

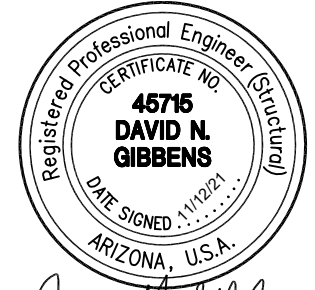
Job Name:	Canyon del Oro HS Central Plant Renovation		
Job Number:	121196	Sheet:	Cover
By:	Dave Gibbens	Date	11/12/2021

CLIENT:

Kelly, Wright & Associates, P.C.
7337 E Tanque Verde Rd
Tucson, AZ 85715

PROJECT DESCRIPTION AND LOCATION:

Canyon del Oro High School Plant Renovation
25 W Calle Concordia
Tucson, AZ 85704



David N. Gibbens

This Electronic Signature
Has Been Authorized By Me
This November 12, 2021

DESIGN CRITERIA:

BUILDING CODE: 2018 International Building Code with Local Amendments
ASCE 7-16

SOIL CRITERIA: N/A

SNOW CRITERIA: N/A

SEISMIC CRITERIA: N/A

WIND CRITERIA: N/A

NOTES: N/A

NEW STEEL BEAM

MECH. WEIGHT= 10,100 LBS

LENGTH= 12 FT

Point Load of 5,500 lbs at midspan

$V_{max} = 2.52$ kips

$M_{max} = 15.15$ k-ft

$\delta_{allow} = L/180 = 0.80$ in

USE W8x24

($V_n/\Omega = 38.85$ k, $M_n/\Omega = 57.63$ k-ft, $L/180 = -0.132$ in)

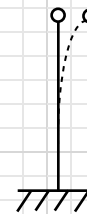
NEW COLUMN SUPPORT FOR 12" & 8" DIA. PIPES

12" DIA. PIPE WEIGHT= 440 LBS

8" DIA. PIPE WEIGHT= 290 LBS

HEIGHT= 16 FT - MAX

$P_a = 0.730$ kips



$K = 2.1$ THEORETICAL VALUE
 $\Omega = 1.67$

USE A Pipe3Std AT 12" MAX. ON CENTER

($P_n/\Omega = 2.63$ kips @ $KL = 33.6$ ft)

refer to details for more information

CONCRETE SLAB ON NEW EQUIPMENT

DIMENSIONS: 8'0"x4'0"x12"

FOUNDATION AREA: 32 sf

BEARING CAPACITY: 1.5 ksf

FOOTING'S CAPACITY: 32 sf x 1.5 k/sf = 48 kips

MAX. VERTICAL LOAD APPLIED: $D_I = 2.42$ kips

MIN. A_s : $0.0018 * A * d = 0.0018 * 8 \text{ ft} * 8 \text{ in} = 1.382 \text{ si}$

MIN. A_s : $0.0018 * A * d = 0.0018 * 4 \text{ ft} * 8 \text{ in} = 0.691 \text{ si}$

Project Title:
 Engineer: RR
 Project ID:
 Project Descr:

Steel Beam

Lic. # : KW-06006042

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Load Combination		Max Stress Ratios		Summary of Moment Values							Summary of Shear Values		
Segment Length	Span #	M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx	Vnx/Omega
Dsgn. L = 12.00 ft	1	0.263	0.065	15.15		15.15	96.25	57.63	1.00	1.00	2.53	58.29	38.86
+0.60D+0.70E+H													
Dsgn. L = 12.00 ft	1	0.158	0.039	9.09		9.09	96.25	57.63	1.00	1.00	1.52	58.29	38.86

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
D Only	1	0.1315	6.000		0.0000	0.000

Vertical Reactions

Load Combination	Support 1	Support 2
Overall MAXimum	2.525	2.525
Overall MINimum	1.515	1.515
+D+H	2.525	2.525
+D+L+H	2.525	2.525
+D+Lr+H	2.525	2.525
+D+S+H	2.525	2.525
+D+0.750Lr+0.750L+H	2.525	2.525
+D+0.750L+0.750S+H	2.525	2.525
+D+0.60W+H	2.525	2.525
+D+0.750Lr+0.750L+0.450W+H	2.525	2.525
+D+0.750L+0.750S+0.450W+H	2.525	2.525
+0.60D+0.60W+0.60H	1.515	1.515
+D+0.70E+0.60H	2.525	2.525
+D+0.750L+0.750S+0.5250E+H	2.525	2.525
+0.60D+0.70E+H	1.515	1.515
D Only	2.525	2.525
H Only		

Project Title:
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Steel Column

Lic. #: KW-06006042

File: Calcs.ec6
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DESCRIPTION: Pipe Support

Code References

Calculations per AISC 360-10, IBC 2012, CBC 2013, ASCE 7-10
 Load Combinations Used : ASCE 7-16

General Information

Steel Section Name :	Pipe3 Std	Overall Column Height	16 ft
Analysis Method :	Allowable Strength	Top & Bottom Fixity	Top Free, Bottom Fixed
Steel Stress Grade		Brace condition for deflection (buckling) along columns :	
Fy : Steel Yield	35.0 ksi	X-X (width) axis :	
E : Elastic Bending Modulus	29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 16 ft, K = 2.1	
		Y-Y (depth) axis :	
		Unbraced Length for buckling ABOUT X-X Axis = 16 ft, K = 2.1	

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 121.669 lbs * Dead Load Factor

AXIAL LOADS . . .

