

## *Slide Analysis Information*

### *SLIDE - An Interactive Slope Stability Program*

#### *Project Summary*

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File Name: TCC Paula - sem berma-NC.slim  
 Slide Modeler Version: 7.026  
 Project Title: SLIDE - An Interactive Slope Stability Program  
 Date Created: 27/11/2017, 18:27:22

#### *General Settings*

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Units of Measurement: Metric Units  
 Time Units: days  
 Permeability Units: meters/second  
 Failure Direction: Left to Right  
 Data Output: Standard  
 Maximum Material Properties: 21  
 Maximum Support Properties: 20

#### *Analysis Options*

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Slices Type: Vertical

##### Analysis Methods Used

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

Number of slices: 10  
 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*

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Groundwater Method: Water Surfaces  
 Pore Fluid Unit Weight [kN/m<sup>3</sup>]: 9.81  
 Use negative pore pressure cutoff: Yes  
 Maximum negative pore pressure [kPa]: 0  
 Advanced Groundwater Method: None

#### *Random Numbers*

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

#### *Surface Options*

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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: Vertical

## Material Properties

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

## Global Minimums

### Method: bishop simplified

| FS                           | 1.619080       |
|------------------------------|----------------|
| Axis Location:               | 12.083, 16.335 |
| Left Slip Surface Endpoint:  | 5.765, 14.200  |
| Right Slip Surface Endpoint: | 10.000, 10.000 |
| Left Slope Intercept:        | 5.765 14.200   |
| Right Slope Intercept:       | 10.000 14.200  |
| Resisting Moment:            | 1718.63 kN-m   |
| Driving Moment:              | 1061.49 kN-m   |
| Total Slice Area:            | 9.16935 m2     |
| Surface Horizontal Width:    | 4.23457 m      |
| Surface Average Height:      | 2.16536 m      |

### Method: janbu simplified

| FS                           | 1.491450       |
|------------------------------|----------------|
| Axis Location:               | 12.381, 15.739 |
| Left Slip Surface Endpoint:  | 6.361, 14.200  |
| Right Slip Surface Endpoint: | 10.000, 10.000 |
| Left Slope Intercept:        | 6.361 14.200   |
| Right Slope Intercept:       | 10.000 14.200  |
| Resisting Horizontal Force:  | 189.733 kN     |
| Driving Horizontal Force:    | 127.214 kN     |
| Total Slice Area:            | 7.94257 m2     |
| Surface Horizontal Width:    | 3.63858 m      |
| Surface Average Height:      | 2.18288 m      |

### Method: spencer

| FS                           | 1.804070       |
|------------------------------|----------------|
| Axis Location:               | 11.752, 16.994 |
| Left Slip Surface Endpoint:  | 5.107, 14.200  |
| Right Slip Surface Endpoint: | 10.000, 10.001 |
| Left Slope Intercept:        | 5.107 14.200   |
| Right Slope Intercept:       | 10.000 14.200  |
| Resisting Moment:            | 2196.44 kN-m   |
| Driving Moment:              | 1217.49 kN-m   |
| Resisting Horizontal Force:  | 256.443 kN     |
| Driving Horizontal Force:    | 142.147 kN     |
| Total Slice Area:            | 11.2047 m2     |
| Surface Horizontal Width:    | 4.89341 m      |
| Surface Average Height:      | 2.28976 m      |

### Method: gle/morgenstern-price

| FS                           | 1.660350       |
|------------------------------|----------------|
| Axis Location:               | 11.877, 16.745 |
| Left Slip Surface Endpoint:  | 5.356, 14.200  |
| Right Slip Surface Endpoint: | 10.000, 10.001 |
| Left Slope Intercept:        | 5.356 14.200   |
| Right Slope Intercept:       | 10.000 14.200  |
| Resisting Moment:            | 1892.23 kN-m   |
| Driving Moment:              | 1139.66 kN-m   |
| Resisting Horizontal Force:  | 223.087 kN     |
| Driving Horizontal Force:    | 134.361 kN     |
| Total Slice Area:            | 10.361 m2      |
| Surface Horizontal Width:    | 4.64431 m      |
| Surface Average Height:      | 2.2309 m       |

