

LOGARITJET STATIKE DHE SIZMIKE TE SISTEMIT TERRAMESH



"AGBES CONSTRUKSION" Sh.p.k

Rruga Nacionale Fier-Tirane, Sheq i Madh Fier

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"47EK79&ILIRIADA P.K.S" sh.p.k

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"GJEOKONSULT & CO" sh.p.k

Ne perlllogaritjen e sistemit terramesh ne morem ne llogaritje 5 seksione tip duke u nisur nga fakti qe i gjithe sistema do te vendoset nga km 8+294 deri te km 9+525 dhe kushtet e shpatit apo te bazamentit te mbeshtetjes jane te njejta.

Per keto 5 Prekje Terthore Tip u beren llogaritjet statike dhe Sizmike dhe ne base te rezultateve u be permasimi i mureve:

1. Seksioni terthor Tip.1 km 8+700 H=6.84 m
2. Seksioni terthor Tip.2 km 8+800 H=10.64 m
3. Seksioni terthor Tip.3 km 9+125 H=13.68 m
4. Seksioni terthor Tip.4 km 9+300 H=15.20 m
5. Seksioni terthor Tip.5 km 9+250 H=19.00 m

1. **Seksioni terthor Tip.1 km 8+700 H=6.84 m**

A.Llogaritjet statike:

Project Title.....: RRUGA KARDHIQ-SARANDE-LOTI6

Cross Section.....: SEKSIONI Nr.37 DIST.PROG 8+800.000

Site.....:

Folder.....:

File.....: Profili 6.8m-STATIK.mac

Date.....: 02/25/2020

Checks according to: Eurocode 7 EN 1997-1
Eurocode 7 EN 1997-1

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"AGBES CONSTRUKSION" Sh.p.k

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SOIL PROPERTIES

Soil: 1	Description:		
Cohesion	[kN/m ²]	:	15.00
Friction Angle Class	: Angle of shearing resistance (Tan phi)		
Friction Angle	[°]	:	23.00
Ru value		:	0.00
Weight Class	: Weight density		
Bulk unit weight - above GWT	[kN/m ³]	:	26.90
Bulk unit weight - below GWT	[kN/m ³]	:	26.90
Elastic Modulus	[kN/m ²]	:	0.00
Poisson's ratio		:	0.30
Soil: 2	Description:		
Cohesion	[kN/m ²]	:	100.00
Friction Angle Class	: Angle of shearing resistance (Tan phi)		
Friction Angle	[°]	:	36.00
Ru value		:	0.00
Weight Class	: Weight density		
Bulk unit weight - above GWT	[kN/m ³]	:	25.50
Bulk unit weight - below GWT	[kN/m ³]	:	25.50
Elastic Modulus	[kN/m ²]	:	0.00
Poisson's ratio		:	0.30
Soil: mbushje	Description:		
Cohesion	[kN/m ²]	:	0.00
Friction Angle Class	: Angle of shearing resistance (Tan phi)		
Friction Angle	[°]	:	30.00
Ru value		:	0.00
Weight Class	: Weight density		
Bulk unit weight - above GWT	[kN/m ³]	:	19.00
Bulk unit weight - below GWT	[kN/m ³]	:	19.00
Elastic Modulus	[kN/m ²]	:	0.00
Poisson's ratio		:	0.30

STRATA PROFILES

Stratum: mbushje	Description: mbushje						
Soil : mbushje							
X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
36.09	25.72	38.58	32.56	44.03	32.69	48.40	32.53
Stratum: shtresa 1	Description: Layer1						
Soil : 1							
X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
19.03	19.67	23.72	21.71	30.00	25.01	33.22	25.28
35.40	26.33	36.09	25.72	38.29	25.72		
Stratum: shtresa 1.1	Description: Layer1.1						
Soil : 1							
X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
41.94	27.47	43.19	30.07	48.40	32.53	50.13	32.47
51.64	34.06	51.64	34.06	69.03	43.57		



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Stratum: shtresa 2

Description: Layer2

Soil : 2

X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
19.03	17.67	23.72	19.71	30.00	23.01	33.22	23.28
38.29	25.72	41.09	25.72	41.94	27.47	43.19	28.07
51.64	32.06	69.03	41.57				

REINFORCED BLOCKS

Block : GTML1

Block dimensions.....[m] : Base width.....= 5.00 Height.....= 3.04
Block Origin.....[m] : Abscissa.....= 36.07 Ordinate.....= 25.70
Face inclination.....[°] : 20.00

Structural embankment type.....: Gravel
Structural embankment.....: mbushje
Backfill soil.....: mbushje
Covering soil.....: mbushje
Foundation soil.....: 2

Brinch Hansen, Vesic or Meyerhof bearing capacity parameters

Embedment depth.....[m] : 0.00

Natural soil slope.....[°] : 0.00

Reinforcements pattern :

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Length.....[m] = 2.50

Vertical spacing.....[m] = 0.76

Wrapped length.....[m] = 0.65

Linear Composites - ParaLink - 300_Seismic

Length.....[m] = 5.00

Vertical spacing.....[m] = 0.76

Offset.....[m] = 0.00

Block : GTML2

Block dimensions.....[m] : Base width.....= 6.00 Height.....= 3.80

Back Shift.....[m] = 0.00 by GTML1

Face inclination.....[°] : 20.00

Structural embankment type.....: Gravel
Structural embankment.....: mbushje
Backfill soil.....: mbushje
Covering soil.....: mbushje
Foundation soil.....: mbushje

Brinch Hansen, Vesic or Meyerhof bearing capacity parameters

Embedment depth.....[m] : 0.00

Natural soil slope.....[°] : 0.00

Reinforcements pattern :

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Length.....[m] = 2.50

Vertical spacing.....[m] = 0.76

Wrapped length.....[m] = 0.65

Linear Composites - ParaLink - 300_Seismic



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Length[m] = 6.00
Vertical spacing[m] = 1.52
Offset[m] = 0.00

SURCHARGE LOADS

Distributed Loads : TL

Description :

Class : Variable unfavourable

Magnitude [kN/m²] = 30.00 Inclination angle [°] = 0.00

Abscissa [m] : from = 39.50 To = 49.00

PROPERTIES OF THE USED REINFORCEMENTS

Linear Composites - ParaLink - 300_Seismic

Tensile strength UTS	[kN/m]	301.00
Plastic extension ratio		0.00
Elastic extension coefficient	[m ² /kN]	1.10e-04
Reinforcement Stiffness	[kN/m]	3168.00
Minimum anchorage length	[m]	0.15
Breakage Safety Factor (gravel)		1.14
Pull-out Safety Factor		1.00
Breakage Safety Factor (sand)		1.10
Pull-out Safety Factor		1.00
Breakage Safety Factor (silty sand)		1.10
Pull-out Safety Factor		1.00
Breakage Safety Factor (sandy clay)		1.10
Pull-out Safety Factor		1.00
Interaction factor reinforcement/reinforcement		0.27
Pullout coefficient reinforcement-gravel		0.90
Pullout coefficient reinforcement-sand		0.90
Pullout coefficient reinforcement-silt		0.70
Pullout coefficient reinforcement-clay		0.40

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Tensile strength UTS	[kN/m]	35.00
Plastic extension ratio		2.00
Elastic extension coefficient	[m ² /kN]	1.10e-04
Reinforcement Stiffness	[kN/m]	330.00
Minimum anchorage length	[m]	0.15
Breakage Safety Factor (gravel)		1.26
Pull-out Safety Factor		1.00
Breakage Safety Factor (sand)		1.09
Pull-out Safety Factor		1.00
Breakage Safety Factor (silty sand)		1.09
Pull-out Safety Factor		1.00
Breakage Safety Factor (sandy clay)		1.09
Pull-out Safety Factor		1.00
Interaction factor reinforcement/reinforcement		0.30
Pullout coefficient reinforcement-gravel		0.90
Pullout coefficient reinforcement-sand		0.65
Pullout coefficient reinforcement-silt		0.50
Pullout coefficient reinforcement-clay		0.30



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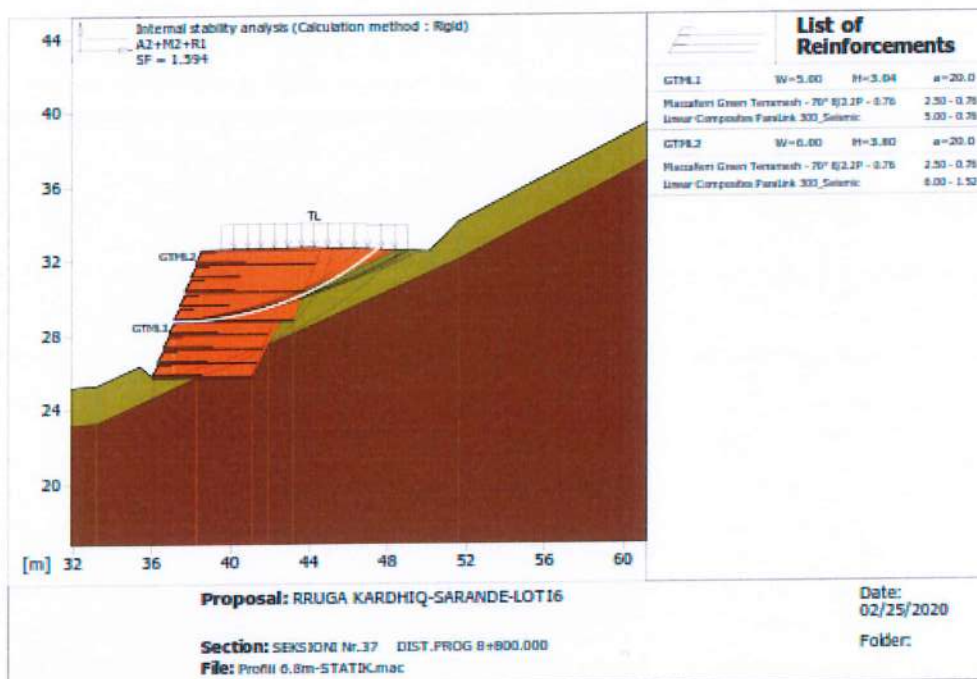
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CHECKS RESULTS



Internal Stability :

Multiplier combination : A2+M2+R1

Reinforcements active Forces according to Rigid Method

Stability analysis with circular surfaces according to Bishop's Method

Evaluated Safety Factor : 1.594

Surfaces searching range
Arrival range, abscises [m]

Block	First point	Second point
GTML1	40.00	60.00

Number of starting point on the starting segment : 1
Total number of trial surfaces : 1000
Minimum base length of slices [m] : 0.50
Superior limit search angle [°] : 0.00
Inferior limit search angle [°] : 0.00

Multiplier	Class
1.30	Variable unfavourable
1.25	Angle of shearing resistance (Tan phi)
1.00	Weight density
1.00	Tensile strength of reinforcement
1.00	Pullout resistance of reinforcement
1.00	Ground resistance for overall stability



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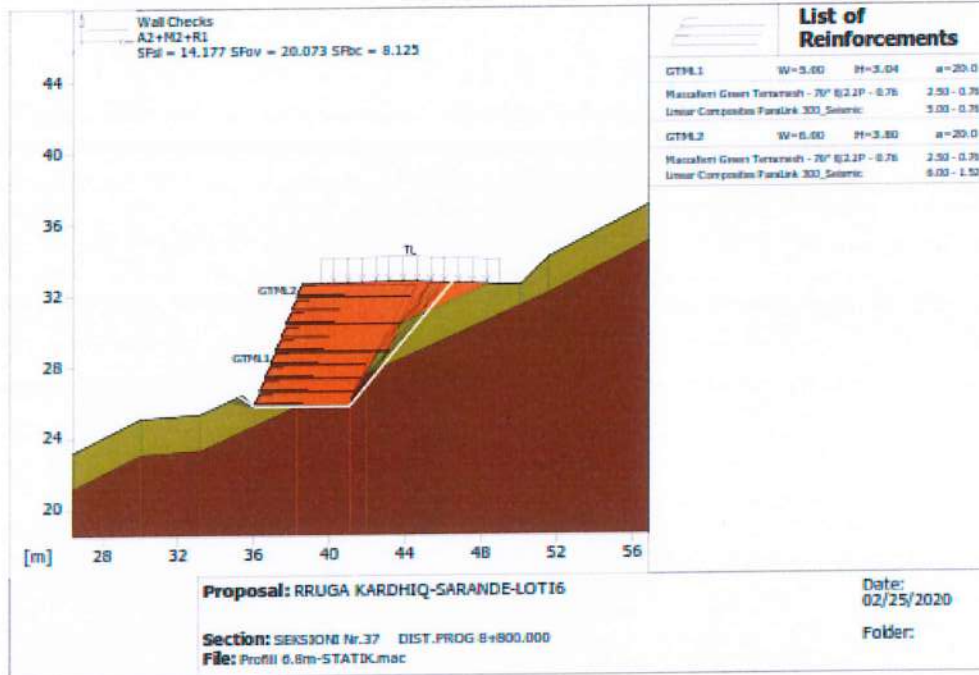
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Wall Checks :

Multiplier combination : A2+M2+R1

Considered block : GTML1

Resisting force.....[kN/m] : 751.21

Active force.....[kN/m] : 52.99

Sliding class.....: Sliding resistance

Sliding safety factor.....: 14.177

Restoring moment.....[kN*m/m] : 4199.30

Overturning moment.....[kN*m/m] : 209.20

Overturning class.....: Overturning

Overturning safety factor.....: 20.073

Ultimate bearing pressure computed with Limit Equilibrium method

Ultimate bearing pressure.....[kN/m²] : 1513.10

Active pressure.....[kN/m²] : 186.23

Pressure class.....: Bearing capacity

Bearing capacity safety factor.....: 8.125

Equivalent bearing area.....[m] : 5.00

Eccentricity of normal force.....[m] : -1.79

Lever arm of overturning force.....[m] : 3.95

Normal force on the base.....[kN] : 929.65

Outer edge stress.....[kN/m²] : -4330.26

Inner edge stress.....[kN/m²] : 5643.51

Multiplier	Class
1.30	Variable unfavourable
1.25	Angle of shearing resistance (Tan phi)
1.00	Weight density
1.00	Tensile strength of reinforcement

1.00	Pullout resistance of reinforcement
1.00	Sliding resistance
1.00	Bearing capacity
1.00	Overturning



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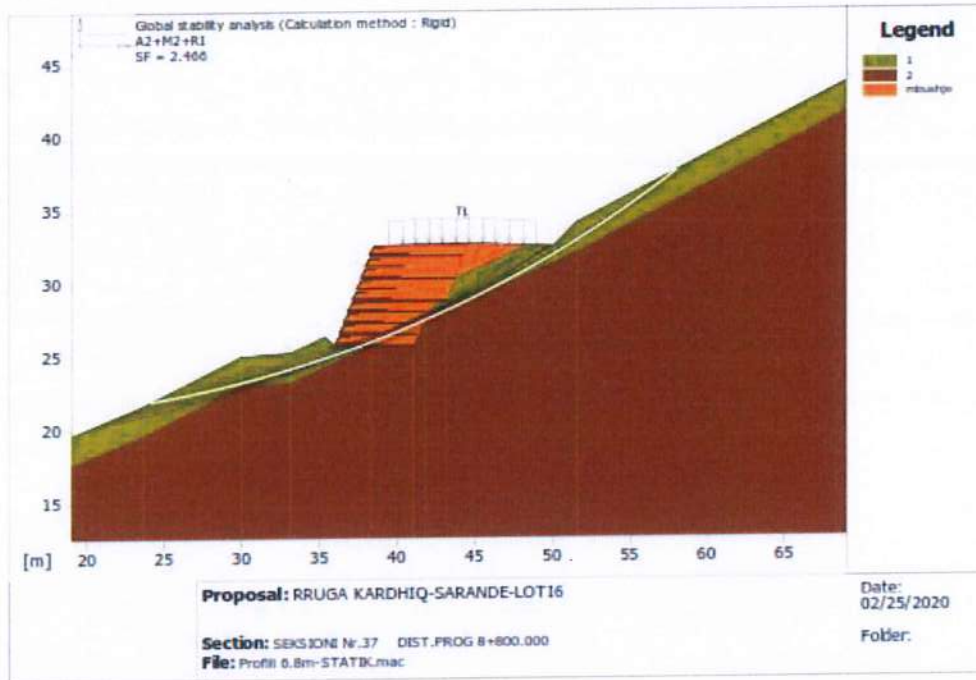
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Global Stability Check :

Multiplier combination : A2+M2+R1

Reinforcements active Forces according to Rigid Method

Stability analysis with circular surfaces according to Bishop's Method

Evaluated Safety Factor 2.466

Starting range, abscises [m]		Arrival range, abscises [m]	
First point	Second point	First point	Second point
20.00	35.00	42.00	60.00
Number of starting point on the starting segment		100	
Total number of trial surfaces		1000	
Minimum base length of slices		[m] : 0.50	
Superior limit search angle		[°] : 0.00	
Inferior limit search angle		[°] : 0.00	

Block : GTML1

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Y	Tb breakage [kN/m]	Tp pullout [kN/m]	Td design [kN/m]	Tb/Td 1/Fmax	Tp/Td
0.000	35.0	77.5	27.8	1.26	2.79

Block : GTML1

Linear Composites - ParaLink - 300_Seismic

Y	Tb breakage [kN/m]	Tp pullout [kN/m]	Td design [kN/m]	Tb/Td 1/Fmax	Tp/Td
0.000	301.0	49.1	49.1	6.13	1.00
0.760	301.0	213.7	213.7	1.41	1.00
1.520	301.0	44.0	44.0	6.84	1.00

Multiplier	Class
1.30	Variable unfavourable
1.25	Angle of shearing resistance (Tan phi)
1.00	Weight density
1.00	Tensile strength of reinforcement
1.00	Pullout resistance of reinforcement
1.00	Ground resistance for overall stability



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B.Llogaritjet Sizmike:

Maccaferri Balkans

Project Title : RRUGA KARDHIQ-SARANDE-LOTI6
Cross Section : SEKSIONI Nr.37 DIST.PROG 8+800.000
Site :
Folder :
File : Profili 6.8m-SIZMIK.mac
Date : 02/25/2020
Checks according to: Eurocode 7 EN 1997-1
Eurocode 7 EN 1997-1

TABLE OF CONTENTS

SOIL PROPERTIES

Soil: 1	Description:		
Cohesion	[kN/m ²]	:	15.00
Friction Angle Class	: Angle of shearing resistance (Tan phi)	:	23.00
Friction Angle	[°]	:	0.00
Ru value		:	
Weight Class	: Weight density	:	
Bulk unit weight - above GWT	[kN/m ³]	:	26.90
Bulk unit weight - below GWT	[kN/m ³]	:	26.90
Elastic Modulus	[kN/m ²]	:	0.00
Poisson's ratio		:	0.30
Soil: 2	Description:		
Cohesion	[kN/m ²]	:	100.00
Friction Angle Class	: Angle of shearing resistance (Tan phi)	:	36.00
Friction Angle	[°]	:	0.00
Ru value		:	
Weight Class	: Weight density	:	
Bulk unit weight - above GWT	[kN/m ³]	:	25.50
Bulk unit weight - below GWT	[kN/m ³]	:	25.50
Elastic Modulus	[kN/m ²]	:	0.00
Poisson's ratio		:	0.30
Soil: mbushje	Description:		
Cohesion	[kN/m ²]	:	0.00
Friction Angle Class	: Angle of shearing resistance (Tan phi)	:	30.00
Friction Angle	[°]	:	0.00
Ru value		:	
Weight Class	: Weight density	:	
Bulk unit weight - above GWT	[kN/m ³]	:	19.00
Bulk unit weight - below GWT	[kN/m ³]	:	19.00
Elastic Modulus	[kN/m ²]	:	0.00
Poisson's ratio		:	0.30

STRATA PROFILES

Stratum: mbushje	Description: mbushje						
Soil : mbushje							
X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
36.09	25.72	38.58	32.56	44.03	32.69	48.40	32.53
Stratum: shtresa 1	Description: Layer1						
Soil : 1							
X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
19.03	19.67	23.72	21.71	30.00	25.01	33.22	25.28
35.40	26.33	36.09	25.72	38.29	25.72		
Stratum: shtresa 1.1	Description: Layer1.1						
Soil : 1							
X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
41.94	27.47	43.19	30.07	48.40	32.53	50.13	32.47
51.64	34.06	51.64	34.06	69.03	43.57		



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Stratum: shtresa 2

Description: Layer2

Soil : 2

X [m]	Y [m]	X [m]	Y [m]	X [m]	Y [m]	X [m]	Y [m]
19.03	17.67	23.72	19.71	30.00	23.01	33.22	23.28
38.29	25.72	41.09	25.72	41.94	27.47	43.19	28.07
51.64	32.06	69.03	41.57				

REINFORCED BLOCKS

Block : GTML1

Block dimensions [m] : Base width = 5.00 Height = 3.04
 Block Origin [m] : Abscissa = 36.07 Ordinate = 25.70
 Face inclination [°] : 20.00

Structural embankment type : Gravel
 Structural embankment : mbushje
 Backfill soil : mbushje
 Covering soil : mbushje
 Foundation soil : 2

Brinch Hansen, Vesic or Meyerhof bearing capacity parameters

Embedment depth [m] : 0.00
 Natural soil slope [°] : 0.00

Reinforcements pattern :

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Length [m] = 2.50
 Vertical spacing [m] = 0.76
 Wrapped length [m] = 0.65

Linear Composites - ParaLink - 300_Seismic

Length [m] = 5.00
 Vertical spacing [m] = 0.76
 Offset [m] = 0.00

Block : GTML2

Block dimensions [m] : Base width = 6.00 Height = 3.80
 Back Shift [m] = 0.00 by GTML1
 Face inclination [°] : 20.00

Structural embankment type : Gravel
 Structural embankment : mbushje
 Backfill soil : mbushje
 Covering soil : mbushje
 Foundation soil : mbushje

Brinch Hansen, Vesic or Meyerhof bearing capacity parameters

Embedment depth [m] : 0.00
 Natural soil slope [°] : 0.00

Reinforcements pattern :

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Length [m] = 2.50
 Vertical spacing [m] = 0.76
 Wrapped length [m] = 0.65

