



Regional Planning Commission of Greater Birmingham
On Behalf of the City of Birmingham

AVENUE F BRIDGE OVER VILLAGE CREEK FEASIBILITY STUDY

Advanced Planning,
Programming, and Logical
Engineering (APPLE) Program

November 19, 2019



PUTTING PEOPLE FIRST

AVENUE F BRIDGE OVER VILLAGE CREEK STUDY

Advanced Planning, Programming, and Logical Engineering (APPLE) Program

Prepared for: Regional Planning Commission of Greater Birmingham on Behalf of The City of Birmingham

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Birmingham, AL 35234

SARCOR Project No. 18-E-01-02000

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1. INTRODUCTION

The Avenue F Bridge over Village Creek Feasibility Study evaluates potential improvements to an aging bridge and adjacent sanitary sewer line, both of which lie in a FEMA flood hazard zone. SARCOR, LLC has prepared the Study at the direction of the Regional Planning Commission of Greater Birmingham and the City of Birmingham under the APPLE¹ program. The Study presents alternative courses of action for both bridge replacement and sewer line relocation. The two bridge alternatives include two styles of single-span bridge systems. The three utility alternatives include line relocations, two using gravity flow, and the third alternative using a lift station.



Image 1-1: Avenue F Bridge at Village Creek. Note accumulated debris at sewer line support structure.

¹ The APPLE Study process involves an assessment of existing conditions, development of proposed alternatives, and comparative evaluation of the proposed alternatives. The APPLE Study considers the technical, economic, and regulatory feasibility of the proposed alternatives, and provides the framework for initiating the NEPA process.

2. EXISTING CONDITIONS

Description of Study Area

The Study area is located in the Ensley neighborhood of Birmingham and consists of Village Creek and the area surrounding the Avenue F Bridge. Avenue F is a connector road between the Ensley and South Pratt neighborhoods with a bridge spanning Village Creek at the study area. Land use in the Study area is primarily residential, with some institutional/public uses including Jackson-Olin High School, McAlpine Park and Recreation Center, and several nearby churches.

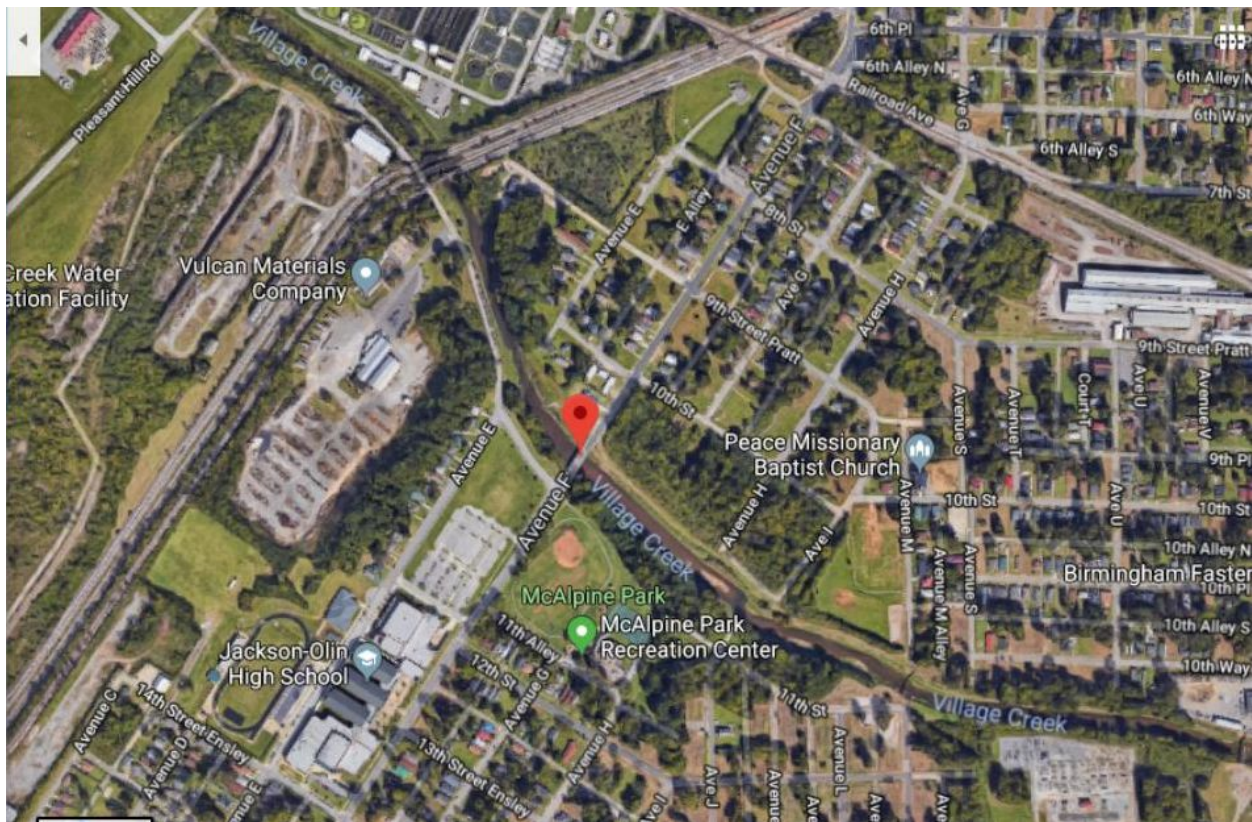


Image 2-1: Study Area, Avenue F and Village Creek

Watershed and Flow Course

Village Creek begins in the Roebuck area of Birmingham and continues west, terminating at the Locust Fork of the Black Warrior River. The Study area lies in the lower reach of Village Creek, extending from river station 152656.3 (shown as cross-section “V” on the FIRM image,

below), downstream to the Avenue F bridge. Flood Hazard Zone AE expands laterally in the Study area, extending well into the neighborhoods alongside the creek.

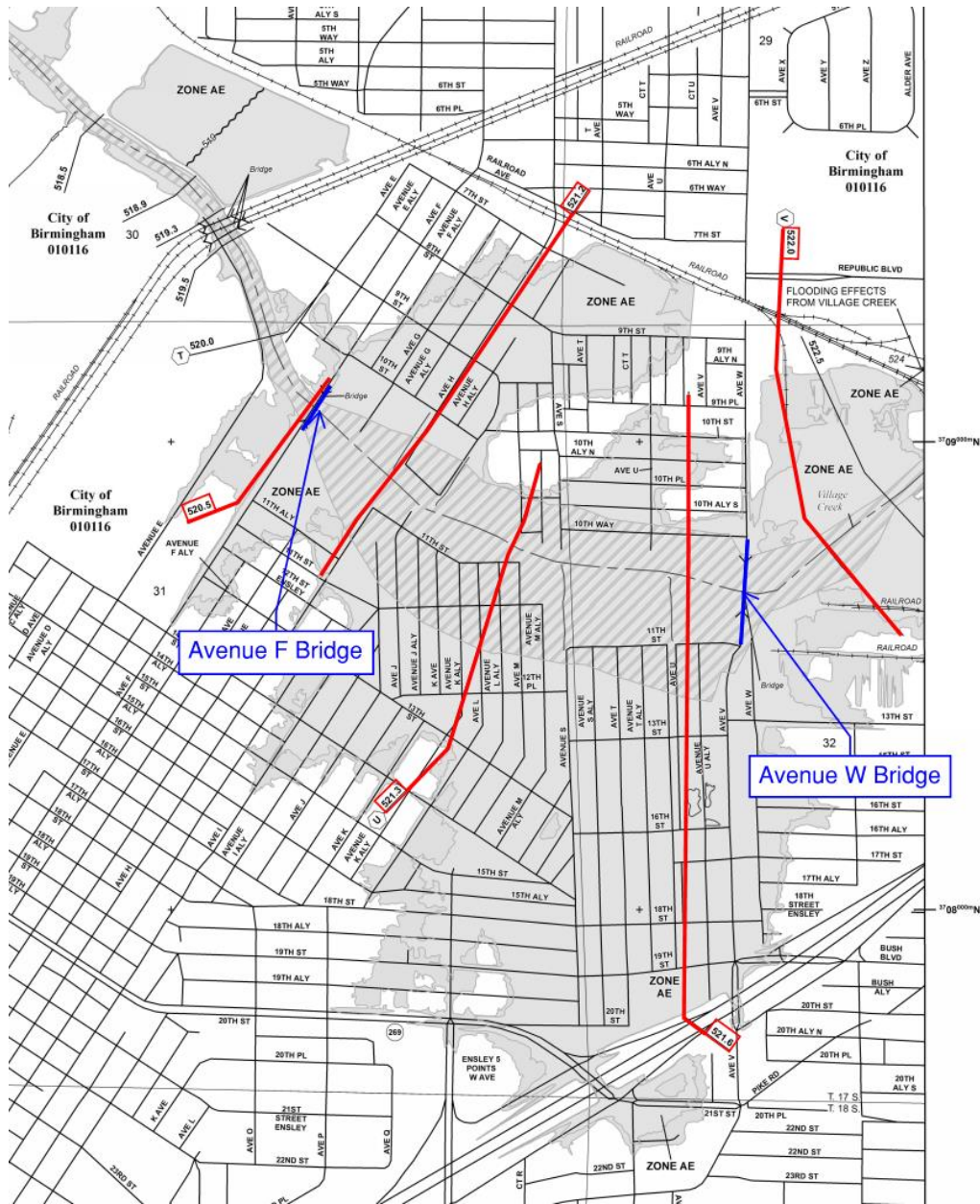


Image 2-2: FEMA Flood Hazard Zones in the Study area.

2.1 Existing Bridge Conditions

The Avenue F bridge was built in 1913. It has a total length of 109.6 feet, with four sets of piers under 24-foot spans, a roadway width of 24.0 feet, and an edge to edge deck width of 35.4 feet. It is in “fair” condition, with an average daily traffic of 8,000 and a sufficiency rating of 47.6. The lower chord of the bridge deck lies at an approximate elevation of 517.7 feet, over three feet below the 100-year base flood elevation (BFE) of 520.9 feet. According to the National Bridge Inventory, the deck geometry of the Avenue F bridge has been assessed as “basically intolerable requiring high priority of replacement”. An above-ground 36” diameter sanitary sewer line lies approximately 10 feet in front of the bridge, with a top of pipe elevation of approximately 513.0 feet.

The numerous bridge piers, the low bridge deck, and the large diameter above-ground pipeline create significant obstructions in the channel, trapping large amounts of debris and impeding the natural flow of the creek.



Image 2-3: View of Avenue F Bridge from downstream. Also see Image 1-1, above.

2.2 Existing Sewer Conditions

There is a 36" diameter above-ground sanitary sewer line crossing Village Creek alongside the bridge, approximately 10' below and 10' upstream from the bridge deck. The line carries sewage north across the creek, then on to the Village Creek wastewater treatment plant. The pipe capacity is 12.4 MGD, which may be slightly under capacity for wet weather conditions (2 year, 24 hour flow of 14.4 MGD).

