

Slide Analysis Information

SLIDE - An Interactive Slope Stability Program

Project Summary

File Name: TCC Paula - com berma.slim
Slide Modeler Version: 7.026
Project Title: SLIDE - An Interactive Slope Stability Program
Date Created: 21/11/2017, 10:40:29

General Settings

Units of Measurement: Metric Units
Time Units: days
Permeability Units: meters/second
Failure Direction: Left to Right
Data Output: Standard
Maximum Material Properties: 20
Maximum Support Properties: 20

Analysis Options

Slices Type: Vertical

Analysis Methods Used

GLE/Morgenstern-Price with interslice force function: Bishop simplified
Half Sine
Janbu corrected
Spencer

Number of slices: 20
Tolerance: 0.005
Maximum number of iterations: 75
Check $m\alpha < 0.2$: Yes
Create Interslice boundaries at intersections with water tables and piezos: Yes
Initial trial value of FS: 1
Steffensen Iteration: Yes

Groundwater Analysis

Groundwater Method: Water Surfaces
Pore Fluid Unit Weight [kN/m³]: 9.81
Use negative pore pressure cutoff: Yes
Maximum negative pore pressure [kPa]: 0
Advanced Groundwater Method: None

Random Numbers

Pseudo-random Seed: 10116
Random Number Generation Method: Park and Miller v.3

Surface Options

Search Method: Cuckoo Search
 Minimum Elevation: Not Defined
 Minimum Depth: Not Defined
 Minimum Area: Not Defined
 Minimum Weight: Not Defined
 Convex Surfaces Only: Enabled

Seismic

Advanced seismic analysis: No
 Staged pseudostatic analysis: No

Loading

1 Distributed Load present

Distributed Load 1

Distribution: Constant
 Magnitude [kPa]: 20
 Orientation: Normal to boundary

Material Properties

Property	aterro	argila arenosa	berma	estaca	Argila arenosa dura
Color					
Strength Type	Mohr-Coulomb	Mohr-Coulomb	Mohr-Coulomb	Mohr-Coulomb	Mohr-Coulomb
Unit Weight [kN/m3]	17	20	17	25	22
Cohesion [kPa]	20	50	20	400	100
Friction Angle [deg]	15	25	15	50	50
Water Surface	None	None	None	None	None
Ru Value	0	0	0	0	0

Global Minimums

Method: bishop simplified

FS	2.014670
Axis Location:	13.798, 17.504
Left Slip Surface Endpoint:	6.896, 14.200
Right Slip Surface Endpoint:	12.300, 10.000
Resisting Moment:	2423.61 kN-m
Driving Moment:	1202.98 kN-m
Total Slice Area:	10.5497 m2
Surface Horizontal Width:	5.40405 m
Surface Average Height:	1.95219 m

Method: janbu corrected

FS	1.970970
Axis Location:	13.798, 17.504
Left Slip Surface Endpoint:	6.896, 14.200
Right Slip Surface Endpoint:	12.300, 10.000
Resisting Horizontal Force:	259.791 kN
Driving Horizontal Force:	131.808 kN
Total Slice Area:	10.5497 m2
Surface Horizontal Width:	5.40405 m
Surface Average Height:	1.95219 m

Method: spencer

FS	2.226260
Axis Location:	13.811, 17.467
Left Slip Surface Endpoint:	6.933, 14.200
Right Slip Surface Endpoint:	12.298, 10.004
Resisting Moment:	2433.64 kN-m
Driving Moment:	1093.15 kN-m
Resisting Horizontal Force:	257.495 kN
Driving Horizontal Force:	115.663 kN
Total Slice Area:	11.3717 m ²
Surface Horizontal Width:	5.36531 m
Surface Average Height:	2.11949 m

Method: gle/morgenstern-price

FS	2.349480
Axis Location:	13.798, 17.504
Left Slip Surface Endpoint:	6.896, 14.200
Right Slip Surface Endpoint:	12.300, 10.000
Resisting Moment:	2626.89 kN-m
Driving Moment:	1118.07 kN-m
Resisting Horizontal Force:	260.868 kN
Driving Horizontal Force:	111.032 kN
Total Slice Area:	10.6749 m ²
Surface Horizontal Width:	5.40405 m
Surface Average Height:	1.97536 m