Linear Composites - ParaLink - 300_Seismic



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Length [m] = 6.00
Vertical spacing [m] = 1.52
Offset [m] = 0.00

SURCHARGE LOADS

Distributed Loads : TL

Description :

Class : Variable unfavourable

Magnitude [kN/m²] = 30.00 Inclination angle [°] = 0.00

Abscissa [m] : from = 39.50 To = 49.00

Earthquake Load :

Class : Seismic action

Acceleration [m/s²] : Horizontal = 1.96 Vertical = 0.59

PROPERTIES OF THE USED REINFORCEMENTS

Linear Composites - ParaLink - 300_Seismic

Tensile strength UTS	[kN/m]	301.00
Plastic extension ratio		0.00
Elastic extension coefficient	[m ² /kN]	1.10e-04
Reinforcement Stiffness	[kN/m]	3168.00
Minimum anchorage length	[m]	0.15
Breakage Safety Factor (gravel)		1.14
Pull-out Safety Factor		1.00
Breakage Safety Factor (sand)		1.10
Pull-out Safety Factor		1.00
Breakage Safety Factor (silty sand)		1.10
Pull-out Safety Factor		1.00
Breakage Safety Factor (sandy clay)		1.10
Pull-out Safety Factor		1.00
Interaction factor reinforcement/reinforcement		0.27
Pullout coefficient reinforcement-gravel		0.90
Pullout coefficient reinforcement-sand		0.90
Pullout coefficient reinforcement-silt		0.70
Pullout coefficient reinforcement-clay		0.40

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Tensile strength UTS	[kN/m]	35.00
Plastic extension ratio		2.00
Elastic extension coefficient	[m ² /kN]	1.10e-04
Reinforcement Stiffness	[kN/m]	330.00
Minimum anchorage length	[m]	0.15
Breakage Safety Factor (gravel)		1.26
Pull-out Safety Factor		1.00
Breakage Safety Factor (sand)		1.09
Pull-out Safety Factor		1.00
Breakage Safety Factor (silty sand)		1.09
Pull-out Safety Factor		1.00
Breakage Safety Factor (sandy clay)		1.09
Pull-out Safety Factor		1.00
Interaction factor reinforcement/reinforcement		0.30
Pullout coefficient reinforcement-gravel		0.90
Pullout coefficient reinforcement-sand		0.65
Pullout coefficient reinforcement-silt		0.50
Pullout coefficient reinforcement-clay		0.30



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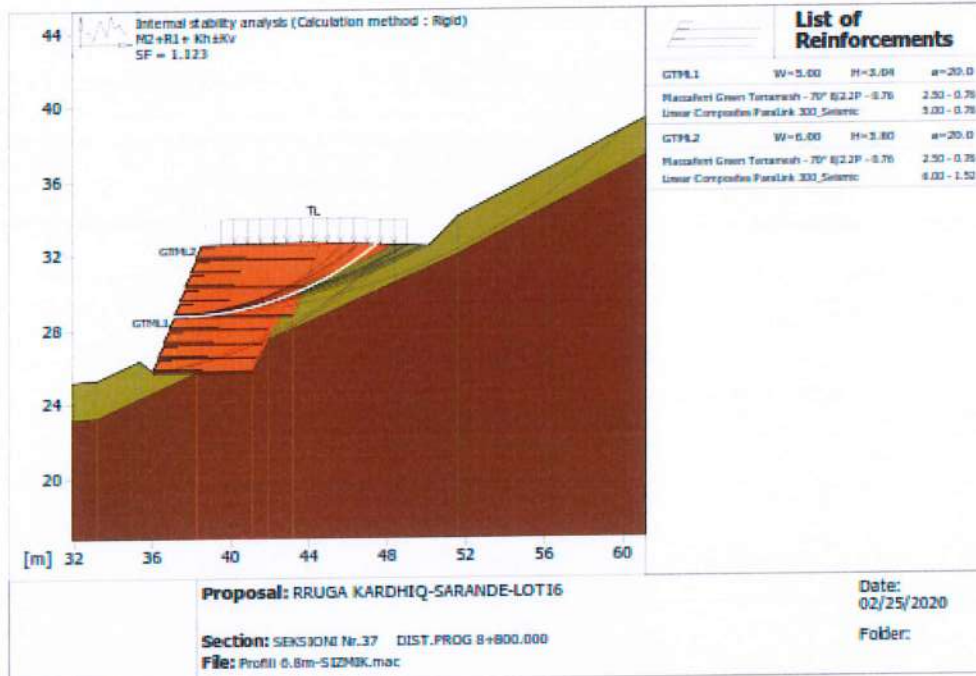
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CHECKS RESULTS



Internal Stability :

Multiplier combination : M2+R1+ Kh±Kv

Reinforcements active Forces according to Rigid Method

Stability analysis with circular surfaces according to Bishop's Method

Evaluated Safety Factor : 1.123

Surfaces searching range
 Arrival range, abscises [m]
 Block GTML1 First point 40.00 Second point 60.00

Number of starting point on the starting segment : 1
 Total number of trial surfaces : 1000
 Minimum base length of slices [m] : 0.50
 Superior limit search angle [°] : 0.00
 Inferior limit search angle [°] : 0.00

Multiplier	Class
1.00	Variable unfavourable
1.00	Seismic action
1.25	Angle of shearing resistance (Tan phi)
1.00	Weight density
1.00	Tensile strength of reinforcement
1.00	Pullout resistance of reinforcement
1.00	Ground resistance for overall stability



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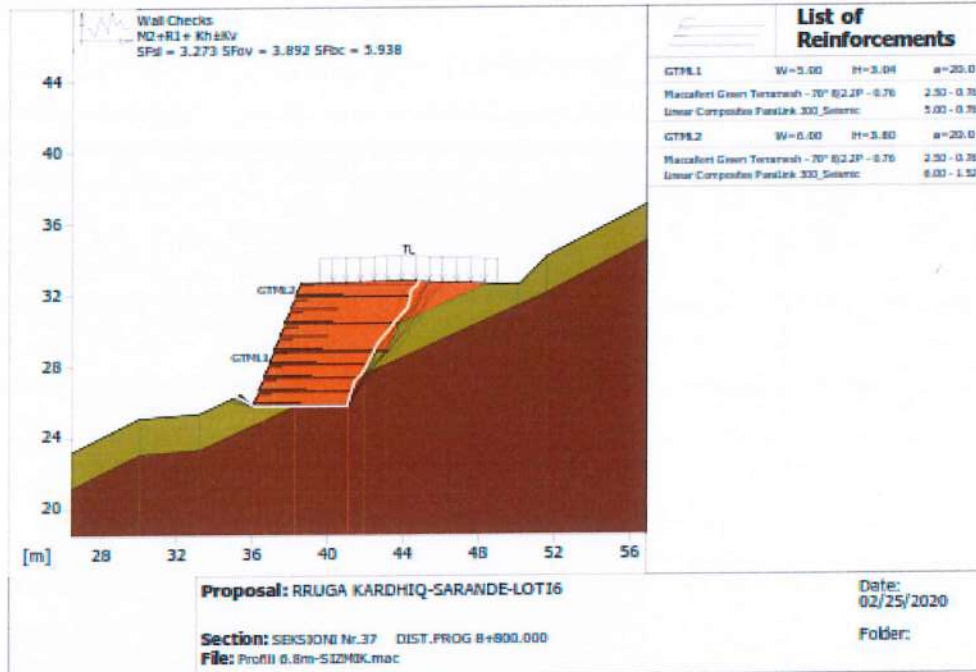
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Wall Checks :

Multiplier combination : M2+R1+ Kh±Kv

Considered block : GTML1

Resisting force [kN/m] : 709.15

Active force [kN/m] : 216.64

Sliding class : Sliding resistance

Sliding safety factor : 3.273

Restoring moment [kN*m/m] : 3927.90

Overturning moment [kN*m/m] : 1009.20

Overturning class : Overturning

Overturning safety factor : 3.892

Ultimate bearing pressure computed with Limit Equilibrium method

Ultimate bearing pressure [kN/m²] : 1030.30

Active pressure [kN/m²] : 173.53

Pressure class : Bearing capacity

Bearing capacity safety factor : 5.938

Equivalent bearing area [m] : 5.00

Eccentricity of normal force [m] : -0.97

Lever arm of overturning force [m] : 4.66

Normal force on the base [kN] : 840.17

Outer edge stress [kN/m²] : -251.72

Inner edge stress [kN/m²] : 802.25

Multiplier	Class
1.00	Variable unfavourable
1.00	Seismic action
1.25	Angle of shearing resistance (Tan phi)
1.00	Weight density

1.00	Tensile strength of reinforcement
1.00	Pullout resistance of reinforcement
1.00	Sliding resistance
1.00	Bearing capacity
1.00	Overturning



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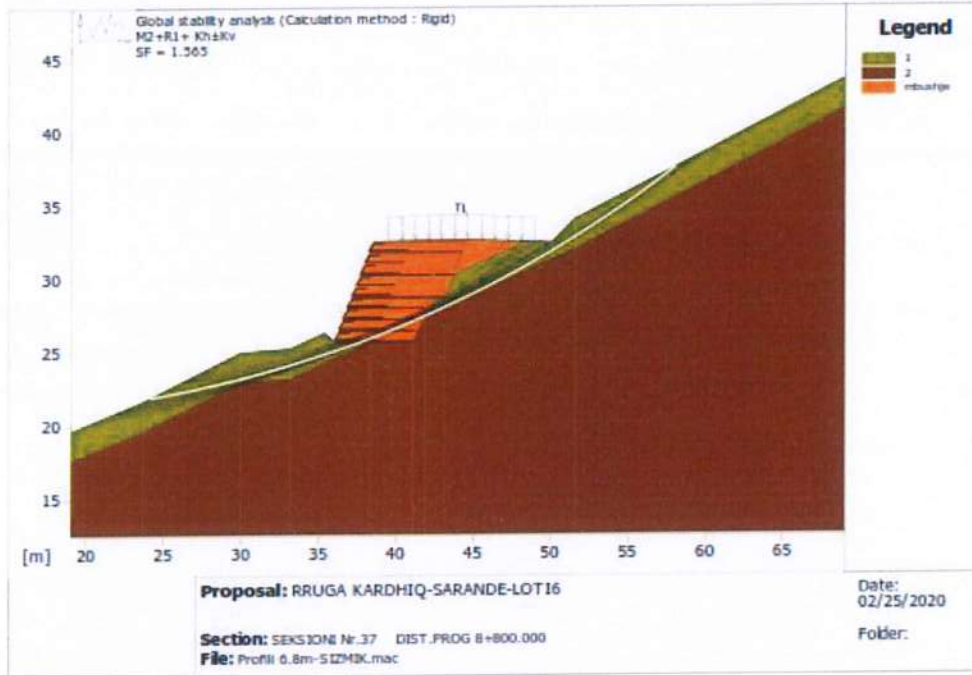
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Global Stability Check :

Multiplier combination : M2+R1+ Kh±Kv

Reinforcements active Forces according to Rigid Method

Stability analysis with circular surfaces according to Bishop's Method

Evaluated Safety Factor : 1.565

Surfaces searching range

Starting range, abscises [m]		Arrival range, abscises [m]	
First point	Second point	First point	Second point
20.00	35.00	42.00	60.00
Number of starting point on the starting segment		100	
Total number of trial surfaces		1000	
Minimum base length of slices [m]		0.50	
Superior limit search angle [°]		0.00	
Inferior limit search angle [°]		0.00	

Block : GTML1

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Y	Tb breakage [kN/m]	Tp pullout [kN/m]	Td design [kN/m]	Tb/Td 1/Fmax	Tp/Td
[m]					
0.000	35.0	77.5	27.8	1.26	2.79

Block : GTML1

Linear Composites - ParaLink - 300_Seismic

Y	Tb breakage [kN/m]	Tp pullout [kN/m]	Td design [kN/m]	Tb/Td 1/Fmax	Tp/Td
[m]					
0.000	301.0	49.1	49.1	6.13	1.00
0.760	301.0	213.1	213.1	1.41	1.00
1.520	301.0	41.2	41.2	7.31	1.00

Multiplier	Class
1.00	Variable unfavourable
1.00	Seismic action
1.25	Angle of shearing resistance (Tan phi)
1.00	Weight density
1.00	Tensile strength of reinforcement
1.00	Pullout resistance of reinforcement
1.00	Ground resistance for overall stability



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2. Seksioni terthor Tip.2 km 8+800 H=10.64 m

A.Llogaritjet statike:

Project Title.....: RRUGA KARDHIQ-SARANDE-LOTI6
Cross Section.....: SEKSIONI Nr.37 DIST.PROG 8+800.000
Site.....:
Folder.....:
File.....: Profili 10m-STATIK.mac
Date.....: 02/25/2020
Checks according to: Eurocode 7 EN 1997-1
Eurocode 7 EN 1997-1

TABLE OF CONTENTS

SOIL PROPERTIES

Soil: 1	Description:		
Cohesion.....	[kN/m ²]	15.00	
Friction Angle Class.....	: Angle of shearing resistance (Tan phi)		
Friction Angle.....	[°]	23.00	
Ru value.....		0.00	
Weight Class.....	: Weight density		
Bulk unit weight - above GWT.....	[kN/m ³]	26.90	
Bulk unit weight - below GWT.....	[kN/m ³]	26.90	
Elastic Modulus.....	[kN/m ²]	0.00	
Poisson's ratio.....		0.30	
Soil: 2	Description:		
Cohesion.....	[kN/m ²]	100.00	
Friction Angle Class.....	: Angle of shearing resistance (Tan phi)		
Friction Angle.....	[°]	36.00	
Ru value.....		0.00	
Weight Class.....	: Weight density		
Bulk unit weight - above GWT.....	[kN/m ³]	25.50	
Bulk unit weight - below GWT.....	[kN/m ³]	25.50	
Elastic Modulus.....	[kN/m ²]	0.00	
Poisson's ratio.....		0.30	
Soil: mbushje	Description:		
Cohesion.....	[kN/m ²]	0.00	
Friction Angle Class.....	: Angle of shearing resistance (Tan phi)		
Friction Angle.....	[°]	30.00	
Ru value.....		0.00	
Weight Class.....	: Weight density		
Bulk unit weight - above GWT.....	[kN/m ³]	19.00	
Bulk unit weight - below GWT.....	[kN/m ³]	19.00	
Elastic Modulus.....	[kN/m ²]	0.00	
Poisson's ratio.....		0.30	

STRATA PROFILES

Stratum: mbushje	Description: mbushje						
Soil : mbushje							
X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
36.09	25.72	39.97	36.36	45.42	36.49	50.87	36.36
53.78	34.41						
Stratum: shtresa 1	Description: Layer1						
Soil : 1							
X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
6.67	16.39	20.42	21.06	30.75	24.79	35.58	26.76
36.09	25.72	38.13	25.72				
Stratum: shtresa 1.1	Description: Layer1.1						
Soil : 1							
X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
42.91	27.60	43.96	30.02	46.13	30.99	53.78	34.41



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62.11 38.19 70.42 42.68 84.49 49.33

Stratum: shtresa 2

Description: Layer2

Soil : 2

X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
6.67	14.39	20.42	19.06	30.75	22.79	35.60	24.72
38.13	25.72	42.09	25.72	42.91	27.60	43.96	28.02
46.13	28.99	53.78	32.41	62.11	36.19	70.42	40.68
84.49	47.33						

REINFORCED BLOCKS

Block : GTML1

Block dimensions [m] : Base width = 6.00 Height = 3.04
Block Origin [m] : Abscissa = 36.07 Ordinate = 25.65
Face inclination [°] : 20.00

Structural embankment type : Gravel
Structural embankment : mbushje
Backfill soil : mbushje
Covering soil : mbushje
Foundation soil : 2

Brinch Hansen, Vesic or Meyerhof bearing capacity parameters

Embedment depth [m] : 0.00
Natural soil slope [°] : 0.00

Reinforcements pattern :

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Length [m] = 2.50
Vertical spacing [m] = 0.76
Wrapped length [m] = 0.65

Linear Composites - ParaLink - 300 Seismic

Length [m] = 6.00
Vertical spacing [m] = 0.76
Offset [m] = 0.00

Block : GTML2

Block dimensions [m] : Base width = 7.00 Height = 2.28
Back Shift [m] = 0.00 by GTML1
Face inclination [°] : 20.00

Structural embankment type : Gravel
Structural embankment : mbushje
Backfill soil : mbushje
Covering soil : mbushje
Foundation soil : mbushje

Brinch Hansen, Vesic or Meyerhof bearing capacity parameters

Embedment depth [m] : 0.00
Natural soil slope [°] : 0.00

Reinforcements pattern :

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Length [m] = 2.50
Vertical spacing [m] = 0.76
Wrapped length [m] = 0.65



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Linear Composites - ParaLink - 300_Seismic

Length [m] = 7.00
Vertical spacing [m] = 0.76
Offset [m] = 0.00

Block : GTML3

Block dimensions [m] : Base width = 9.00 Height = 5.32
Back Shift [m] = 0.00 by GTML2
Face inclination [°] : 20.00

Structural embankment type : Gravel
Structural embankment : mbushje
Backfill soil : mbushje
Covering soil : mbushje
Foundation soil : mbushje

Brinch Hansen, Vesic or Meyerhof bearing capacity parameters

Embedment depth [m] : 0.00
Natural soil slope [°] : 0.00

Reinforcements pattern :

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Length [m] = 2.50
Vertical spacing [m] = 0.76
Wrapped length [m] = 0.65

Linear Composites - ParaLink - 300_Seismic

Length [m] = 9.00
Vertical spacing [m] = 1.52
Offset [m] = 0.00

SURCHARGE LOADS

Distributed Loads : TL

Description :

Class : Variable unfavourable

Magnitude [kN/m²] = 30.00 Inclination angle [°] = 0.00

Abscissa [m] : from = 41.00 To = 50.00

PROPERTIES OF THE USED REINFORCEMENTS

Linear Composites - ParaLink - 300_Seismic

Tensile strength UTS [kN/m] : 301.00
Plastic extension ratio : 0.00
Elastic extension coefficient [m²/kN] : 1.10e-04
Reinforcement Stiffness [kN/m] : 3168.00
Minimum anchorage length [m] : 0.15
Breakage Safety Factor (gravel) : 1.14
Pull-out Safety Factor : 1.00
Breakage Safety Factor (sand) : 1.10
Pull-out Safety Factor : 1.00
Breakage Safety Factor (silty sand) : 1.10
Pull-out Safety Factor : 1.00
Breakage Safety Factor (sandy clay) : 1.10
Pull-out Safety Factor : 1.00
Interaction factor reinforcement/reinforcement : 0.27
Pullout coefficient reinforcement-gravel : 0.90

Pullout coefficient reinforcement-sand : 0.90
Pullout coefficient reinforcement-silt : 0.70
Pullout coefficient reinforcement-clay : 0.40

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Tensile strength UTS [kN/m] : 35.00
Plastic extension ratio : 2.00
Elastic extension coefficient [m²/kN] : 1.10e-04
Reinforcement Stiffness [kN/m] : 330.00
Minimum anchorage length [m] : 0.15
Breakage Safety Factor (gravel) : 1.26
Pull-out Safety Factor : 1.00
Breakage Safety Factor (sand) : 1.09
Pull-out Safety Factor : 1.00
Breakage Safety Factor (silty sand) : 1.09
Pull-out Safety Factor : 1.00
Breakage Safety Factor (sandy clay) : 1.09
Pull-out Safety Factor : 1.00
Interaction factor reinforcement/reinforcement : 0.30
Pullout coefficient reinforcement-gravel : 0.90
Pullout coefficient reinforcement-sand : 0.65
Pullout coefficient reinforcement-silt : 0.50
Pullout coefficient reinforcement-clay : 0.30



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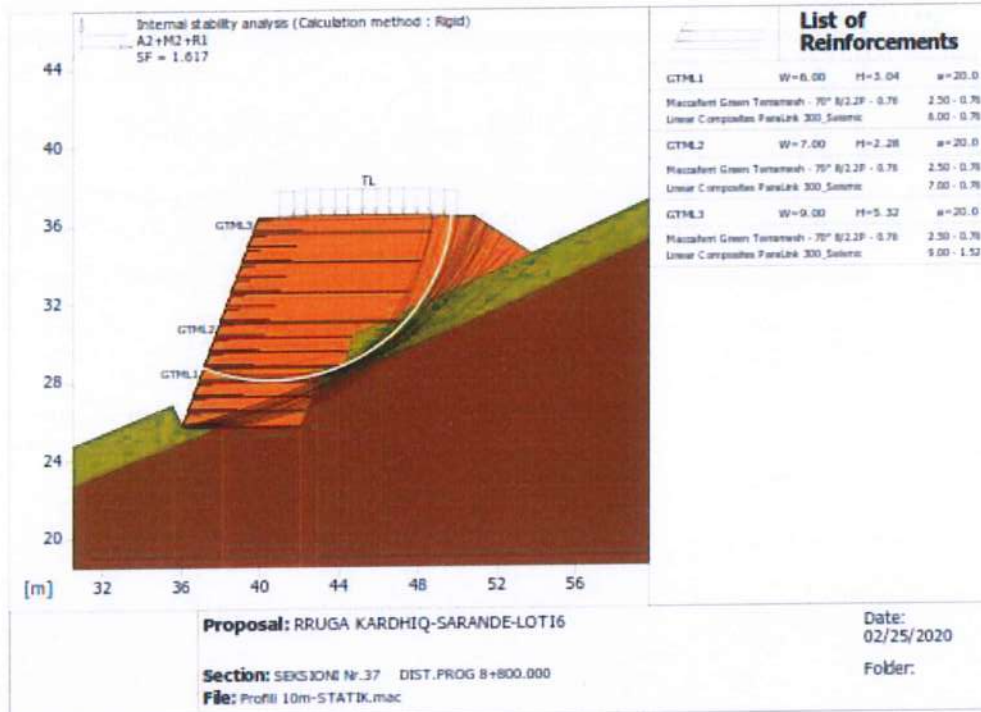
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CHECKS RESULTS



Internal Stability :

