# NCDOT STIP P-5602E GTP TO ELMER RAIL PROJECT LENIOR COUNTY

WBS 46393.1.5

#### FEASIBILITY STUDY MEMORANDUM



#### Prepared for:

North Carolina Department of Transportation Rail Division

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#### List of Acronyms

AREMA – American Railway Engineering and Maintenance-of-Way Association

**CSXT - CSX Transportation** 

SEA – State Environmental Assessment

FONSI - Finding of No Significant Impact

GTP - Global TransPark

KSH – Kinston Snow Hill (Shortline Railroad)

MP- Milepost

NCDOT - North Carolina Department of Transportation

NCRR - North Carolina Railroad

NSR - Norfolk Southern Railway

STIP – State Transportation Improvement Program

#### EXECUTIVE SUMMARY

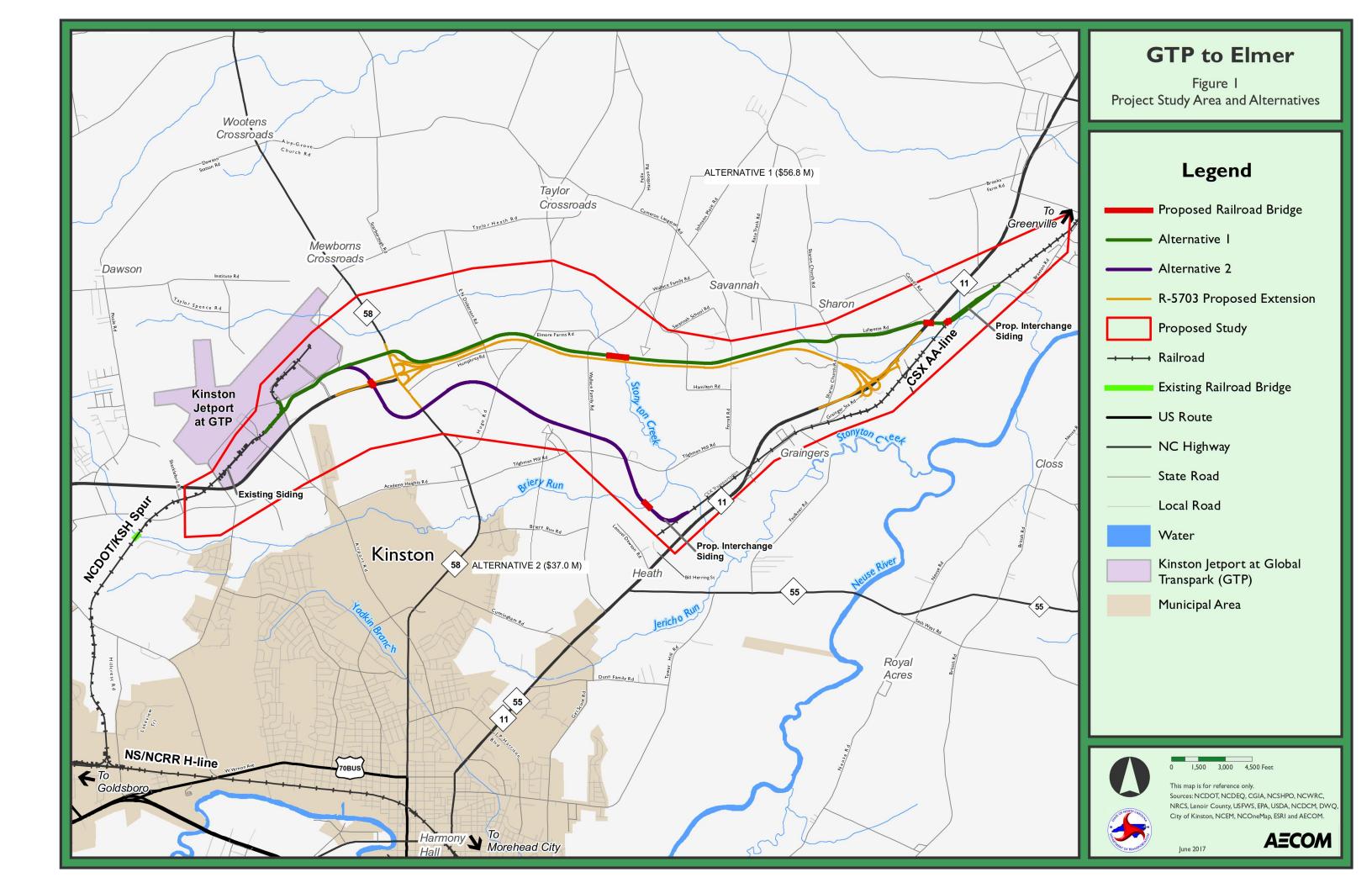
The "Global TransPark (GTP) to Elmer Rail Project" explores the feasibility of a rail connection between the KSH (Kinston Snow Hill) rail spur serving the Global TransPark facility north of Kinston, North Carolina and the existing CSXT 'AA' Line between MP 172 and MP 173 (Elmer). The general purpose of this project is to provide rail service opportunities for the Global Transpark area and future rail users east of the Global Transpark. The study explored the engineering feasibility of completing this connection along with costs and a high level evaluation of the environmental impacts.

The general study corridor followed the extension of the proposed C. F. Harvey Parkway and utilized information accumulated for the SEA/FONSI for that project. Two alignment alternatives were developed and studied, evaluating costs, right of way and utility impacts and general environmental impact. Alternative 1 runs along the north side of C. F. Harvey Parkway and ties to the CSXT 'AA' Line after crossing NC 11 with a grade separation. Alternative 2 runs along the south side of C.F. Harvey Parkway and ties to CSXT 'AA' line on the west side of NC 11, therefore no grade separation is required. Alternative 2 does include a grade separation of C.F. Harvey Parkway. Both Alternatives include an interchange siding of approximately 1500 feet near the connection with CSXT 'AA' line. (Refer to Figure 1)

Alternative 2 follows an alignment south of C.F. Harvey Parkway and results in overall less impact to biotic communities, contains fewer at-grade crossings and has the lower overall estimated cost of approximately \$37 million. Alternative 1 is estimated to cost approximately \$57 million.

This report recommends that both alternatives be carried forward in any future environmental analysis along with design options and alternative combinations which are discussed in this report.

In coordination and negotiation for connection to CSXT's railroad at Elmer, improvements to the CSXT 'AA' line could be required depending upon level of service to the new GTP connection. Investigation of these improvements, including cost and scope, was not included in this study.



#### II. GENERAL DESCRIPTION

The "Global TransPark (GTP) to Elmer Rail Project" is a combination of a feasibility study and the development of functional designs to be used for determining the potential location of a new freight rail connection between the KSH (Kinston Snow Hill) rail spur serving the Global TransPark facility north of Kinston, North Carolina and the existing CSXT 'AA' Line between MP 172 and MP 173 (Elmer). *Refer to Figure 1 for the general location*. The CSXT 'AA' Line runs north through Greenville and turns west at Parmele and continues through Tarboro to Rocky Mount where it ties to the 'A' Line, a major north-south line of CSXT. The GTP to Elmer connection would provide an additional interchange option for the KSH Line as well as establish a corridor along which businesses would have railroad access to ship materials and goods. In combination with the KSH Line it would provide access to the two Class I freight railroads operating in the eastern United States.

The KSH rail spur is owned by NCDOT and operated by Kinston Snow Hill Railroad, a Gulf and Ohio company. The existing KSH rail spur connects to the Norfolk Southern Railway (NSR) which operates on the North Carolina Railroad (NCRR) right of way. The existing KSH rail spur connects to the NSR tracks east of NC 258 at the 'wye' called GTP Junction. The spur extends approximately five miles north, ending in two track yard near Spirit Aerosystems in the GTP. The existing spur crosses C.F. Harvey Parkway at-grade. A 1500-foot-long double ended runaround siding is located between the crossings of C.F. Harvey Parkway and Airport Road.

