

MEMORANDUM

(R-011-2022)

TO: Bob Yeager, PE
Executive Director
District 6, Covington, KY

FROM: Adam Ross, PE
Geotechnical Services Branch Manager
Division of Structural Design

BY: J.C. Wilhoite, PE
Geotechnical Services Branch

DATE: October 18, 2022

SUBJECT: Campbell County
KY 6335
Station 8+00 to 143+00
Item # 06-5011.00
Mars # 1523901D
Project # FD04 019 6335 001-005 D
Geotechnical Engineering Roadway and Landslide Report

Location and Description

At the request of the District, the Geotechnical Services Branch has investigated the subject landslide area. The subject area extends along KY 6335 (Mary Ingles Highway) for approximately 2.9 miles from just North of the KY 445 intersection to just South of the CSX Railroad crossing in Campbell County. This report addresses the slope failures east (downhill) of KY 6335.

Drilling Summary

The Geotechnical Services Branch staff made numerous site visits in order to assess the condition of the roadway, mark stationing along the road, and determine sounding locations. A KYTC drill crew performed soundings at 101 locations designated by the Geotechnical Services Branch staff. The rockline information gained from these soundings is included on the attached drawings.

Landslide Mitigation and Repair

After the site assessment, the repair project was broken up into 17 individual landslides. Each landslide is noted on the chart below and marked on the attached drawings. Repair recommendations using recycled railroad rails of varying length, configuration, and spacing are shown on the chart below. For quantity estimation purposes, we recommend assuming 113,000LF of Railroad Rails – Drilled.

Slide No.	Begin Station	End Station	Rail Length (Feet)	Spacing (Inches)	Row Type	No. of Rails	
1	9+00	11+95	20	36	Single	100	
2	14+19	16+00	30	32	Double	135	
	16+00	19+45	20	36	Single	117	
3	24+00	29+67	20	36	Single	189	
4	30+00	30+86	20	48	Single	22	
5	33+00	38+84	20	48	Single	146	
6	43+00	45+60	20	48	Single	65	
7	47+54	50+33	20	48	Single	70	
8	51+60	52+25	20	48	Single	17	
9	56+58	58+00	20	48	Single	36	
10	59+00	60+80	40	24	Triple	270	
11	67+00	68+00	Repair existing soil nail wall				
12	74+93	79+15	20	24	Single	211	
	79+15	82+30	40	24	Triple	473	
	82+30	87+27	30	24	Double	497	
13	90+00	91+00	30	24	Single	50	
14	92+43	96+00	30	24	Double	357	
15	113+00	114+00	40	24	Triple	150	
16	121+50	123+00	40	24	Triple	225	
	123+00	124+50	20	48	Single	38	
	124+50	126+50	30	36	Double	134	
	126+50	128+00	20	48	Single	38	
17	130+60	136+50	20	36	Single	197	
	136+50	142+25	30	30	Double	220	
	143+00	145+75	20	48	Single	69	

In addition to the rail installation, we recommend repairing an existing soil nail wall. The location of the damaged wall is along the west side of the roadway from approximate station 67+00 to 68+00. The material below the wall has subsided/eroded which has allowed the material behind the wall to erode. At the time of this report, there is a gap between the face of the wall and the retained material. In order to mitigate further loss of material, we recommend placing crushed stone aggregate underlain with geotextile fabric – class 1 from the 2 feet above the base of the wall to the existing groundline. The maximum steepness of the aggregate shall be 2H:1V. The void behind the wall face shall be filled with flowable fill.

The ditchline along the western edge of the roadway has deteriorated and is not providing a proper drainage path at numerous locations. We recommend redressing the ditchline along the entire roadway at any location where the ditch is blocked or doesn't provide proper drainage. Material excavated from the ditch must be disposed of offsite. Do not allow disposal of material on the downhill side slope.

Drainage pipes and culverts were noted at the following approximate locations. At the time of observation, 13 of the 18 culverts were blocked or damaged. We recommend replacing, repairing, and/or inspecting the culverts to ensure proper drainage during this landslide repair project.

Mainline

Station 12+75	Blocked
Station 20+00	Blocked
Station 29+77	Open
Station 37+94	Blocked
Station 50+93	Open
Station 59+45	Blocked
Station 71+73	Open
Station 79+80	Blocked
Station 81+48	Blocked
Station 88+82	Open
Station 90+76	Blocked
Station 95+22	Blocked
Station 102+87	Blocked
Station 105+27	Blocked
Station 107+18	Blocked
Station 128+47	Open
Station 134+65	Blocked
Station 137+00	Blocked

GEOTECHNICAL RECOMMENDATIONS:

