

Structural Calculations

Standard Designs for Sound Barrier Walls

Job Number: 205622

Prepared for:
Fibergrate Composite Structures, Inc.



FRANK W. NEAL & ASSOC, INC.

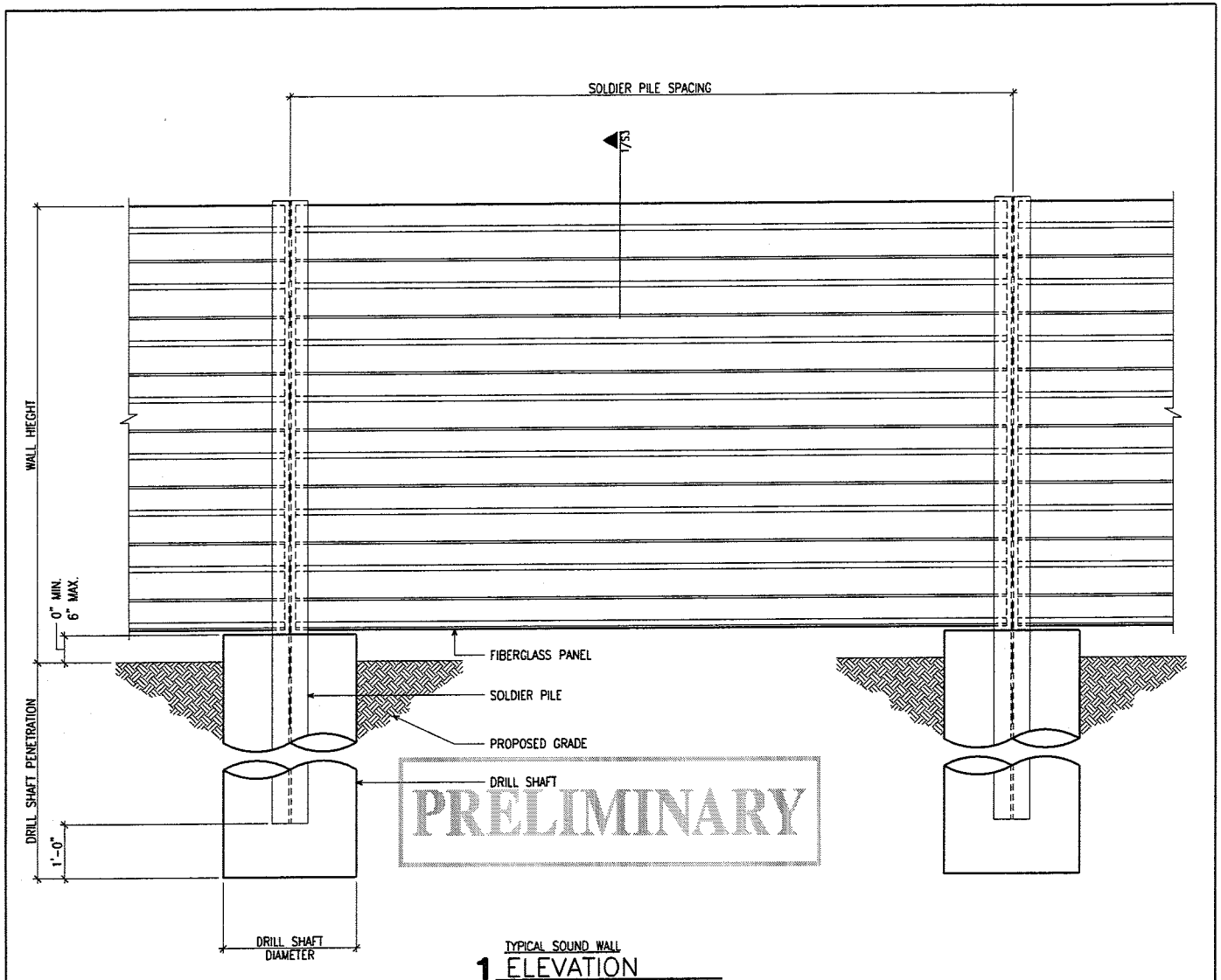
Consulting Engineers

1015 W. Broadway,
Fort Worth, Texas 76104

(817) 332-1944
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1 TYPICAL SOUND WALL ELEVATION

NOTES:

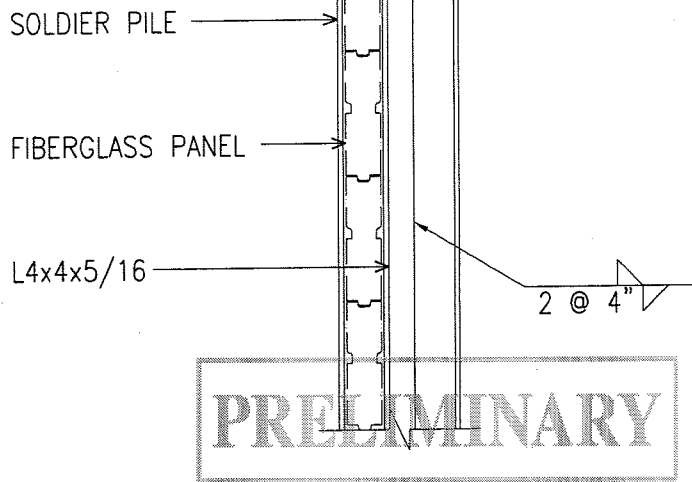
1. Site specific designs must be performed by a registered professional engineer who verifies wind load requirements and actual soil conditions.
2. Wind loads are per Guide Specifications for Structural Design of Sound Barriers Copyright 1989 and Interim Revisions.
3. Foundation design based on Brom's Method as described in Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals 4th Edition Copyright 2001 with Interim Revisions.
4. Structural steel member design per Standard Specifications for Highway Bridges - Seventeenth Edition.
5. Final deflections must be verified based on the criteria of the local governing body.

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SOLDIER PILE DESIGN DRAWINGS FOR:

FIBERGRATE
SOUND WALL

REVISIONS	DATE: 06-12-06
△	SHEET #
△	S1
△	
FWNA PROJECT # 205622	



TYPICAL SOUND WALL
1 SECTION

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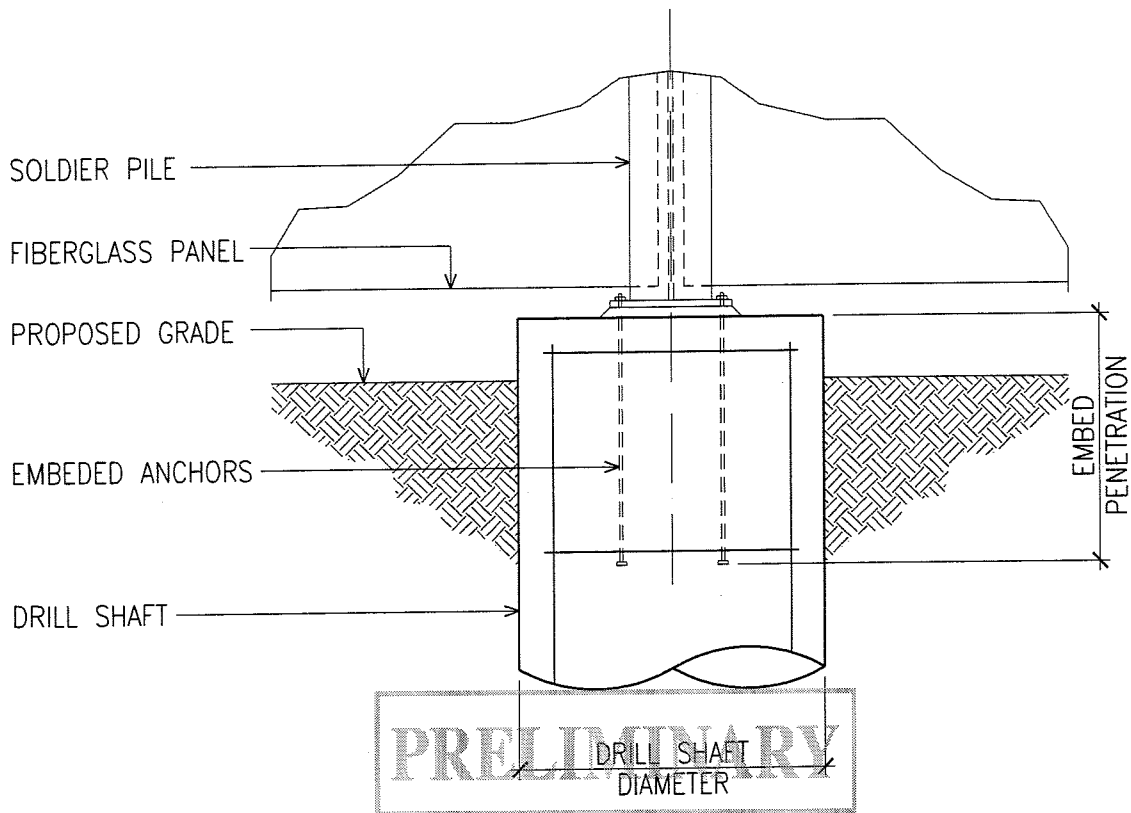
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SOLDIER PILE DESIGN DRAWINGS FOR:

FIBERGRATE
 SOUND WALL

REVISIONS	DATE: 06-12-06
△	SHEET #
△	S3
△	
FWNA PROJECT # 205622	



PRELIMINARY
DRILL SHAFT
DIAMETER

ALTERNATE SOLDIER PILE CONFIGURATION

1 ELEVATION

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FRANK W. NEAL & ASSOC, INC.
Consulting Engineers

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* Registered Brand in Tarrant County

SOLDIER PILE DESIGN DRAWINGS FOR:

FIBERGRATE
SOUND WALL

REVISIONS	DATE: 06-12-06
△	SHEET #
△	S2
△	
FWNA PROJECT # 205622	

SOUNDWALL DESIGN WITH NONCOHESIVE SOILS

Wind Input Parameters:

Wind Speed: 70 mph.
Exposure: B2

Soil Parameters:

Kp: 3
Density: 110 Pcf.
Diameter: 2.5 Ft.
Phi: 0.7
Load Fac.: 1.4

Soldier Pile Properties:

Fy: 50 ksi.

Wall Height (ft.)	Pile Spacing	10'		12'		14'		16'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		3.0	W8x18	3.2	W8x18	3.4	W8x18	3.6	W8x18
8		3.5	W8x18	3.8	W8x18	4.1	W8x18	4.3	W8x18
10		4.0	W8x18	4.4	W8x18	4.6	W8x18	4.9	W8x18
12		4.5	W8x18	4.9	W8x18	5.2	W8x18	5.4	W8x18
14		5.0	W8x18	5.3	W8x18	5.7	W8x18	6.0	W8x18
16		5.5	W8x21	5.9	W8x18	6.3	W8x21	6.6	W8x21
18		6.0	W8x24	6.4	W8x21	6.8	W10x22	7.2	W8x28
20		6.4	W8x28	6.9	W10x22	7.3	W10x33	7.7	W10x33
22		6.9	W10x33	7.4	W10x33	7.8	W10x33	8.3	W10x39
24		7.3	W10x39	7.8	W10x33	8.3	W10x39	8.8	W10x49
26		7.7	W10x49	8.3	W10x39	8.8	W10x49	9.2	W10x49
28		8.1	W10x49	8.7	W10x49	9.2	W10x49	9.7	W12x58

Wall Height (ft.)	Pile Spacing	18'		20'		22'		24'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		3.8	W8x18	4.0	W8x18	4.1	W8x18	4.3	W8x18
8		4.5	W8x18	4.7	W8x18	4.9	W8x18	5.1	W8x18
10		5.1	W8x18	5.3	W8x18	5.6	W8x18	5.8	W8x18
12		5.7	W8x18	6.0	W8x18	6.2	W8x18	6.4	W8x18
14		6.3	W8x18	6.5	W8x21	6.8	W10x22	7.0	W10x22
16		6.9	W10x22	7.2	W10x22	7.5	W10x33	7.8	W10x33
18		7.5	W10x33	7.8	W10x33	8.1	W10x33	8.4	W10x39
20		8.1	W10x33	8.4	W10x39	8.8	W10x39	9.1	W10x49
22		8.6	W10x39	9.0	W10x49	9.4	W10x49	9.7	W10x54
24		9.2	W10x49	9.6	W10x54	9.9	W12x58	10.3	W12x58
26		9.7	W10x54	10.1	W12x58	10.5	W12x58	10.8	W14x68
28		10.2	W12x58	10.6	W12x58	11.0	W14x68	11.4	W14x68

Notes:

1. The above designs are for standard cases only. Site specific designs must be performed by a registered professional engineer who verifies wind load requirements and actual soil conditions.
2. Wind loads are per Guide Specifications for Structural Design of Sound Barriers Copyright 1989 and Interim Revisions.
3. Foundation design based on Brom's Method as described in Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals 4th Edition Copyright 2001 with Interim Revisions.
4. Structural steel member design per Standard Specifications for Highway Bridges - Seventeenth Edition.
5. Final deflections must be verified based on the criteria of the local governing body.
6. Adjust drilled shaft diameters as required to ensure sufficient clear cover.

