M E M O R A N D U M **(R-003-2018)**

TO: **Jill Asher, PE**
Project Management Coordinator
Division of Highway Design

FROM: **Michael Carpenter, PE.**
Geotechnical Branch Manager
Division of Structural Design

BY: **Kyle Pauley, EIT**
Geotechnical Branch

DATE: **January 23, 2019**

SUBJECT: **Jefferson County**
Reconstruct the Watterson Expressway @ US 42
Station 5060+50 to 5144+09
Item # 5-804.00
Mars # 8556402D
Project # FD52 056 0264 021-023
Geotechnical Engineering Roadway Report

Location and Description

An abbreviated geotechnical engineering report has been completed for the subject project. Drilling, sampling was performed by STANTEC, INC. Laboratory testing was performed by the Geotechnical Branch. The purpose of this report is to identify potential geotechnical concerns based on the subsurface information obtained, a review of the project plans, the drilling, and prior experience with the project area. This project involves resurfacing and upgrades to I-264 and connecting ramps at the US 42 interchange. Reduced size geotechnical symbols, notes, profiles, cut stabilities, and embankment stabilities are attached. The CADD input, in DGN format, is being e-mailed to the design consultant, PALMER.

Topography

The project is located in central Kentucky within the Bluegrass physiographic region. This region consists of karst topography which features cave systems, sinkholes, and underground streams.

The maximum topographic relief along the various proposed centerlines are approximately 48 feet. The proposed project will consist of relatively shallow cuts and minor embankment heights due to the low relief of the topography.

Geology

The project is located within the Jeffersonville-New Albany-Charleston Geologic Quadrangle (#1211). The geologic mapping indicates the upper geologic formation at this site is the Sellersburg and Jeffersonville Limestone Formations. This formation consists of limestone that is susceptible to karst activity. However, little karst activity is shown on mapping or was seen during site visit.
The Select Rock Quantity Sheet was submitted by the design consultant, PALMER. The roadway excavation will produce an insufficient quantity of durable rock for the recommendations below.

Drilling and Sampling

Drilling operations for this project were performed in April and May of 2018. Local weather records indicate precipitation events occurred the day prior to drilling operations. Therefore, moisture contents of samples shown on the attached profile drawings may be higher than what is encountered during construction depending on the season.

The roadway drilling operations consisted 3 rock cores, 44 disturbed profile, and 6 undisturbed stability borings. Sampling depths ranged from 5 to 25 feet with 41 of the borings encountering refusal on bedrock.

Laboratory Testing

The soil testing showed the most common soil type for the project to be low to medium plasticity clays (CL in the Unified Soil Classification System). The soil appears to be residual and is typical given the parent rock formation. Other soils encountered during the soil survey include high plasticity clays and silts (CH and ML, respectively).

CBR tests were performed on samples obtained from soils from the proposed cuts and/or near the proposed subgrade. A range of 3-9 was obtained. When using Yoder's 90^{th} percentile model a CBR of **5** is calculated and recommended for design purposes. It should be stated only one data point was less than 5 in the CBR results.

Engineering Analysis

Stability analyses were performed at several locations which indicated no problems to be expected. The drawings are attached showing the result of these analyses. Unless otherwise indicated, all slopes should be constructed at a 2H:1V or flatter.

Soil Stabilization

Due to the insufficient quantity of rock from roadway excavation some rock may need to be purchased. It should be noted that durable limestone from roadway excavation shall be utilized in all applicable notes prior to using it for rock roadbed. If quarried rock must be purchased it should be used in the rock roadbed.

A 1.75-foot working platform consisting of rock from roadway excavation with Geotextile Fabric will be used throughout the project. However, given the variability of estimating rock, quantities may be less than predicted. Therefore, a quantity of quarried stone may be used if the quantity of rock from roadway excavation is not sufficient to complete the project. Additionally, the thickness of the working platform may need to be greater than 1.75 feet to stabilize certain areas as determined by the Engineer during construction and may depend on seasonal fluctuations in the water table. The working platform shall daylight horizontally to the edge of embankment in fills and to the ditch line in cuts, to ensure positive drainage. For quantity estimation purposes only, a 1.75-foot working platform for 500 linear feet of roadway may be assumed using non-erodible Granular Embankment wrapped in Geotextile Fabric, Type IV to supplement the quantity of rock from roadway excavation if it proves to be insufficient.

The embankment foundation construction may require a working platform where soft and/or saturated soils are encountered. The extent of these problems will depend on time of construction and seasonal water table fluctuations. The recommendations below provide for the use of rock from roadway excavation underlain with Geotextile Fabric for stabilization of any such wet areas encountered during construction. For quantity estimation purposes only, a 2-foot embankment working platform for 900 linear feet of roadway may be assumed.

GEOTECHNICAL RECOMMENDATIONS:

1.) In accordance with Section 206 of the current Standard Specifications, the moisture content of embankment material shall not vary from the optimum moisture content as determined by the current version of KM 64-511 by more than +2 percent or less than -2 percent. This moisture content requirement shall have equal weight with the density requirement when determining the acceptability of embankment construction. Refer to the Family of Curves for moisture/density correlation.

2.) All soils, whether from roadway or borrow, may require manipulation to obtain proper moisture content prior to compaction. Direct payment shall not be permitted for rehandling, hauling, stockpiling, and/or manipulating soils.

3.) Excavation of surface ditches and channel changes adjacent to embankment areas shall be performed prior to the placement of the adjacent embankments. The material excavated for the channel changes and surface ditches is suitable for embankment construction if dried to proper moisture content in accordance with Section 206 of the current Standard Specifications for Road and Bridge Construction.

4.) The Contractor is responsible for conducting any operations necessary to excavate the cut areas to the required typical section. These operations shall be incidental to Roadway Excavation or Embankment-in-Place and no additional compensation shall be made for this work.

5.) Some of the soil horizons and slopes on the project are subject to erosion. Necessary procedures in accordance with Sections 212 and 213 of the current Standard Specifications for Road and Bridge Construction shall be followed on construction.

6.) Removal of existing structures and other obstructions shall be completed in accordance with Section 203 of the current Standard Specifications for Road and Bridge Construction.

7.) Clearing and grubbing of roadway areas shall be completed in accordance with the requirements of Section 202 of the current Standard Specifications for Road and Bridge Construction before embankment placement.

8.) Perforated pipe for subgrade drainage shall be placed in vertical sags and the upgrade end of bridges in accordance with KY Standard Drawing RDP-005 at the following approximate locations and/or where designated by the Engineer.

Westport Road Ramp:
STA. 18+00

I-264 Ramp D:
STA. 4010+54

I-71 Southbound Ramp:
STA.34+00

I-71 Northbound Ramp:
STA.74+50
STA.85+61

Rudy Lane:
STA. 16+37
STA. 17+35

Northfield Drive:
STA. 405+73

KY 22:
STA. 304+00

I-264 LT
STA. 5067+50

9.) Foundation embankment benches shall be constructed in accordance with KY Standard Drawing RGX-010 at the locations listed below and/or as directed by the engineer. If water is encountered during the construction of the embankment benches, a one (1) foot Embankment Drainage Blanket will be required. Place the Embankment Drainage Blanket as directed by the Engineer or contact the Geotechnical Branch for guidance. The benches shall be constructed one at a time beginning with the lowest bench. Each bench shall be backfilled prior to excavation of the next bench. This procedure should be followed to help maintain stability of the existing slopes in these areas.

I-71 Southbound
STA. 37+25 to STA. 44+50
STA. 47+75 to STA. 57+75

10.) In areas where pavement is not to be overlaid, existing bituminous concrete located at a distance less than three feet below the proposed subgrade elevation within the limits of new roadway embankments, shall be removed entirely. This shall be performed in compliance with Section 206 of the Standard Specifications for Road and Bridge Construction.

11.) If sinkholes are encountered during construction, please contact the Department's Geotechnical Branch for mitigation procedures.

12.) Construct a 1.75-foot rock roadbed for the entire project. Use all available limestone from Roadway Excavation, and underlay with Geotextile Fabric in accordance with Sections 214 & 843 of the current Standard Specifications. Contrary to the Standard Specifications, Type IV Geotextile Fabric shall be used in lieu of Type III Fabric. The Geotextile Fabric may be omitted when the base of the rock roadbed is on bedrock. The granular material shall daylight horizontally to the edge of embankment in fills and to the ditch line in cuts, to ensure positive drainage. If there is insufficient rock from Roadway Excavation for the roadbed, complete the remaining roadbed using non-erodible Granular Embankment from a quarry, in accordance with Section 805 of the current Standard Specifications for Road and Bridge Construction. The Granular Embankment shall also be underlain with Type IV Geotextile Fabric. Where soft and/or wet subgrade is encountered during construction, the thickness of the rock roadbed may need to be adjusted (increased) to also serve as a working platform for subgrade stabilization. These adjustments, as directed by the Engineer, may depend on seasonal fluctuations in the water table.

13.) The Contractor shall conduct grading operations in such a manner that **limestone** from Roadway Excavation be stockpiled separately or otherwise manipulated so ample quantities are available for those areas requiring said material. No direct payment will be allowed for such necessary manipulating as stockpiling, hauling and/or double handling the material.

DESIGN RECOMMENDATIONS:

1) The project should be designed for a 1.75-foot rock roadbed. A CBR design value of **9** is recommended for the rock. The rock shall be underlain with Type IV Geotextile Fabric, conforming to Sections 214 and 843 of the current Standard Specifications. Please insert the following note in the appropriate plan sheets: "**The rock roadbed shall consist of all available durable limestone from roadway excavation or non-erodible Granular Embankment (as necessary).**"

2) An average soil shrinkage value of two (2) percent is estimated for this project. This value should be applied to the formula for calculating the Apparent Shrinkage as outlined in the Design Manual. The recommended rock swell factor is estimated to be ten (10) percent for material excavated below the rock disintegration zone (RDZ).

3) Bedded material above the RDZ line does not shrink or swell.

cc: **Division of Design (Plan Processing Section)**
TEBM for Pavement Design
Division of Construction
TEBM for Project Delivery & Preservation (District)
TEBM for Project Development (District)
Project Manager (District)

Attachments:

Jefferson County
I-264
Item No. 5-804.00
Mars No. 8556401D

Widen Section from
Westport Rd. to I-71

Ending Sta. 5144+10.23

5144+09

5140+00

5130+00

5120+00

5110+00

5100+00

5090+00

5080+00

5070+00

5060+00

Beginning Sta. 5071+25

Legend

100+00 Stations

Project Area

Interstates

US Highways

State Roads

Local Roads

0 750 1,500 3,000 Feet

COUNTY OF	ITEM NO.	SHEET NO.
JEFFERSON		

GEOTECHNICAL SYMBOLS

AASHTO Classification of Soils and Soil-Aggregate Mixtures

General Classification	Granular Materials (35% or less passing 0.075 mm)							Silt-Clay Materials (More than 35% passing 0.075 mm)			
Group Classification	A-1		A-3	A-2				A-4	A-5	A-6	A-7
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5 A-7-6
Sieve Analysis, Percent Passing											
2.00 mm (No. 10)	50 max	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
0.425 mm (No. 40)	30 max	50 max	51 min	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
0.075 mm (No. 200)	15 max	25 max	10 max	35 max	35 max	35 max	35 max	36 min	36 min	36 min	36 min
Characteristics of Fraction Passing 0.425 mm (No. 40)											
Liquid Limit	- - -		- - -	40 max	41 min	40 max	41 min	40 max	41 min	40 max	41 min
Plasticity Index	6 max		N.P.	10 max	10 max	11 min	11 min	10 max	10 max	11 min	11 min

AI	Activity Index
LI	Liquidity Index
S+C	Silt + Clay (% finer than No.200 Sieve)
○	Rockline Soundings
◒	Disturbed Sample Boring
◎	Undisturbed Sample Boring
⦿	Undisturbed Sample Boring & Rock Core
●	Rock Core
◌	Slope Inclinometer Installation
	typical applications: ⌖ ⌖ ⌖ ⌖ ⌖
OW	Observation Well
➡	Approximate Footing Elevation
▼ (Date)	Water Elevation

VS (psf)	Field Vane Shear Strength
■	Thin-walled Tube Sample
<	Standard Penetration Test Sample
N	Penetration Resistance
Qu (psf)	Unconfined Compressive Strength
UU (psf)	Unconsolidated Undrained Triaxial Strength
w%	Moisture Content
KY RQD	Rock Quality Designation (Kentucky Method)
STD RQD	Rock Quality Designation (Standard Method)
SDI(JS)	Slake Durability Index (Jar Slake Test)
REC	Core Recovery
ϕ	Angle of Internal Friction (Total Stress)
$\overline{\phi}$	Angle of Internal Friction (Effective Stress)
c (psf)	Cohesion (Total Stress)
$\overline{c}$ (psf)	Cohesion (Effective Stress)
δ (pcf)	Total Unit Weight
RDZ	Rock Disintegration Zone
OB	Overburden Bench
IB	Intermediate Bench
R	Refusal
NR	Refusal Not Encountered

Unified Soil Classifications

MAJOR DIVISIONS		SYMBOL	NAME
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	GW	Well-graded gravels or gravel-sand mixtures, little or no fines.
		GP	Poorly graded gravels or gravel-sand mixtures, little or no fines.
		GM	Silty gravels, gravel-sand-silt mixtures.
		GC	Clayey gravels, gravel-sand-clay mixtures.
	SAND AND SANDY SOILS	SW	Well graded sands or gravelly sands, little or no fines.
		SP	Poorly graded sands or gravelly sands, little or no fines.
		SM	Silty sands, sand-silt mixtures.
		SC	Clayey sands, sand-clay mixtures.
FINE GRAINED SOILS	SILTS AND CLAYS LL IS LESS THAN 50	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays silty clays, lean clays.
		ML-CL	Silty clay-silty clay with sand and or gravel, sandy silty clay, sandy silty clay with gravel, gravelly silty clay, gravelly silty clay with sand
	SILTS AND CLAYS LL IS GREATER THAN 50	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
		CH	Inorganic clays of high plasticity, fat clays.

