Geotechnical Report for Wall Structures
Relative to Final Submittal
Citrus Grove Road Phase 5
From SR 91 to Blackstill Lake Road
Lake County, Florida

Ardaman & Associates, Inc.

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Ardaman & Associates, Inc.

Geotechnical, Environmental and
Materials Consultants

April 11, 2022
File No. 19-6418

DRMP, Inc.
941 Lake Baldwin Lane
Orlando, Florida 32814

Attention: Mr. John Burkett, P.E.

Subject: Geotechnical Report for Wall Structures
Relative to Final Submittal
Citrus Grove Road Phase 5
From SR 91 to Blackstill Lake Road
Lake County, Florida

Dear Mr. Burkett:

As requested and authorized, we have completed a geotechnical engineering evaluation relative to Mechanically Stabilized Earth (MSE) walls and a gravity wall proposed to support grade changes for the subject project. The purpose of performing this exploration was to provide geotechnical engineering information for use during the design of the project. This report documents our findings and presents our engineering recommendations relative to the wall design.

This report has been prepared in accordance with generally accepted geotechnical engineering practices for specific application to the subject project indicated in this report. No other warranty, expressed or implied, is made. The soils information and recommendations submitted herein are based on the data obtained from the soil borings presented on Figures 4 through 6. This report does not reflect any variations which may occur adjacent to or between the borings. The nature and extent of the variations between the test locations may not become evident until during construction.

It is a pleasure assisting you with this project. If you have any questions, or when we may be of further assistance to you, please do not hesitate to contact us.

Very truly yours,
ARDAMAN & ASSOCIATES, INC.
Certificate of Authorization No. 5950

Colin T. Jewsbury, P.E.
Senior Engineer
Florida License No. 58074

Alexandra G. Aydelotte, P.E.
Project Engineer
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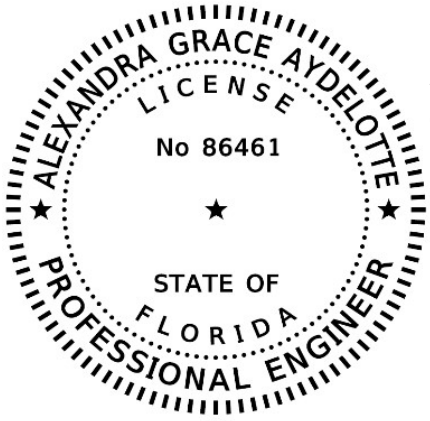

THIS ITEM HAD BEEN DIGITALLY SIGNED AND SEALED BY:
Alexandra G Aydelotte 2022.04.11 12:02:27 -04'00'
ON THE DATE ADJACENT TO THE SEAL

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ARDAMAN & ASSOCIATES, INC.
8008 S. ORANGE AVENUE
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CERTIFICATE OF AUTHORIZATION: 5950
ALEXANDRA G. AYDELOTTE, P.E. NO 86461

AGA/CTJ/jj/nfm
19-6418 Citrus Grove Rd PhV Walls-Final.docx (2019 Geo)

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1.0 INTRODUCTION

1.1 Site Location

The project site for the MSE walls is centered at the location of the new Citrus Grove Road bridge designed (by others) over State Road (SR) 91. In addition, a gravity wall is proposed northwest of the existing intersection of Fosgate Road and Blackstill Lake Road. The proposed walls are located in Sections 9 and 10 of Township 22 South, Range 26 East, in Lake County, Florida. The approximate wall alignments are shown superimposed on a reproduction of the Clermont East, Florida, USGS quadrangle map presented on Figure 1.

The sites for proposed MSE walls RW-1 and RW-2 currently consist of undeveloped vacant land with planted pine. The proposed sites for MSE walls RW-2 and RW-3, and the gravity wall site, currently consist of undeveloped vacant pastureland, grass covered right-of-way areas and the existing Fosgate Road dirt drive.

1.2 Project Considerations

It is our understanding that the project will include the construction of MSE walls to support grade changes for Citrus Grove Road over SR 91 and a gravity wall to support grade changes for a proposed sidewalk. We note that portions of the MSE Walls that fall within the SR 91 right-of-way areas will be designed by others.

The general locations and heights of the walls that are the subject of this report are as follows:

Wall No.	Approximate Centerline Location		Offset	Approximate Maximum Wall Height (Feet)
	Begin Station	End Station		
RW-1	246+30	247+34	Left	24
RW-2	242+98	247+77	Right	28
RW-3	250+89	251+25	Left	14
RW-4	251+31	254+60	Right	15
Gravity Wall	276+85	281+85	Left	6

We understand that the MSE walls will include a minimum of 2 feet of embedment between finished ground and the top of leveling pad. In addition, we understand that the gravity wall will include a minimum of 1 foot of embedment between finished ground and the base of the wall.

1.3 **Purpose and Scope of Project**

The purposes of this exploration were to explore shallow subsurface conditions within the general wall alignments and to provide recommendations relative to design and construction of the proposed walls. We accomplished these purposes by:

1. Obtaining and evaluating readily available geologic and soil survey data.

2. Conducting Standard Penetration Test (SPT) borings at accessible locations relative to the MSE walls and gravity wall.

3. Observing recovered soil samples in our laboratory and performing tests on selected soil samples to aid in classification.

4. Analyzing and interpreting the field and laboratory data.

5. Performing geotechnical engineering analyses relative to wall design.

1.4 **Review of Available Data**

1.4.1 USGS Quadrangle Map

The approximate wall locations are shown superimposed on the Clermont East, Florida USGS quadrangle map presented on Figure 1. Based on review of the USGS quadrangle map, the ground surface elevation in the vicinity of the walls is approximately +125 to +195 feet NGVD.

1.4.2 Soil Survey Maps

Based on the Web Soil Survey, as prepared by the U.S. Department of Agriculture Soil Conservation Service, various soil types exist along the proposed wall alignments. The individual soil types and their characteristics are summarized and presented in Table 1. The type and location of the individual soils are also included on the Soil Survey map presented as Figure 2.

1.4.3 Potentiometric Map

Based on review of the “Potentiometric Surface of the Upper Floridan Aquifer in the St. Johns River Water Management District and Vicinity, Florida” Map (dated June, 2010) published by the United States Geological Survey, the potentiometric elevation within the general project alignment is approximately +75 feet NGVD. This potentiometric surface is below the existing ground surface elevations of approximately +125 to +195 feet NGVD, as determined by a review of the U.S.G.S. quadrangle maps. Therefore, the project corridor is not in an area mapped with artesian type conditions.

2.0 FIELD EXPLORATION PROGRAM

2.1 Test Locations

The field exploration program consisted of performing 15 Standard Penetration Test (SPT) borings. The approximate locations of the SPT borings are schematically illustrated on the Boring Location Plan presented as Figures 3A through 3C. These locations were staked in the field by representatives of Ardaman & Associates using hand-held GPS equipment. Corresponding stations, offsets and approximate existing ground surface elevations were subsequently provided by DRMP.

2.2 Standard Penetration Test (SPT) Borings

The SPT borings were advanced to approximate depths ranging from 15 to 55 feet below the existing ground surface, using the methodology outlined in ASTM D-1586. A summary of this field procedure is included in Appendix I. Split-spoon soil samples were recovered at 1.5-foot intervals to a depth of 10.5 feet and at every 5-foot interval thereafter. The recovered samples were visually classified in the field and representative portions were transported to our laboratory in sealed sample jars for further classification and laboratory testing. At the completion of each boring, the borehole was grouted with a Portland cement grout. The results of the borings are presented on the Report of Core Borings sheets, Figures 4 through 6.

3.0 LABORATORY TESTING PROGRAM

3.1 Visual Examination and Classification Testing

Representative soil samples obtained during performance of the SPT borings were packaged and transferred to our laboratory for further visual examination and classification. The soil samples were visually classified in general accordance with the Unified Soil Classification System (ASTM D-2488). The resulting soil descriptions are shown on the Report of Core Borings sheets presented as Figures 4 through 6.

In addition, we conducted 5 percent fines analyses (ASTM D1140) on selected soil samples obtained from the borings. The results of these tests are presented on Figures 4 through 6 adjacent to the soil profiles at the respective depths from which the tested samples were recovered.

4.0 GENERAL SUBSURFACE CONDITIONS

4.1 General

The results of the field exploration and laboratory testing programs are graphically summarized on the Report of Core Borings sheets presented as Figures 4 through 6. The stratification of the boring profiles represents our interpretation of the field boring logs and the results of laboratory examinations of the recovered samples. The stratification lines represent the approximate boundary between soil types. The actual transitions may be more gradual than implied.

The results of the SPT borings indicate the following general soil profile:

Approximate Elevation (feet, NAVD)		General Description
From	To	
+182	+169	Very loose to loose fine sand (SP)
+169	+152	Loose to medium dense fine sand (SP) and clayey fine sand (SC)
+152	+120	Medium dense to dense fine sand (SP) and fine sand with clay (SP-SC)
+120	+106	Medium dense to very dense fine sand (SP), fine sand with clay (SP-SC) and clayey fine sand (SC)

The above soil profile and descriptions are outlined in general terms only. Please refer to Figures 4 through 6 for soil profile details.

4.2 **Groundwater Levels**

An attempt was made to measure the groundwater level in the boreholes during drilling. As shown on Figures 4 through 6, groundwater was not encountered within the top 10 feet on the dates indicated. Fluctuation in groundwater levels should be anticipated throughout the year primarily due to seasonal variations in rainfall and other factors that may vary from the time the borings were conducted.

The absence of groundwater data at some of the boring locations indicates that groundwater was not encountered within the vertical reach of the borings on the date drilled (referenced “GNE” on Figure 6). For borings referenced “GNM” at the bottom of the boring profiles on Figures 4 and 5, groundwater was not encountered within the top 10 feet and could not be measured below a depth of 10 feet due to the mudded condition of the boreholes. However, this does not necessarily mean that groundwater would not be encountered within the vertical reach of the borings or within the top 10 feet of the borings referenced “GNM” at some other time.

4.3 **Normal Seasonal High Groundwater Level**

The normal seasonal high groundwater level each year is the level in the August-September period at the end of the rainy season during a year of normal (average) rainfall. The water table elevations associated with a higher than normal rainfall and in the extreme case, flood, would be higher to much higher than the normal seasonal high groundwater level. The normal high water levels would more approximate the normal seasonal high groundwater levels.

The seasonal high groundwater level is affected by a number of factors. The drainage characteristics of the soils, the land surface elevation, relief points such as drainage ditches, lakes,

rivers, swamp areas, etc., and distance to relief points are some of the more important factors influencing the seasonal high groundwater level.

Based on our interpretation of the site conditions using our boring logs, we estimate the normal seasonal high groundwater level at the boring locations to be at a depth greater than 20 feet below ground surface. Ground water may perch temporarily at higher level on top of the clayey soil during periods of heavy and/or prolonged rainfall.

5.0 ENGINEERING EVALUATION AND RECOMMENDATIONS

5.1 General

The following are our recommendations for overall site preparation and foundation support which we feel are best suited for the proposed walls and existing soil conditions. The recommendations are made as a guide for the design engineer during the wall plans development phase of the project.

5.2 Mechanically Stabilized Earth (MSE) Walls

5.2.1 General

We understand that a permanent Mechanically Stabilized Earth (MSE) walls are required to support grade changes for proposed Citrus Grove Road over SR 91. The maximum height of these walls will be on the order of 24 feet for RW-1, 28 feet for RW-2, 14 feet for RW-3 and 15 feet for RW-4.

Calculations were performed to determine the minimum required strap length for external stability of the proposed MSE walls. The strap/mesh lengths were interactively adjusted by 1-foot increments for several wall heights until suitable factors of safety were obtained for all of the design criteria. Geometry of the proposed walls was obtained from the wall plans provided by DRMP.

Our analyses for overturning, sliding, and bearing capacity were performed using the computer program entitled “MSE – External LRFD Version 2.5.1” which was developed by FDOT based on LRFD design procedures.

The following soil parameters were utilized in the calculations:

		Reinforced Soil & Random Backfill	Very loose to loose sand	Loose to medium dense sand	Medium dense sand	Medium dense to dense sand and clayey sand	Medium dense to dense sand
Depth Below Existing Ground Surface (feet)	RW-1	--	0 - 10	--	10 - 25	--	25 - 55
	RW-2	--	0 - 10	10 - 15	15 - 25	--	25 - 55
	RW-3	--	0 - 12½	--	--	12½ - 40	--
	RW-4	--	0 - 12½	--	--	12½ - 40	--
Effective Unit Weight (pcf):		105	100	105	108	53	56
Cohesion (psf):		0	0	0	0	0	0
Internal Friction Angle:		30	29	30	31	33	34

As stipulated in the FDOT Structures Design Guidelines, the following Capacity-Demand Ratios were used in our analyses:

Overturning: CDR ≥ 1.0
Eccentricity: CDR ≤ 1.0
Siding: CDR ≥ 1.0
Bearing Resistance: CDR ≥ 1.0

In addition to analyzing the wall design for overturning, eccentricity, sliding, and bearing resistance, a slope stability analysis was performed to check the possibility of bottom heave or toe failure. The slope stability analyses were performed using the computer program ReSSA+ published by ADAMA Engineering, Inc. Circular arc type failure modes were analyzed. The analysis was performed utilizing the soil conditions discussed above and a phreatic surface assuming long term steady state conditions in which the soils above the phreatic surface were in a moist state, while the soils below the phreatic surface were in a buoyant state. We have assumed that hydrostatic pressure will be relieved behind the wall. A search feature of the program was utilized to locate the surface that represented the minimum factor of safety. In order to test the external stability of the retaining wall, potential failure surfaces were excluded from entering the reinforced soil mass. The strap/mesh length was adjusted until the results of the calculations indicated factors of safety of approximately 1.5 or greater.

The calculations show that minimum strap/mesh lengths as shown in the following table are required:

MSE Wall RW-1									
Wall Height (ft.)	24	22	21	--	--	--	--	--	--
Reinforcement Length (ft.)	17	16	15	--	--	--	--	--	--
Factored Bearing Resistance (psf)	6,799	6,759	6,474	--	--	--	--	--	--
MSE Wall RW-2									
Wall Height (ft.)	10	12	13	17	19	21	23	25	27
Reinforcement Length (ft.)	8	9	10	12	14	15	17	18	19
Factored Bearing Resistance (psf)	4,629	4,811	5,265	5,636	6,444	6,474	7,036	7,079	7,126
MSE Wall RW-2 Continued									
Wall Height (ft.)	23	25	27	28	--	--	--	--	--
Reinforcement Length (ft.)	17	18	19	20	--	--	--	--	--
Factored Bearing Resistance (psf)	7,036	7,079	7,126	7,402	--	--	--	--	--
MSE Wall RW-3									
Wall Height (ft.)	14	--	--	--	--	--	--	--	--
Reinforcement Length (ft.)	11	--	--	--	--	--	--	--	--
Factored Bearing Resistance (psf)	5,243	--	--	--	--	--	--	--	--
MSE Wall RW-4									
Wall Height (ft.)	15	13	12	--	--	--	--	--	--
Reinforcement Length (ft.)	11	10	9	--	--	--	--	--	--
Factored Bearing Resistance (psf)	5,010	4,977	4,700	--	--	--	--	--	--

We note that the wall heights presented in the above tables are measured from leveling pad to top of coping.

Based on these calculations, it is our opinion that using the minimum strap/mesh lengths shown in the preceding tables, the proposed walls will have adequate factors of safety against overturning, sliding, eccentricity, bearing capacity, and circular arc slope failure. ***Required strap/mesh lengths may be longer than shown in the attached tables to provide internal stability*.** **Required strap/mesh lengths to satisfy internal stability should be provided by the proprietary wall company.** The longer of the two lengths should be incorporated into the design.

Output from the “MSE-External LRFD Version 2.5.1” and ReSSA+ programs are included in Appendix II.

5.2.2 Wall Settlement

A settlement analysis was undertaken using the computer program Settle3D and the results of the SPT borings. Published correlations based on the SPT N-values were used to estimate the elastic moduli of the sandy soils. A Westergaard stress distribution was used in the Settle3D foundation model as was a flexible foundation type and an assumed fill moist unit weight of 105 pounds per cubic foot (pcf). The results of our calculations are summarized in the following table.

Wall No.	WALL SETTLEMENT				Design High Water Elevation (ft.)
	Long Term Settlement (in.)	Short Term Settlement (in.)	Differential Settlement		
			Longitudinal (%) (ft./100ft.)	Transverse (in.)	
RW-1	N/A	2.5	<0.25	N/A	N/A
RW-2	N/A	2.4	<0.25	N/A	N/A
RW-3	N/A	1.8	<0.25	N/A	N/A
RW-4	N/A	1.5	<0.25	N/A	N/A

For the purpose of this report, long term settlement is settlement that occurs following the completion of wall fill placement. Per FDOT guidelines transverse settlement is only applicable for widening of existing embankments.

Output from the Settle 3D computer program is included in Appendix III for informational purposes.

5.3 **Gravity Wall**

The results of our exploration indicate that the existing soils are suitable for supporting the proposed gravity wall located between approximate Stations 276+85 and 281+85. We understand that the standard design for gravity walls, per FDOT Standard Plans Index 400-011, incorporates the following soil parameters into the analysis.

Soil Classification	Cohesionless (Fine Sand)
Friction Angle	30 degrees
Moist Unit Weight of Backfill	120 pcf
Friction Angle	30 degrees
N-Blow Count	10 blows/ft
Allowable Bearing Capacity	2,500 psf for slopes ≤ 1:1½

Based on our review of the borings, the subsurface conditions along the proposed gravity wall alignment are compatible with the standard design soil parameters presented above.

The gravity wall should be constructed in accordance with FDOT Standard Plans Index 400-011. According to FDOT Standard Plans Index Number 400-011, a gravity wall with no traffic loading and a slope equal to or flatter than 1:1½ shall have a maximum exposed height of 5 feet with a

recommended batter of 5H:12V. For the gravity wall, foundation soils should be prepared in accordance to Section 455 of the FDOT Standard Specifications for Road and Bridge Construction relative to Spread Footings.

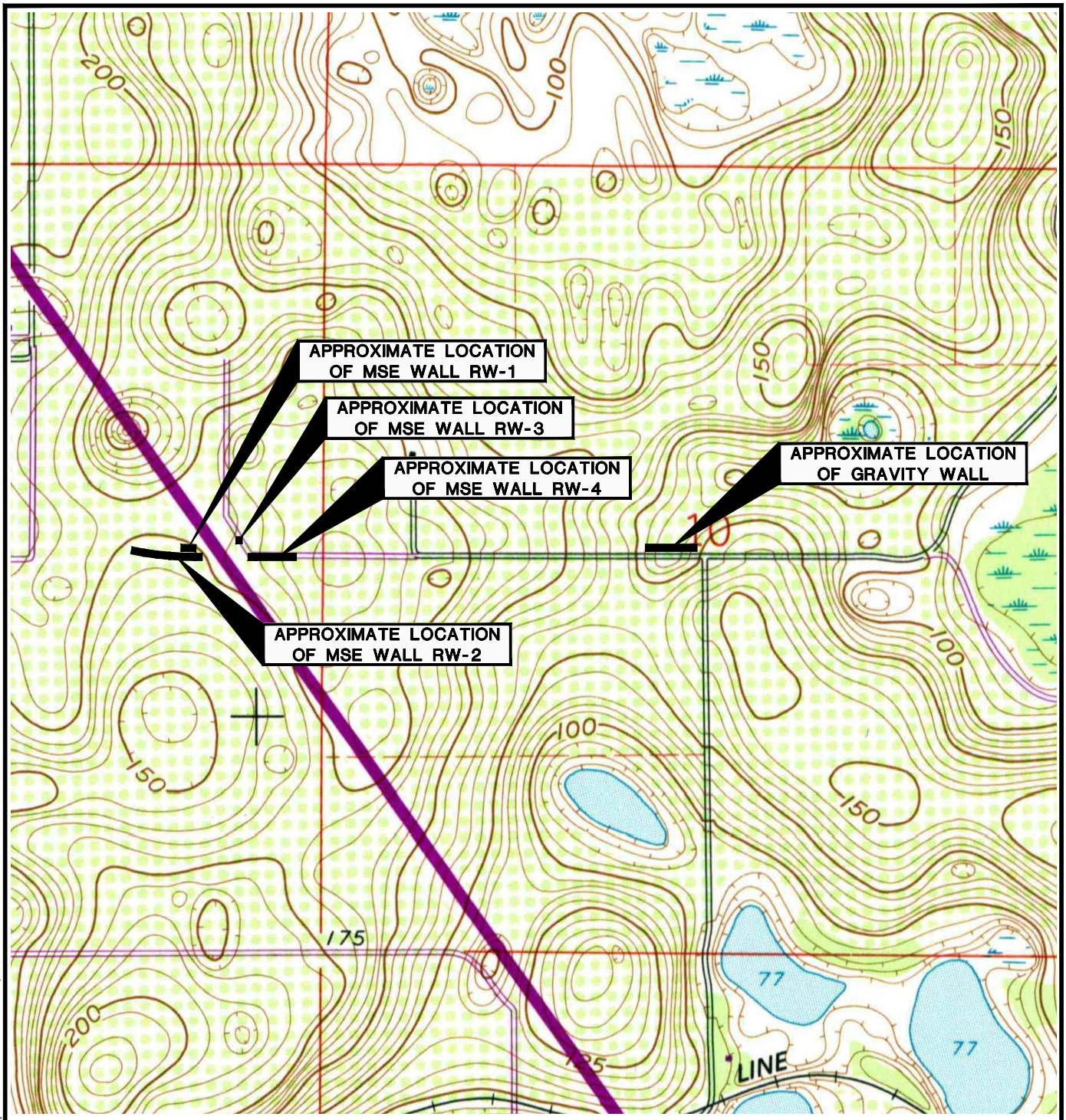
5.4 **Construction Considerations**

Construction should be performed in accordance with the appropriate sections of the FDOT current edition of the Standard Specifications for Road and Bridge Construction. In accordance with these specifications, the removal of organic materials and any plastic soil should be accomplished in accordance with FDOT Standard Plans Index No. 120-002 unless otherwise indicated on the plans. Backfill should generally consist of clean, fine sand compacted in accordance with Standard Specifications. Fill Placement and Side Slopes for Embankment Construction are presented in the FDOT Standard Plans Index No. 120-001.

TABLE 1

Review of Soil Survey Maps
Citrus Grove Road Phase 5
From SR 91 to Blackstill Lake Road
Lake County, Florida

Soil Map Unit	Description	Permeability		Approximate Depth to Normal Seasonal High Groundwater Level
		Depth (inches)	inch/hour	
8; Candler sand, 0 to 5 percent slopes	Consists of nearly level to gently sloping and excessively drained sandy soil on the uplands.	0 – 80	6 – 20	More than 80 inches.
9; Candler sand, 5 to 12 percent slopes	Consists of sloping and strongly sloping and excessively drained sandy soil on the uplands.	0 – 80	6 – 20	More than 80 inches
17; Arents	Consists of material dug from several areas that have different kinds of soil. This fill material is the result of earth moving operations.	--	--	Varies with the amount of fill material and artificial drainage in any mapped area.
21; Lake sand, 0 to 5 percent slopes	Consists of nearly level to gently sloping and excessively drained sandy soil on the uplands.	0 – 80	20 – 50	More than 80 inches
22; Lake sand, 5 to 12 percent slopes	Consists of sloping to strongly sloping and excessively drained sandy soil on the uplands.	0 – 80	20 – 50	More than 80 inches



SECTIONS 9 AND 10
TOWNSHIP 22 SOUTH
RANGE 26 EAST

OBTAINED FROM U.S.G.S. QUAD MAP: CLERMONT EAST, FLORIDA 1962
(PHOTOREVISED 1980)

N

0 500 1000
SCALE: (FEET)

QUADRANGLE LOCATION

SITE LOCATION MAP

Ardaman & Associates, Inc.
Geotechnical, Environmental and Materials Consultants

SUBSURFACE SOIL EXPLORATION
CITRUS GROVE ROAD
PHASE V
MINNEOLA, LAKE COUNTY, FLORIDA

DRAWN BY: CD	CHECKED BY:	DATE: 03/16/20
FILE NO. 19-6418	APPROVED BY:	FIGURE: 1

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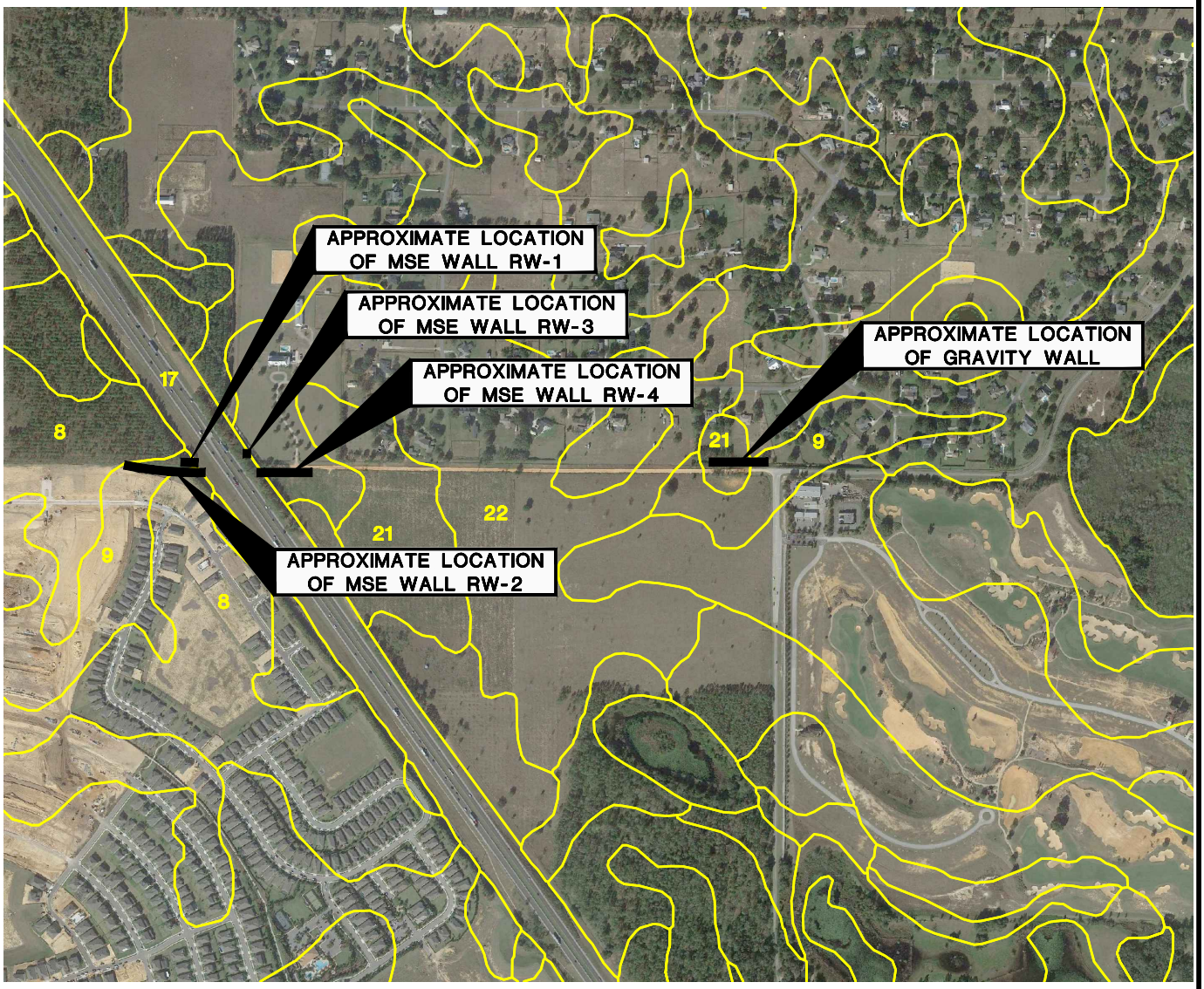

OBTAINED FROM: GOOGLE EARTH PRO
DATED: 03/17/2017

LEGEND

8 - CANDLER SAND, 0 TO 5 PERCENT SLOPES

9 - CANDLER SAND, 5 TO 12 PERCENT SLOPES

17 - ARENTS

21 - LAKE SAND, 0 TO 5 PERCENT SLOPES

22 - LAKE SAND, 5 TO 12 PERCENT SLOPES

N

0 500 1000

SCALE: (FEET)

SOIL SURVEY MAP

Ardaman & Associates, Inc.
Geotechnical, Environmental and Materials Consultants

SUBSURFACE SOIL EXPLORATION
CITRUS GROVE ROAD
PHASE V
MINNEOLA, LAKE COUNTY, FLORIDA

DRAWN BY: CD	CHECKED BY:	DATE: 03/16/20
FILE NO. 19-6418	APPROVED BY:	FIGURE: 2

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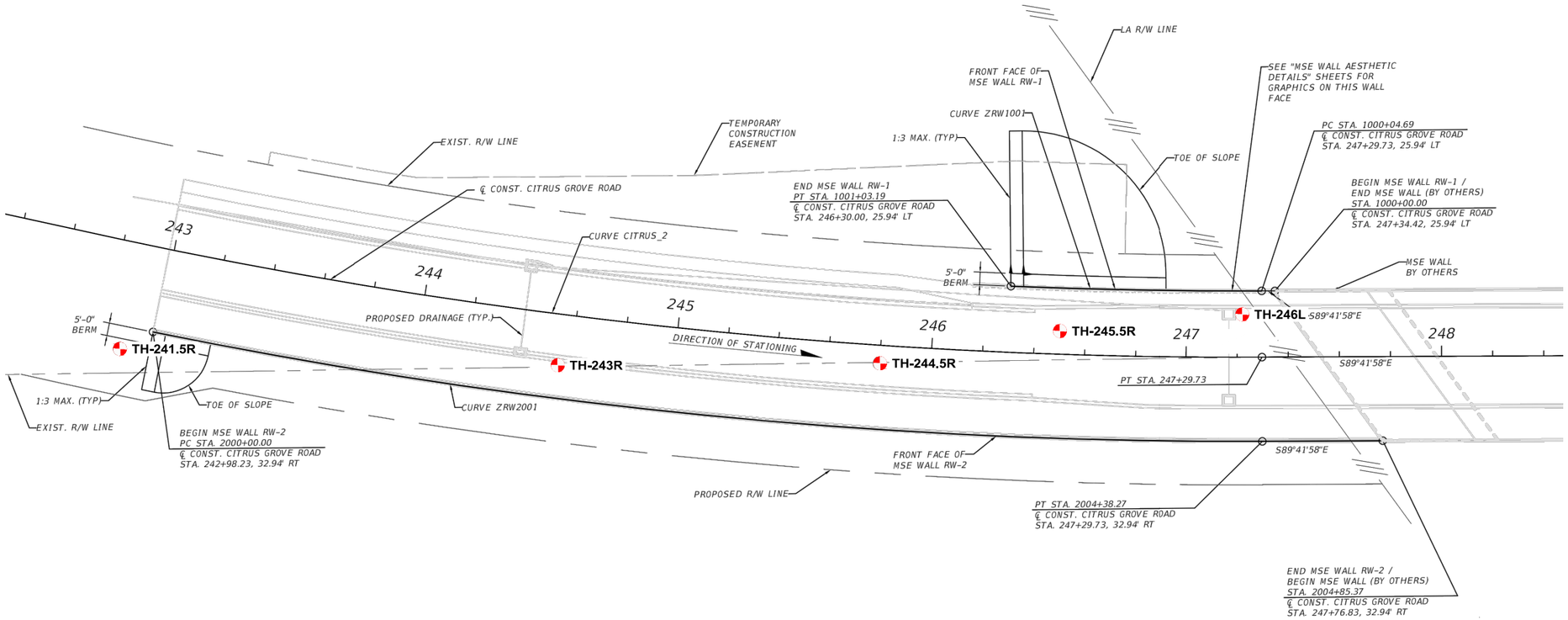
FIGURE 3A



NOTE: THE BASE MAP FOR THE BORING LOCATION PLAN IS A SITE PLAN BY DRMP, INC.

LEGEND

TH **STANDARD PENETRATION TEST (SPT) BORING LOCATION**

N

MSE WALLS RW-1 AND RW-2

REVISIONS	DATE
----	----

LAKE COUNTY, FL
REAL FLORIDA · REAL CLOSE

LAKE COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

ROAD	RSQ NO.
CITRUS GROVE ROAD	17-0003

Ardaman & Associates, Inc.
8008 S. Orange Avenue
Orlando, Fl. 32809
Certificate of Authorization No: 5950
ALEXANDRA G. AYDELOTTE, P.E. LICENSE NO. 86461

DATE:

BORING LOCATION PLAN

SHEET NO.

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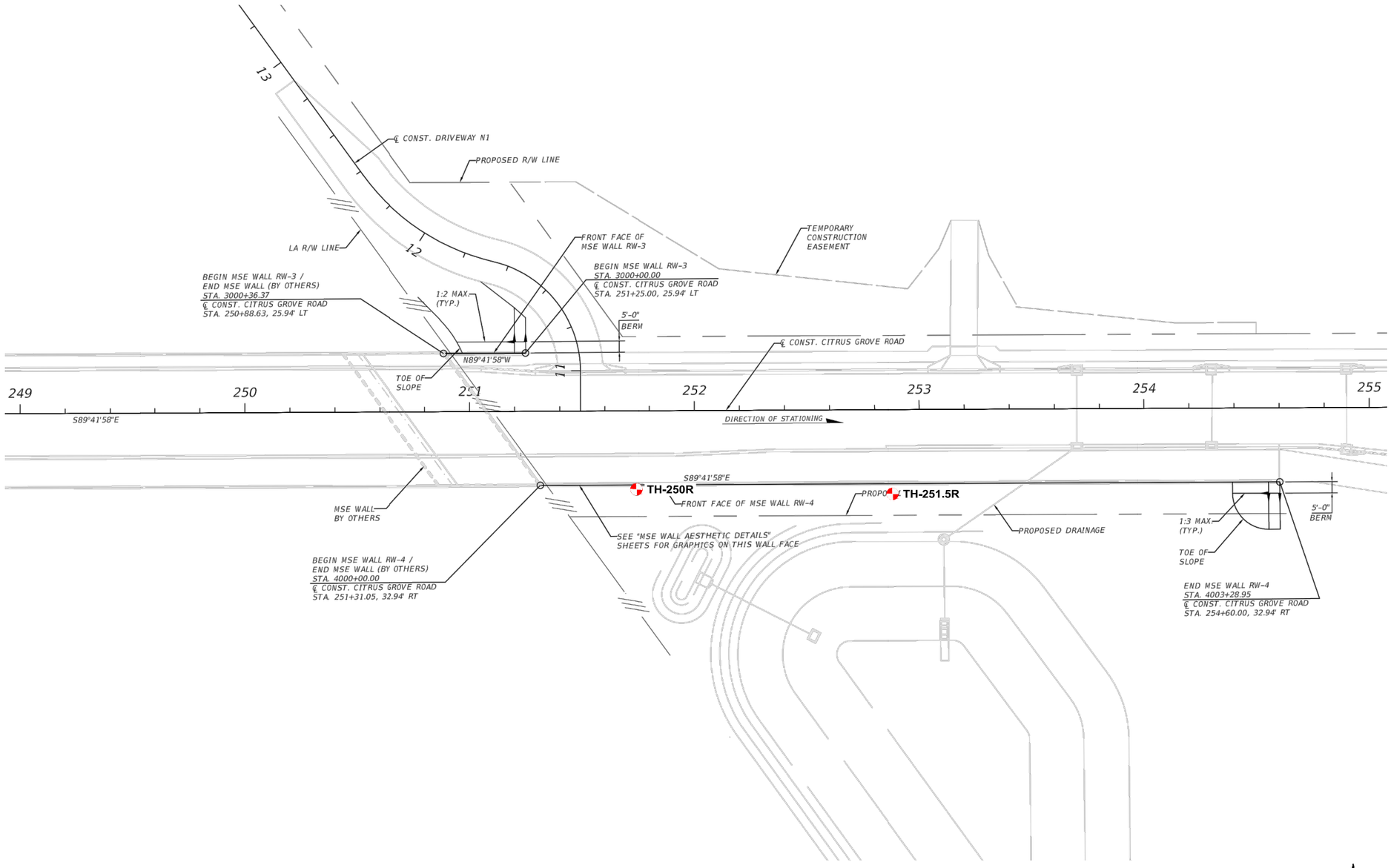
FIGURE 3B



NOTE: THE BASE MAP FOR THE BORING LOCATION PLAN IS A SITE PLAN BY DRMP, INC.

