

# City of Cookeville Major Street Plan Update

October 2017

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## 1. Introduction

Part of the update to the City's Major Street Plan involves estimating the current level of service (LOS) for each functionally classified road. This technical memo discusses data collection, the analysis method used, and recommends an annual growth rate to be applied to existing traffic volumes to forecast future year traffic. It then presents updated roadway LOS for existing conditions (2015) and compares those values to the LOS projections developed for the 2003 Cookeville Major Route Transportation Plan.

## 2. Data Collection

Average Annual Daily Traffic (AADT) counts were obtained from Tennessee Department of Transportation (TDOT) traffic history<sup>1</sup> and supplemented with AADT counts performed by the City of Cookeville. At the majority of the locations, the most recent traffic counts were from 2015. Counts that were collected prior to 2015 were "grown" to 2015 volumes using the same growth rates assumed for projecting future year AADT (see Section 4, *Growth Rate Methodology*).

At a few locations where 2015 forecasts were based on much older count data, new counts were conducted by TDOT in September 2017 to verify AADT volume trends. The 2017 counts were found to be lower than the forecasted 2015 counts. To be conservative, the higher 2015 forecasts were used for projecting future year AADT. This traffic forecasting analysis used the highest volume along a segment when AADT counts were available at multiple locations along the segment.

## 3. Roadway Segment Level of Service Analysis

### 3.1. Methodology

The methods used to calculate LOS for the 2003 MRTP were reviewed with the goal of using a comparable approach so that values could be compared between the old and new plans.

The 2003 MRTP used 2002 traffic volumes to determine segment LOS values along street and roadway segments throughout Cookeville. The 2002 traffic volumes were projected to what were then future years of 2007 and 2027, and LOS values were determined for each of these two horizon years. Roadway segment LOS was estimated based on using the Florida Department of Transportation (FDOT) generalized planning methodology. The thresholds for the tables referenced in 2003 are shown graphically in **Figure 1**. As shown in the figure, link level of service values were determined using the number of lanes, signal spacing, and the link volume as inputs.

To facilitate a reasonable comparison with the 2003 MRTP, this analysis therefore uses the latest (2013) FDOT generalized service planning tables to determine the existing LOS for each roadway functional class, by segment. The LOS volume thresholds in the latest FDOT tables<sup>2</sup> vary based on the following factors:

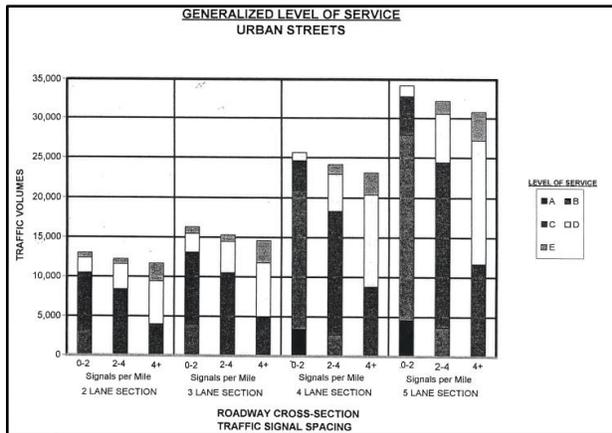
- Population of surrounding area (Urbanized, Transitioning, Rural)
- Facility Type (signalized arterial, freeway, uninterrupted flow highway)
- Posted speed limit
- Geometry (number of lanes, median type, presence of turn lanes, etc.)

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<sup>1</sup> <https://www.tdot.tn.gov/APPLICATIONS/traffichistory>

<sup>2</sup> <http://www.fdot.gov/planning/systems/programs/sm/los/pdfs/fdot%202012%20generalized%20service%20volume%20tables.pdf>

Figure 1: FDOT Generalized Service Volumes (figure referenced in Cookeville 2003 MRTP)



The 2003 MRTP update states that the thresholds in the Class I and Class II Signalized Arterials section of Table 2 of the FDOT tables were used to determine the segment LOS. However, it is not clear how the LOS of *unsignalized* street and roadway segments was determined in the 2003 MRTP, and there is no guidance included with criteria reference shown in Figure 1. The 2013 Florida Quality/Level of Service Handbook<sup>3</sup>, which provides guidance for using the current generalized planning tables, also does not include guidance for unsignalized street and roadway segments.

This study therefore used the thresholds for a 2-lane undivided roadway in the Class II Signalized Arterials section of Table 2 of the FDOT tables with a 10% reduction in thresholds for non-state roadways as the base thresholds for unsignalized road segments. This provides a relatively conservative estimate for LOS thresholds for these roadways. Fisk Road, which has three lanes (center lane is reversible), was analyzed as a 2-lane roadway to be conservative.

### 3.2. Level of Service Results

**Figure 2** shows the existing LOS for each functionally classified roadway in the city, by segment. In urban areas, LOS C and D are considered adequate, while LOS F represents undesirable operating conditions.

**Table 1** lists each roadway segment and its current LOS, compared to the values from the 2003 MRTP for the years 2002, 2007, and 2027. Three roadway segments currently operate at a failing level of service (LOS E or F):

- E. Spring Street (US 70N/SR 24) from SR 111 to I-40 (LOS E)
- E. 10<sup>th</sup> Street from Washington Avenue (SR 136) to Chocolate Drive (LOS F)
- E. Spring Street (US 70N/SR 24 from Avery Trace Middle School to Broad Street (LOS F)

E. 10<sup>th</sup> Street serves as a key corridor for those accessing Cookeville from north and east of the city but has limited capacity (two lanes plus a center turn lane). The relative importance of this segment is evidenced by the AADT, which exceeded 17,000 vehicles per day in 2015. This volume is higher than the traffic volumes on SR 24/US 70N in Cookeville and is high enough to result in an LOS F for this 3-lane

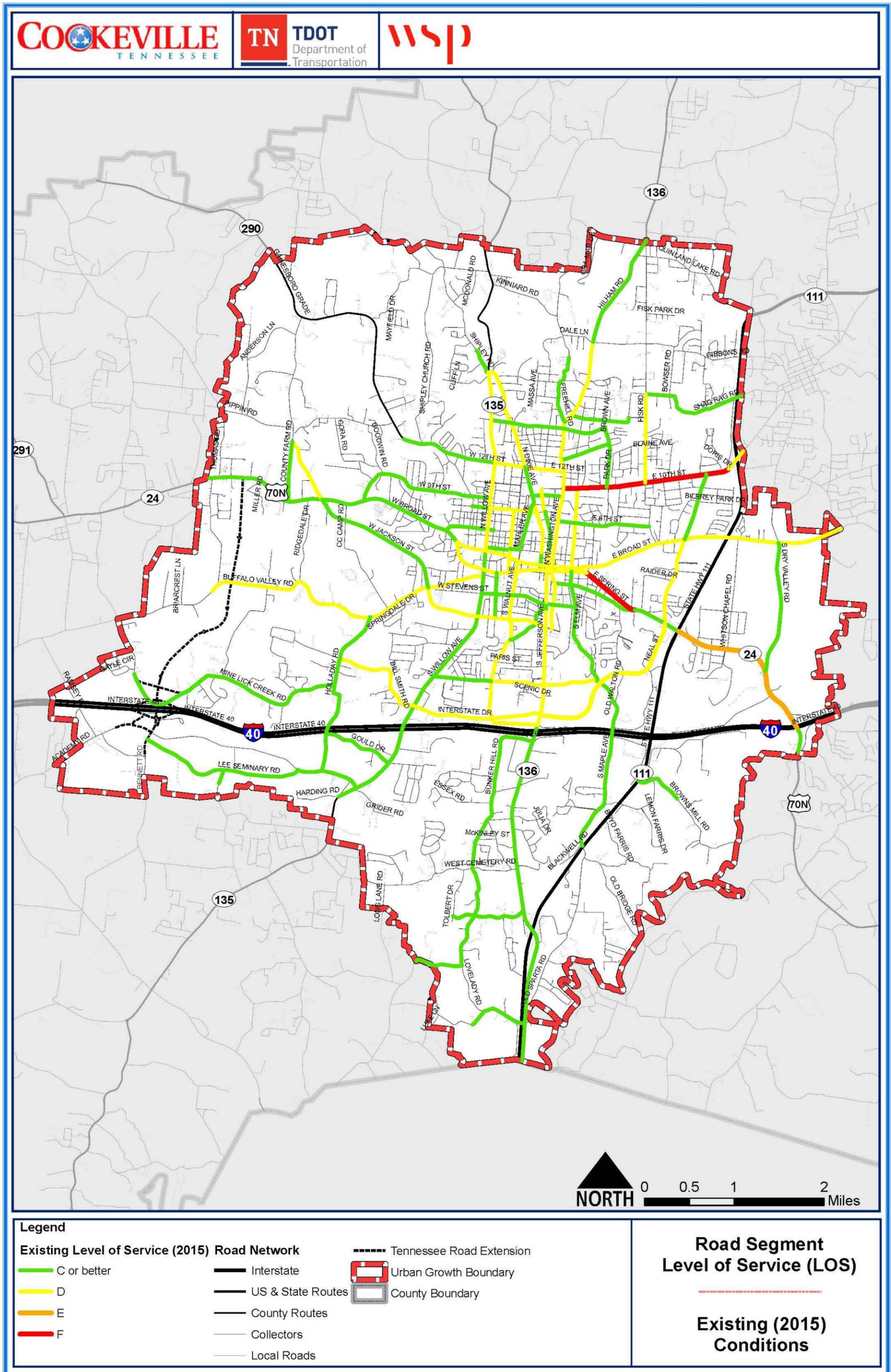
<sup>3</sup> <http://www.fdot.gov/planning/systems/programs/SM/los/pdfs/2013%20QLOS%20Handbook.pdf>

facility. In addition to the traffic volumes, several factors along E. 10<sup>th</sup> Street further exacerbate the congestion issues including uncoordinated traffic signals and close spacing between driveways.

Similarly, E. Spring Street (US 70N/SR 24) serves as a key east-west corridor into and out of Cookeville to and from points south and east of the city. The two failing segments are both located east of downtown. The segment operating at LOS F, just east of downtown, has seen an increase of 1,800 vehicles per day in traffic volume since the 2003 MRTTP report, which also documented this segment as operating at LOS F. Since the 2003 report was completed, this segment has been widened for a short distance to provide a center turn amidst multi-family residential and commercial driveways; however, the analysis still shows the segment operating at LOS F. The segment operating at LOS E is a two-lane segment with limited right or left-turn lanes that serves primarily suburban and semi-rural land uses.

As part of the existing conditions analysis it was noted that a reversible lane operation exists on Fisk Road between E. 10<sup>th</sup> Street and Shag Rag Road. A safety analysis of this segment determined that there is presently no significant crash history along this segment. However, as traffic on this roadway segment continues to increase this segment should be monitored to ensure that it continues to operate safely. Details of the crash history and safety analysis can be found in the Safety Report.

