









**General** The drawing is based on plan by FGMA (Rev. 11/22/2021). The contractor shall protect all existing utilities, and shall be responsible for all worker and public safety at the retaining wall site. All installation shall be per the retaining wall manufacturer's construction recommendations and/or as noted herein.

#### The Leveling Pad shall be constructed 1" minus or clean compacted by at least 4 passes with a vibratory compactor with minimum dimensions of 6" thick and

24" wide.

Retaining Wall Units shall be Versa Lok Mosaic, Weathered, Bethany Ledge Color.

The **reinforced wall backfill** material shall be compacted 1"- 2" clean. **Geogrid** shall be Geostar HP200 as indicated on the plan, or approved equivalent.

Filter Fabric shall be Mirafi 140N or approved equivalent.

Find Fabric shar be winan 1401 of approved eq

Drain Tile shall be 4" HDPE, perforated.

### The Soil Cap shall consist of compacted low plastic impervious soil above the granular backfill in areas not to be paved.

Wall Foundation Excavation Foundation soil shall be excavated as required for the leveling pads and the reinforcing zone. Any soils that are soft, plastic (LL > 50%), frozen, or wet and untested fills shall be removed and recompacted to 90% modified Proctor under the direction of the geotechnical engineer.

Wall Construction

Install toe first course of units on the leveling pad. Install the next course in a running bond stack. Adjust for setback per course. Backfill, install reinforcement as shown and continue construction. Filter fabric shall separate the granular backfill from the retained soil and the soil cap. Filter fabric shall not cover the foundation materials.

#### Geogrid Reinforcing

The geogrids shall be cut to the design lengths "L" and placed between the blocks at the elevations shown on the plans. The geogrid's primary strength direction shall be perpendicular to the wall face (into the fill). The geogrid shall be placed horizontally and laid flat on the reinforcing fill material. The geogrid shall be placed so that a minimum of 10" of grid is between the block layers. Slack in the geogrid shall be removed prior to placing backfill.

#### Wall Backfill

Backfill material shall be placed in maximum 24" lifts and compacted. Backfill shall be placed, spread and compacted in such a manner that minimizes wrinkles and movement of the geogrid. During backfill placement only hand operated equipment shall be used in the 4' zone directly behind the wall. The front of the wall shall be backfilled and compacted to finished grade.

#### Protection of Work

The surfaces surrounding the wall shall be graded at the end of each day to provide positive drainage away from the wall. Grading shall include proper contouring of fills in adjacent areas to prevent the flow of excessive surface water toward the wall. Finish grading should be completed in accordance with the approved site development plan.

#### Miscellaneous

If a fence or guardrail is be installed along the top of the wall under a seperate plan. We recommend that PVC or sonotube sleeves be placed as the wall is being backfilled to prevent a need to excavate post holes after wall construction which could damage the geogrid.

#### **General Notes** Existing utilities a

Existing utilities are not shown. The contractor shall locate and protect all utilities. The contractor shall notify Engineering Solutions, P.C. of any utility conflict affecting this work.

Unless otherwise noted all temporary shoring is strictly the responsibility of the contractor under a separate design.

All job site worker and public safety is strictly the responsibility of the contractor. The contractor shall comply with all OSHA regulations & requirements. Engineering Solutions, P.C. is available upon request to confirm construction compliance with this plan. Please notify Engineering Solutions, P.C. in advance of

#### the work if field inspection is requested.

The Owner or Owner's Representative is responsible for ensuring that construction by others adjacent to the wall does not disturb the wall or place temporary construction loads on the wall that exceed design loads, including loads such as water pressure, temporary grades, or equipment loading. Heavy paving or grading equipment shall be kept a minimum of 3 feet behind the back of the wall face. Equipment with wheel loads in excess of 150 psf live load shall not be operated within 10 feet of the face of the retaining wall during construction adjacent to the wall. Care should be taken by the Owner or Owner's Representative to ensure water runoff is directed away from the wall structure until final grading and surface drainage collection systems are completed.

Global stability and settlement are outside of the scope of this design.



and geometrical layout only. Not a structural review.