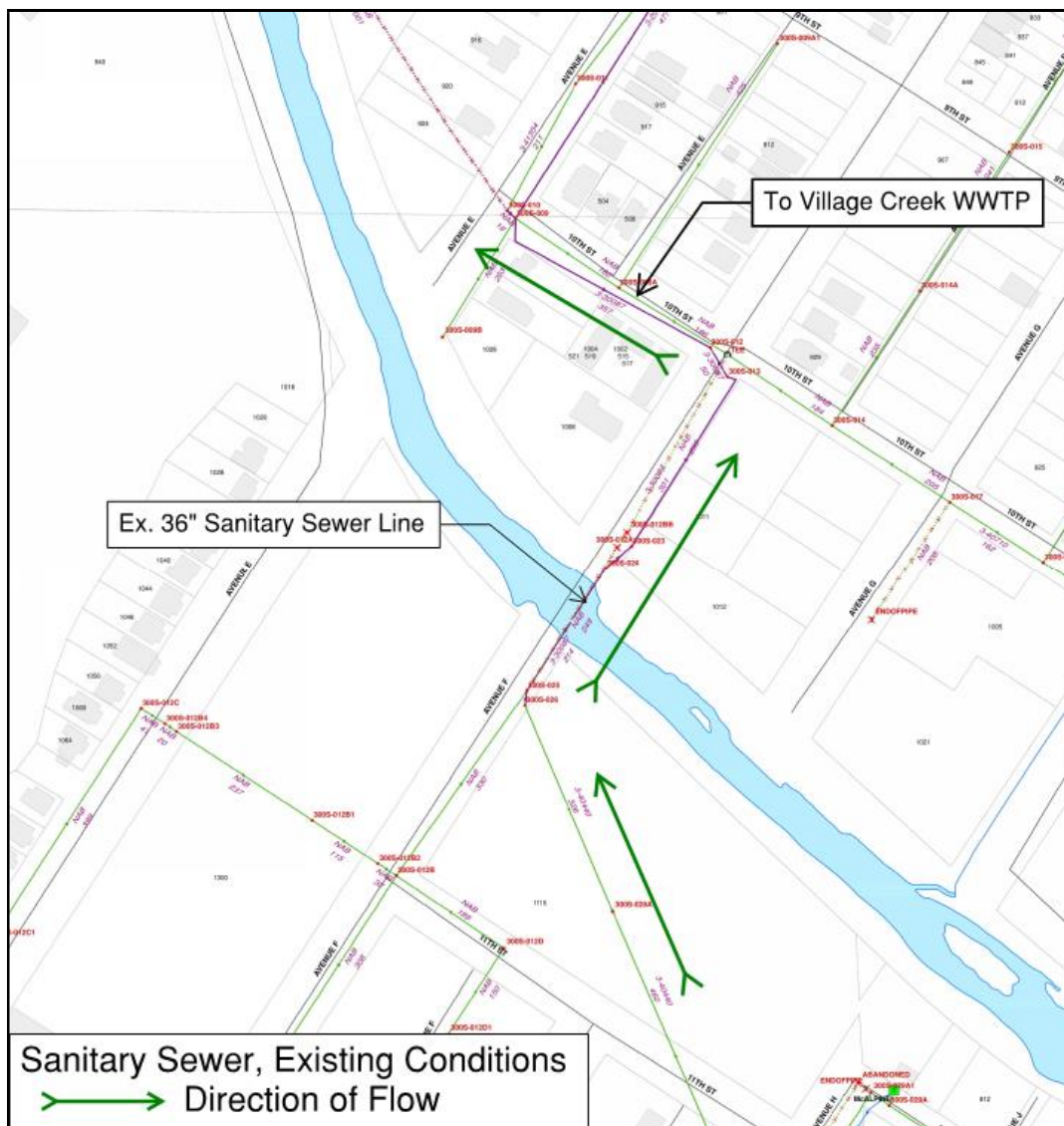


Image 2-4: Existing sanitary sewer network in the project area.

3. PROPOSED IMPROVEMENTS

3.1 Bridge Replacement Alternatives

Bridge improvement alternatives are removal and replacement of the existing bridge with a single span bridge, either a steel truss design, or a concrete girder design. A primary purpose of the single-span replacement is to eliminate the existing bridge piers within the stream channel, reducing the accumulation of restrictive debris. The required bridge deck elevation is determined by the elevation of the lowest chord of the bridge deck superstructure. The lowest chord must be a minimum of two feet above the 100-year base flood elevation (BFE) of 520.9 feet.

Bridge Alternative 1 – AASHTO Concrete Girder Single Span Bridge

Alternative 1 will replace the existing bridge with an AASHTO concrete girder bridge. The single-span design will eliminate the eight existing concrete piles in the creek which collect debris that hinders stream flow. The concrete bridge girders will be at least 72" deep, which will require a significant change in the roadway grade in order to clear the minimum deck elevation.

Estimated Cost for Bridge Alternative 1 - \$2,077,266

Bridge Alternative 2 – Steel Truss Single Span Bridge

Alternative 2 replaces the existing bridge with a single span steel truss bridge. A significant difference between the steel truss bridge and the concrete girder bridge is the depth of the beams supporting the deck. The steel girders will not be as deep as the concrete girders, will provide a more aesthetic appearance for the community, and will require less buildup on the bridge approaches. As with alternative 1, this bridge will also be a single span anchored to abutments on either side of the creek, and will clear the 100-year floodplain elevation.

Estimated Cost for Bridge Alternative 2 - \$2,213,336

Estimated cost is for bridge placement only. It does not include preliminary studies such as environmental and geotechnical required to perform this alternative. See Exhibits for plan and profile sheet of proposed bridge alternatives and breakdown of cost estimates.

3.2 Sewer Replacement Alternatives

Three sewer line relocation alternatives were developed, with a primary goal of eliminating the above-ground pipe from the channel:

Sewer Alternative A – Extend Line Downstream

This alternative will remove the existing sewer line running across the creek by installing a new 48” sewer line from the south end of the Avenue F bridge, running approximately 3225 feet northwest towards the wastewater treatment plant on the south side of Village Creek. Minimum depth will be maintained until the line reaches the plant, where it is proposed to tie into the main tunnel coming from the plant on the north side of the creek. This alternative will maintain a continuous gravity flow from the south end of the Avenue F bridge until it reaches the wastewater treatment plant.

The proposed alternative will involve both open trenching and jack-and-bore installation. The open trenching is proposed for the first 1275 feet of the installation, with a trench depth of 10 to 15 feet. From the railroad bridge to the treatment plant, approximately 1950 feet, the jack-and-bore method of installation is proposed. This installation method is suggested given the close proximity of the proposed alignment to both active industrial work areas and heavily wooded areas. At this point in the profile, the pipe run will be from 15 to 40 feet deep, and open trenching will become increasingly difficult. Note also that Alternative A will involve acquisition of right-of-way from industrial landowners; and that work may involve significant tree removal, constrained work areas on challenging terrain, and increased permitting responsibility due to the work’s proximity alongside Village Creek. See Alternative A Plan and Profile Sheet.

Estimated Cost for Sewer Alternative 1 – \$3,817,500

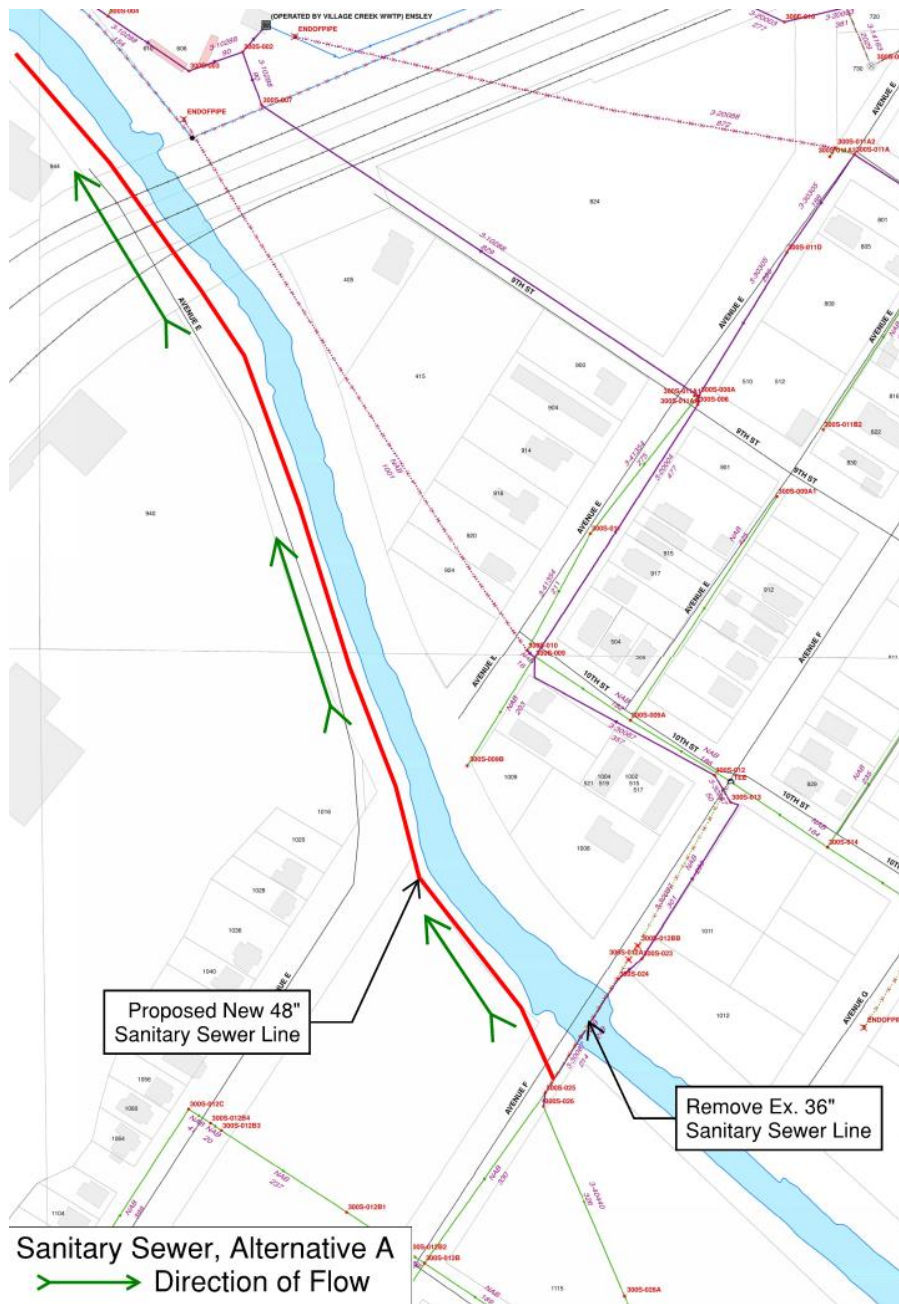


Figure 3-1: Proposed Sanitary Sewer Alternative A; Also see Exhibits for plan and profile of Alternative A.

Sewer Relocation Alternative B – Lift Station

This alternative will remove the existing above-ground pipe and replace it with a buried pipe at the bridge location and pump station to lift the sewage up into the existing system near the manhole on the north side of the creek. Based on preliminary analysis, this alternative will require three to four pumps in the wet well with the number of operating pumps varying based on the amount of incoming flow. Alternative B will also involve ongoing operations and maintenance costs for the lift station equipment. See Alternative B Plan and Profile Sheet.

Estimated Cost for Sewer Alternative B - \$5,590,496

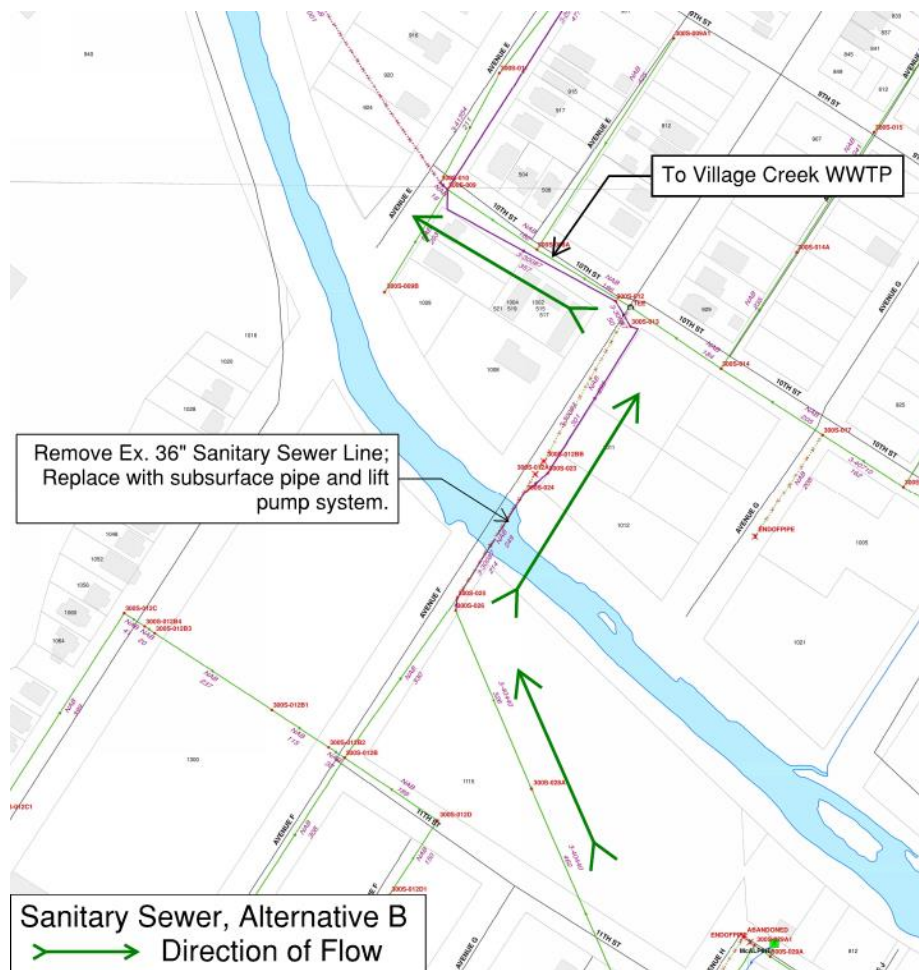


Figure 3-2: Proposed Sanitary Sewer Alternative B; Also see Exhibits for plan and profile of Alternative B.

