
INITIAL FEASIBILITY STUDY

COMMUTER RAIL
NASHVILLE, TN
TO
CLARKSVILLE, TN

November 2008



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Table of Contents

1.0	STUDY PURPOSE AND SCOPE	4
2.0	ORGANIZATIONS INVOLVED	5
2.1	Ashland City	5
2.2	Cheatham County	5
2.3	Cheatham Davidson County Railroad Authority	5
2.4	City of Clarksville	5
2.5	Clarksville Transit System.....	6
2.6	Clarksville Urbanized Area Metropolitan Planning Organization	6
2.7	CSX Transportation Inc.....	6
2.8	Federal Railroad Administration	6
2.9	Federal Transit Administration	6
2.10	Friends of the Cumberland River Bicentennial Trail	7
2.11	Greater Nashville Regional Council.....	7
2.12	Metropolitan Government of Nashville and Davidson County	7
2.13	Montgomery County Railroad Authority	7
2.14	Montgomery County	7
2.15	Nashville Area Metropolitan Planning Organization	8
2.16	Nashville Metropolitan Transit Authority	8
2.17	Nashville & Western Railroad	8
2.18	R.J. Corman Railroad	9
2.19	Regional Transportation Authority	9
2.20	Tennessee Department of Transportation	9
2.21	Project Team	10
3.0	POTENTIAL ROUTES	11
3.1	I-24 Corridor	11
3.2	Springfield	13
3.3	Nashville & Western Railroad	15
3.4	Other Routes	17
3.5	Selected Route	18
4.0	MAJOR CAPITAL IMPROVEMENTS & EXPENDITURES	19
4.1	Nashville to Ashland City.....	19
4.1.1	Right-of-Way	19
4.1.2	Track.....	19

4.1.3	Bridges.....	21
4.1.4	Cumberland River Bridge	22
4.1.5	Grade Crossings.....	23
4.2	Ashland City	25
4.2.1	Right-of-Way	25
4.2.2	Track.....	26
4.2.3	Bridges.....	26
4.2.4	Grade Crossings.....	26
4.3	Ashland City to the County Line.....	28
4.3.1	Right-of-Way	28
4.3.2	Track.....	28
4.3.3	Bridges.....	29
4.3.4	Grade Crossings.....	30
4.3.5	Cumberland River Bicentennial Trail.....	31
4.4	Cheatham Dam	34
4.5	County Line to Clarksville City Limits	35
4.5.1	Right-of-Way	35
4.5.2	Track.....	39
4.5.3	Bridges.....	39
4.5.4	Grade Crossings.....	41
4.6	Clarksville	42
4.6.1	Right-of-Way	42
4.6.2	Track.....	43
4.6.3	Bridges.....	43
4.6.4	Grade Crossings.....	44
4.7	Downtown Nashville	45
4.7.1	Right-of-Way	45
4.7.2	Track.....	45
4.7.3	Bridges.....	45
4.7.4	Grade Crossings.....	45
4.8	Train Control Signals	47
4.9	Rolling Stock.....	48
4.10	Stations	49
4.11	Yards & Maintenance Facilities.....	51
4.12	Minimum Operable Segment.....	51

5.0	Station Sites	53
5.1	Clarksville	53
5.2	Ashland City	56
5.3	Mid-Town Station	58
5.4	Downtown Nashville	59
5.4.1	Clement Landport	59
5.4.2	Farmer's Market Station	60
6.0	Capital Cost Estimate	61
6.1	Right-Of-Way.....	62
6.2	Structures.....	62
6.3	Track Rehabilitation	63
6.4	New Track	63
6.5	Grade Crossing Signals	63
6.6	Stations	64
6.7	Train Control Signals	64
6.8	Rolling Stock.....	64
6.9	Other Capital Items	65
6.10	Cost Summary	65
7.0	Potential Operating Schedules.....	66
8.0	Preliminary Operations Budget.....	76
9.0	Next Steps	77
Appendix A - Map of Proposed Alignment		
Appendix B – Inventory of Structures		
Appendix C – Cost Estimate Detail		
Appendix D – Cumberland River Bridge Study		
Appendix E – Track Charts		

1.0 STUDY PURPOSE AND SCOPE

This initial feasibility study has developed from a mutual interest of several parties to explore the possibility of commuter rail from Clarksville, TN to Nashville, TN. This interest formally came together at a meeting held on June 12, 2007 in the offices of Montgomery County Mayor Carolyn Bowers. At the meeting with Mayor Bowers were City of Clarksville Mayor John Piper, Cheatham County Mayor Bill Orange, Clarksville Area Metropolitan Planning Organization staff, as well as officials from the Nashville and Western Railroad. The Tennessee Department of Transportation's Division of Multi-Modal Transportation Resources also became involved with the study at the behest of the above organizations.

The purpose of this initial feasibility study was to look at the corridor between Clarksville and Nashville and determine if commuter rail is feasible in this corridor, determine the most likely alignment, develop a preliminary capital cost estimate, and a potential operating schedule and operations budget. The results of the study will allow the officials involved to make a more informed decision on whether to invest in the next steps toward a commuter rail.

The scope of the study included:

- Explore potential alignments for the commuter rail
- Determine the most feasible route
- Determine improvements needed on that route
- Study of the capital costs needed
- Develop potential operating schedules
- Develop a preliminary operations budget
- Research the next steps necessary to develop the corridor

2.0 ORGANIZATIONS INVOLVED

The following list is an attempt to identify most of the organizations both public and private that are involved or affected by this study.

2.1 Ashland City

Located on the north side of the Cumberland River, Ashland City with a population of approximately 4000 was established in 1859 and is the county seat of Cheatham County.

2.2 Cheatham County

Established in 1856, Cheatham County is the home to the largest manufacturer of water heaters - A.O. Smith and one of the most renowned boat builders - Triton Boats. The population of Cheatham County in 2005 was 38,603. Within Cheatham County is also the Cheatham County Joint Economic and Community Development Board (JECD).



2.3 Cheatham Davidson County Railroad Authority

The Cheatham County Railroad Authority (CCRA) is a public entity that owns the right-of-way and oversees the rehabilitation of the Nashville & Western Railroad. The CCRA purchased the line in 1986. Prior to their ownership, the line had a long and storied history. Originally chartered as the Nashville and Clarksville Railroad Company, construction began on the line in 1901. In 1903 the first train ran from Nashville to Ashland City on what was then the Tennessee Central Railway. By 1904 the line was completed to Hopkinsville, Kentucky to the west and to Harriman, Tennessee in the east. In 1968 the line, then bankrupt, sold the Nashville to Hopkinsville segment to the Illinois Central. Since then it has been operated by several short line operators prior to the Nashville and Western Railroad starting operations. CCRA is funding a portion of this study.

2.4 City of Clarksville

Founded in 1784 near the confluence of the Cumberland and Red Rivers, the City of Clarksville (pop. 103,455) is Tennessee's fifth largest and third fastest growing city.



2.5 Clarksville Transit System

The Clarksville Transit System created in May 1987 is the operating division of the Clarksville Department of Transportation. It is under direction of the City Council Transportation Committee. The Transportation Committee is responsible for overseeing the management and operation of public transit services for the City.

2.6 Clarksville Urbanized Area Metropolitan Planning Organization

The Clarksville Urbanized Area Metropolitan Planning Organization (CUAMPO) is the Metropolitan Planning Organization (MPO) with the lead responsibility for developing transportation plans and air quality plans/programs for the urbanized areas of Clarksville and MPO. CUAMPO is funding a portion of this study.



2.7 CSX Transportation Inc.

CSX Transportation Inc., operates the largest railroad in the eastern United States with a 21,000-mile rail network linking commercial markets in 23 states, the District of Columbia, and two Canadian provinces. CSXT headquarters are in Jacksonville, Fla.

2.8 Federal Railroad Administration

The Federal Railroad Administration (FRA) was created by the Department of Transportation Act of 1966 (49 U.S.C. 103, Section 3(e)(1)). The purpose of FRA is to: promulgate and enforce rail safety regulations; administer railroad assistance programs; conduct research and development in support of improved railroad safety and national rail transportation policy; provide for the rehabilitation of Northeast Corridor rail passenger service; and consolidate government support of rail transportation activities. Today, the FRA is one of ten agencies within the U.S. Department of Transportation concerned with intermodal transportation. It operates through seven divisions under the offices of the Administrator and Deputy Administrator.

2.9 Federal Transit Administration

The Federal Transit Administration (FTA) is one of 10 modal administrations within the U.S. Department of Transportation. Headed by an Administrator who is appointed by the President of the United States, FTA administers

federal funding to support a variety of locally planned, constructed, and operated public transportation systems throughout the U.S., including buses, subways, light rail, commuter rail, streetcars, monorail, passenger ferry boats, inclined railways, and people movers.

2.10 Friends of the Cumberland River Bicentennial Trail

The Friends of the Cumberland River Bicentennial Trail is an active group of citizen users of the trail. The group maintains the trail's website at www.cumberlandrivertrail.org, supports an annual bike ride, meet at the Ashland City's Parks and Recreation offices the last Monday of every month, and hold a trail maintenance event on the first Saturday of every month.

2.11 Greater Nashville Regional Council

The Greater Nashville Regional Council (GNRC) is the regional planning and economic development organization of the 13 counties and 52 cities of the Greater Nashville Region of Middle Tennessee. The GNRC serves the following counties: Cheatham, Davidson, Dickson, Houston, Humphreys, Montgomery, Robertson, Rutherford, Stewart, Sumner, Trousdale, Williamson and Wilson.

2.12 Metropolitan Government of Nashville and Davidson County

The Metropolitan Government of Nashville and Davidson County was formed in 1963 by combining the City of Nashville with most of the surrounding Davidson County. With an estimated population of 619,626 per the 2007 census the city serves as the State Capital. It is also home to Vanderbilt University, HCA, Dollar General Corporation and many other entities in the music, healthcare, education, finance, insurance, publishing and automotive industries.

2.13 Montgomery County Railroad Authority

The Montgomery County Railroad Authority (MCRA) is the public entity that oversees the Tennessee Short Line Railroad Rehabilitation programs work on the R.J. Corman line in Montgomery County.

2.14 Montgomery County

Established in 1796, Montgomery County (Pop. 154,000+) is the home of Fort Campbell, Austin Peay State University and the City of Clarksville.



2.15 Nashville Area Metropolitan Planning Organization

The Nashville Area MPO is the federally-designated transportation planning agency responsible for identifying future transportation needs and then developing and evaluating proposed solutions to maximize the effectiveness of system investments throughout Davidson, Rutherford, Sumner, Williamson, Wilson and parts of Maury and Robertson counties.

Through the Nashville Area MPO, local partners develop and manage the region's 25-year long range transportation plan and 4-year transportation improvement program to prioritize transportation needs for federal and state funding.

2.16 Nashville Metropolitan Transit Authority

The Nashville Metropolitan Transit Authority provides public transportation services to citizens and visitors in Nashville-Davidson County by offering more than 40 bus routes, including three which travel outside of the county through a contract with the Regional Transportation Authority.

A five-member Board of Directors appointed by the Mayor and confirmed by the Metro Council establishes policies regarding the operation of the MTA and approves its budget.



The chief executive officer, appointed in January 2002, reports to the Board of Directors. The CEO is responsible for managerial oversight and is the agency's only Metro government employee. Other personnel such as the bus drivers, mechanics, supervisors, and others are employees of the Davidson Transit Organization, a private, non-profit organization that is responsible for all employment activities.

2.17 Nashville & Western Railroad

The Nashville and Western Railroad (NWR) is a short-line freight rail operator that runs between downtown Nashville and Ashland City, TN on the rail line owned by the Cheatham County Railroad Authority. The NWR, a sister railroad to the well established Nashville & Eastern, was launched in 2000. Since its inception, the NWR, with the help of its public partners (Cheatham County Railroad Authority & TDOT) has worked hard to rehabilitate its rail infrastructure, increase its customer base and extend its service area westward (now 18 miles west of downtown). NWR is funding a portion of this study.



2.18 R.J. Corman Railroad

R.J. Corman Railroad is a privately held company that operates a 92 mile long short line railroad from Cumberland City, TN to Bowling Green, KY through downtown Clarksville. This line was purchased from CSX by R.J. Corman Railroad in 1987.

2.19 Regional Transportation Authority

The Regional Transportation Authority (RTA) is a government-funded agency supported by member communities. Created in 1988, the RTA provides ridesharing opportunities in order to promote the economic growth of their membership and improve the air quality of their community. Led by a board of city and county mayors and community leaders, the RTA serves nine counties and their member cities/towns. The communities are: Cheatham County, Ashland City, Kingston Springs, Pegram, Davidson County, Belle Meade, Forest Hills, Goodlettsville, Lakewood, Nashville, Oak Hill, Dickson County, Dickson, White Bluff, Maury County, Columbia, Robertson County, Springfield, Rutherford County, La Vergne, Murfreesboro, Smyrna, Sumner County, Gallatin, Goodlettsville, Hendersonville, Millersville, Mitchellville, Portland, Westmoreland, White House, Williamson County, Brentwood, Franklin, Wilson County, Lebanon, Mt. Juliet, and Watertown



2.20 Tennessee Department of Transportation

The Tennessee Department of Transportation (TDOT) is a funding partner of this study and would need to be a major partner in any capital project that came from the study. TDOT also through their Division of Multi-Modal Transportation Resources would be involved in operational support as well. TDOT is funding a portion of this study.



2.21 Project Team

2.21.1 Kevin Walker, P.E.

Kevin Walker of CSR Engineering, Inc. is a licensed professional engineer in the State of Tennessee with over 10 years of experience in railroad design and planning. He recently served as the Construction Manager for the Regional Transportation Authority's \$41 million dollar commuter rail project between Lebanon and Nashville, TN.

2.21.2 Ben Smith

Ben Smith served as Director of the TDOT Division of Public Transit, Railroads, and Waterways from 1998 to 2004. Earlier he served for 13 years as the Governor's Staff environmental policy advisor for Governor Lamar Alexander and for Governor Ned McWherter. During the last 6 years at TDOT he was in charge of initiatives which produced Tennessee's first comprehensive railroad system plan and the first statewide plan for public transportation services. He directed a 2003 application to the U.S. Secretary of Transportation for a high speed rail corridor extension from Atlanta to Nashville. Following his 2004 retirement, after 31 years of state service, he is providing consulting services to state and local transportation agencies and authorities as well as private railroad companies.

2.21.3 Pat Conyers

Pat Conyers of CSR Engineering, Inc. has worked on railroad track and bridge design for over 35 years. His experiences range from industrial spur design to major track realignments for class I railroads. Mr. Conyers has been involved with the Cheatham County Railroad Authority for over 20 years.

