

R4 SHORING CALCS

New Single Family Residence
5818 W Mercer Way
Mercer Island, WA



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Project: 5818 W Mercer Way

By: JDA

Proj No: 269-2024

Date: 02/20/26

Summary

Update shoring calculations for revised soil pressure diagrams for piles, as provided by PanGeo Incorporated (see pages 2 - 5).

See pages 6-67 for all shoring pile designs (moment equilibrium, shear, moment, deflection); wall height, pile diameter, pile spacing, wall type, and minimum embedment). Note that tieback lengths were derived using a 2.5 KLF tieback resistance; lengths of tiebacks was derived outside of program. See pages 68 to 72 for free body diagrams (soil pressures used, tie back no load zone and length derivation). At East shoring wall, in permanent condition grade will be brought up to 197.5' (E1 - E11). Geotech has provided soil pressures in temporary and permanent conditions to allow the wall to retain the decreased soil height for a higher active pressure; while not relying on passive pressure between the temporary bottom of excavation and permanent soil elevation.



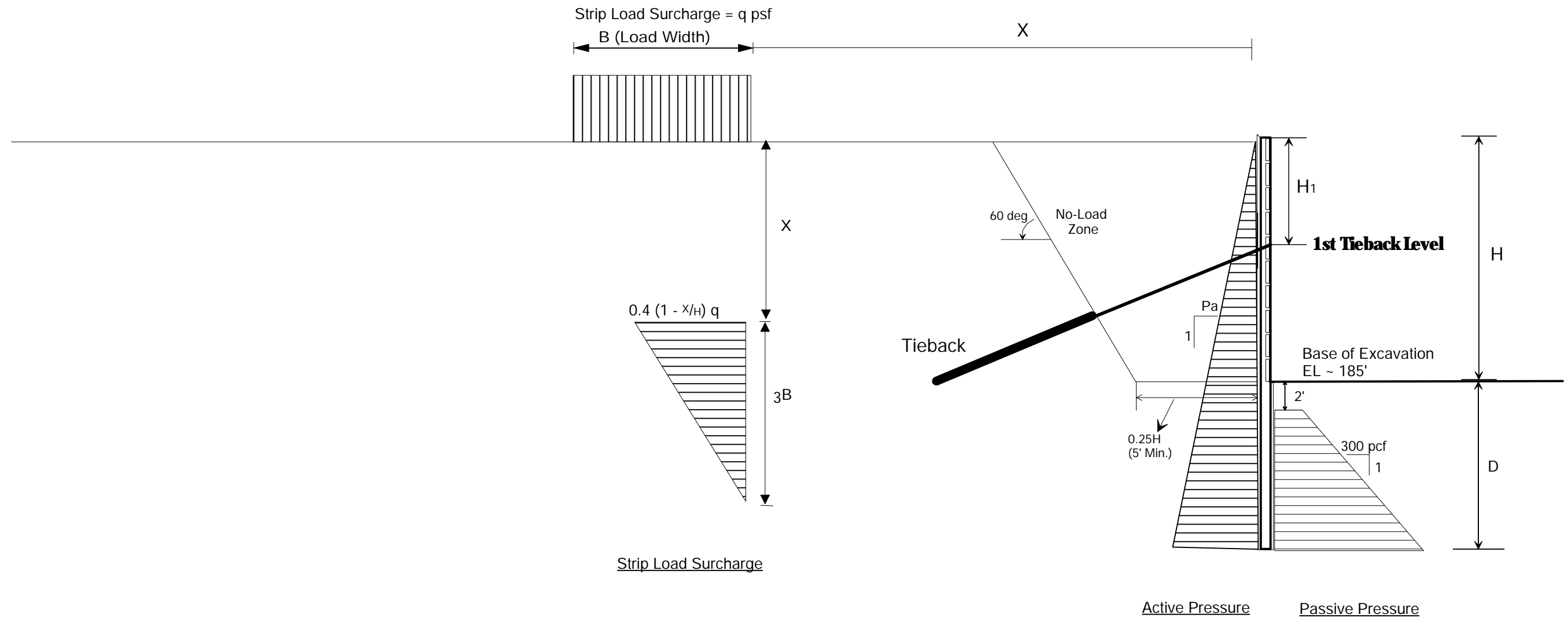
Subject: Shoring Calculation Overview

Project: 5818 W Mercer Way

Client: CenterLine

Project No.: 269-2024

Date: 02/20/26



$P_a = 35H$ psf (Level Background)

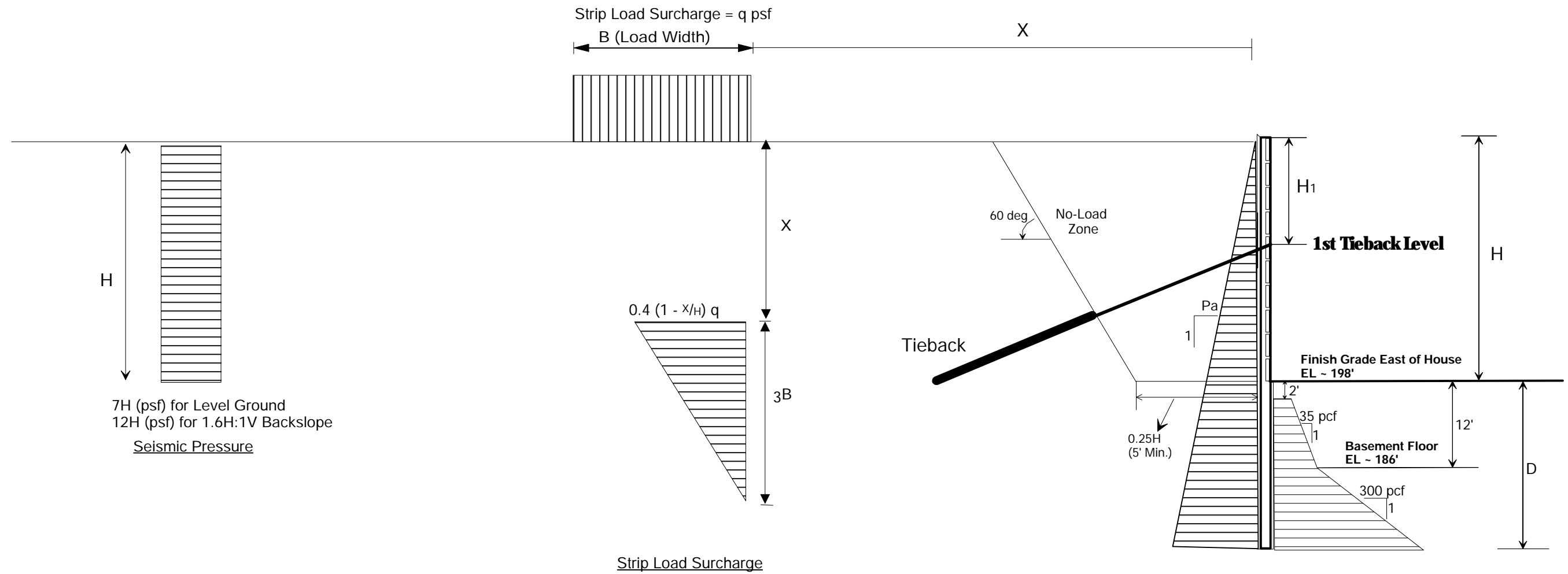
- Notes:
1. Minimum embedment should be at least 8 feet below bottom of excavation.
 2. A factor of safety of 1.5 has been applied to the recommended passive pressure values. No factor of safety has been applied to the recommended active earth pressure values.
 3. Active pressures should be applied over the full width of the pile spacing above the base of the excavation, and over one pile diameter below the base of the excavation.
 4. Surcharge pressures should be applied over the entire length of the loaded area.
 5. Passive pressure should be applied to 2.5 times the diameter of the soldier piles, or pile center-to-center spacing, whichever is less.
 6. For lagging design, refer to report text.

Earth Pressure Factor for Backslope		
Backslope, X:1	Earth Pressure Factor (A)	Pile Locations
Level	1	S1 - S7
3H:1V	1.2	
2H:1V	1.4	E12 - E14
1.6H:1V	1.55	E1 - E11

Tiebacks:
 Minimum Bond Length: 12 feet
 Assume Maximum Allowable Capacity:
 2.5 kip / foot

Note: This Earth Pressure Diagram is for Temporary Tiebacked Soldier Pile Wall Design E1 - E10 Only

	Proposed SFR 5818 West Mercer Way Mercer Island, Washington	DESIGN LATERAL PRESSURES TEMPORARY SOLDIER PILE WALL WITH ONE OR MULTIPLE LEVELS OF TIEBACKS	
		Project No. 25-466	Figure No. 3



$Pa = 49H$ psf (Level Background)

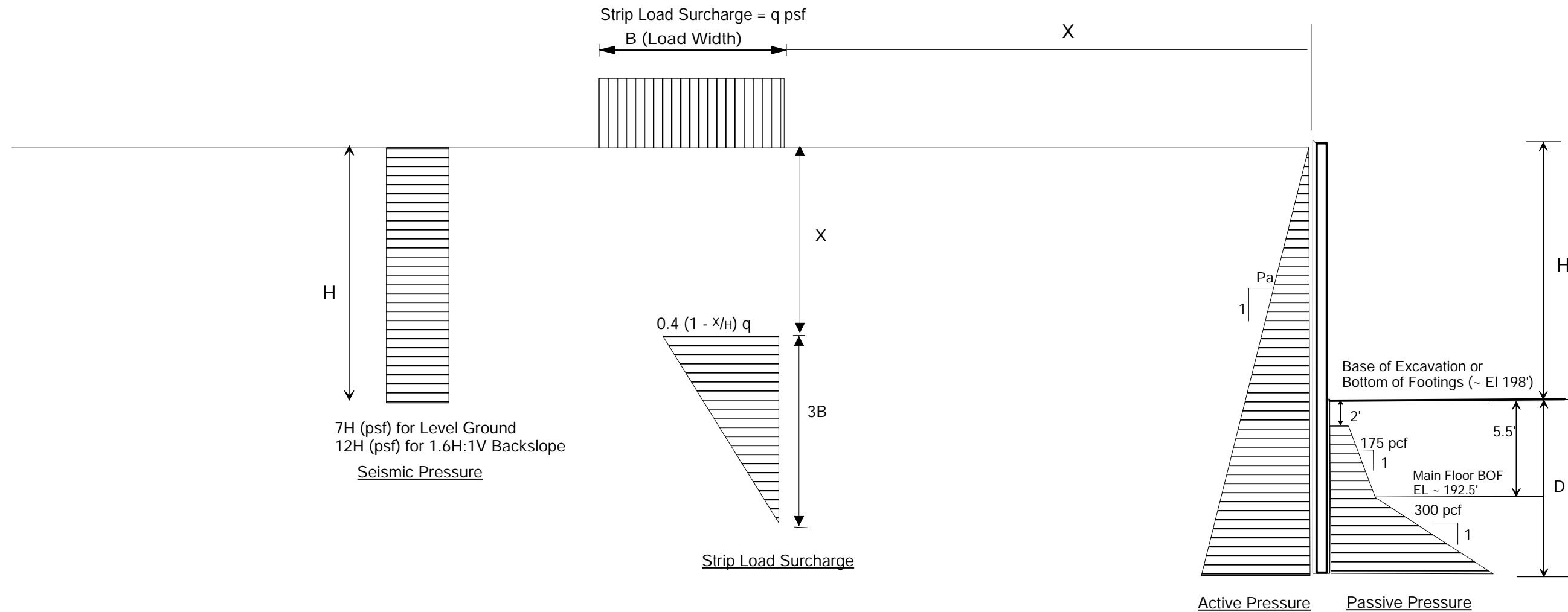
- Notes:
1. Minimum embedment should be at least 8 feet below bottom of excavation.
 2. A factor of safety of 1.5 has been applied to the recommended passive pressure values. No factor of safety has been applied to the recommended active earth pressure values.
 3. Active pressures should be applied over the full width of the pile spacing above the base of the excavation, and over one pile diameter below the base of the excavation.
 4. Surcharge pressures should be applied over the entire length of the loaded area.
 5. Passive pressure should be applied to 2.5 times the diameter of the soldier piles, or pile center-to-center spacing, whichever is less.
 6. For lagging design, refer to report text.

Earth Pressure Factor for Backslope		
Backslope, X:1	Earth Pressure Factor (A)	Pile Locations
Level	1	S1 - S7
3H:1V	1.2	
2H:1V	1.4	E12 - E14
1.6H:1V	1.55	E1 - E11

Tiebacks:
 Minimum Bond Length: 12 feet
 Assume Maximum Allowable Capacity:
 2.5 kip / foot

Note: This Earth Pressure Diagram is for Permanent Tiebacked Soldier Pile Wall Design E1 - E10 Only

	Proposed SFR 5818 West Mercer Way Mercer Island, Washington	DESIGN LATERAL PRESSURES PERMANENT SOLDIER PILE WALL WITH ONE OR MULTIPLE LEVELS OF TIEBACKS E1 - E10	
		Project No. 25-466	Figure No. 4



Notes:

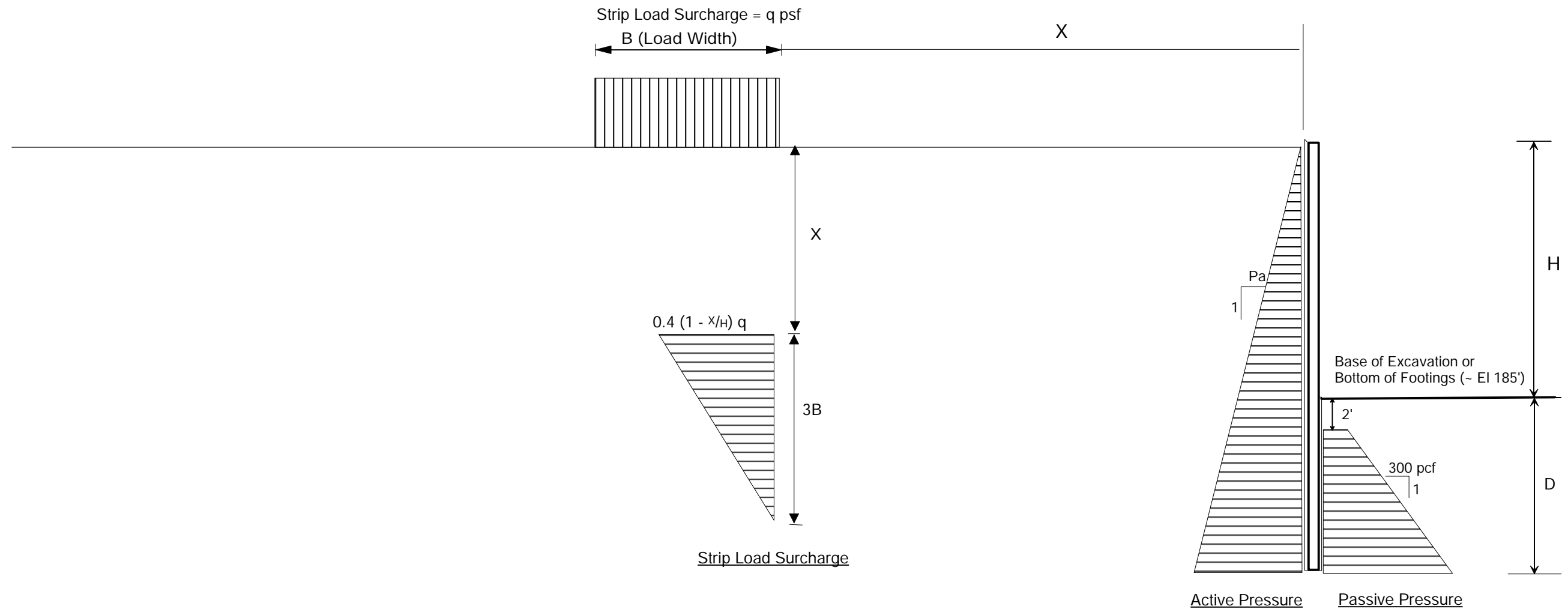
1. Minimum embedment should be at least 8 feet below bottom of excavation.
2. A factor of safety of 1.5 has been applied to the recommended passive pressure values. No factor of safety has been applied to the recommended active earth pressure values.
3. Active pressures should be applied over the full width of the pile spacing above the base of the excavation, and over one pile diameter below the base of the excavation.
4. Surcharge pressures should be applied over the entire length of the loaded area.
5. Passive pressure should be applied to 2.5 times the diameter of the soldier piles, or pile center-to-center spacing, whichever is less.
6. For lagging design, refer to report text.

Temporary Shoring Walls:
 $P_a = 35$ pcf (Level Background)

Permanent Shoring Walls:
 $P_a = 50$ pcf (Level Background)

Earth Pressure Factor for Backslope		
Backslope, X:1	Earth Pressure Factor (A)	Pile Locations
Level	1	S1 - S7
3H:1V	1.2	
2H:1V	1.4	E12 - E14
1.6H:1V	1.55	E1 - E11

Note: This Earth Pressure Diagram is for Cantilever Soldier Pile Wall Design E11 - E14 Only



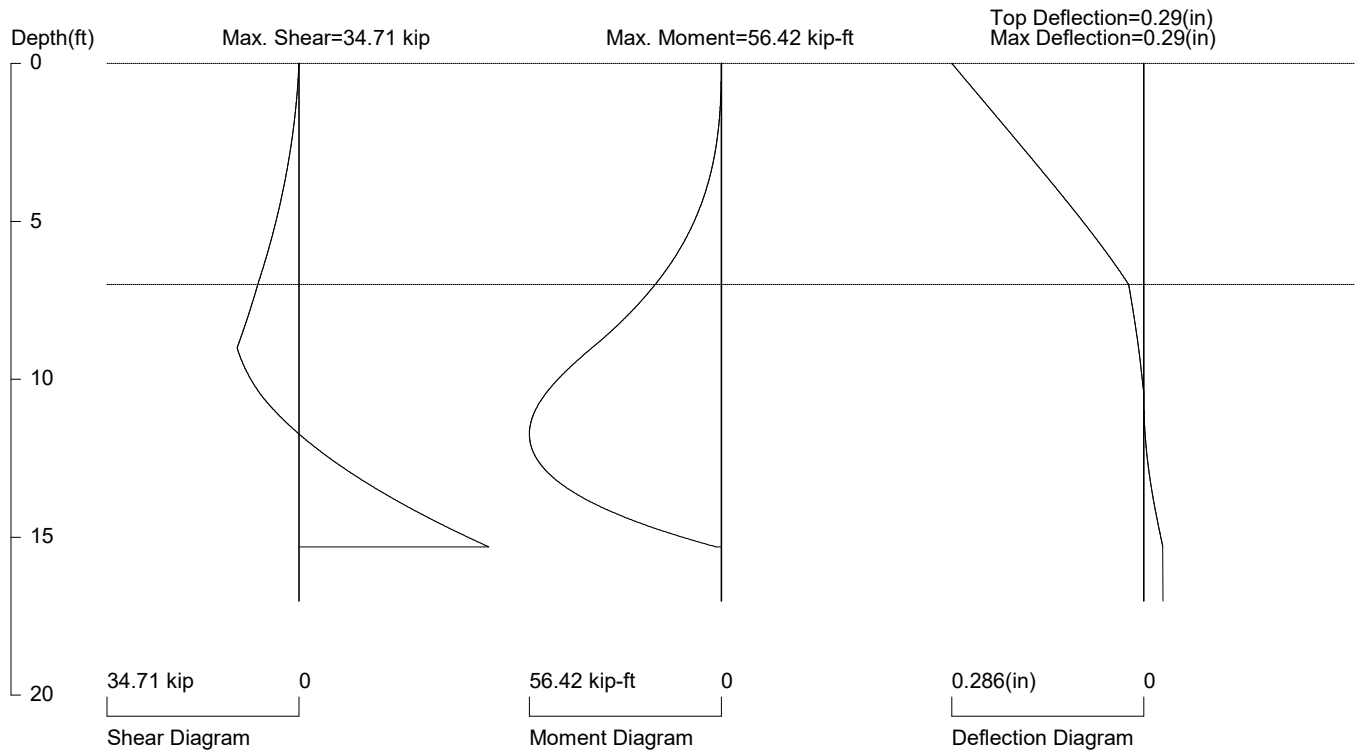
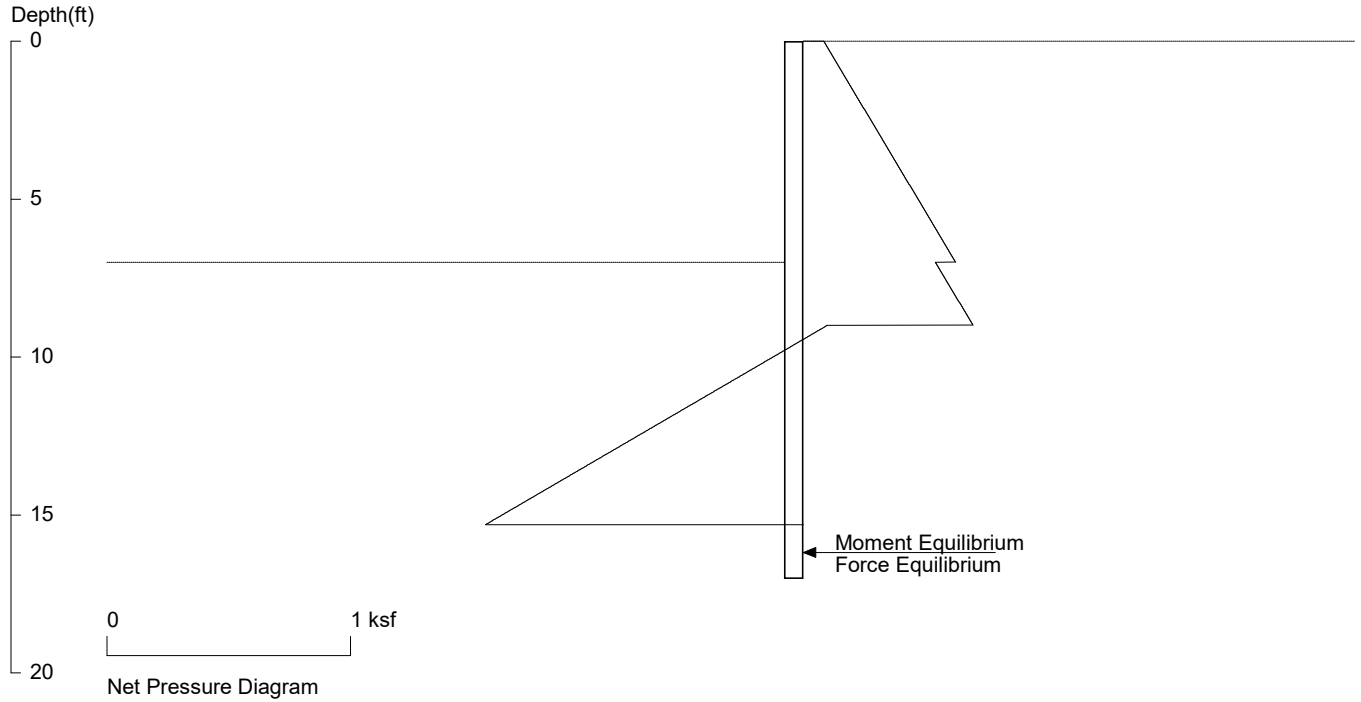
Temporary Shoring Walls:
 $P_a = 35$ pcf (Level Background)

- Notes:
1. Minimum embedment should be at least 8 feet below bottom of excavation.
 2. A factor of safety of 1.5 has been applied to the recommended passive pressure values. No factor of safety has been applied to the recommended active earth pressure values.
 3. Active pressures should be applied over the full width of the pile spacing above the base of the excavation, and over one pile diameter below the base of the excavation.
 4. Surcharge pressures should be applied over the entire length of the loaded area.
 5. Passive pressure should be applied to 2.5 times the diameter of the soldier piles, or pile center-to-center spacing, whichever is less.
 6. For lagging design, refer to report text.

Earth Pressure Factor for Backslope		
Backslope, X:1	Earth Pressure Factor (A)	Pile Locations
Level	1	S1 - S7
3H:1V	1.2	
2H:1V	1.4	E12 - E14
1.6H:1V	1.55	E1 - E11

Note: This Earth Pressure Diagram is for Temporary Cantilever Soldier Pile Wall Design S1 - S7 Only

E0 (10.5 ft @ 6 ft oc) Corner Pile Case



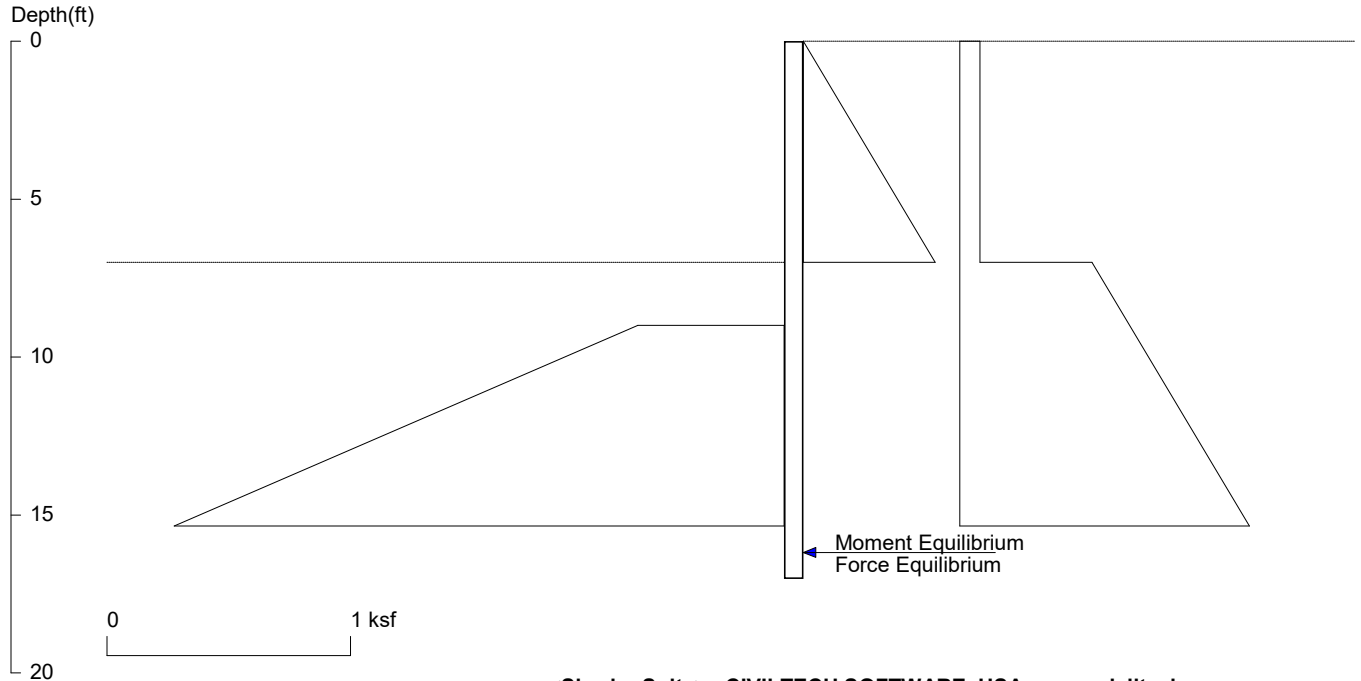
PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

Based on pile spacing: 6.0 foot or meter

User Input Pile, W14x26: E (ksi)=29000.0, I (in⁴)/pile=245.0

File: C:\Users\javid\OneDrive\Desktop\Atlas Projects\269-2024 (5818 West Mercer)\Shoring\R4 Updated\E0_7 ft @ 6 ft oc (Cant).SH8

E0 (10.5 ft @ 6 ft oc) Corner Pile Case



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Wall Height=7.0

Pile Diameter=2.5

Pile Spacing=6.0

Wall Type: 2. Soldier Pile, Drilled

PILE LENGTH: Min. Embedment=10.02 Min. Pile Length=17.02

MOMENT IN PILE: Max. Moment=56.42 per Pile Spacing=6.0 at Depth=11.73

PILE SELECTION:

Request Min. Section Modulus = 20.5 in³/pile=336.22 cm³/pile, Fy= 50 ksi = 345 MPa, Fb/Fy=0.66

W14X26 has Section Modulus = 35.3 in³/pile=578.46 cm³/pile. It is greater than Min. Requirements!

Top Deflection = 0.29(in) based on E (ksi)=29000.00 and I (in⁴)/pile=245.0

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
0	0	7	0.543	.0775
0	.084	7	.084	0
*	Below	Base		
7	.543	100	7.751	.0775

PASSIVE PRESSURES:

Z1	P1	Z2	P2	Slope
9	.6	200	57.90	.3

ACTIVE SPACING:

No.	Z depth	Spacing
1	0.00	3.00
2	10.50	2.50

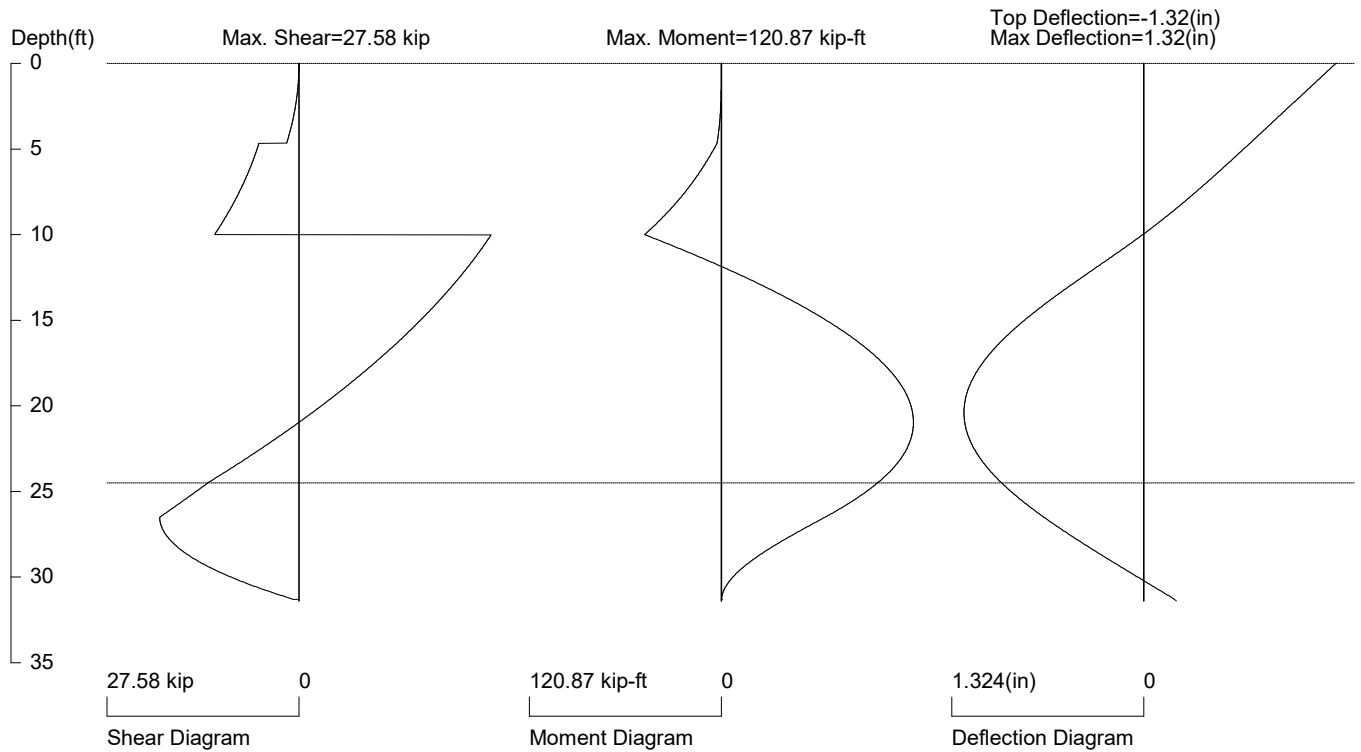
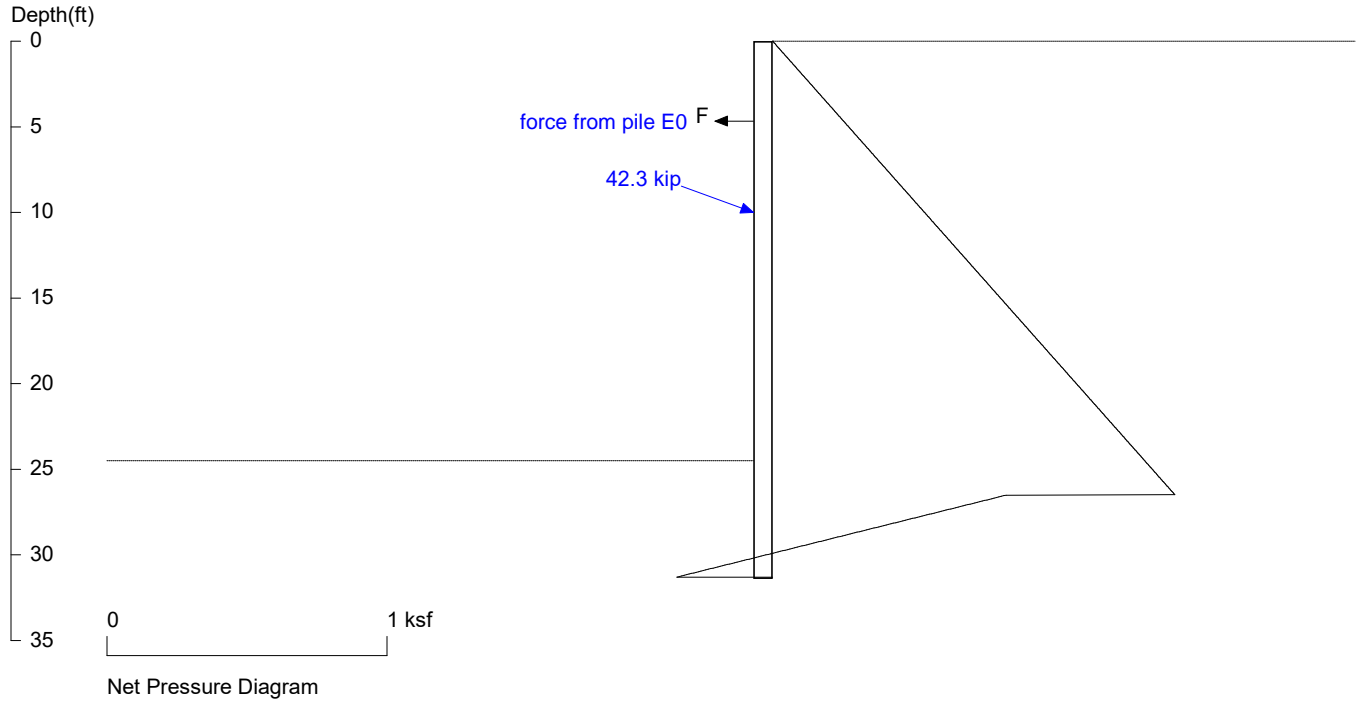
PASSIVE SPACING:

No.	Z depth	Spacing
1	9.00	6.25

UNITS: Width, Spacing, Diameter, Length, and Depth - ft; Force - kip; Moment - kip-ft
Friction, Bearing, and Pressure - ksf; Pres. Slope - kip/ft³; Deflection - in

E1 (24.5 ft @ 6 ft oc) Temporary

Include force from S0



PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

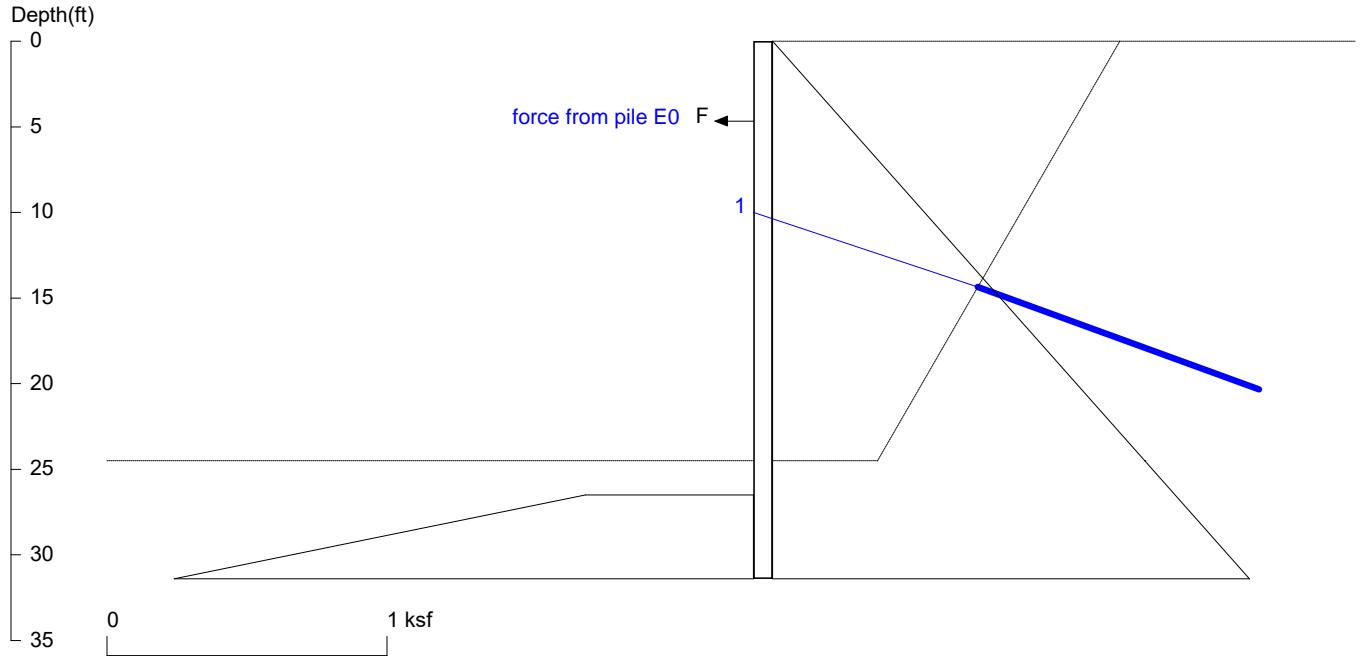
Based on pile spacing: 6.0 foot or meter

