SLOPE/W Analysis

File Information

File Version: 8.16
Created By: Steve Jones
Last Edited By: Steve Jones
Revision Number: 15
Date: 08/07/2022
Time: 08:05:12
Tool Version: 8.16.3.15721
File Name: Plot 1 - Section C-CC - Basal Subgrade1 in 5.gsz
Directory: S:\2022 Projects\167-22-696 Lower Hare Farm, Exeter\Reports\Current Reports\Slope W\
Last Solved Date: 08/07/2022
Last Solved Time: 08:05:14

Project Settings

Length(L) Units: Meters
Time(t) Units: Seconds
Force(F) Units: Kilonewtons
Pressure(p) Units: kPa
Strength Units: kPa
Unit Weight of Water: 9.807 kN/m³
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Bishop
Settings
PWP Conditions Source: Piezometric Line
Apply Phreatic Correction: No
Use Staged Rapid Drawdown: No
Slip Surface
Direction of movement: Left to Right
Use Passive Mode: No
Slip Surface Option: Grid and Radius
Critical slip surfaces saved: 1
Resisting Side Maximum Convex Angle: 1 °
Driving Side Maximum Convex Angle: 5 °
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 m

Materials

Ashton Mudstone Member (Clay)

Model: Mohr-Coulomb
Unit Weight: 20 kN/m³

Cohesion': 0 kPa
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Engineered Fill

Model: Mohr-Coulomb
Unit Weight: 20 kN/m³
Cohesion': 0 kPa
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Slip Surface Grid

Upper Left: (4.33051, 258.86256) m
Lower Left: (4.6401, 143.59306) m
Lower Right: (207.10988, 108.91934) m
Grid Horizontal Increment: 20
Grid Vertical Increment: 20
Left Projection Angle: 0 °
Right Projection Angle: 0 °

Slip Surface Radius

Upper Left Coordinate: (4, 130) m
Upper Right Coordinate: (208, 94) m
Lower Left Coordinate: (0, 80) m
Lower Right Coordinate: (201, 51) m
Number of Increments: 10

Left Projection: No
Left Projection Angle: 135 °
Right Projection: No
Right Projection Angle: 45 °

Slip Surface Limits

Left Coordinate: (0, 134.73) m
Right Coordinate: (290, 116.74) m

Piezometric Lines

Piezometric Line 1

Coordinates

	X (m)	Y (m)
Coordinate 1	0	129.73
Coordinate 2	205	92
Coordinate 3	270	111.44
Coordinate 4	290	111.74

Points

	X (m)	Y (m)
Point 1	0	134.73
Point 2	10	132.838
Point 3	20	130.722

Point 4	30	128.87
Point 5	40	127.552
Point 6	50	126.28
Point 7	60	124.362
Point 8	70	122.048
Point 9	80	120.398
Point 10	90	118.936
Point 11	100	117.783
Point 12	110	116.326
Point 13	120	114.747
Point 14	130	113.146
Point 15	140	111.236
Point 16	150	110.216
Point 17	176	108
Point 18	170	108.948
Point 19	180	107.012
Point 20	190	102.868
Point 21	200	99.02
Point 22	210	98.728
Point 23	220	103.011
Point 24	205	97
Point 25	230	104.528
Point 26	240	107.438
Point 27	250	110.499
Point 28	260	113.597

Point 29	270	116.44
Point 30	274.813	116.74
Point 31	290	116.74
Point 32	290	85
Point 33	0	85
Point 34	0	129.73
Point 35	205	92
Point 36	270	111.44
Point 37	290	111.74

Regions

	Material	Points	Area (m²)
Region 1	Ashton Mudstone Member (Clay)	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,18,17,19,20,21,24,22,23,25,26,27,28,29,30,31,32,33	8,738.5
Region 2	Engineered Fill	17,25,23,22,24,21,20,19	223.63

Current Slip Surface

Slip Surface: 4,262
F of S: 2.264
Volume: 2,417.5818 m³
Weight: 48,351.635 kN
Resisting Moment: 2,117,551.9 kN-m
Activating Moment: 935,473.38 kN-m
F of S Rank (Analysis): 1 of 4,851 slip surfaces

F of S Rank (Query): 1 of 4,851 slip surfaces
Exit: (154.1322, 109.95402) m
Entry: (1.663031, 134.41535) m
Radius: 135.16989 m
Center: (95.47287, 231.73244) m

Slip Slices

	X (m)	Y (m)	PWP (kPa)	Base Normal Stress (kPa)	Frictional Strength (kPa)	Cohesive Strength (kPa)
Slice 1	5.153277	131.27726	-24.475493	41.811003	19.496791	0
Slice 2	9.3217615	127.57817	4.2775721	92.697575	41.230925	0
Slice 3	12.5	125.07236	23.115351	127.93573	48.878548	0
Slice 4	17.5	121.36141	50.483811	179.07797	59.964442	0
Slice 5	22.5	117.99134	74.509338	225.41043	70.366333	0
Slice 6	27.5	114.93251	95.482398	267.40038	80.166669	0
Slice 7	32.5	112.16097	113.63802	306.65112	90.003488	0
Slice 8	37.5	109.6571	129.16867	343.5192	99.953296	0
Slice 9	42.5	107.40468	142.23333	376.06355	109.03682	0
Slice 10	47.5	105.39023	152.96422	404.48252	117.28491	0
Slice 11	52.5	103.6025	161.47163	425.70492	123.21401	0
Slice 12	57.5	102.03211	167.84768	439.78742	126.80758	0
Slice 13	62.5	100.67121	172.16914	447.95343	128.60033	0
Slice 14	67.5	99.513341	174.49954	450.24596	128.58267	0
Slice 15	72.5	98.55319	174.89091	451.8066	129.12791	0
Slice 16	77.5	97.7865	173.38501	452.75811	130.27381	0
Slice 17	82.5	97.209959	170.01431	450.87154	130.96588	0
Slice 18	87.5	96.821125	164.80278	446.18211	131.20934	0

Slice 19	92.5	96.618376	157.76631	439.31142	131.28664	0
Slice 20	97.5	96.600872	148.91313	430.277	131.20213	0
Slice 21	102.5	96.768542	138.24397	415.98302	129.51184	0
Slice 22	107.5	97.122078	125.752	396.34366	126.17896	0
Slice 23	112.5	97.662953	111.42281	372.18795	121.59678	0
Slice 24	117.5	98.39345	95.233996	343.41128	115.72697	0
Slice 25	122.5	99.316711	77.154738	310.40783	108.7677	0
Slice 26	127.5	100.43681	57.145095	273.03693	100.67201	0
Slice 27	132.43235	101.7382	35.479693	230.27298	90.833602	0
Slice 28	137.29704	103.22136	12.153648	182.00496	79.202965	0
Slice 29	139.8647	104.06002	-0.705593	155.14877	72.347061	0
Slice 30	142.5	105.03501	-15.023926	128.76516	60.044181	0
Slice 31	147.5	107.00577	-43.376047	75.819353	35.355145	0
Slice 32	152.0661	109.00131	-71.18791	23.948855	11.167534	0

SLOPE/W Analysis

File Information

File Version: 8.16
Created By: Steve Jones
Last Edited By: Steve Jones
Revision Number: 15
Date: 08/07/2022
Time: 08:15:43
Tool Version: 8.16.3.15721
File Name: Plot 2 - Section C-CC - Basal Subgrade1 in 3.gsz
Directory: S:\2022 Projects\167-22-696 Lower Hare Farm, Exeter\Reports\Current Reports\Slope W\
Last Solved Date: 08/07/2022
Last Solved Time: 08:15:44

Project Settings

Length(L) Units: Meters
Time(t) Units: Seconds
Force(F) Units: Kilonewtons
Pressure(p) Units: kPa
Strength Units: kPa
Unit Weight of Water: 9.807 kN/m³
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Bishop
Settings
PWP Conditions Source: Piezometric Line
Apply Phreatic Correction: No
Use Staged Rapid Drawdown: No
Slip Surface
Direction of movement: Right to Left
Use Passive Mode: No
Slip Surface Option: Grid and Radius
Critical slip surfaces saved: 1
Resisting Side Maximum Convex Angle: 1 °
Driving Side Maximum Convex Angle: 5 °
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 m

Materials

Ashton Mudstone Member (Clay)

Model: Mohr-Coulomb
Unit Weight: 20 kN/m³

Cohesion': 0 kPa
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Engineered Fill

Model: Mohr-Coulomb
Unit Weight: 20 kN/m³
Cohesion': 0 kPa
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Slip Surface Grid

Upper Left: (183, 186) m
Lower Left: (211, 102) m
Lower Right: (292, 125) m
Grid Horizontal Increment: 10
Grid Vertical Increment: 10
Left Projection Angle: 0 °
Right Projection Angle: 0 °

Slip Surface Radius

Upper Left Coordinate: (214, 96) m
Upper Right Coordinate: (291, 119) m
Lower Left Coordinate: (227, 63) m
Lower Right Coordinate: (302, 85) m
Number of Increments: 10

Left Projection: No
Left Projection Angle: 135 °
Right Projection: No
Right Projection Angle: 45 °

Slip Surface Limits

Left Coordinate: (0, 134.73) m
Right Coordinate: (290, 116.74) m

Piezometric Lines

Piezometric Line 1

Coordinates

	X (m)	Y (m)
Coordinate 1	0	129.73
Coordinate 2	205	92
Coordinate 3	270	111.44
Coordinate 4	290	111.74

Points

	X (m)	Y (m)
Point 1	0	134.73
Point 2	10	132.838
Point 3	20	130.722

Point 4	30	128.87
Point 5	40	127.552
Point 6	50	126.28
Point 7	60	124.362
Point 8	70	122.048
Point 9	80	120.398
Point 10	90	118.936
Point 11	100	117.783
Point 12	110	116.326
Point 13	120	114.747
Point 14	130	113.146
Point 15	140	111.236
Point 16	150	110.216
Point 17	176	108
Point 18	170	108.948
Point 19	180	107.012
Point 20	190	102.868
Point 21	200	99.02
Point 22	210	98.728
Point 23	220	103.011
Point 24	205	97
Point 25	230	104.528
Point 26	240	107.438
Point 27	250	110.499
Point 28	260	113.597

Point 29	270	116.44
Point 30	274.813	116.74
Point 31	290	116.74
Point 32	290	85
Point 33	0	85
Point 34	0	129.73
Point 35	205	92
Point 36	270	111.44
Point 37	290	111.74

Regions

	Material	Points	Area (m²)
Region 1	Ashton Mudstone Member (Clay)	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,18,17,19,20,21,24,22,23,25,26,27,28,29,30,31,32,33	8,738.5
Region 2	Engineered Fill	17,25,23,22,24,21,20,19	223.63

Current Slip Surface

Slip Surface: 782
F of S: 1.630
Volume: 97.808036 m³
Weight: 1,956.1607 kN
Resisting Moment: 52,496.479 kN-m
Activating Moment: 32,205.468 kN-m
F of S Rank (Analysis): 1 of 1,331 slip surfaces

F of S Rank (Query): 1 of 1,331 slip surfaces
Exit: (231.17523, 104.86999) m
Entry: (269.96384, 116.42972) m
Radius: 59.135148 m
Center: (234.7, 163.9) m