12" Pipe Weight: Axial Load at 16.0 ft, L = 0.440 k

8" Pipe Weight: Axial Load at 16.0 ft, L = 0.290 k

BENDING LOADS . . .

"Wind" Load (5 psf): Lat. Point Load at 16.0 ft creating Mx-x, W = 0.1150 k

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio =	0.4466 : 1	Maximum Load Reactions . .	
Load Combination	+D+0.750Lr+0.750L+0.450W+H	Top along X-X	0.0 k
Location of max.above base	0.0 ft	Bottom along X-X	0.0 k
At maximum location values are . . .		Top along Y-Y	0.0 k
Pa : Axial	0.6692 k	Bottom along Y-Y	0.1150 k
Pn / Omega : Allowable	2.633 k	Maximum Load Deflections . . .	
Ma-x : Applied	-0.8280 k-ft	Along Y-Y	3.266 in at 16.0ft above base
Mn-x / Omega : Allowable	3.825 k-ft	for load combination : W Only	
Ma-y : Applied	0.0 k-ft	Along X-X	0.0 in at 0.0ft above base
Mn-y / Omega : Allowable	3.825 k-ft	for load combination :	
PASS Maximum Shear Stress Ratio =	0.005276 : 1	X-X & Y-Y kl/r > 200	
Load Combination	+D+0.60W+H		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Va : Applied	0.0690 k		
Vn / Omega : Allowable	13.078 k		

Load Combination Results

Load Combination	Maximum Axial + Bending Stress Ratios								Maximum Shear Ratios		
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry		Stress Ratio	Status	Location
+D+H	0.046	PASS	0.00 ft	1.67	1.00	344.62	344.62		0.000	PASS	0.00 ft
+D+L+H	0.324	PASS	0.00 ft	1.67	1.00	344.62	344.62		0.000	PASS	0.00 ft
+D+Lr+H	0.046	PASS	0.00 ft	1.67	1.00	344.62	344.62		0.000	PASS	0.00 ft
+D+S+H	0.046	PASS	0.00 ft	1.67	1.00	344.62	344.62		0.000	PASS	0.00 ft
+D+0.750Lr+0.750L+H	0.254	PASS	0.00 ft	1.67	1.00	344.62	344.62		0.000	PASS	0.00 ft
+D+0.750L+0.750S+H	0.254	PASS	0.00 ft	1.67	1.00	344.62	344.62		0.000	PASS	0.00 ft
+D+0.60W+H	0.312	PASS	0.00 ft	1.67	1.00	344.62	344.62		0.005	PASS	0.00 ft
+D+0.750Lr+0.750L+0.450W+H	0.447	PASS	0.00 ft	1.67	1.00	344.62	344.62		0.004	PASS	0.00 ft
+D+0.750L+0.750S+0.450W+H	0.447	PASS	0.00 ft	1.67	1.00	344.62	344.62		0.004	PASS	0.00 ft
+0.60D+0.60W+0.60H	0.303	PASS	0.00 ft	1.67	1.00	344.62	344.62		0.005	PASS	0.00 ft
+D+0.70E+0.60H	0.046	PASS	0.00 ft	1.67	1.00	344.62	344.62		0.000	PASS	0.00 ft
+D+0.750L+0.750S+0.5250E+H	0.254	PASS	0.00 ft	1.67	1.00	344.62	344.62		0.000	PASS	0.00 ft
+0.60D+0.70E+H	0.028	PASS	0.00 ft	1.67	1.00	344.62	344.62		0.000	PASS	0.00 ft

Project Title:
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 Project Descr:

Steel Column

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DESCRIPTION: Pipe Support

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction @ Base	X-X Axis Reaction @ Base @ Top	k	Y-Y Axis Reaction @ Base @ Top	Mx - End Moments @ Base @ Top	k-ft	My - End Moments @ Base @ Top
+D+H	0.122						
+D+L+H	0.852						
+D+Lr+H	0.122						
+D+S+H	0.122						
+D+0.750Lr+0.750L+H	0.669						
+D+0.750L+0.750S+H	0.669						
+D+0.60W+H	0.122			0.069	-1.104		
+D+0.750Lr+0.750L+0.450W+H	0.669			0.052	-0.828		
+D+0.750L+0.750S+0.450W+H	0.669			0.052	-0.828		
+0.60D+0.60W+0.60H	0.073			0.069	-1.104		
+D+0.70E+0.60H	0.122						
+D+0.750L+0.750S+0.5250E+H	0.669						
+0.60D+0.70E+H	0.073						
D Only	0.122						
Lr Only							
L Only	0.730						
S Only							
W Only				0.115	-1.840		
E Only							
H Only							

