BIRMINGHAM TO MONTGOMERY PASSENGER RAIL FEASIBILITY STUDY

FINAL REPORT

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BIRMINGHAM TO MONTGOMERY PASSENGER RAIL FEASIBILITY STUDY

Prepared For

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1.0 Study Overview

The purpose of this Birmingham-Montgomery Rail Feasibility Study is to assess the feasibility of passenger rail location and service alternatives and the necessary elements needed to implement a passenger rail system between the two urban corridors. The study provides a detailed evaluation of potential intercity rail Alternatives along with an additional commuter rail option serving Birmingham. The evaluation was conducted on three alternatives that would use the existing CSXT corridor and one alternative that would use the I-65 corridor. All four (4) Alternatives are featured in the table below E1:

TABLE E1 – Passenger Rail Service Alternatives

OPTIONS	ALIGNMENT	DAILY ONE-WAY TRAIN TRIPS
Alternative1	CSXT	2 Intercity (non-stop)
Alternative 2	CSXT	6 Intercity (non-stop)
Alternative 3	CSXT	6 Intercity (with stops)/ 12 Commuter
I-65 Alternative	I-65	6 Intercity (non-stop)

SOURCE: HDR ENGINEERING, INC., 2013

The overall purpose of this study is to determine the relative feasibility of passenger rail service between Birmingham and Montgomery, the study considered concept-level capital, operation and maintenance costs, projected ridership and potential revenue, funding and financing strategies, public and stakeholder support, and an assessment of potential benefits and costs.

2.0 Public Participation Program

Public participation has been an essential component of the Birmingham-Montgomery Passenger Rail Feasibility Study, which focused on key stakeholders in each city. The stakeholder outreach and process was informed by a stakeholder and public participation plan designed to reach target audiences, and focused primarily on agency planning partners, economic groups and elected officials. The public participation program supported the development of the Passenger Rail Feasibility Study and included outreach through a telephone survey and informal meetings to understand the perspectives of both the public and stakeholders. Stakeholders included key elected officials, representatives from state agencies, municipalities, Metropolitan Planning Organizations (MPOs), economic development agencies, Chambers of Commerce, and CSXT.

Overall, the 600 respondents who participated in the survey by Research America were split on "offering" and "not offering" train service between Birmingham and Montgomery. A number of participants (60%) would consider using the train service if it were available to them. How often the service would be utilized depends greatly on how frequent the service is offered and the types of activities that respondents are participating in within either city. Full results are featured in Section 2.3.2.

3.0 Existing Conditions

The Birmingham to Montgomery corridor extends from the Amtrak Station, in downtown Birmingham, AL, to a proposed station (Montgomery Visitor Center) in Montgomery, AL. For Alternative 1, 2, and 3, the study corridor consists of a former passenger rail route, the Gulf Breeze service, which was operated by Amtrak until 1995. The existing freight rail line (for Alternative 1, 2 and 3) is approximately 97 miles long while the study corridor for Alternative 4 (I-65 corridor) is about 90 miles. Further details are summarized below on the existing characteristics of the rail corridor.

Railroad Characteristics - The existing rail corridor for Alternatives 1, 2 and 3 is owned by CSXT. Coordination with CSXT will be required in order to identify opportunities and constraints within the corridor for adding passenger rail service. The rail line is primarily single track with intermittent passing sidings in order to allow trains to pass. The line is currently operating with a 69 mph maximum speed limit.

Highway Characteristics - Interstate 65 (I-65) is a major roadway and primary automobile travel route between Birmingham and Montgomery, approximately 90 miles one-way with 4-lanes, 2-lanes going in each north-south direction. The roadway increases to 6 to 8-lanes on the outskirts of Birmingham and Montgomery allowing for 3 to 4-lanes of traffic in each direction. This roadway also provides connections to smaller activity centers such as Homewood, Hoover, Pelham, Alabaster, Calera, Prattville, and Millbrook while serving as important link to other prominent roadways (I-20, I-59 and I-85). Another travel route between the two cities is US 31a rural 2-lane (1-lane in each direction). The roadway expands to 4-lanes approximately 4 miles outside of Alabaster, a southern suburb of Birmingham in Shelby County. Between Birmingham and Montgomery, US 31 serves the following activity centers: Prattville, Clanton, Thorsby, Jemison, Calera, Alabaster, Pelham, Hoover, Vestavia, Homewood and Birmingham.

Travel Patterns - According to the statewide model, there were 13,000 vehicle trips per day between Birmingham and Montgomery in FY 2005. Applying an auto occupancy of 2.5, this translates into 32,500 daily person-trips between the two metropolitan areas; whereas, in FY 2035 the model projected 15,000 vehicle trips between Birmingham and Montgomery with 38,000 person-trips between the two metropolitan areas.

Transit Service - Currently, the only transit modes available to the public within the corridor consist of carpooling by automobile and intercity bus. CommuteSmart is a

program designed to encourage carpooling in the Greater Birmingham region. Eligible riders can earn up to a $1 per day for each day they carpool to work over a consecutive 90-day period, as part of the GetGreen and CommuterClub program.

Greyhound operates intercity bus service and provides four (4) round-trips per a day: two (2) in the AM and two (2) in the PM time frame. The full one-way trip from Birmingham to Montgomery takes 1 hour and 40 minutes to 1 hour and 50 minutes.

The Birmingham-Jefferson County Transit Authority (BJCTA) is responsible for providing fixed route and paratransit (demand response service) in the City of Birmingham and Jefferson County. The BJCTA currently operates 109 buses on 38 routes while covering almost 200 square miles. The Montgomery Area Transit Service (M) provides fixed route and paratransit services within the City of Montgomery. The M runs 34 buses on 16 fixed routes Monday through Saturday between the hours of 5:00 AM and 9:30 PM.

Demographics – Increases in population and employment are forecasted for almost all the proposed rail station locations with the exception of Birmingham, which is expecting decreases in both. For example, the Calera population is projected to increase by 103% and employment will increase by 254% by 2040. The cities of Pelham, Alabaster and Elmore are expecting significant increases in population and employment as well.

Land Use - The CSXT rail corridor contains a variety of land uses stretching from downtown Birmingham to downtown Montgomery. The most prevalent existing land use in the corridor is forest, which comprises nearly 38% of the total corridor. Other significant existing land uses include developed and agriculture land, comprising 24% and 26% of the total corridor land uses, respectively.

4.0 Alternative Development – Concept Plan

Development of Alternatives – The development of alternatives for this project was prepared using data and other information provided by ADECA and from publicly available sources. CSXT was contacted, as part of this project, but was not able to provide information at this time relative to their corridor infrastructure or train operations. Working closely with the project sponsors, the Project Team developed the following four (4) intercity rail alternatives for the corridor.

- ALTERNATIVE 1: Restore the original Gulf Breeze service on the CSXT line between Birmingham and Montgomery, with one train trip daily in each direction.
- ALTERNATIVE 2: Improved intercity train service between Birmingham and Montgomery on the CSXT line, with 3 trips daily in each direction.
- ALTERNATIVE 3: Improved intercity train service between Birmingham and Montgomery on the CSXT line and commuter rail service to Birmingham. The intercity train service would provide 3 trips daily in each direction with stops in Hoover, Pelham-Alabaster, Calera and Elmore. Peak period commuter rail

service would be operated between Calera and Birmingham with stops at Hoover and Pelham-Alabaster.

- ALTERNATIVE 4: Non-stop, high-speed intercity service in the I-65 corridor. This alternative would include 3 trips daily in each direction.

Types of Rail Vehicles – The Project Team evaluated Diesel Multiple Unit (DMU) and Push-Pull locomotives with passenger coaches to determine which type of passenger rail vehicles would be most appropriate for the Birmingham-Montgomery passenger rail system.

Preliminary Service Schedule – The preliminary service schedules used for Alternatives 1, 2 and 3 are based upon current maximum speeds data, provided by ALDOT for the route, and improved speed estimates from the proposed infrastructure improvements for each alternative (refer to Section 4.4 for complete Service Schedules).

Operating Requirements – Operating requirements for each alternative were developed based on ridership estimates and data provided from conceptual engineering design concepts of the project. TABLE E2 features the operating requirements for each alternative.

TABLE E2 – Summary of Operating Requirements

ALTERNATIVE	1-Way Route Miles	1-Way Run Time	Daily Train Trips	Annual Revenue		Lay Over	Cycle Time	Trains		
				Train Miles	Train-Hours			Peak	Base	Evening
ALTERNATIVE 1	96.6	2:00	2	49,073	1,270	0:30	2:30	0	1	0
ALTERNATIVE 2	96.6	1:45	6	147,218	3,048	0:15	2:00	1	1	1
ALTERNATIVE 3	96.6 33.0	1:45 0:45	6 12	247,802	6,096	0:15 0:15	2:00 1:00	4	1	1
ALTERNATIVE 4	86.6	1:30	6	137,160	3,048	0:30	2:00	1	1	1

SOURCE: HDR ENGINEERING, INC., 2013

Infrastructure Improvements – To accommodate passenger rail service on the CSXT rail corridor between Birmingham and Montgomery, several infrastructure improvements were evaluated to facilitate the four (4) potential Alternatives. In addition to the trackway and station improvements, the rail vehicles will need to be maintained and housed in a central location, most probably in Birmingham. Operations and maintenance requirements could also be contracted with a separate entity with facilities to maintain and store the equipment.

5.0 Demand and Revenue Estimation

Ridership Forecast – Alternative 1 is projected to generate very low ridership, in the order of 40 to 140 passenger trips a day. This is similar to the former Gulf Breeze Amtrak service and is the result of having a very limited schedule (of one (1) train in each direction daily). Alternative 2 would open travel markets to include both work and non-work trips and generate a daily ridership of about 120 to 220 passenger trips a day. Alternative 3 which would provide both commuter service and intercity service is projected to generate 600 to 1,200 passenger trips for commuter service and about 450

to 900 intercity trips, for a total of 1,050 to 2,100 passenger trips. The high-speed service provided by Alternative 4 would generate 300 to 400 daily passenger trips. All the projections are for the forecast year of 2035. It should be noted that with an alignment fully dedicated to the passenger rail service (Alternative 4), the service could be as frequent as can be afforded to pay for operating costs.

Special Generator Ridership – One of the intermediate stations considered in Alternative 3, Calera Station, is located close to the Dixie Rail Road Museum. This museum attracts about 40,000 visitors annually. It is highly likely some of the visitors would use the proposed rail service to access the museum. Projecting this to 2035 using the same growth factors implied in the regional travel models, the mode share for these visitor trips was assumed to be 15% (lower bound) to 25% (upper bound). Under these assumptions, about 1,650 (lower bound) to 2,750 (upper bound) annual trips were estimated to be made by rail to access the museum.

Revenue Forecast – Based on Amtrak's current pricing structure in Alabama and a stakeholder survey, the study found that a one-way fare ticket charge from Birmingham to Montgomery would range cost between $25.00 and $30.00, and a one-way fare ticket charge on the commuter (Alternative 3) would range between $2.50 (e.g., Hoover-Birmingham) and $8.00 (Calera-Birmingham) depending on the distance traveled. The following TABLE E3 shows the estimated passenger revenues based upon 2035 ridership projections.

TABLE E3 – 2035 Projected Ridership and Revenue

ALTERNATIVE	INTERCITY TRIPS (> 50 MILES)	COMMUTER TRIPS (> 50 MILES)	SPECIAL GENERATOR TRIPS	ONE-WAY FARE INTERCITY TRIPS	ONE-WAY FARE COMMUTER TRIPS	PASSENGER REVENUE (MILLIONS $)
ALTERNATIVE 1	12,000 to 42,000	NONE	NONE	$25.00 - $30.00	N/A	$300,000 - $1,260,000*
ALTERNATIVE 2	36,000 to 66,000	NONE	NONE	$25.00 - $30.00	N/A	941,000 - $1,980,000*
ALTERNATIVE 3	135,000 to 270,000	180,000 to 262,500	1,650 to 2, 750	$25.00 - $30.00	$2.50 - $8.00	3,829,125- $10,222,000*
ALTERNATIVE 4	60,000 to 120,000	NONE	NONE	$25.00 - $30.00	N/A	$1,500,000 - $3,600,000*

SOURCE: HDR ENGINEERING, INC., 2013

Cost of Alternative Modes of Transportation – To assess competitiveness and attractiveness of Alternatives 1, 2, 3 and 4 based on cost, the intercity rail alternatives were compared to current travel modes within the route corridor. Currently, almost all person-trip travel in the study area occurs by automobile. The primary automobile travel route is Interstate 65 between Birmingham and Montgomery, approximately 90 miles. Using a driving calculator and the current IRS standard ($56.5 cents per mile), the cost of driving round-trip with one (1) day of parking in either Birmingham ($10) or Montgomery ($5) ranges between $54.40 - $111.70 and $49.40 - $106.70, respectively. Greyhound between Birmingham and Montgomery also provides bus service within the corridor. Typical bus service includes four (4) trips per day: two (2) in the AM and two (2) in the PM. Bus fare prices vary from $26 to $46 depending on fare type (advanced purchase, web only, standard and refundable) with a round-trip ticket costing from $52.00 to $92.00 between the two cities.

6.0 Capital and Operating & Maintenance Cost Estimation

Capital Cost Estimates for Alternatives 1, 2, 3 and 4 – The primary factors that determine the need for infrastructure improvements on proposed intercity and commuter rail systems are the capacity and quality of the existing track and infrastructure. These infrastructure improvements may include the need for additional tracks and passing sidings to accommodate both passenger rail and freight rail traffic along with other features such as bridges, culverts, and other major capital items. Freight rail train volumes are high on portions of the alignment and are expected to grow. Initial assessments show significant track and infrastructure upgrades will be needed for Alternatives 1, 2, 3 and 4. Further field evaluations and CSXT's input are required to determine the exact capital improvements and associated costs for returning passenger rail service to the corridor.

Conceptual Capital Cost Estimates – Conceptual capital cost estimates (TABLE E4) were developed for each Alternative. The estimates include concept-level design work, construction of new rail tracks, train control systems, structures, engineering and permitting, which includes mitigation and utilities, and construction management.

TABLE E4 – Conceptual Capital Cost Estimates for Each Alternative

CAPITAL COST CATEGORY	ALTERNATIVE 1 ($M)	INCREMENTAL COST ALTERNATIVE 2 ($M)	TOTAL COST ALTERNATIVE 2 ($M)	INCREMENTAL COST ALTERNATIVE 3 ($M)	TOTAL COST ALTERNATIVE 3 ($M)	TOTAL COST ALTERNATIVE 4
Grading & Track Work	$40.100	$56.800	$96.900	$36.100	$133.000	$328.400 M
Highway/Road Crossings	$12.900	$5.700	$18.700	$1.700	$20.400	$3.500 M
Train Control Systems	$36.700	$15.000	$51.700	$9.300	$61.100	$119.700 M
Structures	$1.600	$26.800	$28.300	$6.800	$35.100	$1.691 B
Engineering & Permitting	$14.500	$17.200	$31.700	$9.000	$40.700	$330.600 M
Locomotives/Vehicles	$16.000	$16.000	$16.000	$47.500	$47.500	$16.000 M
Total	$121.800	$137.500	$243.300	$110.400	$337.800	$2.489 B

SOURCE: HDR ENGINEERING, INC., 2013

Operating and Maintenance Cost Estimates – Annual operating and maintenance (O&M) cost estimates were prepared for each project alternative using operating plan data (refer to Section 3), ridership projections (refer to Section 5), and O&M unit costs for similar intercity and long-distance commuter rail operations. TABLE E5 shows the likely range of estimated annual O&M costs calculated using the two unit costs – cost per annual revenue train-hour and cost per annual revenue car-mile.

TABLE E5 – O&M Cost Estimates for Each Alternative

RANGE OF ANNUAL O&M COSTS (2011$)	ALTERNATIVE 1	ALTERNATIVE 2 (6 TRIPS)	ALTERNATIVE 3 (6+12=18 TRIPS)	ALTERNATIVE 4 (6 TRIPS)
Based on cost per mile	$850,000	$2.500 M	$4.300 M	$2.400 M
Based on cost per train-hour	$2.000 M	$7.600 M	$14.500 M	$7.400 M

SOURCE: HDR ENGINEERING, INC., 2013

7.0 Cost and Benefit Evaluation

Transportation Benefits – There are both user and non-user benefits of intercity passenger rail. User benefits are those that accrue to train passengers, such as increased personal productivity, improved comfort, reduced travel stress, lower transportation costs, and shorter travel time. In addition, passenger rail can provide the public another option for travel compared with other existing transportation services, which can reduce pressure for expenditures on other modes and create non-user benefits (benefits to members of the general public who are not using the train). Non-user benefits include decreased congestion on other modes, accident savings in other modes and environmental benefits such as air quality improvement. The railroad would also benefit from the capital improvements made with public funds. The following TABLE E6 features the travel, environmental, economic and community, and railroad benefits of implementing passenger rail.

TABLE E6 – Transportation Benefits

TRAVEL BENEFITS:	ECONOMIC AND COMMUNITY BENEFITS:
• Increase personal productivity	• Avoid highway delays and reduce overall transportation costs
• Improve comfort	• Safer than automobile travel
• Reduce travel stress	• Offer connections to other modes
• Lower transportation costs	• Improves mobility for smaller communities to urban centers
• Shorter travel time	• Support community and regional plans
ENVIRONMENTAL BENEFITS:	**RAILROAD BENEFITS:**
• Consume less energy compared to other modes	• Improved safety
• Reduce air pollutants	• Reduced travel time
• Usage of natural resources, which have both human health and environmental impacts	• Reduced fuel consumption and operating costs
• Focus developments near activity centers	• Reduced air pollutants

SOURCE: HDR ENGINEERING, INC., 2013

Evaluation Criteria – The process of defining and evaluating passenger rail service was based on the goals established with the stakeholders involved in the Birmingham-Montgomery Rail Feasibility Study (BMRFS). Using the following BMRFS goals as a framework, the Project Team has established the following evaluation criteria (TABLE E7) based on performance standards to evaluate the different Alternatives.

TABLE E7 – Evaluation Criteria for Alternative 1, 2, 3 & 4

PROJECT GOALS	EVALUATION CRITERIA
1. Primary Mode Choice:	• Will travelers save time riding the train between Birmingham and Montgomery? • Will there be sufficient number of riders using the passenger service between Birmingham and Montgomery?
2. Regional Connectivity:	• Does the passenger service provide direction connections to downtown Birmingham and Montgomery and/or to other activity centers?
3. Reduction in Auto Travel:	• Does the passenger service reduce auto travel in the corridor, thereby improving air quality?
4. Cost-effective Measure:	• Is the investment in a passenger rail system between Birmingham and Montgomery economically feasible based on cost-effectiveness measure: capital, O&M costs and cost per rider?
5. Implementation/Constructability:	• What is the degree of ease or difficulty constructing and/or implementing passenger rail between Birmingham and Montgomery?

SOURCE: HDR ENGINEERING, INC., 2013

Evaluation Results – The evaluation of Alternatives revealed that Alternative 3 received the highest ranking, with a total score of 26 points. Alternative 1 received the lowest ranking at 21 points. The full results are featured in Section 7.3.1 (TABLE 25). The primary differences between Alternatives 1, 2, 3 and 4 include travel time-savings, daily ridership, cost-effectiveness, effectiveness and implementation/constructability. Alternative 4 provides the greatest travel time-savings to travelers especially if traffic is delayed on I-65 between the two cities. Yet, Alternative 3 has the highest daily ridership (1,050-2,100) compared to the other Alternatives. For total capital costs, Alternative 1 is the lowest at $121.8 million, and also has the lowest O&M costs at $2.0 million. While Alternative 3 is the most cost-effective based on cost per rider at $58.00.

8.0 System Planning and Assessment

Peer System Comparisons – Three commuter/intercity passenger rail systems were identified as similar to the Birmingham-Montgomery rail line for comparison as peer systems. New Mexico Rail Runner Express, Utah FrontRunner and Oakland ACE have comparable operating environments and characteristics (socio-economic, physical environment, length of corridor, number of trips, operating speed, etc.) to the proposed Birmingham to Montgomery passenger rail line. Furthermore, some of the other commuter/intercity rail lines were not used as peer systems (i.e. the Nashville Star) because these systems lacked the intercity element. TABLE E8 provides a peer system comparisons summary for the 3 commuter/intercity passenger rail systems and the proposed passenger rail system between Birmingham and Montgomery.

TABLE E8 – Peer System Comparisons

Criteria	ALBUQUERQUE Rail Runner	UTAH FrontRunner	OAKLAND ACE	BIRMINGHAM – MONTGOMERY RAIL SYSTEM			
				ALT 1	ALT 2	ALT 3	ALT 4
Start Year	2006	2008	1998				
Length (in route miles)	93	89	86	97	97	97	87
Trains per day each way (weekday)	24	70	6-8	2	6	18	6
Annual ridership	1.2M	1.6M	700,000	27,000 (FY 2035)	51,000 (FY 2035)	474,000 (FY 2035)	90,000 (FY 2035)
Annual operating costs (millions)	$24.2	$20.5	$11.7	$2.0	$7.6	$14.5	$7.4
O&M costs/passenger trip	$18.19	$12.74	$89.74	$74.07	$149.02	$29.75	$82.22
Initial capital cost/mile (millions)	$4.0	$6.9	$0.6	$1.1	$2.4	$3.0	$28.6

SOURCE: 1. 2011 National Transit Database Reports
2. NM Rail Runner, Ride UTA, and ACE Rail websites.

Financial Viability – The detailed analysis is presented in the full report. The performance of Alternatives 1, 2, 3 and 4 would be comparable to some other passenger rail systems currently operating in other peer cities but with higher costs and less ridership than most. Because the ridership estimates in the Birmingham-Montgomery study were projected with conservative assumptions, the cost-effectiveness would be much more comparable if ridership averaged 200 per train-hour, which is the average of the peer cities. The conceptual capital cost per mile for at least three alternatives (1, 2 and 3) are also similar to several of the peer systems.

Phased Implementation – The proposed Alternatives (1, 2, and 3) may be implemented in phases depending on the level of funding available for financing passenger rail service. A phased passenger rail approach could incrementally build new or expand existing rail infrastructure, add frequency of service, increase train speed, or add intermediate station stops (Hoover, Pelham/Alabaster, Calera and Elmore) for commuter service within the CSXT rail corridor between Birmingham and Montgomery.

Governance and Funding Options – One of the most important requirements for implementation of a new passenger rail line is to define the appropriate form of governance and the associated funding responsibilities for the new service. The fact that the service would run between the two major urban areas of Birmingham–Montgomery and possibly serving communities along the line: this will require a legal entity to manage and operate the service. Generally, the institutional arrangement for passenger rail service varies throughout the country with either having a "state management" or "corridor management" type of governance system. With the state management system, the state government is responsible for overall management and operations while the corridor management involves developing a single agency or a group of agencies responsible for implementing and operating the passenger rail service.

The initial step to develop a funding implementation strategy is to gauge possible or probable funding options from governments at the federal, state and local levels. Using the capital and net annual operating costs for Alternative 1 presented in Sections 6 and 7, the funding would need to be about $120 million for capital and $1.2 million for operations to start passenger rail service. If debt is used to pay the capital costs in addition to the annual net operating costs, this results in an annual obligation of $6.0 million. Revenue sources to provide this level of funding will be necessary.

Typical sources used for other passenger rail service lines are from various taxes. If a county-wide tax including both Jefferson and Montgomery County were utilized for funding a new passenger rail service, the cost per resident would be about $1.50 ($1.35) for net operating costs. Conversely, if the total annual costs are to be covered, it will amount to about $7.00 ($6.74) per resident. Another potential source of funding for a portion of the capital costs would be from the FRA as part of the existing High-speed Intercity Passenger Rail (HSIPR) program of 2009.

Implementation Steps – A number of action items are required for implementation of either an intercity or commuter rail service between Birmingham and Montgomery. This includes future coordination with CSXT, developing a system of governance, and identifying sources of funding. TABLE E9 summarizes the near-term implementation steps recommended for returning passenger rail service between the two cities, and a proposed timeframe.

TABLE E9 – Steps for Implementation

ITEM	RESPONSIBLE PARTY	PARTNERS	TIME FRAME
1) ON-GOING COORDINATION Coordinate with freight railroads (CSXT) and FRA and continue on-going stakeholder involvements.	RPCGB Montgomery MPO CARPDC ADECA	CSXT Local Jurisdictions	To be determined
2) CSXT PASSENGER RAIL COORDINATION & PLANNING • Continue coordination between ADECA and CSXT and develop corridor specific recommendations for passenger rail service. • After ADECA selects a preferred alternative for passenger service and identify opportunities for additional regional commuter rail service.	ADECA	Local Jurisdictions	To be determined
3) REGIONAL TRANSPORTATION PLANNING UPDATES • Continue coordination between ADECA and CSXT regarding opportunities for passenger rail service. • Develop corridor specific recommendations for the CSXT/Birmingham-Montgomery Corridor and provide necessary details for implementation.	RPCGB Montgomery MPO CARPDC ALDOT	Local Jurisdictions ADECA	To be determined
4) FUTURE CORRIDOR DEVELOPMENT PLANS • Complete more detailed studies and analyses following the FRA format for Corridor Development Plans. • Pending recommendations from current and future planning studies in the applicable corridors, and develop corridor specific recommendations and provide necessary details for implementation.	RPCGB CARPDC Montgomery MPO ADECA	CSXT ADECA	To be determined

ITEM	RESPONSIBLE PARTY	PARTNERS	TIME FRAME
5) IDENTIFY FUNDING SOURCE COMMITMENT Define new or portions of existing revenue streams that would be dedicated to development and ongoing operation of the intercity passenger and commuter rail system. An assured funding commitment will be required to negotiate for tracking rights or right-of-way from the railroads.	RPCGB CARPDC Montgomery MPO ADECA Legislature	Local Jurisdictions	To be determined
6) DEVELOP GOVERNANCE PLAN The number of agencies involved in developing a governance plan may be determined by the geographic area for the proposed service. Agencies within the defined service area would need to work together to plan and implement an intercity passenger rail and/or regional commuter rail system.	RPCGB CARPDC Montgomery MPO ADECA BJCTA MATS	Local Jurisdictions	To be determined
7) DEVELOP PARTNERSHIPS WITH RAILROADS Develop a public/private Memorandum of Understanding followed by detailed agreements with freight railroad companies to define funding and to implement passenger rail facilities and services that will mutually benefit the public and private sector interests.	Passenger Rail Authority **or** Joint Powers Authority	CSXT NARP Amtrak Elected officials Tribal Communities	To be determined
8) PASS ENABLING LEGISLATION Work to pass enabling legislation relative to liability and indemnification to facilitate intercity passenger and/or commuter rail operations in freight rail corridors similar to legislation recently passed in Minnesota, Virginia, New Mexico, and Colorado.	Passenger Rail Authority **or** Joint Powers Authority	BJCTA MATS ADECA	To be determined
9) DEVELOP SEAMLESS TRANSIT SYSTEM Coordinate joint planning and operations to develop a seamless system of transit services throughout the Greater Birmingham/Central Alabama region.	Passenger Rail Authority **or** Joint Powers Authority	BJCTA MATS ADECA County Governments Tribal Communities Railroads Major Landowners Business Community	To be determined

SOURCE: HDR ENGINEERING, INC., 2013

SECTION 1: STUDY OVERVIEW

1.1 Background

In 2008, Alabama updated its State Rail Plan (2008 Alabama Rail Plan). A part of the State Rail Plan addressed the loss of the intercity passenger service between Birmingham and Mobile with cessation of the Gulf Breeze Amtrak service (April, 1995). An objective to assess the feasibility of passenger rail service in this important corridor was included in the plan.

In September 2012, the Alabama Department of Economic and Community Affairs (ADECA) issued a Request for Proposal (RFP) to study the feasibility of passenger rail service between Birmingham and Montgomery. HDR Engineering, Inc. was subsequently selected by ADECA and a contract was executed on January 18, 2013.

1.2 Purpose of the System Study

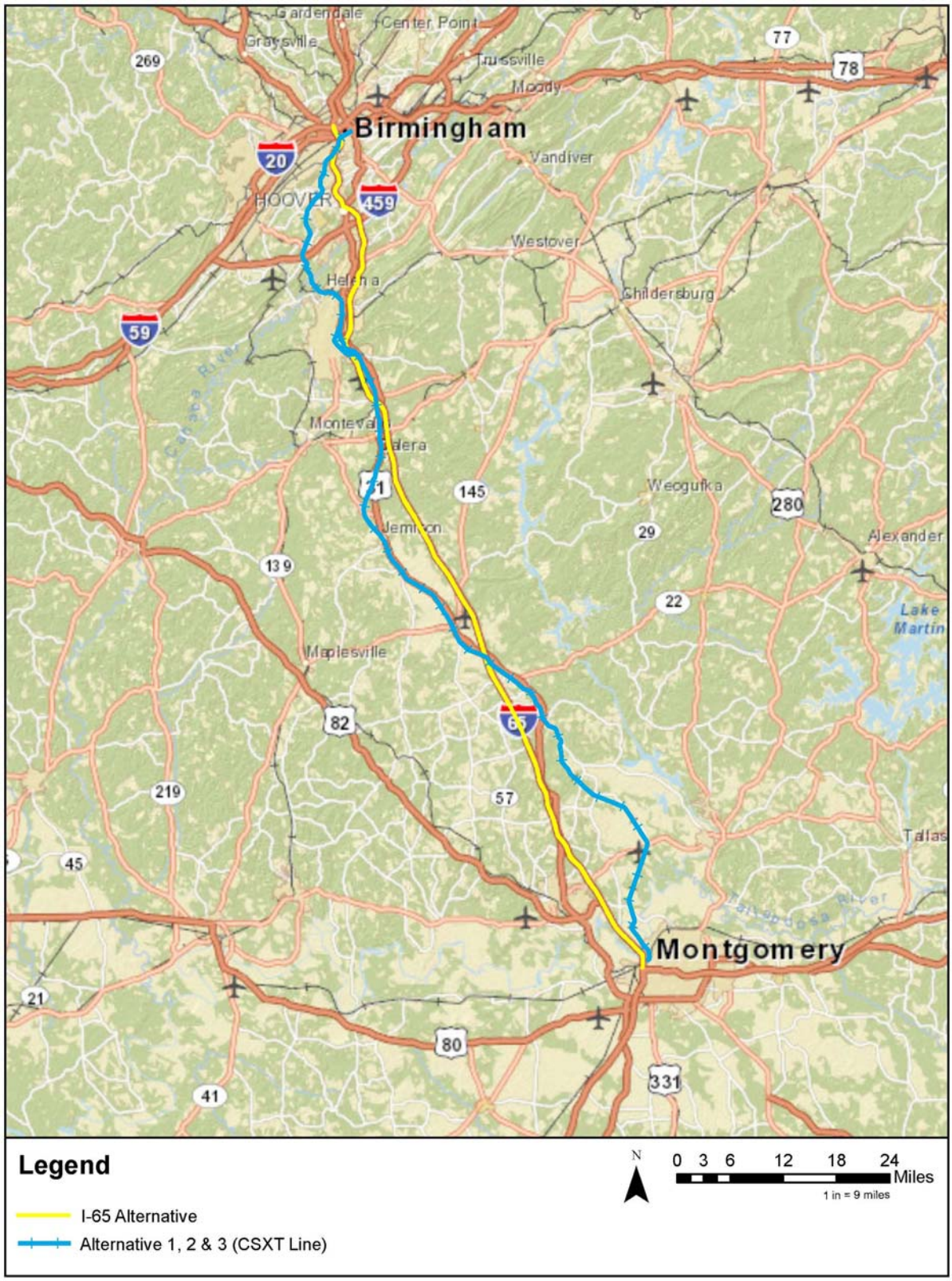
The purpose of this Birmingham-Montgomery Rail Feasibility Study is to define an optimized network of passenger rail corridors and the necessary elements needed to implement a passenger rail system. The study provides a detailed evaluation of potential intercity rail Alternatives including a commuter rail option between the two cities. Further evaluation was conducted on three alternatives that would use the existing CSXT corridor and one alternative that would use the I-65 corridor. All four (4) Alternatives are featured in TABLE 1.

TABLE 1 – Passenger Rail Service Alternatives

OPTIONS	ALIGNMENT	DAILY ONE-WAY TRAIN TRIPS
Alternative1	CSXT	2 Intercity (non-stop)
Alternative 2	CSXT	6 Intercity (non-stop)
Alternative 3	CSXT	6 Intercity (with stops)/ 12 Commuter
I-65 Alternative	I-65	6 Intercity (non-stop)

The overall purpose of this study is to determine the relative feasibility of passenger rail service between Birmingham and Montgomery, considering estimated capital, operation and maintenance costs, projected ridership and revenue, funding and financing strategies, public and stakeholder support, and an assessment of potential benefits and costs. A future, second phase may extend the study area to Mobile or Huntsville, subject to evaluation of the feasibility analysis prepared for Birmingham-Montgomery during Phase I. The Phase I corridor is featured in FIGURE 1.

FIGURE 1 – Corridor Map of Passenger Rail Service Alternatives



1.3 Previous Passenger Rail Service

The *Gulf Breeze* was a 275-mile intercity rail service in Alabama that operated once daily each way between Birmingham and Mobile. The service was introduced in October 1989 and was operated by Amtrak as an extension to the *Southern Crescent*, which offered service between New York and New Orleans. The cost of operations was split between Amtrak and the State of Alabama, with the state contributing approximately $1.512 million in FY 1995. As part of a broad cost-cutting measure that either eliminated or reduced train service nationwide, Amtrak discontinued the Gulf Breeze service on April 1, 1995. Service information was provided by Amtrak.

The *Gulf Breeze* route originated in New York City, as part of the Southern *Crescent*; together these routes provided service to the eastern and southeastern portions of the United States. Eventually the *Gulf Breeze* service split off at Birmingham and ran south through Montgomery to Mobile and the *Crescent* ran southwest through Mississippi to New Orleans, Louisiana. While in operation, the *Gulf Breeze* served the following communities: Birmingham, Montgomery, Greenville, Evergreen, Brewton, Atmore, Bay Minette and Mobile. The Birmingham Station is still served by the Southern *Crescent*, and Mobile and Atmore were served by the *Sunset Limited* prior to the rail line being damaged by Hurricane Katrina in 2005. Montgomery, Greenville, Evergreen, Brewton and Bay Minette have had no passenger rail service since the termination of the *Gulf Breeze*.

The *Gulf Breeze* run time was 118-minutes in the southbound direction from Birmingham to Montgomery, with a 37-minute layover in Birmingham prior to departure to Montgomery. The train arrived in Birmingham at 11:48 AM from Anniston, AL and departed from Birmingham at 12:23 PM. Arrival into Montgomery was 2:21 PM. The return direction (northbound) had a run time of 132-minutes from Montgomery to Birmingham with a 50-minute layover in Birmingham. The scheduled departure time was 11:08 AM from Montgomery with an arrival time of 1:30 PM in Birmingham, eventually leaving Birmingham at 2:20 PM to travel onto Anniston. Service schedule information was obtained from the 1994 *Gulf Breeze* timetable downloaded from the Historical Amtrak Timetables Museum website (TABLE 2).

TABLE 2 – 1994 Gulf Breeze Timetable

ARRIVAL TIME	DEPARTURE TIME	DEPARTURE CITY	ARRIVAL TIME	DEPARTURE TIME	ARRIVAL CITY
11:48 AM	12:23 PM	Birmingham, AL	2:21 PM		Montgomery, AL
	11:08 AM	Montgomery, AL	1:30 PM	2:20 PM	Birmingham, AL

In FY 1993, the annual ridership was 2,649 passengers between Birmingham-Montgomery on the former *Gulf Breeze* service. The annual ticket revenue earned in FY

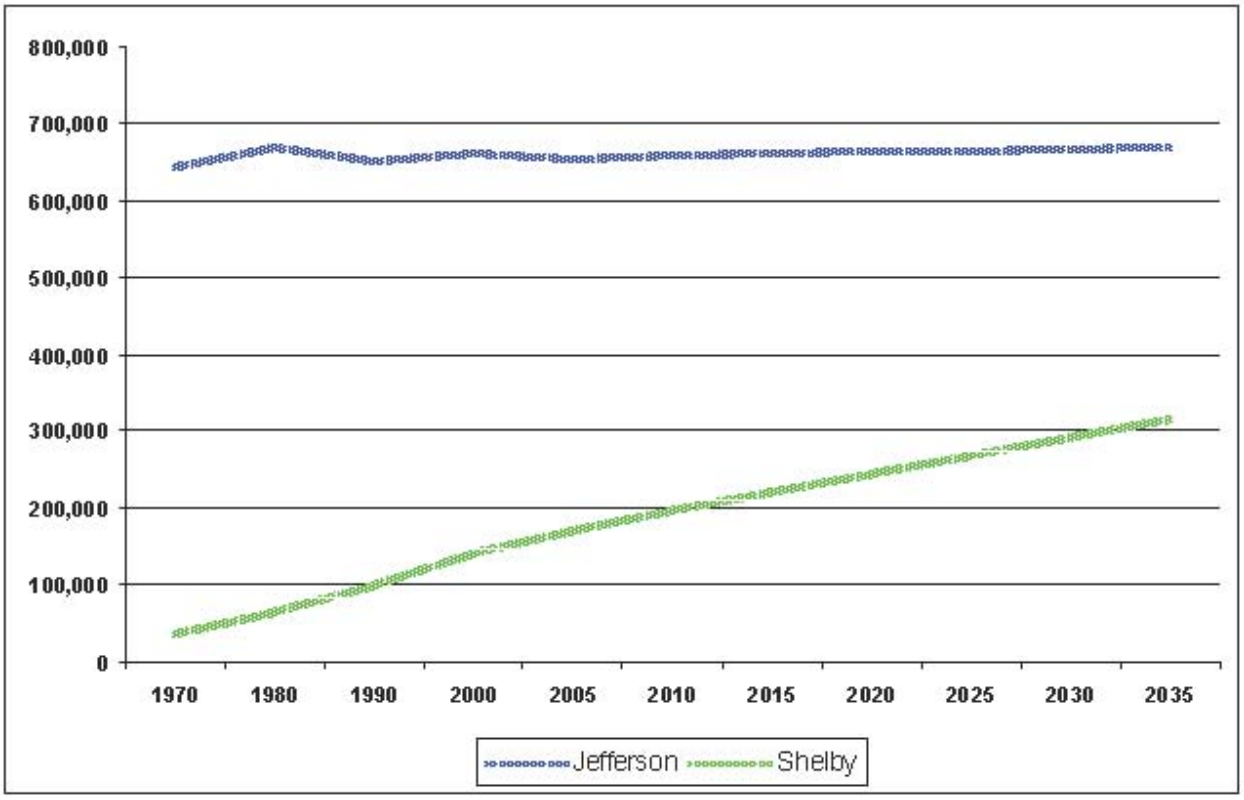
1993 was $23,066 between the two cities. The revenue per passenger travelling between Birmingham and Montgomery in FY 1993 was about $8.71. This passenger and revenue information was obtained from an internal 1993 Amtrak market report.

1.4 Need for a Passenger Rail System

While passenger rail is not the only transportation solution for the corridor, passenger rail service would offer additional mobility and transportation choices for travelers wanting to go between Birmingham and Montgomery.

The outer region of Birmingham has had significant population growth over the last several decades, impacting all aspects of community development and straining the capacity on the existing transportation system. The population migration from Jefferson County (Birmingham) to Shelby County (outer regions of Birmingham) is shown in FIGURE 2. As the population continues to grow in these outer regions, more residents will be commuting along already congested roadway networks (e.g., I-65) that are expected to only become more congested in the years ahead. To address this future travel demand and provide a faster and more reliable travel option for commuters, the project team has developed a range of alternatives that provide varying service levels, station stops and travel times between Birmingham and Montgomery.

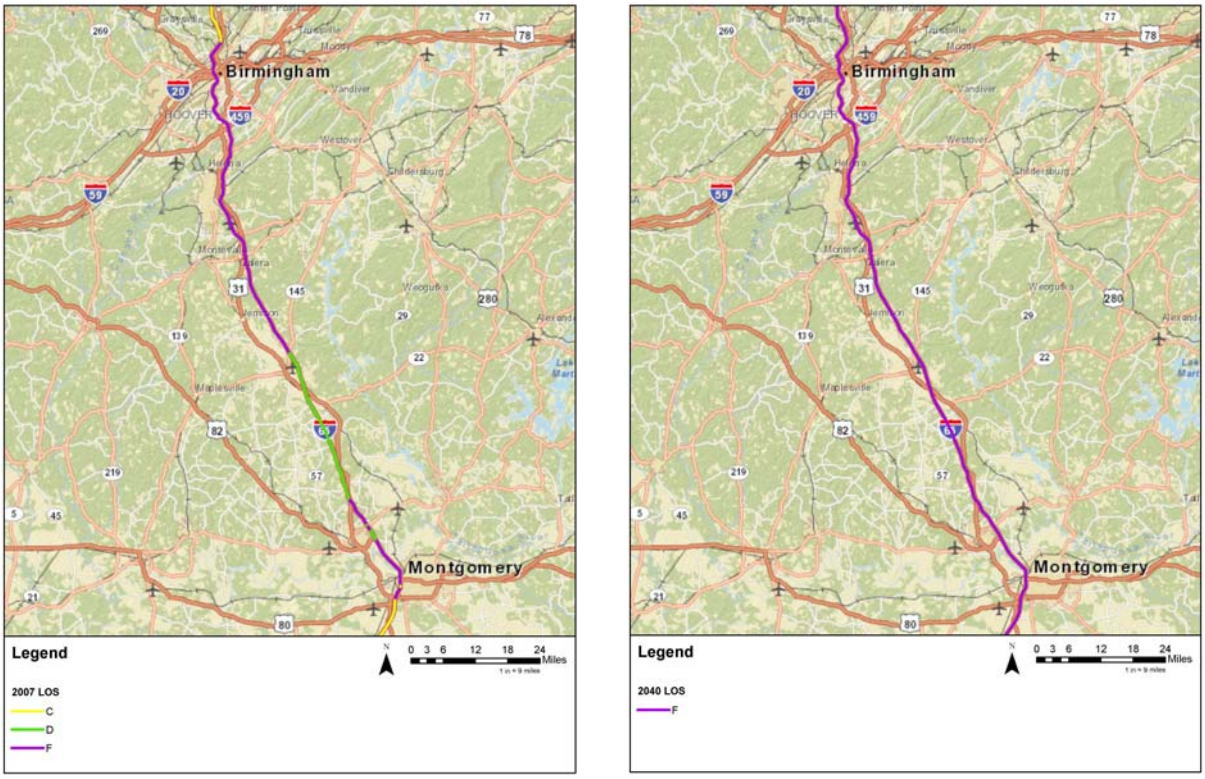
FIGURE 2 – County Population Trends (1970-2035)



SOURCE: RPCGB

Increasing demands on the Birmingham-Montgomery region's I-65 highway system by both passenger and freight traffic have resulted in increased travel times for automobile commuters, as well as less predictable travel times that vary depending on congestion level. The Alabama Department of Transportation (ALDOT) projects that freight traffic will increase by 8-12% by 2035 on the I-65 corridor. Freight volumes on I-65 are already over 4,000 vehicles per day. According to the Federal Highway Administration (FHWA), the Level of Service (LOS) on I-65 corridor varies from D to F (as of 2007) based on volume-to-capacity ratios for vehicles. LOS D represents an area of high-density traffic flow in which speed and freedom to maneuver are severely restricted while LOS F results in traffic volumes being greater than capacity, resulting in a breakdown of traffic flow. In 2040, FHWA is predicting the entire I-65 corridor, between Birmingham and Montgomery, will operate at LOS F. FIGURE 3 shows the LOS for both 2007 and 2040 from the FHWA's Freight Analysis Framework Data Tabulation Tool.

FIGURE 3 – 2007 and 2040 Level of Service (LOS)



1.5 Goals and Objectives

The process of defining and evaluating passenger rail service was based on the goals established with the stakeholders involved in the Birmingham-Montgomery Rail Feasibility Study. In early March of 2013, several stakeholder meetings were held in Birmingham and Montgomery. The stakeholder groups were provided background information on the former *Gulf Breeze* service in addition to identifying some of the

strengths, weaknesses and opportunities for the two proposed rail corridors between the two cities. This included analyses of connectivity, land use, capacity requirements, service levels, and other passenger rail related issues from a corridor or localized perspective. The analysis also helped in the development of project goals and objectives. The following goals and objectives were developed to serve as guiding principles for future rail planning and implementation between the two cities:

GOAL 1: Improve Transportation Mobility Opportunities by Implementing Passenger Rail

Objective 1: Provide multimodal travel options in congested travel corridors.

Objective 2: Provide peak period mobility option to help minimize vehicular congestion.

Objective 3: Serve regional trips, as well as trips between and within urban centers.

Objective 4: Maintain or improve travel times within urban centers.

GOAL 2: Employ Passenger Rail to Shape and Encourage Growth and Create Jobs

Objective 1: Reinforce multi-centered development.

Objective 2: Stimulate economic development and create new jobs.

Objective 3: Spur new development in urban centers.

GOAL 3: Provide a Seamless and Cost Effective Passenger Rail Option

Objective 1: Form partnership with private sector railroads (CSXT) to utilize and enhance existing land and railroad right-of-way and infrastructure where possible.

Objective 2: Utilize available as well as new funding sources.

Objective 3: Provide cost-effective solutions.

Objective 4: Plan integrated transportation services.

GOAL 4: Promote Sustainability through the Implementation of Passenger Rail

Objective 1: Maintain or improve regional air quality.

Objective 2: Develop transportation projects that help focus developments near urban centers.

Objective 3: Provide a dependable long-term transportation solution in critical corridors.

GOAL 5: Increase Public/Private Cooperation to Implement Passenger Rail

Objective 1: Foster public/private partnerships including private sector railroad (CSXT).

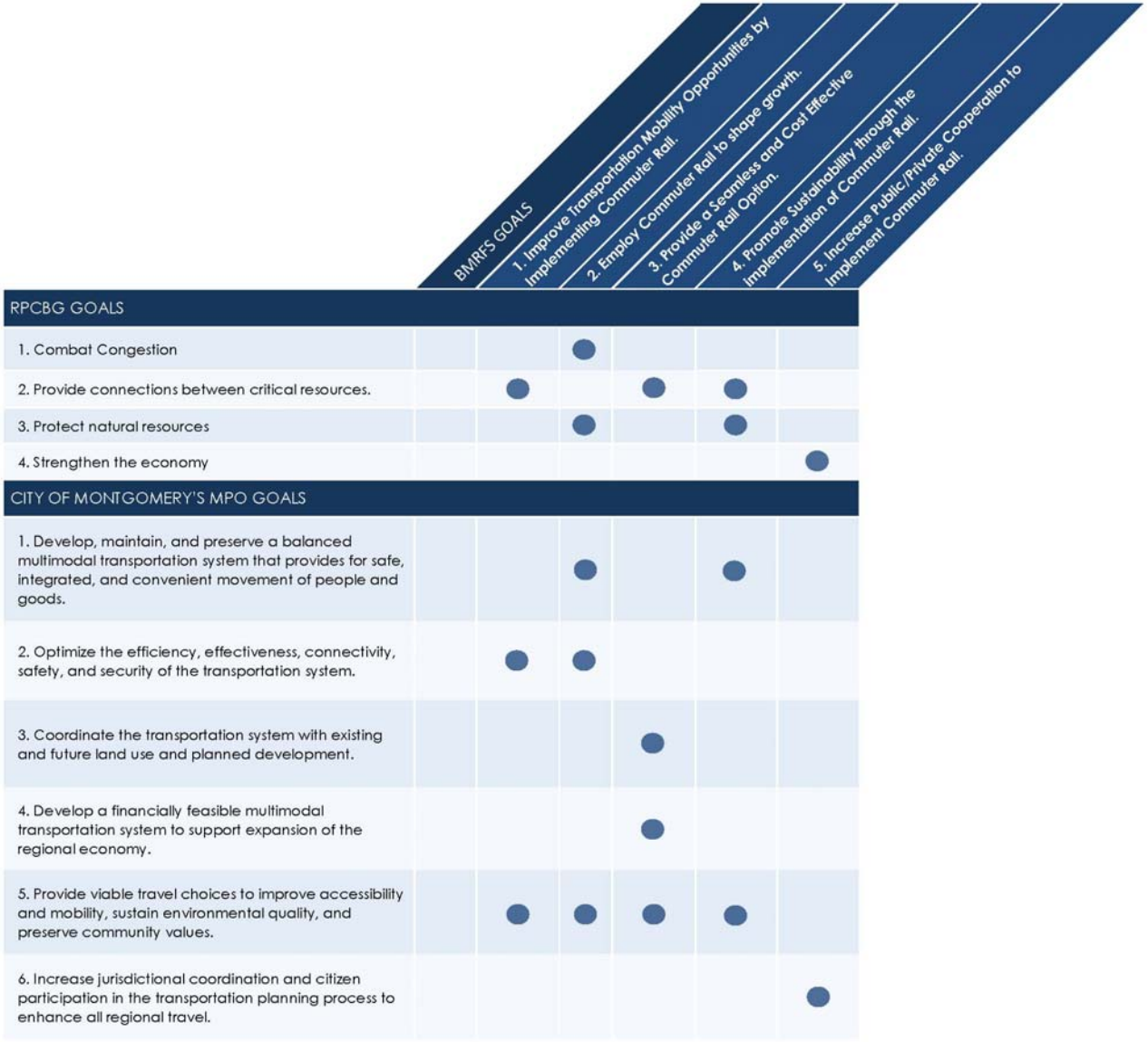
Objective 2: Provide public and private sector funding options.

Objective 3: Develop local and regional support for passenger rail.

The Birmingham-Montgomery Rail Feasibility Study (BMRFS) goals were compared to the Regional Planning Commission of Greater Birmingham (RPCGB) Regional Transportation

Plan and to the City of Montgomery's MPO Transportation Goals to assess consistency. The following relationships between the Birmingham-Montgomery Rail Feasibility Study's goals and the two MPOs were identified. The relationships are featured in FIGURES 4.

FIGURE 4 – Comparison of RPCGB, City of Montgomery's MPO and BMRFS Goals



SECTION 2: PUBLIC PARTICIPATION PROGRAM

2.1 Public Participation Plan

Preparation of a public participation plan has been an essential component of the Birmingham-Montgomery Passenger Rail Feasibility Study. The stakeholder outreach or public participation process was informed by a stakeholder engagement program and public participation plan designed to reach target audiences, and focused primarily on agency planning partners, economic groups and elected officials. The public participation plan supported the development of the Passenger Rail Feasibility Study and included outreach through a telephone survey and informal meetings to understand the perspectives of both the public and stakeholders. Stakeholders included key elected officials, representatives from state agencies, municipalities, Metropolitan Planning Organizations (MPOs), economic development agencies, Chambers of Commerce, and CSXT.

Outreach efforts included:

- *Goal 1*: Identify stakeholder groups that should be involved in the rail feasibility study between Birmingham-Montgomery.
- *Goal 2*: Inform stakeholders of study information and receive feedback throughout the process.
- *Goal 3*: Inform and solicit input from elected officials about the rail feasibility study between Birmingham-Montgomery.
- *Goal 4*: Coordinate with CSXT to obtain data and information.

2.2 Stakeholder Engagement Program

Stakeholder engagement is an important aspect of the planning process; therefore, every effort was made to ensure active and widespread participation from the various stakeholders who had an interest in the passenger rail feasibility study. To ensure that the feasibility study met the needs of the broader public, Alabama Department of Economic and Community Affairs (ADECA), Alabama Department of Transportation (ALDOT), City of Montgomery Planning Department, Regional Planning Commission of Greater Birmingham (RPCGB), and many other stakeholders (listed below) were actively engaged in the process.

- Alabama Public Service Commission (PSC)
- Birmingham-Jefferson County Transit Authority (BJCTA)
- Brown Studio Architecture
- City of Birmingham

- Heart of Dixie Railroad Museum (Calera, AL)
- Montgomery Area Transit
- National Association for Railroad Passenger
- Southern High-Speed Rail Commission
- vRide (Birmingham, AL)

2.2.1 Stakeholder Meetings

Three stakeholder meetings occurred during the feasibility study to provide opportunities for input and feedback. These meetings were held in Birmingham and Montgomery; both cities provided the necessary matching funds for conducting the passenger rail feasibility study.

- **First Stakeholder Meeting**: The all-day meetings, known as the Project Initiation Meetings, occurred on March 7th and 8th (2013) with stakeholders at several locations in Birmingham (RPCBG and City of Birmingham) and Montgomery (City of Montgomery Planning Department and ALDOT). These meetings served to identify key stakeholders and data sources, develop goals and objectives for the study and review the scope and schedule for project completion.
- **Second Stakeholder Meeting**: A Progress Meeting was held at ADECA in Montgomery on May 23, 2013 with several stakeholders (City of Montgomery Planning Department, Montgomery Area Transit System, RPCBG and Brown Studio Architecture) and provided an update on data collection, goals and objectives, conceptual alternatives, operating plans, facility improvements and capital costs, transportation benefits, annual O&M costs along with next steps for the study.
- **Third Stakeholder Meeting**: ADECA arranged for two final meetings with stakeholders to cover the results of the rail feasibility study. The first meeting was held at ADECA in Montgomery on October 17, 2013 and the second meeting was at RPCBG in Birmingham on October 18, 2013.

2.2.2 Project Management Team (PMT) Meetings

For this study, the formation of the PMT was critical to providing guidance for the study's direction and the final recommendations. The PMT was comprised of representatives from ADECA and HDR Engineering, Inc. directly responsible for completion of the passenger rail feasibility study. The PMT held bi-weekly conference calls to discuss schedule, review study information and coordinate ongoing study activities. Throughout the study, the PMT and other stakeholders received a number of briefings and the study direction was altered based on their comments.

2.2.3 Other Project Stakeholder Meetings

CSXT Corporation - Coordination with affected railroads was required in order to identify opportunities and constraints within the corridor for adding passenger rail service. Right-of-way is constrained through Birmingham, and gaining additional right-of-way from multiple owners is challenging. In addition, the rail segment identified for passenger service---Alternatives 1, 2 and 3---is part of a major route that carries commercial freight to and from the Port of Mobile.

During a teleconference meeting with CSXT on April 3, 2013, CSXT informed the PMT that the identified rail corridor for passenger rail is considered a core strategic route. CSXT is anticipating a 50% increase in freight by 2040, and a drop in supply chain capacity within the corridor may have a negative economic impact on the State of Alabama. The corridor is connected to CSXT's largest intermodal center (CSXT Birmingham Boyles Terminal); and if passenger rail service is offered through the corridor, CSXT is requesting that the entire corridor be at the very least double tracked. CSXT declined requests from the project team to provide information regarding existing and projected traffic, current schedules, track charts, track conditions and planned facility upgrades.

Birmingham-Jefferson County Transit Authority (BJCTA) - On April 12, 2013 a teleconference meeting was held with BJCTA. BJCTA gave a brief overview on planned transit improvements for the region and the new Intermodal Center for downtown Birmingham. The other major topic discussed in the meeting had to deal with making the passenger rail service attractive (faster travel time, service reliability, and convenient connections to other travel modes including transit).

Alabama Department of Transportation (ALDOT) - A meeting was held with the ALDOT Modal Programs staff on March 8, 2013. The primary purpose of the meeting was to discuss Modal Programs activities related to freight and passenger rail safety and operations. Modal Programs staff also provided data and GIS files regarding railroad grade crossings along the Birmingham to Montgomery line.

