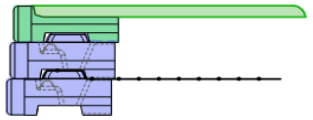
NOVUM WALL PRELIMINARY SECTIONS - FRICTION CONNECTION MSE WALLS (IMPERIAL)

Silty Sand, Clayey Sand - Internal Angle of Friction (ϕ) = 28°

Load Condition A - No Surcharge, No Back Slope, No Toe Slope



28°

Total Wall Height (ft)	Bury Depth (ft)	Exposed Wall Height (ft)	The geogrid used to analyze preliminary sections was Miragrid 3XT, 5XT, and 10XT. Geogrid is to be placed BELOW block number shown below. Block number 1 is located at the bottom of the wall. Geogrid length (L) is measured in feet from the form line near the front of the block.															Est. Geogrid Qty. (sqyd/ft of wall)
6.0	0.5	5.5	Block No.	2	3	5	7											
			L (ft)	5	5	5	6											2.33
			Type	3XT	3XT	3XT	3XT											
7.5	0.5	7.0	Block No.	2	3	5	7	9										
			L (ft)	5	5	5	6	8										3.22
			Type	3XT	3XT	3XT	3XT	3XT										
9.0	0.5	8.5	Block No.	2	3	5	7	9	11									
			L (ft)	6	6	6	6	8	9									4.56
			Type	3XT	3XT	3XT	3XT	3XT	3XT									
10.5	0.5	10.0	Block No.	2	3	5	7	9	11	13								
			L (ft)	7	7	7	7	8	9	10								6.11
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT								
12.0	1.0	11.0	Block No.	2	3	5	7	9	11	13	15							
			L (ft)	8	8	8	8	8	9	10	11							7.78
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT							
13.5	1.0	12.5	Block No.	2	3	5	7	9	11	13	15	17						
			L (ft)	9	9	9	9	9	9	10	11	12						9.67
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT						
15.0	1.0	14.0	Block No.	2	3	5	7	9	11	13	15	17	19					
			L (ft)	9	9	9	9	9	9	10	11	12	13					11.11
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT					
16.5	1.0	15.5	Block No.	2	3	5	7	9	11	13	15	17	19	21				
			L (ft)	10	10	10	10	10	10	10	11	12	13	14				10.00
			Type	5XT	5XT	5XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT				3.33
18.0	1.0	17.0	Block No.	2	3	5	7	9	11	13	15	17	19	21	23			
			L (ft)	11	11	11	11	11	11	11	11	12	13	14	15			10.89
			Type	5XT	5XT	5XT	5XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT			4.89
19.5	1.0	18.5	Block No.	2	3	5	7	9	11	13	15	17	19	21	23	25		
			L (ft)	12	12	12	12	12	12	12	12	12	13	14	15	16		11.78
			Type	5XT	5XT	5XT	5XT	5XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT		6.67
21.0	1.0	20.0	Block No.	2	3	5	7	9	11	13	15	17	19	21	23	25	27	
			L (ft)	13	13	13	13	13	13	13	13	13	13	14	15	16	17	12.67
			Type	5XT	5XT	5XT	5XT	5XT	5XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	8.67

The above chart for friction connection reinforced Novum Wall retaining walls are based on idealized and assumed conditons and are intended for reference and preliminary planning purposes only. They are NOT intended for or as replacement for site-specific Novum Wall retaining wall design. Seismic, flood, rapid drawdown, toe slopes, and any other loading condition not described have not been evaluated or included in the preliminary wall sections. Final project designs, including all construction details, internal and external stablity, and drainage, shall be prepared by a licensed professional enginineer using the actual conditions of the proposed site.

Notes:

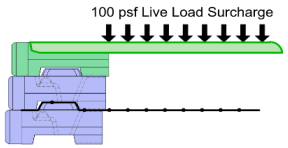
1. Unit weight of 28° and 30° soil is assumed to be 120 pcf; 34° and 40° soil is assumed to be 130 pcf.
2. Designs are in general accordance with NCMA's Design Manual for Segmental Retaining Walls (3rd ed.).
3. Backfill material to be compacted to 95% standard proctor.
4. Global stability has not been considered in the development of these charts.
5. Wall heights between the 1.5 ft increments shown in this chart shall follow the preliminary section of the next tallest height. (i.e. a 14.25 ft section shall follow the geogrid layout of the 15.0 ft section).
6. Wall heights for Novum Wall retaining walls that exceed the heights described in this chart may be acheivable with professional engineering analysis.

05-SEP-2024

NOVUM WALL PRELIMINARY SECTIONS - FRICTION CONNECTION MSE WALLS (IMPERIAL)

Silty Sand, Clayey Sand - Internal Angle of Friction (ϕ) = 28°

Load Condition B100: 100psf Live Load Surcharge, No Back Slope, No Toe Slope



28°

Total Wall Height (ft)	Bury Depth (ft)	Exposed Wall Height (ft)	The geogrid used to analyze preliminary sections was Miragrid 3XT, 5XT, and 10XT. Geogrid is to be placed BELOW block number shown below. Block number 1 is located at the bottom of the wall. Geogrid length (L) is measured in feet from the form line near the front of the block.															Est. Geogrid Qty. (sqyd/ft of wall)
4.5	0.5	4.0	Block No.	2	3	5												
			L (ft)	4	5	6												1.67
			Type	3XT	3XT	3XT												
6.0	0.5	5.5	Block No.	2	3	5	7											
			L (ft)	5	5	5	7											2.44
			Type	3XT	3XT	3XT	3XT											
7.5	0.5	7.0	Block No.	2	3	5	7	9										
			L (ft)	5	5	5	6	8										3.22
			Type	3XT	3XT	3XT	3XT	3XT										
9.0	0.5	8.5	Block No.	2	3	5	7	9	11									
			L (ft)	6	6	6	6	8	9									4.56
			Type	3XT	3XT	3XT	3XT	3XT	3XT									
10.5	0.5	10.0	Block No.	2	3	5	7	9	11	13								
			L (ft)	7	7	7	7	8	9	10								6.11
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT								
12.0	1.0	11.0	Block No.	2	3	5	7	9	11	13	15							
			L (ft)	8	8	8	8	8	9	10	11							7.78
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT							
13.5	1.0	12.5	Block No.	2	3	5	7	9	11	13	15	17						
			L (ft)	9	9	9	9	9	9	10	11	12						9.67
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT						
15.0	1.0	14.0	Block No.	2	3	5	7	9	11	13	15	17	19					
			L (ft)	9	9	9	9	9	9	10	11	12	13					8.11
			Type	5XT	5XT	5XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT					3.00
16.5	1.0	15.5	Block No.	2	3	5	7	9	11	13	15	17	19	21				
			L (ft)	10	10	10	10	10	10	10	11	12	13	14				8.89
			Type	5XT	5XT	5XT	5XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT				4.44
18.0	1.0	17.0	Block No.	2	3	5	7	9	11	13	15	17	19	21	23			
			L (ft)	11	11	11	11	11	11	11	11	12	13	14	15			9.67
			Type	5XT	5XT	5XT	5XT	5XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT			6.11
19.5	1.0	18.5	Block No.	2	3	5	7	9	11	13	15	17	19	21	23	25		
			L (ft)	12	12	12	12	12	12	12	12	12	13	14	15	16		10.44
			Type	5XT	5XT	5XT	5XT	5XT	5XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT		8.00
21.0	1.0	20.0	Block No.	2	3	5	7	9	11	13	15	17	19	21	23	25	27	
			L (ft)	13	13	13	13	13	13	13	13	13	13	14	15	16	17	11.22
			Type	5XT	5XT	5XT	5XT	5XT	5XT	5XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	10.11

The above chart for friction connection reinforced Novum Wall retaining walls are based on idealized and assumed conditons and are intended for reference and preliminary planning purposes only. They are NOT intended for or as replacement for site-specific Novum Wall retaining wall design. Seismic, flood, rapid drawdown, toe slopes, and any other loading condition not described have not been evaluated or included in the preliminary wall sections. Final project designs, including all construction details, internal and external stablity, and drainage, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.