Unified Soil Classifications - Continued

MAJOR DIVISIONS		SYMBOL	NAME
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	GP-GC	Poorly graded gravel with clay (or silty clay), poorly graded gravel with clay and sand (or silty clay & sand)
		GP-GM	Poorly graded gravel with silt, poorly graded gravel with silt and sand
		GW-GC	Well graded gravel with clay (or silty clay), well graded gravel with clay and sand (or silty clay and sand)
		GW-GM	Well graded gravel with silt, well graded gravel with silt and sand
		GC-GM	Silty clayey gravel, silty clayey gravel with sand
	SAND AND SANDY SOILS	SW-SC	Well graded sand with clay (or silty clay), well graded sand with clay and gravel (or silty clay & gravel)
		SP-SC	Poorly graded sand with clay (or silty clay), poorly graded sand with clay and gravel (or silty clay and gravel)
		SP-SM	Poorly graded sand with silt, poorly graded sand with silt and gravel
		SC-SM	Silty clayey sand, silty clayey sand with gravel
		SW-SM	Well graded sand with silt, well graded sand with silt and gravel
UNCLASSIFIED MATERIAL		OH	Organic (High Plasticity)
		OL	Organic (Low Plasticity)

LIMESTONE	TALUS, MINE WASTE, FILL MATERIAL, BOULDERS, & ETC.
SANDSTONE	COAL
DURABLE SHALE (SDI ≥ 95)	DOLOMITE
NONDURABLE SHALE (SDI < 95)	LIMESTONE (ARGILLACEOUS)
GRANULAR EMBANKMENT	SLOPE PROTECTION
STRUCTURE GRANULAR BACKFILL	

GEOTECHNICAL SYMBOL SHEET

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USER:
DATE PLOTTED:
E-SHEET NAME:
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JEFFERSON	5-804.00	

GEOTECHNICAL NOTES

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I-71 Northbound Ramp:
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STA.85+61

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STA. 16+37
STA. 17+35

Northfield Drive:
STA. 405+73

KY 22:
STA. 304+00

I-264 LT
STA. 5067+50

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I-71 Southbound
STA. 37+25 to STA. 44+50
STA. 47+75 to STA. 57+75

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DESIGNED BY:
DATE SUBMITTED:

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS
COUNTY OF

JEFFERSON

PROJECT NUMBERS:

GEOTECHNICAL NOTES

FILE NAME:
USER:
DATE PLOTTED:
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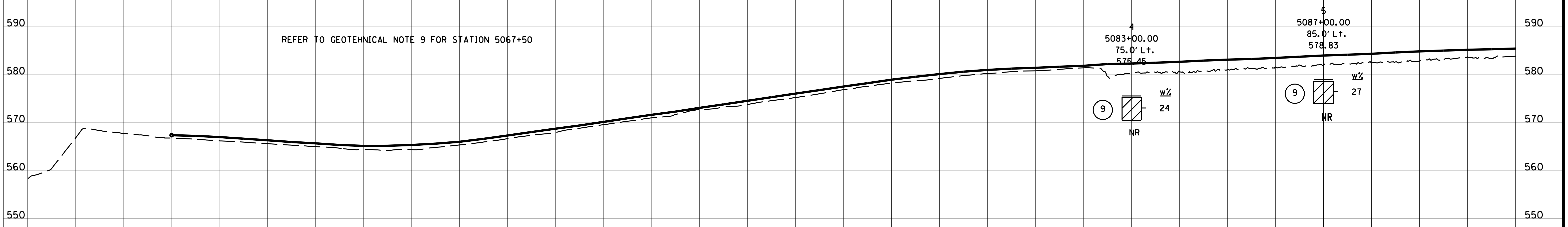
REFER TO GEOTECHNICAL NOTE 9 FOR STATION 5067+50



SAMPLE NO.		9
STATION		5083+00
OFFSET		75.0' Lt.
DEPTH		0.3-5.0
COMPOSITION OF TOTAL SAMPLE	GRAVEL (- 3" + NO. 10)	0
	SAND (- NO 10 + NO. 200)	6
	SILT (- 0.075 mm + 0.002 mm)	65
	CLAY (- 0.002 mm)	29
LIQUID LIMIT		36
PLASTIC LIMIT		20
PLASTICITY INDEX		16
ACTIVITY INDEX		0.55
SPECIFIC GRAVITY		2.53
AASHTO CLASSIFICATION		A-6(15)
UNIFIED CLASSIFICATION		CL
CALIFORNIA BEARING RATIO		-
MAXIMUM DRY DENSITY (pcf)		-
OPTIMUM MOISTURE (%)		-
% +4.75mm	MATERIAL IN CBR & MOISTURE-DENSITY TESTS	0

SCALE: 1" = 100' HORIZONTAL
1" = 10' VERTICAL

FILE NAME:
USER:
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DESIGNED BY:
DATE SUBMITTED:

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS
COUNTY OF

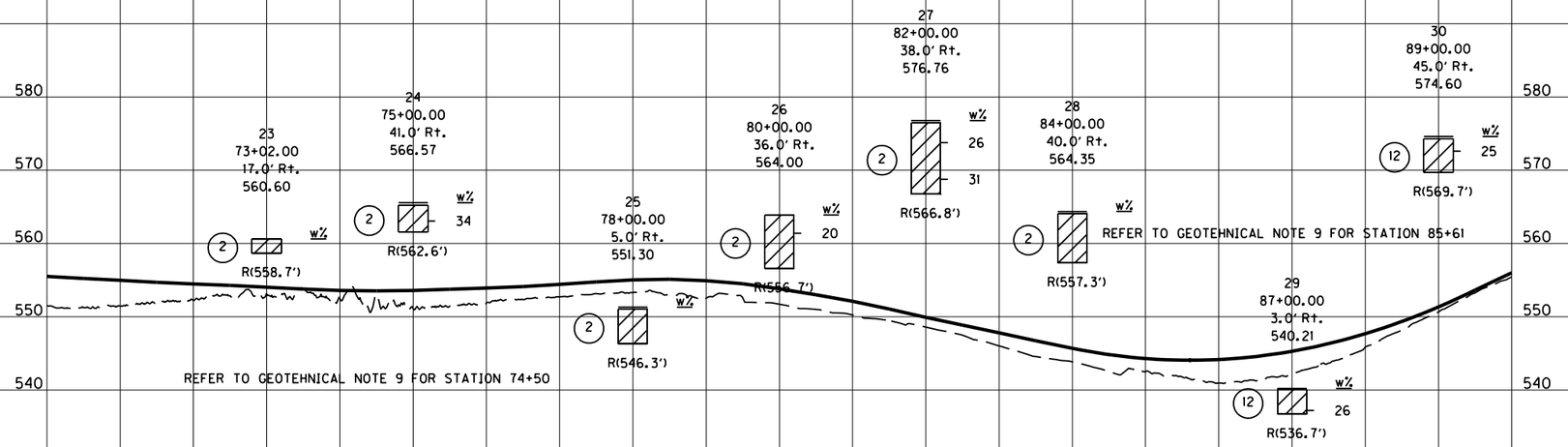
JEFFERSON

PROJECT
NUMBERS:

SOIL PROFILE, I-264 LT
STA. 5060+00 TO 5091+00

COUNTY OF	ITEM NO.	SHEET NO.
JEFFERSON	5-804.00	

SAMPLE NO.		2	12
STATION		82+00	91+00
OFFSET		38.0' Rt.	58.0' Rt.
DEPTH		0.3-10.0	0.3-9.1
COMPOSITION OF TOTAL SAMPLE	GRAVEL (+ 3" + NO. 10)	0	0
	SAND (- NO 10 + NO. 200)	6	3
	SILT (- 0.075 mm + 0.002 mm)	56	73
	CLAY (- 0.002 mm)	38	24
LIQUID LIMIT		42	37
PLASTIC LIMIT		22	23
PLASTICITY INDEX		20	14
ACTIVITY INDEX		0.53	0.58
SPECIFIC GRAVITY		2.64	2.53
AASHTO CLASSIFICATION		A-7-6(20)	A-6(15)
UNIFIED CLASSIFICATION		CL	CL
CALIFORNIA BEARING RATIO		6	5
MAXIMUM DRY DENSITY (pcf)		101	104
OPTIMUM MOISTURE (%)		20	19
% +4.75mm	MATERIAL IN CBR & MOISTURE-DENSITY TESTS	0	0



551.5 555.50 70+00
551.4 554.98 71+00
552.2 554.46 72+00
553.1 554.02 73+00
552.5 553.58 74+00
551.1 553.59 75+00
551.9 553.92 76+00
552.7 554.41 77+00
553.3 555.02 78+00
552.5 554.92 79+00
551.7 553.81 80+00
550.2 552.10 81+00
548.6 549.92 82+00
546.0 547.79 83+00
543.9 545.69 84+00
542.3 544.30 85+00
540.9 544.16 86+00
542.2 545.29 87+00
545.9 547.68 88+00
550.7 551.34 89+00
555.4 556.00 90+00

SOIL PROFILE, I-71 NB
STA. 70+00 TO 90+00

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COUNTY OF	ITEM NO.	SHEET NO.
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Field Drilling and Sampling were performed in April and May of 2018

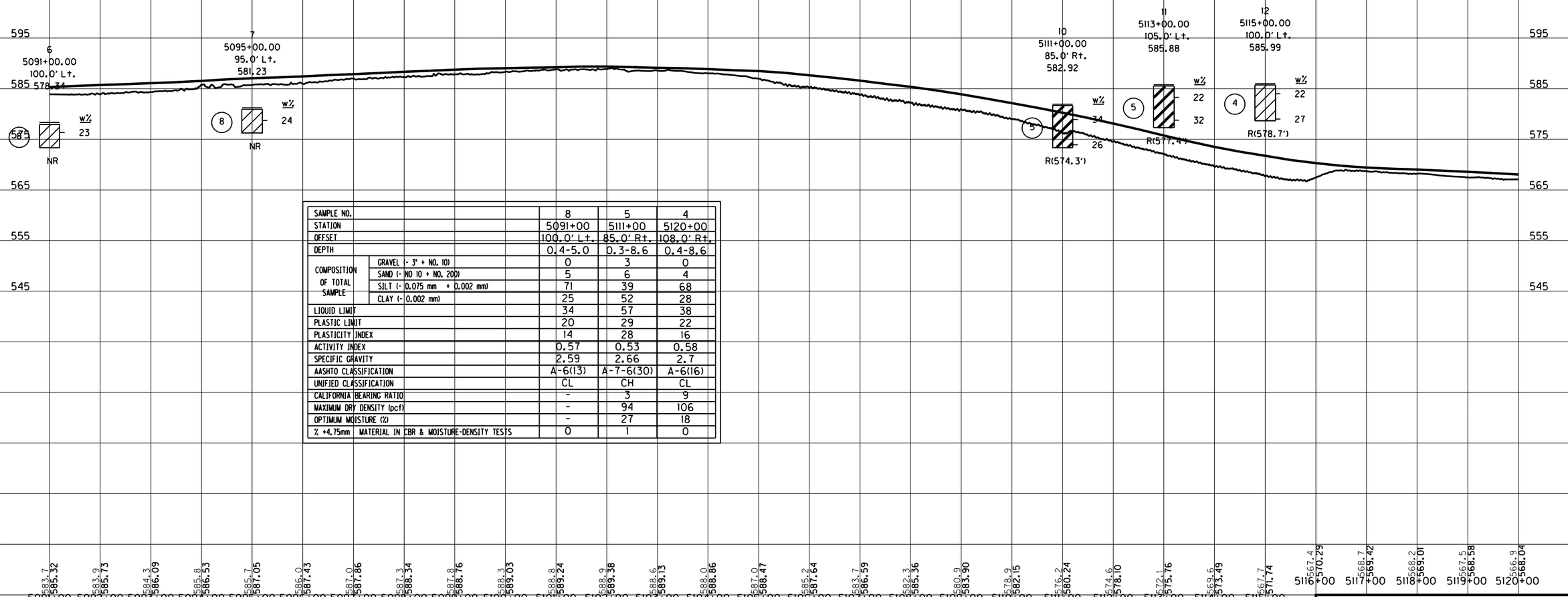
Detailed data and interpretation of subsurface conditions encountered in individual borings are shown on the soil profile. Soil and rock strata descriptions and indicated boundaries are based on engineering interpretation of available subsurface information obtained at selected locations, and may not necessarily reflect the actual variation in subsurface conditions between borings and samples.