The study area begins east of Airport Road (SR 1572) where the GTP to Elmer track would tie to the existing KSH rail spur. The study area extends to the east crossing NC 58 and continues on to the CSXT 'AA' line which parallels NC 11. The corridors selected for study generally follow the two corridors studied for the extension of C.F. Harvey Parkway SEA/FONSI (STIP No. R-5703), completed in June 2016. The proposed section would be single track with a 1500-foot interchange siding located in proximity to the tie with the existing CSXT 'AA' line. The alignment alternatives described herein include grade separations of either C.F. Harvey Parkway or Highway NC 11.

The study serves as the initial step in the planning and design process and is not the product of environmental or design investigations. Environmental data was derived from the recent R-5703 SEA/FONSI. The purpose of this study is to describe the proposed project, including costs, identify potential problems that may require consideration in the later planning and design phases, and provide sufficient information to make informed decisions about funding the proposed improvements. Since this study is investigating the connection between two rail lines, it is possible the construction of the connection would require the approval of the Surface Transportation Board.

#### III. BACKGROUND

The North Carolina Eastern Infrastructure Study, published in January 2015, included recommendations for improving rail and highway access to the Global TransPark. The study recommended: 1) initiation of environmental/planning/design for the extension of C.F. Harvey Parkway, and 2) an environmental analysis be conducted for a rail spur from CSXT near Elmer to the GTP and obtaining advanced right of way.

In June 2016, a State Environmental Assessment/Finding of No-Significant Impact (SEA/FONSI) was signed for the extension of C.F. Harvey Parkway(STIP No. R-5703). Two build alternative alignments evolved for C.F. Harvey Parkway extension during the preparation of the environmental assessment document. Both C.F. Harvey alternatives extend the four lane divided section from west of its existing terminus at NC 58 east to tie with NC 11. C.F. Harvey Alternative 1 takes a southerly route, approximately 4 miles long, interchanging with NC 11 north of the NC 55 and NC 11 intersection, east of the CSXT corridor. C. F. Harvey Alternative 2 (recommended) takes a northerly route, approximately 6 miles long, interchanging with NC 11 near Grainger Station Road (SR 1835) on the west side of the CSXT railroad corridor. C.F. Harvey Alternative 2 is in design and proceeding to right of way acquisition and construction bid. During the R-5703 study the GTP to Elmer connection was discussed. Since the rail connection was not included in approved local or state plans, it was not included in the SEA/FONSI study for C.F. Harvey Parkway.

The purpose of this feasibility study is for consideration of the project to be included in the State Transportation Improvement Program (STIP).

#### IV. PROJECT DESIGN PARAMETERS

The design for the existing KSH rail spur was used as a guide for setting the design parameters for the Project. The Track Chart for the existing KSH alignment is in Appendix B-4. Design parameters for the GTP to Elmer track connection are as follows:

- AREMA Guidelines
- Speed = 25 mph
- Eight (8) degree maximum horizontal curve
- 1.0 inch minimum track super-elevation on main
- Maximum Grade = 1.25% compensated
- Vertical Clearance: 17 feet over major arterials; 15.5 feet over local roadways
- Turnouts #10 used throughout for mainline and siding
- 1,500 feet of interchange siding (25' track centers) located near the CSXT 'AA' line

The horizontal design components for each alternative are shown in a functional design on the Land Suitability Mapping which is included in the Appendices A-1 and A-2. The vertical alignment for each alternative is also included in Appendices B-1 and B-2. The typical section which was used for the determining impact limits is shown in Appendix B-3.

#### V. PRELIMINARY STUDY ALTERNATIVES

Two build alternatives were considered for the GTP to Elmer connection (See Figure 1). Alternative 1 generally parallels to the north of the proposed C.F. Harvey Parkway alignment. Alternative 2 generally follows the discarded southerly C.F. Harvey Parkway alignment alternative. In coordination and negotiation for connection to CSXT's railroad at Elmer, improvements to the CSXT 'AA' line could be required depending upon level of service to the new GTP connection. Investigation of these improvements, including cost and

scope, was not included in this study. The two alternatives are more specifically described in the following functional design alternatives.

#### **FUNCTIONAL DESIGN ALTERNATIVES**

#### Alternative 1

Beginning 1,100 feet east of Airport Road (SR 1578) the alignment will intersect the KSH rail spur alignment on tangent with a No. 10 left hand turnout installed to connect the existing north end of the KSH spur track. The proposed GTP to Elmer track will extend east with at-grade crossings of John Mewborne Road (SR 1581) and Aerosystem Boulevard (SR 2024) prior to crossing NC 58 atgrade north of the proposed C.F. Harvey Parkway (NC 148) interchange with NC 58. From this crossing, the track alignment follows to the northern right of way for the proposed C.F. Harvey Parkway Extension. The alignment crosses at-grade E.N. Dickerson Road (SR 1729), Hugo Road (SR 1004), and Wallace Family Road (SR 1732) prior to crossing Stonyton Creek which will require an approximately 955-foot bridge to span the floodway. The length of the bridge is the same as used for C.F. Harvey Parkway which was set to minimize impact to floodway and wetlands. After crossing the creek, the alignment would cross Hamilton Road (SR 1733) which is proposed to be dead-ended with C.F. Harvey Parkway extension. Since no residual property would remain between the railroad and C.F. Harvey Parkway, Alternative 1 proposes to relocate this dead end approximately 150 feet to the north and thereby avoiding an unnecessary at-grade crossing. The next crossing is Ferrell Road (SR 1735), which would be at-grade. Following the crossing of a wetland area the alignment veers to the north away from C.F. Harvey Parkway and crosses Sharon Church Road (SR 1720) atgrade. From this crossing, the alignment follows the south side of Lafayette Road (SR 1722) for approximately one mile before crossing over NC 11 on a bridge. East of the grade separation, the track must cross the industrial service access for the DuPont Dacron Plant. Since it is impractical to get back to grade in 800 feet, this roadway would be grade separated which forces the interchange siding to be in an elevated condition and on a grade of one (1) percent. An option which could be evaluated would be to relocate this service road to the south side of the NC 11 crossing thereby removing the grade separation crossing, altogether. This would allow the track to be brought down to grade sooner near the CSXT right of way and minimize the retaining wall needs. A 1500foot interchange siding is proposed between the GTP to Elmer track and the CSXT 'AA' line prior to tying to the CSXT 'AA' line at MP 169.2 with a right hand turn-out just south of Braxton Road (SR 1802). The siding and connection tracks will be elevated on a one percent grade, therefore a retaining wall is proposed between the siding and the CSXT track. An existing private farming access at-grade crossing of CSXT would be relocated to the north end of the interchange siding where it would cross only two tracks.

For Alternate 1, the alignment challenge was on the east end where the track crosses NC 11 with a grade separation.

The length of Alternate 1 alignment is approximately 8.18 miles. Alternative 1 contains eight (8) public at-grade crossings and one (1) private at-grade crossing along with two (2) grade separations

(See Table 1). Alternate 1 also includes an approximate 955-foot bridge over the Stonyton Creek floodway and two bridges over roadways (See Table 2).

Table 1: Summary of Roadway Crossings along Alternative 1

Roadway	Type of Facility	Alternative 1
John Mewborne Road (SR 1581)	2-lane, local road	At-grade crossing
AeroSystems Boulevard (SR 2024)	4-lane divided local road	At-grade crossing
NC 58	2-lane, highway	At-grade crossing
E.N. Dickerson Road (SR 1729)	2-lane, local road	At-grade crossing
Hugo Road (SR 1004)	2-lane, cross-county road	At-grade crossing
Wallace Family Road (SR 1732)	2-lane, local road	At-grade crossing
Hamilton Road (SR 1733)	2-lane, local road	Move cul-de-sac to north/no crossing
Ferrell Road (SR 1735)	2-lane, local road	At-grade crossing
Sharon Church Road (SR 1720)	2-lane, local road	At-grade crossing
NC 11	4-lane, divided highway	Grade Separation (railroad over)
Dupont Service Drive	2-lane, private road	Grade Separation (railroad over)
Farm Access Road (different for ea. Alt.)	One-lane unpaved private	Relocate with private crossing
Totals by type:	At-Grade Public crossing	8
	Grade Separation	2

