

Calculations required to be provided by the Permittee on site for all Inspections

PRRWF20250845

STRUCTURAL CALCULATIONS

Project: 2412 Inter Ave. Pond Walls
2412 Inter Avenue
Puyallup, WA 98372

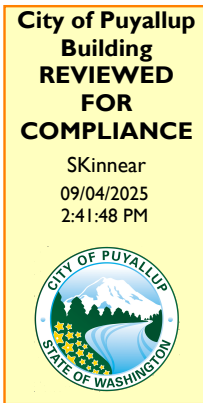
Project No.: 25-039

Civil Engineer: C.E.S. NW, Inc.
429 29th Street NE
Suite D
Puyallup, WA 98372

Client: Through Terra
2412 Inter Avenue
Puyallup, WA 98372 Lakeridge

By: Andy Derrick, P.E., S.E.
Mike Visser, P.E., S.E.

Date: August 11, 2025



ELECTRONICALLY SIGNED
08/11/25



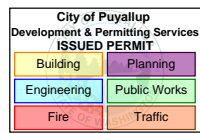
CALCULATION SHEET

Title: _____

Project: INTER AVE, POND WALLSClient: THROUGH-TERRA (25-039)

Date: _____

Page: _____

DETENTION POND WALLSSOIL PARAMETERS

$$Q_A = 2000 \text{ psf} \quad \gamma = 120 \text{ pcf}$$

$$AEP = 40 \text{ pcf (LEVEL BACKFILL)}$$

$$PEP = 240 \text{ pcf (LEVEL GRADE AT TOE)}$$

$$= 165 \text{ pcf (SLOPED GRADE AT TOE)}$$

$$\mu = 0.38 \text{ (INCLUDES FS)}$$

SURCHARGE LOADING

$$\text{SEISMIC} = 8H$$

$$\text{LIVE} = 100 \text{ psf}$$

POND GEOMETRY

$$T/WALL = 62'-0" \text{ (TYP.)}$$

$$B/POND = 58'-0" \text{ (TYP.) - SLOPING @ WEST SIDE}$$

$$\text{MAX. H}_2\text{O STORAGE} = 61'-0"$$

$$\text{FINISH EXT. GRADE} = 62'-0" \text{ (TYP.)}$$

CALCULATION SHEET

City of Puyallup Development & Permitting Services ISSUED PERMIT	
Building	Planning
Engineering	Public Works
Fire	Traffic



Title: _____

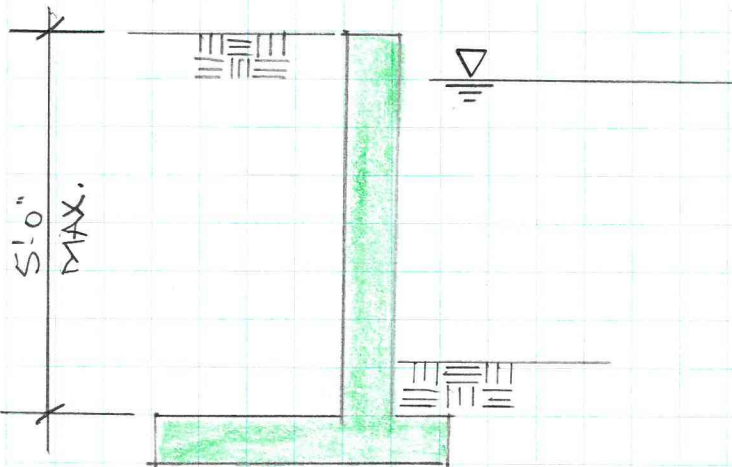
Project: INTER AVE POND WALLS

Client: THROUGH-TERRA (25-039)

