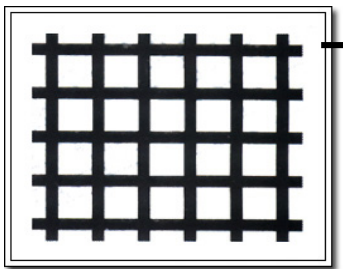
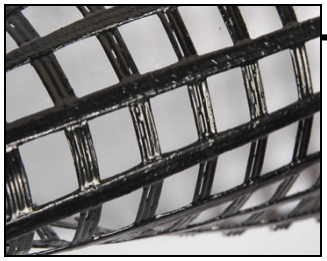
Composite of Glass Fiber or Polyester or PP or HDPE Geogrid Reinforced Solution

Geogrid Membrane System for Embankment of Soil Slope & Road Works Protection, Enhanced Stability, Reduced Erosion & Improved Bearing Capacity



LaMaCo Progrid BXGF System

Glass Fiber Grade of Uni-Direction Bi-Axial Geogrid Type
Tensile Strength in kN/m [Wrap]: 25 – 120kN/m

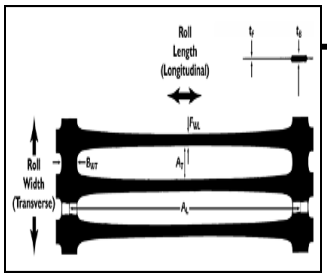


LaMaCo Progrid BXPET System

Polyester Grade of Uni-Direction Bi-Axial Geogrid Type
Tensile Strength in kN/m [Wrap]: 40 – 300kN/m

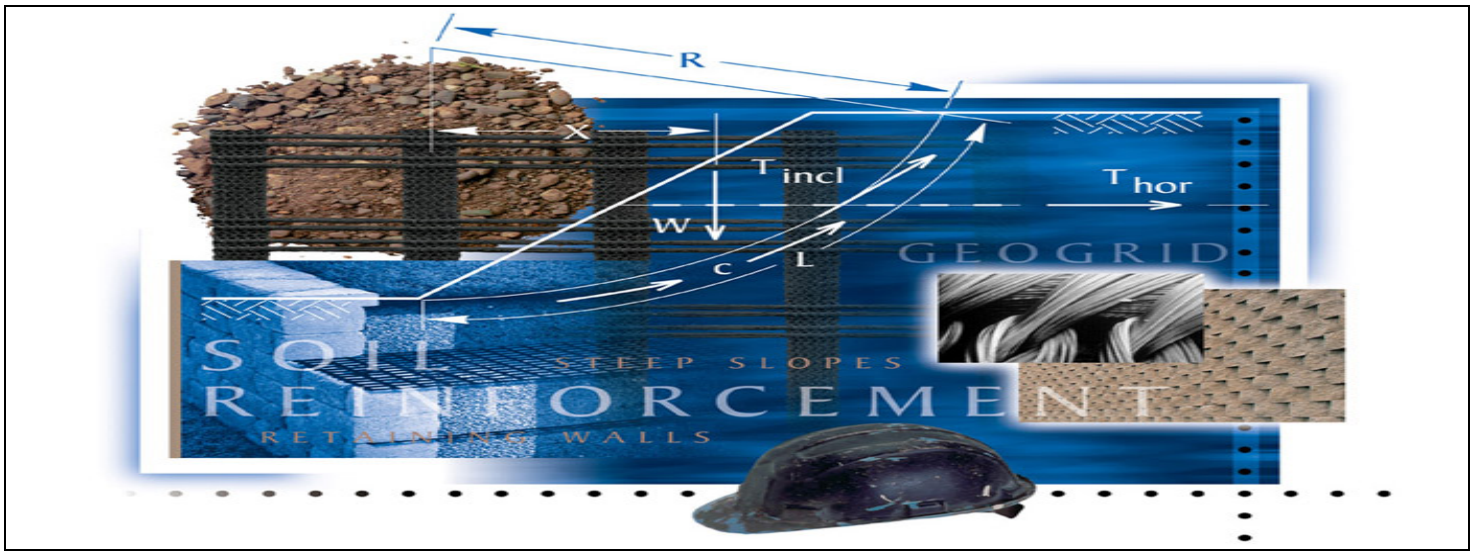
LaMaCo Progrid BXPP System

PP Grade of Bi-Axial Geogrid Type
Longitudinal Tensile Strength in kN/m: 15-45kN/m
Transverses Tensile Strength in kN/m: 15-45kN/m