Table 2: Proposed Structures for Alternative 1

Location	Proposed Structure	Size			
Wildlife crossing	Single barrel culvert	15'x 12' x 80' feet			
Over Stonyton Creek & Floodplain	Ballasted Deck Single Track Bridge	22 feet by 955 feet			
Over NC 11	Ballasted Deck Single Track Bridge	22 feet by 275 feet			
Over Dupont Access Road	Ballasted Deck Single Track Bridge	22 feet by 80 feet			

Location	Proposed Structure	Size		
Adjacent to CSXT Railroad	MSE Wall	9 ft. avg. x 1500 feet		

#### Alternative 2

Beginning 1100 feet east of Airport Road (SR 1578), the alignment will intersect the KSH spur alignment on tangent with a No. 10 left hand turnout installed to connect the existing north end of the KSH spur track. The proposed GTP to Elmer track will extend east with at-grade crossings of John Mewborne Road (SR 1581) and Aerosystems Boulevard (SR 2024) prior to curving south and crossing over C.F. Harvey Parkway with a grade separation. After this grade separation, the alignment turns back north and crosses NC 58 at-grade followed by a turn east to cross Hugo Road (SR 1004) at-grade just south of Hugo Road's intersection with E.N. Dickerson Road(SR 1729). From this crossing, the track alignment continues to follow the C.F. Harvey Alternative 1 corridor and crosses Wallace Family Road (SR 1732) north of Tilghman Mill Road (SR 1742). The alignment turns south and crosses Tilghman Mill Road (SR 1742) at-grade and afterwards crosses Briery Run Stream with an approximately 400-foot bridge. The length of the bridge is based upon plans developed for C.F. Harvey Extension Alternative 1 to span the floodway. After crossing the stream, the alignment turns north and parallels the existing CSXT 'AA' line right of way. A 1500-foot interchange siding is proposed on the inside of the curve on the opposite side of the alignment from the CSXT 'AA' line. An existing private farm access at-grade crossing would be relocated to the north end of the interchange siding where it would cross only two tracks. A right hand turnout connection to the CSXT 'AA' line occurs just south of the existing CSXT 'AA' line bridge over Stonyton Creek at MP 173.2.

The length of the alignment is approximately 5.7 miles. Alternative 2 contains six (6) public atgrade crossings, one (1) grade separation and one (1) private at-grade crossing (See Table 3). It also includes a 400-foot bridge over Briery Run Stream and one bridge over a roadway (See Table 4)

Table 3: Summary of Roadway Crossing along Alternative 2

Roadway	Type of Facility	Alternative 2
John Mewborne Road (SR 1581)	2-lane, local road	At-grade crossing
AeroSystems Boulevard (SR 2024)	4-lane divided local road	At-grade crossing
NC 58	2-lane, highway	At-grade crossing
C.F. Harvey Parkway (NC 148)	4-lane divided highway	Grade Separation (railroad over)
Hugo Road (SR 1004)	2-lane, cross-county road	At-grade crossing
Wallace Family Road (SR 1732)	2-lane, local road	At-grade crossing
Tilghman Mill Road (SR 1742)	2-lane, local road	At-grade crossing
Farm Access Road (different for ea. Alt.)	One-lane unpaved private	Relocate with private crossing
Totals by type:	At-Grade Public crossing	6
	Grade Separation	1

Table 4: Proposed Structures for Alternative 2

Location	Location Proposed Structure		
Wildlife crossing	Single barrel culvert	15'x 12' x 80' feet	
Over C.F. Harvey Pkwy.	Ballasted deck bridge	22 feet by 250 feet	
Over Briery Run Creek	Ballasted deck bridge	22 feet by 400 feet	

#### VI. UTILITIES

Construction of the proposed project will likely require some degree of adjustment, relocation, or modification to existing public utilities. The known utilities, as of this study, that are located in the project study area are described in the following sections. A tabulation of the anticipated utility impacts and estimated costs is included in Appendix C-3. Utilities would be further identified along a selected alternative following the environmental planning process prior to final design.

#### Overhead Utilities

No high-tension overhead transmission lines are located within the project study area. Overhead powerlines are found throughout the project study area and are owned by Duke Energy. Private communications, provided by CenturyLink and SuddenLink, may share the use of these utility poles. It is common that these overhead utilities will require vertical adjustment wherever the tracks pass under or over them.

#### **Underground Utilities**

Natural gas service is provided by Piedmont Natural Gas and is available throughout the project study area. Natural gas lines run underground along NC 58, Hugo Road, Wallace Family Road, and several other locations. Telephone and broadband internet is provided by CenturyLink and SuddenLink.

Public water service is available throughout the project study area through the Neuse Regional Water and Sewer Authority. Its member service providers include the City of Kinston, Greene County Water, and North Lenoir Water Corporation.

The public sewer system is provided by the City of Kinston and is only available to the southernmost portion of the project study area at the eastern terminus of Alternative 2.

Unless the utility company has more stringent criteria for the protection of the underground utility the utility would need to be protected as required by AREMA guidelines.

#### VII. TRAFFIC AND SAFETY ANALYSIS

The automobile and truck traffic was documented in the C.F. Harvey Parkway environmental document based upon field counts obtained in 2015. This study also projected the traffic, which is expected to use the parkway extension and its impact on surrounding roadways. Table 5 reflects the existing and future traffic on roadways in proximity to the alternatives. This was extracted from the C.F. Harvey Parkway study and from NCDOT ADT mapping for 2015. This traffic assumes C.F. Harvey Parkway Extension is in place in accordance with the recommended alignment contained within the SEA/FONSI for which design is progressing.

Table 5: Roadway	<i>ı</i> Traffic co	onditions	with C.F.	. Harvey	Parkway

Roadway	Description	Exist. Veh./Day (VPD)	2040 (VPD)	Speed Limit
C.F. Harvey Parkway (NC 148)	4-lane, divided roadway	7,000(Alt. 2)	19,000(Alt. 2)	65 mph
NC 58	2-lane, undivided roadway	3,200(Alt.1) 4,000(Alt. 2)	5,900(Alt.1) 4,100(Alt. 2)	55 mph
NC 11	4-lane, divided roadway	15,000(Alt. 1)	20,000(Alt. 1)	55 mph
Ferrell Road (SR 1735)	2-lane, undivided roadway	600(Alt.1)	1,000(Alt.1)	55 mph
Braxton Road(SR 1802)	2-lane, undivided roadway	490	600	55 mph
Hugo Road (SR 1004)	2-lane, undivided roadway	3300(Alt.1) 900(Alt.2)	5300(Alt.1) 1700(Alt.2)	55 mph
Wallace Family Road (SR1732)	2-lane, undivided roadway	900(Alt.1) 1200(Alt.2)	1900(Alt.1) 1900(Alt.2)	55 mph
Tilghman Mill Rd.(SR 1742)	2-lane, undivided roadway	1600(Alt. 2)	2,200(Alt. 2)	55 mph
NC 55	2-lane, undivided roadway	2,800	3,800	55 mph

At-grade crossings are where rubber-tired vehicles and trains interface and offer the greatest potential for accidents. Since accidents between a train and an automobile commonly result in serious injury or fatality, it is important that safety measures be incorporated to prevent, to the best means practicable, these accidents from occurring.

Exposure Index is a tool used in predicting the likelihood of a motor vehicle accident involving a train (Ref: Roadway Design Manual Part 1, 7-5). Exposure Index is the product of the number of trains per day and the design year ADT on the crossing roadway. When the exposure index reaches 15,000 in rural areas or 30,000 in urban areas, a grade separation should be considered. Other factors considered include the speed of the train and the posted speed of the roadway and the classification of the roadway. If a roadway has been classified as a strategic corridor or control of access is present, NCDOT places increased interest in minimizing delay and improving safety. The train speed is limited to 25 mph but the posted speed on the roadways is between 55 and 65 mph. An assumption of one round trip train operation per day equates to two crossings per day. Grade separations are proposed at NC 11 (Alternative 1) and C.F. Harvey Parkway (Alternative 2) because both facilities meet the above exposure index guideline warrants, both are strategically important, and both either have or plan to have access control. The other public crossings are proposed as at-grade crossings with active warning devices.

