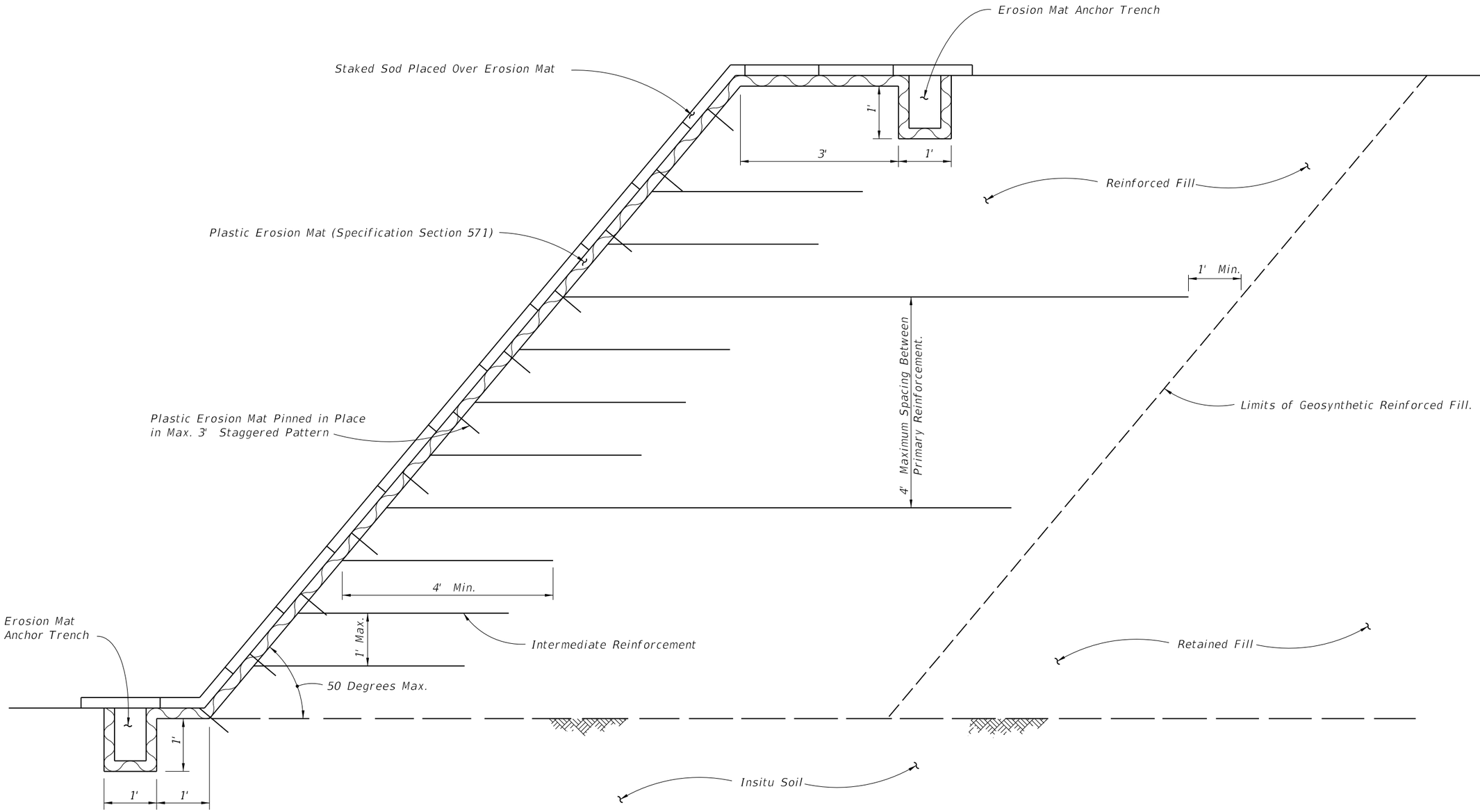

GEOSYNTHETIC REINFORCED SOIL SLOPES

GENERAL NOTES

1. All Designs shall meet the requirements shown on this sheet and the contract documents.
2. $T_a = \dfrac{T_{ult}}{RF_c\, RF_d\, CRF}$
3. Intermediate reinforcement shall be rolled out parallel to slope face.