Alabama Department of Transportation (ALDOT) - A teleconference call was held with the Bureau of Transportation Planning of ALDOT on April 15, 2013. The primary purpose of the meeting was to collect travel demand information for the I-65 corridor, a major travel route between Birmingham and Montgomery. The information will help stakeholders understand the total trip demand (person trips) in the study corridor and the potential ridership on a passenger rail system. Following the meeting, ALDOT staff provided the HDR project team with the current version of the Alabama statewide travel demand model.

Alabama Public Service Commission (PSC) – A project stakeholder meeting happened with the PSC on April 16, 2013 via conference call. The PSC provided information on current track conditions, which appear to be good for the entire segment being

studied; and the necessary up-grades required for running faster passenger rail service (of 79 miles/hour). The maximum travel speed for freight operations on the study corridor is currently about 50 to 60 miles per hour.

2.3 Public Participation

Public participation is a key element when considering the feasibility of major transportation improvement such as new passenger rail service. Public participation increases the prospects for consensus and, if a build alternative should be selected, public support for final implementation. The process of public participation also greatly reduces the potential for project delays and litigation while enhancing the overall planning process.

To enhance the public participation aspect of the Birmingham-Montgomery Passenger Rail Feasibility Study, the project sponsors decided it would be beneficial to conduct a survey of residents of Birmingham and Montgomery to measure interest in passenger rail services in this corridor. The project team subsequently developed a survey instrument and contracted with a private call center to administer a telephone survey.

2.3.1 Phone Survey

The PMT gathered information from the public, in Birmingham and Montgomery, using a random telephone survey. The random survey was conducted by Research America, Inc., a professional data collection firm, who completed 600 telephone interviews (300 for each city). The following 12 questions were asked during the telephone interviews to determine the level of interest in passenger rail service for this corridor.

1. How often do you drive to **Birmingham** or **Montgomery**?
    a. 3 or more times a week
    b. 1-2 times per week
    c. 1-2 times per month
    d. 1-2 times per year
    e. Not at all
2. What is the main reason you visit **Birmingham** or **Montgomery**?
    a. Work
    b. Business
    c. Trips to Doctor or Hospital
    d. Shopping
    e. Personal Business
3. How satisfied are you with your current travel experience between the two cities?
    a. Very satisfied
    b. Somewhat satisfied
    c. Not very satisfied
    d. Not at all satisfied

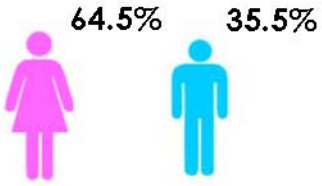
4. How often do you encounter traffic congestion or delays when traveling between the two cities?
    a. Most of the time
    b. Occasionally
    c. Not very often
5. Would you consider traveling by train between the two cities?
    a. For work
    b. Business trips
    c. For medical
    d. Shopping trips
    e. For personal trips
6. Do you currently use public transit in **Birmingham** or **Montgomery**?
    a. 3 or more times a week
    b. 1-2 times per week
    c. 1-2 times per month
    d. 1-2 times per year
    e. Not at all
7. How often would you ride the train between the two cities if the service was available?
    a. 3 or more times a week
    b. 1-2 times per week
    c. 1-2 times per month
    d. 1-2 times per year
    e. Not at all
8. How frequently would the train service need to run between the two cities to make it a viable option for you?
    a. Every hour
    b. Every 4 hours (3 trips a day)
    c. One trip a day
9. If a one-way train ticket were to cost $25.00, is this an acceptable amount for you to pay for travel between the two cities?
    a. Cost is too high – I probably wouldn't pay that
    b. Cost is about right
    c. Cost is too low – I would pay more than that
10. What types of amenities should be offered onboard while riding the train? Please choose three.
    a. Wi-Fi
    b. "Airline" seats
    c. Luggage racks
    d. Restroom
    e. Power Receptacle

11. What other destinations would you be interested in travelling to by train?
    a. Mobile
    b. New Orleans
    c. Atlanta
    d. Tuscaloosa
    e. Huntsville
12. Do you have any other comments regarding train service between **Birmingham** and **Montgomery**?

2.3.2 Results of Phone Survey

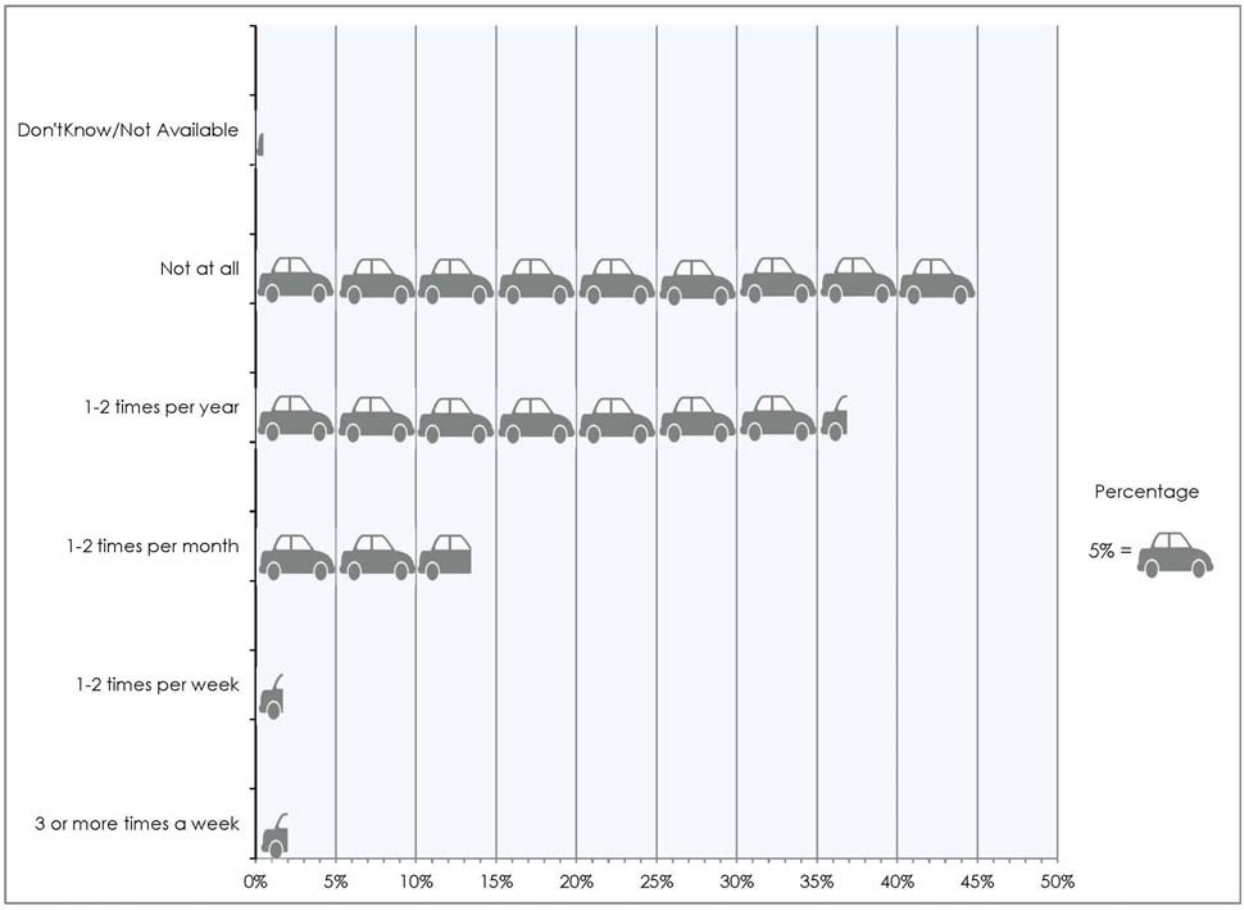
Research America interviewed 600 individuals to gauge interest in having train service between Birmingham and Montgomery. Three hundred respondents were interviewed from each city. The majority of the 600 respondents were females numbered at 387 while 213 respondents were males. FIGURE 5 shows the percentages for each sex.

FIGURE 5 – Sex of Respondents



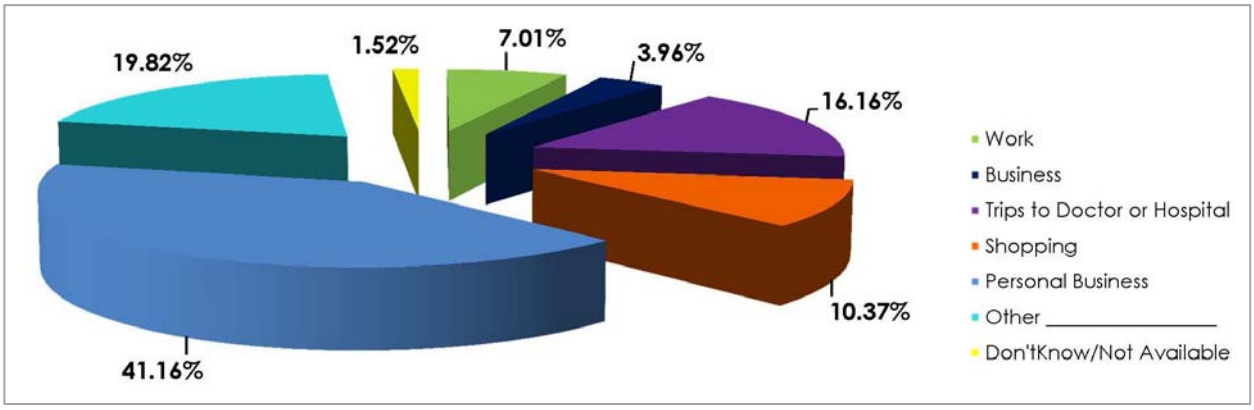
The first question asked during the interview was "How often do you drive either to Birmingham or Montgomery?" Forty-five percent (45%) or 270 of the interviewees either do not drive from Birmingham to Montgomery and/or from Montgomery to Birmingham. The second most popular response was 1-2 times a year (37%) while 1-2 times per month was third (13.8%). Twenty-two or 3.7% of the individuals interviewed drive weekly between the two cities.

FIGURE 6 – Question 1: How often do you drive to Birmingham or Montgomery?



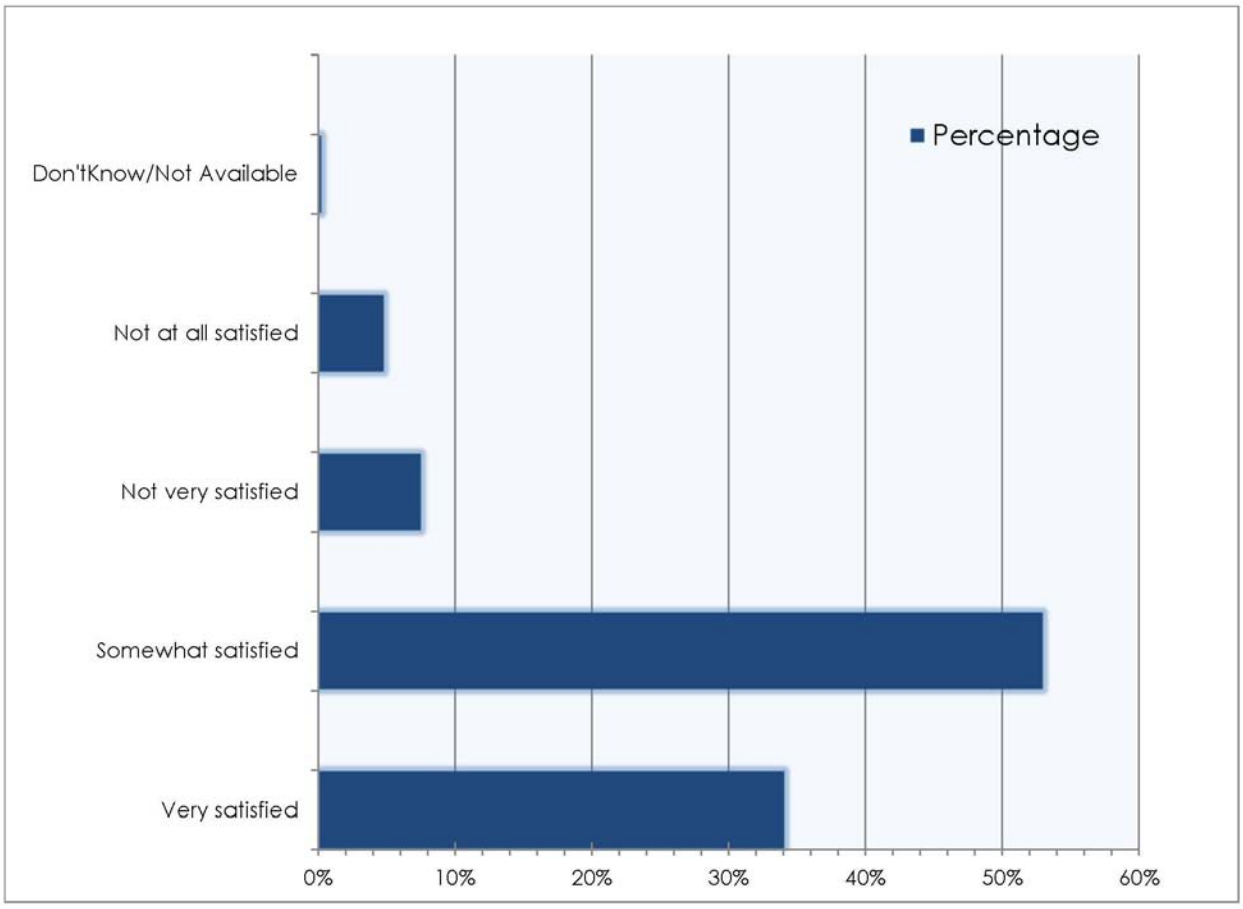
Of the 600 surveyed, only 328 respondents travel between the two cities. The prevailing reason for traveling from Birmingham to Montgomery and/or from Montgomery to Birmingham was for "Personal Business" (41.2%). The second most popular reason was "Other" at almost 20% while "Trips to Doctor or Hospital" came in third. "Shopping" was fourth (10.4%) followed by "Work" at 7%. "Business" and "Don't Know/Not Available" averaged around 5.9%.

FIGURE 7 – Question 2: What is the main reason you visit?



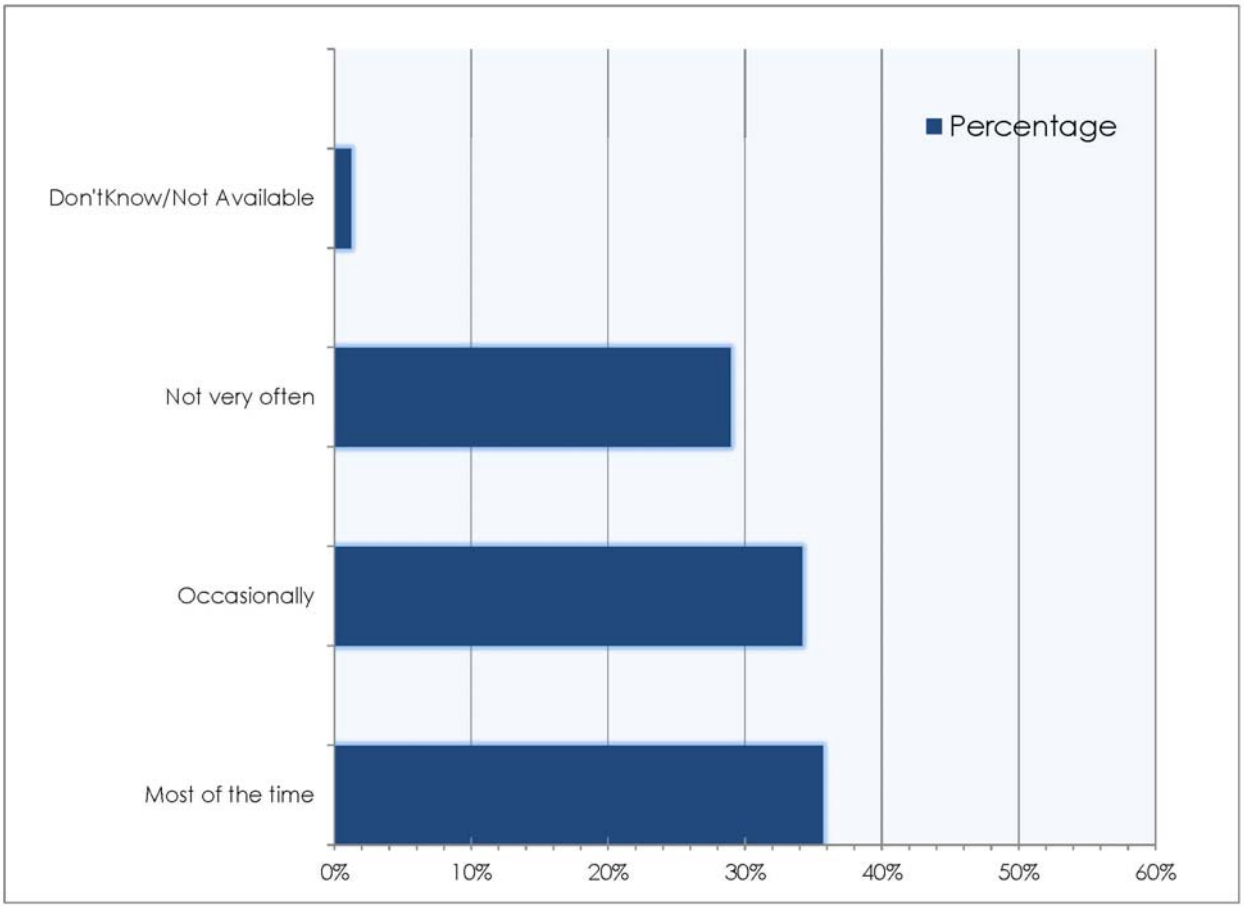
Again, only 328 respondents out of 600 surveyed answered the following question: "Are you satisfied with your current travel experience between the two cities?" A little over half (53.1%) of the surveyed individuals are "somewhat satisfied" with their current travel experience and a third (34.2%) of the respondents "are very satisfied." This leaves approximately 12.5% of respondents "not very satisfied" or "not at all satisfied" with their current travel experience and may consider utilizing another travel mode.

FIGURE 8 – Question 3: Are you satisfied with your current travel experience?



The next question was "How often do you encounter traffic congestion or delays when traveling between the two cities," which was answered by 328 respondents. A majority (or 35.7%) of the respondents "Most of the time" do encounter traffic congestion and delays. "Occasionally" was a close second at 34.2%. Whereas, less than third (29%) of respondents do "Not very often" encounter traffic congestion or delays when traveling between the two cities.

FIGURE 9 – Question 4: How often do you encounter traffic congestion or delays?



Out of the 600 respondents surveyed, a little over half (52.3%) of the respondents would consider traveling between the two cities by train for the following activities: for work, business trips, for medical, shopping trips, for personal trips; whereas, approximately 45% or (45.8%) would not considering using the train for any of purposes listed. Almost 2% (1.8%) were unable to provide an answer to this question.

FIGURE 10 – Question 5: Would you consider traveling by train between the two cities?

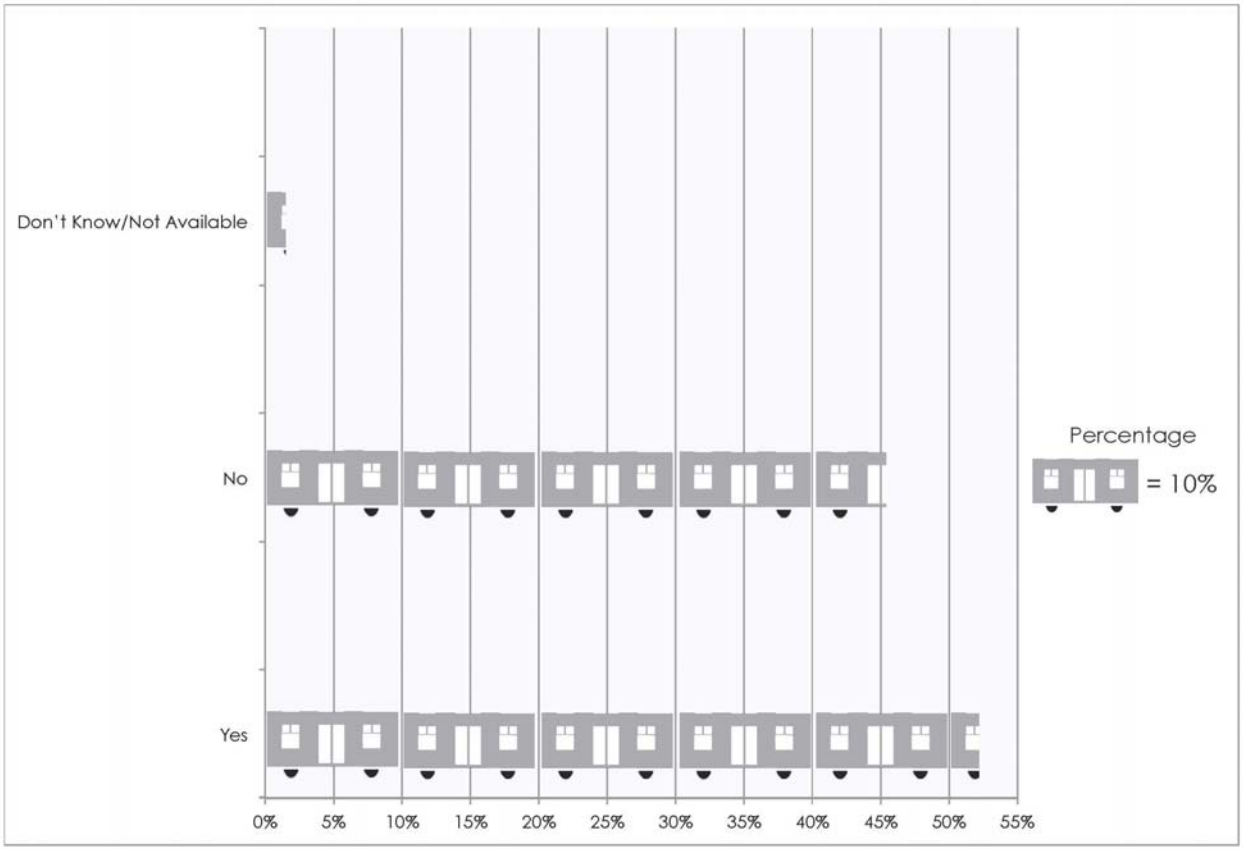
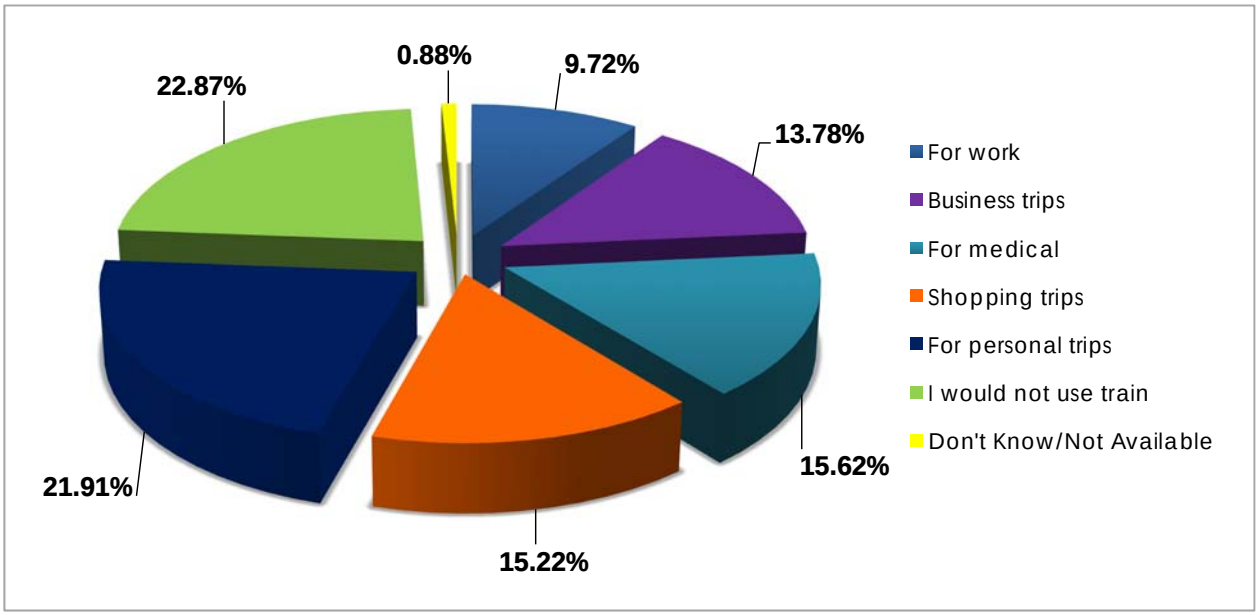


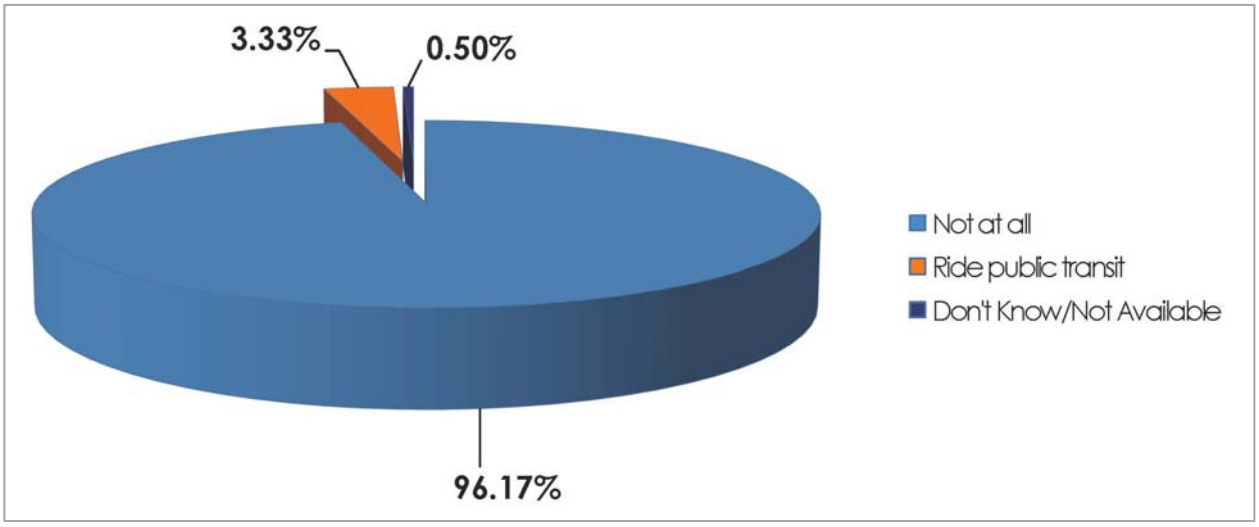
FIGURE 11 features the % of respondents who would travel for the different trip activities (for work, business trips, for medical, shopping trips, for personal trips). "For personal trips" was the most common reason at 21.9% for using train travel between the two cities. The least common reason was "For work" at 9.7%. However, at least 23% of respondents would not use the train for any trip purpose that was listed. Almost 1% (0.9%) of respondents were unsure or unable to provide an answer to this question.

FIGURE 11 – Question 5: Percentage of respondents traveling by train for different activities



All 600 respondents were asked this: "Do you currently ride public transit in either Birmingham or Montgomery, and if yes, how often do you use public transit?" Large majorities of the people surveyed do not ride transit at 96.2%. At least 3.3% of respondents do ride transit: 1.8% ride "1-2 times per year", 1% "1-2 times per month" and 0.50% ride transit weekly.

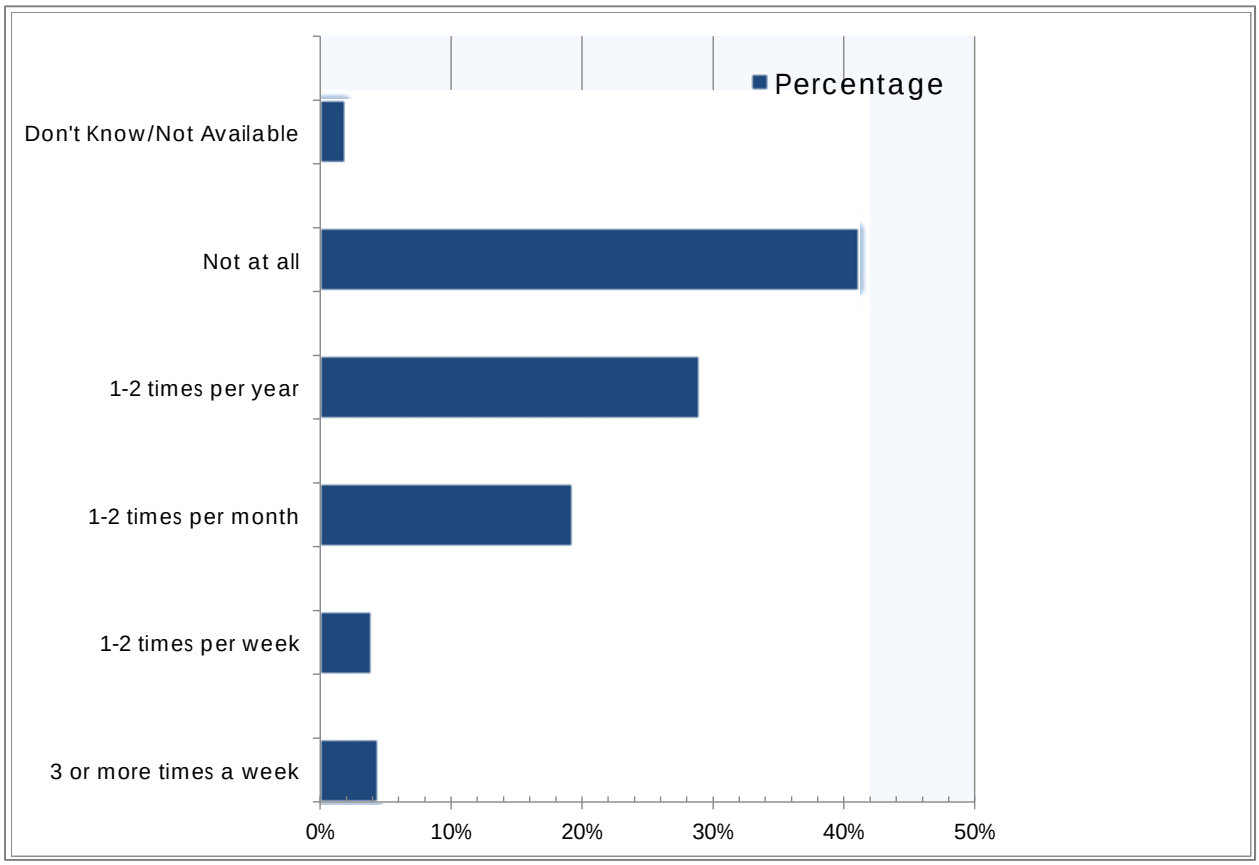
FIGURE 12 – Question 6: Do you currently ride transit in Birmingham or Montgomery?



When asked "How often would you ride the train between the two cities if the service was available?" More than 40% (41.2%) of respondents are "Not at all" interested in riding the train, which means that almost 60% (56.8%) of the surveyed respondents

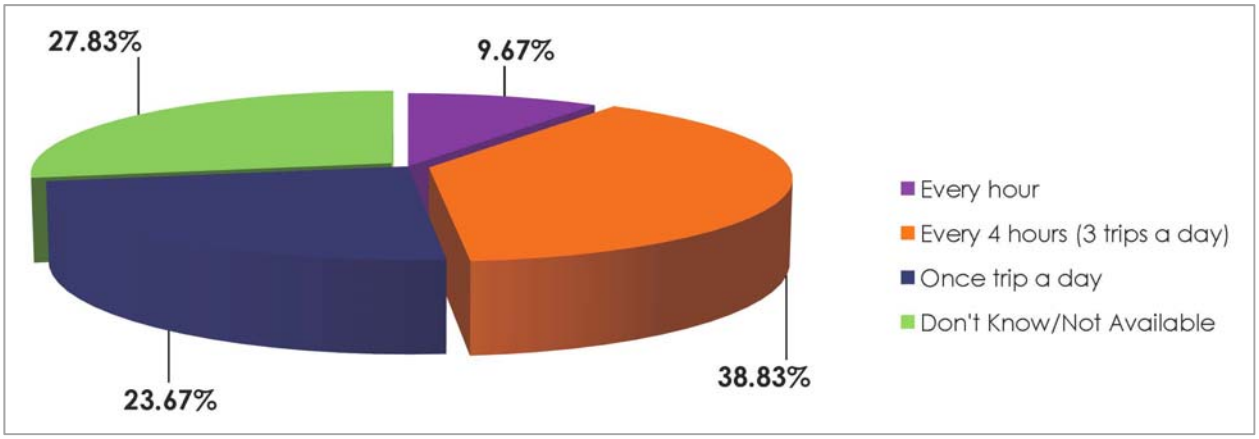
would consider riding the train, if service was to be offered between Birmingham and Montgomery. In regards to frequency of use, it ranges between "1-2 times per year" to "3 or more times a week." FIGURE 13 shows the estimated use of a new train service by the 600 respondents.

FIGURE 13 – Question 7: How often would you ride the train?



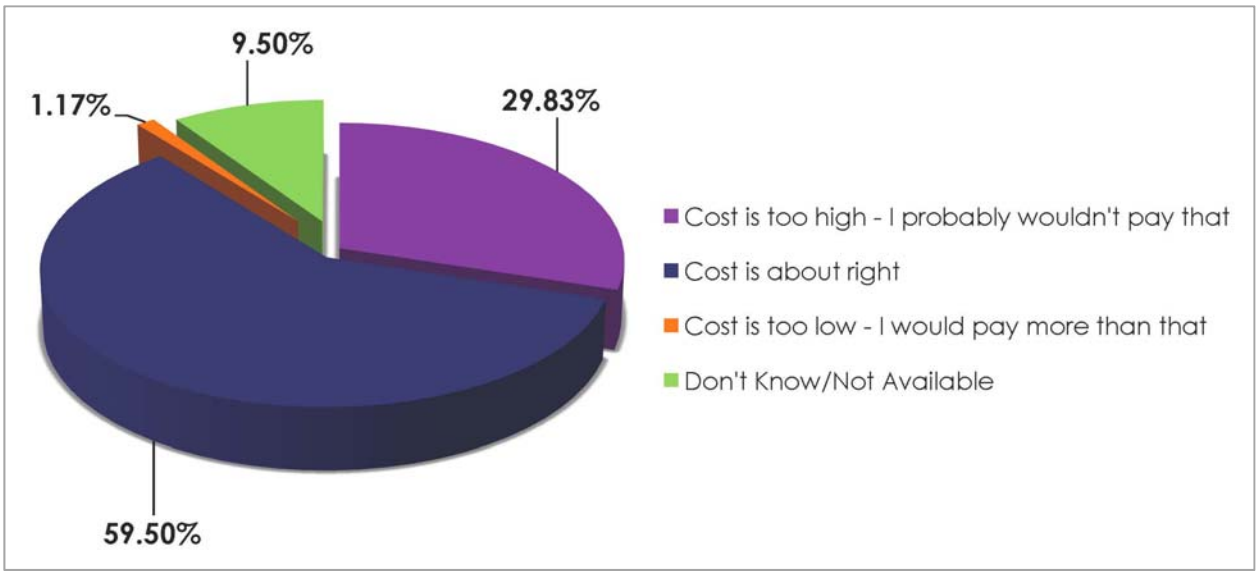
Question 8 asked the respondents "How frequently would the train service need to run between the two cities to make it a viable option for you?" Almost 40% (38.8%) of respondents would need to have the train service run every 4 hours (3 trips a day) to make it a viable option for them to use it. However, a notable portion of respondents, almost 30% (27.8%), were either unsure or provided no answer to Question 8. The third most popular answer was one (1) trip a day at 23.7% while 9.7% of the respondents would like to have service every hour. Results are shown in FIGURE 14.

FIGURE 14 – Question 8: How frequently would the train service need to run?



On the price of a one-way train ticket, almost 60% (59.5%) of the respondents thought $25.00 was about right for the cost of a train ticket. While almost 30% (29. 8%) thought $25.00 was too high of a price for train ticket between Birmingham and Montgomery; whereas, close to 10% (9.5%) were either unsure or didn't provide an answer to this question. Only around 1% (1.2%) thought the price was too cheap for train service between the two cities.

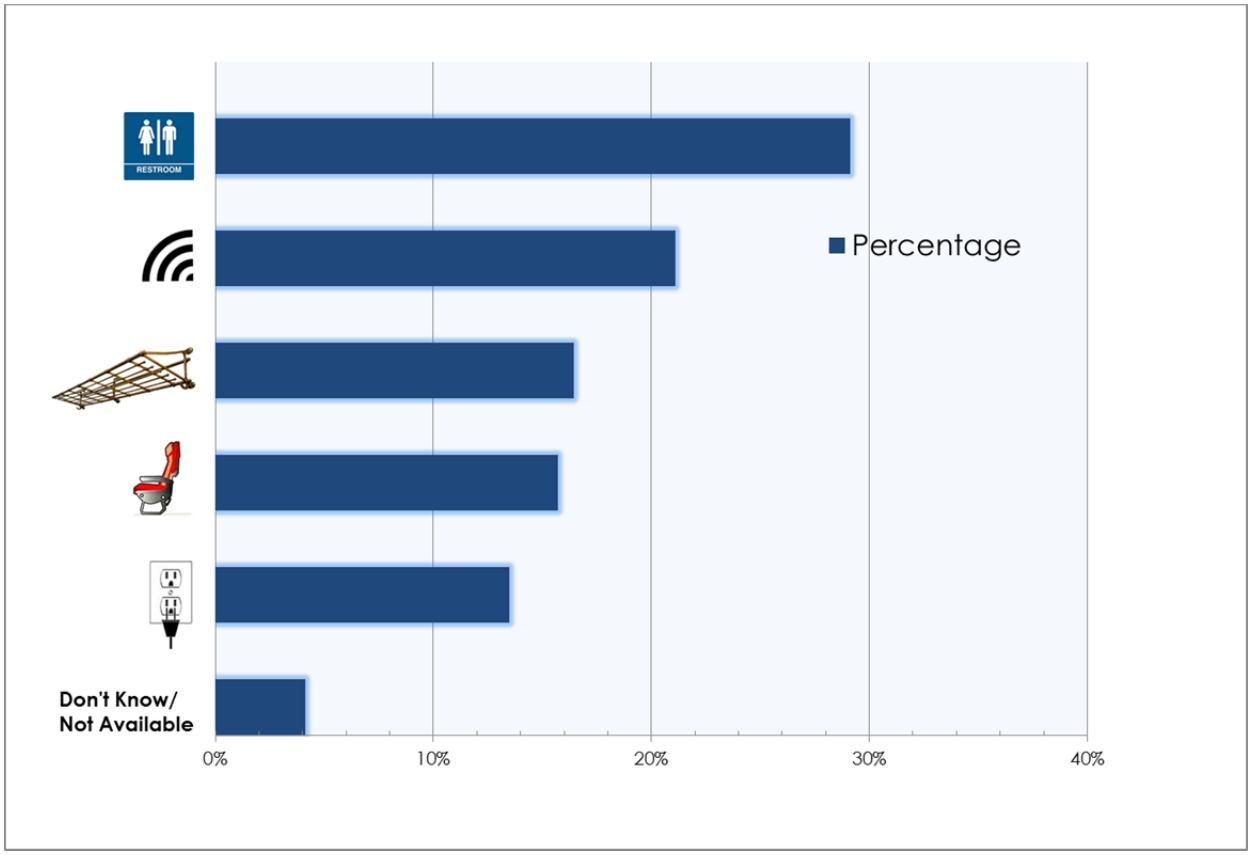
FIGURE 15 – Question 9: If a one-way train ticket were to cost $25.00, is this an acceptable amount for you to pay?



Another question that was asked during the survey is "What types of amenities should be offered while riding the train?" Almost 30% (29.1%) of respondents thought that a public restroom was an amenity that needed to be available to riders of the train service. Following public restrooms was Wi-Fi at 21.1% with 16.4% of respondents wanting to have access to luggage racks onboard the train service. Airline seating was

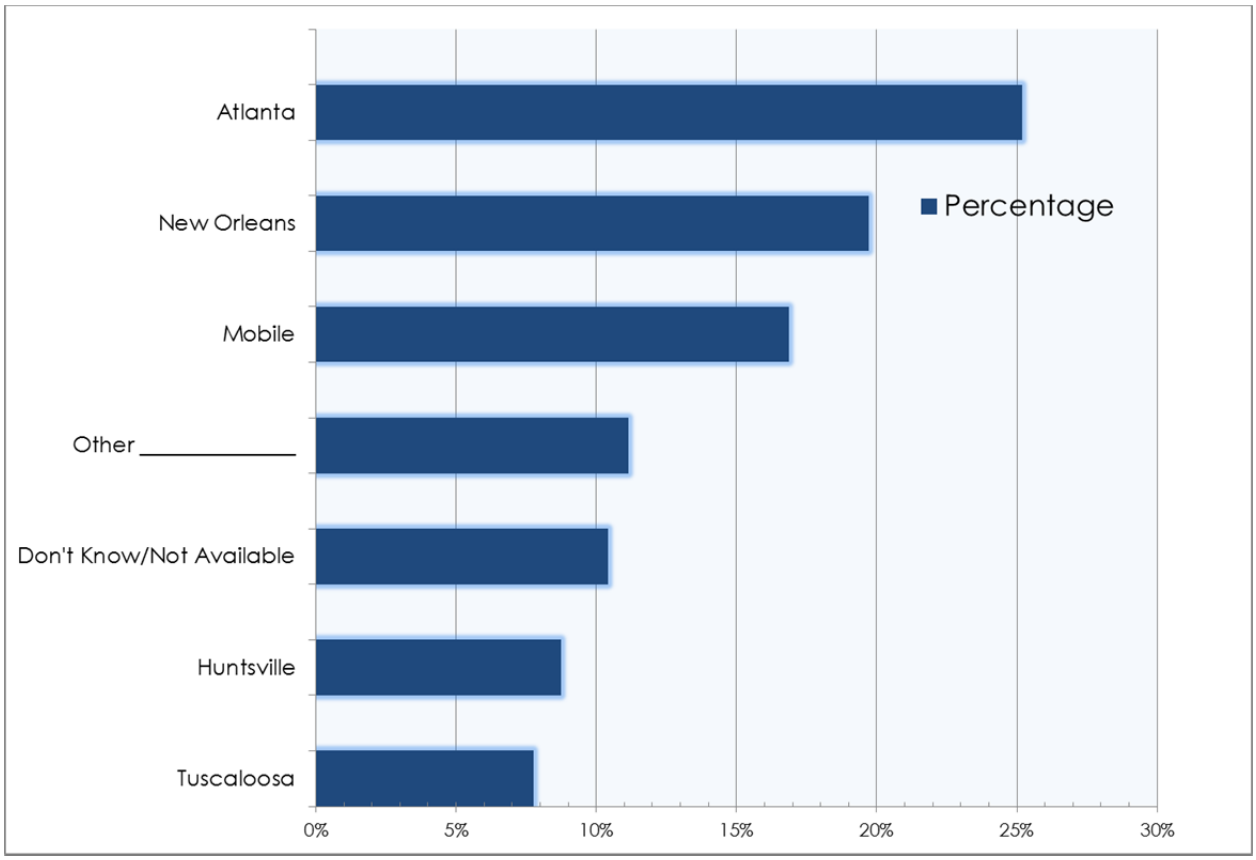
fourth at 15.7% and power receptacles came in last with 13.5% respondents wanting access to an outlet.

FIGURE 16 – Question 10: What types of amenities should be offered?



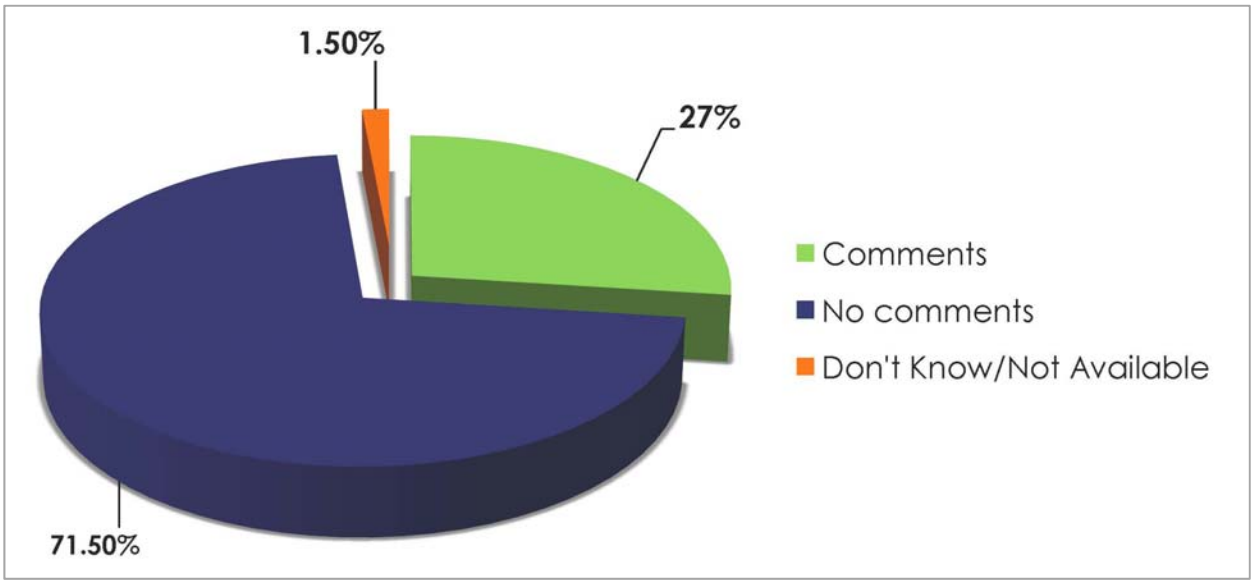
"What other destinations would you be interested in travelling to by train?" was the next question asked during the survey. Of the 600 people surveyed, Atlanta was the most popular destination, at 25.2% provided by the respondents for having train service to. The second most popular destination was New Orleans at 19.7% with Mobile coming in at third (16.9%). Huntsville was the least popular destination at less than 10% (8.8%) for using train travel.

FIGURE 17 – Question 11: What other destinations would you be interested in travelling to by train?



The final question asked respondents if they had any other comments regarding train service between the two cities. A majority (71.5%) of the people interviewed had no further comments while a little over quarter (27%) of the respondents did provide further comments. All the comments are listed in APPENDIX A.

FIGURE 18 – Question 12: Do you have any other comments?



Overall, the respondents who participated in the survey were split on "offering" and "not offering" train service between Birmingham and Montgomery. A number of participants (60%) would consider using the train service if it were available to them. How often the service would be utilized depends greatly on how frequent the service is offered and the types of activities that respondents are participating in within either city.

3.1 Study Corridor

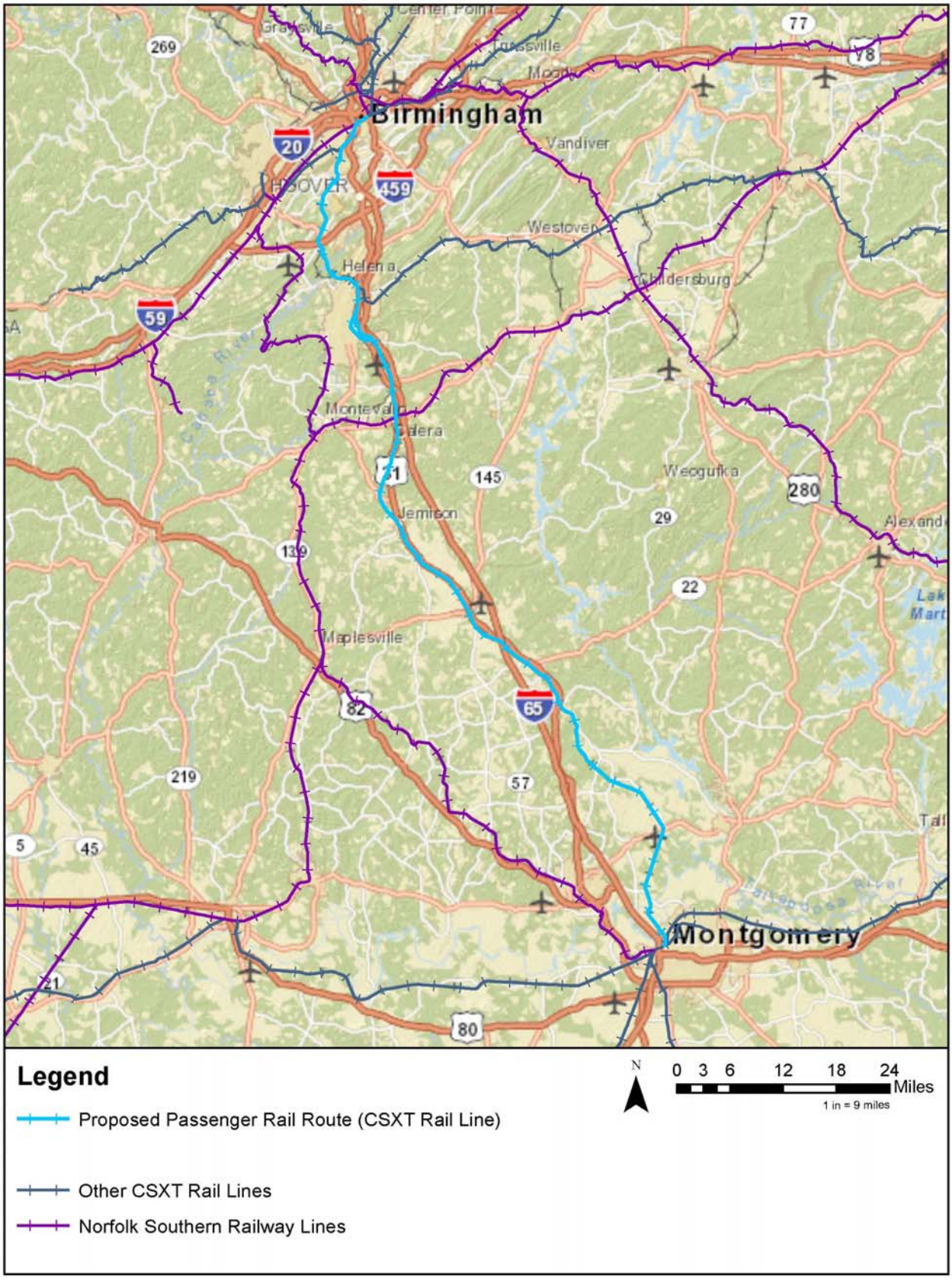
The Birmingham to Montgomery corridor extends from the Amtrak Station, in downtown Birmingham, AL, to a proposed station (Montgomery Visitor Center) in Montgomery, AL. For Alternatives 1, 2, and 3, the study corridor consists of a former passenger rail route, the Gulf Breeze service, which was operated by Amtrak until 1995. The Gulf Breeze ran between Birmingham, Montgomery and Mobile on tracks that carry freight for CSXT (see FIGURE 1). The existing freight rail line (for Alternatives 1, 2 and 3) is approximately 97 miles long while the study corridor for Alternative 4 (I-65 corridor) is about 90 miles. The alternatives to restore passenger service are described in more detail in Section 4.

3.2 Railroad Characteristics

The existing rail corridor for Alternatives 1, 2 and 3 is owned by CSXT. Coordination with CSXT will be required in order to identify opportunities and constraints within the corridor for adding passenger rail service. The rail line is primarily single track with intermittent passing sidings in order to allow trains to pass. Providing passenger rail service with the on-going operations of major CSXT facilities including Boyles and Montgomery rail yards will be key in the implementation of passenger rail in the corridor. Norfolk Southern Railway Company also has several existing railway facilities throughout the corridor. CSXT and Norfolk Southern Railway facilities are featured in FIGURE 19.

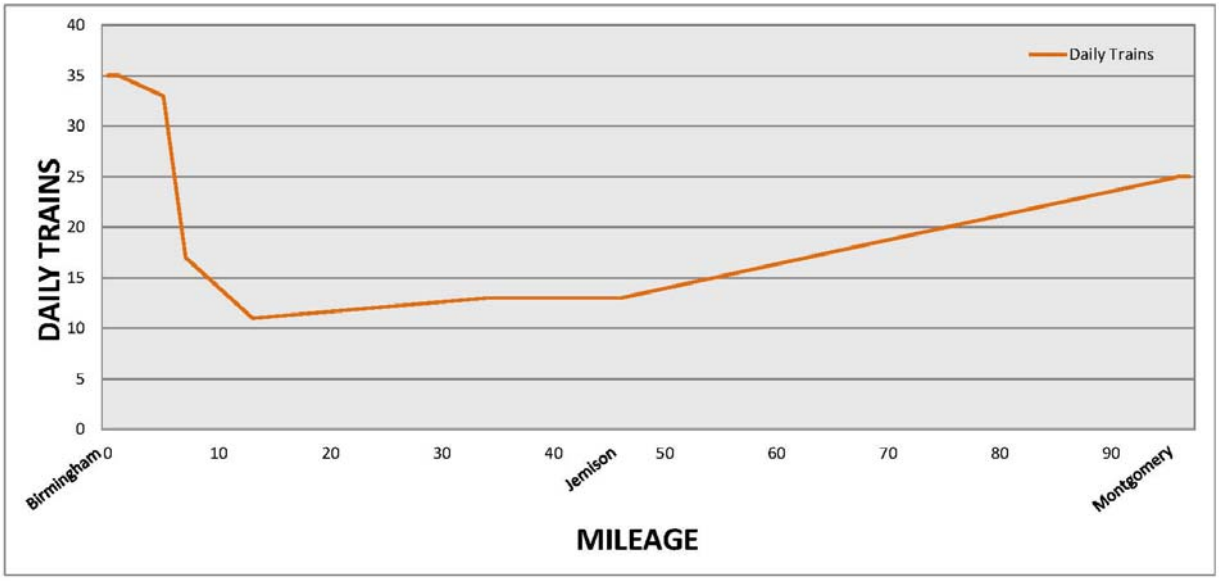
CSXT was contacted early in the project. The project team requested data including track conditions, current and projected traffic (trains per day), train schedules, and planned track and facility improvements. In accordance with current policies, CSXT was not able to provide data on their line and operations without a more formal working agreement. Lacking the availability of data from CSXT, the project team collected publicly available data from other sources including the Federal Railroad Administration (FRA) and Alabama Department of Transportation (ALDOT).

FIGURE 19 – CSXT and Norfolk Southern Railway Facilities



The CSXT rail line begins at milepost 391.6 and ends at 488.2. Portions of the 96-mile CSXT rail corridor are either adjacent and/or parallel to US 31 as the line meanders from Birmingham down to Montgomery. The rail line also crosses several major roadways including I-65 and I-459, and has a total of 140 at-grade or grade separated railroad crossings (featured in APPENDIX B). A majority of the crossings are public, but at least 20 are private. The protection type varies between crossbucks, flashing lights, and flashing lights and gates throughout the rail corridor with at least 33% having no protection at all. The operating speeds for freight rail range between 15 to 60 mph, with the slower speeds being observed near major activity centers. The maximum operating speed is 79 mph for passenger trains. FIGURE 20 shows the number of commercial freight trains that run on the corridor. Alabama Department of Transportation (ALDOT) provided the above data for the rail corridor.

