
BLAINE BARTON ROAD INTERSECTION FEASIBILITY STUDY

BELMONT COUNTY, OHIO

Prepared for:



Belmont County
101 W. Main Street
St. Clairsville, OH 43950

Prepared by:



29 North Park Street
Mansfield, Ohio 44902

Date: January 28, 2022

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BELMONT COUNTY, OHIO**

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B. INTRODUCTION

The project is located in Blaine, Ohio an unincorporated community within Pease Township, Belmont County. Richland Engineering, LTD a WallacePancher Group Company was retained to prepare a Feasibility Study for the County of Belmont to improve the Blaine Barton Road (County Road 10) and US Route 40 intersection by relocating a portion of Blaine Barton Road that is parallel to the U.S. 40 viaduct. The Ohio Department of Transportation (ODOT) constructed this portion of Blaine Barton Road and Pasco Drive when modernizing US Route 40 circa 1950's (Ohio Project No S-1111(1). ODOT relocated a portion of U.S. Route 40 and construction a new viaduct spanning over Wheeling Creek. Blaine Barton Road is identified as 20-foot driveway. Appendix A provides excerpts from the ODOT construction plans.

This study also evaluated providing improved access to residents east of Historic Blaine "S" Hill Bridge using the former railroad right of way. Furthermore, the study evaluated pedestrian connectivity to the Historic Blaine "S" Bridge and layover area for buses. A project location map is shown in Figure 1.

C. PROJECT PURPOSE

The purpose and goal of this Feasibility Study is to identify potential options to improve the operations and safety of the Blaine Barton Road intersection with U.S. Route 40 and to provide improved multimodal connectivity to the Historic Blaine Barton Bridge. Two primary alternatives were developed.

D. PROJECT AREA ROADWAYS

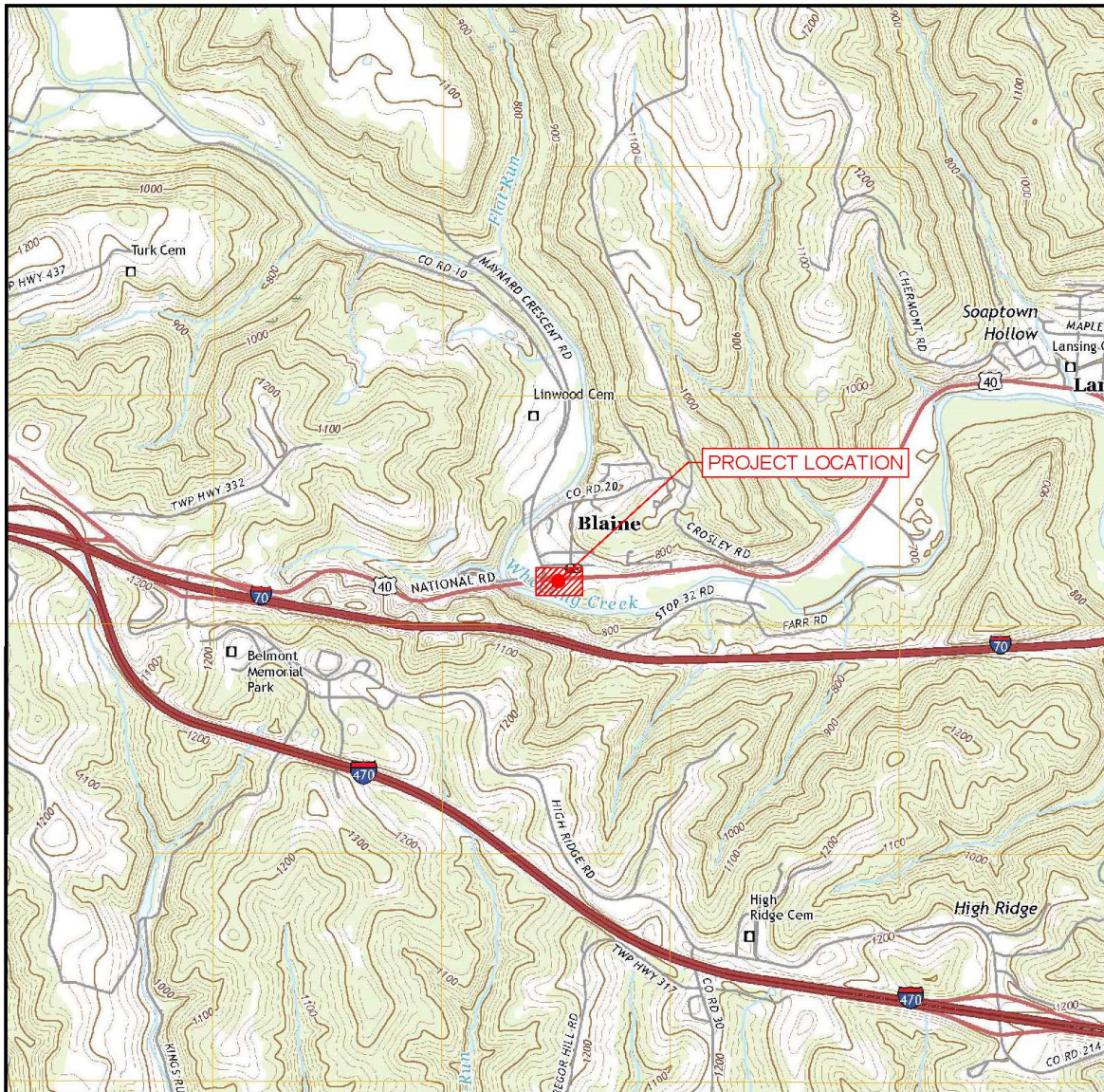
Blaine Barton Road (County Road (CR) 10) is a two-lane roadway with approximately 10-foot travel lanes. The AADT is approximately 680. From the Blaine community, CR 10 continues north to the community of Barton approximately 4.2 miles north and intersects with County Road 4. Blaine Barton Road travels under the U.S. Route 40 Viaduct and forms an unconventional parallel intersection with U.S. 40. Remnants of the former Wheeling Traction Company tracks are still embedded along the pavement.



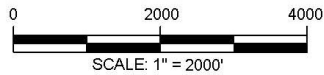
Blaine Barton Road on the North side of U.S.
Route 40



Blaine Barton Road on the
South side of U.S. Route 40



SITE LOCATION
OH 7.5 MINUTE TOPOGRAPHIC DRG, US GEOLOGICAL SURVEY, 2019
"LANSING, OHIO QUADRANGLE"



DATE 01/25/22	PROJECT LOCATION MAP	RICHLAND ENGINEERING LTD 29 NORTH PARK STREET MANSFIELD, OHIO 44902 Phone: (419) 524-0074	 RICHLAND ENGINEERING LTD A WALLACEPANCHER GROUP COMPANY
SHEET NO. FIG-01		PROJECT: BLAINE BARTON ROAD INTERSECTION	

U.S. Route 40

U.S. Route 40 is an arterial roadway paralleling Interstate 70. In the project study area, it is a two-lane roadway with 12-foot lanes and 4-foot shoulders. U.S. Route 40 is a curbed roadway section within the community of Blaine. The highway is posted for 35 mph. The AADT along U.S. Route 40 is approximately 4,770.

Handel Street

Handel Street (T-442) is a local road with a curb-to-curb width of approximately 15.5 feet. The U.S. Post office is located at the intersection of Handel Street and U.S. Route 40. Truck through travel is restricted on this roadway.



Handel Street (T-442)



U.S. Route 40 looking West

E. ENVIRONMENTAL FEATURES

Surface Waters - Wheeling Creek flows in a westerly direction through the project study area. Wheeling Creek flows into the Ohio River at Wheeling WV. The stream has an established Floodway by the Federal Emergency Management Agency (FEMA). In addition, the stream also has floodplain areas. The Stream drainage area is approximately 97.1 square miles at Blaine Ohio. Appendix B includes the National Flood Hazard Layer FIRMette.



Wheeling Creek under the Historic Blaine
"S" Hill Bridge

Wetlands – The U.S. Fish and Wildlife Service National Wetland Inventory Internet site identified the Wheeling Creek as a riverine resource. Appendix C includes the Wetland Inventory Map. Additional resources may be present; therefore a formal aquatic resource delineation report should be prepared during preliminary engineering and environmental documentation.

Cultural Resources - Historic Blaine “S” Bridge – The Historic Blaine Hill “S” Bridge is located over Wheeling Creek at the western boundaries of Blaine. The bridge was designated the Ohio Bicentennial Bridge in 2003 and was placed on the National Register of Historic Places on March 17, 2010. Constructed on a part of the first federally funded national highway, the 1828 “S” Blaine Hill Bridge carried early travelers over Wheeling Creek and up the western hills from the Ohio River crossings in Bridgeport, Ohio and Wheeling, West Virginia. Built of sandstone, the bridge is 345 feet in length with three arches. Its “S” shape carried travelers continually from the days of wagons to automobiles. The 1828 bridge remains the longest existing span of its type on the entire six-state Historic National Road. It is thought to be the first bridge in the Northwest Territory. It is also built upon the ancient Indian trail that became Zane’s Trace and it offers a three-tier view of three generations of American transportation history, which includes I-70 and Historic National Road.



Historic Blaine “S” Bridge

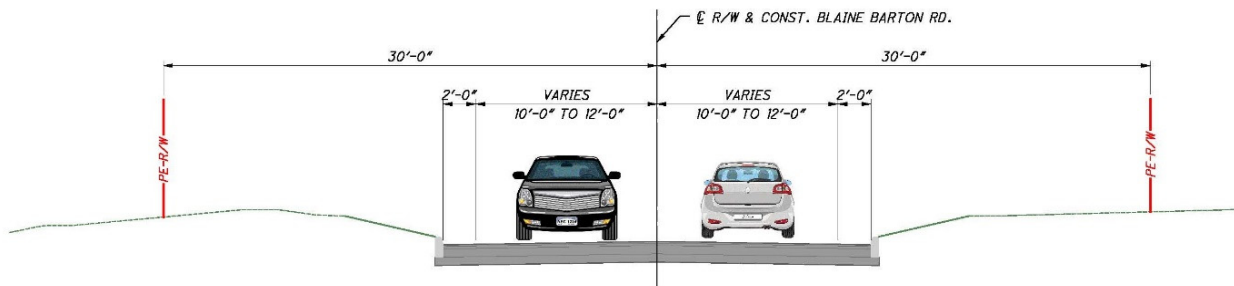
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F. CRASH DATA

Three year reported crash data from 2018 to 2020 within the study area indicate a total of four (4) crashes. Two (2) crashes occurred on weekend and two (2) crashed during the weekday. The reported contributing factor on all four crashes was failure to yield. The current intersection arrangement may be a contributing factor to some of the reported crashes.

G. ALTERNATIVES EVALUATED

Typical Section: The typical section developed for evaluating the roadway alternatives was a two-lane curbed roadway. A two-foot offset from the curb is used for the roadway typical. The proposed travel lane width varies from 10'-00" to 12'-00". The ten-foot width is used at the connection with existing Blaine Barton Road and for alignment under the US Route 40 viaduct because of constrained lateral width between the abutment and pier. The lane width widens to 12-foot beyond of the abutment/pier. Below is the typical section used for alternative development.



The proposed 60-foot right of way width is predicated on coordination with Belmont County for maintenance and operation of the roadway.

Alternatives: Two primary alignment alternatives for relocating a portion of Blaine Barton Road to improve its intersection with US Route 40 were evaluated. The alignments are described below:

Alternative 1 – This alternative creates a four-legged intersection with US Route 40/Handel Street/Relocated Blaine-Barton Road. The parallel segment of Blaine Barton Road is relocated to the South, behind the exiting building/property (Tax Parcel 56-00356). A new driveway will provide access to the Tax Parcel 56-00356 from relocated Blaine Barton Road. The geometry of Handel Street with US Route 40 is improved with larger radii. The Pasco Road access from U.S. Route 40 is closed with a curb along with extending the sidewalk along Pasco Drive. A portion of Pasco Drive parallel to Route 40 remains open to provide a driveway access to existing properties. Appendix D includes the plan and profile of Alternative 1.

Alignment 2 – A new “T” intersection with U.S. Route 40 is proposed at approximately 420 feet east of the existing Intersection. The alternative was evaluated to further improve on the horizontal geometry of Alternative 1 and to provided additional separation between the sag vertical curve (PI Station 116+67 – Original Construction Drawings) from the 7% downhill grade at the east side of the viaduct. Alternative 2 and Alternative 2A follow the same general alignment other than modifying one horizontal curve geometry. Alternative 2 has a radius of 116 feet for curve at PI Station 3+72.25 and Alternative 2A has a radius of 260 feet at curve at PI Station 4+07.63. Appendix D includes the plan and profile of Alternative 2 and 2A.

An improved connection with the Pasco Drive west of Blaine Barton Road and to provide a bus parking area is included with each alternative. Buses currently use the graded area (Parcel Tax ID No. 56-00256) south of Blaine Barton Road to park/stage routes. Also, a future bike trail is shown along Blaine Barton Road.

Table #1 provides a summary of advantages and disadvantages of each roadway alternative.

