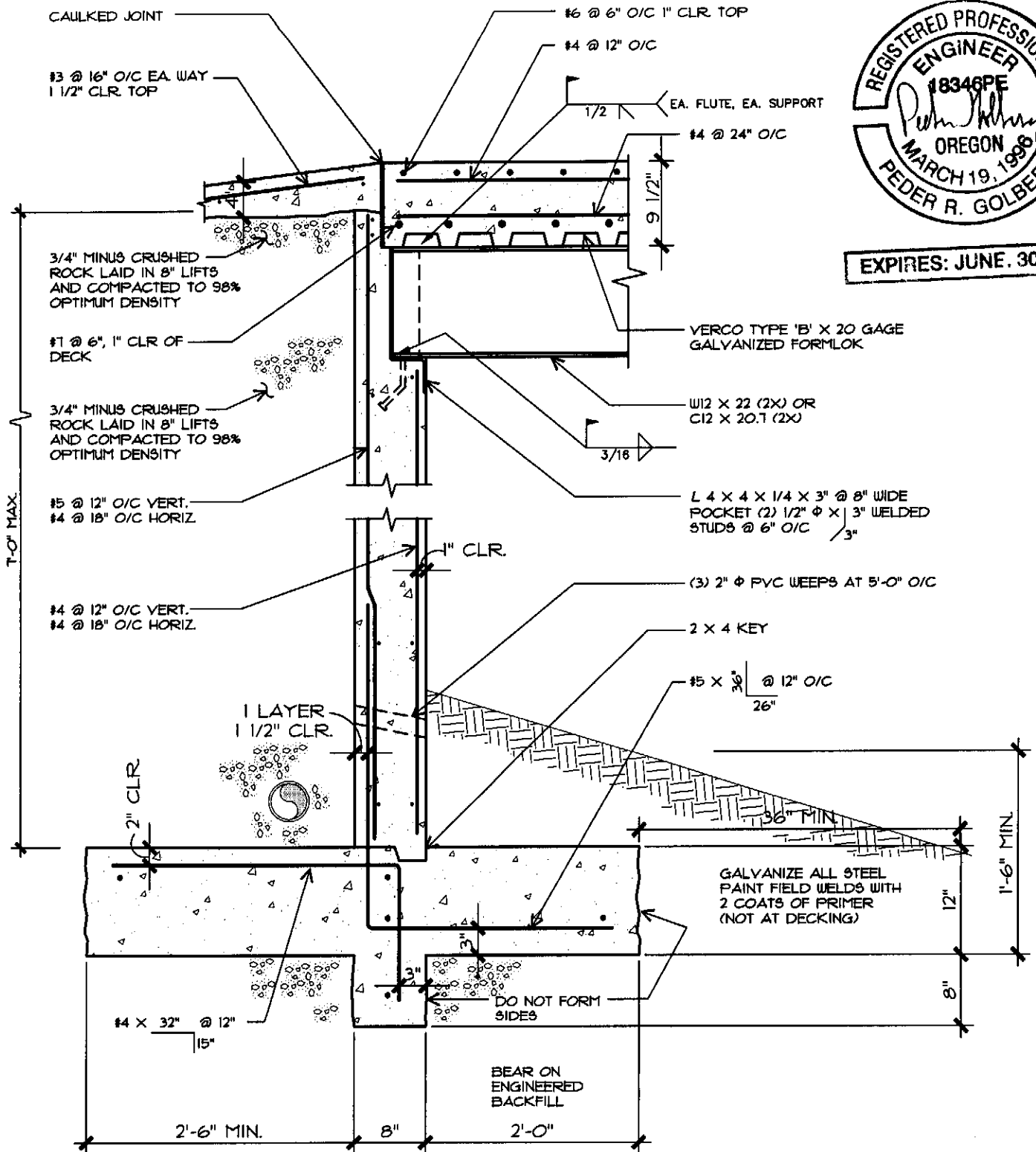


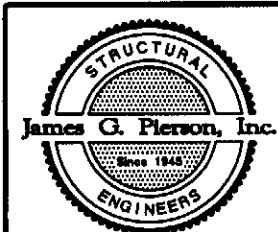
EXPIRES: JUNE 30, 07



CD1
S-3

SECTION

3/4" = 1'-0"



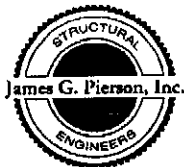
Consulting Structural Engineers
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SHEET NUMBER
S-3

2/2/06



Peder Golberg, P.E./S.E.
James G. Pierson, Inc.
320 SW Stark #535
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Title :
Dsgnr: □Ši9i Å#@R9_@%u. @ü **Date:** 3:27PM, 7 FEB 06
Description :
Scope :
 Code Ref. ACI 318-02, 1997 UBC, 2003 IBC, 2003 NFPA 5000

Rev: 580014
 User: KW-0601615, Ver 5.8.0, 1-Dec-2003
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Cantilevered Retaining Wall Design

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Description backfill

Criteria	
Retained Height	= 7.50 ft
Wall height above soil	= 0.00 ft
Slope Behind Wall	= 0.00 : 1
Height of Soil over Toe	= 6.00 in
Soil Density	= 110.00 pcf
Wind on Stem	= 0.0 psf

Soil Data	
Allow Soil Bearing	= 2,000.0 psf
Equivalent Fluid Pressure Method	
Heel Active Pressure	= 35.0 psf/ft
Toe Active Pressure	= 35.0 psf/ft
Passive Pressure	= 250.0 psf/ft
Water height over heel	= 0.0 ft
Footing Soil Friction	= 0.400
Soil height to ignore for passive pressure	= 0.00 in