FIGURE 20 – CSXT's Daily Freight Train Volumes



SOURCE: ALABAMA DEPARTMENT OF TRANSPORTATION

3.3 Highway Characteristics

3.3.1 Interstate 65

Interstate 65 (I-65) starts in Mobile at an interchange with I-10 and continues north to Nashville, Louisville and Indianapolis. The highway runs primarily through Alabama's countryside, but is a major roadway between Birmingham and Montgomery as well as to Mobile and Huntsville. The roadway also provides connections to smaller activity centers such as Homewood, Hoover, Pelham, Alabaster, Calera, Prattville, and Millbrook while serving as important link to other prominent roadways (I-20, I-59 and I-85).

Interstate 65 (I-65) is the primary automobile travel route between Birmingham and Montgomery, approximately 90 miles one-way with 4-lanes, 2-lanes going in each north-south direction (FIGURE 21). The roadway increases to 6 to 8-lanes on the outskirts of Birmingham and Montgomery allowing for 3 to 4-lanes of traffic in each direction.

As of 2002, 53% of all goods movement by weight is moved with trucks in the State of Alabama (Alabama Statewide Freight Study & Action Plan, June 30, 2010). Movement of freight by trucks is expected to continue to be the preferred method of delivery. In 2035, trucking will ship approximately 54% of freight. Delivery includes local and long distance pickup as well as intermodal connectivity with rail, air cargo and maritime terminals. One of the major generators of truck traffic is Mobile County (Port of Mobile) in addition to Jefferson County (City of Birmingham). Both counties rank in the top ten for most truck origins and destinations: Jefferson is #1 while Mobile is ranked #2.

I-65 is a major truck route in the corridor. Further analysis (performed by UA Huntsville and J.R. Wilburn and Associates, Inc. for the Alabama Department of Transportation) shows that I-65 has particularly high Volume-to-Capacity (VC) ratios especially near Birmingham and Montgomery. The VC ratios and truck volumes per lane are expected to increase by 2035, which will most likely result in congested conditions for both cities on I-65.

The Federal Highway Administration (FHWA), based on 2007 volume-to-capacity ratios for vehicles is showing the Level of Service (LOS) varying between a D and F along I-65 depending on the location of travel. LOS F is occurring closer to Birmingham and Montgomery; whereas, LOS D is happening in the more rural portions on I-65 between Jemison and Elmore. In 2040, FHWA is predicting the entire I-65 corridor, between Birmingham and Montgomery, will operate at LOS F.

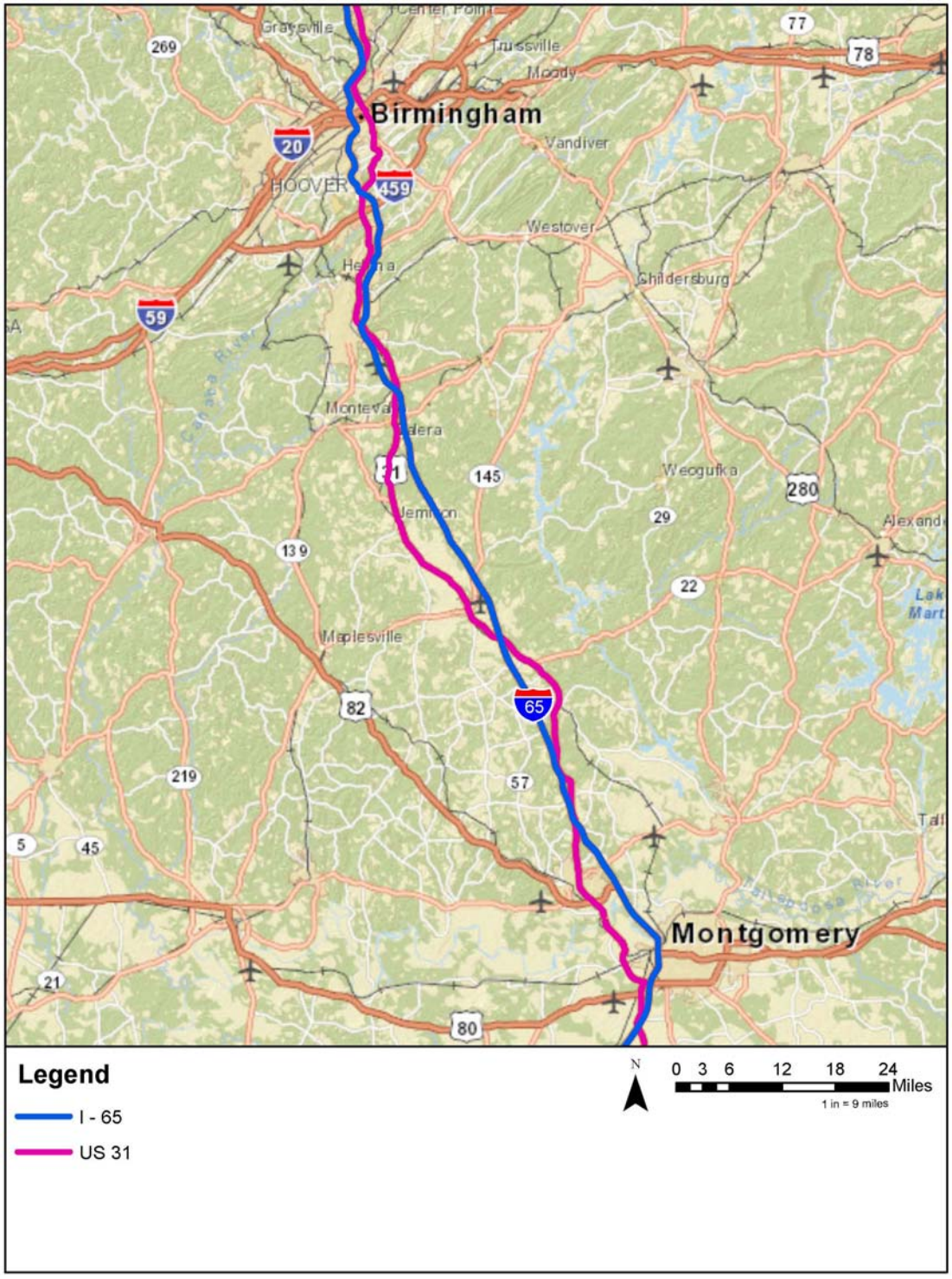
3.3.2 US Highway 31

US Highway 31 (US 31) is an older roadway that generally parallels I-65 and provides alternative route for traveling between Birmingham and Montgomery (FIGURE 21). US 31 northern terminus starts near Mackinaw City, Michigan and the highway runs north-south eventually terminating in southern Alabama at Spanish Fort. The US 31 provides connections to I-20 and I-59 near downtown Birmingham while serving as the northwestern terminus to US 280. Both US 31 and US 280 together serve as connections to the southern and southeastern suburbs of Birmingham along the Red Mountain Expressway Cut.

US 31 is primarily a rural 2-lane (1-lane in each direction) highway between Birmingham and Montgomery. The roadway expands to 4-lanes approximately 4 miles outside of Alabaster, a southern suburb of Birmingham in Shelby County. The City of Hoover and ALDOT are planning to expand the 4-lane roadway to 6-lanes with 3-lanes in either direction between I-459 and Data Drive at Chase Lake. This expansion project is

scheduled in April 2014 (ALDOT). Between Birmingham and Montgomery, US 31 serves the following activity centers: Prattville, Clanton, Thorsby, Jemison, Calera, Alabaster, Pelham, Hoover, Vestavia, Homewood and Birmingham.

FIGURE 21 – I-65 and US 31 Roadway Facilities



3.4 Travel Patterns

Estimated vehicle trips were developed using the Alabama Department of Transportation (ALDOT) Statewide Model for FY 2005 and 2035. The forecasted vehicle trips include Home Based work (HBW), Home Based Other (HBO) and Non Home Based (NHB).

According to the statewide model, there were 13,000 vehicle trips between Birmingham and Montgomery in FY 2005. Applying an auto occupancy of 2.5, this translates into 32,500 person-trips between the two metropolitan areas; whereas, in FY 2035 the model projected 15,000 vehicle trips between Birmingham and Montgomery with 38,000 person-trips between the two metropolitan areas. The full results are shown in TABLE 3 and 4 for the vehicle trips.

TABLE 3 – ALDOT Statewide Model – Year 2005 Vehicle Trips

	BIRMINGHAM METROPOLITAN	MONTGOMERY METROPOLITAN	REST OF ALABAMA	TOTAL
Birmingham MPO	2,311,000	**7,000**	133,000	**2,451,000**
Montgomery MPO	**6,000**	723,000	13,000	**742,000**
Rest of Alabama	133,000	14,000	5,436,000	**5,583,000**
Total	**2,450,000**	**744,000**	**5,582,000**	**8,776,000**

NOTE: INCLUDES HBW, HBO, and NHB TRIPS

TABLE 4 – ALDOT Statewide Model – Year 2035 Vehicle Trips

	BIRMINGHAM METROPOLITAN	MONTGOMERY METROPOLITAN	REST OF ALABAMA	TOTAL
Birmingham MPO	3,231,000	**8,000**	140,000	**3,379,000**
Montgomery MPO	**8,000**	976,000	33,000	**1,017,000**
Rest of Alabama	140,000	33,000	7,414,000	**7,587,000**
Total	**3,379,000**	**1,017,000**	**7,587,000**	**11,983,000**

NOTE: INCLUDES HBW, HBO, and NHB TRIPS

3.5 Transit Service

3.5.1 Intercity Transit Service

Introducing intercity passenger rail service would provide another option to the traveling public. Currently, the only available transit modes to the public within the corridor include carpooling by automobile and intercity bus.

CommuteSmart carpool program aims to relieve traffic congestion while reducing air pollution in Jefferson and Shelby counties. Eligible participants for CommuteSmart program are commuters living or working in Jefferson or Shelby counties and free online

ride matching for carpool and/or vanpool services is available. At least five (5) or six (6) vans provide vanpool service to/from Montgomery County for 9 to15 residents each.

CommuteSmart is a program designed to encourage carpooling in the Greater Birmingham region. Eligible riders can earn up to a $1 per day for each day they carpool to work over a consecutive 90-day period, as part of the GetGreen program. The maximum incentive for the 90-day trial period is $70.00 in exchange for going online and logging information about your new commute. After the 90-day trial period in the GetGreen program, participants are automatically enrolled in the ongoing CommuterClub program. Another program offered through the CommuterClub program is Emergency Ride Home that allows participants a free ride home when an emergency arises. This program covers emergencies, up to five (5) times per year, due to a sickness while at work or unexpected overtime.

Greyhound operates intercity bus service. Daily service including weekends between Birmingham and Montgomery was added after the *Gulf Breeze* service was discontinued. Greyhound provides four (4) round-trips per day: two in the AM and two in the PM time frame. The full one-way trip from Birmingham to Montgomery takes 1 hour and 40 minutes to 1 hour and 50 minutes. Greyhound offers amenities including Wi-Fi service, power ports at each seat, extra legroom and on-board restrooms on all of its newer buses. However, these amenities besides the on-board restrooms are presently not offered on the bus trips between Birmingham and Montgomery. TABLE 5 shows the schedule for Greyhound (as of August 2013).

TABLE 5 – Greyhound Bus Schedule (August 2013)

DEPARTURE CITY	DEPARTURE TIME	ARRIVAL CITY	ARRIVAL TIME
Birmingham	2:35 AM	Montgomery	4:15 AM
Montgomery	5:00 AM	Birmingham	6:40 AM
Birmingham	7:25 AM	Montgomery	9:15 AM
Montgomery	10:15 AM	Birmingham	11:55 AM
Birmingham	1:15 PM	Montgomery	2:55 PM
Montgomery	5:00 PM	Birmingham	6:40 PM
Birmingham	8:55 PM	Montgomery	10:35 PM
Montgomery	9:35 PM	Birmingham	11:15 PM

SOURCE: WWW.GREYHOUND.COM

3.5.2 Birmingham Transit Service

The Birmingham-Jefferson County Transit Authority (BJCTA) is responsible for providing fixed route and paratransit (demand response service) in the City of Birmingham and Jefferson County. The BJCTA currently operates 109 buses on 38 routes while covering almost 200 square miles. Annual ridership and bus-miles exceed 3.5 million. This includes providing bus service to downtown Birmingham and to the New Birmingham Intermodal Transportation Terminal (a new transit hub that will serve Greyhound, Amtrak and BJCTA). Fixed route service is offered Monday through Friday between 5:00 AM and 9:00 PM, and Saturday between 5:00 AM and 12:30 AM. No service is offered on Sundays.

3.5.3 Montgomery Transit Service

The Montgomery Area Transit Service (M) provides fixed route and paratransit services within the City of Montgomery. The fixed route system averages 4,500 daily trips, which is more than 1 million trips annually. The M runs 34 buses on 16 fixed routes Monday through Saturday between the hours of 5:00 AM and 9:30 PM. A major transit transfer center and parking structure is located next to the historic rail depot in downtown Montgomery. The co-location of these facilities would enhance the ability of rail patrons to reach their ultimate destination.

3.6 Demographic

Increases in population and employment are forecasted for almost all the proposed rail station locations with the exception of Birmingham, which is expecting decreases in both. In Calera, population is projected to increase by 103% and employment will increase by 254% by 2040. The cities of Pelham, Alabaster and Elmore are expecting significant increases in population and employment as well. TABLE 6 presents demographic statistics for all the Transportation Analysis Zones located within a five-mile radius of each proposed rail station by Alternative.

TABLE 6 – Demographics within 5 Miles of Proposed Rail Station

ALTERNATIVE	PROPOSED RAIL STATION	2010 TOTAL POPULATION (ALL TAZs)	2040 TOTAL POPULATION (ALL TAZs)	CHANGE IN TOTAL POPULATION	2010 TOTAL EMPLOYMENT (ALL TAZs)	2040 TOTAL EMPLOYMENT (ALL TAZs)	CHANGE IN TOTAL EMPLOYMENT
1, 2, 3 & 4	Birmingham	198,744	181,116	-9%	211,472	199,248	-6%
3	Hoover	96,006	118,147	23%	47,079	57,453	22%
3	Pelham/ Alabaster	82,395	140,186	70%	34,297	55,651	62%
3	Calera	20,327	41,425	103%	5,762	20,380	254%
ALTERNATIVE	PROPOSED RAIL STATION	2005 TOTAL POPULATION (ALL TAZs)	2035 TOTAL POPULATION (ALL TAZs)	CHANGE IN TOTAL POPULATION	2005 TOTAL EMPLOYMENT (ALL TAZs)	2035 TOTAL EMPLOYMENT (ALL TAZs)	CHANGE IN TOTAL EMPLOYMENT
3	Elmore	27,751	43,896	58%	8,917	15,352	72%
1, 2, 3 & 4	Montgomery	144,061	152,326	6%	111,374	142,974	28%

SOURCE: REGIONAL PLANNING COMMISSION OF GREATER BIRMINGHAM AND CITY OF MONTGOMERY DEPARTMENT OF PLANNING

3.7 Land Use

The CSXT rail corridor contains a variety of land uses stretching from downtown Birmingham to downtown Montgomery. The most prevalent existing land use in the corridor is forest, which comprises nearly 38% of the total corridor. Other significant existing land uses include developed and agriculture land, comprising 24% and 26% of the total corridor land uses, respectively.

Those locations within the corridor that have the potential to generate ridership based on land use have been identified as activity centers and are being proposed as sites for rail stations. Furthermore, these locations that have been identified throughout the corridor will serve both commuter and intercity rail Alternatives (1, 2, 3 and 4). The following is a summary of the land use within a mile of each proposed rail station site.

TABLE 7 – Land Use Near Proposed Rail Stations

ALTERNATIVE	PROPOSED RAIL STATION	AGRICULTURE	DEVELOPED	FOREST	NON-FOREST	OPEN WATER	WETLAND
1, 2, 3 & 4	Birmingham	0%	100%	0%	0%	0%	0%
3	Hoover	2%	13%	84%	0%	1%	0%
3	Pelham/ Alabaster	2%	22%	75%	1%	0%	0%
3	Calera	8%	13%	1%	78%	0%	0%
3	Elmore	32%	12%	11%	38%	2%	5%
1, 2, 3 & 4	Montgomery	1%	36%	1%	2%	58%	2%

SOURCE: REGIONAL PLANNING COMMISSION OF GREATER BIRMINGHAM AND CITY OF MONTGOMERY DEPARTMENT OF PLANNING

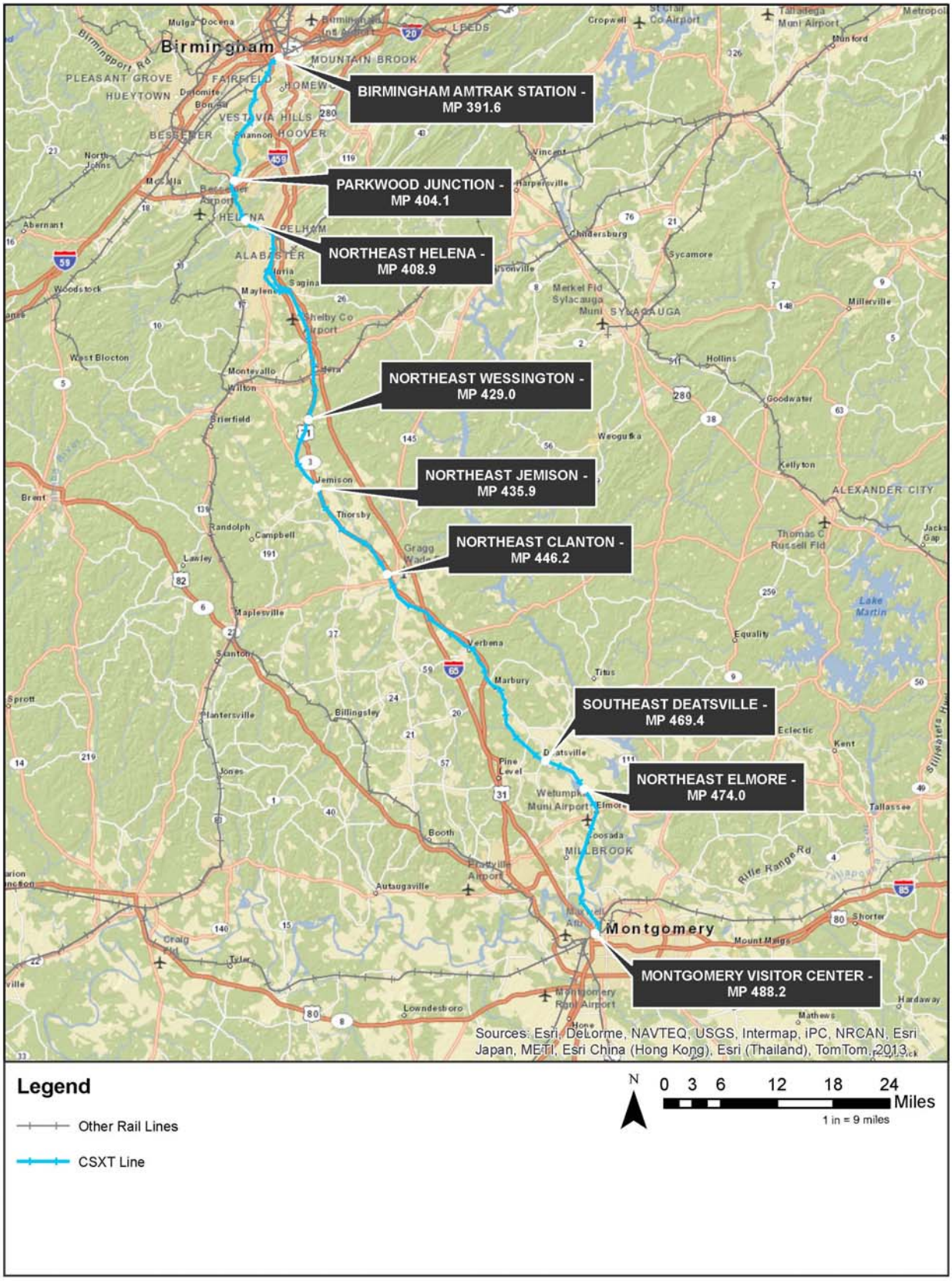
Additional major activity centers within the corridor, or located outside the two-mile radius, include the University of Alabama at Birmingham, Heart of Dixie Railroad Museum, City of Wetumpka, City of Millbrook, City of Prattville, and Maxwell-Gunter Air Force Base.

SECTION 4: ALTERNATIVE DEVELOPMENT – CONCEPT PLAN

4.1 Development of Alternatives

CSX Transportation (CSXT) owns the existing rail corridor under consideration. The rail corridor extends from the existing Birmingham Amtrak Station at Milepost (MP) 391.6 to a proposed station at the Montgomery Visitor Center at MP 488.2 (96.6 miles). The CSXT corridor consists of two main tracks from Birmingham south to Parkwood Junction at MP 404.1. South of Parkwood, the corridor consists of a single main track with passing sidings. In Montgomery, two main tracks extend from MP 488.1 near Coosa Street through the limits of the proposed Montgomery passenger station. The project limits include three (3) CSXT Subdivisions: Boyles Terminal, S&NA South, and M&M. The current maximum authorized speed on the corridor is 60 mph for freight trains. The Amtrak Crescent currently operates on a short segment north of the connection with Norfolk Southern at 13th Street in Birmingham at MP 392.1; no passenger trains currently operate on the CSXT corridor south of this point. A map of the rail corridor is shown in FIGURE 22.

FIGURE 22 – CSXT Rail Corridor



The development of alternatives for this project was prepared using data and other information provided by ADECA and from publicly available sources. CSXT was contacted as part of this project but CSXT did not provide information relative to their corridor infrastructure or train operations. The proposed track and signal improvements that have been identified for the project alternatives have been based on assumptions for capacity improvements that CSXT may require to maintain their existing and projected freight traffic. HDR has identified these potential capacity improvements by using past experience on similar passenger projects.

As this project progresses to more advanced planning and design phase, CSXT will need to be fully engaged so that they can work with ADECA to accurately identify the capacity improvements that will be required to support proposed passenger service on this corridor. It is expected that CSXT will require completion of a capacity analysis using Rail Traffic Controller (RTC) software that will simulate current and proposed freight train operations, as well as the proposed passenger service alternates. RTC will be used to recommend potential capacity improvements such that CSXT freight train operations are not adversely impacted by the proposed passenger service. For this feasibility study, HDR did not perform an RTC simulation or similar operational analysis.

Working closely with ADECA and the project sponsors, the Project Team developed the following four (4) intercity rail alternatives for the corridor.

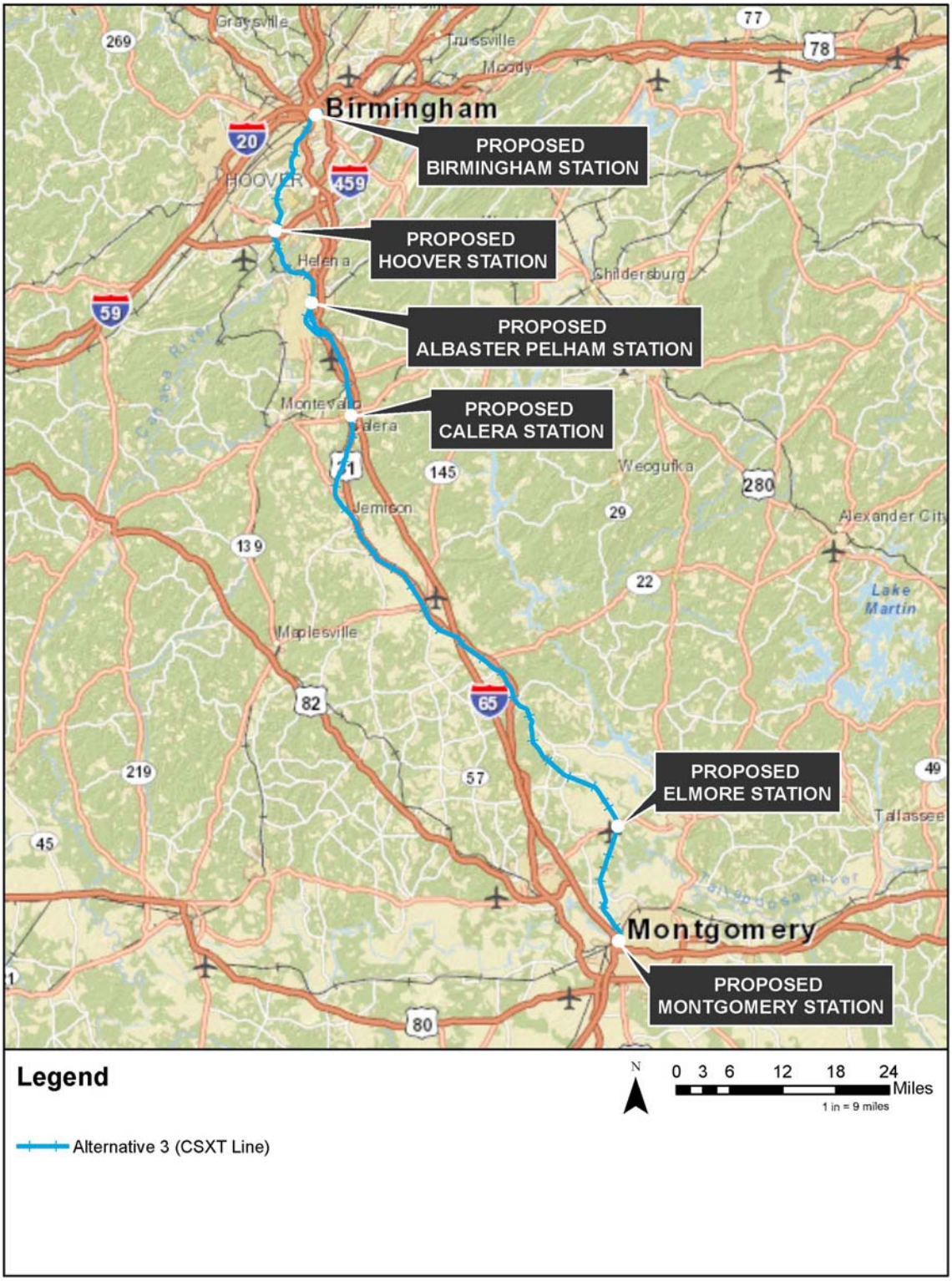
- ALTERNATIVE 1: Restore the original Gulf Breeze service on the CSXT line between Birmingham and Montgomery, with one (1) train trip daily in each direction.
- ALTERNATIVE 2: Improved intercity train service between Birmingham and Montgomery on the CSXT line, with three (3) trips daily in each direction.
- ALTERNATIVE 3: Improved intercity train service between Birmingham and Montgomery on the CSXT line and commuter rail service to Birmingham. The intercity train service would provide three (3) trips daily in each direction with stops in Hoover, Pelham-Alabaster, Calera and Elmore. Peak period commuter rail service would be operated between Calera and Birmingham with stops at Hoover and Pelham-Alabaster.
- ALTERNATIVE 4: Non-stop, high-speed intercity service in the I-65 corridor. This alternative would include three (3) trips daily in each direction.

4.2 Potential Station Locations

The Project Team conducted an evaluation of station target areas for the intercity passenger rail service. The Project Team characterized and assessed potential station target areas based on a set of evaluation criteria which included: potential station boardings, population and employment projections, existing land use, connectivity with existing and planned transportation systems, and proximity to major activity centers.

The map in FIGURE 23 identifies the potential station locations that are described in the following sections.

FIGURE 23 – Potential Train Stations for Alternative 3



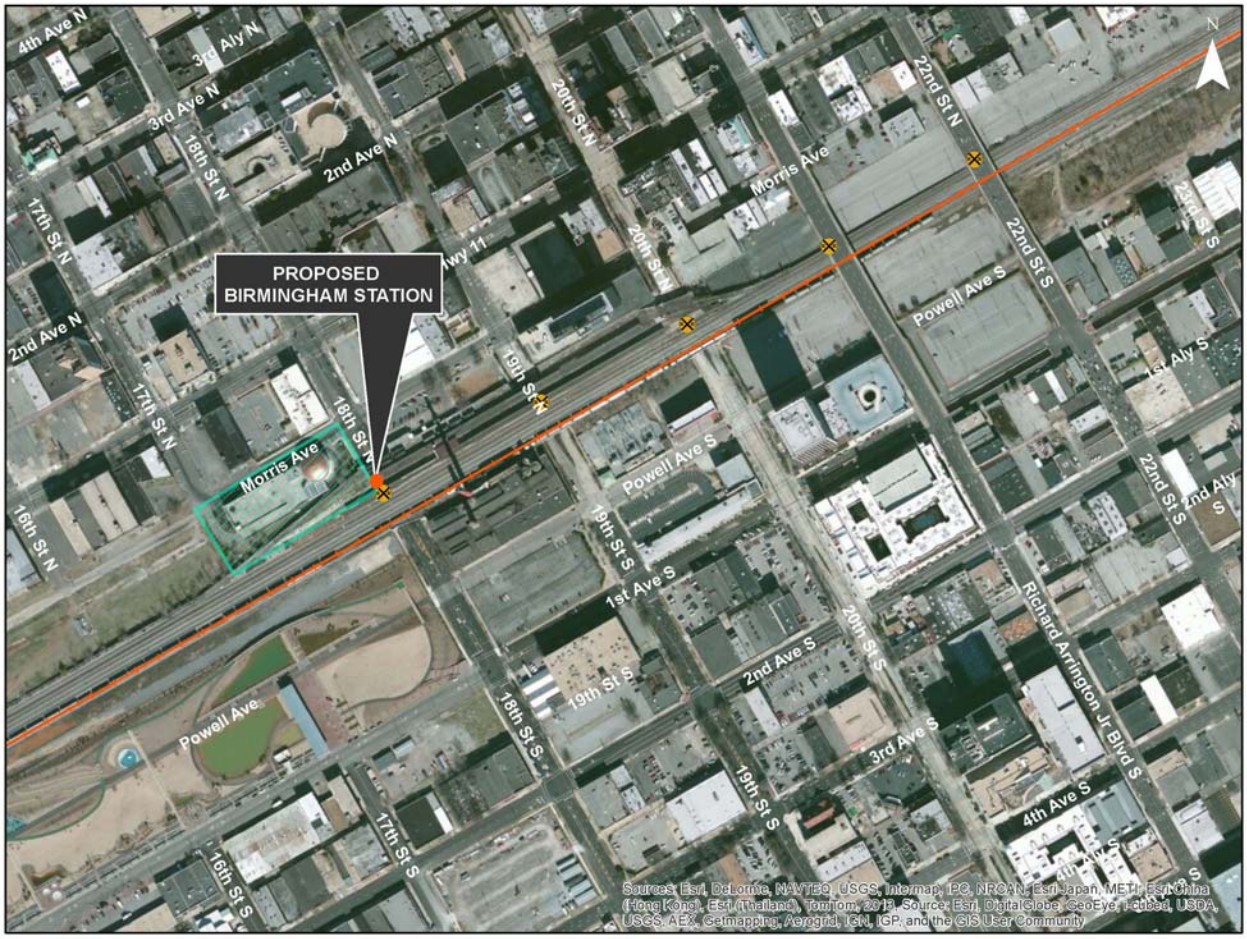
4.2.1 Proposed Birmingham Station

FIGURE 24 – New Birmingham Intermodal Transportation Terminal Picture

The Birmingham Station would be located at the planned $30 million intermodal transportation terminal (featured in FIGURE 24). Anticipated construction is to begin in FY2014, and is being financed by federal (80%) and state (20%) dollars. This station will serve as a hub for customers riding on Amtrak, Greyhound and Birmingham-Jefferson County Transit Authority (BJCTA). The station will feature a 4,700 square-foot waiting room, 60-foot message board that will announce arrivals and departures, and a new parking lot with "panic" call station. The new Birmingham Intermodal Transportation Terminal will replace the Birmingham Central Station and the Birmingham-Jefferson County Transit Authority building currently located at 1735 Morris Avenue in downtown Birmingham.

The Birmingham Station would serve the intercity and commuter rail terminal for all project alternatives. Rail customers utilizing the new train service can connect to other transit services (BJCTA) or other modes of travel in Birmingham. FIGURE 25 features a map of the new station location.

FIGURE 25 – New Birmingham Intermodal Transportation Terminal Map



4.2.2 Proposed Hoover Station

The Hoover Station has been proposed for Alternative 3 because it would be part of the commuter rail system around Birmingham, and would be served by both intercity and commuter trains. The proposed station location is near the intersection of John Hawkins Parkway and Edna Road/Ross Bridge Parkway (behind the Walgreens) in FIGURE 26.

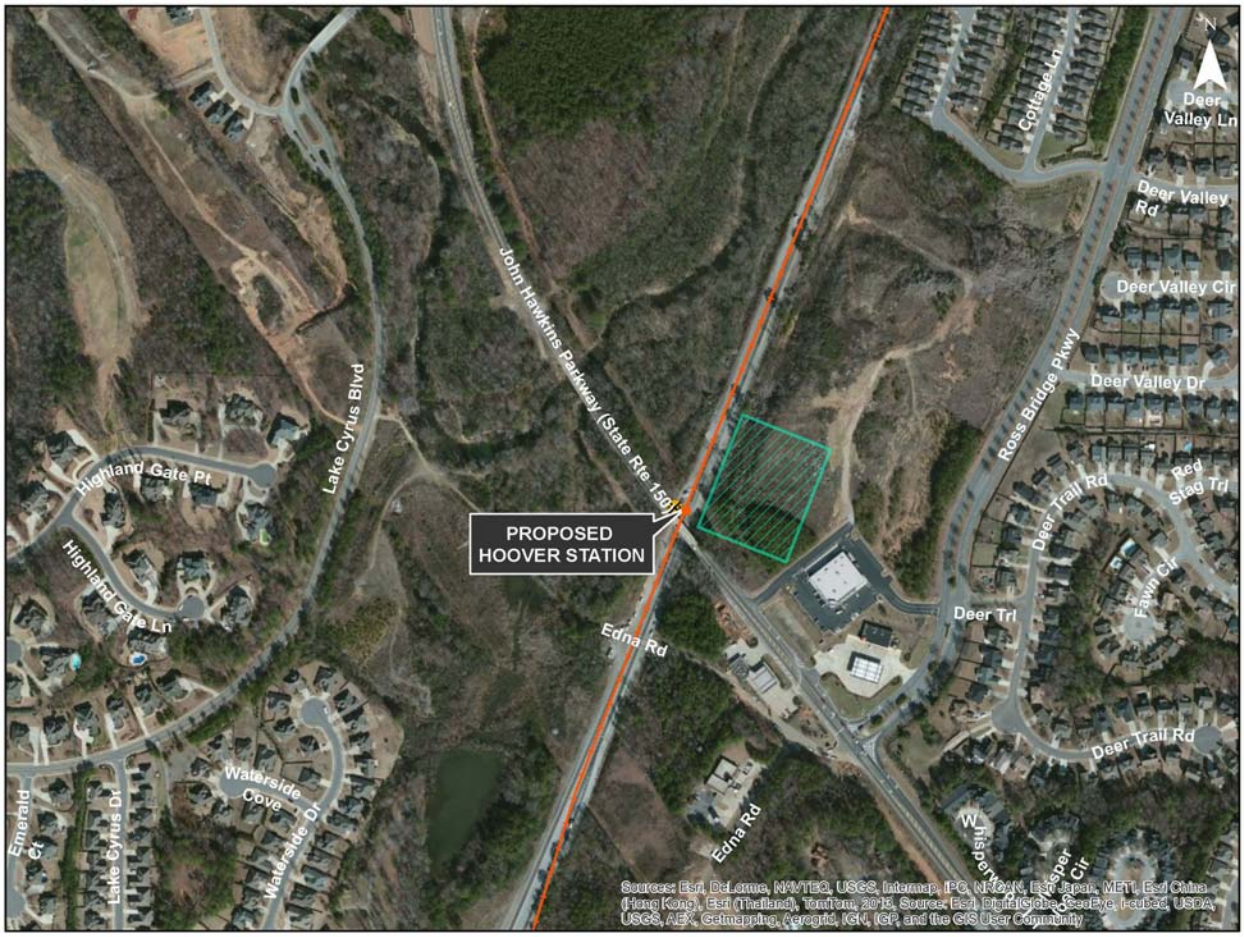
As of 2010, the population was 87,998 in Hoover/Vestavia Hills area (District 19). The projected population growth for this area is about 2.7% by FY 2040 (90,361). The residential development is also expected to increase by 3.9% to 41,777 housing units.

The projected employment for District 19 will increase by 5.8% from 49,059 (2010) to nearly 51,898 (2040).

The adjacent land uses near the proposed Hoover Station is a gas station (BP) directly south of the site. Residential housing and a nearby elementary school (Deer Valley Elementary School) also surround the proposed station location. A map of the proposed Hoover Station location is shown in FIGURE 27.

FIGURE 26 – Proposed Hoover Station Picture

FIGURE 27 – Proposed Hoover Station Map



4.2.3 Proposed Pelham/Alabaster Station

The Pelham/Alabaster Station would also serve the intercity and commuter rail routes for Alternative 3. This station is approximately 9 miles from the proposed Hoover Station and 22 miles from the Birmingham Station. The proposed station location is vacant commercial parcel shown in FIGURE 28 near the intersection of US 31 and Industrial Road.

FIGURE 28 – Proposed Pelham/Alabaster Station Picture

Pelham/Alabaster is one of the most rapidly growing areas in the Birmingham region. In 2010, the population was 48,470 in Pelham/Alabaster/Helena area (District S4). The projected population growth for this area is 42% by 2040 (68,850). The residential development is also expected to increase by 45.2% to 27,597 housing units. Employment is projected to increase by 39%, from 24,680 (2010) to nearly 34,304 (2040).

Commercial properties are situated adjacent to the proposed Pelham/Alabaster Station on US 31 while Shelby Medical Center is located just southeast of the proposed site. A map and picture of the proposed Pelham/Alabaster Station location are shown in FIGURE 29.

FIGURE 29 – Proposed Pelham/Alabaster Station Map

4.2.4 Proposed Calera Station

The Calera Station would also serve the intercity and commuter rail routes for Alternative 3. The station is about 12 miles from the proposed Alabaster/Pelham Station and approximately 33 miles from the Birmingham Station. The proposed station location is near the intersection of US 31 and 17th Avenue. Currently, the proposed site for Calera Station is an overflow parking lot owned by the Heart of Dixie Railroad Museum; this is the official state railroad museum for the State of Alabama. The proposed Calera Station would serve as a convenient connection to the museum. A picture of the location is featured in FIGURE 30.

As of 2010, the population was 16,496 in Southern Shelby area (District S8). The projected population growth for this area is 70.2% by 2040 (28,068). The proposed station is also near District S6. District S6 is projected to have population increases of about 63.7% by 2040 (23,892). The residential development is also expected to increase for both areas. District S8 will increase by 59.7% with 12,344 housing units by 2040, while District S6 housing is expected to increase by 67.3% (2040) with 9,380 units.

Furthermore, both District S6 and S8 are projected to experience employment increases. District S8 employment is projected to increase from about 5,810 (2010) to nearly 17,839 (2040), an increase of about 207%. Projected employment growth is 196.6% for District S6 by 2040 (14,408).

Residential housing surrounds the proposed station location with commercial properties located just west of the proposed site on US 31. FIGURE 31 shows a map of the proposed Calera Station location.

FIGURE 30 – Proposed Calera Station Picture

FIGURE 31 – Proposed Calera Station Map

4.2.5 Proposed Elmore Station

The Elmore Station would also serve the intercity rail route for Alternative 3. The station is about 12 miles from the Montgomery Union Station. The proposed station location (FIGURE 32) is near the intersection of Lucky Town Road and Highway 143 on Jackson Street and provides connections to the following communities: Wetumpka, less than 6 miles away; Millbrook, less than 7 miles away; and Prattville, less than 10 miles away. All of these communities are fast becoming "bedroom communities" (where commuters live) for the City of Montgomery.

FIGURE 32 – Proposed Elmore Station Picture

As of 2010, the population was 56,613 in Elmore County. The projected population growth for this area is 58.4% by 2035 (89,677). The residential development is also expected to increase by 32.7% from 22,700 (2005) to 33,713 (2035) housing units. Employment is projected to increase from about 16,315 (2005) to nearly 33,895 (2035), an increase of about 48.1%.

Residential housing surrounds the proposed station location with some commercial properties located on State Route 143. A map and picture of the proposed Elmore Station location are shown in FIGURE 33.

FIGURE 33 – Proposed Elmore Station Map

4.2.6 Proposed Montgomery Station

The Montgomery Union Station opened on May 6, 1898. At the time, it served over 40 daily passenger trains entering and leaving Montgomery, AL. The structure was designated a National Historic Landmark in 1976. In late 1999, Alabama DOT with a Transportation Enhancement Grant of $500,000 rehabilitated the structure. This was part of the $125 Million Montgomery Riverfront Development project. FIGURE 34 shows a picture of the restored Montgomery Union Station.

FIGURE 34 – Montgomery Union Station Picture

The Montgomery Union Station is located in downtown Montgomery and will serve the intercity rail options for all project alternatives. Rail customers utilizing the new train service can connect to other transit services including the MATS (Montgomery Area Transit Service) and a trolley service that serves downtown Montgomery. Furthermore, the station is located within walking distance to nearby businesses and attractions within downtown Montgomery in FIGURE 35.

FIGURE 35 – Montgomery Union Station Map

4.3 Types of Rail Vehicles

The Project Team evaluated Diesel Multiple Unit (DMU) and Push-Pull vehicles technologies to determine which type of passenger rail vehicles would be most appropriate for the Birmingham-Montgomery passenger rail system. This section analyzes and compares the different rail technologies (DMU vs. Push-Pull vehicles) that might be used in the rail corridor between Birmingham and Montgomery.

4.3.1 Diesel Multiple Unit (DMU)

A Diesel Multiple Unit (DMU) is a self-propelled train powered by on-board diesel engines. The diesel engines are combined in the carriage so that a DMU does not require a separate locomotive. DMU's are typically designed as either a single level or a bi-level unit and are primarily used for commuter and intercity service. DMUs can be operated singly or combined into trains with up to four units.

FIGURE 36 – SFRTA's DMU Demonstration Project

While DMU's are commonly used throughout the world, there are few DMUs in service in the United States. The Federal Railway Administration (FRA) has stringent safety requirements for passenger and commuter trains that share a trackway with freight trains. Non-FRA compliant DMU's can operate on track specifically for passenger rail but are prohibited on freight rail track unless the operations are separated by time of day and the FRA issues a waiver.

There are many manufacturers of DMU vehicles throughout the world. Currently, there are two rail car manufacturers that build a FRA compliant DMU including Stadtler Rail Group from Europe and the US, and US Railcar in Ohio. Stadler DMU vehicles are in operation for the Capital Metro Red Line in Austin, TX and the Denton County Transit Authority rail line in the Dallas-Fort Worth region.

DMU vehicles are popular for lightly used routes where operational flexibility is needed and operating conventional locomotives would not be economical. There are many advantages of DMU vehicles including the following:

- Offer operating flexibility - cars can be added or removed based on passenger demand
- Cost-effective when four (4) or fewer cars are in service
- Superior acceleration and deceleration capabilities
- Less vulnerable to vehicle outage due to distribution of propulsion
- Reduced construction costs due to no need for overhead catenary lines or electrified track

DMU's can experience a higher noise and vibration than a standard locomotive pulled car due to the engine being located within the vehicle.

4.3.2 Push-Pull Vehicles

The most common equipment used for commuter and intercity rail operations is push-pull trains (FIGURE 36). A push-pull train is operated by a locomotive at one end and an unpowered control car or another locomotive at the other end, with one or more coach cars between the cab car and locomotive. The train is operated by either the locomotive pulling the train in the direction of the destination, or pushing the train from behind, in which case the train is controlled by an engineer in the forward facing cab car. This allows for operation of the train in either direction, without physically turning the train around. Push-pull cab cars and coaches come in single-level or bi-level coaches.

FIGURE 37 – Music City Star Commuter Train

There are many benefits of push-pull vehicles

- Allows for quick turnaround at the end of the line because the train does not have to be physically turned around at the terminal; the train crew simply moves from the locomotive to the cab car
- Push-pull trains can be sized to meet the demand; trains can have from 1 to 12 cars.
- Push-pull locomotives, cab cars and coach cars are FRA-compliant and are readily available.

4.3.3 DMU vs. Push-Pull Technologies

Availability. At this time, an "off-the-shelf" FRA-compliant DMU that would be appropriate for use in the Alabama area has limited availability. Although both Stadler and a new manufacturer – US Railcar – have announced their intention to manufacture DMUs for the US market, the small size of any orders makes it uncertain when these vehicles will become readily available. Therefore, FRA-compliant push-pull vehicles are the most commonly used vehicle technology for most commuter and intercity rail alternatives under consideration. Used push-pull equipment could also be available, reducing overall initial costs.

***Flexibility*.** Both DMUs and push-pull trains offer the flexibility of sizing the train size to meet the demand. DMUs may be more efficient when demand is small, as DMUs can be operated singly or in pairs. Push-pull trains, which can link up to 12 cars, would have the ability to satisfy larger passenger demand.

***Passenger Amenities and Capacity*.** Both DMUs and push-pull cab and coach cars are typically equipped with comfortable seating and passenger amenities. The seated capacity of double-deck cab and coach cars is typically 130 to 150 passengers, respectively. Therefore, a three-car train (two coaches and one cab control car) would seat approximately 430 passengers.

4.4 Preliminary Service Schedule

The preliminary service schedules shown for Alternatives 1, 2 and 3 are based upon current maximum speeds data provided by ALDOT for the route and an estimate of improved speeds based on proposed infrastructure improvements for each alternative (refer to section 4.6). If the passenger rail service is actually restored to the corridor, a comprehensive review of operations and infrastructure will be required to determine actual running times and schedules.

ALTERNATIVE 1: Alternative 1 would restore the original Gulf Breeze service between Birmingham (BHM, 1735 Morris Avenue) and Montgomery (MGM, 300 Water Street) by offering daily train service. The non-stop service would offer 1 trip in each direction and feature comfortable carriages with Wi-Fi for passengers making the 2-hour trip. Travel markets served by the intercity train service would be excursion and pleasure trips as well as overnight business/work trips. A sample train schedule is featured in TABLE 8 for Alternative 1. Alternative 1 would feature significant track, signal and grade crossing improvements in Birmingham and the addition or extension of passing tracks on the main line (refer to section 4.6). The one-way travel time for Alternative 1 is assumed to be similar to travel times on the Gulf Breeze – about 2:00 (hours:minutes). (The Gulf Breeze, which was discontinued in 1995, had a scheduled time of 1:58 for southbound trips and 2:22 for northbound trips.) Currently, the City of Birmingham is served daily by the Crescent route. The Crescent train provides mid-day (AR: 11:50 AM – DP: 12:08 PM) service to the Birmingham Amtrak Station in the southbound and northbound direction (AR: 2:15 PM – DP: 2:24 PM). In order to have Alternative 1 provide transfer service to the Crescent, especially in the southbound direction, further coordination is recommended with Amtrak.

TABLE 8 – Alternative 1 Intercity Train Schedule

DEPARTURE (Place/Time)	ARRIVAL (Place/Time)	TRAVEL TIME
BHM 10:00 AM	MGM 12:00 PM	02:00:00*
MGM 12:30 PM	BHM 2:30 PM	02:00:00*

* No stops

ALTERNATIVE 2: Alternative 2 would improve intercity train service between Birmingham and Montgomery by offering 3 non-stop trips daily in each direction. Alternative 2 would feature additional track, signal and grade crossing improvements on the main line. With the addition of these infrastructure improvements trains speeds would be increased and enroute delays would be reduced, resulting in a one-way travel time estimated to be about 1:45 to 1:50 (hours:minutes). Travel markets served by the intercity train service would include same day business/work trips, pleasure trips, and overnight business/work trips. A sample train schedule for Alternative 2 is shown in TABLE 9.

TABLE 9 – Alternative 2 Intercity Train Schedule

DEPARTURE (Place/Time)	ARRIVAL (Place/Time)	TRAVEL TIME
BHM 8:00 AM	MGM 9:45 AM	01:45:00*
MGM 10:00 AM	BHM 11:45 AM	01:45:00*
BHM 12:00 PM	MGM 1:45 PM	01:45:00*
MGM 2:00 PM	BHM 3:45 PM	01:45:00*
BHM 4:00 PM	MGM 5:45 PM	01:45:00*
MGM 6:00 PM	BHM 7:45 PM	01:45:00*

* No stops

ALTERNATIVE 3: Alternative 3 would improve intercity train service between Birmingham and Montgomery to 3 daily train trips in each direction (same as Alternative 2), and add peak period commuter rail service for Birmingham. The intercity train service would also serve stops in Hoover, Pelham-Alabaster, Calera and Elmore. Alternative 3 would feature additional track, signal and grade crossing improvements on the main line over and above the improvements proposed in Alternative 2. With the addition of these infrastructure improvements trains speeds would be increased and enroute delays would be reduced, resulting in a one-way travel time estimated to be about 1:45 (hours:minutes). The commuter rail service will provide service to Birmingham's city center and to the suburban communities (Hoover, Pelham-Alabaster and Calera) south of Birmingham during peak travel periods (Monday-Friday). The estimated one-way travel time for commuter rail trips between Calera and Birmingham is about 0:45 (hours:minutes). The following travel markets would be served: commute trips in urban

centers, same day business/work trips (intercity), pleasure trips, and overnight business/work trips (intercity). Alterative 3 intercity and commuter train service are featured in TABLES 10 and 11.

TABLE 10 – Alternative 3 Intercity Train Schedule

DEPARTURE (Place/Time)	ARRIVAL (Place/Time)	TRAVEL TIME
BHM 8:00 AM	MGM 9:45 AM	01:45:00*
MGM 10:00 AM	BHM 11:45 AM	01:45:00*
BHM 12:00 PM	MGM 1:45 PM	01:45:00*
MGM 2:00 PM	BHM 3:45 PM	01:45:00*
BHM 4:00 PM	MGM 5:45 PM	01:45:00*
MGM 6:00 PM	BHM 7:45 PM	01:45:00*

* Stops in Hoover, Pelham-Alabaster, Calera and Elmore

TABLE 11 – Alternative 3 Commuter Train (AM & PM Peak) Schedule

DEPARTURE (Place/Time)	ARRIVAL (Place/Time)	TRAVEL TIME
CAL 7:00 AM	BHM 7:45 AM	00:45:00*
CAL 7:30 AM	BHM 8:15 AM	00:45:00*
CAL 8:00 AM	BHM 8:45 AM	00:45:00*
BHM 8:30 AM	CAL 9:15 AM	00:45:00*
BHM 9:00 AM	CAL 9:45 AM	00:45:00*
CAL 3:30 PM	BHM 4:15 PM	00:45:00*
CAL 4:00 PM	BHM 4:45 PM	00:45:00*
CAL 4:30 PM	BHM 5:45 PM	00:45:00*
BHM 4:30 PM	CAL 5:15 PM	00:45:00*
BHM 5:00 PM	CAL 5:45 PM	00:45:00*
BHM 5:30 PM	CAL 6:15 PM	00:45:00*

* Stops in Hoover and Pelham-Alabaster

ALTERNATIVE 4: Alternative 4 would introduce non-stop, high-speed intercity service in the I-65 corridor. This alternative would include 3 trips daily in each direction. Alternative 4 would require the construction of double-track adjacent to or in the median of I-65 between downtown Montgomery and downtown Birmingham. The estimated travel time is about 1:30 (hours:minutes). A sample train schedule for Alternative 4 is shown in TABLE 12.

TABLE 12 – Alternative 4 Intercity Train Schedule

DEPARTURE (Place/Time)	ARRIVAL (Place/Time)	TRAVEL TIME
BHM 8:00 AM	MGM 9:30 AM	01:30:00*
MGM 10:00 AM	BHM 11:30 AM	01:30:00*
BHM 12:00 PM	MGM 1:30 PM	01:30:00*
MGM 2:00 PM	BHM 3:30 PM	01:30:00*
BHM 4:00 PM	MGM 5:30 PM	01:30:00*
MGM 6:00 PM	BHM 7:30 PM	01:30:00*

* No stops

4.5 Operating Requirements

Operating requirements for each alternative were developed based on ridership estimates and data provided from conceptual engineering design concepts of the project. Operating requirements for each alternative are displayed in TABLE 13, below. Alternatives 1, 2 and 3 including I-65 Alternative have differences in route miles and run times; thus, the operating requirements will vary between the Alternatives based on car-miles, car-hours, train-hours, and peak trains.

TABLE 13 – Summary of Operating Requirements

ALTERNATIVE	1-Way Route Miles	1-Way Run Time	Daily Train Trips	Annual Revenue		Lay Over	Cycle Time	Trains		
				Train Miles	Train-Hours			Peak	Base	Evening
Alternative 1	96.6	2:00	2	49,073	1,270	0:30	2:30	0	1	0
Alternative 2	96.6	1:45	6	147,218	3,048	0:15	2:00	1	1	1
Alternative 3	96.6 33.0	1:45 0:45	6 12	247,802	6,096	0:15 0:15	2:00 1:00	4	1	1
Alternative 4	86.6	1:30	6	137,160	3,048	0:30	2:00	1	1	1

1. Weekday service only; 254 days per year.

4.6 Infrastructure Improvements

To accommodate passenger rail service on the CSXT rail corridor between Birmingham and Montgomery, several infrastructure improvements were evaluated to facilitate the four (4) potential Alternatives. In addition to the track way and station improvements, the rail vehicles will need to be maintained and housed in a central location, most probably in Birmingham. Operations and maintenance requirements could also be contracted with a separate entity with facilities to maintain and store the equipment. Further information including capital and operating cost estimates are provided in subsequent sections focused on the rail improvements necessary for implementation of each Alternative.

