2.0 ALTERNATIVES CONSIDERED

This chapter describes the development of the Atlanta BeltLine Transit and Multi-Use Trail Alternatives considered in this Tier 1 DEIS and is organized into five sections:

- Section 2.1 summarizes the Transit and Multi-Use Trail Alternatives developed and considered from the origin of the Atlanta BeltLine through the selection of Alternatives considered in this Tier 1 DEIS;
- Section 2.2 describes the No-Build Alternative;
- Section 2.3 describes the Transit Build Alternatives considered in this Tier 1 DEIS, and the considered transit mode technologies;
- Section 2.4 describes the Trail Build Alternatives considered in this Tier 1 DEIS; and,
- Section 2.5 discusses the conceptual planning for stations, operational characteristics, and storage and maintenance facilities.

2.1 Alternatives Development Process

2.1.1 Study Area Definition

The ½-mile wide Atlanta BeltLine study area is centered on the proposed Transit and Multi-Use Trail Alternatives. It contains many of Atlanta's residential neighborhoods, employment centers, a majority of the parks and greenspace in Atlanta, and a significant number of major attractions and points of interest. The study area width is consistent with FTA New Starts criteria and represents the maximum comfortable walking distance. As described in Chapter 1.1 and illustrated in Figure 1-1, the study area is divided into four geographic zones defined by intersections of the proposed alignment with the existing MARTA rail lines.

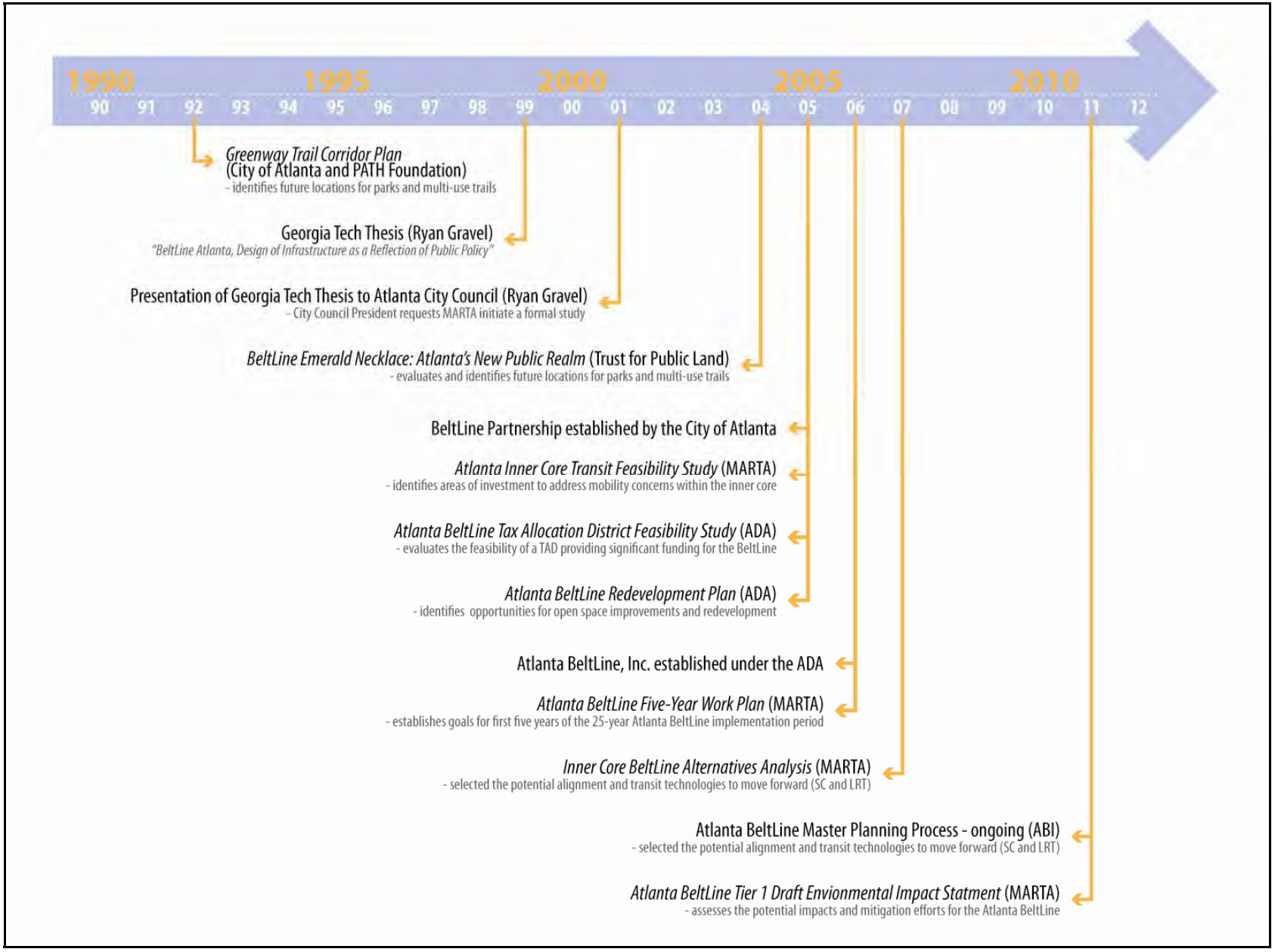
2.1.2 Background and Initial Screening of Alternatives

A timeline highlighting the development of the Atlanta BeltLine Alternatives is illustrated in Figure 2-1. The following subsections summarize key events in the alternatives development process.

2.1.2.1 Inner Core BeltLine Alternatives Analysis

In 2007, MARTA completed the Inner Core BeltLine Alternatives Analysis Detailed Screening Results designed to identify and evaluate transit improvements within the Inner Core. The Inner Core BeltLine Alternatives Analysis Detailed Screening Results served a dual purpose: to examine transit alternatives to improve local and regional mobility, accessibility, and connectivity, and support the City of Atlanta's plan to add mixed-use developments, bicycle and pedestrian greenway trails, and neighborhood connectivity.

Figure 2-1: Atlanta BeltLine Timeline



The analysis prescreened five candidate transit mode technologies to operate on the Atlanta BeltLine including: Bus, Bus Rapid Transit (BRT), Light Rail Transit (LRT), Modern Streetcar (SC), and Diesel Multiple Unit (DMU), and identified BRT, SC, and LRT as potential applicable technologies with four potential alignments (Alternative B1 through B4) generating 12 different Build Alternatives. Initially, B3 LRT was eliminated in a fatal flaw analysis, however, further subsequent engineering/design analysis revealed that B3 LRT would be acceptable and should be carried forward. It can be found in Figure 2.1-1 of Appendix D.

2.1.3 Public Involvement and Conceptual Engineering

2.1.3.1 Scoping

Following the screening phase, MARTA advanced the development and evaluation of alternatives for the Atlanta BeltLine by initiating the NEPA process. This included Scoping and Public Involvement and Agency Coordination. The formal Public Scoping Process for the Atlanta BeltLine Corridor Environmental Study began with the publication on July 24, 2008 in the Federal Register of a *Notice of Intent* (NOI) to prepare a Tier 1 EIS and ended September 22, 2008.

2.1.3.2 Transit and Trail Alignments Workshops

From April 13, 2009 to May 4, 2009, five workshops were held, one in each of the Atlanta BeltLine Study Group areas: southeast, northeast, southwest, and two distinct groups in the northwest zone (westside and northside) to engage the general public in identifying alternative transit and multi-use trail alignments and service characteristics for the Atlanta BeltLine. Chapter 8.0 provides a detailed description of the workshops and other public involvement efforts and the comments received during these efforts. The B3 Alternative served as the basis for these discussions relative to transit. Multi-use trails proposed by previous studies[1] within the Atlanta BeltLine Corridor were the basis for discussions of the trails. The workshops assisted the project team to refine the service characteristics, alignments, potential station locations, and possible connections to existing MARTA rail stations found in the B3 Alternative. Common themes heard at the workshops included the following:

- Transit should provide enhanced and frequent origin and destination accessibility rather than favoring high mobility and transit travel speeds
- Service should allow for expansive coverage providing the maximum number of stations and accessibility to neighborhoods and other destinations
- Stations should be spaced to provide enhanced access to origins and destinations
- Transit and trail alignments should run parallel to each other to the maximum extent possible to both minimize impacts and to form a complementary system
- Transit alignments should connect to MARTA rail stations as well as other planned transit services
- Transit and trail design should include pedestrian access and accommodate special transportation needs (i.e., Americans with Disabilities Act compliance)

[1] City of Atlanta's 1993 Parks, Open Space and Greenways Plan, the Connect Atlanta Plan, Atlanta's Comprehensive Plan, and the BeltLine Redevelopment Plan.