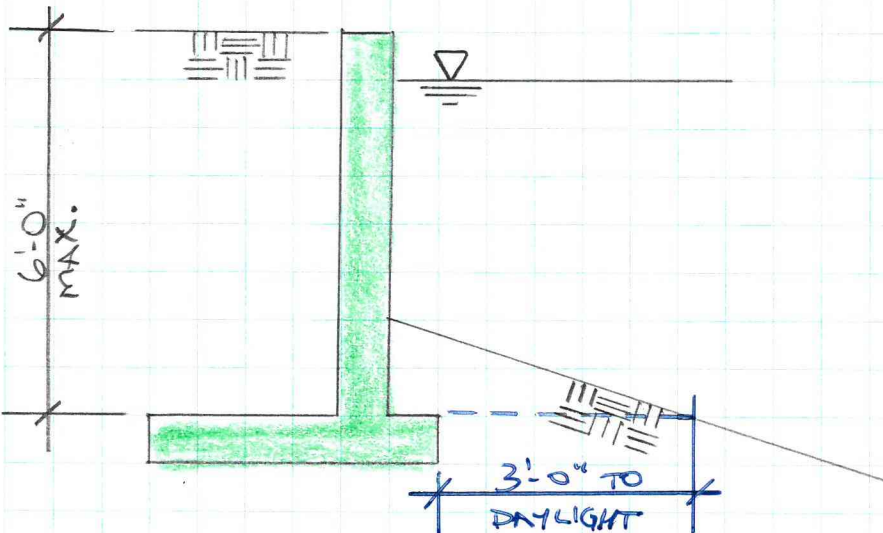
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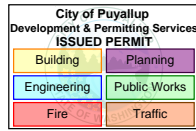
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CASE 1 - TYP. NORTH & SOUTH WALLS



CASE 2 - TYP. WEST WALL





Project: 2412 Inter Ave. (25-039)
 Client: Through-Terra
 Date: 08/11/25

Typ. North and South Retaining Walls - Max. Retained Height = 5' w/ LL

Soil Information			
Allowable Soil Bearing Pressure (q_u) =	2000	psf	
Active Soil Pressure - (AEP) =	40	pcf	
Passive Soil Pressure - Footing (PEP_{ftg}) =	240	pcf	
Passive Soil Pressure - Key (PEP_{key}) =	240	pcf	
Soil Density (γ_{soil}) =	120	pcf	
Coefficient of Friction (μ) =	0.38	(Includes FS)	

Concrete Information			
Concrete Weight (w_c) =	145	psf	
Concrete Strength - Stem ($f'_{c,stem}$) =	4500	psi	
Concrete Strength - Footing ($f'_{c,ftg}$) =	4500	psi	
Reinforcement Strength (f_y) =	60000	psi	
Use Aesthetic Wall Facing?	Yes		
Maximum Reveal =	0.75	in	

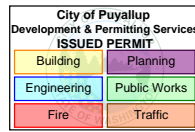
Applied Loads			
Seismic Surcharge (E) =	8.0	*H psf	
LL Surcharge over Heel (S_{heel}) =	100.0	psf	
LL Applied Vertically to Top of Wall (P_{TL}) =	0.0	plf	
Eccentricity of LL (e_{TL}) =	0.0	in	
DL Applied Vertically to Top of Wall (P_{DL}) =	0.0	plf	
Eccentricity of DL (e_{DL}) =	0.0	in	
Horizontal Line Load Applied to Wall (H_{LL}) =	0.0	plf	
Distance from Bottom of Wall to Line Load (y) =	0.0	ft	

Retaining Wall Geometry										
slope	soil cover (ft)	h_{wall} (ft)	$t_{wall,nominal}$ (in)	$t_{wall,design}$ (in)	t_{ftg} (in)	w_{toe} (ft)	w_{heel} (ft)	w_{ftg} (ft)	d_{key} (ft)	
0.0	0.75	5.00	8	7.25	12	0.75	3.00	3.750	0.00	

Terms
slope = slope of backfill - "x" H to 1 V
soil cover = soil cover over toe of footing
h_{wall} = distance from top of wall to top of footing
$t_{wall,nominal}$ = nominal wall thickness
$t_{wall,design}$ = design wall thickness (accounts for reveal)
t_{ftg} = thickness of footing
w_{toe} = width of footing toe
w_{heel} = width of footing heel (includes thickness of wall)
w_{ftg} = total width of footing
d_{key} = depth of key - measured from bottom of footing

Is Slab Present to Resist Sliding Forces? **N**

Summary
Bearing: Maximum Bearing Pressure = 1644 psf - OK
Sliding: Sliding Ratio = 1.06 - OK
Overturning: Overturning Ratio = 2.41 - OK
Walls: Provide 8" Thick Wall w/ #5 Bars @ 18"oc Vert. and #5 Bars @ 18"oc Horiz. - Embed Dowels 6" Min. into Footing
Aesthetic Facing: Yes, maximum reveal = 0.75"
Footing: Provide 3.75' Wide x 12" Thick Footing (Toe Width = 0.75")
Reinforce Toe w/ #5 Bars @ 18"oc (bottom)
Reinforce Heel w/ #5 Bars @ 18"oc (top)
Provide (4) #5 Longitudinal Bars
Key: Key not Required