Notes:

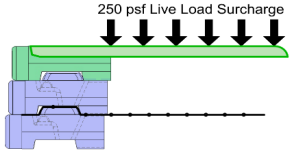
1. Unit weight of 28° and 30° soil is assumed to be 120 pcf; 34° and 40° soil is assumed to be 130 pcf.
2. Designs are in general accordance with NCMA's Design Manual for Segmental Retaining Walls (3rd ed.).
3. Backfill material to be compacted to 95% standard proctor.
4. Global stability has not been considered in the development of these charts.
5. Wall heights between the 1.5 ft increments shown in this chart shall follow the preliminary section of the next tallest height. (i.e. a 14.25 ft section shall follow the geogrid layout of the 15.0 ft section).
6. Wall heights for Novum Wall retaining walls that exceed the heights described in this chart may be acheivable with professional engineering analysis.

05-SEP-2024

NOVUM WALL PRELIMINARY SECTIONS - FRICTION CONNECTION MSE WALLS (IMPERIAL)

Silty Sand, Clayey Sand - Internal Angle of Friction (ϕ) = 28°

Load Condition B250: 250 psf Live Load Surcharge, No Back Slope, No Toe Slope



28°

Total Wall Height (ft)	Bury Depth (ft)	Exposed Wall Height (ft)	The geogrid used to analyze preliminary sections was Miragrid 3XT, 5XT, and 10XT. Geogrid is to be placed BELOW block number shown below. Block number 1 is located at the bottom of the wall. Geogrid length (L) is measured in feet from the form line near the front of the block.																Est. Geogrid Qty. (sqyd/ft of wall)
3.0	0.5	2.5	Block No.	2	3														
			L (ft)	4	7														1.22
			Type	3XT	3XT														
4.5	0.5	4.0	Block No.	2	3	5													
			L (ft)	5	6	7													2.00
			Type	3XT	3XT	3XT													
6.0	0.5	5.5	Block No.	2	3	5	7												
			L (ft)	5	5	6	8												2.67
			Type	3XT	3XT	3XT	3XT												
7.5	0.5	7.0	Block No.	2	3	5	7	9											
			L (ft)	6	6	6	7	9											3.78
			Type	3XT	3XT	3XT	3XT	3XT											
9.0	0.5	8.5	Block No.	2	3	5	7	9	11										
			L (ft)	7	7	7	7	8	10										5.11
			Type	3XT	3XT	3XT	3XT	3XT	3XT										
10.5	0.5	10.0	Block No.	2	3	5	7	9	11	13									
			L (ft)	8	8	8	8	8	9	11									6.67
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT									
12.0	1.0	11.0	Block No.	2	3	5	7	9	11	13	15								
			L (ft)	8	8	8	8	8	9	10	12								5.22
			Type	5XT	5XT	5XT	3XT	3XT	3XT	3XT	3XT								2.67
13.5	1.0	12.5	Block No.	2	3	5	7	9	11	13	15	17							
			L (ft)	9	9	9	9	9	9	10	11	13							5.78
			Type	5XT	5XT	5XT	5XT	3XT	3XT	3XT	3XT	3XT							4.00
15.0	1.0	14.0	Block No.	2	3	5	7	9	11	13	15	17	19						
			L (ft)	10	10	10	10	10	10	10	11	12	14						6.33
			Type	5XT	5XT	5XT	5XT	5XT	3XT	3XT	3XT	3XT	3XT						5.56
16.5	1.0	15.5	Block No.	2	3	5	7	9	11	13	15	17	19	21					
			L (ft)	11	11	11	11	11	11	11	11	12	13	15					6.89
			Type	5XT	5XT	5XT	5XT	5XT	5XT	3XT	3XT	3XT	3XT	3XT					7.33
18.0	1.0	17.0	Block No.	2	3	5	7	9	11	13	15	17	19	21	23				
			L (ft)	11	11	11	11	11	11	11	11	12	13	14	16				7.33
			Type	5XT	5XT	5XT	5XT	5XT	5XT	5XT	3XT	3XT	3XT	3XT	3XT				8.56
19.5	1.0	18.5	Block No.	2	3	5	7	9	11	13	15	17	19	21	23	25			
			L (ft)	12	12	12	12	12	12	12	12	12	13	14	15	17			7.89
			Type	5XT	5XT	5XT	5XT	5XT	5XT	5XT	5XT	3XT	3XT	3XT	3XT	3XT			10.67
21.0	1.0	20.0	Block No.	2	3	4	5	7	9	11	13	15	17	19	21	23	25	27	
			L (ft)	13	13	13	13	13	13	13	13	13	13	13	14	15	16	18	8.44
			Type	5XT	5XT	5XT	5XT	5XT	5XT	5XT	5XT	5XT	5XT	3XT	3XT	3XT	3XT	3XT	14.44

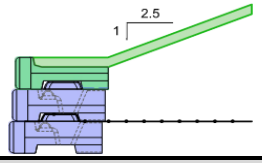
The above chart for friction connection reinforced Novum Wall retaining walls are based on idealized and assumed conditons and are intended for reference and preliminary planning purposes only. They are NOT intended for or as replacement for site-specific Novum Wall retaining wall design. Seismic, flood, rapid drawdown, toe slopes, and any other loading condition not described have not been evaluated or included in the preliminary wall sections. Final project designs, including all construction details, internal and external stablity, and drainage, shall be prepared by a licensed professional enginineer using the actual conditions of the proposed site.

Notes:

1. Unit weight of 28° and 30° soil is assumed to be 120 pcf; 34° and 40° soil is assumed to be 130 pcf.
2. Designs are in general accordance with NCMA's Design Manual for Segmental Retaining Walls (3rd ed.).
3. Backfill material to be compacted to 95% standard proctor.
4. Global stability has not been considered in the development of these charts.
5. Wall heights between the 1.5 ft increments shown in this chart shall follow the preliminary section of the next tallest height. (i.e. a 14.25 ft section shall follow the geogrid layout of the 15.0 ft section).
6. Wall heights for Novum Wall retaining walls that exceed the heights described in this chart may be acheivable with professional engineering analysis.

05-SEP-2024

NOVUM WALL PRELIMINARY SECTIONS - FRICTION CONNECTION MSE WALLS (IMPERIAL)



28°

Silty Sand, Clayey Sand - Internal Angle of Friction (ϕ) = 28°

Load Condition C - 1:2.5 Back Slope, No Surcharge, No Toe Slope

Total Wall Height (ft)	Bury Depth (ft)	Exposed Wall Height (ft)	The geogrid used to analyze preliminary sections was Miragrid 3XT, 5XT, and 10XT. Geogrid is to be placed BELOW block number shown below. Block number 1 is located at the bottom of the wall. Geogrid length (L) is measured in feet from the form line near the front of the block.															Est. Geogrid Qty. (sqyd/ft of wall)
4.5	0.5	4.0	Block No.	2	3	5												
			L (ft)	5	5	6												1.78
			Type	3XT	3XT	3XT												
6.0	0.5	5.5	Block No.	2	3	5	7											
			L (ft)	6	6	6	8											2.89
			Type	3XT	3XT	3XT	3XT											

The above chart for friction connection reinforced Novum Wall retaining walls are based on idealized and assumed conditons and are intended for reference and preliminary planning purposes only. They are NOT intended for or as replacement for site-specific Novum Wall retaining wall design. Seismic, flood, rapid drawdown, toe slopes, and any other loading condition not described have not been evaluated or included in the preliminary wall sections. Final project designs, including all construction details, internal and external stablity, and drainage, shall be prepared by a licensed professional enginineer using the actual conditions of the proposed site.

