



Equipment Anchorage Calculation Report

Trylon Project # 206523

December 21, 2023

Project Information	
Client	Smartlink
Carrier Name	AT&T Mobility
Carrier Site ID	ORL00127
Carrier Site Name	Capitol Highway
PACE Number	MRWOR053817, MRWOR053807, MRWOR053801
PTN Number	3898A0YW31, 3898A0YVEE, 3898A0YTSP
FA Number	10094139
Site Address	5010 Southwest Alfred Street, Portland, OR 97219
Site Coordinates	45.4511000, -122.7291610
Structure Type	Wall & Ground Mounted
Equipment Elevation	3.5 ft

STRUCTURE RATING =

ADEQUATE

Analysis Performed by:

Michelle Prouty, EI, MS

Reviewed and Approved by:

Cliff Abernathy, P.E.



Submitted 1/4/2024

Equipment Anchorage Calculation Report

Subject: Analysis of the Proposed Equipment Ground Mounted

Dear Smartlink,

We have been provided with RF information, photos and sketches of the structure for the above referenced sites. AT&T Mobility is proposing to change the equipment configuration in the equipment area.

1. Source Data

Document Type	Source	Reference	Date
RFDS	AT&T Mobility	RFDS ID: 4376068	July 22, 2021
Construction Drawings	Trylon	Site ID: PR15	December 22, 2023

2. Analysis Criteria

Adopted Codes and Site Parameters	
Building Code / Local Code	2021 IBC / 2019 OSSC
Code Standard	ASCE7-16
Design Wind Speed (mph)	98
Design Wind Speed with Ice (mph)	30
Design Ice Thickness (in)	1.50
Risk Category	II
Exposure Category	C
Topographic Factor, K_{zt}	1.0
Seismic Response Acceleration, S_s (g)	0.878
Seismic Response Acceleration, S_1 (g)	0.397

3. Proposed Equipment

Equipment CL (ft)	Qty.	Manufacturer	Model	Height (in)	Width (in)	Depth (in)	Weight (lbs)
3.5	1	Netsure	7100 DC Power Plant	84.0	23.0	18.0	1971
	1	Netsure	VRLA Battery Rack	84.0	24.4	18.0	3260

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4. Conclusions and Recommendations

Based on the information provided, our calculations conclude that the Proposed AT&T Mobility equipment anchorage listed below has sufficient capacity to resist any lateral and uplift forces.

Connection Through Wall:

Manufacturer	Model	Total No. Bolts	Bolt Type
Netsure	7100 DC Power Plant	4	1/2" Threaded Rod Through Wall
Netsure	VRLA Battery Rack	4	1/2" Threaded Rod Through Wall

Connection to Floor:

Manufacturer	Model	Total No. Bolts	Bolt Type	Min. Effective Embedment Depth (in)
Netsure	7100 DC Power Plant	4	5/8" Lag Screw with Lag Shield Anchor	-
Netsure	VRLA Battery Rack	8	5/8" Lag Screw with Lag Shield Anchor	-

Should you have any questions, comments, or require additional information, please do not hesitate to call.

Submitted 1/4/2024

EQUIPMENT ANCHORAGE CALC TOOL 1.3

PROJECT DATA		
Job Code:	206523	
Carrier Site ID:	ORL00127	
Carrier Site Name:	Capitol Highway	

ANALYSIS CRITERIA		
Building Code:	2018 IBC	--
ASCE Standard:	ASCE 7-16	--
Base Ground Elevation:	632.44	ft
Basic Design Wind Speed:	98	mph
Structure Risk Category:	II	--
Exposure Category:	B	--
Site Class:	D - Default (Section 11.4.3)	--
Topographic Category:	1	--
Topo Feature:		--
Crest Point Elevation:		ft
Base Point Elevation:		ft
Crest to Mid Height Distance (L _h):		ft
Distance from Crest (x):		ft
S _s :	0.878	g
S ₁ :	0.397	g

EQUIPMENT INFO		
Ground Mounted:	Yes	ft
Structure Height:	0	ft
Equipment Centerline:	42	ft
Fully Shielded:	Yes	--
Equipment Name:	Netsure VRLA Battery Rack	--
Equipment Height:	84	in
Equipment Width:	24.4	in
Equipment Depth:	18	in
Equipment Weight:	3260	lbs

ANCHORAGE INFO		
Anchor Hole Width Spacing:	18.4	in
Anchor Hole Depth Spacing:	12	in
Number of Anchor Bolts:	8	--
Type of Anchor Bolts:	Wood Lag Screws	--
Anchor Diameter:	0.625	in

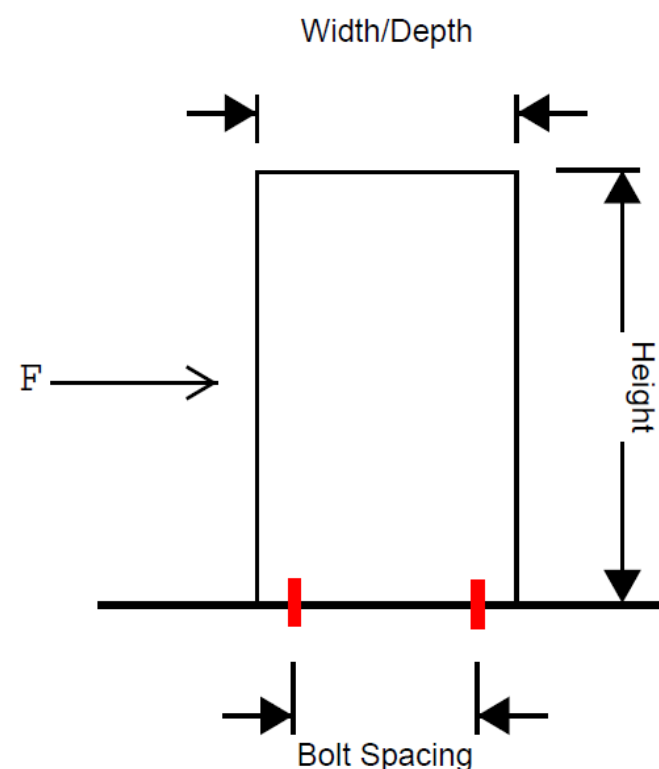
WOOD LAG SCREWS		
Withdrawal Capacity:	1297	lbs
Shear Capacity:	1347	lbs

ANCHOR BOLT CAPACITY		
Tension Usage:	50.3%	--
Shear Usage:	10.2%	--
Interaction Usage:	51.3%	--

WIND CALCULATIONS		
Directional Factor (K _d):	0.85	--
Velocity Pressure Exp. Coeff (K _z):	0.77	--
Topographic Factor (K _{zt}):	1.00	--
Velocity Pressure (q _z):	15.75	psf
Gust Effect Factor (G):	0.85	--
Vertical G*Cr:	0	--
Front Force Coefficient (C _f):	1.34	--
Side Force Coefficient (C _s):	1.36	--
Equipment Front Horizontal Force (F _h):	0.0	lbs
Equipment Side Horizontal Force (F _h):	0.0	lbs
Equipment Vertical Force (F _v):	0.0	lbs

SEISMIC CALCULATIONS		
Overstrength Factor (Ω):	1.0	--
Component Amplification Factor (a _p):	1.0	--
Component Response Mod Factor (R _p):	2.5	--
Component Importance Factor (I _p):	1.0	--
Short Period Site Coeff. (F _a):	1.20	--
Long Period Site Coeff. (F _v):	1.90	--
S _{MS} :	1.05	g
S _{M1} :	0.76	g
S _{DS} :	0.70	g
S _{D1} :	0.50	g
z/h:	1.0	--
Minimum Horizontal Force (F _{pmin}):	686.9	lbs
Maximum Horizontal Force (F _{pmax}):	3663.7	lbs
Horizontal Force (F _p):	1099.1	lbs

ANCHOR FORCES		
FRONT Load Combo: 0.9D + 1.0W		
Maximum Tension Force:	0.0	lbs
Maximum Shear Force:	0.0	lbs
SIDE Load Combo: 0.9D + 1.0W		
Maximum Tension Force:	0.0	lbs
Maximum Shear Force:	0.0	lbs
FRONT Load Combo: (0.9 - 0.2S _{DS})D + 1.0E		
Maximum Tension Force:	652.2	lbs
Maximum Shear Force:	137.4	lbs
SIDE Load Combo: (0.9 - 0.2S _{DS})D + 1.0E		
Maximum Tension Force:	317.7	lbs
Maximum Shear Force:	137.4	lbs



Submitted 1/4/2024

EQUIPMENT ANCHORAGE CALC TOOL 1.3

PROJECT DATA		
Job Code:	206523	
Carrier Site ID:	ORL00127	
Carrier Site Name:	Capitol Highway	

ANALYSIS CRITERIA		
Building Code:	2018 IBC	--
ASCE Standard:	ASCE 7-16	--
Base Ground Elevation:	632.44	ft
Basic Design Wind Speed:	98	mph
Structure Risk Category:	II	--
Exposure Category:	B	--
Site Class:	D - Default (Section 11.4.3)	--
Topographic Category:	1	--
Topo Feature:		--
Crest Point Elevation:		ft
Base Point Elevation:		ft
Crest to Mid Height Distance (L _h):		ft
Distance from Crest (x):		ft
S _s :	0.878	g
S ₁ :	0.397	g

EQUIPMENT INFO		
Ground Mounted:	Yes	ft
Structure Height:	0	ft
Equipment Centerline:	42	ft
Fully Shielded:	Yes	--
Equipment Name:	Netsure 7100 DC Power Plant	--
Equipment Height:	84	in
Equipment Width:	23	in
Equipment Depth:	18	in
Equipment Weight:	1971	lbs

ANCHORAGE INFO		
Anchor Hole Width Spacing:	17	in
Anchor Hole Depth Spacing:	12	in
Number of Anchor Bolts:	4	--
Type of Anchor Bolts:	Wood Lag Screws	--
Anchor Diameter:	0.625	in

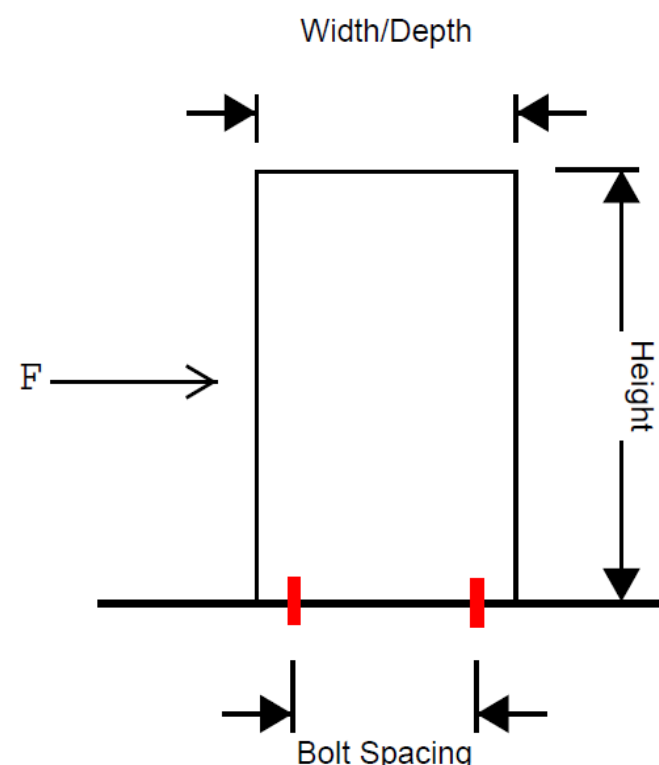
WOOD LAG SCREWS		
Withdrawal Capacity:	1297	lbs
Shear Capacity:	1347	lbs