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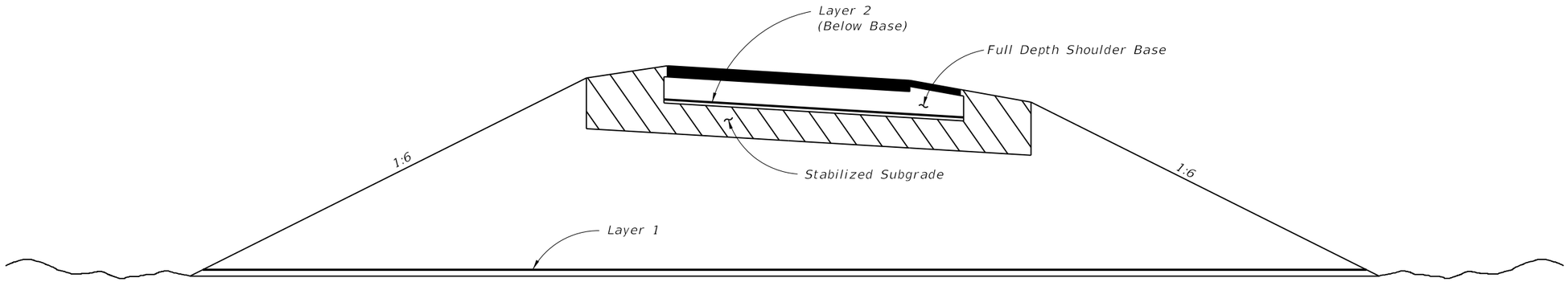
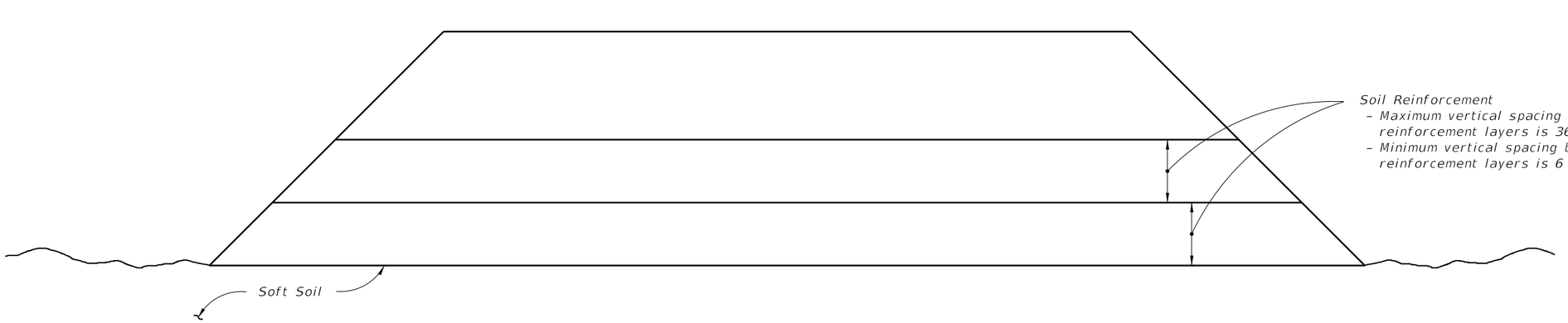


REINFORCED EMBANKMENT



GEOSYNTHETIC REINFORCED FOUNDATIONS CONSTRUCTED ON SOFT SOILS

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TABLE OF WOVEN GEOTEXTILE VALUES

PROPERTY		REQUIRED TEST METHOD	MIRAFI GEOLON HS 1150	MIRAFI MIRAMESH GR	COMTRAC 70.70	GEOTEX 315ST	GEOTEX 2x2HF	GEOTEX 3x3HF	GEOTEX 4x4	GEOTEX 4x4HF	GEOTEX 4X6	TenCate RS380i	TenCate RS580i
Permittivity (0.05 sec^{-1} Min.)		ASTM D 4491	0.32	———	0.20	0.04	0.65	0.18	0.15	0.40	0.26	0.90	1.0
UV Stability (Min. Retained Strength @ 500 hr.)		ASTM D 4355	50%	90%	70%	70%	70%	70%	70%	70%	70%	80%	80%
Burst Strength (psi)		ASTM D 6241	———	———	———	1,000	1,100	1,000	1,500	1,200	1,500	1,770	1,950
Grab Strength (Lb.)		ASTM D 4632	———	———	———	315	315	450/350	600/500	475/440	600/700	475/350	500/480
A.O.S. (in.)		ASTM D 4751	0.0236	0.120 x 0.120	0.0181	0.0167	0.0167	0.0236	0.0236	0.533	0.312	0.0169	0.0169
Tensile Strength (Lb./Ft.)		ASTM D 4595											
Machine Direction	Ultimate (T_{ult})		13,800	1,440	4,800	2,100	2,400	3,600	4,800	4,800	4,800	4,500	4,800
	2% Strain		———	———	———	156	276	400	456	960	700	544	480
	5% Strain		4,800	———	2,196	564	744	1,392	1,452	2,400	1,200	1,800	1,440
Cross Direction	Ultimate		3,600	1,733	3,600	2,100	2,400	3,600	4,800	4,800	6,600	3,600	4,800
	2% Strain		———	———	———	576	660	400	1,380	1,320	1,000	1,020	1,740
	5% Strain		———	———	———	1,104	1,404	1,740	2,604	2,400	2,640	2,256	4,380
Strain @ Ultimate Tensile Strength		ASTM D 4595	12%	6%	9%	15%	10%	10%	10%	8%	8%	8%	10%
Secant Modulus @ (lb./Ft.)	2% Strain		———	———	———	7,800	13,800	27,000	22,800	48,000	48,000	30,000	24,000
	5% Strain		96,000	———	24,400	11,280	14,880	27,000	29,040	48,000	48,000	36,000	28,800
	10% Strain		120,000	———	24,400	10,440	12,480	24,000	31,200	48,000	48,000	36,000	36,000
Seam Breaking Strength (Lb./Ft.)		ASTM D 4884	2,400	———	2,400	———	———	———	———	———	———	2,700	3,000
Puncture Resistance (Lb.)		ASTM D 4833	———	———	———	120	120	180	170	190	280	———	———
Tear Strength (lb.)	Machine Direction	ASTM D 4833	———	———	———	120	120	180	250	180	180	120	180
	Cross Direction	ASTM D 4833	———	———	———	120	120	110	250	180	250	130	150
Soil-Geosynthetic Friction		ASTM D 6706	0.8	0.8	0.9	0.65	0.65	0.65	0.65	0.65	0.65	0.86	0.86
Creep Resistance-T_{creep}(Lb./Ft.)		ASTM D 5262	8,280	471 x 566	———	600	———	———	———	———	———	———	———
Creep Reduction Factor (T_{ult}/T_{creep})			1.67	3.0	1.67	3.5	5.0	5.0	5.0	5.0	5.0	———	———
Installation Damage (RF_c)	Sand	GRI : GG4 & GT7	1.10	1.05	1.2	1.4	1.4	1.4	1.4	1.4	1.4	———	———
	Limestone		1.20	1.10	1.5	1.4	1.4	1.5	1.4	1.4	1.4	———	———
Durability (RF_d)	Chemical	ASTM D 5322	1.1	1.10	1.1	1.1	1.1	1.1	1.1	1.1	1.1	———	———
	Biological	ASTM D1987 & G21	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	———	———
Joint Strength (RF_j)	Mechanical	ASTM D 4595, GRI : GG4 & GT7	———	———	———	———	———	———	———	———	———	———	———
	Overlap *	ASTM D 6706	1.0	1.0	1.0	1.2	1.2	1.0	1.2	1.0	1.2	———	———
Approved Application Usage			3, 4	1,4	3	2	2	2	2	2	2	2,5	2,5