Table 1	Alternative 1	Alternative 2	Alternative 2A
Advantages	▪ Least roadway cost ▪ Shortest roadway length ▪ Least ROW Impacts ▪ Creates a four-legged intersection for improved access management along US Route 40	▪ Relocates the intersection away from sag vertical curve on U.S. Route 40- PI Sta 116+37	▪ Relocates the intersection away from sag vertical curve on U.S. Route 40, PI Sta 116+37
Disadvantages	▪ Affects 6 property parcels	▪ Affects 7 property parcels ▪ High Roadway Cost ▪ Impacts floodway and floodplain	▪ Affects 8 property parcels ▪ High Roadway Cost ▪ One residential displacement

A side-by-side comparison table using project performance measures was developed for evaluating the alternatives. Table #2 on the following page provides the evaluation of the alternatives.

Blaine Barton Road Feasibility Study

Table #2

Performance Measures	Alternative 1- Plus Intersection with Handel St.	Alternative 2 – T Intersection with Route 40	Alternative 2A – T Intersection with Route 40- Improved Horizontal Geometry																																																																																																																																																																																																																																
Length	680'±	1,250'±	1,150'±																																																																																																																																																																																																																																
Horizontal Geometry (Design Exceptions)	Curve 1-1; Dc=50°, 20 mph Curve 1-2; Dc=17°30', 30 mph	Curve 2-1; Dc=50°, 20 mph Curve 2-1; Dc=6°57', 40 mph Curve 2-2; Dc=16°22', 30 mph	Curve 2A-1; Dc=22°, 30 mph with 0.031 super Curve 2A-1; Dc=6°57', 40 mph Curve 2A-2; Dc=16°22', 30 mph																																																																																																																																																																																																																																
Vertical Geometry	3% Grade @ intersection 8% Grade max.	3% Grade @ intersection 9% grade max.	3% Grade @ intersection 8% Grade max.																																																																																																																																																																																																																																
Property Impact	6 parcels <table> <tr> <th>Parcel</th><th>Parcel ID</th><th>total acreage</th><th>take acreage</th></tr> <tr><td>1</td><td>56-00578.000</td><td></td><td>0.004</td></tr> <tr><td>2</td><td>56-00254.0039</td><td>0.3</td><td>0.003</td></tr> <tr><td>3</td><td>56-00255.0040</td><td>0.38</td><td>0.169</td></tr> <tr><td>4</td><td>56-01443.000</td><td>3.5</td><td>0.525</td></tr> <tr><td>5</td><td>56-00237.000</td><td>7.98</td><td>0.039</td></tr> <tr><td>6</td><td>56-01448.000</td><td>1.67</td><td>0.006</td></tr> <tr><td colspan="2"></td><td>Total Roadway acreage</td><td>0.746</td></tr> <tr><td colspan="4"> </td></tr> <tr><td colspan="2">7</td><td>Bus parking</td><td></td></tr> <tr><td></td><td>56-00237.000</td><td>7.98</td><td>0.307</td></tr> <tr><td colspan="2"></td><td>Total Parking acreage</td><td>0.307</td></tr> <tr><td colspan="4"> </td></tr> <tr><td colspan="2">8</td><td>Drainage</td><td></td></tr> <tr><td></td><td>56-00237.000</td><td>7.98</td><td>0.175</td></tr> <tr><td 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Traffic Operation	2 – 12' travel lanes, 2' offset to curb, type 6 curb	2 – 12' travel lanes, 2' offset to curb, type 6 curb	2 – 12' travel lanes, 2' offset to curb, type 6 curb																																																																																																																																																																																																																																
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Functional Classification	US 40 - Minor Arterial; Blaine Barton – Major Collector	US 40 - Minor Arterial; Blaine Barton – Major Collector	US 40 - Minor Arterial; Blaine Barton – Major Collector																																																																																																																																																																																																																																
Floodplain Impact	NA	0.04 acres	NA																																																																																																																																																																																																																																
Floodway Impact	NA	0.02 acres	NA																																																																																																																																																																																																																																
Project Roadway Cost	\$846,400*	\$1,581,500*	\$1,638,940*																																																																																																																																																																																																																																
Bus Staging Area/Access Cost	\$346,100*	\$338,150*	\$338,150*																																																																																																																																																																																																																																
Funding Options	TID funding, ODOT & FHWA Programs, FTA Bus Facilities, ODOT TAP	TID funding, ODOT & Programs, FTA Bus Facilities, ODOT TAP	TID funding, ODOT & FHWA Programs, FTA Bus Facilities, ODOT TAP																																																																																																																																																																																																																																
Other Factors	60' R/W; 30' left, 30' right	60' R/W; 30' left, 30' right	60' R/W; 30' left, 30' right																																																																																																																																																																																																																																

* Rounded Value

H. CONCLUSION & RECOMMENDATION

The three alternatives evaluated meet the project purpose. The benefits of the conceptual solutions presented in this report are:

- Eliminates a poorly arranged intersection to a more conventional intersection
- Improves intersection operations
- Improves intersection sight distance

A summary of the budgetary opinion of cost of the alternatives is shown in Table 3 and 4 for the roadway and bus parking respectively. A 7.4% escalation rate was used in developing project cost based on Engineering News-Record (ENR) December publication. Appendix E provides more detailed information on probable construction cost and excerpt from ENR.

Roadway Alternatives

Table 3	Alternative 1	Alternative 2	Alternative 2A
Construction Cost	\$677,125	\$1,117,989	\$1,085,554
Construction Inspection	\$67,713	\$111,799	\$198,555
Engineering	\$101,569	\$167,698	\$162,833
Right of Way	\$92,000	\$144,000	\$242,000
Utilities	\$40,000	\$40,000	\$40,000
Total	\$846,407	\$1,581,486	\$1,638,942

All right of way cost has been included under the roadway alternatives since a comprehensive right-of-way plan would be prepared for the program and to also avoid multiple claims on the same property. Approximately 0.35 acres of required right of way is for the Bus Parking area

Bus Parking Area

Table 4 provides a summary for the bus parking area.

Table 4	Alternative 1	Alternative 2	Alternative 2A
Construction Cost	\$276,866	\$270,519	\$270,519
Construction Engineering	\$27,686	\$27,052	\$27,052
Engineering	\$41,530	\$40,578	\$40,578
Total	\$346,083	\$338,149	\$338,148

Next steps required for this project are:

- Identify and appropriate funds for Engineering and Environmental Services
- Begin Preliminary Engineering and Environmental Services
- Secure funds for all phases of project implementation

APPENDIX A:

ODOT RELOCATION PLANS – OHIO PROJEC NO. S-111(1)

STATE OF OHIO DEPARTMENT OF HIGHWAYS BLAINE-BARTON ROAD COLERAIN TOWNSHIP BELMONT COUNTY COUNTY ROAD No. 9-A-SEC. A (PT.)

OHIO PROJECT
NO. 5-1111 (1)

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS	
2	OHIO	5-1111(1)		1 16

BELMONT COUNTY
COUNTY ROAD No. 9-A-SEC. A (PT.)
F.A.S.S. 895

LINE DATA

BEGIN PROJECT STA. 10+00
END PROJECT STA. 16+00
NET LENGTH OF PROJECT = 600 LIN. FT.
OR 0.113 MILE

BEGIN WORK STA. 9+00
END WORK STA. 16+00
NET LENGTH OF WORK 700 LIN. FT.
OR 0.132 MILE

CONVENTIONAL SIGNS

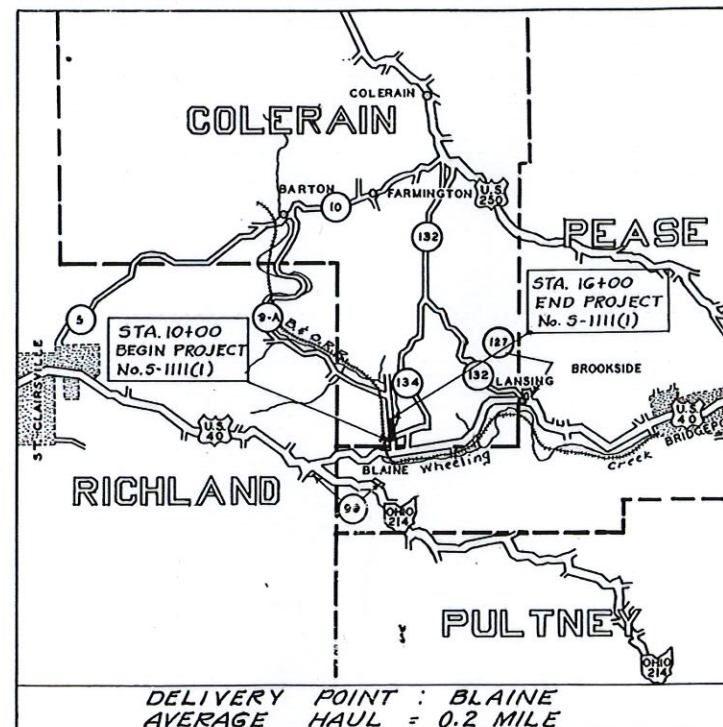
STATE LINE
COUNTY LINE
TOWNSHIP LINE
SECTION LINE
CENTER LINE
RAILROAD
GUARD RAIL, NEW

INDEX OF SHEETS

TITLE PAGE SHEET 1
TYPICAL SECTION AND GENERAL NOTES " 2
SUMMARY OF QUANTITIES " 3
PLAN AND PROFILE " 4-5
CROSS SECTIONS " 6-8
BRIDGE DETAILS " 9-16

* Accepted By B.R.R.
** Submitted To B.R.R. for Approval

STANDARD	DRAWINGS
** 6-7.07	1-2-53 AS-1-47, AS-2-47 7-27-49
* RI-1	5-16-51
* T-35	10-1-52
** I-15 No. 1	2-2-53
** I-15 No. 2	2-2-53
** SSB-1-47	7-27-49



LOCATION PLAN

SCALE 1" = 1 MILE

PORTION TO BE IMPROVED
STATE HIGHWAYS
OTHER ROADS

SCALES

PLAN 1" = 50'
PROFILE (HORIZONTAL) 1" = 50'
PROFILE (VERTICAL) 1" = 10'
CROSS SECTIONS 1" = 10'

SUPPLEMENTAL SPECIFICATIONS
T-171.19 Rev. 3-19-53
M-101.7 1-24-53

We the Commissioners of Belmont County in formal session hereby approve these plans and certify that the necessary right of way is available. We agree to maintain the project in a manner satisfactory to the Director of Highways, State of Ohio, or his duly authorized representatives and will make ample provision each year for such maintenance.
Done under authority of Sections 6906 et. seq. and 7464 et. seq. of the General Code of Ohio.

BOARD of COMMISSIONERS - BELMONT COUNTY

4-22-53
Date

The Standard Specifications of The State of Ohio, Department of Highways including changes and Supplemental Specifications listed in the Proposal will govern this improvement.

I hereby approve these plans and declare that the making of this improvement will not require the closing to traffic of the highway, and that provisions for the maintenance and safety of traffic will be as set forth in the plans and estimates.

APPROVED
DATE 4-22-53 COUNTY ENGINEER

APPROVED
DATE 4-22-53 DIVISION ENGINEER

APPROVED
DATE 5-13-53 CHIEF ENGR. BUREAU BRIDGES & R.R. CROSSINGS

APPROVED
DATE 5-13-53 CHIEF ENGR. BUREAU LOCATION & DESIGN

APPROVED
DATE 5-14-53 ST. ASST. DIRECTOR AND CHIEF ENGINEER

APPROVED
DATE 5-14-53 DIRECTOR OF HIGHWAYS

APPROVED
DATE 5-14-53 CHIEF ENGINEER BUREAU OF PLANNING & PROGRAMMING

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS

RECOMMENDED FOR APPROVAL:

DISTRICT ENGINEER DATE

APPROVED:

FOR THE DIVISION ENGINEER DATE

FILE No.	BELMONT CO., CO. ROAD No. 9-A.
	DATE OF LETTING
	CONTRACT No.

EXISTING BRIDGE
Three span stone arch bridge; spans 50, 40, 30
Piers 5'-0" and 4'-6"
Total length 129'-6"
Roadway 26'-9"
Wearing Surface 5" brick.

Present bridge over
Wheeling Creek to remain
in place.

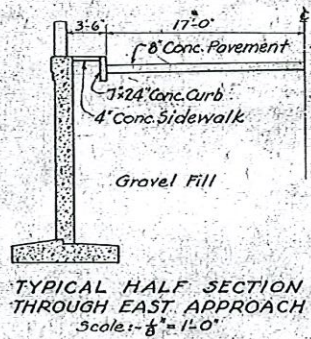
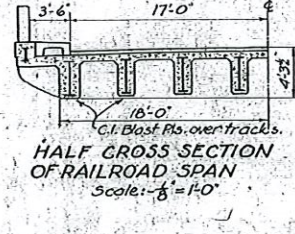
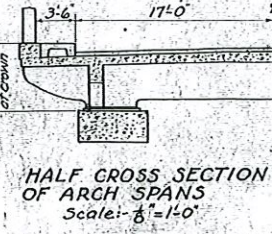
PROPOSED BRIDGE
Reinforced concrete bridge consisting
of four open spandrel arch spans, six
concrete beam spans, and one encased
steel beam span over R.R.
Total length 753'-6"
Roadway width 34'-0"
2-Sidewalks 3'-6" wide.

Grade line of Blaine Hill Improvement
to be made at the same time as
this project.

Note:
Elevations shown opposite
stationing are for & grade.