The observed water levels and/or subsurface conditions indicated on the soil profile are as recorded at the time of exploration. These water levels and/or subsurface conditions may vary considerable with time, according to the prevailing climate, rainfall or other factors and are otherwise dependent on the duration of and methods used in the exploration program.

Selected rock cores and all applicable drill logs, are stored at the Division of Structural Design in Frankfort and are available for inspection request. Contact the Division of Structural Design, Geotechnical Branch for availability information and to schedule an inspection.

NOTICE - Without regard to the materials encountered, all roadway and drainage excavation shall be unclassified and shall be designated as Roadway Excavation. It shall be distinctly understood that any reference to rock, earth or any other materials on the plans or cross sections whether in numbers, words, letters, or lines, is solely for the Department's information and is not to be taken as an indication of classified excavation or the quantity of either rock, earth or any other material involved.

The bidder must draw his own conclusions as to the conditions to be encountered. The Department does not give any guarantee as to the accuracy of the data and no claim will be considered for additional compensation when the materials encountered are not in accord with the classification shown



SAMPLE NO.		8	5	4
STATION		5091+00	5111+00	5120+00
OFFSET		100.0' Lt.	85.0' Rt.	108.0' Rt.
DEPTH		0.4-5.0	0.3-8.6	0.4-8.6
COMPOSITION OF TOTAL SAMPLE	GRAVEL (- 3" + NO. 10)	0	3	0
	SAND (- NO 10 + NO. 200)	5	6	4
	SILT (- 0.075 mm + 0.002 mm)	71	39	68
	CLAY (- 0.002 mm)	25	52	28
LIQUID LIMIT		34	57	38
PLASTIC LIMIT		20	29	22
PLASTICITY INDEX		14	28	16
ACTIVITY INDEX		0.57	0.53	0.58
SPECIFIC GRAVITY		2.59	2.66	2.7
AASHTO CLASSIFICATION		A-6(13)	A-7-6(30)	A-6(16)
UNIFIED CLASSIFICATION		CL	CH	CL
CALIFORNIA BEARING RATIO		-	3	9
MAXIMUM DRY DENSITY (pcf)		-	94	106
OPTIMUM MOISTURE (%)		-	27	18
% +4.75mm	MATERIAL IN CBR & MOISTURE-DENSITY TESTS	0	1	0

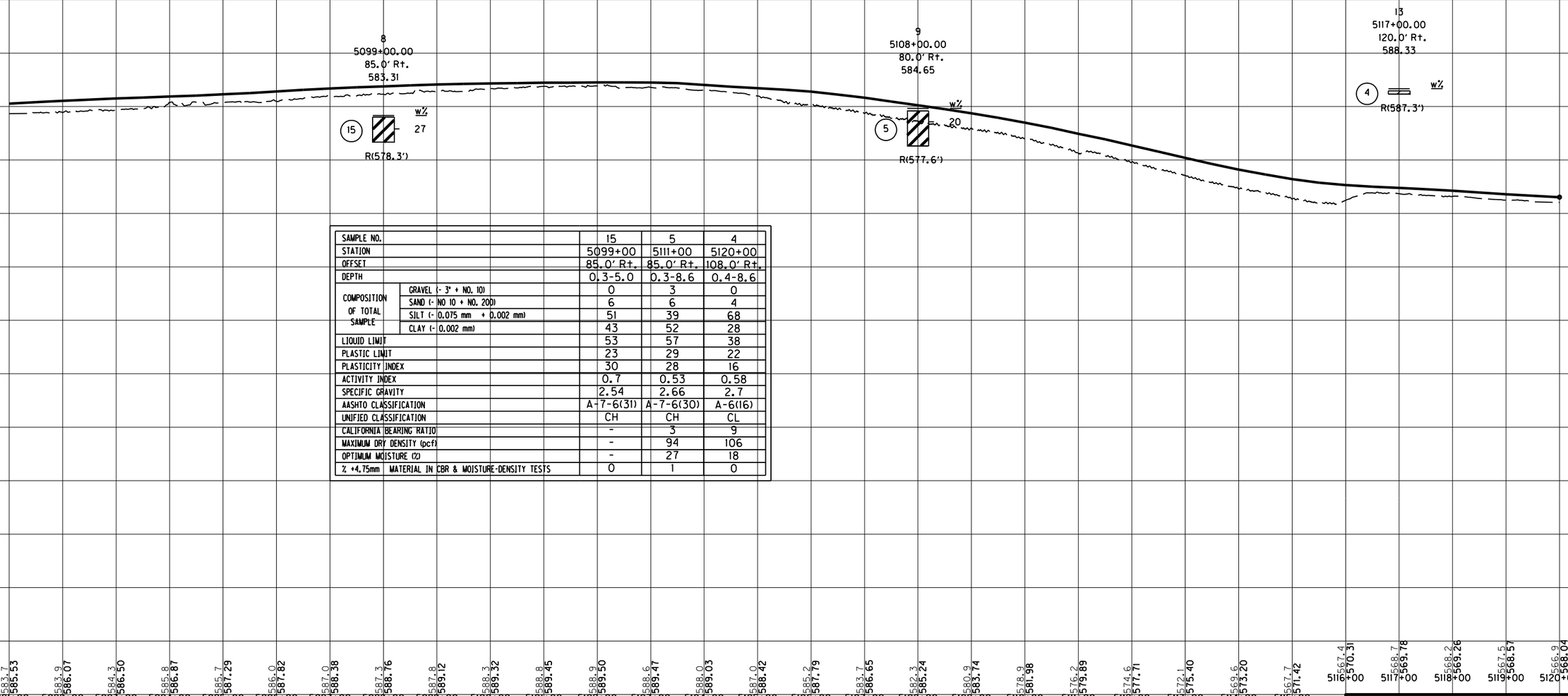
583.7 585.32 | 583.9 585.73 | 584.3 586.09 | 585.8 586.53 | 585.7 587.05 | 586.0 587.43 | 587.0 587.86 | 587.3 588.34 | 587.8 588.76 | 588.3 589.03 | 588.8 589.24 | 588.9 589.38 | 588.6 589.13 | 588.0 588.86 | 587.0 588.47 | 585.2 587.64 | 583.7 586.59 | 582.3 585.36 | 580.9 583.90 | 578.9 582.15 | 576.2 580.24 | 574.6 578.10 | 572.1 575.76 | 569.6 573.49 | 567.7 571.74 | 567.4 570.29 | 568.7 569.42 | 568.2 569.01 | 567.5 568.58 | 566.9 568.04

5091+00 5092+00 5093+00 5094+00 5095+00 5096+00 5097+00 5098+00 5099+00 5100+00 5101+00 5102+00 5103+00 5104+00 5105+00 5106+00 5107+00 5108+00 5109+00 5110+00 5111+00 5112+00 5113+00 5114+00 5115+00 5116+00 5117+00 5118+00 5119+00 5120+00

SOIL PROFILE, I-264 LT
STA. 5091+00 TO 5120+00

FILE NAME:
USER:
DATE PLOTTED:
E-SHEET NAME:
MicroStation v8.11.9.832

COUNTY OF	ITEM NO.	SHEET NO.
JEFFERSON	5-804.00	



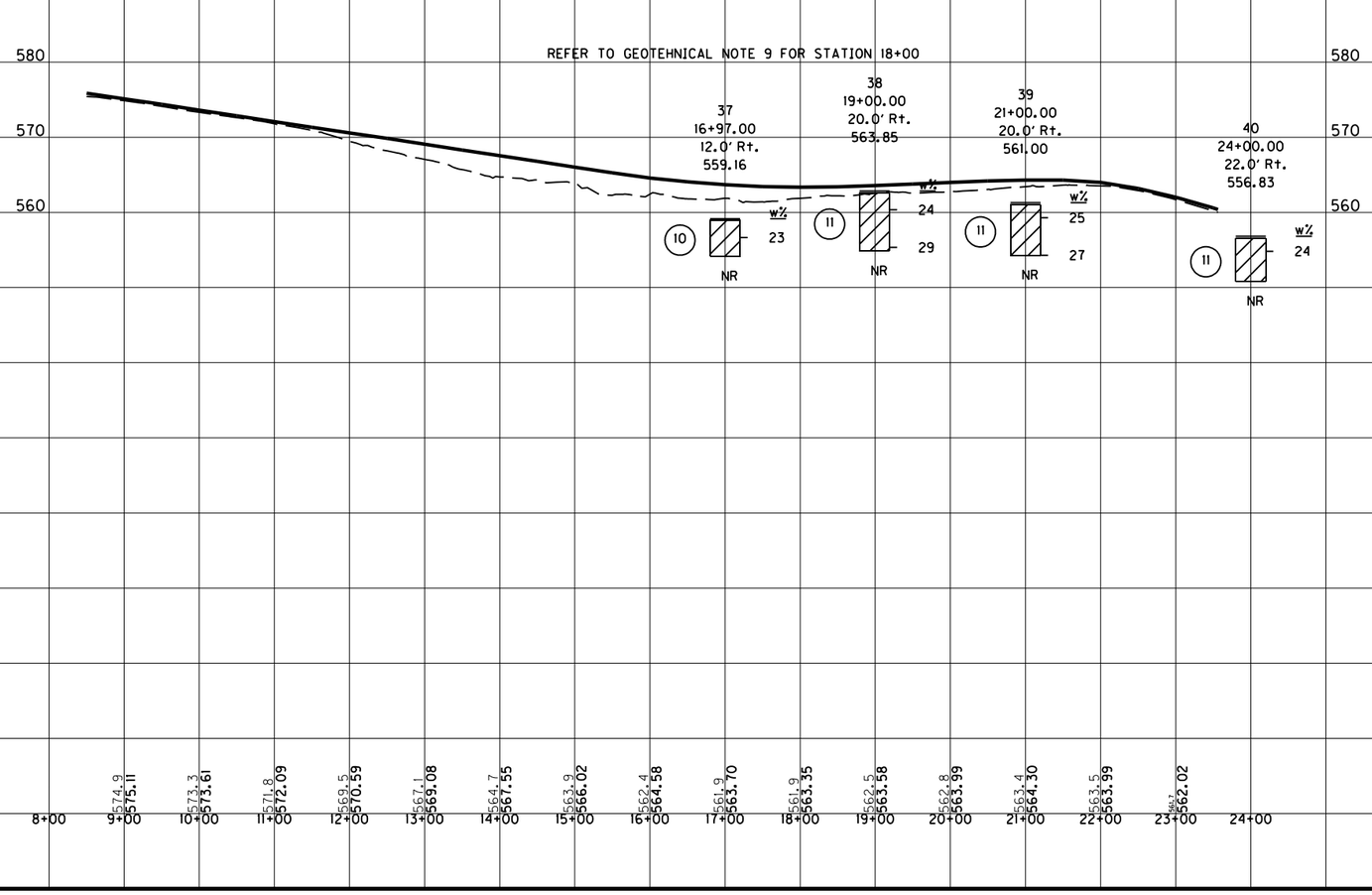
SAMPLE NO.		15	5	4
STATION		5099+00	5111+00	5120+00
OFFSET		85.0' Rt.	85.0' Rt.	108.0' Rt.
DEPTH		0.3-5.0	0.3-8.6	0.4-8.6
COMPOSITION OF TOTAL SAMPLE	GRAVEL (- 3" + NO. 10)	0	3	0
	SAND (- NO 10 + NO. 200)	6	6	4
	SILT (- 0.075 mm + 0.002 mm)	51	39	68
	CLAY (- 0.002 mm)	43	52	28
LIQUID LIMIT		53	57	38
PLASTIC LIMIT		23	29	22
PLASTICITY INDEX		30	28	16
ACTIVITY INDEX		0.7	0.53	0.58
SPECIFIC GRAVITY		2.54	2.66	2.7
AASHTO CLASSIFICATION		A-7-6(31)	A-7-6(30)	A-6(16)
UNIFIED CLASSIFICATION		CH	CH	CL
CALIFORNIA BEARING RATIO		-	3	9
MAXIMUM DRY DENSITY (pcf)		-	94	106
OPTIMUM MOISTURE (%)		-	27	18
% +4.75mm	MATERIAL IN CBR & MOISTURE-DENSITY TESTS	0	1	0