### Global Minimum Coordinates

### Method: bishop simplified

| X       | Y       |
|---------|---------|
| 5.76543 | 14.2    |
| 6.47055 | 13.4775 |
| 6.94626 | 12.9901 |
| 7.88249 | 12.0308 |
| 8.4036  | 11.4969 |
| 9.34143 | 10.536  |
| 9.75423 | 10.113  |
| 10      | 10      |
| 10.001  | 14.2    |

### Method: janbu simplified

| X       | Y       |
|---------|---------|
| 6.36142 | 14.2    |
| 6.9829  | 13.4522 |
| 7.17654 | 13.2192 |
| 7.6128  | 12.6942 |
| 8.60675 | 11.4985 |
| 9.08078 | 10.9283 |
| 9.75364 | 10.1189 |
| 10      | 10      |
| 10.001  | 14.2    |

### Method: spencer



| X       | Y       |
|---------|---------|
| 5.10659 | 14.2    |
| 5.50682 | 13.6972 |
| 6.52915 | 12.6934 |
| 7.05465 | 12.1846 |
| 8.32653 | 11.2416 |
| 8.92775 | 10.796  |
| 9.32031 | 10.5051 |
| 10      | 10.0015 |
| 10.001  | 14.2    |

#### Method: gle/morgenstern-price

| X       | Y       |
|---------|---------|
| 5.35569 | 14.2    |
| 5.88487 | 13.6038 |
| 6.55028 | 12.8976 |
| 7.29939 | 12.2206 |
| 7.95913 | 11.6784 |
| 8.702   | 11.068  |
| 9.39689 | 10.4969 |
| 10      | 10.0013 |
| 10.001  | 14.2    |

#### Valid / Invalid Surfaces

##### Method: bishop simplified

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

##### Method: janbu simplified

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

##### Method: spencer

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

##### Error Codes:

Error Code -111 reported for 1 surface

##### Method: gle/morgenstern-price

Number of Valid Surfaces: 1  
 Number of Invalid Surfaces: 4

##### Error Codes:

Error Code -111 reported for 4 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: 1.61908

| 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            | 0.352561  | 1.08254     | -45.6963                      | Aterro        | 20                  | 15                            | 13.8263            | 22.3858              | 8.90399                  | 0                   | 8.90399                       | 23.0705                    | 23.0705                         |
| 2            | 0.352561  | 3.24762     | -45.6963                      | Aterro        | 20                  | 15                            | 14.6952            | 23.7927              | 14.1547                  | 0                   | 14.1547                       | 29.2115                    | 29.2115                         |
| 3            | 0.475705  | 7.81346     | -45.6963                      | Aterro        | 20                  | 15                            | 15.7159            | 25.4454              | 20.3223                  | 0                   | 20.3223                       | 36.4249                    | 36.4249                         |
| 4            | 0.468115  | 11.5366     | -45.6963                      | Aterro        | 20                  | 15                            | 16.8791            | 27.3285              | 27.3504                  | 0                   | 27.3504                       | 44.6448                    | 44.6448                         |
| 5            | 0.468115  | 15.3535     | -45.6963                      | Aterro        | 20                  | 15                            | 18.0328            | 29.1966              | 34.3221                  | 0                   | 34.3221                       | 52.7987                    | 52.7987                         |
| 6            | 0.521114  | 21.5814     | -45.6962                      | Aterro        | 20                  | 15                            | 19.2519            | 31.1704              | 41.6884                  | 0                   | 41.6884                       | 61.414                     | 61.414                          |
| 7            | 0.468915  | 23.4628     | -45.6962                      | Aterro        | 20                  | 15                            | 20.472             | 33.1458              | 49.0606                  | 0                   | 49.0606                       | 70.0363                    | 70.0363                         |
| 8            | 0.468915  | 27.2927     | -45.6962                      | Aterro        | 20                  | 15                            | 21.6277            | 35.017               | 56.0441                  | 0                   | 56.0441                       | 78.204                     | 78.204                          |
| 9            | 0.412804  | 27.3352     | -45.6962                      | Aterro        | 20                  | 15                            | 22.7327            | 36.806               | 62.721                   | 0                   | 62.721                        | 86.013                     | 86.013                          |
| 10           | 0.245765  | 25.4581     | -24.7019                      | Estaca        | 400                 | 50                            | 241.525            | 391.048              | -7.51195                 | 0                   | -7.51195                      | 103.587                    | 103.587                         |