Figure 2: Existing Level of Service (2015) by Roadway Segment



**Table 1: Existing LOS (2015) by Roadway Segment, Compared to 2003 MRTP**

| Street                          | From             | To               | Class           | 2015 AADT | 2015 LOS | 2002 AADT | 2002 LOS | Projected 2007 LOS | Projected 2027 LOS |
|---------------------------------|------------------|------------------|-----------------|-----------|----------|-----------|----------|--------------------|--------------------|
| 1st Street West                 | Cedar Ave        | Walnut Ave       | Minor Collector | 4,200     | C        |           |          |                    |                    |
| 1st Street East                 | Willow Ave       | Cedar Ave        | Minor Collector | 948       | C        |           |          |                    |                    |
| 4th Street West                 | Broad St         | Whitney Ave      | Minor Collector | 1,966     | C        | 1,525     | B        | B                  | B                  |
| 6th Street East                 | Washington Ave   | Fisk Rd          | Minor Collector | 1967*     | C        | 1,334     | B        | B                  | B                  |
| 7th Street                      | Willow Ave       | Dixie Ave        | Major Collector | 8,414     | D        | 8,711     | D        | D                  | F                  |
| 7th Street West                 | Franklin Ave     | Willow Ave       | Minor Collector | 3,523     | C        | 2,778     | B        | B                  | C                  |
| 9th Street East                 | Dixie Ave        | Washington Ave   | Minor Collector | 1,150†    | C        |           |          |                    |                    |
| 9th Street West/Crescent Drive  | Broad St         | Willow Ave       | Minor Collector | 3,083     | C        | 2,360     |          |                    |                    |
| 10th Street East                | Washington Ave   | Chocolate        | Major Arterial  | 17,505    | F        | 14,127    | D        | E                  | F                  |
| 10th Street East                | Chocolate        | City Limits      | Major Arterial  | 13,907    | D        | 12,536    | B        | B                  | B                  |
| 12th Street (SR 290)            | City Limits      | Franklin Ave     | Minor Arterial  | 9,700†    | C        | 7,500     | C        | C                  | D                  |
| 12th Street (SR 290)            | Franklin Ave     | Willow Ave       | Minor Arterial  | 9,283     | C        | 8,272     | B        | B                  | B                  |
| 12th Street                     | Willow Ave       | Mississippi Ave  | Minor Arterial  | 13796*    | D        | 7,157     | C        | C                  | C                  |
| 12th Street                     | Mississippi Ave  | Washington Ave   | Minor Arterial  | 10,116    | D        | 5,093     | C        | C                  | C                  |
| 15th Street East                | Washington Ave   | Brown Ave        | Minor Arterial  | 1,677     | C        | 1,369     | B        | B                  | B                  |
| 20th Street East                | Washington Ave   | Summerfield Rd   | Minor Collector | 3,232     | C        | 2,851     | B        | B                  | C                  |
| Bill Smith Road / Foreman Drive | Holladay Rd      | Willow Ave       | Major Collector | 4,936     | D        | 4,386     | C        | C                  | C                  |
| Broad Street / US 70N           | City Limits      | Jackson St       | Major Arterial  | 8,362     | C        | 8,588     | C        | C                  | F                  |
| Broad Street / US 70N           | Jackson St       | Spring St        | Major Arterial  | 7,789     | C        | 8,588     | C        | C                  | F                  |
| Broad Street                    | Spring St        | Cedar Ave        | Major Collector | 6,687     | D        | 6,171     | C        | C                  | C                  |
| Broad Street                    | Cedar Ave        | Washington Ave   | Major Collector | 6992*     | D        | 7,030     | D        | D                  | D                  |
| Broad Street                    | Washington Ave   | Spring Extension | Major Collector | 7941*     | D        | 7,568     | C        | C                  | D                  |
| Broad Street                    | Spring Extension | US 111           | Major Collector | 5,461     | D        | 4,300     | C        | C                  | C                  |
| Broad Street / Buck Mt. Road    | US 111           | City Limits      | Major Collector | 4,750     | D        | 3,248     | C        | C                  | C                  |
| Brown Avenue                    | 10th St.         | Jere Whitson Rd  | Minor Collector | 2,646     | C        | 2,531     | B        | B                  | C                  |
| Brown's Mill Road               | US 111           | City Limits      | Minor Collector | 900†      | C        |           |          |                    |                    |

†AADT is factored 2017 value

\*AADT value was forecasted from 2013 AADT value

\*\*AADT value was forecasted from 2012 AADT value

\*\*\*AADT value was forecasted from 2007 AADT value

**Table 1: Existing LOS (2015) by Roadway Segment, Compared to 2003 MRTP**

| Street                | From               | To                 | Class           | 2015 AADT | 2015 LOS | 2002 AADT                        | 2002 LOS | Projected 2007 LOS | Projected 2027 LOS |
|-----------------------|--------------------|--------------------|-----------------|-----------|----------|----------------------------------|----------|--------------------|--------------------|
| Buffalo Valley Road   | City Limits        | Jackson St         | Major Collector | 6,508     | D        | 4,651                            | C        | C                  | C                  |
| Buffalo Valley Road   | Jackson St         | Willow Ave         | Minor Collector | 5,543     | D        | 4,016                            | C        | C                  | C                  |
|                       |                    |                    |                 |           |          |                                  |          |                    |                    |
| Bunker Hill Road      | City Limits        | Davis Rd           | Major Collector | 2516*     | C        | 2,000                            | B        | B                  | C                  |
| Bunker Hill Road      | Davis Rd           | S Jefferson Ave    | Minor Collector | 4,482     | C        | 719                              | B        | B                  | B                  |
|                       |                    |                    |                 |           |          |                                  |          |                    |                    |
| Cane Creek Road       | City Limits        | Lee Seminary Rd    | Major Collector | 328**     | C        |                                  |          |                    |                    |
|                       |                    |                    |                 |           |          |                                  |          |                    |                    |
| Cedar Avenue          | Spring St          | 7th St             | Major Collector | 4985*     | D        | 3,784                            | C        | C                  | C                  |
|                       |                    |                    |                 |           |          |                                  |          |                    |                    |
| County Farm Road      | Spring St / US 70N | Pippin Rd          | Minor Collector | 923       | C        | Segment added to provide context |          |                    |                    |
|                       |                    |                    |                 |           |          |                                  |          |                    |                    |
| Dixie Avenue          | Spring St          | 1st St             | Major Collector | 4,520     | C        | 7,109                            | D        | D                  | D                  |
| Dixie Avenue          | 1st St             | Mahler Ave         | Major Collector | 4769*     | D        | 7,109                            | C        | C                  | D                  |
| Dixie Avenue          | Mahler Ave         | 12th St            | Major Collector | 8,353     | C        | 7,308                            | C        | C                  | D                  |
| Dixie Avenue          | 12th St            | Willow Ave         | Major Collector | 4828*     | D        | 6,606                            | C        | C                  | D                  |
|                       |                    |                    |                 |           |          |                                  |          |                    |                    |
| Dry Valley Road       | US 70N             | Buck Mountain Rd   | Major Collector | 2,688     | C        | 2,234                            | B        | B                  | C                  |
|                       |                    |                    |                 |           |          |                                  |          |                    |                    |
| Fairground Street     | Willow Ave         | Walnut Ave         | Major Collector | 4124*     | C        | 2,182                            | B        | B                  | C                  |
|                       |                    |                    |                 |           |          |                                  |          |                    |                    |
| Fisk Road             | 10th St            | City Limits        | Major Collector | 6,116     | D        | 4,118                            | C        | C                  | C                  |
|                       |                    |                    |                 |           |          |                                  |          |                    |                    |
| Foutch Drive          | Walnut Ave         | Jefferson Ave      | Minor Collector | 751       | C        | 2,635                            | B        | B                  | C                  |
|                       |                    |                    |                 |           |          |                                  |          |                    |                    |
| Freehill Road         | Washington Ave     | City Limits        | Minor Collector | 1275*     | C        | 1,141                            | B        | B                  | B                  |
|                       |                    |                    |                 |           |          |                                  |          |                    |                    |
| Gould Drive           | Holladay Rd        | Willow Ave         | Minor Collector | 2254*     | C        | 2,362                            | B        | B                  | C                  |
|                       |                    |                    |                 |           |          |                                  |          |                    |                    |
| Hawkins Crawford Road | City Limits        | Mine Lick Creek Rd | Minor Collector | 2,000     | C        |                                  |          |                    |                    |
|                       |                    |                    |                 |           |          |                                  |          |                    |                    |
| Holladay Road         | Lee Seminary Rd    | Buffalo Valley Rd  | Minor Collector | 889*      | C        | 3,700                            | C        | C                  | C                  |
|                       |                    |                    |                 |           |          |                                  |          |                    |                    |
| Hudgens Street        | Lowe Ave           | Spring St          | Minor Collector | 2,854     | C        | 2,944                            | B        | C                  | C                  |
|                       |                    |                    |                 |           |          |                                  |          |                    |                    |
| Interstate Drive      | Willow Ave         | Jefferson Ave      | Major Arterial  | 15,197    | D        | 12,929                           | B        | B                  | B                  |
|                       |                    |                    |                 |           |          |                                  |          |                    |                    |

+AADT is factored 2017 value

\*AADT value was forecasted from 2013 AADT value

\*\*AADT value was forecasted from 2012 AADT value

\*\*\*AADT value was forecasted from 2007 AADT value

**Table 1: Existing LOS (2015) by Roadway Segment, Compared to 2003 MRTTP**

| Street                    | From                  | To                    | Class           | 2015 AADT | 2015 LOS | 2002 AADT | 2002 LOS | Projected 2007 LOS | Projected 2027 LOS |
|---------------------------|-----------------------|-----------------------|-----------------|-----------|----------|-----------|----------|--------------------|--------------------|
| Jackson Street            | Broad St              | Cane Creek Elementary | Major Arterial  | 10,132    | C        | 8,138     | B        | B                  | B                  |
| Jackson Street            | Cane Creek Elementary | Buffalo Valley Rd     | Major Arterial  | 11,161    | C        | 9,088     | C        | C                  | C                  |
| Jackson Street            | Buffalo Valley Rd     | Willow Ave            | Major Arterial  | 18,260    | D        | 11,281    | C        | C                  | C                  |
| Jackson Street            | Willow Ave            | Scott Ave             | Minor Arterial  | 13182***  | D        | 13,117    | D        | D                  | D                  |
| Jackson Street            | Scott Ave             | Walnut Ave            | Minor Arterial  | 13,048    | D        | 13,117    | D        | D                  | E                  |
| Jackson Street            | Walnut Ave            | Jefferson Ave         | Minor Arterial  | 13,246    | D        | 13,117    | B        | B                  | B                  |
|                           |                       |                       |                 |           |          |           |          |                    |                    |
| Jefferson Avenue          | City Limits           | US 111 NB Ramps       | Minor Collector | 2,598     | C        | 2,427     | B        | B                  | C                  |
| Jefferson Avenue (SR 136) | US 111 NB Ramps       | Davis Rd              | Major Arterial  | 11,270    | C        | 13,331    | D        | D                  | F                  |
| Jefferson Avenue (SR 136) | Davis Rd              | Bunker Hill Rd        | Major Arterial  | 14,836    | C        | 13,331    | B        | B                  | C                  |
| Jefferson Avenue (SR 136) | Bunker Hill Rd        | I-40                  | Major Arterial  | 14,836    | C        | 13,331    | D        | D                  | D                  |
| Jefferson Avenue (SR 136) | I-40                  | Stevens St            | Major Arterial  | 24,357    | D        | 25,551    | D        | D                  | F                  |
| Jefferson Avenue (SR 136) | Stevens St            | Spring St             | Major Arterial  | 15,138    | D        | 15,280    | D        | D                  | F                  |
| Jefferson Avenue          | Spring St             | 1st St                | Minor Collector | 7874***   | D        | 1,924     | C        | C                  | C                  |
| Jefferson Avenue          | 1st St                | 7th St                | Minor Collector | 2221*     | C        | 2,060     | B        | B                  | C                  |
| Jefferson Avenue          | 7th St                | 10th St               | Minor Collector | 5,870     | D        | 4,828     | C        | C                  | C                  |
|                           |                       |                       |                 |           |          |           |          |                    |                    |
| Jere Whitson Road         | Willow Ave            | Brown Ave             | Minor Collector | 4184*     | C        | 4,166     | C        | C                  | C                  |
|                           |                       |                       |                 |           |          |           |          |                    |                    |
| Lee Seminary Road         | Bennett Rd            | Holladay Rd           | Minor Collector | 910       | C        |           |          |                    |                    |
| Lee Seminary Road         | Holladay Rd           | Burgess Falls Rd      | Minor Collector | 1,063     | C        |           |          |                    |                    |
|                           |                       |                       |                 |           |          |           |          |                    |                    |
| Lovelady Road             | City Limits           | Jefferson Ave         | Minor Collector | 441       | C        | 533       | B        | B                  | B                  |
|                           |                       |                       |                 |           |          |           |          |                    |                    |
| Lowe Avenue               | Jackson St            | Spring St             | Minor Arterial  | 11048***  | D        | 11,870    | D        | D                  | D                  |
|                           |                       |                       |                 |           |          |           |          |                    |                    |
| Mahler Avenue             | 1st St                | 6th St                | Major Collector | 4,209     | C        | 2,702     | B        | B                  | C                  |
| Mahler Avenue             | 6th St                | Dixie Ave             | Major Collector | 4,209     | C        | 2,702     | B        | B                  | C                  |
|                           |                       |                       |                 |           |          |           |          |                    |                    |
| Maple Avenue              | 10th St               | Broad St              | Major Collector | 6154**    | D        | 2,983     | B        | C                  | C                  |
| Maple Avenue              | Broad St              | Hudgens St            | Major Collector | 4602*     | C        | 1,392     | B        |                    |                    |
| Maple Avenue              | Hudgens St            | Veterans Dr           | Major Collector | 3,647     | C        | 2,123     | B        | B                  | C                  |
| Maple Avenue              | Veterans Dr           | I-40 Overpass         | Minor Collector | 4,204     | C        | 2,196     | B        | B                  | B                  |
| Maple Avenue              | I-40 Overpass         | US 111                | Minor Collector | 2,626     | C        | 3,517     | C        | C                  | C                  |
|                           |                       |                       |                 |           |          |           |          |                    |                    |
| Mine Lick Creek Road      | City Limits           | Holladay Rd           | Minor Collector | 1148*     | C        |           |          |                    |                    |
|                           |                       |                       |                 |           |          |           |          |                    |                    |
| Neal Street               | Jefferson Ave         | Spring St             | Major Arterial  | 14,630    | D        | 11,269    | B        | B                  | B                  |
|                           |                       |                       |                 |           |          |           |          |                    |                    |

