Heartland Corridor, Walton Virginia to Columbus Ohio

Preliminary Engineering Phase Report

Vaughan Tunnel – MP N412.08 Roderfield, WV

October 14, 2005, Rev. 2

Hatch Mott MacDonald

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Norfolk Southern Railway
Heartland Corridor, Walton VA to Columbus OH

Vaughan Tunnel – MP N412.08

Statistics: Pocahontas Division
Double-width Tunnel for Main #1 and Main #2
Length = 1,113'
Concrete lined
Tangent track (per Track Chart)
Superelevation = 0.0" (per Track Chart)

1. EXISTING CONDITIONS

1.1 Background

Valuation map V-13-WV/37 (16293) for the Vaughan Tunnel is dated June 30, 1916. The parcel for the tunnel was acquired in 1903. A Norfolk Southern tunnel inspection sheet for the Vaughan Tunnel references drawing Y-3338. This drawing is dated June 10, 1905, applies to tunnels on tangent track, and shows typical portal and lining construction. The tunnel was probably constructed in 1905 based on the date of the drawing Y-3338. Additional information on this tunnel was obtained from various sources such as topographic maps, aerial photos, inspection reports, track charts, and field investigations that were performed on March 24, June 14, and July 7-8, 2005.

1.2 General Area

The tunnel is located in Roderfield, WV. Nearby land use includes residential areas near the east and west portals. There is a staging area close to the east portal and access is to the west portal. The site can be accessed from Route 7. There is a rail bridge in close proximity of the east portal at MP N-412.01, crossing over SR 81 and the Tug Fork River. A cross-over is located between the Vaughan and Roderfield Tunnels west of the Vaughan Tunnel.

1.3 Structural Conditions

The tunnel is 1,113' long with a concrete liner and a nominal width of 28'. It is a double width tunnel for two tracks. The tunnel is in generally good condition; joints at the portals are mostly dry. The third joint from the west portal has running water from the crown of the tunnel. Some minor spalls and cracks were also observed. A track circuit cable is mounted on the south wall.

Liner cores were taken on July 7th and 8th, 2005. Cores were drilled into the liner at locations 250' and 750' into the tunnel from the east portal. The cores were taken at the 10 and 12 o'clock positions at 250' and at the 7 and 12 o'clock positions at 750'. A borescope was inserted into the holes to view inside the liner. The video from the borescope was recorded onto a DVD. The liner probe investigation is summarized in the table below:

Summary of Vaughan Tunnel Liner Core Investigation

Distance from East Portal	Position	Liner Thickness	Notes
250'	10 o'clock	27"	Broken rock behind liner.
250'	12 o'clock	34"	Retrieved 3" of broken rock from behind liner.
750'	7 o'clock	30"	Broken rock in void behind liner.

Summary of Vaughan Tunnel Liner Core Investigation			
Distance from East Portal	**Position**	**Liner Thickness**	**Notes**
750’	12 o’clock	41”	Void behind liner.

Two samples of concrete from the liner core investigation were saved and tested. The sample from the 250’, 10 o’clock position had a compressive strength of 5,957 psi. The sample from the 750’, 12 o’clock position, taken from about 1’ into the liner, had a compressive strength of 6,375 psi.

The bridge outside of the east portal of the tunnel was investigated on June 14, 2005. It is a 4-span timber deck girder bridge. The girders are built-up steel plate girders with the south pair of girders carrying Main #1 and the north pair carrying Main #2. The girders bear on steel plates that are on ~3” thick concrete pads. The bridge spans over the Tug Fork River and a dirt road. There is only 11’-8” of clearance from the road to the bottom of the girder. The structure type and site geometry, coupled with the proximity of rock below the rail make track lowering a difficult and expensive option.

Excavation was done at the tunnel invert to expose a small portion of the tunnel liner footing. The footing thickness was found to be 24”. The vertical distance from the top of rail to the base of the footing was measured at 48”.

1.4 Track

The track is of conventional design with wooden crossties and a stone ballast section. The rail is continuously welded 132 RE with a 19” tie spacing and 18” tie plates fastened with rail spikes and anchors at every tie. The ballast is approximately 2’ from the top of the ties and in generally fair condition, with fouling noted in some areas. There is a sinkhole, under the tracks, located approximately 327’ from the east portal on Main #2. The track is tangent for the entire length of the tunnel. The ballast from this tunnel was not tested, however ballast in the nearby Twin Branch No. 1 Tunnel was tested and classified as being “Very Strong”, requiring many blows of a geological hammer to break intact rock specimens.

1.5 Geotechnical

The tunnels in the east-central part of the Pocahontas Division (including Vaughan) are located in the Appalachian Plateaus Physiographic Province, a region characterized by deeply incised plateaus underlain by flat-lying sedimentary rock. The tunnel itself is lined and no rock was exposed. The description of the site geology at each tunnel is based on our observations of the rockmass at the portals and adjacent cuts and the 1968 West Virginia Geologic Map prepared by the West Virginia Geologic and Economic Survey.

The tunnel was excavated through the medium- to thick-bedded fine-to medium grained sandstone of the New River Formation. The sandstone is locally interbedded with thin-bedded sandstone, siltstone, shale, and coal. Bedding is subhorizontal and gently rolls back and forth

towards the northwest and southeast. Joints in the rock cuts of the formations are typically steeply dipping and widely spaced. Most joints are less than 15 feet in length and are not through-going across the exposure face.

The rock quality designation, Q, at the portals was determined to be 23. A Q rating between 10 and 40 is considered "Good" with 10 bordering on "Fair" and 40 bordering on "Very Good."

The geoprobes indicate that the top of rock is located between 1.75' to 3.85' (averaging about 2.7') below the top of ballast throughout the tunnel for Main #1 and between 1.5' to 3.75' (averaging about 2.5') below the top of ballast throughout the tunnel for Main #2. Top of ballast is typically about 0.8' below top of low rail.

1.6 Clearances

The laser car measurements indicate that the existing tunnel has adequate horizontal clearance for both the "High-Wide Load" and the "Double-Stack Load" portions of the composite clearance envelope throughout the tunnel. For vertical clearance, the "Double Stack" portion of the envelope encroaches on both sides of the tunnel crown for the entire length of the tunnel. The encroachment is similar on both sides, averaging about 16" and varying between 13" to 19". The "High-Wide" portion of the envelope encroaches by similar amounts on both sides of the tunnel crown (at points lower than the "Double Stack" portion) by an average of about 6" and varies between 4" to 10". Cross sections of the tunnel clearance encroachments are shown in the drawings at the end of this report. The maximum vertical encroachments are summarized in the table below:

	Crown Encroachment (radial inches)	
Distance (ft) from East Portal	**Left Side**	**Right Side**
0	18	19
103	19	18
203	18	17
303	17	17
403	18	17
501	17	16
604	15	15
702	16	14
801	16	16
903	17	16
1004	17	16
1102	13	17

2. CLEARANCE IMPROVEMENT ALTERNATIVES

Given the magnitude of the vertical clearance deficiency, there are several general alternatives that can be used to obtain the clearance; replacing the lining, notching the lining, or using steel ties to lower the track. Combinations of the general methods may be required to obtain a design that is cost effective and that can be constructed within reasonable track outages. Track lowering by excavating or undercutting does not appear feasible due to the proximity of the top of rock to the surface.

2.1 Liner Replacement

To obtain the desired clearance, the concrete roof must be demolished, the native rock excavated to the clearance limits plus the new liner thickness, and a new concrete liner installed. This alternative would be necessary for the entire tunnel if it were to be the only method employed. If the encroachment can be reduced using steel ties or other methods, then notching may be employed instead of liner replacement.