Sewer Relocation Alternative C – Tunnel under Village Creek

Alternative C will replace the existing above-ground sewer line by tunneling approximately 35-40 feet underneath Village Creek at Avenue E to the main sewer line on 9th St Pratt. This alternative will utilize gravity flow underneath the creek, then will be pumped up to the other side of the creek.

Alternative 2 will involve 450 linear feet of 48” pipe with an average excavation depth of approximately 12 ft, and 1,925 linear feet of tunneling operations, including the use of a 96” diameter sleeve to contain the 48” pipe.

Estimated Cost for Sewer Alternative C - \$6,090,000

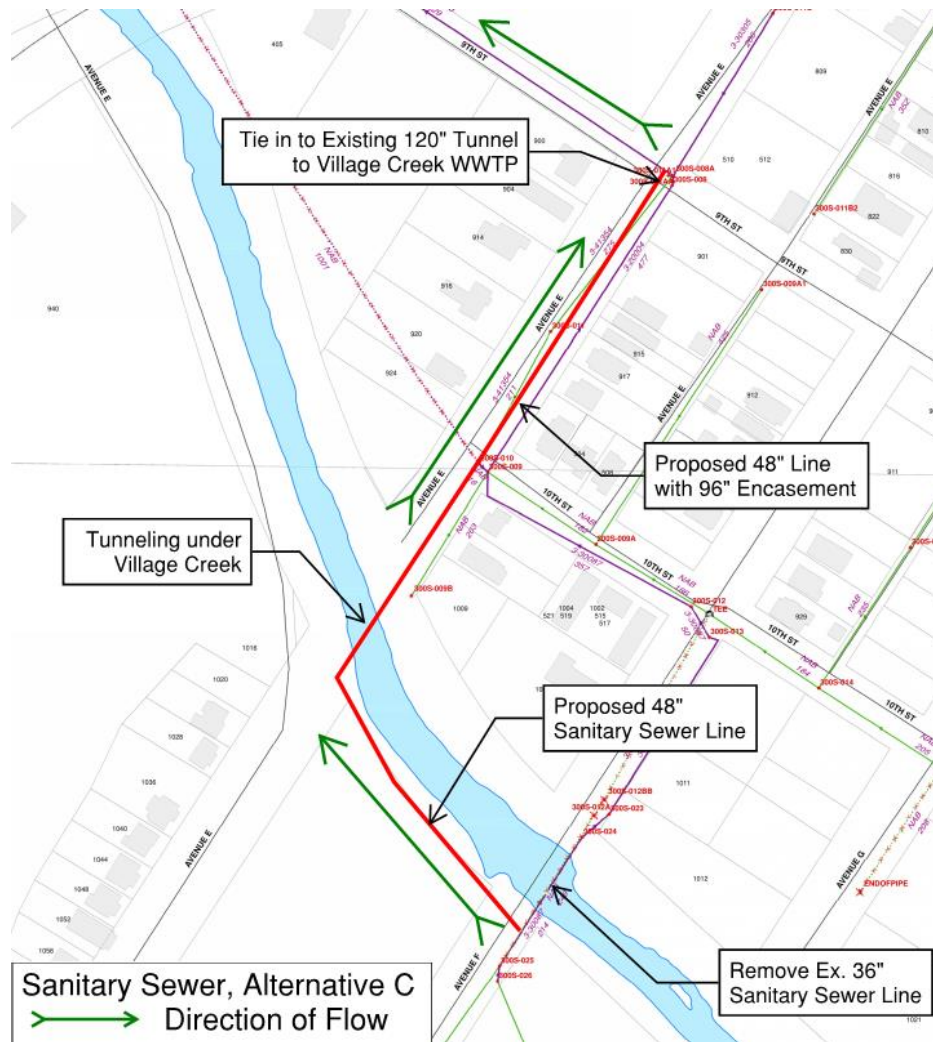


Figure 3-3: Proposed Sanitary Sewer Alternative C; Also see Exhibits for plan and profile of Alternative C.

"No-Build" Alternative

The no-build alternative does not meet the purpose and need for this feasibility study to replace the bridge and relocate the sewer line in order to minimize and avoid flooding issues.

3.3 Effect of Improvements on Flood Conditions

A HEC-RAS model for Village Creek was provided by the City of Birmingham, correlating to the latest revision of FIRM 01073C0369H (v.2.3.3.3 rev. March 21, 2019). The Study area is reflected on the FIRM (above, at Image 2-2) from the upstream river station 152656.3 at Section "V", to the downstream river station 147976.4 at Section "T". The methodology for analysis was to replace the existing bridge with the single-span bridge, and to remove the sewer line from the channel.

The HEC-RAS model was revised and results noted for water surface elevations corresponding to the 10 year, 50 year and 100 year events. Results are below:

Cross-Section Description	River Station	Return Period	Pre-improvement W.S.E.	Post-improvement W.S.E.
Section "V"	152656.3	100 yr	521.98	521.80
		50 yr	521.31	521.11
		10 yr	519.63	519.55
Avenue W Bridge	151995.4	100 yr	521.79	521.60
		50 yr	521.08	520.85
		10 yr	519.29	519.19
Avenue M Ped Bridge	150381	100 yr	521.39	521.15
		50 yr	520.59	520.30
		10 yr	518.47	518.30
Section "U"	150147.4	100 yr	521.33	521.09
		50 yr	520.53	520.27
		10 yr	518.44	518.27

Upstream Section	149296.9	100 yr	521.24	520.99
		50 yr	520.43	520.16
		10 yr	518.27	518.09

Avenue F Bridge	148533.2	100 yr	520.92	520.63
		50 yr	519.96	519.70
		10 yr	517.68	517.62

Downstream Section	148533.2	100 yr	520.46	520.46
		50 yr	519.63	519.63
		10 yr	517.57	517.57

Section "T"	147976.4	100 yr	520.03	520.03
		50 yr	519.20	519.20
		10 yr	517.14	517.14

Note that the change in water surface elevation at the Avenue F Bridge shows a decrease of 0.29 feet according to the revised model. The HEC-RAS model does not reflect the actual condition of debris accumulation against the sewer line and bridge substructure. The model's BFE results therefore may not accurately predict the true impact of reducing debris accumulations at the bridge. The beneficial effects of reducing or eliminating accumulated debris would likely be even more pronounced in smaller storms.

4. EVALUATION OF ALTERNATIVES

Based on the anticipated impact, purpose and need statement, and goals and objectives, it was determined that Bridge Alternative 2 and Sewer Alternative A would be more favorable when compared to other alternatives. Bridge Alternative 2, while more costly, will provide a more aesthetic appearance for the community. The smaller bridge girders will require less buildup on the bridge approaches, and will be better for pedestrians and bicyclists. Sewer Alternative A is far less costly than the other two sewer alternatives and does not involve tunneling or the expense of installing and maintaining a pump station.

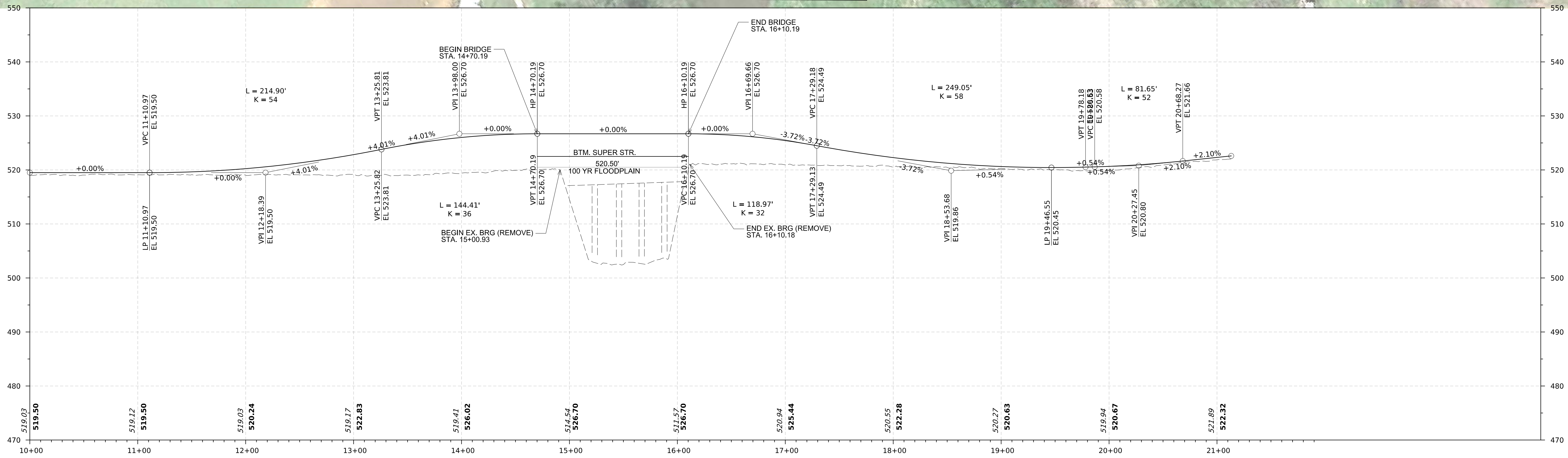
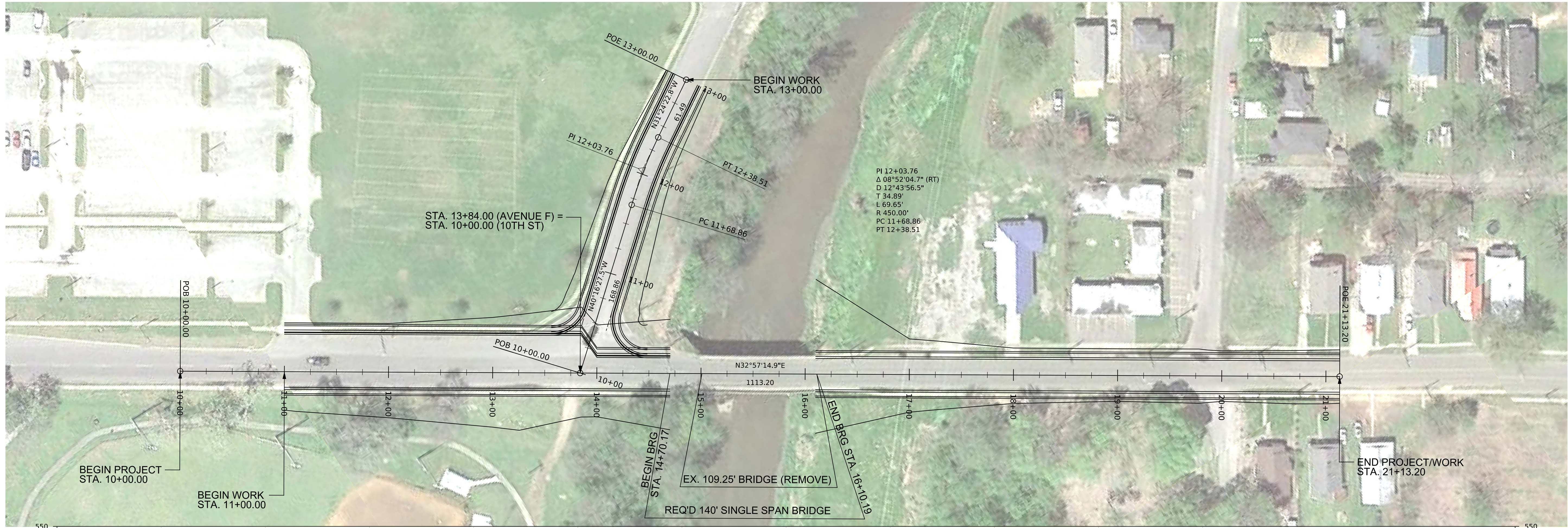
Permitting and Other Considerations

Permitting and other regulatory matters were also evaluated, and included contacting the following agencies:

- U.S. Fish and Wildlife Service: No threatened or endangered species living within the study area. Letter from U.S. Fish and Wildlife Service, dated 11/14/2018
- Alabama Historical Commission: No reason to restrict the project, however should artifacts or archeological features be encountered, work shall cease and the Historical Commission is to be consulted immediately. Letter from Alabama Historical Commission, dated 11/15/2018
- U.S. Army Corps of Engineers: It appears that there may be waters of the U.S. within the study area; any work involving discharge or placement of fill in such waters would require issuance of a permit. Letter from U.S. Army Corps of Engineers, dated 02/13/2019

All project actions will take place within the existing public right of way except for sewer alternative A. Because the bridge removal/replacement and the sewer pipeline removal would take place within the Village Creek channel, a U.S. Army Corps of Engineers permit would be required (most likely NWP 14 – Linear Transportation Projects). Similarly, any work done relocating the sewer pipeline would require a Corps NWP 12 for Utility Lines, to the extent such line relocation involved working in the creek channel or other “waters of the United States”.

