0.00	232.11	0.00	1.32	0.00	-232.11	0.00	1.32
1.651	18.03	232.11	0.14	1.32	0.00	-232.11	0.00	1.32
2.635	34.27	232.11	0.26	1.32	0.00	-232.11	0.00	1.32
3.619	48.69	232.11	0.37	1.32	0.00	-232.11	0.00	1.32

Loc.	Mu	øMn	As req.	As	Mu	øMn	As req.	As
4.603	61.32	232.11	0.46	1.32	0.00	-232.11	0.00	1.32
5.498	71.23	232.11	0.53	1.32	0.00	-232.11	0.00	1.32
5.502	71.27	232.11	0.54	1.32	0.00	-232.11	0.00	1.32
5.587	72.14	232.11	0.54	1.32	0.00	-232.11	0.00	1.32
6.571	81.16	232.11	0.61	1.32	0.00	-232.11	0.00	1.32
7.556	88.37	232.11	0.66	1.32	0.00	-232.11	0.00	1.32
8.540	93.78	232.11	0.70	1.32	0.00	-232.11	0.00	1.32
9.524	97.39	232.11	0.73	1.32	0.00	-232.11	0.00	1.32
10.508	99.19	232.11	0.75	1.32	0.00	-232.11	0.00	0.98
10.998	99.42	232.11	0.75	1.32	0.00	-232.11	0.00	1.35
11.002	99.42	232.11	0.75	1.32	0.00	-232.11	0.00	1.35
11.492	99.19	232.11	0.75	1.32	0.00	-232.11	0.00	0.98
12.476	97.39	232.11	0.73	1.32	0.00	-232.11	0.00	1.32
13.460	93.78	232.11	0.70	1.32	0.00	-232.11	0.00	1.32
14.444	88.37	232.11	0.66	1.32	0.00	-232.11	0.00	1.32
15.429	81.16	232.11	0.61	1.32	0.00	-232.11	0.00	1.32
16.413	72.14	232.11	0.54	1.32	0.00	-232.11	0.00	1.32
16.498	71.28	232.11	0.54	1.32	0.00	-232.11	0.00	1.32
16.502	71.23	232.11	0.53	1.32	0.00	-232.11	0.00	1.32
17.397	61.32	232.11	0.46	1.32	0.00	-232.11	0.00	1.32
18.381	48.70	232.11	0.37	1.32	0.00	-232.11	0.00	1.32
19.365	34.27	232.11	0.26	1.32	0.00	-232.11	0.00	1.32
20.349	18.04	232.11	0.14	1.32	0.00	-232.11	0.00	1.32
21.333	0.00	232.11	0.00	1.32	0.00	-232.11	0.00	1.32
22.000	0.00	232.11	0.00	1.32	0.00	-232.11	0.00	1.32

TRANSVERSE REINFORCEMENT:

				Start		End		Stirrup	
Set	Size	Spacing	Num	Supp.	Loc. (ft)	Supp.	Loc. (ft)	Legs	Type
1	#4	18.00	15	1	0.833	1	21.167	2	Closed

TRANSVERSE BAR DESIGN DETAILS AND TORSION FORCE:

Loc. (ft)	Vu (kip)	øVn (kip)	Tu (kip-ft)	Av req. (in²)	Av prv. (in²)
0.000	19.24	92.17	0.06	0.00	0.00
0.667	19.24	92.17	0.06	0.00	0.00
1.651	17.41	131.67	0.06	0.23	0.27
2.635	15.58	131.67	0.06	0.23	0.27
3.619	13.74	131.67	0.06	0.23	0.27
3.958	13.11	131.67	0.06	0.23	0.27
4.603	11.91	131.67	0.06	0.23	0.27
5.498	10.25	131.67	0.06	0.23	0.27
5.502	10.24	131.67	0.06	0.23	0.27

Loc.	Vu	øVn	Tu	Av req.	Av prv.
5.587	10.08	131.67	0.06	0.23	0.27
6.571	8.25	131.67	0.06	0.23	0.27
7.556	6.41	131.67	0.06	0.23	0.27
8.540	4.58	131.67	0.06	0.23	0.27
9.524	2.75	131.67	0.06	0.23	0.27
10.508	0.92	131.67	0.06	0.23	0.27
10.998	0.00	131.67	0.06	0.23	0.27
11.002	0.00	131.67	0.06	0.23	0.27
11.492	0.92	131.67	0.06	0.23	0.27
12.476	2.75	131.67	0.06	0.23	0.27
13.460	4.58	131.67	0.06	0.23	0.27
14.444	6.41	131.67	0.06	0.23	0.27
15.429	8.25	131.67	0.06	0.23	0.27
16.413	10.08	131.67	0.06	0.23	0.27
16.498	10.24	131.67	0.06	0.23	0.27
16.502	10.25	131.67	0.06	0.23	0.27
17.397	11.91	131.67	0.06	0.23	0.27
18.042	13.11	131.67	0.06	0.23	0.27
18.381	13.74	131.67	0.06	0.23	0.27
19.365	15.58	131.67	0.06	0.23	0.27
20.349	17.41	131.67	0.06	0.23	0.27
21.333	19.24	92.17	0.06	0.00	0.00
22.000	19.24	92.17	0.06	0.00	0.00

TORSION CAPACITY:

0.75 Tn (kip-ft) _____ 29.48 Tu (kip-ft) _____ 0.06

DEFLECTIONS: (Camber = 0.000 in)

Type	Distance (ft)	Delta (in)	Ieff (in4)	Ieff/Ig	Ln/d	Status
Dead Load	10.71	0.010	135828.0	1.00	24175.6	
Live Load	22.00	-0.000	135828.0	1.00	2589049241	**OK**
					6.0	
Long Term + LL	10.71	0.019	135828.0	1.00	13023.9	**OK**
Net Total Load	10.71	0.029	135828.0	1.00	8464.1	

Mcr Tension Bot (kip-ft) = 285.85 Mcr Tension Top (kip-ft) = 285.85
Ig (in4) = 135828.00 λ = 1.86
Controlling Deflection Ratio (Long Term + LL) = 0.018 **OK**

Span Moments For Ieff

	Mlt (kip-ft)	Mmid (kip-ft)	Mrt(kip-ft)
Dead Load	0.01	71.01	0.01
LL down defl	-0.00	0.00	0.00
LL up defl	0.00	0.00	0.00

BEAM INFORMATION: **(Check Design Warnings)**

GRADE BEAM LENGTH CLASSIFIES IT AS A DEEP BEAM

Story Level: FIRST FLOOR
Beam Number: 25 Grid Location: (39.67ft--32.67ft)-(39.67ft--18.33ft)
Beam Line Number: 7 Span Number: 1

Geometry

Size: **42Hx22B**

Depth (in)	42.00	Web Width (in)	22.00
Flange Width (in)	NA	Flange Thickness (in)	NA
Length c-c (ft)	14.34	Clear Length (ft)	13.01
Left Support Length (in)	16.00	Right Support Length (in)	16.00
Left Support Width (in)	16.00	Right Support Width (in)	16.00

MATERIAL PROPERTIES:

f'c (ksi)	5.00	fy Longitudinal (ksi)	60.00
fct (ksi)	0.00	fyt Transverse (ksi)	60.00
Conc. Weight (pcf)	145.00	Conc. Type	NWC
Conc. Modulus (ksi)	4074.28	Reinf. Modulus (ksi)	29000.00

General Warning(s):

Section must be designed as a Deep Beam per ACI 318-11 for shear. Section must be designed as a Deep Beam per ACI 318-11 for flexural design.

TOP LONGITUDINAL REINFORCEMENT:

					Start		End		End-Condition	
Set	**Size**	**Num**	**Depth (in)**	**Layer**	**Supp.**	**Loc. (ft)**	**Supp.**	**Loc. (ft)**	**Start**	**End**
1	#6	3	39.500	Upper	1	0.000	1	7.000	Hooked	Splice
2	#6	3	39.500	Upper	2	-7.340	2	9.660	Splice	Splice

Max. Bar Depth Limit (in): 39.625 Clear Bar Cover (in): Top: 1.500 Side: 1.500

BOTTOM LONGITUDINAL REINFORCEMENT:

					Start		End		End-Condition	
Set	**Size**	**Num**	**Depth (in)**	**Layer**	**Supp.**	**Loc. (ft)**	**Supp.**	**Loc. (ft)**	**Start**	**End**
1	#6	3	39.500	Lower	1	0.000	1	14.000	Hooked	Splice

Max. Bar Depth Limit (in): 39.625 Clear Bar Cover (in): Bot.: 1.500 Side: 1.500

LONGITUDINAL BAR DESIGN DETAILS:

	Positive Moment				Negative Moment			
Loc. (ft)	**Mu (kip-ft)**	**øMn (kip-ft)**	**As req. (in²)**	**As (in²)**	**Mu (kip-ft)**	**øMn (kip-ft)**	**As req. (in²)**	**As (in²)**
0.000	0.00	232.11	0.00	1.32	0.00	-232.11	0.00	1.32

Loc.	Mu	øMn	As req.	As	Mu	øMn	As req.	As
0.667	0.00	232.11	0.00	1.32	0.00	-232.11	0.00	1.32
1.596	17.77	232.11	0.13	1.32	0.00	-232.11	0.00	1.32
2.525	31.27	232.11	0.23	1.32	0.00	-232.11	0.00	1.32
3.454	40.50	232.11	0.30	1.32	0.00	-232.11	0.00	1.32
3.583	41.45	232.11	0.31	1.32	0.00	-232.11	0.00	1.32
3.587	41.48	232.11	0.31	1.32	0.00	-232.11	0.00	1.32
4.383	45.48	232.11	0.34	1.32	0.00	-232.11	0.00	1.32
5.312	46.18	232.11	0.35	1.32	0.00	-232.11	0.00	1.32
6.241	42.62	232.11	0.32	1.32	0.00	-232.11	0.00	1.14
7.168	34.82	232.11	0.26	1.32	0.00	-232.11	0.00	1.35
7.170	34.79	232.11	0.26	1.32	0.00	-232.11	0.00	1.35
7.172	34.77	232.11	0.26	1.32	0.00	-232.11	0.00	1.35
8.099	22.70	232.11	0.17	1.32	0.00	-232.11	0.00	1.32
9.028	6.35	232.11	0.05	1.32	0.00	-232.11	0.00	1.32
9.957	0.00	232.11	0.00	1.32	-14.28	-232.11	0.11	1.32
10.753	0.00	232.11	0.00	1.32	-35.33	-232.11	0.26	1.32
10.757	0.00	232.11	0.00	1.32	-35.45	-232.11	0.27	1.32
10.886	0.00	232.11	0.00	1.32	-39.16	-232.11	0.29	1.32
11.815	0.00	232.11	0.00	1.32	-68.32	-232.11	0.51	1.32
12.744	0.00	232.11	0.00	1.32	-101.74	-232.11	0.76	1.32
13.673	0.00	258.74	0.00	1.50	-139.42	-232.11	1.05	1.32
14.340	0.00	282.20	0.00	1.64	-139.42	-232.11	1.05	1.32

TRANSVERSE REINFORCEMENT:

				Start		End		Stirrup	
Set	**Size**	**Spacing**	**Num**	**Supp.**	**Loc. (ft)**	**Supp.**	**Loc. (ft)**	**Legs**	**Type**
1	#4	18.00	10	1	0.833	1	13.500	2	Closed

TRANSVERSE BAR DESIGN DETAILS AND TORSION FORCE:

Loc. (ft)	Vu (kip)	øVn (kip)	Tu (kip-ft)	Av req. (in²)	Av prv. (in²)
0.000	21.42	92.17	0.71	0.00	0.00
0.667	21.42	92.17	0.71	0.00	0.00
1.596	16.83	131.67	0.71	0.23	0.27
2.525	12.24	131.67	0.71	0.23	0.27
3.454	7.65	131.67	0.71	0.23	0.27
3.583	7.01	131.67	0.71	0.23	0.27
3.587	6.99	131.67	0.71	0.23	0.27
3.958	5.15	131.67	0.71	0.23	0.27
4.383	3.06	131.67	0.71	0.23	0.27
5.312	1.54	131.67	0.71	0.23	0.27
6.241	6.13	131.67	0.71	0.23	0.27
7.168	10.71	131.67	0.71	0.23	0.27

Loc.	Vu	øVn	Tu	Av req.	Av prv.
7.170	10.72	131.67	0.71	0.23	0.27
7.172	10.73	131.67	0.71	0.23	0.27
8.099	15.31	131.67	0.71	0.23	0.27
9.028	19.90	131.67	0.71	0.23	0.27
9.957	24.49	131.67	0.71	0.23	0.27
10.382	26.59	131.67	0.71	0.23	0.27
10.753	28.43	131.67	0.71	0.23	0.27
10.757	28.45	131.67	0.71	0.23	0.27
10.886	29.08	131.67	0.71	0.23	0.27
11.815	33.68	131.67	0.71	0.23	0.27
12.744	38.27	131.67	0.71	0.23	0.27
13.673	42.86	92.17	0.71	0.00	0.00
14.340	42.86	92.17	0.71	0.00	0.00

TORSION CAPACITY:

0.75 Tn (kip-ft) _____ 29.48 Tu (kip-ft) _____ 0.71

DEFLECTIONS: (Camber = 0.000 in)

Type	Distance (ft)	Delta (in)	Ieff (in4)	Ieff/Ig	Ln/d	Status
Dead Load	5.09	0.001	135828.0	1.00	126955.7	
Live Load	9.25	0.000	135828.0	1.00	28921618.0	**OK**
Long Term + LL	5.09	0.002	135828.0	1.00	68237.4	**OK**
Net Total Load	5.09	0.004	135828.0	1.00	44382.4	

Mcr Tension Bot (kip-ft) = 285.85 Mcr Tension Top (kip-ft) = 285.85
Ig (in4) = 135828.00 λ = 1.86
Controlling Deflection Ratio (Long Term + LL) = 0.004 **OK**

Span Moments For Ieff

	Mlt (kip-ft)	Mmid (kip-ft)	Mrt(kip-ft)
Dead Load	0.01	24.85	-99.56
LL down defl	0.00	0.08	0.16
LL up defl	0.00	0.00	0.00

BEAM INFORMATION:

Story Level FIRST FLOOR
Beam Number 26 Grid Location (39.67ft--18.33ft)-(39.67ft-0.00ft)
Beam Line Number 7 Span Number 2

Geometry

Size: **42Hx22B**

Depth (in)	42.00	Web Width (in)	22.00
Flange Width (in)	NA	Flange Thickness (in)	NA
Length c-c (ft)	18.33	Clear Length (ft)	17.00
Left Support Length (in)	16.00	Right Support Length (in)	16.00
Left Support Width (in)	16.00	Right Support Width (in)	16.00

MATERIAL PROPERTIES:

f'c (ksi)	5.00	fy Longitudinal (ksi)	60.00
fct (ksi)	0.00	fyt Transverse (ksi)	60.00
Conc. Weight (pcf)	145.00	Conc. Type	NWC
Conc. Modulus (ksi)	4074.28	Reinf. Modulus (ksi)	29000.00

TOP LONGITUDINAL REINFORCEMENT:

					Start		End		End-Condition	
Set	**Size**	**Num**	**Depth (in)**	**Layer**	**Supp.**	**Loc. (ft)**	**Supp.**	**Loc. (ft)**	**Start**	**End**
2	#6	3	39.500	Upper	2	-7.340	2	9.660	Splice	Splice
3	#6	3	39.500	Upper	3	-8.670	3	-0.003	Splice	Hooked

Max. Bar Depth Limit (in): 39.625 Clear Bar Cover (in): Top: 1.500 Side: 1.500

BOTTOM LONGITUDINAL REINFORCEMENT:

					Start		End		End-Condition	
Set	**Size**	**Num**	**Depth (in)**	**Layer**	**Supp.**	**Loc. (ft)**	**Supp.**	**Loc. (ft)**	**Start**	**End**
2	#6	4	39.500	Lower	2	-0.340	2	18.327	Splice	Hooked

Max. Bar Depth Limit (in): 39.625 Clear Bar Cover (in): Bot.: 1.500 Side: 1.500

LONGITUDINAL BAR DESIGN DETAILS:

	Positive Moment				Negative Moment			
Loc. (ft)	**Mu (kip-ft)**	**øMn (kip-ft)**	**As req. (in²)**	**As (in²)**	**Mu (kip-ft)**	**øMn (kip-ft)**	**As req. (in²)**	**As (in²)**
14.340	0.00	282.21	0.00	1.64	-158.64	-232.11	1.20	1.32
15.007	0.00	305.67	0.00	1.73	-158.64	-232.11	1.20	1.32
16.006	0.00	308.37	0.00	1.76	-103.20	-232.11	0.78	1.32
17.006	0.00	308.37	0.00	1.76	-52.70	-232.11	0.40	1.32
18.006	0.00	308.37	0.00	1.76	-7.14	-232.11	0.05	1.32

Loc.	Mu	øMn	As req.	As	Mu	øMn	As req.	As
19.006	33.48	308.37	0.25	1.76	0.00	-232.11	0.00	1.32
20.006	69.16	308.37	0.52	1.76	0.00	-232.11	0.00	1.32
21.005	99.90	308.37	0.75	1.76	0.00	-232.11	0.00	1.32
22.005	125.71	308.37	0.95	1.76	0.00	-232.11	0.00	1.32
23.005	146.57	308.37	1.10	1.76	0.00	-232.11	0.00	1.29
24.005	162.49	308.37	1.22	1.76	0.00	-232.11	0.00	1.35
25.005	173.46	308.37	1.31	1.76	0.00	-232.11	0.00	1.30
26.005	179.50	308.37	1.35	1.76	0.00	-232.11	0.00	1.32
27.004	180.68	308.37	1.36	1.76	0.00	-232.11	0.00	1.32
27.668	178.89	308.37	1.35	1.76	0.00	-232.11	0.00	1.32
27.672	178.87	308.37	1.35	1.76	0.00	-232.11	0.00	1.32
28.004	170.20	308.37	1.28	1.76	0.00	-232.11	0.00	1.32
29.004	139.05	308.37	1.05	1.76	0.00	-232.11	0.00	1.32
30.004	100.30	308.37	0.75	1.76	0.00	-232.11	0.00	1.32
31.004	53.95	308.37	0.40	1.76	0.00	-232.11	0.00	1.32
32.003	0.00	308.37	0.00	1.76	0.00	-232.11	0.00	1.32
32.670	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

TRANSVERSE REINFORCEMENT:

				Start		End		Stirrup	
Set	Size	Spacing	Num	Supp.	Loc. (ft)	Supp.	Loc. (ft)	Legs	Type
2	#4	18.00	13	2	0.827	2	17.493	2	Closed

TRANSVERSE BAR DESIGN DETAILS AND TORSION FORCE:

Loc. (ft)	Vu (kip)	øVn (kip)	Tu (kip-ft)	Av req. (in^2)	Av prv. (in^2)
14.340	57.92	92.17	0.24	0.00	0.00
15.007	57.92	92.17	0.24	0.00	0.00
16.006	52.98	131.67	0.24	0.23	0.27
17.006	48.04	131.67	0.24	0.23	0.27
18.006	43.10	131.67	0.24	0.23	0.27
18.298	41.66	131.67	0.24	0.23	0.27
19.006	38.16	131.67	0.24	0.23	0.27
20.006	33.22	131.67	0.24	0.23	0.27
21.005	28.28	131.67	0.24	0.23	0.27
22.005	23.33	131.67	0.24	0.23	0.27
23.005	18.39	131.67	0.24	0.23	0.27
24.005	13.45	131.67	0.24	0.23	0.27
25.005	8.51	131.67	0.24	0.23	0.27
26.005	3.57	131.67	0.24	0.23	0.27
27.004	1.18	131.67	0.24	0.23	0.27
27.668	4.18	131.67	0.24	0.23	0.27
27.672	24.83	131.67	0.24	0.23	0.27

Loc.	Vu	øVn	Tu	Av req.	Av prv.
28.004	27.36	131.67	0.24	0.23	0.27
28.712	32.74	131.67	0.24	0.23	0.27
29.004	34.96	131.67	0.24	0.23	0.27
30.004	42.56	131.67	0.24	0.23	0.27
31.004	50.16	131.67	0.24	0.23	0.27
32.003	57.76	92.17	0.24	0.00	0.00
32.670	57.76	92.17	0.24	0.00	0.00

TORSION CAPACITY:

0.75 Tn (kip-ft) _____ 29.48 Tu (kip-ft) _____ 0.24

DEFLECTIONS: (Camber = 0.000 in)

Type	Distance (ft)	Delta (in)	Ieff (in4)	Ieff/Ig	Ln/d	Status
Dead Load	10.37	0.011	135828.0	1.00	18577.8	
Live Load	6.99	0.000	135828.0	1.00	25617082.0	**OK**
Long Term + LL	10.37	0.021	135828.0	1.00	9807.8	**OK**
Net Total Load	10.37	0.032	135828.0	1.00	6419.0	

Mcr Tension Bot (kip-ft) = 285.85 Mcr Tension Top (kip-ft) = 285.85
Ig (in4) = 135828.00 λ = 1.89
Controlling Deflection Ratio (Long Term + LL) = 0.024 **OK**

Span Moments For Ieff

	Mlt (kip-ft)	Mmid (kip-ft)	Mrt(kip-ft)
Dead Load	-113.28	110.82	0.04
LL down defl	0.13	0.06	0.00
LL up defl	0.00	0.00	0.00

BEAM INFORMATION:

Story Level FIRST FLOOR
Beam Number 28 Grid Location (17.00ft--34.67ft)-(17.00ft--18.33ft)
Beam Line Number 8 Span Number 1

Geometry

Size: **42Hx22B**

Depth (in)	42.00	Web Width (in)	22.00
Flange Width (in)	NA	Flange Thickness (in)	NA
Length c-c (ft)	16.34	Clear Length (ft)	15.01
Left Support Length (in)	16.00	Right Support Length (in)	16.00
Left Support Width (in)	16.00	Right Support Width (in)	16.00

MATERIAL PROPERTIES:

f'c (ksi)	5.00	fy Longitudinal (ksi)	60.00
fct (ksi)	0.00	fyt Transverse (ksi)	60.00
Conc. Weight (pcf)	145.00	Conc. Type	NWC
Conc. Modulus (ksi)	4074.28	Reinf. Modulus (ksi)	29000.00

TOP LONGITUDINAL REINFORCEMENT:

					Start		End		End-Condition	
Set	**Size**	**Num**	**Depth (in)**	**Layer**	**Supp.**	**Loc. (ft)**	**Supp.**	**Loc. (ft)**	**Start**	**End**
1	#5	3	39.500	Upper	1	0.000	1	8.000	Hooked	Splice
2	#6	3	39.500	Upper	2	-8.340	2	9.660	Splice	Splice

Max. Bar Depth Limit (in): 39.625 Clear Bar Cover (in): Top: 1.500 Side: 1.500

BOTTOM LONGITUDINAL REINFORCEMENT:

					Start		End		End-Condition	
Set	**Size**	**Num**	**Depth (in)**	**Layer**	**Supp.**	**Loc. (ft)**	**Supp.**	**Loc. (ft)**	**Start**	**End**
1	#5	3	39.500	Lower	1	0.000	1	16.000	Hooked	Splice

Max. Bar Depth Limit (in): 39.688 Clear Bar Cover (in): Bot.: 1.500 Side: 1.500

LONGITUDINAL BAR DESIGN DETAILS:

	Positive Moment				Negative Moment			
Loc. (ft)	**Mu (kip-ft)**	**øMn (kip-ft)**	**As req. (in²)**	**As (in²)**	**Mu (kip-ft)**	**øMn (kip-ft)**	**As req. (in²)**	**As (in²)**
0.000	0.00	164.06	0.00	0.93	0.00	-164.06	0.00	0.93
0.667	0.00	164.06	0.00	0.93	0.00	-164.06	0.00	0.93
1.605	12.51	164.06	0.09	0.93	0.00	-164.06	0.00	0.93
2.542	22.31	164.06	0.17	0.93	0.00	-164.06	0.00	0.93
3.480	29.41	164.06	0.22	0.93	0.00	-164.06	0.00	0.93

Loc.	Mu	øMn	As req.	As	Mu	øMn	As req.	As
4.083	32.54	164.06	0.24	0.93	0.00	-164.06	0.00	0.93
4.087	32.55	164.06	0.24	0.93	0.00	-164.06	0.00	0.93
4.418	33.80	164.06	0.25	0.93	0.00	-164.06	0.00	0.93
5.356	35.48	164.06	0.27	0.93	0.00	-164.06	0.00	0.93
6.294	34.46	164.06	0.26	0.93	0.00	-164.06	0.00	0.93
7.232	30.73	164.06	0.23	0.93	0.00	-173.97	0.00	0.81
8.168	24.32	164.06	0.18	0.93	0.00	-203.36	0.00	1.18
8.170	24.30	164.06	0.18	0.93	0.00	-203.43	0.00	1.18
8.172	24.28	164.06	0.18	0.93	0.00	-203.49	0.00	1.18
9.108	15.16	164.06	0.11	0.93	0.00	-232.11	0.00	1.32
10.046	3.32	164.06	0.02	0.93	0.00	-232.11	0.00	1.32
10.984	0.00	164.06	0.00	0.93	-11.23	-232.11	0.08	1.32
11.922	0.00	164.06	0.00	0.93	-28.49	-232.11	0.21	1.32
12.253	0.00	164.06	0.00	0.93	-35.23	-232.11	0.26	1.32
12.257	0.00	164.06	0.00	0.93	-35.32	-232.11	0.26	1.32
12.860	0.00	164.06	0.00	0.93	-48.45	-232.11	0.36	1.32
13.797	0.00	164.06	0.00	0.93	-71.12	-232.11	0.53	1.32
14.735	0.00	164.06	0.00	0.93	-96.49	-232.11	0.73	1.32
15.673	0.00	214.46	0.00	1.24	-124.57	-232.11	0.94	1.32
16.340	0.00	258.85	0.00	1.50	-124.57	-232.11	0.94	1.32

TRANSVERSE REINFORCEMENT:

				Start		End		Stirrup	
Set	Size	Spacing	Num	Supp.	Loc. (ft)	Supp.	Loc. (ft)	Legs	Type
1	#4	18.00	11	1	0.833	1	15.500	2	Closed

TRANSVERSE BAR DESIGN DETAILS AND TORSION FORCE:

Loc. (ft)	Vu (kip)	øVn (kip)	Tu (kip-ft)	Av req. (in²)	Av prv. (in²)
0.000	14.78	92.17	0.58	0.00	0.00
0.667	14.78	92.17	0.58	0.00	0.00
1.605	11.89	131.67	0.58	0.23	0.27
2.542	9.01	131.67	0.58	0.23	0.27
3.480	6.12	131.67	0.58	0.23	0.27
3.958	4.65	131.67	0.58	0.23	0.27
4.083	4.27	131.67	0.58	0.23	0.27
4.087	4.26	131.67	0.58	0.23	0.27
4.418	3.24	131.67	0.58	0.23	0.27
5.356	0.35	131.67	0.58	0.23	0.27
6.294	2.53	131.67	0.58	0.23	0.27
7.232	5.42	131.67	0.58	0.23	0.27
8.168	8.29	131.67	0.58	0.23	0.27
8.170	8.30	131.67	0.58	0.23	0.27

Loc.	Vu	øVn	Tu	Av req.	Av prv.
8.172	8.31	131.67	0.58	0.23	0.27
9.108	11.19	131.67	0.58	0.23	0.27
10.046	14.07	131.67	0.58	0.23	0.27
10.984	16.96	131.67	0.58	0.23	0.27
11.922	19.84	131.67	0.58	0.23	0.27
12.253	20.86	131.67	0.58	0.23	0.27
12.257	20.87	131.67	0.58	0.23	0.27
12.382	21.26	131.67	0.58	0.23	0.27
12.860	22.73	131.67	0.58	0.23	0.27
13.797	25.61	131.67	0.58	0.23	0.27
14.735	28.50	131.67	0.58	0.23	0.27
15.673	31.38	92.17	0.58	0.00	0.00
16.340	31.38	92.17	0.58	0.00	0.00

TORSION CAPACITY:

0.75 Tn (kip-ft) _____ 29.48 Tu (kip-ft) _____ 0.58

DEFLECTIONS: (Camber = 0.000 in)

Type	Distance (ft)	Delta (in)	Ieff (in4)	Ieff/Ig	Ln/d	Status
Dead Load	5.38	0.001	135828.0	1.00	180491.8	
Live Load	10.10	0.000	135828.0	1.00	35981860.0	**OK**
Long Term + LL	5.38	0.002	135828.0	1.00	96130.2	**OK**
Net Total Load	5.38	0.003	135828.0	1.00	62723.6	

Mcr Tension Bot (kip-ft) = 285.85 Mcr Tension Top (kip-ft) = 285.85
Ig (in4) = 135828.00 λ = 1.87
Controlling Deflection Ratio (Long Term + LL) = 0.002 **OK**

Span Moments For Ieff

	Mlt (kip-ft)	Mmid (kip-ft)	Mrt(kip-ft)
Dead Load	0.01	17.36	-88.96
LL down defl	0.00	0.05	0.11
LL up defl	0.00	0.00	0.00

BEAM INFORMATION:

Story Level FIRST FLOOR
Beam Number 27 Grid Location (17.00ft--18.33ft)-(17.00ft-0.00ft)
Beam Line Number 8 Span Number 2

Geometry

Size: **42Hx22B**

Depth (in)	42.00	Web Width (in)	22.00
Flange Width (in)	NA	Flange Thickness (in)	NA
Length c-c (ft)	18.33	Clear Length (ft)	17.00
Left Support Length (in)	16.00	Right Support Length (in)	16.00
Left Support Width (in)	16.00	Right Support Width (in)	16.00

MATERIAL PROPERTIES:

f'c (ksi)	5.00	fy Longitudinal (ksi)	60.00
fct (ksi)	0.00	fyt Transverse (ksi)	60.00
Conc. Weight (pcf)	145.00	Conc. Type	NWC
Conc. Modulus (ksi)	4074.28	Reinf. Modulus (ksi)	29000.00

TOP LONGITUDINAL REINFORCEMENT:

					Start		End		End-Condition	
Set	**Size**	**Num**	**Depth (in)**	**Layer**	**Supp.**	**Loc. (ft)**	**Supp.**	**Loc. (ft)**	**Start**	**End**
2	#6	3	39.500	Upper	2	-8.340	2	9.660	Splice	Splice
3	#5	3	39.500	Upper	3	-8.670	3	-0.003	Splice	Hooked

Max. Bar Depth Limit (in): 39.625 Clear Bar Cover (in): Top: 1.500 Side: 1.500

BOTTOM LONGITUDINAL REINFORCEMENT:

					Start		End		End-Condition	
Set	**Size**	**Num**	**Depth (in)**	**Layer**	**Supp.**	**Loc. (ft)**	**Supp.**	**Loc. (ft)**	**Start**	**End**
2	#6	4	39.500	Lower	2	-0.340	2	18.327	Splice	Hooked

Max. Bar Depth Limit (in): 39.625 Clear Bar Cover (in): Bot.: 1.500 Side: 1.500

LONGITUDINAL BAR DESIGN DETAILS:

	Positive Moment				Negative Moment			
Loc. (ft)	**Mu (kip-ft)**	**øMn (kip-ft)**	**As req. (in²)**	**As (in²)**	**Mu (kip-ft)**	**øMn (kip-ft)**	**As req. (in²)**	**As (in²)**
16.340	0.00	258.86	0.00	1.50	-142.42	-232.11	1.07	1.32
17.007	0.00	303.26	0.00	1.73	-142.42	-232.11	1.07	1.32
18.006	0.00	308.37	0.00	1.76	-90.74	-232.11	0.68	1.32
19.006	0.00	308.37	0.00	1.76	-43.63	-232.11	0.33	1.32
20.006	0.00	308.37	0.00	1.76	-1.12	-232.11	0.01	1.32

Loc.	Mu	øMn	As req.	As	Mu	øMn	As req.	As
21.006	36.80	308.37	0.28	1.76	0.00	-232.11	0.00	1.32
22.006	70.13	308.37	0.53	1.76	0.00	-232.11	0.00	1.32
23.005	98.88	308.37	0.74	1.76	0.00	-232.11	0.00	1.32
24.005	123.03	308.37	0.93	1.76	0.00	-232.11	0.00	1.32
25.005	142.59	308.37	1.07	1.76	0.00	-229.34	0.00	1.29
26.005	157.56	308.37	1.19	1.76	0.00	-197.93	0.00	1.15
27.005	167.94	308.37	1.27	1.76	0.00	-166.53	0.00	0.91
28.005	173.73	308.37	1.31	1.76	0.00	-164.06	0.00	0.93
29.004	175.00	308.37	1.32	1.76	0.00	-164.06	0.00	0.93
29.668	173.47	308.37	1.31	1.76	0.00	-164.06	0.00	0.93
29.672	173.38	308.37	1.31	1.76	0.00	-164.06	0.00	0.93
30.004	164.91	308.37	1.24	1.76	0.00	-164.06	0.00	0.93
31.004	134.55	308.37	1.01	1.76	0.00	-164.06	0.00	0.93
32.004	96.95	308.37	0.73	1.76	0.00	-164.06	0.00	0.93
33.004	52.10	308.37	0.39	1.76	0.00	-164.06	0.00	0.93
34.003	0.00	308.37	0.00	1.76	0.00	-164.06	0.00	0.93
34.670	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

TRANSVERSE REINFORCEMENT:

				Start		End		Stirrup	
Set	Size	Spacing	Num	Supp.	Loc. (ft)	Supp.	Loc. (ft)	Legs	Type
2	#4	18.00	13	2	0.827	2	17.493	2	Closed

TRANSVERSE BAR DESIGN DETAILS AND TORSION FORCE:

Loc. (ft)	Vu (kip)	øVn (kip)	Tu (kip-ft)	Av req. (in²)	Av prv. (in²)
16.340	54.00	92.17	0.70	0.00	0.00
17.007	54.00	92.17	0.70	0.00	0.00
18.006	49.41	131.67	0.70	0.23	0.27
19.006	44.82	131.67	0.70	0.23	0.27
20.006	40.23	131.67	0.70	0.23	0.27
20.298	38.88	131.67	0.70	0.23	0.27
21.006	35.63	131.67	0.70	0.23	0.27
22.006	31.04	131.67	0.70	0.23	0.27
23.005	26.45	131.67	0.70	0.23	0.27
24.005	21.86	131.67	0.70	0.23	0.27
25.005	17.27	131.67	0.70	0.23	0.27
26.005	12.68	131.67	0.70	0.23	0.27
27.005	8.09	131.67	0.70	0.23	0.27
28.005	3.50	131.67	0.70	0.23	0.27
29.004	0.90	131.67	0.70	0.23	0.27
29.668	3.67	131.67	0.70	0.23	0.27
29.672	24.33	131.67	0.70	0.23	0.27

Loc.	Vu	øVn	Tu	Av req.	Av prv.
30.004	26.73	131.67	0.70	0.23	0.27
30.712	31.86	131.67	0.70	0.23	0.27
31.004	33.98	131.67	0.70	0.23	0.27
32.004	41.23	131.67	0.70	0.23	0.27
33.004	48.48	131.67	0.70	0.23	0.27
34.003	55.73	92.17	0.70	0.00	0.00
34.670	55.73	92.17	0.70	0.00	0.00

TORSION CAPACITY:

0.75 Tn (kip-ft) _____ 29.48 Tu (kip-ft) _____ 0.70

DEFLECTIONS: (Camber = 0.000 in)

Type	Distance (ft)	Delta (in)	Ieff (in4)	Ieff/Ig	Ln/d	Status
Dead Load	10.37	0.011	135828.0	1.00	18988.8	
Live Load	6.99	0.000	135828.0	1.00	37586780.0	**OK**
Long Term + LL	10.37	0.020	135828.0	1.00	10026.4	**OK**
Net Total Load	10.37	0.031	135828.0	1.00	6561.7	

Mcr Tension Bot (kip-ft) = 285.85 Mcr Tension Top (kip-ft) = 285.85
Ig (in4) = 135828.00 λ = 1.89
Controlling Deflection Ratio (Long Term + LL) = 0.024 **OK**

Span Moments For Ieff

	Mlt (kip-ft)	Mmid (kip-ft)	Mrt(kip-ft)
Dead Load	-101.70	107.60	0.04
LL down defl	0.09	0.04	0.00
LL up defl	0.00	0.00	0.00

BEAM INFORMATION: **(Check Design Warnings)**

GRADE BEAM LENGTH CLASSIFIES IT AS A DEEP BEAM

Story Level FIRST FLOOR
Beam Number 29 Grid Location (8.33ft--34.67ft)-(17.00ft--34.67ft)
Beam Line Number 9 Span Number 1

Geometry

Size: **42Hx22B**

Depth (in)	42.00	Web Width (in)	22.00
Flange Width (in)	NA	Flange Thickness (in)	NA
Length c-c (ft)	8.67	Clear Length (ft)	7.34
Left Support Length (in)	16.00	Right Support Length (in)	16.00
Left Support Width (in)	16.00	Right Support Width (in)	16.00

MATERIAL PROPERTIES:

f'c (ksi)	5.00	fy Longitudinal (ksi)	60.00
fct (ksi)	0.00	fyt Transverse (ksi)	60.00
Conc. Weight (pcf)	145.00	Conc. Type	NWC
Conc. Modulus (ksi)	4074.28	Reinf. Modulus (ksi)	29000.00

General Warning(s):

Section must be designed as a Deep Beam per ACI 318-11 for shear. Section must be designed as a Deep Beam per ACI 318-11 for flexural design.

TOP LONGITUDINAL REINFORCEMENT:

					Start		End		End-Condition	
Set	**Size**	**Num**	**Depth (in)**	**Layer**	**Supp.**	**Loc. (ft)**	**Supp.**	**Loc. (ft)**	**Start**	**End**
1	#6	3	39.500	Upper	1	0.000	1	4.000	Hooked	Splice
2	#6	3	39.500	Upper	2	-4.670	2	-0.003	Splice	Hooked

Max. Bar Depth Limit (in): 39.625 Clear Bar Cover (in): Top: 1.500 Side: 1.500

BOTTOM LONGITUDINAL REINFORCEMENT:

					Start		End		End-Condition	
Set	**Size**	**Num**	**Depth (in)**	**Layer**	**Supp.**	**Loc. (ft)**	**Supp.**	**Loc. (ft)**	**Start**	**End**
1	#6	3	39.500	Lower	1	0.000	1	8.667	Hooked	Hooked

Max. Bar Depth Limit (in): 39.625 Clear Bar Cover (in): Bot.: 1.500 Side: 1.500

LONGITUDINAL BAR DESIGN DETAILS:

	Positive Moment				Negative Moment			
Loc. (ft)	**Mu (kip-ft)**	**øMn (kip-ft)**	**As req. (in²)**	**As (in²)**	**Mu (kip-ft)**	**øMn (kip-ft)**	**As req. (in²)**	**As (in²)**
0.000	0.00	232.11	0.00	1.32	0.00	-232.11	0.00	1.32

Loc.	Mu	øMn	As req.	As	Mu	øMn	As req.	As
0.667	0.00	232.11	0.00	1.32	0.00	-232.11	0.00	1.32
1.482	4.95	232.11	0.04	1.32	0.00	-232.11	0.00	1.32
2.165	8.15	232.11	0.06	1.32	0.00	-232.11	0.00	1.32
2.170	8.16	232.11	0.06	1.32	0.00	-232.11	0.00	1.32
2.297	8.66	232.11	0.06	1.32	0.00	-232.11	0.00	1.32
3.112	11.14	232.11	0.08	1.32	0.00	-232.11	0.00	1.22
3.927	12.37	232.11	0.09	1.32	0.00	-232.11	0.00	1.35
4.333	12.53	232.11	0.09	1.32	0.00	-232.11	0.00	1.35
4.337	12.53	232.11	0.09	1.32	0.00	-232.11	0.00	1.35
4.743	12.37	232.11	0.09	1.32	0.00	-232.11	0.00	1.13
5.558	11.14	232.11	0.08	1.32	0.00	-232.11	0.00	1.32
6.373	8.66	232.11	0.06	1.32	0.00	-232.11	0.00	1.32
6.500	8.16	232.11	0.06	1.32	0.00	-232.11	0.00	1.32
6.505	8.15	232.11	0.06	1.32	0.00	-232.11	0.00	1.32
7.188	4.95	232.11	0.04	1.32	0.00	-232.11	0.00	1.32
8.003	0.00	232.11	0.00	1.32	0.00	-232.11	0.00	1.32
8.670	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

TRANSVERSE REINFORCEMENT:

				Start		End		Stirrup	
Set	**Size**	**Spacing**	**Num**	**Supp.**	**Loc. (ft)**	**Supp.**	**Loc. (ft)**	**Legs**	**Type**
1	#4	18.00	6	1	0.833	1	7.833	2	Closed

TRANSVERSE BAR DESIGN DETAILS AND TORSION FORCE:

Loc. (ft)	Vu (kip)	øVn (kip)	Tu (kip-ft)	Av req. (in²)	Av prv. (in²)
0.000	6.83	92.17	0.53	0.00	0.00
0.667	6.83	92.17	0.53	0.00	0.00
1.482	5.31	131.67	0.53	0.23	0.27
2.165	4.04	131.67	0.53	0.23	0.27
2.170	4.03	131.67	0.53	0.23	0.27
2.297	3.80	131.67	0.53	0.23	0.27
3.112	2.28	131.67	0.53	0.23	0.27
3.927	0.76	131.67	0.53	0.23	0.27
3.958	0.70	131.67	0.53	0.23	0.27
4.333	0.00	131.67	0.53	0.23	0.27
4.337	0.00	131.67	0.53	0.23	0.27
4.712	0.70	131.67	0.53	0.23	0.27
4.743	0.76	131.67	0.53	0.23	0.27
5.558	2.28	131.67	0.53	0.23	0.27
6.373	3.79	131.67	0.53	0.23	0.27
6.500	4.03	131.67	0.53	0.23	0.27
6.505	4.04	131.67	0.53	0.23	0.27

Loc.	Vu	øVn	Tu	Av req.	Av prv.
7.188	5.31	131.67	0.53	0.23	0.27
8.003	6.83	92.17	0.53	0.00	0.00
8.670	6.83	92.17	0.53	0.00	0.00

TORSION CAPACITY:

0.75 Tn (kip-ft) 29.48 Tu (kip-ft) 0.53

DEFLECTIONS: (Camber = 0.000 in)

Type	Distance (ft)	Delta (in)	Ieff (in4)	Ieff/Ig	Ln/d	Status
Dead Load	4.22	0.000	135828.0	1.00	345703.2	
Live Load	0.00	0.000	135828.0	1.00	374210528.0	**OK**
Long Term + LL	4.22	0.000	135828.0	1.00	186220.9	**OK**
Net Total Load	4.22	0.001	135828.0	1.00	121027.0	

Mcr Tension Bot (kip-ft) = 285.85 Mcr Tension Top (kip-ft) = 285.85
Ig (in4) = 135828.00 λ = 1.86
Controlling Deflection Ratio (Long Term + LL) = 0.001 **OK**

Span Moments For Ieff

	Mlt (kip-ft)	Mmid (kip-ft)	Mrt(kip-ft)
Dead Load	0.00	8.95	0.00
LL down defl	0.00	0.00	0.00
LL up defl	0.00	0.00	0.00

BEAM INFORMATION:

Story Level FIRST FLOOR
Beam Number 30 Grid Location (8.33ft--34.67ft)-(8.33ft--18.33ft)
Beam Line Number 10 Span Number 1

Geometry

Size: **42Hx22B**

Depth (in)	42.00	Web Width (in)	22.00
Flange Width (in)	NA	Flange Thickness (in)	NA
Length c-c (ft)	16.34	Clear Length (ft)	14.76
Left Support Length (in)	16.00	Right Support Length (in)	22.00
Left Support Width (in)	16.00	Right Support Width (in)	NA

MATERIAL PROPERTIES:

f'c (ksi)	5.00	fy Longitudinal (ksi)	60.00
fct (ksi)	0.00	fyt Transverse (ksi)	60.00
Conc. Weight (pcf)	145.00	Conc. Type	NWC
Conc. Modulus (ksi)	4074.28	Reinf. Modulus (ksi)	29000.00

TOP LONGITUDINAL REINFORCEMENT:

					Start		End		End-Condition	
Set	**Size**	**Num**	**Depth (in)**	**Layer**	**Supp.**	**Loc. (ft)**	**Supp.**	**Loc. (ft)**	**Start**	**End**
1	#6	3	39.500	Upper	1	0.000	1	8.000	Hooked	Splice
2	#6	3	39.500	Upper	2	-8.340	2	-0.007	Splice	Hooked

Max. Bar Depth Limit (in): 39.625 Clear Bar Cover (in): Top: 1.500 Side: 1.500

BOTTOM LONGITUDINAL REINFORCEMENT:

					Start		End		End-Condition	
Set	**Size**	**Num**	**Depth (in)**	**Layer**	**Supp.**	**Loc. (ft)**	**Supp.**	**Loc. (ft)**	**Start**	**End**
1	#6	3	39.500	Lower	1	0.000	1	16.333	Hooked	Hooked

Max. Bar Depth Limit (in): 39.625 Clear Bar Cover (in): Bot.: 1.500 Side: 1.500

LONGITUDINAL BAR DESIGN DETAILS:

	Positive Moment				Negative Moment			
Loc. (ft)	**Mu (kip-ft)**	**øMn (kip-ft)**	**As req. (in²)**	**As (in²)**	**Mu (kip-ft)**	**øMn (kip-ft)**	**As req. (in²)**	**As (in²)**
0.000	0.00	232.11	0.00	1.32	0.00	-232.11	0.00	1.32
0.667	0.00	232.11	0.00	1.32	0.00	-232.11	0.00	1.32
1.650	22.21	232.11	0.17	1.32	0.00	-232.11	0.00	1.32
2.634	41.44	232.11	0.31	1.32	0.00	-232.11	0.00	1.32
3.618	57.69	232.11	0.43	1.32	0.00	-232.11	0.00	1.32

Loc.	Mu	øMn	As req.	As	Mu	øMn	As req.	As
4.083	64.33	232.11	0.48	1.32	0.00	-232.11	0.00	1.32
4.087	64.39	232.11	0.48	1.32	0.00	-232.11	0.00	1.32
4.602	70.97	232.11	0.53	1.32	0.00	-232.11	0.00	1.32
5.586	81.27	232.11	0.61	1.32	0.00	-232.11	0.00	1.32
6.569	88.59	232.11	0.67	1.32	0.00	-232.11	0.00	1.32
7.553	92.93	232.11	0.70	1.32	0.00	-232.11	0.00	0.95
8.168	94.14	232.11	0.71	1.32	0.00	-232.11	0.00	1.35
8.172	94.14	232.11	0.71	1.32	0.00	-232.11	0.00	1.35
8.537	94.30	232.11	0.71	1.32	0.00	-232.11	0.00	1.01
9.521	92.70	232.11	0.70	1.32	0.00	-232.11	0.00	1.32
10.504	88.11	232.11	0.66	1.32	0.00	-232.11	0.00	1.32
11.488	80.55	232.11	0.60	1.32	0.00	-232.11	0.00	1.32
12.253	72.61	232.11	0.55	1.32	0.00	-232.11	0.00	1.32
12.257	72.57	232.11	0.54	1.32	0.00	-232.11	0.00	1.32
12.472	70.01	232.11	0.53	1.32	0.00	-232.11	0.00	1.32
13.456	56.49	232.11	0.42	1.32	0.00	-232.11	0.00	1.32
14.440	40.00	232.11	0.30	1.32	0.00	-232.11	0.00	1.32
15.423	20.57	232.11	0.15	1.32	0.00	-232.11	0.00	1.32
16.340	20.57	0.00	0.15	0.00	0.00	0.00	0.00	0.00

TRANSVERSE REINFORCEMENT:

				Start		End		Stirrup	
Set	Size	Spacing	Num	Supp.	Loc. (ft)	Supp.	Loc. (ft)	Legs	Type
1	#4	18.00	11	1	0.833	1	15.250	2	Closed

TRANSVERSE BAR DESIGN DETAILS AND TORSION FORCE:

Loc. (ft)	Vu (kip)	øVn (kip)	Tu (kip-ft)	Av req. (in²)	Av prv. (in²)
0.000	24.09	92.17	1.03	0.00	0.00
0.667	24.09	92.17	1.03	0.00	0.00
1.650	21.06	131.67	1.03	0.23	0.27
2.634	18.03	131.67	1.03	0.23	0.27
3.618	15.01	131.67	1.03	0.23	0.27
3.958	13.96	131.67	1.03	0.23	0.27
4.083	13.58	131.67	1.03	0.23	0.27
4.087	13.57	131.67	1.03	0.23	0.27
4.602	11.98	131.67	1.03	0.23	0.27
5.586	8.96	131.67	1.03	0.23	0.27
6.569	5.93	131.67	1.03	0.23	0.27
7.553	2.90	131.67	1.03	0.23	0.27
8.168	1.01	131.67	1.03	0.23	0.27
8.172	1.00	131.67	1.03	0.23	0.27
8.537	0.12	131.67	1.03	0.23	0.27

Loc.	Vu	øVn	Tu	Av req.	Av prv.
9.521	3.15	131.67	1.03	0.23	0.27
10.504	6.17	131.67	1.03	0.23	0.27
11.488	9.20	131.67	1.03	0.23	0.27
12.132	11.18	131.67	1.03	0.23	0.27
12.253	11.55	131.67	1.03	0.23	0.27
12.257	11.56	131.67	1.03	0.23	0.27
12.472	12.23	131.67	1.03	0.23	0.27
13.456	15.25	131.67	1.03	0.23	0.27
14.440	18.28	131.67	1.03	0.23	0.27
15.423	21.18	92.17	1.03	0.00	0.00
16.340	21.18	92.17	1.03	0.00	0.00

TORSION CAPACITY:

0.75 Tn (kip-ft) _____ 29.48 Tu (kip-ft) _____ 1.03

DEFLECTIONS: (Camber = 0.000 in)

Type	Distance (ft)	Delta (in)	Ieff (in4)	Ieff/Ig	Ln/d	Status
Dead Load	8.39	0.005	135828.0	1.00	32484.4	
Live Load	0.00	-0.000	135828.0	1.00	155525968.0	**OK**
Long Term + LL	8.39	0.010	135828.0	1.00	17500.5	**OK**
Net Total Load	8.39	0.016	135828.0	1.00	11373.3	

Mcr Tension Bot (kip-ft) = 285.85 Mcr Tension Top (kip-ft) = 285.85
Ig (in4) = 135828.00 λ = 1.86
Controlling Deflection Ratio (Long Term + LL) = 0.014 **OK**

Span Moments For Ieff

	Mlt (kip-ft)	Mmid (kip-ft)	Mrt(kip-ft)
Dead Load	0.01	67.36	0.02
LL down defl	-0.00	-0.00	-0.00
LL up defl	0.00	0.00	0.00

BEAM INFORMATION:

Story Level FIRST FLOOR
Beam Number 31 Grid Location (-2.50ft--18.33ft)-(17.00ft--18.33ft)
Beam Line Number 11 Span Number 1

Geometry

Size: **42Hx22B**

Depth (in)	42.00	Web Width (in)	22.00
Flange Width (in)	NA	Flange Thickness (in)	NA
Length c-c (ft)	19.50	Clear Length (ft)	18.17
Left Support Length (in)	16.00	Right Support Length (in)	16.00
Left Support Width (in)	16.00	Right Support Width (in)	16.00

MATERIAL PROPERTIES:

f'c (ksi)	5.00	fy Longitudinal (ksi)	60.00
fct (ksi)	0.00	fyt Transverse (ksi)	60.00
Conc. Weight (pcf)	145.00	Conc. Type	NWC
Conc. Modulus (ksi)	4074.28	Reinf. Modulus (ksi)	29000.00

TOP LONGITUDINAL REINFORCEMENT:

					Start		End		End-Condition	
Set	**Size**	**Num**	**Depth (in)**	**Layer**	**Supp.**	**Loc. (ft)**	**Supp.**	**Loc. (ft)**	**Start**	**End**
1	#6	3	39.500	Upper	1	0.000	1	10.000	Hooked	Splice
2	#6	3	39.500	Upper	2	-9.500	2	0.000	Splice	Hooked

Max. Bar Depth Limit (in): 39.625 Clear Bar Cover (in): Top: 1.500 Side: 1.500

BOTTOM LONGITUDINAL REINFORCEMENT:

					Start		End		End-Condition	
Set	**Size**	**Num**	**Depth (in)**	**Layer**	**Supp.**	**Loc. (ft)**	**Supp.**	**Loc. (ft)**	**Start**	**End**
1	#6	3	39.500	Lower	1	0.000	1	19.500	Hooked	Hooked

Max. Bar Depth Limit (in): 39.625 Clear Bar Cover (in): Bot.: 1.500 Side: 1.500

LONGITUDINAL BAR DESIGN DETAILS:

	Positive Moment				Negative Moment			
Loc. (ft)	**Mu (kip-ft)**	**øMn (kip-ft)**	**As req. (in²)**	**As (in²)**	**Mu (kip-ft)**	**øMn (kip-ft)**	**As req. (in²)**	**As (in²)**
0.000	0.00	232.11	0.00	1.32	0.00	-232.11	0.00	1.32
0.667	0.00	232.11	0.00	1.32	0.00	-232.11	0.00	1.32
1.623	24.13	232.11	0.18	1.32	0.00	-232.11	0.00	1.32
2.579	46.56	232.11	0.35	1.32	0.00	-232.11	0.00	1.32
3.535	67.28	232.11	0.51	1.32	0.00	-232.11	0.00	1.32