SOIL PROFILE, I-264 RT
STA. 5091+00 TO 5120+00

FILE NAME:
USER:
DATE PLOTTED:
E-SHEET NAME:
MicroStation v8.11.9.832

COUNTY OF	ITEM NO.	SHEET NO.
JEFFERSON	5-804.00	

SAMPLE NO.		10	11	14
STATION		16+97	21+00	13+00
OFFSET		12.0' Rt.	20.0' Rt.	30.0' Lt.
DEPTH		0.2-5.0	0.3-7.0	0.4-8.0
COMPOSITION OF TOTAL SAMPLE	GRAVEL (- 3" + NO. 10)	0	0	0
	SAND (- NO 10 + NO. 200)	5	6	3
	SILT (- 0.075 mm + 0.002 mm)	65	60	67
	CLAY (- 0.002 mm)	30	34	30
LIQUID LIMIT		35	44	36
PLASTIC LIMIT		22	22	22
PLASTICITY INDEX		13	22	14
ACTIVITY INDEX		0.43	0.64	0.47
SPECIFIC GRAVITY		2.6	2.59	2.57
AASHTO CLASSIFICATION		A-6(13)	A-7-6(22)	A-6(14)
UNIFIED CLASSIFICATION		CL	CL	CL
CALIFORNIA BEARING RATIO		7	6	8
MAXIMUM DRY DENSITY (pcf)		105	105	107
OPTIMUM MOISTURE (%)		14	19	18
% +4.75mm	MATERIAL IN CBR & MOISTURE-DENSITY TESTS	0	0	0

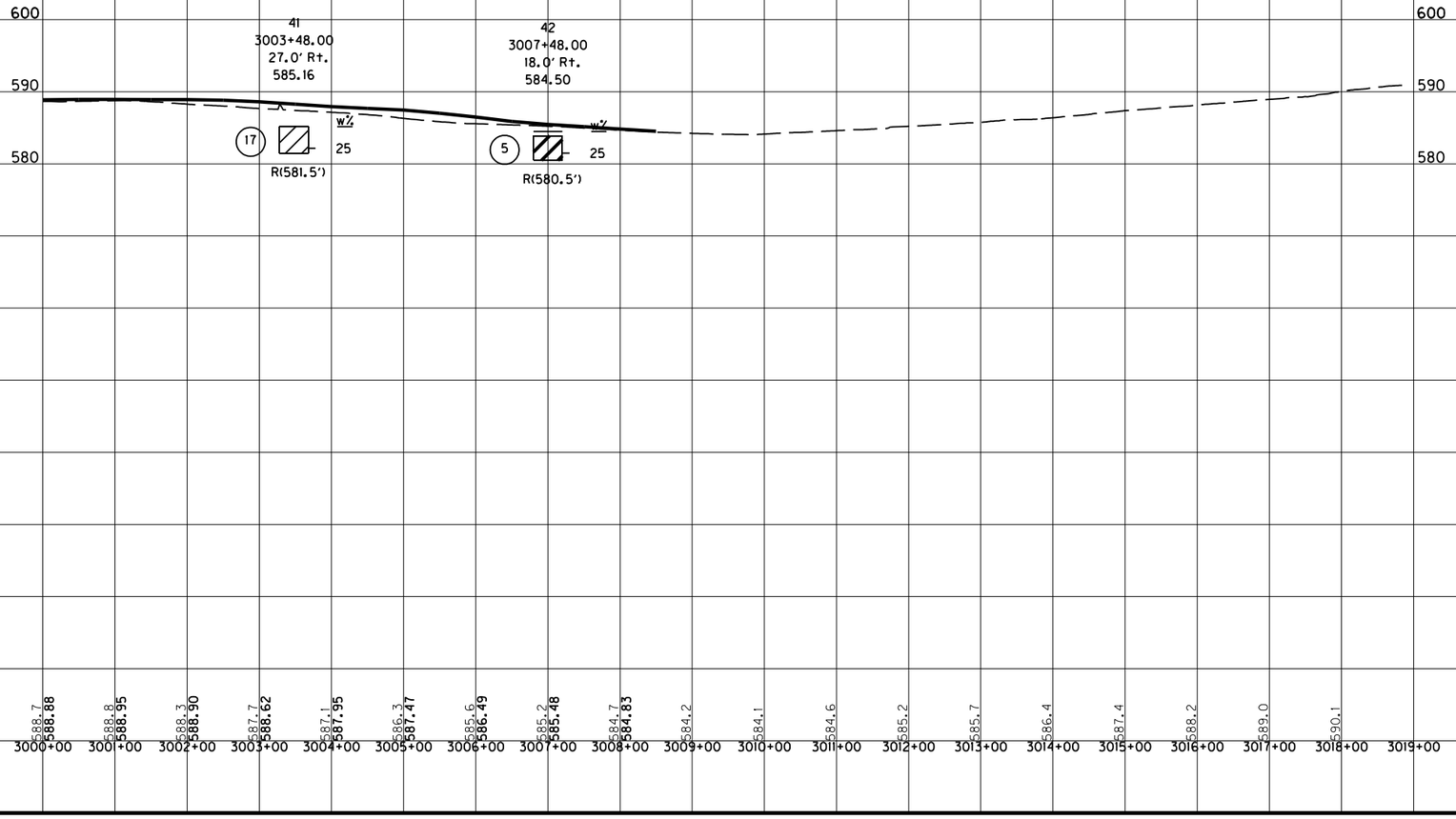


SOIL PROFILE, WESTPORT RAMP
STA. 9+00 TO 24+00

FILE NAME:
USER:
DATE PLOTTED:
E-SHEET NAME:
MicroStation v8.11.9.832

COUNTY OF	ITEM NO.	SHEET NO.
JEFFERSON	5-804.00	

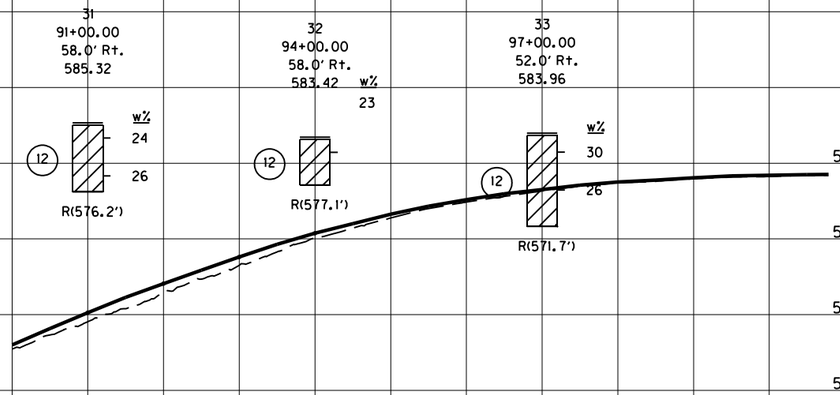
SAMPLE NO.			5	17
STATION			5111+00	3003+48
OFFSET			85.0' Rt.	27.0' Rt.
DEPTH			0.3-8.6	0.0-3.7
COMPOSITION OF TOTAL SAMPLE	GRAVEL (- 3" + NO. 10)		3	0
	SAND (- NO 10 + NO. 200)		6	5
	SILT (- 0.075 mm + 0.002 mm)		39	64
	CLAY (- 0.002 mm)		52	31
LIQUID LIMIT			57	36
PLASTIC LIMIT			29	21
PLASTICITY INDEX			28	15
ACTIVITY INDEX			0.53	0.49
SPECIFIC GRAVITY			2.66	2.55
AASHTO CLASSIFICATION			A-7-6(30)	A-6(15)
UNIFIED CLASSIFICATION			CH	CL
CALIFORNIA BEARING RATIO			3	5
MAXIMUM DRY DENSITY (pcf)			94	106
OPTIMUM MOISTURE (%)			27	20
% +4.75mm	MATERIAL IN CBR & MOISTURE-DENSITY TESTS		1	0



SOIL PROFILE, RAMP E
STA. 3000+00 TO 3019+00

FILE NAME:
USER:
DATE PLOTTED:
E-SHEET NAME:
MicroStation v8.11.9.832

COUNTY OF	ITEM NO.	SHEET NO.
JEFFERSON	5-804.00	



SAMPLE NO.		12
STATION		91+00
OFFSET		58.0' Rt.
DEPTH		0.3-9.1
COMPOSITION OF TOTAL SAMPLE	GRAVEL (- 3" + NO. 10)	0
	SAND (- NO 10 + NO. 200)	3
	SILT (- 0.075 mm + 0.002 mm)	73
	CLAY (- 0.002 mm)	24
LIQUID LIMIT		37
PLASTIC LIMIT		23
PLASTICITY INDEX		14
ACTIVITY INDEX		0.58
SPECIFIC GRAVITY		2.53
AASHTO CLASSIFICATION		A-6(15)
UNIFIED CLASSIFICATION		CL
CALIFORNIA BEARING RATIO		5
MAXIMUM DRY DENSITY (pcf)		104
OPTIMUM MOISTURE (%)		19
% +4.75mm MATERIAL IN CBR & MOISTURE-DENSITY TESTS		0

SOIL PROFILE, I-71 NB
STA. 90+00 TO 100+78

FILE NAME:
USER:
DATE PLOTTED:
E-SHEET NAME:
MicroStation v8.11.9.832

COUNTY OF	ITEM NO.	SHEET NO.
JEFFERSON	5-804.00	

REFER TO GEOTECHNICAL NOTE 11 FOR STA 37+25 TO 44+50.

REFER TO GEOTECHNICAL NOTE 11 FOR STA 47+75 TO 57+75.

REFER TO GEOTEHNICAL NOTE 9 FOR STATION 34+00

34
39+00.00
52.0' Lt.
539.54

w%
28
25
26
(13)
R(526.0')

35
44+00.00
38.0' Lt.
556.16

(16) w% 24
R(551.2')

36
50+00.00
78.0' Lt.
528.63

(16) w%
R(526.9')

SAMPLE NO.		16	13
STATION		44+00	39+00
OFFSET		38.0' Lt.	52.0' Lt.
DEPTH		0.4-5.0	0.4-13.5
COMPOSITION OF TOTAL SAMPLE	GRAVEL (- 3" + NO. 10)	0	0
	SAND (- NO 10 + NO. 200)	6	4
	SILT (- 0.075 mm + 0.002 mm)	57	60
	CLAY (- 0.002 mm)	37	37
LIQUID LIMIT		17	38
PLASTIC LIMIT		23	21
PLASTICITY INDEX		-6	17
ACTIVITY INDEX		+0.16	0.46
SPECIFIC GRAVITY		2.54	2.53
AASHTO CLASSIFICATION		A-4(0)	A-6(17)
UNIFIED CLASSIFICATION		ML	CL
CALIFORNIA BEARING RATIO		-	-
MAXIMUM DRY DENSITY (pcf)		-	-
OPTIMUM MOISTURE (%)		-	-
% +4.75mm	MATERIAL IN CBR & MOISTURE-DENSITY TESTS	0	0

580 570 560 550 540 530 520 510 500

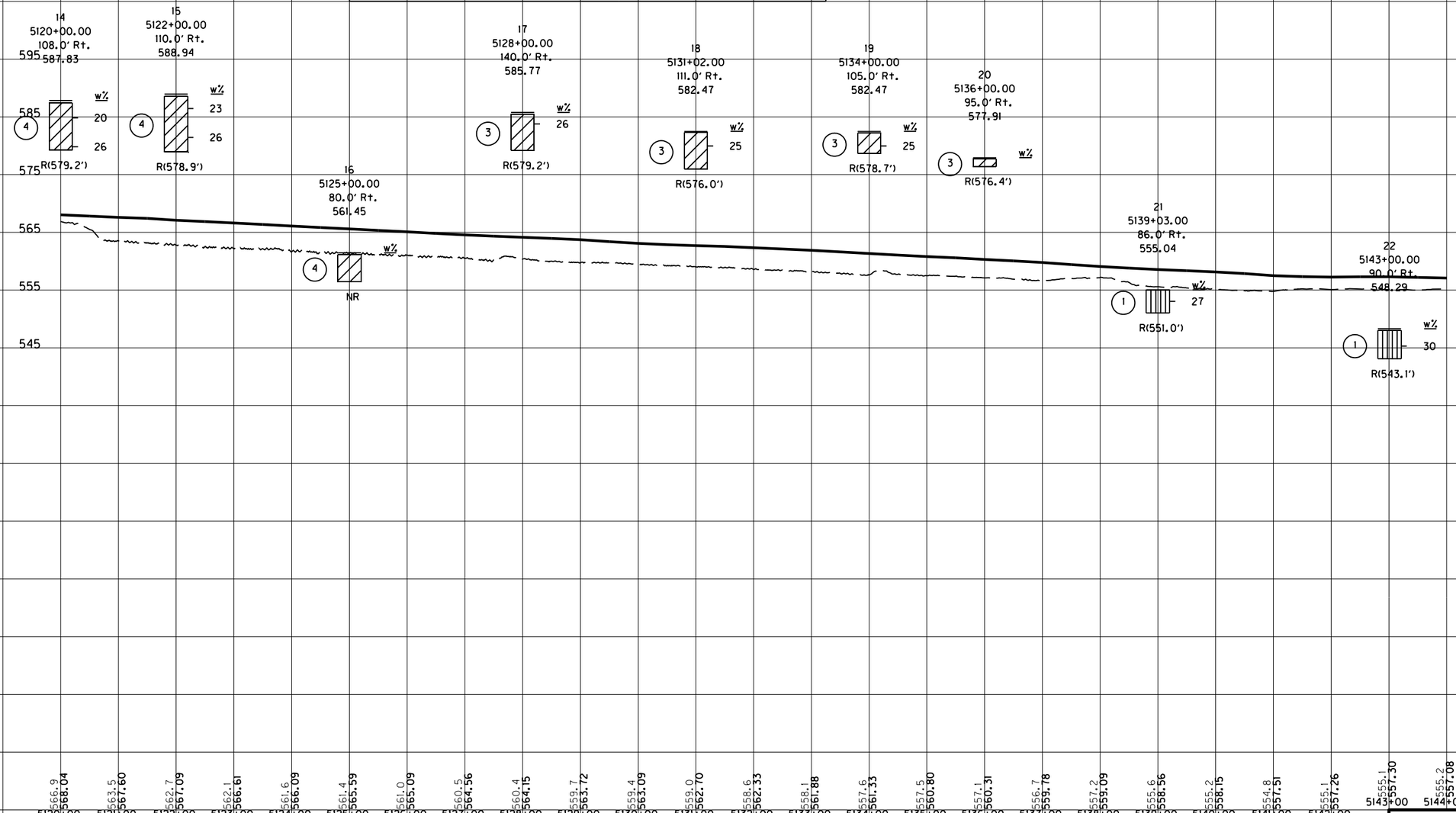
30+00 31+00 32+00 33+00 34+00 35+00 36+00 37+00 38+00 39+00 40+00 41+00 42+00 43+00 44+00 45+00 46+00 47+00 48+00 49+00 50+00 51+00 52+00 53+00 54+00 55+00 56+00 57+00 58+00 59+00 60+00