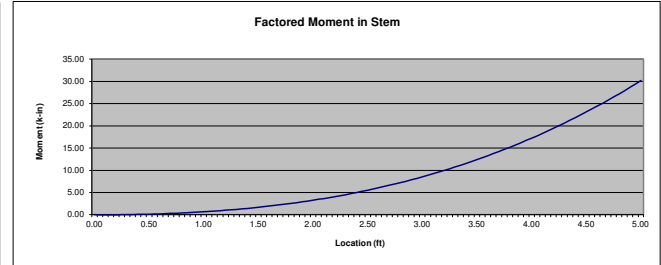
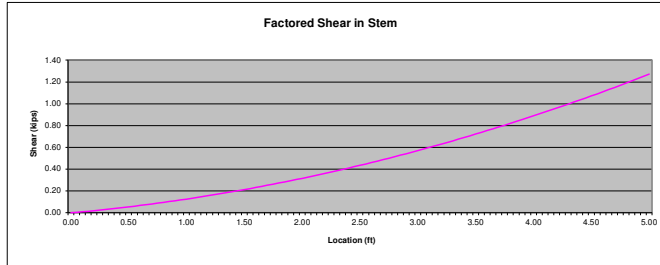
Project: 2412 Inter Ave. (25-039)

Client: Through-Terra

Date: 08/11/25

Typ. North and South Retaining Walls - Max. Retained Height = 5' w/ LL

Wall Design:											
Mu (max):		30.16		k-in/ft		Vu (max):		1.27		k-in	
Bar size	spacing (in)	A _s (sq. in./ft)	d (in)	A _s F _y (k/ft)	a (in)	φM _n (k-in/ft)	φV _n (k/ft)	φV _{n, xfr} (k/ft)			
5	18.0	0.21	5.438	12.40	0.27	59.2	6.57	5.58	OK		

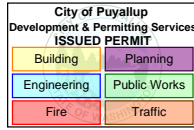


Footings Design: Toe											
Mu (max):		8.49		k-in/ft		Vu (max):		1.84		k/ft	
Bar Size	spacing (in)	A _s (sq. in./ft)	d (in)	A _s F _y (k/ft)	a (in)	φM _n (k-in/ft)	φV _n (k/ft)				
5	18	0.21	8.688	12.40	0.27	95.45	10.49	OK			
Footings Design: Heel											
Mu (max):		36.30		k-in/ft		Vu (max):		2.53		k/ft	
Bar Size	spacing (in)	A _s (sq. in./ft)	d (in)	A _s F _y (k/ft)	a (in)	φM _n (k-in/ft)	φV _n (k/ft)				
5	18	0.21	10.188	12.40	0.27	112.19	12.30	OK			

Sliding:								
Weights					Soil Resistance			
W _{sur} (#/ft)	W _{wall} (#/ft)	W _{hg} (#/ft)	W _{LL} (#/ft)	W _{soil-heel} (#/ft)	W _{soil-toe} (#/ft)	V _{ftg} (plf)	V _{key} (plf)	Σ V _{resisting} (plf)
233	483	544	233	1400	68	0	0	1125
Sliding Forces								
h _{sliding} (ft)	V _{sliding} (plf)	Ratio						
6.00	1060	1.06	OK					

Overturning:						
Resisting Moments (lb-ft/ft)						
Surcharge	Wall	Ftg	Key	Soil _{heel}	Soil _{toe}	ΣRM
595	524	1020	253	3669	25.3125	6085
Overturning Moments						
h _{OT} (ft)	M _{OT} (lb-ft/ft)	Ratio				
6.00	2530	2.41	OK			

Bearing Pressure:							
M _{OT} (lb-ft/ft)	M _{RES} (lb-ft/ft)	M _{NET} (lb-ft/ft)	W _{NET} (#/ft)	e (ft)	q _{heel} (psf)	q _{toe} (psf)	
2530	6085	3555	2961	-0.67	0	1644	OK