ANCHOR BOLT CAPACITY		
Tension Usage:	60.8%	--
Shear Usage:	12.3%	--
Interaction Usage:	62.0%	--

WIND CALCULATIONS		
Directional Factor (K _d):	0.85	--
Velocity Pressure Exp. Coeff (K _z):	0.77	--
Topographic Factor (K _{zt}):	1.00	--
Velocity Pressure (q _z):	15.75	psf
Gust Effect Factor (G):	0.85	--
Vertical G*Cr:	0	--
Front Force Coefficient (C _f):	1.34	--
Side Force Coefficient (C _s):	1.36	--
Equipment Front Horizontal Force (F _h):	0.0	lbs
Equipment Side Horizontal Force (F _h):	0.0	lbs
Equipment Vertical Force (F _v):	0.0	lbs

SEISMIC CALCULATIONS		
Overstrength Factor (Ω):	1.0	--
Component Amplification Factor (a _p):	1.0	--
Component Response Mod Factor (R _p):	2.5	--
Component Importance Factor (I _p):	1.0	--
Short Period Site Coeff. (F _a):	1.20	--
Long Period Site Coeff. (F _v):	1.90	--
S _{MS} :	1.05	g
S _{M1} :	0.76	g
S _{DS} :	0.70	g
S _{D1} :	0.50	g
z/h:	1.0	--
Minimum Horizontal Force (F _{pmin}):	415.3	lbs
Maximum Horizontal Force (F _{pmax}):	2215.1	lbs
Horizontal Force (F _p):	664.5	lbs

ANCHOR FORCES		
FRONT Load Combo: 0.9D + 1.0W		
Maximum Tension Force:	0.0	lbs
Maximum Shear Force:	0.0	lbs
SIDE Load Combo: 0.9D + 1.0W		
Maximum Tension Force:	0.0	lbs
Maximum Shear Force:	0.0	lbs
FRONT Load Combo: (0.9 - 0.2S _{DS})D + 1.0E		
Maximum Tension Force:	788.7	lbs
Maximum Shear Force:	166.1	lbs
SIDE Load Combo: (0.9 - 0.2S _{DS})D + 1.0E		
Maximum Tension Force:	446.6	lbs
Maximum Shear Force:	166.1	lbs



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**Products specifications**

Bit Size	7/8"
Minimum Embedment	3-1/2"
Thread Type	5/8" - 5
2000 PSI Concrete - Pull-Out (lbs.) *	1297
Type	Female
Diameter	5/8"
Length	3-1/2"
Material	Zamac
Environment	Wet
Box Qty	25
Minimum Spacing	8-3/4"
Minimum Edge Distance	4-3/8"
Minimum Fixture Hole Diameter (In Place)	1"
Minimum Fixture Hole Diameter (Hole Spotted)	5/8"
Inside Anchor Diameter-Bolt Diameter	5/8"
Outside Anchor Diameter	7/8"
Internal Thread Length	2-1/4"
Length Measurement	End to End
Bolt Length	Fixture Thickness + Embedment Depth
Brand Name	CONFAST

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Design Method	Load & Resistance Factor Design (LRFD) ▾
Connection Type	Lateral loading ▾
Fastener Type	Lag Screw ▾
Loading Scenario	Single Shear ▾

Main Member Type	Southern Pine ▾
Main Member Thickness	-- Other (in inches) -- ▾ 2.5
Main Member: Angle of Load to Grain	0
Side Member Type	Steel ▾
Side Member Thickness	1/4 in. ▾
Side Member: Angle of Load to Grain	0
Washer Thickness	1/8 in. ▾
Nominal Diameter	5/8 in. ▾
Length	2.5 in. ▾
Time Effect Factor	<input type="checkbox"/> = 0.8 ▾
Wet Service Factor	C _M = 1.0 ▾
End Grain Factor	C _{eg} = 1.0 ▾
Temperature Factor	C _t = 1.0 ▾

Connection Yield Modes

Im	4028 lbs.
Is	4426 lbs.
II	1867 lbs.
III _{Im}	2221 lbs.
III _{Is}	1347 lbs.
IV	1573 lbs.

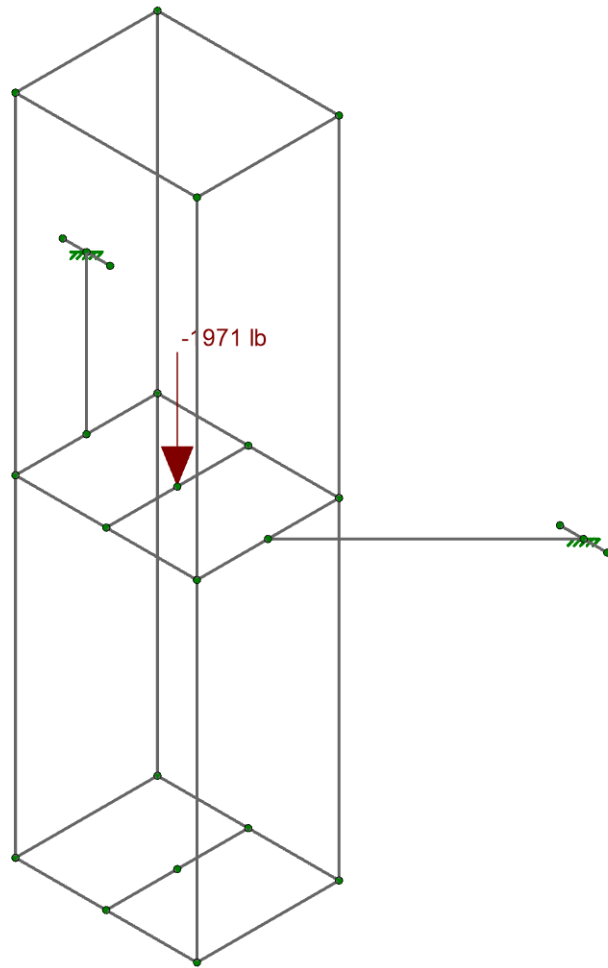
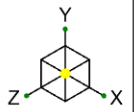
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Adjusted LRFD Capacity	1347 lbs.
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- Lag Screw bending yield strength of 45000 psi is assumed.
- The Adjusted LRFD Capacity is only applicable for lag screws with adequate end distance, edge distance and spacing per NDS chapter 11.
- ASTM A36 Steel is assumed for steel side members 1/4 in. thick, and ASTM A653 Grade 33 Steel is assumed for steel side members less than 1/4 in. thick.

While every effort has been made to insure the accuracy of the information presented, and special effort has been made to assure that the information reflects the state-of-the-art, neither the American Wood Council nor its members assume any responsibility for any particular design prepared from this on-line Connection Calculator. Those using this on-line Connection Calculator assume all liability from its use.

The Connection Calculator was designed and created by Cameron Knudson, Michael Dodson and David Pollock at Washington State University. Support for development of the Connection Calculator was provided by [American Wood Council](#).



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Loads: BLC 1, Self Weight

Trylon

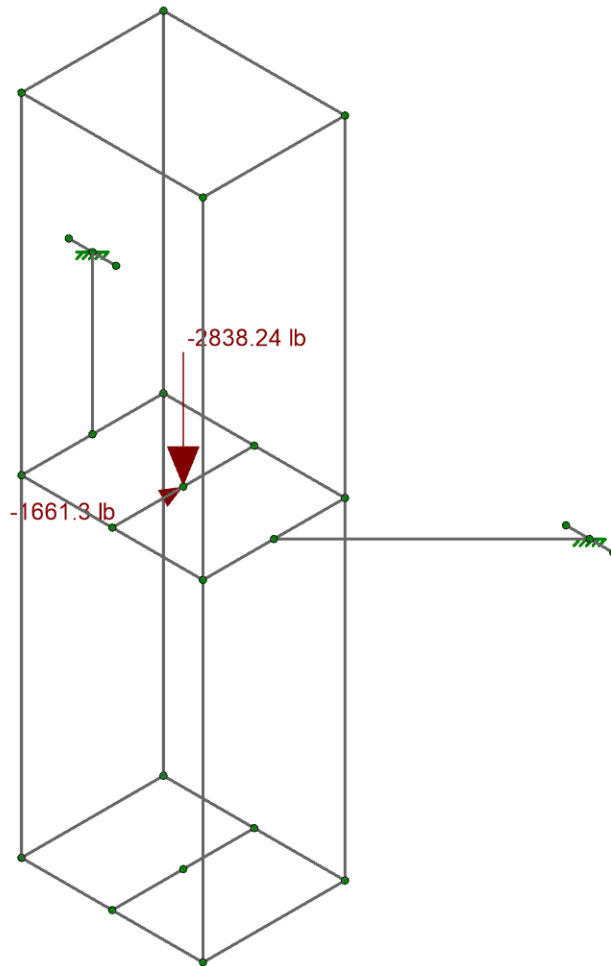
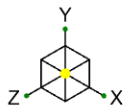
Marc.Velden

Cabinet Anchorage

SK-1

Dec 21, 2023

Cabinet wall attachment 7100.r3d



Loads: LC 50, (1.2+0.2Sds) + 1.0E 0 AZI

Submitted 1/4/2024

Trylon

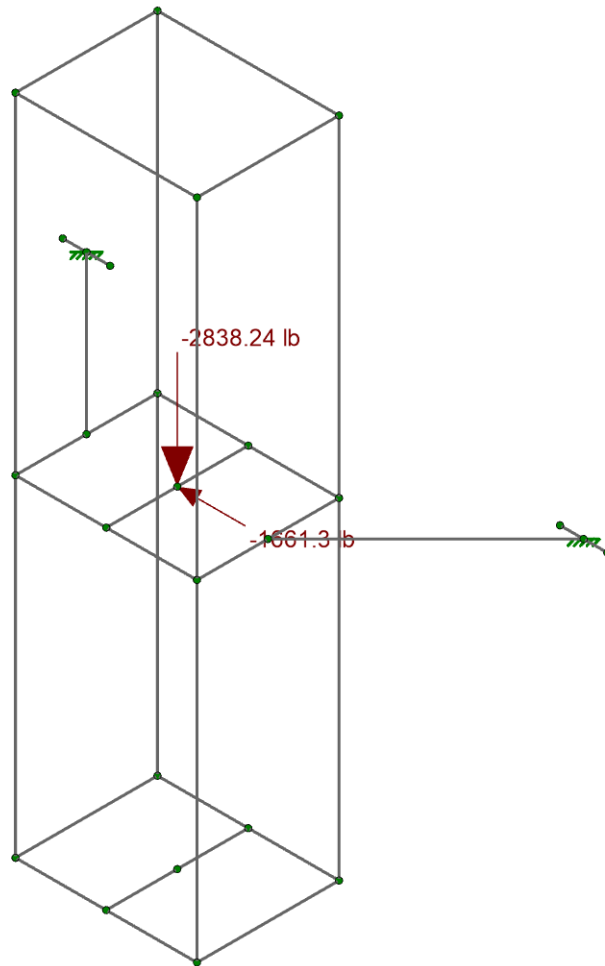
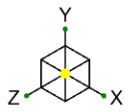
Marc.Velden