+AADT is factored 2017 value

\*AADT value was forecasted from 2013 AADT value

\*\*AADT value was forecasted from 2012 AADT value

\*\*\*AADT value was forecasted from 2007 AADT value

**Table 1: Existing LOS (2015) by Roadway Segment, Compared to 2003 MRTP**

| Street                           | From             | To               | Class           | 2015 AADT | 2015 LOS | 2002 AADT                        | 2002 LOS | Projected 2007 LOS | Projected 2027 LOS |
|----------------------------------|------------------|------------------|-----------------|-----------|----------|----------------------------------|----------|--------------------|--------------------|
| Old Kentucky Road                | Spring St        | Broad St         | Major Collector | 7,732     | D        | 5,701                            | C        | C                  | C                  |
| Old Kentucky Road                | Broad St         | 10th St          | Major Collector | 5,837     | C        | Segment added to provide context |          |                    |                    |
| Pigeon Roost Creek Road          | City Limits      | Jefferson Ave    | Minor Collector | 1,127     | C        | 1,247                            | B        | B                  | B                  |
| Pippin Road                      | US 70N           | County Farm Rd   | Minor Collector | 5656*     | D        | Segment added to provide context |          |                    |                    |
| Scott Avenue                     | Jackson St       | Spring St        | Minor Collector | 3797*     | C        | 2,827                            | C        | C                  | C                  |
| Summerfield Road / Shag Rag Road | Fisk Rd          | City Limits      | Minor Collector | 1,579     | C        | 1,712                            | B        | B                  | B                  |
| Shipleigh Road                   | City Limits      | Willow Ave       | Minor Collector | 2382*     | C        | 2,343                            | B        | B                  | C                  |
| Stevens Street                   | Willow Ave       | Maple Avenue     | Minor Collector | 4,478     | C        | 3,369                            | C        | C                  | C                  |
| Veterans Drive                   | Walnut Ave       | Neal St          | Minor Collector | 8,255     | D        | 5,068                            | C        | C                  | C                  |
| Walnut Avenue                    | Broad St         | Interstate Dr    | Major Collector | 8,931     | D        | 4,845                            | C        | C                  | C                  |
| Walnut Avenue                    | Interstate Dr    | Jefferson Ave    | Minor Collector | 5,879     | D        | 4,056                            | D        | D                  | D                  |
| N Washington Ave (SR 136)        | Spring St        | Broad Ave        | Major Arterial  | 10301***  | D        | 12,495                           | E        | E                  | F                  |
| N Washington Ave (SR 136)        | Broad Ave        | 1st St           | Major Arterial  | 11,523    | D        | 12,495                           | C        | C                  | C                  |
| N Washington Ave (SR 136)        | 1st St           | 10th St          | Major Arterial  | 16,640    | D        | 13,484                           | D        | E                  | F                  |
| N Washington Ave (SR 136)        | 10th St          | 15 St/17th*      | Major Arterial  | 15,256    | D        | 9,446                            | B        | B                  | B                  |
| N Washington Ave (SR 136)        | 15 St/17th       | Whitaker Springs | Major Arterial  | 9660*     | D        | 5,582                            | D        | D                  | D                  |
| N Washington Ave (SR 136)        | Whitaker Springs | City Limits      | Minor Arterial  | 4,867     | C        | 5,671                            | C        | C                  | C                  |
| N Willow Ave (SR 135)            | Dixie Ave        | 12th St          | Major Arterial  | 8,495     | D        | 7,711                            | C        | C                  | E                  |
| N Willow Ave (SR 135)            | 12th St          | Broad St         | Major Arterial  | 16,076    | D        | 15,361                           | C        | C                  | F                  |
| S Willow Ave (SR 135)            | Broad St         | I-40             | Major Arterial  | 24,690    | C        | 23,878                           | C        | D                  | F                  |
| S Willow Ave (SR 135)            | I-40             | City Limits      | Major Arterial  | 14,925    | C        | 14,943                           | F        | F                  | F                  |
| Spring St East (US 70N)          | City Limits      | I-40             | Major Arterial  | 8,623     | C        | 8,170                            | C        | C                  | F                  |
| Spring St East (US 70N)          | I-40             | US 111           | Major Arterial  | 11,256    | E        |                                  |          |                    |                    |
| Spring St East (US 70N)          | US 111           | Old Kentucky Rd  | Major Arterial  | 17,034    | C        | 12,294                           | D        | D                  | D                  |
| Spring St East (US 70N)          | Old Kentucky Rd  | School           | Major Arterial  | 13,802    | C        | 13,495                           | D        | D                  | F                  |
| Spring St East (US 70N)          | School           | Split            | Major Arterial  | 15269*    | F        | 13,495                           | F        | F                  | F                  |
| Spring St East (US 70N)          | Split            | Walnut Ave       | Major Arterial  | 10,760    | D        | 10,312                           | D        | D                  | F                  |
| Spring St East (US 70N)          | Walnut Ave       | Broad St         | Major Arterial  | 8,341     | D        | 8,415                            | C        | C                  | D                  |

†AADT is factored 2017 value

\*AADT value was forecasted from 2013 AADT value

\*\*AADT value was forecasted from 2012 AADT value

\*\*\*AADT value was forecasted from 2007 AADT value

## 4. Growth Rate Methodology

Before projecting future roadway LOS, it is necessary to determine the traffic growth rates to be applied.

Growth rates for the SR 135, SR 136 and SR 24/US 70N corridors have already been proposed and documented separately in the Corridor Analysis Existing Conditions Report. (See Table 9 in that report.)

A 1 percent annual growth rate is recommended for use on the city's other arterial corridors, based on analysis of historical growth rates across all count locations in Cookeville, excluding I-40 and SR 111. As shown in **Table 2**, the average of the 5, 10, and 15-year historical traffic growth rate for these stations is just over 1 percent.

*Table 2: Annual Growth Rate Based on Historical Traffic Counts*

| Count Stations             | Annual Growth Rate |         |         | Average |
|----------------------------|--------------------|---------|---------|---------|
|                            | 5-year             | 10-year | 15-year |         |
| <i>Cookeville Stations</i> | 0.29%              | 1.28%   | 1.45%   | 1.01%   |

With a conservative assumption that the major arterials will reach saturation, causing motorists to use non-arterial routes, it is reasonable to assume that traffic volumes will grow at a higher rate for non-arterial roadways. Accordingly, a 1.5 percent annual growth rate in traffic volumes has been used to project future volumes on corridors that are not functionally classified as arterials.

## 5. Future Roadway Segment Level of Service Analysis

### 5.1. Future Volume Development

Annual Average Daily Traffic (AADT) volumes were forecast for the 2040 conditions using the growth rates listed in **Table 3** and the 2015 AADT volumes (**Table 1**, Section 3.2).

Table 3: Growth Rates Used to Forecast 2040 AADT Volumes

| Corridor                                      | Growth Rate |
|---|-------------|
| S. Willow Ave./N. Willow Ave. (SR 135)        | 0.50%       |
| S. Jefferson Ave./N. Washington Ave. (SR 136) | 0.75%       |
| Spring Street/Broad Street (US 70N, SR 24)    | 2.00%       |
| E. 10th Street                                | 1.00%       |
| Broad Street                                  | 0.50%       |
| All Other Arterial Corridors                  | 1.00%       |
| All Other Collector Corridors                 | 1.50%       |

Source: *Cookeville Corridor Analysis, WSP, 2017.*

Future volumes were forecast using a growth formula based on the following equation and rounded-up to the nearest multiple of 25:

$$\text{Future AADT} = \text{Existing AADT} \times [1 + \text{growth rate}(\text{future year} - \text{existing year})]$$

Once 2040 volumes were forecast, the 2040 Level of Service (LOS) for each roadway segment was determined using the most recent Florida Department of Transportation (FDOT) generalized service planning tables<sup>4</sup>. The Existing Roadway LOS report also used the FDOT service planning tables.

### 5.2. Programmed Improvements

The current list of proposed improvements to the transportation network in Cookeville is found in the Cookeville 2030 Plan<sup>5</sup>. A list of all projects and their status as of October 2017 is shown in **Table 4** and depicted in map form in **Figure 3**. This list was reviewed with City of Cookeville staff to document the current status of each project (categorized as completed, in progress, funded, or not funded). At the time of writing, of the 38 total projects, six projects have been completed, two projects are in progress and two projects are funded.

Projects in progress include the construction of the new “5<sup>th</sup> exit” interchange on I-40 (Project 1) and the Bennett Road Extension project (now called Tennessee Avenue) to connect the new interchange to West Broad Street (US 70N, SR 24) (Project 2). The remaining length of Tennessee Avenue, from West Broad Street (US 70N, SR 24 north to Gainesboro Grade (SR 290) is not currently programmed for funds.

<sup>4</sup> <http://www.fdot.gov/planning/systems/programs/sm/los/pdfs/fdot%202012%20generalized%20service%20volume%20tables.pdf>

<sup>5</sup> <http://www.cookeville-tn.gov/uploads/planning/files/compplan/Cookeville2030Plan.pdf>

Table 4: Current Status of Projects in the 2030 Cookeville Plan (as of October 2017)

| Project No. | Project Name   | Limits   | Description  | Status                        |
|-------------|--|--|--|-------------------------------|
| 1           | Construction of I-40 interchange at Mine Lick Creek Rd   |  |  | In Progress                   |
| 2           | Construction of Western North-South Connector            | I-40 to US 70N in progress. US 70N to SR 290 not funded. |  | In Progress (Partial Project) |
| 3           | Construction of Southern East-West Connector             | SR 111 in White County to new interchange                | E-W connection S. of I-40 from SR 111, SR 136, and SR 135 to I-40          |                               |
| 4           | Construction of Northern East-West Connector             |  | E-W connection N. of Cookeville from SR 111, SR 136, and SR 135 to SR 290. |                               |
| 5           | Construction of Regional Industrial/Business Park Street |  | Highlands Park Boulevard   | Complete                      |
| 6           | Extension and Widening of Lee Seminary Rd                |  |  | Complete                      |
| 7           | Widening of S. Willow Ave. (SR 135)                      | South of I-40  | Increase capacity on SR 135 South of I-40                                  |                               |
| 8           | Construction of Bunker Hill Rd. Tunnel/Bridge            | Connect Bunker Hill Road to S. Walnut Avenue             | N-S connection parallel to and between SR 135 and SR 136                   |                               |
| 9           | Construction of I-40 Parallel Access Street              | Bunker Hill Road S. of I-40 to Green Gate Lane           | E-W connection S. of I-40 from SR 136 to SR 135                            |                               |
| 10          | Extension of W. Cemetery Rd                              | Bunker Hill Road to SR 136                               |  | Complete                      |

(continued from previous page)

| Project No. | Project Name  | Limits                                       | Description                                | Status   |
|-------------|---|--|--|----------|
| 11          | Extension of Farrell Dr.  |  | E-W connection from SR 136 to S. Maple Ave |          |
| 12          | Widening of E. Spring St. (US 70N, SR 24)                         | SR 111 to I-40                               | Widen US 70N to 5 lanes                    |          |
| 13          | Widening of E. Spring Street (US 70N, SR 24)                      | Avery Trace MS (near SR 111) to Broad Street | Widen to 3 or 5 lanes                      |          |
| 14          | Widening of W. Broad Street (US 70N, SR 24)                       | W. Spring St. to N-S Road in Project No. 2   | Widen to 3 or 5 lanes                      |          |
| 15          | Improvements to East Hudgens St. and S. Maple Ave. Intersection   |  |  | Complete |
| 16          | Widening of E. 10th St.   | SR 111 to SR 136                             | Widen to 5 lanes                           |          |
| 17          | Extension of Foreman Dr.  | SR 135 to Holladay Rd                        | Construct Road                             |          |
| 18          | Extension of Commerce Ave. to Veterans Dr.                        | Whitson Ave to Veterans Dr                   | Construct Road                             |          |
| 19          | Construction of turn lane on W. Jackson St.                       | SR 135 to SR 136                             | Add center turn lane                       |          |
| 20          | Improvements to Buffalo Valley Rd. at W. Jackson St. Intersection |  |  | Funded   |
| 21          | Widening of N. Willow Ave. (SR 135)                               | Broad St. to 12th St                         | Add center turn lane                       |          |
| 22          | Improvements to E. 7th St.  |  |  | Complete |