Loc.	Mu	øMn	As req.	As	Mu	øMn	As req.	As
4.491	86.31	232.11	0.65	1.32	0.00	-232.11	0.00	1.32
5.447	103.63	232.11	0.78	1.32	0.00	-232.11	0.00	1.32
6.404	119.25	232.11	0.90	1.32	0.00	-232.11	0.00	1.32
7.360	133.17	232.11	1.00	1.32	0.00	-232.11	0.00	1.32
8.316	145.38	232.11	1.10	1.32	0.00	-232.11	0.00	1.32
9.272	155.90	232.11	1.18	1.32	0.00	-232.11	0.00	1.13
10.228	164.84	232.11	1.24	1.32	0.00	-232.11	0.00	1.35
10.828	169.72	232.11	1.28	1.32	0.00	-232.11	0.00	1.19
10.832	170.73	232.11	1.29	1.32	0.00	-232.11	0.00	1.19
11.184	165.03	232.11	1.24	1.32	0.00	-232.11	0.00	1.32
12.140	148.71	232.11	1.12	1.32	0.00	-232.11	0.00	1.32
13.096	131.16	232.11	0.99	1.32	0.00	-232.11	0.00	1.32
14.053	112.38	232.11	0.85	1.32	0.00	-232.11	0.00	1.32
15.009	92.37	232.11	0.69	1.32	0.00	-232.11	0.00	1.32
15.965	71.13	232.11	0.53	1.32	0.00	-232.11	0.00	1.32
16.921	48.65	232.11	0.36	1.32	0.00	-232.11	0.00	1.32
17.877	24.94	232.11	0.19	1.32	0.00	-232.11	0.00	1.32
18.833	0.00	232.11	0.00	1.32	0.00	-232.11	0.00	1.32
19.500	0.00	232.11	0.00	1.32	0.00	-232.11	0.00	1.32

TRANSVERSE REINFORCEMENT:

				Start		End		Stirrup	
Set	Size	Spacing	Num	Supp.	Loc. (ft)	Supp.	Loc. (ft)	Legs	Type
1	#4	18.00	13	1	0.833	1	18.667	2	Closed

TRANSVERSE BAR DESIGN DETAILS AND TORSION FORCE:

Loc. (ft)	Vu (kip)	øVn (kip)	Tu (kip-ft)	Av req. (in²)	Av prv. (in²)
0.000	26.13	92.17	0.27	0.00	0.00
0.667	26.13	92.17	0.27	0.00	0.00
1.623	24.35	131.67	0.27	0.23	0.27
2.579	22.57	131.67	0.27	0.23	0.27
3.535	20.79	131.67	0.27	0.23	0.27
3.958	20.00	131.67	0.27	0.23	0.27
4.491	19.01	131.67	0.27	0.23	0.27
5.447	17.23	131.67	0.27	0.23	0.27
6.404	15.45	131.67	0.27	0.23	0.27
7.360	13.66	131.67	0.27	0.23	0.27
8.316	11.88	131.67	0.27	0.23	0.27
9.272	10.17	131.67	0.27	0.23	0.27
10.228	8.57	131.67	0.27	0.23	0.27
10.828	7.71	131.67	0.27	0.23	0.27
10.832	15.95	131.67	0.27	0.23	0.27

Loc.	Vu	øVn	Tu	Av req.	Av prv.
11.184	16.42	131.67	0.27	0.23	0.27
12.140	17.71	131.67	0.27	0.23	0.27
13.096	19.00	131.67	0.27	0.23	0.27
14.053	20.29	131.67	0.27	0.23	0.27
15.009	21.57	131.67	0.27	0.23	0.27
15.542	22.29	131.67	0.27	0.23	0.27
15.965	22.86	131.67	0.27	0.23	0.27
16.921	24.15	131.67	0.27	0.23	0.27
17.877	25.44	131.67	0.27	0.23	0.27
18.833	26.73	92.17	0.27	0.00	0.00
19.500	26.73	92.17	0.27	0.00	0.00

TORSION CAPACITY:

0.75 Tn (kip-ft) _____ 29.48 Tu (kip-ft) _____ 0.27

DEFLECTIONS: (Camber = 0.000 in)

Type	Distance (ft)	Delta (in)	Ieff (in4)	Ieff/Ig	Ln/d	Status
Dead Load	10.01	0.012	135828.0	1.00	17930.6	
Live Load	0.00	-0.000	135828.0	1.00	281852384.0	**OK**
Long Term + LL	10.01	0.023	135828.0	1.00	9659.5	**OK**
Net Total Load	10.01	0.035	135828.0	1.00	6277.7	

Mcr Tension Bot (kip-ft) = 285.85 Mcr Tension Top (kip-ft) = 285.85
Ig (in4) = 135828.00 λ = 1.86
Controlling Deflection Ratio (Long Term + LL) = 0.025 **OK**

Span Moments For Ieff

	Mlt (kip-ft)	Mmid (kip-ft)	Mrt(kip-ft)
Dead Load	0.01	114.69	0.02
LL down defl	0.00	0.00	-0.00
LL up defl	0.00	0.00	0.00

BEAM INFORMATION:

Story Level FIRST FLOOR
Beam Number 32 Grid Location (-2.50ft--18.33ft)-(-2.50ft--0.00ft)
Beam Line Number 12 Span Number 1

Geometry

Size: **42Hx22B**

Depth (in)	42.00	Web Width (in)	22.00
Flange Width (in)	NA	Flange Thickness (in)	NA
Length c-c (ft)	18.33	Clear Length (ft)	16.33
Left Support Length (in)	16.00	Right Support Length (in)	32.00
Left Support Width (in)	16.00	Right Support Width (in)	16.00

MATERIAL PROPERTIES:

f'c (ksi)	5.00	fy Longitudinal (ksi)	60.00
fct (ksi)	0.00	fyt Transverse (ksi)	60.00
Conc. Weight (pcf)	145.00	Conc. Type	NWC
Conc. Modulus (ksi)	4074.28	Reinf. Modulus (ksi)	29000.00

TOP LONGITUDINAL REINFORCEMENT:

					Start		End		End-Condition	
Set	**Size**	**Num**	**Depth (in)**	**Layer**	**Supp.**	**Loc. (ft)**	**Supp.**	**Loc. (ft)**	**Start**	**End**
1	#6	3	39.500	Upper	1	0.000	1	9.000	Hooked	Splice
2	#6	3	39.500	Upper	2	-9.330	2	0.003	Splice	Hooked

Max. Bar Depth Limit (in): 39.625 Clear Bar Cover (in): Top: 1.500 Side: 1.500

BOTTOM LONGITUDINAL REINFORCEMENT:

					Start		End		End-Condition	
Set	**Size**	**Num**	**Depth (in)**	**Layer**	**Supp.**	**Loc. (ft)**	**Supp.**	**Loc. (ft)**	**Start**	**End**
1	#6	3	39.500	Lower	1	0.000	1	18.333	Hooked	Hooked

Max. Bar Depth Limit (in): 39.625 Clear Bar Cover (in): Bot.: 1.500 Side: 1.500

LONGITUDINAL BAR DESIGN DETAILS:

	Positive Moment				Negative Moment			
Loc. (ft)	**Mu (kip-ft)**	**øMn (kip-ft)**	**As req. (in²)**	**As (in²)**	**Mu (kip-ft)**	**øMn (kip-ft)**	**As req. (in²)**	**As (in²)**
0.000	0.00	232.11	0.00	1.32	0.00	-232.11	0.00	1.32
0.667	0.00	232.11	0.00	1.32	0.00	-232.11	0.00	1.32
1.627	33.90	232.11	0.25	1.32	0.00	-232.11	0.00	1.32
2.588	63.56	232.11	0.48	1.32	0.00	-232.11	0.00	1.32
3.548	88.98	232.11	0.67	1.32	0.00	-232.11	0.00	1.32

Loc.	Mu	øMn	As req.	As	Mu	øMn	As req.	As
4.509	110.17	232.11	0.83	1.32	0.00	-232.11	0.00	1.32
4.580	111.57	232.11	0.84	1.32	0.00	-232.11	0.00	1.32
4.585	111.65	232.11	0.84	1.32	0.00	-232.11	0.00	1.32
5.470	127.12	232.11	0.96	1.32	0.00	-232.11	0.00	1.32
6.430	139.83	232.11	1.05	1.32	0.00	-232.11	0.00	1.32
7.391	148.30	232.11	1.12	1.32	0.00	-232.11	0.00	1.32
8.351	152.54	232.11	1.15	1.32	0.00	-232.11	0.00	1.08
9.163	152.82	232.11	1.15	1.32	0.00	-232.11	0.00	1.35
9.167	152.81	232.11	1.15	1.32	0.00	-232.11	0.00	1.35
9.312	152.54	232.11	1.15	1.32	0.00	-232.11	0.00	1.35
10.273	148.30	232.11	1.12	1.32	0.00	-232.11	0.00	1.32
11.233	139.83	232.11	1.05	1.32	0.00	-232.11	0.00	1.32
12.194	127.12	232.11	0.96	1.32	0.00	-232.11	0.00	1.32
13.154	110.17	232.11	0.83	1.32	0.00	-232.11	0.00	1.32
13.745	97.63	232.11	0.73	1.32	0.00	-232.11	0.00	1.32
13.750	97.54	232.11	0.73	1.32	0.00	-232.11	0.00	1.32
14.115	88.98	232.11	0.67	1.32	0.00	-232.11	0.00	1.32
15.075	63.56	232.11	0.48	1.32	0.00	-232.11	0.00	1.32
16.036	33.90	232.11	0.25	1.32	0.00	-232.11	0.00	1.32
16.997	0.00	232.11	0.00	1.32	0.00	-232.11	0.00	1.32
18.330	0.00	232.11	0.00	1.32	0.00	-232.11	0.00	1.32

TRANSVERSE REINFORCEMENT:

				Start		End		Stirrup	
Set	Size	Spacing	Num	Supp.	Loc. (ft)	Supp.	Loc. (ft)	Legs	Type
1	#4	18.00	12	1	0.833	1	16.833	2	Closed

TRANSVERSE BAR DESIGN DETAILS AND TORSION FORCE:

Loc. (ft)	Vu (kip)	øVn (kip)	Tu (kip-ft)	Av req. (in²)	Av prv. (in²)
0.000	37.49	92.17	0.62	0.00	0.00
0.667	37.49	92.17	0.62	0.00	0.00
1.627	33.08	131.67	0.62	0.23	0.27
2.588	28.67	131.67	0.62	0.23	0.27
3.548	24.26	131.67	0.62	0.23	0.27
3.958	22.38	131.67	0.62	0.23	0.27
4.509	19.85	131.67	0.62	0.23	0.27
4.580	19.52	131.67	0.62	0.23	0.27
4.585	19.50	131.67	0.62	0.23	0.27
5.470	15.44	131.67	0.62	0.23	0.27
6.430	11.03	131.67	0.62	0.23	0.27
7.391	6.62	131.67	0.62	0.23	0.27
8.351	2.21	131.67	0.62	0.23	0.27

Loc.	Vu	øVn	Tu	Av req.	Av prv.
9.163	1.52	131.67	0.62	0.23	0.27
9.167	1.54	131.67	0.62	0.23	0.27
9.312	2.20	131.67	0.62	0.23	0.27
10.273	6.62	131.67	0.62	0.23	0.27
11.233	11.03	131.67	0.62	0.23	0.27
12.194	15.44	131.67	0.62	0.23	0.27
13.154	19.85	131.67	0.62	0.23	0.27
13.705	22.38	131.67	0.62	0.23	0.27
13.745	22.56	131.67	0.62	0.23	0.27
13.750	22.58	131.67	0.62	0.23	0.27
14.115	24.26	131.67	0.62	0.23	0.27
15.075	28.67	131.67	0.62	0.23	0.27
16.036	33.08	131.67	0.62	0.23	0.27
16.997	37.49	92.17	0.62	0.00	0.00
18.330	37.49	92.17	0.62	0.00	0.00

TORSION CAPACITY:

0.75 Tn (kip-ft) _____ 29.48 Tu (kip-ft) _____ 0.62

DEFLECTIONS: (Camber = 0.000 in)

Type	Distance (ft)	Delta (in)	Ieff (in4)	Ieff/Ig	Ln/d	Status
Dead Load	8.92	0.010	135828.0	1.00	19327.6	
Live Load	18.33	-0.000	135828.0	1.00	195923920.0	**OK**
Long Term + LL	8.92	0.019	135828.0	1.00	10412.2	**OK**
Net Total Load	8.92	0.029	135828.0	1.00	6766.8	

Mcr Tension Bot (kip-ft) = 285.85 Mcr Tension Top (kip-ft) = 285.85
Ig (in4) = 135828.00 λ = 1.86
Controlling Deflection Ratio (Long Term + LL) = 0.023 **OK**

Span Moments For Ieff

	Mlt (kip-ft)	Mmid (kip-ft)	Mrt(kip-ft)
Dead Load	0.02	109.34	0.02
LL down defl	0.00	0.00	-0.00
LL up defl	0.00	0.00	0.00

BEAM INFORMATION:

Story Level FIRST FLOOR
Beam Number 20 Grid Location (17.00ft-0.00ft)-(39.67ft-0.00ft)
Beam Line Number 13 Span Number 1

Geometry

Size: **42Hx22B**

Depth (in)	42.00	Web Width (in)	22.00
Flange Width (in)	NA	Flange Thickness (in)	NA
Length c-c (ft)	22.67	Clear Length (ft)	21.34
Left Support Length (in)	16.00	Right Support Length (in)	16.00
Left Support Width (in)	16.00	Right Support Width (in)	16.00

MATERIAL PROPERTIES:

f'c (ksi)	5.00	fy Longitudinal (ksi)	60.00
fct (ksi)	0.00	fyt Transverse (ksi)	60.00
Conc. Weight (pcf)	145.00	Conc. Type	NWC
Conc. Modulus (ksi)	4074.28	Reinf. Modulus (ksi)	29000.00

TOP LONGITUDINAL REINFORCEMENT:

					Start		End		End-Condition	
Set	**Size**	**Num**	**Depth (in)**	**Layer**	**Supp.**	**Loc. (ft)**	**Supp.**	**Loc. (ft)**	**Start**	**End**
1	#6	3	39.500	Upper	1	0.000	1	11.000	Hooked	Splice
2	#6	3	39.500	Upper	2	-11.670	2	-0.003	Splice	Hooked

Max. Bar Depth Limit (in): 39.625 Clear Bar Cover (in): Top: 1.500 Side: 1.500

BOTTOM LONGITUDINAL REINFORCEMENT:

					Start		End		End-Condition	
Set	**Size**	**Num**	**Depth (in)**	**Layer**	**Supp.**	**Loc. (ft)**	**Supp.**	**Loc. (ft)**	**Start**	**End**
1	#6	3	39.500	Lower	1	0.000	1	22.667	Hooked	Hooked

Max. Bar Depth Limit (in): 39.625 Clear Bar Cover (in): Bot.: 1.500 Side: 1.500

LONGITUDINAL BAR DESIGN DETAILS:

	Positive Moment				Negative Moment			
Loc. (ft)	**Mu (kip-ft)**	**øMn (kip-ft)**	**As req. (in²)**	**As (in²)**	**Mu (kip-ft)**	**øMn (kip-ft)**	**As req. (in²)**	**As (in²)**
0.000	0.00	232.11	0.00	1.32	-63.66	-232.11	0.48	1.32
0.667	0.00	232.11	0.00	1.32	-63.66	-232.11	0.48	1.32
1.637	0.00	232.11	0.00	1.32	-45.77	-232.11	0.34	1.32
2.606	0.00	232.11	0.00	1.32	-29.64	-232.11	0.22	1.32
3.576	0.00	232.11	0.00	1.32	-15.25	-232.11	0.11	1.32

Loc.	Mu	øMn	As req.	As	Mu	øMn	As req.	As
4.546	0.00	232.11	0.00	1.32	-2.62	-232.11	0.02	1.32
5.516	8.26	232.11	0.06	1.32	0.00	-232.11	0.00	1.32
5.665	9.78	232.11	0.07	1.32	0.00	-232.11	0.00	1.32
5.670	9.82	232.11	0.07	1.32	0.00	-232.11	0.00	1.32
6.486	17.39	232.11	0.13	1.32	0.00	-232.11	0.00	1.32
7.456	24.77	232.11	0.19	1.32	0.00	-232.11	0.00	1.32
8.425	30.39	232.11	0.23	1.32	0.00	-232.11	0.00	1.32
9.395	34.27	232.11	0.26	1.32	0.00	-232.11	0.00	1.32
10.365	36.39	232.11	0.27	1.32	0.00	-232.11	0.00	1.07
11.333	36.76	232.11	0.28	1.32	0.00	-232.11	0.00	1.35
11.335	36.76	232.11	0.28	1.32	0.00	-232.11	0.00	1.35
11.337	36.76	232.11	0.28	1.32	0.00	-232.11	0.00	1.35
12.305	35.38	232.11	0.27	1.32	0.00	-232.11	0.00	1.32
13.275	32.25	232.11	0.24	1.32	0.00	-232.11	0.00	1.32
14.245	27.37	232.11	0.21	1.32	0.00	-232.11	0.00	1.32
15.214	20.73	232.11	0.16	1.32	0.00	-232.11	0.00	1.32
16.184	12.34	232.11	0.09	1.32	0.00	-232.11	0.00	1.32
17.000	3.93	232.11	0.03	1.32	0.00	-232.11	0.00	1.32
17.005	3.88	232.11	0.03	1.32	0.00	-232.11	0.00	1.32
17.154	2.21	232.11	0.02	1.32	0.00	-232.11	0.00	1.32
18.124	0.00	232.11	0.00	1.32	-9.68	-232.11	0.07	1.32
19.094	0.00	232.11	0.00	1.32	-23.32	-232.11	0.17	1.32
20.064	0.00	232.11	0.00	1.32	-38.72	-232.11	0.29	1.32
21.033	0.00	232.11	0.00	1.32	-55.86	-232.11	0.42	1.32
22.003	0.00	232.11	0.00	1.32	-74.76	-232.11	0.56	1.32
22.670	0.00	0.00	0.00	0.00	-74.76	0.00	0.56	0.00

TRANSVERSE REINFORCEMENT:

				Start		End		Stirrup	
Set	Size	Spacing	Num	Supp.	Loc. (ft)	Supp.	Loc. (ft)	Legs	Type
1	#4	18.00	15	1	0.833	1	21.833	2	Closed

TRANSVERSE BAR DESIGN DETAILS AND TORSION FORCE:

Loc. (ft)	Vu (kip)	øVn (kip)	Tu (kip-ft)	Av req. (in²)	Av prv. (in²)
0.000	19.35	92.17	0.05	0.00	0.00
0.667	19.35	92.17	0.05	0.00	0.00
1.637	17.54	131.67	0.05	0.23	0.27
2.606	15.73	131.67	0.05	0.23	0.27
3.576	13.93	131.67	0.05	0.23	0.27
3.958	13.22	131.67	0.05	0.23	0.27
4.546	12.12	131.67	0.05	0.23	0.27
5.516	10.32	131.67	0.05	0.23	0.27

Loc.	Vu	øVn	Tu	Av req.	Av prv.
5.665	10.04	131.67	0.05	0.23	0.27
5.670	10.03	131.67	0.05	0.23	0.27
6.486	8.51	131.67	0.05	0.23	0.27
7.456	6.70	131.67	0.05	0.23	0.27
8.425	4.90	131.67	0.05	0.23	0.27
9.395	3.09	131.67	0.05	0.23	0.27
10.365	1.29	131.67	0.05	0.23	0.27
11.333	0.52	131.67	0.05	0.23	0.27
11.335	0.52	131.67	0.05	0.23	0.27
11.337	0.52	131.67	0.05	0.23	0.27
12.305	2.33	131.67	0.05	0.23	0.27
13.275	4.13	131.67	0.05	0.23	0.27
14.245	5.94	131.67	0.05	0.23	0.27
15.214	7.74	131.67	0.05	0.23	0.27
16.184	9.55	131.67	0.05	0.23	0.27
17.000	11.07	131.67	0.05	0.23	0.27
17.005	11.08	131.67	0.05	0.23	0.27
17.154	11.36	131.67	0.05	0.23	0.27
18.124	13.16	131.67	0.05	0.23	0.27
18.712	14.26	131.67	0.05	0.23	0.27
19.094	14.97	131.67	0.05	0.23	0.27
20.064	16.77	131.67	0.05	0.23	0.27
21.033	18.58	131.67	0.05	0.23	0.27
22.003	20.39	92.17	0.05	0.00	0.00
22.670	20.39	92.17	0.05	0.00	0.00

TORSION CAPACITY:

0.75 Tn (kip-ft) _____ 29.48 Tu (kip-ft) _____ 0.05

DEFLECTIONS: (Camber = 0.000 in)

Type	Distance (ft)	Delta (in)	Ieff (in4)	Ieff/Ig	Ln/d	Status
Dead Load	11.04	0.003	135828.0	1.00	95252.1	
Live Load	11.04	0.000	135828.0	1.00	125231296.0	**OK**
Long Term + LL	11.04	0.005	135828.0	1.00	51281.4	**OK**
Net Total Load	11.04	0.008	135828.0	1.00	33334.8	

Mcr Tension Bot (kip-ft) = 285.85 Mcr Tension Top (kip-ft) = 285.85
Ig (in4) = 135828.00 λ = 1.86
Controlling Deflection Ratio (Long Term + LL) = 0.005 **OK**

Span Moments For Ieff

	Mlt (kip-ft)	Mmid (kip-ft)	Mrt(kip-ft)
Dead Load	-45.46	26.26	-53.39
LL down defl	0.01	0.01	0.01

	Mlt (kip-ft)	Mmid (kip-ft)	Mrt(kip-ft)
LL up defl	0.00	0.00	0.00

BEAM INFORMATION:

Story Level FIRST FLOOR
Beam Number 33 Grid Location (17.00ft--5.00ft)-(39.67ft--5.00ft)
Beam Line Number 14 Span Number 1

Geometry

Size: **42Hx22B**

Depth (in)	42.00	Web Width (in)	22.00
Flange Width (in)	NA	Flange Thickness (in)	NA
Length c-c (ft)	22.67	Clear Length (ft)	20.84
Left Support Length (in)	22.00	Right Support Length (in)	22.00
Left Support Width (in)	NA	Right Support Width (in)	NA

MATERIAL PROPERTIES:

f'c (ksi)	5.00	fy Longitudinal (ksi)	60.00
fct (ksi)	0.00	fyt Transverse (ksi)	60.00
Conc. Weight (pcf)	145.00	Conc. Type	NWC
Conc. Modulus (ksi)	4074.28	Reinf. Modulus (ksi)	29000.00

TOP LONGITUDINAL REINFORCEMENT:

					Start		End		End-Condition	
Set	**Size**	**Num**	**Depth (in)**	**Layer**	**Supp.**	**Loc. (ft)**	**Supp.**	**Loc. (ft)**	**Start**	**End**
1	#6	3	39.500	Upper	1	0.000	1	11.000	Hooked	Splice
2	#6	3	39.500	Upper	2	-11.670	2	-0.003	Splice	Hooked

Max. Bar Depth Limit (in): 39.625 Clear Bar Cover (in): Top: 1.500 Side: 1.500

BOTTOM LONGITUDINAL REINFORCEMENT:

					Start		End		End-Condition	
Set	**Size**	**Num**	**Depth (in)**	**Layer**	**Supp.**	**Loc. (ft)**	**Supp.**	**Loc. (ft)**	**Start**	**End**
1	#6	3	39.500	Lower	1	0.000	1	22.667	Hooked	Hooked

Max. Bar Depth Limit (in): 39.625 Clear Bar Cover (in): Bot.: 1.500 Side: 1.500

LONGITUDINAL BAR DESIGN DETAILS:

	Positive Moment				Negative Moment			
Loc. (ft)	**Mu (kip-ft)**	**øMn (kip-ft)**	**As req. (in²)**	**As (in²)**	**Mu (kip-ft)**	**øMn (kip-ft)**	**As req. (in²)**	**As (in²)**
0.000	18.31	232.11	0.14	1.32	0.00	-232.11	0.00	1.32
0.917	18.31	232.11	0.14	1.32	0.00	-232.11	0.00	1.32
1.909	36.61	232.11	0.27	1.32	0.00	-232.11	0.00	1.32
2.901	53.11	232.11	0.40	1.32	0.00	-232.11	0.00	1.32
3.893	67.77	232.11	0.51	1.32	0.00	-232.11	0.00	1.32

Loc.	Mu	øMn	As req.	As	Mu	øMn	As req.	As
4.886	80.61	232.11	0.61	1.32	0.00	-232.11	0.00	1.32
5.665	89.41	232.11	0.67	1.32	0.00	-232.11	0.00	1.32
5.670	89.45	232.11	0.67	1.32	0.00	-232.11	0.00	1.32
5.878	91.61	232.11	0.69	1.32	0.00	-232.11	0.00	1.32
6.870	100.77	232.11	0.76	1.32	0.00	-232.11	0.00	1.32
7.862	108.11	232.11	0.81	1.32	0.00	-232.11	0.00	1.32
8.854	113.61	232.11	0.85	1.32	0.00	-232.11	0.00	1.32
9.847	117.27	232.11	0.88	1.32	0.00	-232.11	0.00	1.32
10.839	119.11	232.11	0.90	1.32	0.00	-232.11	0.00	1.35
11.333	119.34	232.11	0.90	1.32	0.00	-232.11	0.00	1.35
11.337	119.34	232.11	0.90	1.32	0.00	-232.11	0.00	1.35
11.831	119.11	232.11	0.90	1.32	0.00	-232.11	0.00	1.19
12.823	117.28	232.11	0.88	1.32	0.00	-232.11	0.00	1.32
13.816	113.61	232.11	0.85	1.32	0.00	-232.11	0.00	1.32
14.808	108.11	232.11	0.81	1.32	0.00	-232.11	0.00	1.32
15.800	100.78	232.11	0.76	1.32	0.00	-232.11	0.00	1.32
16.792	91.61	232.11	0.69	1.32	0.00	-232.11	0.00	1.32
17.000	89.45	232.11	0.67	1.32	0.00	-232.11	0.00	1.32
17.005	89.41	232.11	0.67	1.32	0.00	-232.11	0.00	1.32
17.784	80.61	232.11	0.61	1.32	0.00	-232.11	0.00	1.32
18.777	67.78	232.11	0.51	1.32	0.00	-232.11	0.00	1.32
19.769	53.11	232.11	0.40	1.32	0.00	-232.11	0.00	1.32
20.761	36.61	232.11	0.27	1.32	0.00	-232.11	0.00	1.32
21.753	18.31	232.11	0.14	1.32	0.00	-232.11	0.00	1.32
22.670	18.31	0.00	0.14	0.00	0.00	0.00	0.00	0.00

TRANSVERSE REINFORCEMENT:

				Start		End		Stirrup	
Set	Size	Spacing	Num	Supp.	Loc. (ft)	Supp.	Loc. (ft)	Legs	Type
1	#4	18.00	15	1	1.083	1	21.583	2	Closed

TRANSVERSE BAR DESIGN DETAILS AND TORSION FORCE:

Loc. (ft)	Vu (kip)	øVn (kip)	Tu (kip-ft)	Av req. (in²)	Av prv. (in²)
0.000	19.28	92.17	0.03	0.00	0.00
0.917	19.28	92.17	0.03	0.00	0.00
1.909	17.55	131.67	0.03	0.23	0.27
2.901	15.71	131.67	0.03	0.23	0.27
3.893	13.86	131.67	0.03	0.23	0.27
4.208	13.27	131.67	0.03	0.23	0.27
4.886	12.01	131.67	0.03	0.23	0.27
5.665	10.56	131.67	0.03	0.23	0.27
5.670	10.55	131.67	0.03	0.23	0.27

Loc.	Vu	øVn	Tu	Av req.	Av prv.
5.878	10.16	131.67	0.03	0.23	0.27
6.870	8.31	131.67	0.03	0.23	0.27
7.862	6.47	131.67	0.03	0.23	0.27
8.854	4.62	131.67	0.03	0.23	0.27
9.847	2.77	131.67	0.03	0.23	0.27
10.839	0.92	131.67	0.03	0.23	0.27
11.333	0.00	131.67	0.03	0.23	0.27
11.337	0.00	131.67	0.03	0.23	0.27
11.831	0.92	131.67	0.03	0.23	0.27
12.823	2.77	131.67	0.03	0.23	0.27
13.816	4.62	131.67	0.03	0.23	0.27
14.808	6.47	131.67	0.03	0.23	0.27
15.800	8.31	131.67	0.03	0.23	0.27
16.792	10.16	131.67	0.03	0.23	0.27
17.000	10.55	131.67	0.03	0.23	0.27
17.005	10.56	131.67	0.03	0.23	0.27
17.784	12.01	131.67	0.03	0.23	0.27
18.462	13.27	131.67	0.03	0.23	0.27
18.777	13.86	131.67	0.03	0.23	0.27
19.769	15.71	131.67	0.03	0.23	0.27
20.761	17.55	131.67	0.03	0.23	0.27
21.753	19.28	92.17	0.03	0.00	0.00
22.670	19.28	92.17	0.03	0.00	0.00

TORSION CAPACITY:

0.75 Tn (kip-ft) _____ 29.48 Tu (kip-ft) _____ 0.03

DEFLECTIONS: (Camber = 0.000 in)

Type	Distance (ft)	Delta (in)	Ieff (in4)	Ieff/Ig	Ln/d	Status
Dead Load	11.63	0.015	135828.0	1.00	17239.3	
Live Load	15.81	0.000	135828.0	1.00	7503292404 2297344.0	**OK**
Long Term + LL	11.63	0.027	135828.0	1.00	9287.2	**OK**
Net Total Load	11.63	0.041	135828.0	1.00	6035.6	

Mcr Tension Bot (kip-ft) = 285.85 Mcr Tension Top (kip-ft) = 285.85
Ig (in4) = 135828.00 λ = 1.86
Controlling Deflection Ratio (Long Term + LL) = 0.026 **OK**

Span Moments For Ieff

	Mlt (kip-ft)	Mmid (kip-ft)	Mrt(kip-ft)
Dead Load	0.01	85.24	0.01
LL down defl	-0.00	-0.00	0.00
LL up defl	0.00	0.00	0.00

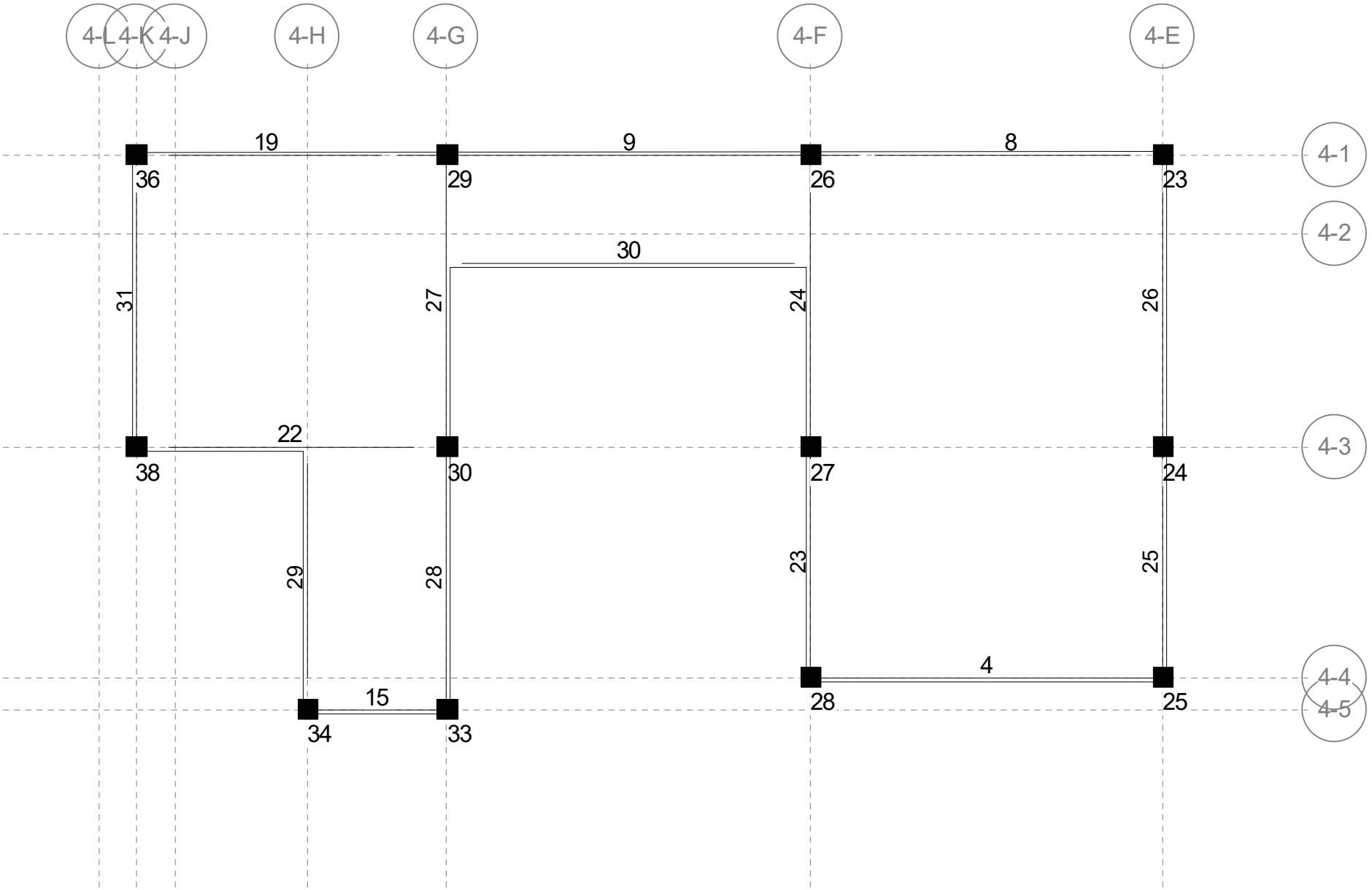
Building 4 Lateral Design

Floor Map

RAM Steel 17.04.02.12
DataBase: 30479 Building 4
Building Code: IBC

01/23/23 13:59:36
Steel Code: AISC 360-16 LRFD

Floor Type: ROOF **Beam Numbers**



Member Code Check

RAM Frame 17.04.02.12
DataBase: 30479 Building 4 — 01/24/23 09:11:09
Building Code: IBC — Steel Code: AISC360-16 LRFD

BEAM INFORMATION:

Story Level = ROOF Frame Number = 0 Beam Number = 4
Fy (ksi) = 50.00
Beam Size = W10X33

INPUT DESIGN PARAMETERS:

	X-Axis	Y-Axis
Lu for Axial (ft)	22.00	22.00
Lu for Bending (ft)	22.00	22.00
K	1.00	1.00
Top Flange Continuously Braced	No	
Bottom Flange Continuously Braced	No	

CONTROLLING BEAM SEGMENT FORCES - SHEAR

Load Combination: 1.200 D + 0.500 Rfp + 1.000 W1

Segment distance (ft) i - end 0.00
j - end 22.00

SHEAR CHECK:

Vux (kip)	=	-1.78	1.00Vnx (kip)	=	84.65	Vux/1.00Vnx	= 0.021
Vuy (kip)	=	-0.01	0.90Vny (kip)	=	186.98	Vuy/0.90Vny	= 0.000

CONTROLLING BEAM SEGMENT FORCES - AXIAL

Load Combination: 1.200 D + 1.000 W1

Segment distance (ft) i - end 0.00
j - end 22.00

AXIAL CHECK:

Pu (kip)	=	0.73	0.90Pnx (kip)	=	327.16	Pu/0.90Pnx	= 0.002
			0.90Pny (kip)	=	118.64	Pu/0.90Pny	= 0.006
			0.90Pn (kip)	=	118.64	Pu/0.90Pn	= 0.006

CONTROLLING BEAM SEGMENT FORCES - FLEXURE

Load Combination: 1.200 D + 0.500 Rfp + 1.000 W1

Segment distance (ft) i - end 0.00
j - end 22.00

CALCULATED PARAMETERS:

Pu (kip)	=	0.73	0.90Pnx (kip)	=	327.16
			0.90Pny (kip)	=	118.64
Mux (kip-ft)	=	-7.55	0.90Mnx (kip-ft)	=	145.50
Muy(kip-ft)	=	-0.03	0.90Mny (kip-ft)	=	52.50
			Mcx (kip-ft)	=	90.83
KL/Rx	=	62.91	KL/Ry	=	135.98
Cbx	=	2.77			

INTERACTION EQUATION:

Pu/0.90*Pn=0.002
Eq H1-3: 0.009 + 0.001 = 0.010
Eq H1-1b Per H1.3: 0.001 + 0.052 + 0.000 = 0.053

BEAM INFORMATION:

Story Level = ROOF Frame Number = 0 Beam Number = 9
Fy (ksi) = 50.00
Beam Size = W10X33

INPUT DESIGN PARAMETERS:

	X-Axis	Y-Axis
Lu for Axial (ft)	22.67	22.67
Lu for Bending (ft)	22.67	22.67
K	1.00	1.00
Top Flange Continuously Braced	No	
Bottom Flange Continuously Braced	No	

CONTROLLING BEAM SEGMENT FORCES - SHEAR

Load Combination: 1.200 D + 0.500 Rfp - 1.000 W1

Segment distance (ft) i - end 3.00
j - end 25.67

SHEAR CHECK:

Vux (kip)	=	2.56	1.00Vnx (kip)	=	84.65	Vux/1.00Vnx	= 0.030
Vuy (kip)	=	-0.01	0.90Vny (kip)	=	186.98	Vuy/0.90Vny	= 0.000

CONTROLLING BEAM SEGMENT FORCES - AXIAL

Load Combination: 1.200 D + 0.500 Rfp - 1.000 W2

Segment distance (ft) i - end 3.00
j - end 25.67

AXIAL CHECK:

Pu (kip)	=	4.59	0.90Pnx (kip)	=	321.36	Pu/0.90Pnx	= 0.014
			0.90Pny (kip)	=	111.73	Pu/0.90Pny	= 0.041
			0.90Pn (kip)	=	111.73	Pu/0.90Pn	= 0.041

CONTROLLING BEAM SEGMENT FORCES - FLEXURE

Load Combination: 0.900 D + 1.000 W8

Segment distance (ft) i - end 3.00
j - end 25.67

CALCULATED PARAMETERS:

Pu (kip)	=	3.46	0.90Pn (kip)	=	111.73
Mux (kip-ft)	=	-7.27	0.90Mnx (kip-ft)	=	145.50
Muy(kip-ft)	=	0.05	0.90Mny (kip-ft)	=	52.50
KL/Rx	=	64.83	KL/Ry	=	140.12
Cbx	=	2.95			

INTERACTION EQUATION:

Pu/0.90*Pn=0.031
Eq H1-1b: 0.015 + 0.050 + 0.001 = 0.066

BEAM INFORMATION:

Story Level = ROOF Frame Number = 0 Beam Number = 15
Fy (ksi) = 50.00
Beam Size = W10X33

INPUT DESIGN PARAMETERS:

	X-Axis	Y-Axis
Lu for Axial (ft)	8.67	8.67
Lu for Bending (ft)	8.67	8.67
K	1.00	1.00
Top Flange Continuously Braced	No	
Bottom Flange Continuously Braced	No	

CONTROLLING BEAM SEGMENT FORCES - SHEAR

Load Combination: 1.200 D + 0.500 Rfp + 1.000 W1

Segment distance (ft) i - end 0.00
j - end 8.67

SHEAR CHECK:

Vux (kip)	=	-2.10	1.00Vnx (kip)	=	84.65	Vux/1.00Vnx	= 0.025
Vuy (kip)	=	-0.04	0.90Vny (kip)	=	186.98	Vuy/0.90Vny	= 0.000

CONTROLLING BEAM SEGMENT FORCES - AXIAL

Load Combination: 0.900 D + 1.000 W10

Segment distance (ft) i - end 0.00
j - end 8.67

AXIAL CHECK:

Pu (kip)	=	0.84	0.90Pnx (kip)	=	417.75	Pu/0.90Pnx	= 0.002
			0.90Pny (kip)	=	354.20	Pu/0.90Pny	= 0.002
			0.90Pn (kip)	=	354.20	Pu/0.90Pn	= 0.002

CONTROLLING BEAM SEGMENT FORCES - FLEXURE

Load Combination: 1.200 D + 0.500 Rfp - 1.000 W7

Segment distance (ft) i - end 0.00
j - end 8.67

CALCULATED PARAMETERS:

Pu (kip)	=	-0.92	0.90Pn (kip)	=	354.20
Mux (kip-ft)	=	7.90	0.90Mnx (kip-ft)	=	145.50
Muy(kip-ft)	=	-0.09	0.90Mny (kip-ft)	=	52.50
L/r	=	53.59			
Cbx	=	2.50			

INTERACTION EQUATION:

Pu/0.90*Pn=0.002
Eq H1-1b: 0.001 + 0.054 + 0.002 = 0.057

BEAM INFORMATION:

Story Level = ROOF Frame Number = 0 Beam Number = 23
Fy (ksi) = 50.00
Beam Size = W10X49

INPUT DESIGN PARAMETERS:

	X-Axis	Y-Axis
Lu for Axial (ft)	14.34	14.34
Lu for Bending (ft)	14.34	14.34
K	1.00	1.00
Top Flange Continuously Braced	No	
Bottom Flange Continuously Braced	No	

CONTROLLING BEAM SEGMENT FORCES - SHEAR

Load Combination: 1.200 D + 1.600 Rfp + 0.500 W2

Segment distance (ft) i - end 0.00
j - end 14.34

SHEAR CHECK:

Vux (kip)	= -10.38	1.00Vnx (kip)	= 102.00	Vux/1.00Vnx	= 0.102
Vuy (kip)	= 0.00	0.90Vny (kip)	= 302.40	Vuy/0.90Vny	= 0.000

CONTROLLING BEAM SEGMENT FORCES - AXIAL

Load Combination: 1.200 D + 0.500 Rfp + 1.000 W8

Segment distance (ft) i - end 0.00
j - end 14.34

AXIAL CHECK:

Pu (kip)	= 1.16	0.90Pnx (kip)	= 577.82	Pu/0.90Pnx	= 0.002
		0.90Pny (kip)	= 464.09	Pu/0.90Pny	= 0.002
		0.90Pn (kip)	= 464.09	Pu/0.90Pn	= 0.002

CONTROLLING BEAM SEGMENT FORCES - FLEXURE

Load Combination: 1.200 D + 0.500 Rfp + 1.000 W2

Segment distance (ft) i - end 0.00
j - end 14.34

CALCULATED PARAMETERS:

Pu (kip)	= -0.18	0.90Pn (kip)	= 464.09
Mux (kip-ft)	= -29.13	0.90Mnx (kip-ft)	= 226.50
Muy(kip-ft)	= -0.03	0.90Mny (kip-ft)	= 106.13
L/r	= 67.57		
Cbx	= 2.46		

INTERACTION EQUATION:

Pu/0.90*Pn=0.000
Eq H1-1b: 0.000 + 0.129 + 0.000 = 0.129

BEAM INFORMATION:

Story Level = ROOF Frame Number = 0 Beam Number = 24
Fy (ksi) = 50.00
Beam Size = W10X49

INPUT DESIGN PARAMETERS:

	X-Axis	Y-Axis
Lu for Axial (ft)	18.33	11.50
Lu for Bending (ft)	18.33	11.50
K	1.00	1.00
Top Flange Continuously Braced	No	
Bottom Flange Continuously Braced	No	

CONTROLLING BEAM SEGMENT FORCES - SHEAR

Load Combination: 1.200 D + 1.600 Rfp - 0.500 W2

Segment distance (ft) i - end 0.00
j - end 11.50

SHEAR CHECK:

Vux (kip)	= 12.22	1.00Vnx (kip)	= 102.00	Vux/1.00Vnx	= 0.120
Vuy (kip)	= -0.02	0.90Vny (kip)	= 302.40	Vuy/0.90Vny	= 0.000

CONTROLLING BEAM SEGMENT FORCES - AXIAL

Load Combination: 1.200 D + 0.500 Rfp + 1.000 W5

Segment distance (ft) i - end 11.50
j - end 18.33

AXIAL CHECK:

Pu (kip)	= 1.99	0.90Pnx (kip)	= 537.33	Pu/0.90Pnx	= 0.004
		0.90Pny (kip)	= 600.74	Pu/0.90Pny	= 0.003
		0.90Pn (kip)	= 537.33	Pu/0.90Pn	= 0.004

CONTROLLING BEAM SEGMENT FORCES - FLEXURE

Load Combination: 1.200 D + 1.600 Rfp - 0.500 W2

Segment distance (ft) i - end 0.00
j - end 11.50

CALCULATED PARAMETERS:

Pu (kip)	= 1.18	0.90Pnx (kip)	= 537.33
		0.90Pny (kip)	= 522.81
Mux (kip-ft)	= -38.81	0.90Mnx (kip-ft)	= 226.50
Muy(kip-ft)	= -0.04	0.90Mny (kip-ft)	= 106.13
		Mcx (kip-ft)	= 217.28
KL/Rx	= 50.61	KL/Ry	= 54.19
Cbx	= 2.08		

INTERACTION EQUATION:

Pu/0.90*Pn=0.002
Eq H1-3: 0.003 + 0.007 = 0.011
Eq H1-1b Per H1.3: 0.001 + 0.171 + 0.000 = 0.172

BEAM INFORMATION:

Story Level = ROOF Frame Number = 0 Beam Number = 25
Fy (ksi) = 50.00
Beam Size = W10X33

INPUT DESIGN PARAMETERS:

	X-Axis	Y-Axis
Lu for Axial (ft)	14.34	14.34
Lu for Bending (ft)	14.34	14.34
K	1.00	1.00
Top Flange Continuously Braced	No	
Bottom Flange Continuously Braced	No	

CONTROLLING BEAM SEGMENT FORCES - SHEAR

Load Combination: 1.200 D + 1.600 Rfp + 0.500 W5

Segment distance (ft) i - end 0.00
j - end 14.34

SHEAR CHECK:

Vux (kip)	= -9.07	1.00Vnx (kip)	= 84.65	Vux/1.00Vnx	= 0.107
Vuy (kip)	= 0.01	0.90Vny (kip)	= 186.98	Vuy/0.90Vny	= 0.000

CONTROLLING BEAM SEGMENT FORCES - AXIAL

Load Combination: 1.200 D + 0.500 Rfp - 1.000 W10

Segment distance (ft) i - end 0.00
j - end 14.34

AXIAL CHECK:

Pu (kip)	= 1.07	0.90Pnx (kip)	= 386.40	Pu/0.90Pnx	= 0.003
		0.90Pny (kip)	= 246.02	Pu/0.90Pny	= 0.004
		0.90Pn (kip)	= 246.02	Pu/0.90Pn	= 0.004

CONTROLLING BEAM SEGMENT FORCES - FLEXURE

Load Combination: 1.200 D + 0.500 Rfp + 1.000 W5

Segment distance (ft) i - end 0.00
j - end 14.34

CALCULATED PARAMETERS:

Pu (kip)	= -0.15	0.90Pn (kip)	= 246.02
Mux (kip-ft)	= -23.13	0.90Mnx (kip-ft)	= 145.50
Muy(kip-ft)	= 0.04	0.90Mny (kip-ft)	= 52.50
L/r	= 88.63		
Cbx	= 2.44		

INTERACTION EQUATION:

Pu/0.90*Pn=0.000
Eq H1-1b: 0.000 + 0.159 + 0.001 = 0.160

BEAM INFORMATION:

Story Level = ROOF Frame Number = 0 Beam Number = 26
Fy (ksi) = 50.00
Beam Size = W10X33

INPUT DESIGN PARAMETERS:

	X-Axis	Y-Axis
Lu for Axial (ft)	18.33	18.33
Lu for Bending (ft)	18.33	18.33
K	1.00	1.00
Top Flange Continuously Braced	No	
Bottom Flange Continuously Braced	No	

CONTROLLING BEAM SEGMENT FORCES - SHEAR

Load Combination: 1.200 D + 1.600 Rfp - 0.500 W5

Segment distance (ft) i - end 0.00
j - end 18.33

SHEAR CHECK:

Vux (kip)	= 10.15	1.00Vnx (kip)	= 84.65	Vux/1.00Vnx	= 0.120
Vuy (kip)	= 0.02	0.90Vny (kip)	= 186.98	Vuy/0.90Vny	= 0.000

CONTROLLING BEAM SEGMENT FORCES - AXIAL

Load Combination: 1.200 D + 0.500 Rfp + 1.000 W5

Segment distance (ft) i - end 0.00
j - end 18.33

AXIAL CHECK:

Pu (kip)	= 1.70	0.90Pnx (kip)	= 357.43	Pu/0.90Pnx	= 0.005
		0.90Pny (kip)	= 170.94	Pu/0.90Pny	= 0.010
		0.90Pn (kip)	= 170.94	Pu/0.90Pn	= 0.010

CONTROLLING BEAM SEGMENT FORCES - FLEXURE

Load Combination: 1.200 D + 1.600 Rfp - 0.500 W5

Segment distance (ft) i - end 0.00
j - end 18.33

CALCULATED PARAMETERS:

Pu (kip)	= 0.78	0.90Pnx (kip)	= 357.43
		0.90Pny (kip)	= 170.94
Mux (kip-ft)	= -29.27	0.90Mnx (kip-ft)	= 145.50
Muy(kip-ft)	= -0.03	0.90Mny (kip-ft)	= 52.50
		Mcx (kip-ft)	= 104.40
KL/Rx	= 52.41	KL/Ry	= 113.30
Cbx	= 1.77		

INTERACTION EQUATION:

Pu/0.90*Pn=0.002
Eq H1-3: 0.007 + 0.025 = 0.032
Eq H1-1b Per H1.3: 0.001 + 0.201 + 0.000 = 0.202

BEAM INFORMATION:

Story Level = ROOF Frame Number = 0 Beam Number = 27
Fy (ksi) = 50.00
Beam Size = W10X49

INPUT DESIGN PARAMETERS:

	X-Axis	Y-Axis
Lu for Axial (ft)	18.33	11.50
Lu for Bending (ft)	18.33	11.50
K	1.00	1.00
Top Flange Continuously Braced	No	
Bottom Flange Continuously Braced	No	

CONTROLLING BEAM SEGMENT FORCES - SHEAR

Load Combination: 1.200 D + 1.600 Rfp - 0.500 W2

Segment distance (ft) i - end 0.00
j - end 11.50

SHEAR CHECK:

Vux (kip)	= 10.61	1.00Vnx (kip)	= 102.00	Vux/1.00Vnx	= 0.104
Vuy (kip)	= 0.04	0.90Vny (kip)	= 302.40	Vuy/0.90Vny	= 0.000

CONTROLLING BEAM SEGMENT FORCES - AXIAL

Load Combination: 1.200 D + 0.500 Rfp - 1.000 W7

Segment distance (ft) i - end 0.00
j - end 11.50

AXIAL CHECK:

Pu (kip)	= 3.82	0.90Pnx (kip)	= 537.33	Pu/0.90Pnx	= 0.007
		0.90Pny (kip)	= 522.81	Pu/0.90Pny	= 0.007
		0.90Pn (kip)	= 522.81	Pu/0.90Pn	= 0.007

CONTROLLING BEAM SEGMENT FORCES - FLEXURE

Load Combination: 1.200 D + 1.600 Rfp - 0.500 W2

Segment distance (ft) i - end 0.00
j - end 11.50

CALCULATED PARAMETERS:

Pu (kip)	= 2.43	0.90Pnx (kip)	= 537.33
		0.90Pny (kip)	= 522.81
Mux (kip-ft)	= -32.61	0.90Mnx (kip-ft)	= 226.50
Muy(kip-ft)	= -0.07	0.90Mny (kip-ft)	= 106.13
		Mcx (kip-ft)	= 217.28
KL/Rx	= 50.61	KL/Ry	= 54.19
Cbx	= 1.95		

INTERACTION EQUATION:

Pu/0.90*Pn=0.005
Eq H1-3: 0.007 + 0.006 = 0.013
Eq H1-1b Per H1.3: 0.002 + 0.144 + 0.000 = 0.146

BEAM INFORMATION:

Story Level = ROOF Frame Number = 0 Beam Number = 28
Fy (ksi) = 50.00
Beam Size = W10X49

INPUT DESIGN PARAMETERS:

	X-Axis	Y-Axis
Lu for Axial (ft)	16.34	16.34
Lu for Bending (ft)	16.34	16.34
K	1.00	1.00
Top Flange Continuously Braced	No	
Bottom Flange Continuously Braced	No	

CONTROLLING BEAM SEGMENT FORCES - SHEAR

Load Combination: 1.200 D + 1.600 Rfp + 0.500 W2

Segment distance (ft) i - end 0.00
j - end 16.34

SHEAR CHECK:

Vux (kip)	= -4.64	1.00Vnx (kip)	= 102.00	Vux/1.00Vnx	= 0.046
Vuy (kip)	= 0.01	0.90Vny (kip)	= 302.40	Vuy/0.90Vny	= 0.000

CONTROLLING BEAM SEGMENT FORCES - AXIAL

Load Combination: 1.200 D + 0.500 Rfp - 1.000 W7

Segment distance (ft) i - end 0.00
j - end 16.34

AXIAL CHECK:

Pu (kip)	= 2.50	0.90Pnx (kip)	= 558.39	Pu/0.90Pnx	= 0.004
		0.90Pny (kip)	= 420.09	Pu/0.90Pny	= 0.006
		0.90Pn (kip)	= 420.09	Pu/0.90Pn	= 0.006

CONTROLLING BEAM SEGMENT FORCES - FLEXURE

Load Combination: 1.200 D + 0.500 Rfp + 1.000 W2

Segment distance (ft) i - end 0.00
j - end 16.34

CALCULATED PARAMETERS:

Pu (kip)	= -1.23	0.90Pn (kip)	=	648.00
Mux (kip-ft)	= -21.28	0.90Mnx (kip-ft)	=	226.50
Muy(kip-ft)	= 0.08	0.90Mny (kip-ft)	=	106.13
L/r	= 76.99			
Cbx	= 2.51			

INTERACTION EQUATION:

Pu/0.90*Pn=0.002
Eq H1-1b: 0.001 + 0.094 + 0.001 = 0.096

BEAM INFORMATION:

Story Level = ROOF Frame Number = 0 Beam Number = 31
Fy (ksi) = 50.00
Beam Size = W10X33

INPUT DESIGN PARAMETERS:

	X-Axis	Y-Axis
Lu for Axial (ft)	18.33	18.33
Lu for Bending (ft)	18.33	18.33
K	1.00	1.00
Top Flange Continuously Braced	No	
Bottom Flange Continuously Braced	No	

CONTROLLING BEAM SEGMENT FORCES - SHEAR

Load Combination: 1.200 D + 1.600 Rfp - 0.500 W6

Segment distance (ft) i - end 0.00
j - end 18.33

SHEAR CHECK:

Vux (kip)	= 8.63	1.00Vnx (kip)	= 84.65	Vux/1.00Vnx	= 0.102
Vuy (kip)	= -0.02	0.90Vny (kip)	= 186.98	Vuy/0.90Vny	= 0.000

CONTROLLING BEAM SEGMENT FORCES - AXIAL

Load Combination: 1.200 D + 0.500 Rfp + 1.000 W6

Segment distance (ft) i - end 0.00
j - end 18.33

AXIAL CHECK:

Pu (kip)	= 3.69	0.90Pnx (kip)	= 357.43	Pu/0.90Pnx	= 0.010
		0.90Pny (kip)	= 170.94	Pu/0.90Pny	= 0.022
		0.90Pn (kip)	= 170.94	Pu/0.90Pn	= 0.022

CONTROLLING BEAM SEGMENT FORCES - FLEXURE

Load Combination: 1.200 D + 0.500 Rfp + 1.000 W6

Segment distance (ft) i - end 0.00
j - end 18.33

CALCULATED PARAMETERS:

Pu (kip)	= 3.69	0.90Pnx (kip)	= 357.43
		0.90Pny (kip)	= 170.94
Mux (kip-ft)	= -20.79	0.90Mnx (kip-ft)	= 145.50
Muy(kip-ft)	= 0.09	0.90Mny (kip-ft)	= 52.50
		Mcx (kip-ft)	= 104.40
KL/Rx	= 52.41	KL/Ry	= 113.30
Cbx	= 1.75		

INTERACTION EQUATION:

Pu/0.90*Pn=0.010
Eq H1-3: 0.032 + 0.013 = 0.045
Eq H1-1b Per H1.3: 0.005 + 0.143 + 0.000 = 0.148

Concrete Column Design

RAM Concrete Column v17.04.02.12
Database: 30479 Building 4 01/24/23 09:16:02
Building Code: IBC Concrete Code: ACI 318-11

COLUMN INFORMATION:

Level	ROOF	Frame Number:	0
Column Number:	23	Grid Location:	(61.67ft-0.00ft)
Size:	**16x16**	Depth x Width (in)	16.00x16.00
Reinforcement			
Longitudinal:	**8-#6 (3 x 1)**	As (in²)	3.52 (1.37%)
Transverse:	**#4@ 12.0" 0'-0"-12'-0"**		
Confinement	Tie	Clear Cover (in)	1.50
Shear Legs Major	2	Shear Legs Minor	2

Longitudinal Bars Max Tension Stress Ratio: 1.00

MATERIAL PROPERTIES:

f'c (ksi):	5.00	fy Long (ksi):	60.00
fct (ksi):	0.00	fyt Trans (ksi):	60.00
Conc. Weight (pcf):	145.00	Conc. Type:	NWC
Conc. Modulus (ksi):	4074.28	Reinf. Modulus (ksi):	29000.00

DESIGN PARAMETERS:

	Major	Minor
Unbraced Length (ft)	15.00	15.00
K	1.91	1.91
Braced Against Sidesway	No	No

LONGITUDINAL REINFORCEMENT:

Controlling Load Combination: (31) 1.200 D + 0.500 Rfp + 1.000 W5

Axial		Load (kip)	19.58
Moment	Top	Major(kip-ft)	-8.98
		Minor(kip-ft)	-1.76
Moment	Bottom	Major(kip-ft)	31.61
		Minor(kip-ft)	5.98

Calculated Parameters (Angle = 10.71 degrees): Ld/Cap = 0.28

0.90 Pn(kip):	19.58		
0.90 Mn Major(kip-ft):	111.61	0.90 Mn Minor(kip-ft):	21.10

	Major	Minor
Kl/r	74.44	74.44
Slender	Yes	Yes
Slenderness:		
Pu (kip)	19.58	19.58
Combination	31	31
Cm	0.49	0.54
K	1.00	1.00
δns	1.00	1.00
βd	0.92	0.92
Pc (kip)	1414.97	1414.97
Ig (in^4)	5461.33	5461.33

TRANSVERSE REINFORCEMENT:

Controlling Load Combination: (31) 1.200 D + 0.500 Rfp + 1.000 W5

	LC	Vu (kip)	Vc (kip)	Vs (kip)	ϕ	ϕ (Vc + Vs) (kip)	Ld/Cap
1 Major:	31	2.70	32.01	27.25	0.75	44.44	0.06
1 Minor:	39	1.52	31.93	27.25	0.75	44.38	0.03

TORSION CAPACITY:

Controlling Load Combination: (98) 0.900 D - 1.000 W12

0.75 Tn (kip-ft) 4.93 Tu (kip-ft) 0.01

COLUMN INFORMATION:

Level	ROOF	Frame Number:	0
Column Number:	24	Grid Location:	(61.67ft--18.33ft)
Size:	**16x16**	Depth x Width (in)	16.00x16.00

Reinforcement

Longitudinal:	**8-#6 (3 x 1)**	As (in²)	3.52 (1.37%)
Transverse:	**#4@ 12.0" 0'-0"-12'-0"**		
Confinement	Tie	Clear Cover (in)	1.50
Shear Legs Major	2	Shear Legs Minor	2

Longitudinal Bars Max Tension Stress Ratio: 1.00

MATERIAL PROPERTIES:

f'c (ksi):	5.00	fy Long (ksi):	60.00
fct (ksi):	0.00	fyt Trans (ksi):	60.00
Conc. Weight (pcf):	145.00	Conc. Type:	NWC
Conc. Modulus (ksi):	4074.28	Reinf. Modulus (ksi):	29000.00

DESIGN PARAMETERS:

	Major	Minor
Unbraced Length (ft)	14.59	15.00
K	1.43	1.91
Braced Against Sidesway	No	No

LONGITUDINAL REINFORCEMENT:

Controlling Load Combination: (43) 1.200 D + 0.500 Rfp - 1.000 W5

Axial		Load (kip)	42.70
Moment	Top	Major(kip-ft)	33.07
		Minor(kip-ft)	3.84
Moment	Bottom	Major(kip-ft)	-23.75
		Minor(kip-ft)	-3.84

Calculated Parameters (Angle = 6.63 degrees): Ld/Cap = 0.31

0.77 Pn(kip):	42.70		
0.77 Mn Major(kip-ft):	108.05	0.77 Mn Minor(kip-ft):	12.56

	Major	Minor
Kl/r	54.36	74.44
Slender	Yes	Yes

Slenderness:

Pu (kip)	42.70	42.70
Combination	43	43
Cm	0.31	0.36
K	1.00	1.00
δns	1.00	1.00
βd	0.95	0.95
Pc (kip)	1465.52	1387.37
Ig (in^4)	5461.33	5461.33

TRANSVERSE REINFORCEMENT:

Controlling Load Combination: (43) 1.200 D + 0.500 Rfp - 1.000 W5

	LC	Vu (kip)	Vc (kip)	Vs (kip)	ϕ	ϕ (Vc + Vs) (kip)	Ld/Cap
1 Major:	43	3.88	33.40	27.25	0.75	45.49	0.09
1 Minor:	87	1.87	32.61	27.25	0.75	44.90	0.04

TORSION CAPACITY:

Controlling Load Combination: (98) 0.900 D - 1.000 W12

0.75 Tn (kip-ft) 5.38 Tu (kip-ft) 0.03

COLUMN INFORMATION:

Level	ROOF	Frame Number:	0
Column Number:	25	Grid Location:	(61.67ft--32.67ft)
Size:	**16x16**	Depth x Width (in)	16.00x16.00
Reinforcement			
Longitudinal:	**8-#6 (3 x 1)**	As (in²)	3.52 (1.37%)
Transverse:	**#4@ 12.0" 0'-0"-12'-0"**		
Confinement	Tie	Clear Cover (in)	1.50
Shear Legs Major	2	Shear Legs Minor	2

Longitudinal Bars Max Tension Stress Ratio: 1.00

MATERIAL PROPERTIES:

f'c (ksi):	5.00	fy Long (ksi):	60.00
fct (ksi):	0.00	fyt Trans (ksi):	60.00
Conc. Weight (pcf):	145.00	Conc. Type:	NWC
Conc. Modulus (ksi):	4074.28	Reinf. Modulus (ksi):	29000.00

DESIGN PARAMETERS:

	Major	Minor
Unbraced Length (ft)	15.00	14.59
K	1.91	1.69
Braced Against Sidesway	No	No

LONGITUDINAL REINFORCEMENT:

Controlling Load Combination: (36) 1.200 D + 0.500 Rfp + 1.000 W10

Axial		Load (kip)	14.86
Moment	Top	Major(kip-ft)	-7.41
		Minor(kip-ft)	11.99
Moment	Bottom	Major(kip-ft)	28.19
		Minor(kip-ft)	-17.79

Calculated Parameters (Angle = 32.26 degrees): Ld/Cap = 0.30

0.89 Pn(kip):	14.86		
0.89 Mn Major(kip-ft):	95.46	0.89 Mn Minor(kip-ft):	60.24

	Major	Minor
Kl/r	74.44	63.96
Slender	Yes	Yes
Slenderness:		
Pu (kip)	14.86	14.86
Combination	36	36
Cm	0.49	0.33
K	1.00	1.00
δns	1.00	1.00
βd	1.00	1.00
Pc (kip)	1358.27	1434.78
Ig (in^4)	5461.33	5461.33

TRANSVERSE REINFORCEMENT:

Controlling Load Combination: (31) 1.200 D + 0.500 Rfp + 1.000 W5

	LC	Vu (kip)	Vc (kip)	Vs (kip)	ϕ	ϕ (Vc + Vs) (kip)	Ld/Cap
1 Major:	31	2.69	31.68	27.25	0.75	44.20	0.06
1 Minor:	27	2.60	31.80	27.25	0.75	44.29	0.06

TORSION CAPACITY:

Controlling Load Combination: (85) 0.900 D + 1.000 W11

0.75 Tn (kip-ft) 4.90 Tu (kip-ft) 0.02

COLUMN INFORMATION:

Level	ROOF	Frame Number:	0
Column Number:	26	Grid Location:	(39.67ft-0.00ft)
Size:	**16x16**	Depth x Width (in)	16.00x16.00

Reinforcement

Longitudinal:	**8-#6 (3 x 1)**	As (in²)	3.52 (1.37%)
Transverse:	**#4@ 12.0" 0'-0"-12'-0"**		
Confinement	Tie	Clear Cover (in)	1.50
Shear Legs Major	2	Shear Legs Minor	2

Longitudinal Bars Max Tension Stress Ratio: 1.00

MATERIAL PROPERTIES:

f'c (ksi):	5.00	fy Long (ksi):	60.00
fct (ksi):	0.00	fyt Trans (ksi):	60.00
Conc. Weight (pcf):	145.00	Conc. Type:	NWC
Conc. Modulus (ksi):	4074.28	Reinf. Modulus (ksi):	29000.00

DESIGN PARAMETERS:

	Major	Minor
Unbraced Length (ft)	15.00	14.59
K	1.91	1.70
Braced Against Sidesway	No	No

LONGITUDINAL REINFORCEMENT:

Controlling Load Combination: (46) 1.200 D + 0.500 Rfp - 1.000 W8

Axial		Load (kip)	28.72
Moment	Top	Major(kip-ft)	-9.13
		Minor(kip-ft)	-10.93
Moment	Bottom	Major(kip-ft)	23.37
		Minor(kip-ft)	19.27

Calculated Parameters (Angle = 39.51 degrees): Ld/Cap = 0.29

0.76 Pn(kip):	28.72		
0.76 Mn Major(kip-ft):	80.34	0.76 Mn Minor(kip-ft):	66.24

	Major	Minor
Kl/r	74.44	64.29
Slender	Yes	Yes

Slenderness:

	Major	Minor
Pu (kip)	28.72	28.72
Combination	46	46
Cm	0.44	0.37
K	1.00	1.00
δns	1.00	1.00
βd	0.93	0.93
Pc (kip)	1407.24	1486.51
Ig (in^4)	5461.33	5461.33

TRANSVERSE REINFORCEMENT:

Controlling Load Combination: (28) 1.200 D + 0.500 Rfp + 1.000 W2

	LC	Vu (kip)	Vc (kip)	Vs (kip)	ϕ	ϕ (Vc + Vs) (kip)	Ld/Cap
1 Major:	28	2.76	32.59	27.25	0.75	44.88	0.06
1 Minor:	39	2.38	32.50	27.25	0.75	44.81	0.05

TORSION CAPACITY:

Controlling Load Combination: (98) 0.900 D - 1.000 W12

0.75 Tn (kip-ft) 5.12 Tu (kip-ft) 0.01

COLUMN INFORMATION:

Level	ROOF	Frame Number:	0
Column Number:	27	Grid Location:	(39.67ft--18.33ft)
Size:	**16x16**	Depth x Width (in)	16.00x16.00

Reinforcement

Longitudinal:	**8-#6 (3 x 1)**	As (in²)	3.52 (1.37%)
Transverse:	**#4@ 12.0" 0'-0"-12'-0"**		
Confinement	Tie	Clear Cover (in)	1.50
Shear Legs Major	2	Shear Legs Minor	2

Longitudinal Bars Max Tension Stress Ratio: 1.00

MATERIAL PROPERTIES:

f'c (ksi):	5.00	fy Long (ksi):	60.00
fct (ksi):	0.00	fyt Trans (ksi):	60.00
Conc. Weight (pcf):	145.00	Conc. Type:	NWC
Conc. Modulus (ksi):	4074.28	Reinf. Modulus (ksi):	29000.00

DESIGN PARAMETERS:

	Major	Minor
Unbraced Length (ft)	14.58	15.00
K	1.35	1.91
Braced Against Sidesway	No	No

LONGITUDINAL REINFORCEMENT:

Controlling Load Combination: (40) 1.200 D + 0.500 Rfp - 1.000 W2

Axial		Load (kip)	44.92
Moment	Top	Major(kip-ft)	41.46
		Minor(kip-ft)	4.04
Moment	Bottom	Major(kip-ft)	-29.53
		Minor(kip-ft)	-4.04

Calculated Parameters (Angle = 5.57 degrees): Ld/Cap = 0.35

0.84 Pn(kip):	44.92		
0.84 Mn Major(kip-ft):	117.57	0.84 Mn Minor(kip-ft):	11.46

	Major	Minor
Kl/r	51.16	74.44
Slender	Yes	Yes

Slenderness:

Pu (kip)	44.92	44.92
Combination	40	40
Cm	0.32	0.37
K	1.00	1.00
δns	1.00	1.00
βd	0.95	0.95
Pc (kip)	1472.66	1391.99
Ig (in^4)	5461.33	5461.33

TRANSVERSE REINFORCEMENT:

Controlling Load Combination: (40) 1.200 D + 0.500 Rfp - 1.000 W2

	LC	Vu (kip)	Vc (kip)	Vs (kip)	ϕ	ϕ (Vc + Vs) (kip)	Ld/Cap
1 Major:	40	4.86	33.53	27.25	0.75	45.59	0.11
1 Minor:	87	1.91	32.81	27.25	0.75	45.05	0.04

TORSION CAPACITY:

Controlling Load Combination: (72) 1.200 D - 1.000 W10

0.75 Tn (kip-ft) 5.72 Tu (kip-ft) 0.02

COLUMN INFORMATION:

Level	ROOF	Frame Number:	0
Column Number:	28	Grid Location:	(39.67ft--32.67ft)
Size:	**16x16**	Depth x Width (in)	16.00x16.00
Reinforcement			
Longitudinal:	**8-#6 (3 x 1)**	As (in²)	3.52 (1.37%)
Transverse:	**#4@ 12.0" 0'-0"-12'-0"**		
Confinement	Tie	Clear Cover (in)	1.50
Shear Legs Major	2	Shear Legs Minor	2

Longitudinal Bars Max Tension Stress Ratio: 1.00

MATERIAL PROPERTIES:

f'c (ksi):	5.00	fy Long (ksi):	60.00
fct (ksi):	0.00	fyt Trans (ksi):	60.00
Conc. Weight (pcf):	145.00	Conc. Type:	NWC
Conc. Modulus (ksi):	4074.28	Reinf. Modulus (ksi):	29000.00

DESIGN PARAMETERS:

	Major	Minor
Unbraced Length (ft)	15.00	14.59
K	1.91	1.69
Braced Against Sidesway	No	No

LONGITUDINAL REINFORCEMENT:

Controlling Load Combination: (28) 1.200 D + 0.500 Rfp + 1.000 W2

Axial		Load (kip)	12.55
Moment	Top	Major(kip-ft)	-8.40
		Minor(kip-ft)	-3.45
Moment	Bottom	Major(kip-ft)	27.09
		Minor(kip-ft)	1.13

Calculated Parameters (Angle = 2.39 degrees): Ld/Cap = 0.25

0.90 Pn(kip):	12.55		
0.90 Mn Major(kip-ft):	110.49	0.90 Mn Minor(kip-ft):	4.61

	Major	Minor
Kl/r	74.44	63.96
Slender	Yes	Yes
Slenderness:		
Pu (kip)	12.55	12.55
Combination	28	28
Cm	0.48	0.52
K	1.00	1.00
δns	1.00	1.00
βd	1.06	1.06
Pc (kip)	1318.61	1392.89
Ig (in^4)	5461.33	5461.33

TRANSVERSE REINFORCEMENT:

Controlling Load Combination: (28) 1.200 D + 0.500 Rfp + 1.000 W2

	LC	Vu (kip)	Vc (kip)	Vs (kip)	ϕ	ϕ (Vc + Vs) (kip)	Ld/Cap
1 Major:	28	2.36	31.59	27.25	0.75	44.13	0.05
1 Minor:	63	2.10	31.68	27.25	0.75	44.20	0.05

TORSION CAPACITY:

Controlling Load Combination: (98) 0.900 D - 1.000 W12

0.75 Tn (kip-ft) 4.83 Tu (kip-ft) 0.04

COLUMN INFORMATION:

Level	ROOF	Frame Number:	0
Column Number:	29	Grid Location:	(17.00ft-0.00ft)
Size:	**16x16**	Depth x Width (in)	16.00x16.00

Reinforcement

Longitudinal:	**8-#6 (3 x 1)**	As (in²)	3.52 (1.37%)
Transverse:	**#4@ 12.0" 0'-0"-12'-0"**		
Confinement	Tie	Clear Cover (in)	1.50
Shear Legs Major	2	Shear Legs Minor	2

Longitudinal Bars Max Tension Stress Ratio: 1.00

MATERIAL PROPERTIES:

f'c (ksi):	5.00	fy Long (ksi):	60.00
fct (ksi):	0.00	fyt Trans (ksi):	60.00
Conc. Weight (pcf):	145.00	Conc. Type:	NWC
Conc. Modulus (ksi):	4074.28	Reinf. Modulus (ksi):	29000.00

DESIGN PARAMETERS:

	Major	Minor
Unbraced Length (ft)	15.00	14.59
K	1.91	1.70
Braced Against Sidesway	No	No

LONGITUDINAL REINFORCEMENT:

Controlling Load Combination: (46) 1.200 D + 0.500 Rfp - 1.000 W8

Axial		Load (kip)	27.52
Moment	Top	Major(kip-ft)	-8.26
		Minor(kip-ft)	-12.34
Moment	Bottom	Major(kip-ft)	18.37
		Minor(kip-ft)	20.29

Calculated Parameters (Angle = 47.85 degrees): Ld/Cap = 0.27

0.75 Pn(kip):	27.52		
0.75 Mn Major(kip-ft):	68.70	0.75 Mn Minor(kip-ft):	75.90

	Major	Minor
Kl/r	74.44	64.29
Slender	Yes	Yes

Slenderness:

Pu (kip)	27.52	27.52
Combination	46	46
Cm	0.42	0.36
K	1.00	1.00
δns	1.00	1.00
βd	0.92	0.92
Pc (kip)	1411.14	1490.63
Ig (in^4)	5461.33	5461.33

TRANSVERSE REINFORCEMENT:

Controlling Load Combination: (39) 1.200 D + 0.500 Rfp - 1.000 W1

	LC	Vu (kip)	Vc (kip)	Vs (kip)	ϕ	ϕ (Vc + Vs) (kip)	Ld/Cap
1 Major:	28	2.22	32.50	27.25	0.75	44.81	0.05
1 Minor:	39	2.53	32.44	27.25	0.75	44.77	0.06

TORSION CAPACITY:

Controlling Load Combination: (82) 0.900 D + 1.000 W8

0.75 Tn (kip-ft) 5.06 Tu (kip-ft) 0.00

COLUMN INFORMATION:

Level	ROOF	Frame Number:	0
Column Number:	30	Grid Location:	(17.00ft--18.33ft)
Size:	**16x16**	Depth x Width (in)	16.00x16.00

Reinforcement

Longitudinal:	**8-#6 (3 x 1)**	As (in²)	3.52 (1.37%)
Transverse:	**#4@ 12.0" 0'-0"-12'-0"**		
Confinement	Tie	Clear Cover (in)	1.50
Shear Legs Major	2	Shear Legs Minor	2

Longitudinal Bars Max Tension Stress Ratio: 1.00

MATERIAL PROPERTIES:

f'c (ksi):	5.00	fy Long (ksi):	60.00
fct (ksi):	0.00	fyt Trans (ksi):	60.00
Conc. Weight (pcf):	145.00	Conc. Type:	NWC
Conc. Modulus (ksi):	4074.28	Reinf. Modulus (ksi):	29000.00

DESIGN PARAMETERS:

	Major	Minor
Unbraced Length (ft)	14.58	15.00
K	1.36	1.91
Braced Against Sidesway	No	No

LONGITUDINAL REINFORCEMENT:

Controlling Load Combination: (40) 1.200 D + 0.500 Rfp - 1.000 W2

Axial		Load (kip)	38.03
Moment	Top	Major(kip-ft)	48.63
		Minor(kip-ft)	-3.42
Moment	Bottom	Major(kip-ft)	-33.45
		Minor(kip-ft)	3.42

Calculated Parameters (Angle = 4.03 degrees): Ld/Cap = 0.40

0.90 Pn(kip):	38.03		
0.90 Mn Major(kip-ft):	121.57	0.90 Mn Minor(kip-ft):	8.56

	Major	Minor
Kl/r	51.59	74.44
Slender	Yes	Yes

Slenderness:

Pu (kip)	38.03	38.03
Combination	40	40
Cm	0.32	0.30
K	1.00	1.00
δns	1.00	1.00
βd	0.95	0.95
Pc (kip)	1470.65	1390.08
Ig (in^4)	5461.33	5461.33

TRANSVERSE REINFORCEMENT:

Controlling Load Combination: (40) 1.200 D + 0.500 Rfp - 1.000 W2

	LC	Vu (kip)	Vc (kip)	Vs (kip)	ϕ	ϕ (Vc + Vs) (kip)	Ld/Cap
1 Major:	40	5.62	33.12	27.25	0.75	45.28	0.12
1 Minor:	87	1.97	32.40	27.25	0.75	44.74	0.04

TORSION CAPACITY:

Controlling Load Combination: (40) 1.200 D + 0.500 Rfp - 1.000 W2

0.75 Tn (kip-ft) 5.59 Tu (kip-ft) 0.00

COLUMN INFORMATION:

Level	ROOF	Frame Number:	0
Column Number:	33	Grid Location:	(17.00ft--34.67ft)
Size:	**16x16**	Depth x Width (in)	16.00x16.00

Reinforcement

Longitudinal:	**8-#6 (3 x 1)**	As (in²)	3.52 (1.37%)
Transverse:	**#4@ 12.0" 0'-0"-12'-0"**		
Confinement	Tie	Clear Cover (in)	1.50
Shear Legs Major	2	Shear Legs Minor	2

Longitudinal Bars Max Tension Stress Ratio: 1.00

MATERIAL PROPERTIES:

f'c (ksi):	5.00	fy Long (ksi):	60.00
fct (ksi):	0.00	fyt Trans (ksi):	60.00
Conc. Weight (pcf):	145.00	Conc. Type:	NWC
Conc. Modulus (ksi):	4074.28	Reinf. Modulus (ksi):	29000.00

DESIGN PARAMETERS:

	Major	Minor
Unbraced Length (ft)	15.00	14.59
K	1.91	1.45
Braced Against Sidesway	No	No

LONGITUDINAL REINFORCEMENT:

Controlling Load Combination: (33) 1.200 D + 0.500 Rfp + 1.000 W7

Axial		Load (kip)	10.87
Moment	Top	Major(kip-ft)	-4.27
		Minor(kip-ft)	13.98
Moment	Bottom	Major(kip-ft)	16.06
		Minor(kip-ft)	-22.28

Calculated Parameters (Angle = 54.21 degrees): Ld/Cap = 0.25

0.89 Pn(kip):	10.87		
0.89 Mn Major(kip-ft):	65.33	0.89 Mn Minor(kip-ft):	90.63

	Major	Minor
Kl/r	74.44	54.95
Slender	Yes	Yes

Slenderness:

Pu (kip)	10.87	10.87
Combination	33	33
Cm	0.49	0.35
K	1.00	1.00
δns	1.00	1.00
βd	0.76	0.76
Pc (kip)	1541.56	1628.40
Ig (in^4)	5461.33	5461.33

TRANSVERSE REINFORCEMENT:

Controlling Load Combination: (27) 1.200 D + 0.500 Rfp + 1.000 W1

	LC	Vu (kip)	Vc (kip)	Vs (kip)	ϕ	ϕ (Vc + Vs) (kip)	Ld/Cap
1 Major:	28	1.75	31.34	27.25	0.75	43.94	0.04
1 Minor:	27	2.58	31.53	27.25	0.75	44.09	0.06

TORSION CAPACITY:

Controlling Load Combination: (82) 0.900 D + 1.000 W8

0.75 Tn (kip-ft) 4.79 Tu (kip-ft) 0.02

COLUMN INFORMATION:

Level	ROOF	Frame Number:	0
Column Number:	34	Grid Location:	(8.33ft--34.67ft)
Size:	**16x16**	Depth x Width (in)	16.00x16.00

Reinforcement

Longitudinal:	**8-#6 (3 x 1)**	As (in²)	3.52 (1.37%)
Transverse:	**#4@ 12.0" 0'-0"-12'-0"**		
Confinement	Tie	Clear Cover (in)	1.50
Shear Legs Major	2	Shear Legs Minor	2

Longitudinal Bars Max Tension Stress Ratio: 1.00

MATERIAL PROPERTIES:

f'c (ksi):	5.00	fy Long (ksi):	60.00
fct (ksi):	0.00	fyt Trans (ksi):	60.00
Conc. Weight (pcf):	145.00	Conc. Type:	NWC
Conc. Modulus (ksi):	4074.28	Reinf. Modulus (ksi):	29000.00

DESIGN PARAMETERS:

	Major	Minor
Unbraced Length (ft)	15.00	14.59
K	1.91	1.45
Braced Against Sidesway	No	No

LONGITUDINAL REINFORCEMENT:

Controlling Load Combination: (33) 1.200 D + 0.500 Rfp + 1.000 W7

Axial		Load (kip)	6.70
Moment	Top	Major(kip-ft)	-3.33
		Minor(kip-ft)	13.55
Moment	Bottom	Major(kip-ft)	13.55
		Minor(kip-ft)	-22.05

Calculated Parameters (Angle = 58.43 degrees): Ld/Cap = 0.23

0.90 Pn(kip):	6.70		
0.90 Mn Major(kip-ft):	57.76	0.90 Mn Minor(kip-ft):	93.98

	Major	Minor
Kl/r	74.44	54.95
Slender	Yes	Yes

Slenderness:

Pu (kip)	6.70	6.70
Combination	33	33
Cm	0.50	0.35
K	1.00	1.00
δns	1.00	1.00
βd	1.45	1.45
Pc (kip)	1107.91	1170.31
Ig (in^4)	5461.33	5461.33

TRANSVERSE REINFORCEMENT:

Controlling Load Combination: (27) 1.200 D + 0.500 Rfp + 1.000 W1

	LC	Vu (kip)	Vc (kip)	Vs (kip)	ϕ	ϕ (Vc + Vs) (kip)	Ld/Cap
1 Major:	28	1.36	31.37	27.25	0.75	43.96	0.03
1 Minor:	27	2.51	31.23	27.25	0.75	43.86	0.06

TORSION CAPACITY:

Controlling Load Combination: (82) 0.900 D + 1.000 W8

0.75 Tn (kip-ft) 4.70 Tu (kip-ft) 0.00

COLUMN INFORMATION:

Level	ROOF	Frame Number:	0
Column Number:	38	Grid Location:	(-2.50ft--18.33ft)
Size:	**16x16**	Depth x Width (in)	16.00x16.00

Reinforcement

Longitudinal:	**8-#6 (3 x 1)**	As (in²)	3.52 (1.37%)
Transverse:	**#4@ 12.0" 0'-0"-12'-0"**		
Confinement	Tie	Clear Cover (in)	1.50
Shear Legs Major	2	Shear Legs Minor	2

Longitudinal Bars Max Tension Stress Ratio: 1.00

MATERIAL PROPERTIES:

f'c (ksi):	5.00	fy Long (ksi):	60.00
fct (ksi):	0.00	fyt Trans (ksi):	60.00
Conc. Weight (pcf):	145.00	Conc. Type:	NWC
Conc. Modulus (ksi):	4074.28	Reinf. Modulus (ksi):	29000.00

DESIGN PARAMETERS:

	Major	Minor
Unbraced Length (ft)	14.59	15.00
K	1.64	1.91
Braced Against Sidesway	No	No

LONGITUDINAL REINFORCEMENT:

Controlling Load Combination: (20) 1.200 D + 1.600 Rfp - 0.500 W6

Axial		Load (kip)	24.08
Moment	Top	Major(kip-ft)	42.59
		Minor(kip-ft)	-2.17
Moment	Bottom	Major(kip-ft)	-24.66
		Minor(kip-ft)	2.17

Calculated Parameters (Angle = 2.91 degrees): Ld/Cap = 0.37

0.90 Pn(kip):	24.08		
0.90 Mn Major(kip-ft):	115.72	0.90 Mn Minor(kip-ft):	5.89

	Major	Minor
Kl/r	62.01	74.44
Slender	Yes	Yes

Slenderness:

Pu (kip)	24.08	24.08
Combination	20	20
Cm	0.37	0.47
K	1.00	1.00
δns	1.00	1.00
βd	0.84	0.84
Pc (kip)	1552.46	1469.68
Ig (in^4)	5461.33	5461.33

TRANSVERSE REINFORCEMENT:

Controlling Load Combination: (44) 1.200 D + 0.500 Rfp - 1.000 W6

	LC	Vu (kip)	Vc (kip)	Vs (kip)	ϕ	ϕ (Vc + Vs) (kip)	Ld/Cap
1 Major:	44	4.92	32.18	27.25	0.75	44.57	0.11
1 Minor:	87	1.45	31.79	27.25	0.75	44.28	0.03

TORSION CAPACITY:

Controlling Load Combination: (40) 1.200 D + 0.500 Rfp - 1.000 W2

0.75 Tn (kip-ft) 5.18 Tu (kip-ft) 0.02

COLUMN INFORMATION:

Level	ROOF	Frame Number:	0
Column Number:	36	Grid Location:	(-2.50ft--0.00ft)
Size:	**16X32**	Depth x Width (in)	32.00x16.00

Reinforcement

Longitudinal:	**14-#6 (4 x 3)**	As (in²)	6.16 (1.20%)
Transverse:	**#4@ 12.0" 0'-0"-12'-0"**		
Confinement	Tie	Clear Cover (in)	1.50
Shear Legs Major	2	Shear Legs Minor	2

Longitudinal Bars Max Tension Stress Ratio: 1.00

MATERIAL PROPERTIES:

f'c (ksi):	5.00	fy Long (ksi):	60.00
fct (ksi):	0.00	fyt Trans (ksi):	60.00
Conc. Weight (pcf):	145.00	Conc. Type:	NWC
Conc. Modulus (ksi):	4074.28	Reinf. Modulus (ksi):	29000.00

DESIGN PARAMETERS:

	Major	Minor
Unbraced Length (ft)	14.59	15.00
K	2.16	1.91
Braced Against Sidesway	No	No

LONGITUDINAL REINFORCEMENT:

Controlling Load Combination: (32) 1.200 D + 0.500 Rfp + 1.000 W6

Axial		Load (kip)	24.96
Moment	Top	Major(kip-ft)	-55.51
		Minor(kip-ft)	-2.25
Moment	Bottom	Major(kip-ft)	123.38
		Minor(kip-ft)	4.32

Calculated Parameters (Angle = 2.00 degrees): Ld/Cap = 0.30

0.90 Pn(kip):	24.96		
0.90 Mn Major(kip-ft):	416.24	0.90 Mn Minor(kip-ft):	14.56

	Major	Minor
Kl/r	41.01	74.44
Slender	Yes	Yes

Slenderness:

Pu (kip)	24.96	24.96
Combination	32	32
Cm	0.42	0.59
K	1.00	1.00
δns	1.00	1.00
βd	0.92	0.92
Pc (kip)	11926.55	2822.64
Ig (in^4)	43690.67	10922.67

TRANSVERSE REINFORCEMENT:

Controlling Load Combination: (32) 1.200 D + 0.500 Rfp + 1.000 W6

	LC	Vu (kip)	Vc (kip)	Vs (kip)	ϕ	ϕ (Vc + Vs) (kip)	Ld/Cap
1 Major:	32	12.25	68.67	59.25	0.75	95.94	0.13
1 Minor:	39	2.63	63.14	27.25	0.75	67.79	0.04

TORSION CAPACITY:

Controlling Load Combination: (61) 1.200 D + 1.000 W11

0.75 Tn (kip-ft) 12.96 Tu (kip-ft) 0.11

COLUMN INFORMATION:

Level	FIRST FLOOR	Frame Number:	0
Column Number:	33	Grid Location:	(61.67ft-0.00ft)
Size:	**16x16**	Depth x Width (in)	16.00x16.00

Reinforcement

Longitudinal:	**8-#6 (3 x 1)**	As (in²)	3.52 (1.37%)
Transverse:	**#4@ 12.0" 0'-0"-3'-0"**		
Confinement	Tie	Clear Cover (in)	1.50
Shear Legs Major	2	Shear Legs Minor	2

Longitudinal Bars Max Tension Stress Ratio: 1.00

MATERIAL PROPERTIES:

f'c (ksi):	5.00	fy Long (ksi):	60.00
fct (ksi):	0.00	fyt Trans (ksi):	60.00
Conc. Weight (pcf):	145.00	Conc. Type:	NWC
Conc. Modulus (ksi):	4074.28	Reinf. Modulus (ksi):	29000.00

DESIGN PARAMETERS:

	Major	Minor
Unbraced Length (ft)	15.00	15.00
K	1.91	1.91
Braced Against Sidesway	No	No

LONGITUDINAL REINFORCEMENT:

Controlling Load Combination: (31) 1.200 D + 0.500 Rfp + 1.000 W5

Axial		Load (kip)	20.54
Moment	Top	Major(kip-ft)	-8.98
		Minor(kip-ft)	-1.85
Moment	Bottom	Major(kip-ft)	31.61
		Minor(kip-ft)	5.98

Calculated Parameters (Angle = 10.71 degrees): Ld/Cap = 0.28

0.90 Pn(kip):	20.54		
0.90 Mn Major(kip-ft):	112.04	0.90 Mn Minor(kip-ft):	21.18

	Major	Minor
Kl/r	74.44	74.44
Slender	Yes	Yes

Slenderness:

	Major	Minor
Pu (kip)	20.54	20.54
Combination	31	31
Cm	0.49	0.54
K	1.00	1.00
δns	1.00	1.00
βd	0.92	0.92
Pc (kip)	1412.08	1412.08
Ig (in^4)	5461.33	5461.33

TRANSVERSE REINFORCEMENT:

Controlling Load Combination: (31) 1.200 D + 0.500 Rfp + 1.000 W5

	LC	Vu (kip)	Vc (kip)	Vs (kip)	ϕ	ϕ (Vc + Vs) (kip)	Ld/Cap
1 Major:	31	2.70	32.07	27.25	0.75	44.49	0.06
1 Minor:	39	1.52	31.99	27.25	0.75	44.43	0.03

TORSION CAPACITY:

Controlling Load Combination: (22) 1.200 D + 1.600 Rfp - 0.500 W8

0.75 Tn (kip-ft) 5.15 Tu (kip-ft) 0.02

COLUMN INFORMATION:

Level	FIRST FLOOR	Frame Number:	0
Column Number:	34	Grid Location:	(61.67ft--18.33ft)
Size:	**16x16**	Depth x Width (in)	16.00x16.00

Reinforcement

Longitudinal:	**8-#6 (3 x 1)**	As (in²)	3.52 (1.37%)
Transverse:	**#4@ 12.0" 0'-0"-3'-0"**		
Confinement	Tie	Clear Cover (in)	1.50
Shear Legs Major	2	Shear Legs Minor	2

Longitudinal Bars Max Tension Stress Ratio: 1.00

MATERIAL PROPERTIES:

f'c (ksi):	5.00	fy Long (ksi):	60.00
fct (ksi):	0.00	fyt Trans (ksi):	60.00
Conc. Weight (pcf):	145.00	Conc. Type:	NWC
Conc. Modulus (ksi):	4074.28	Reinf. Modulus (ksi):	29000.00

DESIGN PARAMETERS:

	Major	Minor
Unbraced Length (ft)	14.59	15.00
K	1.43	1.91
Braced Against Sidesway	No	No

LONGITUDINAL REINFORCEMENT:

Controlling Load Combination: (43) 1.200 D + 0.500 Rfp - 1.000 W5

Axial		Load (kip)	43.66
Moment	Top	Major(kip-ft)	33.07
		Minor(kip-ft)	3.93
Moment	Bottom	Major(kip-ft)	-23.75
		Minor(kip-ft)	-3.93

Calculated Parameters (Angle = 6.78 degrees): Ld/Cap = 0.31

0.76 Pn(kip):	43.66		
0.76 Mn Major(kip-ft):	107.51	0.76 Mn Minor(kip-ft):	12.78

	Major	Minor
Kl/r	54.36	74.44
Slender	Yes	Yes

Slenderness:

Pu (kip)	43.66	43.66
Combination	43	43
Cm	0.31	0.36
K	1.00	1.00
δns	1.00	1.00
βd	0.96	0.96
Pc (kip)	1464.76	1386.65
Ig (in^4)	5461.33	5461.33

TRANSVERSE REINFORCEMENT:

Controlling Load Combination: (43) 1.200 D + 0.500 Rfp - 1.000 W5

	LC	Vu (kip)	Vc (kip)	Vs (kip)	ϕ	ϕ (Vc + Vs) (kip)	Ld/Cap
1 Major:	43	3.88	33.46	27.25	0.75	45.53	0.09
1 Minor:	87	1.87	32.65	27.25	0.75	44.93	0.04

TORSION CAPACITY:

Controlling Load Combination: (10) 1.200 D + 1.600 Rfp + 0.500 W8

0.75 Tn (kip-ft) 5.86 Tu (kip-ft) 0.01

COLUMN INFORMATION:

Level	FIRST FLOOR	Frame Number:	0
Column Number:	35	Grid Location:	(61.67ft--32.67ft)
Size:	**16x16**	Depth x Width (in)	16.00x16.00

Reinforcement

Longitudinal:	**8-#6 (3 x 1)**	As (in²)	3.52 (1.37%)
Transverse:	**#4@ 12.0" 0'-0"-3'-0"**		
Confinement	Tie	Clear Cover (in)	1.50
Shear Legs Major	2	Shear Legs Minor	2

Longitudinal Bars Max Tension Stress Ratio: 1.00

MATERIAL PROPERTIES:

f'c (ksi):	5.00	fy Long (ksi):	60.00
fct (ksi):	0.00	fyt Trans (ksi):	60.00
Conc. Weight (pcf):	145.00	Conc. Type:	NWC
Conc. Modulus (ksi):	4074.28	Reinf. Modulus (ksi):	29000.00

DESIGN PARAMETERS:

	Major	Minor
Unbraced Length (ft)	15.00	14.59
K	1.91	1.69
Braced Against Sidesway	No	No

LONGITUDINAL REINFORCEMENT:

Controlling Load Combination: (36) 1.200 D + 0.500 Rfp + 1.000 W10

Axial		Load (kip)	15.82
Moment	Top	Major(kip-ft)	-7.41
		Minor(kip-ft)	11.99
Moment	Bottom	Major(kip-ft)	28.19
		Minor(kip-ft)	-17.79

Calculated Parameters (Angle = 32.26 degrees): Ld/Cap = 0.30

0.89 Pn(kip):	15.82		
0.89 Mn Major(kip-ft):	95.01	0.89 Mn Minor(kip-ft):	59.96

	Major	Minor
Kl/r	74.44	63.96
Slender	Yes	Yes

Slenderness:

Pu (kip)	15.82	15.82
Combination	36	36
Cm	0.49	0.33
K	1.00	1.00
δns	1.00	1.00
βd	1.00	1.00
Pc (kip)	1358.11	1434.61
Ig (in^4)	5461.33	5461.33

TRANSVERSE REINFORCEMENT:

Controlling Load Combination: (31) 1.200 D + 0.500 Rfp + 1.000 W5

	LC	Vu (kip)	Vc (kip)	Vs (kip)	ϕ	ϕ (Vc + Vs) (kip)	Ld/Cap
1 Major:	31	2.69	31.74	27.25	0.75	44.24	0.06
1 Minor:	27	2.60	31.86	27.25	0.75	44.33	0.06

TORSION CAPACITY:

Controlling Load Combination: (3) 1.200 D + 1.600 Rfp + 0.500 W1

0.75 Tn (kip-ft) 5.06 Tu (kip-ft) 0.01

COLUMN INFORMATION:

Level	FIRST FLOOR	Frame Number:	0
Column Number:	36	Grid Location:	(39.67ft-0.00ft)
Size:	**16x16**	Depth x Width (in)	16.00x16.00

Reinforcement

Longitudinal:	**8-#6 (3 x 1)**	As (in²)	3.52 (1.37%)
Transverse:	**#4@ 12.0" 0'-0"-3'-0"**		
Confinement	Tie	Clear Cover (in)	1.50
Shear Legs Major	2	Shear Legs Minor	2

Longitudinal Bars Max Tension Stress Ratio: 1.00

MATERIAL PROPERTIES:

f'c (ksi):	5.00	fy Long (ksi):	60.00
fct (ksi):	0.00	fyt Trans (ksi):	60.00
Conc. Weight (pcf):	145.00	Conc. Type:	NWC
Conc. Modulus (ksi):	4074.28	Reinf. Modulus (ksi):	29000.00

DESIGN PARAMETERS:

	Major	Minor
Unbraced Length (ft)	15.00	14.59
K	1.91	1.70
Braced Against Sidesway	No	No

LONGITUDINAL REINFORCEMENT:

Controlling Load Combination: (46) 1.200 D + 0.500 Rfp - 1.000 W8

Axial		Load (kip)	29.68
Moment	Top	Major(kip-ft)	-9.13
		Minor(kip-ft)	-10.93
Moment	Bottom	Major(kip-ft)	23.37
		Minor(kip-ft)	19.27

Calculated Parameters (Angle = 39.50 degrees): Ld/Cap = 0.29

0.76 Pn(kip):	29.68		
0.76 Mn Major(kip-ft):	80.13	0.76 Mn Minor(kip-ft):	66.07

	Major	Minor
Kl/r	74.44	64.29
Slender	Yes	Yes
Slenderness:		
Pu (kip)	29.68	29.68
Combination	46	46
Cm	0.44	0.37
K	1.00	1.00
δns	1.00	1.00
βd	0.93	0.93
Pc (kip)	1405.51	1484.68
Ig (in^4)	5461.33	5461.33

TRANSVERSE REINFORCEMENT:

Controlling Load Combination: (28) 1.200 D + 0.500 Rfp + 1.000 W2

	LC	Vu (kip)	Vc (kip)	Vs (kip)	ϕ	ϕ (Vc + Vs) (kip)	Ld/Cap
1 Major:	28	2.76	32.65	27.25	0.75	44.92	0.06
1 Minor:	39	2.38	32.56	27.25	0.75	44.86	0.05

TORSION CAPACITY:

Controlling Load Combination: (22) 1.200 D + 1.600 Rfp - 0.500 W8

0.75 Tn (kip-ft) 5.44 Tu (kip-ft) 0.04

COLUMN INFORMATION:

Level	FIRST FLOOR	Frame Number:	0
Column Number:	37	Grid Location:	(39.67ft--18.33ft)
Size:	**16x16**	Depth x Width (in)	16.00x16.00

Reinforcement

Longitudinal:	**8-#6 (3 x 1)**	As (in²)	3.52 (1.37%)
Transverse:	**#4@ 12.0" 0'-0"-3'-0"**		
Confinement	Tie	Clear Cover (in)	1.50
Shear Legs Major	2	Shear Legs Minor	2

Longitudinal Bars Max Tension Stress Ratio: 1.00

MATERIAL PROPERTIES:

f'c (ksi):	5.00	fy Long (ksi):	60.00
fct (ksi):	0.00	fyt Trans (ksi):	60.00
Conc. Weight (pcf):	145.00	Conc. Type:	NWC
Conc. Modulus (ksi):	4074.28	Reinf. Modulus (ksi):	29000.00

DESIGN PARAMETERS:

	Major	Minor
Unbraced Length (ft)	14.58	15.00
K	1.35	1.91
Braced Against Sidesway	No	No

LONGITUDINAL REINFORCEMENT:

Controlling Load Combination: (43) 1.200 D + 0.500 Rfp - 1.000 W5

Axial		Load (kip)	45.91
Moment	Top	Major(kip-ft)	39.33
		Minor(kip-ft)	4.13
Moment	Bottom	Major(kip-ft)	-26.66
		Minor(kip-ft)	-4.13

Calculated Parameters (Angle = 6.00 degrees): Ld/Cap = 0.35

0.81 Pn(kip):	45.91		
0.81 Mn Major(kip-ft):	113.97	0.81 Mn Minor(kip-ft):	11.97

	Major	Minor
Kl/r	51.16	74.44
Slender	Yes	Yes

Slenderness:

Pu (kip)	45.91	45.91
Combination	43	43
Cm	0.33	0.36
K	1.00	1.00
δns	1.00	1.00
βd	0.95	0.95
Pc (kip)	1472.43	1391.76
Ig (in^4)	5461.33	5461.33

TRANSVERSE REINFORCEMENT:

Controlling Load Combination: (40) 1.200 D + 0.500 Rfp - 1.000 W2

	LC	Vu (kip)	Vc (kip)	Vs (kip)	ϕ	ϕ (Vc + Vs) (kip)	Ld/Cap
1 Major:	40	4.86	33.59	27.25	0.75	45.63	0.11
1 Minor:	87	1.91	32.86	27.25	0.75	45.08	0.04

TORSION CAPACITY:

Controlling Load Combination: (22) 1.200 D + 1.600 Rfp - 0.500 W8

0.75 Tn (kip-ft) 5.93 Tu (kip-ft) 0.01

COLUMN INFORMATION:

Level	FIRST FLOOR	Frame Number:	0
Column Number:	38	Grid Location:	(39.67ft--32.67ft)
Size:	**16x16**	Depth x Width (in)	16.00x16.00

Reinforcement

Longitudinal:	**8-#6 (3 x 1)**	As (in²)	3.52 (1.37%)
Transverse:	**#4@ 12.0" 0'-0"-3'-0"**		
Confinement	Tie	Clear Cover (in)	1.50
Shear Legs Major	2	Shear Legs Minor	2

Longitudinal Bars Max Tension Stress Ratio: 1.00

MATERIAL PROPERTIES:

f'c (ksi):	5.00	fy Long (ksi):	60.00
fct (ksi):	0.00	fyt Trans (ksi):	60.00
Conc. Weight (pcf):	145.00	Conc. Type:	NWC
Conc. Modulus (ksi):	4074.28	Reinf. Modulus (ksi):	29000.00

DESIGN PARAMETERS:

	Major	Minor
Unbraced Length (ft)	15.00	14.59
K	1.91	1.69
Braced Against Sidesway	No	No

LONGITUDINAL REINFORCEMENT:

Controlling Load Combination: (28) 1.200 D + 0.500 Rfp + 1.000 W2

Axial		Load (kip)	13.51
Moment	Top	Major(kip-ft)	-8.40
		Minor(kip-ft)	-3.45
Moment	Bottom	Major(kip-ft)	27.09
		Minor(kip-ft)	1.22

Calculated Parameters (Angle = 2.57 degrees): Ld/Cap = 0.24

0.90 Pn(kip):	13.51		
0.90 Mn Major(kip-ft):	110.91	0.90 Mn Minor(kip-ft):	4.98

	Major	Minor
Kl/r	74.44	63.96
Slender	Yes	Yes

Slenderness:

Pu (kip)	13.51	13.51
Combination	28	28
Cm	0.48	0.52
K	1.00	1.00
δns	1.00	1.00
βd	1.05	1.05
Pc (kip)	1321.18	1395.60
Ig (in^4)	5461.33	5461.33

TRANSVERSE REINFORCEMENT:

Controlling Load Combination: (28) 1.200 D + 0.500 Rfp + 1.000 W2

	LC	Vu (kip)	Vc (kip)	Vs (kip)	ϕ	ϕ (Vc + Vs) (kip)	Ld/Cap
1 Major:	28	2.36	31.64	27.25	0.75	44.17	0.05
1 Minor:	63	2.10	31.74	27.25	0.75	44.24	0.05

TORSION CAPACITY:

Controlling Load Combination: (15) 1.200 D + 1.600 Rfp - 0.500 W1

0.75 Tn (kip-ft) 5.01 Tu (kip-ft) 0.01

COLUMN INFORMATION:

Level	FIRST FLOOR	Frame Number:	0
Column Number:	39	Grid Location:	(17.00ft-0.00ft)
Size:	**16x16**	Depth x Width (in)	16.00x16.00

Reinforcement

Longitudinal:	**8-#6 (3 x 1)**	As (in²)	3.52 (1.37%)
Transverse:	**#4@ 12.0" 0'-0"-3'-0"**		
Confinement	Tie	Clear Cover (in)	1.50
Shear Legs Major	2	Shear Legs Minor	2

Longitudinal Bars Max Tension Stress Ratio: 1.00

MATERIAL PROPERTIES:

f'c (ksi):	5.00	fy Long (ksi):	60.00
fct (ksi):	0.00	fyt Trans (ksi):	60.00
Conc. Weight (pcf):	145.00	Conc. Type:	NWC
Conc. Modulus (ksi):	4074.28	Reinf. Modulus (ksi):	29000.00

DESIGN PARAMETERS:

	Major	Minor
Unbraced Length (ft)	15.00	14.59
K	1.91	1.70
Braced Against Sidesway	No	No

LONGITUDINAL REINFORCEMENT:

Controlling Load Combination: (46) 1.200 D + 0.500 Rfp - 1.000 W8

Axial		Load (kip)	28.48
Moment	Top	Major(kip-ft)	-8.26
		Minor(kip-ft)	-12.34
Moment	Bottom	Major(kip-ft)	18.37
		Minor(kip-ft)	20.29

Calculated Parameters (Angle = 47.85 degrees): Ld/Cap = 0.27

0.75 Pn(kip):	28.48		
0.75 Mn Major(kip-ft):	68.47	0.75 Mn Minor(kip-ft):	75.64

	Major	Minor
Kl/r	74.44	64.29
Slender	Yes	Yes

Slenderness:

Pu (kip)	28.48	28.48
Combination	46	46
Cm	0.42	0.36
K	1.00	1.00
δns	1.00	1.00
βd	0.92	0.92
Pc (kip)	1409.19	1488.57
Ig (in^4)	5461.33	5461.33

TRANSVERSE REINFORCEMENT:

Controlling Load Combination: (39) 1.200 D + 0.500 Rfp - 1.000 W1

	LC	Vu (kip)	Vc (kip)	Vs (kip)	ϕ	ϕ (Vc + Vs) (kip)	Ld/Cap
1 Major:	28	2.22	32.55	27.25	0.75	44.85	0.05
1 Minor:	39	2.53	32.50	27.25	0.75	44.81	0.06

TORSION CAPACITY:

Controlling Load Combination: (11) 1.200 D + 1.600 Rfp + 0.500 W9

0.75 Tn (kip-ft) 5.40 Tu (kip-ft) 0.02

COLUMN INFORMATION:

Level	FIRST FLOOR	Frame Number:	0
Column Number:	40	Grid Location:	(17.00ft--18.33ft)
Size:	**16x16**	Depth x Width (in)	16.00x16.00

Reinforcement

Longitudinal:	**8-#6 (3 x 1)**	As (in²)	3.52 (1.37%)
Transverse:	**#4@ 12.0" 0'-0"-3'-0"**		
Confinement	Tie	Clear Cover (in)	1.50
Shear Legs Major	2	Shear Legs Minor	2