SOUNDWALL DESIGN WITH NONCOHESIVE SOILS

Wind Input Parameters:

Wind Speed: 80 mph.
Exposure: B2

Soil Parameters:

Kp: 3
Density: 110 Pcf.
Diameter: 2.5 Ft.
Phi: 0.7
Load Fac.: 1.4

Soldier Pile Properties:

Fy: 50 ksi.

Wall Height (ft.)	Pile Spacing	10'		12'		14'		16'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		3.3	W8x18	3.6	W8x18	3.8	W8x18	4.0	W8x18
8		3.9	W8x18	4.2	W8x18	4.5	W8x18	4.8	W8x18
10		4.5	W8x18	4.8	W8x18	5.2	W8x18	5.4	W8x18
12		5.0	W8x18	5.4	W8x18	5.7	W8x18	6.1	W8x18
14		5.5	W8x21	5.9	W8x18	6.3	W8x18	6.6	W8x21
16		6.1	W8x24	6.5	W8x21	7.0	W10x22	7.3	W8x28
18		6.6	W8x28	7.1	W10x22	7.6	W10x33	8.0	W10x33
20		7.1	W10x33	7.7	W10x33	8.1	W10x33	8.6	W10x39
22		7.6	W10x39	8.2	W10x39	8.7	W10x39	9.2	W10x49
24		8.1	W10x49	8.7	W10x49	9.2	W10x49	9.7	W10x54
26		8.5	W10x49	9.2	W10x49	9.7	W10x54	10.2	W12x58
28		9.0	W10x54	9.6	W10x54	10.2	W12x58	10.8	W14x68

Wall Height (ft.)	Pile Spacing	18'		20'		22'		24'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		4.2	W8x18	4.4	W8x18	4.6	W8x18	4.8	W8x18
8		5.0	W8x18	5.2	W8x18	5.5	W8x18	5.7	W8x18
10		5.7	W8x18	6.0	W8x18	6.2	W8x18	6.4	W8x18
12		6.4	W8x18	6.6	W8x21	6.9	W10x22	7.2	W10x22
14		7.0	W10x22	7.3	W10x22	7.6	W10x33	7.8	W10x33
16		7.7	W10x33	8.0	W10x33	8.3	W10x33	8.6	W10x39
18		8.4	W10x39	8.7	W10x39	9.1	W10x49	9.4	W10x49
20		9.0	W10x49	9.4	W10x49	9.7	W10x54	10.1	W12x58
22		9.6	W10x54	10.0	W12x58	10.4	W12x58	10.8	W12x58
24		10.2	W12x58	10.6	W12x58	11.0	W14x68	11.4	W14x68
26		10.7	W12x58	11.2	W14x68	11.6	W14x68	12.0	W12x79
28		11.3	W14x68	11.7	W14x68	12.2	W12x87	12.6	W14x90

Notes:

1. The above designs are for standard cases only. Site specific designs must be performed by a registered professional engineer who verifies wind load requirements and actual soil conditions.
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3. Foundation design based on Brom's Method as described in Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals 4th Edition Copyright 2001 with Interim Revisions.
4. Structural steel member design per Standard Specifications for Highway Bridges - Seventeenth Edition.
5. Final deflections must be verified based on the criteria of the local governing body.
6. Adjust drilled shaft diameters as required to ensure sufficient clear cover.

SOUNDWALL DESIGN WITH NONCOHESIVE SOILS

Wind Input Parameters:

Wind Speed: 90 mph.
Exposure: B2

Soil Parameters:

Kp: 3
Density: 110 Pcf.
Diameter: 2.5 Ft.
Phi: 0.7
Load Fac.: 1.4

Soldier Pile Properties:

Fy: 50 ksi.

Wall Height (ft.)	Pile Spacing	10'		12'		14'		16'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		3.7	W8x18	3.9	W8x18	4.2	W8x18	4.5	W8x18
8		4.3	W8x18	4.7	W8x18	5.0	W8x18	5.3	W8x18
10		4.9	W8x18	5.3	W8x18	5.7	W8x18	6.0	W8x18
12		5.5	W8x18	5.9	W8x18	6.3	W8x18	6.7	W8x21
14		6.1	W8x21	6.5	W8x21	6.9	W10x22	7.3	W10x22
16		6.7	W8x24	7.2	W10x22	7.6	W10x33	8.1	W10x33
18		7.3	W10x33	7.8	W10x33	8.3	W10x33	8.8	W10x39
20		7.8	W8x35	8.4	W10x39	8.9	W10x49	9.4	W10x49
22		8.4	W10x49	9.0	W10x49	9.5	W10x49	10.1	W12x58
24		8.9	W10x49	9.5	W10x54	10.1	W12x58	10.7	W12x58
26		9.4	W10x54	10.0	W12x58	10.7	W12x58	11.2	W14x68
28		9.8	W10x60	10.5	W12x58	11.2	W14x68	11.8	W14x68

Wall Height (ft.)	Pile Spacing	18'		20'		22'		24'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		4.7	W8x18	4.9	W8x18	5.1	W8x18	5.3	W8x18
8		5.5	W8x18	5.8	W8x18	6.0	W8x18	6.3	W8x18
10		6.3	W8x18	6.6	W8x18	6.9	W8x21	7.1	W10x22
12		7.0	W10x22	7.3	W10x22	7.6	W8x28	7.9	W10x33
14		7.7	W10x33	8.0	W10x33	8.3	W10x33	8.6	W10x33
16		8.5	W10x33	8.8	W10x39	9.2	W10x49	9.5	W10x49
18		9.2	W10x49	9.6	W10x49	10.0	W10x54	10.3	W12x58
20		9.9	W10x54	10.3	W12x58	10.7	W12x58	11.1	W14x68
22		10.5	W12x58	11.0	W14x68	11.4	W14x68	11.8	W14x68
24		11.2	W14x68	11.7	W14x68	12.1	W12x79	12.5	W12x87
26		11.8	W14x68	12.3	W12x87	12.8	W14x90	13.2	W14x90
28		12.4	W12x87	12.9	W14x90	13.4	W14x99	13.9	W14x109

Notes:

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4. Structural steel member design per Standard Specifications for Highway Bridges - Seventeenth Edition.
5. Final deflections must be verified based on the criteria of the local governing body.
6. Adjust drilled shaft diameters as required to ensure sufficient clear cover.

SOUNDWALL DESIGN WITH NONCOHESIVE SOILS

Wind Input Parameters:

Wind Speed: 100 mph.
Exposure: B2

Soil Parameters:

Kp: 3
Density: 110 Pcf.
Diameter: 2.5 Ft.
Phi: 0.7
Load Fac.: 1.4

Soldier Pile Properties:

Fy: 50 ksi.

Wall Height (ft.)	Pile Spacing	10'		12'		14'		16'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		4.0	W8x18	4.3	W8x18	4.6	W8x18	4.9	W8x18
8		4.7	W8x18	5.1	W8x18	5.4	W8x18	5.8	W8x18
10		5.4	W8x18	5.8	W8x18	6.2	W8x18	6.5	W8x18
12		6.0	W8x18	6.5	W8x21	6.9	W8x21	7.3	W10x22
14		6.6	W8x24	7.1	W10x22	7.5	W10x33	8.0	W10x33
16		7.3	W8x28	7.8	W10x33	8.3	W10x33	8.8	W10x39
18		7.9	W10x33	8.5	W10x39	9.0	W10x49	9.5	W10x49
20		8.5	W10x49	9.1	W10x49	9.7	W10x54	10.3	W12x58
22		9.1	W10x49	9.8	W10x54	10.4	W12x58	10.9	W12x58
24		9.6	W10x54	10.3	W12x58	11.0	W14x68	11.6	W14x68
26		10.2	W14x68	10.9	W14x68	11.6	W14x68	12.2	W12x87
28		10.7	W12x72	11.4	W14x68	12.2	W12x87	12.8	W14x90

Wall Height (ft.)	Pile Spacing	18'		20'		22'		24'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		5.1	W8x18	5.4	W8x18	5.6	W8x18	5.8	W8x18
8		6.1	W8x18	6.3	W8x18	6.6	W8x18	6.9	W8x21
10		6.9	W8x21	7.2	W10x22	7.5	W10x22	7.8	W8x28
12		7.6	W8x28	8.0	W10x33	8.3	W10x33	8.6	W10x33
14		8.4	W10x33	8.7	W10x39	9.1	W10x39	9.4	W10x49
16		9.2	W10x49	9.6	W10x49	10.0	W10x54	10.4	W12x58
18		10.0	W10x54	10.5	W12x58	10.9	W12x58	11.3	W14x68
20		10.8	W12x58	11.2	W14x68	11.7	W14x68	12.1	W14x68
22		11.5	W14x68	12.0	W14x68	12.4	W12x87	12.9	W14x90
24		12.2	W12x79	12.7	W14x90	13.2	W14x90	13.7	W14x99
26		12.8	W14x90	13.4	W14x90	13.9	W14x99	14.4	W14x109
28		13.4	W14x99	14.0	W14x109	14.6	W14x120	15.1	W18x130

Notes:

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4. Structural steel member design per Standard Specifications for Highway Bridges - Seventeenth Edition.
5. Final deflections must be verified based on the criteria of the local governing body.
6. Adjust drilled shaft diameters as required to ensure sufficient clear cover.

SOUNDWALL DESIGN WITH NONCOHESIVE SOILS

Wind Input Parameters:

Wind Speed: 110 mph.
Exposure: B2

Soil Parameters:

Kp: 3
Density: 110 Pcf.
Diameter: 2.5 Ft.
Phi: 0.7
Load Fac.: 1.4

Soldier Pile Properties:

Fy: 50 ksi.

Wall Height (ft.)	Pile Spacing	10'		12'		14'		16'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		4.3	W8x18	4.7	W8x18	5.0	W8x18	5.3	W8x18
8		5.1	W8x18	5.5	W8x18	5.9	W8x18	6.2	W8x18
10		5.8	W8x18	6.3	W8x18	6.7	W8x21	7.1	W10x22
12		6.5	W8x21	7.0	W10x22	7.5	W10x22	7.9	W10x33
14		7.1	W8x24	7.7	W10x33	8.2	W10x33	8.6	W10x33
16		7.8	W10x33	8.4	W10x33	9.0	W10x39	9.5	W10x49
18		8.5	W10x39	9.2	W10x49	9.8	W10x49	10.3	W12x58
20		9.2	W10x49	9.9	W10x54	10.5	W12x58	11.1	W12x58
22		9.8	W10x54	10.5	W12x58	11.2	W14x68	11.8	W14x68
24		10.4	W12x58	11.2	W14x68	11.9	W14x68	12.5	W12x87
26		10.9	W14x68	11.8	W14x68	12.5	W12x87	13.2	W14x90
28		11.5	W12x72	12.3	W12x87	13.1	W14x90	13.8	W14x109

Wall Height (ft.)	Pile Spacing	18'		20'		22'		24'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		5.6	W8x18	5.9	W8x18	6.1	W8x18	6.4	W8x18
8		6.6	W8x18	6.9	W8x21	7.2	W8x21	7.5	W10x22
10		7.5	W10x22	7.8	W8x28	8.1	W10x33	8.5	W10x33
12		8.3	W10x33	8.7	W10x33	9.0	W10x39	9.4	W10x39
14		9.1	W10x39	9.5	W10x49	9.9	W10x49	10.2	W10x49
16		10.0	W10x49	10.4	W12x58	10.8	W12x58	11.3	W12x58
18		10.8	W12x58	11.3	W14x68	11.8	W14x68	12.2	W14x68
20		11.6	W14x68	12.1	W14x68	12.6	W12x87	13.1	W14x90
22		12.4	W12x87	12.9	W14x90	13.5	W14x90	14.0	W14x99
24		13.1	W14x90	13.7	W14x99	14.2	W14x109	14.8	W14x120
26		13.8	W14x99	14.4	W14x109	15.0	W18x130	15.6	W18x130
28		14.5	W14x120	15.1	W18x130	15.7	W18x130	16.3	W18x130

Notes:

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4. Structural steel member design per Standard Specifications for Highway Bridges - Seventeenth Edition.
5. Final deflections must be verified based on the criteria of the local governing body.
6. Adjust drilled shaft diameters as required to ensure sufficient clear cover.