#### VIII. HUMAN AND NATURAL ENVIRONMENTAL ISSUES

A high level analysis was performed for the project study area using 2015 R-5703 C.F. Harvey Parkway Extension data. More impacts are possible once further environmental investigation of these communities is conducted during the environmental assessment process for the project.

#### **Biotic Resources**

Terrestrial communities found in this area include pine plantation, mixed hardwood forest, and maintained/disturbed communities. Being that the project is located in the eastern region of North Carolina, characteristic of low-lying topography; wetlands are a common occurrence. These communities may be affected by habitat loss due to land clearing and the overall construction process.

Additionally, the North Carolina Environmental Management Commission has adopted rules pertaining to maintaining vegetated buffers around riparian areas as part of the Nutrient Sensitive Water Management Strategies for select watersheds of North Carolina (15A North Carolina Administrative Code [NCAC] 2B). Being that the project is located within the Neuse River basin, it is subject to the Neuse River Basin Buffer Rules (15 ANCAC 02B.0233).

**Table 2: Terrestrial Community Impacts** 

Community	Alternative 1	Alternative 2
Other communities - Loblolly Pine Plantation (acres)	0.5	4.4
Other communities - Maintained/ Disturbed (acres)	58.5	30.4
Other communities - Mesic Mixed Hardwood Forest (acres)	2.9	1.8
Wetland communities - Hardwood Flat (acres)	7.0	3.6
Wetland communities - Riverine Swamp Forest (acres)	3.2	-
Wetland communities - Pine Flat - Loblolly Pine Plantation (acres)	0.9	4.9
Wetland communities - Pine Flat - Clear cut (acres)	-	1.6
Streams (feet)	1002	254
Open Water (acres)	0.03	-

<sup>\*</sup>Note: These impact calculations include areas previously studied inside of the C.F. Harvey environmental study area. The entirety of P-5602E is not covered by this area. There is potential for more impacts once the entire project area has undergone a full Natural Resources evaluation.

#### Rare and Protected Species

This project has the potential to affect endangered species within the study area. Two endangered species are listed for Lenoir County: Picodes borealis (red-cockaded woodpecker) and Aeschynomene vierginiana (sensitive joint-vetch). A further environmental investigation of these communities will be conducted during the environmental assessment process for the project. These assessments may include field surveys of the proposed corridor during the season of high activity.

#### **Human Environment**

No known issues with significant impacts to the human environment exist. Further coordination and study will be conducted during the environmental assessment process for the project. These may include public involvement and evaluations of community characteristics, historic properties, public recreational facilities, low income communities, special populations, and section 4(f) resources.

#### IX. PROJECT COST

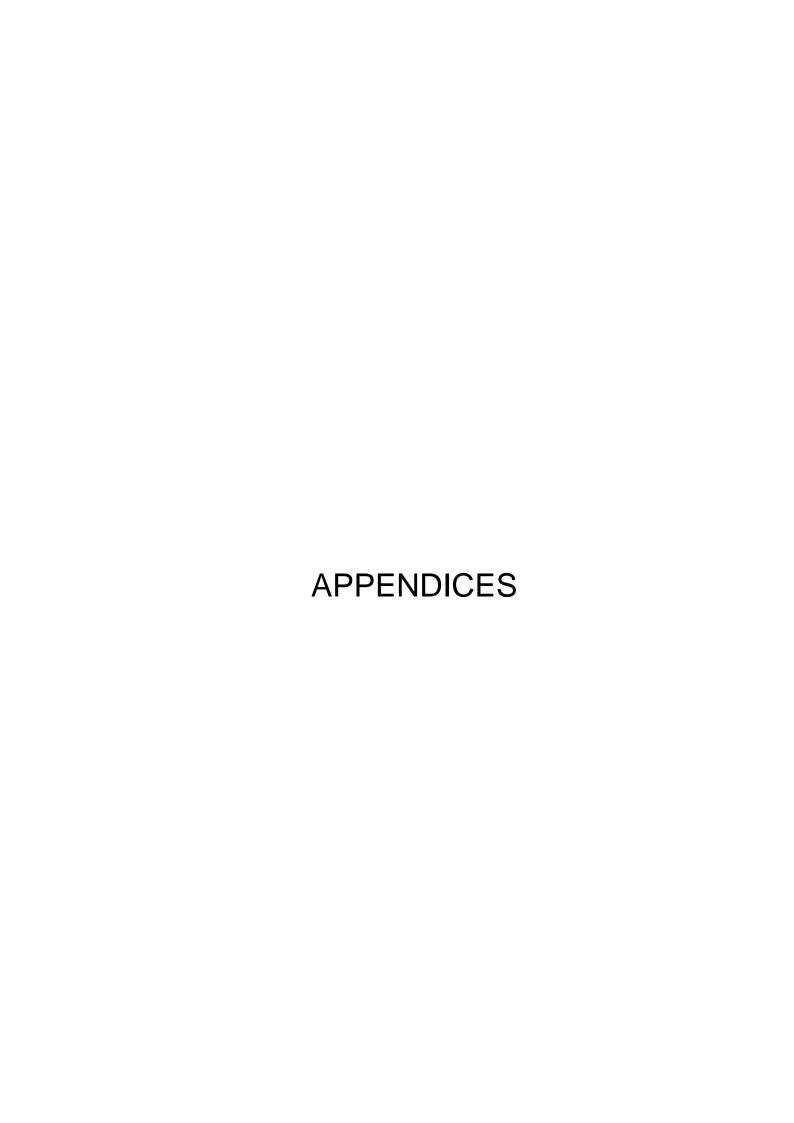
Cost estimations for this project were calculated based upon functional design concepts. Table 7 summarizes the cost associated with the two Alternatives under consideration. Construction Cost detail is included in the Appendices C-1 and C-2. Right of way and Utility cost estimates were requested and received from NCDOT Right of Way Branch and Utilities Unit (See Appendices C-3 and C-4). Alternative 2 results in lower costs because it is shorter and requires less structure construction.

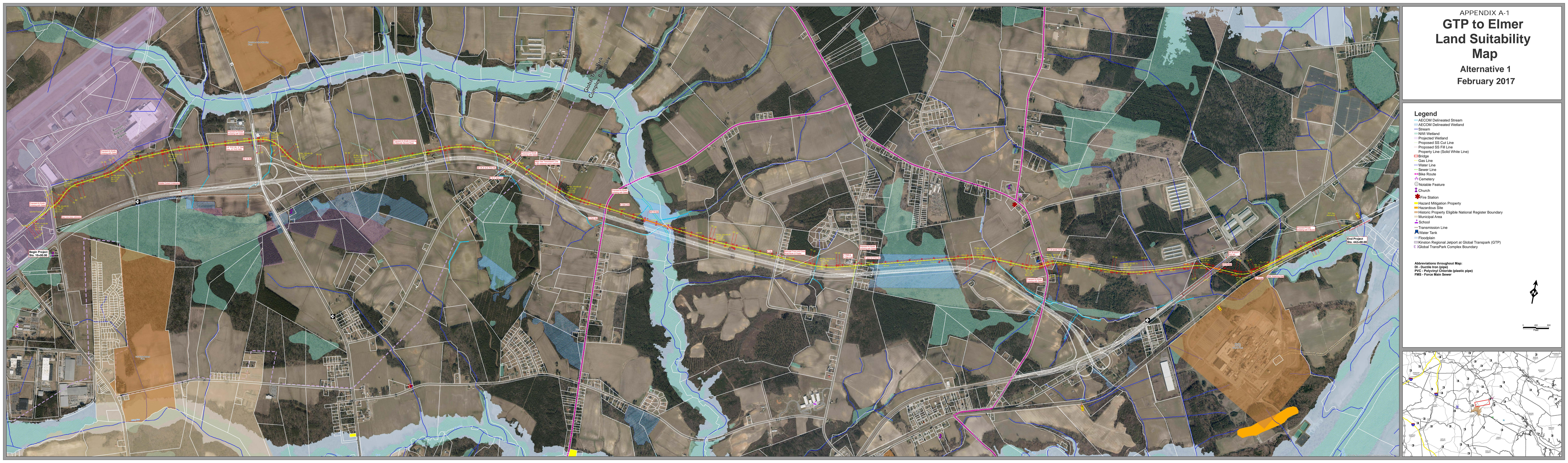
	Alternative 1	Alternative 2
Construction	\$ 51,711,700	\$ 34,521,500
Right of Way	\$ 2,538,600	\$1,252,300
Utility Relocation	\$ 2,593,200	\$ 1,206,200
Total Cost	\$ 56,843,500	\$ 36,980,000

