Skyscraper

Segmental Retaining Wall
Design Chart (USA)

Techo-Bloc

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Preface

This document contains the preliminary design charts for the SKYSCRAPER retaining wall system. The charts help to determine the optimized block configuration for several wall heights under specific assumed conditions.

First, evaluate the proposed conditions for the retaining wall project. It is important to determine the soil type, the applied surcharge and the backslope/toeslope conditions that most closely represent the final constructed wall. Second, select the desired wall inclination; inclined (12.7°) or near vertical (0.8°). Third, select the chart case number that most closely resembles the final project conditions. Finally, select the wall height that will best fit the project wall profile.

This document has been prepared for the following cases:

	SOIL	SURCHARGE	BACKSLOPE	TOESLOPE
CASE N° 1	Clean sand / sand & gravel mixes	No	No	No
CASE N° 2	Clean sand / sand & gravel mixes	100 psf	No	No
CASE N° 3	Clean sand / sand & gravel mixes	250 psf	No	No
CASE N° 4	Clean sand / sand & gravel mixes	No	1V: 3H	No
CASE N° 5	Fine Sands & Silty Sands	No	No	No
CASE N° 6	Fine Sands & Silty Sands	100 psf	No	No
CASE N° 7	Fine Sands & Silty Sands	250 psf	No	No
CASE N° 8	Fine Sands & Silty Sands	No	1V: 3H	No
CASE N° 9	Low Plasticity Silts and Clays	No	No	No
CASE N° 10	Low Plasticity Silts and Clays	100 psf	No	No
CASE N° 11	Low Plasticity Silts and Clays	250 psf	No	No
CASE N° 12	Low Plasticity Silts and Clays	No	1V: 3H	No
CASE N° 13	Clear Crushed Stone Backfill over Poor soil conditions	No	No	No
CASE N° 14	Clear Crushed Stone Backfill over Poor soil conditions	100 psf	No	No
CASE N° 15	Clear Crushed Stone Backfill over Poor soil conditions	250 psf	No	No
CASE N° 16	Clear Crushed Stone Backfill over Poor soil conditions	No	1V: 3H	No

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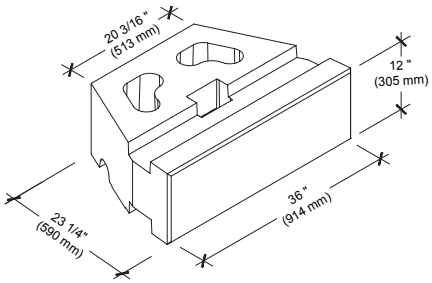
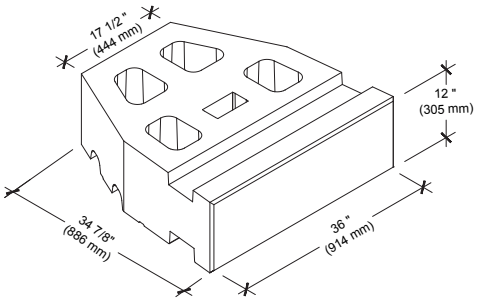
Product Overview

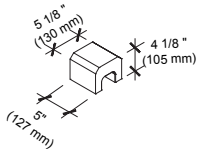
TOP UNIT
Approx. weight:
517 lbs (234.7 kg)



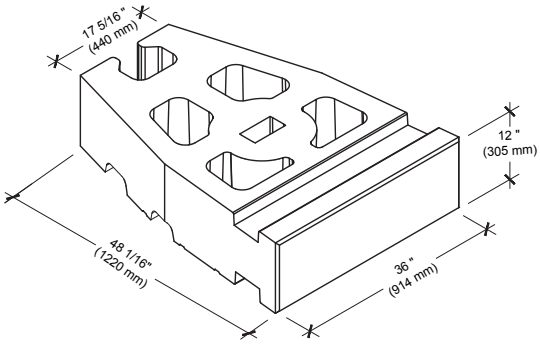
MIDDLE UNIT
Approx. weight:
739 lbs (335.2 kg)



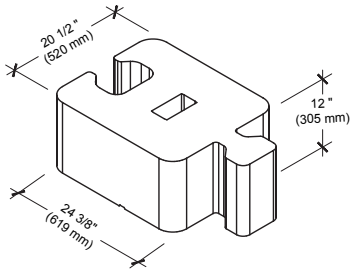
PRECAST CONCRETE "U" CONNECTOR
(alignment pin)



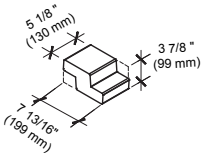
BASE UNIT
Approx. weight:
918 lbs (416.6 kg)



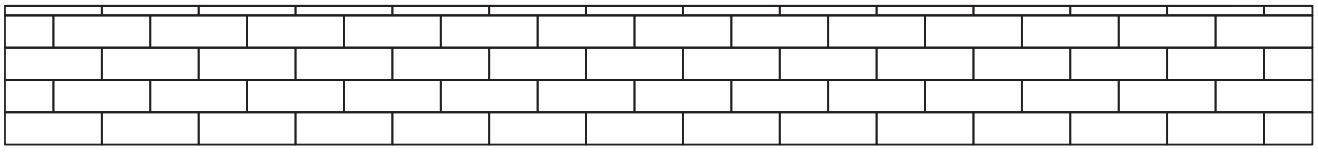
EXTENDER UNIT
Approx. weight:
456 lbs (206.7 kg)



PRECAST CONCRETE "Z" CONNECTOR



PATTERN
Linear Pattern



Technical Specifications

PHYSICAL CHARACTERISTICS	
Compressive Strength	5050 psi (35 MPa)
Water Absorption (max.)	9 lb/ft³ (144 kg/m³)
Freeze-Thaw	1.0% max. loss of mass after 100 cycles; or 1.5% max. loss of mass after 150 cycles
Dimensional Tolerances	Height: ± 1/16 in. [1.5 mm] Length & Width: ± 1/8 in. [3 mm]

Note: Meets and exceeds the requirements of the ASTM C 1372 Standard Specification for Dry-Cast Segmental Retaining Wall Units.

DESIGN DATA					
Horizontal Setback	2 5/16 in. (68.5 mm)	3/16 in. (4.5 mm)			
Infilled Unit Weight	TOP	115 pcf (18.0 kN/m³)			
	MIDDLE	115 pcf (18.1 kN/m³)			
	BASE	111 pcf (17.5 kN/m³)			
	BASE +EXTENDER(S)	Variable			
Infilled center of gravity (measured from the face of the unit)	TOP	11 9/16 in. (294 mm)			
	MIDDLE	17 3/16 in. (437 mm)			
	BASE	23 1/16 in. (586 mm)			
	BASE +EXTENDER(S)	Variable			
Block Shear Strength (Inclined Position) (ASTM D 6916)	Vub[lb/ft] =	N≤	5050		134 + N*tan(43.5)
		5050	< N ≤	8229	2124 + N*tan(29.0)
		N>	8238	**	N*tan(31.0)
	Vub[kN/m] =	73.7	< N ≤	120.1	30.97 + N*tan(29.0)
		N>	120.1	**	N*tan(31.0)
Block Shear Strength (Near Vertical Position) (ASTM D 6916)	Vub[lb/ft] =	N≤	8559		1689 + N*tan(35.7)
		N>	8559	**	N*tan(31.0)
	Vub[kN/m] =	N≤	124.8		24.62 + N*tan(35.7)
		N>	124.8	**	N*tan(31.0)

Notes:

1. The infilled unit weight shown here is based on an assumed aggregate unit weight of 96.8 lb/ft³ (1550 kg/m³) used to fill the core cavity of the block and the space between adjacent blocks.

**Block shear strength obtained from weighted average friction coefficient analysis (concrete to concrete friction: 0.6, concrete to aggregate: 0.8*tan (ϕ aggregate), aggregate to aggregate: tan (ϕ aggregate).

Design Charts

Notes and Assumptions

This preliminary guide has been prepared for different soil types to approximate good (Clean sand / sand & gravel mixes), medium (Fine Sands & Silty Sands) and poor (Low Plasticity Silts and Clays) soil conditions to cover the typical design range. Moreover, a soil condition was prepared to consider the replacement of a poor soil by a free drainage backfill behind the wall (Clear crushed stone backfill over poor soil conditions). The description of the soil is provided for information purposes; it is the actual shear strength parameter that will govern the design.

Additionally, the following four different load conditions were considered:

I. A horizontal surface above the wall with no surcharge to account for lawn or similar load conditions.

II. A horizontal surface above the wall with a uniform surcharge of 100 psf (4.8 kPa) to account for paved surfaces and/or parking or alleys for car and light vehicles traffic.

III. A horizontal surface above the wall with a uniform surcharge of 250 psf (12 kPa) to account for heavy vehicle traffic or fire lanes.

IV. A 1V:3H slope above the wall (backslope).

Furthermore, each case contains two setback alternatives: one for a wall with 12.7° batter and one for a near vertical wall (0.8°). The 12.7° wall inclination is achieved by using the precast concrete “Z” connector and the 0.8° wall inclination (Near vertical) by using the precast concrete “U” connector.

No slope condition below the wall (Toeslope) was considered. The design parameters and additional assumptions are shown in each chart. Skyscraper walls are not limited to the conditions contained in these charts. Wall section for different soil, slope, loading and height conditions can be designed.

The design charts show the optimized block combination for a Skyscraper wall, based on the height of the wall, the soil type and the load conditions. The wall height varies approximately from 2.0 ft (0.61 m) to 23.0 ft (7.01 m), gradually increasing in height increments of 1.0-2.0 ft (0.30-0.61 m). The wall height shown does not include the thickness of the cap.

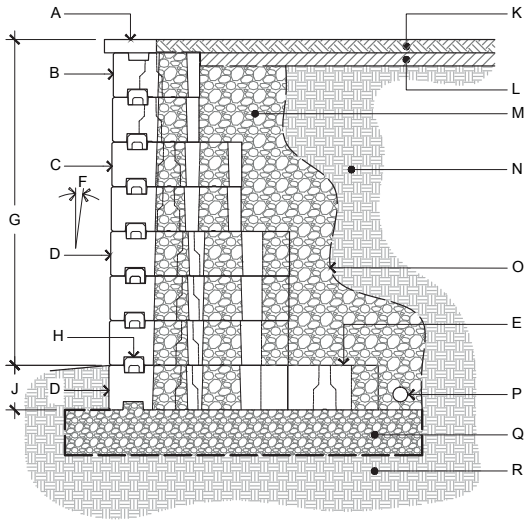
The gravity walls charts have been prepared from an allowable stress design (ASD) procedure based in the industry practice and the Design Manual for Segmental Retaining Walls from the National Concrete Masonry Association (NCMA), 3rd edition. Additional analytical methods and theories for a Multiple Depth Precast Modular Block Gravity Retaining Wall are taken from AASHTO and FHWA guidelines. Minimum factors of safety were taken as: 1.5 for sliding; 1.5 for overturning and 2.0 for bearing capacity. Other factors of safety, analyzes and considerations such as global stability, seismic analysis and hydrostatic pressure, may result in a different wall design configuration.

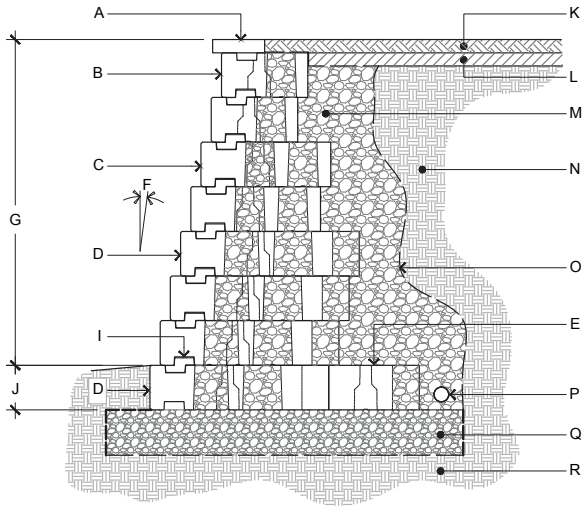
Guard and barriers at the top of the wall must be designed and detailed by a registered Professional Engineer to assure the performance for specific site conditions. Railing, fence, guardrail and traffic barrier design may result in changes to available wall heights and block combinations shown in this document.

The design charts contained herein have been compiled and prepared by Techo-Bloc and to the best of its knowledge. Final determination of the suitability for the use of this document is the sole responsibility of the user. Final design for construction purposes shall be performed, using the actual conditions of the proposed site, by a registered Professional Engineer. For further information, please contact our technical service department.

Gravity Wall

Typical cross section detail





GRAVITY NEAR VERTICAL WALL DETAIL

A. CAP FROM TECHO-BLOC

B. SKYSCRAPER TOP UNIT FROM TECHO-BLOC

C. SKYSCRAPER MIDDLE UNIT FROM TECHO-BLOC

D. SKYSCRAPER BASE UNIT FROM TECHO-BLOC

E. SKYSCRAPER EXTENDER UNIT FROM TECHO-BLOC

F. WALL INCLINATION: 0.8”

G. EXPOSED HEIGHT

H. PRECAST CONCRETE “U” CONNECTOR

J. EMBEDMENT DEPTH

K. TOP SOIL

L. LOW PERMEABILITY SOIL

M. ¾” (20 mm) CLEAN STONE, 12” (300 mm) THICK MIN

N. RETAINED SOIL

O. GEOTEXTILE

P. PERFORATED DRAIN

Q. LEVELING PAD

R. FOUNDATION SOIL

GRAVITY NEAR INCLINED WALL DETAIL

A. CAP FROM TECHO-BLOC

B. SKYSCRAPER TOP UNIT FROM TECHO-BLOC

C. SKYSCRAPER MIDDLE UNIT FROM TECHO-BLOC

D. SKYSCRAPER BASE UNIT FROM TECHO-BLOC

E. SKYSCRAPER EXTENDER UNIT FROM TECHO-BLOC

F. WALL INCLINATION: 12.7”

G. EXPOSED HEIGHT

H. PRECAST CONCRETE “Z” CONNECTOR

J. EMBEDMENT DEPTH

K. TOP SOIL

L. LOW PERMEABILITY SOIL

M. ¾” (20 mm) CLEAN STONE, 12” (300 mm) THICK MIN

N. RETAINED SOIL

O. GEOTEXTILE

P. PERFORATED DRAIN

Q. LEVELING PAD

R. FOUNDATION SOIL

Techo-Bloc

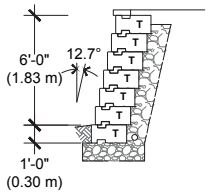
DESIGN CHART
SKYSCRAPER
INCLINED POSITION

ALLOWABLE STRESS DESIGN

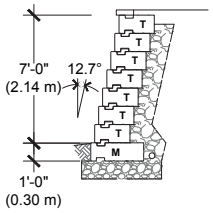
CLEAN SAND/ SAND AND GRAVEL MIXES (Ø=34°, γ = 130 pcf)

CASE N° 1 :
No Surcharge
No Backslope
No Toe Slope

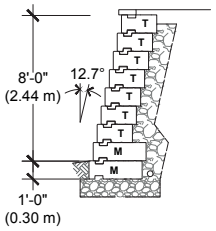
7 ft (2.13 m) Total Height
T: 7



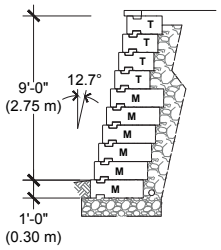
8 ft (2.44 m) Total Height
T: 7
M: 1



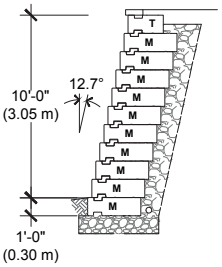
9 ft (2.74 m) Total Height
T: 7
M: 2



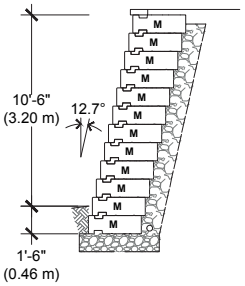
10 ft (3.05 m) Total Height
T: 4
M: 6



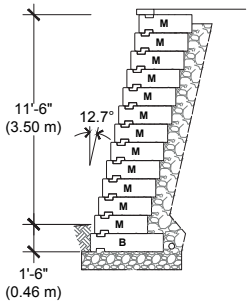
11 ft (3.35 m) Total Height
T: 1
M: 10



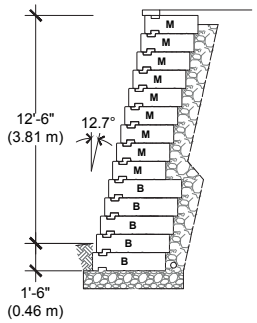
12 ft (3.66 m) Total Height
M: 12



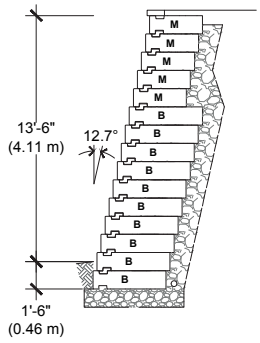
13 ft (3.96 m) Total Height
M: 12
B: 1



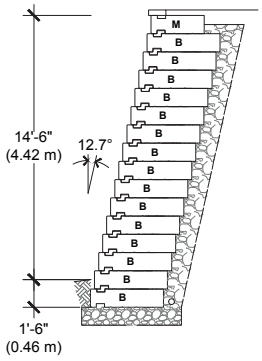
14 ft (4.27 m) Total Height
M: 9
B: 5



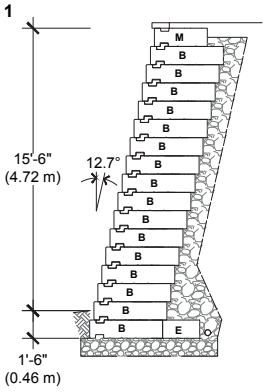
15 ft (4.57 m) Total
M: 5
B: 10



16 ft (4.88 m) Total Height
M: 1
B: 15



17 ft (5.18 m) Total Height
M: 1
B: 15
BE: 1



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6. The seismic analysis is not included.
7. The design charts do not apply to tiered walls.
8. The charts assume that the walls are constructed in accordance with Techo-Bloc specifications, good construction practice and an adequate drainage system.
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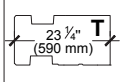
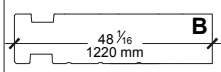


TOP UNIT

MIDDLE UNIT



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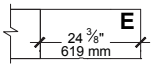


EXTENDER UNIT

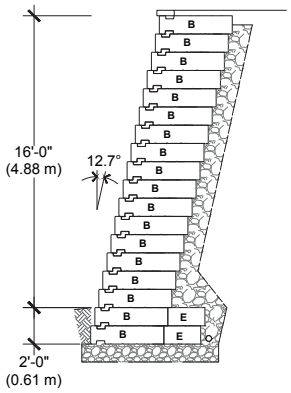
DESIGN CHART
SKYSCRAPER
INCLINED POSITION

ALLOWABLE STRESS DESIGN

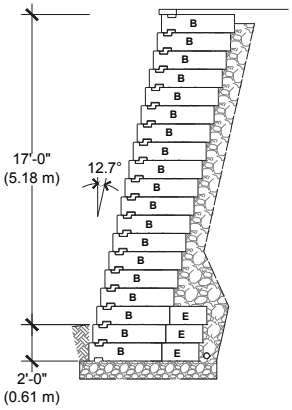
CLEAN SAND/ SAND AND GRAVEL MIXES (Ø=34°, γ = 130 pcf)

CASE N° 1 :
No Surcharge
No Backslope
No Toe Slope

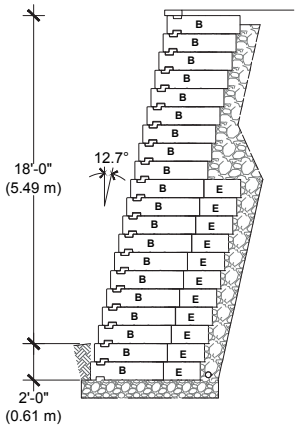
18 ft (5.49 m) Total Height
B: 16
BE: 2



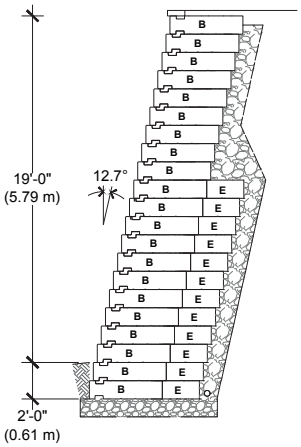
19 ft (5.79 m) Total Height
B: 16
BE: 3



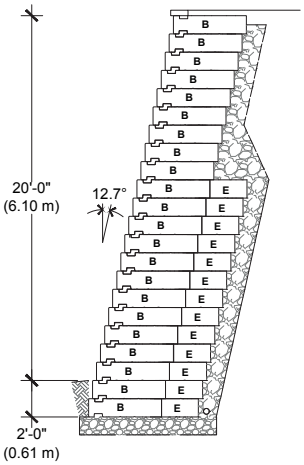
20 ft (6.10 m) Total Height
B: 9
BE: 11



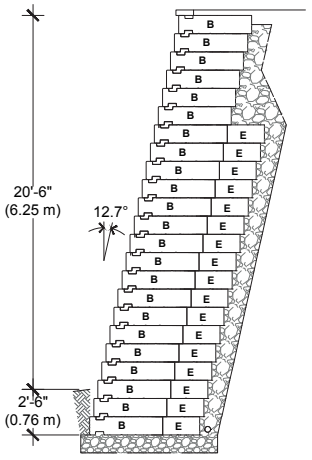
21 ft (6.40 m) Total Height
B: 9
BE: 12



22 ft (6.71 m) Total Height
B: 9
BE: 13



23 ft (7.01 m) Total Height
B: 6
BE: 17



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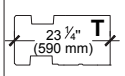

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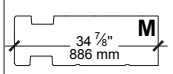
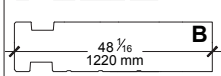
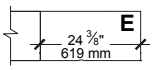


MIDDLE UNIT



BASE UNIT



EXTENDER UNIT

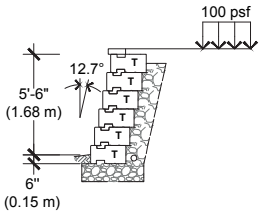
DESIGN CHART
SKYSCRAPER
INCLINED POSITION

ALLOWABLE STRESS DESIGN

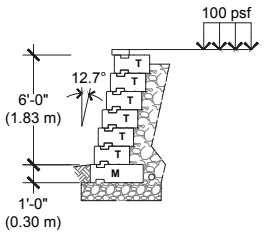
CLEAN SAND/ SAND AND GRAVEL MIXES (Ø=34°, γ = 130 pcf)

CASE N° 2 :
100 psf Surcharge
No Backslope
No Toe Slope

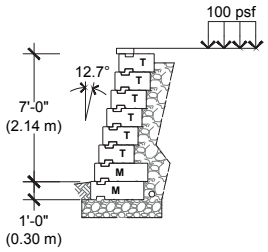
6 ft (1.83 m) Total Height
T: 6



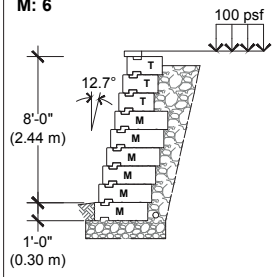
7 ft (2.13 m) Total Height
T: 6
M: 1



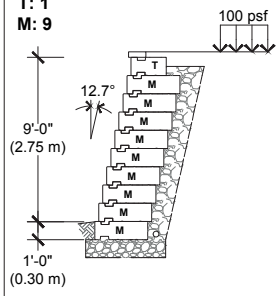
8 ft (2.44 m) Total Height
T: 6
M: 2



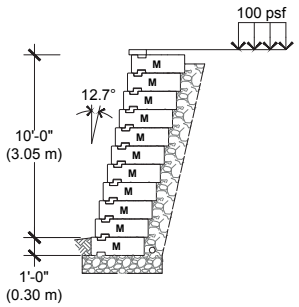
9 ft (2.74 m) Total Height
T: 3
M: 6



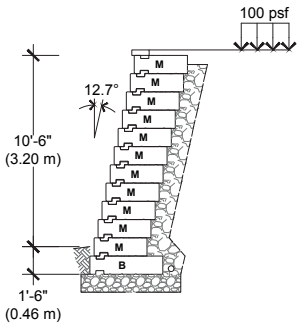
10 ft (3.05 m) Total Height
T: 1
M: 9



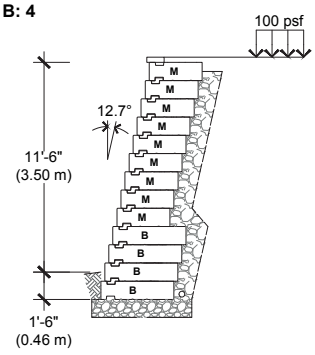
11 ft (3.35 m) Total Height
M: 11



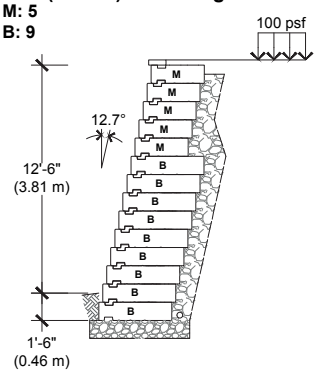
12 ft (3.66 m) Total Height
M: 11
B: 1



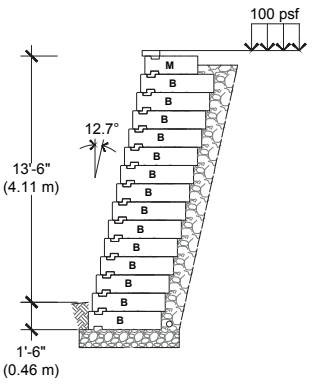
13 ft (3.96 m) Total Height
M: 9
B: 4



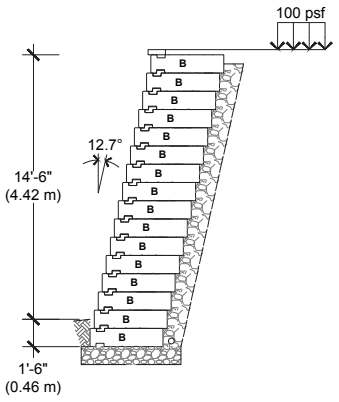
14 ft (4.27 m) Total Height
M: 5
B: 9



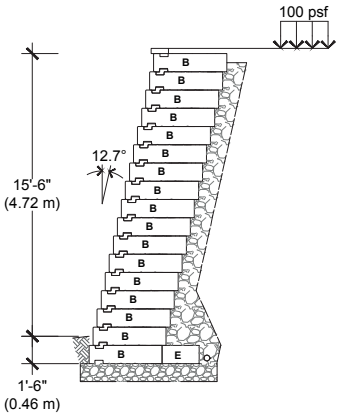
15 ft (4.57 m) Total
M: 1
B: 14



16 ft (4.88 m) Total Height
B: 16



17 ft (5.18 m) Total Height
B: 16
BE: 1



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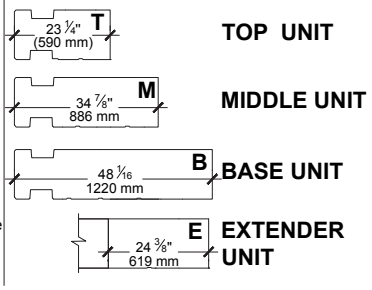
LEGEND :



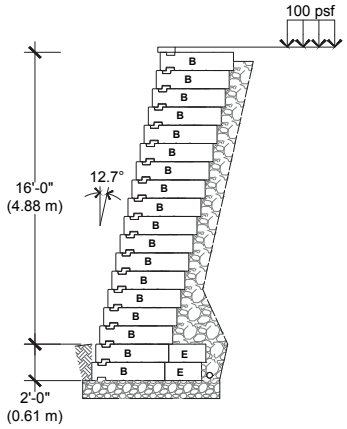
DESIGN CHART
SKYSCRAPER
INCLINED POSITION

ALLOWABLE STRESS DESIGN

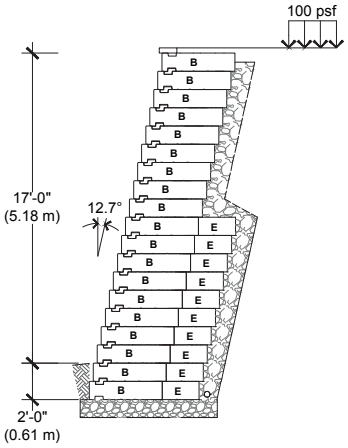
CLEAN SAND/ SAND AND GRAVEL MIXES (Ø=34°, γ = 130 pcf)

CASE N° 2 :
100 psf Surcharge
No Backslope
No Toe Slope

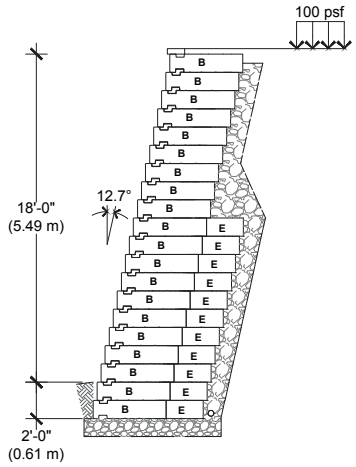
18 ft (5.49 m) Total Height
B:16
BE: 2



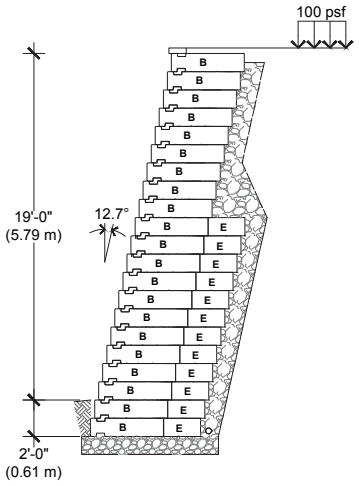
19 ft (5.79 m) Total Height
B: 9
BE: 10



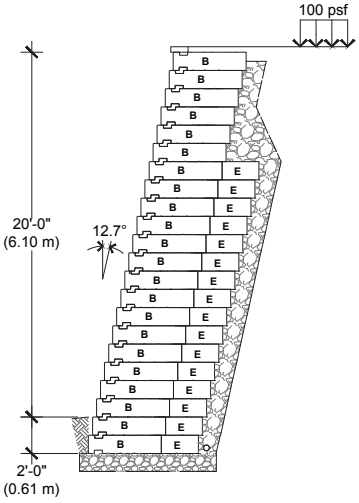
20 ft (6.10 m) Total Height
B: 9
BE: 11



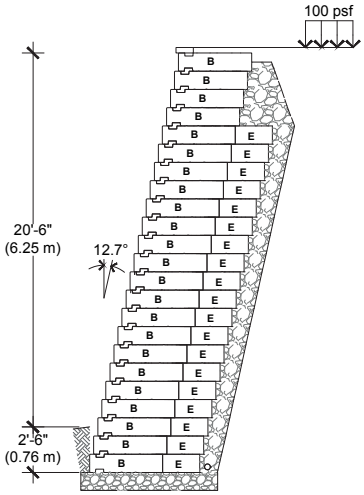
21 ft (6.40 m) Total Height
B: 9
BE: 12



22 ft (6.71 m) Total Height
B: 6
BE: 16



23 ft (7.01 m) Total Height
B: 4
BE: 19



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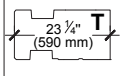
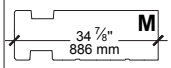
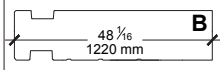
LEGEND :



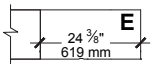
TOP UNIT



MIDDLE UNIT



BASE UNIT



EXTENDER UNIT

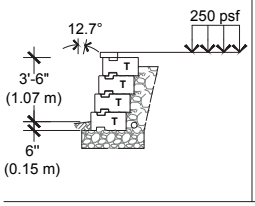
DESIGN CHART
SKYSCRAPER
INCLINED POSITION

ALLOWABLE STRESS DESIGN

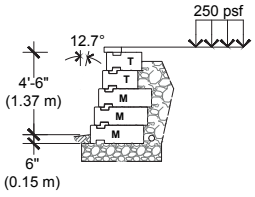
CLEAN SAND/ SAND AND GRAVEL MIXES (Ø=34°, γ = 130 pcf)

CASE N° 3 :
250 psf Surcharge
No Toe Slope

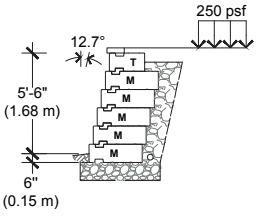
4 ft (1.22 m) Total Height
T: 4



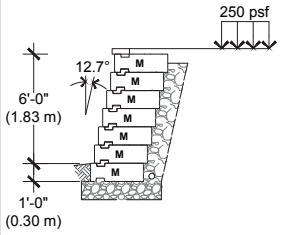
5 ft (1.52 m) Total Height
T: 2
M: 3



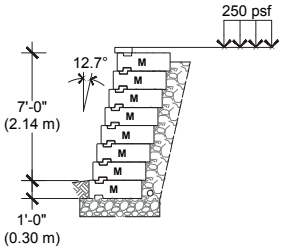
6 ft (1.83 m) Total Height
T: 1
M: 5



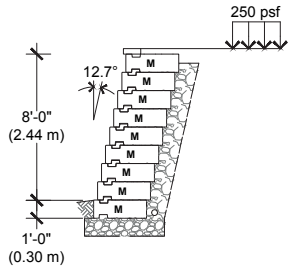
7 ft (2.13 m) Total Height
M: 7



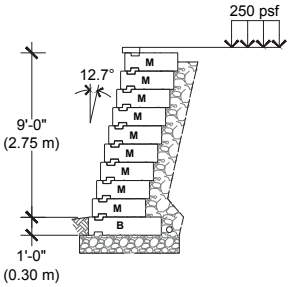
8 ft (2.44 m) Total Height
M: 8



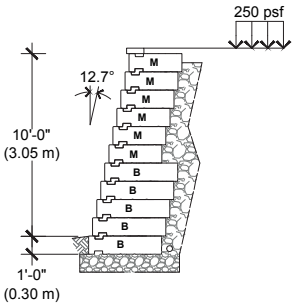
9 ft (2.74 m) Total Height
M: 9



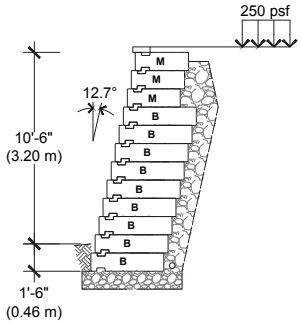
10 ft (3.05 m) Total Height
M: 9
B: 1



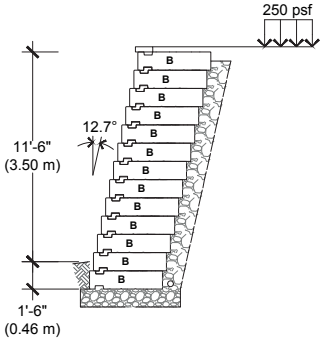
11 ft (3.35 m) Total Height
M: 6
B: 5



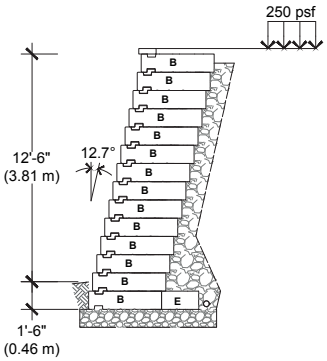
12 ft (3.66 m) Total Height
M: 3
B: 9



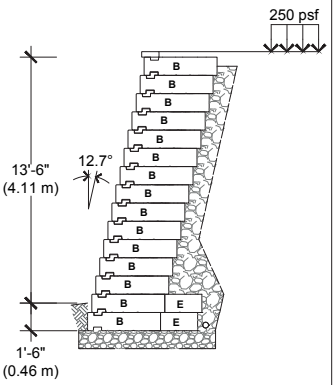
13 ft (3.96 m) Total Height
B: 13



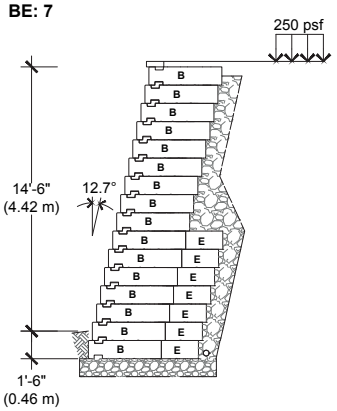
14 ft (4.27 m) Total Height
B: 13
BE: 1



15 ft (4.57 m) Total
B: 13
BE: 2



16 ft (4.88 m) Total Height
B: 9
BE: 7



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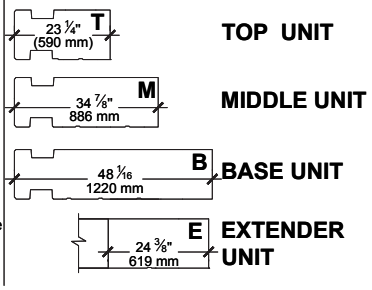
LEGEND :