Multiplier combination : A2+M2+R1

Reinforcements active Forces according to Rigid Method

Stability analysis with circular surfaces according to Bishop's Method

Evaluated Safety Factor : 1.617

Surfaces searching range
Arrival range, abscises [m]

Block	First point	Second point
GTML1	43.00	65.00

Number of starting point on the starting segment : 1
Total number of trial surfaces : 1000
Minimum base length of slices [m] : 0.50
Superior limit search angle [°] : 0.00
Inferior limit search angle [°] : 0.00

Multiplier	Class
1.30	Variable unfavourable
1.25	Angle of shearing resistance (Tan phi)
1.00	Weight density
1.00	Tensile strength of reinforcement
1.00	Pullout resistance of reinforcement
1.00	Ground resistance for overall stability



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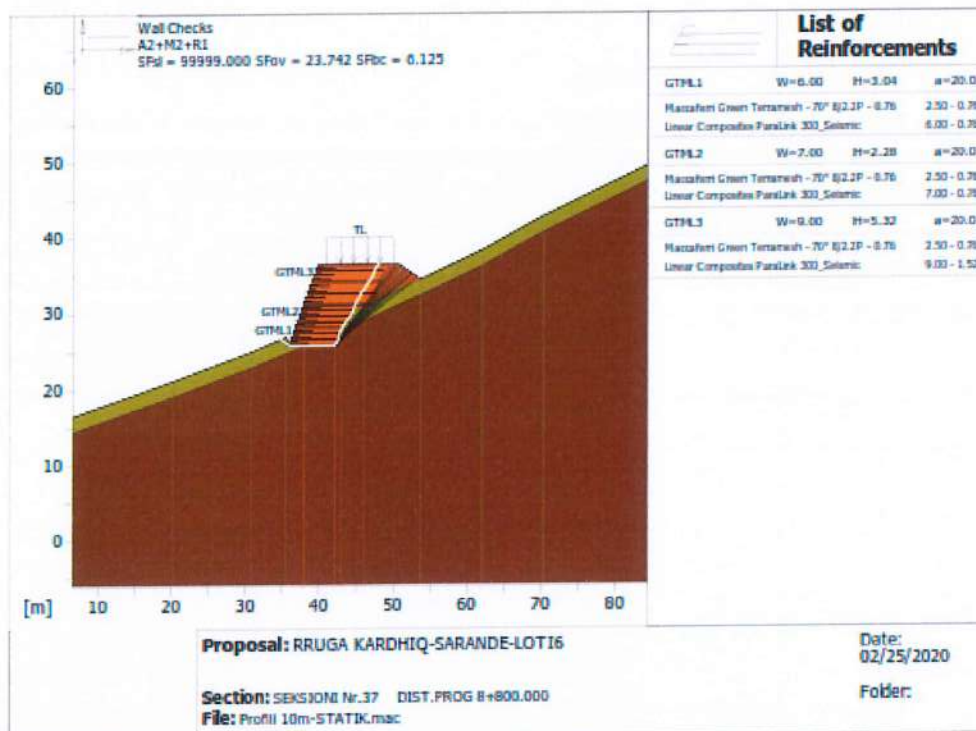
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Wall Checks :

Multiplier combination : A2+M2+R1

Considered block : GTML1

Resisting force.....[kN/m] : 1387.00

Active force.....[kN/m] : -74.76

Sliding class.....: Sliding resistance

Sliding safety factor.....: 99999.000

Restoring moment.....[kN*m/m] : 12470.00

Overturning moment.....[kN*m/m] : 525.22

Overturning class.....: Overturning

Overturning safety factor.....: 23.742

Ultimate bearing pressure computed with Limit Equilibrium method

Ultimate bearing pressure.....[kN/m²] : 1935.30

Active pressure.....[kN/m²] : 315.97

Pressure class.....: Bearing capacity

Bearing capacity safety factor.....: 6.125

Equivalent bearing area.....[m] : 6.00

Eccentricity of normal force.....[m] : -3.31

Lever arm of overturning force.....[m] : -7.03

Normal force on the base.....[kN] : 1894.40

Outer edge stress.....[kN/m²] : -103806.08

Inner edge stress.....[kN/m²] : 97603.06

Multiplier	Class
1.30	Variable unfavourable
1.25	Angle of shearing resistance (Tan phi)
1.00	Weight density
1.00	Tensile strength of reinforcement
1.00	Pullout resistance of reinforcement
1.00	Sliding resistance
1.00	Bearing capacity
1.00	Overturning



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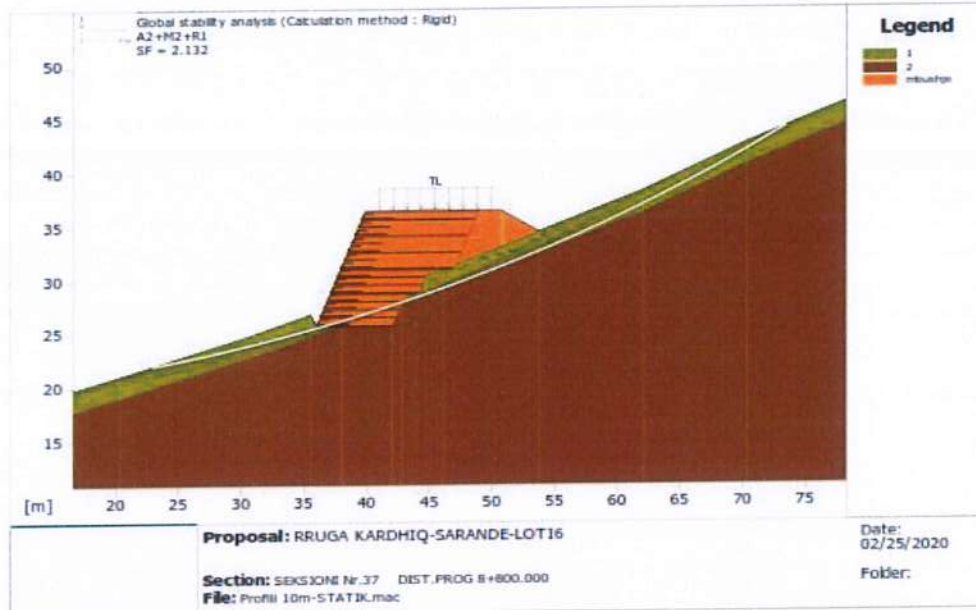
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Global Stability Check :

Multiplier combination : A2+M2+R1

Reinforcements active Forces according to Rigid Method

Stability analysis with circular surfaces according to Bishop's Method

Evaluated Safety Factor : 2.132

Starting range, abscises [m]		Surfaces searching range		Arrival range, abscises [m]	
First point	Second point	First point	Second point	First point	Second point
15.00	35.00	55.00	75.00		
Number of starting point on the starting segment				100	
Total number of trial surfaces				1000	
Minimum base length of slices [m]				0.50	
Superior limit search angle [°]				0.00	
Inferior limit search angle [°]				0.00	

Block : GTML1

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Y	Tb breakage [kN/m]	Tp pullout [kN/m]	Td design [kN/m]	Tb/Td 1/Fmax	Tp/Td
0.000	35.0	126.6	27.8	1.26	4.55

Block : GTML1

Linear Composites - ParaLink - 300_Seismic

Y	Tb breakage [kN/m]	Tp pullout [kN/m]	Td design [kN/m]	Tb/Td 1/Fmax	Tp/Td
0.000	301.0	2.5	2.5	120.40	1.00
0.760	301.0	117.9	117.9	2.55	1.00
1.520	301.0	377.7	264.0	1.14	1.43

Multiplier	Class
1.30	Variable unfavourable
1.25	Angle of shearing resistance (Tan phi)
1.00	Weight density
1.00	Tensile strength of reinforcement
1.00	Pullout resistance of reinforcement
1.00	Ground resistance for overall stability



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B.Llogaritjet Sizmike:

Project Title : RRUGA KARDHIQ-SARANDE-LOTI6
Cross Section : SEKSIONI Nr.37 DIST.PROG 8+800.000
Site :
Folder :
File : Profili 10m-SIZMIK.mac
Date : 02/25/2020
Checks according to: Eurocode 7 EN 1997-1
Eurocode 7 EN 1997-1

TABLE OF CONTENTS

SOIL PROPERTIES

Soil: 1	Description:		
Cohesion	[kN/m ²]	:	15.00
Friction Angle Class	: Angle of shearing resistance (Tan phi)		
Friction Angle	[°]	:	23.00
Ru value		:	0.00
Weight Class	: Weight density		
Bulk unit weight - above GWT	[kN/m ³]	:	26.90
Bulk unit weight - below GWT	[kN/m ³]	:	26.90
Elastic Modulus	[kN/m ²]	:	0.00
Poisson's ratio		:	0.30
Soil: 2	Description:		
Cohesion	[kN/m ²]	:	100.00
Friction Angle Class	: Angle of shearing resistance (Tan phi)		
Friction Angle	[°]	:	36.00
Ru value		:	0.00
Weight Class	: Weight density		
Bulk unit weight - above GWT	[kN/m ³]	:	25.50
Bulk unit weight - below GWT	[kN/m ³]	:	25.50
Elastic Modulus	[kN/m ²]	:	0.00
Poisson's ratio		:	0.30
Soil: mbushje	Description:		
Cohesion	[kN/m ²]	:	0.00
Friction Angle Class	: Angle of shearing resistance (Tan phi)		
Friction Angle	[°]	:	30.00
Ru value		:	0.00
Weight Class	: Weight density		
Bulk unit weight - above GWT	[kN/m ³]	:	19.00
Bulk unit weight - below GWT	[kN/m ³]	:	19.00
Elastic Modulus	[kN/m ²]	:	0.00
Poisson's ratio		:	0.30

STRATA PROFILES

Stratum: mbushje	Description: mbushje						
Soil : mbushje							
X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
36.09	25.72	39.97	36.36	45.42	36.49	50.87	36.36
53.78	34.41						
Stratum: shtresa 1	Description: Layer1						
Soil : 1							
X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
6.67	16.39	20.42	21.06	30.75	24.79	35.58	26.76
36.09	25.72	38.13	25.72				
Stratum: shtresa 1.1	Description: Layer1.1						
Soil : 1							
X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
42.91	27.60	43.96	30.02	46.13	30.99	53.78	34.41



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62.11 38.19 70.42 42.68 84.49 49.33

Stratum: shtresa 2

Description: Layer2

Soil : 2

X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
6.67	14.39	20.42	19.06	30.75	22.79	35.60	24.72
38.13	25.72	42.09	25.72	42.91	27.60	43.96	28.02
46.13	28.99	53.78	32.41	62.11	36.19	70.42	40.68
84.49	47.33						

REINFORCED BLOCKS

Block : GTML1

Block dimensions [m] : Base width = 6.00 Height = 3.04
 Block Origin [m] : Abscissa = 36.08 Ordinate = 25.65
 Face inclination [°] : 20.00

Structural embankment type : Gravel
 Structural embankment : mbushje
 Backfill soil : mbushje
 Covering soil : mbushje
 Foundation soil : 2

Brinch Hansen, Vesic or Meyerhof bearing capacity parameters

Embedment depth [m] : 0.00
 Natural soil slope [°] : 0.00

Reinforcements pattern :

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Length [m] = 2.50
 Vertical spacing [m] = 0.76
 Wrapped length [m] = 0.65

Linear Composites - ParaLink - 300 Seismic

Length [m] = 6.00
 Vertical spacing [m] = 0.76
 Offset [m] = 0.00

Block : GTML2

Block dimensions [m] : Base width = 7.00 Height = 2.28
 Back Shift [m] = 0.00 by GTML1
 Face inclination [°] : 20.00

Structural embankment type : Gravel
 Structural embankment : mbushje
 Backfill soil : mbushje
 Covering soil : mbushje
 Foundation soil : mbushje

Brinch Hansen, Vesic or Meyerhof bearing capacity parameters

Embedment depth [m] : 0.00
 Natural soil slope [°] : 0.00

Reinforcements pattern :

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Length [m] = 2.50
 Vertical spacing [m] = 0.76
 Wrapped length [m] = 0.65



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Linear Composites - ParaLink - 300_Seismic

Length [m] = 7.00
Vertical spacing [m] = 0.76
Offset [m] = 0.00

Block : GTML3

Block dimensions [m] : Base width = 9.00 Height = 5.32
Back Shift [m] = 0.00 by GTML2
Face inclination [°] : 20.00

Structural embankment type : Gravel
Structural embankment : mbushje
Backfill soil : mbushje
Covering soil : mbushje
Foundation soil : mbushje

Brinch Hansen, Vesic or Meyerhof bearing capacity parameters

Embedment depth [m] : 0.00
Natural soil slope [°] : 0.00

Reinforcements pattern :

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Length [m] = 2.50
Vertical spacing [m] = 0.76
Wrapped length [m] = 0.65

Linear Composites - ParaLink - 300_Seismic

Length [m] = 9.00
Vertical spacing [m] = 1.52
Offset [m] = 0.00

SURCHARGE LOADS

Distributed Loads : TL

Description :

Class : Variable unfavourable

Magnitude [kN/m²] = 30.00 Inclination angle [°] = 0.00

Abscissa [m] : from = 41.00 To = 50.00

Earthquake Load :

Class : Seismic action

Acceleration [m/s²] : Horizontal = 1.96 Vertical = 0.59

PROPERTIES OF THE USED REINFORCEMENTS

Linear Composites - ParaLink - 300_Seismic

Tensile strength UTS [kN/m] : 301.00
Plastic extension ratio : 0.00
Elastic extension coefficient [m²/kN] : 1.10e-04
Reinforcement Stiffness [kN/m] : 3168.00
Minimum anchorage length [m] : 0.15
Breakage Safety Factor (gravel) : 1.14
Pull-out Safety Factor : 1.00
Breakage Safety Factor (sand) : 1.10
Pull-out Safety Factor : 1.00
Breakage Safety Factor (silty sand) : 1.10
Pull-out Safety Factor : 1.00

Breakage Safety Factor (sandy clay) : 1.10
Pull-out Safety Factor : 1.00
Interaction factor reinforcement/reinforcement : 0.27
Pullout coefficient reinforcement-gravel : 0.90
Pullout coefficient reinforcement-sand : 0.90
Pullout coefficient reinforcement-silt : 0.70
Pullout coefficient reinforcement-clay : 0.40

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Tensile strength UTS [kN/m] : 35.00
Plastic extension ratio : 2.00
Elastic extension coefficient [m²/kN] : 1.10e-04
Reinforcement Stiffness [kN/m] : 330.00
Minimum anchorage length [m] : 0.15
Breakage Safety Factor (gravel) : 1.26
Pull-out Safety Factor : 1.00
Breakage Safety Factor (sand) : 1.09
Pull-out Safety Factor : 1.00
Breakage Safety Factor (silty sand) : 1.09
Pull-out Safety Factor : 1.00
Breakage Safety Factor (sandy clay) : 1.09
Pull-out Safety Factor : 1.00
Interaction factor reinforcement/reinforcement : 0.30
Pullout coefficient reinforcement-gravel : 0.90
Pullout coefficient reinforcement-sand : 0.65
Pullout coefficient reinforcement-silt : 0.50
Pullout coefficient reinforcement-clay : 0.30



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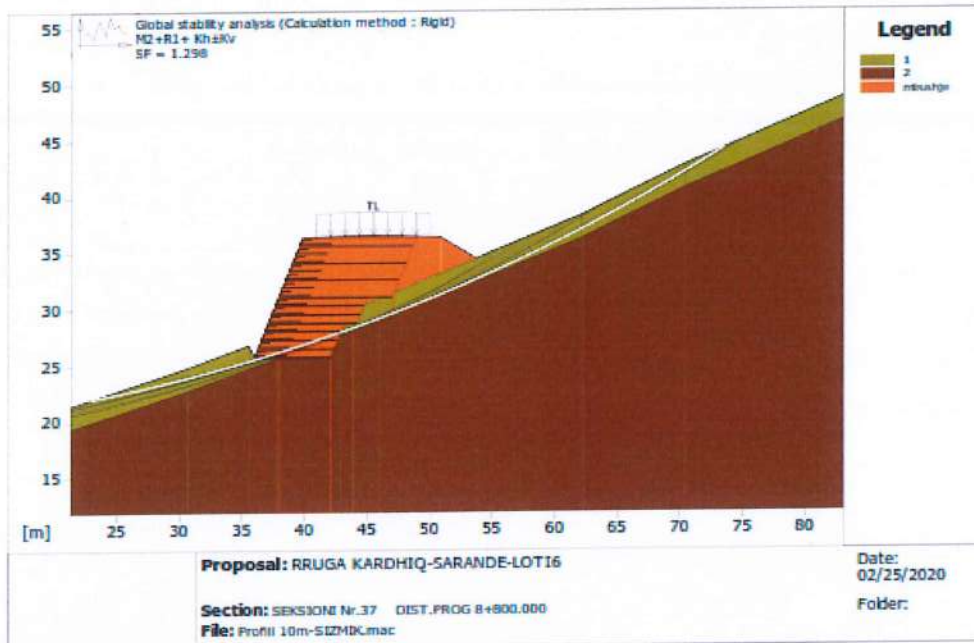
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CHECKS RESULTS



Global Stability Check :

Multiplier combination : M2+R1+ Kh±Kv

Reinforcements active Forces according to Rigid Method

Stability analysis with circular surfaces according to Bishop's Method

Evaluated Safety Factor : 1.298

Starting range, abscises [m]		Surfaces searching range		Arrival range, abscises [m]	
First point	Second point	First point	Second point	First point	Second point
15.00	35.00	55.00	75.00		
Number of starting point on the starting segment		100			
Total number of trial surfaces		1000			
Minimum base length of slices		[m] : 0.50			
Superior limit search angle		[°] : 0.00			
Inferior limit search angle		[°] : 0.00			

Block : GTML1
Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Y	Tb breakage [kN/m]	Tp pullout [kN/m]	Td design [kN/m]	Tb/Td 1/Fmax	Tp/Td
0.000	35.0	127.6	27.8	1.26	4.59

Block : GTML1
Linear Composites - ParaLink - 300_Seismic

Y	Tb breakage [kN/m]	Tp pullout [kN/m]	Td design [kN/m]	Tb/Td 1/Fmax	Tp/Td
0.000	301.0	2.5	2.5	120.40	1.00
0.760	301.0	117.9	117.9	2.55	1.00
1.520	301.0	364.6	264.0	1.14	1.38

Multiplier	Class
1.00	Variable unfavourable
1.00	Seismic action
1.25	Angle of shearing resistance (Tan phi)
1.00	Weight density
1.00	Tensile strength of reinforcement
1.00	Pullout resistance of reinforcement
1.00	Ground resistance for overall stability



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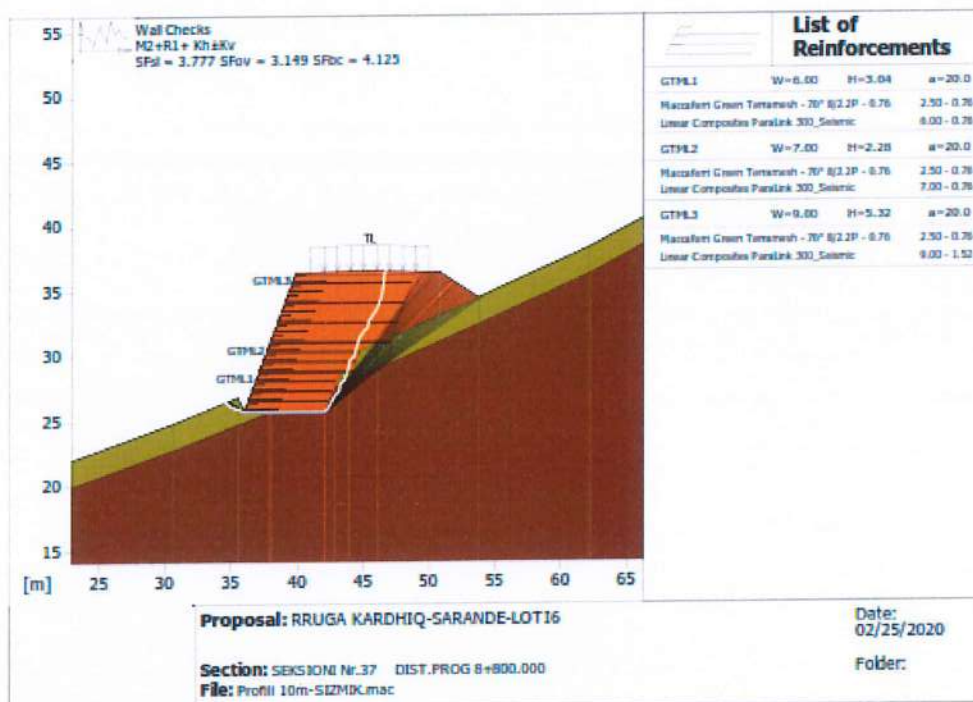
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Wall Checks :

Multiplier combination : M2+R1+ Kh±Kv

Considered block : GTML1

Resisting force.....[kN/m].....: 1306.30

Active force.....[kN/m].....: 345.86

Sliding class.....: Sliding resistance

Sliding safety factor.....: 3.777

Restoring moment.....[kN*m/m].....: 11840.00

Overturning moment.....[kN*m/m].....: 3760.20

Overturning class.....: Overturning

Overturning safety factor.....: 3.149

Ultimate bearing pressure computed with Limit Equilibrium method

Ultimate bearing pressure.....[kN/m²].....: 1212.90

Active pressure.....[kN/m²].....: 294.04

Pressure class.....: Bearing capacity

Bearing capacity safety factor.....: 4.125

Equivalent bearing area.....[m].....: 6.00

Eccentricity of normal force.....[m].....: -1.67

Lever arm of overturning force.....[m].....: 10.87

Normal force on the base.....[kN].....: 1730.00

Outer edge stress.....[kN/m²].....: 1801.40

Inner edge stress.....[kN/m²].....: 3102.55

Multiplier	Class
1.00	Variable unfavourable
1.00	Seismic action
1.25	Angle of shearing resistance (Tan phi)
1.00	Weight density
1.00	Tensile strength of reinforcement
1.00	Pullout resistance of reinforcement
1.00	Sliding resistance
1.00	Bearing capacity
1.00	Overturning