Global Minimum Query (janbu simplified) - Safety Factor: 1.49145

| 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            | 0.310739  | 0.987624    | -50.2722                      | Aterro        | 20                  | 15                            | 14.45              | 21.5515              | 5.79029                  | 0                   | 5.79029                       | 23.1783                    | 23.1783                         |
| 2            | 0.310739  | 2.96287     | -50.2722                      | Aterro        | 20                  | 15                            | 15.389             | 22.952               | 11.017                   | 0                   | 11.017                        | 29.5349                    | 29.5349                         |
| 3            | 0.193638  | 2.84527     | -50.2722                      | Aterro        | 20                  | 15                            | 16.1511            | 24.0886              | 15.2588                  | 0                   | 15.2588                       | 34.6937                    | 34.6937                         |
| 4            | 0.436265  | 9.22099     | -50.2702                      | Aterro        | 20                  | 15                            | 17.103             | 25.5083              | 20.5573                  | 0                   | 20.5573                       | 41.1362                    | 41.1362                         |
| 5            | 0.496975  | 15.2471     | -50.2641                      | Aterro        | 20                  | 15                            | 18.5135            | 27.612               | 28.4085                  | 0                   | 28.4085                       | 50.6798                    | 50.6798                         |
| 6            | 0.496975  | 20.2981     | -50.2641                      | Aterro        | 20                  | 15                            | 20.015             | 29.8513              | 36.7658                  | 0                   | 36.7658                       | 60.8432                    | 60.8432                         |
| 7            | 0.474029  | 24.0674     | -50.2641                      | Aterro        | 20                  | 15                            | 21.4818            | 32.039               | 44.93                    | 0                   | 44.93                         | 70.772                     | 70.772                          |
| 8            | 0.336429  | 19.8692     | -50.2641                      | Aterro        | 20                  | 15                            | 22.706             | 33.8649              | 51.7444                  | 0                   | 51.7444                       | 79.0591                    | 79.0591                         |
| 9            | 0.336429  | 22.3026     | -50.2641                      | Aterro        | 20                  | 15                            | 23.7426            | 35.4109              | 57.5141                  | 0                   | 57.5141                       | 86.0758                    | 86.0758                         |
| 10           | 0.246361  | 25.5019     | -25.756                       | Estaca        | 400                 | 50                            | 253.268            | 377.737              | -18.6809                 | 0                   | -18.6809                      | 103.514                    | 103.514                         |