Cabinet Anchorage

SK-2

Dec 21, 2023

Cabinet wall attachment 7100.r3d



Submitted 1/4/2024

Loads: LC 54, (1.2+0.2Sds) + 1.0E 90 AZI

Trylon

Marc.Velden

Cabinet Anchorage

SK-3

Dec 21, 2023

Cabinet wall attachment 7100.r3d

BOLT TOOL 1.5.3

Project Data	
Job Code:	206523
Carrier Site ID:	ORL00127
Carrier Site Name:	Capitol Highway

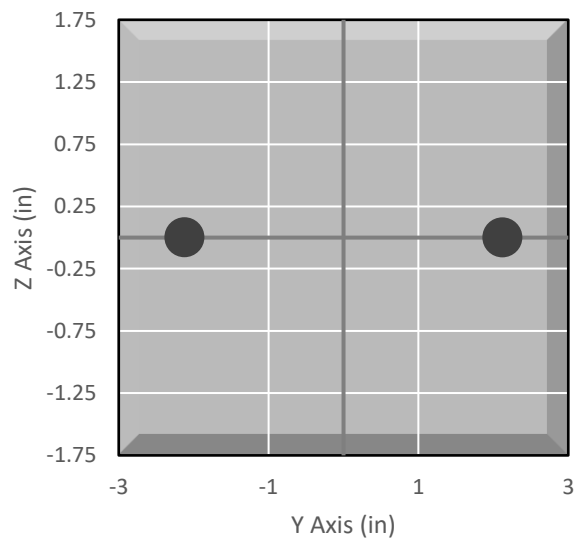
Code	
Design Standard:	TIA-222-H
Slip Check:	No
Pretension Standard:	AISC

Bolt Properties		
Connection Type:	Threaded Rod	
Diameter:	0.5	in
Grade:	A325	--
Yield Strength (Fy):	92	ksi
Ultimate Strength (Fu):	120	ksi
Number of Bolts:	2	--
Threads Included:	Yes	--
Double Shear:	No	--
Connection Pipe Size:	-	in

Connection Description
Wall Mount (7100)

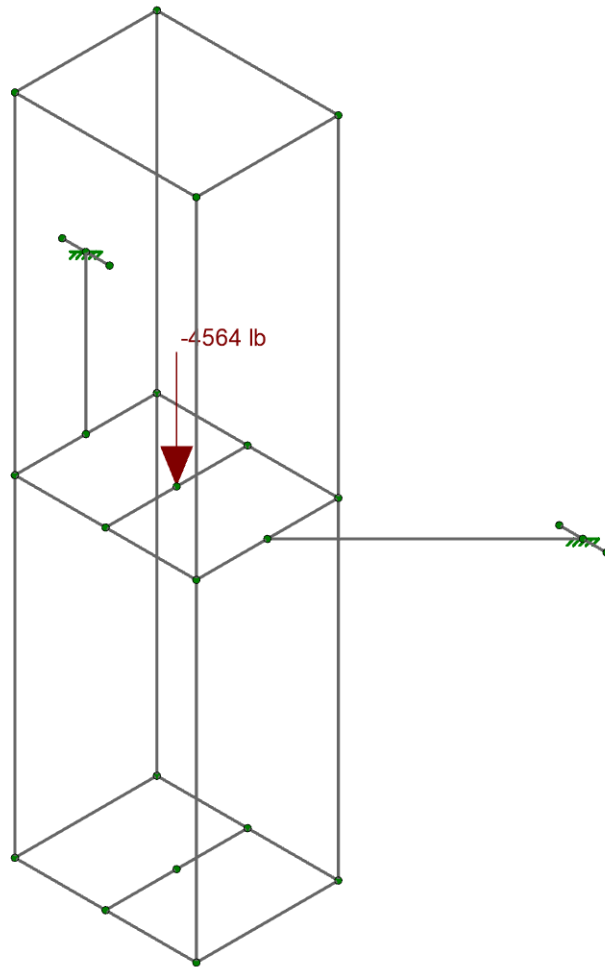
Bolt Check*		
Tensile Capacity (ϕT_n):	12770.9	lbs
Shear Capacity (ϕV_n):	8835.7	lbs
Tension Force (T_u):	1580.1	lbs
Shear Force (V_u):	802.3	lbs
Tension Usage:	11.8%	--
Shear Usage:	8.6%	--
Interaction:	11.8%	Pass
Controlling Member:	M18	--
Controlling LC:	55	--

*Rating per TIA-222-H Section 15.5

Bolt Layout


Submitted 1/4/2024

1825 W. Walnut Hill Lane, Suite 120
Irving, Texas 75038



Submitted 1/4/2024

Loads: LC 1, 1.4DL

Trylon

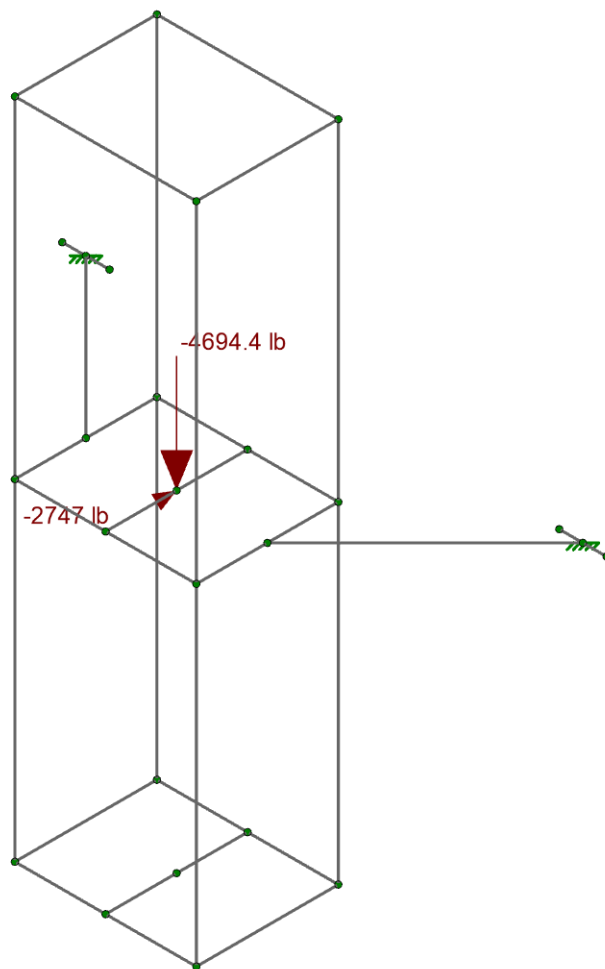
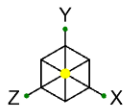
Marc.Velden

Cabinet Anchorage

SK-1

Dec 21, 2023

Cabinet wall attachment vrla.r3d



Submitted 1/4/2024

Loads: LC 50, (1.2+0.2Sds) + 1.0E 0 AZI

Trylon

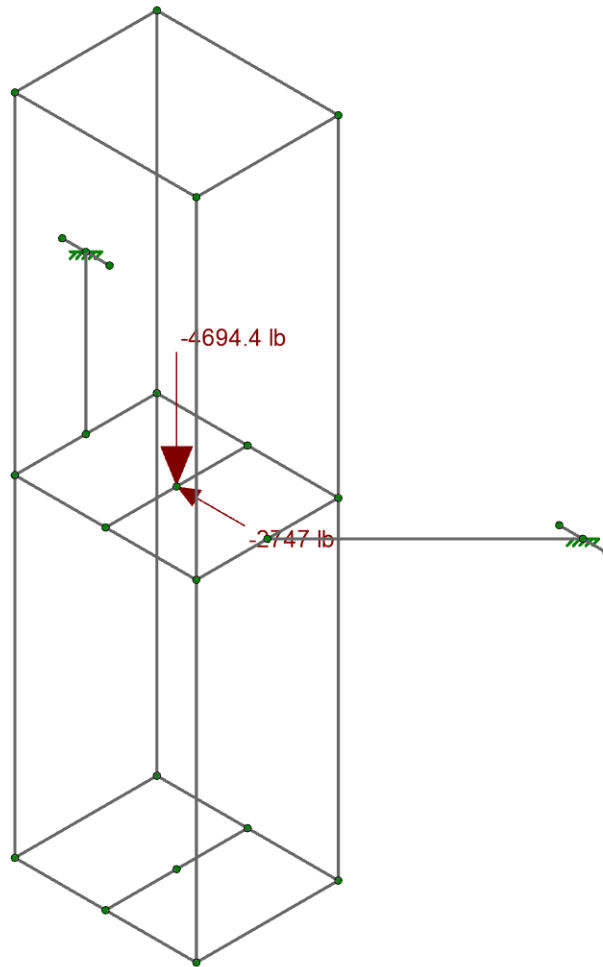
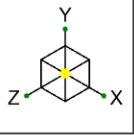
Marc.Velden

Cabinet Anchorage

SK-2

Dec 21, 2023

Cabinet wall attachment vrla.r3d



Submitted 1/4/2024

Loads: LC 54, (1.2+0.2Sds) + 1.0E 90 AZI

Trylon

Marc.Velden

Cabinet Anchorage

SK-3

Dec 21, 2023

Cabinet wall attachment vrla.r3d

BOLT TOOL 1.5.3

Project Data	
Job Code:	206523
Carrier Site ID:	ORL00127
Carrier Site Name:	Capitol Highway

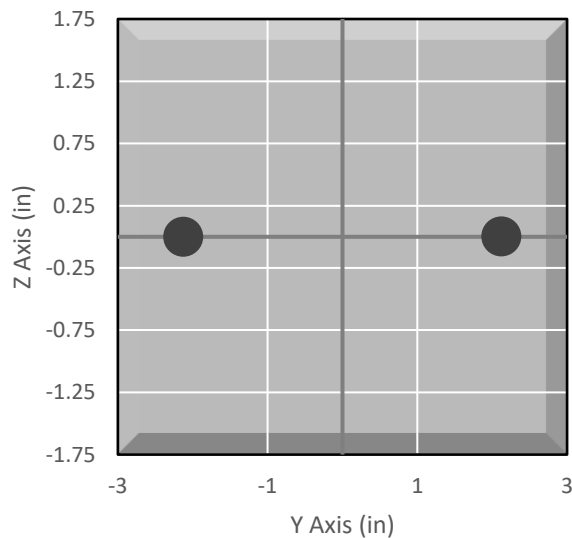
Code	
Design Standard:	TIA-222-H
Slip Check:	No
Pretension Standard:	AISC