Extreme Reactions

Item	Extreme Value	Axial Reaction @ Base	X-X Axis Reaction @ Base @ Top	k	Y-Y Axis Reaction @ Base @ Top	Mx - End Moments @ Base @ Top	k-ft	My - End Moments @ Base @ Top
Axial @ Base	Maximum	0.852						
"	Minimum							
Reaction, X-X Axis Base	Maximum	0.122						
"	Minimum	0.122						
Reaction, Y-Y Axis Base	Maximum				0.115	-1.840		
"	Minimum	0.122						
Reaction, X-X Axis Top	Maximum	0.122						
"	Minimum	0.122						
Reaction, Y-Y Axis Top	Maximum	0.122						
"	Minimum	0.122						
Moment, X-X Axis Base	Maximum	0.122						
"	Minimum		-1.840		0.115	-1.840		
Moment, Y-Y Axis Base	Maximum	0.122						
"	Minimum	0.122						
Moment, X-X Axis Top	Maximum	0.122						
"	Minimum	0.122						
Moment, Y-Y Axis Top	Maximum	0.122						
"	Minimum	0.122						

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	0.000 in	0.000 ft
+D+L+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+Lr+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+S+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.750Lr+0.750L+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.750L+0.750S+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.60W+H	0.0000 in	0.000 ft	1.960 in	16.000 ft
+D+0.750Lr+0.750L+0.450W+H	0.0000 in	0.000 ft	1.470 in	16.000 ft
+D+0.750L+0.750S+0.450W+H	0.0000 in	0.000 ft	1.470 in	16.000 ft
+0.60D+0.60W+0.60H	0.0000 in	0.000 ft	1.960 in	16.000 ft
+D+0.70E+0.60H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.750L+0.750S+0.5250E+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+0.60D+0.70E+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
D Only	0.0000 in	0.000 ft	0.000 in	0.000 ft

Steel Column

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DESCRIPTION: Pipe Support

Maximum Deflections for Load Combinations

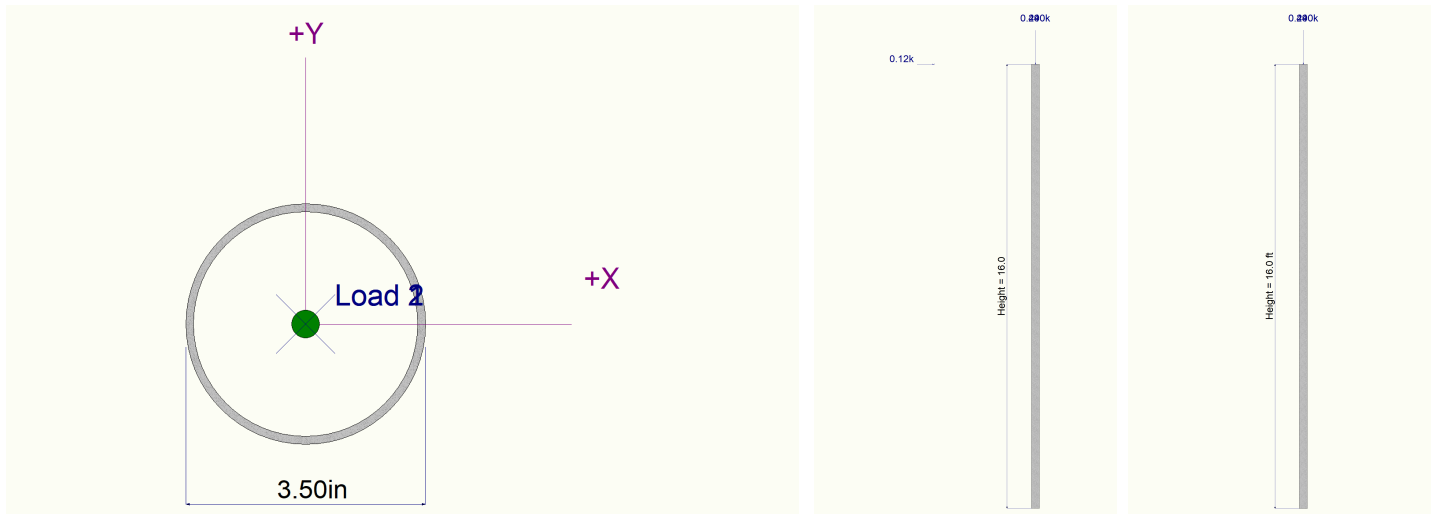
Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
Lr Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
L Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
S Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
W Only	0.0000 in	0.000 ft	3.266 in	16.000 ft
E Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
H Only	0.0000 in	0.000 ft	0.000 in	0.000 ft

