

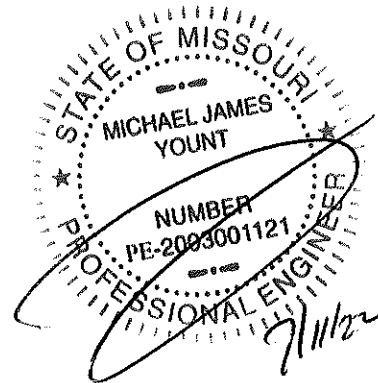
Modular Block Retaining Wall Calculations

Panda Express #3585
3601 Monticello Plaza Dr.
O'Fallon, MO 63304

Prepared By:

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Michael J. Yount, P.E.



THE
MICHIGAN
JOINT
NUMBER
15100000-PLC
MICHIGAN

SRWall (Version 4) Report**Project Identification**

Project ID :
Project Name :
Owner :
Client :
Prepared By :
Company : **Retaining Wall Solutions, Inc.**
Address :
Telephone :
Section :
Project File : **aaa RWS Clean.prj**
Vendor Data File : **GEOSTAR.vdf**
Date and Time : **06/05/2019 15:30:48**

Type of Structure : **Reinforced Wall**

Wall Geometry

Design Wall Height(ft) : **4.00**
Embedment Wall Height(ft) : **0.50**
Exposed Wall Design Height(ft) : **3.50**
Number of Segmental Wall Units : **6**
Wall Inclination(degrees) : **7.13**

Grades

Top Slope(degrees) : **18.00**

Uniform Distributed Surcharge

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

Soil Data

Soil Zone	Description	Cohesion (c) (psf)	Friction Angle(Φ) (degrees)	Unit Weight (γ)(pcf)
Reinforced Soil	SGB	N/A	34.00	100.00
Retained Soil	Low Plastic Silty Clay	N/A	26.00	120.00
Leveling Pad Soil	1" clean or minus	N/A	38.00	100.00
Foundation Soil	Low Plastic Silty Clay	150.00	26.00	120.00

Segmental Unit Data

Segmental Unit Name	: Rockwood Classic 8
Cap Height (Inches)	: 4.00
Unit Height (Hu)(Inches)	: 8.00
Unit Width (Wu)(Inches)	: 12.00
Unit Length (Inches)	: 18.00
Setback (Inches)	: 1.00
Weight (Infilled)(lb)	: 120.00
Unit Weight (Infilled)(pcf)	: 120.00
Center of Gravity(Inches)	: 6.00

Geosynthetic Reinforcement Type and Number

Supplier	Product Name	Number
Geostar Technologies, LLC	HP200	1
Geostar Technologies, LLC	HP300	0
Geostar Technologies, LLC	HP500	0
Geostar Technologies, LLC	HP700	0

Geosynthetic Properties

Geosynthetic Product	Tult (lb/ft)	RFcr	RFd	RFid	LTDS (lb/ft)	Ci	Cds
HP200	3373.00	1.55	1.10	1.25	1582.64	0.85	0.85
HP300	4650.00	1.55	1.10	1.25	2181.82	0.85	0.85
HP500	7952.00	1.55	1.10	1.25	3731.14	0.85	0.85
HP700	10688.00	1.55	1.10	1.25	5014.90	0.85	0.85

Unit-Unit Interface Properties

Minimum Shear Capacity(lb/ft)	Shear Friction Angle	Maximum Shear Capacity (lb/ft)
585.00	56.00	6000.00

Geosynthetic-SRW Unit Connection Strength properties

Geosynthetic Product	Minimum Conn. Capacity (lb/ft)	1st Inflection Point (lb/ft)		2nd Inflection Point (lb/ft)	
		Normal Load (lb/ft)	Connection Capacity (lb/ft)	Normal Load (lb/ft)	Max Connection Capacity (lb/ft)
HP200	1055.00	1799.00	1633.00	1800.00	1634.00
HP300	1235.00	2999.00	2553.00	3000.00	2554.00
HP500	1530.00	4199.00	3899.00	4200.00	3900.00
HP700	2445.00	5999.00	4475.00	6000.00	4476.00

Geosynthetic-SRW Unit Shear Strength properties

Geosynthetic Product	Minimum Shear Capacity(lb/ft)	Shear Friction Angle	Maximum Shear Capacity (lb/ft)
HP200	585.00	56.00	6000.00
HP300	585.00	56.00	6000.00
HP500	585.00	56.00	6000.00
HP700	585.00	56.00	6000.00

Vertical Components

Vertical Components of Earth Pressures Used : No

Coefficients of Earth Pressure and Failure Plane Orientation

Reinforcement Soil(Static)(Ka)	: 0.261
Reinforcement Soil(Static)(Kah Horizontal Component)	: 0.251
Internal Modified Back Slope(Bint)	: 18.000
Orientation of failure plane from horizontal(degrees) for Internal Stability	: 51.793
Retained Soil(Static)(Ka)	: 0.408
Retained Soil(Static)(Kah Horizontal Component)	: 0.386
External Modified Back Slope(Bext)	: 18.000
Orientation of failure plane from horizontal(degrees) for External Stability	: 42.245