First Suitable Pile: W8X58: E (ksi)=29000.0, I (in⁴)/pile=228.0

File: C:\Users\javid\OneDrive\Desktop\Atlas Projects\269-2024 (5818 West Mercer)\Shoring\R4 Updated\E1_24.5 ft @ 6 ft oc (Tieback).SH8

E1 (24.5 ft @ 6 ft oc) Temporary

Include force from S0



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Wall Height=24.5 Pile Diameter=2.5 Pile Spacing=6.0 Wall Type: 4. Secant/Tangent

PILE LENGTH: Min. Embedment=6.90 Min. Pile Length=31.40

MOMENT IN PILE: Max. Moment=120.87 per Pile Spacing=6.0 at Depth=20.96

PILE SELECTION:

Request Min. Section Modulus = 44.0 in³/pile=720.23 cm³/pile, Fy= 50 ksi = 345 MPa, Fb/Fy=0.66

-> Piles meet Min. Section Requirements:

Top Deflection is shown in (in)

- W8X58 (-1.32) HP10X57 (-1.03) W10X45 (-1.22) HP12X53 (-0.77) W12X35 (-1.06)
- HP13X60 (-0.60) HP14X73 (-0.41) W14X34 (-0.89) W16X31 (-0.81) HP16X88 (-0.27)
- W16X89 (-0.23) HP16X101 (-0.23) W16X100 (-0.20) HP16X121 (-0.19)

BRACE FORCE: Strut, Tieback, Plate Anchor, Deadman, Sheet Pile as Anchor

No. & Type	Depth	Angle	Space	Total F.	Horiz. F.	Vert. F.	L_free	Fixed Length
1. Tieback	10.0	20.0	6.0	42.3	39.7	14.5	12.7	26.9

UNITS: Width,Diameter,Spacing,Length,Depth,and Height - ft; Force - kip; Bond Strength and Pressure - ksf

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
0	0	24.5	1.329	.05425
*	Below	Base		
24.5	1.329	125	6.781	.05425

PASSIVE PRESSURES:

Z1	P1	Z2	P2	Slope
26.5	.6	200	52.65	.3

ACTIVE SPACING:

No.	Z depth	Spacing
1	0.00	3.00
2	24.50	2.50

PASSIVE SPACING:

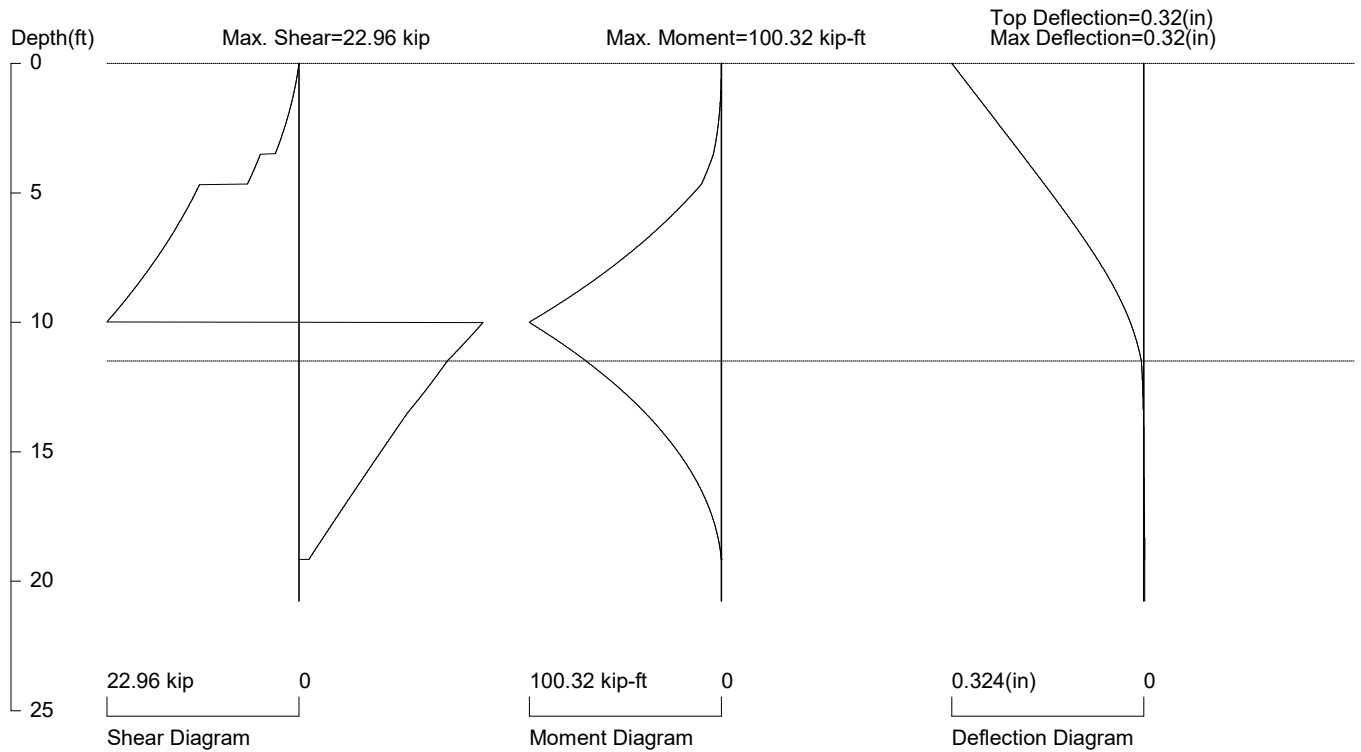
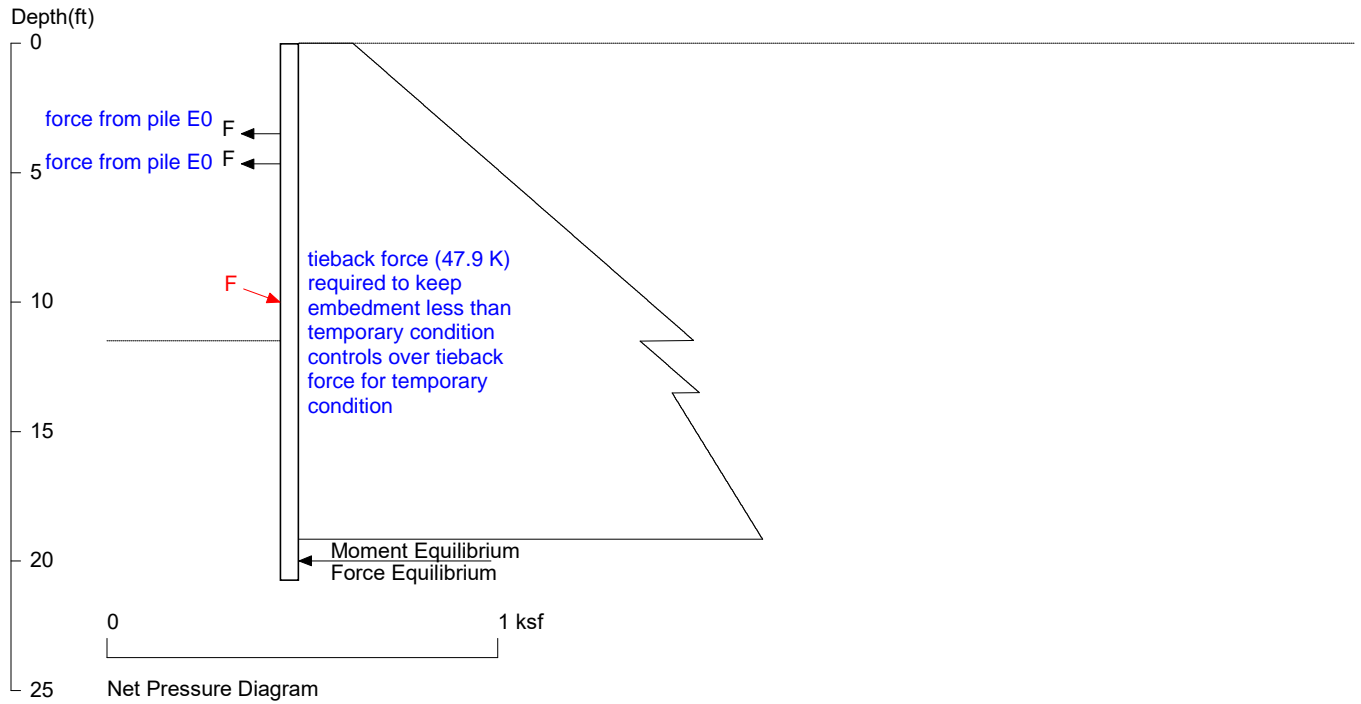
No.	Z depth	Spacing
1	24.50	6.00

EXTERNAL FORCE ACTING ON WALL (Pushing on Wall - Positive; Against Wall - Negative)

No.	Z force	Force	Angle	Spacing
1	4.67	3.99	0.0	6.00

UNITS: Width, Spacing, Diameter, Length, and Depth - ft; Force - kip; Moment - kip-ft
Friction, Bearing, and Pressure - ksf; Pres. Slope - kip/ft³; Deflection - in

E1 (24.5 ft @ 6 ft oc) Permanent Corner Pile Case



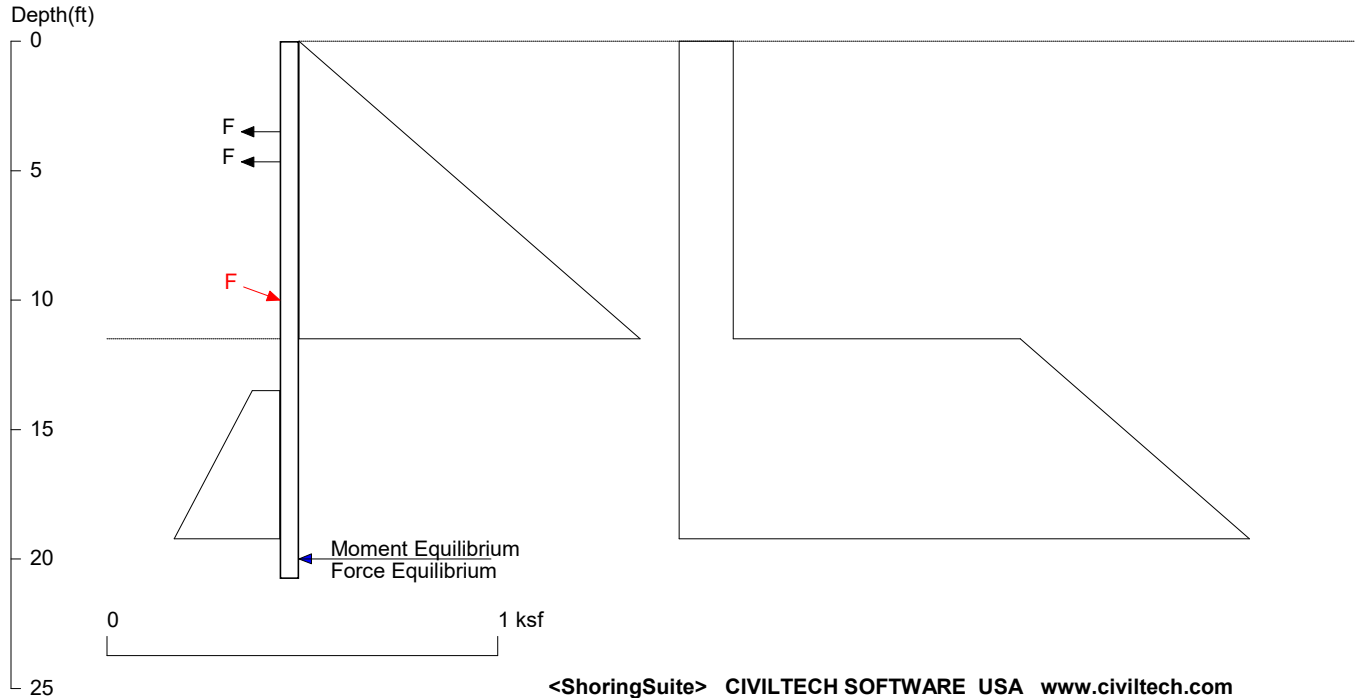
PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

Based on pile spacing: 6.0 foot or meter

User Input Pile, W18x60: E (ksi)=29000.0, I (in⁴)/pile=984.0

File: C:\Users\javid\OneDrive\Desktop\Atlas Projects\269-2024 (5818 West Mercer)\Shoring\R4 Updated\E1_24.5 ft @ 6 ft oc (Tieback) Permanent.SH8

E1 (24.5 ft @ 6 ft oc) Permanent Corner Pile Case



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Date: 2/24/2026

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Wall Height=11.5 Pile Diameter=2.5 Pile Spacing=6.0 Wall Type: 2. Soldier Pile, Drilled

PILE LENGTH: Min. Embedment=9.27 Min. Pile Length=20.77

MOMENT IN PILE: Max. Moment=100.32 per Pile Spacing=6.0 at Depth=10.01

PILE SELECTION:

Request Min. Section Modulus = 36.5 in³/pile=597.83 cm³/pile, F_y= 50 ksi = 345 MPa, F_b/F_y=0.66

W18X60 has Section Modulus = 108.0 in³/pile=1769.80 cm³/pile. It is greater than Min. Requirements!

Top Deflection = 0.32(in) based on E (ksi)=29000.00 and I (in⁴)/pile=984.0

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
0	0	11.5	0.873	.07595
0	.138	11.5	.138	0.000000
*	Below	Base		
11.5	.873	125	9.493	.07595

PASSIVE PRESSURES:

Z1	P1	Z2	P2	Slope
13.5	.07	23.5	0.420	.035

ACTIVE SPACING:

No.	Z depth	Spacing
1	0.00	3.00
2	11.50	2.50

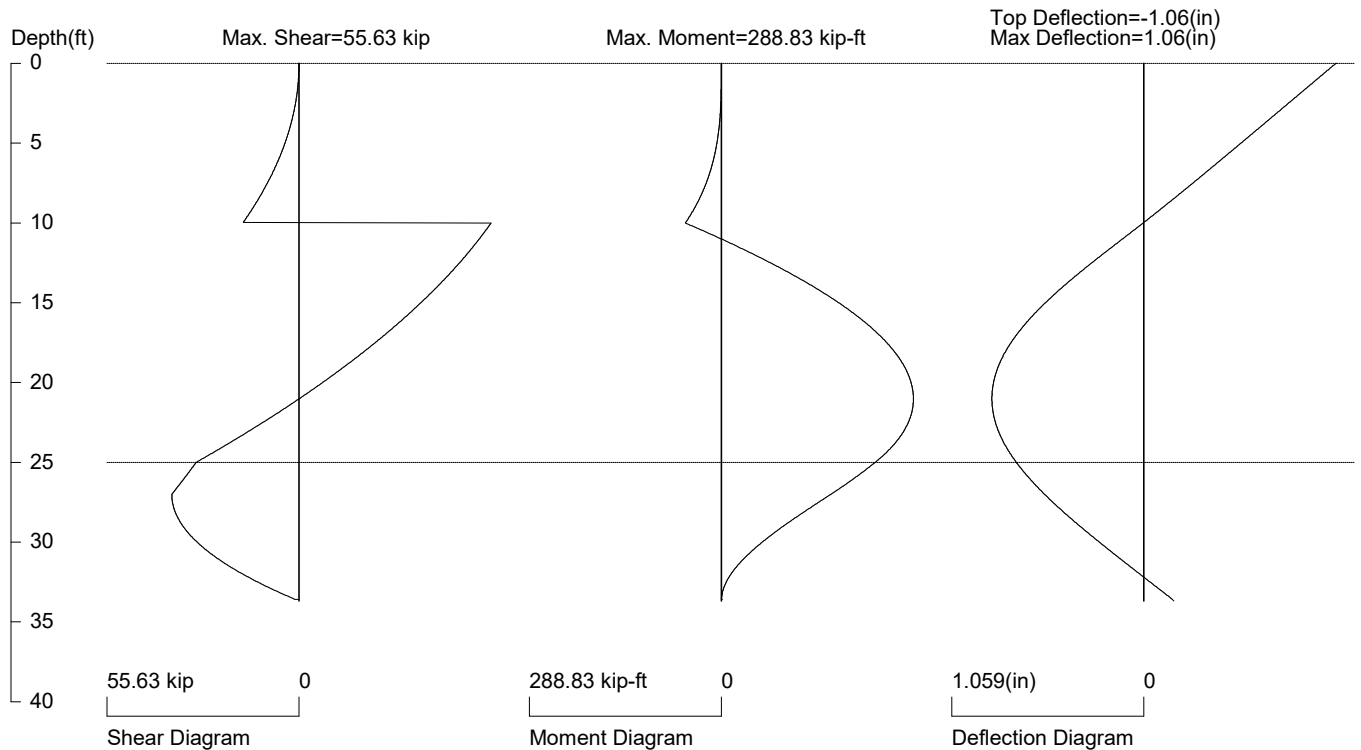
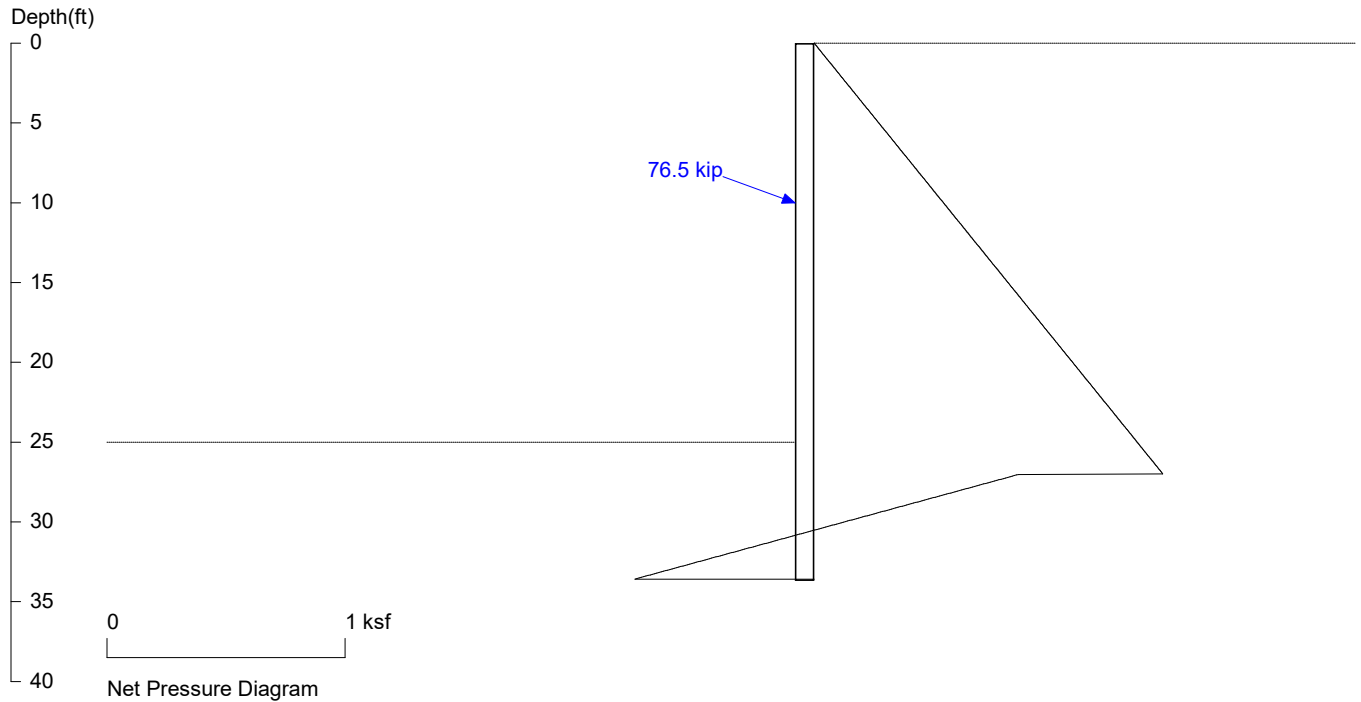
PASSIVE SPACING:

No.	Z depth	Spacing
1	11.50	6.00

EXTERNAL FORCE ACTING ON WALL (Pushing on Wall - Positive; Against Wall - Negative)				
No.	Z force	Force	Angle	Spacing
1	3.50	1.76	0.0	6.00
2	4.67	5.70	0.0	6.00
3	10.00	-47.90	20.0	6.00

UNITS: Width, Spacing, Diameter, Length, and Depth - ft; Force - kip; Moment - kip-ft
Friction, Bearing, and Pressure - ksf; Pres. Slope - kip/ft³; Deflection - in

E2, E4-E7 (25 ft @ 6 ft oc) Temporary



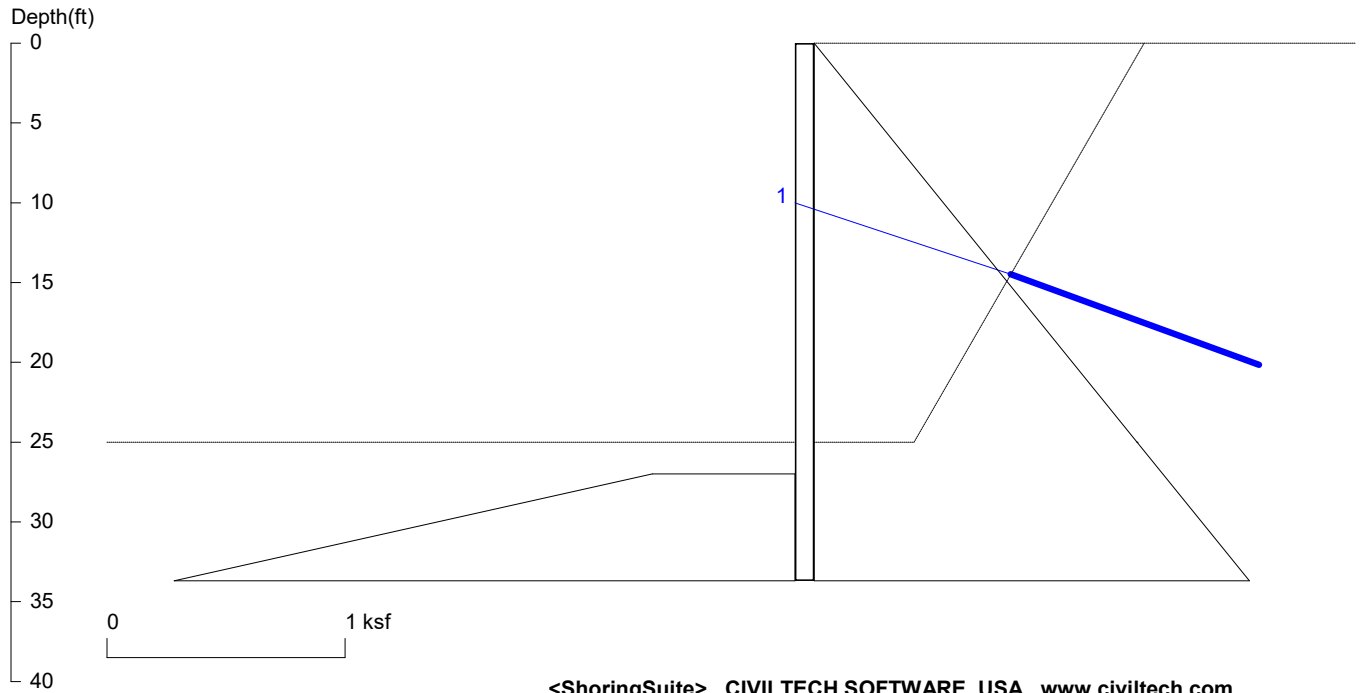
PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

Based on pile spacing: 6.0 foot or meter

User Input Pile, W18X60: E (ksi)=29000.0, I (in⁴)/pile=984.0

File: C:\Users\javid\OneDrive\Desktop\Atlas Projects\269-2024 (5818 West Mercer)\Shoring\R4 Updated\E2, E4-E7_25 ft @ 6 ft oc (Tieback).SH8

E2, E4-E7 (25 ft @ 6 ft oc) Temporary



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Date: 2/24/2026

File: C:\Users\javid\OneDrive\Desktop\Atlas Projects\269-2024 (5818 West Mercer)\Shoring\R4 Updated\E2, E4-E7_25 ft @

Wall Height=25.0 Pile Diameter=2.5 Pile Spacing=6.0 Wall Type: 2. Soldier Pile, Drilled

PILE LENGTH: Min. Embedment=8.69 Min. Pile Length=33.69

MOMENT IN PILE: Max. Moment=288.83 per Pile Spacing=6.0 at Depth=21.03

PILE SELECTION:

Request Min. Section Modulus = 105.0 in³/pile=1721.14 cm³/pile, Fy= 50 ksi = 345 MPa, Fb/Fy=0.66

W18X60 has Section Modulus = 108.0 in³/pile=1769.80 cm³/pile. It is greater than Min. Requirements!

Top Deflection = -1.06(in) based on E (ksi)=29000.00 and I (in⁴)/pile=984.0

BRACE FORCE: Strut, Tieback, Plate Anchor, Deadman, Sheet Pile as Anchor

No. & Type	Depth	Angle	Space	Total F.	Horiz. F.	Vert. F.	L_free	Fixed Length
1. Tieback	10.0	20.0	6.0	76.5	71.9	26.2	13.1	48.7

UNITS: Width,Diameter,Spacing,Length,Depth,and Height - ft; Force - kip; Bond Strength and Pressure - ksf

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
0	0	25	1.356	.05425
*	Below	Base		
25	1.356	125	6.781	.05425

PASSIVE PRESSURES:

Z1	P1	Z2	P2	Slope
27	.6	200	52.50	.3

ACTIVE SPACING:

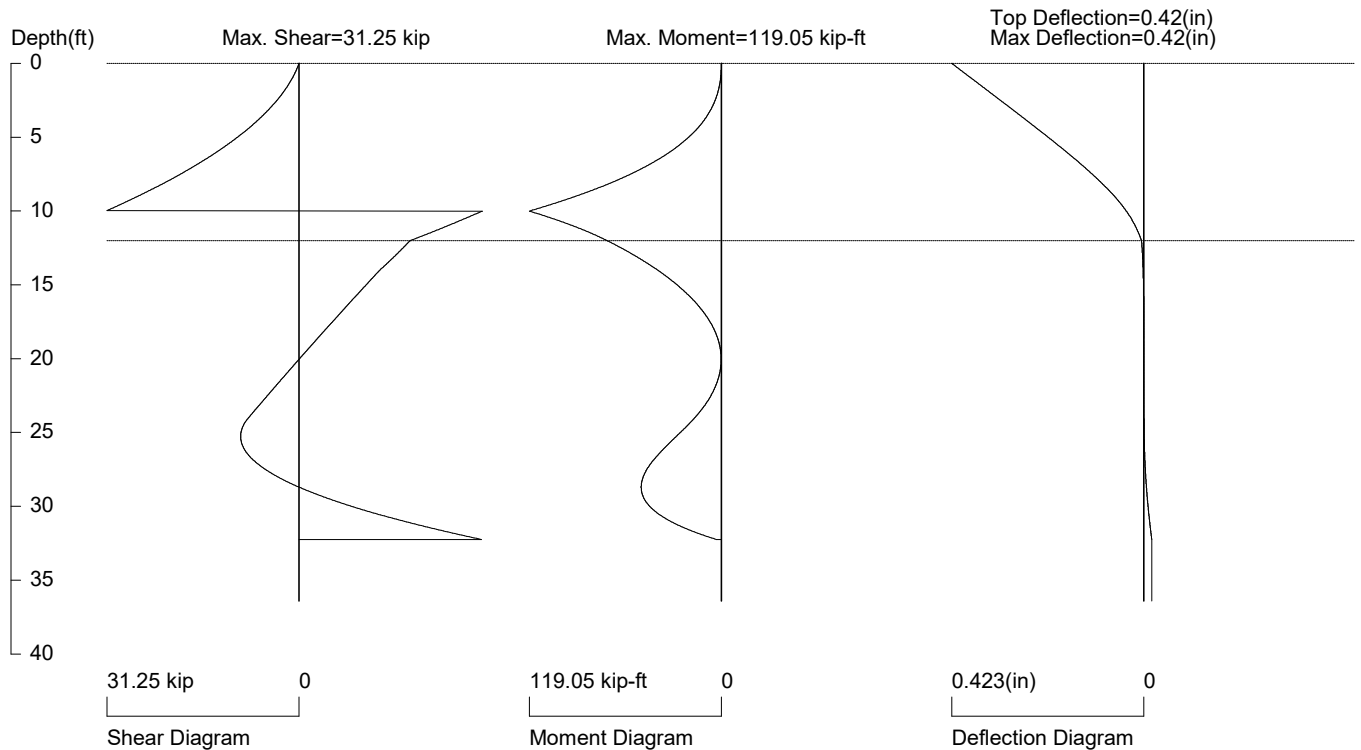
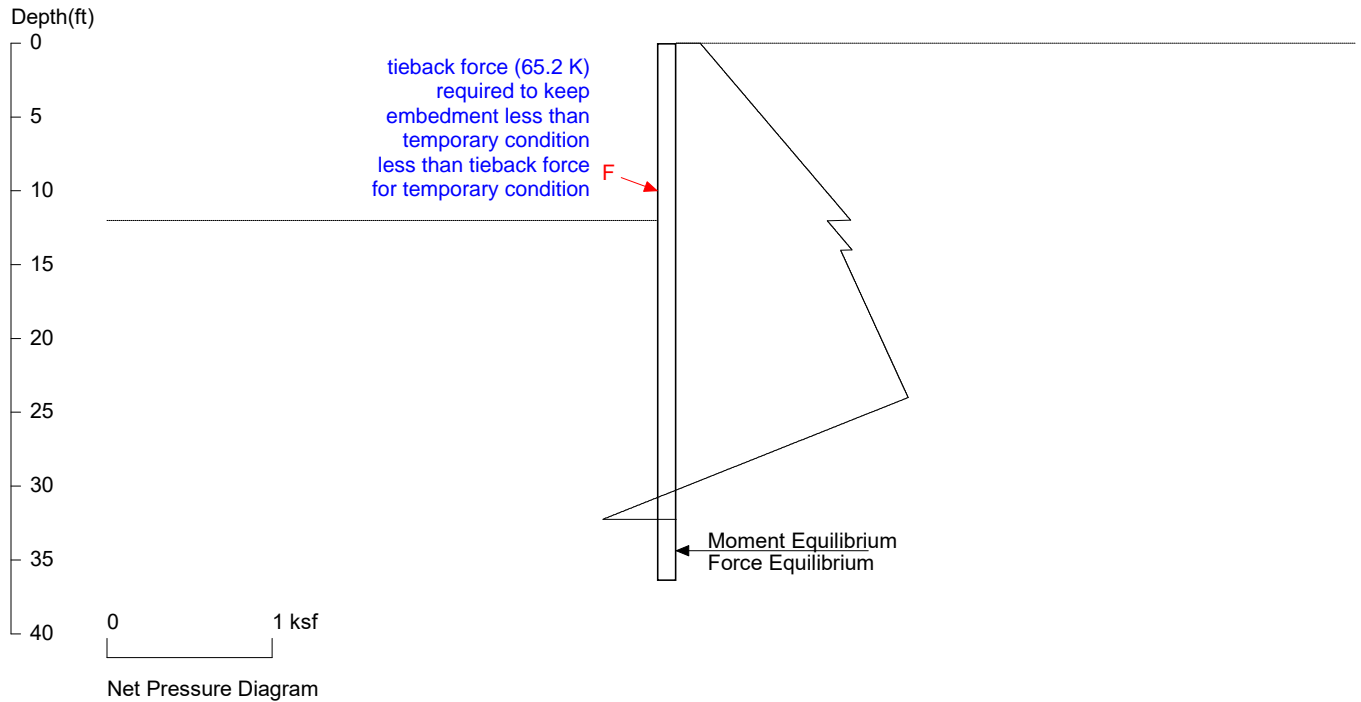
No.	Z depth	Spacing
1	0.00	6.00
2	25.00	2.50

PASSIVE SPACING:

No.	Z depth	Spacing
1	25.00	6.00

UNITS: Width, Spacing, Diameter, Length, and Depth - ft; Force - kip; Moment - kip-ft
Friction, Bearing, and Pressure - ksf; Pres. Slope - kip/ft³; Deflection - in

E2, E4-E7 (25 ft @ 6 ft oc) Permanent



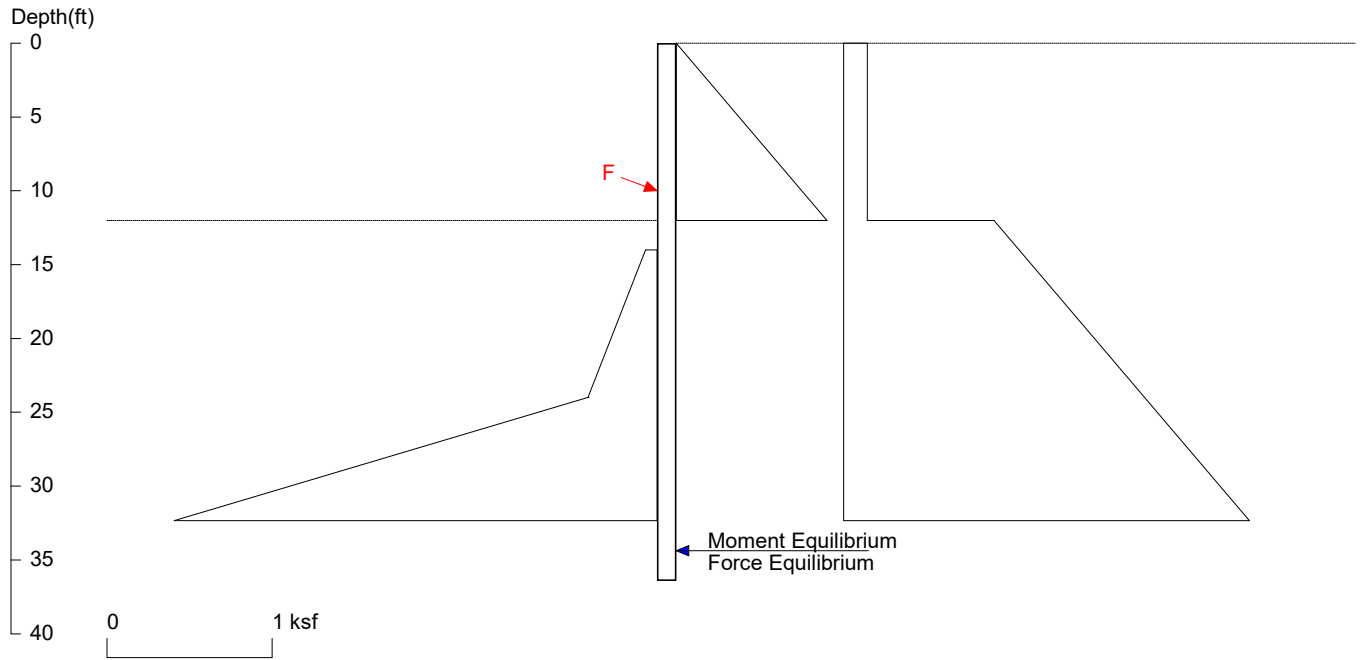
PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

Based on pile spacing: 6.0 foot or meter

User Input Pile, W18X60: E (ksi)=29000.0, I (in⁴)/pile=984.0

File: C:\Users\javid\OneDrive\Desktop\Atlas Projects\269-2024 (5818 West Mercer)\Shoring\R4 Updated\E2, E4-E7_25 ft @ 6 ft oc (Tieback) Permanent.SH8

E2, E4-E7 (25 ft @ 6 ft oc) Permanent



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File: C:\Users\javid\OneDrive\Desktop\Atlas Projects\269-2024 (5818 West Mercer)\Shoring\R4 Updated\E2, E4-E7_25 ft @

Wall Height=12.0 Pile Diameter=2.5 Pile Spacing=6.0 Wall Type: 2. Soldier Pile, Drilled

PILE LENGTH: Min. Embedment=24.41 Min. Pile Length=36.41

MOMENT IN PILE: Max. Moment=119.05 per Pile Spacing=6.0 at Depth=10.00

PILE SELECTION:

Request Min. Section Modulus = 43.3 in³/pile=709.41 cm³/pile, F_y= 50 ksi = 345 MPa, F_b/F_y=0.66

W18X60 has Section Modulus = 108.0 in³/pile=1769.80 cm³/pile. It is greater than Min. Requirements!