2.2 Notching the Crown

Notching in the upper quadrants of the tunnel crown would not cut entirely through the liner and could be an alternative to complete liner replacement. However, the encroachments may be large enough that a minimum liner thickness of at least 10” might not be maintained. The four cores taken in July 2005 varied in thickness from 27" to 41", which is more than the minimum thickness of 26" at crown and 34" minimum in the sidewalls that was indicated on drawings for adjacent tunnels. However additional investigations would be required before the apparent additional thickness of concrete can be relied on in the reconstruction. Therefore, deep notching of the tunnel crown will no longer be considered as a viable alternative for achieving the necessary vertical clearance, unless additional investigations in the Final Design Phase conclude that an adequate thickness can be maintained.

2.3 Steel Ties

Substitution of steel ties for the standard wood ties would permit the rails to be lowered about 6 inches. Transition sections would be constructed at the tunnel approaches for the vertical curves and for a gradual transition in track stiffness. A proper drainage system is required to minimize corrosion of the ties.

Steel ties would not be sufficient to fix the entire clearance deficiencies, but in some cases could be used in conjunction with notching to provide a more economical solution. In this case, it appears that steel ties could reduce the maximum encroachment from 19” to 16”, which would allow the deep notching method to be used instead of liner replacement. However, due to the close proximity of the rail bridge outside the east portal, steel ties would require expensive and impractical bridge modifications in order to lower the bridge. Also, lateral shifting of the track is a concern when using steel ties. Steel ties do not provide enough of an advantage to warrant their expense as well as the bridge modifications. Therefore, steel ties and deep notching will no longer be considered as a viable alternatives.

3. PREFERRED ALTERNATIVE

Given the magnitude of the vertical encroachment, liner replacement of the tunnel crown is necessary to achieve the required clearance in the tunnel. Drainage improvements are also recommended.

3.1 Preliminary Design

The preliminary design uses replacement of the liner crown. Additional investigation in the final design phase may determine that notching is feasible for some length of the tunnel. The existing track structure is planned to be flooded with ballast to the top of the rail to provide access into the tunnel for the contractor to work and to protect the track during the construction. The preliminary design also proposes to install a new drainage system and undercut the track to replace the fouled ballast.

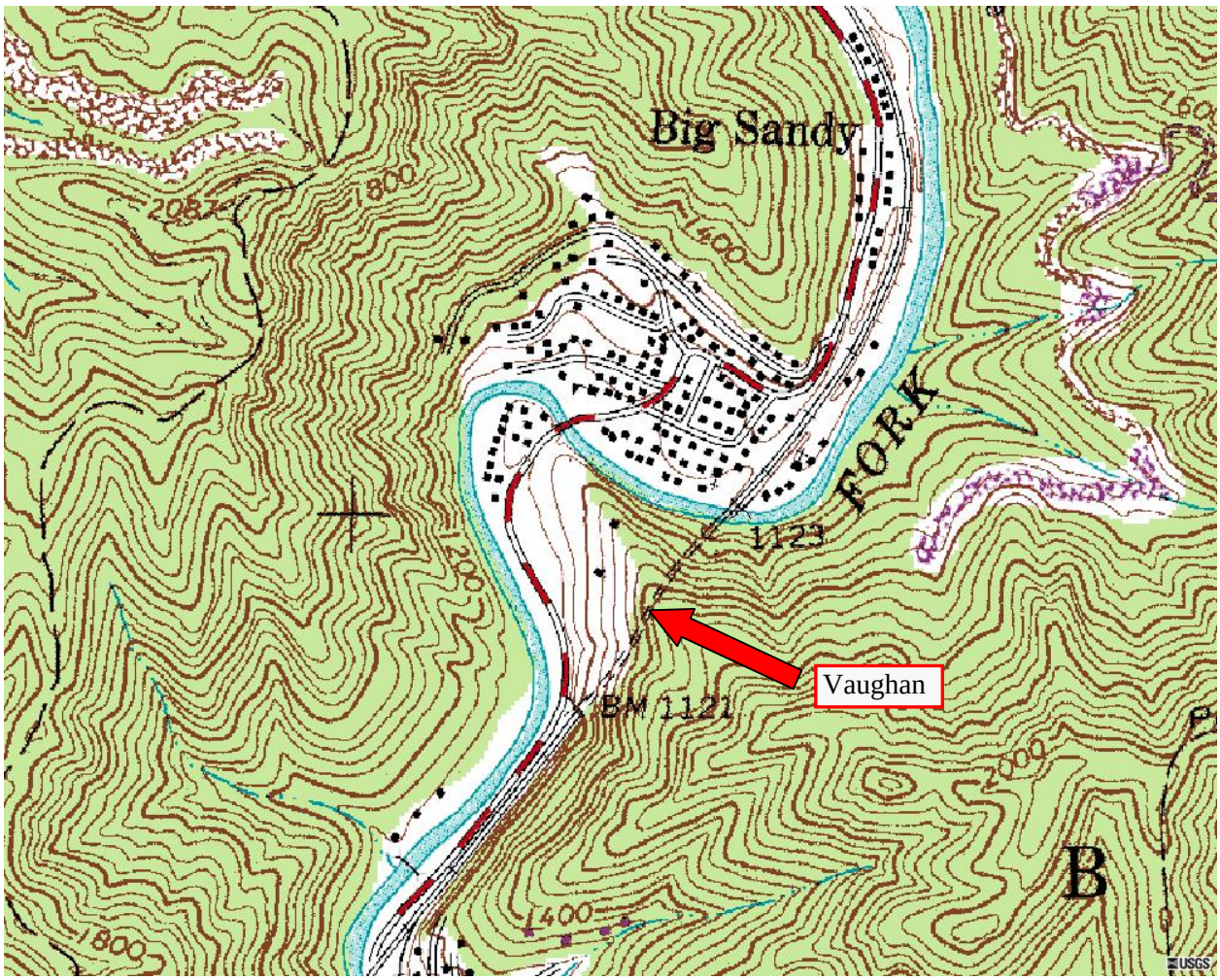
3.2 Schedule

The estimated schedule for completing improvements on this tunnel is forty-three (43) weeks from mobilization to demobilization. The schedule assumes one track being closed at a time, for eight hours, five days a week. The schedule assumes 12' of crown removal each day, with concrete removal, installation of rock dowels and installation of shotcrete all occurring on the same day for each 12' segment. Drainage improvement operations would be undertaken at the same time as the crown removal, but at different locations in the tunnel.