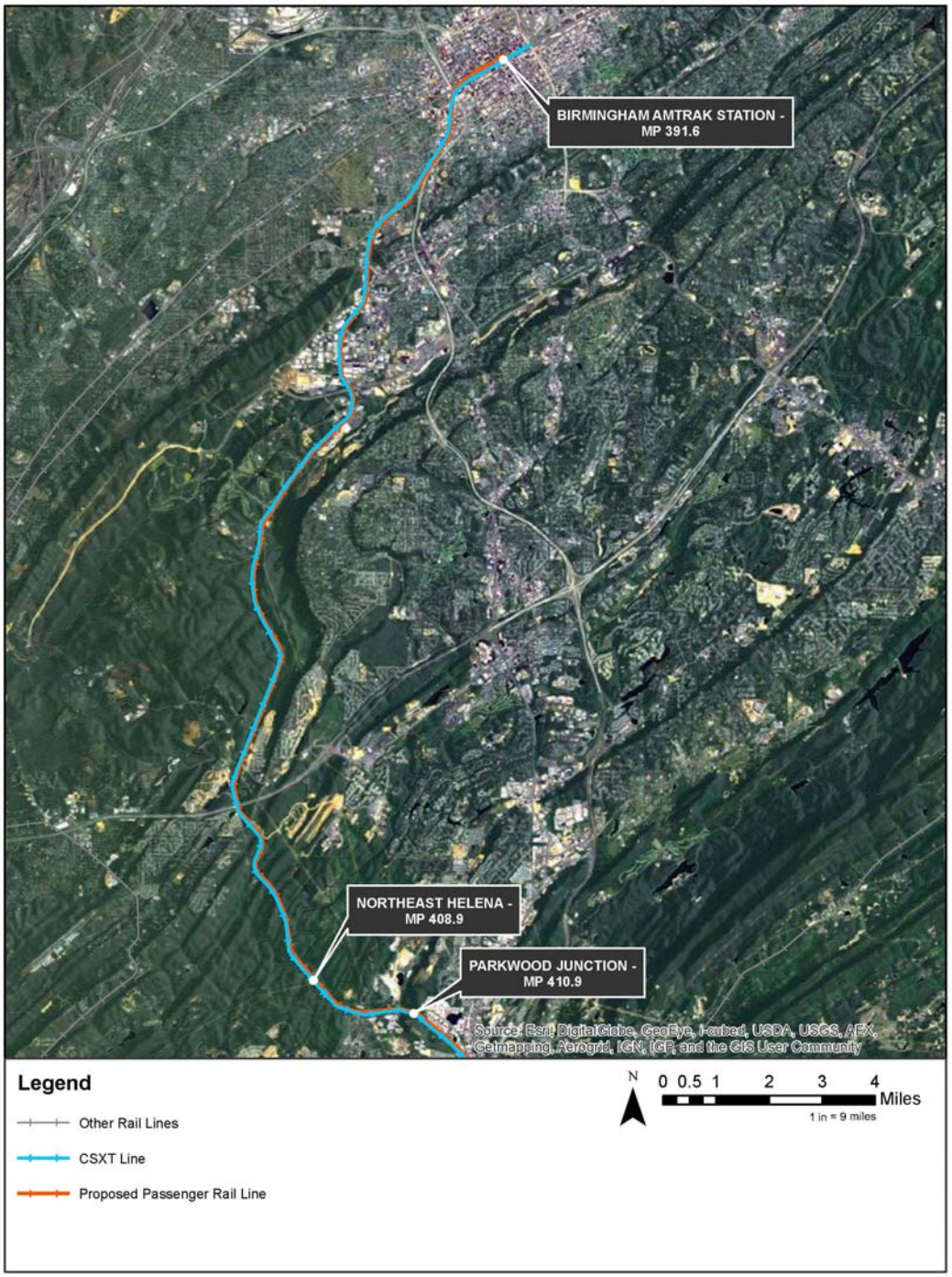
4.6.1 Alternative 1

Alternative 1 includes the introduction of a single round trip passenger train per day. The passenger service would originate in Birmingham and then operate to Montgomery with no intermediate station stops. After a layover period at Montgomery, the passenger train would then return to Birmingham.

The assumed capacity improvements for Alternative 1, described below, would include constructing a series of passing sidings that will be in excess of 2 miles in length. Existing sidings will be lengthened and new sidings will be constructed which would give CSXT more flexibility to dispatch freight and passenger trains. See FIGURE 38 for a line drawing of Alternate 1.

The CSXT Lineville Subdivision currently breaks off from the CSXT corridor at Parkwood Junction at MP 410.9. It is proposed to use a portion of the Lineville Subdivision single main track as essentially a second main track between Parkwood and a new connection that would be constructed at Helena at about MP 408.9. FIGURE 37 shows the proposed second track between Parkwood Junction and Birmingham Amtrak Station.

FIGURE 38 – Proposed Second Main Track



A second connection would also be built to the Lineville Subdivision at Pelham at MP 410.9. These connections would give CSXT much greater flexibility for dispatching both freight and passenger trains from Pelham north to Birmingham. Two (2) new sidings and extensions to four (4) existing sidings are also proposed. A new lead track will be constructed beginning at the south end of the CSXT Montgomery Yard. This third track would then become a new station track adjacent to the platform at the Montgomery

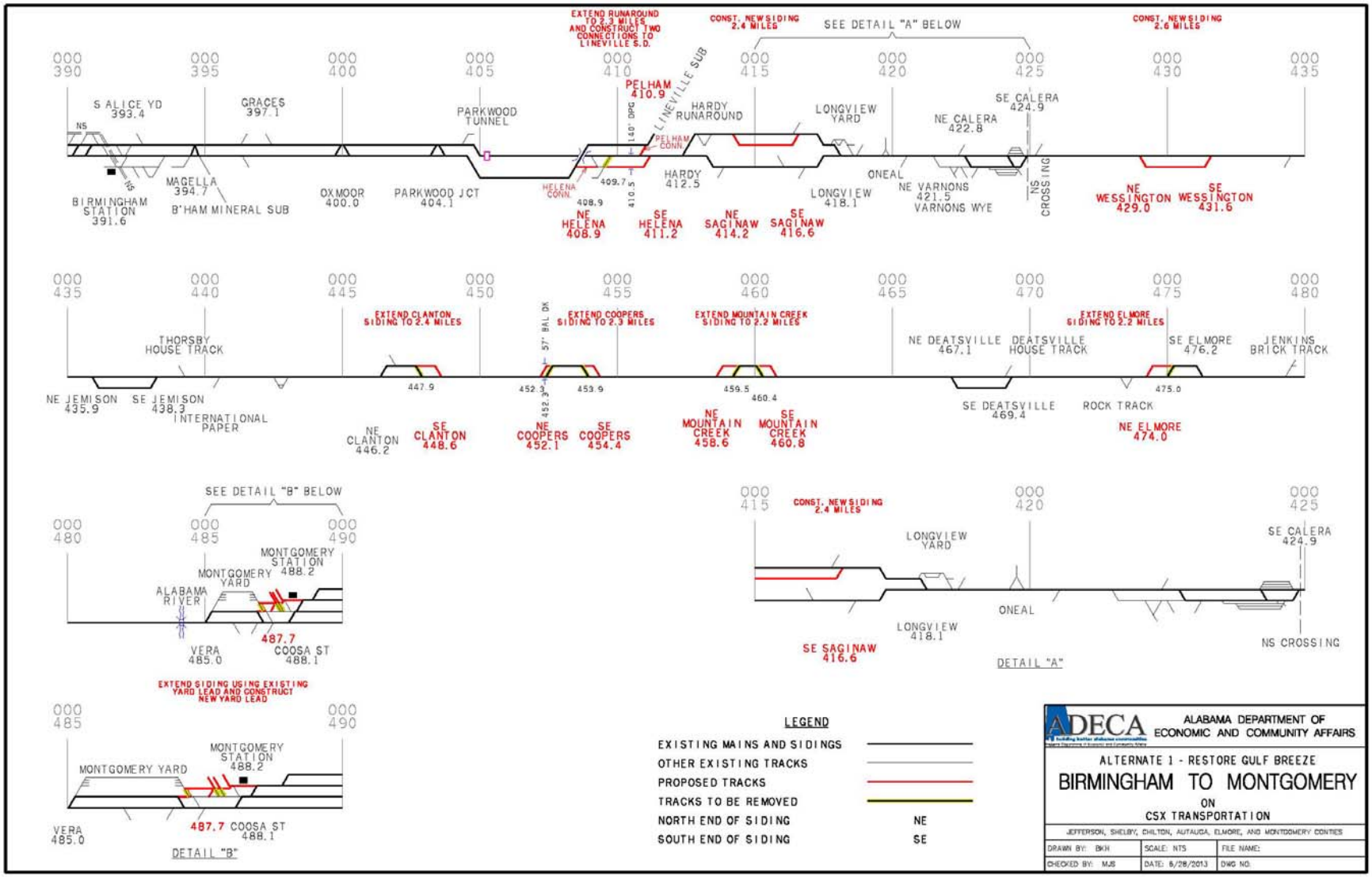
Visitor Center. This track would be located south and outside of the former train shed structure, with the platform being under the train shed.

For this feasibility study, each existing horizontal curve on the CSXT corridor was evaluated for improvements to allow higher speeds. It is assumed that all curves on the route will be surfaced and adjusted to ensure that the proper super-elevation is provided to allow passenger trains to operate at higher maximum speeds not to exceed 79 mph. Minor curve "flattening" has been assumed to reduce the degree of curve wherever practical and to provide the longer spiral lengths necessary to increase the super-elevation to allow higher passenger train speeds. Several curves were determined unfeasible for improvement to 79 mph operations due to right-of-way requirements and other physical constraints; these curves would accommodate maximum speeds less than 79 mph.

One new highway/railroad at-grade crossing is proposed for the single track Pelham connection; this crossing would be equipped with new automatic warning devices (AWD's) consisting of flashers, gates and bells. A second track would be added at 3 single track crossing locations that are not currently equipped with AWD's; new AWD's will be provided at these three (3) locations. New AWD's will be provided at five (5) single-track crossing locations that currently have AWD's where a second track will be added. The timing for the existing AWD's at 41 other crossing locations will be adjusted to allow higher train speeds. No new grade separations are proposed.

New precast concrete trestles (PCT's) would be constructed at two (2) locations adjacent to existing PCT bridges where a second track will be added. One (1) steel bridge that formerly had two (2) tracks would be rehabilitated to allow a second track to be added back to the bridge.

FIGURE 39 – Alternative 1 Infrastructure Improvements



SOURCE: HDR ENGINEERING, INC., 2013

4.6.2 Alternative 2

Alternative 2 includes the introduction of three (3) round trip passenger trains per day. The passenger service would originate in Birmingham and then operate to Montgomery with no intermediate station stops. After layover periods at Montgomery, the passenger trains would then return to Birmingham.

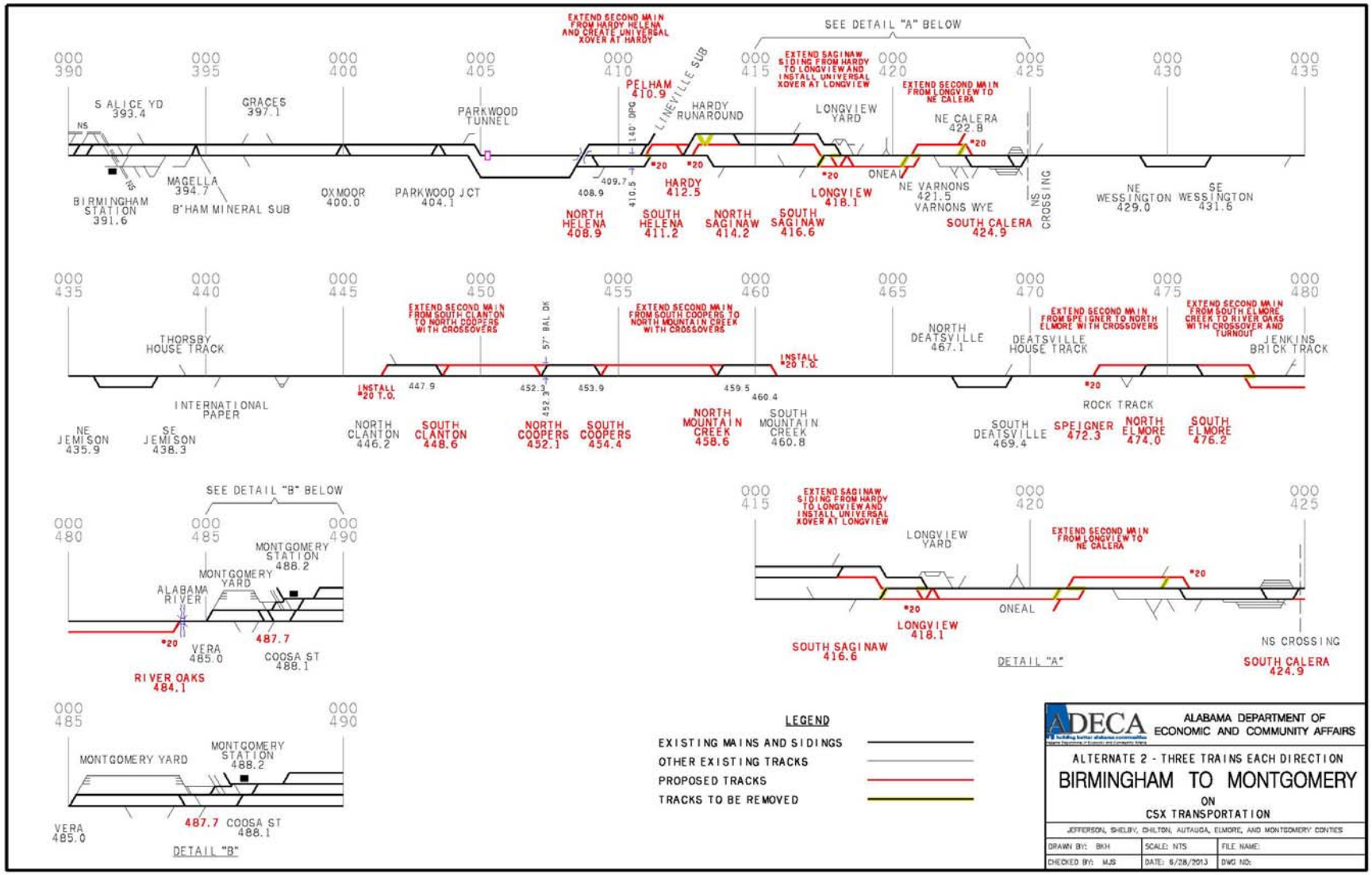
Alternative 2 capacity improvements are assumed to also include all improvements described above for Alternative 1. The assumed capacity improvement work for Alternative 2 will also include lengthening of existing sidings. See FIGURE 40 for Alternate 2.

The siding at Saginaw would be extended to provide approximately 10.3 miles of double main line track. The sidings at Clanton, Coopers and Mountain Creek would be extended and connected to provide a 14.6-mile segment of double main line track. The siding at Elmore would be extended to provide approximately 11.8 miles of double main line track.

New AWD's will be provided at 14 single-track crossing locations that currently have AWD's where a second track will be added. No new grade separations are proposed.

New precast concrete trestles (PCT's) will be constructed at 18 locations adjacent to existing PCT bridges where a second track will be added. Two (2) new steel bridges will be constructed adjacent to existing single-track steel bridges where a second track will be added.

FIGURE 40 – Alternative 2 Infrastructure Improvements



SOURCE: HDR ENGINEERING, INC., 2013

4.6.3 Alternative 3

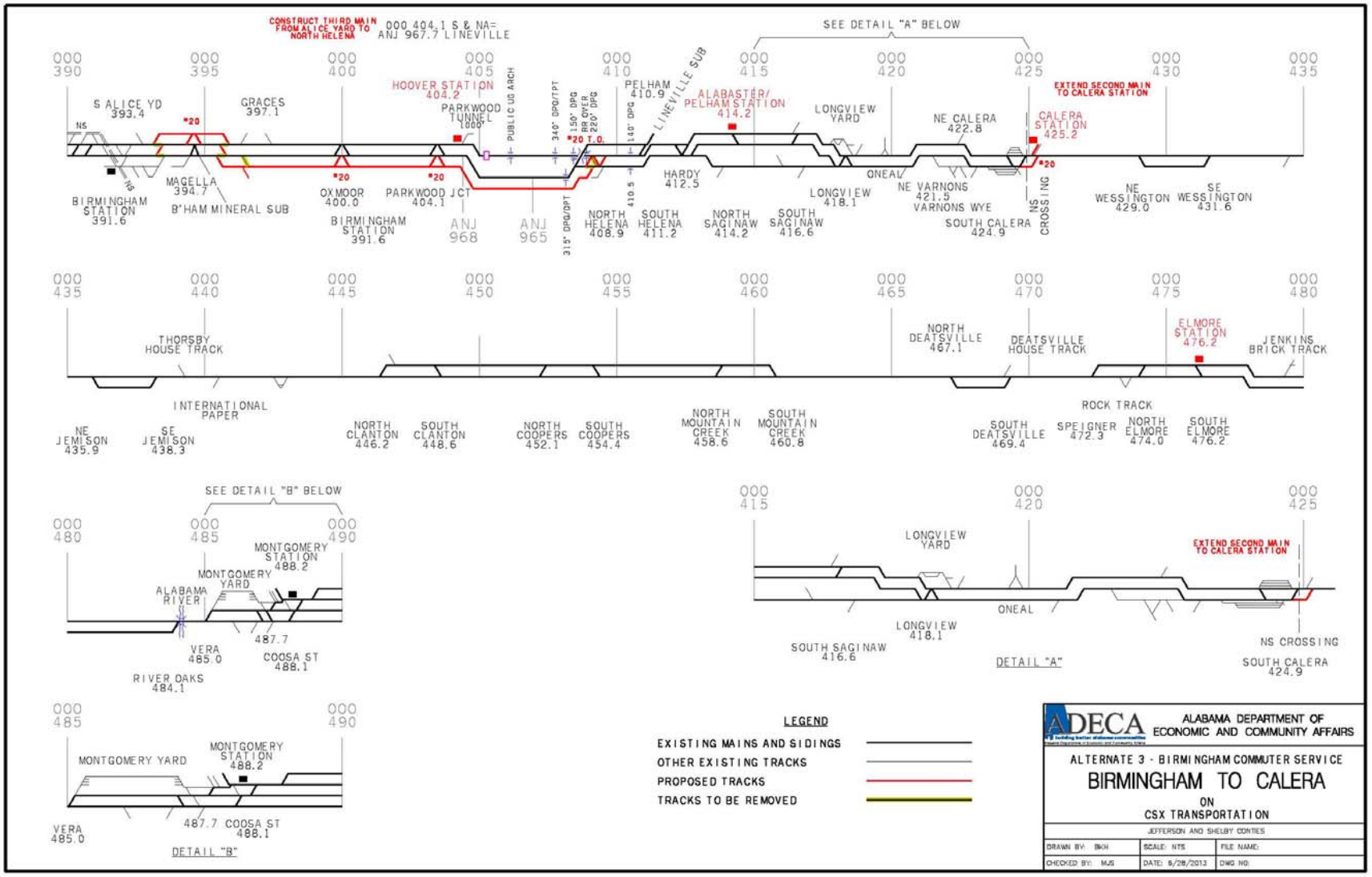
Alternative 3 includes the introduction of three (3) round trip passenger trains per day between Montgomery and Birmingham, with intermediate stops at Hoover, Alabaster, Calera and Elmore. Alternative 3 also includes the introduction of commuter service in the Birmingham metro area. This commuter service will include three (3) morning round-trips and three (3) afternoon round-trips. Commuter trains will stop at Birmingham, Hoover, Alabaster, and Calera.

For purposes of this discussion, it is assumed that the Alternative 1 and Alternative 2 capacity improvements would have already been constructed prior to implementing the Alternative 3 improvements. The assumed capacity improvement work for Alternative 3 would primarily consist of adding a third main line track for a distance of 7.3 miles between the Birmingham station and Helena. A second main line track would also be added for a distance of 0.3 miles near Calera. See FIGURE 41 for Alternate 3. No track changes will be made at the Montgomery station area.

New AWD's would be provided at five (5) single-track crossing locations that currently have AWD's where a second track will be added. No new grade separations are proposed.

New precast concrete trestles (PCT's) would be constructed at 18 locations adjacent to existing PCT bridges where a second track will be added. Three (3) new steel bridges would be constructed adjacent to existing single-track steel bridges where a second track will be added.

FIGURE 41 – Alternative 3 Infrastructure Improvements



SOURCE: HDR ENGINEERING, INC., 2013

4.6.4 Alternative 4

Alternative 4 includes the introduction of three (3) round trip passenger trains per day. The passenger service would originate in Birmingham and then operate to Montgomery with no intermediate station stops. After layover periods at Montgomery, the passenger trains would then return to Birmingham.

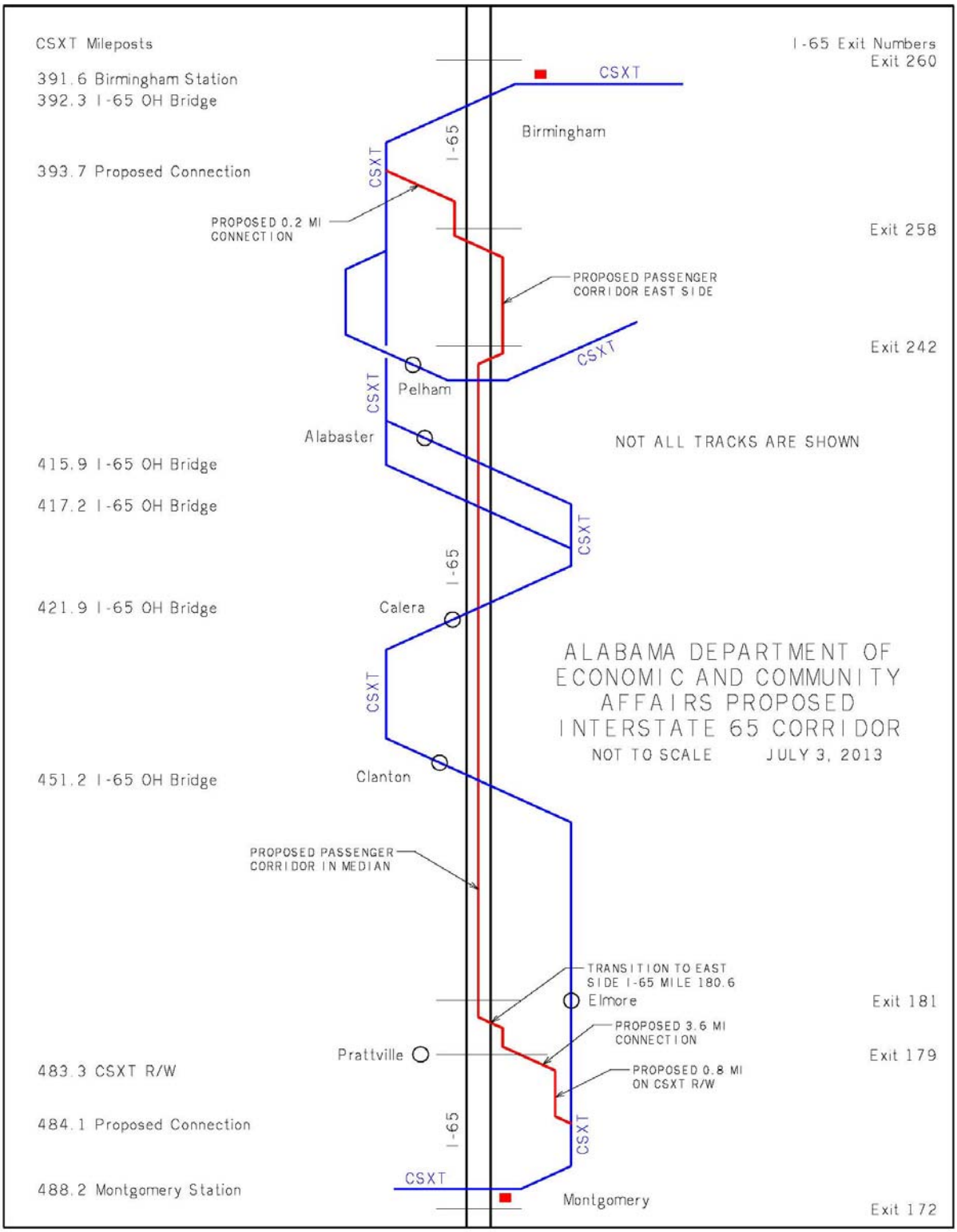
The assumed capacity improvement work for Alternative 4 will primarily consist of adding a main line track for a distance of 86.6 miles between the Birmingham station and Montgomery. Furthermore, all existing curves (total of 11.8 miles) on the route would be surfaced and adjusted to ensure that the proper super-elevation is provided to allow passenger trains to operate at higher maximum speeds. See FIGURE 41 for Alternate 4.

Fifteen (15) new highway/railroad at-grade crossings are proposed for the new track. Fourteen (14) of these crossings are new crossings on the proposed south connection while the remaining location is an existing crossing on CSXT. The CSXT crossing would receive an additional track and require relocating the existing signal. New signals would be installed at seven (7) of the new crossings. These crossings would be equipped with new automatic warning devices AWD's.

There are 30 locations within the I-65 corridor, the south connection and the CSXT corridor where existing highway or railroad bridges cross over streams, roadways or railroads. New precast concrete ballast deck structures would be constructed at four (4) locations while steel concentration would be used for the remaining structures.

Roadway bridges cross over the I-65 corridor at 35 locations. It is proposed that the majority of the new passenger main rail line would be constructed in the median of I-65 where possible. All of the existing overpasses in this corridor have insufficient vertical clearances for passenger rail equipment. In addition, center piers in the median eliminate the ability for the track to pass under the highway bridges. Where the new passenger main runs along the east or west side of I-65 overhead clearances and the presence of exit ramps also eliminates the ability to stay at grade while passing these locations. Therefore, the new passenger main rail line must fly-over these overpasses. For the feasibility study, a standard fly-over was developed for these locations at height of approximately 30 feet.

FIGURE 42 – Alternative 4 Infrastructure Improvements



SOURCE: HDR ENGINEERING, INC., 2013

SECTION 5: DEMAND AND REVENUE ESTIMATION

5.1 Ridership Methodology

The ridership estimation methodology for the Birmingham to Montgomery Commuter Rail Feasibility study was based on a sketch planning model that uses the Alabama Statewide Travel model (AL STM) data, the Greater Birmingham MPO regional travel model data, the Montgomery MPO regional travel model data, and empirical commuter rail and intercity rail ridership data gathered from currently functioning rail systems in the U.S. The methodology was implemented in two (2) key steps.

In **Step 1**, the total trip demand (person trips) in the study corridor between the cities of Birmingham and Montgomery was estimated using the output data from all the three (3) travel demand models listed above. First, trips in the corridor were broadly divided into two (2) categories: those that are greater than 50 miles (long distance intercity trips) and those shorter than 50 miles (short distance commuter trips). The total number of long distance intercity person trips in the corridor was obtained from the output of the AL STM model. To estimate the number of short distance commuter trips in the corridor, the output person-trip tables from the Birmingham MPO model and the Montgomery MPO model were used.

The long distance trips were estimated by first defining a catchment area for each proposed rail station along the alignment, then extracting the trips made between the catchment areas using the AL STM vehicle trip tables and finally converting the vehicle trips to person trips by applying an auto occupancy factor. The total trip demand was estimated for both work and non-work trip purposes.

A similar procedure was followed for extracting the short distance trips except the conversion from vehicle trips to person trips was not necessary since the trips reported by the Birmingham MPO and Montgomery MPO models were already in person trip format. The following guidelines were used in defining the station catchment areas used to calculate person trips.

TABLE 14 – Station Catchment Areas

LONG DISTANCE TRIPS (INTERCITY TRIPS)
• For terminal stations: eight (8) mile around the station in the direction of travel.
• For intermediate stations: five (5) mile around the station in the direction of travel.
SHORT DISTANCE TRIPS (COMMUTER TRIPS)
• For terminal stations: one (1) mile buffer around the downtown station.
• For intermediate stations: five (5) mile around the station in the direction of travel.

In **Step 2**, the potential rail transit share of the total demand was estimated by applying a mode share to the total person trips estimated in **Step 1**. In order to determine the

most appropriate rail mode share to use for this corridor, an extensive database of ridership and person trip data was compiled for other commuter rail and intercity rail systems. This database contains detailed operating characteristics of most rail systems in the U.S. such as route length, peak and off-peak headways, number of stations, intermodal connectivity at terminal stations and level of service during weekend days. The database also contains daily rail ridership and an estimate of total trips and rail mode shares in the rail corridor.

TABLE 15 shows selected commuter rail and intercity rail systems operating in the U.S. (this database excludes large rail systems in more densely populated Northeast and Midwest cities). One peer system that is comparable to the proposed passenger rail operation between Birmingham and Montgomery would be New Mexico's Rail Runner system, which runs between Albuquerque and Santa Fe (State Capital). The Rail Runner corridor is similar in length (approximately 100 miles long) to the Birmingham-Montgomery corridor, the population sizes of the two (2) terminal cities are similar, and the level of train service is comparable to what is proposed in Alternative 3. However, the Rail Runner operates parallel to I-25 where the congestion levels are higher than the congestion levels on I-65. Also, the alternative highway routes available in the Rail Runner corridor are much longer or constraining, which makes the rail mode more attractive than in the I-65 corridor. The Rail Runner serves a total 13 stations in Albuquerque, Santa Fe and intermediate cities.

Given these differences, the rail mode shares in the Birmingham-Montgomery corridor are not likely to be as high as in the Rail Runner corridor. Therefore, the Rail Runner mode share was adjusted to account for differences in corridor population, roadway congestion, and station access. Finally, a range of daily and annual ridership was presented for each project alternative, reflecting the uncertainty associated with a high-level feasibility study.

Presented in TABLE 16 are the Rail Mode shares (lower-bound and upper-bound) that were applied to the person trips to estimate the potential rail ridership. TABLE 16 also shows the city pairs and trip purposes (travel markets) considered in each alternative. For commuter rail trips, one end of each trip was assumed to begin or end at either Birmingham or Montgomery. In other words, work trips between intermediate stations are not assumed to be candidates for commuter rail service (i.e., Hoover to Elmore).

TABLE 15 – Ridership and Operational Characteristics of Peer Commuter Rail and Intercity Rail Service

OPERATOR/ AGENCY	METROPOLITAN AREA	STATE	TRAIN LINE	FROM	TO	TRAVEL TO CBD?	CONNECT TO HCT?	CONNECT TO LOCAL ROUTES?	LENGTH ONE-WAY (MI)	NO. OF STATION SERVED
Denton County Transportation Authority	Denton	TX	A-train	Denton DT TC	Trinity Mills	NO	YES-LRT	YES-BUS	21	6
Capital Metropolitan Transportation Authority	Austin	TX	Red Line	Leander	Downtown Austin	YES	NO	YES-BUS	32	9
Utah Transit Authority	Salt Lake City-Ogden	UT	FrontRunner	Ogden	Salt Lake Central Station	YES	YES-LRT	YES-BUS	45	7
Tennessee Department of Transportation	Nashville	TN	East Corridor Line	Lebanon	Nashville Riverfront Station	YES	NO	YES-BUS	32	6
North County Transit District	San Diego	CA	Coaster	Oceanside	Downtown San Diego	YES	YES-LRT	YES-BUS	41	8
NMDOT & Mid Region Council of Governments	Albuquerque	NM	RailRunner	Santa Fe Depot	Belen	YES	YES-BRT	YES-BUS	97	13
Dallas Area Rapid Transit & Ft. Worth Transportation Authority	Dallas-Ft. Worth Metroplex	TX	Trinity Railway Express	T&P Station, Ft. Worth	Dallas Union Station	YES	YES-LRT	YES-BUS	34	10

SOURCE: HDR ENGINEERING, INC., 2013

TABLE 15 – Ridership and Operational Characteristics of Peer Commuter Rail and Intercity Rail Service (Continued)

OPERATOR/ AGENCY	METROPOLITAN AREA	STATE	NO. OF PEAK TRIPS	NO. OF OFF-PEAK TRIPS	WEEKEND SERVICE	APTA 2011 QUARTERLY WEEKDAY RIDERSHIP (AVERAGE)	PARALLEL INTERSTATE	WORKTRIPS IN CORRIDOR	TOTAL CORRIDOR TRIPS	RAIL MODE SHARE (PEAK/DAILY)
Denton County Transportation Authority	Denton	TX	14 (IB)/ 14 (OB)	9 (IB)/ 8 (OB)	YES	5,100	I-35E	31,000	77,500	0.143/0.065
Capital Metropolitan Transportation Authority	Austin	TX	5 (IB)/ 5 (OB)	10 (IB)/ 10 (OB)	NO	1,800	US-183/I-35	82,300	205,750	0.019/0.0087
Utah Transit Authority	Salt Lake City-Ogden	UT	16 (IB)/ 18 (OB)	13 (IB)/ 11(OB)	YES	5,700	I-15	36,200	45	0.137/0.062
Tennessee Department of Transportation	Nashville	TN	6 (IB)/ 6 (OB)	N/A	NO	1,100	I-40	44,000	32	0.220/0.010
North County Transit District	San Diego	CA	9 (SB)/ 9(NB)	2 (SB)/ 2 (NB)	YES	5,400	I-5	46,200	41	0.220/0.010
NMDOT & Mid Region Council of Governments	Albuquerque	NM	6 (SB)/ 7(NB)	4 (SB)/ 3(NB)	YES	4,200	I-25	YES-BUS	48,850	0.075/0.0343
Dallas Area Rapid Transit & Ft. Worth Transportation Authority	Dallas-Ft. Worth Metroplex	TX	13 (EB)/ 15 (WB)	9 (EB)/ 10 (WB)	YES	8,400	I-30	YES-BUS	82,000	0.089/0.041

SOURCE: HDR ENGINEERING, INC., 2013

TABLE 16 – Derived Rail Mode Shares

ALTERNATIVE	CITY PAIRS SERVED	TRIP PURPOSE	ASSUMED RAIL MODE SHARE	
			COMMUTER (< 50 MILES)	INTERCITY (> 50 MILES)
Long Distance Trips (greater than 50 miles)				
ALTERNATIVE 1	Birmingham - Montgomery	Non-work		0.17 to 0.25
ALTERNATIVE 2	Birmingham - Montgomery	Work and non-work		0.17 to 0.25
ALTERNATIVE 3	Birmingham – Montgomery Birmingham - Elmore	Work and non-work		0.17 to 0.25
ALTERNATIVE 4	Birmingham - Montgomery	Work and non-work		0.25 to 0.37
Short Distance Trips (less than 50 miles)				
ALTERNATIVE 1	Not applicable	Work trips	Not Applicable	
ALTERNATIVE 2	Not applicable	Work trips	Not Applicable	
ALTERNATIVE 3	Birmingham – Hoover Birmingham – Shelby Birmingham – Calera	Work trips	0.35 to 0.52	
ALTERNATIVE 4	Not applicable	Work trips	Not Applicable	

SOURCE: HDR ENGINEERING, INC., 2013

5.2 Ridership Forecasts

Using the person trips developed in **Step 1** and the mode shares estimated in **Step 2**, the potential rail ridership was estimated for the proposed rail service between Birmingham and Montgomery. The following four (4) alternatives were considered for ridership estimation:

Alternative 1**:** Restore the original Gulf Breeze service between Birmingham and Montgomery by offering daily train service. The non-stop service would offer one (1) daily trip in each direction, featuring comfortable carriages with Wi-Fi and other passenger amenities for passengers making the 2:00 (hours:minutes) trip. The travel market for daily service would be limited to non-work (pleasure) trips and overnight work trips.

Alternative 2: Provide non-stop intercity train service between Birmingham and Montgomery with three (3) trips daily in each direction. With the provision of additional passing tracks, track capacity and grade crossing improvements, the one-way run time was estimated to be about 1:45 (hours:minutes). With the operation of three (3) trains daily in each direction, the travel market for this alternative would be expanded to include daily and overnight work and non-work trips.

Alternative 3: Provide intercity train service between Birmingham and Montgomery, and commuter rail service for Birmingham. The intercity train service would offer three (3) trips daily in each direction with intermediate stops. The commuter rail service would provide service to Birmingham's city center and to the suburban communities on the

outskirts of Birmingham during peak travel periods (Monday-Friday). All intermediate stations (Hoover, Alabaster/Pelham, Calera and Elmore) were assumed to have park and ride lots as well as kiss and ride staging areas. In both downtowns, passengers will be able to make easy transfers between the rail and local bus systems. With the provision of additional passing tracks, track capacity and grade crossing improvements, the one-way run time was estimated to be similar to Alternative 2, about 1:45 (hours:minutes), despite the additional intermediate stops.

Alternative 4: Provide high-speed, non-stop intercity train service between Birmingham and Montgomery by offering three (3) trips daily in each direction on the I-65 corridor. The number of train trips supplied for Alternative 4 would be the same as Alternative 2; thus, the travel market will include both work and non-work trips. With the provision of a direct, exclusive guideway between Birmingham and Montgomery, the estimated travel time would be reduced to about 1:30 (hours:minutes).

Presented in TABLE 17 are the daily ridership forecasts. Alternative 1 is projected to generate very low ridership, in the order of 40 to 140 trips a day. Alternative 2 would open travel markets to include both work and non-work trips and generate a daily ridership of about 120 to 220 trips a day. Alternative 3 which would provide both commuter service and intercity service is projected to generate 600 to 1200 trips for commuter service and about 450 to 900 intercity trips, for a total of 1,050 to 2,100 trips. The high-speed service provided by Alternative 4 would generate 300 to 400 daily trips. All the projections are for the forecast year of 2035.

TABLE 17 – 2035 Daily Ridership Forecasts

ALTERNATIVE	INTERCITY TRIPS (> 50 MILES)	COMMUTER TRIPS (< 50 MILES)	TOTAL RIDERSHIP (DAILY)
ALTERNATIVE 1	40 to 140	NONE	40 to 140
ALTERNATIVE 2	120 to 220	NONE	120 to 220
ALTERNATIVE 3	450 to 900	600 to 1,200	1,050 to 2,100
ALTERNATIVE 4	300 to 400	NONE	300 to 400

SOURCE: HDR ENGINEERING, INC., 2013

5.2.1 Special Generator Ridership

One of the intermediate stations considered in Alternative 3, Calera Station, is located close to the Dixie Rail Road Museum. This museum attracts about 40,000 visitors annually. It is highly likely some of the visitors would use the proposed rail service to access the museum. In order to determine the rail ridership generated by the museum, website traffic data provided by the Museum was analyzed. The website data show about 18% of the website hits come from Birmingham and about 6% from Montgomery. Assuming the origins of the museum visitors are in the same proportion of the website hits, there are about 9,600 museum visitors from Birmingham and Montgomery (2012). Projecting this to 2035 using the same growth factors implied in the regional travel models, the Museum would attract about 11,000 visitors from Birmingham and Montgomery. Given the higher propensity of rail museum visitors to ride intercity

rail, the mode share for these visitor trips was assumed to be 15% (lower bound) to 25% (upper bound). Under these assumptions, about 1,650 (lower bound) to 2,750 (upper bound) annual trips were estimated to be made by rail to access the museum.

TABLE 18 shows the annual ridership for all the alternatives. The Dixie Rail Road Museum special generator trips are included in these forecasts.

TABLE 18 – 2035 Annual Ridership Forecasts

ALTERNATIVE	INTERCITY TRIPS (> 50 MILES)	COMMUTER TRIPS (< 50 MILES)	SPECIAL GENERATOR TRIPS	TOTAL RIDERSHIP (ANNUAL)
ALTERNATIVE 1	12,000 to 42,000	NONE	NONE	12,000 to 42,000
ALTERNATIVE 2	36,000 to 66,000	NONE	NONE	36,000 to 66,000
ALTERNATIVE 3	135,000 to 270,000	180,000 to 360,000	1,650 to 2,750	316,650 to 632,750
ALTERNATIVE 4	60,000 to 120,000	NONE	NONE	60,000 to 120,000

SOURCE: HDR ENGINEERING, INC., 2013

5.3 Revenue Methodology

Each Alternative was evaluated to determine if it is feasible with respect to economic considerations, including projections of passenger revenue. This involved applying an average fare to the projected total ridership between Birmingham and Montgomery. The *Crescent* service (from New York City to New Orleans), operated by Amtrak, currently provides passenger service to the following locations in Alabama: Anniston, Birmingham and Tuscaloosa, and it charges about $0.26 per passenger mile. Based on Amtrak's current pricing structure in Alabama and a stakeholder survey, the study found that a one-way fare from Birmingham to Montgomery would likely cost between $25.00 and $30.00.

Using the same methodology, a one-way fare on the commuter rail service (Alternative 3) would cost between $2.50 (e.g., Hoover-Birmingham) and $8.00 (Calera-Birmingham) depending on the distance traveled.

5.4 Revenue Forecast

The projected revenue estimates for the proposed passenger rail service are based upon 2035 ridership projections and average fares (2013 dollars) for 12-month operation of service. TABLE 19 shows the estimated total annual ridership and passenger revenue based on a one-way fare of $25.00-$30.00 for intercity and $2.50 to $8.00 for commuter rail.

TABLE 19 – 2035 Projected Ridership and Revenue

ALTERNATIVE	INTERCITY TRIPS (> 50 MILES)	COMMUTER TRIPS (< 50 MILES)	SPECIAL GENERATOR TRIPS	ONE-WAY FARE INTERCITY TRIPS	ONE-WAY FARE COMMUTER TRIPS	PASSENGER REVENUE (MILLIONS $)
ALTERNATIVE 1	12,000 to 18,000	NONE	NONE	$25.00 - $30.00	N/A	$300,000 - $1,260,000*
ALTERNATIVE 2	36,000 to 60,000	NONE	NONE	$25.00 - $30.00	N/A	$941,000 - $1,980,000*
ALTERNATIVE 3	135,000 to 210,000	180,000 to 262,500	1,650 to 2,750	$25.00 - $30.00	$2.50 - $8.00	$3,829,125 - $10,222,000*
ALTERNATIVE 4	60,000 to 90,000	NONE	NONE	$25.00 - $30.00	N/A	$1,500,000 - $3,600,000*

* Revenue forecast is for revenue from ticket sales only.

5.5 Cost of Alternative Modes of Transportation

To assess Alternatives 1, 2, 3 and 4 competitiveness and attractiveness based on cost, these intercity rail alternatives were compared to current travel modes within the route corridor. Travel modes assessed were personal auto and commercial intercity bus service. Alternate travel modes were evaluated for their travel cost based on a typical one-way trip between Birmingham and Montgomery. The evaluations were compared to each of the project Alternatives to determine if the rail alternatives offered competitive and attractive costs.

Currently, almost all person-trip travel in the study area occurs by automobile. The primary automobile travel route is Interstate 65 (I-65) between Birmingham and Montgomery, approximately 90 miles. A one-way trip by automobile at the posted interstate speeds takes about 1:30 (hours:minutes) depending on traffic. Using a driving calculator and the current IRS standard ($56.5 cents per mile), the cost of driving round-trip with one (1) day of parking in either Birmingham ($10) or Montgomery ($5) ranges between $54.40 - $111.70 and $49.40 - $106.70, respectively.

Greyhound between Birmingham and Montgomery provides bus service. Typical bus service includes four (4) trips per day: two (2) in the AM and two (2) in the PM. The average travel time between Birmingham and Montgomery is 1:40 (hours:minutes) except the 7:25 AM trip is slightly longer at 1:50. Bus fare prices vary from $26 to $46 depending on fare type (advanced purchase, web only, standard and refundable) with a round-trip ticket costing from $52.00 to $92.00 between the two (2) cities. A detailed schedule and prices is featured in TABLE 20 (as of August 2013).

These data indicate that a similar fare structure with different categories such as “standard”, “advance purchase”, “web-only”, etc. would be possible to apply to the intercity passenger rail service. An overall higher amount of revenue would result.

TABLE 20 – Greyhound Bus Schedule and Prices (August 2013)

DEPARTURE CITY	DEPARTURE TIME	ARRIVAL CITY	ARRIVAL TIME	FARE			
				ADVANCED PURCHASE	WEB ONLY	STANDARD	REFUNDABLE
Birmingham	2:35 AM	Montgomery	4:15 AM	$26 - $31	$28.80 -$32	$36 - $40	$42 - $46
Montgomery	5:00 AM	Birmingham	6:40 AM	$26 - $31	$28.80 -$32	$36 - $40	$42 - $46
Birmingham	7:25 AM	Montgomery	9:15 AM	$26 - $31	$28.80 -$32	$36 - $40	$42 - $46
Montgomery	10:15 AM	Birmingham	11:55 AM	$26 - $31	$28.80 -$32	$36 - $40	$42 - $46
Birmingham	1:15 PM	Montgomery	2:55 PM	$26 - $31	$28.80 -$32	$36 - $40	$42 - $46
Montgomery	5:00 PM	Birmingham	6:40 PM	$26 - $31	$28.80 -$32	$36 - $40	$42 - $46
Birmingham	8:55 PM	Montgomery	10:35 PM	$26 - $31	$28.80 -$32	$36 - $40	$42 - $46
Montgomery	9:35 PM	Birmingham	11:15 PM	$26 - $31	$28.80 -$32	$36 - $40	$42 - $46

SOURCE: WWW.GREYHOUND.COM

SECTION 6: CAPITAL AND O&M COST ESTIMATION

6.1 Capital Cost Methodology/Estimates

The primary factors that determine the need for infrastructure improvements on proposed intercity and commuter rail systems are the capacity and quality of the existing track and infrastructure. These infrastructure improvements may include the need for additional tracks and passing sidings to accommodate both passenger rail and freight rail traffic along with other features such as bridges, culverts, and other major capital items. Initial assessments show significant track and infrastructure upgrades will be needed for Alternatives 1, 2, and 3 to return passenger rail service to the existing CSXT freight corridor between Birmingham and Montgomery. Further field evaluations and CSXT's input are required to determine the exact capital improvements and associated costs for returning passenger rail service to the corridor. Line drawings were prepared for each alternative that were presented in Section 4 identifying proposed infrastructure improvements, then unit costs were developed for each category of improvements based on recent, and actual costs for similar improvements on Class 3 track.

The following sections present the assumptions and proposed infrastructure improvements for each alternative.

6.1.1 Alternative 1 – Restore Gulf Breeze Service

Track and Grading Work – Track and grading improvements for Alternative 1 include grading, track drainage (ditching, pipes), track material, turnout and crossover material, track and turnout labor, and contractor mobilization for 12.5 miles of new track. Also included is surfacing work for all existing curves (44.6 miles total) to ensure proper spirals and super-elevation for the proposed passenger design speed (79 mph).

Highway/Road Crossings – Highway and road crossing improvements for Alternative 1 Include crossing surface material and labor for crossings with new track construction at 13 locations. In addition, there are four (4) crossings requiring crossing signal relocations for second track installation and 17 locations requiring new crossing signals. Estimates include costs for resetting the timing for all other crossing signals for the proposed passenger design speed of 79 mph.

Train Control Systems – Train control systems for Alternative 1 Include signal and interlocking modifications for new track construction, signal and interlocking improvements for the entire route (due to track operational changes) and an initial allowance for positive train control.

Structures – The Alternative 1 improvements will require rehabilitation of one steel bridge (140') that formerly had two (2) tracks to allow a second track to be added back to the bridge, and construction of one (1) new precast concrete ballast deck bridge (58'). It is assumed that new bridges will be separate, independent structures while no new work will be performed to the existing bridge structure itself. Other than these bridge structures, no grade separations of track are included for Alternative 1.

Locomotives and Passenger Cars – Alternative 1 would require 1 peak trainset comprised of 1 locomotive, 1 coach car and 1 cab car. The estimated fleet, including maintenance spares, would include two (2) locomotives, one (1) coach car and two (2) cab cars.

Engineering and Permitting – Cost estimates include engineering design work for all of the above items. Mitigation, utility allowance, and construction management are also included.

Contingencies – Contingencies have been proportionally distributed to each of the items.

Right of Way – Pending more detailed design, no allowance for right-of-way acquisition has been included. Approximately 20 acres would be required for the two (2) connections including two (2) homes and one (1) business on the Pelham connection.

6.1.2 Alternative 2 – Three Trains per Day in Each Direction

The proposed infrastructure improvements and capital cost estimates for Alternative 2 are in addition to the Alternative 1 improvements and costs. In other words, the total cost of implementing Alternative 2 would equal Alternative 1 costs plus the incremental costs (described below) for Alternative 2 improvements.

Track and Grading Work - Track and grading improvements for Alternative 2 include grading, track drainage (ditching, pipes), track material, turnout and crossover material, track and turnout labor, and contractor mobilization for 26.5 miles of new track.

Highway/Road Crossings - Highway and road crossing improvements for Alternative 2 Include crossing surface material and labor for crossings with new track construction at 28 locations. In addition, there are 14 crossings requiring signal relocations for second track installation and three (3) locations requiring new crossing signals.

Train Control Systems – The Alternative 2 estimate includes signal and interlocking modifications for new track construction and an allowance for positive train control.

Structures – Alternative 2 includes 18 new precast concrete ballast deck bridges (2,230' total length) and construction of 2 DPG bridges (302' total length). It is assumed that

new bridges will be separate independent structures with no work done to existing bridges. Other than these bridge structures, no grade separations of track are included for Alternative 2. The only crossing within the project limits with a traffic volume high enough to potentially justify a grade separation is Montevallo Road at Alabaster (352 268U MP OOO 414.13). The 6-lane (with median) crossing is adjacent to parallel highway US 31 (6-lanes with median), which would require extensive highway intersection improvements and/or separation.

Locomotives and Passenger Cars – Alternative 2 would require 1-peak train set comprised of one (1) locomotive, one (1) coach car and one (1) cab car. The estimated fleet, including maintenance spares, would include two (2) locomotives, one (1) coach car and two (2) cab cars.

Engineering and Permitting – Cost estimates Include engineering design work for all of the above items, mitigation, utility allowance, and construction management.

Contingencies – Contingencies have been proportionally distributed to each of the items.

Right of Way – Pending more detailed design, no allowance for right-of-way acquisition has been included.

6.1.3 Alternative 3 – Three Intercity Trains per Day plus Six Commuter Trains per Day per Direction

The proposed infrastructure improvements and capital cost estimates for Alternative 3 are in addition to the Alternative 1 and 2 improvements and costs. In other words, the total cost of implementing Alternative 3 would equal the Alternative 1 and 2 costs plus the incremental costs (described below) for Alternative 3 improvements.

Track and Grading Work - Track and grading improvements for Alternative 3 include grading, track drainage (ditching, pipes), track material, turnout and crossover material, track and turnout labor, and contractor mobilization for 15.8 miles of new track. In addition, a crossing diamond or at-grade railroad crossing will be required at Calera to cross the Norfolk Southern "N-Line" and a new main line between Parkwood and Helena. This has been added to the Lineville S.D. side to avoid constructing 395 feet of additional steel bridge at the single track Parkwood Tunnel.

Highway/Road Crossings - Highway and road crossing improvements for Alternative 3 Include crossing surface materials plus labor for seven (7) crossing locations requiring new track construction. In addition, five (5) crossings will require signal relocations for second track installation while none of the locations are requiring new crossing signals.

Train Control Systems - The Alternative 3 estimate includes signal and interlocking modifications for new track construction.

Structures - Alternative 3 includes construction of two (2) new bridges, including one 136' thru plate girder bridge and one 306' deck plate girder bridge. It is assumed that new bridges will be separate independent structures with no work done to existing bridges. Other than these bridge structures, no grade separations of track are included for Alternative 3.

Locomotives and Passenger Cars – Alternative 3 would require 4 peak train sets each comprised of one (1) locomotive, one (1) coach car and one (1) cab car. The estimated fleet, including maintenance spares, would include five (5) locomotives, five (5) coach cars and five (5) cab cars.

Engineering and Permitting – Cost estimates Include engineering design work for all of the above items, mitigation, utility allowance, and construction management.

Contingencies – Contingencies have been proportionally distributed to each of the items.

Right of Way – Pending more detailed design, no allowance for right of way acquisition has been included.

6.1.4 Alternative 4 – New Alignment along I-65 with Three Trains per Day per Direction

The Alternate 4 estimate includes installing new rail infrastructure for the entire I-65 corridor between Birmingham and Montgomery.

Track and Grading Work - Track and grading improvements for Alternative 4 includes grading, track drainage (ditching, pipes), track material, turnout and crossover material, track and turnout labor, and contractor mobilization for 86.6 miles of new track. The improvements also include surfacing work for all existing curves (11.8 miles total) to ensure proper spirals and super-elevation for the proposed passenger design speed of 79 mph. In addition, three 2000 ft. passing sidings within the I-65 corridor (wide median locations) have been assumed.

Highway/Road Crossings - Highway and road crossing improvements for Alternative 4 include crossing surface material and labor for crossings with new track construction at 15 locations. Fourteen (14) of these crossings are new crossings on the proposed south connection. The remaining location is an existing crossing on CSXT, which will receive an additional track and require signal relocation. New signals will be installed at seven (7) of the new crossings. In addition, costs include resetting the timing for two (2) other crossing signal locations for a proposed passenger design speed of 79 mph.

Train Control Systems - The Alternative 4 estimate includes costs for new signals and interlockings along the 83.1 miles of new passenger main line within the I-65 corridor and the north and south connections. The estimate also includes signal and interlocking improvements for 11.8 miles of CSXT corridor (due to track operational changes) and an initial allowance for positive train control. Alternative 4 includes 2.1 miles between the north connection (I-65 to CSXT and the Birmingham Station) as well as 4.1 miles between the south connection (I-65 to CSXT and the Montgomery Station).

Structures - Alternative 4 includes construction of 30 structures where existing highway or railroad bridges cross over streams, roadways or railroads. For these locations the new passenger main bridge length is based on the length of the existing bridge carrying the highway or railroad. Four of these bridges will be precast concrete ballast deck structures while the remaining will be steel.

At 35 locations roadway bridges cross over the I-65 corridor. Due to alternating cut and fill sections along the east and west sides of the corridor the project team assumed that the majority of the new passenger main line will be constructed in the median of I-65 where possible. All of the existing highway overpasses have insufficient vertical clearances for passenger rail equipment and also include center piers in the median which impedes the ability for the track to pass under the highway bridges.

Therefore, the new passenger main line assumed a fly-over at these overpasses. Each fly-over will consist of two-2000' approach embankments with a 1.5% grade reaching a height of approximately 30 feet. Each approach will require retaining walls approximately 2000' long ranging in height from 1 to 26 feet (26,000 SF for each wall), and each location will require four (4) of these walls. A total surface area of 104,000 SF was used for retaining walls at each fly-over. Each steel bridge will consist of a combination of deck plate girder and through plate girder spans with ballasted decks totaling 2100 feet. Top of rail at the roadway overpass is estimated to be 45 feet above the I-65 grade. At locations outside the median varying bridge, embankment, and retaining walls were used based on the arrangement of the roadway and ramps.

It may be possible to reduce bridge costs by replacing some of the highway overpasses at higher elevations with longer spans to eliminate center piers, hence allowing the passenger main line to pass under. Each location would need to be evaluated further as design is progressed.

At seven (7) locations along the I-65 corridor concrete box culverts or large pipes carry streams or drainage under the highway with open channels where the new main track will be constructed. The estimate includes costs for construction of similar structures under the track.

Locomotives and Passenger Cars – Alternative 4 would require 1 peak train set comprised of one (1) locomotive, one (1) coach car and one (1) cab car. The

estimated fleet, including maintenance spares, would include two (2) locomotives, one (1) coach car and two (2) cab cars.

Engineering and Permitting – Cost estimates Include engineering design work for all of the above items, mitigation, utility allowance, and construction management.

Contingencies – Contingencies have been proportionally distributed to each of the items.

Right of Way – Pending more detailed design, no allowance for right of way acquisition has been included.

6.2 Conceptual Capital Cost Estimates

Conceptual capital cost estimates were developed for each Alternative. The estimates include concept-level design work, construction of new rail tracks, train control systems, structures, engineering and permitting, which includes mitigation and utilities, and construction management. TABLE 21 lists the estimated cost for each Alternative, excluding right-of-way, track maintenance, new stations and platforms, and parking lots or layover facilities.

