Project: Plan 2800

Location: Garage Roof Girder Truss Footing
Footing
[2015 International Building Code(2012 NDS)]
Footing Size: 3.0 FT x 3.0 FT x 10.00 IN
Reinforcement: #4 Bars @ 9.00 IN. O.C. E/W / (4) min.
Section Footing Design Adequate

FOOTING PROPERTIES

Allowable Soil Bearing Pressure:	Qs =	1500	psf
Concrete Compressive Strength:	F'c =	2500	psi
Reinforcing Steel Yield Strength:	Fy =	60000	psi
Concrete Reinforcement Cover:	c =	3	in

FOOTING SIZE

Width:	W =	3	ft
Length:	L =	3	ft
Depth:	Depth =	10	in
Effective Depth to Top Layer of Steel:	d =	6.25	in

COLUMN AND BASEPLATE SIZE

Column Type:	Wood	
Column Width:	m =	6 in
Column Depth:	n =	6 in

FOOTING CALCULATIONS

Bearing Calculations:

Ultimate Bearing Pressure:	Qu =	1111	psf
Effective Allowable Soil Bearing Pressure:	Qe =	1375	psf
Required Footing Area:	Areq =	7.27	sf
Area Provided:	A =	9.00	sf

Baseplate Bearing:

Bearing Required:	Bear =	14800	lb
Allowable Bearing:	Bear-A =	99450	lb

Beam Shear Calculations (One Way Shear):

Beam Shear:	Vu1 =	4831	lb
Allowable Beam Shear:	Vc1 =	16875	lb

Punching Shear Calculations (Two Way Shear):

Critical Perimeter:	Bo =	49	in
Punching Shear:	Vu2 =	13086	lb
Allowable Punching Shear (ACI 11-35):	vc2-a =	68906	lb
Allowable Punching Shear (ACI 11-36):	vc2-b =	81563	lb
Allowable Punching Shear (ACI 11-37):	vc2-c =	45938	lb
Controlling Allowable Punching Shear:	vc2 =	45938	lb

Bending Calculations:

Factored Moment:	Mu =	66600	in-lb
Nominal Moment Strength:	Mn =	251888	in-lb

Reinforcement Calculations:

Concrete Compressive Block Depth:	a =	0.62	in
Steel Required Based on Moment:	As(1) =	0.20	in2
Min. Code Req'd Reinf. Shrink./Temp. (ACI-10.5.4):	As(2) =	0.65	in2
Controlling Reinforcing Steel:	As-reqd =	0.65	in2
Selected Reinforcement:	#4's @ 9.0 in. o.c. e/w (4) Min.		
Reinforcement Area Provided:	As =	0.79	in2

Development Length Calculations:

Development Length Required:	Ld =	15	in
Development Length Supplied:	Ld-sup =	15	in

LOADING DIAGRAM

Subject To Field Inspection

CHANGES
MUST Be Approved Prior
To Performing Work
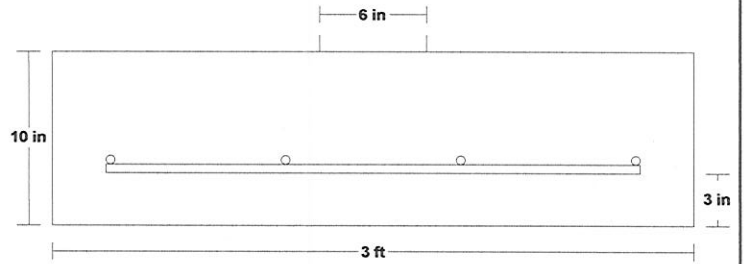
FOOTING LOADING

Live Load:	PL =	7000	lb
Dead Load:	PD =	3000	lb
Total Load:	PT =	10000	lb
Ultimate Factored Load:	Pu =	14800	lb
Weight to resist uplift w/ 1.5 F.S.:	U.R. =	725	lb