3.0 POTENTIAL ROUTES

The potential routes for commuter rail from Clarksville to Nashville were evaluated for the feasibility of constructing the line as well as operation of the line once established. Due to the rugged terrain of the Highland Rim between Clarksville and Nashville, specifically the northwest corner of Davidson County and the majority of Cheatham County, very few potential alignments exist. For the purpose of this study three alignments were studied, the I-24 Corridor, CSX through Springfield, and the Nashville and Western Railroad. For each alignment, possible stations were located, commute length and time were estimated, capital costs were estimated at a broad level.

3.1 I-24 Corridor

The first corridor that was explored was the existing Interstate 24 route from mile marker 4 in Clarksville to downtown Nashville as shown in Figure 3-1. This alignment would be 45 miles long and typically utilize either the median or the shoulder of Interstate 24 as dictated by the terrain.

The alignment would start with a station near the new Gateway Medical Center and the RJ Corman railroad just south of Exit 4 on the interstate. Following the interstate, intermediate stations would include south Clarksville near exit 11, Pleasant View at Exit 24, Joelton at Exit 35. The terminus for the alignment would be the Clement Landport in downtown Nashville, TN.

Positives:

- Public ROW from Clarksville to Briley Parkway.
- Curvature from Clarksville to Briley Parkway allows for 59 to 79 mph operating speeds.
- Overall trip time from Clarksville to Nashville of 55 to 60 minutes (this assumes that there are no regular delays at Kayne Avenue Yard).
- Desirable Station locations in South Clarksville, Pleasant View and Joelton.
- Ability to expand system to Downtown Clarksville using RJ Corman's line.
- Limited to no interaction in between commuter trains and freight trains except for downtown Nashville.

Negatives:

- Extensive property acquisition will be required in Nashville, affecting both residences and businesses.

- Running through CSX Transportation's Kayne Avenue yard will increase operating expenses, commute time and coordination efforts.
- Capital Cost of approximately \$300 million due to new bridge over the Cumberland River, interstate interchanges, vehicular barrier walls, and new alignment from Briley Parkway to Downtown.
- The grade heading out of Nashville up the Highland Rim exceeds 4% which exceeds industry recommendations for maximum grade and would likely require new locomotives and vehicles.

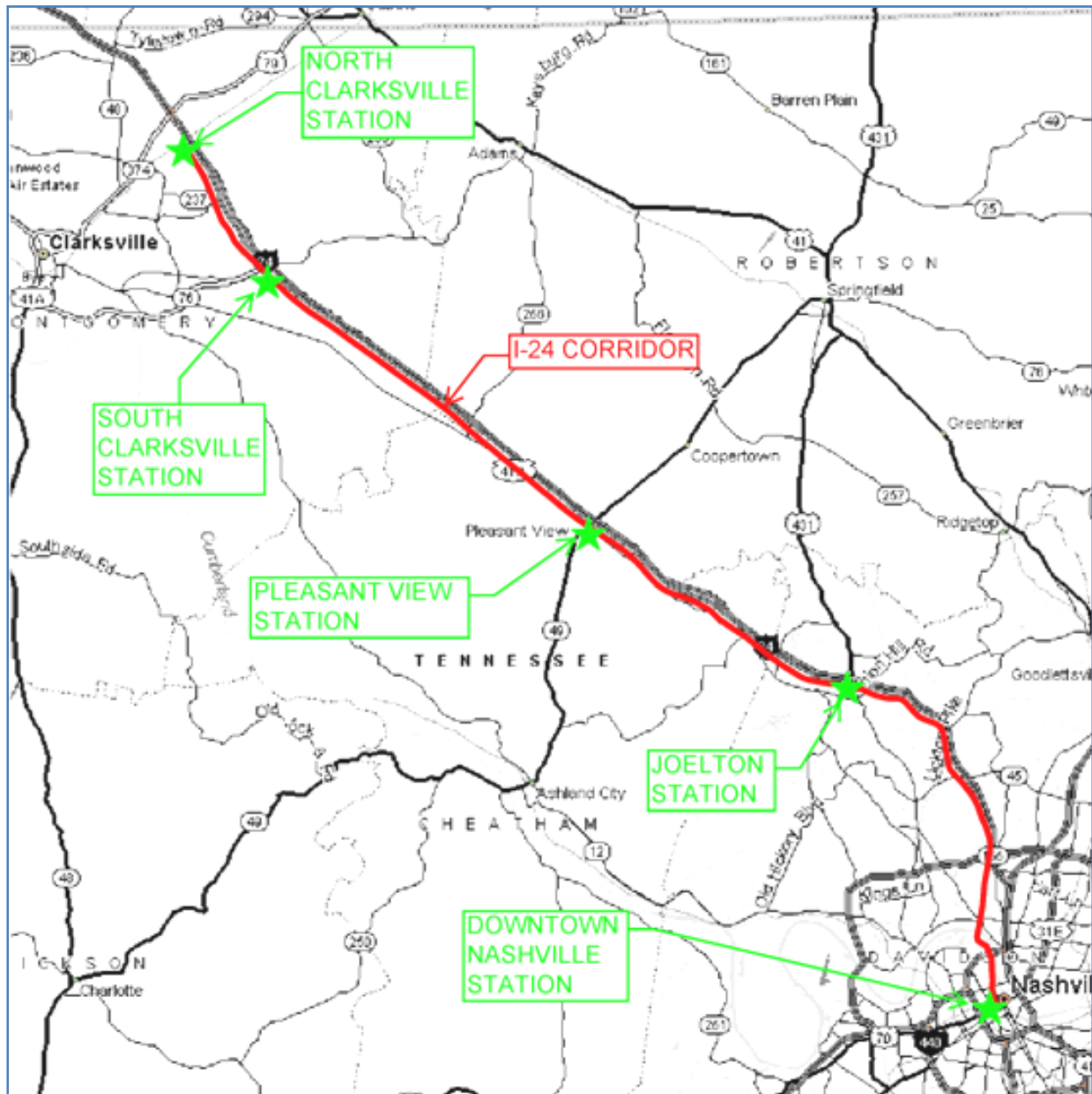


Figure 3-1 Map of Interstate 24 Corridor

3.2 Springfield

The second corridor explored was along the RJ Corman Railroad from Downtown Clarksville to their interchange with CSX in Guthrie, Kentucky, down CSX's line through Adams, Springfield, Greenbrier, Ridgetop, Goodlettsville and into downtown Nashville as shown in Figure 3-2. This alignment would be 63 miles long.

The Clarksville Terminus would be downtown with an additional station near the Gateway Medical Center. Intermediate stations would likely be located in Springfield, Greenbrier and Goodlettsville. The terminus for the alignment would be the Clement Landport in downtown Nashville.

Positives:

- Existing infrastructure and right-of-way.
- Desirable Station locations in Springfield and Goodlettsville.
- Downtown Clarksville Station.
- Few if any residences or business will need to be relocated.

Negatives:

- Overall trip time from Clarksville to Nashville of 65 to 75 minutes.
- Use of CSX's main lines is very unlikely due to high volume of freight trains currently using the line. It would likely be necessary to double track the whole line from Guthrie to Nashville including a new bridge over the Cumberland River.
- Capital Cost's are unknown until a rough scope of work that CSX would require is established.
- Project crosses over a state line which would add to the complexity of the project due to the additional bureaucracy of another state to coordinate with and seek approval of. It is possible that a new interchange track could be built that would "cut the corner" and eliminate Kentucky from the project.

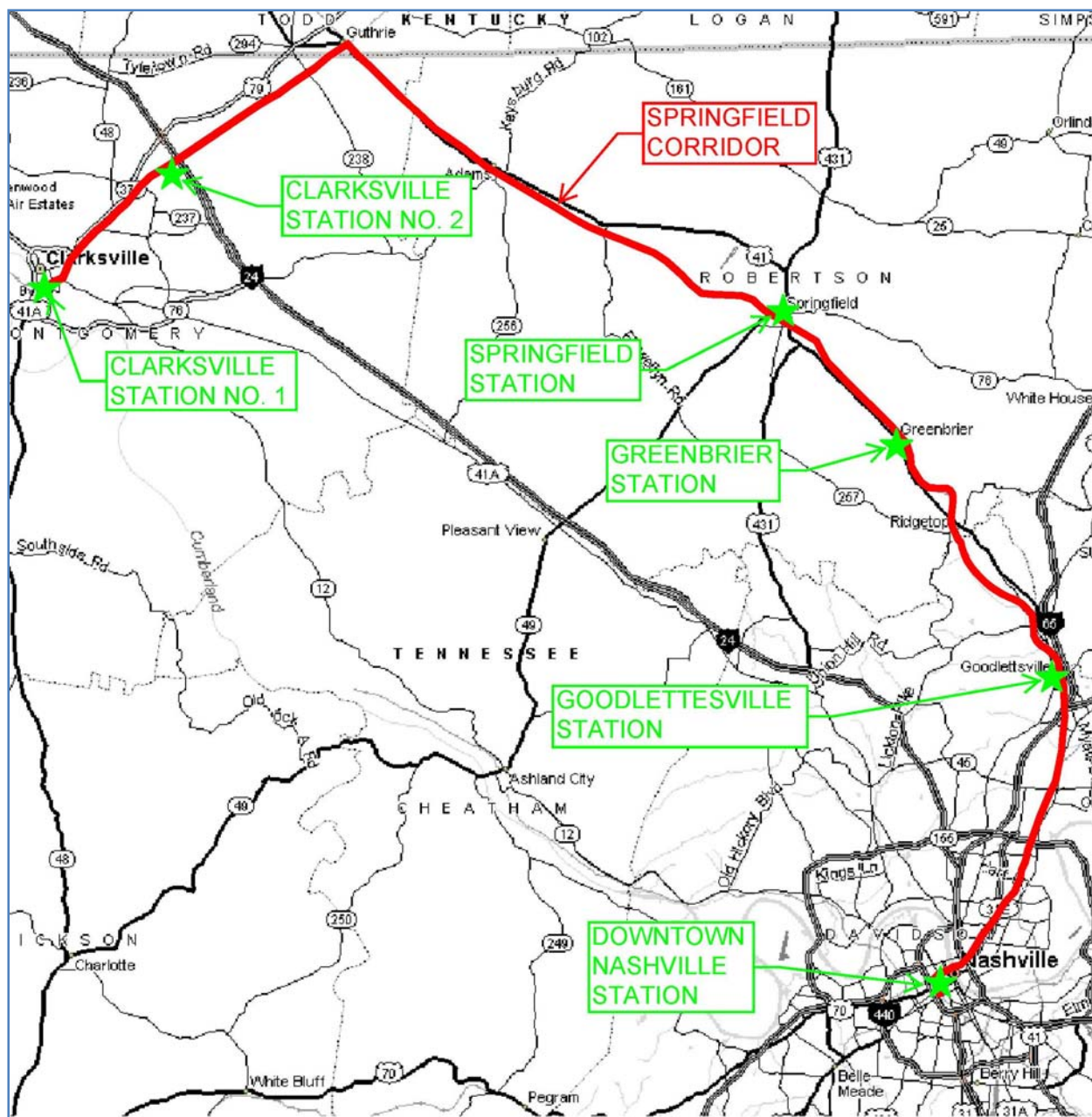


Figure 3-2 - Map of Springfield Corridor

3.3 Nashville & Western Railroad

The last alignment that was looked at was along the Nashville & Western railroad as shown in Figure 3-3. This line originally was a Tennessee Central Railroad line from Hopkinsville, Kentucky through Clarksville and Ashland City to Nashville. The northern portion of the line beyond Ashland City was abandoned, but the roadbed from Ashland City to Clarksville is largely still in place. This line would be 43 miles long with a travel time of 48 - 55 minutes.

The Clarksville Terminus would be near Madison Street and Golf Club Lane. At start-up the only Intermediate station would be in Ashland City. An intermediate station might be located in Scottsboro if the Maytown development in the Bell's Bend area of Nashville ever proceeds. The terminus for the alignment would be in the Mid-Town area of Nashville. A station near Farmer's Market or at Clement Landport is also a possibility.

Positives:

- Existing road bed
- Willing host railroad
- 29 of the 43 miles of right-of-way are publicly owned (Cheatham County Railroad Authority, Town of Ashland City, and City of Clarksville).
- Short trip time of approximately 50 minutes is shorter than current commute time even considering time spent on shuttles to / from station.
- The bridge over the Cumberland River has a separate funding source (savings of \$35 to \$40 million)
- Does not have to involve CSX at time of start-up

Negatives:

- Likely less ridership at intermediate station(s) than other routes
- Nashville Terminus will not be tied into other commuter rail lines at start-up even though that option would exist as future expansion.
- The Cumberland River Bicentennial Trail will be impacted by the line.

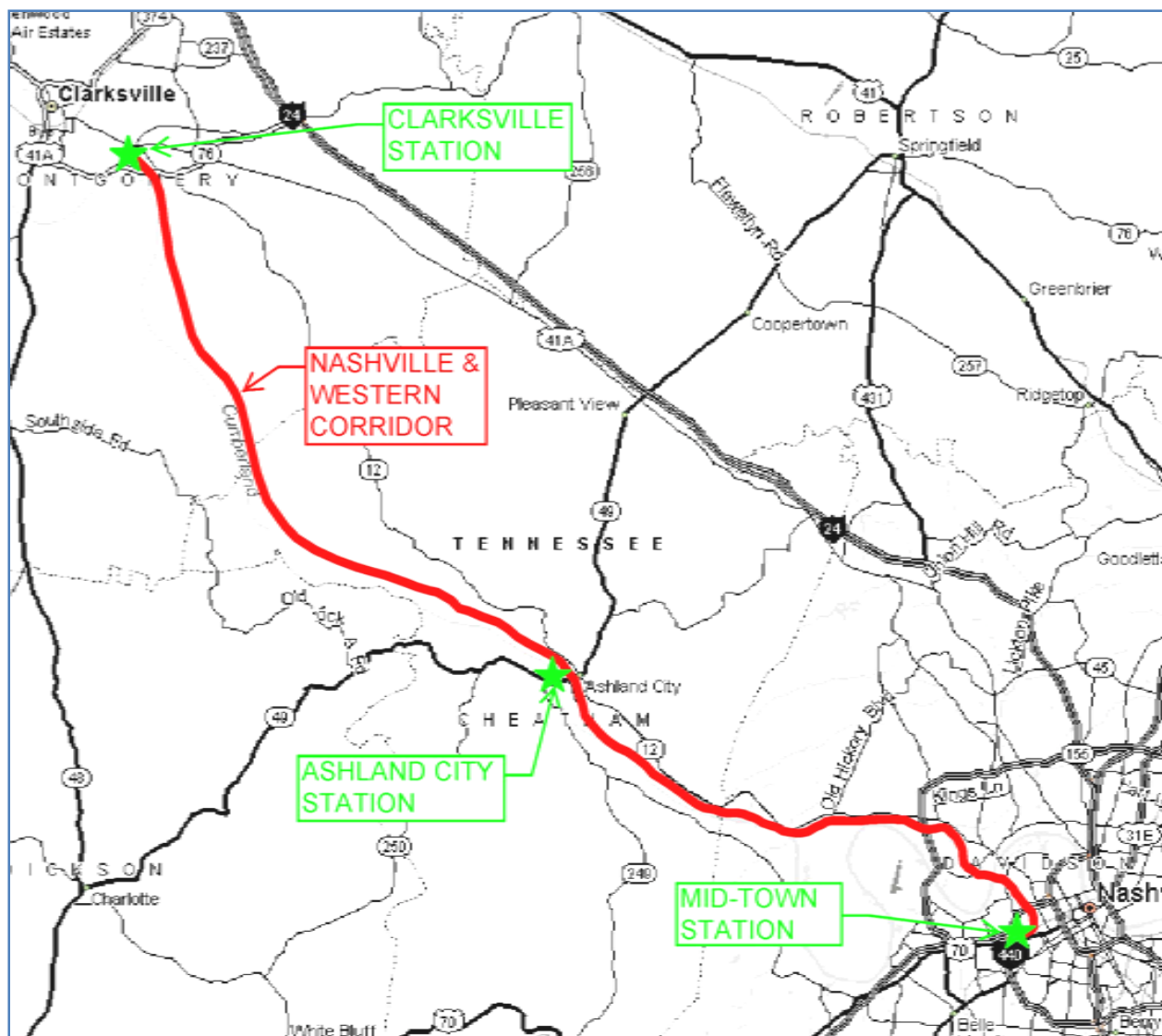


Figure 3-3 - Map of the Nashville & Western Corridor

3.4 Other Routes

As stated previously, the rugged terrain of the Highland Rim between Clarksville and Nashville, specifically the northwest corner of Davidson County and the majority of Cheatham County, presented no other options for different alignments. However, within the three alignments studied, there were some other possibilities that should be mentioned.