(continued from previous page)

| <b>Project No.</b> | <b>Project Name</b>   | <b>Limits</b>                         | <b>Description</b>  | <b>Status</b> |
|--------------------|---|---------------------------------------|---|---------------|
| 23                 | Improvements to Broad St. and Cedar St. Intersection                                |                                       | Realign intersection  |               |
| 24                 | Extension of E. 15th St.  | Brown Ave. to Fisk Rd.                | Construct Road  |               |
| 25                 | Widening of S. Jefferson Ave. (SR 136)  | I-40 to SR 111                        | Widen existing road from 2 to 5 lanes; 11 foot lanes, curb and gutter, sidewalk | Funded        |
| 26                 | Construction of Connector Street from Bunker Hill Rd. to S. Jefferson Ave. (SR 136) | Bunker Hill Road S. of I-40 to SR 136 | Construct 3 lane roadway  |               |
| 27                 | Construction of Connector Street from SR 111 to Salem Church Rd                     | SR 111 to Salem Church Rd.            | Signalize intersection and construct 3 lane road                                |               |
| 28                 | Widening of W. Cemetery Rd.   | Bunker Hill Road to SR 135            |   |               |
| 29                 | Improvements to Stevens St.   | S. Lowe Ave to Buffalo Valley Rd.     | Widen and realign intersection at Jackson St.                                   |               |
| 30                 | Widening of W. 12th Street  | Mississippi Ave to SR 136             | Widen to match cross section west of project                                    |               |
| 31                 | Extension of and improvements to Old Walton Rd.                                     | Neal St to US 70N                     | Widen and add sidewalks   |               |
| 32                 | Improvements to Holladay Rd.  | Lee Seminary to Buffalo Valley        | Widen and add sidewalks   |               |
| 33                 | Construction of I-40 Parallel Access Street   | SR 111 S. of I-40 to US 70N           | Construct 2 or 3 lane roadway   |               |

*(continued from previous page)*

| <b>Project No.</b> | <b>Project Name</b>   | <b>Limits</b>                             | <b>Description</b>  | <b>Status</b> |
|--------------------|---|---|---|---------------|
| 34                 | Widening of W. Jackson St.  | US 70N to Buffalo Valley                  | Add center turn lane  |               |
| 35                 | Construction of Intersection and Connecting Street on Tennessee Ave | 700 ft S. of Nashville and Eastern RR ROW | Construct roadway and intersection to encourage development |               |
| 36                 | Construction of Intersection and Connecting Street on Tennessee Ave | 1400 ft S. of Buffalo Valley Road         | Construct roadway and intersection to encourage development |               |
| 37                 | Construction of Intersection and Connecting Street on Tennessee Ave | 1500 ft S. of Project No. 36              | Construct roadway and intersection to encourage development |               |
| 38                 | Construction of Intersection and Connecting Street on Tennessee Ave | 1500 ft north of I-40                     | Construct roadway and intersection to encourage development |               |

Projects 21 and 25 (widening N. Willow Avenue from Broad Street north to W. 12<sup>th</sup> Street, and widening S. Jefferson Avenue from I-40 to SR 111) will be funded through Tennessee's IMPROVE Act motor fuel tax increase. It was therefore assumed in the 2040 No-Build analysis that these widening projects would be completed by the year 2040. In addition, a new roadway segment, Stevens Street from Jackson Street to Willow Avenue (SR 135), was added to the 2040 analysis as a result of the planned intersection improvements at Buffalo Valley Road and Stevens Street.

With the exception of the projects noted above, 2040 No-Build LOS conditions were determined based on current roadway geometries along with 2040 forecast AADT volumes. Tennessee Avenue, which is currently under construction, was not included in the analysis since there are no existing traffic volumes to use as a base to forecast future volumes. It is assumed that Tennessee Avenue has been designed to operate at an LOS D or better in the year 2040.

### 5.3. 2040 No-Build Level of Service Results

Using the methodology documented in Section 3.1, the 2040 No-Build LOS was computed for each functionally classified roadway in the city, by segment. **Figure 4** shows the 2040 No-Build LOS for these roadway segments on a map; **Table 5** shows the projected AADT and LOS for the 2040 No-Build scenario, along with the existing conditions (2015) AADT and segment LOS.

Note that in urban areas, LOS C and D are considered adequate, while LOS E and F represent undesirable operating conditions.

Figure 3: Current Status of Transportation Projects in the Cookeville 2030 Plan

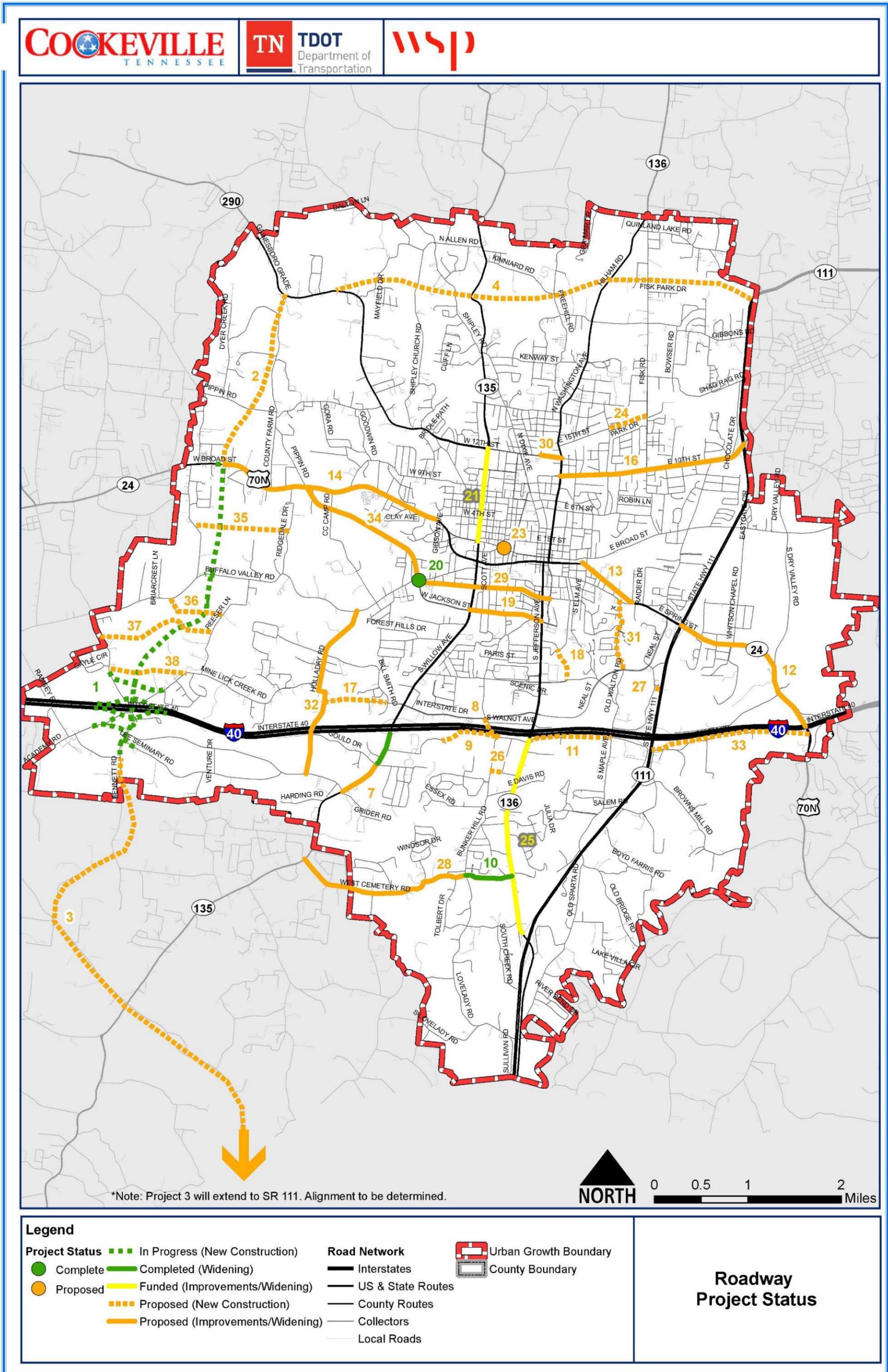
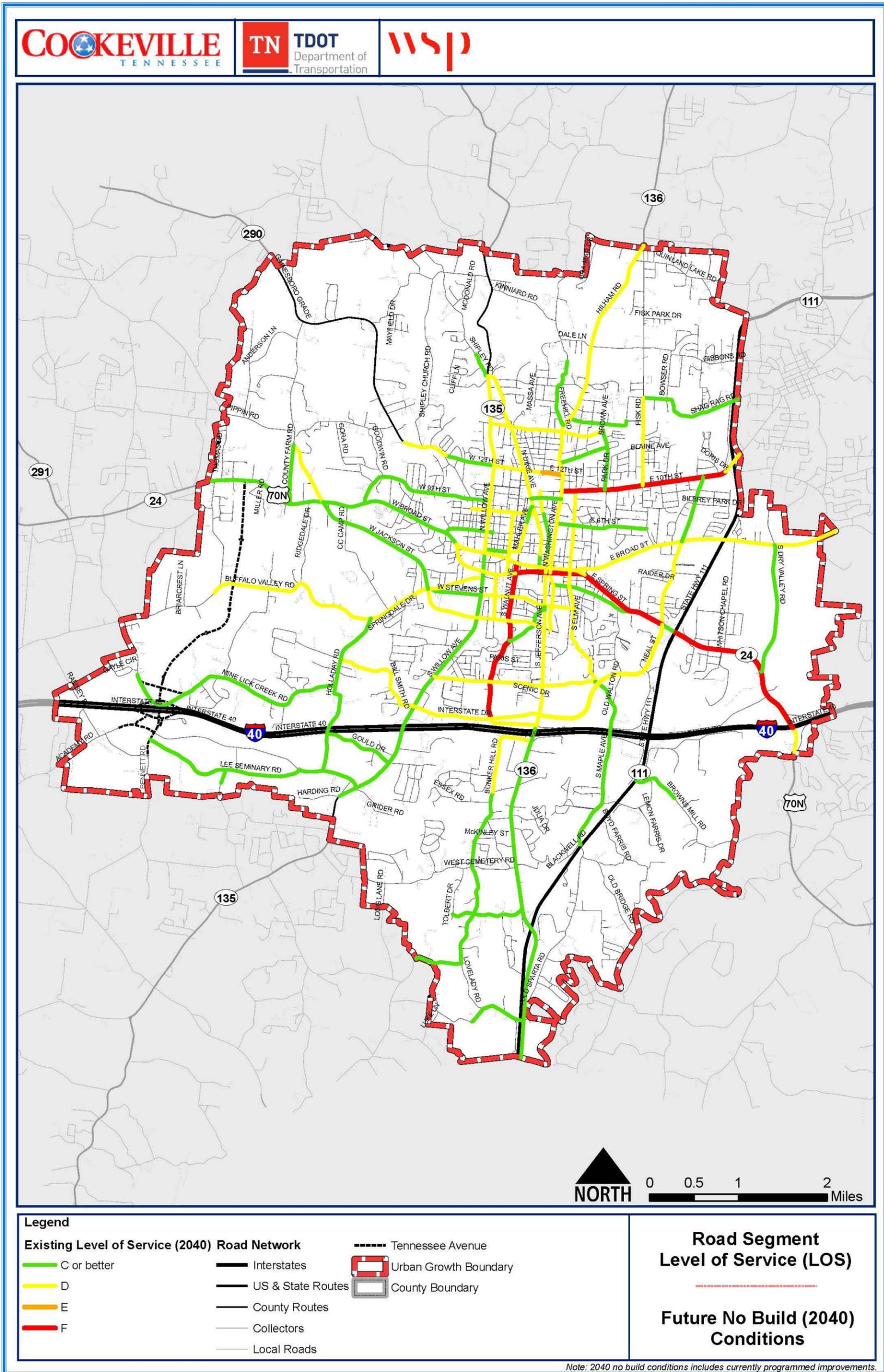


Figure 4: Projected Level of Service by Roadway Segment, 2040 No-Build Conditions