Slip Slices

	X (m)	Y (m)	PWP (kPa)	Base Normal Stress (kPa)	Frictional Strength (kPa)	Cohesive Strength (kPa)
Slice 1	231.80557	104.8391	-47.29105	4.3473213	2.0271892	0
Slice 2	233.06625	104.79079	-43.1196	12.690126	5.917503	0
Slice 3	234.32694	104.76939	-39.212101	20.391778	9.508842	0
Slice 4	235.58762	104.77487	-35.568266	27.464558	12.806934	0
Slice 5	236.8483	104.80725	-32.188167	33.919475	15.816911	0
Slice 6	238.10898	104.86657	-29.07224	39.766343	18.54335	0
Slice 7	239.36966	104.9529	-26.221283	45.013866	20.990311	0
Slice 8	240.625	105.06578	-23.646283	49.835799	23.238815	0
Slice 9	241.875	105.20512	-21.346512	54.240651	25.292831	0
Slice 10	243.125	105.37149	-19.311777	58.071547	27.079207	0
Slice 11	244.375	105.56512	-17.544346	61.3332	28.600141	0
Slice 12	245.625	105.78627	-16.046893	64.029468	29.857431	0
Slice 13	246.875	106.03527	-14.822514	66.163374	30.852488	0
Slice 14	248.125	106.31247	-13.874753	67.737133	31.586344	0
Slice 15	249.375	106.61829	-13.20763	68.752164	32.059661	0
Slice 16	250.625	106.95319	-12.825666	69.251923	32.292702	0
Slice 17	251.875	107.31768	-12.733928	69.235454	32.285022	0
Slice 18	253.125	107.71235	-12.938069	68.65872	32.016087	0

Slice 19	254.375	108.13782	-13.444372	67.519992	31.485089	0
Slice 20	255.625	108.59481	-14.259818	65.816739	30.69085	0
Slice 21	256.875	109.08412	-15.392143	63.545624	29.631811	0
Slice 22	258.125	109.60661	-16.849919	60.702476	28.306029	0
Slice 23	259.375	110.16326	-18.642647	57.282276	26.711164	0
Slice 24	260.62274	110.754	-20.776353	53.008748	24.718385	0
Slice 25	261.86822	111.37989	-23.261392	47.883303	22.328351	0
Slice 26	263.1137	112.04324	-26.113852	42.173143	19.66566	0
Slice 27	264.35918	112.74552	-29.348041	35.869956	16.726435	0
Slice 28	265.60466	113.48835	-32.979928	28.964482	13.50636	0
Slice 29	266.85014	114.27356	-37.027389	21.446481	10.000658	0
Slice 30	268.09562	115.10319	-41.510508	13.304714	6.2040901	0
Slice 31	269.3411	115.97955	-46.451941	4.526926	2.1109403	0

SLOPE/W Analysis

File Information

File Version: 8.16
Created By: Steve Jones
Last Edited By: Steve Jones
Revision Number: 21
Date: 08/07/2022
Time: 08:22:56
Tool Version: 8.16.3.15721
File Name: Plot 3 - Section C-CC - Side Subgrade EF 1 in 3.gsz
Directory: S:\2022 Projects\167-22-696 Lower Hare Farm, Exeter\Reports\Current Reports\Slope W\
Last Solved Date: 08/07/2022
Last Solved Time: 08:22:58

Project Settings

Length(L) Units: Meters
Time(t) Units: Seconds
Force(F) Units: Kilonewtons
Pressure(p) Units: kPa
Strength Units: kPa
Unit Weight of Water: 9.807 kN/m³
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Bishop
Settings
PWP Conditions Source: Piezometric Line
Apply Phreatic Correction: No
Use Staged Rapid Drawdown: No
Slip Surface
Direction of movement: Left to Right
Use Passive Mode: No
Slip Surface Option: Grid and Radius
Critical slip surfaces saved: 1
Resisting Side Maximum Convex Angle: 1 °
Driving Side Maximum Convex Angle: 5 °
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 m

Materials

Ashton Mudstone Member (Clay)

Model: Mohr-Coulomb
Unit Weight: 20 kN/m³

Cohesion': 0 kPa
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Engineered Fill

Model: Mohr-Coulomb
Unit Weight: 20 kN/m³
Cohesion': 0 kPa
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Slip Surface Grid

Upper Left: (50.19236, 146.94405) m
Lower Left: (164.92581, 107.52907) m
Lower Right: (203.69582, 211.15465) m
Grid Horizontal Increment: 15
Grid Vertical Increment: 15
Left Projection Angle: 0 °
Right Projection Angle: 0 °

Slip Surface Radius

Upper Left Coordinate: (52.36615, 134.35515) m
Upper Right Coordinate: (134.06268, 106.82437) m
Lower Left Coordinate: (38.09315, 104.43559) m
Lower Right Coordinate: (120.32715, 76.18818) m
Number of Increments: 10

Left Projection: No
Left Projection Angle: 135 °
Right Projection: No
Right Projection Angle: 45 °

Slip Surface Limits

Left Coordinate: (0, 134.73) m
Right Coordinate: (290, 116.74) m

Piezometric Lines

Piezometric Line 1

Coordinates

	X (m)	Y (m)
Coordinate 1	0	129.73
Coordinate 2	205	92
Coordinate 3	270	111.44
Coordinate 4	290	111.74

Points

	X (m)	Y (m)
Point 1	0	134.73
Point 2	10	132.838
Point 3	20	130.722

Point 4	30	128.87
Point 5	40	127.552
Point 6	50	126.28
Point 7	60	124.362
Point 8	70	122.048
Point 9	80	120.398
Point 10	90	118.936
Point 11	100	117.783
Point 12	110	116.326
Point 13	120	114.747
Point 14	130	113.146
Point 15	140	111.236
Point 16	150	110.216
Point 17	176	108
Point 18	170	108.948
Point 19	180	107.012
Point 20	190	102.868
Point 21	200	99.02
Point 22	210	98.728
Point 23	220	103.011
Point 24	205	97
Point 25	230	104.528
Point 26	240	107.438
Point 27	250	110.499
Point 28	260	113.597

Point 29	270	116.44
Point 30	274.813	116.74
Point 31	290	116.74
Point 32	290	85
Point 33	0	85
Point 34	0	129.73
Point 35	205	92
Point 36	270	111.44
Point 37	290	111.74
Point 38	80	126.589
Point 39	98.573	120.398
Point 40	111.521	116.085
Point 41	89.08689	119.0695

Regions

	Material	Points	Area (m^2)
Region 1	Ashton Mudstone Member (Clay)	1,2,3,4,5,6,7,8,9,41,10,11,12,40,13,14,15,16,18,17,19,20,21,24,22,23,25,26,27,28,29,30,31,32,33	8,738.5
Region 2	Engineered Fill	17,25,23,22,24,21,20,19	223.63
Region 3	Engineered Fill	1,38,39,40,12,11,41,9,8,7,6,5,4,3,2	347.34

Current Slip Surface

Slip Surface: 1,706
F of S: 1.421
Volume: 33.811313 m³
Weight: 676.22625 kN
Resisting Moment: 27,668.317 kN-m
Activating Moment: 19,474.494 kN-m
F of S Rank (Analysis): 1 of 2,816 slip surfaces
F of S Rank (Query): 1 of 2,816 slip surfaces
Exit: (113.04167, 115.84504) m
Entry: (80.088902, 126.55937) m
Radius: 92.043259 m
Center: (124.51708, 207.17015) m

Slip Slices

	X (m)	Y (m)	PWP (kPa)	Base Normal Stress (kPa)	Frictional Strength (kPa)	Cohesive Strength (kPa)
Slice 1	80.632552	126.26448	-111.55271	1.9298281	0.89989363	0
Slice 2	81.719852	125.68407	-107.82312	5.6577861	2.638269	0
Slice 3	82.807152	125.12217	-104.27511	9.1035371	4.2450491	0
Slice 4	83.894452	124.5784	-100.90496	12.268586	5.7209356	0
Slice 5	84.981751	124.05242	-97.709188	15.15432	7.0665753	0
Slice 6	86.069051	123.54388	-94.684493	17.762009	8.2825606	0
Slice 7	87.156351	123.05247	-91.827777	20.092806	9.3694291	0
Slice 8	88.243651	122.57789	-89.13611	22.147748	10.327664	0
Slice 9	89.330951	122.11986	-86.606729	23.927756	11.157696	0
Slice 10	90.418251	121.67811	-84.237025	25.433637	11.8599	0
Slice 11	91.505551	121.25239	-82.024535	26.666081	12.434598	0
Slice 12	92.592851	120.84247	-79.966932	27.625664	12.882059	0

Slice 13	93.68015	120.44811	-78.062019	28.312848	13.202498	0
Slice 14	94.76745	120.06911	-76.307723	28.727982	13.396078	0
Slice 15	95.85475	119.70527	-74.702084	28.871299	13.462908	0
Slice 16	96.94205	119.3564	-73.243255	28.742918	13.403043	0
Slice 17	98.02935	119.02232	-71.929492	28.342845	13.216486	0
Slice 18	99.102264	118.70691	-70.77278	27.685603	12.910009	0
Slice 19	100.16079	118.40962	-69.767903	26.778187	12.486874	0
Slice 20	101.21932	118.12591	-68.896163	25.612675	11.943387	0
Slice 21	102.27785	117.85565	-68.156289	24.188652	11.279353	0
Slice 22	103.33638	117.59871	-67.547087	22.505591	10.494529	0
Slice 23	104.39491	117.35498	-67.067437	20.562862	9.5886203	0
Slice 24	105.45344	117.12435	-66.716285	18.359726	8.5612807	0
Slice 25	106.51196	116.90672	-66.492648	15.89533	7.4121141	0
Slice 26	107.57049	116.70201	-66.395604	13.168713	6.1406717	0
Slice 27	108.57482	116.51932	-66.416749	10.34417	4.8235656	0
Slice 28	109.52494	116.35735	-66.543214	7.4474185	3.4727883	0
Slice 29	110.7605	116.16396	-66.876833	3.322441	1.5492797	0
Slice 30	112.28134	115.94702	-67.494345	0.34479362	0.1607799	0

SLOPE/W Analysis

File Information

File Version: 8.16
Created By: Steve Jones
Last Edited By: Steve Jones
Revision Number: 15
Date: 08/07/2022
Time: 08:15:43
Tool Version: 8.16.3.15721
File Name: Plot 4 - Section C-CC - Side Subgrade Nat 1 in 3.gsz
Directory: S:\2022 Projects\167-22-696 Lower Hare Farm, Exeter\Reports\Current Reports\Slope W\
Last Solved Date: 08/07/2022
Last Solved Time: 08:15:44

Project Settings

Length(L) Units: Meters
Time(t) Units: Seconds
Force(F) Units: Kilonewtons
Pressure(p) Units: kPa
Strength Units: kPa
Unit Weight of Water: 9.807 kN/m³
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Bishop
Settings
PWP Conditions Source: Piezometric Line
Apply Phreatic Correction: No
Use Staged Rapid Drawdown: No
Slip Surface
Direction of movement: Right to Left
Use Passive Mode: No
Slip Surface Option: Grid and Radius
Critical slip surfaces saved: 1
Resisting Side Maximum Convex Angle: 1 °
Driving Side Maximum Convex Angle: 5 °
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 m

Materials

Ashton Mudstone Member (Clay)

Model: Mohr-Coulomb
Unit Weight: 20 kN/m³

Cohesion': 0 kPa
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Engineered Fill

Model: Mohr-Coulomb
Unit Weight: 20 kN/m³
Cohesion': 0 kPa
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Slip Surface Grid

Upper Left: (183, 186) m
Lower Left: (211, 102) m
Lower Right: (292, 125) m
Grid Horizontal Increment: 10
Grid Vertical Increment: 10
Left Projection Angle: 0 °
Right Projection Angle: 0 °