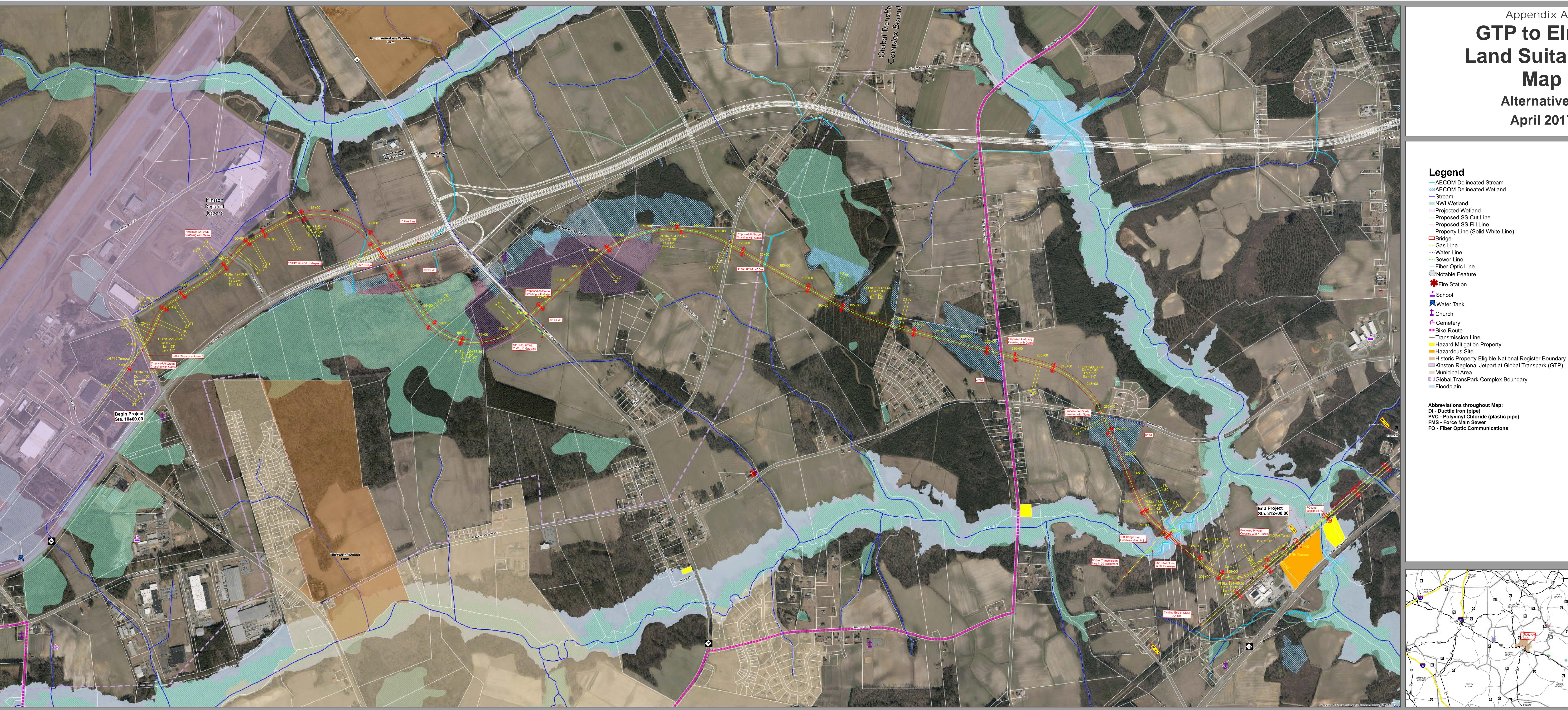
Table 7: Project Costs

#### X. FINDINGS:

In conclusion, Alternative 2 has less estimated impact to biotic communities and has the lower overall cost. Both alternatives should be included in any future environmental analysis and documentation along with design options which are discussed in this report. Another alternative which might be considered for study is a combination of Alternative 1 and Alternative 2 where Alternative 1 would be followed until after it crosses NC 58 at which point it would turn south and cross C.F. Harvey Parkway on a bridge and tie to and continue with the alignment of Alternative 2.