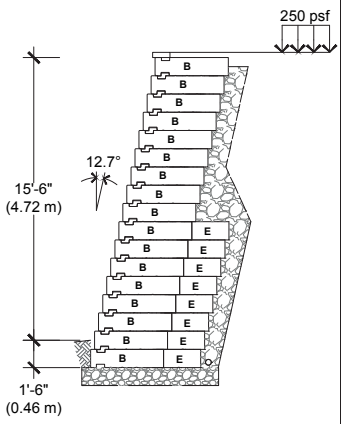
DESIGN CHART
SKYSCRAPER
INCLINED POSITION

ALLOWABLE STRESS DESIGN

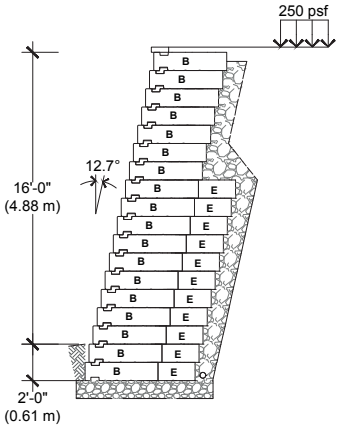
CLEAN SAND/ SAND AND GRAVEL MIXES (Ø=34°, γ = 130 pcf)

CASE N° 3 :
250 psf Surcharge
No Toe Slope

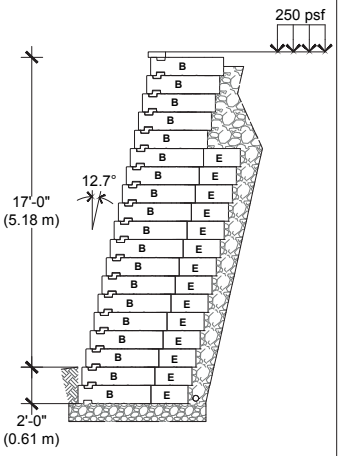
17 ft (5.18 m) Total Height
B: 9
BE: 8



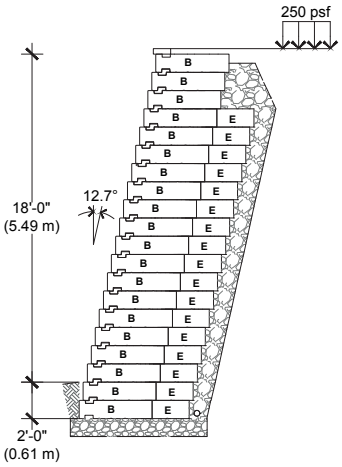
18 ft (5.49 m) Total Height
B: 7
BE: 11



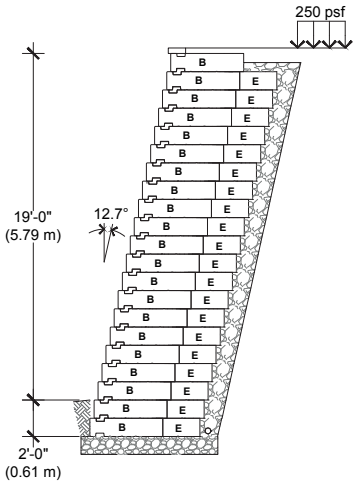
19 ft (5.79 m) Total Height
B: 5
BE: 14



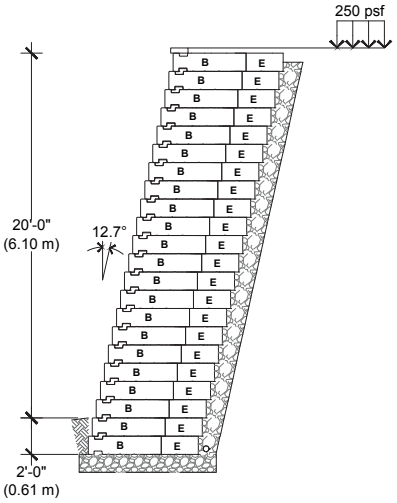
20 ft (6.10 m) Total Height
B: 3
BE: 17



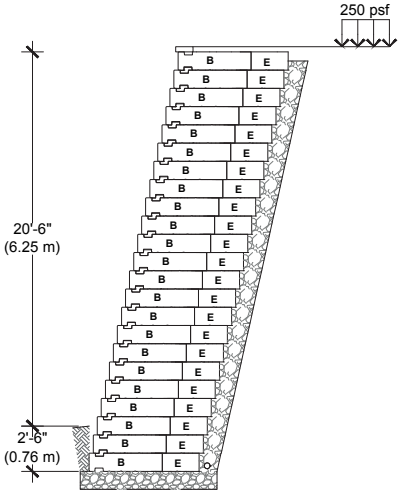
21 ft (6.40 m) Total Height
B: 1
BE: 20



22 ft (6.71 m) Total Height
BE: 22



23 ft (7.01 m) Total Height
BE: 23



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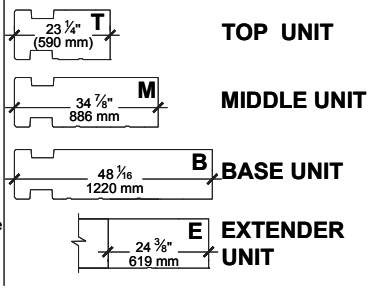
LEGEND :



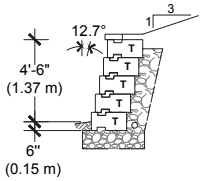
DESIGN CHART
SKYSCRAPER
INCLINED POSITION

ALLOWABLE STRESS DESIGN

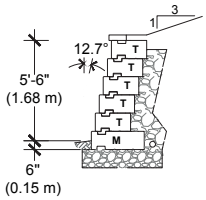
CLEAN SAND/ SAND AND GRAVEL MIXES (Ø=34°, γ = 130 pcf)

CASE N° 4 :
No Surcharge
Backslope 1V : 3H
No Toe Slope

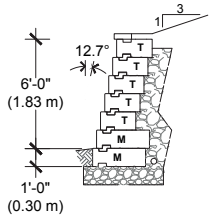
5 ft (1.52 m) Total Height
T: 5



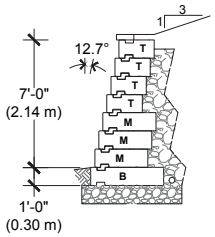
6 ft (1.83 m) Total Height
T: 5
M: 1



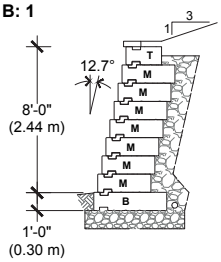
7 ft (2.13 m) Total Height
T: 5
M: 2



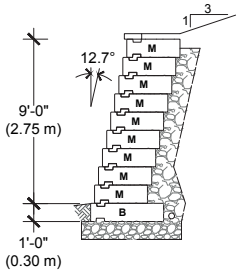
8 ft (2.44 m) Total Height
T: 4
M: 3
B: 1



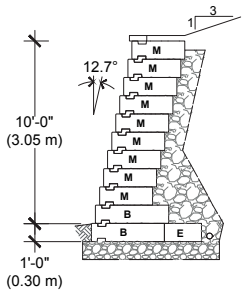
9 ft (2.74 m) Total Height
T: 1
M: 7
B: 1



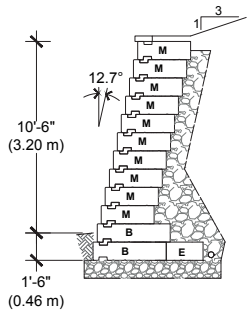
10 ft (3.05 m) Total Height
M: 9
B: 1



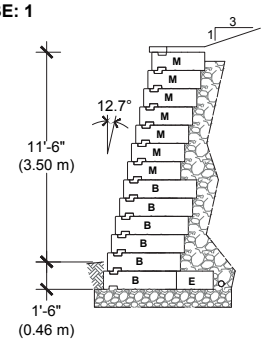
11 ft (3.35 m) Total Height
M: 9
B: 1
BE: 1



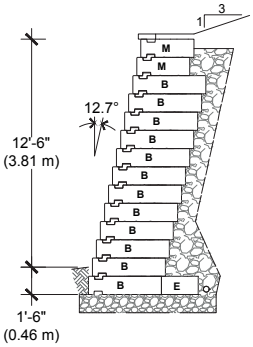
12 ft (3.66 m) Total Height
M: 10
B: 1
BE: 1



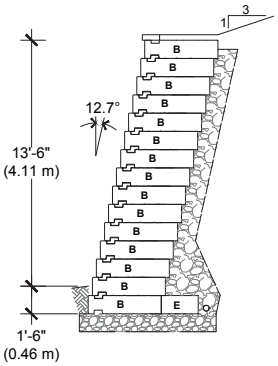
13 ft (3.96 m) Total Height
M: 7
B: 5
BE: 1



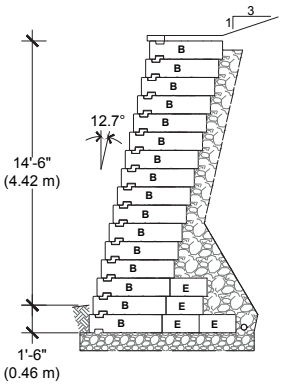
14 ft (4.27 m) Total Height
M: 2
B: 11
BE: 1



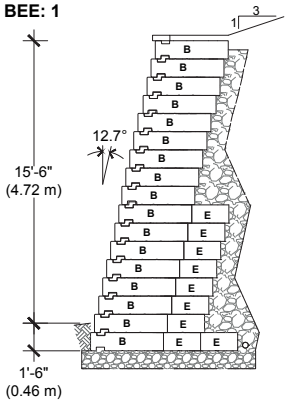
15 ft (4.57 m) Total
B: 14
BE: 1



16 ft (4.88 m) Total Height
B: 13
BE: 2
BEE: 1



17 ft (5.18 m) Total Height
B: 9
BE: 7
BEE: 1



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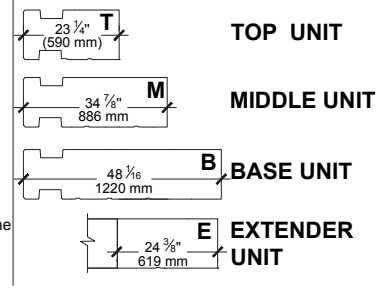
LEGEND :



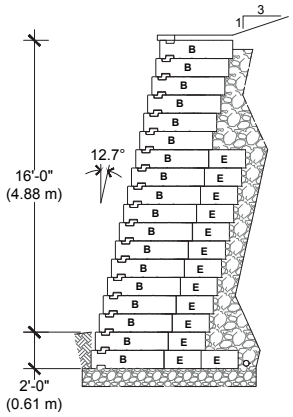
DESIGN CHART
SKYSCRAPER
INCLINED POSITION

ALLOWABLE STRESS DESIGN

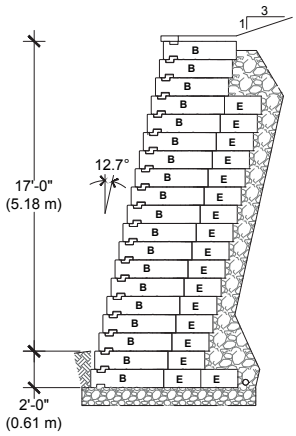
CLEAN SAND/ SAND AND GRAVEL MIXES (Ø=34°, γ = 130 pcf)

CASE N° 4 :
No Surcharge
Backslope 1V : 3H
No Toe Slope

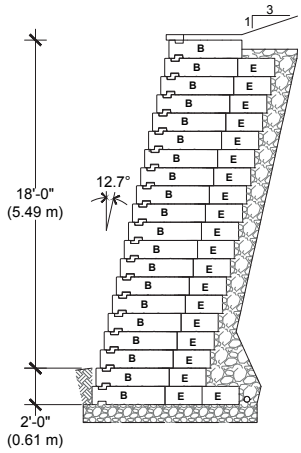
18 ft (5.49 m) Total Height
B: 6
BE: 11
BEE: 1



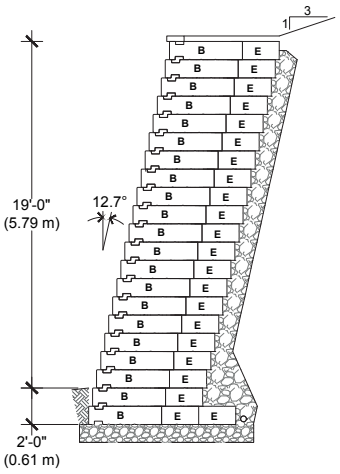
19 ft (5.79 m) Total Height
B: 3
BE: 15
BEE: 1



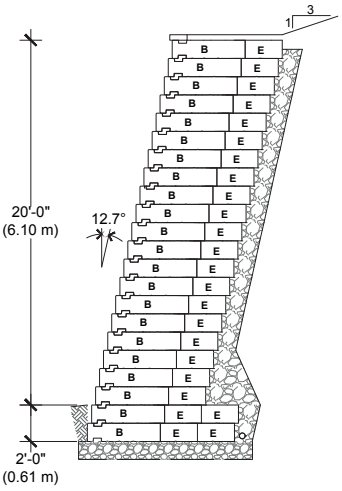
20 ft (6.10 m) Total Height
B: 1
BE: 18
BEE: 1



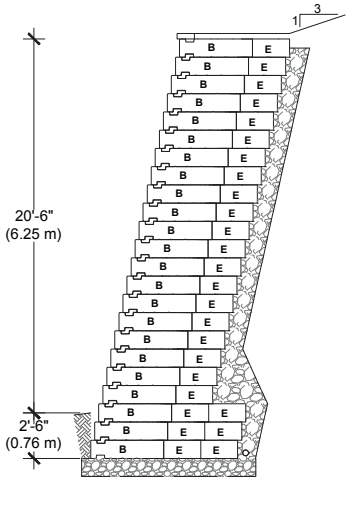
21 ft (6.40 m) Total Height
BE: 20
BEE: 1



22 ft (6.71 m) Total Height
BE: 20
BEE: 2



23 ft (7.01 m) Total Height
BE: 20
BEE: 3



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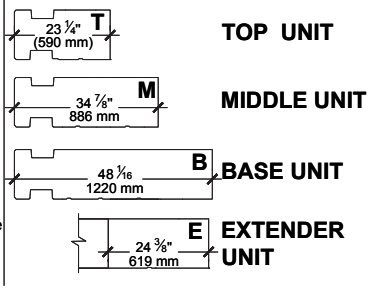
LEGEND :



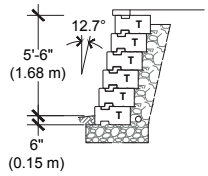
DESIGN CHART
SKYSCRAPER
INCLINED POSITION

ALLOWABLE STRESS DESIGN

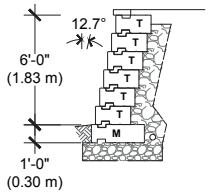
FINE SANDS AND SILTY SANDS (Ø=30°, γ = 120 pcf)

CASE N° 5 :
No Surcharge
No Backslope
No Toe Slope

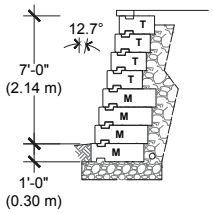
6 ft (1.83 m) Total Height
T: 6



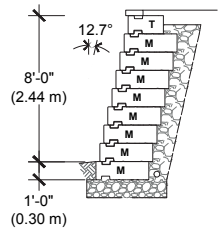
7 ft (2.13 m) Total Height
T: 6
M: 1



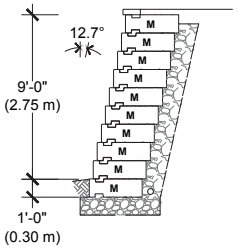
8 ft (2.44 m) Total Height
T: 4
M: 4



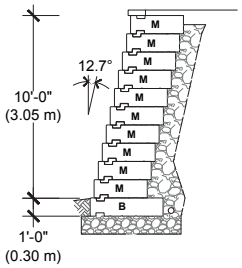
9 ft (2.74 m) Total Height
T: 1
M: 8



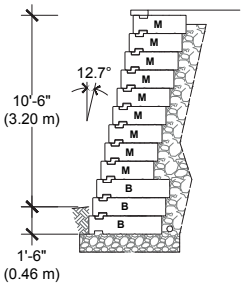
10 ft (3.05 m) Total Height
M: 10



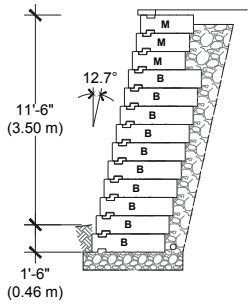
11 ft (3.35 m) Total Height
M: 10
B: 1



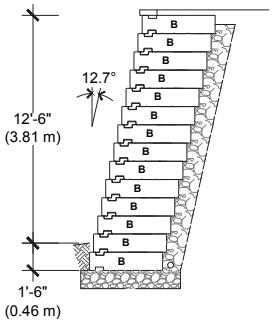
12 ft (3.66 m) Total Height
M: 9
B: 3



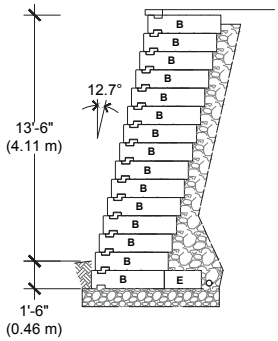
13 ft (3.96 m) Total Height
M: 3
B: 10



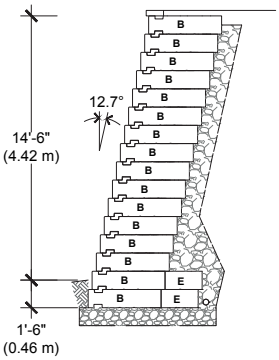
14 ft (4.27 m) Total Height
B: 14



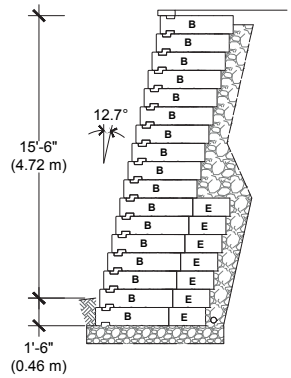
15 ft (4.57 m) Total
B: 14
BE: 1



16 ft (4.88 m) Total Height
B: 14
BE: 2



17 ft (5.18 m) Total Height
B: 10
BE: 7



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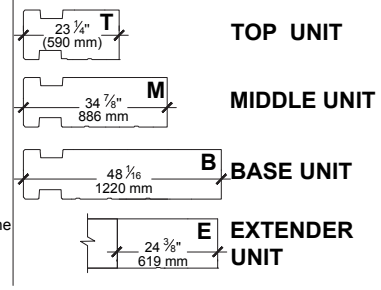
LEGEND :



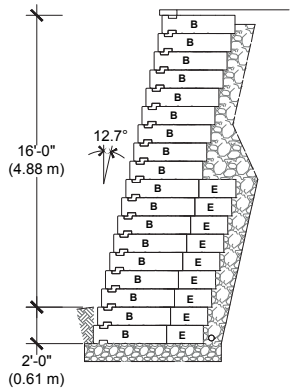
DESIGN CHART
SKYSCRAPER
INCLINED POSITION

ALLOWABLE STRESS DESIGN

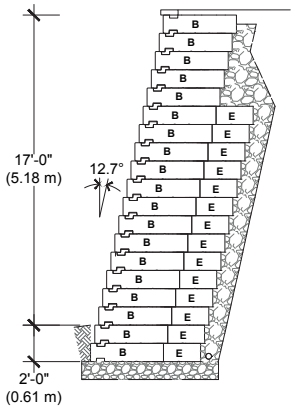
FINE SANDS AND SILTY SANDS (Ø=30°, γ = 120 pcf)

CASE N° 5 :
No Surcharge
No Backslope
No Toe Slope

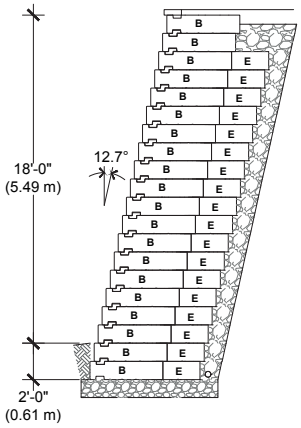
18 ft (5.49 m) Total Height
B: 9
BE: 9



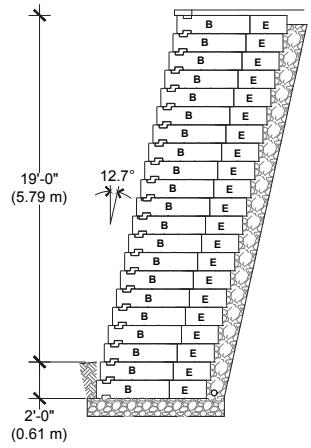
19 ft (5.79 m) Total Height
B: 5
BE: 14



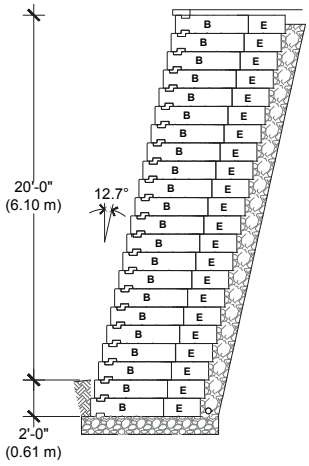
20 ft (6.10 m) Total Height
B: 2
BE: 18



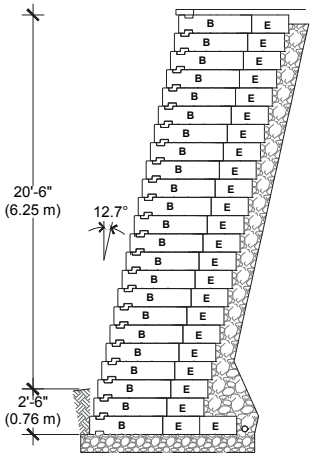
21 ft (6.40 m) Total Height
BE: 21



22 ft (6.71 m) Total Height
BE: 22



23 ft (7.01 m) Total Height
BE: 22
BEE: 1



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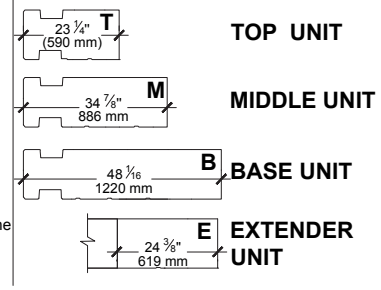


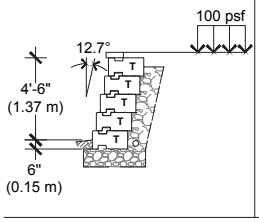
DESIGN CHART
SKYSCRAPER
INCLINED POSITION

ALLOWABLE STRESS DESIGN

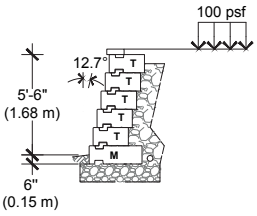
FINE SANDS AND SILTY SANDS (Ø=30°, γ = 120 pcf)

CASE N° 6 :
100 psf Surcharge
No Backslope
No Toe Slope

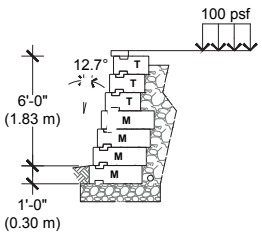
5 ft (1.52 m) Total Height
T: 5



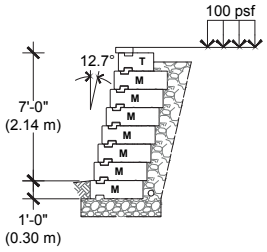
6 ft (1.83 m) Total Height
T: 5
M: 1



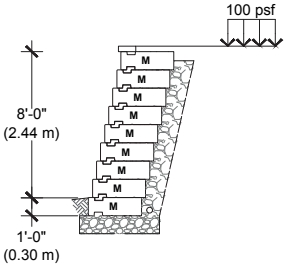
7 ft (2.13 m) Total Height
T: 3
M: 4



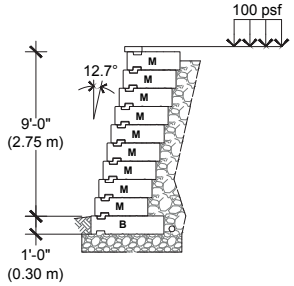
8 ft (2.44 m) Total Height
T: 1
M: 7



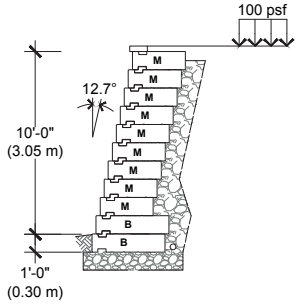
9 ft (2.74 m) Total Height
M: 9



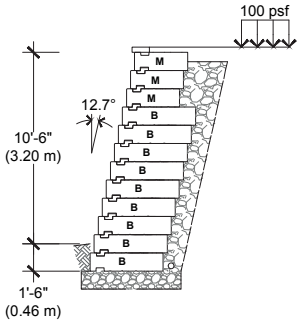
10 ft (3.05 m) Total Height
M: 9
B: 1



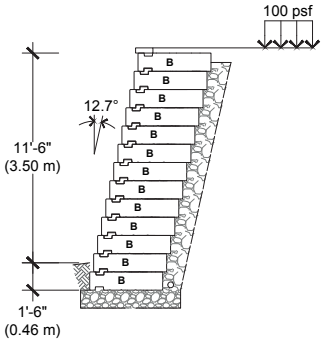
11 ft (3.35 m) Total Height
M: 9
B: 2



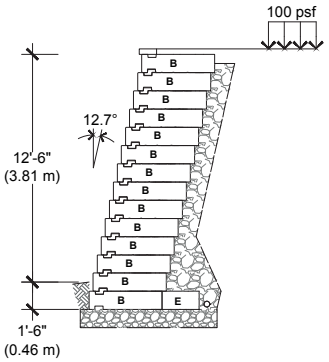
12 ft (3.66 m) Total Height
M: 3
B: 9



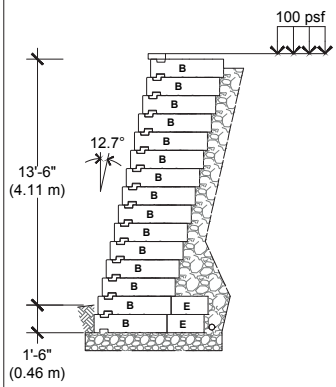
13 ft (3.96 m) Total Height
B: 13



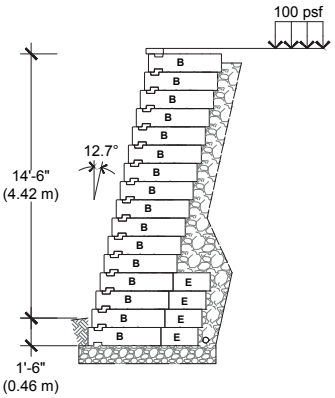
14 ft (4.27 m) Total Height
B: 13
BE: 1



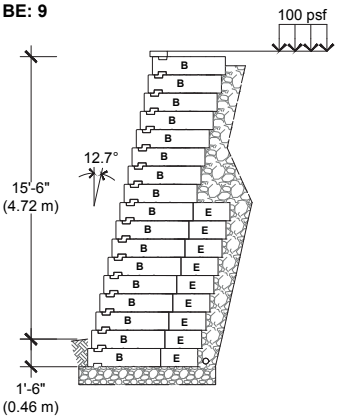
15 ft (4.57 m) Total
B: 13
BE: 2



16 ft (4.88 m) Total Height
B: 12
BE: 4



17 ft (5.18 m) Total Height
B: 8
BE: 9



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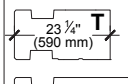
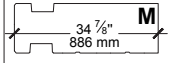
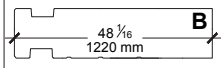
LEGEND :



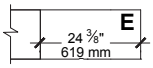
TOP UNIT



MIDDLE UNIT



BASE UNIT



EXTENDER UNIT

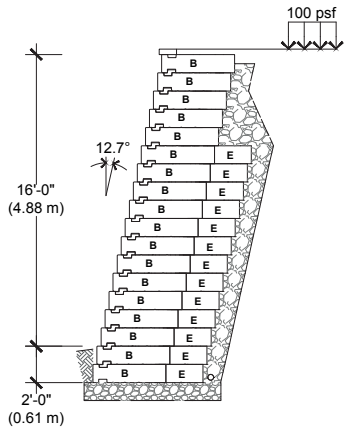
DESIGN CHART
SKYSCRAPER
INCLINED POSITION

ALLOWABLE STRESS DESIGN

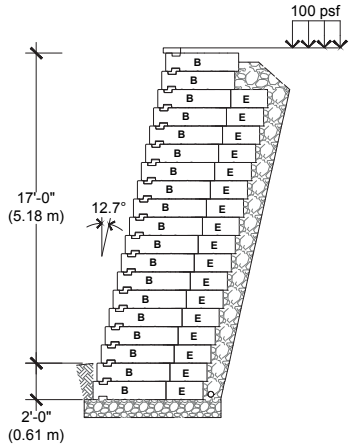
FINE SANDS AND SILTY SANDS (Ø=30°, γ = 120 pcf)

CASE N° 6 :
100 psf Surcharge
No Backslope
No Toe Slope

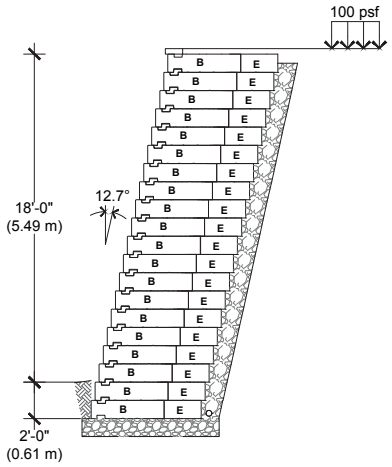
18 ft (5.49 m) Total Height
B: 5
BE: 13



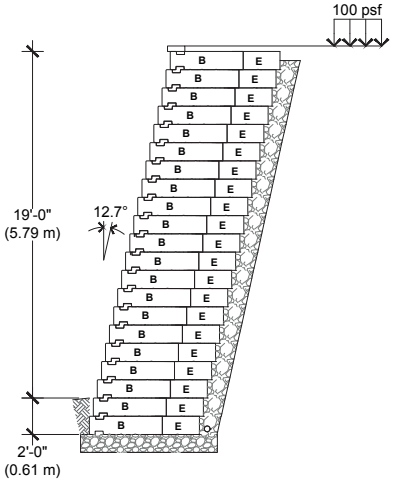
19 ft (5.79 m) Total Height
B: 2
BE: 17



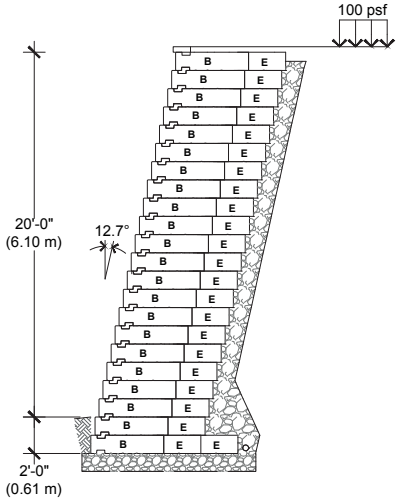
20 ft (6.10 m) Total Height
BE: 20



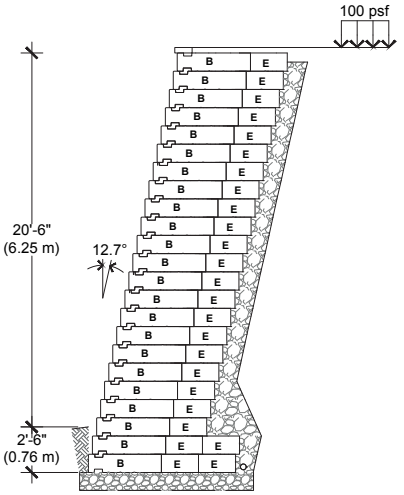
21 ft (6.40 m) Total Height
BE: 21



22 ft (6.71 m) Total Height
B: 21
BE: 1



23 ft (7.01 m) Total Height
BE: 21
BEE: 2



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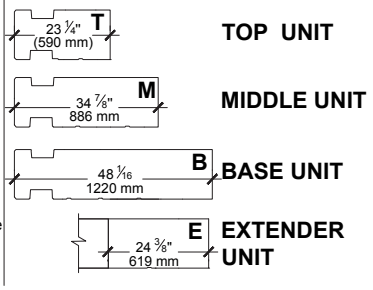
LEGEND :