Slip Surface Radius

Upper Left Coordinate: (214, 96) m
Upper Right Coordinate: (291, 119) m
Lower Left Coordinate: (227, 63) m
Lower Right Coordinate: (302, 85) m
Number of Increments: 10

Left Projection: No
Left Projection Angle: 135 °
Right Projection: No
Right Projection Angle: 45 °

Slip Surface Limits

Left Coordinate: (0, 134.73) m
Right Coordinate: (290, 116.74) m

Piezometric Lines

Piezometric Line 1

Coordinates

	X (m)	Y (m)
Coordinate 1	0	129.73
Coordinate 2	205	92
Coordinate 3	270	111.44
Coordinate 4	290	111.74

Points

	X (m)	Y (m)
Point 1	0	134.73
Point 2	10	132.838
Point 3	20	130.722

Point 4	30	128.87
Point 5	40	127.552
Point 6	50	126.28
Point 7	60	124.362
Point 8	70	122.048
Point 9	80	120.398
Point 10	90	118.936
Point 11	100	117.783
Point 12	110	116.326
Point 13	120	114.747
Point 14	130	113.146
Point 15	140	111.236
Point 16	150	110.216
Point 17	176	108
Point 18	170	108.948
Point 19	180	107.012
Point 20	190	102.868
Point 21	200	99.02
Point 22	210	98.728
Point 23	220	103.011
Point 24	205	97
Point 25	230	104.528
Point 26	240	107.438
Point 27	250	110.499
Point 28	260	113.597

Point 29	270	116.44
Point 30	274.813	116.74
Point 31	290	116.74
Point 32	290	85
Point 33	0	85
Point 34	0	129.73
Point 35	205	92
Point 36	270	111.44
Point 37	290	111.74

Regions

	Material	Points	Area (m²)
Region 1	Ashton Mudstone Member (Clay)	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,18,17,19,20,21,24,22,23,25,26,27,28,29,30,31,32,33	8,738.5
Region 2	Engineered Fill	17,25,23,22,24,21,20,19	223.63

Current Slip Surface

Slip Surface: 782
F of S: 1.630
Volume: 97.808036 m³
Weight: 1,956.1607 kN
Resisting Moment: 52,496.479 kN-m
Activating Moment: 32,205.468 kN-m
F of S Rank (Analysis): 1 of 1,331 slip surfaces

F of S Rank (Query): 1 of 1,331 slip surfaces
Exit: (231.17523, 104.86999) m
Entry: (269.96384, 116.42972) m
Radius: 59.135148 m
Center: (234.7, 163.9) m

Slip Slices

	X (m)	Y (m)	PWP (kPa)	Base Normal Stress (kPa)	Frictional Strength (kPa)	Cohesive Strength (kPa)
Slice 1	231.80557	104.8391	-47.29105	4.3473213	2.0271892	0
Slice 2	233.06625	104.79079	-43.1196	12.690126	5.917503	0
Slice 3	234.32694	104.76939	-39.212101	20.391778	9.508842	0
Slice 4	235.58762	104.77487	-35.568266	27.464558	12.806934	0
Slice 5	236.8483	104.80725	-32.188167	33.919475	15.816911	0
Slice 6	238.10898	104.86657	-29.07224	39.766343	18.54335	0
Slice 7	239.36966	104.9529	-26.221283	45.013866	20.990311	0
Slice 8	240.625	105.06578	-23.646283	49.835799	23.238815	0
Slice 9	241.875	105.20512	-21.346512	54.240651	25.292831	0
Slice 10	243.125	105.37149	-19.311777	58.071547	27.079207	0
Slice 11	244.375	105.56512	-17.544346	61.3332	28.600141	0
Slice 12	245.625	105.78627	-16.046893	64.029468	29.857431	0
Slice 13	246.875	106.03527	-14.822514	66.163374	30.852488	0
Slice 14	248.125	106.31247	-13.874753	67.737133	31.586344	0
Slice 15	249.375	106.61829	-13.20763	68.752164	32.059661	0
Slice 16	250.625	106.95319	-12.825666	69.251923	32.292702	0
Slice 17	251.875	107.31768	-12.733928	69.235454	32.285022	0
Slice 18	253.125	107.71235	-12.938069	68.65872	32.016087	0

Slice 19	254.375	108.13782	-13.444372	67.519992	31.485089	0
Slice 20	255.625	108.59481	-14.259818	65.816739	30.69085	0
Slice 21	256.875	109.08412	-15.392143	63.545624	29.631811	0
Slice 22	258.125	109.60661	-16.849919	60.702476	28.306029	0
Slice 23	259.375	110.16326	-18.642647	57.282276	26.711164	0
Slice 24	260.62274	110.754	-20.776353	53.008748	24.718385	0
Slice 25	261.86822	111.37989	-23.261392	47.883303	22.328351	0
Slice 26	263.1137	112.04324	-26.113852	42.173143	19.66566	0
Slice 27	264.35918	112.74552	-29.348041	35.869956	16.726435	0
Slice 28	265.60466	113.48835	-32.979928	28.964482	13.50636	0
Slice 29	266.85014	114.27356	-37.027389	21.446481	10.000658	0
Slice 30	268.09562	115.10319	-41.510508	13.304714	6.2040901	0
Slice 31	269.3411	115.97955	-46.451941	4.526926	2.1109403	0

SLOPE/W Analysis

File Information

File Version: 8.16
Created By: Steve Jones
Last Edited By: Steve Jones
Revision Number: 27
Date: 08/07/2022
Time: 08:46:44
Tool Version: 8.16.3.15721
File Name: Plot 5 - Section C-CC - Basal Liner.gsz
Directory: S:\2022 Projects\167-22-696 Lower Hare Farm, Exeter\Reports\Current Reports\Slope W\
Last Solved Date: 08/07/2022
Last Solved Time: 08:46:46

Project Settings

Length(L) Units: Meters
Time(t) Units: Seconds
Force(F) Units: Kilonewtons
Pressure(p) Units: kPa
Strength Units: kPa
Unit Weight of Water: 9.807 kN/m³
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Bishop
Settings
PWP Conditions Source: Piezometric Line
Apply Phreatic Correction: No
Use Staged Rapid Drawdown: No
Slip Surface
Direction of movement: Left to Right
Use Passive Mode: No
Slip Surface Option: Grid and Radius
Critical slip surfaces saved: 1
Resisting Side Maximum Convex Angle: 1 °
Driving Side Maximum Convex Angle: 5 °
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 m

Materials

Ashton Mudstone Member (Clay)

Model: Mohr-Coulomb
Unit Weight: 20 kN/m³

Cohesion': 0 kPa
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Engineered Fill

Model: Mohr-Coulomb
Unit Weight: 20 kN/m³
Cohesion': 0 kPa
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Geological Barrier

Model: Mohr-Coulomb
Unit Weight: 20 kN/m³
Cohesion': 0 kPa
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Slip Surface Grid

Upper Left: (51, 129) m
Lower Left: (246, 106) m
Lower Right: (269, 226) m
Grid Horizontal Increment: 20
Grid Vertical Increment: 20
Left Projection Angle: 0 °
Right Projection Angle: 0 °

Slip Surface Radius

Upper Left Coordinate: (52, 123) m
Upper Right Coordinate: (245, 99) m
Lower Left Coordinate: (42, 73) m
Lower Right Coordinate: (235, 49) m
Number of Increments: 20
Left Projection: No
Left Projection Angle: 135 °
Right Projection: No
Right Projection Angle: 45 °

Slip Surface Limits

Left Coordinate: (0, 134.73) m
Right Coordinate: (290, 116.74) m

Piezometric Lines

Piezometric Line 1

Coordinates

	X (m)	Y (m)
Coordinate 1	0	129.73
Coordinate 2	205	92
Coordinate 3	270	111.44
Coordinate 4	290	111.74

Points

	X (m)	Y (m)
Point 1	0	134.73
Point 2	10	132.838
Point 3	20	130.722
Point 4	30	128.87
Point 5	40	127.552
Point 6	50	126.28
Point 7	60	124.362
Point 8	70	122.048
Point 9	80	120.398
Point 10	90	118.936
Point 11	100	117.783
Point 12	110	116.326
Point 13	120	114.747
Point 14	130	113.146
Point 15	140	111.236
Point 16	150	110.216
Point 17	176	108
Point 18	170	108.948
Point 19	180	107.012
Point 20	190	102.868
Point 21	200	99.02
Point 22	210	98.728

Point 23	220	103.011
Point 24	205	97
Point 25	230	104.528
Point 26	240	107.438
Point 27	250	110.499
Point 28	260	113.597
Point 29	270	116.44
Point 30	274.813	116.74
Point 31	290	116.74
Point 32	290	85
Point 33	0	85
Point 34	0	129.73
Point 35	205	92
Point 36	270	111.44
Point 37	290	111.74
Point 38	80	126.589
Point 39	98.573	120.398
Point 40	111.521	116.085
Point 41	98.573	121.398
Point 42	111.521	117.085
Point 43	130	114.747
Point 44	170	109.948
Point 45	240	108.438
Point 46	260	114.597
Point 47	230	105.528

Point 48	84.52987	126.13978
Point 49	225.44094	105.81205
Point 50	233.20387	106.43496
Point 51	265.14644	116.147
Point 52	106.51646	117.75202

Regions

	Material	Points	Area (m^2)
Region 1	Ashton Mudstone Member (Clay)	1,2,3,4,5,6,7,8,9,10,11,12,40,13,14,15,16,18,17,19,20,21,24,22,23,25,26,27,28,29,30,31,32,33	8,738.5
Region 2	Engineered Fill	17,25,23,22,24,21,20,19	223.63
Region 3	Engineered Fill	1,38,39,52,40,12,11,10,9,8,7,6,5,4,3,2	347.48
Region 4	Geological Barrier	52,42,43,44,49,50,45,46,51,29,28,27,26,25,17,18,16,15,14,13,40	213.74

Current Slip Surface

Slip Surface: 6,742
F of S: 1.564
Volume: 74.946648 m^3
Weight: 1,498.933 kN
Resisting Moment: 29,105.138 kN-m
Activating Moment: 18,607.08 kN-m
F of S Rank (Analysis): 1 of 9,261 slip surfaces

F of S Rank (Query): 1 of 9,261 slip surfaces
Exit: (112.59593, 116.949) m
Entry: (78.997895, 126.69098) m
Radius: 42.716846 m
Center: (106.65, 159.25) m

Slip Slices

	X (m)	Y (m)	PWP (kPa)	Base Normal Stress (kPa)	Frictional Strength (kPa)	Cohesive Strength (kPa)
Slice 1	79.498947	126.27838	-109.64285	5.8068232	2.7077661	0
Slice 2	80.577902	125.42039	-103.17609	15.872831	7.4016226	0
Slice 3	81.733706	124.55993	-96.823717	23.905059	11.147112	0
Slice 4	82.88951	123.75797	-91.045056	31.14236	14.521921	0
Slice 5	84.045313	123.01061	-85.801939	37.606407	17.536155	0
Slice 6	85.201117	122.31455	-81.061796	43.316502	20.198817	0
Slice 7	86.356921	121.66691	-76.796632	48.289675	22.517845	0
Slice 8	87.512725	121.06524	-72.982242	52.540793	24.500174	0
Slice 9	88.668529	120.50739	-69.597594	56.082674	26.15178	0
Slice 10	89.824332	119.99149	-66.624344	58.926197	27.477737	0
Slice 11	90.980136	119.5159	-64.046449	61.080401	28.482259	0
Slice 12	92.13594	119.0792	-61.849849	62.552569	29.168742	0
Slice 13	93.291744	118.68011	-60.022219	63.348292	29.539794	0
Slice 14	94.457565	118.31472	-58.54308	63.466794	29.595052	0
Slice 15	95.633404	117.98266	-57.408928	62.89867	29.330132	0
Slice 16	96.809242	117.68651	-56.626959	61.63779	28.742173	0
Slice 17	97.985081	117.42551	-56.189685	59.683274	27.830768	0
Slice 18	99.2865	117.17883	-56.119498	56.6731	26.427101	0