Bolt Properties		
Connection Type:	Threaded Rod	
Diameter:	0.5	in
Grade:	A325	--
Yield Strength (Fy):	92	ksi
Ultimate Strength (Fu):	120	ksi
Number of Bolts:	2	--
Threads Included:	Yes	--
Double Shear:	No	--
Connection Pipe Size:	-	in

Connection Description
Wall Mount (VRLA)

Bolt Check*		
Tensile Capacity (ϕT_n):	12770.9	lbs
Shear Capacity (ϕV_n):	8835.7	lbs
Tension Force (T_u):	2603.1	lbs
Shear Force (V_u):	1322.7	lbs
Tension Usage:	19.4%	--
Shear Usage:	14.3%	--
Interaction:	19.4%	Pass
Controlling Member:	M18	--
Controlling LC:	55	--

*Rating per TIA-222-H Section 15.5

Bolt Layout


Submitted 1/4/2024

1825 W. Walnut Hill Lane, Suite 120
Irving, Texas 75038

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Beam

LIC#: KW-06012946, Build:20.23.10.31TRYLON(c) ENERCALC INC 1983-2023

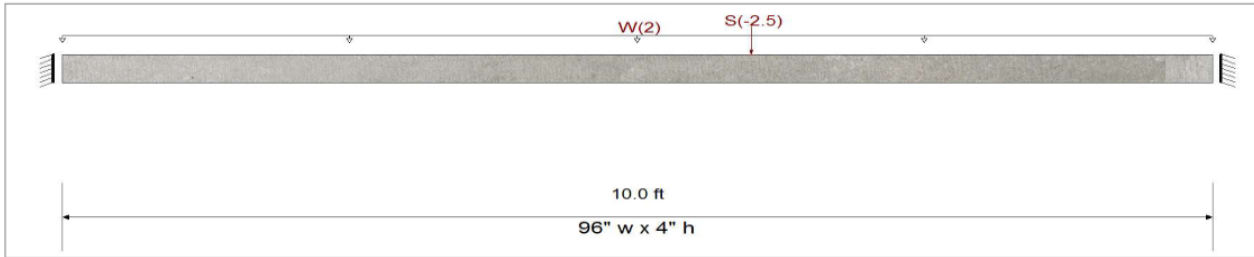
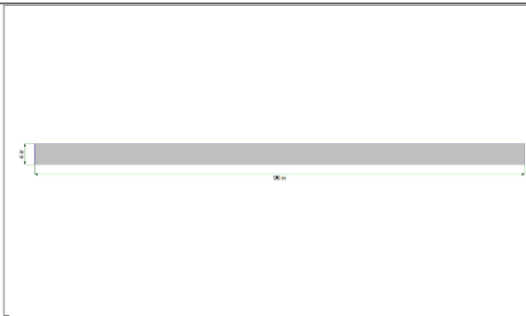
DESCRIPTION: --None--

CODE REFERENCES

Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16
Load Combination Set : ASCE 7-05

General Information

f_c	=	3.0 ksi	ϕ Phi Values	Flexure :	0.90
$f_r = f_c^{1/2}$	=	7.50		Shear :	0.750
ψ Density	=	145.0 pcf	β_1	=	0.0
λ LtWt Factor	=	1.0			
Elastic Modulus	=	3,122.0 ksi	Fy - Stirrups	=	40.0 ksi
fy - Main Rebar	=	60.0 ksi	E - Stirrups	=	29,000.0 ksi
E - Main Rebar	=	29,000.0 ksi	Stirrup Bar Size #	=	3
			Number of Resisting Legs Per Stirrup	=	2



Cross Section & Reinforcing Details

Rectangular Section, Width = 96.0 in, Height = 4.0 in

Beam self weight calculated and added to loads

Point Load : S = -2.50 k @ 6.0 ft

Uniform Load : W = 2.0 k/ft, Tributary Width = 1.0 ft

DESIGN SUMMARY

Check As Max Limits!

Maximum Bending Stress Ratio	=	N/A : 1
Section used for this span		
Mu : Applied		k-ft
Mn * Phi : Allowable		PhiMn = 0 k-ft
Location of maximum on span		See M Table ft
Span # where maximum occurs		

Maximum Deflection

Max Downward Transient Deflection	0.067 in	Ratio =	1804	>=360.0	S Only
Max Upward Transient Deflection	-0.013 in	Ratio =	9335	>=360.0	W Only
Max Downward Total Deflection	0.092 in	Ratio =	1298	>=180.0	Span: 1 : +D+W
Max Upward Total Deflection	0.000 in	Ratio =	0	<180.0	Span: 1 : +D+W

Vertical Reactions

Support notation : Far left is #1

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	11.933	11.933
Max Upward from Load Combinations	11.933	11.933
Max Upward from Load Cases	10.000	10.000
Max Downward from all Load Conditions (Resisting Uplift)	-0.880	-1.620
Max Downward from Load Cases (Resisting Uplift)	-0.880	-1.620
D Only	1.933	1.933
+D+S	1.053	0.313
+D+0.750S	1.273	0.718
+D+W	11.933	11.933

Submitted 1/4/2024

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Beam

LIC#: KW-06012946, Build:20.23.10.31

TRYLON

(c) ENERCALC INC 1983-2023

DESCRIPTION: --None--

Vertical Reactions

Support notation : Far left is #1

Load Combination	Support 1	Support 2
+D+0.750W	9.433	9.433
+D+0.750S+0.750W	8.742	8.250
+0.60D+W	11.160	11.160
+0.60D	1.160	1.160
S Only	-0.880	-1.620
W Only	10.000	10.000

Shear Stirrup Requirements

Between 0.00 to 1.17 ft, $\Phi^*V_c / 2 < V_u \leq \Phi^*V_c$, Req'd Vs = Min per 9.6.3.1, use #3 stirrups spaced at 1.000 in
Between 1.18 to 8.82 ft, $V_u < \Phi^*V_c / 2$, Req'd Vs = Not Req'd per 9.6.3.1, Stirrups are not required.
Between 8.83 to 9.98 ft, $\Phi^*V_c / 2 < V_u \leq \Phi^*V_c$, Req'd Vs = Min per 9.6.3.1, use #3 stirrups spaced at 1.000 in

