Stemwall Cont. Footing Calculator

Check continuous footings at highest (vertically) loaded section of wall excluding point loads. From previous sections and by inspection the most critically loaded wall is at the front entrance wall between the garage and front bedroom.

(10)	Deedlard	Electric E			Roof LL or S =	19.3 psf
(plf)	Dead Load		toof Live	i	Roof DL =	17.5 psf
Roof	420	0	463.2		Roof Trib. Width =	24.0 ft
Wall	108	0	0		Wall DL =	12 psf
=loor	55	220	0		Wall Hgt. =	9 ft
Stemwall	150	0	0		Floor LL =	40.0 psf
Totals	733	220	463.2		Floor DL =	10.0 psf
		- / 0			FloorTrib. Width =	5.5 ft
	ses from ASCE				ρconc =	150 pcf
2.) D + L =	-	953 plf			Steel Yield Strength =	60,000 psi
3.) D + (Lr or \$		1196.2 plf			Conc. Comp. Strength =	3,000 psi
4.) D + .75L +	.75(Lr or S) =	1245.4 plf		(governs)	Soil Bearing Pressure =	1,500 psf
					Reinf. Cover =	3 in
Bearing Calcu					Reinf. Bar Size =	4
Applied Bearir	ng Pressure	Qasd =	1,245	psf	Soil Depth Above Ftg.	6 in
Eff. Allowable SBP		Qe =	1,400	psf	ρsoil =	100 pcf
Footing Width Required		Wreq =	10.7	in	Stem Width =	6 in
ooting Width		Wfooting =	12	in \longrightarrow OK	Stem Hgt. =	24 in
					Footing Width =	12 in
Strength Desi	gn Load Cases f	rom ASCE 7-10:			Footing Depth =	6 in
1.) 1.4D =	•	1026.2 plf			ů i	
2.) 1.2D + 1.6L + .5(Lr or S) =		1463.2 plf			Eff. Depth	to Top Layer of Steel
3.) 1.2D + 1.6(Lr or S) + L =		1840.72 plf		(governs)	d =	2.25 in
Beam Shear (Calculations (One	e Way Shear):			Beam Shear Calculati	ons (One Way Shear):
		Qu =	1,841	nsf	Unreinforced Concrete	
Jlt. Applied Bearing Pressure Applied Beam Shear		Vu =	115	•	Vu =	<u>-</u> 460 lbs
Allowable Beam Shear		Vu = Vc =		lbs (ACI 11-3)	Vu = Vc =	2,103 lbs (ACI 22-9)
Footing Depth Required		Dreg =	0.3		Dreg =	1.3 in
Footing Depth		Dfooting =		in $\longrightarrow OK$	Dfooting =	6.0 in $\longrightarrow OK$
	•	Diooting -	0.0		Drooting -	
Bending Calcu		a =	0.26		Bending Calculations:	
Cantilever length		Lcant =	3.0	in	Unreinforced Concrete	
Factored Bending Moment		Mu =	690	in-lb	S =	32.0 in ³
Moment Stren	ngth	Mn =	14,997	in-lb	Mu =	690 in-lb
					Mn =	5,258 in-lb (ACI 22-2)
Transverse Reinforcement Ca		culations:			Dreq =	0.8 in
ransverse Re			12.6	psi	Dfooting =	6.0 in -> OK
		Rn =				
∕lu/φbd²		Rn = ρ =	0.0002		2.000g	
Иu/фbd² Steel Ratio	sed on Moment		0.0002	in ²	2 rooming	
Mu/φbd ² Steel Ratio Steel Req. bas		ρ = As(1) =	0.0002 0.006	-	2.000m.ig	
Mu/φbd ² Steel Ratio Steel Req. bas Steel Req. bas	sed on Shrink	ρ = As(1) = As(2) =	0.0002 0.006 0.130	in ² (ACI 7.12)		
Mu/φbd ² Steel Ratio Steel Req. bas Steel Req. bas Controlling Re	sed on Shrink einf. Steel	ρ = As(1) = As(2) = As(req) =	0.0002 0.006 0.130 0.130	in ² (ACI 7.12) in ²	(Transverse Reinford	
Mu/¢bd ² Steel Ratio Steel Req. bas Steel Req. bas Controlling Re Required Spa	sed on Shrink einf. Steel cing with #4 bars	ρ = As(1) = As(2) = As(req) =	0.0002 0.006 0.130 0.130 18.18	in ² (ACI 7.12) in ² in o/c		
Mu/¢bd ² Steel Ratio Steel Req. bas Steel Req. bas Controlling Re Required Spas Selected Transv	sed on Shrink sinf. Steel cing with #4 bars verse Spacing:	ρ = As(1) = As(2) = As(req) = 5 = #4 bars @	0.0002 0.006 0.130 0.130 18.18 18	in ² (ACI 7.12) in ² in o/c in o/c		
Mu/¢bd ² Steel Ratio Steel Req. bas Steel Req. bas Controlling Re Required Spas Selected Transv	sed on Shrink einf. Steel cing with #4 bars	ρ = As(1) = As(2) = As(req) =	0.0002 0.006 0.130 0.130 18.18 18	in ² (ACI 7.12) in ² in o/c	(Transverse Reinford	cment Unnecessary)