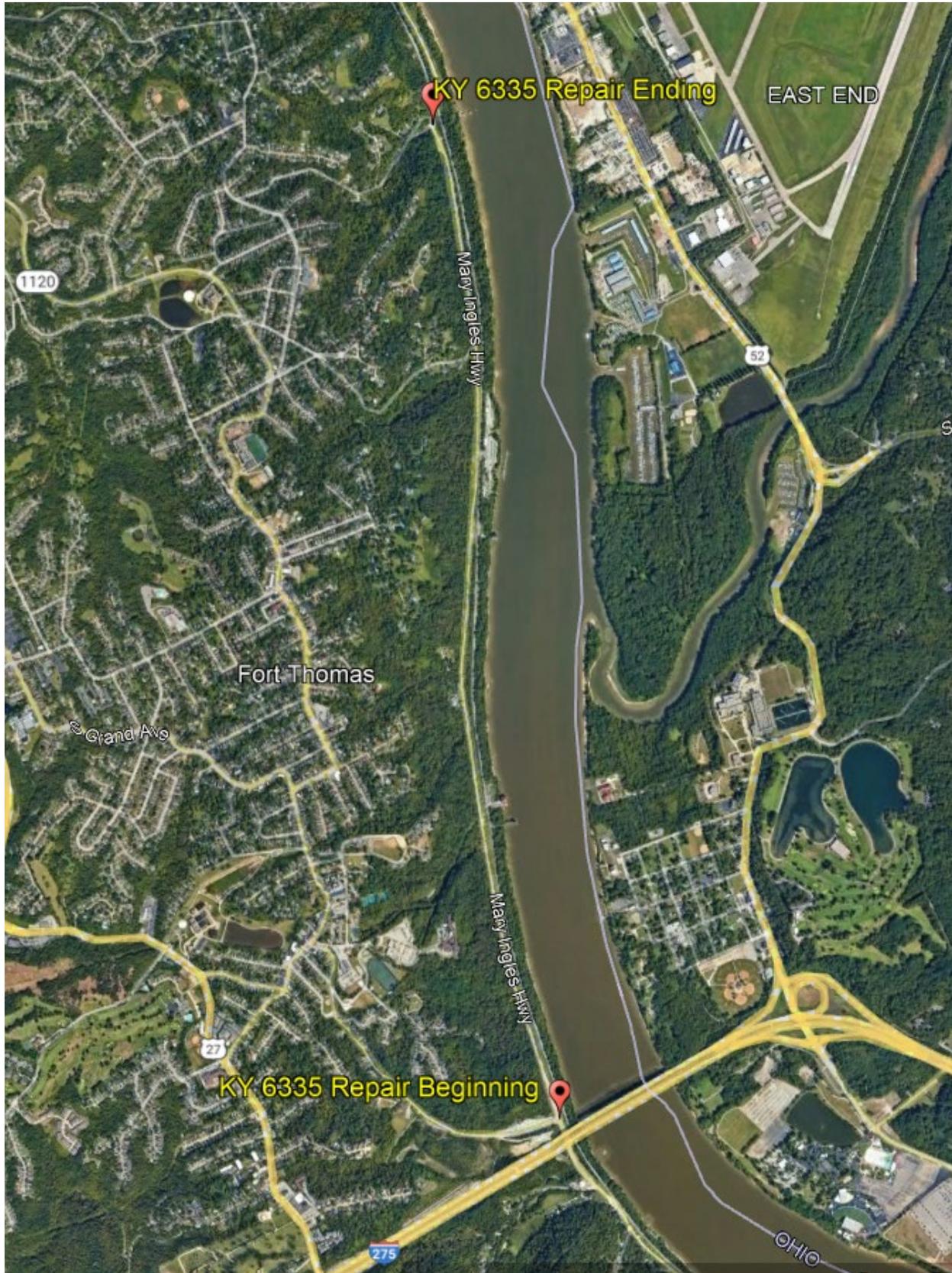
- 1.) Install recycled railroad rails as indicated on the attached drawings. Rail spacing should be as indicated with a minimum spacing of **2.0 feet** and a maximum spacing of **4.0 feet** center to center. The second and third row of rails should be set back 2' from the previous row as shown on the typical drawing attached. The distance from center line for installation of the rails will be determined by the Engineer. **The length of rail shall be as indicated on the attached drawings.**
- 2.) Install Recycled Drilled-In (Used) Railroad Rails classified with a nominal weight of **136 lbs/yd. or greater**. Use only visibly straight Recycled Railroad Rails with no splices. The Engineer will verify rail nominal weights (Manufacturer's Stamp with lbs/yd., date, etc.). Provide certification for nominal weight if the Manufacturer's Stamp is unidentifiable. Install the flanges of the rails positioned parallel to the centerline of the roadway. Immediately after installing Railroad Rail, backfill the drilled socket with one of the following materials: high slump concrete; grout; or flowable fill.
- 3.) Rails should be installed to a height of 1 foot below the roadway level or as instructed by the Engineer.
- 4.) Install lagging as directed by the engineer. If installed along a double or triple row, the

lagging shall be placed along the row furthest from centerline. Lagging could consist of concrete panels, recycled (used) steel “W” beam guardrail, or timber lagging. Use Kentucky Coarse Aggregate Nos. 2’s, 3’s, or 23’s meeting the requirements of Sections 703 and 805 of the Standard Specifications for Road and Bridge Construction (Current Edition) for backfill behind the lagging. Positive drainage must be maintained behind the lagging. Place Geotextile Fabric Class 2, in accordance with Section 214 & 843 of the Standard Specifications for Road and Bridge Construction, current edition, between the aggregate and soil interface.