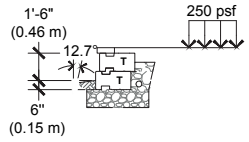
DESIGN CHART
SKYSCRAPER
INCLINED POSITION

ALLOWABLE STRESS DESIGN

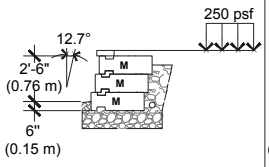
FINE SANDS AND SILTY SANDS (Ø=30°, γ = 120 pcf)

CASE N° 7 :
250 psf Surcharge
No Backslope
No Toe Slope

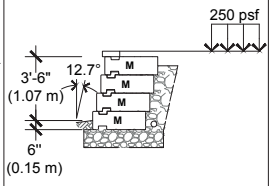
2 ft (0.61 m) Total Height
T: 2



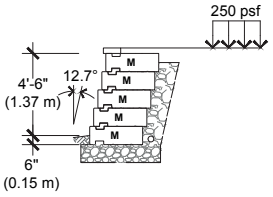
3 ft (0.91 m) Total Height
M: 3



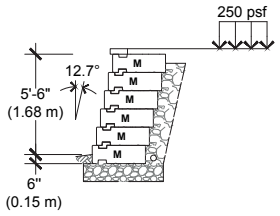
4 ft (1.22 m) Total Height
M: 4



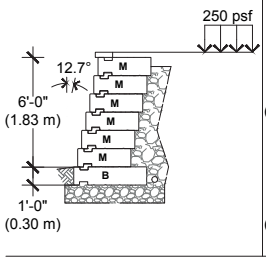
5 ft (1.52 m) Total Height
M: 5



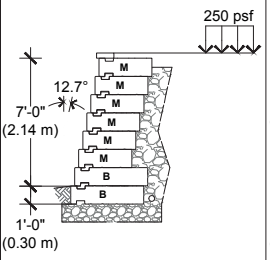
6 ft (1.83 m) Total Height
M: 6



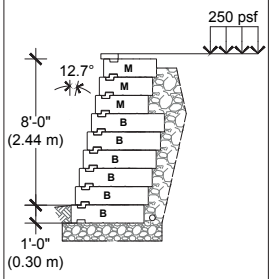
7 ft (2.13 m) Total Height
M: 6
B: 1



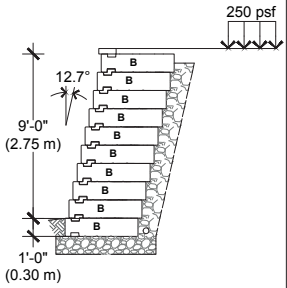
8 ft (2.44 m) Total Height
M: 6
B: 2



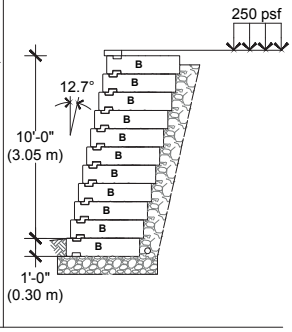
9 ft (2.74 m) Total Height
M: 3
B: 6



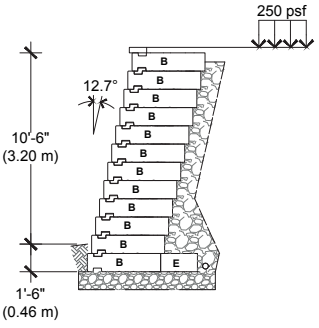
10 ft (3.05 m) Total Height
B: 10



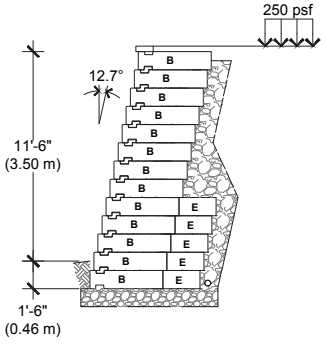
11 ft (3.35 m) Total Height
B: 11



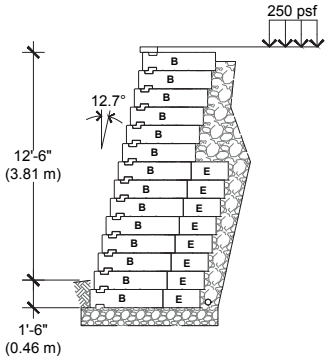
12 ft (3.66 m) Total Height
B: 11
BE: 1



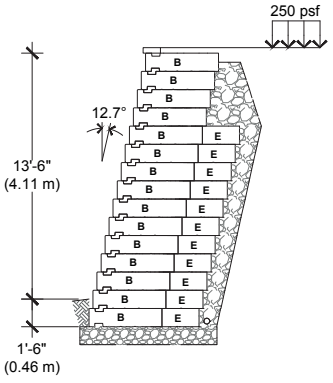
13 ft (3.96 m) Total Height
B: 8
BE: 5



14 ft (4.27 m) Total Height
B: 6
BE: 8



15 ft (4.57 m) Total
B: 4
BE: 11



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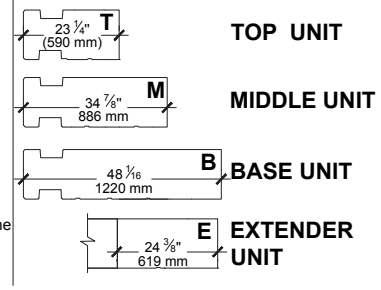


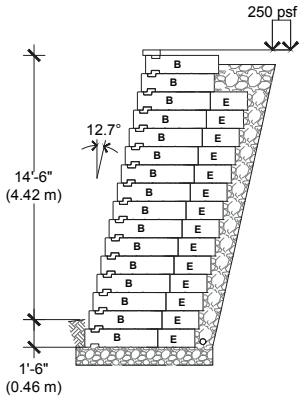
DESIGN CHART
SKYSCRAPER
INCLINED POSITION

ALLOWABLE STRESS DESIGN

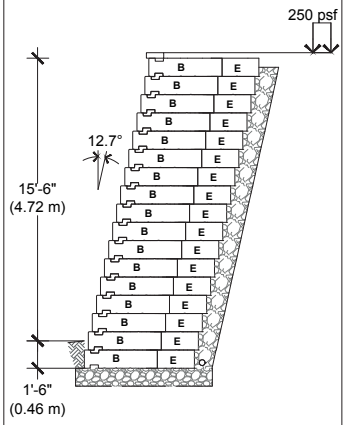
FINE SANDS AND SILTY SANDS (Ø=30°, γ = 120 pcf)

CASE N° 7 :
250 psf Surcharge
No Backslope
No Toe Slope

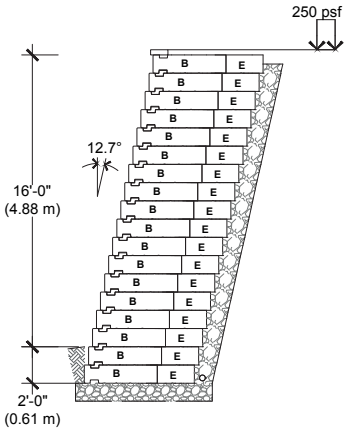
16 ft (4.88 m) Total Height
B: 2
BE: 14



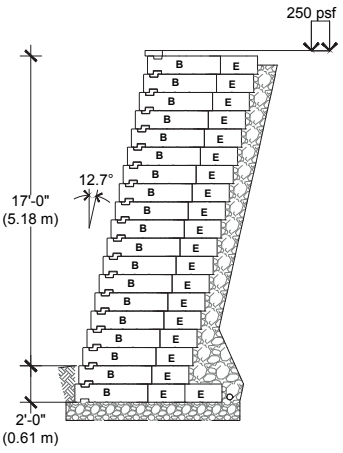
17 ft (5.18 m) Total Height
BE: 17



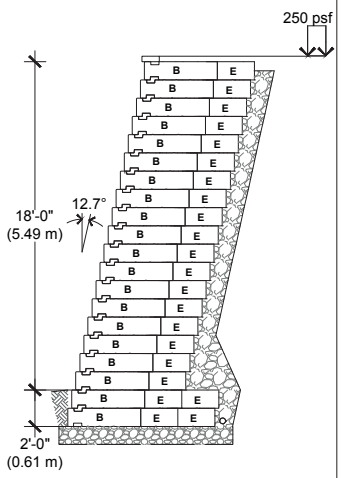
18 ft (5.49 m) Total Height
BE: 18



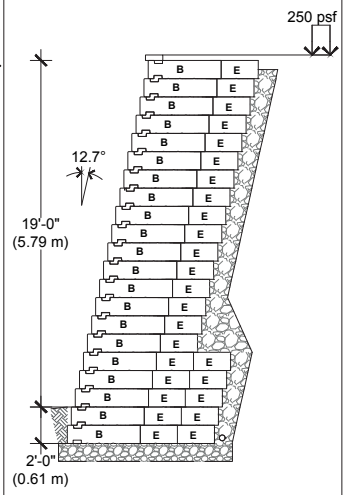
19 ft (5.79 m) Total Height
BE: 18
BEE: 1



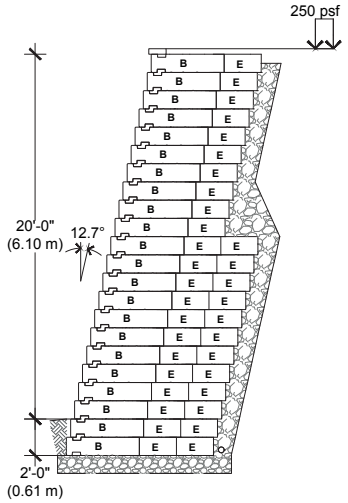
20 ft (6.10 m) Total Height
BE: 18
BEE: 2



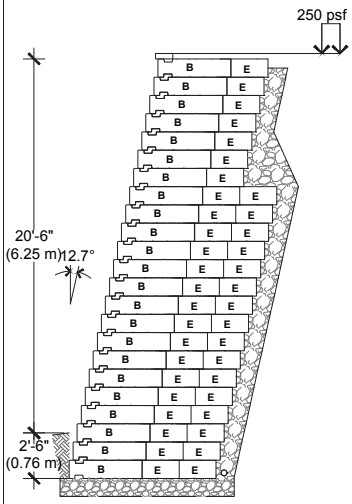
21 ft (6.40 m) Total Height
BE: 16
BEE: 5



22 ft (6.71 m) Total Height
BE: 10
BEE: 12



23 ft (7.01 m) Total Height
BE: 7
BEE: 16



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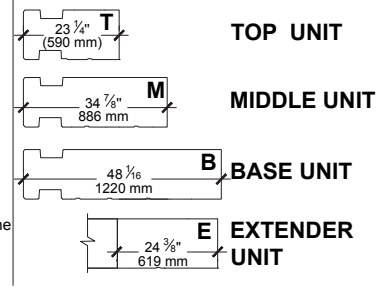


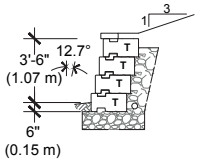
DESIGN CHART
SKYSCRAPER
INCLINED POSITION

ALLOWABLE STRESS DESIGN

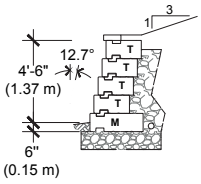
FINE SANDS AND SILTY SANDS (Ø=30°, γ = 120 pcf)

CASE N° 8 :
No Surcharge
Backslope 1V : 3H
No Toe Slope

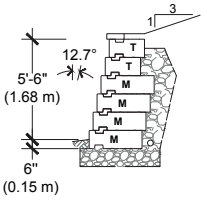
4 ft (1.22 m) Total Height
T: 4



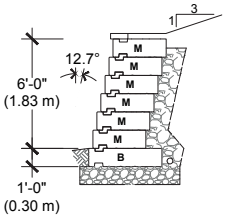
5 ft (1.52 m) Total Height
T: 4
M: 1



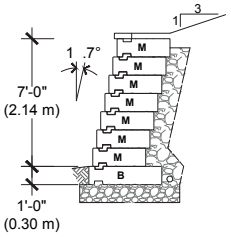
6 ft (1.83 m) Total Height
T: 2
M: 4



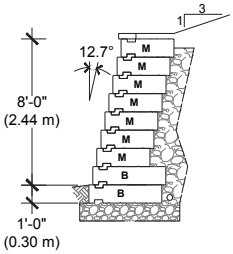
7 ft (2.13 m) Total Height
M: 6
B: 1



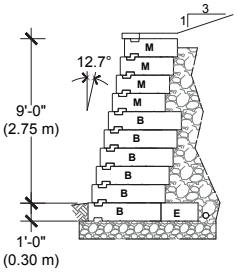
8 ft (2.44 m) Total Height
M: 7
B: 1



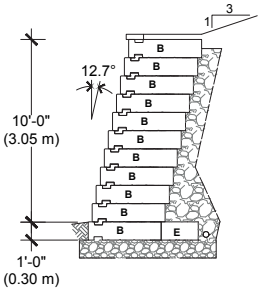
9 ft (2.74 m) Total Height
M: 7
B: 2



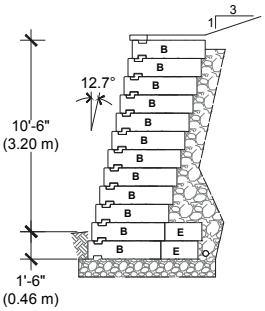
10 ft (3.05 m) Total Height
M: 4
B: 5
BE: 1



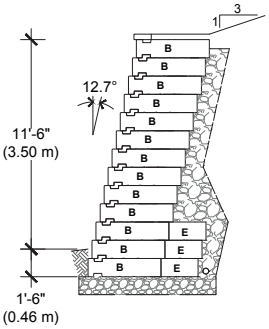
11 ft (3.35 m) Total Height
B: 10
BE: 1



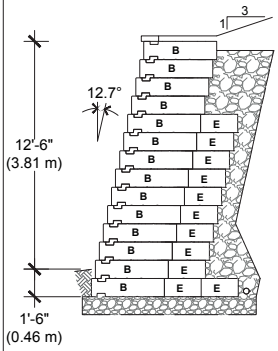
12 ft (3.66 m) Total Height
B: 10
BE: 2



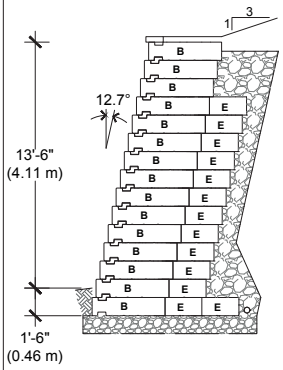
13 ft (3.96 m) Total Height
B: 10
BE: 3



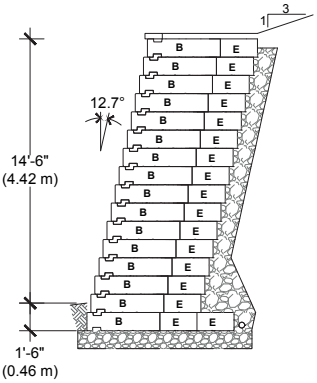
14 ft (4.27 m) Total Height
B: 4
BE: 9
BEE: 1



15 ft (4.57 m) Total
B: 3
BE: 11
BEE: 1



16 ft (4.88 m) Total Height
BE: 15
BEE: 1



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6. The seismic analysis is not included.
7. The design charts do not apply to tiered walls.
8. The charts assume that the walls are constructed in accordance with Techo-Bloc specifications, good construction practice and an adequate drainage system.
9. Engineering judgement should be used when interpolating between heights.
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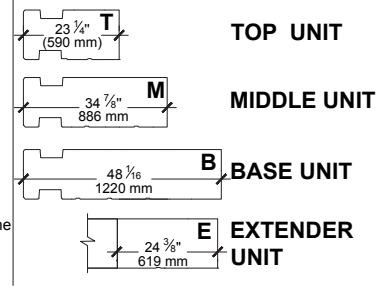
11. For further information, please contact our technical service department.

LEGEND :

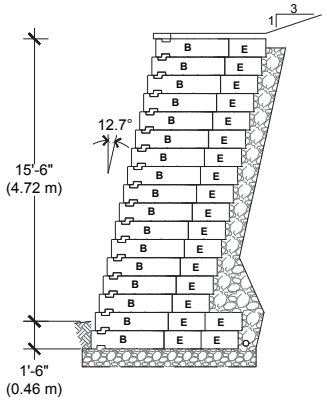


ALLOWABLE STRESS DESIGN

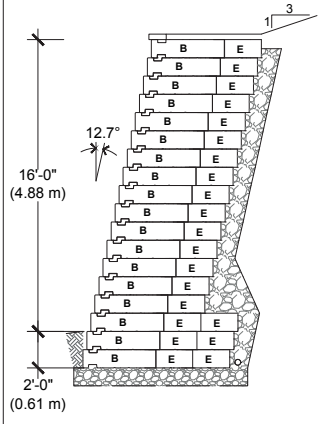
FINE SANDS AND SILTY SANDS (Ø=30°, γ = 120 pcf)

CASE N° 8 :
No Surcharge
Backslope 1V : 3H
No Toe Slope

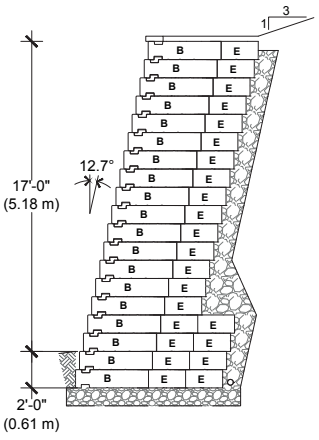
17 ft (5.18 m) Total Height
BE: 15
BEE: 2



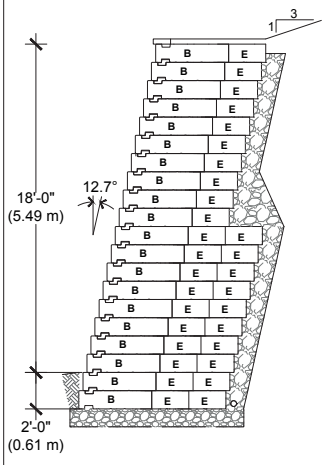
18 ft (5.49 m) Total Height
BE: 15
BEE: 3



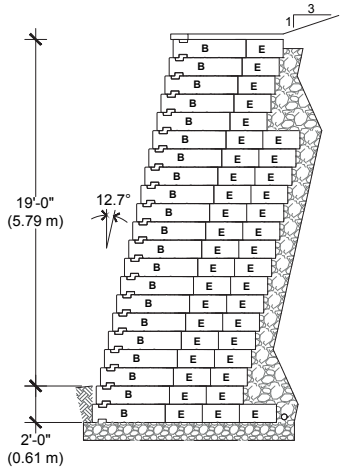
19 ft (5.79 m) Total Height
BE: 15
BEE: 4



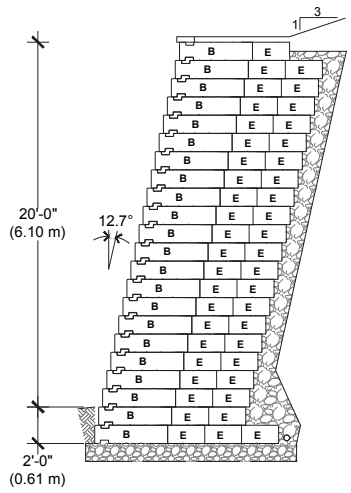
20 ft (6.10 m) Total Height
BE: 10
BEE: 10



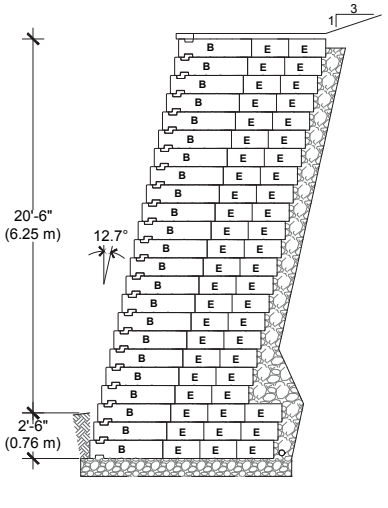
21 ft (6.40 m) Total Height
BE: 5
BEE: 15
BEE: 1



22 ft (6.71 m) Total Height
BE: 1
BEE: 20
BEE: 1



23 ft (7.01 m) Total Height
BEE: 20
BEEE: 3



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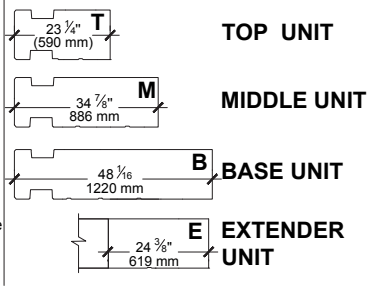
LEGEND :



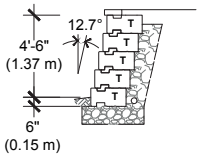
DESIGN CHART
SKYSCRAPER
INCLINED POSITION

ALLOWABLE STRESS DESIGN

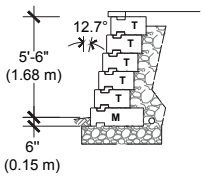
LOW PLASTICITY SILTS AND CLAYS (Ø=28°, γ = 120 pcf)

CASE N° 9 :
No Surcharge
No Backslope
No Toe Slope

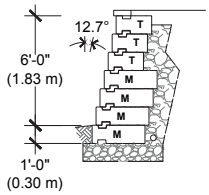
5 ft (1.52 m) Total Height
T: 5



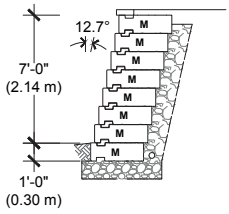
6 ft (1.83 m) Total Height
T: 5
M: 1



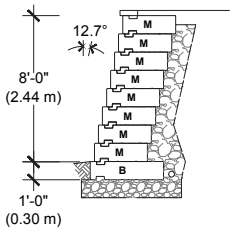
7 ft (2.13 m) Total Height
T: 3
M: 4



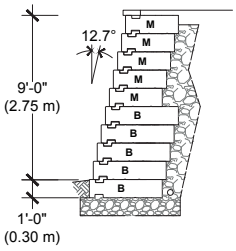
8 ft (2.44 m) Total Height
M: 8



9 ft (2.74 m) Total Height
M: 8
B: 1



10 ft (3.05 m) Total Height
M: 5
B: 5



FOR TALLER WALLS AND POOR SOIL CONDITIONS : A PROFESSIONAL ENGINEER SHOULD EVALUATE DESIGN

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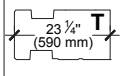
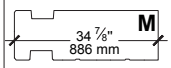
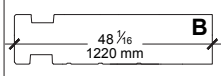
LEGEND :



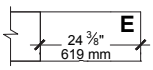
TOP UNIT



MIDDLE UNIT



BASE UNIT



EXTENDER UNIT

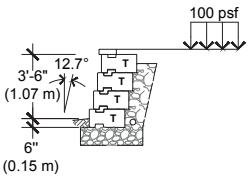
DESIGN CHART
SKYSCRAPER
INCLINED POSITION

ALLOWABLE STRESS DESIGN

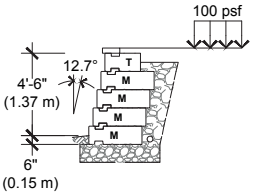
LOW PLASTICITY SILTS AND CLAYS (Ø=28°, γ = 120 pcf)

CASE N° 10 :
100 psf Surcharge
No Backslope
No Toe Slope

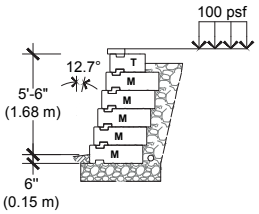
4 ft (1.22 m) Total Height
T: 4



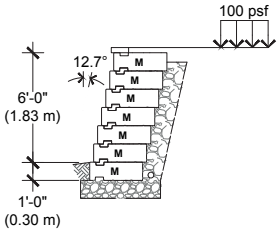
5 ft (1.52 m) Total Height
T: 1
M: 4



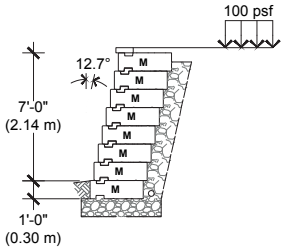
6 ft (1.83 m) Total Height
T: 1
M: 5



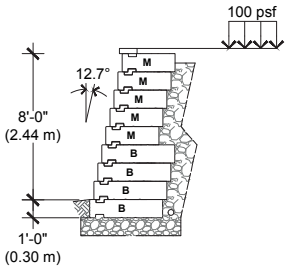
7 ft (2.13 m) Total Height
M: 7



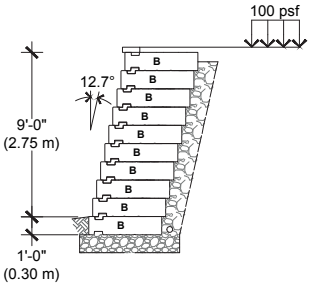
8 ft (2.44 m) Total Height
M: 8



9 ft (2.74 m) Total Height
M: 5
B: 4



10 ft (3.05 m) Total Height
B: 10



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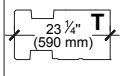
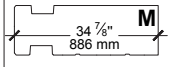
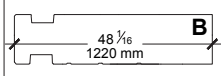
LEGEND :



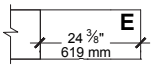
TOP UNIT



MIDDLE UNIT



BASE UNIT



EXTENDER UNIT

Techo-Bloc

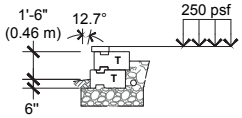
DESIGN CHART
SKYSCRAPER
INCLINED POSITION

ALLOWABLE STRESS DESIGN

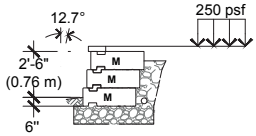
LOW PLASTICITY SILTS AND CLAYS (Ø=28°, γ = 120 pcf)

CASE N° 11 :
250 psf Surcharge
No Backslope
No Toe Slope

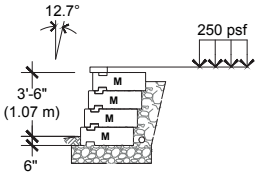
2 ft (0.61 m) Total Height
T: 2



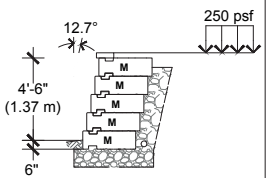
3 ft (0.91 m) Total Height
M: 3



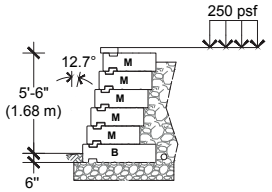
4 ft (1.22 m) Total Height
M: 4



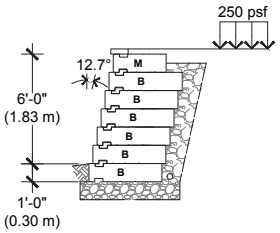
5 ft (1.52 m) Total Height
M: 5



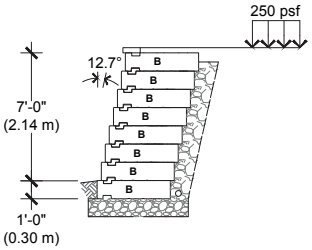
6 ft (1.83 m) Total Height
M: 5
B: 1



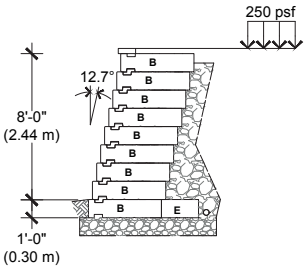
7 ft (2.13 m) Total Height
M: 1
B: 6



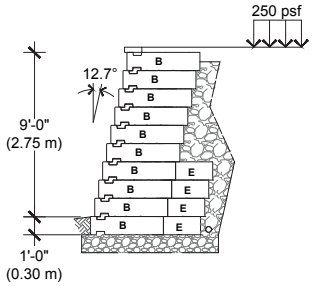
8 ft (2.44 m) Total Height
B: 8



9 ft (2.74 m) Total Height
B: 8
BE: 1



10 ft (3.05 m) Total Height
B: 6
BE: 4



FOR TALLER WALLS AND POOR SOIL CONDITIONS : A PROFESSIONAL ENGINEER SHOULD EVALUATE DESIGN

1. The information contained in the design charts is supplied for information purposes only and as such should only be used for preliminary designs.
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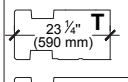
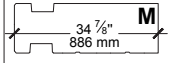
11. For further information, please contact our technical service department.

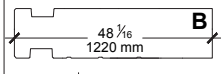
LEGEND :



TOP UNIT



MIDDLE UNIT



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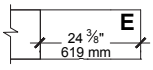


EXTENDER UNIT

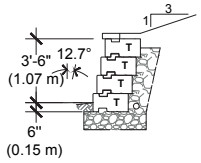
DESIGN CHART
SKYSCRAPER
INCLINED POSITION

ALLOWABLE STRESS DESIGN

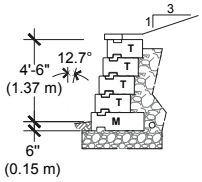
LOW PLASTICITY SILTS AND CLAYS (Ø=28°, γ = 120 pcf)

CASE N° 12 :
No Surcharge
Backslope 1V : 3H
No Toe Slope

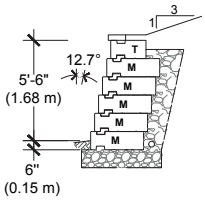
4 ft (1.22 m) Total Height
T: 4



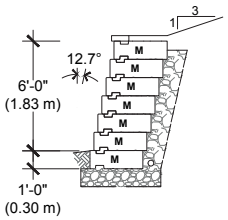
5 ft (1.52 m) Total Height
T: 4
M: 1



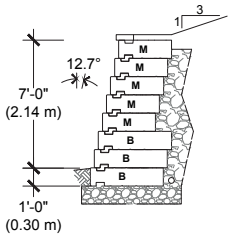
6 ft (1.83 m) Total Height
T: 1
M: 5



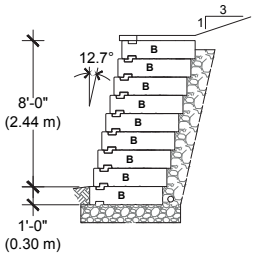
7 ft (2.13 m) Total Height
M: 7



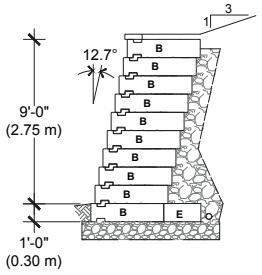
8 ft (2.44 m) Total Height
M: 5
B: 3



9 ft (2.74 m) Total Height
B: 9



10 ft (3.05 m) Total Height
B: 9
BE: 1



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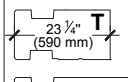
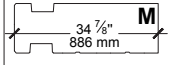
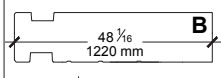
LEGEND :



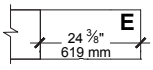
TOP UNIT



MIDDLE UNIT



BASE UNIT



EXTENDER UNIT

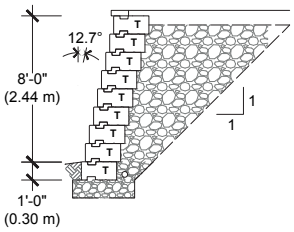
DESIGN CHART
SKYSCRAPER
INCLINED POSITION

ALLOWABLE STRESS DESIGN

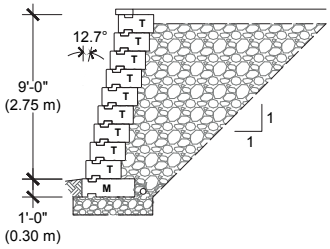
CLEAR CRUSHED STONE BACKFILL (Ø=38°, γ = 125 pcf)
OVER POOR SOIL CONDITIONS (Ø=28°, γ = 120 pcf)

CASE N° 13 :
No Surcharge
No Backslope
No Toe Slope

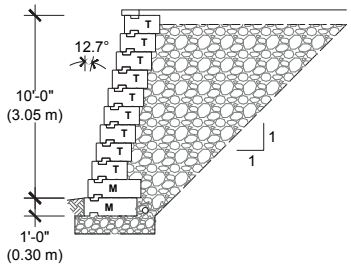
9 ft (2.74 m) Total Height
T: 9



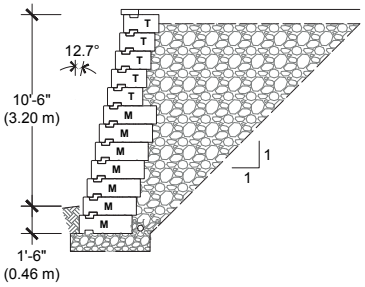
10 ft (3.05 m) Total Height
T: 9
M: 1



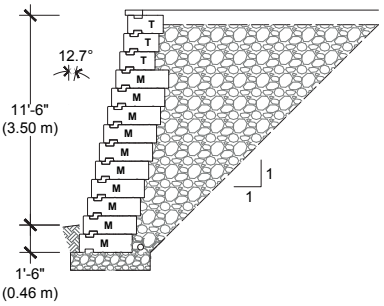
11 ft (3.35 m) Total Height
T: 9
M: 2



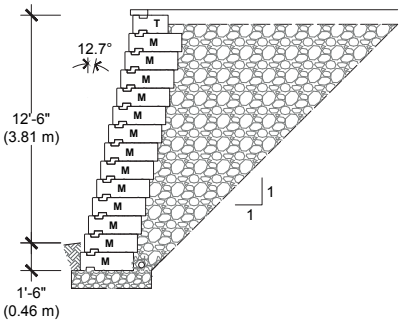
12 ft (3.66 m) Total Height
T: 5
M: 7



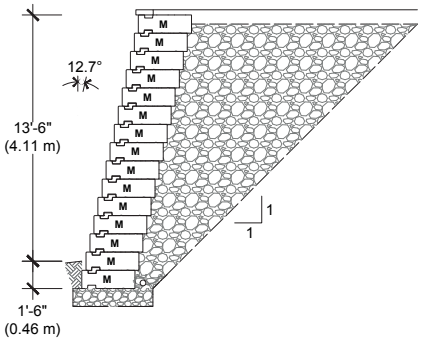
13 ft (3.96 m) Total Height
T: 3
M: 10



14 ft (4.27 m) Total Height
T: 1
M: 13



15 ft (4.57 m) Total
M: 15



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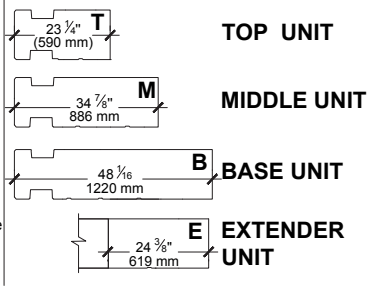
LEGEND :