Slice 19	100.54304	116.97551	-56.393476	53.041313	24.73357	0
Slice 20	101.62912	116.83278	-56.954093	49.208142	22.946133	0
Slice 21	102.71519	116.71826	-57.791348	44.764813	20.874175	0
Slice 22	103.80127	116.63172	-58.903008	39.703499	18.514046	0
Slice 23	104.88735	116.573	-60.287405	34.014885	15.861401	0
Slice 24	105.97342	116.54197	-61.943411	27.688073	12.91116	0
Slice 25	106.97405	116.53683	-63.69919	23.136257	10.788614	0
Slice 26	107.88923	116.55359	-65.515353	20.48657	9.5530445	0
Slice 27	109.08423	116.60896	-68.21537	16.293588	7.5978251	0
Slice 28	110.24648	116.68696	-71.078079	11.651762	5.4333059	0
Slice 29	111.09616	116.76732	-73.399827	7.7271616	3.6032346	0
Slice 30	112.05847	116.88039	-76.245641	2.8402498	1.3244302	0

SLOPE/W Analysis

File Information

File Version: 8.16
Created By: Steve Jones
Last Edited By: Steve Jones
Revision Number: 31
Date: 08/07/2022
Time: 09:00:24
Tool Version: 8.16.3.15721
File Name: Plot 6 - Section C-CC - Side Liner EF.gsz
Directory: S:\2022 Projects\167-22-696 Lower Hare Farm, Exeter\Reports\Current Reports\Slope W\
Last Solved Date: 08/07/2022
Last Solved Time: 09:00:26

Project Settings

Length(L) Units: Meters
Time(t) Units: Seconds
Force(F) Units: Kilonewtons
Pressure(p) Units: kPa
Strength Units: kPa
Unit Weight of Water: 9.807 kN/m³
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Bishop
Settings
PWP Conditions Source: Piezometric Line
Apply Phreatic Correction: No
Use Staged Rapid Drawdown: No
Slip Surface
Direction of movement: Left to Right
Use Passive Mode: No
Slip Surface Option: Grid and Radius
Critical slip surfaces saved: 1
Resisting Side Maximum Convex Angle: 1 °
Driving Side Maximum Convex Angle: 5 °
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 m

Materials

Ashton Mudstone Member (Clay)

Model: Mohr-Coulomb
Unit Weight: 20 kN/m³

Cohesion': 0 kPa
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Engineered Fill

Model: Mohr-Coulomb
Unit Weight: 20 kN/m³
Cohesion': 0 kPa
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Geological Barrier

Model: Mohr-Coulomb
Unit Weight: 20 kN/m³
Cohesion': 0 kPa
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Slip Surface Grid

Upper Left: (61.01356, 138.12943) m
Lower Left: (153.45963, 106.74077) m
Lower Right: (188.94745, 201.69219) m
Grid Horizontal Increment: 20
Grid Vertical Increment: 20
Left Projection Angle: 0 °
Right Projection Angle: 0 °

Slip Surface Radius

Upper Left Coordinate: (58.51728, 131.30944) m
Upper Right Coordinate: (151.7397, 101.03156) m
Lower Left Coordinate: (42.57213, 95.47763) m
Lower Right Coordinate: (138.18333, 65.19976) m
Number of Increments: 20
Left Projection: No
Left Projection Angle: 135 °
Right Projection: No
Right Projection Angle: 45 °

Slip Surface Limits

Left Coordinate: (0, 134.73) m
Right Coordinate: (290, 116.74) m

Piezometric Lines

Piezometric Line 1

Coordinates

	X (m)	Y (m)
Coordinate 1	0	129.73
Coordinate 2	205	92
Coordinate 3	270	111.44
Coordinate 4	290	111.74

Points

	X (m)	Y (m)
Point 1	0	134.73
Point 2	10	132.838
Point 3	20	130.722
Point 4	30	128.87
Point 5	40	127.552
Point 6	50	126.28
Point 7	60	124.362
Point 8	70	122.048
Point 9	80	120.398
Point 10	90	118.936
Point 11	100	117.783
Point 12	110	116.326
Point 13	120	114.747
Point 14	130	113.146
Point 15	140	111.236
Point 16	150	110.216
Point 17	176	108
Point 18	170	108.948
Point 19	180	107.012
Point 20	190	102.868
Point 21	200	99.02
Point 22	210	98.728

Point 23	220	103.011
Point 24	205	97
Point 25	230	104.528
Point 26	240	107.438
Point 27	250	110.499
Point 28	260	113.597
Point 29	270	116.44
Point 30	274.813	116.74
Point 31	290	116.74
Point 32	290	85
Point 33	0	85
Point 34	0	129.73
Point 35	205	92
Point 36	270	111.44
Point 37	290	111.74
Point 38	80	126.589
Point 39	98.573	120.398
Point 40	111.521	116.085
Point 41	98.573	121.398
Point 42	111.521	117.085
Point 43	130	114.747
Point 44	170	109.948
Point 45	240	108.438
Point 46	260	114.597
Point 47	230	105.528

Point 48	84.52987	126.13978
Point 49	225.44094	105.81205
Point 50	233.20387	106.43496
Point 51	265.14644	116.147
Point 52	106.51646	117.75202

Regions

	Material	Points	Area (m^2)
Region 1	Ashton Mudstone Member (Clay)	1,2,3,4,5,6,7,8,9,10,11,12,40,13,14,15,16,18,17,19,20,21,24,22,23,25,26,27,28,29,30,31,32,33	8,738.5
Region 2	Engineered Fill	17,25,23,22,24,21,20,19	223.63
Region 3	Engineered Fill	1,38,39,52,40,12,11,10,9,8,7,6,5,4,3,2	347.48
Region 4	Geological Barrier	52,42,43,44,49,50,45,46,51,29,28,27,26,25,17,18,16,15,14,13,40	213.74
Region 5	Geological Barrier	38,48,41,42,52,39	27.318

Current Slip Surface

Slip Surface: 5,419
F of S: 1.495
Volume: 57.955024 m^3
Weight: 1,159.1005 kN
Resisting Moment: 19,465.719 kN-m
Activating Moment: 13,023.836 kN-m

F of S Rank (Analysis): 1 of 9,261 slip surfaces
F of S Rank (Query): 1 of 9,261 slip surfaces
Exit: (111.6834, 117.06445) m
Entry: (84.131209, 126.17931) m
Radius: 37.120047 m
Center: (108.63833, 154.05939) m

Slip Slices

	X (m)	Y (m)	PWP (kPa)	Base Normal Stress (kPa)	Frictional Strength (kPa)	Cohesive Strength (kPa)
Slice 1	84.33054	126.00659	-115.69835	2.4080975	1.1229143	0
Slice 2	84.927804	125.50346	-111.84218	7.9736107	3.7181557	0
Slice 3	85.723672	124.86076	-106.97569	14.073032	6.5623627	0
Slice 4	86.566298	124.21953	-102.20811	20.030422	9.3403391	0
Slice 5	87.455683	123.58153	-97.556548	25.810189	12.035489	0
Slice 6	88.345069	122.98208	-93.283048	31.061625	14.484274	0
Slice 7	89.234454	122.41899	-89.366089	35.79648	16.692173	0
Slice 8	90.123839	121.89034	-85.786923	40.025331	18.664118	0
Slice 9	91.013225	121.39446	-82.529126	43.757613	20.40451	0
Slice 10	91.90261	120.92987	-79.578249	47.001667	21.917237	0
Slice 11	92.791995	120.49528	-76.921535	49.764782	23.205699	0
Slice 12	93.681381	120.08953	-74.54768	52.053241	24.272825	0
Slice 13	94.570766	119.7116	-72.446651	53.872358	25.121093	0
Slice 14	95.460151	119.36059	-70.609525	55.226522	25.75255	0
Slice 15	96.349537	119.03567	-69.02836	56.11922	26.168822	0
Slice 16	97.238922	118.73613	-67.696088	56.553063	26.371127	0
Slice 17	98.128307	118.46133	-66.60642	56.529809	26.360283	0
Slice 18	99.014303	118.21156	-65.756138	56.091007	26.155666	0

Slice 19	99.89691	117.98614	-65.138571	55.241095	25.759346	0
Slice 20	100.77952	117.7836	-64.745309	53.942386	25.153748	0
Slice 21	101.66212	117.60355	-64.57261	52.19332	24.338145	0
Slice 22	102.54473	117.44566	-64.61722	49.991508	23.311423	0
Slice 23	103.42734	117.30963	-64.876335	47.333715	22.072074	0
Slice 24	104.30994	117.19524	-65.347579	44.215827	20.618179	0
Slice 25	105.19255	117.10228	-66.028982	40.63282	18.947395	0
Slice 26	106.07516	117.03059	-66.918959	36.578716	17.056935	0
Slice 27	106.92242	116.98125	-67.96441	32.245308	15.036234	0
Slice 28	107.73433	116.95258	-69.14865	27.665137	12.900465	0
Slice 29	108.54624	116.94168	-70.507256	22.66681	10.569707	0
Slice 30	109.38033	116.94923	-72.086833	17.083116	7.965988	0
Slice 31	110.2366	116.97624	-73.89728	10.878087	5.0725353	0
Slice 32	111.09287	117.02307	-75.90204	4.17718	1.947851	0
Slice 33	111.6022	117.05795	-77.163415	0.34414754	0.16047863	0

SLOPE/W Analysis

File Information

File Version: 8.16
Created By: Steve Jones
Last Edited By: Steve Jones
Revision Number: 33
Date: 08/07/2022
Time: 09:05:37
Tool Version: 8.16.3.15721
File Name: Plot 7 - Section C-CC - Side Liner Nat.gsz
Directory: S:\2022 Projects\167-22-696 Lower Hare Farm, Exeter\Reports\Current Reports\Slope W\
Last Solved Date: 08/07/2022
Last Solved Time: 09:05:40

Project Settings

Length(L) Units: Meters
Time(t) Units: Seconds
Force(F) Units: Kilonewtons
Pressure(p) Units: kPa
Strength Units: kPa
Unit Weight of Water: 9.807 kN/m³
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Bishop
Settings
PWP Conditions Source: Piezometric Line
Apply Phreatic Correction: No
Use Staged Rapid Drawdown: No
Slip Surface
Direction of movement: Right to Left
Use Passive Mode: No
Slip Surface Option: Grid and Radius
Critical slip surfaces saved: 1
Resisting Side Maximum Convex Angle: 1 °
Driving Side Maximum Convex Angle: 5 °
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 m

Materials

Ashton Mudstone Member (Clay)

Model: Mohr-Coulomb
Unit Weight: 20 kN/m³

Cohesion': 0 kPa
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Engineered Fill

Model: Mohr-Coulomb
Unit Weight: 20 kN/m³
Cohesion': 0 kPa
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Geological Barrier

Model: Mohr-Coulomb
Unit Weight: 20 kN/m³
Cohesion': 0 kPa
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Slip Surface Grid