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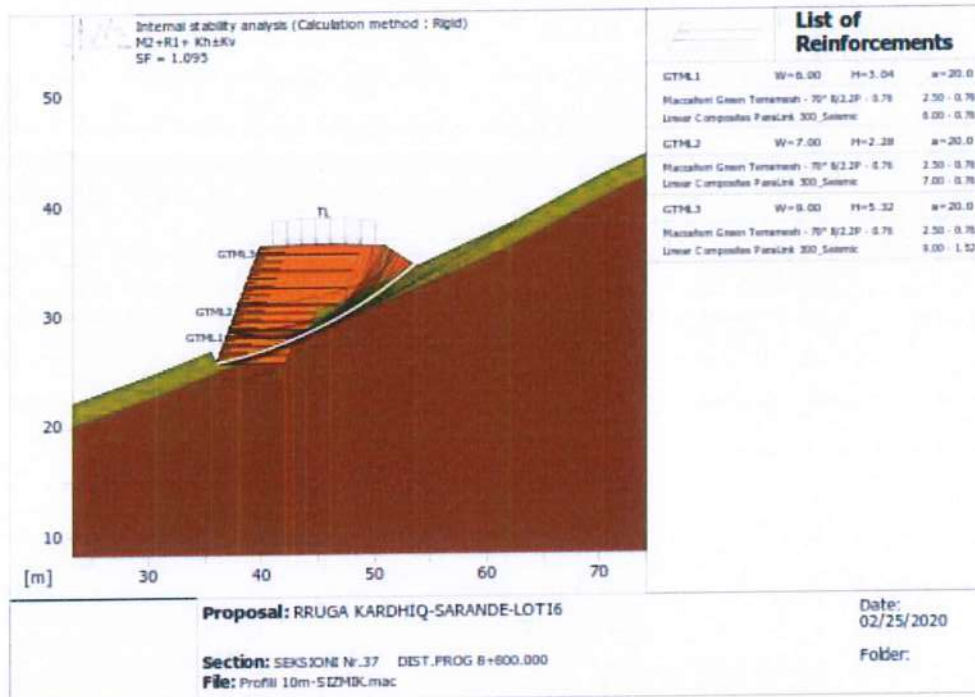
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Internal Stability :

Multiplier combination : M2+R1+ Kh±Kv

Reinforcements active Forces according to Rigid Method

Stability analysis with circular surfaces according to Bishop's Method

Evaluated Safety Factor : 1.095

Block	Surfaces searching range	
	First point	Second point
GTML1	43.00	65.00
Arrival range, abscises [m]		
Number of starting point on the starting segment : 1		
Total number of trial surfaces : 1000		
Minimum base length of slices [m] : 0.50		
Superior limit search angle [°] : 0.00		
Inferior limit search angle [°] : 0.00		

Block : GTML1 Linear Composites - ParaLink - 300_Seismic

Y	Tb breakage [kN/m]	Tp pullout [kN/m]	Td design [kN/m]	Tb/Td 1/Fmax	Tp/Td
[m]					
0.760	301.0	117.9	117.9	2.55	1.00
1.520	301.0	335.3	264.0	1.14	1.27

Multiplier	Class
1.00	Variable unfavourable
1.00	Seismic action
1.25	Angle of shearing resistance (Tan phi)
1.00	Weight density
1.00	Tensile strength of reinforcement
1.00	Pullout resistance of reinforcement
1.00	Ground resistance for overall stability



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3. Seksioni terthor Tip.3 km 9+125 H=13.68 m

A. Llogaritjet statike:

Project Title : RRUGA KARDHIQ-SARANDE-LOTI6
Cross Section : SEKSIONI Nr.52 DIST.PROG 9+125.000
Site :
Folder :
File : Profili 13.7m-STATIK.mac
Date : 02/25/2020
Checks according to : Eurocode 7 EN 1997-1
Eurocode 7 EN 1997-1

TABLE OF CONTENTS

SOIL PROPERTIES

Soil: 1	Description:		
Cohesion	[kN/m ²]	:	15.00
Friction Angle Class	: Angle of shearing resistance (Tan phi)		
Friction Angle	[°]	:	23.00
Ru value		:	0.00
Weight Class	: Weight density		
Bulk unit weight - above GWT	[kN/m ³]	:	26.90
Bulk unit weight - below GWT	[kN/m ³]	:	26.90
Elastic Modulus	[kN/m ²]	:	0.00
Poisson's ratio		:	0.30
Soil: 2	Description:		
Cohesion	[kN/m ²]	:	100.00
Friction Angle Class	: Angle of shearing resistance (Tan phi)		
Friction Angle	[°]	:	36.00
Ru value		:	0.00
Weight Class	: Weight density		
Bulk unit weight - above GWT	[kN/m ³]	:	25.50
Bulk unit weight - below GWT	[kN/m ³]	:	25.50
Elastic Modulus	[kN/m ²]	:	0.00
Poisson's ratio		:	0.30
Soil: mbushje	Description:		
Cohesion	[kN/m ²]	:	0.00
Friction Angle Class	: Angle of shearing resistance (Tan phi)		
Friction Angle	[°]	:	30.00
Ru value		:	0.00
Weight Class	: Weight density		
Bulk unit weight - above GWT	[kN/m ³]	:	19.00
Bulk unit weight - below GWT	[kN/m ³]	:	19.00
Elastic Modulus	[kN/m ²]	:	0.00
Poisson's ratio		:	0.30

STRATA PROFILES

Stratum: shtresa 1	Description: Layer1						
Soil : 1							
X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
4.21	5.19	18.00	16.29	23.81	21.22	24.67	20.32
25.99	20.32						
Stratum: mbushje	Description: mbushje						
Soil : mbushje							
X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
24.67	20.32	29.65	34.00	35.10	34.13	40.60	33.95
41.77	34.58						
Stratum: shtresa 2	Description: Layer2						
Soil : 2							
X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
4.21	2.62	19.28	14.75	25.04	19.64	25.99	20.32



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30.67	20.32	32.94	25.96	35.72	26.07	36.97	28.83
43.03	33.02	47.35	37.07	57.25	44.09	70.32	53.17

Stratum: shtresa 1.1

Description: Layer1.1

Soil : 1

X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
36.97	28.83	38.29	31.73	40.77	31.82	41.77	34.58
46.08	38.62	56.10	45.73	70.32	55.60		

REINFORCED BLOCKS

Block : GTML1

Block dimensions	[m]	: Base width	=	6.00	Height	=	3.04
Block Origin	[m]	: Abscissa	=	24.66	Ordinate	=	20.31
Face inclination	[°]	:		20.00			

Structural embankment type	:	Gravel
Structural embankment	:	mbushje
Backfill soil	:	mbushje
Covering soil	:	mbushje
Foundation soil	:	2

Brinch Hansen, Vesic or Meyerhof bearing capacity parameters

Embedment depth	[m]	:	0.00
Natural soil slope	[°]	:	0.00

Reinforcements pattern :

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Length	[m]	=	2.50
Vertical spacing	[m]	=	0.76
Wrapped length	[m]	=	0.65

Linear Composites - ParaLink - 300_Seismic

Length	[m]	=	6.00
Vertical spacing	[m]	=	0.76
Offset	[m]	=	0.00

Block : GTML2

Block dimensions	[m]	: Base width	=	6.00	Height	=	3.04
Back Shift	[m]	=	0.00 by GTML1				
Face inclination	[°]	:		20.00			

Structural embankment type	:	Gravel
Structural embankment	:	mbushje
Backfill soil	:	mbushje
Covering soil	:	mbushje
Foundation soil	:	2

Brinch Hansen, Vesic or Meyerhof bearing capacity parameters

Embedment depth	[m]	:	0.00
Natural soil slope	[°]	:	0.00

Reinforcements pattern :

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Length	[m]	=	2.50
Vertical spacing	[m]	=	0.76
Wrapped length	[m]	=	0.65



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Linear Composites - ParaLink - 300_Seismic

Length [m] = 6.00
Vertical spacing [m] = 1.52
Offset [m] = 0.00

Block : GTML3

Block dimensions [m] : Base width = 9.00 Height = 7.60
Back Shift [m] = 0.00 by GTML2
Face inclination [°] : 20.00

Structural embankment type : Gravel
Structural embankment : mbushje
Backfill soil : mbushje
Covering soil : mbushje
Foundation soil : 2

Brinch Hansen, Vesic or Meyerhof bearing capacity parameters

Embedment depth [m] : 0.00
Natural soil slope [°] : 0.00

Reinforcements pattern :

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Length [m] = 2.50
Vertical spacing [m] = 0.76
Wrapped length [m] = 0.65

Linear Composites - ParaLink - 300_Seismic

Length [m] = 9.00
Vertical spacing [m] = 1.52
Offset [m] = 0.00

SURCHARGE LOADS

Distributed Loads : TL

Description :

Class : Variable unfavourable

Magnitude [kN/m²] = 30.00 Inclination angle [°] = 0.00

Abscissa [m] : from = 30.50 To = 40.00

PROPERTIES OF THE USED REINFORCEMENTS

Linear Composites - ParaLink - 300_Seismic

Tensile strength UTS	[kN/m]	301.00
Plastic extension ratio		0.00
Elastic extension coefficient	[m³/kN]	1.10e-04
Reinforcement Stiffness	[kN/m]	3168.00
Minimum anchorage length	[m]	0.15
Breakage Safety Factor (gravel)		1.14
Pull-out Safety Factor		1.00
Breakage Safety Factor (sand)		1.10
Pull-out Safety Factor		1.00
Breakage Safety Factor (silty sand)		1.10
Pull-out Safety Factor		1.00
Breakage Safety Factor (sandy clay)		1.10
Pull-out Safety Factor		1.00
Interaction factor reinforcement/reinforcement		0.27
Pullout coefficient reinforcement-gravel		0.90



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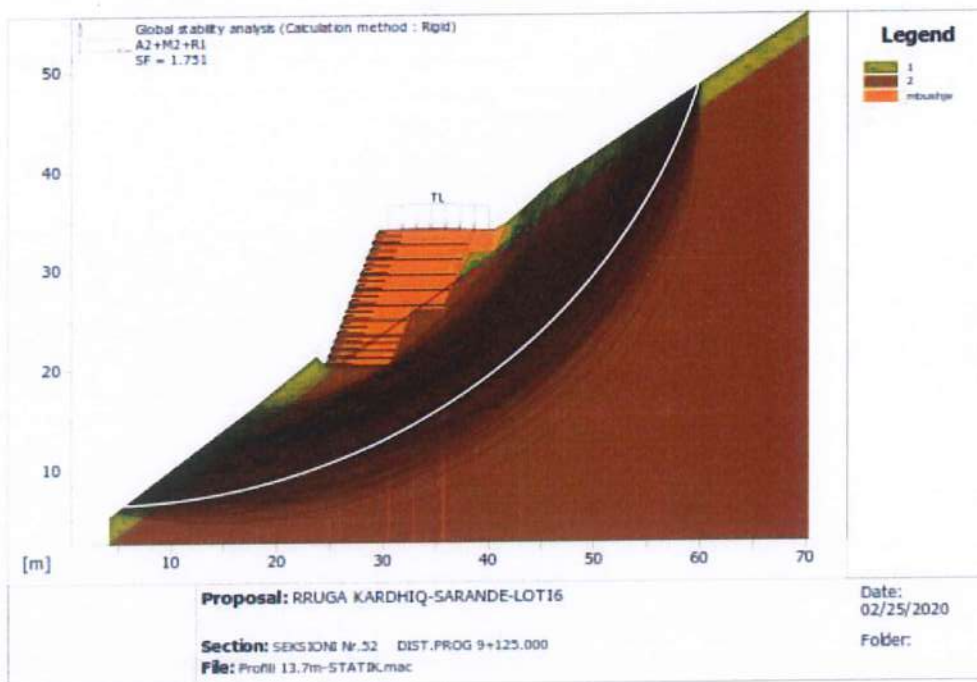
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Pullout coefficient reinforcement-sand	0.90
Pullout coefficient reinforcement-silt	0.70
Pullout coefficient reinforcement-clay	0.40
Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76	
Tensile strength UTS [kN/m]	35.00
Plastic extension ratio	2.00
Elastic extension coefficient [m ² /kN]	1.10e-04
Reinforcement Stiffness [kN/m]	330.00
Minimum anchorage length [m]	0.15
Breakage Safety Factor (gravel)	1.26
Pull-out Safety Factor	1.00
Breakage Safety Factor (sand)	1.09
Pull-out Safety Factor	1.00
Breakage Safety Factor (silty sand)	1.09
Pull-out Safety Factor	1.00
Breakage Safety Factor (sandy clay)	1.09
Pull-out Safety Factor	1.00
Interaction factor reinforcement/reinforcement	0.30
Pullout coefficient reinforcement-gravel	0.90
Pullout coefficient reinforcement-sand	0.65
Pullout coefficient reinforcement-silt	0.50
Pullout coefficient reinforcement-clay	0.30

CHECKS RESULTS



Global Stability Check :

Multiplier combination : A2+M2+R1

Reinforcements active Forces according to Rigid Method

Stability analysis with circular surfaces according to Bishop's Method

Evaluated Safety Factor : 1.751

Surfaces searching range

Starting range, abscises [m]		Arrival range, abscises [m]	
First point	Second point	First point	Second point
5.00	24.00	43.00	60.00
Number of starting point on the starting segment		100	
Total number of trial surfaces		1000	
Minimum base length of slices [m]		0.50	
Superior limit search angle [°]		0.00	
Inferior limit search angle [°]		0.00	

Multiplier	Class
1.30	Variable unfavourable
1.25	Angle of shearing resistance (Tan phi)
1.00	Weight density
1.00	Tensile strength of reinforcement
1.00	Pullout resistance of reinforcement
1.00	Ground resistance for overall stability



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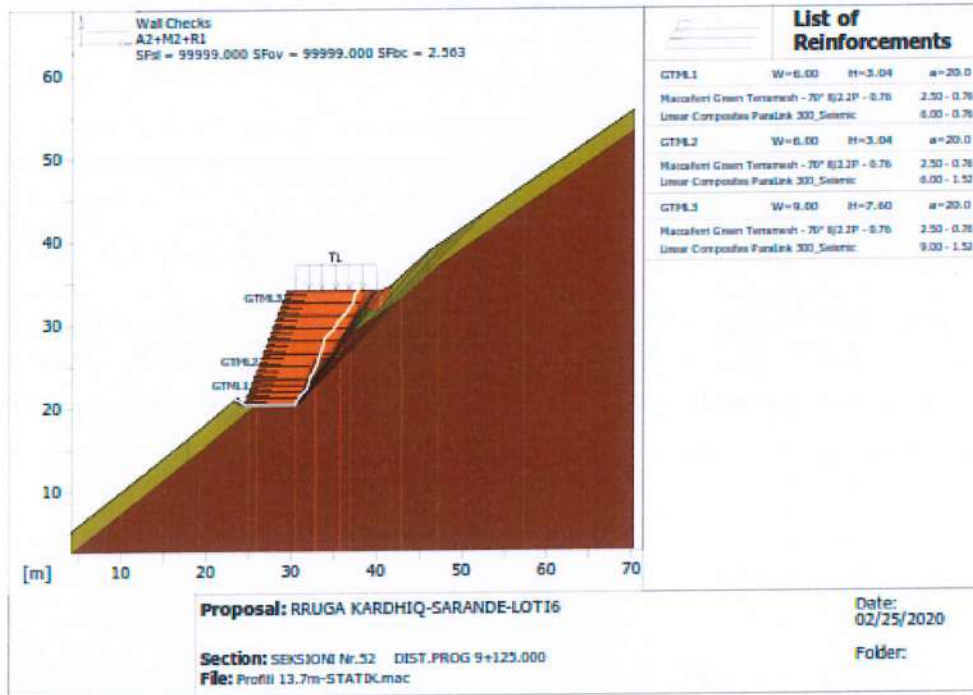
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Wall Checks :

Multiplier combination : A2+M2+R1

Considered block : GTML1

Resisting force [kN/m] : 1705.80

Active force [kN/m] : -529.36

Sliding class : Sliding resistance

Sliding safety factor : 99999.000

Restoring moment [kN*m/m] : 16649.00

Overturning moment [kN*m/m] : -1812.80

Overturning class : Overturning

Overturning safety factor : 99999.000

Ultimate bearing pressure computed with Limit Equilibrium method

Ultimate bearing pressure [kN/m²] : 1017.70

Active pressure [kN/m²] : 397.16

Pressure class : Bearing capacity

Bearing capacity safety factor : 2.563

Equivalent bearing area [m] : 6.00

Eccentricity of normal force [m] : -4.95

Lever arm of overturning force [m] : 3.42

Normal force on the base [kN] : 2323.40

Outer edge stress [kN/m²] : -5149.59

Inner edge stress [kN/m²] : 3955.53

Multiplier	Class
1.30	Variable unfavourable
1.25	Angle of shearing resistance (Tan phi)
1.00	Weight density
1.00	Tensile strength of reinforcement
1.00	Pullout resistance of reinforcement
1.00	Sliding resistance
1.00	Bearing capacity
1.00	Overturning



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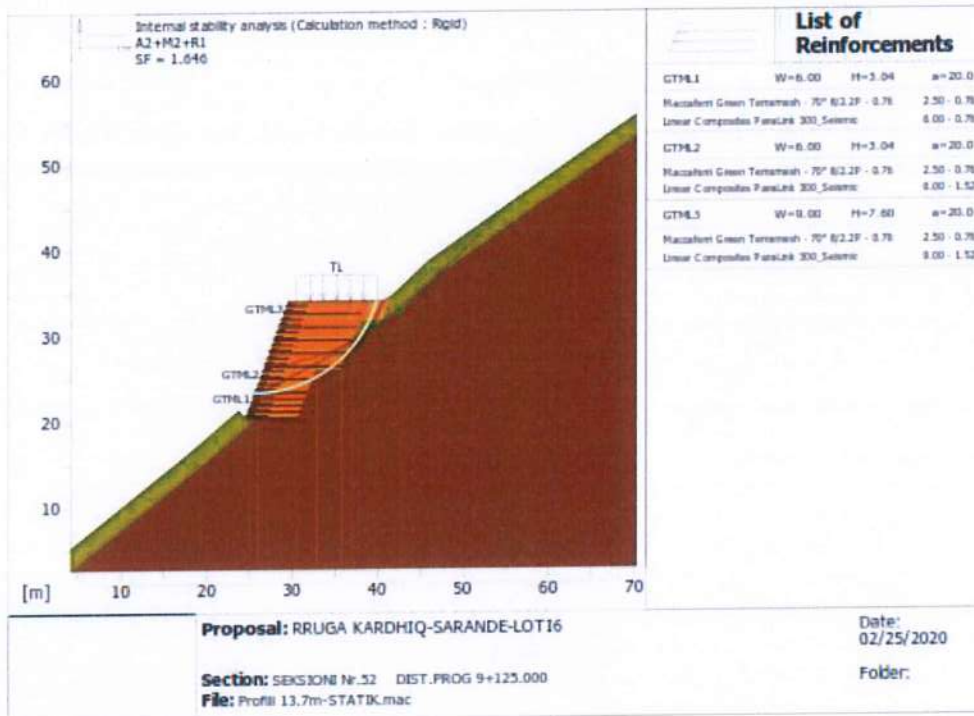
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Internal Stability :

Multiplier combination : A2+M2+R1

Reinforcements active Forces according to Rigid Method

Stability analysis with circular surfaces according to Bishop's Method

Evaluated Safety Factor.....: 1.646

Block	Surfaces searching range	
	First point	Second point
GTML1	30.00	55.00
Arrival range, abscises [m]		
Number of starting point on the starting segment.....: 1		
Total number of trial surfaces.....: 500		
Minimum base length of slices [m].....: 0.50		
Superior limit search angle [°].....: 0.00		
Inferior limit search angle [°].....: 0.00		

Block : GTML3
Linear Composites - ParaLink - 300_Seismic

Y	Tb breakage	Tp pullout	Td design	Tb/Td 1/Fmax	Tp/Td
[m]	[kN/m]	[kN/m]	[kN/m]		
0.000	301.0	223.1	223.1	1.35	1.00
Multiplier					
1.30	Class				
1.25	Variable unfavourable				
1.00	Angle of shearing resistance (Tan phi)				
1.00	Weight density				
1.00	Tensile strength of reinforcement				
1.00	Pullout resistance of reinforcement				
1.00	Ground resistance for overall stability				



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B.Llogaritjet Sizmike:

Project Title : RRUGA KARDHIQ-SARANDE-LOTI6
Cross Section : SEKSIONI Nr.52 DIST.PROG 9+125.000
Site :
Folder :
File : Profili 13.7m-SIZMIK.mac
Date : 02/25/2020
Checks according to: Eurocode 7 EN 1997-1
Eurocode 7 EN 1997-1

TABLE OF CONTENTS

SOIL PROPERTIES

Soil: 1	Description:		
Cohesion	[kN/m ²]	:	15.00
Friction Angle Class	: Angle of shearing resistance (Tan phi)		
Friction Angle	[°]	:	23.00
Ru value		:	0.00
Weight Class	: Weight density		
Bulk unit weight - above GWT	[kN/m ³]	:	26.90
Bulk unit weight - below GWT	[kN/m ³]	:	26.90
Elastic Modulus	[kN/m ²]	:	0.00
Poisson's ratio		:	0.30
Soil: 2	Description:		
Cohesion	[kN/m ²]	:	100.00
Friction Angle Class	: Angle of shearing resistance (Tan phi)		
Friction Angle	[°]	:	36.00
Ru value		:	0.00
Weight Class	: Weight density		
Bulk unit weight - above GWT	[kN/m ³]	:	25.50
Bulk unit weight - below GWT	[kN/m ³]	:	25.50
Elastic Modulus	[kN/m ²]	:	0.00
Poisson's ratio		:	0.30
Soil: mbushje	Description:		
Cohesion	[kN/m ²]	:	0.00
Friction Angle Class	: Angle of shearing resistance (Tan phi)		
Friction Angle	[°]	:	30.00
Ru value		:	0.00
Weight Class	: Weight density		
Bulk unit weight - above GWT	[kN/m ³]	:	19.00
Bulk unit weight - below GWT	[kN/m ³]	:	19.00
Elastic Modulus	[kN/m ²]	:	0.00
Poisson's ratio		:	0.30