### Sheet: RW 1 of 1

Engineering

Solutions, P.C

5393 Old Baumgartner Rd

St Louis, Mo. 63129

Phone (314) 280-7748

Mo. State Certificate of Authority #P00565746

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# Modular Block Retaining Wall Calculations

MotoMart - Caledonia 8601 HWY DD O'Fallon, MO 63368

Prepared By: Engineering Solutions, P.C. 5393 Old Baumgartner Rd St. Louis, Mo. 63129 (314) 280-7748

Michael J. Yount, P.E.



A STANDAL LAND DAM & CO THE REAL

#### SRWall (Version 4) Report

#### **Project Identification**

Project ID	:
Project Name	:
Owner	:
Client	;
Prepared By	:
Company	: Retaining Wall Solutions, inc.
Address	: 5393 Old Baumgartner Rd, St. Louis, Mo. 63129
Telephone	: 314-842-8200
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)	: 8.33
Embedment Wall Height(ft)	: 0.50
Exposed Wall Design Height(ft)	: 7.83
Number of Segmental Wall Units	: 10
Wall Inclination(degrees)	: 7.13

#### <u>Grades</u>

Top Slope(degrees) : 0.00

#### **Uniform Distributed Surcharge**

Live Load Surcharge(Psf)	: 250.00
Live Load Surcharge Setback(ft)	: 3.00
Dead Load Surcharge(Psf)	: 0.00

#### Soil Data

Soil Zone	Description	Cohesion (c) (psf)	Friction Angle(Φ) (degrees)	Unit Weight (γ)(pcf)
Reinforced Soil	1"-2" Clean	N/A	40.00	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 Slity Clay	150.00	26.00	120.00

#### Segmental Unit Data

Segmental Unit Name	: Versa-Lok Mosaic
Cap Height (Inches)	: 0.00
Unit Height (Hu)(Inches)	: 10.00
Unit Width (Wu)(Inches)	: 12.00
Unit Length (Inches)	: 18.00
Setback (Inches)	: 1.25
Weight (Infilled)(Ib)	: 150.00
Unit Weight (Infilled)(pcf)	: 120.00
Center of Gravity(Inches)	: 6.00
	Segmental Unit Name Cap Height (Inches) Unit Height (Hu)(Inches) Unit Width (Wu)(Inches) Unit Length (Inches) Setback (Inches) Weight (Infilled)(Ib) Unit Weight (Infilled)(pcf) Center of Gravity(Inches)

### **Geosynthetic Reinforcement Type and Number**

Supplier	Product Name	Number
Geostar Technologies, LLC	HP200	3
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	Shear Friction	Maximum Shear
	Capacity(lb/ft)	Angle	Capacity (lb/ft)
ſ	585.00	56.00	6000.00

#### Geosynthetic-SRW Unit Connection Strength properties

	Minimum	1st Inflection	n Point (lb/ft)	2nd Inflectio	n Point (lb/ft)
Geosynthetic Product	Conn. Capacity (lb/ft)	Normal Load (lb/ft)	Connection Capacity (Ib/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

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#### **Vertical Components**

Vertical Components of Earth Pressures Used : No

# Cofficients of Earth Pressure and Failure Plane Orientation

Reinforcement Soil(Static)(Ka)	: 0.155
Reinforcement Soil(Static)(Kah Horizontal Component)	: 0.146
Internal Modified Back Slope(Bint)	: 0.000
Orientation of failure plane from horizontal(degrees) for Internal Stability	: 59.139
Retained Soil(Static)(Ka)	: 0,292
Retained Soil(Static)(Kah Horizontal Component)	: 0.276
External Modified Back Slope(Bext)	: 0.000
Orientation of failure plane from horizontal(degrees) for External Stability	: 49.571
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#### **Result of External Stability Static Analysis**

	Calculated	Design Criteria
FOS Sliding	1.61	> 1.50
FOS Overturning	2.21	> 2.00
FOS Bearing Capacity	4.09	> 2.00
Base Reinforcement Length (L)(ft)	5.00	
Base Reinforcement Ratio (L/H)	0.60	> 0.60