Detailed Shear Information

Load Combination	Span Number	Distance (ft)	'd' (in)	Vu Actual	(k) Design	Mu (k-ft)	d*Vu/Mu	Φ^*V_c (k)	Comment	Φ^*V_s (k)	Φ^*V_n (k)	Spacing (in) Req'd
+1.20D+1.60W	1	0.00	3.00	18.32	18.32	30.53	0.15	25.18	$\Phi^*V_c / 2 < V_u$ in per 9.6.3.1	45.0	45.0	1.5
+1.20D+1.60W	1	0.11	3.00	17.92	17.92	28.55	0.16	25.30	$\Phi^*V_c / 2 < V_u$ in per 9.6.3.1	45.1	45.1	1.5
+1.20D+1.60W	1	0.22	3.00	17.52	17.52	26.62	0.16	25.44	$\Phi^*V_c / 2 < V_u$ in per 9.6.3.1	45.2	45.2	1.5
+1.20D+1.60W	1	0.33	3.00	17.12	17.12	24.72	0.17	25.59	$\Phi^*V_c / 2 < V_u$ in per 9.6.3.1	45.4	45.4	1.5
+1.20D+1.60W	1	0.44	3.00	16.72	16.72	22.87	0.18	25.77	$\Phi^*V_c / 2 < V_u$ in per 9.6.3.1	45.6	45.6	1.5
+1.20D+1.60W	1	0.55	3.00	16.32	16.32	21.07	0.19	25.96	$\Phi^*V_c / 2 < V_u$ in per 9.6.3.1	45.8	45.8	1.5
+1.20D+1.60W	1	0.66	3.00	15.92	15.92	19.31	0.21	26.19	$\Phi^*V_c / 2 < V_u$ in per 9.6.3.1	46.0	46.0	1.5
+1.20D+1.60W	1	0.77	3.00	15.52	15.52	17.59	0.22	26.45	$\Phi^*V_c / 2 < V_u$ in per 9.6.3.1	46.2	46.2	1.5
+1.20D+1.60W	1	0.87	3.00	15.12	15.12	15.92	0.24	26.75	$\Phi^*V_c / 2 < V_u$ in per 9.6.3.1	46.6	46.6	1.5
+1.20D+1.60W	1	0.98	3.00	14.72	14.72	14.29	0.26	27.11	$\Phi^*V_c / 2 < V_u$ in per 9.6.3.1	46.9	46.9	1.5
+1.20D+1.60W	1	1.09	3.00	14.32	14.32	12.70	0.28	27.55	$\Phi^*V_c / 2 < V_u$ in per 9.6.3.1	47.4	47.4	1.5
+1.20D+1.60W	1	1.20	3.00	13.92	13.92	11.16	0.31	28.09	$V_u < \Phi^*V_c / 2$ at Req'd per 9.6.3.1	28.1	28.1	0.0
+1.20D+1.60W	1	1.31	3.00	13.51	13.51	9.66	0.35	28.78	$V_u < \Phi^*V_c / 2$ at Req'd per 9.6.3.1	28.8	28.8	0.0
+1.20D+1.60W	1	1.42	3.00	13.11	13.11	8.20	0.40	29.67	$V_u < \Phi^*V_c / 2$ at Req'd per 9.6.3.1	29.7	29.7	0.0
+1.20D+1.60W	1	1.53	3.00	12.71	12.71	6.79	0.47	30.90	$V_u < \Phi^*V_c / 2$ at Req'd per 9.6.3.1	30.9	30.9	0.0
+1.20D+1.60W	1	1.64	3.00	12.31	12.31	5.42	0.57	32.69	$V_u < \Phi^*V_c / 2$ at Req'd per 9.6.3.1	32.7	32.7	0.0
+1.20D+1.60W	1	1.75	3.00	11.91	11.91	4.10	0.73	35.55	$V_u < \Phi^*V_c / 2$ at Req'd per 9.6.3.1	35.6	35.6	0.0
+1.20D+1.60W	1	1.86	3.00	11.51	11.51	2.82	1.00	40.48	$V_u < \Phi^*V_c / 2$ at Req'd per 9.6.3.1	40.5	40.5	0.0
+1.20D+1.60W	1	1.97	3.00	11.11	11.11	1.58	1.00	40.48	$V_u < \Phi^*V_c / 2$ at Req'd per 9.6.3.1	40.5	40.5	0.0
+1.20D+1.60W	1	2.08	3.00	10.71	10.71	0.39	1.00	40.48	$V_u < \Phi^*V_c / 2$ at Req'd per 9.6.3.1	40.5	40.5	0.0
+1.20D+1.60W	1	2.19	1.00	10.31	10.31	0.76	1.00	7.89	$\Phi^*V_c < V_u$ 2.424	7.9	7.9	0.5
+1.20D+1.60W	1	2.30	1.00	9.91	9.91	1.86	0.44	7.89	$\Phi^*V_c < V_u$ 2.024	7.9	7.9	0.5
+1.20D+1.60W	1	2.40	1.00	9.51	9.51	2.92	0.27	7.89	$\Phi^*V_c < V_u$ 1.623	7.9	7.9	0.5
+1.20D+1.60W	1	2.51	1.00	9.11	9.11	3.94	0.19	7.89	$\Phi^*V_c < V_u$ 1.223	7.9	7.9	0.5
+1.20D+1.60W	1	2.62	1.00	8.71	8.71	4.92	0.15	7.89	$\Phi^*V_c < V_u$ 0.8223	7.9	7.9	0.5
+1.20D+1.60W	1	2.73	1.00	8.31	8.31	5.85	0.12	7.89	$\Phi^*V_c < V_u$ 0.4219	7.9	7.9	0.5
+1.20D+1.60W	1	2.84	1.00	7.91	7.91	6.73	0.10	7.89	$\Phi^*V_c < V_u$ 0.02143	7.9	7.9	0.5
+1.20D+1.60W	1	2.95	1.00	7.51	7.51	7.57	0.08	7.89	$\Phi^*V_c / 2 < V_u$ in per 9.6.3.1	7.9	7.9	0.5
+1.20D+1.60W	1	3.06	1.00	7.11	7.11	8.37	0.07	7.89	$\Phi^*V_c / 2 < V_u$ in per 9.6.3.1	7.9	7.9	0.5
+1.20D+1.60W	1	3.17	1.00	6.71	6.71	9.13	0.06	7.89	$\Phi^*V_c / 2 < V_u$ in per 9.6.3.1	7.9	7.9	0.5
+1.20D+1.60W	1	3.28	1.00	6.31	6.31	9.84	0.05	7.89	$\Phi^*V_c / 2 < V_u$ in per 9.6.3.1	7.9	7.9	0.5
+1.20D+1.60W	1	3.39	1.00	5.91	5.91	10.51	0.05	7.89	$\Phi^*V_c / 2 < V_u$ in per 9.6.3.1	7.9	7.9	0.5
+1.20D+1.60W	1	3.50	1.00	5.51	5.51	11.13	0.04	7.89	$\Phi^*V_c / 2 < V_u$ in per 9.6.3.1	7.9	7.9	0.5
+1.20D+1.60W	1	3.61	1.00	5.11	5.11	11.71	0.04	7.89	$\Phi^*V_c / 2 < V_u$ in per 9.6.3.1	7.9	7.9	0.5
+1.20D+1.60W	1	3.72	1.00	4.71	4.71	12.25	0.03	7.89	$\Phi^*V_c / 2 < V_u$ in per 9.6.3.1	7.9	7.9	0.5
+1.20D+1.60W	1	3.83	1.00	4.30	4.30	12.74	0.03	7.89	$\Phi^*V_c / 2 < V_u$ in per 9.6.3.1	7.9	7.9	0.5
+1.20D+1.60W	1	3.93	1.00	3.90	3.90	13.19	0.02	7.89	$V_u < \Phi^*V_c / 2$ at Req'd per 9.6.3.1	7.9	7.9	0.0
+1.20D+1.60W	1	4.04	1.00	3.50	3.50	13.59	0.02	7.89	$V_u < \Phi^*V_c / 2$ at Req'd per 9.6.3.1	7.9	7.9	0.0
+1.20D+1.60W	1	4.15	1.00	3.10	3.10	13.95	0.02	7.89	$V_u < \Phi^*V_c / 2$ at Req'd per 9.6.3.1	7.9	7.9	0.0
+1.20D+1.60W	1	4.26	1.00	2.70	2.70	14.27	0.02	7.89	$V_u < \Phi^*V_c / 2$ at Req'd per 9.6.3.1	7.9	7.9	0.0
+1.20D+1.60W	1	4.37	1.00	2.30	2.30	14.54	0.01	7.89	$V_u < \Phi^*V_c / 2$ at Req'd per 9.6.3.1	7.9	7.9	0.0
+1.20D+1.60W	1	4.48	1.00	1.90	1.90	14.77	0.01	7.89	$V_u < \Phi^*V_c / 2$ at Req'd per 9.6.3.1	7.9	7.9	0.0
+1.20D+1.60W	1	4.59	1.00	1.50	1.50	14.96	0.01	7.89	$V_u < \Phi^*V_c / 2$ at Req'd per 9.6.3.1	7.9	7.9	0.0
+1.20D+1.60S	1	4.70	3.00	-1.27	1.27	0.86	0.37	29.08	$V_u < \Phi^*V_c / 2$ at Req'd per 9.6.3.1	29.1	29.1	0.0
+1.20D+1.60S	1	4.81	3.00	-1.32	1.32	1.01	0.33	28.38	$V_u < \Phi^*V_c / 2$ at Req'd per 9.6.3.1	28.4	28.4	0.0

Submitted 1/4/2024

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Beam

LIC# : KW-06012946, Build:20.23.10.31

TRYLON

(c) ENERCALC INC 1983-2023

DESCRIPTION: --None--

Detailed Shear Information

Load Combination	Span Number	Distance (ft)	'd' (in)	Vu Actual	(k) Design	Mu (k-ft)	d*Vu/Mu	Phi*Vc (k)	Comment	Phi*Vs (k)	Phi*Vn (k)	Spacing (in) Req'd
+1.20D+1.60S	1	4.92	3.00	-1.37	1.37	1.15	0.30	27.83	Vu < Phi*Vc / 2	27.8	27.8	0.0
+1.20D+1.60S+0.80W	1	5.03	1.00	-1.46	1.46	5.36	0.02	7.89	Vu < Phi*Vc / 2	7.9	7.9	0.0
+1.20D+1.60S+0.80W	1	5.14	1.00	-1.69	1.69	5.19	0.03	7.89	Vu < Phi*Vc / 2	7.9	7.9	0.0
+1.20D+1.60S+0.80W	1	5.25	1.00	-1.92	1.92	4.99	0.03	7.89	Vu < Phi*Vc / 2	7.9	7.9	0.0
+1.20D+1.60S+0.80W	1	5.36	1.00	-2.14	2.14	4.77	0.04	7.89	Vu < Phi*Vc / 2	7.9	7.9	0.0
+1.20D+1.60S+0.80W	1	5.46	1.00	-2.37	2.37	4.52	0.04	7.89	Vu < Phi*Vc / 2	7.9	7.9	0.0
+1.20D+1.60S+0.80W	1	5.57	1.00	-2.59	2.59	4.25	0.05	7.89	Vu < Phi*Vc / 2	7.9	7.9	0.0
+1.20D+0.50S+1.60W	1	5.68	1.00	-2.94	2.94	13.11	0.02	7.89	Vu < Phi*Vc / 2	7.9	7.9	0.0
+1.20D+0.50S+1.60W	1	5.79	1.00	-3.34	3.34	12.77	0.02	7.89	Vu < Phi*Vc / 2	7.9	7.9	0.0
+1.20D+0.50S+1.60W	1	5.90	1.00	-3.74	3.74	12.38	0.03	7.89	Vu < Phi*Vc / 2	7.9	7.9	0.0
+1.20D+1.60W	1	6.01	1.00	-3.70	3.70	13.39	0.02	7.89	Vu < Phi*Vc / 2	7.9	7.9	0.0
+1.20D+1.60W	1	6.12	1.00	-4.10	4.10	12.97	0.03	7.89	Phi*Vc / 2 < Vu	7.9	7.9	0.5
+1.20D+1.60W	1	6.23	1.00	-4.50	4.50	12.50	0.03	7.89	Phi*Vc / 2 < Vu	7.9	7.9	0.5
+1.20D+1.60W	1	6.34	1.00	-4.91	4.91	11.98	0.03	7.89	Phi*Vc / 2 < Vu	7.9	7.9	0.5
+1.20D+1.60W	1	6.45	1.00	-5.31	5.31	11.43	0.04	7.89	Phi*Vc / 2 < Vu	7.9	7.9	0.5
+1.20D+1.60W	1	6.56	1.00	-5.71	5.71	10.82	0.04	7.89	Phi*Vc / 2 < Vu	7.9	7.9	0.5
+1.20D+1.60W	1	6.67	1.00	-6.11	6.11	10.18	0.05	7.89	Phi*Vc / 2 < Vu	7.9	7.9	0.5
+1.20D+1.60W	1	6.78	1.00	-6.51	6.51	9.49	0.06	7.89	Phi*Vc / 2 < Vu	7.9	7.9	0.5
+1.20D+1.60W	1	6.89	1.00	-6.91	6.91	8.76	0.07	7.89	Phi*Vc / 2 < Vu	7.9	7.9	0.5
+1.20D+1.60W	1	6.99	1.00	-7.31	7.31	7.98	0.08	7.89	Phi*Vc / 2 < Vu	7.9	7.9	0.5
+1.20D+1.60W	1	7.10	1.00	-7.71	7.71	7.16	0.09	7.89	Phi*Vc / 2 < Vu	7.9	7.9	0.5
+1.20D+1.60W	1	7.21	1.00	-8.11	8.11	6.29	0.11	7.89	Phi*Vc < Vu	0.2216	7.9	0.5
+1.20D+1.60W	1	7.32	1.00	-8.51	8.51	5.39	0.13	7.89	Phi*Vc < Vu	0.6221	7.9	0.5
+1.20D+1.60W	1	7.43	1.00	-8.91	8.91	4.43	0.17	7.89	Phi*Vc < Vu	1.023	7.9	0.5
+1.20D+1.60W	1	7.54	1.00	-9.31	9.31	3.44	0.23	7.89	Phi*Vc < Vu	1.423	7.9	0.5
+1.20D+1.60W	1	7.65	1.00	-9.71	9.71	2.40	0.34	7.89	Phi*Vc < Vu	1.823	7.9	0.5
+1.20D+1.60W	1	7.76	1.00	-10.11	10.11	1.32	0.64	7.89	Phi*Vc < Vu	2.224	7.9	0.5
+1.20D+1.60W	1	7.87	1.00	-10.51	10.51	0.19	1.00	7.89	Phi*Vc < Vu	2.624	7.9	0.5
+1.20D+1.60W	1	7.98	3.00	-10.91	10.91	0.98	1.00	40.48	Vu < Phi*Vc / 2	40.5	40.5	0.0
+1.20D+1.60W	1	8.09	3.00	-11.31	11.31	2.20	1.00	40.48	Vu < Phi*Vc / 2	40.5	40.5	0.0
+1.20D+1.60W	1	8.20	3.00	-11.71	11.71	3.45	0.85	37.74	Vu < Phi*Vc / 2	37.7	37.7	0.0
+1.20D+1.60W	1	8.31	3.00	-12.11	12.11	4.76	0.64	33.94	Vu < Phi*Vc / 2	33.9	33.9	0.0
+1.20D+1.60W	1	8.42	3.00	-12.51	12.51	6.10	0.51	31.71	Vu < Phi*Vc / 2	31.7	31.7	0.0
+1.20D+1.60W	1	8.52	3.00	-12.91	12.91	7.49	0.43	30.24	Vu < Phi*Vc / 2	30.2	30.2	0.0
+1.20D+1.60W	1	8.63	3.00	-13.31	13.31	8.93	0.37	29.19	Vu < Phi*Vc / 2	29.2	29.2	0.0
+1.20D+1.60W	1	8.74	3.00	-13.71	13.71	10.40	0.33	28.41	Vu < Phi*Vc / 2	28.4	28.4	0.0
+1.20D+1.60W	1	8.85	3.00	-14.12	14.12	11.92	0.30	27.81	Phi*Vc / 2 < Vu	47.6	47.6	1.5
+1.20D+1.60W	1	8.96	3.00	-14.52	14.52	13.49	0.27	27.32	Phi*Vc / 2 < Vu	47.1	47.1	1.5
+1.20D+1.60W	1	9.07	3.00	-14.92	14.92	15.10	0.25	26.93	Phi*Vc / 2 < Vu	46.7	46.7	1.5
+1.20D+1.60W	1	9.18	3.00	-15.32	15.32	16.75	0.23	26.59	Phi*Vc / 2 < Vu	46.4	46.4	1.5
+1.20D+1.60W	1	9.29	3.00	-15.72	15.72	18.44	0.21	26.31	Phi*Vc / 2 < Vu	46.1	46.1	1.5
+1.20D+1.60W	1	9.40	3.00	-16.12	16.12	20.18	0.20	26.07	Phi*Vc / 2 < Vu	45.9	45.9	1.5
+1.20D+1.60W	1	9.51	3.00	-16.52	16.52	21.97	0.19	25.86	Phi*Vc / 2 < Vu	45.7	45.7	1.5
+1.20D+1.60W	1	9.62	3.00	-16.92	16.92	23.79	0.18	25.68	Phi*Vc / 2 < Vu	45.5	45.5	1.5
+1.20D+1.60W	1	9.73	3.00	-17.32	17.32	25.66	0.17	25.52	Phi*Vc / 2 < Vu	45.3	45.3	1.5
+1.20D+1.60W	1	9.84	3.00	-17.72	17.72	27.58	0.16	25.37	Phi*Vc / 2 < Vu	45.2	45.2	1.5
+1.20D+1.60W	1	9.95	3.00	-18.12	18.12	29.54	0.15	25.24	Phi*Vc / 2 < Vu	45.0	45.0	1.5