- All transit and trail design should include provisions for ensuring the safety of users

2.1.3.3 Technology and Transit Service Characteristics Workshops

MARTA in partnership with ABI consulted the public through the five previously mentioned formal public workshops, as well as an additional 12 public and community organization presentations in the Spring and Summer of 2009 to determine the type of transit service most suitable for the Atlanta BeltLine. The public and stakeholders were presented with two service concepts.

The first, an "expanded service" concept, emphasizes access using a higher number of Atlanta BeltLine transit stops and more direct operations within communities, where feasible, thereby minimizing walking and bicycling distances.

The second concept, an "express service" concept, would focus on minimizing travel time through the Atlanta BeltLine Corridor, with fewer stops supported by a greater number of connecting pedestrian, bicycle, and transit services.

Consensus from public and stakeholder representatives suggested a preference for the "expanded service" concept. However, recognizing the potential role of transit services in the Atlanta BeltLine Corridor in improving regional mobility, many respondents supported a hybrid of the "express" and "expanded" services that would provide service flexibility, particularly during peak travel periods.

The comments received during Scoping, public workshops, and other public involvement efforts (described in Chapter 8.0) helped to refine the transit and trail alternatives carried forward from the *Inner Core BeltLine Alternatives Analysis.* Additionally, the comments helped to identify additional alternatives to evaluate in the feasibility screening.

2.1.4 Feasibility Screening of Initial Build Alternatives

The information gained through public involvement activities identified alternatives for consideration, in addition to the B3 Alternative. These Transit and Multi-Use Trail Alternatives vary within several portions of the Atlanta BeltLine and include different station locations. Sections 2.3 and 2.4 discuss the full range of Transit and Multi-Use Trail Build Alternatives identified during Scoping (Appendix D provides detail on each alternative by zone). These Alternatives were screened for their ability to meet the Purpose and Need Statement discussed in Chapter 1.0 and feasibility to determine which should be considered further in this Tier 1 DEIS.

The focus of the feasibility screening was the locations where the Transit and Multi-Use Trail Build Alternatives may have to depart from the existing railroad ROW. Sixty total transit and multi-use trail alignment options were considered in the feasibility screening process. The full range of transit and multi-use trail alignments are listed in the 2009 *Atlanta BeltLine Feasibility Screening Technical Memorandum.* The nine screening criteria employed during the feasibility are listed below in Table 2-1. They are described in detail in the *Atlanta BeltLine Feasibility Screening Technical Memorandum*.

In addition to these feasibility criteria, a key factor in alignment screening is the geographic location of Alternatives within a TAD, as described by the *Atlanta BeltLine Tax Allocation District Feasibility Study*. As described in Chapter 1.4.3, the TAD provides a critical mechanism for economic development as well as funding and policy for transit, trails, and land use implementation.

Table 2-1: Feasibility Screening of Initial Build Alternatives

Criteria	Screening Issues by Mode	
	Transit	**Trail**
Engineering Feasibility	Avoid vertical geometry with grades greater than six percent Avoid horizontal geometry with turn radii less than 100 feet	Separate trail from roadway Path width and clearance Horizontal alignments Grades, sight distances, and vertical curves
Security and Safety	Safe interaction between modes Remoteness from activity centers Number and distance between access points Visual access	
Service Effectiveness and Efficiency	Serve destinations within shortest travel time and minimal service disruptions Minimize meandering between destinations	Access between residential neighborhoods, commercial and employment centers, schools and parks
Avoidance of Negative Impacts to Environmental Features	Avoid adverse impacts to water resources and noise-sensitive land uses	
Avoidance of Negative Impacts to Historical and Community Resources	Avoid National Register of Historic Places resources Avoid Georgia State Historic Preservation office resources Avoid City of Atlanta designated resources	
Assessment of Transit and Traffic Operations and Parking	On-street alignments subjected to geometric and traffic conditions assessment; traffic signal delays	
Minimization of Potential Impacts to Utilities and Other Infrastructure	Utility features including: overhead and underground wires and pipes Other infrastructure including: bridges, abutments, and retaining walls	
Minimization of Potential Impacts to Private ROW	Evaluate impacts to existing structures and private ROW including: buildings, utility easements, and existing railroad ROW	
Order of Magnitude Capital Costs	Evaluate relative costs and benefits	

2.1.4.1 Screening Results

The feasibility screening eliminated various alignment options based on poor performance relative to one or more of the criteria described above. Alignments were eliminated primarily because of the following (see *Atlanta BeltLine Feasibility Screening Technical Memorandum* for a detailed description of each alternative and reason for elimination of further evaluation):

- Failure to meet the Atlanta BeltLine's Purpose and Need;
- Safety and security concerns;
- Significant ROW and/or parking impacts;
- Operational efficiencies;
- Redundancy with other planned transit projects; or,
- Location outside the Atlanta BeltLine TAD, an area expressly intended to encompass and promote economic development by means of land use policy and funding for transit.

The feasibility screening process yielded three transit and three trails alignment concepts for advancement in the Tier 1 DEIS. The options retained after screening were subsequently renamed as Build Alternatives and refined. Each surviving Build Alternative is described below.

2.2 No-Build Alternative

In addition to the Build Alternatives, this Tier 1 DEIS assesses a No-Build Alternative in order to provide a basis of comparison with the Build Alternatives. The No-Build Alternative is comprised of the following:

- The existing transportation system including roadways, transit service, and trails;
- All programmed transportation projects in the cost constrained ARC's Envision6 RTP and the Fiscal Years 2008-2013 TIP, except for the Atlanta BeltLine transit and trails; and,
- The trail improvements that the City of Atlanta and Atlanta BeltLine, Inc. (ABI) have committed would be constructed, although some are elements of the Build Alternatives.

The proposed elements of the transportation system comprising the No-Build Alternative in the study area are listed in Appendix Table 2.2-1 and illustrated in Appendix Figure 2.2-2, both in Appendix D. These elements would provide a number of roadway maintenance, operational and capacity improvements; primarily radial transit services; and localized bicycle/pedestrian improvements.

Collectively, these facilities would not address the elements of the Purpose and Need. Specifically, the No-Build Alternative would not increase in-city transit and bicycle/pedestrian options to the extent that those options would improve access and mobility for existing and future residents and workers study area-wide. None of the planned projects specifically targets the study area for transit or bicycle/pedestrian improvements, although several would cross the study area to connect downtown and midtown areas with areas outside the study area. As a result, the No-Build Alternative would not:

- provide public transit improvements to accommodate growing population and employment in the study area;
- provide public transit and bicycle/pedestrian options in those areas in which environmental justice populations have been identified in the study area;
- increase transportation options in parallel with making changes in land use and development patterns in the study area to improve economic opportunities and quality of life;
- increase transportation options in the study area that will provide more travel connections and greater efficiency, and potentially reduce roadway congestion;
- increase rail transit options between neighborhoods and activity centers in the study area, and provide connections to MARTA; or
- provide connections between parks.

Despite its failings and in accordance with NEPA, the No-Build Alternative is retained in this Tier 1 DEIS to serve as a baseline by which the Build Alternatives are compared.

2.3 Transit Build Alternatives

The Transit Build Alternatives that survived the screening analysis, discussed in Section 2.1.4, are considered potentially viable and are assessed in this Tier 1 DEIS. The Transit Build Alternatives are all approximately 22-miles long and would accommodate

approximately 50 proposed station locations with an average spacing of slightly less than a ½ mile. The Transit Build Alternatives are identical in the northeast, southeast, and southwest zones as described below by zone, and shown in Figure 2-2 through Figure 2-4.

- Northeast zone – The alignment begins at Lindbergh MARTA rail station and proceeds southeast (see discussion under Section 2.3.5 MARTA Station Connectivity and Infill Station Alternatives). At Ansley Golf Course the alignment enters the Decatur Belt and continues south to Edgewood Avenue on the Decatur Belt, an unused freight corridor owned by the ADA. Between these points, and starting on the north, the alignment crosses under Montgomery Ferry Road, proceeds behind Ansley Mall, crosses under Piedmont Road, proceeds alongside Piedmont Park, crosses Monroe Drive, crosses over Ponce de Leon Avenue and North Avenue, crosses under Freedom Parkway and Highland Avenue, and ends at Edgewood Avenue on the south. At the southern end, the alignment enters the area that includes the Inman Park/Reynoldstown and King Memorial MARTA rail stations.
- Southeast zone – The alignment begins at the Inman Park/Reynoldstown and King Memorial MARTA rail stations areas and proceeds southwest (see discussion under Section 2.3.5). From the MARTA Station Connectivity and Infill Station Alternatives area, the alternatives converge near the intersection of Memorial Drive and Bill Kennedy Way and proceed southwest to Allene Avenue primarily on the A&WP BeltLine, a freight railroad owned by CSX. A short section of the proposed alternatives between Memorial Drive and Glenwood Avenue is on-street ROW owned by the City of Atlanta. Between these points, and starting on the north, the alignment proceeds south within the Bill Kennedy Way roadway ROW, crosses I-20, enters the CSX ROW at Glenwood Avenue, crosses over Ormewood Avenue and Confederate Avenue, crosses Boulevard and Milton Avenue, crosses under McDonough Boulevard and I-75/85, crosses over Metropolitan Parkway, and ends at Allene Avenue on the southwest. At the western end, the alignment enters the area that includes the West End MARTA rail station.
- Southwest zone – The alignment begins at the West End MARTA rail station and proceeds northwest (see discussion under Section 2.3.5). From the MARTA Station Connectivity and Infill Station Alternatives area the alternatives converge near Rose Circle and proceed north to Martin Luther King, Jr. Drive on an unused railroad ROW owned by Georgia Department of Transportation (GDOT). Between these points, the alignment proceeds northwest crossing under Lawton Street, Ralph David Abernathy Boulevard, and I-20, and ends at Martin Luther King, Jr. Drive. At the northern end, the alignment enters the area that includes the Ashby MARTA rail station.

