
RECORD OF DECISION

PELLISSIPPI PARKWAY EXTENSION (State Route 162)

**from State Route 33 (Old Knoxville Highway) to
US 321/State Route 73/Lamar Alexander Parkway**

BLOUNT COUNTY, TENNESSEE

Submitted Pursuant to 42 USC 4332(2)(c)

U.S. Department of Transportation, Federal Highway Administration
Tennessee Department of Transportation

Cooperating Agencies:
US Army Corps of Engineers
Tennessee Valley Authority

August 2017

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8/31/17

Date

Pamela Markland

Federal Highway Administration, Tennessee Division
Division Administrator

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LIST OF ENVIRONMENTAL COMMITMENTS

In addition to following the standard requirements of the Tennessee Department of Transportation (TDOT) *Standard Specifications for Road and Bridge Construction*, the following commitments will be executed.

Environmental Justice—TDOT will build a noise barrier for the Kensington Place mobile home community to mitigate the predicted noise impacts, provided that the majority of benefited residents and property owner(s) give their approval. TDOT will conclude that a community desires the construction of a noise barrier unless a majority (at least 51 percent) of the benefited property owners and residents indicate that they do not want the proposed noise barrier. TDOT will seek input from community residents regarding the landscaping and color/pattern of the barrier in order to minimize possible visual impacts to the community as a result of the barrier and the new roadway.

Noise— To minimize adverse impacts to Area 4 (Kensington Place mobile home community), TDOT will build a noise barrier for the community. TDOT will conclude that a community desires the construction of a noise barrier unless a majority (at least 51 percent) of the benefited property owners and residents indicate that they do not want the proposed noise barrier.

Threatened and Endangered Species—

- TDOT will coordinate with the Tennessee Wildlife Resources Agency (TWRA) regarding methods to minimize potential impacts to terrestrial and aquatic species under TWRA's authority in the event species of concern are discovered during TWRA's future aquatic species surveys near proposed stream crossings. TDOT will protect groundwater resources if previously unknown species are identified by TWRA or other resources agencies.
- Where possible, removal of trees with loose bark and greater than 6 inches in diameter at breast height will occur only between October 15 and March 31 to further minimize potential for impacts to the Indiana bat (*Myotis sodalis*).
- Erosion and siltation control best management practices (BMPs) will be stringently adhered to since several of the threatened or endangered aquatic species noted in the Final Environmental Impact Statement (FEIS) have been found downstream of the project.
- The contractor will be required to prepare and implement a revegetation plan that has been approved by TDOT. If an area of mixed forest must be permanently removed for temporary use (i.e., construction staging), it will be replaced with plantings of native tree species within the affected area. The contractor will adhere to project requirements identified in the 2013 Biological Assessment, the US Fish and Wildlife Service (USFWS) letter dated July 26, 2013, and the USFWS letter dated May 28, 2015, contained in Attachment C-2 and Attachment I of the FEIS, September 10, 2015.
- TDOT will re-coordinate with the USFWS, TWRA and Tennessee Department of Environment and Conservation (TDEC) for potential impacts to listed or proposed species prior to the construction of the project. If unanticipated threatened or endangered species are encountered, the proposed project is modified, or new species are listed in the area, the Federal Highway Administration (FHWA) will enter into appropriate consultation with USFWS.

Invasive Species—During construction of the proposed project, TDOT will follow the guidelines of *Executive Order 13112* to control and prevent the spread of invasive exotic pest plant species. The use of native trees, shrubs, and warm season grasses, where practicable, will be implemented for the stabilization of disturbed areas and to prevent revegetation of disturbed areas by harmful exotic plants. Disturbed areas will not be revegetated with plants listed by the Tennessee Exotic Pest Plant Council as harmful exotic plants.

Wetland and Streams—TDOT will provide the US Army Corps of Engineers (USACE), USFWS, Tennessee Valley Authority (TVA), TDEC, and TWRA with copies of the Environmental Boundaries Study and Mitigation Memorandum prior to submitting the permit application. TDOT will invite USACE to participate in a field review to make a jurisdictional determination for any of the streams and wetlands that will be impacted by the project, at USACE's discretion. TDOT will provide the permitting agencies and the Environmental Protection Agency (EPA) with an opportunity to comment on the Draft Final Mitigation package for the project, which will include project related wetland and stream information, prior to formal submittal of the permit applications. TDOT will carry out any required mitigation for jurisdictional stream and wetland impacts, which is a condition of the permit.

Karst Topography—During final design and construction, TDOT will take special care to minimize unnecessary impacts to the habitat of the numerous karst features (specifically sinkholes) in the study area. TDOT will abide by all permit terms, including those through TDEC's Underground Injection Control (UIC) program.

Farmlands—During final design of the project, TDOT will work with the farming community, through individual or community meetings, to reduce the impact on farmlands as much as possible based on available design solutions.

Historic Resources—If the project involves relocating the Anne Elizabeth Thompson Pershing historic marker along Buchanan Road, which was identified by the Tennessee Historical Commission as Blount (BT).2361, the marker will be relocated and installed in a pull-off area, which is safer and makes the marker more accessible to the public.

Archaeological Resources—Pursuant to TCA 11-6-107(d), if human remains are identified, construction work must be halted and the state archaeologist, the county coroner, and local law enforcement must be contacted immediately. In addition, representatives of Native American tribes will be notified in the event they wish to be present.

Airport Coordination—Since the northern half of the project area is within 6 miles of the McGhee Tyson Airport, once the design of the project is underway, TDOT will inform the Federal Aviation Administration (FAA) Memphis Airports District Office of the nature of construction. TDOT will provide detailed layout drawings and elevations to the FAA along with the completed FAA Form 7460-1, Notice of Proposed Construction or Alteration.

Construction Impacts—Construction activities will be confined within the permitted limits to prevent unnecessary disturbance of adjacent streams and wetland areas.

Bicycle and Pedestrian Facilities—During the design process, TDOT will investigate the provision of bicycle and pedestrian facilities within the project right-of-way. If TDOT determines that the provision of such facilities is feasible, the facilities will be developed as a separate project and TDOT will work with the Knoxville Regional Transportation Planning Organization (TPO) and local governments to determine sources of funding for the construction and maintenance of the bicycle and pedestrian facilities.

1. DECISION

The subject project involves extending and constructing a new section of Pellissippi Parkway (State Route [SR] 162) in Blount County, Tennessee. The project begins at the current terminus of Pellissippi Parkway/Interstate 140 (I-140) and extends from SR 33 (Old Knoxville Highway) to US 321/SR 73 (Lamar Alexander Parkway) in Blount County. The project is about 4.38 miles in length.

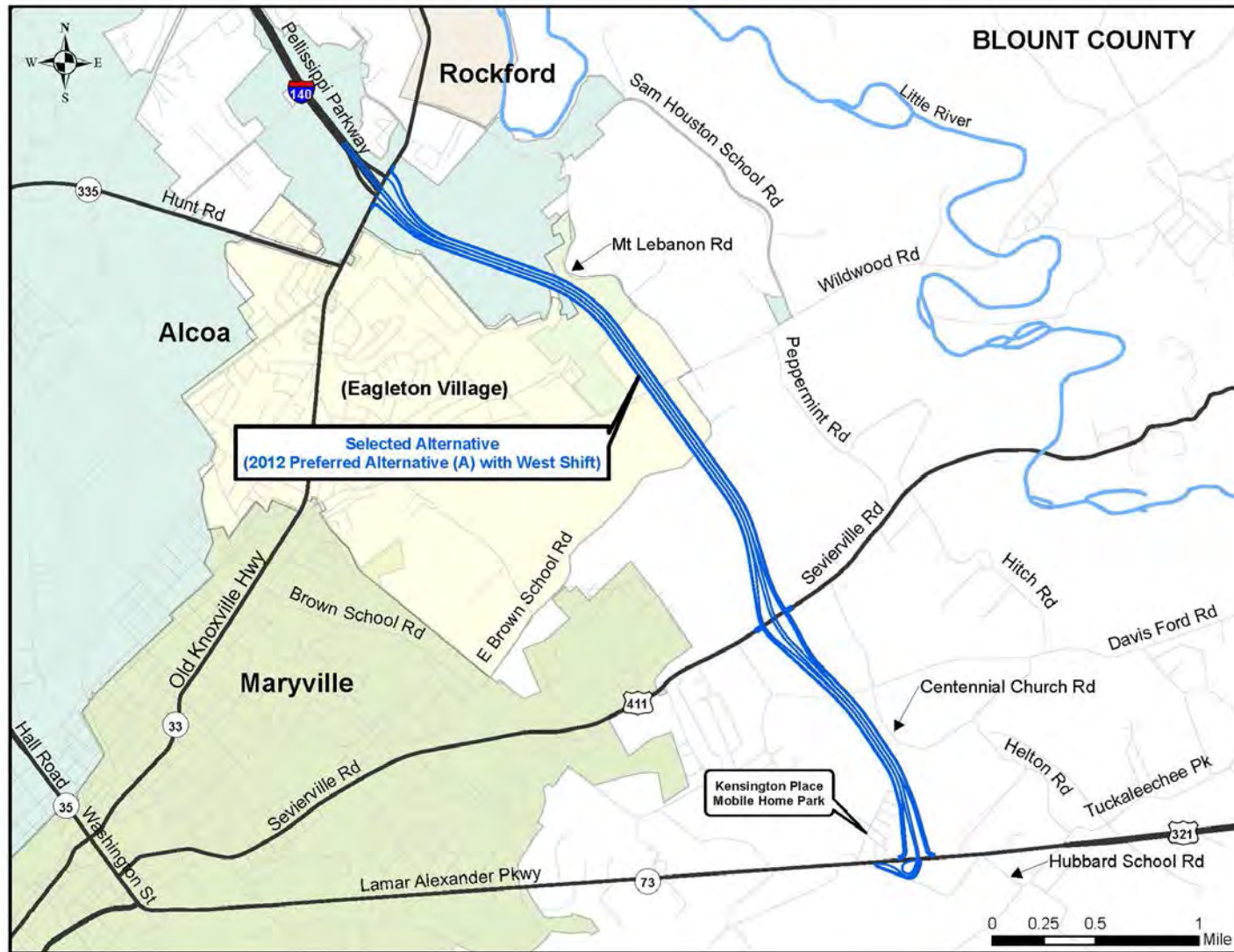
The Federal Highway Administration (FHWA) has approved the Selected Alternative (Preferred Alternative identified in the Final Environmental Impact Statement (FEIS)) to complete the extension of Pellissippi Parkway to US 321/SR 73; **Figure 1** illustrates the location of the Selected Alternative. The decision includes concurrence with the project location, preliminary design, capacity and proposed draft mitigation.