STRATA PROFILES

Stratum: shtresa 1	Description: Layer1						
Soil : 1							
X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
4.21	5.19	18.00	16.29	23.81	21.22	24.67	20.32
25.99	20.32						
Stratum: mbushje	Description: mbushje						
Soil : mbushje							
X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
24.67	20.32	29.65	34.00	35.10	34.13	40.60	33.95
41.77	34.58						
Stratum: shtresa 2	Description: Layer2						
Soil : 2							
X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
4.21	2.62	19.28	14.75	25.04	19.64	25.99	20.32



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30.67	20.32	32.94	25.96	35.72	26.07	36.97	28.83
43.03	33.02	47.35	37.07	57.25	44.09	70.32	53.17

Stratum: shtresa 1.1

Description: Layer1.1

Soil : 1

X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
36.97	28.83	38.29	31.73	40.77	31.82	41.77	34.58
46.08	38.62	56.10	45.73	70.32	55.60		

REINFORCED BLOCKS

Block : GTML1

Block dimensions	[m]	: Base width	=	6.00	Height	=	3.04
Block Origin	[m]	: Abscissa	=	24.66	Ordinate	=	20.31
Face inclination	[°]	: 20.00					

Structural embankment type	:	Gravel
Structural embankment	:	mbushje
Backfill soil	:	mbushje
Covering soil	:	mbushje
Foundation soil	:	2

Brinch Hansen, Vesic or Meyerhof bearing capacity parameters

Embedment depth	[m]	:	0.00
Natural soil slope	[°]	:	0.00

Reinforcements pattern :

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Length	[m]	=	2.50
Vertical spacing	[m]	=	0.76
Wrapped length	[m]	=	0.65

Linear Composites - ParaLink - 300_Seismic

Length	[m]	=	6.00
Vertical spacing	[m]	=	0.76
Offset	[m]	=	0.00

Block : GTML2

Block dimensions	[m]	: Base width	=	6.00	Height	=	3.04
Back Shift	[m]	=	0.00 by GTML1				
Face inclination	[°]	: 20.00					

Structural embankment type	:	Gravel
Structural embankment	:	mbushje
Backfill soil	:	mbushje
Covering soil	:	mbushje
Foundation soil	:	mbushje

Brinch Hansen, Vesic or Meyerhof bearing capacity parameters

Embedment depth	[m]	:	0.00
Natural soil slope	[°]	:	0.00

Reinforcements pattern :

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Length	[m]	=	2.50
Vertical spacing	[m]	=	0.76
Wrapped length	[m]	=	0.65



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Linear Composites - ParaLink - 300_Seismic

Length [m] = 6.00
Vertical spacing [m] = 1.52
Offset [m] = 0.00

Block : GTML3

Block dimensions [m] : Base width = 9.00 Height = 7.60
Back Shift [m] = 0.00 by GTML2
Face inclination [°] : 20.00

Structural embankment type : Gravel
Structural embankment : mbushje
Backfill soil : mbushje
Covering soil : mbushje
Foundation soil : mbushje

Brinch Hansen, Vesic or Meyerhof bearing capacity parameters

Embedment depth [m] : 0.00
Natural soil slope [°] : 0.00

Reinforcements pattern :

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Length [m] = 2.50
Vertical spacing [m] = 0.76
Wrapped length [m] = 0.65

Linear Composites - ParaLink - 300_Seismic

Length [m] = 9.00
Vertical spacing [m] = 1.52
Offset [m] = 0.00

SURCHARGE LOADS

Distributed Loads : TL

Description :

Class : Variable unfavourable

Magnitude [kN/m²] = 30.00 Inclination angle [°] = 0.00

Abscissa [m] : from = 30.50 To = 40.00

Earthquake Load :

Class : Seismic action

Acceleration [m/s²] : Horizontal = 1.96 Vertical = 0.59

PROPERTIES OF THE USED REINFORCEMENTS

Linear Composites - ParaLink - 300_Seismic

Tensile strength UTS	[kN/m]	301.00
Plastic extension ratio		0.00
Elastic extension coefficient	[m³/kN]	1.10e-04
Reinforcement Stiffness	[kN/m]	3168.00
Minimum anchorage length	[m]	0.15
Breakage Safety Factor (gravel)		1.14
Pull-out Safety Factor		1.00
Breakage Safety Factor (sand)		1.10
Pull-out Safety Factor		1.00
Breakage Safety Factor (silty sand)		1.10
Pull-out Safety Factor		1.00
Breakage Safety Factor (sandy clay)		1.10



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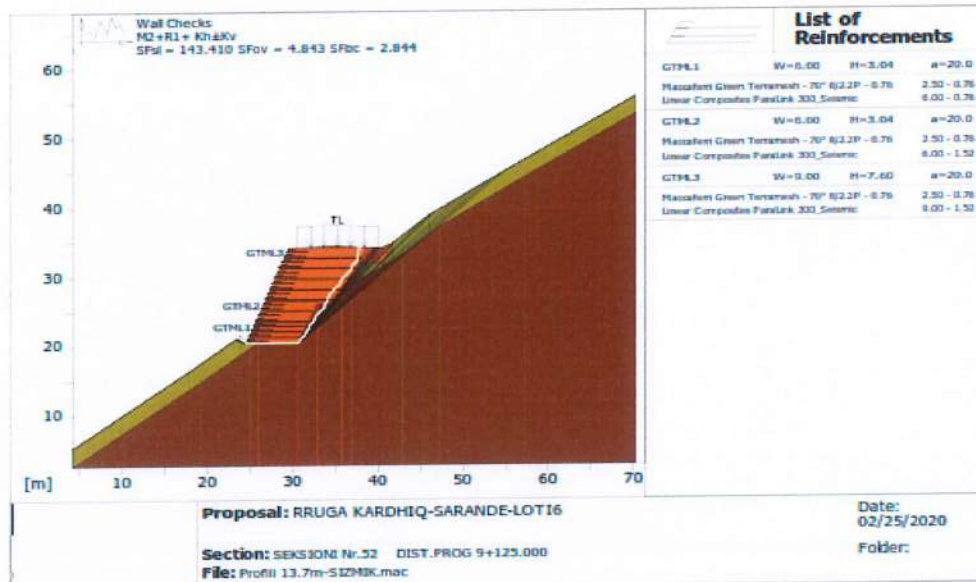
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Pull-out Safety Factor	1.00
Interaction factor reinforcement/reinforcement	0.27
Pullout coefficient reinforcement-gravel	0.90
Pullout coefficient reinforcement-sand	0.90
Pullout coefficient reinforcement-silt	0.70
Pullout coefficient reinforcement-clay	0.40
Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76	
Tensile strength UTS [kN/m]	35.00
Plastic extension ratio	2.00
Elastic extension coefficient [m³/kN]	1.10e-04
Reinforcement Stiffness [kN/m]	330.00
Minimum anchorage length [m]	0.15
Breakage Safety Factor (gravel)	1.26
Pull-out Safety Factor	1.00
Breakage Safety Factor (sand)	1.09
Pull-out Safety Factor	1.00
Breakage Safety Factor (silty sand)	1.09
Pull-out Safety Factor	1.00
Breakage Safety Factor (sandy clay)	1.09
Pull-out Safety Factor	1.00
Interaction factor reinforcement/reinforcement	0.30
Pullout coefficient reinforcement-gravel	0.90
Pullout coefficient reinforcement-sand	0.65
Pullout coefficient reinforcement-silt	0.50
Pullout coefficient reinforcement-clay	0.30

CHECKS RESULTS



Wall Checks :

Multiplier combination : M2+R1+ Kh±Kv

Considered block : GTML1

Resisting force [kN/m] : 1604.30

Active force [kN/m] : 11.19

Sliding class : Sliding resistance

Sliding safety factor : 143.410

Restoring moment [kN*m/m] : 15923.00

Overturning moment [kN*m/m] : 3288.10

Overturning class : Overturning

Overturning safety factor : 4.843

Ultimate bearing pressure computed with Limit Equilibrium method

Ultimate bearing pressure [kN/m²] : 1009.50

Active pressure [kN/m²] : 354.97

Pressure class : Bearing capacity

Bearing capacity safety factor : 2.844

Equivalent bearing area [m] : 6.00

Eccentricity of normal force [m] : -2.93

Lever arm of overturning force [m] : 293.92

Normal force on the base [kN] : 2129.80

Outer edge stress [kN/m²] : -2028183.00

Inner edge stress [kN/m²] : 2059642.38

Multiplier
1.00
1.00

Class
Variable unfavourable
Seismic action



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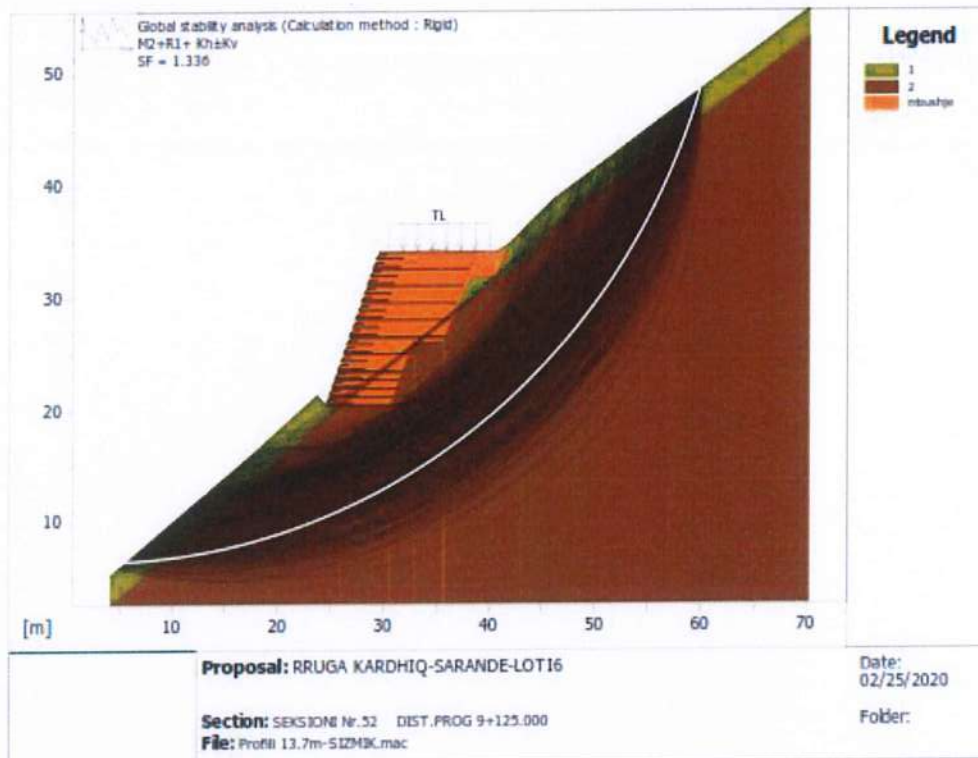
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1.25	Angle of shearing resistance (Tan phi)
1.00	Weight density
1.00	Tensile strength of reinforcement
1.00	Pullout resistance of reinforcement
1.00	Sliding resistance
1.00	Bearing capacity
1.00	Overturning



Global Stability Check :

Multiplier combination : M2+R1+ Kh±Kv

Reinforcements active Forces according to Rigid Method

Stability analysis with circular surfaces according to Bishop's Method

Evaluated Safety Factor..... : 1.336

Surfaces searching range

Starting range, abscises [m]		Arrival range, abscises [m]	
First point	Second point	First point	Second point
5.00	24.00	43.00	60.00
Number of starting point on the starting segment.....		100	
Total number of trial surfaces.....		1000	
Minimum base length of slices..... [m]		0.50	
Superior limit search angle..... [°]		0.00	
Inferior limit search angle..... [°]		0.00	

Multiplier	Class
1.00	Variable unfavourable
1.00	Seismic action
1.25	Angle of shearing resistance (Tan phi)
1.00	Weight density
1.00	Tensile strength of reinforcement
1.00	Pullout resistance of reinforcement
1.00	Ground resistance for overall stability



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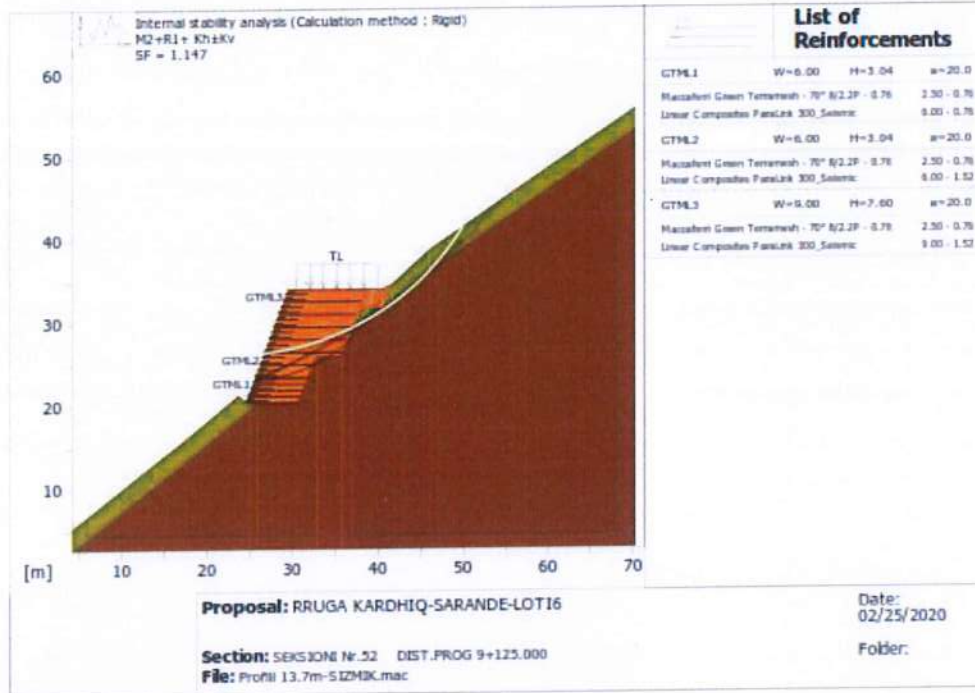
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Internal Stability :

Multiplier combination : M2+R1+ Kh±Kv

Reinforcements active Forces according to Rigid Method

Stability analysis with circular surfaces according to Bishop's Method

Evaluated Safety Factor : 1.147

Block	Surfaces searching range		
	Arrival range, abscises [m]		
GTML1	First point	Second point	
	30.00	55.00	
Number of starting point on the starting segment : 1			
Total number of trial surfaces : 500			
Minimum base length of slices [m] : 0.50			
Superior limit search angle [°] : 0.00			
Inferior limit search angle [°] : 0.00			

Block : GTML3 Linear Composites - ParaLink - 300_Seismic

Y	Tb breakage [kN/m]	Tp pullout [kN/m]	Td design [kN/m]	Tb/Td 1/Fmax	Tp/Td
[m]					
1.520	301.0	450.8	264.0	1.14	1.71
Multiplier					
1.00	Class				
1.00	Variable unfavourable				
1.25	Seismic action				
1.00	Angle of shearing resistance (Tan phi)				
1.00	Weight density				
1.00	Tensile strength of reinforcement				
1.00	Pullout resistance of reinforcement				
1.00	Ground resistance for overall stability				



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4. Seksioni terthor Tip.4 km 9+300 H=15.20 m

A.Llogaritjet statike:

Project Title : RRUGA KARDHIQ-SARANDE-LOTI6
Cross Section : SEKSIONI Nr.61 DIST.PROG 9+300.000
Site :
Folder :
File : Profili 15m-STATIK.mac
Date : 02/25/2020
Checks according to: Eurocode 7 EN 1997-1
Eurocode 7 EN 1997-1

TABLE OF CONTENTS

SOIL PROPERTIES

Soil: 1	Description:		
Cohesion	[kN/m ²]	:	15.00
Friction Angle Class	: Angle of shearing resistance (Tan phi)		
Friction Angle	[°]	:	23.00
Ru value		:	0.00
Weight Class	: Weight density		
Bulk unit weight - above GWT	[kN/m ³]	:	26.90
Bulk unit weight - below GWT	[kN/m ³]	:	26.90
Elastic Modulus	[kN/m ²]	:	0.00
Poisson's ratio		:	0.30
Soil: 2	Description:		
Cohesion	[kN/m ²]	:	100.00
Friction Angle Class	: Angle of shearing resistance (Tan phi)		
Friction Angle	[°]	:	36.00
Ru value		:	0.00
Weight Class	: Weight density		
Bulk unit weight - above GWT	[kN/m ³]	:	25.50
Bulk unit weight - below GWT	[kN/m ³]	:	25.50
Elastic Modulus	[kN/m ²]	:	0.00
Poisson's ratio		:	0.30
Soil: mbushje	Description:		
Cohesion	[kN/m ²]	:	0.00
Friction Angle Class	: Angle of shearing resistance (Tan phi)		
Friction Angle	[°]	:	30.00
Ru value		:	0.00
Weight Class	: Weight density		
Bulk unit weight - above GWT	[kN/m ³]	:	19.00
Bulk unit weight - below GWT	[kN/m ³]	:	19.00
Elastic Modulus	[kN/m ²]	:	0.00
Poisson's ratio		:	0.30

STRATA PROFILES

Stratum: mbushje	Description: mbushje						
Soil : mbushje							
X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
36.09	25.72	41.63	40.92	47.08	41.05	52.53	40.92
53.96	39.96						
Stratum: shtresa 1	Description: Layer1						
Soil : 1							
X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
11.57	10.32	22.08	16.05	27.55	20.47	35.24	26.69
36.09	25.72	36.61	25.72				
Stratum: shtresa 1.1	Description: Layer1.1						
Soil : 1							
X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
53.53	38.76	54.52	41.53	61.40	47.21	67.75	52.06



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72.08 55.76 84.06 64.49

Stratum: shtresa 2

Description: Layer2

Soil : 2

X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
11.57	8.32	22.07	14.05	27.55	18.47	35.24	24.69
36.61	25.72	42.50	25.72	44.40	31.50	47.71	31.50
49.93	37.01	52.93	37.07	53.53	38.76	54.52	39.53
61.40	45.21	67.75	50.06	72.07	53.76	84.06	62.49

REINFORCED BLOCKS

Block : GTML1

Block dimensions [m] : Base width = 6.00 Height = 3.80
 Block Origin [m] : Abscissa = 36.08 Ordinate = 25.71
 Face inclination [°] : 20.00

Structural embankment type : Gravel
 Structural embankment : mbushje
 Backfill soil : mbushje
 Covering soil : mbushje
 Foundation soil : 2

Brinch Hansen, Vesic or Meyerhof bearing capacity parameters

Embedment depth [m] : 0.00
 Natural soil slope [°] : 0.00

Reinforcements pattern :

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Length [m] = 2.50
 Vertical spacing [m] = 0.76
 Wrapped length [m] = 0.65

Linear Composites - ParaLink - 500_Seismic

Length [m] = 6.00
 Vertical spacing [m] = 0.76
 Offset [m] = 0.00

Block : GTML2

Block dimensions [m] : Base width = 7.00 Height = 3.04
 Back Shift [m] = 0.00 by GTML1
 Face inclination [°] : 20.00

Structural embankment type : Gravel
 Structural embankment : mbushje
 Backfill soil : mbushje
 Covering soil : mbushje
 Foundation soil : mbushje

Brinch Hansen, Vesic or Meyerhof bearing capacity parameters

Embedment depth [m] : 0.00
 Natural soil slope [°] : 0.00

Reinforcements pattern :

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Length [m] = 2.50
 Vertical spacing [m] = 0.76
 Wrapped length [m] = 0.65



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Linear Composites - ParaLink - 300_Seismic

Length [m] = 7.00
Vertical spacing [m] = 1.52
Offset [m] = 0.00

Block : GTML3

Block dimensions [m] : Base width = 9.00 Height = 8.36
Back Shift [m] = 0.00 by GTML2
Face inclination [°] : 20.00

Structural embankment type : Gravel
Structural embankment : mbushje
Backfill soil : mbushje
Covering soil : mbushje
Foundation soil : mbushje

Brinch Hansen, Vesic or Meyerhof bearing capacity parameters

Embedment depth [m] : 0.00
Natural soil slope [°] : 0.00

Reinforcements pattern :

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Length [m] = 2.50
Vertical spacing [m] = 0.76
Wrapped length [m] = 0.65

Linear Composites - ParaLink - 300_Seismic

Length [m] = 9.00
Vertical spacing [m] = 1.52
Offset [m] = 0.00

SURCHARGE LOADS

Distributed Loads : TL

Description :

Class : Variable unfavourable

Magnitude [kN/m²] = 30.00 Inclination angle [°] = 0.00

Abscissa [m] : from = 43.00 To = 51.00

PROPERTIES OF THE USED REINFORCEMENTS

Linear Composites - ParaLink - 300_Seismic

Tensile strength UTS	[kN/m]	301.00
Plastic extension ratio		0.00
Elastic extension coefficient	[m³/kN]	1.10e-04
Reinforcement Stiffness	[kN/m]	3168.00
Minimum anchorage length	[m]	0.15
Breakage Safety Factor (gravel)		1.14
Pull-out Safety Factor		1.00
Breakage Safety Factor (sand)		1.10
Pull-out Safety Factor		1.00
Breakage Safety Factor (silty sand)		1.10
Pull-out Safety Factor		1.00
Breakage Safety Factor (sandy clay)		1.10
Pull-out Safety Factor		1.00
Interaction factor reinforcement/reinforcement		0.27
Pullout coefficient reinforcement-gravel		0.90