I-24 Corridor – As this corridor near Briley Parkway, it currently is shown as veering west and crossing the Cumberland River near the Metro Center area and connecting to the CSX tracks in that vicinity. Another option would be to stay on the north and east side of the river and join with the CSX tracks just prior to their River Bridge south of Jefferson St. It is anticipated that a new river bridge would still be needed since CSX's is at capacity. This option does not significantly change operations or capital costs, but it gives CSX a couple options to consider.

Springfield Corridor – One option that was considered on this route was that initially it may be desirable to shorten the route by not extending the line all the way to the downtown Clarksville Station. This would shorten overall trip times and also save on initial capital costs.

Springfield Corridor – One other option that was considered on this route was that at the interchange between RJ Corman and CSX in Guthrie, Kentucky that it may be advantageous to build a new interchange track south of Guthrie that would shorten the trip time and keep the alignment in Tennessee.

Nashville & Western Corridor – One other partial alignment that was considered was using the alignment proposed in Section 3.3 from Clarksville to the Scottsboro area near MP 8.5. At that point a new track could be built across the Cumberland River tying into the CSX track near the Ford Glass plant and using CSX tracks to the Clement Landport. This would eliminate the Mid-Town Station and may possibly be more desirable to CSX. At this level of study, the added expense of this partial alignment does not seem cost effective.

Nashville & Western Corridor – There are two possibilities on this corridor to add an additional station closer to downtown Nashville. Both options require the rebuilding of one leg of a wye near 21st Avenue and Herman Street. This would allow trains to head directly into Nashville, by-passing the Mid-Town Station.

The first possibility for a downtown station is the Clement Landport. By heading east on the Nashville and Western's lead track the interchange with CSX can be reached. Once on CSX, the commuter train would have to cross over to the other side of Kayne Avenue Yard to the Clement Landport. This option will require some additional track and signal upgrades on the Nashville & Western as well as possibly upgrading some track and adding some crossovers to CSX's track.

The second possibility for a downtown station is in the Farmer's Market area. Historically the Nashville and Western use to cross through the Farmer's Market and the Bicentennial Mall area. By heading east on the Nashville and Western's lead track the train could reach the 9th to 10th Avenue area. A station could be located in between 9th Avenue and Rosa Parks Blvd. This would require relocating at least one business. This would put the downtown station in close proximity to the current state employee parking area.

3.5 Selected Route

Of the three corridors and various options studied in this section, the alignment described in Section 3.3 was chosen as the preferred alignment by the study team. This alignment from Mid-Town Station in Nashville along the Nashville & Western Railroad to Golf Club Lane in Clarksville provides the quickest commute time and the lowest capital and operating costs of all of the corridors. The rest of the report looks into this option in more detail.

4.0 MAJOR CAPITAL IMPROVEMENTS & EXPENDITURES

A detail map of the proposed alignment on USGS Quadrangle sheets is provided in Appendix A - Map of Proposed Alignment. The main capital improvements are broken down by the segments of the most likely route.

4.1 Nashville to Ashland City

This segment starts at the Mid-Town Station (MP 2.0) and ends at the end of the currently active mainline just past Thompson St. near the Ashland City Industrial Park (MP 17)

4.1.1 Right-of-Way

The right-of-way is currently owned by the Cheatham County Railroad Authority. This portion is currently an active freight railroad operated by the Nashville & Western Railroad. An operating agreement in between the CCRA, NWR and the commuter rail grantee will have to be executed prior to construction or operations could begin on this segment. It is not anticipated that any other right-of-way would be necessary in this area except for the portion

Additional property will be needed for the Mid-Town Station site.

4.1.2 Track

The track in this section is currently used and maintained at or above FRA Class I standards. Extensive tie replacement will be necessary for the whole segment. Most grade crossings and turnouts will need to be replaced. The rail is 90# and 100# jointed up to near MP 6 will need to be replaced. At that point there is 10 miles of 112# jointed that rail that can be left in the track. A few curves may need the rail replaced. The rail should be tested for flaws prior to the rehabilitation program being completed. Beyond MP 16, the rail is 70#, 80# and 100# rail and will need to be replaced. It is recommended that the track in this section be upgraded to allow for FRA Class III operations at 59mph. However, the curvature in between MP 8 and 16 is slight enough that if the number of private grade crossings could be reduced, a FRA Class IV track with operating speeds of 79 mph might be possible.

A passing siding will be needed somewhere in between MP 8 and MP 12. The exact location will need to be selected once the number of train consists and their schedule is better known. The siding should be at least 2000 ft long with a minimum of #15 turnouts.



Figure 4-1 Nashville & Western Track near MP 7

4.1.3 Bridges

The following 16 bridges will be in this segment:

Milepost	Crossing	Proposed Length (ft)
2.81	Albion St.	40
2.90	Alameda St	40
2.99	Meharry Blvd.	80
3.02	Alley	40
3.08	Jefferson St.	80
4.12	Buchanan St.	150
4.45	Cumberland River	1600
6.02	Emerald Drive	12
6.04	Drain	12
6.12	Creek	50
6.70	Whites Creek	310
7.10	Eatons Creek	320
9.30	Old Hydes Ferry Pike	40
9.50	Drain	215
10.60	Old Hickory Blvd.	240
14.50	Bull Run Creek	203

The majority of the bridges will need to be replaced for commuter rail service. The bridges on this segment were originally open deck timber trestles that are not suitable for commuter rail traffic. A summary of each bridge in this section is given in Appendix B – Inventory of Structures. The first five bridges are all over local roads in the Meharry St. neighborhood of Nashville. These bridges all currently have very low clearances of 9 to 14 feet and a history of being struck by box vans and other tall vehicles. It is recommended that the track be raised for this half mile section so that better clearances can be achieved.



Figure 4-2 Meharry St. Bridge

4.1.4 Cumberland River Bridge

The current bridge over the Cumberland River has been in service for over 100 years. The bridge is a swing span through truss bridge with a timber approach span. The overall length of the bridge is over 1800 ft. Over the last several years the United States Coast Guard (USCG) has worked with the CCRA on replacing the bridge. The bridge has been declared a hazard to navigation and an “Order to Alter” has been given by the USCG. This order qualifies the bridge for funding under the Truman-Hobbs Act. While the commuter rail project requires this bridge to be replaced, the actual replacement of the bridge has not been figured into this study. More detail about the work proposed is given in Appendix D – Cumberland River Bridge Study.

4.1.5 Grade Crossings

The following 36 rail-highway intersections will be in this segment:

Milepost	Crossing	Proposed Type	Width (ft)
1.94	27th Ave.	At-Grade	45
2.02	26th Ave.	At-Grade	45
2.11	25th Ave.	At-Grade	45
2.20	Clifton Ave.	At-Grade	45
2.60	Herman St.	At-Grade	34
2.67	Hermosa St.	At-Grade	30
3.12	I-40	Hwy Overpass	
3.24	Helman St.	At-Grade (2-tracks)	30
5.22	County Hospital Rd.	At-Grade	45
5.78	Private Drive	At-Grade	16
6.62	Private Drive	At-Grade	16
7.42	Jordania Station Rd.	At-Grade	16
7.91	Briley Parkway	Hwy Overpass	
8.01	Private Drive	At-Grade	36
8.10	Private Drive	At-Grade	54
8.42	Amy Lynn Dr.	At-Grade	61
9.08	WWCR Ave.	At-Grade	16
9.94	Private Drive	At-Grade	12
10.30	Private Drive	At-Grade	12
10.40	Private Drive	At-Grade	12
10.75	Private Drive	At-Grade	12
11.10	Private Drive	At-Grade	28
11.30	Private Drive	At-Grade	12
11.66	Hyde's Ferry Pk.	At-Grade	28
11.72	Private Drive	At-Grade	12
11.94	Private Drive	At-Grade	12
12.05	Private Drive	At-Grade	16
13.20	Private Drive	At-Grade	12
13.36	Private Drive	At-Grade	16
13.83	Private Drive	At-Grade	20
14.62	Park Entrance	At-Grade	16
14.97	Private Drive	At-Grade	12
15.30	Graham Rd	At-Grade	24
15.60	Trinity Rd	At-Grade	24
16.46	Bluegrass	At-Grade	24
16.90	Thompson	At-Grade	24

Each of the 17 at-grade public crossings will need to be updated to active warning signals with gates and constant warning time train detection. Lane delineators for 100 feet each side of the crossing should be considered where the geometry of the road is conducive to it.

Efforts should be made to close or consolidate as many of the private grade crossings as possible. All private grade crossings that are left in should have appropriate signage placed and sight distances improved to the extent possible.



Figure 4-3 Private Drives at MP 13

It should be noted that both Ed Temple Blvd and Old Hydes Ferry Pike grade crossings are not included in this section since they are scheduled for grade separation in conjunction with the Cumberland River Bridge Replacement.

4.2 Ashland City

This segment is from the end of the active line near the Ashland City Industrial Park to just past the SR 455 by-pass on the north side of Ashland City. This is approximately MP 17 to MP 21.6. The segment of track still has both bridges and most of the rail in place, but the line is not currently in operable condition. One section of track on either side of the new SR 455 By-Pass does not have track built on it. This segment was recently rebuilt through the sub-ballast, at a higher elevation to accommodate the by-pass. Agreements in between the CCRA and the Town of Ashland City should be researched regarding the financial responsibility of putting this grade crossing back in service.

4.2.1 Right-of-Way

The right-of-way is currently owned by the Cheatham County Railroad Authority. The only additional property needed will be for the station which as proposed sits on land owned by the Town of Ashland City. There are currently at least two locations where adjacent businesses have been using the right-of-way. Adjacent to Hwy 49 in downtown Ashland City, both the local Co-op and lumber yard have paved over the tracks and are using it for parking.



Figure 4-4 Track Adjacent to Hwy 49 in Ashland City

4.2.2 Track

The track in this segment has not been active for over fifteen years. Brush and small trees have grown in between the rails. With the condition of the ties and ballast being poor and the rail being 70# and 80# the most economical solution is to completely remove the track and build back up from the sub-grade. The new track should be built on the current alignment with a design speed of 59 mph.

A passing siding should be built at the station. This will allow for train meets at the station. The siding should be 1500 to 2000 ft long.

4.2.3 Bridges

The following 5 bridges will be in this segment:

Milepost	Crossing	Proposed Length (ft)
19.09	Private Rd. & Drain	45
19.81	Marrowbone Creek	800
20.42	Drain	60
20.79	Puzzle Fool Creek	40
21.34	Lennox Branch	10

All of these bridges will need to be replaced for commuter rail service. The bridges on this segment are open deck timber trestles that are not suitable for commuter rail traffic.

During the design phase of the project a hydraulic study will need to be done for each bridge. The study may show that some of the bridges can be replaced with culverts or significantly shortened.

4.2.4 Grade Crossings

The following six rail-highway intersections will be crossed:

Milepost	Crossing	Proposed Type	Width (ft)
19.50	Farm	At-Grade	16
20.10	SR 455	At-Grade	32
20.82	Rhea St.	At-Grade	24
20.87	Hwy. 49	At-Grade	32

21.29	W. Lenox	At-Grade (2-tracks)	45
21.40	SR 455	At-Grade	54

Each of these public crossings will need to be updated to active warning signals with gates and constant warning time. Lane delineators for 100 feet each side of the crossing should be considered where the geometry of the road will allow it. The cantilevers at Hwy. 49 can be re-used.

Efforts should be made to close or consolidate as many of the private grade crossings as possible. All private grade crossings that are left in should have appropriate signage placed and sight distances improved to the extent possible.



Figure 4-5 Highway 49 Grade Crossing in Ashland City

4.3 Ashland City to the County Line

This segment is from just north of the new SR 455 By-Pass (Tennessee Waltz Parkway) in Ashland City to the county line in between Montgomery and Cheatham Counties. This is approximately MP 21.6 to MP 34.3.

4.3.1 Right-of-Way

The proposed right-of-way in this segment is largely owned by the Cheatham County Railroad Authority. However, eight parcels (82.8 acres) will need to be purchased or an easement granted. Table 4-1 shows the parcels that will be required. Currently several miles of the right-of way are being utilized as the Cumberland River Bicentennial Trail (See Section 4.3.5)

Parcel ID	Owner	Parcel (Acres)	ROW Needed (Acres)
A011045 00102 000045 CA	Tennessee Parks & Greenways Foundation	6.2	6.2
A011045 00101 000045 CA	Doty Robert Douglas Jr	6.31	6.31
Unknown	Us Corps Of Engineers		3
A011046 01400 000046 CA	Gibbs Cathie & Alicia Parchman	1.87	1.87
A011033 02800 000033 CA	Town Of Ashland City	53.9	53.9
A011015 00309 000015 CA	Christian Leadership Concepts Inc	73.11	4.5
A011015 00308 000015 CA	The Foundation For Evangelism & Discipleship	50.48	4
A011015 00200 000015 CA	Montel Metals, Inc.	3	3

Table 4-1 Property Acquisition Table – Ashland City to County Line

Source: Cheatham County GIS

No structures other than those associated with the Bicentennial Trail will be affected in this segment

4.3.2 Track

The track on this segment should be built back on the original alignment. There are a few three degree curves that if feasible should be flattened to allow for higher operating speeds. The design speed on this section should be 79 mph.