#### **Detailed Result of External Stability Analysis**

	Calculated
Total Horizontal Force (lb/ft)	1724.92
Total Vertical Force (lb/ft)	4166.67
Sliding Resistance (lb/ft)	2782.22
Driving Moment (lb-ft/ft)	5590.02
Resisting Moment (lb-ft/ft)	12369.79
Bearing Capacity (psf)	6497.71
Base Eccentricity (e)(ft.)	0.87
Eccentricity Ratio (e/L-2e)	0.27
Maximum Bearing Pressure (psf)	1587.65

#### **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
7	HP200	5.00	5.00	1.64	5.68	2.79	5.14	ок
5	HP200	3.33	5.00	2.43	8.69	9.50	3.82	ок
3	HP200	1.67	5.00	3.21	4.53	8.73	3.07	ок

# **Results of Facing Stability Static Analysis**

SRW Unit #	Heel Elev (ft)	Geosynthetic Product	FOS Crest Toppling >=1.50	FOS Connection >=1.50
7	5.00	HP200	2.91	9.34
5	3.33	HP200		10.27
3	1.67	HP200		5.08

#### Wall Reinforcement Layout



#### **Project Identification**

Project ID	:
Project Name	:
Owner	:
Client	:
Prepared By	:
Company	: Retaining Wall Solutions, inc.
Address	: 5393 Old Baumgartner Rd, St. Louis, Mo. 63129
Telephone	: 314-842-8200
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Type of Structure	: Reinforced Wall

#### Wall Geometry

	Design Wall Height(ft)	: 5.83
	Embedment Wall Height(ft)	: 0.50
	Exposed Wall Design Height(ft)	: 5.33
	Number of Segmental Wall Units	: 7
	Wall Inclination(degrees)	: 7.13
-		

#### <u>Grades</u>

Top Slope(degrees) :0.00

#### Uniform Distributed Surcharge

Live Load Surcharge(Psf)	: 250.00
Live Load Surcharge Setback(ft)	: 3.00
Dead Load Surcharge(Psf)	: 0.00
	***

#### Soil Data

Soil Zone	Description	Cohesion (c) (psf)	Friction Angle(Φ) (degrees)	Unit Weight (γ)(pcf)
Reinforced Soil	1"-2" Clean	N/A	40.00	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 Slity Clay	150.00	26.00	120.00

#### Segmental Unit Data

Segmental Unit Name	: Versa-Lok Mosaic
Cap Height (Inches)	: 0.00
Unit Height (Hu)(Inches)	: 10.00
Unit Width (Wu)(Inches)	: 12.00
Unit Length (Inches)	: 18.00
Setback (Inches)	: 1.25
Weight (Infilled)(lb)	: 150.00
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	2
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	Shear Friction	Maximum Shear
Capacity(lb/ft)	Angle	Capacity (lb/ft)
585.00	56.00	

#### Geosynthetic-SRW Unit Connection Strength properties

	Minimum	Minimum 1st Inflection Point (Ik		2nd Inflection Point (lb/ft)		
Geosynthetic Product	Conn. Capacity (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

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# Cofficients of Earth Pressure and Failure Plane Orientation

Reinforcement Soil(Static)(Ka)	: 0.155
Reinforcement Soil(Static)(Kah Horizontal Component)	: 0.146
Internal Modified Back Slope(Bint)	: 0.000
Orientation of failure plane from horizontal(degrees) for Internal Stability	: 59.139
Retained Soil(Static)(Ka)	: 0.292
Retained Soil(Static)(Kah Horizontal Component)	: 0.276
External Modified Back Slope(Bext)	: 0.000
Orientation of failure plane from horizontal(degrees) for External Stability	: 49.571

#### **Result of External Stability Static Analysis**

	Calculated	Design Criteria
FOS Sliding	1.80	> 1.50
FOS Overturning	2.38	> 2.00
FOS Bearing Capacity	5.27	> 2.00
Base Reinforcement Length (L)(ft)	4.00	
Base Reinforcement Ratio (L/H)	0.69	> 0.60

#### Detailed Result of External Stability Analysis

	Calculated
Total Horizontal Force (lb/ft)	965.96
Total Vertical Force (lb/ft)	2333.33
Sliding Resistance (lb/ft)	1738.04
Driving Moment (lb-ft/ft)	2269.55
Resisting Moment (lb-ft/ft)	5395.83
Bearing Capacity (psf)	6065.41
Base Eccentricity (e)(ft.)	0.66
Eccentricity Ratio (e/L-2e)	0.25
Maximum Bearing Pressure (psf)	1150.64