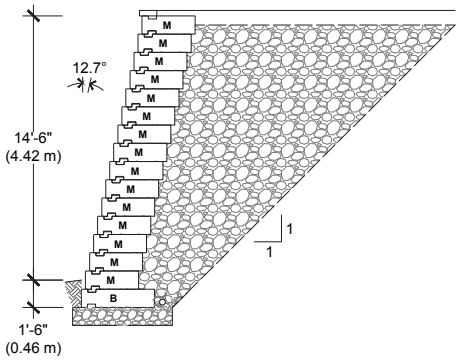


ALLOWABLE STRESS DESIGN

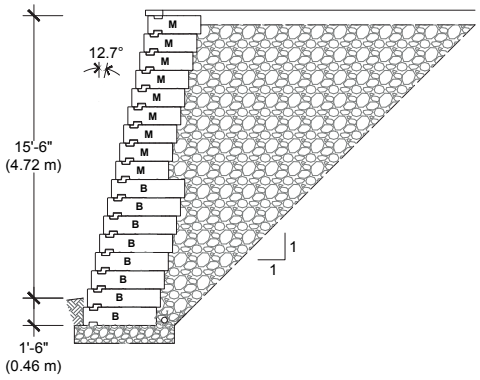
CLEAR CRUSHED STONE BACKFILL (Ø=38°, γ = 125 pcf)
OVER POOR SOIL CONDITIONS (Ø=28°, γ = 120 pcf)

CASE N° 13 :
No Surcharge
No Backslope
No Toe Slope

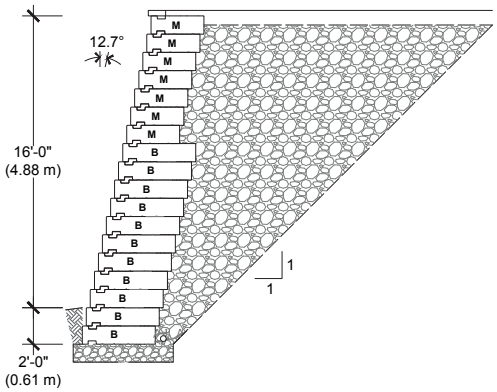
16 ft (4.88 m) Total Height
M: 15
B: 1



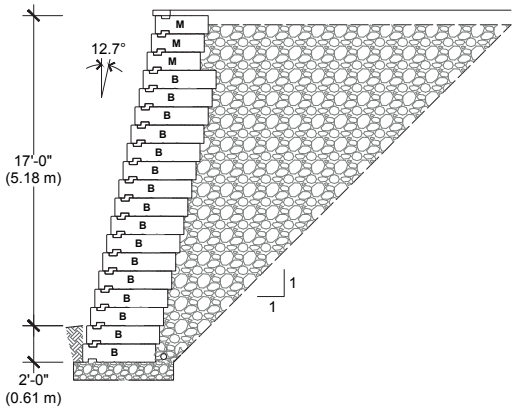
17 ft (5.18 m) Total Height
M: 9
B: 8



18 ft (5.49 m) Total Height
M: 7
B: 11



19 ft (5.79 m) Total Height
M: 3
B: 16



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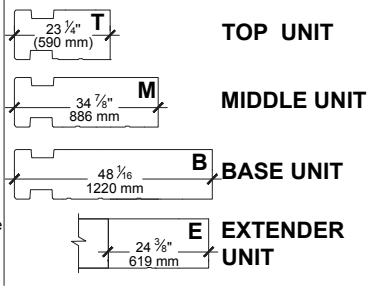
LEGEND :



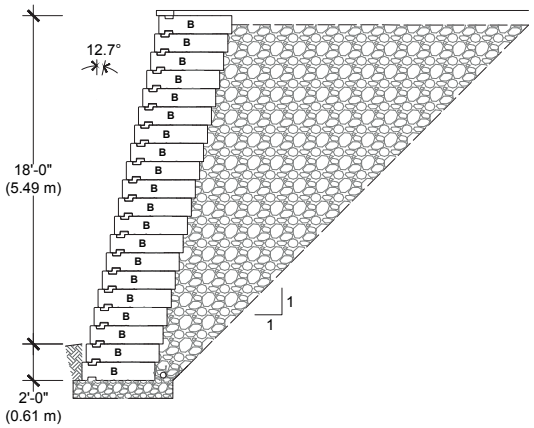
DESIGN CHART
SKYSCRAPER
INCLINED POSITION

ALLOWABLE STRESS DESIGN

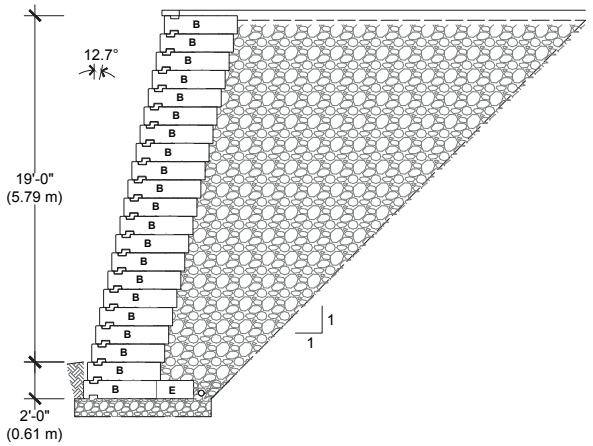
CLEAR CRUSHED STONE BACKFILL (Ø=38°, γ = 125 pcf)
OVER POOR SOIL CONDITIONS (Ø=28°, γ = 120 pcf)

CASE N° 13 :
No Surcharge
No Backslope
No Toe Slope

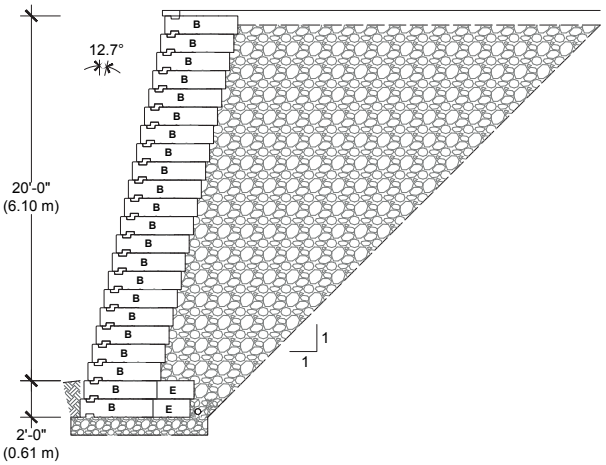
20 ft (6.10 m) Total Height
B: 20



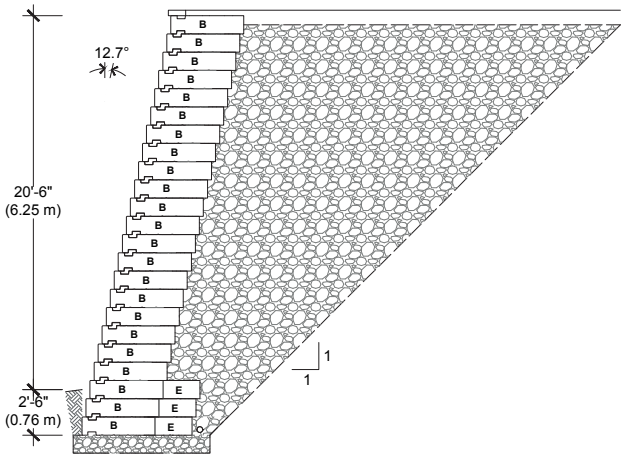
21 ft (6.40 m) Total Height
B: 20
BE: 1



22 ft (6.71 m) Total Height
B: 20
BE: 2



23 ft (7.01 m) Total Height
B: 20
BE: 3



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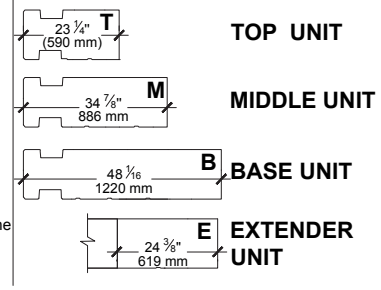
LEGEND :



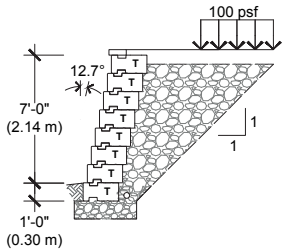
DESIGN CHART
SKYSCRAPER
INCLINED POSITION

ALLOWABLE STRESS DESIGN

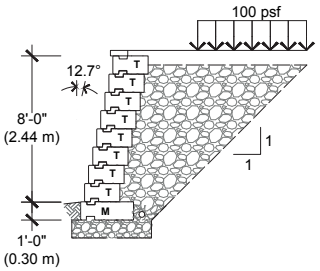
CLEAR CRUSHED STONE BACKFILL (Ø=38°, γ = 125 pcf)
OVER POOR SOIL CONDITIONS (Ø=28°, γ = 120 pcf)

CASE N° 14 :
100 psf Surcharge
No Backslope
No Toe Slope

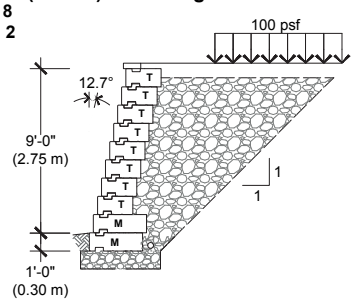
8 ft (2.44 m) Total Height
T: 8



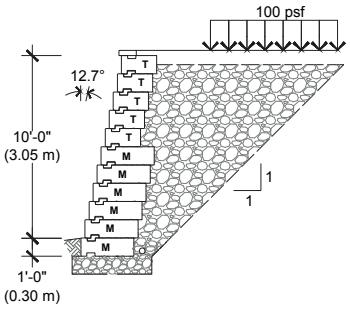
9 ft (2.74 m) Total Height
T: 8
M: 1



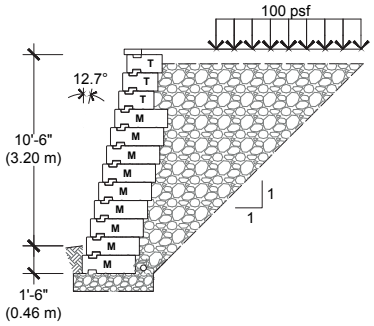
10 ft (3.05 m) Total Height
T: 8
M: 2



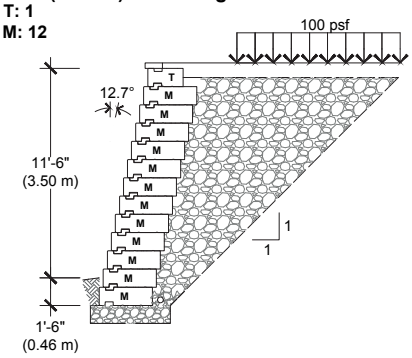
11 ft (3.35 m) Total Height
T: 5
M: 6



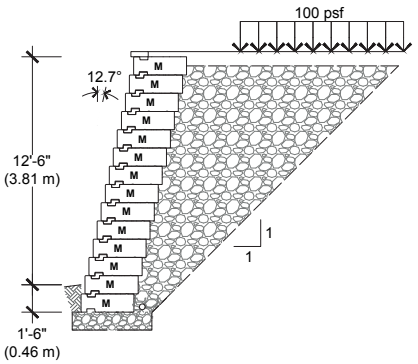
12 ft (3.66 m) Total Height
T: 3
M: 9



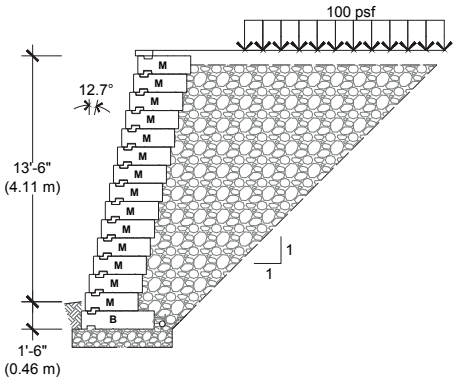
13 ft (3.96 m) Total Height
T: 1
M: 12



14 ft (4.27 m) Total Height
M: 14



15 ft (4.57 m) Total
M: 14
B: 1



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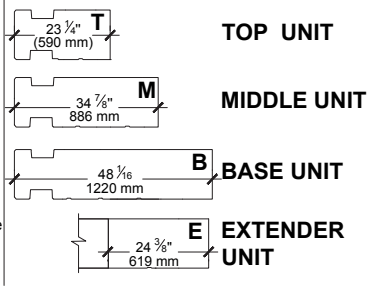


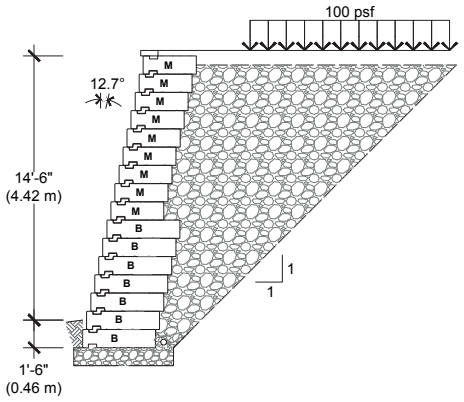
DESIGN CHART
SKYSCRAPER
INCLINED POSITION

ALLOWABLE STRESS DESIGN

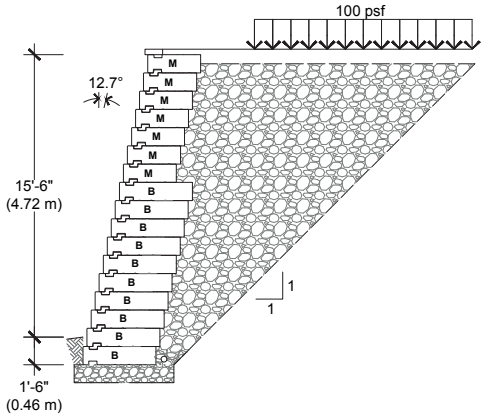
CLEAR CRUSHED STONE BACKFILL (Ø=38°, γ = 125 pcf)
OVER POOR SOIL CONDITIONS (Ø=28°, γ = 120 pcf)

CASE N° 14 :
100 psf Surcharge
No Backslope
No Toe Slope

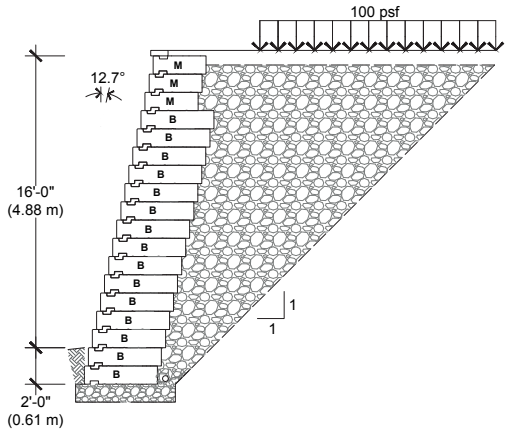
16 ft (4.88 m) Total Height
M: 9
B: 7



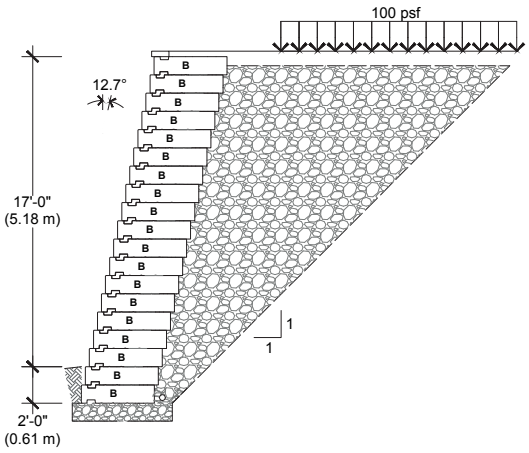
17 ft (5.18 m) Total Height
M: 7
B: 10



18 ft (5.49 m) Total Height
M: 3
B: 15



19 ft (5.79 m) Total Height
B: 19



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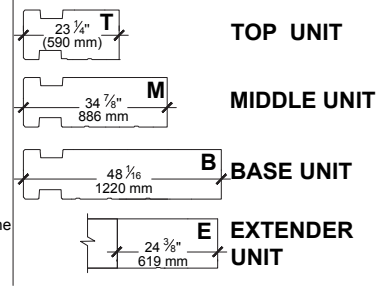
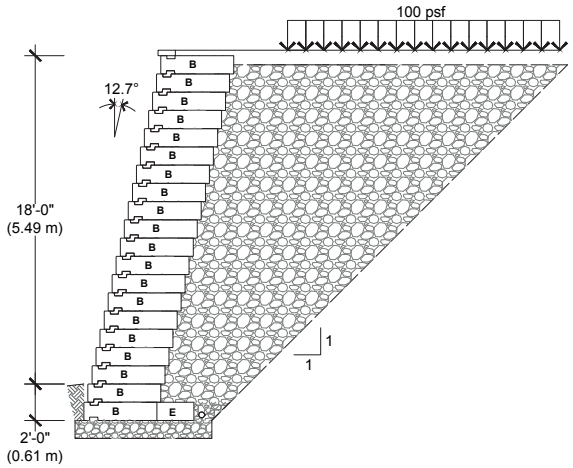


ALLOWABLE STRESS DESIGN

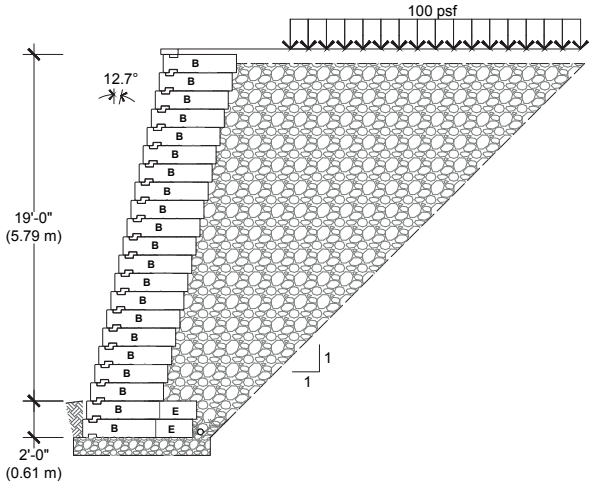
CLEAR CRUSHED STONE BACKFILL (Ø=38°, γ = 125 pcf)
OVER POOR SOIL CONDITIONS (Ø=28°, γ = 120 pcf)

CASE N° 14 :
100 psf Surcharge
No Backslope
No Toe Slope

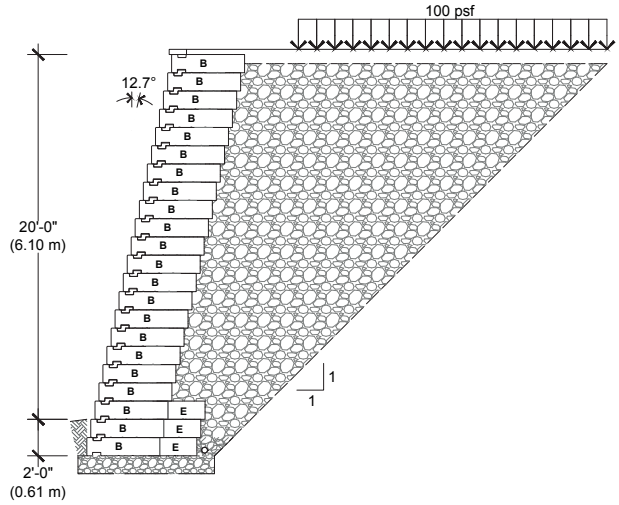
20 ft (6.10 m) Total Height
B: 19
BE: 1



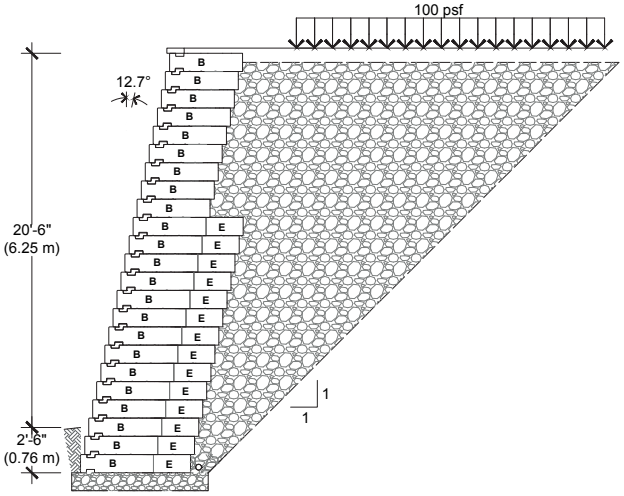
21 ft (6.40 m) Total Height
B: 19
BE: 2



22 ft (6.71 m) Total Height
B: 19
BE: 3



23 ft (7.01 m) Total Height
B: 9
BE: 14



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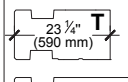
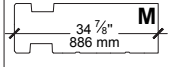
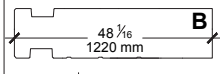


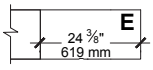
TOP UNIT



MIDDLE UNIT



BASE UNIT



EXTENDER UNIT

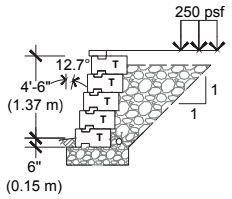
DESIGN CHART
SKYSCRAPER
INCLINED POSITION

ALLOWABLE STRESS DESIGN

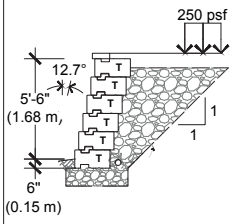
CLEAR CRUSHED STONE BACKFILL (Ø=38°, γ = 125 pcf)
OVER POOR SOIL CONDITIONS (Ø=28°, γ = 120 pcf)

CASE N° 15 :
250 psf Surcharge
No Backslope
No Toe Slope

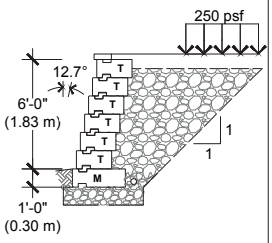
5 ft (1.52 m) Total Height
T: 5



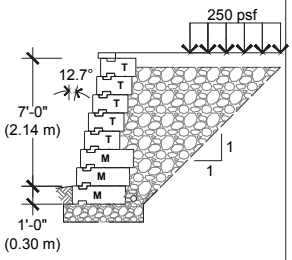
6 ft (1.83 m) Total Height
T: 6



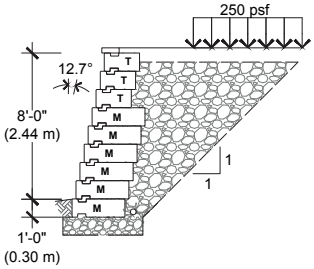
7 ft (2.13 m) Total Height
T: 6
M: 1



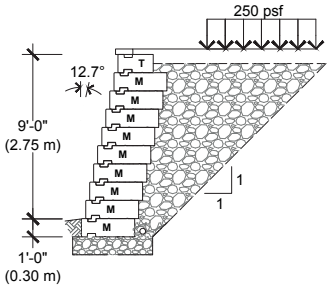
8 ft (2.44 m) Total Height
T: 5
M: 3



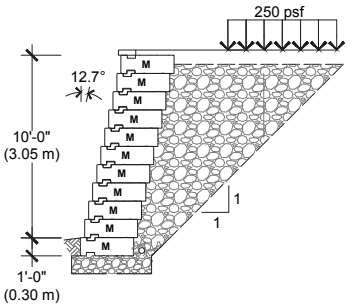
9 ft (2.74 m) Total Height
T: 3
M: 6



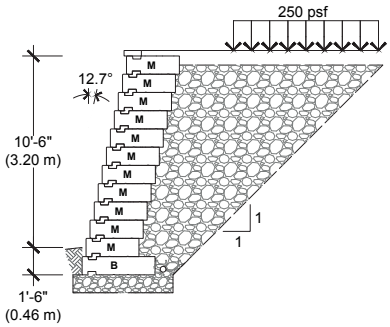
10 ft (3.05 m) Total Height
T: 1
M: 9



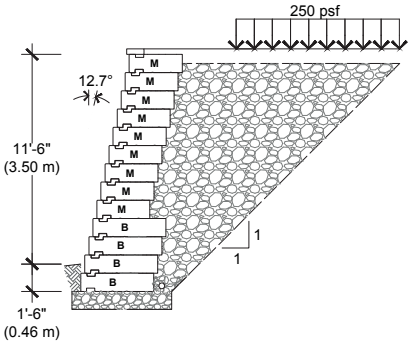
11 ft (3.35 m) Total Height
M: 11



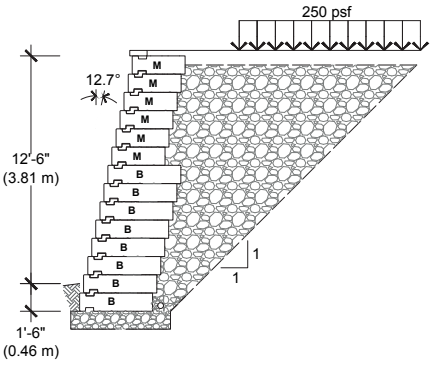
12 ft (3.66 m) Total Height
M: 11
B: 1



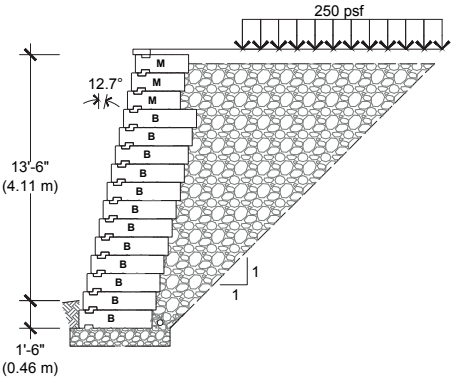
13 ft (3.96 m) Total Height
M: 9
B: 4



14 ft (4.27 m) Total Height
M: 6
B: 8



15 ft (4.57 m) Total
M: 3
B: 12



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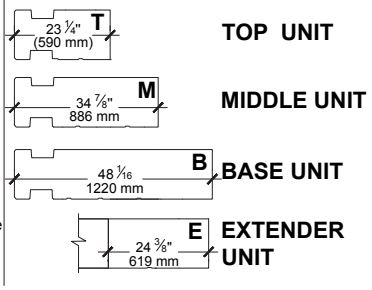

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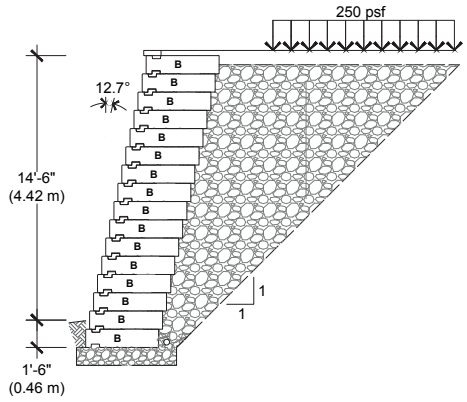
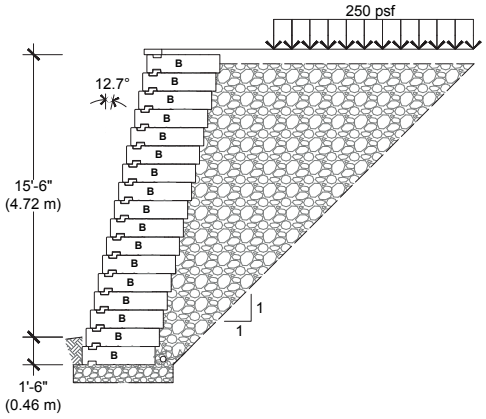
OVER POOR SOIL CONDITIONS (Ø=28°, γ = 120 pcf)

CASE N° 15 :
250 psf Surcharge
No Backslope
No Toe Slope

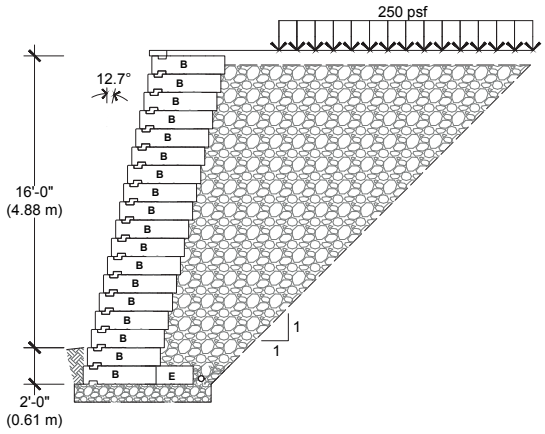
16 ft (4.88 m) Total Height
B: 16



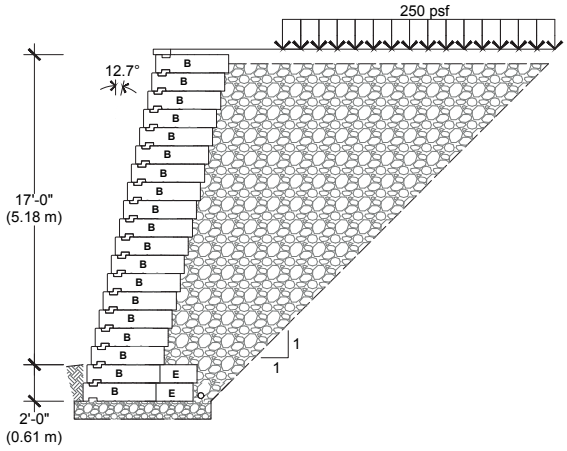
17 ft (5.18 m) Total Height
B: 17



18 ft (5.49 m) Total Height
B: 17
BE: 1



19 ft (5.79 m) Total Height
B: 17
BE: 2



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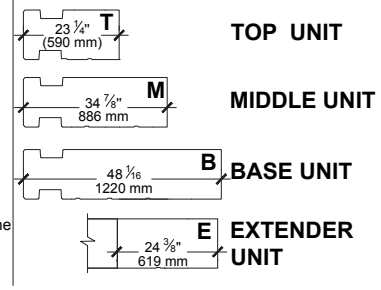

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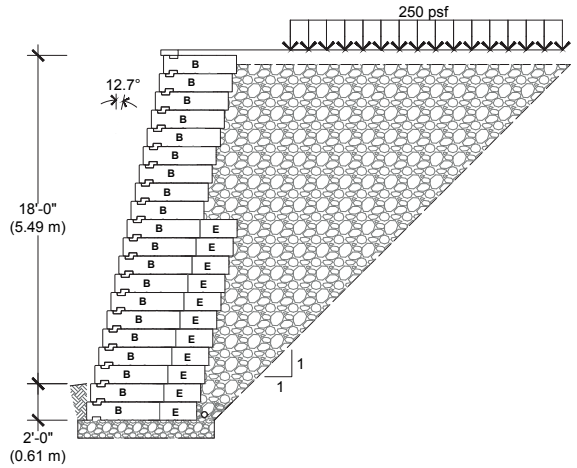
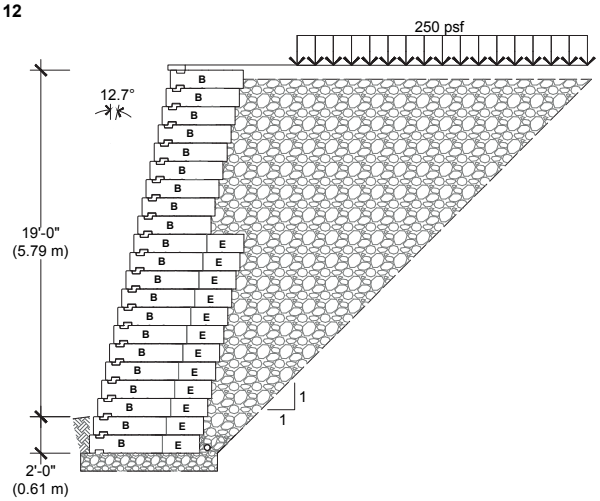
No Backslope
No Toe Slope

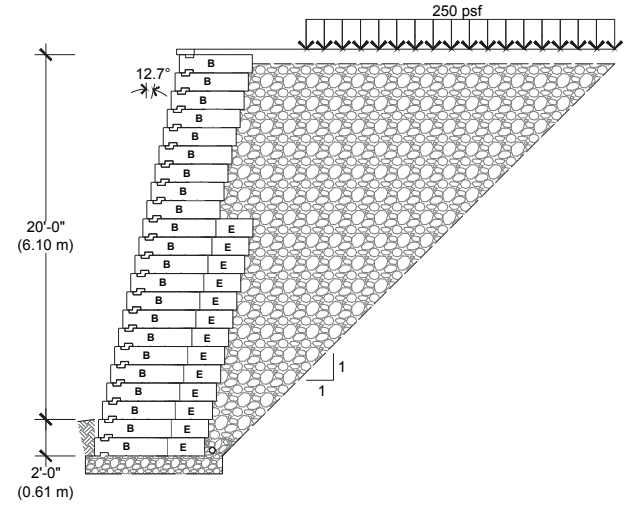
20 ft (6.10 m) Total Height
B: 9
BE: 11



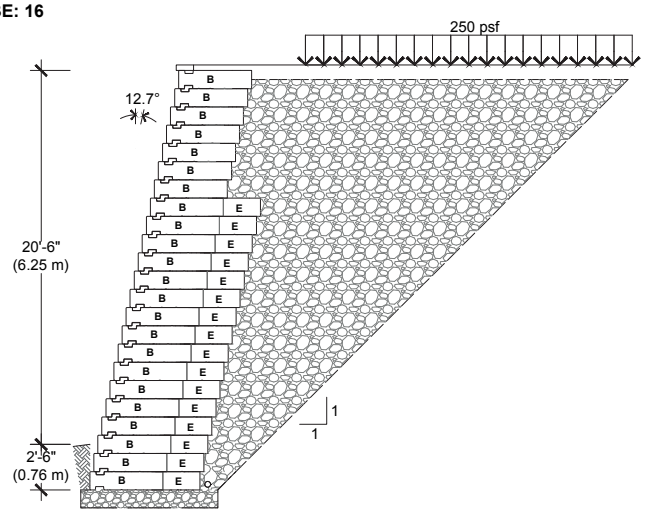
21 ft (6.40 m) Total Height
B: 9
BE: 12



22 ft (6.71 m) Total Height
B: 9
BE: 13



23 ft (7.01 m) Total Height
B: 7
BE: 16



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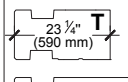
LEGEND :