Approved Application Usage:
1 = Steepened Slopes
2 = Reinforcement of Foundations over Soft Soils
3 = Both Steepened Slopes & Reinforcement of Foundations over Soft Soils
4 = Reinforced Embankment
5 = Construction Expedient

* Minimum 3' Overlap

APPROVED GEOSYNTHETIC PRODUCTS
(WOVEN GEOTEXTILE)
APPLICATION AND PROPERTIES

LAST REVISION	REVISION	DESCRIPTION:			INDEX NO.	SHEET NO.
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TABLE OF WOVEN GEOTEXTILE VALUES

PROPERTY		REQUIRED TEST METHOD	TENCATE HP270	TENCATE HP370	TENCATE HP570	TENCATE HP665	TENCATE HP770	TENCATE MMESH/GR	TENCATE MMESH/SG	TENCATE HS400	TENCATE HS600	TENCATE HS800	TENCATE HS1150
Permittivity (0.05 sec^{-1} Min.)		ASTM D 4491	0.5	0.52	0.4	0.26	0.23	--	--	0.1	0.32	0.2	0.32
UV Stability (Min. Retained Strength @ 500 hr.)		ASTM D 4355	80%	80%	80%	70%	80%	90%	90%	50%	50%	50%	50%
Burst Strength (psi)		ASTM D 6241	--	--	--	--	--	--	--	--	--	--	--
Grab Strength (Lb.)		ASTM D 4632	290/255	400/250	475/440	600/700	550/450	--	--	--	--	--	--
A.O.S. (in.)		ASTM D 4751	0.0236	0.0236	0.0236	0.0167	0.0236	--	--	0.0169	0.0335	0.0335	0.0236
Tensile Strength (Lb./Ft.)		ASTM D 4595											
Machine Direction	Ultimate (T_{Ult})		2640	3600	4800	4800	7200	1440	1440	4800	7200	9600	13800
	2% Strain		480	540	960	300	1140	--	--	--	--	--	--
	5% Strain		1212	1500	2400	1200	3600	--	--	1080	2400	3600	6000
Cross Direction	Ultimate		2460	2700	4800	6600	5760	1733	1733	4800	3600	3600	3600
	2% Strain		588	540	1320	1740	1560	--	--	--	--	--	--
	5% Strain		1356	1560	2700	4200	3600	--	--	2400	1800	1200	--
Strain @ Ultimate Tensile Strength		ASTM D 4595	10%	10%	10%	10%	10%	6%	6%	10%	10%	10%	10%
Secant Modulus @ (lb./ft.)	2% Strain		24000	27000	48000	48000	57000	--	--	--	--	--	--
	5% Strain		24240	30000	48000	48000	72000	--	--	21600	48000	72000	120000
	10% Strain		23400	--	--	50400	66000	--	--	33600	--	90000	--
Seam Breaking Strength (Lb./Ft.)		ASTM D 4884	1260	1260	3000	3600	3000	--	--	2400	2400	2400	2400
Puncture Resistance (Lb.)		ASTM D 4833	--	180	--	1650	--	--	--	--	--	--	--
Tear Strength (lb.)	Machine Direction	ASTM D 4833	120	170	180	180	250	--	--	--	--	--	--
	Cross Direction	ASTM D 4833	140	125	180	275	300	--	--	--	--	--	--
Soil-Geosynthetic Friction		ASTM D 6706	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Creep Resistance-T_{creep}(Lb./Ft.)		ASTM D 5262	660	900	900	1650	1800	471	471	2880	4320	5760	8280
Creep Reduction Factor (T_{ult}/T_{creep})			4	4	4	4	4	3.7	3.7	1.67	1.67	1.67	1.67
Installation Damage (RF_c)	Sand	GRI : GG4 & GT7	1.1	1.1	1.1	1.1	1.1	1.05	1.05	1.15	1.15	1.15	1.15
	Limestone		1.5	1.5	1.5	1.5	1.5	1.1	1.1	1.25	1.25	1.25	1.25
Durability (RF_d)	Chemical	ASTM D 5322	1.1	1.1	1.1	1.1	1.1	--	1.1	1.1	1.1	1.1	1.1
	Biological	ASTM D1987 & G21	1.0	1.0	1.0	1.0	1.0	--	1.0	1.0	1.0	1.0	1.0
Joint Strength (RF_j)	Mechanical	ASTM D 4595, GRI : GG4 & GT7	--	--	--	--	--	--	--	--	--	--	--
	Overlap *	ASTM D 6706	1.0	1.0	1.0	1.0	1.0	--	--	--	--	--	--
Approved Application Usage			3, 4, 5	3, 4, 5	3, 4, 5	3, 4, 5	3, 4, 5	1, 4, 5	1, 4, 5	3, 4, 5	3, 4, 5	3, 4, 5	3, 4, 5