BRIDGE ALTERNATIVES



CITY OF BIRMINGHAM

DEPARTMENT OF
**PLANNING, ENGINEERING
AND PERMITS**
ENGINEERING DIVISION
Mike Eddington, P.E.
City Engineer
Edwin Revell
Director
Randall Woodfin
Mayor

Seal

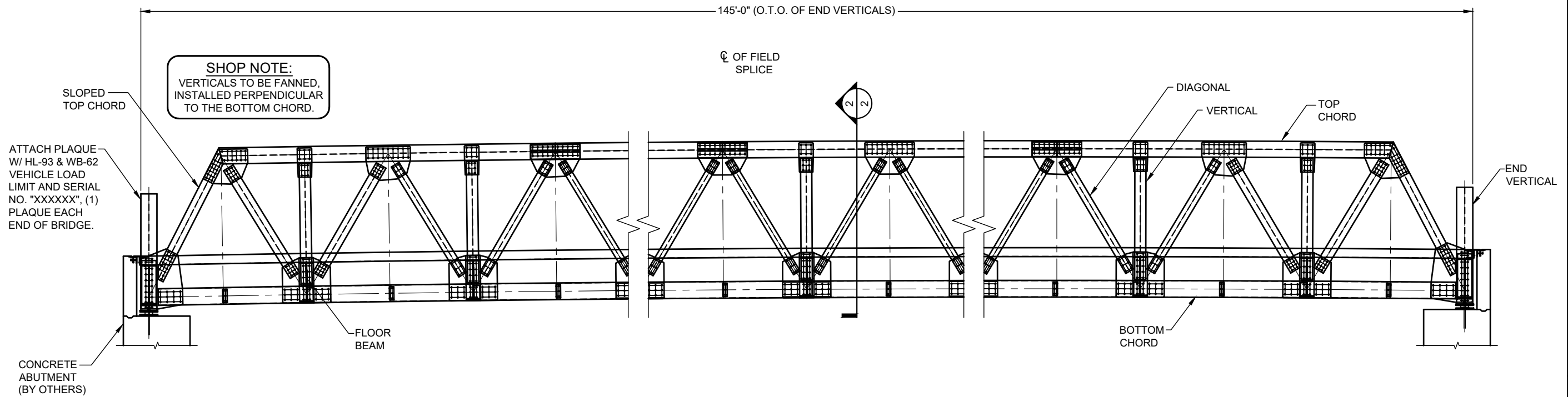
Date Approved:

No.	Revision Description	Date
0	GENERAL REVISION	

PROJECT NAME:
**AVENUE F
STREET AND DRAINAGE
IMPROVEMENTS
BRIDGE**

Drawn By: BHD Crew Chief:
Project Manager: LAWRENCE WILSON
Project Number: 18E-02-20100
Sheet Name:
Scale: 1" = 50'
Sheet of
File Number:

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BRIDGE ELEVATION

GENERAL NOTES

1. ALL DESIGN STRESSES ARE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 8th EDITION, USING "LRFD BRIDGE DESIGN SPECIFICATIONS".
2. BRIDGE MEMBERS ARE FABRICATED FROM HIGH STRENGTH, LOW ALLOY, ENHANCED ATMOSPHERIC CORROSION RESISTANT ASTM A847 COLD-FORMED WELDED SQUARE AND RECTANGULAR TUBING, AND ASTM A588, ASTM A606, OR ASTM A242 PLATE AND STRUCTURAL SHAPES (Fy=50,000 PSI).
3. FLUX CORED ARC WELDING OR GMAW PROCESS WILL BE USED. WELDING TO BE IN ACCORDANCE WITH AWS D1.5.
4. ALL CONNECTION BOLTS SHALL BE 1" DIA., A325-SC TYPE 3 WITH A563 GR DH3 HEAVY HEX NUTS AND F436 TYPE 3 WASHERS UNLESS NOTED. FIELD CONNECTIONS SHALL BE MADE USING THE "TURN-OF-NUT" TIGHTENING METHOD IN ACCORDANCE WITH AISC, "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR M490 BOLTS".
5. ANCHOR BOLTS TO BE GALVANIZED ASTM F1554 GRADE 105 WITH A563 NUTS AND F436 WASHERS. THE MINIMUM DISTANCE TO THE EDGE OF CONCRETE SHALL BE 6". ANCHOR BOLTS MAY BE CAST IN PLACE OR EPOXY GROUTED IN DRILLED HOLES. ANCHOR BOLTS ARE PROVIDED BY OTHERS.
6. SETTING PLATES SHALL BE PLACED ON SHIMS. THE PREFORMED BEARING PADS AND THE BRIDGE SHALL THEN BE PLACED RESPECTIVELY ON THE SETTING PLATES. GROUTING SHOULD BE PERFORMED AFTER THE BRIDGE HAS BEEN PLACED TO ALLOW FOR FINAL VERTICAL ADJUSTMENT.
7. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI. REINFORCING SHALL CONFORM TO ASTM A615 GRADE 60. ALL REBAR DEVELOPMENT LENGTHS AND LAP SPLICES SHALL BE DETAILED AND FURNISHED IN ACCORDANCE WITH "CRSI", "REINFORCEMENT: ANCHORAGE, LAP SPLICES AND CONNECTIONS", LATEST EDITION. REBAR SUPPLIED BY OTHERS.
8. THE FINISHED CONCRETE ROADWAY DECK SHALL BE GIVEN A SKID RESISTANT TEXTURE BY HAND TINING AS APPROVED BY THE OWNER AND AS SPECIFIED BY AASHTO. THE FINISHED CONCRETE PEDESTRIAN SIDE WALK DECK SHALL BE GIVEN A SKID RESISTANT MEDIUM BROOM TEXTURE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF THE BRIDGE COMPONENTS FROM CONCRETE SPLATTER AND REQUIRED CLEANING OF THE STRUCTURE RESULTING FROM SPLILLS.
9. THE BRIDGE SHALL BE FORMED WITH GALVANIZED 2" x 36", 18 GA. G165 COATING COMPOSITE FLOOR DECK. CONSTRUCTION AND CONTROL JOINTS ARE NOT RECOMMENDED, BUT IF USED, THEY SHALL BE PLACED AT THE FLOOR BEAMS.
10. THE FLOOR DECK SHALL BE ATTACHED USING POWDER ACTUATED PINS INSTALLED IN ACCORDANCE WITH THE MANUFACTURES INSTRUCTIONS OR BY ARC SPOT PUDDLE WELDS WITH A MINIMUM VISIBLE DIAMETER OF 5/8". SPACING OF FASTENERS SHALL NOT EXCEED 24".
11. CLEANING: ALL EXPOSED SURFACES OF STEEL SHALL BE CLEANED IN ACCORDANCE WITH STEEL STRUCTURES PAINTING COUNCIL SURFACES PREPARATION SPECIFICATIONS NO. 7 BRUSH-OFF BLAST CLEANING. SSPC-SP7-LATEST EDITION.
12. 1/4" MINIMUM THICKNESS IS REQUIRED ON ALL STRUCTURAL MEMBERS.

DESIGN CRITERIA

1. NORMAL WEIGHT CONCRETE DECK, (145 PCF)
2. 25 PSF RESURFACING ALLOWANCE (FUTURE)
3. HL-93 & WB-62 AASHTO LIVE LOADING WITH IMPACT, (2 LANES)
4. 300 PLF WIND LOADING
5. 75 PSF PEDESTRIAN LOADING
6. FUTURE 16" DUCTILE IRON WATER LINE (ASSUMED 180 PLF FULL INCLUDING CONDUIT FOR FUTURE ELECTRICAL/FIBER).

QUALITY ASSURANCE NOTES

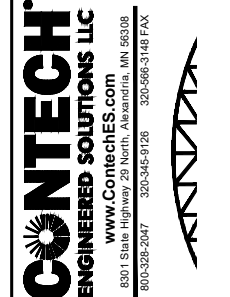
1. WELD TESTING:
 - A. ALL WELD TESTING SHALL BE DONE BY A PERSON QUALIFIED I.A.W. ASNT SNT-TC-1A.
 - B. ALL FULL PENETRATION WELDS IN THE CHORDS ARE TO BE ULTRASONICALLY TESTED I.A.W. AWS SPECIFICATIONS.
 - C. ALL FILLET AND PARTIAL PENETRATION GROOVE WELDS SHALL BE VISUALLY INSPECTED WITH 10% ALSO BEING MAGNETIC PARTICLE TESTED I.A.W. AWS SPECIFICATIONS.
 - D. A WRITTEN TESTING REPORT SHALL BE SUBMITTED UPON COMPLETION.
2. CHARPY V-NOTCH TESTING: BOTTOM CHORDS, DIAGONALS, BRACE DIAGONALS, STRINGERS (ROADWAY & SIDE WALK), STRINGER CLIP ANGLES (ROADWAY & SIDE WALK) & TRUSS GUSSET PLATES (INCLUDING SPLICE PLATES) SHALL BE TESTED IN ACCORDANCE WITH ASTM A709 REQUIREMENTS FOR NON-FRACTURE CRITICAL TENSION COMPONENTS FOR ZONE 2, TABLE 9.
3. BUY AMERICA.
4. CERTIFIED MILL REPORTS REQUIRED.
5. CERTIFIED AISC SHOP REQUIRED.
6. WELDER CERTIFICATIONS REQUIRED.

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DATE	REVISED PER CUSTOMER COMMENTS	TFR

145'-0" X 32'-0"
AVE F
VEHICULAR BRIDGE
BIRMINGHAM, AL

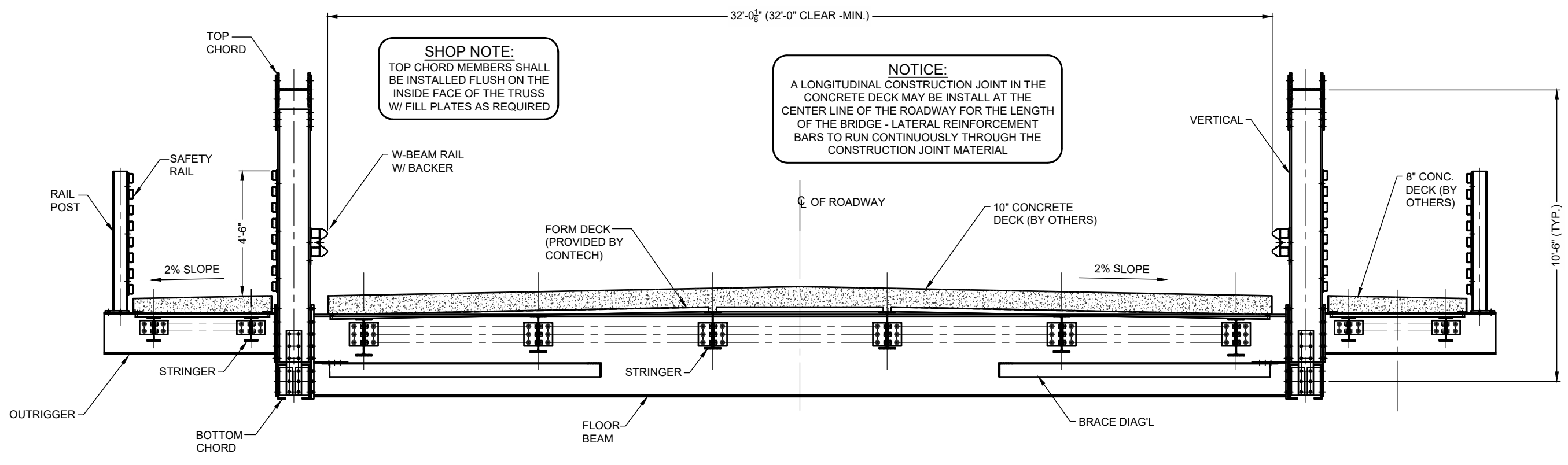


DATE:	07-MAY-18	
DESIGNED:	XXX	BD
CHECKED:	XXX	APPROVE
PROJECT No.:	XXXXXX	SEQUENC
SHEET:		01

CONTECH
PROPOSAL
DRAWING



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SHOP NOTE:
TOP CHORD MEMBERS SHALL BE INSTALLED FLUSH ON THE INSIDE FACE OF THE TRUSS W/ FILL PLATES AS REQUIRED