Top Deflection = 0.42(in) based on E (ksi)=29000.00 and I (in⁴)/pile=984.0

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
0	0	12	0.911	.07595
0	.144	12	.144	0.000000
*	Below	Base		
12	.911	125	9.493	.07595

PASSIVE PRESSURES:

Z1	P1	Z2	P2	Slope
14	.07	24	0.420	.035
24	.42	250	68.22	.3

ACTIVE SPACING:

No.	Z depth	Spacing
1	0.00	6.00
2	12.00	2.50

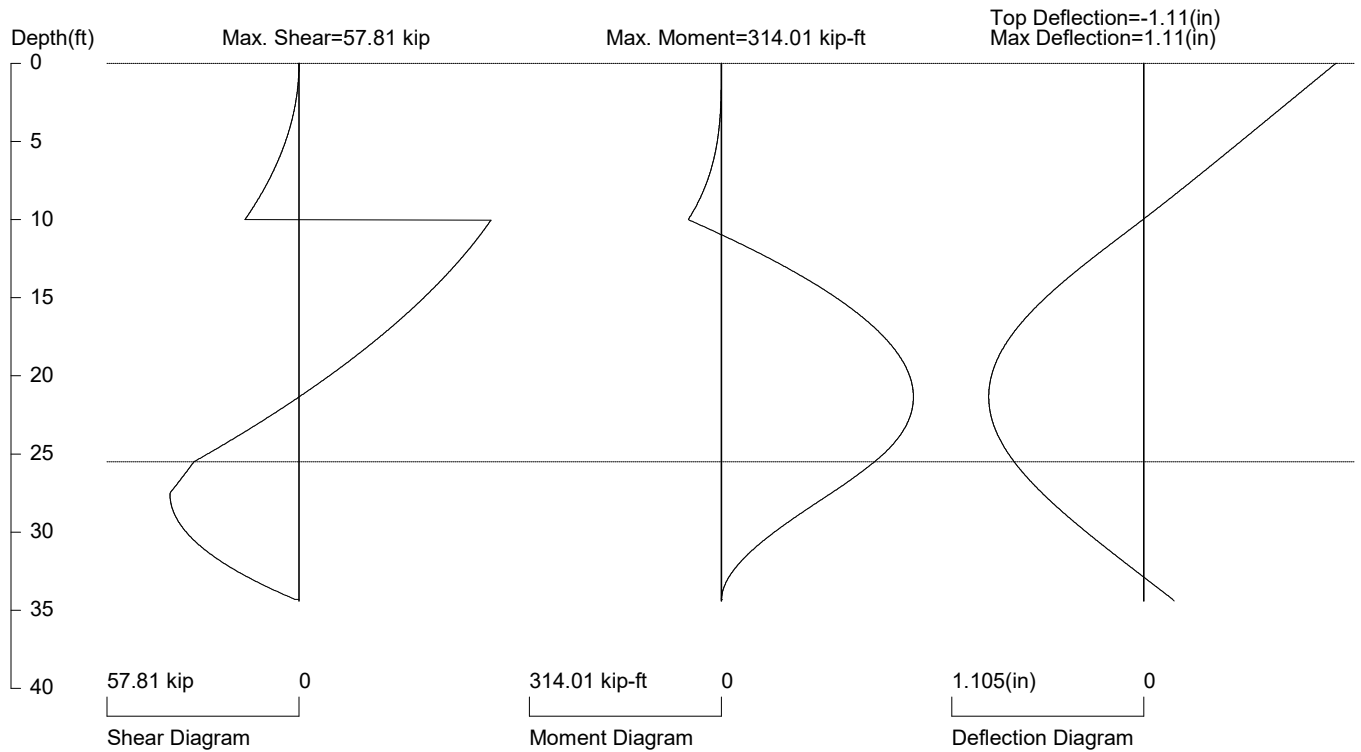
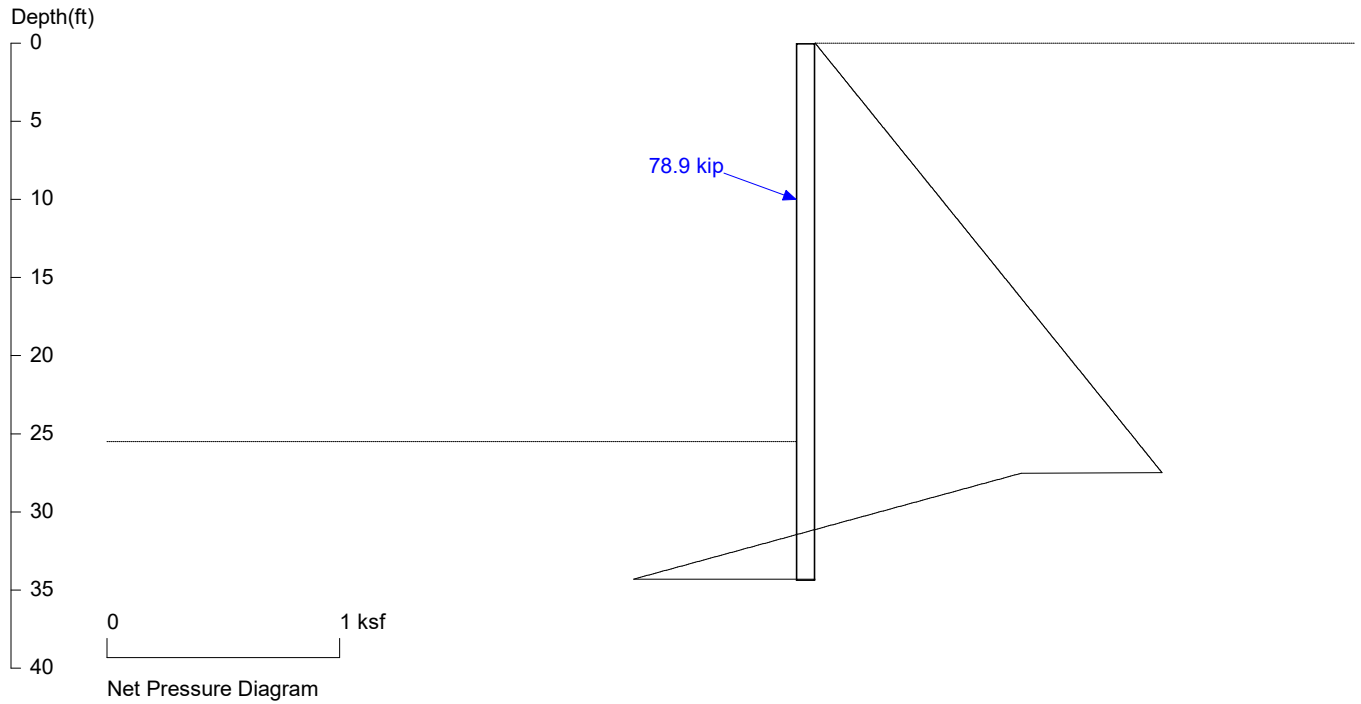
PASSIVE SPACING:

No.	Z depth	Spacing
1	12.00	6.00

EXTERNAL FORCE ACTING ON WALL (Pushing on Wall - Positive; Against Wall - Negative)				
No.	Z force	Force	Angle	Spacing
1	10.00	-65.20	20.0	6.00

UNITS: Width, Spacing, Diameter, Length, and Depth - ft; Force - kip; Moment - kip-ft
Friction, Bearing, and Pressure - ksf; Pres. Slope - kip/ft³; Deflection - in

E3 (25.5 ft @ 6 ft oc) Temporary



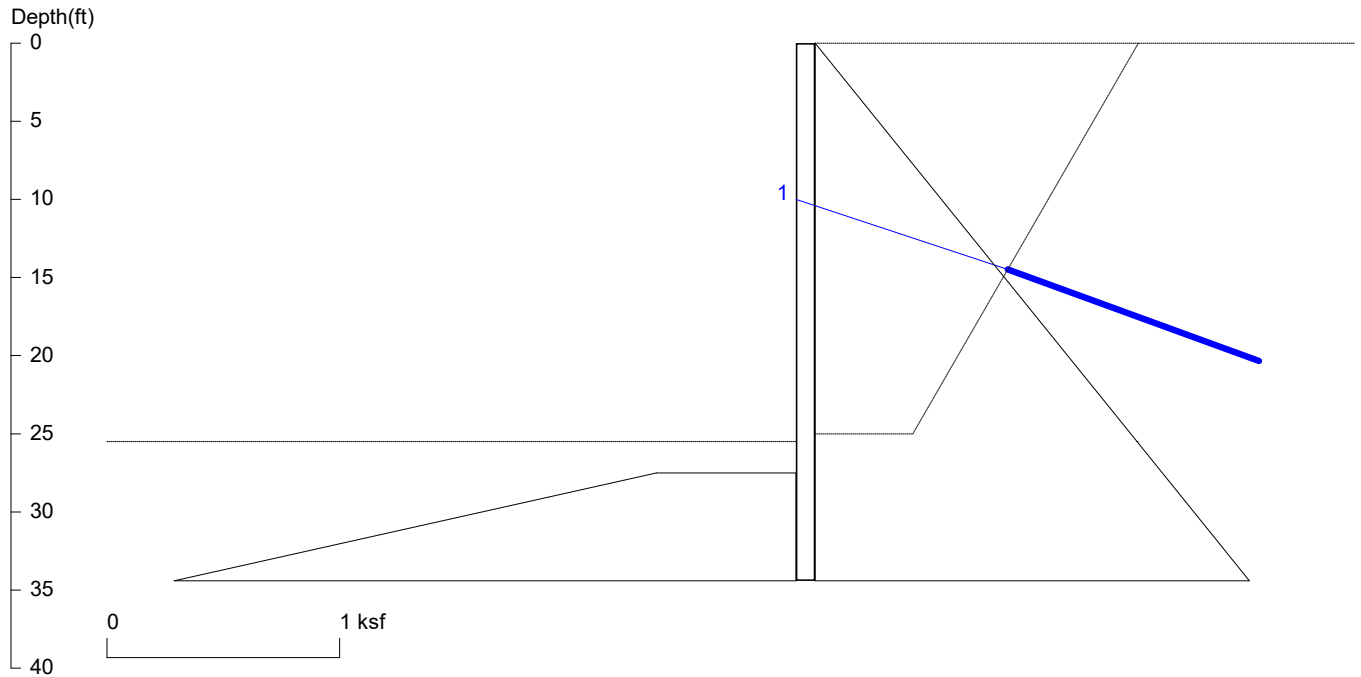
PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

Based on pile spacing: 6.0 foot or meter

User Input Pile, W18X65: E (ksi)=29000.0, I (in⁴)/pile=1070.0

File: C:\Users\javid\OneDrive\Desktop\Atlas Projects\269-2024 (5818 West Mercer)\Shoring\R4 Updated\E3_25.5 ft @ 6 ft oc (Tieback).SH8

E3 (25.5 ft @ 6 ft oc) Temporary



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Date: 2/24/2026

File: C:\Users\javid\OneDrive\Desktop\Atlas Projects\269-2024 (5818 West Mercer)\Shoring\R4 Updated\E3_25.5 ft @ 6 ft oc

Wall Height=25.5 Pile Diameter=2.5 Pile Spacing=6.0 Wall Type: 2. Soldier Pile, Drilled

PILE LENGTH: Min. Embedment=8.91 Min. Pile Length=34.41

MOMENT IN PILE: Max. Moment=314.01 per Pile Spacing=6.0 at Depth=21.36

PILE SELECTION:

Request Min. Section Modulus = 114.2 in³/pile=1871.17 cm³/pile, Fy= 50 ksi = 345 MPa, Fb/Fy=0.66

W18X65 has Section Modulus = 117.0 in³/pile=1917.28 cm³/pile. It is greater than Min. Requirements!

Top Deflection = -1.11(in) based on E (ksi)=29000.00 and I (in⁴)/pile=1070.0

BRACE FORCE: Strut, Tieback, Plate Anchor, Deadman, Sheet Pile as Anchor

No. & Type	Depth	Angle	Space	Total F.	Horiz. F.	Vert. F.	L_free	Fixed Length
1. Tieback	10.0	20.0	6.0	78.9	74.2	27.0	13.1	50.3

UNITS: Width,Diameter,Spacing,Length,Depth,and Height - ft; Force - kip; Bond Strength and Pressure - ksf

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
0	0	25.5	1.383	.05425
*	Below	Base		
25.5	1.383	125	6.781	.05425

PASSIVE PRESSURES:

Z1	P1	Z2	P2	Slope
27.5	.6	200	52.35	.3

ACTIVE SPACING:

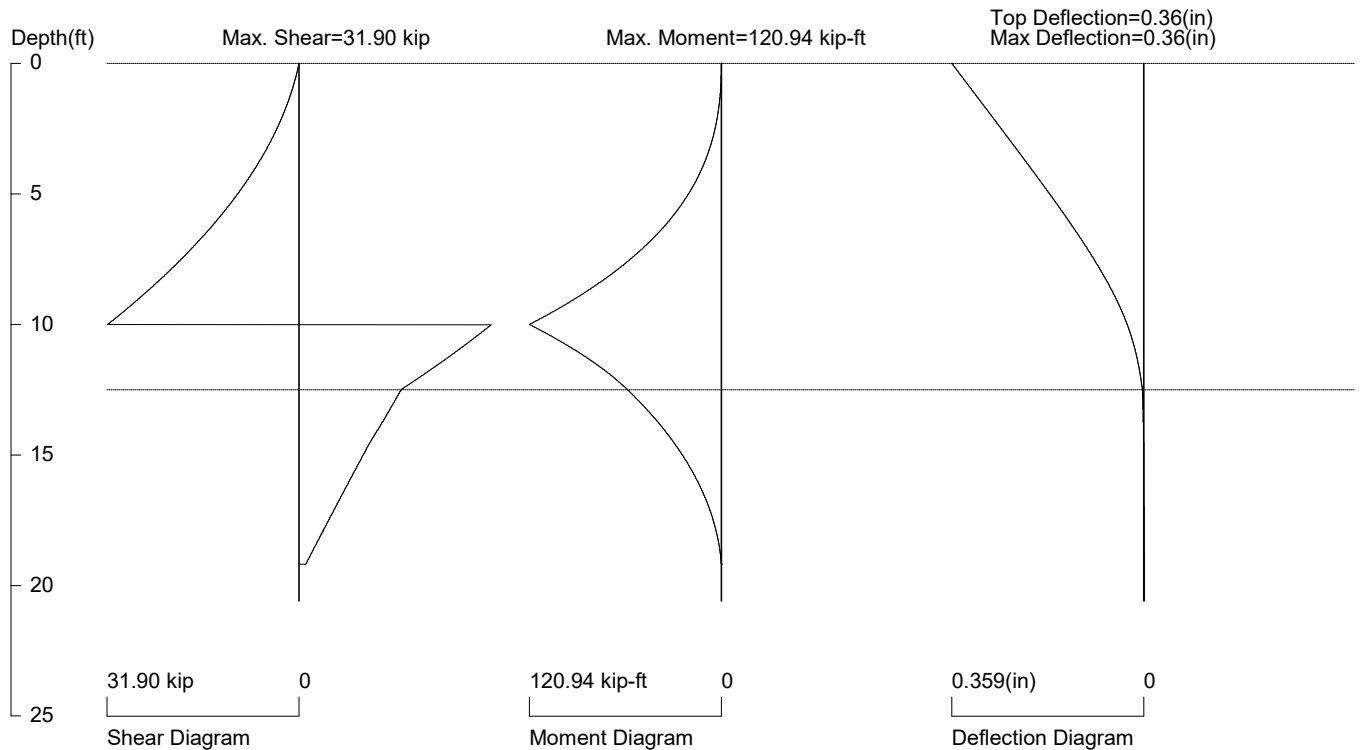
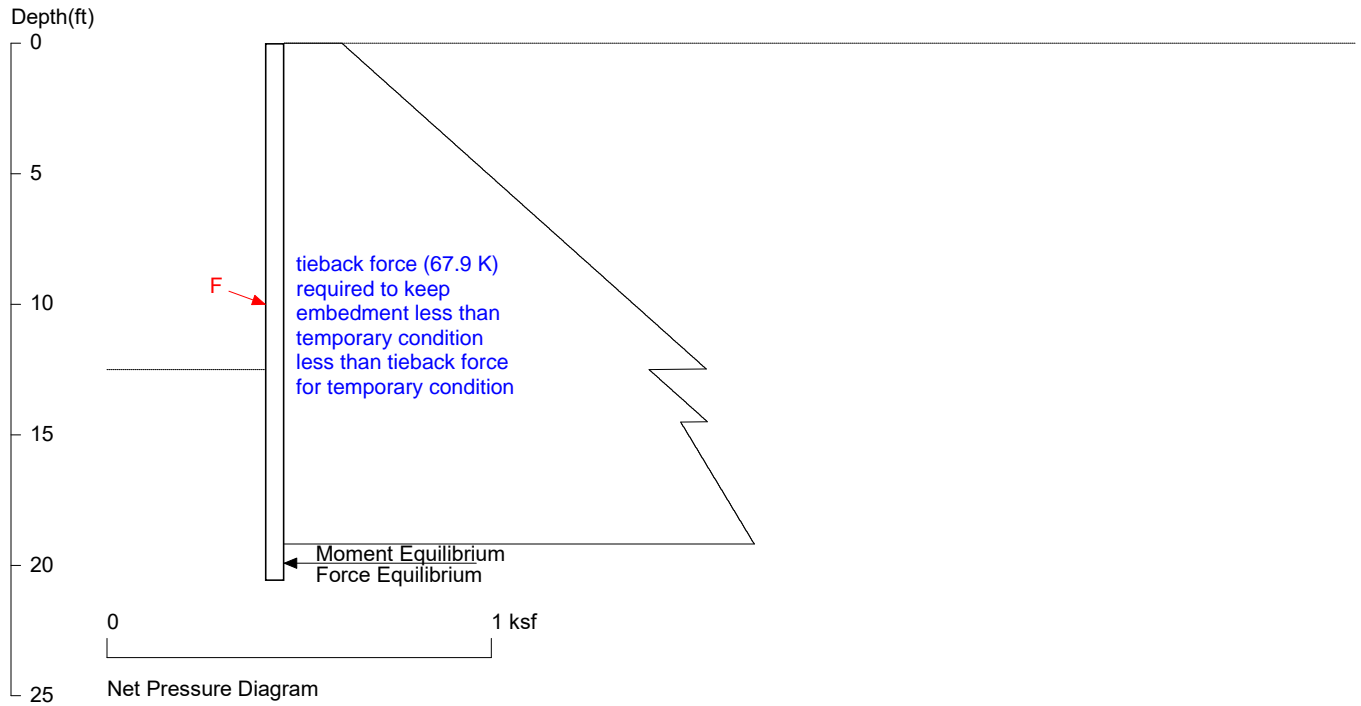
No.	Z depth	Spacing
1	0.00	6.00
2	25.50	2.50

PASSIVE SPACING:

No.	Z depth	Spacing
1	25.50	6.00

UNITS: Width, Spacing, Diameter, Length, and Depth - ft; Force - kip; Moment - kip-ft
Friction, Bearing, and Pressure - ksf; Pres. Slope - kip/ft³; Deflection - in

E3 (25.5 ft @ 6 ft oc) Permanent



PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

Based on pile spacing: 6.0 foot or meter

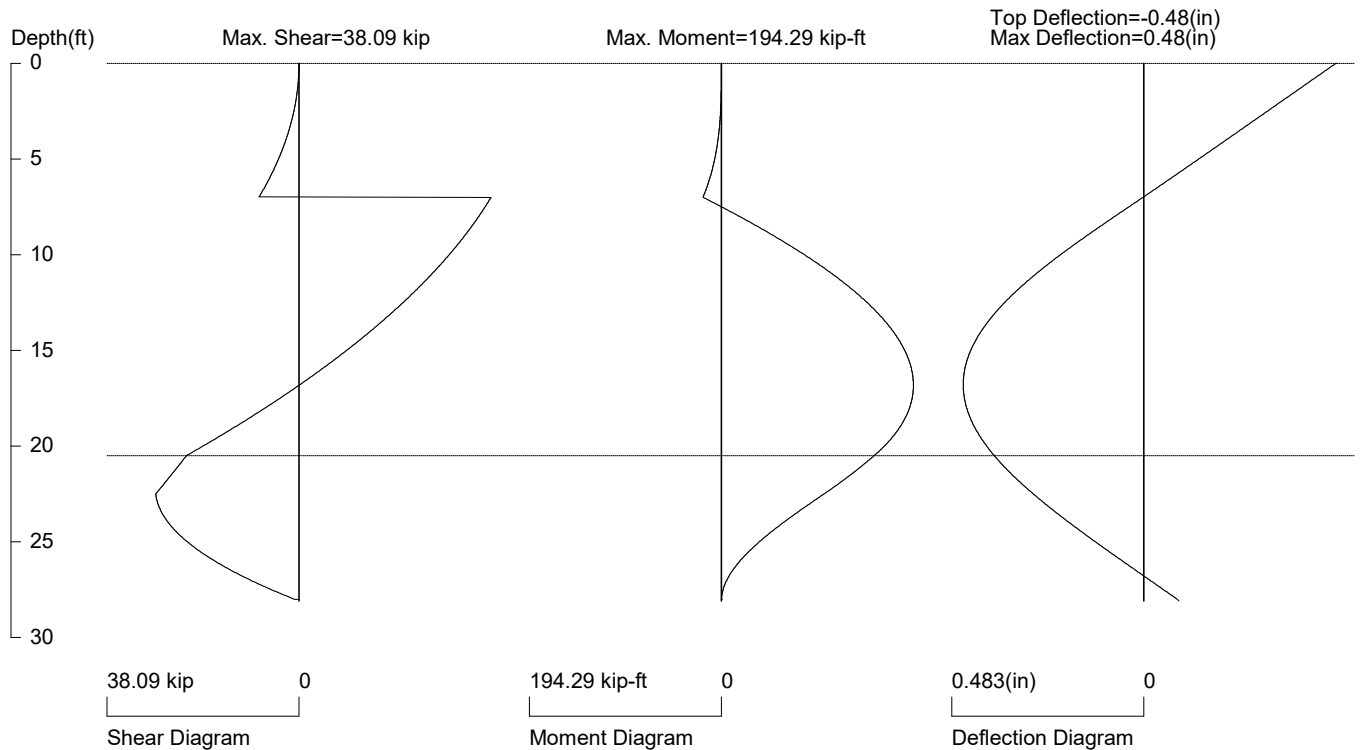
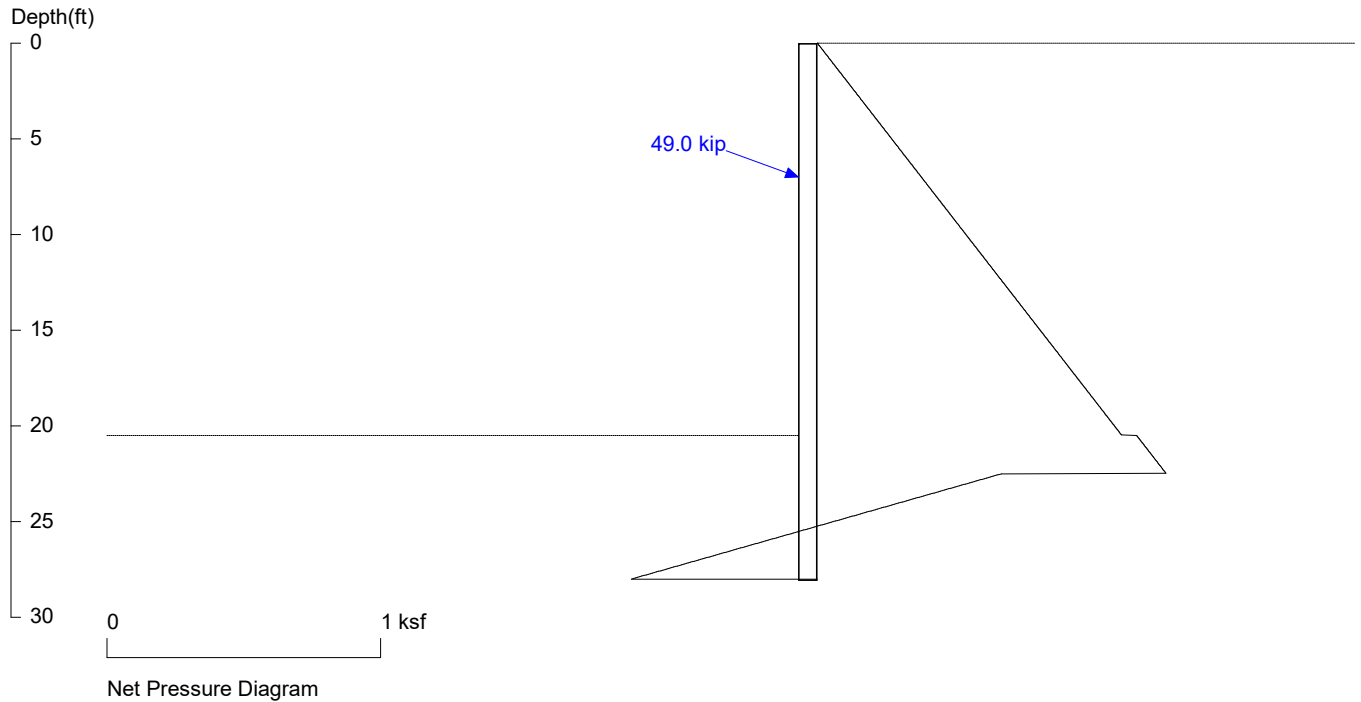
User Input Pile, W18x65: E (ksi)=29000.0, I (in⁴)/pile=1070.0

File: C:\Users\javid\OneDrive\Desktop\Atlas Projects\269-2024 (5818 West Mercer)\Shoring\R4 Updated\E3_25.5 ft @ 6 ft oc (Tieback) Permanent.SH8

EXTERNAL FORCE ACTING ON WALL (Pushing on Wall - Positive; Against Wall - Negative)				
No.	Z force	Force	Angle	Spacing
1	10.00	-67.90	20.0	6.00

UNITS: Width, Spacing, Diameter, Length, and Depth - ft; Force - kip; Moment - kip-ft
 Friction, Bearing, and Pressure - ksf; Pres. Slope - kip/ft³; Deflection - in

E8 (20.5 ft @ 6 ft oc) Temporary



PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

Based on pile spacing: 6.0 foot or meter

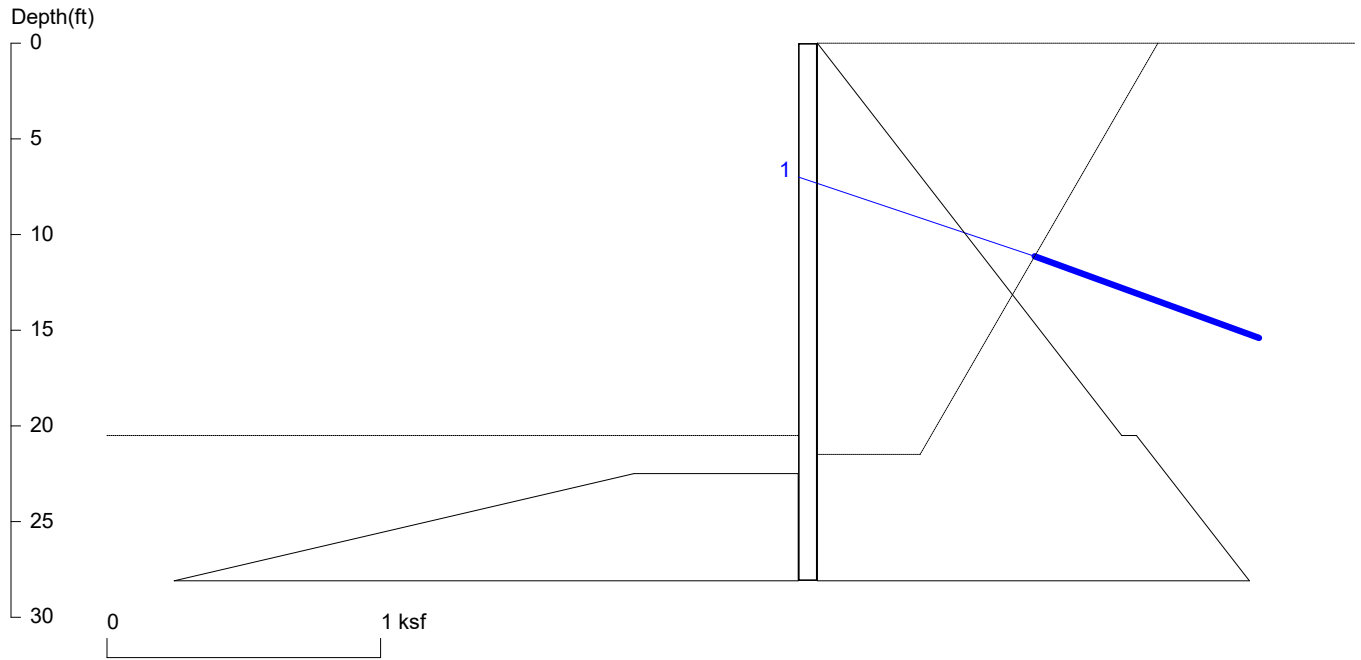
User Input Pile, W18X60: E (ksi)=29000.0, I (in⁴)/pile=984.0

File: C:\Users\javid\OneDrive\Desktop\Atlas Projects\269-2024 (5818 West Mercer)\Shoring\R4 Updated\E8_20.5 ft @ 6 ft oc (Tieback).SH8

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E8 (20.5 ft @ 6 ft oc) Temporary



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Date: 2/24/2026

File: C:\Users\javid\OneDrive\Desktop\Atlas Projects\269-2024 (5818 West Mercer)\Shoring\R4 Updated\E8_20.5 ft @ 6 ft oc

Wall Height=20.5 Pile Diameter=2.5 Pile Spacing=6.0 Wall Type: 2. Soldier Pile, Drilled

PILE LENGTH: Min. Embedment=7.60 Min. Pile Length=28.10

MOMENT IN PILE: Max. Moment=194.29 per Pile Spacing=6.0 at Depth=16.82

PILE SELECTION:

Request Min. Section Modulus = 70.7 in³/pile=1157.76 cm³/pile, F_y= 50 ksi = 345 MPa, F_b/F_y=0.66

W18X60 has Section Modulus = 108.0 in³/pile=1769.80 cm³/pile. It is greater than Min. Requirements!

Top Deflection = -0.48(in) based on E (ksi)=29000.00 and I (in⁴)/pile=984.0

BRACE FORCE: Strut, Tieback, Plate Anchor, Deadman, Sheet Pile as Anchor

No. & Type	Depth	Angle	Space	Total F.	Horiz. F.	Vert. F.	L_free	Fixed Length
1. Tieback	7.0	20.0	6.0	49.0	46.1	16.8	12.1	31.2

UNITS: Width,Diameter,Spacing,Length,Depth,and Height - ft; Force - kip; Bond Strength and Pressure - ksf

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
0	0	20.5	1.112	.05425
*	Below	Base		
20.5	1.166	150	8.191	.05425

PASSIVE PRESSURES:

Z1	P1	Z2	P2	Slope
22.5	.6	200	53.85	.3

ACTIVE SPACING:

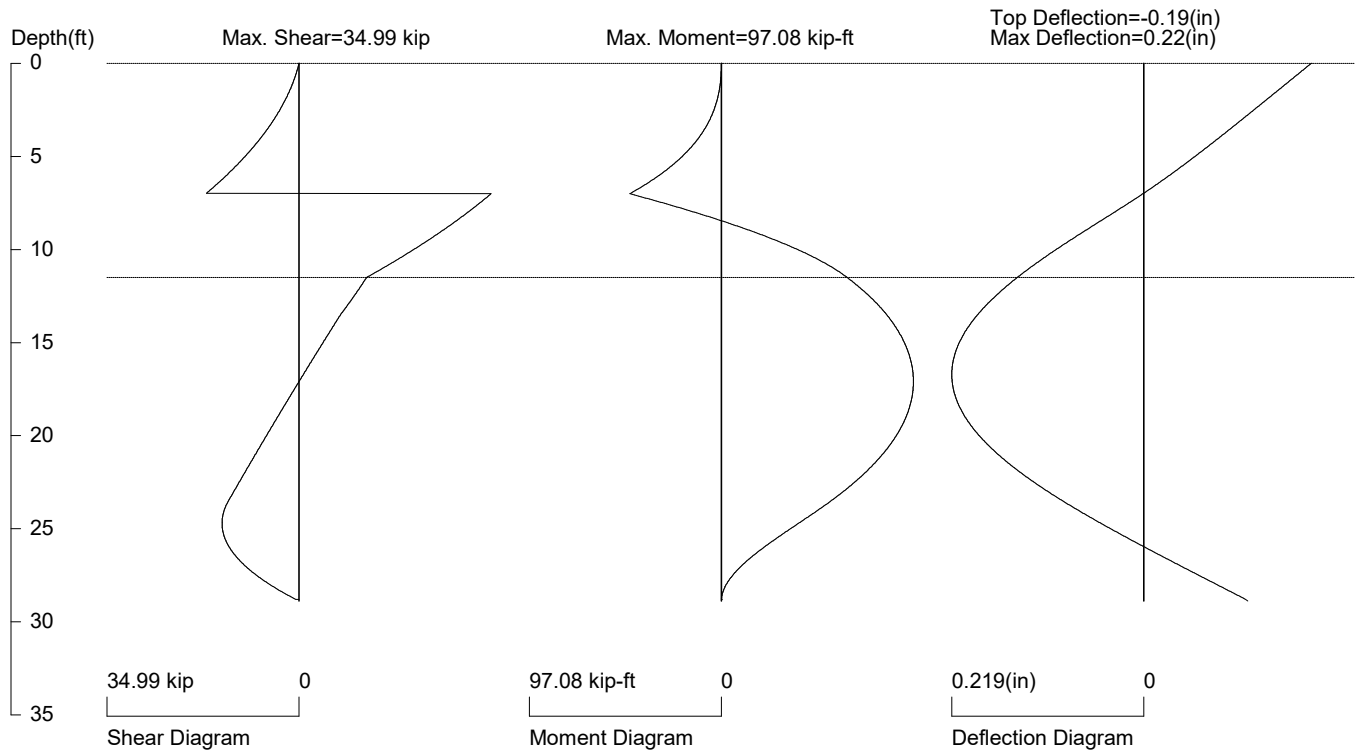
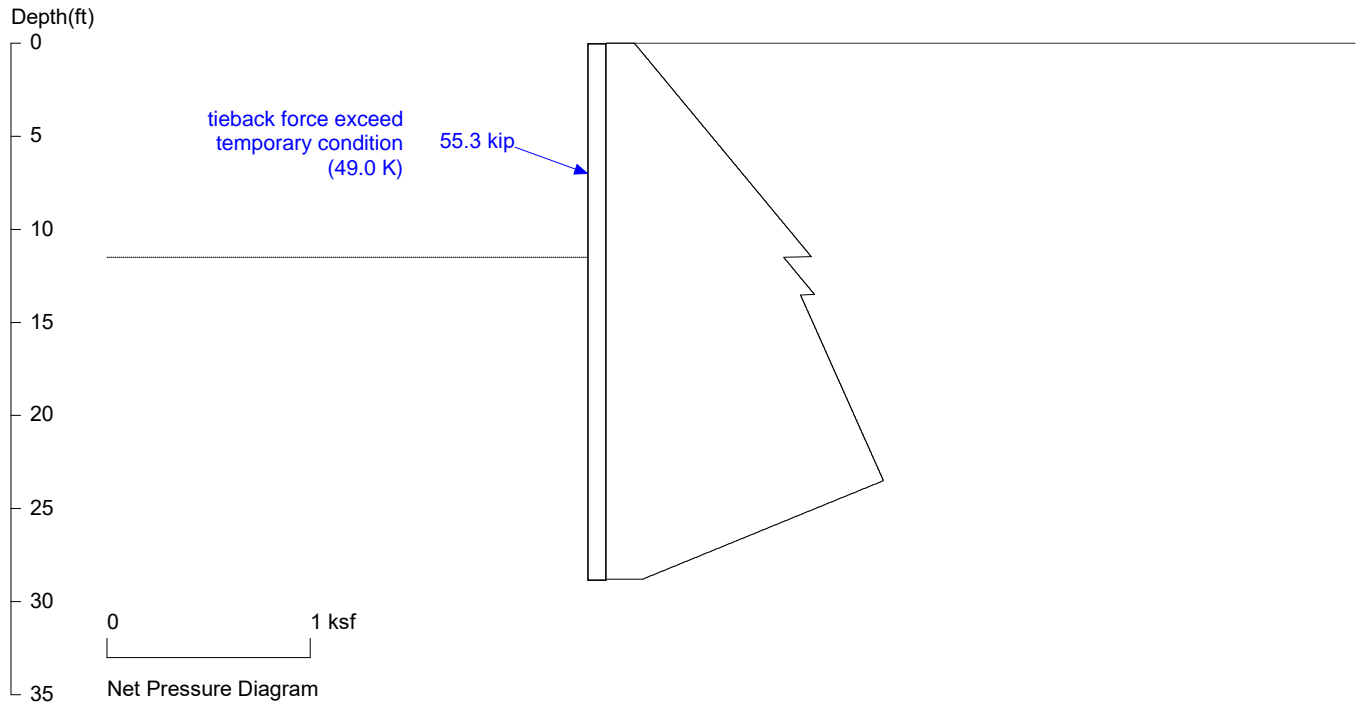
No.	Z depth	Spacing
1	0.00	6.00
2	20.50	2.50