Notes:

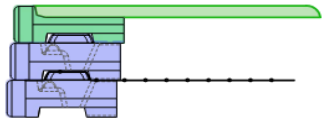
1. Unit weight of 28° and 30° soil is assumed to be 120 pcf; 34° and 40° soil is assumed to be 130 pcf.
2. Designs are in general accordance with NCMA's Design Manual for Segmental Retaining Walls (3rd ed.).
3. Backfill material to be compacted to 95% standard proctor.
4. Global stability has not been considered in the development of these charts.
5. Wall heights between the 1.5 ft increments shown in this chart shall follow the preliminary section of the next tallest height. (i.e. a 5.25 ft section shall follow the geogrid layout of the 6.0 ft section).
6. Wall heights for Novum Wall retaining walls that exceed the heights described in this chart may be acheivable with professional engineering analysis.

05-SEP-2024

NOVUM WALL PRELIMINARY SECTIONS - FRICTION CONNECTION MSE WALLS (IMPERIAL)

Silty Sand, Fine to Medium Sand - Internal Angle of Friction (ϕ) = 30°

Load Condition A - No Surcharge, No Back Slope, No Toe Slope



30°

Total Wall Height (ft)	Bury Depth (ft)	Exposed Wall Height (ft)	The geogrid used to analyze preliminary sections was Miragrid 3XT, 5XT, and 10XT. Geogrid is to be placed BELOW block number shown below. Block number 1 is located at the bottom of the wall. Geogrid length (L) is measured in feet from the form line near the front of the block.															Est. Geogrid Qty. (sqyd/ft of wall)
7.5	0.5	7.0	Block No.	2	3	5	7	9										
			L (ft)	5	5	5	6	7										3.11
			Type	3XT	3XT	3XT	3XT	3XT										
9.0	0.5	8.5	Block No.	2	3	5	7	9	11									
			L (ft)	6	6	6	6	7	8									4.33
			Type	3XT	3XT	3XT	3XT	3XT	3XT									
10.5	0.5	10.0	Block No.	2	3	5	7	9	11	13								
			L (ft)	7	7	7	7	7	8	9								5.78
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT								
12.0	1.0	11.0	Block No.	2	3	5	7	9	11	13	15							
			L (ft)	8	8	8	8	8	8	9	10							7.44
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT							
13.5	1.0	12.5	Block No.	2	3	5	7	9	11	13	15	17						
			L (ft)	9	9	9	9	9	9	9	10	11						9.33
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT						
15.0	1.0	14.0	Block No.	2	3	5	7	9	11	13	15	17	19					
			L (ft)	9	9	9	9	9	9	9	10	11	12					10.67
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT					
16.5	1.0	15.5	Block No.	2	3	5	7	9	11	13	15	17	19	21				
			L (ft)	10	10	10	10	10	10	10	10	11	12	13				12.89
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT				
18.0	1.0	17.0	Block No.	2	3	5	7	9	11	13	15	17	19	21	23			
			L (ft)	11	11	11	11	11	11	11	11	11	12	13	14			15.33
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT			
19.5	1.0	18.5	Block No.	2	3	5	7	9	11	13	15	17	19	21	23	25		
			L (ft)	12	12	12	12	12	12	12	12	12	12	13	14	15		14.00
			Type	5XT	5XT	5XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT		4.00
21.0	1.0	20.0	Block No.	2	3	5	7	9	11	13	15	17	19	21	23	25	27	
			L (ft)	13	13	13	13	13	13	13	13	13	13	13	14	15	16	15.11
			Type	5XT	5XT	5XT	5XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	5.78

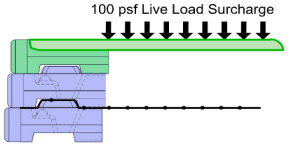
The above chart for friction connection reinforced Novum Wall retaining walls are based on idealized and assumed conditons and are intended for reference and preliminary planning purposes only. They are NOT intended for or as replacement for site-specific Novum Wall retaining wall design. Seismic, flood, rapid drawdown, toe slopes, and any other loading condition not described have not been evaluated or included in the preliminary wall sections. Final project designs, including all construction details, internal and external stablity, and drainage, shall be prepared by a licensed professional enginineer using the actual conditions of the proposed site.

Notes:

1. Unit weight of 28° and 30° soil is assumed to be 120 pcf; 34° and 40° soil is assumed to be 130 pcf.
2. Designs are in general accordance with NCMA's Design Manual for Segmental Retaining Walls (3rd ed.).
3. Backfill material to be compacted to 95% standard proctor.
4. Global stability has not been considered in the development of these charts.
5. Wall heights between the 1.5 ft increments shown in this chart shall follow the preliminary section of the next tallest height. (i.e. a 14.25 ft section shall follow the geogrid layout of the 15.0 ft section).
6. Wall heights for Novum Wall retaining walls that exceed the heights described in this chart may be acheivable with professional engineering analysis.

05-SEP-2024

NOVUM WALL PRELIMINARY SECTIONS - FRICTION CONNECTION MSE WALLS (IMPERIAL)



30°

Silty Sand, Fine to Medium Sand - Internal Angle of Friction (ϕ) = 30°

Load Condition B100: 100psf Live Load Surcharge, No Back Slope, No Toe Slope

Total Wall Height (ft)	Bury Depth (ft)	Exposed Wall Height (ft)	The geogrid used to analyze preliminary sections was Miragrid 3XT, 5XT, and 10XT. Geogrid is to be placed BELOW block number shown below. Block number 1 is located at the bottom of the wall. Geogrid length (L) is measured in feet from the form line near the front of the block.														Est. Geogrid Qty. (sqyd/ft of wall)
6.0	0.5	5.5	Block No.	2	3	5	7										
			L (ft)	4	4	5	7										2.22
			Type	3XT	3XT	3XT	3XT										
7.5	0.5	7.0	Block No.	2	3	5	7	9									
			L (ft)	5	5	5	6	8									3.22
			Type	3XT	3XT	3XT	3XT	3XT									
9.0	0.5	8.5	Block No.	2	3	5	7	9	11								
			L (ft)	6	6	6	6	7	8								4.33
			Type	3XT	3XT	3XT	3XT	3XT	3XT								
10.5	0.5	10.0	Block No.	2	3	5	7	9	11	13							
			L (ft)	7	7	7	7	7	8	9							5.78
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT							
12.0	1.0	11.0	Block No.	2	3	5	7	9	11	13	15						
			L (ft)	8	8	8	8	8	8	9	10						7.44
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT						
13.5	1.0	12.5	Block No.	2	3	5	7	9	11	13	15	17					
			L (ft)	9	9	9	9	9	9	9	10	11					9.33
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT					
15.0	1.0	14.0	Block No.	2	3	5	7	9	11	13	15	17	19				
			L (ft)	9	9	9	9	9	9	9	10	11	12				10.67
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT				
16.5	1.0	15.5	Block No.	2	3	5	7	9	11	13	15	17	19	21			
			L (ft)	10	10	10	10	10	10	10	10	11	12	13			12.89
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT			
18.0	1.0	17.0	Block No.	2	3	5	7	9	11	13	15	17	19	21	23		
			L (ft)	11	11	11	11	11	11	11	11	11	12	13	14		11.67
			Type	5XT	5XT	5XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT		3.67
19.5	1.0	18.5	Block No.	2	3	5	7	9	11	13	15	17	19	21	23	25	
			L (ft)	12	12	12	12	12	12	12	12	12	12	13	14	15	12.67
			Type	5XT	5XT	5XT	5XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	5.33
21.0	1.0	20.0	Block No.	2	3	5	7	9	11	13	15	17	19	21	23	25	27
			L (ft)	13	13	13	13	13	13	13	13	13	13	13	14	15	16	13.67
			Type	5XT	5XT	5XT	5XT	5XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	7.22

The above chart for friction connection reinforced Novum Wall retaining walls are based on idealized and assumed conditons and are intended for reference and preliminary planning purposes only. They are NOT intended for or as replacement for site-specific Novum Wall retaining wall design. Seismic, flood, rapid drawdown, toe slopes, and any other loading condition not described have not been evaluated or included in the preliminary wall sections. Final project designs, including all construction details, internal and external stablity, and drainage, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.