STATE OF OHIO
Approved: *J.P. Burkley* 3/28/32
Chief Engineer of Bridges & Grade Separations
Chief Engineer of Highways
Director of Highways
BALTIMORE AND OHIO R.R.
Approved: *J.P. Burkley*
Chief Engineer

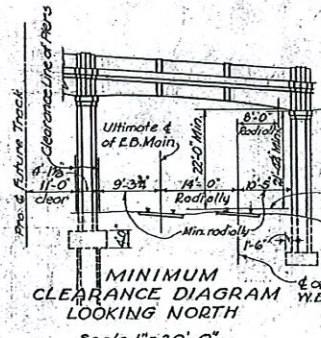
SOUTH SIDE ELEVATION
Scale 1" = 40'-0"
COMMISSIONERS OF BELMONT COUNTY
Approved: *J.W. Dillman*
J.P. Burkley
James M. Fulton
Date: April 11-1932



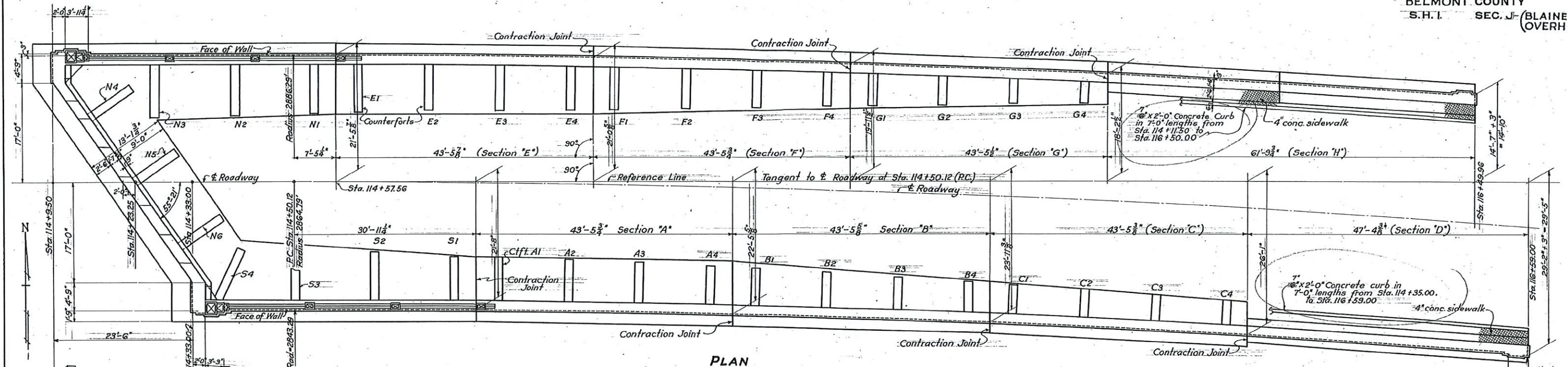
STATE OF OHIO DEPARTMENT OF HIGHWAYS BUREAU OF BRIDGES					
GENERAL PLAN AND ELEVATION					
BR. NO. BE-40-232 BLAINE HILL VIADUCT OVER B. & O. R.R. - WHEELING CREEK					
BELMONT COUNTY SEC. J (BLAINE OVERHEAD)					
DESIGNED J.M.C.	DRAWN J.M.C.	TRACED J.M.C.	CHECKED J.M.C.	APPROVED J.M.C.	DATE 3/15/32

Note:
Bridge designed for H-15
loading according to "Specifications
for Design of Highway Structures"
State of Ohio, Department of
Highways, 1932.
All work done by the
State's contractor on or adjacent
to railroad tracks shall be
done in co-operation with and
in a manner prescribed by
the Railroad Company.

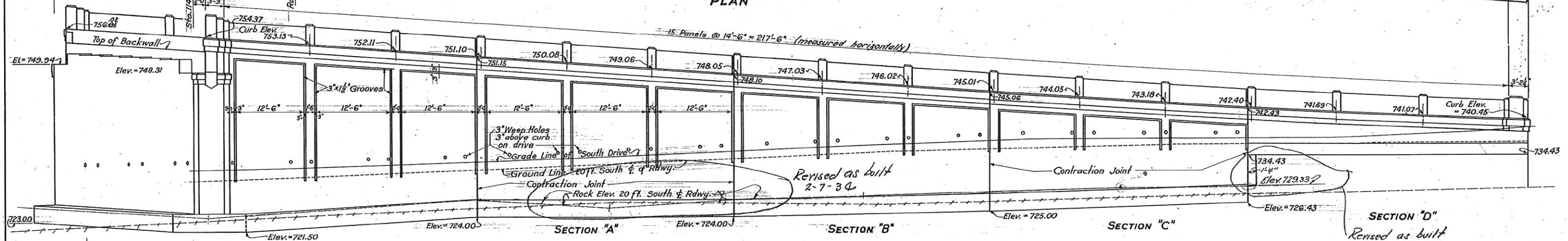
Note: These soundings represent
the subsurface information obtained
but the State of Ohio does
not guarantee the correctness
thereof.



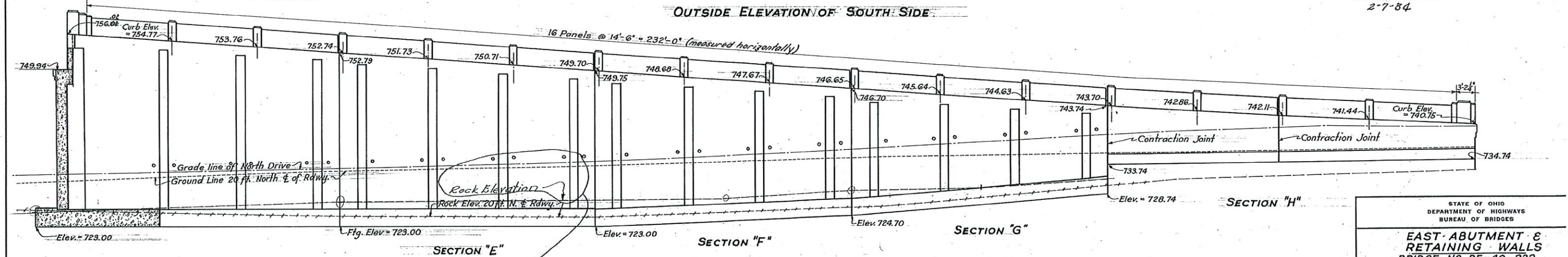
S.H.I. SEC. J- (BLAINE
OVERH



PLAN



OUTSIDE ELEVATION OF SOUTH SIDE



INSIDE ELEVATION OF NORTH SIDE

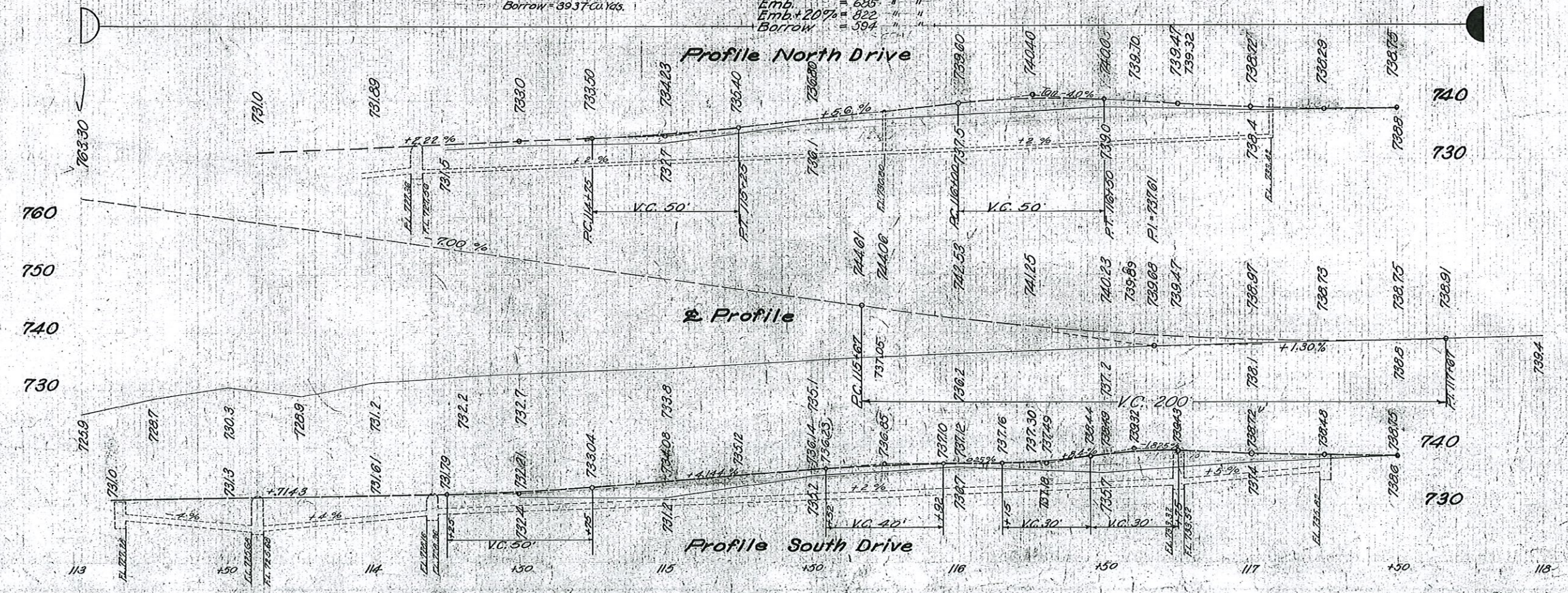
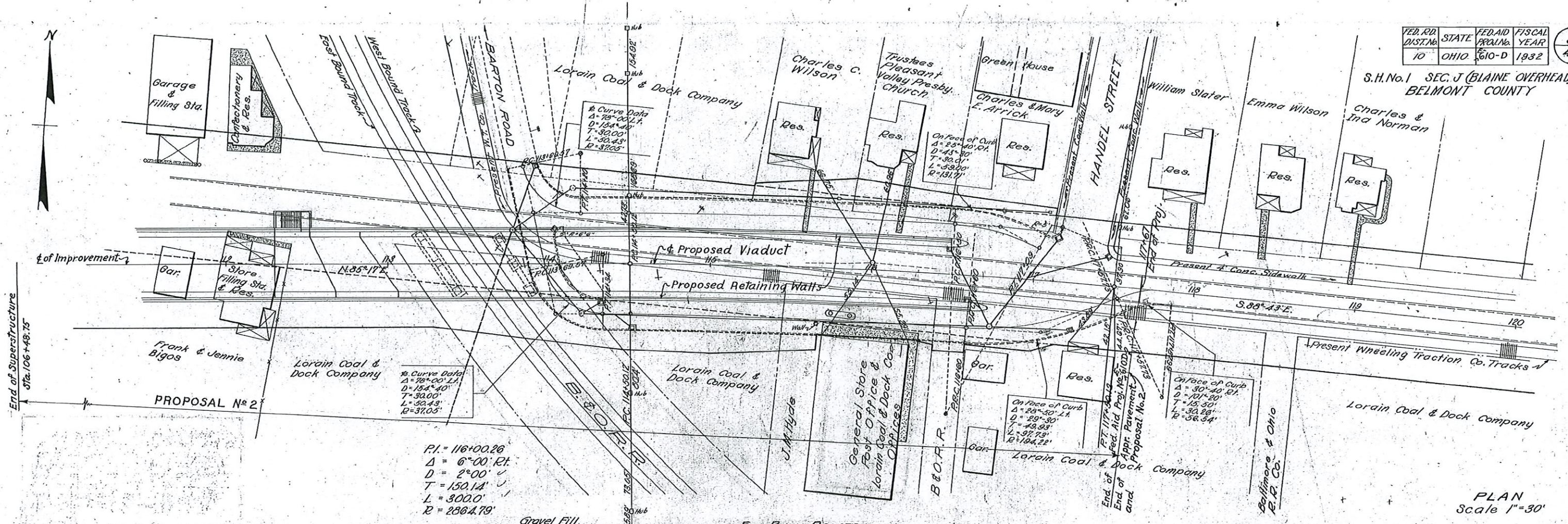
Revised as built
2-7-34

STATE OF OHIO DEPARTMENT OF HIGHWAYS BUREAU OF BRIDGES					
EAST ABUTMENT & RETAINING WALLS BRIDGE NO. BE-40-232 BLAINE HILL VIADUCT OVER B.&O. R.R. — WHEELING CREEK BELMONT COUNTY SEC. J — (BLAINE OVERHEAD) — S.H.					
DESIGNED A.B.D.	DRAWN A.B.D.	TRACED J.V.G.	CHECKED W.F.	REVIEWED S.H.C. M.H.G.	DATE 1/22/52