Section 2.3.1 highlights the Transit Build Alternatives that utilize the CSX freight rail corridor for the northwest zone. Section 2.3.2 discusses the Transit Build Alternatives that are located outside but parallel to the CSX freight rail corridor in the northwest zone. Section 2.3.3 describes the Transit Build Alternatives that are located outside of and parallel to the Norfolk Southern freight rail corridor. Section 2.3.4 summarizes the differences between the transit alternatives. Section 2.3.5 relates to the Atlanta BeltLine interconnecting with MARTA rail stations. Section 2.3.6 discusses the transit mode technologies advanced through the screening process and commented on by the public and stakeholders.

The Transit Build Alternatives considered in this Tier 1 DEIS are designated A, B, C, D, and F; they are described in the following subsections. The transit alternatives designated E- Norfolk Southern Alternatives, were eliminated from consideration after

coordination with Norfolk Southern determined that potential use of Norfolk Southern ROW is infeasible.

2.3.1 Transit Alternatives Using CSX Corridor

There are four Transit Build Alternatives that use portions of the existing CSX freight rail ROW in the northwest zone:

- A- CSX Howell Junction LRT Transit Alternative
- A- CSX Howell Junction SC Transit Alternative
- C- CSX Marietta Boulevard LRT Transit Alternative
- C- CSX Marietta Boulevard SC Transit Alternative

The four Transit Build Alternatives using the CSX corridor are described in the following subsections and illustrated in Figure 2-2.

CSX has preliminarily indicated a willingness to consider these alternatives that would use a portion of their ROW (Chapter 3.1). Correspondence with CSX regarding potential use of their ROW can be found in Appendix C. The CSX correspondence contains a number of statements that indicate a willingness to consider Atlanta BeltLine in its ROW:

- *"Because of the potential impact to our rail network, CSXT[2] requests that we continue to be included in the foregoing discussions concerning the potential use and preliminary engineering design that includes CSXT ROW for trails and transit lines during the NEPA process."*[3]
- *"CSXT will cooperate in establishment of such paths, recognizing that important requirements must be met and safety precautions taken to protect those who use the pathways."*[4]
- *"There may be a possibility of using some of the CSX right-of-way as long as the railroad's needs for capacity are met and efficiency and safety are not compromised."*[5]
- *"If in the future, if it is determined that CSX's needs for capacity are met and efficiency and safety are not compromised, CSX will be willing to continue discussing the possibility of the BeltLine project operating in their right-of-way but they cannot guarantee or commit to anything."*[6]

MARTA and its partner ABI will continue their coordination efforts with CSX during the EIS process to better define each other's needs and further assess the alignments using CSX's ROW.

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[2] CSX Transportation Inc. (CSXT) is CSX's principal operating company.

[3] Letter from CSXT to Atlanta BeltLine, Inc. "Re: CSXT Comments on the Atlanta BeltLine Tier 1 Draft Environmental Impact Statement." 08 Oct. 2010.

[4] Ibid.

[5] Coordination Meeting between MARTA, ABI, and CSX. "Meeting Notes." 10 Nov. 2010.

[6] Ibid.

2.3.1.1 A- CSX Howell Junction LRT Alternative

From Joseph E. Boone Boulevard, A- CSX Howell Junction LRT Alternative travels north on unused railroad corridor towards Jefferson Street where the alignment would continue parallel to Joseph E. Lowery Boulevard. After crossing West Marietta Street, the A- CSX Howell Junction LRT Alternative traverses the Howell Junction, rejoining the CSX railroad corridor south of Huff Road. From this point, the alignment travels north in the CSX ROW, joined by the C- CSX Marietta Boulevard Alternatives southwest of Howell Mill Boulevard. The A- CSX Howell Junction LRT Alternative is based on the use of LRT technology only.

2.3.1.2 A- CSX Howell Junction SC Alternative

The A- CSX Howell Junction SC Alternative shares the same alignment as the A- CSX Howell Junction LRT Alternative but it is based on the use of SC technology only.

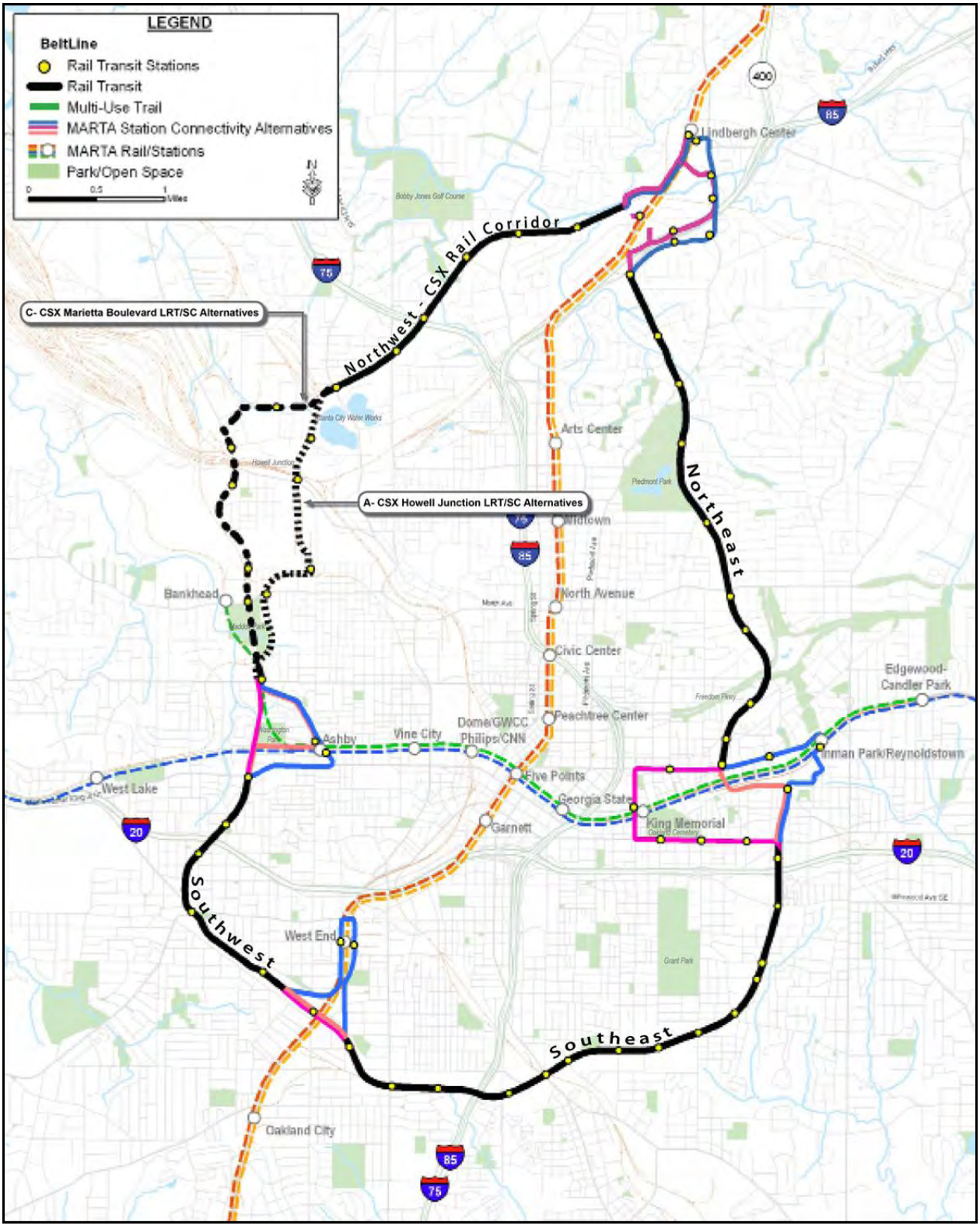
2.3.1.3 C- CSX Marietta Boulevard LRT Alternative

From Joseph E. Boone Boulevard, the C- CSX Marietta Boulevard LRT Alternative travels directly north on former railroad ROW before transitioning to an alignment using Marietta Boulevard as an in-street running section. The alignment turns east across vacant land to rejoin the CSX corridor west of Howell Mill Road. The C- CSX Marietta Boulevard LRT Alternative is based on the use of LRT technology only.