Global Minimum Query (spencer) - Safety Factor: 1.80407

| 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            | 0.400226  | 1.71047     | -51.4801                      | Aterro        | 20                  | 15                            | 12.4603            | 22.4792              | 9.2524                   | 0                   | 9.2524                        | 24.9059                    | 24.9059                         |
| 2            | 0.511165  | 6.54996     | -44.477                       | Aterro        | 20                  | 15                            | 13.6211            | 24.5733              | 17.068                   | 0                   | 17.068                        | 30.4426                    | 30.4426                         |
| 3            | 0.511165  | 10.9115     | -44.477                       | Aterro        | 20                  | 15                            | 14.3348            | 25.861               | 21.8735                  | 0                   | 21.8735                       | 35.949                     | 35.949                          |
| 4            | 0.525498  | 15.7319     | -44.0731                      | Aterro        | 20                  | 15                            | 15.0942            | 27.2311              | 26.9867                  | 0                   | 26.9867                       | 41.6003                    | 41.6003                         |
| 5            | 0.63594   | 24.3371     | -36.555                       | Aterro        | 20                  | 15                            | 16.6553            | 30.0474              | 37.4976                  | 0                   | 37.4976                       | 49.8467                    | 49.8467                         |
| 6            | 0.63594   | 29.4347     | -36.555                       | Aterro        | 20                  | 15                            | 17.4194            | 31.4259              | 42.6421                  | 0                   | 42.6421                       | 55.5577                    | 55.5577                         |
| 7            | 0.601224  | 32.5143     | -36.5402                      | Aterro        | 20                  | 15                            | 18.1645            | 32.7701              | 47.6587                  | 0                   | 47.6587                       | 61.1195                    | 61.1195                         |
| 8            | 0.392553  | 23.6866     | -36.5402                      | Aterro        | 20                  | 15                            | 18.7614            | 33.8468              | 51.677                   | 0                   | 51.677                        | 65.58                      | 65.58                           |
| 9            | 0.429695  | 28.1533     | -36.5402                      | Aterro        | 20                  | 15                            | 19.2552            | 34.7377              | 55.0018                  | 0                   | 55.0018                       | 69.2708                    | 69.2708                         |
| 10           | 0.25      | 25.662      | -36.5402                      | Estaca        | 400                 | 50                            | 266.835            | 481.389              | 68.2936                  | 0                   | 68.2936                       | 266.031                    | 266.031                         |

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 1.66035

| 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            | 0.529178  | 2.68158     | -48.4067                      | Aterro        | 20                  | 15                            | 13.6869            | 22.7251              | 10.17                    | 0                   | 10.17                         | 25.5896                    | 25.5896                         |
| 2            | 0.665404  | 10.7384     | -46.7064                      | Aterro        | 20                  | 15                            | 14.866             | 24.6827              | 17.4762                  | 0                   | 17.4762                       | 33.2551                    | 33.2551                         |
| 3            | 0.374559  | 9.37093     | -42.1038                      | Aterro        | 20                  | 15                            | 16.1994            | 26.8967              | 25.7386                  | 0                   | 25.7386                       | 40.3779                    | 40.3779                         |
| 4            | 0.374559  | 11.5262     | -42.1038                      | Aterro        | 20                  | 15                            | 16.9972            | 28.2212              | 30.682                   | 0                   | 30.682                        | 46.0421                    | 46.0421                         |
| 5            | 0.659731  | 25.2404     | -39.4148                      | Aterro        | 20                  | 15                            | 17.9741            | 29.8434              | 36.7359                  | 0                   | 36.7359                       | 51.5078                    | 51.5078                         |
| 6            | 0.742871  | 35.6994     | -39.4111                      | Aterro        | 20                  | 15                            | 18.7668            | 31.1594              | 41.6475                  | 0                   | 41.6475                       | 57.0688                    | 57.0688                         |
| 7            | 0.347446  | 19.3429     | -39.4111                      | Aterro        | 20                  | 15                            | 20.0875            | 33.3523              | 49.8317                  | 0                   | 49.8317                       | 66.3383                    | 66.3383                         |
| 8            | 0.347446  | 21.0292     | -39.4111                      | Aterro        | 20                  | 15                            | 22.2533            | 36.9483              | 63.2518                  | 0                   | 63.2518                       | 81.5381                    | 81.5381                         |
| 9            | 0.353112  | 23.1        | -39.4111                      | Aterro        | 20                  | 15                            | 26.0073            | 43.1812              | 86.5135                  | 0                   | 86.5135                       | 107.885                    | 107.885                         |
| 10           | 0.25      | 25.5996     | -39.4111                      | Estaca        | 400                 | 50                            | 220.394            | 365.93               | -28.5878                 | 0                   | -28.5878                      | 152.517                    | 152.517                         |