A passing siding will be needed somewhere in between MP 30 and MP 33. The exact location will need to be selected once the number of train consists and their schedule is better known. The siding should be at least 2000 ft long.

In a few locations it will likely be necessary to reinforce the riverbank with a large clean rip-rap.

4.3.3 Bridges

The following 18 bridges will be needed in this segment:

Milepost	Crossing	Proposed Length (ft)
21.97	Chapmansboro Rd	195
23.19	Private Rd. & Drain	65
23.49	Private Rd.	51
23.88	Coon Hollow	69
24.36	Road	124
24.76	Slough Creek	530
25.26	Sycamore Creek	820
25.56	Opossum Creek	14
25.99	Indian Creek	447
27.09	Drain	94
27.41	Drain	43
28.40	Private Rd.	20
29.05	Cheatham Dam Rd.	60
30.40	Fall Creek	160
31.60	Mill Hollow	448
32.20	Chestnut Hollow	20
33.50	Half Dry Fork	600
33.80	Drain	160

While some of these bridges are still in existence as part of the trail, a new bridge will be required at each location. The bridges over the private roads may not be required depending on the land use at the time of construction.

The proposed lengths for these bridges were assumed from either the bridge length shown on old valuation maps and track charts or from topography of the area. During the design phase of the project a hydraulic study will need to be done for each bridge. The study may

show that some of the bridges can be replaced with culverts or significantly shortened.



Figure 4-6- Chapmansboro Rd. Bridge at MP 21.97

4.3.4 Grade Crossings

The following four rail-highway intersections will be crossed in this segment:

Milepost	Crossing	Proposed Type	Width (ft)
30.05	Beech Grove Rd.	At-Grade	36
31.70	Justice Rd	At-Grade	24
32.50	Neptune Rd	At-Grade	30
33.60	Hinton Rd.	At-Grade	30

Each of these public crossings will need to have active warning signals with gates and constant warning time. Lane delineators for 100 feet each side of the crossing should be considered where the geometry of the road will allow it. The crossings should also be reviewed for potential grade separation.

4.3.5 Cumberland River Bicentennial Trail

The Cumberland River Bicentennial Trail is a rails-to-trails walking, bicycling and horse-back riding trail that lies on the old Tennessee Central Railroad Bed just north of Ashland City. The first four miles of the trail, called the Trestle Bridge Segment, is paved starting at the Marks Creek Trail Head (Near MP 22) and ending at the Sycamore Creek Trail Head (near MP 26). The second part of the trail is called Eagle Pass and is 2.5 miles long. This section has a gravel surface.



Figure 4-7 - Marks Creek Trail Head of the Cumberland River Bicentennial Trail

The Town of Ashland City currently owns the old railroad property from the end of the Eagle Pass Segment almost all the way to the county line. That portion is shown in their literature as a projected trail.

The current trail however is not on property owned by the Town of Ashland City, but rather on land owned by the Cheatham County Railroad Authority. The property was leased to the town for the purpose of the trail.

The Cumberland River Bicentennial Trail will be a significant challenge to the development of the commuter rail line. The trail is well utilized and beloved by the residents of Cheatham County. However, there is an opportunity for the trail and the rail line to co-exist. Throughout this country more and more rails with trails projects are being developed. It is this model that is recommended for this trail. The U.S. Department of Transportation's Federal Highway Administration has published "Rails-with-Trail: Lessons Learned" that could serve as a guideline. There is also a publication titled "Design, Management, and Operating Characteristics of 61 Trails Along Active Rail Lines" published by the Rails-to-Trails Conservancy.

Due to the curvature, grades and flood elevation concerns of the railroad, it will generally be necessary and cost effective to build the track back on its original road bed. This would require moving the trail off to one side of the track. It would be desirable to keep the trail reasonably level for handicap access. Also, it will be necessary to separate the trail from the railroad by fencing or natural barricades. A natural barricade of shrubbery or trees is more desirable since it allows for a more natural feel to the walkway as well as allowing more natural movement by wildlife.



Figure 4-8 Sycamore Creek Bridge

The Sycamore Creek Bridge that is currently being used as a pedestrian bridge should be left as a pedestrian bridge and a new railroad bridge should be built parallel to it.

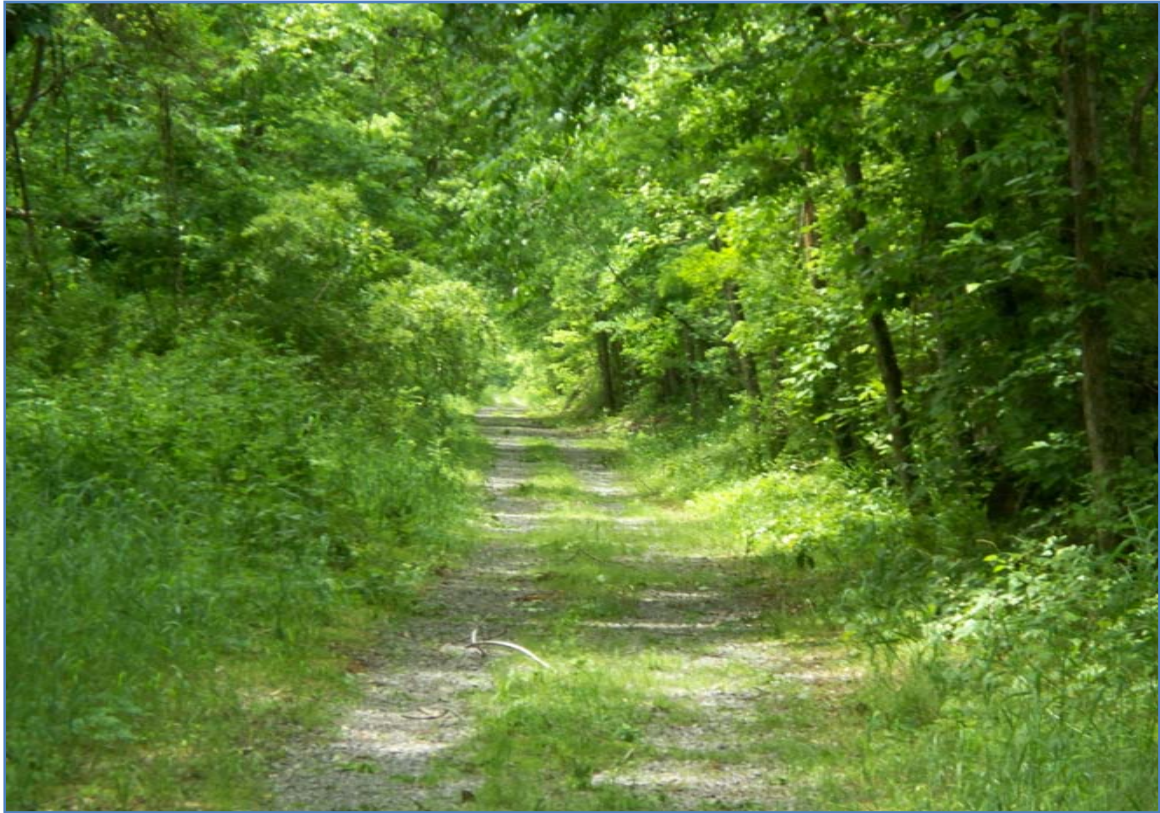


Figure 4-9 Eagle Pass Trail

One benefit to the Cumberland River Bicentennial Trail from the commuter rail project is the potential to expand the trail. The trail currently ends approximately a mile from downtown Ashland City. This project could easily expand the trail to tie it to River Bluff Park, the walking trail, baseball fields and the commuter rail station that could be used as parking for the trail on the weekends. Consideration of expanding the trail towards Clarksville as part of this project is also a possibility. It is in Clarksville's Greenways Master Plan to connect their current downtown riverfront greenway with the Bicentennial Trail.

4.4 Cheatham Dam

The United States Corps of Army Engineers (USCOE) maintains a campground and recreational area adjacent to the proposed alignment from MP 28.2 to MP 30.3.

This area includes the Lock A Campground located on the eastern edge of the recreation area. The campground includes 45 camp sites, restroom and shower facilities, a nature trail, picnic shelter and a boat launching ramp.

The area also includes the Cheatham Dam Right Bank Recreation Area that has 4 picnic shelters, a designated swimming area, two boat launching ramps, two playgrounds, two volleyball courts, a softball field, and public restrooms.



Figure 4-10 Lock A Campground

The impact of the commuter rail project to the Cheatham Dam area will be limited. A bridge will need to be built over the entrance to the park with adequate clearance for boats and campers. A pedestrian grade crossing to the picnic shelter and nature trail entrance will need to be added. Some fencing in between the campground and track may be necessary. Some right-of-way will need to be purchased from the USCOE. It is likely that a 4 F permit will be required for this portion of the project.

4.5 County Line to Clarksville City Limits

This segment is 8.3 miles long from the county line in between Montgomery and Cheatham Counties to the Clarksville city limit. This is approximately MP 34.3 to MP 43.0.

4.5.1 Right-of-Way

The right-of-way in this segment will have to be purchased from private entities as it has all been abandoned by the railroad. There are twenty parcels with a total size of 104 acres that will need to be purchased. The acreage is based on 100 feet wide right-of-way. Over 42 of the acres are currently owned by the City of Clarksville or the Cunningham Utility District of Montgomery County

Parcel ID	Owner	Parcel (Acres)	ROW Needed (Acres)
145 00401 00014145	City Of Clarksville	9.4	9.4
130 01506 00014130	Matlock James	5	5
130 01502 00014130	Shanks Michael F	7.7	6
130 01537 00015130	Cunningham Utility Dist Of Montgomery County	1.8	1.8
130 01505 00015130	Cunningham Utility Dist Of Montgomery County	20.1	1.9
125 02901 00015125	Cunningham Utility Dist Of Montgomery County	11.5	11.5
125 02700 00015125	McCormac Jesse W	44.64	2.5
125 00204 00015125	Daly Bruce J	6.18	3.3
125 00203 00015125	Daly Bruce J	37.56	5
124 03800 00015124	Holt Dannie R	21.87	2.5
124 03600 00015124	Holt Sarah F	48.59	1.4
111 02900 00015111	Marks George M	146.6	1.7
111 02704 00015111	Marks Albert S	94.9	3.7
111 00801 00015111	Marks George M	144.2	3
111 00800 00015111	Marks Julia W	267.8	8.9
102 04501 00015102	Rinehart Christopher J	25.3	25.3
089 05600 00011089	Greenfield James Douglas	42.7	5
089 05702 00011089	Kraeske John W	1.84	1.84
089 05800 00011089	Appleton Buford J	19.87	3
080N C 02700 00011080M	Heggie Connie	1.16	1.16

Table 4-2 Property Acquisition Table – County Line to Clarksville City Limits

Source: Montgomery County GIS

At approximately MP 35.8 the alignment will force the relocation of a residence at 3385 Jarrell Ridge Rd.



Figure 4-11 Aerial View of the Residence at 3385 Jarrell Ridge Rd.
(Image Source Montgomery Co. GIS)



Figure 4-12 - Residence at MP 35.8

At approximately MP 36.4 the alignment will cross the property of the Clarksville Water Treatment Plant in between the pumps and the plant.



Figure 4-13 Aerial View of Clarksville Water Plant
(Image Source Montgomery Co. GIS)



Figure 4-14 Clarksville Water Plant at MP 36.4

Close to the Clarksville, there is a property off of Appleton Lane that has used the road bed as a driveway into the property. If the rail line is built on the old alignment, this driveway would need to be relocated along with an elaborate gate at its entrance. In the Appendix A - Map of Proposed Alignment sheet 13a shows some alternative alignments through this area. The alternative alignments created were done using three degree curves or less.



Figure 4-15 Driveway off of Appleton Lane

Just to the north of the Appleton Lane crossing the alignment will require the relocation of a barn / shop.

4.5.2 Track

The track on this segment should be built back on the original alignment with the possible exception of near Appleton Lane. There are a few three degree curves that if feasible should be flattened to allow for higher operating speeds. The design speed on this section should be 79 mph.

In a few locations it will likely be necessary to reinforce the riverbank with a large clean rip-rap. This work will need to be coordinated with the U.S. Corps of Engineers



Figure 4-16 Cumberland River Embankment Needing Riprap

4.5.3 Bridges

There are not any remaining usable structures in this part of the route. During the field study of this area some old bridge abutments and piling were found. The bridges in this segment are mostly over drains and creeks at the point they enter the Cumberland River. Ten bridges will need to be built over creeks and drains. A hydraulic study will likely show that some of the smaller bridges can actually be culverts.

Milepost	Crossing	Proposed Length (ft)
34.60	Mirey Branch	168
35.10	Drain	140
35.70	Sulphur Branch	200
36.60	Brush Creek	500
37.30	Midnight Hollow	120
38.20	Muddy Branch	300
38.60	Drain	40
42.10	Drain	240
42.70	Drain	40
42.80	Drain	40



Figure 4-17 Remaining Structure over Brush Creek at MP 36.60

4.5.4 Grade Crossings

The following 6 rail-highway intersections will be part of this segment:

Milepost	Crossing	Proposed Type	Width (ft)
37.30	Lock B Rd N	At-Grade	30
37.90	Gholson Rd	At-Grade	50
38.20	Private Rd	At-Grade	16
38.60	Private Rd	At-Grade	16
40.10	Boyd Rhinehart Rd.	At-Grade	24
42.40	Appleton Lane	At-Grade	24

Each of these public crossings will need to have active warning signals with gates and constant warning time. Lane delineators for 100 feet each side of the crossing should be considered where the geometry of the road will allow it.

Efforts should be made to avoid or limit the amount of private grade crossings to the extent possible. All private grade crossings in the segment should have appropriate signage placed and sight distances improved to the extent possible.

4.6 Clarksville

This segment is from the city limits at MP 43.0 to the Clarksville Station near MP 44.8.

4.6.1 Right-of-Way

Five parcels, with a total of 26.7 acres will have to be purchased for this segment.

Parcel ID	Owner	Parcel (Acres)	ROW Needed (Acres)
080 00701 00111080	River Chase Llc	14.04	14.04
080 00500 00012080	Blewett John C	25.08	4.1
080F F 00201 00011080F	City Of Clarksville	2.78	2.78
080B D 00502 00012080B	Wilson John Bruce Trustee	4.71	4.71
065P J 03600 00012080B	City Of Clarksville	1.02	1.02

Table 4-3 Property Acquisition Table – Within Clarksville City Limits

Source: Montgomery County GIS

Additional property and some business relocations will be required for the Clarksville Station.



Figure 4-18 Business Affected by Clarksville Station Location

4.6.2 Track

The track in this segment will need to be re-built from the sub-ballast up. The maximum curvature on this section is 4 degrees with maximum grades of near 4% at the approach to the station. The design speed in this segment will be 59 mph.

4.6.3 Bridges

There are not any remaining structures in this part of the route. However, two bridges will need to be built. One over a drain and the other over a drain and Hwy 41A By-Pass.

