

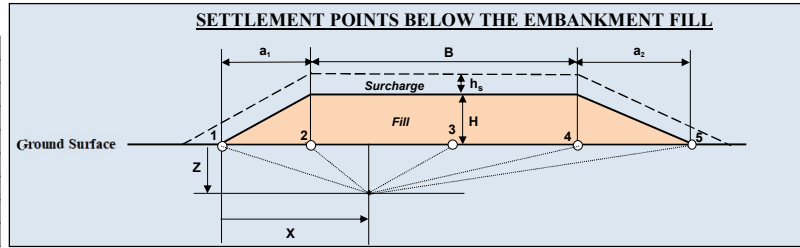
ANALYSIS OF GROUND SETTLEMENTS BENEATH A TRAPEZOIDAL EMBANKMENT

(Copyright © 2015, 2026, EMBANKSETT, All Rights Reserved; By: InfraGEO Software)

PROJECT INFORMATION	
Project Name	
Project No.	
Project Location	
Analyzed By	
Reviewed By	

COMPUTED GROUND SETTLEMENTS	Point 1	Point 2	Point 3	Point 4	Point 5
Distance, X (feet)	0.0	50.0	150.0	250.0	300.0
Total Elastic Settlement (inches)	0.128	1.408	1.533	1.408	0.128
Total Consolidation Settlement (inches)	1.237	5.279	5.771	5.279	1.237
Total Settlement (inches)	1.37	6.69	7.30	6.69	1.37

INPUT PARAMETERS	
Analysis Description	
Ground Stress Analysis Method	Boussinesq Method
Embankment Fill Height, H	25.0 feet
Surcharge Height, h _s	5.0 feet
Top Width of Embankment, B	200.0 feet
Left Side Slope Width, a ₁	50.0 feet
Right Side Slope Width, a ₂	50.0 feet
Groundwater Depth Used for Design	10.0 feet
Unit Weight of Fill, γ _{f,fill}	120.0 pcf



- REFERENCES:**
- Coduto, D.P., 1999, Geotechnical Engineering Principles and Practices, Prentice Hall, pp. 366-463.
 - Poulos, H.G. and Davis, E.H., 1974, "Elastic Solutions for Soil and Rock Mechanics," John Wiley & Sons, pp. 54-57, 92-93.
 - Soils and Foundations. Reference Manual, 2006, Volume I, Report No. FHWA-NHI-06-088, December 2006, pp. 7-15 to 7-28.

INPUT SOIL PROFILE DATA									
Depth to Top of Soil Layer (feet)	Depth to Bottom of Soil Layer (feet)	Soil Type Model	Total Soil Unit Weight γ _t (pcf)	Elastic Soil Modulus E _s (ksf)	Poisson's Ratio ν	Primary Comp. Ratio C _c / (1 + e ₀)	Recomp. Ratio C _r / (1 + e ₀)	Secondary Recomp. Ratio C _α / (1 + e ₀)	Overconsol. Ratio OCR
0.0	5.0	Cohesionless Soil	120.00	500.00	0.30				1.00
5.0	10.0	Cohesionless Soil	120.00	600.00	0.30				1.00
10.0	15.0	Cohesionless Soil	120.00	800.00	0.30				1.00
15.0	20.0	Cohesionless Soil	120.00	1,000.00	0.30				1.00
20.0	25.0	Cohesive Soil	105.00			0.20000	0.02500	0.00750	1.00
25.0	30.0	Cohesionless Soil	120.00	1,200.00	0.30				1.00
30.0	35.0	Cohesionless Soil	120.00	1,500.00	0.30				1.00
35.0	40.0	Cohesionless Soil	120.00	2,500.00	0.30				1.00

COMPUTED SOIL STRESS AND SETTLEMENT CALCULATIONS																			
Bottom of Embankment to Soil Depth Z (feet)	Soil Layer Thickness H _i (feet)	Ini. Effective Vertical Stress (bottom) σ' _{vo,b} (psf)	Ini. Effective Vertical Stress (mid-layer) σ' _{vo,m} (psf)	Maximum Past Soil Pressure σ' _p (ksf)	Load-Induced Stress Change Δp (ksf)					Elastic Settlement S _e (inches)					Consolidation Settlement S _c (inches)				
					Point 1	Point 2	Point 3	Point 4	Point 5	Point 1	Point 2	Point 3	Point 4	Point 5	Point 1	Point 2	Point 3	Point 4	Point 5
2.50	5.00	600.00	300.00	N/A	0.06	3.54	3.60	3.54	0.06	0.006	0.387	0.393	0.387	0.006	0.000	0.000	0.000	0.000	0.000
7.50	5.00	1,200.00	900.00	N/A	0.17	3.43	3.60	3.43	0.17	0.016	0.312	0.328	0.312	0.016	0.000	0.000	0.000	0.000	0.000
12.50	5.00	1,488.00	1,344.00	N/A	0.28	3.32	3.60	3.32	0.28	0.019	0.227	0.246	0.227	0.019	0.000	0.000	0.000	0.000	0.000
17.50	5.00	1,776.00	1,632.00	N/A	0.39	3.21	3.60	3.21	0.39	0.021	0.175	0.196	0.175	0.021	0.000	0.000	0.000	0.000	0.000
22.50	5.00	1,989.00	1,882.50	1.88	0.48	3.11	3.59	3.11	0.48	0.000	0.000	0.000	0.000	0.000	1.237	5.279	5.771	5.279	1.237
27.50	5.00	2,277.00	2,133.00	N/A	0.58	3.02	3.58	3.02	0.58	0.026	0.138	0.163	0.138	0.026	0.000	0.000	0.000	0.000	0.000
32.50	5.00	2,565.00	2,421.00	N/A	0.66	2.94	3.57	2.94	0.66	0.024	0.107	0.130	0.107	0.024	0.000	0.000	0.000	0.000	0.000
37.50	5.00	2,853.00	2,709.00	N/A	0.74	2.86	3.56	2.86	0.74	0.016	0.062	0.078	0.062	0.016	0.000	0.000	0.000	0.000	0.000