SOIL PROFILE, I-71 SB
STA. 30+00 TO 60+00

FILE NAME:
USER:
DATE PLOTTED:
E-SHEET NAME:
MicroStation v8.11.9.832

COUNTY OF	ITEM NO.	SHEET NO.
JEFFERSON	**5-804.00**	

SAMPLE NO.		3	4	1
STATION		5131+02	5120+00	5143+00
OFFSET		111.0′ Rt.	108.0′ Rt.	90.0′ Rt.
DEPTH		0.2-6.5	0.4-8.6	0.3-5.2
COMPOSITION OF TOTAL SAMPLE	GRAVEL (- 3" + NO. 10)	0	0	0
	SAND (- NO 10 + NO. 200)	2	4	5
	SILT (- 0.075 mm + 0.002 mm)	77	68	72
	CLAY (- 0.002 mm)	21	28	23
LIQUID LIMIT		35	38	33
PLASTIC LIMIT		24	22	24
PLASTICITY INDEX		11	16	9
ACTIVITY INDEX		0.53	0.58	0.39
SPECIFIC GRAVITY		2.65	2.7	2.64
AASHTO CLASSIFICATION		A-6(12)	A-6(16)	A-4(9)
UNIFIED CLASSIFICATION		CL	CL	ML
CALIFORNIA BEARING RATIO		5	9	-
MAXIMUM DRY DENSITY (pcf)		103	106	-
OPTIMUM MOISTURE (%)		19	18	-
% +4.75mm MATERIAL IN CBR & MOISTURE-DENSITY TESTS		0	0	0



FILE NAME:

USER:
DATE PLOTTED:

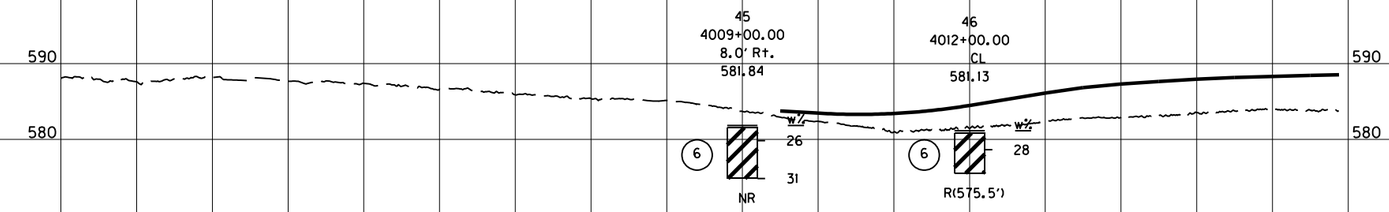
E-SHEET NAME:

MicroStation v8.11.9.832

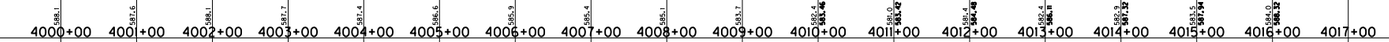
SOIL PROFILE, I-264 RT
STA. 5120+00 TO 5145+00

COUNTY OF	ITEM NO.	SHEET NO.
JEFFERSON	5-804.00	

SAMPLE NO.		6
STATION		4012+00
OFFSET		CL
DEPTH		0.3-5.6
COMPOSITION OF TOTAL SAMPLE	GRAVEL (- 3" + NO. 10)	2
	SAND (- NO 10 + NO. 200)	10
	SILT (- 0.075 mm + 0.002 mm)	44
	CLAY (- 0.002 mm)	45
LIQUID LIMIT		56
PLASTIC LIMIT		27
PLASTICITY INDEX		29
ACTIVITY INDEX		0.65
SPECIFIC GRAVITY		2.75
AASHTO CLASSIFICATION		A-7-6(29)
UNIFIED CLASSIFICATION		CH
CALIFORNIA BEARING RATIO		-
MAXIMUM DRY DENSITY (pcf)		-
OPTIMUM MOISTURE (%)		-
% +4.75mm MATERIAL IN CBR & MOISTURE-DENSITY TESTS		1



REFER TO GEOTEHNICAL NOTE 9 FOR STATION 4010+54

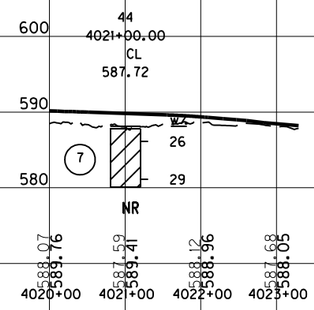


SOIL PROFILE, RAMP D
STA. 4000+00 TO 4017+00

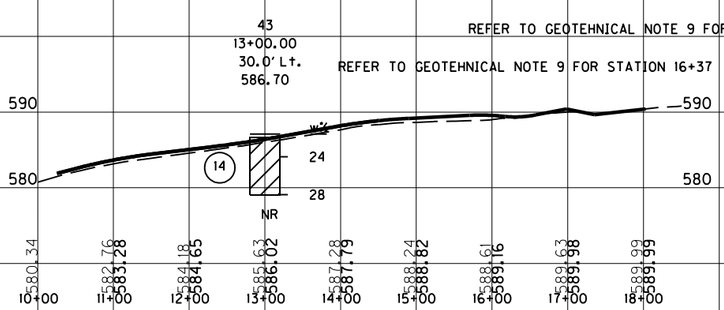
FILE NAME:
USER:
DATE PLOTTED:
E-SHEET NAME:
MicroStation v8.11.9.832

COUNTY OF	ITEM NO.	SHEET NO.
JEFFERSON	5-804.00	

SAMPLE NO.			7	14
STATION			4021+00	13+00
OFFSET			CL	30.0' Lt.
DEPTH			0.3-8.0	0.4-8.0
COMPOSITION OF TOTAL SAMPLE	GRAVEL (- 3" + NO. 10)		0	0
	SAND (- NO 10 + NO. 200)		5	3
	SILT (- 0.075 mm + 0.002 mm)		59	67
	CLAY (- 0.002 mm)		37	30
LIQUID LIMIT			45	36
PLASTIC LIMIT			23	22
PLASTICITY INDEX			22	14
ACTIVITY INDEX			0.6	0.47
SPECIFIC GRAVITY			2.61	2.57
AASHTO CLASSIFICATION			A-7-6(23)	A-6(14)
UNIFIED CLASSIFICATION			CL	CL
CALIFORNIA BEARING RATIO			-	8
MAXIMUM DRY DENSITY (pcf)			-	107
OPTIMUM MOISTURE (%)			-	18
% +4.75mm	MATERIAL IN CBR & MOISTURE-DENSITY TESTS		0	0



RAMP C



RUDY LANE

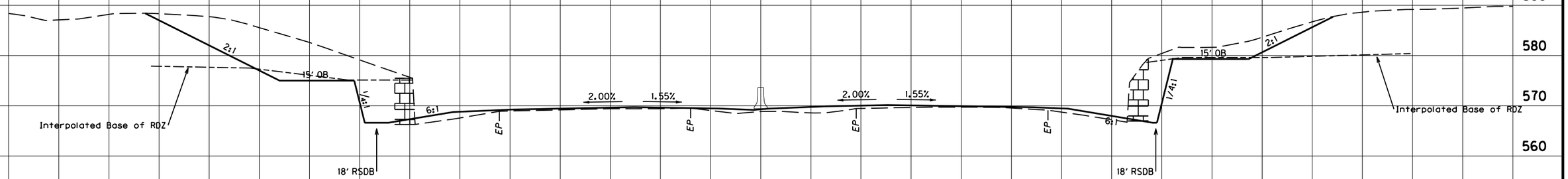
SOIL PROFILE, RAMP C & RUDY LANE

FILE NAME:
USER:
DATE PLOTTED:
E-SHEET NAME:
MicroStation v8.11.9.832

COUNTY OF	ITEM NO.	SHEET NO.
Jefferson	5-804.00	

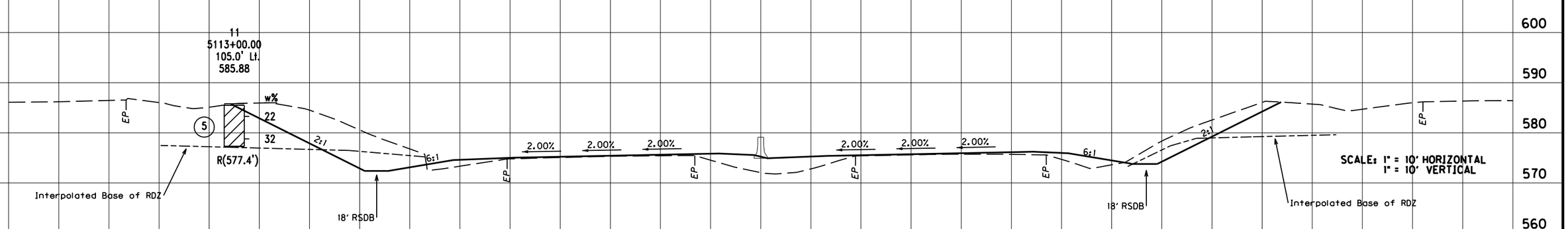
Open Face Log #2 Sta. 5117+00, Lt Side
Elev. 575.0-566.0 Limestone: brownish and medium gray, fine to medium grained, fossiliferous, thin crossbedded slabs and thick bedded.

Cut Limits from Sta. 5109+50 to Sta. 5124+50
Open Face Log #1 Sta. 5117+00, Rt Side
Elev. 579.0-567.0 Limestone: brownish and medium gray, fine to medium grained, fossiliferous, thin crossbedded slabs and thick bedded.