2.3.1.4 C- CSX Marietta Boulevard SC Alternative

The C- CSX Marietta Boulevard SC Alternative shares the same alignment as the C- CSX Marietta Boulevard LRT Alternative but it is based on the use of SC technology only.

Figure 2-2: Transit Build Alternatives Using CSX Corridor



Source: AECOM 2011

2.3.2 Transit Alternatives Adjacent to But Outside the CSX Corridor

Four Transit Build Alternatives would be located adjacent to but outside the existing CSX freight rail ROW in the northwest zone:

- B- Howell Junction LRT Transit Alternative
- B- Howell Junction SC Transit Alternative
- D- Marietta Boulevard LRT Transit Alternative
- D- Marietta Boulevard SC Transit Alternative

The four Transit Build Alternatives adjacent to the CSX corridor are described in the following subsections and illustrated in Figure 2-3. The two alternatives are similar except for slight variations in the alignment of the northwest zone.

2.3.2.1 B- Howell Junction LRT Alternative

From Joseph E. Boone Boulevard, B- Howell Junction LRT Alternative travels north on unused railroad corridor towards Jefferson Street where the alignment would continue parallel to Joseph E. Lowery Boulevard. After crossing West Marietta Street, the B- Howell Junction LRT Alternative traverses the Howell Junction, rejoining the area adjacent to but outside of the CSX railroad corridor south of Huff Road. From this point, the alignment travels north adjacent to but outside of the CSX ROW, joined by the D- Marietta Boulevard Alternatives southwest of Howell Mill Boulevard. The B- Howell Junction LRT Alternative is based on the use of LRT technology only.

2.3.2.2 B- Howell Junction SC Alternative

The B- Howell Junction SC Alternative shares the same alignment as the B- Howell Junction LRT Alternative but it is based on the use of SC technology only.

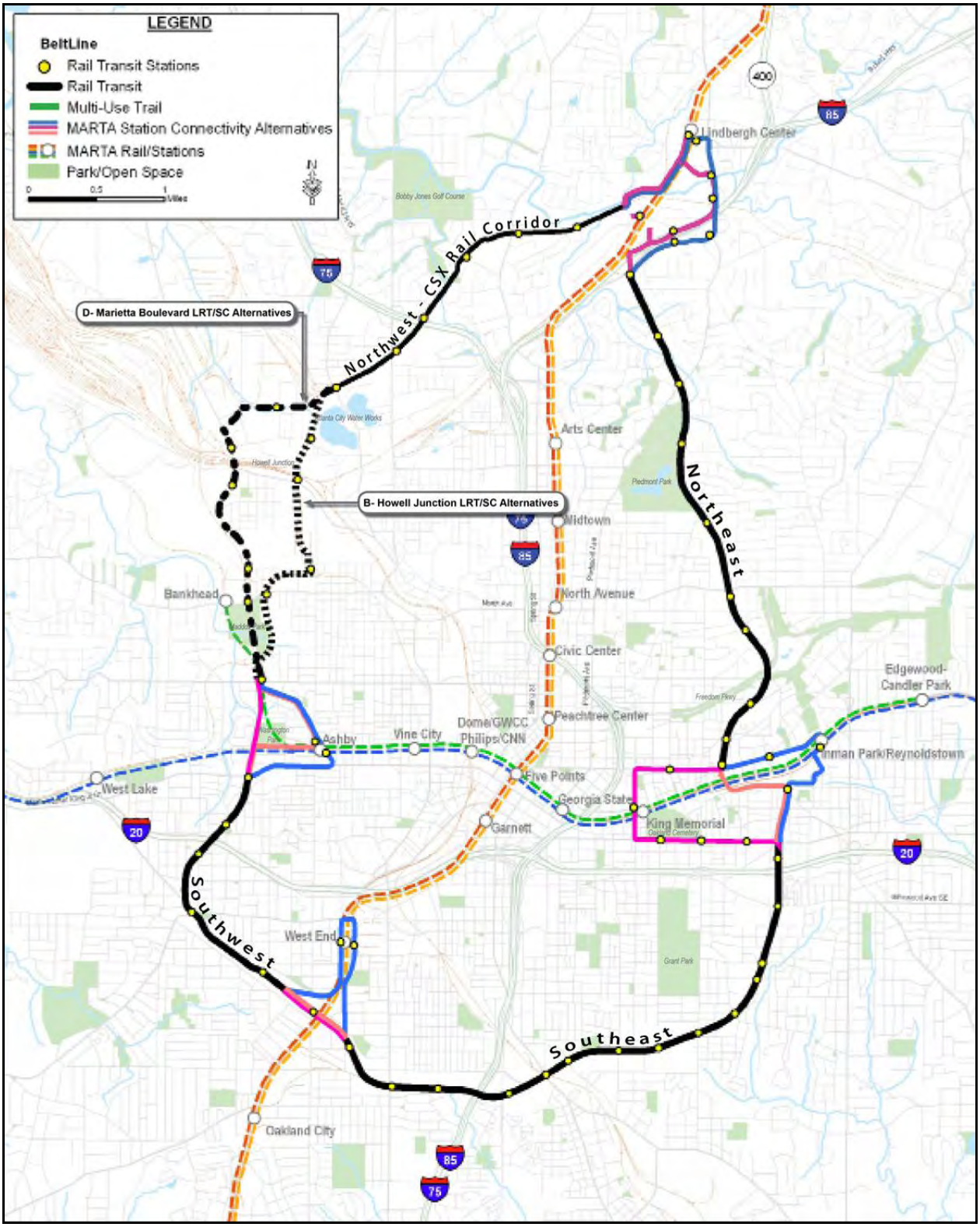
2.3.2.3 D- Marietta Boulevard LRT Alternative

From Joseph E. Boone Boulevard, the D- Marietta Boulevard LRT Alternative travels directly north on former railroad ROW before transitioning to an alignment using Marietta Boulevard as an in-street running section. The alignment turns east across vacant land to rejoin the area adjacent to but outside the CSX corridor west of Howell Mill Road. The D- Marietta Boulevard LRT Alternative is based on the use of LRT technology only.

2.3.2.4 D- CSX Marietta Boulevard SC Alternative

The D- Marietta Boulevard SC Alternative shares the same alignment as the D- Marietta Boulevard LRT Alternative but it is based on the use of SC technology only.

Figure 2-3: Transit Build Alternatives Adjacent to but Outside the CSX Corridor



Source: AECOM 2011

2.3.3 Transit Alternatives Adjacent to But Outside the Norfolk Southern Corridor

Two Transit Build Alternatives would be located adjacent to but outside the existing Norfolk Southern freight rail corridor in the northwest zone:

- F- Atlantic Station LRT Alternative
- F- Atlantic Station SC Alternative

The two Transit Build Alternatives adjacent to the Norfolk Southern corridor are described in the following subsections and illustrated in Figure 2-4.

2.3.3.1 F- Atlantic Station LRT Alternative

From Joseph E. Boone Boulevard and heading northward, the F- Atlantic Station LRT Alternative would follow former railroad ROW crossing below grade of Donald Lee Hollowell Boulevard. At this point, the F- Atlantic Station LRT Alternative would curve toward the northeast to a point southwest of the intersection of Jefferson Street and Joseph E. Lowery Boulevard. After crossing Jefferson Street, the Alternative proceeds on unused railroad corridor parallel to Joseph E. Lowery Boulevard to Marietta Street. After crossing West Marietta Street, the Alternative would traverse the Howell Junction, turn east, and run parallel to and on the south side of the Norfolk Southern railroad corridor and cross over Northside Dive. Beyond Northside Drive, the alignment enters in-street running segments along the south side of the Norfolk Southern railroad corridor on 18th Street, then east along 20th Street. The alignment departs from in-street running onto aerial structure crossing to the north side of the Norfolk Southern corridor and onto Deering Street. In-street running resumes east along Deering Street to the intersection with Peachtree Street. After Peachtree Street, the alignment proceeds on aerial structure along the south side of the Norfolk Southern corridor to the Armour area. Here the alignment would cross the Norfolk Southern corridor again to the north side on aerial structure and run in-street along Ottley Drive before continuing north and adjacent to the north side of the Norfolk Southern corridor.