- 5.) Repair surface drainage ditches along the side of the roadway. Use care as to not damage existing utilities located near the proposed ditch. Excavated material must be disposed of offsite or as directed by the Engineer.
- 6.) Clean out, repair, and/or replace existing pipes/culverts as directed by the Engineer.
- 7.) Repair the soil nail wall at the following approximate station interval. Place Kentucky Coarse Aggregate No. 2, 3, or 23 underlain with Class 1 Geotextile Fabric 2 feet above the base of the wall to the existing groundline. The maximum steepness of the slope shall be 2H:1V. Backfill the void between the wall face and the existing embankment material with flowable fill.

Mainline

Station 67+00 to 68+00



Project Site Map

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)			
	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				
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	41 min
Plasticity Index	6 max	N.P.	10 max	10 max	11 min	11 min	10 max	10 max	11 min	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 Inclinator 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)
- φ̄ Angle of Internal Friction (Effective Stress)
- c (psf) Cohesion (Total Stress)
- c̄ (psf) Cohesion (Effective Stress)
- γ (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)	

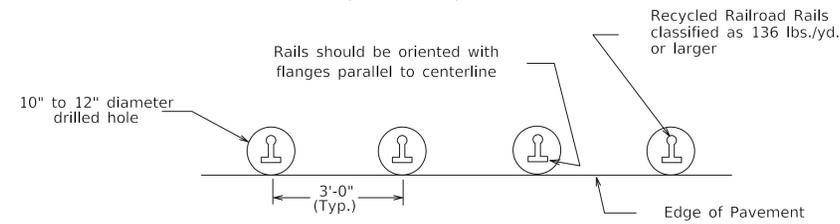
- LIMESTONE
- SANDSTONE
- DURABLE SHALE (SDI ≥ 95)
- NONDURABLE SHALE (SDI < 95)
- GRANULAR EMBANKMENT
- STRUCTURE GRANULAR BACKFILL
- TALUS, MINE WASTE, FILL MATERIAL, BOULDERS, & ETC.
- COAL
- DOLOMITE
- LIMESTONE (ARGILLACEOUS)
- SLOPE PROTECTION

TYPICAL PLAN VIEW

(NO SCALE)

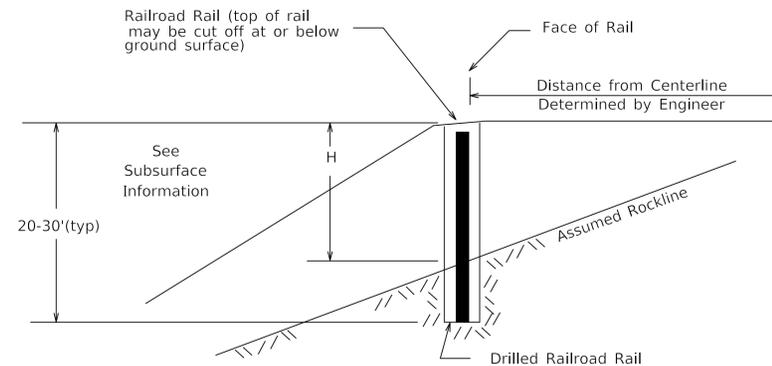
TYPICAL SPACING DETAIL - SINGLE ROW

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TYPICAL CROSS SECTION DETAIL - SINGLE ROW

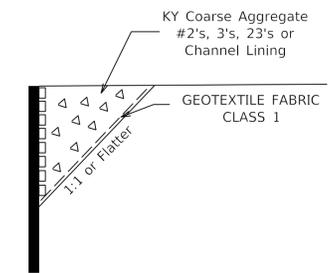
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TYPICAL CROSS SECTION WITH BACKFILL

(Use with Single, Double, or Triple Row)

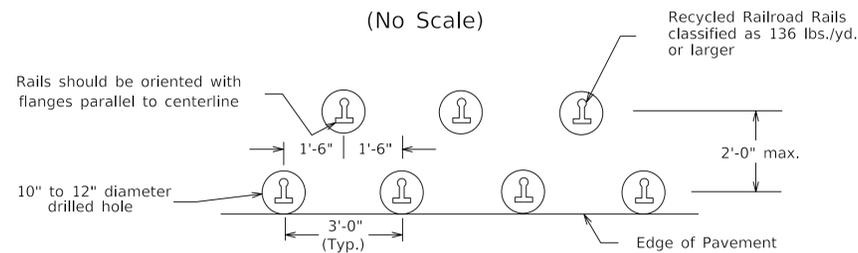
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GEOTECHNICAL NOTES