SOUNDWALL DESIGN WITH NONCOHESIVE SOILS

Wind Input Parameters:

Wind Speed: 70 mph.
Exposure: B1

Soil Parameters:

Kp: 3
Density: 110 Pcf.
Diameter: 2.5 Ft.
Phi: 0.7
Load Fac.: 1.4

Soldier Pile Properties:

Fy: 50 ksi.

Wall Height (ft.)	Pile Spacing	10'		12'		14'		16'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		2.5	W8x18	2.7	W8x18	2.8	W8x18	3.0	W8x18
8		2.9	W8x18	3.2	W8x18	3.4	W8x18	3.5	W8x18
10		3.4	W8x18	3.6	W8x18	3.8	W8x18	4.1	W8x18
12		3.8	W8x18	4.0	W8x18	4.3	W8x18	4.5	W8x18
14		4.2	W8x18	4.5	W8x18	4.7	W8x18	5.0	W8x18
16		4.6	W8x18	5.0	W8x18	5.3	W8x18	5.5	W8x18
18		5.1	W8x21	5.4	W8x18	5.7	W8x18	6.0	W8x18
20		5.5	W8x24	5.9	W8x18	6.2	W8x21	6.5	W10x22
22		5.9	W8x28	6.3	W8x21	6.6	W10x22	7.0	W8x28
24		6.2	W10x33	6.7	W10x22	7.1	W10x33	7.4	W10x33
26		6.6	W8x35	7.0	W10x33	7.5	W10x33	7.8	W10x33
28		6.9	W10x39	7.4	W10x33	7.8	W10x33	8.3	W10x39

Wall Height (ft.)	Pile Spacing	18'		20'		22'		24'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		3.1	W8x18	3.3	W8x18	3.4	W8x18	3.5	W8x18
8		3.7	W8x18	3.9	W8x18	4.0	W8x18	4.2	W8x18
10		4.2	W8x18	4.4	W8x18	4.6	W8x18	4.8	W8x18
12		4.7	W8x18	4.9	W8x18	5.1	W8x18	5.3	W8x18
14		5.2	W8x18	5.4	W8x18	5.6	W8x18	5.8	W8x18
16		5.8	W8x18	6.0	W8x18	6.3	W8x21	6.5	W8x21
18		6.3	W8x21	6.6	W10x22	6.8	W10x22	7.1	W10x22
20		6.8	W10x22	7.1	W8x28	7.4	W10x33	7.6	W10x33
22		7.3	W10x33	7.6	W10x33	7.9	W10x33	8.2	W10x39
24		7.8	W10x33	8.1	W10x39	8.4	W10x39	8.7	W10x49
26		8.2	W10x39	8.5	W10x39	8.9	W10x49	9.2	W10x49
28		8.6	W10x49	9.0	W10x49	9.3	W10x49	9.6	W10x54

Notes:

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2. Wind loads are per Guide Specifications for Structural Design of Sound Barriers Copyright 1989 and Interim Revisions.
3. Foundation design based on Brom's Method as described in Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals 4th Edition Copyright 2001 with Interim Revisions.
4. Structural steel member design per Standard Specifications for Highway Bridges - Seventeenth Edition.
5. Final deflections must be verified based on the criteria of the local governing body.
6. Adjust drilled shaft diameters as required to ensure sufficient clear cover.

SOUNDWALL DESIGN WITH NONCOHESIVE SOILS

Wind Input Parameters:

Wind Speed: 80 mph.
Exposure: B1

Soil Parameters:

Kp: 3
Density: 110 Pcf.
Diameter: 2.5 Ft.
Phi: 0.7
Load Fac.: 1.4

Soldier Pile Properties:

Fy: 50 ksi.

Wall Height (ft.)	Pile Spacing	10'		12'		14'		16'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		2.7	W8x18	3.0	W8x18	3.1	W8x18	3.3	W8x18
8		3.3	W8x18	3.5	W8x18	3.7	W8x18	3.9	W8x18
10		3.7	W8x18	4.0	W8x18	4.3	W8x18	4.5	W8x18
12		4.2	W8x18	4.5	W8x18	4.8	W8x18	5.0	W8x18
14		4.6	W8x18	4.9	W8x18	5.2	W8x18	5.5	W8x18
16		5.1	W8x21	5.5	W8x18	5.8	W8x18	6.1	W8x18
18		5.6	W8x24	6.0	W8x18	6.4	W8x21	6.7	W10x22
20		6.0	W8x28	6.5	W10x22	6.9	W10x22	7.2	W10x33
22		6.5	W10x33	6.9	W10x22	7.4	W10x33	7.7	W10x33
24		6.9	W8x35	7.4	W10x33	7.8	W10x33	8.2	W10x39
26		7.3	W10x39	7.8	W10x33	8.3	W10x39	8.7	W10x49
28		7.6	W10x49	8.2	W10x39	8.7	W10x49	9.1	W10x49

Wall Height (ft.)	Pile Spacing	18'		20'		22'		24'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		3.5	W8x18	3.6	W8x18	3.8	W8x18	3.9	W8x18
8		4.1	W8x18	4.3	W8x18	4.5	W8x18	4.7	W8x18
10		4.7	W8x18	4.9	W8x18	5.1	W8x18	5.3	W8x18
12		5.3	W8x18	5.5	W8x18	5.7	W8x18	5.9	W8x18
14		5.8	W8x18	6.0	W8x18	6.3	W8x18	6.5	W8x21
16		6.4	W8x21	6.7	W10x22	7.0	W10x22	7.2	W10x22
18		7.0	W10x22	7.3	W10x33	7.6	W10x33	7.9	W10x33
20		7.6	W10x33	7.9	W10x33	8.2	W10x33	8.5	W10x39
22		8.1	W10x33	8.4	W10x39	8.8	W10x49	9.1	W10x49
24		8.6	W10x39	9.0	W10x49	9.3	W10x49	9.6	W10x54
26		9.1	W10x49	9.5	W10x54	9.8	W12x58	10.2	W12x58
28		9.6	W10x54	10.0	W12x58	10.3	W12x58	10.7	W14x68

Notes:

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3. Foundation design based on Brom's Method as described in Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals 4th Edition Copyright 2001 with Interim Revisions.
4. Structural steel member design per Standard Specifications for Highway Bridges - Seventeenth Edition.
5. Final deflections must be verified based on the criteria of the local governing body.
6. Adjust drilled shaft diameters as required to ensure sufficient clear cover.

SOUNDWALL DESIGN WITH NONCOHESIVE SOILS

Wind Input Parameters:

Wind Speed: 90 mph.
Exposure: B1

Soil Parameters:

Kp: 3
Density: 110 Pcf.
Diameter: 2.5 Ft.
Phi: 0.7
Load Fac.: 1.4

Soldier Pile Properties:

Fy: 50 ksi.

Wall Height (ft.)	Pile Spacing	10'		12'		14'		16'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		3.0	W8x18	3.3	W8x18	3.5	W8x18	3.7	W8x18
8		3.6	W8x18	3.9	W8x18	4.1	W8x18	4.3	W8x18
10		4.1	W8x18	4.4	W8x18	4.7	W8x18	5.0	W8x18
12		4.6	W8x18	4.9	W8x18	5.2	W8x18	5.5	W8x18
14		5.0	W8x18	5.4	W8x18	5.7	W8x18	6.1	W8x18
16		5.6	W8x21	6.0	W8x18	6.4	W8x21	6.7	W10x22
18		6.1	W8x24	6.6	W10x22	7.0	W10x22	7.4	W10x33
20		6.6	W10x33	7.1	W8x28	7.5	W10x33	7.9	W10x33
22		7.1	W10x33	7.6	W10x33	8.1	W10x33	8.5	W10x39
24		7.5	W10x39	8.1	W10x39	8.6	W10x39	9.0	W10x49
26		7.9	W10x49	8.5	W10x39	9.0	W10x49	9.5	W10x54
28		8.4	W10x49	9.0	W10x49	9.5	W10x54	10.0	W12x58

Wall Height (ft.)	Pile Spacing	18'		20'		22'		24'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		3.8	W8x18	4.0	W8x18	4.2	W8x18	4.3	W8x18
8		4.6	W8x18	4.8	W8x18	4.9	W8x18	5.1	W8x18
10		5.2	W8x18	5.4	W8x18	5.6	W8x18	5.8	W8x18
12		5.8	W8x18	6.0	W8x18	6.3	W8x18	6.5	W8x21
14		6.4	W8x21	6.6	W8x21	6.9	W10x22	7.1	W10x22
16		7.1	W10x22	7.4	W8x28	7.6	W10x33	7.9	W10x33
18		7.7	W10x33	8.0	W10x33	8.3	W10x39	8.6	W10x39
20		8.3	W10x39	8.7	W10x39	9.0	W10x49	9.3	W10x49
22		8.9	W10x49	9.3	W10x49	9.6	W10x54	9.9	W12x58
24		9.4	W10x49	9.8	W12x58	10.2	W12x58	10.6	W12x58
26		10.0	W12x58	10.4	W12x58	10.8	W14x68	11.1	W14x68
28		10.5	W12x58	10.9	W14x68	11.3	W14x68	11.7	W14x68

Notes:

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2. Wind loads are per Guide Specifications for Structural Design of Sound Barriers Copyright 1989 and Interim Revisions.
3. Foundation design based on Brom's Method as described in Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals 4th Edition Copyright 2001 with Interim Revisions.
4. Structural steel member design per Standard Specifications for Highway Bridges - Seventeenth Edition.
5. Final deflections must be verified based on the criteria of the local governing body.
6. Adjust drilled shaft diameters as required to ensure sufficient clear cover.

SOUNDWALL DESIGN WITH NONCOHESIVE SOILS

Wind Input Parameters:

Wind Speed: 100 mph.
Exposure: B1

Soil Parameters:

Kp: 3
Density: 110 Pcf.
Diameter: 2.5 Ft.
Phi: 0.7
Load Fac.: 1.4

Soldier Pile Properties:

Fy: 50 ksi.

Wall Height (ft.)	Pile Spacing	10'		12'		14'		16'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		3.3	W8x18	3.5	W8x18	3.8	W8x18	4.0	W8x18
8		3.9	W8x18	4.2	W8x18	4.5	W8x18	4.7	W8x18
10		4.5	W8x18	4.8	W8x18	5.1	W8x18	5.4	W8x18
12		5.0	W8x18	5.4	W8x18	5.7	W8x18	6.0	W8x18
14		5.5	W8x21	5.9	W8x18	6.3	W8x18	6.6	W8x21
16		6.1	W8x24	6.5	W8x21	6.9	W10x22	7.3	W8x28
18		6.6	W8x28	7.1	W10x22	7.6	W10x33	8.0	W10x33
20		7.2	W10x33	7.7	W10x33	8.2	W10x33	8.6	W10x39
22		7.7	W10x39	8.2	W10x39	8.7	W10x49	9.2	W10x49
24		8.2	W10x49	8.7	W10x49	9.3	W10x49	9.8	W10x54
26		8.6	W10x49	9.2	W10x49	9.8	W12x58	10.3	W12x58
28		9.1	W10x54	9.7	W12x58	10.3	W12x58	10.9	W14x68

Wall Height (ft.)	Pile Spacing	18'		20'		22'		24'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		4.2	W8x18	4.4	W8x18	4.6	W8x18	4.8	W8x18
8		5.0	W8x18	5.2	W8x18	5.4	W8x18	5.6	W8x18
10		5.7	W8x18	5.9	W8x18	6.2	W8x18	6.4	W8x18
12		6.3	W8x18	6.6	W8x21	6.8	W8x21	7.1	W10x22
14		6.9	W10x22	7.2	W10x22	7.5	W8x28	7.8	W10x33
16		7.7	W10x33	8.0	W10x33	8.3	W10x33	8.6	W10x39
18		8.4	W10x39	8.7	W10x39	9.1	W10x49	9.4	W10x49
20		9.0	W10x49	9.4	W10x49	9.8	W10x54	10.1	W12x58
22		9.7	W10x54	10.1	W12x58	10.5	W12x58	10.8	W12x58
24		10.2	W12x58	10.7	W12x58	11.1	W14x68	11.5	W14x68
26		10.8	W14x68	11.3	W14x68	11.7	W14x68	12.1	W12x87
28		11.4	W14x68	11.8	W12x79	12.3	W12x87	12.7	W14x90

Notes:

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3. Foundation design based on Brom's Method as described in Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals 4th Edition Copyright 2001 with Interim Revisions.
4. Structural steel member design per Standard Specifications for Highway Bridges - Seventeenth Edition.
5. Final deflections must be verified based on the criteria of the local governing body.
6. Adjust drilled shaft diameters as required to ensure sufficient clear cover.

SOUNDWALL DESIGN WITH NONCOHESIVE SOILS

Wind Input Parameters:

Wind Speed: 110 mph.
Exposure: B1

Soil Parameters:

Kp: 3
Density: 110 Pcf.
Diameter: 2.5 Ft.
Phi: 0.7
Load Fac.: 1.4

Soldier Pile Properties:

Fy: 50 ksi.