Longitudinal Bars Max Tension Stress Ratio: 1.00

MATERIAL PROPERTIES:

f'c (ksi):	5.00	fy Long (ksi):	60.00
fct (ksi):	0.00	fyt Trans (ksi):	60.00
Conc. Weight (pcf):	145.00	Conc. Type:	NWC
Conc. Modulus (ksi):	4074.28	Reinf. Modulus (ksi):	29000.00

DESIGN PARAMETERS:

	Major	Minor
Unbraced Length (ft)	14.58	15.00
K	1.36	1.91
Braced Against Sidesway	No	No

LONGITUDINAL REINFORCEMENT:

Controlling Load Combination: (40) 1.200 D + 0.500 Rfp - 1.000 W2

Axial		Load (kip)	38.99
Moment	Top	Major(kip-ft)	48.63
		Minor(kip-ft)	-3.51
Moment	Bottom	Major(kip-ft)	-33.45
		Minor(kip-ft)	3.51

Calculated Parameters (Angle = 4.13 degrees): Ld/Cap = 0.40

0.90 Pn(kip):	38.99		
0.90 Mn Major(kip-ft):	122.00	0.90 Mn Minor(kip-ft):	8.80

	Major	Minor
Kl/r	51.59	74.44
Slender	Yes	Yes

Slenderness:

Pu (kip)	38.99	38.99
Combination	40	40
Cm	0.32	0.30
K	1.00	1.00
δns	1.00	1.00
βd	0.95	0.95
Pc (kip)	1469.73	1389.22
Ig (in^4)	5461.33	5461.33

TRANSVERSE REINFORCEMENT:

Controlling Load Combination: (40) 1.200 D + 0.500 Rfp - 1.000 W2

	LC	Vu (kip)	Vc (kip)	Vs (kip)	ϕ	ϕ (Vc + Vs) (kip)	Ld/Cap
1 Major:	40	5.62	33.18	27.25	0.75	45.32	0.12
1 Minor:	87	1.97	32.45	27.25	0.75	44.77	0.04

TORSION CAPACITY:

Controlling Load Combination: (3) 1.200 D + 1.600 Rfp + 0.500 W1

0.75 Tn (kip-ft) 5.74 Tu (kip-ft) 0.03

COLUMN INFORMATION:

Level	FIRST FLOOR	Frame Number:	0
Column Number:	41	Grid Location:	(17.00ft--34.67ft)
Size:	**16x16**	Depth x Width (in)	16.00x16.00

Reinforcement

Longitudinal:	**8-#6 (3 x 1)**	As (in²)	3.52 (1.37%)
Transverse:	**#4@ 12.0" 0'-0"-3'-0"**		
Confinement	Tie	Clear Cover (in)	1.50
Shear Legs Major	2	Shear Legs Minor	2

Longitudinal Bars Max Tension Stress Ratio: 1.00

MATERIAL PROPERTIES:

f'c (ksi):	5.00	fy Long (ksi):	60.00
fct (ksi):	0.00	fyt Trans (ksi):	60.00
Conc. Weight (pcf):	145.00	Conc. Type:	NWC
Conc. Modulus (ksi):	4074.28	Reinf. Modulus (ksi):	29000.00

DESIGN PARAMETERS:

	Major	Minor
Unbraced Length (ft)	15.00	14.59
K	1.91	1.45
Braced Against Sidesway	No	No

LONGITUDINAL REINFORCEMENT:

Controlling Load Combination: (33) 1.200 D + 0.500 Rfp + 1.000 W7

Axial		Load (kip)	11.83
Moment	Top	Major(kip-ft)	-4.27
		Minor(kip-ft)	13.98
Moment	Bottom	Major(kip-ft)	16.06
		Minor(kip-ft)	-22.28

Calculated Parameters (Angle = 54.21 degrees): Ld/Cap = 0.25

0.88 Pn(kip):	11.83		
0.88 Mn Major(kip-ft):	64.99	0.88 Mn Minor(kip-ft):	90.16

	Major	Minor
Kl/r	74.44	54.95
Slender	Yes	Yes

Slenderness:

Pu (kip)	11.83	11.83
Combination	33	33
Cm	0.49	0.35
K	1.00	1.00
δns	1.00	1.00
βd	0.78	0.78
Pc (kip)	1524.59	1610.46
Ig (in^4)	5461.33	5461.33

TRANSVERSE REINFORCEMENT:

Controlling Load Combination: (27) 1.200 D + 0.500 Rfp + 1.000 W1

	LC	Vu (kip)	Vc (kip)	Vs (kip)	ϕ	ϕ (Vc + Vs) (kip)	Ld/Cap
1 Major:	28	1.75	31.40	27.25	0.75	43.99	0.04
1 Minor:	27	2.58	31.59	27.25	0.75	44.13	0.06

TORSION CAPACITY:

Controlling Load Combination: (20) 1.200 D + 1.600 Rfp - 0.500 W6

0.75 Tn (kip-ft) 4.83 Tu (kip-ft) 0.03

COLUMN INFORMATION:

Level	FIRST FLOOR	Frame Number:	0
Column Number:	42	Grid Location:	(8.33ft--34.67ft)
Size:	**16x16**	Depth x Width (in)	16.00x16.00

Reinforcement

Longitudinal:	**8-#6 (3 x 1)**	As (in²)	3.52 (1.37%)
Transverse:	**#4@ 12.0" 0'-0"-3'-0"**		
Confinement	Tie	Clear Cover (in)	1.50
Shear Legs Major	2	Shear Legs Minor	2

Longitudinal Bars Max Tension Stress Ratio: 1.00

MATERIAL PROPERTIES:

f'c (ksi):	5.00	fy Long (ksi):	60.00
fct (ksi):	0.00	fyt Trans (ksi):	60.00
Conc. Weight (pcf):	145.00	Conc. Type:	NWC
Conc. Modulus (ksi):	4074.28	Reinf. Modulus (ksi):	29000.00

DESIGN PARAMETERS:

	Major	Minor
Unbraced Length (ft)	15.00	14.59
K	1.91	1.45
Braced Against Sidesway	No	No

LONGITUDINAL REINFORCEMENT:

Controlling Load Combination: (33) 1.200 D + 0.500 Rfp + 1.000 W7

Axial		Load (kip)	7.66
Moment	Top	Major(kip-ft)	-3.33
		Minor(kip-ft)	13.55
Moment	Bottom	Major(kip-ft)	13.55
		Minor(kip-ft)	-22.05

Calculated Parameters (Angle = 58.43 degrees): Ld/Cap = 0.23

0.90 Pn(kip):	7.66		
0.90 Mn Major(kip-ft):	57.96	0.90 Mn Minor(kip-ft):	94.31

	Major	Minor
Kl/r	74.44	54.95
Slender	Yes	Yes
Slenderness:		
Pu (kip)	7.66	7.66
Combination	33	33
Cm	0.50	0.35
K	1.00	1.00
δns	1.00	1.00
βd	1.39	1.39
Pc (kip)	1133.88	1197.75
Ig (in^4)	5461.33	5461.33

TRANSVERSE REINFORCEMENT:

Controlling Load Combination: (27) 1.200 D + 0.500 Rfp + 1.000 W1

	LC	Vu (kip)	Vc (kip)	Vs (kip)	ϕ	ϕ (Vc + Vs) (kip)	Ld/Cap
1 Major:	28	1.36	31.42	27.25	0.75	44.01	0.03
1 Minor:	27	2.51	31.29	27.25	0.75	43.91	0.06

TORSION CAPACITY:

Controlling Load Combination: (26) 1.200 D + 1.600 Rfp - 0.500 W12

0.75 Tn (kip-ft) 4.90 Tu (kip-ft) 0.02

COLUMN INFORMATION:

Level	FIRST FLOOR	Frame Number:	0
Column Number:	43	Grid Location:	(-2.50ft--18.33ft)
Size:	**16x16**	Depth x Width (in)	16.00x16.00

Reinforcement

Longitudinal:	**8-#6 (3 x 1)**	As (in²)	3.52 (1.37%)
Transverse:	**#4@ 12.0" 0'-0"-3'-0"**		
Confinement	Tie	Clear Cover (in)	1.50
Shear Legs Major	2	Shear Legs Minor	2

Longitudinal Bars Max Tension Stress Ratio: 1.00

MATERIAL PROPERTIES:

f'c (ksi):	5.00	fy Long (ksi):	60.00
fct (ksi):	0.00	fyt Trans (ksi):	60.00
Conc. Weight (pcf):	145.00	Conc. Type:	NWC
Conc. Modulus (ksi):	4074.28	Reinf. Modulus (ksi):	29000.00

DESIGN PARAMETERS:

	Major	Minor
Unbraced Length (ft)	14.59	15.00
K	1.64	1.91
Braced Against Sidesway	No	No

LONGITUDINAL REINFORCEMENT:

Controlling Load Combination: (20) 1.200 D + 1.600 Rfp - 0.500 W6

Axial		Load (kip)	25.04
Moment	Top	Major(kip-ft)	42.59
		Minor(kip-ft)	-2.25
Moment	Bottom	Major(kip-ft)	-24.66
		Minor(kip-ft)	2.25

Calculated Parameters (Angle = 3.03 degrees): Ld/Cap = 0.37

0.90 Pn(kip):	25.04		
0.90 Mn Major(kip-ft):	115.76	0.90 Mn Minor(kip-ft):	6.13

	Major	Minor
Kl/r	62.01	74.44
Slender	Yes	Yes

Slenderness:

Pu (kip)	25.04	25.04
Combination	20	20
Cm	0.37	0.47
K	1.00	1.00
δns	1.00	1.00
βd	0.85	0.85
Pc (kip)	1547.47	1464.95
Ig (in^4)	5461.33	5461.33

TRANSVERSE REINFORCEMENT:

Controlling Load Combination: (44) 1.200 D + 0.500 Rfp - 1.000 W6

	LC	Vu (kip)	Vc (kip)	Vs (kip)	ϕ	ϕ (Vc + Vs) (kip)	Ld/Cap
1 Major:	44	4.92	32.24	27.25	0.75	44.61	0.11
1 Minor:	87	1.45	31.83	27.25	0.75	44.31	0.03

TORSION CAPACITY:

Controlling Load Combination: (23) 1.200 D + 1.600 Rfp - 0.500 W9

0.75 Tn (kip-ft) 5.25 Tu (kip-ft) 0.00

COLUMN INFORMATION:

Level	FIRST FLOOR	Frame Number:	0
Column Number:	46	Grid Location:	(-2.50ft--0.00ft)
Size:	**16X32**	Depth x Width (in)	32.00x16.00

Reinforcement

Longitudinal:	**14-#6 (4 x 3)**	As (in²)	6.16 (1.20%)
Transverse:	**#4@ 12.0" 0'-0"-3'-0"**		
Confinement	Tie	Clear Cover (in)	1.50
Shear Legs Major	2	Shear Legs Minor	2

Longitudinal Bars Max Tension Stress Ratio: 1.00

MATERIAL PROPERTIES:

f'c (ksi):	5.00	fy Long (ksi):	60.00
fct (ksi):	0.00	fyt Trans (ksi):	60.00
Conc. Weight (pcf):	145.00	Conc. Type:	NWC
Conc. Modulus (ksi):	4074.28	Reinf. Modulus (ksi):	29000.00

DESIGN PARAMETERS:

	Major	Minor
Unbraced Length (ft)	14.59	15.00
K	2.16	1.91
Braced Against Sidesway	No	No

LONGITUDINAL REINFORCEMENT:

Controlling Load Combination: (32) 1.200 D + 0.500 Rfp + 1.000 W6

Axial		Load (kip)	26.88
Moment	Top	Major(kip-ft)	-55.51
		Minor(kip-ft)	-2.42
Moment	Bottom	Major(kip-ft)	123.38
		Minor(kip-ft)	4.32

Calculated Parameters (Angle = 2.00 degrees): Ld/Cap = 0.30

0.90 Pn(kip):	26.88		
0.90 Mn Major(kip-ft):	418.17	0.90 Mn Minor(kip-ft):	14.63

	Major	Minor
Kl/r	41.01	74.44
Slender	Yes	Yes

Slenderness:

	Major	Minor
Pu (kip)	26.88	26.88
Combination	32	32
Cm	0.42	0.59
K	1.00	1.00
δns	1.00	1.00
βd	0.93	0.93
Pc (kip)	11891.65	2814.38
Ig (in^4)	43690.67	10922.67

TRANSVERSE REINFORCEMENT:

Controlling Load Combination: (32) 1.200 D + 0.500 Rfp + 1.000 W6

	LC	Vu (kip)	Vc (kip)	Vs (kip)	ϕ	ϕ (Vc + Vs) (kip)	Ld/Cap
1 Major:	32	12.25	68.79	59.25	0.75	96.03	0.13
1 Minor:	39	2.63	63.26	27.25	0.75	67.88	0.04

TORSION CAPACITY:

Controlling Load Combination: (26) 1.200 D + 1.600 Rfp - 0.500 W12

0.75 Tn (kip-ft) 13.20 Tu (kip-ft) 0.05

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Column

LIC# : KW-06011269, Build:20.23.06.01 Ramaker & Associates

DESCRIPTION: Building 4 Coastal Column Check - Typical 16x16

Code References

Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : ASCE 7-16

General Information

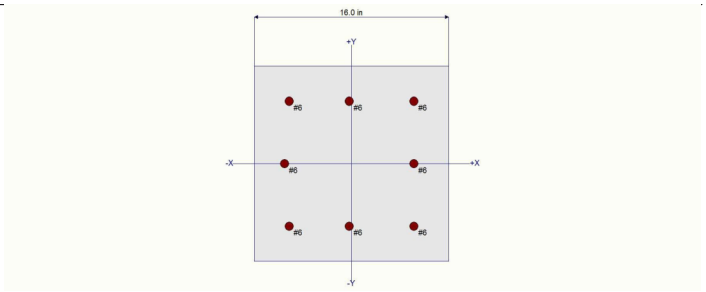
f'c : Concrete 28 day streng	=	5.0 ksi
E =	=	4,030.51 ksi
Density	=	150.0 pcf
β	=	0.80
fy - Main Rebar	=	60.0 ksi
E - Main Rebar	=	29,000.0 ksi
Allow. Reinforcing Limits		*ASTM A615 Bars Used*
Min. Reinf.	=	1 %
Max. Reinf.	=	8.0 %

Overall Column Height = 12.0 ft
End Fixity Top Free, Bottom Fixed
Brace condition for deflection (buckling) along colun
X-X (width) axis :
Unbraced Length for buckling ABOUT Y-Y Axis = 12.0 ft, K = 2.0
Y-Y (depth) axis :
Unbraced Length for buckling ABOUT X-X Axis = 12.0 ft, K = 2.0

Column Cross Section

Column Dimensions : 16.0in Square Column, Column Edge to Rebar Edge Cover = 2.50in

Column Reinforcing : 4 - #6 bars @ corners,, 1 - #6 bars top & bottom between corner bars, 1 - #6 bars left & right between corner



Applied Loads

Entered loads are factored per load combinations specified by user.

Column self weight included : 3,200.0 lbs * Dead Load Factor
BENDING LOADS . . .
Wave Load: Lat. Point Load at 3.90 ft creating Mx-x, LR = 1.240 k
Impact Load: Lat. Point Load at 3.90 ft creating Mx-x, D = 8.90 k

DESIGN SUMMARY

Load Combination	+1.20D+2.0Lr+L+1.60H		
Location of max.above base	11.919 ft		
Maximum Stress Ratio	**0.497 : 1**		
Ratio = (Pu^2+Mu^2)^.5 / (PhiPn^2+PhiMn^2)^.5			
Pu = 3.840 k		φ * Pn =	7.239 k
Mu-x = -51.728 k-ft		φ * Mn-x =	105.347 k-ft
Mu-y = 0.3456 k-ft		φ* Mn-y =	1.151 k-ft
Mu Angle = 0.0 deg		φ =	0.90
Mu at Angle = 51.730 k-ft		φMn at Angle =	104.068 k-ft

Pn & Mn values located at Pu-Mu vector intersection with capacity curve

Column Capacities . .

Pnmax : Nominal Max. Compressive Axial Capaci	1,284.24 k
Pnmin : Nominal Min. Tension Axial Capacity	k
φ Pn, max : Usable Compressive Axial Capacity	491.105 k
φ Pn, min : Usable Tension Axial Capacity	k

Maximum SERVICE Load Reactions .

Top along Y-Y	0.0 k	Bottom along Y-Y	0.0 k
Top along X-X	0.0 k	Bottom along X-X	10.140 k

Maximum SERVICE Load Deflections . .

Along Y-Y 0.06454 in at 12.0 ft above base
for load combination : +D+Lr+H
Along X-X 0.0 in at 0.0 ft above base
for load combination :

General Section Informatio β = 0.80 θ = 0.80

ρ : % Reinforcing	1.375 %	Rebar % Ok
Reinforcing Area	3.520 in^2	
Concrete Area	256.0 in^2	

Governing Load Combination Results

Governing Factored Load Combination	Moment X-X	Moment Y-Y	Dist. from base ft	Axial Load k Pu	φ * Pn	Bending Analysis k-ft δx	δx * Mux	δy	δy * Muy	Alpha (deg)	δ Mu	φ Mn	Utilization Ratio
+1.40D+1.60H	Actual	M2,min	11.92	4.48	7.24	1.009	-49.04	1.000	0.40	0.000	49.04	104.07	**0.471**
+1.20D+0.50Lr+1.60L+1.60H	Actual	M2,min	11.92	3.84	7.24	1.008	-44.42	1.000	0.35	0.000	44.42	104.07	**0.427**

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Column

LIC# : KW-06011269, Build:20.23.06.01 Ramaker & Associates (c) ENERCALC INC 1983-2023

DESCRIPTION: Building 4 Coastal Column Check - Typical 16x16

Governing Load Combination Results

Governing Factored Load Combination	Moment X-X	Moment Y-Y	Dist. from base ft	Axial Load k Pu	φ * Pn	Bending Analysis k-ft δx	δx * Mux	δy	δy * Muy	Alpha (deg)	δ Mu	φ Mn	Utilization Ratio
+1.20D+1.60L+0.50S+1.60H	Actual	M2,min	11.92	3.84	7.24	1.008	-41.98	1.000	0.35	0.000	41.98	104.07	**0.403**
+1.20D+2.0Lr+L+1.60H	Actual	M2,min	11.92	3.84	7.24	1.008	-51.73	1.000	0.35	0.000	51.73	104.07	**0.497**
+1.20D+L+1.60S+1.60H	Actual	M2,min	11.92	3.84	7.24	1.008	-41.98	1.000	0.35	0.000	41.98	104.07	**0.403**
+1.20D+1.60S+0.50W+1.60H	Actual	M2,min	11.92	3.84	7.24	1.008	-41.98	1.000	0.35	0.000	41.98	104.07	**0.403**
+1.20D+0.50Lr+L+W+1.60H	Actual	M2,min	11.92	3.84	7.24	1.008	-44.42	1.000	0.35	0.000	44.42	104.07	**0.427**
+1.20D+L+0.50S+W+1.60H	Actual	M2,min	11.92	3.84	7.24	1.008	-41.98	1.000	0.35	0.000	41.98	104.07	**0.403**
+0.90D+W+1.60H	Actual	M2,min	11.92	2.88	7.24	1.006	-31.42	1.000	0.26	0.000	31.42	104.07	**0.302**
+1.20D+L+0.20S+E+1.60H	Actual	M2,min	11.92	3.84	7.24	1.008	-41.98	1.000	0.35	0.000	41.98	104.07	**0.403**
+0.90D+E+0.90H	Actual	M2,min	11.92	2.88	7.24	1.006	-31.42	1.000	0.26	0.000	31.42	104.07	**0.302**

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction @ Base	@ Top	k Y-Y Axis Reaction @ Base	@ Top	Axial Reaction @ Base	Mx - End Moments @ Base	k-ft @ Top	My - End Moments @ Base	@ Top
+D+H			8.900		3.200	-34.710			
+D+L+H			8.900		3.200	-34.710			
+D+Lr+H			10.140		3.200	-39.546			
+D+S+H			8.900		3.200	-34.710			
+D+0.750Lr+0.750L+H			9.830		3.200	-38.337			
+D+0.750L+0.750S+H			8.900		3.200	-34.710			
+D+0.60W+H			8.900		3.200	-34.710			
+D+0.750Lr+0.750L+0.450W+H			9.830		3.200	-38.337			
+D+0.750L+0.750S+0.450W+H			8.900		3.200	-34.710			
+0.60D+0.60W+0.60H			5.340		1.920	-20.826			
+D+0.70E+0.60H			8.900		3.200	-34.710			
+D+0.750L+0.750S+0.5250E+H			8.900		3.200	-34.710			
+0.60D+0.70E+H			5.340		1.920	-20.826			
D Only			8.900		3.200	-34.710			
Lr Only			1.240			-4.836			
L Only									
S Only									
W Only									
E Only									
H Only									

Maximum Moment Reactions

Note: Only non-zero reactions are listed.

Load Combination	Moment About X-X Axis @ Base	@ Top		Moment About Y-Y Axis @ Base	@ Top	
+D+H	-34.710		k-ft			k-ft
+D+L+H	-34.710		k-ft			k-ft
+D+Lr+H	-39.546		k-ft			k-ft
+D+S+H	-34.710		k-ft			k-ft
+D+0.750Lr+0.750L+H	-38.337		k-ft			k-ft
+D+0.750L+0.750S+H	-34.710		k-ft			k-ft
+D+0.60W+H	-34.710		k-ft			k-ft
+D+0.750Lr+0.750L+0.450W+H	-38.337		k-ft			k-ft
+D+0.750L+0.750S+0.450W+H	-34.710		k-ft			k-ft
+0.60D+0.60W+0.60H	-20.826		k-ft			k-ft
+D+0.70E+0.60H	-34.710		k-ft			k-ft
+D+0.750L+0.750S+0.5250E+H	-34.710		k-ft			k-ft
+0.60D+0.70E+H	-20.826		k-ft			k-ft
D Only	-34.710		k-ft			k-ft
Lr Only	-4.836		k-ft			k-ft
L Only			k-ft			k-ft
S Only			k-ft			k-ft
W Only			k-ft			k-ft
E Only			k-ft			k-ft
H Only			k-ft			k-ft

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Column

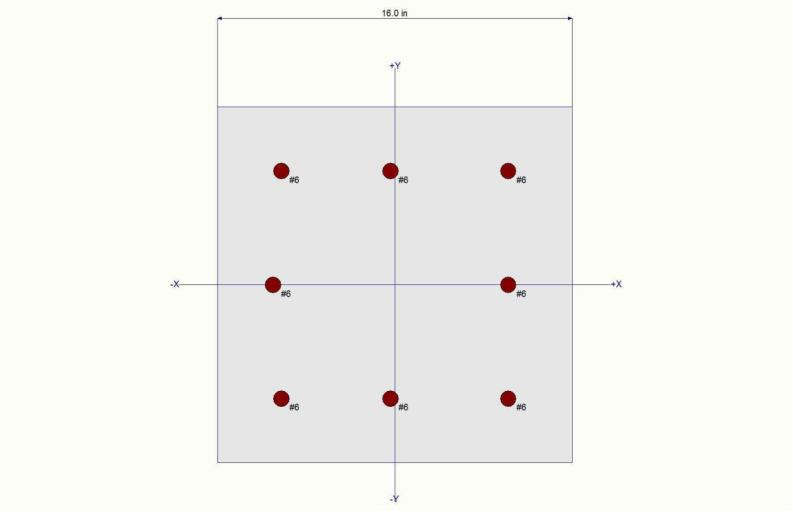
LIC# : KW-06011269, Build:20.23.06.01 Ramaker & Associates (c) ENERCALC INC 1983-2023

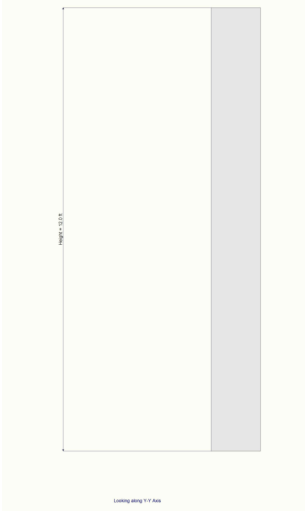
DESCRIPTION: Building 4 Coastal Column Check - Typical 16x16

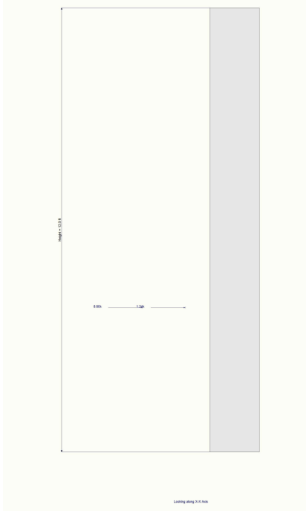
Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
+D+H	0.0000 in	0.000 ft	0.057 in	12.000 ft
+D+L+H	0.0000 in	0.000 ft	0.057 in	12.000 ft
+D+Lr+H	0.0000 in	0.000 ft	0.065 in	12.000 ft
+D+S+H	0.0000 in	0.000 ft	0.057 in	12.000 ft
+D+0.750Lr+0.750L+H	0.0000 in	0.000 ft	0.063 in	12.000 ft
+D+0.750L+0.750S+H	0.0000 in	0.000 ft	0.057 in	12.000 ft
+D+0.60W+H	0.0000 in	0.000 ft	0.057 in	12.000 ft
+D+0.750Lr+0.750L+0.450W+H	0.0000 in	0.000 ft	0.063 in	12.000 ft
+D+0.750L+0.750S+0.450W+H	0.0000 in	0.000 ft	0.057 in	12.000 ft
+0.60D+0.60W+0.60H	0.0000 in	0.000 ft	0.034 in	12.000 ft
+D+0.70E+0.60H	0.0000 in	0.000 ft	0.057 in	12.000 ft
+D+0.750L+0.750S+0.5250E+H	0.0000 in	0.000 ft	0.057 in	12.000 ft
+0.60D+0.70E+H	0.0000 in	0.000 ft	0.034 in	12.000 ft
D Only	0.0000 in	0.000 ft	0.057 in	12.000 ft
Lr Only	0.0000 in	0.000 ft	0.008 in	12.000 ft
L Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
S Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
W Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
E Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
H Only	0.0000 in	0.000 ft	0.000 in	0.000 ft

Sketches







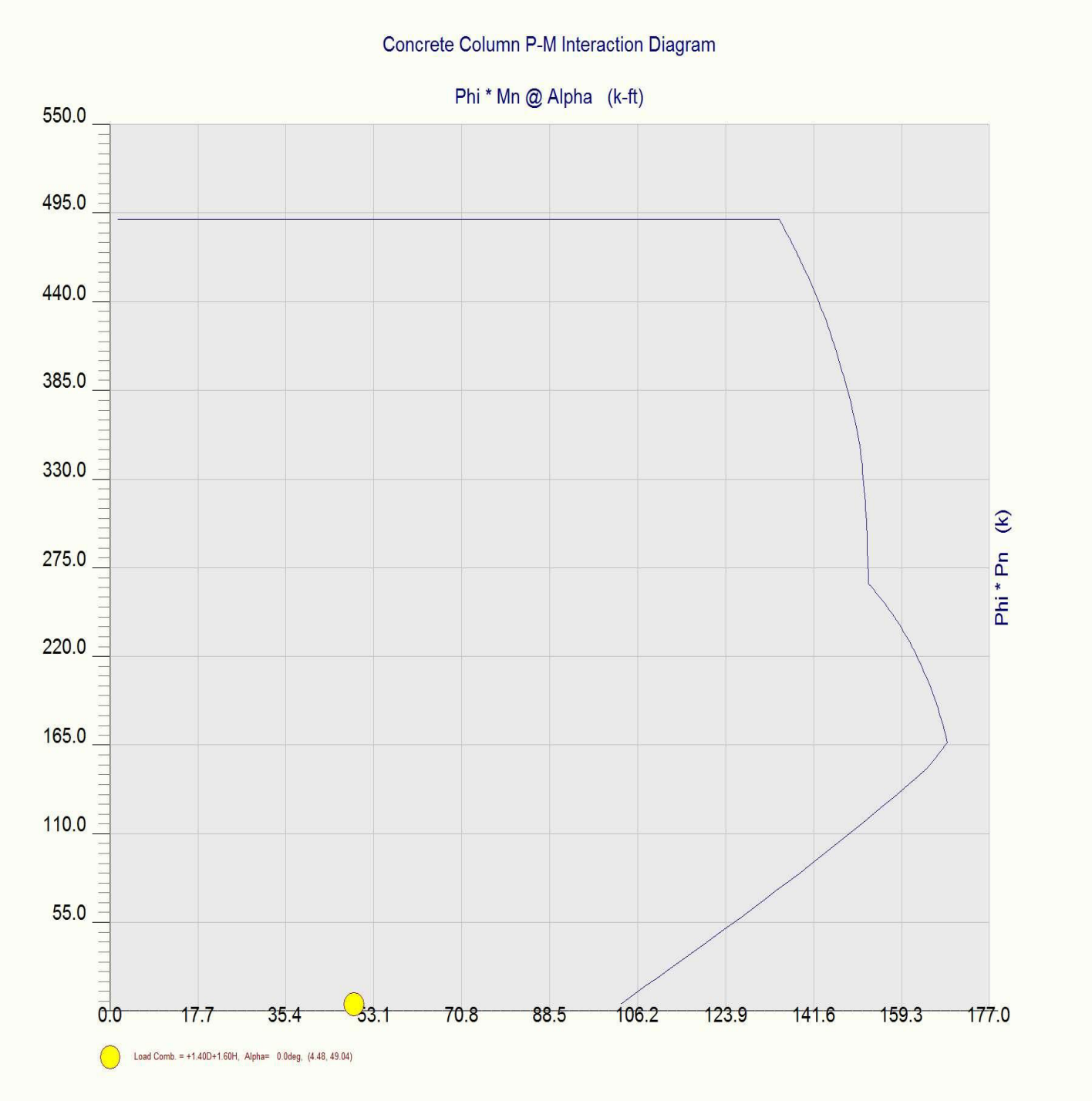
Interaction Diagrams

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Column

LIC# : KW-06011269, Build:20.23.06.01 Ramaker & Associates (c) ENERCALC INC 1983-2023

DESCRIPTION: Building 4 Coastal Column Check - Typical 16x16

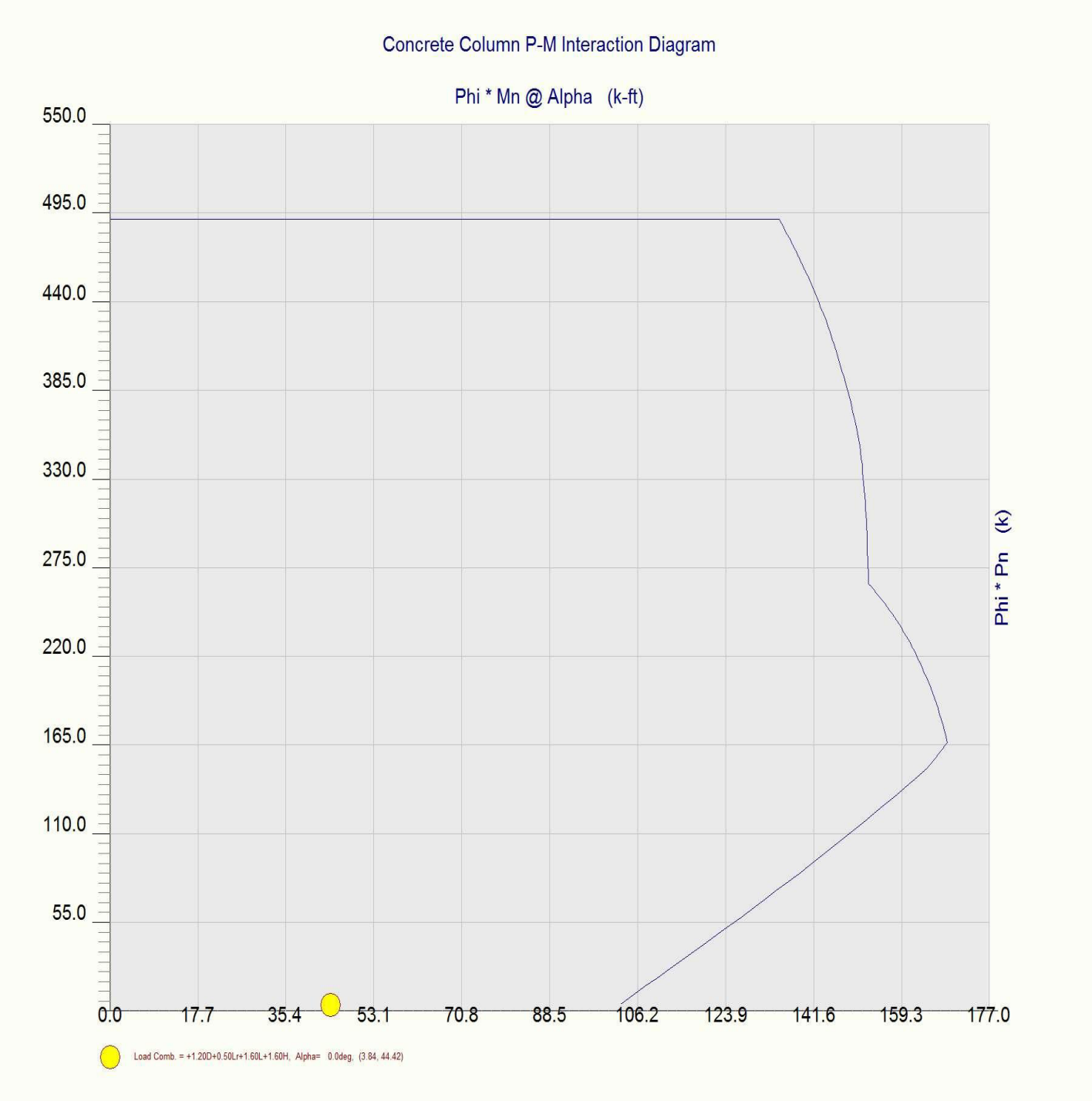


Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Column

LIC# : KW-06011269, Build:20.23.06.01 Ramaker & Associates (c) ENERCALC INC 1983-2023

DESCRIPTION: Building 4 Coastal Column Check - Typical 16x16

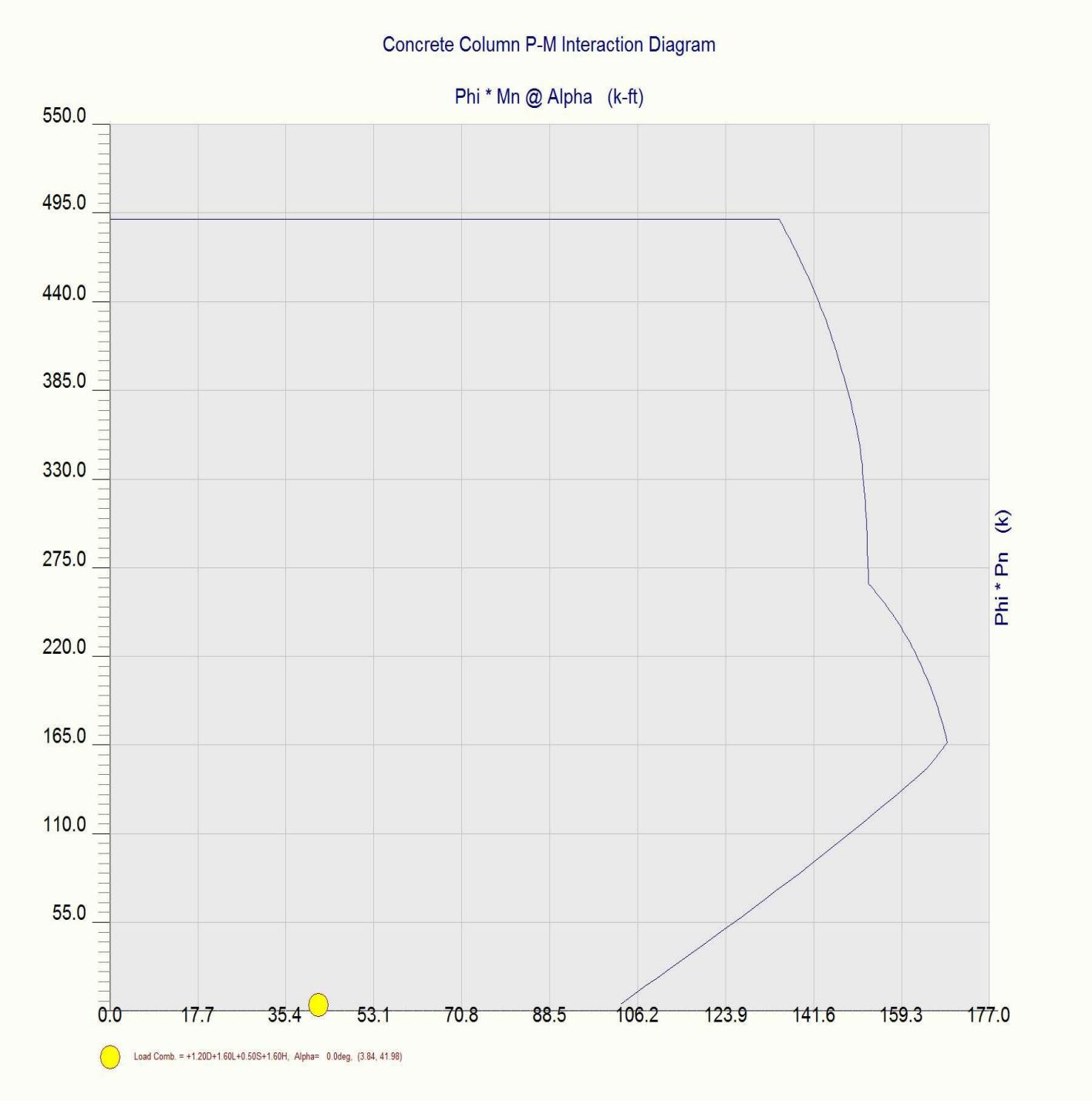


Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Column

LIC# : KW-06011269, Build:20.23.06.01 Ramaker & Associates (c) ENERCALC INC 1983-2023

DESCRIPTION: Building 4 Coastal Column Check - Typical 16x16

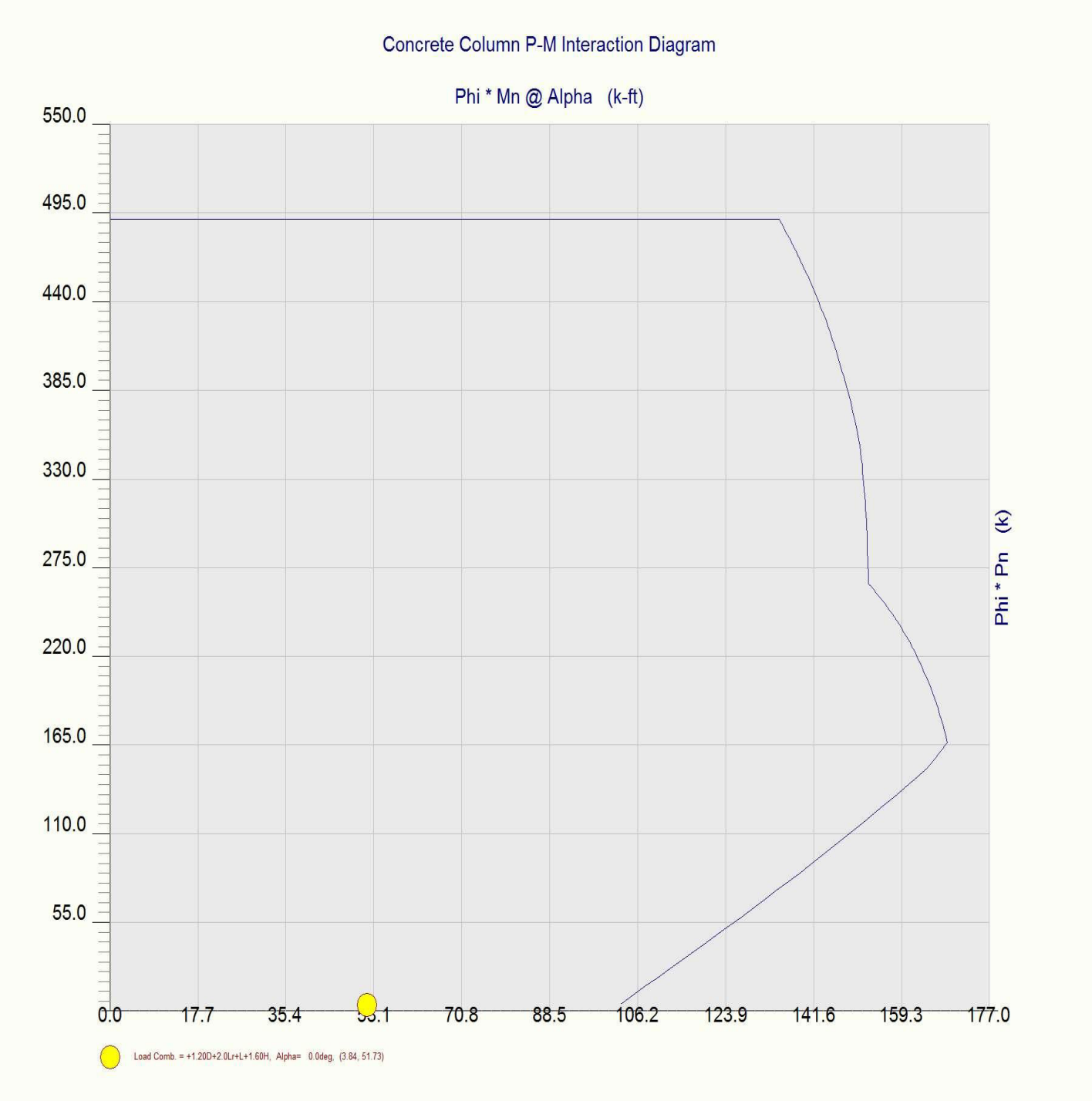


Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Column

LIC# : KW-06011269, Build:20.23.06.01 Ramaker & Associates (c) ENERCALC INC 1983-2023

DESCRIPTION: Building 4 Coastal Column Check - Typical 16x16

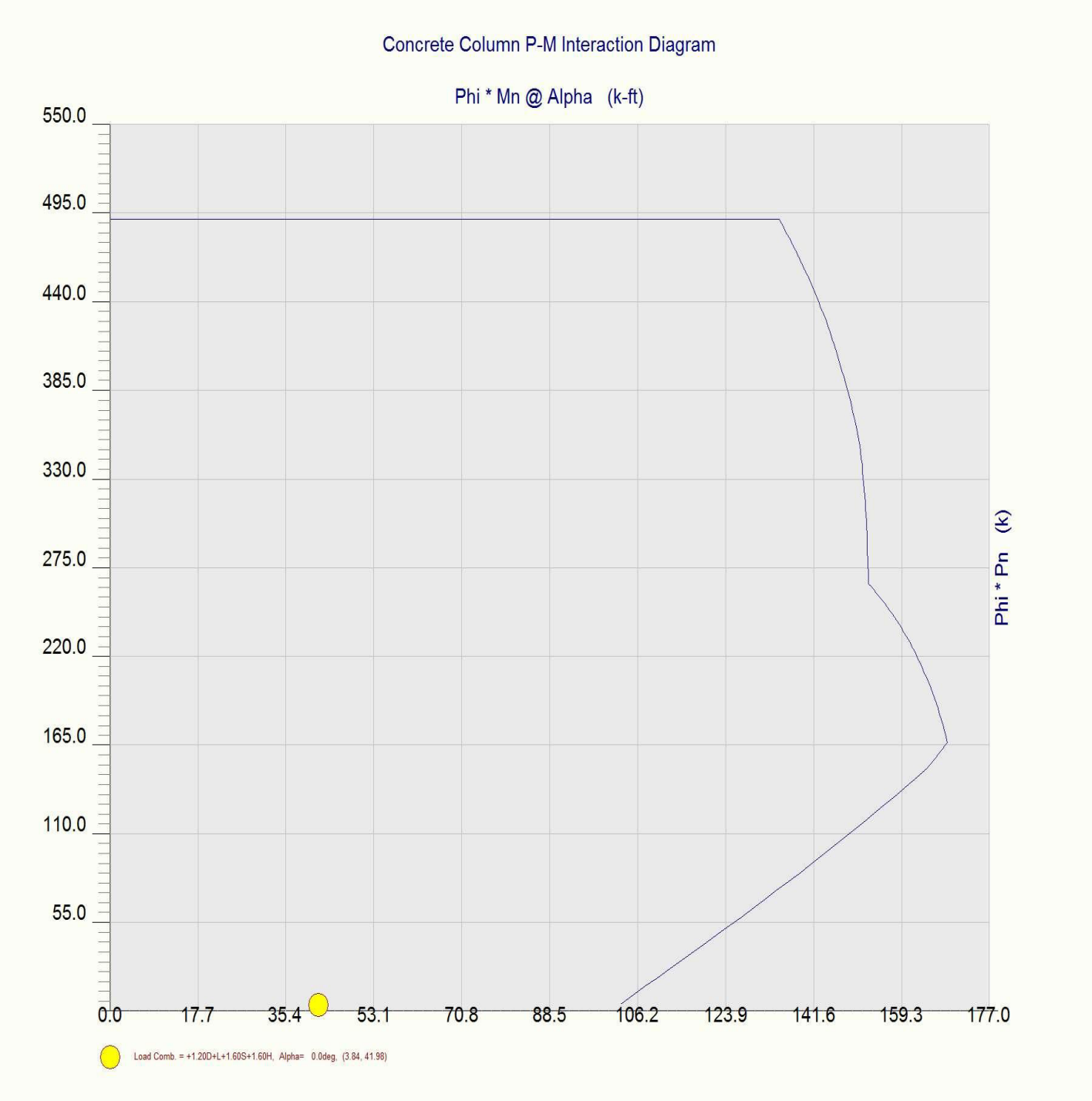


Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Column

LIC# : KW-06011269, Build:20.23.06.01 Ramaker & Associates (c) ENERCALC INC 1983-2023

DESCRIPTION: Building 4 Coastal Column Check - Typical 16x16

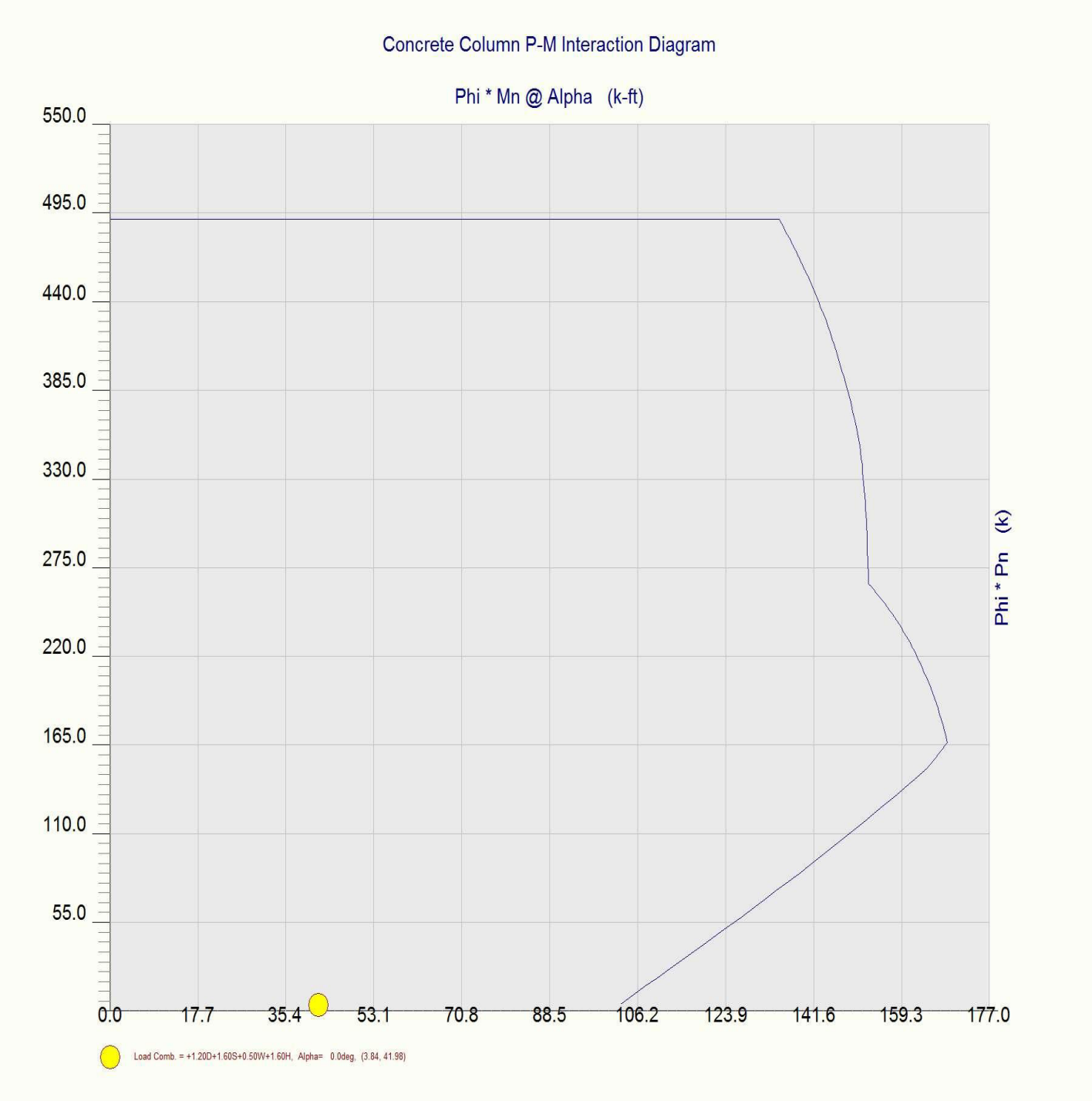


Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Column

LIC# : KW-06011269, Build:20.23.06.01 Ramaker & Associates (c) ENERCALC INC 1983-2023

DESCRIPTION: Building 4 Coastal Column Check - Typical 16x16

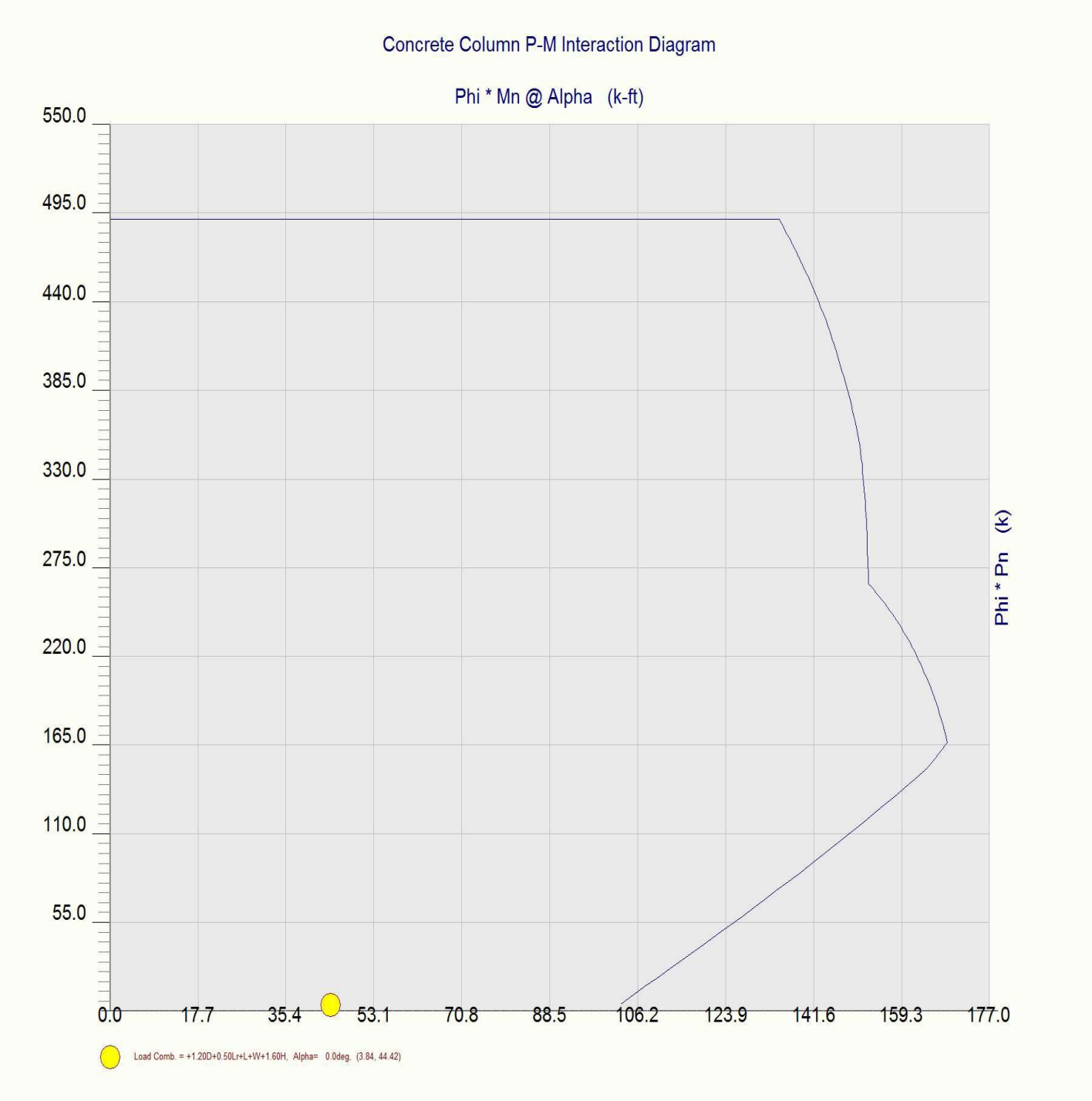


Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Column

LIC# : KW-06011269, Build:20.23.06.01 Ramaker & Associates (c) ENERCALC INC 1983-2023