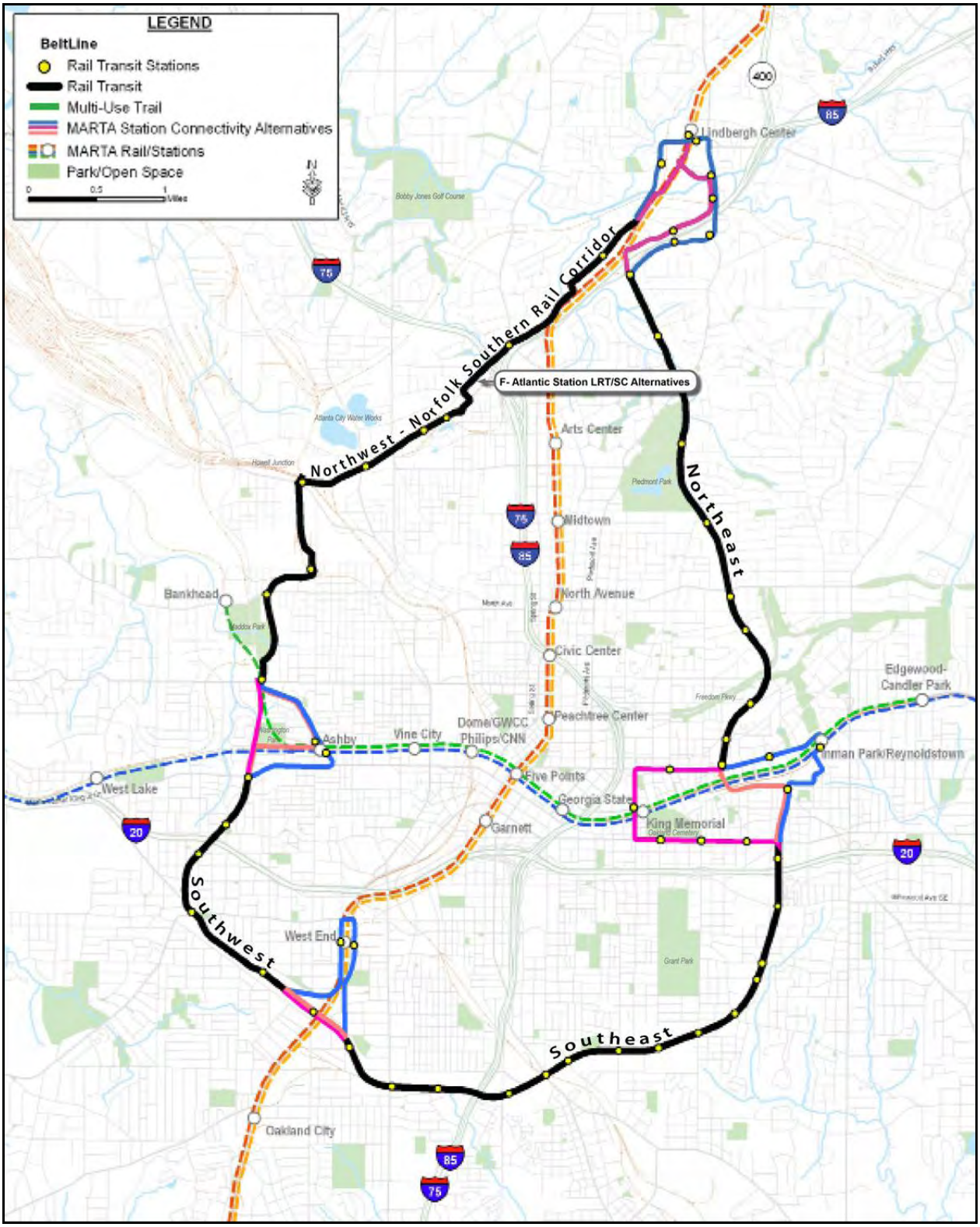
2.3.3.2 F- Atlantic Station SC Alternative

The F- Atlantic Station SC Alternative shares the same alignment as the F- Atlantic Station LRT Alternative but it is based on the use of SC technology only.

2.3.4 Evaluation of Transit Alternatives

Table 2-2 provides a comparison of the distinguishing characteristics and constraints of the alignment alternatives. Factors include engineering, operational, and environmental considerations as well as public observations. Some or all transit alternatives share certain characteristics, such as the need for coordination with the freight railroads; however, other characteristics or constraints, such as connections to key destinations or the amount of in-street running alignment, set the alternatives apart from one another.

Figure 2-4: Transit Build Alternatives Adjacent to the Norfolk Southern Corridor



Source: AECOM 2011

Table 2-2: Transit Alternative Characteristics and Constraints in Northwest Zone

Transit Alignment Alternative	Required Agreements with Freight Railroads			Requires New Structure Across Howell Junction	Connections to Key Destinations				Northerly Access to Peachtree	In-street Running (Percent)[1]	Number of Parcels Potentially Impacted[2]	SAC/TAC/Public Input			Other Key Differences[4]
	Transit Corridor Inside Existing ROW	ROW as Needed for Construction or to Overcome Localized Spatial Constraint	Permission for Grade Separated Crossings		Bankhead MARTA rail station	Westside Park	Atlantic Station	Piedmont Hospital				Consistent with the project Vision[3]	Reaches an Area Underserved by Rail Transit	Preserves Ability to Keep Transit and Trail Together	
A- CSX Howell Jct. Alternatives	✓		✓	✓				✓	✓	0%	60	✓	✓	✓	• High performing - connection to the TAD • Consistent with current plans
B- Howell Jct. Alternatives		✓	✓	✓				✓	✓	0%	71	✓	✓	✓	• High performing - connection to the TAD • Consistent with current plans
C- CSX Marietta Blvd. Alternatives	✓		✓		✓	✓		✓	✓	26%	61	✓	✓	✓	• Connects to most neighborhoods and commercial facilities • Connects to most parks • Connects to other transit services • High performing - connection to the TAD • Consistent with current plans • Adds the least amount of runoff during a storm
D- Marietta Blvd. Alternatives		✓	✓		✓	✓		✓	✓	27%	68	✓	✓	✓	• Connects to most neighborhoods and commercial facilities • Connects to most parks • Connects to other transit services • High performing - connection to the TAD • Consistent with current plans • Adds the least amount of runoff during a storm
F- Atlantic Station Alternatives		✓	✓	✓			✓			32%	56				• Moderate performing - connection to the TAD • Low performing - potential impacts on cultural resources • High performing - low number of ecological impacts • High performing - low number of noise, vibration, and biological effects • Low performing - high number of at-grade crossings • Serves one less economic development focus area

[1] Percentages are of in-street running in the northwest zone only, excluding MARTA Connectivity Areas and Infill Station Alternatives which will be studied in future phases of analysis.
[2] Totals include the number of parcels in the northwest zone only, excluding MARTA Connectivity Areas and Infill Station Alternatives which will be studied in future phases of analysis; includes partial impacts and total impacts; calculations were obtained from the *Analysis of Potential Right-of-Way Needs Technical Memorandum*.
[3] Consistency with the project vision includes location relative to the Atlanta Beltline Tax Allocation District (TAD) and proximity to areas of potential future development.
[4] Supporting analysis results are presented in Chapter 7, Evaluation of Alternatives.

2.3.5 MARTA Station Connectivity and Infill Station Alternative Areas

There is a need for the Atlanta BeltLine to interconnect with MARTA rail stations in order to permit travelers to move from one transportation facility to another. However, the existing railroad ROW on which most of the Atlanta BeltLine would operate does not extend to or connect directly with existing MARTA rail stations. The geographic areas in which a connection is needed are referred to as MARTA Station Connectivity and Infill Station Alternative areas. In some instances, these areas present challenges for identifying appropriate connections and the Atlanta BeltLine station sites such as significant grade differences between MARTA and the Atlanta BeltLine or proximity to active rail facilities. Connectivity options occur near six MARTA rail stations as shown in Figure 2-5 at the following locations: Lindbergh Center, Inman Park/Reynoldstown, King Memorial, West End, Bankhead, and Ashby. In three of these areas, there are also opportunities for potential infill stations: West End at Lee Street/Donnelly Avenue; Ashby at Joseph E. Boone Boulevard/MARTA Proctor Creek Line; and Lindbergh at Armour Yard.

The intent is to identify possible connections across these challenge areas. In the Tier 1 DEIS, the alignments within each of the MARTA Station Connectivity and Infill Station Alternative areas and their potential impacts were evaluated as a composite group, not individually. Evaluation of and decisions regarding the selection of preferred MARTA Station Connectivity and Infill Station Alternatives will be made during analyses subsequent to this Tier 1 DEIS. At that time, evaluations and decisions will be made regarding transit and trails alignments and potential infill stations along the MARTA rail corridors.