Wall Height (ft.)	Pile Spacing	10'		12'		14'		16'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		3.6	W8x18	3.8	W8x18	4.1	W8x18	4.3	W8x18
8		4.2	W8x18	4.5	W8x18	4.8	W8x18	5.1	W8x18
10		4.8	W8x18	5.2	W8x18	5.5	W8x18	5.8	W8x18
12		5.4	W8x18	5.8	W8x18	6.2	W8x18	6.5	W8x21
14		5.9	W8x21	6.3	W8x21	6.7	W8x21	7.1	W10x22
16		6.6	W8x24	7.0	W10x22	7.5	W10x33	7.9	W10x33
18		7.2	W10x33	7.7	W10x33	8.2	W10x33	8.6	W10x39
20		7.7	W8x35	8.3	W10x39	8.8	W10x49	9.3	W10x49
22		8.3	W10x49	8.9	W10x49	9.4	W10x49	9.9	W12x58
24		8.8	W10x49	9.4	W10x49	10.0	W12x58	10.5	W12x58
26		9.3	W10x54	9.9	W12x58	10.6	W12x58	11.1	W14x68
28		9.7	W10x60	10.4	W12x58	11.1	W14x68	11.7	W14x68

Wall Height (ft.)	Pile Spacing	18'		20'		22'		24'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		4.6	W8x18	4.8	W8x18	5.0	W8x18	5.2	W8x18
8		5.4	W8x18	5.6	W8x18	5.9	W8x18	6.1	W8x18
10		6.1	W8x18	6.4	W8x18	6.7	W8x21	6.9	W8x21
12		6.8	W8x21	7.1	W10x22	7.4	W10x22	7.7	W8x28
14		7.5	W8x28	7.8	W10x33	8.1	W10x33	8.4	W10x33
16		8.3	W10x33	8.6	W10x39	9.0	W10x39	9.3	W10x49
18		9.0	W10x49	9.4	W10x49	9.8	W10x49	10.2	W10x54
20		9.7	W10x54	10.2	W12x58	10.6	W12x58	10.9	W12x58
22		10.4	W12x58	10.9	W12x58	11.3	W14x68	11.7	W14x68
24		11.0	W14x68	11.5	W14x68	12.0	W14x68	12.4	W12x87
26		11.7	W14x68	12.2	W12x87	12.6	W14x90	13.1	W14x90
28		12.2	W12x87	12.8	W14x90	13.3	W14x90	13.7	W14x99

Notes:

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3. Foundation design based on Brom's Method as described in Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals 4th Edition Copyright 2001 with Interim Revisions.
4. Structural steel member design per Standard Specifications for Highway Bridges - Seventeenth Edition.
5. Final deflections must be verified based on the criteria of the local governing body.
6. Adjust drilled shaft diameters as required to ensure sufficient clear cover.

SOUNDWALL DESIGN WITH NONCOHESIVE SOILS

Wind Input Parameters:

Wind Speed: 70 mph.
Exposure: C

Soil Parameters:

Kp: 3
Density: 110 Pcf.
Diameter: 2.5 Ft.
Phi: 0.7
Load Fac.: 1.4

Soldier Pile Properties:

Fy: 50 ksi.

Wall Height (ft.)	Pile Spacing	10'		12'		14'		16'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		3.4	W8x18	3.6	W8x18	3.9	W8x18	4.1	W8x18
8		4.0	W8x18	4.3	W8x18	4.6	W8x18	4.8	W8x18
10		4.6	W8x18	4.9	W8x18	5.2	W8x18	5.5	W8x18
12		5.1	W8x18	5.5	W8x18	5.8	W8x18	6.2	W8x18
14		5.6	W8x21	6.0	W8x18	6.4	W8x21	6.7	W8x21
16		6.2	W8x24	6.6	W8x21	7.1	W10x22	7.4	W10x33
18		6.7	W8x28	7.2	W8x28	7.7	W10x33	8.1	W10x33
20		7.2	W10x33	7.8	W10x33	8.2	W10x39	8.7	W10x39
22		7.7	W10x39	8.3	W10x39	8.8	W10x49	9.3	W10x49
24		8.2	W10x49	8.8	W10x49	9.3	W10x49	9.8	W10x54
26		8.6	W10x49	9.3	W10x49	9.8	W12x58	10.4	W12x58
28		9.1	W10x54	9.7	W12x58	10.3	W12x58	10.9	W14x68

Wall Height (ft.)	Pile Spacing	18'		20'		22'		24'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		4.3	W8x18	4.5	W8x18	4.7	W8x18	4.9	W8x18
8		5.1	W8x18	5.3	W8x18	5.5	W8x18	5.7	W8x18
10		5.8	W8x18	6.1	W8x18	6.3	W8x18	6.5	W8x18
12		6.5	W8x21	6.7	W8x21	7.0	W10x22	7.3	W10x22
14		7.1	W10x22	7.4	W10x22	7.7	W10x33	8.0	W10x33
16		7.8	W10x33	8.1	W10x33	8.5	W10x33	8.8	W10x39
18		8.5	W10x39	8.8	W10x39	9.2	W10x49	9.5	W10x49
20		9.1	W10x49	9.5	W10x49	9.9	W10x54	10.2	W12x58
22		9.7	W10x54	10.1	W12x58	10.5	W12x58	10.9	W12x58
24		10.3	W12x58	10.7	W12x58	11.1	W14x68	11.5	W14x68
26		10.8	W14x68	11.3	W14x68	11.7	W14x68	12.2	W12x87
28		11.4	W14x68	11.9	W12x79	12.3	W12x87	12.7	W14x90

Notes:

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3. Foundation design based on Brom's Method as described in Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals 4th Edition Copyright 2001 with Interim Revisions.
4. Structural steel member design per Standard Specifications for Highway Bridges - Seventeenth Edition.
5. Final deflections must be verified based on the criteria of the local governing body.
6. Adjust drilled shaft diameters as required to ensure sufficient clear cover.

SOUNDWALL DESIGN WITH NONCOHESIVE SOILS

Wind Input Parameters:

Wind Speed: 80 mph.
Exposure: C

Soil Parameters:

Kp: 3
Density: 110 Pcf.
Diameter: 2.5 Ft.
Phi: 0.7
Load Fac.: 1.4

Soldier Pile Properties:

Fy: 50 ksi.

Wall Height (ft.)	Pile Spacing	10'		12'		14'		16'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		3.8	W8x18	4.1	W8x18	4.3	W8x18	4.6	W8x18
8		4.5	W8x18	4.8	W8x18	5.1	W8x18	5.4	W8x18
10		5.1	W8x18	5.5	W8x18	5.8	W8x18	6.2	W8x18
12		5.7	W8x18	6.1	W8x18	6.5	W8x21	6.9	W8x21
14		6.2	W10x22	6.7	W8x21	7.1	W10x22	7.5	W8x28
16		6.9	W8x28	7.4	W8x28	7.8	W10x33	8.3	W10x33
18		7.5	W10x33	8.0	W10x33	8.5	W10x39	9.0	W10x49
20		8.0	W10x39	8.6	W10x39	9.2	W10x49	9.7	W10x49
22		8.6	W10x49	9.2	W10x49	9.8	W10x54	10.3	W12x58
24		9.1	W10x49	9.7	W10x54	10.4	W12x58	10.9	W14x68
26		9.6	W10x54	10.3	W12x58	10.9	W14x68	11.5	W14x68
28		10.0	W14x68	10.8	W14x68	11.4	W14x68	12.1	W12x87

Wall Height (ft.)	Pile Spacing	18'		20'		22'		24'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		4.8	W8x18	5.1	W8x18	5.3	W8x18	5.5	W8x18
8		5.7	W8x18	6.0	W8x18	6.2	W8x18	6.4	W8x18
10		6.5	W8x18	6.8	W8x21	7.1	W8x21	7.3	W10x22
12		7.2	W10x22	7.5	W10x22	7.8	W10x33	8.1	W10x33
14		7.9	W10x33	8.2	W10x33	8.6	W10x33	8.9	W10x39
16		8.7	W10x39	9.1	W10x39	9.4	W10x49	9.8	W10x49
18		9.4	W10x49	9.8	W10x49	10.2	W12x58	10.6	W12x58
20		10.1	W12x58	10.6	W12x58	11.0	W12x58	11.4	W14x68
22		10.8	W12x58	11.3	W14x68	11.7	W14x68	12.1	W14x68
24		11.4	W14x68	11.9	W14x68	12.4	W12x87	12.8	W14x90
26		12.1	W12x79	12.6	W14x90	13.1	W14x90	13.5	W14x99
28		12.6	W14x90	13.2	W14x90	13.7	W14x99	14.2	W14x109

Notes:

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3. Foundation design based on Brom's Method as described in Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals 4th Edition Copyright 2001 with Interim Revisions.
4. Structural steel member design per Standard Specifications for Highway Bridges - Seventeenth Edition.
5. Final deflections must be verified based on the criteria of the local governing body.
6. Adjust drilled shaft diameters as required to ensure sufficient clear cover.

SOUNDWALL DESIGN WITH NONCOHESIVE SOILS

Wind Input Parameters:

Wind Speed: 90 mph.
Exposure: C

Soil Parameters:

Kp: 3
Density: 110 Pcf.
Diameter: 2.5 Ft.
Phi: 0.7
Load Fac.: 1.4

Soldier Pile Properties:

Fy: 50 ksi.

Wall Height (ft.)	Pile Spacing	10'		12'		14'		16'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		4.2	W8x18	4.5	W8x18	4.8	W8x18	5.1	W8x18
8		4.9	W8x18	5.3	W8x18	5.7	W8x18	6.0	W8x18
10		5.6	W8x18	6.0	W8x18	6.4	W8x18	6.8	W8x21
12		6.2	W8x21	6.7	W8x21	7.2	W10x22	7.6	W8x28
14		6.8	W8x24	7.4	W10x22	7.8	W10x33	8.3	W10x33
16		7.5	W10x33	8.1	W10x33	8.6	W10x39	9.1	W10x49
18		8.2	W10x39	8.8	W10x39	9.4	W10x49	9.9	W10x54
20		8.8	W10x49	9.5	W10x49	10.1	W12x58	10.6	W12x58
22		9.4	W10x49	10.1	W12x58	10.7	W12x58	11.3	W14x68
24		9.9	W12x58	10.7	W12x58	11.4	W14x68	12.0	W14x68
26		10.5	W14x68	11.3	W14x68	12.0	W12x79	12.6	W14x90
28		11.0	W12x72	11.8	W12x79	12.6	W14x90	13.3	W14x90

Wall Height (ft.)	Pile Spacing	18'		20'		22'		24'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		5.4	W8x18	5.6	W8x18	5.9	W8x18	6.1	W8x18
8		6.3	W8x18	6.6	W8x18	6.9	W8x21	7.1	W8x21
10		7.2	W10x22	7.5	W10x22	7.8	W8x28	8.1	W10x33
12		8.0	W10x33	8.3	W10x33	8.7	W10x33	9.0	W10x39
14		8.7	W10x39	9.1	W10x39	9.5	W10x49	9.8	W10x49
16		9.6	W10x49	10.0	W10x49	10.4	W12x58	10.8	W12x58
18		10.4	W12x58	10.8	W12x58	11.3	W14x68	11.7	W14x68
20		11.1	W14x68	11.6	W14x68	12.1	W14x68	12.5	W12x87
22		11.9	W14x68	12.4	W12x87	12.9	W14x90	13.4	W14x90
24		12.6	W12x87	13.1	W14x90	13.6	W14x99	14.1	W14x109
26		13.2	W14x90	13.8	W14x99	14.4	W14x109	14.9	W14x120
28		13.9	W14x109	14.5	W14x120	15.1	W18x130	15.6	W18x130

Notes:

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3. Foundation design based on Brom's Method as described in Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals 4th Edition Copyright 2001 with Interim Revisions.
4. Structural steel member design per Standard Specifications for Highway Bridges - Seventeenth Edition.
5. Final deflections must be verified based on the criteria of the local governing body.
6. Adjust drilled shaft diameters as required to ensure sufficient clear cover.

SOUNDWALL DESIGN WITH NONCOHESIVE SOILS

Wind Input Parameters:

Wind Speed: 100 mph.
Exposure: C

Soil Parameters:

Kp: 3
Density: 110 Pcf.
Diameter: 2.5 Ft.
Phi: 0.7
Load Fac.: 1.4

Soldier Pile Properties:

Fy: 50 ksi.