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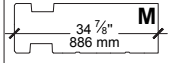
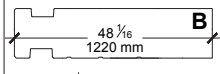


MIDDLE UNIT



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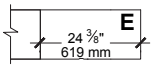


EXTENDER UNIT

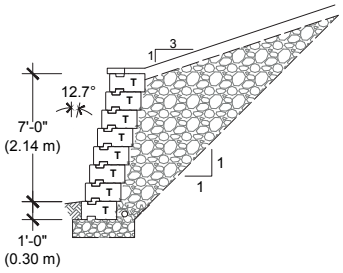
DESIGN CHART
SKYSCRAPER
INCLINED POSITION

ALLOWABLE STRESS DESIGN

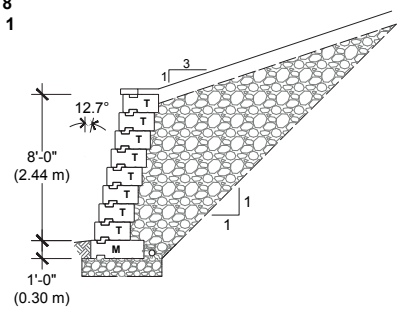
CLEAR CRUSHED STONE BACKFILL (Ø=38°, γ = 125 pcf)
OVER POOR SOIL CONDITIONS (Ø=28°, γ = 120 pcf)

CASE N° 16 :
No Surcharge
Backslope 1V : 3H
No Toe Slope

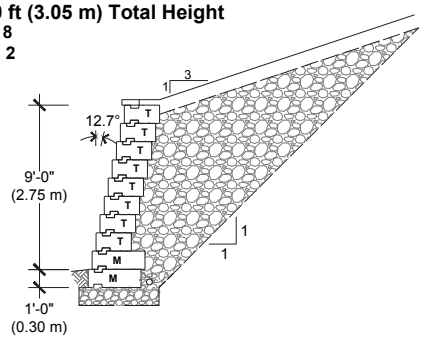
8 ft (2.44 m) Total Height
T: 8



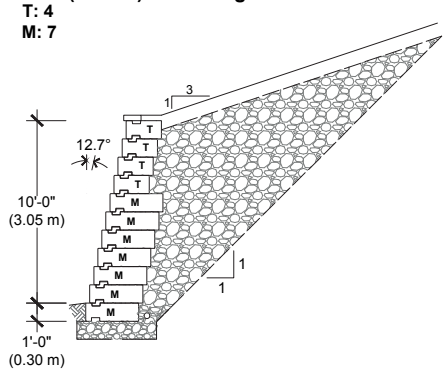
9 ft (2.74 m) Total Height
T: 8
M: 1



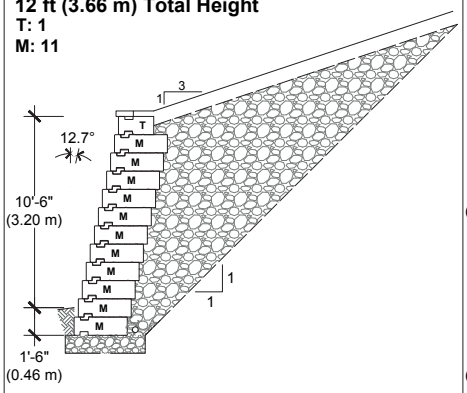
10 ft (3.05 m) Total Height
T: 8
M: 2



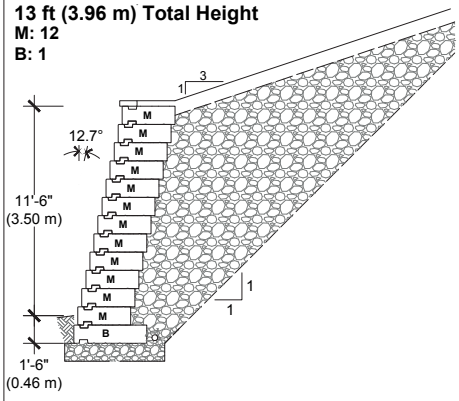
11 ft (3.35 m) Total Height
T: 4
M: 7



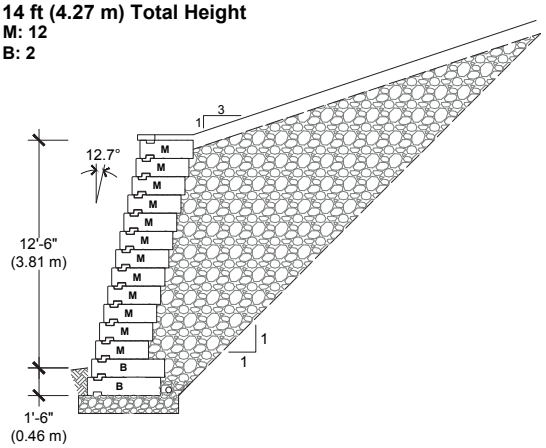
12 ft (3.66 m) Total Height
T: 1
M: 11



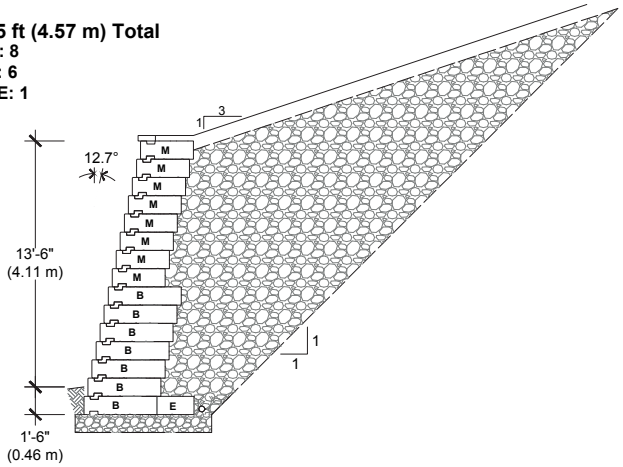
13 ft (3.96 m) Total Height
M: 12
B: 1



14 ft (4.27 m) Total Height
M: 12
B: 2



15 ft (4.57 m) Total
M: 8
B: 6
BE: 1



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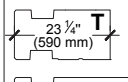
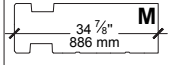
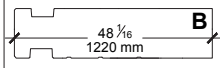


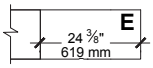
TOP UNIT



MIDDLE UNIT



BASE UNIT



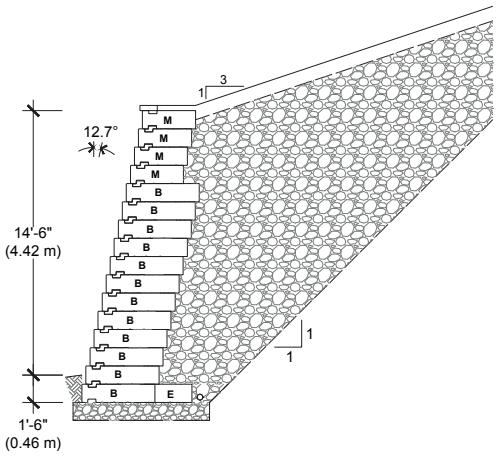
EXTENDER UNIT

ALLOWABLE STRESS DESIGN

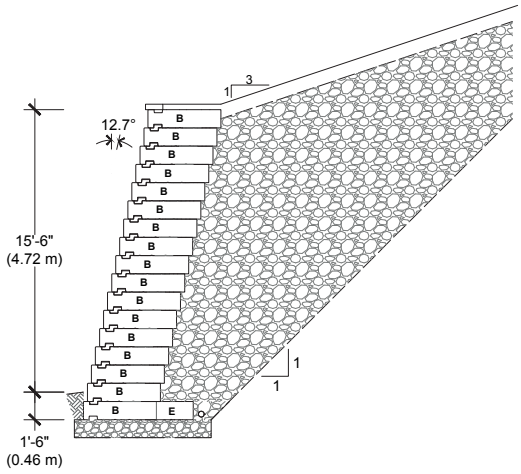
CLEAR CRUSHED STONE BACKFILL (Ø=38°, γ = 125 pcf)
OVER POOR SOIL CONDITIONS (Ø=28°, γ = 120 pcf)

CASE N° 16 :
No Surcharge
Backslope 1V : 3H
No Toe Slope

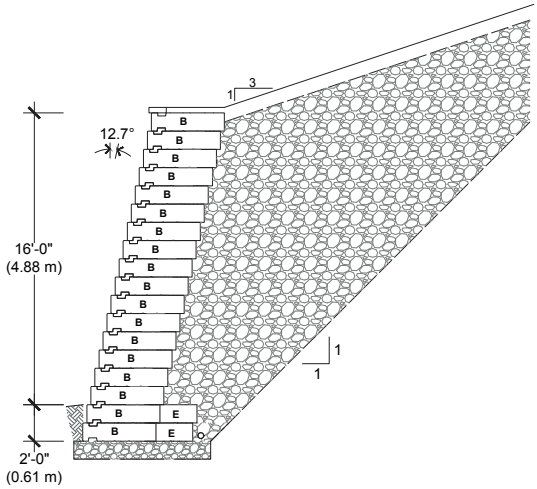
16 ft (4.88 m) Total Height
M: 4
B: 11
BE: 1



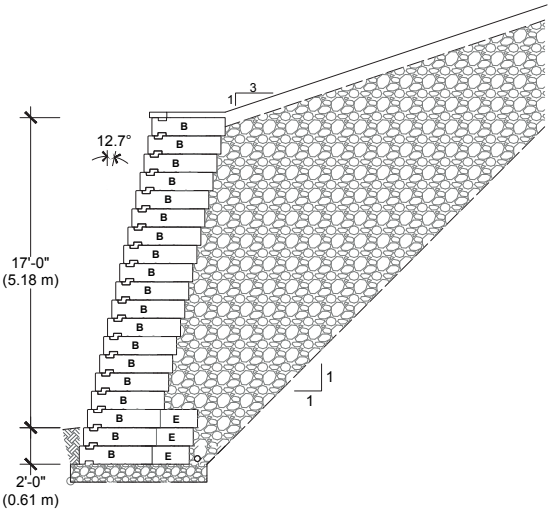
17 ft (5.18 m) Total Height
B: 16
BE: 1



18 ft (5.49 m) Total Height
B: 16
BE: 2



19 ft (5.79 m) Total Height
B: 16
BE: 3



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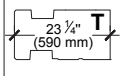
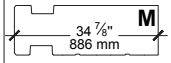
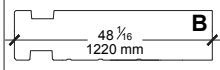
LEGEND :



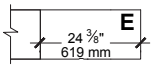
TOP UNIT



MIDDLE UNIT



BASE UNIT



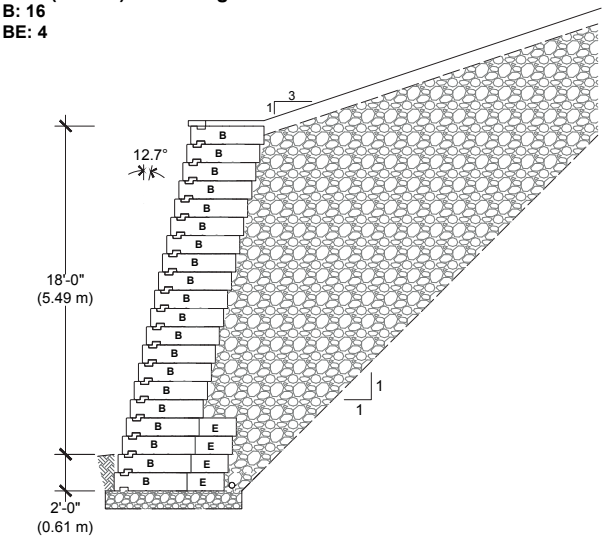
EXTENDER UNIT

ALLOWABLE STRESS DESIGN

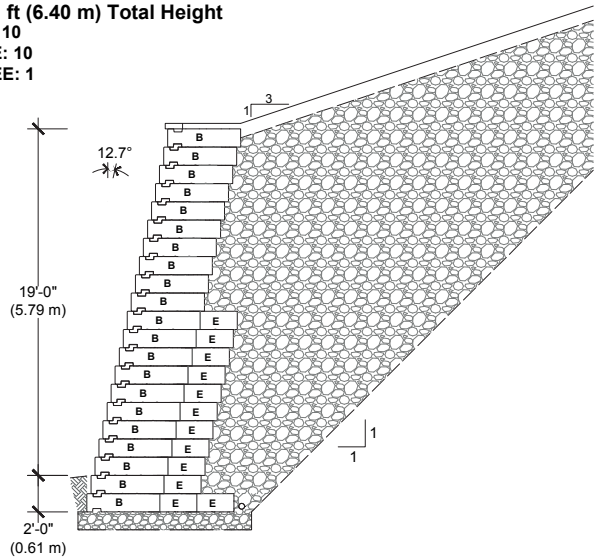
CLEAR CRUSHED STONE BACKFILL (Ø=38°, γ = 125 pcf)
OVER POOR SOIL CONDITIONS (Ø=28°, γ = 120 pcf)

CASE N° 16 :
No Surcharge
Backslope 1V : 3H
No Toe Slope

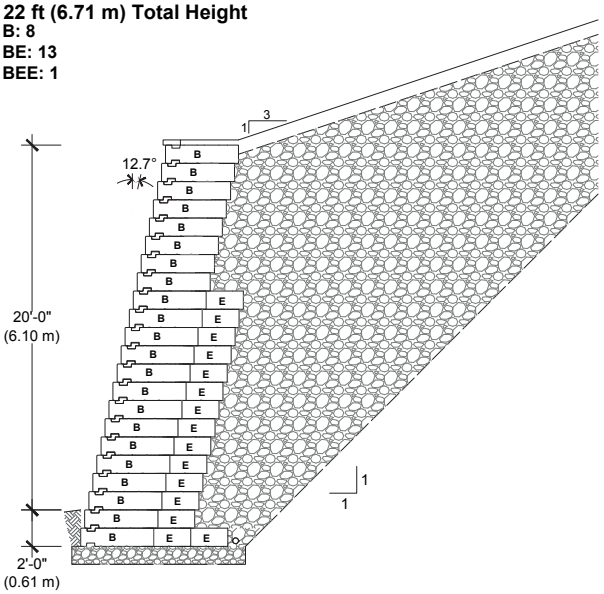
20 ft (6.10 m) Total Height
B: 16
BE: 4



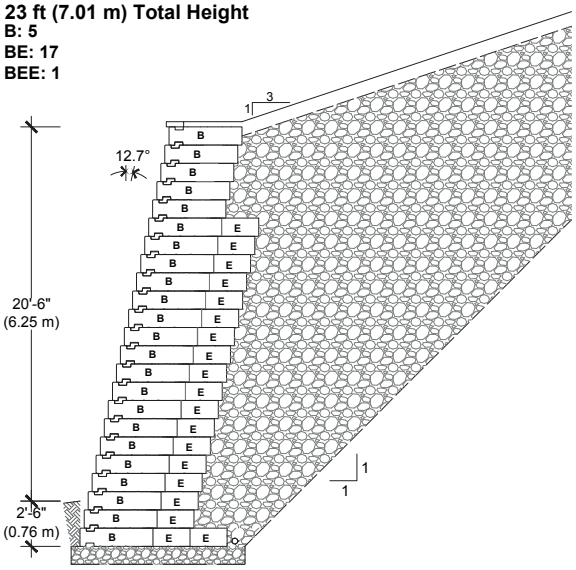
21 ft (6.40 m) Total Height
B: 10
BE: 10
BEE: 1



22 ft (6.71 m) Total Height
B: 8
BE: 13
BEE: 1



23 ft (7.01 m) Total Height
B: 5
BE: 17
BEE: 1



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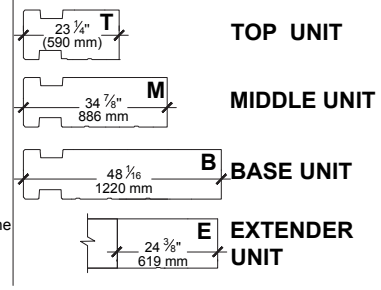
LEGEND :



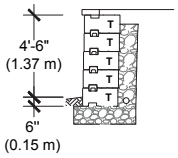
DESIGN CHART
SKYSCRAPER
NEAR VERTICAL

ALLOWABLE STRESS DESIGN

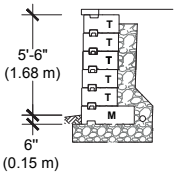
CLEAN SAND/ SAND AND GRAVEL MIXES (Ø=34°, γ = 130 pcf)

CASE N° 1 :
No Surcharge
No Backslope
No Toe Slope

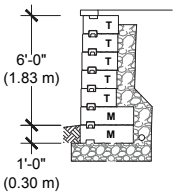
5 ft (1.52 m) Total Height
T: 5



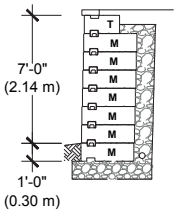
6 ft (1.83 m) Total Height
T: 5
M: 1



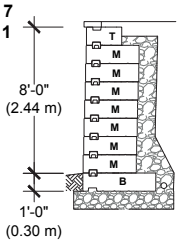
7 ft (2.13 m) Total Height
T: 5
M: 2



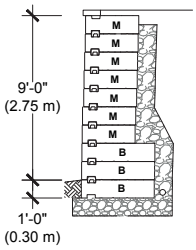
8 ft (2.44 m) Total Height
T: 1
M: 7



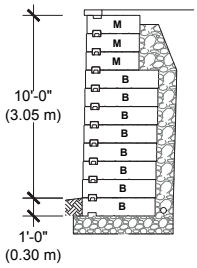
9 ft (2.74 m) Total Height
T: 1
M: 7
B: 1



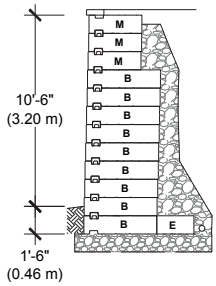
10 ft (3.05 m) Total Height
M: 7
B: 3



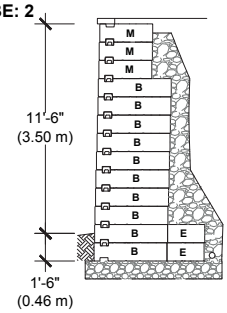
11 ft (3.35 m) Total Height
M: 3
B: 8



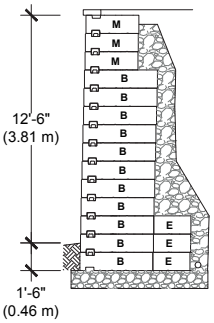
12 ft (3.66 m) Total Height
M: 3
B: 8
BE: 1



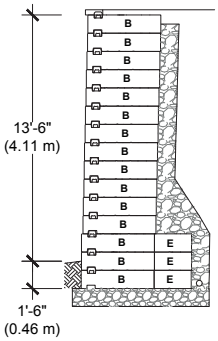
13 ft (3.96 m) Total Height
M: 3
B: 8
BE: 2



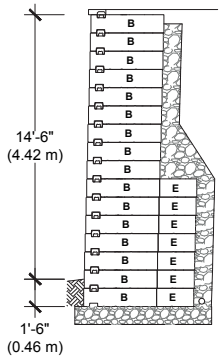
14 ft (4.27 m) Total Height
M: 3
B: 8
BE: 3



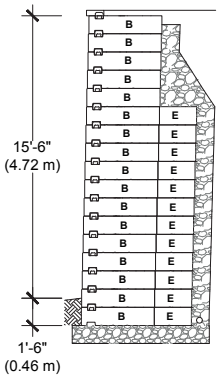
15 ft (4.57 m) Total
B: 12
BE: 3



16 ft (4.88 m) Total Height
B: 9
BE: 7



17 ft (5.18 m) Total Height
B: 5
BE: 12



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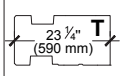
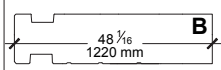
LEGEND :

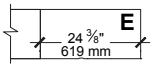


TOP UNIT

MIDDLE UNIT



BASE UNIT



EXTENDER UNIT

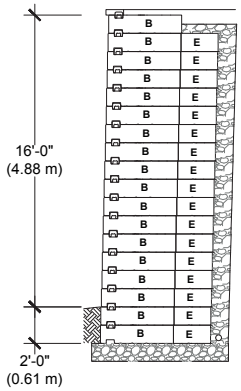
DESIGN CHART
SKYSCRAPER
NEAR VERTICAL

ALLOWABLE STRESS DESIGN

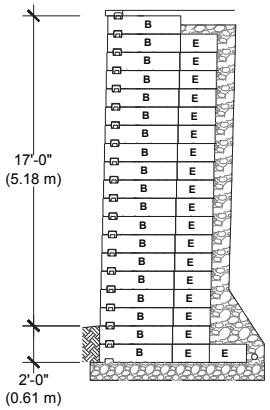
CLEAN SAND/ SAND AND GRAVEL MIXES (Ø=34°, γ = 130 pcf)

CASE N° 1 :
No Surcharge
No Backslope
No Toe Slope

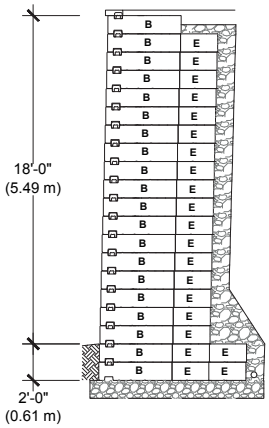
18 ft (5.49 m) Total Height
B: 1
BE: 17



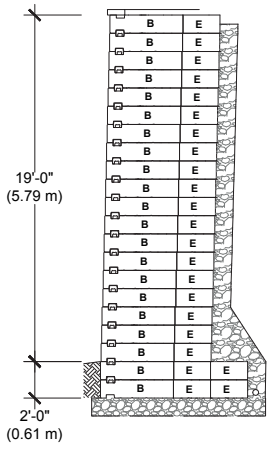
19 ft (5.79 m) Total Height
B: 1
BE: 17
BEE: 1



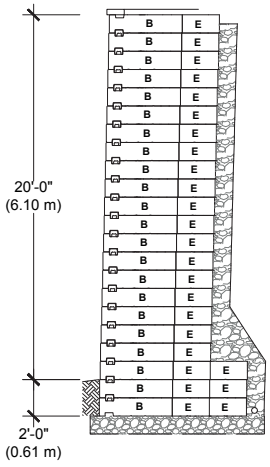
20 ft (6.10 m) Total Height
B: 1
BE: 17
BEE: 2



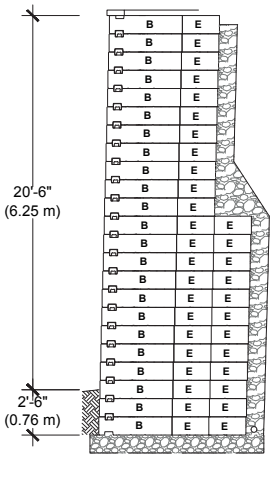
21 ft (6.40 m) Total Height
BE: 19
BEE: 2



22 ft (6.71 m) Total Height
BE: 19
BEE: 3



23 ft (7.01 m) Total Height
BE: 11
BEE: 12



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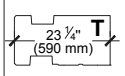
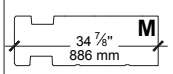
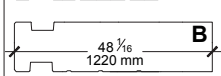
LEGEND :



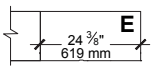
TOP UNIT



MIDDLE UNIT



BASE UNIT



EXTENDER UNIT

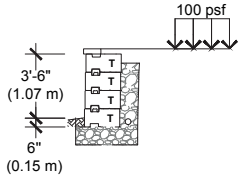
DESIGN CHART
SKYSCRAPER
NEAR VERTICAL

ALLOWABLE STRESS DESIGN

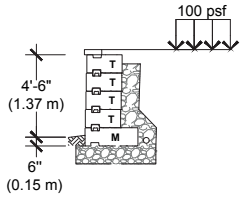
CLEAN SAND/ SAND AND GRAVEL MIXES (Ø=34°, γ = 130 pcf)

CASE N° 2 :
100 psf Surcharge
No Backslope
No Toe Slope

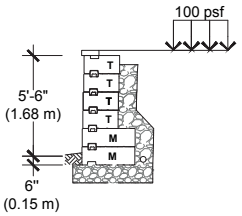
4 ft (1.22 m) Total Height
T: 4



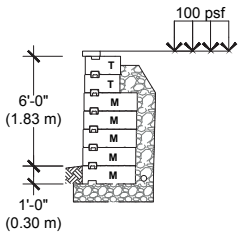
5 ft (1.52 m) Total Height
T: 4
M: 1



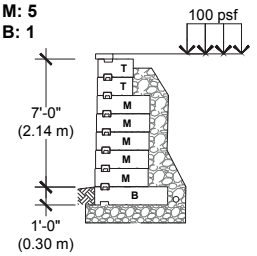
6 ft (1.83 m) Total Height
T: 4
M: 2



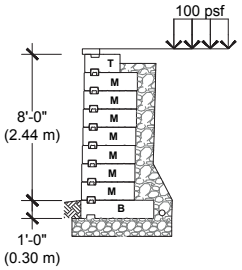
7 ft (2.13 m) Total Height
T: 2
M: 5



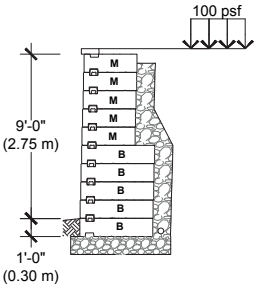
8 ft (2.44 m) Total Height
T: 2
M: 5
B: 1



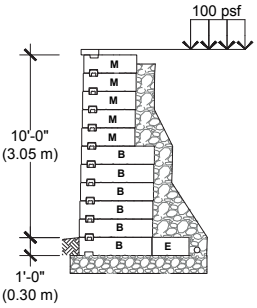
9 ft (2.74 m) Total Height
T: 1
M: 7
B: 1



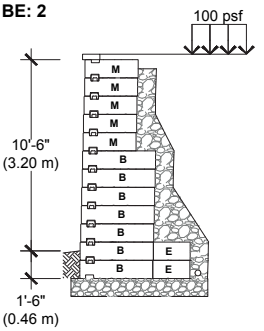
10 ft (3.05 m) Total Height
M: 5
B: 5



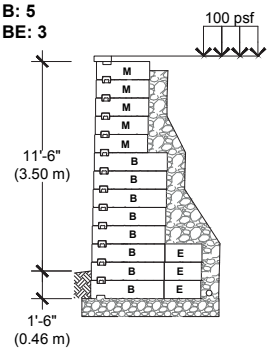
11 ft (3.35 m) Total Height
M: 5
B: 5
BE: 1



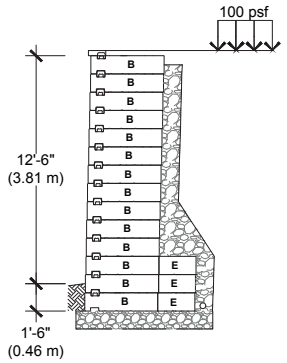
12 ft (3.66 m) Total Height
M: 5
B: 5
BE: 2



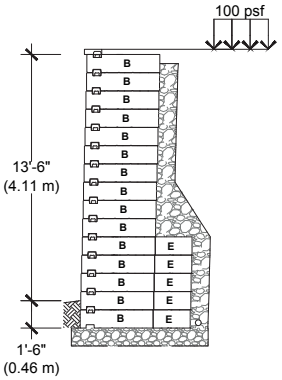
13 ft (3.96 m) Total Height
M: 5
B: 5
BE: 3



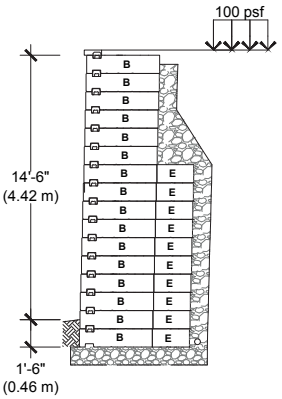
14 ft (4.27 m) Total Height
B: 11
BE: 3



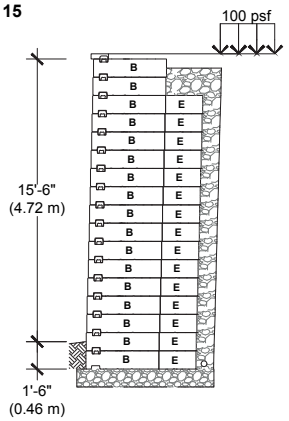
15 ft (4.57 m) Total
B: 10
BE: 5



16 ft (4.88 m) Total Height
B: 6
BE: 10



17 ft (5.18 m) Total Height
B: 2
BE: 15



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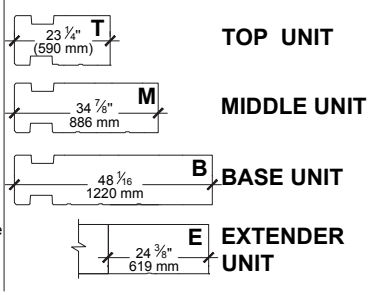
LEGEND :



Techo-Bloc

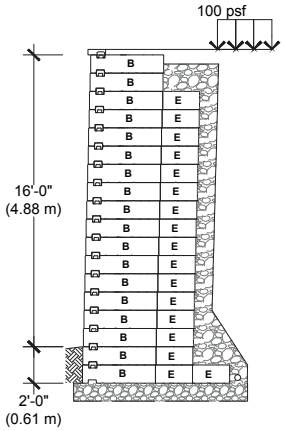
DESIGN CHART
SKYSCRAPER
NEAR VERTICAL

ALLOWABLE STRESS DESIGN

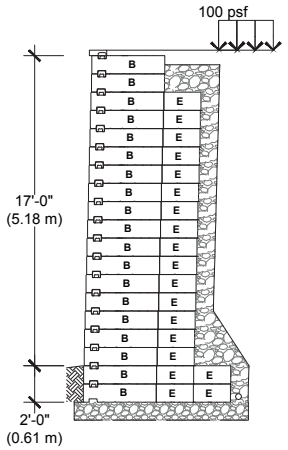
CLEAN SAND/ SAND AND GRAVEL MIXES (Ø=34°, γ = 130 pcf)

CASE N° 2 :
100 psf Surcharge
No Backslope
No Toe Slope

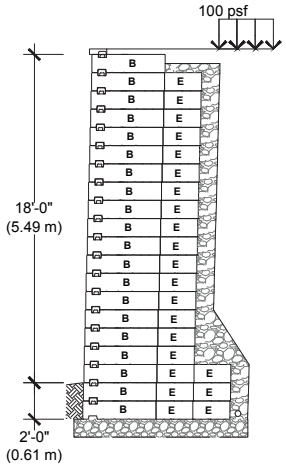
18 ft (5.49 m) Total Height
B: 2
BE: 15
BEE: 1



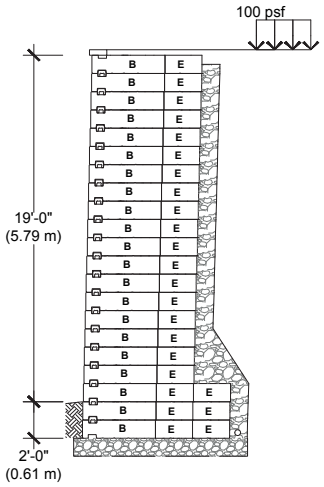
19 ft (5.79 m) Total Height
B: 2
BE: 15
BEE: 2



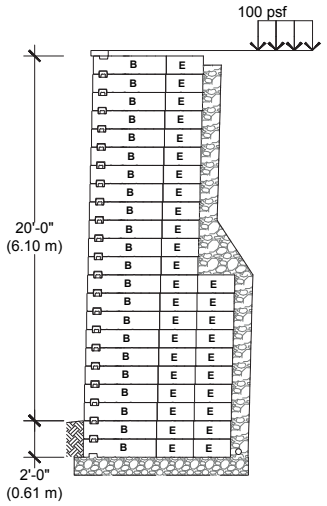
20 ft (6.10 m) Total Height
B: 1
BE: 16
BEE: 3



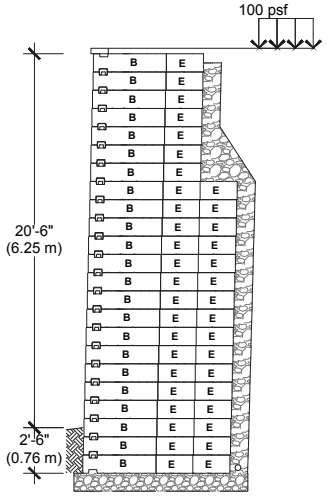
21 ft (6.40 m) Total Height
BE: 18
BEE: 3



22 ft (6.71 m) Total Height
BE: 12
BEE: 10



23 ft (7.01 m) Total Height
BE: 7
BEE: 16



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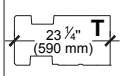
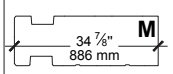
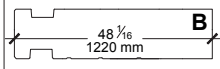
LEGEND :



TOP UNIT



MIDDLE UNIT



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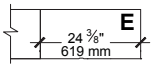


EXTENDER UNIT

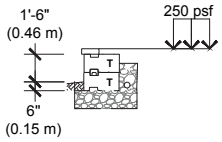
DESIGN CHART
SKYSCRAPER
NEAR VERTICAL

ALLOWABLE STRESS DESIGN

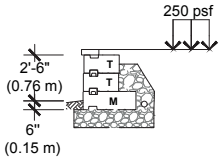
CLEAN SAND/ SAND AND GRAVEL MIXES (Ø=34°, γ = 130 pcf)