## Interslice Data

Global Minimum Query (bishop simplified) - Safety Factor: 1.61908

|  |
|--|
|  |
|--|

| Slice Number | X coordinate [m] | Y coordinate - Bottom [m] | Interslice Normal Force [kN] | Interslice Shear Force [kN] | Interslice Force Angle [degrees] |
|--------------|------------------|---------------------------|------------------------------|-----------------------------|----------------------------------|
| 1            | 5.76543          | 14.2                      | 0                            | 0                           | 0                                |
| 2            | 6.11799          | 13.8388                   | -1.65816                     | 0                           | 0                                |
| 3            | 6.47055          | 13.4775                   | -1.72594                     | 0                           | 0                                |
| 4            | 6.94626          | 12.9901                   | 0.703219                     | 0                           | 0                                |
| 5            | 7.41437          | 12.5105                   | 5.92007                      | 0                           | 0                                |
| 6            | 7.88249          | 12.0308                   | 13.9407                      | 0                           | 0                                |
| 7            | 8.4036           | 11.4969                   | 26.1671                      | 0                           | 0                                |
| 8            | 8.87252          | 11.0165                   | 40.1388                      | 0                           | 0                                |
| 9            | 9.34143          | 10.536                    | 56.9237                      | 0                           | 0                                |
| 10           | 9.75423          | 10.113                    | 74.068                       | 0                           | 0                                |
| 11           | 10               | 10                        | 0                            | 0                           | 0                                |

Global Minimum Query (janbu simplified) - Safety Factor: 1.49145

| Slice Number | X coordinate [m] | Y coordinate - Bottom [m] | Interslice Normal Force [kN] | Interslice Shear Force [kN] | Interslice Force Angle [degrees] |
|--------------|------------------|---------------------------|------------------------------|-----------------------------|----------------------------------|
| 1            | 6.36142          | 14.2                      | 0                            | 0                           | 0                                |
| 2            | 6.67216          | 13.8261                   | -2.32511                     | 0                           | 0                                |
| 3            | 6.9829           | 13.4522                   | -2.98767                     | 0                           | 0                                |
| 4            | 7.17654          | 13.2192                   | -2.55972                     | 0                           | 0                                |
| 5            | 7.6128           | 12.6942                   | 0.769894                     | 0                           | 0                                |
| 6            | 8.10978          | 12.0964                   | 8.55302                      | 0                           | 0                                |
| 7            | 8.60675          | 11.4985                   | 20.5863                      | 0                           | 0                                |
| 8            | 9.08078          | 10.9283                   | 36.0244                      | 0                           | 0                                |
| 9            | 9.41721          | 10.5236                   | 49.3271                      | 0                           | 0                                |
| 10           | 9.75364          | 10.1189                   | 64.6162                      | 0                           | 0                                |
| 11           | 10               | 10                        | 0                            | 0                           | 0                                |