Wall Height (ft.)	Pile Spacing	10'		12'		14'		16'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		4.5	W8x18	4.9	W8x18	5.3	W8x18	5.6	W8x18
8		5.4	W8x18	5.8	W8x18	6.2	W8x18	6.6	W8x18
10		6.1	W8x18	6.6	W8x18	7.0	W8x21	7.4	W10x22
12		6.8	W10x22	7.3	W10x22	7.8	W10x33	8.3	W10x33
14		7.4	W8x28	8.0	W10x33	8.6	W10x33	9.0	W10x39
16		8.2	W10x33	8.8	W10x39	9.4	W10x49	9.9	W10x49
18		8.9	W10x39	9.6	W10x49	10.2	W12x58	10.8	W12x58
20		9.6	W10x49	10.3	W12x58	11.0	W12x58	11.6	W14x68
22		10.2	W12x58	11.0	W14x68	11.7	W14x68	12.3	W12x79
24		10.8	W14x68	11.6	W14x68	12.4	W12x87	13.1	W14x90
26		11.4	W12x72	12.2	W12x87	13.0	W14x90	13.7	W14x99
28		12.0	W12x79	12.9	W14x90	13.7	W14x99	14.4	W14x120

Wall Height (ft.)	Pile Spacing	18'		20'		22'		24'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		5.9	W8x18	6.2	W8x18	6.5	W8x18	6.7	W8x18
8		6.9	W8x21	7.2	W8x21	7.6	W10x22	7.9	W10x22
10		7.8	W8x28	8.2	W10x33	8.6	W10x33	8.9	W10x33
12		8.7	W10x33	9.1	W10x39	9.5	W10x39	9.8	W10x49
14		9.5	W10x49	9.9	W10x49	10.3	W10x54	10.7	W12x58
16		10.4	W12x58	10.9	W12x58	11.4	W12x58	11.8	W14x68
18		11.3	W14x68	11.8	W14x68	12.3	W14x68	12.8	W12x87
20		12.2	W14x68	12.7	W12x87	13.2	W14x90	13.7	W14x90
22		12.9	W14x90	13.5	W14x90	14.1	W14x99	14.6	W14x109
24		13.7	W14x99	14.3	W14x109	14.9	W14x120	15.4	W18x130
26		14.4	W14x109	15.1	W18x130	15.7	W18x130	16.2	W18x130
28		15.1	W18x130	15.8	W18x130	16.4	W18x130	17.0	W18x143

Notes:

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4. Structural steel member design per Standard Specifications for Highway Bridges - Seventeenth Edition.
5. Final deflections must be verified based on the criteria of the local governing body.
6. Adjust drilled shaft diameters as required to ensure sufficient clear cover.

SOUNDWALL DESIGN WITH NONCOHESIVE SOILS

Wind Input Parameters:

Wind Speed: 110 mph.
Exposure: C

Soil Parameters:

Kp: 3
Density: 110 Pcf.
Diameter: 2.5 Ft.
Phi: 0.7
Load Fac.: 1.4

Soldier Pile Properties:

Fy: 50 ksi.

Wall Height (ft.)	Pile Spacing	10'		12'		14'		16'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		4.9	W8x18	5.4	W8x18	5.7	W8x18	6.1	W8x18
8		5.8	W8x18	6.3	W8x18	6.7	W8x18	7.1	W8x21
10		6.6	W8x21	7.1	W10x22	7.6	W10x22	8.1	W10x33
12		7.4	W8x28	7.9	W10x33	8.5	W10x33	9.0	W10x39
14		8.1	W10x33	8.7	W10x39	9.3	W10x39	9.8	W10x49
16		8.9	W10x39	9.6	W10x49	10.2	W10x54	10.8	W12x58
18		9.6	W10x49	10.4	W12x58	11.0	W12x58	11.7	W14x68
20		10.3	W12x58	11.1	W14x68	11.9	W14x68	12.5	W12x87
22		11.0	W14x68	11.9	W14x68	12.6	W12x87	13.3	W14x90
24		11.7	W14x68	12.6	W12x87	13.4	W14x90	14.1	W14x109
26		12.3	W12x87	13.2	W14x90	14.1	W14x109	14.9	W14x120
28		12.9	W14x90	13.9	W14x109	14.8	W14x120	15.6	W18x130

Wall Height (ft.)	Pile Spacing	18'		20'		22'		24'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		6.4	W8x18	6.7	W8x18	7.1	W8x18	7.4	W8x21
8		7.5	W10x22	7.9	W10x22	8.2	W10x33	8.6	W10x33
10		8.5	W10x33	8.9	W10x33	9.3	W10x39	9.7	W10x39
12		9.4	W10x39	9.9	W10x49	10.3	W10x49	10.7	W10x54
14		10.3	W10x54	10.8	W12x58	11.2	W12x58	11.7	W12x58
16		11.3	W12x58	11.8	W14x68	12.3	W14x68	12.8	W12x79
18		12.3	W14x68	12.8	W12x87	13.3	W14x90	13.9	W14x90
20		13.2	W14x90	13.7	W14x90	14.3	W14x99	14.8	W14x109
22		14.0	W14x99	14.6	W14x109	15.2	W14x120	15.8	W18x130
24		14.8	W14x120	15.5	W18x130	16.1	W18x130	16.7	W18x130
26		15.6	W18x130	16.3	W18x130	16.9	W18x143	17.6	W18x158
28		16.3	W18x130	17.1	W18x143	17.8	W18x158	18.4	W21x166

Notes:

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4. Structural steel member design per Standard Specifications for Highway Bridges - Seventeenth Edition.
5. Final deflections must be verified based on the criteria of the local governing body.
6. Adjust drilled shaft diameters as required to ensure sufficient clear cover.

SOUNDWALL DESIGN WITH COHESIVE SOILS

Wind Input Parameters:

Wind Speed: 70 mph.
Exposure: B1

Soil Parameters:

Cohesion: 1000 psf.
Density: 110 Pcf.
Diameter: 2.5 Ft.
Phi: 0.7
Load Fac.: 1.4

Soldier Pile Properties:

Fy: 50 ksi.

Wall Height (ft.)	Pile Spacing	10'		12'		14'		16'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		5.2	W8x18	5.3	W8x18	5.5	W8x18	5.6	W8x18
8		5.6	W8x18	5.8	W8x18	5.9	W8x18	6.1	W8x18
10		6.0	W8x18	6.2	W8x18	6.4	W8x18	6.6	W8x18
12		6.4	W8x18	6.6	W8x18	6.9	W8x18	7.1	W8x18
14		6.8	W8x21	7.1	W8x18	7.3	W8x21	7.6	W8x21
16		7.3	W8x24	7.6	W10x22	7.9	W10x22	8.3	W10x33
18		7.8	W8x28	8.2	W8x28	8.5	W10x33	8.9	W10x33
20		8.3	W10x33	8.7	W10x33	9.1	W10x39	9.5	W10x39
22		8.7	W10x39	9.2	W10x39	9.7	W10x49	10.1	W10x49
24		9.2	W10x49	9.8	W10x49	10.3	W10x49	10.7	W10x54
26		9.7	W10x49	10.3	W10x49	10.8	W12x58	11.3	W12x58
28		10.1	W10x54	10.8	W12x58	11.4	W12x58	11.9	W14x68

Wall Height (ft.)	Pile Spacing	18'		20'		22'		24'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		5.7	W8x18	5.8	W8x18	5.9	W8x18	6.0	W8x18
8		6.3	W8x18	6.4	W8x18	6.5	W8x18	6.7	W8x18
10		6.8	W8x18	7.0	W8x18	7.1	W8x18	7.3	W8x18
12		7.3	W8x21	7.5	W8x21	7.7	W10x22	7.9	W10x22
14		7.8	W10x22	8.1	W10x22	8.3	W10x33	8.5	W10x33
16		8.5	W10x33	8.8	W10x33	9.1	W10x33	9.3	W10x39
18		9.2	W10x39	9.5	W10x39	9.8	W10x49	10.1	W10x49
20		9.9	W10x49	10.2	W10x49	10.6	W10x54	10.9	W12x58
22		10.5	W10x54	10.9	W12x58	11.3	W12x58	11.7	W12x58
24		11.2	W12x58	11.6	W12x58	12.0	W14x68	12.4	W14x68
26		11.8	W14x68	12.3	W14x68	12.7	W14x68	13.2	W12x79
28		12.5	W14x68	13.0	W14x68	13.5	W12x87	13.9	W14x90

Notes:

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4. Structural steel member design per Standard Specifications for Highway Bridges - Seventeenth Edition.
5. Final deflections must be verified based on the criteria of the local governing body.
6. Adjust drilled shaft diameters as required to ensure sufficient clear cover.

SOUNDWALL DESIGN WITH COHESIVE SOILS

Wind Input Parameters:

Wind Speed: 80 mph.
Exposure: B1

Soil Parameters:

Cohesion: 1000 psf.
Density: 110 Pcf.
Diameter: 2.5 Ft.
Phi: 0.7
Load Fac.: 1.4

Soldier Pile Properties:

Fy: 50 ksi.

Wall Height (ft.)	Pile Spacing	10'		12'		14'		16'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		5.4	W8x18	5.6	W8x18	5.7	W8x18	5.9	W8x18
8		5.9	W8x18	6.1	W8x18	6.3	W8x18	6.5	W8x18
10		6.3	W8x18	6.6	W8x18	6.8	W8x18	7.0	W8x18
12		6.8	W8x18	7.1	W8x18	7.3	W8x21	7.6	W8x21
14		7.2	W10x22	7.6	W8x21	7.9	W10x22	8.2	W8x28
16		7.8	W8x28	8.2	W8x28	8.6	W10x33	8.9	W10x33
18		8.4	W10x33	8.8	W10x33	9.3	W10x39	9.7	W10x39
20		8.9	W10x39	9.4	W10x39	9.9	W10x49	10.4	W10x49
22		9.5	W10x49	10.1	W10x49	10.6	W10x54	11.1	W12x58
24		10.0	W10x49	10.7	W10x54	11.2	W12x58	11.8	W12x58
26		10.6	W10x54	11.3	W12x58	11.9	W14x68	12.5	W14x68
28		11.1	W14x68	11.9	W14x68	12.5	W14x68	13.2	W12x79

Wall Height (ft.)	Pile Spacing	18'		20'		22'		24'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		6.0	W8x18	6.2	W8x18	6.3	W8x18	6.4	W8x18
8		6.6	W8x18	6.8	W8x18	7.0	W8x18	7.1	W8x18
10		7.2	W8x18	7.4	W8x21	7.6	W8x21	7.8	W10x22
12		7.9	W10x22	8.1	W10x22	8.3	W10x33	8.5	W10x33
14		8.5	W10x33	8.7	W10x33	9.0	W10x33	9.2	W10x39
16		9.3	W10x39	9.6	W10x39	9.9	W10x49	10.2	W10x49
18		10.1	W10x49	10.4	W10x49	10.8	W10x54	11.1	W12x58
20		10.8	W10x54	11.2	W12x58	11.6	W12x58	12.0	W14x68
22		11.6	W12x58	12.0	W14x68	12.5	W14x68	12.9	W14x68
24		12.3	W14x68	12.8	W14x68	13.3	W12x79	13.8	W12x87
26		13.1	W14x68	13.6	W12x87	14.1	W14x90	14.6	W14x90
28		13.8	W14x90	14.4	W14x90	15.0	W14x99	15.5	W14x109

Notes:

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3. Foundation design based on Brom's Method as described in Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals 4th Edition Copyright 2001 with Interim Revisions.
4. Structural steel member design per Standard Specifications for Highway Bridges - Seventeenth Edition.
5. Final deflections must be verified based on the criteria of the local governing body.
6. Adjust drilled shaft diameters as required to ensure sufficient clear cover.

SOUNDWALL DESIGN WITH COHESIVE SOILS

Wind Input Parameters:

Wind Speed: 90 mph.
Exposure: B1

Soil Parameters:

Cohesion: 1000 psf.
Density: 110 Pcf.
Diameter: 2.5 Ft.
Phi: 0.7
Load Fac.: 1.4

Soldier Pile Properties:

Fy: 50 ksi.