Approved Application Usage:
1 = Steepened Slopes
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* Minimum 3' Overlap

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(WOVEN GEOTEXTILE)
APPLICATION AND PROPERTIES

LAST REVISION	REVISION	DESCRIPTION:			INDEX NO.	SHEET NO.
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TABLE OF WOVEN GEOGRID VALUES

PROPERTY		REQUIRED TEST METHOD	GeoBase GB 11	GeoBase GB 12	Hanes Geo Terra Grid RX 1100	Hanes Geo Terra Grid RX 1200	Hanes Geo Terra Grid SX 1515	Hanes Geo E' Grid 1616	Hanes Geo E' Grid 2020	Hanes Geo E' Grid 2020L	Hanes Geo E' Grid 3030	SynTec SBX 11	SynTec SBX 12
UV Stability (Min. Retained Strength @ 500 hr.)		ASTM D 4355	92%	92%	94%	100%	100%	100%	100%	100%	100%	94%	100%
Tensile Strength (Lb./Ft.)		ASTM D 6637											
Machine Direction	Ultimate (T_{ult})		883.9	1,349.8	850	1,310	1,025	1,095	1,370	1,370	2,055	850	1310
	2% Strain		294.6	438.5	280	410	340	395	520	520	750	280	410
	5% Strain		609.8	842.8	580	810	685	795	1,045	1,045	1,480	580	810
Cross Direction	Ultimate		1,343.0	1,998	1,300	1,970	1,025	1,095	1,370	1,370	2,055	1,300	1970
	2% Strain		472.8	644.1	450	620	340	395	520	520	750	450	620
	5% Strain		952.4	1377.2	920	1,340	685	795	1,045	1,045	1,480	920	1340
Strain @ Ultimate Tensile Strength		ASTM D 6637	9.3% / 6.6%	11% / 7.8%	25% / 10%	25% / 10%	15% / 10%	15% / 10%	15% / 10%	15% / 10%	15% / 10%	10%	10%
Secant Modulus @ (Lb./Ft.)	2% Strain		14,730/23,640	21,925/32,205	14,000/22,500	20,500/31,000	17,000	19,750	26,000	26,000	37,500	14,000	20,500
	5% Strain		12,196/19,048	16,856/27,544	11,600/18,400	16,200/26,800	13,700	15,900	20,900	20,900	29,600	11,600	10,200
	10% Strain		———	———	———	———	———	———	———	———	———	———	———
Junction Strength (Lb./Ft.)		GRI : GG2	144.9/177.1	155/180	790/1209	1,218/1,832	974/974	1,040	1,300	1,300	1,950	93%	93%
Soil-Geosynthetic Friction		ASTM D 6706	0.9	0.9	———	———	———	———	———	———	———	0.9	0.9
Creep Resistance-T_{creep} (Lb./Ft.)		ASTM D 5262	———	———	———	———	———	———	———	———	———	———	———
Creep Reduction Factor (T_{ult}/T_{creep})			4	4	———	———	———	———	———	———	———	———	———
Installation Damage (RF_c)	Sand	GRI : GG4 & GT7	1.05	1.05	———	———	———	———	———	———	———	———	———
	Limestone		1.1	1.1	———	———	———	———	———	———	———	———	———
Durability (RF_d)	Chemical	ASTM D 5322	———	———	———	———	———	———	———	———	———	———	———
	Biological	ASTM D1987 & G21	———	———	———	———	———	———	———	———	———	———	———
Joint Strength (RF_j)	Mechanical	ASTM D 6637, GRI : GG4 & GT7	———	———	———	———	———	———	———	———	———	———	———
	Overlap *	ASTM D 6706	———	———	———	———	———	———	———	———	———	———	———
Approved Application Usage			2,5	2,5	2,5	2,5	2,5	2,5	2,5	2,5	2,5	2,5	2,5