NOTICE:
A LONGITUDINAL CONSTRUCTION JOINT IN THE CONCRETE DECK MAY BE INSTALLED AT THE CENTER LINE OF THE ROADWAY FOR THE LENGTH OF THE BRIDGE - LATERAL REINFORCEMENT BARS TO RUN CONTINUOUSLY THROUGH THE CONSTRUCTION JOINT MATERIAL

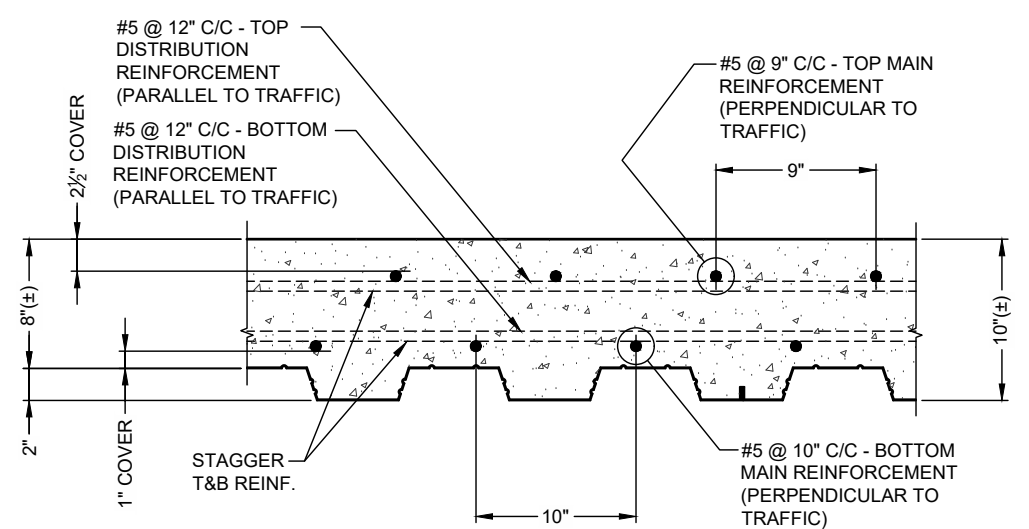
2 BRIDGE SECTION

CONTRACTOR NOTE:
CONCRETE ROADWAY DECK SHALL BE GIVEN A SKID RESISTANT TEXTURED FINISH BY HAND TINING.

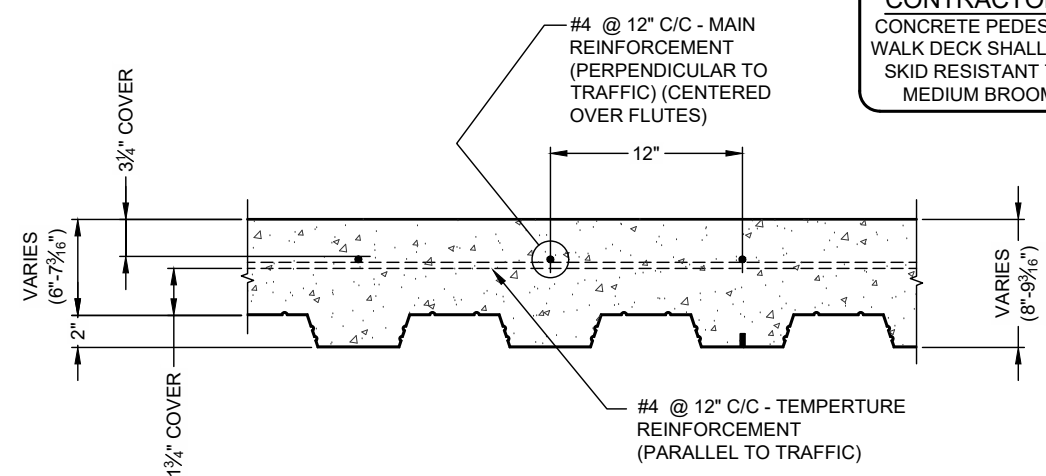
SHOP NOTE:
COMPOSITE DECK AND END CLOSURES TO BE INSTALLED PRIOR TO ERECTION OF THE SIDE DAM.

CONTRACTOR NOTE:
CONCRETE PEDESTRIAN SIDE WALK DECK SHALL BE GIVEN A SKID RESISTANT TEXTURED MEDIUM BROOM FINISH.

CONTECH
PROPOSAL
DRAWING



3 CONCRETE DECK REINFORCEMENT
2 (AT ROADWAY)



4 CONCRETE DECK REINFORCEMENT
2 (AT SIDE WALKS)

145'-0" X 32'-0"
AVE F
VEHICULAR BRIDGE
BIRMINGHAM, AL

CONTECH
ENGINEERED SOLUTIONS LLC
WWW.CONTECHES.COM
8301 State Highway, 28 North, Alexanderia, MN 55008
800-328-2047 320-566-3148 FAX

DATE:		07-MAY-18	
DESIGNED:	XXX	BD	
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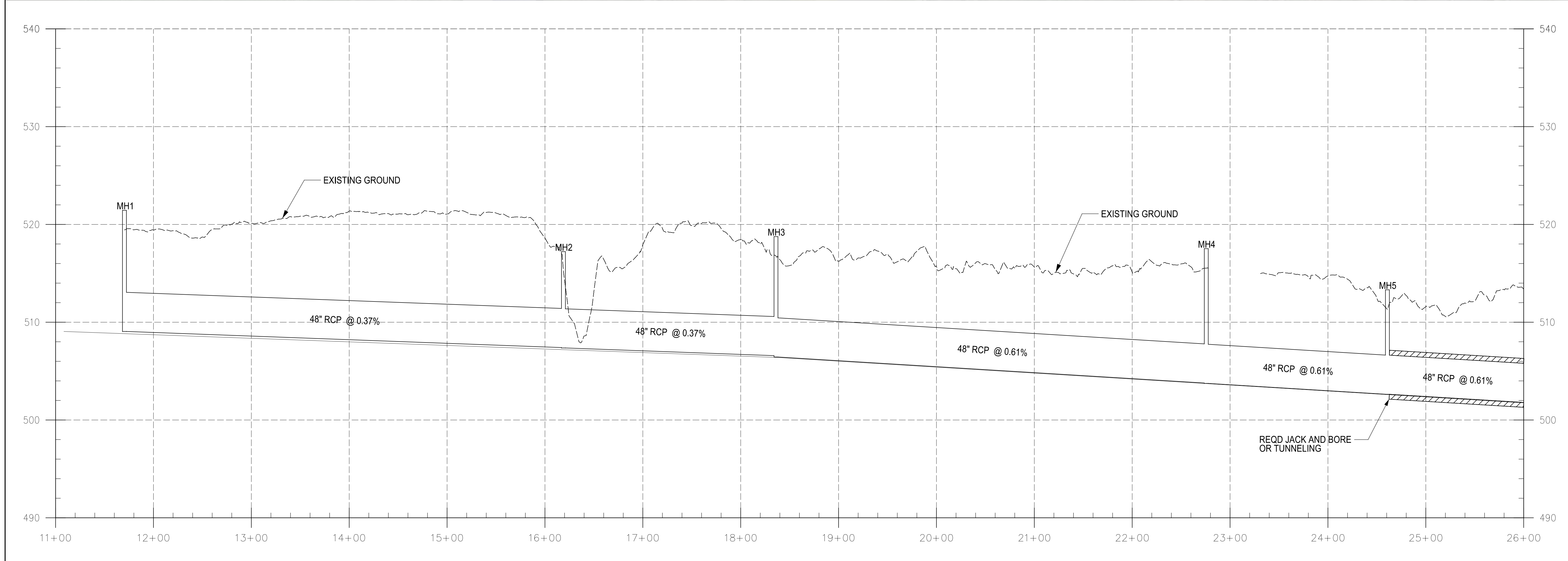
Base Bid					
Item No.	Item Description	Quantity	Unit	Unit Price	Item Total
1	Clearing and Grubbing	1	lump sum	\$7,500.00	\$7,500
2	Unclassified Excavation	875	cubic yard	\$13.61	\$11,909
2	Asphalt Removal	2910	square yard	\$12.00	\$34,920
2	Removal of Bridge and Bridge Structure	1	each	\$100,000.00	\$100,000
2	Removal of concrete structures	4	each	\$100.00	\$400
2	Removal of 36" Sanitary Sewer Line	180	linear foot	\$25.00	\$4,500
2	Removal of concrete sidewalk	973	square yard	\$12.00	\$11,676
2	Borrow Excavation A-2-4 or Better	9880	Cubic Yard	\$12.00	\$118,560
3	Crushed Stone Base, 8" thick	3604	square yard	\$18.12	\$65,304
4	Asphalt, Seal, Type "N.S.", 1"	192	ton	\$80.50	\$15,456
5	Asphalt Binder, 2"	445	ton	\$74.00	\$32,930
6	Asphalt Tack Coat	468	gallon	\$4.18	\$1,956
7	4" Concrete Sidewalk (4000 PSI Concrete)	1045	square yard	\$55.00	\$57,475
8	Curb Ramp, Type D	3	each	\$1,250.00	\$3,750
9	AASHTO abutments	2	each	\$50,000.00	\$100,000
11	18" Combined Curb & Gutter (4000 PSI Concrete)	1660	linear foot	\$18.00	\$29,880
12	18" Roadway Concrete Pipe	0	linear foot	\$45.43	\$0
13	24" Roadway Concrete Pipe	48	linear foot	\$60.13	\$2,886
14	36" Roadway Concrete Pipe	0	linear foot	\$89.52	\$0
15	18" Storm Sewer Pipe	48	linear foot	\$28.77	\$1,381
16	24" Storm Sewer Pipe	325	linear foot	\$44.94	\$14,606
17	30" Storm Sewer Pipe	0	linear foot	\$50.00	\$0
18	HF Inlet 1 Wing	4	each	\$4,396.05	\$17,584
19	HF Inlet 2 Wing	0	each	\$4,650.00	\$0
21	Yard Inlet	2	each	\$2,445.00	\$4,890
22	Junction Box	1	each	\$2,246.00	\$2,246
23	Sloped Paved HW	3	each	\$631.00	\$1,893
24	Concrete Flared End HW	0	each	\$1,200.00	\$0
25	Concrete Headwall	0	each	\$1,100.00	\$0
26	Minor Structure Concrete	75	cubic yard	\$2,445.01	\$183,376
27	Riprap, CL 2	500	square yard	\$100.00	\$50,000
30	Topsoil (Off-Site, 2" Thick)	1000	cubic yard	\$30.00	\$30,000
31	Solid Sodding	2348	square yard	\$10.00	\$23,480
32	Inlet Protection	8	each	\$300.00	\$2,400
33	Silt Fence	1000	linear foot	\$5.00	\$5,000
34	Wattle Check Dam	75	each	\$20.00	\$1,500
35	White Traffic Stripe (Thermoplastic)	1	Mile	\$600.00	\$600
35	Double Yellow Traffic Stripe (Thermoplastic)	1	Mile	\$625.00	\$625
35	White Traffic Control Markings (Thermoplastic)	500	square foot	\$6.29	\$3,145
36	White Temporary Traffic Control Markings (Paint)	246	square foot	\$4.00	\$984
37	Roadway Sign Reset/relocation	11	each	\$300.00	\$3,300
38	Water Meter Reset	0	each	\$300.00	\$0
39	3/4" Copper Pipe	0	linear foot	\$30.00	\$0
40	Manhole Height Adjustment	7	each	\$1,000.00	\$7,000
Base Bid Total					\$953,112
10% Contingency					\$95,311
Total (Base Bid + 10%)					\$1,048,423


41	AASHTO Girder Bridge (BT-72) - 140' span X 48' width	6720	square foot	\$125.00	\$840,000
AASHTO + Base Bid Total					\$1,888,423
10% Contingency					\$188,842
Total (Base Bid + 10%)					\$2,077,266