Steel Section Properties : Pipe3 Std

Depth	=	3.500 in	I xx	=	2.85 in^4	J	=	5.690 in^4
			S xx	=	1.63 in^3			
Diameter	=	3.500 in	R xx	=	1.170 in			
Wall Thick	=	0.216 in	Zx	=	2.190 in^3			
Area	=	2.080 in^2	I yy	=	2.850 in^4			
Weight	=	7.604 plf	S yy	=	1.630 in^3			
			R yy	=	1.170 in			

Ycg = 0.000 in

Sketches



Project Title:
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 Project Descr:

General Footing

Lic. # : KW-06006042

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DESCRIPTION: Steel Pipe Footing

Code References

Calculations per ACI 318-11, IBC 2012, CBC 2013, ASCE 7-10

Load Combinations Used : ASCE 7-16

General Information

Material Properties

f'c : Concrete 28 day strength	=	2.50	ksi
fy : Rebar Yield	=	60.0	ksi
Ec : Concrete Elastic Modulus	=	2,850.0	ksi
Concrete Density	=	145.0	pcf
φ Values Flexure	=	0.90	
Shear	=	0.750	

Analysis Settings

Min Steel % Bending Reinf.	=	
Min Allow % Temp Reinf.	=	0.00180
Min. Overturning Safety Factor	=	1.0 : 1
Min. Sliding Safety Factor	=	1.0 : 1
Add Ftg Wt for Soil Pressure	:	Yes
Use ftg wt for stability, moments & shears	:	Yes
Add Pedestal Wt for Soil Pressure	:	No
Use Pedestal wt for stability, mom & shear	:	No

Soil Design Values

Allowable Soil Bearing	=	1.50	ksf
Increase Bearing By Footing Weight	=	No	
Soil Passive Resistance (for Sliding)	=	250.0	pcf
Soil/Concrete Friction Coeff.	=	0.30	

Increases based on footing Depth

Footing base depth below soil surface	=	1.0	ft
Allow press. increase per foot of depth when footing base is below	=	1.50	ksf
	=	1.0	ft

Increases based on footing plan dimension

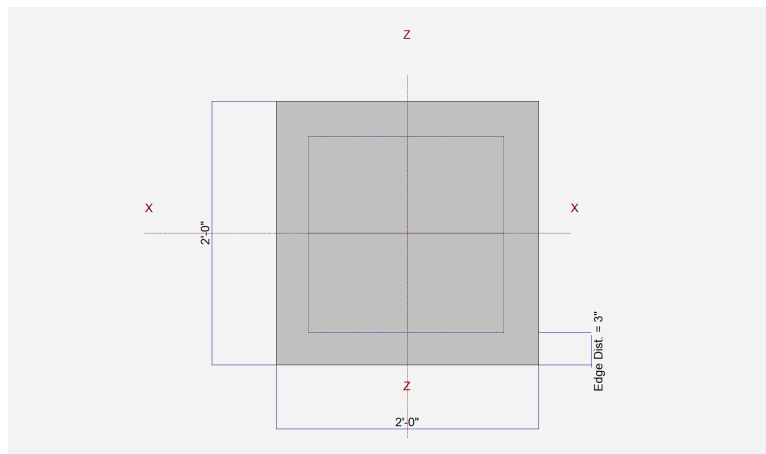
Allowable pressure increase per foot of depth when max. length or width is greater than	=	1.50	ksf
	=	1.0	ft

Dimensions

Width parallel to X-X Axis	=	2.0	ft
Length parallel to Z-Z Axis	=	2.0	ft
Footing Thickness	=	10.0	in

Pedestal dimensions...

px : parallel to X-X Axis	=		in
pz : parallel to Z-Z Axis	=		in
Height	=		in
Rebar Centerline to Edge of Concrete... at Bottom of footing	=	3.0	in



Reinforcing

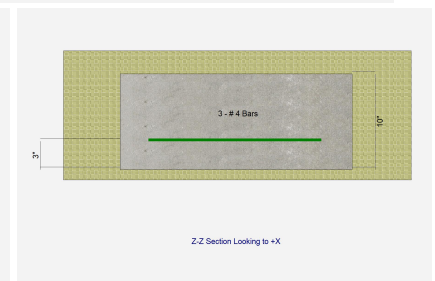
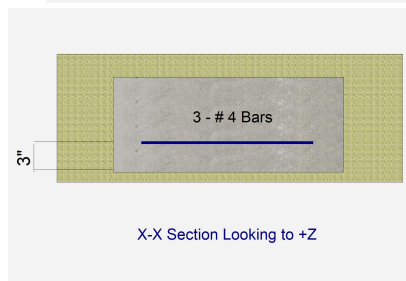
Bars parallel to X-X Axis	=	
Number of Bars	=	3.0
Reinforcing Bar Size	=	# 4