DESCRIPTION: Building 4 Coastal Column Check - Typical 16x16

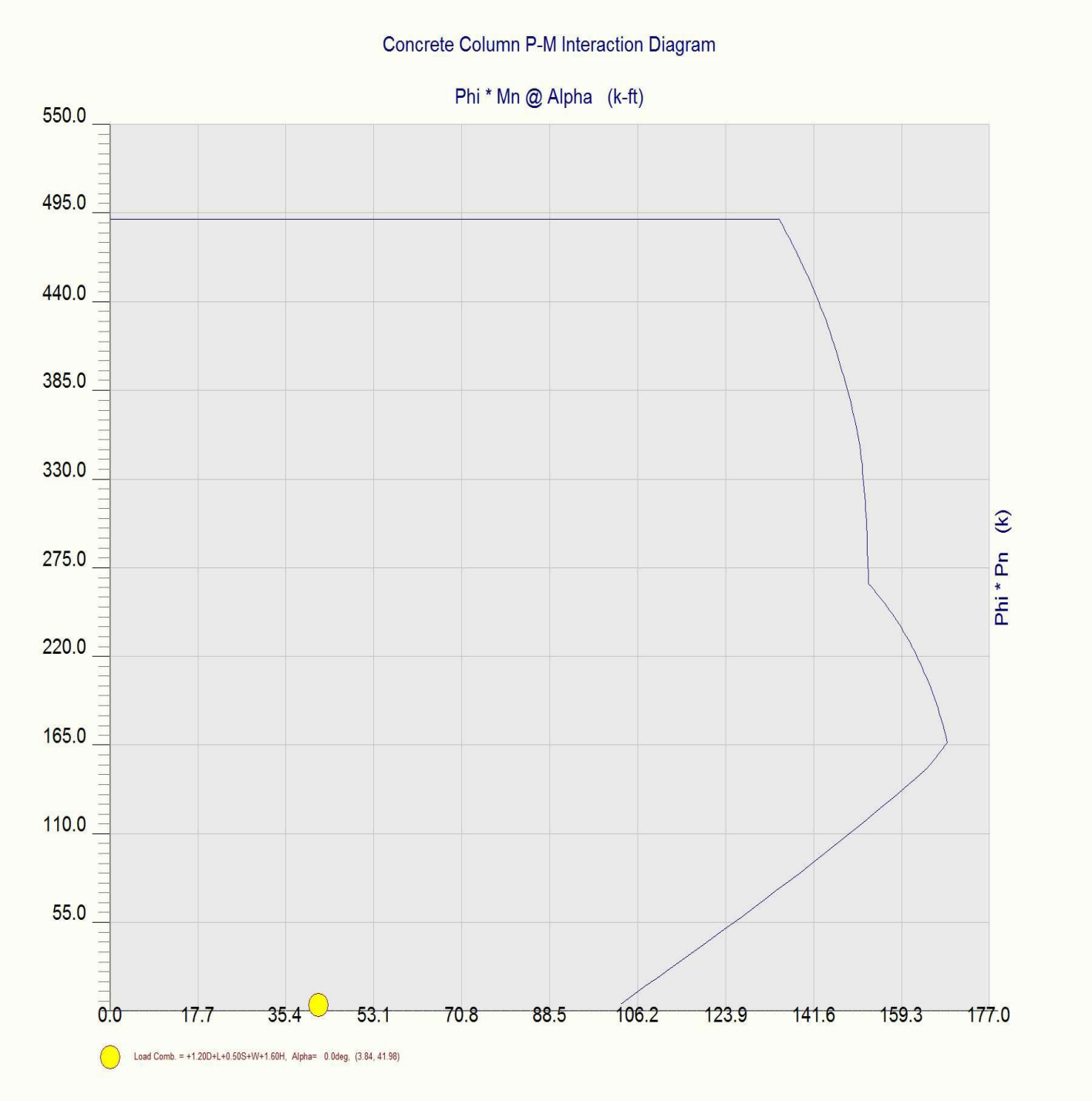


Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Column

LIC# : KW-06011269, Build:20.23.06.01 Ramaker & Associates (c) ENERCALC INC 1983-2023

DESCRIPTION: Building 4 Coastal Column Check - Typical 16x16

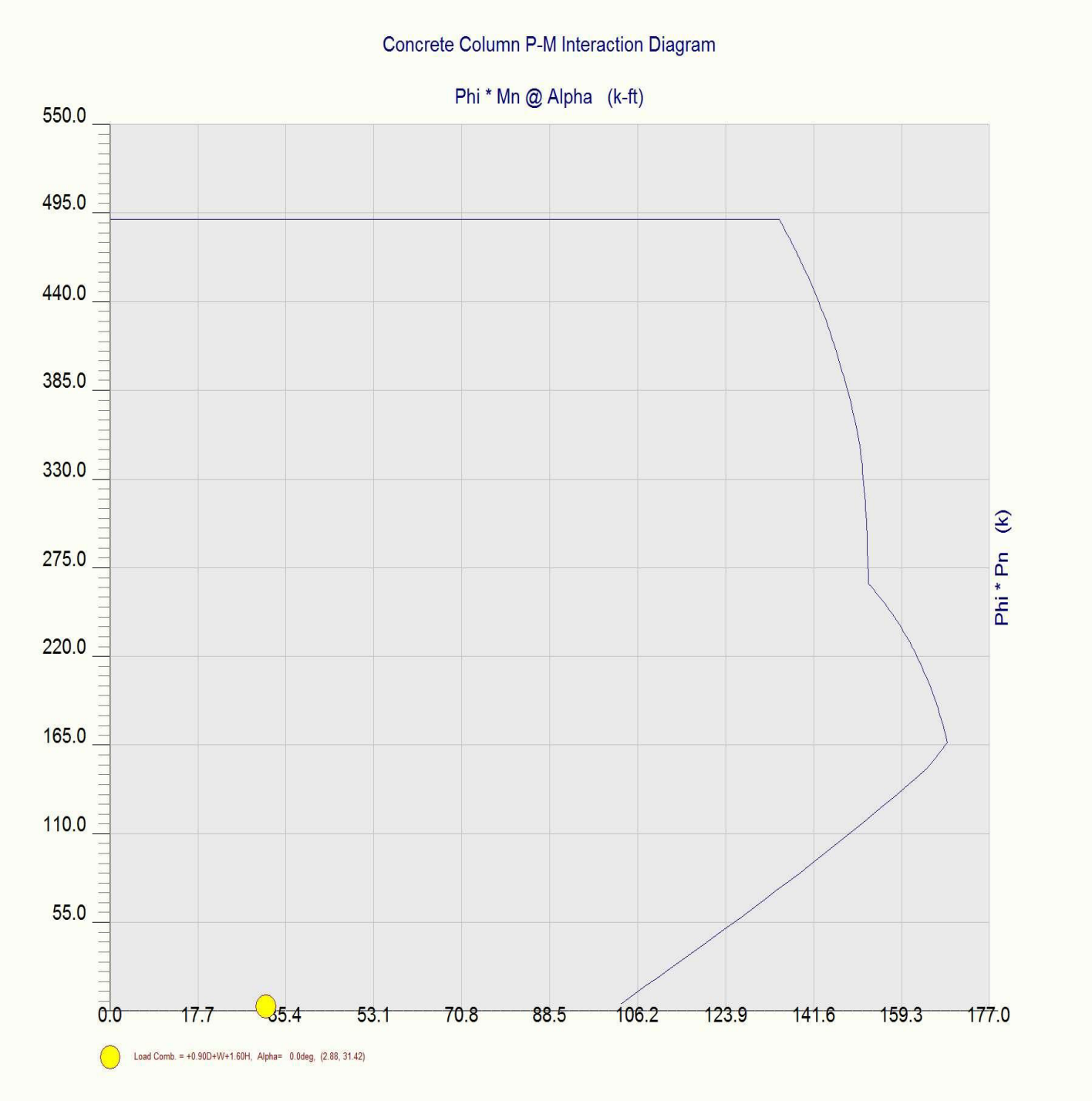


Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Column

LIC# : KW-06011269, Build:20.23.06.01 Ramaker & Associates (c) ENERCALC INC 1983-2023

DESCRIPTION: Building 4 Coastal Column Check - Typical 16x16

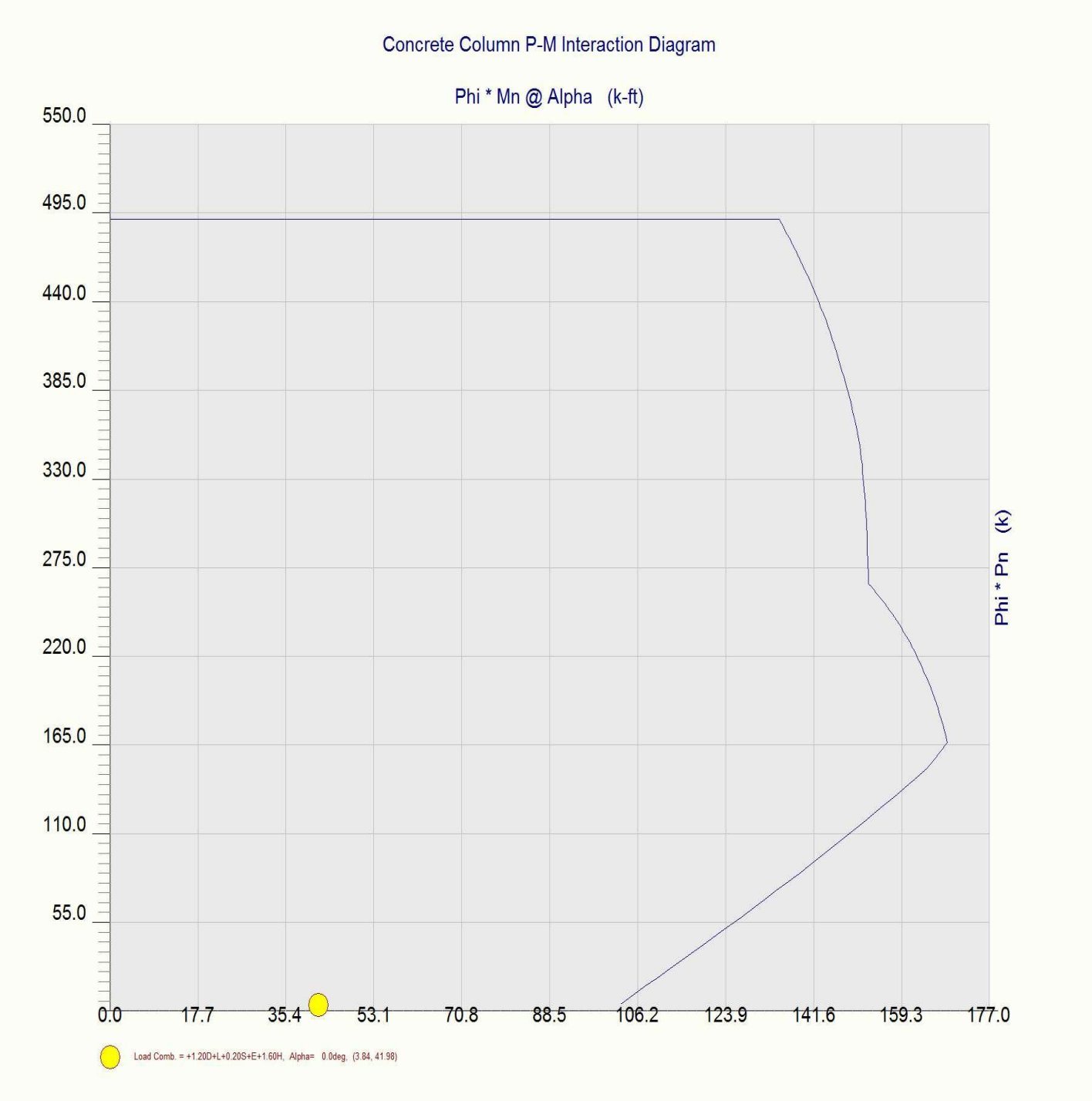


Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Column

LIC# : KW-06011269, Build:20.23.06.01 Ramaker & Associates (c) ENERCALC INC 1983-2023

DESCRIPTION: Building 4 Coastal Column Check - Typical 16x16

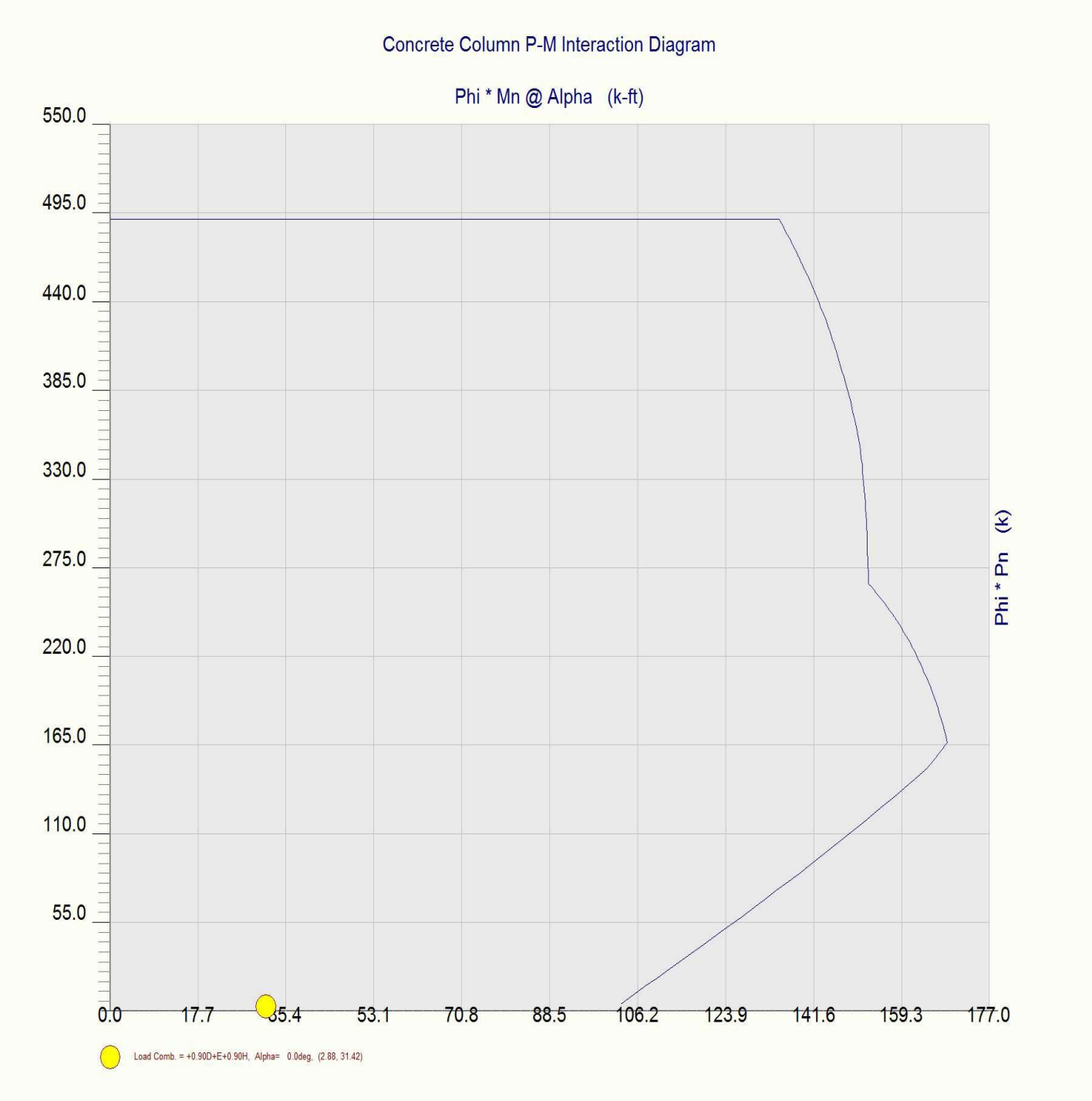


Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Column

LIC# : KW-06011269, Build:20.23.06.01 Ramaker & Associates (c) ENERCALC INC 1983-2023

DESCRIPTION: Building 4 Coastal Column Check - Typical 16x16



Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Slender Wall

LIC# : KW-06011269, Build:20.23.06.01 Ramaker & Associates (c) ENERCALC INC 1983-2023

DESCRIPTION: Building 4 Wall

Code References

Calculations per ACI 318-14 Sec 11.8, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : ASCE 7-16

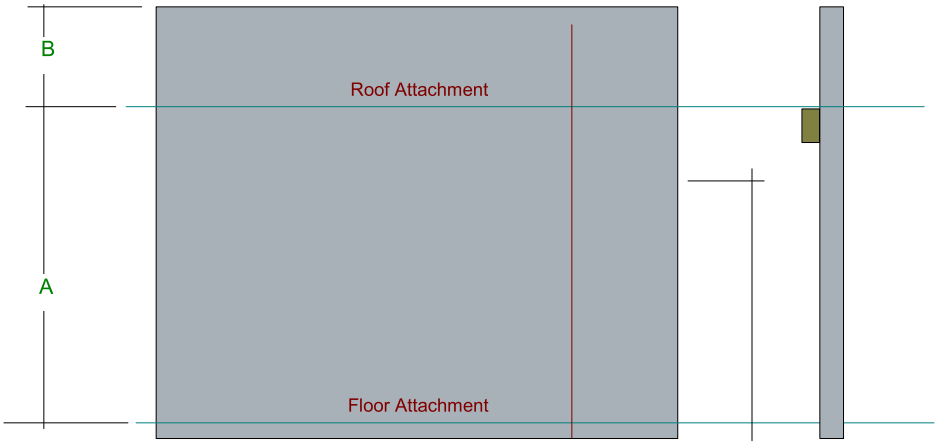
General Information

f'c : Concrete 28 day streng	=	5.0 ksi	Wall Thickness		14.0 in	Temp Diff across thickness	=	deg F
Fy : Rebar Yield	=	60.0 ksi	Rebar at each face			Min Allow Out-of-Plane Defl Ratio	=	0.0
Ec : Concrete Elastic Modu	=	3,122.0 ksi	Rebar "d" distance		2.0 in			
λ : Lt Wt Conc Fact	=	1.0	Lower Level Rebar . . .			Min allow As/bd	=	0.0020
Fr : Rupture Modulus	=	353.553 psi	Bar Size	#	8	Using Stiff. Reduction Factor per ACI 318-14		
Max Allow As/bd	=	0.02125	Bar Spacing		7.0 in			Section 11.8.3
Max Pu/Ag = f'c *	=	0.060						
Concrete Density	=	144.0 pcf						
Width of Design Strip	=	12.0 in						

One-Story Wall Dimensions

A	Clear Height	=	11.670 ft
B	Parapet height	=	1.670 ft

Wall Support Condition Top Pinned, Bottom F



Lateral Loads

Wind Loads :
Full area WIND load 56.0 psf

Seismic Loads :
Wall Weight Seismic Load Input Method : Direct entry of Lateral Wall Weight
Seismic Wall Lateral Load psf

Fp 1.0 = 0.0 psf

	D	Lr	L	E	W	Height	(Applied to full "STRIP Width")
Point Lateral Load	8.90	4.90			k	3.90 ft	

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Slender Wall

LIC# : KW-06011269, Build:20.23.06.01 Ramaker & Associates (c) ENERCALC INC 1983-2023

DESCRIPTION: Building 4 Wall

DESIGN SUMMARY

Results reported for "Strip Width" of 12.0 in

Governing Load Combination . . .	Actual Values . . .		Allowable Values . . .	
PASS Moment Capacity Check	Maximum Bending Stress Rat	0.6596		
+1.20D+2.0Lr+W	Max Mu	-44.835 k-ft	Phi * Mn	67.978 k-ft
PASS Service Deflection Check	Actual Defl. Ratio L/	2,494	Allowable Defl. Ratio	150.0
+D+Lr+H	Max. Deflection	0.05616 in		
PASS Axial Load Check	Max Pu / Ag	2.905 psi	Max. Allow. Defl.	0.9336 in
+1.20D+2.0Lr+W	Location	0.1945 ft	0.06 * f'c	300.0 psi
PASS Reinforcing Limit Check				
OK per ACI 318 Section 22.2	Actual As/bd	0.009405	Max Allow As/bd	0.02125

Maximum Reactions *for Load Combination...*

Top Horizontal	+D+Lr+H	2.159 k
Base Horizontal	+D+Lr+H	11.641 k
Vertical Reaction	+D+H	2.241 k

Design Maximum Combinations - Moments

Results reported for "Strip Width" = 12 in.

Load Combination	Axial Load Pu k	Axial Load 0.06*f'c*b*t k	Moment Values Mcr k-ft	Mu k-ft	Phi	Phi Mn k-ft	As in^2	As Ratio	0.6 * rho bal	Bar 'd'
+1.20D+2.0Lr+W at 0.00 to 0.39	0.000	50.400	11.55	44.83	0.90	67.98	1.354	0.0094	0.0213	12.00
+0.90D+2.0Lr+W at 0.00 to 0.39	0.000	50.400	11.55	38.93	0.90	67.98	1.354	0.0094	0.0213	12.00

Design Maximum Combinations - Deflections

Results reported for "Strip Width" = 12 in.

Load Combination	Axial Load Pu k	Moment Values Mcr k-ft	Mactual k-ft	Stiffness I gross in^4	I cracked in^4	I effective in^4	Deflections Deflection in	Defl. Ratio
+D+H at 5.45 to 5.84	1.326	11.55	9.09	2,744.00	1,163.95	2058.000	0.028	5,005.5
+D+L+H at 5.45 to 5.84	1.326	11.55	9.09	2,744.00	1,163.95	2058.000	0.028	5,005.5
+D+Lr+H at 5.45 to 5.84	1.326	11.55	13.02	2,744.00	1,163.95	1595.481	0.056	2,493.5
+D+S+H at 5.45 to 5.84	1.326	11.55	9.09	2,744.00	1,163.95	2058.000	0.028	5,005.5
+D+0.750Lr+0.750L+H at 5.06 to 5.45	1.392	11.55	12.51	2,744.00	1,164.40	1713.842	0.048	2,890.8
+D+0.750L+0.750S+H at 5.45 to 5.84	1.326	11.55	9.09	2,744.00	1,163.95	2058.000	0.028	5,005.5
+D+0.60W+H at 5.45 to 5.84	1.326	11.55	9.33	2,744.00	1,163.95	2058.000	0.029	4,818.1
+D+0.750Lr+0.750L+0.450W+H at 5.06 t	1.392	11.55	12.85	2,744.00	1,164.40	1633.273	0.050	2,804.4
+D+0.750L+0.750S+0.450W+H at 5.45 t	1.326	11.55	9.31	2,744.00	1,163.95	2058.000	0.029	4,883.6
+0.60D+0.60W+0.60H at 5.84 to 6.22	0.756	11.55	4.77	2,744.00	1,160.25	2058.000	0.015	9,384.3
+D+0.70E+0.60H at 5.45 to 5.84	1.326	11.55	9.09	2,744.00	1,163.95	2058.000	0.028	5,005.5
+D+0.750L+0.750S+0.5250E+H at 5.45 t	1.326	11.55	9.09	2,744.00	1,163.95	2058.000	0.028	5,005.5
+0.60D+0.70E+H at 5.84 to 6.22	0.756	11.55	4.50	2,744.00	1,160.25	2058.000	0.014	9,901.8
D Only at 5.45 to 5.84	1.326	11.55	9.09	2,744.00	1,163.95	2058.000	0.028	5,005.5
Lr Only at 5.84 to 6.22	0.000	11.55	4.11	2,744.00	1,155.24	2058.000	0.013	10,830.0
	0.000	0.00	0.00	0.00	0.00	0.000	0.000	0.0
	0.000	0.00	0.00	0.00	0.00	0.000	0.000	0.0
W Only at 6.61 to 7.00	0.000	11.55	0.50	2,744.00	1,155.24	2058.000	0.001	99,371.7
	0.000	0.00	0.00	0.00	0.00	0.000	0.000	0.0
	0.000	0.00	0.00	0.00	0.00	0.000	0.000	0.0

Reactions - Vertical & Horizontal

Load Combination	Base Horizontal	Top Horizontal	Vertical @ Wall Base
+D+H	7.4 k	1.51 k	2.241 k
+D+L+H	7.4 k	1.51 k	2.241 k
+D+Lr+H	11.6 k	2.16 k	2.241 k

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Slender Wall

LIC# : KW-06011269, Build:20.23.06.01 Ramaker & Associates (c) ENERCALC INC 1983-2023

DESCRIPTION: Building 4 Wall

+D+S+H	7.4 k	1.51 k	2.241 k
+D+0.750Lr+0.750L+H	10.6 k	1.95 k	2.241 k
+D+0.750L+0.750S+H	7.4 k	1.51 k	2.241 k
+D+0.60W+H	7.6 k	1.71 k	2.241 k
+D+0.750Lr+0.750L+0.450W+H	10.8 k	2.13 k	2.241 k
+D+0.750L+0.750S+0.450W+H	7.6 k	1.67 k	2.241 k
+0.60D+0.60W+0.60H	4.8 k	1.00 k	1.345 k
+D+0.70E+0.60H	7.4 k	1.51 k	2.241 k
+D+0.750L+0.750S+0.5250E+H	7.4 k	1.51 k	2.241 k
+0.60D+0.70E+H	4.5 k	0.80 k	1.345 k
D Only	7.4 k	1.51 k	2.241 k
Lr Only	4.2 k	0.73 k	0.000 k
L Only	0.0 k	0.00 k	0.000 k

Reactions - Vertical & Horizontal

Load Combination	Base Horizontal	Top Horizontal	Vertical @ Wall Base
S Only	0.0 k	0.00 k	0.000 k
W Only	0.4 k	0.35 k	0.000 k
E Only	0.0 k	0.00 k	0.000 k
H Only	0.0 k	0.00 k	0.000 k

Deflections - Service Loads

Load Combination / Location	Axial Load (k)	Moments (k-ft) Mcr	Mu	Inertia (in^4) Igross	Icracked	Ieff	Iterated Deflection (in) Deflection	Ratio
Overall MAXimum Envelope								
. . . .+D+Lr+H at 11.28 to 11.67	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.003	999.0
. . . .+D+Lr+H at 10.89 to 11.28	0.41	11.55	1.26	2,744.000	1,157.90	2,058.000	0.008	999.0
. . . .+D+Lr+H at 10.50 to 10.89	0.47	11.55	2.10	2,744.000	1,158.35	2,058.000	0.012	999.0
. . . .+D+Lr+H at 10.11 to 10.50	0.54	11.55	2.94	2,744.000	1,158.80	2,058.000	0.017	999.0
. . . .+D+Lr+H at 9.73 to 10.11	0.61	11.55	3.78	2,744.000	1,159.25	2,058.000	0.022	999.0
. . . .+D+Lr+H at 9.34 to 9.73	0.67	11.55	4.62	2,744.000	1,159.57	2,058.000	0.027	999.0
. . . .+D+Lr+H at 8.95 to 9.34	0.74	11.55	5.46	2,744.000	1,160.02	2,058.000	0.031	999.0
. . . .+D+Lr+H at 8.56 to 8.95	0.80	11.55	6.30	2,744.000	1,160.47	2,058.000	0.035	999.0
. . . .+D+Lr+H at 8.17 to 8.56	0.87	11.55	7.14	2,744.000	1,160.92	2,058.000	0.039	999.0
. . . .+D+Lr+H at 7.78 to 8.17	0.93	11.55	7.98	2,744.000	1,161.37	2,058.000	0.043	999.0
. . . .+D+Lr+H at 7.39 to 7.78	1.00	11.55	8.82	2,744.000	1,161.82	2,058.000	0.046	999.0
. . . .+D+Lr+H at 7.00 to 7.39	1.06	11.55	9.66	2,744.000	1,162.27	2,058.000	0.049	999.0
. . . .+D+Lr+H at 6.61 to 7.00	1.13	11.55	10.50	2,744.000	1,162.59	2,058.000	0.052	999.0
. . . .+D+Lr+H at 6.22 to 6.61	1.19	11.55	11.34	2,744.000	1,163.04	2,058.000	0.054	999.0
. . . .+D+Lr+H at 5.84 to 6.22	1.26	11.55	12.18	2,744.000	1,163.49	1,808.950	0.055	999.0
. . . .+D+Lr+H at 5.45 to 5.84	1.33	11.55	13.02	2,744.000	1,163.95	1,595.481	0.056	999.0
. . . .+D+Lr+H at 5.06 to 5.45	1.39	11.55	13.86	2,744.000	1,164.40	1,454.346	0.056	999.0
. . . .+D+Lr+H at 4.67 to 5.06	1.46	11.55	14.70	2,744.000	1,164.85	1,354.651	0.055	999.0
. . . .+D+Lr+H at 4.28 to 4.67	1.52	11.55	15.54	2,744.000	1,165.17	1,280.759	0.053	999.0
. . . .+D+Lr+H at 3.89 to 4.28	1.58	11.55	16.31	2,744.000	1,165.57	1,228.311	0.050	999.0
. . . .+D+Lr+H at 3.50 to 3.89	1.64	11.55	14.40	2,744.000	1,166.00	1,387.945	0.045	999.0
. . . .+D+Lr+H at 3.11 to 3.50	1.70	11.55	9.87	2,744.000	1,166.44	2,058.000	0.040	999.0
. . . .+D+Lr+H at 2.72 to 3.11	1.77	11.55	5.34	2,744.000	1,166.89	2,058.000	0.034	999.0
. . . .+D+Lr+H at 2.33 to 2.72	1.83	11.55	0.81	2,744.000	1,167.21	2,058.000	0.028	999.0
. . . .+D+Lr+H at 1.95 to 2.33	1.90	11.55	3.72	2,744.000	1,167.66	2,058.000	0.022	999.0

Concrete Slender Wall

DESCRIPTION: Building 4 Wall

. . . .+D+Lr+H at 1.56 to 1.95	1.97	11.55	8.25	2,744.000	1,168.11	2,058.000	0.016	999.0
. . . .+D+Lr+H at 1.17 to 1.56	2.03	11.55	12.77	2,744.000	1,168.57	1,651.453	0.010	999.0
. . . .+D+Lr+H at 0.78 to 1.17	2.10	11.55	17.30	2,744.000	1,169.03	1,177.994	0.006	999.0
. . . .+D+Lr+H at 0.39 to 0.78	2.17	11.55	21.83	2,744.000	1,169.50	1,169.495	0.002	999.0
. . . .+D+Lr+H at 0.00 to 0.39	0.00	11.55	28.62	2,744.000	1,155.24	1,155.243	0.000	999.0
+D+H								
. . . .11.28 to 11.67	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.001	999.0
. . . .10.89 to 11.28	0.41	11.55	0.88	2,744.000	1,157.90	2,058.000	0.004	999.0
. . . .10.50 to 10.89	0.48	11.55	1.47	2,744.000	1,158.35	2,058.000	0.007	999.0
. . . .10.11 to 10.50	0.54	11.55	2.05	2,744.000	1,158.80	2,058.000	0.009	999.0
. . . .9.73 to 10.11	0.61	11.55	2.64	2,744.000	1,159.25	2,058.000	0.012	999.0
. . . .9.34 to 9.73	0.67	11.55	3.23	2,744.000	1,159.58	2,058.000	0.015	999.0
. . . .8.95 to 9.34	0.74	11.55	3.81	2,744.000	1,160.03	2,058.000	0.017	999.0
. . . .8.56 to 8.95	0.80	11.55	4.40	2,744.000	1,160.48	2,058.000	0.019	999.0
. . . .8.17 to 8.56	0.87	11.55	4.99	2,744.000	1,160.93	2,058.000	0.021	999.0

Deflections - Service Loads

Load Combination / Location	Axial Load (k)	Moments (k-ft) Mcr	Mu	Inertia (in^4) Igross	Icracked	Ieff	Iterated Deflection (in) Deflection	Ratio
. . . .7.78 to 8.17	0.93	11.55	5.57	2,744.000	1,161.37	2,058.000	0.023	999.0
. . . .7.39 to 7.78	1.00	11.55	6.16	2,744.000	1,161.82	2,058.000	0.024	999.0
. . . .7.00 to 7.39	1.06	11.55	6.74	2,744.000	1,162.27	2,058.000	0.026	999.0
. . . .6.61 to 7.00	1.13	11.55	7.33	2,744.000	1,162.60	2,058.000	0.027	999.0
. . . .6.22 to 6.61	1.20	11.55	7.92	2,744.000	1,163.05	2,058.000	0.027	999.0
. . . .5.84 to 6.22	1.26	11.55	8.50	2,744.000	1,163.50	2,058.000	0.028	999.0
. . . .5.45 to 5.84	1.33	11.55	9.09	2,744.000	1,163.95	2,058.000	0.028	999.0
. . . .5.06 to 5.45	1.39	11.55	9.68	2,744.000	1,164.40	2,058.000	0.028	999.0
. . . .4.67 to 5.06	1.46	11.55	10.26	2,744.000	1,164.85	2,058.000	0.027	999.0
. . . .4.28 to 4.67	1.52	11.55	10.85	2,744.000	1,165.17	2,058.000	0.026	999.0
. . . .3.89 to 4.28	1.58	11.55	11.39	2,744.000	1,165.60	2,058.000	0.024	999.0
. . . .3.50 to 3.89	1.65	11.55	10.20	2,744.000	1,166.05	2,058.000	0.022	999.0
. . . .3.11 to 3.50	1.71	11.55	7.33	2,744.000	1,166.49	2,058.000	0.020	999.0
. . . .2.72 to 3.11	1.78	11.55	4.45	2,744.000	1,166.94	2,058.000	0.017	999.0
. . . .2.33 to 2.72	1.84	11.55	1.57	2,744.000	1,167.39	2,058.000	0.014	999.0
. . . .1.95 to 2.33	1.91	11.55	1.30	2,744.000	1,167.71	2,058.000	0.011	999.0
. . . .1.56 to 1.95	1.98	11.55	4.18	2,744.000	1,168.16	2,058.000	0.008	999.0
. . . .1.17 to 1.56	2.04	11.55	7.05	2,744.000	1,168.61	2,058.000	0.006	999.0
. . . .0.78 to 1.17	2.11	11.55	9.93	2,744.000	1,169.06	2,058.000	0.003	999.0
. . . .0.39 to 0.78	2.17	11.55	12.81	2,744.000	1,169.52	1,644.582	0.001	999.0
. . . .0.00 to 0.39	0.00	11.55	17.12	2,744.000	1,155.24	1,176.393	0.000	999.0
+D+L+H								
. . . .11.28 to 11.67	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.001	999.0
. . . .10.89 to 11.28	0.41	11.55	0.88	2,744.000	1,157.90	2,058.000	0.004	999.0
. . . .10.50 to 10.89	0.48	11.55	1.47	2,744.000	1,158.35	2,058.000	0.007	999.0
. . . .10.11 to 10.50	0.54	11.55	2.05	2,744.000	1,158.80	2,058.000	0.009	999.0
. . . .9.73 to 10.11	0.61	11.55	2.64	2,744.000	1,159.25	2,058.000	0.012	999.0
. . . .9.34 to 9.73	0.67	11.55	3.23	2,744.000	1,159.58	2,058.000	0.015	999.0
. . . .8.95 to 9.34	0.74	11.55	3.81	2,744.000	1,160.03	2,058.000	0.017	999.0
. . . .8.56 to 8.95	0.80	11.55	4.40	2,744.000	1,160.48	2,058.000	0.019	999.0
. . . .8.17 to 8.56	0.87	11.55	4.99	2,744.000	1,160.93	2,058.000	0.021	999.0
. . . .7.78 to 8.17	0.93	11.55	5.57	2,744.000	1,161.37	2,058.000	0.023	999.0
. . . .7.39 to 7.78	1.00	11.55	6.16	2,744.000	1,161.82	2,058.000	0.024	999.0

Concrete Slender Wall

DESCRIPTION: Building 4 Wall

. . . .7.00 to 7.39	1.06	11.55	6.74	2,744.000	1,162.27	2,058.000	0.026	999.0
. . . .6.61 to 7.00	1.13	11.55	7.33	2,744.000	1,162.60	2,058.000	0.027	999.0
. . . .6.22 to 6.61	1.20	11.55	7.92	2,744.000	1,163.05	2,058.000	0.027	999.0
. . . .5.84 to 6.22	1.26	11.55	8.50	2,744.000	1,163.50	2,058.000	0.028	999.0
. . . .5.45 to 5.84	1.33	11.55	9.09	2,744.000	1,163.95	2,058.000	0.028	999.0
. . . .5.06 to 5.45	1.39	11.55	9.68	2,744.000	1,164.40	2,058.000	0.028	999.0
. . . .4.67 to 5.06	1.46	11.55	10.26	2,744.000	1,164.85	2,058.000	0.027	999.0
. . . .4.28 to 4.67	1.52	11.55	10.85	2,744.000	1,165.17	2,058.000	0.026	999.0
. . . .3.89 to 4.28	1.58	11.55	11.39	2,744.000	1,165.60	2,058.000	0.024	999.0
. . . .3.50 to 3.89	1.65	11.55	10.20	2,744.000	1,166.05	2,058.000	0.022	999.0
. . . .3.11 to 3.50	1.71	11.55	7.33	2,744.000	1,166.49	2,058.000	0.020	999.0
. . . .2.72 to 3.11	1.78	11.55	4.45	2,744.000	1,166.94	2,058.000	0.017	999.0
. . . .2.33 to 2.72	1.84	11.55	1.57	2,744.000	1,167.39	2,058.000	0.014	999.0
. . . .1.95 to 2.33	1.91	11.55	1.30	2,744.000	1,167.71	2,058.000	0.011	999.0
. . . .1.56 to 1.95	1.98	11.55	4.18	2,744.000	1,168.16	2,058.000	0.008	999.0

Deflections - Service Loads

Load Combination Location	Axial Load (k)	Moments (k-ft) Mcr	 Mu	Inertia (in^4) Igross	 Icracked	 Ieff	Iterated Deflection (in) Deflection	 Ratio
. . . .1.17 to 1.56	2.04	11.55	7.05	2,744.000	1,168.61	2,058.000	0.006	999.0
. . . .0.78 to 1.17	2.11	11.55	9.93	2,744.000	1,169.06	2,058.000	0.003	999.0
. . . .0.39 to 0.78	2.17	11.55	12.81	2,744.000	1,169.52	1,644.582	0.001	999.0
. . . .0.00 to 0.39	0.00	11.55	17.12	2,744.000	1,155.24	1,176.393	0.000	999.0
+D+Lr+H								
. . . .11.28 to 11.67	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.003	999.0
. . . .10.89 to 11.28	0.41	11.55	1.26	2,744.000	1,157.90	2,058.000	0.008	999.0
. . . .10.50 to 10.89	0.47	11.55	2.10	2,744.000	1,158.35	2,058.000	0.012	999.0
. . . .10.11 to 10.50	0.54	11.55	2.94	2,744.000	1,158.80	2,058.000	0.017	999.0
. . . .9.73 to 10.11	0.61	11.55	3.78	2,744.000	1,159.25	2,058.000	0.022	999.0
. . . .9.34 to 9.73	0.67	11.55	4.62	2,744.000	1,159.57	2,058.000	0.027	999.0
. . . .8.95 to 9.34	0.74	11.55	5.46	2,744.000	1,160.02	2,058.000	0.031	999.0
. . . .8.56 to 8.95	0.80	11.55	6.30	2,744.000	1,160.47	2,058.000	0.035	999.0
. . . .8.17 to 8.56	0.87	11.55	7.14	2,744.000	1,160.92	2,058.000	0.039	999.0
. . . .7.78 to 8.17	0.93	11.55	7.98	2,744.000	1,161.37	2,058.000	0.043	999.0
. . . .7.39 to 7.78	1.00	11.55	8.82	2,744.000	1,161.82	2,058.000	0.046	999.0
. . . .7.00 to 7.39	1.06	11.55	9.66	2,744.000	1,162.27	2,058.000	0.049	999.0
. . . .6.61 to 7.00	1.13	11.55	10.50	2,744.000	1,162.59	2,058.000	0.052	999.0
. . . .6.22 to 6.61	1.19	11.55	11.34	2,744.000	1,163.04	2,058.000	0.054	999.0
. . . .5.84 to 6.22	1.26	11.55	12.18	2,744.000	1,163.49	1,808.950	0.055	999.0
. . . .5.45 to 5.84	1.33	11.55	13.02	2,744.000	1,163.95	1,595.481	0.056	999.0
. . . .5.06 to 5.45	1.39	11.55	13.86	2,744.000	1,164.40	1,454.346	0.056	999.0
. . . .4.67 to 5.06	1.46	11.55	14.70	2,744.000	1,164.85	1,354.651	0.055	999.0
. . . .4.28 to 4.67	1.52	11.55	15.54	2,744.000	1,165.17	1,280.759	0.053	999.0
. . . .3.89 to 4.28	1.58	11.55	16.31	2,744.000	1,165.57	1,228.311	0.050	999.0
. . . .3.50 to 3.89	1.64	11.55	14.40	2,744.000	1,166.00	1,387.945	0.045	999.0
. . . .3.11 to 3.50	1.70	11.55	9.87	2,744.000	1,166.44	2,058.000	0.040	999.0
. . . .2.72 to 3.11	1.77	11.55	5.34	2,744.000	1,166.89	2,058.000	0.034	999.0
. . . .2.33 to 2.72	1.83	11.55	0.81	2,744.000	1,167.21	2,058.000	0.028	999.0
. . . .1.95 to 2.33	1.90	11.55	3.72	2,744.000	1,167.66	2,058.000	0.022	999.0
. . . .1.56 to 1.95	1.97	11.55	8.25	2,744.000	1,168.11	2,058.000	0.016	999.0
. . . .1.17 to 1.56	2.03	11.55	12.77	2,744.000	1,168.57	1,651.453	0.010	999.0
. . . .0.78 to 1.17	2.10	11.55	17.30	2,744.000	1,169.03	1,177.994	0.006	999.0

Concrete Slender Wall

DESCRIPTION: Building 4 Wall

. . . .0.39 to 0.78	2.17	11.55	21.83	2,744.000	1,169.50	1,169.495	0.002	999.0
. . . .0.00 to 0.39	0.00	11.55	28.62	2,744.000	1,155.24	1,155.243	0.000	999.0
+D+S+H								
. . . .11.28 to 11.67	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.001	999.0
. . . .10.89 to 11.28	0.41	11.55	0.88	2,744.000	1,157.90	2,058.000	0.004	999.0
. . . .10.50 to 10.89	0.48	11.55	1.47	2,744.000	1,158.35	2,058.000	0.007	999.0
. . . .10.11 to 10.50	0.54	11.55	2.05	2,744.000	1,158.80	2,058.000	0.009	999.0
. . . .9.73 to 10.11	0.61	11.55	2.64	2,744.000	1,159.25	2,058.000	0.012	999.0
. . . .9.34 to 9.73	0.67	11.55	3.23	2,744.000	1,159.58	2,058.000	0.015	999.0
. . . .8.95 to 9.34	0.74	11.55	3.81	2,744.000	1,160.03	2,058.000	0.017	999.0
. . . .8.56 to 8.95	0.80	11.55	4.40	2,744.000	1,160.48	2,058.000	0.019	999.0
. . . .8.17 to 8.56	0.87	11.55	4.99	2,744.000	1,160.93	2,058.000	0.021	999.0
. . . .7.78 to 8.17	0.93	11.55	5.57	2,744.000	1,161.37	2,058.000	0.023	999.0
. . . .7.39 to 7.78	1.00	11.55	6.16	2,744.000	1,161.82	2,058.000	0.024	999.0
. . . .7.00 to 7.39	1.06	11.55	6.74	2,744.000	1,162.27	2,058.000	0.026	999.0

Deflections - Service Loads

Load Combination / Location	Axial Load (k)	Moments (k-ft) Mcr	Mu	Inertia (in^4) Igross	Icracked	Ieff	Iterated Deflection (in) Deflection	Ratio
. . . .6.61 to 7.00	1.13	11.55	7.33	2,744.000	1,162.60	2,058.000	0.027	999.0
. . . .6.22 to 6.61	1.20	11.55	7.92	2,744.000	1,163.05	2,058.000	0.027	999.0
. . . .5.84 to 6.22	1.26	11.55	8.50	2,744.000	1,163.50	2,058.000	0.028	999.0
. . . .5.45 to 5.84	1.33	11.55	9.09	2,744.000	1,163.95	2,058.000	0.028	999.0
. . . .5.06 to 5.45	1.39	11.55	9.68	2,744.000	1,164.40	2,058.000	0.028	999.0
. . . .4.67 to 5.06	1.46	11.55	10.26	2,744.000	1,164.85	2,058.000	0.027	999.0
. . . .4.28 to 4.67	1.52	11.55	10.85	2,744.000	1,165.17	2,058.000	0.026	999.0
. . . .3.89 to 4.28	1.58	11.55	11.39	2,744.000	1,165.60	2,058.000	0.024	999.0
. . . .3.50 to 3.89	1.65	11.55	10.20	2,744.000	1,166.05	2,058.000	0.022	999.0
. . . .3.11 to 3.50	1.71	11.55	7.33	2,744.000	1,166.49	2,058.000	0.020	999.0
. . . .2.72 to 3.11	1.78	11.55	4.45	2,744.000	1,166.94	2,058.000	0.017	999.0
. . . .2.33 to 2.72	1.84	11.55	1.57	2,744.000	1,167.39	2,058.000	0.014	999.0
. . . .1.95 to 2.33	1.91	11.55	1.30	2,744.000	1,167.71	2,058.000	0.011	999.0
. . . .1.56 to 1.95	1.98	11.55	4.18	2,744.000	1,168.16	2,058.000	0.008	999.0
. . . .1.17 to 1.56	2.04	11.55	7.05	2,744.000	1,168.61	2,058.000	0.006	999.0
. . . .0.78 to 1.17	2.11	11.55	9.93	2,744.000	1,169.06	2,058.000	0.003	999.0
. . . .0.39 to 0.78	2.17	11.55	12.81	2,744.000	1,169.52	1,644.582	0.001	999.0
. . . .0.00 to 0.39	0.00	11.55	17.12	2,744.000	1,155.24	1,176.393	0.000	999.0
+D+0.750Lr+0.750L+H								
. . . .11.28 to 11.67	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.002	999.0
. . . .10.89 to 11.28	0.41	11.55	1.14	2,744.000	1,157.90	2,058.000	0.007	999.0
. . . .10.50 to 10.89	0.47	11.55	1.90	2,744.000	1,158.35	2,058.000	0.011	999.0
. . . .10.11 to 10.50	0.54	11.55	2.65	2,744.000	1,158.80	2,058.000	0.015	999.0
. . . .9.73 to 10.11	0.61	11.55	3.41	2,744.000	1,159.25	2,058.000	0.019	999.0
. . . .9.34 to 9.73	0.67	11.55	4.17	2,744.000	1,159.57	2,058.000	0.023	999.0
. . . .8.95 to 9.34	0.74	11.55	4.93	2,744.000	1,160.02	2,058.000	0.027	999.0
. . . .8.56 to 8.95	0.80	11.55	5.69	2,744.000	1,160.47	2,058.000	0.031	999.0
. . . .8.17 to 8.56	0.87	11.55	6.45	2,744.000	1,160.92	2,058.000	0.034	999.0
. . . .7.78 to 8.17	0.93	11.55	7.20	2,744.000	1,161.37	2,058.000	0.037	999.0
. . . .7.39 to 7.78	1.00	11.55	7.96	2,744.000	1,161.82	2,058.000	0.040	999.0
. . . .7.00 to 7.39	1.06	11.55	8.72	2,744.000	1,162.27	2,058.000	0.042	999.0
. . . .6.61 to 7.00	1.13	11.55	9.48	2,744.000	1,162.59	2,058.000	0.044	999.0
. . . .6.22 to 6.61	1.19	11.55	10.24	2,744.000	1,163.04	2,058.000	0.046	999.0

Concrete Slender Wall

DESCRIPTION: Building 4 Wall

. . . .5.84 to 6.22	1.26	11.55	11.00	2,744.000	1,163.49	2,058.000	0.048	999.0
. . . .5.45 to 5.84	1.33	11.55	11.75	2,744.000	1,163.94	1,965.740	0.048	999.0
. . . .5.06 to 5.45	1.39	11.55	12.51	2,744.000	1,164.40	1,713.842	0.048	999.0
. . . .4.67 to 5.06	1.46	11.55	13.27	2,744.000	1,164.85	1,548.690	0.048	999.0
. . . .4.28 to 4.67	1.52	11.55	14.03	2,744.000	1,165.17	1,432.536	0.046	999.0
. . . .3.89 to 4.28	1.58	11.55	14.72	2,744.000	1,165.58	1,353.105	0.043	999.0
. . . .3.50 to 3.89	1.64	11.55	12.97	2,744.000	1,166.02	1,607.014	0.039	999.0
. . . .3.11 to 3.50	1.71	11.55	8.84	2,744.000	1,166.46	2,058.000	0.035	999.0
. . . .2.72 to 3.11	1.77	11.55	4.70	2,744.000	1,166.90	2,058.000	0.030	999.0
. . . .2.33 to 2.72	1.84	11.55	0.57	2,744.000	1,167.22	2,058.000	0.025	999.0
. . . .1.95 to 2.33	1.90	11.55	3.56	2,744.000	1,167.67	2,058.000	0.019	999.0
. . . .1.56 to 1.95	1.97	11.55	7.70	2,744.000	1,168.13	2,058.000	0.014	999.0
. . . .1.17 to 1.56	2.03	11.55	11.83	2,744.000	1,168.58	1,934.443	0.009	999.0
. . . .0.78 to 1.17	2.10	11.55	15.97	2,744.000	1,169.04	1,253.059	0.005	999.0
. . . .0.39 to 0.78	2.17	11.55	20.10	2,744.000	1,169.50	1,169.501	0.002	999.0

Deflections - Service Loads

Load Combination / Location	Axial Load (k)	Moments (k-ft) Mcr	Mu	Inertia (in^4) Igross	Icracked	Ieff	Iterated Deflection (in) Deflection	Ratio
. . . .0.00 to 0.39	0.00	11.55	26.30	2,744.000	1,155.24	1,155.243	0.000	999.0
+D+0.750L+0.750S+H								
. . . .11.28 to 11.67	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.001	999.0
. . . .10.89 to 11.28	0.41	11.55	0.88	2,744.000	1,157.90	2,058.000	0.004	999.0
. . . .10.50 to 10.89	0.48	11.55	1.47	2,744.000	1,158.35	2,058.000	0.007	999.0
. . . .10.11 to 10.50	0.54	11.55	2.05	2,744.000	1,158.80	2,058.000	0.009	999.0
. . . .9.73 to 10.11	0.61	11.55	2.64	2,744.000	1,159.25	2,058.000	0.012	999.0
. . . .9.34 to 9.73	0.67	11.55	3.23	2,744.000	1,159.58	2,058.000	0.015	999.0
. . . .8.95 to 9.34	0.74	11.55	3.81	2,744.000	1,160.03	2,058.000	0.017	999.0
. . . .8.56 to 8.95	0.80	11.55	4.40	2,744.000	1,160.48	2,058.000	0.019	999.0
. . . .8.17 to 8.56	0.87	11.55	4.99	2,744.000	1,160.93	2,058.000	0.021	999.0
. . . .7.78 to 8.17	0.93	11.55	5.57	2,744.000	1,161.37	2,058.000	0.023	999.0
. . . .7.39 to 7.78	1.00	11.55	6.16	2,744.000	1,161.82	2,058.000	0.024	999.0
. . . .7.00 to 7.39	1.06	11.55	6.74	2,744.000	1,162.27	2,058.000	0.026	999.0
. . . .6.61 to 7.00	1.13	11.55	7.33	2,744.000	1,162.60	2,058.000	0.027	999.0
. . . .6.22 to 6.61	1.20	11.55	7.92	2,744.000	1,163.05	2,058.000	0.027	999.0
. . . .5.84 to 6.22	1.26	11.55	8.50	2,744.000	1,163.50	2,058.000	0.028	999.0
. . . .5.45 to 5.84	1.33	11.55	9.09	2,744.000	1,163.95	2,058.000	0.028	999.0
. . . .5.06 to 5.45	1.39	11.55	9.68	2,744.000	1,164.40	2,058.000	0.028	999.0
. . . .4.67 to 5.06	1.46	11.55	10.26	2,744.000	1,164.85	2,058.000	0.027	999.0
. . . .4.28 to 4.67	1.52	11.55	10.85	2,744.000	1,165.17	2,058.000	0.026	999.0
. . . .3.89 to 4.28	1.58	11.55	11.39	2,744.000	1,165.60	2,058.000	0.024	999.0
. . . .3.50 to 3.89	1.65	11.55	10.20	2,744.000	1,166.05	2,058.000	0.022	999.0
. . . .3.11 to 3.50	1.71	11.55	7.33	2,744.000	1,166.49	2,058.000	0.020	999.0
. . . .2.72 to 3.11	1.78	11.55	4.45	2,744.000	1,166.94	2,058.000	0.017	999.0
. . . .2.33 to 2.72	1.84	11.55	1.57	2,744.000	1,167.39	2,058.000	0.014	999.0
. . . .1.95 to 2.33	1.91	11.55	1.30	2,744.000	1,167.71	2,058.000	0.011	999.0
. . . .1.56 to 1.95	1.98	11.55	4.18	2,744.000	1,168.16	2,058.000	0.008	999.0
. . . .1.17 to 1.56	2.04	11.55	7.05	2,744.000	1,168.61	2,058.000	0.006	999.0
. . . .0.78 to 1.17	2.11	11.55	9.93	2,744.000	1,169.06	2,058.000	0.003	999.0
. . . .0.39 to 0.78	2.17	11.55	12.81	2,744.000	1,169.52	1,644.582	0.001	999.0
. . . .0.00 to 0.39	0.00	11.55	17.12	2,744.000	1,155.24	1,176.393	0.000	999.0
+D+0.60W+H								