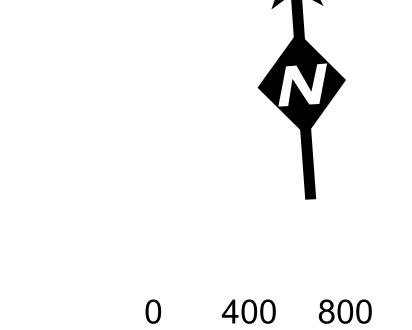
Appendix A-2

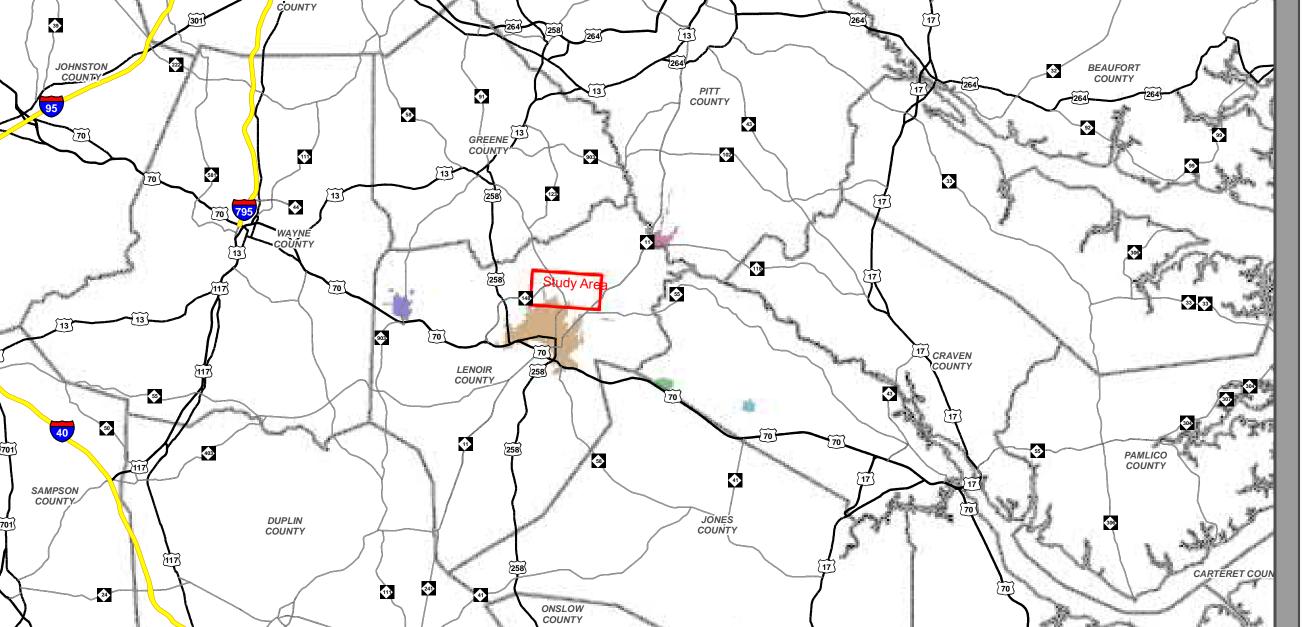
# GTP to Elmer Land Suitability

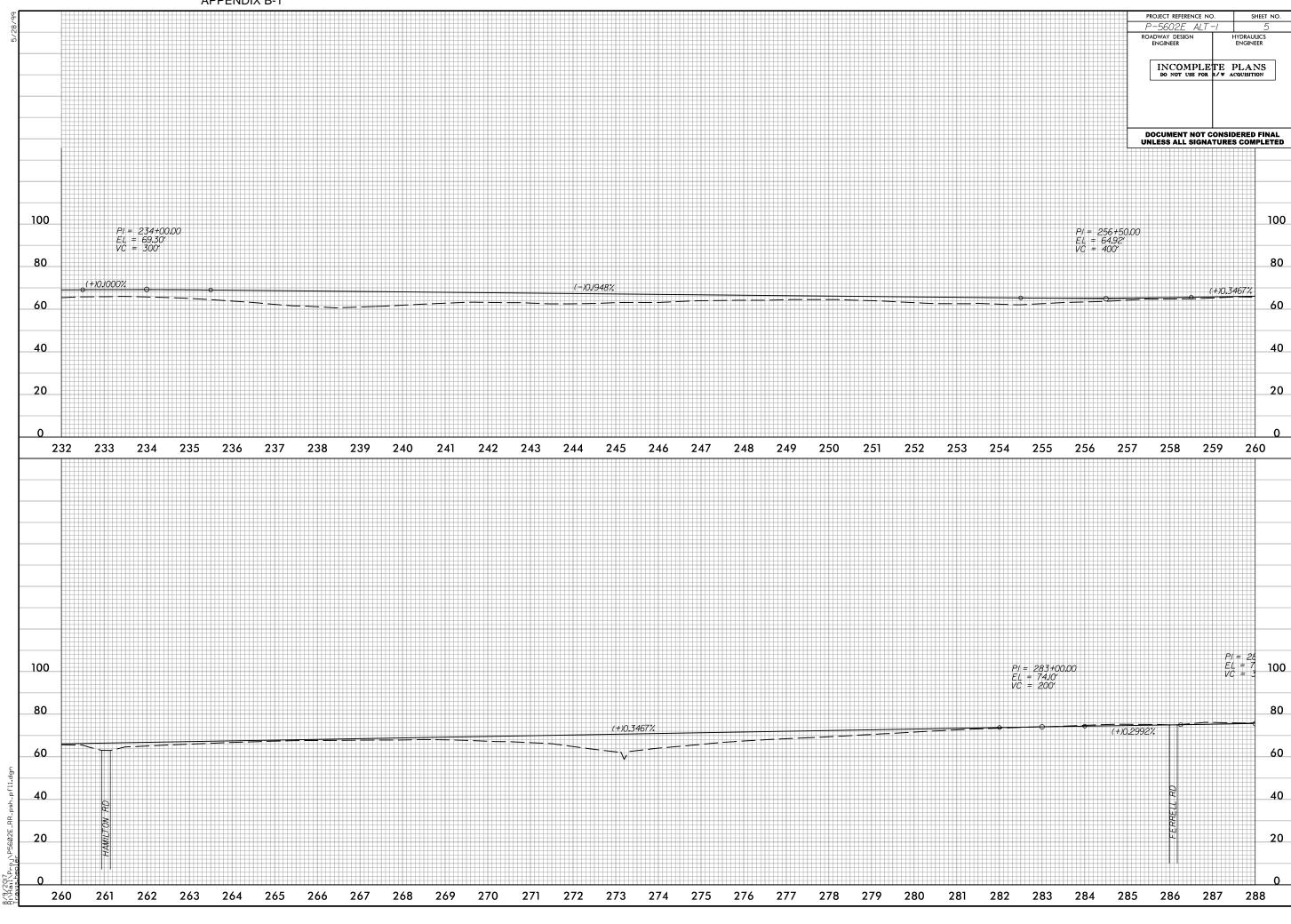
Alternative 2 **April 2017** 

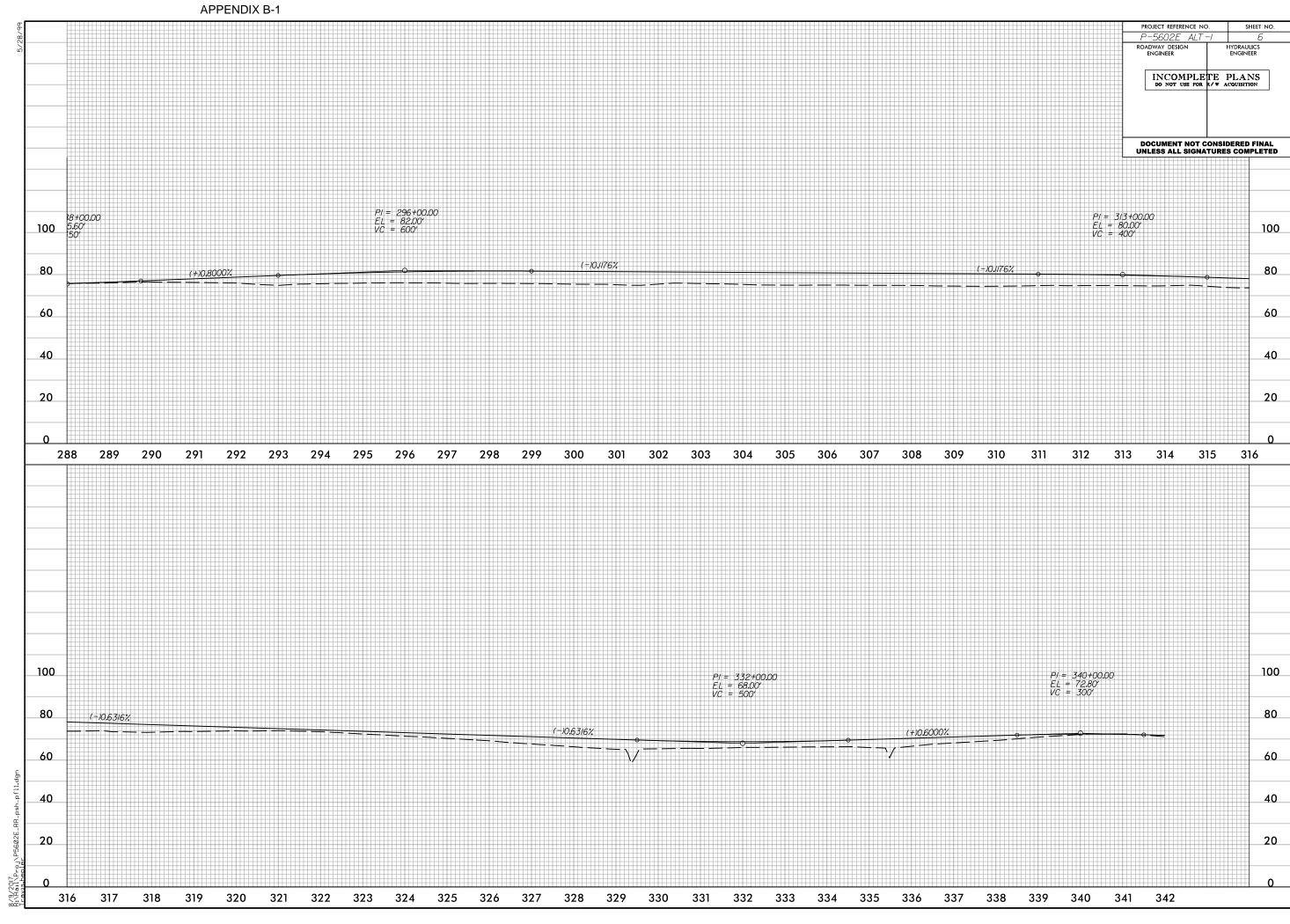
- Historic Property Eligible National Register Boundary
- Municipal AreaGlobal TransPark Complex Boundary

Abbreviations throughout Map:
DI - Ductile Iron (pipe)
PVC - Polyvinyl Chloride (plastic pipe)
FMS - Force Main Sewer
FO - Fiber Optic Communications