Global Minimum Coordinates

Method: bishop simplified

X	Y
6.89595	14.2
7.65563	13.1642
8.22817	12.3984
9.01626	11.36
9.7527	10.402
9.9973	10.2941
11.1716	10
12.3	10

Method: janbu corrected

X	Y
6.89595	14.2
7.65563	13.1642
8.22817	12.3984
9.01626	11.36
9.7527	10.402
9.9973	10.2941
11.1716	10
12.3	10

Method: spencer

X	Y
6.93266	14.2
7.01853	13.4032
7.8829	12.4497
9.14848	11.0617
9.75214	10.4095
11.081	10.0041
11.6301	10.0031
12.298	10.0041

Method: gle/morgenstern-price

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X	Y
6.89595	14.2
7.29539	13.2892
7.7073	12.6473
8.28832	11.9875
9.08842	11.2893
9.9973	10.587
11.2517	10.0686
11.6153	10
12.3	10

Valid / Invalid Surfaces

Method: bishop simplified

Number of Valid Surfaces: 4
 Number of Invalid Surfaces: 0

Method: janbu corrected

Number of Valid Surfaces: 4
 Number of Invalid Surfaces: 0

Method: spencer

Number of Valid Surfaces: 1
 Number of Invalid Surfaces: 3

Error Codes:

Error Code -111 reported for 3 surfaces

Method: gle/morgenstern-price

Number of Valid Surfaces: 2
 Number of Invalid Surfaces: 2

Error Codes:

Error Code -111 reported for 2 surfaces

Error Codes

The following errors were encountered during the computation:
 -111 = safety factor equation did not converge

Slice Data

Global Minimum Query (bishop simplified) - Safety Factor: 2.01467

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Slice Number	Width [m]	Weight [kN]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [kPa]	Base Friction Angle [degrees]	Shear Stress [kPa]	Shear Strength [kPa]	Base Normal Stress [kPa]	Pore Pressure [kPa]	Effective Normal Stress [kPa]	Base Vertical Stress [kPa]	Effective Vertical Stress [kPa]
1	0.253224	0.743139	-53.7426	aterro	20	15	10.9854	22.132	7.95657	0	7.95657	22.9347	22.9347
2	0.253224	2.22942	-53.7426	aterro	20	15	11.6462	23.4632	12.925	0	12.925	28.8042	28.8042
3	0.253224	3.71569	-53.7426	aterro	20	15	12.307	24.7945	17.8935	0	17.8935	34.6736	34.6736
4	0.286272	5.97253	-53.2185	aterro	20	15	13.0418	26.2749	23.4181	0	23.4181	40.8632	40.8632
5	0.286272	7.83608	-53.2185	aterro	20	15	13.7768	27.7557	28.9447	0	28.9447	47.373	47.373
6	0.262698	8.81868	-52.8012	aterro	20	15	14.5094	29.2317	34.4534	0	34.4534	53.5697	53.5697
7	0.262698	10.3643	-52.8012	aterro	20	15	15.1753	30.5732	39.46	0	39.46	59.4535	59.4535
8	0.262698	11.91	-52.8012	aterro	20	15	15.8412	31.9147	44.4665	0	44.4665	65.3374	65.3374
9	0.24548	12.5179	-52.4508	aterro	20	15	16.5123	33.2669	49.5127	0	49.5127	70.9938	70.9938
10	0.24548	13.8506	-52.4508	aterro	20	15	17.1279	34.507	54.1407	0	54.1407	76.4225	76.4225
11	0.24548	15.2653	-52.4508	aterro	20	15	17.7564	35.7732	58.8662	0	58.8662	81.9656	81.9656
12	0.244596	23.5541	-23.7963	estaca	400	50	202.647	408.266	6.93601	0	6.93601	96.2982	96.2982
13	0.293577	11.8495	-14.0625	berma	20	15	14.8022	29.8216	36.6547	0	36.6547	40.3624	40.3624
14	0.293577	12.0586	-14.0625	berma	20	15	14.8939	30.0063	37.3439	0	37.3439	41.0746	41.0746
15	0.293577	12.4256	-14.0625	berma	20	15	15.0548	30.3305	38.5539	0	38.5539	42.3249	42.3249
16	0.293577	12.292	-14.0625	berma	20	15	14.9962	30.2124	38.1135	0	38.1135	41.8698	41.8698
17	0.282099	9.47	5.80312e-008	berma	20	15	14.3919	28.995	33.5698	0	33.5698	33.5698	33.5698
18	0.282099	6.76429	5.80294e-008	berma	20	15	13.1163	26.425	23.9784	0	23.9784	23.9784	23.9784
19	0.282099	4.05857	5.80312e-008	berma	20	15	11.8406	23.855	14.387	0	14.387	14.387	14.387
20	0.282099	1.35286	5.8029e-008	berma	20	15	10.565	21.285	4.79569	0	4.79569	4.79569	4.79569