LaMaCo Progrid UXPP or Progrid UXHDPE System

PP or HDPE Grade of Uni-Axial Geogrid Type
Yield Strength at 2% Elongation kN/m: 7-85kN/m
Yield Strength at 5% Elongation kN/m: 14-145kN/m
Tensile Strength in kN/m: 25-200kN/m



LaMaCo-Progrid BXGF or Progrid BXPET or Progrid BXPP or Progrid UXPP or Progrid UXHDPE, system has extensive experience with internal soil reinforcement in a wide range "Step Slope", "Retaining Walls", "Highway Rail Embankments", "Landslide Repairs", "Landfills" & "Levees" of all type. Our Geogrid Membrane products have been proven in many installations throughout Worldwide with a broad variety of modular block facing.

What are Geogrid Membrane

Geogrids are **"Glass Fiber or Polyester or PP or HDPE"** widely used to stabilize slopes and roads base to provide **enhanced stability conditions, reduced erosion potential,** and **improved bearing capacity**. Their use provides reliable cost effective and practical solutions in often otherwise difficult geotechnical engineering conditions. Design using geogrids has become widespread and accepted throughout the geotechnical engineering discipline with the publishing of the British Standard (BS 8006: 1995) which is the "Code of practice for Strengthened/reinforced soils and other fills".

How Do Geogrid Membrane Work, Key Properties

The stability of fill slopes depends mainly on the shear strength which, invariably is difficult to predict with high degree of certainty. By incorporating geogrids within fill material the structures thus formed benefit from the mobilization of the high tensile force provided by the geogrid at low strains. This reinforcement results from the bond between the fill material and the geogrid through interlocking. Such reinforced fills will have reliable long-term stability when designed according to BS8006.

Where To Use Geogrid Membrane

▓→New or Existing Embankment Construction

Geogrids provide practical solutions in conditions where land take is limited or cost prohibitive (both financially and/or environmentally). Stable steep embankment slopes can be constructed reducing both earthwork quantities and minimizing the environmental impact of such works. In steep mountainous terrain geogrids provide a practical cost effective option for the construction of embankment slopes. By using steep reinforced geogrid slopes an aesthetically "green solution" is provided (vegetation covered) with no otherwise obvious concrete structure present.

▓→ Slope Remedial Works

In steep mountainous terrain the failure of sidelong embankments is not uncommon due to the build up of excessive pore pressures between the fill material and original ground. By minimizing the need for sidelong filing geogrid embankments can provide an engineering solution that is significantly more reliably stable in both the long and short term to conventional methods of embankment reconstruction. The foundation of geogrid structures can be based on original ground and with the use of free draining material build up of pore pressures controlled. Geogrid solutions are also highly resistant to erosion due to the binding effect of the geogrid at the slope surface.

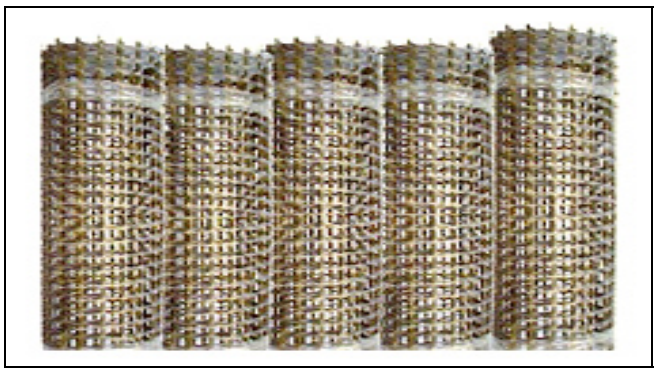
▓→ Road Widening & Noise Bunds

Geogrid reinforced embankments allow road widening with little or no land acquisition. This is particularly important in areas where development of the surrounding areas has taken place and land acquisition costs are high. By enabling the practical construction of steep embankments that are "green" (vegetated) geogrids also provide the ideal mechanism for providing aesthetic and environment friendly solutions for noise reduction bunds in areas that land is limited (alongside highways, airport etc.)