Footing Strengths & Dimensions	
f_c	= 3,000 psi
F_y	= 60,000 psi
Min. As %	= 0.0014
Toe Width	= 2.00 ft
Heel Width	= 3.17
Total Footing Width	= 5.17
Footing Thickness	= 13.00 in
Key Width	= 8.00 in
Key Depth	= 8.00 in
Key Distance from Toe	= 2.00 ft
Cover @ Top	= 3.00 in @ Btm. = 3.00 in

Surcharge Loads	
Surcharge Over Heel	= 250.0 psf
Used To Resist Sliding & Overturning	
Surcharge Over Toe	= 0.0 psf
Used for Sliding & Overturning	

Lateral Load Applied to Stem	
Lateral Load	= 0.0 #/ft
...Height to Top	= 0.00 ft
...Height to Bottom	= 0.00 ft

Axial Load Applied to Stem	
Axial Dead Load	= 760.0 lbs
Axial Live Load	= 0.0 lbs
Axial Load Eccentricity	= 4.0 in

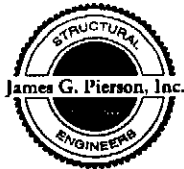
Design Summary	
Total Bearing Load	= 5,972 lbs
...resultant ecc.	= 3.69 in
Soil Pressure @ Toe	= 1,567 psf OK
Soil Pressure @ Heel	= 743 psf OK
Allowable	= 2,000 psf
Soil Pressure Less Than Allowable	
ACI Factored @ Toe	= 1,908 psf
ACI Factored @ Heel	= 905 psf
Footing Shear @ Toe	= 15.7 psi OK
Footing Shear @ Heel	= 51.3 psi OK
Allowable	= 93.1 psi
Wall Stability Ratios	
Overturning	= 3.06 OK
Sliding	= 1.53 (Vertical Co)
Sliding Calcs (Vertical Component Used)	
Lateral Sliding Force	= 1,972.1 lbs
less 100% Passive Force	= - 632.8 lbs
less 100% Friction Force	= - 2,388.8 lbs
Added Force Req'd	= 0.0 lbs OK
...for 1.5 : 1 Stability	= 0.0 lbs OK

Stem Construction	
Design height	ft = 0.00
Wall Material Above "Ht"	= Concrete
Thickness	= 8.00
Rebar Size	= # 5
Rebar Spacing	= 11.00
Rebar Placed at	= Edge
Design Data	
$f_b/FB + f_a/Fa$	= 0.936
Total Force @ Section	lbs = 2,680.2
Moment....Actual	ft-# = 8,340.3
Moment....Allowable	= 8,910.2
Shear....Actual	psi = 36.1
Shear....Allowable	psi = 93.1
Bar Develop ABOVE Ht.	in = 21.36
Bar Lap/Hook BELOW Ht.	in = 8.94
Wall Weight	= 96.7
Rebar Depth 'd'	in = 6.19

Top Stem	
Stem OK	

Footing Design Results		
	Toe	Heel
Factored Pressure	= 1,908	905 psf
μ_u : Upward	= 3,557	0 ft-#
μ_u : Downward	= 609	8,745 ft-#
μ_u : Design	= 2,948	8,745 ft-#
Actual 1-Way Shear	= 15.75	51.31 psi
Allow 1-Way Shear	= 93.11	93.11 psi
Toe Reinforcing	= None Spec'd	
Heel Reinforcing	= None Spec'd	
Key Reinforcing	= None Spec'd	

Masonry Data	
f_m	psi =
F_s	psi =
Solid Grouting	=
Special Inspection	=
Modular Ratio 'n'	=
Short Term Factor	=
Equiv. Solid Thick.	=
Masonry Block Type	= Normal Weight
Concrete Data	
f_c	psi = 3,000.0
F_y	psi = 60,000.0
Other Acceptable Sizes & Spacings	
Toe: Not req'd, $\mu_u < S * Fr$	
Heel: #4@ 8.75 in, #5@ 13.50 in, #6@ 19.00 in, #7@ 26.00 in, #8@ 34.25 in, #9@ 43	
Key: #4@ 28.75 in, #5@ 44.50 in, #6@ 48.	



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 Description :
 Scope :
 Code Ref: ACI 318-02, 1997 UBC, 2003 IBC, 2003 NFPA 5000

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Cantilevered Retaining Wall Design

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Description backfill

Summary of Overturning & Resisting Forces & Moments

ItemOVERTURNING.....			=RESISTING.....			
	Force lbs	Distance ft	Moment ft-#		Force lbs	Distance ft	Moment ft-#	
Heel Active Pressure	= 1,972.1	3.36	6,619.0		Soil Over Heel	= 2,065.3	3.92	8,092.3
Toe Active Pressure	=				Sloped Soil Over Heel	=		
Surcharge Over Toe	=				Surcharge Over Heel	= 625.8	3.92	2,452.2
Adjacent Footing Load	=				Adjacent Footing Load	=		
Added Lateral Load	=				Axial Dead Load on Stem	= 760.0	2.00	1,520.0
Load @ Stem Above Soil	=				Soil Over Toe	= 110.0	1.00	110.0
Seismic Load	=				Surcharge Over Toe	=		
					Stem Weight(s)	= 725.0	2.33	1,691.7
Total	= 1,972.1	O.T.M. =	6,619.0		Earth @ Stem Transitions	=		
Resisting/Overturning Ratio		=	3.06		Footing Weight	= 840.1	2.59	2,171.7
Vertical Loads used for Soil Pressure	=	5,972.1	lbs		Key Weight	= 66.7	2.33	155.6
Vertical component of active pressure used for soil pressure					Vert. Component	= 779.2	5.17	4,028.5
					Total =	5,972.1	lbs R.M. =	20,222.0