Global Minimum Query (janbu corrected) - Safety Factor: 1.97097

Slice Number	Width [m]	Weight [kN]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [kPa]	Base Friction Angle [degrees]	Shear Stress [kPa]	Shear Strength [kPa]	Base Normal Stress [kPa]	Pore Pressure [kPa]	Effective Normal Stress [kPa]	Base Vertical Stress [kPa]	Effective Vertical Stress [kPa]
1	0.253224	0.743139	-53.7426	aterro	20	15	11.0735	21.8254	6.81262	0	6.81262	21.9108	21.9108
2	0.253224	2.22942	-53.7426	aterro	20	15	11.7395	23.1383	11.7123	0	11.7123	27.7187	27.7187
3	0.253224	3.71569	-53.7426	aterro	20	15	12.4056	24.4511	16.6119	0	16.6119	33.5265	33.5265
4	0.286272	5.97253	-53.2185	aterro	20	15	13.1492	25.9167	22.0816	0	22.0816	39.6704	39.6704
5	0.286272	7.83608	-53.2185	aterro	20	15	13.8903	27.3774	27.5327	0	27.5327	46.1128	46.1128
6	0.262698	8.81868	-52.8012	aterro	20	15	14.6316	28.8384	32.9851	0	32.9851	52.2623	52.2623
7	0.262698	10.3643	-52.8012	aterro	20	15	15.303	30.1618	37.9245	0	37.9245	58.0863	58.0863
8	0.262698	11.91	-52.8012	aterro	20	15	15.9745	31.4852	42.8636	0	42.8636	63.91	63.91
9	0.24548	12.5179	-52.4508	aterro	20	15	16.6537	32.8239	47.8595	0	47.8595	69.5244	69.5244
10	0.24548	13.8506	-52.4508	aterro	20	15	17.2745	34.0475	52.4259	0	52.4259	74.8984	74.8984
11	0.24548	15.2653	-52.4508	aterro	20	15	17.9083	35.2968	57.0886	0	57.0886	80.3857	80.3857
12	0.244596	23.5541	-23.7963	estaca	400	50	203.292	400.682	0.572093	0	0.572093	90.2187	90.2187
13	0.293577	11.8495	-14.0625	berma	20	15	15.0859	29.7339	36.3275	0	36.3275	40.1064	40.1064
14	0.293577	12.0586	-14.0625	berma	20	15	15.1793	29.918	37.0145	0	37.0145	40.8167	40.8167
15	0.293577	12.4256	-14.0625	berma	20	15	15.3434	30.2413	38.2208	0	38.2208	42.0641	42.0641
16	0.293577	12.292	-14.0625	berma	20	15	15.2836	30.1236	37.7817	0	37.7817	41.6101	41.6101
17	0.282099	9.47	5.80312e-008	berma	20	15	14.711	28.995	33.5698	0	33.5698	33.5698	33.5698
18	0.282099	6.76429	5.80294e-008	berma	20	15	13.4071	26.425	23.9784	0	23.9784	23.9784	23.9784
19	0.282099	4.05857	5.80312e-008	berma	20	15	12.1032	23.855	14.387	0	14.387	14.387	14.387
20	0.282099	1.35286	5.8029e-008	berma	20	15	10.7993	21.285	4.79569	0	4.79569	4.79569	4.79569