Concrete Slender Wall

DESCRIPTION: Building 4 Wall

. . . .11.28 to 11.67	0.00	11.55	0.05	2,744.000	1,155.24	2,058.000	0.001	999.0
. . . .10.89 to 11.28	0.41	11.55	0.91	2,744.000	1,157.90	2,058.000	0.004	999.0
. . . .10.50 to 10.89	0.48	11.55	1.55	2,744.000	1,158.35	2,058.000	0.007	999.0
. . . .10.11 to 10.50	0.54	11.55	2.18	2,744.000	1,158.80	2,058.000	0.010	999.0
. . . .9.73 to 10.11	0.61	11.55	2.80	2,744.000	1,159.25	2,058.000	0.013	999.0
. . . .9.34 to 9.73	0.67	11.55	3.42	2,744.000	1,159.58	2,058.000	0.015	999.0
. . . .8.95 to 9.34	0.74	11.55	4.04	2,744.000	1,160.03	2,058.000	0.018	999.0
. . . .8.56 to 8.95	0.80	11.55	4.64	2,744.000	1,160.47	2,058.000	0.020	999.0
. . . .8.17 to 8.56	0.87	11.55	5.25	2,744.000	1,160.92	2,058.000	0.022	999.0
. . . .7.78 to 8.17	0.93	11.55	5.85	2,744.000	1,161.37	2,058.000	0.024	999.0
. . . .7.39 to 7.78	1.00	11.55	6.44	2,744.000	1,161.82	2,058.000	0.025	999.0
. . . .7.00 to 7.39	1.06	11.55	7.03	2,744.000	1,162.27	2,058.000	0.027	999.0
. . . .6.61 to 7.00	1.13	11.55	7.61	2,744.000	1,162.60	2,058.000	0.028	999.0
. . . .6.22 to 6.61	1.20	11.55	8.19	2,744.000	1,163.05	2,058.000	0.029	999.0
. . . .5.84 to 6.22	1.26	11.55	8.77	2,744.000	1,163.50	2,058.000	0.029	999.0

Deflections - Service Loads

Load Combination / Location	Axial Load (k)	Moments (k-ft) Mcr	Mu	Inertia (in^4) Igross	Icracked	Ieff	Iterated Deflection (in) Deflection	Ratio
. . . .5.45 to 5.84	1.33	11.55	9.33	2,744.000	1,163.95	2,058.000	0.029	999.0
. . . .5.06 to 5.45	1.39	11.55	9.90	2,744.000	1,164.40	2,058.000	0.029	999.0
. . . .4.67 to 5.06	1.46	11.55	10.45	2,744.000	1,164.85	2,058.000	0.028	999.0
. . . .4.28 to 4.67	1.52	11.55	11.01	2,744.000	1,165.17	2,058.000	0.027	999.0
. . . .3.89 to 4.28	1.58	11.55	11.51	2,744.000	1,165.60	2,058.000	0.025	999.0
. . . .3.50 to 3.89	1.65	11.55	10.28	2,744.000	1,166.05	2,058.000	0.023	999.0
. . . .3.11 to 3.50	1.71	11.55	7.35	2,744.000	1,166.49	2,058.000	0.021	999.0
. . . .2.72 to 3.11	1.78	11.55	4.42	2,744.000	1,166.94	2,058.000	0.018	999.0
. . . .2.33 to 2.72	1.84	11.55	1.49	2,744.000	1,167.39	2,058.000	0.015	999.0
. . . .1.95 to 2.33	1.91	11.55	1.45	2,744.000	1,167.71	2,058.000	0.012	999.0
. . . .1.56 to 1.95	1.97	11.55	4.40	2,744.000	1,168.16	2,058.000	0.009	999.0
. . . .1.17 to 1.56	2.04	11.55	7.35	2,744.000	1,168.61	2,058.000	0.006	999.0
. . . .0.78 to 1.17	2.11	11.55	10.30	2,744.000	1,169.06	2,058.000	0.003	999.0
. . . .0.39 to 0.78	2.17	11.55	13.26	2,744.000	1,169.51	1,552.836	0.001	999.0
. . . .0.00 to 0.39	0.00	11.55	17.71	2,744.000	1,155.24	1,155.243	0.000	999.0
+D+0.750Lr+0.750L+0.450W+H								
. . . .11.28 to 11.67	0.00	11.55	0.04	2,744.000	1,155.24	2,058.000	0.002	999.0
. . . .10.89 to 11.28	0.41	11.55	1.18	2,744.000	1,157.90	2,058.000	0.007	999.0
. . . .10.50 to 10.89	0.47	11.55	1.98	2,744.000	1,158.35	2,058.000	0.011	999.0
. . . .10.11 to 10.50	0.54	11.55	2.78	2,744.000	1,158.80	2,058.000	0.016	999.0
. . . .9.73 to 10.11	0.61	11.55	3.58	2,744.000	1,159.25	2,058.000	0.020	999.0
. . . .9.34 to 9.73	0.67	11.55	4.37	2,744.000	1,159.57	2,058.000	0.024	999.0
. . . .8.95 to 9.34	0.74	11.55	5.16	2,744.000	1,160.02	2,058.000	0.028	999.0
. . . .8.56 to 8.95	0.80	11.55	5.95	2,744.000	1,160.47	2,058.000	0.032	999.0
. . . .8.17 to 8.56	0.87	11.55	6.73	2,744.000	1,160.92	2,058.000	0.035	999.0
. . . .7.78 to 8.17	0.93	11.55	7.51	2,744.000	1,161.37	2,058.000	0.038	999.0
. . . .7.39 to 7.78	1.00	11.55	8.28	2,744.000	1,161.82	2,058.000	0.041	999.0
. . . .7.00 to 7.39	1.06	11.55	9.05	2,744.000	1,162.27	2,058.000	0.044	999.0
. . . .6.61 to 7.00	1.13	11.55	9.82	2,744.000	1,162.59	2,058.000	0.046	999.0
. . . .6.22 to 6.61	1.19	11.55	10.58	2,744.000	1,163.04	2,058.000	0.048	999.0
. . . .5.84 to 6.22	1.26	11.55	11.34	2,744.000	1,163.49	2,058.000	0.049	999.0
. . . .5.45 to 5.84	1.33	11.55	12.10	2,744.000	1,163.95	1,837.943	0.050	999.0
. . . .5.06 to 5.45	1.39	11.55	12.85	2,744.000	1,164.40	1,633.273	0.050	999.0

Concrete Slender Wall

DESCRIPTION: Building 4 Wall

. . . .4.67 to 5.06	1.46	11.55	13.59	2,744.000	1,164.85	1,494.541	0.049	999.0
. . . .4.28 to 4.67	1.52	11.55	14.34	2,744.000	1,165.17	1,394.675	0.047	999.0
. . . .3.89 to 4.28	1.58	11.55	15.01	2,744.000	1,165.58	1,325.411	0.044	999.0
. . . .3.50 to 3.89	1.64	11.55	13.24	2,744.000	1,166.01	1,555.082	0.041	999.0
. . . .3.11 to 3.50	1.71	11.55	9.08	2,744.000	1,166.46	2,058.000	0.036	999.0
. . . .2.72 to 3.11	1.77	11.55	4.91	2,744.000	1,166.90	2,058.000	0.031	999.0
. . . .2.33 to 2.72	1.84	11.55	0.75	2,744.000	1,167.22	2,058.000	0.025	999.0
. . . .1.95 to 2.33	1.90	11.55	3.43	2,744.000	1,167.67	2,058.000	0.020	999.0
. . . .1.56 to 1.95	1.97	11.55	7.60	2,744.000	1,168.12	2,058.000	0.015	999.0
. . . .1.17 to 1.56	2.03	11.55	11.78	2,744.000	1,168.58	1,955.243	0.010	999.0
. . . .0.78 to 1.17	2.10	11.55	15.96	2,744.000	1,169.04	1,253.237	0.005	999.0
. . . .0.39 to 0.78	2.17	11.55	20.15	2,744.000	1,169.50	1,169.500	0.002	999.0
. . . .0.00 to 0.39	0.00	11.55	26.44	2,744.000	1,155.24	1,155.243	0.000	999.0
+D+0.750L+0.750S+0.450W+H								
. . . .11.28 to 11.67	0.00	11.55	0.04	2,744.000	1,155.24	2,058.000	0.001	999.0

Deflections - Service Loads

Load Combination / Location	Axial Load (k)	Moments (k-ft) Mcr	Mu	Inertia (in^4) Igross	Icracked	Ieff	Iterated Deflection (in) Deflection	Ratio
. . . .10.89 to 11.28	0.41	11.55	0.91	2,744.000	1,157.90	2,058.000	0.004	999.0
. . . .10.50 to 10.89	0.48	11.55	1.53	2,744.000	1,158.35	2,058.000	0.007	999.0
. . . .10.11 to 10.50	0.54	11.55	2.16	2,744.000	1,158.80	2,058.000	0.010	999.0
. . . .9.73 to 10.11	0.61	11.55	2.77	2,744.000	1,159.25	2,058.000	0.012	999.0
. . . .9.34 to 9.73	0.67	11.55	3.39	2,744.000	1,159.58	2,058.000	0.015	999.0
. . . .8.95 to 9.34	0.74	11.55	4.00	2,744.000	1,160.03	2,058.000	0.017	999.0
. . . .8.56 to 8.95	0.80	11.55	4.60	2,744.000	1,160.48	2,058.000	0.020	999.0
. . . .8.17 to 8.56	0.87	11.55	5.20	2,744.000	1,160.92	2,058.000	0.022	999.0
. . . .7.78 to 8.17	0.93	11.55	5.80	2,744.000	1,161.37	2,058.000	0.023	999.0
. . . .7.39 to 7.78	1.00	11.55	6.40	2,744.000	1,161.82	2,058.000	0.025	999.0
. . . .7.00 to 7.39	1.06	11.55	6.99	2,744.000	1,162.27	2,058.000	0.026	999.0
. . . .6.61 to 7.00	1.13	11.55	7.57	2,744.000	1,162.60	2,058.000	0.027	999.0
. . . .6.22 to 6.61	1.20	11.55	8.16	2,744.000	1,163.05	2,058.000	0.028	999.0
. . . .5.84 to 6.22	1.26	11.55	8.74	2,744.000	1,163.50	2,058.000	0.029	999.0
. . . .5.45 to 5.84	1.33	11.55	9.31	2,744.000	1,163.95	2,058.000	0.029	999.0
. . . .5.06 to 5.45	1.39	11.55	9.88	2,744.000	1,164.40	2,058.000	0.028	999.0
. . . .4.67 to 5.06	1.46	11.55	10.45	2,744.000	1,164.85	2,058.000	0.028	999.0
. . . .4.28 to 4.67	1.52	11.55	11.02	2,744.000	1,165.17	2,058.000	0.026	999.0
. . . .3.89 to 4.28	1.58	11.55	11.53	2,744.000	1,165.60	2,058.000	0.025	999.0
. . . .3.50 to 3.89	1.65	11.55	10.31	2,744.000	1,166.05	2,058.000	0.023	999.0
. . . .3.11 to 3.50	1.71	11.55	7.40	2,744.000	1,166.49	2,058.000	0.020	999.0
. . . .2.72 to 3.11	1.78	11.55	4.49	2,744.000	1,166.94	2,058.000	0.018	999.0
. . . .2.33 to 2.72	1.84	11.55	1.57	2,744.000	1,167.39	2,058.000	0.015	999.0
. . . .1.95 to 2.33	1.91	11.55	1.35	2,744.000	1,167.71	2,058.000	0.012	999.0
. . . .1.56 to 1.95	1.98	11.55	4.28	2,744.000	1,168.16	2,058.000	0.009	999.0
. . . .1.17 to 1.56	2.04	11.55	7.21	2,744.000	1,168.61	2,058.000	0.006	999.0
. . . .0.78 to 1.17	2.11	11.55	10.14	2,744.000	1,169.06	2,058.000	0.003	999.0
. . . .0.39 to 0.78	2.17	11.55	13.08	2,744.000	1,169.52	1,587.983	0.001	999.0
. . . .0.00 to 0.39	0.00	11.55	17.49	2,744.000	1,155.24	1,159.183	0.000	999.0
+0.60D+0.60W+0.60H								
. . . .11.28 to 11.67	0.00	11.55	0.05	2,744.000	1,155.24	2,058.000	0.001	999.0
. . . .10.89 to 11.28	0.25	11.55	0.50	2,744.000	1,156.84	2,058.000	0.002	999.0
. . . .10.50 to 10.89	0.29	11.55	0.86	2,744.000	1,157.03	2,058.000	0.004	999.0

Concrete Slender Wall

DESCRIPTION: Building 4 Wall

. . . .10.11 to 10.50	0.32	11.55	1.21	2,744.000	1,157.36	2,058.000	0.005	999.0
. . . .9.73 to 10.11	0.36	11.55	1.56	2,744.000	1,157.55	2,058.000	0.007	999.0
. . . .9.34 to 9.73	0.40	11.55	1.90	2,744.000	1,157.87	2,058.000	0.008	999.0
. . . .8.95 to 9.34	0.44	11.55	2.24	2,744.000	1,158.06	2,058.000	0.009	999.0
. . . .8.56 to 8.95	0.48	11.55	2.58	2,744.000	1,158.38	2,058.000	0.010	999.0
. . . .8.17 to 8.56	0.52	11.55	2.90	2,744.000	1,158.70	2,058.000	0.011	999.0
. . . .7.78 to 8.17	0.56	11.55	3.23	2,744.000	1,158.90	2,058.000	0.012	999.0
. . . .7.39 to 7.78	0.60	11.55	3.54	2,744.000	1,159.22	2,058.000	0.013	999.0
. . . .7.00 to 7.39	0.64	11.55	3.86	2,744.000	1,159.41	2,058.000	0.014	999.0
. . . .6.61 to 7.00	0.68	11.55	4.17	2,744.000	1,159.73	2,058.000	0.014	999.0
. . . .6.22 to 6.61	0.72	11.55	4.47	2,744.000	1,159.93	2,058.000	0.015	999.0
. . . .5.84 to 6.22	0.76	11.55	4.77	2,744.000	1,160.25	2,058.000	0.015	999.0
. . . .5.45 to 5.84	0.80	11.55	5.06	2,744.000	1,160.44	2,058.000	0.015	999.0
. . . .5.06 to 5.45	0.83	11.55	5.35	2,744.000	1,160.76	2,058.000	0.015	999.0
. . . .4.67 to 5.06	0.87	11.55	5.63	2,744.000	1,160.96	2,058.000	0.014	999.0

Deflections - Service Loads

Load Combination Location	Axial Load (k)	Moments (k-ft) Mcr	 Mu	Inertia (in^4) Igross	 Icracked	 Ieff	Iterated Deflection (in) Deflection	 Ratio
. . . .4.28 to 4.67	0.91	11.55	5.90	2,744.000	1,161.28	2,058.000	0.014	999.0
. . . .3.89 to 4.28	0.95	11.55	6.15	2,744.000	1,161.46	2,058.000	0.013	999.0
. . . .3.50 to 3.89	0.99	11.55	5.35	2,744.000	1,161.78	2,058.000	0.011	999.0
. . . .3.11 to 3.50	1.03	11.55	3.54	2,744.000	1,161.98	2,058.000	0.010	999.0
. . . .2.72 to 3.11	1.07	11.55	1.72	2,744.000	1,162.30	2,058.000	0.009	999.0
. . . .2.33 to 2.72	1.11	11.55	0.11	2,744.000	1,162.49	2,058.000	0.007	999.0
. . . .1.95 to 2.33	1.15	11.55	1.94	2,744.000	1,162.81	2,058.000	0.005	999.0
. . . .1.56 to 1.95	1.19	11.55	3.78	2,744.000	1,163.00	2,058.000	0.004	999.0
. . . .1.17 to 1.56	1.23	11.55	5.62	2,744.000	1,163.32	2,058.000	0.003	999.0
. . . .0.78 to 1.17	1.27	11.55	7.46	2,744.000	1,163.52	2,058.000	0.001	999.0
. . . .0.39 to 0.78	1.30	11.55	9.31	2,744.000	1,163.84	2,058.000	0.001	999.0
. . . .0.00 to 0.39	0.00	11.55	12.10	2,744.000	1,155.24	1,834.073	0.000	999.0
+D+0.70E+0.60H								
. . . .11.28 to 11.67	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.001	999.0
. . . .10.89 to 11.28	0.41	11.55	0.88	2,744.000	1,157.90	2,058.000	0.004	999.0
. . . .10.50 to 10.89	0.48	11.55	1.47	2,744.000	1,158.35	2,058.000	0.007	999.0
. . . .10.11 to 10.50	0.54	11.55	2.05	2,744.000	1,158.80	2,058.000	0.009	999.0
. . . .9.73 to 10.11	0.61	11.55	2.64	2,744.000	1,159.25	2,058.000	0.012	999.0
. . . .9.34 to 9.73	0.67	11.55	3.23	2,744.000	1,159.58	2,058.000	0.015	999.0
. . . .8.95 to 9.34	0.74	11.55	3.81	2,744.000	1,160.03	2,058.000	0.017	999.0
. . . .8.56 to 8.95	0.80	11.55	4.40	2,744.000	1,160.48	2,058.000	0.019	999.0
. . . .8.17 to 8.56	0.87	11.55	4.99	2,744.000	1,160.93	2,058.000	0.021	999.0
. . . .7.78 to 8.17	0.93	11.55	5.57	2,744.000	1,161.37	2,058.000	0.023	999.0
. . . .7.39 to 7.78	1.00	11.55	6.16	2,744.000	1,161.82	2,058.000	0.024	999.0
. . . .7.00 to 7.39	1.06	11.55	6.74	2,744.000	1,162.27	2,058.000	0.026	999.0
. . . .6.61 to 7.00	1.13	11.55	7.33	2,744.000	1,162.60	2,058.000	0.027	999.0
. . . .6.22 to 6.61	1.20	11.55	7.92	2,744.000	1,163.05	2,058.000	0.027	999.0
. . . .5.84 to 6.22	1.26	11.55	8.50	2,744.000	1,163.50	2,058.000	0.028	999.0
. . . .5.45 to 5.84	1.33	11.55	9.09	2,744.000	1,163.95	2,058.000	0.028	999.0
. . . .5.06 to 5.45	1.39	11.55	9.68	2,744.000	1,164.40	2,058.000	0.028	999.0
. . . .4.67 to 5.06	1.46	11.55	10.26	2,744.000	1,164.85	2,058.000	0.027	999.0
. . . .4.28 to 4.67	1.52	11.55	10.85	2,744.000	1,165.17	2,058.000	0.026	999.0
. . . .3.89 to 4.28	1.58	11.55	11.39	2,744.000	1,165.60	2,058.000	0.024	999.0

Concrete Slender Wall

DESCRIPTION: Building 4 Wall

. . . .3.50 to 3.89	1.65	11.55	10.20	2,744.000	1,166.05	2,058.000	0.022	999.0
. . . .3.11 to 3.50	1.71	11.55	7.33	2,744.000	1,166.49	2,058.000	0.020	999.0
. . . .2.72 to 3.11	1.78	11.55	4.45	2,744.000	1,166.94	2,058.000	0.017	999.0
. . . .2.33 to 2.72	1.84	11.55	1.57	2,744.000	1,167.39	2,058.000	0.014	999.0
. . . .1.95 to 2.33	1.91	11.55	1.30	2,744.000	1,167.71	2,058.000	0.011	999.0
. . . .1.56 to 1.95	1.98	11.55	4.18	2,744.000	1,168.16	2,058.000	0.008	999.0
. . . .1.17 to 1.56	2.04	11.55	7.05	2,744.000	1,168.61	2,058.000	0.006	999.0
. . . .0.78 to 1.17	2.11	11.55	9.93	2,744.000	1,169.06	2,058.000	0.003	999.0
. . . .0.39 to 0.78	2.17	11.55	12.81	2,744.000	1,169.52	1,644.582	0.001	999.0
. . . .0.00 to 0.39	0.00	11.55	17.12	2,744.000	1,155.24	1,176.393	0.000	999.0
+D+0.750L+0.750S+0.5250E+H								
. . . .11.28 to 11.67	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.001	999.0
. . . .10.89 to 11.28	0.41	11.55	0.88	2,744.000	1,157.90	2,058.000	0.004	999.0
. . . .10.50 to 10.89	0.48	11.55	1.47	2,744.000	1,158.35	2,058.000	0.007	999.0
. . . .10.11 to 10.50	0.54	11.55	2.05	2,744.000	1,158.80	2,058.000	0.009	999.0

Deflections - Service Loads

Load Combination Location	Axial Load (k)	Moments (k-ft) Mcr	Mu	Inertia (in^4) Igross	Icracked	Ieff	Iterated Deflection (in) Deflection	Ratio
. . . .9.73 to 10.11	0.61	11.55	2.64	2,744.000	1,159.25	2,058.000	0.012	999.0
. . . .9.34 to 9.73	0.67	11.55	3.23	2,744.000	1,159.58	2,058.000	0.015	999.0
. . . .8.95 to 9.34	0.74	11.55	3.81	2,744.000	1,160.03	2,058.000	0.017	999.0
. . . .8.56 to 8.95	0.80	11.55	4.40	2,744.000	1,160.48	2,058.000	0.019	999.0
. . . .8.17 to 8.56	0.87	11.55	4.99	2,744.000	1,160.93	2,058.000	0.021	999.0
. . . .7.78 to 8.17	0.93	11.55	5.57	2,744.000	1,161.37	2,058.000	0.023	999.0
. . . .7.39 to 7.78	1.00	11.55	6.16	2,744.000	1,161.82	2,058.000	0.024	999.0
. . . .7.00 to 7.39	1.06	11.55	6.74	2,744.000	1,162.27	2,058.000	0.026	999.0
. . . .6.61 to 7.00	1.13	11.55	7.33	2,744.000	1,162.60	2,058.000	0.027	999.0
. . . .6.22 to 6.61	1.20	11.55	7.92	2,744.000	1,163.05	2,058.000	0.027	999.0
. . . .5.84 to 6.22	1.26	11.55	8.50	2,744.000	1,163.50	2,058.000	0.028	999.0
. . . .5.45 to 5.84	1.33	11.55	9.09	2,744.000	1,163.95	2,058.000	0.028	999.0
. . . .5.06 to 5.45	1.39	11.55	9.68	2,744.000	1,164.40	2,058.000	0.028	999.0
. . . .4.67 to 5.06	1.46	11.55	10.26	2,744.000	1,164.85	2,058.000	0.027	999.0
. . . .4.28 to 4.67	1.52	11.55	10.85	2,744.000	1,165.17	2,058.000	0.026	999.0
. . . .3.89 to 4.28	1.58	11.55	11.39	2,744.000	1,165.60	2,058.000	0.024	999.0
. . . .3.50 to 3.89	1.65	11.55	10.20	2,744.000	1,166.05	2,058.000	0.022	999.0
. . . .3.11 to 3.50	1.71	11.55	7.33	2,744.000	1,166.49	2,058.000	0.020	999.0
. . . .2.72 to 3.11	1.78	11.55	4.45	2,744.000	1,166.94	2,058.000	0.017	999.0
. . . .2.33 to 2.72	1.84	11.55	1.57	2,744.000	1,167.39	2,058.000	0.014	999.0
. . . .1.95 to 2.33	1.91	11.55	1.30	2,744.000	1,167.71	2,058.000	0.011	999.0
. . . .1.56 to 1.95	1.98	11.55	4.18	2,744.000	1,168.16	2,058.000	0.008	999.0
. . . .1.17 to 1.56	2.04	11.55	7.05	2,744.000	1,168.61	2,058.000	0.006	999.0
. . . .0.78 to 1.17	2.11	11.55	9.93	2,744.000	1,169.06	2,058.000	0.003	999.0
. . . .0.39 to 0.78	2.17	11.55	12.81	2,744.000	1,169.52	1,644.582	0.001	999.0
. . . .0.00 to 0.39	0.00	11.55	17.12	2,744.000	1,155.24	1,176.393	0.000	999.0
+0.60D+0.70E+H								
. . . .11.28 to 11.67	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.001	999.0
. . . .10.89 to 11.28	0.25	11.55	0.47	2,744.000	1,156.84	2,058.000	0.002	999.0
. . . .10.50 to 10.89	0.29	11.55	0.78	2,744.000	1,157.03	2,058.000	0.004	999.0
. . . .10.11 to 10.50	0.32	11.55	1.09	2,744.000	1,157.36	2,058.000	0.005	999.0
. . . .9.73 to 10.11	0.36	11.55	1.40	2,744.000	1,157.55	2,058.000	0.006	999.0
. . . .9.34 to 9.73	0.40	11.55	1.71	2,744.000	1,157.87	2,058.000	0.007	999.0

Concrete Slender Wall

DESCRIPTION: Building 4 Wall

. . . .8.95 to 9.34	0.44	11.55	2.02	2,744.000	1,158.06	2,058.000	0.009	999.0
. . . .8.56 to 8.95	0.48	11.55	2.33	2,744.000	1,158.38	2,058.000	0.010	999.0
. . . .8.17 to 8.56	0.52	11.55	2.64	2,744.000	1,158.71	2,058.000	0.011	999.0
. . . .7.78 to 8.17	0.56	11.55	2.95	2,744.000	1,158.90	2,058.000	0.012	999.0
. . . .7.39 to 7.78	0.60	11.55	3.26	2,744.000	1,159.22	2,058.000	0.012	999.0
. . . .7.00 to 7.39	0.64	11.55	3.57	2,744.000	1,159.41	2,058.000	0.013	999.0
. . . .6.61 to 7.00	0.68	11.55	3.88	2,744.000	1,159.73	2,058.000	0.014	999.0
. . . .6.22 to 6.61	0.72	11.55	4.19	2,744.000	1,159.93	2,058.000	0.014	999.0
. . . .5.84 to 6.22	0.76	11.55	4.50	2,744.000	1,160.25	2,058.000	0.014	999.0
. . . .5.45 to 5.84	0.80	11.55	4.81	2,744.000	1,160.44	2,058.000	0.014	999.0
. . . .5.06 to 5.45	0.83	11.55	5.12	2,744.000	1,160.76	2,058.000	0.014	999.0
. . . .4.67 to 5.06	0.87	11.55	5.43	2,744.000	1,160.96	2,058.000	0.014	999.0
. . . .4.28 to 4.67	0.91	11.55	5.74	2,744.000	1,161.28	2,058.000	0.013	999.0
. . . .3.89 to 4.28	0.95	11.55	6.02	2,744.000	1,161.46	2,058.000	0.012	999.0
. . . .3.50 to 3.89	0.99	11.55	5.26	2,744.000	1,161.78	2,058.000	0.011	999.0

Deflections - Service Loads

Load Combination Location	Axial Load (k)	Moments (k-ft) Mcr	 Mu	Inertia (in^4) Igross	 Icracked	 Ieff	Iterated Deflection (in) Deflection	 Ratio
. . . .3.11 to 3.50	1.03	11.55	3.50	2,744.000	1,161.98	2,058.000	0.010	999.0
. . . .2.72 to 3.11	1.07	11.55	1.73	2,744.000	1,162.30	2,058.000	0.008	999.0
. . . .2.33 to 2.72	1.11	11.55	0.04	2,744.000	1,162.49	2,058.000	0.007	999.0
. . . .1.95 to 2.33	1.15	11.55	1.81	2,744.000	1,162.81	2,058.000	0.005	999.0
. . . .1.56 to 1.95	1.19	11.55	3.57	2,744.000	1,163.00	2,058.000	0.004	999.0
. . . .1.17 to 1.56	1.23	11.55	5.34	2,744.000	1,163.32	2,058.000	0.002	999.0
. . . .0.78 to 1.17	1.27	11.55	7.11	2,744.000	1,163.52	2,058.000	0.001	999.0
. . . .0.39 to 0.78	1.30	11.55	8.88	2,744.000	1,163.84	2,058.000	0.001	999.0
. . . .0.00 to 0.39	0.00	11.55	11.53	2,744.000	1,155.24	2,058.000	0.000	999.0
D Only								
. . . .11.28 to 11.67	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.001	999.0
. . . .10.89 to 11.28	0.41	11.55	0.88	2,744.000	1,157.90	2,058.000	0.004	999.0
. . . .10.50 to 10.89	0.48	11.55	1.47	2,744.000	1,158.35	2,058.000	0.007	999.0
. . . .10.11 to 10.50	0.54	11.55	2.05	2,744.000	1,158.80	2,058.000	0.009	999.0
. . . .9.73 to 10.11	0.61	11.55	2.64	2,744.000	1,159.25	2,058.000	0.012	999.0
. . . .9.34 to 9.73	0.67	11.55	3.23	2,744.000	1,159.58	2,058.000	0.015	999.0
. . . .8.95 to 9.34	0.74	11.55	3.81	2,744.000	1,160.03	2,058.000	0.017	999.0
. . . .8.56 to 8.95	0.80	11.55	4.40	2,744.000	1,160.48	2,058.000	0.019	999.0
. . . .8.17 to 8.56	0.87	11.55	4.99	2,744.000	1,160.93	2,058.000	0.021	999.0
. . . .7.78 to 8.17	0.93	11.55	5.57	2,744.000	1,161.37	2,058.000	0.023	999.0
. . . .7.39 to 7.78	1.00	11.55	6.16	2,744.000	1,161.82	2,058.000	0.024	999.0
. . . .7.00 to 7.39	1.06	11.55	6.74	2,744.000	1,162.27	2,058.000	0.026	999.0
. . . .6.61 to 7.00	1.13	11.55	7.33	2,744.000	1,162.60	2,058.000	0.027	999.0
. . . .6.22 to 6.61	1.20	11.55	7.92	2,744.000	1,163.05	2,058.000	0.027	999.0
. . . .5.84 to 6.22	1.26	11.55	8.50	2,744.000	1,163.50	2,058.000	0.028	999.0
. . . .5.45 to 5.84	1.33	11.55	9.09	2,744.000	1,163.95	2,058.000	0.028	999.0
. . . .5.06 to 5.45	1.39	11.55	9.68	2,744.000	1,164.40	2,058.000	0.028	999.0
. . . .4.67 to 5.06	1.46	11.55	10.26	2,744.000	1,164.85	2,058.000	0.027	999.0
. . . .4.28 to 4.67	1.52	11.55	10.85	2,744.000	1,165.17	2,058.000	0.026	999.0
. . . .3.89 to 4.28	1.58	11.55	11.39	2,744.000	1,165.60	2,058.000	0.024	999.0
. . . .3.50 to 3.89	1.65	11.55	10.20	2,744.000	1,166.05	2,058.000	0.022	999.0
. . . .3.11 to 3.50	1.71	11.55	7.33	2,744.000	1,166.49	2,058.000	0.020	999.0
. . . .2.72 to 3.11	1.78	11.55	4.45	2,744.000	1,166.94	2,058.000	0.017	999.0

Concrete Slender Wall

DESCRIPTION: Building 4 Wall

. . . .2.33 to 2.72	1.84	11.55	1.57	2,744.000	1,167.39	2,058.000	0.014	999.0
. . . .1.95 to 2.33	1.91	11.55	1.30	2,744.000	1,167.71	2,058.000	0.011	999.0
. . . .1.56 to 1.95	1.98	11.55	4.18	2,744.000	1,168.16	2,058.000	0.008	999.0
. . . .1.17 to 1.56	2.04	11.55	7.05	2,744.000	1,168.61	2,058.000	0.006	999.0
. . . .0.78 to 1.17	2.11	11.55	9.93	2,744.000	1,169.06	2,058.000	0.003	999.0
. . . .0.39 to 0.78	2.17	11.55	12.81	2,744.000	1,169.52	1,644.582	0.001	999.0
. . . .0.00 to 0.39	0.00	11.55	17.12	2,744.000	1,155.24	1,176.393	0.000	999.0
Lr Only								
. . . .11.28 to 11.67	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.001	999.0
. . . .10.89 to 11.28	0.00	11.55	0.43	2,744.000	1,155.24	2,058.000	0.002	999.0
. . . .10.50 to 10.89	0.00	11.55	0.71	2,744.000	1,155.24	2,058.000	0.003	999.0
. . . .10.11 to 10.50	0.00	11.55	0.99	2,744.000	1,155.24	2,058.000	0.004	999.0
. . . .9.73 to 10.11	0.00	11.55	1.28	2,744.000	1,155.24	2,058.000	0.006	999.0
. . . .9.34 to 9.73	0.00	11.55	1.56	2,744.000	1,155.24	2,058.000	0.007	999.0
. . . .8.95 to 9.34	0.00	11.55	1.84	2,744.000	1,155.24	2,058.000	0.008	999.0

Deflections - Service Loads

Load Combination / Location	Axial Load (k)	Moments (k-ft) Mcr	Mu	Inertia (in^4) Igross	Icracked	Ieff	Iterated Deflection (in) Deflection	Ratio
. . . .8.56 to 8.95	0.00	11.55	2.13	2,744.000	1,155.24	2,058.000	0.009	999.0
. . . .8.17 to 8.56	0.00	11.55	2.41	2,744.000	1,155.24	2,058.000	0.010	999.0
. . . .7.78 to 8.17	0.00	11.55	2.70	2,744.000	1,155.24	2,058.000	0.011	999.0
. . . .7.39 to 7.78	0.00	11.55	2.98	2,744.000	1,155.24	2,058.000	0.011	999.0
. . . .7.00 to 7.39	0.00	11.55	3.26	2,744.000	1,155.24	2,058.000	0.012	999.0
. . . .6.61 to 7.00	0.00	11.55	3.55	2,744.000	1,155.24	2,058.000	0.012	999.0
. . . .6.22 to 6.61	0.00	11.55	3.83	2,744.000	1,155.24	2,058.000	0.013	999.0
. . . .5.84 to 6.22	0.00	11.55	4.11	2,744.000	1,155.24	2,058.000	0.013	999.0
. . . .5.45 to 5.84	0.00	11.55	4.40	2,744.000	1,155.24	2,058.000	0.013	999.0
. . . .5.06 to 5.45	0.00	11.55	4.68	2,744.000	1,155.24	2,058.000	0.013	999.0
. . . .4.67 to 5.06	0.00	11.55	4.97	2,744.000	1,155.24	2,058.000	0.012	999.0
. . . .4.28 to 4.67	0.00	11.55	5.25	2,744.000	1,155.24	2,058.000	0.012	999.0
. . . .3.89 to 4.28	0.00	11.55	5.51	2,744.000	1,155.24	2,058.000	0.011	999.0
. . . .3.50 to 3.89	0.00	11.55	4.81	2,744.000	1,155.24	2,058.000	0.010	999.0
. . . .3.11 to 3.50	0.00	11.55	3.19	2,744.000	1,155.24	2,058.000	0.009	999.0
. . . .2.72 to 3.11	0.00	11.55	1.57	2,744.000	1,155.24	2,058.000	0.007	999.0
. . . .2.33 to 2.72	0.00	11.55	0.05	2,744.000	1,155.24	2,058.000	0.006	999.0
. . . .1.95 to 2.33	0.00	11.55	1.67	2,744.000	1,155.24	2,058.000	0.005	999.0
. . . .1.56 to 1.95	0.00	11.55	3.30	2,744.000	1,155.24	2,058.000	0.003	999.0
. . . .1.17 to 1.56	0.00	11.55	4.92	2,744.000	1,155.24	2,058.000	0.002	999.0
. . . .0.78 to 1.17	0.00	11.55	6.54	2,744.000	1,155.24	2,058.000	0.001	999.0
. . . .0.39 to 0.78	0.00	11.55	8.16	2,744.000	1,155.24	2,058.000	0.000	999.0
. . . .0.00 to 0.39	0.00	11.55	10.60	2,744.000	1,155.24	2,058.000	0.000	999.0
L Only								
. . . .11.28 to 11.67	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .10.89 to 11.28	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .10.50 to 10.89	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .10.11 to 10.50	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .9.73 to 10.11	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .9.34 to 9.73	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .8.95 to 9.34	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .8.56 to 8.95	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .8.17 to 8.56	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0

Concrete Slender Wall

DESCRIPTION: Building 4 Wall

. . . .7.78 to 8.17	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .7.39 to 7.78	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .7.00 to 7.39	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .6.61 to 7.00	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .6.22 to 6.61	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .5.84 to 6.22	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .5.45 to 5.84	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .5.06 to 5.45	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .4.67 to 5.06	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .4.28 to 4.67	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .3.89 to 4.28	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .3.50 to 3.89	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .3.11 to 3.50	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .2.72 to 3.11	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .2.33 to 2.72	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0

Deflections - Service Loads

Load Combination / Location	Axial Load (k)	Moments (k-ft) Mcr	Mu	Inertia (in^4) Igross	Icracked	Ieff	Iterated Deflection (in) Deflection	Ratio
. . . .1.95 to 2.33	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .1.56 to 1.95	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .1.17 to 1.56	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .0.78 to 1.17	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .0.39 to 0.78	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .0.00 to 0.39	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
S Only								
. . . .11.28 to 11.67	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .10.89 to 11.28	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .10.50 to 10.89	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .10.11 to 10.50	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .9.73 to 10.11	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .9.34 to 9.73	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .8.95 to 9.34	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .8.56 to 8.95	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .8.17 to 8.56	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .7.78 to 8.17	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .7.39 to 7.78	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .7.00 to 7.39	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .6.61 to 7.00	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .6.22 to 6.61	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .5.84 to 6.22	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .5.45 to 5.84	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .5.06 to 5.45	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .4.67 to 5.06	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .4.28 to 4.67	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .3.89 to 4.28	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .3.50 to 3.89	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .3.11 to 3.50	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .2.72 to 3.11	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .2.33 to 2.72	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .1.95 to 2.33	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .1.56 to 1.95	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0

Concrete Slender Wall

DESCRIPTION: Building 4 Wall

. . . .1.17 to 1.56	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .0.78 to 1.17	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .0.39 to 0.78	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .0.00 to 0.39	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
W Only								
. . . .11.28 to 11.67	0.00	11.55	0.08	2,744.000	1,155.24	2,058.000	0.000	999.0
. . . .10.89 to 11.28	0.00	11.55	0.06	2,744.000	1,155.24	2,058.000	0.000	999.0
. . . .10.50 to 10.89	0.00	11.55	0.14	2,744.000	1,155.24	2,058.000	0.000	999.0
. . . .10.11 to 10.50	0.00	11.55	0.22	2,744.000	1,155.24	2,058.000	0.001	999.0
. . . .9.73 to 10.11	0.00	11.55	0.28	2,744.000	1,155.24	2,058.000	0.001	999.0
. . . .9.34 to 9.73	0.00	11.55	0.34	2,744.000	1,155.24	2,058.000	0.001	999.0
. . . .8.95 to 9.34	0.00	11.55	0.39	2,744.000	1,155.24	2,058.000	0.001	999.0
. . . .8.56 to 8.95	0.00	11.55	0.43	2,744.000	1,155.24	2,058.000	0.001	999.0
. . . .8.17 to 8.56	0.00	11.55	0.46	2,744.000	1,155.24	2,058.000	0.001	999.0
. . . .7.78 to 8.17	0.00	11.55	0.48	2,744.000	1,155.24	2,058.000	0.001	999.0

Deflections - Service Loads

Load Combination / Location	Axial Load (k)	Moments (k-ft) Mcr	Mu	Inertia (in^4) Igross	Icracked	Ieff	Iterated Deflection (in) Deflection	Ratio
. . . .7.39 to 7.78	0.00	11.55	0.50	2,744.000	1,155.24	2,058.000	0.001	999.0
. . . .7.00 to 7.39	0.00	11.55	0.50	2,744.000	1,155.24	2,058.000	0.001	999.0
. . . .6.61 to 7.00	0.00	11.55	0.50	2,744.000	1,155.24	2,058.000	0.001	999.0
. . . .6.22 to 6.61	0.00	11.55	0.49	2,744.000	1,155.24	2,058.000	0.001	999.0
. . . .5.84 to 6.22	0.00	11.55	0.47	2,744.000	1,155.24	2,058.000	0.001	999.0
. . . .5.45 to 5.84	0.00	11.55	0.44	2,744.000	1,155.24	2,058.000	0.001	999.0
. . . .5.06 to 5.45	0.00	11.55	0.40	2,744.000	1,155.24	2,058.000	0.001	999.0
. . . .4.67 to 5.06	0.00	11.55	0.36	2,744.000	1,155.24	2,058.000	0.001	999.0
. . . .4.28 to 4.67	0.00	11.55	0.31	2,744.000	1,155.24	2,058.000	0.001	999.0
. . . .3.89 to 4.28	0.00	11.55	0.24	2,744.000	1,155.24	2,058.000	0.001	999.0
. . . .3.50 to 3.89	0.00	11.55	0.17	2,744.000	1,155.24	2,058.000	0.001	999.0
. . . .3.11 to 3.50	0.00	11.55	0.10	2,744.000	1,155.24	2,058.000	0.001	999.0
. . . .2.72 to 3.11	0.00	11.55	0.01	2,744.000	1,155.24	2,058.000	0.001	999.0
. . . .2.33 to 2.72	0.00	11.55	0.09	2,744.000	1,155.24	2,058.000	0.001	999.0
. . . .1.95 to 2.33	0.00	11.55	0.19	2,744.000	1,155.24	2,058.000	0.000	999.0
. . . .1.56 to 1.95	0.00	11.55	0.30	2,744.000	1,155.24	2,058.000	0.000	999.0
. . . .1.17 to 1.56	0.00	11.55	0.43	2,744.000	1,155.24	2,058.000	0.000	999.0
. . . .0.78 to 1.17	0.00	11.55	0.55	2,744.000	1,155.24	2,058.000	0.000	999.0
. . . .0.39 to 0.78	0.00	11.55	0.69	2,744.000	1,155.24	2,058.000	0.000	999.0
. . . .0.00 to 0.39	0.00	11.55	0.91	2,744.000	1,155.24	2,058.000	0.000	999.0
E Only								
. . . .11.28 to 11.67	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .10.89 to 11.28	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .10.50 to 10.89	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .10.11 to 10.50	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .9.73 to 10.11	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .9.34 to 9.73	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .8.95 to 9.34	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .8.56 to 8.95	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .8.17 to 8.56	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .7.78 to 8.17	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .7.39 to 7.78	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .7.00 to 7.39	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0

Concrete Slender Wall

DESCRIPTION: Building 4 Wall

. . . .6.61 to 7.00	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .6.22 to 6.61	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .5.84 to 6.22	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .5.45 to 5.84	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .5.06 to 5.45	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .4.67 to 5.06	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .4.28 to 4.67	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .3.89 to 4.28	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .3.50 to 3.89	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .3.11 to 3.50	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .2.72 to 3.11	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .2.33 to 2.72	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .1.95 to 2.33	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .1.56 to 1.95	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .1.17 to 1.56	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0

Deflections - Service Loads

Load Combination / Location	Axial Load (k)	Moments (k-ft) Mcr	Mu	Inertia (in^4) Igross	Icracked	Ieff	Iterated Deflection (in) Deflection	Ratio
. . . .0.78 to 1.17	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .0.39 to 0.78	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .0.00 to 0.39	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
H Only								
. . . .11.28 to 11.67	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .10.89 to 11.28	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .10.50 to 10.89	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .10.11 to 10.50	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .9.73 to 10.11	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .9.34 to 9.73	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .8.95 to 9.34	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .8.56 to 8.95	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .8.17 to 8.56	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .7.78 to 8.17	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .7.39 to 7.78	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .7.00 to 7.39	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .6.61 to 7.00	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .6.22 to 6.61	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .5.84 to 6.22	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .5.45 to 5.84	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .5.06 to 5.45	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .4.67 to 5.06	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .4.28 to 4.67	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .3.89 to 4.28	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .3.50 to 3.89	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .3.11 to 3.50	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .2.72 to 3.11	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .2.33 to 2.72	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .1.95 to 2.33	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .1.56 to 1.95	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .1.17 to 1.56	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .0.78 to 1.17	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0
. . . .0.39 to 0.78	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Slender Wall

DESCRIPTION: Building 4 Wall

. . . .0.00 to 0.39	0.00	11.55	0.00	2,744.000	1,155.24	2,058.000	0.000	0.0

Building 4 Foundation Design

TABLE 1 – SUMMARY OF DRIVEN PILE CAPACITIES (Concrete)				
Pile Size (inches square)	**Estimated Pile Embedment Depth (1) (Feet)**	**Allowable Compression Capacity (tons)**	**Allowable Tension Capacity (3) (tons)**	**Allowable Lateral Capacity (4) (kips)**
10	13-15	20	5.5(3)	5
12	13-15	28	6(3)	5

(1) Embedment depth is based upon the ground surface elevation at the time of this field exploration program. If any fill material is placed at the site, the pile embedment depth must be increased to achieve the desired pile tip elevation.
(2) The above tonnages are based upon the piles achieving tonnage within the fine sand layer that extend to a depth of approximately 15ft BGS. It is possible that some piles may not achieve the design capacity at the above provided depths, in which case these piles should be spliced and driven to deeper depths and/or helper piles may have to be installed. The actual final pile depths can be determined following completion of the test pile program.
(3) The provided tonnages for tension support are based on full length or mechanically spliced piles.
(4) For our analysis we assume the piles will be vertically aligned with at-grade pile head (Fixed Head Condition). The provided lateral loads will yield a deflection of less than 0.5 inches.
(5) The impact of storm surge, wave impact forces and scour were not taken into account for our analysis.
(6) Due to the proximity of surrounding structures, it may be necessary to pre-drill pilling locations to limit vibration impacts.
(7) To perform the above analysis boring B-12 was utilized, it was not performed within the footprint of the proposed structure, thus field conditions may vary.

All sitework and fill placement operations should be completed prior to the installation of piles to avoid adverse impacts such as damage to the piles and/or negative skin friction resulting in increased pile settlement. It is recommended that a minimum center-to-center pile spacing of 3 times the nominal pile diameter (e.g., 36 inch minimum spacing for 12 inch piles) be maintained. We estimate settlement of a single pile to be ½-inch or less, most of it due to elastic shortening of the pile.

UES should be retained to monitor the installation of the driven pile foundation system for this project. UES's pile installation monitoring services will consist of monitoring the installation of each pile, documenting the number of hammer blows required to drive each pile for each linear foot, and evaluation of the pile driving records by a geotechnical engineer.

Once the pile size and pile driving equipment to be used for this project have been selected, a pile driving formula should be used to establish the pile driving criteria for the allowable pile load based on the pile driving hammer used. Each pile shall be driven until the established driving criteria have been achieved.

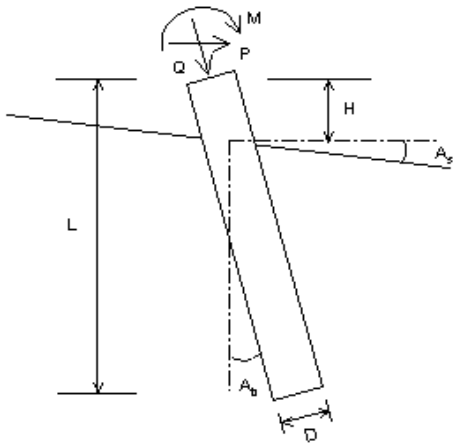
Pile load testing is not required for this project, in lieu of that, a minimum of five test piles should be driven at locations throughout the structure footprint to confirm the required production pile lengths. Test piles can be located at production pile locations and incorporated into the foundation system of the residential structure. Following the monitoring and evaluation of the test pile program by UES, production pile lengths and driving criteria can be finalized.

Piles should be driven with a hammer having a minimum energy proportionate to the size of the pile being driven. All pile driving operations should be performed in accordance with industry standards, applicable building codes, and the guidelines published by the Deep Foundations Institute (DFI).

12-inch square driven concrete piles, 15 feet embedment, Lateral load – 5 kips, Max. Moment – (-50.8 Kips-ft), Deflection – (-0.23 inch), 2 feet of unbraced length (assumed scour depth)

LATERAL ANALYSIS

Figure 2



Driving Concrete Pile

Loads:
Load Factor for Vertical Loads= 1.0
Load Factor for Lateral Loads= 1.0
Loads Supported by Pile Cap= 0 %
Shear Condition: Static

(with Load Factor)
Vertical Load, Q= 36.0 -kp
Shear Load, P= 5.0 -kp
Moment, M= -50.8 -kp-f

Profile:
Pile Length, L= 15.0 -ft
Top Height, H= 2 -ft
Slope Angle, As= 0
Batter Angle, Ab= 0

Soil Data:

Depth -ft	Gamma -lb/f3	Phi	C -kp/f2	K -lb/i3	e50 or Dr %	Nspt
0	114.9	33.0	0.00	45.0	34.78	10
2.5	52.5	33.0	0.00	32.5	34.78	10
4	59.1	36.5	0.00	68.5	54.49	20
6	59.1	36.5	0.00	68.2	54.35	20
15	36.5	26.5	0.00	2.7	6.19	1

Pile Data:

Depth -ft	Width -in	Area -in2	Per. -in	I -in4	E -kp/i2	Weight -kp/f
0.0	12	144.0	48.0	1728.0	3000	0.150
15.0	12	144.0	48.0	1728.0	3000	0.150

Single Pile Lateral Analysis:
Top Deflection, yt= -0.23400-in
Max. Moment, M= -50.75-kp-f
Top Deflection Slope, St= 0.00677
OK! Top Deflection, -0.2340-in is less than the Allowable Deflection= 1.00-in

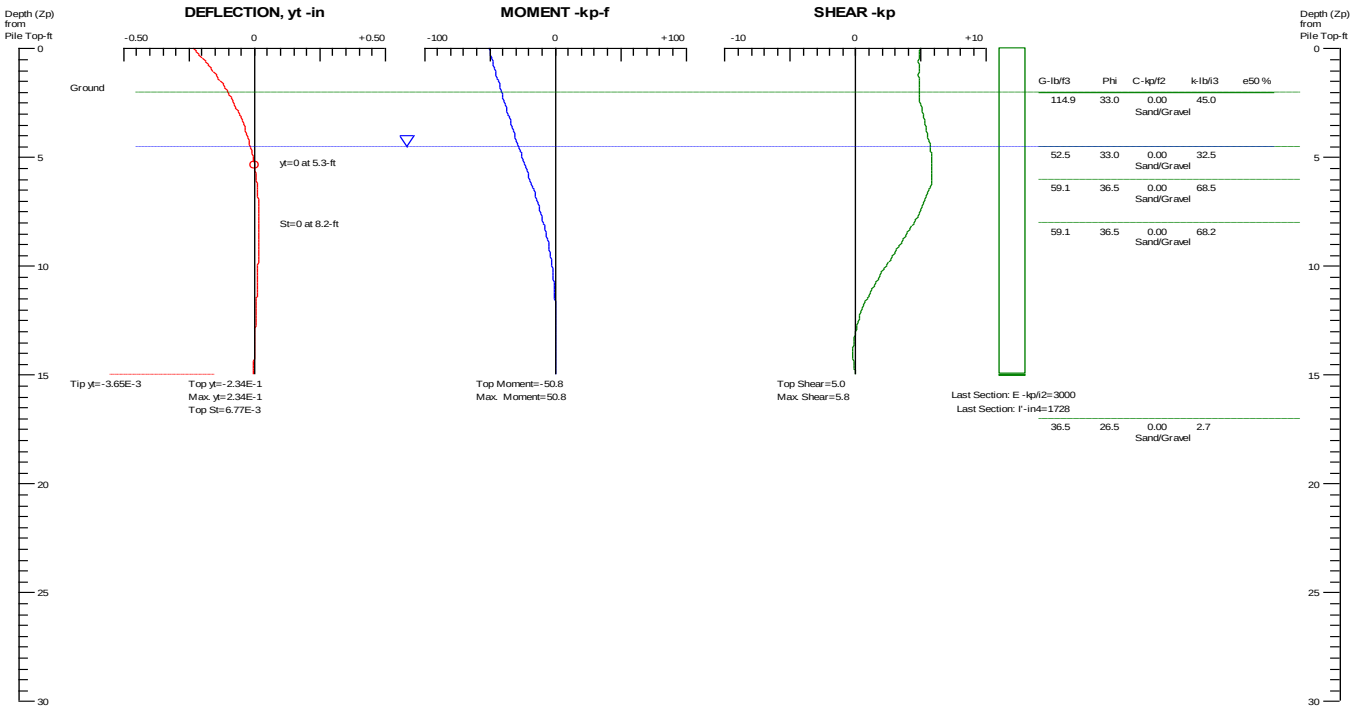
Note: If the program cannot find a result or the result exceeds the upper limit. The result will be displayed as 99999.
The Max. Moment calculated by program is an internal force from the applied load conditions. Structural engineer has to check whether the pile has enough capacity to resist the moment with adequate factor of safety. If not, the pile may fail under the load conditions.