PASSIVE SPACING:

No.	Z depth	Spacing
1	20.50	6.00

UNITS: Width, Spacing, Diameter, Length, and Depth - ft; Force - kip; Moment - kip-ft
Friction, Bearing, and Pressure - ksf; Pres. Slope - kip/ft³; Deflection - in

E8 (20.5 ft @ 6 ft oc) Permanent



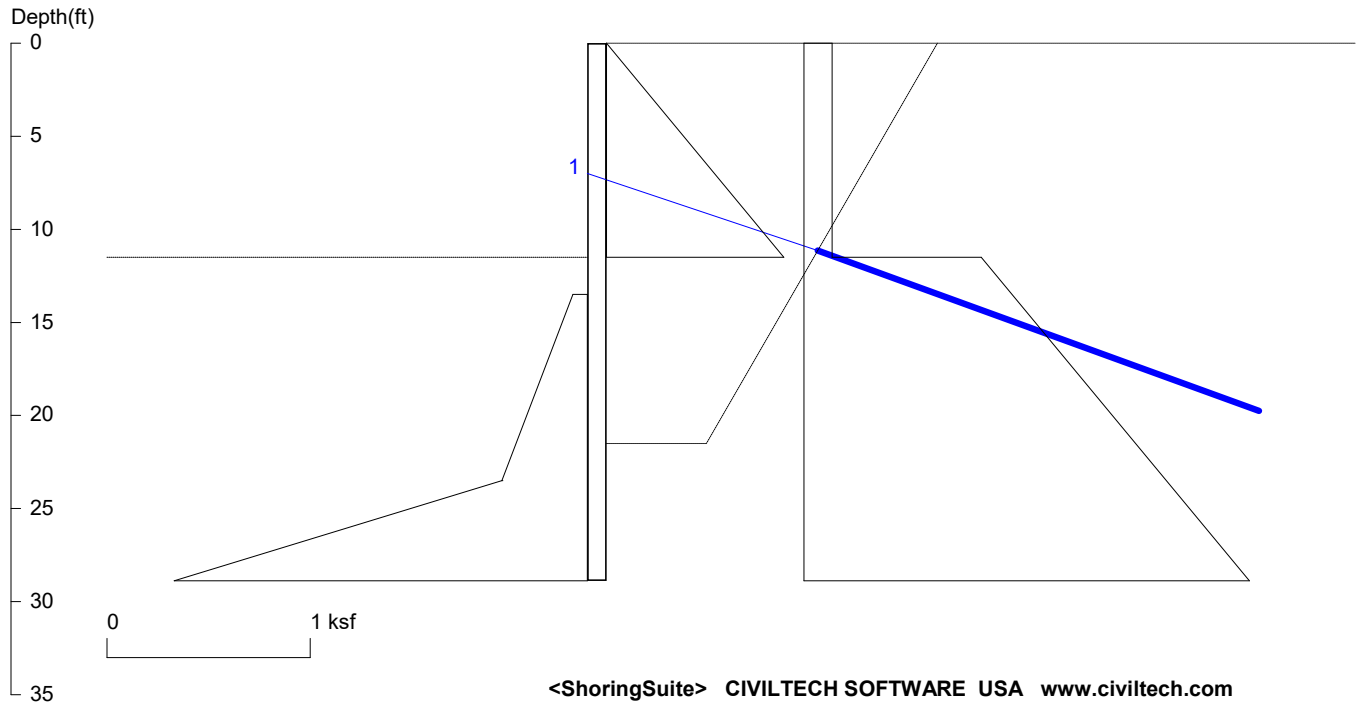
PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

Based on pile spacing: 6.0 foot or meter

User Input Pile, W18x60: E (ksi)=29000.0, I (in4)/pile=984.0

File: C:\Users\javid\OneDrive\Desktop\Atlas Projects\269-2024 (5818 West Mercer)\Shoring\R4 Updated\E8_20.5 ft @ 6 ft oc (Tieback) Permanent.SH8

E8 (20.5 ft @ 6 ft oc) Permanent



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Date: 2/24/2026

File: C:\Users\javid\OneDrive\Desktop\Atlas Projects\269-2024 (5818 West Mercer)\Shoring\R4 Updated\E8_20.5 ft @ 6 ft oc

Wall Height=11.5 Pile Diameter=2.5 Pile Spacing=6.0 Wall Type: 2. Soldier Pile, Drilled

PILE LENGTH: Min. Embedment=17.38 Min. Pile Length=28.88
 MOMENT IN PILE: Max. Moment=97.08 per Pile Spacing=6.0 at Depth=17.09

PILE SELECTION:

Request Min. Section Modulus = 35.3 in³/pile=578.47 cm³/pile, F_y= 50 ksi = 345 MPa, F_b/F_y=0.66
 W18X60 has Section Modulus = 108.0 in³/pile=1769.80 cm³/pile. It is greater than Min. Requirements!
 Top Deflection = -0.19(in) based on E (ksi)=29000.00 and I (in⁴)/pile=984.0

BRACE FORCE: Strut, Tieback, Plate Anchor, Deadman, Sheet Pile as Anchor

No. & Type	Depth	Angle	Space	Total F.	Horiz. F.	Vert. F.	L _{free}	Fixed Length
1. Tieback	7.0	20.0	6.0	55.3	52.0	18.9	12.1	35.2

UNITS: Width,Diameter,Spacing,Length,Depth,and Height - ft; Force - kip; Bond Strength and Pressure - ksf

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
0	0	11.5	0.873	.07595
0	.138	11.5	.138	0
*	Below	Base		
11.5	.873	150	11.39	.07595

PASSIVE PRESSURES:

Z1	P1	Z2	P2	Slope
13.5	.07	23.5	0.420	.035
23.5	.42	250	68.37	.3

ACTIVE SPACING:

No.	Z depth	Spacing
1	0.00	6.00
2	11.50	2.50

PASSIVE SPACING:

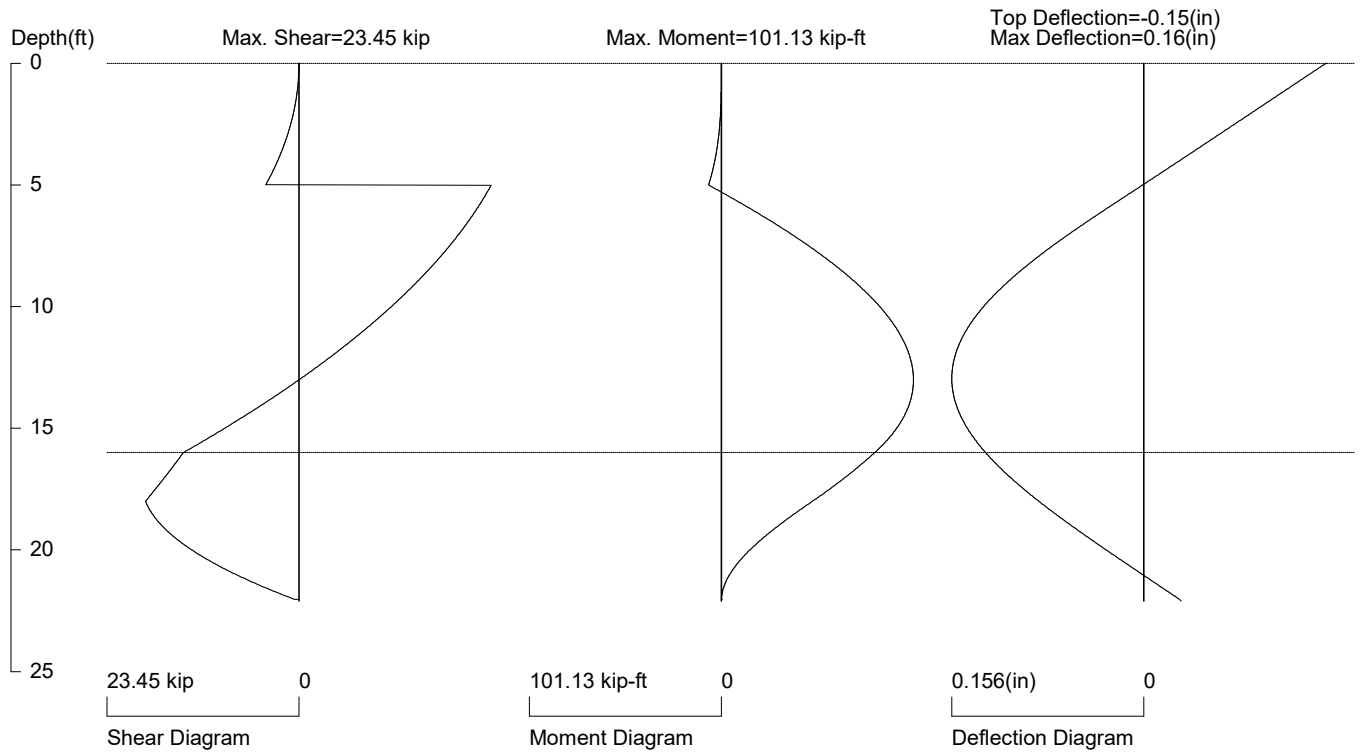
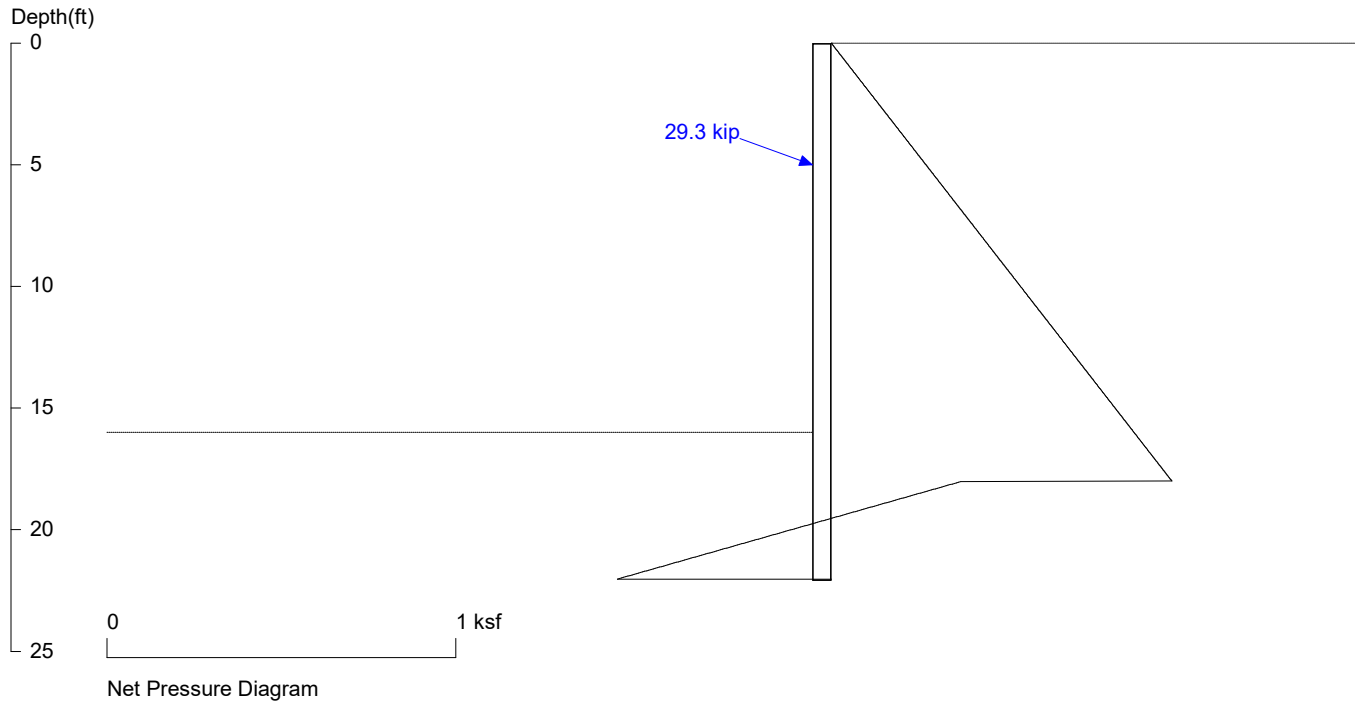
No.	Z depth	Spacing
1	11.50	6.00

EXTERNAL FORCE ACTING ON WALL (Pushing on Wall - Positive; Against Wall - Negative)

No.	Z force	Force	Angle	Spacing
1	7.00	0.00	20.0	6.00

UNITS: Width, Spacing, Diameter, Length, and Depth - ft; Force - kip; Moment - kip-ft
Friction, Bearing, and Pressure - ksf; Pres. Slope - kip/ft³; Deflection - in

E9 (16 ft @ 6 ft oc) Temporary



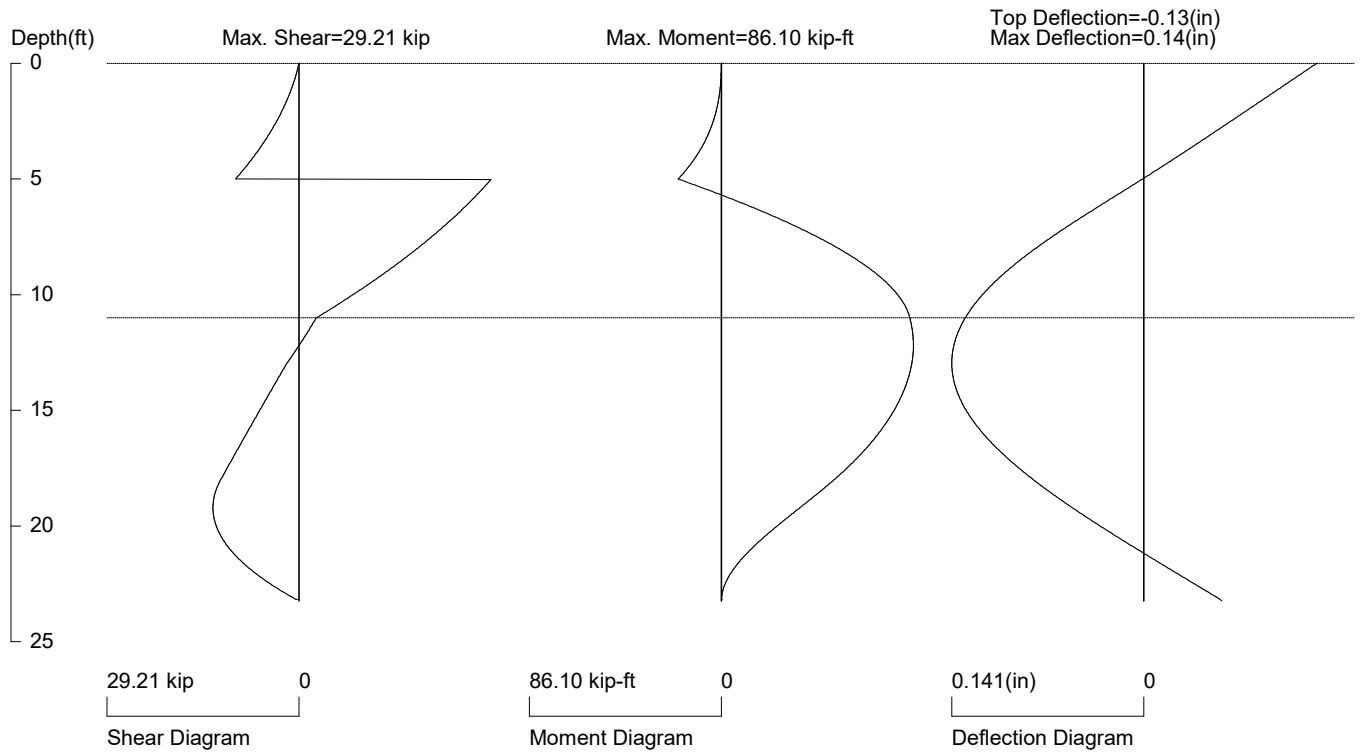
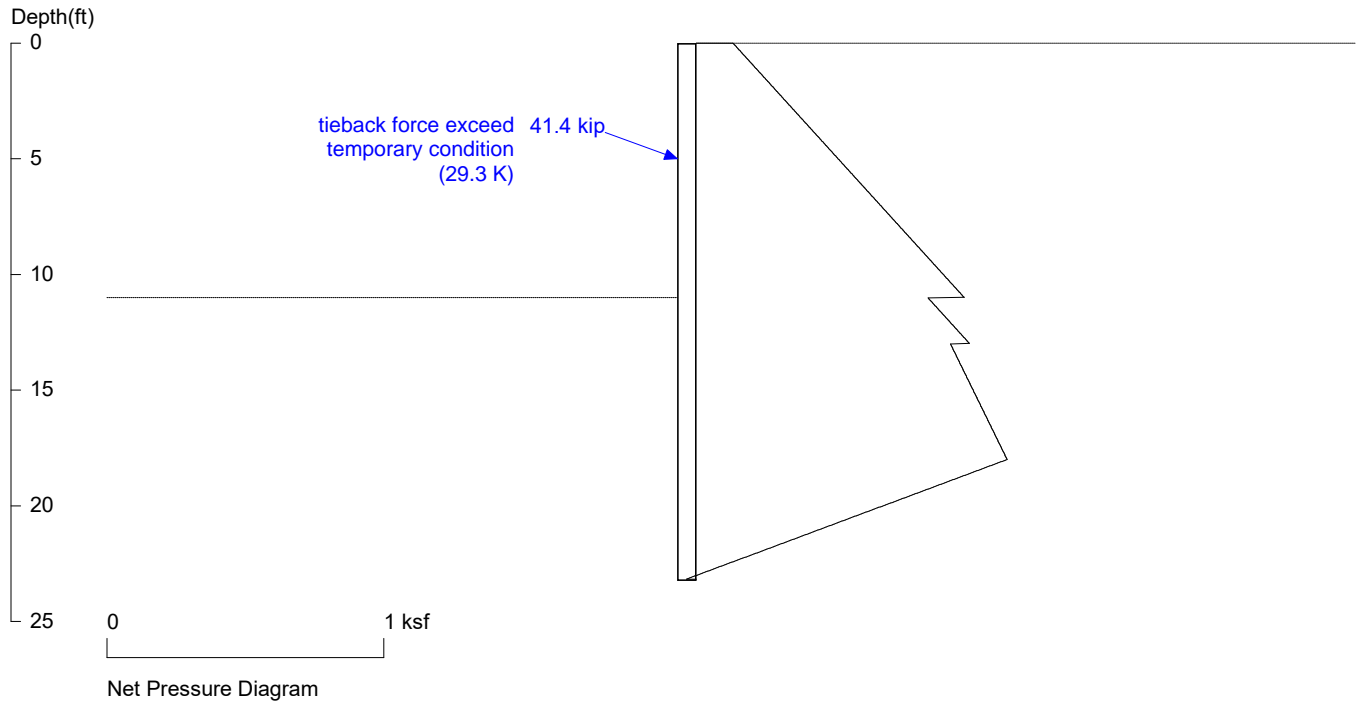
PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

Based on pile spacing: 6.0 foot or meter

User Input Pile, W18X60: E (ksi)=29000.0, I (in⁴)/pile=984.0

File: C:\Users\javid\OneDrive\Desktop\Atlas Projects\269-2024 (5818 West Mercer)\Shoring\R4 Updated\E9_18 ft @ 6 ft oc (Tieback).SH8

E9 (16 ft @ 6 ft oc) Permanent



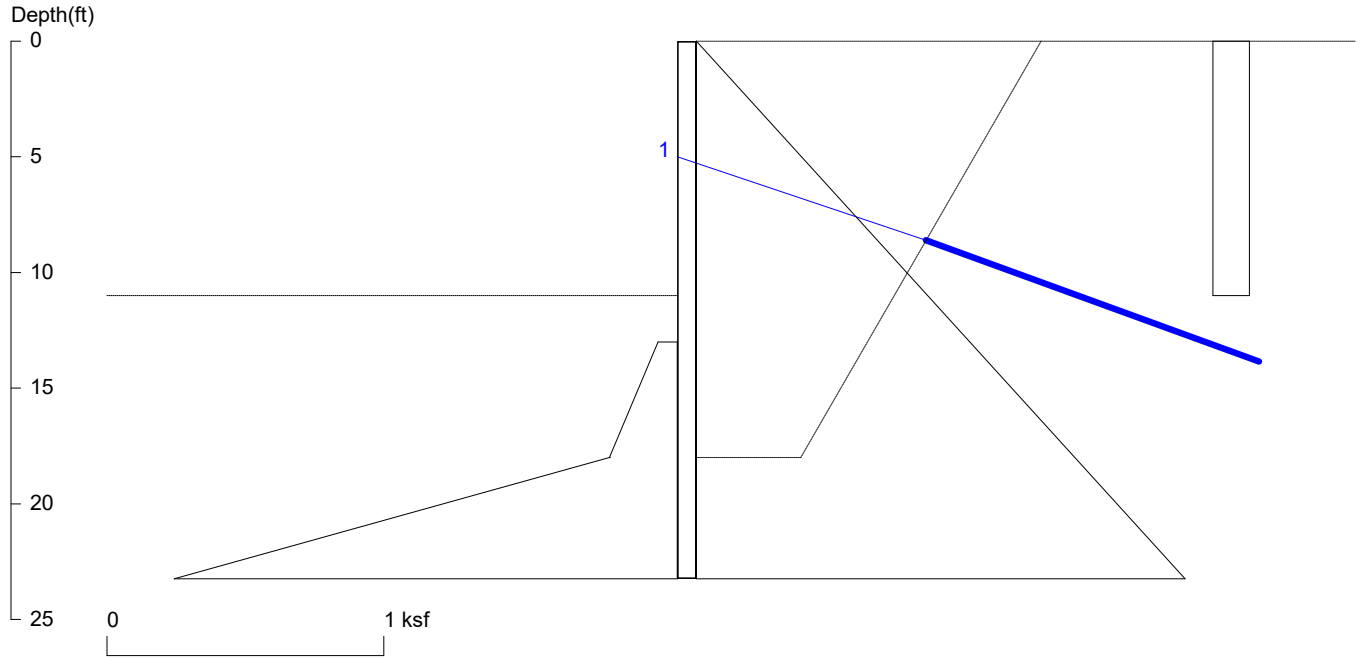
PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

Based on pile spacing: 6.0 foot or meter

User Input Pile, W18X60: E (ksi)=29000.0, I (in⁴)/pile=984.0

File: C:\Users\javid\OneDrive\Desktop\Atlas Projects\269-2024 (5818 West Mercer)\Shoring\R4 Updated\E9_18 ft @ 6 ft oc (Tieback) Permanent.SH8

E9 (16 ft @ 6 ft oc) Permanent



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Date: 2/24/2026

File: C:\Users\javid\OneDrive\Desktop\Atlas Projects\269-2024 (5818 West Mercer)\Shoring\R4 Updated\E9_18 ft @ 6 ft oc

Wall Height=11.0 Pile Diameter=2.5 Pile Spacing=6.0 Wall Type: 2. Soldier Pile, Drilled

PILE LENGTH: Min. Embedment=12.24 Min. Pile Length=23.24

MOMENT IN PILE: Max. Moment=86.10 per Pile Spacing=6.0 at Depth=12.21

PILE SELECTION:

Request Min. Section Modulus = 31.3 in³/pile=513.08 cm³/pile, Fy= 50 ksi = 345 MPa, Fb/Fy=0.66

W18X60 has Section Modulus = 108.0 in³/pile=1769.80 cm³/pile. It is greater than Min. Requirements!

Top Deflection = -0.13(in) based on E (ksi)=29000.00 and I (in⁴)/pile=984.0

BRACE FORCE: Strut, Tieback, Plate Anchor, Deadman, Sheet Pile as Anchor

No. & Type	Depth	Angle	Space	Total F.	Horiz. F.	Vert. F.	L_free	Fixed Length
1. Tieback	5.0	20.0	6.0	41.4	38.9	14.2	10.6	26.4

UNITS: Width,Diameter,Spacing,Length,Depth,and Height - ft; Force - kip; Bond Strength and Pressure - ksf

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
0	0	100	7.595	.07595
0	.132	11	.132	0

PASSIVE PRESSURES:

Z1	P1	Z2	P2	Slope
13	.07	18	0.245	.035
18	.245	250	69.84	.3

ACTIVE SPACING:

No.	Z depth	Spacing
1	0.00	6.00
2	11.00	2.50

PASSIVE SPACING:

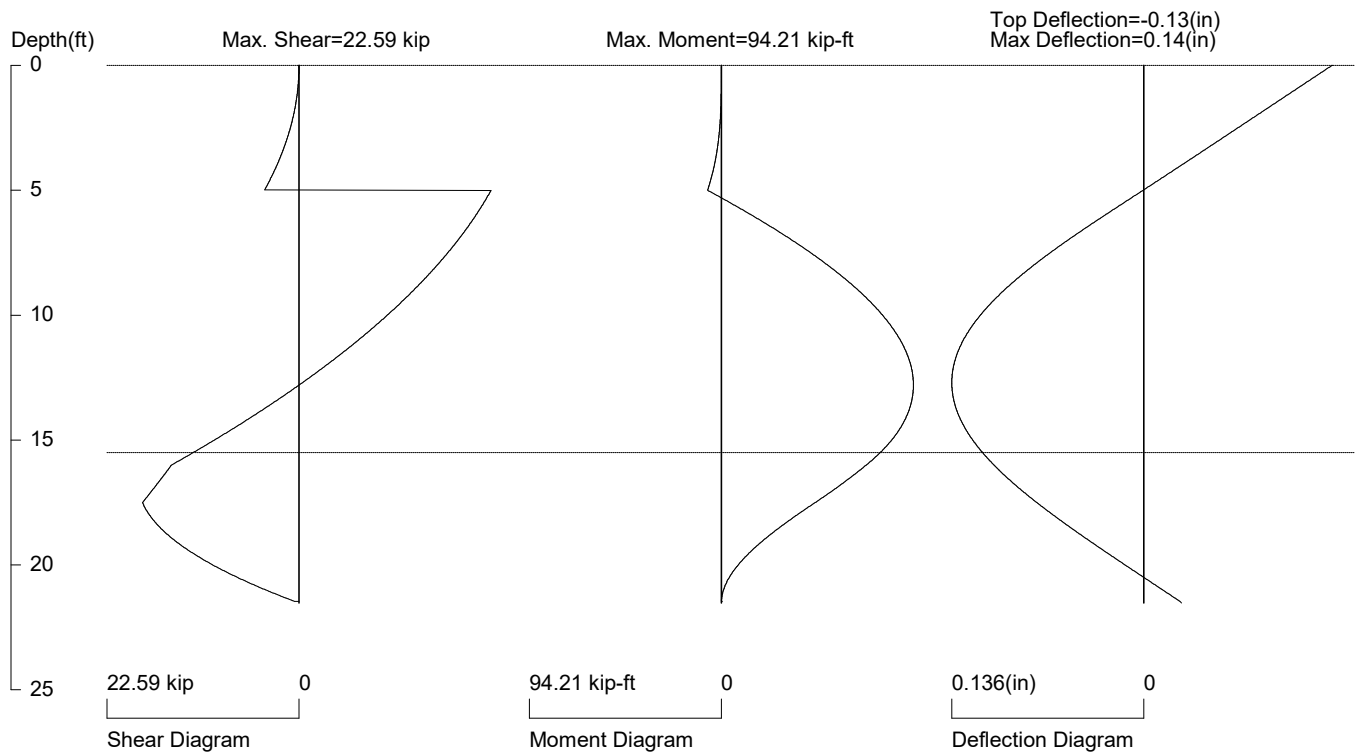
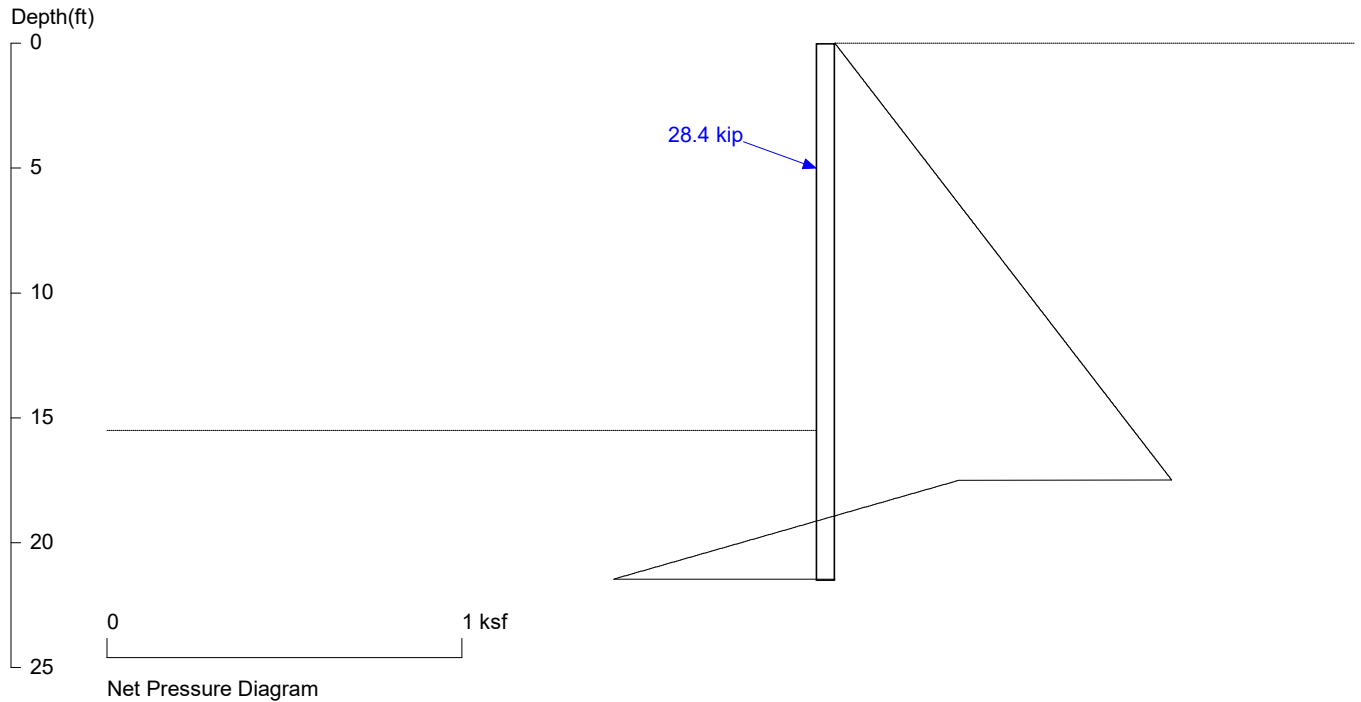
No.	Z depth	Spacing
1	11.00	6.00

EXTERNAL FORCE ACTING ON WALL (Pushing on Wall - Positive; Against Wall - Negative)

No.	Z force	Force	Angle	Spacing
1	10.00	0.00	20.0	6.00

UNITS: Width, Spacing, Diameter, Length, and Depth - ft; Force - kip; Moment - kip-ft
Friction, Bearing, and Pressure - ksf; Pres. Slope - kip/ft³; Deflection - in

E10 (16 ft @ 6 ft oc) Temporary



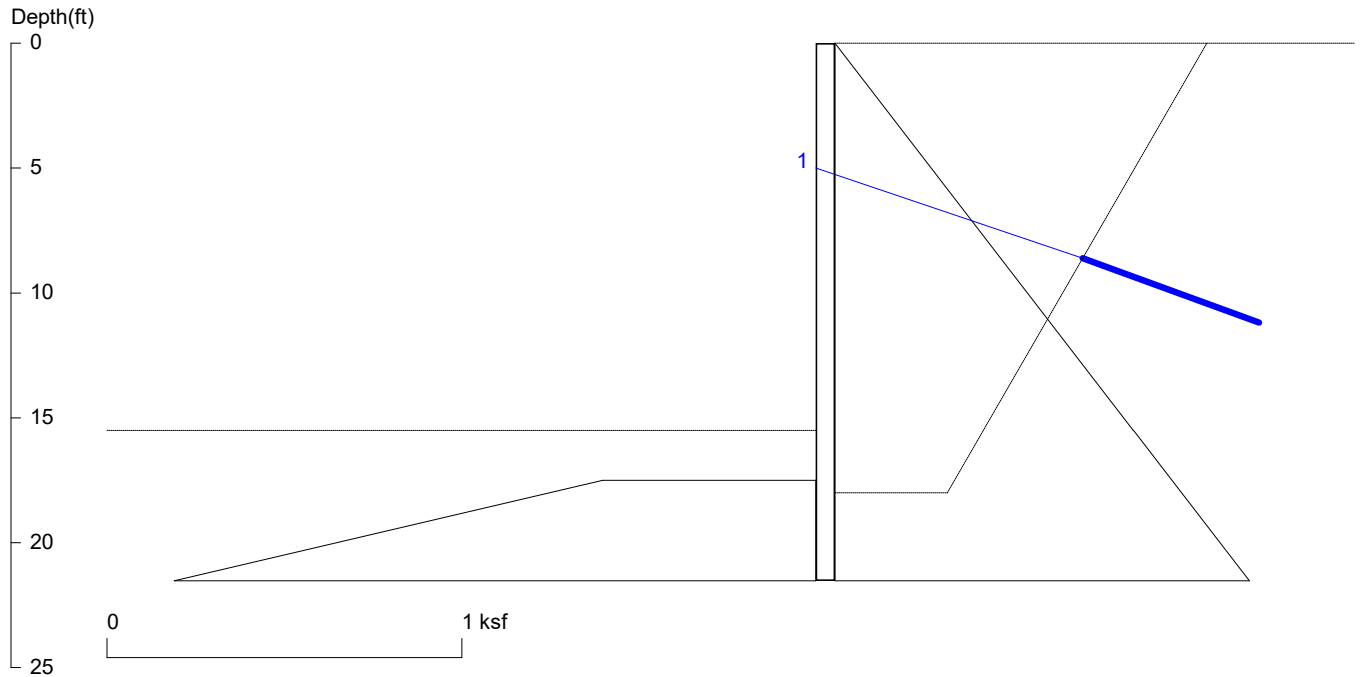
PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

Based on pile spacing: 6.0 foot or meter

User Input Pile, W18X60: E (ksi)=29000.0, I (in⁴)/pile=984.0

File: C:\Users\javid\OneDrive\Desktop\Atlas Projects\269-2024 (5818 West Mercer)\Shoring\R4 Updated\E10_15.25 ft @ 6 ft oc (Tieback).SH8

E10 (16 ft @ 6 ft oc) Temporary



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File: C:\Users\javid\OneDrive\Desktop\Atlas Projects\269-2024 (5818 West Mercer)\Shoring\R4 Updated\E10_15.25 ft @ 6 ft

Wall Height=15.5 Pile Diameter=2.5 Pile Spacing=6.0 Wall Type: 2. Soldier Pile, Drilled

PILE LENGTH: Min. Embedment=6.02 Min. Pile Length=21.52

MOMENT IN PILE: Max. Moment=94.21 per Pile Spacing=6.0 at Depth=12.79

PILE SELECTION:

Request Min. Section Modulus = 34.3 in³/pile=561.37 cm³/pile, Fy= 50 ksi = 345 MPa, Fb/Fy=0.66

W18X60 has Section Modulus = 108.0 in³/pile=1769.80 cm³/pile. It is greater than Min. Requirements!