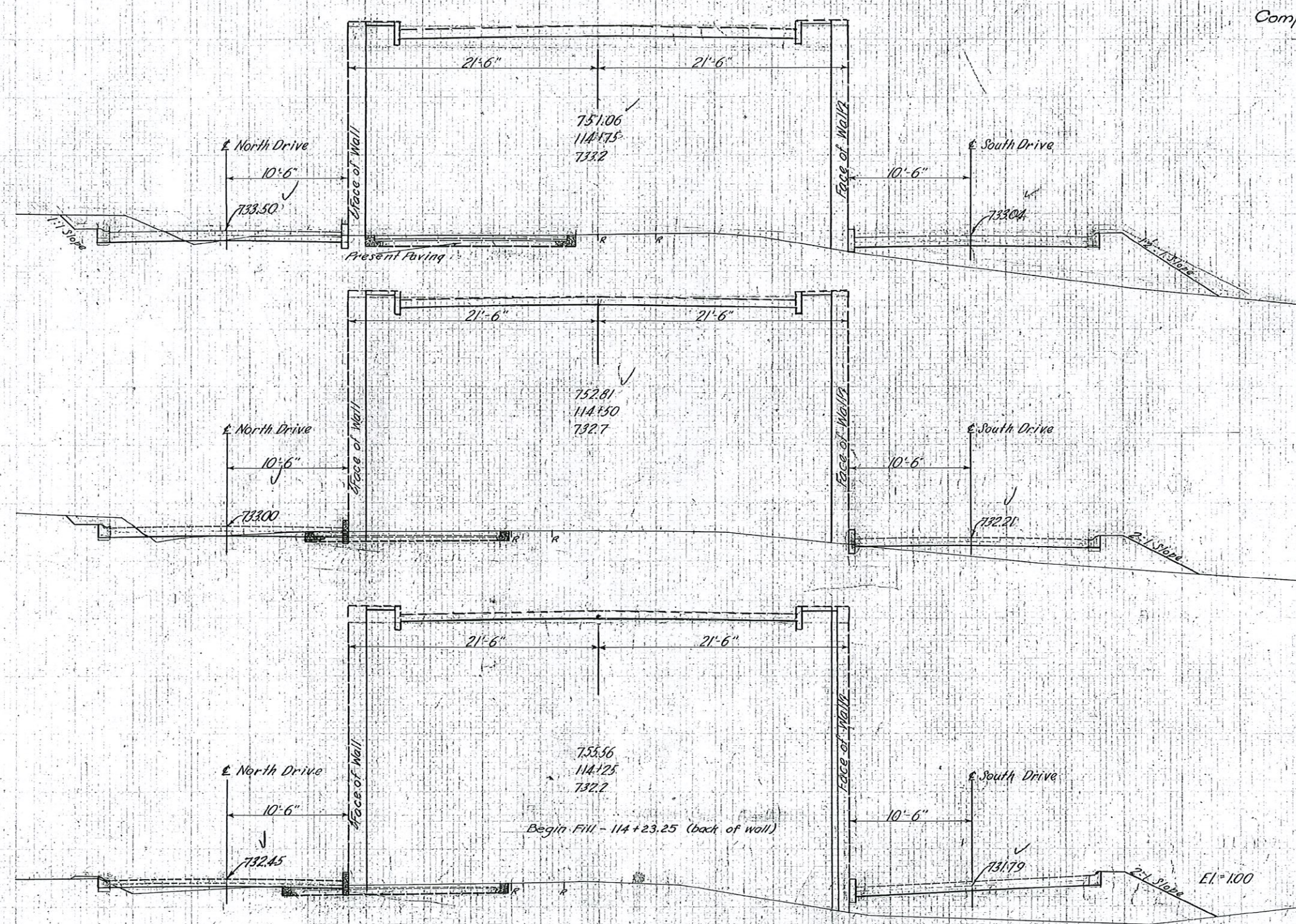
Revision: 8-23-32 Dimensions and elevations of curb

FED. RD. DIST. No.	STATE	FED. AID PROJ. No.	FISCAL YEAR
10	OHIO	610-D	1932

S.H. No. 1 SEC. J (BLAINE OVERHEAL, BELMONT COUNTY)

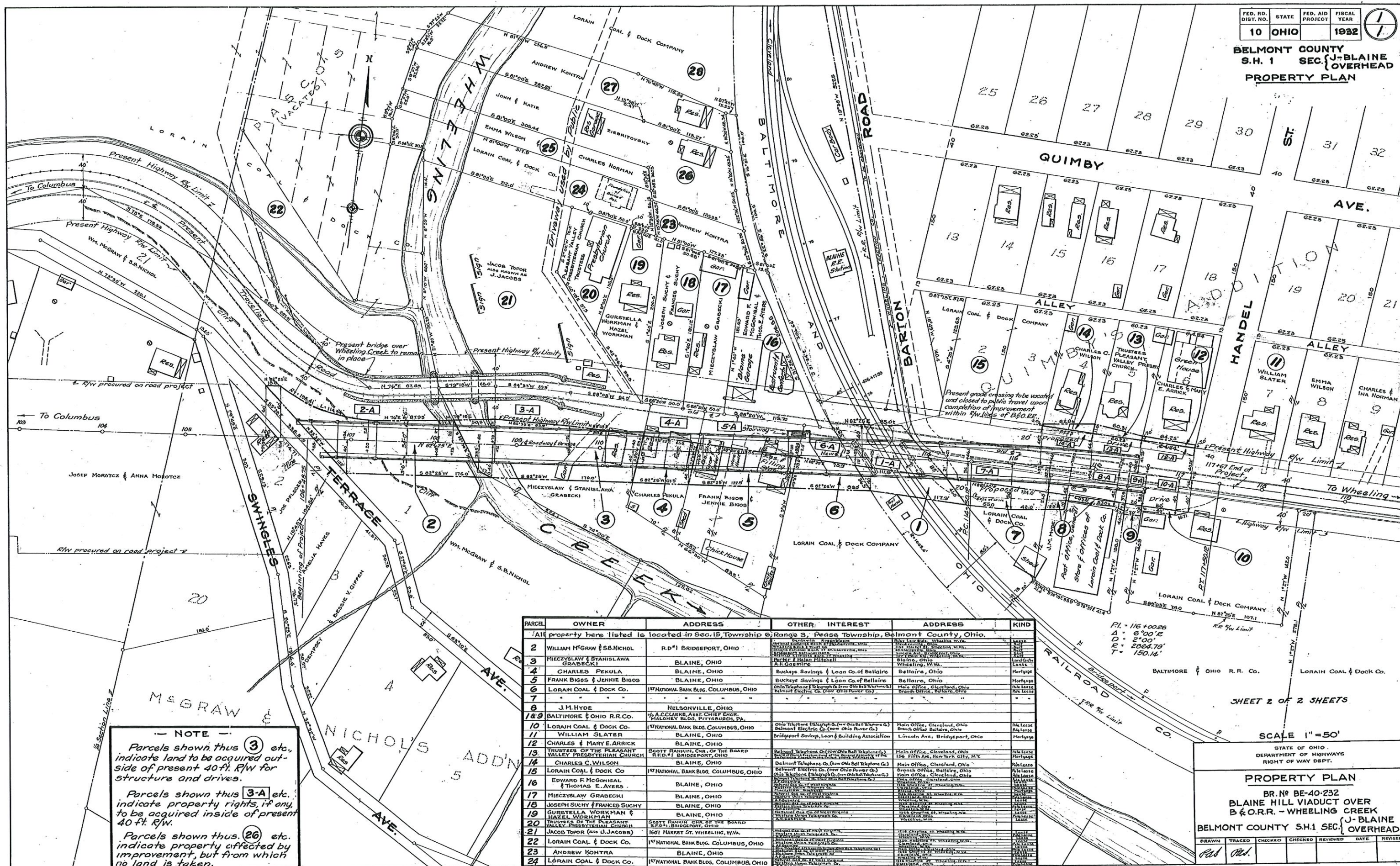


93



Compacted Fill Between Walls		Side Drive			
END AREA CU. YDS.		END AREA CU. YDS.		END AREA CU. YDS.	
FILL	FILL	CUT	FILL	CUT	FILL
585		19	68		
670				11	49
675					
788		5	37		
796				3	57
935				10	87
40					

Sta. 114+25 To Sta. 114+75



PARCEL	OWNER	ADDRESS	OTHER	INTEREST	ADDRESS	KIND
All property here listed is located in Sec. 15 Township of Range 3, Pease Township, Belmont County, Ohio.						
2	WILLIAM McGRW & S.B. NICHOL	R.D.#1 BRIDGEPORT, OHIO	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Tele. Exch.
3	MIECZYSLAW & STANISLAWA GRABECKI	BLAINE, OHIO	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Tele. Exch.
4	CHARLES PEKULA	BLAINE, OHIO	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Tele. Exch.
5	FRANK BIGOS & JENNIE BIGOS	BLAINE, OHIO	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Tele. Exch.
6	LORAIN COAL & DOCK CO.	157 NATIONAL BANK BLDG. COLUMBUS, OHIO	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Tele. Exch.
7	" " " "	" " " "	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Tele. Exch.
8	J.M. HYDE	NELSONVILLE, OHIO	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Tele. Exch.
8-9	BALTIMORE & OHIO R.R.CO.	94 A.C. CARRIAGE, ARTIST CHIEF ENGR. MALONEY BLDG. PITTSBURGH, PA.	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Tele. Exch.
10	LORAIN COAL & DOCK CO.	157 NATIONAL BANK BLDG. COLUMBUS, OHIO	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Tele. Exch.
11	WILLIAM SLATER	BLAINE, OHIO	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Tele. Exch.
12	CHARLES & MARY E. ARRICK	BLAINE, OHIO	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Tele. Exch.
13	TRUSTEES OF THE PLEASANT VALLEY PRESBYTERIAN CHURCH	SCOTT RANKIN, CHIEF OF THE BOARD R.F.D.#1 BRIDGEPORT, OHIO	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Tele. Exch.
14	CHARLES C. WILSON	BLAINE, OHIO	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Tele. Exch.
15	LORAIN COAL & DOCK CO.	157 NATIONAL BANK BLDG. COLUMBUS, OHIO	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Tele. Exch.
16	EDWARD F. McGOONAL & THOMAS E. AYERS	BLAINE, OHIO	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Tele. Exch.
17	MIECZYSLAW GRABECKI	BLAINE, OHIO	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Tele. Exch.
18	JOSEPH SUCHY & FRANK SUCHY	BLAINE, OHIO	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Tele. Exch.
19	GURSTELLA WORKMAN & HAZEL WORKMAN	BLAINE, OHIO	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Tele. Exch.
20	TRUSTEES OF THE PLEASANT VALLEY PRESBYTERIAN CHURCH	SCOTT RANKIN, CHIEF OF THE BOARD R.F.D.#1, BRIDGEPORT, OHIO	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Tele. Exch.
21	JACOB TOPOR (aka J. JACOBS)	1601 MARKET ST. WHEELING, W.VA.	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Tele. Exch.
22	LORAIN COAL & DOCK CO.	157 NATIONAL BANK BLDG. COLUMBUS, OHIO	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Tele. Exch.
23	ANDREW KONTRA	BLAINE, OHIO	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Tele. Exch.
24	LORAIN COAL & DOCK CO.	157 NATIONAL BANK BLDG. COLUMBUS, OHIO	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Tele. Exch.
25	EMMA WILSON & CHAS. NORMAN	BLAINE, OHIO	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Tele. Exch.
26	JOHN & KATIE ZIEBRITOVSKY	BLAINE, OHIO	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Tele. Exch.
27	ANDREW KONTRA	BLAINE, OHIO	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Tele. Exch.
28	LORAIN COAL & DOCK CO.	157 NATIONAL BANK BLDG. COLUMBUS, OHIO	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Belmont Electric Co. (new Ohio Bell Telephone Co.)	Tele. Exch.