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APPROVED GEOSYNTHETIC PRODUCTS
(WOVEN GEOGRID)
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TABLE OF WOVEN GEOGRID VALUES

PROPERTY		REQUIRED TEST METHOD	SynTec SBX 41	RAUGRID 3/3	RAUGRID 4/2	RAUGRID 6/3	RAUGRID 8/3	RAUGRID 10/3	FORNIT 20	FORNIT 30	STRATAGRID MICROGRID	STRATAGRID SG 150	STRATAGRID SG 200
UV Stability (Min. Retained Strength @ 500 hr.)		ASTM D 4355	100%	95%	95%	95%	95%	95%	92%	92%	70%	70%	70%
Tensile Strength (Lb./Ft.)		ASTM D 6637									———	———	———
Machine Direction	Ultimate (T_{ult})		880	2,233	2,843	4,350	5,288	6,590	1,159	1,890	2,000	1,875	3,400
	2% Strain		270	———	———	———	———	———	360	600	———	———	———
	5% Strain		550	712	767	1,144	1,165	1,582	774	1,390	600	450	700
Cross Direction	Ultimate		920	2,213	1,459	1,959	2,089	2,192	1,641	2,466	2,000	1,875	———
	2% Strain		380	———	———	———	———	———	543	778	———	———	———
	5% Strain		720	541	356	452	507	521	1,111	1,719	450	———	———
Strain @ Ultimate Tensile Strength		ASTM D 6637	10%	10.8%	11.8%	13.1%	12.2%	11.5%	6%	6%	15.0%	15.0%	15.0%
Secant Modulus @ (lb./ft.)	2% Strain		13,500	———	———	———	———	———	18,000	30,000	———	———	———
	5% Strain		11,000	———	———	———	———	———	15,480	27,800	12,000	9,000	14,000
	10% Strain		———	———	———	———	———	———	———	———	———	———	———
Junction Strength (Lb./Ft.)		GRI : GG2	93%	N/A	100%	100%	100%	100%	30	32.2	———	———	———
Soil-Geosynthetic Friction		ASTM D 6706	0.9	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.8	0.8	0.8
Creep Resistance-T_{creep} (Lb./Ft.)		ASTM D 5262	———	1,466	1,870	2,862	3,479	4,335	355	588	1,149	1,210	2,194
Creep Reduction Factor (T_{ult} /T_{creep})			———	1.52	1.52	1.52	1.52	1.52	3.5	3.5	1.74	1.55	1.55
Installation Damage (RF_c)	Sand	GRI : GG4 & GT7	———	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.20	1.10	1.10
	Limestone		———	1.17	1.17	1.17	1.17	1.17	1.10	1.10	1.90	1.20	1.20
Durability (RF_d)	Chemical	ASTM D 5322	———	1.15	1.15	1.15	1.15	1.15	1.10	1.10	1.10	1.10	1.10
	Biological	ASTM D1987 & G21	———	1.15	1.15	1.15	1.15	1.15	1.0	1.0	1.10	1.10	1.10
Joint Strength (RF_j)	Mechanical	ASTM D 6637, GRI : GG4 & GT7	———	———	———	———	———	———	———	———	———	———	———
	Overlap *	ASTM D 6706	———	———	———	———	———	———	1.0	1.1	1.25	1.25	1.25
Approved Application Usage			2,5	2, 5	2, 5	2, 5	2, 5	2, 5	2, 4, 5	2, 4, 5	3, 4, 5	3, 4, 5	3, 4

Approved Application Usage:
1 = Steepened Slopes
2 = Reinforcement of Foundations over Soft Soils
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APPROVED GEOSYNTHETIC PRODUCTS
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TABLE OF WOVEN GEOGRID VALUES