Wall Height (ft.)	Pile Spacing	10'		12'		14'		16'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		5.6	W8x18	5.8	W8x18	6.0	W8x18	6.2	W8x18
8		6.1	W8x18	6.4	W8x18	6.6	W8x18	6.8	W8x18
10		6.7	W8x18	6.9	W8x18	7.2	W8x18	7.5	W8x21
12		7.2	W8x21	7.5	W8x21	7.8	W10x22	8.1	W10x22
14		7.7	W8x24	8.1	W10x22	8.4	W10x33	8.8	W10x33
16		8.3	W10x33	8.8	W10x33	9.2	W10x39	9.6	W10x39
18		9.0	W10x39	9.5	W10x39	10.0	W10x49	10.5	W10x49
20		9.6	W10x49	10.2	W10x49	10.8	W10x54	11.3	W12x58
22		10.2	W10x49	10.9	W12x58	11.5	W12x58	12.1	W14x68
24		10.9	W12x58	11.6	W12x58	12.3	W14x68	12.9	W14x68
26		11.5	W14x68	12.3	W14x68	13.0	W14x68	13.7	W12x87
28		12.1	W12x72	12.9	W14x68	13.7	W12x87	14.5	W14x90

Wall Height (ft.)	Pile Spacing	18'		20'		22'		24'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		6.3	W8x18	6.5	W8x18	6.6	W8x18	6.8	W8x18
8		7.0	W8x18	7.2	W8x18	7.4	W8x21	7.6	W8x21
10		7.7	W10x22	7.9	W10x22	8.2	W10x22	8.4	W10x33
12		8.4	W10x33	8.7	W10x33	8.9	W10x33	9.2	W10x33
14		9.1	W10x33	9.4	W10x39	9.7	W10x39	10.0	W10x49
16		10.0	W10x49	10.4	W10x49	10.7	W10x54	11.1	W12x58
18		10.9	W12x58	11.3	W12x58	11.7	W12x58	12.1	W14x68
20		11.8	W12x58	12.2	W14x68	12.7	W14x68	13.1	W14x68
22		12.6	W14x68	13.2	W14x68	13.7	W12x87	14.1	W14x90
24		13.5	W12x87	14.1	W14x90	14.6	W14x90	15.1	W14x99
26		14.3	W14x90	14.9	W14x99	15.5	W14x109	16.1	W14x120
28		15.2	W14x99	15.8	W14x109	16.5	W14x120	17.1	W18x130

Notes:

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3. Foundation design based on Brom's Method as described in Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals 4th Edition Copyright 2001 with Interim Revisions.
4. Structural steel member design per Standard Specifications for Highway Bridges - Seventeenth Edition.
5. Final deflections must be verified based on the criteria of the local governing body.
6. Adjust drilled shaft diameters as required to ensure sufficient clear cover.

SOUNDWALL DESIGN WITH COHESIVE SOILS

Wind Input Parameters:

Wind Speed: 100 mph.
Exposure: B1

Soil Parameters:

Cohesion: 1000 psf.
Density: 110 Pcf.
Diameter: 2.5 Ft.
Phi: 0.7
Load Fac.: 1.4

Soldier Pile Properties:

Fy: 50 ksi.

Wall Height (ft.)	Pile Spacing	10'		12'		14'		16'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		5.9	W8x18	6.1	W8x18	6.3	W8x18	6.5	W8x18
8		6.4	W8x18	6.7	W8x18	7.0	W8x18	7.2	W8x18
10		7.0	W8x18	7.3	W8x21	7.6	W8x21	7.9	W10x22
12		7.6	W10x22	7.9	W10x22	8.3	W10x33	8.6	W10x33
14		8.1	W8x28	8.6	W10x33	9.0	W10x33	9.4	W10x39
16		8.9	W10x33	9.4	W10x39	9.9	W10x49	10.3	W10x49
18		9.6	W10x39	10.2	W10x49	10.7	W10x54	11.3	W12x58
20		10.3	W10x49	11.0	W12x58	11.6	W12x58	12.2	W14x68
22		11.0	W12x58	11.7	W12x58	12.4	W14x68	13.1	W14x68
24		11.7	W14x68	12.5	W14x68	13.3	W12x79	14.0	W14x90
26		12.4	W12x72	13.3	W12x87	14.1	W14x90	14.9	W14x99
28		13.1	W12x79	14.0	W14x90	14.9	W14x99	15.8	W14x109

Wall Height (ft.)	Pile Spacing	18'		20'		22'		24'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		6.6	W8x18	6.8	W8x18	7.0	W8x18	7.1	W8x18
8		7.4	W8x21	7.6	W8x21	7.8	W10x22	8.0	W10x22
10		8.2	W10x22	8.5	W10x33	8.7	W10x33	8.9	W10x33
12		9.0	W10x33	9.3	W10x39	9.6	W10x39	9.9	W10x49
14		9.7	W10x39	10.1	W10x49	10.4	W10x49	10.8	W10x54
16		10.8	W10x54	11.2	W12x58	11.6	W12x58	12.0	W12x58
18		11.8	W12x58	12.2	W14x68	12.7	W14x68	13.1	W14x68
20		12.7	W14x68	13.3	W12x79	13.8	W12x87	14.3	W14x90
22		13.7	W12x87	14.3	W14x90	14.9	W14x90	15.4	W14x99
24		14.7	W14x90	15.3	W14x99	15.9	W14x109	16.5	W14x120
26		15.6	W14x109	16.3	W14x120	17.0	W18x130	17.6	W18x130
28		16.6	W14x120	17.3	W18x130	18.0	W18x130	18.7	W18x130

Notes:

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4. Structural steel member design per Standard Specifications for Highway Bridges - Seventeenth Edition.
5. Final deflections must be verified based on the criteria of the local governing body.
6. Adjust drilled shaft diameters as required to ensure sufficient clear cover.

SOUNDWALL DESIGN WITH COHESIVE SOILS

Wind Input Parameters:

Wind Speed: 110 mph.
Exposure: B1

Soil Parameters:

Cohesion: 1000 psf.
Density: 110 Pcf.
Diameter: 2.5 Ft.
Phi: 0.7
Load Fac.: 1.4

Soldier Pile Properties:

Fy: 50 ksi.

Wall Height (ft.)	Pile Spacing	10'		12'		14'		16'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		6.1	W8x18	6.3	W8x18	6.5	W8x18	6.7	W8x18
8		6.7	W8x18	7.0	W8x18	7.3	W8x18	7.6	W8x21
10		7.3	W8x21	7.7	W10x22	8.0	W10x22	8.4	W10x33
12		8.0	W8x28	8.4	W10x33	8.8	W10x33	9.2	W10x33
14		8.6	W10x33	9.1	W10x33	9.5	W10x39	10.0	W10x49
16		9.4	W10x39	10.0	W10x49	10.5	W10x49	11.0	W12x58
18		10.2	W10x49	10.9	W10x54	11.5	W12x58	12.1	W14x68
20		11.0	W12x58	11.8	W12x58	12.5	W14x68	13.1	W14x68
22		11.8	W12x58	12.6	W14x68	13.4	W12x87	14.1	W14x90
24		12.6	W14x68	13.5	W12x87	14.3	W14x90	15.1	W14x99
26		13.3	W12x87	14.3	W14x90	15.2	W14x99	16.1	W14x120
28		14.1	W14x90	15.1	W14x99	16.1	W14x120	17.1	W18x130

Wall Height (ft.)	Pile Spacing	18'		20'		22'		24'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		6.9	W8x18	7.1	W8x18	7.3	W8x18	7.5	W8x21
8		7.8	W10x22	8.0	W10x22	8.3	W8x28	8.5	W10x33
10		8.7	W10x33	9.0	W10x33	9.2	W10x33	9.5	W10x39
12		9.5	W10x39	9.9	W10x49	10.2	W10x49	10.5	W10x49
14		10.4	W10x49	10.8	W10x54	11.2	W12x58	11.5	W12x58
16		11.5	W12x58	12.0	W12x58	12.4	W14x68	12.9	W14x68
18		12.6	W14x68	13.2	W14x68	13.7	W12x87	14.2	W14x90
20		13.7	W12x87	14.3	W14x90	14.9	W14x90	15.4	W14x99
22		14.8	W14x90	15.5	W14x99	16.1	W14x109	16.7	W14x120
24		15.9	W14x109	16.6	W14x120	17.3	W18x130	18.0	W18x130
26		16.9	W18x130	17.7	W18x130	18.5	W18x130	19.2	W18x143
28		18.0	W18x130	18.8	W18x130	19.6	W18x143	20.4	W18x158

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4. Structural steel member design per Standard Specifications for Highway Bridges - Seventeenth Edition.
5. Final deflections must be verified based on the criteria of the local governing body.
6. Adjust drilled shaft diameters as required to ensure sufficient clear cover.

SOUNDWALL DESIGN WITH COHESIVE SOILS

Wind Input Parameters:

Wind Speed: 70 mph.
Exposure: B2

Soil Parameters:

Cohesion: 1000 psf.
Density: 110 Pcf.
Diameter: 2.5 Ft.
Phi: 0.7
Load Fac.: 1.4

Soldier Pile Properties:

Fy: 50 ksi.

Wall Height (ft.)	Pile Spacing	10'		12'		14'		16'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		5.6	W8x18	5.8	W8x18	6.0	W8x18	6.1	W8x18
8		6.1	W8x18	6.3	W8x18	6.6	W8x18	6.8	W8x18
10		6.6	W8x18	6.9	W8x18	7.2	W8x18	7.4	W8x21
12		7.1	W8x21	7.4	W8x21	7.7	W10x22	8.0	W10x22
14		7.6	W8x24	8.0	W10x22	8.3	W10x33	8.7	W10x33
16		8.2	W8x28	8.7	W10x33	9.1	W10x33	9.5	W10x39
18		8.8	W10x33	9.3	W10x39	9.8	W10x49	10.2	W10x49
20		9.4	W10x49	10.0	W10x49	10.5	W10x49	11.0	W12x58
22		10.0	W10x49	10.6	W10x54	11.2	W12x58	11.8	W12x58
24		10.6	W10x54	11.3	W12x58	11.9	W14x68	12.5	W14x68
26		11.2	W12x58	11.9	W14x68	12.6	W14x68	13.3	W12x79
28		11.7	W14x68	12.5	W14x68	13.3	W12x87	14.0	W14x90

Wall Height (ft.)	Pile Spacing	18'		20'		22'		24'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		6.3	W8x18	6.4	W8x18	6.6	W8x18	6.7	W8x18
8		7.0	W8x18	7.1	W8x18	7.3	W8x18	7.5	W8x21
10		7.6	W8x21	7.9	W10x22	8.1	W10x22	8.3	W8x28
12		8.3	W10x33	8.6	W10x33	8.8	W10x33	9.1	W10x33
14		9.0	W10x33	9.3	W10x39	9.6	W10x39	9.9	W10x49
16		9.8	W10x49	10.2	W10x49	10.5	W10x49	10.9	W10x54
18		10.7	W10x54	11.1	W12x58	11.5	W12x58	11.8	W12x58
20		11.5	W12x58	11.9	W14x68	12.4	W14x68	12.8	W14x68
22		12.3	W14x68	12.8	W14x68	13.3	W12x79	13.7	W12x87
24		13.1	W14x68	13.6	W12x87	14.2	W14x90	14.7	W14x90
26		13.9	W14x90	14.5	W14x90	15.0	W14x99	15.6	W14x109
28		14.7	W14x90	15.3	W14x99	15.9	W14x109	16.5	W14x120

Notes:

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4. Structural steel member design per Standard Specifications for Highway Bridges - Seventeenth Edition.
5. Final deflections must be verified based on the criteria of the local governing body.
6. Adjust drilled shaft diameters as required to ensure sufficient clear cover.

SOUNDWALL DESIGN WITH COHESIVE SOILS

Wind Input Parameters:

Wind Speed: 80 mph.
Exposure: B2

Soil Parameters:

Cohesion: 1000 psf.
Density: 110 Pcf.
Diameter: 2.5 Ft.
Phi: 0.7
Load Fac.: 1.4

Soldier Pile Properties:

Fy: 50 ksi.

Wall Height (ft.)	Pile Spacing	10'		12'		14'		16'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		5.9	W8x18	6.1	W8x18	6.3	W8x18	6.5	W8x18
8		6.5	W8x18	6.7	W8x18	7.0	W8x18	7.2	W8x18
10		7.0	W8x18	7.4	W8x21	7.7	W10x22	8.0	W10x22
12		7.6	W10x22	8.0	W10x22	8.4	W10x33	8.7	W10x33
14		8.2	W8x28	8.6	W10x33	9.0	W10x33	9.4	W10x39
16		8.9	W10x33	9.4	W10x39	9.9	W10x49	10.4	W10x49
18		9.6	W10x39	10.2	W10x49	10.7	W10x54	11.3	W12x58
20		10.3	W10x49	10.9	W12x58	11.6	W12x58	12.1	W14x68
22		10.9	W12x58	11.7	W12x58	12.4	W14x68	13.0	W14x68
24		11.6	W12x58	12.4	W14x68	13.2	W12x79	13.9	W14x90
26		12.3	W12x72	13.2	W12x79	14.0	W14x90	14.7	W14x90
28		12.9	W12x79	13.9	W14x90	14.8	W14x90	15.6	W14x109

Wall Height (ft.)	Pile Spacing	18'		20'		22'		24'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		6.7	W8x18	6.8	W8x18	7.0	W8x18	7.1	W8x18
8		7.5	W8x21	7.7	W8x21	7.9	W10x22	8.1	W10x22
10		8.2	W8x28	8.5	W10x33	8.8	W10x33	9.0	W10x33
12		9.0	W10x33	9.3	W10x39	9.6	W10x39	9.9	W10x49
14		9.8	W10x49	10.2	W10x49	10.5	W10x49	10.8	W10x54
16		10.8	W10x54	11.2	W12x58	11.6	W12x58	12.0	W12x58
18		11.7	W12x58	12.2	W14x68	12.7	W14x68	13.1	W14x68
20		12.7	W14x68	13.2	W14x68	13.7	W12x87	14.2	W14x90
22		13.6	W12x87	14.2	W14x90	14.8	W14x90	15.3	W14x99
24		14.5	W14x90	15.2	W14x99	15.8	W14x109	16.4	W14x120
26		15.5	W14x109	16.2	W14x120	16.8	W18x130	17.5	W18x130
28		16.4	W14x120	17.1	W18x130	17.9	W18x130	18.5	W18x130

Notes:

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5. Final deflections must be verified based on the criteria of the local governing body.
6. Adjust drilled shaft diameters as required to ensure sufficient clear cover.

