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Symons Engineering Consultants, Inc.

12805 S.E. Foster Road Portland, OR 97236 (503) 760-1353 Fax 762-1962

## MEMO

<i>TO:</i>	Ron Bistline	DATE:	September 19, 2018
FIRM:	716 4 <sup>th</sup> Street Oregon City, OR		
FROM:	Dan Symons		
PROJECT:	2' Gravity Wall in ROW	PROJECT No:	15-08

At your request I have reviewed a 2' high rockery wall proposed in 4<sup>th</sup> Street in front of the above address. If the wall is constructed in accordance with and, at a minimum, to meet or exceed the attached requirements then the installation shall be considered in general conformance with industry standards.



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12805 SE Fos	~~~					<del>wity</del> Boulde	r			Project #	<u>#: 15-08</u>
Portland, OR					GW	= 2 FT	8			Date:	9/19/18
503-760-135	3, fax: 762-	1962				_				Sp⊯	Z GRADE
								13	" 1	SLOPE	GRADE
								Wt		B	ví [≆
Retaining Wa	Address of Concernation and Concernation						1				
W	= 1.5	ft	Wall Base	Width			Î	_1 (米	)		4
Hv	v 2	ft	Wall Ht				(C) (P) 西				ĺ
ні	= 3	ft	Grade Slop	oe Soil Ht		┨ ₌	9	BATTER BATTER	)		
Ht	= 0.5	ft	Toe Depth	Below Gra	ade	N	≥ ‴		<u> </u>	Rv	17
Pb	= 1500	psf	Allowable	Soil Bearin	g	- ``-	L.	Rb1	Db		I X
Pp:	= 300	Psf/ft	Passive So	il Pressure		1					1~1
f=	= 0.6	8	Soil Frictio			1		Ra Da	-	4	Rh N
Ws	= 120	pcf	Soil Unit W	/t		GRADE				H3	
Wr:	- 145	pcf	Rock Unit Wt			t "•"	t <sub>Rp</sub> 1,	$-(\gamma)$	ľ	<u> </u>	
Br=	- 6	<u>.</u>	Wall Batte	r of Face		-1 ~	-	LA A		E	<u>Y</u> _
Sp=	-	2	Grade Slop								
	] <sup>™®®®®®</sup> ≣®®®®®	<u></u>	1			-		R	0	HEEL	
ctive Soil Pre	ssure from	Annen	dix A Chart			-	휜	Wa Wb=	Wt_		
<u>β</u> =		deg	Slope Angl	۱	· · · · · · · · · · · · · · · · · · ·	-	1/3 (Ht -1)	W	-		
·	·						<u>ا ت</u>				7
H=		ft	Retained V	vali Ht	H = Hw + I	Ht	<u> </u>	18"			ļ
H1/H=	-		Ht Ratio	l			<u>                                     </u>				
Kh=	-732 (C)E300 (C)S30 (C)S20 (C)	20	Horizontal								
Kv=	27	psf/ft	Vertical Ac	tive Soil Pr	essure		<u>(</u> ]	-70":2	<u>,</u>		
	l		[			<u> </u>	ļ	for 1 65	$\omega_{\perp}$		
Active Soil Pro	1	· · · · · · · · · · · · · · · · · · ·	<u> </u>			1	L	THICK	-3/4	<u>+(-)</u>	
Rh=	0.19	kips	Horizontal	Force		Rh = (1/2)*	*Kh*H^2	CRUSH	5D		
Rv=	0.08	kips	Vertical For	rce		Rv = (1/2)*	'Kv*H^2	ROCK B	450	 هد ۲۶	
											[
verturning N	loment abo	out Heel	of Wall:			1					
H/3=	0.83	ft	Moment Ar	m				ANG	1.1	AR	
OM=	0.16	k-ft	Overturnin	g Moment		OM = Rh*(	H/3) ,		A		<u>}</u>
				-	1	1		- 5704	IFS	56	SII BE
ertical Reacti	on Force F	rom Bou	lder Rock W	/t:			·····				Care Late
Wt=	1.08	· · · · · · · · · · · · · · · · · · ·	Top width c			Wt = Wb		SFIR	1.7	VET	
Wa=	0.42	-	Wall Batter		th	Wa = H/Br		and the set from		6 alertan	· /
Wb=	1.08		Wall Base V		1	Wb = W - V		LAND	المستقر	ACI	20 70
Ra=	0.08	kips	Batter Verti		۱	Ra = (1/2)*		<u> </u>		-1 6 3.	
Rb=	0.39	1	Base Vertica			Rb = Wb*H		FASTI	17 50	EI	12.3
R=	0.47		Vertical Res	*****		R = Ra + Rb		ENSU	<u> </u>		ILL
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sistive Mom	· · ·					D= = (4 10)+	Ma ( ) M	Ala			
Da=	1.22	ft	Moment Ar	~~~~~~		Da = (1/3)*		NO 11	977	ERLY	142 142
Da= Db=	1.22 0.54	ft ft		~~~~~~		Db = (1/2)*	Wb	NO 11	977	ERA	2/12
Da= Db= X=	1.22 0.54 0.99	ft ft OK	Moment Ari Moment Ari	m		Db = (1/2)* X = (OM + F	Wb	NO // *Db)/R 52/	97) FE	ERA AG B	1/12 
Da= Db=	1.22 0.54	ft ft OK	Moment Ar	m		Db = (1/2)*	Wb	NO 11	97) PE	ER/Y 9 <i>G B</i>	1/12 1/12 1 1
Da= Db= X= RM=	1.22 0.54 0.99 0.46	ft ft OK k-ft	Moment Ari Moment Ari	m		Db = (1/2)* X = (OM + F	Wb	NO 11	977 P F 1 A	ER/S 4 <i>G B</i> V	142 7 7 0105
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DACK OF VAUL NO SURCHARGE LOADS W/1 5' OF BACK OF VA 5" PERFURATED DRAIN V/ SOCK 70 DAYLICHT B" MN. CLE DRAIN ROCK 5107.85 \$ \$ V 369 ~ ~ ò : 0 Landscape Retaining Wall 716-4<sup>th</sup> Ave Oregon City Tiker r 北步

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