216 217

PROPOSED
GTP MAIN

PROPOSED
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PROPOSED
GTP MAIN

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

EXISTING GROUND

2.00' MIN

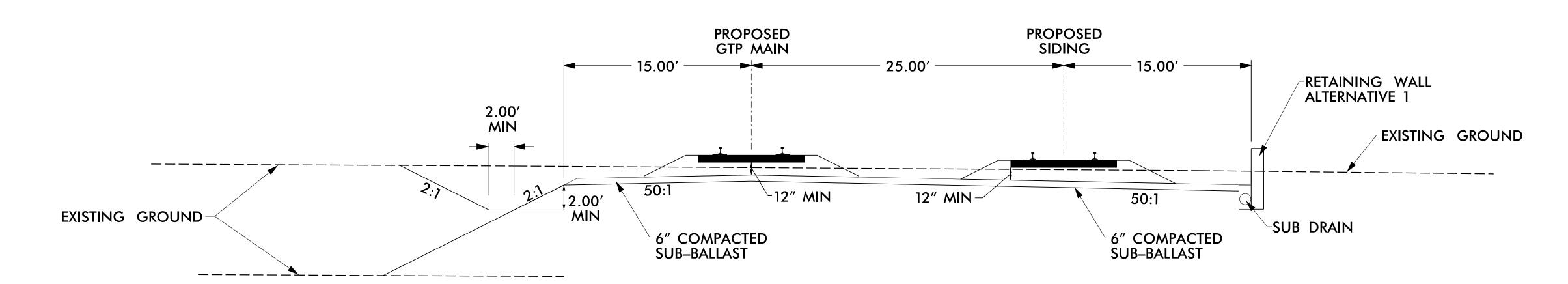


2.00' MIN

EXISTING GROUND-

6" COMPACTED T

50:1



TYPICAL #2 WITH SIDING TRACK

Appendix B-4 GTP 0 GTP 2 GTP 1 GTP 3 GTP 4 GTP 5 **END** W - 3702.81′ 5280.00 5280.007 5280.00 5280.001 5280.00 2.76-5BSB-250' EC 22,12 (NCRR) 930684S 930684S 930685Y 930680P ₩1890681W 930683K # 930687M + 930689B **PROPOSED** LAYOUT •|• - G- G-8 8 AEROSYSTEMS BLVD SHACKLEFORD RD RD CLAYHILL SAND HARVEY HARVEY GTP 0.00 = VT EC 22.89 (NCRR) 55 00R 0 45R 8 00R ]8 00L 00L 00L 5 00R 30R 00R 00 00  $_{\odot}$ **PROPOSED** 0 D.  $_{\odot}$ M  $\sim$ m 1.5 **ALIGNMENT** <u>•</u> 0. 0. 0. 0. ď. -T&S 2012 MAINTENANCE IINWF136P IINWFI36S IINWF136S IINWFI36P d IINWFI36S 29 IINWFI36S IINWFI36 IINWFI36P IINWFI36S IINWFI36P IINWF136S IINWFI36P MNWF136P IINWF136S **RAIL** IINWFI36P IINWFI36S WFI36S WFI36S INWEI3EMNII IINWFI36P IINWF136P IINWF136S INWF136S JINWF136S TINWF136S IINWF136P +0.88 -0.75 -0.5 0.2 -0.67 -0.195 -0.78 +0.1 0.53 +0.25 +0.96 0.0 6.0 **GRADING** GTP 4.77 **SPEEDS** (mph) (15) (20) 4.72 36" CSP 4.79 66" CSP 36" CSP 36" CSP 42" CSP GTP 0.86 2 cell6'x6' RCBC GTP 0.13 2 cell 9'x4' RCBC 2,03 36" CSP GTP 3.49 2 cell12'x9' RCBC GTP 1.29 36" CSP 5.46 42" CSP 4.13 72" CSP 2.87 GTP 2 -**CULVERTS** GTP GTP GTP GTP **JUNE 2013** NC GLOBAL TRANSPARK RAIL ACCESS: GTP 0 – END Appendix B-4 **R1** NC Department of Transportation

# Appendix C-1

TIP No. P-5602E Conceptual Estimate County: Lenoir

Description: GTP to Elmer Feasibility Study - Alternate 1

CONSTR. COST \$ 51,711,700

Prepared By: AECOM - Raleigh, NC Requested By: NCDOT Rail Division

Line		Sec							
Item	Des	No.	Description	Quantity	Unit		Price		Amount
			Track						
			New Wood Tie Railroad Track - New Location	43,000	TF	\$	125.00	\$	5,375,000
			Shift Existing Wood Tie Railroad Track	435	TF	\$	75.00	\$	32,625
			No. 10 Turnout - Wood Ties	4	EA	\$	100,000.00	\$	400,000
			Roadbed						
				1,500,00	CV	Φ.	12.00	Φ	1.006.000
			Grading - Borrow	158000		\$	12.00	\$	1,896,000
			Sub-Ballast - 6" Thick	45000	TN	\$	25.00	\$	1,125,000
			ABC for Access Road - 6" Thick	490	TN	\$	27.00	\$	13,230
			Concrete Panels Thru Grade Crossing	400	TF	\$	400.00	\$	160,000
			Grade Crossing - Flashers and Gates	8	EA	\$	225,000.00	\$	1,800,000
			Grade Crossing - Cross Bucks Only	1	EA	\$	200.00	\$	200
			Clearing and Grubbing	20	AC	\$	15,000.00	\$	300,000
			Drainage New Location	8.14	Mile	\$	400,000.00	\$	3,256,000
			Erosion Control	8.14	Mile	\$	15,000.00	\$	122,100
			Wetland and Stream Impact	13	EA	\$	15,000.00	\$	195,000
			Structure						
			Railroad Bridge - 217+50 to 227+05	23875	SF	\$	500.00	\$	11,937,500
			Railroad Bridge - 397+60 to 400+35	6875	SF	\$	500.00	\$	3,437,500
			Railroad Bridge - 409+50 to 410+30	2000	SF	\$	500.00	\$	1,000,000
			Retaining Wall - 415+00 to 432+81.20	17000	SF	\$	60.00	\$	1,020,000
			Culverts	12	EA	\$	50,000.00	\$	600,000
			Wildlife Culvert Underpass	47	CY	\$	1,250.00	\$	58,750
			Construction Sub-Total					\$	32,728,905
			Contingono	200/		_		¢	0.919.672

Contingency	30%		\$ 9,818,672
Mob/Demob	10%		\$ 3,272,891
<b>Engineering and Const Management</b>	18%		\$ 5,891,203
Railroad Construction/PE Total .			\$ 51,711,670
		say	\$ 51,711,700

### Appendix C-2

TIP No. P-5602E Conceptual Estimate County: Lenoir

Description: GTP to Elmer Feasibility Study - Alternate 2

\* 34,521,500

Prepared By: AECOM - Raleigh, NC Requested By: NCDOT Rail Division

Line		Sec					
tem	Des	No.	Description	Quantity	Unit	Price	Amount
			Track				
			New Wood Tie Railroad Track - New Location	30,000	TF	\$ 125.00	\$ 3,750,000
			Shift Existing Wood Tie Railroad Track	435	TF	\$ 75.00	\$ 32,625
			No. 10 Turnout - Wood Ties	4	EA	\$ 100,000.00	\$ 400,000
			Roadbed				
			Grading - Borrow	293000	CY	\$ 12.00	\$ 3,516,000
			Sub-Ballast - 6" Thick	45000	TN	\$ 25.00	\$ 1,125,000
			ABC for Access Road - 6" Thick	490	TN	\$ 27.00	\$ 13,230
			Concrete Panels Thru Grade Crossing	340	TF	\$ 400.00	\$ 136,000
			Grade Crossing - Flashers and Gates	6	EA	\$ 225,000.00	\$ 1,350,000
			Grade Crossing - Cross Bucks Only	1	EA	\$ 200.00	\$ 200
			Clearing and Grubbing	20	AC	\$ 15,000.00	\$ 300,000
			Drainage New Location	5.68	Mile	\$ 400,000.00	\$ 2,272,000
			Erosion Control	5.68	Mile	\$ 15,000.00	\$ 85,200
			Wetland and Stream Impact	9	EA	\$ 15,000.00	\$ 135,000
			Structure				
			Railroad Bridge - 80+00 to 82+50	6250	SF	\$ 500.00	\$ 3,125,000
			Railroad Bridge - 277+20 to 281+20	11000	SF	\$ 500.00	\$ 5,500,000
			Culverts	1	EA	\$ 50,000.00	\$ 50,000
			Wildlife Culvert Underpass	47	CY	\$ 1,250.00	\$ 58,750
			Construction Sub-Total				\$ 21,849,005
			Contingency	30%		 	\$ 6,554,702
			Mob/Demob	10%			\$ 2,184,901