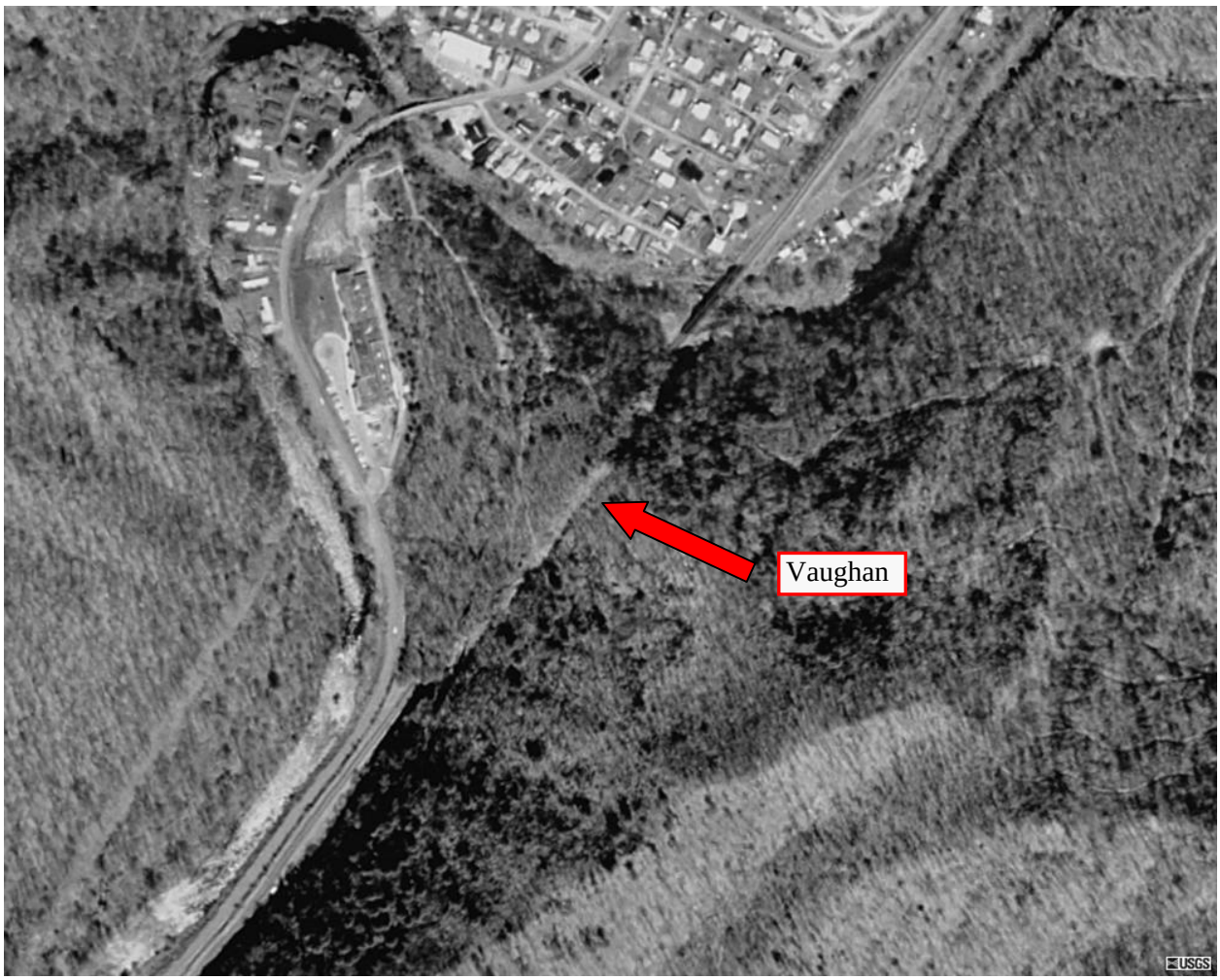
3.3 Estimate

The total estimated cost for achieving clearance at this location is $8.2 million (2005 rates) or $7,351per foot of tunnel. The work items include mobilization, surveying, liner removal, rock removal, rock dowels, crown installation, rock cut for drainage trench, tunnel drainage system, ballast cleaning, and demobilization. An allowance for grouting the void in the invert was also included. The total cost is made up of tunnel, track, signal, and site work items at $5.1 million, plus a 30% construction contingency, a 10% engineering allowance, and a 14% construction management allowance.

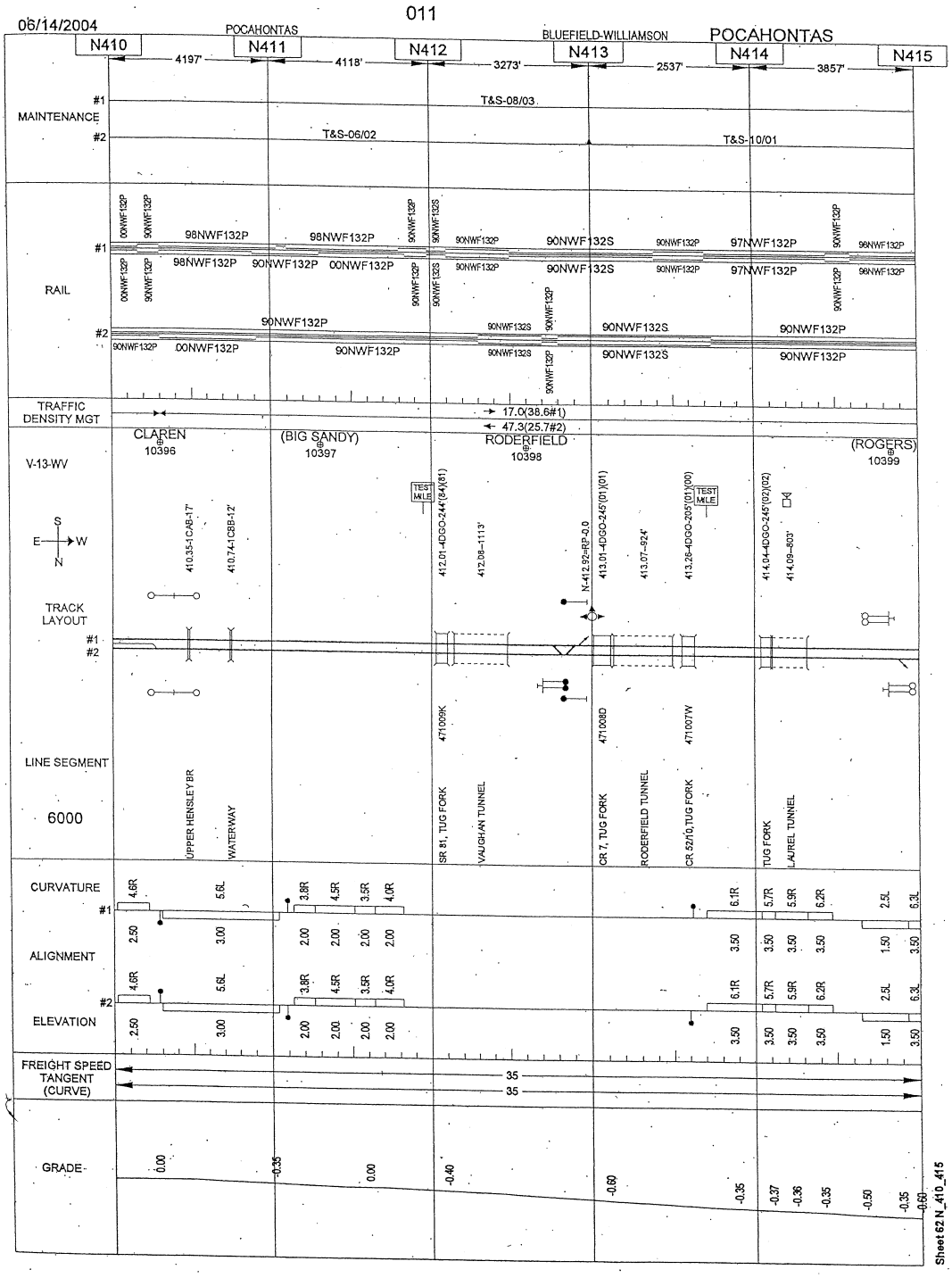
4. USGS TOPOGRAPHIC MAP



5. AERIAL PHOTO



6. TRACK CHART



7. PHOTOS

Photo1. East Portal

Photo 2. View Outside of East Portal

Photo 3. West Portal

Photo 4. View from West Portal

Photo5. Mud in Ballast

Photo 6. Slight Spalling with Water Leaking at Vertical Construction Joint

8. ESTIMATE

Vaughan

Tunnel Length	1113	ft
Tunnel Width	28	ft
# of Tracks	2	

	Contractor		Railroad	
Work Window	10	hrs	10	hrs
Setup & Demobilization Allowance	2	hrs	2	hrs
Production Time	8	hrs	8	hrs

Tunnel Work Items	UOM	Quantity	Unit Rate	Total
Mobilization	%	5%		$212,620.68
Surveying	DY	5	$1,300.00	$6,500.00
Rock Dowels 14' with Chain Link Mesh - Crown	EA	1855	$601.89	$1,116,510.40
Crown Removal	SF	52449	$16.12	$845,630.40
Rock Removal - Crown	CY	1943	$425.74	$827,030.40
Crown Installation	SF	52449	$24.38	$1,278,770.32
Rock Cut Drainage Trench	LF	1513	$88.98	$134,630.40
Tunnel Drainage	LF	1513	$17.80	$26,925.62
Demobilization	DY	5	$3,283.20	$16,416.00
Total Tunnel Work Items	**LF**	**1113**	**$4,011.71**	**$4,465,034.22**