Global Minimum Query (spencer) - Safety Factor: 2.22626

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Slice Number	Width [m]	Weight [kN]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [kPa]	Base Friction Angle [degrees]	Shear Stress [kPa]	Shear Strength [kPa]	Base Normal Stress [kPa]	Pore Pressure [kPa]	Effective Normal Stress [kPa]	Base Vertical Stress [kPa]	Effective Vertical Stress [kPa]
1	0.0858661	0.581564	-83.8494	aterro	20	15	3.32297	7.3978	-47.0319	0	-47.0319	-16.1956	-16.1956
2	0.288125	4.68128	-47.8067	aterro	20	15	11.9394	26.5801	24.5574	0	24.5574	37.7278	37.7278
3	0.288125	6.23806	-47.8067	aterro	20	15	12.5666	27.9766	29.7689	0	29.7689	43.6313	43.6313
4	0.288125	7.79484	-47.8067	aterro	20	15	13.1939	29.373	34.9805	0	34.9805	49.5347	49.5347
5	0.253116	8.12878	-47.6412	aterro	20	15	13.7888	30.6974	39.9233	0	39.9233	55.0458	55.0458
6	0.253116	9.32327	-47.6412	aterro	20	15	14.3367	31.9172	44.4757	0	44.4757	60.1991	60.1991
7	0.253116	10.5178	-47.6412	aterro	20	15	14.8846	33.1371	49.0284	0	49.0284	65.3527	65.3527
8	0.253116	11.7123	-47.6412	aterro	20	15	15.4326	34.3569	53.5808	0	53.5808	70.506	70.506
9	0.253116	12.9068	-47.6412	aterro	20	15	15.9805	35.5768	58.1334	0	58.1334	75.6596	75.6596
10	0.30183	16.9396	-47.215	aterro	20	15	16.596	36.947	63.2471	0	63.2471	81.1786	81.1786
11	0.30183	18.6779	-47.215	aterro	20	15	17.2484	38.3995	68.6677	0	68.6677	87.3041	87.3041
12	0.247859	23.7222	-16.9647	estaca	400	50	190.211	423.459	19.6848	0	19.6848	77.7102	77.7102
13	0.270262	10.6011	-16.9647	berma	20	15	13.1907	29.366	34.9544	0	34.9544	38.9783	38.9783
14	0.270262	10.9799	-16.9647	berma	20	15	13.3563	29.7347	36.3303	0	36.3303	40.4048	40.4048
15	0.270262	11.3587	-16.9647	berma	20	15	13.5219	30.1033	37.706	0	37.706	41.8309	41.8309
16	0.270262	11.6258	-16.9647	berma	20	15	13.6387	30.3633	38.6764	0	38.6764	42.837	42.837
17	0.274521	10.0784	-0.103578	berma	20	15	13.2445	29.4856	35.4008	0	35.4008	35.4247	35.4247
18	0.274521	7.51838	-0.103578	berma	20	15	12.1352	27.0161	26.1843	0	26.1843	26.2062	26.2062
19	0.33394	5.69151	0.0843352	berma	20	15	10.9084	24.2849	15.9914	0	15.9914	15.9753	15.9753
20	0.33394	1.89717	0.0843352	berma	20	15	9.55668	21.2756	4.76079	0	4.76079	4.74672	4.74672