FHWA and the Tennessee Department of Transportation (TDOT) identified the Draft Environmental Impact Statement's (DEIS) Alternative A as the project's Preferred Alternative in 2012 following the close of the DEIS comment period in 2010 and after additional traffic studies were conducted in 2011 and 2012. In 2013, the Preferred Alternative (hereafter referred to as the 2012 Preferred Alternative (A)) was modified with a minor alignment shift to avoid a newly identified National Register of Historic Places (NRHP) eligible archaeology site. An approved reevaluation of the DEIS in 2014 confirmed the 2012 Preferred Alternative (A) with the West Shift as the project's Preferred Alternative. Based upon public comments received on the DEIS and in coordination with environmental resource and regulatory agencies, the 2012 Preferred Alternative (A) modified by the West Shift was confirmed as the project's Preferred Alternative, as documented in the approved FEIS (September 10, 2015). The 2012 Preferred Alternative (A) with the West Shift was selected because it has, in balance and through mitigation, lower overall impacts in comparison to the other alternatives considered. The FEIS included details of the decision-making process and reasons for selecting the Preferred Alternative. A complete description of the Preferred Alternative and its anticipated impacts was also included in the FEIS.

In accordance with the National Environmental Policy Act (NEPA) and the requirements set forth by the Council on Environmental Quality (CEQ) (40 CFR 1505.2), this ROD:

- Identifies the Selected Alternative for the Pellissippi Parkway Extension Improvement Project;
- Summarizes all alternatives considered by the FHWA and the factors included in the evaluation process;
- Describes the measures adopted to avoid and/or minimize environmental harm;
- Identifies monitoring and enforcement programs for the implementation of mitigation measures; and
- Responds to comments received on the FEIS.

Figure 1: Selected Alternative



Source: WSP 2017.

2. PURPOSE AND NEED

The proposed action is intended to address identified transportation needs in the study area. These needs have been identified during the public and agency coordination activities conducted for the project between April 2006 and February 2008, as well as through prior planning efforts and review of current transportation and community plans. The transportation needs are:

- Limited mobility options in Blount County and Maryville because of the county's primarily radial roadway network.
- Poor local road network with substandard cross sections (with narrow lanes, sharp curves, and insufficient shoulders) in the eastern portion of the county.
- Lack of a northwest/east connection east of Alcoa and Maryville to help serve:
 - Expanding residential development occurring in eastern Alcoa and Maryville and northeastern Blount County
 - Demand for trips between Maryville and Alcoa and the Knoxville area to the north as shown by current high traffic volumes between the areas on US 129 (approximately 40,090 vehicles per day) and SR 33 (approximately 6,230 vehicles per day).
- Safety issues on roadways in the area, including roads in the Maryville core. People traveling between the north and western portions of the county and the eastern portions of the county must pass through the Maryville core. Numerous rear-end crashes and angle crashes reported due to high volumes of traffic and lack of access management along the roadways.
- Traffic congestion and poor levels of traffic operation on major arterial roads (in particular US 129, SR 33, and US 411) and intersections in the study area.

Based on input received from local officials and the public as well as reviews of previous planning studies and current plans, the objectives developed for this study are:

- Provide travel options for motorists to the county's existing radial roadway network.
- Enhance the regional transportation system linkages.
- Enhance roadway safety on the county's roadway network, including the Maryville core.
- Assist in achieving acceptable traffic operations on the transportation network or avoid adversely affecting traffic operations on the existing transportation network.

Other objectives include:

- Support community goals and plans
- Minimize adverse impacts to neighborhoods and businesses
- Minimize adverse impacts to farmlands
- Minimize adverse impacts to the natural and cultural environment

3. ALTERNATIVES CONSIDERED

The following alternatives were considered in the decision-making process for the project:

- No-Build Alternative
- Two four-lane Build Alternatives (A and C)
- One enhanced two-lane Build Alternative (D)
- Two modifications of the 2012 Preferred Alternative (A)

Each of these alternatives is summarized below.

3.1. No-Build Alternative

The No-Build Alternative would not extend Pellissippi Parkway beyond its existing terminus at SR 33 to US 321. It assumes that several other capacity-enhancing and safety-related projects in the study area would be constructed or implemented, as identified in the Knoxville Regional Transportation Planning Organization's (Knoxville Regional TPO) *Regional Mobility Plan 2040*.

The No-Build Alternative would retain the radial road network in the county and provide few travel options for motorists traveling between the northern and eastern portions of the county. It would not be consistent with community growth plans or the regional transportation plans. The No-Build Alternative was dismissed since it would not meet the purpose and need of the project.

3.2. Three Build Alternatives

The DEIS, approved on April 14, 2010, evaluated three build alternatives: Alternative A, Alternative C, and Alternative D.

Alternative A proposed extending Pellissippi Parkway as a four-lane divided roadway for 4.38 miles from SR 33 to US 321/SR 73. It proposed three interchanges: with SR 33, US 411/Sevierville Road, and US 321/SR 73. The proposed typical section for Alternative A consisted of two 12-foot travel lanes in each direction, 12-foot outside shoulders, and a 48-foot depressed median with 6-foot inside shoulders. The proposed right-of-way (ROW) was a minimum of 300 feet, and the road would be designed for traffic traveling at 60 miles per hour (mph), although the posted speed may be lower. No homes within the Kensington Place Mobile Home Park would have been displaced under this alternative, but Alternative A would have likely resulted in visual and noise impacts to the neighborhood as it would have skirted the northeastern and eastern boundary. This alternative would acquire the largest number of acres of farmland (though not the most number of acres of prime or unique farmland), would have the highest amount of stream crossings and would affect the largest amount of wetlands.

In 2012 following the close of the comment period for the DEIS and additional traffic studies, Alternative A was chosen as the Preferred Alternative (hereafter referred to as the 2012 Preferred Alternative [A]) because it had the least number of residential

displacements, had the greatest physical distance/separation from Little River, and had the support of local officials. **Figure 2** illustrates the 2012 Preferred Alternative (A).

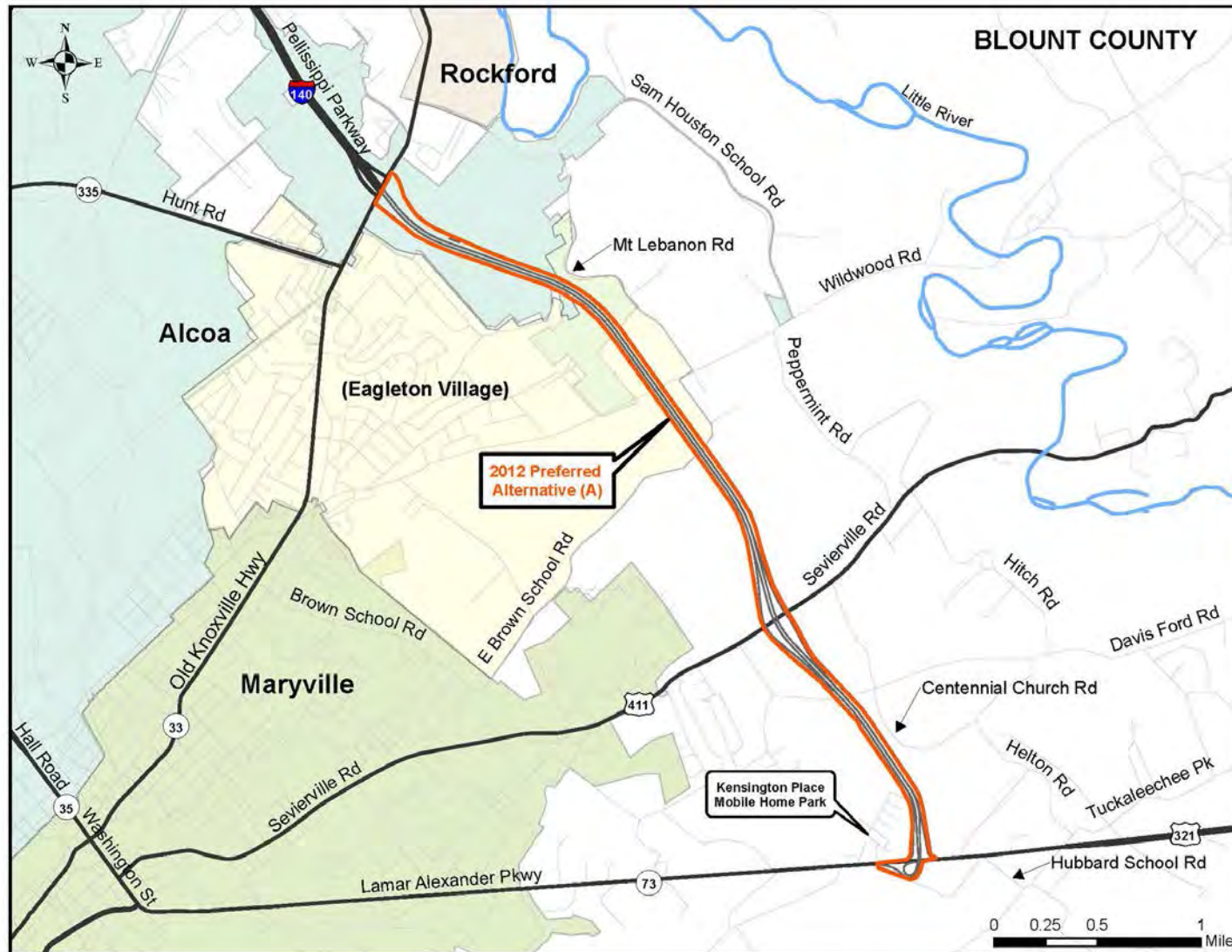
Alternative C used the same proposed typical roadway cross-section as Alternative A. It shared the same alignment as Alternative A from the project beginning at SR 33 to the vicinity of Brown School Road, at which point it diverged to the east, following a southeasterly course. It intersected with US 411/Sevierville Road about 0.6 mile east of Alternative A and continued southeasterly and then southerly to its termination at US 321/SR 73 in the vicinity of Hubbard School Road. The length of Alternative C was 4.68 miles. The road would be designed for traffic traveling at 60 mph, although the posted speed may be lower. Of the alternatives considered, Alternative C had the highest construction cost, required the highest amount of additional ROW, and the highest number of hazardous materials sites. This alternative also had substantially higher residential displacements than did Alternative A. In comparison with Alternative A, this alternative received little support from local officials, agencies and the public. Based on these factors (which reflected updates of technical studies since approval of the DEIS), it was eliminated as an alternative.