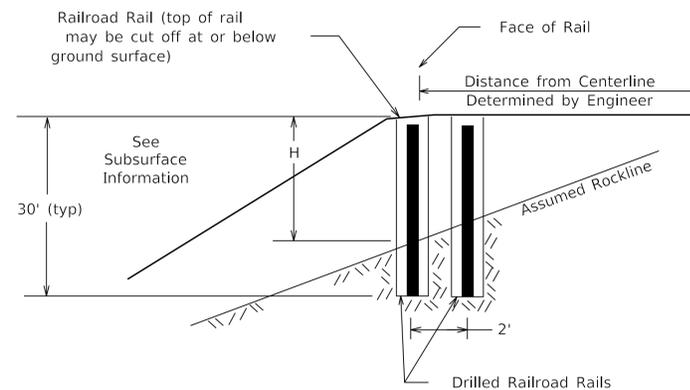
TYPICAL SPACING DETAIL - DOUBLE ROW

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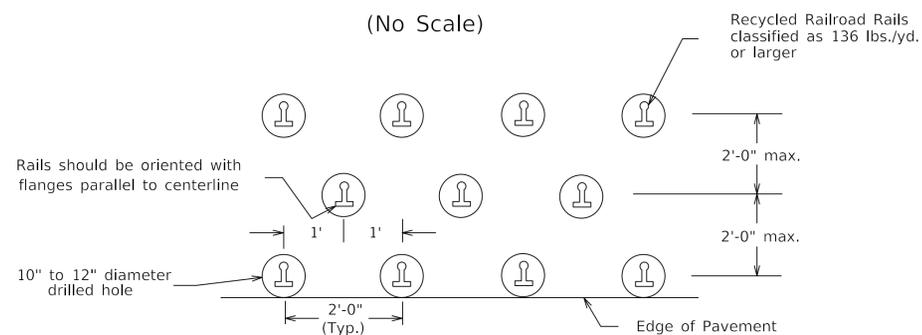
TYPICAL CROSS SECTION DETAIL - DOUBLE ROW

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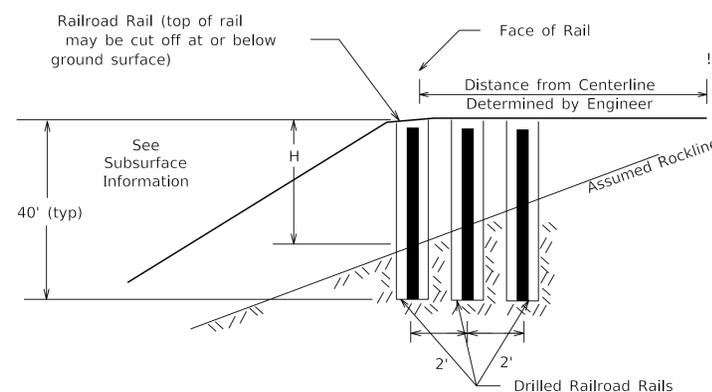
TYPICAL SPACING DETAIL - TRIPLE ROW

(No Scale)



TYPICAL CROSS SECTION DETAIL - TRIPLE ROW

(No Scale)



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Mainline
Station 67+00 to 68+00



COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS



REVISION	DATE

PREPARED BY
Division of Structural Design
Geotechnical Branch

DATE:	CHECKED BY:
DESIGNED BY:	
DETAILED BY:	

GEOTECHNICAL NOTES SHEET
RAILROAD RAIL TYPICALS

ROUTE
KY 6335

ITEM NO.
06-5011.00
SHEET NO.

COUNTY OF
CAMPBELL
DRAWING NUMBER
R-011-2022

Field Drilling and Sampling were performed in July & August of 2022.

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

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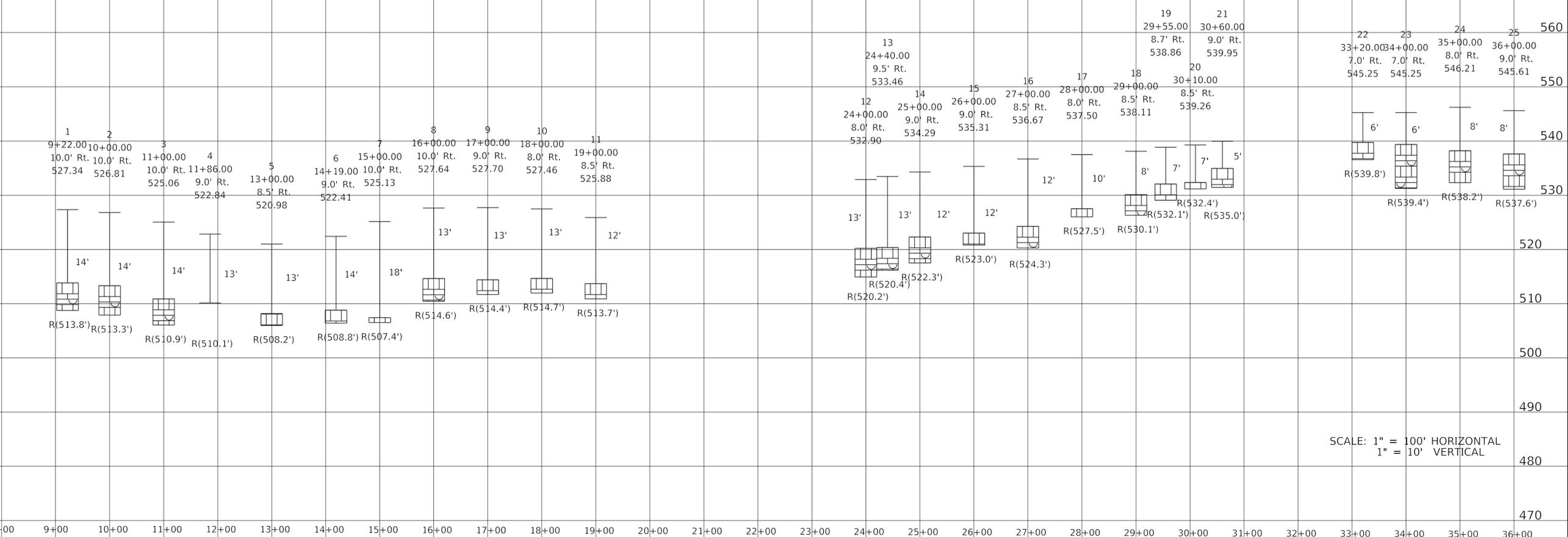
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Slide No.	Begin Station	End Station	Rail Length (Feet)	Spacing (Inches)	Row Type
1	9+00	11+95	20	36	Single
2	14+19	16+00	30	32	Double
	16+00	19+45	20	36	Single
3	24+00	29+67	20	36	Single
4	30+00	30+86	20	48	Single
5	33+00	38+84	20	48	Single