Notes:

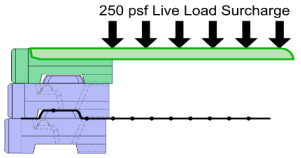
1. Unit weight of 28° and 30° soil is assumed to be 120 pcf; 34° and 40° soil is assumed to be 130 pcf.
2. Designs are in general accordance with NCMA's Design Manual for Segmental Retaining Walls (3rd ed.).
3. Backfill material to be compacted to 95% standard proctor.
4. Global stability has not been considered in the development of these charts.
5. Wall heights between the 1.5 ft increments shown in this chart shall follow the preliminary section of the next tallest height. (i.e. a 14.25 ft section shall follow the geogrid layout of the 15.0 ft section).
6. Wall heights for Novum Wall retaining walls that exceed the heights described in this chart may be acheivable with professional engineering analysis.

05-SEP-2024

NOVUM WALL PRELIMINARY SECTIONS - FRICTION CONNECTION MSE WALLS (IMPERIAL)

Silty Sand, Fine to Medium Sand - Internal Angle of Friction (ϕ) = 30°

Load Condition B250: 250 psf Live Load Surcharge, No Back Slope, No Toe Slope



30°

Total Wall Height (ft)	Bury Depth (ft)	Exposed Wall Height (ft)	The geogrid used to analyze preliminary sections was Miragrid 3XT, 5XT, and 10XT. Geogrid is to be placed BELOW block number shown below. Block number 1 is located at the bottom of the wall. Geogrid length (L) is measured in feet from the form line near the front of the block.															Est. Geogrid Qty. (sqyd/ft of wall)
3.0	0.5	2.5	Block No.	2	3													
			L (ft)	4	5													1.00
			Type	3XT	3XT													
4.5	0.5	4.0	Block No.	2	3	5												
			L (ft)	4	4	6												1.56
			Type	3XT	3XT	3XT												
6.0	0.5	5.5	Block No.	2	3	5	7											
			L (ft)	5	5	5	7											2.44
			Type	3XT	3XT	3XT	3XT											
7.5	0.5	7.0	Block No.	2	3	5	7	9										
			L (ft)	5	5	5	6	8										3.22
			Type	3XT	3XT	3XT	3XT	3XT										
9.0	0.5	8.5	Block No.	2	3	5	7	9	11									
			L (ft)	6	6	6	6	7	9									4.44
			Type	3XT	3XT	3XT	3XT	3XT	3XT									
10.5	0.5	10.0	Block No.	2	3	5	7	9	11	13								
			L (ft)	7	7	7	7	7	8	10								5.89
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT								
12.0	1.0	11.0	Block No.	2	3	5	7	9	11	13	15							
			L (ft)	8	8	8	8	8	8	9	11							7.56
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT							
13.5	1.0	12.5	Block No.	2	3	5	7	9	11	13	15	17						
			L (ft)	9	9	9	9	9	9	9	10	12						6.44
			Type	5XT	5XT	5XT	3XT	3XT	3XT	3XT	3XT	3XT						3.00
15.0	1.0	14.0	Block No.	2	3	5	7	9	11	13	15	17	19					
			L (ft)	10	10	10	10	10	10	10	10	11	13					7.11
			Type	5XT	5XT	5XT	5XT	3XT	3XT	3XT	3XT	3XT	3XT					4.44
16.5	1.0	15.5	Block No.	2	3	5	7	9	11	13	15	17	19	21				
			L (ft)	10	10	10	10	10	10	10	10	11	12	14				7.44
			Type	5XT	5XT	5XT	5XT	5XT	3XT	3XT	3XT	3XT	3XT	3XT				5.56
18.0	1.0	17.0	Block No.	2	3	5	7	9	11	13	15	17	19	21	23			
			L (ft)	11	11	11	11	11	11	11	11	11	12	13	15			8.11
			Type	5XT	5XT	5XT	5XT	5XT	5XT	3XT	3XT	3XT	3XT	3XT	3XT			7.33
19.5	1.0	18.5	Block No.	2	3	5	7	9	11	13	15	17	19	21	23	25		
			L (ft)	12	12	12	12	12	12	12	12	12	12	13	14	16		8.78
			Type	5XT	5XT	5XT	5XT	5XT	5XT	5XT	3XT	3XT	3XT	3XT	3XT	3XT		9.33
21.0	1.0	20.0	Block No.	2	3	5	7	9	11	13	15	17	19	21	23	15	27	
			L (ft)	13	13	13	13	13	13	13	13	13	13	13	14	15	17	9.44
			Type	5XT	5XT	5XT	5XT	5XT	5XT	5XT	5XT	3XT	3XT	3XT	3XT	3XT	3XT	11.56

The above chart for friction connection reinforced Novum Wall retaining walls are based on idealized and assumed conditons and are intended for reference and preliminary planning purposes only. They are NOT intended for or as replacement for site-specific Novum Wall retaining wall design. Seismic, flood, rapid drawdown, toe slopes, and any other loading condition not described have not been evaluated or included in the preliminary wall sections. Final project designs, including all construction details, internal and external stablity, and drainage, shall be prepared by a licensed professional enginineer using the actual conditions of the proposed site.

Notes:

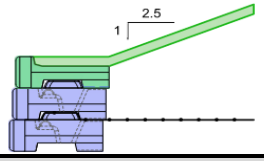
1. Unit weight of 28° and 30° soil is assumed to be 120 pcf; 34° and 40° soil is assumed to be 130 pcf.
2. Designs are in general accordance with NCMA's Design Manual for Segmental Retaining Walls (3rd ed.).
3. Backfill material to be compacted to 95% standard proctor.
4. Global stability has not been considered in the development of these charts.
5. Wall heights between the 1.5 ft increments shown in this chart shall follow the preliminary section of the next tallest height. (i.e. a 14.25 ft section shall follow the geogrid layout of the 15.0 ft section).
6. Wall heights for Novum Wall retaining walls that exceed the heights described in this chart may be acheivable with professional engineering analysis.

05-SEP-2024

NOVUM WALL PRELIMINARY SECTIONS - FRICTION CONNECTION MSE WALLS (IMPERIAL)