PROPERTY		REQUIRED TEST METHOD	STRATAGRID SG 350	STRATAGRID SG 500	STRATAGRID SG 550	STRATAGRID SG 600	STRATAGRID SG 700	SYNTEEN SF 11	SYNTEEN SF 12	SYNTEEN SF 20	SYNTEEN SF 35	SYNTEEN SF 40	SYNTEEN SF 50
UV Stability (Min. Retained Strength @ 500 hr.)		ASTM D 4355	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
Tensile Strength (Lb./Ft.)		ASTM D 6637	———	———	———	———	———						
Machine Direction	Ultimate (T_{ult})		4,800	6,300	7,800	8,700	11,750	2,388	2,388	1,672	2,627	3,050	3,731
	2% Strain		———	———	———	———	———	526	526	370	462	488	791
	5% Strain		750	1,150	1,200	1,400	1,700	990	1,042	670	725	970	922
Cross Direction	Ultimate		———	———	———	———	———	3,870	5,268	1,630	2,556	3,050	3,933
	2% Strain		———	———	———	———	———	578	797	370	399	430	630
	5% Strain		———	———	———	———	———	792	1,129	670	583	765	815
Strain @ Ultimate Tensile Strength		ASTM D 6637	15.0%	15.0%	15.0%	18.0%	18.0%	12.6%	13.0%	9.4%	14.1%	9.9%	14.2%
Secant Modulus @ (lb./ft.)	2% Strain		———	———	———	———	———	26,300	26,300	18,494	23,114	24,408	39,551
	5% Strain		15,000	23,000	24,000	24,000	34,000	15,840	20,840	13,397	14,499	19,404	18,432
	10% Strain		———	———	———	———	———	———	———	15,206	15,234	22,089	18,432
Junction Strength (Lb./Ft.)		GRI : GG2	———	———	———	———	———	354	320	———	———	———	———
Soil-Geosynthetic Friction		ASTM D 6706	0.8	0.8	0.8	0.8	0.8	1.0	1.0	0.8	0.8	0.8	0.8
Creep Resistance-T_{creep}(Lb./Ft.)		ASTM D 5262	3,097	4,065	5,032	5,613	7,581	1,380	1,380	1,005	1,523	1,525	2,201
Creep Reduction Factor (T_{ult}/T_{creep})			1.55	1.55	1.55	1.55	1.55	1.73	1.73	1.66	1.73	2.00	1.70
Installation Damage (RF_c)	Sand	GRI : GG4 & GT7	1.05	1.05	1.05	1.05	1.05	1.18	1.06	1.05	1.15	1.15	1.08
	Limestone		1.20	1.15	1.15	1.15	1.15	1.31	1.20	1.75	1.70	1.60	1.55
Durability (RF_d)	Chemical	ASTM D 5322	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
	Biological	ASTM D1987 & G21	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
Joint Strength (RF_j)	Mechanical	ASTM D 6637, GRI : GG4 & GT7	———	———	———	———	———	———	———	———	———	———	———
	Overlap *	ASTM D 6706	1.25	1.25	1.25	1.25	1.25	1.10	1.10	1.10	1.10	1.10	1.10
Approved Application Usage			3, 4	3, 4	3, 4	3, 4	3, 4	3,4,5	3,4,5	3	3	3	3

Approved Application Usage:
1 = Steepened Slopes
2 = Reinforcement of Foundations over Soft Soils
3 = Both Steepened Slopes & Reinforcement of Foundations over Soft Soils
4 = Reinforced Embankment
5 = Construction Expedient
* Minimum 3' Overlap

APPROVED GEOSYNTHETIC PRODUCTS
(WOVEN GEOGRID)
APPLICATION AND PROPERTIES

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TABLE OF WOVEN GEOGRID VALUES

PROPERTY		REQUIRED TEST METHOD	SYNTEEN SF 55	SYNTEEN SF 80	SYNTEEN SF 110	TENCATE BXG11	TENCATE BXG12	TENCATE/ MIRAGRID 2XT	TENCATE/ MIRAGRID 3XT	TENCATE/ MIRAGRID 5XT	TENCATE/ MIRAGRID 7XT	TENCATE/ MIRAGRID 8XT	TENCATE/ MIRAGRID 10XT
UV Stability (Min. Retained Strength @ 500 hr.)		ASTM D 4355	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
Tensile Strength (Lb./Ft.)		ASTM D 6637											
Machine Direction	Ultimate (T_{ult})		3,774	5,583	7,462	2500	2500	2000	3500	4700	5900	7400	9500
	2% Strain		736	1,016	1,186	625	625	--	--	--	--	--	--
	5% Strain		1,159	1,273	1,684	1000	1000	950	1056	1740	2160	2520	3120
Cross Direction	Ultimate		2,499	2,206	2,179	2500	4500	2000	--	--	--	--	--
	2% Strain		604	882	1,274	625	840	--	--	--	--	--	--
	5% Strain		796	1,563	1,581	1000	1350	--	--	--	--	--	--
Strain @ Ultimate Tensile Strength		ASTM D 6637	11.5%	13.9%	18.8%	12%	12%	10%	10%	10%	10%	10%	10%
Secant Modulus @ (lb./ft.)	2% Strain		36,799	50,807	59,298	31250	31250	--	--	--	--	--	--
	5% Strain		23,174	25,459	33,712	20000	20000	19000	21120	34800	43200	50400	62400
	10% Strain		27,137	37,910	27,380	--	--	--	--	--	--	--	--
Junction Strength (Lb./Ft.)		GRI : GG2	———	———	———	--	--	--	--	--	--	--	--
Soil-Geosynthetic Friction		ASTM D 6706	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Creep Resistance-T_{creep} (Lb./Fft.)		ASTM D 5262	2,265	3,182	4,029	--	--	1266	2115	2975	3734	4684	6013
Creep Reduction Factor (T_{ult}/T_{creep})			1.67	1.75	2.02	1.6	1.6	1.58	1.58	1.58	1.58	1.58	1.58
Installation Damage (RF_c)	Sand	GRI : GG4 & GT7	1.08	1.08	1.08	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
	Limestone		1.55	1.55	1.35	1.1	1.1	1.5	1.25	1.25	1.25	1.25	1.25
Durability (RF_d)	Chemical	ASTM D 5322	1.10	1.10	1.10	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
	Biological	ASTM D1987 & G21	1.10	1.10	1.10	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Joint Strength (RF_j)	Mechanical	ASTM D 6637, GRI : GG4 & GT7	———	———	———	--	--	--	--	--	--	--	--
	Overlap *	ASTM D 6706	1.10	1.10	1.10	--	--	--	--	--	--	--	--
Approved Application Usage			3	3	3	3, 4, 5	3, 4, 5	3	3	3	3	3	3