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Pullout coefficient reinforcement-sand	0.90
Pullout coefficient reinforcement-silt	0.70
Pullout coefficient reinforcement-clay	0.40
Linear Composites - ParaLink - 500_Seismic	
Tensile strength UTS [kN/m]	502.00
Plastic extension ratio	0.00
Elastic extension coefficient [m ³ /kN]	1.10e-04
Reinforcement Stiffness [kN/m]	5284.00
Minimum anchorage length [m]	0.15
Breakage Safety Factor (gravel)	1.14
Pull-out Safety Factor	1.00
Breakage Safety Factor (sand)	1.10
Pull-out Safety Factor	1.00
Breakage Safety Factor (silty sand)	1.10
Pull-out Safety Factor	1.00
Breakage Safety Factor (sandy clay)	1.10
Pull-out Safety Factor	1.00
Interaction factor reinforcement/reinforcement	0.30
Pullout coefficient reinforcement-gravel	0.90
Pullout coefficient reinforcement-sand	0.90
Pullout coefficient reinforcement-silt	0.70
Pullout coefficient reinforcement-clay	0.40
Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76	
Tensile strength UTS [kN/m]	35.00
Plastic extension ratio	2.00
Elastic extension coefficient [m ³ /kN]	1.10e-04
Reinforcement Stiffness [kN/m]	330.00
Minimum anchorage length [m]	0.15
Breakage Safety Factor (gravel)	1.26
Pull-out Safety Factor	1.00
Breakage Safety Factor (sand)	1.09
Pull-out Safety Factor	1.00
Breakage Safety Factor (silty sand)	1.09
Pull-out Safety Factor	1.00
Breakage Safety Factor (sandy clay)	1.09
Pull-out Safety Factor	1.00
Interaction factor reinforcement/reinforcement	0.30
Pullout coefficient reinforcement-gravel	0.90
Pullout coefficient reinforcement-sand	0.65
Pullout coefficient reinforcement-silt	0.50
Pullout coefficient reinforcement-clay	0.30



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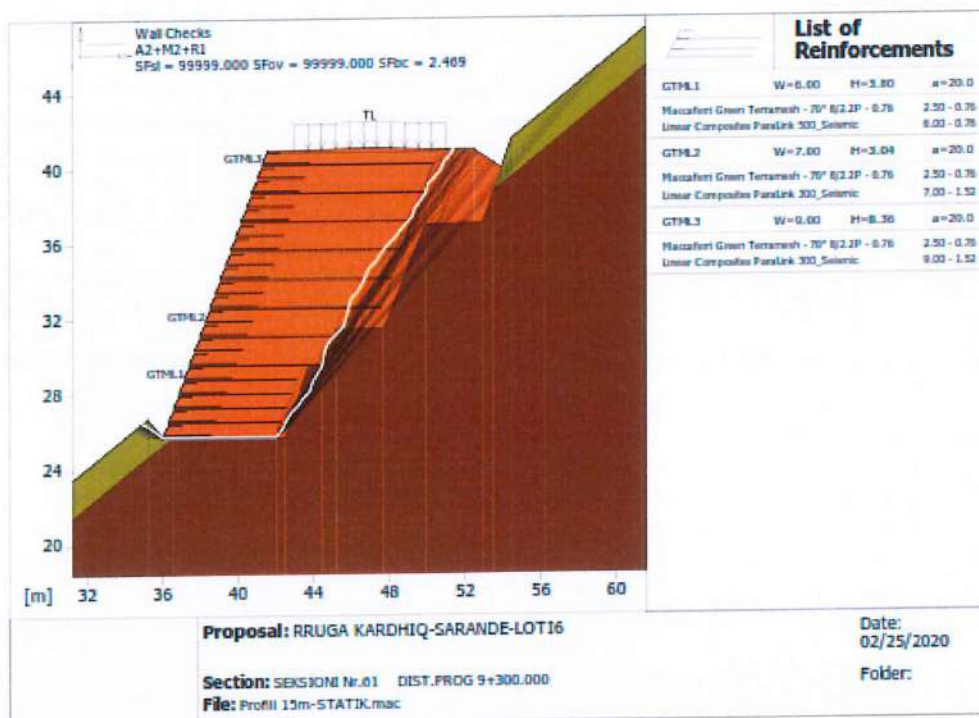
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CHECKS RESULTS



Wall Checks :

Multiplier combination : A2+M2+R1

Considered block : GTML1

Resisting force [kN/m] : 1995.40

Active force [kN/m] : -337.55

Sliding class : Sliding resistance

Sliding safety factor : 99999.000

Restoring moment [kN*m/m] : 19285.00

Overturning moment [kN*m/m] : -1980.30

Overturning class : Overturning

Overturning safety factor : 99999.000

Ultimate bearing pressure computed with Limit Equilibrium method

Ultimate bearing pressure [kN/m²] : 1069.90

Active pressure [kN/m²] : 433.36

Pressure class : Bearing capacity

Bearing capacity safety factor : 2.469

Equivalent bearing area [m] : 6.00

Eccentricity of normal force [m] : -5.25

Lever arm of overturning force [m] : 5.87

Normal force on the base [kN] : 2578.30

Outer edge stress [kN/m²] : -4590.95

Inner edge stress [kN/m²] : 3443.84

Multiplier	Class
1.30	Variable unfavourable
1.25	Angle of shearing resistance (Tan phi)

1.00	Weight density
1.00	Tensile strength of reinforcement
1.00	Pullout resistance of reinforcement
1.00	Sliding resistance
1.00	Bearing capacity
1.00	Overturning



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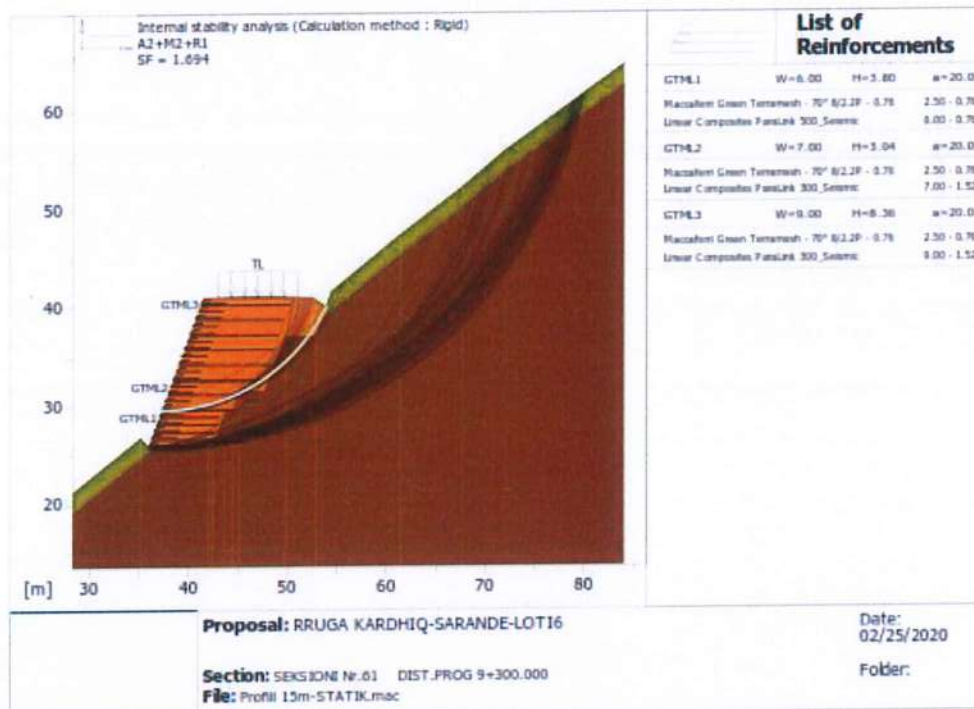
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web: www.agbesconstruction.al e-mail: info@agbesconstruction.al

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Internal Stability :

Multiplier combination : A2+M2+R1

Reinforcements active Forces according to Rigid Method

Stability analysis with circular surfaces according to Bishop's Method

Evaluated Safety Factor..... 1.694

Block GTML1

Surfaces searching range
Arrival range, abscises [m]
First point 43.00 Second point 80.00

Number of starting point on the starting segment..... 1
Total number of trial surfaces..... 1000
Minimum base length of slices [m]..... 0.50
Superior limit search angle [°]..... 0.00
Inferior limit search angle [°]..... 0.00

Block : GTML2
Linear Composites - ParaLink - 300 Seismic

Y	Tb breakage [kN/m]	Tp pullout [kN/m]	Td design [kN/m]	Tb/Td 1/Fmax	Tp/Td
[m] 1.520	301.0	86.9	86.9	3.46	1.00

Multiplier	Class
1.30	Variable unfavourable
1.25	Angle of shearing resistance (Tan phi)
1.00	Weight density
1.00	Tensile strength of reinforcement

1.00	Pullout resistance of reinforcement
1.00	Ground resistance for overall stability



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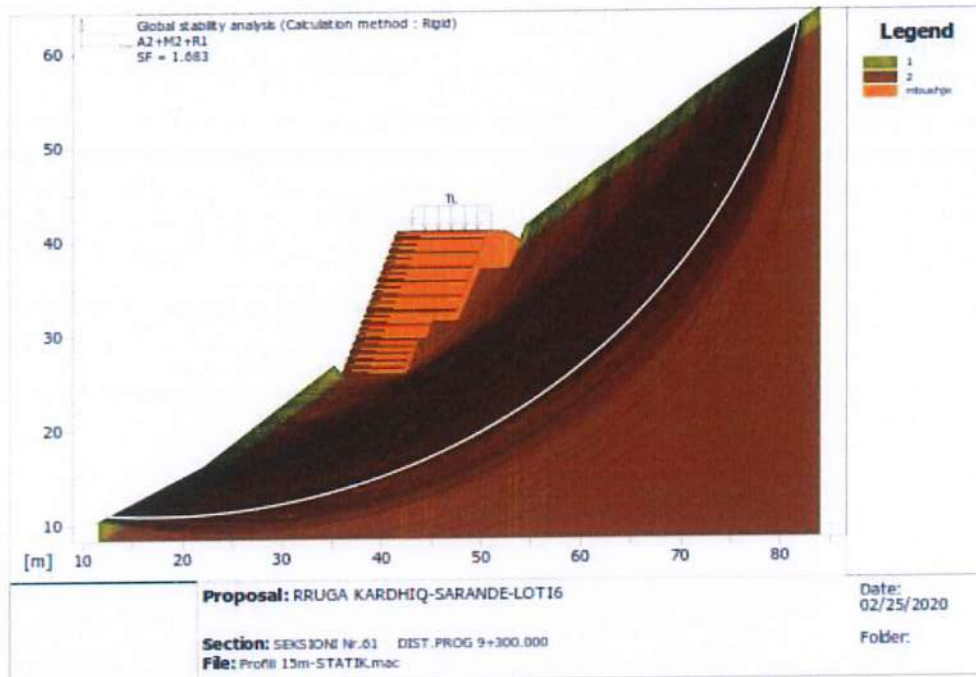
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Global Stability Check :

Multiplier combination : A2+M2+R1

Reinforcements active Forces according to Rigid Method

Stability analysis with circular surfaces according to Bishop's Method

Evaluated Safety Factor.....: 1.683

Surfaces searching range			
Starting range, abscises [m]		Arrival range, abscises [m]	
First point	Second point	First point	Second point
12.00	35.00	55.00	82.00
Number of starting point on the starting segment.....		100	
Total number of trial surfaces.....		1000	
Minimum base length of slices.....		[m] : 0.50	
Superior limit search angle.....		[°] : 0.00	
Inferior limit search angle.....		[°] : 0.00	

Multiplier	Class
1.30	Variable unfavourable
1.25	Angle of shearing resistance (Tan phi)
1.00	Weight density
1.00	Tensile strength of reinforcement
1.00	Pullout resistance of reinforcement
1.00	Ground resistance for overall stability



B.Llogaritjet Sizmike:

Project Title.....: RRUGA KARDHIQ-SARANDE-LOT16
Cross Section.....: SEKSIONI Nr.61 DIST.PROG 9+300.000
Site.....:
Folder.....:
File.....: Profili 15m-SIZMIK.mac
Date.....: 02/25/2020
Checks according to: Eurocode 7 EN 1997-1
Eurocode 7 EN 1997-1

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SOIL PROPERTIES

Soil: 1	Description:		
Cohesion	[kN/m ²]	:	15.00
Friction Angle Class	: Angle of shearing resistance (Tan phi)		
Friction Angle	[°]	:	23.00
Ru value		:	0.00
Weight Class	: Weight density		
Bulk unit weight - above GWT	[kN/m ³]	:	26.90
Bulk unit weight - below GWT	[kN/m ³]	:	26.90
Elastic Modulus	[kN/m ²]	:	0.00
Poisson's ratio		:	0.30
Soil: 2	Description:		
Cohesion	[kN/m ²]	:	100.00
Friction Angle Class	: Angle of shearing resistance (Tan phi)		
Friction Angle	[°]	:	36.00
Ru value		:	0.00
Weight Class	: Weight density		
Bulk unit weight - above GWT	[kN/m ³]	:	25.50
Bulk unit weight - below GWT	[kN/m ³]	:	25.50
Elastic Modulus	[kN/m ²]	:	0.00
Poisson's ratio		:	0.30
Soil: mbushje	Description:		
Cohesion	[kN/m ²]	:	0.00
Friction Angle Class	: Angle of shearing resistance (Tan phi)		
Friction Angle	[°]	:	30.00
Ru value		:	0.00
Weight Class	: Weight density		
Bulk unit weight - above GWT	[kN/m ³]	:	19.00
Bulk unit weight - below GWT	[kN/m ³]	:	19.00
Elastic Modulus	[kN/m ²]	:	0.00
Poisson's ratio		:	0.30

STRATA PROFILES

Stratum: mbushje		Description: mbushje					
Soil : mbushje							
X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
36.09	25.72	41.63	40.92	47.08	41.05	52.53	40.92
53.96	39.96						
Stratum: shtresa 1		Description: Layer1					
Soil : 1							
X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
11.57	10.32	22.08	16.05	27.55	20.47	35.24	26.69
36.09	25.72	36.61	25.72				
Stratum: shtresa 1.1		Description: Layer1.1					
Soil : 1							
X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
53.53	38.76	54.52	41.53	61.40	47.21	67.75	52.06



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72.08 55.76 84.06 64.49

Stratum: shtresa 2

Description: Layer2

Soil : 2

X [m]	Y [m]	X [m]	Y [m]	X [m]	Y [m]	X [m]	Y [m]
11.57	8.32	22.07	14.05	27.55	18.47	35.24	24.69
36.61	25.72	42.50	25.72	44.40	31.50	47.71	31.50
49.93	37.01	52.93	37.07	53.53	38.76	54.52	39.53
61.40	45.21	67.75	50.06	72.07	53.76	84.06	62.49

REINFORCED BLOCKS

Block : GTML1

Block dimensions [m] : Base width = 6.00 Height = 3.80
Block Origin [m] : Abscissa = 36.08 Ordinate = 25.71
Face inclination [°] : 20.00

Structural embankment type : Gravel
Structural embankment : mbushje
Backfill soil : mbushje
Covering soil : mbushje
Foundation soil : 2

Brinch Hansen, Vesic or Meyerhof bearing capacity parameters

Embedment depth [m] : 0.00
Natural soil slope [°] : 0.00

Reinforcements pattern :

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Length [m] = 2.50
Vertical spacing [m] = 0.76
Wrapped length [m] = 0.65

Linear Composites - ParaLink - 500 Seismic

Length [m] = 6.00
Vertical spacing [m] = 0.76
Offset [m] = 0.00

Block : GTML2

Block dimensions [m] : Base width = 7.00 Height = 3.04
Back Shift [m] = 0.00 by GTML1
Face inclination [°] : 20.00

Structural embankment type : Gravel
Structural embankment : mbushje
Backfill soil : mbushje
Covering soil : mbushje
Foundation soil : mbushje

Brinch Hansen, Vesic or Meyerhof bearing capacity parameters

Embedment depth [m] : 0.00
Natural soil slope [°] : 0.00

Reinforcements pattern :

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Length [m] = 2.50
Vertical spacing [m] = 0.76
Wrapped length [m] = 0.65



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Linear Composites - ParaLink - 300_Seismic

Length [m] = 7.00
Vertical spacing [m] = 1.52
Offset [m] = 0.00

Block : GTML3

Block dimensions [m] : Base width = 9.00 Height = 8.36
Back Shift [m] = 0.00 by GTML2
Face inclination [°] : 20.00

Structural embankment type : Gravel
Structural embankment : mbushje
Backfill soil : mbushje
Covering soil : mbushje
Foundation soil : mbushje

Brinch Hansen, Vesic or Meyerhof bearing capacity parameters

Embedment depth [m] : 0.00
Natural soil slope [°] : 0.00

Reinforcements pattern :

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Length [m] = 2.50
Vertical spacing [m] = 0.76
Wrapped length [m] = 0.65

Linear Composites - ParaLink - 300_Seismic

Length [m] = 9.00
Vertical spacing [m] = 1.52
Offset [m] = 0.00

SURCHARGE LOADS

Distributed Loads : TL

Class : Variable unfavourable

Magnitude [kN/m²] = 30.00 Inclination angle [°] = 0.00
Abscissa [m] : from = 43.00 To = 51.00

Description :

Earthquake Load :

Class : Seismic action

Acceleration [m/s²] : Horizontal = 1.96 Vertical = 0.59

PROPERTIES OF THE USED REINFORCEMENTS

Linear Composites - ParaLink - 300_Seismic

Tensile strength UTS [kN/m] : 301.00
Plastic extension ratio : 0.00
Elastic extension coefficient [m²/kN] : 1.10e-04
Reinforcement Stiffness [kN/m] : 3168.00
Minimum anchorage length [m] : 0.15
Breakage Safety Factor (gravel) : 1.14
Pull-out Safety Factor : 1.00
Breakage Safety Factor (sand) : 1.10
Pull-out Safety Factor : 1.00
Breakage Safety Factor (silty sand) : 1.10
Pull-out Safety Factor : 1.00



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Breakage Safety Factor (sandy clay)	1.10
Pull-out Safety Factor	1.00
Interaction factor reinforcement/reinforcement	0.27
Pullout coefficient reinforcement-gravel	0.90
Pullout coefficient reinforcement-sand	0.90
Pullout coefficient reinforcement-silt	0.70
Pullout coefficient reinforcement-clay	0.40
Linear Composites - ParaLink - 500_Seismic	
Tensile strength UTS [kN/m]	502.00
Plastic extension ratio	0.00
Elastic extension coefficient [m ³ /kN]	1.10e-04
Reinforcement Stiffness [kN/m]	5284.00
Minimum anchorage length [m]	0.15
Breakage Safety Factor (gravel)	1.14
Pull-out Safety Factor	1.00
Breakage Safety Factor (sand)	1.10
Pull-out Safety Factor	1.00
Breakage Safety Factor (silty sand)	1.10
Pull-out Safety Factor	1.00
Breakage Safety Factor (sandy clay)	1.10
Pull-out Safety Factor	1.00
Interaction factor reinforcement/reinforcement	0.30
Pullout coefficient reinforcement-gravel	0.90
Pullout coefficient reinforcement-sand	0.90
Pullout coefficient reinforcement-silt	0.70
Pullout coefficient reinforcement-clay	0.40
Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76	
Tensile strength UTS [kN/m]	35.00
Plastic extension ratio	2.00
Elastic extension coefficient [m ³ /kN]	1.10e-04
Reinforcement Stiffness [kN/m]	330.00
Minimum anchorage length [m]	0.15
Breakage Safety Factor (gravel)	1.26
Pull-out Safety Factor	1.00
Breakage Safety Factor (sand)	1.09
Pull-out Safety Factor	1.00
Breakage Safety Factor (silty sand)	1.09
Pull-out Safety Factor	1.00
Breakage Safety Factor (sandy clay)	1.09
Pull-out Safety Factor	1.00
Interaction factor reinforcement/reinforcement	0.30
Pullout coefficient reinforcement-gravel	0.90
Pullout coefficient reinforcement-sand	0.65
Pullout coefficient reinforcement-silt	0.50
Pullout coefficient reinforcement-clay	0.30



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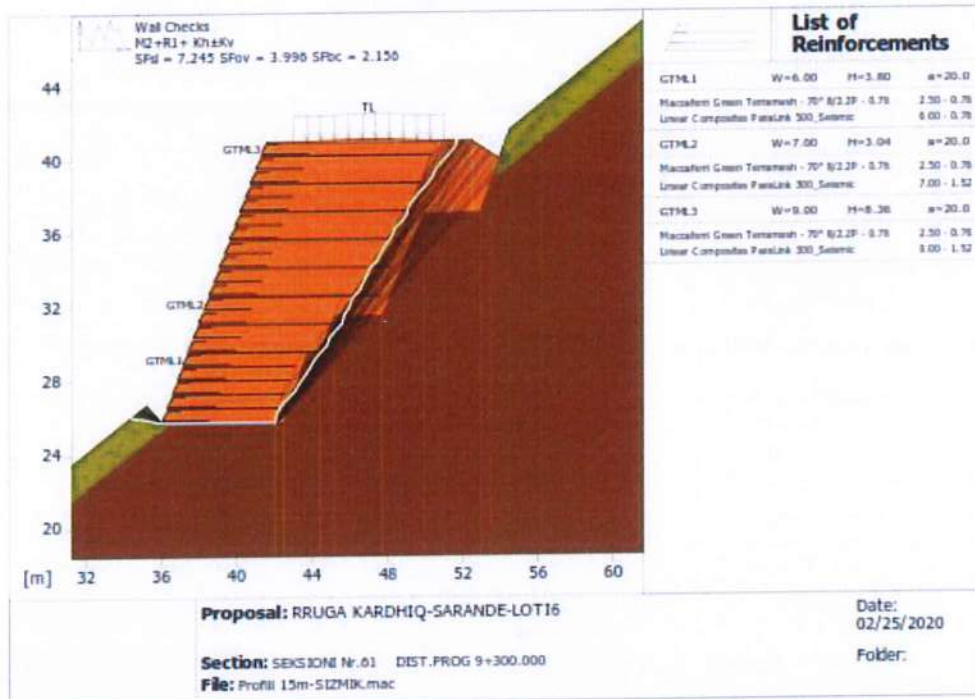
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CHECKS RESULTS



Wall Checks :