Top Deflection = -0.13(in) based on E (ksi)=29000.00 and I (in⁴)/pile=984.0

BRACE FORCE: Strut, Tieback, Plate Anchor, Deadman, Sheet Pile as Anchor

No. & Type	Depth	Angle	Space	Total F.	Horiz. F.	Vert. F.	L_free	Fixed Length
1. Tieback	5.0	20.0	6.0	28.4	26.7	9.7	10.6	18.1

UNITS: Width,Diameter,Spacing,Length,Depth,and Height - ft; Force - kip; Bond Strength and Pressure - ksf

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
0	0	15.5	0.841	.05425
*	Below	Base		
15.5	.841	150	8.138	.05425

PASSIVE PRESSURES:

Z1	P1	Z2	P2	Slope
17.5	.6	23.5	2.400	.3

ACTIVE SPACING:

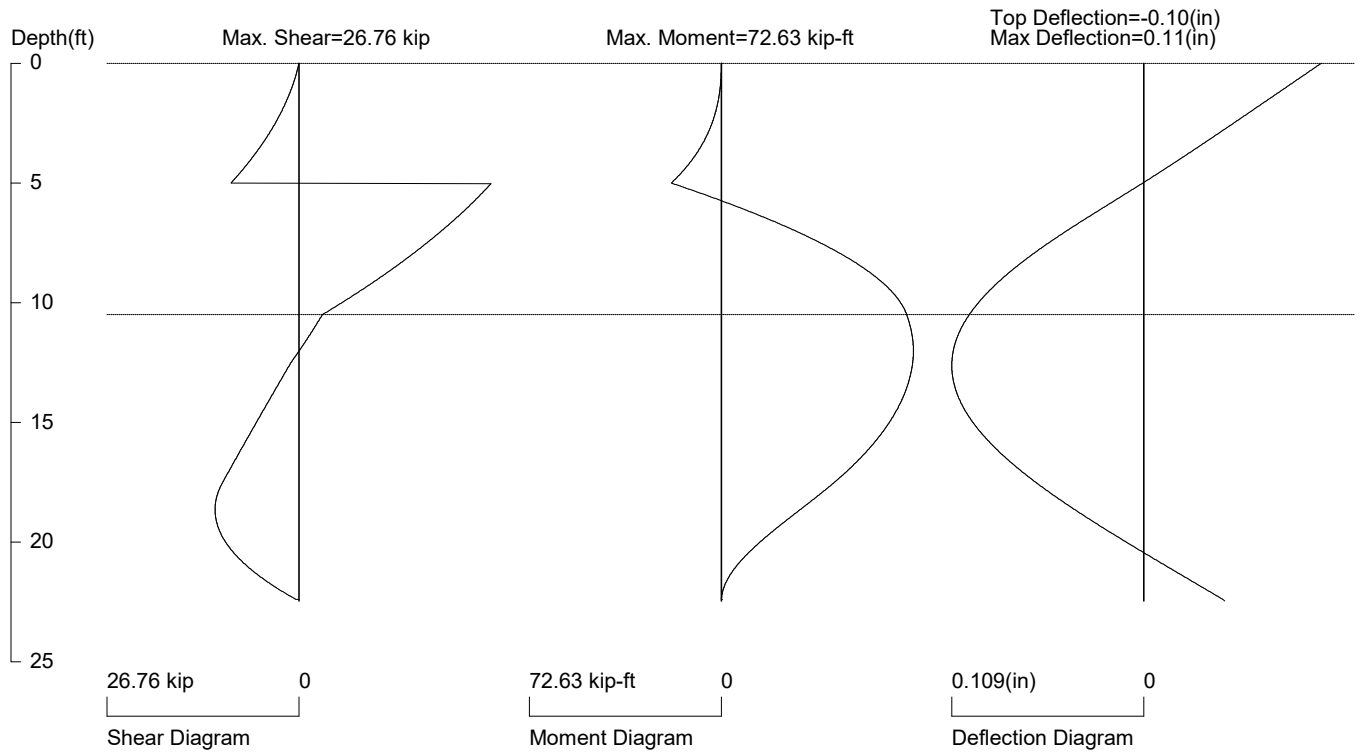
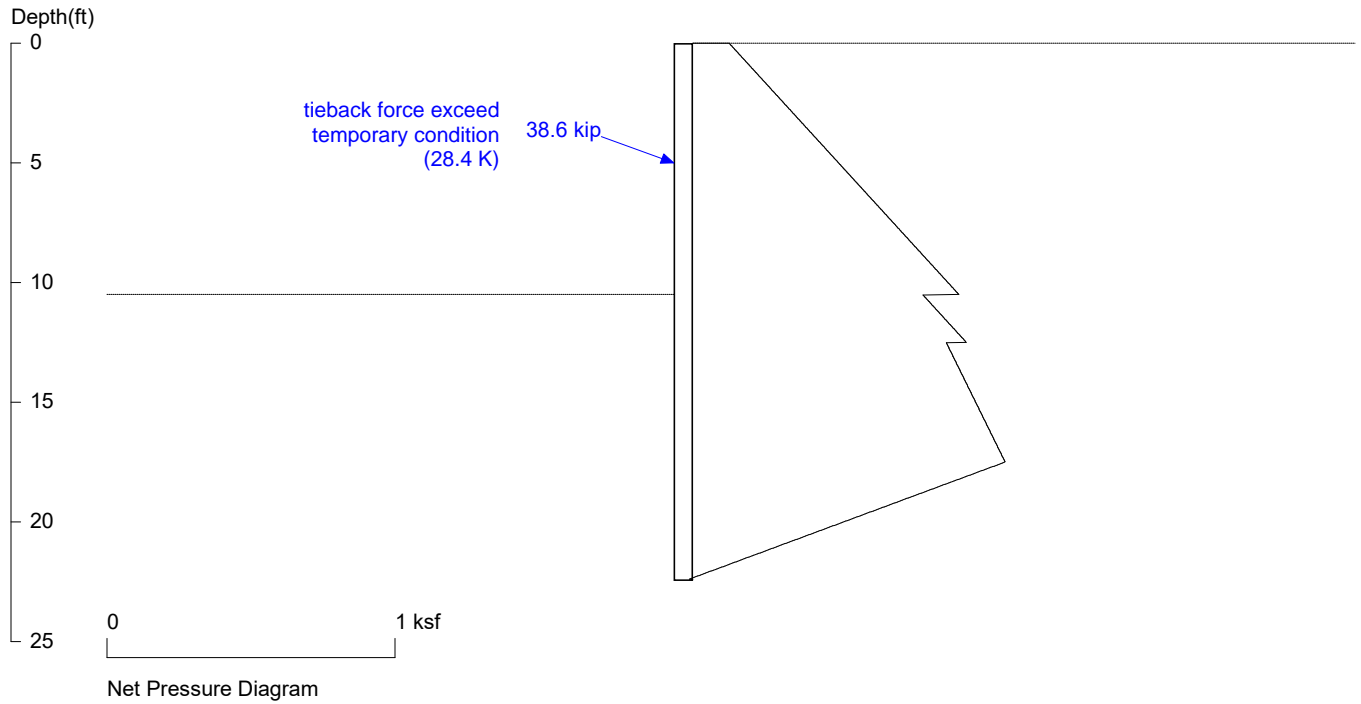
No.	Z depth	Spacing
1	0.00	6.00
2	16.00	2.50

PASSIVE SPACING:

No.	Z depth	Spacing
1	16.00	6.00

UNITS: Width, Spacing, Diameter, Length, and Depth - ft; Force - kip; Moment - kip-ft
Friction, Bearing, and Pressure - ksf; Pres. Slope - kip/ft³; Deflection - in

E10 (15.5 ft @ 6 ft oc) Permanent



PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

Based on pile spacing: 6.0 foot or meter

User Input Pile, W18X60: E (ksi)=29000.0, I (in⁴)/pile=984.0

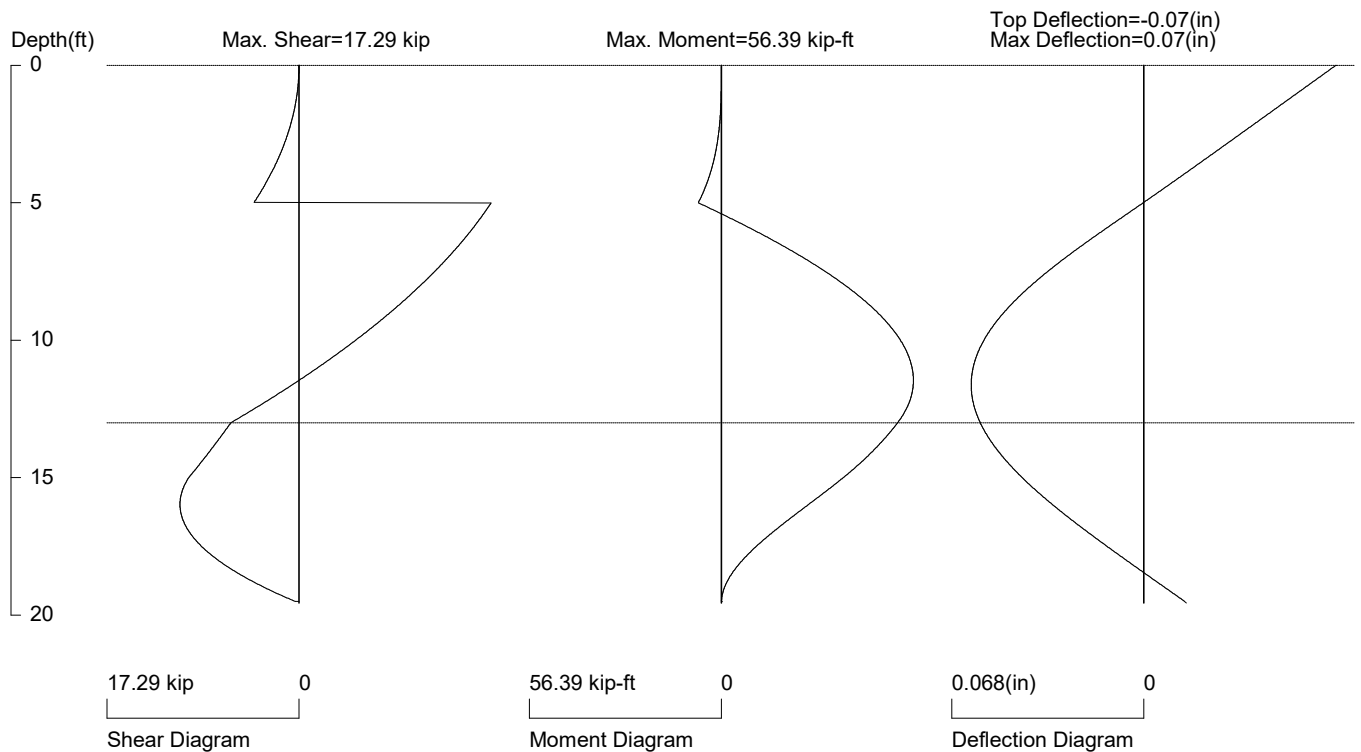
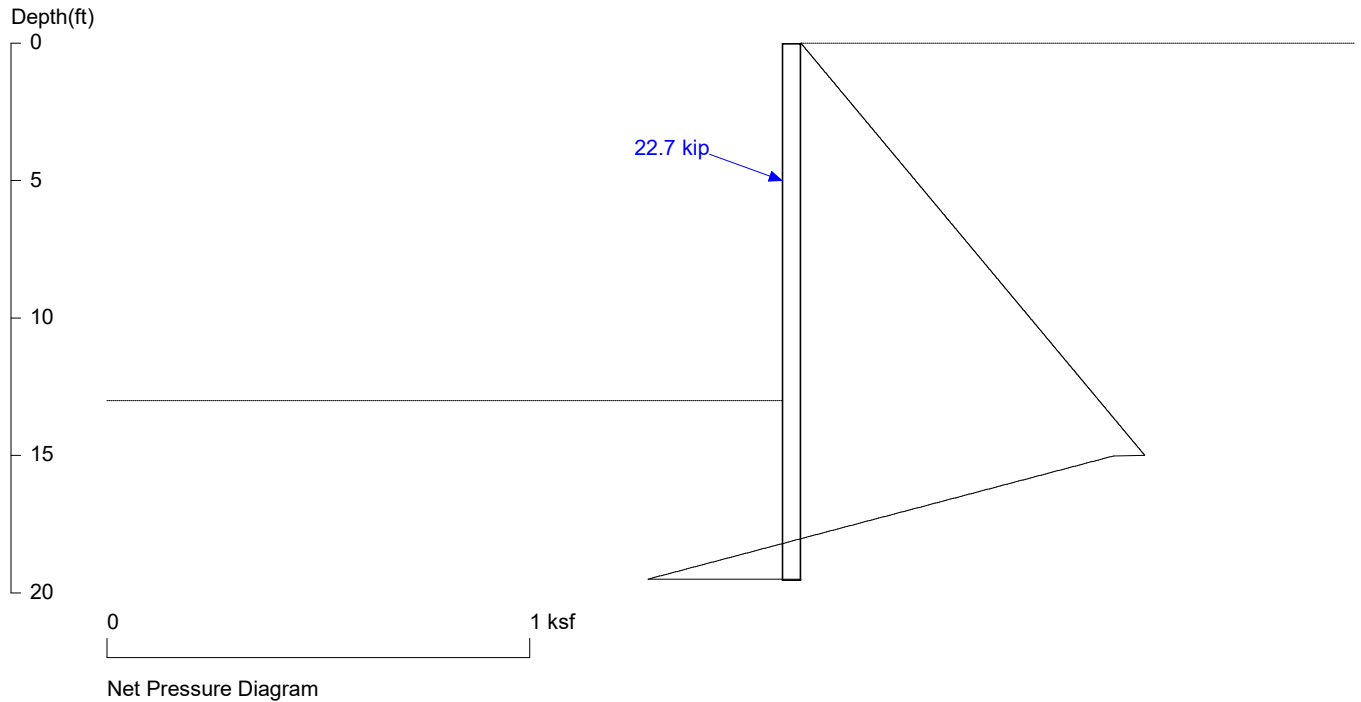
File: C:\Users\javid\OneDrive\Desktop\Atlas Projects\269-2024 (5818 West Mercer)\Shoring\R4 Updated\E10_15.25 ft @ 6 ft oc (Tieback) Permanent.SH8

PASSIVE SPACING:

No.	Z depth	Spacing
1	10.50	6.00

UNITS: Width, Spacing, Diameter, Length, and Depth - ft; Force - kip; Moment - kip-ft
Friction, Bearing, and Pressure - ksf; Pres. Slope - kip/ft³; Deflection - in

E11 (13 ft @ 6 ft oc) Permanent



PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

Based on pile spacing: 6.0 foot or meter

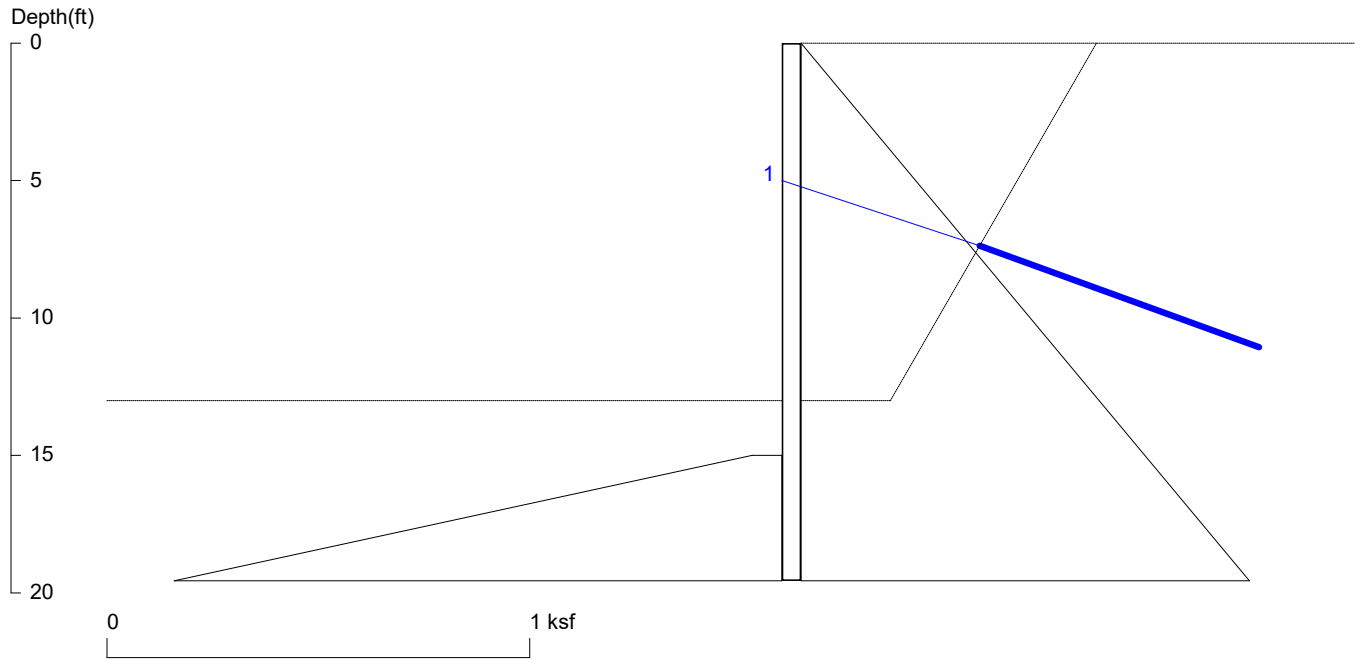
User Input Pile, W18X60: E (ksi)=29000.0, I (in⁴)/pile=984.0

File: C:\Users\javid\OneDrive\Desktop\Atlas Projects\269-2024 (5818 West Mercer)\Shoring\R4 Updated\E11_10.5 ft @ 6 ft oc (Tieback).SH8

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E11 (13 ft @ 6 ft oc) Permanent



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Date: 2/24/2026

File: C:\Users\javid\OneDrive\Desktop\Atlas Projects\269-2024 (5818 West Mercer)\Shoring\R4 Updated\E11_10.5 ft @ 6 ft

Wall Height=13.0 Pile Diameter=2.5 Pile Spacing=6.0 Wall Type: 2. Soldier Pile, Drilled

PILE LENGTH: Min. Embedment=6.56 Min. Pile Length=19.56

MOMENT IN PILE: Max. Moment=56.39 per Pile Spacing=6.0 at Depth=11.47

PILE SELECTION:

Request Min. Section Modulus = 20.5 in³/pile=336.03 cm³/pile, F_y= 50 ksi = 345 MPa, F_b/F_y=0.66

W18X60 has Section Modulus = 108.0 in³/pile=1769.80 cm³/pile. It is greater than Min. Requirements!

Top Deflection = -0.07(in) based on E (ksi)=29000.00 and I (in⁴)/pile=984.0

BRACE FORCE: Strut, Tieback, Plate Anchor, Deadman, Sheet Pile as Anchor

No. & Type	Depth	Angle	Space	Total F.	Horiz. F.	Vert. F.	L_free	Fixed Length
1. Tieback	5.0	20.0	6.0	22.7	21.4	7.8	6.9	14.5

UNITS: Width,Diameter,Spacing,Length,Depth,and Height - ft; Force - kip; Bond Strength and Pressure - ksf

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
0	0	150	8.137	.05425

PASSIVE PRESSURES:

Z1	P1	Z2	P2	Slope
15	.07	250	70.57	.3

ACTIVE SPACING:

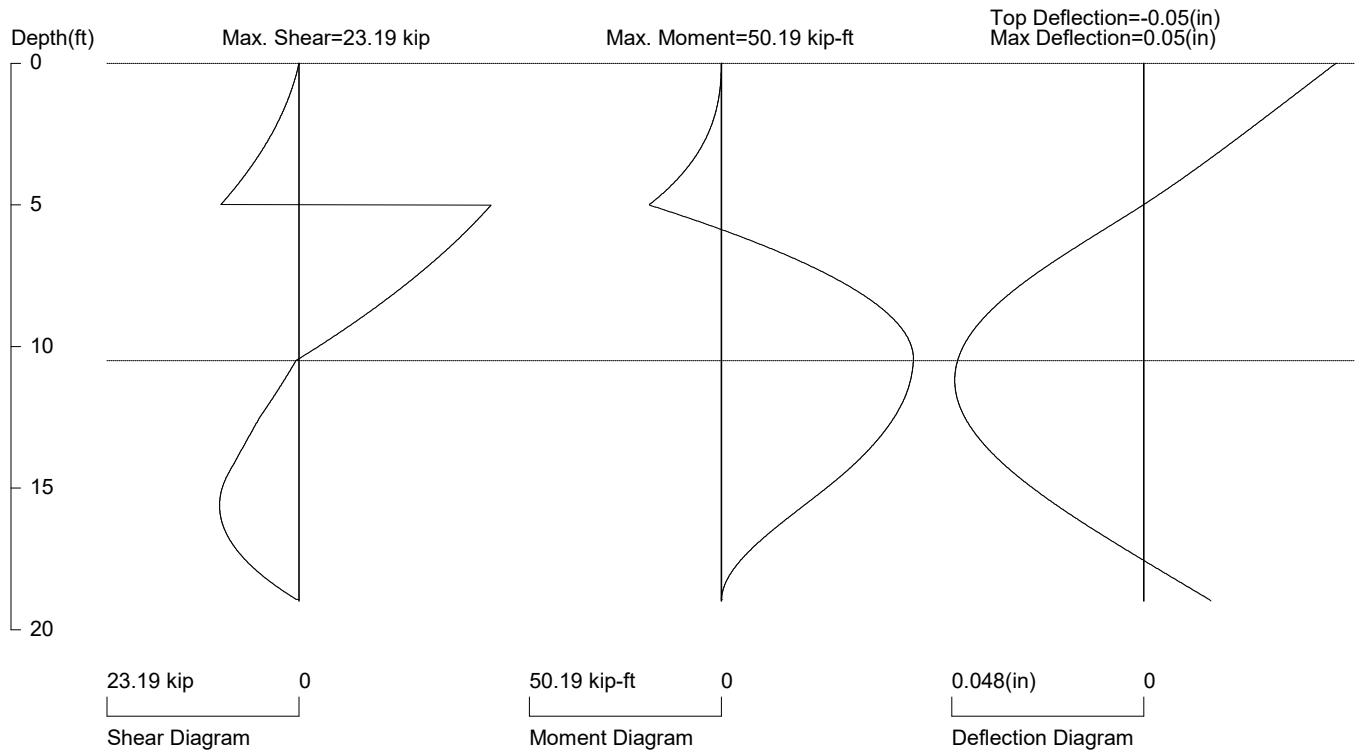
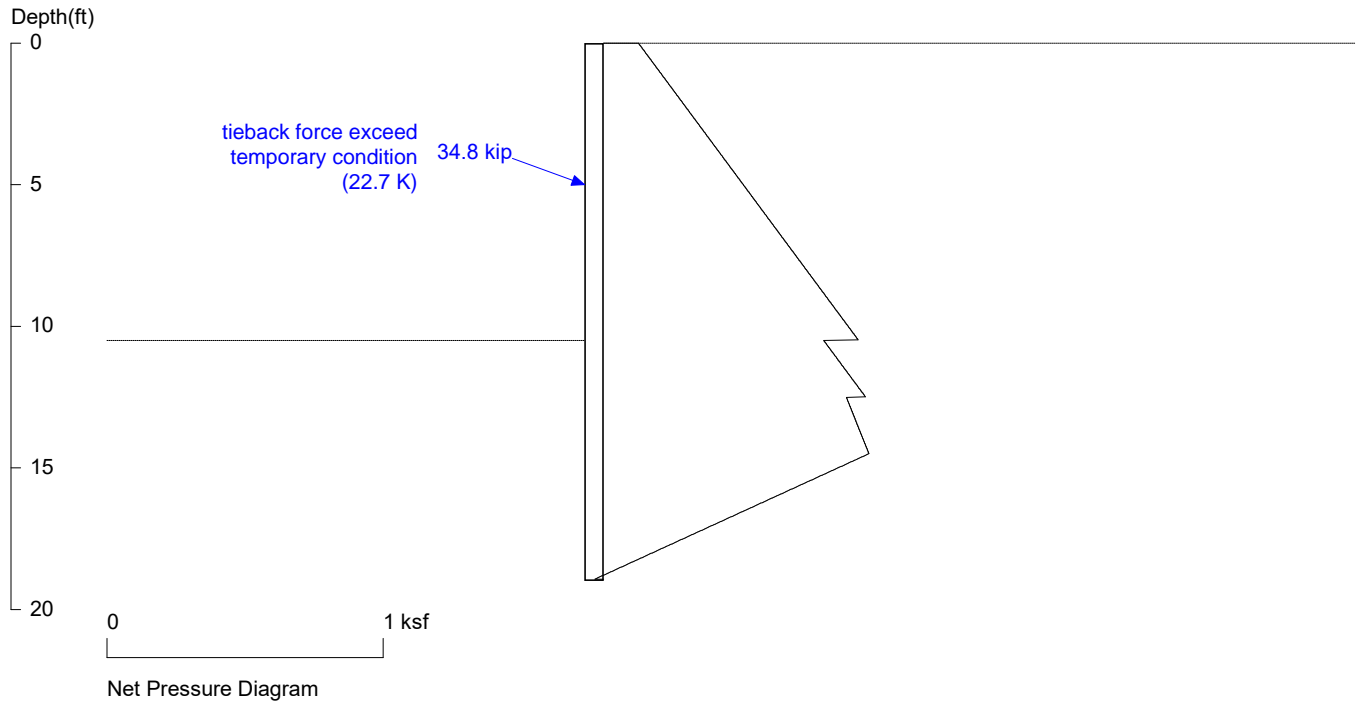
No.	Z depth	Spacing
1	0.00	6.00
2	13.00	2.50

PASSIVE SPACING:

No.	Z depth	Spacing
1	13.00	6.00

UNITS: Width,Spacing,Diameter,Length,and Depth - ft; Force - kip; Moment - kip-ft
Friction,Bearing,and Pressure - ksf; Pres. Slope - kip/ft³; Deflection - in

E11 (13 ft @ 6 ft oc) Permanent



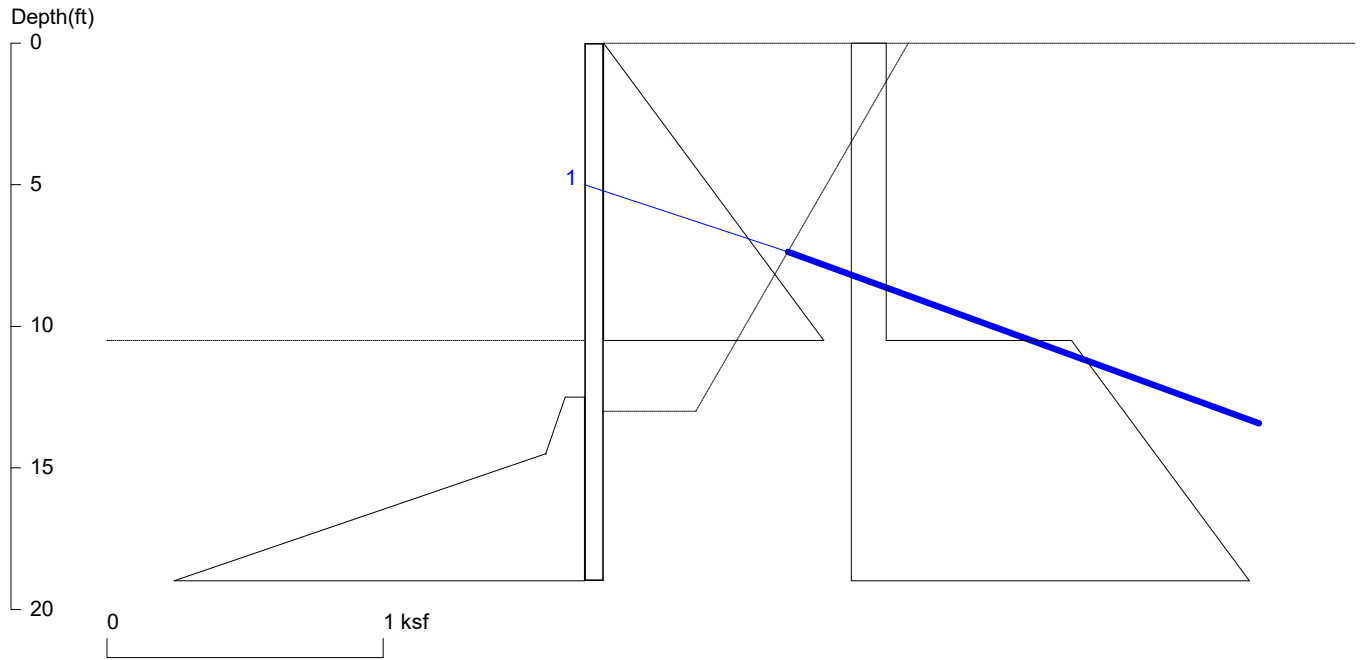
PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

Based on pile spacing: 6.0 foot or meter

User Input Pile, W18X60: E (ksi)=29000.0, I (in⁴)/pile=984.0

File: C:\Users\javid\OneDrive\Desktop\Atlas Projects\269-2024 (5818 West Mercer)\Shoring\R4 Updated\E11_10.5 ft @ 6 ft oc (Tieback) Permanent.SH8

E11 (13 ft @ 6 ft oc) Permanent



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File: C:\Users\javid\OneDrive\Desktop\Atlas Projects\269-2024 (5818 West Mercer)\Shoring\R4 Updated\E11_10.5 ft @ 6 ft

Wall Height=10.5 Pile Diameter=2.5 Pile Spacing=6.0 Wall Type: 2. Soldier Pile, Drilled

PILE LENGTH: Min. Embedment=8.49 Min. Pile Length=18.99

MOMENT IN PILE: Max. Moment=50.19 per Pile Spacing=6.0 at Depth=10.44

PILE SELECTION:

Request Min. Section Modulus = 18.2 in³/pile=299.06 cm³/pile, F_y= 50 ksi = 345 MPa, F_b/F_y=0.66

W18X60 has Section Modulus = 108.0 in³/pile=1769.80 cm³/pile. It is greater than Min. Requirements!

Top Deflection = -0.05(in) based on E (ksi)=29000.00 and I (in⁴)/pile=984.0

BRACE FORCE: Strut, Tieback, Plate Anchor, Deadman, Sheet Pile as Anchor

No. & Type	Depth	Angle	Space	Total F.	Horiz. F.	Vert. F.	L_free	Fixed Length
1. Tieback	5.0	20.0	6.0	34.8	32.7	11.9	6.9	22.1

UNITS: Width,Diameter,Spacing,Length,Depth,and Height - ft; Force - kip; Bond Strength and Pressure - ksf

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
0	0	10.5	0.797	.07595
0	.126	10.5	.126	
*	Below	Base		
10.5	.797	150	11.39	.07595

PASSIVE PRESSURES:

Z1	P1	Z2	P2	Slope
12.5	.07	14.5	0.140	.035
14.5	.14	250	70.79	.3

ACTIVE SPACING:

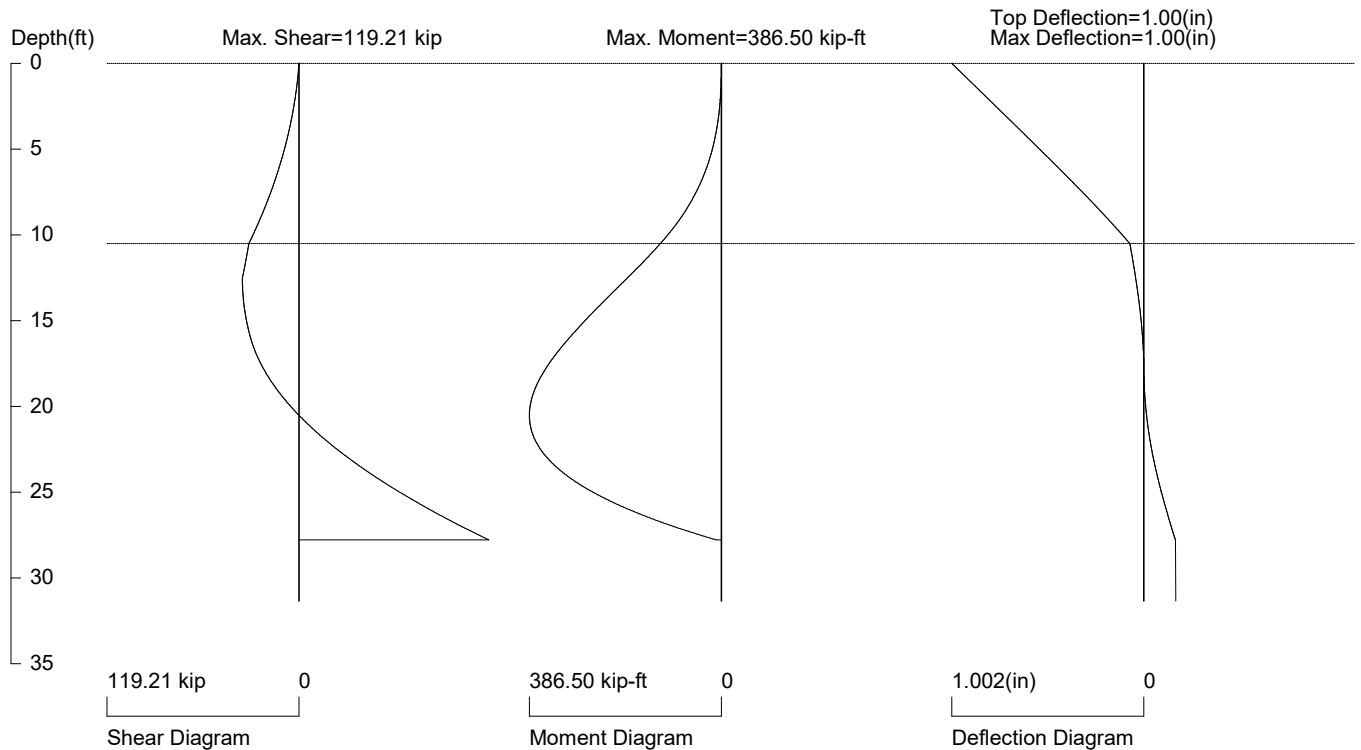
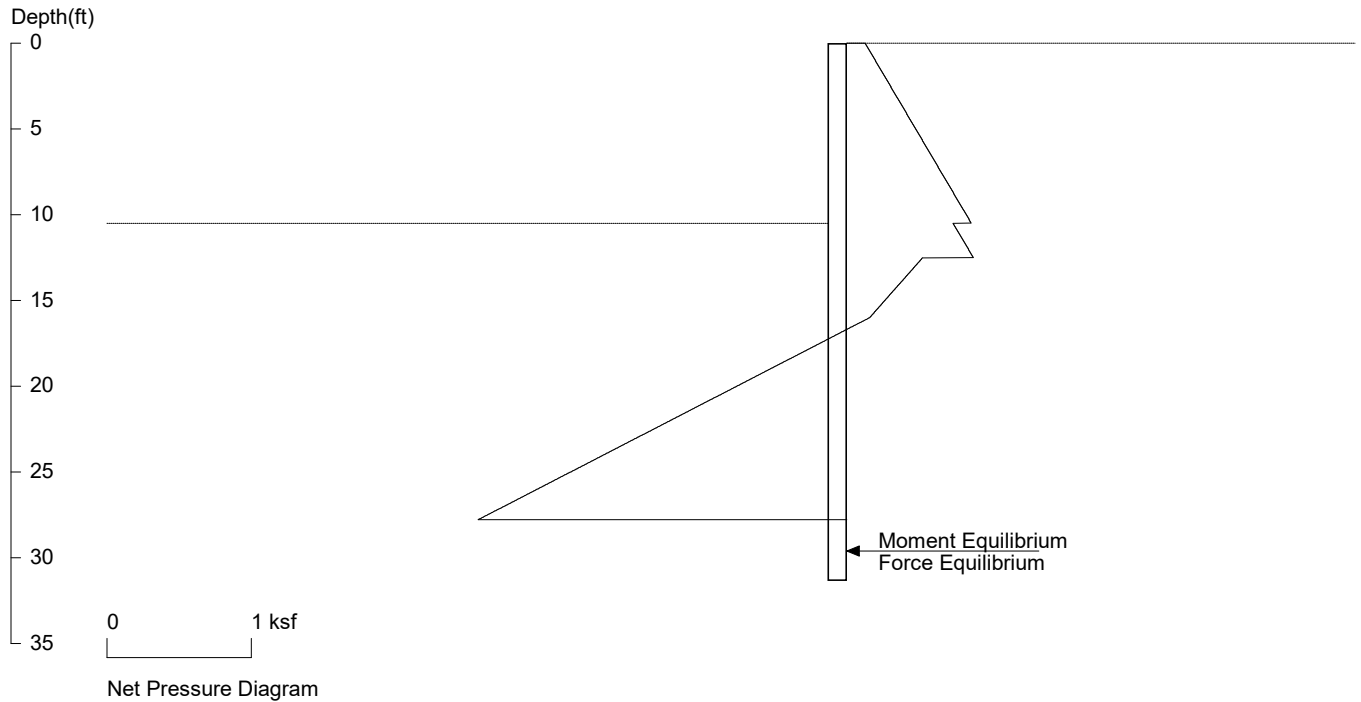
No.	Z depth	Spacing
1	0.00	6.00
2	10.50	2.50

PASSIVE SPACING:

No.	Z depth	Spacing
1	10.50	6.25

UNITS: Width, Spacing, Diameter, Length, and Depth - ft; Force - kip; Moment - kip-ft
Friction, Bearing, and Pressure - ksf; Pres. Slope - kip/ft³; Deflection - in

E12, E13 (10.5 ft @ 6 ft oc)



PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

Based on pile spacing: 6.0 foot or meter

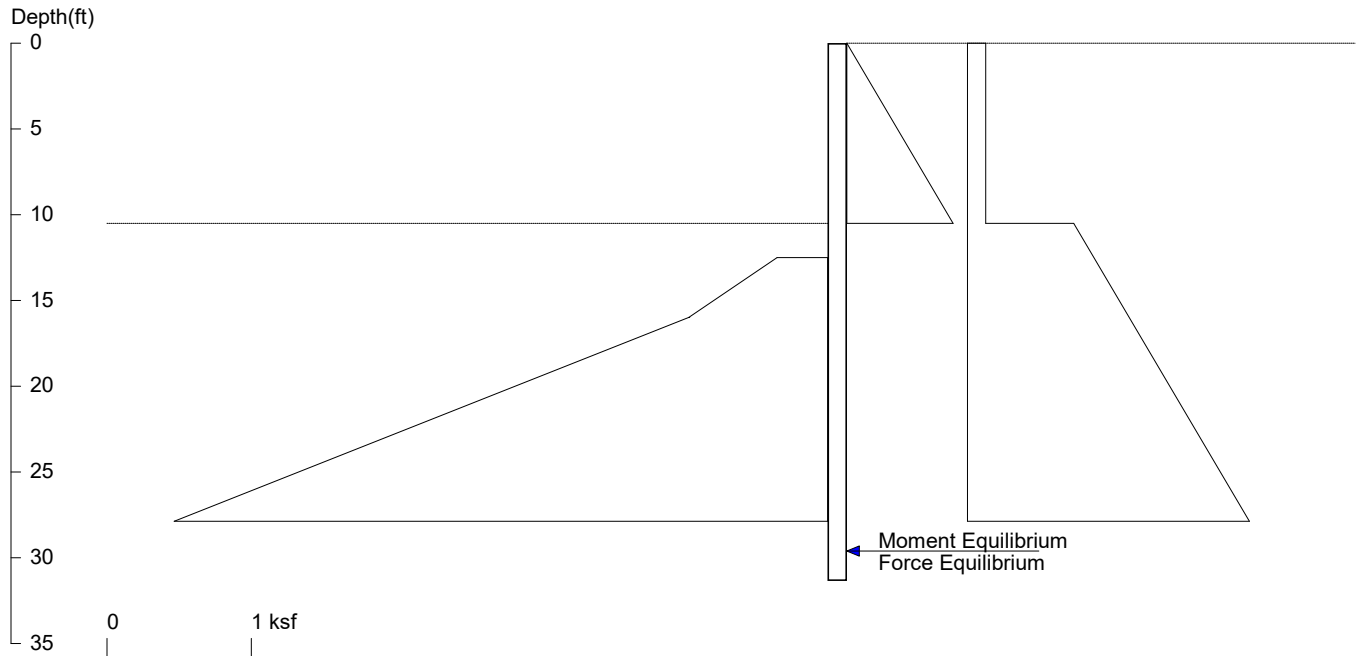
User Input Pile, W18X76: E (ksi)=29000.0, I (in⁴)/pile=1330.0

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E12, E13 (10.5 ft @ 6 ft oc)



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Wall Height=10.5 Pile Diameter=2.5 Pile Spacing=6.0 Wall Type: 2. Soldier Pile, Drilled

PILE LENGTH: Min. Embedment=20.85 Min. Pile Length=31.35

MOMENT IN PILE: Max. Moment=386.50 per Pile Spacing=6.0 at Depth=20.53

PILE SELECTION:

Request Min. Section Modulus = 140.5 in³/pile=2303.10 cm³/pile, F_y= 50 ksi = 345 MPa, F_b/F_y=0.66

W18X76 has Section Modulus = 146.0 in³/pile=2392.50 cm³/pile. It is greater than Min. Requirements!