NOTES

Project: Plan 2800

Location: Garage Floor Support om Stem Wall
Footing
[2015 International Building Code(2012 NDS)]
Footing Size: 16.0 IN Wide x 6.0 IN Deep Continuous Footing With 6.0 IN Thick
x 24.0 IN Tall Stemwall
LongitudinalReinforcement: (2) Continuous #4 Bars
TransverseReinforcement: #4 Bars @ 18.00 IN. O.C. (unnecessary)
Section Footing Design Adequate

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FOOTING PROPERTIES

Allowable Soil Bearing Pressure:	Q_s =	1500	psf
Concrete Compressive Strength:	$F'c$ =	2500	psi
Reinforcing Steel Yield Strength:	F_y =	60000	psi
Concrete Reinforcement Cover:	c =	3	in

FOOTING SIZE

Width:	W =	16	in
Depth:	$Depth$ =	6	in
Effective Depth to Top Layer of Steel:	d =	2.25	in

STEMWALL SIZE

Stemwall Width: 6 in
Stemwall Height: 24 in
Stemwall Weight: 150 pcf

FOOTING CALCULATIONS

Bearing Calculations:

Ultimate Bearing Pressure:	Q_u =	563	psf
Effective Allowable Soil Bearing Pressure:	Q_e =	1425	psf
Width Required:	W_{req} =	0.53	in2

Beam Shear Calculations (One Way Shear):

Beam Shear:	V_{u1} =	182	lb
Allowable Beam Shear:	V_{c1} =	2025	lb

Transverse Direction:

Bending Calculations:

Factored Moment:	M_u =	828	in-lb
Nominal Moment Strength:	M_n =	0	in-lb

Reinforcement Calculations:

Concrete Compressive Block Depth:	a =	0.30	in
Steel Required Based on Moment:	$As(1)$ =	0.01	in2
Min. Code Req'd Reinf. Shrink./Temp. (ACI-10.5.4):	$As(2)$ =	0.13	in2
Controlling Reinforcing Steel:	As-reqd =	0.13	in2
Selected Reinforcement:	Trans: #4's @ 18.0 in. o.c.		
Reinforcement Area Provided:	As =	0.13	in2

Development Length Calculations:

Development Length Required:	L_d =	15	in
Development Length Supplied:	L_{d-sup} =	2	in

Note: Plain concrete adequate for bending,
therefore adequate development length not required.

Longitudinal Direction:

Reinforcement Calculations:

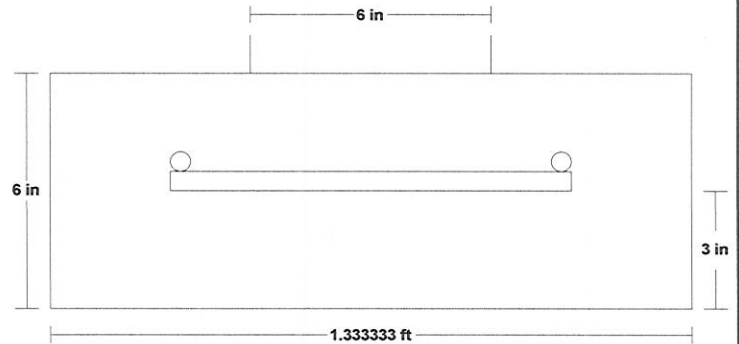|			
Min. Code Req'd Reinf. Shrink./Temp. (ACI-10.5.4):	$As(2)$ =	0.17	in2
Controlling Reinforcing Steel:	As-reqd =	0.17	in2
Selected Reinforcement:	Longitudinal: (2) Cont. #4 Bars		
Reinforcement Area Provided:	As =	0.39	in2

NOTES

LOADING DIAGRAM

FOOTING LOADING

Live Load:	PL =	400	lb
Dead Load:	PD =	200	lb
Total Load:	PT =	750	lb
Ultimate Factored Load:	P_u =	1060	lb

Permit Number: 20-01956