Trackwork Items	UOM	Quantity	Unit Rate	Total
Mobilization	DY			
Undercutting	PF	2226	$23.39	$52,059.44
Surfacing & Lining	PF	6678	$2.31	$15,456.10
Ballasting Track	TN	2226	$37.57	$83,641.32
Demobilization	DY			
Total Trackwork Items				**$151,156.86**

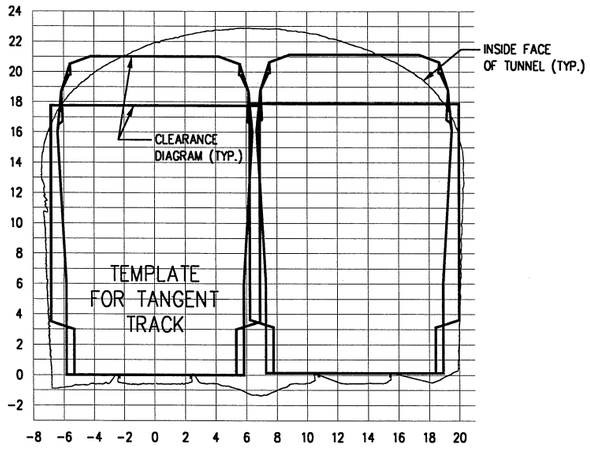
Signal Items	UOM	Quantity	Unit Rate	Total
Mobilization	DY			
Relocate Cables / Track Leads	LF	1113	$12.61	$14,032.78
Demobilization	DY			
Total Signal Items				**$14,032.78**

Site Items	UOM	Quantity	Unit Rate	Total
Mobilization	DY	1	$2,483.60	$2,483.60
Erosion & Sedimentation Control	EA	1	$11,958.80	$11,958.80
Demobilization	DY			
Total Site Items				**$14,442.40**

Special Items	UOM	Quantity	Unit Rate	Total
Mobilization	DY			
Flagging	DY	214	$821.50	$175,801.00
Flood Track with Ballast for Protection	TN	4452	$38.13	$169,746.06
Remove Flooded Ballast	TN	4452	$9.16	$40,790.76
Invert/Crown Void Grouting	DY	10	$4,448.80	$44,488.00
Demobilization	DY			
Total Specialty Items				**$430,825.82**

Subtotal All Items		**$5,075,492.07**
Construction Contingency	**30%**	**$1,522,647.62**
Engineering Allowance	**10%**	**$659,813.97**
Construction Management Allowance	**14%**	**$923,739.56**
Total		**$8,181,693.22**

9. DRAWINGS



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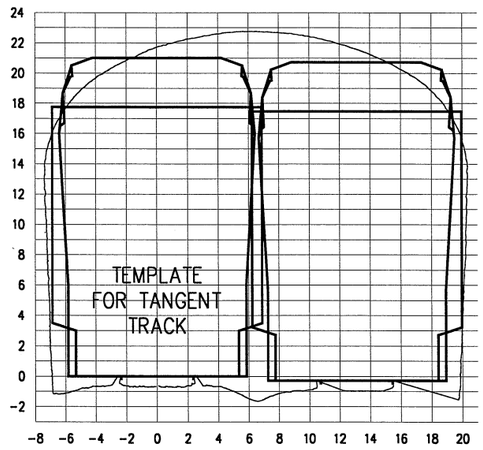

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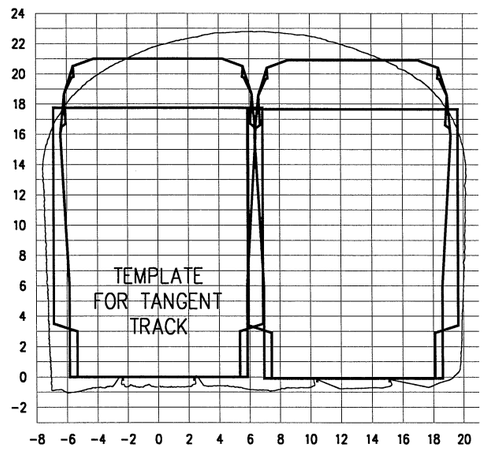

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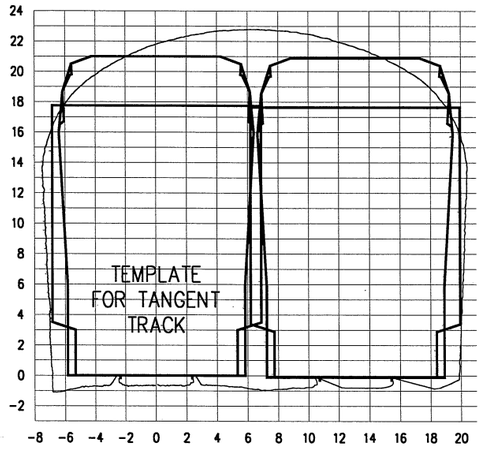

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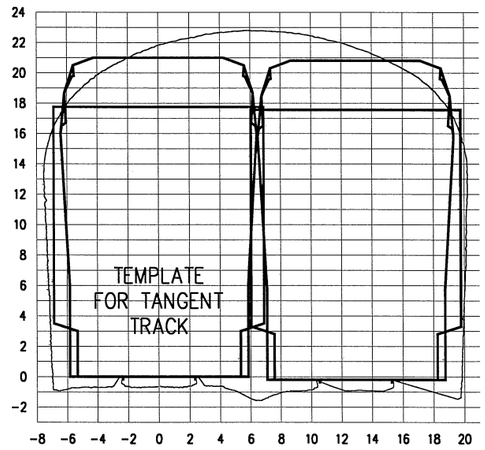

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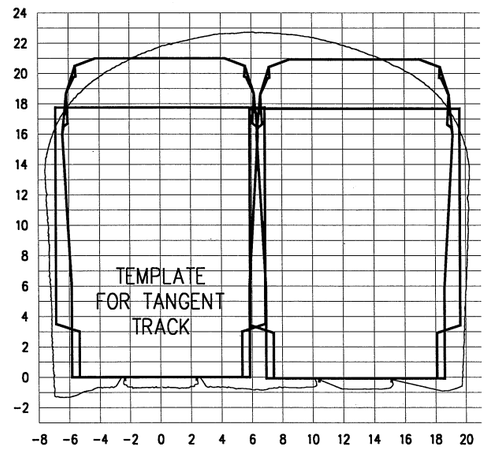

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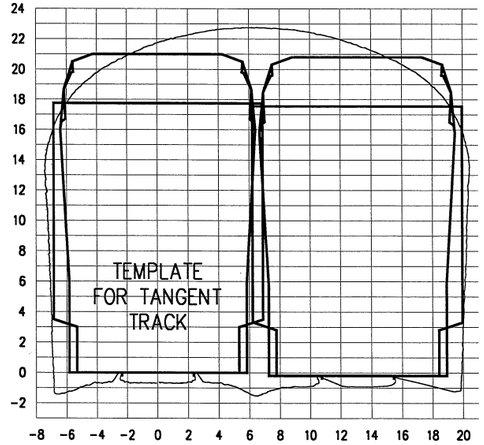

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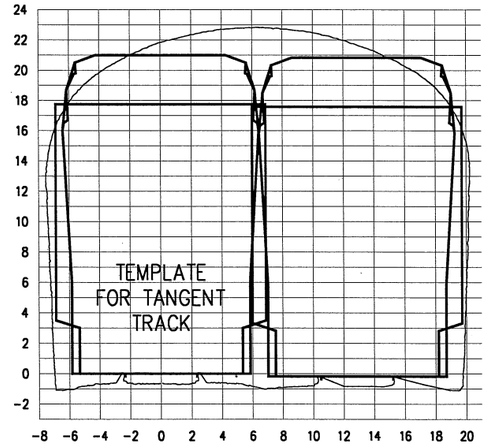

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NOTES:

1. HORIZONTAL DATUM IS PARALLEL TO TRACK. WHERE TRACK IS SUPERELEVATED, DATUM IS NOT PARALLEL WITH GROUND.
2. CROSS SECTION GIVEN FOR STA. 0+00 IS A COMPOSITE FOR THE TUNNEL FROM STA. 0+00 THROUGH 0+50. ALL OF THE SECTIONS FOLLOW THIS CONVENTION.