Project: 2412 Inter Ave. (25-039)
 Client: Through-Terra
 Date: 08/11/25

Typ. North and South Retaining Walls - Max. Retained Height = 5' w/o LL

Soil Information		
Allowable Soil Bearing Pressure (q_u) =	2000	psf
Active Soil Pressure - (AEP) =	40	pcf
Passive Soil Pressure - Footing (PEP_{ftg}) =	240	pcf
Passive Soil Pressure - Key (PEP_{key}) =	240	pcf
Soil Density (γ_{soil}) =	120	pcf
Coefficient of Friction (μ) =	0.38	(Includes FS)

Concrete Information		
Concrete Weight (w_c) =	145	psf
Concrete Strength - Stem (f'_{c_stem}) =	4500	psi
Concrete Strength - Footing (f'_{c_ftg}) =	4500	psi
Reinforcement Strength (f_y) =	60000	psi
Use Aesthetic Wall Facing?	Yes	
Maximum Reveal =	0.75	in

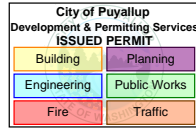
Applied Loads		
Seismic Surcharge (E) =	8.0	*H psf
LL Surcharge over Heel (S_{heel}) =	0.0	psf
LL Applied Vertically to Top of Wall (P_{LL}) =	0.0	plf
Eccentricity of LL (e_{LL}) =	0.0	in
DL Applied Vertically to Top of Wall (P_{DL}) =	0.0	plf
Eccentricity of DL (e_{DL}) =	0.0	in
Horizontal Line Load Applied to Wall (H_{LL}) =	0.0	plf
Distance from Bottom of Wall to Line Load (y) =	0.0	ft

Retaining Wall Geometry										
slope	soil cover (ft)	h_{wall} (ft)	$t_{wall, nominal}$ (in)	$t_{wall, design}$ (in)	t_{ftg} (in)	w_{toe} (ft)	w_{heel} (ft)	w_{ftg} (ft)	d_{key} (ft)	
0.0	0.75	5.00	8	7.25	12	0.75	2.75	3.500	0.00	

Terms
slope = slope of backfill - "x" H to 1 V
soil cover = soil cover over toe of footing
h_{wall} = distance from top of wall to top of footing
$t_{wall, nominal}$ = nominal wall thickness
$t_{wall, design}$ = design wall thickness (accounts for reveal)
t_{ftg} = thickness of footing
w_{toe} = width of footing toe
w_{heel} = width of footing heel (includes thickness of wall)
w_{ftg} = total width of footing
d_{key} = depth of key - measured from bottom of footing

Is Slab Present to Resist Sliding Forces? **N**

Summary
Bearing: Maximum Bearing Pressure = 1350 psf - OK
Sliding: Sliding Ratio = 1.02 - OK
Overturning: Overturning Ratio = 2.36 - OK
Walls: Provide 8" Thick Wall w/ #5 Bars @ 18"oc Vert. and #5 Bars @ 18"oc Horiz. - Embed Dowels 6" Min. into Footing
Aesthetic Facing: Yes, maximum reveal = 0.75"
Footing: Provide 3.5' Wide x 12" Thick Footing (Toe Width = 0.75')
Reinforce Toe w/ #5 Bars @ 18"oc (bottom)
Reinforce Heel w/ #5 Bars @ 18"oc (top)
Provide (3) #5 Longitudinal Bars
Key: Key not Required



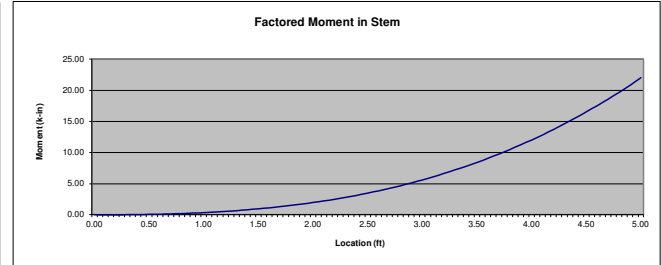
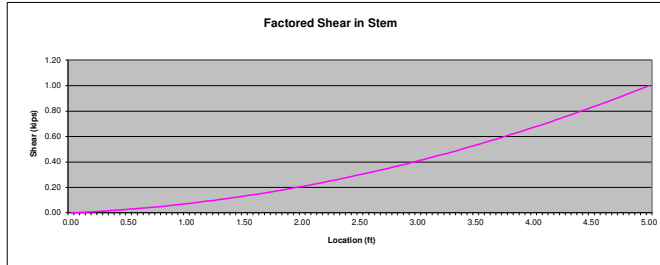
Project: 2412 Inter Ave. (25-039)