LEGEND

TH STANDARD PENETRATION TEST (SPT) BORING LOCATION

MSE WALLS RW-3 AND RW-4

REVISIONS	DATE
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LAKE COUNTY, FL
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LAKE COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

ROAD	RSO NO.
CITRUS GROVE ROAD	17-0003

Ardaman & Associates, Inc.
8008 S. Orange Avenue
Orlando, Fl. 32809
Certificate of Authorization No: 5950
ALEXANDRA G. AYDELOTTE, P.E. LICENSE NO. 86461

DATE:

BORING LOCATION PLAN

SHEET NO.

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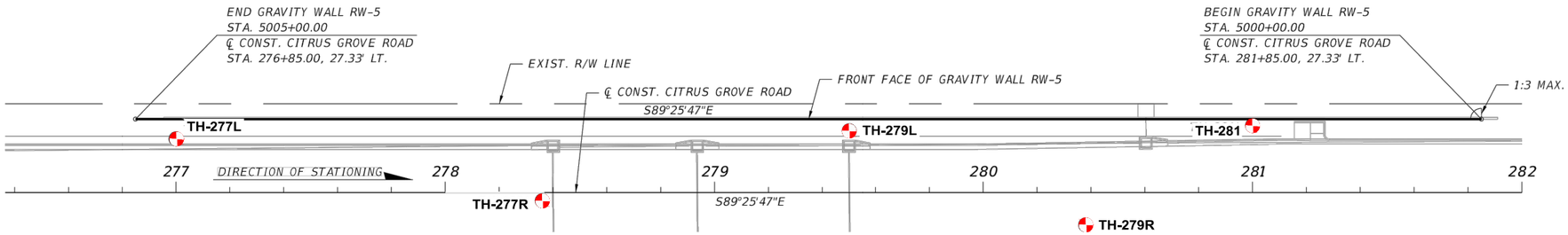

NOTE: THE BASE MAP FOR THE BORING LOCATION PLAN IS A SITE PLAN BY DRMP, INC.

LEGEND

TH STANDARD PENETRATION TEST (SPT) BORING LOCATION

REVISIONS	DATE
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DATE:

BORING LOCATION PLAN

SHEET NO.

FIGURE 4

LEGEND

FINE SAND

CLAYEY FINE SAND

SILTY FINE SAND

N	STANDARD PENETRATION RESISTANCE IN BLOWS PER FOOT
GSE	APPROXIMATE GROUND SURFACE ELEVATION (ft NAVD)
−200	PERCENT PASSING NO. 200 SIEVE SIZE (PERCENT FINES)(ASTM D−1140)
GNM	GROUNDWATER NOT MEASURED (i.e., NOT ENCOUNTERED IN THE TOP 10 FEET AND NOT MEASURED BELOW 10 FEET DUE TO THE MUDDED CONDITION OF THE BOREHOLE)
SP,SP−SM SM,SC,CH	UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D−2487)

STANDARD PENETRATION TEST DATA

SPOON I.D.= 1.375"
SPOON O.D.= 2.0"
HAMMER DROP= 30"
HAMMER WEIGHT= 140 lbs.
HAMMER TYPE= AUTOMATIC

SHELL CONTENT

TRACE: <5%
FEW: 5 TO 10%
LITTLE: 15 TO 25%
SOME: 30 TO 45%
MOSTLY: 50 TO 100%

NOTES:

1. UPON COMPLETION OF THE BORING, THE BOREHOLE WAS GROUTED WITH PORTLAND CEMENT GROUT.
2. ALL SPT BORINGS WERE PERFORMED USING AN AUTOMATIC HAMMER TO THE BORING TERMINATION DEPTH. AUTOMATIC HAMMER N−VALUES MAY BE CONVERTED TO EQUIVALENT SAFETY HAMMER N−VALUES BY MULTIPLYING BY 1.24.
3. ARTESIAN CONDITIONS WERE NOT NOTED BY THE DRILLER DURING BOREHOLE DRILLING. HOWEVER, BASED ON REVIEW OF THE POTENTIOMETRIC MAPS OF THE AREA, IF THE CONTRACTOR SHOULD ENCOUNTERED ARTESIAN CONDITIONS DURING CONSTRUCTION, THE ESTIMATED ELEVATION OF THE ARTESIAN HEAD IS APPROXIMATELY +75 FEET NGVD. THE CONTRACTOR SHALL BE PREPARED TO HANDLE ARTESIAN WATER LEVELS UP TO +75 FEET NGVD.
4. STATION AND OFFSET REFERENCED TO CENTERLINE CONSTRUCTION CITRUS GROVE ROAD BASELINE.
5. APPROXIMATE GROUND SURFACE ELEVATIONS PROVIDED BY DRMP.

ENGINEERING CLASSIFICATION

I GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N−VALUE (BLOW/FOOT)
VERY LOOSE	<3
LOOSE	3 TO 8
MEDIUM	8 TO 24
DENSE	24 TO 40
VERY DENSE	>40

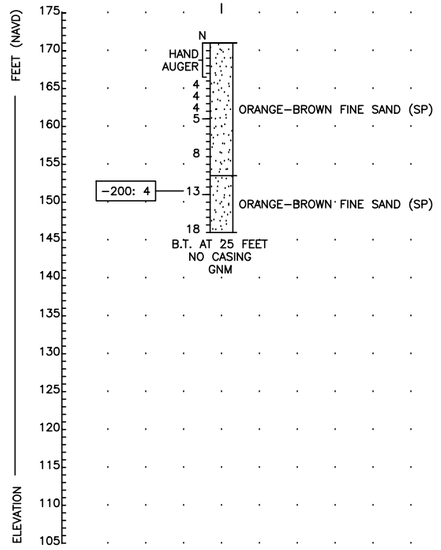
II SILTS AND CLAYS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH, Qu, TSF	AUTOMATIC HAMMER SPT N−VALUE (BLOW/FOOT)
VERY SOFT	<1/4	<1
SOFT	1/4 TO 1/2	1 TO 3
FIRM	1/2 TO 1	3 TO 6
STIFF	1 TO 2	6 TO 12
VERY STIFF	2 TO 4	12 TO 24
HARD	>4	>24

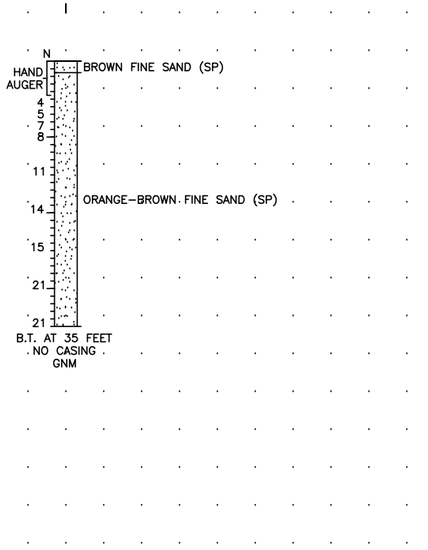
WHILE THE BORINGS ARE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT THEIR RESPECTIVE LOCATIONS AND FOR THEIR RESPECTIVE VERTICAL REACHES, LOCAL VARIATIONS CHARACTERISTIC OF THE SUBSURFACE MATERIALS OF THE REGION ARE ANTICIPATED AND MAY BE ENCOUNTERED. THE BORING LOGS AND RELATED INFORMATION ARE BASED ON THE DRILLER'S LOGS AND VISUAL EXAMINATION OF SELECTED SAMPLES IN THE LABORATORY. THE DELINEATION BETWEEN SOIL TYPES SHOWN ON THE LOGS IS APPROXIMATE AND THE DESCRIPTION REPRESENTS OUR INTERPRETATION OF SUBSURFACE CONDITIONS AT THE DESIGNATED BORING LOCATIONS ON THE PARTICULAR DATE DRILLED. DESIGNATED BORING LOCATIONS ON THE PARTICULAR DATE DRILLED.

GROUNDWATER ELEVATIONS SHOWN ON THE BORING LOGS REPRESENT GROUNDWATER SURFACES ENCOUNTERED ON THE DATES SHOWN. FLUCTUATIONS IN WATER TABLE LEVELS SHOULD BE ANTICIPATED THROUGHOUT THE YEAR. ABSENCE OF WATER SURFACE DATA IN THE BORING IMPLIES THAT NO GROUNDWATER DATA IS AVAILABLE, BUT DOES NOT NECESSARILY MEAN THAT GROUNDWATER WILL NOT BE ENCOUNTERED AT THIS LOCATION OR WITHIN THE VERTICAL REACHES OF THIS BORING IN THE FUTURE.

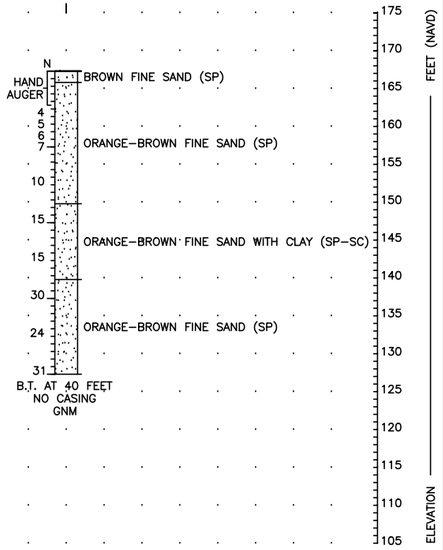
BORING:	TH-241.5R
DATE:	03/03/20
GSE:	171.0
STATION:	242+87
OFFSET:	42R
LATITUDE:	28.586578°
LONGITUDE:	−80.710778°



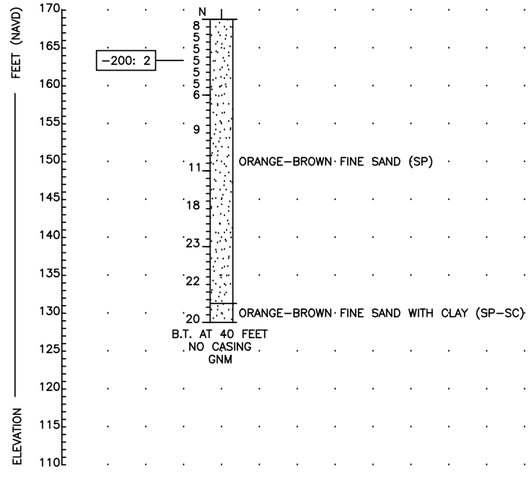
BORING:	TH-243R
DATE:	03/03/20
GSE:	168.6
STATION:	244+55
OFFSET:	20R
LATITUDE:	28.586557°
LONGITUDE:	−80.710306°



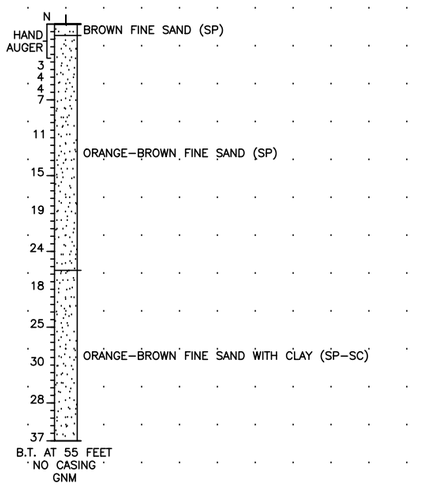
BORING:	TH-244.5R
DATE:	03/03/20
GSE:	167.3
STATION:	245+80
OFFSET:	7R
LATITUDE:	28.586556°
LONGITUDE:	−80.709856°



BORING:	TH-245.5R
DATE:	03/04/20
GSE:	168.8
STATION:	246+50
OFFSET:	10L
LATITUDE:	28.586556°
LONGITUDE:	−80.709856°



BORING:	TH-246L
DATE:	03/03/20
GSE:	167.9
STATION:	247+22
OFFSET:	18L
LATITUDE:	28.586617°
LONGITUDE:	−80.709417°



MSE WALLS RW-1 AND RW-2

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

REVISIONS	DATE
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Ardaman & Associates, Inc.
8008 S. Orange Avenue
Orlando, Fl. 32809
Certificate of Authorization No: 5950

LAKE COUNTY, FL
REAL FLORIDA · REAL CLOSE

LAKE COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

ROAD	RSQ NO.
CITRUS GROVE ROAD	17-0003

Ardaman & Associates, Inc.
8008 S. Orange Avenue
Orlando, Fl. 32809
Certificate of Authorization No: 5950

ALEXANDRA G. AYDELOTTE, P.E. LICENSE NO. 86461

DATE:

REPORT OF CORE BORINGS

SHEET NO.
BW-14

Drew, Chris 3/30/2021 4:23:04 PM T:\Orlando\19\19-6418\Geo\196418-GEO-04.dwg

FIGURE 5

LEGEND

FINE SAND

CLAYEY FINE SAND

SILTY FINE SAND

N	STANDARD PENETRATION RESISTANCE IN BLOWS PER FOOT
GSE	APPROXIMATE GROUND SURFACE ELEVATION (ft NAVD)
−200	PERCENT PASSING NO. 200 SIEVE SIZE (PERCENT FINES)(ASTM D−1140)
GNM	GROUNDWATER NOT MEASURED (i.e., NOT ENCOUNTERED IN THE TOP 10 FEET AND NOT MEASURED BELOW 10 FEET DUE TO THE MUDDED CONDITION OF THE BOREHOLE)
SP,SP−SM SM,SC,CH	UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D−2487)

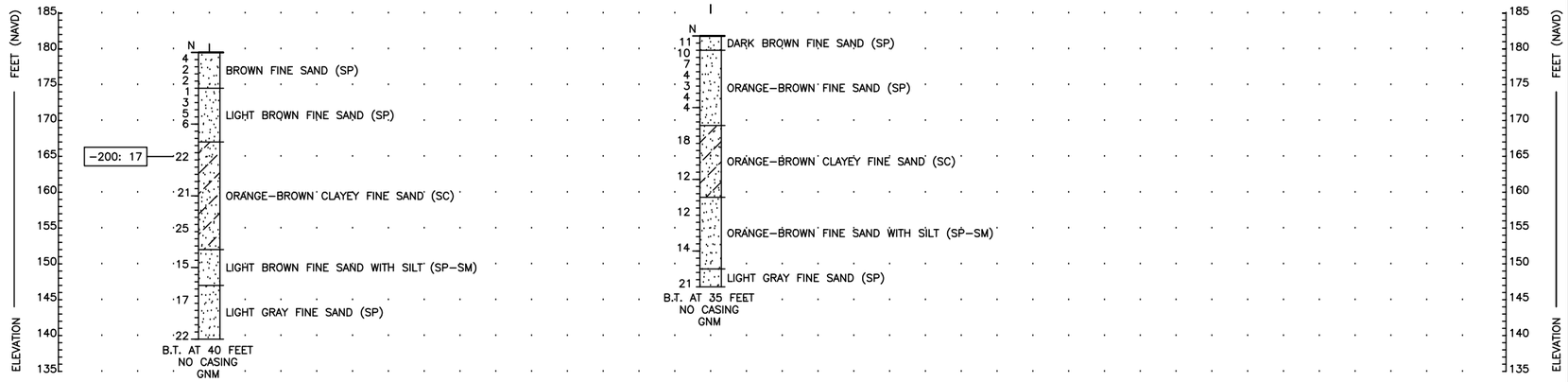
STANDARD PENETRATION TEST DATA

SPOON I.D.= 1.375"
SPOON O.D.= 2.0"
HAMMER DROP= 30"
HAMMER WEIGHT= 140 lbs.
HAMMER TYPE= AUTOMATIC

SHELL CONTENT

TRACE: <5%
FEW: 5 TO 10%
LITTLE: 15 TO 25%
SOME: 30 TO 45%
MOSTLY: 50 TO 100%

BORING:	TH-250R	TH-251.5R
DATE:	03/05/20	03/05/20
GSE:	179.5	181.8
STATION:	251+74	252+88
OFFSET:	35R	37R
LATITUDE:	28.586464°	28.586459°
LONGITUDE:	−80.708005°	−80.707657°



NOTES:

1. UPON COMPLETION OF THE BORING, THE BOREHOLE WAS GROUTED WITH PORTLAND CEMENT GROUT.
2. ALL SPT BORINGS WERE PERFORMED USING AN AUTOMATIC HAMMER TO THE BORING TERMINATION DEPTH. AUTOMATIC HAMMER N−VALUES MAY BE CONVERTED TO EQUIVALENT SAFETY HAMMER N−VALUES BY MULTIPLYING BY 1.24.
3. ARTESIAN CONDITIONS WERE NOT NOTED BY THE DRILLER DURING BOREHOLE DRILLING. HOWEVER, BASED ON REVIEW OF THE POTENTIOMETRIC MAPS OF THE AREA, IF THE CONTRACTOR SHOULD ENCOUNTERED ARTESIAN CONDITIONS DURING CONSTRUCTION, THE ESTIMATED ELEVATION OF THE ARTESIAN HEAD IS APPROXIMATELY +75 FEET NGVD. THE CONTRACTOR SHALL BE PREPARED TO HANDLE ARTESIAN WATER LEVELS UP TO +75 FEET NGVD.
4. STATION AND OFFSET REFERENCED TO CENTERLINE CONSTRUCTION CITRUS GROVE ROAD BASELINE.
5. APPROXIMATE GROUND SURFACE ELEVATIONS PROVIDED BY DRMP.

ENGINEERING CLASSIFICATION

I GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N−VALUE (BLOW/FOOT)
VERY LOOSE	<3
LOOSE	3 TO 8
MEDIUM	8 TO 24
DENSE	24 TO 40
VERY DENSE	>40

II SILTS AND CLAYS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH, QU, TSF	AUTOMATIC HAMMER SPT N−VALUE (BLOW/FOOT)
VERY SOFT	<1/4	<1
SOFT	1/4 TO 1/2	1 TO 3
FIRM	1/2 TO 1	3 TO 6
STIFF	1 TO 2	6 TO 12
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HARD	>4	>24

WHILE THE BORINGS ARE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT THEIR RESPECTIVE LOCATIONS AND FOR THEIR RESPECTIVE VERTICAL REACHES, LOCAL VARIATIONS CHARACTERISTIC OF THE SUBSURFACE MATERIALS OF THE REGION ARE ANTICIPATED AND MAY BE ENCOUNTERED. THE BORING LOGS AND RELATED INFORMATION ARE BASED ON THE DRILLER'S LOGS AND VISUAL EXAMINATION OF SELECTED SAMPLES IN THE LABORATORY. THE DELINEATION BETWEEN SOIL TYPES SHOWN ON THE LOGS IS APPROXIMATE AND THE DESCRIPTION REPRESENTS OUR INTERPRETATION OF SUBSURFACE CONDITIONS AT THE DESIGNATED BORING LOCATIONS ON THE PARTICULAR DATE DRILLED. DESIGNATED BORING LOCATIONS ON THE PARTICULAR DATE DRILLED.

GROUNDWATER ELEVATIONS SHOWN ON THE BORING LOGS REPRESENT GROUNDWATER SURFACES ENCOUNTERED ON THE DATES SHOWN. FLUCTUATIONS IN WATER TABLE LEVELS SHOULD BE ANTICIPATED THROUGHOUT THE YEAR. ABSENCE OF WATER SURFACE DATA IN THE BORING IMPLIES THAT NO GROUNDWATER DATA IS AVAILABLE, BUT DOES NOT NECESSARILY MEAN THAT GROUNDWATER WILL NOT BE ENCOUNTERED AT THIS LOCATION OR WITHIN THE VERTICAL REACHES OF THIS BORING IN THE FUTURE.

MSE WALLS RW-3 AND RW-4

REVISIONS	DATE
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LAKE COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

ROAD	RSQ NO.
CITRUS GROVE ROAD	17-0003

Ardaman & Associates, Inc.
8008 S. Orange Avenue
Orlando, Fl. 32809
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ALEXANDRA G. AYDELOTTE, P.E. LICENSE NO. 86461

DATE:

REPORT OF CORE BORINGS

SHEET NO.
BW-15

Drew, Chris 3/30/2021 4:23:08 PM T:\Orlando\19\19-6418\Geo\196418-GEO-04.dwg

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FIGURE 6

LEGEND

FINE SAND

CLAYEY FINE SAND

N	STANDARD PENETRATION RESISTANCE IN BLOWS PER FOOT
GSE	APPROXIMATE GROUND SURFACE ELEVATION (ft NAVD)
−200	PERCENT PASSING NO. 200 SIEVE SIZE (PERCENT FINES)(ASTM D−1140)
GNE	GROUNDWATER NOT ENCOUNTERED ON DATE DRILLED
SP,SP−SM SM,SC,CH	UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D−2487)

STANDARD PENETRATION TEST DATA

SPOON I.D.= 1.375"
SPOON O.D.= 2.0"
HAMMER DROP= 30"
HAMMER WEIGHT= 140 lbs.
HAMMER TYPE= AUTOMATIC

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TRACE:	<5%
FEW:	5 TO 10%
LITTLE:	15 TO 25%
SOME:	30 TO 45%
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NOTES:

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4. STATION AND OFFSET REFERENCED TO CENTERLINE CONSTRUCTION CITRUS GROVE ROAD BASELINE.
5. APPROXIMATE GROUND SURFACE ELEVATIONS PROVIDED BY DRMP.
6. * STATIONS, OFFSETS AND GROUND SURFACE ELEVATION APPROXIMATED FROM PLAN SHEETS.

ENGINEERING CLASSIFICATION

I GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N−VALUE (BLOW/FOOT)
VERY LOOSE	<3
LOOSE	3 TO 8
MEDIUM	8 TO 24
DENSE	24 TO 40
VERY DENSE	>40

II SILTS AND CLAYS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH, QU, TSF	AUTOMATIC HAMMER SPT N−VALUE (BLOW/FOOT)
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SOFT	1/4 TO 1/2	1 TO 3
FIRM	1/2 TO 1	3 TO 6
STIFF	1 TO 2	6 TO 12
VERY STIFF	2 TO 4	12 TO 24
HARD	>4	>24

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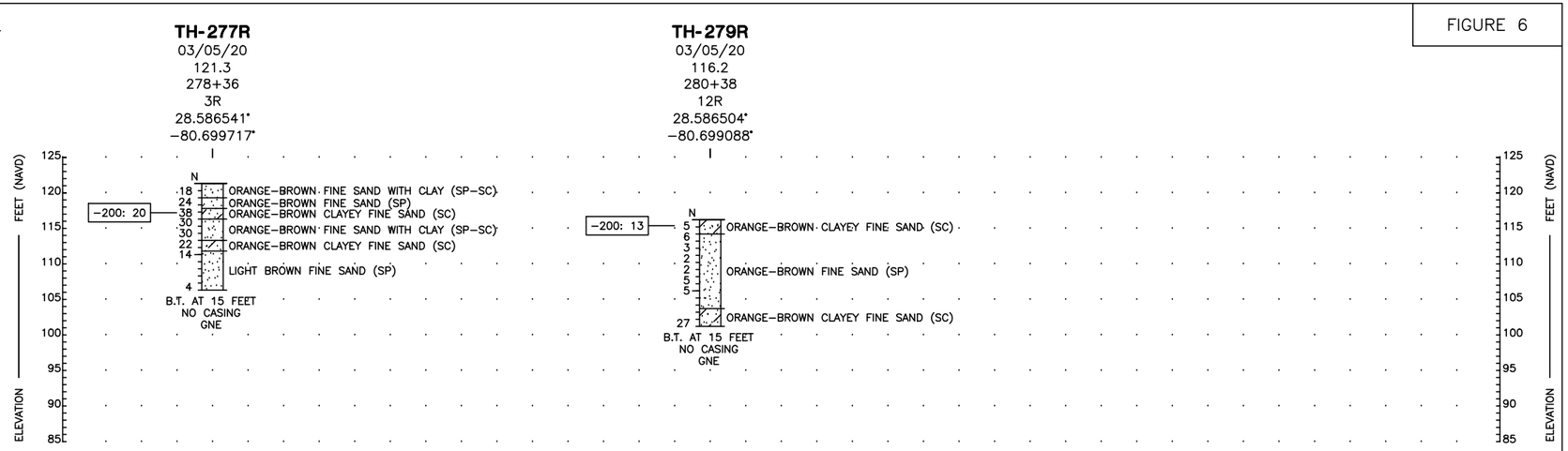

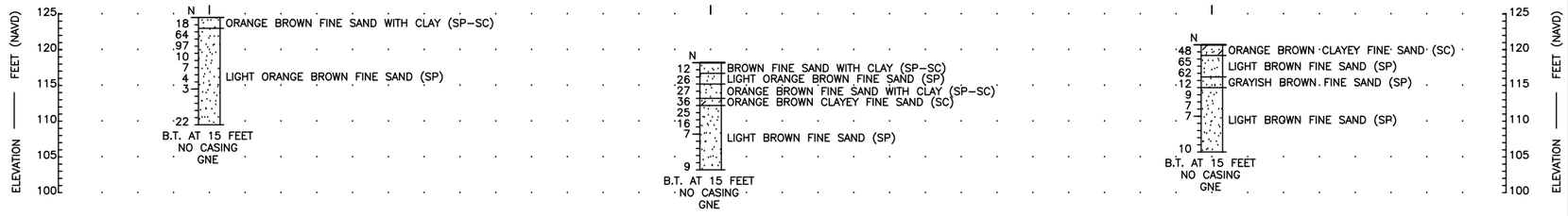

GRAVITY WALL

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REVISIONS	DATE
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8008 S. Orange Avenue
Orlando, Fl. 32809
Certificate of Authorization No: 5950

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LAKE COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

ROAD	RSQ NO.
CITRUS GROVE ROAD	17-0003

Ardaman & Associates, Inc.
8008 S. Orange Avenue
Orlando, Fl. 32809
Certificate of Authorization No: 5950

ALEXANDRA G. AYDELOTTE, P.E. LICENSE NO. 86461

DATE:

REPORT OF CORE BORINGS

SHEET NO.
BW−16

Drew, Chris 3/30/2021 4:23:13 PM

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APPENDIX I

Standard Penetration Test (SPT) Boring Procedure

STANDARD PENETRATION TEST

The standard penetration test is a widely accepted test method of *in situ* testing of foundation soils (ASTM D 1586). A 2-foot long, 2-inch O.D. split-barrel sampler attached to the end of a string of drilling rods is driven 18 inches into the ground by successive blows of a 140-pound hammer freely dropping 30 inches. The number of blows needed for each 6 inches of penetration is recorded. The sum of the blows required for penetration of the second and third 6-inch increments of penetration constitutes the test result or N-value. After the test, the sampler is extracted from the ground and opened to allow visual examination and classification of the retained soil sample. The N-value has been empirically correlated with various soil properties allowing a conservative estimate of the behavior of soils under load.

The tests are usually performed at 5-foot intervals. However, more frequent or continuous testing is done by our firm through depths where a more accurate definition of the soils is required. The test holes are advanced to the test elevations by rotary drilling with a cutting bit, using circulating fluid to remove the cuttings and hold the fine grains in suspension. The circulating fluid, which is a bentonitic drilling mud, is also used to keep the hole open below the water table by maintaining an excess hydrostatic pressure inside the hole. In some soil deposits, particularly highly pervious ones, NX-size flush-coupled casing must be driven to just above the testing depth to keep the hole open and/or prevent the loss of circulating fluid.

Representative split-spoon samples from the soils at every 2.5 feet of drilled depth are brought to our laboratory in air-tight jars for further evaluation and testing, if necessary. Samples not used in testing are stored for 30 days prior to being discarded.

APPENDIX II

MSE Wall External Stability Analysis and ReSSA+ Computer Program Output

MSE WALL - LRFD External Stability Analysis

version 2.5.1

MSE WALLS RW1 AND RW2

	H (ft)	* Ho (ft)	* D (ft)	* L (ft)	Minimum Reinforcement Length Requirement	Over-turning CDR > = 1	Eccen-tricity CDR < = 1	Sliding CDR > = 1	Bearing Resitance CDR > = 1	* β (deg)	* λ (ft)	* Water d (ft)	* γ[rf] (pcf)	* γ[bf] (pcf)	* ϕ [bf] (deg)	* γ[fs] (pcf)	* ϕ [fs] (deg)	* c[fs] (psf)	* ϕ u (deg)	* q1 (psf)	* q2 (psf)	CW
1	**24.0**	22.0	2.0	**17.0**	**OK**	**2.23**	**0.90**	**1.33**	**1.38**	0.0	100.0	20.0	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	0.89
2	**22.0**	20.0	2.0	**16.0**	**OK**	**2.30**	**0.87**	**1.34**	**1.50**	0.0	100.0	20.0	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	0.92
3	**21.0**	19.0	2.0	**15.0**	**OK**	**2.19**	**0.91**	**1.30**	**1.47**	0.0	100.0	20.0	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	0.94
4	**0.0**				**OK**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**													#DIV/0!
5	**0.0**				**OK**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**													#DIV/0!
6	**10.0**	8.0	2.0	**8.0**	**OK**	**2.09**	**0.95**	**1.19**	**1.93**	0.0	100.0	20.0	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	1.00
7	**12.0**	10.0	2.0	**9.0**	**OK**	**1.99**	**1.00**	**1.18**	**1.71**	0.0	100.0	20.0	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	1.00
8	**13.0**	11.0	2.0	**10.0**	**OK**	**2.16**	**0.92**	**1.24**	**1.79**	0.0	100.0	20.0	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	1.00
9	**17.0**	15.0	2.0	**12.0**	**OK**	**2.01**	**1.00**	**1.23**	**1.50**	0.0	100.0	20.0	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	1.00
10	**19.0**	17.0	2.0	**14.0**	**OK**	**2.26**	**0.88**	**1.32**	**1.61**	0.0	100.0	20.0	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	0.98
11	**21.0**	19.0	2.0	**15.0**	**OK**	**2.19**	**0.91**	**1.30**	**1.47**	0.0	100.0	20.0	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	0.94
12	**23.0**	21.0	2.0	**17.0**	**OK**	**2.41**	**0.83**	**1.37**	**1.51**	0.0	100.0	20.0	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	0.89
13	**25.0**	23.0	2.0	**18.0**	**OK**	**2.33**	**0.86**	**1.36**	**1.40**	0.0	100.0	20.0	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	0.87
14	**27.0**	25.0	2.0	**19.0**	**OK**	**2.27**	**0.88**	**1.35**	**1.31**	0.0	100.0	20.0	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	0.85
15	**23.0**	21.0	2.0	**17.0**	**OK**	**2.41**	**0.83**	**1.37**	**1.51**	0.0	100.0	20.0	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	0.89
16	**25.0**	23.0	2.0	**18.0**	**OK**	**2.33**	**0.86**	**1.36**	**1.40**	0.0	100.0	20.0	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	0.87
17	**27.0**	25.0	2.0	**19.0**	**OK**	**2.27**	**0.88**	**1.35**	**1.31**	0.0	100.0	20.0	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	0.85
18	**28.0**	26.0	2.0	**20.0**	**OK**	**2.36**	**0.85**	**1.38**	**1.33**	0.0	100.0	20.0	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	0.83
19	**0.0**				**OK**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**													#DIV/0!
20	**0.0**				**OK**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**													#DIV/0!

* Indicates required input

Note:

Disclaimer: No Warranty, expressed or implied, is made by the author or the Florida Department of Transportation (FDOT) as to the accuracy and the functioning of this program or the results it produces; nor shall the fact of distribution constitute any such warranty, and no responsibility is assumed by the author or the FDOT in any connection therewith.