TABLE 21 – Conceptual Capital Cost Estimates for Each Alternative

CAPITAL COST CATEGORY	ALTERNATIVE 1 ($M)	INCREMENTAL COST ALTERNATIVE 2 ($M)	TOTAL COST ALTERNATIVE 2 ($M)	INCREMENTAL COST ALTERNATIVE 3 ($M)	TOTAL COST ALTERNATIVE 3 ($M)	TOTAL COST ALTERNATIVE 4
Grading & Track Work	$40.100	$56.800	$96.900	$36.100	$133.000	$328.400 M
Highway/Road Crossings	$12.900	$5.700	$18.700	$1.700	$20.400	$3.500 M
Train Control Systems	$36.700	$15.000	$51.700	$9.300	$61.100	$119.700 M
Structures	$1.600	$26.800	$28.300	$6.800	$35.100	$1.691 B
Engineering & Permitting	$14.500	$17.200	$31.700	$9.000	$40.700	$330.600 M
Locomotives/ Vehicles	$16.000	$16.000	$16.000	$47.500	$47.500	$16.000 M
Total	$121.800	$137.500	$243.300	$110.400	$337.800	$2.489 B

SOURCE: HDR ENGINEERING, INC., 2013

6.3 Operating and Maintenance Cost Methodology

Annual operating and maintenance (O&M) cost estimates were prepared for each project alternative using operating plan data (refer to Section 3), ridership projections (refer to Section 5), and O&M unit costs for similar intercity and long-distance commuter rail operations.

The O&M unit costs were developed using 2011 National Transit Database (NTD) financial and operations data for 15 peer commuter/intercity passenger rail operations

in the US shown in TABLE 22. Average unit costs for commuter/intercity passenger rail operations were $17.29 per revenue train-hour and $2,494 per revenue car-mile.

Of the 15 peer systems, 3 intercity rail systems were identified as having similar system and operating characteristics as the proposed Birmingham-Montgomery rail passenger service – Albuquerque RailRunner, Utah FrontRunner and Oakland ACE. Characteristics of these 3 peer systems are discussed in Section 8.

TABLE 22 – 2011 Passenger Rail Cost Model and Peer Analysis

SERVICE AND COST PARAMETER	PORTLAND WES	SEATTLE Sound Transit	NEW YORK ConnDot	BALTIMORE MARC	WASH. D.C. VRE	SFRTA Tri-Rail	NASHVILLE Music City Star	MINNEAPOLIS Northstar
TRS ID:	*0008*	*0040*	*1102*	*3034*	*3073*	*4077*	*4159*	*5027*
2011 Service Supplied								
Peak Trains in Operation	3	9	4	23	14	10	2	4
Peak Passenger Cars in Operation	4	47	16	115	75	27	5	15
Train Revenue Miles	118,751	252,617	310,464	1,030,596	326,663	1,038,611	86,386	145,401
Train Revenue Hours	5,456	6,626	6,417	26,405	10,384	34,900	2,994	3,922
Car Revenue Miles	143,053	1,498,423	1,108,903	5,398,457	1,923,979	2,879,940	205,168	537,307
Car Revenue Hours	6,587	38,588	22,966	134,320	61,605	96,960	6,894	14,595
Annual Passenger Trips	371,172	2,626,711	601,708	8,232,729	4,645,591	3,810,823	250,656	703,424
Directional Route Miles	19.2	140.8	106.0	471.0	161.5	152.2	33.0	69.1
# of Stations	5	10	9	42	18	18	6	6
# of Yards	1	1	1	4	2	2	1	2
TRS ID:	*0008*	*0040*	*1102*	*3034*	*3073*	*4077*	*4159*	*5027*
2011 Costs								
Vehicle Operations	2,671,045	12,067,092	16,690,112	48,492,717	30,112,960	25,540,737	2,029,916	4,323,306
Vehicle Maintenance	1,054,182	9,648,145	7,443,716	28,157,879	13,315,218	11,113,667	150,224	2,475,436
Non-Vehicle Maintenance	623,585	4,614,891	3,807,134	3,619,853	3,784,946	4,051,940	526,466	1,795,625
General Administration	1,907,795	5,351,836	3,929,576	12,633,191	10,248,177	11,012,642	987,245	7,363,018
Total Costs in '11 dollars	$6,256,607	$31,681,964	$25,870,538	$92,903,640	$57,461,301	$51,718,986	$3,693,851	$15,957,385
Percent Vehicle Operations	42.7%	38.1%	41.3%	52.2%	52.4%	49.4%	55.0%	27.1%
Percent Vehicle Maintenance	16.8%	30.5%	28.8%	30.3%	23.2%	21.5%	4.1%	15.5%
Percent Non-Vehicle Maintenance	10.0%	14.6%	14.7%	3.9%	6.6%	7.8%	14.3%	11.3%
Percent General Administration	30.5%	16.9%	15.2%	13.6%	17.8%	21.3%	26.7%	46.1%
TRS ID:	*0008*	*0040*	*1102*	*3034*	*3073*	*4077*	*4159*	*5027*
Productivity Calculations (2011 $)								
Cost per Revenue Train-Hour	$1,146.74	$4,781.46	$4,031.56	$3,518.41	$5,533.64	$1,481.92	$1,233.75	$4,068.69
Cost per Revenue Car-Mile	$43.74	$21.14	$23.33	$17.21	$29.87	$17.96	$18.00	$29.70
Cost per Passenger Trip	$16.86	$12.06	$43.00	$11.28	$12.37	$13.57	$14.74	$22.69
Operating Parameters								
Average Train Consist	1.3	5.2	4.0	5.0	5.4	2.7	2.5	3.8
Average Speed (mph)	21.8	38.1	48.4	39.0	31.5	29.8	28.9	37.1

NOTES: 1. SOURCE: 2011 NATIONAL TRANSIT DATABASE REPORTS

2. SYSTEMS HIGHLIGHTED IN ORANGE ARE CONSIDERED PEER SYSTEMS FOR THE PROPOSED BIRMINGHAM-MONTGOMERY PASSENGER RAIL SYSTEM

TABLE 22 – 2011 Passenger Rail Cost Model and Peer Analysis (Continued)

SERVICE AND COST PARAMETER	DALLAS Trinity Exp.	ALBUQUERQUE Rail Runner	UTAH FrontRunner	SAN DIEGO Coaster	SF BAY Caltrain	LOS ANGELES Metrolink	OAKLAND ACE	PEER AVERAGE
TRS ID:	*6007/6056*	*6111*	*8001*	*9030*	*9134*	*9151*	*9182*	
2011 Service Supplied								
Peak Trains in Operation	6	5	6	4	20	34	3	9.8
Peak Passenger Cars in Operation	18	16	18	20	95	149	18	42.5
Train Revenue Miles	417,239	460,079	646,578	263,192	1,298,421	2,365,135	130,732	592,724
Train Revenue Hours	16,949	12,294	23,076	6,565	37,211	59,906	3,276	17,092
Car Revenue Miles	1,142,577	1,382,782	1,925,334	1,322,123	6,484,270	10,252,813	786,034	2,466,078
Car Revenue Hours	47,440	37,164	69,228	32,981	185,792	259,055	3,276	67,830
Annual Passenger Trips	2,388,407	1,219,111	1,610,773	1,390,142	12,574,233	11,270,214	130,732	3,455,095
Directional Route Miles	55.3	111.1	52.1	98.9	136.7	655.8	90.0	156.8
# of Stations	10	12	8	8	32	55	10	17
# of Yards	1	1	1	1	1	1	1	1.4
TRS ID:	*6007/6056*	*6111*	*8001*	*9030*	*9134*	*9151*	*9182*	
2011 Costs								
Vehicle Operations	9,933,985	6,829,139	8,036,399	6,504,393	37,945,568	56,296,057	5,011,083	$17,765,634
Vehicle Maintenance	11,455,686	6,851,657	4,173,794	2,547,264	13,886,687	25,586,678	1,637,348	$9,299,839
Non-Vehicle Maintenance	10,611,750	5,738,623	5,996,074	2,835,978	7,896,826	24,465,610	16,213	$5,359,034
General Administration	5,344,239	2,759,762	2,311,273	3,963,002	25,617,286	54,672,286	5,067,426	$10,211,250
Total Costs in '11 dollars	$37,345,660	$22,179,181	$20,517,540	$15,850,637	$85,346,367	$161,020,631	$11,732,070	$42,635,757
Percent Vehicle Operations	26.6%	30.8%	39.2%	41.0%	44.5%	35.0%	42.7%	41.7%
Percent Vehicle Maintenance	30.7%	30.9%	20.3%	16.1%	16.3%	15.9%	14.0%	21.8%
Percent Non-Vehicle Maintenance	28.4%	25.9%	29.2%	17.9%	9.3%	15.2%	0.1%	12.6%
Percent General Administration	14.3%	12.4%	11.3%	25.0%	30.0%	34.0%	43.2%	23.9%
TRS ID:	*6007/6056*	*6111*	*8001*	*9030*	*9134*	*9151*	*9182*	
Productivity Calculations (2011 $)								
Cost per Revenue Train-Hour	$2,203.41	$1,804.07	$889.13	$2,414.42	$2,293.58	$2,687.89	$3,581.22	$2,494.48
Cost per Revenue Car-Mile	$32.69	$16.04	$10.66	$11.99	$13.16	$15.71	$14.93	$17.29
Cost per Passenger Trip	$15.64	$18.19	$12.74	$11.40	$6.79	$14.29	$89.74	$12.34
Operating Parameters								
Average Train Consist	3.0	3.2	3.0	5.0	4.8	4.4	6.0	4.3
Average Speed (mph)	24.6	37.4	28.0	40.1	34.9	39.5	39.9	34.7

NOTES: 1. SOURCE: 2011 NATIONAL TRANSIT DATABASE REPORTS

2. SYSTEMS HIGHLIGHTED IN ORANGE ARE CONSIDERED PEER SYSTEMS FOR THE PROPOSED BIRMINGHAM-MONTGOMERY PASSENGER RAIL SYSTEM

6.4 Operating and Maintenance Cost Estimates

Annual O&M costs were estimated for each of the project alternatives based on the operating plan data and NTD unit costs for peer systems. Table 4 summarizes the operating plan data for the four (4) alternatives. TABLE 23 shows the likely range of estimated annual O&M costs calculated using the two unit costs – cost per annual revenue train-hour and cost per annual revenue car-mile. The two unit costs generate different estimated O&M costs due to differences in peer system operations – like average operating speed. The two (2) estimates provide a reliable range – low and high -- of likely costs for the Birmingham to Montgomery system.

TABLE 23 – Operating Plan Data for Each Alternative

SYSTEM CHARACTERISTICS	ALTERNATIVE 1 (2 TRIPS)	ALTERNATIVE 2 (6 TRIPS)	ALTERNATIVE 3 (6+12=18 TRIPS)	ALTERNATIVE 4 (6 TRIPS)
One-way Run Time (min)	120.0	105.0	105.0	90.0
Directional Route Miles	96.5	96.5	96.5	86.6
Cycle Time (min)	300.0	270.0	270.0	240.0
Peak Trainsets	1	1	4	1
Peak Vehicles	3	3	12	3
Spare Vehicles	2	2	3	2
Total Fleet	5	5	15	5
Revenue Car-Miles	49,073	147,218	247,802	137,160
Revenue Train-Hours	1,270	3,048	6,096	3,048
Average Speed (mph) =	38.5	42.9	42.2	79
Stations	2	2	6	2

RANGE OF ANNUAL O&M COSTS (2011$)	ALTERNATIVE 1 (2 TRIPS)	ALTERNATIVE 2 (6 TRIPS)	ALTERNATIVE 3 (6+12=18 TRIPS)	ALTERNATIVE 4 (6 TRIPS)
Based on cost per mile	$850,000	$2.500 M	$4.300 M	$2.400 M
Based on cost per train-hour	$2.000 M	$7.600 M	$14.500 M	$7.400 M

SOURCE: HDR ENGINEERING, INC., 2013

SECTION 7: COST AND BENEFIT EVALUATION

7.1 Transportation Benefits

There are both user and non-user benefits of intercity passenger rail. User benefits are those that accrue to train passengers, such as increased personal productivity, improved comfort, reduced travel stress, lower transportation costs, and shorter travel time. In addition, passenger rail can provide the public another option for travel compared with other existing transportation services, which can reduce pressure for expenditures on other modes and create non-user benefits (benefits to members of the general public who are not using the train). Non-user benefits include decreased congestion on other modes, accident savings in other modes and environmental benefits such as air quality improvement.

7.1.1 Economic and Community Benefits

Improved mobility is one of the greatest benefits residents will receive. With passenger rail people now have the option of living where they want knowing rail can take them to their job, education, or entertainment in Birmingham or Montgomery. This is important in that people can now reside in one city and work in another therefore increasing the economic development of both cities. There is also increased mobility for those who cannot drive due to lack of a vehicle, age or their economic status of not being able to afford a vehicle. Tourism also has the potential to increase due to passenger rail. People would have the option of traveling to another city for as little as a day. This type of tourism will increase visitor spending and in turn contribute to the economic activity of each city.

Passenger rail travel also allows travelers to be more productive with their time. This is especially true for those who would use rail to travel for business or employment. Also, for those traveling for recreation it is an opportunity for them to be able to read or relax during the commute as opposed to driving.

A major economic benefit to communities is the opportunity to promote a livable community. By expanding transportation options to the community, each city may be able to improve the walkability. Livable communities also can promote transit-oriented development and station development. Current trends indicate that people now want to live close to transit and want to use their vehicle less. This trend is causing cities to change their land use patterns and encourage more mixed-use development around station locations. This development will lend to economic development opportunities to not only build different housing but also for the potential to revitalize the community. Furthermore, stations in downtown areas can act as catalysts for downtown revitalization efforts and increase density in conjunction with local land use efforts and comprehensive planning.

As people begin to utilize passenger rail connections, the existing transportation networks will become even more important to commuters. Traveling by rail means when passengers reach their destination they do not have a vehicle so they are forced to rely on walking or using the existing transit system. Coordinating service with existing transit systems will be critical in making passenger connections as seamless as possible.

Other benefits of passenger rail include:

- Shorter trip for commuters
- Avoid highway delays
- Improve mobility for transportation disadvantaged persons
- Reduces transportation costs
- Costeffective for higher densities
- Economical mode of transportation
- Safer than auto travel

Passenger rail can also increase the number of jobs within a community. The increase would begin during the construction of the rail and continue through operation.

7.1.2 CSXT Railroad Benefits

The freight rail will receive identifiable benefits from passenger rail related investments. Improvements to track and signal infrastructure, such as double-tracking and positive train control, increase capacity and ensure reliability and safety of the railroad corridor for freight rail services. Furthermore, adding more capacity allows freight trains to operate at higher track speeds with fewer delays and quicker trips times, and increases in freight volume. Further discussions are required with CSXT to identify what types of rail improvements are necessary for the rail corridor that would benefit both freight business and passenger rail operations between Birmingham and Montgomery.

7.1.3 Environmental Benefits

Transit provides many environmental benefits to the communities served. Passenger rail promotes livable communities by expanding transportation options and encouraging economic development in communities, especially near transit stations and helps communities in their efforts to meet specified planning and smart growth goals. Individuals who use transit walk more than their counterparts who travel by personal vehicle; thereby, reducing their carbon footprint. Passenger rail is also an environmentally friendly mode of transportation. Rail produces fewer carbon dioxide emissions per passenger mile versus personal vehicle. Fewer carbon dioxide emissions mean that there is an improvement to air quality. This improvement in air quality is through the reduction of greenhouse gas emissions. Water quality is also improved with the use of rail over personal vehicles because roadways collect oils and other contaminants from vehicle uses that are transported during rainfall events.

Passenger rail may provide opportunities to change land use and travel patterns that have the potential to improve air and water quality. Passenger rail stations may spur new developments that include mixed-use commercial (offices, stores, etc.) and mixed housing options that are within walking distance from home and transit. Increased density greatly reduces driving, traffic congestion, and vast amounts of air pollution that comes with it.

Another major environmental benefit is passenger rail provides an alternative for emergency response and evacuation. Passenger rail has the benefit of moving large numbers of people in a short amount of time. Unlike personal vehicles and airplanes, rail can generally operate in inclement weather. This provides communities the opportunity of evacuating their residents in a safe effective manner during a natural disaster or other emergency situation.

7.2 Evaluation Criteria

The process of defining and evaluating passenger rail service was based on the goals established with the stakeholders involved in the Birmingham-Montgomery Rail Feasibility Study (BMRFS). Using the following BMRFS goals as a framework, the Project Team has established the following evaluation criteria based on performance standards to evaluate the different Alternatives. For each project goal, one or more evaluation criteria are recommended.

To answer these questions, each Alternative (1, 2, 3 and 4) was evaluated based on the listed criteria in TABLE 24.

TABLE 24 – Evaluation Criteria for Alternatives 1, 2, 3 & 4

PROJECT GOALS	EVALUATION CRITERIA
1. Primary Mode Choice:	• Will travelers save time riding the train between Birmingham and Montgomery? • Will there be sufficient number of riders using the passenger service between Birmingham and Montgomery?
2. Regional Connectivity:	• Does the passenger service provide direct connections to downtown Birmingham and Montgomery and/or to other activity centers?
3. Reduction in Auto Travel:	• Does the passenger service reduce auto travel in the corridor, thereby improving air quality?
4. Cost-effective Measure:	• Is the investment in a passenger rail system between Birmingham and Montgomery economically feasible based on cost-effectiveness measures: capital, O&M costs and cost per rider?
5. Implementation/Constructability:	• What is the degree of ease or difficulty constructing and/or implementing passenger rail between Birmingham and Montgomery?

SOURCE: HDR ENGINEERING, INC., 2013

7.3 Evaluation Results

7.3.1 Evaluation Criteria

For each of the listed factors featured below (TABLE 25), each Alternative (1, 2, 3 and 4) was evaluated. A numerical score was assigned to each factor using a High (=3), Medium (=2) and (=1) Low scale. The scores were added and ranked according to the total score for each Alternative based on efficiency and effectiveness. The comprehensive evaluation for each goal is featured in TABLE 26.

TABLE 25 – Evaluation Factors for Alternatives 1, 2, 3 & 4

CRITERIA	FACTORS
Primary Mode Choice:	• Estimated end-to-end travel time savings • Total daily ridership (2035)
Regional Connectivity:	• Direct connections to downtown Birmingham and Montgomery • Connections to other activity centers
Reduction in Auto Travel:	• VMT (vehicle miles of travel) reduction in corridor • Impact on regional travel and air quality
Cost-effective Measure:	• Total capital cost • Average annual O&M cost • Cost per rider
Implementation/Constructability:	• Ease of constructability • Impact on freight railroad operations • Benefit to adjacent or crossing highway infrastructure

SOURCE: HDR ENGINEERING, INC., 2013

TABLE 26 – Evaluation Matrix for Alternatives 1, 2, 3 & 4

CRITERIA	ALTERNATIVE 1		ALTERNATIVE 2		ALTERNATIVE 3		ALTERNATIVE 4	
Primary Mode Choice:		*Rating*		*Rating*		*Rating*		*Rating*
Estimated end-to-end travel time savings	None – unless traffic is delayed on I-65	1	Small – to significant if traffic is delayed on I-65	2	Small – to significant if traffic is delayed on I-65	2	Moderate – especially if traffic is delayed on I-65	3
Total daily ridership (2035)	40-140	1	120-220	2	1,050-2,100	3	300-400	2
Regional Connectivity:								
Direct connections to downtown Birmingham and Montgomery	Excellent	3	Excellent	3	Excellent	3	Excellent	3
Connections to other activity centers	None	1	None	1	Hoover, Pelham/Alabaster, Calera & Elmore	2	None	1
Reduction in Auto Travel:								
VMT (vehicle miles of travel) reduction in corridor	Negligible decrease	1	Small decrease	2	Moderate Decrease	3	Small decrease	2
Impact on regional travel and air quality	Negligible	1	Small	2	Moderate	3	Small	2
Cost-effectiveness:								
Total capital cost	$121.8 M	3	$243.3 M	2	$337.8 M	2	$2,489.1 M	1
Average annual O&M cost	$2.0 M	3	$7.6 M	2	$14.5 M	1	$7.4 M	2
Total annual cost per annual rider	$250.00	2	$336.00	2	$58.00	3	$1,164.00	1
Implementation/Constructability:								
Ease of constructability	High – will include constructing a series of sidings and main track in excess of 11 miles in length.	3	Medium – will include constructing a series of sidings and main track in excess of 37 miles.	2	Medium – will include constructing a series of sidings and main track in excess of 54 miles.	2	Low – will include constructing 86.6 miles of new track within the I-65 corridor.	1
Impact on freight railroad operations	Low	3	Medium	2	High	1	Low	3
Benefit to adjacent or crossing highway infrastructure	Low	1	Low	1	Low	1	Low	1
Totals:		23		23		26		22
Ranking:		2		2		1		3

SOURCE: HDR ENGINEERING, INC., 2013

7.3.2 Findings

The evaluation of Alternatives revealed that Alternative 3 received the highest ranking, with a total score of 26 points. Alternative 4 received the lowest ranking at 22 points. The finals results are featured in TABLE 26. The primary differences between Alternatives 1, 2, 3 and 4 included travel time savings, daily ridership, cost-effectiveness, effectiveness and implementation/ constructability. The following is a brief summary of the results as it relates to the criteria.

Travel Time Savings – The greater the time savings between Birmingham and Montgomery, the more attractive the new rail service becomes to potential travelers along the I-65 corridor. After evaluating the different service options, Alternative 4 provides the greatest travel savings benefit to travelers especially if traffic is delayed on I-65 between the two cities.

Total Daily Ridership (2035) – The measure of total daily riders along the I-65 corridor reflects the usefulness and attractiveness of the new rail service as a primary mode choice to potential travelers. The evaluation results show that Alternative 3 has the highest daily ridership (1,050 – 2,100) compared to the other Alternatives. Alternative 1 has the lowest daily ridership at 40 – 140, similar to the former Gulf Breeze service.

Cost-effectiveness – The estimated total capital and operating and maintenance (O&M) costs basis for the new service is a good indicator for evaluating the cost-effectiveness of offering passenger rail between the two cities. Alternative 1 has the lowest total capital costs at $121.8 million while Alternative 4 had the highest at approximately $2.5 billion. For O&M costs per mile, Alternative 1 is the lowest at $2.0 million. The highest O&M cost per mile is $14.5 million for Alternative 3, which includes offering both commuter and intercity rail service. Based on the total annual cost per annual rider, Alternative 3 is the most cost-effective at $58.00; whereas, Alternative 4 has the highest cost per rider at $1,164.00. The results are featured in TABLE 27 for Alternatives 1, 2 3 and 4.

TABLE 27 – Cost-Effectiveness Comparison of Intercity Passenger Rail Alternatives

ALTERNATIVE	TOTAL CAPITAL COST ($M)	ANNUALIZED CAPITAL COST ($M)	ANNUAL OPERATING COST ($M)	ANNUAL REVENUES ($M)	NET OPERATING COST ($M)	ANNUAL RIDERSHIP (M)	TOTAL ANNUAL COST ($M)	TOTAL ANNUAL COST PER ANNUAL RIDER
1 – Restore Gulf Breeze – one (1) train each day per direction	$121.8	$4.8	$2.0	$0.8	$1.2	0.027	$6.8	$250
2 – Three (3) trains each day per direction	$243.3	$9.5	$7.6	$1.5	$6.1	0.051	$17.1	$336
3 – Three (3) intercity and six (6) commuter rail trains each day per direction	$337.8	$13.2	$14.5	$7.0	$7.5	0.475	$27.7	$58
4 – I-65 alignment with three (3) trains per day per direction	$2,489.1	$97.3	$7.4	$2.6	$4.8	0.09	$104.7	$1,164

SOURCE: HDR ENGINEERING, INC., 2013

If ridership increases to 200 riders per hour, which is the average ridership for the peer cities, the cost-effectiveness of offering passenger rail between Birmingham and Montgomery is more than feasible for Alternatives 1, 2 and 3 based on cost-effectiveness measures. The results are featured in TABLE 28.

TABLE 28 – Cost-Effectiveness with Ridership Similar to Peer Cities

ALTERNATIVE	ANNUAL RIDERSHIP PEER AVERAGE PER TRAIN-HOUR	O&M ANNUAL TRAIN HOURS	ANNUAL RIDERSHIP WITH PEER CITY RESPONSE (M)	TOTAL ANNUAL COST ($M)	TOTAL ANNUAL COST PER ANNUAL RIDER
1 – Restore Gulf Breeze – one (1) train each day per direction	200	1,270	0.254	$6.8	$27.00
2 – Three (3) trains each day per direction	200	3,048	0.610	$17.1	$28.00
3 – Three (3) intercity and six (6) commuter rail trains each day per direction	200	6,096	1.219	$27.7	$23.00
4 – I-65 alignment with three (3) trains per day per direction	200	3,048	0.610	$104.7	$172.00

SOURCE: HDR ENGINEERING, INC., 2013

Implementation or Constructability – The option with the least complexity to construct would be Alternative 1. To accommodate passenger rail service, this Alternative would require constructing new sidings and main track for about 11 miles; whereas, Alternative 4 would require installation of 86.6 miles of new mainline track for the entire I-65 corridor between the two cities.

Further discussions are required with CSXT to determine the compatibility of Alternatives 1, 2 and 3 with their freight business. However, the additional capacity of 54 miles of

sidings and mainline track from Alternative 3 is expected to provide the greatest benefit to CSXT. This alternative will allow for faster track speeds in addition to increases in freight volumes between the two cities. Alternative 2 (37 miles of new sidings and mainline track) and Alternative 1 (11 miles of new sidings and mainline track) are also expected to allow for some increases in track speeds and freight volumes, but not at the same level as 3. Alternative 4 is a completely new alignment that would run the entire I-65 corridor with no conflicts with CSXT's freight business until reaching the city limits of Birmingham or Montgomery where shared track would be required near the stations. None of the alternatives provide much of a benefit to the existing roadway infrastructure located near the rail alignment.

8.1 Peer System Comparisons

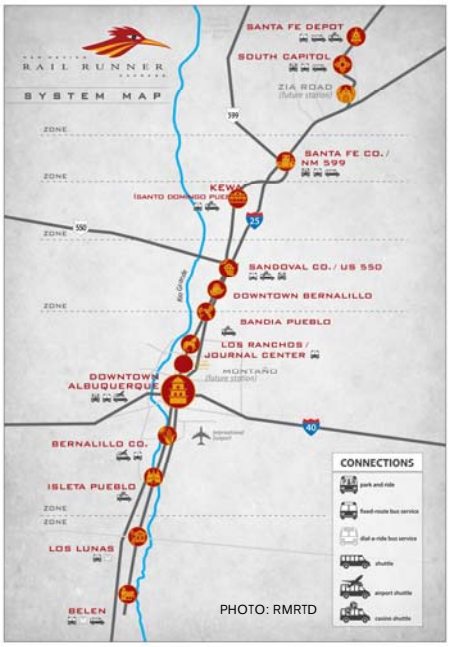
This section outlines three (3) commuter/intercity passenger rail systems---New Mexico Rail Runner Express, Utah FrontRunner and Oakland Altamont Corridor Express (ACE)---that have comparable operating environments and characteristics (socio-economic, physical environment, length of corridor, number of trips, operating speed, etc.) to the proposed Birmingham to Montgomery passenger rail line. While no passenger rail operations are perfectly comparable to the intercity service being proposed between Birmingham and Montgomery, the selected examples provide valuable insight into the possible range of operating characteristics, costs and ridership for the proposed Birmingham to Montgomery rail service options.

8.1.1 New Mexico Rail Runner Express

The New Mexico Rail Runner Express is a commuter/intercity rail system that provides service to the metropolitan areas of Albuquerque, Belen and Santa Fe, New Mexico. The rail service is about 100 miles and stops at 13 stations. The service operates at a top speed of 79 miles per hour with trains comprised of one (1) locomotive and three (3) passenger cars. The travel time is 2:12 (hours:minutes) for the entire corridor. The Rio Metro Regional Transit District (RMRTD) oversees the Rail Runner Express and as of FY 2011, the total annual ridership was 1.2 million with an average of 4,200 weekday riders. (Ridership, fare and cost data was provided by the New Mexico Department of Transportation, NMDOT).

The Rail Runner schedule (August 2013) focuses on providing service primarily during the morning and evening commutes. The weekday operating schedule offers four (4) round-trips from Albuquerque to Santa Fe, and from Belen to Santa Fe between the hours of 4:30 AM to 10:30PM. Three (3) round-trips are also offered between Belen and Albuquerque during the same time schedule. The Saturday operating schedule has four (4) round-trips between Belen and Santa Fe, and one (1) round-trip between Belen and Albuquerque. The Sunday service schedule has three (3) round-trips between Belen and Santa Fe. FIGURE 42 shows a map of the service area with stations.

FIGURE 43 – Rail Runner System Map



The RMRTD uses a zone fare structure for the Rail Runner Express, and the different fare payments (one-way trip, day pass, monthly pass or annual pass) are featured in TABLE 29. Passengers have the option of purchasing tickets online or with the attendant (conductor) once onboard the train.

TABLE 29 – Rail Runner Fare Structure

	One-way Trip	Day Pass	Monthly Pass	Annual Pass
1 ZONE	$2	$3 ($2 online)	$39 ($29 online)	$385 ($375 online)
2 ZONE	$3	$4 ($3 online)	$55 ($45 online)	$550 ($540 online)
3 ZONE	$5	$6 ($5 online)	$72 ($62 online)	$715 ($705 online)
4 ZONE	$8	$9 ($8 online)	$105 ($95 online)	$1,045 ($1,035 online)
5 ZONE	$9	$10 ($9 online)	$110 ($100 online)	$1,100 ($1,090 online)
6 ZONE	$10	$11 ($10 online)	$121 ($111 online)	$1,210 ($1,200 online)

SOURCE: RMRTD

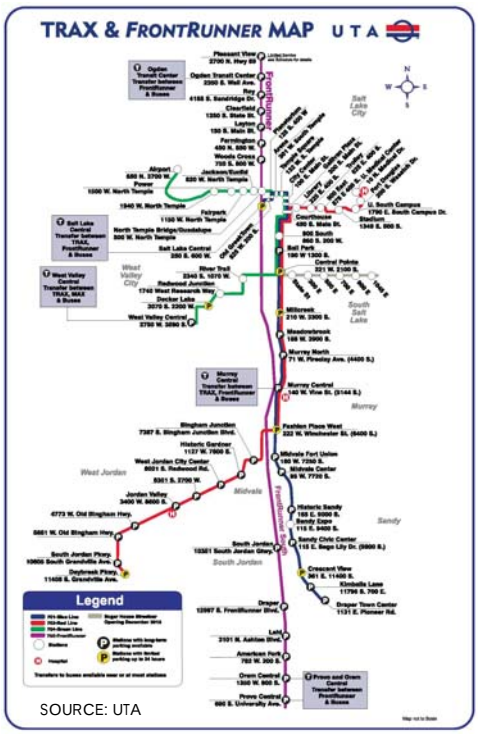
The total capital costs to construct the Rail Runner system was $403.8 million. These costs were covered by state funds including $318 million of GRIP (Governor Richardson's Investment Partnership) funds, $60 million in interest on bonds, $17 million in capital outlay approved during the 2007 New Mexico Legislative Session, and $10 million provided by Sandoval County. The annual operating and maintenance (O&M) costs were $22.2 million in FY 2011 and $23.8 million in FY 2012. According to NMDOT, the operating revenues for the Rail Runner were from the following sources: BNSF Railroad and Amtrak payments, $2 million; farebox revenue, $3.2 million; federal grant funds, $5.4 million, state tax revenue, $12.7 million; state funds, $200,000; advertising revenues, $200,000; and special project revenue, $40,000.

8.1.2 Utah FrontRunner

The Utah FrontRunner is a commuter/intercity rail system that provides service between Pleasant View and Provo Central Station, Utah. The route is 89 miles with 16 stations. The service operates at a top speed of 79 miles per hour with trains comprised of one locomotive and three (3) passenger cars. The travel time is 2:40 (hours:minutes) for the entire corridor. The Utah Transit Authority (UTA) oversees the Utah FrontRunner with an annual ridership of approximately 1.6 million while weekday ridership is around 6,000 as of FY 2011.

The FrontRunner schedule (August 2013) provides rail service between the hours of 4:30 AM to just after 12:00 AM during the weekdays. Trains run every 30 minutes during the AM and PM peak while non-peak service is every 60 minutes. The Saturday operating schedule runs between 6:00 AM and 1:30 AM with train service every 60 minutes. No service is offered on Sundays. FIGURE 43 shows a map of the service area with stations.

FIGURE 44 – FrontRunner Map



SOURCE: UTA

The UTA utilizes a distance-based fare structure for the Utah FrontRunner between Provo and Pleasant View. The fare structure is featured in TABLE 30. Rail tickets can either be purchased online or at selected ticket sale outlets.

TABLE 30 – FrontRunner Fare Structure

Full Fare FrontRunner Ticket

	Provo	Orem	Vineyard (Future)	American Fork	Lehi	Draper	South Jordan	Murray	Salt Lake City	North Temple	Woods Cross	Farmington	Layton	Clearfield	Roy	Ogden	Pleasant View
Provo		$2.50	X	$3.10	$3.70	$4.30	$4.90	$5.50	$6.10	$6.10	$6.70	$7.30	$7.90	$8.50	$9.10	$9.70	$10.30
Orem	$2.50		X	$2.50	$3.10	$3.70	$4.30	$4.90	$5.50	$5.50	$6.10	$6.70	$7.30	$7.90	$8.50	$9.10	$9.70
Vinyard (Future)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
American Fork	$3.10	$2.50	X		$2.50	$3.10	$3.70	$4.30	$4.90	$4.90	$5.50	$6.10	$6.70	$7.30	$7.90	$8.50	$9.10
Lehi	$3.70	$3.10	X	$2.50		$2.50	$3.10	$3.70	$4.30	$4.30	$4.90	$5.50	$6.10	$6.70	$7.30	$7.90	$8.50
Draper	$4.30	$3.70	X	$3.10	$2.50		$2.50	$3.10	$3.70	$3.70	$4.30	$4.90	$5.50	$6.10	$6.70	$7.30	$7.90
South Jordan	$4.90	$4.30	X	$3.70	$3.10	$2.50		$2.50	$3.10	$3.10	$3.70	$4.30	$4.90	$5.50	$6.10	$6.70	$7.30
Murray	$5.50	$4.90	X	$4.30	$3.70	$3.10	$2.50		$2.50	$2.50	$3.10	$3.70	$4.30	$4.90	$5.50	$6.10	$6.70
Salt Lake City	$6.10	$5.50	X	$4.90	$4.30	$3.70	$3.10	$2.50		$2.50	$2.50	$3.10	$3.70	$4.30	$4.90	$5.50	$6.10
North Temple	$6.10	$5.50	X	$4.90	$4.30	$3.70	$3.10	$2.50	$2.50		$2.50	$3.10	$3.70	$4.30	$4.90	$5.50	$6.10
Woods Cross	$6.70	$6.10	X	$5.50	$4.90	$4.30	$3.70	$3.10	$2.50	$2.50		$2.50	$3.10	$3.70	$4.30	$4.90	$5.50
Farmington	$7.30	$6.70	X	$6.10	$5.50	$4.90	$4.30	$3.70	$3.10	$3.10	$2.50		$2.50	$3.10	$3.70	$4.30	$4.90
Layton	$7.90	$7.30	X	$6.70	$6.10	$5.50	$4.90	$4.30	$3.70	$3.70	$3.10	$2.50		$2.50	$3.10	$3.70	$4.30
Clearfield	$8.50	$7.90	X	$7.30	$6.70	$6.10	$5.50	$4.90	$4.30	$4.30	$3.70	$3.10	$2.50		$2.50	$3.10	$3.70
Roy	$9.10	$8.50	X	$7.90	$7.30	$6.70	$6.10	$5.50	$4.90	$4.90	$4.30	$3.70	$3.10	$2.50		$2.50	$3.10
Ogden	$9.70	$9.10	X	$8.50	$7.90	$7.30	$6.70	$6.10	$5.50	$5.50	$4.90	$4.30	$3.70	$3.10	$2.50		$2.50
Pleasant View	$10.30	$9.70	X	$9.10	$8.50	$7.90	$7.30	$6.70	$6.10	$6.10	$5.50	$4.90	$4.30	$3.70	$3.10	$2.50	

Full Fare Round Trip FrontRunner Ticket

	Provo	Orem	Vineyard (Future)	American Fork	Lehi	Draper	South Jordan	Murray	Salt Lake City	North Temple	Woods Cross	Farmington	Layton	Clearfield	Roy	Ogden	Pleasant View
Provo		$5.00	X	$6.20	$7.40	$8.60	$9.80	$11.00	$12.20	$12.20	$13.40	$14.60	$15.80	$17.00	$18.20	$19.40	$20.60
Orem	$5.00		X	$5.00	$6.20	$7.40	$8.60	$9.80	$11.00	$11.00	$12.20	$13.40	$14.60	$15.80	$17.00	$18.20	$19.40
Vinyard (Future)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
American Fork	$6.20	$5.00	X		$5.00	$6.20	$7.40	$8.60	$9.80	$9.80	$11.00	$12.20	$13.40	$14.60	$15.80	$17.00	$18.20
Lehi	$7.40	$6.20	X	$5.00		$5.00	$6.20	$7.40	$8.60	$8.60	$9.80	$11.00	$12.20	$13.40	$14.60	$15.80	$17.00
Draper	$8.60	$7.40	X	$6.20	$5.00		$5.00	$6.20	$7.40	$7.40	$8.60	$9.80	$11.00	$12.20	$13.40	$14.60	$15.80
South Jordan	$9.80	$8.60	X	$7.40	$6.20	$5.00		$5.00	$6.20	$6.20	$7.40	$8.60	$9.80	$11.00	$12.20	$13.40	$14.60
Murray	$11.00	$9.80	X	$8.60	$7.40	$6.20	$5.00		$5.00	$5.00	$6.20	$7.40	$8.60	$9.80	$11.00	$12.20	$13.40
Salt Lake City	$12.20	$11.00	X	$9.80	$8.60	$7.40	$6.20	$5.00		$5.00	$5.00	$6.20	$7.40	$8.60	$9.80	$11.00	$12.20
North Temple	$12.20	$11.00	X	$9.80	$8.60	$7.40	$6.20	$5.00	$5.00		$5.00	$6.20	$7.40	$8.60	$9.80	$11.00	$12.20
Woods Cross	$13.40	$12.20	X	$11.00	$9.80	$8.60	$7.40	$6.20	$5.00	$5.00		$5.00	$6.20	$7.40	$8.60	$9.80	$11.00
Farmington	$14.60	$13.40	X	$12.20	$11.00	$9.80	$8.60	$7.40	$6.20	$6.20	$5.00		$5.00	$6.20	$7.40	$8.60	$9.80
Layton	$15.80	$14.60	X	$13.40	$12.20	$11.00	$9.80	$8.60	$7.40	$7.40	$6.20	$5.00		$5.00	$6.20	$7.40	$8.60
Clearfield	$17.00	$15.80	X	$14.60	$13.40	$12.20	$11.00	$9.80	$8.60	$8.60	$7.40	$6.20	$5.00		$5.00	$6.20	$7.40
Roy	$18.20	$17.00	X	$15.80	$14.60	$13.40	$12.20	$11.00	$9.80	$9.80	$8.60	$7.40	$6.20	$5.00		$5.00	$6.20
Ogden	$19.40	$18.20	X	$17.00	$15.80	$14.60	$13.40	$12.20	$11.00	$11.00	$9.80	$8.60	$7.40	$6.20	$5.00		$5.00
Pleasant View	$20.60	$19.40	X	$18.20	$17.00	$15.80	$14.60	$13.40	$12.20	$12.20	$11.00	$9.80	$8.60	$7.40	$6.20	$5.00	

SOURCE: UTA

For the FrontRunner, the total capital costs were $612 million (FY 2008). Federal subsides covered at least 80% with local funding making up the difference at $122 million. In FY 2011, the annual total costs of $20.5 million were experienced by UTA with an operating budget utilizing the following revenue sources: investment income (1%), advertising (1%), other (1%), sales and use tax (65%), federal funding (18%) and passenger revenue (14%). (Ridership, fare and cost data was provided by the UTA.)

8.1.3 Oakland ACE

The Oakland ACE is a commuter/intercity rail system that provides service between Stockton and San Jose, California. The route is 86 miles and stops at 10 stations. The service operates at a top speed of 79 miles per hour with trains comprised of one (1) locomotive and six (6) passenger cars. The travel time is 2:10 (hours:minutes) for the entire corridor. The San Joaquin Regional Rail Commission (SJRRC) owns and operates the Oakland ACE. The ACE is carrying an average of 4,000 riders per day as of FY 2011 with annual ridership of over 700,000. (Ridership, fare and cost data was provided by 2011-2012 SJRRC Work Program.)

The Oakland ACE schedule (August 2013) provides rail service between the hours of 4:20 AM to just after 8:50 PM with the emphasis being on the morning and evening commute times. The weekday operating schedule offers four (4) round-trips from Stockton to San Jose. The AM Peak Service offers trips from Stockton to San Jose while the PM Peak Service provides return service from San Jose to Stockton. No weekend rail service is offered between the two cities. FIGURE 45 shows a map of the service area with stations.

FIGURE 45 – ACE System Map

SOURCE: SJRRC

The SJRRC utilizes a distance-based fare structure for the Oakland ACE between Stockton and San Jose. The fare structure is featured in TABLE 31. Rail tickets can either be purchased online or at selected ticket sale outlets for a one-way trip, round trip, 20 ride pass or monthly pass.

TABLE 31 – ACE Fare Structure

Destination Station		Lathrop	Tracy	Vasco	Livermore	Pleasanton	Fremont	G. America	Santa Clara	San Jose
Origin Station										
SKT	ONEWAY	$4.25	$5.25	$9.00	$9.00	$9.00	$10.25	$13.00	$13.00	$13.00
	ROUND TRIP	$5.25	$10.25	$14.00	$14.00	$14.00	$18.50	$23.00	$23.00	$23.00
	20 RIDE	$44.50	$79.25	$112.25	$112.25	$112.25	$145.50	$179.50	$179.50	$179.50
	MONTHLY	$83.00	$144.00	$206.50	$206.50	$206.50	$267.50	$330.00	$330.00	$330.00
LAT	ONEWAY		$5.00	$8.50	$8.50	$8.50	$9.75	$12.00	$12.00	$12.00
	ROUND TRIP		$9.75	$13.50	$13.50	$13.50	$17.00	$22.00	$22.00	$22.00
	20 RIDE		$75.25	$107.25	$107.25	$107.25	139.25	$171.75	$171.75	$171.75
	MONTHLY		$137.50	$197.50	$197.50	$197.50	$256.25	$316.25	$316.25	$316.25
TRC	ONEWAY			$5.00	$5.00	$5.00	$8.50	$9.75	$9.75	$9.75
	ROUND TRIP			$9.75	$9.75	$9.75	$13.50	$17.00	$17.00	$17.00
	20 RIDE			$75.25	$75.25	$75.25	$107.25	$139.25	$139.25	$139.25
	MONTHLY			$137.50	$137.50	$137.50	$197.50	$256.25	$256.25	$256.25
TRI-VALLEY	ONEWAY				$3.75	$3.75	$5.00	$8.50	$8.50	$8.50
	ROUND TRIP				$5.00	$5.00	$9.75	$13.50	$13.50	$13.50
	20 RIDE				$42.75	$42.75	$75.25	$107.25	$107.25	$107.25
	MONTHLY				$79.50	$79.50	$137.50	$197.50	$197.50	$197.50
TRI-VALLEY	ONEWAY					$3.75	$5.00	$8.50	$8.50	$8.50
	ROUND TRIP					$5.00	$9.75	$13.50	$13.50	$13.50
	20 RIDE					$42.75	$75.25	$107.25	$107.25	$107.25
	MONTHLY					$79.50	$137.50	$197.50	$197.50	$197.50
TRI-VALLEY	ONEWAY						$5.00	$8.50	$8.50	$8.50
	ROUND TRIP						$9.75	$13.50	$13.50	$13.50
	20 RIDE						$75.25	$107.25	$107.25	$107.25
	MONTHLY						$137.50	$197.50	$197.50	$197.50
FMT	ONEWAY							$5.00	$5.00	$5.00
	ROUND TRIP							$9.75	$9.75	$9.75
	20 RIDE							$75.25	$75.25	$75.25
	MONTHLY							$137.50	$137.50	$137.50

SOURCE: SJRRC

For the Oakland ACE, the initial purchase of rolling stock, construction of stations, and other start-up costs amounted to a total capital cost of $48 million in 1998. Primarily the San Joaquin County transportation sales tax approved in 1990 covered the costs. The SJRRC operating budget is around $15.5 million (Work Program 2011-2012) and the following is a list of the major funding sources:

- Fare Revenues - $4.8 million,
- San Joaquin Regional Rail Commission Local Measure K - $3.9 million,
- Santa Clara VTA Local - $2.7 million,
- ACTC Measure B Local - $2.1 million ,
- Local Transportation Funds - $532,000, and
- Federal Section 5307 Funds - $710,000.

TABLE 32 provides a peer system comparisons summary for the three (3) commuter/intercity passenger rail systems and the proposed passenger rail system between Birmingham and Montgomery. Most of the information for the peer systems was obtained through the National Transit Database (NTD) while the initial capital costs were obtained from the websites of the peer systems.

TABLE 32 – Peer System Comparisons

Criteria	ALBUQUERQUE Rail Runner	UTAH FrontRunner	OAKLAND ACE	BIRMINGHAM – MONTGOMERY RAIL SYSTEM			
				ALT 1	ALT 2	ALT 3	ALT 4
Start Year	2006	2008	1998				
Length (in route miles)	93	89	86	97	97	97	87
Trains per day (weekday)	24	70	6-8	2	6	18	6
Annual ridership	1.2M	1.6M	700,000	27,000 (FY 2035)	51,000 (FY 2035)	474,700 (FY 2035)	90,000 (FY 2035)
Annual operating Costs (millions)	$24.2	$20.5	$11.7	$2.0	$ 7.6	$14.1	$7.4
2011 O&M costs/passenger trip	$18.19	$12.74	$89.74	$74.07	$149.02	$29.75	$82.22
Initial capital cost/mile (millions)	$4.0	$6.9	$0.6	$1.1	$2.4	$3.0	$28.6

SOURCE: 1. 2011 National Transit Database Reports
2. NM Rail Runner, Ride UTA, and ACE Rail websites.

8.2 Financial Viability

The detailed analysis presented in Section 7.4 found that the performance and cost-effectiveness of Alternatives 1, 2, 3 and 4 would be comparable to some other passenger rail systems currently operating in other peer cities but with higher costs and less ridership than most. Because the ridership estimates in the Birmingham-Montgomery study were projected with conservative assumptions, the cost-effectiveness would be much more comparable if ridership averages 200 per train-hour which is the average of the peer cities. The conceptual capital cost per mile for at least three Alternatives (1, 2 and 3) are also similar to several of the peer systems.

8.3 Phased Implementation

The proposed Alternatives (1, 2, and 3) may be implemented in phases depending on the level of funding available for financing passenger rail service. A phased passenger rail approach could incrementally build new or expand existing rail infrastructure, add frequency of service, increase train speed, or add intermediate station stops (Hoover, Pelham/Alabaster, Calera and Elmore) for commuter service within the CSXT rail corridor between Birmingham and Montgomery. Necessary improvements to implement phases could entail the following:

- Construction of track, signaling, structures and stations
- Improvements to track and signaling to enable higher train speeds
- Acquisition of additional equipment (locomotives and passenger cars)
- Agreements on the phases and the required improvements with CSXT and other railroads.

Phased implementation of the passenger rail service would also allow ADECA and FRA to provide incremental benefits of the service by taking advantage of funding as it becomes available.

8.4 Governance and Funding Options

One of the most important requirements for implementation of a new passenger rail line is to define the appropriate form of governance and the associated funding responsibilities for the new service. The fact that the service would run between the two major urban areas of Montgomery and Birmingham and might serve communities along the line requires a legal entity to manage and operate the service.

8.4.1 State Management

In many states, the state government assumes the responsibility for overall management and operations. Governance related to policy implementation and operating plans is sometimes shared with other agencies to provide inputs but the primary responsibility typically rests with the state agency. In most states the Department of Transportation takes on the responsibility. In most of those operations the state also assumes responsibility for all or a portion of the funding.

Decisions to implement and then operate intercity passenger rail service usually require legislative and executive branch approvals. Commitment of the state to a funding obligation may also require a vote of the residents of the state of Alabama, especially if it would require a new tax or fee to support the rail service.

8.4.2 Corridor Management

In several corridors around the country a single agency or a group of agencies assembles to implement and operate the passenger rail service. This is true in areas such as the San Francisco Bay where several agencies formed a “joint powers” authority (JPA). The JPA form of governance was used in that situation because the service crossed many jurisdictional boundaries and each jurisdiction has funding obligations as well as interests in the level and quality of service.

In the Birmingham-Montgomery corridor, the geographic area for the proposed service will determine the number of agencies involved in developing a governance plan. Agencies within the defined service area would need to work together to plan and implement an intercity passenger rail and/or regional commuter rail system.

The agencies would maintain their current responsibilities and funding for their current programs but would be jointly charged with implementation of passenger rail in the corridor and/or region. The transportation agencies would need to agree to implement and administer the passenger rail system by one of a variety of means including:

- A new Passenger Rail Authority (PRA);
- Designation of one of the agencies as the Passenger Rail Authority; or
- Establishment of a new Joint Powers Authority (JPA) with a provision for representation appropriate to the corridor or system to be implemented. One potential example of a regional Joint Powers Authority would be through the formation of a multi-county Corridor Planning Council.

8.4.3 Funding Options

Using the capital and net annual operating costs for Alternative 1 presented in Sections 6 and 7, funding for about $120 million in capital and an annual $1.2 million for operations would be needed to start passenger rail service. If debt is used to pay the capital costs and adding the annual net operating costs results in an annual obligation of $6.0 million. Revenue sources to provide this level of funding will be necessary.

New or portions of existing revenue streams that would be dedicated to development and ongoing operation of the intercity passenger and commuter rail system will need to be identified. Typical sources used for other passenger rail service lines are from various taxes. In most cases the taxes are a form of sales tax that is levied to support transportation projects. In some locations, property taxes are used to pay for the service. To negotiate for trackage rights or right-of-way from the railroads, an assured funding commitment will be required. At the same time it is important to recognize the strong preference among agencies to avoid disrupting current programmed projects and funding.

For the Birmingham-Montgomery corridor, a defined area will need to be identified in which the new taxes could be levied. The collected taxes than can be utilized by the rail authority (or similar entity) to pay for the passenger rail service. Assuming that a county-wide tax including both Jefferson and Montgomery County is utilized for funding a new passenger rail service, the population total is around 890,000 for both areas. The cost per resident would be about $1.50 ($1.35), if the new tax is only covering the net operating costs. Conversely, if the total annual costs (annualized capital and net annual operating costs) are to be covered, it will amount to about $7.00 ($6.74) per resident.

Another potential source of funding for a portion of the capital costs would be from the FRA as part of the existing High-speed Intercity Passenger Rail (HSIPR) program of 2009. Currently this program is not fully funded from the initial designations and additional funding amounts since inception have not been made by Congress.

8.5 Implementation Steps

A number of action items are required for implementation of either an intercity or commuter rail service between Birmingham and Montgomery. This includes future coordination with CSXT, developing a system of governance, and identifying sources of funding. TABLE 33 summarizes the near-term implementation steps recommended for returning passenger rail service between the two cities, and a proposed timeframe.

TABLE 33 – Steps for Implementation

ITEM	RESPONSIBLE PARTY	PARTNERS	TIME FRAME
1) ON-GOING COORDINATION • Coordination with CSXT and other freight railroads for improved facilities and freight movement. • Coordination with FRA by ADECA as the state sponsoring agency for intercity passenger service between Birmingham and Montgomery. • On-going stakeholder involvements as projects are developed.	RPCGB Montgomery MPO CARPDC ADECA	CSXT Local Jurisdictions	To be determined
2) CSXT PASSENGER RAIL COORDINATION & PLANNING • Continue coordination between ADECA and CSXT regarding opportunities for passenger rail service in Alabama. • Develop corridor specific recommendations for intercity passenger rail service between Birmingham and Montgomery and provide necessary details for implementation. • After ADECA selects a preferred alternative for Birmingham/Montgomery passenger rail service, identify opportunities for additional regional commuter rail service along CSXT corridors in the following counties: Jefferson, Shelby, Chilton, Autauga, Elmore and Montgomery.	ADECA	Local Jurisdictions	To be determined
3) REGIONAL TRANSPORTATION PLANNING UPDATES • Continue coordination between ADECA and CSXT Railway regarding opportunities for passenger rail service in Alabama. • Develop corridor specific recommendations for the CSXT/Birmingham-Montgomery Corridor and provide necessary details for implementation. (e.g., RPCGB Regional Transit Improvement Plan, Montgomery MPO Transit Development Plan, Alabama State Rail Plan).	RPCGB Montgomery MPO CARPDC ALDOT	Local Jurisdictions ADECA	To be determined

SOURCE: HDR ENGINEERING, INC., 2013

TABLE 33 – Steps for Implementation (Continued)

ITEM	RESPONSIBLE PARTY	PARTNERS	TIME FRAME
4) FUTURE CORRIDOR DEVELOPMENT PLANS • Complete more detailed studies and analyses following the FRA format for Corridor Development Plans and eventually a full Service Development Plan with required NEPA environmental studies. • Corridor and Service Development Plans would be applicable to the following corridors: Birmingham-Mobile Passenger Rail, Montgomery-Mobile Passenger Rail and Gulf Coast High-Speed Rail Corridor (New Orleans-Birmingham-Atlanta). • Pending recommendations from current and future planning studies in the applicable corridors, develop corridor specific recommendations and provide necessary details for implementation.	RPCGB CARPDC Montgomery MPO ADECA	CSXT ADECA	To be determined
5) IDENTIFY FUNDING SOURCE COMMITMENT Define new or portions of existing revenue streams that would be dedicated to development and ongoing operation of the intercity passenger and commuter rail system. An assured funding commitment will be required to negotiate for tracking rights or right-of-way from the railroads. At the same time it is important to recognize the strong preference to avoid disrupting current programmed projects and funding among the agencies. A potential source of funding that would contribute a portion of the capital and possibly operating funds would be from the FRA as part of the existing Passenger Rail Investment and Improvement Act (PRIIA) of 2008 and the High-Speed Intercity Passenger Rail (HSIPR) program of 2009.	RPCGB CARPDC Montgomery MPO ADECA Legislature	Local Jurisdictions	To be determined
6) DEVELOP GOVERNANCE PLAN The number of agencies involved in developing a governance plan may be determined by the geographic area for the proposed service. Agencies within the defined service area would need to work together to plan and implement an intercity passenger rail and/or regional commuter rail system. The agencies would maintain their current responsibilities and funding for their current programs but would be jointly charged with implementation of passenger rail in the corridor and/or region. The transportation agencies would need to agree to implement and administer the passenger rail system by one of a variety of means including: • A new Passenger Rail Authority (PRA); • Designation of one of the agencies as the Passenger Rail Authority; or • Establishment of a new Joint Powers Authority (JPA) with a provision for representation appropriate to the corridor or system to be implemented. One potential example of a regional Joint Powers Authority would be through the formation of a multi-county Megapolitan Planning Council.	RPCGB CARPDC Montgomery MPO ADECA BJCTA MATS	Local Jurisdictions	To be determined

SOURCE: HDR ENGINEERING, INC., 2013

TABLE 33 – Steps for Implementation (Continued)

ITEM	RESPONSIBLE PARTY	PARTNERS	TIME FRAME
6) DEVELOP PARTNERSHIPS WITH RAILROADS Develop a public/private Memorandum of Understanding followed by detailed agreements with freight railroad companies to define funding and to implement passenger rail facilities and services that will mutually benefit the public and private sector interests.	Passenger Rail Authority **or** Joint Powers Authority	CSXT NARP Amtrak Elected officials Tribal Communities	To be determined
7) PASS ENABLING LEGISLATION Work to pass enabling legislation relative to liability and indemnification to facilitate intercity passenger and/or commuter rail operations in freight rail corridors similar to legislation recently passed in Minnesota, Virginia, New Mexico, and Colorado.	Passenger Rail Authority **or** Joint Powers Authority	BJCTA MATS ADECA	To be determined
8) DEVELOP SEAMLESS TRANSIT SYSTEM Coordinate joint planning and operations to develop a seamless system of transit services throughout the Greater Birmingham/Central Alabama region.	Passenger Rail Authority **or** Joint Powers Authority	BJCTA MATS ADECA County Governments Tribal Communities Railroads Major Landowners Business Community	To be determined

SOURCE: HDR ENGINEERING, INC., 2013

APPENDIX A:

APPENDIX A: COMMENTS FROM SURVEY QUESTION 12

Do you have any other comments regarding train service between **Birmingham** and **Montgomery**?