#### **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
5	HP200	3.33	4.00	1.43	7.81	2.51	5.66	ок
3	HP200	1.67	4.00	2.21	6.13	5.08	3.86	ок

# **Results of Facing Stability Static Analysis**

SRW Unit #	Heel Elev (ft)	Geosynthetic Product	FOS Crest Toppling >=1.50	FOS Connection >=1.50
5	3.33	HP200	4.76	14.21
3	1.67	HP200		7.27

#### Wall Reinforcement Layout



#### **Project Identification**

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Client	;
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# **Design & Installation Guidelines**









# **Color Swatches**











# O S E T T A WALLS • STEPS • ACCENTS

Cedar Valley



Ozark Blend



We have made every attempt to display realistic photos, however colors may vary due to the printing process. Final color selection should be made from actual product samples. All products are not available in all colors.





# Mirafi<sup>®</sup> 140N

Mirafi<sup>®</sup> 140N is a nonwoven geotextile composed of polypropylene fibers, which are formed into a a stable network such that the fibers retain their relative position. 140N is inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids.

Mechanical Properties	Test Method	Unit	Minimum Average Roll Value		
			MD	CD	
Grab Tensile Strength	ASTM D 4632	kN (lbs)	0.53 (120)	0.53 (120)	
Grab Tensile Elongation	ASTM D 4632	%	50	50	
Trapezoid Tear Strength	ASTM D 4533	kN (lbs)	0.22 (50)	0.22 (50)	
Mullen Burst Strength	ASTM D 3786	kPa (psi)	1550	(225)	
Puncture Strength <sup>1</sup>	ASTM D 4833	kN (lbs)	0.30 (65)		
CBR Puncture Strength	ASTM D 6241	kN (lbs)	1.33 (300)		
Apparent Opening Size (AOS)	ASTM D 4751	mm (U.S. Sieve)	0.212		
Permittivity	ASTM D 4491	sec <sup>-1</sup>	1.8		
Permeability	ASTM D 4491	cm/sec	0.21		
Elow Poto		l/min/m <sup>2</sup>	5500		
Flow Rate	ASTM D 4491	(gal/min/ft <sup>2</sup> )	(135)		
UV Resistance (at 500 hours)	ASTM D 4355	% strength retained	7	0	

<sup>1</sup> ASTM D 4833 has been replaced with ASTM D 6241

Physical Properties	Test Method	Unit	Typical Value		
Weight	ASTM D 5261	g/m² (oz/yd²)	163 (4.8)		
Thickness	ASTM D 5199	mm (mils)	1.4 (55)		
Roll Dimensions		m	3.8 x 110	4.5 x 110	
(width x length)		(ft)	(12.5 x 360)	(15 x 360)	
Roll Area		m² (yd²)	418 (500)	502 (600)	
Estimated Roll Weight		kg (lb)	74 (164)	89 (197)	

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# **GeoGrid.** The underlining principles of viable walls.



Dependable *GeoGrid*, available in a wide variety of strengths, and the finer-patterned *GeoFace* are Geostar's polyester grid lines. Connection tested with all major SRW products, this is the stuff viability is made of and technical data is readily available that proves it.

And both, like all Geostar products, are strategically positioned by purpose, price, proximity and performance.

We have what you need, you can afford it, we can get it to you, and you'll get more than you need from it.

All proven.



The brightest ideas on earth.