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 2.34948

Slice Number	Width [m]	Weight [kN]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [kPa]	Base Friction Angle [degrees]	Shear Stress [kPa]	Shear Strength [kPa]	Base Normal Stress [kPa]	Pore Pressure [kPa]	Effective Normal Stress [kPa]	Base Vertical Stress [kPa]	Effective Vertical Stress [kPa]
1	0.199716	0.773052	-66.3193	aterro	20	15	8.92312	20.9647	3.60025	0	3.60025	23.9463	23.9463
2	0.199716	2.31915	-66.3193	aterro	20	15	9.44776	22.1973	8.20051	0	8.20051	29.7428	29.7428
3	0.411911	8.62535	-57.3148	aterro	20	15	10.4607	24.5772	17.0824	0	17.0824	33.3859	33.3859
4	0.290512	8.4831	-48.6295	aterro	20	15	11.2448	26.4194	23.9575	0	23.9575	36.7255	36.7255
5	0.290512	10.1122	-48.6295	aterro	20	15	11.3949	26.772	25.2734	0	25.2734	38.2118	38.2118
6	0.266701	10.5588	-41.1094	aterro	20	15	12.1012	28.4314	31.4665	0	31.4665	42.0265	42.0265
7	0.266701	11.614	-41.1094	aterro	20	15	12.2985	28.8951	33.1969	0	33.1969	43.9291	43.9291
8	0.266701	12.6691	-41.1094	aterro	20	15	12.549	29.4836	35.3931	0	35.3931	46.3439	46.3439
9	0.220525	11.2314	-37.6956	aterro	20	15	13.1374	30.8661	40.5529	0	40.5529	50.705	50.705
10	0.220525	11.8702	-37.6956	aterro	20	15	13.4455	31.5899	43.2544	0	43.2544	53.6446	53.6446
11	0.220525	12.5091	-37.6956	aterro	20	15	13.8118	32.4506	46.4661	0	46.4661	57.1394	57.1394
12	0.247298	21.7466	-37.6956	estaca	400	50	204.979	481.594	68.4658	0	68.4658	226.866	226.866
13	0.250873	8.9579	-22.4526	berma	20	15	12.0671	28.3515	31.1681	0	31.1681	36.1548	36.1548
14	0.250873	9.24843	-22.4526	berma	20	15	12.224	28.72	32.5434	0	32.5434	37.5949	37.5949
15	0.250873	9.69058	-22.4526	berma	20	15	12.4443	29.2377	34.4757	0	34.4757	39.6182	39.6182
16	0.250873	10.1327	-22.4526	berma	20	15	12.68	29.7914	36.5418	0	36.5418	41.7818	41.7818
17	0.250873	9.4982	-22.4526	berma	20	15	12.5284	29.4352	35.2126	0	35.2126	40.3899	40.3899
18	0.36359	10.5002	-10.6872	berma	20	15	12.2741	28.8378	32.9833	0	32.9833	35.2997	35.2997
19	0.342374	5.9782	1.04161e-007	berma	20	15	11.1389	26.1706	23.0289	0	23.0289	23.0289	23.0289
20	0.342374	1.99273	1.04161e-007	berma	20	15	9.36924	22.0128	7.51203	0	7.51203	7.51203	7.51203

Interslice Data

Global Minimum Query (bishop simplified) - Safety Factor: 2.01467

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Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [degrees]
1	6.89595	14.2	0	0	0
2	7.14918	13.8547	-0.0346709	0	0
3	7.4024	13.5095	1.47874	0	0
4	7.65563	13.1642	4.54023	0	0
5	7.9419	12.7813	9.77413	0	0
6	8.22817	12.3984	16.9139	0	0
7	8.49087	12.0523	25.0268	0	0
8	8.75357	11.7062	34.6976	0	0
9	9.01626	11.36	45.9263	0	0
10	9.26174	11.0407	57.6846	0	0
11	9.50722	10.7214	70.7697	0	0
12	9.7527	10.402	85.2096	0	0
13	9.9973	10.2941	36.3912	0	0
14	10.2909	10.2206	34.7411	0	0
15	10.5845	10.1471	33.1148	0	0
16	10.878	10.0735	31.5302	0	0
17	11.1716	10	29.9304	0	0
18	11.4537	10	25.8705	0	0
19	11.7358	10	22.1704	0	0
20	12.0179	10	18.8301	0	0
21	12.3	10	0	0	0

Global Minimum Query (janbu corrected) - Safety Factor: 1.97097

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [degrees]
1	6.89595	14.2	0	0	0
2	7.14918	13.8547	-0.642086	0	0
3	7.4024	13.5095	0.22737	0	0
4	7.65563	13.1642	2.60837	0	0
5	7.9419	12.7813	7.04444	0	0
6	8.22817	12.3984	13.3414	0	0
7	8.49087	12.0523	20.6534	0	0
8	8.75357	11.7062	29.4866	0	0
9	9.01626	11.36	39.8409	0	0
10	9.26174	11.0407	50.7593	0	0
11	9.50722	10.7214	62.9733	0	0
12	9.7527	10.402	76.51	0	0
13	9.9973	10.2941	23.4754	0	0
14	10.2909	10.2206	21.4176	0	0
15	10.5845	10.1471	19.381	0	0
16	10.878	10.0735	17.3817	0	0
17	11.1716	10	15.3689	0	0
18	11.4537	10	10.9375	0	0
19	11.7358	10	6.89889	0	0
20	12.0179	10	3.25305	0	0
21	12.3	10	0	0	0