Global Minimum Query (spencer) - Safety Factor: 1.80407

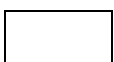
| Slice Number | X coordinate [m] | Y coordinate - Bottom [m] | Interslice Normal Force [kN] | Interslice Shear Force [kN] | Interslice Force Angle [degrees] |
|--------------|------------------|---------------------------|------------------------------|-----------------------------|----------------------------------|
| 1            | 5.10659          | 14.2                      | 0                            | 0                           | 0                                |
| 2            | 5.50682          | 13.6972                   | -0.334859                    | -0.253024                   | 37.0752                          |
| 3            | 6.01799          | 13.1953                   | 1.26923                      | 0.959044                    | 37.0751                          |
| 4            | 6.52915          | 12.6934                   | 4.92048                      | 3.71797                     | 37.0751                          |
| 5            | 7.05465          | 12.1846                   | 10.7184                      | 8.09894                     | 37.0751                          |
| 6            | 7.69059          | 11.7131                   | 17.8073                      | 13.4554                     | 37.0751                          |
| 7            | 8.32653          | 11.2416                   | 26.8359                      | 20.2775                     | 37.0751                          |
| 8            | 8.92775          | 10.796                    | 37.1486                      | 28.0699                     | 37.0751                          |
| 9            | 9.32031          | 10.5051                   | 44.8166                      | 33.864                      | 37.0752                          |
| 10           | 9.75             | 10.1867                   | 54.0566                      | 40.8458                     | 37.0751                          |
| 11           | 10               | 10.0015                   | 0                            | 0                           | 0                                |

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 1.66035

| Slice Number | X coordinate [m] | Y coordinate - Bottom [m] | Interslice Normal Force [kN] | Interslice Shear Force [kN] | Interslice Force Angle [degrees] |
|--------------|------------------|---------------------------|------------------------------|-----------------------------|----------------------------------|
| 1            | 5.35569          | 14.2                      | 0                            | 0                           | 0                                |
| 2            | 5.88487          | 13.6038                   | -1.19199                     | -0.514672                   | 23.3535                          |
| 3            | 6.55028          | 12.8976                   | 1.24224                      | 1.10676                     | 41.6991                          |
| 4            | 6.92484          | 12.5591                   | 3.87653                      | 4.17085                     | 47.0946                          |
| 5            | 7.29939          | 12.2206                   | 7.88476                      | 9.40026                     | 50.0107                          |
| 6            | 7.95913          | 11.6784                   | 15.9246                      | 19.2708                     | 50.4311                          |
| 7            | 8.702            | 11.068                    | 27.3832                      | 25.9669                     | 43.4793                          |
| 8            | 9.04944          | 10.7824                   | 34.6194                      | 25.581                      | 36.4615                          |
| 9            | 9.39689          | 10.4969                   | 44.9334                      | 21.9696                     | 26.0557                          |
| 10           | 9.75             | 10.2068                   | 60.8375                      | 12.6185                     | 11.7178                          |
| 11           | 10               | 10.0013                   | 0                            | 0                           | 0                                |

## List Of Coordinates

### Distributed Load



| X    | Y    |
|------|------|
| 0    | 14.2 |
| 9.75 | 14.2 |

#### External Boundary

| X    | Y        |
|------|----------|
| 0    | 14.2     |
| 0    | 10       |
| 0    | 4        |
| 0    | 0        |
| 0    | -10.0862 |
| 20   | -10.0862 |
| 20   | 0        |
| 20   | 4        |
| 20   | 10       |
| 10   | 10       |
| 10   | 12.25    |
| 10   | 14.2     |
| 9.75 | 14.2     |

#### Material Boundary

| X  | Y   |
|----|-----|
| 10 | 6.2 |
| 10 | 10  |

#### Material Boundary

| X    | Y    |
|------|------|
| 9.75 | 6.2  |
| 9.75 | 10   |
| 9.75 | 14.2 |

#### Material Boundary

| X    | Y    |
|------|------|
| 9.75 | 6.2  |
| 9.75 | 4    |
| 9.75 | 0    |
| 9.75 | -3.8 |
| 10   | -3.8 |
| 10   | 0    |
| 10   | 4    |
| 10   | 6.2  |

#### Material Boundary

| X    | Y  |
|------|----|
| 0    | 10 |
| 9.75 | 10 |

#### Material Boundary

| X    | Y |
|------|---|
| 0    | 4 |
| 9.75 | 4 |

#### Material Boundary

| X  | Y |
|----|---|
| 10 | 4 |
| 20 | 4 |