2.3.6 Transit Mode Technologies

As described in Section 2.1.2.1, the *Inner Core BeltLine Alternatives Analysis* included a prescreening of five candidate transit mode technologies to operate on the Atlanta BeltLine with this initial screening finding that either LRT or SC would be a viable transit mode technology.

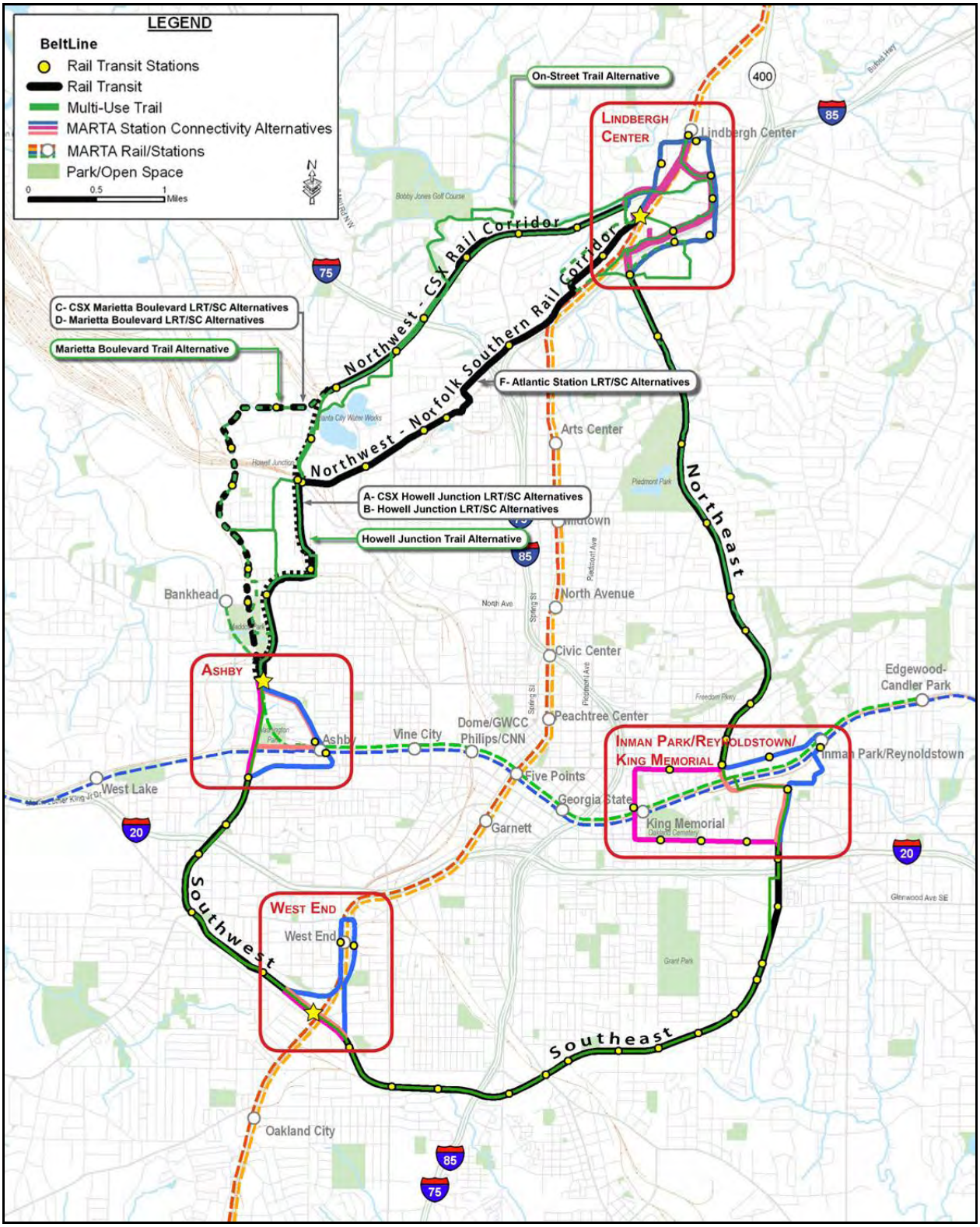
The basic goal of an LRT or SC project is to provide commuters and other travelers with the benefits of improved public transportation in a cost effective, environmentally sensitive, and socially responsible manner.

LRT and SC are in the same transit class, but are typically used differently. SC, a type of light rail vehicle, is substantially smaller than an LRT vehicle and usually operates as a single car train. On the Atlanta BeltLine, streetcars would draw electric power from overhead wires, and are relatively quiet, electrically-powered, zero-emissions vehicles. LRT vehicles look similar to SC and are powered similarly, but the vehicles are substantially larger and LRT trains are typically operated as sets of two or three vehicles.

SC is most often used in urbanized conditions where it operates at relatively slow speeds in mixed traffic. LRT is typically used in urban and suburban locations where it operates at relatively higher speeds primarily in exclusive ROW. The typical characteristics of SC and LRT are summarized in Table 2-3.

Conceptual designs for the Atlanta BeltLine assumed the more conservative LRT geometric standards to assure that either LRT or SC could be used. By using the more conservative LRT design standards, the project sponsors are preserving the option for modal interoperability with other, future transit projects.

Figure 2-5: Areas Surrounding MARTA Station Connectivity and Infill Station Alternatives



Source: AECOM 2011
Note: Starred stations represent the three potential MARTA infill stations.

Table 2-3: Summary of Typical Mode Characteristics

Characteristic	Light Rail Transit (LRT)	Modern Streetcar (SC)
Units per train	One to three cars	One
Vehicle Length/ Train Length	1 vehicle: 77 ft. to 110 ft. 2 vehicles: 154 ft. to 220 ft. 3 vehicles: 231 ft. to 330 ft.	66 to 85 ft.
Passenger capacity per vehicle	180 passengers per vehicle	128 to 133 (41 seated / 87 to 92 standing)
Power source	Overhead catenary	Overhead catenary
ROW / Operations	Exclusive ROW or in-street	Operate in-street
Station spacing	½- to one-mile	Three blocks to ½-mile
Peak hour passenger capacity	1,900 to 7,200 (1 to 3 vehicles)	1,170 to 1,300 (1 vehicle)

Because LRT is a larger vehicle than SC, requiring station lengths, track geometry, systems and structures that are typically larger than those of SC, the impacts stemming from LRT design standards in this EIS are considered to be worst case. Only those parameters that meaningfully differ between the two technologies are described in this EIS.

The project sponsors performed conceptual engineering analyses to support the DEIS that took into consideration alignments within all four zones as well as MARTA Station Connectivity and Infill Station Alternative Area design considerations. The analysis examined transit geometry (curve radii, grades, and clearances), track configuration, and safety needs. The outcome of these analyses is that either mode can be accommodated throughout the corridor.

Further examination of mode performance in terms of system, vehicle and infrastructure characteristics as well as community desires determined that SC is better adapted to the Atlanta BeltLine project. As shown in Table 2-4, LRT and SC are equally adaptable in terms of conceptual design and ability to connect to other planned transit projects. However, SC can be implemented at a generally lower capital cost while its shorter vehicle lengths provide greater flexibility than LRT in navigating the constrained geometry of the alignments, and may result in fewer noise, vibration, and land use impacts. In addition, SC is better adapted to the Atlanta BeltLine operating plan that calls for frequent stops. For these reasons. SC is MARTA's recommended mode technology for the Atlanta BeltLine project.

2.4 Trail Build Alternatives

In general, the Trail Build Alternatives are alongside the Transit Build Alternatives in the northeast, southeast, and southwest zones as illustrated in Figure 2-6. The parallel alignment of the transit and trails reduces the potential for community and environmental disruption and would be the least costly. In the northwest zone, two of the three Trail Build Alternatives, the Marietta Boulevard and Howell Junction Trail Alternatives would follow alongside the Transit Build Alternatives that are located within or adjacent to but outside the CSX freight rail corridor.