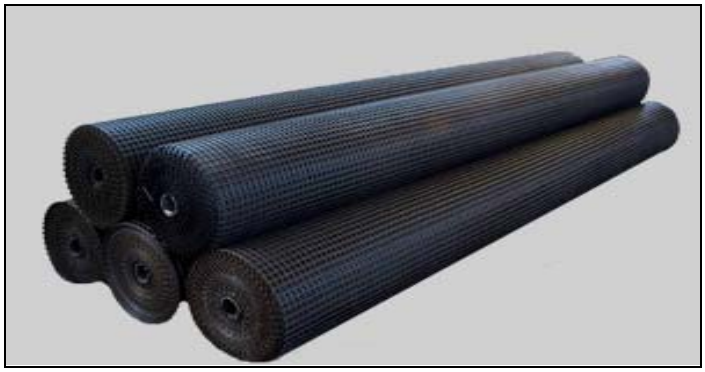
▓→ Basal Reinforcement

Geogrids can be used as reinforcement layers in the construction of embankments over poor ground, the base of road pavements, parking areas and railways. By accommodating the lateral stresses developed in the foundation, the use of geogrids minimizes differential settlement. Due to the reduction in differential movement the depth of founding layers can be optimized realizing cost savings in both materials required and time through improved traffic ability and longevity.

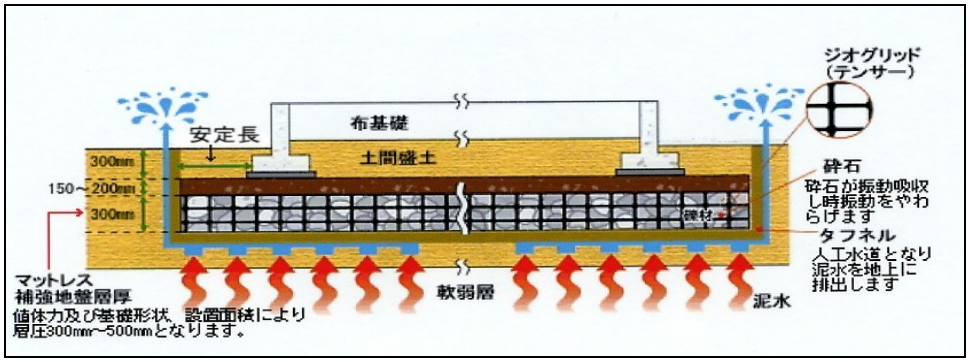
Advanced, Protected & Strengthen Soil Reinforced System by LaMaCo Progrid

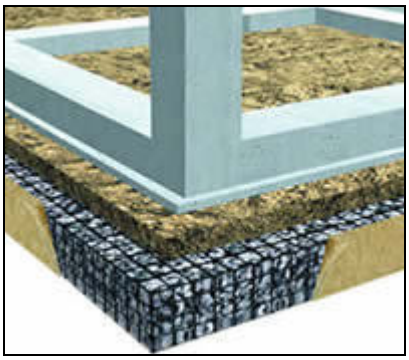


Roll of "**LaMaCo Progrid Net**" Membrane



Roll of "**LaMaCo Progrid**" Membrane





Japan Housing Development Board Protected the "**LaMaCo Progrid**" system "**Geogrid Membrane**" as Ground or Basement Floor for Commercial Building/Factory, to Protected/Prevent on Soil Stability.

"**LaMaCo Progrid UXPP**" install on Retaining Wall

"**LaMaCo Progrid BXPP**" install on Sea Landfill

"LaMaCo Progrid BXGF" install on Slope Step

"LaMaCo Progrid BXPET" install on Slope Step

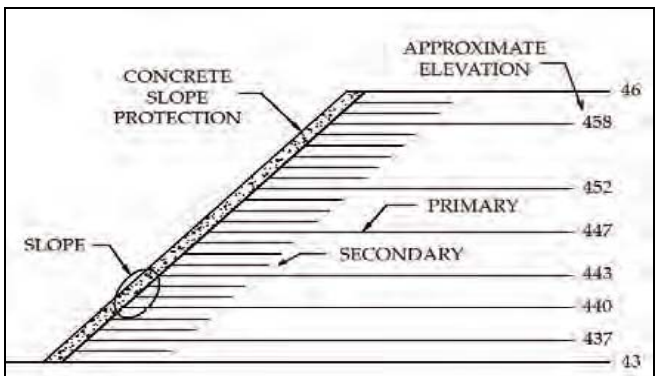
"LaMaCo Progrid UXPP" install on Side Retaining Wall