NOT FOR CONSTRUCTION

SCALE: 1"=100'

50 0 100 200 300

Hatch Mott MacDonald

NORFOLK SOUTHERN

OWNING COMPANY
POCAHONTAS
OPERATING DIVISION
OFFICE OF THE CHIEF ENGINEER - DESIGN AND CONSTRUCTION - ATLANTA, GA.

P1	DJL	7/29/05	PRELIMINARY ENGINEERING PHASE REPORT
REV	BY	DATE	DESCRIPTION

LOCATION: VAUGHAN TUNNEL, RODERFIELD, WV

TITLE: TUNNEL CLEARANCE CROSS SECTIONS – 1 OF 3

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CHK	DATE APRIL 22, 2005		

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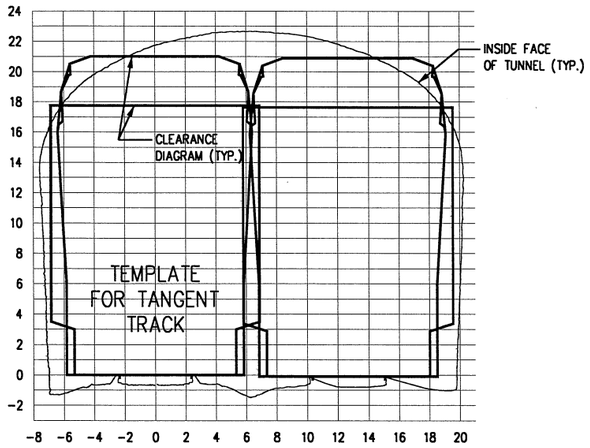

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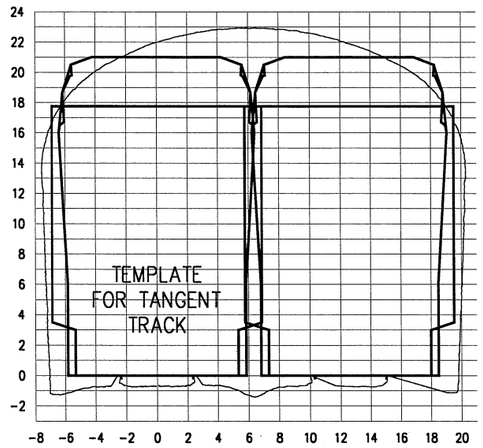

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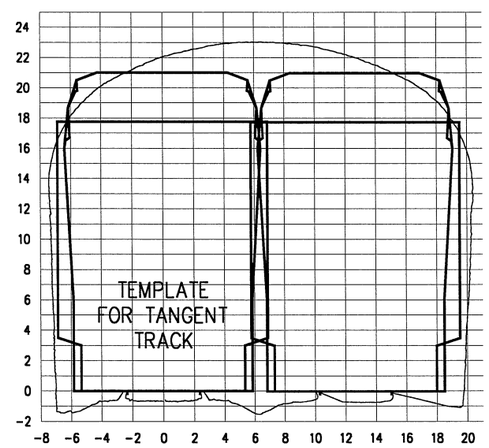

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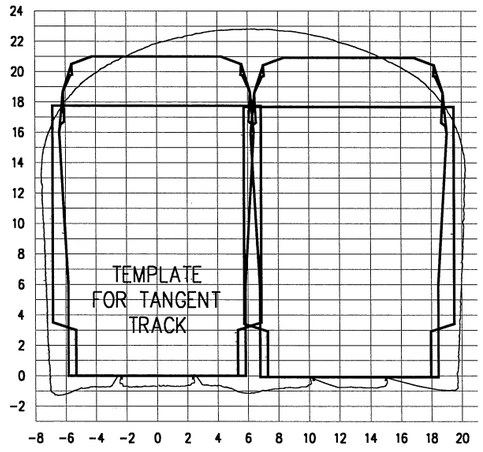

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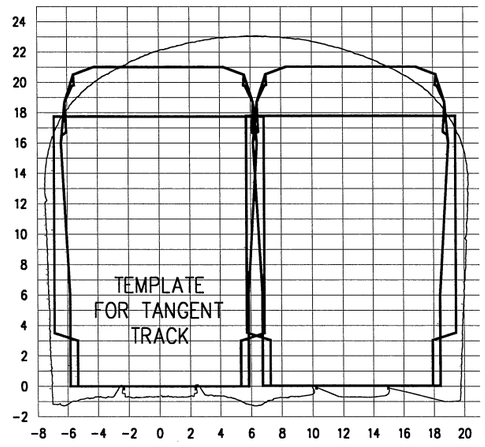

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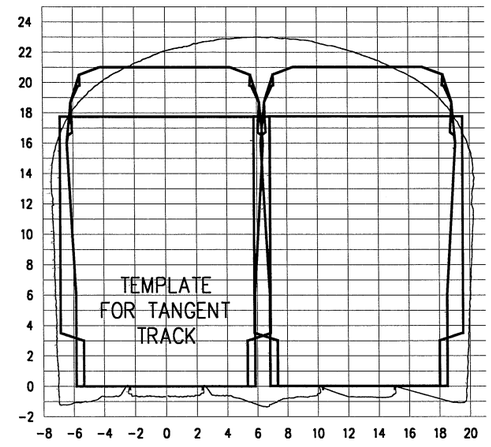

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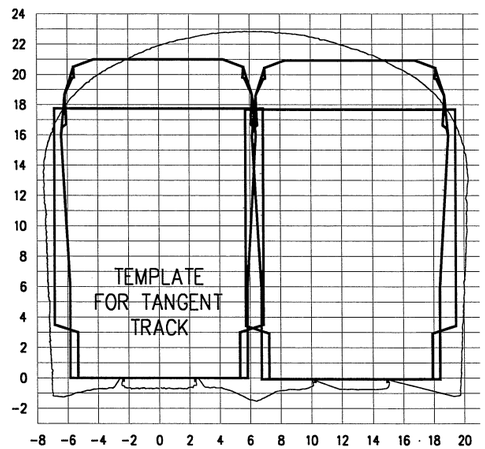

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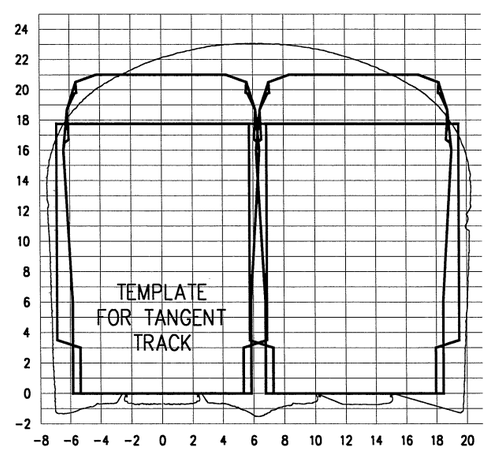

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NOTES:

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2. CROSS SECTION GIVEN FOR STA. 0+00 IS A COMPOSITE FOR THE TUNNEL FROM STA. 0+00 THROUGH 0+50. ALL OF THE SECTIONS FOLLOW THIS CONVENTION.