H — Wall Height H = Ho + D

Ho — Wall Height above ground (feet)

D — Wall Embeddment Depth (feet)

L — Reinforcing Strap Length (feet)

CDR — Capacity-Demand Ratio for :
- Overturning = Mr / Mo => 1.0
- Eccentricity = e / (L/4) =< 1.0
- Sliding = Fr / Fd => 1.0
- Bearing Resistance = qr / q_{vb} => 1.0

β — Slope of backfill soil (degrees)

λ — Horizontal distance from the back of the wall to the top of the slope (for broken-back slopes) (feet)
Use λ >= 2*H when modeling infinite slopes

d — Water depth below base of leveling pad (feet)

γ[rf] — Reinforced fill unit weight (pounds per cubic foot)

γ[bf] — Backfill soil unit weight (pounds per cubic foot)

ϕ[bf] — Backfill soil angle of internal friction (degrees)

γ[fs] — Foundation Soil unit weight (pounds per cubic foot)

ϕ[fs] — Foundation Soil angle of internal friction (degrees)

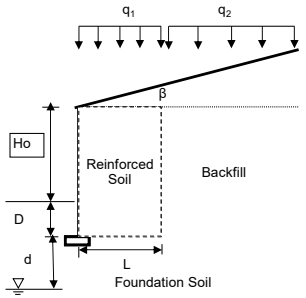
c[fs] — Foundation Soil cohesion (pounds per square foot)

ϕu — Base Angle of Internal Friction (degrees) (Sliding)

q1 — Surcharge load over reinforced soil mass (pounds per square foot) - Should be zero when modeling infinite slopes

q2 — Surcharge load behind reinforced soil mass (pounds per square foot) - Should be zero when modeling infinite slopes

Cw — Cw = 0.5 for d =< 0, Cw=1.0 for d => 1.5*L + D



MSE WALL - LRFD External Stability Analysis
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qvb (psf)	**qr (psf)**	h (ft)	W1 (lbs/ft)	W2 (lbs/ft)	W3 (lbs/ft)	q_{1V} (lbs/ft)	α (deg)	Ft (lbs/ft)	qt (lbs/ft)	Fd (lbs/ft)	Fr (lbs/ft)	Rv (lbs/ft)	Rv2 (lbs/ft)	Mr (lbs-ft/ft)	Mr_2	Mo (lbs-ft/ft)	Mo_2 (lbs-ft/ft)	e (ft)	e_2 (ft)	L' (ft)	Nc [fs]	Nq [fs]	Ng [fs]	Kabh [bf]	Kabs [bf]	Kabs2 [bf]
5436	**6799**	0.00	42840	0	0	7438	0.0	10080	2000	15120	24734	42840	65272	364140	554808	162960	162960	3.80	2.50	12.01	27.86	16.44	19.34	0.333	0.000	0.000
4954	**6759**	0.00	36960	0	0	7000	0.0	8470	1833	12705	21339	36960	56896	295680	455168	128462	128462	3.48	2.26	11.48	27.86	16.44	19.34	0.333	0.000	0.000
4841	**6474**	0.00	33075	0	0	6563	0.0	7718	1750	11576	19096	33075	51214	248063	384103	113190	113190	3.42	2.21	10.58	27.86	16.44	19.34	0.333	0.000	0.000
#DIV/0!	**#DIV/0!**	0.00	0	0	0	0	#DIV/0!	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	5.14	1.00	0.00	1.000	0.000	0.000
#DIV/0!	**#DIV/0!**	0.00	0	0	0	0	#DIV/0!	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	5.14	1.00	0.00	1.000	0.000	0.000
2542	**4629**	0.00	8400	0	0	3500	0.0	1750	833	2625	4850	8400	14840	33600	59360	16042	16042	1.91	1.08	5.84	27.86	16.44	19.34	0.333	0.000	0.000
3037	**4811**	0.00	11340	0	0	3938	0.0	2520	1000	3780	6547	11340	19247	51030	86609	25620	25620	2.26	1.33	6.34	27.86	16.44	19.34	0.333	0.000	0.000
3153	**5265**	0.00	13650	0	0	4375	0.0	2958	1083	4436	7881	13650	22803	68250	114013	31547	31547	2.31	1.38	7.23	27.86	16.44	19.34	0.333	0.000	0.000
4141	**5636**	0.00	21420	0	0	5250	0.0	5058	1417	7586	12367	21420	34167	128520	205002	64062	64062	2.99	1.87	8.25	27.86	16.44	19.34	0.333	0.000	0.000
4357	**6444**	0.00	27930	0	0	6125	0.0	6318	1583	9476	16125	27930	43831	195510	306814	86339	86339	3.09	1.97	10.06	27.86	16.44	19.34	0.333	0.000	0.000
4841	**6474**	0.00	33075	0	0	6563	0.0	7718	1750	11576	19096	33075	51214	248063	384103	113190	113190	3.42	2.21	10.58	27.86	16.44	19.34	0.333	0.000	0.000
5075	**7036**	0.00	41055	0	0	7438	0.0	9258	1917	13886	23703	41055	62862	348968	534325	145034	145034	3.53	2.31	12.39	27.86	16.44	19.34	0.333	0.000	0.000
5550	**7079**	0.00	47250	0	0	7875	0.0	10938	2083	16406	27280	47250	71663	425250	644963	182292	182292	3.86	2.54	12.91	27.86	16.44	19.34	0.333	0.000	0.000
6030	**7126**	0.00	53865	0	0	8313	0.0	12758	2250	19136	31099	53865	81030	511718	769787	225383	225383	4.18	2.78	13.44	27.86	16.44	19.34	0.333	0.000	0.000
5075	**7036**	0.00	41055	0	0	7438	0.0	9258	1917	13886	23703	41055	62862	348968	534325	145034	145034	3.53	2.31	12.39	27.86	16.44	19.34	0.333	0.000	0.000
5550	**7079**	0.00	47250	0	0	7875	0.0	10938	2083	16406	27280	47250	71663	425250	644963	182292	182292	3.86	2.54	12.91	27.86	16.44	19.34	0.333	0.000	0.000
6030	**7126**	0.00	53865	0	0	8313	0.0	12758	2250	19136	31099	53865	81030	511718	769787	225383	225383	4.18	2.78	13.44	27.86	16.44	19.34	0.333	0.000	0.000
6144	**7402**	0.00	58800	0	0	8750	0.0	13720	2333	20580	33948	58800	88130	588000	881300	249247	249247	4.24	2.83	14.34	27.86	16.44	19.34	0.333	0.000	0.000
#DIV/0!	**#DIV/0!**	0.00	0	0	0	0	#DIV/0!	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	5.14	1.00	0.00	1.000	0.000	0.000
#DIV/0!	**#DIV/0!**	0.00	0	0	0	0	#DIV/0!	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	5.14	1.00	0.00	1.000	0.000	0.000

** **Note: This spreadsheet does not analyze Global Stability or Wall Settlement.**

qvb Maximum Vertical Pressure at base of the structure (psf): qvb = Rv_2 / L'
qr Minimum Factored bearing resistance including footing embedment (i.e. overburden) term (qNq)
h h = Wall height for backfill stress calculations (H+Ltanβ for infinite slopes and H+λ.Tanα for broken back slopes with λ < 2*H) (ft)
W_1 Reinforced fill weight (lbs/ft)
W_2 Sloped backfill weight over reinforced area (lbs/ft)
W_3 Flat backfill weight over reinforced area (lbs/ft)
q_{1V} Surcharge vertical force over reinforced area (lbs/ft)
α Resultant earth pressure inclination (deg)
Ft Total resultant horizontal backfill force (lbs/ft)
qt Total resultant horizontal surcharge force (q_2) (lbs/ft)
Fd Driving force (Sum of factored horizontal components of total horizontal foces) (lbs/ft)
Fr Resisting foce (Sum of factored resisting foces * Tan ϕ_u) (lbs/ft)
Rv Sum of factored vertical forces acting within reingorced soil mass without live load (q1L) used in sliding CDR calculation (lbs/ft)
Rv_2 Sum of factored vertical forces acting within reingorced soil mass including live load - used in calculation of qvb for bearing CDR (lbs/ft)
Mr Sum of Resisting Moments without live load (lbs-ft/ft)
Mr_2 Sum of Resisting Moments including live load - used in calculation of e_2 for bearing CDR (lbs-ft/ft)
Mo Sum of Overturning Moments(lbs-ft/ft)
Mo_2 Sum of Overturning Moments from case S-1-b (lbs-ft/ft)
e Eccentricity {L/2 - [(Mr-Mo)/Rv]} (ft) [for overturning]
e_2 Eccentricity {L/2 - [(Mr_2-Mo_2)/Rv_2]} (ft) [for bearing stress calculation]
L' Effective foundation width (feet): L'= L - 2*e_2

Nc Cohesion Bearing Resistance Factor : Nc = (Nq-1)cot(ϕ) if f>0; for f=0 Nc=5.14
Ng Footing Width Bearing Resistance Factor : Ng = 2*(Nq+1)*tan(ϕ)
Nq Embedment Bearing Resistance Factor : Nq = [e^PI*tan(ϕ)]*N(ϕ); N(ϕ)=tan^2(PI/4 + ϕ/2)
Kabh Backfill earth pressure coefficient when retained soil is horizontal
Kabs Backfill earth pressure coefficient when retained soil is at slope β (infinite slope)
Kabs2 Backfill earth pressure coefficient for broken back slopes

MSE WALL - LRFD External Stability Analysis

version 2.5.1

MSE WALLS RW3 and RW4

	H (ft)	* Ho (ft)	* D (ft)	* L (ft)	Minimum Reinforcement Length Requirement	Over-turning CDR > = 1	Eccen-tricity CDR < = 1	Sliding CDR > = 1	Bearing Resitance CDR > = 1	* β (deg)	* λ (ft)	* Water d (ft)	* γ[rf] (pcf)	* γ[bf] (pcf)	* ϕ [bf] (deg)	* γ[fs] (pcf)	* ϕ [fs] (deg)	* c[fs] (psf)	* ϕ u (deg)	* q1 (psf)	* q2 (psf)	CW
1	**14.0**	12.0	2.0	**11.0**	**OK**	**2.32**	**0.86**	**1.30**	**1.71**	0.0	100.0	12.5	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	0.88
2	**0.0**				**OK**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	0.0	100.0	0.0	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	#DIV/0!
3	**15.0**	13.0	2.0	**11.0**	**OK**	**2.07**	**0.96**	**1.24**	**1.49**	0.0	100.0	12.5	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	0.88
4	**13.0**	11.0	2.0	**10.0**	**OK**	**2.16**	**0.92**	**1.24**	**1.69**	0.0	100.0	12.5	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	0.92
5	**12.0**	10.0	2.0	**9.0**	**OK**	**1.99**	**1.00**	**1.18**	**1.66**	0.0	100.0	12.5	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	0.96
6	**0.0**				**OK**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	0.0	100.0	0.0	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	#DIV/0!
7	**0.0**				**OK**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	0.0	100.0	0.0	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	#DIV/0!
8	**0.0**				**OK**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	0.0	100.0	0.0	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	#DIV/0!
9	**0.0**				**OK**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	0.0	100.0	0.0	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	#DIV/0!
10	**0.0**				**OK**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	0.0	100.0	0.0	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	#DIV/0!
11	**0.0**				**OK**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	0.0	100.0	0.0	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	#DIV/0!
12	**0.0**				**OK**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	0.0	100.0	0.0	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	#DIV/0!
13	**0.0**				**OK**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	0.0	100.0	0.0	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	#DIV/0!
14	**0.0**				**OK**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	0.0	100.0	0.0	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	#DIV/0!
15	**0.0**				**OK**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	0.0	100.0	0.0	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	#DIV/0!
16	**0.0**				**OK**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	0.0	100.0	0.0	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	#DIV/0!
17	**0.0**				**OK**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	0.0	100.0	0.0	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	#DIV/0!
18	**0.0**				**OK**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	0.0	100.0	0.0	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	#DIV/0!
19	**0.0**				**OK**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	0.0	100.0	0.0	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	#DIV/0!
20	**0.0**				**OK**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	0.0	100.0	0.0	105.0	105.0	30.0	100.0	29.0	0.0	30.0	250	250	#DIV/0!

* Indicates required input

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- Sliding = Fr / Fd => 1.0
- Bearing Resistance = qr / q_{vb} => 1.0

β — Slope of backfill soil (degrees)

λ — Horizontal distance from the back of the wall to the top of the slope (for broken-back slopes) (feet)
Use λ >= 2*H when modeling infinite slopes

d — Water depth below base of leveling pad (feet)

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γ[bf] — Backfill soil unit weight (pounds per cubic foot)

ϕ[bf] — Backfill soil angle of internal friction (degrees)

γ[fs] — Foundation Soil unit weight (pounds per cubic foot)

ϕ[fs] — Foundation Soil angle of internal friction (degrees)

c[fs] — Foundation Soil cohesion (pounds per square foot)

ϕu — Base Angle of Internal Friction (degrees) (Sliding)

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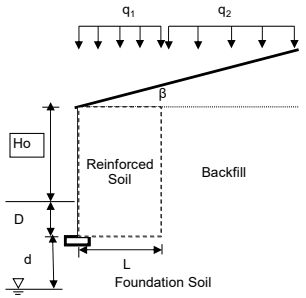
Cw — Cw = 0.5 for d =< 0, Cw=1.0 for d => 1.5*L + D



MSE WALL - LRFD External Stability Analysis

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qvb (psf)	**qr (psf)**	h (ft)	W1 (lbs/ft)	W2 (lbs/ft)	W3 (lbs/ft)	q_{1V} (lbs/ft)	α (deg)	Ft (lbs/ft)	qt (lbs/ft)	Fd (lbs/ft)	Fr (lbs/ft)	Rv (lbs/ft)	Rv2 (lbs/ft)	Mr (lbs-ft/ft)	Mr_2	Mo (lbs-ft/ft)	Mo_2 (lbs-ft/ft)	e (ft)	e_2 (ft)	L' (ft)	Nc [fs]	Nq [fs]	Ng [fs]	Kabh [bf]	Kabs [bf]	Kabs2 [bf]
3279	**5243**	0.00	16170	0	0	4813	0.0	3430	1167	5145	9336	16170	26642	88935	146531	38302	38302	2.37	1.44	8.12	27.86	16.44	19.34	0.333	0.000	0.000
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3643	**5010**	0.00	17325	0	0	4813	0.0	3938	1250	5906	10003	17325	28201	95288	155107	45938	45938	2.65	1.63	7.74	27.86	16.44	19.34	0.333	0.000	0.000
3153	**4977**	0.00	13650	0	0	4375	0.0	2958	1083	4436	7881	13650	22803	68250	114013	31547	31547	2.31	1.38	7.23	27.86	16.44	19.34	0.333	0.000	0.000
3037	**4700**	0.00	11340	0	0	3938	0.0	2520	1000	3780	6547	11340	19247	51030	86609	25620	25620	2.26	1.33	6.34	27.86	16.44	19.34	0.333	0.000	0.000
#DIV/0!	**#DIV/0!**	0.00	0	0	0	0	#DIV/0!	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	27.86	16.44	19.34	0.333	0.000	0.000
#DIV/0!	**#DIV/0!**	0.00	0	0	0	0	#DIV/0!	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	27.86	16.44	19.34	0.333	0.000	0.000
#DIV/0!	**#DIV/0!**	0.00	0	0	0	0	#DIV/0!	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	27.86	16.44	19.34	0.333	0.000	0.000
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#DIV/0!	**#DIV/0!**	0.00	0	0	0	0	#DIV/0!	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	27.86	16.44	19.34	0.333	0.000	0.000
#DIV/0!	**#DIV/0!**	0.00	0	0	0	0	#DIV/0!	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	27.86	16.44	19.34	0.333	0.000	0.000
#DIV/0!	**#DIV/0!**	0.00	0	0	0	0	#DIV/0!	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	27.86	16.44	19.34	0.333	0.000	0.000
#DIV/0!	**#DIV/0!**	0.00	0	0	0	0	#DIV/0!	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	27.86	16.44	19.34	0.333	0.000	0.000
#DIV/0!	**#DIV/0!**	0.00	0	0	0	0	#DIV/0!	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	27.86	16.44	19.34	0.333	0.000	0.000
#DIV/0!	**#DIV/0!**	0.00	0	0	0	0	#DIV/0!	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	27.86	16.44	19.34	0.333	0.000	0.000
#DIV/0!	**#DIV/0!**	0.00	0	0	0	0	#DIV/0!	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	27.86	16.44	19.34	0.333	0.000	0.000
#DIV/0!	**#DIV/0!**	0.00	0	0	0	0	#DIV/0!	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	27.86	16.44	19.34	0.333	0.000	0.000
#DIV/0!	**#DIV/0!**	0.00	0	0	0	0	#DIV/0!	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	27.86	16.44	19.34	0.333	0.000	0.000
#DIV/0!	**#DIV/0!**	0.00	0	0	0	0	#DIV/0!	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	27.86	16.44	19.34	0.333	0.000	0.000
#DIV/0!	**#DIV/0!**	0.00	0	0	0	0	#DIV/0!	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	27.86	16.44	19.34	0.333	0.000	0.000

** **Note: This spreadsheet does not analyze Global Stability or Wall Settlement.**

qvb — Maximum Vertical Pressure at base of the structure (psf): qvb = Rv_2 / L'
qr — Minimum Factored bearing resistance including footing embedment (i.e. overburden) term (qNq)
h — h = Wall height for backfill stress calculations (H+Ltanβ for infinite slopes and H+λTanα for broken back slopes with λ < 2*H) (ft)
W_1 — Reinforced fill weight (lbs/ft)
W_2 — Sloped backfill weight over reinforced area (lbs/ft)
W_3 — Flat backfill weight over reinforced area (lbs/ft)
q_{1V} — Surcharge vertical force over reinforced area (lbs/ft)
α — Resultant earth pressure inclination (deg)
Ft — Total resultant horizontal backfill force (lbs/ft)
qt — Total resultant horizontal surcharge force (q_2) (lbs/ft)
Fd — Driving force (Sum of factored horizontal components of total horizontal foces) (lbs/ft)
Fr — Resisting foce (Sum of factored resisting foces * Tan ϕ_u) (lbs/ft)
Rv — Sum of factored vertical forces acting within reingorced soil mass without live load (q1L) used in sliding CDR calculation (lbs/ft)
Rv_2 — Sum of factored vertical forces acting within reingorced soil mass including live load - used in calculation of qvb for bearing CDR (lbs/ft)
Mr — Sum of Resisting Moments without live load (lbs-ft/ft)
Mr_2 — Sum of Resisting Moments including live load - used in calculation of e_2 for bearing CDR (lbs-ft/ft)
Mo — Sum of Overturning Moments(lbs-ft/ft)
Mo_2 — Sum of Overturning Moments from case S-1-b (lbs-ft/ft)
e — Eccentricity {L/2 - [(Mr-Mo)/Rv]} (ft) [for overturning]
e_2 — Eccentricity {L/2 - [(Mr_2-Mo_2)/Rv_2]} (ft) [for bearing stress calculation]
L' — Effective foundation width (feet): L'= L - 2*e_2

Nc — Cohesion Bearing Resistance Factor : Nc = (Nq-1)cot(ϕ) if f>0; for f=0 Nc=5.14
Ng — Footing Width Bearing Resistance Factor : Ng = 2*(Nq+1)*tan(ϕ)
Nq — Embedment Bearing Resistance Factor : Nq = [e^PI*tan(ϕ)]*N(ϕ); N(ϕ)=tan^2(PI/4 + ϕ/2)
Kabh — Backfill earth pressure coefficient when retained soil is horizontal
Kabs — Backfill earth pressure coefficient when retained soil is at slope β (infinite slope)
Kabs2 — Backfill earth pressure coefficient for broken back slopes

Ardaman & Associates, Inc.

Citrus Grove Phase V

PROJECT IDENTIFICATION

Title:	Citrus Grove Phase V
Project Number:	113-19-60-6418 -
Client:	DRMP
Designer:	Alexandra G. Aydelotte, P.E.
Station Number:	243+00

Description:
MSE Wall RW-2 Wall Height 10 ft ; Strap Length 8ft

Company's information:

Name:	Ardaman & Associates, Inc.
Street:	8008 S. Orange Avenue Orlando, FL 32809
Telephone #:	407-855-3860
Fax #:	407-859-8121
E-Mail:	www.ardaman.com

Original file path and name: O:\Geotech ..... rus Grove Rd Phase 5 Lake Cty FL\Walls\243+00.MSEp
Original date and time of creating this file: Tue Jul 14 15:45:53 2020

PROGRAM MODE: Analysis of a General Slope using NO reinforcement material.

INPUT DATA (EXCLUDING REINFORCEMENT LAYOUT)

SOIL DATA

========== Soil Layer #: ==========	Unit weight, γ [lb/ft ^{3}]	Internal angle of friction, ϕ [deg.]	Cohesion, c [lb/ft ^{2}]
1	105.0	30.0	0.0
2	100.0	29.0	0.0
3	108.0	31.0	0.0
4	118.0	34.0	0.0

REINFORCEMENT

Analysis of slope WITHOUT reinforcement.

WATER

Unit weight of water = 62.45 [lb/ft ^{3}]
Water pressure is defined by phreatic surface in Effective Stress Analysis.

SEISMICITY

Not Applicable

DRAWING OF SPECIFIED GEOMETRY - GENERAL

-- Problem geometry is defined along sections selected by user at x,y coordinates.
-- X1,Y1 represents the coordinates of soil surface. X2,Y2 represent the coordinates of the end of soil layer 1 and start of soil layer 2, and so on.
-- Xw,Yw represents the coordinates of phreatic surface.

GEOMETRY

Soil profile contains 4 layers (see details in next page)

WATER GEOMETRY

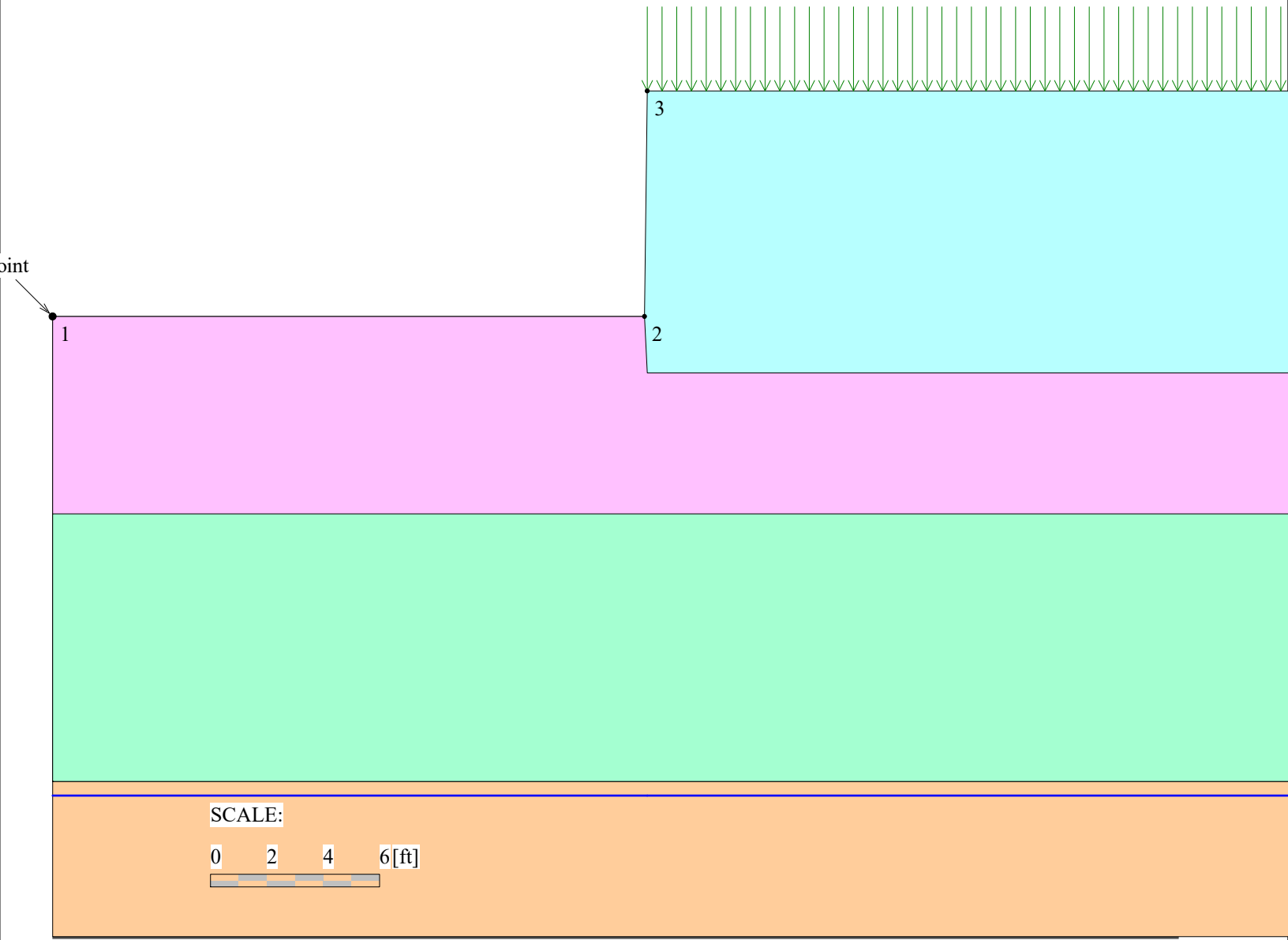
Phreatic line was specified.

UNIFORM SURCHARGE

Load Q1 = 250.00 [lb/ft²] inclined from verical at 0.00 degrees, starts at X1s = 41.10 and ends at X1e = 100.00 [ft].
Surcharge load, Q2.....None
Surcharge load, Q3.....None

STRIP LOAD

.....None.....



TABULATED DETAILS OF GENERAL SPECIFIED GEOMETRY

Soil profile contains 4 layers. Coordinates in [ft.]
Water was described by phreatic line.

	#	Xi	Yi
Top of Layer 1	1	20.00	168.50
	2	41.00	168.50
	3	41.10	176.50
	4	100.00	176.50
Top of Layer 2	5	20.00	168.50
	6	41.00	168.50
	7	41.10	166.50
	8	100.00	166.50
Top of Layer 3	9	20.00	161.50
	10	100.00	161.50
Top of Layer 4	11	20.00	146.50
	12	100.00	146.50
Top of Phreatic Line	14	20.00	151.50
	15	100.00	151.50

TABULATED DETAILS OF SPECIFIED GEOMETRY

Soil profile contains 4 layers. Coordinates in [ft.]
Water was described by phreatic line. Y values are tabulated in the right most column.

#	X	Y1	Y2	Y3	Y4	(phreatic) Yw
1	20.00	168.50	168.50	161.50	146.50	151.50
2	41.00	168.50	168.50	161.50	146.50	151.50
3	41.10	176.50	166.50	161.50	146.50	151.50
4	100.00	176.50	166.50	161.50	146.50	151.50

RESULTS OF ROTATIONAL STABILITY ANALYSIS

Results in the tables below represent critical circles identified between specified points on entry and exit. (Theta-exit set to 50.00 deg.) The most critical circle is obtained from a search considering all the combinations of input entry and exit points.

Critical circles for each entry point (considering all specified exit points)

Entry Point #	Entry Point (X, Y) [ft]		Exit Point (X, Y) [ft]		Critical Circle (Xc, Yc, R) [ft]			Fs	STATUS
1	20.00	168.50	20.00	168.50	20.00	168.50	0.00	N/A	#10 - Overhanging Cliff
2	20.00	168.50	20.00	168.50	20.00	168.50	0.00	N/A	#10 - Overhanging Cliff
3	20.00	168.50	20.00	168.50	20.00	168.50	0.00	N/A	#10 - Overhanging Cliff
4	20.00	168.50	20.00	168.50	20.00	168.50	0.00	N/A	#10 - Overhanging Cliff
5	20.00	168.50	20.00	168.50	20.00	168.50	0.00	N/A	#10 - Overhanging Cliff
6	55.69	176.50	30.41	168.70	41.08	178.98	14.82	1.86	
7	57.42	176.50	29.07	168.70	40.66	182.02	17.65	1.83	OK
8	59.16	176.50	26.72	168.51	39.58	186.17	21.84	1.86	
9	60.90	176.50	27.86	168.60	40.55	188.55	23.64	1.91	
10	62.63	176.50	25.22	168.63	39.46	193.78	28.90	1.98	
11	64.37	176.50	23.91	168.63	39.19	198.00	33.11	2.07	
12	66.11	176.50	23.97	168.59	39.59	201.58	36.50	2.17	
13	67.84	176.50	22.71	168.57	39.22	207.01	41.83	2.27	
14	69.58	176.50	21.48	168.54	38.78	213.30	47.98	2.37	
15	71.32	176.50	21.51	168.53	39.28	217.10	51.72	2.48	
16	73.05	176.50	20.20	168.54	39.03	222.90	57.54	2.60	
17	74.79	176.50	18.52	168.67	39.11	226.85	61.72	2.71	
18	76.53	176.50	18.52	168.67	39.89	229.14	64.13	2.83	
19	78.26	176.50	17.19	168.69	39.98	233.14	68.36	2.94	
20	80.00	176.50	15.92	168.68	40.08	237.16	72.62	3.06	

Note: In the 'Status' column, OK means the critical circle was identified within the specified search domain. 'On extreme X-entry' means that the critical result is on the edge of the search domain; a lower Fs may result if the search domain is expanded.

RESULTS OF ROTATIONAL STABILITY ANALYSIS

Results in the tables below represent critical circles identified between specified points on entry and exit. (Theta-exit set to 50.00 deg.) The most critical circle is obtained from a search considering all the combinations of input entry and exit points.

Critical circles for each exit point (considering all specified entry points).

Exit Point #	Exit Point (X, Y) [ft]		Entry Point (X, Y) [ft]		Critical Circle (Xc, Yc, R) [ft]			Fs	STATUS
1	9.77	168.64	62.63	176.50	31.49	204.26	41.72	2.37	
2	10.91	168.76	60.90	176.50	31.83	198.95	36.73	2.32	
3	12.24	168.73	60.90	176.50	32.51	198.05	35.64	2.26	
4	13.59	168.69	60.90	176.50	33.19	197.15	34.56	2.21	
5	14.97	168.62	60.90	176.50	33.87	196.25	33.48	2.17	
6	16.38	168.54	60.90	176.50	34.55	195.36	32.40	2.12	
7	17.42	168.71	60.90	176.50	35.24	194.47	31.32	2.08	
8	18.89	168.59	59.16	176.50	35.64	189.78	27.01	2.05	
9	20.29	168.51	59.16	176.50	36.21	189.61	26.43	1.98	
10	21.28	168.73	59.16	176.50	36.90	188.82	25.44	1.95	
11	22.63	168.68	59.16	176.50	37.59	188.03	24.46	1.92	
12	23.92	168.72	57.42	176.50	37.94	184.35	21.00	1.89	
13	25.27	168.66	57.42	176.50	38.64	183.67	20.11	1.87	
14	26.62	168.61	57.42	176.50	39.34	183.00	19.21	1.85	
15	27.96	168.55	57.42	176.50	40.05	182.33	18.33	1.85	
16	29.07	168.70	57.42	176.50	40.66	182.02	17.65	1.83	OK
17	30.41	168.70	55.69	176.50	41.08	178.98	14.82	1.86	
18	31.80	168.59	55.69	176.50	41.80	178.41	14.02	1.90	
19	32.99	168.68	55.69	176.50	42.44	178.10	13.34	1.93	
20	34.43	168.53	55.69	176.50	43.18	177.53	12.55	2.04	
21	35.70	168.54	55.69	176.50	43.84	177.18	11.86	2.17	
22	36.92	168.59	57.42	176.50	44.87	178.52	12.72	2.39	
23	38.13	168.70	59.16	176.50	46.96	177.14	12.21	3.49	
24	20.00	168.50	20.00	168.50	20.00	168.50	0.00	N/A	#10 - Overhanging Cliff
25	20.00	168.50	20.00	168.50	20.00	168.50	0.00	N/A	#10 - Overhanging Cliff

Note: In the 'Status' column, OK means the critical circle was identified within the specified search domain. 'On extreme X-exit' means that the critical result is on the edge of the search domain; a lower Fs may result if the search domain is expanded.

CRITICAL RESULTS OF ROTATIONAL AND TRANSLATIONAL STABILITY ANALYSES

Rotational (Circular Arc; Bishop) Stability Analysis with slip surfaces excluded from this polygon:

Minimum Factor of Safety = 1.83

Critical Circle: Xc = 40.66[ft], Yc = 182.02[ft], R = 17.65[ft]. (Number of slices used = 53)

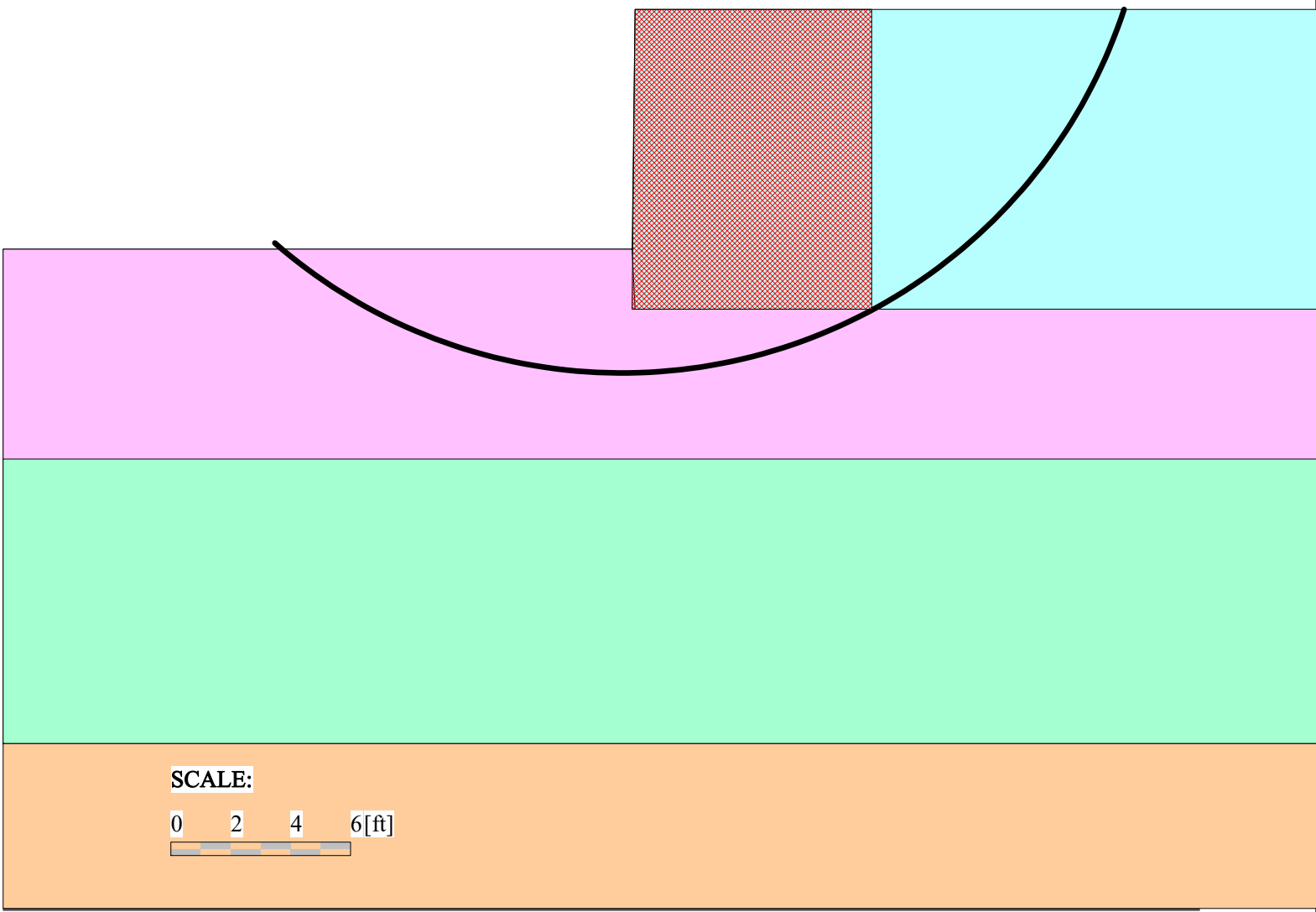
Translational (2-Part Wedge; Spencer), Direct Sliding, Stability Analysis

N O T C O N D U C T E D

Three-Part Wedge Stability Analysis

N O T C O N D U C T E D

REINFORCEMENT LAYOUT: DRAWING



Citrus Grove Phase V

PROJECT IDENTIFICATION

Title:	Citrus Grove Phase V
Project Number:	113-19-60-6418 -
Client:	DRMP
Designer:	Alexandra G. Aydelotte, P.E.
Station Number:	244+00

Description:
MSE Wall RW-2 Wall Height 14 ft ; Strap Length 11 ft

Company's information:

Name:	Ardaman & Associates, Inc.
Street:	8008 S. Orange Avenue Orlando, FL 32809
Telephone #:	407-855-3860
Fax #:	407-859-8121
E-Mail:	www.ardaman.com

Original file path and name: O:\Geotech ..... rus Grove Rd Phase 5 Lake Cty FL\Walls\244+00.MSEp
Original date and time of creating this file: Tue Jul 14 15:45:53 2020

PROGRAM MODE: Analysis of a General Slope using NO reinforcement material.

INPUT DATA (EXCLUDING REINFORCEMENT LAYOUT)

SOIL DATA

========== Soil Layer #: ==========	Unit weight, γ [lb/ft ^{3}]	Internal angle of friction, ϕ [deg.]	Cohesion, c [lb/ft ^{2}]
1	105.0	30.0	0.0
2	100.0	29.0	0.0
3	108.0	31.0	0.0
4	118.0	34.0	0.0

REINFORCEMENT

Analysis of slope WITHOUT reinforcement.

WATER

Unit weight of water = 62.45 [lb/ft ^{3}]
Water pressure is defined by phreatic surface in Effective Stress Analysis.

SEISMICITY

Not Applicable

DRAWING OF SPECIFIED GEOMETRY - GENERAL

-- Problem geometry is defined along sections selected by user at x,y coordinates.
-- X1,Y1 represents the coordinates of soil surface. X2,Y2 represent the coordinates of the end of soil layer 1 and start of soil layer 2, and so on.
-- Xw,Yw represents the coordinates of phreatic surface.