"LaMaCo Progrid UXPP" install on Railway Side Retaining Wall

"LaMaCo Progrid BXPET" install on Side Retaining Wall & Main Street Way

"LaMaCo Progrid UXPP" install on Side Retaining Wall & Main Street Way

"LaMaCo Progrid BXPET" install on Side Retaining Wall



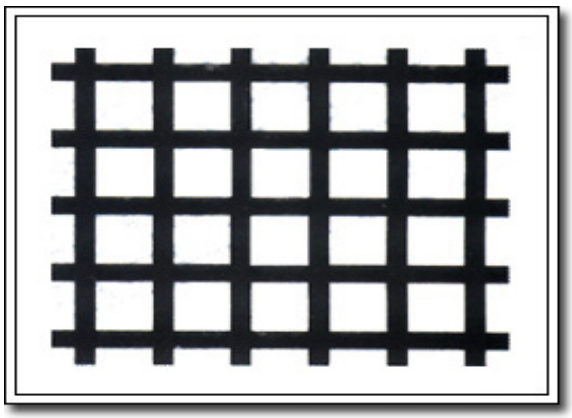
Drawing for "LaMaCo Progrid" install on Railway Side Retaining Wall

Specification of "LaMaCo Progrid BXGF®" Physical Properties

Glass Fiber Grade of Uni-Direction Bi-Axial Geogrid Type

Properties	Test Method	Progrid BXGF Grade of Products				
Type of Model		**30-30**	**50-50**	**80-80**	**100-100**	**120-120**
Materials		**Glass Fiber**	**Glass Fiber**	**Glass Fiber**	**Glass Fiber**	**Glass Fiber**
Bitumen PVC Coated Content %		Yes	Yes	Yes	Yes	Yes
Longitudinal Strength in kN/mm	ASTM D4595	30 kN/m	50 kN/m	80 kN/m	100 kN/m	120 kN/m
Crosswise Strength in kN/m	ASTM D5262	30 kN/m	50 kN/m	80 kN/m	100 kN/m	120 kN/m
Break Elongation Ratio %		<3	<3	<3	<3	<3
Creep at 50%, Ultimate Load after 2 Years	ASTM D5262	2-4%	2-4%	2-4%	2-4%	2-4%
Temperature Resistance: °C		[-]100~ 280°C	[-]100~ 280°C	[-]100~ 280°C	[-]100~ 280°C	[-]100~ 280°C
Elastic Modulus [Special Grade of Glass Fiber]		76	76	76	76	76
Weight in g/m^2	ASTM D5261	133	249	421	479	510
Mesh Size: mm x mm		12.7x 12.7	12.7x 12.7	25.4x 25.4	25.4x 25.4	25.4x 25.4
Width Size: meter		4	4	4	4	4
Roll Length: meter		50 or 100	50 or 100	50 or 100	50 or 100	50 or 100

Glass Fiber Grade of Uni-Direction Bi-Axial Geogrid Type



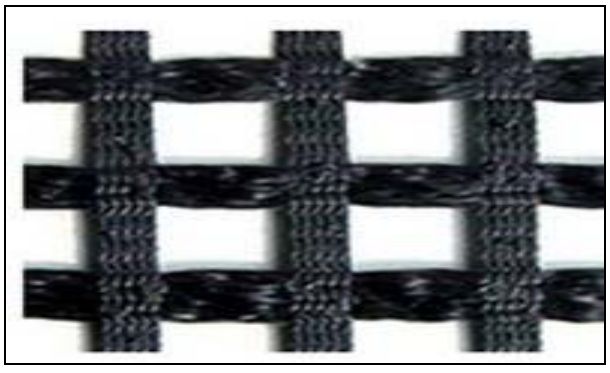
"LaMaCo Progrid BXGF" Biaxial Geogrid
Glass Fiber Biaxial
Tensile Strength kN/m: 25-120

Specification of "LaMaCo Progrid BXPET®" Physical Properties

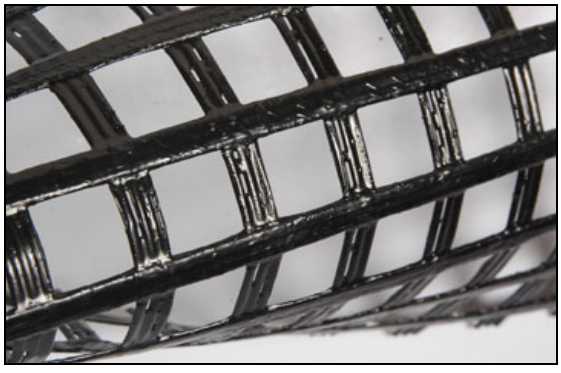
Polyester [PET] Grade of Uni-Direction Bi-Axial Geogrid Type