Alternative D proposed upgrading an existing network of two-lane roads in the area (Sam Houston School Road, Peppermint Road, Hitch Road, and Helton Road) to serve as a two-lane connection between SR 33 and US 321/SR 73. Under this alternative, an improved two-lane roadway would have been constructed using the existing roadway alignment where possible, while straightening curves, realigning intersections and using new locations to provide a continuous route with a 50-mph design speed, within a 150-foot ROW. The proposed roadway typical section consisted of one 12-foot travel lane in each direction with 10-foot outside shoulders with a center turn lane at major intersections, if necessary. The length of Alternative D was 5.77 miles. Alternative D had the highest number of residential and business relocations (based on updated information provided in the approved reevaluation of the DEIS [Table 13] and the FEIS [Tables 2-7 and 3-37]). Additional traffic studies prepared since the DEIS have demonstrated that forecasted traffic would exceed the carrying capacity of local roads, and the alternative would result in poor traffic operation (level of service (LOS) E or F) on area roadways and intersections and increased delay at several key intersections. Alternative D received little support from local officials, agencies and the public. Based on these factors, it was eliminated as an alternative.

3.3. Two Modifications Considered for 2012 Preferred Alternative (A)

Following the 2012 selection of the Preferred Alternative (A), Phase II archaeological investigations conducted for that alternative identified one site as eligible for listing on the National Register of Historic Places (NRHP). Since the 2012 Preferred Alternative (A) had already been analyzed and selected over the other DEIS alternatives, TDOT focused on identifying potential avoidance options via two minor alignment shifts near the sensitive portion of the eligible archaeological site rather than major shifts of the alignment. TDOT identified and investigated two possible minor shifts in the alignment of the 2012 Preferred Alternative (A) between Davis Ford Road and US 321/SR 73 (the southern terminus of the project).

Figure 2: 2012 Preferred Alternative (A)



Source: WSP 2017.

The two proposed minor alignment shifts, shown in **Figure 3**, were:

- The East Shift would move the ROW about 300 feet eastward, away from the Kensington Place mobile home community and toward the developing Sweetgrass Plantation subdivision.
- The West Shift would move the ROW about 150 feet to the west, which would encroach into the northeastern corner of the Kensington Place mobile home community.

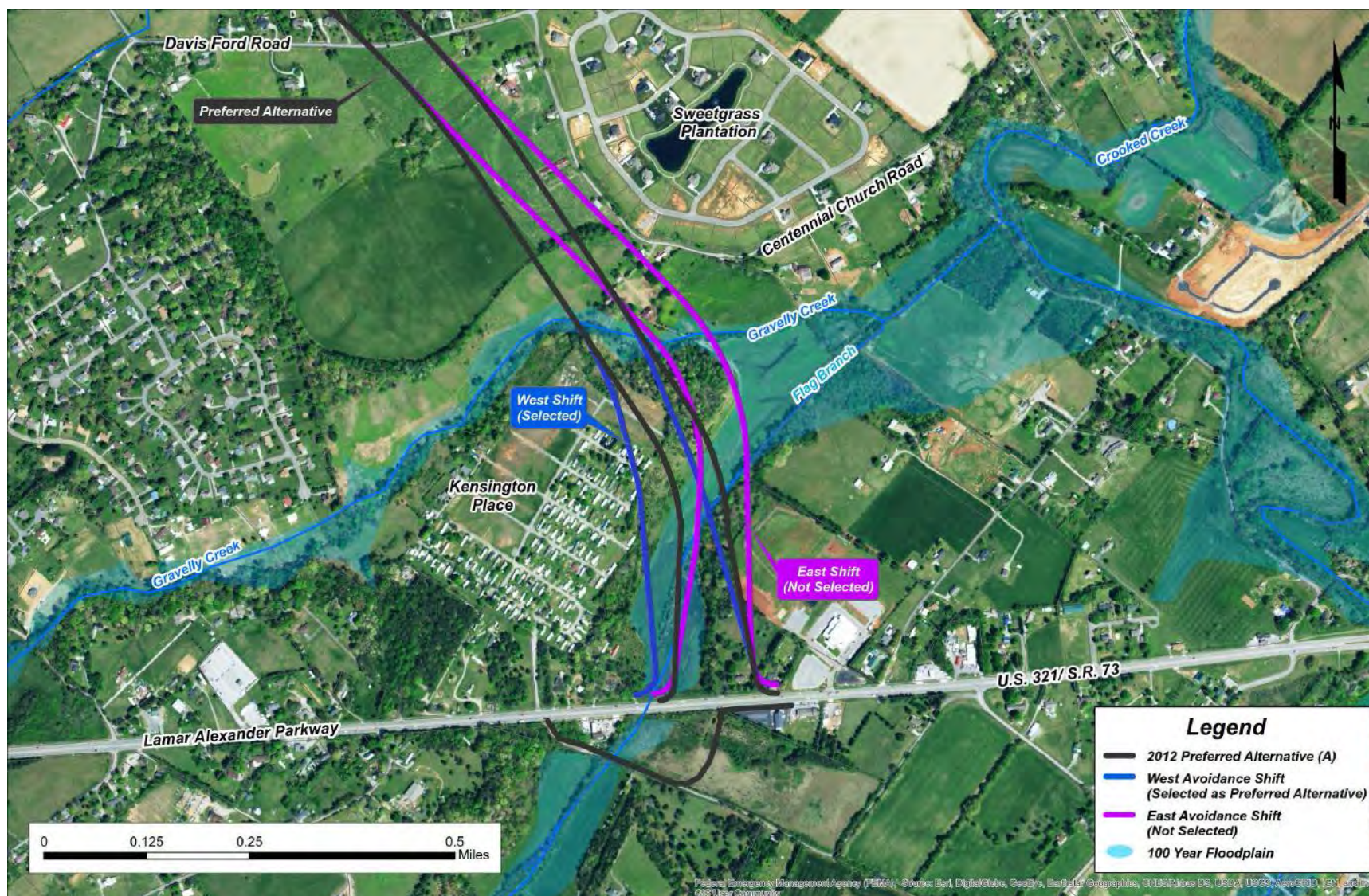
The typical section of each alignment shift was the same as defined for the 2012 Preferred Alternative (A)—a four-lane divided roadway with a 48-foot depressed median. Each avoidance shift would extend about 1.4 miles between Davis Ford Road and US 321/SR 73.

TDOT investigated potential archaeology, noise, ecology, farmland, relocations, and environmental justice impacts for each shift. The two potential alignment shifts and the impacts of these shifts were presented to the public at a Community Briefing held on May 30, 2013 in the project area.

Based on consideration of the amount and type of impacts of each shift, the potential to mitigate adverse effects, and public input received during the May 30, 2013 Community Briefing and associated comment period, TDOT determined that the alignment of the 2012 Preferred Alternative (A) was best modified by the West Shift. The reasons for the selection of the West Shift were:

- The West Shift minimized impacts to the operations of two active farms.
- The West Shift was farther away from a recently constructed church, thus minimizing potential access impacts to the church.
- With either alignment shift, Kensington Place residents would experience increased noise levels. With the East Shift, the mobile home community would not be eligible for a noise barrier. With the West Shift, the Kensington Place mobile home community would be potentially eligible for a noise barrier that will minimize both noise and visual impacts. Should this alternative be approved as the Selected Alternative, TDOT is committed to building a noise barrier for this community, provided that the majority of benefited residents and property owner(s) give their approval. TDOT will also allow the Kensington Place residences to have input into the landscaping and color/patterns for the noise barrier.
- While the West Shift would increase impacts to streams, wetlands and floodplains, these would be minimized during the design and permitting phases of the project.
- Since the Kensington Place mobile home community is not completely occupied, displaced residents who want to stay within their existing community may be able to relocate to one of the numerous site pads available, if they so choose.
- While there would be adverse impacts within Kensington Place with the West Shift, TDOT and FHWA determined through an environmental justice analysis that these impacts would not change the finding of the approved DEIS and that the project would have no disproportionately high and adverse impacts to minority and low-income populations compared with the rest of the corridor pursuant to Title VI of the 1964 *Civil Rights Act* and *Executive Order 12898*.

Figure 3: Alignment Shifts Considered in 2013



Source: WSP 2017.

4. REEVALUATION OF DRAFT ENVIRONMENTAL IMPACT STATEMENT

Because more than three years had passed since the 2010 DEIS was circulated, in 2013 TDOT initiated a reevaluation of the DEIS pursuant to 23 Code of Federal Regulations (CFR) 771, FHWA's NEPA implementing regulations. The purpose of the reevaluation was to determine whether the modification of the Preferred Alternative, the 2013 major update of the regional travel demand model, and changes in the project area since 2010 would result in significant adverse impacts that had not been identified in the approved DEIS and whether a Supplemental DEIS (SDEIS) or a new DEIS needed to be prepared.