Multiplier combination : M2+R1+ Kh±Kv

Considered block : GTML1

Resisting force [kN/m] : 1881.30

Active force [kN/m] : 259.67

Sliding class : Sliding resistance

Sliding safety factor : 7.245

Restoring moment [kN*m/m] : 18551.00

Overturning moment [kN*m/m] : 4642.60

Overturning class : Overturning

Overturning safety factor : 3.996

Ultimate bearing pressure computed with Limit Equilibrium method

Ultimate bearing pressure [kN/m²] : 858.87

Active pressure [kN/m²] : 398.32

Pressure class : Bearing capacity

Bearing capacity safety factor : 2.156

Equivalent bearing area [m] : 5.99

Eccentricity of normal force [m] : -2.86

Lever arm of overturning force [m] : 17.88

Normal force on the base [kN] : 2372.90

Outer edge stress [kN/m²] : -579321.19

Inner edge stress [kN/m²] : 597345.50

Multiplier	Class
1.00	Variable unfavourable
1.00	Seismic action
1.25	Angle of shearing resistance (Tan phi)
1.00	Weight density
1.00	Tensile strength of reinforcement
1.00	Pullout resistance of reinforcement
1.00	Sliding resistance
1.00	Bearing capacity
1.00	Overturning



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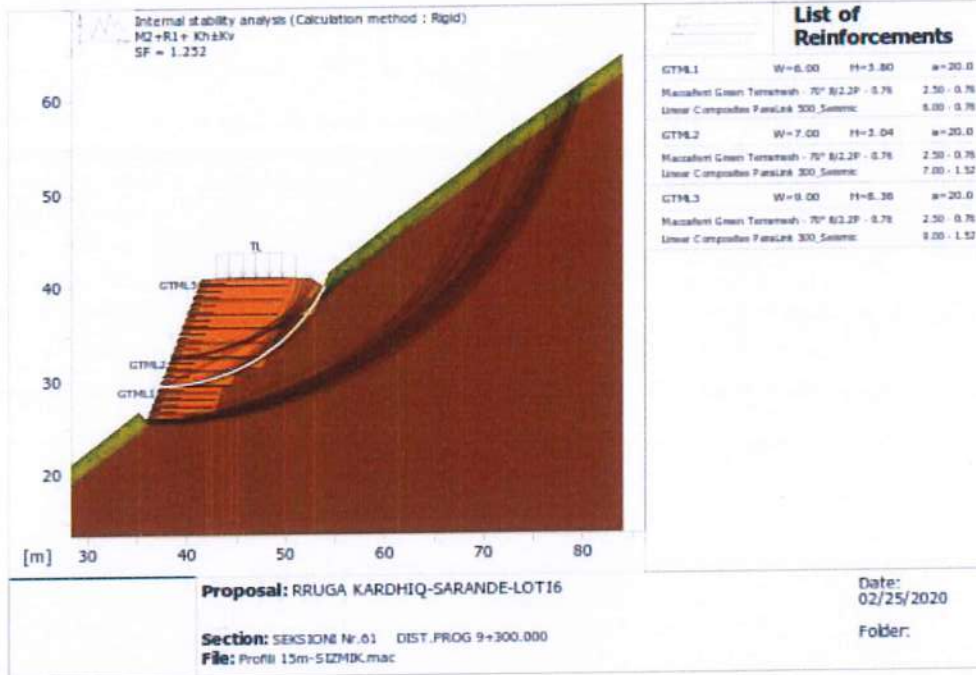
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Internal Stability :

Multiplier combination : M2+R1+ Kh±Kv

Reinforcements active Forces according to Rigid Method

Stability analysis with circular surfaces according to Bishop's Method

Evaluated Safety Factor : 1.252

Block	Surfaces searching range	
	First point	Second point
GTML1	43.00	80.00
Number of starting point on the starting segment : 1		
Total number of trial surfaces : 1000		
Minimum base length of slices [m] : 0.50		
Superior limit search angle [°] : 0.00		
Inferior limit search angle [°] : 0.00		

Block : GTML2
Linear Composites - ParaLink - 300 Seismic

Y	Tb breakage	Tp pullout	Td design	Tb/Td 1/Fmax	Tp/Td
[m]	[kN/m]	[kN/m]	[kN/m]		
1.520	301.0	83.5	83.5	3.60	1.00

Multiplier	Class
1.00	Variable unfavourable
1.00	Seismic action
1.25	Angle of shearing resistance (Tan phi)
1.00	Weight density
1.00	Tensile strength of reinforcement
1.00	Pullout resistance of reinforcement
1.00	Ground resistance for overall stability



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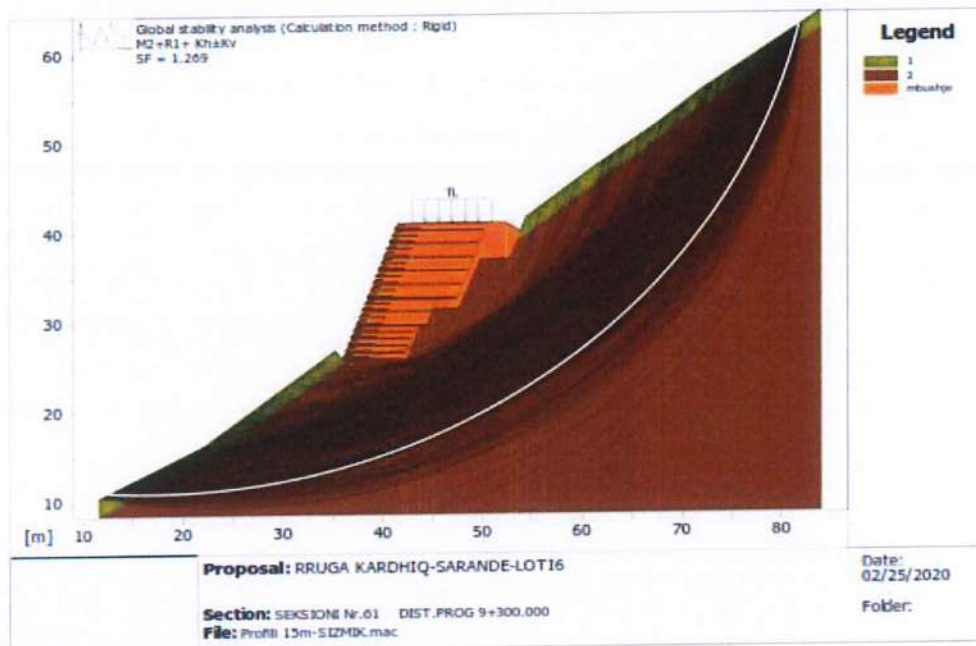
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Global Stability Check :

Multiplier combination : M2+R1+ Kh±Kv

Reinforcements active Forces according to Rigid Method

Stability analysis with circular surfaces according to Bishop's Method

Evaluated Safety Factor..... 1.269

Surfaces searching range			
Starting range, abscises [m]		Arrival range, abscises [m]	
First point	Second point	First point	Second point
12.00	35.00	55.00	82.00
Number of starting point on the starting segment.....		100	
Total number of trial surfaces.....		1000	
Minimum base length of slices.....		[m] : 0.50	
Superior limit search angle.....		[°] : 0.00	
Inferior limit search angle.....		[°] : 0.00	

Multiplier	Class
1.00	Variable unfavourable
1.00	Seismic action
1.25	Angle of shearing resistance (Tan phi)
1.00	Weight density
1.00	Tensile strength of reinforcement
1.00	Pullout resistance of reinforcement
1.00	Ground resistance for overall stability

5. Seksioni terthor Tip.5 km 9+250 H=19.00 m

A.Llogaritjet statike:

Project Title.....: RRUGA KARDHIQ-SARANDE-LOT16
Cross Section.....: SEKSIONI Nr.59 DIST.PROG 9+250.000
Site.....:
Folder.....:
File.....: Profili 19m-STATIK.mac
Date.....: 02/25/2020
Checks according to: Eurocode 7 EN 1997-1
Eurocode 7 EN 1997-1

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SOIL PROPERTIES

Soil: 1	Description:		
Cohesion	[kN/m ²]	:	15.00
Friction Angle Class	: Angle of shearing resistance (Tan phi)		
Friction Angle	[°]	:	23.00
Ru value		:	0.00
Weight Class	: Weight density		
Bulk unit weight - above GWT	[kN/m ³]	:	26.90
Bulk unit weight - below GWT	[kN/m ³]	:	26.90
Elastic Modulus	[kN/m ²]	:	0.00
Poisson's ratio		:	0.30

Soil: 2	Description:		
Cohesion	[kN/m ²]	:	100.00
Friction Angle Class	: Angle of shearing resistance (Tan phi)		
Friction Angle	[°]	:	36.00
Ru value		:	0.00
Weight Class	: Weight density		
Bulk unit weight - above GWT	[kN/m ³]	:	25.50
Bulk unit weight - below GWT	[kN/m ³]	:	25.50
Elastic Modulus	[kN/m ²]	:	0.00
Poisson's ratio		:	0.30

Soil: mbushje	Description:		
Cohesion	[kN/m ²]	:	0.00
Friction Angle Class	: Angle of shearing resistance (Tan phi)		
Friction Angle	[°]	:	30.00
Ru value		:	0.00
Weight Class	: Weight density		
Bulk unit weight - above GWT	[kN/m ³]	:	19.00
Bulk unit weight - below GWT	[kN/m ³]	:	19.00
Elastic Modulus	[kN/m ²]	:	0.00
Poisson's ratio		:	0.30

STRATA PROFILES

Stratum: mbushje	Description: mbushje						
Soil : mbushje							
X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
36.09	25.72	43.01	44.72	48.46	44.85	53.91	44.72
60.30	40.46						

Stratum: shtresa 1	Description: Layer1						
Soil : 1							
X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
5.92	7.12	23.46	19.07	27.13	22.02	35.37	26.52
36.09	25.72	38.03	25.72				

Stratum: shtresa 1.1	Description: Layer1.1						
Soil : 1							
X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
50.13	32.48	51.29	35.42	60.30	40.46	69.80	45.33



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102.26 61.73

Stratum: shtresa 2

Description: Layer2

Soil : 2

X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
5.92	4.70	24.65	17.46	28.25	20.35	36.34	24.77
38.03	25.72	43.50	25.72	45.50	31.49	49.74	31.49
50.13	32.48	61.24	38.70	70.71	43.54	102.26	59.49

REINFORCED BLOCKS

Block : GTML1

Block dimensions [m] : Base width = 7.00 Height = 6.08
 Block Origin [m] : Abscissa = 36.08 Ordinate = 25.65
 Face inclination [°] : 20.00

Structural embankment type : Gravel
 Structural embankment : mbushje
 Backfill soil : mbushje
 Covering soil : mbushje
 Foundation soil : mbushje

Brinch Hansen, Vesic or Meyerhof bearing capacity parameters

Embedment depth [m] : 0.00
 Natural soil slope [°] : 0.00

Reinforcements pattern :

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Length [m] = 2.50
 Vertical spacing [m] = 0.76
 Wrapped length [m] = 0.65

Linear Composites - ParaLink - 500 Seismic

Length [m] = 7.00
 Vertical spacing [m] = 0.76
 Offset [m] = 0.00

Block : GTML2

Block dimensions [m] : Base width = 13.00 Height = 6.08
 Back Shift [m] = 0.00 by GTML1
 Face inclination [°] : 20.00

Structural embankment type : Gravel
 Structural embankment : mbushje
 Backfill soil : mbushje
 Covering soil : mbushje
 Foundation soil : mbushje

Brinch Hansen, Vesic or Meyerhof bearing capacity parameters

Embedment depth [m] : 0.00
 Natural soil slope [°] : 0.00

Reinforcements pattern :

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Length [m] = 2.50
 Vertical spacing [m] = 0.76
 Wrapped length [m] = 0.65



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Linear Composites - ParaLink - 300_Seismic

Length [m] = 13.00
Vertical spacing [m] = 1.52
Offset [m] = 0.00

Block : GTML3

Block dimensions [m] : Base width = 10.00 Height = 6.84
Back Shift [m] = 0.00 by GTML2
Face inclination [°] : 20.00

Structural embankment type : Gravel
Structural embankment : mbushje
Backfill soil : mbushje
Covering soil : mbushje
Foundation soil : mbushje

Brinch Hansen, Vesic or Meyerhof bearing capacity parameters

Embedment depth [m] : 0.00
Natural soil slope [°] : 0.00

Reinforcements pattern :

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Length [m] = 2.50
Vertical spacing [m] = 0.76
Wrapped length [m] = 0.65

Linear Composites - ParaLink - 300_Seismic

Length [m] = 10.00
Vertical spacing [m] = 1.52
Offset [m] = 0.00

SURCHARGE LOADS

Distributed Loads : TL

Description :

Class : Variable unfavourable

Magnitude [kN/m²] = 30.00 Inclination angle [°] = 0.00

Abscissa [m] : from = 44.00 To = 53.00

PROPERTIES OF THE USED REINFORCEMENTS

Linear Composites - ParaLink - 300_Seismic

Tensile strength UTS	[kN/m]	301.00
Plastic extension ratio		0.00
Elastic extension coefficient	[m³/kN]	1.10e-04
Reinforcement Stiffness	[kN/m]	3168.00
Minimum anchorage length	[m]	0.15
Breakage Safety Factor (gravel)		1.14
Pull-out Safety Factor		1.00
Breakage Safety Factor (sand)		1.10
Pull-out Safety Factor		1.00
Breakage Safety Factor (silty sand)		1.10
Pull-out Safety Factor		1.00
Breakage Safety Factor (sandy clay)		1.10
Pull-out Safety Factor		1.00
Interaction factor reinforcement/reinforcement		0.27
Pullout coefficient reinforcement-gravel		0.90



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Pullout coefficient reinforcement-sand	0.90
Pullout coefficient reinforcement-silt	0.70
Pullout coefficient reinforcement-clay	0.40
Linear Composites - ParaLink - 500_Seismic	
Tensile strength UTS [kN/m]	502.00
Plastic extension ratio	0.00
Elastic extension coefficient [m ³ /kN]	1.10e-04
Reinforcement Stiffness [kN/m]	5284.00
Minimum anchorage length [m]	0.15
Breakage Safety Factor (gravel)	1.14
Pull-out Safety Factor	1.00
Breakage Safety Factor (sand)	1.10
Pull-out Safety Factor	1.00
Breakage Safety Factor (silty sand)	1.10
Pull-out Safety Factor	1.00
Breakage Safety Factor (sandy clay)	1.10
Pull-out Safety Factor	1.00
Interaction factor reinforcement/reinforcement	0.30
Pullout coefficient reinforcement-gravel	0.90
Pullout coefficient reinforcement-sand	0.90
Pullout coefficient reinforcement-silt	0.70
Pullout coefficient reinforcement-clay	0.40
Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76	
Tensile strength UTS [kN/m]	35.00
Plastic extension ratio	2.00
Elastic extension coefficient [m ³ /kN]	1.10e-04
Reinforcement Stiffness [kN/m]	330.00
Minimum anchorage length [m]	0.15
Breakage Safety Factor (gravel)	1.26
Pull-out Safety Factor	1.00
Breakage Safety Factor (sand)	1.09
Pull-out Safety Factor	1.00
Breakage Safety Factor (silty sand)	1.09
Pull-out Safety Factor	1.00
Breakage Safety Factor (sandy clay)	1.09
Pull-out Safety Factor	1.00
Interaction factor reinforcement/reinforcement	0.30
Pullout coefficient reinforcement-gravel	0.90
Pullout coefficient reinforcement-sand	0.65
Pullout coefficient reinforcement-silt	0.50
Pullout coefficient reinforcement-clay	0.30



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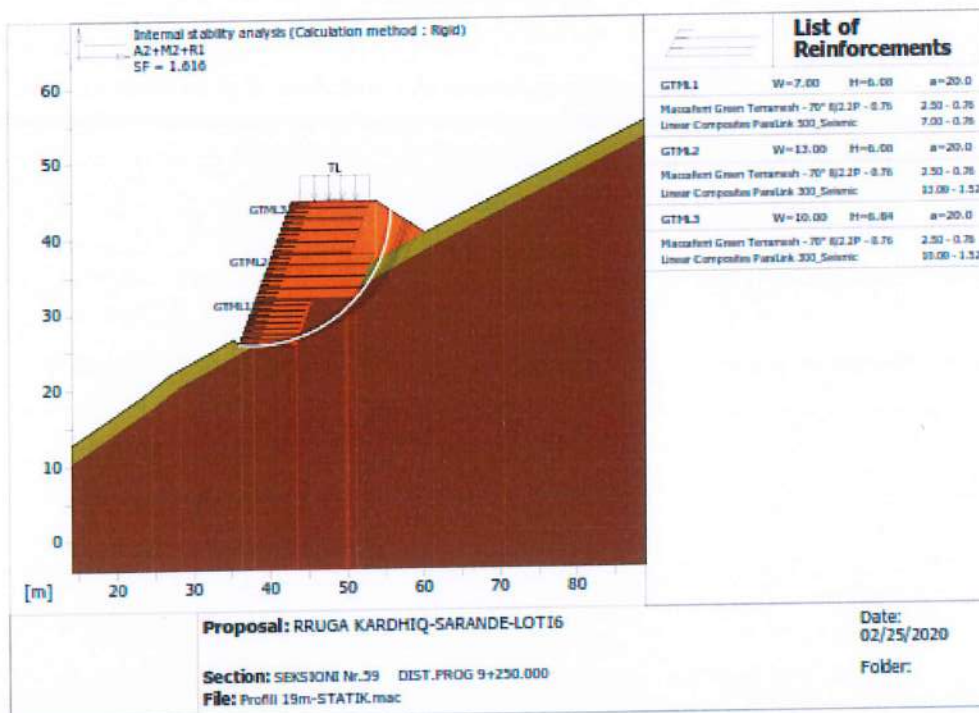
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CHECKS RESULTS



Internal Stability :

Multiplier combination : A2+M2+R1

Reinforcements active Forces according to Rigid Method

Stability analysis with circular surfaces according to Bishop's Method

Evaluated Safety Factor : 1.616

Block	Surfaces searching range	
	Arrival range, abscises [m]	
GTML1	First point 45.00	Second point 85.00
Number of starting point on the starting segment	1	
Total number of trial surfaces	1000	
Minimum base length of slices	[m]	0.50
Superior limit search angle	[°]	0.00
Inferior limit search angle	[°]	0.00

Block : GTML1
Linear Composites - ParaLink - 500_Seismic

Y	Tb breakage [kN/m]	Tp pullout [kN/m]	Td design [kN/m]	Tb/Td 1/Fmax	Tp/Td
[m]					
0.760	502.0	216.7	216.7	2.32	1.00

Multiplier	Class
1.30	Variable unfavourable
1.25	Angle of shearing resistance (Tan phi)

1.00	Weight density
1.00	Tensile strength of reinforcement
1.00	Pullout resistance of reinforcement
1.00	Ground resistance for overall stability



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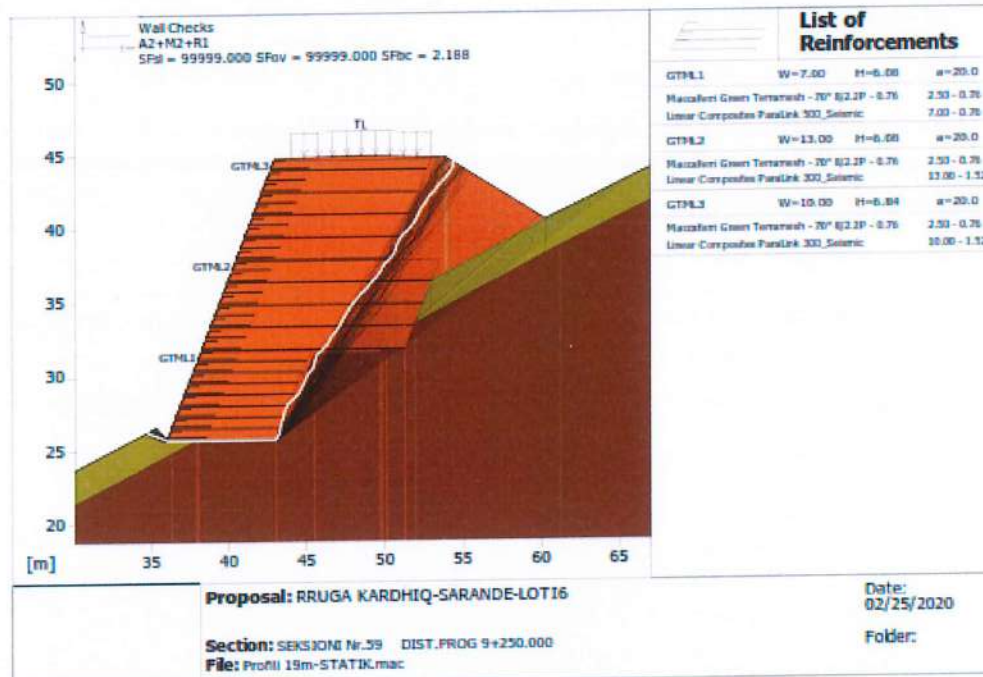
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Wall Checks :

Multiplier combination : A2+M2+R1

Considered block : GTML1

Resisting force [kN/m] : 2712.80

Active force [kN/m] : -467.10

Sliding class : Sliding resistance

Sliding safety factor : 99999.000

Restoring moment [kN*m/m] : 40727.00

Overturning moment [kN*m/m] : -1031.40

Overturning class : Overturning

Overturning safety factor : 99999.000

Ultimate bearing pressure computed with Limit Equilibrium method

Ultimate bearing pressure [kN/m²] : 1327.00

Active pressure [kN/m²] : 606.62

Pressure class : Bearing capacity

Bearing capacity safety factor : 2.188

Equivalent bearing area [m] : 7.00

Eccentricity of normal force [m] : -6.39

Lever arm of overturning force [m] : 2.21

Normal force on the base [kN] : 4220.50

Outer edge stress [kN/m²] : -5562.34

Inner edge stress [kN/m²] : 4103.97

Multiplier	Class
1.30	Variable unfavourable
1.25	Angle of shearing resistance (Tan phi)
1.00	Weight density
1.00	Tensile strength of reinforcement