 Contingency
 30%
 \$ 6,534,702

 Mob/Demob
 10%
 \$ 2,184,901

 Engineering and Const Management
 18%
 \$ 3,932,821

 Railroad Construction/PE Total
 \$ 34,521,428

 \$ 34,521,500

# Appendix C-3

#### **UTILITY ESTIMATE WORKSHEET**

TIP No: P-5602E WBS Element No: 46393.1.8

State Project No: Fed. Project No:

County: Lenoir

Description: Proposed GTP to Elmer(CSX) connection at the Global Transpark in Kinston

**Field Inspection - Evidence of Utilities** 

Gas: Yes Electric: Yes Telephone: Yes CATV: Yes Water: Yes Sewer: Yes Drainage: No Other: No

**Anticipated Relocation** 

Gas: Yes Electric: Yes Telephone: Yes CATV: Yes Water: Yes Sewer: Yes Drainage: No Other: No

Summary: Alternate 1

Requesting Party: Matthew Simmons, P.E.

Estimate Date: June 8, 2017

Relocatio	n Totals	Constructi	on Total	Alternate Totals				
Power Poles:	\$755,895.00	Power Poles:		Relocation Total	\$1,047,095.00			
Power Items:		Power Items:		Construction Total	\$947,670.00			
Telephone Poles	\$0.00	Telephone Poles		Alternate Total	\$1,994,765.00			
Telephone Items	\$113,600.00	Telephone Items		With 30% contingen	cy= \$2,593,200			
Gas Line:	\$177,600.00	Gas Line:						
Gas Items:		Gas Items:						
Water Line:		Water Line:	\$684,000.00					
Water Items:		Water Items:	\$245,670.00					
Sewer Line:		Sewer Line:	\$18,000.00					
Sewer Items:		Sewer Items:						
Misc.Items:		Misc.Items:						

Summary: Alternate 2

Requesting Party: Matthew Simmons, P.E.

Estimate Date: June 8, 2017

Relocatio	n Totals	Construction	on Total	Alternate Totals				
Power Poles:	\$516,588.00	Power Poles:		Relocation Total	\$516,588.00			
Power Items:		Power Items:		Construction Total	\$411,200.00			
Telephone Poles		Telephone Poles		Alternate Total	\$927,788.00			
Telephone Items		Telephone Items		With 30% contingency=	· \$1,206,200			
Gas Line:		Gas Line:						
Gas Items:		Gas Items:						
Water Line:		Water Line:	\$381,200.00					
Water Items:		Water Items:						
Sewer Line:		Sewer Line:	\$30,000.00					
Sewer Items:		Sewer Items:						
Misc.Items:		Misc.Items:						

Detail: Alternate 1					
Power Poles					
Туре	Location		Number	Cost / Pole	Total Cost
Distribution Pole Single Phase			13	\$8,760.00	\$113,880.00
Distribution Pole Three Phase			55	\$11,673.00	\$642,015.00
		Total:	68		\$755,895.00
Telephone Poles					
Туре	Location		Number	Cost / Pole	Total Cost
					\$0.00
		Total:			\$0.00
Telephone Items					
Item	Location		Number	<b>Unit Cost</b>	Total Cost
Directional Boring 12" to 22" Per Linear Foot			800	\$142.00	\$113,600.00
		Total:			\$113,600.00
Gas Lines					
Line Type	Location		Length	Cost per Ft.	Total Cost
6" Gas Line Per Linear Foot			800	\$111.00	\$88,800.00
4" Gas Line Per Linear Foot			800	\$111.00	\$88,800.00
		Total:			\$177,600.00
Water Lines					
Line Type	Location		Length	Cost per Ft.	Total Cost
24" DIP Water Line Per Linear Foot			600	\$165.00	\$99,000.00
10" DIP Water LinePer Linear Foot			2500	\$122.00	\$305,000.00
6" PVC Water Line Per Linear Foot			3500	\$80.00	\$280,000.00
		Total:			\$684,000.00
Water Items					
Item	Location		Number	<b>Unit Cost</b>	Total Cost
Pump Station			1	\$245,670.00	\$245,670.00
		Total:			\$245,670.00
Sewer Lines					
Line Type	Location		Length	Cost per Ft.	Total Cost
4" PVC Sewer Line Per Linear Foot			600	\$30.00	\$18,000.00
		Total:			\$18,000.00
			Alterna	te Total	\$1,994,765.00

Detail: Alternate 2					
Power Poles					
Туре	Location		Number	Cost / Pole	<b>Total Cost</b>
Distribution Pole Single Phase			11	\$8,760.00	\$96,360.00
Distribution Pole Three Phase			36	\$11,673.00	\$420,228.00
		Total:	47		\$516,588.00
Water Lines					
Line Type	Location		Length	Cost per Ft.	<b>Total Cost</b>
8" DIP Water Line Per Linear Foot			1800	\$122.00	\$219,600.00
24" PVC Water Line Per Linear Foot			800	\$202.00	\$161,600.00
		Total:			\$381,200.00
Sewer Lines					
Line Type	Location		Length	Cost per Ft.	<b>Total Cost</b>
12" DIP Sewer Line Per Linear Foot			400	\$75.00	\$30,000.00
		Total:			\$30,000.00
			Alterna	te Total	\$927,788.00

## REQUEST FOR R/W COST ESTIMATE / RELOCATION EIS

COST ESTIM	IATE REQUES	T 🖂 REL	OCATION EI	S REPORT				
NEW REQUI		DATE REQUEST: date to Estimate		REQUEST: Estimate				
DATE RECEIV	ED: <u>04/12/17</u> [	DATE ASSIGNED: <u>04/13/17</u> # of Alternates Requested:						
	DAT	TE DUE: <u>asap 05/22</u>	<u>/17</u>					
TIP No.: P-5602E	DESCRIPTION: GTP t GTP spur and CSX AA	to Elmer Feasibility Study; R -line	ail connection betwe	en Global Transpark				
WBS ELEMENT: 463	93.1.5 COUNTY: Lenoi	ir	DIV: 2 APPRAISA	AL OFFICE: 1				
REQUESTOR: Matth	ew Simmons DEPT: Rail							
TYPE OF PLANS: H	EARING MAPS□  LOCATI	ION MAP□  AERIAL□  VICIN	ity   Preliminary	]  conceptual				
** Based on past project historical data, the land and damage figures have been adjusted to include condemnation and administrative increases that occur during settlement of all parcels.**								
APPRAISER: Bob Chadwick COMPLETED: 05/02/17 # of Alternates Completed: 2								
		Alt 1 Northern	Alt 2 Southern					

	Alt 1 Northern			Alt 2 uthern	
TYPE OF ACCESS:	NONE:		LIMITED: 🗌	NONE:	LIMITED: 🔲
TIPL OF ACCESS.	PARTIAL: ☐ FULL: ☐ I		PARTIAL:	FULL:	
ESTIMATED NO. OF PARCELS:		42	)	28	
RESIDENTIAL RELOCATEES:	4	\$ 200,000		-	\$ -
BUSINESS RELOCATEES:	-	\$ -		-	\$ -
GRAVES:	-	\$ -		-	\$ -
CHURCH / NON – PROFIT:	-	\$ -		-	\$ -
MISC:	-	\$ -		-	\$ -
SIGNS:	- \$-		- \$-		
LAND, IMPROVEMENTS, & DAMAGES:	\$ 1,500,752		\$ 795,235		
ACQUISTION:	\$ 252,000		\$ 168,000		
TOTAL ESTIMATED R/W COST:	\$ 1,952,752		\$ 963,235		

<sup>\*\*</sup> The estimated number of above relocatees includes those parcels where the proposed acquisition areas involve relocation of livable or business units only. \*\*

NOTES: Adding and 30% contigency and rounding up resulted in \$2,538,600 for Alternative 1 and \$1,252,300 for Alternative 2

\$2,538,600

\$1,252,300