Properties	Test Method	Progrid BXPET Grade of Products				
Type of Model		**50**	**80**	**100**	**120**	**300**
Materials		**PET**	**PET**	**PET**	**PET**	**PET**
Bitumen PVC Coated Content %		Yes	Yes	Yes	Yes	Yes
Ultimate Tensile Strength in kN/mm [Wrap]	ASTM D4595	50 kN/m	80 kN/m	100 kN/m	120 kN/m	300 kN/m
Creep Reduced Strength in kN/m [Weft]	ASTM D5262	50 kN/m	80 kN/m	100 kN/m	120 kN/m	300 kN/m
Ultimate Tensile Strength in kN/m [Weft]	ASTM D4595	25 kN/m	25 kN/m	25 kN/m	25 kN/m	25 kN/m
Elogation in % [Wrap]	ASTM D4595	13%	13%	13%	13%	13%
Creep at 50%, Ultimate Load after 2 Years	ASTM D5262	2-4%	2-4%	2-4%	2-4%	2-4%
Temperature Resistance: °C		[-]100~ 280°C	[-]100~ 280°C	[-]100~ 280°C	[-]100~ 280°C	[-]100~ 280°C
Elastic Modulus [Special Grade of Polyester]		76	76	76	76	76
Weight in g/m^2	ASTM D5261	238	389	431	470	-
Mesh Size: mm x mm		12.7x 12.7	12.7x 12.7	25.4x 25.4	25.4x 25.4	40x40
Width Size: meter		4	4	4	4	4
Roll Length: meter		50 or 100	50 or 100	50 or 100	50 or 100	50 or 100

Polyester [PET] Grade of Uni-Direction Bi-Axial Geogrid Type



"LaMaCo Progrid BXPET" Biaxial Geogrid
Polyester Biaxial
Tensile Strength kN/m: 40-300



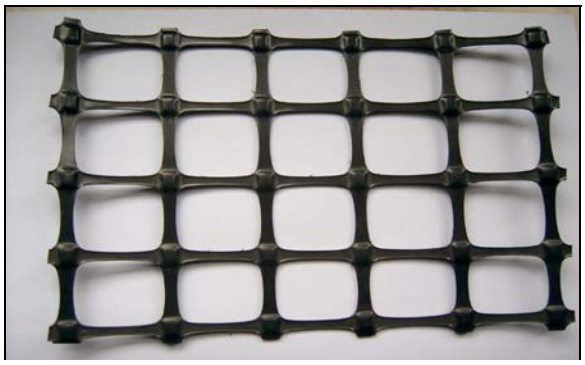
"LaMaCo Progrid BXPET" Biaxial Geogrid
Polyester Biaxial
Tensile Strength kN/m: 40-300

Specification of "LaMaCo Progrid BXPP®" Physical Properties

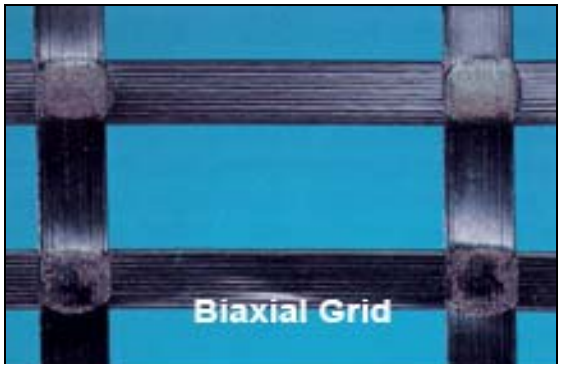
PP (Polypropylene) Biaxial Geogrid System