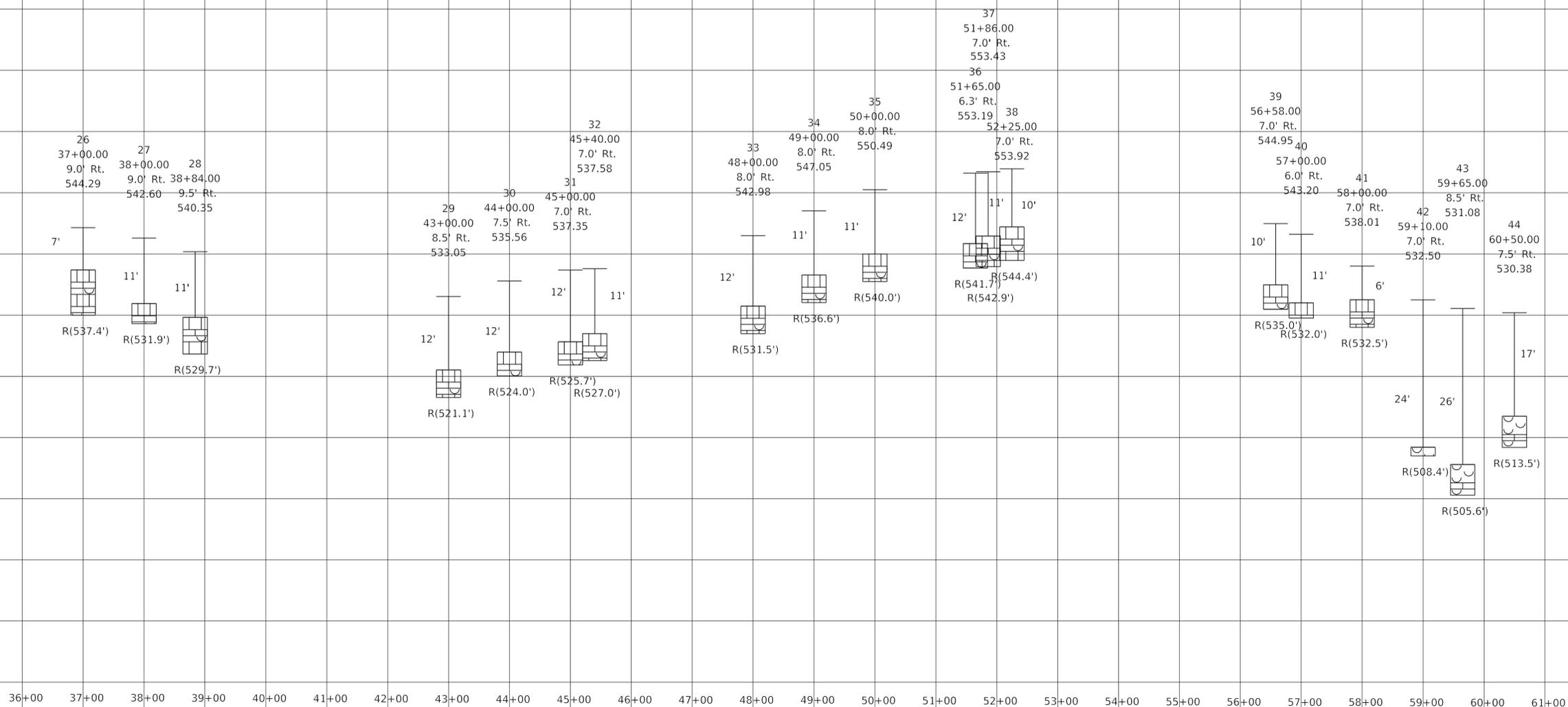


SCALE: 1" = 100' HORIZONTAL
1" = 10' VERTICAL

Slide No.	Begin Station	End Station	Rail Length (Feet)	Spacing (Inches)	Row Type
6	43+00	45+60	20	48	Single
7	47+54	50+33	20	48	Single
8	51+60	52+25	20	48	Single
9	56+58	58+00	20	48	Single
10	59+00	60+80	40	24	Triple