SOUNDWALL DESIGN WITH COHESIVE SOILS

Wind Input Parameters:

Wind Speed: 90 mph.
Exposure: B2

Soil Parameters:

Cohesion: 1000 psf.
Density: 110 Pcf.
Diameter: 2.5 Ft.
Phi: 0.7
Load Fac.: 1.4

Soldier Pile Properties:

Fy: 50 ksi.

Wall Height (ft.)	Pile Spacing	10'		12'		14'		16'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		6.2	W8x18	6.4	W8x18	6.6	W8x18	6.9	W8x18
8		6.8	W8x18	7.1	W8x18	7.4	W8x21	7.7	W8x21
10		7.5	W8x21	7.8	W10x22	8.2	W10x22	8.5	W10x33
12		8.1	W8x28	8.6	W10x33	9.0	W10x33	9.4	W10x39
14		8.8	W10x33	9.3	W10x39	9.8	W10x39	10.2	W10x49
16		9.6	W10x39	10.2	W10x49	10.7	W10x54	11.3	W12x58
18		10.4	W10x49	11.0	W12x58	11.7	W12x58	12.3	W14x68
20		11.1	W12x58	11.9	W12x58	12.6	W14x68	13.3	W12x79
22		11.9	W14x68	12.8	W14x68	13.5	W12x87	14.3	W14x90
24		12.7	W14x68	13.6	W12x87	14.5	W14x90	15.3	W14x99
26		13.4	W12x87	14.4	W14x90	15.4	W14x99	16.2	W14x120
28		14.2	W14x90	15.3	W14x99	16.3	W14x120	17.2	W18x130

Wall Height (ft.)	Pile Spacing	18'		20'		22'		24'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		7.1	W8x18	7.2	W8x18	7.4	W8x21	7.6	W8x21
8		8.0	W10x22	8.2	W10x22	8.4	W10x33	8.7	W10x33
10		8.9	W10x33	9.2	W10x33	9.4	W10x39	9.7	W10x39
12		9.7	W10x39	10.1	W10x49	10.4	W10x49	10.8	W10x54
14		10.6	W10x49	11.0	W12x58	11.4	W12x58	11.8	W12x58
16		11.8	W12x58	12.2	W14x68	12.7	W14x68	13.1	W14x68
18		12.8	W14x68	13.4	W12x79	13.9	W12x87	14.4	W14x90
20		13.9	W12x87	14.5	W14x90	15.1	W14x99	15.7	W14x99
22		15.0	W14x90	15.7	W14x109	16.3	W14x120	16.9	W18x130
24		16.0	W14x109	16.8	W14x120	17.5	W18x130	18.2	W18x130
26		17.1	W18x130	17.9	W18x130	18.7	W18x130	19.4	W18x143
28		18.1	W18x130	19.0	W18x143	19.8	W18x158	20.6	W21x166

Notes:

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2. Wind loads are per Guide Specifications for Structural Design of Sound Barriers Copyright 1989 and Interim Revisions.
3. Foundation design based on Brom's Method as described in Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals 4th Edition Copyright 2001 with Interim Revisions.
4. Structural steel member design per Standard Specifications for Highway Bridges - Seventeenth Edition.
5. Final deflections must be verified based on the criteria of the local governing body.
6. Adjust drilled shaft diameters as required to ensure sufficient clear cover.

SOUNDWALL DESIGN WITH COHESIVE SOILS

Wind Input Parameters:

Wind Speed: 100 mph.
Exposure: B2

Soil Parameters:

Cohesion: 1000 psf.
Density: 110 Pcf.
Diameter: 2.5 Ft.
Phi: 0.7
Load Fac.: 1.4

Soldier Pile Properties:

Fy: 50 ksi.

Wall Height (ft.)	Pile Spacing	10'		12'		14'		16'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		6.4	W8x18	6.7	W8x18	7.0	W8x18	7.2	W8x18
8		7.2	W8x18	7.5	W8x21	7.9	W10x22	8.2	W10x22
10		7.9	W10x22	8.3	W10x33	8.7	W10x33	9.1	W10x33
12		8.6	W10x33	9.1	W10x33	9.6	W10x39	10.1	W10x49
14		9.4	W10x39	9.9	W10x49	10.5	W10x49	11.0	W10x54
16		10.3	W10x49	10.9	W10x54	11.6	W12x58	12.2	W14x68
18		11.2	W12x58	11.9	W12x58	12.6	W14x68	13.3	W12x79
20		12.0	W14x68	12.9	W14x68	13.7	W12x87	14.5	W14x90
22		12.9	W14x68	13.8	W12x87	14.7	W14x90	15.6	W14x99
24		13.7	W12x87	14.8	W14x90	15.8	W14x109	16.7	W14x120
26		14.6	W14x90	15.7	W14x109	16.8	W18x130	17.8	W18x130
28		15.4	W14x109	16.7	W18x130	17.8	W18x130	18.9	W18x130

Wall Height (ft.)	Pile Spacing	18'		20'		22'		24'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		7.5	W8x21	7.7	W8x21	7.9	W10x22	8.1	W10x22
8		8.5	W10x33	8.8	W10x33	9.0	W10x33	9.3	W10x33
10		9.5	W10x39	9.8	W10x39	10.2	W10x49	10.5	W10x49
12		10.5	W10x49	10.9	W10x54	11.3	W12x58	11.6	W12x58
14		11.5	W12x58	11.9	W12x58	12.4	W14x68	12.8	W14x68
16		12.7	W14x68	13.3	W14x68	13.8	W12x87	14.3	W14x90
18		14.0	W12x87	14.6	W14x90	15.2	W14x90	15.7	W14x99
20		15.2	W14x99	15.9	W14x109	16.5	W14x120	17.2	W18x130
22		16.4	W14x120	17.1	W18x130	17.9	W18x130	18.6	W18x130
24		17.6	W18x130	18.4	W18x130	19.2	W18x143	20.0	W18x158
26		18.7	W18x130	19.6	W18x143	20.5	W18x158	21.4	W21x166
28		19.9	W18x158	20.9	W21x166	21.8	W21x166	22.8	W30x173

Notes:

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3. Foundation design based on Brom's Method as described in Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals 4th Edition Copyright 2001 with Interim Revisions.
4. Structural steel member design per Standard Specifications for Highway Bridges - Seventeenth Edition.
5. Final deflections must be verified based on the criteria of the local governing body.
6. Adjust drilled shaft diameters as required to ensure sufficient clear cover.

SOUNDWALL DESIGN WITH COHESIVE SOILS

Wind Input Parameters:

Wind Speed: 110 mph.
Exposure: B2

Soil Parameters:

Cohesion: 1000 psf.
Density: 110 Pcf.
Diameter: 2.5 Ft.
Phi: 0.7
Load Fac.: 1.4

Soldier Pile Properties:

Fy: 50 ksi.

Wall Height (ft.)	Pile Spacing	10'		12'		14'		16'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		6.7	W8x18	7.0	W8x18	7.3	W8x18	7.6	W8x21
8		7.6	W8x21	7.9	W10x22	8.3	W8x28	8.7	W10x33
10		8.4	W10x33	8.8	W10x33	9.3	W10x33	9.7	W10x39
12		9.2	W10x33	9.7	W10x39	10.3	W10x49	10.8	W10x54
14		10.0	W10x49	10.6	W10x49	11.2	W12x58	11.8	W12x58
16		11.0	W12x58	11.7	W12x58	12.4	W14x68	13.1	W14x68
18		12.0	W12x58	12.8	W14x68	13.6	W12x87	14.4	W14x90
20		12.9	W14x68	13.9	W12x87	14.8	W14x90	15.6	W14x99
22		13.9	W12x87	15.0	W14x90	16.0	W14x109	16.9	W18x130
24		14.8	W14x90	16.0	W14x109	17.1	W18x130	18.1	W18x130
26		15.8	W14x109	17.1	W18x130	18.2	W18x130	19.4	W18x143
28		16.7	W18x130	18.1	W18x130	19.4	W18x143	20.6	W21x166

Wall Height (ft.)	Pile Spacing	18'		20'		22'		24'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		7.9	W10x22	8.1	W10x22	8.3	W8x28	8.6	W10x33
8		9.0	W10x33	9.3	W10x33	9.6	W10x39	9.9	W10x39
10		10.1	W10x49	10.5	W10x49	10.9	W10x54	11.2	W12x58
12		11.2	W12x58	11.7	W12x58	12.1	W12x58	12.5	W14x68
14		12.3	W14x68	12.9	W14x68	13.4	W14x68	13.9	W12x87
16		13.7	W12x87	14.4	W14x90	14.9	W14x90	15.5	W14x99
18		15.1	W14x90	15.8	W14x109	16.5	W14x120	17.1	W14x120
20		16.5	W14x120	17.2	W18x130	18.0	W18x130	18.7	W18x130
22		17.8	W18x130	18.7	W18x130	19.5	W18x143	20.3	W18x158
24		19.1	W18x143	20.1	W18x158	21.0	W21x166	21.8	W21x166
26		20.4	W18x158	21.5	W21x166	22.4	W21x166	23.4	W30x173
28		21.7	W21x166	22.8	W30x173	23.9	W30x173	24.9	W30x173

Notes:

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4. Structural steel member design per Standard Specifications for Highway Bridges - Seventeenth Edition.
5. Final deflections must be verified based on the criteria of the local governing body.
6. Adjust drilled shaft diameters as required to ensure sufficient clear cover.

SOUNDWALL DESIGN WITH COHESIVE SOILS

Wind Input Parameters:

Wind Speed: 70 mph.
Exposure: C

Soil Parameters:

Cohesion: 1000 psf.
Density: 110 Pcf.
Diameter: 2.5 Ft.
Phi: 0.7
Load Fac.: 1.4

Soldier Pile Properties:

Fy: 50 ksi.

Wall Height (ft.)	Pile Spacing	10'		12'		14'		16'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		5.9	W8x18	6.1	W8x18	6.3	W8x18	6.5	W8x18
8		6.5	W8x18	6.8	W8x18	7.1	W8x18	7.3	W8x18
10		7.1	W8x18	7.4	W8x21	7.8	W10x22	8.1	W10x22
12		7.7	W10x22	8.1	W10x22	8.5	W10x33	8.8	W10x33
14		8.3	W10x33	8.7	W10x33	9.1	W10x33	9.5	W10x39
16		9.0	W10x33	9.5	W10x39	10.0	W10x49	10.5	W10x49
18		9.7	W10x39	10.3	W10x49	10.8	W10x54	11.4	W12x58
20		10.4	W10x49	11.0	W12x58	11.7	W12x58	12.3	W14x68
22		11.0	W12x58	11.8	W12x58	12.5	W14x68	13.1	W14x68
24		11.7	W14x68	12.5	W14x68	13.3	W12x79	14.0	W14x90
26		12.4	W12x72	13.3	W12x87	14.1	W14x90	14.9	W14x99
28		13.1	W12x79	14.0	W14x90	14.9	W14x99	15.8	W14x109

Wall Height (ft.)	Pile Spacing	18'		20'		22'		24'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		6.7	W8x18	6.9	W8x18	7.1	W8x18	7.2	W8x18
8		7.5	W8x21	7.8	W10x22	8.0	W10x22	8.2	W10x22
10		8.3	W10x33	8.6	W10x33	8.9	W10x33	9.1	W10x33
12		9.1	W10x33	9.5	W10x39	9.8	W10x39	10.0	W10x49
14		9.9	W10x49	10.3	W10x49	10.6	W10x49	11.0	W10x54
16		10.9	W10x54	11.3	W12x58	11.7	W12x58	12.1	W14x68
18		11.9	W12x58	12.4	W14x68	12.8	W14x68	13.3	W14x68
20		12.8	W14x68	13.4	W12x79	13.9	W12x87	14.4	W14x90
22		13.8	W12x87	14.4	W14x90	14.9	W14x90	15.5	W14x99
24		14.7	W14x90	15.4	W14x99	16.0	W14x109	16.6	W14x120
26		15.6	W14x109	16.3	W14x120	17.0	W18x130	17.7	W18x130
28		16.6	W14x120	17.3	W18x130	18.0	W18x130	18.8	W18x130

Notes:

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4. Structural steel member design per Standard Specifications for Highway Bridges - Seventeenth Edition.
5. Final deflections must be verified based on the criteria of the local governing body.
6. Adjust drilled shaft diameters as required to ensure sufficient clear cover.