**Table 5: 2040 No-Build Roadway Segment Level of Service**

| Street Name                     | From             | To               | Class           | 2015 AADT | 2015 LOS | 2040 AADT | 2040 No-Build LOS |
|---------------------------------|------------------|------------------|-----------------|-----------|----------|-----------|-------------------|
| 1st Street West                 | Cedar Ave        | Walnut Ave       | Minor Collector | 4,200     | C        | 5,775     | D                 |
| 1st Street East                 | Willow Ave       | Cedar Ave        | Minor Collector | 948       | C        | 1,325     | C                 |
|                                 |                  |                  |                 |           |          |           |                   |
| 4th Street West                 | Broad St         | Whitney Ave      | Minor Collector | 1,966     | C        | 2,725     | C                 |
|                                 |                  |                  |                 |           |          |           |                   |
| 6th Street East                 | Washington Ave   | Fisk Rd          | Minor Collector | 1967*     | C        | 2,725     | C                 |
|                                 |                  |                  |                 |           |          |           |                   |
| 7th Street                      | Willow Ave       | Dixie Ave        | Major Collector | 8,414     | D        | 11,575    | D                 |
| 7th Street West                 | Franklin Ave     | Willow Ave       | Minor Collector | 3,523     | C        | 4,850     | D                 |
|                                 |                  |                  |                 |           |          |           |                   |
| 9th Street East                 | Dixie Ave        | Washington Ave   | Minor Collector | 1,150†    | C        | 1,550     | C                 |
| 9th Street West/Crescent Drive  | Broad St         | Willow Ave       | Minor Collector | 3,083     | C        | 4,250     | C                 |
|                                 |                  |                  |                 |           |          |           |                   |
| 10th Street East                | Washington Ave   | Chocolate        | Major Arterial  | 17,505    | F        | 21,900    | F                 |
| 10th Street East                | Chocolate        | City Limits      | Major Arterial  | 13,907    | D        | 17,400    | D                 |
|                                 |                  |                  |                 |           |          |           |                   |
| 12th Street (SR 290)            | City Limits      | Franklin Ave     | Minor Arterial  | 9,700†    | C        | 11,900    | D                 |
| 12th Street (SR 290)            | Franklin Ave     | Willow Ave       | Minor Arterial  | 9,283     | C        | 11,625    | C                 |
| 12th Street                     | Willow Ave       | Mississippi Ave  | Minor Arterial  | 13796*    | D        | 17,250    | D                 |
| 12th Street                     | Mississippi Ave  | Washington Ave   | Minor Arterial  | 10,116    | D        | 12,650    | E                 |
|                                 |                  |                  |                 |           |          |           |                   |
| 15th Street East                | Washington Ave   | Brown Ave        | Minor Arterial  | 1,677     | C        | 2,100     | C                 |
|                                 |                  |                  |                 |           |          |           |                   |
| 20th Street East                | Washington Ave   | Summerfield Rd   | Minor Collector | 3,232     | C        | 4,450     | C                 |
|                                 |                  |                  |                 |           |          |           |                   |
| Bill Smith Road / Foreman Drive | Holladay Rd      | Willow Ave       | Major Collector | 4,936     | D        | 6,800     | D                 |
|                                 |                  |                  |                 |           |          |           |                   |
| Broad Street / US 70N           | City Limits      | Jackson St       | Major Arterial  | 8,362     | C        | 12,550    | C                 |
| Broad Street / US 70N           | Jackson St       | Spring St        | Major Arterial  | 7,789     | C        | 11,700    | C                 |
| Broad Street                    | Spring St        | Cedar Ave        | Major Collector | 6,687     | D        | 7,525     | D                 |
| Broad Street                    | Cedar Ave        | Washington Ave   | Major Collector | 6992*     | D        | 7,875     | D                 |
| Broad Street                    | Washington Ave   | Spring Extension | Major Collector | 7941*     | D        | 8,950     | D                 |
| Broad Street                    | Spring Extension | US 111           | Major Collector | 5,461     | D        | 7,525     | D                 |
| Broad Street / Buck Mt. Road    | US 111           | City Limits      | Major Collector | 4,750     | D        | 6,550     | D                 |

†AADT is 2017 value

\*AADT value was forecasted from 2013 AADT value

\*\*AADT value was forecasted from 2012 AADT value

\*\*\*AADT value was forecasted from 2007 AADT value

**Table 5: 2040 No-Build Roadway Segment Level of Service**

| Street Name         | From               | To               | Class           | 2015 AADT | 2015 LOS | 2040 AADT | 2040 No-Build LOS |
|---------------------|--------------------|------------------|-----------------|-----------|----------|-----------|-------------------|
| Brown Avenue        | 10th St.           | Jere Whitson Rd  | Minor Collector | 2,646     | C        | 3,650     | C                 |
| Brown's Mill Road   | US 111             | City Limits      | Minor Collector | 900†      | C        | 1,225     | C                 |
| Buffalo Valley Road | City Limits        | Jackson St       | Major Collector | 6,508     | D        | 8,950     | D                 |
| Buffalo Valley Road | Jackson St         | Willow Ave       | Minor Collector | 5,543     | D        | 7,625     | D                 |
| Bunker Hill Road    | City Limits        | Davis Rd         | Major Collector | 2516*     | C        | 3,475     | C                 |
| Bunker Hill Road    | Davis Rd           | S Jefferson Ave  | Minor Collector | 4,482     | C        | 6,175     | D                 |
| Cane Creek Road     | City Limits        | Lee Seminary Rd  | Major Collector | 328**     | C        | 475       | C                 |
| Cedar Avenue        | Spring St          | 7th St           | Major Collector | 4985*     | D        | 6,875     | D                 |
| County Farm Road    | Spring St / US 70N | Pippin Rd        | Minor Collector | 923       | C        | 1,275     | C                 |
| Dixie Avenue        | Spring St          | 1st St           | Major Collector | 4,520     | C        | 6,225     | C                 |
| Dixie Avenue        | 1st St             | Mahler Ave       | Major Collector | 4769*     | D        | 6,575     | D                 |
| Dixie Avenue        | Mahler Ave         | 12th St          | Major Collector | 8,353     | C        | 11,500    | D                 |
| Dixie Avenue        | 12th St            | Willow Ave       | Major Collector | 4828*     | D        | 6,650     | D                 |
| Dry Valley Road     | US 70N             | Buck Mountain Rd | Major Collector | 2,688     | C        | 3,700     | C                 |
| Fairground Street   | Willow Ave         | Walnut Ave       | Major Collector | 4124*     | C        | 5,675     | D                 |
| Fisk Road           | 10th St            | City Limits      | Major Collector | 6,116     | D        | 8,425     | D                 |
| Foutch Drive        | Walnut Ave         | Jefferson Ave    | Minor Collector | 751       | C        | 1,050     | C                 |
| Freehill Road       | Washington Ave     | City Limits      | Minor Collector | 1275*     | C        | 1,775     | C                 |
| Gould Drive         | Holladay Rd        | Willow Ave       | Minor Collector | 2254*     | C        | 3,100     | C                 |

†AADT is 2017 value

\*AADT value was forecasted from 2013 AADT value

\*\*AADT value was forecasted from 2012 AADT value

\*\*\*AADT value was forecasted from 2007 AADT value

**Table 5: 2040 No-Build Roadway Segment Level of Service**

| Street Name               | From                  | To                    | Class           | 2015 AADT | 2015 LOS | 2040 AADT | 2040 No-Build LOS |
|---------------------------|-----------------------|-----------------------|-----------------|-----------|----------|-----------|-------------------|
| Hawkins Crawford Road     | City Limits           | Mine Lick Creek Rd    | Minor Collector | 2,000     | C        | 2,750     | C                 |
| Holladay Road             | Lee Seminary Rd       | Buffalo Valley Rd     | Minor Collector | 889*      | C        | 1,225     | C                 |
| Hudgens Street            | Lowe Ave              | Spring St             | Minor Collector | 2,854     | C        | 3,925     | C                 |
| Interstate Drive          | Willow Ave            | Jefferson Ave         | Major Arterial  | 15,197    | D        | 19,000    | D                 |
| Jackson Street            | Broad St              | Cane Creek Elementary | Major Arterial  | 10,132    | C        | 12,675    | C                 |
| Jackson Street            | Cane Creek Elementary | Buffalo Valley Rd     | Major Arterial  | 11,161    | C        | 13,975    | C                 |
| Jackson Street            | Buffalo Valley Rd     | Willow Ave            | Major Arterial  | 18,260    | D        | 22,825    | D                 |
| Jackson Street            | Willow Ave            | Scott Ave             | Minor Arterial  | 13182***  | D        | 16,500    | D                 |
| Jackson Street            | Scott Ave             | Walnut Ave            | Minor Arterial  | 13,048    | D        | 16,325    | D                 |
| Jackson Street            | Walnut Ave            | Jefferson Ave         | Minor Arterial  | 13,246    | D        | 16,575    | D                 |
| Jefferson Avenue          | City Limits           | US 111 NB Ramps       | Minor Collector | 2,598     | C        | 3,100     | C                 |
| Jefferson Avenue (SR 136) | US 111 NB Ramps       | Davis Rd              | Major Arterial  | 11,270    | C        | 13,400    | C                 |
| Jefferson Avenue (SR 136) | Davis Rd              | Bunker Hill Rd        | Major Arterial  | 14,836    | C        | 17,625    | C                 |
| Jefferson Avenue (SR 136) | Bunker Hill Rd        | I-40                  | Major Arterial  | 14,836    | C        | 17,625    | C                 |
| Jefferson Avenue (SR 136) | I-40                  | Stevens St            | Major Arterial  | 24,357    | D        | 28,925    | D                 |
| Jefferson Avenue (SR 136) | Stevens St            | Spring St             | Major Arterial  | 15,138    | D        | 18,000    | D                 |
| Jefferson Avenue          | Spring St             | 1st St                | Minor Collector | 7874***   | D        | 10,850    | D                 |
| Jefferson Avenue          | 1st St                | 7th St                | Minor Collector | 2221*     | C        | 3,075     | C                 |
| Jefferson Avenue          | 7th St                | 10th St               | Minor Collector | 5,870     | D        | 8,075     | D                 |
| Jere Whitson Road         | Willow Ave            | Brown Ave             | Minor Collector | 4184*     | C        | 5,775     | D                 |
| Lee Seminary Road         | Bennett Rd            | Holladay Rd           | Minor Collector | 910       | C        | 1,275     | C                 |
| Lee Seminary Road         | Holladay Rd           | Burgess Falls Rd      | Minor Collector | 1,063     | C        | 1,475     | C                 |
| Lovelady Road             | City Limits           | Jefferson Ave         | Minor Collector | 441       | C        | 625       | C                 |
| Lowe Avenue               | Jackson St            | Spring St             | Minor Arterial  | 11048***  | D        | 13,825    | D                 |

†AADT is 2017 value

\*AADT value was forecasted from 2013 AADT value

\*\*AADT value was forecasted from 2012 AADT value

\*\*\*AADT value was forecasted from 2007 AADT value

**Table 5: 2040 No-Build Roadway Segment Level of Service**

| Street Name                      | From              | To             | Class           | 2015 AADT | 2015 LOS | 2040 AADT | 2040 No-Build LOS |
|----------------------------------|-------------------|----------------|-----------------|-----------|----------|-----------|-------------------|
| Mahler Avenue                    | 1st St            | 6th St         | Major Collector | 4,209     | C        | 5,800     | D                 |
| Mahler Avenue                    | 6th St            | Dixie Ave      | Major Collector | 4,209     | C        | 5,800     | C                 |
| Maple Avenue                     | 10th St           | Broad St       | Major Collector | 6154**    | D        | 8,475     | D                 |
| Maple Avenue                     | Broad St          | Hudgens St     | Major Collector | 4602*     | C        | 6,350     | D                 |
| Maple Avenue                     | Hudgens St        | Veterans Dr    | Major Collector | 3,647     | C        | 5,025     | D                 |
| Maple Avenue                     | Veterans Dr       | I-40 Overpass  | Minor Collector | 4,204     | C        | 5,800     | C                 |
| Maple Avenue                     | I-40 Overpass     | US 111         | Minor Collector | 2,626     | C        | 3,625     | C                 |
| Mine Lick Creek Road             | City Limits       | Holladay Rd    | Minor Collector | 1148*     | C        | 1,600     | C                 |
| Neal Street                      | Jefferson Ave     | Spring St      | Major Arterial  | 14,630    | D        | 18,300    | D                 |
| Old Kentucky Road                | Spring St         | Broad St       | Major Collector | 7,732     | D        | 10,650    | D                 |
| Old Kentucky Road                | Broad St          | 10th St        | Major Collector | 5,837     | C        | 8,050     | C                 |
| Pigeon Roost Creek Road          | City Limits       | Jefferson Ave  | Minor Collector | 1,127     | C        | 1,550     | C                 |
| Pippin Road                      | US 70N            | County Farm Rd | Minor Collector | 5656*     | D        | 7,800     | D                 |
| Scott Avenue                     | Jackson St        | Spring St      | Minor Collector | 3797*     | C        | 5,225     | D                 |
| Summerfield Road / Shag Rag Road | Fisk Rd           | City Limits    | Minor Collector | 1,579     | C        | 2,175     | C                 |
| Shipleigh Road                   | City Limits       | Willow Ave     | Minor Collector | 2382*     | C        | 3,300     | C                 |
| Stevens Street                   | Buffalo Valley Rd | Willow Ave     | Minor Collector | -         | -        | 3,950     | C                 |
| Stevens Street                   | Willow Ave        | Maple Avenue   | Minor Collector | 4,478     | C        | 6,175     | D                 |
| Veterans Drive                   | Walnut Ave        | Neal St        | Minor Collector | 8,255     | D        | 11,375    | D                 |
| Walnut Avenue                    | Broad St          | Interstate Dr  | Major Collector | 8,931     | D        | 12,300    | F                 |
| Walnut Avenue                    | Interstate Dr     | Jefferson Ave  | Minor Collector | 5,879     | D        | 8,100     | D                 |