Bars parallel to Z-Z Axis	=	
Number of Bars	=	3.0
Reinforcing Bar Size	=	# 4

Bandwidth Distribution Check (ACI 15.4.4.2)

Direction Requiring Closer Separation

# Bars required within zone	n/a
# Bars required on each side of zone	n/a



Applied Loads

		D	Lr	L	S	W	E	H
P : Column Load	=	0.050		0.730				k
OB : Overburden	=							ksf
M-xx	=							k-ft
M-zz	=			0.8280				k-ft
V-x	=							k
V-z	=							k

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General Footing

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DESCRIPTION: Steel Pipe Footing

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.3870	Soil Bearing	1.161 ksf	3.0 ksf	+D+L+H about Z-Z axis
PASS	n/a	Overturning - X-X	0.0 k-ft	0.0 k-ft	No Overturning
PASS	1.614	Overturning - Z-Z	0.8280 k-ft	1.337 k-ft	+D+L+H
PASS	n/a	Sliding - X-X	0.0 k	0.0 k	No Sliding
PASS	n/a	Sliding - Z-Z	0.0 k	0.0 k	No Sliding
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.06450	Z Flexure (+X)	0.5788 k-ft/ft	8.974 k-ft/ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.009305	Z Flexure (-X)	0.08350 k-ft/ft	8.974 k-ft/ft	+1.20D+1.60L+0.50S+1.60H
PASS	0.01711	X Flexure (+Z)	0.1535 k-ft/ft	8.974 k-ft/ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.01711	X Flexure (-Z)	0.1535 k-ft/ft	8.974 k-ft/ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.09623	1-way Shear (+X)	7.217 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.01113	1-way Shear (-X)	0.8350 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.02047	1-way Shear (+Z)	1.535 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.02047	1-way Shear (-Z)	1.535 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.04283	2-way Punching	6.424 psi	150.0 psi	+1.20D+0.50Lr+1.60L+1.60H

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc	Zecc (in)	Actual Soil Bearing Stress @ Location				Actual / Allow Ratio
				Bottom, -Z	Top, +Z	Left, -X	Right, +X	
X-X, +D+H	3.0	n/a	0.0	0.1517	0.1517	n/a	n/a	0.051
X-X, +D+L+H	3.0	n/a	0.0	0.3342	0.3342	n/a	n/a	0.111
X-X, +D+Lr+H	3.0	n/a	0.0	0.1517	0.1517	n/a	n/a	0.051
X-X, +D+S+H	3.0	n/a	0.0	0.1517	0.1517	n/a	n/a	0.051
X-X, +D+0.750Lr+0.750L+H	3.0	n/a	0.0	0.2885	0.2885	n/a	n/a	0.096
X-X, +D+0.750L+0.750S+H	3.0	n/a	0.0	0.2885	0.2885	n/a	n/a	0.096
X-X, +D+0.60W+H	3.0	n/a	0.0	0.1517	0.1517	n/a	n/a	0.051
X-X, +D+0.750Lr+0.750L+0.450W+H	3.0	n/a	0.0	0.2885	0.2885	n/a	n/a	0.096
X-X, +D+0.750L+0.750S+0.450W+H	3.0	n/a	0.0	0.2885	0.2885	n/a	n/a	0.096
X-X, +0.60D+0.60W+0.60H	3.0	n/a	0.0	0.0910	0.0910	n/a	n/a	0.030
X-X, +D+0.70E+0.60H	3.0	n/a	0.0	0.1517	0.1517	n/a	n/a	0.051
X-X, +D+0.750L+0.750S+0.5250E+H	3.0	n/a	0.0	0.2885	0.2885	n/a	n/a	0.096
X-X, +0.60D+0.70E+H	3.0	n/a	0.0	0.0910	0.0910	n/a	n/a	0.030
Z-Z, +D+H	3.0	0.0	n/a	n/a	n/a	0.1517	0.1517	0.051
Z-Z, +D+L+H	3.0	7.433	n/a	n/a	n/a	0.0	1.161	0.387
Z-Z, +D+Lr+H	3.0	0.0	n/a	n/a	n/a	0.1517	0.1517	0.051
Z-Z, +D+S+H	3.0	0.0	n/a	n/a	n/a	0.1517	0.1517	0.051
Z-Z, +D+0.750Lr+0.750L+H	3.0	6.457	n/a	n/a	n/a	0.0	0.8268	0.276
Z-Z, +D+0.750L+0.750S+H	3.0	6.457	n/a	n/a	n/a	0.0	0.8268	0.276
Z-Z, +D+0.60W+H	3.0	0.0	n/a	n/a	n/a	0.1517	0.1517	0.051
Z-Z, +D+0.750Lr+0.750L+0.450W+H	3.0	6.457	n/a	n/a	n/a	0.0	0.8268	0.276
Z-Z, +D+0.750L+0.750S+0.450W+H	3.0	6.457	n/a	n/a	n/a	0.0	0.8268	0.276
Z-Z, +0.60D+0.60W+0.60H	3.0	0.0	n/a	n/a	n/a	0.0910	0.0910	0.030
Z-Z, +D+0.70E+0.60H	3.0	0.0	n/a	n/a	n/a	0.1517	0.1517	0.051
Z-Z, +D+0.750L+0.750S+0.5250E+H	3.0	6.457	n/a	n/a	n/a	0.0	0.8268	0.276
Z-Z, +0.60D+0.70E+H	3.0	0.0	n/a	n/a	n/a	0.0910	0.0910	0.030