NOT FOR CONSTRUCTION

SCALE: 1"=100'

50 0 100 200 300

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OFFICE OF THE CHIEF ENGINEER - DESIGN AND CONSTRUCTION - ATLANTA, GA

REV.	BY	DATE	DESCRIPTION
P1	DJL	7/29/05	PRELIMINARY ENGINEERING PHASE REPORT

LOCATION: VAUGHAN TUNNEL, RODERFIELD, WV

TITLE: TUNNEL CLEARANCE
CROSS SECTIONS – 2 OF 3

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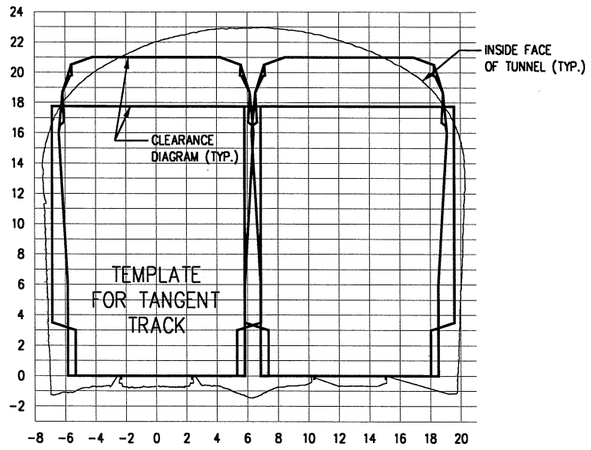

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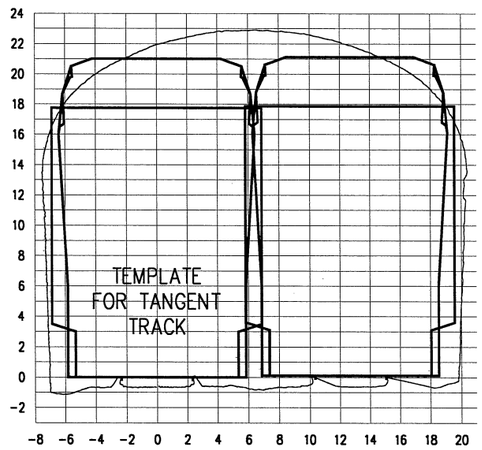

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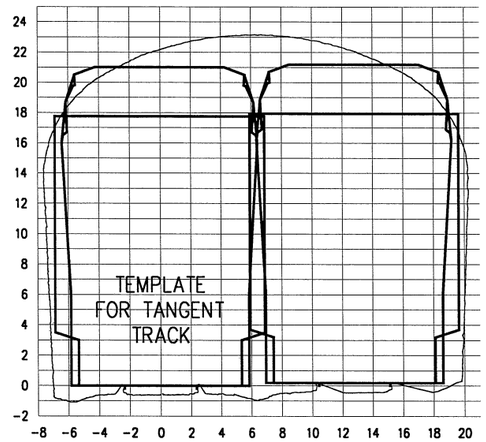

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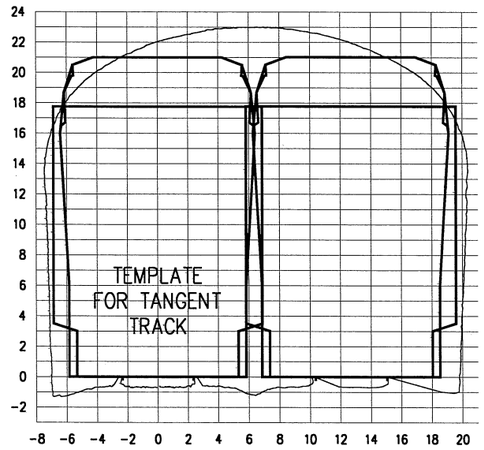

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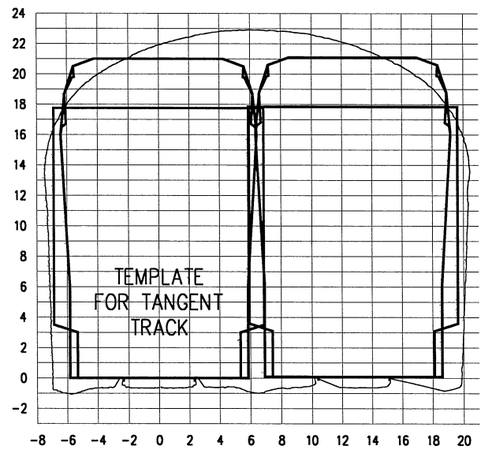

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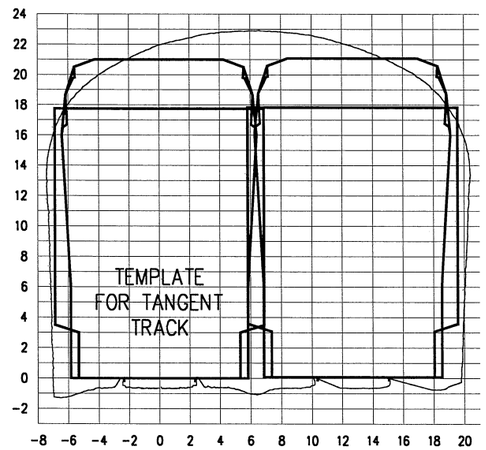

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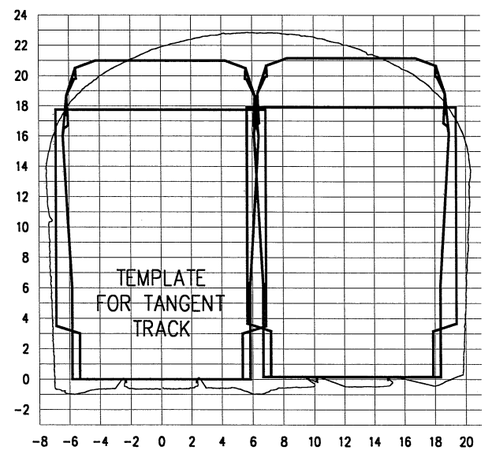

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NOTES:

1. HORIZONTAL DATUM IS PARALLEL TO TRACK. WHERE TRACK IS SUPERELEVATED, DATUM IS NOT PARALLEL WITH GROUND.
2. CROSS SECTION GIVEN FOR STA. 0+00 IS A COMPOSITE FOR THE TUNNEL FROM STA. 0+00 THROUGH 0+50. ALL OF THE SECTIONS FOLLOW THIS CONVENTION.

NOT FOR CONSTRUCTION

SCALE: 1"=100'

50 0 100 200 300

Hatch Mott MacDonald

NORFOLK SOUTHERN

OWNING COMPANY
POCAHONTAS
OPERATING DIVISION
OFFICE OF THE CHIEF ENGINEER - DESIGN AND CONSTRUCTION - ATLANTA, GA.