Upper Left: (184.46609, 166.32508) m
Lower Left: (215.27149, 104.21661) m
Lower Right: (280.71431, 124.17294) m
Grid Horizontal Increment: 20
Grid Vertical Increment: 20
Left Projection Angle: 0 °
Right Projection Angle: 0 °

Slip Surface Radius

Upper Left Coordinate: (219.05373, 99.23997) m
Upper Right Coordinate: (282.50589, 118.4498) m
Lower Left Coordinate: (234.03342, 68.78294) m
Lower Right Coordinate: (294.54936, 89.98342) m
Number of Increments: 20
Left Projection: No
Left Projection Angle: 135 °
Right Projection: No
Right Projection Angle: 45 °

Slip Surface Limits

Left Coordinate: (0, 134.73) m
Right Coordinate: (290, 116.74) m

Piezometric Lines

Piezometric Line 1

Coordinates

	X (m)	Y (m)
Coordinate 1	0	129.73
Coordinate 2	205	92
Coordinate 3	270	111.44
Coordinate 4	290	111.74

Points

	X (m)	Y (m)
Point 1	0	134.73
Point 2	10	132.838
Point 3	20	130.722
Point 4	30	128.87
Point 5	40	127.552
Point 6	50	126.28
Point 7	60	124.362
Point 8	70	122.048
Point 9	80	120.398
Point 10	90	118.936
Point 11	100	117.783
Point 12	110	116.326
Point 13	120	114.747
Point 14	130	113.146
Point 15	140	111.236
Point 16	150	110.216
Point 17	176	108
Point 18	170	108.948
Point 19	180	107.012
Point 20	190	102.868
Point 21	200	99.02
Point 22	210	98.728

Point 23	220	103.011
Point 24	205	97
Point 25	230	104.528
Point 26	240	107.438
Point 27	250	110.499
Point 28	260	113.597
Point 29	270	116.44
Point 30	274.813	116.74
Point 31	290	116.74
Point 32	290	85
Point 33	0	85
Point 34	0	129.73
Point 35	205	92
Point 36	270	111.44
Point 37	290	111.74
Point 38	80	126.589
Point 39	98.573	120.398
Point 40	111.521	116.085
Point 41	98.573	121.398
Point 42	111.521	117.085
Point 43	130	114.747
Point 44	170	109.948
Point 45	240	108.438
Point 46	260	114.597
Point 47	230	105.528

Point 48	84.52987	126.13978
Point 49	225.44094	105.81205
Point 50	233.20387	106.43496
Point 51	265.14644	116.147
Point 52	106.51646	117.75202

Regions

	Material	Points	Area (m^2)
Region 1	Ashton Mudstone Member (Clay)	1,2,3,4,5,6,7,8,9,10,11,12,40,13,14,15,16,18,17,19,20,21,24,22,23,25,26,27,28,29,30,31,32,33	8,738.5
Region 2	Engineered Fill	17,25,23,22,24,21,20,19	223.63
Region 3	Engineered Fill	1,38,39,52,40,12,11,10,9,8,7,6,5,4,3,2	347.48
Region 4	Geological Barrier	52,42,43,44,49,50,45,46,51,29,28,27,26,25,17,18,16,15,14,13,40	213.74
Region 5	Geological Barrier	38,48,41,42,52,39	27.318

Current Slip Surface

Slip Surface: 6,889
F of S: 1.601
Volume: 65.477117 m^3
Weight: 1,309.5423 kN
Resisting Moment: 33,874.705 kN-m
Activating Moment: 21,157.554 kN-m

F of S Rank (Analysis): 1 of 9,261 slip surfaces
F of S Rank (Query): 1 of 9,261 slip surfaces
Exit: (233.60762, 106.55396) m
Entry: (266.5655, 116.23267) m
Radius: 57.226146 m
Center: (234.70527, 163.76958) m

Slip Slices

	X (m)	Y (m)	PWP (kPa)	Base Normal Stress (kPa)	Frictional Strength (kPa)	Cohesive Strength (kPa)
Slice 1	234.18932	106.54871	-57.065569	3.543128	1.6521877	0
Slice 2	235.35273	106.55005	-53.666368	10.330884	4.8173703	0
Slice 3	236.51613	106.57505	-50.499226	16.569994	7.726715	0
Slice 4	237.58152	106.61781	-47.793718	21.827792	10.178466	0
Slice 5	238.54891	106.67472	-45.514385	26.198397	12.216513	0
Slice 6	239.5163	106.74809	-43.396552	30.204815	14.084737	0
Slice 7	240.55556	106.846	-41.308557	34.236986	15.964969	0
Slice 8	241.66667	106.97118	-39.277329	38.236495	17.82997	0
Slice 9	242.77778	107.11844	-37.462513	41.766298	19.475945	0
Slice 10	243.88889	107.28793	-35.865802	44.830176	20.904655	0
Slice 11	245	107.47987	-34.489167	47.431313	22.117585	0
Slice 12	246.11111	107.69447	-33.334868	49.572315	23.11595	0
Slice 13	247.22222	107.93201	-32.405471	51.255226	23.900705	0
Slice 14	248.33333	108.19278	-31.70386	52.481538	24.472543	0
Slice 15	249.44444	108.4771	-31.23326	53.252199	24.831908	0
Slice 16	250.55556	108.78534	-30.997255	53.567622	24.978992	0
Slice 17	251.66667	109.11791	-30.999817	53.427685	24.913739	0
Slice 18	252.77778	109.47525	-31.245333	52.831732	24.635841	0

Slice 19	253.88889	109.85786	-31.738635	51.778574	24.144746	0
Slice 20	255	110.26628	-32.485042	50.26648	23.439645	0
Slice 21	256.11111	110.7011	-33.490402	48.293174	22.519477	0
Slice 22	257.22222	111.16298	-34.761138	45.855824	21.382922	0
Slice 23	258.33333	111.65265	-36.304312	42.95103	20.028394	0
Slice 24	259.44444	112.17088	-38.127683	39.574812	18.454038	0
Slice 25	260.54892	112.7151	-40.22541	35.683834	16.639645	0
Slice 26	261.64675	113.2859	-42.603238	31.279759	14.585991	0
Slice 27	262.74458	113.88739	-45.282059	26.402202	12.311549	0
Slice 28	263.84242	114.5207	-48.272911	21.045008	9.8134482	0
Slice 29	264.76889	115.07857	-51.026575	16.184151	7.5467934	0
Slice 30	265.85597	115.77218	-54.640296	7.0252683	3.2759364	0

SLOPE/W Analysis

File Information

File Version: 8.16
Created By: Steve Jones
Last Edited By: Steve Jones
Revision Number: 36
Date: 08/07/2022
Time: 09:11:25
Tool Version: 8.16.3.15721
File Name: Plot 8 - Section C-CC - Waste Filling.gsz
Directory: S:\2022 Projects\167-22-696 Lower Hare Farm, Exeter\Reports\Current Reports\Slope W\
Last Solved Date: 08/07/2022
Last Solved Time: 09:11:26

Project Settings

Length(L) Units: Meters
Time(t) Units: Seconds
Force(F) Units: Kilonewtons
Pressure(p) Units: kPa
Strength Units: kPa
Unit Weight of Water: 9.807 kN/m³
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Bishop
Settings
PWP Conditions Source: Piezometric Line
Apply Phreatic Correction: No
Use Staged Rapid Drawdown: No
Slip Surface
Direction of movement: Left to Right
Use Passive Mode: No
Slip Surface Option: Grid and Radius
Critical slip surfaces saved: 1
Resisting Side Maximum Convex Angle: 1 °
Driving Side Maximum Convex Angle: 5 °
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 m

Materials

Ashton Mudstone Member (Clay)

Model: Mohr-Coulomb
Unit Weight: 20 kN/m³

Cohesion': 0 kPa
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Engineered Fill

Model: Mohr-Coulomb
Unit Weight: 20 kN/m³
Cohesion': 0 kPa
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Geological Barrier

Model: Mohr-Coulomb
Unit Weight: 20 kN/m³
Cohesion': 0 kPa
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Inert Waste

Model: Mohr-Coulomb
Unit Weight: 20 kN/m³
Cohesion': 0 kPa
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Slip Surface Grid

Upper Left: (92.79247, 140.62337) m
Lower Left: (200.47129, 100.75327) m
Lower Right: (249.08328, 182.14735) m
Grid Horizontal Increment: 25
Grid Vertical Increment: 25
Left Projection Angle: 0 °
Right Projection Angle: 0 °

Slip Surface Radius

Upper Left Coordinate: (102.7157, 131.82241) m
Upper Right Coordinate: (199.88062, 96.50045) m
Lower Left Coordinate: (87.47646, 103.29314) m
Lower Right Coordinate: (186.11805, 66.73077) m
Number of Increments: 15
Left Projection: No
Left Projection Angle: 135 °
Right Projection: No
Right Projection Angle: 45 °

Slip Surface Limits

Left Coordinate: (0, 134.73) m
Right Coordinate: (290, 116.74) m

Piezometric Lines

Piezometric Line 1

Coordinates

	X (m)	Y (m)
Coordinate 1	0	129.73
Coordinate 2	205	92
Coordinate 3	270	111.44
Coordinate 4	290	111.74

Points

	X (m)	Y (m)
Point 1	0	134.73
Point 2	10	132.838
Point 3	20	130.722
Point 4	30	128.87
Point 5	40	127.552
Point 6	50	126.28
Point 7	60	124.362
Point 8	70	122.048
Point 9	80	120.398
Point 10	90	118.936
Point 11	100	117.783

Point 12	110	116.326
Point 13	120	114.747
Point 14	130	113.146
Point 15	140	111.236
Point 16	150	110.216
Point 17	176	108
Point 18	170	108.948
Point 19	180	107.012
Point 20	190	102.868
Point 21	200	99.02
Point 22	210	98.728
Point 23	220	103.011
Point 24	205	97
Point 25	230	104.528
Point 26	240	107.438
Point 27	250	110.499
Point 28	260	113.597
Point 29	270	116.44
Point 30	274.813	116.74
Point 31	290	116.74
Point 32	290	85
Point 33	0	85
Point 34	0	129.73
Point 35	205	92
Point 36	270	111.44

Point 37	290	111.74
Point 38	80	126.589
Point 39	98.573	120.398
Point 40	111.521	116.085
Point 41	98.573	121.398
Point 42	111.521	117.085
Point 43	130	114.747
Point 44	170	109.948
Point 45	240	108.438
Point 46	260	114.597
Point 47	230	105.528
Point 48	84.52987	126.13978
Point 49	225.44094	105.81205
Point 50	233.20387	106.43496
Point 51	265.14644	116.147
Point 52	106.51646	117.75202
Point 53	90	125.128
Point 54	110	123.059
Point 55	120	122.116
Point 56	130	121.189
Point 57	150	119.5
Point 58	160	118.822
Point 59	170	118.189
Point 60	180	117.572
Point 61	190	117.123

Point 62	200	116.867
Point 63	210	116.898
Point 64	220	117.051
Point 65	230	117.434
Point 66	240	118.011
Point 67	250	118.542
Point 68	260	118.696
Point 69	270	118.022
Point 70	274.789	117.014
Point 71	276.22856	116.74
Point 72	190	100.287
Point 73	158.24363	111.35847
Point 74	140.21718	120.32616