Client: Through-Terra

Date: 08/11/25

Typ. North and South Retaining Walls - Max. Retained Height = 5' w/o LL

Wall Design:											
Mu (max):		22.00		k-in/ft		Vu (max):		1.00		k-in	
Bar size	spacing (in)	A _s (sq. in./ft)	d (in)	A _s F _y (k/ft)	a (in)	φM _n (k-in/ft)	φV _n (k/ft)	φV _{n, xfr} (k/ft)			
5	18.0	0.21	5.438	12.40	0.27	59.2	6.57	5.58	OK		

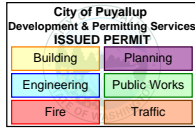


Footing Design: Toe											
Mu (max):		6.96		k-in/ft		Vu (max):		1.51		k/ft	
Bar Size	spacing (in)	A _s (sq. in./ft)	d (in)	A _s F _y (k/ft)	a (in)	φM _n (k-in/ft)	φV _n (k/ft)				
5	18	0.21	8.688	12.40	0.27	95.45	10.49	OK			
Footing Design: Heel											
Mu (max):		24.70		k-in/ft		Vu (max):		1.92		k/ft	
Bar Size	spacing (in)	A _s (sq. in./ft)	d (in)	A _s F _y (k/ft)	a (in)	φM _n (k-in/ft)	φV _n (k/ft)				
5	18	0.21	10.188	12.40	0.27	112.19	12.30	OK			

Sliding:								
Weights					Soil Resistance			
W _{sur} (#/ft)	W _{wall} (#/ft)	W _{ftg} (#/ft)	W _{LL} (#/ft)	W _{soil-heel} (#/ft)	W _{soil-toe} (#/ft)	V _{ftg} (plf)	V _{key} (plf)	Σ V _{resisting} (plf)
0	483	508	0	1250	68	0	0	877
Sliding Forces								
h _{sliding} (ft)	V _{sliding} (plf)	Ratio						
6.00	860	1.02	OK					

Overturning:						
Resisting Moments (lb-ft/ft)						
Surcharge	Wall	Ftg	Key	Soil _{heel}	Soil _{toe}	ΣRM
0	524	888	0	3125	25.3125	4562
Overturning Moments						
h _{OT} (ft)	M _{OT} (lb-ft/ft)	Ratio				
6.00	1930	2.36	OK			

Bearing Pressure:							
M _{OT} (lb-ft/ft)	M _{RES} (lb-ft/ft)	M _{NET} (lb-ft/ft)	W _{NET} (#/ft)	e (ft)	q _{heel} (psf)	q _{toe} (psf)	
1930	4562	2632	2308	-0.61	0	1350	OK



Project: 2412 Inter Ave. (25-039)
 Client: Through-Terra
 Date: 08/11/25

Typ. West Retaining Walls - Max. Retained Height = 6' w/ LL

Soil Information		
Allowable Soil Bearing Pressure (q_u) =	2000	psf
Active Soil Pressure - (AEP) =	40	pcf
Passive Soil Pressure - Footing (PEP_{ftg}) =	165	pcf
Passive Soil Pressure - Key (PEP_{key}) =	165	pcf
Soil Density (γ_{soil}) =	120	pcf
Coefficient of Friction (μ) =	0.38	(Includes FS)

Concrete Information		
Concrete Weight (w_c) =	145	psf
Concrete Strength - Stem (f_{c_stem}) =	4500	psi
Concrete Strength - Footing (f_{c_ftg}) =	4500	psi
Reinforcement Strength (f_y) =	60000	psi
Use Aesthetic Wall Facing?	Yes	
Maximum Reveal =	0.75	in

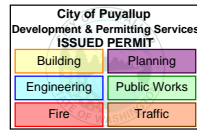
Applied Loads		
Seismic Surcharge (E) =	8.0	*H psf
LL Surcharge over Heel (S_{heel}) =	100.0	psf
LL Applied Vertically to Top of Wall (P_{LL}) =	0.0	plf
Eccentricity of LL (e_{LL}) =	0.0	in
DL Applied Vertically to Top of Wall (P_{DL}) =	0.0	plf
Eccentricity of DL (e_{DL}) =	0.0	in
Horizontal Line Load Applied to Wall (H_{LL}) =	0.0	plf
Distance from Bottom of Wall to Line Load (y) =	0.0	ft