The reevaluation considered the DEIS alternatives as well as the two proposed modifications to the 2012 Preferred Alternative (A) considered after the DEIS was circulated. The reevaluation assessed the changes in conditions in the project area since the DEIS and the updated impact analyses for traffic and potentially affected resources including displacements, Environmental Justice, noise, floodplains, streams, and wetlands. The substantial changes that occurred between the DEIS circulation and the approval of the FEIS include the following:

- The selection of DEIS Alternative (A) as the Preferred Alternative in 2012 based on the DEIS evaluation and comments on the DEIS received from agencies and the public.
- Two minor alignment modifications (East Shift and West Shift) of the 2012 Preferred Alternative (A) were identified in 2013 to avoid an NRHP-eligible archaeology site that was identified during the Phase II archaeological investigation. The East Shift would move the Preferred Alternative's alignment outside of the Kensington Place mobile home park, while the West Shift would move the alignment about 150 feet to the west, extending farther into the northeastern corner of the Kensington Place mobile home community and requiring the relocation of six mobile homes.
- TDOT's selection of the West Shift to modify the Preferred Alternative in July 2013.
- TDOT's adoption of a new Noise Policy in 2011.
- Additional estimated impacts to streams and wetlands. The increase is explained in part by the changed conditions at the time of the 2013 field surveys compared to the 2008 field surveys; in 2008, precipitation was well below average for the region. In addition, the 2013 field surveys revealed hydrological changes that have occurred as a result of substantial beaver activity near the southern terminus of the project. A previously identified small wetland is now substantially larger due to beaver activity in the area, and would be affected by the Preferred Alternative (A), Preferred Alternative with East Shift and Preferred Alternative with West Shift.
- The Knoxville TPO adopted a new travel demand model in June 2013, which included significant revisions to the model's structure, network, socio-economic assumptions, and calibration. The changes were enhancements aimed at improving the accuracy of the model's forecasts. Combined, the changes in the model resulted in lower forecasted traffic volumes for the Pellissippi Parkway Extension alternatives.

Based on the results presented in the reevaluation, the Preferred Alternative incorporating the West Shift was confirmed as the project's Preferred Alternative. In addition, the reevaluation found that the modification of the Preferred Alternative and other changes in the project and in the project area since the DEIS was circulated would not result in significant environmental impacts that had not been evaluated in the approved DEIS. Therefore, a SDEIS or a new DEIS was not warranted. FHWA approved the DEIS reevaluation on July 17, 2014.

5. SELECTED ALTERNATIVE

The Preferred Alternative has been chosen by TDOT and FHWA as the Selected Alternative for the proposed project after the review of potential social, ecological, and cultural impacts as well as the consideration of public and agency comments on the FEIS. The Preferred Alternative was selected because it best meets the purpose and need of the project while minimizing impacts to the environment and the community. All practicable means to avoid or minimize environmental harm from the Selected Alternative have been adopted.

DEIS Alternative A was initially selected as the Preferred Alternative in 2012 because it:

- Displaced the least number of residences in comparison to Alternatives C and D.
- Had the greatest physical distance/separation from Little River, a designated Exceptional Tennessee Water¹, when compared to Alternatives C and D.
- Had the support of local officials. Resolutions were received in 2011 from the legislative bodies of the cities of Maryville and Alcoa and Blount County, each stating support for the selection of Alternative A as the Preferred Alternative. See Attachment C for copies of the resolutions.

The Selected Alternative meets the purpose and need of the project in that it:

- Completes Pellissippi Parkway (SR 162/I-140) as envisioned by local and regional plans;
- Creates a non-radial transportation route in the growing area of northeastern Blount County where such a route has been lacking; and
- Produces a substantial decrease in delays in most of the intersections in the Maryville core.

While there were some agency concerns with the Selected Alternative, this alternative was selected because of its ability to best balance the various project impacts while meeting the purpose and need for the project. The Selected Alternative has slightly greater impacts to streams, floodplains and wetlands that will be mitigated through the implementation of mitigation measures during the design and construction of the proposed project. The project also minimizes impacts to residents of the mobile home community through construction of a noise barrier and participation by residents of the mobile home community in the landscaping and color/pattern of the noise barrier.

¹ In several locations in the DEIS and FEIS, the text incorrectly described the Little River through the project area as a designated Exceptional Tennessee Water (ETW). The ETW designation applies only to that segment of the Little River that lies within the Great Smoky Mountains National Park, about 15 miles upstream of the project area.

The FEIS was prepared in accordance with 23 CFR 771.125 and was approved by FHWA on September 10, 2015. A Notice of Availability (NOA) of the FEIS was published in the *Federal Register* on September 18, 2015. An amended notice extending the comment period from October 19, 2015 to November 18, 2015 was published in the *Federal Register* on October 9, 2015.

The project is included in the current Knoxville Regional TPO's 2014-2017 Transportation Improvement Program (TIP) as project 17-2014-025. The TIP page for the project is included in Appendix B.

6. ENVIRONMENTAL CONSIDERATIONS

6.1. Section 4(f)

The Selected Alternative will not affect any Section 4(f) properties.

6.2. Endangered Species

In 2013 the US Fish and Wildlife Service (USFWS) identified five federally listed species in the vicinity of the project: Indiana bat (*Myotis sodalis*), snail darter (*Percina tanasi*), fine-rayed pigtoe (*Fusconaia cuneolus*), and marbled darter (*Etheostoma marmorinum*). In April 2015, USFWS identified the Northern long-eared bat (*Myotis septentrionalis*) as a new federally listed species that may occur in the project area. In a letter dated May 28, 2015, USFWS stated that since TDOT has committed to re-coordinating with the USFWS for potential impacts to listed or proposed species prior to the construction of the project, "the requirements of Section 7 of the *Endangered Species Act of 1973*, as amended, are fulfilled for all species that currently receive protection under the Act" (FEIS Attachment C-2). Prior to construction of the Selected Alternative, TDOT will conduct an updated environmental boundary and mitigation report and a new bat study for the absence or presence of the Indiana bat and the Northern long-eared bat in consultation with the USFWS, Tennessee Wildlife Resources Agency (TWRA), and Tennessee Department of Environment and Conservation (TDEC). In addition, if unanticipated threatened or endangered species are encountered, the proposed project is modified, or new species are listed in the area, FHWA will enter into appropriate consultation with USFWS.

6.3. Environmental Justice

An Environmental Justice (EJ) analysis was completed as part of the 2014 reevaluation of the DEIS and was incorporated, with minor revisions in 2015, into the FEIS. The affected populations for this analysis, or populations with the greatest likelihood of experiencing impacts, reside in 2010 Census Block Groups (BGs) that intersect the Selected Alternative alignment. The EJ analysis identified one BG (Census Tract 110.01, BG 1) with a substantially higher percentage of population below the poverty level (27.7 percent) compared with the county and most of the other surrounding block groups. This block group includes the Kensington Place mobile home community. The census blocks that comprise the mobile home park have a much higher share of minority residents (23.3 percent) compared with the majority of the surrounding area; most of the minority population in the community is Hispanic (19.9 percent). Kensington Place has been identified as an EJ community.

Of the projected 11 single-family relocations associated with the Selected Alternative, six are within the Kensington Place mobile home community. There are available lots within Kensington Place where displaced residents may choose to relocate.

The Selected Alternative will place a major new transportation facility within the northeastern corner of the Kensington Place property. Some of the residents, primarily those in the northeastern portion of the mobile home community, will likely experience a substantial change in their existing view, from natural vegetation and agricultural activities to a new major roadway. The new edge of ROW would be within 10 to 50 feet of several mobile homes.

A review of the noise impact analysis for the Selected Alternative indicated that of the 103 impacted residences within the overall project area, 48 residences in the Kensington Place mobile home community would be impacted, assuming a noise barrier would not be built. Noise barriers were evaluated to mitigate the predicted noise impacts in the Kensington Place mobile home community and were determined preliminarily to be both feasible and reasonable for the Selected Alternative. With a noise barrier in place, 21 residences in the Kensington Place community would be impacted.

To minimize adverse impacts to the mobile home community, TDOT will build a noise barrier for the community as part of the Selected Alternative, provided the benefited residents and property owners give their approval. TDOT will conclude that a community desires the construction of a noise barrier unless a majority (at least 51 percent) of the benefited residents and property owners indicate that they do not want the proposed noise barrier. Should the community residents give approval for a noise barrier to be built, TDOT will seek input from the residents during the design phase of the Selected Alternative regarding the landscaping and color/pattern of the barrier. This measure is intended to minimize possible visual impacts to the community as a result of the barrier and the new roadway.

As a result of the proposed mitigation that TDOT has committed to carry out, the Selected Alternative will not result in a disproportionately high and adverse effect on minority or low-income populations.

6.4. Permits Required

The acquisition of any required permits will occur prior to initiation of construction activities, pursuant to Section 69-3-108(a) of the *Tennessee Water Quality Control Act of 1977* and other State and Federal laws and regulations. Permits anticipated to be required for this project include:

- Individual or general Aquatic Resource Alteration Permits (ARAP) from the State of Tennessee.
- Individual or Nationwide permit for impacts to waters of the U.S. (including wetlands and aquatic resources) from the US Army Corps of Engineers (USACE) pursuant to Section 404 of the *Clean Water Act*. Other agencies, such as USFWS and the US Environmental Protection Agency (EPA), may be involved in the permitting process.
- Tennessee Valley Authority (TVA) 26a permit for construction activities that occur in floodplains and perennial streams and rivers within the Tennessee River watershed.

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- National Pollutant Discharge Elimination System (NPDES) Stormwater General Permit for Construction Activities for construction projects disturbing one or more acres of land.
 - TDEC Underground Injection Control (UIC) permit if water is flowing into an open sinkhole or cave or for any impact that may affect the ground water via a sinkhole.