Silty Sand, Fine to Medium Sand - Internal Angle of Friction (ϕ) = 30°

Load Condition C - 1:2.5 Back Slope, No Surcharge, No Toe Slope



30°

Total Wall Height (ft)	Bury Depth (ft)	Exposed Wall Height (ft)	The geogrid used to analyze preliminary sections was Miragrid 3XT, 5XT, and 10XT. Geogrid is to be placed BELOW block number shown below. Block number 1 is located at the bottom of the wall. Geogrid length (L) is measured in feet from the form line near the front of the block.														Est. Geogrid Qty. (sqyd/ft of wall)
6.0	0.5	5.5	Block No.	2	3	5	7										
			L (ft)	5	5	6	7										2.56
			Type	3XT	3XT	3XT	3XT										
7.5	0.5	7.0	Block No.	2	3	5	7	9									
			L (ft)	5	5	6	7	9									3.56
			Type	3XT	3XT	3XT	3XT	3XT									
9.0	0.5	8.5	Block No.	2	3	5	7	9	11								
			L (ft)	6	6	6	7	9	10								4.89
			Type	3XT	3XT	3XT	3XT	3XT	3XT								
10.5	0.5	10.0	Block No.	2	3	5	7	9	11	13							
			L (ft)	8	8	8	8	9	10	11							4.22
			Type	5XT	5XT	5XT	3XT	3XT	3XT	3XT							2.67
12.0	1.0	11.0	Block No.	2	3	5	7	9	11	13	15						
			L (ft)	8	8	8	8	9	10	11	13						4.78
			Type	5XT	5XT	5XT	5XT	3XT	3XT	3XT	3XT						3.56
13.5	1.0	12.5	Block No.	2	3	5	7	9	11	13	15	17					
			L (ft)	10	10	10	10	10	10	11	13	14					5.33
			Type	5XT	5XT	5XT	5XT	5XT	3XT	3XT	3XT	3XT					5.56
15.0	1.0	14.0	Block No.	2	3	5	7	9	11	13	15	17	19				
			L (ft)	11	11	11	11	11	11	11	13	14	15				5.89
			Type	5XT	5XT	5XT	5XT	5XT	5XT	3XT	3XT	3XT	3XT				7.33
16.5	1.0	15.5	Block No.	2	3	5	7	9	11	13	15	17	19	21			
			L (ft)	13	13	13	13	13	13	13	13	14	15	16			6.44
			Type	5XT	5XT	5XT	5XT	5XT	5XT	5XT	3XT	3XT	3XT	3XT			10.11

The above chart for friction connection reinforced Novum Wall retaining walls are based on idealized and assumed conditons and are intended for reference and preliminary planning purposes only. They are NOT intended for or as replacement for site-specific Novum Wall retaining wall design. Seismic, flood, rapid drawdown, toe slopes, and any other loading condition not described have not been evaluated or included in the preliminary wall sections. Final project designs, including all construction details, internal and external stablity, and drainage, shall be prepared by a licensed professional enginineer using the actual conditions of the proposed site.

Notes:

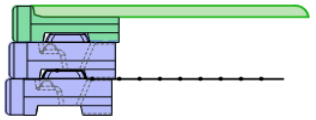
1. Unit weight of 28° and 30° soil is assumed to be 120 pcf; 34° and 40° soil is assumed to be 130 pcf.
2. Designs are in general accordance with NCMA's Design Manual for Segmental Retaining Walls (3rd ed.).
3. Backfill material to be compacted to 95% standard proctor.
4. Global stability has not been considered in the development of these charts.
5. Wall heights between the 1.5 ft increments shown in this chart shall follow the preliminary section of the next tallest height. (i.e. a 14.25 ft section shall follow the geogrid layout of the 15.0 ft section).
6. Wall heights for Novum Wall retaining walls that exceed the heights described in this chart may be acheivable with professional engineering analysis.

05-SEP-2024

NOVUM WALL PRELIMINARY SECTIONS - FRICTION CONNECTION MSE WALLS (IMPERIAL)

Dense Well Graded Sand, Sand and Gravel - Internal Angle of Friction (ϕ) = 34°

Load Condition A - No Surcharge, No Back Slope, No Toe Slope



34°

Total Wall Height (ft)	Bury Depth (ft)	Exposed Wall Height (ft)	The geogrid used to analyze preliminary sections was Miragrid 3XT, 5XT, and 10XT. Geogrid is to be placed BELOW block number shown below. Block number 1 is located at the bottom of the wall. Geogrid length (L) is measured in feet from the form line near the front of the block.															Est. Geogrid Qty. (sqyd/ft of wall)
7.5	0.5	7.0	Block No.	2	3	5	7	9										
			L (ft)	5	5	5	6	7										3.11
			Type	3XT	3XT	3XT	3XT	3XT										
9.0	0.5	8.5	Block No.	2	3	5	7	9	11									
			L (ft)	6	6	6	6	7	8									4.33
			Type	3XT	3XT	3XT	3XT	3XT	3XT									
10.5	0.5	10.0	Block No.	2	3	5	7	9	11	13								
			L (ft)	7	7	7	7	7	8	9								5.78
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT								
12.0	1.0	11.0	Block No.	2	3	5	7	9	11	13	15							
			L (ft)	8	8	8	8	8	8	9	10							7.44
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT							
13.5	1.0	12.5	Block No.	2	3	5	7	9	11	13	15	17						
			L (ft)	9	9	9	9	9	9	9	10	10						9.22
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT						
15.0	1.0	14.0	Block No.	2	3	5	7	9	11	13	15	17	19					
			L (ft)	9	9	9	9	9	9	9	10	11	11					10.56
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT					
16.5	1.0	15.5	Block No.	2	3	5	7	9	11	13	15	17	19	21				
			L (ft)	10	10	10	10	10	10	10	10	10	11	12				12.56
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT				
18.0	1.0	17.0	Block No.	2	3	5	7	9	11	13	15	17	19	21	23			
			L (ft)	11	11	11	11	11	11	11	11	11	11	12	13			15.00
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT			
19.5	1.0	18.5	Block No.	2	3	5	7	9	11	13	15	17	19	21	23	25		
			L (ft)	12	12	12	12	12	12	12	12	12	12	12	13	14		17.67
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT		
21.0	1.0	20.0	Block No.	2	3	5	7	9	11	13	15	17	19	21	23	25	27	
			L (ft)	13	13	13	13	13	13	13	13	13	13	13	13	14	15	20.56
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	

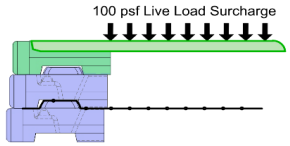
The above chart for friction connection reinforced Novum Wall retaining walls are based on idealized and assumed conditons and are intended for reference and preliminary planning purposes only. They are NOT intended for or as replacement for site-specific Novum Wall retaining wall design. Seismic, flood, rapid drawdown, toe slopes, and any other loading condition not described have not been evaluated or included in the preliminary wall sections. Final project designs, including all construction details, internal and external stablity, and drainage, shall be prepared by a licensed professional enginineer using the actual conditions of the proposed site.

Notes:

1. Unit weight of 28° and 30° soil is assumed to be 120 pcf; 34° and 40° soil is assumed to be 130 pcf.
2. Designs are in general accordance with NCMA's Design Manual for Segmental Retaining Walls (3rd ed.).
3. Backfill material to be compacted to 95% standard proctor.
4. Global stability has not been considered in the development of these charts.
5. Wall heights between the 1.5 ft increments shown in this chart shall follow the preliminary section of the next tallest height. (i.e. a 14.25 ft section shall follow the geogrid layout of the 15.0 ft section).
6. Wall heights for Novum Wall retaining walls that exceed the heights described in this chart may be acheivable with professional engineering analysis.