5117+00

Cut Limits from Sta. 5109+50 to Sta. 5124+50



5113+00

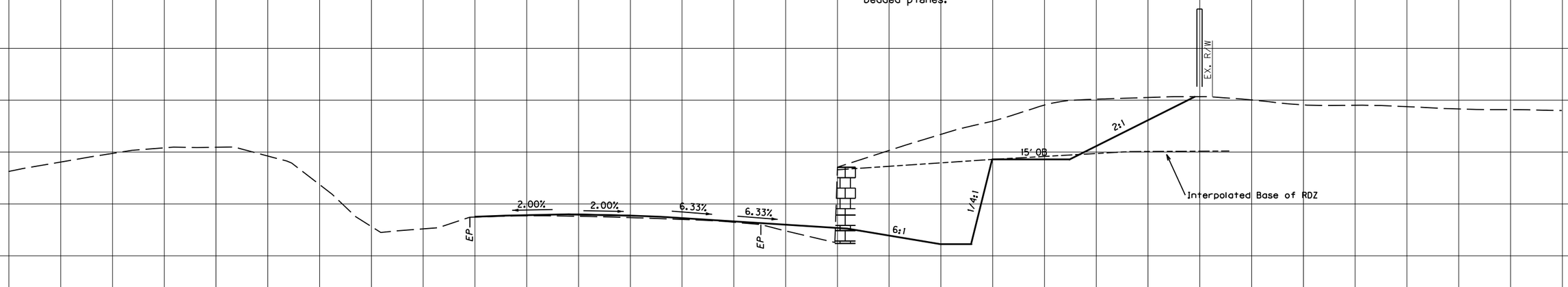
SCALE: 1" = 10' HORIZONTAL
1" = 10' VERTICAL

CUT STABILITY SECTION, I-264
STA. 5113+00 & 5117+00

FILE NAME:
USER:
DATE PLOTTED:
E-SHEET NAME:
MicroStation v8.11.9.832

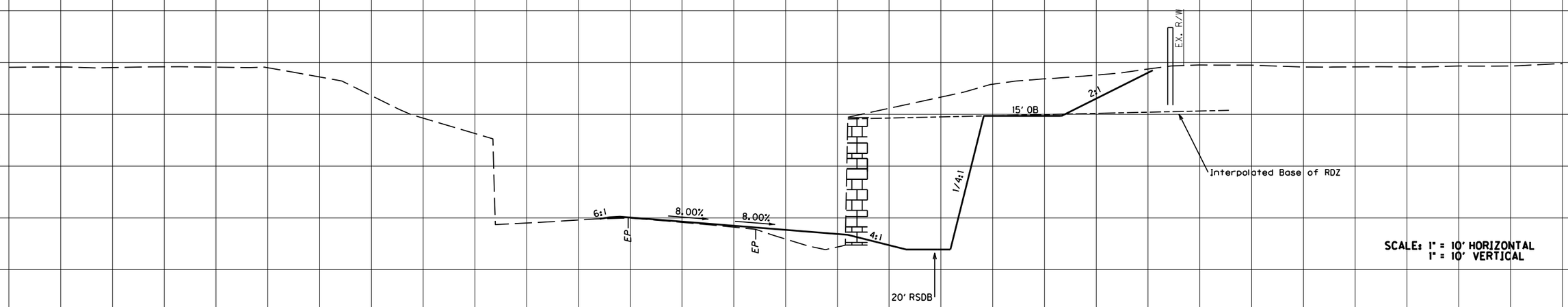
COUNTY OF	ITEM NO.	SHEET NO.
Jefferson	5-804.00	

Cut Limits from Sta. 86+50 to Sta. 100+50
Open Face Log #8 Sta. 90+00, Rt. Side
Elev. 567.0-553.0 Limestone: brownish, light, and medium gray, fine to medium grained, thick bedded seperated by horizontal bedded planes.



90+00

Cut Limits from Sta. 70+00 to Sta. 85+00
Open Face Log #7 Sta. 83+00, Rt. Side
Elev. 570.0-545.0 Limestone: brownish and medium gray, fine to medium grained, thick bedded seperated by horizontal bedded planes.



83+00

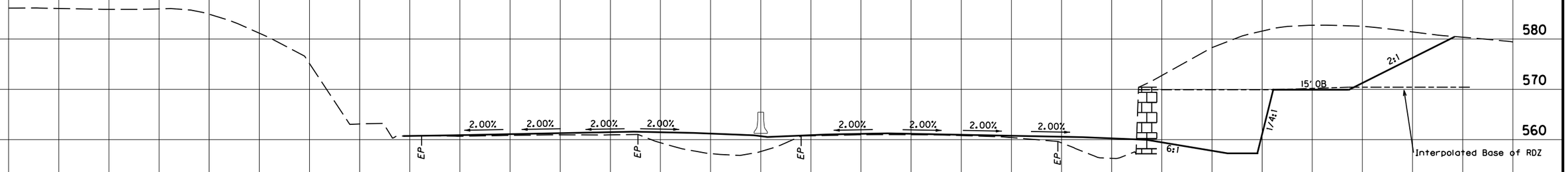
SCALE: 1" = 10' HORIZONTAL
1" = 10' VERTICAL

CUT STABILITY SECTION
I-264 EB to I-71 NB
STA. 83+00 & 90+00

FILE NAME:
USER:
DATE PLOTTED:
E-SHEET NAME:
MicroStation v8.11.9.832

COUNTY OF	ITEM NO.	SHEET NO.
Jefferson	5-804.00	

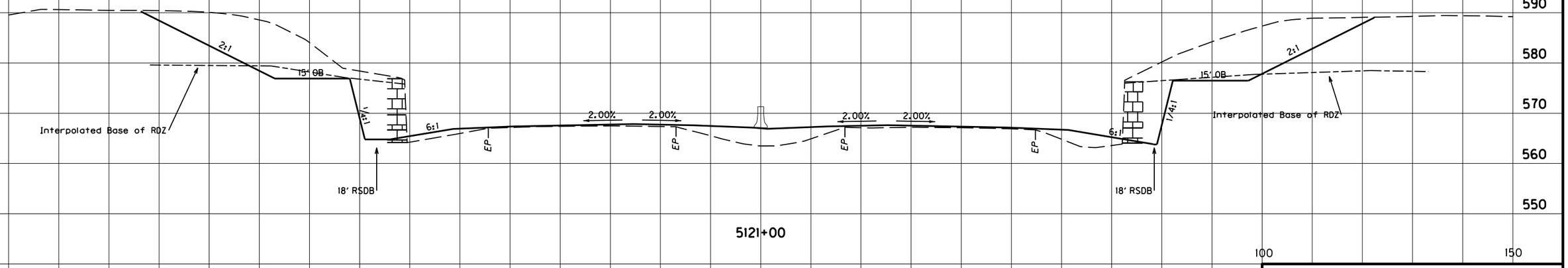
Cut Limits from Ramp H Sta. 2007+50 to Sta. 5139+50
Open Face Log #6 Sta. 5134+00, Rt Side
Elev. 570.0-558.0 Limestone: brownish and medium gray, fine to medium grained, fossiliferous, thin crossbedded slabs and thick bedded, chert layer.



5134+00

Cut Limits from Sta. 5109+50 to Sta. 5124+50
Open Face Log #3 Sta. 5121+00, Rt Side
Elev. 577.0-564.0 Limestone: brownish and medium gray, fine to medium grained, fossiliferous, thin crossbedded slabs and thick bedded, chert layer.

Open Face Log #4 Sta. 5121+00, Lt Side
Elev. 577.0-564.0 Limestone: brownish and medium gray, fine to medium grained, fossiliferous, thin crossbedded slabs and thick bedded, chert layer.



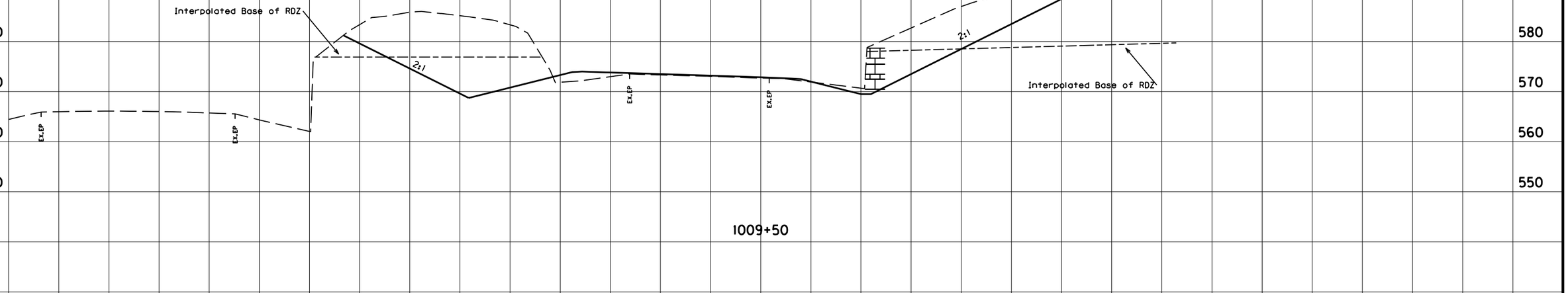
5121+00

CUT STABILITY SECTION, I-264
STA. 5121+00 & 5134+00

FILE NAME:
USER:
DATE PLOTTED:
E-SHEET NAME:
MicroStation v8.11.9.832

COUNTY OF	ITEM NO.	SHEET NO.
Jefferson	5-804.00	

Cut Limits from Sta. 1009+00 to Sta. 1012+00
Open Face Log #9 Sta. 1009+50, Rt. Side
Elev. 579.0-570.0 Limestone: brownish and medium gray, fine to medium grained, fossiliferous, thin crossbedded slabs and thick bedded, chert layer.

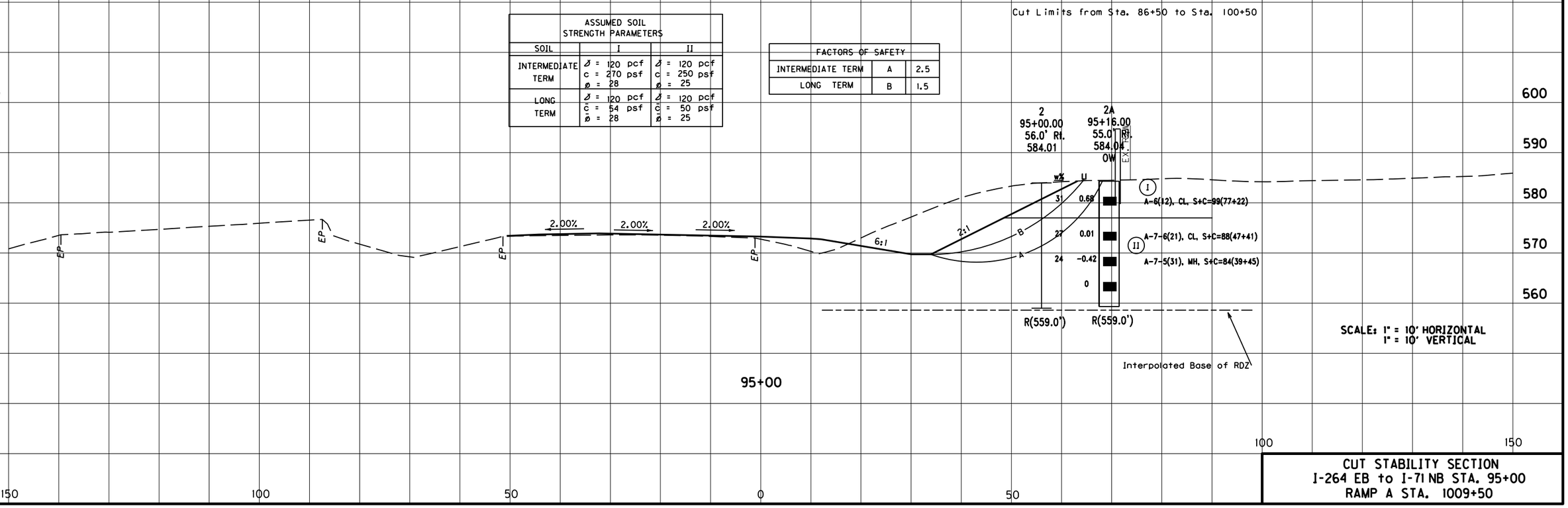


1009+50

Cut Limits from Sta. 86+50 to Sta. 100+50

ASSUMED SOIL STRENGTH PARAMETERS		
SOIL	I	II
INTERMEDIATE TERM	γ = 120 pcf c = 270 psf ϕ = 28	γ = 120 pcf c = 250 psf ϕ = 25
LONG TERM	γ = 120 pcf c = 54 psf ϕ = 28	γ = 120 pcf c = 50 psf ϕ = 25