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GeoGrid Product Data				FaceGrid™		HP Polyester GeoGrint Styles							
Materials	Sym	bol	Test Method	MG	100	HP200		НРЗОО		HP500		HP600	
Polymer		-	_	PET/PET		PET/PET		PET/PET		PET/PET		PET/PET	
Coating		-	_	PVC		PVC		PVC		PVC		PVC	
Tensile Properties				kN/m	lbf/ft	KN/m	lbf/ft	kN/m	lbf/ft	kN/m	lbf/ft	kN/m	lbf/ft
MD-Ultimate Strength <sup>1</sup>	T <sub>ut</sub>	I	ASTM D 6637	21.6	1480	50.2	3437	70.3	4815	117.1	8025	128.6	8809
MD-Creep Limited Strenth	T		ASTM D 5262	13.5	925	32.4	2217	45.3	3106	75.6	5177	82.9	5683
CMD-Ultimate Strength <sup>1</sup>	T <sub>ut</sub>	I	ASTM D 6637	21.4	1465	29.2	2000	29.2	2000	29.2	2000	29.2	2000
Reduction Factors													
Creep Reduction Factor	RF	CR .	ASTM D 5262	1.60	1.60	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55
Durability Reduction Factor (3 <ph<9)< td=""><td>RF</td><td>D</td><td>ASTM D 2455</td><td>1.10</td><td>1.10</td><td>1.10</td><td>1.10</td><td>1.10</td><td>1.10</td><td>1.10</td><td>1.10</td><td>1.10</td><td>1.10</td></ph<9)<>	RF	D	ASTM D 2455	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
Installation Damage Reduction Factor	RF	D	ASTM D 5818										
Soil Type 1 (Sand, Silt & Clay, D50<6mm)	-			1.2	1.2	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
Soil Type 2 (0.75" minus angular aggregate, D50<6mm)				1.30	1.30	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
Soil Type 3 (1.5" minus angular aggregate, D50<20mm)				1.40	1.40	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Design Strength Properties				kN/m	lbf/ft	kN/m	lbf/ft	kN/m	lbf/ft	kN/m	lbf/ft	kN/m	lbf/ft
Long Term Design Strength <sup>2</sup>	LTD	S	—										
T <sub>ULT</sub> / RF for Soil Type 1				10.2	701	28.0	1920	39.3	2690	65.4	4483	71.8	4921
T <sub>ULT</sub> / RF for Soil Type 2				9.4	647	26.7	1833	37.5	2567	62.4	4279	68.5	4697
T <sub>ULT</sub> / RF for Soil Type 3				8.8	601	23.5	1613	33.0	2259	55.0	3765	60.3	4133
Design Interaction Properties													
Coefficient of Interaction	C		ASTM D 6706										
Soil Type 1				0.6 - 0.7		0.7 - 0.8		0.7 - 0.8		0.7 - 0.8		0.7 - 0.8	
Soil Type 2				0.7 - 0.8		0.8 - 0.9		0.8 - 0.9		0.8 - 0.9		0.8 - 0.9	
Soil Type 3				0.9	- 1.1	0.9 - 1.0		0.9 - 1.0		0.9 - 1.0		0.9 - 1.0	
Coefficient of Direct Sliding	C <sub>ds</sub>		ASTM D 5321										
Soil Type 1				0.7		0.7		0.7		0.7		0.7	
Soil Type 2				0.8		0.8		0.8		0.8		0.8	
Soil Type 3				0.9		0.9		0.9		0.9		0.9	
Scale Correction Factor	α			—		—		_		—		_	
Physical Properties	Uni SI	ts US	Test Method	SI	US	SI	US	SI	US	SI	US	SI	US
MD-Aperture Size	mm	in	Measured	2.54	0.10	21.59	0.85	21.59	0.85	20.32	0.80	20.32	0.80
CMD-Aperture Size	mm	in	Measured	2.54	0.10	20.83	0.82	20.32	0.80	19.05	0.75	18.29	0.72
Packaging						,							
Roll Width	m	ft	Measured	2.9	9.5	2.5	8.2	2.5	8.2	2.5	8.2	2.0	6.56
Roll Length	m	ft	Measured	72.2	237	67.0	220.0	67.0	220.0	67.0	220.0	83.8	275.0
Area Per Roll	m²	yd²	Measured	209.2	250.2	167.5	200.3	167.5	200.3	167.5	200.3	167.5	200.3
Weight Per Roll	kgs	lbs	Measured	57.5	127	56.0	122.0	61.0	134.0	61.0	189.0	100.0	221.0

<sup>1</sup> The values reported are calculated as the mean value minus two standard deviations. Statistically, the values yield a 97.7% degree of confidence that any sample of fabric tested will exceed the value reported. <sup>2</sup> Long Term Design Strength is LTDS or TAL = TULT / (RFCR x RFID x RD).



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