CONTECH BRIDGE OPTION

41	Contech Bridge (Steadfast Colonial Bridge) - 145' span X 48' width	1	Lump Sum	\$663,700.00	\$663,700
41	Labor of Install	1	Lump Sum	\$300,000.00	\$300,000
CONTECH Total					\$963,700
CONTECH + Base Bid Total					\$2,012,123
10% Contingency					\$201,212
Total (Base Bid + 10%)					\$2,213,336

SEWER RELOCATION ALTERNATIVE A





CITY OF BIRMINGHAM

DEPARTMENT OF
**PLANNING, ENGINEERING
AND PERMITS**

ENGINEERING DIVISION
Mike Edgington, P.E.
City Engineer

Edwin Revell
Director

Randall Woodfin
Mayor

Seal

Date Approved:

No.	Revision Description	Date
0	GENERAL REVISION	

PROJECT NAME:
AVENUE F
 STREET AND DRAINAGE
 IMPROVEMENTS
 SANITARY SEWER RELOCATION-
 ALTERNATIVE A

Drawn By:
BHD

Project Manager:
LAWRENCE WILSON

Project Number:
18E-02-20100

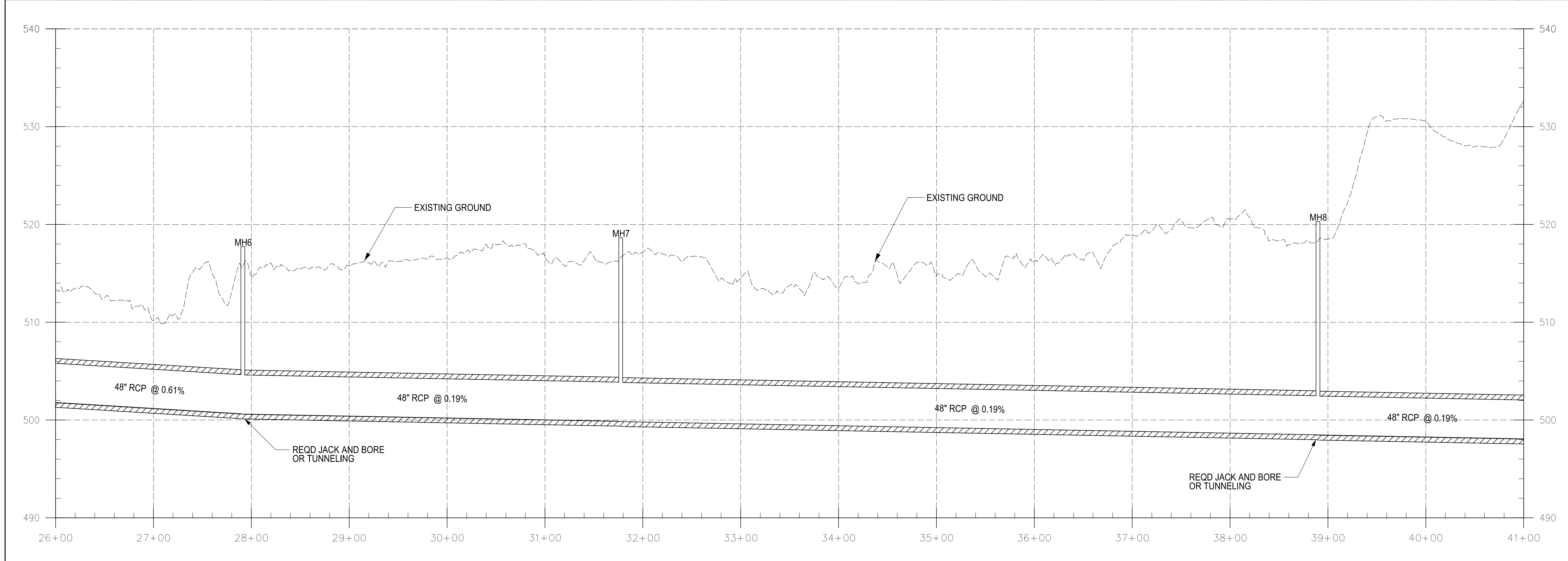
Sheet Name:


Scale: 1" = 50'

Sheet of
A-1

File Number:

Crew Chief:





CITY OF BIRMINGHAM

DEPARTMENT OF
**PLANNING, ENGINEERING
AND PERMITS**

ENGINEERING DIVISION
Mike Eddington, P.E.
City Engineer

Edwin Revell
Director

Randall Woodruff
Mayor

Seal

Date Approved:

No.	Revision Description	Date
0	GENERAL REVISION	

PROJECT NAME:
**AVENUE F
STREET AND DRAINAGE
IMPROVEMENTS
SANITARY SEWER RELOCATION-
ALTERNATIVE A**

Drawn By: **BHD** Crew Chief:

Project Manager:
LAWRENCE WILSON

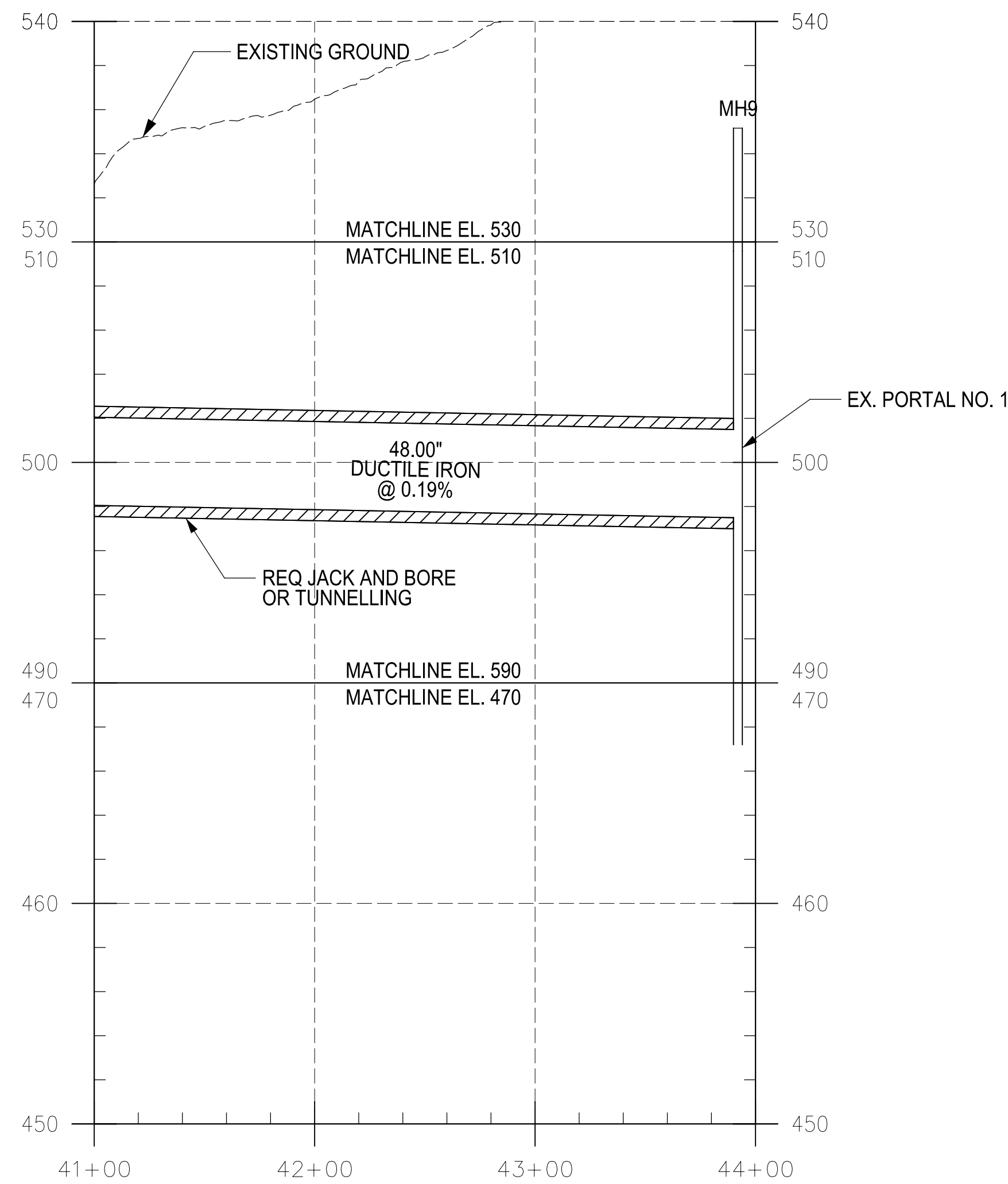
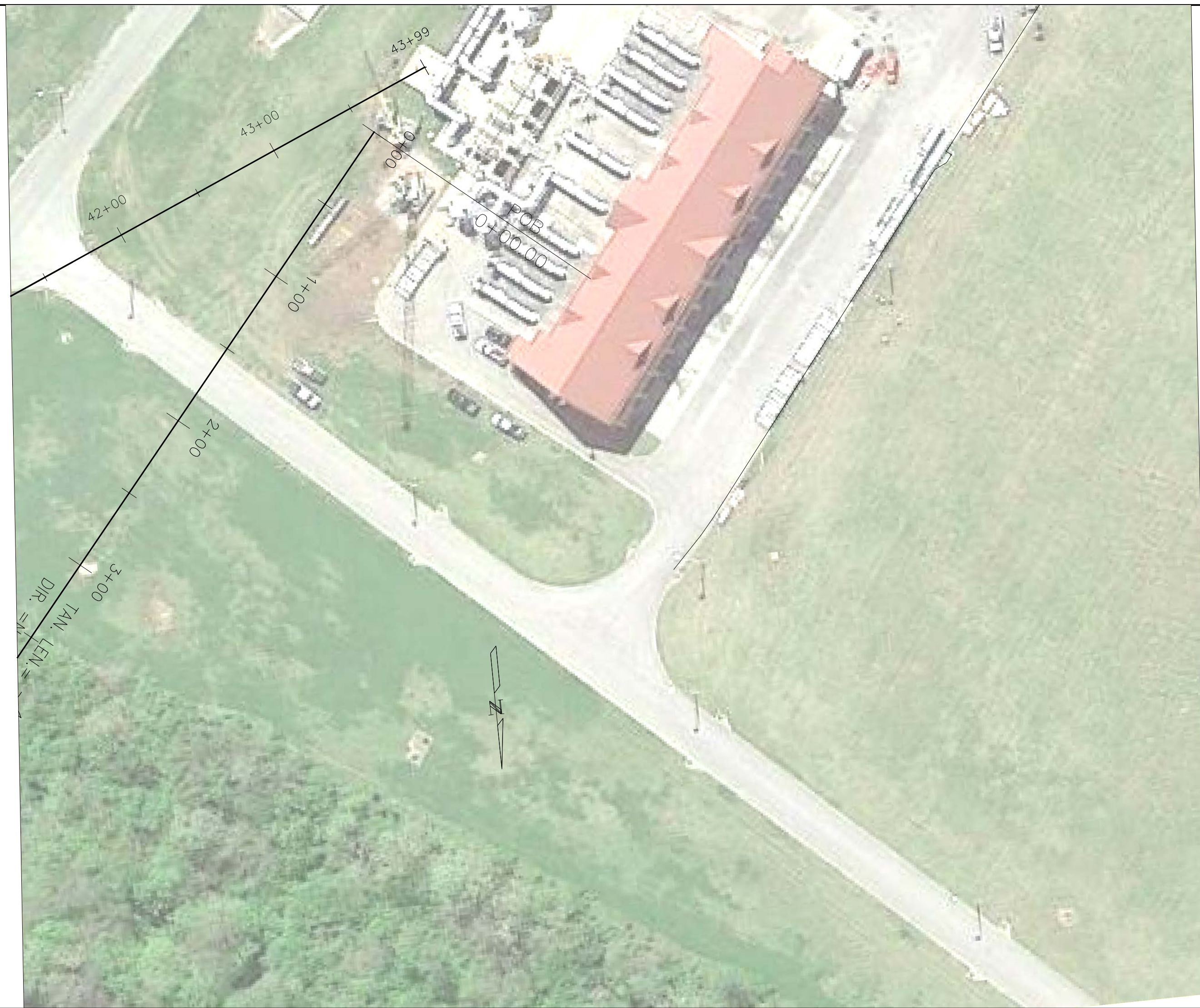
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18E-02-20100

Sheet Name:

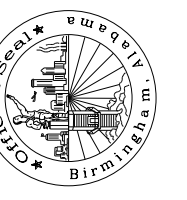
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File Number:



CITY OF BIRMINGHAM



DEPARTMENT OF
**PLANNING, ENGINEERING
AND PERMITS**

ENGINEERING DIVISION
Mike Edgington, P.E.
City Engineer

Edwin Revell
Director

Randall Woodfin
Mayor

Seal

Date Approved:

Date

Revision Description

No.