Milepost	Crossing	Proposed Length (ft)
43.30	Drain	60
43.80	Hwy 41A By-Pass	460



Figure 4-19 Location of Proposed Bridge Over Hwy 41A By-Pass

4.6.4 Grade Crossings

Only one grade crossing will be necessary in this segment

Milepost	Crossing	Proposed Type	Width (ft)
44.80	Golf Club Lane	Hwy Overpass	

There was at one time a highway bridge in place at this location. It appears that the current clearance would not be adequate. Either the track will need to be lowered or the road will need to be raised.

4.7 Downtown Nashville

This segment is only needed if an additional downtown station at Farmer's Market or Clement Landport is planned. This segment is along the Nashville Lead track of the Nashville & Western Railroad. It runs from the Mid-Town Station crossing under I40/I65 to the CSX interchange and /or 9th Avenue.

4.7.1 Right-of-Way

The right-of-way is currently owned by the Cheatham County Railroad Authority. The only additional property needed will be for the station. Passage over CSX will not involve ROW but rather a usage agreement. Use of the Clement Landport will also involve a usage agreement with Metro Nashville and possibly MTA who currently operates the facility.

4.7.2 Track

The track on the Nashville & Western will have to be complete rehabilitated in this area. Currently the ties are in moderate to poor condition and the rail is 80#, 85# and 100# jointed rail. The rehabilitation will need to include crossings, turnouts, rail, ties and surface. Due to the tight curves, tight clearances and the number of grade crossings the maximum speed in this area should be limited to no more than 30 mph.

4.7.3 Bridges

There are not any railroad bridges required in this segment. There are highway overpasses at Dr. DB Todd Blvd. and I40/I65 that currently have adequate clearance.

4.7.4 Grade Crossings

The following rail-highway intersections will be crossed:

Milepost	Crossing	Proposed Type	Width (ft)
0.90	Herman St.	At-Grade	1400
1.07	10th Ave.	At-Grade	40
1.24	I-40	Hwy Overpass	
1.27	12th Ave.	At-Grade	44
1.40	14th Ave.	At-Grade (2-tracks)	26
1.52	16th Ave.	At-Grade	30
1.64	17th Ave.	At-Grade	36

Each of these public crossings will need to be updated to active warning signals with gates and constant warning time. Lane delineators for 100 feet each side of the crossing should be considered where the geometry of the road will allow it.

The crossing at Herman St. is actually track that runs down the westbound lane of the road. For budgetary purposes it was treated as a crossing. Ideally the road would be closed, but if not additional signal consideration should be given at this location.



Figure 4-20 Looking East Down Herman Street

4.8 Train Control Signals

Currently the Nashville & Western Railroad operates in dark territory. At the potential speeds of the commuter train it is highly recommended that an ABS or CTC system be installed. The system would have control points at each of three passing sidings.

The dispatch center for the signals could be combined with the one in place at the Nashville & Eastern Railroad Office in Lebanon, TN.

It should be noted that due to the September 12, 2008 accident in between a Metrolink Commuter Train and a Union Pacific Freight Train it appears likely that it will be mandated by the federal government that all commuter trains that share track with freight trains will be required to have "Positive Train Control." This system will override the engineer's control of the locomotive and stop the train if the engineer runs a stop signal.

4.9 Rolling Stock

It is very early in the process to identify rolling stock. However, it is recommended that this system operate with used equipment similar to that the RTA is using for the Music City Star's operation in between Lebanon and Nashville, TN. This equipment includes double level passenger cars that require a mini-high platform for ADA access. The method of operation is push-pull with a locomotive that stays on one end of the train and a cab car on the other end that allows for train control from either end. The locomotive should be a F40 or better diesel locomotive.

Other options for rolling stock are somewhat limited unless new equipment is pursued. If new equipment is pursued, it is still recommended that the push-pull operation be used with diesel locomotives and double level passenger cars. The new cars allow for a lower floor level for entry which allows for a single level platform for all access including ADA. A picture showing the Frontrunner's car and loading configuration is shown Figure 4-21.



Figure 4-21 UTA's Front Runner Train at the Clearfield Station in Utah

4.10 Stations

The stations will vary from location to location as it is best for each community to incorporate aspects of their own community into their station. However, a rather simple station is the standard for commuter rail. The stations need some simple elements:

- Good road access
- Adequate parking
- Bus transfer points
- Level platform including ADA access and warning tiles
- Ticket Vending Machine
- Route Information
- 200 to 400 square feet of covered area
- Lighting for safety and security
- Appropriate warning signage



Figure 4-22 Aerial View of the Music City Star's Lebanon Station

Other considerations at the stations include the operations methods. While not required, a double track at the station can allow for expanded operational capabilities.

It will depend on the fare structure that is used for operations, but if possible a simple ticket vending machine similar to those used on the Music City Star could be used. It would be nice if the machine had more versatility than the Star's including allowances for change to be given and more denominations excepted.

With only one intermediate station, this alignment is simple enough that it could do without ticket vending machines and sell monthly or 10-trip passes at retailers and single trip tickets would be cash only handled by the conductor.



Figure 4-23 TVM at the Riverfront Station in Nashville, TN

Each individual station is described in more detail in Section 5.0.

4.11 Yards & Maintenance Facilities

A yard and maintenance facility will be necessary for the commuter rail operations. The yard facility should provide secure track storage for all rolling stock. This can be arranged in several different track configurations depending on the site characteristics as well rolling stock acquisitions. However, it is recommended that the yard facility have a minimum of one track per train consist and a minimum track length of 1000 feet above the length of all the locomotives and cars to be used. If service is to originate from both Clarksville and Nashville, two yards may be required. 480V standby power will also be required at this location.

The maintenance facility should be located in conjunction with a yard facility. The maintenance facility would consist of offices for the operating staff, crew lockers, maintenance tracks, inspection pit, a drop table and a spare part storage area.

Another possibility for the yard and maintenance facility is a combination site that would be accessible to all existing and proposed commuter rail segments. This facility would provide one central maintenance facility that would allow for a consolidation of locomotive and passenger vehicle mechanical services. This facility could also provide a higher level of maintenance service than currently provided by the Music City Star's facility in Lebanon or the sole facility proposed above.

Along with yard facilities for commuter rail operations additional tracks may need to be built to replace storage tracks currently utilized by the Nashville & Western Railroad.

4.12 Minimum Operable Segment

The FTA requires that a minimum operable segment be considered. This study does not include ridership, but it does not appear that a segment from Ashland City to Downtown Nashville would have the ridership to justify that as a segment. So therefore, the minimum operable segment needs to be from the proposed Clarksville Station at Golf Club Lane to the Mid-Town Station near Charlotte Ave. in Nashville. An additional segment in Clarksville extending the line on into downtown or out by the new hospital should be considered as a future segment. In Nashville, the segment from Mid-Town to the Farmer's Market or from Mid-Town to the Clement Landport should also be considered as a future segment.

If the minimum operable segment or initial capital expenditure needs to be less than that described above, the current freight line could be only lightly rehabilitated. This would offer significant savings at the expense of commute time and comfort.

5.0 Station Sites

5.1 Clarksville

In Clarksville, the station will be located at the end of the line therefore; the station location is not only driven by normal station concerns but also the cost of extending the line to the station site. The study team conducted a visit of potential sites on March 27, 2008 with Stan Williams of CUAMPO and Jimmy Smith of CTS. Several options were considered including:

- Downtown near the old train station on the RJ Corman line,
- At the intersection of Boillin Lane and Crossland Avenue near the CTS Offices,
- At the intersection of Golf Club Lane and Drinkard Drive in the site currently occupied by the Eastgate Lanes Bowling Alley,
- At the southwest corner of the intersection of SR 12 and Hwy 41A Bypass.

Each of these locations is on or near an existing CTS Bus Route. The station site from SR 12 and HWY 41A was the furthest from Downtown Clarksville that was considered still close enough to the ridership base.



Figure 5-1 - Potential Station Site on Golf Club Lane

It is this study's recommendation that the Clarksville Station be located at the intersection of Golf Club Lane and Drinkard Drive (See Figure 5-1). This location is convenient to Memorial Drive and Hwy 41A and is only 2 ½ miles from downtown Clarksville. This station site is located at milepost 44.8 on the proposed rail alignment.

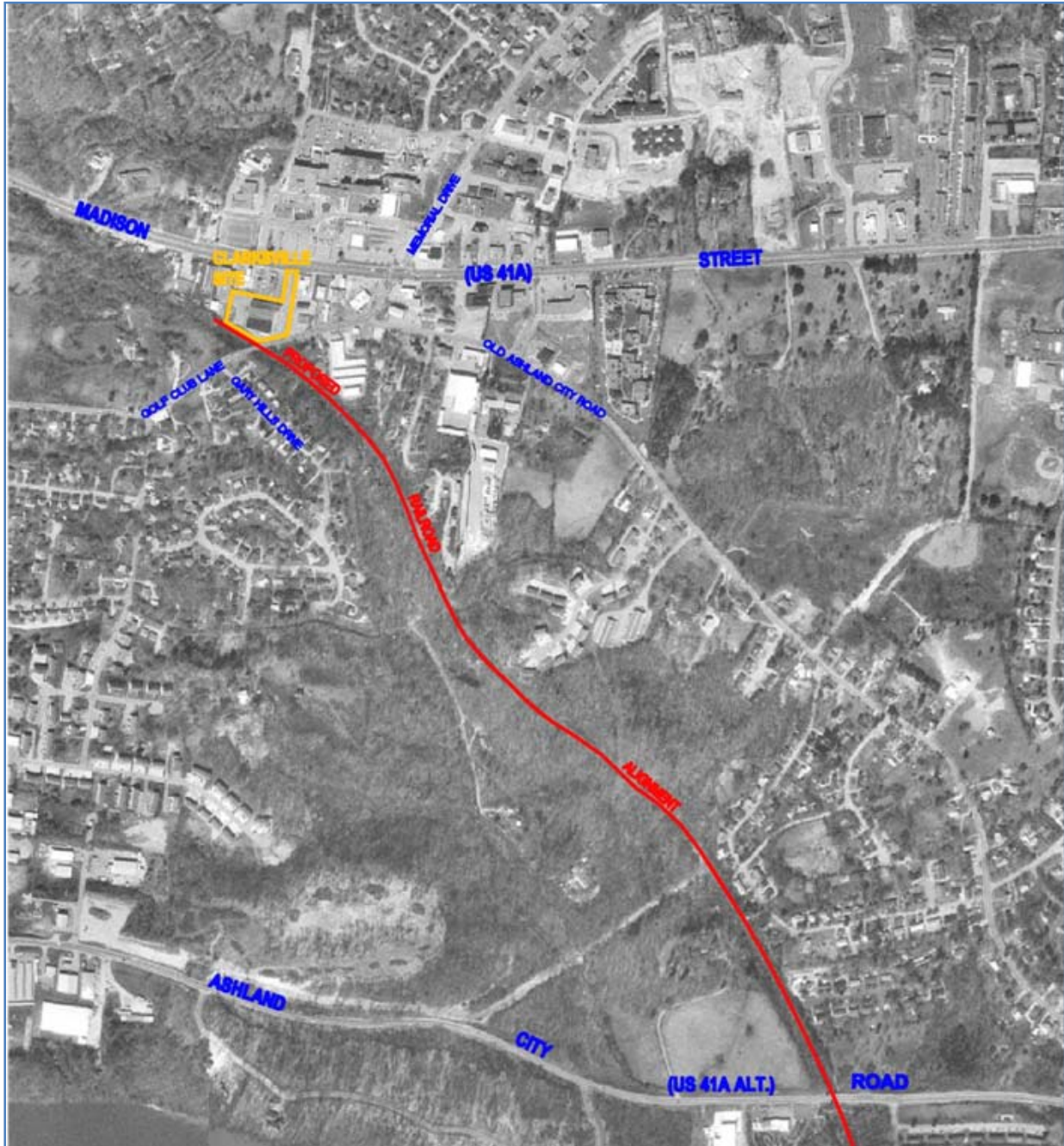


Figure 5-2 - Clarksville Station Location

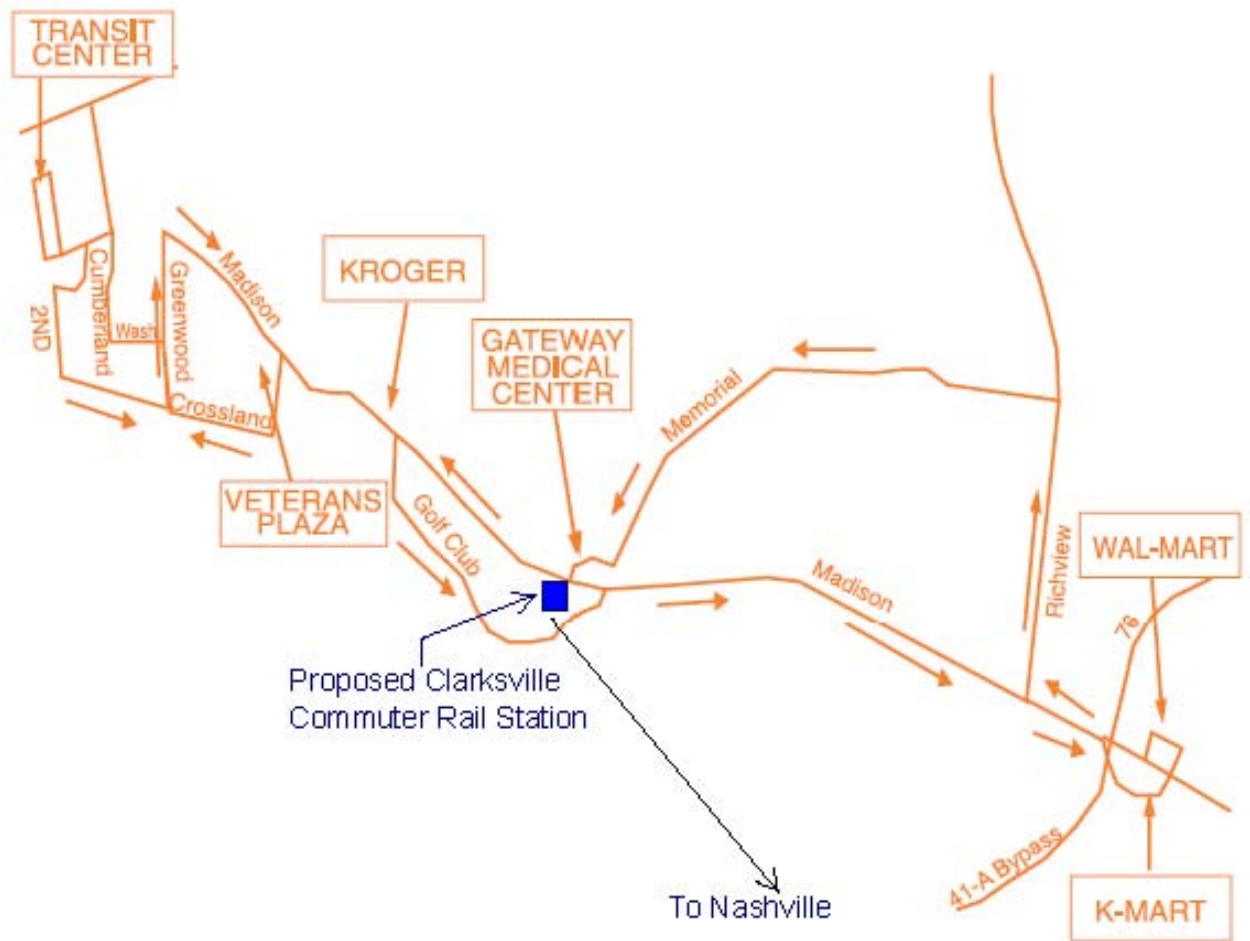


Figure 5-3 - CTS Map of Their Route 6 - Madison St.