GEOMETRY

Soil profile contains 4 layers (see details in next page)

WATER GEOMETRY

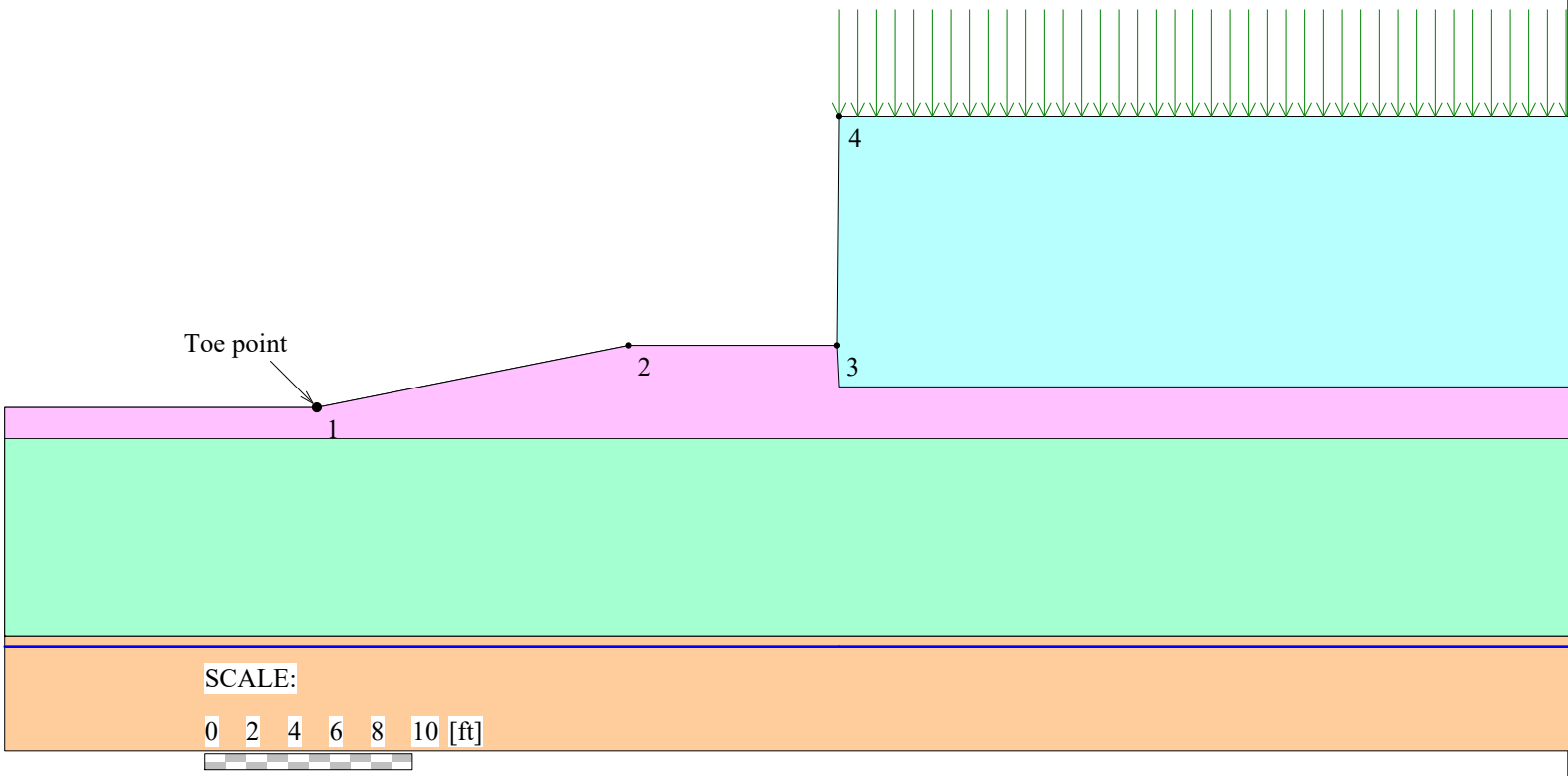
Phreatic line was specified.

UNIFORM SURCHARGE

Load Q1 = 250.00 [lb/ft²] inclined from verical at 0.00 degrees, starts at X1s = 45.10 and ends at X1e = 100.00 [ft].
Surcharge load, Q2.....None
Surcharge load, Q3.....None

STRIP LOAD

.....None.....



TABULATED DETAILS OF GENERAL SPECIFIED GEOMETRY

Soil profile contains 4 layers. Coordinates in [ft.]
Water was described by phreatic line.

	#	Xi	Yi
Top of Layer 1	1	20.00	163.00
	2	35.00	166.00
	3	45.00	166.00
	4	45.10	177.00
	5	100.00	177.00
Top of Layer 2	6	20.00	163.00
	7	35.00	166.00
	8	45.00	166.00
	9	45.10	164.00
	10	100.00	164.00
Top of Layer 3	11	20.00	161.50
	12	100.00	161.50
Top of Layer 4	13	20.00	146.50
	14	100.00	146.50
Top of Phreatic Line	16	20.00	151.50
	17	100.00	151.50

TABULATED DETAILS OF SPECIFIED GEOMETRY

Soil profile contains 4 layers. Coordinates in [ft.]
Water was described by phreatic line. Y values are tabulated in the right most column.

#	X	Y1	Y2	Y3	Y4	(phreatic) Yw
1	20.00	163.00	163.00	161.50	146.50	151.50
2	35.00	166.00	166.00	161.50	146.50	151.50
3	45.00	166.00	166.00	161.50	146.50	151.50
4	45.10	177.00	164.00	161.50	146.50	151.50
5	100.00	177.00	164.00	161.50	146.50	151.50

RESULTS OF ROTATIONAL STABILITY ANALYSIS

Results in the tables below represent critical circles identified between specified points on entry and exit. (Theta-exit set to 50.00 deg.) The most critical circle is obtained from a search considering all the combinations of input entry and exit points.

Critical circles for each entry point (considering all specified exit points)

Entry Point #	Entry Point (X, Y) [ft]		Exit Point (X, Y) [ft]		Critical Circle (Xc, Yc, R) [ft]			Fs	STATUS
1	20.00	163.00	20.00	163.00	20.00	163.00	0.00	N/A	#10 - Overhanging Cliff
2	20.00	163.00	20.00	163.00	20.00	163.00	0.00	N/A	#10 - Overhanging Cliff
3	20.00	163.00	20.00	163.00	20.00	163.00	0.00	N/A	#10 - Overhanging Cliff
4	61.80	177.00	30.88	165.25	44.10	177.03	17.70	1.98	
. 5	67.26	177.00	27.35	164.56	42.19	187.18	27.06	1.80 .	OK
6	72.72	177.00	23.49	163.99	39.93	201.42	40.88	1.86	
7	78.17	177.00	19.91	163.26	37.06	220.94	60.18	1.99	
8	83.63	177.00	16.85	163.03	34.48	245.33	84.17	2.17	
9	89.09	177.00	16.95	163.00	33.79	269.12	107.44	2.39	
10	94.54	177.00	9.33	163.10	29.94	304.87	143.26	2.62	
11	100.00	177.00	12.89	163.09	34.12	309.80	148.24	2.86	

Note: In the 'Status' column, OK means the critical circle was identified within the specified search domain. 'On extreme X-entry' means that the critical result is on the edge of the search domain; a lower Fs may result if the search domain is expanded.

****

Results in the tables below represent critical circles identified between specified points on entry and exit. (Theta-exit set to 50.00 deg.) The most critical circle is obtained from a search considering all the combinations of input entry and exit points.

Critical circles for each exit point (considering all specified entry points).

Exit Point #	Exit Point (X, Y) [ft]		Entry Point (X, Y) [ft]		Critical Circle (Xc, Yc, R) [ft]			Fs	STATUS
1	9.50	163.23	72.72	177.00	32.26	210.74	52.68	1.98	
2	13.43	163.03	72.72	177.00	33.91	208.87	50.21	1.92	
3	16.62	163.15	72.72	177.00	35.59	206.85	47.63	1.88	
4	20.33	163.15	72.72	177.00	37.33	204.83	45.02	1.86	
5	23.57	164.04	67.26	177.00	39.86	189.24	30.01	1.81	
. 6	27.35	164.56	67.26	177.00	42.19	187.18	27.06	1.80 .	OK
7	30.84	165.25	67.26	177.00	44.49	185.27	24.23	1.82	
8	34.14	166.10	67.26	177.00	46.91	183.06	21.23	1.90	
9	37.76	166.12	67.26	177.00	48.82	181.56	19.00	2.10	
10	41.38	166.02	67.26	177.00	51.17	178.95	16.21	2.74	
11	20.00	163.00	20.00	163.00	20.00	163.00	0.00	N/A	#10 - Overhanging Cliff

Note: In the 'Status' column, OK means the critical circle was identified within the specified search domain. 'On extreme X-exit' means that the critical result is on the edge of the search domain; a lower Fs may result if the search domain is expanded.

CRITICAL RESULTS OF ROTATIONAL AND TRANSLATIONAL STABILITY ANALYSES

Rotational (Circular Arc; Bishop) Stability Analysis with slip surfaces excluded from this polygon:

Minimum Factor of Safety = 1.80

Critical Circle: Xc = 42.19[ft], Yc = 187.18[ft], R = 27.06[ft]. (Number of slices used = 55)

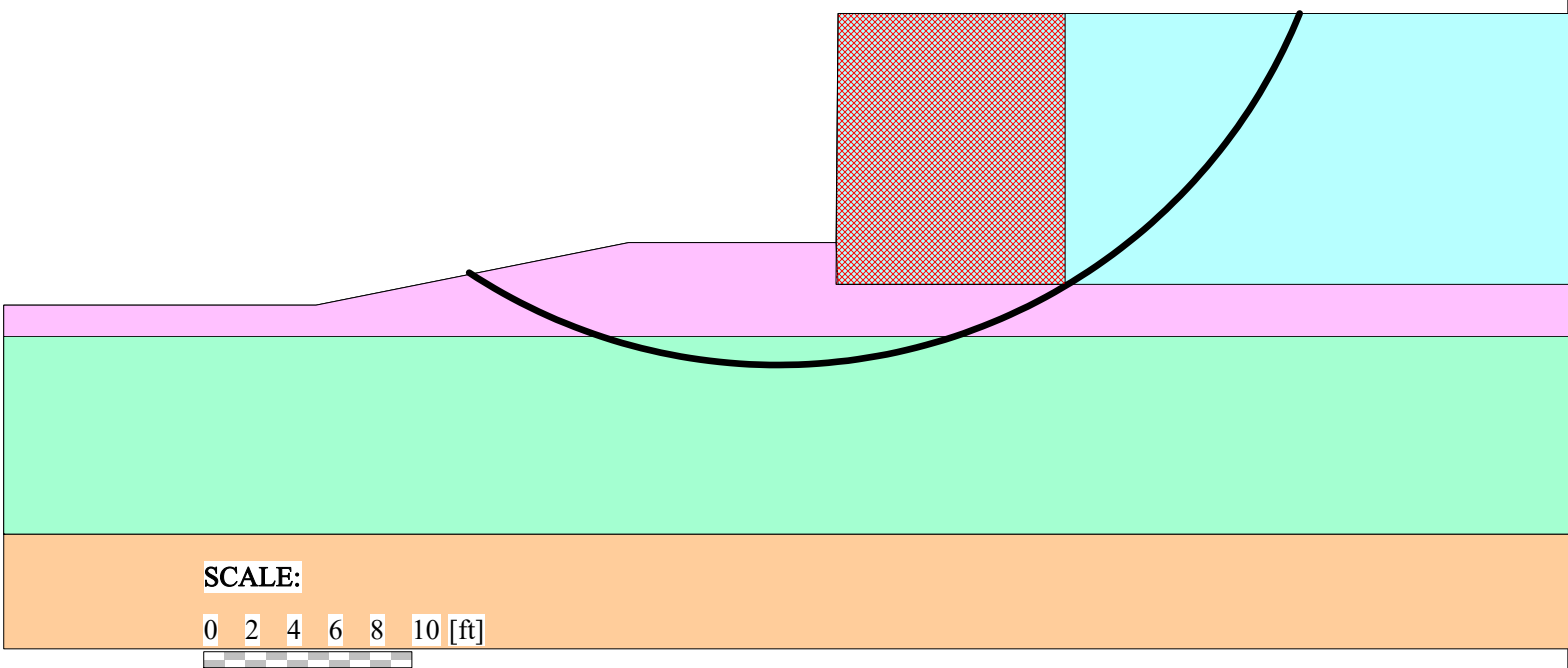
Translational (2-Part Wedge; Spencer), Direct Sliding, Stability Analysis

N O T C O N D U C T E D

Three-Part Wedge Stability Analysis

N O T C O N D U C T E D

REINFORCEMENT LAYOUT: DRAWING



Citrus Grove Phase V

PROJECT IDENTIFICATION

Title:	Citrus Grove Phase V
Project Number:	113-19-60-6418 -
Client:	DRMP
Designer:	Alexandra G. Aydelotte, P.E.
Station Number:	245+00

Description:
MSE Wall RW-2 Wall Height 17 ft ; Strap Length 12 ft

Company's information:

Name:	Ardaman & Associates, Inc.
Street:	8008 S. Orange Avenue Orlando, FL 32809
Telephone #:	407-855-3860
Fax #:	407-859-8121
E-Mail:	www.ardaman.com

Original file path and name: O:\Geotech ..... rus Grove Rd Phase 5 Lake Cty FL\Walls\245+00.MSEp
Original date and time of creating this file: Tue Jul 14 15:45:53 2020

PROGRAM MODE: Analysis of a General Slope using NO reinforcement material.

INPUT DATA (EXCLUDING REINFORCEMENT LAYOUT)

SOIL DATA

========== Soil Layer #: ==========	Unit weight, γ [lb/ft ^{3}]	Internal angle of friction, ϕ [deg.]	Cohesion, c [lb/ft ^{2}]
1	105.0	30.0	0.0
2	100.0	29.0	0.0
3	108.0	31.0	0.0
4	118.0	34.0	0.0

REINFORCEMENT

Analysis of slope WITHOUT reinforcement.

WATER

Unit weight of water = 62.45 [lb/ft ^{3}]
Water pressure is defined by phreatic surface in Effective Stress Analysis.

SEISMICITY

Not Applicable

DRAWING OF SPECIFIED GEOMETRY - GENERAL

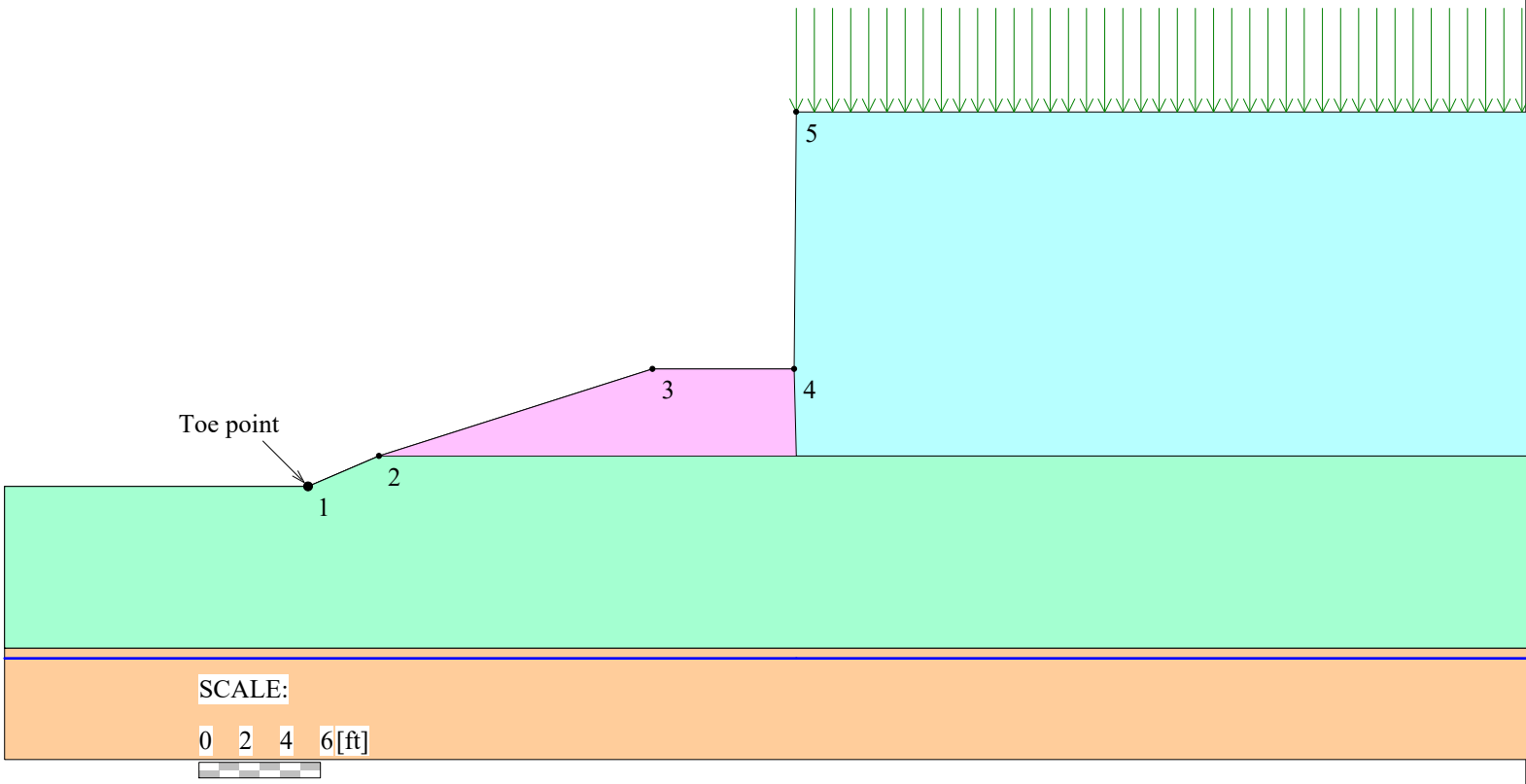
-- Problem geometry is defined along sections selected by user at x,y coordinates.
-- X1,Y1 represents the coordinates of soil surface. X2,Y2 represent the coordinates of the end of soil layer 1 and start of soil layer 2, and so on.
-- Xw,Yw represents the coordinates of phreatic surface.

GEOMETRY
Soil profile contains 4 layers (see details in next page)

WATER GEOMETRY
Phreatic line was specified.

UNIFORM SURCHARGE
Load Q1 = 250.00 [lb/ft²] inclined from verical at 0.00 degrees, starts at X1s = 44.10 and ends at X1e = 100.00 [ft].
Surcharge load, Q2.....None
Surcharge load, Q3.....None

STRIP LOAD
.....None.....



TABULATED DETAILS OF GENERAL SPECIFIED GEOMETRY

Soil profile contains 4 layers. Coordinates in [ft.]
Water was described by phreatic line.

	#	Xi	Yi
Top of Layer 1	1	20.00	160.00
	2	23.50	161.50
	3	37.00	165.80
	4	44.00	165.80
	5	44.10	178.50
	6	100.00	178.50
Top of Layer 2	7	20.00	160.00
	8	23.50	161.50
	9	37.00	165.80
	10	44.00	165.80
	11	44.10	161.50
	12	100.00	161.50
Top of Layer 3	13	20.00	160.00
	14	23.50	161.50
	15	100.00	161.50
Top of Layer 4	16	20.00	146.50
	17	100.00	146.50
Top of Phreatic Line	19	20.00	151.50
	20	100.00	151.50

TABULATED DETAILS OF SPECIFIED GEOMETRY

Soil profile contains 4 layers. Coordinates in [ft.]
Water was described by phreatic line. Y values are tabulated in the right most column.

#	X	Y1	Y2	Y3	Y4	(phreatic) Yw
1	20.00	160.00	160.00	160.00	146.50	151.50
2	23.50	161.50	161.50	161.50	146.50	151.50
3	37.00	165.80	165.80	161.50	146.50	151.50
4	44.00	165.80	165.80	161.50	146.50	151.50
5	44.10	178.50	161.50	161.50	146.50	151.50
6	100.00	178.50	161.50	161.50	146.50	151.50

RESULTS OF ROTATIONAL STABILITY ANALYSIS

Results in the tables below represent critical circles identified between specified points on entry and exit. (Theta-exit set to 50.00 deg.) The most critical circle is obtained from a search considering all the combinations of input entry and exit points.

Critical circles for each entry point (considering all specified exit points)

Entry Point #	Entry Point (X, Y) [ft]		Exit Point (X, Y) [ft]		Critical Circle (Xc, Yc, R) [ft]			Fs	STATUS
1	20.00	160.00	20.00	160.00	20.00	160.00	0.00	N/A	#10 - Overhanging Cliff
2	20.00	160.00	20.00	160.00	20.00	160.00	0.00	N/A	#10 - Overhanging Cliff
3	62.29	178.50	14.86	160.41	35.11	178.53	27.18	2.06	
4	65.43	178.50	19.00	160.26	36.79	183.17	29.02	1.84	
5	68.57	178.50	17.02	160.16	35.66	189.41	34.67	1.76	
. 6	71.72	178.50	12.93	160.14	33.38	197.97	43.00	1.74 .	OK
7	74.86	178.50	14.78	160.20	34.12	204.48	48.32	1.75	
8	78.00	178.50	12.56	160.23	32.83	213.97	57.43	1.80	
9	81.14	178.50	12.67	160.16	32.49	223.14	66.03	1.86	
10	84.29	178.50	10.58	160.15	31.16	234.71	77.34	1.94	
11	87.43	178.50	10.72	160.10	30.84	245.32	87.56	2.03	
12	90.57	178.50	6.68	160.08	28.50	260.94	103.19	2.12	
13	93.71	178.50	4.88	160.02	27.33	274.88	117.03	2.22	
14	96.86	178.50	4.17	160.15	27.31	286.52	128.48	2.32	
15	100.00	178.50	4.38	160.10	27.11	299.62	141.36	2.43	

Note: In the 'Status' column, OK means the critical circle was identified within the specified search domain. 'On extreme X-entry' means that the critical result is on the edge of the search domain; a lower Fs may result if the search domain is expanded.

****

Results in the tables below represent critical circles identified between specified points on entry and exit. (Theta-exit set to 50.00 deg.) The most critical circle is obtained from a search considering all the combinations of input entry and exit points.

Critical circles for each exit point (considering all specified entry points).

Exit Point #	Exit Point (X, Y) [ft]		Entry Point (X, Y) [ft]		Critical Circle (Xc, Yc, R) [ft]			Fs	STATUS
1	4.98	160.01	74.86	178.50	29.23	209.67	55.26	1.83	
2	6.85	160.12	71.72	178.50	30.44	200.51	46.78	1.81	
3	9.04	160.03	71.72	178.50	31.30	200.06	45.81	1.77	
4	10.81	160.15	74.86	178.50	32.05	206.96	51.41	1.76	
. 5	12.93	160.14	71.72	178.50	33.38	197.97	43.00	1.74 .	OK
6	14.68	160.30	71.72	178.50	34.59	196.39	41.22	1.75	
7	17.09	160.10	71.72	178.50	35.50	195.74	40.12	1.75	
8	19.00	160.16	71.72	178.50	36.42	195.03	38.98	1.75	
9	20.86	160.86	71.72	178.50	38.08	193.36	36.78	1.78	
10	23.39	161.49	71.72	178.50	39.75	192.17	34.77	1.80	
11	25.37	162.19	71.72	178.50	41.35	190.77	32.75	1.84	
12	27.29	162.92	71.72	178.50	43.16	188.81	30.36	1.91	
13	29.34	163.61	68.57	178.50	44.39	183.10	24.62	1.97	
14	31.26	164.38	68.57	178.50	45.98	181.83	22.83	2.09	
15	33.51	164.87	68.57	178.50	47.54	180.70	21.15	2.26	
16	35.41	165.68	68.57	178.50	49.05	179.69	19.56	2.49	
17	37.69	165.87	71.72	178.50	51.98	179.53	19.77	3.24	
18	20.00	160.00	20.00	160.00	20.00	160.00	0.00	N/A	#10 - Overhanging Cliff
19	20.00	160.00	20.00	160.00	20.00	160.00	0.00	N/A	#10 - Overhanging Cliff
20	20.00	160.00	20.00	160.00	20.00	160.00	0.00	N/A	#10 - Overhanging Cliff

Note: In the 'Status' column, OK means the critical circle was identified within the specified search domain. 'On extreme X-exit' means that the critical result is on the edge of the search domain; a lower Fs may result if the search domain is expanded.

CRITICAL RESULTS OF ROTATIONAL AND TRANSLATIONAL STABILITY ANALYSES

Rotational (Circular Arc; Bishop) Stability Analysis with slip surfaces excluded from this polygon:

Minimum Factor of Safety = 1.74

Critical Circle: Xc = 33.38[ft], Yc = 197.97[ft], R = 43.00[ft]. (Number of slices used = 55)

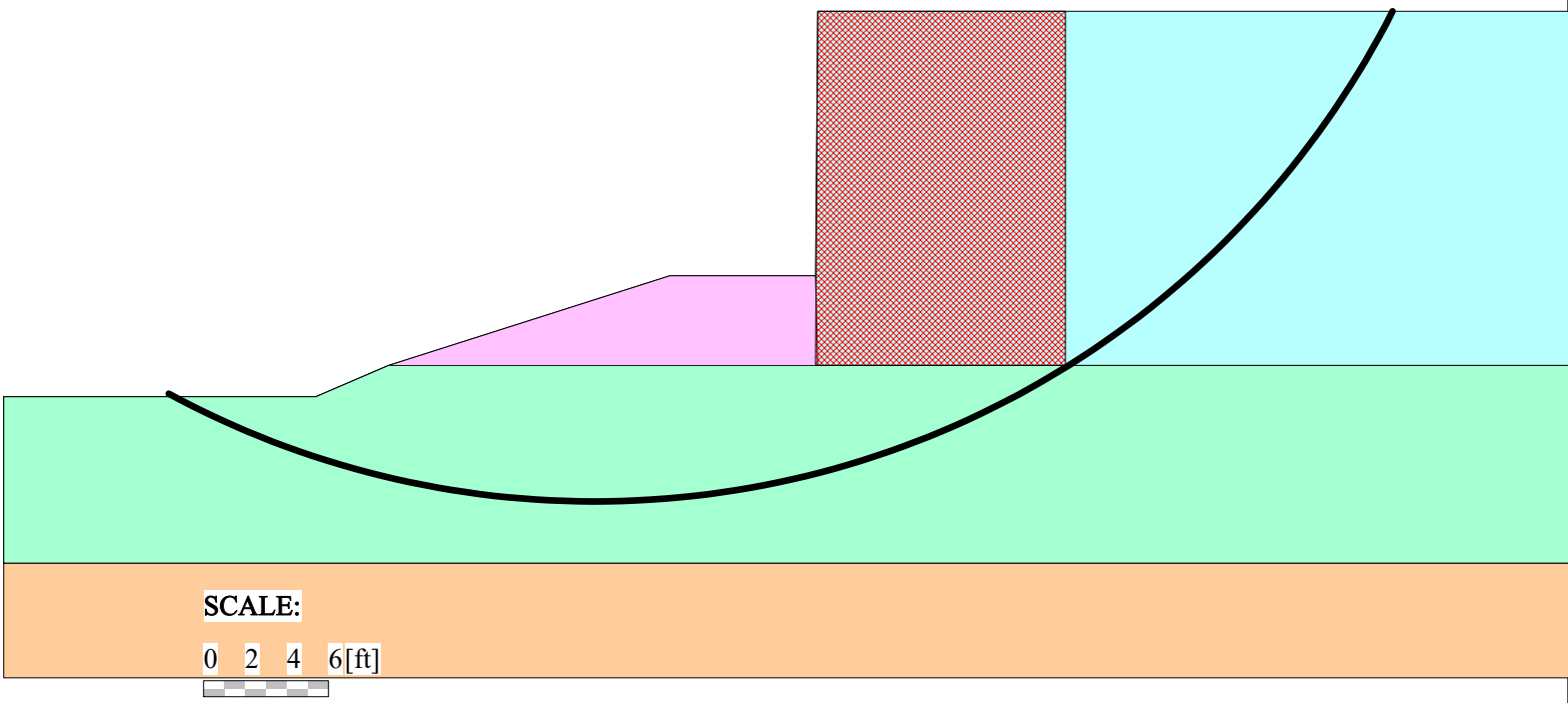
Translational (2-Part Wedge; Spencer), Direct Sliding, Stability Analysis

N O T C O N D U C T E D

Three-Part Wedge Stability Analysis

N O T C O N D U C T E D

REINFORCEMENT LAYOUT: DRAWING



Citrus Grove Phase V

PROJECT IDENTIFICATION

Title:	Citrus Grove Phase V
Project Number:	113-19-60-6418 -
Client:	DRMP
Designer:	Alexandra G. Aydelotte, P.E.
Station Number:	246+00

Description:
MSE Wall RW-2 Wall Height 25 ft ; Strap Length 18 ft

Company's information:

Name:	Ardaman & Associates, Inc.
Street:	8008 S. Orange Avenue Orlando, FL 32809
Telephone #:	407-855-3860
Fax #:	407-859-8121
E-Mail:	www.ardaman.com

Original file path and name: O:\Geotech ..... Grove Rd Phase 5 Lake Cty FL\Walls\246+00 (1).MSEp
Original date and time of creating this file: Tue Jul 14 15:45:53 2020

PROGRAM MODE: Analysis of a General Slope using NO reinforcement material.

INPUT DATA (EXCLUDING REINFORCEMENT LAYOUT)

SOIL DATA

========== Soil Layer #: ==========	Unit weight, γ [lb/ft ^{3}]	Internal angle of friction, ϕ [deg.]	Cohesion, c [lb/ft ^{2}]
1	105.0	30.0	0.0
2	100.0	29.0	0.0
3	108.0	31.0	0.0
4	118.0	34.0	0.0

REINFORCEMENT

Analysis of slope WITHOUT reinforcement.

WATER

Unit weight of water = 62.45 [lb/ft ^{3}]
Water pressure is defined by phreatic surface in Effective Stress Analysis.

SEISMICITY

Not Applicable

DRAWING OF SPECIFIED GEOMETRY - GENERAL

-- Problem geometry is defined along sections selected by user at x,y coordinates.
-- X1,Y1 represents the coordinates of soil surface. X2,Y2 represent the coordinates of the end of soil layer 1 and start of soil layer 2, and so on.
-- Xw,Yw represents the coordinates of phreatic surface.

GEOMETRY

Soil profile contains 4 layers (see details in next page)

WATER GEOMETRY

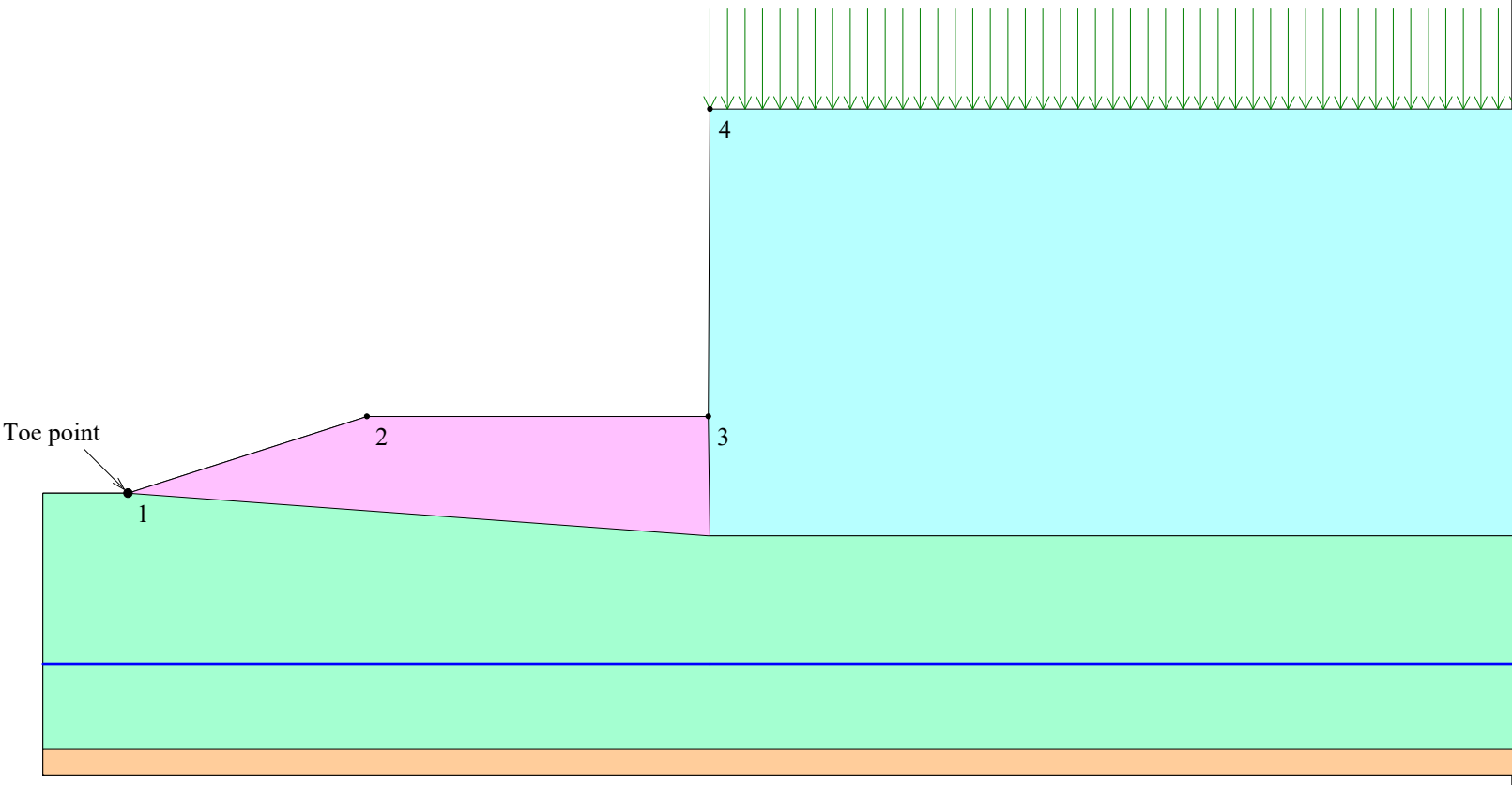
Phreatic line was specified.

UNIFORM SURCHARGE

Load Q1 = 250.00 [lb/ft²] inclined from verical at 0.00 degrees, starts at X1s = 64.10 and ends at X1e = 120.00 [ft].
Surcharge load, Q2.....None
Surcharge load, Q3.....None

STRIP LOAD

.....None.....



SCALE:

0 2 4 6 8 10 [ft]

TABULATED DETAILS OF GENERAL SPECIFIED GEOMETRY

Soil profile contains 4 layers. Coordinates in [ft.]
Water was described by phreatic line.

	#	Xi	Yi
Top of Layer 1	1	30.00	161.50
	2	44.00	166.00
	3	64.00	166.00
	4	64.10	184.00
	5	120.00	184.00
Top of Layer 2	6	30.00	161.50
	7	44.00	166.00
	8	64.00	166.00
	9	64.10	159.00
	10	120.00	159.00
Top of Layer 3	11	30.00	161.50
	12	64.00	159.00
	13	120.00	159.00
Top of Layer 4	14	30.00	146.50
	15	120.00	146.50
Top of Phreatic Line	17	30.00	151.50
	18	120.00	151.50

TABULATED DETAILS OF SPECIFIED GEOMETRY

Soil profile contains 4 layers. Coordinates in [ft.]
Water was described by phreatic line. Y values are tabulated in the right most column.

#	X	Y1	Y2	Y3	Y4	(phreatic) Yw
1	30.00	161.50	161.50	161.50	146.50	151.50
2	44.00	166.00	166.00	160.47	146.50	151.50
3	64.00	166.00	166.00	159.00	146.50	151.50
4	64.10	184.00	159.00	159.00	146.50	151.50
5	120.00	184.00	159.00	159.00	146.50	151.50

RESULTS OF ROTATIONAL STABILITY ANALYSIS

Results in the tables below represent critical circles identified between specified points on entry and exit. (Theta-exit set to 50.00 deg.) The most critical circle is obtained from a search considering all the combinations of input entry and exit points.