FACTORS OF SAFETY		
INTERMEDIATE TERM	A	2.5
LONG TERM	B	1.5



95+00

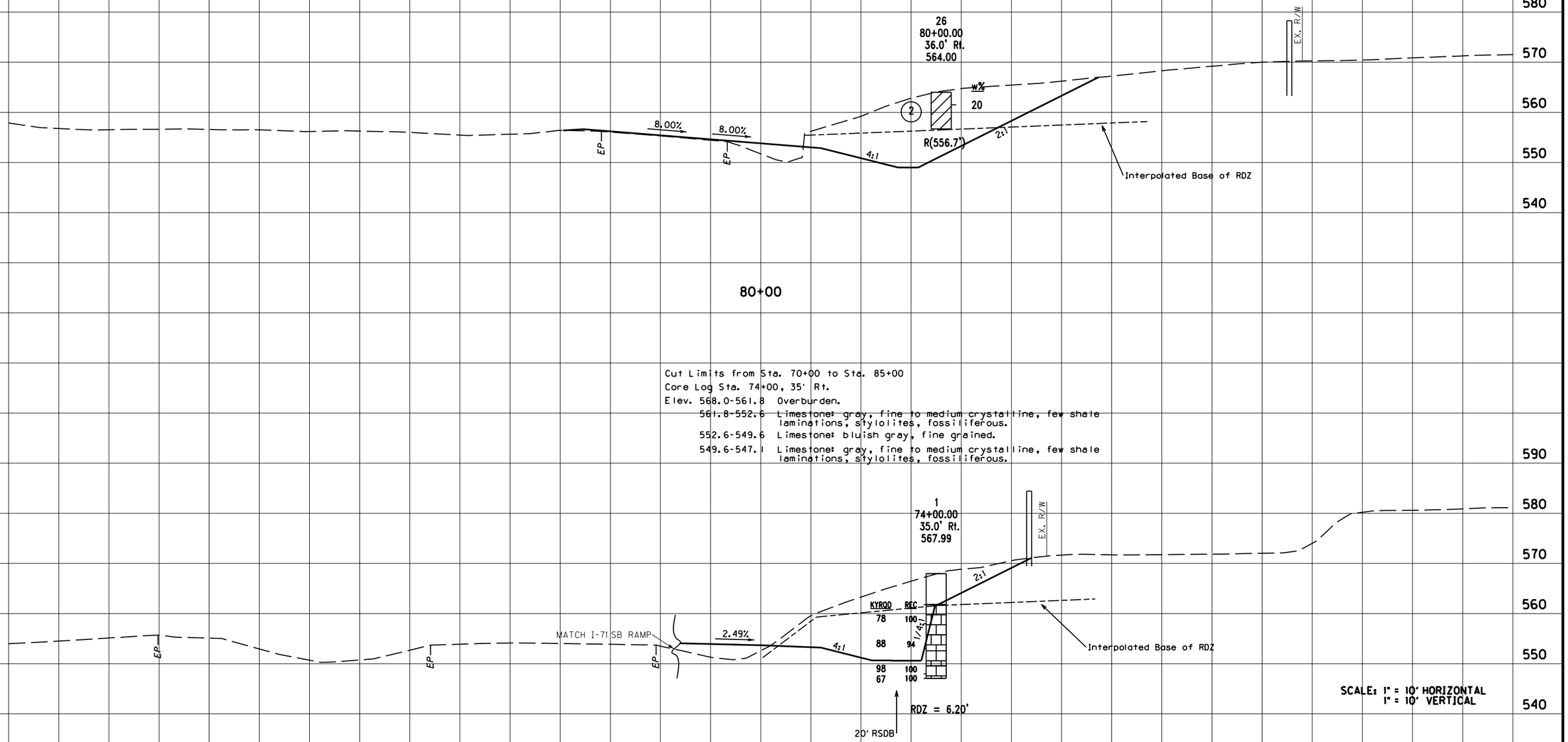
SCALE: 1" = 10' HORIZONTAL
1" = 10' VERTICAL

CUT STABILITY SECTION
I-264 EB to I-71 NB STA. 95+00
RAMP A STA. 1009+50

FILE NAME:
USER:
DATE PLOTTED:
E-SHEET NAME:
MicroStation v8.11.9.832

COUNTY OF	ITEM NO.	SHEET NO.
Jefferson	5-804.00	

Cut Limits from Sta. 70+00 to Sta. 85+00



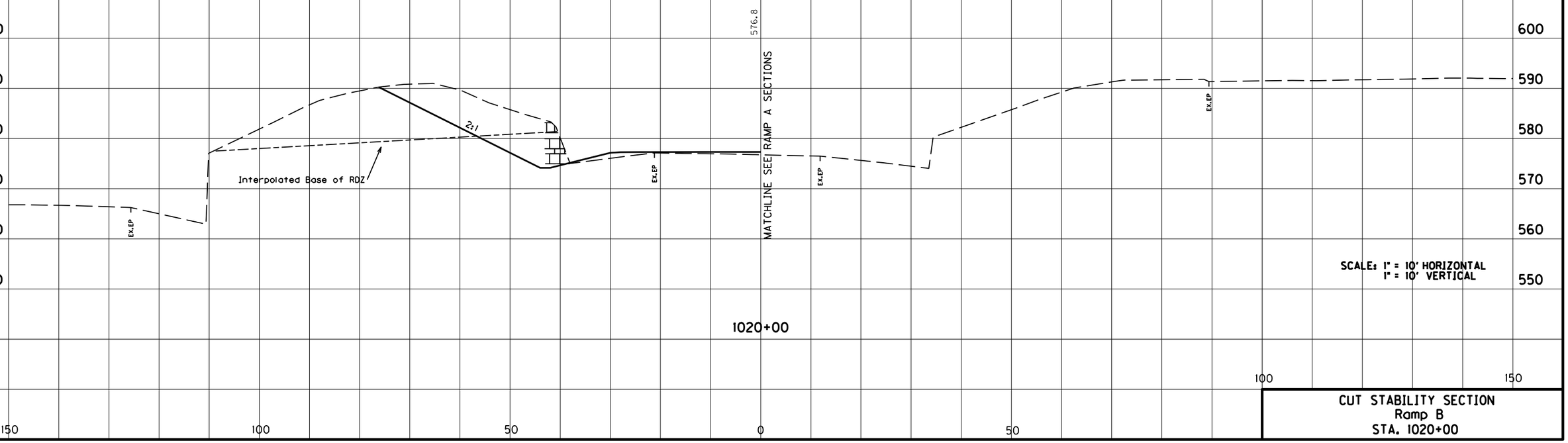
SCALE: 1" = 10' HORIZONTAL
1" = 10' VERTICAL

CUT STABILITY SECTION
I-264 EB to I-71 NB
STA. 74+00 & 80+00

FILE NAME:
USER:
DATE PLOTTED:
E-SHEET NAME:
MicroStation v8.11.9.832

COUNTY OF	ITEM NO.	SHEET NO.
Jefferson	5-804.00	

Cut Limits from Sta. 1020+00 to Sta. 1023+00
Open Face Log #10 Sta. 1020+00, Lt. Side
Elev. 583.0-575.0 Limestone: brownish and medium gray, fine to medium grained, fossiliferous, thin crossbedded slabs and thick bedded, chert layer.



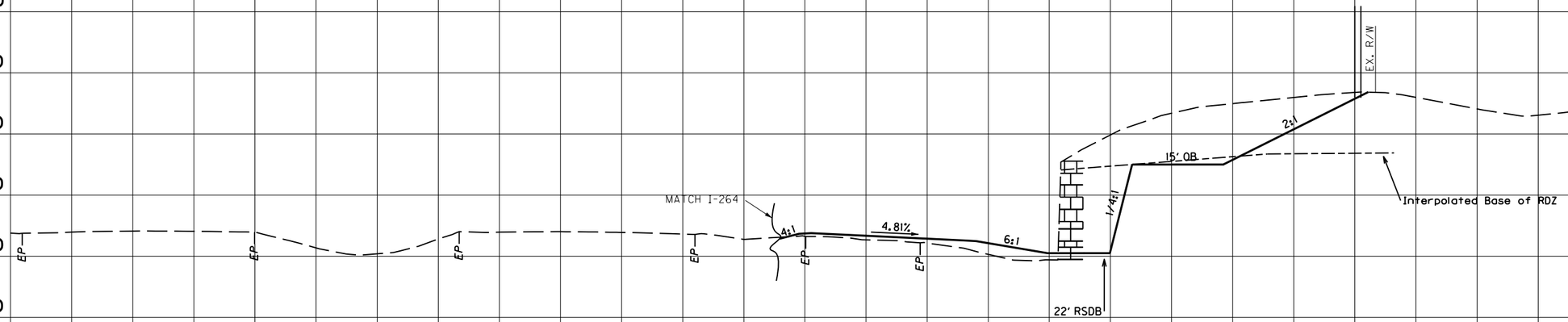
SCALE: 1" = 10' HORIZONTAL
1" = 10' VERTICAL

CUT STABILITY SECTION
Ramp B
STA. 1020+00

FILE NAME:
USER:
DATE PLOTTED:
E-SHEET NAME:
MicroStation v8.11.9.832

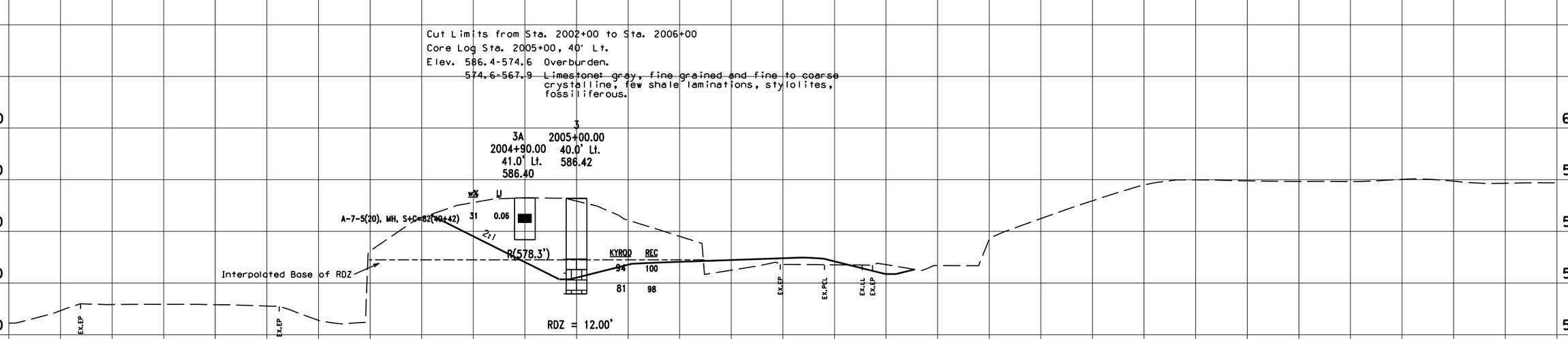
COUNTY OF	ITEM NO.	SHEET NO.
Jefferson	5-804.00	

Cut Limits from Sta. 2007+50 to I-264 Sta. 5139+50
Open Face Log #11 Sta. 2009+00, Rt. Side
Elev. 576.0-559.0 Limestone: brownish and medium gray, fine to medium grained, fossiliferous, thin crossbedded slabs and thick bedded, chert layer.



2009+00

Cut Limits from Sta. 2002+00 to Sta. 2006+00
Core Log Sta. 2005+00, 40' Lt.
Elev. 586.4-574.6 Overburden.
574.6-567.9 Limestone: gray, fine grained and fine to coarse crystalline, few shale laminations, stylolites, fossiliferous.



2005+00

SCALE: 1" = 10' HORIZONTAL
1" = 10' VERTICAL

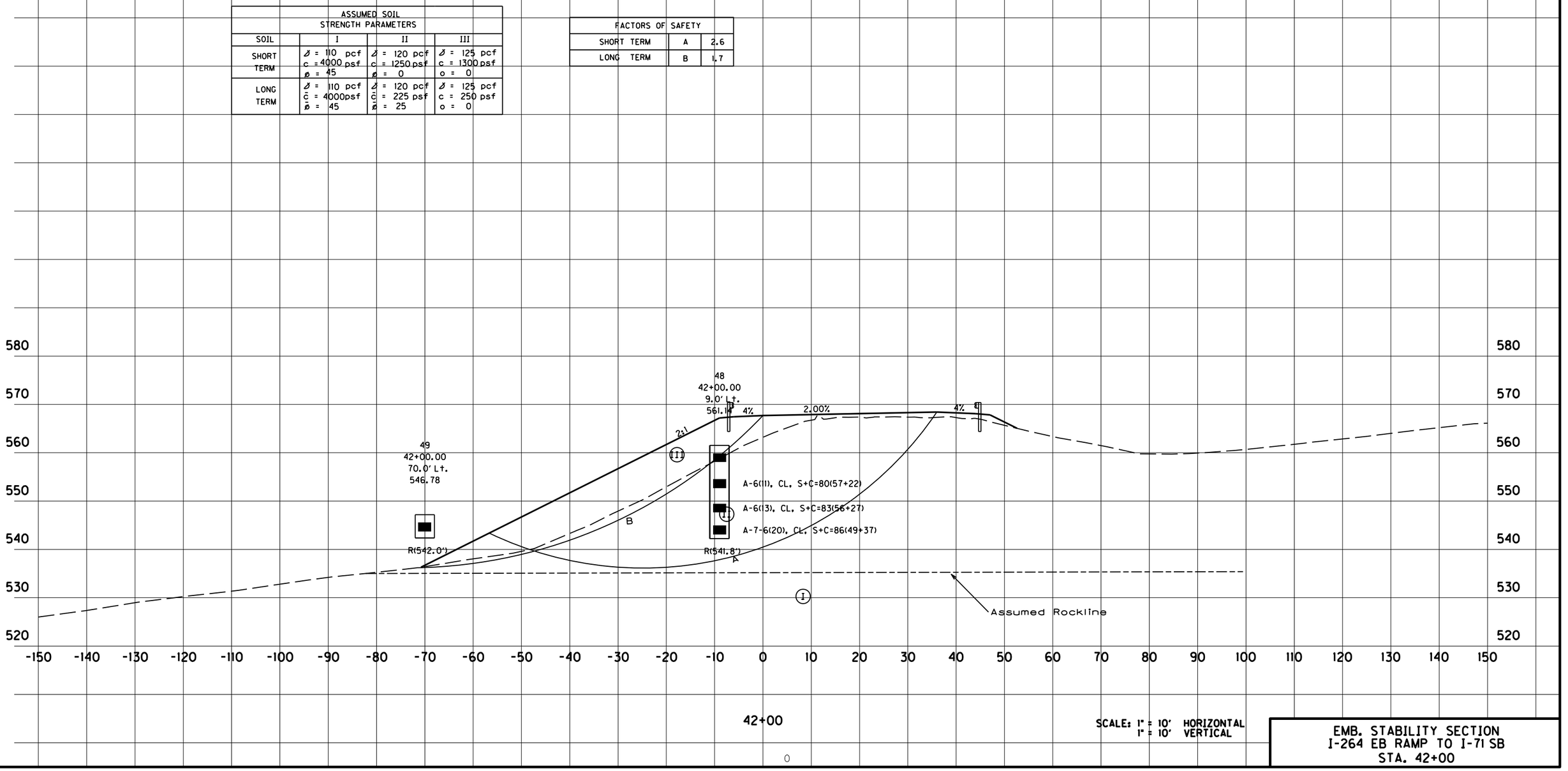
CUT STABILITY SECTION
RAMP H
STA. 2005+00 & 2009+00

FILE NAME:
USER:
DATE PLOTTED:
E-SHEET NAME:
MicroStation v8.11.9.832

COUNTY OF	ITEM NO.	SHEET NO.