CASE N° 3 :
250 psf Surcharge
No Toe Slope

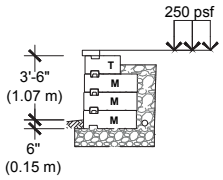
2 ft (0.61 m) Total Height
T: 2



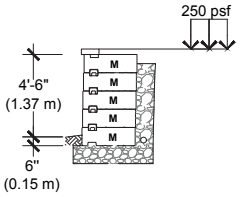
3 ft (0.91 m) Total Height
T: 2
M: 1



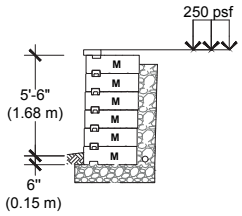
4 ft (1.22 m) Total Height
T: 1
M: 3



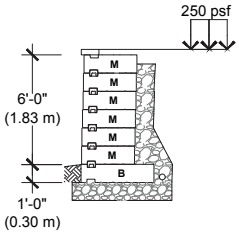
5 ft (1.52 m) Total Height
M: 5



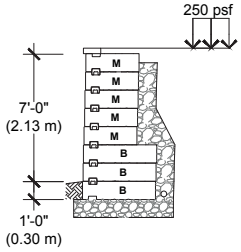
6 ft (1.83 m) Total Height
M: 6



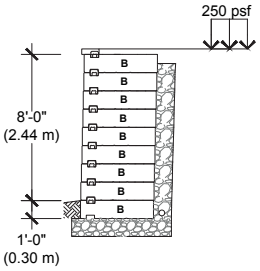
7 ft (2.13 m) Total Height
M: 6
B: 1



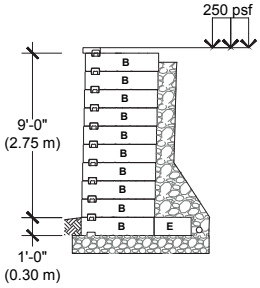
8 ft (2.44 m) Total Height
M: 5
B: 3



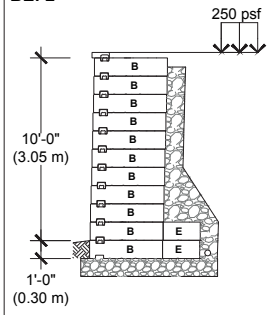
9 ft (2.74 m) Total Height
B: 9



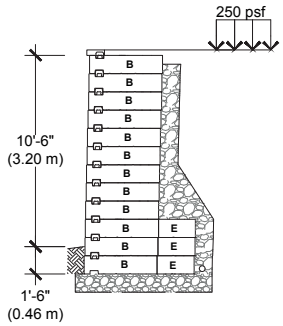
10 ft (3.05 m) Total Height
B: 9
BE: 1



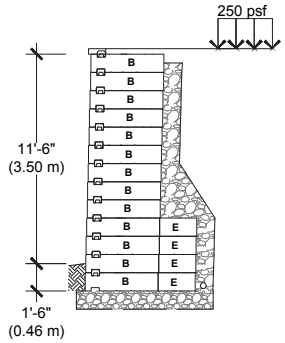
11 ft (3.35 m) Total Height
B: 9
BE: 2



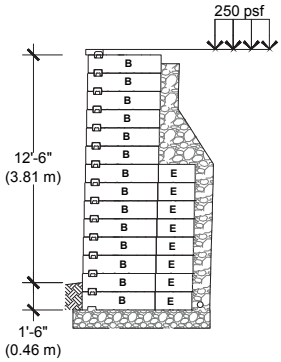
12 ft (3.66 m) Total Height
B: 9
BE: 3



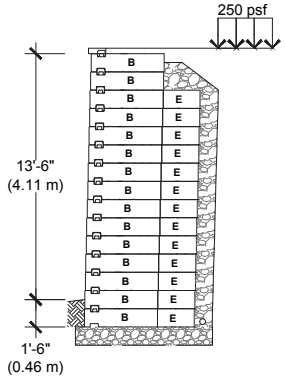
13 ft (3.96 m) Total Height
B: 9
BE: 4



14 ft (4.27 m) Total Height
B: 6
BE: 8



15 ft (4.57 m) Total
B: 2
BE: 13



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2. The height (H) of the wall does not include the thickness of the cap.
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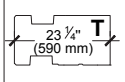
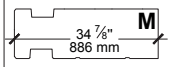
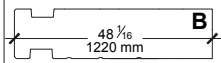
LEGEND :



TOP UNIT



MIDDLE UNIT



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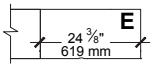


EXTENDER UNIT

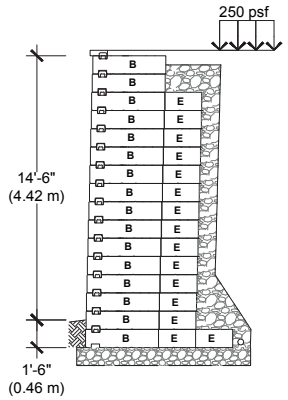
DESIGN CHART
SKYSCRAPER
NEAR VERTICAL

ALLOWABLE STRESS DESIGN

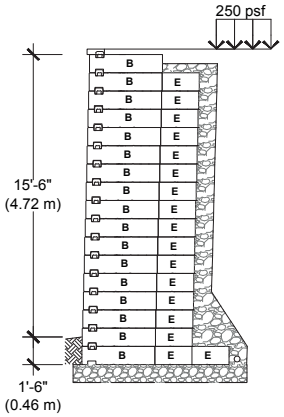
CLEAN SAND/ SAND AND GRAVEL MIXES (Ø=34°, γ = 130 pcf)

CASE N° 3 :
250 psf Surcharge
No Toe Slope

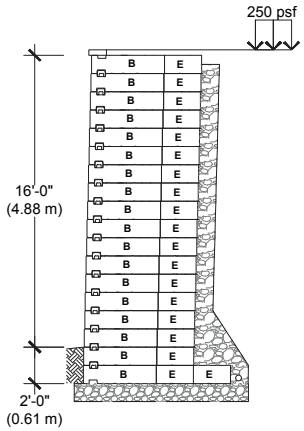
16 ft (4.88 m) Total Height
B: 2
BE: 13
BEE: 1



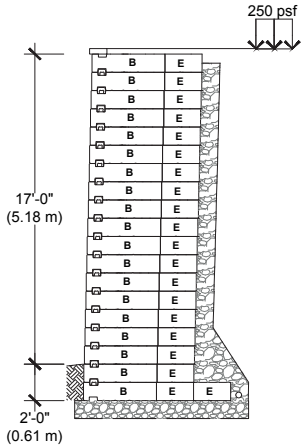
17 ft (5.18 m) Total Height
B: 1
BE: 15
BEE: 1



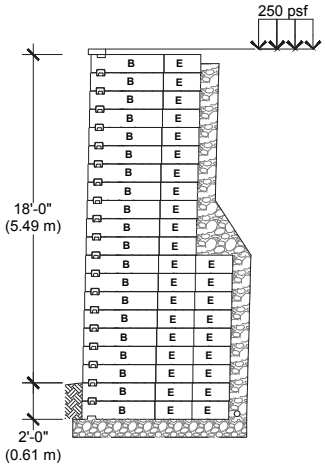
18 ft (5.49 m) Total Height
BE: 17
BEE: 1



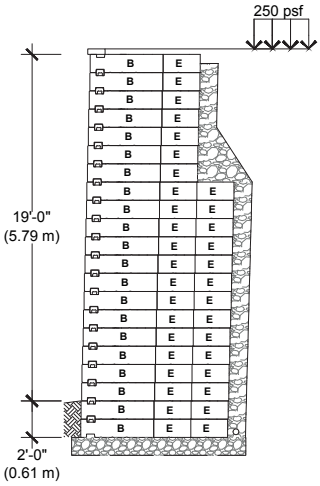
19 ft (5.79 m) Total Height
BE: 18
BEE: 1



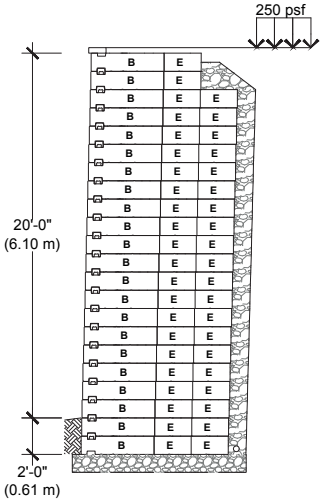
20 ft (6.10 m) Total Height
BE: 11
BEE: 9



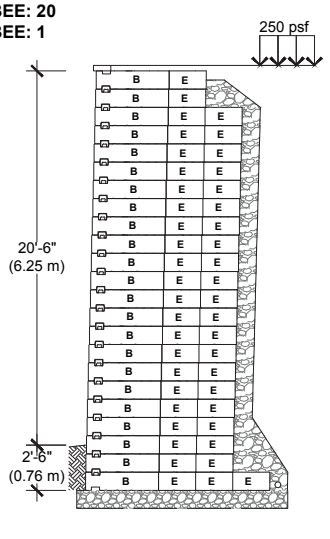
21 ft (6.40 m) Total Height
BE: 7
BEE: 14



22 ft (6.71 m) Total Height
BE: 2
BEE: 20



23 ft (7.01 m) Total Height
BE: 2
BEE: 20
BEE: 1



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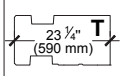
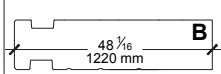
LEGEND :

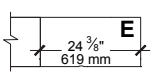


TOP UNIT

MIDDLE UNIT



BASE UNIT



EXTENDER UNIT

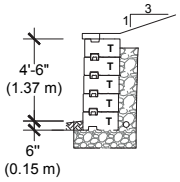
DESIGN CHART
SKYSCRAPER
NEAR VERTICAL

ALLOWABLE STRESS DESIGN

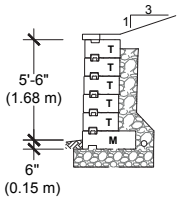
CLEAN SAND/ SAND AND GRAVEL MIXES (Ø=34°, γ = 130 pcf)

CASE N° 4 :
No Surcharge
Backslope 1V : 3H
No Toe Slope

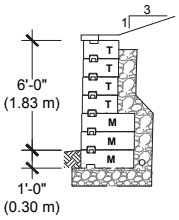
5 ft (1.52 m) Total Height
T: 5



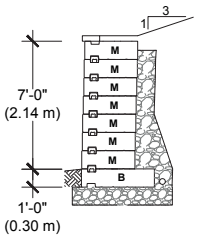
6 ft (1.83 m) Total Height
T: 5
M: 1



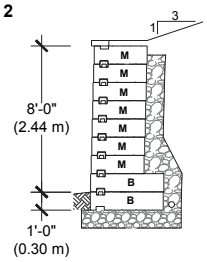
7 ft (2.13 m) Total Height
T: 4
M: 3



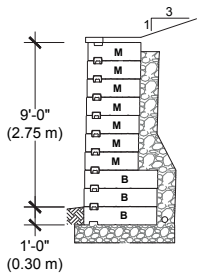
8 ft (2.44 m) Total Height
M: 7
B: 1



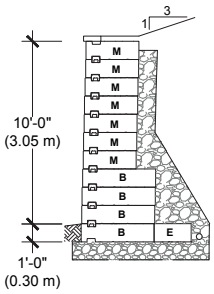
9 ft (2.74 m) Total Height
M: 7
B: 2



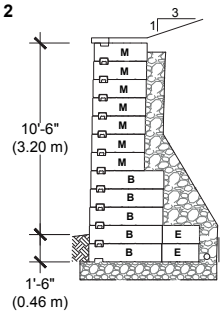
10 ft (3.05 m) Total Height
M: 7
B: 3



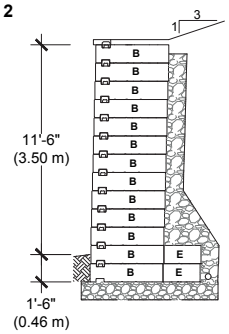
11 ft (3.35 m) Total Height
M: 7
B: 3
BE: 1



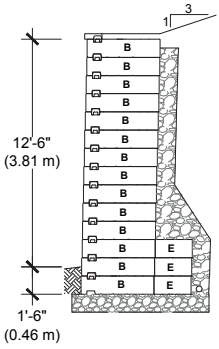
12 ft (3.66 m) Total Height
M: 7
B: 3
BE: 2



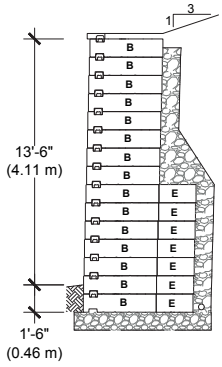
13 ft (3.96 m) Total Height
B: 11
BE: 2



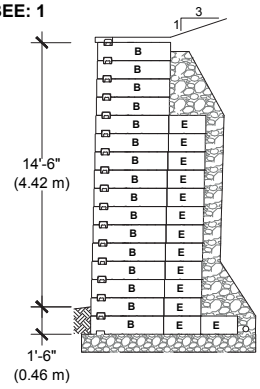
14 ft (4.27 m) Total Height
B: 11
BE: 3



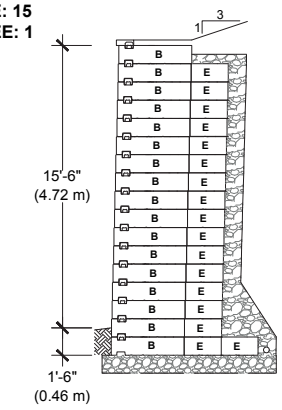
15 ft (4.57 m) Total
B: 8
BE: 7



16 ft (4.88 m) Total Height
B: 4
BE: 11
BEE: 1



17 ft (5.18 m) Total Height
B: 1
BE: 15
BEE: 1



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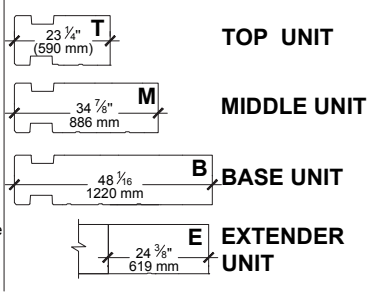
LEGEND :



Techo-Bloc

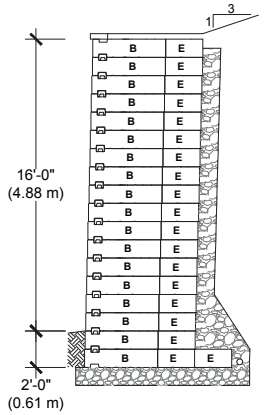
DESIGN CHART
SKYSCRAPER
NEAR VERTICAL

ALLOWABLE STRESS DESIGN

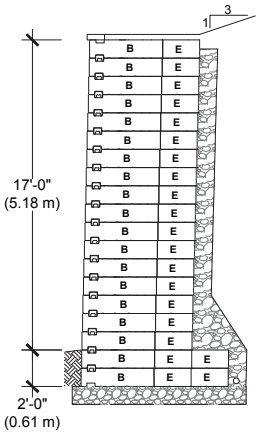
CLEAN SAND/ SAND AND GRAVEL MIXES (Ø=34°, γ = 130 pcf)

CASE N° 4 :
No Surcharge
Backslope 1V : 3H
No Toe Slope

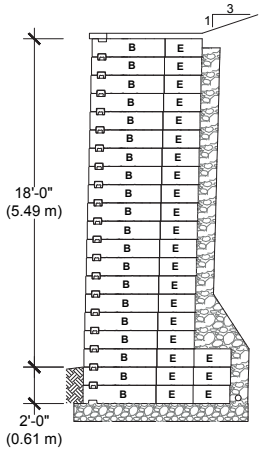
18 ft (5.49 m) Total Height
BE: 17
BEE: 1



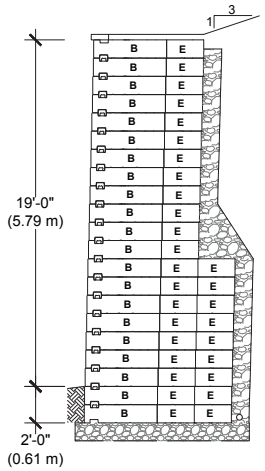
19 ft (5.79 m) Total Height
BE: 17
BEE: 2



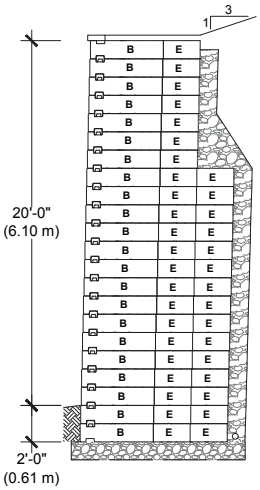
20 ft (6.10 m) Total Height
BE: 17
BEE: 3



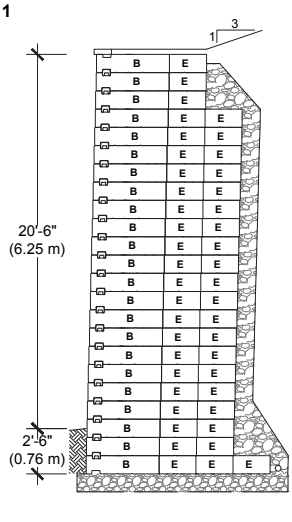
21 ft (6.40 m) Total Height
BE: 12
BEE: 9



22 ft (6.71 m) Total Height
BE: 7
BEE: 15



23 ft (7.01 m) Total Height
BE: 3
BEE: 19
BEE: 1



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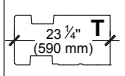
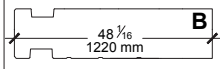
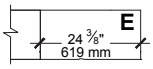


TOP UNIT

MIDDLE UNIT



BASE UNIT



EXTENDER UNIT

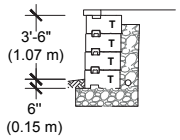
DESIGN CHART
SKYSCRAPER
NEAR VERTICAL

ALLOWABLE STRESS DESIGN

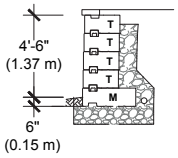
FINE SANDS AND SILTY SANDS (Ø=30°, γ = 120 pcf)

CASE N° 5 :
No Surcharge
No Backslope
No Toe Slope

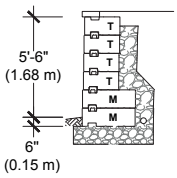
4 ft (1.22 m) Total Height
T: 4



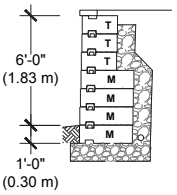
5 ft (1.52 m) Total Height
T: 4
M: 1



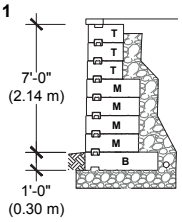
6 ft (1.83 m) Total Height
T: 4
M: 2



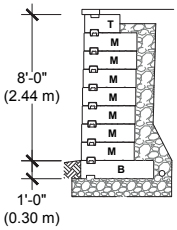
7 ft (2.13 m) Total Height
T: 3
M: 4



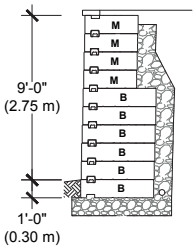
8 ft (2.44 m) Total Height
T: 3
M: 4
B: 1



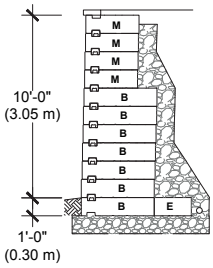
9 ft (2.74 m) Total Height
T: 1
M: 7
B: 1



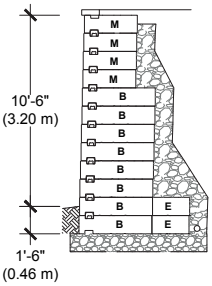
10 ft (3.05 m) Total Height
M: 4
B: 6



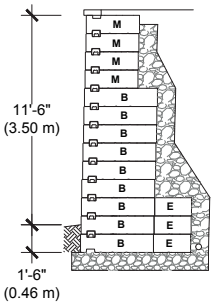
11 ft (3.35 m) Total Height
M: 4
B: 6
BE: 1



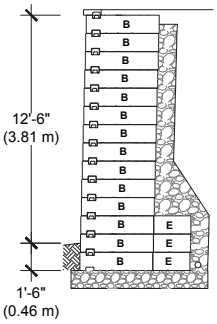
12 ft (3.66 m) Total Height
M: 4
B: 6
BE: 2



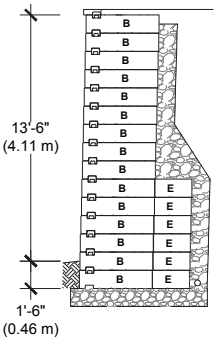
13 ft (3.96 m) Total Height
M: 4
B: 6
BE: 3



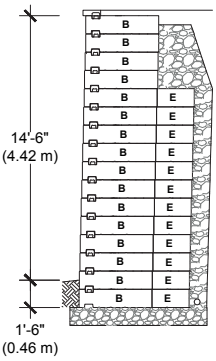
14 ft (4.27 m) Total Height
B: 11
BE: 3



15 ft (4.57 m) Total
B: 9
BE: 6



16 ft (4.88 m) Total Height
B: 4
BE: 12



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6. The seismic analysis is not included.
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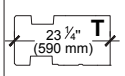
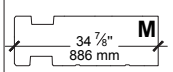
11. For further information, please contact our technical service department.

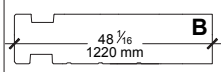
LEGEND :



TOP UNIT



MIDDLE UNIT



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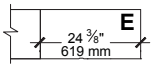


EXTENDER UNIT

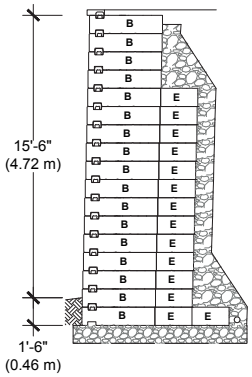
DESIGN CHART
SKYSCRAPER
NEAR VERTICAL

ALLOWABLE STRESS DESIGN

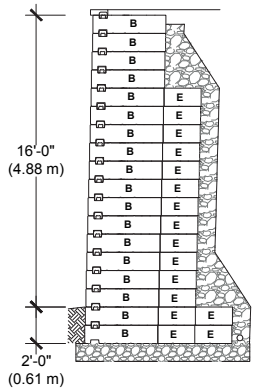
FINE SANDS AND SILTY SANDS (Ø=30°, γ = 120 pcf)

CASE N° 5 :
No Surcharge
No Backslope
No Toe Slope

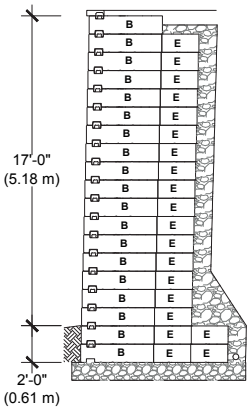
17 ft (5.18 m) Total Height
B: 4
BE: 12
BEE: 1



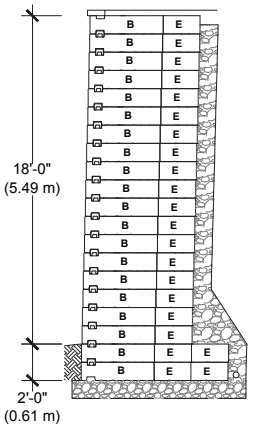
18 ft (5.49 m) Total Height
B: 4
BE: 12
BEE: 2



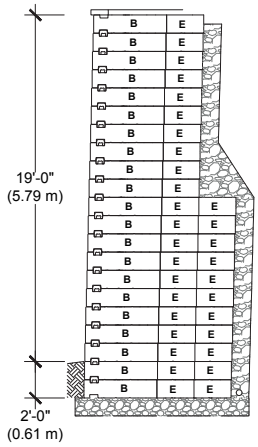
19 ft (5.79 m) Total Height
B: 1
BE: 16
BEE: 2



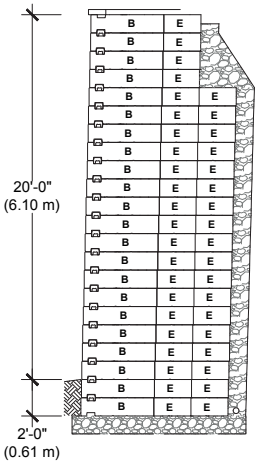
20 ft (6.10 m) Total Height
BE: 18
BEE: 2



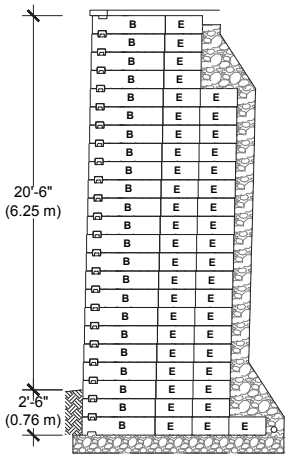
21 ft (6.40 m) Total Height
BE: 10
BEE: 11



22 ft (6.71 m) Total Height
BE: 4
BEE: 18



23 ft (7.01 m) Total Height
BE: 4
BEE: 18
BEE: 1



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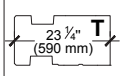
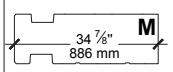
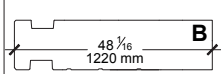
LEGEND :



TOP UNIT



MIDDLE UNIT



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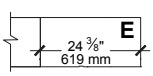


EXTENDER UNIT

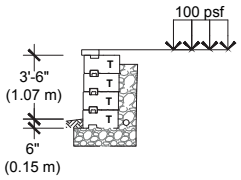
DESIGN CHART
SKYSCRAPER
NEAR VERTICAL

ALLOWABLE STRESS DESIGN

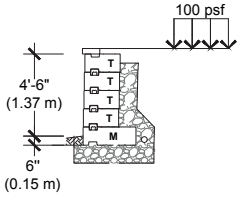
FINE SANDS AND SILTY SANDS (Ø=30°, γ = 120 pcf)

CASE N° 6 :
100 psf Surcharge
No Backslope
No Toe Slope

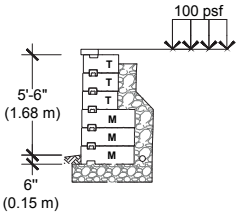
4 ft (1.22 m) Total Height
T: 4



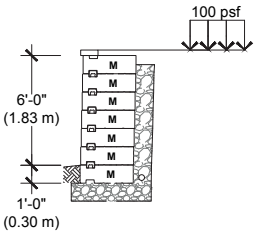
5 ft (1.52 m) Total Height
T: 4
M: 1



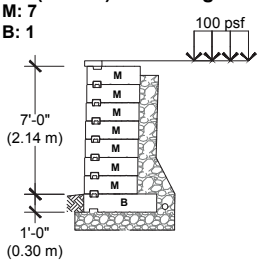
6 ft (1.83 m) Total Height
T: 3
M: 3



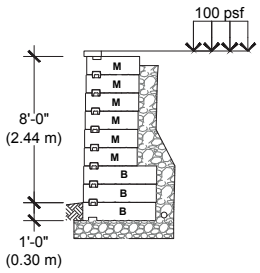
7 ft (2.13 m) Total Height
M: 7



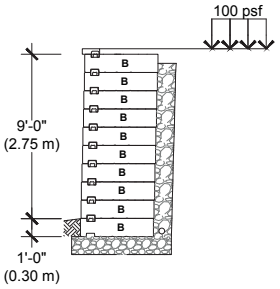
8 ft (2.44 m) Total Height
M: 7
B: 1



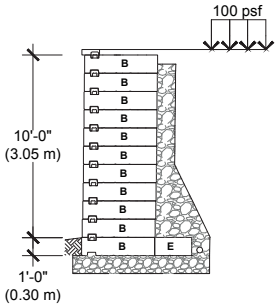
9 ft (2.74 m) Total Height
M: 6
B: 3



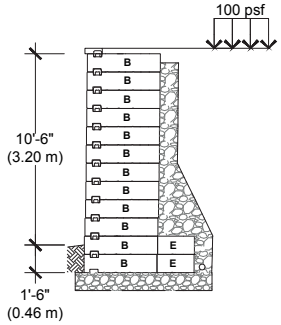
10 ft (3.05 m) Total Height
B: 10



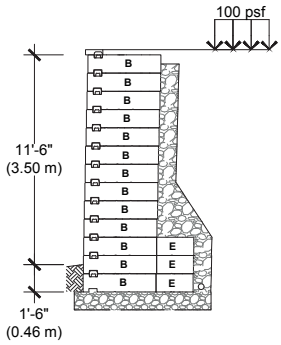
11 ft (3.35 m) Total Height
B: 10
BE: 1



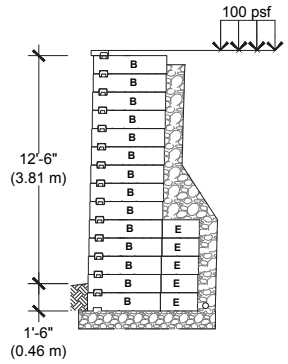
12 ft (3.66 m) Total Height
B: 10
BE: 2



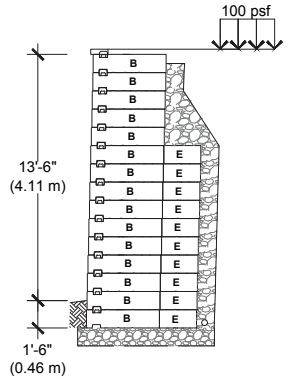
13 ft (3.96 m) Total Height
B: 10
BE: 3



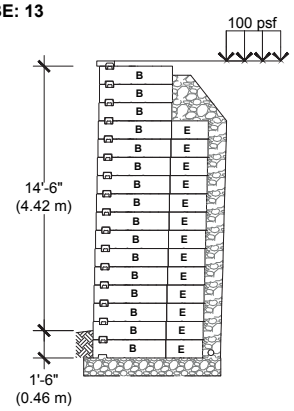
14 ft (4.27 m) Total Height
B: 9
BE: 5



15 ft (4.57 m) Total
B: 5
BE: 10



16 ft (4.88 m) Total Height
B: 3
BE: 13



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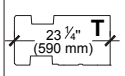
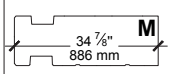
LEGEND :



TOP UNIT



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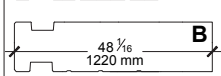
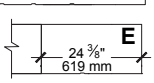


BASE UNIT



EXTENDER UNIT

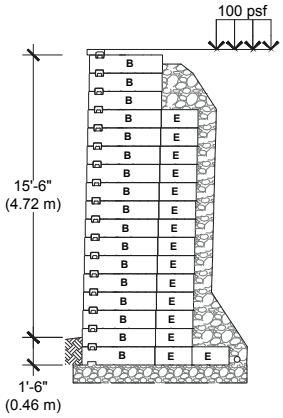
DESIGN CHART
SKYSCRAPER
NEAR VERTICAL

ALLOWABLE STRESS DESIGN

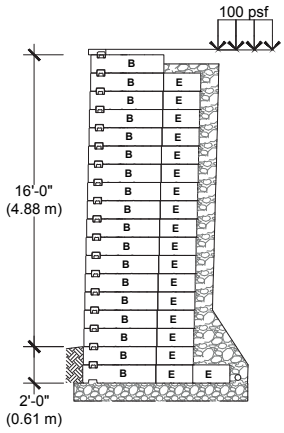
FINE SANDS AND SILTY SANDS (Ø=30°, γ = 120 pcf)

CASE N° 6 :
100 psf Surcharge
No Backslope
No Toe Slope

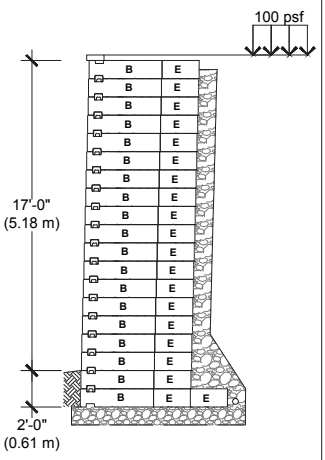
17 ft (5.18 m) Total Height
B: 3
BE: 13
BEE: 1



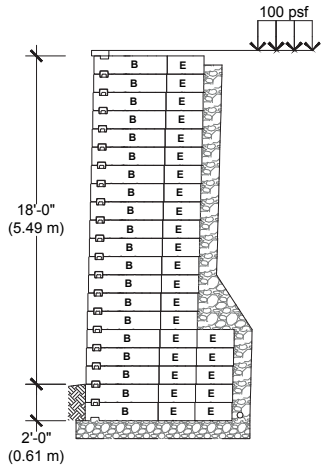
18 ft (5.49 m) Total Height
B: 1
BE: 16
BEE: 1



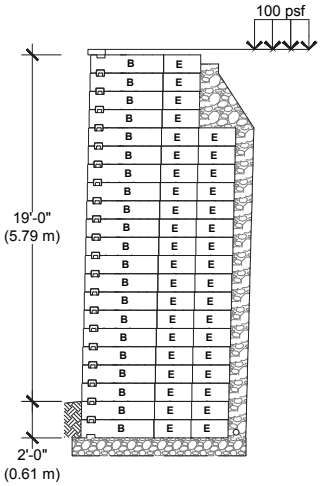
19 ft (5.79 m) Total Height
BE: 18
BEE: 1



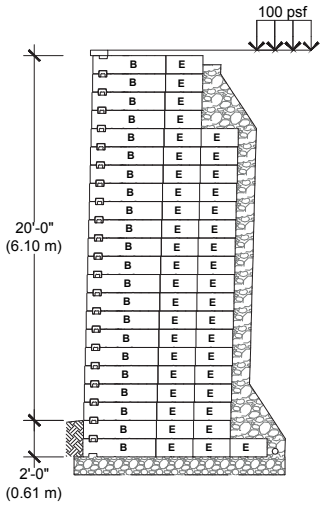
20 ft (6.10 m) Total Height
BE: 15
BEE: 5



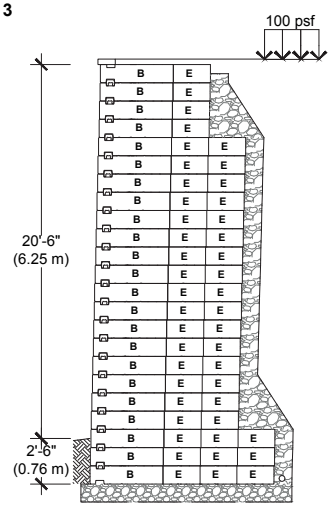
21 ft (6.40 m) Total Height
BE: 4
BEE: 17



22 ft (6.71 m) Total Height
BE: 4
BEE: 17
BEE: 1



23 ft (7.01 m) Total Height
BE: 4
BEE: 16
BEE: 3



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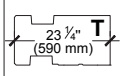
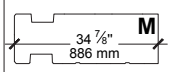
11. For further information, please contact our technical service department.