05-SEP-2024

NOVUM WALL PRELIMINARY SECTIONS - FRICTION CONNECTION MSE WALLS (IMPERIAL)



34°

Dense Well Graded Sand, Sand and Gravel - Internal Angle of Friction (ϕ) = 34°

Load Condition B100: 100psf Live Load Surcharge, No Back Slope, No Toe Slope

Total Wall Height (ft)	Bury Depth (ft)	Exposed Wall Height (ft)	The geogrid used to analyze preliminary sections was Miragrid 3XT, 5XT, and 10XT. Geogrid is to be placed BELOW block number shown below. Block number 1 is located at the bottom of the wall. Geogrid length (L) is measured in feet from the form line near the front of the block.															Est. Geogrid Qty. (sqyd/ft of wall)
7.5	0.5	7.0	Block No.	2	3	5	7	9										
			L (ft)	5	5	5	6	7										3.11
			Type	3XT	3XT	3XT	3XT	3XT										
9.0	0.5	8.5	Block No.	2	3	5	7	9	11									
			L (ft)	6	6	6	6	7	8									4.33
			Type	3XT	3XT	3XT	3XT	3XT	3XT									
10.5	0.5	10.0	Block No.	2	3	5	7	9	11	13								
			L (ft)	7	7	7	7	7	8	9								5.78
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT								
12.0	1.0	11.0	Block No.	2	3	5	7	9	11	13	15							
			L (ft)	8	8	8	8	8	8	9	10							7.44
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT							
13.5	1.0	12.5	Block No.	2	3	5	7	9	11	13	15	17						
			L (ft)	9	9	9	9	9	9	9	10	10						9.22
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT						
15.0	1.0	14.0	Block No.	2	3	5	7	9	11	13	15	17	19					
			L (ft)	9	9	9	9	9	9	9	10	10	11					10.44
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT					
16.5	1.0	15.5	Block No.	2	3	5	7	9	11	13	15	17	19	21				
			L (ft)	10	10	10	10	10	10	10	10	10	11	12				12.56
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT				
18.0	1.0	17.0	Block No.	2	3	5	7	9	11	13	15	17	19	21	23			
			L (ft)	11	11	11	11	11	11	11	11	11	11	12	13			15.00
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT			
19.5	1.0	18.5	Block No.	2	3	5	7	9	11	13	15	17	19	21	23	25		
			L (ft)	12	12	12	12	12	12	12	12	12	12	12	13	14		17.67
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT		
21.0	1.0	20.0	Block No.	2	3	5	7	9	11	13	15	17	19	21	23	25	27	
			L (ft)	13	13	13	13	13	13	13	13	13	13	13	13	14	15	20.56
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	

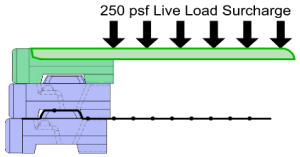
The above chart for friction connection reinforced Novum Wall retaining walls are based on idealized and assumed conditons and are intended for reference and preliminary planning purposes only. They are NOT intended for or as replacement for site-specific Novum Wall retaining wall design. Seismic, flood, rapid drawdown, toe slopes, and any other loading condition not described have not been evaluated or included in the preliminary wall sections. Final project designs, including all construction details, internal and external stablity, and drainage, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.

Notes:

1. Unit weight of 28° and 30° soil is assumed to be 120 pcf; 34° and 40° soil is assumed to be 130 pcf.
2. Designs are in general accordance with NCMA's Design Manual for Segmental Retaining Walls (3rd ed.).
3. Backfill material to be compacted to 95% standard proctor.
4. Global stability has not been considered in the development of these charts.
5. Wall heights between the 1.5 ft increments shown in this chart shall follow the preliminary section of the next tallest height. (i.e. a 14.25 ft section shall follow the geogrid layout of the 15.0 ft section).
6. Wall heights for Novum Wall retaining walls that exceed the heights described in this chart may be acheivable with professional engineering analysis.

05-SEP-2024

NOVUM WALL PRELIMINARY SECTIONS - FRICTION CONNECTION MSE WALLS (IMPERIAL)



Dense Well Graded Sand, Sand and Gravel - Internal Angle of Friction (ϕ) = 34°

34°

Load Condition B250: 250 psf Live Load Surcharge, No Back Slope, No Toe Slope

Total Wall Height (ft)	Bury Depth (ft)	Exposed Wall Height (ft)	The geogrid used to analyze preliminary sections was Miragrid 3XT, 5XT, and 10XT. Geogrid is to be placed BELOW block number shown below. Block number 1 is located at the bottom of the wall. Geogrid length (L) is measured in feet from the form line near the front of the block.															Est. Geogrid Qty. (sqyd/ft of wall)
7.5	0.5	7.0	Block No.	2	3	5	7	9										
			L (ft)	5	5	5	6	7										3.11
			Type	3XT	3XT	3XT	3XT	3XT										
9.0	0.5	8.5	Block No.	2	3	5	7	9	11									
			L (ft)	6	6	6	6	7	8									4.33
			Type	3XT	3XT	3XT	3XT	3XT	3XT									
10.5	0.5	10.0	Block No.	2	3	5	7	9	11	13								
			L (ft)	7	7	7	7	7	8	9								5.78
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT								
12.0	1.0	11.0	Block No.	2	3	5	7	9	11	13	15							
			L (ft)	8	8	8	8	8	8	9	10							7.44
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT							
13.5	1.0	12.5	Block No.	2	3	5	7	9	11	13	15	17						
			L (ft)	9	9	9	9	9	9	9	10	11						9.33
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT						
15.0	1.0	14.0	Block No.	2	3	5	7	9	11	13	15	17	19					
			L (ft)	9	9	9	9	9	9	9	10	10	12					10.56
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT					
16.5	1.0	15.5	Block No.	2	3	5	7	9	11	13	15	17	19	21				
			L (ft)	10	10	10	10	10	10	10	10	10	11	12				12.56
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT				
18.0	1.0	17.0	Block No.	2	3	5	7	9	11	13	15	17	19	21	23			
			L (ft)	11	11	11	11	11	11	11	11	11	11	12	13			15.00
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT			
19.5	1.0	18.5	Block No.	2	3	5	7	9	11	13	15	17	19	21	23	25		
			L (ft)	12	12	12	12	12	12	12	12	12	12	12	13	14		17.67
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT		
21.0	1.0	20.0	Block No.	2	3	5	7	9	11	13	15	17	19	21	23	15	27	
			L (ft)	13	13	13	13	13	13	13	13	13	13	13	13	14	15	20.56
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	

The above chart for friction connection reinforced Novum Wall retaining walls are based on idealized and assumed conditons and are intended for reference and preliminary planning purposes only. They are NOT intended for or as replacement for site-specific Novum Wall retaining wall design. Seismic, flood, rapid drawdown, toe slopes, and any other loading condition not described have not been evaluated or included in the preliminary wall sections. Final project designs, including all construction details, internal and external stablity, and drainage, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.

Notes:

1. Unit weight of 28° and 30° soil is assumed to be 120 pcf; 34° and 40° soil is assumed to be 130 pcf.
2. Designs are in general accordance with NCMA's Design Manual for Segmental Retaining Walls (3rd ed.).
3. Backfill material to be compacted to 95% standard proctor.
4. Global stability has not been considered in the development of these charts.
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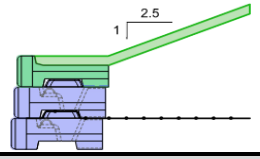
05-SEP-2024

NOVUM WALL PRELIMINARY SECTIONS - FRICTION CONNECTION MSE WALLS (IMPERIAL)