Critical circles for each entry point (considering all specified exit points)

Entry Point #	Entry Point (X, Y) [ft]		Exit Point (X, Y) [ft]		Critical Circle (Xc, Yc, R) [ft]			Fs	STATUS
1	30.00	161.50	30.00	161.50	30.00	161.50	0.00	N/A	#10 - Overhanging Cliff
2	30.00	161.50	30.00	161.50	30.00	161.50	0.00	N/A	#10 - Overhanging Cliff
3	30.00	161.50	30.00	161.50	30.00	161.50	0.00	N/A	#10 - Overhanging Cliff
4	30.00	161.50	30.00	161.50	30.00	161.50	0.00	N/A	#10 - Overhanging Cliff
5	30.00	161.50	30.00	161.50	30.00	161.50	0.00	N/A	#10 - Overhanging Cliff
6	94.29	184.00	23.19	161.98	54.09	188.00	40.40	2.30	
7	97.14	184.00	26.43	161.77	55.87	191.70	41.99	2.22	
8	100.00	184.00	26.50	161.67	56.06	196.49	45.68	2.17	
9	102.86	184.00	29.70	161.57	57.89	200.16	47.79	2.14	
10	105.72	184.00	22.92	161.96	54.99	208.04	56.13	2.13	
11	108.57	184.00	23.02	161.85	55.16	214.02	61.27	2.13	OK
12	111.43	184.00	20.43	161.54	53.86	221.68	68.81	2.16	
13	114.29	184.00	25.95	161.87	57.28	224.19	69.75	2.18	
14	117.14	184.00	19.75	161.86	54.48	234.36	80.40	2.23	
15	120.00	184.00	19.86	161.77	54.62	241.88	87.32	2.27	

Note: In the 'Status' column, OK means the critical circle was identified within the specified search domain. 'On extreme X-entry' means that the critical result is on the edge of the search domain; a lower Fs may result if the search domain is expanded.

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Results in the tables below represent critical circles identified between specified points on entry and exit. (Theta-exit set to 50.00 deg.) The most critical circle is obtained from a search considering all the combinations of input entry and exit points.

Critical circles for each exit point (considering all specified entry points).

Exit Point #	Exit Point (X, Y) [ft]		Entry Point (X, Y) [ft]		Critical Circle (Xc, Yc, R) [ft]			Fs	STATUS
1	4.46	161.86	108.57	184.00	45.64	224.07	74.61	2.26	
2	7.41	162.01	105.72	184.00	47.12	215.21	66.39	2.24	
3	10.69	161.87	105.72	184.00	48.81	213.27	63.99	2.22	
4	14.05	161.68	105.72	184.00	50.17	212.73	62.53	2.18	
5	16.78	161.89	108.57	184.00	52.07	216.98	65.43	2.17	
6	20.28	161.64	108.57	184.00	53.80	214.79	62.83	2.16	
7	23.02	161.85	108.57	184.00	55.16	214.02	61.27	2.13	OK
8	25.89	162.00	108.57	184.00	56.91	211.78	58.66	2.14	
9	29.70	161.57	105.72	184.00	58.15	205.16	52.06	2.13	
10	32.66	162.60	105.72	184.00	60.73	202.18	48.52	2.19	
11	35.53	163.81	102.86	184.00	62.52	196.18	42.14	2.21	
12	38.59	164.87	102.86	184.00	64.88	194.08	39.29	2.27	
13	41.85	165.79	100.00	184.00	66.53	188.92	33.83	2.33	
14	45.27	166.03	100.00	184.00	68.49	187.63	31.72	2.40	
15	47.93	166.51	100.00	184.00	70.24	186.36	29.86	2.52	
16	51.44	166.07	100.00	184.00	72.00	185.11	28.03	2.72	
17	54.22	166.45	102.86	184.00	75.36	184.04	27.50	3.41	
18	30.00	161.50	30.00	161.50	30.00	161.50	0.00	N/A	#10 - Overhanging Cliff
19	30.00	161.50	30.00	161.50	30.00	161.50	0.00	N/A	#10 - Overhanging Cliff
20	30.00	161.50	30.00	161.50	30.00	161.50	0.00	N/A	#10 - Overhanging Cliff

Note: In the 'Status' column, OK means the critical circle was identified within the specified search domain. 'On extreme X-exit' means that the critical result is on the edge of the search domain; a lower Fs may result if the search domain is expanded.

CRITICAL RESULTS OF ROTATIONAL AND TRANSLATIONAL STABILITY ANALYSES

Rotational (Circular Arc; Bishop) Stability Analysis with slip surfaces excluded from this polygon:

Minimum Factor of Safety = 2.13

Critical Circle: Xc = 55.16[ft], Yc = 214.02[ft], R = 61.27[ft]. (Number of slices used = 53)

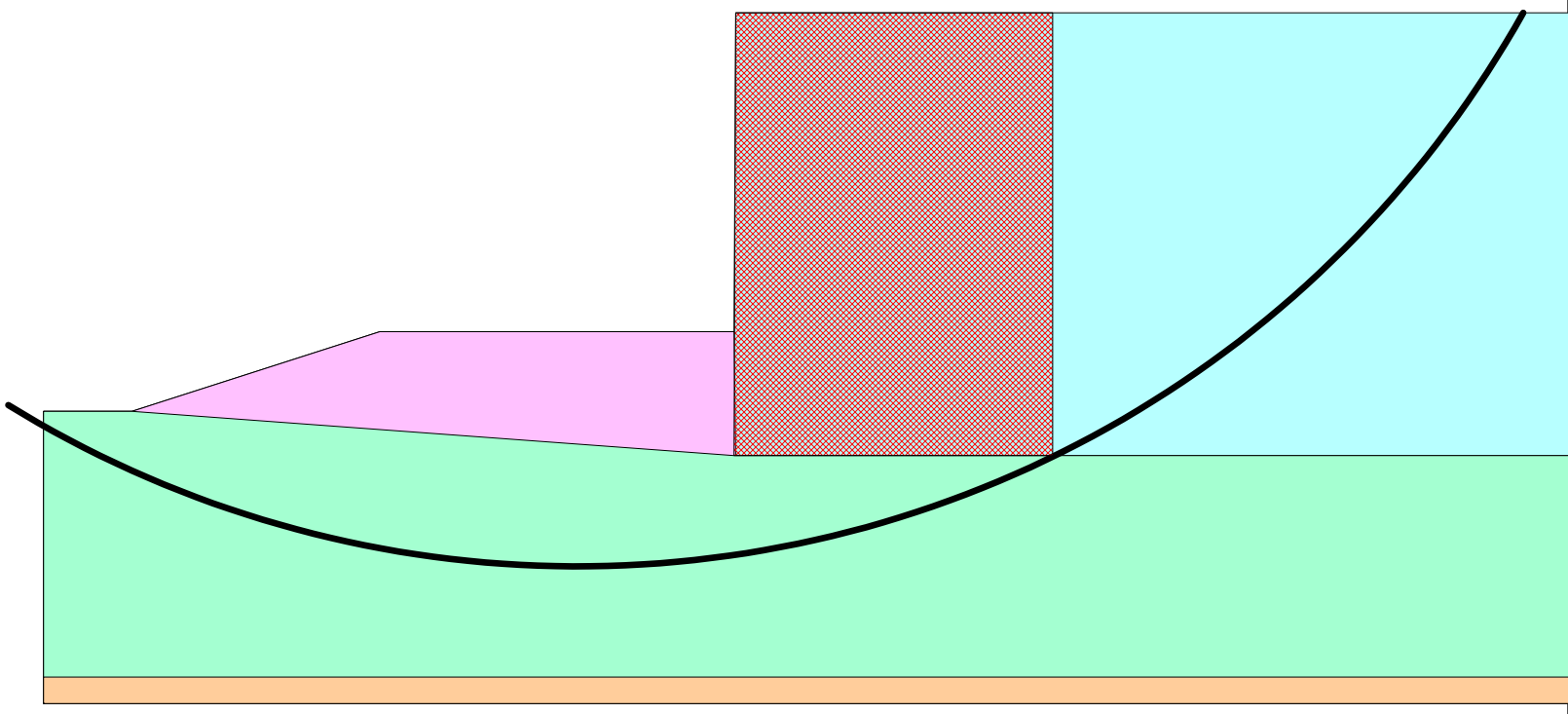
Translational (2-Part Wedge; Spencer), Direct Sliding, Stability Analysis

N O T C O N D U C T E D

Three-Part Wedge Stability Analysis

N O T C O N D U C T E D

REINFORCEMENT LAYOUT: DRAWING



SCALE:

0 2 4 6 8 10 [ft]

Ardaman & Associates, Inc.

Citrus Grove Phase V

PROJECT IDENTIFICATION

Title:	Citrus Grove Phase V
Project Number:	113-19-60-6418 -
Client:	DRMP
Designer:	Alexandra G. Aydelotte, P.E.
Station Number:	246+00

Description:
MSE Wall RW-2 Wall Height 23 ft ; Strap Length 17 ft

Company's information:

Name:	Ardaman & Associates, Inc.
Street:	8008 S. Orange Avenue Orlando, FL 32809
Telephone #:	407-855-3860
Fax #:	407-859-8121
E-Mail:	www.ardaman.com

Original file path and name: O:\Geotech ..... Grove Rd Phase 5 Lake Cty FL\Walls\246+00 (2).MSEp
Original date and time of creating this file: Tue Jul 14 15:45:53 2020

PROGRAM MODE: Analysis of a General Slope using NO reinforcement material.

INPUT DATA (EXCLUDING REINFORCEMENT LAYOUT)

SOIL DATA

========== Soil Layer #: ==========	Unit weight, γ [lb/ft ^{3}]	Internal angle of friction, ϕ [deg.]	Cohesion, c [lb/ft ^{2}]
1	105.0	30.0	0.0
2	100.0	29.0	0.0
3	108.0	31.0	0.0
4	118.0	34.0	0.0

REINFORCEMENT

Analysis of slope WITHOUT reinforcement.

WATER

Unit weight of water = 62.45 [lb/ft ^{3}]
Water pressure is defined by phreatic surface in Effective Stress Analysis.

SEISMICITY

Not Applicable

DRAWING OF SPECIFIED GEOMETRY - GENERAL

-- Problem geometry is defined along sections selected by user at x,y coordinates.
-- X1,Y1 represents the coordinates of soil surface. X2,Y2 represent the coordinates of the end of soil layer 1 and start of soil layer 2, and so on.
-- Xw,Yw represents the coordinates of phreatic surface.

GEOMETRY

Soil profile contains 4 layers (see details in next page)

WATER GEOMETRY

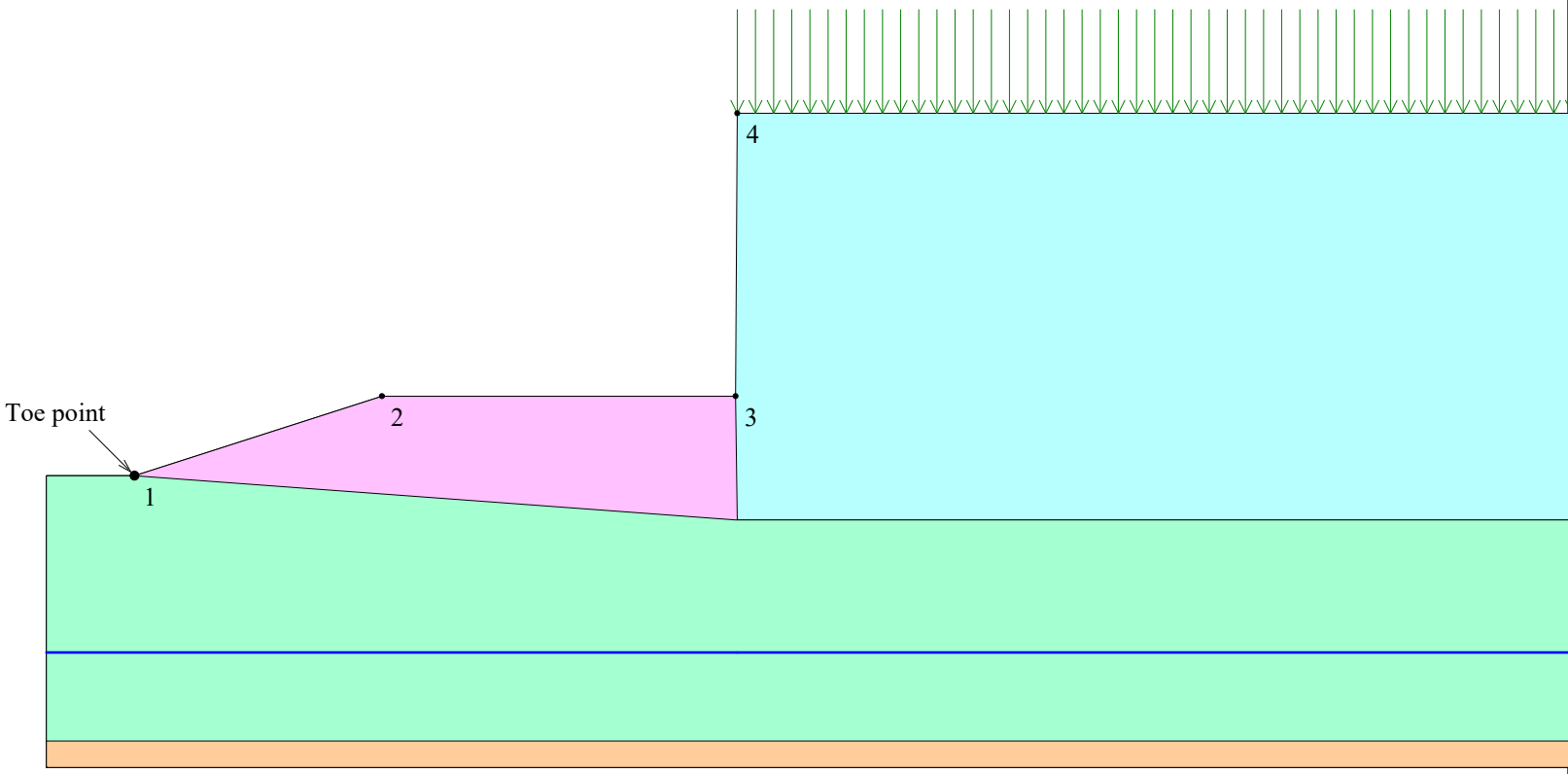
Phreatic line was specified.

UNIFORM SURCHARGE

Load Q1 = 250.00 [lb/ft²] inclined from verical at 0.00 degrees, starts at X1s = 64.10 and ends at X1e = 120.00 [ft].
Surcharge load, Q2.....None
Surcharge load, Q3.....None

STRIP LOAD

.....None.....



SCALE:

0 2 4 6 8 10 [ft]

TABULATED DETAILS OF GENERAL SPECIFIED GEOMETRY

Soil profile contains 4 layers. Coordinates in [ft.]
Water was described by phreatic line.

	#	Xi	Yi
Top of Layer 1	1	30.00	161.50
	2	44.00	166.00
	3	64.00	166.00
	4	64.10	182.00
	5	120.00	182.00
Top of Layer 2	6	30.00	161.50
	7	44.00	166.00
	8	64.00	166.00
	9	64.10	159.00
	10	120.00	159.00
Top of Layer 3	11	30.00	161.50
	12	64.00	159.00
	13	120.00	159.00
Top of Layer 4	14	30.00	146.50
	15	120.00	146.50
Top of Phreatic Line	17	30.00	151.50
	18	120.00	151.50

TABULATED DETAILS OF SPECIFIED GEOMETRY

Soil profile contains 4 layers. Coordinates in [ft.]
Water was described by phreatic line. Y values are tabulated in the right most column.

#	X	Y1	Y2	Y3	Y4	(phreatic) Yw
1	30.00	161.50	161.50	161.50	146.50	151.50
2	44.00	166.00	166.00	160.47	146.50	151.50
3	64.00	166.00	166.00	159.00	146.50	151.50
4	64.10	182.00	159.00	159.00	146.50	151.50
5	120.00	182.00	159.00	159.00	146.50	151.50

RESULTS OF ROTATIONAL STABILITY ANALYSIS

Results in the tables below represent critical circles identified between specified points on entry and exit. (Theta-exit set to 50.00 deg.) The most critical circle is obtained from a search considering all the combinations of input entry and exit points.

Critical circles for each entry point (considering all specified exit points)

Entry Point #	Entry Point (X, Y) [ft]		Exit Point (X, Y) [ft]		Critical Circle (Xc, Yc, R) [ft]			Fs	STATUS
1	30.00	161.50	30.00	161.50	30.00	161.50	0.00	N/A	#10 - Overhanging Cliff
2	30.00	161.50	30.00	161.50	30.00	161.50	0.00	N/A	#10 - Overhanging Cliff
3	30.00	161.50	30.00	161.50	30.00	161.50	0.00	N/A	#10 - Overhanging Cliff
4	30.00	161.50	30.00	161.50	30.00	161.50	0.00	N/A	#10 - Overhanging Cliff
5	30.00	161.50	30.00	161.50	30.00	161.50	0.00	N/A	#10 - Overhanging Cliff
6	94.29	182.00	26.34	161.87	55.24	189.06	39.68	2.36	
7	97.14	182.00	23.32	161.75	53.86	195.11	45.22	2.29	
8	100.00	182.00	29.70	161.58	57.25	197.93	45.62	2.24	
. 9	102.86	182.00	29.70	161.57	57.63	202.76	49.77	2.24 .	OK
10	105.72	182.00	29.70	161.56	57.90	208.26	54.56	2.24	
11	108.57	182.00	23.00	161.83	54.93	218.01	64.61	2.25	
12	111.43	182.00	20.40	161.55	53.62	226.50	72.95	2.28	
13	114.29	182.00	19.61	161.92	53.95	233.24	79.16	2.32	
14	117.14	182.00	19.73	161.83	54.17	240.82	86.17	2.37	
15	120.00	182.00	16.38	161.92	53.10	249.85	95.29	2.44	

Note: In the 'Status' column, OK means the critical circle was identified within the specified search domain. 'On extreme X-entry' means that the critical result is on the edge of the search domain; a lower Fs may result if the search domain is expanded.

****

Results in the tables below represent critical circles identified between specified points on entry and exit. (Theta-exit set to 50.00 deg.) The most critical circle is obtained from a search considering all the combinations of input entry and exit points.

Critical circles for each exit point (considering all specified entry points).

Exit Point #	Exit Point (X, Y) [ft]		Entry Point (X, Y) [ft]		Critical Circle (Xc, Yc, R) [ft]			Fs	STATUS
1	4.09	162.12	105.72	182.00	45.29	221.23	72.04	2.40	
2	7.32	162.03	105.72	182.00	46.96	219.11	69.49	2.37	
3	10.40	162.09	102.86	182.00	47.99	212.14	62.60	2.32	
4	13.78	161.89	102.86	182.00	49.68	210.20	60.19	2.30	
5	16.74	161.89	108.57	182.00	51.87	221.20	68.94	2.28	
6	20.11	161.75	105.72	182.00	53.04	213.58	61.41	2.24	
7	22.91	161.94	105.72	182.00	54.77	211.38	58.81	2.24	
8	26.63	161.54	105.72	182.00	56.50	209.18	56.23	2.25	
. 9	29.70	161.57	102.86	182.00	57.63	202.76	49.77	2.24 .	OK
10	32.62	162.63	102.86	182.00	59.85	200.92	46.99	2.25	
11	35.52	163.84	100.00	182.00	61.78	194.15	40.11	2.29	
12	39.06	164.46	100.00	182.00	64.08	192.17	37.33	2.34	
13	41.85	165.77	100.00	182.00	66.32	190.39	34.72	2.39	
14	45.25	166.05	97.14	182.00	67.69	185.46	29.66	2.47	
15	48.38	166.02	97.14	182.00	69.40	184.26	27.83	2.58	
16	51.39	166.12	97.14	182.00	71.14	183.07	26.03	2.77	
17	54.43	166.21	100.00	182.00	74.30	182.53	25.71	3.40	
18	30.00	161.50	30.00	161.50	30.00	161.50	0.00	N/A	#10 - Overhanging Cliff
19	30.00	161.50	30.00	161.50	30.00	161.50	0.00	N/A	#10 - Overhanging Cliff
20	30.00	161.50	30.00	161.50	30.00	161.50	0.00	N/A	#10 - Overhanging Cliff

Note: In the 'Status' column, OK means the critical circle was identified within the specified search domain. 'On extreme X-exit' means that the critical result is on the edge of the search domain; a lower Fs may result if the search domain is expanded.

CRITICAL RESULTS OF ROTATIONAL AND TRANSLATIONAL STABILITY ANALYSES

Rotational (Circular Arc; Bishop) Stability Analysis with slip surfaces excluded from this polygon:

Minimum Factor of Safety = 2.24

Critical Circle: Xc = 57.63[ft], Yc = 202.76[ft], R = 49.77[ft]. (Number of slices used = 53)

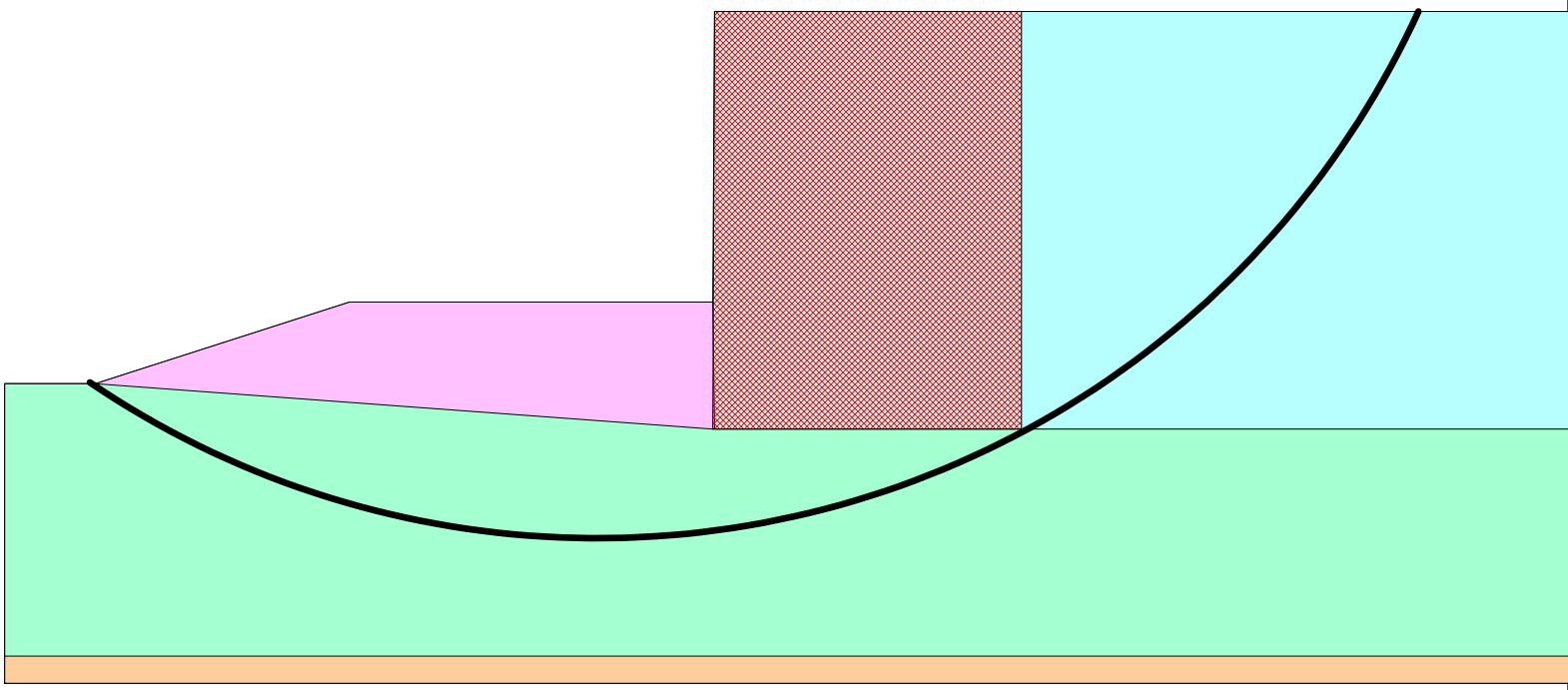
Translational (2-Part Wedge; Spencer), Direct Sliding, Stability Analysis

N O T C O N D U C T E D

Three-Part Wedge Stability Analysis

N O T C O N D U C T E D

REINFORCEMENT LAYOUT: DRAWING



SCALE:

0 2 4 6 8 10 [ft]

Ardaman & Associates, Inc.

Citrus Grove Phase V

PROJECT IDENTIFICATION

Title:	Citrus Grove Phase V
Project Number:	113-19-60-6418 -
Client:	DRMP
Designer:	Alexandra G. Aydelotte, P.E.
Station Number:	247+00

Description:
MSE Wall RW-2 Wall Height 28 ft ; Strap Length 20 ft

Company's information:

Name:	Ardaman & Associates, Inc.
Street:	8008 S. Orange Avenue Orlando, FL 32809
Telephone #:	407-855-3860
Fax #:	407-859-8121
E-Mail:	www.ardaman.com

Original file path and name: O:\Geotech ..... Grove Rd Phase 5 Lake Cty FL\Walls\247+00 (1).MSEp
Original date and time of creating this file: Tue Jul 14 15:45:53 2020

PROGRAM MODE: Analysis of a General Slope using NO reinforcement material.

INPUT DATA (EXCLUDING REINFORCEMENT LAYOUT)

SOIL DATA

========== Soil Layer #: ==========	Unit weight, γ [lb/ft ^{3}]	Internal angle of friction, ϕ [deg.]	Cohesion, c [lb/ft ^{2}]
1	105.0	30.0	0.0
2	100.0	29.0	0.0
3	108.0	31.0	0.0
4	118.0	34.0	0.0

REINFORCEMENT

Analysis of slope WITHOUT reinforcement.

WATER

Unit weight of water = 62.45 [lb/ft ^{3}]
Water pressure is defined by phreatic surface in Effective Stress Analysis.

SEISMICITY

Not Applicable

DRAWING OF SPECIFIED GEOMETRY - GENERAL

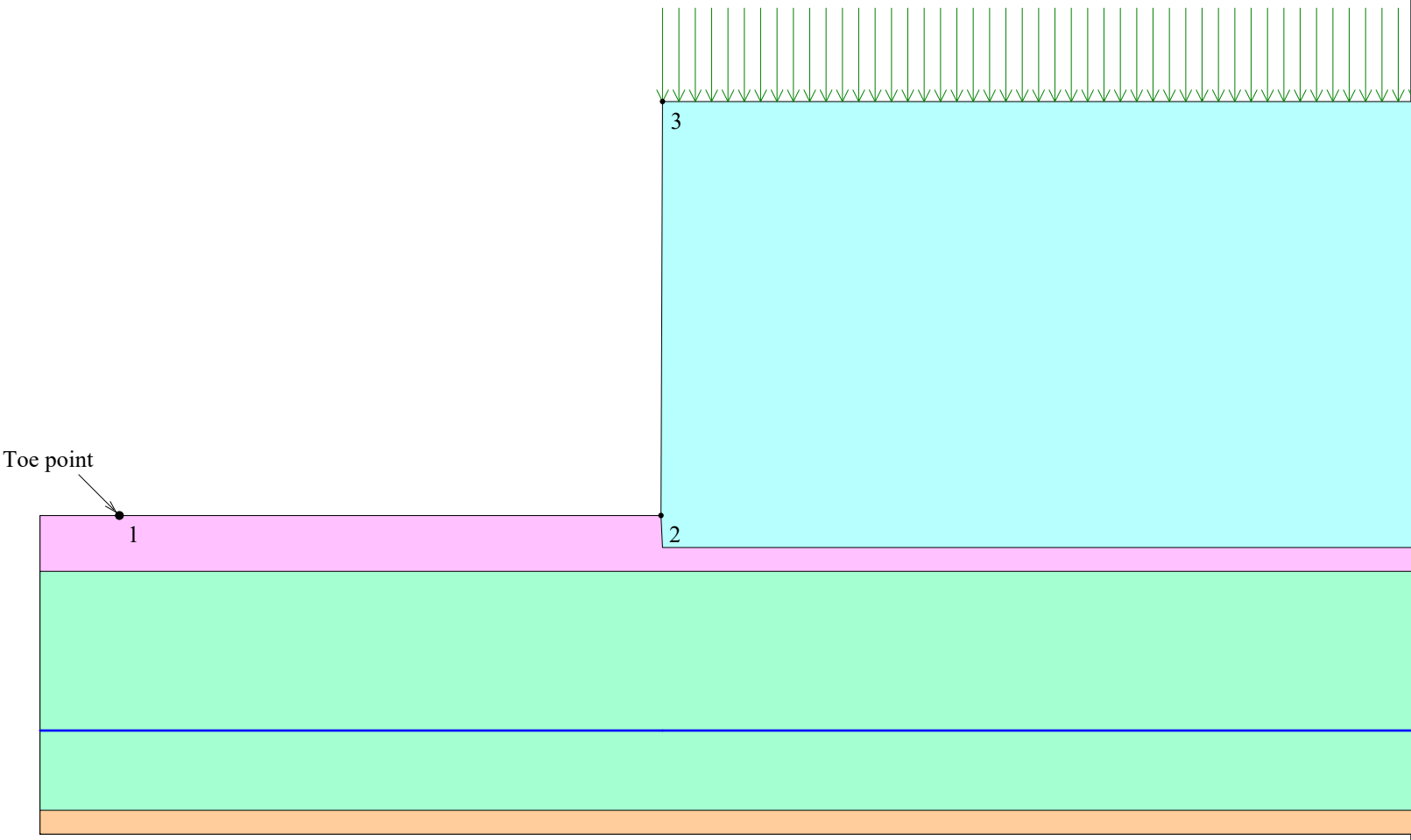
-- Problem geometry is defined along sections selected by user at x,y coordinates.
-- X1,Y1 represents the coordinates of soil surface. X2,Y2 represent the coordinates of the end of soil layer 1 and start of soil layer 2, and so on.
-- Xw,Yw represents the coordinates of phreatic surface.

GEOMETRY
Soil profile contains 4 layers (see details in next page)

WATER GEOMETRY
Phreatic line was specified.

UNIFORM SURCHARGE
Load Q1 = 250.00 [lb/ft²] inclined from verical at 0.00 degrees, starts at X1s = 64.10 and ends at X1e = 120.00 [ft].
Surcharge load, Q2.....None
Surcharge load, Q3.....None

STRIP LOAD
.....None.....



SCALE:

0 2 4 6[ft]

TABULATED DETAILS OF GENERAL SPECIFIED GEOMETRY

Soil profile contains 4 layers. Coordinates in [ft.]
Water was described by phreatic line.

	#	Xi	Yi
Top of Layer 1	1	30.00	165.00
	2	64.00	165.00
	3	64.10	191.00
	4	120.00	191.00
Top of Layer 2	5	30.00	165.00
	6	64.00	165.00
	7	64.10	163.00
	8	120.00	163.00
Top of Layer 3	9	30.00	161.50
	10	120.00	161.50
Top of Layer 4	11	30.00	146.50
	12	120.00	146.50
Top of Phreatic Line	14	30.00	151.50
	15	120.00	151.50

TABULATED DETAILS OF SPECIFIED GEOMETRY

Soil profile contains 4 layers. Coordinates in [ft.]
Water was described by phreatic line. Y values are tabulated in the right most column.

#	X	Y1	Y2	Y3	Y4	(phreatic) Yw
1	30.00	165.00	165.00	161.50	146.50	151.50
2	64.00	165.00	165.00	161.50	146.50	151.50
3	64.10	191.00	163.00	161.50	146.50	151.50
4	120.00	191.00	163.00	161.50	146.50	151.50

RESULTS OF ROTATIONAL STABILITY ANALYSIS

Results in the tables below represent critical circles identified between specified points on entry and exit. (Theta-exit set to 50.00 deg.) The most critical circle is obtained from a search considering all the combinations of input entry and exit points.

Critical circles for each entry point (considering all specified exit points)

Entry Point #	Entry Point (X, Y) [ft]		Exit Point (X, Y) [ft]		Critical Circle (Xc, Yc, R) [ft]			Fs	STATUS
1	30.00	165.00	30.00	165.00	30.00	165.00	0.00	N/A	#10 - Overhanging Cliff
2	30.00	165.00	30.00	165.00	30.00	165.00	0.00	N/A	#10 - Overhanging Cliff
3	30.00	165.00	30.00	165.00	30.00	165.00	0.00	N/A	#10 - Overhanging Cliff
4	30.00	165.00	30.00	165.00	30.00	165.00	0.00	N/A	#10 - Overhanging Cliff
5	30.00	165.00	30.00	165.00	30.00	165.00	0.00	N/A	#10 - Overhanging Cliff
6	95.57	191.00	23.33	165.33	54.82	191.20	40.75	1.98	
7	98.29	191.00	38.76	165.31	62.83	191.35	35.46	1.73	
8	101.00	191.00	38.59	165.42	63.08	194.61	38.10	1.72	
9	103.72	191.00	32.47	165.33	59.92	200.85	44.89	1.69	OK
10	106.43	191.00	35.97	165.02	61.86	203.34	46.25	1.70	
11	109.14	191.00	35.68	165.20	61.88	208.07	50.25	1.70	
12	111.86	191.00	29.70	165.06	58.95	215.49	58.30	1.72	
13	114.57	191.00	29.70	165.05	59.21	220.31	62.64	1.75	
14	117.29	191.00	29.70	165.05	59.38	225.65	67.48	1.78	
15	120.00	191.00	29.70	165.04	59.45	231.60	72.90	1.81	

Note: In the 'Status' column, OK means the critical circle was identified within the specified search domain. 'On extreme X-entry' means that the critical result is on the edge of the search domain; a lower Fs may result if the search domain is expanded.

****

Results in the tables below represent critical circles identified between specified points on entry and exit. (Theta-exit set to 50.00 deg.) The most critical circle is obtained from a search considering all the combinations of input entry and exit points.

Critical circles for each exit point (considering all specified entry points).

Exit Point #	Exit Point (X, Y) [ft]		Entry Point (X, Y) [ft]		Critical Circle (Xc, Yc, R) [ft]			Fs	STATUS
1	3.97	165.63	114.57	191.00	46.49	234.05	80.55	1.96	
2	7.19	165.60	111.86	191.00	47.88	226.26	73.05	1.93	
3	10.94	165.15	114.57	191.00	49.48	231.30	76.56	1.87	
4	14.12	165.11	111.86	191.00	50.92	223.61	69.11	1.83	
5	17.27	165.09	109.14	191.00	52.29	216.73	62.40	1.80	
6	20.28	165.15	109.14	191.00	54.05	214.74	59.99	1.78	
7	23.41	165.14	106.43	191.00	55.37	208.73	54.05	1.75	
8	25.90	165.53	109.14	191.00	57.21	211.98	56.01	1.73	
9	29.70	165.07	106.43	191.00	58.58	206.10	50.18	1.70	
10	32.47	165.33	103.72	191.00	59.92	200.85	44.89	1.69	OK
11	35.68	165.20	109.14	191.00	61.88	208.07	50.25	1.70	
12	38.82	165.19	106.43	191.00	63.36	202.36	44.54	1.70	
13	41.93	165.19	103.72	191.00	64.81	197.29	39.41	1.72	
14	44.77	165.36	103.72	191.00	66.38	196.26	37.70	1.76	
15	48.20	165.13	103.72	191.00	67.99	195.17	35.97	1.83	
16	50.94	165.36	103.72	191.00	69.63	194.02	34.22	1.93	
17	54.19	165.25	103.72	191.00	71.31	192.82	32.45	2.08	
18	57.14	165.25	111.86	191.00	73.73	201.01	39.42	2.20	
19	60.40	165.29	111.86	191.02	79.70	191.02	32.16	3.61	
20	30.00	165.00	30.00	165.00	30.00	165.00	0.00	N/A	#10 - Overhanging Cliff

Note: In the 'Status' column, OK means the critical circle was identified within the specified search domain. 'On extreme X-exit' means that the critical result is on the edge of the search domain; a lower Fs may result if the search domain is expanded.