Top Deflection = 1.00(in) based on E (ksi)=29000.00 and I (in⁴)/pile=1330.0

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
0	0	10.5	0.735	.07
0	.126	10.5	.126	0
*	Below	Base		
10.5	.735	100	7.000	.07

PASSIVE PRESSURES:

Z1	P1	Z2	P2	Slope
12.5	.35	16	0.962	.175
16	.962	200	56.16	.3

ACTIVE SPACING:

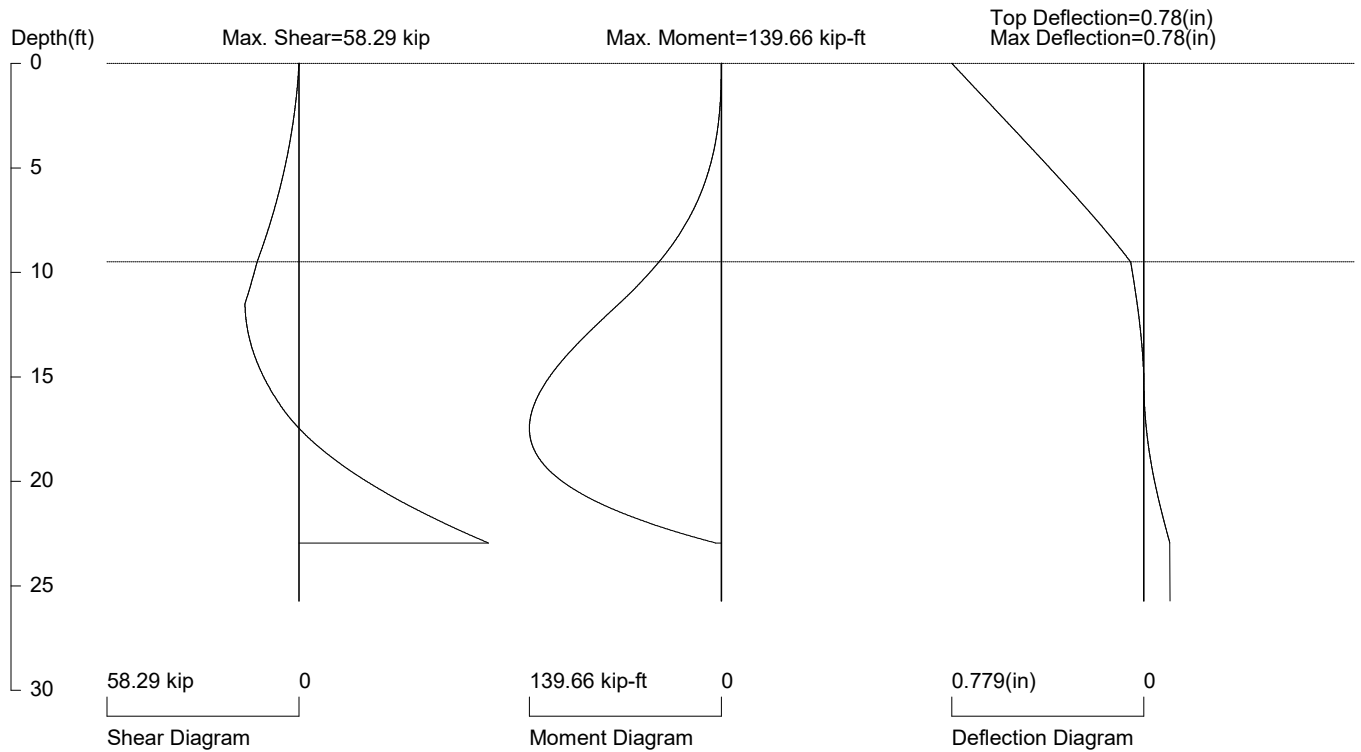
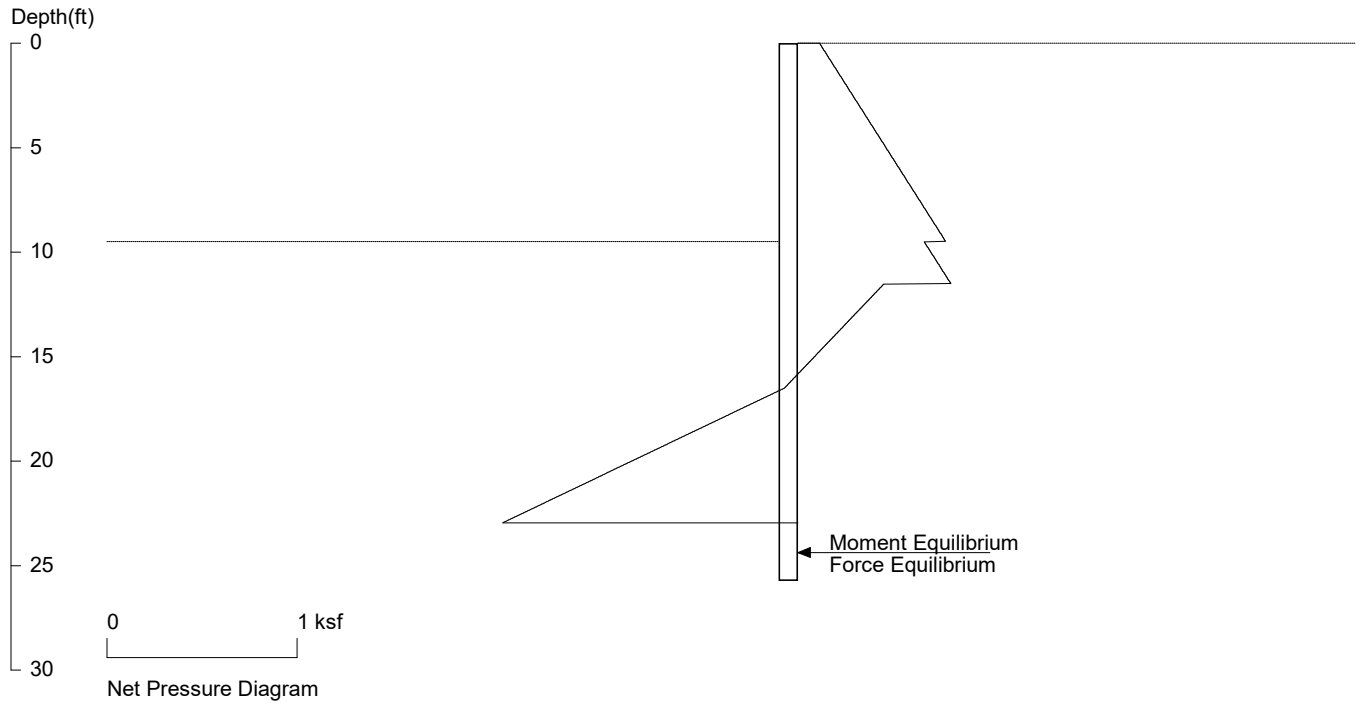
No.	Z depth	Spacing
1	0.00	6.00
2	10.50	2.50

PASSIVE SPACING:

No.	Z depth	Spacing
1	10.50	6.00

UNITS: Width, Spacing, Diameter, Length, and Depth - ft; Force - kip; Moment - kip-ft
Friction, Bearing, and Pressure - ksf; Pres. Slope - kip/ft³; Deflection - in

E14 (9.5 ft @ 6 ft oc) Corner Pile Case



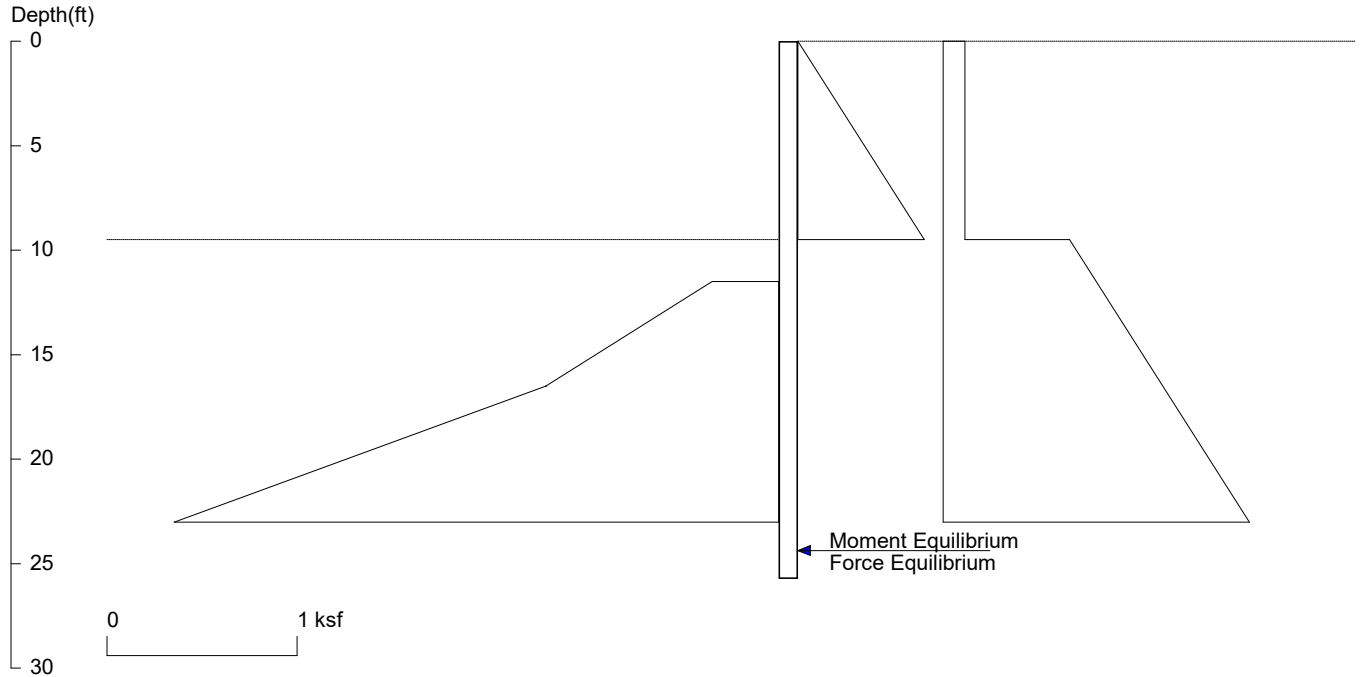
PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

Based on pile spacing: 6.0 foot or meter

User Input Pile, W16X36: E (ksi)=29000.0, I (in⁴)/pile=448.0

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E14 (9.5 ft @ 6 ft oc) Corner Pile Case



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Wall Height=9.5 Pile Diameter=2.5 Pile Spacing=6.0 Wall Type: 2. Soldier Pile, Drilled

PILE LENGTH: Min. Embedment=16.22 Min. Pile Length=25.72

MOMENT IN PILE: Max. Moment=139.66 per Pile Spacing=6.0 at Depth=17.47

PILE SELECTION:

Request Min. Section Modulus = 50.8 in³/pile=832.20 cm³/pile, Fy= 50 ksi = 345 MPa, Fb/Fy=0.66

W16X36 has Section Modulus = 56.5 in³/pile=925.87 cm³/pile. It is greater than Min. Requirements!

Top Deflection = 0.78(in) based on E (ksi)=29000.00 and I (in⁴)/pile=448.0

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
0	0	9.5	0.665	.07
0	.114	9.5	.114	0
*	Below	Base		
9.5	.665	100	7.000	.07

PASSIVE PRESSURES:

Z1	P1	Z2	P2	Slope
11.5	.35	16.5	1.225	.175
16.5	1.225	200	56.27	.3

ACTIVE SPACING:

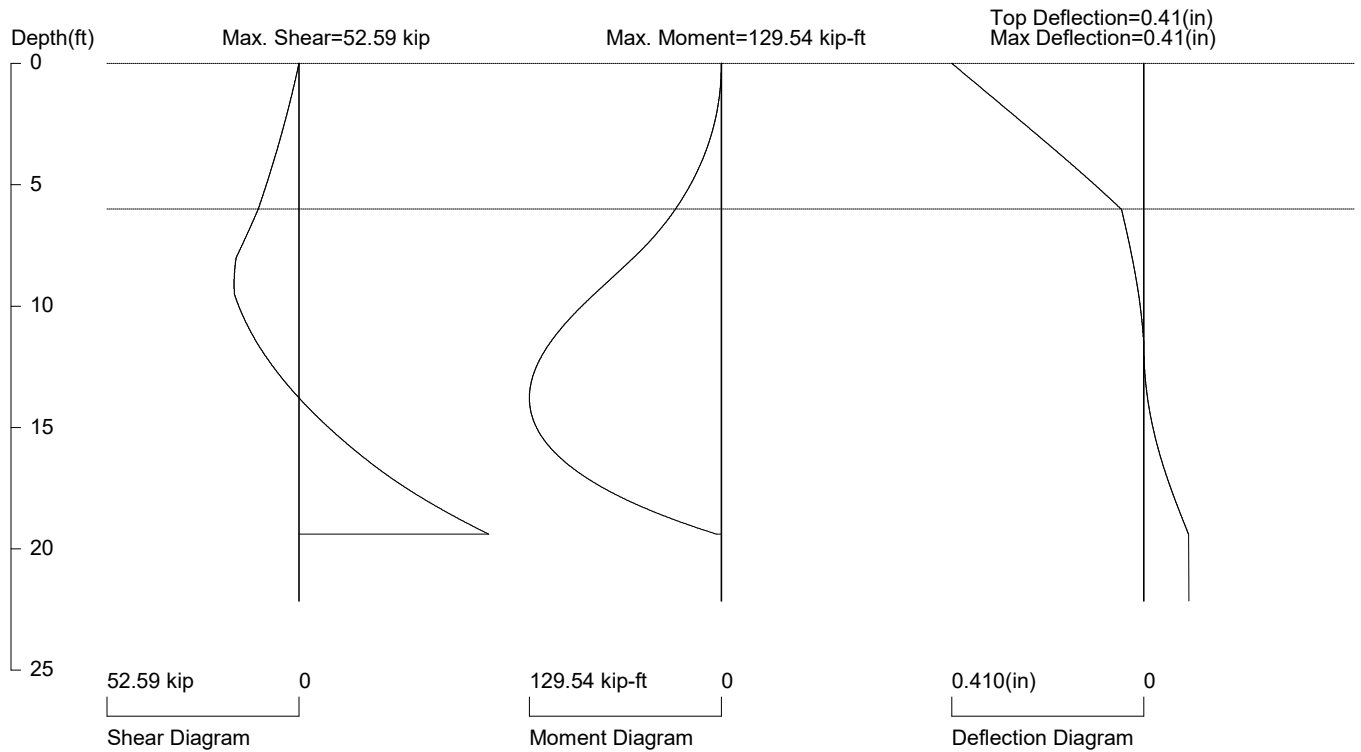
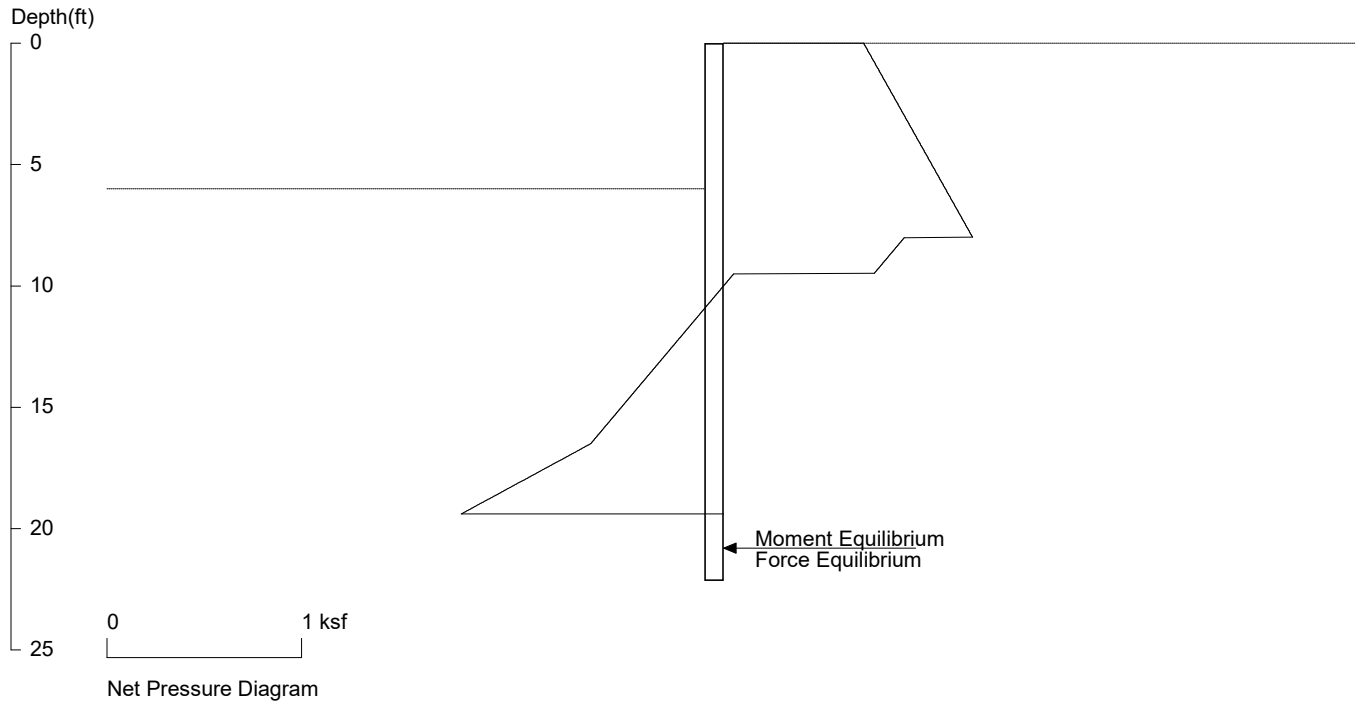
No.	Z depth	Spacing
1	0.00	3.00
2	9.50	2.50

PASSIVE SPACING:

No.	Z depth	Spacing
1	9.50	6.00

UNITS: Width, Spacing, Diameter, Length, and Depth - ft; Force - kip; Moment - kip-ft
Friction, Bearing, and Pressure - ksf; Pres. Slope - kip/ft³; Deflection - in

N1 (6 ft @ 4 ft oc)



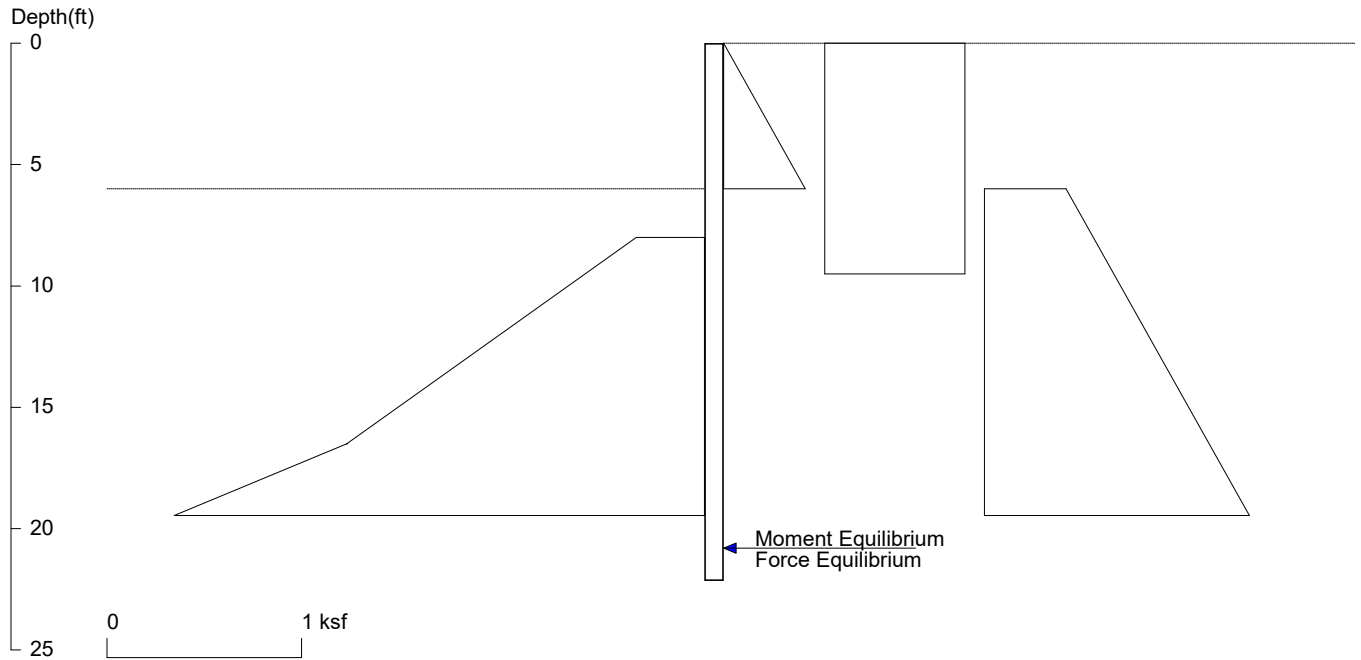
PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

Based on pile spacing: 4.0 foot or meter

User Input Pile, W16X36: E (ksi)=29000.0, I (in⁴)/pile=448.0

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N1 (6 ft @ 4 ft oc)



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Wall Height=6.0 Pile Diameter=2.5 Pile Spacing=4.0 Wall Type: 2. Soldier Pile, Drilled

PILE LENGTH: Min. Embedment=16.15 Min. Pile Length=22.15

MOMENT IN PILE: Max. Moment=129.54 per Pile Spacing=4.0 at Depth=13.79

PILE SELECTION:

Request Min. Section Modulus = 47.1 in³/pile=771.95 cm³/pile, F_y= 50 ksi = 345 MPa, F_b/F_y=0.66

W16X36 has Section Modulus = 56.5 in³/pile=925.87 cm³/pile. It is greater than Min. Requirements!

Top Deflection = 0.41(in) based on E (ksi)=29000.00 and I (in⁴)/pile=448.0

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
0	0	6	0.420	.07
0	.72	9.5	.72	0
*	Below	Base		
6	.420	100	7.000	.07

PASSIVE PRESSURES:

Z1	P1	Z2	P2	Slope
8	.35	16.5	1.837	.175
16.5	1.837	200	56.88	.3

ACTIVE SPACING:

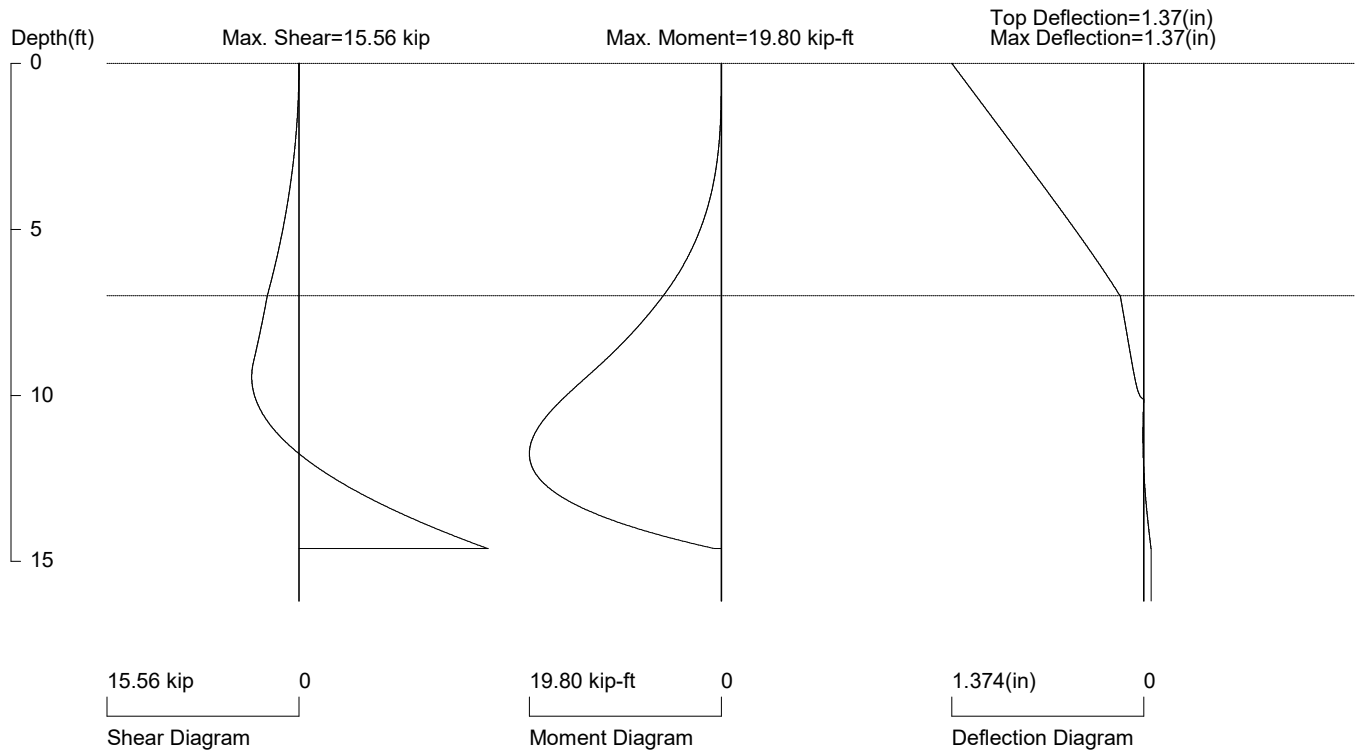
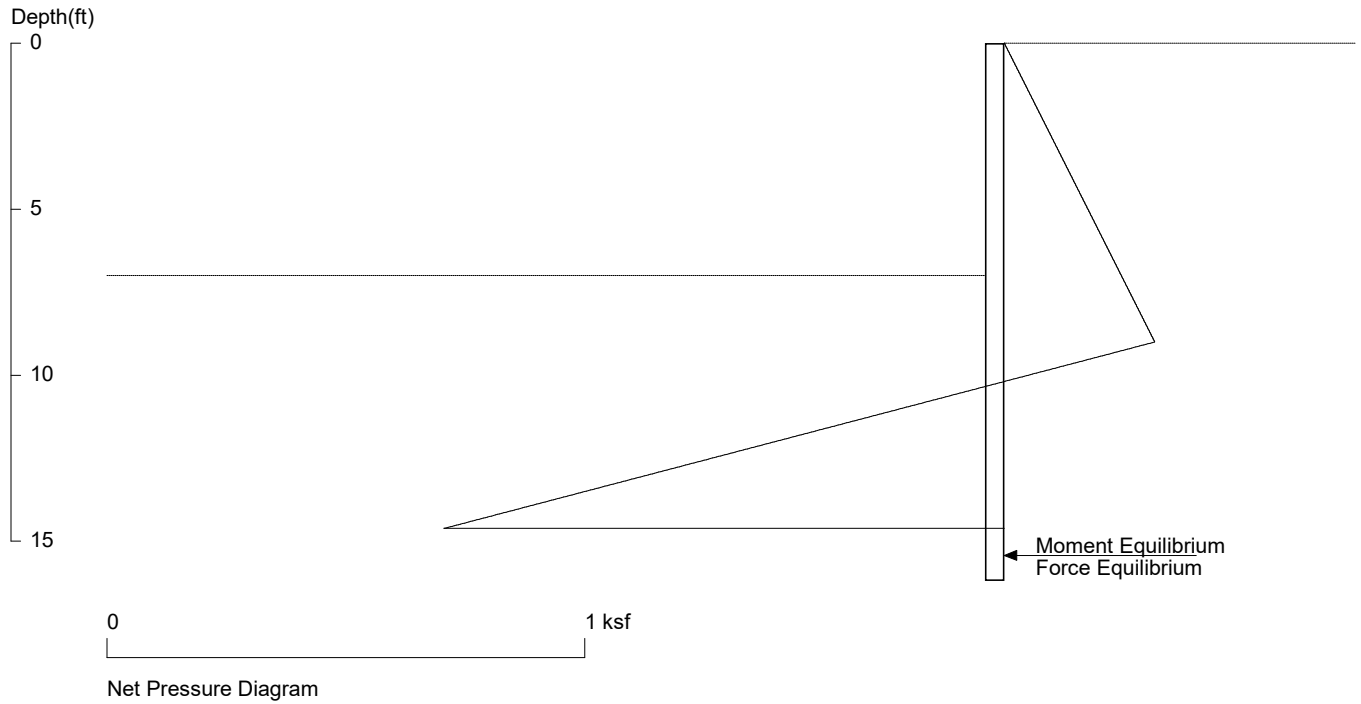
No.	Z depth	Spacing
1	0.00	2.00
2	6.00	2.50

PASSIVE SPACING:

No.	Z depth	Spacing
1	6.00	6.25

UNITS: Width, Spacing, Diameter, Length, and Depth - ft; Force - kip; Moment - kip-ft
Friction, Bearing, and Pressure - ksf; Pres. Slope - kip/ft³; Deflection - in

S1 (7 ft @ 6 ft oc)



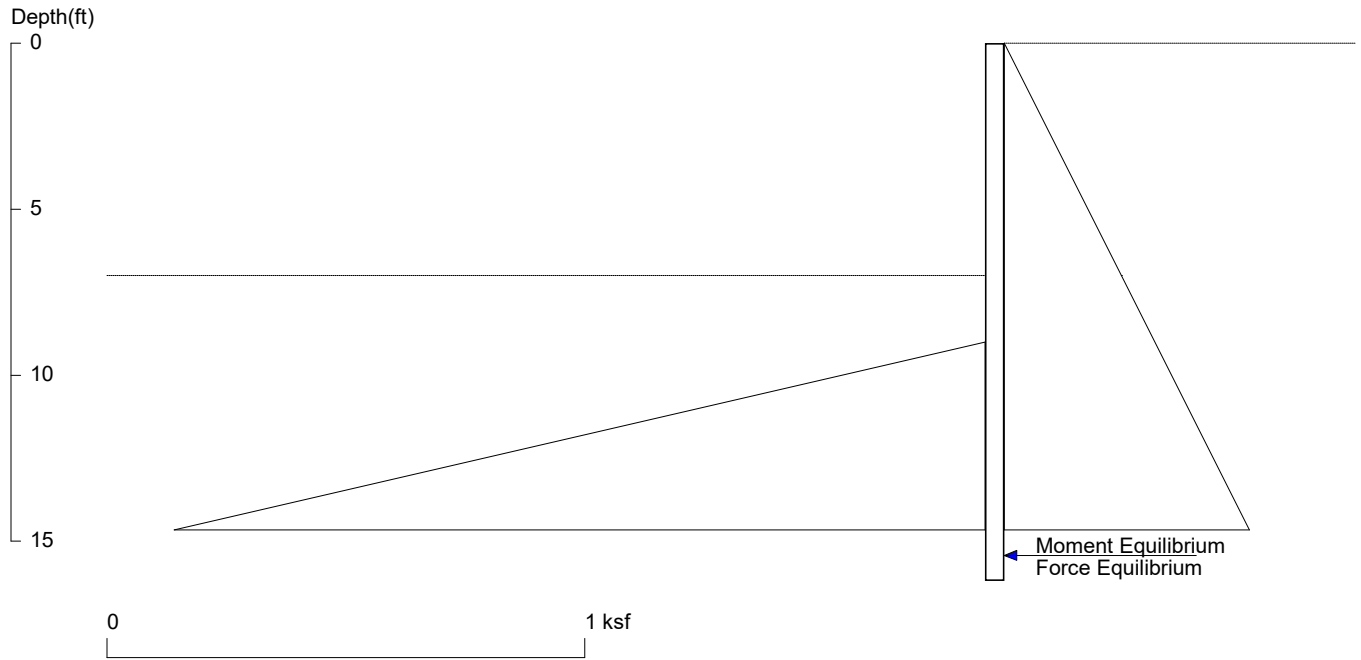
PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

Based on pile spacing: 6.0 foot or meter

First Suitable Pile: W5X16: E (ksi)=29000.0, I (in⁴)/pile=21.4

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S1 (7 ft @ 6 ft oc)



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Wall Height=7.0 Pile Diameter=2.0 Pile Spacing=6.0 Wall Type: 2. Soldier Pile, Drilled

PILE LENGTH: Min. Embedment=9.19 Min. Pile Length=16.19

MOMENT IN PILE: Max. Moment=19.80 per Pile Spacing=6.0 at Depth=11.76

PILE SELECTION:

Request Min. Section Modulus = 7.2 in³/pile=117.99 cm³/pile, Fy= 50 ksi = 345 MPa, Fb/Fy=0.66

-> Piles meet Min. Section Requirements: Top Deflection is shown in (in)

W5X16 (1.37) W6X12 (1.33) HP8X36 (0.25) W8X10 (0.95) HP10X42 (0.14)
 W10X12 (0.55) HP12X53 (0.07) W12X14 (0.33) HP13X60 (0.06) HP14X73 (0.04)
 W14X22 (0.15) W16X26 (0.10) HP16X88 (0.03) W16X89 (0.02)