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

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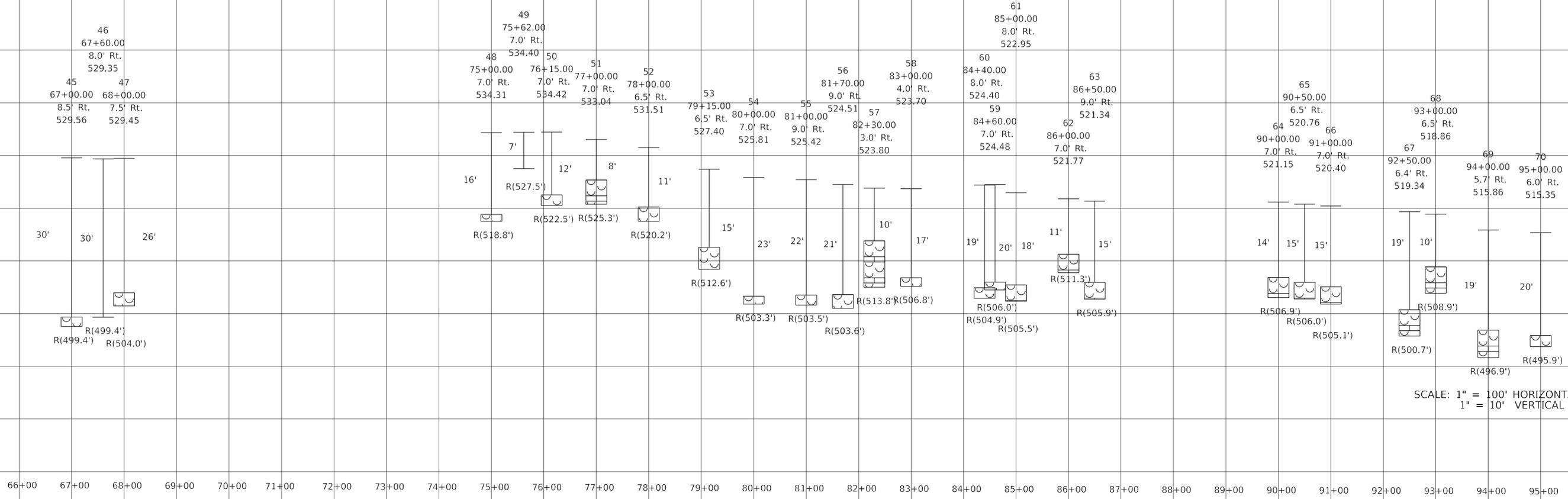
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Slide No.	Begin Station	End Station	Rail Length (Feet)	Spacing (Inches)	Row Type
12	74+93	79+15	20	24	Single
	79+15	82+30	40	24	Triple
	82+30	87+27	30	24	Double
13	90+00	91+00	30	24	Single
14	92+43	96+00	30	24	Double

REFER TO GEOTECHNICAL NOTE 7 FOR STATION 67+00 TO 68+00



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

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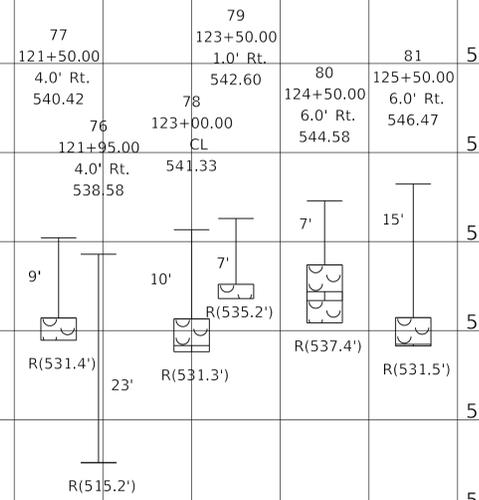
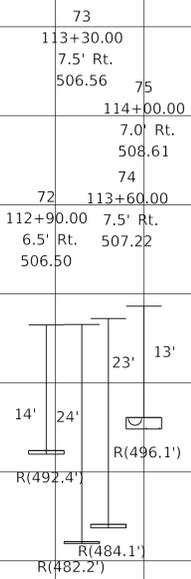
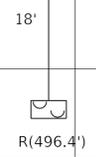
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96+00 97+00 98+00 99+00 100+00 101+00 102+00 103+00 104+00 105+00 106+00 107+00 108+00 109+00 110+00 111+00 112+00 113+00 114+00 115+00 116+00 117+00 118+00 119+00 120+00 121+00 122+00 123+00 124+00 125+00 126+00

Slide No.	Begin Station	End Station	Rail Length (Feet)	Spacing (Inches)	Row Type
15	113+00	114+00	40	24	Triple
16	121+50	123+00	40	24	Triple
	123+00	124+50	20	48	Single
	124+50	126+50	30	36	Double
	126+50	128+00	20	48	Single

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98+70.00
5.5' Rt.
514.64



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

Slide No.	Begin Station	End Station	Rail Length (Feet)	Spacing (Inches)	Row Type	No. of Rails
17	130+60	136+50	20	36	Single	197
	136+50	142+25	30	30	Double	220
	143+00	145+75	20	48	Single	69