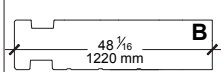
LEGEND :



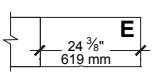
TOP UNIT



MIDDLE UNIT



BASE UNIT



EXTENDER UNIT

Techo-Bloc

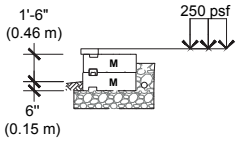
DESIGN CHART
SKYSCRAPER
NEAR VERTICAL

ALLOWABLE STRESS DESIGN

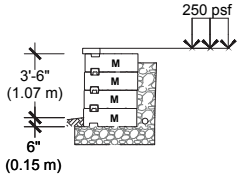
FINE SANDS AND SILTY SANDS (Ø=30°, γ = 120 pcf)

CASE N° 7 :
250 psf Surcharge
No Backslope
No Toe Slope

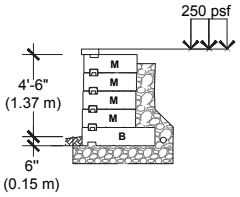
2 ft (0.61 m) Total Height
T: 2



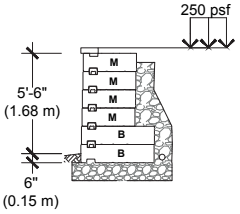
4 ft (1.22 m) Total Height
M: 4



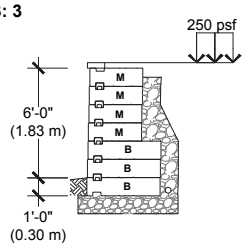
5 ft (1.52 m) Total Height
M: 4
B: 1



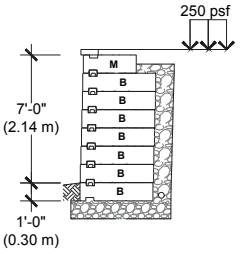
6 ft (1.83 m) Total Height
M: 4
B: 2



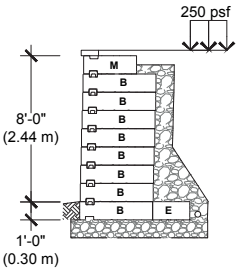
7 ft (2.13 m) Total Height
M: 4
B: 3



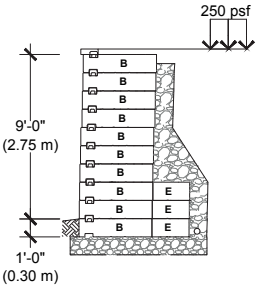
8 ft (2.44 m) Total Height
M: 1
B: 7



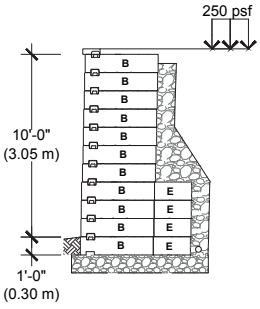
9 ft (2.74 m) Total Height
M: 1
B: 7
BE: 1



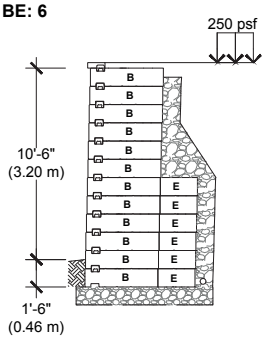
10 ft (3.05 m) Total Height
B: 7
BE: 3



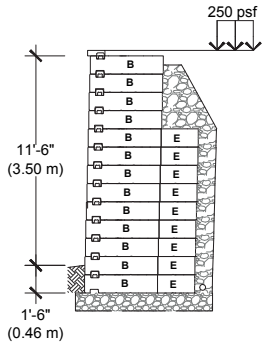
11 ft (3.35 m) Total Height
B: 7
BE: 4



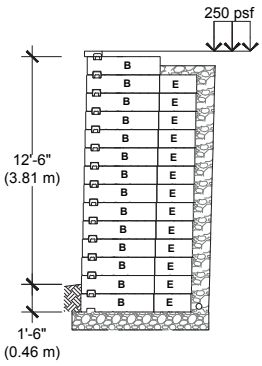
12 ft (3.66 m) Total Height
B: 6
BE: 6



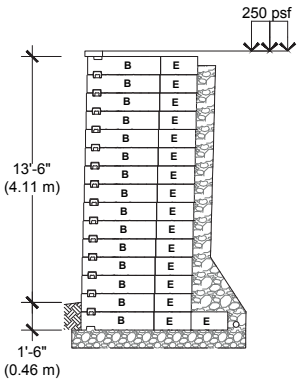
13 ft (3.96 m) Total Height
B: 4
BE: 9



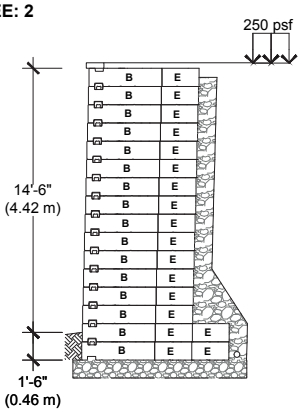
14 ft (4.27 m) Total Height
B: 1
BE: 13



15 ft (4.57 m) Total
BE: 14
BEE: 1



16 ft (4.88 m) Total Height
BE: 14
BEE: 2



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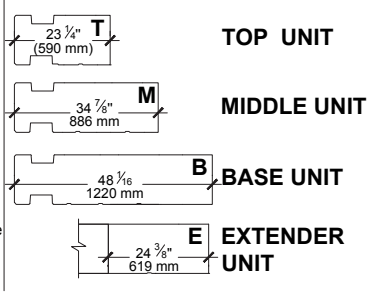
LEGEND :



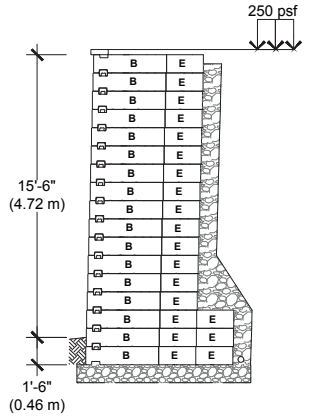
DESIGN CHART
SKYSCRAPER
NEAR VERTICAL

ALLOWABLE STRESS DESIGN

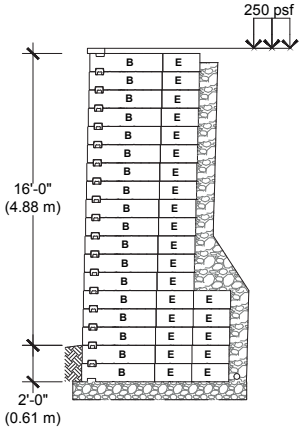
FINE SANDS AND SILTY SANDS (Ø=30°, γ = 120 pcf)

CASE N° 7 :
250 psf Surcharge
No Backslope
No Toe Slope

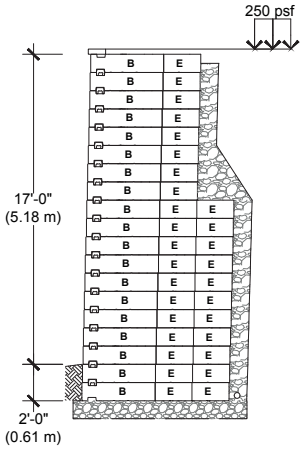
17 ft (5.18 m) Total Height
BE: 14
BEE: 3



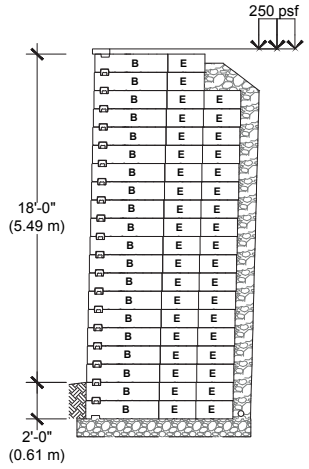
18 ft (5.49 m) Total Height
BE: 13
BEE: 5



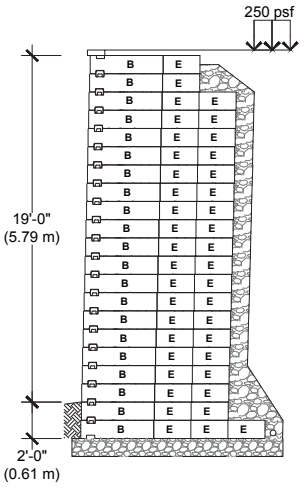
19 ft (5.79 m) Total Height
BE: 8
BEE: 11



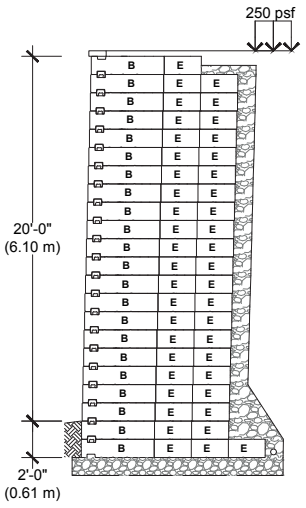
20 ft (6.10 m) Total Height
BE: 2
BEE: 18



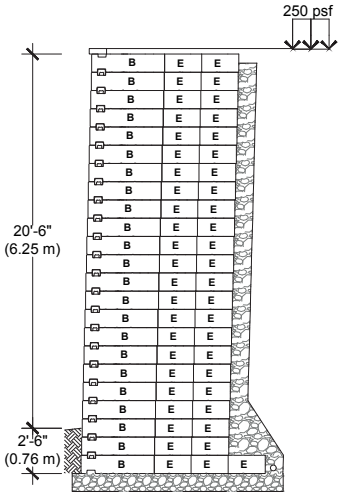
21 ft (6.40 m) Total Height
BE: 2
BEE: 18
BEE: 1



22 ft (6.71 m) Total Height
BE: 1
BEE: 20
BEE: 1



23 ft (7.01 m) Total Height
BEE: 22
BEE: 1



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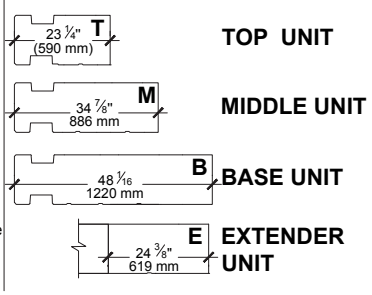
LEGEND :



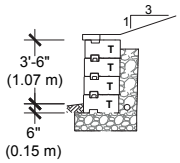
DESIGN CHART
SKYSCRAPER
NEAR VERTICAL

ALLOWABLE STRESS DESIGN

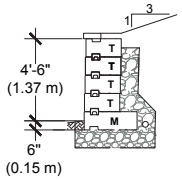
FINE SANDS AND SILTY SANDS (Ø=30°, γ = 120 pcf)

CASE N° 8 :
No Surcharge
Backslope 1V : 3H
No Toe Slope

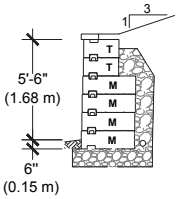
4 ft (1.22 m) Total Height
T: 4



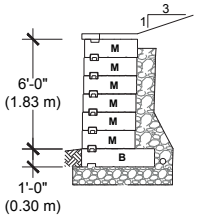
5 ft (1.52 m) Total Height
T: 4
M: 1



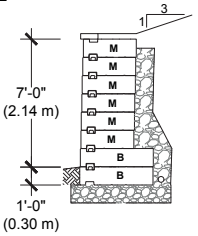
6 ft (1.83 m) Total Height
T: 2
M: 4



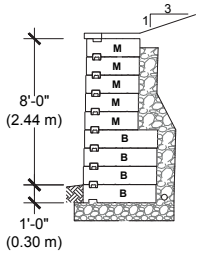
7 ft (2.13 m) Total Height
M: 6
B: 1



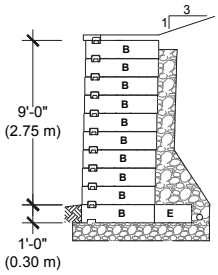
8 ft (2.44 m) Total Height
M: 6
B: 2



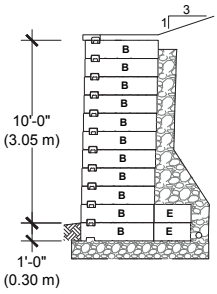
9 ft (2.74 m) Total Height
M: 5
B: 4



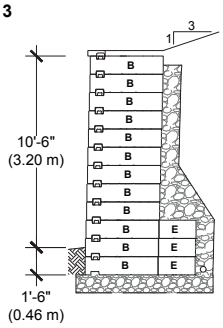
10 ft (3.05 m) Total Height
B: 9
BE: 1



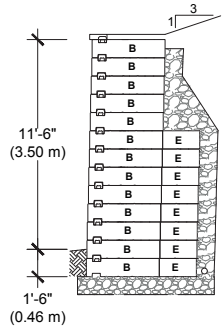
11 ft (3.35 m) Total Height
B: 9
BE: 2



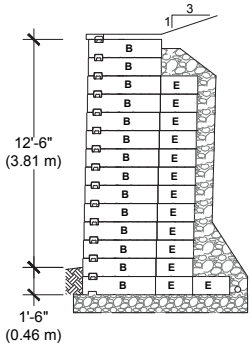
12 ft (3.66 m) Total Height
B: 9
BE: 3



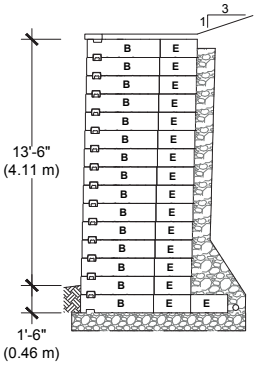
13 ft (3.96 m) Total Height
B: 5
BE: 8



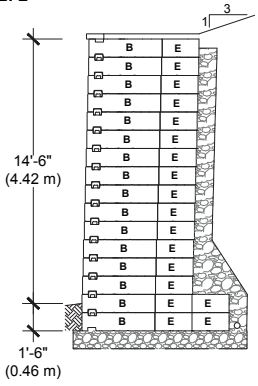
14 ft (4.27 m) Total Height
B: 2
BE: 11
BEE: 1



15 ft (4.57 m) Total
BE: 14
BE: 1



16 ft (4.88 m) Total Height
BE: 14
BE: 2



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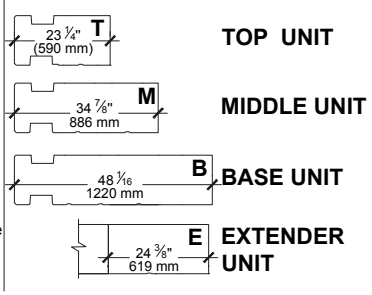
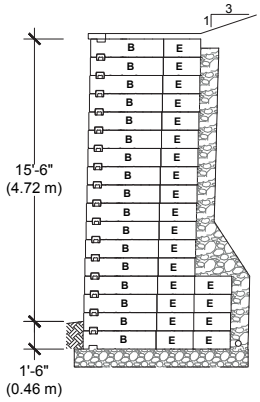


ALLOWABLE STRESS DESIGN

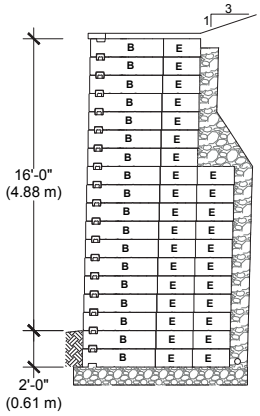
FINE SANDS AND SILTY SANDS (Ø=30°, γ = 120 pcf)

CASE N° 8 :
No Surcharge
Backslope 1V : 3H
No Toe Slope

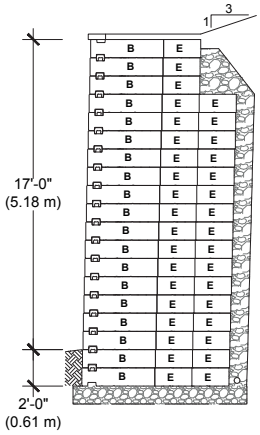
17 ft (5.18 m) Total Height
BE: 13
BEE: 4



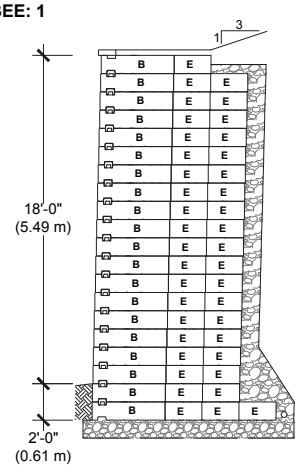
18 ft (5.49 m) Total Height
BE: 7
BEE: 11



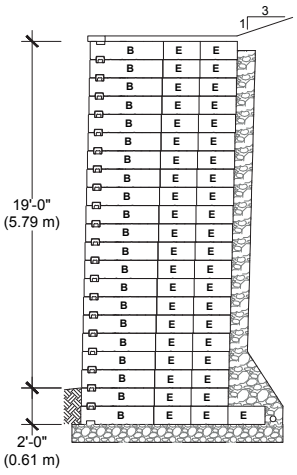
19 ft (5.79 m) Total Height
BE: 3
BEE: 16



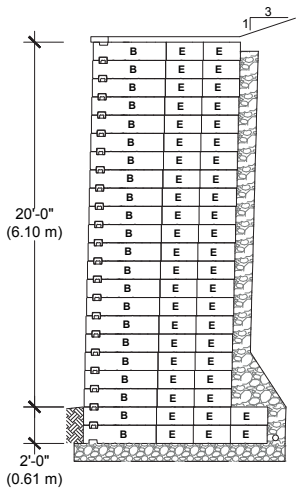
20 ft (6.10 m) Total Height
BE: 1
BEE: 18
BEE: 1



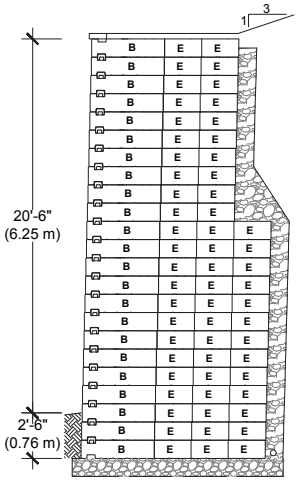
21 ft (6.40 m) Total Height
BEE: 20
BEEE: 1



22 ft (6.71 m) Total Height
BEE: 20
BEEE: 2



23 ft (7.01 m) Total Height
BEE: 10
BEEE: 13



1. The information contained in the design charts is supplied for information purposes only and as such should only be used for preliminary designs.
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3. Soil parameters: retained soil (φ =30°, γ = 120 pcf); foundation soil (φ=30°, γ = 120 pcf)
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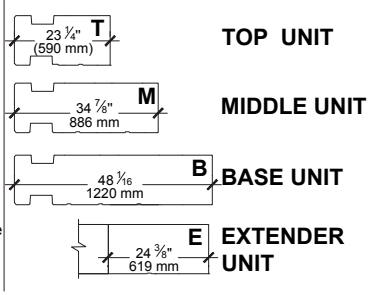
6. The seismic analysis is not included.
7. The design charts do not apply to tiered walls.
8. The charts assume that the walls are constructed in accordance with Techo-Bloc specifications, good construction practice and an adequate drainage system.
9. Engineering judgement should be used when interpolating between heights.
10. Techo-Bloc and its predecessors, successors, beneficiaries, employees, associates, administrators and insurers accepts no liability for the incorrect use of information contained in the design charts.
11. For further information, please contact our technical service department.

LEGEND :



Techo-Bloc

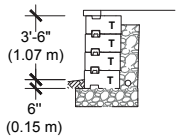
DESIGN CHART
SKYSCRAPER
NEAR VERTICAL

ALLOWABLE STRESS DESIGN

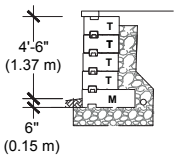
LOW PLASTICITY SILTS AND CLAYS (Ø=28°, γ = 120 pcf)

CASE N° 9 :
No Surcharge
No Backslope
No Toe Slope

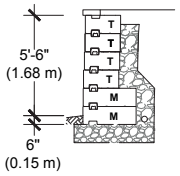
4 ft (1.22 m) Total Height
T: 4



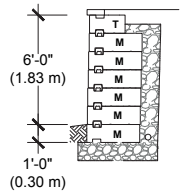
5 ft (1.52 m) Total Height
T: 4
M: 1



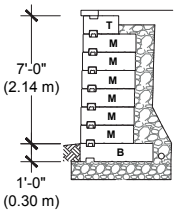
6 ft (1.83 m) Total Height
T: 4
M: 2



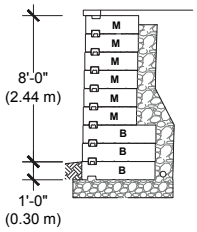
7 ft (2.13 m) Total Height
T: 1
M: 6



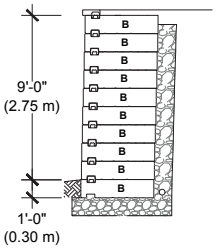
8 ft (2.44 m) Total Height
T: 1
M: 6
B: 1



9 ft (2.74 m) Total Height
M: 6
B: 3



10 ft (3.05 m) Total Height
B: 10



FOR TALLER WALLS AND POOR SOIL CONDITIONS : A PROFESSIONAL ENGINEER SHOULD EVALUATE DESIGN

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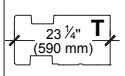
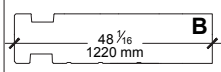
LEGEND :



TOP UNIT

MIDDLE UNIT



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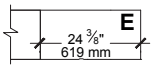


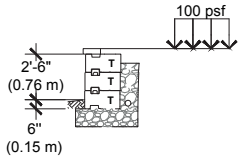
EXTENDER UNIT

ALLOWABLE STRESS DESIGN

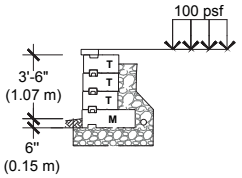
LOW PLASTICITY SILTS AND CLAYS (Ø=28°, γ = 120 pcf)

CASE N° 10 :
100 psf Surcharge
No Backslope
No Toe Slope

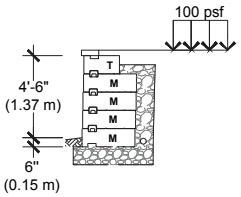
3 ft (0.91 m) Total Height
T: 3



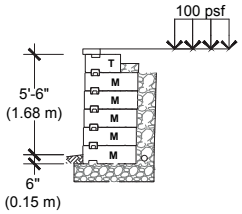
4 ft (1.22 m) Total Height
T: 3
M: 1



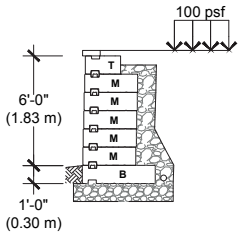
5 ft (1.52 m) Total Height
T: 1
M: 4



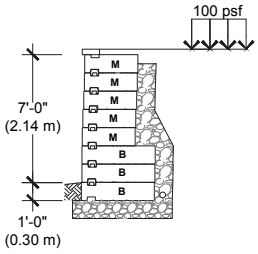
6 ft (1.83 m) Total Height
T: 1
M: 5



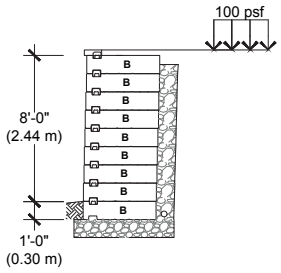
7 ft (2.13 m) Total Height
T: 1
M: 5
B: 1



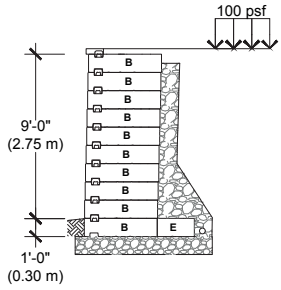
8 ft (2.44 m) Total Height
M: 5
B: 3



9 ft (2.74 m) Total Height
B: 9



10 ft (3.05 m) Total Height
B: 9
BE: 1



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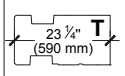
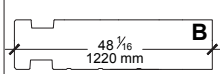
LEGEND :

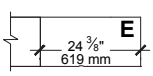


TOP UNIT

MIDDLE UNIT



BASE UNIT



EXTENDER UNIT

Techo-Bloc

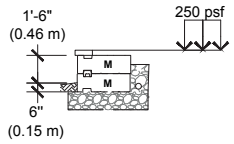
DESIGN CHART
SKYSCRAPER
NEAR VERTICAL

ALLOWABLE STRESS DESIGN

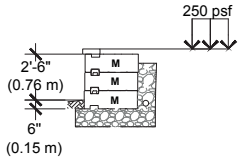
LOW PLASTICITY SILTS AND CLAYS (Ø=28°, γ = 120 pcf)

CASE N° 11 :
250 psf Surcharge
No Backslope
No Toe Slope

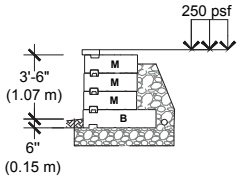
2 ft (0.61 m) Total Height
M: 2



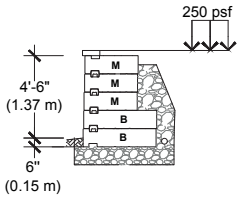
3 ft (0.91 m) Total Height
M: 3



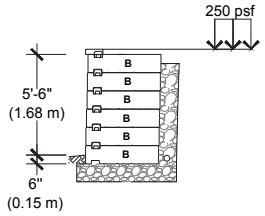
4 ft (1.22 m) Total Height
M: 3
B: 1



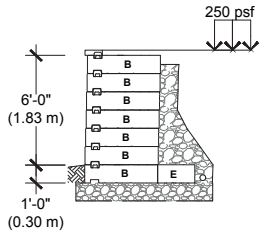
5 ft (1.52 m) Total Height
M: 3
B: 2



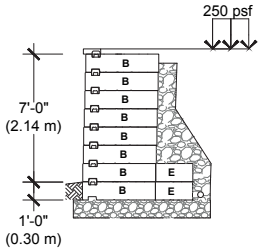
6 ft (1.83 m) Total Height
B: 6



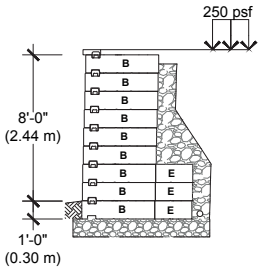
7 ft (2.13 m) Total Height
B: 6
BE: 1



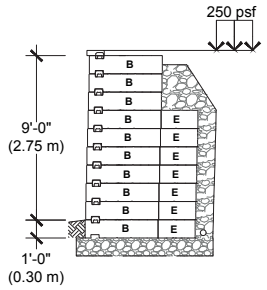
8 ft (2.44 m) Total Height
B: 6
BE: 2



9 ft (2.74 m) Total Height
B: 6
BE: 3



10 ft (3.05 m) Total Height
B: 3
BE: 7



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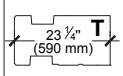
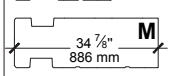
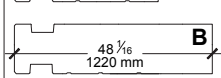
LEGEND :



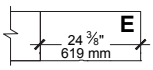
TOP UNIT



MIDDLE UNIT



BASE UNIT



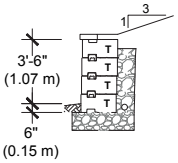
EXTENDER UNIT

ALLOWABLE STRESS DESIGN

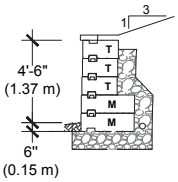
LOW PLASTICITY SILTS AND CLAYS (Ø=28°, γ = 120 pcf)

CASE N° 12 :
No Surcharge
Backslope 1V : 3H
No Toe Slope

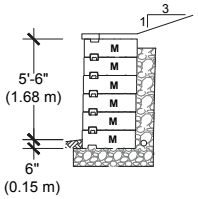
4 ft (1.22 m) Total Height
T: 4



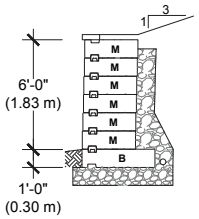
5 ft (1.52 m) Total Height
T: 3
M: 2



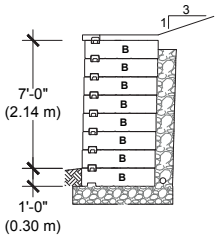
6 ft (1.83 m) Total Height
M: 6



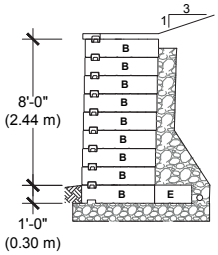
7 ft (2.13 m) Total Height
M: 6
B: 1



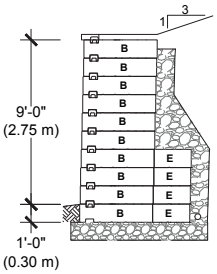
8 ft (2.44 m) Total Height
B: 8



9 ft (2.74 m) Total Height
B: 8
BE: 1



10 ft (3.05 m) Total Height
B: 6
BE: 4



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3. Soil parameters: retained soil (φ =28°, γ = 120 pcf); foundation soil (φ=28°, γ = 120 pcf)
4. A qualified engineer should be consulted for the final design to be used for construction.
5. The foundation soil must be able to support the wall system. The bearing capacity of the foundation soil, settlement, and global stability must be verified and validated by a qualified geotechnical engineer.
6. The seismic analysis is not included.
7. The design charts do not apply to tiered walls.
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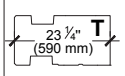
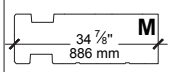
11. For further information, please contact our technical service department.

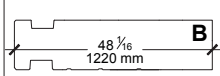
LEGEND :



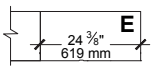
TOP UNIT



MIDDLE UNIT



BASE UNIT



EXTENDER UNIT

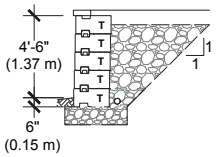
DESIGN CHART
SKYSCRAPER
NEAR VERTICAL

ALLOWABLE STRESS DESIGN

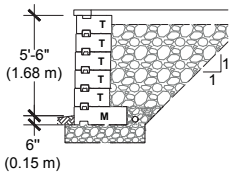
CLEAR CRUSHED STONE BACKFILL (Ø=38°, γ = 125 pcf)
OVER POOR SOIL CONDITIONS (Ø=28°, γ = 120 pcf)

CASE N° 13 :
No Surcharge
No Backslope
No Toe Slope

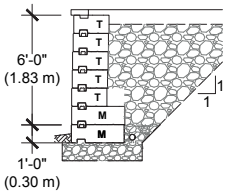
5 ft (1.52 m) Total Height
T: 5



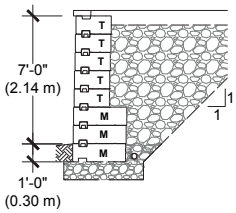
6 ft (1.83 m) Total Height
T: 5
M: 1



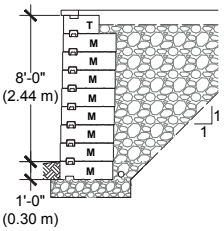
7 ft (2.13 m) Total Height
T: 5
M: 2



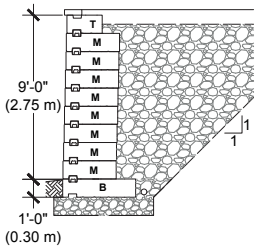
8 ft (2.44 m) Total Height
T: 5
M: 3



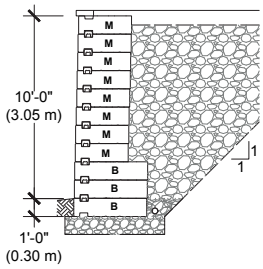
9 ft (2.74 m) Total Height
T: 1
M: 8



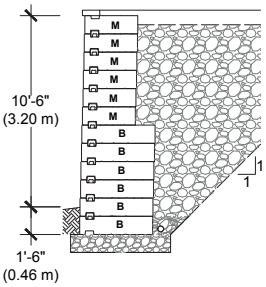
10 ft (3.05 m) Total Height
T: 1
M: 8
B: 1



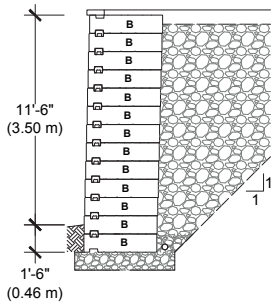
11 ft (3.35 m) Total Height
M: 8
B: 3



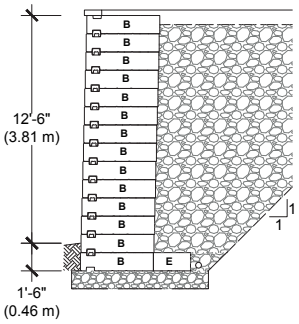
12 ft (3.66 m) Total Height
M: 6
B: 6



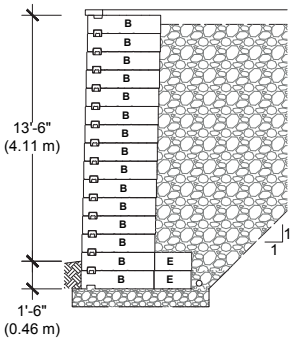
13 ft (3.96 m) Total Height
B:13



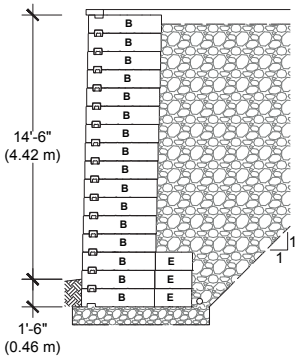
14 ft (4.27 m) Total Height
B: 13
BE: 1



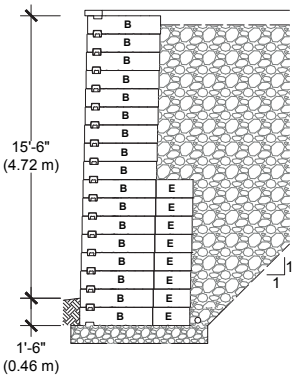
15 ft (4.57 m) Total
B: 13
BE: 2



16 ft (4.88 m) Total Height
B: 13
BE: 3



17 ft (5.18 m) Total Height
B: 9
BE: 8



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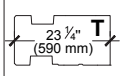
LEGEND :



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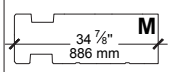
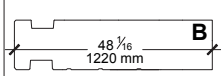
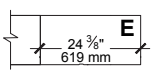


MIDDLE UNIT



BASE UNIT



EXTENDER UNIT

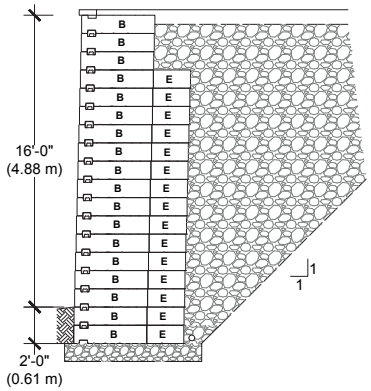
DESIGN CHART
SKYSCRAPER
NEAR VERTICAL

ALLOWABLE STRESS DESIGN

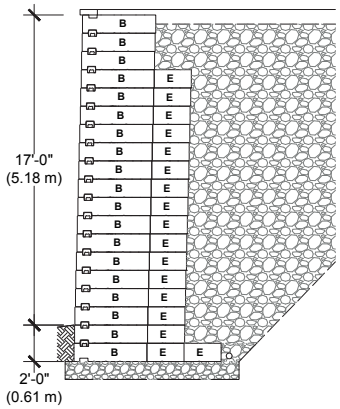
CLEAR CRUSHED STONE BACKFILL (Ø=38°, γ = 125 pcf)
OVER POOR SOIL CONDITIONS (Ø=28°, γ = 120 pcf)