Approved Application Usage:
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2 = Reinforcement of Foundations over Soft Soils
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APPROVED GEOSYNTHETIC PRODUCTS
(WOVEN GEOGRID)
APPLICATION AND PROPERTIES

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TABLE OF WOVEN GEOGRID VALUES						TABLE OF EXTRUDED GEOGRID VALUES						
PROPERTY	REQUIRED TEST METHOD	TENCATE/ MIRAGRID 20XT	TENCATE/ MIRAGRID 22XT	TENCATE/ MIRAGRID 24XT	TENCATE/ MIRAGRID 18XT	TENCATE BXG 110	TENCATE BXG 120	TENSAR BX 4100	TENSAR BX 4200	TENSAR BX 1100	TENSAR BX 1120	TENSAR BX 1200
UV Stability (Min. Retained Strength @ 500 hr.)	ASTM D 4355	70%	70%	70%	70%	100%	100%	90%	90%	90%	100%	90%
Tensile Strength (Lb./Ft.)	ASTM D 6637											
Machine Direction – Ultimate (T_{ult})		13705	17760	27415	9,360	850	1,310	860	1,270	850	850	1,315
Machine Direction – 2% Strain		--	--	--	———	280	410	240	370	280	280	410
Machine Direction – 5% Strain		5340	6700	7000	3,250	580	810	480	705	580	580	810
Cross Direction – Ultimate		--	--	--	———	1,300	1,970	875	1,370	1,300	1,300	1,975
Cross Direction – 2% Strain		--	--	--	———	450	620	300	500	450	450	670
Cross Direction – 5% Strain		--	--	--	———	920	1,341	635	960	920	920	1,360
Strain @ Ultimate Tensile Strength	ASTM D 6637	10%	10%	10%	10%			10%	10%	10%	10%	10%
Secant Modulus @ (lb./ft.) – 2% Strain		--	--	--	———	14,000/22,500	20,500/16,200	11,995	18,506	14,000	14,000	20,500
Secant Modulus @ (lb./ft.) – 5% Strain		106800	134000	140000	65,000	11,600/18,400	31,000/26,820	9,596	14,092	11,600	11,600	16,200
Secant Modulus @ (lb./ft.) – 10% Strain		--	--	--	———	———	———	———	———	———	———	———
Junction Strength (Lb./Ft.)	GRI : GG2	--	--	--	———	790/1,209	1,223/1,837	90%	90%	790/1,210	93%	93%
Soil-Geosynthetic Friction	ASTM D 6706	0.8	0.8	0.8	0.8	0.90	0.90	———	0.95	0.90	0.90	0.90
Creep Resistance-T_{creep} (Lb./Ft.)	ASTM D 5262	8674	9732	17351	5,850	280	425	250	420	280	280	425
Creep Reduction Factor (T_{ult}/T_{creep})		1.58	1.58	1.58	1.6	3.1	3.1	3.5	3.27	3.1	3.1	3.1
Installation Damage (RF_c) – Sand	GRI : GG4 & GT7	1.05	1.05	1.05	1.05	1.10	1.10	1.10	1.10	1.10	1.10	1.10
Installation Damage (RF_c) – Limestone		1.25	1.25	1.25	1.25	1.35	1.35	1.43	1.35	1.35	1.35	1.35
Durability (RF_d) – Chemical	ASTM D 5322	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Durability (RF_d) – Biological	ASTM D1987 & G21	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Joint Strength (RF_j) – Mechanical	ASTM D 6637, GRI : GG4 & GT7	--	--	--	———	———	———	———	———	———	———	———
Joint Strength (RF_j) – Overlap *	ASTM D 6706	--	--	--	1.2	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Approved Application Usage		3	3	3	3	3, 4, 5	3, 4, 5	3, 4, 5	3, 4, 5	3, 4, 5	3, 4, 5	3, 4, 5

APPROVED GEOSYNTHETIC PRODUCTS
(WOVEN GEOGRID)
APPLICATION AND PROPERTIES

APPROVED GEOSYNTHETIC PRODUCTS
(EXTRUDED GEOGRID)
APPLICATION AND PROPERTIES

Approved Application Usage:
1 = Steepened Slopes
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5 = Construction Expedient
* Minimum 3' Overlap