Properties	Test Method	Progrid BXPP Grade of Products				
Type of Model		**15**	**20**	**30**	**40**	**45**
Material		**PP**	**PP**	**PP**	**PP**	**PP**
Mass-area Ratio: g/m2		300 ±30	330 ±30	400 ±30	500 ±30	550 ±30
Carbon Content [%] ≥		2	2	2	2	2
Tensile Strength in kN/mm		15	20	30	40	45
Longitudinal Yield Strength Elongation %		16	16	16	16	16
Transverse Yield Strength Elongation %		13	13	13	13	13
Longitudinal Yield Strength Elongation 2%		5	8	11	13	16
Transverse Yield Strength Elongation 2%		7	10	13	15	20
Longitudinal Yield Strength Elongation 5%		8	10	15	16	25
Transverse Yield Strength Elongation 5%		10	13	15	20	22
Weight in g/m^2	ASTM D5261	225	292	450	540	-
Mesh Size: mm x mm		35x35	39x39	39x39	40x40	-
Length Roll/m		50	50	50	50	30
Width Roll		4	4	4	4	4

PP (Polypropylene) Biaxial Geogrid System



"LaMaCo Progrid BXPP" Biaxial Geogrid PP Biaxial



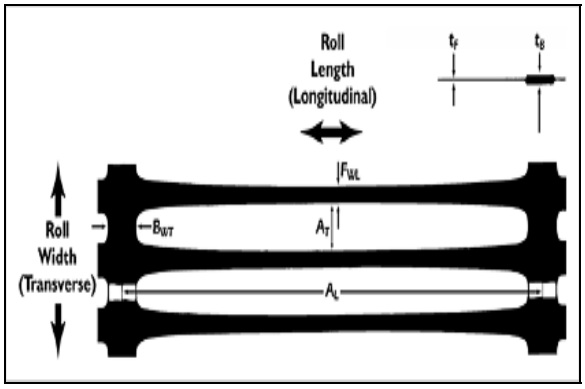
"LaMaCo Progrid BXPP" Biaxial Geogrid PP Biaxial

Specification of "LaMaCo Progrid UXPP®" Physical Properties

PP (Polypropylene) Grade of Uni-Axial Geogrid Type

Properties	Test Method	Progrid UXPP Grade of Products				
Type of Model		50	80	110	170	200
Material		PP	PP	PP	PP	PP
Carbon Content [%] ≥		2	2	2	2	2
Tensile Strength in kN/mm		50	80	110	170	200
Elongation Ratio % ≤		10	10	10	10	10
Yield Strength at 2%, Elongation kN/m ≥		12	20	32	64	85
Yield Strength at 5%, Elongation kN/m ≥		28	48	64	120	145
Length Roll/m		50	50	50	50	50
Width Roll		2.5	2.5	2.5	2.5	2.5

PP (Polypropylene) Grade of Uni-Axial Geogrid Type



"LaMaCo Progrid UXPP" Uniaxial Geogrid

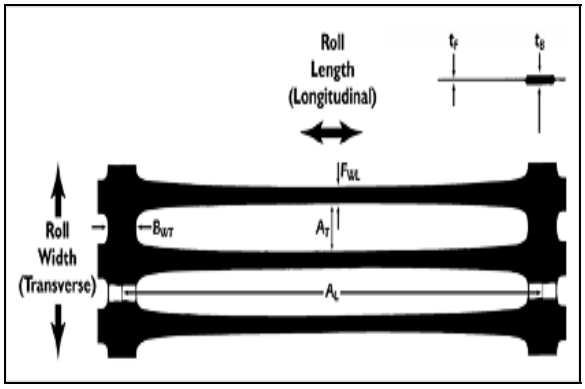
"LaMaCo Progrid UXPP" Uniaxial Geogrid

Specification of "LaMaCo Progrid UXHDPE" Physical Properties

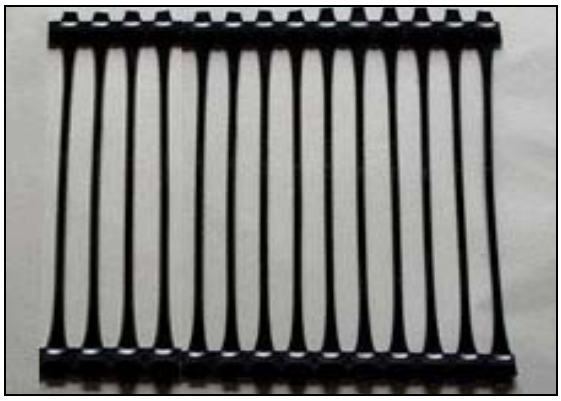
HDPE (High Density Polyethylene) Grade of Uni-Axial Geogrid Type