Dense Well Graded Sand, Sand and Gravel - Internal Angle of Friction (ϕ) = 34°

Load Condition C - 1:2.5 Back Slope, No Surcharge, No Toe Slope



34°

Total Wall Height (ft)	Bury Depth (ft)	Exposed Wall Height (ft)	The geogrid used to analyze preliminary sections was Miragrid 3XT, 5XT, and 10XT. Geogrid is to be placed BELOW block number shown below. Block number 1 is located at the bottom of the wall. Geogrid length (L) is measured in feet from the form line near the front of the block.																Est. Geogrid Qty. (sqyd/ft of wall)
6.0	0.5	5.5	Block No.	2	3	5	7												
			L (ft)	5	5	5	7												2.44
			Type	3XT	3XT	3XT	3XT												
7.5	0.5	7.0	Block No.	2	3	5	7	9											
			L (ft)	5	5	6	7	8											3.44
			Type	3XT	3XT	3XT	3XT	3XT											
9.0	0.5	8.5	Block No.	2	3	5	7	9	11										
			L (ft)	6	6	6	7	8	9										4.67
			Type	3XT	3XT	3XT	3XT	3XT	3XT										
10.5	0.5	10.0	Block No.	2	3	5	7	9	11	13									
			L (ft)	7	7	7	7	8	9	10									6.11
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT									
12.0	1.0	11.0	Block No.	2	3	5	7	9	11	13	15								
			L (ft)	8	8	8	8	8	9	10	11								7.78
			Type	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT								
13.5	1.0	12.5	Block No.	2	3	5	7	9	11	13	15	17							
			L (ft)	9	9	9	9	9	9	10	11	12							6.67
			Type	5XT	5XT	5XT	3XT	3XT	3XT	3XT	3XT	3XT							3.00
15.0	1.0	14.0	Block No.	2	3	5	7	9	11	13	15	17	19						
			L (ft)	9	9	9	9	9	9	10	11	12	13						7.11
			Type	5XT	5XT	5XT	5XT	3XT	3XT	3XT	3XT	3XT	3XT						4.00
16.5	1.0	15.5	Block No.	2	3	5	7	9	11	13	15	17	19	21					
			L (ft)	10	10	10	10	10	10	10	11	12	13	14					7.78
			Type	5XT	5XT	5XT	5XT	5XT	3XT	3XT	3XT	3XT	3XT	3XT					5.56
18.0	1.0	17.0	Block No.	2	3	5	7	9	11	13	15	17	19	21	23				
			L (ft)	11	11	11	11	11	11	11	11	12	13	14	15				8.44
			Type	5XT	5XT	5XT	5XT	5XT	5XT	3XT	3XT	3XT	3XT	3XT	3XT				7.33
19.5	1.0	18.5	Block No.	2	3	5	7	9	11	13	15	17	19	21	23	25			
			L (ft)	12	12	12	12	12	12	12	12	12	13	14	15	17			9.22
			Type	5XT	5XT	5XT	5XT	5XT	5XT	5XT	3XT	3XT	3XT	3XT	3XT	3XT			9.33
21.0	1.0	20.0	Block No.	2	3	4	5	7	9	11	13	15	17	19	21	23	25	27	
			L (ft)	13	13	13	13	13	13	13	13	13	13	13	14	15	17	18	10.00
			Type	5XT	5XT	5XT	5XT	5XT	5XT	5XT	5XT	5XT	3XT	3XT	3XT	3XT	3XT	3XT	13.00

The above chart for friction connection reinforced Novum Wall retaining walls are based on idealized and assumed conditons and are intended for reference and preliminary planning purposes only. They are NOT intended for or as replacement for site-specific Novum Wall retaining wall design. Seismic, flood, rapid drawdown, toe slopes, and any other loading condition not described have not been evaluated or included in the preliminary wall sections. Final project designs, including all construction details, internal and external stablity, and drainage, shall be prepared by a licensed professional enginineer using the actual conditions of the proposed site.

Notes:

1. Unit weight of 28° and 30° soil is assumed to be 120 pcf; 34° and 40° soil is assumed to be 130 pcf.
2. Designs are in general accordance with NCMA's Design Manual for Segmental Retaining Walls (3rd ed.).
3. Backfill material to be compacted to 95% standard proctor.
4. Global stability has not been considered in the development of these charts.
5. Wall heights between the 1.5 ft increments shown in this chart shall follow the preliminary section of the next tallest height. (i.e. a 14.25 ft section shall follow the geogrid layout of the 15.0 ft section).
6. Wall heights for Novum Wall retaining walls that exceed the heights described in this chart may be acheivable with professional engineering analysis.

05-SEP-2024

NOVUM WALL®

PRELIMINARY WALL SECTIONS - FRICTION CONNECTION MSE WALLS

The previous charts for friction connection reinforced Novum Wall retaining walls are based on idealized and assumed conditions and are intended for reference and preliminary planning purposes only. They are NOT intended for use or as replacement for site-specific Novum Wall retaining wall design. Seismic, flood, rapid drawdown, toe slopes, and any other loading condition not described have not been evaluated or included in the preliminary wall sections. Final project designs, including all construction details, internal and external stability, and drainage, shall be prepared by a licensed professional engineer using the actual conditional of the proposed site.

EXAMPLE CALCULATIONS

The following pages represent an example background calculation that the preliminary wall sections for friction connection reinforced Novum Wall retaining wall preliminary section charts were based upon. The sample calculation evaluates the 10.5 ft tall preliminary wall section displayed on page 1 of this document. The soil type is SILTY SAND or CLAYEY SAND (ϕ = 28°) and the load condition is NO LIVE LOAD SURCHARGE, NO CREST SLOPE, NO TOE SLOPE.

The preliminary calculations were completed using National Concrete Masonry Association (NCMA) program SRWall (Version 4) and the designs are in general accordance with *NCMA Design Manual for Segmental Retaining Walls, 3rd Edition.* The analysis considers Novum Wall retaining blocks with standard batter of 5.2° for average block sizes and weights.

The preliminary design minimum factor of safety is 1.5 for sliding, and 2.0 for overturning and bearing capacity. Overall slope (global) stability has NOT been checked and is required to be evaluated for every wall section shown for final design. Seismic, flood, rapid drawdown, toe slopes, and any other loading condition not described in the preliminary wall sections have not been evaluated. If a project exhibits any of those loading scenarios, these preliminary wall sections do not apply.

All other preliminary wall section calculations are available upon request. Please reach out to the Redi-Rock Engineering Team at 866-222-8400, option 2 or engineering@redi-rock.com to request additional preliminary background calculations.

SRWall (Version 4) Report

Project Identification

Project ID	:
Project Name	: **Novum Wall Preliminary Wall Sections - MSE Friction Connection**
Owner	: **Redi-Rock**
Client	:
Prepared By	: **LBH**
Company	: **Redi-Rock International**
Address	: **2940 Parkview Drive, Petoskey, MI 49770**
Telephone	: **231-489-7800**
Section	: **H = 10.5 ft / 28-deg soil / No surcharge, no backslope, no toe slope**
Project File	: **NW_A_28_FC_10.5_calcs.prj**
Vendor Data File	:
Date and Time	: **08/16/2024 16:54:30**

Type of Structure	: **Reinforced Wall**

Wall Geometry

Design Wall Height(ft)	: **10.50**
Embedment Wall Height(ft)	: **0.50**
Exposed Wall Design Height(ft)	: **10.00**
Number of Segmental Wall Units	: **14**
Wall Inclination(degrees)	: **5.14**

Grades

Top Slope(degrees)	: **0.00**

Uniform Distributed Surcharge

Live Load Surcharge(Psf)	: **0.00**
Dead Load Surcharge(Psf)	: **0.00**

Soil Data

Soil Zone	Description	Cohesion (c) (psf)	Friction Angle(Φ) (degrees)	Unit Weight (γ)(pcf)
Reinforced Soil	Silty sand, clayey sand	N/A	28.00	120.00
Retained Soil	Silty sand, clayey sand	N/A	28.00	120.00
Leveling Pad Soil	Crushed stone	N/A	40.00	130.00
Foundation Soil	Silty sand, clayey sand	0.00	28.00	120.00

Segmental Unit Data

Segmental Unit Name	**: Novum Wall Retaining Block**
Cap Height (Inches)	**: 0.00**
Unit Height (Hu)(Inches)	**: 9.00**
Unit Width (Wu)(Inches)	**: 24.00**
Unit Length (Inches)	**: 46.12**
Setback (Inches)	**: 0.81**
Weight (Infilled)(lb)	**: 685.00**
Unit Weight (Infilled)(pcf)	**: 118.82**
Center of Gravity(Inches)	**: 11.70**

Geosynthetic Reinforcement Type and Number

Supplier	Product Name	Number
	Miragrid 10XT	0
	Miragrid 3XT	7
	Miragrid 5XT	0

Geosynthetic Properties

Geosynthetic Product	Tult (lb/ft)	RFcr	RFd	RFid	LTDS (lb/ft)	Ci	Cds
Miragrid 10XT	10200.00	1.45	1.10	1.05	6090.46	0.80	0.80
Miragrid 3XT	3500.00	1.45	1.10	1.05	2089.86	0.80	0.80
Miragrid 5XT	4700.00	1.45	1.10	1.05	2806.39	0.80	0.80