Overturning Stability

Rotation Axis & Load Combination...	Overturning Moment	Resisting Moment	Stability Ratio	Status
X-X, +D+H	None	0.0 k-ft	Infinity	OK
X-X, +D+L+H	None	0.0 k-ft	Infinity	OK
X-X, +D+Lr+H	None	0.0 k-ft	Infinity	OK
X-X, +D+S+H	None	0.0 k-ft	Infinity	OK
X-X, +D+0.750Lr+0.750L+H	None	0.0 k-ft	Infinity	OK
X-X, +D+0.750L+0.750S+H	None	0.0 k-ft	Infinity	OK
X-X, +D+0.60W+H	None	0.0 k-ft	Infinity	OK
X-X, +D+0.750Lr+0.750L+0.450W+H	None	0.0 k-ft	Infinity	OK
X-X, +D+0.750L+0.750S+0.450W+H	None	0.0 k-ft	Infinity	OK
X-X, +0.60D+0.60W+0.60H	None	0.0 k-ft	Infinity	OK

Project Title:
 Engineer: RR
 Project ID:
 Project Descr:

General Footing

Lic. #: KW-06006042

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 SCHNEIDER & ASSOCIATES S.E. INC

DESCRIPTION: Steel Pipe Footing

Overturning Stability

Rotation Axis & Load Combination...	Overturning Moment	Resisting Moment	Stability Ratio	Status
X-X, +D+0.70E+0.60H	None	0.0 k-ft	Infinity	OK
X-X, +D+0.750L+0.750S+0.5250E+H	None	0.0 k-ft	Infinity	OK
X-X, +0.60D+0.70E+H	None	0.0 k-ft	Infinity	OK
Z-Z, +D+H	None	0.0 k-ft	Infinity	OK
Z-Z, +D+L+H	0.8280 k-ft	1.337 k-ft	1.614	OK
Z-Z, +D+Lr+H	None	0.0 k-ft	Infinity	OK
Z-Z, +D+S+H	None	0.0 k-ft	Infinity	OK
Z-Z, +D+0.750Lr+0.750L+H	0.6210 k-ft	1.154 k-ft	1.859	OK
Z-Z, +D+0.750L+0.750S+H	0.6210 k-ft	1.154 k-ft	1.859	OK
Z-Z, +D+0.60W+H	None	0.0 k-ft	Infinity	OK
Z-Z, +D+0.750Lr+0.750L+0.450W+H	0.6210 k-ft	1.154 k-ft	1.859	OK
Z-Z, +D+0.750L+0.450W+H	0.6210 k-ft	1.154 k-ft	1.859	OK
Z-Z, +0.60D+0.60W+0.60H	None	0.0 k-ft	Infinity	OK
Z-Z, +D+0.70E+0.60H	None	0.0 k-ft	Infinity	OK
Z-Z, +D+0.750L+0.750S+0.5250E+H	0.6210 k-ft	1.154 k-ft	1.859	OK
Z-Z, +0.60D+0.70E+H	None	0.0 k-ft	Infinity	OK

All units k

Sliding Stability

Force Application Axis Load Combination...	Sliding Force	Resisting Force	Stability Ratio	Status
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Footing Has NO Sliding