Properties	Test Method	Progrid UXHDPE Grade of Products				
Type of Model		50	80	110	120	200
Material		HDPE	HDPE	HDPE	HDPE	HDPE
Carbon Content [%] ≥		2	2	2	2	2
Tensile Strength in kN/mm		50	80	110	120	200
Elongation Ratio % ≤		10	10	10	10	10
Yield Strength at 2%, Elongation kN/m ≥		12	20	32	64	85
Yield Strength at 5%, Elongation kN/m ≥		28	48	64	120	145
Length Roll/m		50	50	50	50	50
Width Roll		2.5	2.5	2.5	2.5	2.5

HDPE (High Density Polyethylene) Grade of Uni-Axial Geogrid Type



"LaMaCo Progrid UXHDPE" Uniaxial Geogrid



"LaMaCo Progrid UXHDPE" Uniaxial Geogrid

LaMaCo System Sdn Bhd

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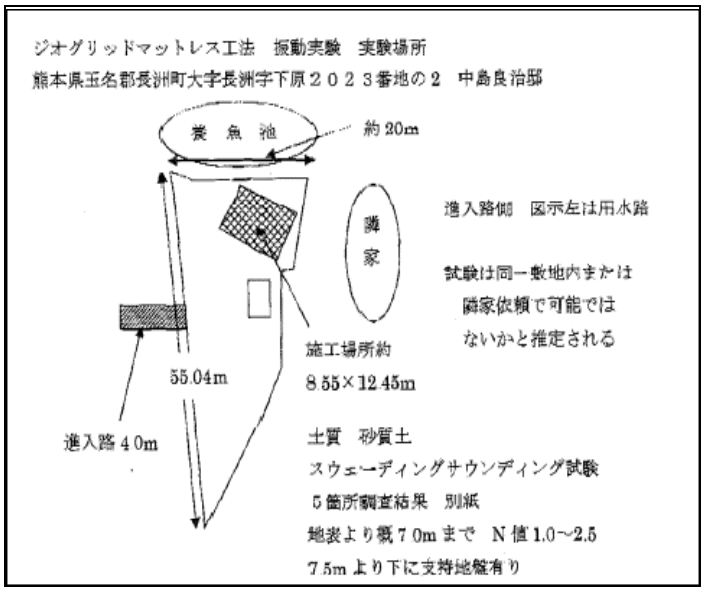
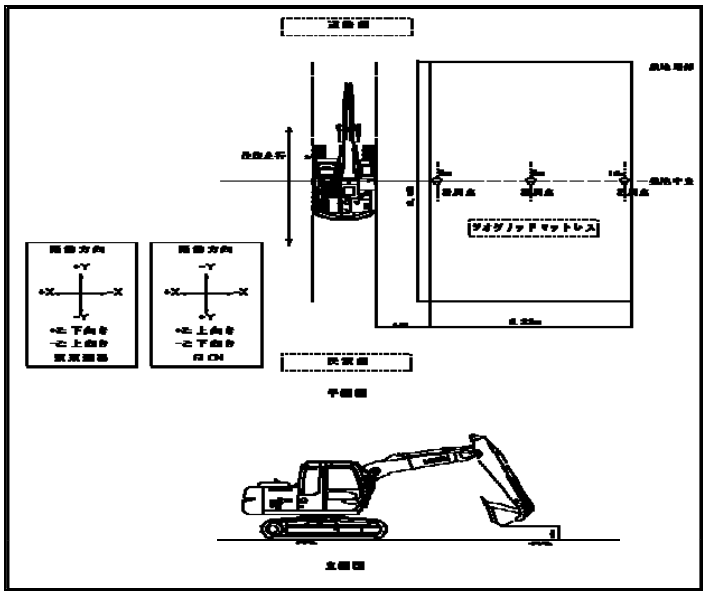
Http : www.lamaco.com
Email : info@lamaco.com


ジオグリッドマットレス工法　振動実験　実験場所
熊本県玉名郡長洲町大字長洲字下原２０２３番地の２　中島良治邸
養 魚 池
約 20m
隣家
進入路側　図示左は用水路
試験は同一敷地内または
隣家依頼で可能では
ないかと推定される
施工場所約
8.55×12.45m
55.04m
進入路 4.0m
土質　砂質土
スウェーディングサウンディング試験
5箇所調査結果　別紙
地表より深 7.0m まで　N 値 1.0~2.5
7.5m より下に支持地盤有り


ジオグリッドマットレス