ASSUMED SOIL STRENGTH PARAMETERS			
SOIL	I	II	III
SHORT TERM	γ = 110 pcf c = 4000 psf ϕ = 45	γ = 120 pcf c = 1250 psf ϕ = 0	γ = 125 pcf c = 1300 psf ϕ = 0
LONG TERM	γ = 110 pcf c = 4000psf ϕ = 45	γ = 120 pcf c = 225 psf ϕ = 25	γ = 125 pcf c = 250 psf ϕ = 0

FACTORS OF SAFETY		
SHORT TERM	A	2.6
LONG TERM	B	1.7



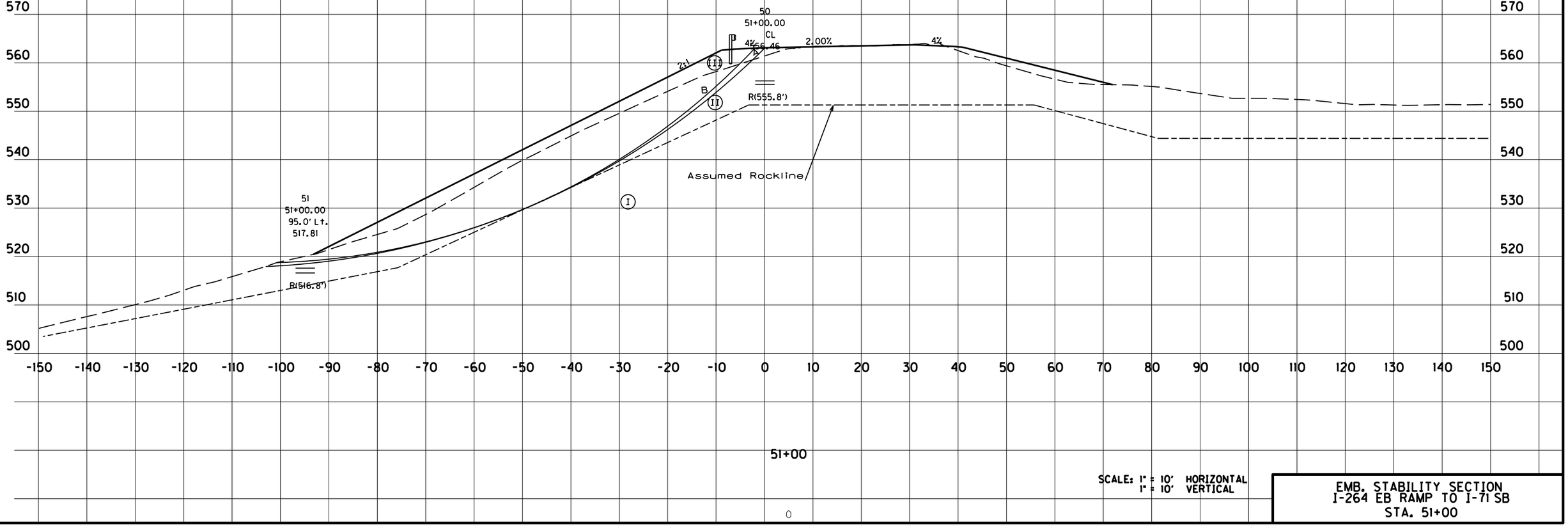
SCALE: 1" = 10' HORIZONTAL
1" = 10' VERTICAL

EMB. STABILITY SECTION
I-264 EB RAMP TO I-71 SB
STA. 42+00

COUNTY OF	ITEM NO.	SHEET NO.

ASSUMED SOIL STRENGTH PARAMETERS			
SOIL	I	II	III
SHORT TERM	γ = 110 pcf c = 5000 psf ϕ = 50	γ = 120 pcf c = 1250 psf ϕ = 0	γ = 125 pcf c = 1300 psf ϕ = 0
LONG TERM	γ = 110 pcf $\bar{c}$ = 5000 psf $\bar{\phi}$ = 50	γ = 120 pcf $\bar{c}$ = 225 psf $\bar{\phi}$ = 25	γ = 125 pcf c = 250 psf ϕ = 25

FACTORS OF SAFETY		
SHORT TERM	A	5.9
LONG TERM	B	2.0



SCALE: 1" = 10' HORIZONTAL
1" = 10' VERTICAL

EMB. STABILITY SECTION
I-264 EB RAMP TO I-71 SB
STA. 51+00

COORDINATE DATA SUBMISSION FORM
KYTC DIVISION OF STRUCTURAL DESIGN -- GEOTECHNICAL BRANCH

County Jefferson

Date 4/6/2018

Road Number I-264 / US 42 Interchange

Survey Crew / Consultant Palmer Engineeing

Contact Person David Shain

Item # 5-804.00

Mars #

Project # FD52 056 0264 021-023

Notes:

Elevation Datum = NAVD88

HOLE NUMBER	LATITUDE (Decimal Degrees)	NORTHING	LONGITUDE (Decimal Degrees)	EASTING	HOLE NUMBER	ALIGNMENT	STATION	OFFSET	ELEVATION (ft)
1	38.2861521	3991909.016	-85.6428964	4951990.912	1	I-264 EB TO I-71 NB	74+00	35' RT	567.989
2	38.2906794	3993558.179	-85.6413571	4952430.788	2	I-264 EB TO I-71 NB	95+00	56' RT	584.006
2A	38.29070640	3993568.013	-85.64131680	4952442.355	2A	I-264 EB TO I-71 NB	95+16	55' RT	584.038
3	38.2811641	3990094.546	-85.6372312	4953619.117	3	US 42 RAMP H	2005+00	40' LT	586.421
3A	38.28114331	3990086.983	-85.63721182	4953624.703	3A	US 42 RAMP H	2004+90	41' LT	586.421
4	38.2720125	3986764.924	-85.6290505	4955971.632	4	I-264	5083+00	75' LT	575.449
5	38.2728847	3987082.215	-85.6298977	4955728.013	5	I-264	5087+00	85' LT	578.829
6	38.2737507	3987397.254	-85.6307583	4955480.565	6	I-264	5091+00	100' LT	578.336
7	38.2746457	3987722.871	-85.6315641	4955248.827	7	I-264	5095+00	95' LT	581.23
8	38.2758243	3988151.944	-85.6318766	4955158.565	8	I-264	5099+00	85' RT	583.305
9	38.2778136	3988875.664	-85.6337511	4954619.574	9	I-264	5108+00	80' RT	584.648
10	38.2784726	3989115.410	-85.6343908	4954435.657	10	I-264	5111+00	85' RT	582.923
11	38.2785627	3989147.900	-85.6353447	4954161.781	11	I-264	5113+00	105' LT	585.882
12	38.2789846	3989301.394	-85.6357810	4954036.364	12	I-264	5115+00	100' LT	585.991
13	38.2797956	3989596.757	-85.6356642	4954069.546	13	I-264	5117+00	120' RT	588.531
14	38.2803941	3989814.447	-85.6363919	4953860.391	14	I-264	5120+00	108' RT	587.832
15	38.2808084	3989965.167	-85.6368415	4953731.156	15	I-264	5122+00	110' RT	588.939
16	38.2813750	3990171.233	-85.6376056	4953511.560	16	I-264	5125+00	80' RT	561.453
17	38.2821029	3990436.115	-85.6381396	4953357.976	17	I-264	5128+00	140' RT	585.767
18	38.2826711	3990642.751	-85.6389102	4953136.543	18	I-264	5131+02	111' RT	582.465
19	38.2832788	3990863.814	-85.6396143	4952934.167	19	I-264	5134+00	105' RT	582.472
20	38.2836713	3991006.558	-85.6401063	4952792.783	20	I-264	5136+00	95' RT	577.905
21	38.2842745	3991225.980	-85.6408263	4952585.870	21	I-264	5139+03	86' RT	555.04
22	38.2850955	3991524.644	-85.6417372	4952324.072	22	I-264	5143+00	90' RT	548.286
23	38.2859204	3991824.721	-85.6427175	4952042.340	23	I-264 EB TO I-71 NB	73+02	17' RT	560.604
24	38.2863702	3991988.364	-85.6431137	4951928.457	24	I-264 EB TO I-71 NB	75+00	41' RT	566.57
25	38.2869910	3992214.247	-85.6437629	4951741.868	25	I-264 EB TO I-71 NB	78+00	5' RT	551.301
26	38.2875297	3992410.388	-85.6438616	4951713.295	26	I-264 EB TO I-71 NB	80+00	36' RT	563.997
27	38.2880540	3992601.272	-85.6439116	4951698.741	27	I-264 EB TO I-71 NB	82+00	38' RT	576.763
28	38.2885733	3992790.430	-85.6438178	4951725.447	28	I-264 EB TO I-71 NB	84+00	40' RT	564.348
29	38.2893521	3993074.100	-85.6435409	4951804.606	29	I-264 EB TO I-71 NB	87+00	3' RT	540.206
30	38.2897025	3993201.874	-85.6430055	4951958.122	30	I-264 EB TO I-71 NB	89+00	45' RT	574.596
31	38.2900158	3993316.160	-85.6424662	4952112.753	31	I-264 EB TO I-71 NB	91+00	58' RT	585.321
32	38.2905147	3993498.118	-85.6416330	4952351.692	32	I-264 EB TO I-71 NB	94+00	58' RT	583.416
33	38.2910161	3993680.971	-85.6408110	4952587.389	33	I-264 EB TO I-71 NB	97+00	52' RT	583.958
34	38.2869034	3992182.115	-85.6444420	4951546.972	34	I-264 EB TO I-71 SB	39+00	52' LT	539.535
35	38.2879348	3992557.347	-85.6455899	4951217.095	35	I-264 EB TO I-71 SB	44+00	38' LT	556.156
36	38.2890662	3992968.857	-85.6471147	4950779.003	36	I-264 EB TO I-71 SB	50+00	78' LT	528.626
37	38.2685843	3985517.564	-85.6263270	4956755.150	37	WESTPORT RD	16+97	12' RT	559.159
38	38.2680622	3985327.516	-85.6260770	4956827.173	38	WESTPORT RD	19+00	20' RT	563.847
39	38.2675555	3985143.113	-85.6258075	4956904.767	39	WESTPORT RD	21+00	20' RT	561.002
40	38.2667934	3984865.737	-85.6254101	4957019.231	40	WESTPORT RD	24+00	22' RT	556.834
41	38.2769101	3988547.024	-85.6327900	4954895.877	41	US 42 RAMP E	3003+48	27' RT	585.164
42-REV	38.27784182	3988886.037	-85.63352288	4954685.076	42-REV	US 42 RAMP E	3007+47	28' RT	583.468
43	38.2775197	3988767.382	-85.6373574	4953584.515	43	RUDY LANE	13+00	30' LT	586.7
44	38.2792083	3989382.533	-85.6367153	4953768.070	44	US 42 RAMP C	4021+00	CL	587.722
45	38.2777771	3988862.062	-85.6346809	4954352.700	45	US 42 RAMP D	4009+00	8' RT	581.84
46	38.2771868	3988647.369	-85.6339512	4954562.413	46	US 42 RAMP D	4012+00	CL	581.127
47	38.2811641	3990094.546	-85.6372312	4953619.117	47	US 42 RAMP H	2005+00	40' LT	586.421
48-REV	38.28755278	3992418.375	-85.64508131	4951363.223	48-REV	I-264 EB TO I-71 SB	41+98	26' LT	556.113
49	38.2874731	3992389.343	-85.6451982	4951329.700	49	I-264 EB TO I-71 SB	42+00	70' LT	546.782
50	38.2894089	3993093.634	-85.6471507	4950768.531	50	I-264 EB TO I-71 SB	51+00	CL	556.464
51	38.2892365	3993030.790	-85.6473895	4950700.059	51	I-264 EB TO I-71 SB	51+00	95' LT	517.808