Mu/¢bd ² Steel Ratio Steel Req. bas Steel Req. bas Controlling Re Required Spa Selected Transv Reinforcemen	sed on Shrink binf. Steel cing with #4 bars rerse Spacing: it Area Provided	ρ = As(1) = As(2) = As(req) = s = #4 bars @ As =	0.0002 0.006 0.130 0.130 18.18 18	in ² (ACI 7.12) in ² in o/c in o/c	(Transverse Reinford) $\lambda = 1.0$	c ment Unnecessary) (lightweight aggregate factor
Mu/¢bd ² Steel Ratio Steel Req. bas Steel Req. bas Controlling Re Required Spa Selected Transv Reinforcemen	sed on Shrink binf. Steel cing with #4 bars rerse Spacing: It Area Provided Length Calculatio	ρ = As(1) = As(2) = As(req) = s = #4 bars @ As = <u>ons:</u>	0.0002 0.006 0.130 0.130 18.18 18 0.131	$\begin{array}{c} \text{in}^2 (\text{ACI 7.12}) \\ \text{in}^2 \\ \text{in o/c} \\ \text{in}^2 \longrightarrow \text{OK} \end{array}$	(Transverse Reinford $\lambda = 1.0$ $\psi_t = 1.0$	cment Unnecessary) (lightweight aggregate factor (reinforcement location facto
Mu/¢bd ² Steel Ratio Steel Req. bas Steel Req. bas Controlling Re Required Spa Selected Transv Reinforcemen <u>Development</u> spacing/cover	sed on Shrink binf. Steel cing with #4 bars rerse Spacing: It Area Provided Length Calculation	$\rho = As(1) = As(2) = As(req) = s = #4 bars @ As = Ons:c =$	0.0002 0.006 0.130 0.130 18.18 18 0.131 3.0	in ² (ACI 7.12) in ² in o/c in o/c in ² \longrightarrow OK in	(Transverse Reinford $\lambda = 1.0$ $\psi_t = 1.0$ $\psi_e = 1.0$	(lightweight aggregate factor (reinforcement location factor (coating factor)
Mu/¢bd ² Steel Ratio Steel Req. bas Steel Req. bas Controlling Re Required Spa Selected Transv Reinforcemen <u>Development</u> spacing/cover Fransverse Re	sed on Shrink binf. Steel cing with #4 bars rerse Spacing: It Area Provided Length Calculation	$\rho = As(1) = As(2) = As(req) = s = #4 bars @As = ons:c = c + Ktr/db =$	0.0002 0.006 0.130 0.130 18.18 18 0.131 3.0 6	in ² (ACI 7.12) in ² in o/c in o/c in ² \longrightarrow OK in (use 2.5)	(Transverse Reinford $\lambda = 1.0$ $\psi_t = 1.0$ $\psi_e = 1.0$ $\psi_s = 0.8$	(lightweight aggregate factor (reinforcement location facto (coating factor) (reinforcement size factor)
Mu/¢bd ² Steel Ratio Steel Req. bas Steel Req. bas Controlling Re Required Spa Selected Transv Reinforcemen <u>Development</u> spacing/cover Fransverse Re Length Req.	sed on Shrink einf. Steel cing with #4 bars rerse Spacing: it Area Provided Length Calculatio dimension einf. Factor	$\rho = A_{s}(1) = A_{s}(2) = A_{s}(req) = S =$ #4 bars @ As = Ons: $c = c + K_{tr}/d_{b} = Ld =$	0.0002 0.006 0.130 0.130 18.18 18 0.131 3.0 6 13.0	in ² (ACI 7.12) in ² in o/c in o/c in ² \longrightarrow OK in (use 2.5) in (ACI 12-1)	(Transverse Reinford $\lambda = 1.0$ $\psi_t = 1.0$ $\psi_e = 1.0$ $\psi_s = 0.8$	(lightweight aggregate factor) (reinforcement location factor)
Mu/φbd ² Steel Ratio Steel Req. bas Steel Req. bas Controlling Re Required Spac Selected Transv Reinforcemen <u>Development</u> spacing/cover Fransverse Re Length Req. Length Availal	sed on Shrink einf. Steel cing with #4 bars rerse Spacing: it Area Provided <u>Length Calculation</u> of dimension einf. Factor	$\rho = As(1) = As(2) = As(req) = s = #4 bars @ As = Ons:c = c + K_{tr}/d_b = Ld = Ld = Ld - sup = $	0.0002 0.006 0.130 0.130 18.18 18 0.131 3.0 6 13.0 0	in ² (ACI 7.12) in ² in o/c in o/c in ² \longrightarrow OK in (use 2.5) in (ACI 12-1) in	(Transverse Reinford $\lambda = 1.0$ $\psi_t = 1.0$ $\psi_e = 1.0$ $\psi_s = 0.8$	(lightweight aggregate factor) (reinforcement location facto (coating factor) (reinforcement size factor)
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