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment	Span #	Location (ft) along Beam	Bending Stress Results (k-ft)		
				Mu : Max	Phi*Mnx	Stress Ratio
MAXimum BENDING Envelope						
+1.40D	Span # 1	1	10.000	-30.53	67.14	0.45
+1.20D	Span # 1	1	10.000	-4.51	67.14	0.07
+1.20D+0.50S	Span # 1	1	10.000	-3.87	67.14	0.06
	Span # 1	1	10.000	-2.67	67.14	0.04

Submitted 1/4/2024

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Beam

LIC# : KW-06012946, Build:20.23.10.31TRYLON(c) ENERCALC INC 1983-2023

DESCRIPTION: --None--

Load Combination Segment	Span #	Location (ft) along Beam	Bending Stress Results (k-ft)		
			Mu : Max	Phi*Mnx	Stress Ratio
+1.20D+0.80W Span # 1	1	10.000	-17.20	67.14	0.26
+1.20D+1.60S Span # 1	1	10.000	-2.89	67.14	0.04
+1.20D+1.60S+0.80W Span # 1	1	10.000	-13.36	67.14	0.20
+1.20D+1.60W Span # 1	1	10.000	-30.53	67.14	0.45
+1.20D+0.50S+1.60W Span # 1	1	10.000	-29.33	67.14	0.44
+1.20D+0.20S Span # 1	1	10.000	-3.39	67.14	0.05
+0.90D+1.60W Span # 1	1	10.000	-29.57	67.14	0.44
+0.90D Span # 1	1	10.000	-2.90	67.14	0.04

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl (in)	Location in Span (ft)	Load Combination	Max. "+" Defl (in)	Location in Span (ft)
+D+W	1	0.0924	5.000		0.0000	0.000

Submitted 1/4/2024

4. Conclusions and Recommendations

Based on the information provided, our calculations conclude that the Proposed AT&T Mobility equipment installed on the ground and attached to the wall listed below has sufficient capacity to resist any lateral and uplift forces.

Connection Through Wall:

Manufacturer	Model	Total No. Bolts	Bolt Type
Netsure	7100 DC Power Plant	4	1/2" Threaded Rod Through Wall
Netsure	VRLA Battery Rack	4	1/2" Threaded Rod Through Wall

Should you have any questions, comments, or require additional information, please do not hesitate to call.

Submitted
12/11/2023

BOLT TOOL 1.5.3

Project Data	
Job Code:	206523
Carrier Site ID:	ORL00127
Carrier Site Name:	Capitol Highway

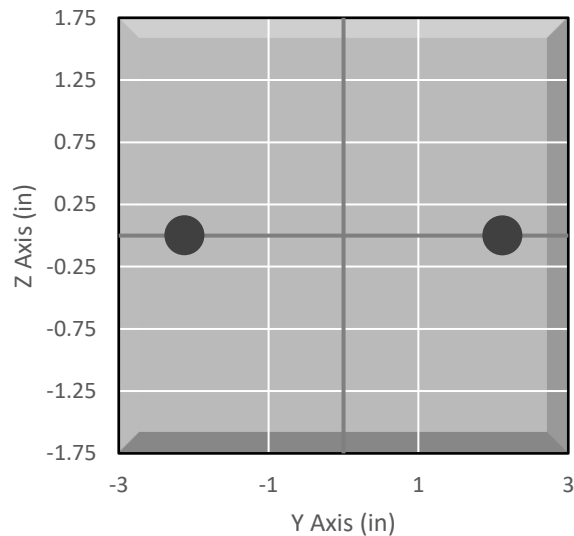
Code	
Design Standard:	TIA-222-H
Slip Check:	No
Pretension Standard:	AISC

Bolt Properties		
Connection Type:	Threaded Rod	
Diameter:	0.5	in
Grade:	A325	--
Yield Strength (Fy):	92	ksi
Ultimate Strength (Fu):	120	ksi
Number of Bolts:	2	--
Threads Included:	Yes	--
Double Shear:	No	--
Connection Pipe Size:	-	in

Connection Description
Wall Mount (7100)

Bolt Check*		
Tensile Capacity (ϕT_n):	12770.9	lbs
Shear Capacity (ϕV_n):	8835.7	lbs
Tension Force (T_u):	1580.1	lbs
Shear Force (V_u):	802.3	lbs
Tension Usage:	11.8%	--
Shear Usage:	8.6%	--
Interaction:	11.8%	Pass
Controlling Member:	M18	--
Controlling LC:	55	--

*Rating per TIA-222-H Section 15.5

Bolt Layout


Submitted
12/11/2023

BOLT TOOL 1.5.3

Project Data	
Job Code:	206523
Carrier Site ID:	ORL00127
Carrier Site Name:	Capitol Highway

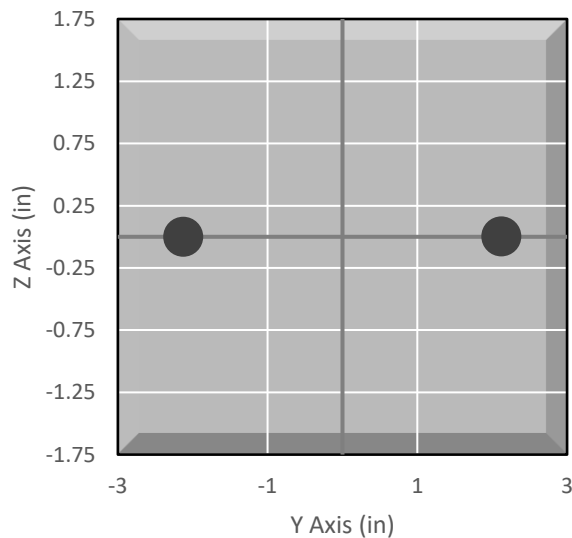
Code	
Design Standard:	TIA-222-H
Slip Check:	No
Pretension Standard:	AISC

Bolt Properties		
Connection Type:	Threaded Rod	
Diameter:	0.5	in
Grade:	A325	--
Yield Strength (Fy):	92	ksi
Ultimate Strength (Fu):	120	ksi
Number of Bolts:	2	--
Threads Included:	Yes	--
Double Shear:	No	--
Connection Pipe Size:	-	in

Connection Description
Wall Mount (VRLA)

Bolt Check*		
Tensile Capacity (ϕT_n):	12770.9	lbs
Shear Capacity (ϕV_n):	8835.7	lbs
Tension Force (T_u):	2603.1	lbs
Shear Force (V_u):	1322.7	lbs
Tension Usage:	19.4%	--
Shear Usage:	14.3%	--
Interaction:	19.4%	Pass
Controlling Member:	M18	--
Controlling LC:	55	--

*Rating per TIA-222-H Section 15.5

Bolt Layout


Submitted
12/11/2023

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Beam

LIC#: KW-06012946, Build:20.23.10.31

TRYLON

(c) ENERCALC INC 1983-2023

DESCRIPTION: --None--

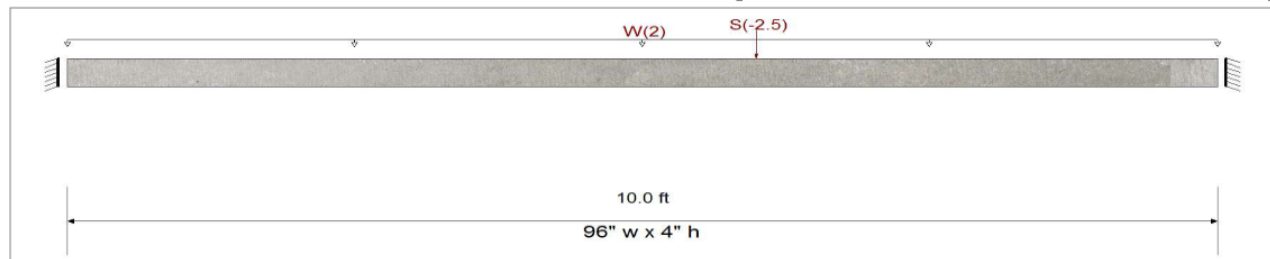
CODE REFERENCES

Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16

Load Combination Set : ASCE 7-05

General Information

f'_c	=	3.0 ksi	ϕ Phi Values	Flexure :	0.90
$f_r = f'_c^{1/2}$	=	7.50		Shear :	0.750
ψ Density	=	145.0 pcf	β_1	=	0.0
λ LtWt Factor	=	1.0			
Elastic Modulus	=	3,122.0 ksi	Fy - Stirrups	=	40.0 ksi
fy - Main Rebar	=	60.0 ksi	E - Stirrups	=	29,000.0 ksi
E - Main Rebar	=	29,000.0 ksi	Stirrup Bar Size #	=	3
			Number of Resisting Legs Per Stirrup	=	2



Cross Section & Reinforcing Details

Rectangular Section, Width = 96.0 in, Height = 4.0 in

Beam self weight calculated and added to loads

Point Load : S = -2.50 k @ 6.0 ft

Uniform Load : W = 2.0 k/ft, Tributary Width = 1.0 ft

DESIGN SUMMARY

Check As Max Limits!