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.40D+1.60H	0.008750	+Z	Bottom	0.2160	Min Temp %	0.30	8.974	OK
X-X, +1.40D+1.60H	0.008750	-Z	Bottom	0.2160	Min Temp %	0.30	8.974	OK
X-X, +1.20D+0.50Lr+1.60L+1.60H	0.1535	+Z	Bottom	0.2160	Min Temp %	0.30	8.974	OK
X-X, +1.20D+0.50Lr+1.60L+1.60H	0.1535	-Z	Bottom	0.2160	Min Temp %	0.30	8.974	OK
X-X, +1.20D+1.60L+0.50S+1.60H	0.1535	+Z	Bottom	0.2160	Min Temp %	0.30	8.974	OK
X-X, +1.20D+1.60L+0.50S+1.60H	0.1535	-Z	Bottom	0.2160	Min Temp %	0.30	8.974	OK
X-X, +1.20D+1.60Lr+L+1.60H	0.09875	+Z	Bottom	0.2160	Min Temp %	0.30	8.974	OK
X-X, +1.20D+1.60Lr+L+1.60H	0.09875	-Z	Bottom	0.2160	Min Temp %	0.30	8.974	OK
X-X, +1.20D+1.60Lr+0.50W+1.60H	0.00750	+Z	Bottom	0.2160	Min Temp %	0.30	8.974	OK
X-X, +1.20D+1.60Lr+0.50W+1.60H	0.00750	-Z	Bottom	0.2160	Min Temp %	0.30	8.974	OK
X-X, +1.20D+L+1.60S+1.60H	0.09875	+Z	Bottom	0.2160	Min Temp %	0.30	8.974	OK
X-X, +1.20D+L+1.60S+1.60H	0.09875	-Z	Bottom	0.2160	Min Temp %	0.30	8.974	OK
X-X, +1.20D+1.60S+0.50W+1.60H	0.00750	+Z	Bottom	0.2160	Min Temp %	0.30	8.974	OK
X-X, +1.20D+1.60S+0.50W+1.60H	0.00750	-Z	Bottom	0.2160	Min Temp %	0.30	8.974	OK
X-X, +1.20D+0.50Lr+L+W+1.60H	0.09875	+Z	Bottom	0.2160	Min Temp %	0.30	8.974	OK
X-X, +1.20D+0.50Lr+L+W+1.60H	0.09875	-Z	Bottom	0.2160	Min Temp %	0.30	8.974	OK
X-X, +1.20D+L+0.50S+W+1.60H	0.09875	+Z	Bottom	0.2160	Min Temp %	0.30	8.974	OK
X-X, +1.20D+L+0.50S+W+1.60H	0.09875	-Z	Bottom	0.2160	Min Temp %	0.30	8.974	OK
X-X, +0.90D+W+1.60H	0.005625	+Z	Bottom	0.2160	Min Temp %	0.30	8.974	OK
X-X, +0.90D+W+1.60H	0.005625	-Z	Bottom	0.2160	Min Temp %	0.30	8.974	OK
X-X, +1.20D+L+0.20S+E+1.60H	0.09875	+Z	Bottom	0.2160	Min Temp %	0.30	8.974	OK
X-X, +1.20D+L+0.20S+E+1.60H	0.09875	-Z	Bottom	0.2160	Min Temp %	0.30	8.974	OK
X-X, +0.90D+E+0.90H	0.005625	+Z	Bottom	0.2160	Min Temp %	0.30	8.974	OK
X-X, +0.90D+E+0.90H	0.005625	-Z	Bottom	0.2160	Min Temp %	0.30	8.974	OK
Z-Z, +1.40D+1.60H	0.008750	-X	Bottom	0.2160	Min Temp %	0.30	8.974	OK
Z-Z, +1.40D+1.60H	0.008750	+X	Bottom	0.2160	Min Temp %	0.30	8.974	OK
Z-Z, +1.20D+0.50Lr+1.60L+1.60H	0.08350	-X	Top	0.2160	Min Temp %	0.30	8.974	OK
Z-Z, +1.20D+0.50Lr+1.60L+1.60H	0.5788	+X	Bottom	0.2160	Min Temp %	0.30	8.974	OK
Z-Z, +1.20D+1.60L+0.50S+1.60H	0.08350	-X	Top	0.2160	Min Temp %	0.30	8.974	OK
Z-Z, +1.20D+1.60L+0.50S+1.60H	0.5788	+X	Bottom	0.2160	Min Temp %	0.30	8.974	OK
Z-Z, +1.20D+1.60Lr+L+1.60H	0.07973	-X	Top	0.2160	Min Temp %	0.30	8.974	OK
Z-Z, +1.20D+1.60Lr+L+1.60H	0.3342	+X	Bottom	0.2160	Min Temp %	0.30	8.974	OK
Z-Z, +1.20D+1.60Lr+0.50W+1.60H	0.00750	-X	Bottom	0.2160	Min Temp %	0.30	8.974	OK
Z-Z, +1.20D+1.60Lr+0.50W+1.60H	0.00750	+X	Bottom	0.2160	Min Temp %	0.30	8.974	OK
Z-Z, +1.20D+L+1.60S+1.60H	0.07973	-X	Top	0.2160	Min Temp %	0.30	8.974	OK
Z-Z, +1.20D+L+1.60S+1.60H	0.3342	+X	Bottom	0.2160	Min Temp %	0.30	8.974	OK
Z-Z, +1.20D+1.60S+0.50W+1.60H	0.00750	-X	Bottom	0.2160	Min Temp %	0.30	8.974	OK

Project Title:
 Engineer: RR
 Project ID:
 Project Descr:

General Footing

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 SCHNEIDER & ASSOCIATES S.E. INC