Result of External Stability Static Analysis

	Calculated	Design Criteria
FOS Sliding	2.49	> 1.50
FOS Overturning	4.17	> 2.00
FOS Bearing Capacity	13.50	> 2.00
Base Reinforcement Length (L)(ft)	4.00	
Base Reinforcement Ratio (L/H)	1.00	> 0.60

Detailed Result of External Stability Analysis

	Calculated
Total Horizontal Force (lb/ft)	583.29
Total Vertical Force (lb/ft)	1752.40
Sliding Resistance (lb/ft)	1454.70
Driving Moment (lb-ft/ft)	975.27
Resisting Moment (lb-ft/ft)	4066.75
Bearing Capacity (psf)	6703.84
Base Eccentricity (e)(ft.)	0.24
Eccentricity Ratio (e/L-2e)	0.07
Maximum Bearing Pressure (psf)	496.68

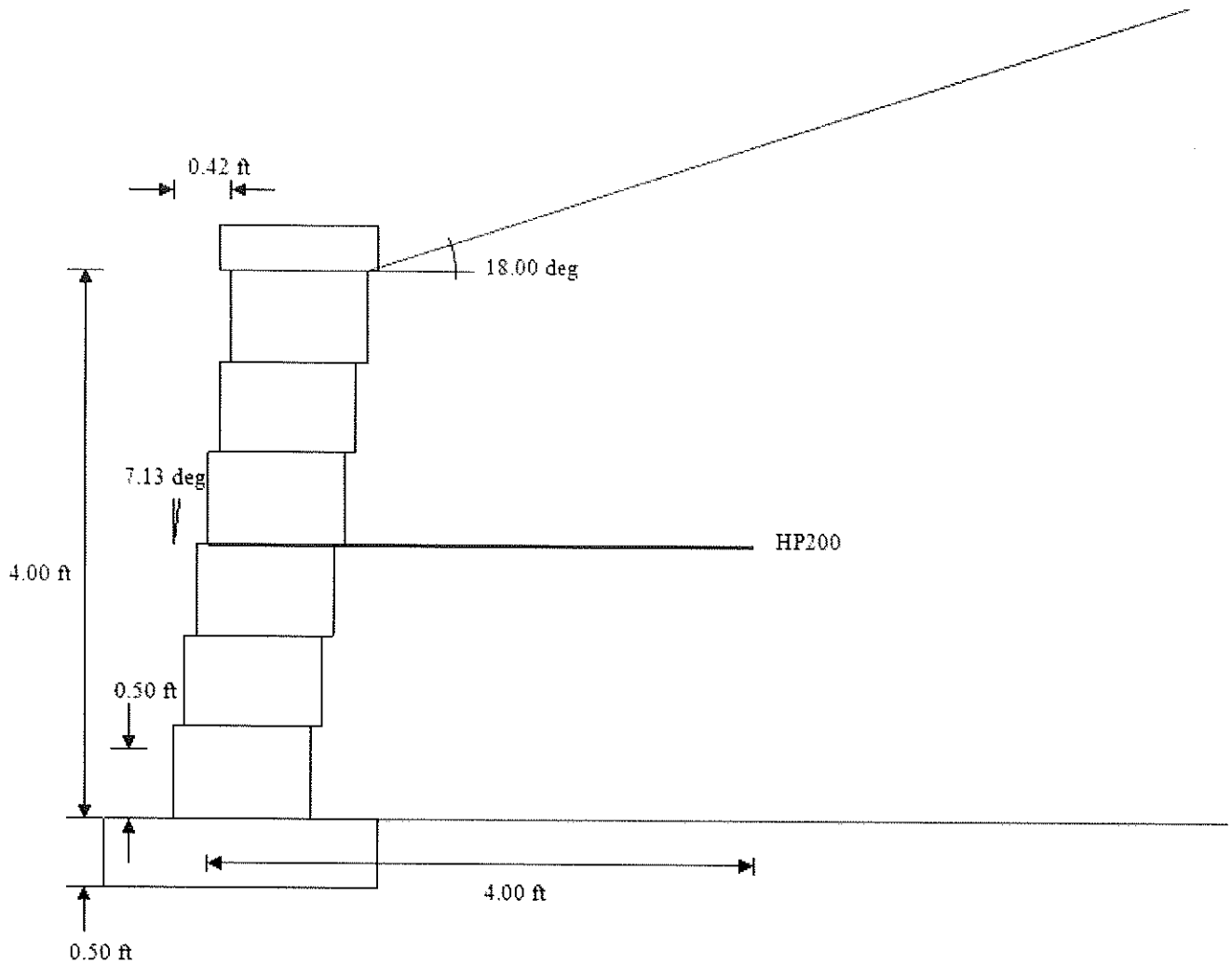
Results of Internal Stability Static Analysis

SRW Unit #	Geosynthetic Product	Elevation (ft)	Length (ft)	Anchor Length (ft)	FOS Overstress ≥ 1.50	FOS Pullout ≥ 1.50	FOS Slide ≥ 1.50	Layer Spacing (ft) ≥ 2.00
4	HP200	2.00	4.00	1.68	7.87	2.51	6.51	OK

Results of Facing Stability Static Analysis

SRW Unit #	Heel Elev (ft)	Geosynthetic Product	FOS Crest Toppling ≥ 1.50	FOS Connection ≥ 1.50
4	2.00	HP200	4.18	5.63

Wall Reinforcement Layout



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