The Clarksville Transit System's Route 6 – Madison Street route (see Figure 5-3) runs right by the proposed station in both directions. This route is currently a Monday – Saturday route with busses running once an hour from 6:00 AM to 8:00 PM.

5.2 Ashland City

The location for the Ashland City station was discussed during a meeting on June 26, 2008 with Mayor Gary Norwood of Ashland City, Mayor McCarver of Pleasant View and Sharon Caton Community Planner for the Cheatham County Joint Economic Community Development. There are some options on the south side of town, but it was the consensus of the group that the best location for the station is in between the city parks where the current practice soccer fields are located. This is shown in Figure 5-4. This location could also potentially serve the joint purpose of parking for the city's greenway and parks.



Figure 5-4 - Ashland City Station Location

The station would be located at a passing siding. The station layout could be similar to the platform layout at the UTA's Clearfield station (pictured in Figure 5-5 - Double Track Commuter Rail Station in Clearfield, Utah) on UTA's Frontrunner Commuter Rail line outside Salt Lake City. This configuration would allow for trains to pass at this location while both utilizing the platform. The structures on the platform would be minimalistic providing a limited amount of cover.



Figure 5-5 - Double Track Commuter Rail Station in Clearfield, Utah

Currently neither Ashland City, Pleasant View nor Cheatham County offer bus service. A shuttle service in between this station and Pleasant View should be considered.

5.3 Mid-Town Station

The study team held a meeting on May 14th, 2008 with representatives of RTA, GNRC, Nashville MPO, and MTA to discuss possibilities for a Nashville Station site. Possible station locations included Scottsboro, Bordeaux, Ed Temple Blvd., Mid-Town, Farmer's Market, Riverfront and the Clement Landport.

Of all the options discussed a station in the mid-town area of Nashville is the most feasible. This location is in between 25th and 26th avenues on the south side of the track. The station would either incorporate or close Felicia Street. This station could provide some public parking since this is not an area where there is pay parking.



Figure 5-6 Location of Mid-Town Station

MTA bus routes 10 and 25 pass by the station on Charlotte Pike. Bus service / shuttles that would allow this to serve as a terminal station for the minimum operable segment described in part 4.12 of this report. This station also would allow for a shuttle service to Baptist Hospital, Centennial Hospital, HCA, Vanderbilt and the rest of the West End Community. The other

possible shuttle service would include Metro Center, MeHarry Hospital, TSU and the Jefferson Street area.

5.4 Downtown Nashville

There are two options for a station in Downtown Nashville; the Clement Landport and the Farmer's Market Area. Both stations are several blocks from the heart of downtown Nashville and will therefore still require shuttle service for many commuters. Both options are shown in.

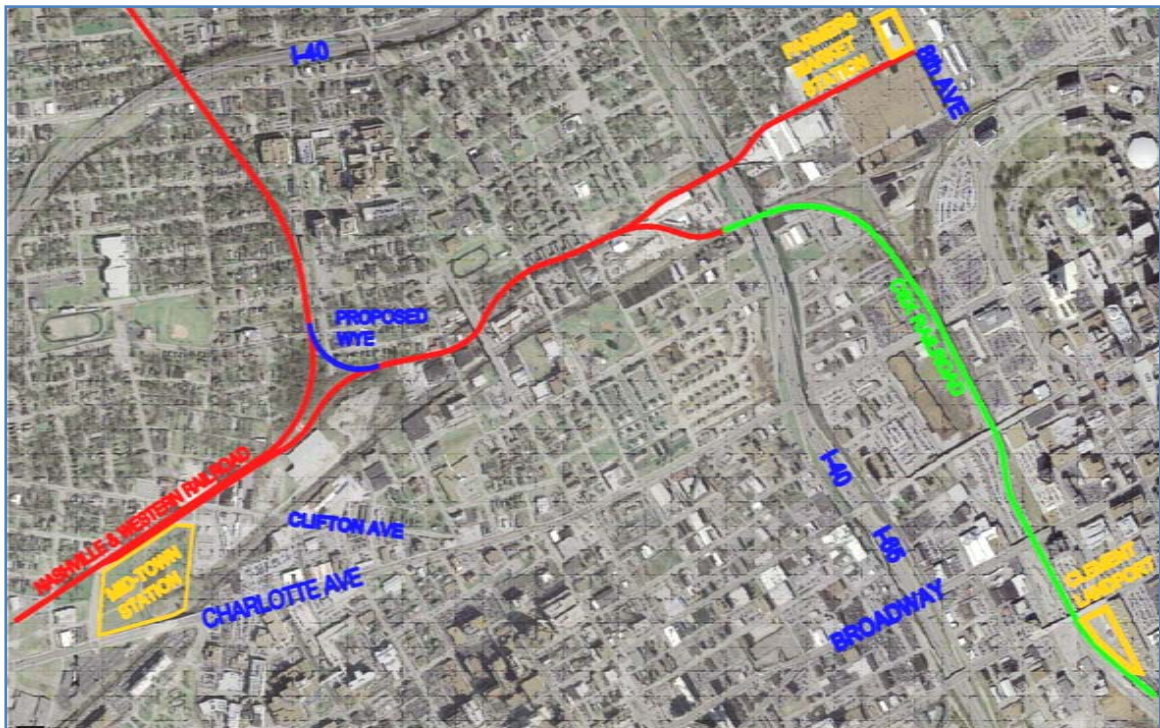


Figure 5-7 Map showing Downtown Nashville Station Options

5.4.1 Clement Landport

The first option is to utilize the Clement Landport located adjacent to Demombreun St. in the Gulch area of downtown Nashville. The benefits of this station site include that it is currently used as a part of the MTA's transit system, a likely terminal for the other proposed commuter rail corridors, and the limited capital cost needed for the station. The main challenge to this site is the line to the station is over CSX and through their busy Kayne Avenue yard.

There will be large capital costs associated with the 2.2 miles between mid-town and the landport. The Nashville & Western line from the mid-town station to the CSX interchange will need to be upgraded similar to their line from Ashland City to Nashville. This includes 5 crossings that will need upgraded and signalized. Once on CSX a new line may need to be built prior to crossing the yard tracks over to the line adjacent to the station.

The operational facets of the Clement Landport station include additional operational costs for the insurance requirements that CSX will require as well as a likely track usage fee.

5.4.2 Farmer's Market Station

The second option for a downtown station in Nashville is to extend the Nashville and Western line from its current terminus at 9th ave. to near 8th avenue. The station could then be located just to the north of the tracks on the west side of 8th Avenue. This would require the purchase of at least one business.

The benefits of this option include not running on CSX, similar distance away from downtown as Clement Landport, near MTA bus routes and near state employee parking lot.

The negatives to this option include the capital cost of upgrading the last 1.5 miles of track on the Nashville & Western, upgrading 6 grade crossings, running down Herman St. for 2 blocks (see Figure 4-20).

6.0 Capital Cost Estimate

The capital cost estimate was generated using the Federal Transit Administration's Standard Cost Categories for Capital Projects. While it is not required in this format until preliminary engineering, it was thought that a consistent format would allow a better understanding of the project as it proceeds. From the FTA's website at www.fta.dot.gov:

"In 2005 FTA implemented a new capital costing format, the Standard Cost Categories, to establish a consistent format for the reporting, estimating, and managing of capital costs for New Starts projects. The cost information gathered from projects across the country was intended to generate a database and a cost estimating resource, useful to FTA and the transit industry alike. The thought was that a shared database would create greater transparency in our industry regarding capital costs, and a greater knowledge base of reasonable cost ranges. These should in turn improve the reliability of cost estimates. The database is still in a state of becoming.

The Standard Cost Category worksheets are a project management tool. They are "project-based," as opposed to grant-based. Over the life of an individual project, the consistent format should make it easier to track, evaluate and control cost changes"

The Standard Cost Categories (SCC) are:

- 10 Guideway and Track Elements
- 20 Stations, Stops, Terminals, Intermodals
- 30 Support Facilities: Yards, Shops, Admin Bldgs
- 40 Sitework & Special Conditions
- 50 Systems
- 60 ROW, Land, Existing Improvements
- 70 Vehicles
- 80 Professional Services
- 90 Unallocated Contingency
- 100 Finance Charges

More information regarding the SCC process is available at the following web site:

http://www.fta.dot.gov/planning/newstarts/planning_environment_2580.html

Since a schedule is not known for this project, the cost estimate was done solely with 2008 unit costs. While contingency was included in the project, no inflationary costs were added.

For the purpose of the base cost estimate for this project, the alignment (described in section 4.0) from the Mid-Town station in Nashville through Ashland City and into the Clarksville Station near Golf Club Lane was used.

6.1 Right-Of-Way

The capital cost of right-of-way was estimated using an approximate value per acre for the land needed. This estimate is not accurate enough at this level of study to be considered in anyway a true assessment of the market value of the property or relocation expenses.

The area needed for each station was calculated using the actual area needed. Cost of land for a maintenance facility and rail yard is also included even though an actual location is not known. The cost for the stations, maintenance facility, and rail yard property is covered in SCC 60.01

The right-of-way for the track was based on a standard 100 ft width. The actual width purchased may need to vary some to account for structures and embankments. The cost for the right-of-way along the tracks is also covered in SCC 60.01.

6.2 Structures

The capital cost of structures was broken down into bridge repair, trestle replacement, new trestle, overpass replacement, new overpass, special structure, and drainage structure. These items are all covered in SCC 10.04.

Bridge lengths were based on existing bridge lengths, historical data, or preliminary field data. Lengths will vary and each bridge should be surveyed and studied to determine the actual length necessary for both highway clearances and hydraulic flows.

New and replacement trestles were assumed to be prestressed concrete box beam bridges with a ballast deck resting on concrete piers. There was a higher cost associated with the replacements just to cover the cost of working around an existing railroad.

New and replacement overpasses were assumed to be steel girder bridges with a concrete deck supported by concrete piers. There was a higher cost associated with the replacements just to cover the cost of working around an existing railroad.

Each bridge will be its own design and costs will vary. It was the intent of this study to pick a median unit cost that will on average cover the costs of the structures.

Drainage structures were assumed on bridges that appeared likely to be able to be replaced by a three-sided prestressed concrete culvert. All bridges over creeks and drains should have hydraulic studies done to determine the actual bridge length or culvert size needed.

6.3 Track Rehabilitation

The track from Nashville to Ashland City was estimated under track rehabilitation. This is covered under SCC 10.11 and 10.12. Ties were assumed to be timber grade 4 or 5 ties. In the mainline 136# rail was estimated with 115# being used in any side tracks. Other items that were included were turnouts, grade crossings, ditching, ballast and surfacing.

6.4 New Track

From MP 17 on to Clarksville, fell under the category of new track which is covered in SCC 10.111. An all inclusive unit cost for track from the sub-grade up was used for the main line. A lighter section was used for the secondary.

Three passing sidings were added as described in section 5.0. These included #15 Power switches.

No credit was given for the value of the salvage rail in between MP 17 and 21 as it will be used to offset the cost of removing the old rail and ties from the road bed.

The earthwork necessary for the passing sidings, clearing and grubbing for the mainline and the rip rap for the river embankment is included in SCC 10.056.

6.5 Grade Crossing Signals

Each public grade crossing will require gates, flashing lights and constant warning time devices. This is covered in SCC 50.02 Crossing Protection. Also in this cost are the incidental costs at each crossing such as signage and pavement striping. Cantilevered signals will be required at some of the wider crossings and those with sight distance restrictions. A few crossings have

modern enough equipment where gates and new controllers can be added to the existing equipment.

Costs for the signage at the private crossings is covered under the overall unit item for private crossings in SCC 10.116c.

6.6 Stations

The costs for the three stations are covered in SCC 20.01. The assumption at each station was 200 parking spaces with a double-track platform.

For a frame of reference the approximate Music City Star station construction costs (sans property costs) were:

Riverfront	\$ 2,553,000
Donelson	\$ 1,420,000
Hermitage	\$ 1,637,000
Mt. Juliet	\$ 1,154,000
Martha (temporary)	\$ 183,000
Lebanon	\$ 1,390,000

6.7 Train Control Signals

Train control signal costs were covered in SCC 50.01. The costs include work on the dispatch center, control points, switch controllers and the intermediate way side signals.

Positive train control signals were not included in the budget.

6.8 Rolling Stock

The rolling stock is covered in SCC 70.03. The cost estimate was based on four train consists with a locomotive, four passenger cars and one cab car. The equipment selected for the cost estimate were used F-40 or similar type locomotive and used bi-level passenger and cab cars similar to those of the Music City Star. The unit cost for the equipment was estimated on the current market for the equipment. It should be noted that the market for this equipment is volatile and actual costs may vary significantly.

If new equipment is desired, that will cost \$25 to \$40 million more depending on the size and type of the fleet desired.

6.9 Other Capital Items

Utility relocation and coordination costs were covered in SCC 40.02. At this level of report, this number is nothing more than a placeholder for utility costs until the time that a more detailed assessment of utilities can be done. It is important to note that this project will not have the advantage of an active railroad for the entire right-of-way and therefore the project will have to bear the cost of relocation.

The cost of the relocation of the Cumberland River Bicentennial Trail is covered in SCC 40.061. The cost includes the costs of grading, paving, pedestrian bridges, fencing, and relocation of trailheads.

6.10 Cost Summary

The following is a summary of the capital cost of the project:

10	TRACK & BRIDGE ELEMENTS	\$86,352,292
20	STATIONS	\$5,000,000
30	SUPPORT FACILITIES	\$2,488,000
40	SITEWORK & SPECIAL CONDITIONS	\$3,500,000
50	SYSTEMS	\$6,578,000
60	RIGHT-OF-WAY	\$6,030,000
70	VEHICLES	\$4,250,000
80	PROFESSIONAL SERVICES	\$17,472,339
90	CONTINGENCY	\$13,167,063
TOTAL		\$144,837,694

A detailed cost estimate is provided in Appendix C – Cost Estimate Detail.

This cost estimate does not include the cost of the Cumberland River Bridge Replacement. This cost was omitted from the study since the bridge replacement has a separate source for funding.