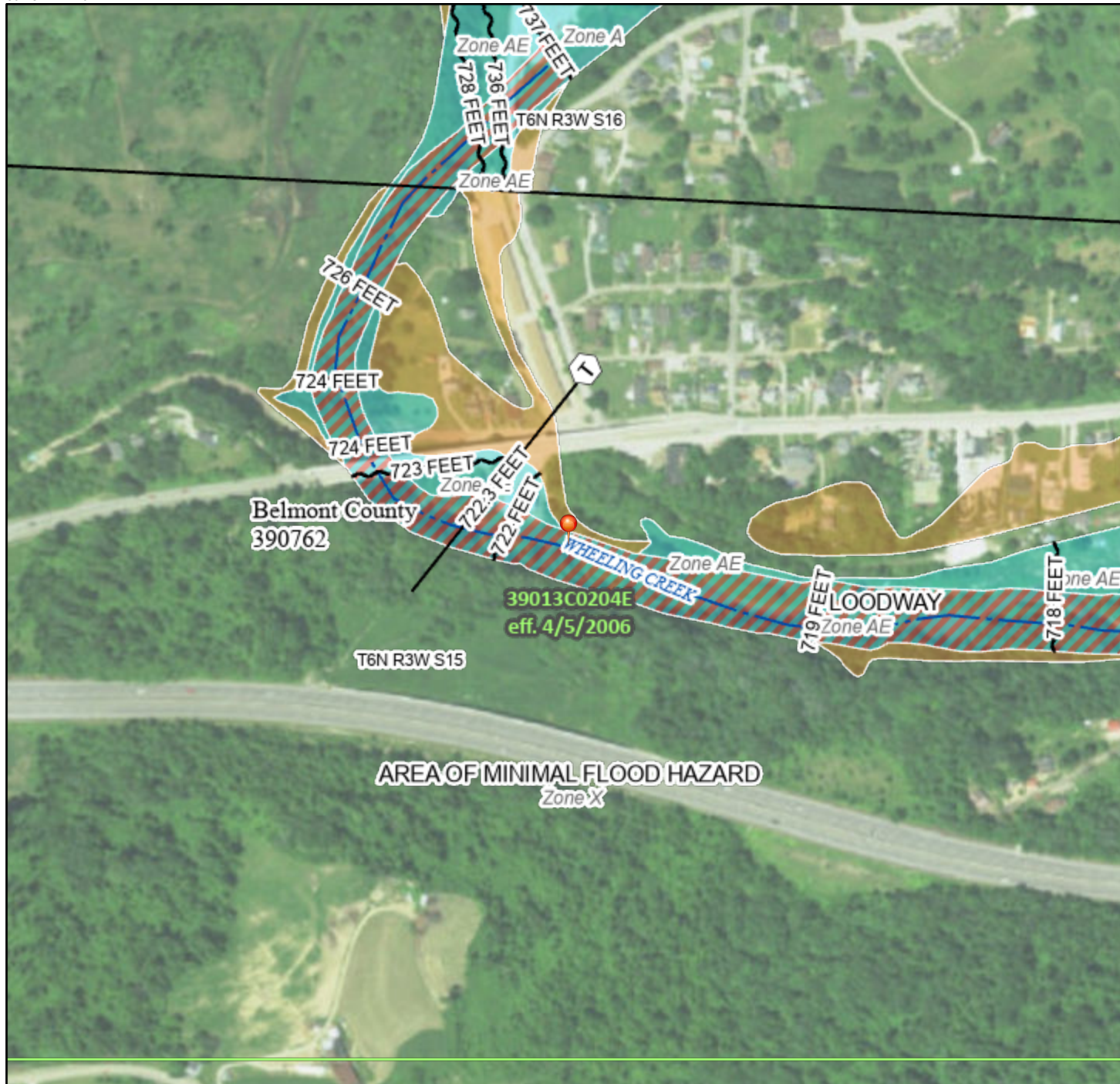
APPENDIX B:

NATIONAL FLOOD HAZARD LAYER FIRMette

National Flood Hazard Layer FIRMette



80°49'27"W 40°4'12"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

80°48'50"W 40°3'44"N

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone D
		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 5/3/2021 at 10:56 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

APPENDIX C:

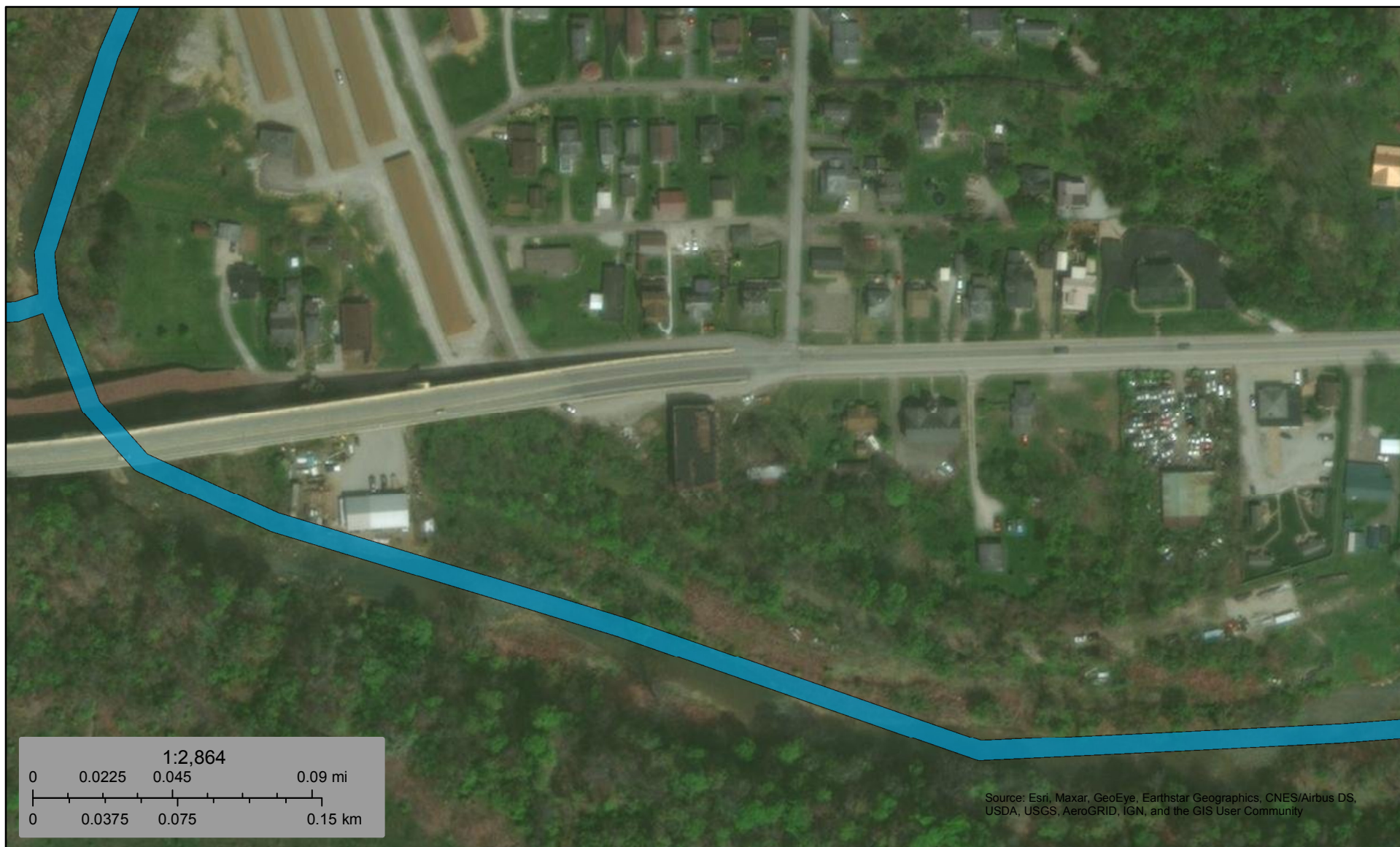
NATIONAL WETLANDS INVENTORY



U.S. Fish and Wildlife Service

National Wetlands Inventory

Wetlands



January 24, 2022

Wetlands

	Estuarine and Marine Deepwater		Freshwater Emergent Wetland		Lake
	Estuarine and Marine Wetland		Freshwater Forested/Shrub Wetland		Other
			Freshwater Pond		Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

APPENDIX D:

ALTERNATIVE 1, 2, 2A PLAN AND PROFILE

P.I. Sta. 5+26.86
 $\Delta = 33^{\circ} 36' 03''$ (RT)
 $Dc = 17^{\circ} 31' 18''$
 $R = 327.00'$
 $T = 98.73'$
 $L = 191.77'$
 $E = 14.58'$
 $C = 189.03'$
 $C.B. = N 38^{\circ} 08' 49'' W$

	WITHOUT BASE FLOOD ELEVATION (BFE) ZONE A, V, A99
	WITH BFE OR DEPTH ZONE AE
	REGULATORY FLOODWAY
	0.2% ANNUAL CHANCE FLOOD HAZARD, AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTH LESS THAN ONE FOOT OR WITH DRAINAGE AREAS OF LESS THAN ONE SQUARE MILE ZONE X