†AADT is 2017 value

\*AADT value was forecasted from 2013 AADT value

\*\*AADT value was forecasted from 2012 AADT value

\*\*\*AADT value was forecasted from 2007 AADT value

**Table 5: 2040 No-Build Roadway Segment Level of Service**

| Street Name               | From             | To               | Class          | 2015 AADT | 2015 LOS | 2040 AADT | 2040 No-Build LOS |
|---------------------------|------------------|------------------|----------------|-----------|----------|-----------|-------------------|
| N Washington Ave (SR 136) | Spring St        | Broad Ave        | Major Arterial | 10301***  | D        | 12,250    | D                 |
| N Washington Ave (SR 136) | Broad Ave        | 1st St           | Major Arterial | 11,523    | D        | 13,700    | D                 |
| N Washington Ave (SR 136) | 1st St           | 10th St          | Major Arterial | 16,640    | D        | 19,775    | D                 |
| N Washington Ave (SR 136) | 10th St          | 15 St/17th*      | Major Arterial | 15,256    | D        | 18,125    | D                 |
| N Washington Ave (SR 136) | 15 St/17th       | Whitaker Springs | Major Arterial | 9660*     | D        | 11,475    | D                 |
| N Washington Ave (SR 136) | Whitaker Springs | City Limits      | Minor Arterial | 4,867     | C        | 5,800     | D                 |
|                           |                  |                  |                |           |          |           |                   |
| N Willow Ave (SR 135)     | Dixie Ave        | 12th St          | Major Arterial | 8,495     | D        | 9,575     | D                 |
| N Willow Ave (SR 135)     | 12th St          | Broad St         | Major Arterial | 16,076    | D        | 18,100    | D                 |
| S Willow Ave (SR 135)     | Broad St         | I-40             | Major Arterial | 24,690    | C        | 27,800    | C                 |
| S Willow Ave (SR 135)     | I-40             | City Limits      | Major Arterial | 14,925    | C        | 16,800    | C                 |
|                           |                  |                  |                |           |          |           |                   |
| Spring St East (US 70N)   | City Limits      | I-40             | Major Arterial | 8,623     | C        | 12,950    | D                 |
| Spring St East (US 70N)   | I-40             | SR 111           | Major Arterial | 11,256    | E        | 16,900    | F                 |
| Spring St East (US 70N)   | SR 111           | Old Kentucky Rd  | Major Arterial | 17,034    | C        | 25,575    | C                 |
| Spring St East (US 70N)   | Old Kentucky Rd  | School           | Major Arterial | 13,802    | C        | 20,725    | F                 |
| Spring St East (US 70N)   | School           | Split            | Major Arterial | 15269*    | F        | 22,925    | F                 |
| Spring St East (US 70N)   | Split            | Walnut Ave       | Major Arterial | 10,760    | D        | 16,150    | F                 |
| Spring St East (US 70N)   | Walnut Ave       | Broad St         | Major Arterial | 8,341     | D        | 12,525    | D                 |

†AADT is 2017 value

\*AADT value was forecasted from 2013 AADT value

\*\*AADT value was forecasted from 2012 AADT value

\*\*\*AADT value was forecasted from 2007 AADT value

Based on this analysis, seven roadway segments are forecast to operate at a failing LOS in 2040 No-Build conditions, even with the completion of projects already in progress and those already funded. The road segments projected to be over capacity by 2040 are shown below in **Table 6**.

*Table 6: Roadway Segments Failing in 2040 No-Build conditions (Summarized from Table 5)*

| <b>Route</b>                     | <b>From</b>                  | <b>To</b>                   | <b>2040 No-Build LOS</b> |
|----------------------------------|------------------------------|-----------------------------|--------------------------|
| E. 10 <sup>th</sup> St.          | N. Washington Ave. (SR 136)  | Chocolate Dr.               | F                        |
| W. 12 <sup>th</sup> St.          | Mississippi Ave.             | N. Washington Ave. (SR 136) | E                        |
| S. Walnut Ave.                   | Broad St.                    | Interstate Dr.              | F                        |
| E. Spring St.<br>(US 70N, SR 24) | I-40                         | SR 111                      | F                        |
| E. Spring St.<br>(US 70N, SR 24) | S. Old Kentucky Rd./Neal St. | Avery Trace Middle School   | F                        |
| E. Spring St.<br>(US 70N, SR 24) | Avery Trace Middle School    | Broad St.                   | F                        |
| E. Spring St.<br>(US 70N, SR 24) | Broad St.                    | Walnut Ave.                 | F                        |

Since the section of E. 10<sup>th</sup> Street shown in the table is already operating at LOS F, its deficiencies were discussed in the existing LOS results (Section 3.2). As traffic volumes continue to grow, the operations on this segment will further deteriorate unless there is an increase in roadway capacity or reduction in vehicular demand on this corridor.

Similarly, two segments along Spring Street (US 70N, SR 24) are already operating at a failing LOS in existing conditions: SR 111 to I-40, and Avery Trace Middle School to Broad Street. Future year forecasts indicate traffic volumes will cause two additional segments of Spring Street to operate at a failing LOS in 2040.

The section of W. 12<sup>th</sup> Street that is failing in the 2040 LOS analysis is a short (approximately 0.25 mile) two-lane segment of the W. 12<sup>th</sup> Street corridor. There is a four-lane undivided cross section on the west side of the segment, an at-grade railroad crossing in the middle of the segment, and a traffic signal on the east side of the segment. The transition from a four-lane roadway to a two-lane roadway results in an eastbound choke point at Mississippi Avenue.

S. Walnut Avenue, as a two-lane roadway with center turn lane, currently operates at LOS C. It is one of only three north-south corridors, including S. Willow Avenue (SR 135) and S. Jefferson Avenue (SR 136), which connect downtown Cookeville and Interstate Drive. Traffic volumes on this corridor are projected to exceed the roadway capacity and operate at an LOS F by 2040.

## 6. Projects to Address Corridors with Failing LOS

Several of the projects in the current (2003) Major Street Plan will help to address delays and operational issues on the corridors where demand is expected to exceed roadway capacity. As further discussed below, these projects should be carried forward into the new MSP to help meet the adopted goals and policies of the *Cookeville 2030 Plan*. This includes the policy that “all segments of the transportation system should be designed and located to meet future as well as present demands.”

There are two significant areas that are projected to have roadway capacity problems, but are not directly addressed by any projects in the current plan: S. Walnut Street, and E. Spring Street between Walnut Avenue and Broad Street. Although these segments could be considered for widening, adding lanes would have a major impact on adjoining land uses and may not be consistent with the City’s other goals for livability and community development. The policies in the *Cookeville 2030 Plan* call for major streets to be “located in a manner that will minimize disruption to neighborhoods, open space and recreational areas, and/or environmentally sensitive areas.” As further discussed below, some relief might be provided in these areas through targeted improvements to other streets to help distribute traffic demand across a greater number of facilities.

Providing multiple routes among a community’s major origins and destinations has a variety of benefits: in addition to improving traffic circulation, it greatly enhances local safety and security. Emergency and homeland security officials often use the terms “resiliency” and “redundancy” to describe a desirable road network. Large residential subdivisions are typically required to have more than one entrance so that emergency responders can reach them (or residents can evacuate) even if the primary entrance is blocked. Similarly, a city that has multiple routes to its critical facilities (*redundancy*) is more *resilient* to disasters, whether they are natural or intentionally caused.

### 6.1. Construction of Northern East-West Connector

This project, included in the *Cookeville 2030 Plan* (Project 4), proposes to construct a three to five-lane major arterial roadway connecting SR 111 west to SR 290. This project would likely help moderate growing demand on E. 10<sup>th</sup> Street – which is already over capacity in existing conditions — by providing a continuous east-west corridor connecting SR 111, N. Washington Avenue (SR 136), N. Willow Avenue (SR 135) and Gainesboro Grade (SR 290) north of the city.

### 6.2. Widening of Highway 70N near I-40

This project, included as part of the *Cookeville 2030 Plan* (Project 12), proposes to widen E. Spring Street (US 70N, SR 24) between SR 111 and I-40 from a two-lane roadway to a five-lane roadway. The project is significant because this segment already operates at LOS E in existing conditions and is forecast to operate at LOS F without any improvements by 2040. Widening this section is expected to improve roadway operations in 2040 from LOS F to LOS C.

### 6.3. Widening of East Spring Street east of downtown

This project, included as part of the *Cookeville 2030 Plan* (Project 13), proposes to widen E. Spring Street (US 70N, SR 24) between Avery Trace Middle School and the Broad Street split east of downtown Cookeville to a consistent three-lane or five-lane roadway section. This section currently operates at LOS F in existing conditions, and operations will likely continue to degrade as new development at the edges

of the city generates additional traffic. Widening to five lanes is expected to improve 2040 operations from LOS F to LOS C.

#### 6.4. Widening of West 12th Street

This project, included as part of the Cookeville 2030 Plan (Project 30), proposes to widen W. 12<sup>th</sup> Street between Mississippi Avenue and N. Washington Avenue (SR 136) to a four-lane undivided roadway to match the 12<sup>th</sup> Street cross section west of the project. This will eliminate the current eastbound choke point and increase capacity. Roadway operations in 2040 are projected to improve from LOS E to LOS D as a result of the widening project.

#### 6.5. East 10th Street

This project, included as part of the Cookeville 2030 Plan (Project 16), proposes to widen E. 10<sup>th</sup> Street from a three-lane to a five-lane roadway. This segment currently operates at LOS F in existing conditions, and operations will likely continue to degrade if demand increases at the current rate.

Widening to five lanes would be expected to improve roadway operations in 2040 from LOS F to LOS D. LOS D is the minimum acceptable level of service for roadways in urban areas. Given the projected cost (\$24.2 million in 2017 dollars) and the impact to adjoining property owners, the City may wish to first explore other means of improving traffic along E. 10<sup>th</sup> Street.

It is possible that capacity improvements to adjacent routes and the construction of new roadways could divert traffic demand away from East 10<sup>th</sup> Street to the point where it might not be necessary to widen to five lanes. Projects already mentioned in this section that may contribute to this scenario include the widening of E. Spring Street and US 70N (Projects 12 & 13) and the construction of a Northern East-West connector (Project 4). When one or more of these projects is complete a new analysis of 10<sup>th</sup> Street could be undertaken to assess the traffic volumes and determine future traffic demand for the corridor.

The Cookeville area is likely, after the 2020 Census, to reach the population threshold at which it would become a federally designated Metropolitan Planning Organization (MPO). While smaller MPOs are not required to have a travel demand model, it has been the standard practice in Tennessee for all MPOs to have a travel demand model. MPO designation within the next few years could therefore lead to the availability of additional planning tools (e.g., a travel demand model) that can more precisely identify the shifts in traffic flows and demand associated with various roadway improvements. Such analysis can help guide decisions about using limited funds and resources, to avoid unnecessary improvements or make more strategic decisions about the E. 10<sup>th</sup> Street corridor.

#### 6.6. S. Walnut Avenue

No improvements to S. Walnut Avenue are proposed in the City's current plans. By the year 2040, the route is projected to be over capacity from Broad Street to Interstate Drive. Widening S. Walnut Avenue from 3 lanes to 5 lanes would improve operations from LOS F to LOS D. However, adding lanes to this section of S. Walnut Avenue would significantly impact the surrounding land uses, including parks and single-family homes, many of which are immediately adjacent to the roadway. Limiting the widening project to the portion not directly adjacent to residential communities (i.e. south of E. Veterans Drive) would likely not mitigate congestion, as traffic volumes are relatively consistent throughout the segment.