7.0 Potential Operating Schedules

With the capital improvements called for in this study, the commute time from the Clarksville Station at Golf Club Lane to the Mid-Town Station in Nashville via the Nashville & Western Railroad alignment will be approximately 50 minutes. Some trips may be 10 minutes longer if they have to wait or slow down to pass another train.

The train schedule will be affected by several different decisions that will need to be made during preliminary engineering. Those factors include:

- Number of Train Consists (*dictated by level of service desired as well as ridership estimates*)
- Viability of two-way commute
- Location of layover facilities
- Exact location of passing sidings
- Number of 3 and 4 degree curves in final alignment (*The existing alignment had a number of these curves which restrict speeds to 60 and 50 mph respectively. Ideally the restored alignment will straighten some of these curves out allowing for higher speeds*)

Even through final design and construction, until test runs are done, the schedule will fluctuate some. Therefore, the schedules presented here in this report should be considered extremely preliminary and be used only as a demonstration as to what might service might be possible.

However, the following string lines and train schedules were generated to show what train service options are feasible. Only the morning string lines are shown, but both morning and evening schedules are given. Of importance to note is the amount of time in between trains at each station. Currently the Music City Star's times are 55 minutes. It is recommended that a time of 25 to 40 minutes be the goal for the service.

Other changes to the schedule that may be desirable or include:

- Evening trains (especially on Friday)
- Weekend Trains
- One or two mid-day trains

Using four train consists of one locomotive, one to four passenger cars and one cab car each, the following schedule could be achieved.

Morning Schedule - 4 Train Consists

Nashville to Clarksville

	Train 1	Train 2	Train 3	Train 4	Train 5
Nashville	6:00 AM	6:26 AM	6:53 AM	7:20 AM	7:51 AM
Ashland City	6:25 AM	6:51 AM	7:18 AM	7:50 AM	8:20 AM
Clarksville	6:50 AM	7:22 AM	7:52 AM	8:22 AM	8:44 AM
	50 min	56 min	59 min	62 min	53 min

Clarksville to Nashville

	Train 6	Train 7	Train 8	Train 9	Train 10
Clarksville	6:00 AM	6:24 AM	6:55 AM	7:26 AM	7:56 AM
Ashland City	6:25 AM	6:51 AM	7:19 AM	7:50 AM	8:20 AM
Nashville	6:49 AM	7:15 AM	7:44 AM	8:15 AM	8:45 AM
	49 min	51 min	49 min	49 min	49 min

Evening Schedule - 4 Train Consists

Nashville to Clarksville

	Train 1	Train 2	Train 3	Train 4	Train 5
Nashville	3:45 PM	4:09 PM	4:40 PM	5:11 PM	5:41 PM
Ashland City	4:10 PM	4:36 PM	5:04 PM	5:35 PM	6:05 PM
Clarksville	4:34 PM	5:00 PM	5:29 PM	6:00 PM	6:30 PM
	49 min	51 min	49 min	49 min	49 min

Clarksville to Nashville

	Train 6	Train 7	Train 8	Train 9	Train 10
Clarksville	3:45 PM	4:11 PM	4:38 PM	5:05 PM	5:36 PM
Ashland City	4:10 PM	4:36 PM	5:03 PM	5:35 PM	6:05 PM
Nashville	4:35 PM	5:07 PM	5:37 PM	6:07 PM	6:29 PM
	50 min	56 min	59 min	62 min	53 min

Figure 7-1 Train Schedule (4 Train Consists)

Using three train consists of one locomotive, one to four passenger cars and one cab car each, the following schedule could be achieved.

Morning Schedule - 3 Train Consists

Clarksville to Nashville						
	Train 1	Train 2	Train 3	Train 4	Train 5	Train 6
Clarksville	5:45 AM	6:17 AM	6:54 AM	7:29 AM	8:05 AM	8:39 AM
Ashland City	6:09 AM	6:41 AM	7:18 AM	7:53 AM	8:29 AM	9:03 AM
Nashville	6:32 AM	7:04 AM	7:41 AM	8:16 AM	8:52 AM	9:26 AM
	47 min	47 min	47 min	47 min	47 min	47 min

Nashville to Clarksville			
	Train 7	Train 8	Train 9
Nashville	6:36 AM	7:12 AM	7:46 AM
Ashland City	6:59 AM	7:35 AM	8:09 AM
Clarksville	7:25 AM	8:01 AM	8:35 AM
	49 min	49 min	49 min

Evening Schedule - 3 Train Consists

Clarksville to Nashville			
	Train 1	Train 2	Train 3
Clarksville	4:21 PM	4:57 PM	5:31 PM
Ashland City	4:44 PM	5:20 PM	5:54 PM
Nashville	5:10 PM	5:46 PM	6:20 PM
	49 min	49 min	49 min

Nashville to Clarksville						
	Train 4	Train 5	Train 6	Train 7	Train 8	Train 9
Nashville	3:30 PM	4:02 PM	4:39 PM	5:14 PM	5:50 PM	6:24 PM
Ashland City	3:54 PM	4:26 PM	5:03 PM	5:38 PM	6:14 PM	6:48 PM
Clarksville	4:17 PM	4:49 PM	5:26 PM	6:01 PM	6:37 PM	7:11 PM
	47 min	47 min	47 min	47 min	47 min	47 min

Figure 7-2 - Train Schedule (3 Train Consists)

Using two train consists of one locomotive, one to four passenger cars and one cab car each, the following three schedules could be achieved.

Morning Schedule - 2 Train Consists - Option A

Nashville to Clarksville

	Train 1	Train 2	Train 3
Nashville	6:00 AM	6:53 AM	7:46 AM
Ashland City	6:24 AM	7:17 AM	8:11 AM
Clarksville	6:49 AM	7:42 AM	8:35 AM
	49 min	49 min	49 min

Clarksville to Nashville

	Train 4	Train 5	Train 6
Clarksville	6:00 AM	6:53 AM	7:46 AM
Ashland City	6:24 AM	7:17 AM	8:10 AM
Nashville	6:49 AM	7:42 AM	8:35 AM
	49 min	49 min	49 min

Evening Schedule - 2 Train Consists - Option A

Nashville to Clarksville

	Train 1	Train 2	Train 3
Nashville	3:45 PM	4:38 PM	5:31 PM
Ashland City	4:09 PM	5:02 PM	5:55 PM
Clarksville	4:34 PM	5:27 PM	6:20 PM
	49 min	49 min	49 min

Clarksville to Nashville

	Train 4	Train 5	Train 6
Clarksville	3:45 PM	4:38 PM	5:31 PM
Ashland City	4:09 PM	5:02 PM	5:56 PM
Nashville	4:34 PM	5:27 PM	6:20 PM
	49 min	49 min	49 min

Figure 7-3 - Train Schedule (2 Train Consists - Option A)

Morning Schedule - 2 Train Consists - Option B

Nashville to Clarksville

	Train 1	Train 2	Train 3	Train 4
Nashville		6:28 AM	7:21 AM	8:14 AM
Ashland City	6:00 AM	6:52 AM	7:45 AM	8:38 AM
Clarksville	6:24 AM	7:17 AM	8:10 AM	
	24 min	49 min	49 min	24 min

Clarksville to Nashville

	Train 5	Train 6	Train 7	Train 8
Clarksville		6:28 AM	7:21 AM	8:14 AM
Ashland City	6:00 AM	6:52 AM	7:45 AM	8:38 AM
Nashville	6:24 AM	7:17 AM	8:10 AM	
	24 min	49 min	49 min	24 min

Evening Schedule - 2 Train Consists - Option B

Nashville to Clarksville

	Train 1	Train 2	Train 3	Train 4
Nashville		4:13 PM	5:06 PM	5:59 PM
Ashland City	3:45 PM	4:37 PM	5:30 PM	6:23 PM
Clarksville	4:09 PM	5:02 PM	5:55 PM	
	24 min	49 min	49 min	24 min

Clarksville to Nashville

	Train 4	Train 5	Train 6	Train 8
Clarksville		4:13 PM	5:06 PM	5:59 PM
Ashland City	3:45 PM	4:37 PM	5:30 PM	6:23 PM
Nashville	4:09 PM	5:02 PM	5:55 PM	
	24 min	49 min	49 min	24 min

Figure 7-4 - Train Schedule (2 Train Consists - Option B)

Morning Schedule - 2 Train Consists - Option C

Clarksville to Nashville

	Train 1	Train 2	Train 3	Train 4
Clarksville	6:00 AM	6:28 AM		7:47 AM
Ashland City	6:24 AM	6:52 AM	7:47 AM	8:11 AM
Nashville	6:49 AM	7:17 AM	8:11 AM	8:36 AM
	49 min	49 min	24 min	49 min

Nashville to Clarksville

	Train 5	Train 6
Nashville	6:53 AM	7:19 AM
Ashland City	7:18 AM	7:43 AM
Clarksville	7:43 AM	
	50 min	24 min

Evening Schedule - 2 Train Consists - Option C

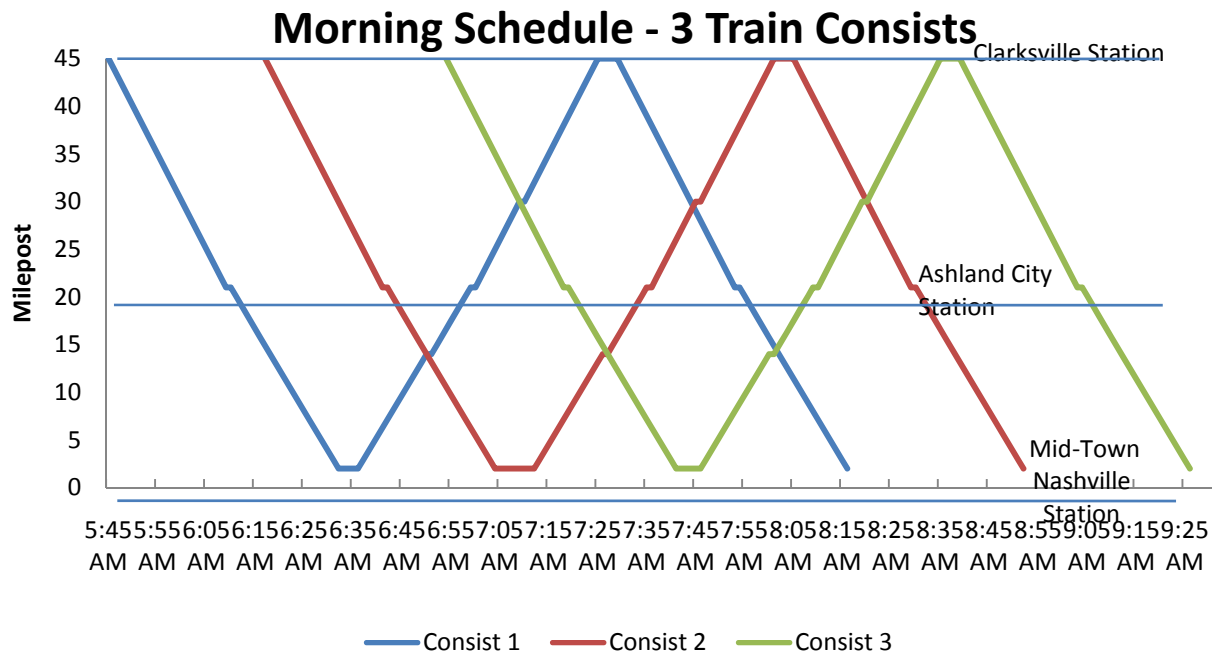
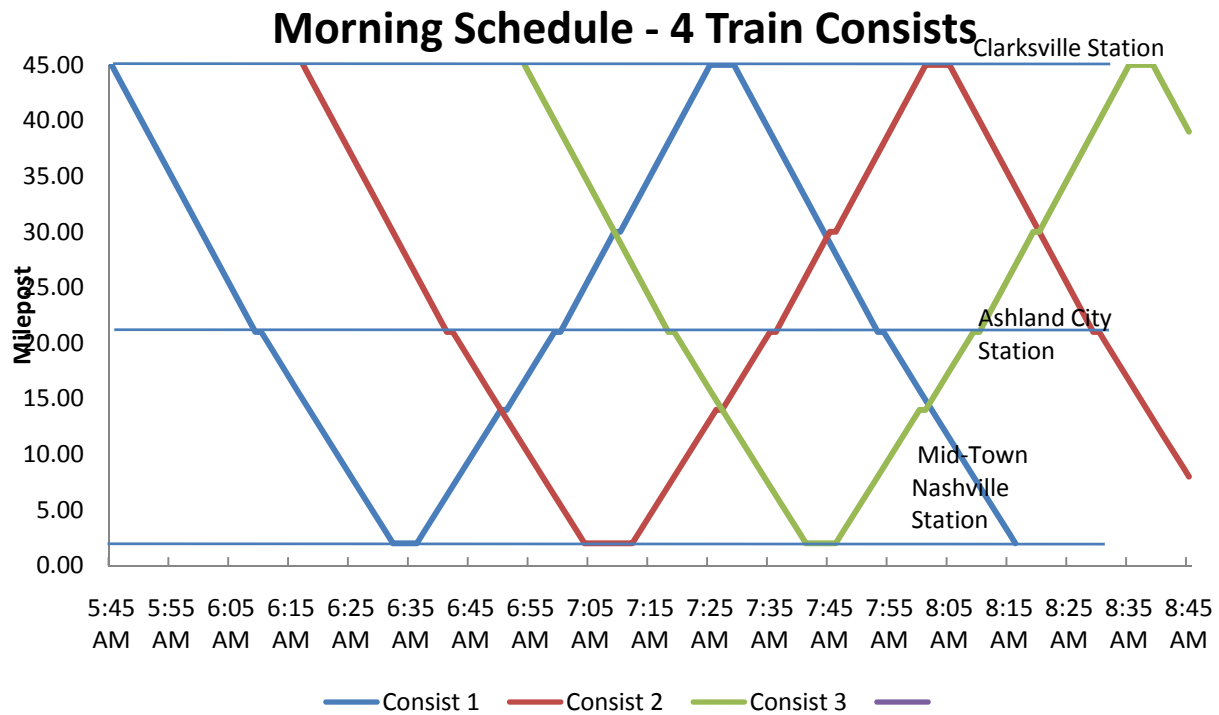
Nashville to Clarksville

	Train 1	Train 2	Train 3	Train 4
Nashville	3:45 PM	4:13 PM	4:43 PM	6:02 PM
Ashland City	4:09 PM	4:37 PM	5:07 PM	6:26 PM
Clarksville		5:02 PM	5:32 PM	6:51 PM
	24 min	49 min	49 min	49 min

Clarksville to Nashville

	Train 5	Train 6
Clarksville		5:07 PM
Ashland City	4:14 PM	5:32 PM
Nashville	4:38 PM	5:57 PM
	24 min	50 min

Figure 7-5 - Train Schedule (2 Train Consists - Option C)