Prior to the formal submittal of permit applications to the permitting agencies, TDOT will make the Draft Final Mitigation package available for review and comment to all current TESA agencies and the EPA. The Draft Final Mitigation package represents the final concurrence point (CP 4) under the current Tennessee Environmental Streamlining Agreement (TESA), revised January 2014; this concurrence point occurs after the issuance of the Record of Decision (ROD) and prior to the submittal of the permit application. The TESA process for this project was concluded in May 2012, under the original TESA agreement (2008); at that time CP 4 was the Preferred Alternative and Preliminary Mitigation, occurring between the completion of the DEIS review period and the preparation of the FEIS. The Draft Final Mitigation package for this project will be prepared and submitted to the agencies for review and comment, rather than for concurrence.

7. AGENCY AND PUBLIC COORDINATION

The development of this project was coordinated closely with the public following *National Environmental Policy Act* (NEPA) and FHWA requirements as provided in 40 CFR 1506, 23 United States Code (USC) 128 and 23 CFR 771, respectively. The project also adheres to TDOT's 2007 Public Involvement Plan. Additionally, a project-specific Coordination Plan, required by the *Safe, Accountable, Flexible, Efficient Transportation Equity Act – a Legacy for Users* (SAFETEA-LU), was developed to define the process by which information about the project would be communicated to the cooperating, participating, and other agencies and to the public. The Coordination Plan also identified how input from agencies and the public would be solicited and considered. The project-specific Coordination Plan has been posted on the project website.

Public meetings/hearings conducted for this project have included two scoping meetings (2006), an alternatives workshop (2007), a public information meeting (2008), a public hearing for the DEIS (2010), and a community briefing (2013). The public was also kept informed about the project through the project website, newsletters, flyers, press releases and public notices in local and regional newspapers.

Outreach to the EJ community has been conducted during the project. In 2010, copies of the Notice of Availability for the DEIS and the public hearing notice were hand-delivered to the Kensington Place mobile home community manager for distribution to the residents. Prior to the May 30, 2013 community briefing on the potential shifts in the alignment of the 2012 Preferred Alternative (A), TDOT mailed a flyer advertising the briefing, printed in both English and Spanish, to the 97 occupied mobile home community residents. At the community briefing, TDOT provided materials (i.e., handouts and PowerPoint presentation) in English and Spanish and provided a Spanish translator to ensure full understanding of the concepts presented.

The EIS has been coordinated with interested parties and the appropriate local, state, and federal agencies, and was made available for public comment. TVA and USACE are cooperating agencies for the project and were involved in the development of the EIS. The comments received from interested parties, agencies and the public have been addressed in the FEIS.

7.1. Review Period for the FEIS

FHWA published the NOA of the FEIS in the *Federal Register* on September 18, 2015 and provided a 30-day review period, to close on October 19, 2015. In response to requests to extend the review period to allow the public more time to review the FEIS, FHWA agree to extend the review period by 30 days. The review period for the FEIS ended on November 18, 2015. With the extension, the official review period lasted a total of 60 days – far exceeding the minimum 30-day period established by regulation.

FHWA and CEQ regulations do not require a period for comments following the FEIS, however, pursuant to FHWA Technical Advisory 6640.8A, “All substantive comments received on the final EIS should be identified and given appropriate responses. Other comments should be summarized and responses provided where appropriate.” Therefore, for this project, TDOT and FHWA elected to address the substantive comments received during the review period for the FEIS.

TDOT received comments via the project website, by mail, fax, and e-mail. All correspondence that was forwarded to the Lead Agencies was considered during the decision-making process. All correspondence that included requests for information was given immediate attention to provide the information. For example, commenters requested copies of the Final EIS, technical reports, maps or property acquisition information; these requests were fulfilled as soon as possible, usually within a few days.

7.1.1. Agency Comments

During the FEIS review period, six agencies provided comments on the FEIS. EPA, City of Alcoa Planning and Codes Department, and Knoxville Regional TPO provided substantive comments. The Alcoa Public Works and Engineering Department, Maryville City Manager, and Blount County Mayor provided comments supporting the need for the proposed project and encouraging its completion.

Comments from EPA primarily focused on the following categories:

- Purpose and Need
- Alternatives Analysis
- Environmental Justice

Concerns expressed by EPA included:

- The traffic studies do not support the purpose and need elements regarding substantial traffic having to use the Maryville core without the proposed project, the proposed project not serving areas of substantial residential development, safety issues on roadways, or addressing congestion and poor levels of service on roadways and intersections in the study area.

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- The FEIS did not provide consistent traffic analysis and environmental information for all the alternatives considered, which made its evaluation of the 'Council on Environmental Quality (CEQ) required alternative comparison' difficult.
 - The least environmentally damaging practicable alternative (LEDPA) was not selected
 - Terminating the project at US 411 rather than US 321 to avoid or minimize impacts to waters of the US, an environmental justice community, and prime farmlands.
 - The ROD should include all mitigation measures in the Environmental Commitments.
 - The proposed action's greenhouse gas impacts should be in the context of the CEQ's draft 2014 Climate Change Guidance.

The City of Alcoa's Planning and Codes Department noted that the FEIS incorrectly referenced its sidewalk requirements; this correction is noted in this ROD. The Knoxville Regional TPO's representative expressed concern regarding the FEIS's elimination of the former commitment to investigate the provision of bicycle and pedestrian facilities in the project's ROW during the design process. As a result of several comments on this earlier commitment, the ROD now includes a commitment to consider such facilities as part of the final design of the project (see page EC-3).

A summary of the agency comments received and a disposition for the comments is in **Appendix A-1**.

7.1.2. Non-Governmental Organizations Comments

TDOT received two comment letters from non-governmental organizations: Citizens Against Pellissippi Parkway Extension (CAPPE) and Great Smoky Mountains Regional Greenway Council.

Comments from CAPPE primarily focused on the following categories:

- Purpose and Need
- Analysis of Impacts/Alternatives
- Geology
- Impacts on Water
- Impacts on Threatened and Endangered Species
- Impacts on Air and Health
- Visual Impacts
- Farmland Impacts
- Economic and Fiscal Impacts

Concerns expressed by CAPPE included:

- The project rationale (purpose and need) has been undermined by repeatedly diminished and questionable analysis.

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- Determination of need is impossible because the FEIS provides no origin/destination data and only very limited select/link analysis.
 - Significantly reduced [traffic] volumes undermine the need for the project.
 - The project contributes to unsafe conditions, and the FEIS fails to compute the safety impacts of the Preferred Alternative.
 - The FEIS reports none of the usual benefits of transportation projects
 - The FEIS fails to rigorously explore and compare alternatives, and falls far short of objectively evaluating Alternative D.
 - Thorough field studies were not performed for geologic and hydrologic conditions for water quality and threatened and endangered species.
 - Threatened and endangered species were not adequately surveyed or reported.
 - The FEIS is inadequate in dismissing likely impacts of the project on air quality and fails to address health risks of proximity to high volume traffic.
 - Visual impact analysis failed to consult with viewers and failed to acknowledge the scope and impact of the project on the visual environment and on the physical and mental health of residents.
 - The FEIS failed to recognize farms as businesses, and did not include input from farmers.

The Great Smoky Mountain Regional Greenway Council requested that TDOT reconsider including the text referencing consideration of bicycle and pedestrian facility for this project.

A summary of the CAPPE and Great Smoky Mountains Regional Greenway Council comments and a disposition for the comments is in **Appendix A-2**.

7.1.3. Comments from the Public

TDOT received 87 letters and emails from individuals or families. The comments primarily focused on the following categories:

- Fix it First²
- Traffic/Roads/Safety
- Land Use
- Farmland Impacts
- Water Quality/Water Resources
- Economic Development/Tourism
- Community Impacts

² The term “Fix It First” refers to a TDOT focus and top priority of repairing and maintaining Tennessee existing highways with the limited available federal and state funding. Many of the FEIS commenters who oppose the project requested that TDOT use available funds to fix existing roads before building new roads, such as the proposed Pellissippi Parkway Extension.

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- Financial Impacts/Cost
 - Purpose and Need

Concerns expressed in the letters/emails included:

- Fix existing roads first, in particular US 411 (Sevierville Road) and SR 33.
- The project will not solve congestion or improve safety on the road network.
- Land use patterns will change, leading to urban sprawl.
- The rural character of the area will be changed forever.
- Construction and roadway runoff and urban sprawl will contaminate ground water and surface waters, including the Little River.
- Bike and pedestrian facilities should be considered as part of the project.
- The new highway will help business development and tourism. Alternatively, the new highway will divert traffic from the commercial districts and adversely affect local businesses.
- The cost for the project is high and has escalated during the studies. It is too costly to build.
- The rationale for the project has changed over the years and is far from compelling. The evidence in the FEIS show that the Preferred Alternative does not support the purpose and need.

A summary of the comments in the letters and emails is in **Appendix A-3**. Substantive comments by these persons for the most part have been addressed as part of the responses to agency and non-governmental organization comments. Substantive comments not addressed otherwise are included in **Appendix A-4** along with a disposition to each substantive comment.

8. ADDITIONAL STUDIES AFTER THE FEIS

After reviewing the comments received, FHWA and TDOT determined that additional studies could assist in a more thorough response to some of the comments received. Therefore, TDOT developed an update to the Traffic Operations Technical Report to include Alternative D and developed a Crash Analysis Technical Report to update the traffic safety analysis for this project. FHWA reviewed these additional studies and determined that these studies did not constitute or bring to light any new information or circumstances relevant to environmental concerns and bearing on the proposed action or its impacts that would result in significant environmental impacts not evaluated in the EIS. Therefore, a supplemental EIS was not warranted.

In response to comments received on the approved FEIS, TDOT updated the traffic forecasts and operational analysis and the crash analysis. The results of these additional studies are summarized in the following sections.

8.1. Traffic Study for Alternative D

Following the availability of the approved FEIS in September 2015, EPA, CAPPE and several citizens commented on what they perceived as a failure of the FEIS to apply a consistent traffic forecasting and analysis methodology to evaluate the improved two-lane Alternative D against the Preferred Alternative and other four-lane alternatives considered. Based on the agency and public comments received, in December 2015 TDOT and FHWA determined that additional forecasts and analysis should be conducted for Alternative D to ensure a more comparable level of comparison with the No-Build Alternative and the Preferred Alternative, prior to the issuance of a ROD.