Given the capacity concerns and limitations on widening, the City may wish to weigh the desirability of extending S. Walnut Avenue south of I-40 to Bunker Hill Road, as proposed in the current MSP (Project 8).

The project's key advantage is to create additional network connectivity by providing an alternative north-south connection to the busy S. Willow Avenue (SR 135) and S. Jefferson Avenue (SR 136) corridors. However, both SR 135 and SR 136 are proposed for improvements, including signal system optimization and targeted intersection projects. Neither corridor is projected to be over capacity in 2040, whereas S. Walnut Avenue is expected to reach LOS F even if it is not connected to the expanding road network south of the interstate.

#### 6.7. E. Spring Street from Walnut Avenue to Broad Street

The section of E. Spring Street (US 70N, SR 24) between Walnut Avenue and Broad Street – currently operating at LOS D – is projected to worsen to LOS F by 2040. Similar to S. Walnut Avenue, widening this segment of Spring Street may not be a context-sensitive nor practical solution. This section runs through the historic downtown area where there are high levels of pedestrian traffic, and where available right-of-way is very constrained due to historic buildings.

Planned improvements to other nearby east-west routes, such as Stevens Street and W. Jackson Street, should help to draw some traffic demand from E. Spring Street. The *Cookeville Corridor Analysis* also identifies other possible operational improvements in the downtown area which may help reduce delay along E. Spring Street, including relocation of mid-block crosswalks, removal of certain on-street parking spaces, and/or designating the downtown portions of Broad and Spring Streets as a one-way pair.

#### 6.8. East-West Connectivity near I-40

Three projects in the current MSP are focused on the creation of new access roads running parallel to I-40 on the south side of the interstate. One possible benefit is to provide a continuous alternate route for local traffic that may currently be using I-40 for short trips between interchanges. If this is one of the City's goals, then it may be valuable to discuss with TDOT the potential for making this local access road function somewhat similar to a collector-distributor (CD) system along I-40 connecting the interchanges serving Cookeville. This could improve traffic flow on the interstate as well as the local roadways through the City of Cookeville. TDOT is about to begin updating its statewide plan for the I-40/81 corridor (completed in 2008) so this would be a timely discussion.

Another potential purpose for these new roads is to provide access for proposed commercial land uses shown in the Cookeville 2030 Plan. Since the new access roads would essentially create a continuous link between SR 135, S. Jefferson Avenue (SR 136), SR 111 and E. Spring Street (US 70, SR 24), their intersections with these major routes are likely to significantly change traffic patterns.

As currently shown, the new access roads would intersect each of these major arterials very close to the I-40 interchanges. It is important to avoid creating future backups that block access to the interstate ramps. As the city further defines the function and alignment of the new routes, detailed traffic analysis should be performed to ensure that new major intersections are adequately spaced from the busy I-40 interchanges. For example, west of S. Jefferson Avenue, the new local access road could tie in at Henley Street rather than following Bunker Hill Road.

## 7. Recommendations From 2017 Cookeville Corridor Analysis

As noted above, a separate, more detailed analysis of traffic operations and safety was conducted for several of the City's key corridors:

- Willow Avenue (SR 135)
- Jefferson Avenue/Washington Avenue (SR 136)
- Spring and Broad Streets (US 70N / SR 24)
- E. 10<sup>th</sup> Street

That 2017 report (the *Cookeville Corridor Analysis*) resulted in recommended signal timing and optimization plans for the City to implement immediately. However, it also includes a set of capital projects recommended for implementation on these key corridors. The recommended corridor improvements are primarily located at intersections, and consist mainly of adding turn lanes and channelizing existing turn lanes.

It is recommended that the City include these proposed improvements into the new MSP, to consolidate all of its transportation projects in one document for reference and planning purposes.

**Figure 5** shows the location of proposed improvement projects from the *Cookeville Corridor Analysis*. **Table 7** lists the projects in recommended order of implementation, based on a number of considerations. These factors include whether the location is already operating below acceptable LOS, and whether there are also immediate safety concerns that would be addressed by the improvement. Near-term priority was assigned to projects that can yield temporary improvement at low cost while a longer-term solution is being designed for the same corridor. Consideration was also given to whether locations need to be addressed as a group.

## 8. All Recommended MSP Projects

**Table 8** consolidates the list of all recommended projects for the Major Street Plan. This list reflects the level of service analysis and other issues discussed in this report, and incorporates the additional recommendations from the *Cookeville Corridor Analysis*.

Figure 5: Improvements Recommended by the Cookeville Corridor Analysis

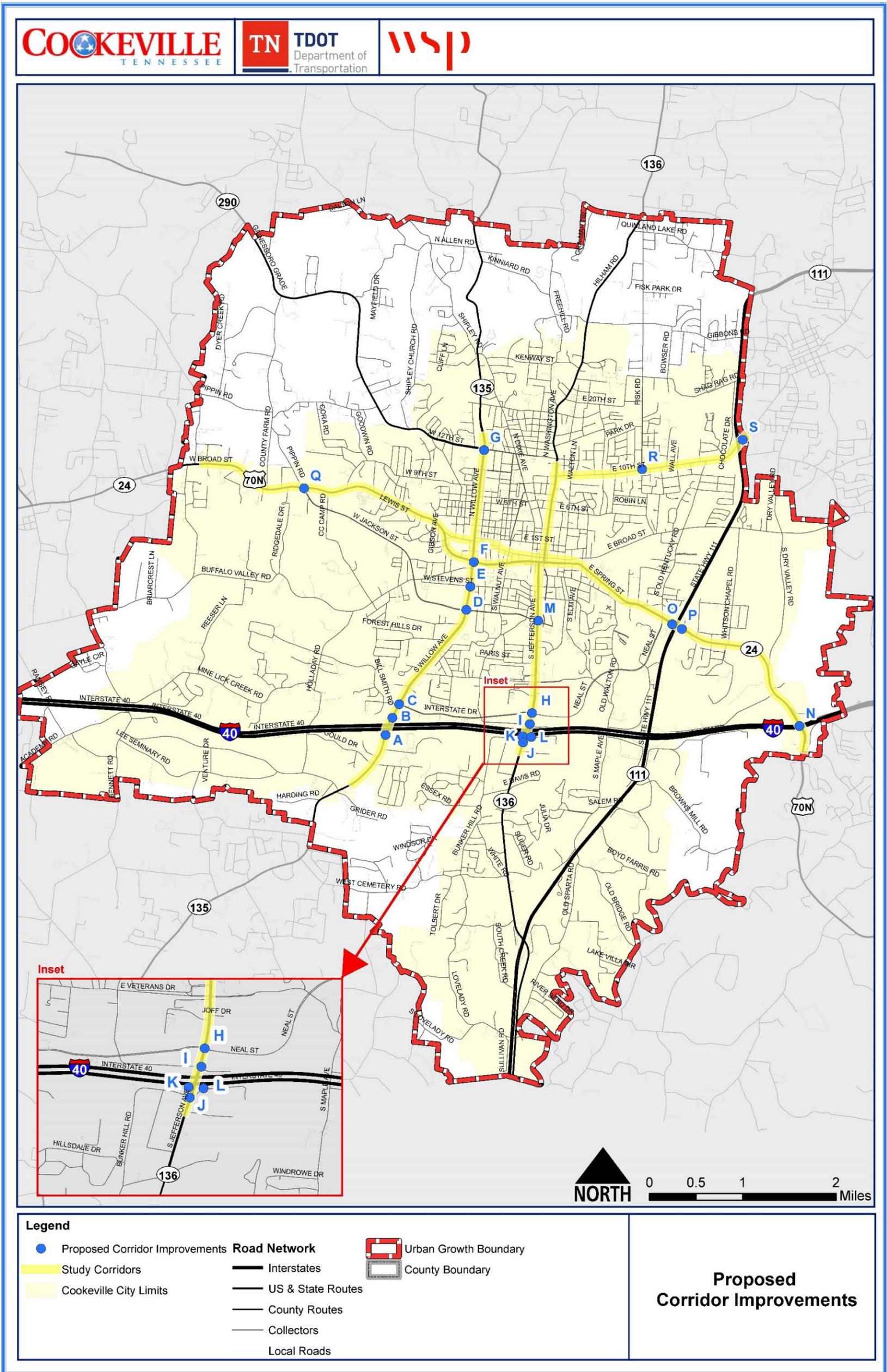


Table 7: Proposed Improvements from Cookeville Corridor Analysis

| Project No.        | Location of Proposed Improvement   | Priority  | Est. Cost (2017 Dollars) |
|--------------------|--|-----------|--------------------------|
| A                  | S. Willow Ave. (SR 135) at Interstate 40 Eastbound   | Near-term | \$75,000                 |
| B                  | S. Willow Ave. (SR 135) at Interstate 40 Westbound   | Near-term | \$40,000                 |
| D                  | S. Willow Ave. (SR 135) at W. Jackson St.  | Near-term | \$592,000                |
| 21 (MSP)           | N. Willow Ave. (SR 135) from W. Broad St. to W. 12th St. (includes EB and WB right-turn lanes at W. 3 <sup>rd</sup> , W. 4 <sup>th</sup> and W. 9 <sup>th</sup> St. intersections) | Near-term | \$36,982,000             |
| G                  | N. Willow Ave. (SR 135) at W. 12th St. (SR 290)  | Near-term | \$55,000                 |
| R                  | E. 10th St. at Fisk Rd.  | Near-term | \$354,000                |
| F                  | S. Willow Ave. (SR 135) at W. Spring St. (US 70N, SR 24)   | Mid-term  | \$640,000                |
| H                  | S. Jefferson Ave. (SR 136) at Bunker Hill Rd.  | Mid-term  | \$50,000                 |
| I                  | S. Jefferson Ave. (SR 136) at Interstate 40 Eastbound ramp   |           | \$98,000                 |
| J                  | S. Jefferson Ave. (SR 136) at Interstate 40 Westbound ramp   |           | \$10,000                 |
| K                  | S. Jefferson Ave. (SR 136) at S. Walnut Ave. / Dubois St.  |           | \$35,000                 |
| L                  | S. Jefferson Ave. (SR 136) at Interstate Dr. / Neal St.  |           | \$441,000                |
| O                  | E. Spring St. (US 70N, SR 24) at SR 111 Southbound ramp  | Mid-term  | \$15,000                 |
| P                  | E. Spring St. (US 70N, SR 24) at SR 111 Northbound ramp  |           | \$346,000                |
| Q                  | W. Broad St. (US 70N, SR 24) at W. Jackson St.   | Mid-term  | \$197,000                |
| 16 (MSP)           | E. 10th St. from N. Washington Ave. (SR 136) to Chocolate Dr.  | Mid-term  | \$27,924,000             |
| S                  | E. 10th St. at SR 111 Northbound ramp  | Mid-term  | \$108,000                |
| C                  | S. Willow Ave. (SR 135) at Interstate Drive / Foreman Drive  | Long-term | \$260,000                |
| E                  | S. Willow Avenue (SR 135) at W. Stevens St.  | Long-term | \$222,000                |
| M                  | S. Jefferson Avenue (SR 136) at Jackson St.  | Long-term | \$245,000                |
| N                  | E. Spring St. (US 70N, SR 24) at Interstate 40   | Long-term | \$30,000                 |
| <b>GRAND TOTAL</b> |  |           | <b>\$68,719,000</b>      |