Maximum Bending Stress Ratio	=	N/A : 1
Section used for this span		
Mu : Applied		k-ft
Mn * Phi : Allowable		PhiMn = 0 k-ft
Location of maximum on span		See M Table ft
Span # where maximum occurs		

Maximum Deflection

Max Downward Transient Deflection	0.067 in	Ratio =	1804	>=360.0	S Only
Max Upward Transient Deflection	-0.013 in	Ratio =	9335	>=360.0	W Only
Max Downward Total Deflection	0.092 in	Ratio =	1298	>=180.0	Span: 1 : +D+W
Max Upward Total Deflection	0.000 in	Ratio =	0	<180.0	Span: 1 : +D+W

Vertical Reactions

Support notation : Far left is #1

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	11.933	11.933
Max Upward from Load Combinations	11.933	11.933
Max Upward from Load Cases	10.000	10.000
Max Downward from all Load Conditions (Resisting Uplift)	-0.880	-1.620
Max Downward from Load Cases (Resisting Uplift)	-0.880	-1.620
D Only	1.933	1.933
+D+S	1.053	0.313
+D+0.750S	1.273	0.718
+D+W	11.933	11.933

Submitted
12/11/2023

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Beam

LIC#: KW-06012946, Build:20.23.10.31

TRYLON

(c) ENERCALC INC 1983-2023

DESCRIPTION: --None--

Vertical Reactions

Support notation : Far left is #1

Load Combination	Support 1	Support 2
+D+0.750W	9.433	9.433
+D+0.750S+0.750W	8.742	8.250
+0.60D+W	11.160	11.160
+0.60D	1.160	1.160
S Only	-0.880	-1.620
W Only	10.000	10.000

Shear Stirrup Requirements

Between 0.00 to 1.17 ft, $\Phi^i V_c / 2 < V_u \leq \Phi^i V_c$, Req'd Vs = Min per 9.6.3.1, use #3 stirrups spaced at 1.000 in
Between 1.18 to 8.82 ft, $V_u < \Phi^i V_c / 2$, Req'd Vs = Not Req'd per 9.6.3.1, Stirrups are not required.
Between 8.83 to 9.98 ft, $\Phi^i V_c / 2 < V_u \leq \Phi^i V_c$, Req'd Vs = Min per 9.6.3.1, use #3 stirrups spaced at 1.000 in

Detailed Shear Information

Load Combination	Span Number	Distance 'd' (ft)	(in)	Vu Actual	(k) Design	Mu (k-ft)	d*Vu/Mu	Phi*Vc (k)	Comment	Phi*Vs (k)	Phi*Vn (k)	Spacing (in) Req'd
+1.20D+1.60W	1	0.00	3.00	18.32	18.32	30.53	0.15	25.18	Phi*Vc / 2 < Vu	in per 9.6.3.1	45.0	1.5
+1.20D+1.60W	1	0.11	3.00	17.92	17.92	28.55	0.16	25.30	Phi*Vc / 2 < Vu	in per 9.6.3.1	45.1	1.5
+1.20D+1.60W	1	0.22	3.00	17.52	17.52	26.62	0.16	25.44	Phi*Vc / 2 < Vu	in per 9.6.3.1	45.2	1.5
+1.20D+1.60W	1	0.33	3.00	17.12	17.12	24.72	0.17	25.59	Phi*Vc / 2 < Vu	in per 9.6.3.1	45.4	1.5
+1.20D+1.60W	1	0.44	3.00	16.72	16.72	22.87	0.18	25.77	Phi*Vc / 2 < Vu	in per 9.6.3.1	45.6	1.5
+1.20D+1.60W	1	0.55	3.00	16.32	16.32	21.07	0.19	25.96	Phi*Vc / 2 < Vu	in per 9.6.3.1	45.8	1.5
+1.20D+1.60W	1	0.66	3.00	15.92	15.92	19.31	0.21	26.19	Phi*Vc / 2 < Vu	in per 9.6.3.1	46.0	1.5
+1.20D+1.60W	1	0.77	3.00	15.52	15.52	17.59	0.22	26.45	Phi*Vc / 2 < Vu	in per 9.6.3.1	46.2	1.5
+1.20D+1.60W	1	0.87	3.00	15.12	15.12	15.92	0.24	26.75	Phi*Vc / 2 < Vu	in per 9.6.3.1	46.6	1.5
+1.20D+1.60W	1	0.98	3.00	14.72	14.72	14.29	0.26	27.11	Phi*Vc / 2 < Vu	in per 9.6.3.1	46.9	1.5
+1.20D+1.60W	1	1.09	3.00	14.32	14.32	12.70	0.28	27.55	Phi*Vc / 2 < Vu	in per 9.6.3.1	47.4	1.5
+1.20D+1.60W	1	1.20	3.00	13.92	13.92	11.16	0.31	28.09	Vu < Phi*Vc / 2	at Req'd per 9.6.3.1	28.1	0.0
+1.20D+1.60W	1	1.31	3.00	13.51	13.51	9.66	0.35	28.78	Vu < Phi*Vc / 2	at Req'd per 9.6.3.1	28.8	0.0
+1.20D+1.60W	1	1.42	3.00	13.11	13.11	8.20	0.40	29.67	Vu < Phi*Vc / 2	at Req'd per 9.6.3.1	29.7	0.0
+1.20D+1.60W	1	1.53	3.00	12.71	12.71	6.79	0.47	30.90	Vu < Phi*Vc / 2	at Req'd per 9.6.3.1	30.9	0.0
+1.20D+1.60W	1	1.64	3.00	12.31	12.31	5.42	0.57	32.69	Vu < Phi*Vc / 2	at Req'd per 9.6.3.1	32.7	0.0
+1.20D+1.60W	1	1.75	3.00	11.91	11.91	4.10	0.73	35.55	Vu < Phi*Vc / 2	at Req'd per 9.6.3.1	35.6	0.0
+1.20D+1.60W	1	1.86	3.00	11.51	11.51	2.82	1.00	40.48	Vu < Phi*Vc / 2	at Req'd per 9.6.3.1	40.5	0.0
+1.20D+1.60W	1	1.97	3.00	11.11	11.11	1.58	1.00	40.48	Vu < Phi*Vc / 2	at Req'd per 9.6.3.1	40.5	0.0
+1.20D+1.60W	1	2.08	3.00	10.71	10.71	0.39	1.00	40.48	Vu < Phi*Vc / 2	at Req'd per 9.6.3.1	40.5	0.0
+1.20D+1.60W	1	2.19	1.00	10.31	10.31	0.76	1.00	7.89	Phi*Vc < Vu	2.424	7.9	0.5
+1.20D+1.60W	1	2.30	1.00	9.91	9.91	1.86	0.44	7.89	Phi*Vc < Vu	2.024	7.9	0.5
+1.20D+1.60W	1	2.40	1.00	9.51	9.51	2.92	0.27	7.89	Phi*Vc < Vu	1.623	7.9	0.5
+1.20D+1.60W	1	2.51	1.00	9.11	9.11	3.94	0.19	7.89	Phi*Vc < Vu	1.223	7.9	0.5
+1.20D+1.60W	1	2.62	1.00	8.71	8.71	4.92	0.15	7.89	Phi*Vc < Vu	0.8223	7.9	0.5
+1.20D+1.60W	1	2.73	1.00	8.31	8.31	5.85	0.12	7.89	Phi*Vc < Vu	0.4219	7.9	0.5
+1.20D+1.60W	1	2.84	1.00	7.91	7.91	6.73	0.10	7.89	Phi*Vc < Vu	0.02143	7.9	0.5
+1.20D+1.60W	1	2.95	1.00	7.51	7.51	7.57	0.08	7.89	Phi*Vc / 2 < Vu	in per 9.6.3.1	7.9	0.5
+1.20D+1.60W	1	3.06	1.00	7.11	7.11	8.37	0.07	7.89	Phi*Vc / 2 < Vu	in per 9.6.3.1	7.9	0.5
+1.20D+1.60W	1	3.17	1.00	6.71	6.71	9.13	0.06	7.89	Phi*Vc / 2 < Vu	in per 9.6.3.1	7.9	0.5
+1.20D+1.60W	1	3.28	1.00	6.31	6.31	9.84	0.05	7.89	Phi*Vc / 2 < Vu	in per 9.6.3.1	7.9	0.5
+1.20D+1.60W	1	3.39	1.00	5.91	5.91	10.51	0.05	7.89	Phi*Vc / 2 < Vu	in per 9.6.3.1	7.9	0.5
+1.20D+1.60W	1	3.50	1.00	5.51	5.51	11.13	0.04	7.89	Phi*Vc / 2 < Vu	in per 9.6.3.1	7.9	0.5
+1.20D+1.60W	1	3.61	1.00	5.11	5.11	11.71	0.04	7.89	Phi*Vc / 2 < Vu	in per 9.6.3.1	7.9	0.5
+1.20D+1.60W	1	3.72	1.00	4.71	4.71	12.25	0.03	7.89	Phi*Vc / 2 < Vu	in per 9.6.3.1	7.9	0.5
+1.20D+1.60W	1	3.83	1.00	4.30	4.30	12.74	0.03	7.89	Phi*Vc / 2 < Vu	in per 9.6.3.1	7.9	0.5
+1.20D+1.60W	1	3.93	1.00	3.90	3.90	13.19	0.02	7.89	Vu < Phi*Vc / 2	at Req'd per 9.6.3.1	7.9	0.0
+1.20D+1.60W	1	4.04	1.00	3.50	3.50	13.59	0.02	7.89	Vu < Phi*Vc / 2	at Req'd per 9.6.3.1	7.9	0.0
+1.20D+1.60W	1	4.15	1.00	3.10	3.10	13.95	0.02	7.89	Vu < Phi*Vc / 2	at Req'd per 9.6.3.1	7.9	0.0
+1.20D+1.60W	1	4.26	1.00	2.70	2.70	14.27	0.02	7.89	Vu < Phi*Vc / 2	at Req'd per 9.6.3.1	7.9	0.0
+1.20D+1.60W	1	4.37	1.00	2.30	2.30	14.54	0.01	7.89	Vu < Phi*Vc / 2	at Req'd per 9.6.3.1	7.9	0.0
+1.20D+1.60W	1	4.48	1.00	1.90	1.90	14.77	0.01	7.89	Vu < Phi*Vc / 2	at Req'd per 9.6.3.1	7.9	0.0
+1.20D+1.60W	1	4.59	1.00	1.50	1.50	14.96	0.01	7.89	Vu < Phi*Vc / 2	at Req'd per 9.6.3.1	7.9	0.0
+1.20D+1.60S	1	4.70	3.00	-1.27	1.27	0.86	0.37	29.08	Vu < Phi*Vc / 2	at Req'd per 9.6.3.1	29.1	0.0
+1.20D+1.60S	1	4.81	3.00	-1.32	1.32	1.01	0.33	28.38	Vu < Phi*Vc / 2	at Req'd per 9.6.3.1	28.4	0.0