CivilTech Software

Margaritaville Resort
18-6322 (B-12)

ALL-PILE CivilTech Software www.civiltech.com Licensed to

PILE DEFLECTION & FORCE vs DEPTH
Single Pile, Khead=1, Kbc=1



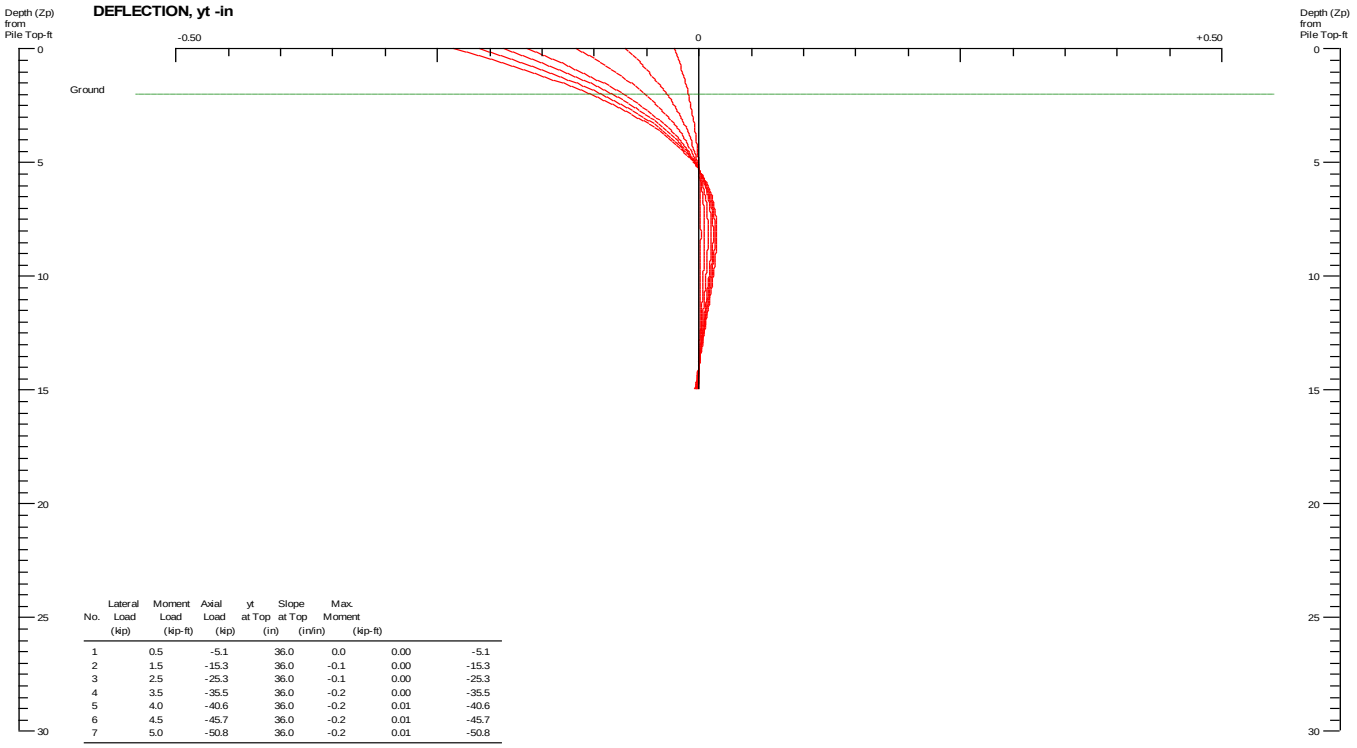
CivilTech Software

Margaritaville Resort
18-6322 (B-12)

Figure 2

ALL-PILE CivilTech Software www.civiltech.com Licensed to

PILE DEFLECTION vs LOADING
Single Pile, Khead=1, Kbc=1



No.	Lateral Load (kip)	Moment Load (kip-ft)	Axial Load (kip)	yt at Top (in)	Slope at Top (in/in)	Max. Moment (kip-ft)
1	0.5	-5.1	36.0	0.0	0.00	-5.1
2	1.5	-15.3	36.0	-0.1	0.00	-15.3
3	2.5	-25.3	36.0	-0.1	0.00	-25.3
4	3.5	-35.5	36.0	-0.2	0.00	-35.5
5	4.0	-40.6	36.0	-0.2	0.01	-40.6
6	4.5	-45.7	36.0	-0.2	0.01	-45.7
7	5.0	-50.8	36.0	-0.2	0.01	-50.8

CivilTech Software

Margaritaville Resort
18-6322 (B-12)

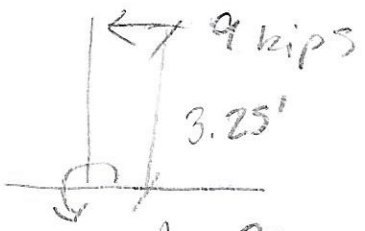
Figure 2

RAMAKER employee-owned

855 Community Drive, Sauk City, WI 53583
Phone: 608-643-4100 Fax: 608-643-7999
www.Ramaker.com

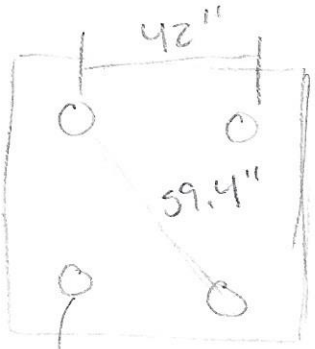
JOB # 30479 FMB
SHEET # 1 OF 1
CALCULATED BY KLM DATE 12/2/22
CHECKED BY _____ DATE _____
SCALE _____

PILE CAP CAPACITIES DUE TO WAVE & DEBRIS HIT

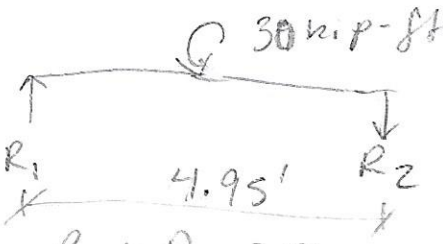


$M = 30$ kip-ft

WAVE = .804 kips
DEBRIS = 8.2 kips



6.06 kips



$\circlearrowleft \sum F_y = R_1 + R_2 = 0$

$\circlearrowleft \sum M_{R1} = 30\ k\text{-}ft - R_2(4.95) = 0$

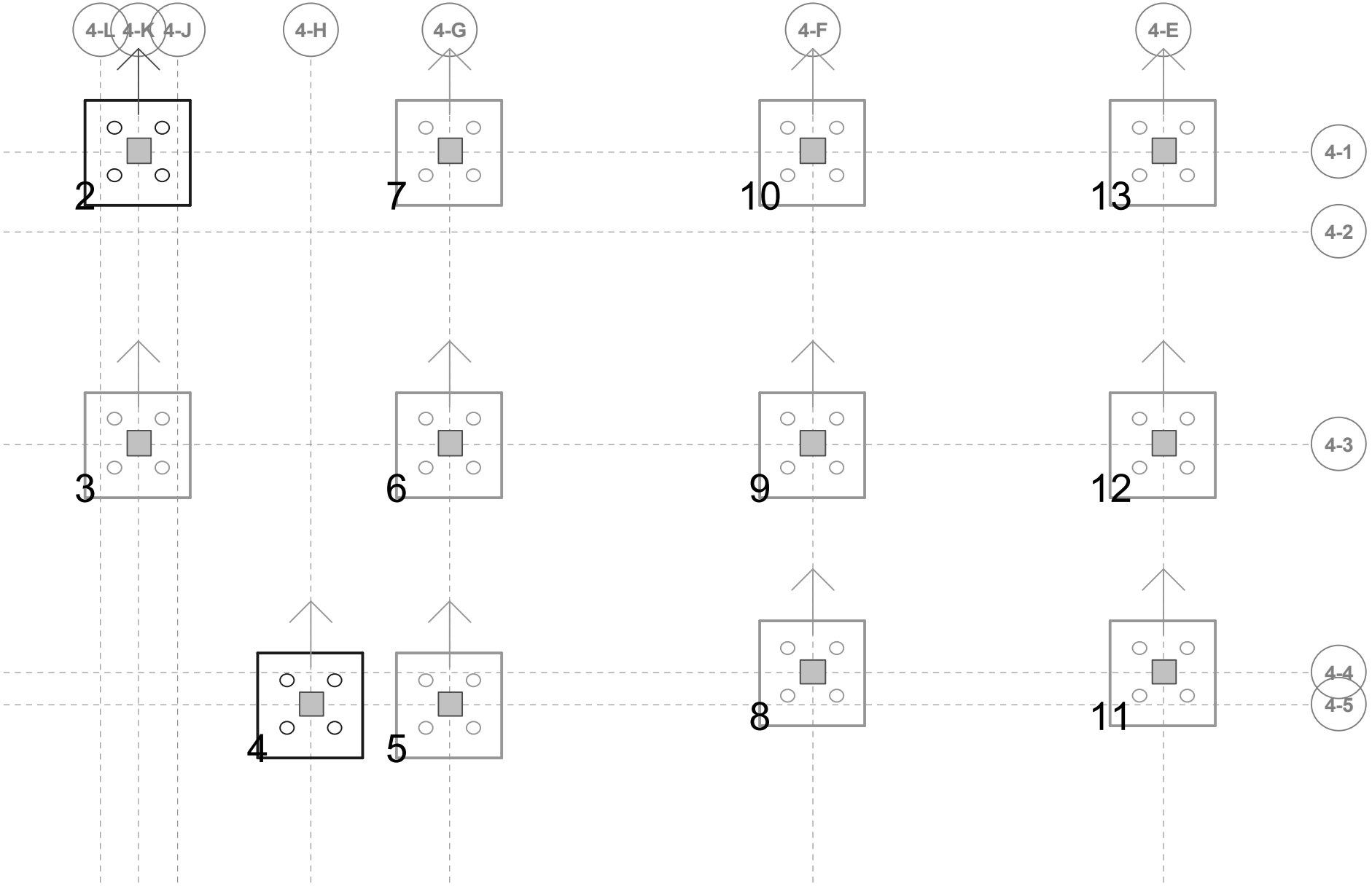
$R_2 = 6.06$ kips

FROM GFA 12" SQUARE PILE

COMP = 28 tons = 61.73 kips
TEN = 6 tons = 13.23 kips
LATERAL = 5 kips

$$\text{LATERAL} = 5\ \text{kips} - \frac{9\ \text{kips}}{4\ \text{piles}} = 2.75\ \text{kips}$$

COMP = 61.73 − 6.06 kips = 55.67 kips
TEN = 13.23 − 6.06 kips = 7.17 kips


4-L
4-K
4-J
4-H
4-G
4-F
4-E
4-1
4-2
4-3
4-4
4-5
2
7
10
13
3
6
9
12
4
5
8
11

PILE CAP DESIGN

Footing # 3

Footing Column Location: ____ (-2.50 - -18.33)
Footing Orientation (deg): ____ 90.00
Column Orientation (deg): ____ 0.00
Length (ft): ____ 6.50
Width (ft): ____ 6.50
Thickness (ft): ____ 2.50
Bottom Reinf. Parallel to Length: 8 - #7 Width: 8 - #7
Concrete f'c (ksi): 4.00 fct (ksi): CODE Density (pcf): 150.00 Ec (ksi): 3834.00
Reinf. fy (ksi): 60.00
Pile Label: 12" 13-15ft - 4pile Pile Diameter: (in) 12.00 Pile Cap Label: 4 Pile Group
Pile Spacing: (in) 36.00 Edge Spacing: (in) 21.00
Column Size: 16x16

LOADS

Surcharge (ksf)	Dead Load:	0.400	Live Load:	0.000
Axial (kip)	Dead Load:	18.00		
	Pos. Live:	0.00	Neg. Live:	N/A
	Pos. Roof:	2.15	Neg. Roof:	N/A

CONCRETE CAPACITY

	Major	Ld Co/Code Ref.	Minor	Ld Co/Code Ref.
Required Shear (kip)	29.80	44	22.94	39
Provided Shear: (kip)	834.78	CRSI-02 Eq 13-2	802.41	CRSI-02 Eq 13-2
Required Moment: (kip-ft)	25.12	44	17.69	39
Provided Moment: (kip-ft)	475.62	N/A	456.72	N/A
Req. Col. Punching Shear: (kip)	56.81	45		
Prv. Col Punching Shear: (kip)	708.20	CRSI-02 Eq 13-1		

REINFORCEMENT

	Bottom Bars Parallel to		Top Bars Parallel to	
	Length	Width	Length	Width
Bar Quantity/Bar Size:	8-#7	8-#7	None	None
Required Steel/Provided Steel (in^2)	4.21/ 4.80	4.21/ 4.80	None	None
Required Steel Code Ref.	Sec. 24.4.3.2	Sec. 24.4.3.2	None	None
Bar Spacing (in)	10.16	10.16	None	None
Bar Depth (in)	22.56	21.69	None	None

Cover (in) Top 2.00 Bottom: 3.00 Side: 3.00

PILE FORCES

Pile Capacity: Compression (kip): 53.86 Tension(kip): -5.36 Shear(kip): 2.50

		Ld Co	Pile #	H (in)	V (in)
Max Unfactored Pile Axial (kip) ____	19.09	292	3	-18.00	18.00
Min Unfactored Pile Axial (kip) ____	2.95	316	2	18.00	-18.00
Max Unfactored Pile Shear (kip) ____	0.85	287	3	-18.00	18.00
Max Factored Pile Axial (kip) ____	24.81	45	3	-18.00	18.00
Min Factored Pile Axial (kip) ____	3.99	93	2	18.00	-18.00
Max Factored Pile Shear (kip) ____	1.18	40	3	-18.00	18.00

PILE CAP DESIGN

Footing # 5

Footing Column Location: ____ (17.00 - -34.67)
Footing Orientation (deg): ____ 90.00
Column Orientation (deg): ____ 0.00
Length (ft): ____ 6.50
Width (ft): ____ 6.50
Thickness (ft): ____ 2.75
Bottom Reinf. Parallel to Length: 8 - #7 Width: 8 - #7
Concrete f'c (ksi): 4.00 fct (ksi): CODE Density (pcf): 150.00 Ec (ksi): 3834.00
Reinf. fy (ksi): 60.00
Pile Label: 12" 13-15ft - 4pile Pile Diameter: (in) 12.00 Pile Cap Label: 4 Pile Group
Pile Spacing: (in) 36.00 Edge Spacing: (in) 21.00
Column Size: 16x16

LOADS

Surcharge (ksf)	Dead Load:	0.400	Live Load:	0.000
Axial (kip)	Dead Load:	7.86		
	Pos. Live:	0.00	Neg. Live:	N/A
	Pos. Roof:	0.55	Neg. Roof:	N/A

CONCRETE CAPACITY

	Major	Ld Co/Code Ref.	Minor	Ld Co/Code Ref.
Required Shear (kip)	17.27	40	19.20	27
Provided Shear: (kip)	945.78	CRSI-02 Eq 13-2	913.40	CRSI-02 Eq 13-2
Required Moment: (kip-ft)	169.75	93	377.70	45
Provided Moment: (kip-ft)	540.42	N/A	521.52	N/A
Req. Col. Punching Shear: (kip)	31.84	45		
Prv. Col Punching Shear: (kip)	985.14	CRSI-02 Eq 13-1		

REINFORCEMENT

	Bottom Bars Parallel to		Top Bars Parallel to	
	Length	Width	Length	Width
Bar Quantity/Bar Size:	8-#7	8-#7	None	None
Required Steel/Provided Steel (in^2)	4.63/ 4.80	4.63/ 4.80	None	None
Required Steel Code Ref.	Sec. 24.4.3.2	Sec. 24.4.3.2	None	None
Bar Spacing (in)	10.16	10.16	None	None
Bar Depth (in)	25.56	24.69	None	None

Cover (in) Top 2.00 Bottom: 3.00 Side: 3.00

PILE FORCES

Pile Capacity: Compression (kip): 53.86 Tension(kip): -5.36 Shear(kip): 2.50

		Ld Co	Pile #	H (in)	V (in)
Max Unfactored Pile Axial (kip) ____	14.76	268	3	-18.00	18.00
Min Unfactored Pile Axial (kip) ____	1.68	316	2	18.00	-18.00
Max Unfactored Pile Shear (kip) ____	0.44	268	3	-18.00	18.00
Max Factored Pile Axial (kip) ____	19.47	45	3	-18.00	18.00
Min Factored Pile Axial (kip) ____	1.82	93	2	18.00	-18.00
Max Factored Pile Shear (kip) ____	0.70	45	3	-18.00	18.00

PILE CAP DESIGN

Footing # 6

Footing Column Location: ____ (17.00 - -18.33)
Footing Orientation (deg): ____ 90.00
Column Orientation (deg): ____ 0.00
Length (ft): ____ 6.50
Width (ft): ____ 6.50
Thickness (ft): ____ 2.50
Bottom Reinf. Parallel to Length: 8 - #7 Width: 8 - #7
Concrete f'c (ksi): 4.00 fct (ksi): CODE Density (pcf): 150.00 Ec (ksi): 3834.00
Reinf. fy (ksi): 60.00
Pile Label: 12" 13-15ft - 4pile Pile Diameter: (in) 12.00 Pile Cap Label: 4 Pile Group
Pile Spacing: (in) 36.00 Edge Spacing: (in) 21.00
Column Size: 16x16

LOADS

Surcharge (ksf)	Dead Load:	0.400	Live Load:	0.000
Axial (kip)	Dead Load:	28.37		
	Pos. Live:	0.00	Neg. Live:	N/A
	Pos. Roof:	3.72	Neg. Roof:	N/A

CONCRETE CAPACITY

	Major	Ld Co/Code Ref.	Minor	Ld Co/Code Ref.
Required Shear (kip)	37.12	40	31.31	27
Provided Shear: (kip)	834.78	CRSI-02 Eq 13-2	802.41	CRSI-02 Eq 13-2
Required Moment: (kip-ft)	33.05	40	26.76	27
Provided Moment: (kip-ft)	475.62	N/A	456.72	N/A
Req. Col. Punching Shear: (kip)	71.61	34		
Prv. Col Punching Shear: (kip)	708.20	CRSI-02 Eq 13-1		

REINFORCEMENT

	Bottom Bars Parallel to		Top Bars Parallel to	
	Length	Width	Length	Width
Bar Quantity/Bar Size:	8-#7	8-#7	None	None
Required Steel/Provided Steel (in^2)	4.21/ 4.80	4.21/ 4.80	None	None
Required Steel Code Ref.	Sec. 24.4.3.2	Sec. 24.4.3.2	None	None
Bar Spacing (in)	10.16	10.16	None	None
Bar Depth (in)	22.56	21.69	None	None

Cover (in) Top 2.00 Bottom: 3.00 Side: 3.00

PILE FORCES

Pile Capacity: Compression (kip): 53.86 Tension(kip): -5.36 Shear(kip): 2.50

		Ld Co	Pile #	H (in)	V (in)
Max Unfactored Pile Axial (kip) ____	21.85	281	1	-18.00	-18.00
Min Unfactored Pile Axial (kip) ____	3.86	316	2	18.00	-18.00
Max Unfactored Pile Shear (kip) ____	0.86	263	4	18.00	18.00
Max Factored Pile Axial (kip) ____	28.56	34	1	-18.00	-18.00
Min Factored Pile Axial (kip) ____	5.10	93	2	18.00	-18.00
Max Factored Pile Shear (kip) ____	1.26	40	4	18.00	18.00

PILE CAP DESIGN

Footing # 7

Footing Column Location: ____ (17.00 - 0.00)
Footing Orientation (deg): ____ 90.00
Column Orientation (deg): ____ 0.00
Length (ft): ____ 6.50
Width (ft): ____ 6.50
Thickness (ft): ____ 2.50
Bottom Reinf. Parallel to Length: 8 - #7 Width: 8 - #7
Concrete f'c (ksi): 4.00 fct (ksi): CODE Density (pcf): 150.00 Ec (ksi): 3834.00
Reinf. fy (ksi): 60.00
Pile Label: 12" 13-15ft - 4pile Pile Diameter: (in) 12.00 Pile Cap Label: 4 Pile Group
Pile Spacing: (in) 36.00 Edge Spacing: (in) 21.00
Column Size: 16x16

LOADS

Surcharge (ksf)	Dead Load:	0.400	Live Load:	0.000
Axial (kip)	Dead Load:	23.92		
	Pos. Live:	0.00	Neg. Live:	N/A
	Pos. Roof:	3.05	Neg. Roof:	N/A

CONCRETE CAPACITY

	Major	Ld Co/Code Ref.	Minor	Ld Co/Code Ref.
Required Shear (kip)	34.33	28	27.88	39
Provided Shear: (kip)	834.78	CRSI-02 Eq 13-2	802.41	CRSI-02 Eq 13-2
Required Moment: (kip-ft)	30.03	28	23.04	39
Provided Moment: (kip-ft)	475.62	N/A	456.72	N/A
Req. Col. Punching Shear: (kip)	68.31	46		
Prv. Col Punching Shear: (kip)	708.20	CRSI-02 Eq 13-1		

REINFORCEMENT

	Bottom Bars Parallel to		Top Bars Parallel to	
	Length	Width	Length	Width
Bar Quantity/Bar Size:	8-#7	8-#7	None	None
Required Steel/Provided Steel (in^2)	4.21/ 4.80	4.21/ 4.80	None	None
Required Steel Code Ref.	Sec. 24.4.3.2	Sec. 24.4.3.2	None	None
Bar Spacing (in)	10.16	10.16	None	None
Bar Depth (in)	22.56	21.69	None	None

Cover (in) Top 2.00 Bottom: 3.00 Side: 3.00

PILE FORCES

Pile Capacity: Compression (kip): 53.86 Tension(kip): -5.36 Shear(kip): 2.50

		Ld Co	Pile #	H (in)	V (in)
Max Unfactored Pile Axial (kip) ____	21.08	269	4	18.00	18.00
Min Unfactored Pile Axial (kip) ____	3.00	317	1	-18.00	-18.00
Max Unfactored Pile Shear (kip) ____	0.92	251	4	18.00	18.00
Max Factored Pile Axial (kip) ____	27.79	46	4	18.00	18.00
Min Factored Pile Axial (kip) ____	3.88	94	1	-18.00	-18.00
Max Factored Pile Shear (kip) ____	1.30	28	4	18.00	18.00

PILE CAP DESIGN

Footing # 8

Footing Column Location: ____ (39.67 - -32.67)
Footing Orientation (deg): ____ 90.00
Column Orientation (deg): ____ 0.00
Length (ft): ____ 6.50
Width (ft): ____ 6.50
Thickness (ft): ____ 2.50
Bottom Reinf. Parallel to Length: 8 - #7 Width: 8 - #7
Concrete f'c (ksi): 4.00 fct (ksi): CODE Density (pcf): 150.00 Ec (ksi): 3834.00
Reinf. fy (ksi): 60.00
Pile Label: 12" 13-15ft - 4pile Pile Diameter: (in) 12.00 Pile Cap Label: 4 Pile Group
Pile Spacing: (in) 36.00 Edge Spacing: (in) 21.00
Column Size: 16x16

LOADS

Surcharge (ksf)	Dead Load:	0.400	Live Load:	0.000
Axial (kip)	Dead Load:	12.80		
	Pos. Live:	0.00	Neg. Live:	N/A
	Pos. Roof:	1.29	Neg. Roof:	N/A

CONCRETE CAPACITY

	Major	Ld Co/Code Ref.	Minor	Ld Co/Code Ref.
Required Shear (kip)	23.62	40	20.78	39
Provided Shear: (kip)	834.78	CRSI-02 Eq 13-2	802.41	CRSI-02 Eq 13-2
Required Moment: (kip-ft)	93.77	88	15.35	39
Provided Moment: (kip-ft)	475.62	N/A	456.72	N/A
Req. Col. Punching Shear: (kip)	45.42	45		
Prv. Col Punching Shear: (kip)	708.20	CRSI-02 Eq 13-1		

REINFORCEMENT

	Bottom Bars Parallel to		Top Bars Parallel to	
	Length	Width	Length	Width
Bar Quantity/Bar Size:	8-#7	8-#7	None	None
Required Steel/Provided Steel (in^2)	4.21/ 4.80	4.21/ 4.80	None	None
Required Steel Code Ref.	Sec. 24.4.3.2	Sec. 24.4.3.2	None	None
Bar Spacing (in)	10.16	10.16	None	None
Bar Depth (in)	22.56	21.69	None	None

Cover (in) Top 2.00 Bottom: 3.00 Side: 3.00

PILE FORCES

Pile Capacity: Compression (kip): 53.86 Tension(kip): -5.36 Shear(kip): 2.50

		Ld Co	Pile #	H (in)	V (in)
Max Unfactored Pile Axial (kip) ____	16.53	268	3	-18.00	18.00
Min Unfactored Pile Axial (kip) ____	2.72	316	2	18.00	-18.00
Max Unfactored Pile Shear (kip) ____	0.51	271	3	-18.00	18.00
Max Factored Pile Axial (kip) ____	21.84	45	3	-18.00	18.00
Min Factored Pile Axial (kip) ____	3.53	93	2	18.00	-18.00
Max Factored Pile Shear (kip) ____	0.78	48	3	-18.00	18.00

PILE CAP DESIGN

Footing # 9 Footing Column Location: ____ (39.67 - -18.33)
Footing Orientation (deg): ____ 90.00 Column Orientation (deg): ____ 0.00
Length (ft): ____ 6.50
Width (ft): ____ 6.50
Thickness (ft): ____ 2.50
Bottom Reinf. Parallel to Length: 8 - #7 Width: 8 - #7
Concrete f'c (ksi): 4.00 fct (ksi): CODE Density (pcf): 150.00 Ec (ksi): 3834.00
Reinf. fy (ksi): 60.00
Pile Label: 12" 13-15ft - 4pile Pile Diameter: (in) 12.00 Pile Cap Label: 4 Pile Group
Pile Spacing: (in) 36.00 Edge Spacing: (in) 21.00
Column Size: 16x16

LOADS

Surcharge (ksf)	Dead Load:	0.400	Live Load:	0.000
Axial (kip)	Dead Load:	33.25		
	Pos. Live:	0.00	Neg. Live:	N/A
	Pos. Roof:	4.59	Neg. Roof:	N/A

CONCRETE CAPACITY

	Major	Ld Co/Code Ref.	Minor	Ld Co/Code Ref.
Required Shear (kip)	40.54	40	35.09	39
Provided Shear: (kip)	834.78	CRSI-02 Eq 13-2	802.41	CRSI-02 Eq 13-2
Required Moment: (kip-ft)	36.76	40	30.85	39
Provided Moment: (kip-ft)	475.62	N/A	456.72	N/A
Req. Col. Punching Shear: (kip)	79.26	45		
Prv. Col Punching Shear: (kip)	708.20	CRSI-02 Eq 13-1		

REINFORCEMENT

	Bottom Bars Parallel to		Top Bars Parallel to	
	Length	Width	Length	Width
Bar Quantity/Bar Size:	8-#7	8-#7	None	None
Required Steel/Provided Steel (in^2)	4.21/ 4.80	4.21/ 4.80	None	None
Required Steel Code Ref.	Sec. 24.4.3.2	Sec. 24.4.3.2	None	None
Bar Spacing (in)	10.16	10.16	None	None
Bar Depth (in)	22.56	21.69	None	None

Cover (in) Top 2.00 Bottom: 3.00 Side: 3.00

PILE FORCES

Pile Capacity: Compression (kip): 53.86 Tension(kip): -5.36 Shear(kip): 2.50

		Ld Co	Pile #	H (in)	V (in)
Max Unfactored Pile Axial (kip) ____	23.23	292	3	-18.00	18.00
Min Unfactored Pile Axial (kip) ____	4.42	316	2	18.00	-18.00
Max Unfactored Pile Shear (kip) ____	0.78	263	3	-18.00	18.00
Max Factored Pile Axial (kip) ____	30.51	45	3	-18.00	18.00
Min Factored Pile Axial (kip) ____	5.96	93	2	18.00	-18.00
Max Factored Pile Shear (kip) ____	1.18	40	3	-18.00	18.00

PILE CAP DESIGN

Footing # 10

Footing Orientation (deg): 90.00
Length (ft): 6.50
Width (ft): 6.50
Thickness (ft): 2.50

Footing Column Location: (39.67 - 0.00)
Column Orientation (deg): 0.00

Bottom Reinf. Parallel to Length: 8 - #7 Width: 8 - #7
Concrete f'c (ksi): 4.00 fct (ksi): CODE Density (pcf): 150.00 Ec (ksi): 3834.00
Reinf. fy (ksi): 60.00
Pile Label: 12" 13-15ft - 4pile Pile Diameter: (in) 12.00 Pile Cap Label: 4 Pile Group
Pile Spacing: (in) 36.00 Edge Spacing: (in) 21.00
Column Size: 16x16

LOADS

Surcharge (ksf)	Dead Load:	0.400	Live Load:	0.000
Axial (kip)	Dead Load:	24.99		
	Pos. Live:	0.00	Neg. Live:	N/A
	Pos. Roof:	3.20	Neg. Roof:	N/A

CONCRETE CAPACITY

	Major	Ld Co/Code Ref.	Minor	Ld Co/Code Ref.
Required Shear (kip)	36.65	28	28.09	39
Provided Shear: (kip)	834.78	CRSI-02 Eq 13-2	802.41	CRSI-02 Eq 13-2
Required Moment: (kip-ft)	32.55	28	23.27	39
Provided Moment: (kip-ft)	475.62	N/A	456.72	N/A
Req. Col. Punching Shear: (kip)	70.62	46		
Prv. Col Punching Shear: (kip)	708.20	CRSI-02 Eq 13-1		

REINFORCEMENT

	Bottom Bars Parallel to		Top Bars Parallel to	
	Length	Width	Length	Width
Bar Quantity/Bar Size:	8-#7	8-#7	None	None
Required Steel/Provided Steel (in^2)	4.21/ 4.80	4.21/ 4.80	None	None
Required Steel Code Ref.	Sec. 24.4.3.2	Sec. 24.4.3.2	None	None
Bar Spacing (in)	10.16	10.16	None	None
Bar Depth (in)	22.56	21.69	None	None

Cover (in) Top 2.00 Bottom: 3.00 Side: 3.00

PILE FORCES

Pile Capacity: Compression (kip): 53.86 Tension(kip): -5.36 Shear(kip): 2.50

		Ld Co	Pile #	H (in)	V (in)
Max Unfactored Pile Axial (kip)	21.50	269	4	18.00	18.00
Min Unfactored Pile Axial (kip)	2.96	317	1	-18.00	-18.00
Max Unfactored Pile Shear (kip)	0.95	251	4	18.00	18.00
Max Factored Pile Axial (kip)	28.39	46	4	18.00	18.00
Min Factored Pile Axial (kip)	3.78	94	1	-18.00	-18.00
Max Factored Pile Shear (kip)	1.35	28	4	18.00	18.00

PILE CAP DESIGN

Footing # 11

Footing Column Location: ____ (61.67 - -32.67)
Footing Orientation (deg): ____ 90.00
Column Orientation (deg): ____ 0.00
Length (ft): ____ 6.50
Width (ft): ____ 6.50
Thickness (ft): ____ 2.75
Bottom Reinf. Parallel to Length: 8 - #7 Width: 8 - #7
Concrete f'c (ksi): 4.00 fct (ksi): CODE Density (pcf): 150.00 Ec (ksi): 3834.00
Reinf. fy (ksi): 60.00
Pile Label: 12" 13-15ft - 4pile Pile Diameter: (in) 12.00 Pile Cap Label: 4 Pile Group
Pile Spacing: (in) 36.00 Edge Spacing: (in) 21.00
Column Size: 16x16

LOADS

Surcharge (ksf)	Dead Load:	0.400	Live Load:	0.000
Axial (kip)	Dead Load:	14.07		
	Pos. Live:	0.00	Neg. Live:	N/A
	Pos. Roof:	1.35	Neg. Roof:	N/A

CONCRETE CAPACITY

	Major	Ld Co/Code Ref.	Minor	Ld Co/Code Ref.
Required Shear (kip)	25.72	43	22.06	27
Provided Shear: (kip)	945.78	CRSI-02 Eq 13-2	913.40	CRSI-02 Eq 13-2
Required Moment: (kip-ft)	140.09	88	16.40	27
Provided Moment: (kip-ft)	540.42	N/A	521.52	N/A
Req. Col. Punching Shear: (kip)	46.67	34		
Prv. Col Punching Shear: (kip)	985.14	CRSI-02 Eq 13-1		

REINFORCEMENT

	Bottom Bars Parallel to		Top Bars Parallel to	
	Length	Width	Length	Width
Bar Quantity/Bar Size:	8-#7	8-#7	None	None
Required Steel/Provided Steel (in^2)	4.63/ 4.80	4.63/ 4.80	None	None
Required Steel Code Ref.	Sec. 24.4.3.2	Sec. 24.4.3.2	None	None
Bar Spacing (in)	10.16	10.16	None	None
Bar Depth (in)	25.56	24.69	None	None

Cover (in) Top 2.00 Bottom: 3.00 Side: 3.00

PILE FORCES

Pile Capacity: Compression (kip): 53.86 Tension(kip): -5.36 Shear(kip): 2.50

		Ld Co	Pile #	H (in)	V (in)
Max Unfactored Pile Axial (kip) ____	17.69	257	1	-18.00	-18.00
Min Unfactored Pile Axial (kip) ____	2.82	305	4	18.00	18.00
Max Unfactored Pile Shear (kip) ____	0.56	266	4	18.00	18.00
Max Factored Pile Axial (kip) ____	23.33	34	1	-18.00	-18.00
Min Factored Pile Axial (kip) ____	3.66	82	4	18.00	18.00
Max Factored Pile Shear (kip) ____	0.85	43	4	18.00	18.00

PILE CAP DESIGN

Footing # 12

Footing Column Location: ____ (61.67 - -18.33)
Footing Orientation (deg): ____ 90.00
Column Orientation (deg): ____ 0.00
Length (ft): ____ 6.50
Width (ft): ____ 6.50
Thickness (ft): ____ 2.50
Bottom Reinf. Parallel to Length: 8 - #7 Width: 8 - #7
Concrete f'c (ksi): 4.00 fct (ksi): CODE Density (pcf): 150.00 Ec (ksi): 3834.00
Reinf. fy (ksi): 60.00
Pile Label: 12" 13-15ft - 4pile Pile Diameter: (in) 12.00 Pile Cap Label: 4 Pile Group
Pile Spacing: (in) 36.00 Edge Spacing: (in) 21.00
Column Size: 16x16

LOADS

Surcharge (ksf)	Dead Load:	0.400	Live Load:	0.000
Axial (kip)	Dead Load:	32.45		
	Pos. Live:	0.00	Neg. Live:	N/A
	Pos. Roof:	4.27	Neg. Roof:	N/A

CONCRETE CAPACITY

	Major	Ld Co/Code Ref.	Minor	Ld Co/Code Ref.
Required Shear (kip)	39.22	43	34.48	27
Provided Shear: (kip)	834.78	CRSI-02 Eq 13-2	802.41	CRSI-02 Eq 13-2
Required Moment: (kip-ft)	35.33	43	30.20	27
Provided Moment: (kip-ft)	475.62	N/A	456.72	N/A
Req. Col. Punching Shear: (kip)	76.69	34		
Prv. Col Punching Shear: (kip)	708.20	CRSI-02 Eq 13-1		

REINFORCEMENT

	Bottom Bars Parallel to		Top Bars Parallel to	
	Length	Width	Length	Width
Bar Quantity/Bar Size:	8-#7	8-#7	None	None
Required Steel/Provided Steel (in^2)	4.21/ 4.80	4.21/ 4.80	None	None
Required Steel Code Ref.	Sec. 24.4.3.2	Sec. 24.4.3.2	None	None
Bar Spacing (in)	10.16	10.16	None	None
Bar Depth (in)	22.56	21.69	None	None

Cover (in) Top 2.00 Bottom: 3.00 Side: 3.00

PILE FORCES

Pile Capacity: Compression (kip): 53.86 Tension(kip): -5.36 Shear(kip): 2.50

		Ld Co	Pile #	H (in)	V (in)
Max Unfactored Pile Axial (kip) ____	22.63	257	1	-18.00	-18.00
Min Unfactored Pile Axial (kip) ____	4.45	305	4	18.00	18.00
Max Unfactored Pile Shear (kip) ____	0.75	266	4	18.00	18.00
Max Factored Pile Axial (kip) ____	29.83	34	1	-18.00	-18.00
Min Factored Pile Axial (kip) ____	5.99	82	4	18.00	18.00
Max Factored Pile Shear (kip) ____	1.14	43	4	18.00	18.00

PILE CAP DESIGN

Footing # 13

Footing Column Location: ____ (61.67 - 0.00)
Footing Orientation (deg): ____ 90.00
Column Orientation (deg): ____ 0.00
Length (ft): ____ 6.50
Width (ft): ____ 6.50
Thickness (ft): ____ 2.50
Bottom Reinf. Parallel to Length: 8 - #7 Width: 8 - #7
Concrete f'c (ksi): 4.00 fct (ksi): CODE Density (pcf): 150.00 Ec (ksi): 3834.00
Reinf. fy (ksi): 60.00
Pile Label: 12" 13-15ft - 4pile Pile Diameter: (in) 12.00 Pile Cap Label: 4 Pile Group
Pile Spacing: (in) 36.00 Edge Spacing: (in) 21.00
Column Size: 16x16

LOADS

Surcharge (ksf)	Dead Load:	0.400	Live Load:	0.000
Axial (kip)	Dead Load:	17.22		
	Pos. Live:	0.00	Neg. Live:	N/A
	Pos. Roof:	1.87	Neg. Roof:	N/A

CONCRETE CAPACITY

	Major	Ld Co/Code Ref.	Minor	Ld Co/Code Ref.
Required Shear (kip)	28.84	31	21.64	27
Provided Shear: (kip)	834.78	CRSI-02 Eq 13-2	802.41	CRSI-02 Eq 13-2
Required Moment: (kip-ft)	130.30	76	16.28	27
Provided Moment: (kip-ft)	475.62	N/A	456.72	N/A
Req. Col. Punching Shear: (kip)	51.83	49		
Prv. Col Punching Shear: (kip)	708.20	CRSI-02 Eq 13-1		

REINFORCEMENT

	Bottom Bars Parallel to		Top Bars Parallel to	
	Length	Width	Length	Width
Bar Quantity/Bar Size:	8-#7	8-#7	None	None
Required Steel/Provided Steel (in^2)	4.21/ 4.80	4.21/ 4.80	None	None
Required Steel Code Ref.	Sec. 24.4.3.2	Sec. 24.4.3.2	None	None
Bar Spacing (in)	10.16	10.16	None	None
Bar Depth (in)	22.56	21.69	None	None

Cover (in) Top 2.00 Bottom: 3.00 Side: 3.00

PILE FORCES

Pile Capacity: Compression (kip): 53.86 Tension(kip): -5.36 Shear(kip): 2.50

		Ld Co	Pile #	H (in)	V (in)
Max Unfactored Pile Axial (kip) ____	17.87	272	4	18.00	18.00
Min Unfactored Pile Axial (kip) ____	2.96	320	1	-18.00	-18.00
Max Unfactored Pile Shear (kip) ____	0.74	254	4	18.00	18.00
Max Factored Pile Axial (kip) ____	23.49	49	4	18.00	18.00
Min Factored Pile Axial (kip) ____	3.86	97	1	-18.00	-18.00
Max Factored Pile Shear (kip) ____	1.07	31	4	18.00	18.00

RAMAKER employee-owned

855 Community Drive, Sauk City, WI 53583
Phone: 608-643-4100 Fax: 608-643-7999
www.Ramaker.com

JOB # 30479 BLDG 4
SHEET # 1 OF 1
CALCULATED BY KLM DATE 6/5/23
CHECKED BY _____ DATE _____
SCALE _____

BOUYANCY CALCS ON DRIVEN PILES

SEE FOLLOWING PAGES FOR LOADING ON SLAB/PILES.

FROM RAM CONCEPT BOUYANCY UPLIFT ON PILES = 33.9 kips

FROM GEOTECH (12" SQUARE PILE)
ALLOWABLE TENSION CAPACITY OF 6 TONS

6 TONS = 12,000 lbs

4 PILES PER PILE CAP (12,000 x 4) = 48,000 lbs

48 kips > 33.9 kips OK

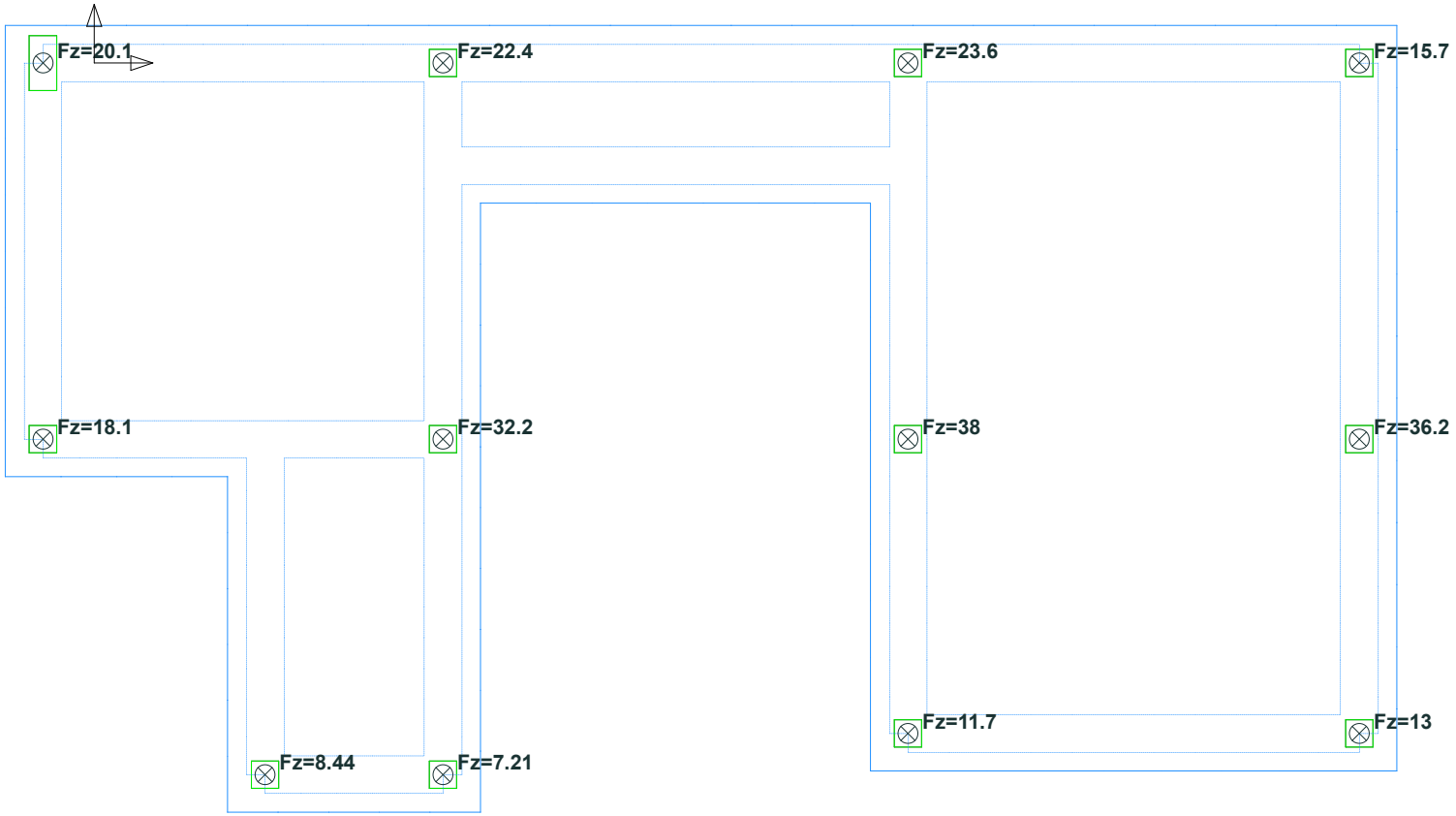
PILES W/ HELP OF SLAB WEIGHT WILL BE ABLE TO COUNTER THE BOUYANCY FORCE

Self-Dead Loading: All Loads Plan

Self-Dead Loading: User Lines; User Notes; User Dimensions; Point Loads; Point Load Icons; Point Load Values; Line Loads; Line Load Icons; Line Load Values; A
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element C
Scale = 1:99

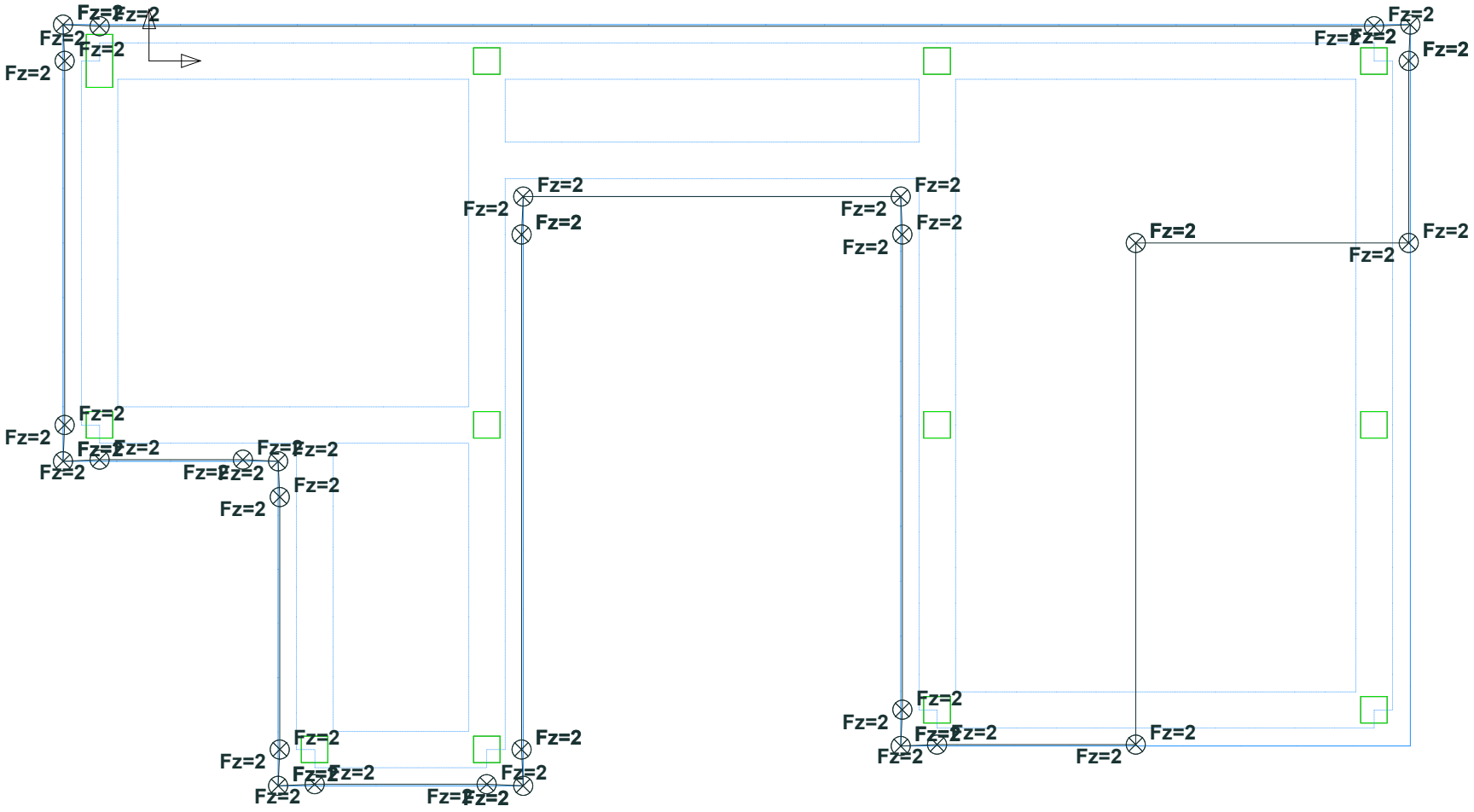
Dead Load (transfer): All Loads Plan

Dead Load (transfer): User Lines; User Notes; User Dimensions; Point Loads; Point Load Icons; Point Load Values; Line Loads; Line Load Icons; Line Load Values; Area Loads; Area L
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:109



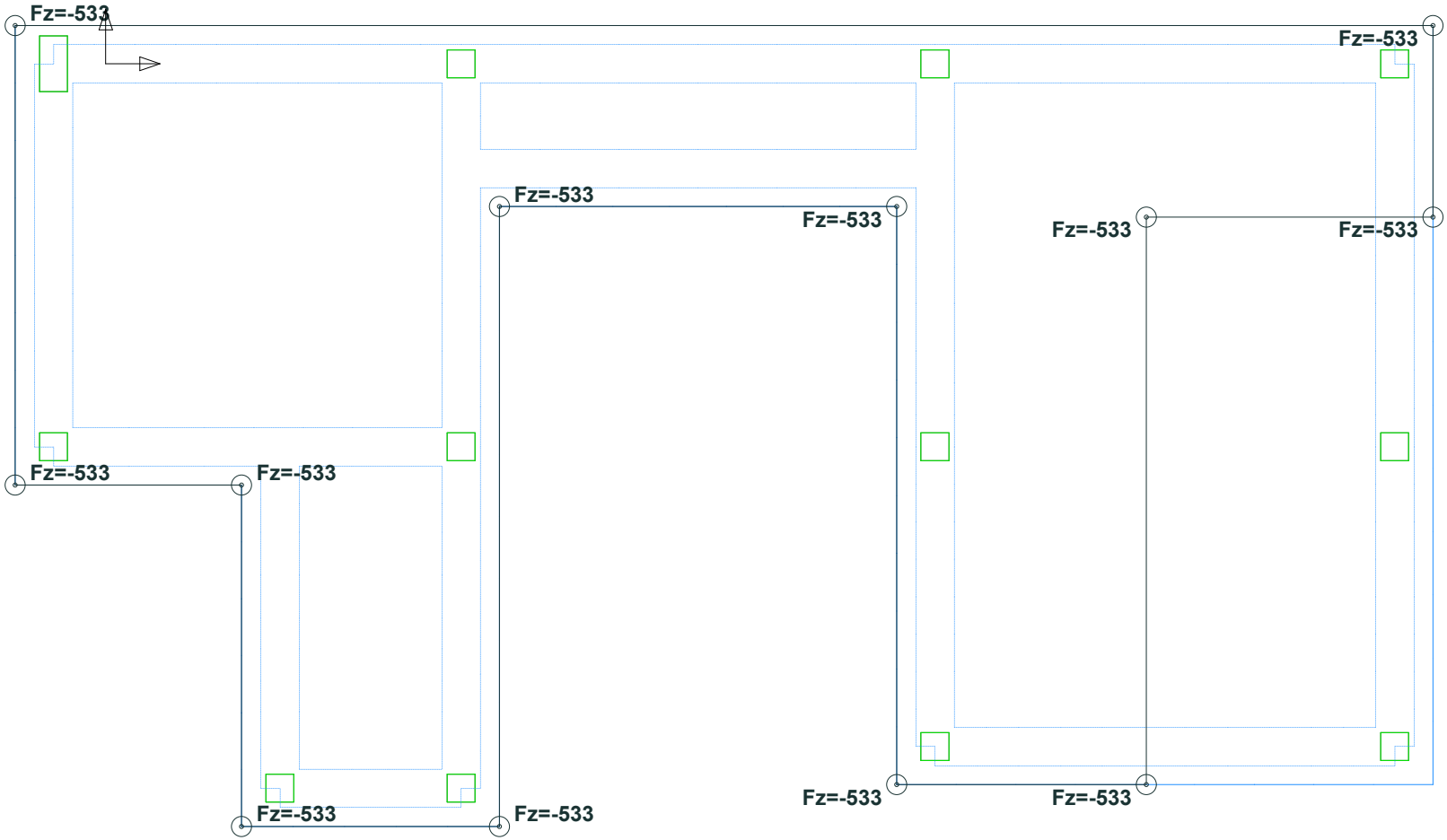
Dead Load (Wall Loading): All Loads Plan

Dead Load (Wall Loading): User Lines; User Notes; User Dimensions; Point Loads; Point Load Icons; Point Load Values; Line Loads; Line Load Icons; Line Load Va
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element C
Scale = 1:99