**TABLE 8: PROPOSED PROJECTS, MAJOR STREET PLAN**

| Proj. No.               | Project Name   | Limits  | Description   | Project Status                | Priority | Comments  |
|-------------------------|--|---|---|-------------------------------|----------|---|
| <b>In Progress</b>      |  |   |   |                               |          |   |
| 1                       | Construction of I-40 interchange at Mine Lick Creek Rd |   |   | In Progress                   | -        |   |
| 2                       | Construction of Western North-South Connector          | I-40 to SR 290                                  |   | In Progress (partial project) | -        | I-40 to US 70N in progress. US 70N to SR 290 not funded.  |
| 25                      | Widening of S. Jefferson Ave. (SR 136)                 | SR 111 to I-40                                  | Widen existing road from 2 to 5 lanes; 11 foot lanes, curb and gutter, sidewalk   | Funded                        | H        | Will be fully funded through IMPROVE Act  |
| 21                      | Widening of N. Willow Ave. (SR 135)                    | W. Broad St. to W. 12th St.                     | Add center turn lane. Also add EB and WB right-turn lanes on W. 3rd, W. 4th and W. 9th Streets at intersections with N. Willow Avenue.  | Funded                        | H        | Will be fully funded through IMPROVE Act  |
| <b>Not Yet Underway</b> |  |   |   |                               |          |   |
| A                       | S. Willow Ave. (SR 135) at I-40 eastbound ramp         |   | Add right-turn channelization in southeast corner of the intersection. Move ped crossing from north side of intersection to south side. |                               | H        | Relatively low-cost, provides immediate safety benefits; keep future widening (Project #7) in mind when designing channelization.   |
| B                       | S. Willow Ave. (SR 135) at I-40 westbound ramp         |   | Move ped crossing from south side of intersection to north side.  |                               | H        | Relatively low-cost, provides immediate safety benefits and more efficient signal timing  |
| D                       | S. Willow Ave. (SR 135) at W. Jackson St.              |   | Provide dual northbound left-turn lanes. Provide exclusive westbound right-turn lane. Review access points on eastbound approach.       |                               | H        | Need to reduce PM peak hour congestion; also high crash area  |
| G                       | N. Willow Ave. (SR 135) at W. 12th St. (SR 290)        |   | Add a right-turn channelization island in the northwest corner of the intersection. Update crosswalk markings.                          |                               | H        | Relatively low-cost, provides immediate safety benefits to pedestrians, including students  |
| R                       | E. 10th St. at Fisk Rd.                                |   | Provide dedicated left-turn lanes, both northbound and southbound   |                               | H        | Can be implemented near-term to help with congestion prior to widening project  |
| 12                      | Widening of E. Spring St. (US 70N, SR 24)              | SR 111 to I-40                                  | Widen US 70N to 5 lanes   |                               | H        | Critical east-west corridor into downtown   |
| 13                      | Widening of E. Spring St. (US 70N, SR 24)              | E. Broad St. to SR 111                          | Widen to 5 lanes  |                               | H        | Critical east-west corridor into downtown   |
| 30                      | Widening of W. 12th St.                                | Mississippi Ave. to N. Washington Ave. (SR 136) | Widen to match cross section west of project  |                               | H        | Helps improve east-west connections as alternative to E. 10th St  |
| 4                       | Construction of Northern East-West Connector           | SR 290 to SR 111                                | New east-west route north of Cookeville, including grade-separated interchange at SR 111 and Quinland Lake Rd.                          |                               | H        | Could serve as an east-west alternate and potentially alleviate traffic on 12th St. and E. 10th St. In near-term, enhance signal coordination between intersections at SR 136 & E. 10th St and SR 136 & E. 12th St. to improve traffic flow between 12th and E. 10th. |
| 16                      | Widening of E. 10th St.                                | N. Washington Ave. (SR 136) to SR 111           | Widen to 5 lanes  |                               | H        | Critical east-west corridor into Cookeville to & from areas north and east. However, this is a high-cost, high-impact project. Building the Northern E-W Connector (Project #4) may help reduce demand.   |
| 29                      | Widening of Stevens St.                                | Buffalo Valley Rd. to S. Lowe Ave.              | Widen to 3 lanes with sidewalks   |                               | H        | In conjunction with redevelopment occurring in the area   |

**TABLE 8: PROPOSED PROJECTS, MAJOR STREET PLAN**

| Proj. No. | Project Name  | Limits  | Description   | Project Status | Priority | Comments  |
|-----------|---|---|---|----------------|----------|---|
| E         | S. Willow Ave (SR 135) at W. Stevens St.                    |   | Add eastbound left-turn lane.   |                | H        |   |
| H         | S. Jefferson Ave. (SR 136) at Bunker Hill Rd.               |   | Needs to include solution for Pilot truck stop access.  |                | H        | Projects H through L should be implemented together, and should be implemented in conjunction with Project #25 (Widening of SR 136 between I-40 and SR 111). Close proximity of these five intersections means that poor operations or queuing at one intersection can cause upstream effects.    |
| I         | S. Jefferson Ave. (SR 136) at I-40 eastbound ramp           |   | Provide dual eastbound left-turn lanes.   |                | H        |   |
| J         | S. Jefferson Ave. (SR 136) at I-40 westbound ramp           |   | Improve channelization of the two right-turn lanes. Implement no right-turn on red. Consider converting inner right-turn lane to shared right-left turn lane. |                | H        |   |
| K         | S. Jefferson Ave. (SR 136) at S. Walnut Ave. / Dubois St.   |   | Consider prohibiting westbound left turns.  |                | H        |   |
| L         | S. Jefferson Ave. (SR 136) at Interstate Dr./Neal St.       |   | Add dual westbound left-turn lanes on Interstate Dr. Provide dual northbound left-turn lanes on S. Jefferson Ave.   |                | H        |   |
| O         | E. Spring St. (US 70N, SR 24) at SR 111 southbound ramp     |   | Monitor, and signalize when traffic volumes warrant it.   |                | M        | Project P should be implemented in conjunction with Projects #12 and 13 (Widening of E. Spring St.) and Project O should be evaluated for signal warrants at the same time. Investigate interchange redesign, including non-conventional solutions such as a Diverging Diamond Interchange (DDI). |
| P         | E. Spring St. (US 70N, SR 24) at SR 111 northbound ramp     |   | Provide dual northbound left-turn lanes. Add receiving lane on the SR 111 on-ramp.  |                | H        |   |
| F         | S. Willow Ave. (SR 135) at W. Spring St. (US 70N, SR 24)    |   | Provide right-turn lanes on eastbound and westbound approaches. Review access on westbound approach.  |                | M        | Critical node, but still acceptable LOS in 2017 after signal optimization.  |
| Q         | W. Broad St. (US 70N, SR 24) at W. Jackson St. / Pippin Rd. |   | Provide a southbound left-turn lane on Pippin Rd.   |                | M        |   |
| S         | E. 10th St. at SR 111 northbound ramp                       |   | Provide additional northbound right-turn lane. Restrict right turns on red.   |                | M        |   |
| 19        | Construction of Turn Lane on W. Jackson St.                 | SR 135 to SR 136                                      | Add center turn lane  |                | M        | Projected for LOS D in 2040. Could begin programming ROW acquisition, as Jackson St. serves as key east-west corridor   |
| 9         | Construction of I-40 Parallel Access St.                    | Green Gate Ln. to Bunker Hill Rd. (S. of I-40)        | E-W connection S. of I-40 from SR 135 to SR 136   |                | M        | Discuss with TDOT the possibility of a collector-distributor ramp system along eastbound I-40 between SR 135 and SR 136.  |
| 18        | Extension of Commerce Ave. to E. Veterans Dr.               | Whitson Ave. to E. Veterans Dr.                       | Construct new road  |                | L        | A new roadway could help mitigate congestion on SR 136 between I-40 & Commerce St. However, note that a previous geotechnical study revealed significant presence of caves and sinkholes, so this is likely to be a costly project.   |
| 34        | Widening of W. Jackson St.                                  | W. Broad Street (US 70N, SR 24) to Buffalo Valley Rd. | Add center turn lane  |                | M        | Evaluate after Tennessee Ave. is complete   |
| 14        | Widening of W. Broad Street (US 70N, SR 24)                 | W. Spring St. to Tennessee Ave. (Project #2)          | Widen to 3 or 5 lanes   |                | M        | Projected 2040 LOS is still acceptable on W. Broad Street west of Cookeville; recommend monitoring future growth  |
| 17        | Extension of Foreman Drive                                  | Holladay Rd. towards S. Willow Ave. (SR 135)          | Construct new road to complete connection between Holladay Rd. and S. Willow Ave. (SR 135)  |                | M        | Consider in conjunction with improvements to Bill Smith Rd, outline ROW acquisition timeframe   |

**TABLE 8: PROPOSED PROJECTS, MAJOR STREET PLAN**

| Proj. No. | Project Name   | Limits   | Description  | Project Status                    | Priority | Comments  |
|-----------|--|--|--|-----------------------------------|----------|---|
| 7         | Widening of S. Willow Ave. (SR 135)                                      | South of I-40  | Increase capacity on SR 135 south of I-40  | Complete from I-40 to Gould Drive | M        | Once Highlands Business Park opens, and traffic from Academy Sports begins using the area, traffic volumes will increase.   |
| 23        | Improvements to Broad St. and Cedar St. Intersection                     |  | Realign intersection   |                                   | M        | Additional studies needed, given proximity of railroad and potential historic resources   |
| 26        | Extend Henley Dr. from Bunker Hill Rd. to existing terminus at Sams St.  | Bunker Hill Rd. to S. Jefferson Ave. (SR 136) via Henley Dr.     | Construct 3 lane roadway   |                                   | M        | Shift Sam's Club traffic to access SR 136 from Henley Dr. instead of using existing Bunker Hill /SR 136 intersection. This would improve operational issues along SR 136 near I-40. |
| 3         | Construction of Southern East-West Connector                             | New Tennessee Ave. interchange on I-40 to SR 111 in White County | E-W connection S. of I-40 from Tennessee Ave to SR 111 in White County (including interchanges with SR 135 and SR 136)   |                                   | M        | Provides east-west connectivity south of I-40 and alleviates use of I-40 as a local arterial  |
| C         | S. Willow Ave. (SR 135) at Interstate Dr/Foreman Dr.                     |  | Provide dual southbound left-turn lanes. Add eastbound through-right lane  |                                   | L        |   |
| M         | S. Jefferson Ave. (SR 136) at E. Jackson St.                             |  | Provide dual northbound left-turn lanes.   |                                   | L        |   |
| N         | E. Spring St. (US 70N, SR 24) at I-40 ramps                              |  | Monitor delay and queue lengths, and perform signal warrant analysis when delays increase.   |                                   | L        |   |
| 8         | Construction of Bunker Hill Rd. Tunnel/Bridge (S. Walnut Ave. Extension) | Connect Bunker Hill Rd. to S. Walnut Avenue                      | N-S connection parallel to and between SR 135 and SR 136   |                                   | L        | Advise further study once S. Jefferson Ave. is continuously operating at LOS E, or if land use changes significantly  |
| 27        | Construction of Connector Street from Salem Church Rd. to SR 111         | Salem Church Rd. to SR 111                                       | Signalize intersection and construct 3 lane road extending Osler Dr. (at the existing median U-turn facility on SR 111, entrance to Fortis Institute and Border States Electric properties). |                                   | L        | Evaluate further (the need for signalization of the SR 111 and Osler Dr. intersection & extension to Salem Church Rd.) if development along Neal Street intensifies                 |
| 28        | Widening of W. Cemetery Rd.  | Burgess Falls Rd. (SR 135) to Bunker Hill Rd.                    |  |                                   | L        | Continue to evaluate as development increases south of I-40. As development intensifies, program ROW acquisition.   |
| 24        | Extension of E. 15th St.   | Brown Ave. to Fisk Rd.   | Construct new road   |                                   | L        | Recommend more thorough study to assess which street (15th, 20th, Summerfield Rd) would be best to extend in this area of Cookeville  |
| 11        | Extension of Ferrell Dr.   | S. Jefferson Ave. (SR 136) to S. Maple Ave.                      | New east-west connection   |                                   | L        | Outline ROW acquisition timeline to provide future alternate E-W route south of I-40  |
| 31        | Extension of and improvements to Old Walton Rd.                          | Neal St. to E. Spring St. (US 70N, SR 24)                        | Widen and add sidewalks  |                                   | L        | Recommend acquiring ROW when planning & constructing Project #13  |
| 32        | Improvements to Holladay Rd.   | Lee Seminary Rd. to Buffalo Valley Rd.                           | Widen and add sidewalks  |                                   | L        | Evaluate further as development west of S. Willow Avenue intensifies  |
| 33        | Construction of I-40 Parallel Access Street                              | SR 111 S. of I-40 to E. Spring St. (US 70N, SR 24)               | Construct 2 or 3 lane roadway  |                                   | L        | Evaluate further as development east of SR 111 intensifies, begin planning and programming ROW acquisition  |
| 35        | Construction of Intersection and Connecting Street on Tennessee Ave      | 700 ft S. of Nashville & Eastern Rail ROW                        | Encourage development  |                                   | L        | Evaluate after Tennessee Ave. is complete   |
| 36        | Construction of Intersection and Connecting Street on Tennessee Ave      | 1400 ft S. of Buffalo Valley Rd.                                 | Encourage development  |                                   | L        | Evaluate after Tennessee Ave. is complete   |
| 37        | Construction of Intersection and Connecting Street on Tennessee Ave      | 1500 ft S. of Project No. 36                                     | Encourage development  |                                   | L        | Evaluate after Tennessee Ave. is complete   |
| 38        | Construction of Intersection and Connecting Street on Tennessee Ave      | 1500 ft N. of I-40   | Encourage development  |                                   | L        | Evaluate after Tennessee Ave. is complete   |