Table 2-4: Mode Characteristics and Constraints as Applied to the Atlanta BeltLine Project

Mode Characteristics	Light Rail Transit (LRT)	Modern Streetcar (SC)
System		
Conceptual design for entire Atlanta Beltline project (main line and connectivity areas) can accommodate mode	✓	✓
Potentially higher operating speed	✓	
Ability to connect with other planned transit projects	✓	✓
Generally lower capital costs for systems		✓
Vehicle and Infrastructure		
Higher single vehicle capacity	✓	
Potentially smaller fleet (total number of vehicles)	✓	
Greater flexibility in constrained track geometry		✓
Generally lower capital costs per vehicle		✓
Community Desires		
Ability to make frequent stops (adaptable to operating plan and BeltLine economic development objectives)	✓	✓+
Lower potential for noise, vibration and visual impacts		✓
Small vehicle and infrastructure (potentially fewer land use impacts, appropriate scale and community fit)		✓

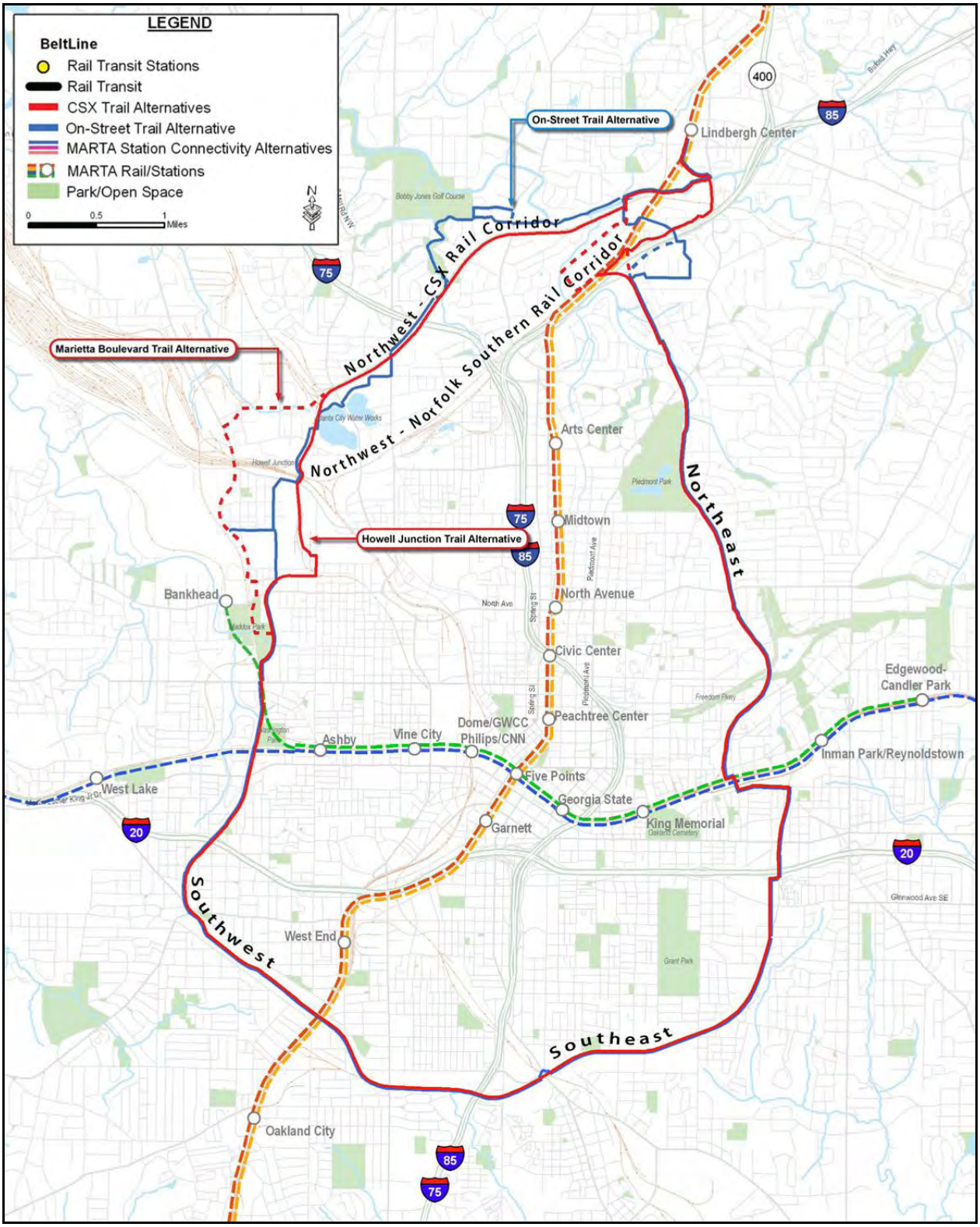
The exception is the On-Street Trail Alternative, which is parallel to the CSX railroad corridor in the northwest zone for a portion of its length; however, it would use other, parallel streets and ROW for much of its length. Separate trail alignments are required because of a lack of sufficient existing ROW, an engineering or access issue, or a need to provide a connection to a park that is not adjacent to the transit alignment.

Table 2-5 provides a comparison of the distinguishing characteristics and constraints of the Trail Alternatives. Factors include engineering, operational, and environmental considerations as well as public observations. Some or all trail alternatives share certain characteristics, such as consistency with the Atlanta BeltLine vision; however, other characteristics or constraints, such as preserving the ability to keep transit and trails together, set the trail alternatives apart from each other.

2.5 Supplemental Transit Features

Other elements of the proposed Atlanta BeltLine Build Alternatives are described below, which would be integral to the operation of a transit service, but are not decisive factors in this Tier 1 EIS. These other elements will be considered in detail in subsequent analysis. They include stations, operational characteristics, and vehicle storage and maintenance facilities.

Figure 2-6: Trail Build Alternatives



Source: AECOM 2011

Table 2-5: Trail Alternative Characteristics and Constraints in Northwest Zone

Trail Alignment Alternative	Requires New Structure Across Howell Junction	Connections to Key Destinations				Northerly Access to Peachtree	Number of Parcels Potentially Impacted[1]	SAC/TAC/Public Input			Other Key Differences[4]
		Bankhead MARTA rail station	Westside Park	Atlantic Station	Piedmont Hospital			Consistent with the project Vision[2]	Reaches an Area Underserved by Rail Transit	Preserves Ability to Keep Transit and Trail Together	
Howell Jct. Alternative	✓				✓	✓	84[3]	✓	✓	✓	• High performing - community benefits • Low performing – low number of potential ecological impacts
Marietta Blvd. Alternative		✓	✓		✓	✓	103[3]	✓	✓	✓	• High performing - community benefits • Low performing – low number of potential ecological impacts • Low performing – low number of potential for hazardous waste effects
On-Street Alternative	✓					✓	69[3]	✓	✓		• High performing - access to transit and other trails • Potentially adds one additional stream impact • Has the most runoff during a storm

[1] Totals include the number of parcels in the northwest zone only, excluding MARTA Connectivity Areas and Infill Station Alternatives which will be studied in future phases of analysis; includes partial impacts and total impacts; calculations were obtained from the *Analysis of Potential Right-of-Way Needs Technical Memorandum*.

[2] Consistency with the project vision includes location relative to the Atlanta Beltline Tax Allocation District (TAD) and proximity to areas of potential future development.

[3] Totals include the number of parcels for transit and trail.

[4] Supporting analysis results are presented in Chapter 7, Evaluation of Alternatives.

2.5.1 Transit Station Locations

Each of the various Transit Build Alternatives include approximately 50 potential station locations, which are illustrated in Figure 2-2 through Figure 2-4 and other figures throughout this Tier 1 DEIS. Previous and ongoing studies, along with public and agency input, have helped to identify potential station locations and provide guidance regarding station spacing and frequency. Public and agency input has indicated a preference for numerous transit stops providing enhanced origin and destination accessibility relative to high mobility and transit travel speeds. A preference was also expressed for few park-and-ride type facilities due to the high-density land use characteristics of the study area and transit-oriented focus of future development planning.

Potential station locations were identified through the *Atlanta BeltLine Redevelopment Plan* and subsequent Atlanta BeltLine subarea master plans (Section 1.5.2.1). Table 2-6 lists the potential station locations along with which subarea plan addresses them, the likely mode of access to the stations and key potential connectivity with transit projects in the No-Build Alternative. These station locations are based on existing bus routes, as well as access, land use, and circulation plans developed through the *Atlanta BeltLine Redevelopment Plan* and Atlanta BeltLine subarea master plans. These station locations and access details are preliminary in nature. Refinement of station access and locations would occur in future project development efforts.