Retaining Wall Geometry										
slope	soil cover (ft)	h_{wall} (ft)	$t_{wall, nominal}$ (in)	$t_{wall, design}$ (in)	t_{ftg} (in)	w_{toe} (ft)	w_{heel} (ft)	w_{ftg} (ft)	d_{key} (ft)	
0.0	0.75	6.00	8	7.25	12	0.75	3.50	4.250	0.00	

Terms
slope = slope of backfill - "x" H to 1 V
soil cover = soil cover over toe of footing
h_{wall} = distance from top of wall to top of footing
$t_{wall, nominal}$ = nominal wall thickness
$t_{wall, design}$ = design wall thickness (accounts for reveal)
t_{ftg} = thickness of footing
w_{toe} = width of footing toe
w_{heel} = width of footing heel (includes thickness of wall)
w_{ftg} = total width of footing
d_{key} = depth of key - measured from bottom of footing

Is Slab Present to Resist Sliding Forces? **N**

Summary
Bearing: Maximum Bearing Pressure = 1999 psf - OK
Sliding: Sliding Ratio = 1.04 - OK
Overturning: Overturning Ratio = 2.28 - OK
Walls: Provide 8" Thick Wall w/ #5 Bars @ 16"oc Vert. and #5 Bars @ 18"oc Horiz. - Embed Dowels 6" Min. into Footing
Aesthetic Facing: Yes, maximum reveal = 0.75"
Footings: Provide 4.25' Wide x 12" Thick Footing (Toe Width = 0.75")
Reinforce Toe w/ #5 Bars @ 16"oc (bottom)
Reinforce Heel w/ #5 Bars @ 18"oc (top)
Provide (4) #5 Longitudinal Bars
Key: Key not Required



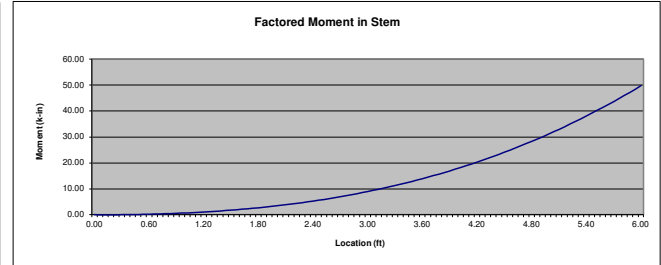
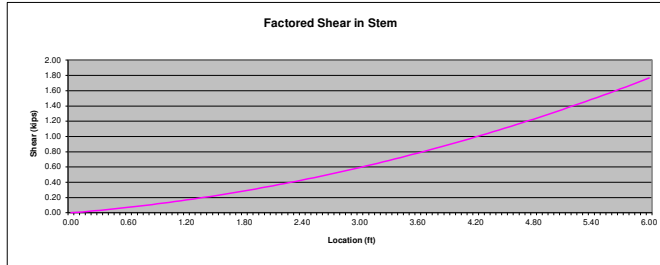
Project: 2412 Inter Ave. (25-039)

Client: Through-Terra

Date: 08/11/25

Typ. West Retaining Walls - Max. Retained Height = 6' w/ LL

Wall Design:											
Mu (max):		49.77		k-in/ft		Vu (max):		1.77		k-in	
Bar size	spacing (in)	A _s (sq. in./ft)	d (in)	A _s F _y (k/ft)	a (in)	φM _n (k-in/ft)	φV _n (k/ft)	φV _{n, xfr} (k/ft)			
5	16.0	0.23	5.438	13.95	0.30	66.4	6.57	6.28	OK		

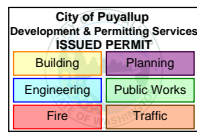


Footings Design: Toe											
Mu (max):		10.36		k-in/ft		Vu (max):		2.25		k/ft	
Bar Size	spacing (in)	A _s (sq. in./ft)	d (in)	A _s F _y (k/ft)	a (in)	φM _n (k-in/ft)	φV _n (k/ft)				
5	16	0.23	8.688	13.95	0.30	107.16	10.49	OK			
Footings Design: Heel											
Mu (max):		60.28		k-in/ft		Vu (max):		3.47		k/ft	
Bar Size	spacing (in)	A _s (sq. in./ft)	d (in)	A _s F _y (k/ft)	a (in)	φM _n (k-in/ft)	φV _n (k/ft)				
5	18	0.21	10.188	12.40	0.27	112.19	12.30	OK			