REV	BY	DATE	DESCRIPTION
P1	DJL	7/29/05	PRELIMINARY ENGINEERING PHASE REPORT

LOCATION: VAUGHAN TUNNEL, RODERFIELD, WV

TITLE: TUNNEL CLEARANCE
CROSS SECTIONS – 3 OF 3

DGN	PID No.	VRN 16293	MILE POST N-412.08
DWN	FILE No.	DRAWING NUMBER	
CHK	DATE APRIL 22, 2005		

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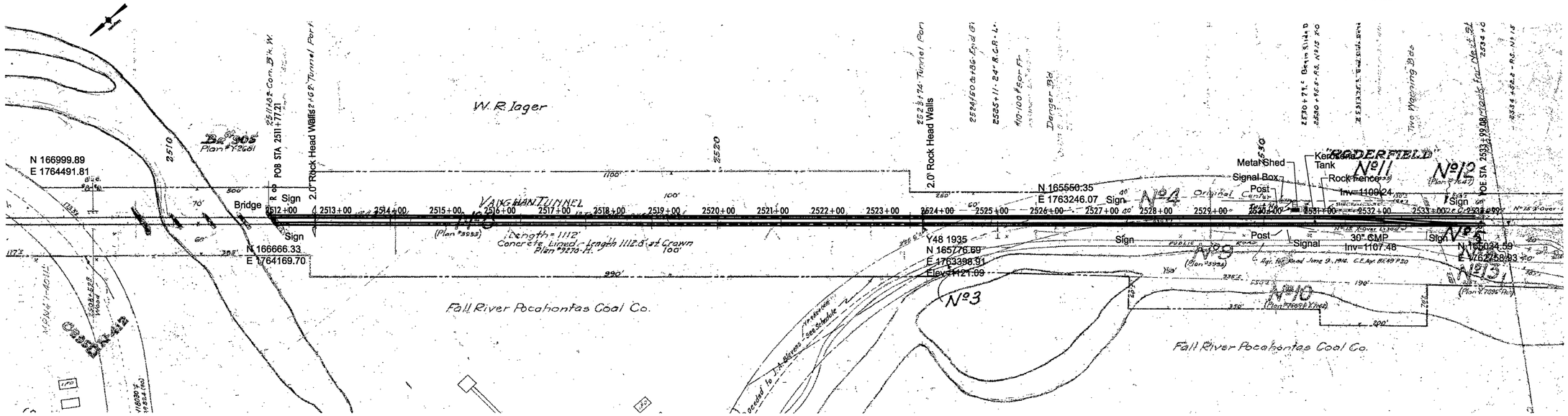


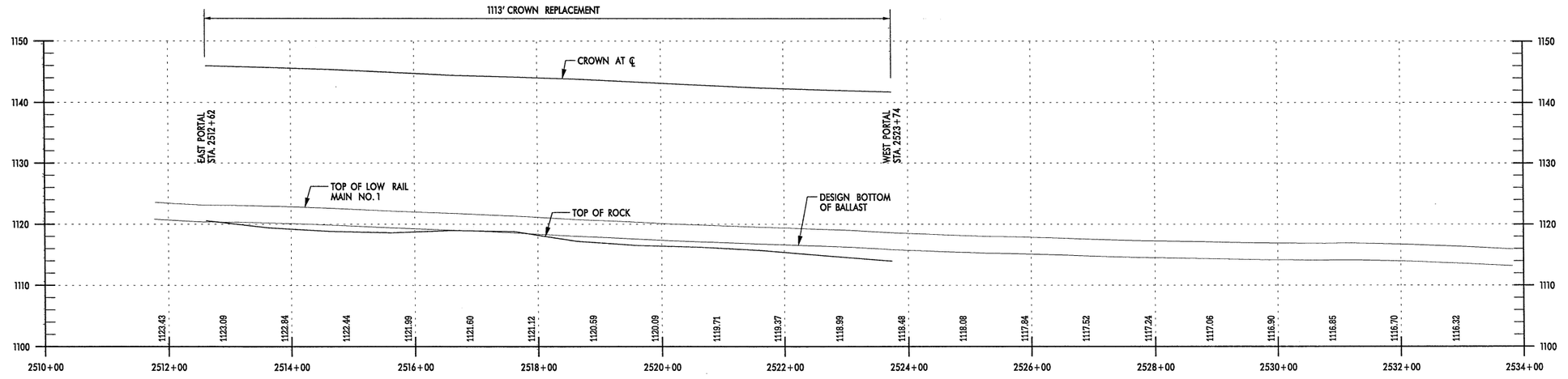
VAUGHAN PLAN

SCALE: 1"=100'

VAUGHAN CENTERLINE DATA

Horizontal Alignment Name: 2
Description:
Style:
Input Factor: 1.0000

	STATION	NORTHING	EASTING
Elements: Linear			
POB (2)	2511+77.21	166674.98	1764194.09
POE (1)	2533+99.08	164986.00	1762750.46
Tangent Direction:	220°31'19"		
Tangent Length:	2221.87		



VAUGHAN PROFILE

SCALE: 1"=100' HORIZ.
1"=10' VERT.

NOT FOR CONSTRUCTION

SCALE: 1"=100'

50 0 100 200 300

Hatch Mott MacDonald

NORFOLK SOUTHERN

OWNING COMPANY
POCAHONTAS
OPERATING DIVISION
OFFICE OF THE CHIEF ENGINEER - DESIGN AND CONSTRUCTION - ATLANTA, GA.

REV	BY	DATE	DESCRIPTION
P2	DJL	10/14/05	PRELIMINARY ENGINEERING PHASE REPORT
P1	DJL	7/25/05	PRELIMINARY ENGINEERING PHASE REPORT

LOCATION: VAUGHAN TUNNEL, RODERFIELD, WV
TITLE: PLAN AND PROFILE

DGN	PID No.	VRN 16293	MILE POST	N-412.08
DWN	FILE No.		DRAWING NUMBER	
CHK	DATE APRIL 22, 2005			

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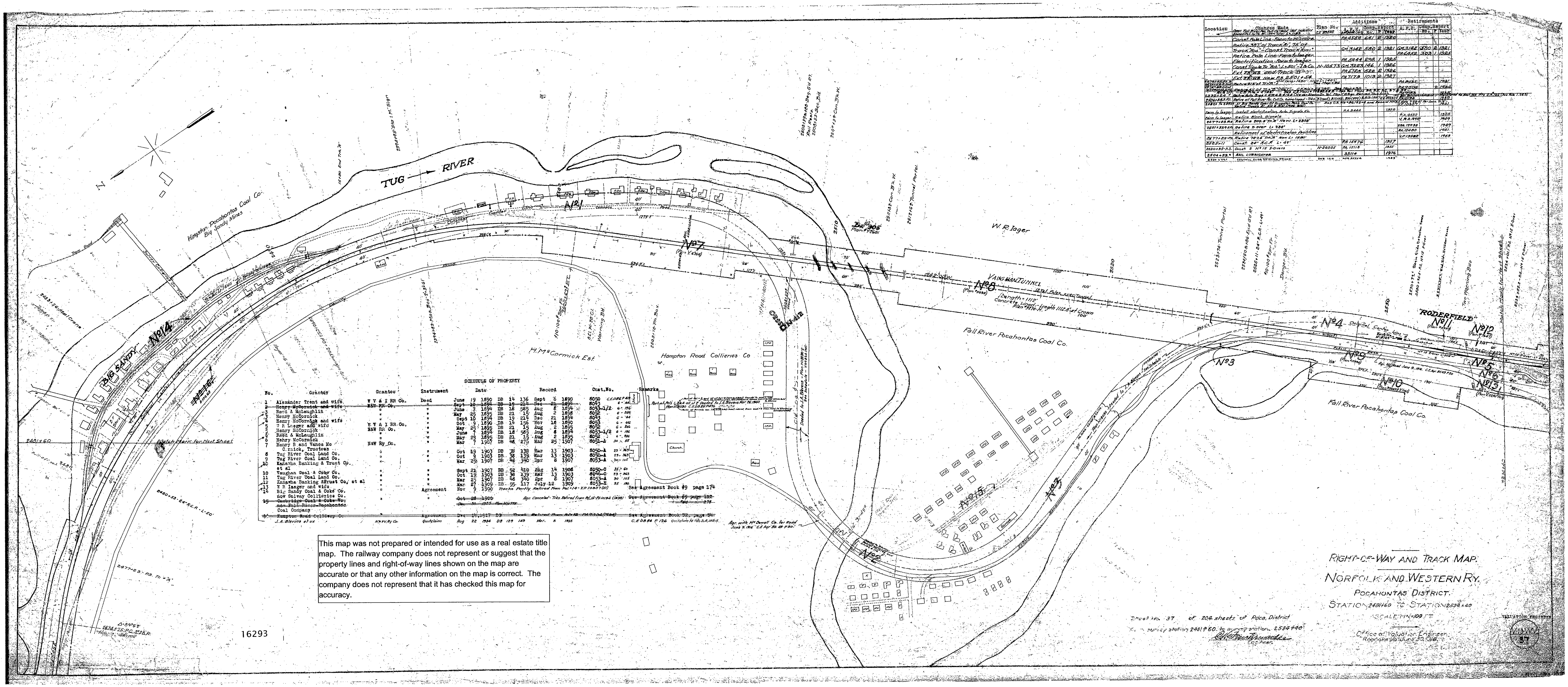