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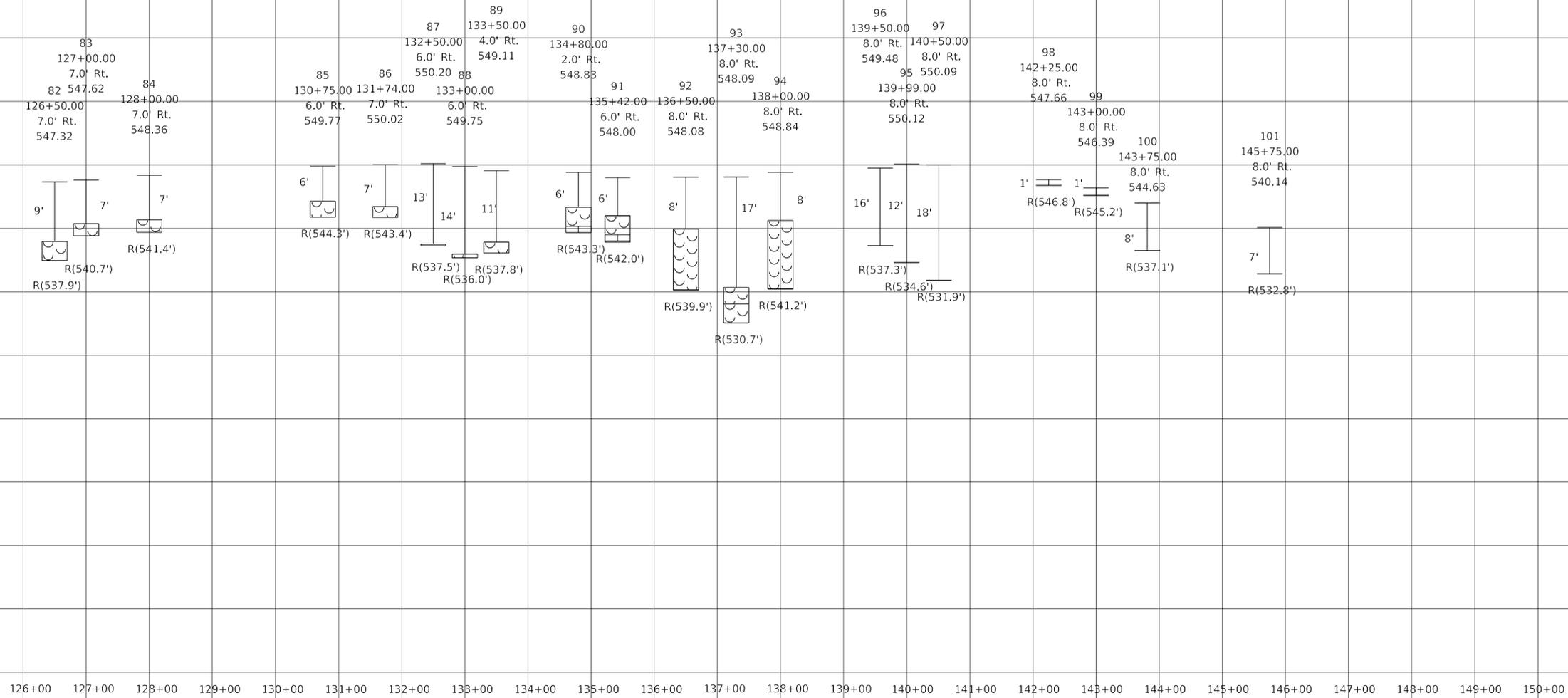
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SCALE: 1" = 100' HORIZONTAL
1" = 10' VERTICAL

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

County CAMPBELL

Date _____

Road Number KY 6335

Survey Crew / Consultant _____

Contact Person _____

Item # 06-5011.00

Mars # 1523901D

Project # _____

Notes:

(circle one)

Elevation Datum **NAVD88** Assumed

HOLE NUMBER	LATITUDE (Decimal Degrees)	LONGITUDE (Decimal Degrees)	HOLE NUMBER	STATION	OFFSET	ELEVATION (ft)
1	N39.05903	W84.43519	1	9+22	10	527.34
2	N39.05924	W84.43528	2	10+00	10	526.81
3	N39.05949	W84.43538	3	11+00	10	525.06
4	N39.05972	W84.43547	4	11+86	9	522.84
5	N39.06002	W84.43559	5	13+00	8.5	520.98
6	N39.06033	W84.43571	6	14+19	9	522.41
7	N39.06054	W84.43581	7	15+00	10	525.13
8	N39.06082	W84.43593	8	16+00	10	527.64
9	N39.06108	W84.43605	9	17+00	9	527.7
10	N39.06134	W84.43616	10	18+00	8	527.46
11	N39.06160	W84.43627	11	19+00	8.5	525.88
12	N39.06293	W84.43672	12	24+00	8	532.9
13	N39.06303	W84.43675	13	24+40	9.5	533.46
14	N39.06319	W84.43680	14	25+00	9	534.29
15	N39.06345	W84.43687	15	26+00	9	535.31