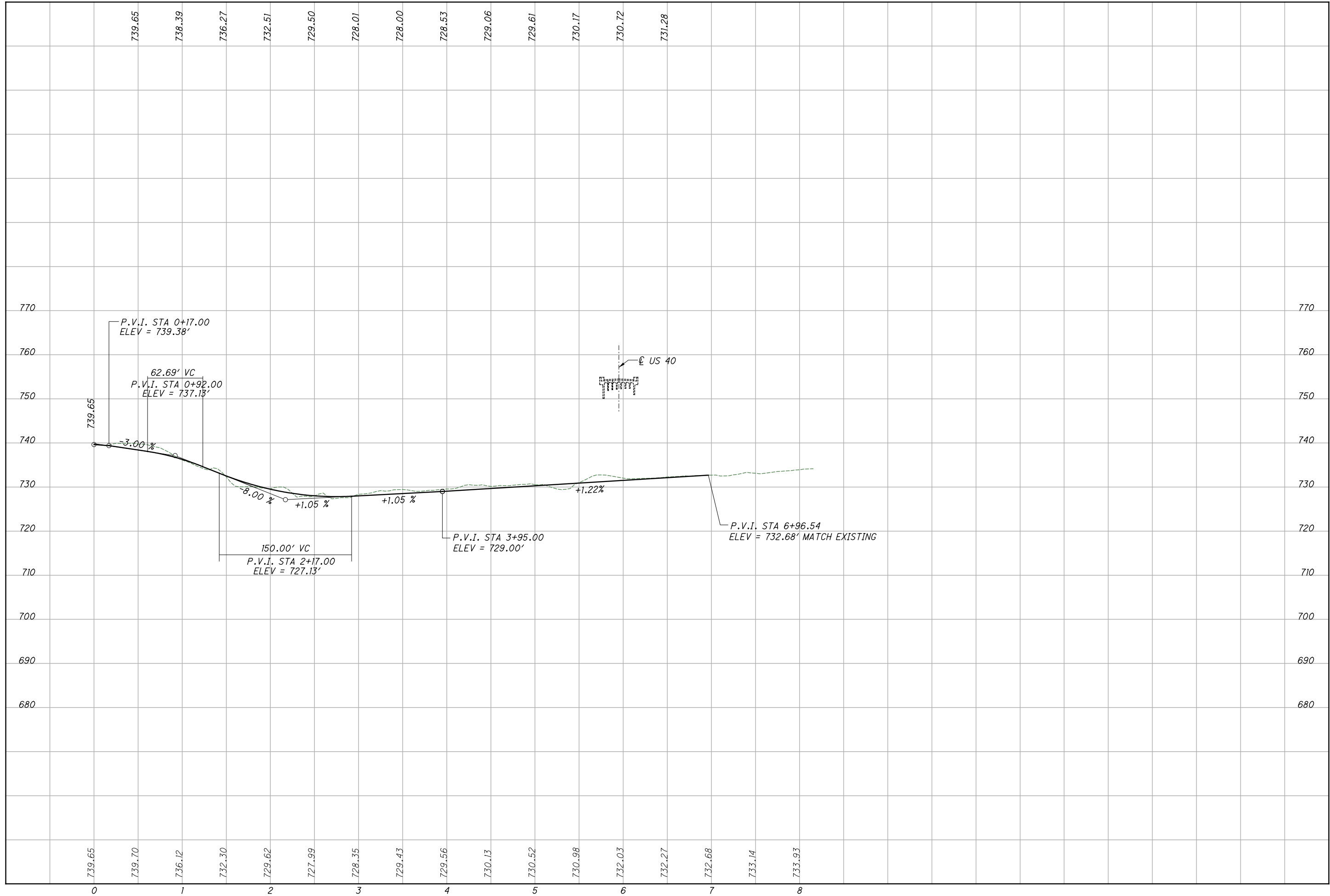
**REPRESENTATIVE PLAN - ALTERNATIVE 1
BLAINE BARTON ROAD INTERSECTION**

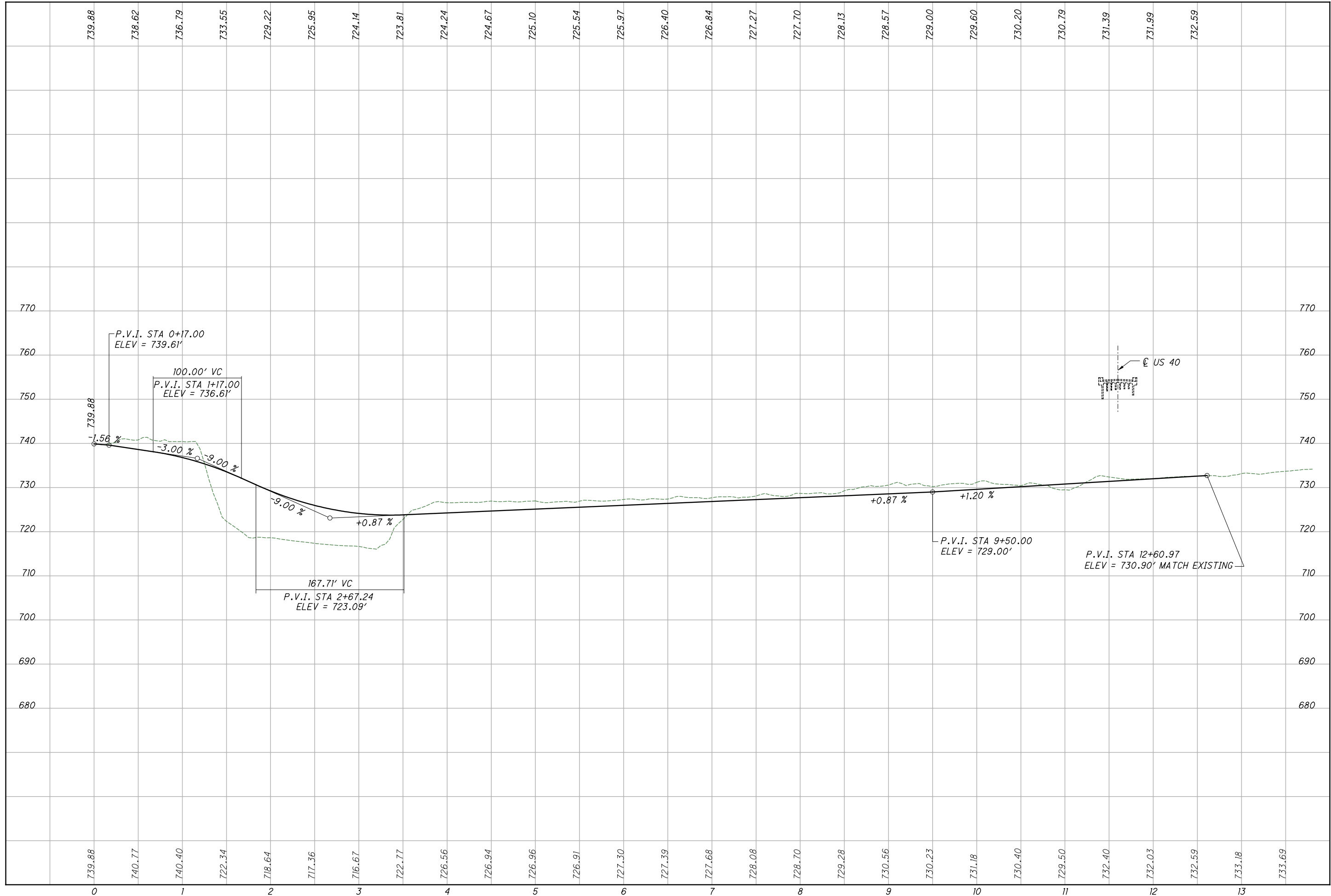
HORIZONTAL
SCALE IN FEET

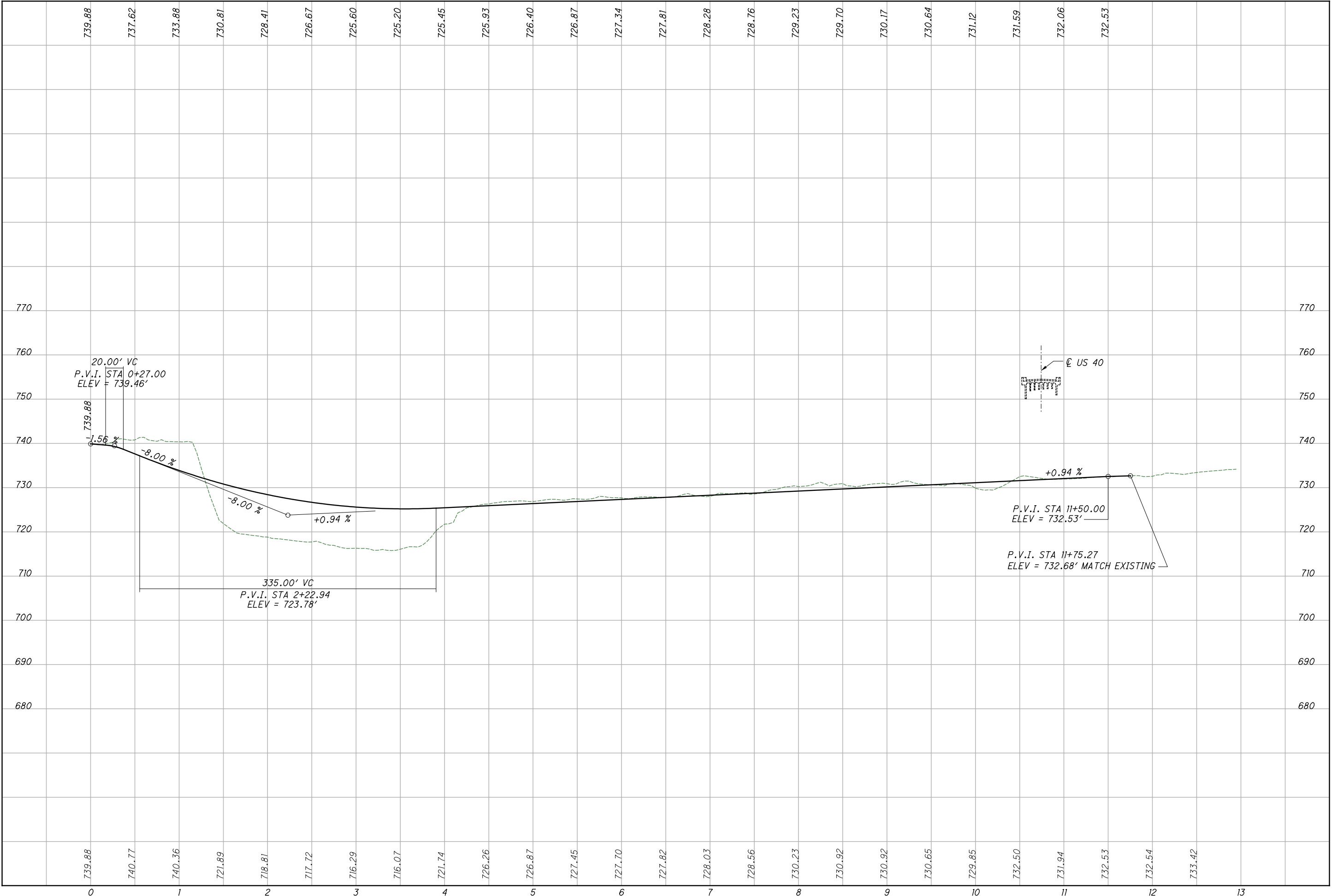


REL **RICHLAND ENGINEERING LTD**
A WALLACEPANCHERGROUP COMPANY

29 NORTH PARK STREET
MANSFIELD OHIO 44902
PHONE: (419) 524-0074
www.wallacepancher.com







REPRESENTATIVE PROFILE - ALTERNATIVE 2A
BLAINE BARTON ROAD INTERSECTION



APPENDIX E:

OPINION OF PROBABLE COST

City of Blaine
Blaine Barton Road Intersection
Alternate 1
BUDGETARY OPINION OF PROBABLE CONSTRUCTION COST

DESCRIPTION	QUANTITY	UNIT	UNIT COST 2021	TOTAL PROJECT COST
ROADWAY				
CLEARING AND GRUBBING	LS		\$ 10,000.00	\$ 10,000.00
PAVEMENT REMOVED	1382	SY	\$ 10.00	\$ 13,820.00
WALK REMOVED	150	SF	\$ 5.00	\$ 750.00
CURB REMOVED	200	FT	\$ 10.00	\$ 2,000.00
PIPE REMOVED, 24" AND UNDER	25	FT	\$ 20.00	\$ 500.00
CATCH BASIN REMOVED	3	EACH	\$ 350.00	\$ 1,050.00
EXCAVATION	1771	CY	\$ 15.00	\$ 26,565.00
EMBANKMENT	142	CY	\$ 25.00	\$ 3,550.00
SUBGRADE COMPACTION	3497	SY	\$ 2.00	\$ 6,994.00
PROOF ROLLING	3	HOUR	\$ 165.00	\$ 495.00
4" CONCRETE WALK	3557	SF	\$ 10.00	\$ 35,570.00
CURB RAMP	400	SF	\$ 20.00	\$ 8,000.00
			ROADWAY TOTAL =	\$ 109,294.00
EROSION CONTROL				
SOIL ANALYSIS TEST	2	EACH	\$ 100.00	\$ 200.00
TOPSOIL	198	CY	\$ 40.00	\$ 7,920.00
SEEDING AND MULCHING	1780	SY	\$ 2.00	\$ 3,560.00
COMMERCIAL FERTILIZER	0.24	TON	\$ 750.00	\$ 180.00
LIME	0.37	ACRE	\$ 150.00	\$ 55.50
WATER	10	MGAL	\$ 2.00	\$ 20.00
EROSION CONTROL	5000	EACH	\$ 1.00	\$ 5,000.00
			EROSION CONTROL TOTAL =	\$ 16,935.50
DRAINAGE				
6" BASE PIPE UNDERDRAINS	1745	FT	\$ 10.00	\$ 17,450.00
12" CONDUIT, TYPE B	51	FT	\$ 85.00	\$ 4,335.00
12" CONDUIT, TYPE C	125	FT	\$ 60.00	\$ 7,500.00
15" CONDUIT, TYPE B	25	FT	\$ 100.00	\$ 2,500.00
15" CONDUIT, TYPE C	525	FT	\$ 60.00	\$ 31,500.00
18" CONDUIT, TYPE B	25	FT	\$ 120.00	\$ 3,000.00
18" CONDUIT, TYPE C	25	FT	\$ 100.00	\$ 2,500.00
CATCH BASIN, NO. 3	4	EACH	\$ 3,200.00	\$ 12,800.00
CATCH BASIN, NO. 2-2B	1	EACH	\$ 1,800.00	\$ 1,800.00
MANHOLE, NO. 3	2	EACH	\$ 3,500.00	\$ 7,000.00
			DRAINAGE TOTAL =	\$ 90,385.00
PAVEMENT				
PAVEMENT PLANING, ASPHALT CONCRETE	67	SY	\$ 2.00	\$ 134.00
ASPHALT CONCRETE BASE, PG64-22	458	CY	\$ 175.00	\$ 80,150.00
AGGREGATE BASE	509	CY	\$ 70.00	\$ 35,630.00
TACK COAT	336	GAL	\$ 3.00	\$ 1,008.00
ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG64-22	235	CY	\$ 250.00	\$ 58,750.00
CURB, TYPE 6	1621	FT	\$ 25.00	\$ 40,525.00
			PAVEMENT TOTAL =	\$ 216,197.00
TRAFFIC CONTROL				
GROUND MOUNTED SUPPORT, NO. 3 POST	134.5	FT	\$ 15.00	\$ 2,017.50
STREET NAME SIGN SUPPORT, NO. 2 POST	12.5	FT	\$ 10.00	\$ 125.00
SIGN POST REFLECTOR	7	EACH	\$ 45.00	\$ 315.00
SIGN, FLAT SHEET	45	SF	\$ 20.00	\$ 900.00
SIGN, DOUBLE FACED, STREET NAME	2	EACH	\$ 180.00	\$ 360.00
REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL	2	EACH	\$ 15.00	\$ 30.00
REMOVAL OF GROUND MOUNTED SIGN AND REERECTION	8	EACH	\$ 65.00	\$ 520.00
REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL	6	EACH	\$ 15.00	\$ 90.00
CENTER LINE, TYPE 1	0.14	MILE	\$ 7,500.00	\$ 1,050.00
STOP LINE, TYPE 1	43	FT	\$ 5.00	\$ 215.00
CROSSWALK LINE, TYPE 1	301	FT	\$ 3.00	\$ 903.00
YIELD LINE, TYPE 1	52	FT	\$ 10.00	\$ 520.00
			TRAFFIC CONTROL TOTAL =	\$ 7,045.50
MAINTAINANCE OF TRAFFIC				
DETOUR SIGNING	LS		\$ 5,000.00	\$ 5,000.00
WATER	4	MGAL	\$ 30.00	\$ 120.00
			MISCELLANEOUS TOTAL =	\$ 5,120.00
MISCELLANEOUS				
MAINTAINING TRAFFIC	LS		\$ 15,000.00	\$ 15,000.00
CONSTRUCTION LAYOUT STAKES AND SURVEYING	LS		\$ 10,000.00	\$ 10,000.00
MOBILIZATION	LS		\$ 10,000.00	\$ 10,000.00
BID GUARANTY AND CONTRACT BOND	LS		\$ 5,000.00	\$ 5,000.00
			MISCELLANEOUS TOTAL =	\$ 40,000.00

City of Blaine
Blaine Barton Road Intersection
Alternate 1
BUDGETARY OPINION OF PROBABLE CONSTRUCTION COST