Regions

	Material	Points	Area (m^2)
Region 1	Ashton Mudstone Member (Clay)	1,2,3,4,5,6,7,8,9,10,11,12,40,13,14,15,16,18,17,19,20,21,24,22,23,25,26,27,28,29,30,71,31,32,33	8,738.5
Region 2	Engineered Fill	17,25,23,22,24,21,20,19	223.63
Region 3	Engineered Fill	1,38,39,52,40,12,11,10,9,8,7,6,5,4,3,2	347.48
Region 4	Geological Barrier	52,42,43,73,44,49,50,45,46,51,29,28,27,26,25,17,18,16,15,14,13,40	213.74

Region 5	Geological Barrier	38,48,41,42,52,39	27.318
Region 6	Inert Waste	48,53,54,55,56,74,44,73,43,42,41	356.46

Current Slip Surface

Slip Surface: 5,649
F of S: 1.385
Volume: 47.593745 m³
Weight: 951.8749 kN
Resisting Moment: 25,600.127 kN-m
Activating Moment: 18,487.091 kN-m
F of S Rank (Analysis): 1 of 10,816 slip surfaces
F of S Rank (Query): 1 of 10,816 slip surfaces
Exit: (169.76265, 110.03071) m
Entry: (139.65622, 120.37353) m
Radius: 60.416365 m
Center: (173.6455, 170.32217) m

Slip Slices

	X (m)	Y (m)	PWP (kPa)	Base Normal Stress (kPa)	Frictional Strength (kPa)	Cohesive Strength (kPa)
Slice 1	139.9367	120.18496	-158.97282	2.6890253	1.2539131	0
Slice 2	140.71955	119.66982	-155.33391	7.8971384	3.6824961	0
Slice 3	141.7243	119.03061	-150.87869	12.738257	5.9399469	0
Slice 4	142.72904	118.41872	-146.69142	17.194517	8.0179349	0
Slice 5	143.73378	117.8332	-142.76271	21.270018	9.9183724	0
Slice 6	144.73853	117.27316	-139.08399	24.968535	11.643019	0
Slice 7	145.74327	116.73782	-135.64743	28.293513	13.193482	0

Slice 8	146.74802	116.22644	-132.44583	31.248071	14.571215	0
Slice 9	147.75276	115.73834	-129.47259	33.835003	15.777521	0
Slice 10	148.75751	115.27291	-126.72161	36.056783	16.813554	0
Slice 11	149.76225	114.82957	-124.18732	37.915566	17.680319	0
Slice 12	150.76699	114.4078	-121.86456	39.413194	18.378674	0
Slice 13	151.77174	114.00712	-119.74856	40.551195	18.909333	0
Slice 14	152.77648	113.62707	-117.83495	41.330792	19.272865	0
Slice 15	153.78123	113.26724	-116.11967	41.752898	19.469696	0
Slice 16	154.78597	112.92726	-114.599	41.818123	19.500111	0
Slice 17	155.79072	112.60677	-113.26949	41.526772	19.364252	0
Slice 18	156.79546	112.30545	-112.12798	40.878844	19.062118	0
Slice 19	157.8002	112.023	-111.17155	39.874033	18.593567	0
Slice 20	158.80495	111.75916	-110.39752	38.511724	17.958312	0
Slice 21	159.80969	111.51366	-109.80344	36.790992	17.155921	0
Slice 22	160.81444	111.28628	-109.38706	34.710595	16.185816	0
Slice 23	161.81918	111.07681	-109.14633	32.26897	15.047268	0
Slice 24	162.82393	110.88506	-109.07939	29.464227	13.739395	0
Slice 25	163.82867	110.71086	-109.18458	26.294139	12.261158	0
Slice 26	164.86157	110.55017	-109.47298	22.646915	10.56043	0
Slice 27	165.92263	110.40382	-109.95295	18.496919	8.6252551	0
Slice 28	166.98369	110.27658	-110.62029	13.929333	6.4953548	0
Slice 29	168.04475	110.16833	-111.4738	8.9397738	4.168685	0
Slice 30	169.16897	110.07482	-112.58593	3.1758317	1.4809146	0

SLOPE/W Analysis

File Information

File Version: 8.16
Created By: Steve Jones
Last Edited By: Steve Jones
Revision Number: 19
Date: 08/07/2022
Time: 09:32:33
Tool Version: 8.16.3.15721
File Name: Plot 9 - Waste Filling E-W.gsz
Directory: S:\2022 Projects\167-22-696 Lower Hare Farm, Exeter\Reports\Current Reports\Slope W\
Last Solved Date: 08/07/2022
Last Solved Time: 09:32:36

Project Settings

Length(L) Units: Meters
Time(t) Units: Seconds
Force(F) Units: Kilonewtons
Pressure(p) Units: kPa
Strength Units: kPa
Unit Weight of Water: 9.807 kN/m³
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Bishop
Settings
PWP Conditions Source: Piezometric Line
Apply Phreatic Correction: No
Use Staged Rapid Drawdown: No
Slip Surface
Direction of movement: Right to Left
Use Passive Mode: No
Slip Surface Option: Grid and Radius
Critical slip surfaces saved: 1
Resisting Side Maximum Convex Angle: 1 °
Driving Side Maximum Convex Angle: 5 °
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 m

Materials

Ashton Mudstone Member (Clay)

Model: Mohr-Coulomb
Unit Weight: 20 kN/m³

Cohesion': 0 kPa
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Engineered Fill

Model: Mohr-Coulomb
Unit Weight: 20 kN/m³
Cohesion': 0 kPa
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Inert Waste

Model: Mohr-Coulomb
Unit Weight: 19 kN/m³
Cohesion': 0 kPa
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Geological Barrier

Model: Mohr-Coulomb
Unit Weight: 20 kN/m³
Cohesion': 0 kPa
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Slip Surface Grid

Upper Left: (85.55178, 200.83029) m
Lower Left: (147.42832, 99.90228) m
Lower Right: (282.64806, 145.33611) m
Grid Horizontal Increment: 25
Grid Vertical Increment: 25
Left Projection Angle: 0 °
Right Projection Angle: 0 °

Slip Surface Radius

Upper Left Coordinate: (157.48867, 94.70986) m
Upper Right Coordinate: (288.2732, 134.7349) m
Lower Left Coordinate: (183.99174, 41.59555) m
Lower Right Coordinate: (314.23538, 88.97654) m
Number of Increments: 15
Left Projection: No
Left Projection Angle: 135 °
Right Projection: No
Right Projection Angle: 45 °

Slip Surface Limits

Left Coordinate: (-40, 87) m
Right Coordinate: (324.635, 122) m

Piezometric Lines

Piezometric Line 1

Coordinates

	X (m)	Y (m)
Coordinate 1	-40	83
Coordinate 2	10	83.783
Coordinate 3	90	87.192
Coordinate 4	180	92.301
Coordinate 5	310	114.666
Coordinate 6	360	117

Points

	X (m)	Y (m)
Point 1	310	121.666
Point 2	300	120.884
Point 3	290	120.101
Point 4	280	118.645
Point 5	270	117.027
Point 6	260	113.951
Point 7	250	111.969
Point 8	240	110.404
Point 9	230	109.398

Point 10	220	108.593
Point 11	210	107.482
Point 12	200	106.045
Point 13	190	101.935
Point 14	180	98.016
Point 15	170	97.464
Point 16	160	97.821
Point 17	150	97.865
Point 18	140	97.301
Point 19	120	98.479
Point 20	110	97.218
Point 21	90	92.197
Point 22	80	92
Point 23	70	92
Point 24	60	93.678
Point 25	50	93.708
Point 26	40	92.171
Point 27	30	91.286
Point 28	20	89.933
Point 29	10	88.783
Point 30	0	88.476
Point 31	360	122.8
Point 32	-40	87
Point 33	-40	78
Point 34	360	78

Point 35	-40	83
Point 36	10	83.783
Point 37	90	87.192
Point 38	180	92.301
Point 39	310	114.666
Point 40	360	117
Point 41	300	122.128
Point 42	290	122.823
Point 43	280	123.827
Point 44	270	124.978
Point 45	260	125.693
Point 46	250	126
Point 47	240	125.516
Point 48	230	124.603
Point 49	220	123.452
Point 50	210	122.017
Point 51	200	120.603
Point 52	190	119.17
Point 53	180	117.67
Point 54	170	116.171
Point 55	160	114.644
Point 56	150	113.042
Point 57	140	111.518
Point 58	130	109.707
Point 59	120	107.922

Point 60	110	105.96
Point 61	100	103.964
Point 62	90	102.071
Point 63	80	99.927
Point 64	70	98.226
Point 65	60	96.638
Point 66	50	94.989
Point 67	40	93.304
Point 68	30	91.395
Point 69	132.63553	100.05752
Point 70	320	122
Point 71	324.635	122
Point 72	290	121.1
Point 73	270	118.027
Point 74	260	114.951
Point 75	240	111.404
Point 76	132.63	101.057
Point 77	60	94.678
Point 78	190	106
Point 79	195.76404	107.9439

Regions

	Material	Points	Area (m^2)

Region 1	Ashton Mudstone Member (Clay)	31,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,69,19,20,21,22,23,24,25,26,27,28,29,30,32,33,34	9,984.6
Region 2	Engineered Fill	24,20,21,22,23	108.87
Region 3	Engineered Fill	69,12,13,14,15,16,17,18	267.53
Region 4	Inert Waste	71,70,41,42,43,44,45,46,79,74,73,72,1	638.91
Region 5	Geological Barrier	25,24,20,19,69,12,11,10,9,8,7,6,5,4,3,2,1,72,73,74,79,76,77	383.13

Current Slip Surface

Slip Surface: 10,257
F of S: 1.421
Volume: 57.289339 m³
Weight: 1,088.4974 kN
Resisting Moment: 58,342.773 kN-m
Activating Moment: 41,048.663 kN-m
F of S Rank (Analysis): 1 of 10,816 slip surfaces
F of S Rank (Query): 1 of 10,816 slip surfaces
Exit: (196.81439, 108.29358) m
Entry: (238.06344, 122.02611) m
Radius: 120.57608 m
Center: (179.97626, 227.68817) m

Slip Slices

	X (m)	Y (m)	PWP (kPa)	Base Normal Stress (kPa)	Frictional Strength (kPa)	Cohesive Strength (kPa)
Slice 1	197.50188	108.39458	-128.3009	2.317935	1.0808709	0

Slice 2	198.87684	108.60469	-128.04168	6.7816336	3.1623277	0
Slice 3	200.25181	108.83109	-127.94208	10.919492	5.0918426	0
Slice 4	201.62678	109.07385	-128.00302	14.733155	6.870183	0
Slice 5	203.00175	109.33308	-128.2255	18.224126	8.4980494	0
Slice 6	204.37672	109.60889	-128.61057	21.393765	9.9760764	0
Slice 7	205.75168	109.9014	-129.15937	24.243296	11.304834	0
Slice 8	207.12665	110.21073	-129.87313	26.773806	12.484831	0
Slice 9	208.50162	110.53701	-130.75316	28.986249	13.51651	0
Slice 10	209.87659	110.88039	-131.80085	30.881447	14.400255	0
Slice 11	211.25156	111.24101	-133.01769	32.460093	15.13639	0
Slice 12	212.62653	111.61905	-134.40524	33.722751	15.725177	0
Slice 13	214.00149	112.01466	-135.96519	34.669858	16.166821	0
Slice 14	215.37646	112.42803	-137.6993	35.301726	16.461465	0
Slice 15	216.75143	112.85936	-139.60947	35.618539	16.609198	0
Slice 16	218.1264	113.30883	-141.69768	35.62036	16.610047	0
Slice 17	219.50137	113.77668	-143.96604	35.307126	16.463983	0
Slice 18	220.87633	114.26313	-146.41678	34.678651	16.17092	0
Slice 19	222.2513	114.76841	-149.05226	33.734626	15.730714	0
Slice 20	223.62627	115.29278	-151.87497	32.474619	15.143163	0
Slice 21	225.00124	115.83651	-154.88754	30.898073	14.408008	0
Slice 22	226.37621	116.39989	-158.09276	29.00431	13.524932	0
Slice 23	227.75118	116.98321	-161.49356	26.792526	12.49356	0
Slice 24	229.12614	117.58679	-165.09307	24.261794	11.31346	0
Slice 25	230.50111	118.21097	-168.89456	21.411063	9.9841426	0
Slice 26	231.87608	118.8561	-172.90151	18.239155	8.5050575	0