Global Minimum Query (spencer) - Safety Factor: 2.22626

[illegible]

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [degrees]
1	6.93266	14.2	0	0	0
2	7.01853	13.4032	-37.761	3.68953	-5.58051
3	7.30665	13.0854	-33.3959	3.26303	-5.58051
4	7.59478	12.7675	-27.5552	2.69234	-5.58049
5	7.8829	12.4497	-20.2387	1.97747	-5.58051
6	8.13602	12.1721	-12.6463	1.23563	-5.58048
7	8.38913	11.8945	-3.92874	0.383867	-5.58051
8	8.64225	11.6169	5.91386	-0.577827	-5.5805
9	8.89536	11.3393	16.8815	-1.64945	-5.58052
10	9.14848	11.0617	28.9743	-2.831	-5.5805
11	9.45031	10.7356	44.5911	-4.35688	-5.58051
12	9.75214	10.4095	61.7788	-6.03625	-5.58051
13	10	10.3339	16.1216	-1.5752	-5.58051
14	10.2703	10.2514	15.4385	-1.50846	-5.58052
15	10.5405	10.169	14.8241	-1.44842	-5.58049
16	10.8108	10.0865	14.2783	-1.3951	-5.58053
17	11.081	10.0041	13.781	-1.3465	-5.58048
18	11.3556	10.0036	10.1627	-0.992968	-5.58049
19	11.6301	10.0031	6.84431	-0.668739	-5.5805
20	11.964	10.0036	3.1937	-0.312048	-5.58051
21	12.298	10.0041	0	0	0

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 2.34948

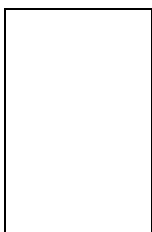
Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [degrees]
1	6.89595	14.2	0	0	0
2	7.09567	13.7446	-0.142605	-0.0150853	6.03851
3	7.29539	13.2892	1.70489	0.358272	11.8677
4	7.7073	12.6473	8.36262	3.46981	22.5345
5	7.99781	12.3174	12.9986	7.09394	28.6233
6	8.28832	11.9875	18.025	11.9154	33.4666
7	8.55502	11.7548	22.121	16.5996	36.8846
8	8.82172	11.5221	26.567	21.8317	39.412
9	9.08842	11.2893	31.4574	27.4749	41.134
10	9.30895	11.1189	35.4711	31.935	41.997
11	9.52947	10.9485	39.8771	36.3858	42.3788
12	9.75	10.7781	44.7498	40.7047	42.2899
13	9.9973	10.587	7.14282	6.34765	41.6267
14	10.2482	10.4833	7.34677	6.23528	40.3216
15	10.499	10.3796	7.65395	6.05217	38.3343
16	10.7499	10.276	8.10616	5.80361	35.6008
17	11.0008	10.1723	8.71347	5.45441	32.0455
18	11.2517	10.0686	9.22099	4.81988	27.5964
19	11.6153	10	7.02145	2.48547	19.4931
20	11.9576	10	3.20778	0.579184	10.2348
21	12.3	10	0	0	0

List Of Coordinates

Distributed Load

X	Y
9.75	14.2
0	14.2

External Boundary



X	Y
0	14.2
0	10
0	4
0	0
20	2.84e-014
20	4
20	10
12.3	10
11	12.6
10	12.6
10	14.2
9.75	14.2

Material Boundary

X	Y
9.75	14.2
9.75	10
9.75	4.3
10	4.3
10	10
12.3	10

Material Boundary

X	Y
10	10
10	12.6

Material Boundary

X	Y
0	10
9.75	10

Material Boundary

X	Y
0	4
20	4