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
0	0	7	0.245	.035
*	Below	Base		
7	.245	100	3.500	.035

PASSIVE PRESSURES:

Z1	P1	Z2	P2	Slope
9	0	17	2.400	.3

ACTIVE SPACING:

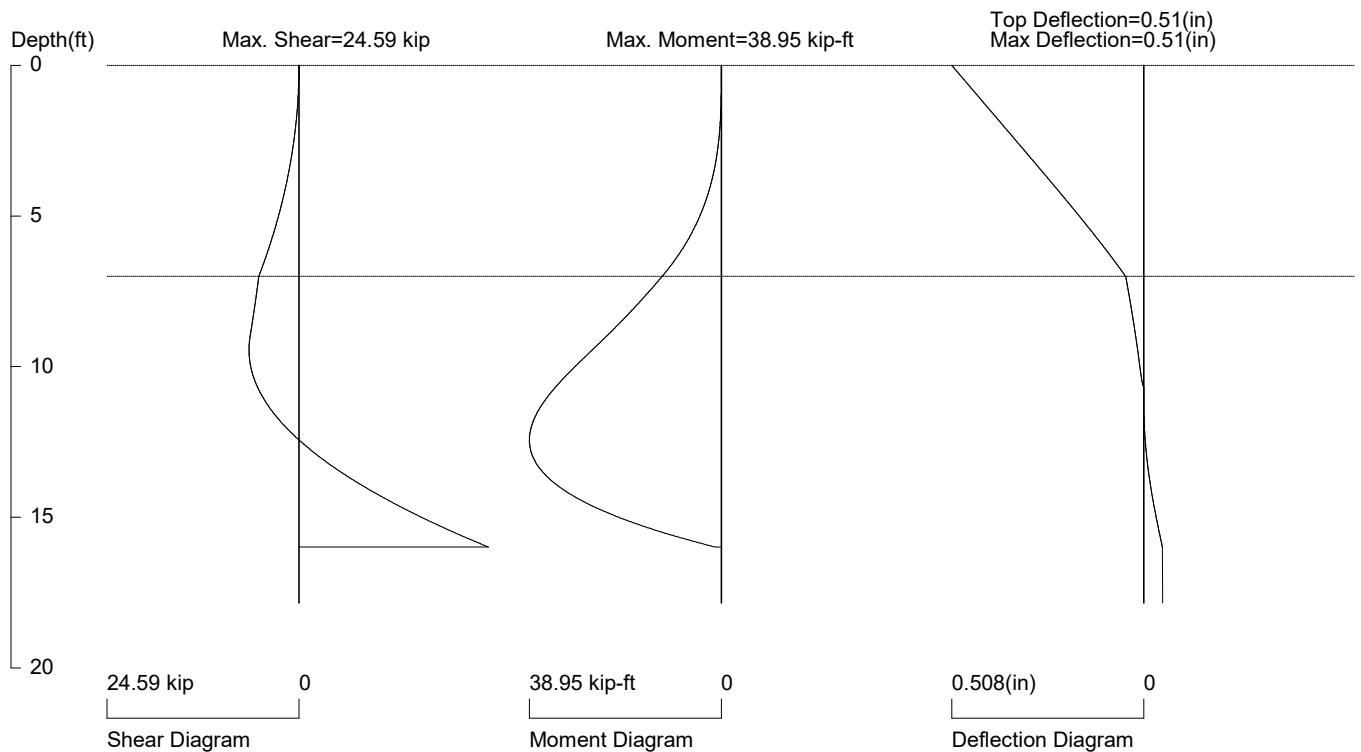
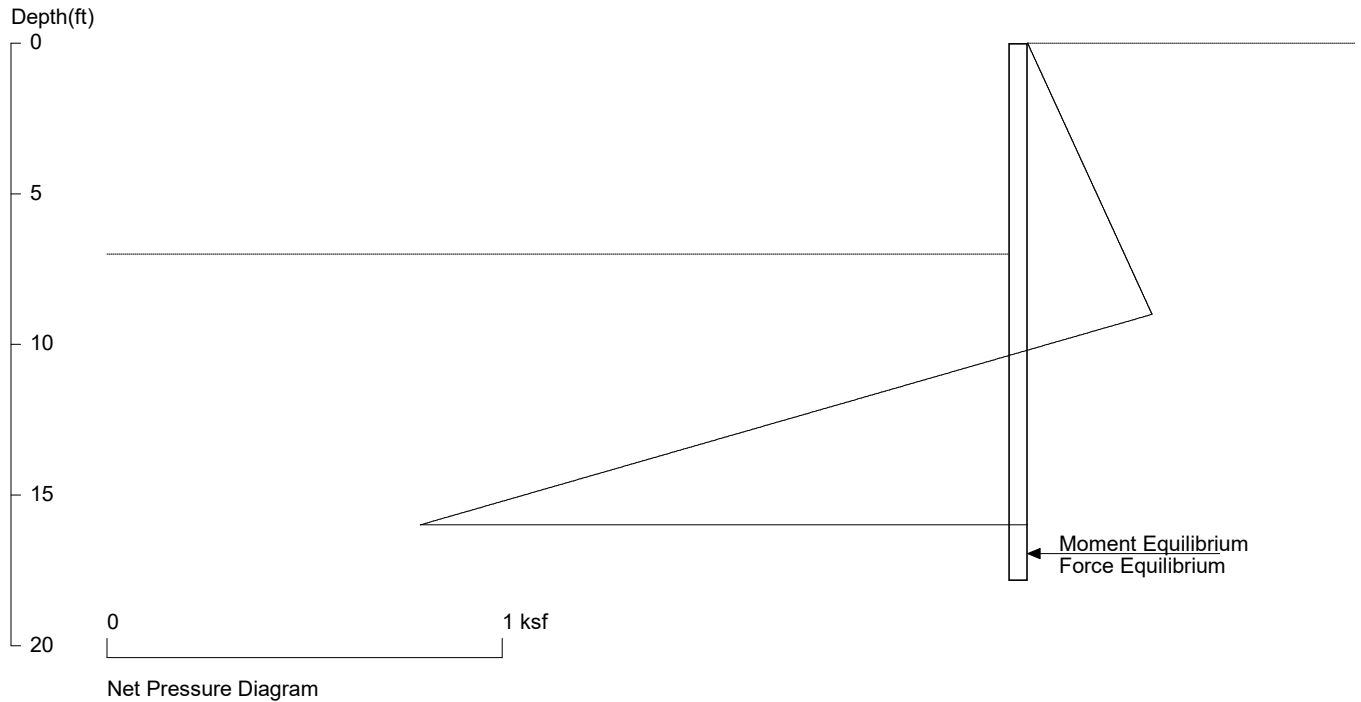
No.	Z depth	Spacing
1	0.00	3.00
2	7.00	2.00

PASSIVE SPACING:

No.	Z depth	Spacing
1	7.00	5.00

UNITS: Width, Spacing, Diameter, Length, and Depth - ft; Force - kip; Moment - kip-ft
 Friction, Bearing, and Pressure - ksf; Pres. Slope - kip/ft³; Deflection - in

S2 (7 ft @ 6 ft oc)



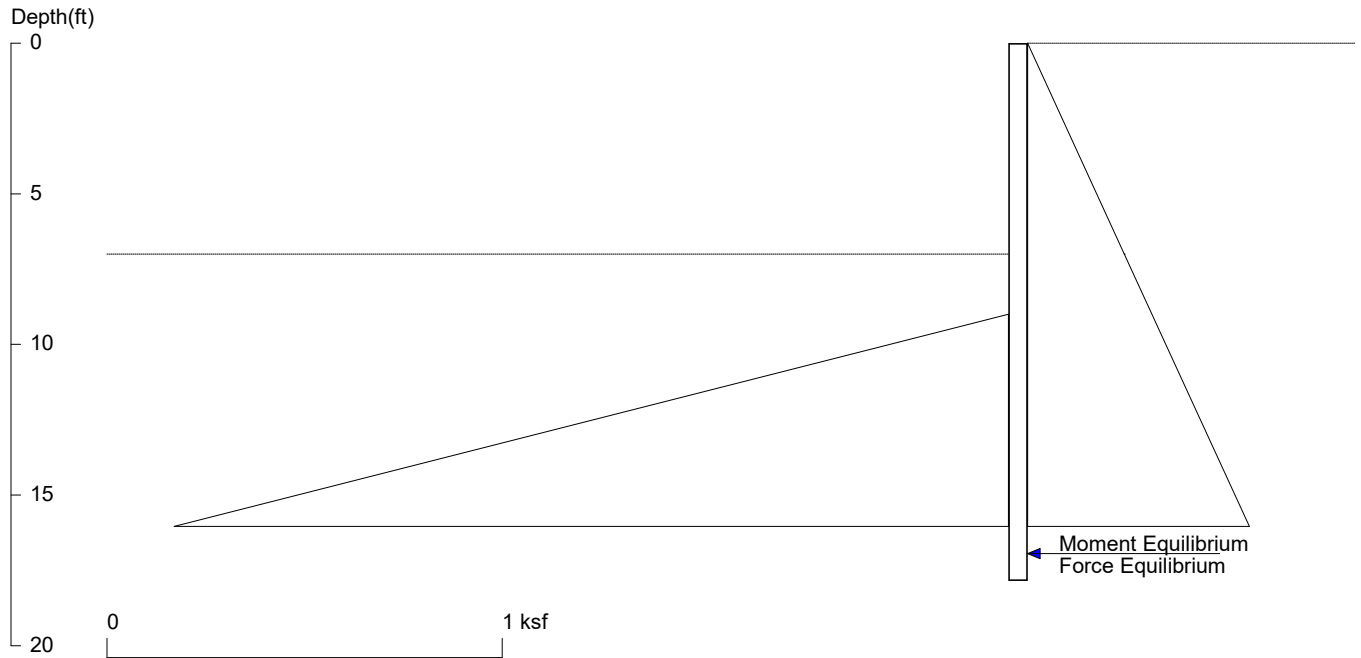
PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

Based on pile spacing: 6.0 foot or meter

User Input Pile, W12X16: E (ksi)=29000.0, I (in⁴)/pile=103.0

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S2 (7 ft @ 6 ft oc)



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Wall Height=7.0 Pile Diameter=2.0 Pile Spacing=6.0 Wall Type: 2. Soldier Pile, Drilled

PILE LENGTH: Min. Embedment=10.84 Min. Pile Length=17.84

MOMENT IN PILE: Max. Moment=38.95 per Pile Spacing=6.0 at Depth=12.44

PILE SELECTION:

Request Min. Section Modulus = 14.2 in³/pile=232.07 cm³/pile, F_y= 50 ksi = 345 MPa, F_b/F_y=0.66

W12X16 has Section Modulus = 17.1 in³/pile=280.22 cm³/pile. It is greater than Min. Requirements!

Top Deflection = 0.51(in) based on E (ksi)=29000.00 and I (in⁴)/pile=103.0

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
0	0	7	0.245	.035
*	Below	Base		
7	.245	100	3.500	.035

PASSIVE PRESSURES:

Z1	P1	Z2	P2	Slope
9	0	17	2.400	.3
17	2.4	200	56.90	.3

ACTIVE SPACING:

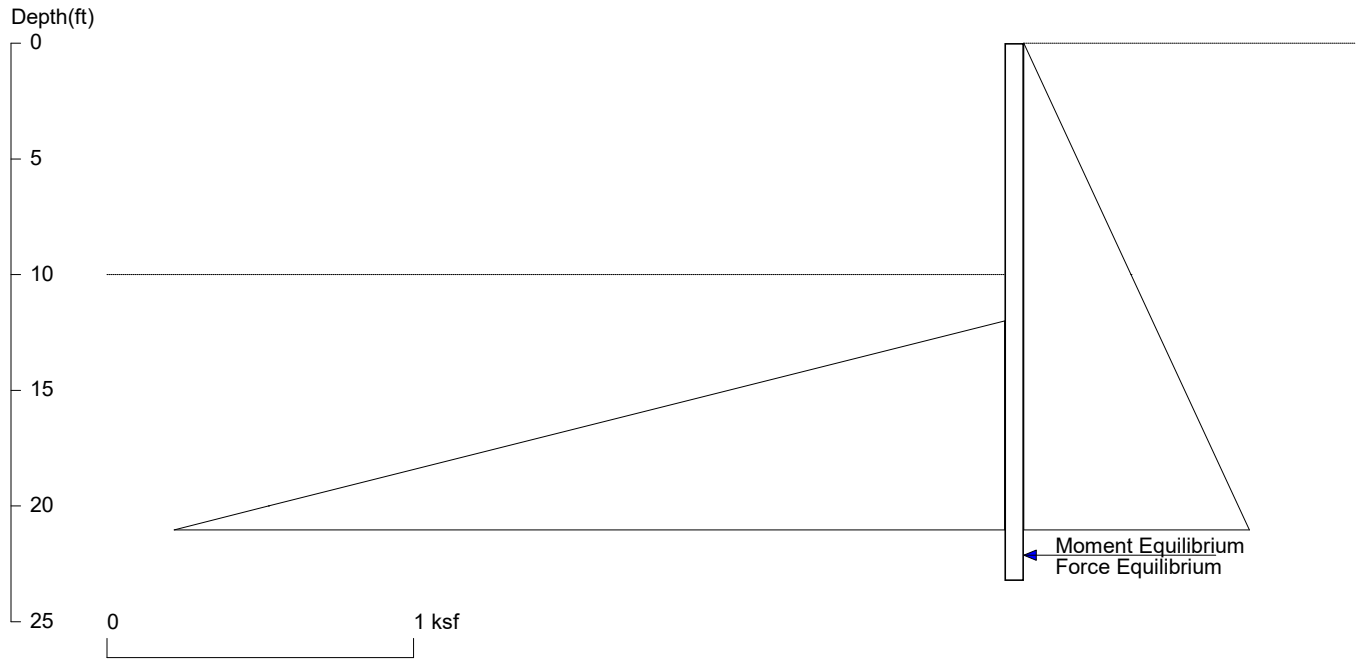
No.	Z depth	Spacing
1	0.00	6.00
2	7.00	2.00

PASSIVE SPACING:

No.	Z depth	Spacing
1	7.00	5.00

UNITS: Width, Spacing, Diameter, Length, and Depth - ft; Force - kip; Moment - kip-ft
Friction, Bearing, and Pressure - ksf; Pres. Slope - kip/ft³; Deflection - in

S3 (10 ft @ 5 ft oc)



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Wall Height=10.0 Pile Diameter=2.0 Pile Spacing=5.0 Wall Type: 2. Soldier Pile, Drilled

PILE LENGTH: Min. Embedment=13.23 Min. Pile Length=23.23

MOMENT IN PILE: Max. Moment=81.27 per Pile Spacing=5.0 at Depth=16.42

PILE SELECTION:

Request Min. Section Modulus = 29.6 in³/pile=484.26 cm³/pile, Fy= 50 ksi = 345 MPa, Fb/Fy=0.66

W14X26 has Section Modulus = 35.3 in³/pile=578.46 cm³/pile. It is greater than Min. Requirements!

Top Deflection = 0.77(in) based on E (ksi)=29000.00 and I (in⁴)/pile=245.0

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
0	0	10	0.350	.035
*	Below	Base		
10	.35	100	3.500	.035

PASSIVE PRESSURES:

Z1	P1	Z2	P2	Slope
12	0	20	2.400	.3
20	2.4	200	56.00	.3

ACTIVE SPACING:

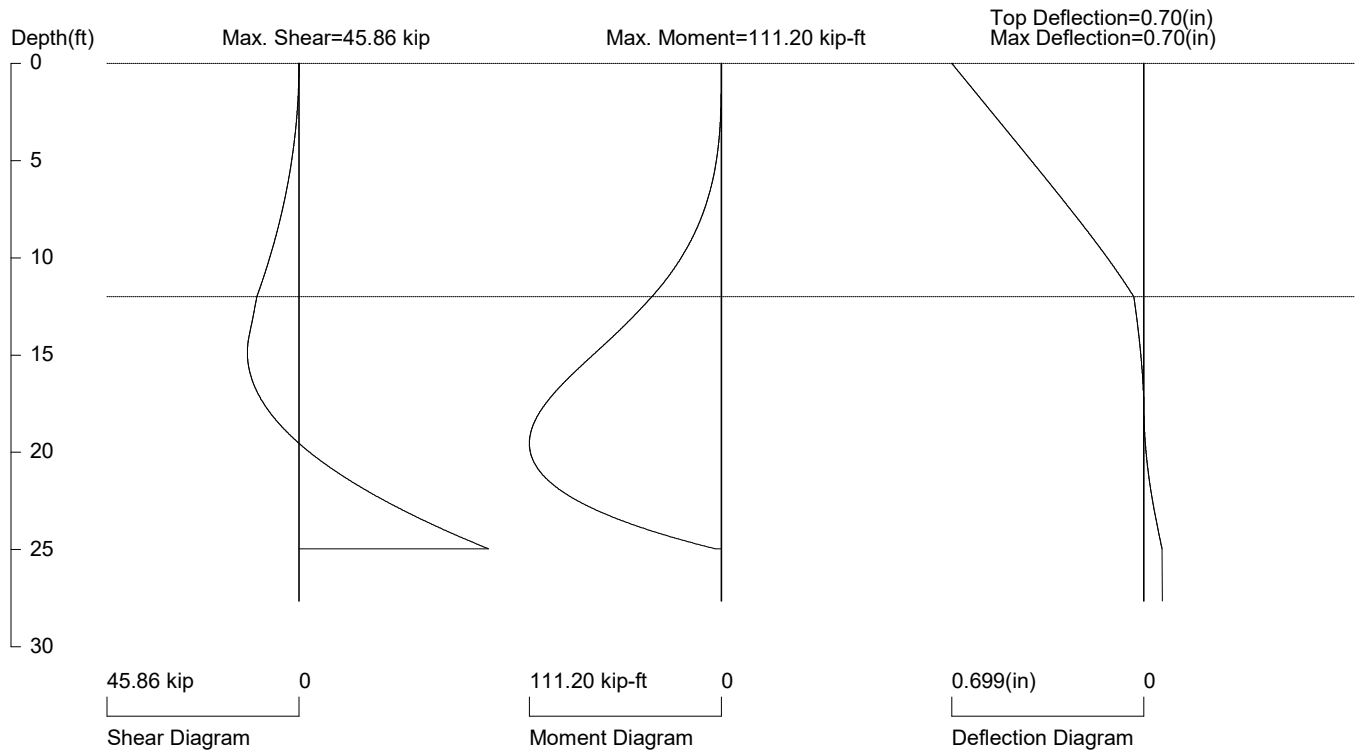
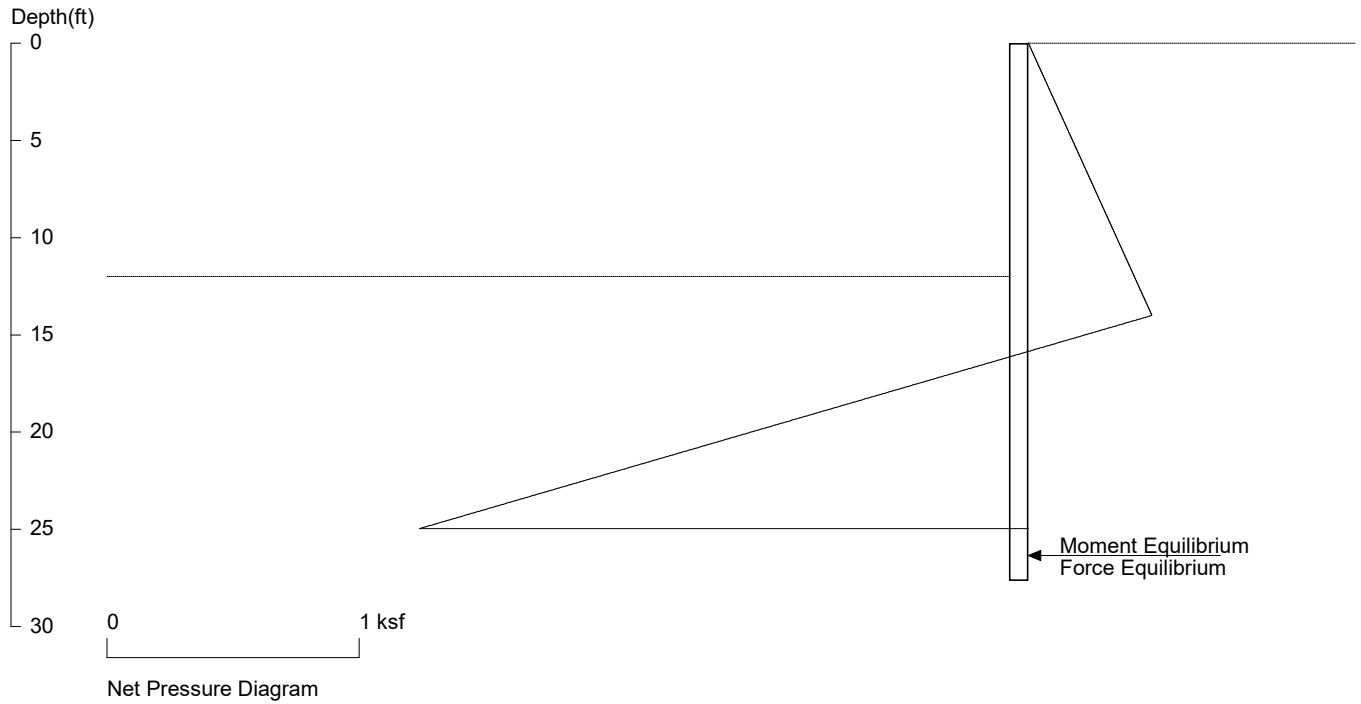
No.	Z depth	Spacing
1	0.00	5.00
2	10.00	2.00

PASSIVE SPACING:

No.	Z depth	Spacing
1	10.00	5.00

UNITS: Width, Spacing, Diameter, Length, and Depth - ft; Force - kip; Moment - kip-ft
Friction, Bearing, and Pressure - ksf; Pres. Slope - kip/ft³; Deflection - in

S4 (12 ft @ 4 ft oc)



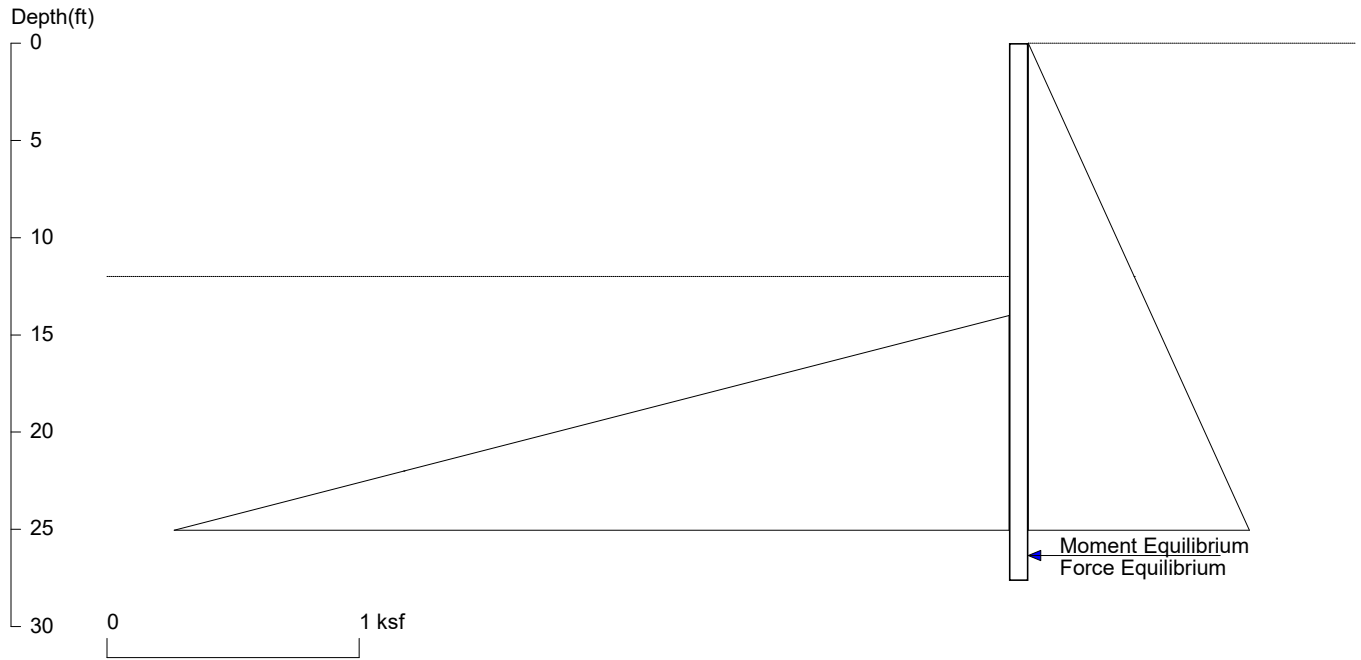
PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

Based on pile spacing: 4.0 foot or meter

User Input Pile, W16X40: E (ksi)=29000.0, I (in⁴)/pile=518.0

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S4 (12 ft @ 4 ft oc)



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Wall Height=12.0 Pile Diameter=2.0 Pile Spacing=4.0 Wall Type: 2. Soldier Pile, Drilled

PILE LENGTH: Min. Embedment=15.65 Min. Pile Length=27.65

MOMENT IN PILE: Max. Moment=111.20 per Pile Spacing=4.0 at Depth=19.53

PILE SELECTION:

Request Min. Section Modulus = 56.2 in³/pile=920.28 cm³/pile, Fy= 36 ksi = 248 MPa, Fb/Fy=0.66

W16X40 has Section Modulus = 64.7 in³/pile=1060.24 cm³/pile. It is greater than Min. Requirements!

Top Deflection = 0.70(in) based on E (ksi)=29000.00 and I (in⁴)/pile=518.0

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
0	0	12	0.420	.035
*	Below	Base		
12	.42	100	3.500	.035

PASSIVE PRESSURES:

Z1	P1	Z2	P2	Slope
14	0	22	2.400	.3
22	2.4	200	55.80	.3

ACTIVE SPACING:

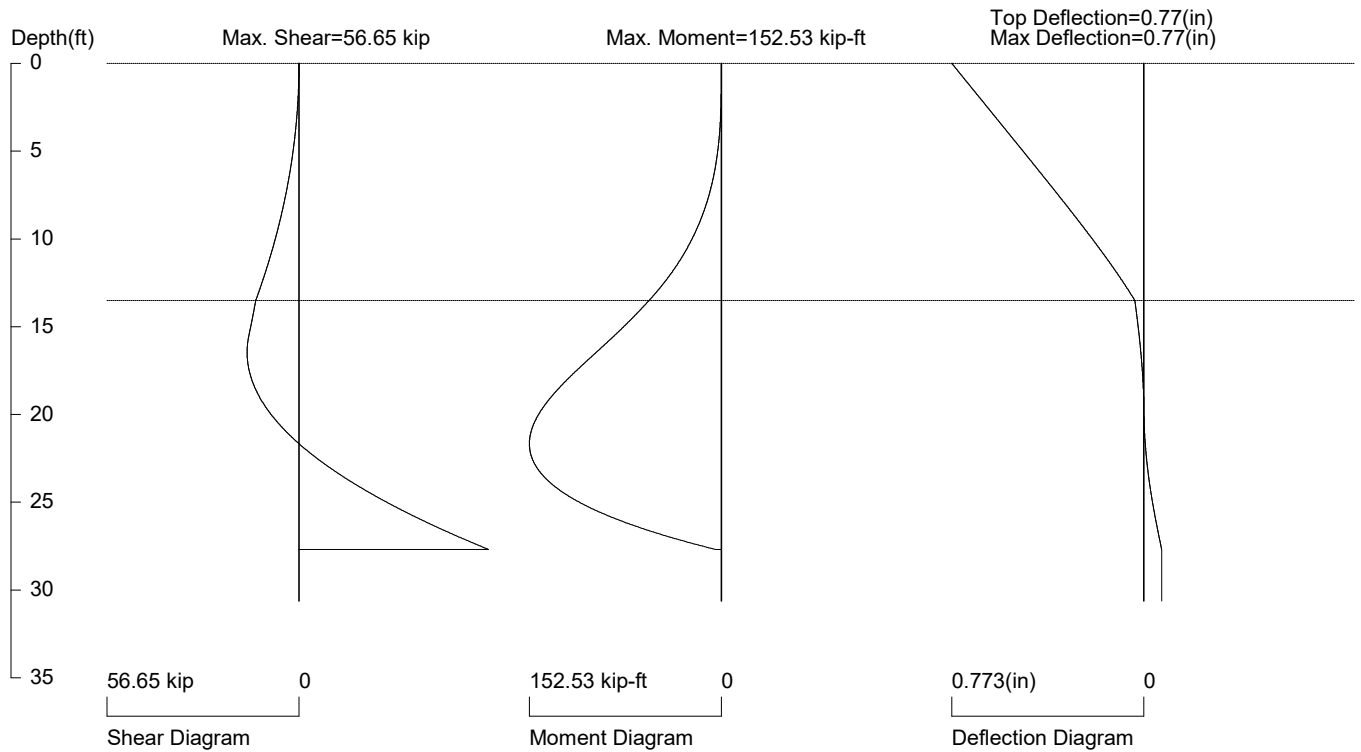
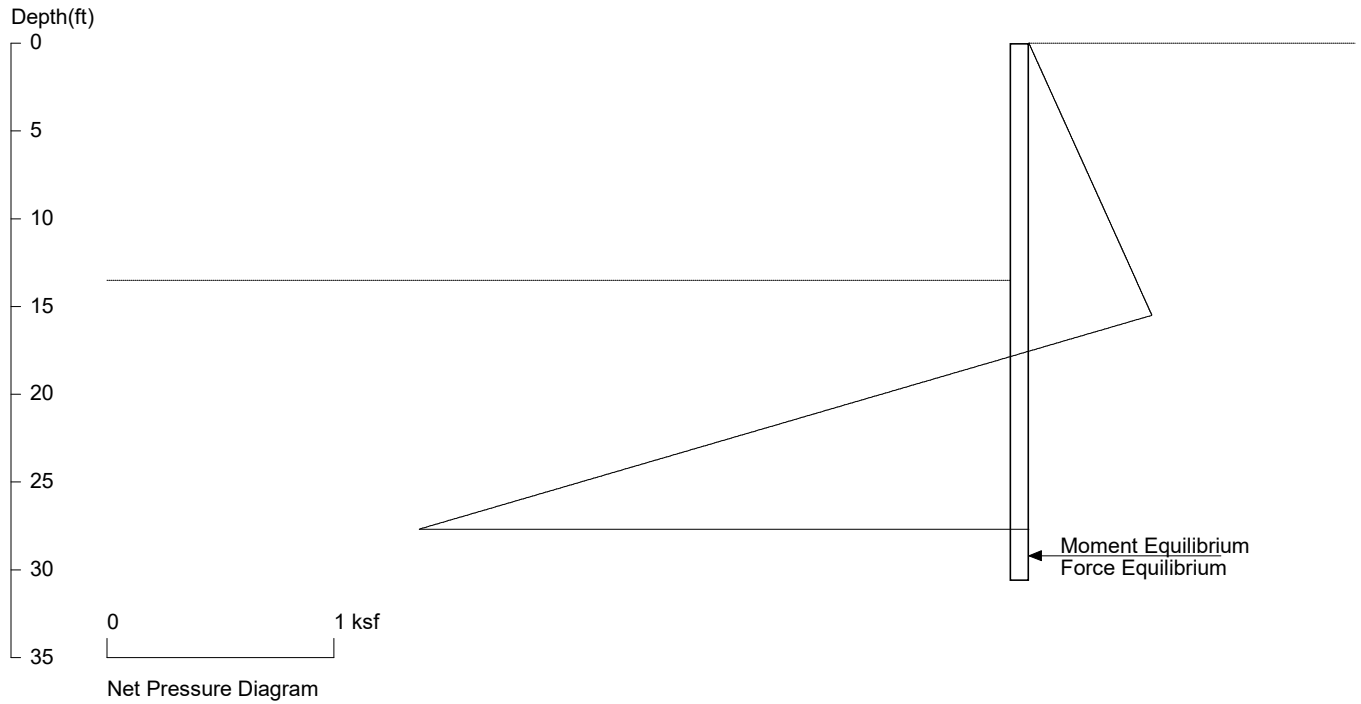
No.	Z depth	Spacing
1	0.00	4.00
2	12.00	2.00

PASSIVE SPACING:

No.	Z depth	Spacing
1	12.00	4.00

UNITS: Width, Spacing, Diameter, Length, and Depth - ft; Force - kip; Moment - kip-ft
Friction, Bearing, and Pressure - ksf; Pres. Slope - kip/ft³; Deflection - in

S5 (13.5 ft @ 4 ft oc)



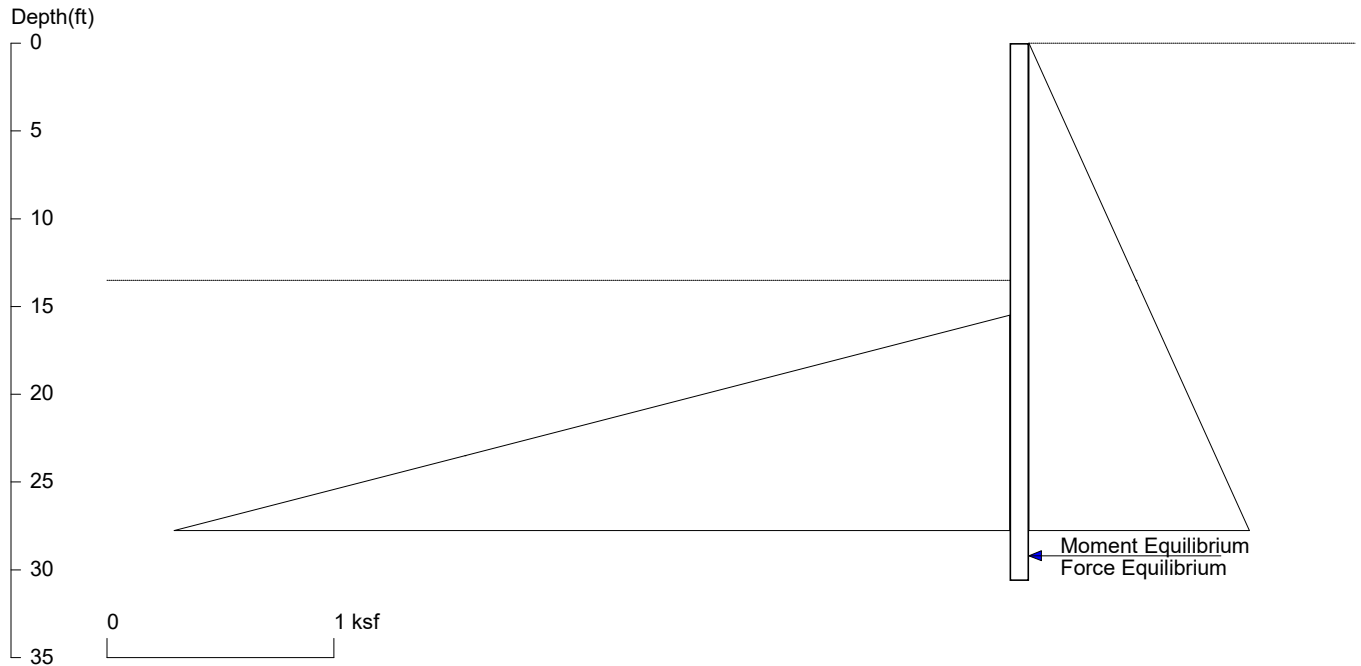
PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

Based on pile spacing: 4.0 foot or meter

User Input Pile, W18X50: E (ksi)=29000.0, I (in⁴)/pile=800.0

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S5 (13.5 ft @ 4 ft oc)



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Wall Height=13.5 Pile Diameter=2.0 Pile Spacing=4.0 Wall Type: 2. Soldier Pile, Drilled

PILE LENGTH: Min. Embedment=17.12 Min. Pile Length=30.62

MOMENT IN PILE: Max. Moment=152.53 per Pile Spacing=4.0 at Depth=21.66

PILE SELECTION:

Request Min. Section Modulus = 55.5 in³/pile=908.90 cm³/pile, Fy= 50 ksi = 345 MPa, Fb/Fy=0.66

W18X50 has Section Modulus = 88.9 in³/pile=1456.80 cm³/pile. It is greater than Min. Requirements!