CRITICAL RESULTS OF ROTATIONAL AND TRANSLATIONAL STABILITY ANALYSES

Rotational (Circular Arc; Bishop) Stability Analysis with slip surfaces excluded from this polygon:

Minimum Factor of Safety = 1.69

Critical Circle: Xc = 59.92[ft], Yc = 200.85[ft], R = 44.89[ft]. (Number of slices used = 54)

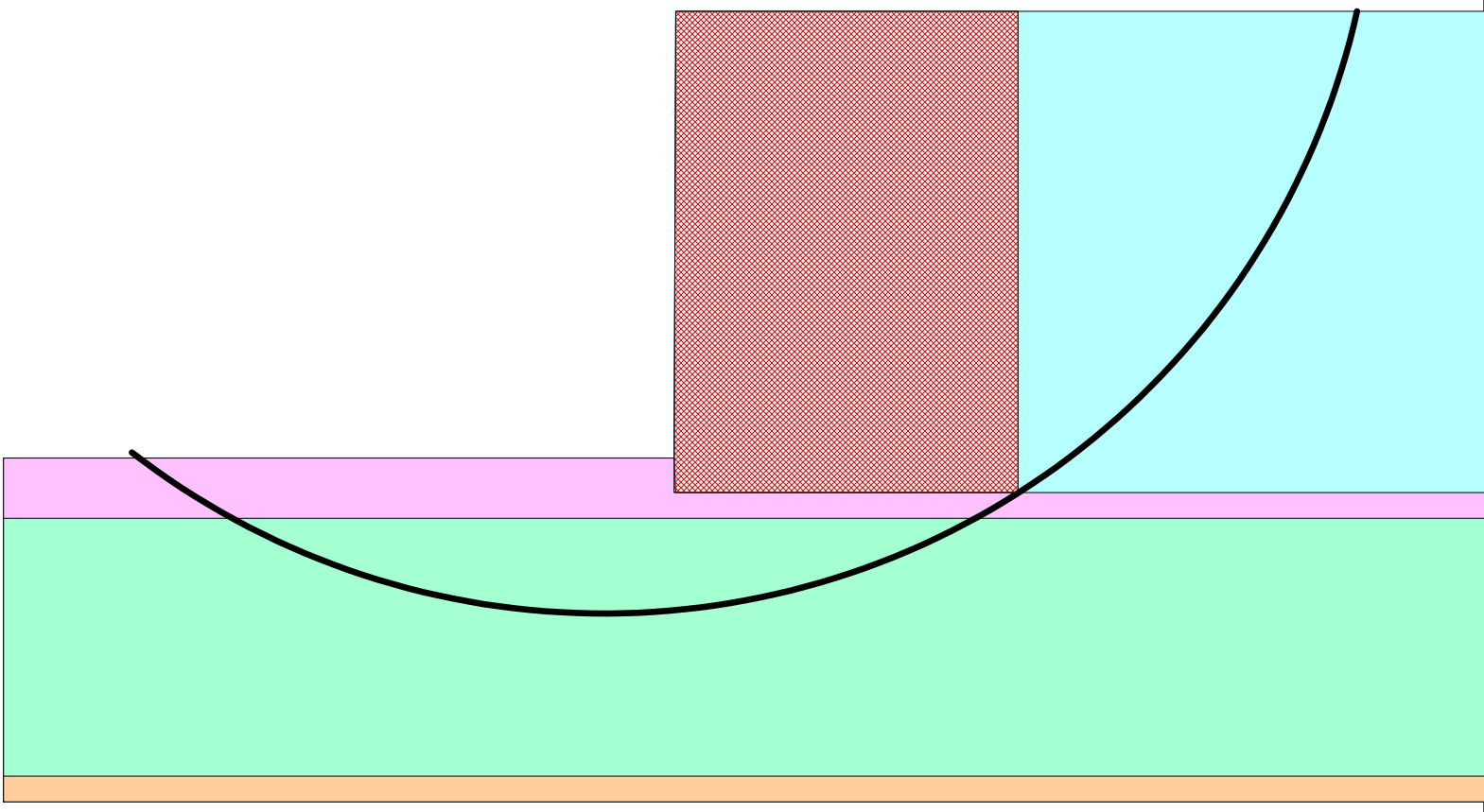
Translational (2-Part Wedge; Spencer), Direct Sliding, Stability Analysis

N O T C O N D U C T E D

Three-Part Wedge Stability Analysis

N O T C O N D U C T E D

REINFORCEMENT LAYOUT: DRAWING



SCALE:

0 2 4 6[ft]

Ardaman & Associates, Inc.

Citrus Grove Phase V

PROJECT IDENTIFICATION

Title:	Citrus Grove Phase V
Project Number:	113-19-60-6418 -
Client:	DRMP
Designer:	Alexandra G. Aydelotte, P.E.
Station Number:	247+00

Description:
MSE Wall RW-1 Wall Height 24 ft ; Strap Length 17 ft

Company's information:

Name:	Ardaman & Associates, Inc.
Street:	8008 S. Orange Avenue Orlando, FL 32809
Telephone #:	407-855-3860
Fax #:	407-859-8121
E-Mail:	www.ardaman.com

Original file path and name: O:\Geotech ..... Grove Rd Phase 5 Lake Cty FL\Walls\247+00 (2).MSEp
Original date and time of creating this file: Tue Jul 14 15:45:53 2020

PROGRAM MODE: Analysis of a General Slope using NO reinforcement material.

INPUT DATA (EXCLUDING REINFORCEMENT LAYOUT)

SOIL DATA

========== Soil Layer #: ==========	Unit weight, γ [lb/ft ^{3}]	Internal angle of friction, ϕ [deg.]	Cohesion, c [lb/ft ^{2}]
1	105.0	30.0	0.0
2	100.0	29.0	0.0
3	108.0	31.0	0.0
4	118.0	34.0	0.0

REINFORCEMENT

Analysis of slope WITHOUT reinforcement.

WATER

Unit weight of water = 62.45 [lb/ft ^{3}]
Water pressure is defined by phreatic surface in Effective Stress Analysis.

SEISMICITY

Not Applicable

DRAWING OF SPECIFIED GEOMETRY - GENERAL

-- Problem geometry is defined along sections selected by user at x,y coordinates.
-- X1,Y1 represents the coordinates of soil surface. X2,Y2 represent the coordinates of the end of soil layer 1 and start of soil layer 2, and so on.
-- Xw,Yw represents the coordinates of phreatic surface.

GEOMETRY

Soil profile contains 4 layers (see details in next page)

WATER GEOMETRY

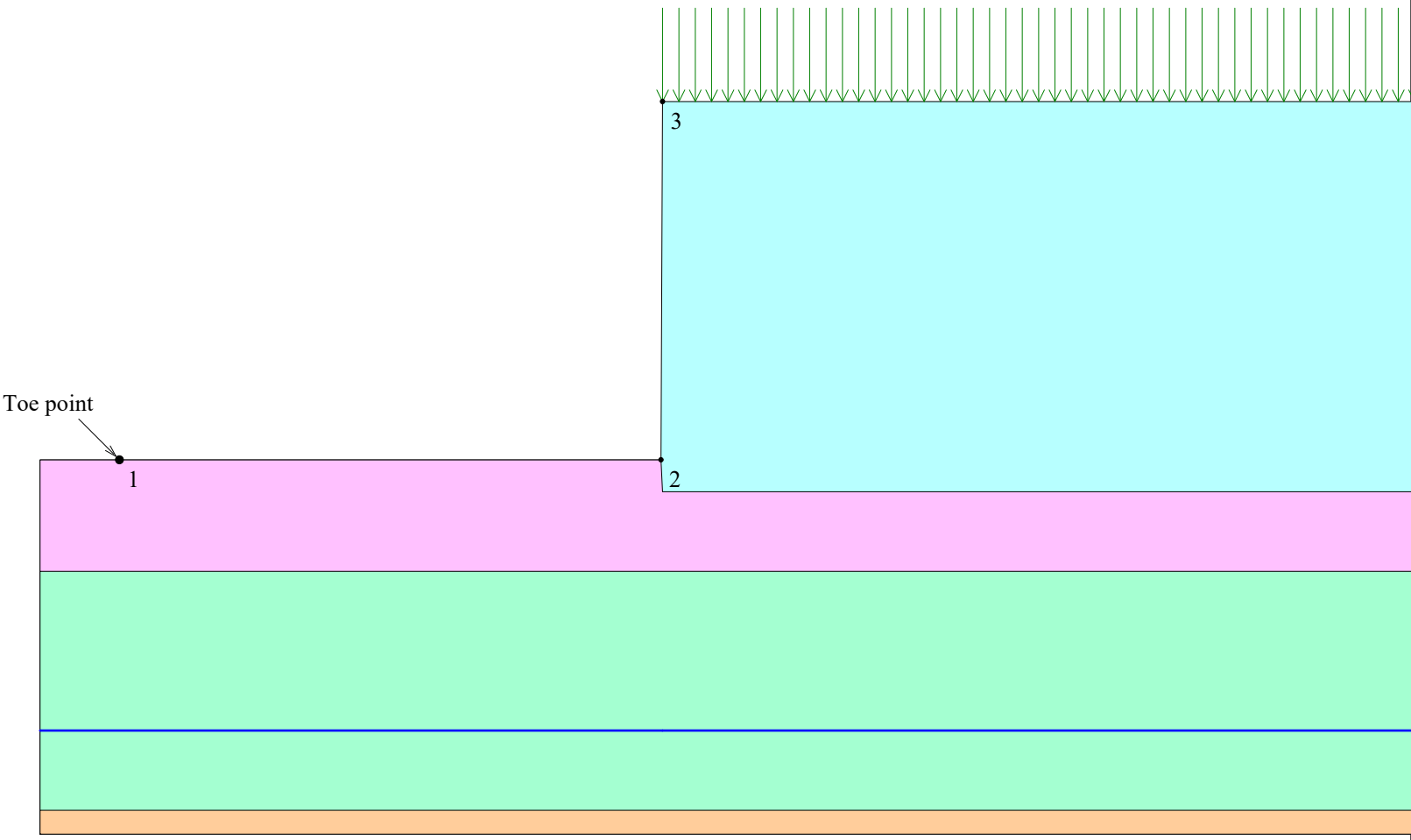
Phreatic line was specified.

UNIFORM SURCHARGE

Load Q1 = 250.00 [lb/ft²] inclined from verical at 0.00 degrees, starts at X1s = 64.10 and ends at X1e = 120.00 [ft].
Surcharge load, Q2.....None
Surcharge load, Q3.....None

STRIP LOAD

.....None.....



SCALE:

0 2 4 6[ft]

TABULATED DETAILS OF GENERAL SPECIFIED GEOMETRY

Soil profile contains 4 layers. Coordinates in [ft.]
Water was described by phreatic line.

	#	Xi	Yi
Top of Layer 1	1	30.00	168.50
	2	64.00	168.50
	3	64.10	191.00
	4	120.00	191.00
Top of Layer 2	5	30.00	168.50
	6	64.00	168.50
	7	64.10	166.50
	8	120.00	166.50
Top of Layer 3	9	30.00	161.50
	10	120.00	161.50
Top of Layer 4	11	30.00	146.50
	12	120.00	146.50
Top of Phreatic Line	14	30.00	151.50
	15	120.00	151.50

TABULATED DETAILS OF SPECIFIED GEOMETRY

Soil profile contains 4 layers. Coordinates in [ft.]
Water was described by phreatic line. Y values are tabulated in the right most column.

#	X	Y1	Y2	Y3	Y4	(phreatic) Yw
1	30.00	168.50	168.50	161.50	146.50	151.50
2	64.00	168.50	168.50	161.50	146.50	151.50
3	64.10	191.00	166.50	161.50	146.50	151.50
4	120.00	191.00	166.50	161.50	146.50	151.50

RESULTS OF ROTATIONAL STABILITY ANALYSIS

Results in the tables below represent critical circles identified between specified points on entry and exit. (Theta-exit set to 50.00 deg.) The most critical circle is obtained from a search considering all the combinations of input entry and exit points.

Critical circles for each entry point (considering all specified exit points)

Entry Point #	Entry Point (X, Y) [ft]		Exit Point (X, Y) [ft]		Critical Circle (Xc, Yc, R) [ft]			Fs	STATUS
1	30.00	168.50	30.00	168.50	30.00	168.50	0.00	N/A	#10 - Overhanging Cliff
2	30.00	168.50	30.00	168.50	30.00	168.50	0.00	N/A	#10 - Overhanging Cliff
3	30.00	168.50	30.00	168.50	30.00	168.50	0.00	N/A	#10 - Overhanging Cliff
4	30.00	168.50	30.00	168.50	30.00	168.50	0.00	N/A	#10 - Overhanging Cliff
5	91.43	191.00	26.29	168.99	54.78	192.07	36.66	1.96	
6	94.29	191.00	41.96	168.72	63.08	191.69	31.21	1.68	
7	97.14	191.00	41.68	168.91	63.25	195.44	34.19	1.63	
8	100.00	191.00	41.97	168.66	63.30	199.78	37.74	1.60	OK
9	102.86	191.00	38.73	168.73	62.01	205.16	43.23	1.61	
10	105.72	191.00	32.23	168.89	58.88	213.50	51.96	1.63	
11	108.57	191.00	35.80	168.60	60.73	217.03	54.47	1.67	
12	111.43	191.00	29.70	168.55	57.86	226.03	64.01	1.72	
13	114.29	191.00	29.70	168.54	58.11	232.08	69.60	1.77	
14	117.14	191.00	29.70	168.54	58.24	238.89	75.91	1.82	
15	120.00	191.00	26.01	168.77	57.02	247.48	84.60	1.89	

Note: In the 'Status' column, OK means the critical circle was identified within the specified search domain. 'On extreme X-entry' means that the critical result is on the edge of the search domain; a lower Fs may result if the search domain is expanded.

****

Results in the tables below represent critical circles identified between specified points on entry and exit. (Theta-exit set to 50.00 deg.) The most critical circle is obtained from a search considering all the combinations of input entry and exit points.

Critical circles for each exit point (considering all specified entry points).

Exit Point #	Exit Point (X, Y) [ft]		Entry Point (X, Y) [ft]		Critical Circle (Xc, Yc, R) [ft]			Fs	STATUS
1	4.84	168.60	108.57	191.00	44.83	234.79	77.33	2.02	
2	7.87	168.61	114.29	191.00	46.77	247.80	88.22	1.95	
3	10.38	168.94	111.43	191.00	48.21	238.11	78.84	1.90	
4	14.30	168.50	108.57	191.00	49.55	229.55	70.50	1.85	
5	16.80	168.85	108.57	191.00	51.28	227.18	67.76	1.82	
6	20.16	168.71	105.72	191.00	52.54	219.77	60.46	1.77	
7	23.03	168.82	108.57	191.00	54.37	224.01	63.46	1.73	
8	26.66	168.52	105.72	191.00	55.68	216.73	56.26	1.69	
9	29.70	168.56	105.72	191.00	57.45	214.52	53.69	1.67	
10	32.23	168.89	105.72	191.00	58.88	213.50	51.96	1.63	
11	35.31	168.95	102.86	191.00	60.51	206.25	45.01	1.63	
12	38.71	168.78	100.00	191.00	61.75	200.85	39.50	1.60	
13	41.97	168.66	100.00	191.00	63.30	199.78	37.74	1.60	OK
14	44.92	168.79	97.14	191.00	64.85	194.44	32.48	1.64	
15	47.91	168.86	97.14	191.00	66.48	193.38	30.76	1.70	
16	51.02	168.84	97.14	191.00	68.15	192.28	29.02	1.80	
17	54.38	168.63	100.00	191.00	70.10	194.29	30.09	1.95	
18	57.30	168.71	102.86	191.00	71.95	196.47	31.39	2.15	
19	60.77	168.52	105.72	191.00	77.43	191.39	28.29	3.32	
20	30.00	168.50	30.00	168.50	30.00	168.50	0.00	N/A	#10 - Overhanging Cliff

Note: In the 'Status' column, OK means the critical circle was identified within the specified search domain. 'On extreme X-exit' means that the critical result is on the edge of the search domain; a lower Fs may result if the search domain is expanded.

CRITICAL RESULTS OF ROTATIONAL AND TRANSLATIONAL STABILITY ANALYSES

Rotational (Circular Arc; Bishop) Stability Analysis with slip surfaces excluded from this polygon:

Minimum Factor of Safety = 1.60

Critical Circle: Xc = 63.30[ft], Yc = 199.78[ft], R = 37.74[ft]. (Number of slices used = 53)

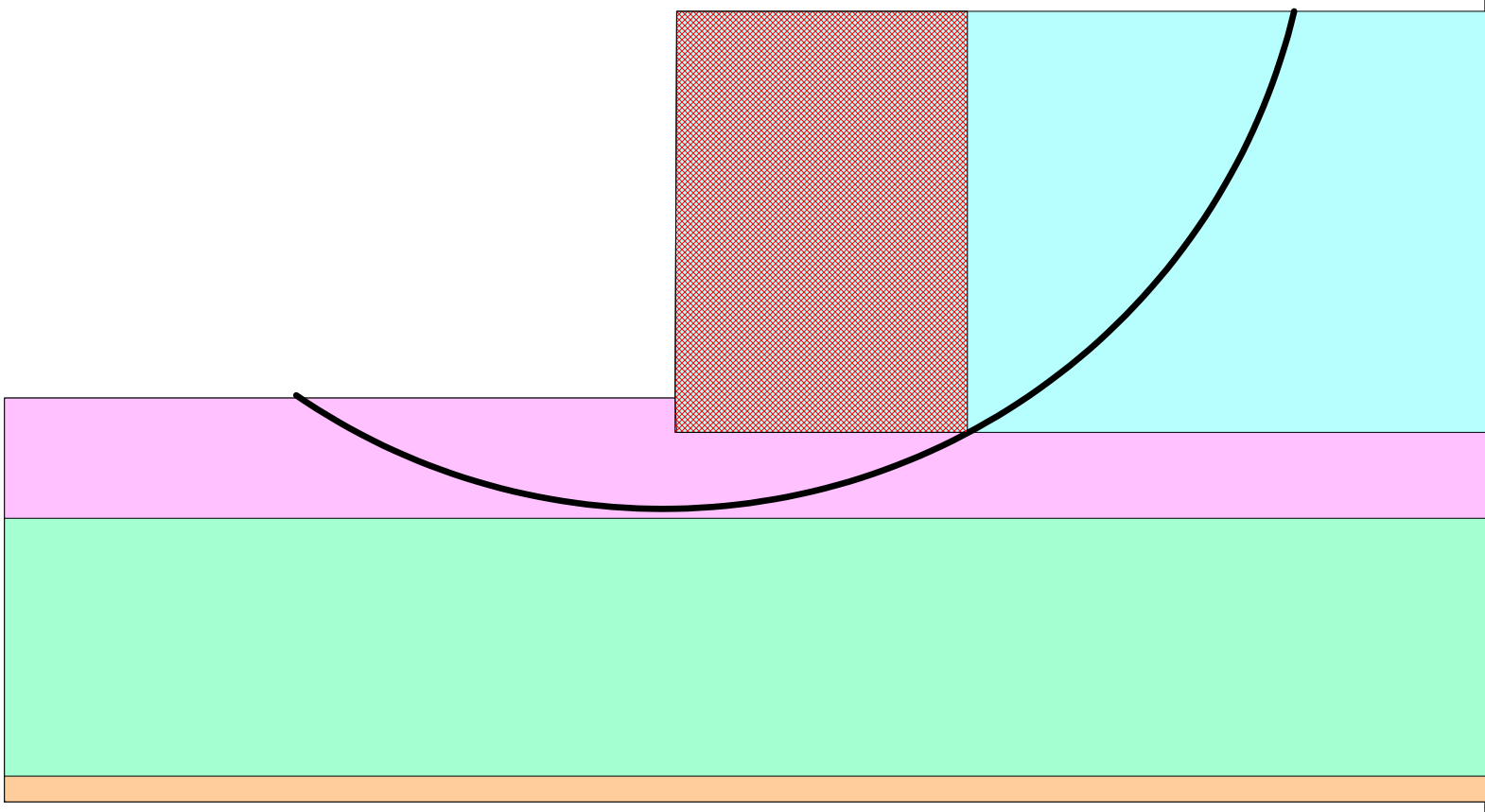
Translational (2-Part Wedge; Spencer), Direct Sliding, Stability Analysis

N O T C O N D U C T E D

Three-Part Wedge Stability Analysis

N O T C O N D U C T E D

REINFORCEMENT LAYOUT: DRAWING



SCALE:

0 2 4 6[ft]

Citrus Grove Phase V

PROJECT IDENTIFICATION

Title:	Citrus Grove Phase V
Project Number:	113-19-60-6418 -
Client:	DRMP
Designer:	Alexandra G. Aydelotte, P.E.
Station Number:	247+00

Description:
MSE Wall RW-2 Wall Height 25 ft ; Strap Length 18 ft

Company's information:

Name:	Ardaman & Associates, Inc.
Street:	8008 S. Orange Avenue Orlando, FL 32809
Telephone #:	407-855-3860
Fax #:	407-859-8121
E-Mail:	www.ardaman.com

Original file path and name: O:\Geotech ..... Grove Rd Phase 5 Lake Cty FL\Walls\247+00 (3).MSEp
Original date and time of creating this file: Tue Jul 14 15:45:53 2020

PROGRAM MODE: Analysis of a General Slope using NO reinforcement material.

INPUT DATA (EXCLUDING REINFORCEMENT LAYOUT)

SOIL DATA

========== Soil Layer #: ==========	Unit weight, γ [lb/ft ^{3}]	Internal angle of friction, ϕ [deg.]	Cohesion, c [lb/ft ^{2}]
1	105.0	30.0	0.0
2	100.0	29.0	0.0
3	108.0	31.0	0.0
4	118.0	34.0	0.0

REINFORCEMENT

Analysis of slope WITHOUT reinforcement.

WATER

Unit weight of water = 62.45 [lb/ft ^{3}]
Water pressure is defined by phreatic surface in Effective Stress Analysis.

SEISMICITY

Not Applicable

DRAWING OF SPECIFIED GEOMETRY - GENERAL

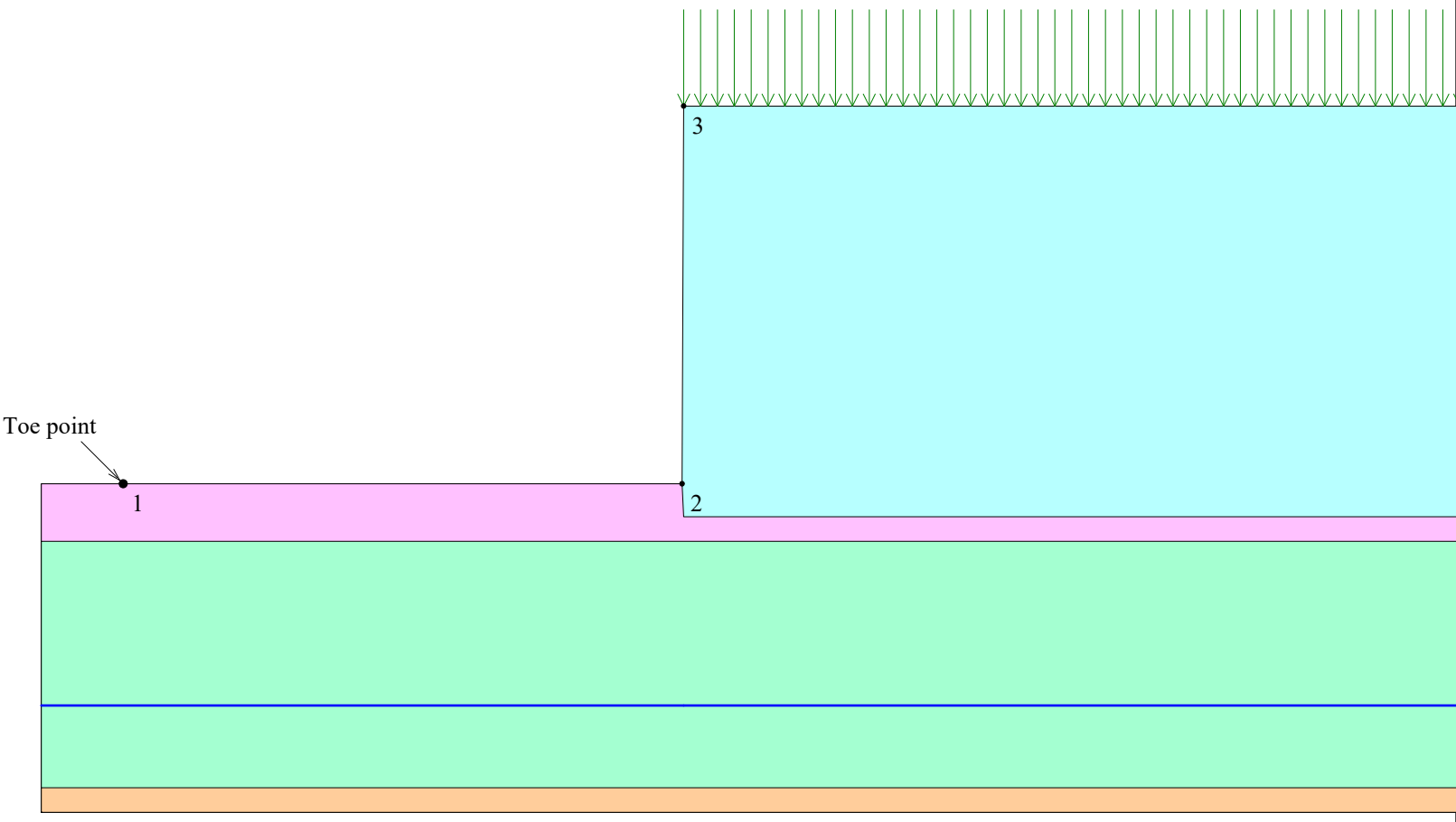
-- Problem geometry is defined along sections selected by user at x,y coordinates.
-- X1,Y1 represents the coordinates of soil surface. X2,Y2 represent the coordinates of the end of soil layer 1 and start of soil layer 2, and so on.
-- Xw,Yw represents the coordinates of phreatic surface.

GEOMETRY
Soil profile contains 4 layers (see details in next page)

WATER GEOMETRY
Phreatic line was specified.

UNIFORM SURCHARGE
Load Q1 = 250.00 [lb/ft²] inclined from verical at 0.00 degrees, starts at X1s = 64.10 and ends at X1e = 120.00 [ft].
Surcharge load, Q2.....None
Surcharge load, Q3.....None

STRIP LOAD
.....None.....



SCALE:

0 2 4 6[ft]

TABULATED DETAILS OF GENERAL SPECIFIED GEOMETRY

Soil profile contains 4 layers. Coordinates in [ft.]
Water was described by phreatic line.

	#	Xi	Yi
Top of Layer 1	1	30.00	165.00
	2	64.00	165.00
	3	64.10	188.00
	4	120.00	188.00
Top of Layer 2	5	30.00	165.00
	6	64.00	165.00
	7	64.10	163.00
	8	120.00	163.00
Top of Layer 3	9	30.00	161.50
	10	120.00	161.50
Top of Layer 4	11	30.00	146.50
	12	120.00	146.50
Top of Phreatic Line	14	30.00	151.50
	15	120.00	151.50

TABULATED DETAILS OF SPECIFIED GEOMETRY

Soil profile contains 4 layers. Coordinates in [ft.]
Water was described by phreatic line. Y values are tabulated in the right most column.

#	X	Y1	Y2	Y3	Y4	(phreatic) Yw
1	30.00	165.00	165.00	161.50	146.50	151.50
2	64.00	165.00	165.00	161.50	146.50	151.50
3	64.10	188.00	163.00	161.50	146.50	151.50
4	120.00	188.00	163.00	161.50	146.50	151.50

RESULTS OF ROTATIONAL STABILITY ANALYSIS

Results in the tables below represent critical circles identified between specified points on entry and exit. (Theta-exit set to 50.00 deg.) The most critical circle is obtained from a search considering all the combinations of input entry and exit points.

Critical circles for each entry point (considering all specified exit points)

Entry Point #	Entry Point (X, Y) [ft]		Exit Point (X, Y) [ft]		Critical Circle (Xc, Yc, R) [ft]			Fs	STATUS
1	30.00	165.00	30.00	165.00	30.00	165.00	0.00	N/A	#10 - Overhanging Cliff
2	30.00	165.00	30.00	165.00	30.00	165.00	0.00	N/A	#10 - Overhanging Cliff
3	30.00	165.00	30.00	165.00	30.00	165.00	0.00	N/A	#10 - Overhanging Cliff
4	30.00	165.00	30.00	165.00	30.00	165.00	0.00	N/A	#10 - Overhanging Cliff
5	92.86	188.02	32.87	165.03	58.46	188.02	34.40	1.87	
6	95.57	188.00	35.68	165.30	60.21	190.96	35.49	1.76	
7	98.29	188.00	39.06	165.03	62.12	193.42	36.57	1.73	
. 8	101.00	188.00	35.90	165.07	60.59	198.85	41.84	1.71 .	OK
9	103.72	188.00	35.66	165.22	60.80	203.18	45.53	1.71	
10	106.43	188.00	32.54	165.22	59.44	209.18	51.54	1.73	
11	109.14	188.00	35.85	165.08	61.25	212.49	53.79	1.76	
12	111.86	188.00	35.57	165.21	61.54	217.36	58.26	1.80	
13	114.57	188.00	29.70	165.05	58.57	226.69	68.07	1.84	
14	117.29	188.00	29.70	165.04	58.68	233.04	73.91	1.88	
15	120.00	188.00	32.49	165.16	60.50	236.90	77.02	1.93	

Note: In the 'Status' column, OK means the critical circle was identified within the specified search domain. 'On extreme X-entry' means that the critical result is on the edge of the search domain; a lower Fs may result if the search domain is expanded.

****

Results in the tables below represent critical circles identified between specified points on entry and exit. (Theta-exit set to 50.00 deg.) The most critical circle is obtained from a search considering all the combinations of input entry and exit points.

Critical circles for each exit point (considering all specified entry points).

Exit Point #	Exit Point (X, Y) [ft]		Entry Point (X, Y) [ft]		Critical Circle (Xc, Yc, R) [ft]			Fs	STATUS
1	4.81	165.11	111.86	188.00	45.72	235.53	81.45	2.08	
2	7.67	165.24	111.86	188.00	46.98	235.14	80.20	2.01	
3	10.68	165.29	111.86	188.00	48.70	232.65	77.35	1.97	
4	13.88	165.26	109.14	188.00	50.07	224.54	69.46	1.92	
5	17.04	165.23	106.43	188.00	51.37	217.31	62.37	1.87	
6	19.74	165.45	109.14	188.00	53.14	221.53	65.28	1.83	
7	23.19	165.29	103.72	188.00	54.35	208.92	53.61	1.80	
8	26.67	165.02	106.43	188.00	56.24	212.28	55.75	1.77	
9	29.70	165.07	103.72	188.00	57.54	206.13	49.61	1.73	
10	32.81	165.06	103.72	188.00	59.32	204.17	47.25	1.73	
11	35.90	165.07	101.00	188.00	60.59	198.85	41.84	1.71 .	OK
12	38.88	165.16	101.00	188.00	62.41	197.08	39.65	1.72	
13	41.95	165.19	98.29	188.00	63.68	192.50	34.90	1.73	
14	44.83	165.36	98.29	188.00	65.28	191.51	33.20	1.76	
15	48.22	165.13	98.29	188.00	66.90	190.47	31.48	1.82	
16	51.21	165.18	101.00	188.00	68.76	192.62	32.57	1.91	
17	54.34	165.12	109.14	188.00	71.10	202.05	40.56	2.04	
18	57.45	165.12	106.43	188.00	72.84	196.04	34.54	2.22	
19	60.80	165.00	106.43	188.00	77.69	188.25	28.74	3.49	
20	30.00	165.00	30.00	165.00	30.00	165.00	0.00	N/A	#10 - Overhanging Cliff

Note: In the 'Status' column, OK means the critical circle was identified within the specified search domain. 'On extreme X-exit' means that the critical result is on the edge of the search domain; a lower Fs may result if the search domain is expanded.

CRITICAL RESULTS OF ROTATIONAL AND TRANSLATIONAL STABILITY ANALYSES

Rotational (Circular Arc; Bishop) Stability Analysis with slip surfaces excluded from this polygon:

Minimum Factor of Safety = 1.71

Critical Circle: Xc = 60.59[ft], Yc = 198.85[ft], R = 41.84[ft]. (Number of slices used = 54)

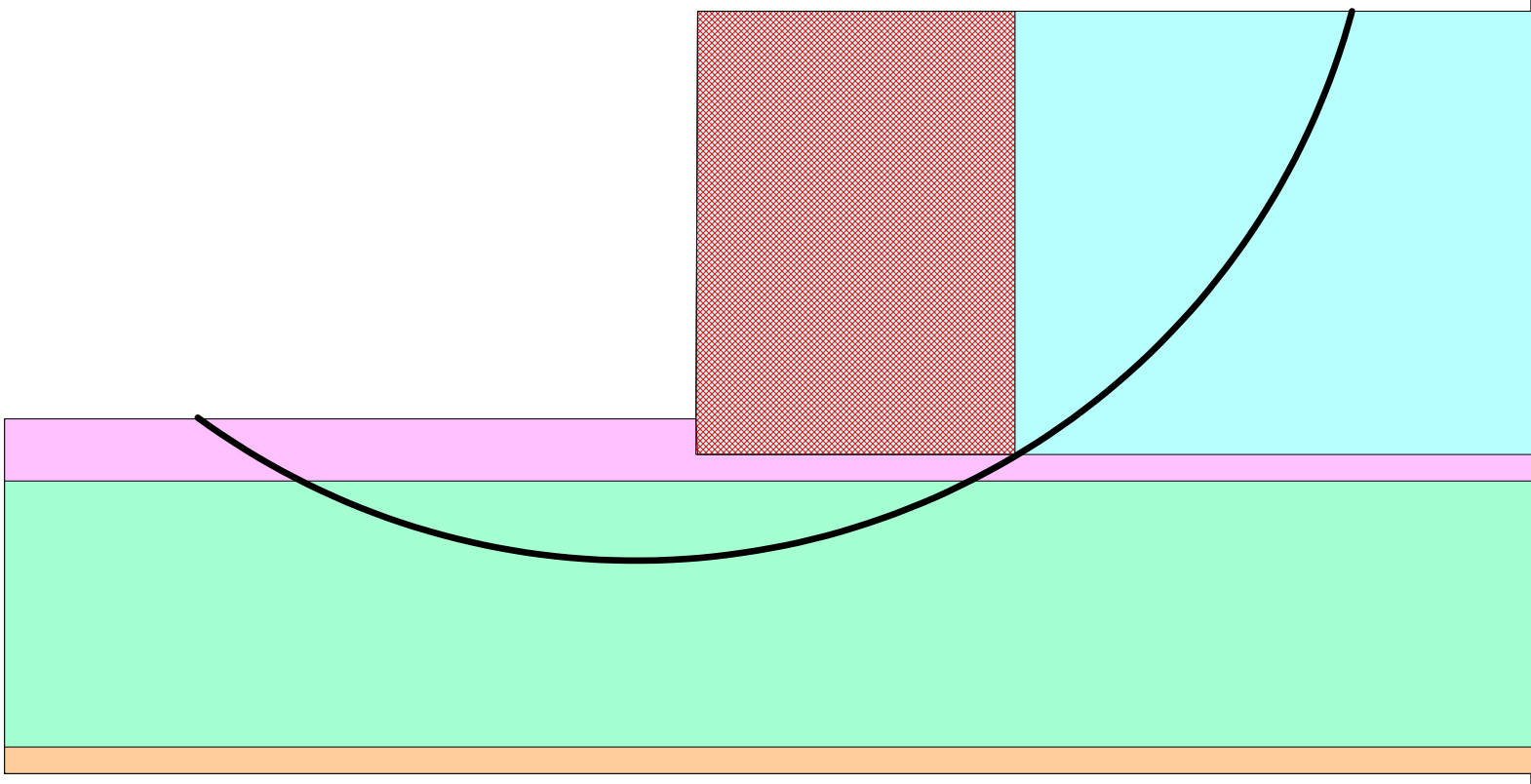
Translational (2-Part Wedge; Spencer), Direct Sliding, Stability Analysis

N O T C O N D U C T E D

Three-Part Wedge Stability Analysis

N O T C O N D U C T E D

REINFORCEMENT LAYOUT: DRAWING



SCALE:

0 2 4 6[ft]

Citrus Grove Phase V

PROJECT IDENTIFICATION

Title:	Citrus Grove Phase V
Project Number:	113-19-60-6418 -
Client:	DRMP
Designer:	Alexandra G. Aydelotte, P.E.
Station Number:	251+00

Description:
MSE Wall RW-3 Wall Height 14 ft ; Strap Length 11 ft

Company's information:

Name:	Ardaman & Associates, Inc.
Street:	8008 S. Orange Avenue Orlando, FL 32809
Telephone #:	407-855-3860
Fax #:	407-859-8121
E-Mail:	www.ardaman.com

Original file path and name: O:\Geotech ..... rus Grove Rd Phase 5 Lake Cty FL\Walls\251+00.MSEp
Original date and time of creating this file: Tue Jul 14 15:45:53 2020

PROGRAM MODE: Analysis of a General Slope using NO reinforcement material.