COMMENT 1 - WISH WE WOULD HAVE HAD THE SERVICE YEARS AGO.
COMMENT 2 - I'D LIKE TO SEE MORE TRAIN SERVICES.
COMMENT 3 - THEY NEED TO PUT THE TRAINS BACK!
COMMENT 4 - Make it as good as china's rail service.
COMMENT 5 - I think it should start tomorrow.
COMMENT 6 - INCREASE AVAILABILITY TO TRAVEL LONGER DISTANCES.
COMMENT 7 - I would like to see it happen.
COMMENT 8 - I remember riding the train as a child to Montgomery, and it was an enjoyable experience.
COMMENT 9 - It's a good service and I have no complaints.
COMMENT 10 - I THINK THAT TRAIN SERVICE SHOULD BE MADE SAFER.
COMMENT 11 - I WISH THEY WOULD PROVIDE IT.
COMMENT 12 - DESPERATLY NEED THE TRANSIT SYSTEM BROUGHT UP TO CODE WITH THE OTHER STATES. WOULD LIKE MORE TRANSPORTATION AVAILABLE FOR MEDICAL, WORK, AND SCHOOLS.
COMMENT 13 - hope to get it back
COMMENT 14 - I think that it is a good idea and it really needs to be looked into.
COMMENT 15 - its needed
COMMENT 16 - It would be nice if that service was provided.
COMMENT 17 - *nonstop, wish there were dining cars
COMMENT 18 - I LOVE RIDING THE TRAIN BUT I AM TOO OLD TO USE IT ANYMORE.
COMMENT 19 - It will not be feasible.
COMMENT 20 - I THINK IT WOULD BE VERY BENEFICIAL.
COMMENT 21 - WE NEED THE SERVICE. IT WOULD TAKE A LOT OF STRESS OFF THE DRIVE.
COMMENT 22 - It might work for students who are traveling.
COMMENT 23 - I WOULD LIKE A TRAIN FROM BIRMINGHAM TO TEXAS.
COMMENT 24 - There needs to be better accessibility to the train.
COMMENT 25 - They can make the route better for shopping.
COMMENT 26 - A GREAT SERVICE IF YOU CAN GET IT STARTED.

COMMENT 27 - I THINK IT IS WONDERFUL FOR PEOPLE WHO ARE NOT ALONE.

COMMENT 28 - I like the idea of a train straight through from Montgomery to Birmingham and 25.00 is too much to pay for a one-way trip.

COMMENT 29 - I think it would cut down traffic by offering the service.

COMMENT 30 - It would be great.

COMMENT 31 - They need more handicap cars.

COMMENT 32 - It is not economically important, to travel between the two cities.

COMMENT 33 - IT HAS TO BE RELIABLE AND AFFORDABLE.

COMMENT 34 - I THINK IT'S WONDERFUL.

COMMENT 35 - They need to actually do it because gas isn't going anywhere but up.

COMMENT 36 - The Birmingham to Mobile should be reopened.

COMMENT 37 - MY QUESTION IS WHERE WOULD THE TRAIN STATION BE LOCATED?

COMMENT 38 - I THINK IT SHOULD BE HANDICAP ACCESSIBLE.

COMMENT 39 - I would ride it if it would run often.

COMMENT 40 - I HOPE IT COMES SOON BECAUSE WE NEED IT.

COMMENT 41 - I DO NOT THINK ITS NECESSARY BECAUSE TRAIN TRAFFIC IS LOW.

COMMENT 42 - I would ride it if it would run often.

COMMENT 43 - IT WOULD BE MORE CONVENIENT.

COMMENT 44 - I think it is a good idea for students in college.

COMMENT 45 - THEY SHOULD JUST TAKE THE MONEY FOR THIS IDIOTIC PROPOSAL AND PUT IT INTO EDUCATING OUR PRE-KINDERGARTEN CHILDREN.

COMMENT 46 - I PREFER THE TRAINS TO BE FAST AND CLEAN.

COMMENT 47 - I DO NOT THINK IT IS NECESSARY, NEEDED OR WANTED, PEOPLE LOVE DRIVING THEIR CARS.

COMMENT 48 - They do need train service to Mobile and Mississippi.

COMMENT 49 - WE DEFINITELY NEED A NEW TRAIN STATION HERE IN BIRMINGHAM, OURS IS OLD AND NEEDS TO BE RENOVATED OR TORN DOWN.

COMMENT 50 - I FEEL IT IS A WASTE OF MONEY.

COMMENT 51 - IT DOESN'T EXIST.

COMMENT 52 - IT WOULD NEED TO BE HIGH SPEED WITH NONSTOP SERVICE TO MAJOR CITIES AND DEDICATED RAIL.

COMMENT 53 - We need a service from Birmingham to Atlanta.

COMMENT 54 - I do not want the taxpayer money going to pay for train services to go to Montgomery.

COMMENT 55 - I WOULD LIKE TO SEE TRAIN SERVICE BETWEEN BIRMINGHAM AND MONTGOMERY BECOMES A REALITY.
COMMENT 56 - I THINK THEY SHOULD HAVE A SNACK SHOP.
COMMENT 57 - If there were a need, i would use it. We need more public transportation systems.
COMMENT 58 - I HOPE IT'S SOMETHING THAT'S ACTIVELY CONSIDERED, IT WOULD BE BENEFICIAL TO BOTH BIRMINGHAM AND MONTGOMERY.
COMMENT 59 - THE STATION IS UNSAFE, NOT HANDICAPPED ACCESSIBLE, VERY DIRTY AND THE HOMELESS LOITER THERE.
COMMENT 60 - FEWER DPS OFFICERS WOULD BENEFIT TRANSPROTATION.
COMMENT 61 - Sounds like a good idea for younger people.
COMMENT 62 - I WOULD LOVE FOR A TRAIN SYSTEM TO BE INSTALLED AND IT WOULD CUT DOWN ON MY CAR USAGE.
COMMENT 63 - IT SHOULD DEPEND ON HOW MANY PEOPLE WOULD BE USING THE TRAIN, ENOUGH TO HAVE IT RUN.
COMMENT 64 - I WISH IT HAD BEEN AVAILABLE LONG AGO.
COMMENT 65 - I REALLY DO NOT SEE ANY NEED FOR TRAIN SERVICE HERE.
COMMENT 66 - BIRMINGHAM IS WOEFULLY UNDERSERVED IN ALL FORMS OF PUBLIC TRANSPORTATION.
COMMENT 67 - I don't want to see my taxes go up to create this train system.
COMMENT 68 - IT DEPENDS ON WHERE THE PICK UP AND DROP OFF DESTINATIONS ARE.
COMMENT 69 - I AM A LARGE SUPPORTER OF RAIL SERVICE AND I ENDORSE THIS OPTION 100%.
COMMENT 70 - It definitely should be an option by now for medical and football.
COMMENT 71 - I WOULD LOVE TO RIDE IT.
COMMENT 72 - IF THEY ARE THINKING ABOUT IT, THEY SHOULD GO AHEAD AND DO IT.
COMMENT 73 - I WOULD BE VERY HAPPY IF THE SERVICE WAS ACTIVATED.
COMMENT 74 - i wish it were available.
COMMENT 75 - I recall an experimental trip about 25 years ago that reporters and other dignitaries made.
COMMENT 76 - I think it would benefit most folks around here.
COMMENT 77 - THEY SHOULD REALLY HAVE IT BACK.
COMMENT 78 - I think the rails should run from Mobile to Atlanta.
COMMENT 79 - It would be a good idea.
COMMENT 80 - I BELIEVE IT WOULD BE VERY USEFUL AND LESS STRESSFUL THAN DRIVING.
COMMENT 81 - IT WOULD BE A GOOD IDEA TO BRING TRAIN SERVICE TO MONTGOMERY.
COMMENT 82 - IF ITS NOT AMTRAK I'LL BE ON IT.
COMMENT 83 - I'M NOT SURE IF THERE IS TRAIN SERVICE.
COMMENT 84 - It would be great.

COMMENT 85 - The costs are too high.
COMMENT 86 - I think it would be great, it gives us an option.
COMMENT 87 - We probably need it but I would not use it.
COMMENT 88 - WE DON'T HAVE IT AND I WOULD LOVE TO SEE IT.
COMMENT 89 - IT MAYBE A GOOD IDEA FOR THOSE WHO WANT TO RIDE AND FOR THOSE WHO MAY NOT HAVE THEIR OWN PERSONAL TRANSPORTATION.
COMMENT 90 - They should get it here as fast as you can!
COMMENT 91 - BE ABLE TO GIVE TIME FOR PEOPLE TO BETTER UNDERSTAND THE TRAIN SYSTEM.
COMMENT 92 - IT IS ABOUT TIME. I ENJOY RIDING TRAINS.
COMMENT 93 - I THINK THAT TRAIN SERVICE BETWEEN BIRMINGHAM AND MONTGOMERY IS A GOOD IDEA.
COMMENT 94 - The system better have good security.
COMMENT 95 - The train rides through a wooded area, and in my opinion, it is not safe.
COMMENT 96 - I think train service would benefit the 21st century.
COMMENT 97 - The train rides through a wooded area, and in my opinion is not safe.
COMMENT 98 - I WOULD LIKE TO SEE IT RUN.
COMMENT 99 - They need comfortable seats.
COMMENT 100 - It was good back in those days.
COMMENT 101 - I WOULD LIKE TO SEE IT RUN.
COMMENT 102 - They need more trips to Mobile.
COMMENT 103 - I THINK A LOT OF PEOPLE WOULD USE IT.
COMMENT 104 - I THINK THAT IT WOULD BE A GREAT THING.
COMMENT 105 - IT WOULD BE NICE TO HAVE. SOMEONE WOULD HAVE TO MEET ME THERE.
COMMENT 106 - THEY USED TO HAVE ONE, THEN THEY CUT IT OUT, I'M VERY DISAPPOINTED IN THAT.
COMMENT 107 - They need a restaurant on the train.
COMMENT 108 - I THINK ITS A GREAT IDEA.
COMMENT 109 - It should be nice.
COMMENT 110 - IT WOULD BE A LOVELY ADDITION.
COMMENT 111 - I just wish we had it now.
COMMENT 112 - It would be great if they had a shuttle for the airport.
COMMENT 113 - I would like to see that happen.
COMMENT 114 - I would love if they had train service between the two cities.

COMMENT 115 - It's something that is needed.
COMMENT 116 - AT ONE TIME THERE WAS TRAIN SERVICE FROM MONTGOMERY TO BIRMINGHAM.WAS SAD TO SEE IT STOP.
COMMENT 117 - I understand why they did away with it, but I think it would be a good time to bring it back.
COMMENT 118 - They need senior discounts.
COMMENT 119 - I think it is an excellent idea.
COMMENT 120 - WE NEED THE SERVICE SO PLEASE HURRY UP IF YOU ARE GOING TO DO THIS.
COMMENT 121 - I WISH I WERE AN ENGINEER ON THE TRAIN; I AM A RETIRED 43-YEAR TRAIN ENGINEER.
COMMENT 122 - I THINK IT IS SOMETHING THAT IS NEEDED.
COMMENT 123 - THEY NEED TO DO IT.
COMMENT 124 - ELDERLY PEOPLE WOULD BE INTERESTED IN TRAVELING.
COMMENT 125 - They need to start running the train again in Montgomery.
COMMENT 126 - IT WOULD BE A GOOD IDEA, AND KEEPING RATES REASONABLE.
COMMENT 127 - THEY SHOULD HAVE ONLY SO MANY PASSENGERS PER TRIP FOR SAFETY.
COMMENT 128 - I LOVE THE TRAIN SERVICE.
COMMENT 129 - I KNOW SOME PEOPLE WOULD LOVE TO HAVE TRANSIT BETWEEN MONTGOMERY AND BIRMINGHAM FOR DOCTOR'S VISITS.
COMMENT 130 - THEY SHOULD HAVE ONLY SO MANY PASSENGERS PER TRIP FOR SAFETY.
COMMENT 131 - TRAIN SERVICE JUST BETWEEN MONTGOMERY AND BIRMINGHAM WOULD BE SILLY.
COMMENT 132 - IT WOULD BE NICE TO HAVE.
COMMENT 133 - I THINK IT WOULD BE WONDERFUL TO HAVE THIS SERVICE TO CONNECT US TO BIRMINGHAM.
COMMENT 134 - I've never been on a train so I would like to try it at least.
COMMENT 135 - It would be nice to have train service here.
COMMENT 136 - IT WOULD BE A ASSET.
COMMENT 137 - I WISH IT WAS A VIABLE OPTION AT THIS TIME, I AM A FORMER EAST COAST GIRL AND I RODE THE TRAIN DAILY FROM NEW JERSEY TO THE BIG APPLE FOR WORK.
COMMENT 138 - It would have to be cheap.
COMMENT 139 - It will be awesome.
COMMENT 140 - I would like to see it happen.
COMMENT 141 - They need to keep working on these transportation projects.
COMMENT 142 - I WOULD LIKE TO SEE IT HAPPEN.
COMMENT 143 - I WOULD LIKE IT TO BE A FAST TRAIN AND TAKES LESS TIME THEN IF I WERE TO DRIVE.

COMMENT 144 - It's a necessary thing to have trains running between the two cities.
COMMENT 145 - A high-speed train would be better; a lot of people would recognize it.
COMMENT 146 - I WAS NOT AWARE OF A TRAIN SERVICE.
COMMENT 147 - Not a lot that it offers. Interested in New Orleans & Atlanta.
COMMENT 148 - It probably would be helpful for people who need to travel back and forth, especially the elderly.
COMMENT 149 - It would be nice to have that option available.
COMMENT 150 - I WOULD LIKE FOR MY GRAND KIDS TO GET TO RIDE THE TRAIN.
COMMENT 151 - It is ridiculous.
COMMENT 152 - The sooner they get going the better.
COMMENT 153 - I think it's a great idea.
COMMENT 154 - I THINK IT IS A GREAT IDEA.
COMMENT 155 - It would be a very good opportunity, and it would be a good chance to save on gas. It would be great to see branch off into a statewide rail.
COMMENT 156 - It would be a good service.
COMMENT 157 - It should ease travel issues getting to those cities.
COMMENT 158 - No reason to go to Montgomery.
COMMENT 159 - IT MIGHT BE NECESSARY BUT I WOULDN'T USE IT.

APPENDIX B:

APPENDIX B: RAIL CROSSING INFORMATION (ALTERNATIVES 1, 2 & 3)

MILEPOST	MAXSPEED (MPH)	MINSPEED (MPH)	GRADE CROSSING	CROSSING TYPE	PROTECTION TYPE	STREET CROSSING	DAILY THRU TRAINS (6AM-6PM)	NIGHT THRU TRAINS (6PM-6AM)	TOTAL DAILY TRAINS	AADT VOLUMES	ALTERNATIVE 1 - BASE	ALTERNATIVE 2 - BASE	ALTERNATIVE 3 - BASE	CITY
390.88	20	15	RR UNDER	PUBLIC	NONE	RED MTN EXPWY	12	21	33			DOUBLE TRACK	DOUBLE TRACK	
391.1	20	15	RR UNDER	PUBLIC	NONE	24TH ST	13	21	34			DOUBLE TRACK	DOUBLE TRACK	
391.27	20	15	RR UNDER	PUBLIC	NONE	22ND ST	14	21	35			DOUBLE TRACK	DOUBLE TRACK	
391.36	20	15	RR UNDER	PUBLIC	NONE	21ST ST	14	21	35			DOUBLE TRACK	DOUBLE TRACK	
391.45	20	15	RR OVER	PUBLIC	NONE	20TH ST	14	21	35			DOUBLE TRACK	DOUBLE TRACK	
391.54	20	15	RR OVER	PUBLIC	NONE	19TH ST	14	21	35			DOUBLE TRACK	DOUBLE TRACK	
391.64	20	15	RR OVER	PUBLIC	NONE	18TH ST	14	21	35			DOUBLE TRACK	DOUBLE TRACK	
392.01	20	15	RR OVER	PUBLIC	NONE	14TH ST	14	21	35			DOUBLE TRACK	DOUBLE TRACK	
392.34	30	25	RR UNDER	PUBLIC	NONE	I-65	14	21	35			DOUBLE TRACK	DOUBLE TRACK	
392.87	30	25	RR OVER	PUBLIC	NONE	6TH AVE S	14	21	35			DOUBLE TRACK	DOUBLE TRACK	
393.48	30	25	AT GRADE	PUBLIC	FLASHING LIGHTS & GATES	17TH AVE S	14	21	35	1,780		DOUBLE TRACK	DOUBLE TRACK	
394.1	30	25	RR UNDER	PUBLIC	NONE	GREEN SPRINGS AVE	14	21	35			DOUBLE TRACK	DOUBLE TRACK	
395.89	30	25	RR UNDER	PUBLIC	NONE	W OXMOOR RD	13	20	33			DOUBLE TRACK	DOUBLE TRACK	
397.6	30	25	RR UNDER	PUBLIC	NONE	LAKESHORE PKWY	6	11	17				DOUBLE TRACK	
397.88	30	25	RR UNDER	PUBLIC	NONE	WENONOH-OXMOOR RD	6	11	17				DOUBLE TRACK	
398.9	30	25	AT GRADE	PUBLIC	FLASHING LIGHTS & GATES	CAMMACK RD	6	10	16	710			DOUBLE TRACK	
400.17	30	25	AT GRADE	PUBLIC	FLASHING LIGHTS & GATES	SHANNON RD	6	10	16	1,150			DOUBLE TRACK	
401.22	50	45	RR UNDER	PUBLIC	NONE	ROSS BRIDGE PKWY	6	10	16				DOUBLE TRACK	
404.22	40	35	RR UNDER	PUBLIC	NONE	SR 150	6	5	11					
406.13	40	35	RR OVER	PUBLIC	NONE	CR 269	6	5	11					HELENA
409.03	45	40	AT GRADE	PUBLIC	FLASHING LIGHTS & GATES	MAIN ST / HELENA RD	6	5	11	10,950	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	HELENA
411.08	45	40	AT GRADE	PUBLIC	FLASHING LIGHTS & GATES	CR 52	6	5	11	11,100	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	HELENA
411.3	0	0	RR OVER	PUBLIC	NONE	W OF SR 3/US 31	0	0	0		CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	
411.72	50	45	AT GRADE	PUBLIC	FLASHING LIGHTS & GATES	STONEHAVEN TRL	6	5	11	470	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	
413.1	50	45	AT GRADE	PUBLIC	CANTI FLASHING LIGHTS & GATES	INDUSTRIAL RD (CR 66)	6	5	11	14,410	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	
413.34	40	35	AT GRADE	PUBLIC	FLASHING LIGHTS & GATES	8TH AVE NW	6	5	11					
413.7	0	0	AT GRADE	PRIVATE	NONE	PRIVATE RD	0	0	0					ALABASTER
413.85	0	0	AT GRADE	PEDESTRIAN	NONE	2nd PLACE NW	0	0	0	7,270	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	ALABASTER
413.88	5	1	AT GRADE	PRIVATE	NONE	PRIVATE RD	6	5	11		CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	ALABASTER
413.95	40	35	AT GRADE	PUBLIC	FLASHING LIGHTS	1ST AVE W	6	5	11	5,870	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	
414.37	40	35	AT GRADE	PUBLIC	FLASHING LIGHTS	6TH AVE SW	6	5	11	6,390	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	
414.85	40	35	AT GRADE	PUBLIC	FLASHING LIGHTS	11TH AVE SW	6	5	11					
415.16	40	35	AT GRADE	PUBLIC	CANTI FLASHING LIGHTS & GATES	MONTEVALLO RD	6	5	11	25,230	CROSSING IMPROVEMENTS	GRADE SEPARATED	GRADE SEPARATED	
416.55	40	35	AT GRADE	PUBLIC	FLASHING LIGHTS	FULTON SPRINGS RD	6	5	11	4,460	CROSSING IMPROVEMENTS	GRADE SEPARATED	GRADE SEPARATED	
417.39	40	35	AT GRADE	PRIVATE	NONE	SHADY ACRES RD	6	5	11	60	CROSSING IMPROVEMENTS	GRADE SEPARATED	GRADE SEPARATED	
417.15	40	35	RR UNDER	PUBLIC	NONE	I-65	6	5	11					
413.85	40	35	AT GRADE	PUBLIC	FLASHING LIGHTS	2ND PLACE NW	6	5	11					
414.13	40	35	AT GRADE	PUBLIC	CANTI FLASHING LIGHTS & GATES	SR 119	6	5	11	23,530		GRADE SEPARATED	GRADE SEPARATED	
415.64	40	35	AT GRADE	PRIVATE	NONE	CHENEY LIME&CEMENT CO	6	5	11					
415.89	40	35	AT GRADE	PRIVATE	NONE	PONY DR	6	5	11					
416.01	40	35	AT GRADE	PRIVATE	NONE	PRIVATE RD	6	5	11					
415.94	40	35	RR UNDER	PUBLIC	NONE	I-65	6	5	11					
416.24	40	35	AT GRADE	PUBLIC	CROSSBUCKS	FULTON SPRINGS RD	6	5	11	4,260	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CALERA

MILEPOST	MAXSPEED (MPH)	MINSPEED (MPH)	GRADE CROSSING	CROSSING TYPE	PROTECTION TYPE	STREET CROSSING	DAILY THRU TRAINS (6AM-6PM)	NIGHT THRU TRAINS (6PM-6AM)	TOTAL DAILY TRAINS	AADT VOLUMES	ALTERNATIVE 1 - BASE	ALTERNATIVE 2 - BASE	ALTERNATIVE 3 - BASE	CITY
416.42	10	5	AT GRADE	PUBLIC	FLASHING LIGHTS	US 31/ SR 3	0	4	4	18,230	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CALERA
416.56	40	35	AT GRADE	PUBLIC	CROSSBUCKS	SHADY ACRES RD	6	5	11		CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CALERA
418.14	50	45	AT GRADE	PUBLIC	CROSSBUCKS	SNOW DR	6	5	11		CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CALERA
418.4	50	45	AT GRADE	PUBLIC	FLASHING LIGHTS & GATES	CR 87	6	5	11					
421.47	50	45	AT GRADE	PUBLIC	FLASHING LIGHTS & GATES	DARGIN RD	5	6	11					
421.85	50	45	RR UNDER	PUBLIC	NONE	I-65	5	6	11					
422.17	50	45	AT GRADE	PUBLIC	FLASHING LIGHTS & GATES	CR 84	5	6	11					
423.31	50	45	RR UNDER	PUBLIC	NONE	CR 211	5	6	11					
423.42	50	45	RR UNDER	PUBLIC	NONE	US 31	5	6	11					
424.4	50	40	AT GRADE	PUBLIC	CROSSBUCKS	6TH AVE	8	8	16					
424.96	30	25	AT GRADE	PUBLIC	FLASHING LIGHTS & GATES	SR 25	6	7	13	9,410	CROSSING IMPROVEMENTS	CONSIDER SPEED IMPROVEMENTS FOR ALIGNMENT	CONSIDER SPEED IMPROVEMENTS FOR ALIGNMENT	CALERA
425.03	30	25	AT GRADE	PUBLIC	CROSSBUCKS	17TH AVE	6	7	13	1,830	CROSSING IMPROVEMENTS	CONSIDER SPEED IMPROVEMENTS FOR ALIGNMENT	CONSIDER SPEED IMPROVEMENTS FOR ALIGNMENT	CALERA
425.3	30	25	AT GRADE	PUBLIC	CROSSBUCKS	20TH AVE	6	7	13	780	CROSSING IMPROVEMENTS	CONSIDER SPEED IMPROVEMENTS FOR ALIGNMENT	CONSIDER SPEED IMPROVEMENTS FOR ALIGNMENT	CALERA
425.54	30	25	AT GRADE	PUBLIC	CROSSBUCKS	23RD AVE	6	7	13		CROSSING IMPROVEMENTS	CONSIDER SPEED IMPROVEMENTS FOR ALIGNMENT	CONSIDER SPEED IMPROVEMENTS FOR ALIGNMENT	CALERA
425.81	30	25	AT GRADE	PUBLIC	CROSSBUCKS	SLAB HILL RD	6	7	13		CROSSING IMPROVEMENTS	CONSIDER SPEED IMPROVEMENTS FOR ALIGNMENT	CONSIDER SPEED IMPROVEMENTS FOR ALIGNMENT	CALERA
426.16	50	45	AT GRADE	PUBLIC	CROSSBUCKS	OFF CR 31 @BONNEVILLE DR	6	7	13					
426.57	50	45	AT GRADE	PUBLIC	CROSSBUCKS	CR 6	6	7	13					
426.96	50	45	AT GRADE	PUBLIC	CROSSBUCKS	CR 67	6	7	13					
427.38	50	45	AT GRADE	PRIVATE	NONE	PRIVATE	6	7	13					
427.78	50	45	AT GRADE	PUBLIC	CROSSBUCKS	CR 95	6	7	13					
428.37	50	45	AT GRADE	PUBLIC	CROSSBUCKS	OFF US 31/SR 3	6	7	13					
428.9	50	45	AT GRADE	PUBLIC	CROSSBUCKS	CR 800	6	7	13					
429.43	45	40	AT GRADE	PUBLIC	NONE	US 31/ SR 3	6	7	13					
430.03	50	45	AT GRADE	PUBLIC	CROSSBUCKS	CR 147	6	7	13					
430.7	0	0	AT GRADE	PRIVATE	NONE	PRIVATE RD	0	0	0					
432.32	50	45	RR OVER	PUBLIC	NONE	CR 135	6	7	13					
432.86	50	45	RR UNDER	PUBLIC	NONE	SR 155	6	7	13					
433.87	50	45	AT GRADE	PUBLIC	CROSSBUCKS	CR 25	6	7	13					
434.32	50	45	AT GRADE	PRIVATE	NONE	PRIVATE RD	6	6	12					
435.1	0	0	AT GRADE	PRIVATE	NONE	PRIVATE RD	0	0	0					
435.71	50	45	AT GRADE	PUBLIC	FLASHING LIGHTS	PATTON ST	6	6	12	1,460	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	JEMISON
435.81	50	45	AT GRADE	PUBLIC	FLASHING LIGHTS & GATES	CHURCH ST	6	6	12	9,510	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	JEMISON
435.92	50	45	AT GRADE	PUBLIC	CROSSBUCKS	UNION GROVE RD	6	6	12	1,030	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	JEMISON
436.59	50	45	AT GRADE	PUBLIC	CROSSBUCKS	GUY ST	6	6	12					
436.99	50	45	AT GRADE	PUBLIC	CROSSBUCKS	ELLISON LN	6	7	13					
437.5	60	50	AT GRADE	PUBLIC	CROSSBUCKS		8	8	16					
438.39	50	45	AT GRADE	PUBLIC	CROSSBUCKS	MONTGOMERY / IND DR	6	7	13					
439.14	45	40	AT GRADE	PUBLIC	FLASHING LIGHTS & GATES	DAKOTA RD	6	7	13	2,880	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	THORSBY

MILEPOST	MAXSPEED (MPH)	MINSPEED (MPH)	GRADE CROSSING	CROSSING TYPE	PROTECTION TYPE	STREET CROSSING	DAILY THRU TRAINS (6AM-6PM)	NIGHT THRU TRAINS (6PM-6AM)	TOTAL DAILY TRAINS	AADT VOLUMES	ALTERNATIVE 1 - BASE	ALTERNATIVE 2 - BASE	ALTERNATIVE 3 - BASE	CITY
439.31	45	40	AT GRADE	PUBLIC	FLASHING LIGHTS	JONES ST	6	7	13	900	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	THORSBY
439.39	45	40	AT GRADE	PUBLIC	FLASHING LIGHTS & GATES	CONCORDIA AVE	6	7	13	2,340	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	THORSBY
439.61	45	20	AT GRADE	PUBLIC	CROSSBUCKS	OAK ST	8	8	16					
439.83	45	40	AT GRADE	PUBLIC	CROSSBUCKS	FRANKLIN ST	6	7	13					
440.1	45	40	AT GRADE	PUBLIC	CROSSBUCKS	BAGGETT RD	6	7	13					
440.38	45	40	AT GRADE	PRIVATE	NONE	INTERNATIONAL PAPER	6	7	13					
440.58	50	45	AT GRADE	PUBLIC	CROSSBUCKS	CR 623	6	7	13					
441.22	50	45	AT GRADE	PUBLIC	CROSSBUCKS	CR 233	6	7	13					
441.38	50	45	AT GRADE	PUBLIC	CROSSBUCKS	CR 29	6	7	13					
442.07	50	45	AT GRADE	PUBLIC	CROSSBUCKS	CR 235	6	7	13					
442.7	50	45	AT GRADE	PRIVATE	CROSSBUCKS	OFF US 31	6	7	13					
443.3	0	0	AT GRADE	PRIVATE	NONE	PRIVATE RD	0	0	0					
443.4	0	0	AT GRADE	PRIVATE	NONE	PRIVATE RD	0	0	0					
443.72	50	45	AT GRADE	PUBLIC	FLASHING LIGHTS	LOMAX DR	6	7	13	740				
445.34	50	45	AT GRADE	PUBLIC	CROSSBUCKS	CENTER ST	6	7	13					
445.77	50	45	AT GRADE	PUBLIC	FLASHING LIGHTS & GATES	16TH AVE N	6	7	13					
446.64	35	30	RR UNDER	PUBLIC	NONE	4TH AVE N	6	7	13		CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CLANTON
446.79	35	30	AT GRADE	PUBLIC	CANTI FLASHING LIGHTS & GATES	2ND AVE N	6	7	13	6,480	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CLANTON
446.97	35	30	AT GRADE	PUBLIC	FLASHING LIGHTS & GATES	JACKSON AVE	6	7	13		CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CLANTON
447.49	50	45	AT GRADE	PUBLIC	CANTI FLASHING LIGHTS & GATES	PIPES AVE	6	7	13					
448.23	50	45	AT GRADE	PUBLIC	CANTI FLASHING LIGHTS	LOGAN RD	6	7	13					
449.16	50	45	AT GRADE	PUBLIC	CROSSBUCKS	COODEY RD	6	7	13					
449.54	50	45	AT GRADE	PUBLIC	FLASHING LIGHTS & GATES	CR 7	6	7	13					
450.06	50	45	AT GRADE	PUBLIC	FLASHING LIGHTS & GATES	CR 47	6	7	13					
450.75	50	45	AT GRADE	PUBLIC	CROSSBUCKS	BEN WELLS RD	6	7	13					
451.17	50	45	RR UNDER	PUBLIC	NONE	I-65	6	7	13					
451.47	50	45	AT GRADE	PRIVATE	NONE	PRIVATE	6	7	13					
452.77	50	45	AT GRADE	PRIVATE	NONE		6	7	13					
453.76	50	45	AT GRADE	PUBLIC	FLASHING LIGHTS	MAIN ST	6	7	13					
455.5	50	45	AT GRADE	PRIVATE	NONE	OFF CR 500	6	7	13					
456.25	40	35	AT GRADE	PUBLIC	CANTI FLASHING LIGHTS	DEPOT ST	6	7	13					
456.88	40	35	AT GRADE	PUBLIC	CROSSBUCKS	CR 510	6	7	13					
456.89	45	30	AT GRADE	PUBLIC	CROSSBUCKS	CR 510	5	7	12					
458.78	45	40	AT GRADE	PUBLIC	NONE	CR 503	6	7	13					
459.51	30	25	RR UNDER	PUBLIC	NONE	OLD US 31	6	7	13		CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	
459.61	30	25	RR UNDER	PUBLIC	NONE	US 31	6	7	13		CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	
459.93	30	25	AT GRADE	PUBLIC	CROSSBUCKS	CR 63	6	7	13		CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	
460.72	30	25	AT GRADE	PUBLIC	FLASHING LIGHTS	CR 20	6	7	13		CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	
460.86	30	25	AT GRADE	PUBLIC	CROSSBUCKS	MUSHAT LN	6	7	13		CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	
461.91	30	25	AT GRADE	PUBLIC	CROSSBUCKS	HUNTERS LOOP RD	6	7	13		CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	
462.62	0	0	AT GRADE	PRIVATE	NONE	PRIVATE RD	0	0	0					
463.11	50	45	AT GRADE	PUBLIC	FLASHING LIGHTS	WADSWORTH CROSSING	6	7	13					
464.25	50	45	AT GRADE	PUBLIC	CROSSBUCKS	CR 70	6	7	13					
465.55	50	45	AT GRADE	PUBLIC	CROSSBUCKS	CR 64	6	7	13					
467.13	50	45	AT GRADE	PUBLIC	FLASHING LIGHTS	ALPHA SPRINGS RD	6	7	13					

MILEPOST	MAXSPEED (MPH)	MINSPEED (MPH)	GRADE CROSSING	CROSSING TYPE	PROTECTION TYPE	STREET CROSSING	DAILY THRU TRAINS (6AM-6PM)	NIGHT THRU TRAINS (6PM-6AM)	TOTAL DAILY TRAINS	AADT VOLUMES	ALTERNATIVE 1 - BASE	ALTERNATIVE 2 - BASE	ALTERNATIVE 3 - BASE	CITY
469.17	50	45	AT GRADE	PUBLIC	FLASHING LIGHTS & GATES	CR 7	6	7	13					
469.45	50	45	AT GRADE	PUBLIC	CROSSBUCKS	CYPRESS RD	6	7	13					
472.36	50	45	AT GRADE	PUBLIC	CROSSBUCKS	SPEIGNER CIR	6	7	13					
472.66	50	45	AT GRADE	PUBLIC	CROSSBUCKS	SPEIGNER CIR	6	7	13					
473.26	50	45	AT GRADE	PUBLIC	FLASHING LIGHTS	MARON SPILLWAY RD	6	7	13					
475.87	50	45	AT GRADE	PUBLIC	FLASHING LIGHTS	JACKSON ST	6	7	13					
476.21	50	45	AT GRADE	PUBLIC	FLASHING LIGHTS	POLITIC RD	6	7	13					
476.31	50	45	RR UNDER	PUBLIC	NONE	SR 143	6	7	13					
477.1	50	45	AT GRADE	PRIVATE	NONE	GADDIS RD	6	7	13					
418.14	50	45	AT GRADE	PUBLIC	CROSSBUCKS	SNOW DR	6	5	11		CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CALERA
418.4	50	45	AT GRADE	PUBLIC	FLASHING LIGHTS & GATES	CR 87	6	5	11					
421.47	50	45	AT GRADE	PUBLIC	FLASHING LIGHTS & GATES	DARGIN RD	5	6	11					
421.85	50	45	RR UNDER	PUBLIC	NONE	I-65	5	6	11					
422.17	50	45	AT GRADE	PUBLIC	FLASHING LIGHTS & GATES	CR 84	5	6	11					
423.31	50	45	RR UNDER	PUBLIC	NONE	CR 211	5	6	11					
423.42	50	45	RR UNDER	PUBLIC	NONE	US 31	5	6	11					
424.4	50	40	AT GRADE	PUBLIC	CROSSBUCKS	6TH AVE	8	8	16					
424.96	30	25	AT GRADE	PUBLIC	FLASHING LIGHTS & GATES	SR 25	6	7	13	9,410	CROSSING IMPROVEMENTS	CONSIDER SPEED IMPROVEMENTS FOR ALIGNMENT	CONSIDER SPEED IMPROVEMENTS FOR ALIGNMENT	CALERA
425.03	30	25	AT GRADE	PUBLIC	CROSSBUCKS	17TH AVE	6	7	13	1,830	CROSSING IMPROVEMENTS	CONSIDER SPEED IMPROVEMENTS FOR ALIGNMENT	CONSIDER SPEED IMPROVEMENTS FOR ALIGNMENT	CALERA
425.3	30	25	AT GRADE	PUBLIC	CROSSBUCKS	20TH AVE	6	7	13	780	CROSSING IMPROVEMENTS	CONSIDER SPEED IMPROVEMENTS FOR ALIGNMENT	CONSIDER SPEED IMPROVEMENTS FOR ALIGNMENT	CALERA
425.54	30	25	AT GRADE	PUBLIC	CROSSBUCKS	23RD AVE	6	7	13		CROSSING IMPROVEMENTS	CONSIDER SPEED IMPROVEMENTS FOR ALIGNMENT	CONSIDER SPEED IMPROVEMENTS FOR ALIGNMENT	CALERA
425.81	30	25	AT GRADE	PUBLIC	CROSSBUCKS	SLAB HILL RD	6	7	13		CROSSING IMPROVEMENTS	CONSIDER SPEED IMPROVEMENTS FOR ALIGNMENT	CONSIDER SPEED IMPROVEMENTS FOR ALIGNMENT	CALERA
426.16	50	45	AT GRADE	PUBLIC	CROSSBUCKS	OFF CR 31 @BONNEVILLE DR	6	7	13					
426.57	50	45	AT GRADE	PUBLIC	CROSSBUCKS	CR 6	6	7	13					
426.96	50	45	AT GRADE	PUBLIC	CROSSBUCKS	CR 67	6	7	13					
427.38	50	45	AT GRADE	PRIVATE	NONE	PRIVATE	6	7	13					
427.78	50	45	AT GRADE	PUBLIC	CROSSBUCKS	CR 95	6	7	13					
428.37	50	45	AT GRADE	PUBLIC	CROSSBUCKS	OFF US 31/SR 3	6	7	13					
428.9	50	45	AT GRADE	PUBLIC	CROSSBUCKS	CR 800	6	7	13					
429.43	45	40	AT GRADE	PUBLIC	NONE	US 31/ SR 3	6	7	13					
430.03	50	45	AT GRADE	PUBLIC	CROSSBUCKS	CR 147	6	7	13					
430.7	0	0	AT GRADE	PRIVATE	NONE	PRIVATE RD	0	0	0					
432.32	50	45	RR OVER	PUBLIC	NONE	CR 135	6	7	13					
432.86	50	45	RR UNDER	PUBLIC	NONE	SR 155	6	7	13					
433.87	50	45	AT GRADE	PUBLIC	CROSSBUCKS	CR 25	6	7	13					
434.32	50	45	AT GRADE	PRIVATE	NONE	PRIVATE RD	6	6	12					
435.1	0	0	AT GRADE	PRIVATE	NONE	PRIVATE RD	0	0	0					
435.71	50	45	AT GRADE	PUBLIC	FLASHING LIGHTS	PATTON ST	6	6	12	1,460	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	JEMISON
435.81	50	45	AT GRADE	PUBLIC	FLASHING LIGHTS & GATES	CHURCH ST	6	6	12	9,510	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	JEMISON
435.92	50	45	AT GRADE	PUBLIC	CROSSBUCKS	UNION GROVE RD	6	6	12	1,030	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	JEMISON
436.59	50	45	AT GRADE	PUBLIC	CROSSBUCKS	GUY ST	6	6	12					

MILEPOST	MAXSPEED (MPH)	MINSPEED (MPH)	GRADE CROSSING	CROSSING TYPE	PROTECTION TYPE	STREET CROSSING	DAILY THRU TRAINS (6AM-6PM)	NIGHT THRU TRAINS (6PM-6AM)	TOTAL DAILY TRAINS	AADT VOLUMES	ALTERNATIVE 1 - BASE	ALTERNATIVE 2 - BASE	ALTERNATIVE 3 - BASE	CITY
436.99	50	45	AT GRADE	PUBLIC	CROSSBUCKS	ELLISON LN	6	7	13					
437.5	60	50	AT GRADE	PUBLIC	CROSSBUCKS		8	8	16					
438.39	50	45	AT GRADE	PUBLIC	CROSSBUCKS	MONTGOMERY / IND DR	6	7	13					
439.14	45	40	AT GRADE	PUBLIC	FLASHING LIGHTS & GATES	DAKOTA RD	6	7	13	2,880	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	THORSBY
439.31	45	40	AT GRADE	PUBLIC	FLASHING LIGHTS	JONES ST	6	7	13	900	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	THORSBY
439.39	45	40	AT GRADE	PUBLIC	FLASHING LIGHTS & GATES	CONCORDIA AVE	6	7	13	2,340	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	THORSBY
439.61	45	20	AT GRADE	PUBLIC	CROSSBUCKS	OAK ST	8	8	16					
439.83	45	40	AT GRADE	PUBLIC	CROSSBUCKS	FRANKLIN ST	6	7	13					
440.1	45	40	AT GRADE	PUBLIC	CROSSBUCKS	BAGGETT RD	6	7	13					
440.38	45	40	AT GRADE	PRIVATE	NONE	INTERNATIONAL PAPER	6	7	13					
440.58	50	45	AT GRADE	PUBLIC	CROSSBUCKS	CR 623	6	7	13					
477.34	50	45	AT GRADE	PRIVATE	NONE	GAS PLANT RD	6	7	13					
477.51	50	45	AT GRADE	PRIVATE	NONE	PRIVATE RD	6	7	13					
478.3	50	45	AT GRADE	PUBLIC	CROSSBUCKS	PECAN GROVE DR	6	7	13					
479.28	50	45	AT GRADE	PUBLIC	FLASHING LIGHTS	COOSADA RD	6	7	13					
480.58	50	45	AT GRADE	PRIVATE	CROSSBUCKS	ROGERS DR	6	7	13					
481.48	50	45	AT GRADE	PUBLIC	CROSSBUCKS	PRATTVILLE JCT RD	6	7	13					
482.75	50	45	RR OVER	PRIVATE	NONE	PRIVATE RD	6	7	13					
483.1	50	45	AT GRADE	PUBLIC	CANTI FLASHING LIGHTS & GATES	ALABAMA RIVER PKWY	6	7	13					
483.67	35	30	AT GRADE	PRIVATE	NONE	PRIVATE RD	6	7	13					
484.08	35	30	RR OVER	PRIVATE	NONE	PRIVATE RD	6	7	13		CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	
484.26	35	30	RR OVER	PRIVATE	NONE	PRIVATE RD	6	7	13		CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	
484.71	35	30	RR OVER	PRIVATE	NONE	PRIVATE RD	6	7	13		CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	
485.68	30	25	RR UNDER	PUBLIC	NONE	PARALLEL ST	5	7	12		CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	
486.98	30	25	RR UNDER	PUBLIC	NONE	NORTHERN BLVD / SR 0152	13	12	25		CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	
487.01	0	0	AT GRADE	PUBLIC	NONE	KENNEDY ST	0	0	0		CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	
487.29	10	3	AT GRADE	PUBLIC	CROSSBUCKS	WALKER ST / TILLIS TRACK	0	0	0		CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	CROSSING IMPROVEMENTS	
487.8	20	15	AT GRADE	PUBLIC	FLASHING LIGHTS	W RAILROAD ST	13	12	25					
488.12	0	0	RR OVER	PEDESTRIAN		PEDESTRIAN @ COMMERCE ST	0	0	0					
488.2	0	0	RR UNDER	PEDESTRIAN		PEDESTRIAN @ MOLTON ST	0	0	0					

APPENDIX C:

Conceptual and Illustrative Only

APPENDIX C: ALTERNATIVE 3 - DESIGN DRAWINGS FOR PROPOSED NEW RAIL STATIONS

Proposed Hoover Station: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

Proposed Pelham/Alabaster Station: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

Proposed Calera Station: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

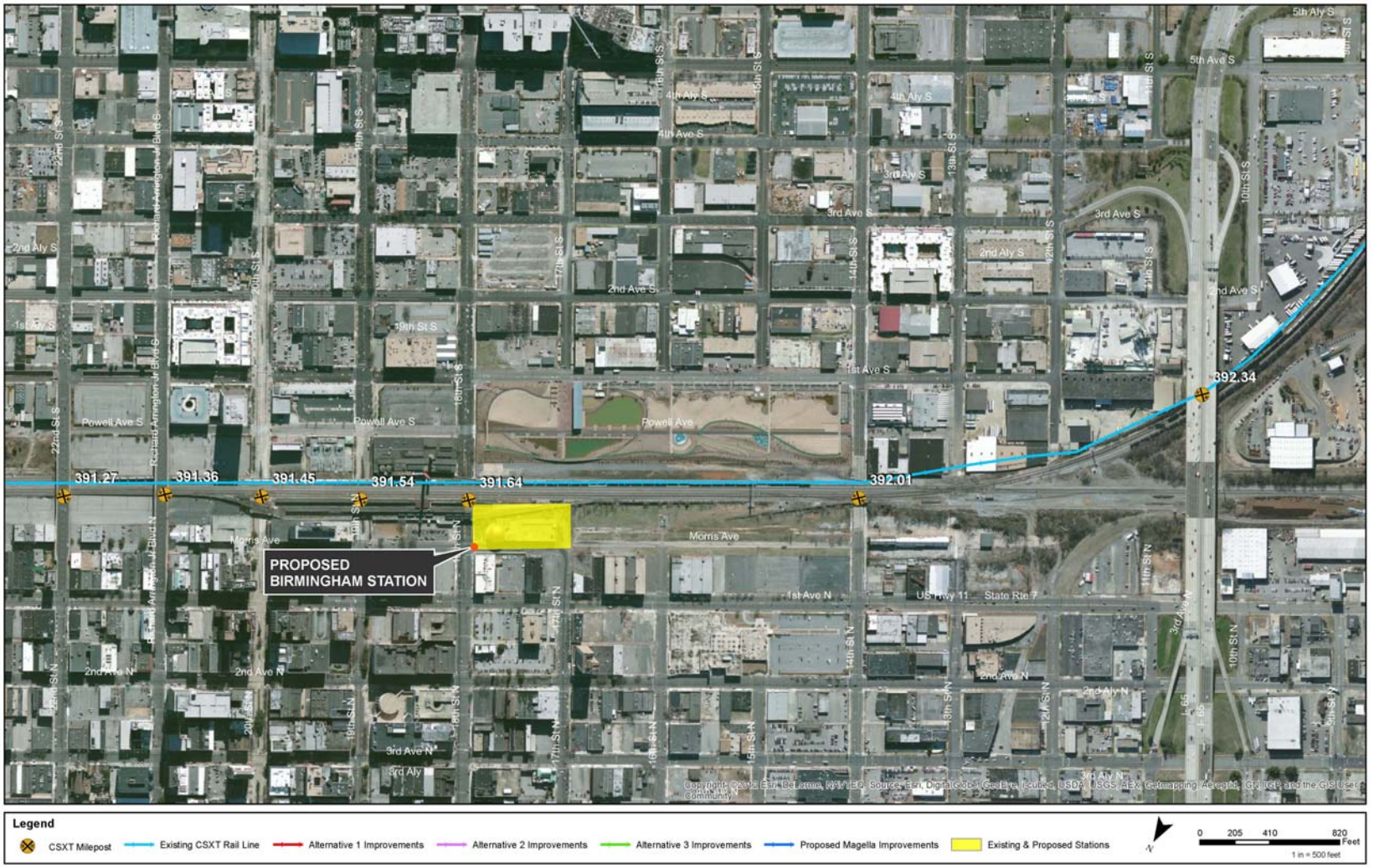
Proposed Elmore Station: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

APPENDIX D:

Conceptual and Illustrative Only

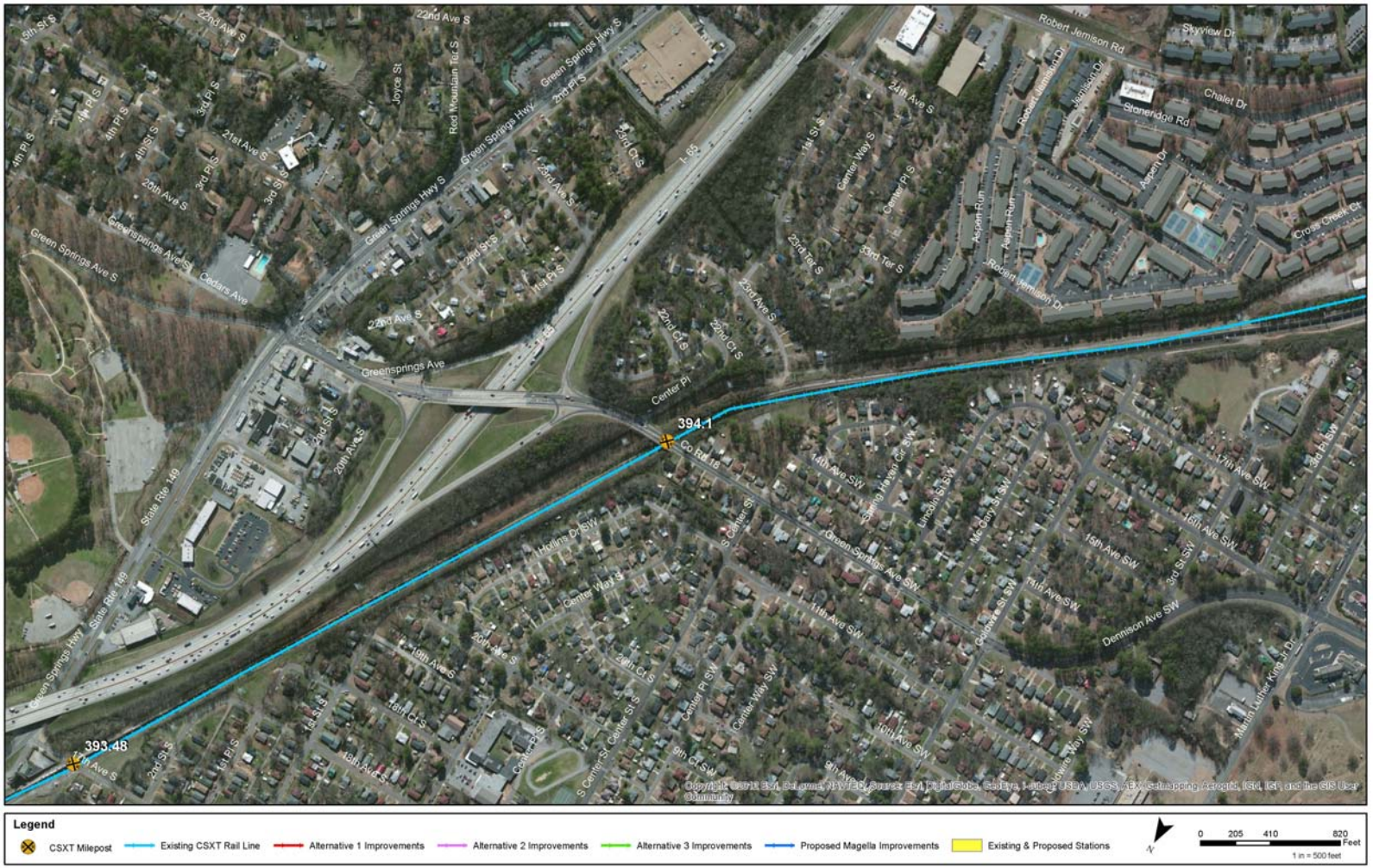
APPENDIX D: ALTERNATIVES 1, 2 & 3: CORRIDOR MAPS WITH INFRASTRACTURE IMPROVEMENTS

MAP 1 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future



MAP 2 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

MAP 3 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future



MAP 4 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

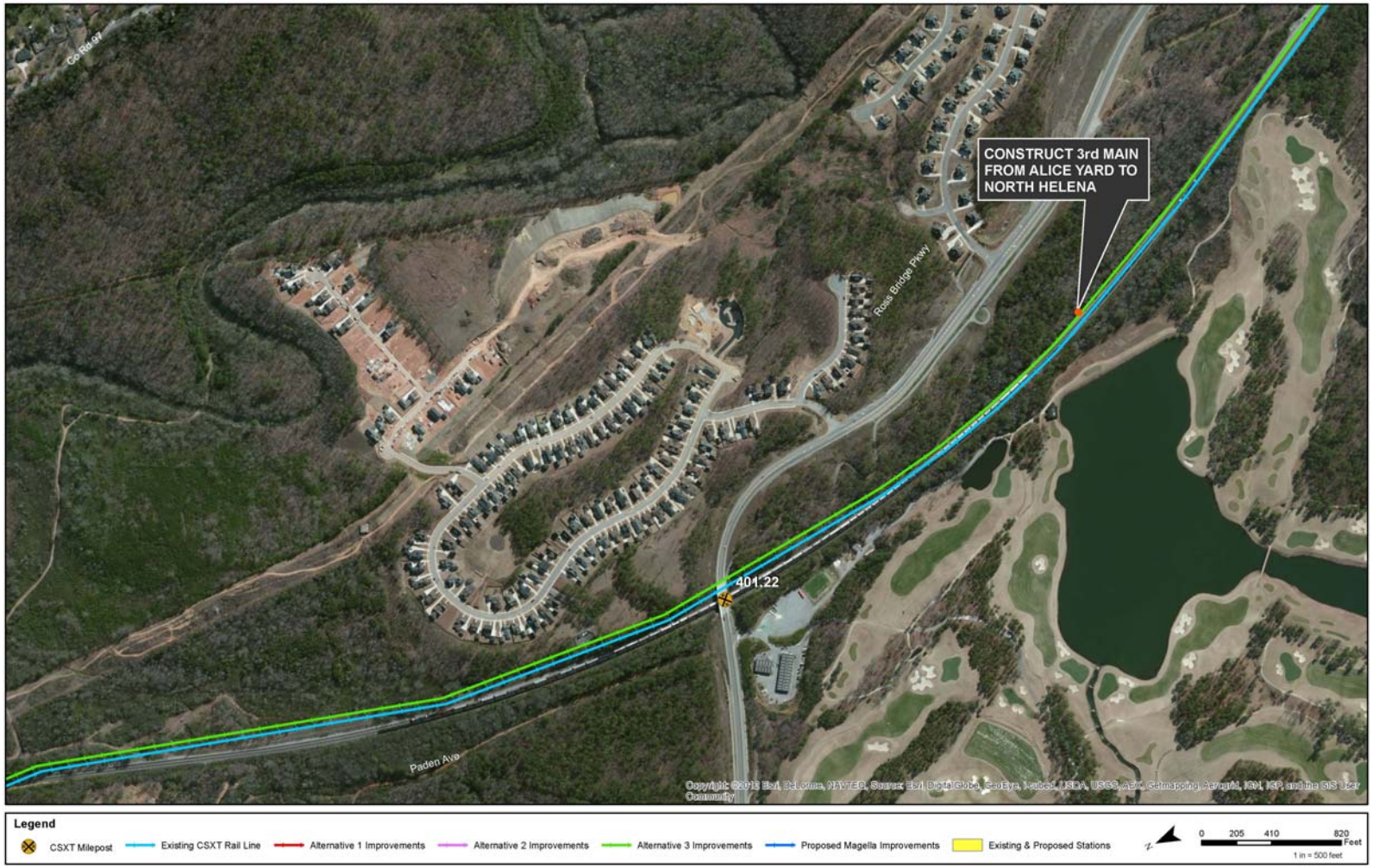
MAP 5 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