Slice 27	233.25105	119.52255	-177.1176	14.744767	6.8755979	0
Slice 28	234.62602	120.21073	-181.54672	10.926472	5.0950975	0
Slice 29	236.00099	120.92105	-186.19299	6.7827132	3.1628311	0
Slice 30	237.37595	121.65395	-191.06078	2.3118091	1.0780143	0

SLOPE/W Analysis

File Information

File Version: 8.16
Created By: Steve Jones
Last Edited By: Steve Jones
Revision Number: 19
Date: 04/07/2024
Time: 14:58:18
Tool Version: 8.16.3.15721
File Name: Plot 10 - Restoration Soils E-W (Bund).gsz
Directory: S:\2022 Projects\167-22-696 Lower Hare Farm, Exeter\Reports\Current Reports\Slope W\2024\
Last Solved Date: 04/07/2024
Last Solved Time: 14:59:06

Project Settings

Length(L) Units: Meters
Time(t) Units: Seconds
Force(F) Units: Kilonewtons
Pressure(p) Units: kPa
Strength Units: kPa
Unit Weight of Water: 9.807 kN/m³
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Bishop
Settings
PWP Conditions Source: Piezometric Line
Apply Phreatic Correction: No
Use Staged Rapid Drawdown: No
Slip Surface
Direction of movement: Right to Left
Use Passive Mode: No
Slip Surface Option: Grid and Radius
Critical slip surfaces saved: 1
Resisting Side Maximum Convex Angle: 1 °
Driving Side Maximum Convex Angle: 5 °
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 m

Materials

Ashton Mudstone Member (Clay)

Model: Mohr-Coulomb
Unit Weight: 20 kN/m³

Cohesion': 0 kPa
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Engineered Fill

Model: Mohr-Coulomb
Unit Weight: 20 kN/m³
Cohesion': 0 kPa
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Inert Waste

Model: Mohr-Coulomb
Unit Weight: 19 kN/m³
Cohesion': 0 kPa
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Geological Barrier

Model: Mohr-Coulomb
Unit Weight: 20 kN/m³
Cohesion': 0 kPa
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Restoration Soils

Model: Mohr-Coulomb
Unit Weight: 19 kN/m³
Cohesion': 0 kPa
Phi': 24 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Slip Surface Grid

Upper Left: (-14, 270) m
Lower Left: (50, 97) m
Lower Right: (261, 132) m
Grid Horizontal Increment: 25
Grid Vertical Increment: 25
Left Projection Angle: 0 °
Right Projection Angle: 0 °

Slip Surface Radius

Upper Left Coordinate: (54, 88) m
Upper Right Coordinate: (261, 125) m
Lower Left Coordinate: (71, 41) m
Lower Right Coordinate: (280, 78) m
Number of Increments: 10
Left Projection: No
Left Projection Angle: 135 °
Right Projection: No
Right Projection Angle: 45 °

Slip Surface Limits

Left Coordinate: (-40, 87) m
Right Coordinate: (324.635, 122) m

Piezometric Lines

Piezometric Line 1

Coordinates

	X (m)	Y (m)
Coordinate 1	-40	83
Coordinate 2	10	83.783
Coordinate 3	90	87.192
Coordinate 4	180	92.301
Coordinate 5	310	114.666
Coordinate 6	360	117

Points

	X (m)	Y (m)
Point 1	310	121.666
Point 2	300	120.884
Point 3	290	120.101
Point 4	280	118.645
Point 5	270	117.027

Point 6	260	113.951
Point 7	250	111.969
Point 8	240	110.404
Point 9	230	109.398
Point 10	220	108.593
Point 11	210	107.482
Point 12	200	106.045
Point 13	190	101.935
Point 14	180	98.016
Point 15	170	97.464
Point 16	160	97.821
Point 17	150	97.865
Point 18	140	97.301
Point 19	120	98.479
Point 20	110	97.218
Point 21	90	92.197
Point 22	80	92
Point 23	70	92
Point 24	60	93.678
Point 25	50	93.708
Point 26	40	92.171
Point 27	30	91.286
Point 28	20	89.933
Point 29	10	88.783
Point 30	0	88.476

Point 31	360	122.8
Point 32	-40	87
Point 33	-40	78
Point 34	360	78
Point 35	-40	83
Point 36	10	83.783
Point 37	90	87.192
Point 38	180	92.301
Point 39	310	114.666
Point 40	360	117
Point 41	300	122.128
Point 42	290	122.823
Point 43	280	123.827
Point 44	270	124.978
Point 45	260	125.693
Point 46	250	126
Point 47	240	125.516
Point 48	230	124.603
Point 49	220	123.452
Point 50	210	122.017
Point 51	200	120.603
Point 52	190	119.17
Point 53	180	117.67
Point 54	170	116.171
Point 55	160	114.644

Point 56	150	113.042
Point 57	140	111.518
Point 58	130	109.707
Point 59	120	107.922
Point 60	110	105.96
Point 61	100	103.964
Point 62	90	102.071
Point 63	80	99.927
Point 64	70	98.226
Point 65	60	96.638
Point 66	50	94.989
Point 67	40	93.304
Point 68	30	91.395
Point 69	132.63553	100.05752
Point 70	320	122
Point 71	324.635	122
Point 72	290	121.1
Point 73	270	118.027
Point 74	260	114.951
Point 75	240	111.404
Point 76	132.63	101.057
Point 77	60	94.678
Point 78	290	121.823
Point 79	280	122.827
Point 80	250	125

Point 81	50.08681	94.0073
Point 82	60.08927	95.68784
Point 83	70.16911	97.26414
Point 84	80.22827	98.91625
Point 85	90.12195	101.03236
Point 86	100.08102	102.91791
Point 87	110.08078	104.93512
Point 88	120.10721	106.93312
Point 89	130.08389	108.71594
Point 90	140.04938	110.45941
Point 91	150.036	112.05851
Point 92	160.04133	113.63181
Point 93	170.08255	115.17008
Point 94	180.07435	116.68158
Point 95	190.05958	118.1868
Point 96	200.0702	119.55096
Point 97	210.08423	121.0682
Point 98	220.09431	122.5306
Point 99	230.05502	123.63417
Point 100	240.08322	124.45421
Point 101	259.95823	124.70206
Point 102	269.95115	123.97326
Point 103	300.06919	121.38496
Point 104	88.36	100.65
Point 105	97.343	97.693

Point 106	96.70022	97.90133
Point 107	96.7	99.9
Point 108	90.63566	99.90002
Point 109	119.46142	99.90042

Regions

	Material	Points	Area (m²)
Region 1	Ashton Mudstone Member (Clay)	31,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,69,19,20,21,22,23,24,25,26,27,28,29,30,32,33,34	9,984.6
Region 2	Engineered Fill	24,20,21,22,23	108.87
Region 3	Engineered Fill	69,12,13,14,15,16,17,18	267.53
Region 4	Inert Waste	106,109,76,74,73,72,103,78,79,102,101,80,100,99,98,97,96,95,94,93,92,91,90,89,88,87,86,85,104,108	1,740.9
Region 5	Geological Barrier	25,24,20,19,69,12,11,10,9,8,7,6,5,4,3,2,1,103,72,73,74,76,109,106,77	383.13
Region 6	Restoration Soils	28,27,26,81,82,83,84,104,85,86,87,88,89,90,91,92,93,94,95,96,97,98,99,100,80,101,102,79,78,103,1,71,70,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66,67,68	277.29
Region 7	Geological Barrier	26,25,77,106,108,104,84,83,82,81	81.063

Current Slip Surface

Slip Surface: 4,962
F of S: 2.607
Volume: 455.40528 m³
Weight: 8,776.1988 kN
Resisting Moment: 538,024.45 kN-m
Activating Moment: 206,346.02 kN-m
F of S Rank (Analysis): 1 of 7,436 slip surfaces

F of S Rank (Query): 1 of 7,436 slip surfaces
Exit: (61.409485, 96.861826) m
Entry: (148.32878, 112.78731) m
Radius: 132.06343 m
Center: (82.44, 227.24) m

Slip Slices

	X (m)	Y (m)	PWP (kPa)	Base Normal Stress (kPa)	Frictional Strength (kPa)	Cohesive Strength (kPa)
Slice 1	62.994243	96.625888	-103.80387	9.5059863	4.2323378	0
Slice 2	65.93425	96.219219	-98.58703	26.849179	12.519978	0
Slice 3	68.64475	95.906132	-94.383869	41.894984	19.535952	0
Slice 4	70.084555	95.755832	-92.308178	49.533909	23.098041	0
Slice 5	70.667471	95.703283	-91.549231	52.572936	24.515163	0
Slice 6	72.638193	95.549091	-89.213506	62.337915	29.068647	0
Slice 7	75.582916	95.362946	-86.157376	75.937881	35.410415	0
Slice 8	78.527639	95.242748	-83.747999	88.103413	41.083296	0
Slice 9	80.114135	95.197098	-82.637303	94.330619	43.98709	0
Slice 10	80.735547	95.18854	-82.293686	97.087027	45.272424	0
Slice 11	83.022117	95.189836	-81.350836	106.55511	49.687464	0
Slice 12	86.580706	95.2535	-80.488052	119.9479	55.932625	0
Slice 13	89.18	95.351225	-80.360198	128.19243	59.77711	0
Slice 14	90.060975	95.396655	-80.429101	130.377	60.795792	0
Slice 15	90.378805	95.415648	-80.438427	130.97271	61.073577	0
Slice 16	92.1518	95.542921	-80.699557	133.86503	62.422288	0
Slice 17	95.18408	95.80173	-81.549587	137.96884	64.335927	0
Slice 18	98.35011	96.148975	-83.192456	141.38021	65.926672	0

Slice 19	101.11569	96.508599	-85.179665	143.98955	67.143429	0
Slice 20	103.52615	96.877411	-87.454671	145.4346	67.817266	0
Slice 21	106.11569	97.322795	-90.380924	146.02296	68.091624	0
Slice 22	108.70523	97.82152	-93.830302	145.572	67.881339	0
Slice 23	111.63966	98.456058	-98.419587	143.62491	66.973395	0
Slice 24	114.8786	99.233102	-104.2369	139.92168	65.246549	0
Slice 25	118.23894	100.13438	-111.20497	134.61987	62.774278	0
Slice 26	121.7024	101.16052	-119.34021	127.16064	59.29598	0
Slice 27	125.05361	102.25281	-128.18668	117.67917	54.874699	0
Slice 28	128.3512	103.42635	-137.85974	106.66748	49.739861	0
Slice 29	131.69463	104.719	-148.67541	93.855994	43.765769	0
Slice 30	135.04195	106.118	-160.53192	79.375558	37.01343	0
Slice 31	138.34732	107.60809	-173.30508	63.31087	29.522343	0
Slice 32	141.47008	109.11507	-186.34558	45.818092	21.365327	0
Slice 33	144.38555	110.61744	-199.45628	27.223626	12.694585	0
Slice 34	147.07986	112.08624	-212.36086	8.8551547	3.9425689	0