DESCRIPTION: Steel Pipe Footing

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in ²	Gvrn. As in ²	Actual As in ²	Phi*Mn k-ft	Status
Z-Z, +1.20D+1.60S+0.50W+1.60H	0.00750	+X	Bottom	0.2160	Min Temp %	0.30	8.974	OK
Z-Z, +1.20D+0.50Lr+L+W+1.60H	0.07973	-X	Top	0.2160	Min Temp %	0.30	8.974	OK
Z-Z, +1.20D+0.50Lr+L+W+1.60H	0.3342	+X	Bottom	0.2160	Min Temp %	0.30	8.974	OK
Z-Z, +1.20D+L+0.50S+W+1.60H	0.07973	-X	Top	0.2160	Min Temp %	0.30	8.974	OK
Z-Z, +1.20D+L+0.50S+W+1.60H	0.3342	+X	Bottom	0.2160	Min Temp %	0.30	8.974	OK
Z-Z, +0.90D+W+1.60H	0.005625	-X	Bottom	0.2160	Min Temp %	0.30	8.974	OK
Z-Z, +0.90D+W+1.60H	0.005625	+X	Bottom	0.2160	Min Temp %	0.30	8.974	OK
Z-Z, +1.20D+L+0.20S+E+1.60H	0.07973	-X	Top	0.2160	Min Temp %	0.30	8.974	OK
Z-Z, +1.20D+L+0.20S+E+1.60H	0.3342	+X	Bottom	0.2160	Min Temp %	0.30	8.974	OK
Z-Z, +0.90D+E+0.90H	0.005625	-X	Bottom	0.2160	Min Temp %	0.30	8.974	OK
Z-Z, +0.90D+E+0.90H	0.005625	+X	Bottom	0.2160	Min Temp %	0.30	8.974	OK

One Way Shear

Load Combination...	Vu @ -X	Vu @ +X	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D+1.60H	0.09 psi	0.09 psi	0.09 psi	0.09 psi	0.09 psi	75.00 psi	0.00	OK
+1.20D+0.50Lr+1.60L+1.60H	0.84 psi	7.22 psi	1.54 psi	1.54 psi	7.22 psi	75.00 psi	0.10	OK
+1.20D+1.60L+0.50S+1.60H	0.84 psi	7.22 psi	1.54 psi	1.54 psi	7.22 psi	75.00 psi	0.10	OK
+1.20D+1.60Lr+L+1.60H	0.84 psi	3.88 psi	0.99 psi	0.99 psi	3.88 psi	75.00 psi	0.05	OK
+1.20D+1.60Lr+0.50W+1.60H	0.08 psi	0.08 psi	0.08 psi	0.08 psi	0.08 psi	75.00 psi	0.00	OK
+1.20D+L+1.60S+1.60H	0.84 psi	3.88 psi	0.99 psi	0.99 psi	3.88 psi	75.00 psi	0.05	OK
+1.20D+1.60S+0.50W+1.60H	0.08 psi	0.08 psi	0.08 psi	0.08 psi	0.08 psi	75.00 psi	0.00	OK
+1.20D+0.50Lr+L+W+1.60H	0.84 psi	3.88 psi	0.99 psi	0.99 psi	3.88 psi	75.00 psi	0.05	OK
+1.20D+L+0.50S+W+1.60H	0.84 psi	3.88 psi	0.99 psi	0.99 psi	3.88 psi	75.00 psi	0.05	OK
+0.90D+W+1.60H	0.06 psi	0.06 psi	0.06 psi	0.06 psi	0.06 psi	75.00 psi	0.00	OK
+1.20D+L+0.20S+E+1.60H	0.84 psi	3.88 psi	0.99 psi	0.99 psi	3.88 psi	75.00 psi	0.05	OK
+0.90D+E+0.90H	0.06 psi	0.06 psi	0.06 psi	0.06 psi	0.06 psi	75.00 psi	0.00	OK

Two-Way "Punching" Shear

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D+1.60H	0.33 psi	150.00 psi	0.002167	OK
+1.20D+0.50Lr+1.60L+1.60H	6.42 psi	150.00 psi	0.04283	OK
+1.20D+1.60L+0.50S+1.60H	6.42 psi	150.00 psi	0.04283	OK
+1.20D+1.60Lr+L+1.60H	3.87 psi	150.00 psi	0.02577	OK
+1.20D+1.60Lr+0.50W+1.60H	0.28 psi	150.00 psi	0.001857	OK
+1.20D+L+1.60S+1.60H	3.87 psi	150.00 psi	0.02577	OK
+1.20D+1.60S+0.50W+1.60H	0.28 psi	150.00 psi	0.001857	OK
+1.20D+0.50Lr+L+W+1.60H	3.87 psi	150.00 psi	0.02577	OK
+1.20D+L+0.50S+W+1.60H	3.87 psi	150.00 psi	0.02577	OK
+0.90D+W+1.60H	0.21 psi	150.00 psi	0.001393	OK
+1.20D+L+0.20S+E+1.60H	3.87 psi	150.00 psi	0.02577	OK
+0.90D+E+0.90H	0.21 psi	150.00 psi	0.001393	OK

All units k