Sliding:								
Weights					Soil Resistance			
W _{sur} (#/ft)	W _{wall} (#/ft)	W _{hg} (#/ft)	W _{LL} (#/ft)	W _{soil-heel} (#/ft)	W _{soil-toe} (#/ft)	V _{fg} (plf)	V _{key} (plf)	Σ V _{resisting} (plf)
283	580	616	283	2040	68	0	0	1471
Sliding Forces								
h _{sliding} (ft)	V _{sliding} (plf)	Ratio						
7.00	1415	1.04	OK					

Overturning:						
Resisting Moments (lb-ft/ft)						
Surcharge	Wall	Ftg	Key	Soil _{heel}	Soil _{toe}	ΣRM
794	628	1310	307	5842	25.3125	8906
Overturning Moments						
h _{OT} (ft)	M _{OT} (lb-ft/ft)	Ratio				
7.00	3910	2.28	OK			

Bearing Pressure:							
M _{OT} (lb-ft/ft)	M _{RES} (lb-ft/ft)	M _{NET} (lb-ft/ft)	W _{NET} (#/ft)	e (ft)	q _{heel} (psf)	q _{toe} (psf)	
3910	8906	4997	3870	-0.83	0	1999	OK



Project: 2412 Inter Ave. (25-039)
 Client: Through-Terra
 Date: 08/11/25

Typ. West Retaining Walls - Max. Retained Height = 6' w/o LL

Soil Information			
Allowable Soil Bearing Pressure (q_u) =	2000	psf	
Active Soil Pressure - (AEP) =	40	pcf	
Passive Soil Pressure - Footing (PEP_{ftg}) =	165	pcf	
Passive Soil Pressure - Key (PEP_{key}) =	165	pcf	
Soil Density (γ_{soil}) =	120	pcf	
Coefficient of Friction (μ) =	0.38	(Includes FS)	

Concrete Information			
Concrete Weight (w_c) =	145	psf	
Concrete Strength - Stem (f'_{c_stem}) =	4500	psi	
Concrete Strength - Footing (f'_{c_ftg}) =	4500	psi	
Reinforcement Strength (f_y) =	60000	psi	
Use Aesthetic Wall Facing?	Yes		
Maximum Reveal =	0.75	in	

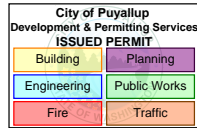
Applied Loads			
Seismic Surcharge (E) =	8.0	*H psf	
LL Surcharge over Heel (S_{heel}) =	0.0	psf	
LL Applied Vertically to Top of Wall (P_{TL}) =	0.0	plf	
Eccentricity of LL (e_{TL}) =	0.0	in	
DL Applied Vertically to Top of Wall (P_{DL}) =	0.0	plf	
Eccentricity of DL (e_{DL}) =	0.0	in	
Horizontal Line Load Applied to Wall (H_{LL}) =	0.0	plf	
Distance from Bottom of Wall to Line Load (y) =	0.0	ft	

Retaining Wall Geometry										
slope	soil cover (ft)	h_{wall} (ft)	$t_{wall, nominal}$ (in)	$t_{wall, design}$ (in)	t_{ftg} (in)	w_{toe} (ft)	w_{heel} (ft)	w_{ftg} (ft)	d_{key} (ft)	
0.0	0.75	6.00	8	7.25	12	0.75	3.50	4.250	0.00	

Terms
slope = slope of backfill - "x" H to 1 V
soil cover = soil cover over toe of footing
h_{wall} = distance from top of wall to top of footing
$t_{wall, nominal}$ = nominal wall thickness
$t_{wall, design}$ = design wall thickness (accounts for reveal)
t_{ftg} = thickness of footing
w_{toe} = width of footing toe
w_{heel} = width of footing heel (includes thickness of wall)
w_{ftg} = total width of footing
d_{key} = depth of key - measured from bottom of footing