8.1.1. Background of Traffic Analysis

As part of the 2014 DEIS reevaluation, TDOT and FHWA determined that updated traffic forecasts should be prepared for the No-Build Alternative and the Preferred Alternative, based on the length of time since the original forecasts were prepared (2007 and 2011) and the adoption of the 2013 Knoxville Regional Travel Demand Model. The 2013 traffic forecasts (*Traffic Forecast Study*, December 23, 2013) considered 34 roadway segments of 13 existing and planned roadways for the Preferred Alternative. Because Alternative D had already been dismissed following the circulation of the DEIS, the 2013 forecasting study did not include updated forecasts for Alternative D. The February 2014 *Addendum to the Traffic Operations Technical Report* incorporated the 2013 traffic forecasts and evaluated the No-Build Alternative and the Preferred Alternative for the years 2020 and 2040, reflecting the most recent travel demand model horizon year. The analysis provided LOS data for the 34 road segments and intersections as well as intersection delay for the No-Build and Preferred Alternatives.

In May 2014, TDOT prepared a memo to update the traffic analysis for Alternative D, following FHWA's request that previously dismissed alternatives (including Alternative D) be evaluated in the DEIS reevaluation. (Note: the analysis for the Preferred Alternative applies equally to the previously dismissed four-lane alternatives since the travel demand model is not sensitive enough to differentiate among the four-lane alternatives.) Existing volumes and the 2013 Knoxville Regional Travel Demand Model were used to prepare the forecast for Alternative D for 2020 and 2040 for the four road segments (Sam Houston School Road, Peppermint Road, Hitch Road and Helton Road) that comprise Alternative D. A full analysis of all 34 road segments in the study area was not prepared for Alternative D at that time since a 2011 analysis of those four roads found that they would operate at a poor LOS for the horizon year (*Addendum to the Traffic Operations Technical Report*, June, 2011, with minor modifications September 2011). The 2014 assessment also found that the two-lane Alternative D would not have the capacity to accommodate the additional traffic. The approved FEIS presented this information.

8.1.2. 2016 Traffic Forecasts and Operational Analysis for Alternative D

In 2016, updated traffic forecasts for all 34 project area road segments were prepared for Alternative D (reported in the *Traffic Forecast Study*, February 2016, in Appendix C to this ROD). Using the updated forecasts, the traffic operations analysis was prepared (reported in the *Update to the Traffic Operations Technical Report*, April 2016, in **Appendix C** of this ROD.) The updated analysis of Alternative D confirmed the findings in the FEIS that the traffic volumes are sufficiently high so that corridor LOS for

Alternative D would fall to LOS E, compared to No-Build conditions ranging from LOS A to LOS D. In addition, the updated analysis demonstrates that with the increased traffic volumes, intersections in the vicinity of Alternative D would also fail, similar to the No-Build Alternative. This results in failing operations on the stop sign controlled approaches. Additional analysis was conducted to determine if signalizing these intersections would alleviate the congestion. Given the high traffic volumes associated with Alternative D, the intersection capacity would still be exceeded resulting, for the most part, in failing operations (LOS F). The analysis confirmed the finding of the FEIS that Alternative D would provide poor traffic operation (LOS E or F) on roadways and intersections along its general route (Sam Houston School Road, Peppermint Road, Helton Road and Hitch Road) when compared to the No-Build condition.

8.2. Crash Analysis

CAPPE's November 18, 2015 comments also stated that the FEIS failed to draw conclusions of future crashes from the safety data collected and analyzed in the 2014 crash report, and that the Preferred Alternative would contribute to unsafe conditions. In its comments, CAPPE presented a summary of its own analysis and drew the conclusions that the Preferred Alternative would increase the number of crashes area wide.

In response to CAPPE's comments on the crash analysis that was reported in the FEIS, TDOT prepared an updated traffic safety analysis for the major roadways impacted by the proposed construction of Pellissippi Parkway Extension. The approved *Crash Analysis Technical Report* (July 2017) is contained in **Appendix D** of this ROD.

The crash analysis evaluated the most recent three years of crash data available for roads in the project area, 2014-2016, to determine actual crash patterns. During that three-year period, 2,310 crashes were reported within the study area. Of those crashes, the vast majority (96 percent) were minor crashes (property damage only or non-incapacitating injuries to drivers and passengers). Approximately 3 percent were serious injury (incapacitating) and 1 percent involved a fatality. More than half of the crashes occurred at intersections and were rear-end or angle crashes involving multiple vehicles.

At this time, TDOT's standard practice is to use a qualitative approach to address the safety of new or improved roadways. After consultation with FHWA, TDOT confirmed that a qualitative approach to address the anticipated safety performance of the proposed Pellissippi Parkway Extension is appropriate.

Roadways in Tennessee functionally classified as freeways (also referred to as interstate highways) have statewide average crash rates lower than all other roadway types, including roadways in the Maryville core. Due to their design features, freeways are safer than other roads because freeways control traffic flow and restrict access to and from the highway. A controlled access freeway has no traffic signals, intersections, or direct property access, and no at-grade (intersection) crossings with other roads, railroads, or bike/pedestrian paths. Full access control reduces the potential traffic incidents compared with other roadway classifications.

The Selected Alternative will be a freeway meeting interstate level design standards. Thus, it should be inherently safer than the No-Build Alternative or Alternative D, which are local roadways with points of conflict such as at-grade intersections, traffic signals or

stop signs, direct property access/driveways, narrow traffic lanes, narrow or non-existent shoulders, and inadequate clear zones.

In addition, under the Selected Alternative, many of the study area roadways are forecasted to have lower traffic volumes in both 2020 and 2040, including roadways that serve the Maryville core, compared with the No-Build Alternative. The updated evaluation of recent crash data identified several of the road segments in the Maryville core as having more crashes than is statistically probable based on random occurrence.

The migration of traffic from existing non-freeway roadways to the proposed freeway of the Selected Alternative represents a shift from roadways with higher typical average crash rates to a roadway with a lower typical average crash rate. This migration of traffic would be expected to reduce the overall crash risk for the Selected Alternative relative to the No-Build Alternative. Thus, the Selected Alternative supports the project's Purpose and Need of enhancing roadway safety in the proposed project area, including roads within the Maryville core area.

9. CORRECTIONS TO FEIS

Several corrections to the FEIS are provided in this ROD. These corrections were identified based in part on the responses to comments on the FEIS (Appendix A) and additional information obtained since the publication of the FEIS.

- FEIS pages S-3, 2-8, 3-47, and 3-94. In several locations in the FEIS, the text described the Little River as a designated Exceptional Tennessee Water (ETW). The EPA pointed out that the ETW designation applies only to that segment of the Little River that lies within the Great Smoky Mountains National Park, about 15 miles upstream of the project area.
- FEIS page 3-99, Table 3-32. The table listed the Longhead darter (*Percina macrocephala*) as a state endangered species potentially occurring in the project area. Two commenters noted that the FEIS failed to acknowledge the updated status of the Longhead darter as the Sickie darter (*Percina williamsi*). The correct name for this species occurring in the Little River is the Sickie darter. Prior to 2007, the Longhead darter was found in the Ohio, Tennessee and Allegheny River drainage in New York, Pennsylvania, Ohio, West Virginia, Kentucky, Tennessee and North Carolina. In 2007, the Longhead darter population in the Little River was re-allocated to the Sickie darter; the species continued to be listed as threatened in Tennessee. However, the 2013 data base (TDEC Natural Heritage Inventory) used for the 2013 Biological Assessment (BA) still referred to this species as the Longhead darter. The 2013 BA was prepared using the best available data at that time. Although the change in taxonomic status decreases the range for the species, the Sickie darter has no official federal status other than being petitioned for listing.
- FEIS page 3-93. A review of the 2012 303(d) list of impaired streams determined that the FEIS incorrectly stated that Crooked Creek was no longer 303(d) listed. The 2012 list of impaired streams, and the more recent *Proposed Final Version Year 2014 303(d) List* (October 2014) include Crooked Creek as an impaired stream.
- FEIS page 3-20. The last sentence of the fourth paragraph stated that "the City of Alcoa's Subdivision Regulations (1997) do not mention sidewalks." The City's Planning and Codes Department responded to the FEIS by noting that the City of

Alcoa's Standards for Land Subdivision (revised March 2015) includes sidewalk requirements. "The city does require sidewalks, a minimum of 5 feet in width, on each side of the street for those classified arterial, collector or local."

- FEIS page S-12. Based on comments received from a representative of the Knoxville Regional TPO, the Great Smoky Mountains Regional Greenway Council and several individuals, TDOT determined that the previous commitment to investigate the provision of bike and pedestrian facilities within the project ROW would be included as a commitment in the ROD. The 2010 approved DEIS and the 2014 approved reevaluation of the DEIS both included that commitment. The reinstated commitment reads: "During the design process, TDOT will investigate the provision of bicycle and pedestrian facilities within the project right-of-way. If TDOT determines that the provision of such facilities is feasible, the facilities will be developed as a separate project and TDOT will work with the Knoxville Regional TPO and local governments to determine sources of funding for the construction and maintenance of the bicycle and pedestrian facilities."
- FEIS page 3-5. A commenter noted that the description of the traffic pattern on US 411 by 2040, presented in the 5th bullet of the second set of bullets on page 3-5, seemed to be "incomprehensible." In responding to the comment, it was discovered that the reported 40 percent higher traffic volumes in 2040 on US 411 for the Preferred Alternative compared with the No-Build was in error. With updated traffic volumes, the traffic volumes for that section of road would be only 5 percent higher for the Preferred Alternative. The bullet should have read that "US 411 traffic west of the proposed interchange and Washington Avenue would be lower with the Preferred Alternative. East of the proposed interchange the traffic would be higher than the No-Build. From the interchange to Hitch Road, the traffic would be about 5 percent higher, and from Hitch Road to the end of the study area the traffic would increase about 26 percent by 2040."
- FEIS page 3-5: The 5th bullet in the second set of bullets on page 3-5 was in error; it was not updated to reflect the traffic forecasts of 2011 and 2014. The bullet should have read: "US 411 traffic west of the proposed interchange and Washington Avenue would be lower with the Preferred Alternative. East of the proposed interchange the traffic would be higher than the No-Build. From the interchange to Hitch Road, the traffic would be about 5 percent higher, and from Hitch Road to the end of the study area the traffic would increase about 26 percent by 2040."
- FEIS page 3-5. The 6th bullet of the second set of bullets on page 3-5 of the FEIS read: "The traffic for most sections of SR 33 would be lower under the Preferred Alternative, except between the proposed intersection with the new roadway and Sam Houston School Road." It should have read: "The traffic for most sections of SR 33 is lower under the Preferred Alternative, including the sections south of the proposed intersection with the new roadway. To the north, traffic volumes for the Preferred Alternative increase heading toward Knoxville."