0

GENERAL REVISION

PROJECT NAME:

**AVENUE F
STREET AND DRAINAGE
IMPROVEMENTS
SANITARY SEWER RELOCATION-
ALTERNATIVE A**

Drawn By:
BHD

Crew Chief:

Project Manager:
LAWRENCE WILSON

Project Number:
18E-02-20100

Sheet Name:

Scale: 1" = 50'

Sheet of
A-3

File Number:

Project No: 18E-02-020100
Project: Avenue F Bridge at Village Creek Feasibility Study
Cost Estimate for Sewer Relocation Alternatives
Client: RPCGB/City of Birmingham

Alternative A

Item Description	Unit	Unit Cost	Est. Quantity	Est. Item Cost
48" DIP, open trench installation (10 to 15 ft depth)	LF	700	1,275	892,500
48" DIP, jack and bore	LF	1,500	1,950	2,925,000
				3,817,500 Total

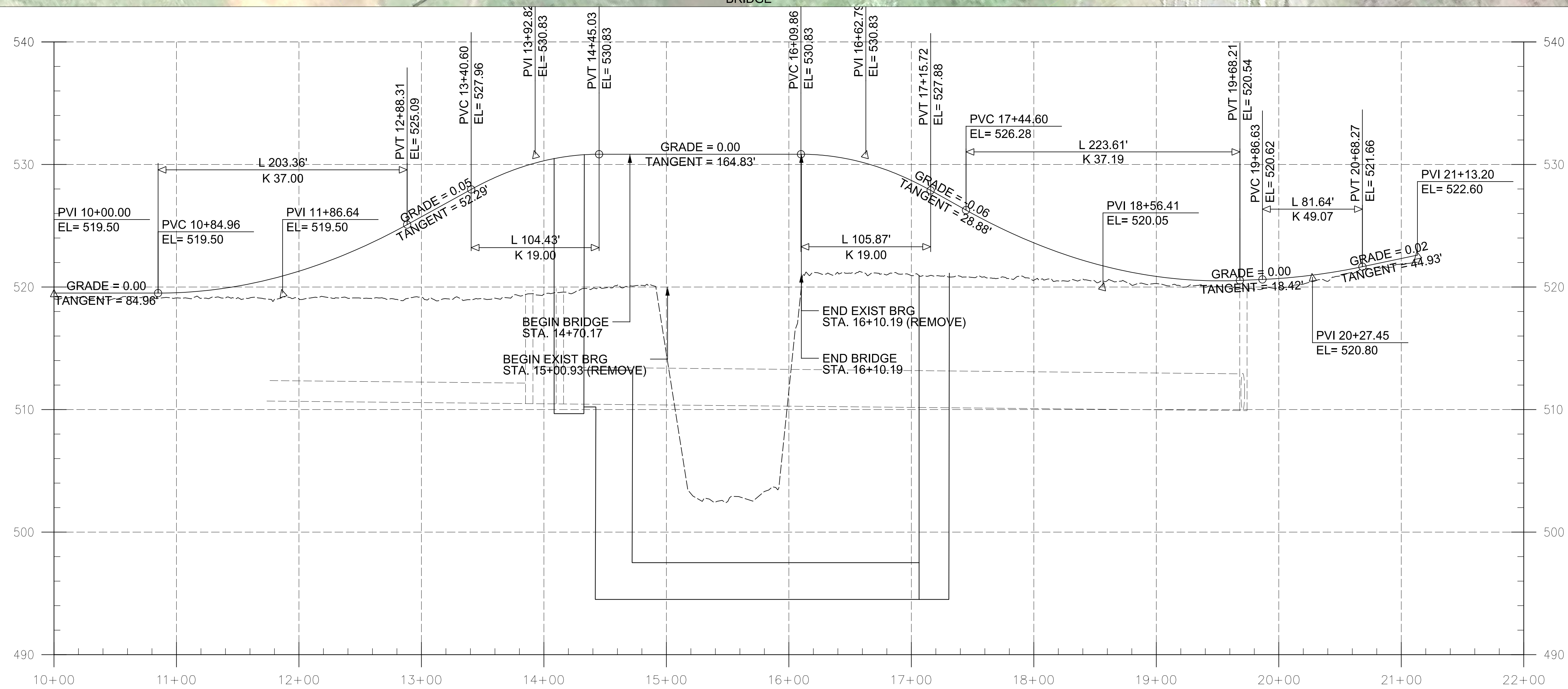
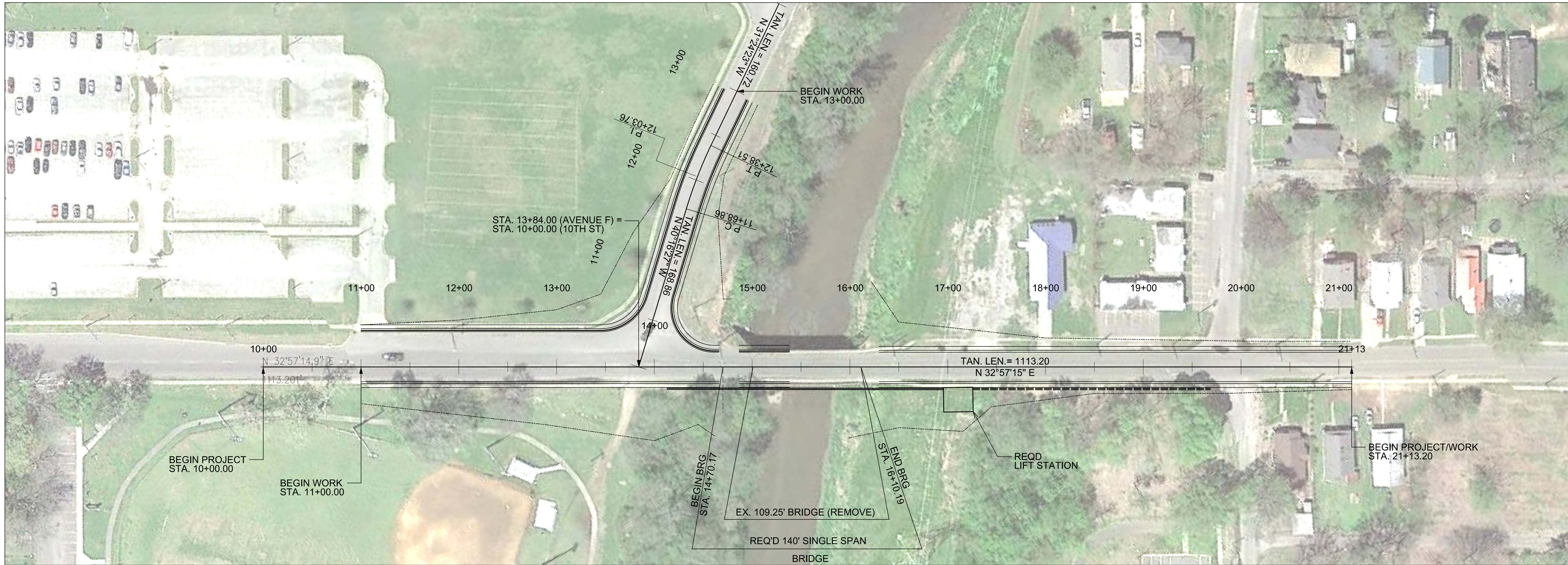
Alternative B

[SEE ATTACHMENT]

Alternative C

Item Description	Unit	Unit Cost	Est. Quantity	Est. Item Cost
48" DIP, open trench installation (10 to 15 ft depth)	LF	700	450	315,000
48" DIP, micro-tunneling	LF	4,500	1,925	8,662,500
				8,977,500 Total

SEWER RELOCATION ALTERNATIVE B



CITY OF BIRMINGHAM

DEPARTMENT OF
**PLANNING, ENGINEERING
AND PERMITS**

ENGINEERING DIVISION
Mike Eddington, P.E.
City Engineer

Randall Woodfin
Mayor

Edwin Revell
Director

Seal

Date Approved:

Date	Revision Description
10-13-2017	GENERAL REVISION
01-13-2018	GENERAL REVISION
03-05-2018	GENERAL REVISION
05-04-2018	GENERAL REVISION

No.	Revision Description
0	GENERAL REVISION
1	GENERAL REVISION
2	GENERAL REVISION
3	GENERAL REVISION

PROJECT NAME:
**AVENUE F
STREET AND DRAINAGE
IMPROVEMENTS
SANITARY SEWER RELOCATION-
ALTERNATIVE B**

Drawn By: BLR Crew Chief:

Project Manager:
LAWRENCE WILSON

Project Number:
18E-02-00113

Sheet Name:

Scale: 1" = 50'

Sheet of
B-1

File Number:

Engineering Design Technologies, Inc.

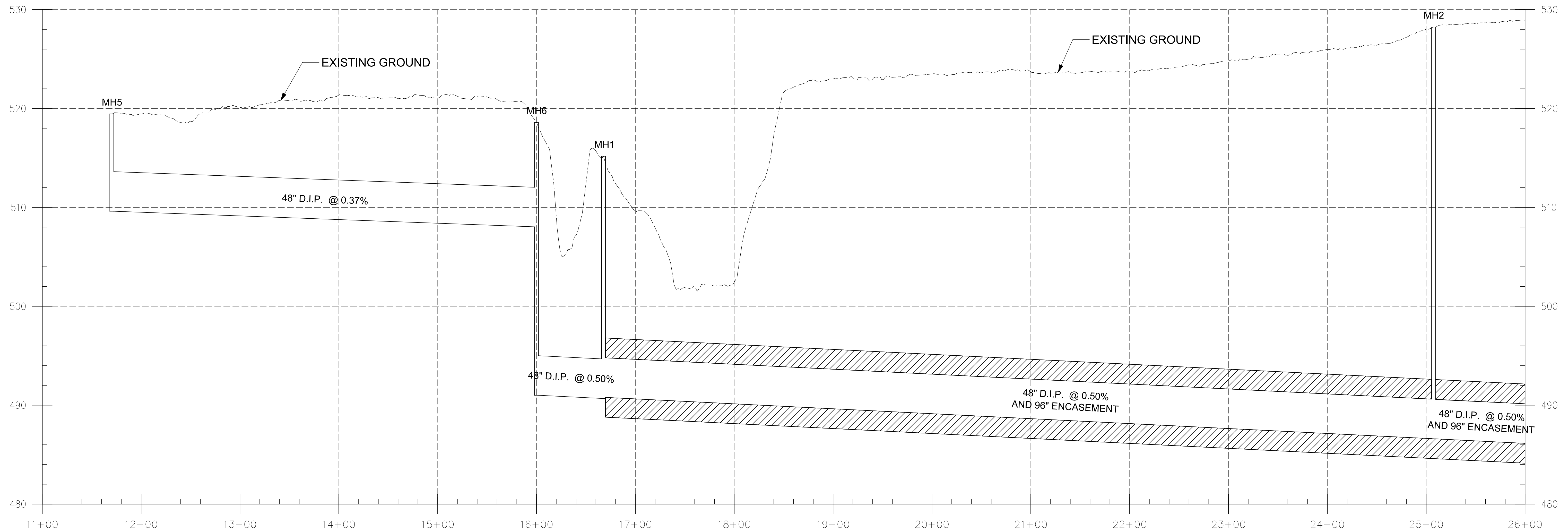
Avenue F Pump Station Cost Estimate

Oct.