Table 2-6: Potential Station Locations

Station Name	Atlanta BeltLine Subarea Plan	Primary Access Types	Comments
Northeast Zone			
Montgomery Ferry	Subarea 6	Bicycle - pedestrian - bus	
Ansley Mall	Subarea 6	Bicycle - pedestrian - bus	
Piedmont Park	Subarea 6	Bicycle - pedestrian - bus	
Virginia Monroe	Subarea 6	Bicycle - pedestrian - bus	
Ponce De Leon	Subarea 5	Bicycle - pedestrian - bus	
Angier Springs	Subarea 5	Bicycle - pedestrian - bus	
Highland	Subarea 5	Bicycle - pedestrian - bus	
Irwin	Subarea 5	Bicycle - pedestrian - bus	Potential connection to Atlanta Streetcar
Edgewood	Subarea 5	Bicycle - pedestrian - bus	Potential connection to Atlanta Streetcar
Southeast Zone			
Reynoldstown	Subarea 4	Bicycle - pedestrian - bus	
Memorial	Subarea 4	Bicycle - pedestrian - bus - car	Potential connection to I-20 East and Memorial Drive BRT projects
Glenwood	Subarea 4	Bicycle - pedestrian - bus - car	Potential connection to I-20 East and Memorial Drive BRT projects
Ormewood	Subarea 3	Bicycle - pedestrian - bus	
Delmar	Subarea 3	Bicycle - pedestrian - bus	
Confederate Avenue	Subarea 3	Bicycle - pedestrian - bus	
Boulevard	Subarea 3	Bicycle - pedestrian - bus	
Cherokee (Extension)	Subarea 3	Bicycle - pedestrian - bus	
Hill Street	Subarea 3	Bicycle - pedestrian - bus	
Milton	Subarea 2	Bicycle - pedestrian - bus	
McDonough - University	Subarea 2	Bicycle - pedestrian - bus	
Pryor	Subarea 2	Bicycle - pedestrian - bus - car	
McDaniel	Subarea 2	Bicycle - pedestrian - bus	
Metropolitan	Subarea 2	Bicycle - pedestrian - bus	
Allene	Subarea 2	Bicycle - pedestrian - bus	
Southwest Zone			
Lee	Subarea 1	Bicycle - pedestrian - bus	
Lawton	Subarea 1	Bicycle - pedestrian - bus	
RDA	Subarea 1	Bicycle - pedestrian - bus	
Langhorn	Subarea 1	Bicycle - pedestrian - bus - car	
Westview	Subarea 10	Bicycle - pedestrian - bus - car	
MLK	Subarea 10	Bicycle - pedestrian - bus	
Northwest – A- CSX Howell Junction and B- Howell Junction Transit Alternatives			
Boone	Subarea 9	Bicycle - pedestrian - bus	
Hollowell	Subarea 9	Bicycle - pedestrian - bus	
Jefferson	Subarea 9	Bicycle - pedestrian - bus	

Station Name	Atlanta BeltLine Subarea Plan	Primary Access Types	Comments
Lowery	Subarea 9	Bicycle - pedestrian - bus	
Huff	Subarea 8	Bicycle - pedestrian - bus	
Howell Mill	Subarea 8	Bicycle - pedestrian - bus	
Northside	Subarea 8	Bicycle - pedestrian - bus	Potential connection to I-75 LRT project
I-75	Subarea 7	Bicycle - pedestrian - bus - car	Potential connection to I-75 LRT project
Collier	Subarea 7	Bicycle - pedestrian - bus	
Peachtree	Subarea 7	Bicycle - pedestrian - bus - car	Potential connection to Atlanta Streetcar
Fairhaven	Subarea 7	Bicycle - pedestrian - bus	
Northwest – C- CSX Marietta Boulevard and D- Marietta Boulevard Transit Alternatives			
Boone	Subarea 9	Bicycle - pedestrian - bus	
Bankhead MARTA	Subarea 9	Bicycle - pedestrian - bus - rail - car	
Rice	Subarea 9	Bicycle - pedestrian - bus	
W. Marietta	Subarea 9	Bicycle - pedestrian - bus	
Elaine	Subarea 8	Bicycle - pedestrian - bus	
Fairmont	Subarea 8	Bicycle - pedestrian - bus	
Howell Mill	Subarea 8	Bicycle - pedestrian - bus	
Northside	Subarea 8	Bicycle - pedestrian - bus	Potential connection to I-75 LRT project
I-75	Subarea 7	Bicycle - pedestrian - bus - car	Potential connection to I-75 LRT project
Collier	Subarea 7	Bicycle - pedestrian - bus	
Peachtree	Subarea 7	Bicycle - pedestrian - bus - car	Potential connection to Atlanta Streetcar
Fairhaven	Subarea 7	Bicycle - pedestrian - bus	
Northwest – F- Atlantic Station Transit Alternatives			
Boone	Subarea 9	Bicycle - pedestrian - bus	
Hollowell	Subarea 9	Bicycle - pedestrian - bus	
Jefferson	Subarea 9	Bicycle - pedestrian - bus	
Lowery	Subarea 9	Bicycle - pedestrian - bus	
14th	Subarea 8	Bicycle - pedestrian - bus	
17th	Subarea 8	Bicycle - pedestrian - bus	
18th	Subarea 8	Bicycle - pedestrian - bus	
Deering	Subarea 8	Bicycle - pedestrian - bus -rail	Potential connection to Atlanta Streetcar
Ottley	Subarea 7	Bicycle - pedestrian - bus	

Note: Does not include stations in MARTA Connectivity and Infill Station Alternative Areas, because the alignments in these areas are not being in Tier 1

Station location characteristics will be refined during the Tier 2 analysis. The Atlanta BeltLine project may include improvements to the street, curbside areas, and sidewalks in the vicinity of proposed stations to facilitate pedestrian, bicycle, and transit passenger access, roadway-based vehicle circulation and the required geometry for operation of the selected technology. The decision regarding joint infill stations serving both MARTA heavy rail and the Atlanta BeltLine in the MARTA Station Connectivity and Infill Station Alternative areas is being deferred to subsequent analysis.

2.5.2 Operational Characteristics

Assumptions from previous studies and public and agency input have provided guidance in establishing Atlanta BeltLine transit service characteristics such as vehicle headways, scheduling, and train capacity provisions. Public and agency input has indicated a preference for providing enhanced and frequent origin and destination accessibility relative to favoring long distance mobility and transit travel speeds.

Ridership projections were developed during the *BeltLine Inner Core Alternatives Analysis: Detailed Screening Results* (MARTA 2007). The results indicate the line loads for the B3 Alternative would be 1,129 passengers in the morning and afternoon peak periods, peak direction (between Lindbergh and Armour Drive). Peak periods are from 6:30am to 9:30am, and 3:30pm to 6:30pm. Through the 2007 screening analysis, the estimated end-to-end travel time for both LRT and SC would be over 71 minutes.

In this Tier 1 DEIS, the service frequencies, or headways, are assumed to be 10 minutes during the peak period, 12 minutes during the off-peak period, and 15 and 30 minutes for evening and late evening, respectively.

For LRT, these assumptions result in a need for 16 trains in the three-hour peak period. This service would require 32 LRT vehicles during peak periods, and 39 LRT vehicles total, including spares. For SC, these assumptions result in a need for 19 SC trains in the three-hour peak period. This service would require 38 SC vehicles in the peak periods, and 46 SC vehicles total, including a 20 percent spare ratio[7].

2.5.3 Vehicle Storage and Maintenance Facilities

The new transit system developed for the Atlanta BeltLine project would require facilities to support operations and would potentially include the following:

- Storage yard for overnight and midday storage of vehicles, parts, materials, and special maintenance equipment;
- Employee facilities for operations offices, reporting crew, and welfare functions; and,
- Maintenance facility for daily maintenance (cleaning, fueling, inspection, and running repairs) and heavy repair or overhaul.

A single storage and maintenance facility has been assumed to serve the entire Atlanta BeltLine fleet. Previous studies identified a potential site for vehicle storage and maintenance in the area immediately south of the existing MARTA Armour Yard facility near the northern end of the northeast zone of the Atlanta BeltLine alignment. This site is approximately 10 to 12 acres, and would have the capacity for approximately 50 LRT-scale vehicles accommodating vehicle storage, daily and heavy maintenance activities, fleet operations, and employee welfare functions.

Consideration of this site and other potential sites will occur during Tier 2 analysis. The importance of the maintenance facility to this Tier 1 Draft EIS is in its effects on operations and maintenance of LRT or SC over the assumed life of the project on the resources of MARTA when considered together with the operation and maintenance of other vehicle technologies being operated and planned for future operation by other

[7] Spare ratio is the number of spare vehicles divided by the vehicles required for maximum service.

projects. Chapter 7.3 provides a comparison of operation and maintenance costs of LRT and SC.

2.5.4 Transit and Multi-Use Trail Cross Sections

Typically, the transit and trail corridor requires a 57-foot wide cross section for implementation as illustrated in Figure 2-7. This cross section consists of a 37-foot wide transit corridor including a five-foot buffer adjacent to a 20-foot trail corridor that includes a four-foot buffer. At minimum, the transit and trail combined can fit within a 52-foot wide section with the removal of buffer space. Transit stations with platforms can be configured as a 72-foot wide section with a center platform for use by both directions of transit or a 75-foot wide section with a side platform for each direction of transit.

The transit component will operate in both directions, with tracks laid immediately adjacent to each other along the entirety of the alignment. Each travel direction will have dedicated track, with the potential exception of some bridge and tunnel sections where track sharing for bi-directional movement cannot occur.

Development of typical cross sections for transit and trail alternatives along the active mainline railroad corridors of the northwest zone requires intensive cooperation and interaction between the railroads and MARTA. Currently dimensions for these typical cross sections are undefined and development of recommendations will occur as the project advances.

Figure 2-7: Typical Section of Trail and Transit