MAP 6 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

MAP 7 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

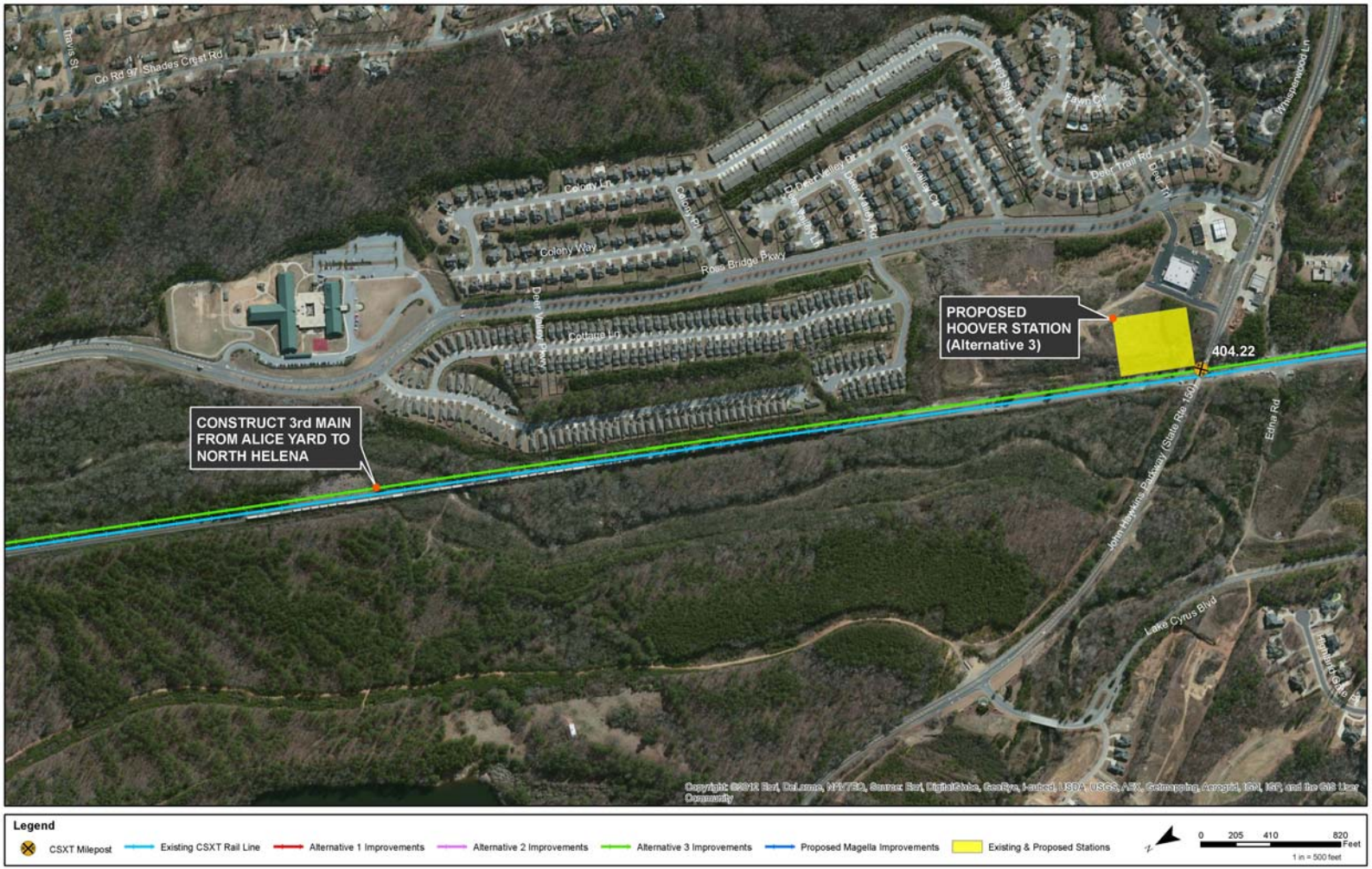
MAP 8 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

MAP 9 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

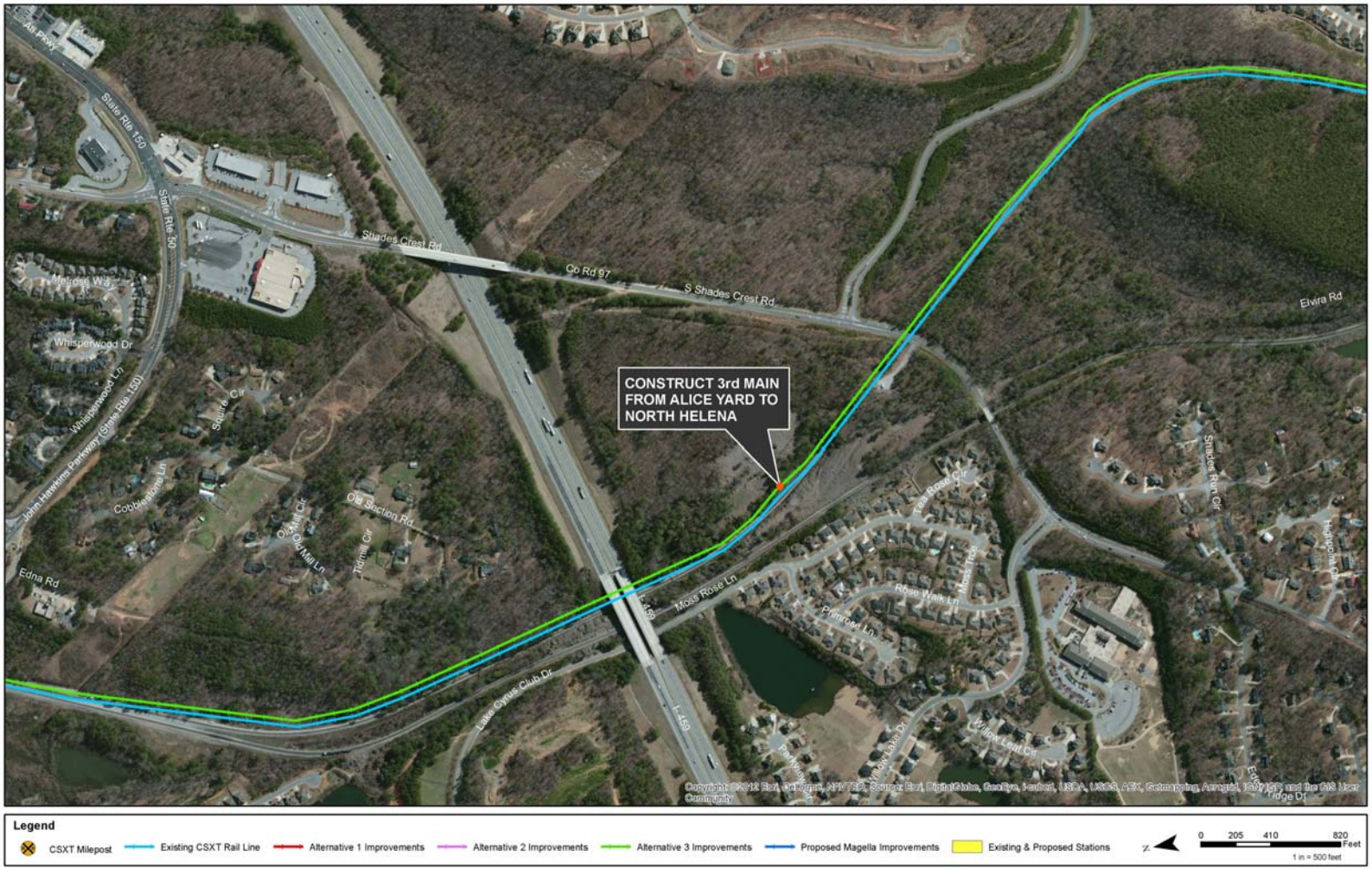


MAP 10 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

MAP 11 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future



MAP 12 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future



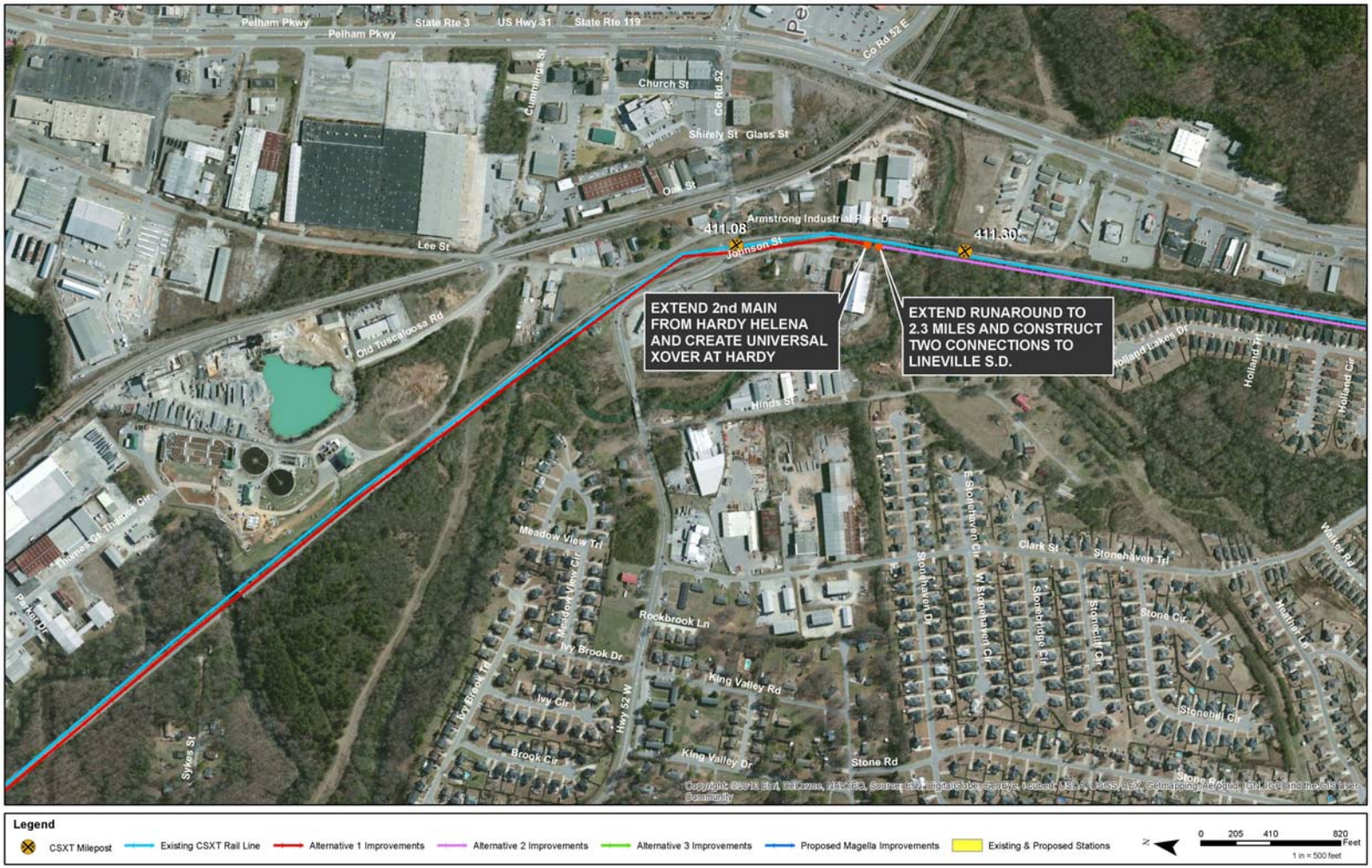
MAP 13 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

MAP 14 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

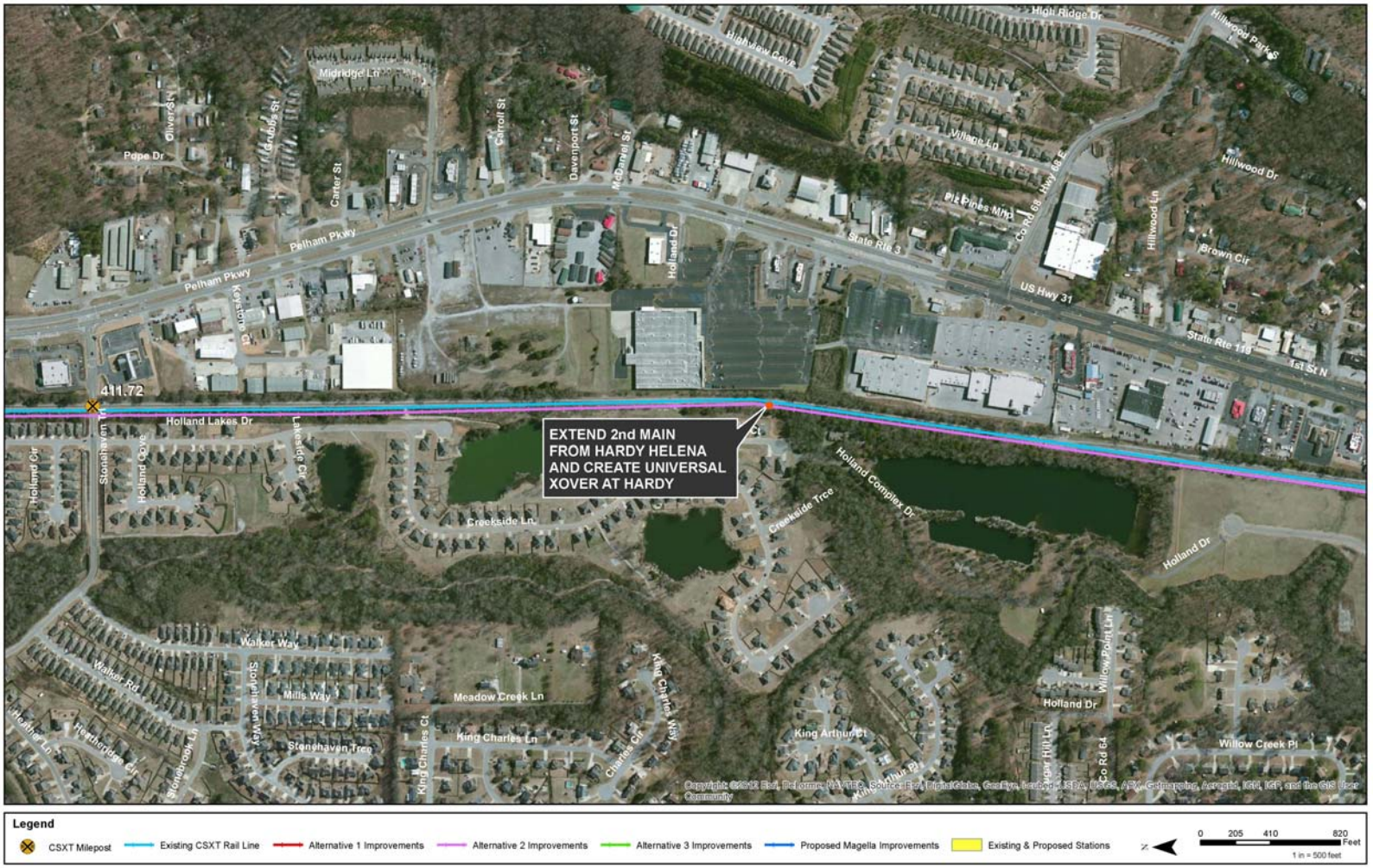
MAP 15 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

MAP 16 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

MAP 17 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future



MAP 18 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

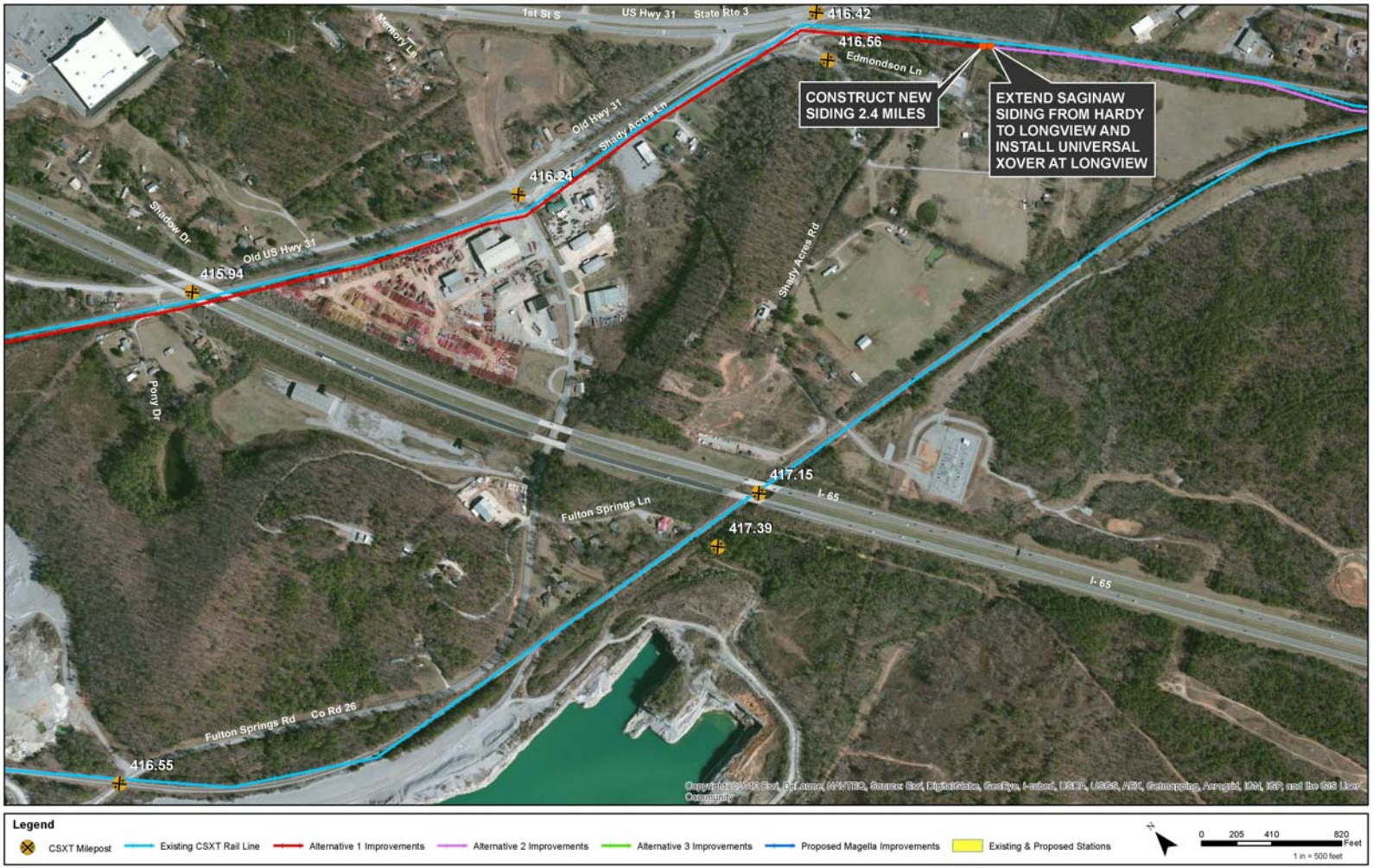


MAP 19 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

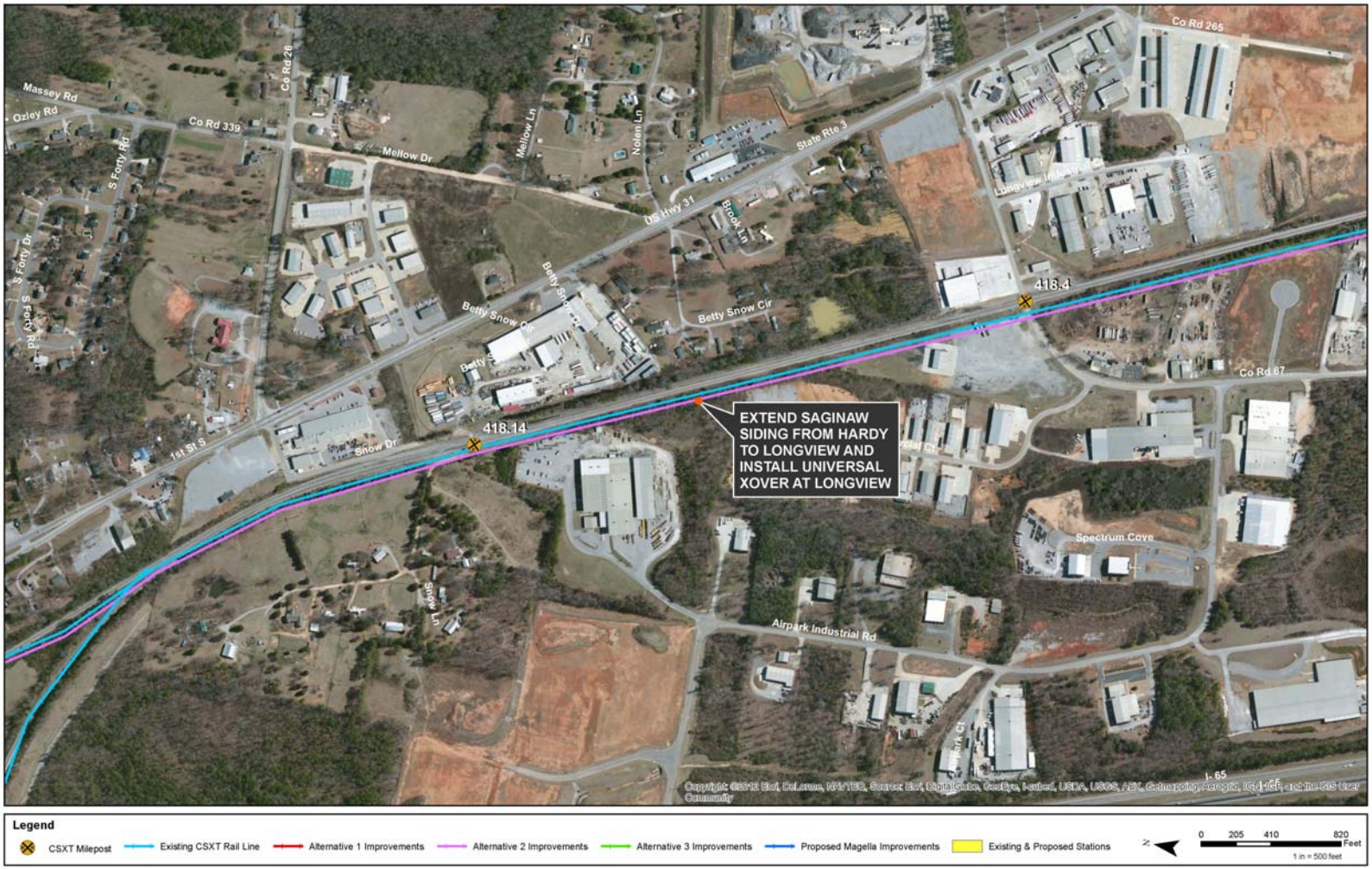
MAP 20 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

MAP 21 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

MAP 22 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future



MAP 23 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future



MAP 24 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

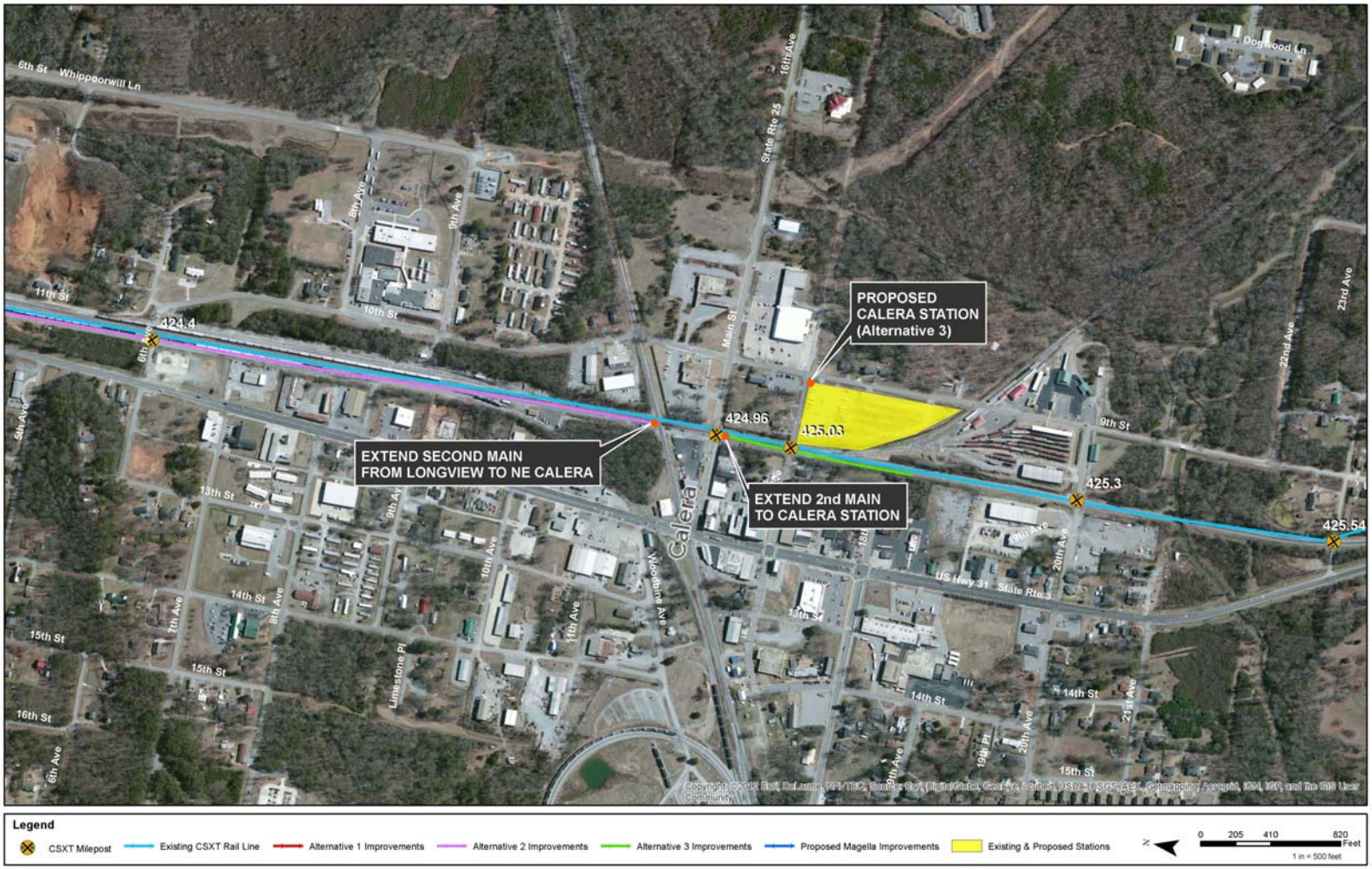
MAP 25 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

MAP 26 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

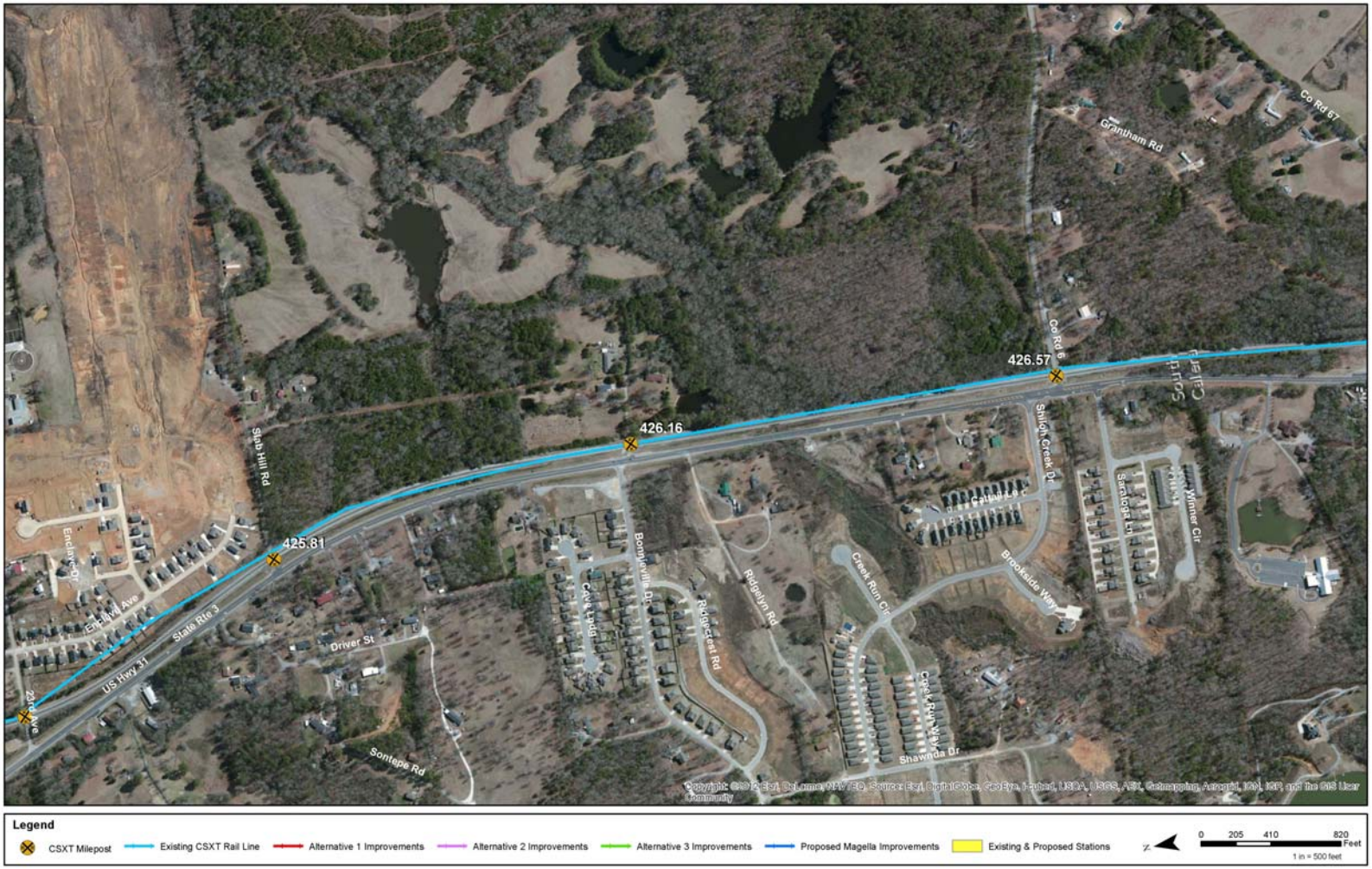
MAP 27 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

MAP 28 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

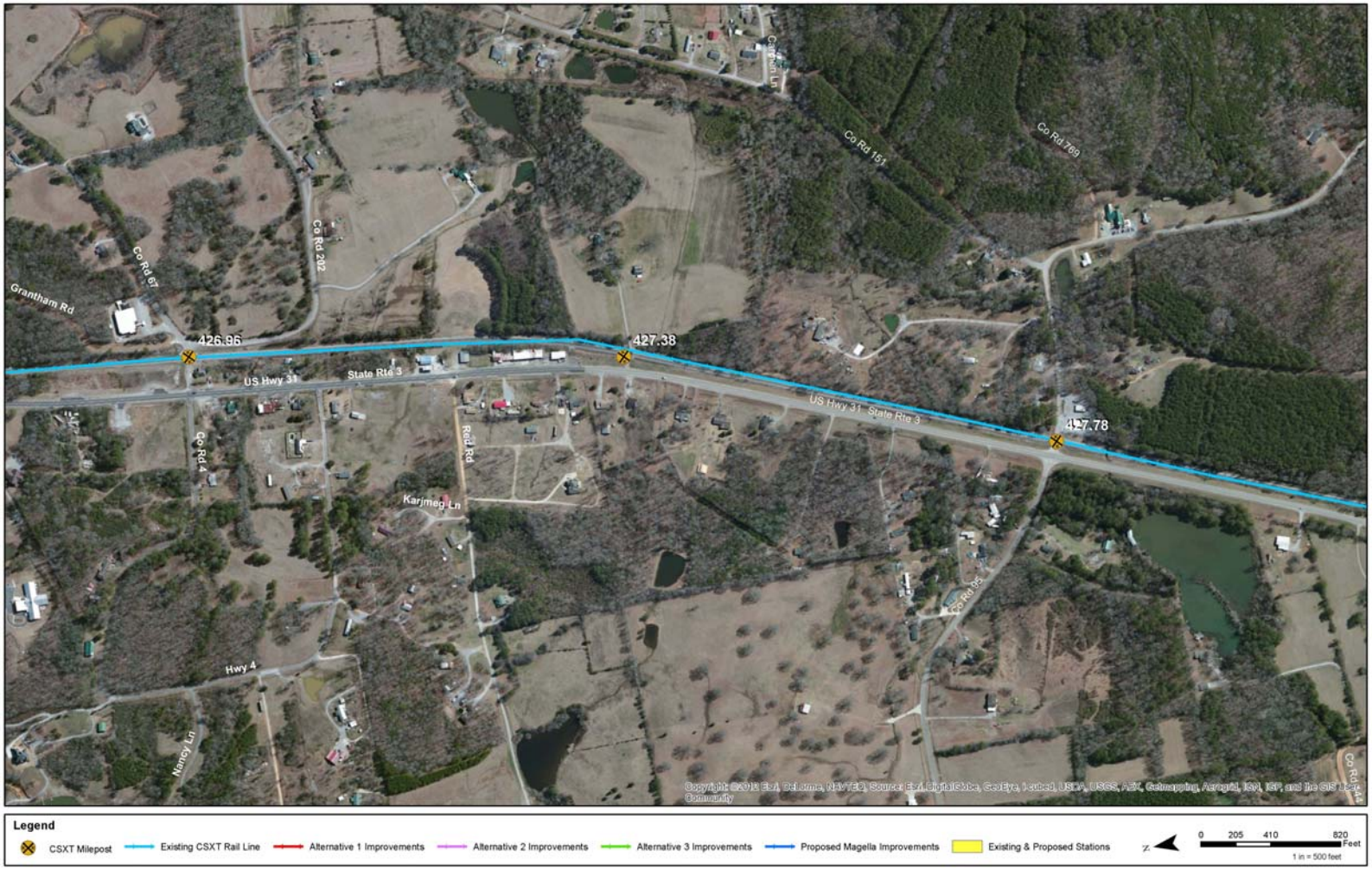
MAP 29 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future



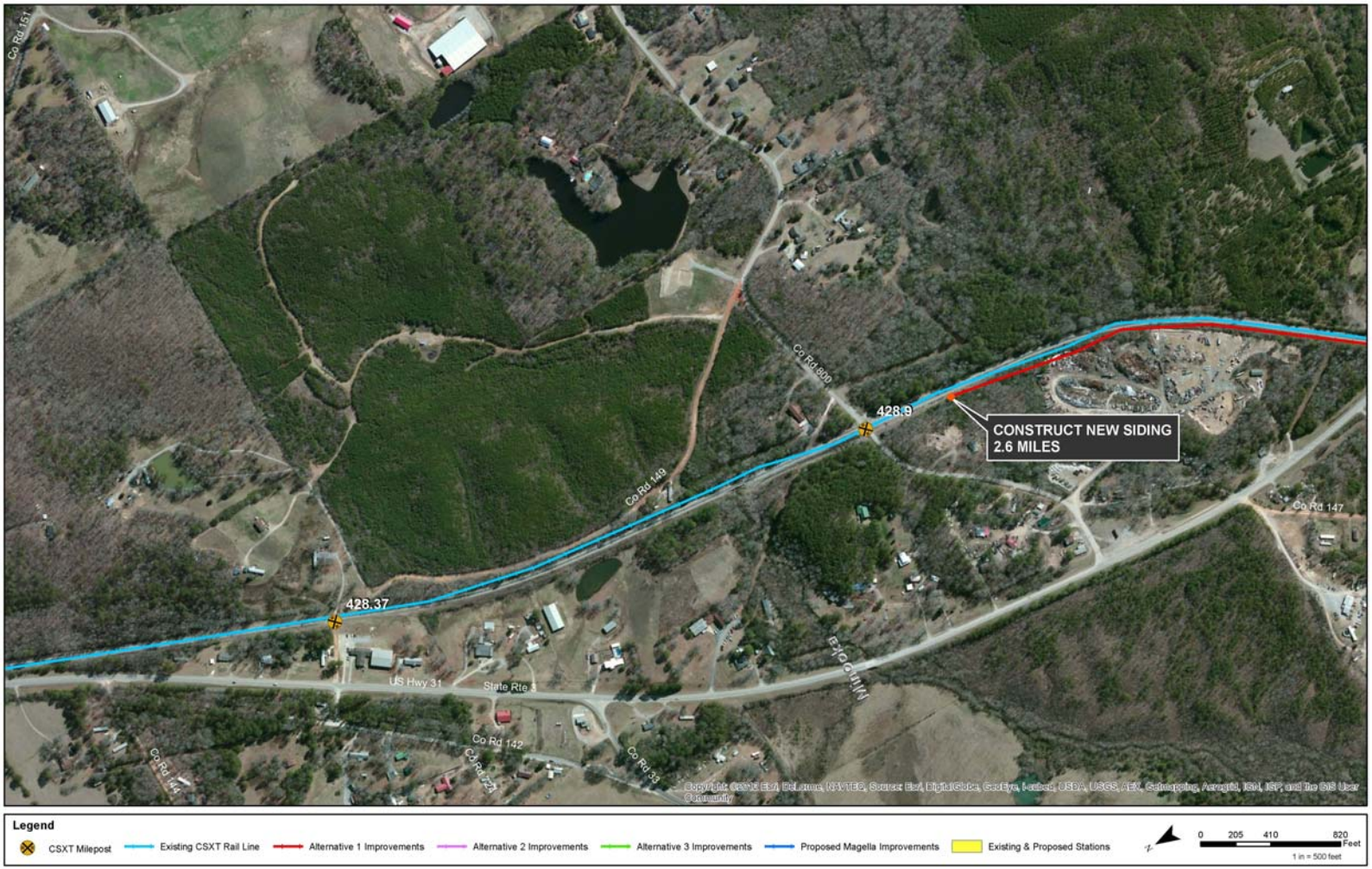
MAP 30 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future



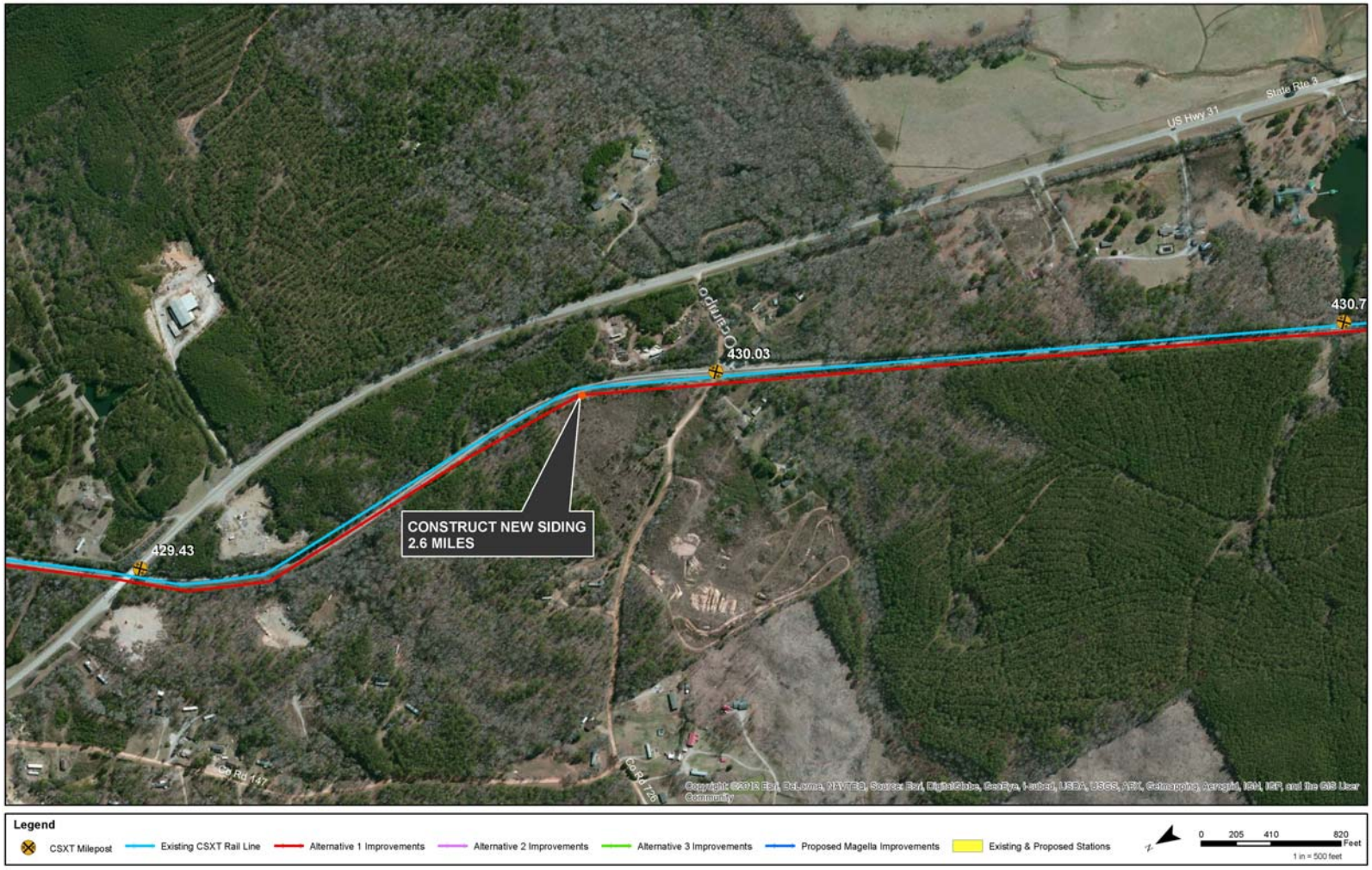
MAP 31 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future



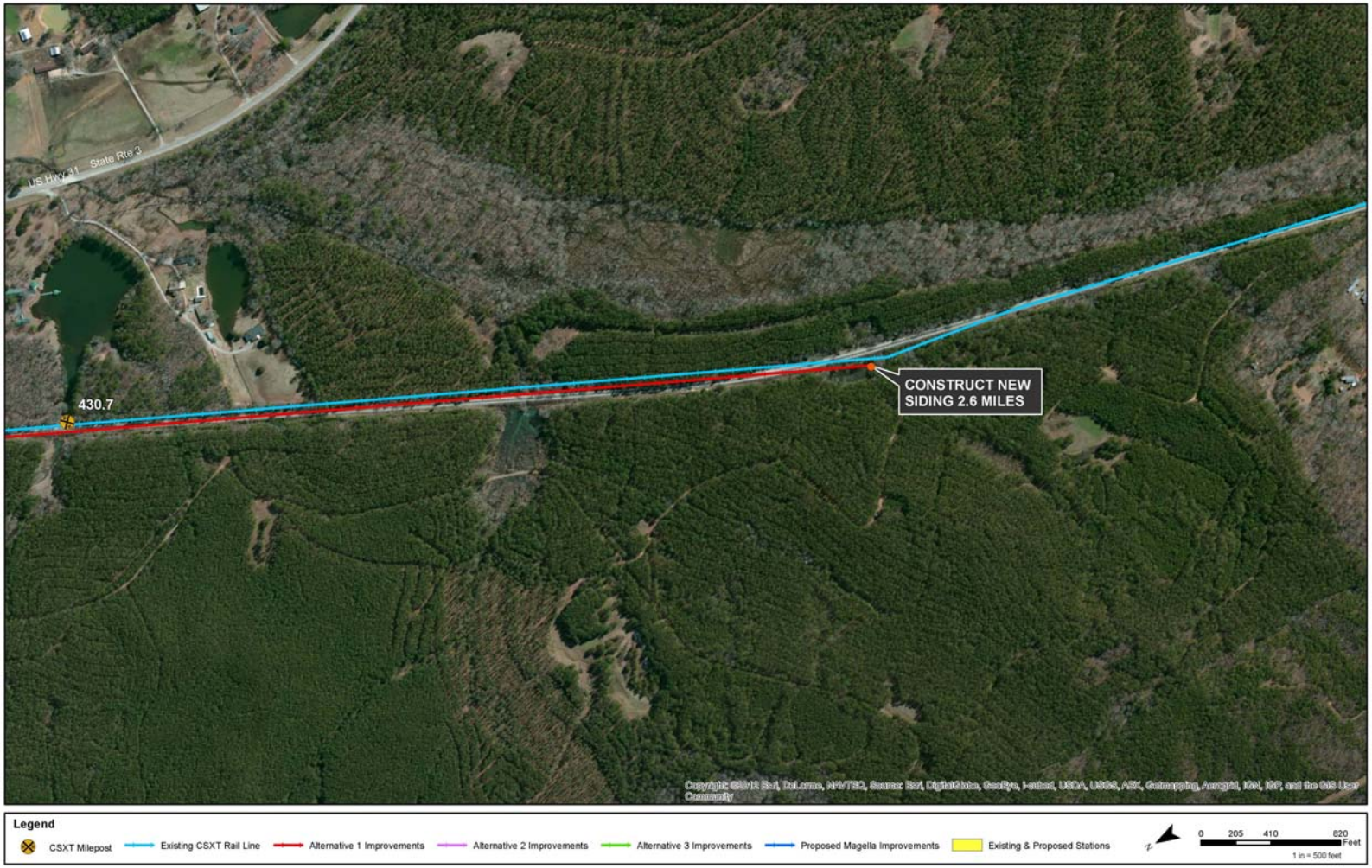
MAP 32 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future



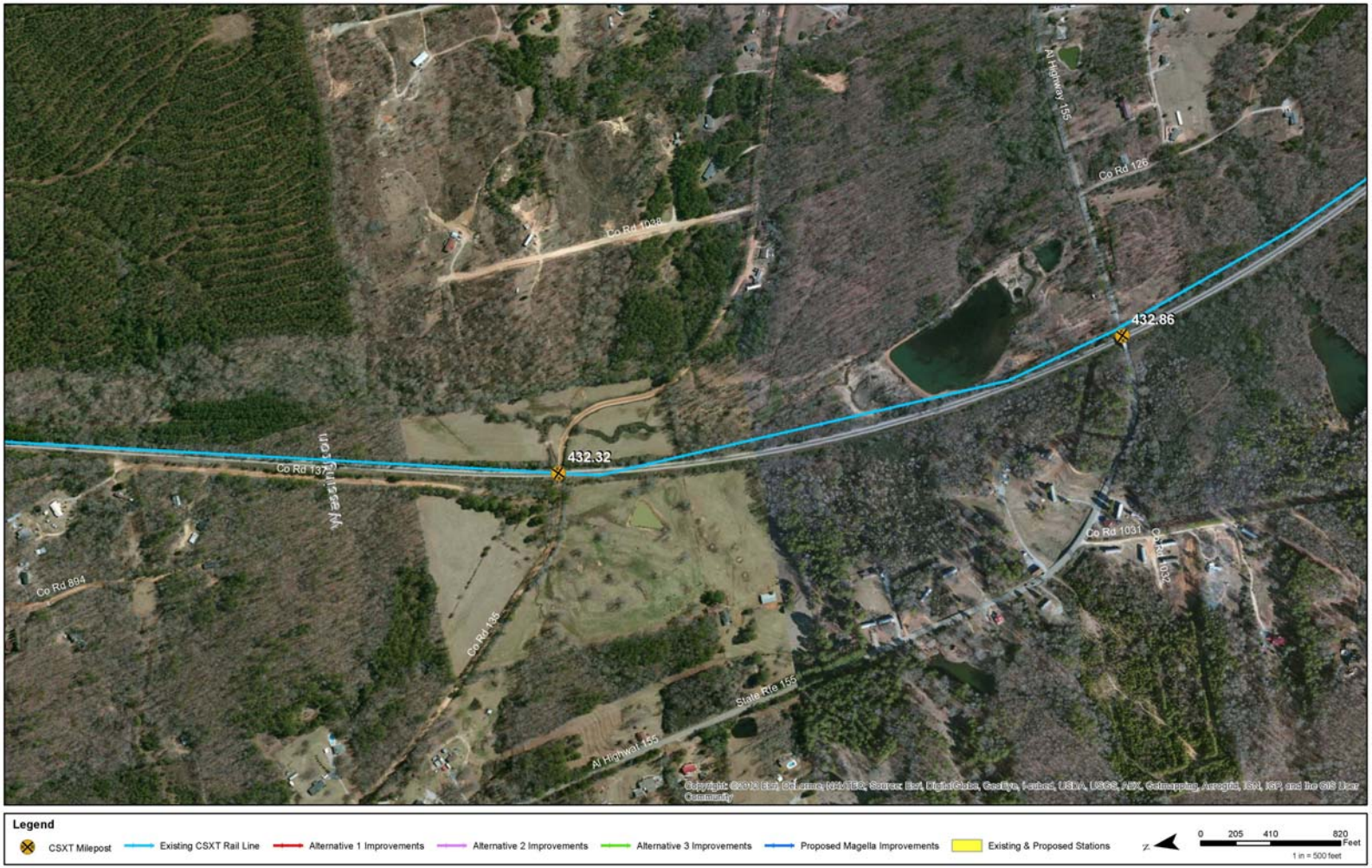
MAP 33 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future