INPUT DATA (EXCLUDING REINFORCEMENT LAYOUT)

SOIL DATA

========== Soil Layer #: ==========	Unit weight, γ [lb/ft ^{3}]	Internal angle of friction, ϕ [deg.]	Cohesion, c [lb/ft ^{2}]
1	105.0	30.0	0.0
2	100.0	29.0	0.0
3	115.0	33.0	0.0

REINFORCEMENT

Analysis of slope WITHOUT reinforcement.

WATER

Unit weight of water = 62.45 [lb/ft ^{3}]
Water pressure is defined by phreatic surface in Effective Stress Analysis.

SEISMICITY

Not Applicable

DRAWING OF SPECIFIED GEOMETRY - GENERAL

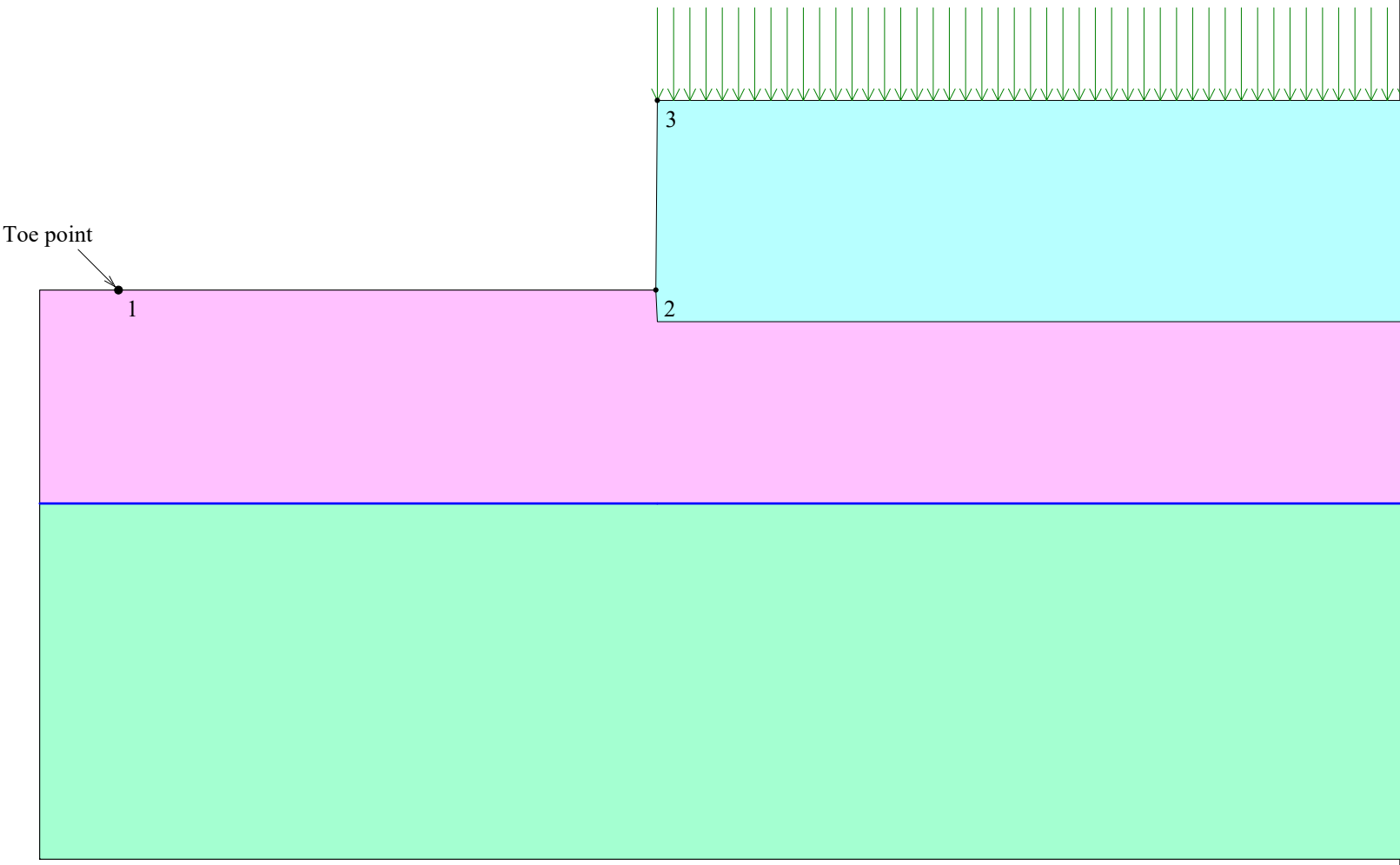
-- Problem geometry is defined along sections selected by user at x,y coordinates.
-- X1,Y1 represents the coordinates of soil surface. X2,Y2 represent the coordinates of the end of soil layer 1 and start of soil layer 2, and so on.
-- Xw,Yw represents the coordinates of phreatic surface.

GEOMETRY
Soil profile contains 3 layers (see details in next page)

WATER GEOMETRY
Phreatic line was specified.

UNIFORM SURCHARGE
Load Q1 = 250.00 [lb/ft²] inclined from verical at 0.00 degrees, starts at X1s = 64.10 and ends at X1e = 120.00 [ft].
Surcharge load, Q2.....None
Surcharge load, Q3.....None

STRIP LOAD
.....None.....



SCALE:

0 2 4 6 [ft]

TABULATED DETAILS OF GENERAL SPECIFIED GEOMETRY

Soil profile contains 3 layers. Coordinates in [ft.]
Water was described by phreatic line.

	#	Xi	Yi
Top of Layer 1	1	30.00	181.00
	2	64.00	181.00
	3	64.10	193.00
	4	120.00	193.00
Top of Layer 2	5	30.00	181.00
	6	64.00	181.00
	7	64.10	179.00
	8	120.00	179.00
Top of Layer 3	9	30.00	167.50
	10	120.00	167.50
Top of Phreatic Line	12	30.00	167.50
	13	120.00	167.50

TABULATED DETAILS OF SPECIFIED GEOMETRY

Soil profile contains 3 layers. Coordinates in [ft.]
Water was described by phreatic line. Y values are tabulated in the right most column.

#	X	Y1	Y2	Y3	Yw (phreatic)
1	30.00	181.00	181.00	167.50	167.50
2	64.00	181.00	181.00	167.50	167.50
3	64.10	193.00	179.00	167.50	167.50
4	120.00	193.00	179.00	167.50	167.50

RESULTS OF ROTATIONAL STABILITY ANALYSIS

Results in the tables below represent critical circles identified between specified points on entry and exit. (Theta-exit set to 50.00 deg.) The most critical circle is obtained from a search considering all the combinations of input entry and exit points.

Critical circles for each entry point (considering all specified exit points)

Entry Point #	Entry Point (X, Y) [ft]		Exit Point (X, Y) [ft]		Critical Circle (Xc, Yc, R) [ft]			Fs	STATUS
1	30.00	181.00	30.00	181.00	30.00	181.00	0.00	N/A	#10 - Overhanging Cliff
2	30.00	181.00	30.00	181.00	30.00	181.00	0.00	N/A	#10 - Overhanging Cliff
3	81.43	193.01	48.14	181.32	62.73	193.02	18.70	1.84	
. 4	84.65	193.00	48.26	181.13	63.10	197.33	21.97	1.76	. OK
5	87.86	193.00	48.06	181.24	63.43	202.46	26.20	1.76	
6	91.07	193.00	44.86	181.27	62.33	209.34	33.06	1.82	
7	94.29	193.00	41.74	181.24	61.09	218.07	41.60	1.91	
8	97.50	193.00	41.89	181.14	61.67	224.72	47.86	2.03	
9	100.72	193.00	38.86	181.09	60.31	236.26	59.19	2.16	
10	103.93	193.00	39.03	181.02	60.90	244.32	66.97	2.30	
11	107.14	193.00	35.29	181.22	59.58	258.12	80.64	2.45	
12	110.36	193.00	35.82	181.06	60.97	262.67	85.40	2.60	
13	113.57	193.00	32.34	181.17	60.63	271.72	94.86	2.75	
14	116.79	193.00	32.14	181.24	62.06	276.37	99.73	2.90	
15	120.00	193.00	29.70	181.03	61.78	285.61	109.39	3.05	

Note: In the 'Status' column, OK means the critical circle was identified within the specified search domain. 'On extreme X-entry' means that the critical result is on the edge of the search domain; a lower Fs may result if the search domain is expanded.

****

Results in the tables below represent critical circles identified between specified points on entry and exit. (Theta-exit set to 50.00 deg.) The most critical circle is obtained from a search considering all the combinations of input entry and exit points.

Critical circles for each exit point (considering all specified entry points).

Exit Point #	Exit Point (X, Y) [ft]		Entry Point (X, Y) [ft]		Critical Circle (Xc, Yc, R) [ft]			Fs	STATUS
1	4.19	181.36	100.72	193.00	42.93	266.19	93.25	2.82	
2	8.04	181.03	97.50	193.00	43.79	254.17	81.40	2.70	
3	10.56	181.31	97.50	193.00	45.43	251.18	78.08	2.60	
4	14.02	181.14	97.50	193.00	47.07	248.20	74.76	2.51	
5	17.26	181.08	94.29	193.00	48.40	234.69	62.00	2.42	
6	20.17	181.18	94.29	193.00	49.78	233.82	60.39	2.31	
7	23.21	181.22	94.29	193.00	51.44	231.22	57.42	2.22	
8	26.30	181.26	91.07	193.00	52.58	220.85	47.51	2.13	
9	29.70	181.07	91.07	193.00	54.24	218.64	44.88	2.05	
10	32.64	181.17	91.07	193.00	55.91	216.44	42.26	1.98	
11	35.97	181.02	91.07	193.00	57.39	215.23	40.36	1.91	
12	39.01	181.07	87.86	193.00	58.59	206.87	32.39	1.84	
13	41.81	181.30	87.86	193.00	60.30	205.01	30.07	1.80	
14	45.14	181.12	87.86	193.00	61.85	203.78	28.15	1.76	
15	48.26	181.13	84.65	193.00	63.10	197.33	21.97	1.76	. OK
16	51.18	181.29	84.65	193.00	64.73	196.22	20.17	1.79	
17	54.56	181.04	84.65	193.00	66.40	195.06	18.36	1.90	
18	57.48	181.18	84.65	193.00	68.12	193.86	16.55	2.15	
19	60.74	181.05	87.86	193.00	71.26	193.92	16.62	3.05	
20	30.00	181.00	30.00	181.00	30.00	181.00	0.00	N/A	#10 - Overhanging Cliff

Note: In the 'Status' column, OK means the critical circle was identified within the specified search domain. 'On extreme X-exit' means that the critical result is on the edge of the search domain; a lower Fs may result if the search domain is expanded.

CRITICAL RESULTS OF ROTATIONAL AND TRANSLATIONAL STABILITY ANALYSES

Rotational (Circular Arc; Bishop) Stability Analysis with slip surfaces excluded from this polygon:

Minimum Factor of Safety = 1.76

Critical Circle: Xc = 63.10[ft], Yc = 197.33[ft], R = 21.97[ft]. (Number of slices used = 52)

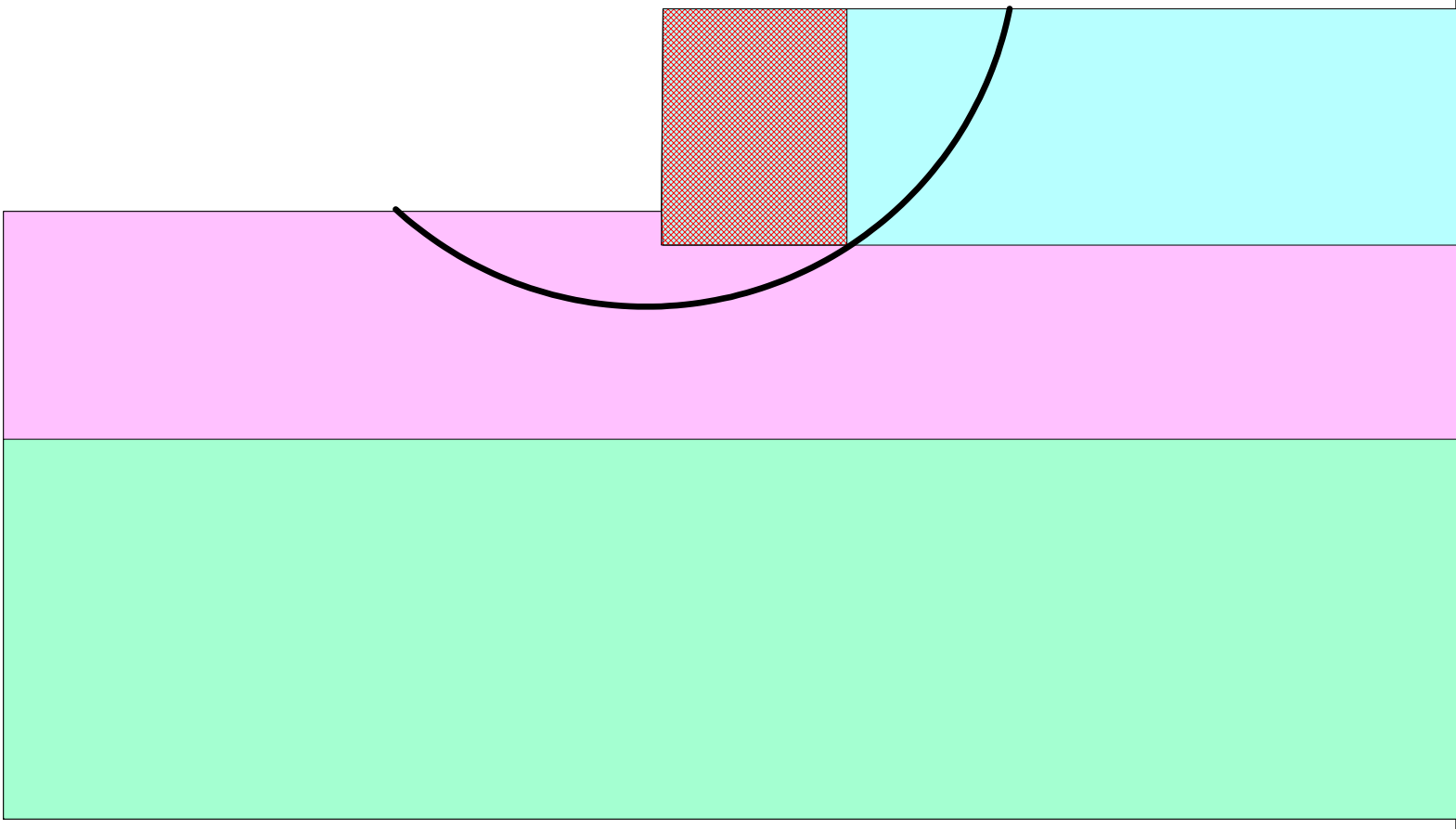
Translational (2-Part Wedge; Spencer), Direct Sliding, Stability Analysis

N O T C O N D U C T E D

Three-Part Wedge Stability Analysis

N O T C O N D U C T E D

REINFORCEMENT LAYOUT: DRAWING



SCALE:

0 2 4 6[ft]

Citrus Grove Phase V

PROJECT IDENTIFICATION

Title:	Citrus Grove Phase V
Project Number:	113-19-60-6418 -
Client:	DRMP
Designer:	Alexandra G. Aydelotte, P.E.
Station Number:	252+00

Description:
MSE Wall RW-4 Wall Height 15 ft ; Strap Length 11 ft

Company's information:

Name:	Ardaman & Associates, Inc.
Street:	8008 S. Orange Avenue Orlando, FL 32809
Telephone #:	407-855-3860
Fax #:	407-859-8121
E-Mail:	www.ardaman.com

Original file path and name: O:\Geotech ..... Grove Rd Phase 5 Lake Cty FL\Walls\252+00 (1).MSEp
Original date and time of creating this file: Tue Jul 14 15:45:53 2020

PROGRAM MODE: Analysis of a General Slope using NO reinforcement material.

INPUT DATA (EXCLUDING REINFORCEMENT LAYOUT)

SOIL DATA

========== Soil Layer #: ==========	Unit weight, γ [lb/ft ^{3}]	Internal angle of friction, ϕ [deg.]	Cohesion, c [lb/ft ^{2}]
1	105.0	30.0	0.0
2	100.0	29.0	0.0
3	115.0	33.0	0.0

REINFORCEMENT

Analysis of slope WITHOUT reinforcement.

WATER

Unit weight of water = 62.45 [lb/ft ^{3}]
Water pressure is defined by phreatic surface in Effective Stress Analysis.

SEISMICITY

Not Applicable

DRAWING OF SPECIFIED GEOMETRY - GENERAL

-- Problem geometry is defined along sections selected by user at x,y coordinates.
-- X1,Y1 represents the coordinates of soil surface. X2,Y2 represent the coordinates of the end of soil layer 1 and start of soil layer 2, and so on.
-- Xw,Yw represents the coordinates of phreatic surface.

GEOMETRY

Soil profile contains 3 layers (see details in next page)

WATER GEOMETRY

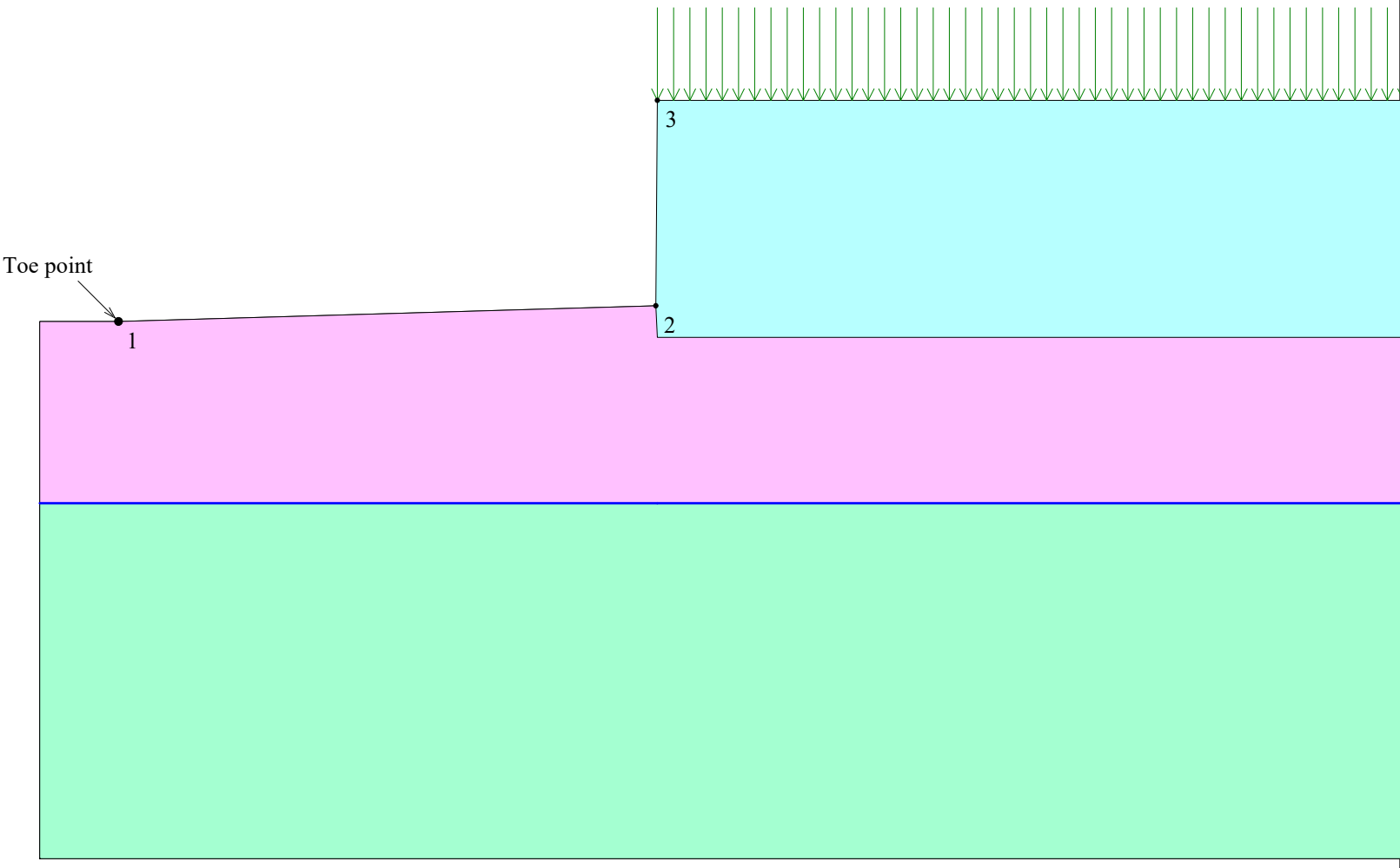
Phreatic line was specified.

UNIFORM SURCHARGE

Load Q1 = 250.00 [lb/ft²] inclined from verical at 0.00 degrees, starts at X1s = 64.10 and ends at X1e = 120.00 [ft].
Surcharge load, Q2.....None
Surcharge load, Q3.....None

STRIP LOAD

.....None.....



SCALE:

0 2 4 6[ft]

TABULATED DETAILS OF GENERAL SPECIFIED GEOMETRY

Soil profile contains 3 layers. Coordinates in [ft.]
Water was described by phreatic line.

	#	Xi	Yi
Top of Layer 1	1	30.00	179.00
	2	64.00	180.00
	3	64.10	193.00
	4	120.00	193.00
Top of Layer 2	5	30.00	179.00
	6	64.00	180.00
	7	64.10	178.00
	8	120.00	178.00
Top of Layer 3	9	30.00	167.50
	10	120.00	167.50
Top of Phreatic Line	12	30.00	167.50
	13	120.00	167.50

TABULATED DETAILS OF SPECIFIED GEOMETRY

Soil profile contains 3 layers. Coordinates in [ft.]
Water was described by phreatic line. Y values are tabulated in the right most column.

#	X	Y1	Y2	Y3	Yw (phreatic)
1	30.00	179.00	179.00	167.50	167.50
2	64.00	180.00	180.00	167.50	167.50
3	64.10	193.00	178.00	167.50	167.50
4	120.00	193.00	178.00	167.50	167.50

RESULTS OF ROTATIONAL STABILITY ANALYSIS

Results in the tables below represent critical circles identified between specified points on entry and exit. (Theta-exit set to 50.00 deg.) The most critical circle is obtained from a search considering all the combinations of input entry and exit points.

Critical circles for each entry point (considering all specified exit points)

Entry Point #	Entry Point (X, Y) [ft]		Exit Point (X, Y) [ft]		Critical Circle (Xc, Yc, R) [ft]			Fs	STATUS
1	30.00	179.00	30.00	179.00	30.00	179.00	0.00	N/A	#10 - Overhanging Cliff
2	30.00	179.00	30.00	179.00	30.00	179.00	0.00	N/A	#10 - Overhanging Cliff
3	30.00	179.00	30.00	179.00	30.00	179.00	0.00	N/A	#10 - Overhanging Cliff
4	83.86	193.00	48.15	179.77	62.67	195.39	21.32	1.66	
. 5	87.15	193.00	45.01	179.66	61.29	201.46	27.20	1.64 .	OK
6	90.43	193.00	41.93	179.52	59.91	208.83	34.38	1.69	
7	93.72	193.00	45.00	179.60	61.89	213.46	37.84	1.76	
8	97.00	193.00	38.62	179.48	58.72	225.48	50.21	1.85	
9	100.29	193.00	38.73	179.41	59.38	232.09	56.59	1.97	
10	103.57	193.00	35.85	179.23	57.60	245.66	69.90	2.09	
11	106.86	193.00	35.43	179.34	57.89	255.50	79.40	2.22	
12	110.14	193.00	32.21	179.27	56.74	268.07	92.13	2.35	
13	113.43	193.00	32.80	179.11	58.11	273.17	97.40	2.49	
14	116.71	193.00	29.70	179.03	57.65	282.92	107.59	2.62	
15	120.00	193.00	25.99	179.21	58.01	288.20	113.61	2.75	

Note: In the 'Status' column, OK means the critical circle was identified within the specified search domain. 'On extreme X-entry' means that the critical result is on the edge of the search domain; a lower Fs may result if the search domain is expanded.

****

Results in the tables below represent critical circles identified between specified points on entry and exit. (Theta-exit set to 50.00 deg.) The most critical circle is obtained from a search considering all the combinations of input entry and exit points.

Critical circles for each exit point (considering all specified entry points).

Exit Point #	Exit Point (X, Y) [ft]		Entry Point (X, Y) [ft]		Critical Circle (Xc, Yc, R) [ft]			Fs	STATUS
1	4.23	179.35	100.29	193.00	41.60	261.20	89.97	2.49	
2	7.54	179.24	100.29	193.00	42.83	260.82	88.89	2.40	
3	10.60	179.30	97.00	193.00	44.20	246.66	75.28	2.30	
4	14.05	179.12	97.00	193.00	45.88	243.74	72.03	2.23	
5	16.78	179.31	97.00	193.00	47.56	240.83	68.79	2.16	
6	20.20	179.17	93.72	193.00	48.71	229.90	58.20	2.07	
7	23.22	179.21	93.72	193.00	50.40	227.35	55.28	2.00	
8	26.31	179.26	90.43	193.00	51.66	217.43	45.83	1.93	
9	29.70	179.07	90.43	193.00	53.36	215.27	43.25	1.87	
10	32.51	179.34	90.43	193.00	55.09	213.25	40.73	1.82	
11	35.84	179.28	90.43	193.00	56.60	212.14	38.87	1.75	
12	39.09	179.28	90.43	193.00	58.36	210.09	36.34	1.72	
13	42.13	179.41	87.15	193.00	59.70	202.58	29.07	1.67	
14	45.01	179.66	87.15	193.00	61.29	201.46	27.20	1.64 .	OK
15	48.15	179.77	83.86	193.00	62.67	195.39	21.32	1.66	
16	51.25	179.86	83.86	193.00	64.34	194.40	19.57	1.69	
17	54.30	179.98	83.86	193.00	66.05	193.37	17.81	1.80	
18	57.39	180.02	87.15	193.00	68.16	195.92	19.21	2.03	
19	60.56	180.09	90.43	193.00	71.96	194.72	18.55	3.03	
20	30.00	179.00	30.00	179.00	30.00	179.00	0.00	N/A	#10 - Overhanging Cliff

Note: In the 'Status' column, OK means the critical circle was identified within the specified search domain. 'On extreme X-exit' means that the critical result is on the edge of the search domain; a lower Fs may result if the search domain is expanded.

CRITICAL RESULTS OF ROTATIONAL AND TRANSLATIONAL STABILITY ANALYSES

Rotational (Circular Arc; Bishop) Stability Analysis with slip surfaces excluded from this polygon:

Minimum Factor of Safety = 1.64

Critical Circle: Xc = 61.29[ft], Yc = 201.46[ft], R = 27.20[ft]. (Number of slices used = 53)

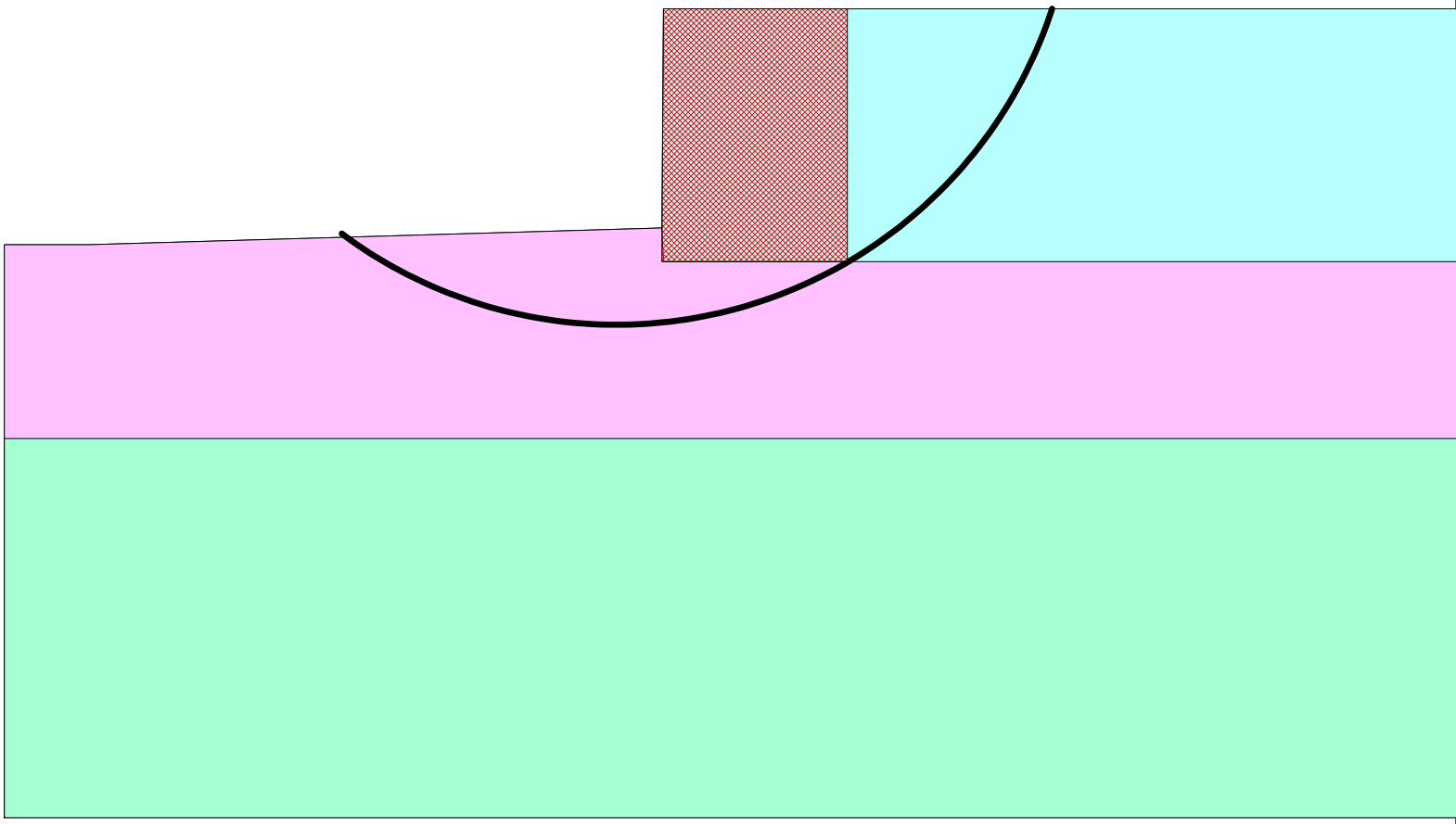
Translational (2-Part Wedge; Spencer), Direct Sliding, Stability Analysis

N O T C O N D U C T E D

Three-Part Wedge Stability Analysis

N O T C O N D U C T E D

REINFORCEMENT LAYOUT: DRAWING



SCALE:

0 2 4 6[ft]

Ardaman & Associates, Inc.

Citrus Grove Phase V

PROJECT IDENTIFICATION

Title:	Citrus Grove Phase V
Project Number:	113-19-60-6418 -
Client:	DRMP
Designer:	Alexandra G. Aydelotte, P.E.
Station Number:	252+00

Description:
MSE Wall RW-4 Wall Height 13 ft ; Strap Length10 ft

Company's information:

Name:	Ardaman & Associates, Inc.
Street:	8008 S. Orange Avenue Orlando, FL 32809
Telephone #:	407-855-3860
Fax #:	407-859-8121
E-Mail:	www.ardaman.com

Original file path and name: O:\Geotech ..... Grove Rd Phase 5 Lake Cty FL\Walls\252+00 (2).MSEp
Original date and time of creating this file: Tue Jul 14 15:45:53 2020

PROGRAM MODE: Analysis of a General Slope using NO reinforcement material.

INPUT DATA (EXCLUDING REINFORCEMENT LAYOUT)

SOIL DATA

========== Soil Layer #: ==========	Unit weight, γ [lb/ft ^{3}]	Internal angle of friction, ϕ [deg.]	Cohesion, c [lb/ft ^{2}]
1	105.0	30.0	0.0
2	100.0	29.0	0.0
3	115.0	33.0	0.0

REINFORCEMENT

Analysis of slope WITHOUT reinforcement.

WATER

Unit weight of water = 62.45 [lb/ft ^{3}]
Water pressure is defined by phreatic surface in Effective Stress Analysis.

SEISMICITY

Not Applicable

DRAWING OF SPECIFIED GEOMETRY - GENERAL

-- Problem geometry is defined along sections selected by user at x,y coordinates.
-- X1,Y1 represents the coordinates of soil surface. X2,Y2 represent the coordinates of the end of soil layer 1 and start of soil layer 2, and so on.
-- Xw,Yw represents the coordinates of phreatic surface.

GEOMETRY

Soil profile contains 3 layers (see details in next page)

WATER GEOMETRY

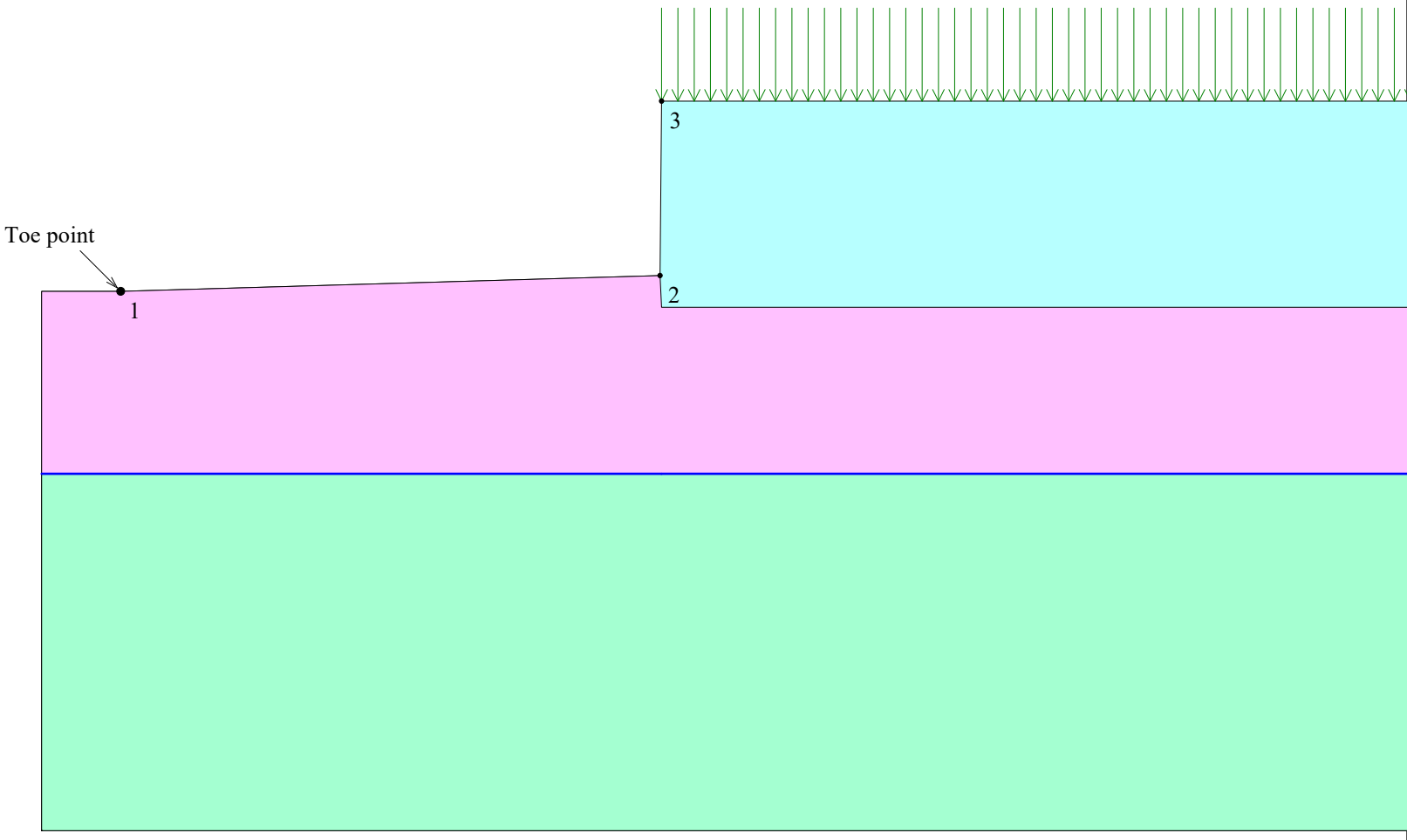
Phreatic line was specified.