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TABLE OF EXTRUDED GEOGRID VALUES

PROPERTY		REQUIRED TEST METHOD	TENSAR BX 1220	TENSAR BX 1500	TENSAR UX 1400 HS UX 1400 MSE UX MESA 3	TENSAR UX 1500 HS UX 1500 MSE UX MESA 4	TENSAR UX 1600 HS UX 1600 MSE UX MESA 5	TENSAR UX 1700 HS UX 1700 MSE UX MESA 6	TENAX MS 220	TENAX MS 330	COMBIGRID 30/30 Q1 151 GRK 3
UV Stability (Min. Retained Strength @ 500 hr.)		ASTM D 4355	100%	90%	90%	90%	90%	90%	85%	85%	90%
Tensile Strength (Lb./Ft.)		ASTM D 6637									
Machine Direction	Ultimate (T_{ult})		1,315	1,790	4,790	7810	9,860	11,980	925	1,370	2,055
	2% Strain		410	580	1,100	1,850	2,330	2,740	300	418	686
	5% Strain		810	1,200	2,130	3,560	3,980	5,140	615	925	1,475
Cross Direction	Ultimate		1,975	2,055	———	———	———	———	1,400	2,100	2,055
	2% Strain		670	685	———	———	———	———	445	616	686
	5% Strain		1,360	1,370	———	———	———	———	890	1,340	1,475
Strain @ Ultimate Tensile Strength		ASTM D 6637	10%	10%	10%	10%	10%	10%	12%	12%	8%
Secant Modulus @ (lb./ft.)	2% Strain		20,500	29,000	55,000	92,500	116,500	137,000	15,000	20,900	34,300
	5% Strain		16,200	27,400	42,600	71,200	79,600	102,800	12,330	18,500	29,500
	10% Strain		———	———	———	———	———	———	———	———	———
Junction Strength (Lb./Ft.)		GRI : GG2	93%	93%	90%	90%	90%	90%	835	1,230	337
Soil-Geosynthetic Friction		ASTM D 6706	0.90	0.90	0.462	0.462	0.462	0.462	———	———	0.65
Creep Resistance-T_{creep} (Lb./Ft.)		ASTM D 5262	425	575	1,970	3,000	3,960	4,975	———	———	726
Creep Reduction Factor (T_{ult}/T_{creep})			3.1	3.1	2.43	2.60	2.49	2.41	3.5	3.5	2.83
Installation Damage (RF_c)	Sand	GRI : GG4 & GT7	1.10	1.10	1.10	1.10	1.10	1.10	1.1	1.1	1.1
	Limestone		1.35	1.35	1.20	1.20	1.20	1.20	1.1	1.1	1.1
Durability (RF_d)	Chemical	ASTM D 5322	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
	Biological	ASTM D1987 & G21	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Joint Strength (RF_j)	Mechanical	ASTM D 6637, GRI : GG4 & GT7	———	———	1.0	1.0	1.0	1.0	1.0	1.0	———
	Overlap *	ASTM D 6706	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Approved Application Usage			3, 4, 5	3, 4, 5	3	3	3	3	2, 5	2, 5	2, 5

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APPROVED GEOSYNTHETIC PRODUCTS
(EXTRUDED GEOGRID)
APPLICATION AND PROPERTIES

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TABLE OF EXTRUDED GEOGRID VALUES

PROPERTY		REQUIRED TEST METHOD	SECUGRID 20/20 Q1	SECUGRID 30/30 Q1
UV Stability (Min. Retained Strength @ 500 hr.)		ASTM D 4355	90%	90%
Tensile Strength (Lb./Ft.)		ASTM D 6637		
Machine Direction	Ultimate (T_{ult})		1,646	2,055
	2% Strain		549	686
	5% Strain		1,029	1,475
Cross Direction	Ultimate		1,646	2,055
	2% Strain		549	686
	5% Strain		1,029	1,475
Strain @ Ultimate Tensile Strength		ASTM D 6637	9%	7.5%
Secant Modulus @ (lb./ft.)	2% Strain		27,450	34,300
	5% Strain		20,580	29,500
	10% Strain		———	———
Junction Strength (Lb./Ft.)		GRI : GG2	549	617
Soil-Geosynthetic Friction		ASTM D 6706	0.93	0.93
Creep Resistance-T_{creep} (Lb./Ft.)		ASTM D 5262	581	726
Creep Reduction Factor (T_{ult}/T_{creep})			2.83	2.83
Installation Damage (RF_c)	Sand	GRI : GG4 & GT7	1.1	1.1
	Limestone		1.1	1.1
Durability (RF_d)	Chemical	ASTM D 5322	1.1	1.1
	Biological	ASTM D1987 & G21	1.0	1.0
Joint Strength (RF_j)	Mechanical	ASTM D 6637, GRI : GG4 & GT7	———	———
	Overlap *	ASTM D 6706	1.0	1.0
Approved Application Usage			2, 5	2, 5

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