Is Slab Present to Resist Sliding Forces? **N**

Summary
Bearing: Maximum Bearing Pressure = 1544 psf - OK
Sliding: Sliding Ratio = 1.06 - OK
Overturning: Overturning Ratio = 2.52 - OK
Walls: Provide 8" Thick Wall w/ #5 Bars @ 18"oc Vert. and #5 Bars @ 18"oc Horiz. - Embed Dowels 6" Min. into Footing
Aesthetic Facing: Yes, maximum reveal = 0.75"
Footing: Provide 4.25' Wide x 12" Thick Footing (Toe Width = 0.75')
Reinforce Toe w/ #5 Bars @ 18"oc (bottom)
Reinforce Heel w/ #5 Bars @ 18"oc (top)
Provide (4) #5 Longitudinal Bars
Key: Key not Required



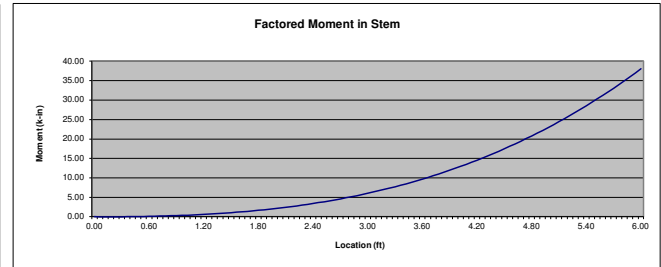
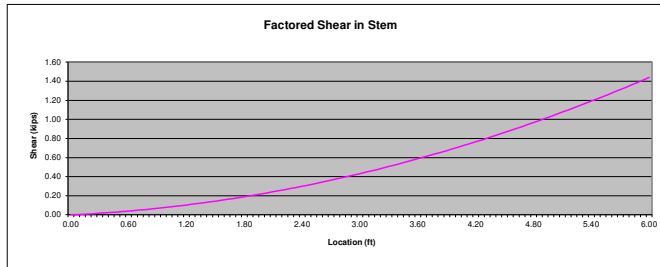
Project: 2412 Inter Ave. (25-039)

Client: Through-Terra

Date: 08/11/25

Typ. West Retaining Walls - Max. Retained Height = 6' w/o LL

Wall Design:											
Mu (max):		38.02		k-in/ft		Vu (max):		1.44		k-in	
Bar size	spacing (in)	A _s (sq. in./ft)	d (in)	A _s F _y (k/ft)	a (in)	φM _n (k-in/ft)	φV _n (k/ft)	φV _{n, xfr} (k/ft)			
5	18.0	0.21	5.438	12.40	0.27	59.2	6.57	5.58	OK		



Footings Design: Toe											
Mu (max):		8.11		k-in/ft		Vu (max):		1.78		k/ft	
Bar Size	spacing (in)	A _s (sq. in./ft)	d (in)	A _s F _y (k/ft)	a (in)	φM _n (k-in/ft)	φV _n (k/ft)				
5	18	0.21	8.688	12.40	0.27	95.45	10.49	OK			
Footings Design: Heel											
Mu (max):		52.23		k-in/ft		Vu (max):		3.01		k/ft	
Bar Size	spacing (in)	A _s (sq. in./ft)	d (in)	A _s F _y (k/ft)	a (in)	φM _n (k-in/ft)	φV _n (k/ft)				
5	18	0.21	10.188	12.40	0.27	112.19	12.30	OK			

Sliding:								
Weights					Soil Resistance			
W _{sur} (#/ft)	W _{wall} (#/ft)	W _{ftg} (#/ft)	W _{LL} (#/ft)	W _{soil-heel} (#/ft)	W _{soil-toe} (#/ft)	V _{ftg} (plf)	V _{key} (plf)	Σ V _{resisting} (plf)
0	580	616	0	2040	68	0	0	1255
Sliding Forces								
h _{sliding} (ft)	V _{sliding} (plf)	Ratio						
7.00	1182	1.06	OK					

Overturning:						
Resisting Moments (lb-ft/ft)						
Surcharge	Wall	Ftg	Key	Soil _{heel}	Soil _{toe}	ΣRM
0	628	1310	0	5842	25.3125	7806
Overturning Moments						
h _{OT} (ft)	M _{OT} (lb-ft/ft)	Ratio				
7.00	3093	2.52	OK			

Bearing Pressure:							
M _{OT} (lb-ft/ft)	M _{RES} (lb-ft/ft)	M _{NET} (lb-ft/ft)	W _{NET} (#/ft)	e (ft)	q _{heel} (psf)	q _{toe} (psf)	
3093	7806	4712	3304	-0.70	11	1544	OK