HOLE NUMBER	LATITUDE (Decimal Degrees)	LONGITUDE (Decimal Degrees)	HOLE NUMBER	STATION	OFFSET	ELEVATION (ft)
16	N39.06372	W84.43695	16	27+00	8.5	536.67
17	N39.06399	W84.43702	17	28+00	8	537.5
18	N39.06426	W84.43709	18	29+00	8.5	538.11
19	N39.06440	W84.43713	19	29+55	8.7	538.86
20	N39.06455	W84.43717	20	30+10	8.5	539.26
21	N39.06468	W84.43720	21	30+60	9	539.95
22	N39.06539	W84.43738	22	33+20	7	545.25
23	N39.06560	W84.43744	23	34+00	7	545.25
24	N39.06587	W84.43749	24	35+00	8	546.21
25	N39.06614	W84.43755	25	36+00	9	545.61
26	N39.06641	W84.43761	26	37+00	9	544.29
27	N39.06668	W84.43766	27	38+00	9	542.6
28	N39.06690	W84.43770	28	38+84	9.5	540.35
29	N39.06803	W84.43796	29	43+00	8.5	533.05
30	N39.06830	W84.43801	30	44+00	7.5	535.56
31	N39.06857	W84.43806	31	45+00	7	537.35
32	N39.06868	W84.43808	32	45+40	7	537.58
33	N39.06938	W84.43821	33	48+00	8	542.98
34	N39.06965	W84.43826	34	49+00	8	547.05
35	N39.06993	W84.43831	35	50+00	8	550.49
36	N39.07037	W84.43838	36	51+65	6.3	553.19
37	N39.07043	W84.43839	37	51+86	7	553.43
38	N39.07053	W84.43841	38	52+25	7	553.92
39	N39.07171	W84.43861	39	56+58	7	544.95
40	N39.07182	W84.43863	40	57+00	6	543.2
41	N39.07209	W84.43867	41	58+00	7	538.01
42	N39.07239	W84.43873	42	59+10	7	532.5
43	N39.07255	W84.43875	43	59+65	8.5	531.08
44	N39.07272	W84.43878	44	60+50	7.5	530.38
45	N39.07454	W84.43907	45	67+00	8.5	529.56
46	N39.07471	W84.43908	46	67+60	8	529.35
47	N39.07481	W84.43909	47	68+00	7.5	529.45

HOLE NUMBER	LATITUDE (Decimal Degrees)	LONGITUDE (Decimal Degrees)	HOLE NUMBER	STATION	OFFSET	ELEVATION (ft)
48	N39.07672	W84.43886	48	75+00	7	534.31
49	N39.07689	W84.43884	49	75+62	7	534.4
50	N39.07704	W84.43882	50	76+15	7	534.42
51	N39.07727	W84.43879	51	77+00	7	533.04
52	N39.07754	W84.43876	52	78+00	6.5	531.51
53	N39.07785	W84.43872	53	79+15	6.5	527.4
54	N39.07810	W84.43870	54	80+00	7	525.81
55	N39.07836	W84.43868	55	81+00	9	525.42
56	N39.07855	W84.43866	56	81+70	9	524.51
57	N39.07871	W84.43866	57	82+30	3	523.8
58	N39.07892	W84.43864	58	83+00	4	523.7
59	N39.07908	W84.43863	59	84+60	7	524.48
60	N39.07929	W84.43862	60	84+40	8	524.4
61	N39.07946	W84.43860	61	85+00	8	522.95
62	N39.07973	W84.43858	62	86+00	7	521.77
63	N39.07988	W84.43857	63	86+50	9	521.34
64	N39.08083	W84.43849	64	90+00	7	521.15
65	N39.08097	W84.43848	65	90+50	6.5	520.76
66	N39.08109	W84.43846	66	91+00	7	520.4
67	N39.08152	W84.43839	67	92+50	6.4	519.34
68	N39.08166	W84.43837	68	93+00	6.5	518.86
69	N39.08193	W84.43831	69	94+00	5.7	515.86
70	N39.08220	W84.43827	70	95+00	6	515.35
71	N39.08239	W84.43823	71	95+70	5.5	514.64
72	N39.08714	W84.43811	72	112+90	6.5	506.5
73	N39.08724	W84.43812	73	113+30	7.5	506.56
74	N39.08732	W84.43813	74	113+60	7.5	507.22
75	N39.08745	W84.43814	75	114+00	7	508.61
76	N39.08956	W84.43828	76	121+95	4	538.58
77	N39.08976	W84.43832	77	122+50	4	540.42
78	N39.08989	W84.43836	78	123+00	0	541.33
79	N39.09002	W84.43839	79	123+50	1	542.6

HOLE NUMBER	LATITUDE (Decimal Degrees)	LONGITUDE (Decimal Degrees)	HOLE NUMBER	STATION	OFFSET	ELEVATION (ft)
80	N39.09029	W84.43841	80	124+50	6	544.58
81	N39.09057	W84.43846	81	125+50	6	546.47
82	N39.09084	W84.43851	82	126+50	7	547.32
83	N39.09099	W84.43853	83	127+00	7	547.62
84	N39.09125	W84.43858	84	128+00	7	548.36
85	N39.09200	W84.43871	85	130+75	6	549.77
86	N39.09224	W84.43877	86	131+74	7	550.02
87	N39.09248	W84.43880	87	132+50	6	550.2
88	N39.09261	W84.43882	88	133+00	6	549.75
89	N39.09276	W84.43885	89	133+50	4	549.11
90	N39.09310	W84.43892	90	134+80	2	548.83
91	N39.09343	W84.43896	91	136+00	8	548
92	N39.09356	W84.43898	92	136+50	8	548.08
93	N39.09378	W84.43902	93	137+30	8	548.09
94	N39.09397	W84.43905	94	138+00	8	548.84
95	N39.09424	W84.43910	95	139+99	8	550.12
96	N39.09439	W84.43913	96	139+50	8	549.48
97	N39.09466	W84.43918	97	140+50	8	550.09
98	N39.09513	W84.43927	98	142+25	8	547.66
99	N39.09533	W84.43932	99	143+00	8	546.39
100	N39.09553	W84.43937	100	143+75	8	544.63
101	N39.09607	W84.43952	101	145+75	8	540.14