UNIFORM SURCHARGE

Load Q1 = 250.00 [lb/ft²] inclined from verical at 0.00 degrees, starts at X1s = 64.10 and ends at X1e = 120.00 [ft].
Surcharge load, Q2.....None
Surcharge load, Q3.....None

STRIP LOAD

.....None.....



SCALE:

0 2 4 6 [ft]

TABULATED DETAILS OF GENERAL SPECIFIED GEOMETRY

Soil profile contains 3 layers. Coordinates in [ft.]
Water was described by phreatic line.

	#	Xi	Yi
Top of Layer 1	1	30.00	179.00
	2	64.00	180.00
	3	64.10	191.00
	4	120.00	191.00
Top of Layer 2	5	30.00	179.00
	6	64.00	180.00
	7	64.10	178.00
	8	120.00	178.00
Top of Layer 3	9	30.00	167.50
	10	120.00	167.50
Top of Phreatic Line	12	30.00	167.50
	13	120.00	167.50

TABULATED DETAILS OF SPECIFIED GEOMETRY

Soil profile contains 3 layers. Coordinates in [ft.]
Water was described by phreatic line. Y values are tabulated in the right most column.

#	X	Y1	Y2	Y3	Yw (phreatic)
1	30.00	179.00	179.00	167.50	167.50
2	64.00	180.00	180.00	167.50	167.50
3	64.10	191.00	178.00	167.50	167.50
4	120.00	191.00	178.00	167.50	167.50

RESULTS OF ROTATIONAL STABILITY ANALYSIS

Results in the tables below represent critical circles identified between specified points on entry and exit. (Theta-exit set to 50.00 deg.) The most critical circle is obtained from a search considering all the combinations of input entry and exit points.

Critical circles for each entry point (considering all specified exit points)

Entry Point #	Entry Point (X, Y) [ft]		Exit Point (X, Y) [ft]		Critical Circle (Xc, Yc, R) [ft]			Fs	STATUS
1	30.00	179.00	30.00	179.00	30.00	179.00	0.00	N/A	#10 - Overhanging Cliff
2	30.00	179.00	30.00	179.00	30.00	179.00	0.00	N/A	#10 - Overhanging Cliff
3	80.57	191.00	51.48	179.65	63.67	191.38	16.91	1.76	
. 4	83.86	191.00	48.35	179.58	62.40	196.82	22.24	1.71 .	OK
5	87.15	191.00	48.20	179.66	62.70	202.42	26.98	1.73	
6	90.43	191.00	45.15	179.53	61.30	210.86	35.25	1.81	
7	93.72	191.00	44.91	179.62	61.68	218.04	41.92	1.92	
8	97.00	191.00	41.85	179.49	60.28	229.04	52.87	2.05	
9	100.29	191.00	38.73	179.39	59.05	240.66	64.55	2.20	
10	103.57	191.00	35.71	179.26	57.62	254.59	78.45	2.36	
11	106.86	191.00	35.50	179.32	59.02	259.46	83.51	2.51	
12	110.14	191.00	32.78	179.12	58.61	268.75	93.28	2.67	
13	113.43	191.00	32.59	179.17	60.04	273.74	98.47	2.82	
14	116.71	191.00	29.70	179.03	59.69	283.25	108.45	2.97	
15	120.00	191.00	25.99	179.21	59.44	293.17	118.77	3.12	

Note: In the 'Status' column, OK means the critical circle was identified within the specified search domain. 'On extreme X-entry' means that the critical result is on the edge of the search domain; a lower Fs may result if the search domain is expanded.

****

Results in the tables below represent critical circles identified between specified points on entry and exit. (Theta-exit set to 50.00 deg.) The most critical circle is obtained from a search considering all the combinations of input entry and exit points.

Critical circles for each exit point (considering all specified entry points).

Exit Point #	Exit Point (X, Y) [ft]		Entry Point (X, Y) [ft]		Critical Circle (Xc, Yc, R) [ft]			Fs	STATUS
1	4.70	179.13	97.00	191.00	40.79	263.31	91.59	2.74	
2	8.01	179.04	97.00	191.00	42.44	259.90	87.89	2.64	
3	10.54	179.28	97.00	191.00	44.10	256.51	84.20	2.55	
4	13.72	179.29	93.72	191.00	45.31	242.58	70.73	2.45	
5	17.27	179.06	93.72	191.00	46.97	239.63	67.45	2.36	
6	19.97	179.31	90.43	191.00	48.25	227.06	55.50	2.27	
7	23.06	179.31	90.43	191.00	49.91	224.57	52.62	2.18	
8	26.31	179.22	90.43	191.00	51.33	223.43	50.80	2.09	
9	29.70	179.06	90.43	191.00	53.01	220.88	47.88	2.02	
10	32.73	179.20	87.15	191.00	54.35	210.88	38.35	1.94	
11	35.96	179.20	87.15	191.00	56.06	208.92	35.88	1.87	
12	38.72	179.53	87.15	191.00	57.79	206.98	33.42	1.82	
13	42.04	179.46	87.15	191.00	59.34	205.76	31.48	1.76	
14	45.06	179.65	83.86	191.00	60.78	197.90	24.09	1.73	
15	48.35	179.58	83.86	191.00	62.40	196.82	22.24	1.71 .	OK
16	51.33	179.76	83.86	191.00	64.04	195.68	20.37	1.72	
17	54.41	179.87	83.86	191.00	65.72	194.48	18.47	1.81	
18	57.66	179.85	83.86	191.00	67.57	192.91	16.40	2.06	
19	60.69	179.99	87.15	191.00	70.88	192.80	16.37	2.99	
20	30.00	179.00	30.00	179.00	30.00	179.00	0.00	N/A	#10 - Overhanging Cliff

Note: In the 'Status' column, OK means the critical circle was identified within the specified search domain. 'On extreme X-exit' means that the critical result is on the edge of the search domain; a lower Fs may result if the search domain is expanded.

CRITICAL RESULTS OF ROTATIONAL AND TRANSLATIONAL STABILITY ANALYSES

Rotational (Circular Arc; Bishop) Stability Analysis with slip surfaces excluded from this polygon:

Minimum Factor of Safety = 1.71

Critical Circle: Xc = 62.40[ft], Yc = 196.82[ft], R = 22.24[ft]. (Number of slices used = 53)

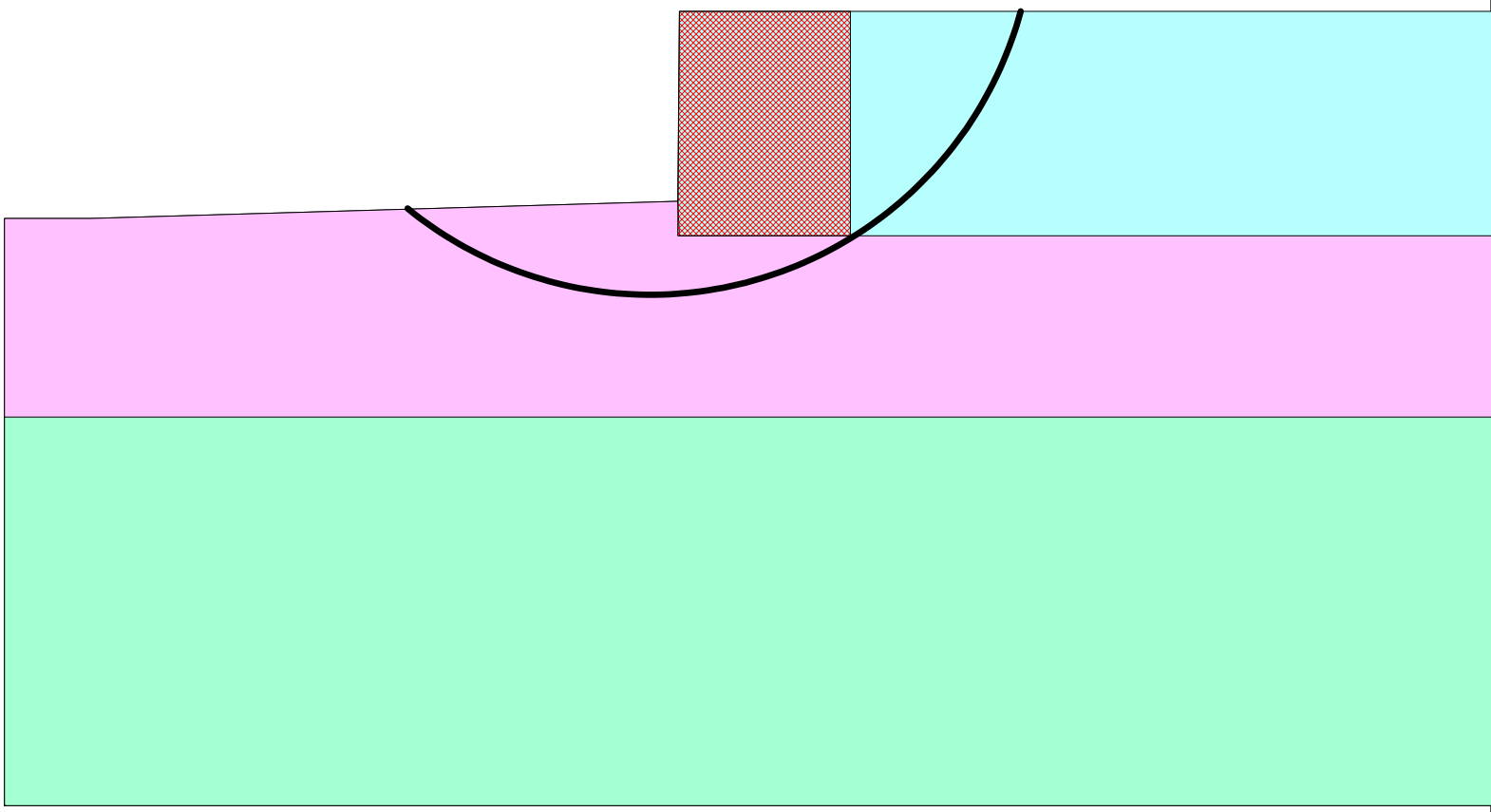
Translational (2-Part Wedge; Spencer), Direct Sliding, Stability Analysis

N O T C O N D U C T E D

Three-Part Wedge Stability Analysis

N O T C O N D U C T E D

REINFORCEMENT LAYOUT: DRAWING



SCALE:

0 2 4 6[ft]

Citrus Grove Phase V

PROJECT IDENTIFICATION

Title:	Citrus Grove Phase V
Project Number:	113-19-60-6418 -
Client:	DRMP
Designer:	Alexandra G. Aydelotte, P.E.
Station Number:	252+00

Description:
MSE Wall RW-4 Wall Height 12 ft ; Strap Length 9 ft

Company's information:

Name:	Ardaman & Associates, Inc.
Street:	8008 S. Orange Avenue Orlando, FL 32809
Telephone #:	407-855-3860
Fax #:	407-859-8121
E-Mail:	www.ardaman.com

Original file path and name: O:\Geotech ..... Grove Rd Phase 5 Lake Cty FL\Walls\252+00 (3).MSEp
Original date and time of creating this file: Tue Jul 14 15:45:53 2020

PROGRAM MODE: Analysis of a General Slope using NO reinforcement material.

INPUT DATA (EXCLUDING REINFORCEMENT LAYOUT)

SOIL DATA

========== Soil Layer #: ==========	Unit weight, γ [lb/ft ^{3}]	Internal angle of friction, ϕ [deg.]	Cohesion, c [lb/ft ^{2}]
1	105.0	30.0	0.0
2	100.0	29.0	0.0
3	115.0	33.0	0.0

REINFORCEMENT

Analysis of slope WITHOUT reinforcement.

WATER

Unit weight of water = 62.45 [lb/ft ^{3}]
Water pressure is defined by phreatic surface in Effective Stress Analysis.

SEISMICITY

Not Applicable

DRAWING OF SPECIFIED GEOMETRY - GENERAL

-- Problem geometry is defined along sections selected by user at x,y coordinates.
-- X1,Y1 represents the coordinates of soil surface. X2,Y2 represent the coordinates of the end of soil layer 1 and start of soil layer 2, and so on.
-- Xw,Yw represents the coordinates of phreatic surface.

GEOMETRY

Soil profile contains 3 layers (see details in next page)

WATER GEOMETRY

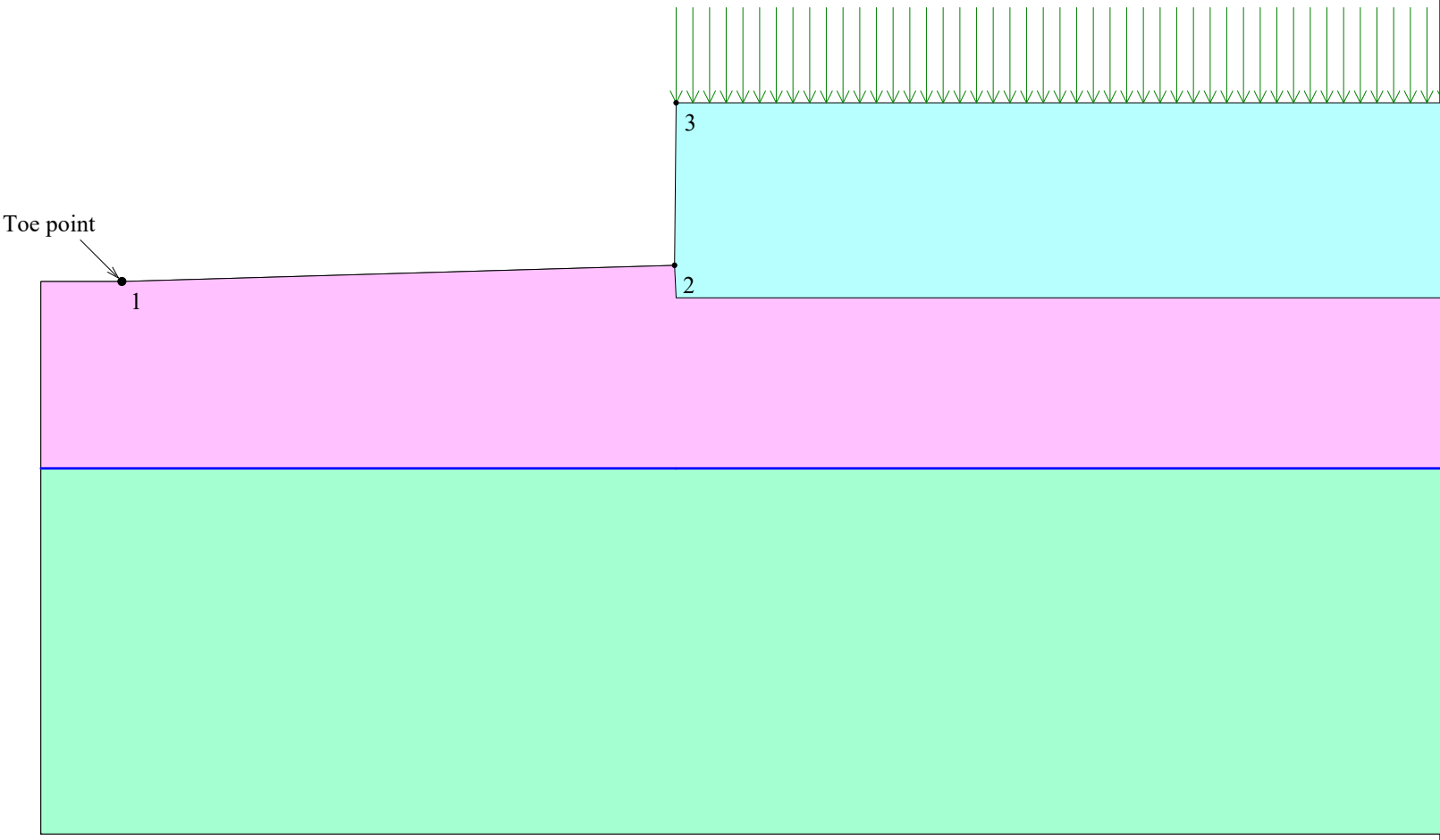
Phreatic line was specified.

UNIFORM SURCHARGE

Load Q1 = 250.00 [lb/ft²] inclined from verical at 0.00 degrees, starts at X1s = 64.10 and ends at X1e = 120.00 [ft].
Surcharge load, Q2.....None
Surcharge load, Q3.....None

STRIP LOAD

.....None.....



SCALE:

0 2 4 6 [ft]

TABULATED DETAILS OF GENERAL SPECIFIED GEOMETRY

Soil profile contains 3 layers. Coordinates in [ft.]
Water was described by phreatic line.

	#	Xi	Yi
Top of Layer 1	1	30.00	179.00
	2	64.00	180.00
	3	64.10	190.00
	4	120.00	190.00
Top of Layer 2	5	30.00	179.00
	6	64.00	180.00
	7	64.10	178.00
	8	120.00	178.00
Top of Layer 3	9	30.00	167.50
	10	120.00	167.50
Top of Phreatic Line	12	30.00	167.50
	13	120.00	167.50

TABULATED DETAILS OF SPECIFIED GEOMETRY

Soil profile contains 3 layers. Coordinates in [ft.]
Water was described by phreatic line. Y values are tabulated in the right most column.

#	X	Y1	Y2	Y3	Yw (phreatic)
1	30.00	179.00	179.00	167.50	167.50
2	64.00	180.00	180.00	167.50	167.50
3	64.10	190.00	178.00	167.50	167.50
4	120.00	190.00	178.00	167.50	167.50

RESULTS OF ROTATIONAL STABILITY ANALYSIS

Results in the tables below represent critical circles identified between specified points on entry and exit. (Theta-exit set to 50.00 deg.) The most critical circle is obtained from a search considering all the combinations of input entry and exit points.

Critical circles for each entry point (considering all specified exit points)

Entry Point #	Entry Point (X, Y) [ft]		Exit Point (X, Y) [ft]		Critical Circle (Xc, Yc, R) [ft]			Fs	STATUS
1	30.00	179.00	30.00	179.00	30.00	179.00	0.00	N/A	#10 - Overhanging Cliff
2	30.00	179.00	30.00	179.00	30.00	179.00	0.00	N/A	#10 - Overhanging Cliff
3	79.72	190.00	51.43	179.70	63.21	191.34	16.56	1.73	
. 4	83.07	190.00	48.33	179.59	61.91	197.47	22.44	1.70	. OK
5	86.43	190.00	48.20	179.66	62.25	203.54	27.71	1.75	
6	89.79	190.00	45.07	179.56	61.11	211.86	36.06	1.87	
7	93.14	190.00	42.06	179.42	59.72	222.73	46.78	2.01	
8	96.50	190.00	41.77	179.51	60.17	231.54	55.19	2.17	
9	99.86	190.00	38.65	179.41	58.96	244.21	67.91	2.33	
10	103.22	190.00	38.66	179.40	59.91	251.84	75.49	2.51	
11	106.57	190.00	35.87	179.21	59.53	261.24	85.37	2.68	
12	109.93	190.00	32.16	179.31	59.75	266.89	91.82	2.85	
13	113.29	190.00	32.75	179.13	61.25	271.80	96.95	3.02	
14	116.64	190.00	29.70	179.03	60.99	281.03	106.69	3.18	
15	120.00	190.00	25.98	179.22	60.83	290.65	116.75	3.35	

Note: In the 'Status' column, OK means the critical circle was identified within the specified search domain. 'On extreme X-entry' means that the critical result is on the edge of the search domain; a lower Fs may result if the search domain is expanded.

****

Results in the tables below represent critical circles identified between specified points on entry and exit. (Theta-exit set to 50.00 deg.) The most critical circle is obtained from a search considering all the combinations of input entry and exit points.

Critical circles for each exit point (considering all specified entry points).

Exit Point #	Exit Point (X, Y) [ft]		Entry Point (X, Y) [ft]		Critical Circle (Xc, Yc, R) [ft]			Fs	STATUS
1	4.60	179.16	96.50	190.00	40.77	267.53	95.48	2.91	
2	7.92	179.07	96.50	190.00	42.00	267.31	94.59	2.79	
3	10.94	179.12	93.14	190.00	43.59	248.45	76.63	2.69	
4	13.65	179.29	93.14	190.00	44.90	247.73	75.23	2.57	
5	17.22	179.08	93.14	190.00	46.56	244.49	71.69	2.47	
6	19.93	179.31	89.79	190.00	47.85	230.44	58.26	2.37	
7	23.04	179.30	89.79	190.00	49.51	227.73	55.19	2.28	
8	26.30	179.21	89.79	190.00	50.92	226.53	53.34	2.17	
9	29.70	179.05	89.79	190.00	52.60	223.74	50.22	2.10	
10	32.70	179.21	86.43	190.00	53.92	212.72	39.67	2.00	
11	35.93	179.22	86.43	190.00	55.63	210.60	37.05	1.92	
12	38.70	179.52	86.43	190.00	57.36	208.49	34.45	1.86	
13	42.18	179.38	83.07	190.00	58.57	200.31	26.59	1.79	
14	45.04	179.66	83.07	190.00	60.30	198.65	24.36	1.74	
15	48.33	179.59	83.07	190.00	61.91	197.47	22.44	1.70	. OK
16	51.26	179.82	83.07	190.00	63.68	195.80	20.24	1.73	
17	54.53	179.79	79.72	190.00	64.90	190.39	14.82	1.80	
18	57.53	179.93	83.07	190.00	67.06	193.19	16.32	2.00	
19	60.75	179.94	83.07	190.00	69.41	190.54	13.68	2.75	
20	30.00	179.00	30.00	179.00	30.00	179.00	0.00	N/A	#10 - Overhanging Cliff

Note: In the 'Status' column, OK means the critical circle was identified within the specified search domain. 'On extreme X-exit' means that the critical result is on the edge of the search domain; a lower Fs may result if the search domain is expanded.

CRITICAL RESULTS OF ROTATIONAL AND TRANSLATIONAL STABILITY ANALYSES

Rotational (Circular Arc; Bishop) Stability Analysis with slip surfaces excluded from this polygon:

Minimum Factor of Safety = 1.70

Critical Circle: Xc = 61.91[ft], Yc = 197.47[ft], R = 22.44[ft]. (Number of slices used = 53)

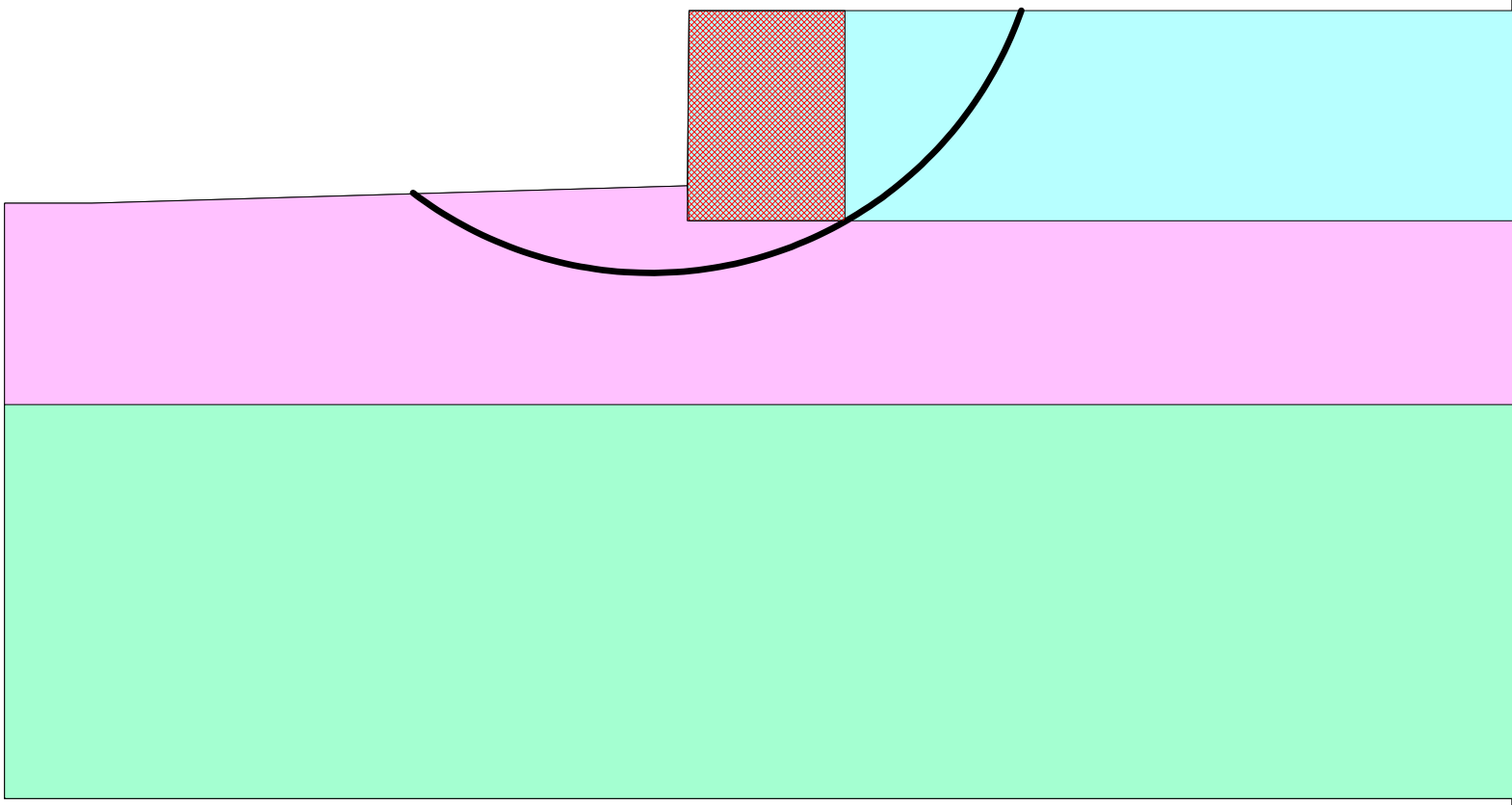
Translational (2-Part Wedge; Spencer), Direct Sliding, Stability Analysis

N O T C O N D U C T E D

Three-Part Wedge Stability Analysis

N O T C O N D U C T E D

REINFORCEMENT LAYOUT: DRAWING

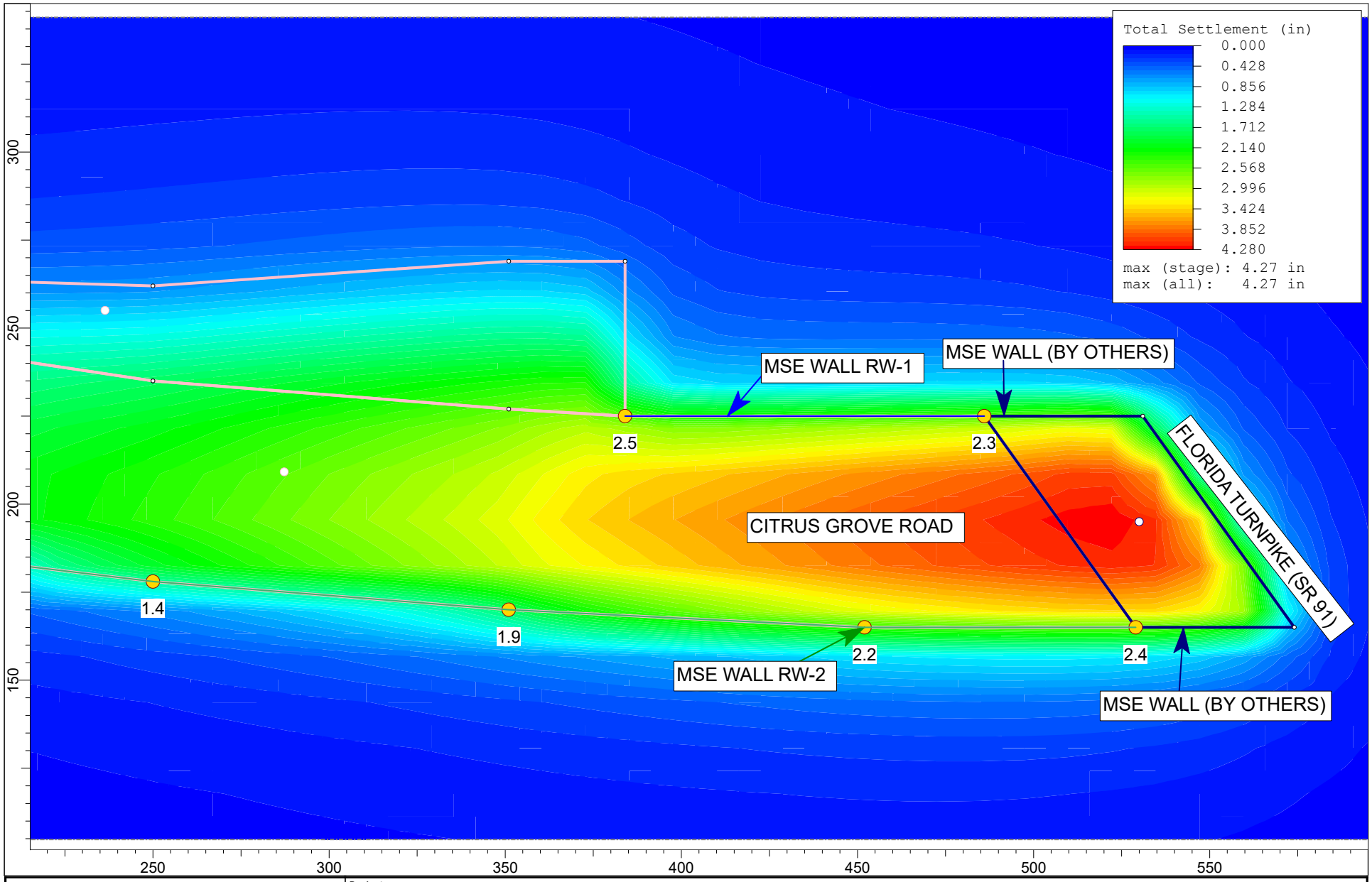


SCALE:

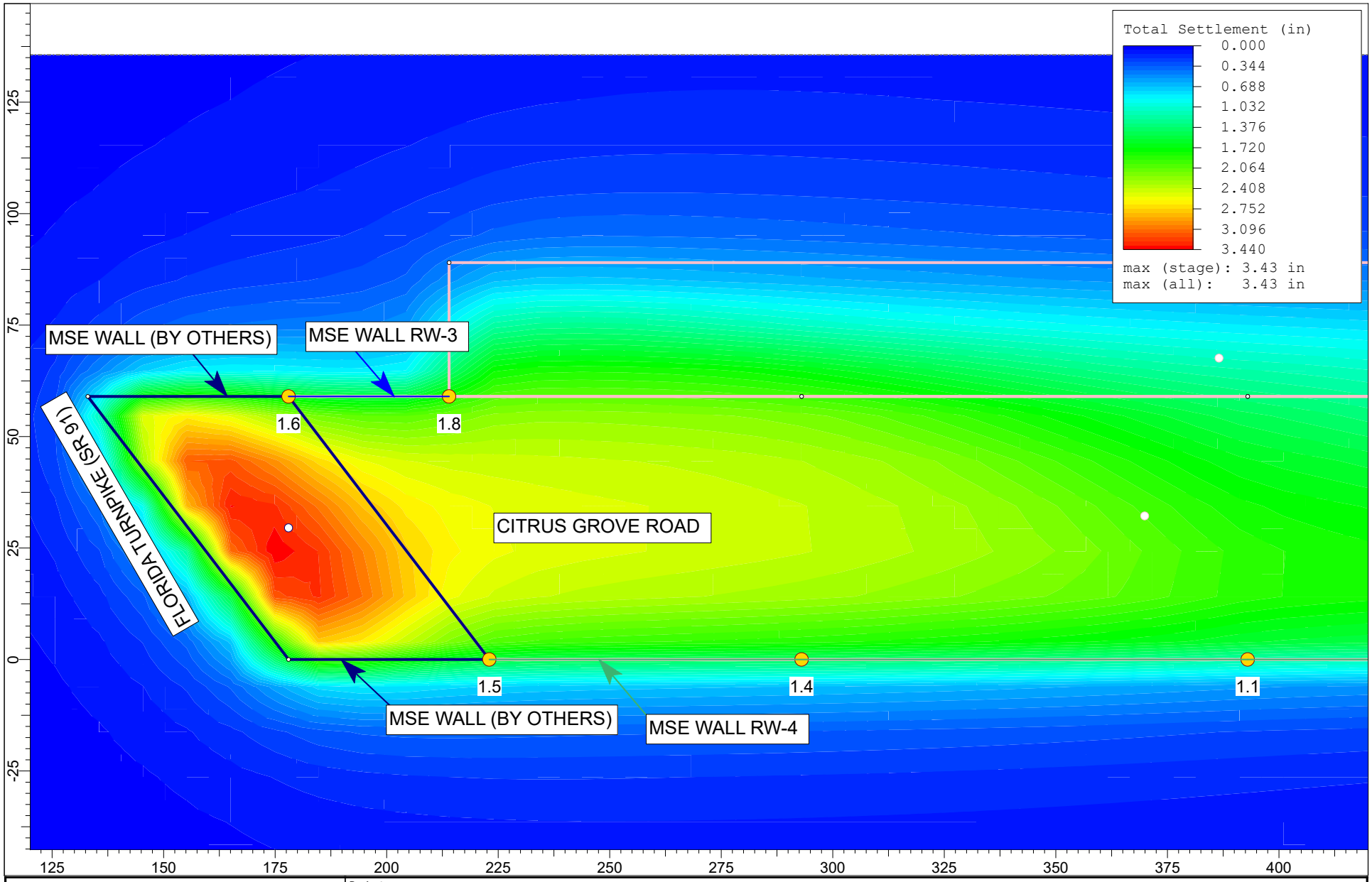
0 2 4 6[ft]

APPENDIX III

Settle3D Computer Program Output



Ardaman & Associates, Inc.	*Project*	Citrus Grove Road Phase V	
	Analysis Description	MSE Walls RW-1 and RW-2	
	Drawn By	Alexandra G. Aydelotte, P.E.	*Company* Ardaman & Associates, Inc.
	Date	1/28/2021, 1:35:11 PM	*File Name* RW1_RW2.s3z



Ardaman & Associates, Inc.	*Project*	Citrus Grove Road Phase V	
	Analysis Description	MSE Walls RW-3 and RW-4	
	Drawn By	Alexandra G. Aydelotte, P.E.	*Company* Ardaman & Associates, Inc.
	Date	01/28/2021, 2:15:11 PM	*File Name* RW3_RW4.s3z