1.00	Pullout resistance of reinforcement
1.00	Sliding resistance
1.00	Bearing capacity
1.00	Overturning



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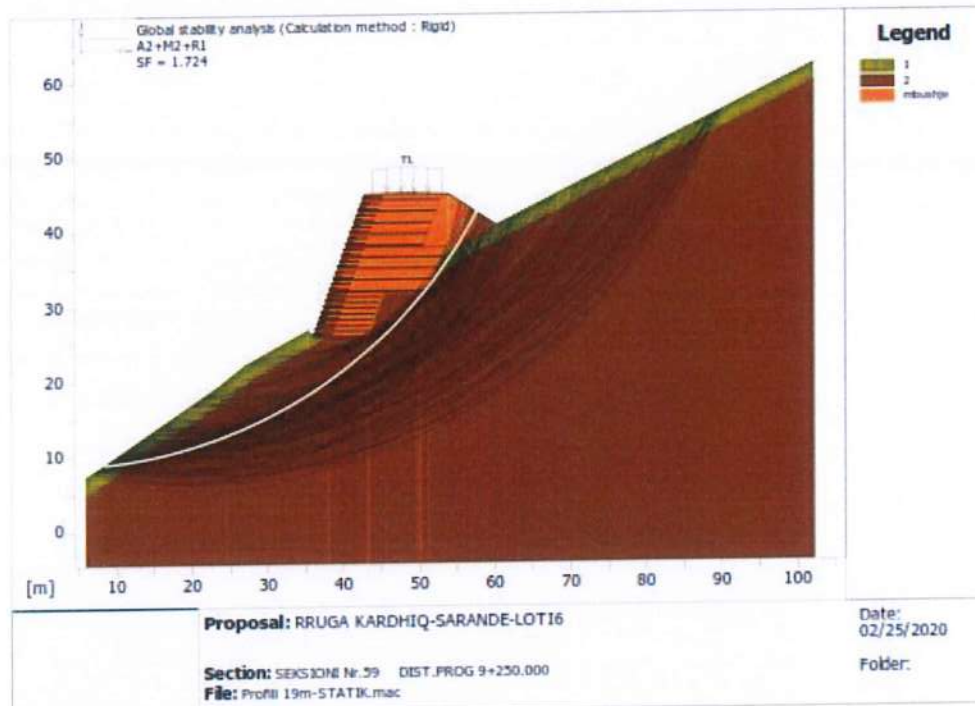
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Global Stability Check :

Multiplier combination : A2+M2+R1

Reinforcements active Forces according to Rigid Method

Stability analysis with circular surfaces according to Bishop's Method

Evaluated Safety Factor..... : 1.724

Surfaces searching range

Starting range, abscises [m]		Arrival range, abscises [m]	
First point	Second point	First point	Second point
7.00	35.00	55.00	90.00
Number of starting point on the starting segment.....		100	
Total number of trial surfaces.....		1000	
Minimum base length of slices..... [m]		0.50	
Superior limit search angle..... [°]		0.00	
Inferior limit search angle..... [°]		0.00	

Block : GTML2

Linear Composites - ParaLink - 300_Seismic

Y	Tb breakage	Tp pullout	Td design	Tb/Td 1/Fmax	Tp/Td
[m]	[kN/m]	[kN/m]	[kN/m]		
0.000	301.0	146.3	146.3	2.06	1.00

Multiplier	Class
1.30	Variable unfavourable
1.25	Angle of shearing resistance (Tan phi)
1.00	Weight density
1.00	Tensile strength of reinforcement
1.00	Pullout resistance of reinforcement
1.00	Ground resistance for overall stability



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B.Llogaritjet Sizmike:

Project Title.....: RRUGA KARDHIQ-SARANDE-LOTI6
Cross Section.....: SEKSIONI Nr.59 DIST.PROG 9+250.000
Site.....:
Folder.....:
File.....: Profili 19m-SIZMIK.mac
Date.....: 02/25/2020
Checks according to: Eurocode 7 EN 1997-1
Eurocode 7 EN 1997-1

TABLE OF CONTENTS

SOIL PROPERTIES

Soil: 1	Description:		
Cohesion.....	[kN/m ²]	15.00	
Friction Angle Class.....	: Angle of shearing resistance (Tan phi)		
Friction Angle.....	[°]	23.00	
Ru value.....		0.00	
Weight Class.....	: Weight density		
Bulk unit weight - above GWT.....	[kN/m ³]	26.90	
Bulk unit weight - below GWT.....	[kN/m ³]	26.90	
Elastic Modulus.....	[kN/m ²]	0.00	
Poisson's ratio.....		0.30	
Soil: 2	Description:		
Cohesion.....	[kN/m ²]	100.00	
Friction Angle Class.....	: Angle of shearing resistance (Tan phi)		
Friction Angle.....	[°]	36.00	
Ru value.....		0.00	
Weight Class.....	: Weight density		
Bulk unit weight - above GWT.....	[kN/m ³]	25.50	
Bulk unit weight - below GWT.....	[kN/m ³]	25.50	
Elastic Modulus.....	[kN/m ²]	0.00	
Poisson's ratio.....		0.30	
Soil: mbushje	Description:		
Cohesion.....	[kN/m ²]	0.00	
Friction Angle Class.....	: Angle of shearing resistance (Tan phi)		
Friction Angle.....	[°]	30.00	
Ru value.....		0.00	
Weight Class.....	: Weight density		
Bulk unit weight - above GWT.....	[kN/m ³]	19.00	
Bulk unit weight - below GWT.....	[kN/m ³]	19.00	
Elastic Modulus.....	[kN/m ²]	0.00	
Poisson's ratio.....		0.30	

STRATA PROFILES

Stratum: mbushje	Description: mbushje						
Soil : mbushje							
X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
36.09	25.72	43.01	44.72	48.46	44.85	53.91	44.72
60.30	40.46						
Stratum: shtresa 1	Description: Layer1						
Soil : 1							
X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
5.92	7.12	23.46	19.07	27.13	22.02	35.37	26.52
36.09	25.72	38.03	25.72				
Stratum: shtresa 1.1	Description: Layer1.1						
Soil : 1							
X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
50.13	32.48	51.29	35.42	60.30	40.46	69.80	45.33



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102.26 61.73

Stratum: shtresa 2

Description: Layer2

Soil : 2

X	Y	X	Y	X	Y	X	Y
[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
5.92	4.70	24.65	17.46	28.25	20.35	36.34	24.77
38.03	25.72	43.50	25.72	45.50	31.49	49.74	31.49
50.13	32.48	61.24	38.70	70.71	43.54	102.26	59.49

REINFORCED BLOCKS

Block : GTML1

Block dimensions [m] : Base width = 7.00 Height = 6.08
 Block Origin [m] : Abscissa = 36.08 Ordinate = 25.65
 Face inclination [°] : 20.00

Structural embankment type : Gravel
 Structural embankment : mbushje
 Backfill soil : mbushje
 Covering soil : mbushje
 Foundation soil : mbushje

Brinch Hansen, Vesic or Meyerhof bearing capacity parameters

Embedment depth [m] : 0.00
 Natural soil slope [°] : 0.00

Reinforcements pattern :

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Length [m] = 2.50
 Vertical spacing [m] = 0.76
 Wrapped length [m] = 0.65

Linear Composites - ParaLink - 500_Seismic

Length [m] = 7.00
 Vertical spacing [m] = 0.76
 Offset [m] = 0.00

Block : GTML2

Block dimensions [m] : Base width = 13.00 Height = 6.08
 Back Shift [m] = 0.00 by GTML1
 Face inclination [°] : 20.00

Structural embankment type : Gravel
 Structural embankment : mbushje
 Backfill soil : mbushje
 Covering soil : mbushje
 Foundation soil : mbushje

Brinch Hansen, Vesic or Meyerhof bearing capacity parameters

Embedment depth [m] : 0.00
 Natural soil slope [°] : 0.00

Reinforcements pattern :

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Length [m] = 2.50
 Vertical spacing [m] = 0.76
 Wrapped length [m] = 0.65



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Linear Composites - ParaLink - 300_Seismic

Length [m] = 13.00
Vertical spacing [m] = 1.52
Offset [m] = 0.00

Block : GTML3

Block dimensions [m] : Base width = 10.00 Height = 6.84
Back Shift [m] = 0.00 by GTML2
Face inclination [°] : 20.00

Structural embankment type : Gravel
Structural embankment : mbushje
Backfill soil : mbushje
Covering soil : mbushje
Foundation soil : mbushje

Brinch Hansen, Vesic or Meyerhof bearing capacity parameters

Embedment depth [m] : 0.00
Natural soil slope [°] : 0.00

Reinforcements pattern :

Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76

Length [m] = 2.50
Vertical spacing [m] = 0.76
Wrapped length [m] = 0.65

Linear Composites - ParaLink - 300_Seismic

Length [m] = 10.00
Vertical spacing [m] = 1.52
Offset [m] = 0.00

SURCHARGE LOADS

Distributed Loads : TL

Description :

Class : Variable unfavourable
Magnitude [kN/m²] = 30.00 Inclination angle [°] = 0.00
Abscissa [m] : from = 44.00 To = 53.00

Earthquake Load :

Class : Seismic action
Acceleration [m/s²] : Horizontal = 1.96 Vertical = 0.59

PROPERTIES OF THE USED REINFORCEMENTS

Linear Composites - ParaLink - 300_Seismic

Tensile strength UTS	[kN/m]	301.00
Plastic extension ratio		0.00
Elastic extension coefficient	[m³/kN]	1.10e-04
Reinforcement Stiffness	[kN/m]	3168.00
Minimum anchorage length	[m]	0.15
Breakage Safety Factor (gravel)		1.14
Pull-out Safety Factor		1.00
Breakage Safety Factor (sand)		1.10
Pull-out Safety Factor		1.00
Breakage Safety Factor (silty sand)		1.10
Pull-out Safety Factor		1.00
Breakage Safety Factor (sandy clay)		1.10



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Pull-out Safety Factor.....	1.00
Interaction factor reinforcement/reinforcement.....	0.27
Pullout coefficient reinforcement-gravel.....	0.90
Pullout coefficient reinforcement-sand.....	0.90
Pullout coefficient reinforcement-silt.....	0.70
Pullout coefficient reinforcement-clay.....	0.40
Linear Composites - ParaLink - 500_Seismic	
Tensile strength UTS..... [kN/m]	502.00
Plastic extension ratio.....	0.00
Elastic extension coefficient..... [m ³ /kN]	1.10e-04
Reinforcement Stiffness..... [kN/m]	5284.00
Minimum anchorage length..... [m]	0.15
Breakage Safety Factor (gravel).....	1.14
Pull-out Safety Factor.....	1.00
Breakage Safety Factor (sand).....	1.10
Pull-out Safety Factor.....	1.00
Breakage Safety Factor (silty sand).....	1.10
Pull-out Safety Factor.....	1.00
Breakage Safety Factor (sandy clay).....	1.10
Pull-out Safety Factor.....	1.00
Interaction factor reinforcement/reinforcement.....	0.30
Pullout coefficient reinforcement-gravel.....	0.90
Pullout coefficient reinforcement-sand.....	0.90
Pullout coefficient reinforcement-silt.....	0.70
Pullout coefficient reinforcement-clay.....	0.40
Maccaferri - Green Terramesh - 70° - 8/2.2P - 0.76	
Tensile strength UTS..... [kN/m]	35.00
Plastic extension ratio.....	2.00
Elastic extension coefficient..... [m ³ /kN]	1.10e-04
Reinforcement Stiffness..... [kN/m]	330.00
Minimum anchorage length..... [m]	0.15
Breakage Safety Factor (gravel).....	1.26
Pull-out Safety Factor.....	1.00
Breakage Safety Factor (sand).....	1.09
Pull-out Safety Factor.....	1.00
Breakage Safety Factor (silty sand).....	1.09
Pull-out Safety Factor.....	1.00
Breakage Safety Factor (sandy clay).....	1.09
Pull-out Safety Factor.....	1.00
Interaction factor reinforcement/reinforcement.....	0.30
Pullout coefficient reinforcement-gravel.....	0.90
Pullout coefficient reinforcement-sand.....	0.65
Pullout coefficient reinforcement-silt.....	0.50
Pullout coefficient reinforcement-clay.....	0.30



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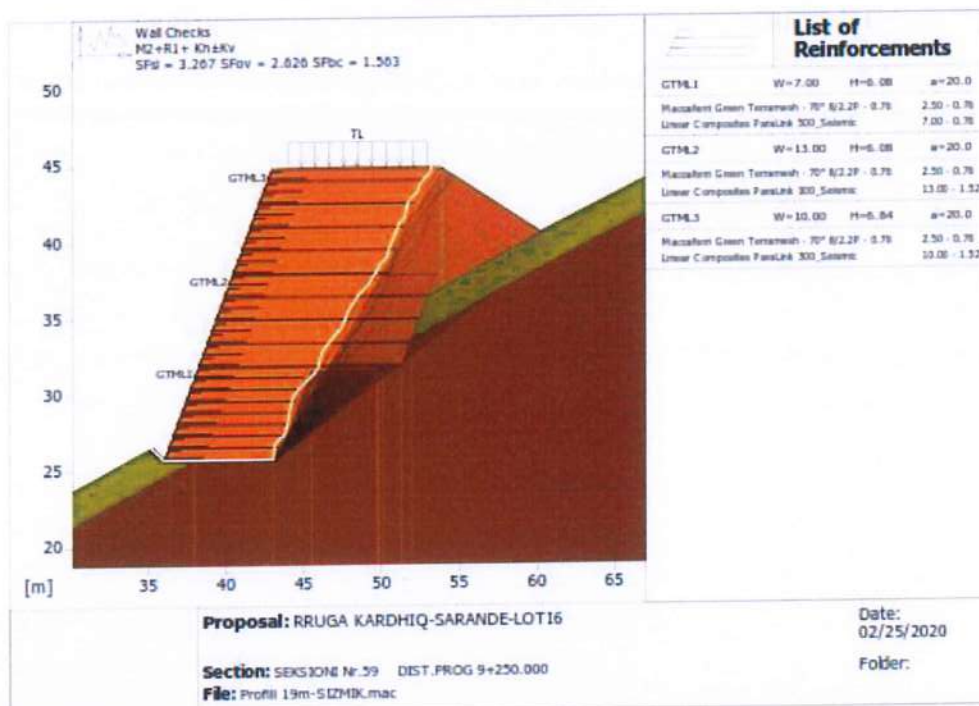
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CHECKS RESULTS



Wall Checks :

Multiplier combination : M2+R1+ Kh±Kv

Considered block : GTML1

Resisting force [kN/m] : 2551.90

Active force [kN/m] : 781.14

Sliding class : Sliding resistance

Sliding safety factor : 3.267

Restoring moment [kN*m/m] : 39721.00

Overturning moment [kN*m/m] : 15124.00

Overturning class : Overturning

Overturning safety factor : 2.626

Ultimate bearing pressure computed with Limit Equilibrium method

Ultimate bearing pressure [kN/m²] : 889.44

Active pressure [kN/m²] : 569.24

Pressure class : Bearing capacity

Bearing capacity safety factor : 1.563

Equivalent bearing area [m] : 7.00

Eccentricity of normal force [m] : -2.79

Lever arm of overturning force [m] : 19.36

Normal force on the base [kN] : 3907.40

Outer edge stress [kN/m²] : -30178.31

Inner edge stress [kN/m²] : 35719.94

Multiplier
1.00
1.00

Class
Variable unfavourable
Seismic action

1.25 Angle of shearing resistance (Tan phi)
1.00 Weight density
1.00 Tensile strength of reinforcement
1.00 Pullout resistance of reinforcement
1.00 Sliding resistance
1.00 Bearing capacity
1.00 Overturning



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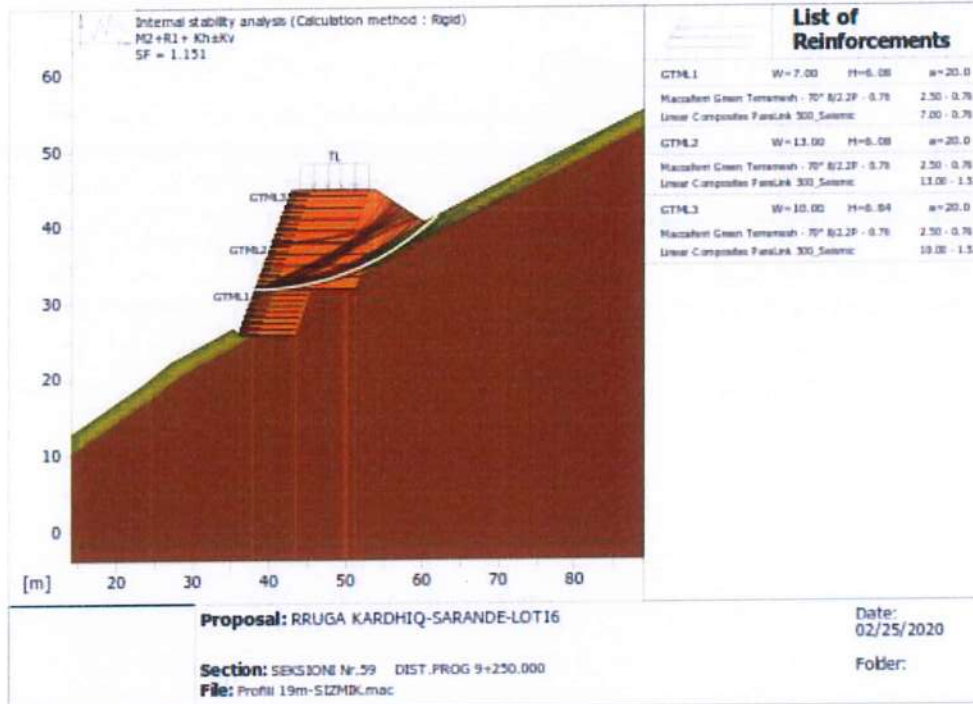
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Internal Stability :

Multiplier combination : M2+R1+ Kh±Kv

Reinforcements active Forces according to Rigid Method

Stability analysis with circular surfaces according to Bishop's Method

Evaluated Safety Factor : 1.151

Block	Surfaces searching range	
	Arrival range, abscises [m]	
GTML1	First point 45.00	Second point 85.00
Number of starting point on the starting segment	1	
Total number of trial surfaces	1000	
Minimum base length of slices	[m]	0.50
Superior limit search angle	[°]	0.00
Inferior limit search angle	[°]	0.00

Block : GTML2
Linear Composites - ParaLink - 300_Seismic

Y	Tb breakage [kN/m]	Tp pullout [kN/m]	Td design [kN/m]	Tb/Td 1/Fmax	Tp/Td
[m] 1.520	301.0	907.3	264.0	1.14	3.44

Multiplier	Class
1.00	Variable unfavourable
1.00	Seismic action
1.25	Angle of shearing resistance (Tan phi)
1.00	Weight density
1.00	Tensile strength of reinforcement
1.00	Pullout resistance of reinforcement
1.00	Ground resistance for overall stability



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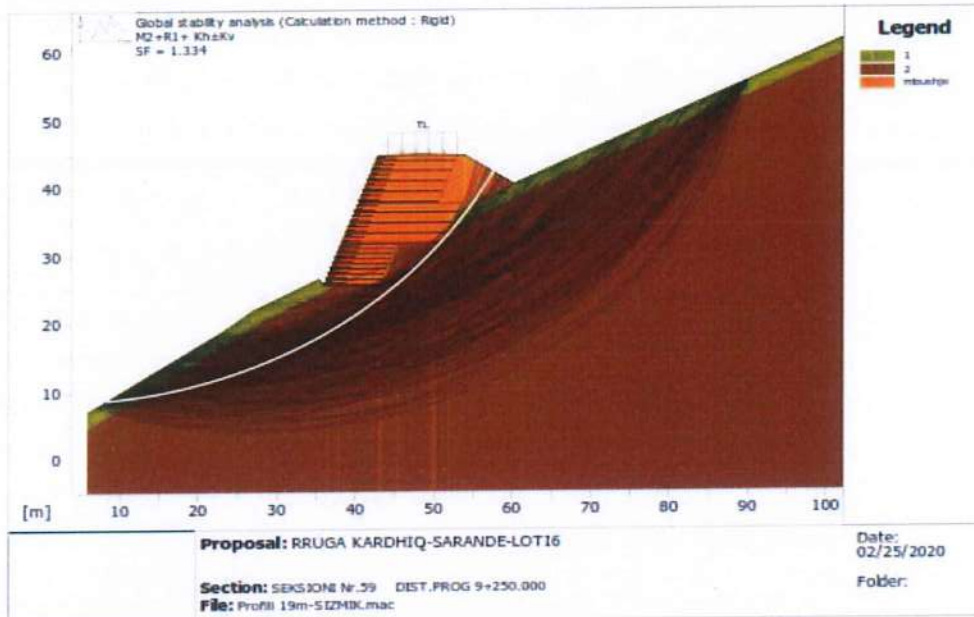
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Global Stability Check :

Multiplier combination : M2+R1+ Kh±Kv

Reinforcements active Forces according to Rigid Method

Stability analysis with circular surfaces according to Bishop's Method

Evaluated Safety Factor.....: 1.334

Starting range, abscises [m]		Arrival range, abscises [m]	
First point	Second point	First point	Second point
7.00	35.00	55.00	90.00
Number of starting point on the starting segment.....:		100	
Total number of trial surfaces.....:		1000	
Minimum base length of slices..... [m] :		0.50	
Superior limit search angle..... [°] :		0.00	
Inferior limit search angle..... [°] :		0.00	

Block : GTML2
Linear Composites - ParaLink - 300_Seismic

Y	Tb breakage	Tp pullout	Td design	Tb/Td 1/Fmax	Tp/Td
[m]	[kN/m]	[kN/m]	[kN/m]		
0.000	301.0	141.7	141.7	2.12	1.00

Multiplier	Class
1.00	Variable unfavourable
1.00	Seismic action
1.25	Angle of shearing resistance (Tan phi)
1.00	Weight density
1.00	Tensile strength of reinforcement
1.00	Pullout resistance of reinforcement
1.00	Ground resistance for overall stability

MBIKQYRESI I PUNIMEVE:

B.P.O.E: "47EK79&ILIRIADA P.K.S." Sh.p.k.
& "GJEOKONSULT&CO" Sh.p.k.J.V.
Perfaqesues Ligjor

Z.Kujtim ÇELA

SIPERMARRESI

"Agbes Konstruktion" Shpk & "Arberia" sh.a
Perfaqesues Ligjor

Z.Arben GOGA