Top Deflection = 0.77(in) based on E (ksi)=29000.00 and I (in⁴)/pile=800.0

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
0	0	13.5	0.472	.035
*	Below	Base		
13.5	.472	100	3.500	.035

PASSIVE PRESSURES:

Z1	P1	Z2	P2	Slope
15.5	0	23.5	2.400	.3
23.5	2.4	200	55.35	.3

ACTIVE SPACING:

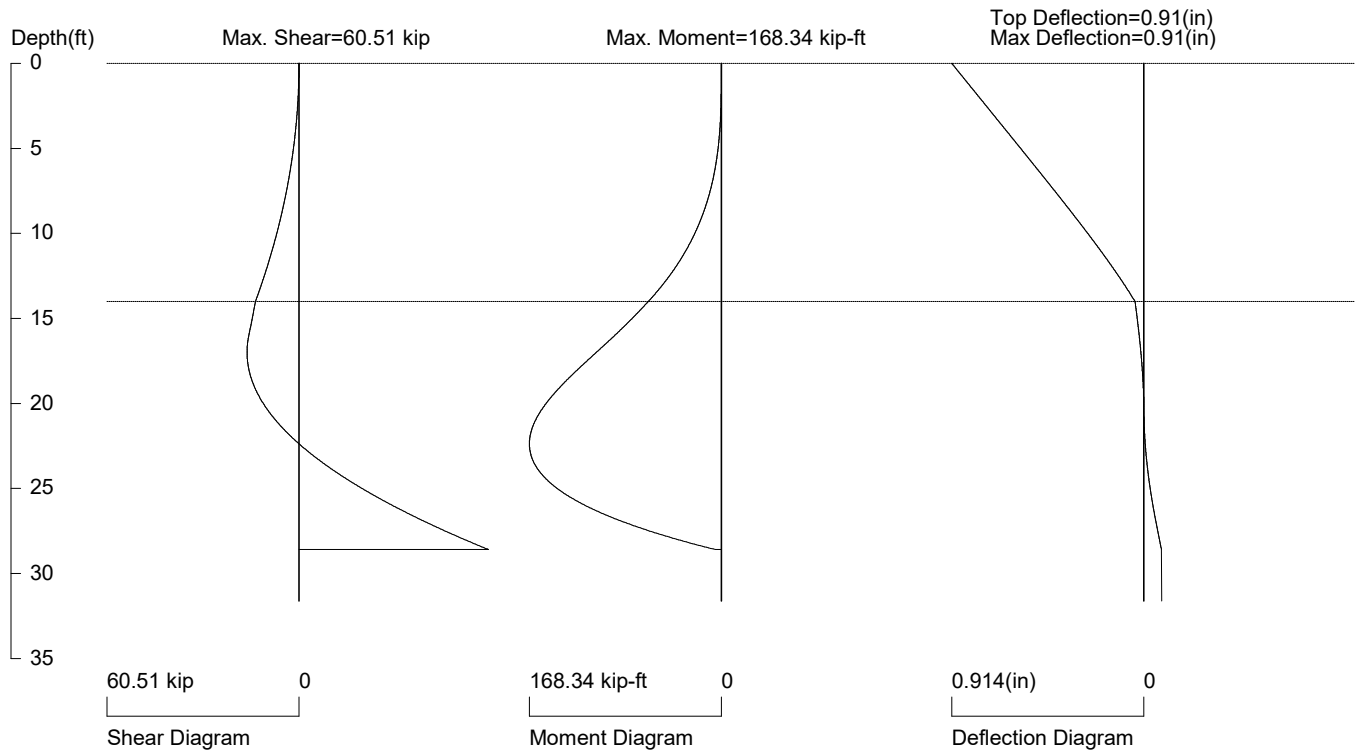
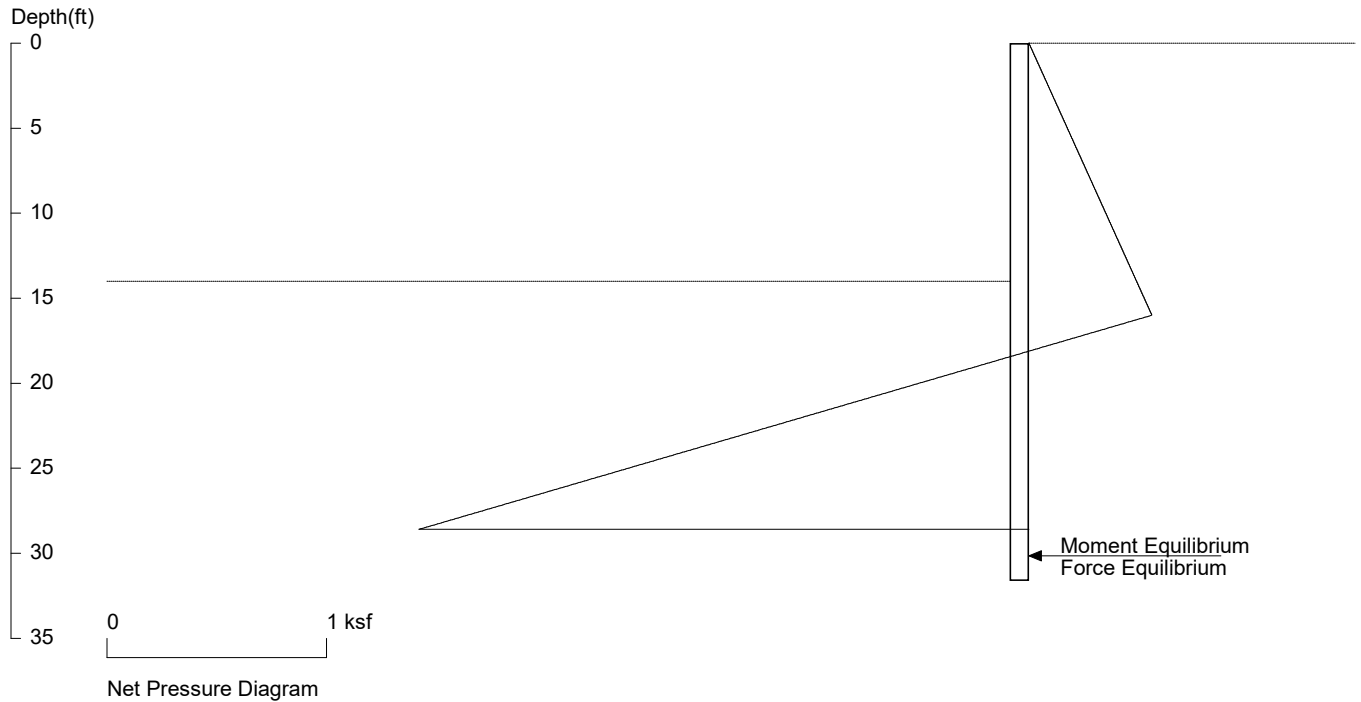
No.	Z depth	Spacing
1	0.00	4.00
2	13.50	2.00

PASSIVE SPACING:

No.	Z depth	Spacing
1	13.50	4.00

UNITS: Width, Spacing, Diameter, Length, and Depth - ft; Force - kip; Moment - kip-ft
Friction, Bearing, and Pressure - ksf; Pres. Slope - kip/ft³; Deflection - in

S6 (14 ft @ 4 ft oc)



PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

Based on pile spacing: 4.0 foot or meter

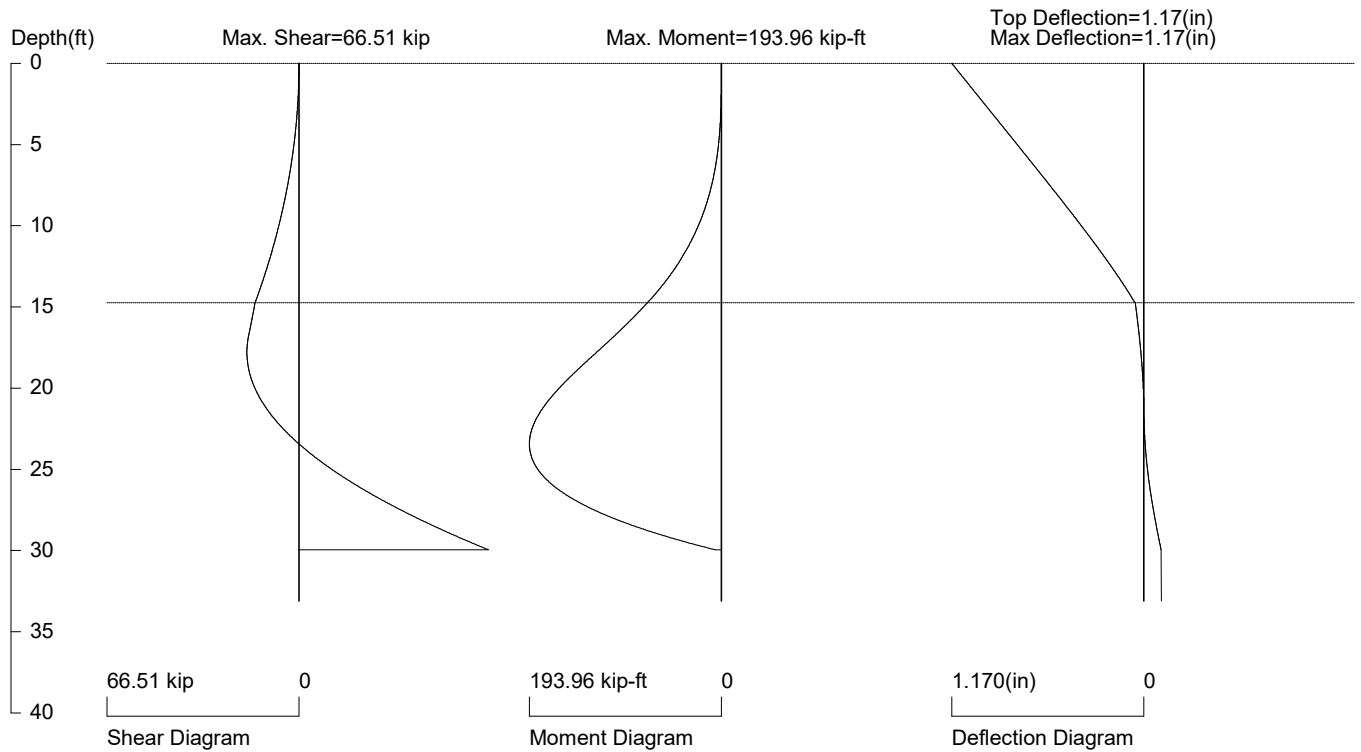
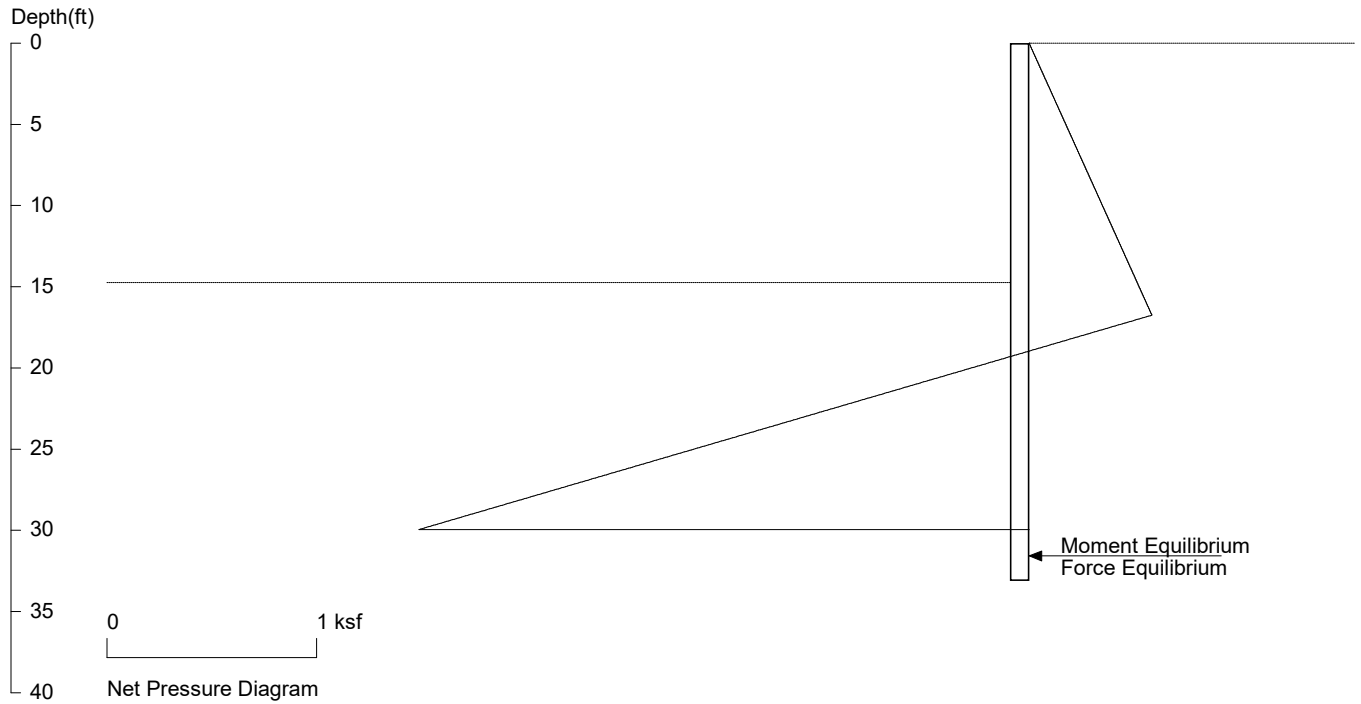
User Input Pile, W18X50: E (ksi)=29000.0, I (in⁴)/pile=800.0

File: C:\Users\javid\OneDrive\Desktop\Atlas Projects\269-2024 (5818 West Mercer)\Shoring\R4 Updated\S6_14 ft @ 4 ft oc (Cant).SH8

<ShoringSuite> CIVILTECH SOFTWARE USA www.civiltech.com

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S7 (14.75 ft @ 4 ft oc)



PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

Based on pile spacing: 4.0 foot or meter

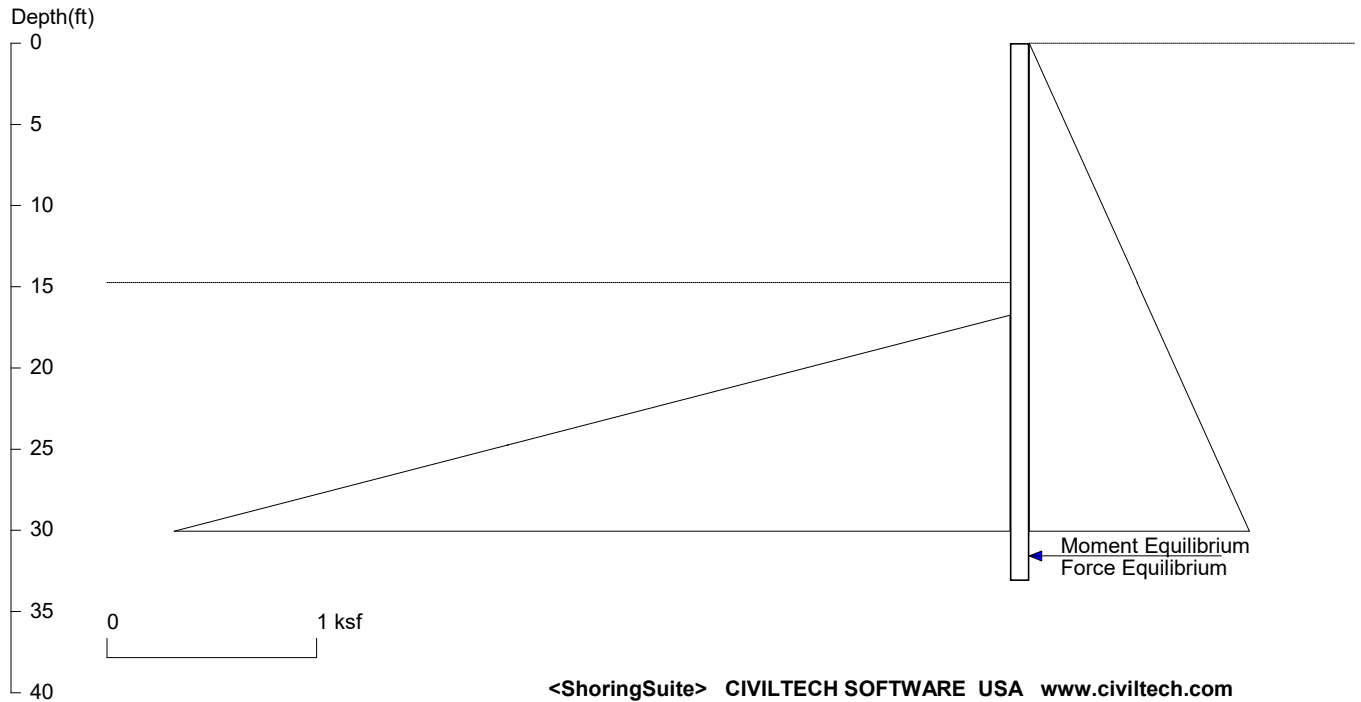
User Input Pile, W18X50: E (ksi)=29000.0, I (in⁴)/pile=800.0

File: C:\Users\javid\OneDrive\Desktop\Atlas Projects\269-2024 (5818 West Mercer)\Shoring\R4 Updated\S7_14.75 ft @ 4 ft oc (Cant).SH8

<ShoringSuite> CIVILTECH SOFTWARE USA www.civiltech.com

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S7 (14.75 ft @ 4 ft oc)



Licensed to 4324324234 3424343

Date: 2/20/2026

File: C:\Users\javid\OneDrive\Desktop\Atlas Projects\269-2024 (5818 West Mercer)\Shoring\R4 Updated\S7_14.75 ft @ 4 ft

Wall Height=14.8 Pile Diameter=2.0 Pile Spacing=4.0 Wall Type: 2. Soldier Pile, Drilled

PILE LENGTH: Min. Embedment=18.36 Min. Pile Length=33.11

MOMENT IN PILE: Max. Moment=193.96 per Pile Spacing=4.0 at Depth=23.43

PILE SELECTION:

Request Min. Section Modulus = 70.5 in³/pile=1155.79 cm³/pile, F_y= 50 ksi = 345 MPa, F_b/F_y=0.66

W18X50 has Section Modulus = 88.9 in³/pile=1456.80 cm³/pile. It is greater than Min. Requirements!

Top Deflection = 1.17(in) based on E (ksi)=29000.00 and I (in⁴)/pile=800.0

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
0	0	14.75	0.516	.035
*	Below	Base		
14.75	.516	100	3.500	.035

PASSIVE PRESSURES:

Z1	P1	Z2	P2	Slope
16.75	0	24.75	2.400	.3
24.75	2.4	200	54.975	.3

ACTIVE SPACING:

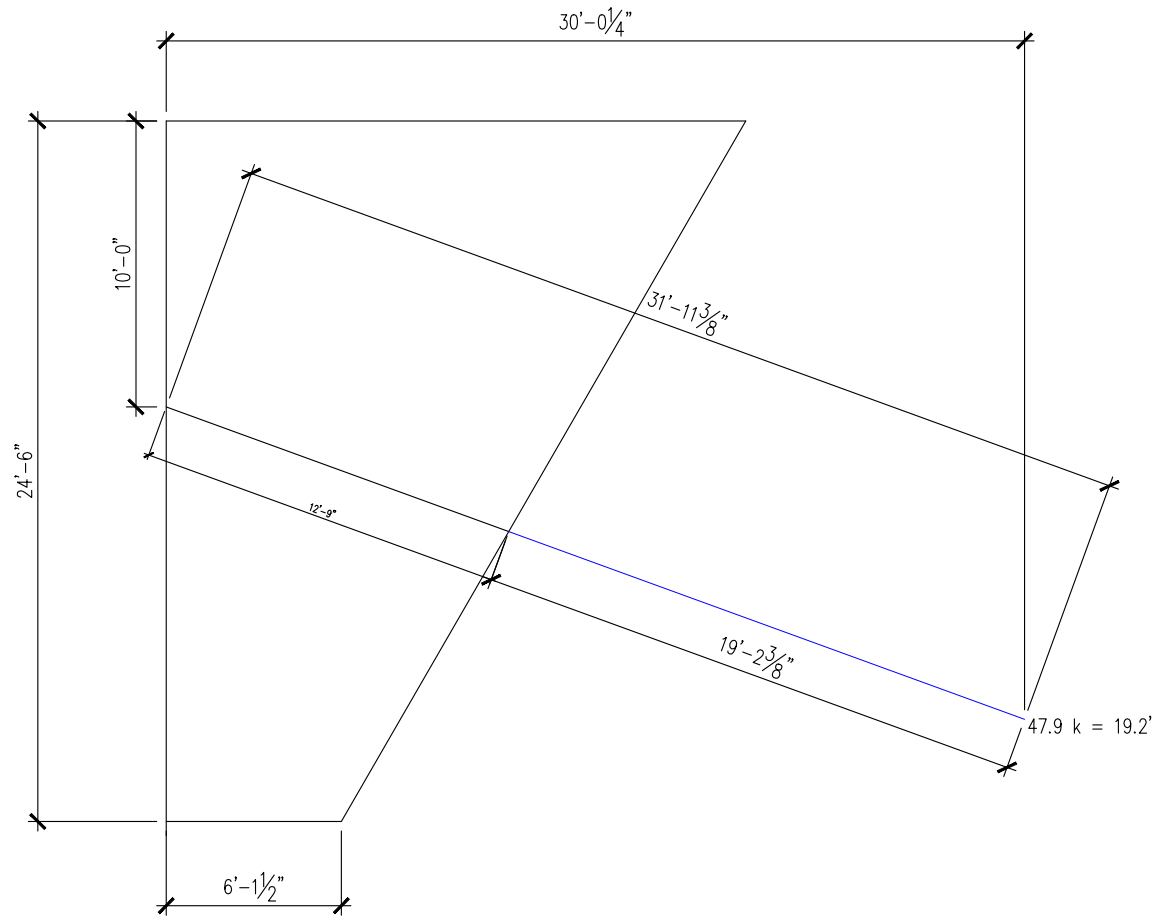
No.	Z depth	Spacing
1	0.00	4.00
2	14.75	2.00

PASSIVE SPACING:

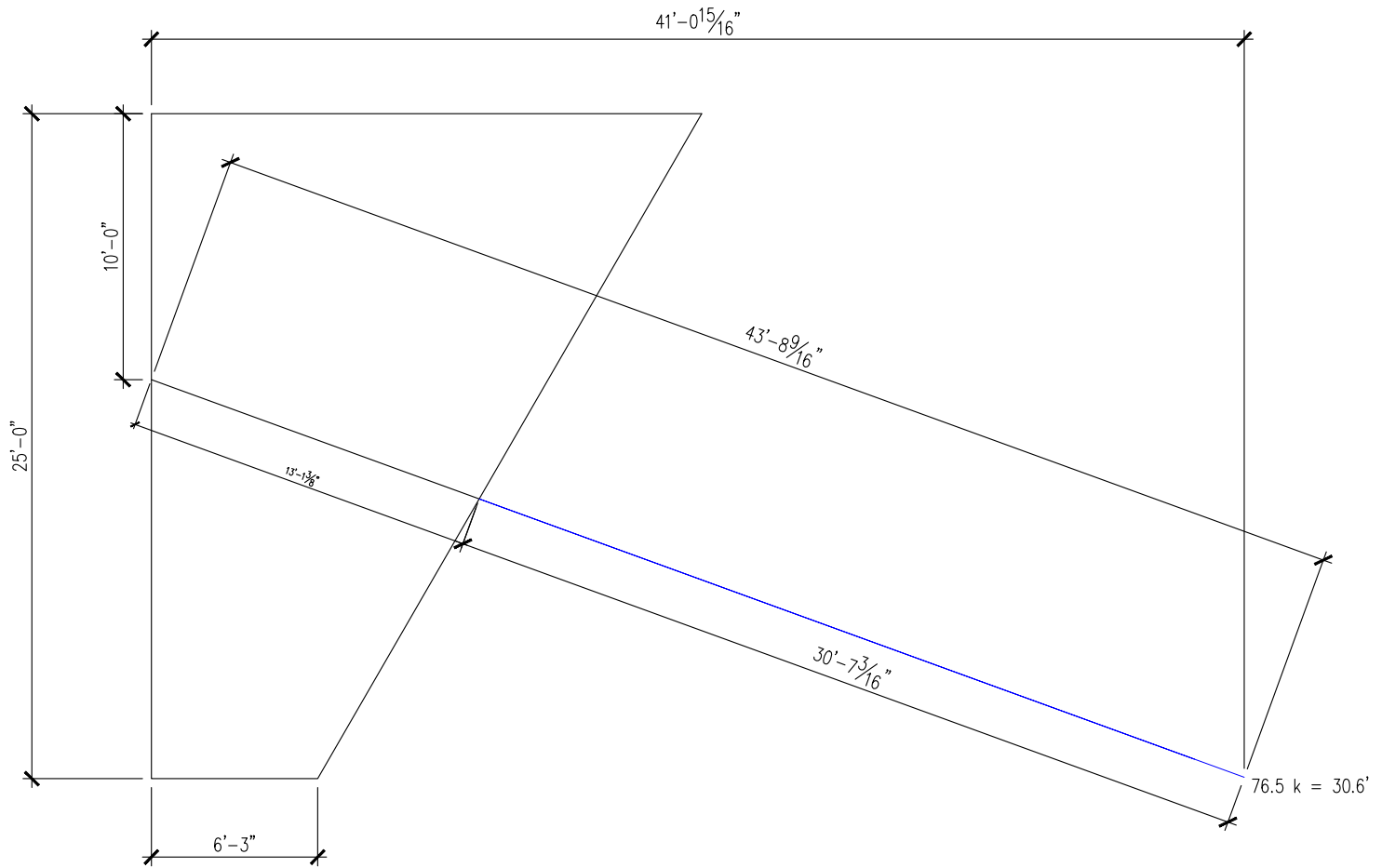
No.	Z depth	Spacing
1	14.75	4.00

UNITS: Width, Spacing, Diameter, Length, and Depth - ft; Force - kip; Moment - kip-ft
Friction, Bearing, and Pressure - ksf; Pres. Slope - kip/ft³; Deflection - in

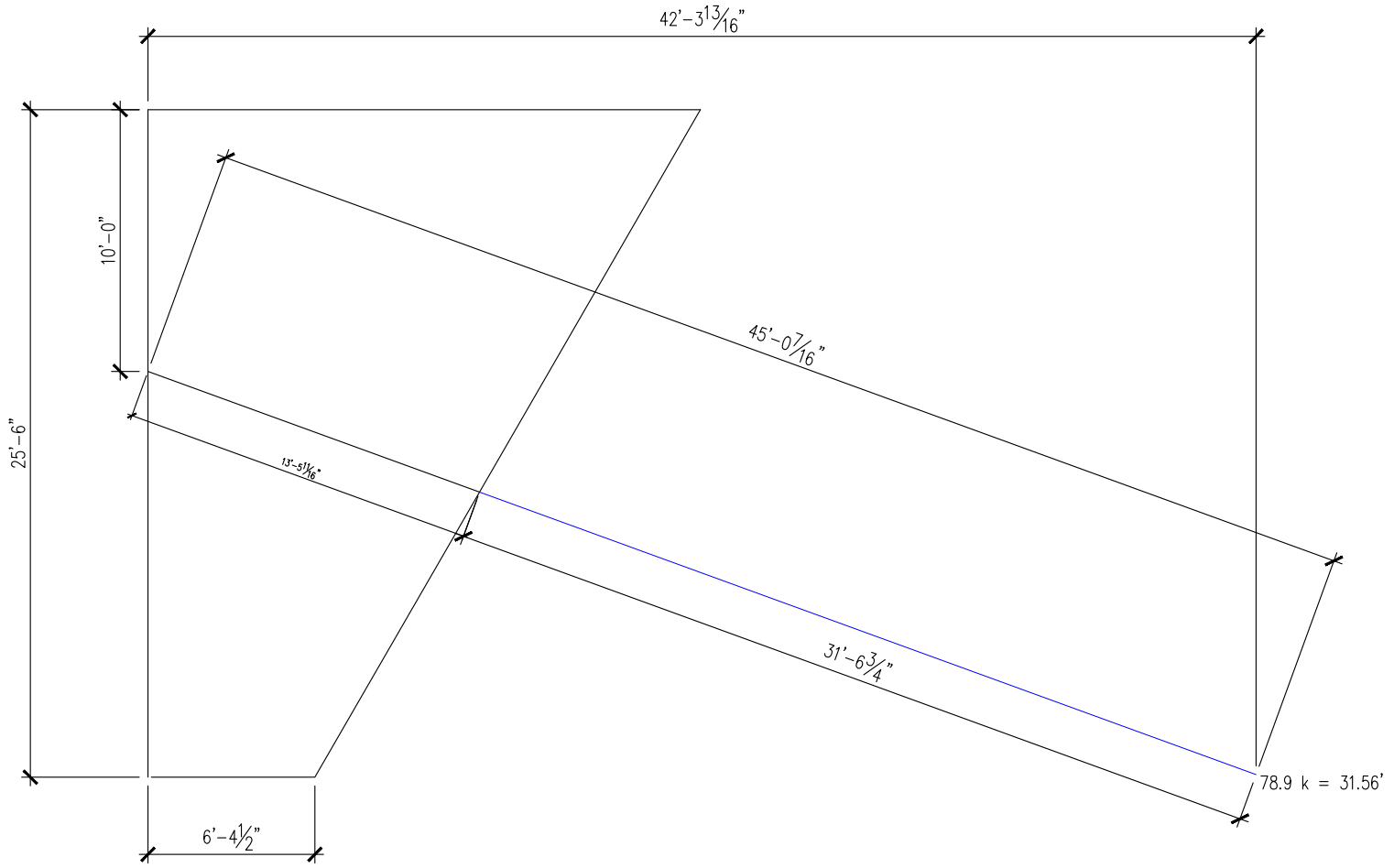
E1



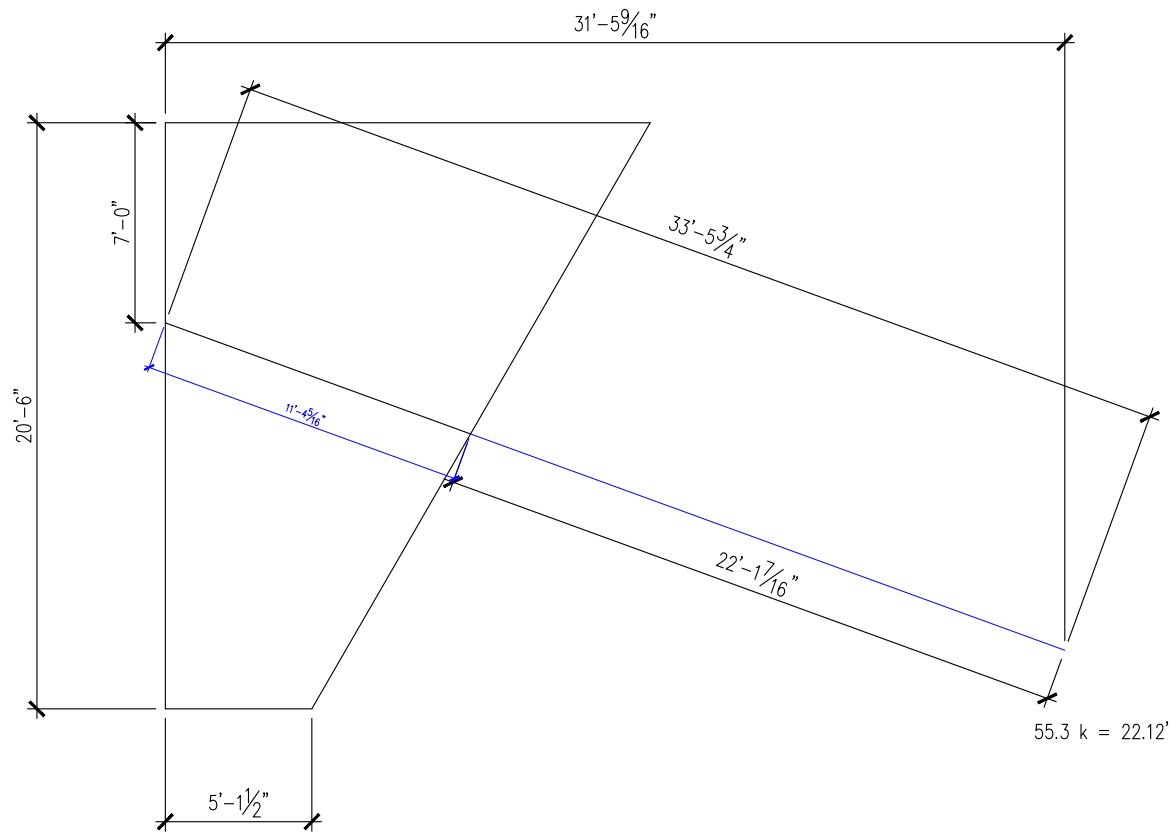
E2, E4-E7



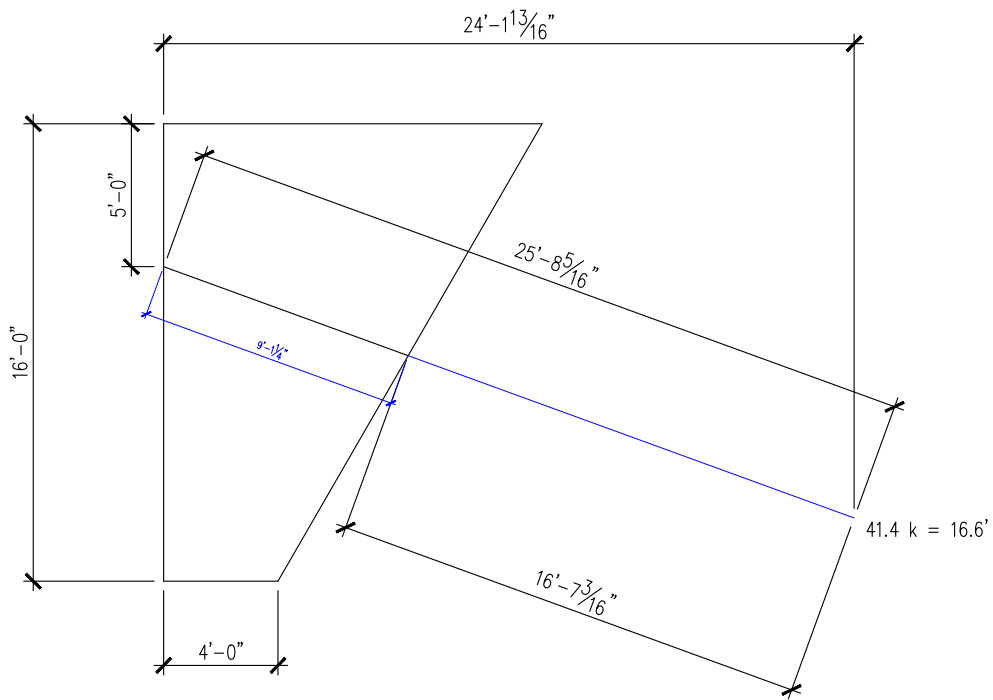
E3



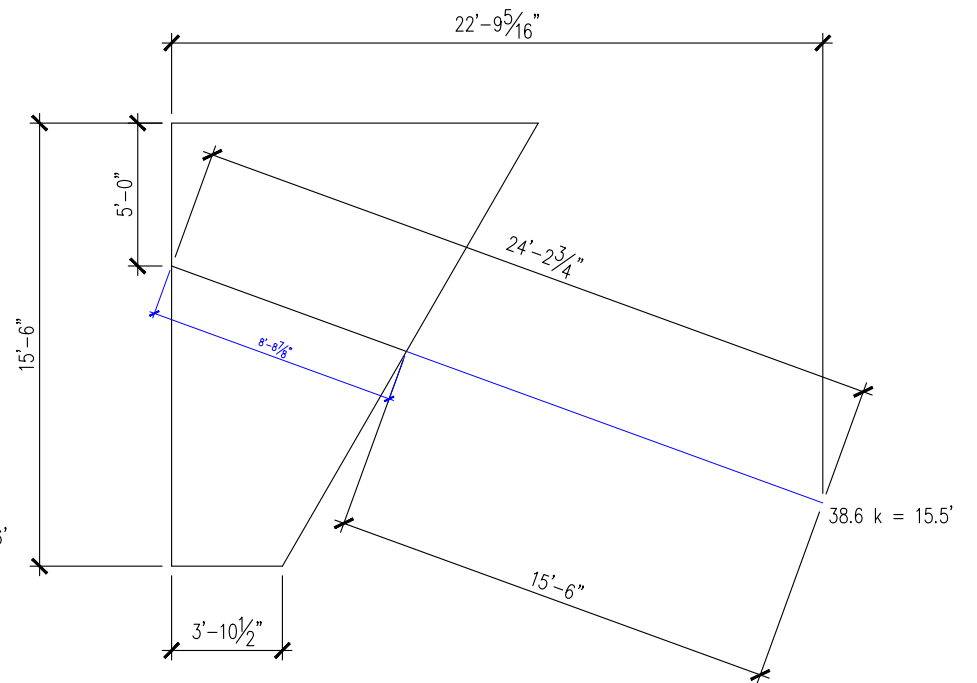
E8



E9



E10



E11