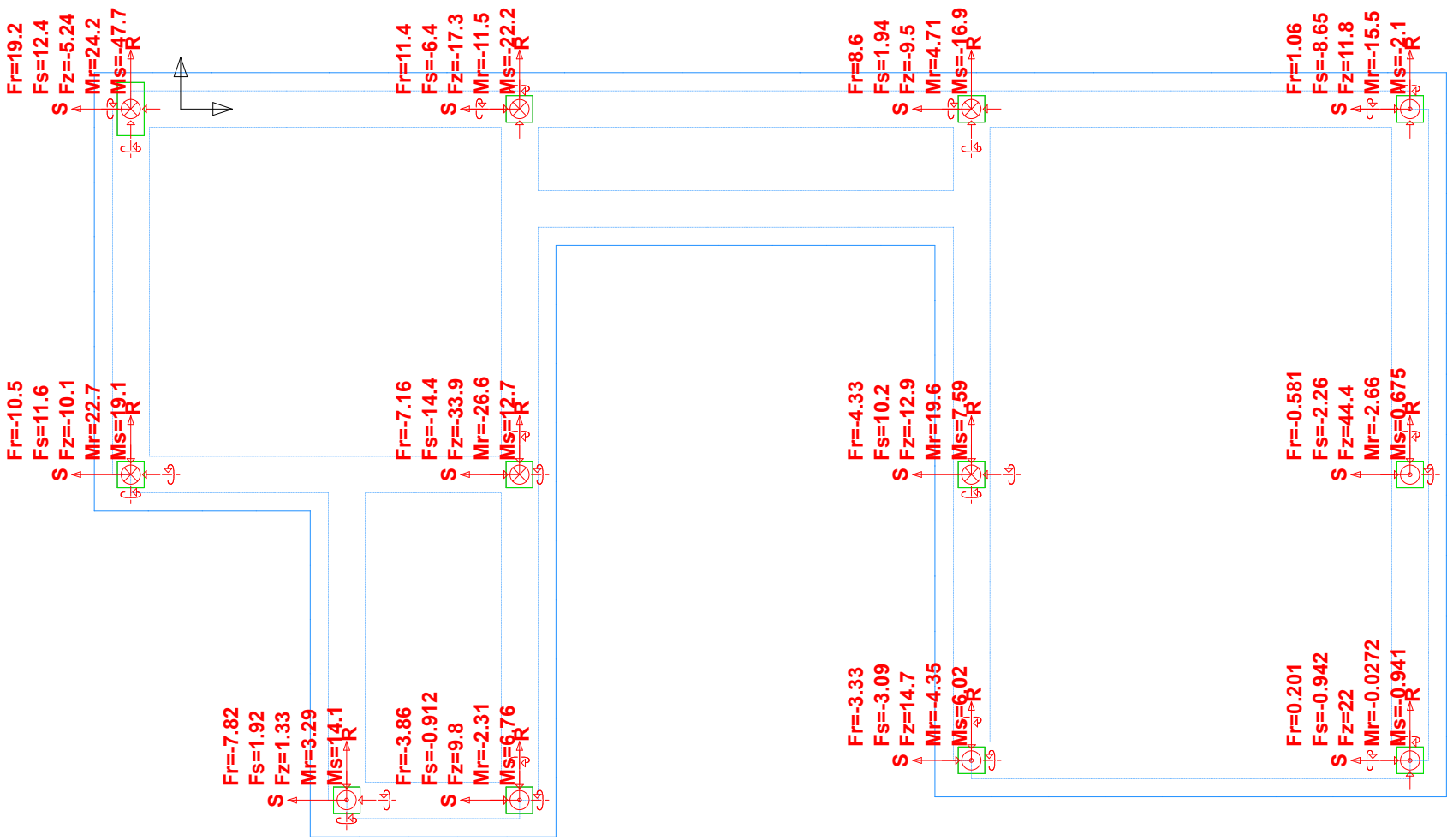
Hydrostatic Pressure: All Loads Plan

Hydrostatic Pressure: User Lines; User Notes; User Dimensions; Point Loads; Point Load Icons; Point Load Values; Line Loads; Line Load Icons; Line Load Values;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element C
Scale = 1:99



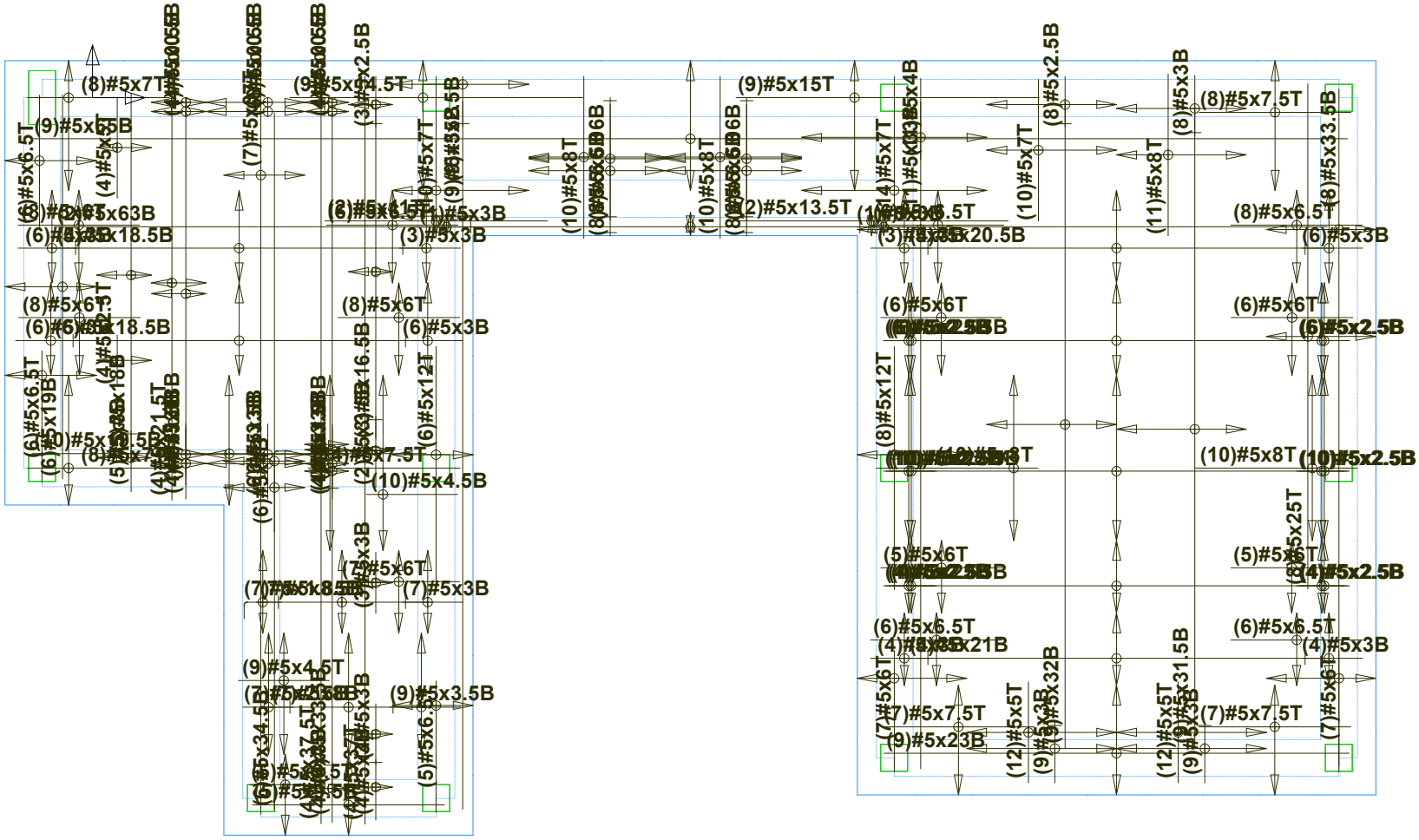
.6DL+1.0H: Max Reactions Plan

.6DL+1.0H: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element C
Scale = 1:99
.6DL+1.0H - Reaction Plot: (Column Below)(Fr,Fs,Fz,Mr,Ms,Mz)(Max Fz Context)

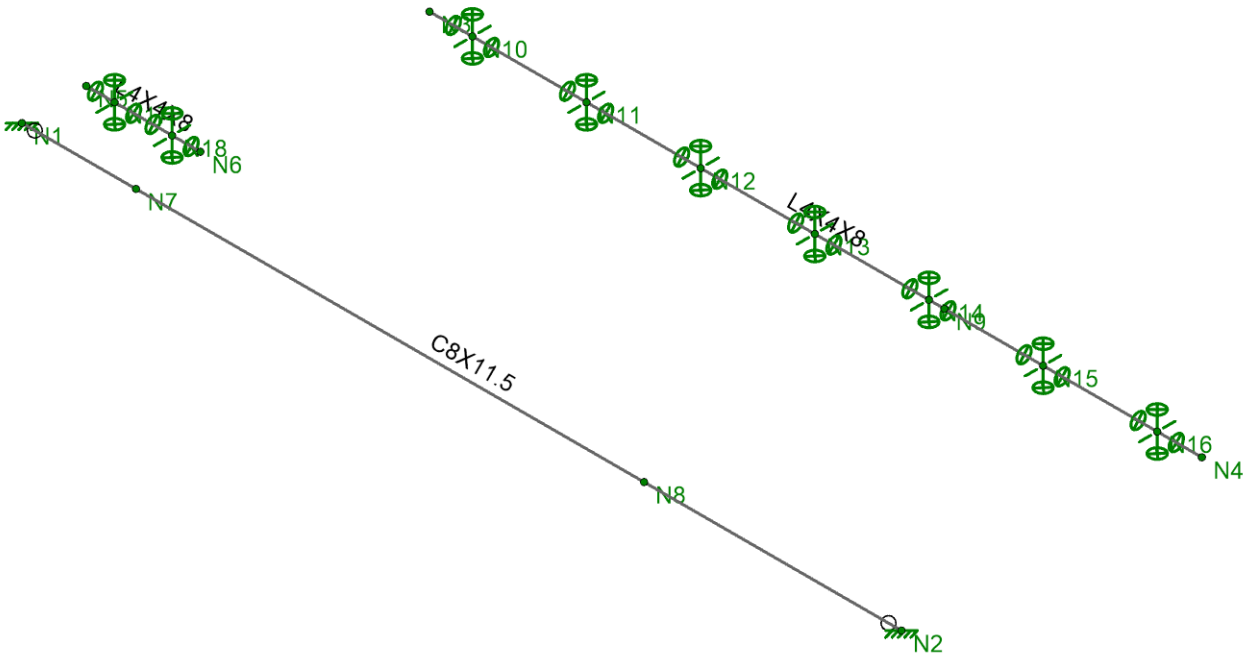


Reinforcement: Standard Plan

Reinforcement: User Lines; User Notes; User Dimensions; Latitude User Concentrated Reinf.; Longitude User Concentrated Reinf.; Latitude Program Concentrated
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element C
Scale = 1:99



Building 4 Miscellaneous Calcs



Envelope Only Solution

Ramaker	Building 4 Equipment Platform	SK-2
KLM		Jan 24, 2023
30479		30479 Building 4 Equipment Platfo…

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3
5	A500 Gr.B RECT	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
6	A500 Gr.C RND	29000	11154	0.3	0.65	0.527	46	1.4	62	1.3
7	A500 Gr.C RECT	29000	11154	0.3	0.65	0.527	50	1.4	62	1.3
8	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
9	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3
10	A913 Gr.65	29000	11154	0.3	0.65	0.49	65	1.1	80	1.1

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	L4x4x1/2	L4X4X8	Beam	Single Angle	A36 Gr.36	Typical	3.75	5.52	5.52	0.322
2	C6x8.2	C8X11.5	Beam	Channel	A36 Gr.36	Typical	3.37	1.31	32.5	0.13

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	M1	N3	N4	90	L4x4x1/2	Beam	Single Angle	A36 Gr.36	Typical
2	M2	N5	N6	90	L4x4x1/2	Beam	Single Angle	A36 Gr.36	Typical
3	M3	N1	N2	180	C6x8.2	Beam	Channel	A36 Gr.36	Typical

Member Advanced Data

	Label	I Release	J Release	Physical	Deflection Ratio Options	Seismic DR
1	M1			Yes	Default	None
2	M2			Yes	Default	None
3	M3	BenPIN	BenPIN	Yes	Default	None

Hot Rolled Steel Design Parameters

	Label	Shape	Length [ft]	Lcomp top [ft]	Channel Conn.	a [ft]	Function
1	M1	L4x4x1/2	9	Lbyy	N/A	N/A	Lateral
2	M2	L4x4x1/2	1.33	Lbyy	N/A	N/A	Lateral
3	M3	C6x8.2	10.25	Lbyy	N/A	N/A	Lateral

Basic Load Cases

	BLC Description	Category	Y Gravity	Distributed	Area(Member)
1	DL	DL	-1		3
2	LL	LL			2
3	BLC 1 Transient Area Loads	None		14	
4	BLC 2 Transient Area Loads	None		12	

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor
1	Deflection 1	Yes	Y	DL	1				
2	Deflection 2	Yes	Y	LL	1				
3	Deflection 3	Yes	Y	DL	1	LL	1		

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor
4	IBC 16-1	Yes	Y	DL	1.4				
5	IBC 16-2 (a)	Yes	Y	DL	1.2	LL	1.6	LLS	1.6

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N17	max	0	5	37.115	5	0	5	0	5	-0.166	1	0	5
2		min	0	1	10.979	1	0	1	0	1	-0.562	5	0	1
3	N18	max	0	5	37.115	5	0	3	0	5	0.562	5	0	5
4		min	0	1	10.979	1	0	5	0	1	0.166	1	0	1
5	N1	max	0	5	863.674	5	0	5	0	5	0	5	0	5
6		min	0	1	173.186	1	0	1	0	1	0	1	0	1
7	N2	max	0	5	1398.899	5	0	5	0	5	0	5	0	5
8		min	0	1	420.792	1	0	1	0	1	0	1	0	1
9	N12	max	0	5	239.151	5	0.758	4	0	5	0.182	5	0	5
10		min	0	1	38.402	1	-0.612	2	0	1	0.056	2	0	1
11	N10	max	0	5	303.555	5	1.709	5	0	5	0.076	4	0	5
12		min	0	1	41.123	1	0.062	1	0	1	-0.892	5	0	1
13	N11	max	0	5	254.088	5	-0.059	1	0	5	-0.256	1	0	5
14		min	0	1	38.662	1	-0.895	5	0	1	-2.509	5	0	1
15	N14	max	0	5	299.51	5	-0.156	1	0	5	10.41	4	0	5
16		min	0	1	88.219	1	-0.884	5	0	1	-0.038	2	0	1
17	N13	max	0	5	231.61	5	0.188	2	0	5	-0.003	2	0	5
18		min	0	1	29.933	1	-5.026	4	0	1	-0.492	4	0	1
19	N15	max	0	5	427.6	5	5.542	4	0	5	1.973	5	0	5
20		min	0	1	127.639	2	-1.352	2	0	1	-0.01	4	0	1
21	N16	max	0	5	457.518	5	1.82	5	0	5	1.778	5	0	5
22		min	0	1	162.568	2	-1.06	4	0	1	-0.645	4	0	1
23	Totals:	max	0	5	4549.837	5	0	3						
24		min	0	1	1202.931	1	0	5						

Envelope AISC 15TH (360-16): LRFD Member Steel Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
1	M1	L4X4X8	0.009	8.531	5	0.006	8.438	z	5	43736.804	121500	5480.406	12057.021	1.5	H2-1
2	M2	L4X4X8	0.001	1.011	5	0	0.998	z	5	118824.257	121500	5480.406	12574.63	1.385	H2-1
3	M3	C8X11.5	0.162	5.445	5	0.041	10.25	y	5	19561.444	109188	3352.607	17772.653	1.138	H1-1b

Company:		Page:	1
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	30479 - Equipment Platform Channel Conn to Concre	Date:	6/5/2023
Fastening point:			

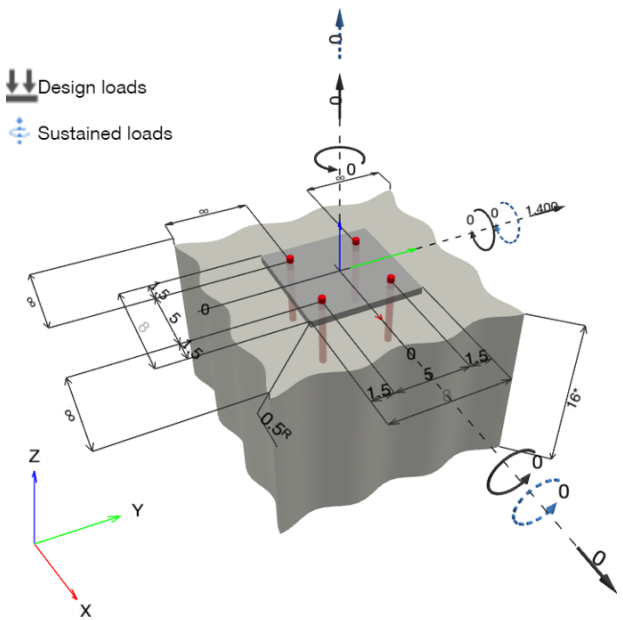
Specifier's comments:

1 Input data

Anchor type and diameter:	**HIT-HY 200 V3 + HAS-V-36 (ASTM F1554 Gr.36) 1/2**
Item number:	2198022 HAS-V-36 1/2"x6-1/2" (element) / 2334276 HIT-HY 200-R V3 (adhesive)
Effective embedment depth:	$h_{ef,act}$ = 4.500 in. ($h_{ef,limit}$ = - in.)
Material:	ASTM F1554 Grade 36
Evaluation Service Report:	ESR-4868
Issued I Valid:	11/1/2022 | 11/1/2024
Proof:	Design Method ACI 318-14 / Chem
Stand-off installation:	e_b = 0.000 in. (no stand-off); t = 0.500 in.
Anchor plate[R]:	l_x x l_y x t = 8.000 in. x 8.000 in. x 0.500 in.; (Recommended plate thickness: not calculated)
Profile:	no profile
Base material:	cracked concrete, 5000, f_c' = 5,000 psi; h = 16.000 in., Temp. short/long: 32/32 °F
Installation:	**hammer drilled hole, Installation condition: Dry**
Reinforcement:	tension: condition B, shear: condition B; no supplemental splitting reinforcement present edge reinforcement: none or < No. 4 bar

[R] - The anchor calculation is based on a rigid anchor plate assumption.

Geometry [in.] & Loading [lb, in.lb]

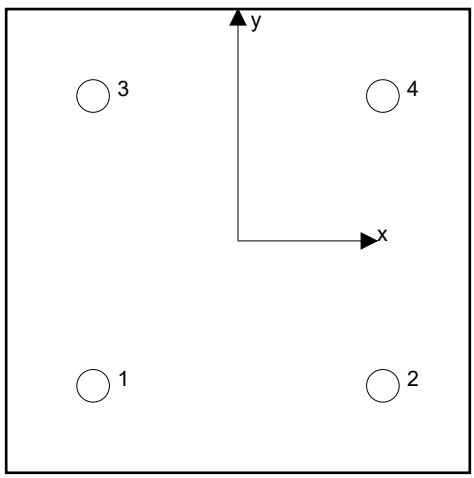


Company:		Page:	2
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	30479 - Equipment Platform Channel Conn to Concre	Date:	6/5/2023
Fastening point:			

1.1 Design results

Case	Description	Forces [lb] / Moments [in.lb]	Seismic	Max. Util. Anchor [%]
1	Combination 1	N = 0; V_x = 0; V_y = 1,400; M_x = 0; M_y = 0; M_z = 0; N_{sus} = 0; $M_{x,sus}$ = 0; $M_{y,sus}$ = 0;	no	11

2 Load case/Resulting anchor forces



Anchor reactions [lb]
Tension force: (+Tension, -Compression)

Anchor	Tension force	Shear force	Shear force x	Shear force y
1	0	350	0	350
2	0	350	0	350
3	0	350	0	350
4	0	350	0	350

max. concrete compressive strain: - [‰]
max. concrete compressive stress: - [psi]
resulting tension force in (x/y)=(0.000/0.000): 0 [lb]
resulting compression force in (x/y)=(0.000/0.000): 0 [lb]

Anchor forces are calculated based on the assumption of a rigid anchor plate.

3 Tension load

	Load N_{ua} [lb]	Capacity ϕ N_n [lb]	Utilization $\beta_N = N_{ua}/\phi$ N_n	Status
Steel Strength*	N/A	N/A	N/A	N/A
Bond Strength**	N/A	N/A	N/A	N/A
Sustained Tension Load Bond Strength*	N/A	N/A	N/A	N/A
Concrete Breakout Failure**	N/A	N/A	N/A	N/A

* highest loaded anchor **anchor group (anchors in tension)

Company:		Page:	3
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	30479 - Equipment Platform Channel Conn to Concre	Date:	6/5/2023
Fastening point:			

4 Shear load

	Load V_{ua} [lb]	Capacity ϕ V_n [lb]	Utilization $\beta_V = V_{ua}/\phi$ V_n	Status
Steel Strength*	350	3,211	11	OK
Steel failure (with lever arm)*	N/A	N/A	N/A	N/A
Pryout Strength (Bond Strength controls)**	1,400	21,664	7	OK
Concrete edge failure in direction **	N/A	N/A	N/A	N/A

* highest loaded anchor **anchor group (relevant anchors)

4.1 Steel Strength

V_{sa} = ESR value refer to ICC-ES ESR-4868
ϕ $V_{steel} \geq V_{ua}$ ACI 318-14 Table 17.3.1.1

Variables

$A_{se,V}$ [in.^{2}]	f_{uta} [psi]
0.14	58,000

Calculations

V_{sa} [lb]
4,940

Results

V_{sa} [lb]	ϕ_{steel}	ϕ V_{sa} [lb]	V_{ua} [lb]
4,940	0.650	3,211	350

Company:		Page:	4
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	30479 - Equipment Platform Channel Conn to Concre	Date:	6/5/2023
Fastening point:			

4.2 Pryout Strength (Bond Strength controls)

$V_{cpg} = k_{cp}\left[\left(\frac{A_{Na}}{A_{Na0}}\right) \psi_{ec1,Na}\ \psi_{ec2,Na}\ \psi_{ed,Na}\ \psi_{cp,Na}\ N_{ba}\right]$ ACI 318-14 Eq. (17.5.3.1b)

$\phi\ V_{cpg} \geq V_{ua}$ ACI 318-14 Table 17.3.1.1

A_{Na} see ACI 318-14, Section 17.4.5.1, Fig. R 17.4.5.1(b)

$A_{Na0} = (2\ c_{Na})^2$ ACI 318-14 Eq. (17.4.5.1c)

$c_{Na} = 10\ d_a \sqrt{\frac{\tau_{uncr}}{1100}}$ ACI 318-14 Eq. (17.4.5.1d)

$\psi_{ec,Na} = \left(\frac{1}{1 + \frac{e'_N}{c_{Na}}}\right) \leq 1.0$ ACI 318-14 Eq. (17.4.5.3)

$\psi_{ed,Na} = 0.7 + 0.3\left(\frac{c_{a,min}}{c_{Na}}\right) \leq 1.0$ ACI 318-14 Eq. (17.4.5.4b)

$\psi_{cp,Na} = MAX\left(\frac{c_{a,min}}{c_{ac}}, \frac{c_{Na}}{c_{ac}}\right) \leq 1.0$ ACI 318-14 Eq. (17.4.5.5b)

$N_{ba} = \lambda_a \cdot \tau_{k,c} \cdot \pi \cdot d_a \cdot h_{ef}$ ACI 318-14 Eq. (17.4.5.2)

Variables

k_{cp}	$\alpha_{overhead}$	$\tau_{k,c,uncr}$ [psi]	d_a [in.]	h_{ef} [in.]	$c_{a,min}$ [in.]	$\tau_{k,c}$ [psi]
2	1.000	2,379	0.500	4.500	∞	1,216

$e_{c1,N}$ [in.]	$e_{c2,N}$ [in.]	c_{ac} [in.]	λ_a
0.000	0.000	8.272	1.000

Calculations

c_{Na} [in.]	A_{Na} [in.^{2}]	A_{Na0} [in.^{2}]	$\psi_{ed,Na}$
7.320	385.76	214.35	1.000

$\psi_{ec1,Na}$	$\psi_{ec2,Na}$	$\psi_{cp,Na}$	N_{ba} [lb]
1.000	1.000	1.000	8,599

Results

V_{cpg} [lb]	$\phi_{concrete}$	$\phi\ V_{cpg}$ [lb]	V_{ua} [lb]
30,949	0.700	21,664	1,400

Company:		Page:	5
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	30479 - Equipment Platform Channel Conn to Concre	Date:	6/5/2023
Fastening point:			

5 Warnings

- The anchor design methods in PROFIS Engineering require rigid anchor plates per current regulations (AS 5216:2021, ETAG 001/Annex C, EOTA TR029 etc.). This means load re-distribution on the anchors due to elastic deformations of the anchor plate are not considered - the anchor plate is assumed to be sufficiently stiff, in order not to be deformed when subjected to the design loading. PROFIS Engineering calculates the minimum required anchor plate thickness with CBFEM to limit the stress of the anchor plate based on the assumptions explained above. The proof if the rigid anchor plate assumption is valid is not carried out by PROFIS Engineering. Input data and results must be checked for agreement with the existing conditions and for plausibility!
- Condition A applies where the potential concrete failure surfaces are crossed by supplementary reinforcement proportioned to tie the potential concrete failure prism into the structural member. Condition B applies where such supplementary reinforcement is not provided, or where pullout or pryout strength governs.
- Design Strengths of adhesive anchor systems are influenced by the cleaning method. Refer to the INSTRUCTIONS FOR USE given in the Evaluation Service Report for cleaning and installation instructions.
- For additional information about ACI 318 strength design provisions, please go to https://submittals.us.hilti.com/PROFISAnchorDesignGuide/
- Installation of Hilti adhesive anchor systems shall be performed by personnel trained to install Hilti adhesive anchors. Reference ACI 318-14, Section 17.8.1.

Fastening meets the design criteria!

Company:		Page:	6
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	30479 - Equipment Platform Channel Conn to Concre	Date:	6/5/2023
Fastening point:			

6 Installation data

Profile: no profile

Hole diameter in the fixture: d_f = 0.562 in.

Plate thickness (input): 0.500 in.

Recommended plate thickness: not calculated

Drilling method: Hammer drilled

Cleaning: Compressed air cleaning of the drilled hole according to instructions for use is required

Anchor type and diameter: HIT-HY 200 V3 + HAS-V-36 (ASTM F1554 Gr.36) 1/2

Item number: 2198022 HAS-V-36 1/2"x6-1/2" (element) / 2334276 HIT-HY 200-R V3 (adhesive)

Maximum installation torque: 360 in.lb

Hole diameter in the base material: 0.562 in.

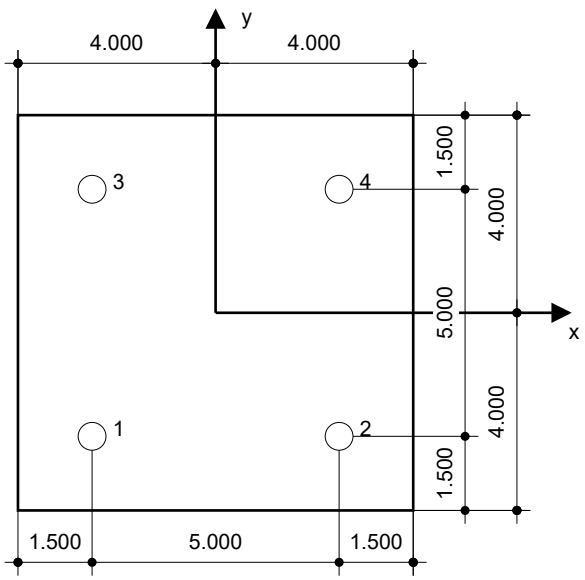
Hole depth in the base material: 4.500 in.

Minimum thickness of the base material: 5.750 in.

1/2 Hilti HAS Carbon steel threaded rod with Hilti HIT-HY 200 V3 Safe Set System

6.1 Recommended accessories

Drilling	Cleaning	Setting
• Suitable Rotary Hammer • Properly sized drill bit	• Compressed air with required accessories to blow from the bottom of the hole • Proper diameter wire brush	• Dispenser including cassette and mixer • Torque wrench



Coordinates Anchor [in.]

Anchor	x	y	c_{-x}	c_{+x}	c_{-y}	c_{+y}
1	-2.500	-2.500	-	-	-	-
2	2.500	-2.500	-	-	-	-
3	-2.500	2.500	-	-	-	-
4	2.500	2.500	-	-	-	-

Company:		Page:	7
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	30479 - Equipment Platform Channel Conn to Concre	Date:	6/5/2023
Fastening point:			

7 Remarks; Your Cooperation Duties

- Any and all information and data contained in the Software concern solely the use of Hilti products and are based on the principles, formulas and security regulations in accordance with Hilti's technical directions and operating, mounting and assembly instructions, etc., that must be strictly complied with by the user. All figures contained therein are average figures, and therefore use-specific tests are to be conducted prior to using the relevant Hilti product. The results of the calculations carried out by means of the Software are based essentially on the data you put in. Therefore, you bear the sole responsibility for the absence of errors, the completeness and the relevance of the data to be put in by you. Moreover, you bear sole responsibility for having the results of the calculation checked and cleared by an expert, particularly with regard to compliance with applicable norms and permits, prior to using them for your specific facility. The Software serves only as an aid to interpret norms and permits without any guarantee as to the absence of errors, the correctness and the relevance of the results or suitability for a specific application.
- You must take all necessary and reasonable steps to prevent or limit damage caused by the Software. In particular, you must arrange for the regular backup of programs and data and, if applicable, carry out the updates of the Software offered by Hilti on a regular basis. If you do not use the AutoUpdate function of the Software, you must ensure that you are using the current and thus up-to-date version of the Software in each case by carrying out manual updates via the Hilti Website. Hilti will not be liable for consequences, such as the recovery of lost or damaged data or programs, arising from a culpable breach of duty by you.

Company:		Page:	1
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	30479 Equipment Platform Ledger Anchor	Date:	6/5/2023
Fastening point:			

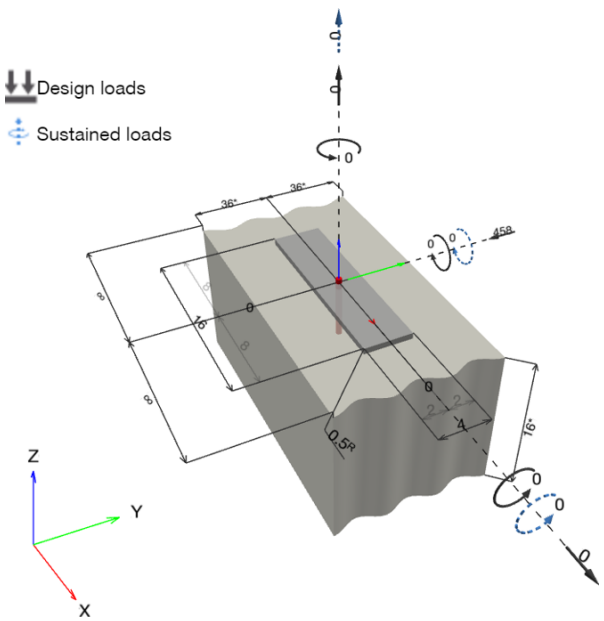
Specifier's comments:

1 Input data

Anchor type and diameter:	**HIT-HY 200 V3 + HAS-V-36 (ASTM F1554 Gr.36) 1/2**
Item number:	2198022 HAS-V-36 1/2"x6-1/2" (element) / 2334276 HIT-HY 200-R V3 (adhesive)
Effective embedment depth:	$h_{ef,act}$ = 4.500 in. ($h_{ef,limit}$ = - in.)
Material:	ASTM F1554 Grade 36
Evaluation Service Report:	ESR-4868
Issued I Valid:	11/1/2022 | 11/1/2024
Proof:	Design Method ACI 318-14 / Chem
Stand-off installation:	e_b = 0.000 in. (no stand-off); t = 0.500 in.
Anchor plate[R]:	l_x x l_y x t = 16.000 in. x 4.000 in. x 0.500 in.; (Recommended plate thickness: not calculated)
Profile:	no profile
Base material:	cracked concrete, 5000, f_c' = 5,000 psi; h = 16.000 in., Temp. short/long: 32/32 °F
Installation:	**hammer drilled hole, Installation condition: Dry**
Reinforcement:	tension: condition B, shear: condition B; no supplemental splitting reinforcement present edge reinforcement: none or < No. 4 bar

[R] - The anchor calculation is based on a rigid anchor plate assumption.

Geometry [in.] & Loading [lb, in.lb]



Company:		Page:	2
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	30479 Equipment Platform Ledger Anchor	Date:	6/5/2023
Fastening point:			

1.1 Design results

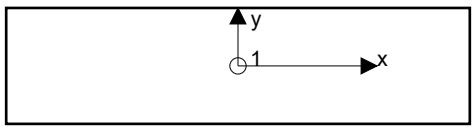
Case	Description	Forces [lb] / Moments [in.lb]	Seismic	Max. Util. Anchor [%]
1	Combination 1	N = 0; V_x = 0; V_y = -458; M_x = 0; M_y = 0; M_z = 0; N_{sus} = 0; $M_{x,sus}$ = 0; $M_{y,sus}$ = 0;	no	15

2 Load case/Resulting anchor forces

Anchor reactions [lb]

Tension force: (+Tension, -Compression)

Anchor	Tension force	Shear force	Shear force x	Shear force y
1	0	458	0	-458



max. concrete compressive strain: - [‰]
max. concrete compressive stress: - [psi]
resulting tension force in (x/y)=(0.000/0.000): 0 [lb]
resulting compression force in (x/y)=(0.000/0.000): 0 [lb]

Anchor forces are calculated based on the assumption of a rigid anchor plate.

3 Tension load

	Load N_{ua} [lb]	Capacity ϕ N_n [lb]	Utilization $\beta_N = N_{ua}/\phi$ N_n	Status
Steel Strength*	N/A	N/A	N/A	N/A
Bond Strength**	N/A	N/A	N/A	N/A
Sustained Tension Load Bond Strength*	N/A	N/A	N/A	N/A
Concrete Breakout Failure**	N/A	N/A	N/A	N/A

* highest loaded anchor **anchor group (anchors in tension)

Company:		Page:	3
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	30479 Equipment Platform Ledger Anchor	Date:	6/5/2023
Fastening point:			

4 Shear load

	Load V_{ua} [lb]	Capacity ϕ V_n [lb]	Utilization $\beta_V = V_{ua}/\phi$ V_n	Status
Steel Strength*	458	3,211	15	OK
Steel failure (with lever arm)*	N/A	N/A	N/A	N/A
Pryout Strength (Bond Strength controls)**	458	12,038	4	OK
Concrete edge failure in direction y-**	458	43,662	2	OK

* highest loaded anchor **anchor group (relevant anchors)

4.1 Steel Strength

V_{sa} = ESR value refer to ICC-ES ESR-4868
ϕ $V_{steel} \geq V_{ua}$ ACI 318-14 Table 17.3.1.1

Variables

$A_{se,V}$ [in.^{2}]	f_{uta} [psi]
0.14	58,000

Calculations

V_{sa} [lb]
4,940

Results

V_{sa} [lb]	ϕ_{steel}	ϕ V_{sa} [lb]	V_{ua} [lb]
4,940	0.650	3,211	458

Company:		Page:	4
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	30479 Equipment Platform Ledger Anchor	Date:	6/5/2023
Fastening point:			

4.2 Pryout Strength (Bond Strength controls)

$V_{cp} = k_{cp}\left[\left(\frac{A_{Na}}{A_{Na0}}\right) \psi_{ed,Na} \psi_{cp,Na} N_{ba}\right]$ ACI 318-14 Eq. (17.5.3.1a)

$\phi V_{cp} \geq V_{ua}$ ACI 318-14 Table 17.3.1.1

A_{Na} see ACI 318-14, Section 17.4.5.1, Fig. R 17.4.5.1(b)

$A_{Na0} = (2 c_{Na})^2$ ACI 318-14 Eq. (17.4.5.1c)

$c_{Na} = 10 d_a \sqrt{\frac{\tau_{uncr}}{1100}}$ ACI 318-14 Eq. (17.4.5.1d)

$\psi_{ed,Na} = 0.7 + 0.3 \left(\frac{c_{a,min}}{c_{Na}}\right) \leq 1.0$ ACI 318-14 Eq. (17.4.5.4b)

$\psi_{cp,Na} = \text{MAX}\left(\frac{c_{a,min}}{c_{ac}}, \frac{c_{Na}}{c_{ac}}\right) \leq 1.0$ ACI 318-14 Eq. (17.4.5.5b)

$N_{ba} = \lambda_a \cdot \tau_{k,c} \cdot \pi \cdot d_a \cdot h_{ef}$ ACI 318-14 Eq. (17.4.5.2)

Variables

k_{cp}	$\alpha_{overhead}$	$\tau_{k,c,uncr}$ [psi]	d_a [in.]	h_{ef} [in.]	$c_{a,min}$ [in.]	$\tau_{k,c}$ [psi]
2	1.000	2,379	0.500	4.500	36.000	1,216

c_{ac} [in.]	λ_a
8.272	1.000

Calculations

c_{Na} [in.]	A_{Na} [in.^{2}]	A_{Na0} [in.^{2}]	$\psi_{ed,Na}$
7.320	214.35	214.35	1.000

$\psi_{cp,Na}$	N_{ba} [lb]
1.000	8,599

Results

V_{cp} [lb]	$\phi_{concrete}$	ϕV_{cp} [lb]	V_{ua} [lb]
17,197	0.700	12,038	458

4.3 Concrete edge failure in direction y-

$V_{cb} = \left(\frac{A_{Vc}}{A_{Vc0}}\right) \psi_{ed,V} \psi_{c,V} \psi_{h,V} \psi_{parallel,V} V_b$ — ACI 318-14 Eq. (17.5.2.1a)

$\phi V_{cb} \geq V_{ua}$ — ACI 318-14 Table 17.3.1.1

A_{Vc} see ACI 318-14, Section 17.5.2.1, Fig. R 17.5.2.1(b)

$A_{Vc0} = 4.5 c_{a1}^2$ — ACI 318-14 Eq. (17.5.2.1c)

$\psi_{ed,V} = 0.7 + 0.3\left(\frac{c_{a2}}{1.5c_{a1}}\right) \leq 1.0$ — ACI 318-14 Eq. (17.5.2.6b)

$\psi_{h,V} = \sqrt{\frac{1.5c_{a1}}{h_a}} \geq 1.0$ — ACI 318-14 Eq. (17.5.2.8)

$V_b = \left(7\left(\frac{l_e}{d_a}\right)^{0.2}\sqrt{d_a}\right) \lambda_a \sqrt{f'_c} c_{a1}^{1.5}$ — ACI 318-14 Eq. (17.5.2.2a)

Variables

c_{a1} [in.]	c_{a2} [in.]	$\psi_{c,V}$	h_a [in.]	l_e [in.]
36.000	-	1.000	16.000	4.000

λ_a	d_a [in.]	f'_c [psi]	$\psi_{parallel,V}$
1.000	0.500	5,000	1.000

Calculations

A_{Vc} [in.^{2}]	A_{Vc0} [in.^{2}]	$\psi_{ed,V}$	$\psi_{h,V}$	V_b [lb]
1,728.00	5,832.00	1.000	1.837	114,588

Results

V_{cb} [lb]	$\phi_{concrete}$	ϕV_{cb} [lb]	V_{ua} [lb]
62,374	0.700	43,662	458

5 Warnings

- The anchor design methods in PROFIS Engineering require rigid anchor plates per current regulations (AS 5216:2021, ETAG 001/Annex C, EOTA TR029 etc.). This means load re-distribution on the anchors due to elastic deformations of the anchor plate are not considered - the anchor plate is assumed to be sufficiently stiff, in order not to be deformed when subjected to the design loading. PROFIS Engineering calculates the minimum required anchor plate thickness with CBFEM to limit the stress of the anchor plate based on the assumptions explained above. The proof if the rigid anchor plate assumption is valid is not carried out by PROFIS Engineering. Input data and results must be checked for agreement with the existing conditions and for plausibility!
- Condition A applies where the potential concrete failure surfaces are crossed by supplementary reinforcement proportioned to tie the potential concrete failure prism into the structural member. Condition B applies where such supplementary reinforcement is not provided, or where pullout or pryout strength governs.
- Design Strengths of adhesive anchor systems are influenced by the cleaning method. Refer to the INSTRUCTIONS FOR USE given in the Evaluation Service Report for cleaning and installation instructions.
- For additional information about ACI 318 strength design provisions, please go to https://submittals.us.hilti.com/PROFISAnchorDesignGuide/
- Installation of Hilti adhesive anchor systems shall be performed by personnel trained to install Hilti adhesive anchors. Reference ACI 318-14, Section 17.8.1.

Company:		Page:	6
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	30479 Equipment Platform Ledger Anchor	Date:	6/5/2023
Fastening point:			

Fastening meets the design criteria!

Company:		Page:	7
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	30479 Equipment Platform Ledger Anchor	Date:	6/5/2023
Fastening point:			

6 Installation data

Profile: no profile

Hole diameter in the fixture: d_f = 0.562 in.

Plate thickness (input): 0.500 in.

Recommended plate thickness: not calculated

Drilling method: Hammer drilled

Cleaning: Compressed air cleaning of the drilled hole according to instructions for use is required

Anchor type and diameter: HIT-HY 200 V3 + HAS-V-36 (ASTM F1554 Gr.36) 1/2

Item number: 2198022 HAS-V-36 1/2"x6-1/2" (element) / 2334276 HIT-HY 200-R V3 (adhesive)

Maximum installation torque: 360 in.lb

Hole diameter in the base material: 0.562 in.

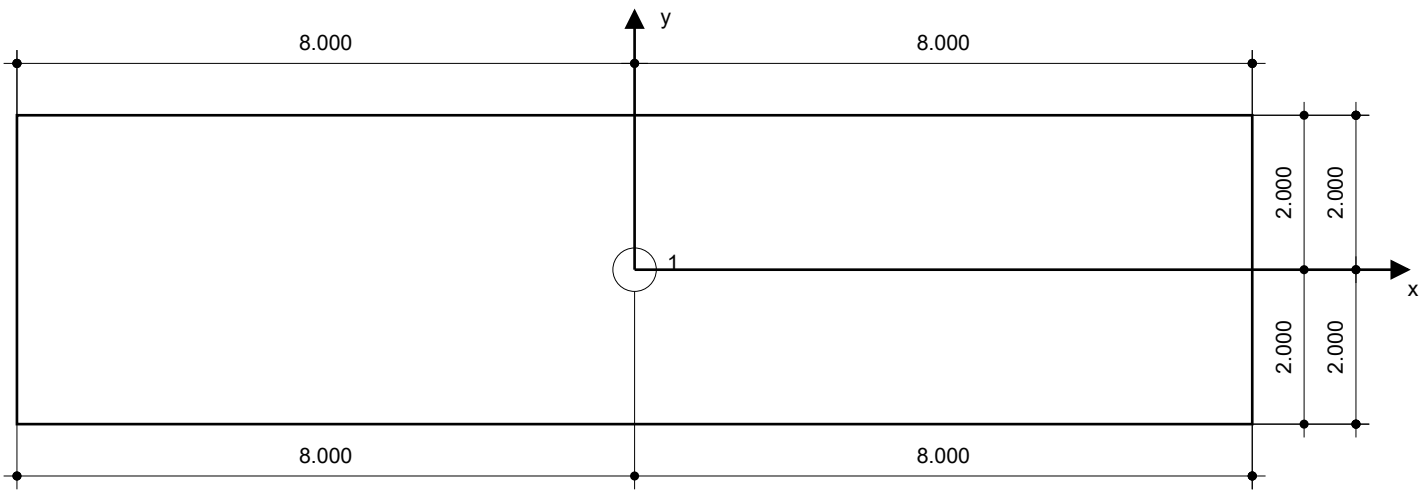
Hole depth in the base material: 4.500 in.

Minimum thickness of the base material: 5.750 in.

1/2 Hilti HAS Carbon steel threaded rod with Hilti HIT-HY 200 V3 Safe Set System

6.1 Recommended accessories

Drilling	Cleaning	Setting
• Suitable Rotary Hammer • Properly sized drill bit	• Compressed air with required accessories to blow from the bottom of the hole • Proper diameter wire brush	• Dispenser including cassette and mixer • Torque wrench



Coordinates Anchor [in.]

Anchor	x	y	c_{-x}	c_{+x}	c_{-y}	c_{+y}
1	0.000	0.000	-	-	36.000	36.000

Company:		Page:	8
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	30479 Equipment Platform Ledger Anchor	Date:	6/5/2023
Fastening point:			

7 Remarks; Your Cooperation Duties

- Any and all information and data contained in the Software concern solely the use of Hilti products and are based on the principles, formulas and security regulations in accordance with Hilti's technical directions and operating, mounting and assembly instructions, etc., that must be strictly complied with by the user. All figures contained therein are average figures, and therefore use-specific tests are to be conducted prior to using the relevant Hilti product. The results of the calculations carried out by means of the Software are based essentially on the data you put in. Therefore, you bear the sole responsibility for the absence of errors, the completeness and the relevance of the data to be put in by you. Moreover, you bear sole responsibility for having the results of the calculation checked and cleared by an expert, particularly with regard to compliance with applicable norms and permits, prior to using them for your specific facility. The Software serves only as an aid to interpret norms and permits without any guarantee as to the absence of errors, the correctness and the relevance of the results or suitability for a specific application.
- You must take all necessary and reasonable steps to prevent or limit damage caused by the Software. In particular, you must arrange for the regular backup of programs and data and, if applicable, carry out the updates of the Software offered by Hilti on a regular basis. If you do not use the AutoUpdate function of the Software, you must ensure that you are using the current and thus up-to-date version of the Software in each case by carrying out manual updates via the Hilti Website. Hilti will not be liable for consequences, such as the recovery of lost or damaged data or programs, arising from a culpable breach of duty by you.

SERIES TYPE & NAME	BB HGT	BB THK	LBS./SF		LOAD/ DEFL	CLEAR SPAN															
			19-W-4	19-W-2		12"	18"	24"	30"	36"	42"	48"	54"	60"	66"	72"	78"	84"	90"	96"	102"	108"	114"	120"
GW-75-A & GW-75-A-2	3/4"	1/8"	4.1	5.0	U	1421	631	355	227	158	116	89	70	57	47	39	34	29	25	22	20	18	16	14
					D	0.025	0.056	0.099	0.155	0.224	0.304	0.398	0.502	0.623	0.752	0.883	1.061	1.217	1.382	1.575	1.824	2.064	2.277	2.446
					C	710	474	355	284	237	203	178	158	142	129	118	109	101	95	89	84	79	75	71
					D	0.020	0.045	0.079	0.124	0.179	0.243	0.319	0.403	0.496	0.600	0.713	0.837	0.969	1.121	1.274	1.442	1.610	1.798	1.985
GW-75 & GW-75-2	3/4"	3/16"	5.8	6.7	U	2131	947	533	341	237	174	133	105	85	70	59	50	43	38	33	29	26	24	21
					D	0.025	0.056	0.099	0.155	0.224	0.304	0.397	0.502	0.619	0.746	0.891	1.040	1.203	1.401	1.575	1.764	1.987	2.277	2.446
					C	1066	710	533	426	355	304	266	237	213	194	178	164	152	142	133	125	118	112	107
					D	0.020	0.045	0.079	0.124	0.179	0.243	0.317	0.403	0.496	0.602	0.717	0.839	0.972	1.117	1.269	1.431	1.603	1.790	1.994
GW-100-A & GW-100-A-2	1"	1/8"	5.2	6.1	U	2526	1123	632	404	281	206	158	125	101	84	70	60	52	45	39	35	31	28	25
					D	0.019	0.042	0.075	0.116	0.168	0.228	0.298	0.378	0.465	0.566	0.668	0.789	0.920	1.049	1.177	1.346	1.499	1.680	1.842
					C	1263	842	632	505	421	361	316	281	253	230	211	194	180	168	158	149	140	133	126
					D	0.015	0.034	0.060	0.093	0.134	0.182	0.238	0.302	0.373	0.451	0.537	0.628	0.728	0.836	0.954	1.079	1.203	1.344	1.485
GW-100 & GW-100-2	1"	3/16"	7.5	8.4	U	3790	1684	947	606	421	309	237	187	152	125	105	90	77	67	59	52	47	42	38
					D	0.019	0.042	0.074	0.116	0.168	0.228	0.298	0.377	0.467	0.562	0.669	0.789	0.908	1.042	1.187	1.334	1.515	1.681	1.867
					C	1895	1263	947	758	632	541	474	421	379	345	316	292	271	253	237	223	211	199	189
					D	0.015	0.034	0.060	0.093	0.134	0.182	0.238	0.302	0.372	0.451	0.537	0.630	0.731	0.839	0.954	1.077	1.209	1.341	1.486
GW-125-A & GW-125-A-2	1-1/4"	1/8"	6.3	7.2	U	3947	1754	987	631	439	322	247	195	158	130	110	93	81	70	62	55	49	44	39
					D	0.015	0.034	0.060	0.093	0.134	0.182	0.239	0.302	0.373	0.449	0.538	0.626	0.734	0.836	0.958	1.083	1.213	1.352	1.472
					C	1973	1316	987	789	658	564	493	439	395	359	329	304	282	263	247	232	219	208	197
					D	0.012	0.027	0.048	0.074	0.107	0.146	0.191	0.242	0.298	0.361	0.429	0.504	0.584	0.670	0.764	0.860	0.964	1.077	1.189
GW-125 & GW-125-2	1-1/4"	3/16"	9.1	10.0	U	5921	2631	1480	947	658	483	370	292	237	196	164	140	121	105	93	82	73	66	59
					D	0.015	0.034	0.060	0.093	0.134	0.182	0.238	0.301	0.373	0.451	0.535	0.629	0.731	0.836	0.958	1.077	1.205	1.352	1.484
					C	2960	1974	1480	1184	987	846	740	658	592	538	493	455	423	395	370	348	329	312	296
					D	0.012	0.027	0.048	0.074	0.107	0.146	0.191	0.241	0.298	0.360	0.429	0.503	0.584	0.671	0.763	0.860	0.965	1.077	1.191
GW-150-A & GW-150-A-2	1-1/2"	1/8"	7.4	8.3	U	5684	2526	1421	910	632	464	355	281	227	188	158	135	116	101	89	79	70	63	57
					D	0.012	0.028	0.050	0.078	0.112	0.152	0.198	0.252	0.310	0.376	0.447	0.526	0.608	0.698	0.796	0.901	1.003	1.121	1.245
					C	2842	1895	1421	1137	947	812	711	632	568	517	474	437	406	379	355	334	316	299	284
					D	0.010	0.022	0.040	0.062	0.089	0.122	0.159	0.201	0.248	0.301	0.358	0.419	0.487	0.559	0.635	0.717	0.805	0.896	0.992
GW-150 & GW150-2	1-1/2"	3/16"	10.8	11.7	U	8526	3789	2132	1364	947	696	533	421	341	282	237	202	174	152	133	118	105	94	85
					D	0.012	0.028	0.050	0.078	0.112	0.152	0.199	0.251	0.310	0.376	0.447	0.525	0.608	0.700	0.793	0.897	1.003	1.115	1.238
					C	4263	2842	2132	1705	1421	1218	1066	947	853	775	711	656	609	568	533	502	474	449	426
					D	0.010	0.022	0.040	0.062	0.089	0.122	0.159	0.201	0.248	0.300	0.358	0.420	0.487	0.558	0.636	0.718	0.805	0.897	0.992
GW-175 & GW-175-2	1-3/4"	3/16"	12.5	13.4	U	11605	5158	2901	1857	1289	947	725	573	464	384	322	275	237	206	181	161	143	129	116
					D	0.011	0.024	0.043	0.067	0.096	0.130	0.170	0.215	0.266	0.322	0.383	0.450	0.522	0.598	0.680	0.771	0.860	0.963	1.064
					C	5803	3868	2901	2321	1934	1658	1451	1289	1161	1055	967	893	829	774	725	683	645	611	580
					D	0.009	0.019	0.034	0.053	0.077	0.104	0.136	0.172	0.213	0.257	0.306	0.360	0.417	0.479	0.545	0.615	0.690	0.768	0.851
GW-200 & GW-200-2	2"	3/16"	14.1	15.0	U	15158	6737	3790	2425	1684	1237	947	749	606	501	421	359	309	269	237	210	187	168	152
					D	0.009	0.021	0.037	0.058	0.084	0.114	0.149	0.189	0.233	0.282	0.335	0.394	0.456	0.523	0.596	0.673	0.754	0.840	0.934
					C	7579	5053	3790	3032	2526	2165	1895	1684	1516	1378	1263	1166	1083	1011	947	892	842	798	758
					D	0.007	0.017	0.030	0.047	0.067	0.091	0.119	0.151	0.186	0.225	0.268	0.315	0.365	0.419	0.476	0.538	0.603	0.672	0.745
GW-225 & GW-225-2	2-1/4"	3/16"	15.8	16.7	U	19184	8526	4796	3070	2132	1566	1199	947	767	634	533	454	392	341	300	266	237	213	192
					D	0.008	0.019	0.033	0.052	0.074	0.101	0.132	0.168	0.207	0.250	0.298	0.350	0.406	0.465	0.530	0.599	0.671	0.748	0.828
					C	9592	6395	4796	3837	3197	2741	2398	2132	1918	1744	1599	1476	1370	1279	1199	1128	1066	1010	959
					D	0.007	0.015	0.026	0.041	0.060	0.081	0.106	0.134	0.165	0.200	0.238	0.280	0.324	0.372	0.424	0.478	0.536	0.598	0.662
GW-250 & GW-250-2	2-1/2"	3/16"	17.4	18.3	U	23684	10526	5921	3790	2632	1933	1480	1170	947	783	658	561	483	421	370	328	292	262	237
					D	0.007	0.017	0.030	0.047	0.067	0.091	0.119	0.151	0.186	0.225	0.268	0.315	0.365	0.419	0.477	0.538	0.602	0.671	0.745
					C	11842	7895	5921	4737	3947	3383	2961	2632	2368	2153	1974	1822	1692	1579	1480	1393	1316	1247	1184
					D	0.006	0.013	0.024	0.037	0.054	0.073	0.095	0.121	0.149	0.180	0.215	0.252	0.292	0.335	0.381	0.430	0.483	0.538	0.596

U - Uniform Load - Lbs. per Square Foot

D - Deflection - in Inches

C - Concentrated Load - Lbs. per Square Foot of Width at Mid Span

- Span and loading values to the left of the bolded black line produce a deflection of 1/4" or less under a uniform load of 100 lbs. per square foot, allowing for safe pedestrian comfort. Span and loading values to the right of the bolded black line are applicable to other types of loads at the discretion of a licensed engineer.
- For Grating with a serrated surface (1" bearing bar height or taller), subtract 1/4" from the bearing bar height requirement and reference that loading information listed in the table. For example, a 1-1/2" x 3/16" serrated bearing bar height and thickness would have the same strength and loading values as a 1-1/4" x 3/16" smooth (non-serrated) bearing bar height and thickness.
- Loading and deflection values are theoretical and based on a maximum allowable fiber stress (Fs) of 18,000 PSI, E = 29,000,000 PSI.
- Technical information provided is theoretical and for evaluation by technically skilled persons, with any use thereof to be at their independent discretion and risk. **McNICHOLS** shall have no responsibility or liability for results obtained or damages resulting from improper evaluation or use of Bar Grating.