MAP 34 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

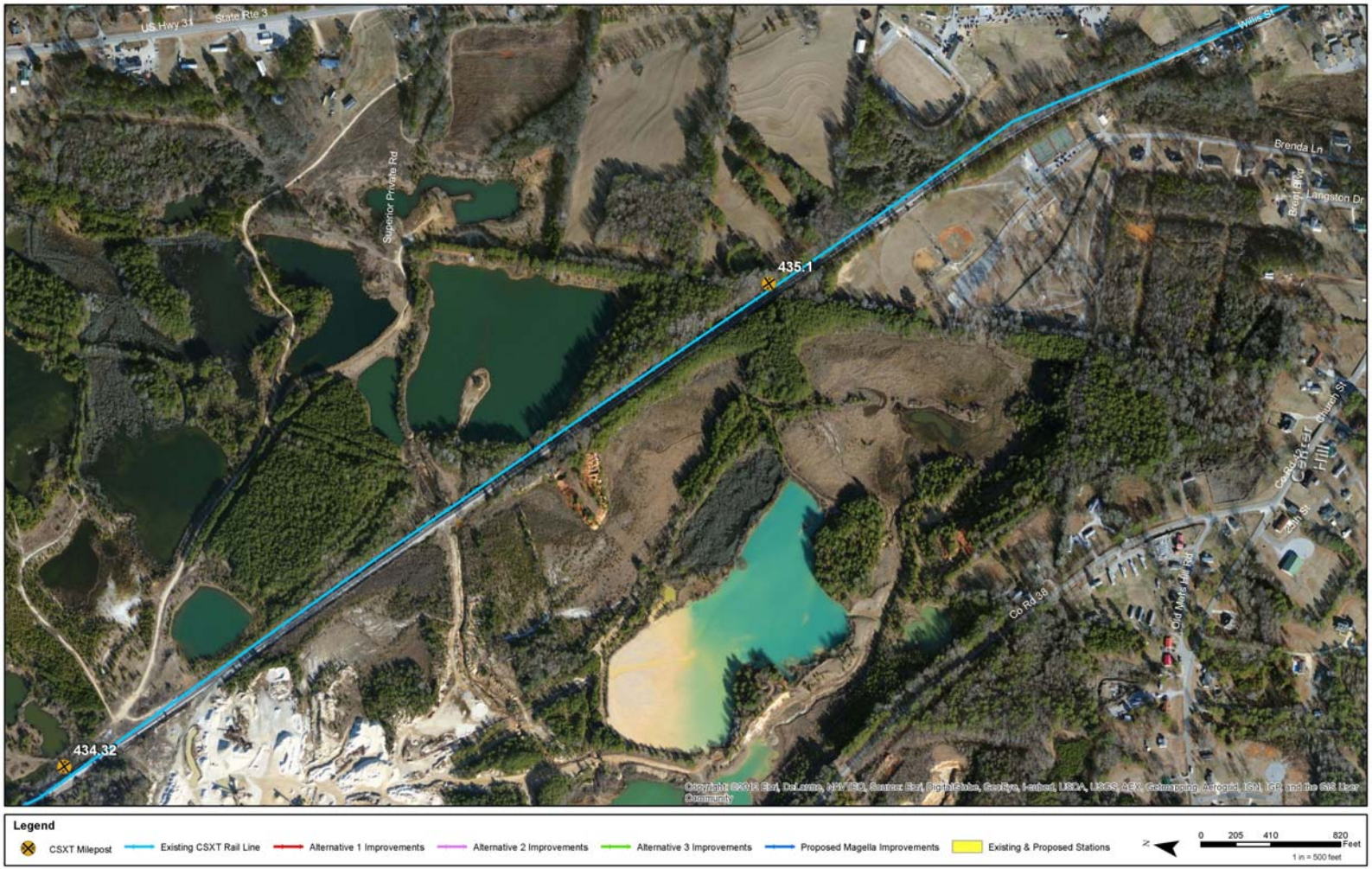


MAP 35 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future



MAP 36 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

MAP 37 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future



MAP 38 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

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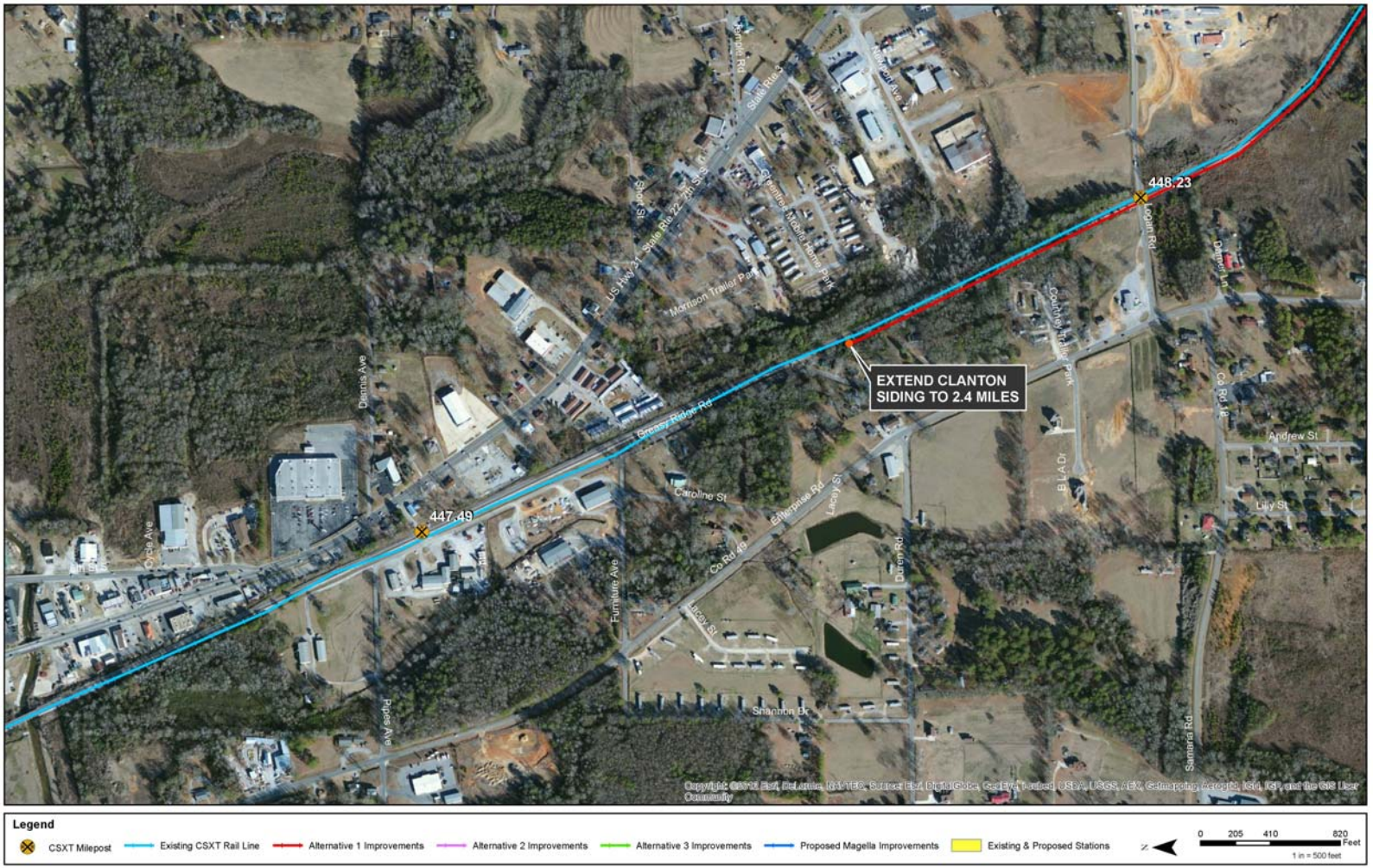
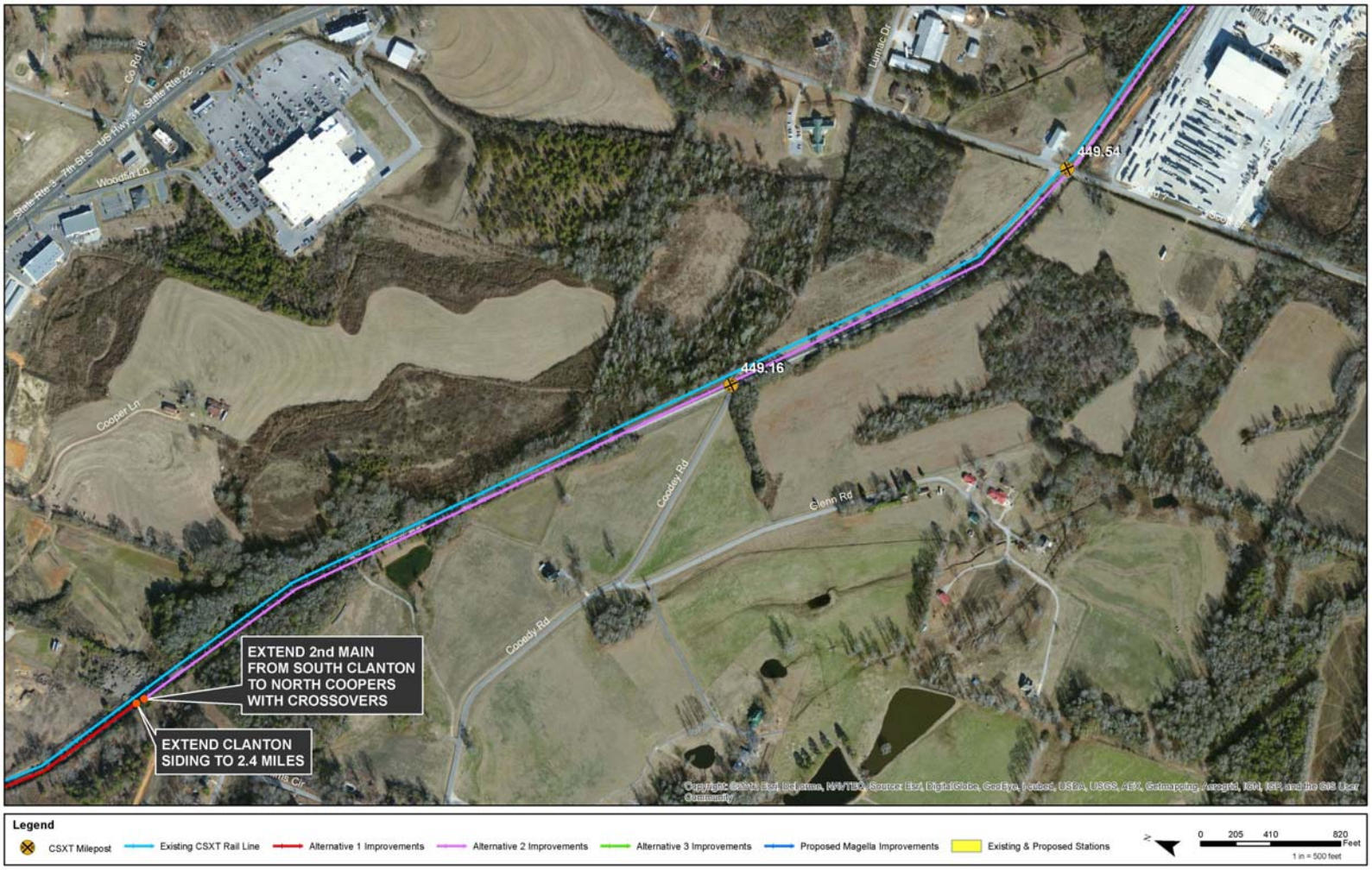
MAP 46 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

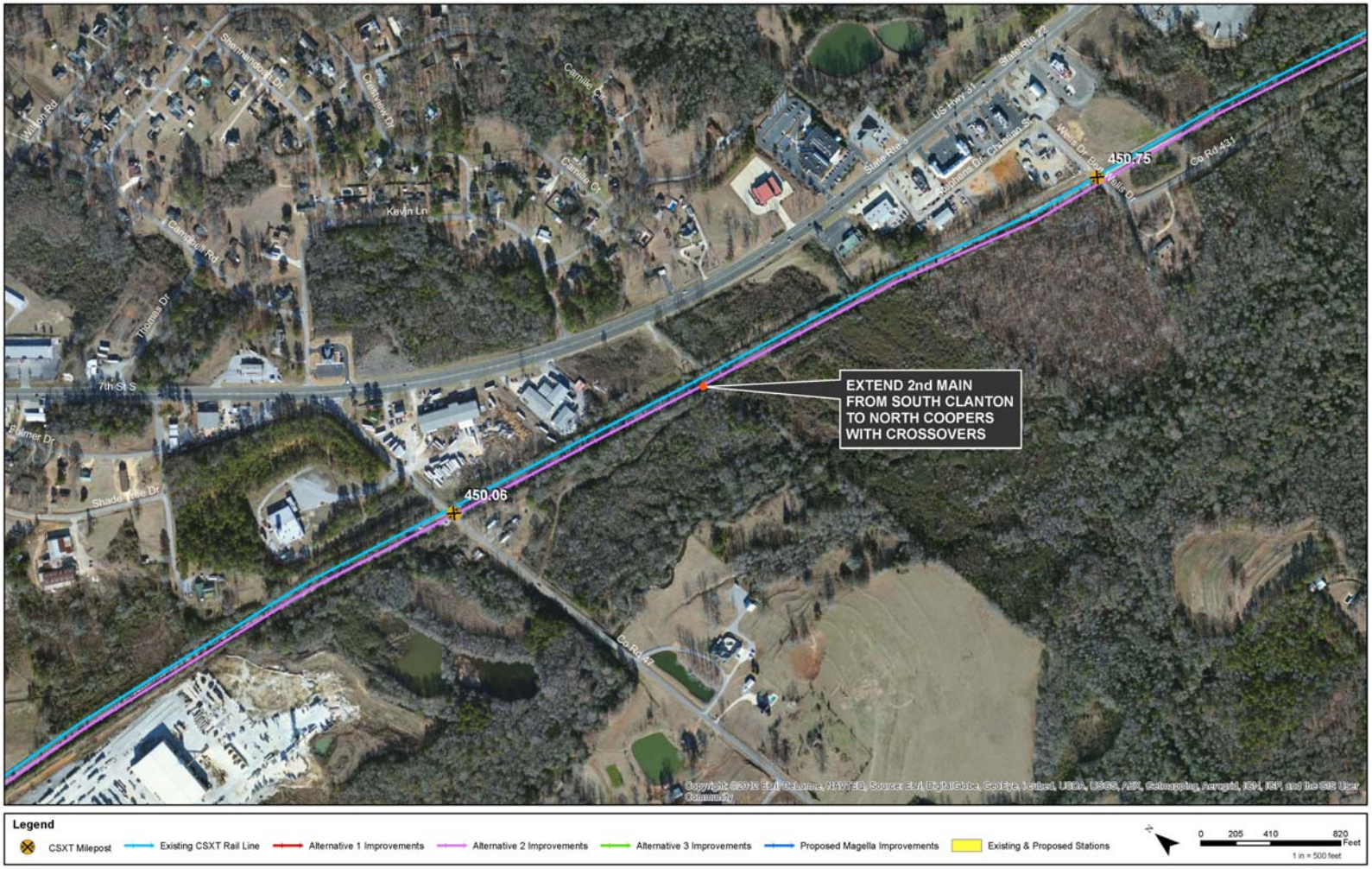
MAP 47 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future



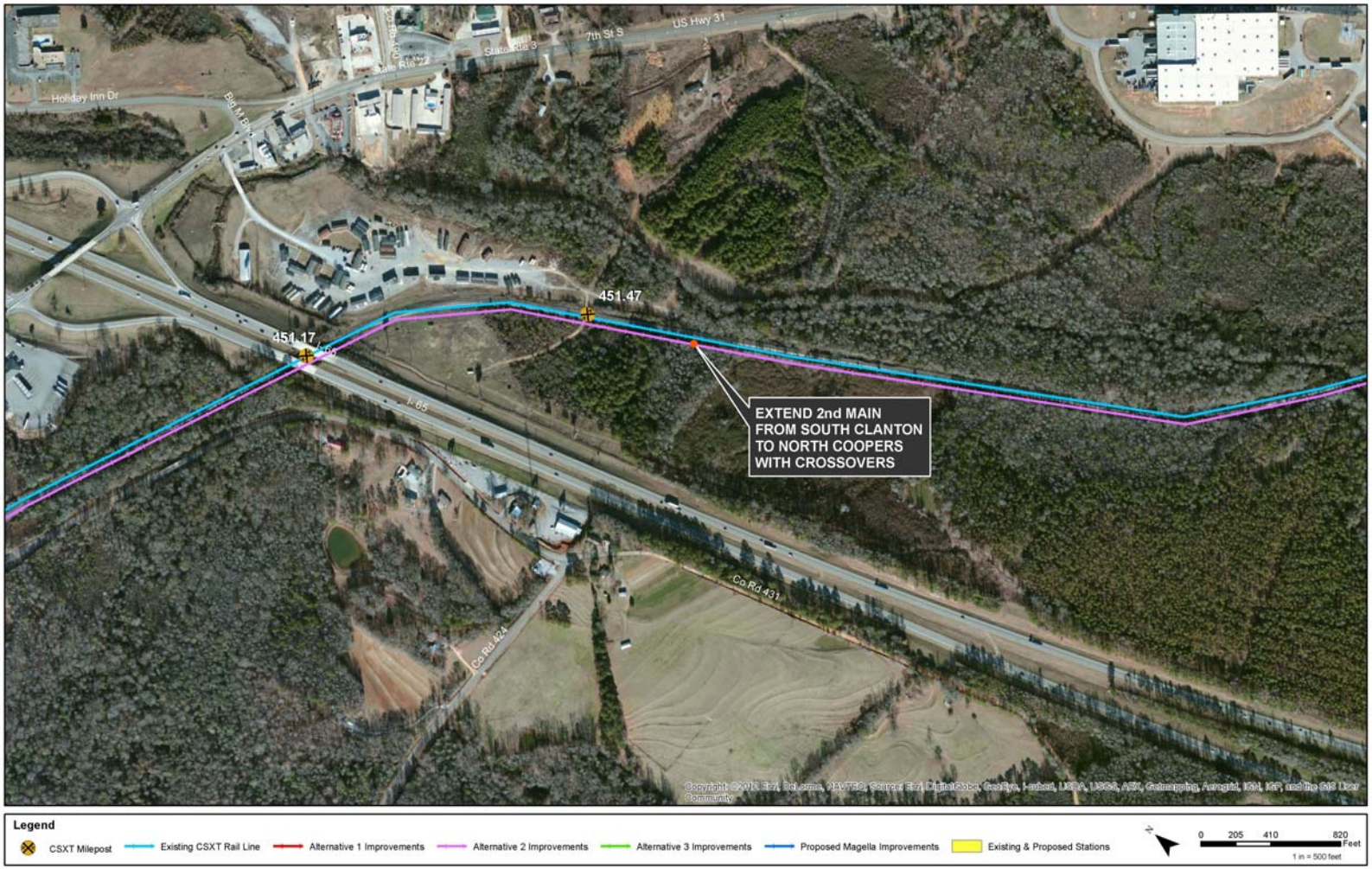
MAP 48 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future



MAP 49 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

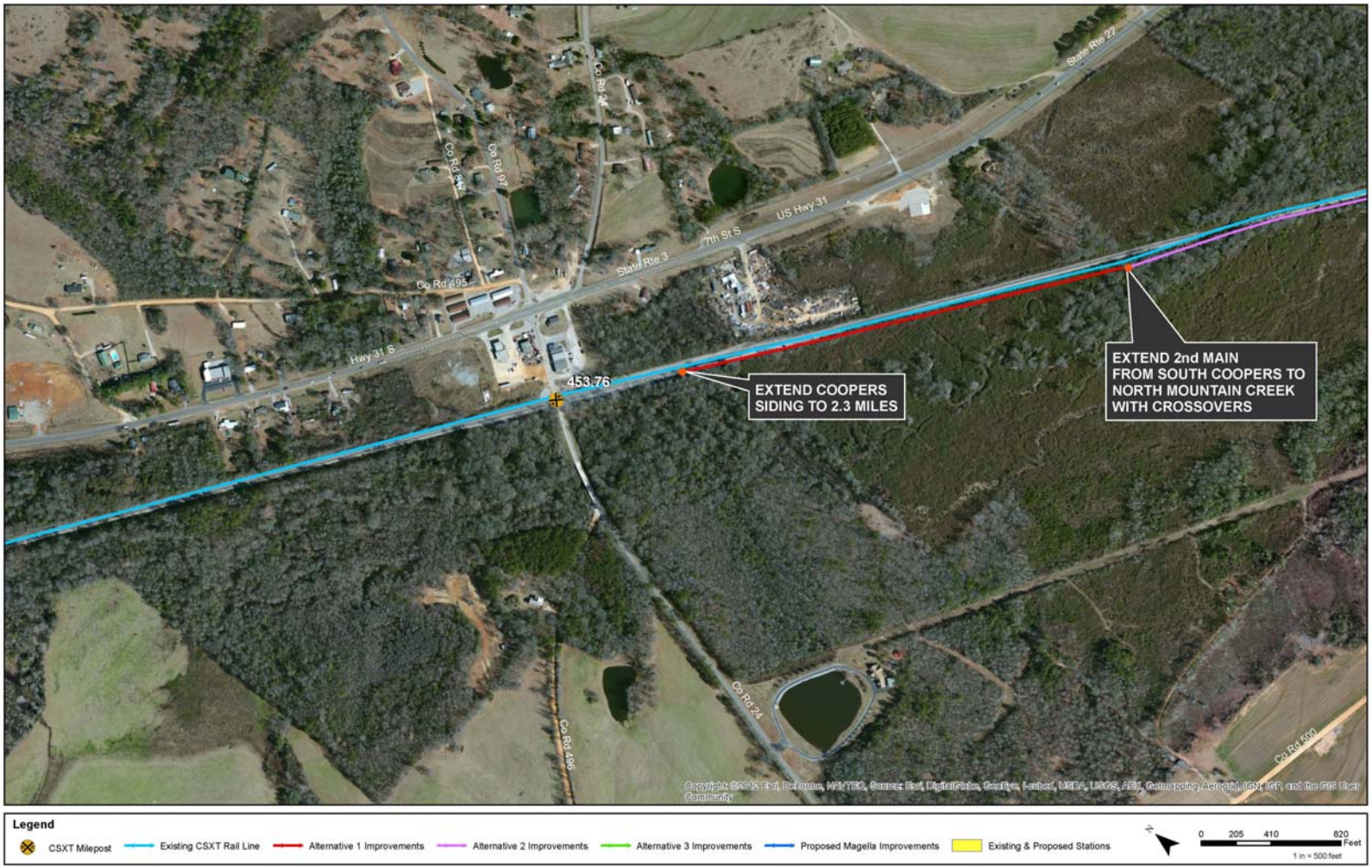


MAP 50 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

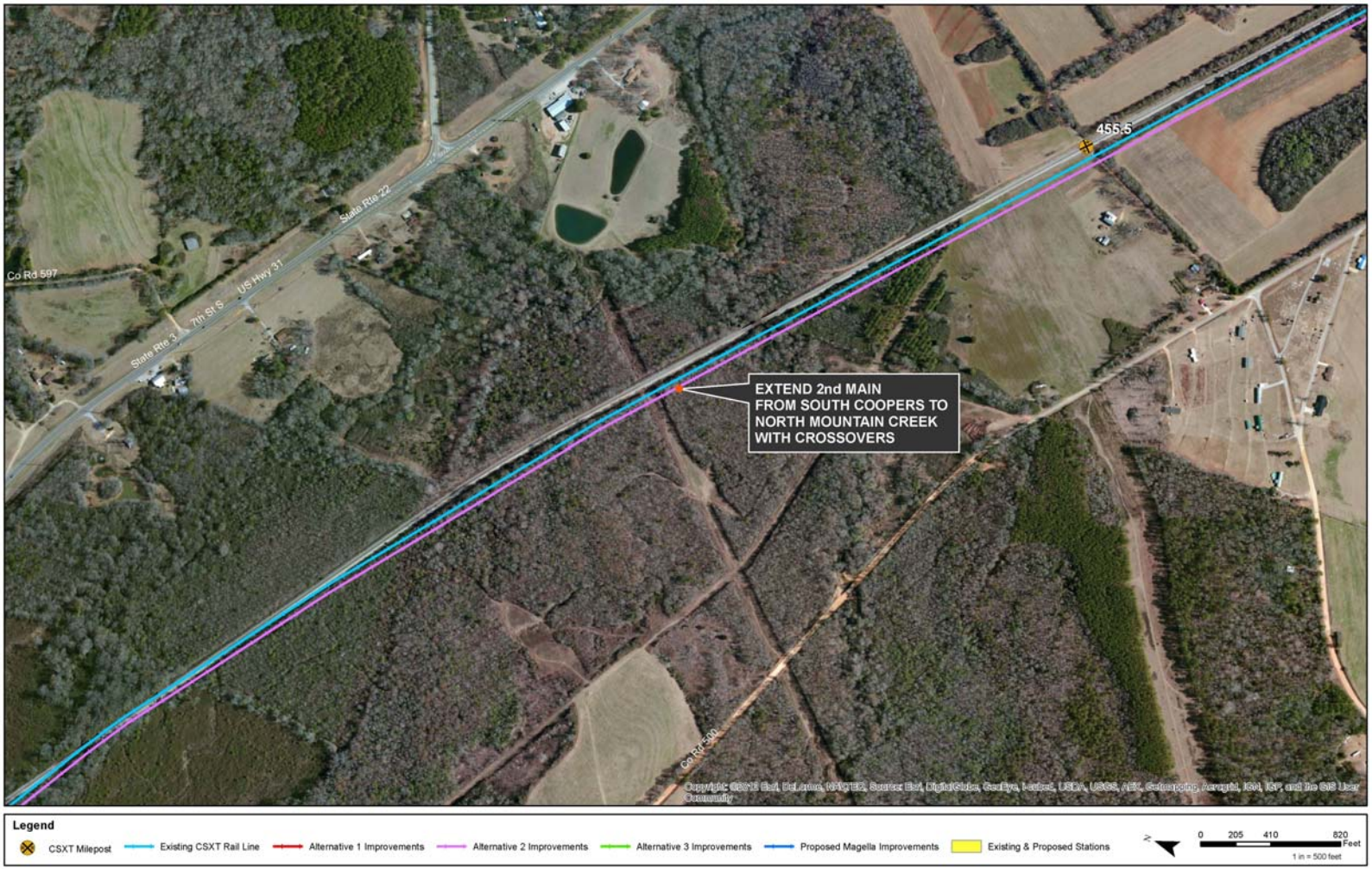


MAP 51 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

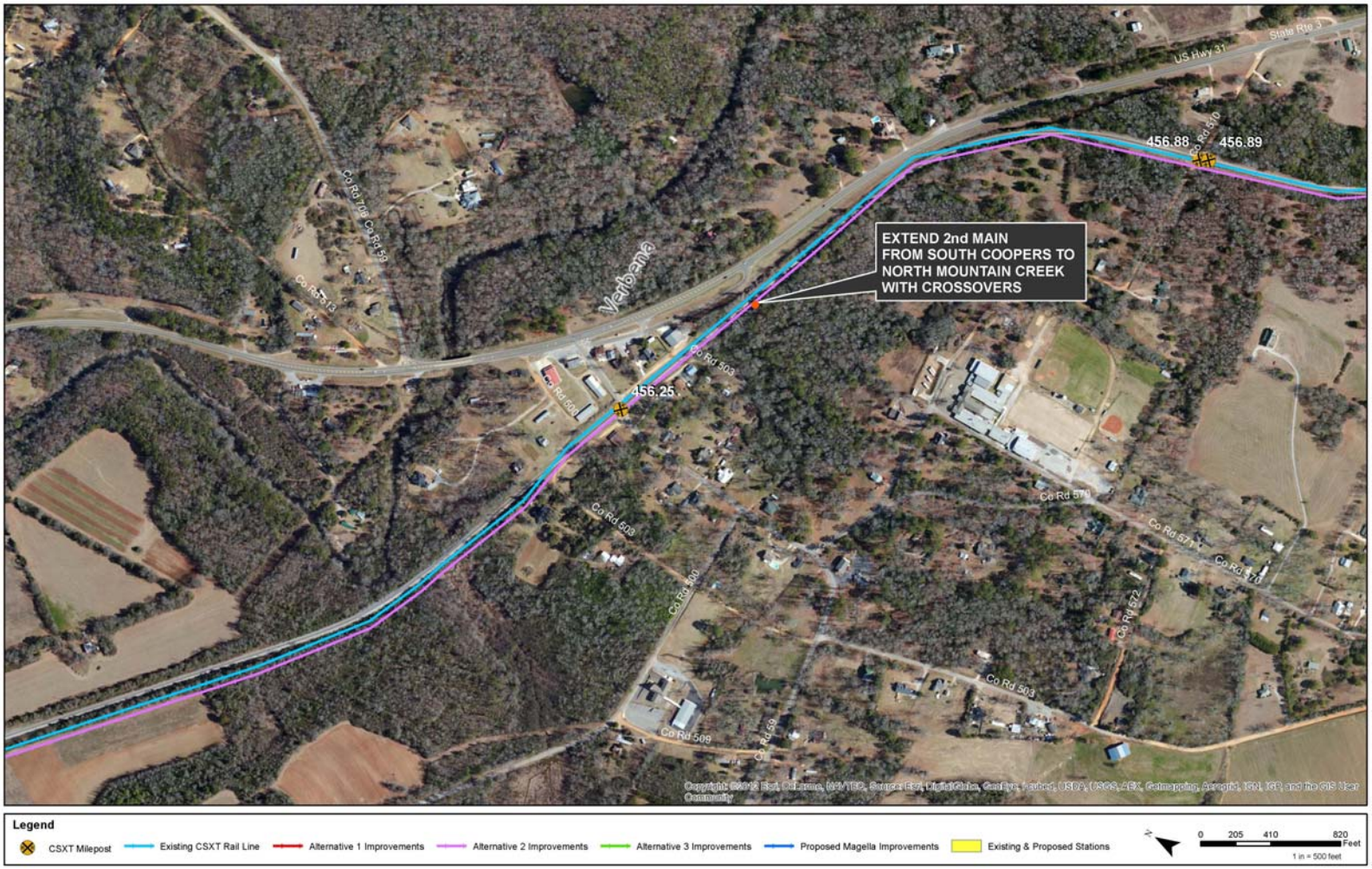
MAP 52 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future



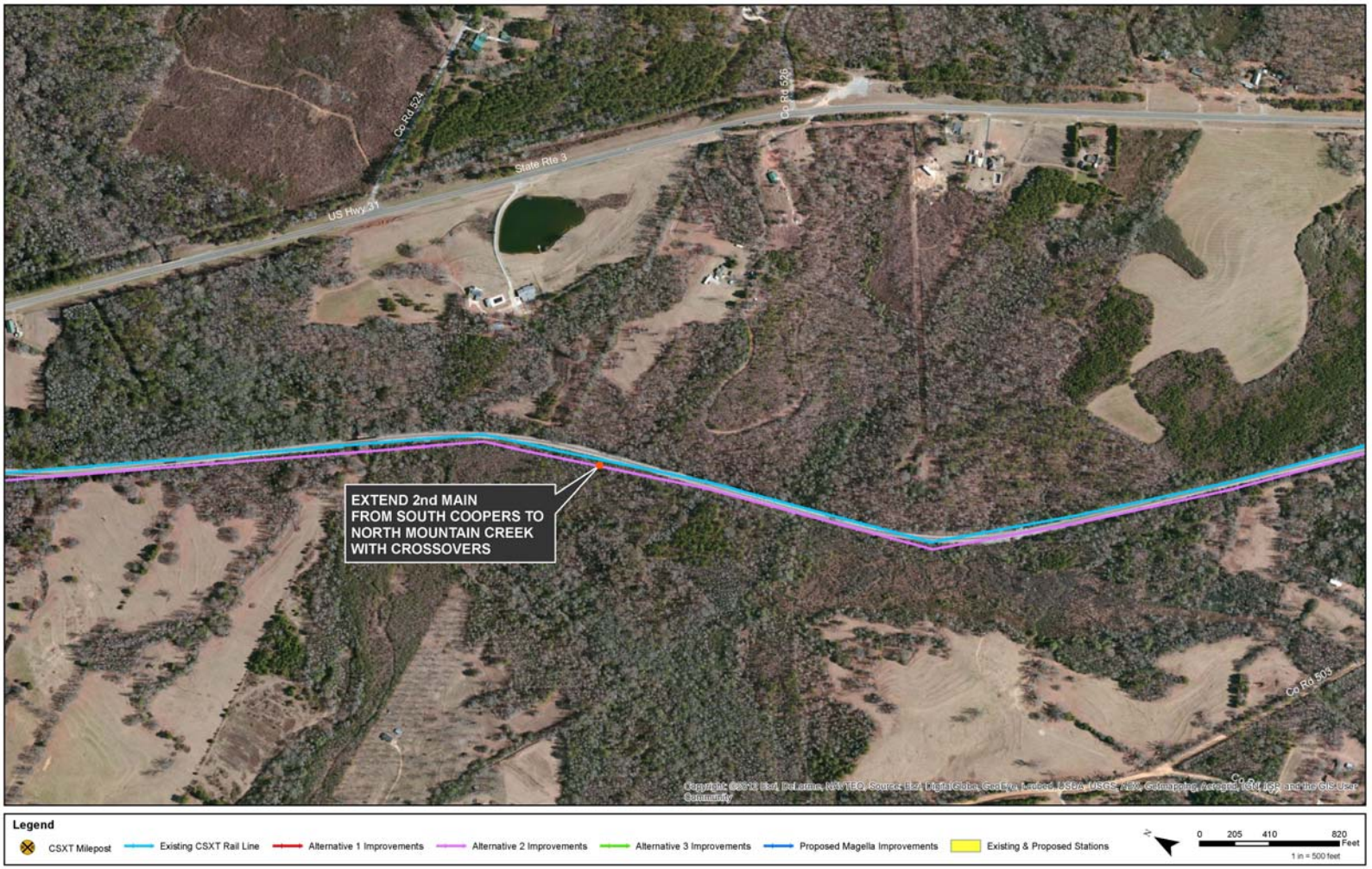
MAP 53 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future



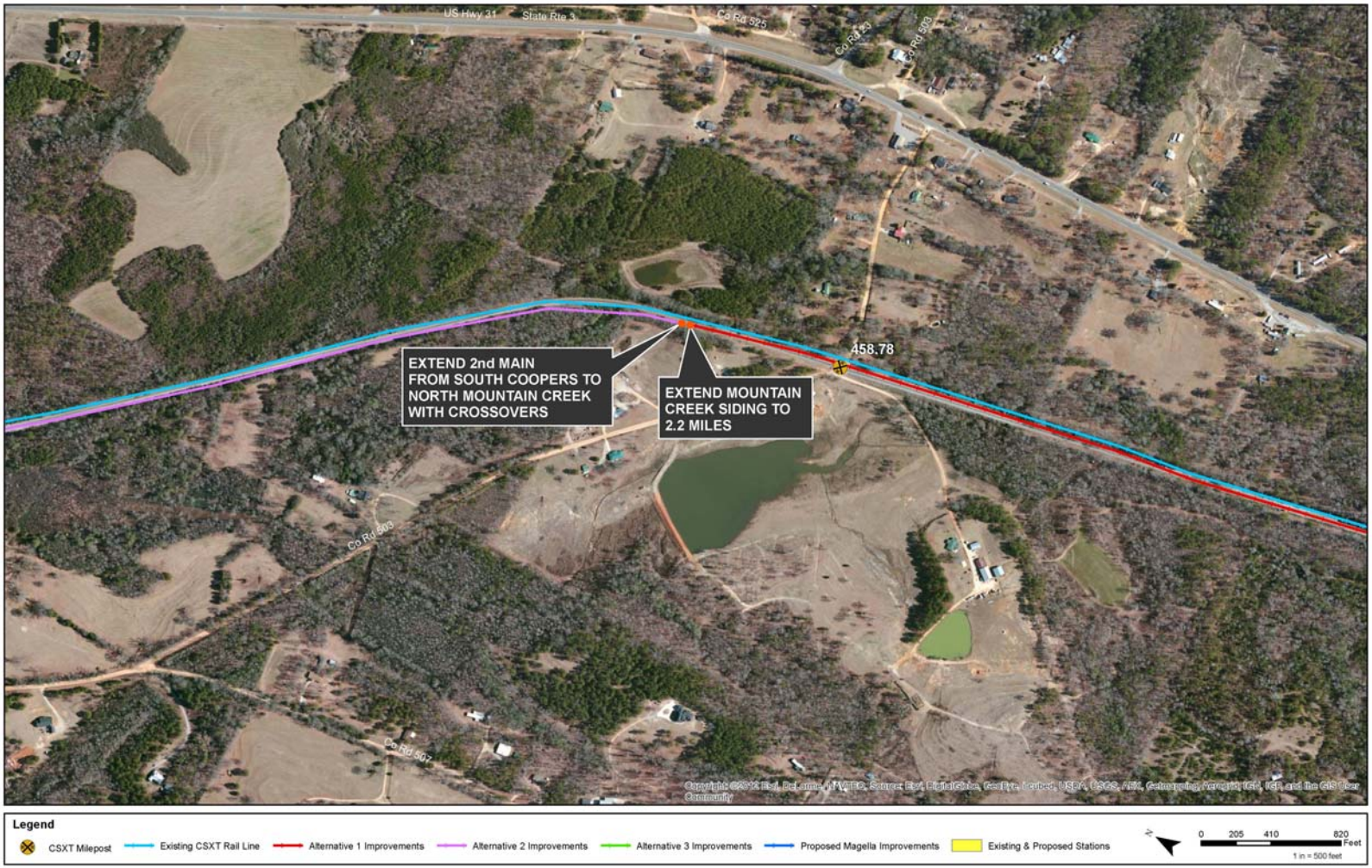
MAP 54 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future



MAP 55 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

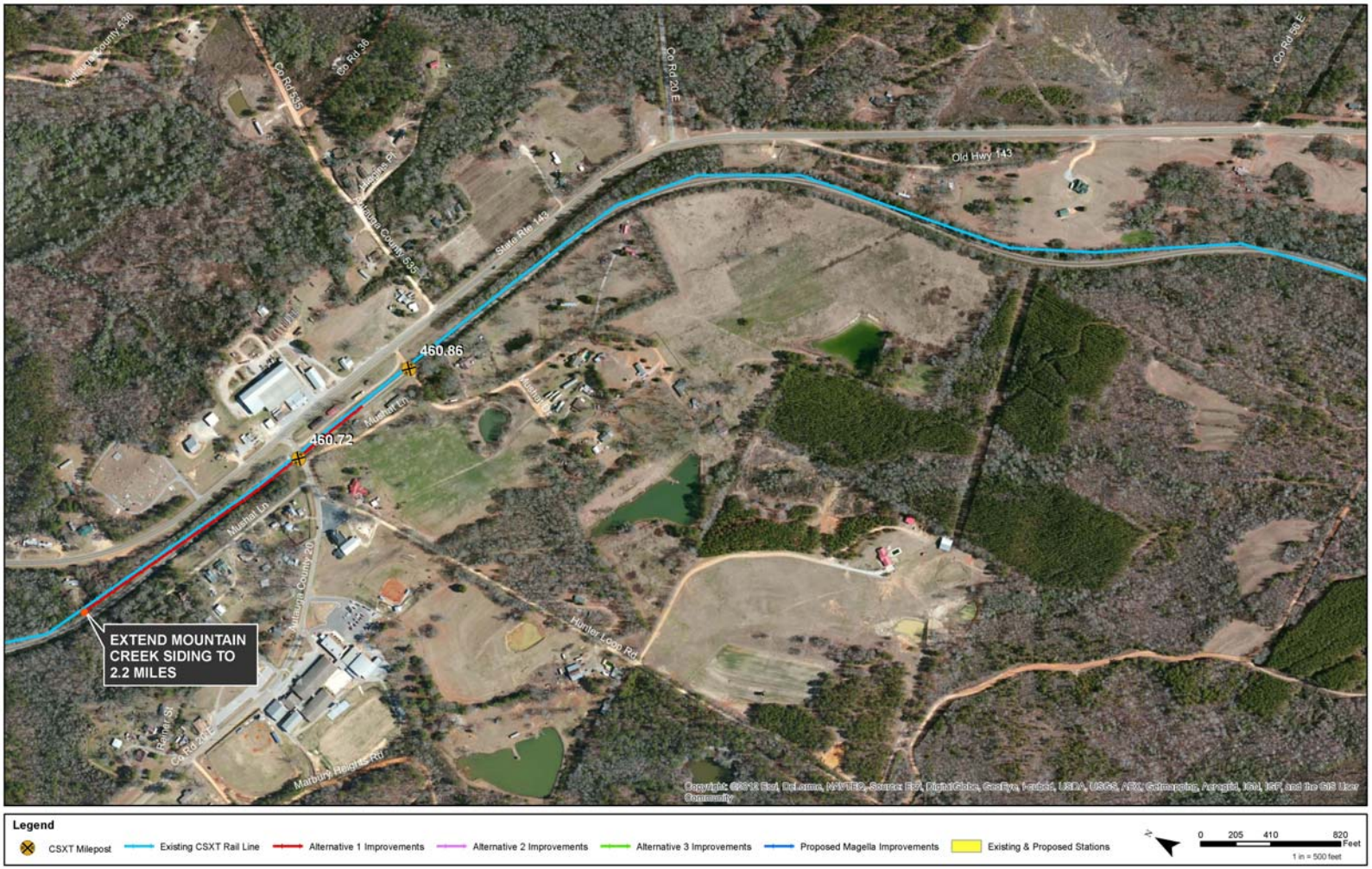


MAP 56 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future



MAP 57 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

MAP 58 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future



MAP 59 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

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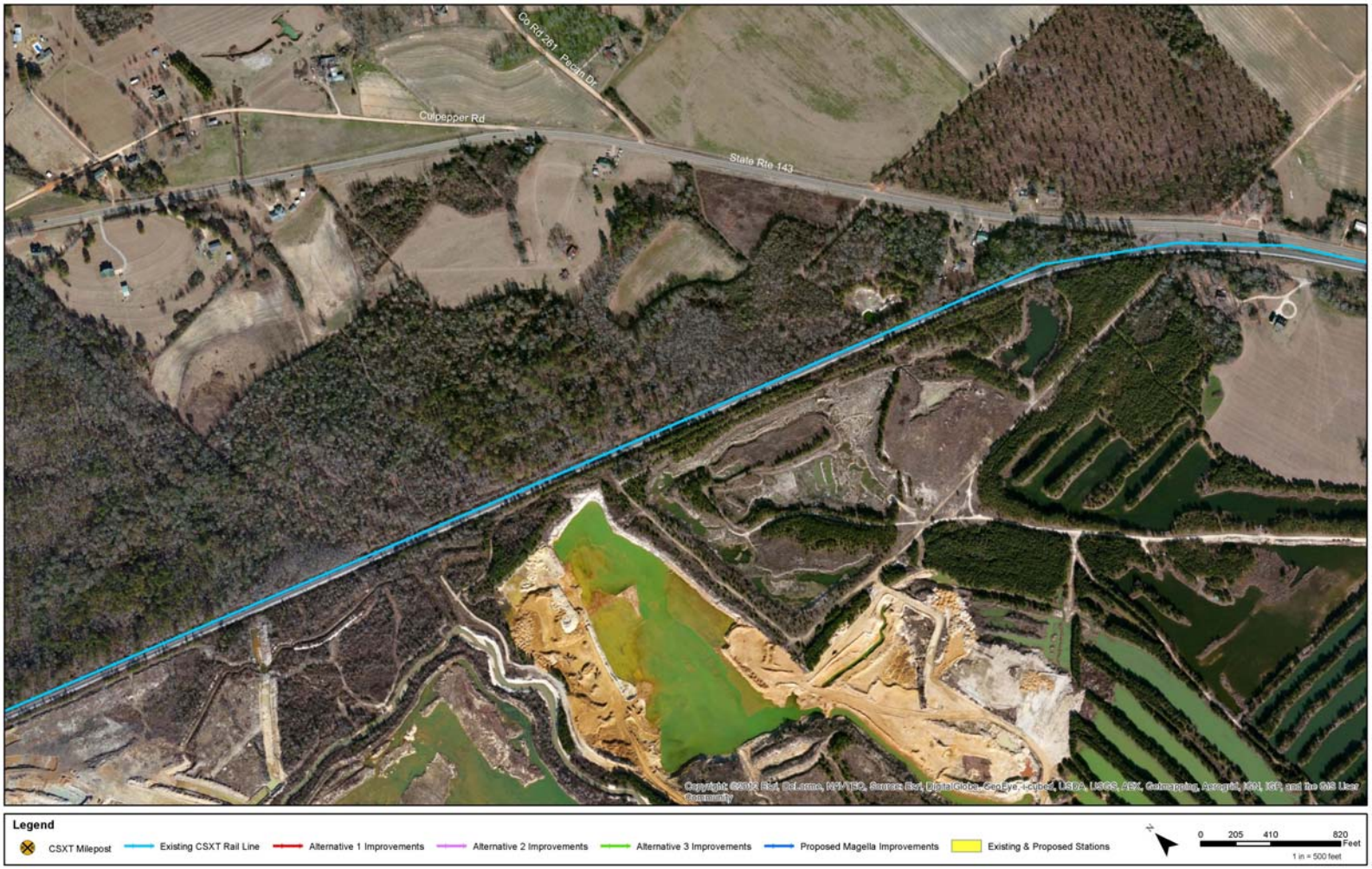
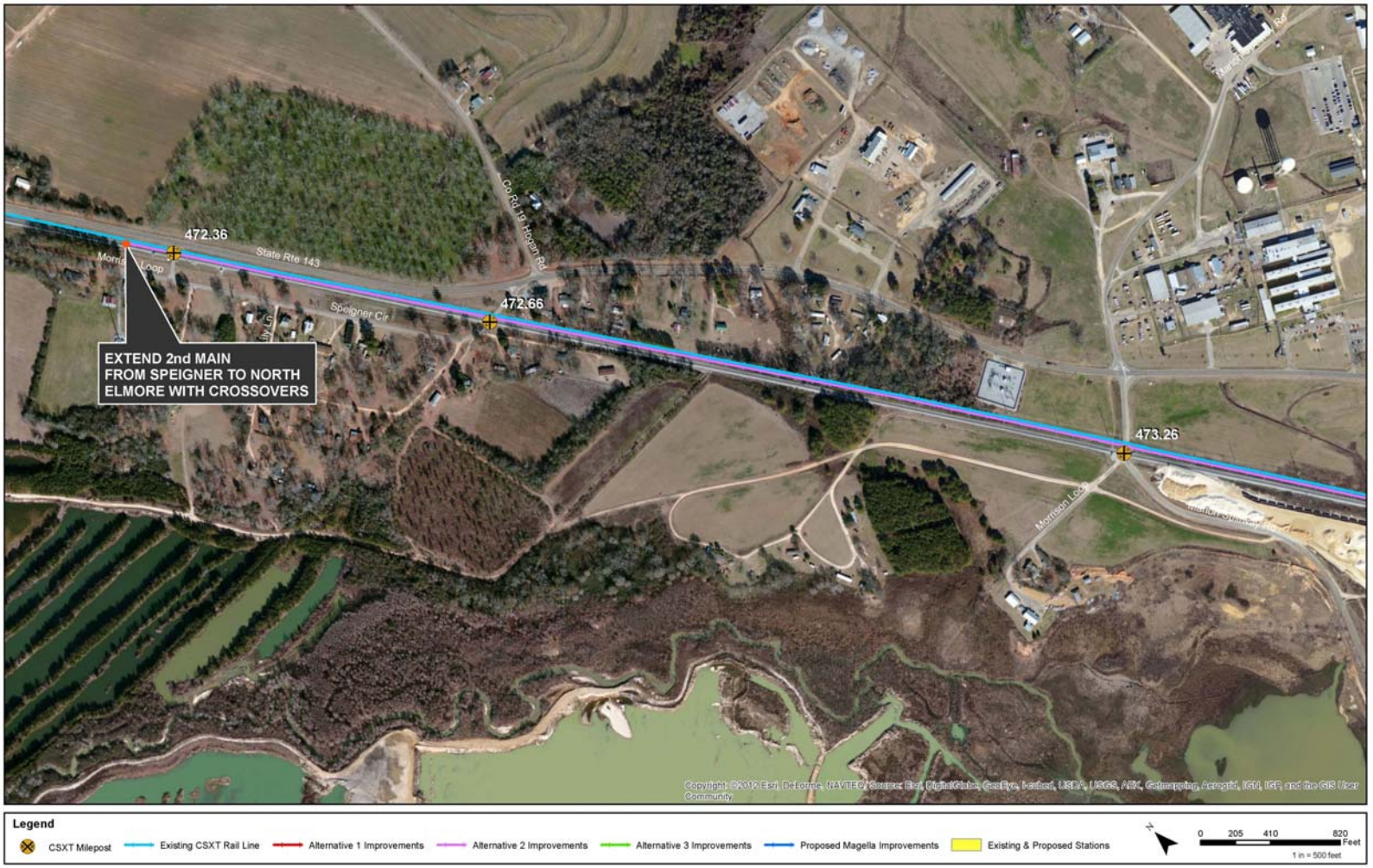
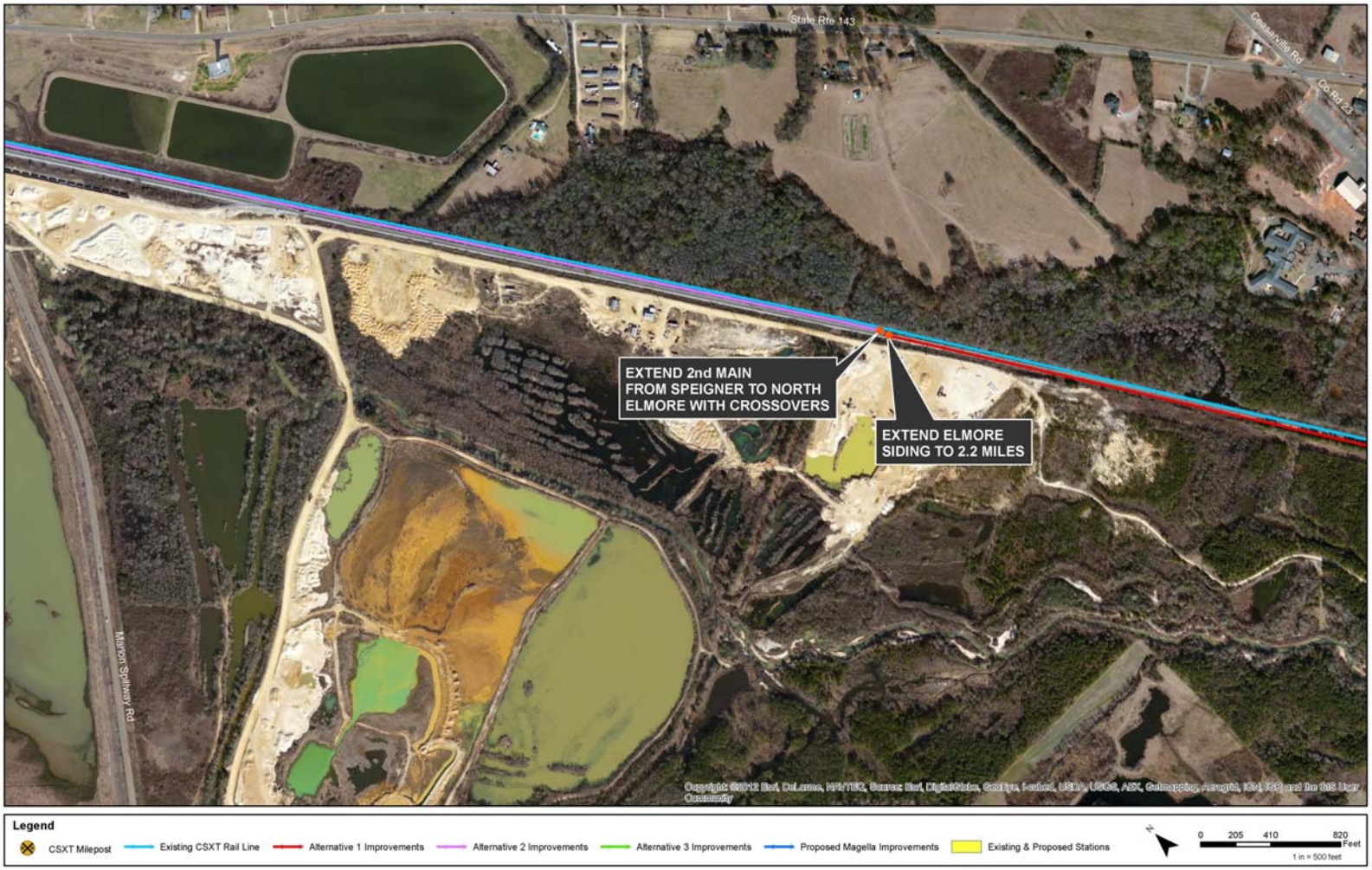


MAP 67 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future



MAP 68 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future



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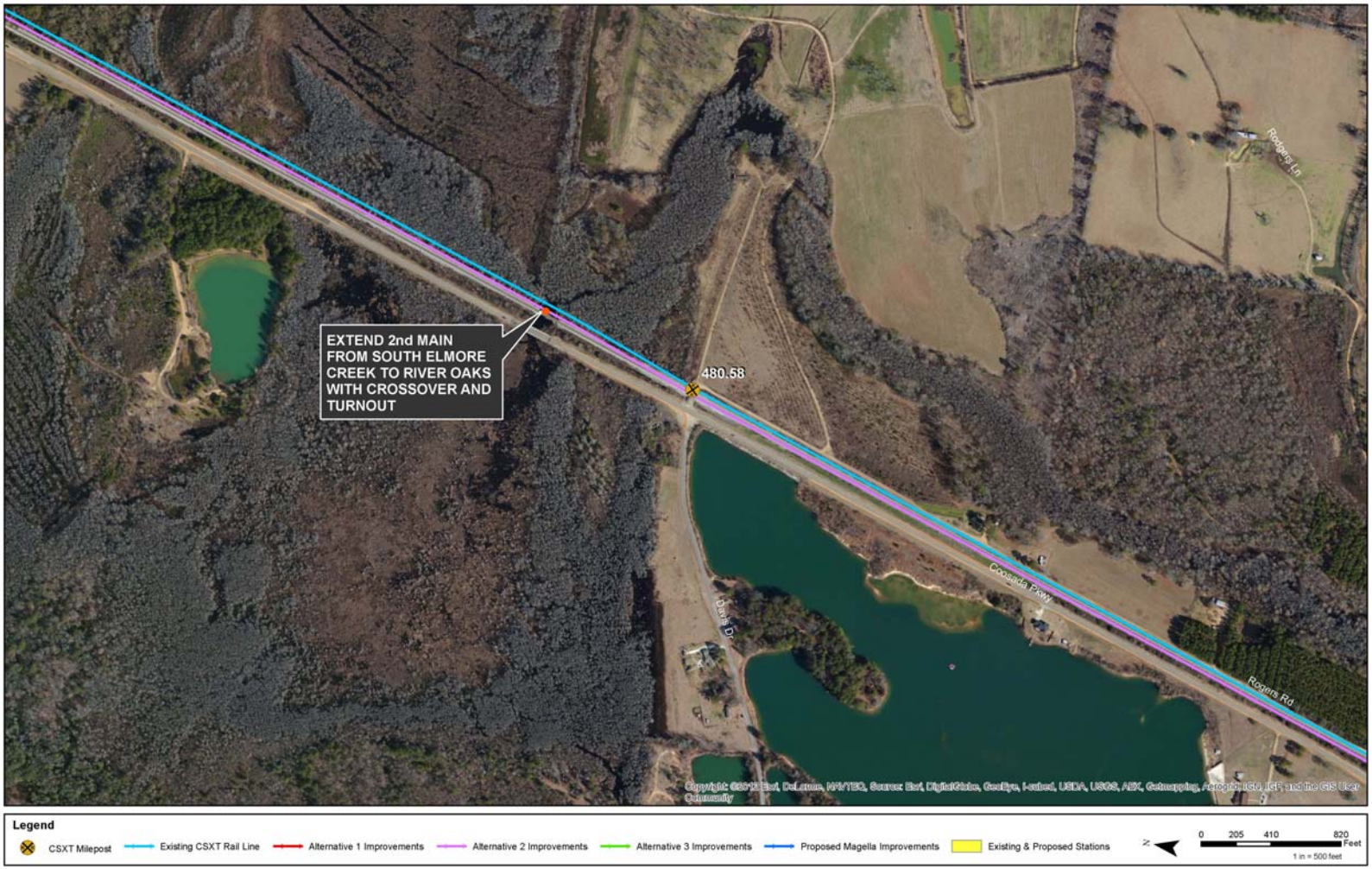
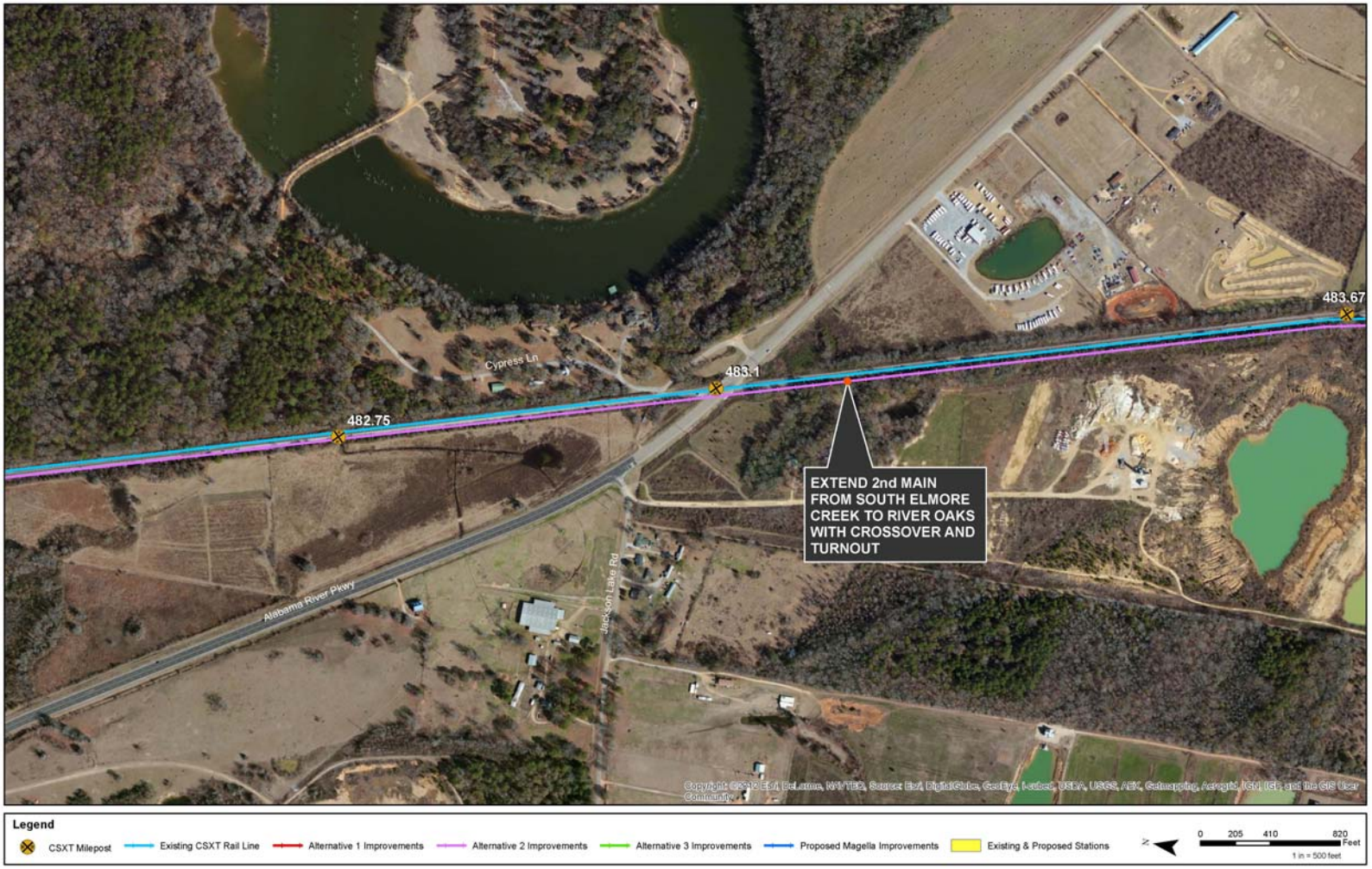
MAP 73 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future



MAP 74 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future

MAP 75 of 79: Conceptual and Illustrative Only – Subject to Detailed Planning and Design in the Future



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