DESCRIPTION	QUANTITY	UNIT	UNIT COST 2021	TOTAL PROJECT COST
PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COST =				\$ 484,977.00
DESIGN CONTINGENCY (EST. 30%) =				\$ 145,493.00
SUBTOTAL=				\$ 630,470.00
INFLATION BASED UPON ODOT BUSINESS PLAN INFLATION CALCULATOR (EST. 7.4% -2022) =				\$ 46,655.00
SUBTOTAL INCLUDING INFLATION =				\$ 677,125.00
CONSTRUCTION ENGINEERING (EST. 10%) =				\$ 67,713.00
OPINION OF PROBABLE CONSTRUCTION COST =				\$ 744,838.00
RIGHT OF WAY				\$ 92,000.00
UTILITY RELOCATIONS				\$ 40,000.00
DESIGN ENGINEERING (EST. 15%) =				\$ 101,569.00
ENVIRONMENTAL (EST. 0%) =				\$ -
BUDGETARY OPINION OF PROBABLE PROJECT TOTAL =				\$ 846,407.00
BUS PARKING AREA				
ROADWAY				
CLEARING AND GRUBBING	LS		\$ 5,000.00	\$ 5,000.00
EXCAVATION	321	CY	\$ 15.00	\$ 4,815.00
EMBANKMENT	321	CY	\$ 25.00	\$ 8,025.00
SUBGRADE COMPACTION	1218	SY	\$ 2.00	\$ 2,436.00
PROOF ROLLING	1	HOUR	\$ 165.00	\$ 165.00
ROADWAY TOTAL =				\$ 20,441.00
EROSION CONTROL				
SOIL ANALYSIS TEST	2	EACH	\$ 100.00	\$ 200.00
TOPSOIL	190	CY	\$ 40.00	\$ 7,600.00
SEEDING AND MULCHING	1706	SY	\$ 2.00	\$ 3,412.00
COMMERCIAL FERTILIZER	0.23	TON	\$ 750.00	\$ 172.50
LIME	0.35	ACRE	\$ 150.00	\$ 52.50
WATER	10	MGAL	\$ 2.00	\$ 20.00
EROSION CONTROL TOTAL =				\$ 11,457.00
PAVEMENT				
NON-REINFORCED CONCRETE PAVEMENT, MISC.: PERVIOUS CONCRETE	1218	SY	\$ 150.00	\$ 182,700.00
PAVEMENT TOTAL =				\$ 182,700.00
TRAFFIC CONTROL				
PARKING LOT STALL MARKING, TYPE 1 PERVIOUS CONCRETE	227	FT	\$ 1.00	\$ 227.00
TRAFFIC CONTROL TOTAL =				\$ 227.00
PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COST =				\$ 214,825.00
DESIGN CONTINGENCY (EST. 20%) =				\$ 42,965.00
SUBTOTAL=				\$ 257,790.00
INFLATION BASED UPON ODOT BUSINESS PLAN INFLATION CALCULATOR (EST. 7.4% -2022) =				\$ 19,076.00
SUBTOTAL INCLUDING INFLATION =				\$ 276,866.00
CONSTRUCTION ENGINEERING (EST. 10%) =				\$ 27,687.00
OPINION OF PROBABLE CONSTRUCTION COST =				\$ 304,553.00
DESIGN ENGINEERING (EST. 15%) =				\$ 41,530.00
ENVIRONMENTAL (EST. 0%) =				\$ -
BUDGETARY OPINION OF PROBABLE PROJECT TOTAL =				\$ 346,083.00

City of Blaine
Blaine Barton Road Intersection
Alternate 2

BUDGETARY OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT COST 2021	TOTAL PROJECT COST
ROADWAY					
201	CLEARING AND GRUBBING	LS		\$ 10,000.00	\$ 10,000.00
202	PAVEMENT REMOVED	1382	SY	\$ 10.00	\$ 13,820.00
202	WALK REMOVED	150	SF	\$ 5.00	\$ 750.00
202	CURB REMOVED	200	FT	\$ 10.00	\$ 2,000.00
202	PIPE REMOVED, 24" AND UNDER	25	FT	\$ 20.00	\$ 500.00
202	CATCH BASIN REMOVED	3	EACH	\$ 350.00	\$ 1,050.00
203	EXCAVATION	3125	CY	\$ 15.00	\$ 46,875.00
203	EMBANKMENT	4701	CY	\$ 25.00	\$ 117,525.00
204	SUBGRADE COMPACTION	5454	SY	\$ 2.00	\$ 10,908.00
204	PROOF ROLLING	3	hour	\$ 165.00	\$ 495.00
608	4" CONCRETE WALK	3557	SF	\$ 10.00	\$ 35,570.00
608	CURB RAMP	400	SF	\$ 20.00	\$ 8,000.00
				ROADWAY TOTAL =	\$ 247,493.00
EROSION CONTROL					
659	SOIL ANALYSIS TEST	2	EACH	\$ 100.00	\$ 200.00
659	TOPSOIL	447	CY	\$ 40.00	\$ 17,880.00
659	SEEDING AND MULCHING	4026	SY	\$ 2.00	\$ 8,052.00
659	COMMERCIAL FERTILIZER	0.54	TON	\$ 750.00	\$ 405.00
659	LIME	0.83	ACRE	\$ 150.00	\$ 124.50
659	WATER	22	MGAL	\$ 2.00	\$ 44.00
832	EROSION CONTROL	5000	EACH	\$ 1.00	\$ 5,000.00
				EROSION CONTROL TOTAL =	\$ 31,705.50
DRAINAGE					
605	6" BASE PIPE UNDERDRAINS	2931	FT	\$ 10.00	\$ 29,310.00
611	12" CONDUIT, TYPE B	103	FT	\$ 90.00	\$ 9,270.00
611	12" CONDUIT, TYPE C	125	FT	\$ 80.00	\$ 10,000.00
611	15" CONDUIT, TYPE B	25	FT	\$ 100.00	\$ 2,500.00
611	15" CONDUIT, TYPE C	225	FT	\$ 60.00	\$ 13,500.00
611	18" CONDUIT, TYPE B	25	FT	\$ 120.00	\$ 3,000.00
611	18" CONDUIT, TYPE C	125	FT	\$ 100.00	\$ 12,500.00
611	CATCH BASIN, NO. 3	6	EACH	\$ 3,200.00	\$ 19,200.00
611	CATCH BASIN, NO. 2-2B	1	EACH	\$ 1,800.00	\$ 1,800.00
611	MANHOLE, NO. 3	3	EACH	\$ 3,500.00	\$ 10,500.00
				DRAINAGE TOTAL =	\$ 111,580.00
PAVEMENT					
254	PAVEMENT PLANING, ASPHALT CONCRETE	67	SY	\$ 2.00	\$ 134.00
301	ASPHALT CONCRETE BASE, PG64-22	753	CY	\$ 175.00	\$ 131,775.00
304	AGGREGATE BASE	839	CY	\$ 70.00	\$ 58,730.00
407	TACK COAT	548	GAL	\$ 3.00	\$ 1,644.00
441	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG64-22	382	CY	\$ 250.00	\$ 95,500.00
609	CURB, TYPE 6	2756	FT	\$ 25.00	\$ 68,900.00
				PAVEMENT TOTAL =	\$ 356,683.00
TRAFFIC CONTROL					
630	GROUND MOUNTED SUPPORT, NO. 3 POST	134.5	FT	\$ 15.00	\$ 2,017.50
630	STREET NAME SIGN SUPPORT, NO. 2 POST	12.5	FT	\$ 10.00	\$ 125.00
630	SIGN POST REFLECTOR	7	EACH	\$ 45.00	\$ 315.00
630	SIGN, FLAT SHEET	45	SF	\$ 20.00	\$ 900.00
630	SIGN, DOUBLE FACED, STREET NAME	2	EACH	\$ 180.00	\$ 360.00
630	REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL	2	EACH	\$ 15.00	\$ 30.00
630	REMOVAL OF GROUND MOUNTED SIGN AND REERECTION	8	EACH	\$ 65.00	\$ 520.00
630	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL	6	EACH	\$ 15.00	\$ 90.00
642	CENTER LINE, TYPE 1	0.24	MILE	\$ 7,500.00	\$ 1,800.00
642	STOP LINE, TYPE 1	43	FT	\$ 5.00	\$ 215.00
642	CROSSWALK LINE, TYPE 1	301	FT	\$ 3.00	\$ 903.00
642	YIELD LINE, TYPE 1	52	FT	\$ 10.00	\$ 520.00
				TRAFFIC CONTROL TOTAL =	\$ 7,795.50
MAINTAINANCE OF TRAFFIC					
614	DETOUR SIGNING	LS		\$ 5,000.00	\$ 5,000.00
616	WATER	16	MGAL	\$ 30.00	\$ 480.00
				MISCELLANEOUS TOTAL =	\$ 5,480.00
MISCELLANEOUS					
614	MAINTAINING TRAFFIC	LS		\$ 15,000.00	\$ 15,000.00
623	CONSTRUCTION LAYOUT STAKES AND SURVEYING	LS		\$ 10,000.00	\$ 10,000.00
624	MOBILIZATION	LS		\$ 10,000.00	\$ 10,000.00
SPECIAL	BID GUARANTY AND CONTRACT BOND	LS		\$ 5,000.00	\$ 5,000.00
				MISCELLANEOUS TOTAL =	\$ 40,000.00

City of Blaine
Blaine Barton Road Intersection
Alternate 2

BUDGETARY OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT COST 2021	TOTAL PROJECT COST
	PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COST =				\$ 800,737.00
	DESIGN CONTINGENCY (EST. 30%) =				\$ 240,221.00
	SUBTOTAL=				\$ 1,040,958.00
	INFLATION BASED UPON ODOT BUSINESS PLAN INFLATION CALCULATOR (EST. 7.4% -2022) :				\$ 77,031.00
	SUBTOTAL INCLUDING INFLATION =				\$ 1,117,989.00
	CONSTRUCTION ENGINEERING (EST. 10%) =				\$ 111,799.00
	OPINION OF PROBABLE CONSTRUCTION COST =				\$ 1,229,788.00
	RIGHT OF WAY =				\$ 144,000.00
	UTILITY RELOCATIONS =				\$ 40,000.00
	DESIGN ENGINEERING (EST. 15%) =				\$ 167,698.00
	ENVIRONMENTAL (EST. 0%) =				\$ -
	BUDGETARY OPINION OF PROBABLE PROJECT TOTAL =				\$ 1,581,486.00
BUS PARKING AREA					
ROADWAY					
201	CLEARING AND GRUBBING	LS		\$ 5,000.00	\$ 5,000.00
203	EXCAVATION	314	CY	\$ 15.00	\$ 4,710.00
203	EMBANKMENT	314	CY	\$ 25.00	\$ 7,850.00
204	SUBGRADE COMPACTION	1189	SY	\$ 2.00	\$ 2,378.00
204	PROOF ROLLING	1	HOUR	\$ 165.00	\$ 165.00
	EROSION CONTROL			ROADWAY TOTAL =	\$ 20,103.00
659	SOIL ANALYSIS TEST	2	EACH	\$ 100.00	\$ 200.00
659	TOPSOIL	186	CY	\$ 40.00	\$ 7,440.00
659	SEEDING AND MULCHING	1668	SY	\$ 2.00	\$ 3,336.00
659	COMMERCIAL FERTILIZER	0.23	TON	\$ 750.00	\$ 172.50
659	LIME	0.34	ACRE	\$ 150.00	\$ 51.00
659	WATER	10	MGAL	\$ 2.00	\$ 20.00
	EROSION CONTROL TOTAL =				\$ 11,219.50
PAVEMENT					
452	NON-REINFORCED CONCRETE PAVEMENT, MISC.: PERVIOUS CONCRETE	1189	SY	\$ 150.00	\$ 178,350.00
	PAVEMENT TOTAL =				\$ 178,350.00
TRAFFIC CONTROL					
642	PARKING LOT STALL MARKING, TYPE 1 PERVIOUS CONCRETE	227	FT	\$ 1.00	\$ 227.00
	TRAFFIC CONTROL TOTAL =				\$ 227.00
	PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COST =				\$ 209,900.00
	DESIGN CONTINGENCY (EST. 20%) =				\$ 41,980.00
	SUBTOTAL=				\$ 251,880.00
	INFLATION BASED UPON ODOT BUSINESS PLAN INFLATION CALCULATOR (EST. 7.4% -2022) :				\$ 18,639.00
	SUBTOTAL INCLUDING INFLATION =				\$ 270,519.00
	CONSTRUCTION ENGINEERING (EST. 10%) =				\$ 27,052.00
	OPINION OF PROBABLE CONSTRUCTION COST =				\$ 297,571.00
	DESIGN ENGINEERING (EST. 15%) =				\$ 40,578.00
	ENVIRONMENTAL (EST. 0%) =				\$ -
	BUDGETARY OPINION OF PROBABLE PROJECT TOTAL =				\$ 338,149.00