Location	Changes Made	Plan No.	Additions A.F.E.	Comp. Report No.	P	Year	Retirements A.F.E.	Comp. Report No.	P	Year
	Oper. Fall River Poc. Coll. Co.-Hold. 180' Industry Owned Ext. to Tk. B1.-New Total L=1183.	C.E. 59232	C.E. 59232 (1917)							
	Const. Pole Line-Farm to Wilmore.		PA4554	641	2	1920				
	Retire 387' of Track "A1", 75' of Track "A1a" - Const. Track "A1a1"		GM.3142	580	2	1921	GM.3142	580	2	1921
	Retire Pole Line-Farm to Iaeger.						PA.6452	303	1	1925
	Electrification-Farm to Iaeger.		PA.5444	298	1	1925				
	Const. Tipple Tk. "B1b"-L=501'-I.&Co.	N-10573	GM.3223	146	1	1926				
	Ext. EB-WB and Track "B"		PA.6728	522	2	1926				
	Ext. EB-WB New P.S. 2501+54		PA.7179	1013	2	1927				
2479+45 P.S. to 2485+55	Retire 213' of Tr. "B" Old Leng.=1680'-New L=1467' See Map=36						PA.8435			1931
2475+85 to 2490+02 E.P.S. Rt. & Lt.	Retire All of Tr. "B" (1467') - C.E. File=54789. See Map=36 — C.E. File=47231 — See C.E. Maps=1838 A&B - See Val. Maps 34, 35, 36, 37 & 39						PA.9004		2	1934
2332+24	Retire Auto Sigs.=4124 & 4125 (Never Shown On Val. Map) Sigs. Retired This Auth. — Transferred to Acct. 105 thru C.A. 166 (See File 1.283)						PA.9183			1935
2526+38.3 P.S.	Retire all Fall River Poc. Coll. Co. Siding Layout-Trks. B (1905'), B1 (1153'), B1a (509') & B1b (501')	C.E. 59232					PA.10194			1939
2482+ To 2492+	At Big Sandy Oper. Of Kingston Poca. Coal Co. Retire Tracks A1, A1a & A1a1 (1146' Total) See C.E. File=36192-A and Record MN85 date 7-28-41 For Loc. Tr. A						V.P.10307			1941
Farm to Iaeger	Install electrification, Auto. Signals Etc.		P.A.5444			1925				
Farm to Iaeger	Retire Block Signals						P.A.6452			1925
2477+23 P.S.	Retire 209.5' Tr. "A" New L=2308'						V.P.A.12937			1949
2501+33.9 E.P.	Retire X-over L=236'						V.P.A.12938			1949
	Retirement of electrification facilities						PA.12480			1951
2477+23-P.S.	Retire 727.5' Trk. "A" New L=1580'						V.P.13582			1953
2525+11	Const. 24" R.C.P. L=49'		P.R.15476			1957				
2530+35-P.S.	Const. 2 No. 15 X-Overs	N-26025	PA.15118			1955				
2504+59.0	RAIL LUBRICATOR		35114			1976				
2530+79.?	INSTALL SLIDE DETECTOR FENCE	SEE 160	AFE 35554			1983				

SCHEDULE OF PROPERTY

No.	Grantor	Grantee	Instrument	Date	Record	Cust. No.	Remarks
1	Alexander Trent and wife	W V & I RR Co.	Deed	June 19 1890	DB 14 136 Sept 6 1890	8050	C.E.DB6 P.48
~~2~~	~~Henry McCormick and wife~~	~~N&W RR Co.~~	"	~~Sept 10 1894~~	~~DB 19 214 Dec 21 1894~~	8043	6 " 44
3	Reed & McLaughlin	"	"	June 7 1894	DB 18 585 Aug 8 1894	8053-1/2	6 " 196
3	Henry McCormick	"	"	May 25 1895	DB 21 15 Aug 2 1895	8052	6 " 246
4	Henry McCormick and wife	"	"	Sept 10 1894	DB 19 214 Dec 21 1894	8043	6 " 44
5	W R Laeger and wife	W V & I RR Co.	"	Oct 9 1890	DB 14 156 Nov 18 1890	8053	6 " 446
5	Henry McCormick	N&W RR Co.	"	May 25 1895	DB 21 15 Aug 2 1895	8052	6 " 246
6	Reed & McLaughlin	"	"	June 7 1894	DB 18 585 Aug 8 1894	8053-1/2	6 " 196
6	Henry McCormick	"	"	May 25 1895	DB 21 15 Aug 2 1895	8052	6 " 246
7	Henry B and Vance Mc Cormick, Trustees	N&W Ry Co.	"	Mar 7 1907	DB 46 275 Mar 25 1907	8051-A	30 " 55
8	Tug River Coal Land Co.	"	"	Oct 19 1903	DB 38 138 Mar 13 1903	8050-A	23 " 369
9	Tug River Coal Land Co.	"	"	Oct 9 1903	DB 38 139 Mar 13 1903	8050-A	23 " 363
10	Kanawha Banking & Trust Co. et al	"	"	Mar 25 1907	DB 48 340 Apr 8 1907	8053-A	30 " 105
10	Vaughan Coal & Coke Co.	"	"	Sept 21 1907	DB 52 410 Aug 14 1908	8050-C	35 " 60
11	Tug River Coal Land Co.	"	"	Oct 19 1903	DB 38 139 Mar 13 1903	8046-C	23 " 363
12	Kanawha Banking & Trust Co. et al	"	"	Mar 25 1907	DB 48 340 Apr 8 1907	8053-A	30 " 105
13	W R Iaeger and wife	"	"	Mar 27 1909	DB 55 117 July 12 1909	8053-E	35 " 190
14	Big Sandy Coal & Coke Co. now Solvay Collieries Co.	"	Agreement	Nov 9 1900	Tracks Partly Retired From Pcl.=14-V.P.10307(41)		See Agreement Book #9 page 174
~~15~~	~~Cambridge Coal & Coke Co. now Fall River Pocahontas~~ Coal Company	"	"	~~Oct 28 1900~~ ~~Dec 30 1925 Plan N10558~~	Agr. Canceled-Trks. Retired from Pcl.15-PA10194 (1939)		~~See Agreement Book #9 page 118~~ ~~"#64 " 278~~
~~16~~	~~Hampton Road Colliery Co~~		~~Agreement~~	~~Dec 14, 1917~~	~~DB Track Retired From Pcl.=16 PA9004(1934)~~		~~See Agreement Book 52, page 54~~
	J.A. Blevins et ux	N&W Ry Co.	Quitclaim	Aug 22 1934	DB 129 149 Mar. 5 1935		C.E DB 84 P.126 Quitclaim to Pcls 3,4,6&12

Part of Pcls 1,3 & 4 all of 2 Deeded to J.A. Blevins Mar. 26, 1940 Plan N18030 C.E.DB85 P.470

This map was not prepared or intended for use as a real estate title map. The railway company does not represent or suggest that the property lines and right-of-way lines shown on the map are accurate or that any other information on the map is correct. The company does not represent that it has checked this map for accuracy.

16293

RIGHT-OF-WAY AND TRACK MAP

NORFOLK AND WESTERN RY.

POCAHONTAS DISTRICT.

STATION 2481+60 TO STATION 2534+40

SCALE 1 IN.=100 FT.

Sheet No. 37 of 204 sheets of Poca. District

From survey station 2481+60 to survey station 2534+40

Office of Valuation Engineer. Roanoke, Va. June 30, 1916.

VALUATION ENGINEER V-13-WV 37