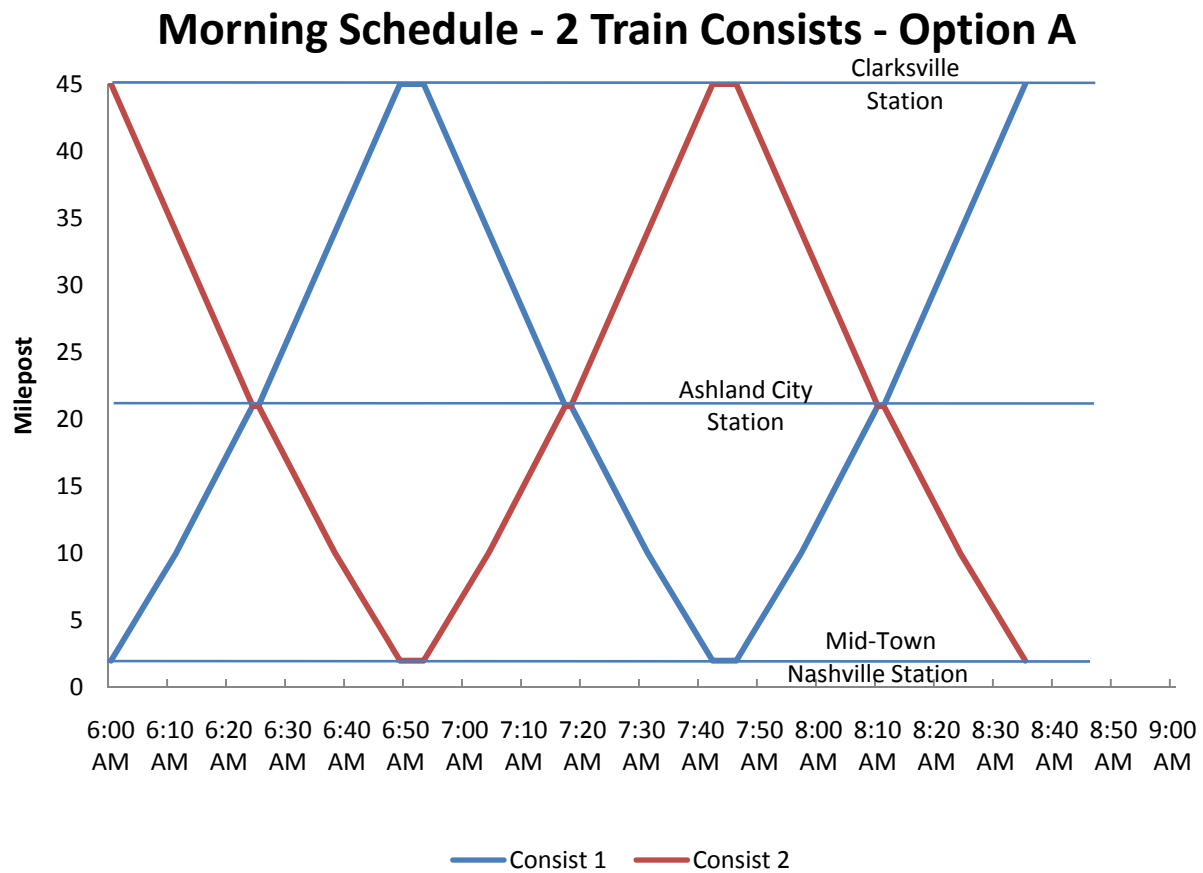


Figure 7-8 - String Line with 2 Consists - Option A

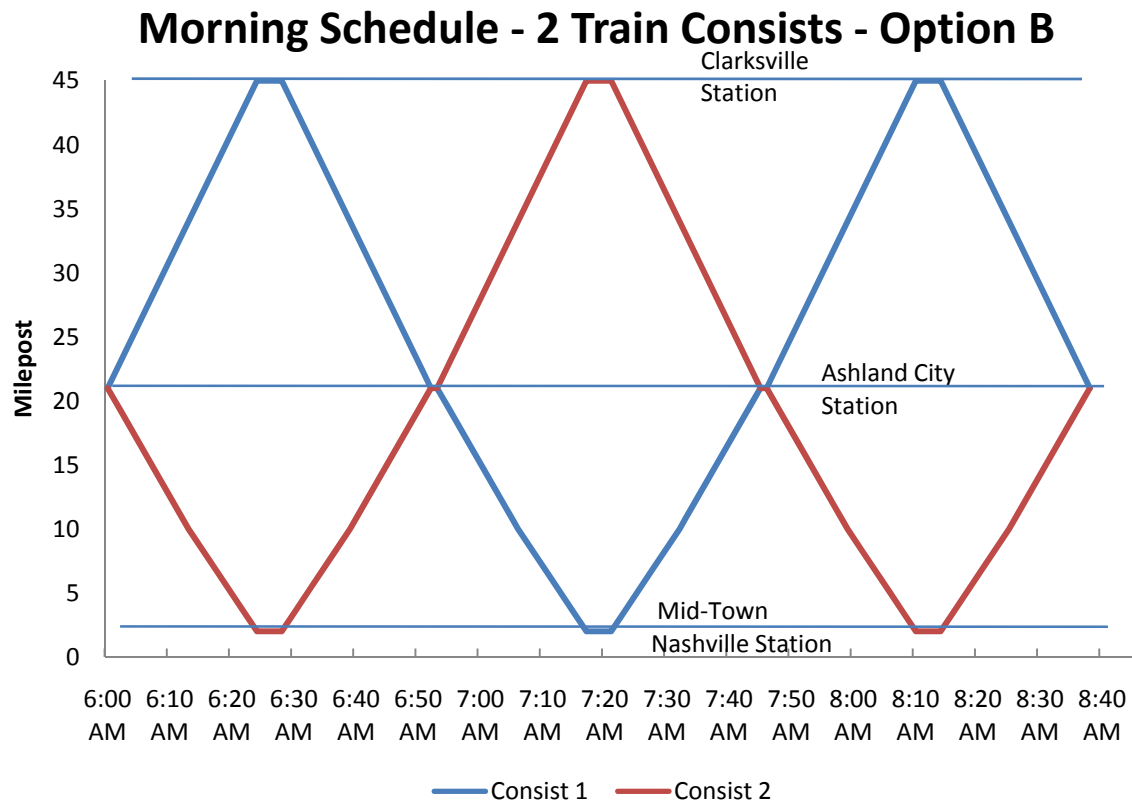


Figure 7-9 - String Line with 2 Consists - Option B

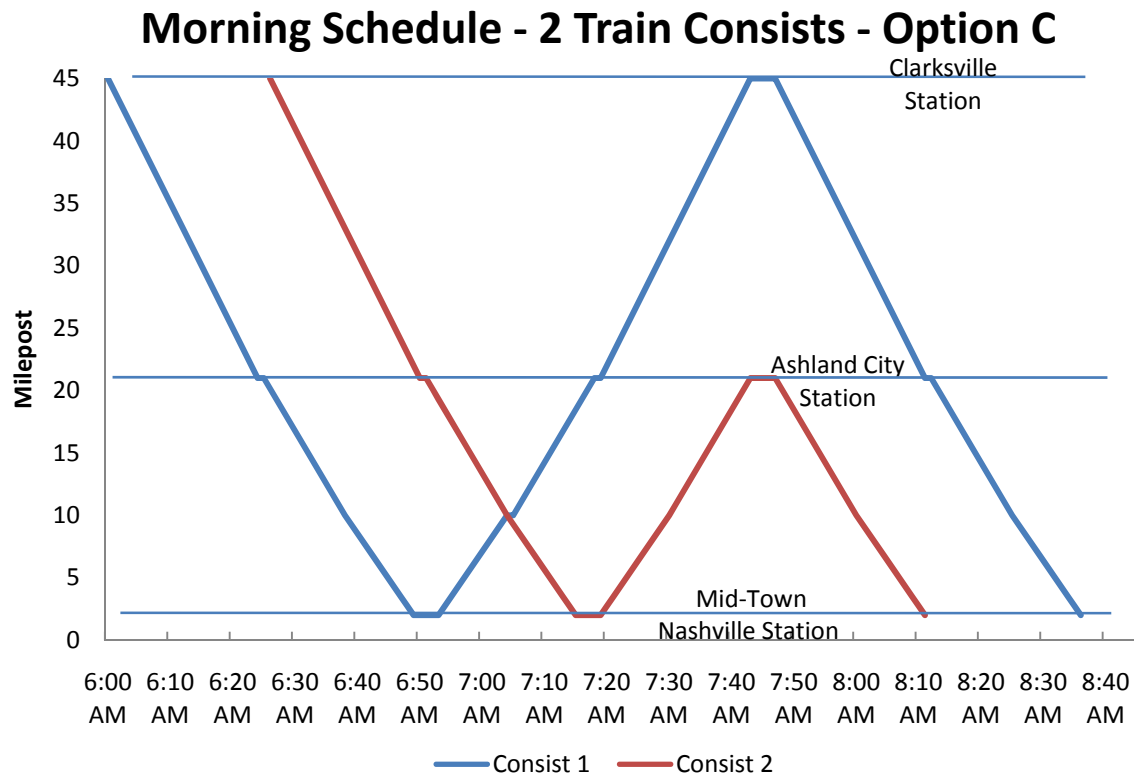


Figure 7-10 - String Line with 2 Consists - Option C

8.0 Preliminary Operations Budget

It is very early in the process to even be discussing an operations budget. Many factors and negotiations need to be decided or completed prior to a budget being discussed in any detail. The following budget was estimated based off of similar 2008 expenses for the Music City Star. Budget items were adjusted for trip length and frequency. The operating schedule discussed in Figure 7-4 - Train Schedule (2 Train Consists - Option B) was used to generate the estimate. For a point of reference the annual operating budget for the Music City Star in 2008 was \$3,927,159.00.

Annual Operating Budget

Insurance	\$ 830,000.00
Operations Contract	\$ 2,041,200.00
Shuttle Operations - Clarksville	\$ 125,000.00
Shuttle Operations - Nashville	\$ 215,000.00
Fuel	\$ 1,008,000.00
Track Usage	\$ 81,600.00
Maintenance & Dispatch	\$ 226,800.00
Station Maintenance & Security	\$ 95,000.00
TVM Maintenance & Servicing	\$ 15,000.00
Marketing	\$ 250,000.00
Administration	\$ 240,000.00
Printing	\$ 80,000.00
Contingency (10%)	\$ 556,000.00
	\$ 5,728,300.00

By adding track usage on CSX, this budget will increase significantly not only in track usage fees, but increased insurance costs due to higher required limits.

The fare box revenue would likely be 15 to 20% of the operating expense. There will be significant federal and state funds available to offset the operating expenses also, but it should be noted that a significant portion (20 to 40%) will be required.

9.0 Next Steps

As this study was just one of the very first steps in establishing a commuter rail line in between Clarksville and Nashville, it is recommended that the parties sponsoring this study meet to discuss the results of the study. If it is determined that additional progress toward a commuter rail is desired, the next steps are:

- 1) Initial Notification – The Initial Notification Report should be submitted to the FTA to make them aware that this corridor is being considered. This would likely need to be done through the Clarksville Transit System since they are an active FTA grantee. The report should be submitted with a request for feedback from the FTA. The feedback request should focus on FTA’s requirements for defining a “baseline alternative” and on FTA’s requirements for successful travel forecasting.
- 2) Review the Feedback – Adjust the next steps as necessary to meet any requirements and/or desires the FTA has.
- 3) Additional Ridership Modeling – The preliminary ridership modeling done for the Initial Notification Report showed a need to further refine this process. Depending upon FTA input, it may be desirable to employ alternative travel forecasting methods such as:
 - a. Intercity modeling similar to that used for Amtrak and high speed rail projects.
 - b. Refinement or modification of the Nashville MPO’s travel demand modeling
 - c. Refinement of the sketch modeling process to user a smaller sample group that has train speeds and station spacing similar to a Clarksville / Nashville commuter rail operation.
- 4) Alternatives Analysis – A full scale alternatives analysis will need to be conducted for the corridor. This study on similar corridors has typically cost \$800,000 to \$1,200,000. The higher end of this range of costs would be applicable if the FTA requires extraordinary travel forecasting methods. This is a possibility since a large portion of the project is located between MPO jurisdictions. The alternatives analysis will have to be financed with state and local funds and with applicable categories of federal planning funds available to MPOs and FTA transit funding grantees.

- 5) Locally Preferred Alternative – From the alternatives analysis, a locally preferred alternative will have to be selected. Due to the nature of this corridor, this will likely require both Nashville MPO and CUAMPO to agree on the same alternative. The locally preferred alternative will need to be adopted into both the Nashville MPO's and the CUAMPO's constrained long range transportation plans.
- 6) FTA Project Development – The FTA has defined a new funding category for capital projects where the initial request for funding is under \$75 million in Federal capital funding and the total project cost is less than \$250 million. This new program is the "Small Starts" program. Up to 80% Federal capital funding may be requested, but where project sponsors can finance more than 20% of capital costs, FTA project ratings may be increased. There are very significant advantages in project justification and in project rating by qualifying for the "Small Starts" funding category. For "Small Starts" projects FTA combines all preliminary engineering and final design into one phase referred to as "Project Development". FTA requirements for entry into "Project Development" include completion of the alternatives analysis, adoption of the preferred alternative into the MPOs' long range transportation plans, development of a project management plan which will demonstrate the readiness of the project sponsor to manage a major project, and preparation and submission of project information required for an FTA project rating. Funding for "Project Development" is 80% Federal and 20% State/Local.
- 7) Construction – Start the construction process. Note that any project construction done prior to an FTA "Project Construction Grant Agreement" will likely not be counted toward the local match.
- 8) Revenue Operations – Begin revenue operations

There are also some items that should be done concurrently to these steps:

- 1) Protect the ROW – Through the county and city planning and land use regulation agencies appropriate steps should be taken to protect the ROW from further development. The local governments involved should examine the current land use plans, zoning, and development policies which apply in ½ mile buffer zones around station locations to determine if local land use controls are "transit-supportive", as defined by FTA. Corrective measures may be needed to increase the FTA project rating.
- 2) Cumberland River Bridge – One of the facets of the Nashville & Western alignment that makes it attractive is that the Cumberland River crossing has a separate funding source. Every effort should be made to start the process in securing the funding for the bridge replacement through the Truman-Hobbs

act. Even if it is just to start preliminary engineering and surveying, positive steps on this portion of the project is critical.

- 3) Freight Service – Research needs to be done on FTA’s willingness to allow freight rail service on the currently non-active portions of the line as well as what would be the newly constructed portions. Of particular interest is from the current end of the line at the Ashland City Industrial Park to downtown Ashland City where there are customers that desire freight rail service.

Appendix A - Map of Proposed Alignment

Appendix B – Inventory of Structures

Appendix C – Cost Estimate Detail

Appendix D – Cumberland River Bridge Study

Appendix E – Track Charts