10. SUMMARY OF BENEFICIAL PROJECT EFFECTS

The Selected Alternative, Preferred Alternative with West Shift, will result in the following beneficial effects:

- The proposed Pellissippi Parkway Extension project will achieve the long-envisioned, regional, limited access connection between I-40/I-75 in West Knoxville and US 321/SR 73 (Lamar Alexander Parkway) east of Maryville. The concept of extending Pellissippi Parkway as a four-lane divided highway to US 321/SR 73 has been a part of the Knoxville regional transportation planning vision since 1977.
- The proposed project will improve travel options in the northeast area of Blount County between SR 33 and US 321/SR 73. Motorists traveling between Alcoa and areas north and areas east of Maryville (including the communities of Townsend and Walland and the Great Smoky Mountains National Park) will have a direct and continuous route, rather than having to travel through the Maryville core or use a disconnected set of narrow two-lane local roads.
- The proposed project will improve mobility for travelers in the northeastern area by enabling people to travel from Pellissippi Parkway at SR 33 to US 321/SR 73 in about 9 minutes compared to about 20 minutes in the No Build condition during a typical weekday peak hour (see Table 3-6 on page 3-17 of the FEIS).
- The proposed project will serve an area that has undergone, and will continue to undergo, population and employment growth. Since the 1970s, Blount County has been one of the fastest growing counties in the Knoxville region, and its double-digit growth (16 percent between 2000 and 2010) is expected to continue into the future. Substantial residential growth has been occurring east of SR 33 and south from Wildwood Road toward US 321/SR 73 and along US 411 (Sevierville Highway). A new high-tech and research mixed used development, Pellissippi Place, has opened east of the existing Pellissippi Parkway/SR 33 interchange.
- The proposed project will enhance the safety of area roadways, including those in the Maryville core, by allowing motorists to shift to a safer roadway type (freeway) for certain types of trips. The project will also help to reduce future traffic volumes on several local roads in the Maryville core that have higher than average crash rates for those roadway types.
- The proposed project will also assist in achieving acceptable traffic operations on the transportation network or avoid adversely affecting traffic operations on the existing transportation network. The Selected Alternative shows substantial reduction in delay for most of the intersections in the Alcoa/Maryville core. The improvements range from an 8 percent to a 50 percent reduction in delay over the No-Build Alternative. In actual seconds of delay, these improvements correspond to a reduction in delay of between 1 second and 163 seconds.

11. MEASURES TO MINIMIZE HARM

All practicable measures to minimize environmental harm have been incorporated into the planning of the proposed action.

Specific environmental commitments are outlined starting on page EC-1 of this ROD on the green sheets entitled “List of Environmental Commitments.” These commitments are binding on TDOT and FHWA.

TDOT’s construction specifications will apply to this project. As a result, construction procedures shall be governed by the *Standard Specifications for Road and Bridge Construction* as issued by TDOT and as amended by the most recent applicable supplements.

12. STATUTE OF LIMITATIONS ON FILING CLAIMS

FHWA may publish a notice in the *Federal Register*, pursuant to 23 USC § 139(I), indicating that one or more Federal agencies have taken final action on permits, licenses, or approvals for the subject transportation project. If such notice is published, claims seeking judicial review of those Federal agency actions will be barred unless such claims are filed within 150 days after the date of publication of the notice, or within such shorter time period as is specified in the Federal laws pursuant to which judicial review of the Federal agency action is allowed. If no notice is published, then the periods of time that otherwise are provided by the Federal laws governing such claims will apply.

13. CONCLUSION

This ROD is based on the FEIS, which is incorporated herein by reference. The FEIS has been independently evaluated by FHWA and determined to adequately and accurately discuss the needs, environmental issues and impacts of the proposed project and mitigation measures. FHWA takes full responsibility for the accuracy, scope, and content of the FEIS and its attachments. The FEIS contains an adequately detailed discussion of the following: purpose and need for the proposed project, probable impact of the proposed action, alternatives, unavoidable adverse environmental effects, short-term versus long-term benefits, irreversible and irretrievable commitments of resources, and mitigation and measures to minimize environmental harm. The proposal conforms to the State’s air quality implementation plans and the National Ambient Air Quality Standards. The FEIS is in conformance with the applicable provisions of 23 CFR 771, “*Environmental Impact and Related Procedures*,” and it satisfactorily covers the anticipated environmental impacts, including physiographic and cultural effects.

APPENDIX A

FEIS Comments Received and Disposition of Comments

Appendix A-1 – Disposition of Agency Comments on the FEIS

Appendix A-2 – Disposition of Non-governmental Organizations Comments on the FEIS
(including CAPPE and Great Smoky Mountains Regional Greenway Council)

Appendix A-3 – Summary of General Public Comments on the FEIS

Appendix A-4 – Disposition of Substantive Public Comments and General Public
Comments on the FEIS

APPENDIX A-1

Disposition of Agency Comments on the FEIS

Agency Date of Comment	Comment #	Page # of Comment	FEIS Page #	Summary of Agency Comments	Responses
U.S. Environmental Protection Agency October 18, 2015					
EPA—Letter	EPA 1	1 – 2 nd para.		EPA stated that its earlier recommendations to FHWA and TDOT <i>remain largely unaddressed in the FEIS. The purpose and need statements are not supported by environmental information, nor does FHWA/TDOT make any analysis or conclude that they do.</i>	The environmental analysis presented in the EIS documents demonstrates that the Preferred Alternative meets the purpose and need for the project. Response to EPA’s earlier recommendations is presented in Chapter 4.0, Table 4.3 of the FEIS, and Table C-1 in Attachment C of the FEIS. As to EPA’s statement that the purpose and need statements are not supported by environmental information, responses to this assertion are addressed below to specific comments.
EPA—Letter	EPA 2	1- 2 nd para.		<i>The provided information suggests that the proposed action could detrimentally impact the identified need for certain corridors. This has not been evaluated in the FEIS.</i>	The intent of this comment is unclear.
EPA—Letter	EPA 3	1 -2 nd para.		<i>The alternatives do not appear to be rigorously explored or objectively evaluated as required by the Council of Environmental Quality’s (CEQ’s) NEPA regulations.</i>	The analysis of alternatives followed a rigorous process, in accordance with the CEQ’s NEPA implementing regulations. Chapter 2 of the FEIS explains the process that was followed and presents the reasoning for which alternatives were considered and then dismissed, and why the preferred alternative was selected. The EPA had the opportunity to review the Preliminary DEIS as part of the Tennessee Environmental Streamlining Agreement (TESA) Concurrence Point #3, Preliminary Draft EIS. EPA provided advisory comments, but did not state any objections to the rigor of the study or objectivity for the alternatives in the DEIS. TDOT addressed advisory comments in the FEIS. EPA also reviewed and concurred with TESA Concurrence Point #4, Preferred Alternative and Preliminary Mitigation. The FEIS included expanded investigations, including updated traffic analysis based on the 2013 travel demand model update, including new traffic forecasts; crash analysis; economic and fiscal impact analysis; relocation study; archaeological studies; air quality analysis; noise study; Phase II preliminary site assessment; ecology study, including bat survey, and indirect and cumulative analysis. The FEIS complies with all applicable standards for legal sufficiency established under NEPA and the implementing regulations of both the Council of Environmental Quality(CEQ) (40 CFR § 1500-1508) and FHWA’s own NEPA regulations (23 CFR § 771).
EPA—Letter	EPA 4	2 – 1 st para.		<i>The least environmentally damaging practicable alternative (LEDPA) was not selected. The Clean Water Act (CWA) Section 404(b) (1) guidelines require applicants to avoid and minimize impacts to waters of the U.S. EPA strongly recommends that FHWA/TDOT consider the selection of a different Preferred Alternative that represents the LEDPA (see attached detailed comments). The proposed action will directly impact 4 CWA 303 (d) listed impaired streams and indirectly impact a fifth listed stream that has been identified as a threatened water body and a public water supply. These impaired streams are subject to total daily maximum loadings (TMDLs) for both pathogen and sediment related issues. Impacts to these impaired waters should be avoided and minimized to the extent practicable.</i>	The process defined in the National Environmental Policy Act, CEQ’s regulations and FHWA’s regulations, was followed to evaluate alternatives and determine the Preferred Alternative based on the technical evaluation of alternatives and carefully considering input from the public and affected agencies. The Preferred Alternative was selected because it best meets the purpose and need of the project while minimizing impacts to the environment and the community. The requirement for the LEDPA applies to the Clean Water Act; in the NEPA process, TDOT and FHWA are considering the environmentally preferred alternative, but are not required to select it so long as the NEPA process is followed. The determination of the Preferred Alternative has taken into account a range of environmental issues. The FEIS complies with all applicable standards for legal sufficiency established under NEPA and the implementing regulations of both the Council of Environmental Quality (40 CFR § 1500-1508) and FHWA’s own NEPA regulations (23 CFR § 771). See responses to EPA detailed comments 19 through 23 (pages 8-9) and EPA detailed comment 26 (page 11) below.
EPA—Letter	EPA 5	2	2-12, 3-49	<i>The proposed new location project will also impact an environmental justice (EJ) community and a significant amount of prime farmland. EPA has environmental objections to the ‘Preferred Alternative’ as currently proposed and requests that the transportation agencies consider less environmentally damaging alternatives prior to issuance of the Record of</i>	Mitigation measures (including construction of a noise barrier and allowing residents to have input into the landscaping and color patterns for the noise barrier) will be implemented to minimize impacts to the EJ community (in Kensington Place mobile home community). For further information and responses regarding EJ, see responses to EPA detailed comments 27 through 30