Unit-Unit Interface Properties

Minimum Shear Capacity(lb/ft)	Shear Friction Angle	Maximum Shear Capacity (lb/ft)
1479.00	71.00	4291.00

Geosynthetic-SRW Unit Connection Strength properties

Geosynthetic Product	Minimum Conn. Capacity (lb/ft)	1st Inflection Point (lb/ft)		2nd Inflection Point (lb/ft)	
		Normal Load (lb/ft)	Connection Capacity (lb/ft)	Normal Load (lb/ft)	Max Connection Capacity(lb/ft)
Miragrid 10XT	493.00	2835.00	1600.00	6250.00	1600.00
Miragrid 3XT	412.00	3900.00	1100.00	6250.00	1100.00
Miragrid 5XT	512.00	2905.00	1400.00	6250.00	1400.00

Geosynthetic-SRW Unit Shear Strength properties

Geosynthetic Product	Minimum Shear Capacity(lb/ft)	Shear Friction Angle	Maximum Shear Capacity (lb/ft)
Miragrid 10XT	823.00	72.00	4000.00
Miragrid 3XT	823.00	72.00	4000.00
Miragrid 5XT	823.00	72.00	4000.00

Vertical Components

Vertical Components of Earth Pressures Used : **Yes**

Cofficients of Earth Pressure and Failure Plane Orientation

Reinforcement Soil(Static)(Ka) : **0.286**
Reinforcement Soil(Static)(Kah Horizontal Component) : **0.278**
Internal Modified Back Slope(Bint) : **0.000**
Orientation of failure plane from horizontal(degrees) for Internal Stability : **52.854**
Retained Soil(Static)(Ka) : **0.281**
Retained Soil(Static)(Kah Horizontal Component) : **0.259**
External Modified Back Slope(Bext) : **0.000**
Orientation of failure plane from horizontal(degrees) for External Stability : **51.473**

Result of External Stability Static Analysis

	Calculated	Design Criteria
FOS Sliding	2.96	> 1.50
FOS Overturning	6.67	> 2.00
FOS Bearing Capacity	5.80	> 2.00
Base Reinforcement Length (L)(ft)	7.00	
Base Reinforcement Ratio (L/H)	0.67	> 0.60

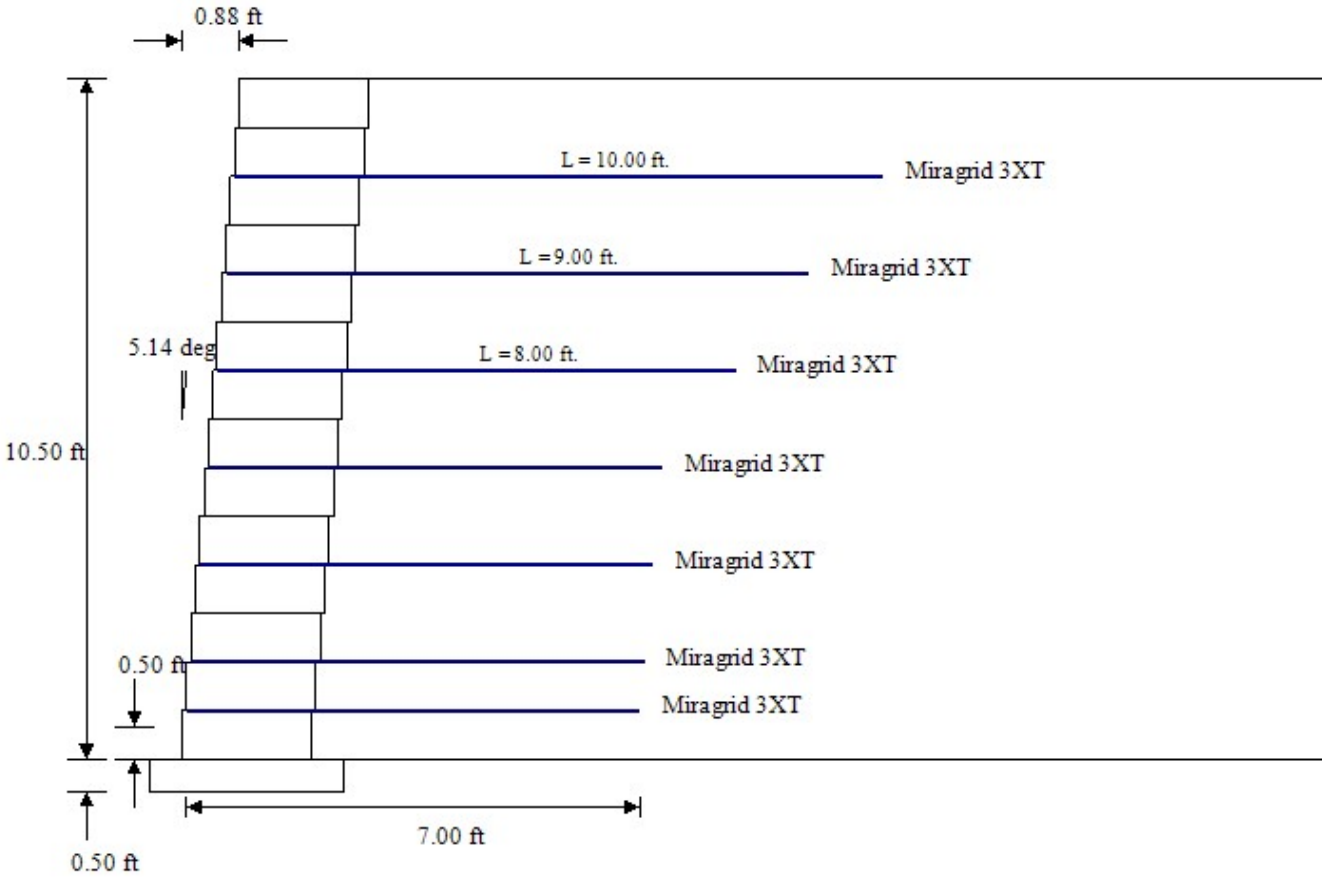
Results of Internal Stability Static Analysis

SRW Unit #	Geosynthetic Product	Elevation (ft)	Length (ft)	Anchor Length (ft)	FOS Overstress >=1.50	FOS Pullout >=1.50	FOS Slide >=1.50	Layer Spacing (ft) >=2.0
13	Miragrid 3XT	9.00	10.00	1.99	24.75	3.61	65.99	OK
11	Miragrid 3XT	7.50	9.00	1.99	13.92	4.07	27.20	OK
9	Miragrid 3XT	6.00	8.00	1.99	9.28	4.07	16.53	OK
7	Miragrid 3XT	4.50	7.00	2.00	6.96	4.07	10.06	OK
5	Miragrid 3XT	3.00	7.00	3.00	5.57	6.11	6.94	OK
3	Miragrid 3XT	1.50	7.00	4.00	6.32	11.11	5.18	OK
2	Miragrid 3XT	0.75	7.00	4.50	5.60	12.01	4.57	OK

Results of Facing Stability Static Analysis

SRW Unit #	Heel Elev (ft)	Geosynthetic Product	FOS Crest Toppling >=1.50	FOS Connection >=1.50
13	9.00	Miragrid 3XT	20.63	5.62
11	7.50	Miragrid 3XT		3.58
9	6.00	Miragrid 3XT		2.67
7	4.50	Miragrid 3XT		2.21
5	3.00	Miragrid 3XT		1.94
3	1.50	Miragrid 3XT		2.39
2	0.75	Miragrid 3XT		2.20

Wall Reinforcement Layout



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