City of Blaine
Blaine Barton Road Intersection
Alternate 2A

BUDGETARY OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT COST 2021	TOTAL PROJECT COST
ROADWAY					
201	CLEARING AND GRUBBING	LS		\$ 10,000.00	\$ 10,000.00
202	PAVEMENT REMOVED	1382	SY	\$ 10.00	\$ 13,820.00
202	WALK REMOVED	150	SF	\$ 5.00	\$ 750.00
202	CURB REMOVED	200	FT	\$ 10.00	\$ 2,000.00
202	PIPE REMOVED, 24" AND UNDER	25	FT	\$ 20.00	\$ 500.00
202	CATCH BASIN REMOVED	3	EACH	\$ 350.00	\$ 1,050.00
203	EXCAVATION	2408	CY	\$ 15.00	\$ 36,120.00
203	EMBANKMENT	4701	CY	\$ 25.00	\$ 117,525.00
204	SUBGRADE COMPACTION	5159	SY	\$ 2.00	\$ 10,318.00
204	PROOF ROLLING	3	hour	\$ 165.00	\$ 495.00
608	4" CONCRETE WALK	3557	SF	\$ 10.00	\$ 35,570.00
608	CURB RAMP	400	SF	\$ 20.00	\$ 8,000.00
				ROADWAY TOTAL =	\$ 236,148.00
EROSION CONTROL					
659	SOIL ANALYSIS TEST	2	EACH	\$ 100.00	\$ 200.00
659	TOPSOIL	645	CY	\$ 40.00	\$ 25,800.00
659	SEEDING AND MULCHING	5803	SY	\$ 2.00	\$ 11,606.00
659	COMMERCIAL FERTILIZER	0.78	TON	\$ 750.00	\$ 585.00
659	LIME	1.2	ACRE	\$ 150.00	\$ 180.00
659	WATER	32	MGAL	\$ 2.00	\$ 64.00
832	EROSION CONTROL	5000	EACH	\$ 1.00	\$ 5,000.00
				EROSION CONTROL TOTAL =	\$ 43,435.00
DRAINAGE					
605	6" BASE PIPE UNDERDRAINS	2710	FT	\$ 10.00	\$ 27,100.00
611	12" CONDUIT, TYPE B	103	FT	\$ 90.00	\$ 9,270.00
611	12" CONDUIT, TYPE C	125	FT	\$ 80.00	\$ 10,000.00
611	15" CONDUIT, TYPE B	25	FT	\$ 100.00	\$ 2,500.00
611	15" CONDUIT, TYPE C	225	FT	\$ 60.00	\$ 13,500.00
611	18" CONDUIT, TYPE B	25	FT	\$ 120.00	\$ 3,000.00
611	18" CONDUIT, TYPE C	125	FT	\$ 100.00	\$ 12,500.00
611	CATCH BASIN, NO. 3	6	EACH	\$ 3,200.00	\$ 19,200.00
611	CATCH BASIN, NO. 2-2B	1	EACH	\$ 1,800.00	\$ 1,800.00
611	MANHOLE, NO. 3	3	EACH	\$ 3,500.00	\$ 10,500.00
				DRAINAGE TOTAL =	\$ 109,370.00
PAVEMENT					
254	PAVEMENT PLANING, ASPHALT CONCRETE	67	SY	\$ 2.00	\$ 134.00
301	ASPHALT CONCRETE BASE, PG64-22	708	CY	\$ 175.00	\$ 123,900.00
304	AGGREGATE BASE	789	CY	\$ 70.00	\$ 55,230.00
407	TACK COAT	516	GAL	\$ 3.00	\$ 1,548.00
441	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG64-22	360	CY	\$ 250.00	\$ 90,000.00
609	CURB, TYPE 6	2584	FT	\$ 25.00	\$ 64,600.00
				PAVEMENT TOTAL =	\$ 335,412.00
TRAFFIC CONTROL					
630	GROUND MOUNTED SUPPORT, NO. 3 POST	134.5	FT	\$ 15.00	\$ 2,017.50
630	STREET NAME SIGN SUPPORT, NO. 2 POST	12.5	FT	\$ 10.00	\$ 125.00
630	SIGN POST REFLECTOR	7	EACH	\$ 45.00	\$ 315.00
630	SIGN, FLAT SHEET	45	SF	\$ 20.00	\$ 900.00
630	SIGN, DOUBLE FACED, STREET NAME	2	EACH	\$ 180.00	\$ 360.00
630	REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL	2	EACH	\$ 15.00	\$ 30.00
630	REMOVAL OF GROUND MOUNTED SIGN AND REERECTION	8	EACH	\$ 65.00	\$ 520.00
630	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL	6	EACH	\$ 15.00	\$ 90.00
642	CENTER LINE, TYPE 1	0.23	MILE	\$ 7,500.00	\$ 1,725.00
642	STOP LINE, TYPE 1	43	FT	\$ 5.00	\$ 215.00
642	CROSSWALK LINE, TYPE 1	301	FT	\$ 3.00	\$ 903.00
642	YIELD LINE, TYPE 1	52	FT	\$ 10.00	\$ 520.00
				TRAFFIC CONTROL TOTAL =	\$ 7,720.50
MAINTAINANCE OF TRAFFIC					
614	DETOUR SIGNING	LS		\$ 5,000.00	\$ 5,000.00
616	WATER	14	MGAL	\$ 30.00	\$ 420.00
				MISCELLANEOUS TOTAL =	\$ 5,420.00
MISCELLANEOUS					
614	MAINTAINING TRAFFIC	LS		\$ 15,000.00	\$ 15,000.00
623	CONSTRUCTION LAYOUT STAKES AND SURVEYING	LS		\$ 10,000.00	\$ 10,000.00
624	MOBILIZATION	LS		\$ 10,000.00	\$ 10,000.00
SPECIAL	BID GUARANTY AND CONTRACT BOND	LS		\$ 5,000.00	\$ 5,000.00
				MISCELLANEOUS TOTAL =	\$ 40,000.00

City of Blaine
Blaine Barton Road Intersection
Alternate 2A

BUDGETARY OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT COST 2021	TOTAL PROJECT COST
	PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COST =				\$ 777,506.00
	DESIGN CONTINGENCY (EST. 30%) =				\$ 233,252.00
	SUBTOTAL=				\$ 1,010,758.00
	INFLATION BASED UPON ODOT BUSINESS PLAN INFLATION CALCULATOR (EST. 7.4% -2022) :				\$ 74,796.00
	SUBTOTAL INCLUDING INFLATION =				\$ 1,085,554.00
	CONSTRUCTION ENGINEERING (EST. 10%) =				\$ 108,555.00
	OPINION OF PROBABLE CONSTRUCTION COST =				\$ 1,194,109.00
	RIGHT OF WAY =				\$ 242,000.00
	UTILITY RELOCATIONS				\$ 40,000.00
	DESIGN ENGINEERING (EST. 15%) =				\$ 162,833.00
	ENVIRONMENTAL (EST. 0%) =				\$ -
	BUDGETARY OPINION OF PROBABLE PROJECT TOTAL =				\$ 1,638,942.00
BUS PARKING AREA					
ROADWAY					
201	CLEARING AND GRUBBING	LS		\$ 5,000.00	\$ 5,000.00
203	EXCAVATION	314	CY	\$ 15.00	\$ 4,710.00
203	EMBANKMENT	314	CY	\$ 25.00	\$ 7,850.00
204	SUBGRADE COMPACTION	1189	SY	\$ 2.00	\$ 2,378.00
204	PROOF ROLLING	1	HOUR	\$ 165.00	\$ 165.00
	EROSION CONTROL			ROADWAY TOTAL =	\$ 20,103.00
659	SOIL ANALYSIS TEST	2	EACH	\$ 100.00	\$ 200.00
659	TOPSOIL	186	CY	\$ 40.00	\$ 7,440.00
659	SEEDING AND MULCHING	1668	SY	\$ 2.00	\$ 3,336.00
659	COMMERCIAL FERTILIZER	0.23	TON	\$ 750.00	\$ 172.50
659	LIME	0.34	ACRE	\$ 150.00	\$ 51.00
659	WATER	10	MGAL	\$ 2.00	\$ 20.00
	EROSION CONTROL TOTAL =				\$ 11,219.50
PAVEMENT					
452	NON-REINFORCED CONCRETE PAVEMENT, MISC.: PERVIOUS CONCRETE	1189	SY	\$ 150.00	\$ 178,350.00
	PAVEMENT TOTAL =				\$ 178,350.00
TRAFFIC CONTROL					
642	PARKING LOT STALL MARKING, TYPE 1 PERVIOUS CONCRETE	227	FT	\$ 1.00	\$ 227.00
	TRAFFIC CONTROL TOTAL =				\$ 227.00
	PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COST =				\$ 209,900.00
	DESIGN CONTINGENCY (EST. 20%) =				\$ 41,980.00
	SUBTOTAL=				\$ 251,880.00
	INFLATION BASED UPON ODOT BUSINESS PLAN INFLATION CALCULATOR (EST. 7.4% -2022) :				\$ 18,639.00
	SUBTOTAL INCLUDING INFLATION =				\$ 270,519.00
	CONSTRUCTION ENGINEERING (EST. 10%) =				\$ 27,052.00
	OPINION OF PROBABLE CONSTRUCTION COST =				\$ 297,571.00
	DESIGN ENGINEERING (EST. 15%) =				\$ 40,578.00
	ENVIRONMENTAL (EST. 0%) =				\$ -
	BUDGETARY OPINION OF PROBABLE PROJECT TOTAL =				\$ 338,149.00

CONSTRUCTION ECONOMICS

ENR's 20-city average cost indexes, wages and material prices. Historical data for ENR's 20 cities can be found at ENR.com/economics

Construction Cost Index

+7.4%
DEC. 2021

ANNUAL INFLATION RATE

1913=100	INDEX VALUE	MONTH	YEAR
CONSTRUCTION COST	12481.82	+0.1%	+7.4%
COMMON LABOR	24355.78	0.0%	+1.3%
WAGE \$/HR.	46.80	0.0%	+1.3%

Building Cost Index

+13.1%
DEC. 2021

ANNUAL INFLATION RATE

1913=100	INDEX VALUE	MONTH	YEAR
BUILDING COST	7289.50	+0.5%	+13.1%
SKILLED LABOR	11055.72	+0.5%	+2.9%
WAGE \$/HR.	60.99	+0.5%	+2.9%

Materials Cost Index

+0.5%
DEC. 2021

MONTHLY INFLATION RATE

1913=100	INDEX VALUE	MONTH	YEAR
MATERIALS COST	4964.65	+0.5%	+31.0%
CEMENT \$/TON	152.17	+1.4%	+2.9%
STEEL \$/CWT	76.55	+4.3%	+37.0%
LUMBER \$/MBF	952.09	-5.8%	+26.1%

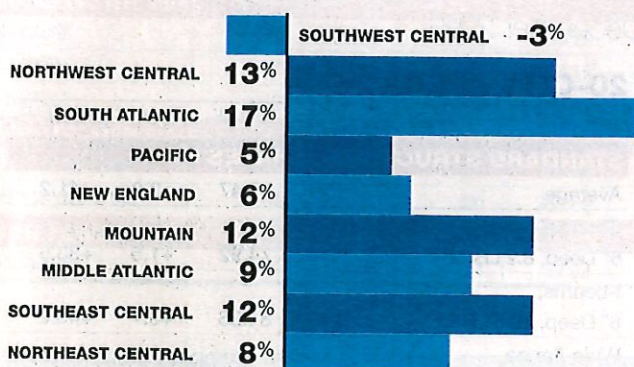
The Construction Cost Index's annual escalation rose 7.4%, while the monthly component rose 0.1%.

The Building Cost Index was up 13.1% on an annual basis, while the monthly component increased 0.5%.

The MCI rose 0.5% since last month, while the annual escalation rate increased 31%.

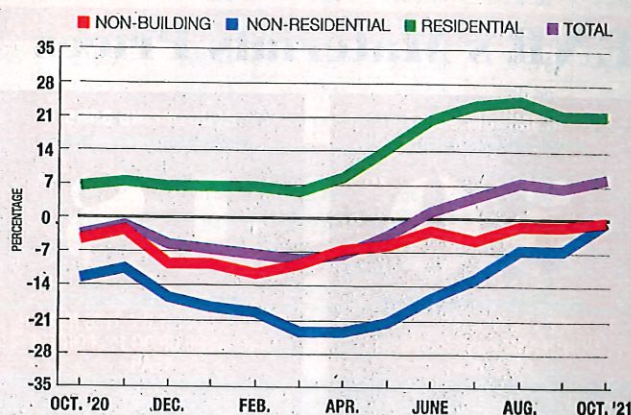
Construction Starts Regional growth trends vs. national trends

SOUTHEAST CENTRAL STARTS UP 12%



SOURCE: DODGE DATA & ANALYTICS. YEAR-TO-YEAR PERCENT CHANGE IN VALUE OF TOTAL PROJECTS STARTED MARCH 2021 FOR 12-MONTH ROLLING TOTALS.

RESIDENTIAL STARTS ON THE RISE



SOURCE: DODGE DATA & ANALYTICS. YEAR-TO-YEAR PERCENT CHANGE FOR 12-MONTH ROLLING NATIONAL TOTAL STARTS.

The total dollar value of new construction starts in Utah in September was 12.1% above September 2020's level, according to Dodge Data & Analytics. The residential sector increased 25.8%, while non-residential fell 15.4% from the same time last year. Non-building construction increased 21.3% in the same period.

UTAH CONSTRUCTION STARTS: \$/MIL.	2021 SEPT.	2021 AUG.	2020 SEPT.	% CHG. MONTH	% CHG. YEAR
TOTAL CONSTRUCTION	13,885,719	14,013,712	12,392,299	-0.9	+12.1
NON-RESIDENTIAL	3,286,113	3,125,049	3,883,779	+5.2	-15.4
COMMERCIAL, MANUFACTURING	1,681,093	1,549,082	2,238,287	+8.5	-24.9
STORES, SHOPPING CENTERS	201,325	197,023	92,235	+2.2	+118.3
OFFICE, BANK BUILDINGS	303,796	204,076	679,825	+48.9	-55.3
HOTELS, MOTELS	357,450	323,950	440,098	+10.3	-18.8
MANUFACTURING BUILDINGS	96,700	98,248	459,730	-1.6	-79.0
INSTITUTIONAL	1,605,020	1,575,967	1,645,492	+1.8	-2.5
EDUCATIONAL BUILDINGS	775,424	645,768	864,221	+20.1	-10.3
HEALTH CARE FACILITIES	331,810	324,151	195,217	+2.4	+70.0
RESIDENTIAL	7,711,383	7,786,356	6,128,364	-1.0	+25.8
NON-BUILDING	2,888,223	3,102,307	2,380,156	-6.9	+21.3
HIGHWAYS, BRIDGES	1,459,131	1,469,304	1,057,204	-0.7	+38.0
ENVIRONMENTAL PUBLIC WORKS	862,714	1,050,298	674,435	-17.9	+27.9
POWER, UTILITIES	394,334	396,334	343,158	-0.5	+14.9

SOURCE: DODGE DATA & ANALYTICS CONSTRUCTION STARTS. TOTALS MAY NOT ADD UP DUE TO EXCLUSION OF OTHER CATEGORIES. 12-MONTH ROLLING TOTALS FOR UTAH.



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