CASE N° 13 :
No Surcharge
No Backslope
No Toe Slope

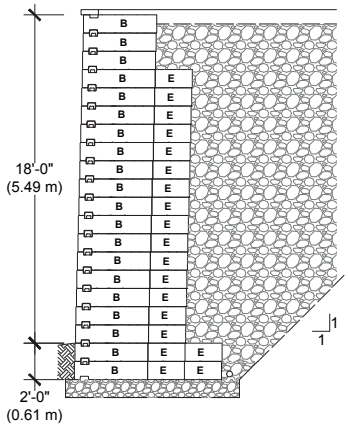
18 ft (5.49 m) Total Height
B: 3
BE: 15



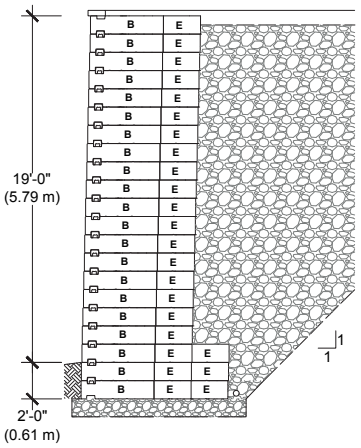
19 ft (5.79 m) Total Height
B: 3
BE: 15
BEE: 1



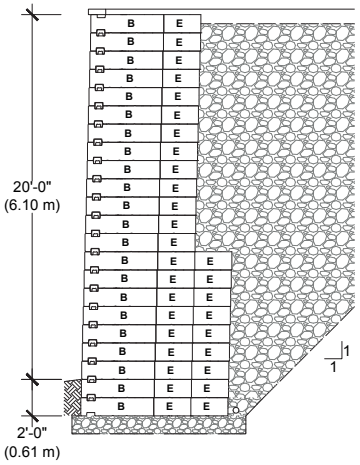
20 ft (6.10 m) Total Height
B: 3
BE: 15
BEE: 2



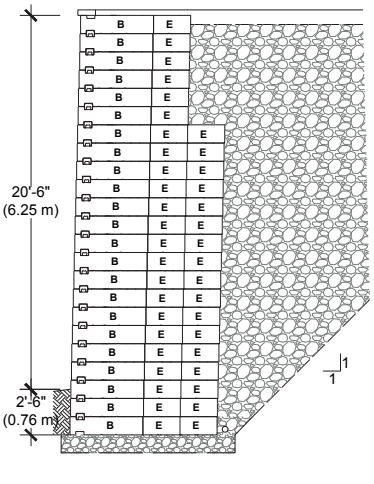
21 ft (6.40 m) Total Height
BE: 18
BEE: 3



22 ft (6.71 m) Total Height
BE: 13
BEE: 9



23 ft (7.01 m) Total Height
BE: 6
BEE: 17



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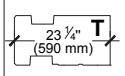
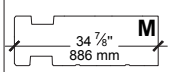
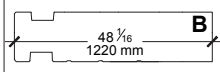
LEGEND :



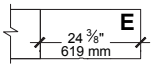
TOP UNIT



MIDDLE UNIT



BASE UNIT



EXTENDER UNIT

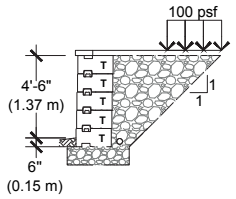
DESIGN CHART
SKYSCRAPER
NEAR VERTICAL

ALLOWABLE STRESS DESIGN

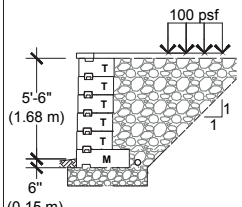
CLEAR CRUSHED STONE BACKFILL (Ø=38°, γ = 125 pcf)
OVER POOR SOIL CONDITIONS (Ø=28°, γ = 120 pcf)

CASE N° 14 :
100 psf Surcharge
No Backslope
No Toe Slope

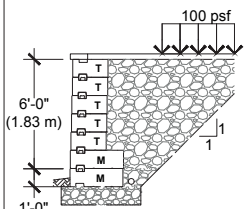
5 ft (1.52 m) Total Height
T: 5



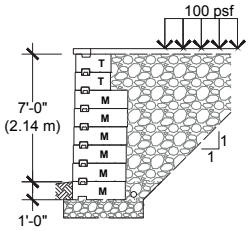
6 ft (1.83 m) Total Height
T: 5
M: 1



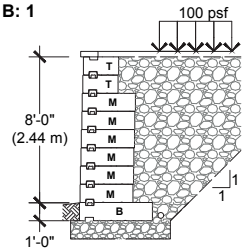
7 ft (2.13 m) Total Height
T: 5
M: 2



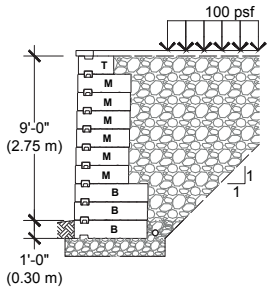
8 ft (2.44 m) Total Height
T: 2
M: 6



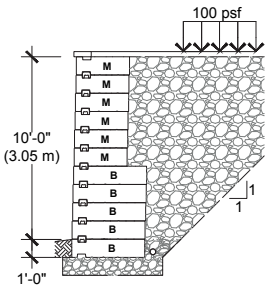
9 ft (2.74 m) Total Height
T: 2
M: 6
B: 1



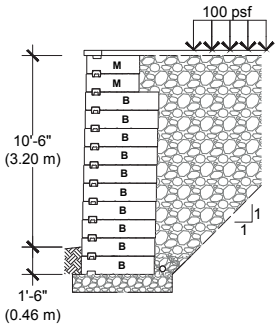
10 ft (3.05 m) Total Height
T: 1
M: 6
B: 3



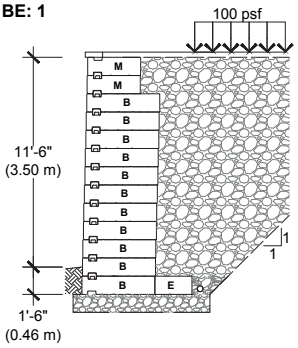
11 ft (3.35 m) Total Height
M: 6
B: 5



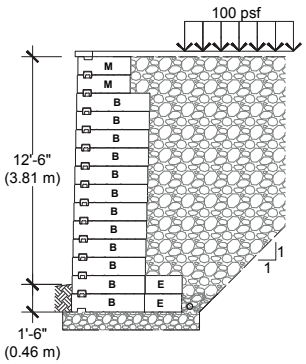
12 ft (3.66 m) Total Height
M: 2
B: 10



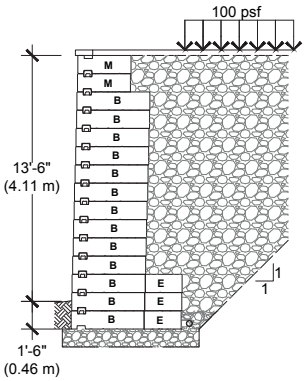
13 ft (3.96 m) Total Height
M: 2
B: 10
BE: 1



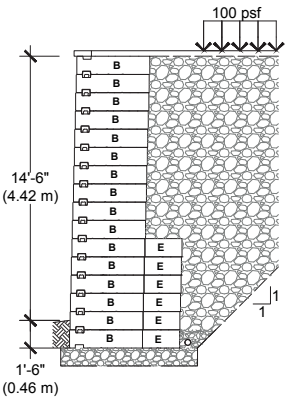
14 ft (4.27 m) Total Height
M: 2
B: 10
BE: 2



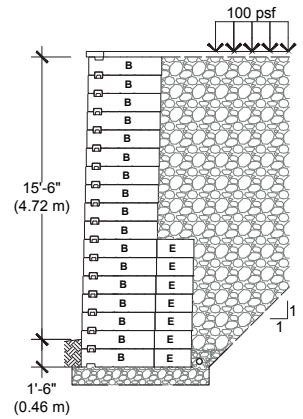
15 ft (4.57 m) Total
M: 2
B: 10
BE: 3



16 ft (4.88 m) Total Height
B: 10
BE: 6



17 ft (5.18 m) Total Height
B: 10
BE: 7



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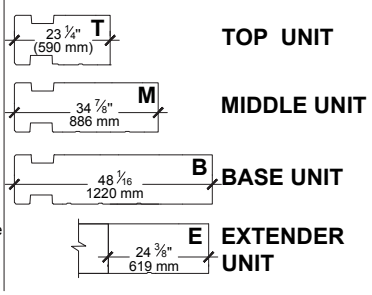
LEGEND :



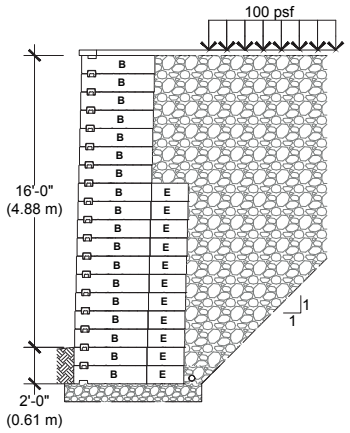
DESIGN CHART
SKYSCRAPER
NEAR VERTICAL

ALLOWABLE STRESS DESIGN

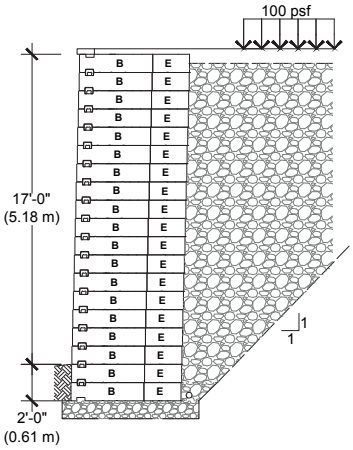
CLEAR CRUSHED STONE BACKFILL (Ø=38°, γ = 125 pcf)
OVER POOR SOIL CONDITIONS (Ø=28°, γ = 120 pcf)

CASE N° 14 :
100 psf Surcharge
No Backslope
No Toe Slope

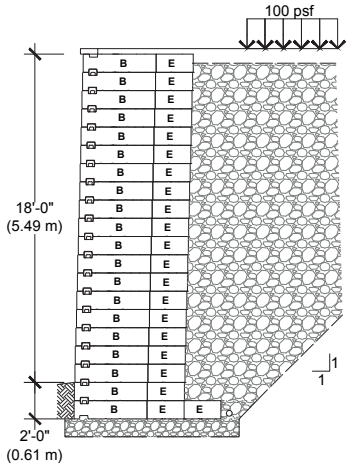
18 ft (5.49 m) Total Height
B: 7
BE: 11



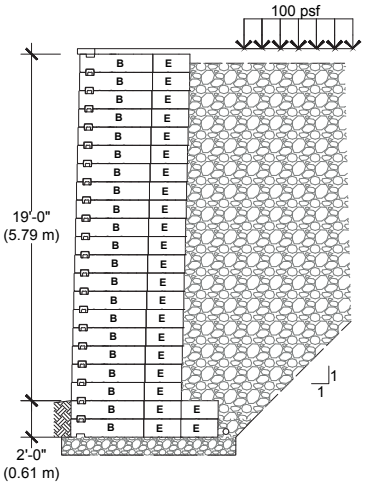
19 ft (5.79 m) Total Height
BE: 19



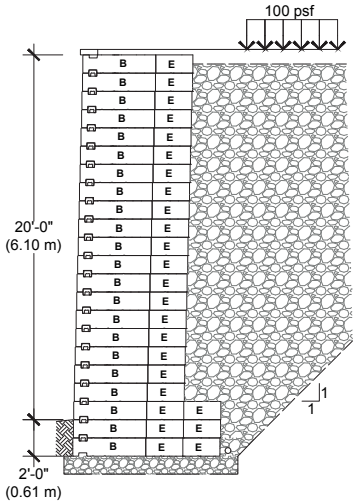
20 ft (6.10 m) Total Height
BE: 19
BEE: 1



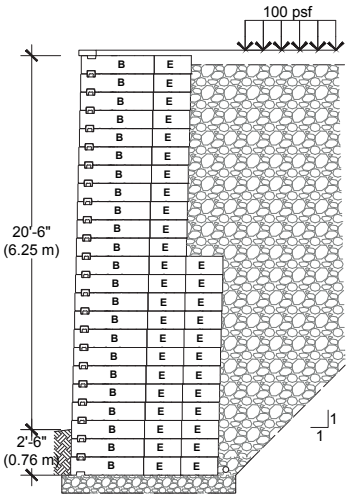
21 ft (6.40 m) Total Height
BE: 19
BEE: 2



22 ft (6.71 m) Total Height
BE: 19
BEE: 3



23 ft (7.01 m) Total Height
BE: 11
BEE: 12



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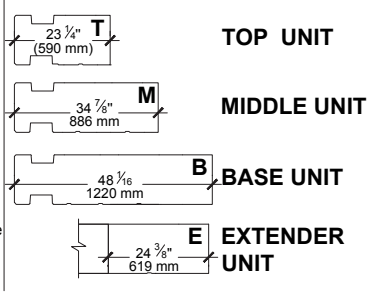
LEGEND :



Techo-Bloc

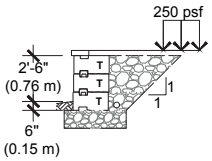
DESIGN CHART
SKYSCRAPER
NEAR VERTICAL

ALLOWABLE STRESS DESIGN

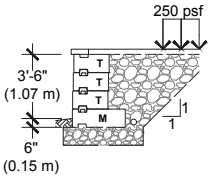
CLEAR CRUSHED STONE BACKFILL (Ø=38°, γ = 125 pcf)
OVER POOR SOIL CONDITIONS (Ø=28°, γ = 120 pcf)

CASE N° 15 :
250 psf Surcharge
No Backslope
No Toe Slope

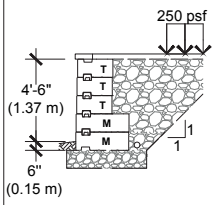
3 ft (0.91 m) Total Height
M: 3



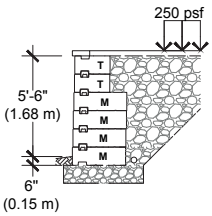
4 ft (1.22 m) Total Height
T: 3
M: 1



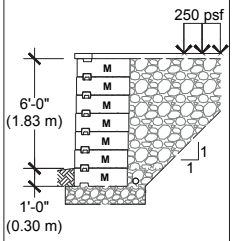
5 ft (1.52 m) Total Height
T: 3
M: 2



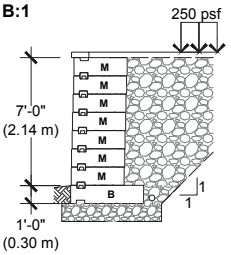
6 ft (1.83 m) Total Height
T: 2
M: 4



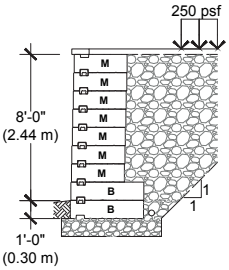
7 ft (2.13 m) Total Height
M: 7



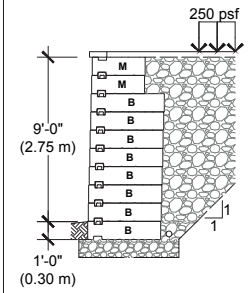
8 ft (2.44 m) Total Height
M: 7
B:1



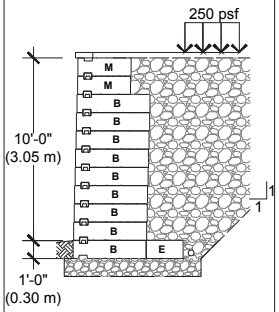
9 ft (2.74 m) Total Height
M: 7
B: 2



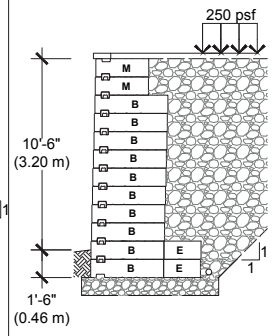
10 ft (3.05 m) Total Height
M: 2
B: 8



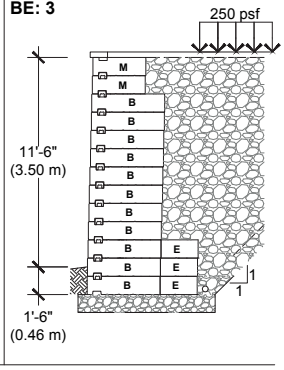
11 ft (3.35 m) Total Height
M: 2
B: 8
BE: 1



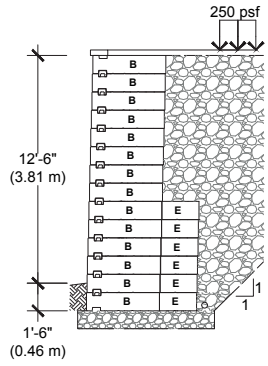
12 ft (3.66 m) Total Height
M: 2
B: 8
BE: 2



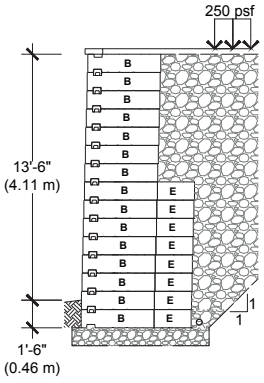
13 ft (3.96 m) Total Height
M: 2
B: 8
BE: 3



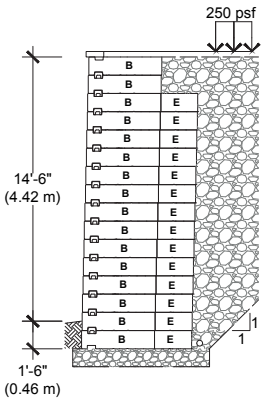
14 ft (4.27 m) Total Height
B: 8
BE: 6



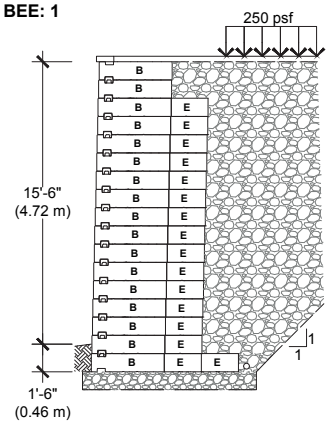
15 ft (4.57 m) Total
B: 7
BE: 8



16 ft (4.88 m) Total Height
B: 2
BE: 14



17 ft (5.18 m) Total Height
B: 2
BE: 14
BEE: 1



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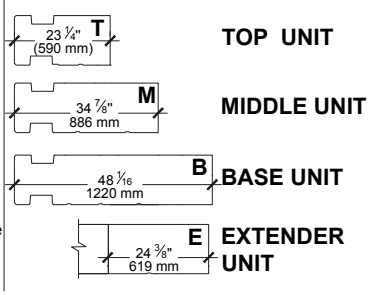
LEGEND :



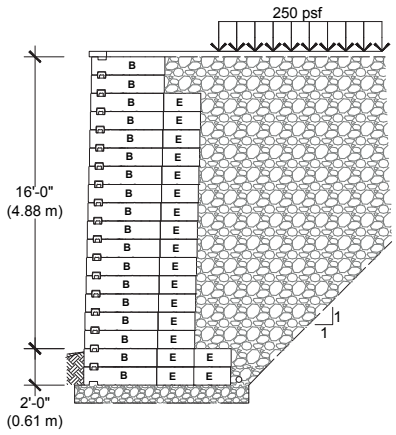
DESIGN CHART
SKYSCRAPER
NEAR VERTICAL

ALLOWABLE STRESS DESIGN

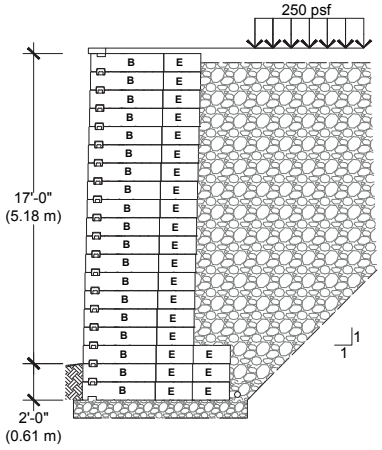
CLEAR CRUSHED STONE BACKFILL (Ø=38°, γ = 125 pcf)
OVER POOR SOIL CONDITIONS (Ø=28°, γ = 120 pcf)

CASE N° 15 :
250 psf Surcharge
No Backslope
No Toe Slope

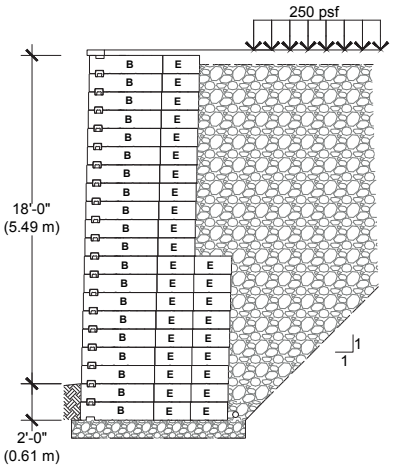
18 ft (5.49 m) Total Height
B: 2
BE: 14
BEE: 2



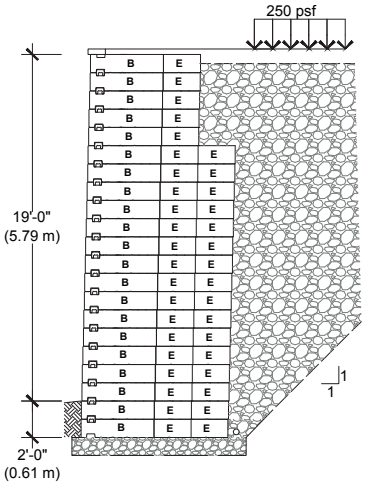
19 ft (5.79 m) Total Height
BE: 16
BEE: 3



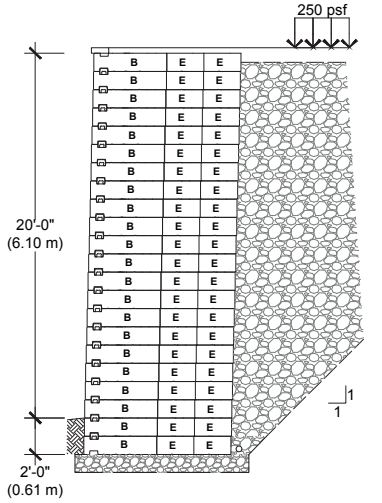
20 ft (6.10 m) Total Height
BE: 11
BEE: 9



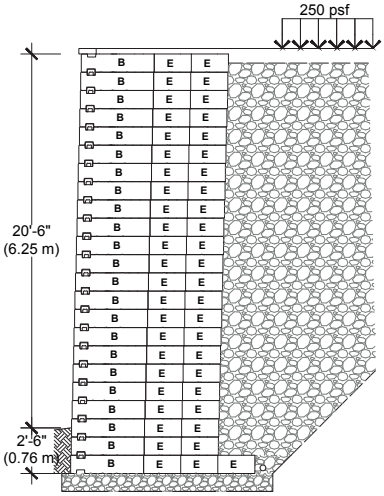
21 ft (6.40 m) Total Height
BE: 5
BEE: 16



22 ft (6.71 m) Total Height
BEE: 22



23 ft (7.01 m) Total Height
BEE: 22
BEEE: 1



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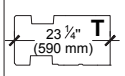
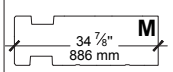
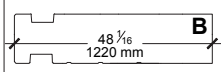


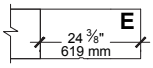
TOP UNIT



MIDDLE UNIT



BASE UNIT



EXTENDER UNIT

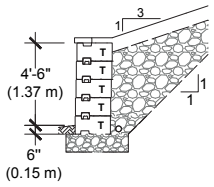
DESIGN CHART
SKYSCRAPER
NEAR VERTICAL

ALLOWABLE STRESS DESIGN

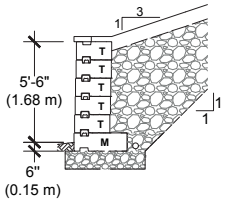
CLEAR CRUSHED STONE BACKFILL (Ø=38°, γ = 125 pcf)
OVER POOR SOIL CONDITIONS (Ø=28°, γ = 120 pcf)

CASE N° 16 :
No Surcharge
Backslope 1V : 3H
No Toe Slope

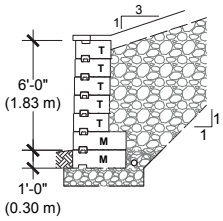
5 ft (1.52 m) Total Height
T: 5



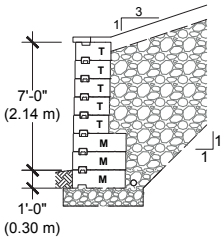
6 ft (1.83 m) Total Height
T: 5
M: 1



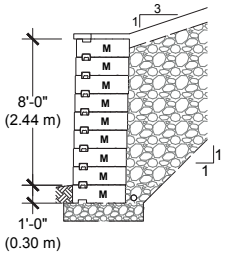
7 ft (2.13 m) Total Height
T: 5
M: 2



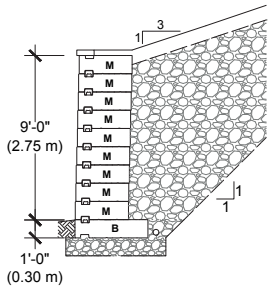
8 ft (2.44 m) Total Height
T: 5
M: 3



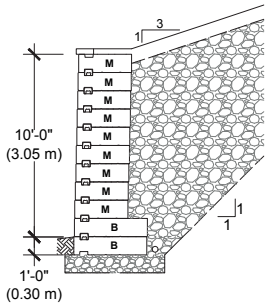
9 ft (2.74 m) Total Height
M: 9



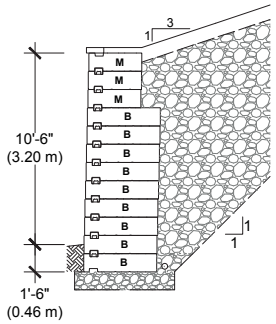
10 ft (3.05 m) Total Height
M: 9
B: 1



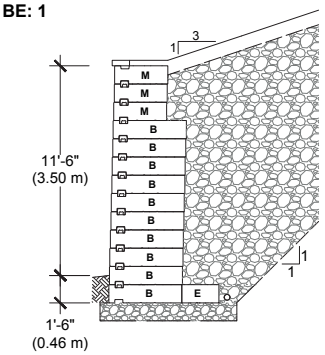
11 ft (3.35 m) Total Height
M: 9
B: 2



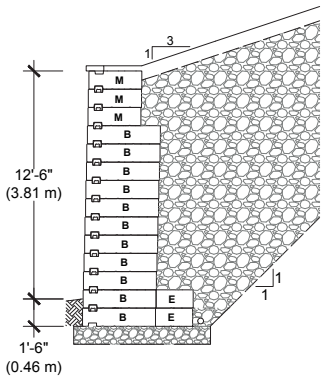
12 ft (3.66 m) Total Height
M: 3
B: 9



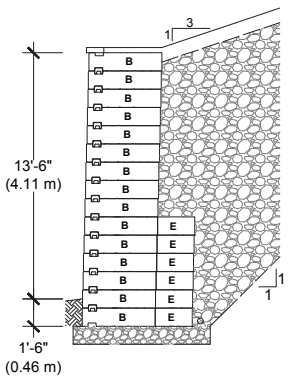
13 ft (3.96 m) Total Height
M: 3
B: 9
BE: 1



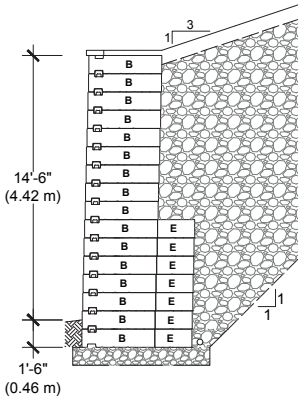
14 ft (4.27 m) Total Height
M: 3
B: 9
BE: 2



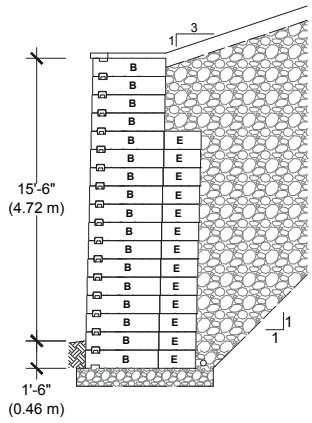
15 ft (4.57 m) Total
B: 9
BE: 6



16 ft (4.88 m) Total Height
B: 9
BE: 7



17 ft (5.18 m) Total Height
B: 4
BE: 13



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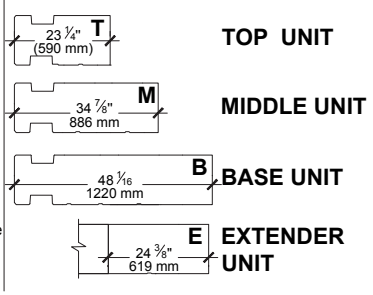
6. The seismic analysis is not included.
7. The design charts do not apply to tiered walls.
8. The charts assume that the walls are constructed in accordance with Techo-Bloc specifications, good construction practice and an adequate drainage system.
9. Engineering judgement should be used when interpolating between heights.
10. Techo-Bloc and its predecessors, successors, beneficiaries, employees, associates, administrators and insurers accepts no liability for the incorrect use of information contained in the design charts.
11. For further information, please contact our technical service department.

LEGEND :

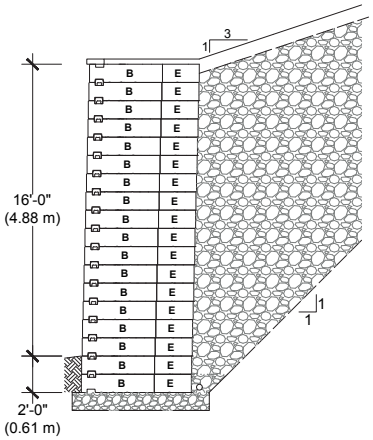


ALLOWABLE STRESS DESIGN

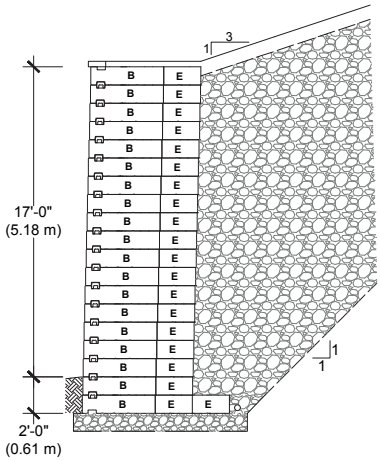
CLEAR CRUSHED STONE BACKFILL (Ø=38°, γ = 125 pcf)
OVER POOR SOIL CONDITIONS (Ø=28°, γ = 120 pcf)

CASE N° 16 :
No Surcharge
Backslope 1V : 3H
No Toe Slope

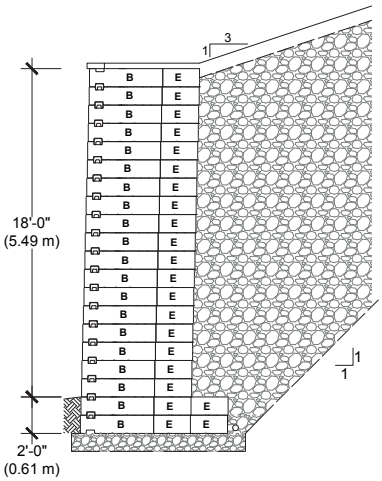
18 ft (5.49 m) Total Height
BE: 18



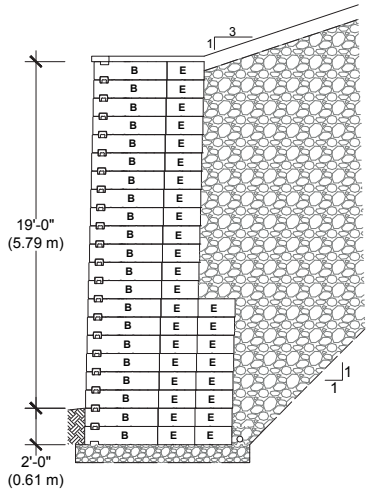
19 ft (5.79 m) Total Height
BE: 18
BEE: 1



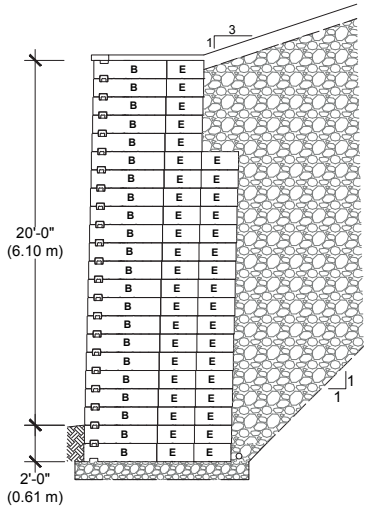
20 ft (6.10 m) Total Height
BE: 18
BEE: 2



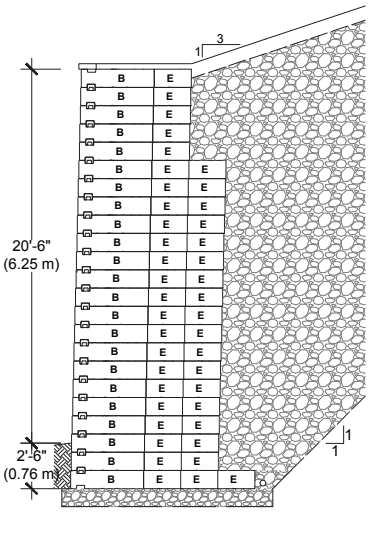
21 ft (6.40 m) Total Height
BE: 13
BEE: 8



22 ft (6.71 m) Total Height
BE: 5
BEE: 17

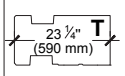


23 ft (7.01 m) Total Height
BE: 5
BEE: 17
BEEE:1

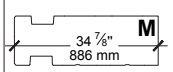


1. The information contained in the design charts is supplied for information purposes only and as such should only be used for preliminary designs.
2. The height (H) of the wall does not include the thickness of the cap.
3. Soil parameters: retained soil (φ =38°, γ = 125 pcf); foundation soil (φ=28°, γ = 120 pcf)
4. A qualified engineer should be consulted for the final design to be used for construction.
5. The foundation soil must be able to support the wall system. The bearing capacity of the foundation soil, settlement, and global stability must be verified and validated by a qualified geotechnical engineer.
6. The seismic analysis is not included.
7. The design charts do not apply to tiered walls.
8. The charts assume that the walls are constructed in accordance with Techo-Bloc specifications, good construction practice and an adequate drainage system.
9. Engineering judgement should be used when interpolating between heights.
10. Techo-Bloc and its predecessors, successors, beneficiaries, employees, associates, administrators and insurers accepts no liability for the incorrect use of information contained in the design charts.
11. For further information, please contact our technical service department.

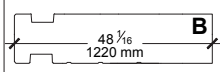
LEGEND :



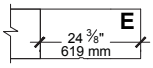
TOP UNIT



MIDDLE UNIT



BASE UNIT



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