SLOPE/W Analysis

File Information

File Version: 8.16
Created By: Steve Jones
Last Edited By: Steve Jones
Revision Number: 21
Date: 04/07/2024
Time: 15:01:20
Tool Version: 8.16.3.15721
File Name: Plot 11 - Restoration Soils E-W (Bund) - Water in Waste.gsz
Directory: S:\2022 Projects\167-22-696 Lower Hare Farm, Exeter\Reports\Current Reports\Slope W\2024\
Last Solved Date: 04/07/2024
Last Solved Time: 16:38:20

Project Settings

Length(L) Units: Meters
Time(t) Units: Seconds
Force(F) Units: Kilonewtons
Pressure(p) Units: kPa
Strength Units: kPa
Unit Weight of Water: 9.807 kN/m³
View: 2D
Element Thickness: 1

Analysis Settings

SLOPE/W Analysis

Kind: SLOPE/W
Method: Bishop
Settings
PWP Conditions Source: Piezometric Line
Apply Phreatic Correction: No
Use Staged Rapid Drawdown: No
Slip Surface
Direction of movement: Right to Left
Use Passive Mode: No
Slip Surface Option: Grid and Radius
Critical slip surfaces saved: 1
Resisting Side Maximum Convex Angle: 1 °
Driving Side Maximum Convex Angle: 5 °
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)
F of S Distribution
F of S Calculation Option: Constant
Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 m

Materials

Ashton Mudstone Member (Clay)

Model: Mohr-Coulomb
Unit Weight: 20 kN/m³

Cohesion': 0 kPa
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Engineered Fill

Model: Mohr-Coulomb
Unit Weight: 20 kN/m³
Cohesion': 0 kPa
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Inert Waste

Model: Mohr-Coulomb
Unit Weight: 19 kN/m³
Cohesion': 0 kPa
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Geological Barrier

Model: Mohr-Coulomb
Unit Weight: 20 kN/m³
Cohesion': 0 kPa
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Restoration Soils

Model: Mohr-Coulomb
Unit Weight: 19 kN/m³
Cohesion': 0 kPa
Phi': 24 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Slip Surface Grid

Upper Left: (-14, 270) m
Lower Left: (50, 97) m
Lower Right: (261, 132) m
Grid Horizontal Increment: 25
Grid Vertical Increment: 25
Left Projection Angle: 0 °
Right Projection Angle: 0 °

Slip Surface Radius

Upper Left Coordinate: (54, 88) m
Upper Right Coordinate: (261, 125) m
Lower Left Coordinate: (71, 41) m
Lower Right Coordinate: (280, 78) m
Number of Increments: 10
Left Projection: No
Left Projection Angle: 135 °
Right Projection: No
Right Projection Angle: 45 °

Slip Surface Limits

Left Coordinate: (-40, 87) m
Right Coordinate: (324.635, 122) m

Piezometric Lines

Piezometric Line 1

Coordinates

	X (m)	Y (m)
Coordinate 1	90.63566	99.90002
Coordinate 2	119.46142	99.90042
Coordinate 3	132.63	101.057
Coordinate 4	260	114.951
Coordinate 5	270	118.027
Coordinate 6	290	121.1
Coordinate 7	300.06919	121.38496

Points

	X (m)	Y (m)
Point 1	310	121.666
Point 2	300	120.884
Point 3	290	120.101
Point 4	280	118.645

Point 5	270	117.027
Point 6	260	113.951
Point 7	250	111.969
Point 8	240	110.404
Point 9	230	109.398
Point 10	220	108.593
Point 11	210	107.482
Point 12	200	106.045
Point 13	190	101.935
Point 14	180	98.016
Point 15	170	97.464
Point 16	160	97.821
Point 17	150	97.865
Point 18	140	97.301
Point 19	120	98.479
Point 20	110	97.218
Point 21	90	92.197
Point 22	80	92
Point 23	70	92
Point 24	60	93.678
Point 25	50	93.708
Point 26	40	92.171
Point 27	30	91.286
Point 28	20	89.933
Point 29	10	88.783

Point 30	0	88.476
Point 31	360	122.8
Point 32	-40	87
Point 33	-40	78
Point 34	360	78
Point 35	-40	83
Point 36	10	83.783
Point 37	90	87.192
Point 38	180	92.301
Point 39	310	114.666
Point 40	360	117
Point 41	300	122.128
Point 42	290	122.823
Point 43	280	123.827
Point 44	270	124.978
Point 45	260	125.693
Point 46	250	126
Point 47	240	125.516
Point 48	230	124.603
Point 49	220	123.452
Point 50	210	122.017
Point 51	200	120.603
Point 52	190	119.17
Point 53	180	117.67
Point 54	170	116.171

Point 55	160	114.644
Point 56	150	113.042
Point 57	140	111.518
Point 58	130	109.707
Point 59	120	107.922
Point 60	110	105.96
Point 61	100	103.964
Point 62	90	102.071
Point 63	80	99.927
Point 64	70	98.226
Point 65	60	96.638
Point 66	50	94.989
Point 67	40	93.304
Point 68	30	91.395
Point 69	132.63553	100.05752
Point 70	320	122
Point 71	324.635	122
Point 72	290	121.1
Point 73	270	118.027
Point 74	260	114.951
Point 75	240	111.404
Point 76	132.63	101.057
Point 77	60	94.678
Point 78	290	121.823
Point 79	280	122.827

Point 80	250	125
Point 81	50.08681	94.0073
Point 82	60.08927	95.68784
Point 83	70.16911	97.26414
Point 84	80.22827	98.91625
Point 85	90.12195	101.03236
Point 86	100.08102	102.91791
Point 87	110.08078	104.93512
Point 88	120.10721	106.93312
Point 89	130.08389	108.71594
Point 90	140.04938	110.45941
Point 91	150.036	112.05851
Point 92	160.04133	113.63181
Point 93	170.08255	115.17008
Point 94	180.07435	116.68158
Point 95	190.05958	118.1868
Point 96	200.0702	119.55096
Point 97	210.08423	121.0682
Point 98	220.09431	122.5306
Point 99	230.05502	123.63417
Point 100	240.08322	124.45421
Point 101	259.95823	124.70206
Point 102	269.95115	123.97326
Point 103	300.06919	121.38496
Point 104	88.36	100.65

Point 105	97.343	97.693
Point 106	96.70022	97.90133
Point 107	96.7	99.9
Point 108	90.63566	99.90002
Point 109	119.46142	99.90042

Regions

	Material	Points	Area (m²)
Region 1	Ashton Mudstone Member (Clay)	31,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,69,19,20,21,22,23,24,25,26,27,28,29,30,32,33,34	9,984.6
Region 2	Engineered Fill	24,20,21,22,23	108.87
Region 3	Engineered Fill	69,12,13,14,15,16,17,18	267.53
Region 4	Inert Waste	106,109,76,74,73,72,103,78,79,102,101,80,100,99,98,97,96,95,94,93,92,91,90,89,88,87,86,85,104,108	1,740.9
Region 5	Geological Barrier	25,24,20,19,69,12,11,10,9,8,7,6,5,4,3,2,1,103,72,73,74,76,109,106,77	383.13
Region 6	Restoration Soils	28,27,26,81,82,83,84,104,85,86,87,88,89,90,91,92,93,94,95,96,97,98,99,100,80,101,102,79,78,103,1,71,70,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66,67,68	277.29
Region 7	Geological Barrier	26,25,77,106,108,104,84,83,82,81	81.063

Current Slip Surface

Slip Surface: 6,439

F of S: 2.361
Volume: 2,610.0381 m³
Weight: 51,089.34 kN
Resisting Moment: 3,422,991.5 kN-m
Activating Moment: 1,449,515.1 kN-m
F of S Rank (Analysis): 1 of 7,436 slip surfaces
F of S Rank (Query): 1 of 7,436 slip surfaces
Exit: (45.219161, 94.183429) m
Entry: (215.04737, 122.7413) m
Radius: 182.76446 m
Center: (103.4, 267.44) m

Slip Slices

	X (m)	Y (m)	PWP (kPa)	Base Normal Stress (kPa)	Frictional Strength (kPa)	Cohesive Strength (kPa)
Slice 1	46.258148	93.841435	0	10.474173	4.6634024	0
Slice 2	47.514959	93.429485	0	23.259487	10.846077	0
Slice 3	48.866392	93.005129	0	37.136702	17.317129	0
Slice 4	52.521703	91.919759	0	72.892234	33.990207	0
Slice 5	57.521703	90.546031	0	118.7755	55.385927	0
Slice 6	62.522318	89.324399	0	160.59709	74.887651	0
Slice 7	67.522318	88.249441	0	198.52825	92.575245	0
Slice 8	72.542277	87.317826	0	233.72777	108.98905	0
Slice 9	77.542277	86.531007	0	266.0328	124.05313	0
Slice 10	84.18	85.73757	0	307.08608	143.19659	0
Slice 11	89.18	85.231426	0	336.95213	157.12336	0
Slice 12	90.060975	85.162969	0	341.33035	159.16496	0
Slice 13	90.378805	85.14016	0	342.72649	159.81599	0
Slice 14	93.66794	84.960095	146.51625	354.42966	96.951615	0

Slice 15	98.35011	84.75277	148.55013	373.60099	104.94294	0
Slice 16	102.52026	84.695031	149.11695	389.61786	112.14742	0
Slice 17	107.52026	84.738821	148.68817	406.76186	120.34174	0
Slice 18	112.38555	84.912181	146.9887	420.51305	127.5465	0
Slice 19	117.11626	85.206132	144.10657	431.07503	133.81559	0
Slice 20	119.73071	85.406804	142.37084	436.0991	136.96774	0
Slice 21	122.5268	85.696886	141.93438	439.14826	138.59311	0
Slice 22	127.5268	86.29221	140.40272	442.85583	141.0362	0
Slice 23	131.315	86.824852	138.44202	444.07888	142.52081	0
Slice 24	136.315	87.702921	134.90561	442.44302	143.40705	0
Slice 25	142.51235	88.92821	129.51902	436.41349	143.10724	0
Slice 26	147.51235	90.097452	123.40119	426.44263	141.31055	0
Slice 27	152.509	91.416222	115.81336	413.91644	139.00775	0
Slice 28	157.509	92.888391	106.72472	398.78107	136.18811	0
Slice 29	162.51033	94.518689	96.086739	380.28243	132.52263	0
Slice 30	167.51033	96.309505	83.873127	358.39137	128.00996	0
Slice 31	170.04128	97.258368	77.275192	346.51947	125.55067	0
Slice 32	170.36905	97.387358	76.360828	344.84945	125.1983	0
Slice 33	172.99166	98.462289	68.624613	330.67437	122.19581	0
Slice 34	177.66389	100.46339	53.998068	303.838	116.50227	0
Slice 35	183.4683	103.19315	33.436838	265.97561	108.43461	0
Slice 36	188.4683	105.68946	14.304457	230.74748	100.92904	0
Slice 37	190.9393	107.00754	4.0214832	211.68449	96.834853	0
Slice 38	195.9393	109.90541	-19.049005	172.22278	80.3088	0
Slice 39	202.51755	113.91612	-51.344795	118.68479	55.343628	0

Slice 40	207.51755	117.26257	-78.814476	73.590899	34.316	0
Slice 41	211.75555	120.27624	-103.83582	33.055304	15.413941	0
Slice 42	214.27923	122.15507	-119.56167	7.9064511	3.5201788	0