SOUNDWALL DESIGN WITH COHESIVE SOILS

Wind Input Parameters:

Wind Speed: 80 mph.
Exposure: C

Soil Parameters:

Cohesion: 1000 psf.
Density: 110 Pcf.
Diameter: 2.5 Ft.
Phi: 0.7
Load Fac.: 1.4

Soldier Pile Properties:

Fy: 50 ksi.

Wall Height (ft.)	Pile Spacing	10'		12'		14'		16'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		6.3	W8x18	6.5	W8x18	6.7	W8x18	7.0	W8x18
8		6.9	W8x18	7.3	W8x18	7.6	W8x21	7.8	W10x22
10		7.6	W8x21	8.0	W10x22	8.4	W10x33	8.7	W10x33
12		8.3	W10x33	8.7	W10x33	9.2	W10x33	9.6	W10x39
14		8.9	W10x33	9.5	W10x39	10.0	W10x49	10.5	W10x49
16		9.8	W10x49	10.4	W10x49	11.0	W12x58	11.5	W12x58
18		10.6	W10x54	11.3	W12x58	11.9	W12x58	12.6	W14x68
20		11.4	W12x58	12.2	W14x68	12.9	W14x68	13.6	W12x87
22		12.2	W14x68	13.0	W14x68	13.9	W12x87	14.6	W14x90
24		13.0	W12x79	13.9	W14x90	14.8	W14x90	15.6	W14x109
26		13.7	W12x87	14.8	W14x90	15.7	W14x109	16.6	W14x120
28		14.5	W14x90	15.6	W14x109	16.7	W18x130	17.6	W18x130

Wall Height (ft.)	Pile Spacing	18'		20'		22'		24'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		7.2	W8x18	7.4	W8x18	7.6	W8x21	7.8	W10x22
8		8.1	W10x22	8.4	W10x33	8.6	W10x33	8.9	W10x33
10		9.0	W10x33	9.4	W10x39	9.7	W10x39	10.0	W10x49
12		10.0	W10x49	10.3	W10x49	10.7	W10x49	11.0	W10x54
14		10.9	W10x54	11.3	W12x58	11.7	W12x58	12.1	W12x58
16		12.0	W12x58	12.5	W14x68	13.0	W14x68	13.5	W12x79
18		13.2	W14x68	13.7	W12x87	14.3	W14x90	14.8	W14x90
20		14.3	W14x90	14.9	W14x90	15.5	W14x99	16.1	W14x109
22		15.4	W14x99	16.1	W14x109	16.7	W14x120	17.4	W18x130
24		16.4	W14x120	17.2	W18x130	17.9	W18x130	18.6	W18x130
26		17.5	W18x130	18.3	W18x130	19.1	W18x143	19.9	W18x158
28		18.6	W18x130	19.5	W18x143	20.3	W18x158	21.2	W21x166

Notes:

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4. Structural steel member design per Standard Specifications for Highway Bridges - Seventeenth Edition.
5. Final deflections must be verified based on the criteria of the local governing body.
6. Adjust drilled shaft diameters as required to ensure sufficient clear cover.

SOUNDWALL DESIGN WITH COHESIVE SOILS

Wind Input Parameters:

Wind Speed: 90 mph.
Exposure: C

Soil Parameters:

Cohesion: 1000 psf.
Density: 110 Pcf.
Diameter: 2.5 Ft.
Phi: 0.7
Load Fac.: 1.4

Soldier Pile Properties:

Fy: 50 ksi.

Wall Height (ft.)	Pile Spacing	10'		12'		14'		16'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		6.6	W8x18	6.9	W8x18	7.2	W8x18	7.4	W8x21
8		7.4	W8x21	7.7	W10x22	8.1	W10x22	8.4	W10x33
10		8.1	W10x22	8.6	W10x33	9.0	W10x33	9.4	W10x39
12		8.9	W10x33	9.4	W10x39	9.9	W10x49	10.4	W10x49
14		9.7	W10x39	10.3	W10x49	10.8	W10x54	11.4	W12x58
16		10.6	W10x49	11.3	W12x58	12.0	W12x58	12.6	W14x68
18		11.5	W12x58	12.3	W14x68	13.1	W14x68	13.8	W12x87
20		12.4	W14x68	13.3	W12x79	14.2	W14x90	15.0	W14x90
22		13.3	W12x79	14.3	W14x90	15.3	W14x99	16.1	W14x109
24		14.2	W14x90	15.3	W14x99	16.3	W14x120	17.3	W18x130
26		15.1	W14x99	16.3	W14x120	17.4	W18x130	18.4	W18x130
28		16.0	W14x109	17.3	W18x130	18.5	W18x130	19.6	W18x143

Wall Height (ft.)	Pile Spacing	18'		20'		22'		24'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		7.7	W8x21	7.9	W10x22	8.1	W10x22	8.3	W10x22
8		8.7	W10x33	9.0	W10x33	9.3	W10x33	9.6	W10x39
10		9.8	W10x39	10.1	W10x49	10.5	W10x49	10.8	W10x54
12		10.8	W10x54	11.3	W12x58	11.7	W12x58	12.1	W12x58
14		11.9	W12x58	12.4	W14x68	12.9	W14x68	13.3	W14x68
16		13.2	W14x68	13.8	W12x87	14.3	W14x90	14.9	W14x90
18		14.5	W14x90	15.1	W14x90	15.7	W14x99	16.4	W14x109
20		15.7	W14x109	16.5	W14x120	17.2	W18x130	17.8	W18x130
22		17.0	W18x130	17.8	W18x130	18.6	W18x130	19.3	W18x143
24		18.2	W18x130	19.1	W18x130	19.9	W18x143	20.8	W18x158
26		19.4	W18x143	20.4	W18x158	21.3	W21x166	22.2	W21x166
28		20.7	W21x166	21.7	W21x166	22.7	W30x173	23.7	W30x173

Notes:

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6. Adjust drilled shaft diameters as required to ensure sufficient clear cover.

SOUNDWALL DESIGN WITH COHESIVE SOILS

Wind Input Parameters:

Wind Speed: 100 mph.
Exposure: C

Soil Parameters:

Cohesion: 1000 psf.
Density: 110 Pcf.
Diameter: 2.5 Ft.
Phi: 0.7
Load Fac.: 1.4

Soldier Pile Properties:

Fy: 50 ksi.

Wall Height (ft.)	Pile Spacing	10'		12'		14'		16'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		6.9	W8x18	7.3	W8x18	7.6	W8x21	7.9	W10x22
8		7.8	W10x22	8.2	W10x22	8.6	W10x33	9.0	W10x33
10		8.7	W10x33	9.2	W10x33	9.6	W10x39	10.1	W10x49
12		9.5	W10x39	10.1	W10x49	10.7	W10x49	11.2	W12x58
14		10.4	W10x49	11.1	W12x58	11.7	W12x58	12.3	W14x68
16		11.4	W12x58	12.2	W14x68	13.0	W14x68	13.7	W12x87
18		12.5	W14x68	13.4	W12x79	14.2	W14x90	15.0	W14x90
20		13.5	W12x87	14.5	W14x90	15.5	W14x99	16.4	W14x120
22		14.5	W14x90	15.6	W14x109	16.7	W14x120	17.7	W18x130
24		15.5	W14x99	16.7	W14x120	17.9	W18x130	19.0	W18x130
26		16.5	W14x120	17.8	W18x130	19.1	W18x143	20.3	W18x158
28		17.5	W18x130	18.9	W18x143	20.3	W18x158	21.6	W21x166

Wall Height (ft.)	Pile Spacing	18'		20'		22'		24'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		8.1	W10x22	8.4	W8x28	8.7	W10x33	8.9	W10x33
8		9.3	W10x33	9.7	W10x39	10.0	W10x49	10.3	W10x49
10		10.5	W10x49	10.9	W10x54	11.3	W12x58	11.7	W12x58
12		11.7	W12x58	12.2	W12x58	12.7	W14x68	13.1	W14x68
14		12.9	W14x68	13.5	W14x68	14.0	W12x87	14.5	W14x90
16		14.4	W14x90	15.0	W14x90	15.7	W14x99	16.3	W14x109
18		15.8	W14x109	16.6	W14x120	17.3	W18x130	18.0	W18x130
20		17.2	W18x130	18.1	W18x130	18.9	W18x130	19.6	W18x143
22		18.6	W18x130	19.6	W18x143	20.4	W18x158	21.3	W21x166
24		20.0	W18x158	21.0	W21x166	22.0	W21x166	23.0	W30x173
26		21.4	W21x166	22.5	W21x166	23.6	W30x173	24.6	W30x173
28		22.8	W30x173	24.0	W30x173	25.1	W30x173	26.2	W30x173

Notes:

1. The above designs are for standard cases only. Site specific designs must be performed by a registered professional engineer who verifies wind load requirements and actual soil conditions.
2. Wind loads are per Guide Specifications for Structural Design of Sound Barriers Copyright 1989 and Interim Revisions.
3. Foundation design based on Brom's Method as described in Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals 4th Edition Copyright 2001 with Interim Revisions.
4. Structural steel member design per Standard Specifications for Highway Bridges - Seventeenth Edition.
5. Final deflections must be verified based on the criteria of the local governing body.
6. Adjust drilled shaft diameters as required to ensure sufficient clear cover.

SOUNDWALL DESIGN WITH COHESIVE SOILS

Wind Input Parameters:

Wind Speed: 110 mph.
Exposure: C

Soil Parameters:

Cohesion: 1000 psf.
Density: 110 Pcf.
Diameter: 2.5 Ft.
Phi: 0.7
Load Fac.: 1.4

Soldier Pile Properties:

Fy: 50 ksi.

Wall Height (ft.)	Pile Spacing	10'		12'		14'		16'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		7.3	W8x18	7.6	W8x21	8.0	W10x22	8.3	W10x22
8		8.2	W10x22	8.7	W10x33	9.2	W10x33	9.6	W10x39
10		9.2	W10x33	9.8	W10x39	10.3	W10x49	10.8	W10x49
12		10.1	W10x49	10.8	W10x54	11.5	W12x58	12.1	W12x58
14		11.1	W12x58	11.9	W12x58	12.6	W14x68	13.3	W14x68
16		12.3	W14x68	13.2	W14x68	14.0	W12x87	14.8	W14x90
18		13.4	W12x79	14.4	W14x90	15.4	W14x99	16.3	W14x109
20		14.6	W14x90	15.7	W14x109	16.8	W14x120	17.8	W18x130
22		15.7	W14x109	16.9	W18x130	18.1	W18x130	19.3	W18x143
24		16.8	W14x120	18.2	W18x130	19.5	W18x143	20.7	W18x158
26		17.9	W18x130	19.4	W18x143	20.8	W21x166	22.2	W21x166
28		19.0	W18x143	20.6	W21x166	22.2	W21x166	23.6	W30x173

Wall Height (ft.)	Pile Spacing	18'		20'		22'		24'	
		Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile	Penetration (ft.)	Soldier Pile
6		8.6	W10x33	8.9	W10x33	9.2	W10x33	9.5	W10x33
8		10.0	W10x39	10.3	W10x49	10.7	W10x49	11.1	W10x54
10		11.3	W12x58	11.8	W12x58	12.2	W12x58	12.6	W14x68
12		12.6	W14x68	13.2	W14x68	13.7	W12x79	14.2	W12x87
14		14.0	W12x87	14.6	W14x90	15.2	W14x90	15.8	W14x99
16		15.6	W14x99	16.3	W14x109	17.0	W14x120	17.7	W18x130
18		17.2	W18x130	18.0	W18x130	18.8	W18x130	19.6	W18x143
20		18.8	W18x130	19.7	W18x143	20.6	W18x158	21.5	W21x166
22		20.4	W18x158	21.4	W21x166	22.4	W21x166	23.4	W30x173
24		21.9	W21x166	23.0	W30x173	24.1	W30x173	25.2	W30x173
26		23.5	W30x173	24.7	W30x173	25.9	W30x173	27.0	W30x191
28		25.0	W30x173	26.3	W30x173	27.6	W30x191	28.9	W30x211

Notes:

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