Submitted
12/11/2023

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Beam

LIC#: KW-06012946, Build:20.23.10.31

TRYLON

(c) ENERCALC INC 1983-2023

DESCRIPTION: --None--

Detailed Shear Information

Load Combination	Span Number	Distance (ft)	'd' (in)	Vu Actual	(k) Design	Mu (k-ft)	d*Vu/Mu	Phi*Vc (k)	Comment	Phi*Vs (k)	Phi*Vn (k)	Spacing (in) Req'd
+1.20D+1.60S	1	4.92	3.00	-1.37	1.37	1.15	0.30	27.83	Vu < Phi*Vc / 2	27.8	27.8	0.0
+1.20D+1.60S+0.80W	1	5.03	1.00	-1.46	1.46	5.36	0.02	7.89	Vu < Phi*Vc / 2	7.9	7.9	0.0
+1.20D+1.60S+0.80W	1	5.14	1.00	-1.69	1.69	5.19	0.03	7.89	Vu < Phi*Vc / 2	7.9	7.9	0.0
+1.20D+1.60S+0.80W	1	5.25	1.00	-1.92	1.92	4.99	0.03	7.89	Vu < Phi*Vc / 2	7.9	7.9	0.0
+1.20D+1.60S+0.80W	1	5.36	1.00	-2.14	2.14	4.77	0.04	7.89	Vu < Phi*Vc / 2	7.9	7.9	0.0
+1.20D+1.60S+0.80W	1	5.46	1.00	-2.37	2.37	4.52	0.04	7.89	Vu < Phi*Vc / 2	7.9	7.9	0.0
+1.20D+1.60S+0.80W	1	5.57	1.00	-2.59	2.59	4.25	0.05	7.89	Vu < Phi*Vc / 2	7.9	7.9	0.0
+1.20D+0.50S+1.60W	1	5.68	1.00	-2.94	2.94	13.11	0.02	7.89	Vu < Phi*Vc / 2	7.9	7.9	0.0
+1.20D+0.50S+1.60W	1	5.79	1.00	-3.34	3.34	12.77	0.02	7.89	Vu < Phi*Vc / 2	7.9	7.9	0.0
+1.20D+0.50S+1.60W	1	5.90	1.00	-3.74	3.74	12.38	0.03	7.89	Vu < Phi*Vc / 2	7.9	7.9	0.0
+1.20D+1.60W	1	6.01	1.00	-3.70	3.70	13.39	0.02	7.89	Vu < Phi*Vc / 2	7.9	7.9	0.0
+1.20D+1.60W	1	6.12	1.00	-4.10	4.10	12.97	0.03	7.89	Phi*Vc / 2 < Vu	7.9	7.9	0.5
+1.20D+1.60W	1	6.23	1.00	-4.50	4.50	12.50	0.03	7.89	Phi*Vc / 2 < Vu	7.9	7.9	0.5
+1.20D+1.60W	1	6.34	1.00	-4.91	4.91	11.98	0.03	7.89	Phi*Vc / 2 < Vu	7.9	7.9	0.5
+1.20D+1.60W	1	6.45	1.00	-5.31	5.31	11.43	0.04	7.89	Phi*Vc / 2 < Vu	7.9	7.9	0.5
+1.20D+1.60W	1	6.56	1.00	-5.71	5.71	10.82	0.04	7.89	Phi*Vc / 2 < Vu	7.9	7.9	0.5
+1.20D+1.60W	1	6.67	1.00	-6.11	6.11	10.18	0.05	7.89	Phi*Vc / 2 < Vu	7.9	7.9	0.5
+1.20D+1.60W	1	6.78	1.00	-6.51	6.51	9.49	0.06	7.89	Phi*Vc / 2 < Vu	7.9	7.9	0.5
+1.20D+1.60W	1	6.89	1.00	-6.91	6.91	8.76	0.07	7.89	Phi*Vc / 2 < Vu	7.9	7.9	0.5
+1.20D+1.60W	1	6.99	1.00	-7.31	7.31	7.98	0.08	7.89	Phi*Vc / 2 < Vu	7.9	7.9	0.5
+1.20D+1.60W	1	7.10	1.00	-7.71	7.71	7.16	0.09	7.89	Phi*Vc / 2 < Vu	7.9	7.9	0.5
+1.20D+1.60W	1	7.21	1.00	-8.11	8.11	6.29	0.11	7.89	Phi*Vc < Vu	0.2216	7.9	0.5
+1.20D+1.60W	1	7.32	1.00	-8.51	8.51	5.39	0.13	7.89	Phi*Vc < Vu	0.6221	7.9	0.5
+1.20D+1.60W	1	7.43	1.00	-8.91	8.91	4.43	0.17	7.89	Phi*Vc < Vu	1.023	7.9	0.5
+1.20D+1.60W	1	7.54	1.00	-9.31	9.31	3.44	0.23	7.89	Phi*Vc < Vu	1.423	7.9	0.5
+1.20D+1.60W	1	7.65	1.00	-9.71	9.71	2.40	0.34	7.89	Phi*Vc < Vu	1.823	7.9	0.5
+1.20D+1.60W	1	7.76	1.00	-10.11	10.11	1.32	0.64	7.89	Phi*Vc < Vu	2.224	7.9	0.5
+1.20D+1.60W	1	7.87	1.00	-10.51	10.51	0.19	1.00	7.89	Phi*Vc < Vu	2.624	7.9	0.5
+1.20D+1.60W	1	7.98	3.00	-10.91	10.91	0.98	1.00	40.48	Vu < Phi*Vc / 2	40.5	40.5	0.0
+1.20D+1.60W	1	8.09	3.00	-11.31	11.31	2.20	1.00	40.48	Vu < Phi*Vc / 2	40.5	40.5	0.0
+1.20D+1.60W	1	8.20	3.00	-11.71	11.71	3.45	0.85	37.74	Vu < Phi*Vc / 2	37.7	37.7	0.0
+1.20D+1.60W	1	8.31	3.00	-12.11	12.11	4.76	0.64	33.94	Vu < Phi*Vc / 2	33.9	33.9	0.0
+1.20D+1.60W	1	8.42	3.00	-12.51	12.51	6.10	0.51	31.71	Vu < Phi*Vc / 2	31.7	31.7	0.0
+1.20D+1.60W	1	8.52	3.00	-12.91	12.91	7.49	0.43	30.24	Vu < Phi*Vc / 2	30.2	30.2	0.0
+1.20D+1.60W	1	8.63	3.00	-13.31	13.31	8.93	0.37	29.19	Vu < Phi*Vc / 2	29.2	29.2	0.0
+1.20D+1.60W	1	8.74	3.00	-13.71	13.71	10.40	0.33	28.41	Vu < Phi*Vc / 2	28.4	28.4	0.0
+1.20D+1.60W	1	8.85	3.00	-14.12	14.12	11.92	0.30	27.81	Phi*Vc / 2 < Vu	47.6	47.6	1.5
+1.20D+1.60W	1	8.96	3.00	-14.52	14.52	13.49	0.27	27.32	Phi*Vc / 2 < Vu	47.1	47.1	1.5
+1.20D+1.60W	1	9.07	3.00	-14.92	14.92	15.10	0.25	26.93	Phi*Vc / 2 < Vu	46.7	46.7	1.5
+1.20D+1.60W	1	9.18	3.00	-15.32	15.32	16.75	0.23	26.59	Phi*Vc / 2 < Vu	46.4	46.4	1.5
+1.20D+1.60W	1	9.29	3.00	-15.72	15.72	18.44	0.21	26.31	Phi*Vc / 2 < Vu	46.1	46.1	1.5
+1.20D+1.60W	1	9.40	3.00	-16.12	16.12	20.18	0.20	26.07	Phi*Vc / 2 < Vu	45.9	45.9	1.5
+1.20D+1.60W	1	9.51	3.00	-16.52	16.52	21.97	0.19	25.86	Phi*Vc / 2 < Vu	45.7	45.7	1.5
+1.20D+1.60W	1	9.62	3.00	-16.92	16.92	23.79	0.18	25.68	Phi*Vc / 2 < Vu	45.5	45.5	1.5
+1.20D+1.60W	1	9.73	3.00	-17.32	17.32	25.66	0.17	25.52	Phi*Vc / 2 < Vu	45.3	45.3	1.5
+1.20D+1.60W	1	9.84	3.00	-17.72	17.72	27.58	0.16	25.37	Phi*Vc / 2 < Vu	45.2	45.2	1.5
+1.20D+1.60W	1	9.95	3.00	-18.12	18.12	29.54	0.15	25.24	Phi*Vc / 2 < Vu	45.0	45.0	1.5

Maximum Forces & Stresses for Load Combinations

Load Combination Segment	Span #	Location (ft) along Beam	Bending Stress Results (k-ft)		
			Mu : Max	Phi*Mnx	Stress Ratio
MAXimum BENDING Envelope					
Span # 1	1	10.000	-30.53	67.14	0.45
+1.40D					
Span # 1	1	10.000	-4.51	67.14	0.07
+1.20D					
Span # 1	1	10.000	-3.87	67.14	0.06
+1.20D+0.50S					
Span # 1	1	10.000	-2.67	67.14	0.04

Submitted
12/11/2023

Project Title:
 Engineer:
 Project ID:
 Project Descr:

Concrete Beam

LIC# : KW-06012946, Build:20.23.10.31

TRYLON

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DESCRIPTION: --None--

Load Combination Segment	Span #	Location (ft) along Beam	Bending Stress Results (k-ft)		
			Mu : Max	Phi*Mnx	Stress Ratio
+1.20D+0.80W Span # 1	1	10.000	-17.20	67.14	0.26
+1.20D+1.60S Span # 1	1	10.000	-2.89	67.14	0.04
+1.20D+1.60S+0.80W Span # 1	1	10.000	-13.36	67.14	0.20
+1.20D+1.60W Span # 1	1	10.000	-30.53	67.14	0.45
+1.20D+0.50S+1.60W Span # 1	1	10.000	-29.33	67.14	0.44
+1.20D+0.20S Span # 1	1	10.000	-3.39	67.14	0.05
+0.90D+1.60W Span # 1	1	10.000	-29.57	67.14	0.44
+0.90D Span # 1	1	10.000	-2.90	67.14	0.04

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl (in)	Location in Span (ft)	Load Combination	Max. "+" Defl (in)	Location in Span (ft)
+D+W	1	0.0924	5.000		0.0000	0.000

Submitted
 12/11/2023