24, 2018

Item	Description	Unit	Unit Cost	Quantity	Amount
Earthwork					
1.01	Site Prep, Erosion & Sediment Control	LS	\$ 30,000	1	\$ 30,000
1.02	Dewatering	LS	\$ 30,000	1	\$ 30,000
1.03	Shoring	SF	\$ 85	5,400	\$ 459,000
1.04	Excavation	CY	\$ 60	2,710	\$ 162,600
1.05	Backfill	CY	\$ 55	900	\$ 49,500
Subtotal - Demolition Cost					\$ 731,100
Construction					
2.01	57 Stone Sub Base	TN	\$ 50	110	\$ 5,500
2.02	Floor Slab	SF	\$ 75	1,970	\$ 147,750
2.03	Walls	SF	\$ 80	4,640	\$ 371,200
2.04	Roof Slab	SF	\$ 60	1,169	\$ 70,140
2.05	Waterproofing	SF	\$ 15	4,060	\$ 60,900
2.06	Miscellaneous	LS	\$ 25,000	1	\$ 25,000
Subtotal - Construction Cost					\$ 680,490
Equipment					
3.01	Valve Pit, Assemblies & FM	LS	\$ 275,000	1	\$ 275,000
3.02	Pumps, Accessories & Controls	LS	\$ 1,155,000	1	\$ 1,155,000
3.03	Stand-by 700KW Diesel Generator	LS	\$ 185,000	1	\$ 185,000
3.04	Installation	LS	\$ 375,000	1	\$ 375,000
Subtotal - Equipment Cost					\$ 1,990,000
Subtotal					\$ 3,401,590
General Allowances					
4.01	Mobilization/Demobilization	%		10.0%	\$ 340,159
4.02	General Conditions	%		12.0%	\$ 408,191
4.03	Overhead & Profit	%		15.0%	\$ 510,239
4.04	Contingency	%		20.0%	\$ 680,318
Subtotal - General Allowances					\$ 1,938,906
Other Allowances					
5.01	Rock Excavation Contingency	CY	\$ 250.00	1000	\$ 250,000
Subtotal - Other Allowances					\$ 250,000
Total Estimated Cost					\$ 5,590,496

SEWER RELOCATION ALTERNATIVE C



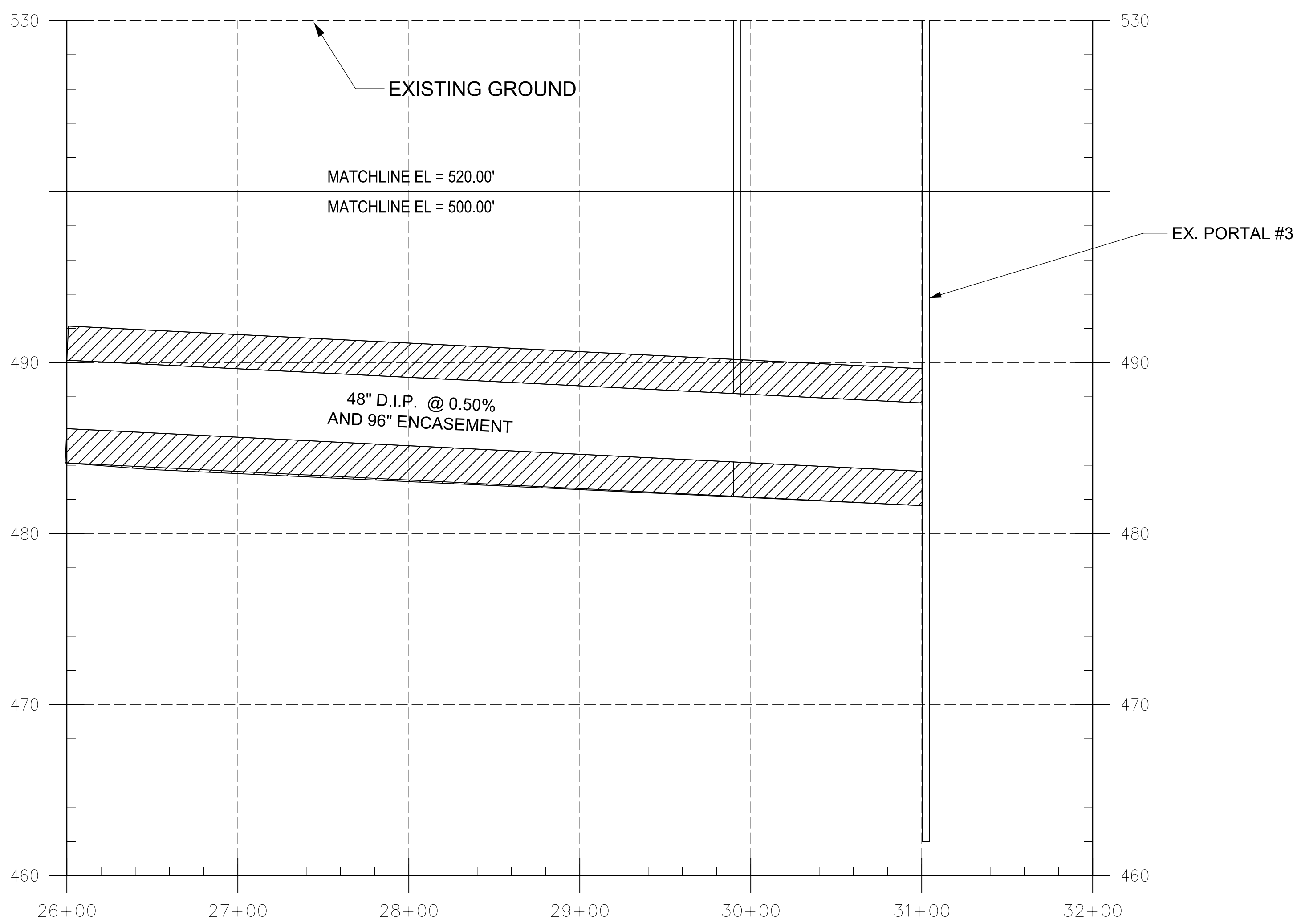
Seal

Date Approved:

No.	Revision Description	Date
0	GENERAL REVISION	

PROJECT NAME:
AVENUE F
 STREET AND DRAINAGE
 IMPROVEMENTS
 SANITARY SEWER RELOCATION-
 ALTERNATE C

Drawn By: BHD Crew Chief:
 Project Manager: LAWRENCE WILSON
 Project Number: 18E-02-20100
 Sheet Name:
 Scale: 1" = 50'
 Sheet of C-1
 File Number:



CITY OF BIRMINGHAM
 DEPARTMENT OF
**PLANNING, ENGINEERING
 AND PERMITS**
 ENGINEERING DIVISION
 Mike Edgington, P.E.
 City Engineer

Seal

Date Approved:

No.	Revision Description	Date
0	GENERAL REVISION	

PROJECT NAME:
AVENUE F
 STREET AND DRAINAGE
 IMPROVEMENTS
 SANITARY SEWER RELOCATION-
 ALTERNATE C

Drawn By: BHD Crew Chief:
 Project Manager:
 LAWRENCE WILSON
 Project Number:
 18E-02-20100
 Sheet Name:
 Scale: 1" = 50'
 Sheet of
 C-2
 File Number:

Randall Woodfin
 Mayor
 Edwin Revell
 Director

Project No: 18E-02-020100
 Project: Avenue F Bridge at Village Creek Feasibility Study
 Cost Estimate for Sewer Relocation Alternatives
 Client: RPCGB/City of Birmingham

Alternative A

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Alternative B

[SEE ATTACHMENT]

Alternative C

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48" DIP, micro-tunneling	LF	4,500	1,925	8,662,500
				8,977,500 Total

PERMITTING AND OTHER CONSIDERATIONS

SARCOR, LLC

www.sarcorllc.com
info@sarcorllc.com



TA/JR
2019-7A-0166

1116 20TH Street South #322
Birmingham, AL 35205
205.434.1555

my

November 6, 2018

RECEIVED
NOV 08 2018

BY: *[Signature]*

Mr. William Pearson
US Fish and Wildlife Service
Daphne ES Field Office
1208-B Main Street
Daphne, Alabama 36526

Re: Threatened/Endangered Species Request
Project Number: T.B.D
City of Birmingham – Avenue F Bridge over Village Creek Feasibility Study: APPLE

Dear Mr. Pearson:

SARCOR, LLC (SARCOR) has been selected to conduct the feasibility study and prepare the documentation for the above referenced project. The proposed scope of work is to analyze existing conditions including water flow and flood conditions, bridge structure, and the utilities surrounding the bridge to determine improvements to the bridge and utilities located at Avenue F over Village Creek in the Ensley area of Jefferson County, Alabama.

In accordance with Section 7 of the Endangered Species Act, I am requesting your assistance in determining whether endangered and/or threatened species that may be impacted. Please provide a list of endangered and/or threatened species in the project vicinity.

Your assistance is greatly appreciated. If you should require any additional information, please contact me at (205) 434-1555 or via e-mail at selena@sarcorllc.com.

Sincerely,

SARCOR, LLC

[Signature]

Selena Rodgers, MBA
President



U.S. Fish and Wildlife Service
1208-B – Daphne, Alabama 36526
Phone: 251-441-5181 Fax: 251-441-6222

No endangered or threatened species or critical habitat are known to occur in the project area. As described, the project will have no significant impact on fish and wildlife resources. IF PROJECT DESIGN CHANGES ARE MADE, PLEASE SUBMIT NEW PLANS FOR REVIEW.

[Signature]

William J. Pearson, Field Supervisor

NOV 14 2018

Date

#2

Attachment: Project Location Map





ALABAMA HISTORICAL COMMISSION

468 South Perry Street
P.O. Box 300900
Montgomery, Alabama 36130-0900
334-242-3184 / Fax: 334-240-3477

Lisa D. Jones
Executive Director
State Historic Preservation Officer

November 15, 2018

Selena Rodgers
SARCOR, LLC
1116 20th Street, South #322
Birmingham, AL 35205

Re: AHC 18-0080
Replacement of Avenue F Ensley Bridge along Village Creek Bridge
Jefferson County

Dear Ms. Rodgers:

Our records indicate that we have previously concurred with this project this project. We continue to concur with project activities provided the scope of work remains the same. However, if the scope of work has changed, further consultation with our office will be necessary.

Should artifacts or archaeological features be encountered during project activities, work shall cease and our office shall be consulted immediately. Artifacts are objects made, used or modified by humans. They include but are not excluded to arrowheads, broken pieces of pottery or glass, stone implements, metal fasteners or tools, etc. Archaeological features are stains in the soil that indicate disturbance by human activity. Some examples are post holes, building foundations, trash pits and even human burials. This stipulation shall be placed on the construction plans to insure contractors are aware of it.

We appreciate your commitment to helping us preserve Alabama's historic archaeological and architectural resources. Should you have any questions, please contact Amanda McBride at 334.230.2692 or Amanda.McBride@ahc.alabama.gov. Have the AHC tracking number referenced above available and include it with any future correspondence.

Sincerely,

A handwritten signature in blue ink that reads "Lee Anne Wofford".

Lee Anne Wofford
Deputy State Historic Preservation Officer

LAW/AMH/amh



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, MOBILE DISTRICT
218 SUMMIT PARKWAY, SUITE 222
HOMEWOOD, ALABAMA 35209

February 13, 2019

North Branch
Regulatory Division

SUBJECT: File Number SAM-2019-00130-CMS, City of Birmingham, Avenue F Bridge over Village Creek Feasibility Study

City of Birmingham
c/o Sarcor, LLC
Attention: Ms. Selena Rodgers
1116 20th Street South #322
Birmingham, Alabama 35205

Transmitted electronically to selena@sarcorllc.com

Dear Ms. Rodgers:

This is in response to your letter dated November 6, 2018, received on January 25, 2019, requesting comments regarding the proposed feasibility study on the Avenue F bridge over Village Creek.

Section 404 of the Clean Water Act requires that a Department of the Army (DA) permit be obtained for the placement or discharge of dredged and/or fill material into waters of the United States (U.S.), including wetlands, prior to conducting the work (33 U.S.C. 1344). It appears there may be waters of the U.S. located within the project area based on our review of USGS topographic maps, National Wetland Inventory maps, and the Jefferson County Soil Survey. If the project will involve work in or a discharge or placement of dredged and/or fill material into waters of the U.S. under our regulatory jurisdiction, issuance of a DA permit will be required prior to conducting the proposed work. It is unclear from the limited amount of information provided in the letter whether a DA permit will be required.

Nothing in this letter shall be construed as excusing you from compliance with other Federal, State, or local statutes, ordinances, or regulations that may affect any proposed work. We appreciate your cooperation with the U.S. Army Corps of Engineers' Regulatory Program.

Please contact me at (205) 290-9096 or at courtney.m.shea@usace.army.mil should you have any questions, and refer to project number SAM-2019-00130-CMS. For additional information about our Regulatory Program, you may visit our web site at <http://www.sam.usace.army.mil/Missions/Regulatory.aspx>. Also, please take a moment to complete our customer satisfaction survey located near the bottom of the webpage. Your responses are appreciated and will allow us to improve our services.

Sincerely,

Courtney Shea
Senior Project Manager