Agency Date of Comment	Comment #	Page # of Comment	FEIS Page #	Summary of Agency Comments	Responses
				<i>Decision (ROD).</i>	(pages 11-13), below. Based on coordination with NRCS on December 10, 2014, about 94,952 acres of land in Blount County were considered prime farmland (including farmlands of statewide or local significance). Table 3-19 of the FEIS shows that the Preferred Alternative would affect 34 acres of prime farmland and 48 acres of statewide and locally important farmlands. The 82 total acres of prime farmland (including farmlands of statewide or local significance) that would be converted represent less than 0.1 percent of the countywide total for prime farmlands as defined by the NRCS. In addition, the total corridor assessment score for the Preferred Alternative (shown on the completed NRCS-CPA-106 form) was 141, well below the 160-point threshold that would require the consideration of alternative project alignment that would convert either fewer acres or farmland or other farmland that has a relatively lower score while still serving the proposed purpose of the project. Thus, the conversion of farmland to a transportation use by the Preferred Alternative or other project alternative is consistent with the Farmland Preservation Policy Act. The project area is within the adopted Urban Growth boundary for Blount County, Maryville and Alcoa, a designation that means the area is anticipated to be converted to residential and commercial uses in the next twenty years.
EPA—Letter	EPA 6	2		The EPA recommended consideration of appropriate avoidance and minimization measures for all new location alternatives including but not limited to the bridging of streams and wetlands, reducing the median and/or shoulder widths, installation of properly designed stormwater management devices and roadway re-alignments to avoid the EJ community.	These items will be addressed, where possible during final design. As part of the design phase, detailed survey will be used to assist in avoiding and minimizing impacts to streams and wetlands and community resources. This is part of TDOT’s standard practice. Appropriate mitigation for the EJ community has been considered and commitments have been made, as stated in the Environmental Commitments included in both the FEIS and the Record of Decision documents.
EPA Detailed Comments					
EPA— Recommendati ons	EPA 7	4	1-9 to 1-10, Fig 1-4	Purpose and Need — <i>deficient circumferential road system. EPA does not understand how the FHWA/TDOT traffic studies support its finding that “substantial movement of traffic must travel through the Maryville core.” FHWA/TDOT’s average annual daily traffic (AADT) studies indicate the heaviest traffic volume lie outside of the Maryville core (i.e., on the SR 115 segment of US 129, west of the Maryville core and the US 129 Bypass southwest of the Maryville core). Moreover, FHWA/TDOT’s traffic studies do not support a finding that the Proposed Action will alleviate any traffic movement through the Maryville core. EPA recommends that “FHWA/NCDOT” [sic] consider the following examples.</i>	In evaluating trip paths from the northwestern and eastern portions of Blount County, there is currently no direct connection that serves these trips. The existing routes that serve this movement include portions of US 129, Broadway Avenue (SR 33), or Hall Road and Washington Street. The proposed action would serve this need. The Maryville core is the downtown area in the vicinity of SR 35/Washington Street between Broadway Avenue and US 321. While larger traffic volumes may be on segments of US 129 west and southwest of town, “substantial traffic” is not a comparison of traffic in the core to those areas outside the core, but rather a discussion of traffic compared to a preferred volume for that core area. Current traffic must still follow Hall Road and Washington Street to reach points east of the downtown area. The intent of the project is to provide travel options for motorists, including those who would have to travel through the Maryville core to travel to or from areas east of Alcoa and Maryville. Comparing the forecasted traffic volumes for the No-Build (Figure 1) and the Preferred Scenario (Figure 2) from the <i>Addendum to Traffic Operations Technical Report</i> , dated February 2014 (found in Technical Appendix B of the FEIS), there are some reductions in traffic volumes for the Preferred Alternative scenario in the future year 2040. These include the following segments, which are in or leading to the Maryville core:

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					<table><tr><th>Segment</th><th>No-Build AADT</th><th>Preferred AADT</th><th>% reduction</th></tr><tr><td>US 129: Relocated Alcoa Hwy to Pellissippi Pkwy</td><td>45,270</td><td>44,950</td><td>1%</td></tr><tr><td>US 129: Hunt Road to Relocated Alcoa Hwy</td><td>97,820</td><td>92,470</td><td>5%</td></tr><tr><td>Hall Road: Alcoa Hwy to Bessemer St</td><td>35,370</td><td>31,200</td><td>12%</td></tr><tr><td>Hall Road: Bessemer St to E. Broadway / Old Knoxville Hwy</td><td>32,530</td><td>23,930</td><td>26%</td></tr><tr><td>Washington Street: E. Broadway / Old Knoxville Hwy to US 411</td><td>29,900</td><td>20,130</td><td>33%</td></tr><tr><td>Washington Street: US 411 to Lamar Alexander Pkwy</td><td>25,570</td><td>18,630</td><td>27%</td></tr><tr><td>Broadway Avenue: Hall Road to Wildwood Road</td><td>21,510</td><td>19,130</td><td>11%</td></tr></table> (Note: The four examples referred to in EPA’s comment are addressed individually below as four comments – EPA Comments 8 through 11.)	Segment	No-Build AADT	Preferred AADT	% reduction	US 129: Relocated Alcoa Hwy to Pellissippi Pkwy	45,270	44,950	1%	US 129: Hunt Road to Relocated Alcoa Hwy	97,820	92,470	5%	Hall Road: Alcoa Hwy to Bessemer St	35,370	31,200	12%	Hall Road: Bessemer St to E. Broadway / Old Knoxville Hwy	32,530	23,930	26%	Washington Street: E. Broadway / Old Knoxville Hwy to US 411	29,900	20,130	33%	Washington Street: US 411 to Lamar Alexander Pkwy	25,570	18,630	27%	Broadway Avenue: Hall Road to Wildwood Road	21,510	19,130	11%
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EPA—Recommendations	EPA 8	4	1-10; 1-16 (Tab 1-3); 1-17 (Fig 1-6) Appendix C, pages 32-43 (Tab 13 and Tab 14)	Purpose and Need - Example #1 in the Maryville core, FHWA/TDOT forecast a 7% increase in AADT for the Washington Street segment of SR 35, which is half of the 15% forecasted increase in AADT for the SR 35-US 321 intersection. In the vicinity of this intersection is the Blount Memorial Hospital Complex and the Maryville College campus. FHWA/TDOT do not conclude the proposed action will address the forecasted AADT increase. Moreover FHWA/TDOT do not interpret this increase in AADTs warranted a corridor Level of Service (LOS) analysis for this segment. Furthermore the US 321 LOS analysis indicates “green” for good, including its intersection with SR 35. Additionally the development on US 321 is also concentrated near the Maryville core.	Growth in traffic volumes is expected throughout the Maryville core area, with or without the proposed action. The segment for SR 35 just prior to the US 321 intersection was not evaluated for a corridor LOS as the posted speed limit (30 mph) is less than the speed typically evaluated for a corridor analysis. This means the intersections govern the operations of the segment and an intersection analysis is more appropriate. The intersection of SR 35 (Washington Street) at US 321 in 2040 would operate at LOS F under both the No-Build and Preferred Alternative scenarios, as shown in the table below. However, under the Preferred Alternative, the amount of delay experienced would be reduced by approximately 327 seconds, a decrease of more than half the time (56.8%) spent waiting at the intersection. <table><tr><th>Scenario</th><th>LOS</th><th>Seconds of Delay</th></tr><tr><td>No Build</td><td>F</td><td>571.3</td></tr><tr><td>Preferred</td><td>F</td><td>243.6</td></tr></table>	Scenario	LOS	Seconds of Delay	No Build	F	571.3	Preferred	F	243.6																							
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EPA—Recommendations	EPA 9	4	3-5	Purpose and Need - Example #2, access to the Foothills Mall area requires traffic to continue south on US 321 past its intersection with SR 35. The Foothills Mall lies south of US 321, west of US 129, and north of US 411, all of which are south of Maryville’s core. FHWA/TDOT state that “with the Preferred Alternative,” US 321 from its junction with SR 33 east of Foothill Parkway shows a “decline in forecasted traffic.” However, the proposed action’s geographical location precludes it from having any impact in the Foothills Mall area. The Preferred Alternative connects the existing Pellissippi Parkway, north of Maryville’s core, tends southeast to intersect US 321 north and east of Maryville’s core.	The “Foothills Parkway” identified in EPA’s comment is not a roadway serving the Foothills Mall. Rather, the Foothills Parkway is a National Park Service scenic route that crosses US 321 about 5 miles east of the proposed project area, and about 11 miles east of the intersection of US 321 and SR 35 (Washington Street). As the EPA has pointed out, the Foothills Mall is outside of the area of impact for the proposed action.																																
EPA—Recommendations	EPA 10	4	1-10; Fig 1-4 & Fig 3-1. Also Figs 1&2 in Traffic Report	Purpose and Need - Example #3: FHWA/TDOT forecast a 23-27 percent increase in AADT for the Broadway Avenue segment of SR 33, between SR 35 and SR 335. This segment lies north of the Maryville core. The growth on this segment was insufficient to warrant a LOS analysis. The forecasted increase in AADT might reflect growth in the residential community of Eagleton Village, which lies south of the new Pellissippi Place Research and Technology Park, and north of the Maryville core. The Park [Pellissippi Place] is located on the opposite (east) side of the Pellissippi Parkway interchange with SR 33, where the parkway terminates. The Village is located between the intersections of SR 33 with Wildwood and SR 335. Like the	Eagleton Village residents and future residents in the Pellissippi Place development have access to existing Pellissippi Parkway (SR 162) to travel to and from the airport, western portions of Knox County and Oak Ridge. Without the proposed project, travel from these areas eastward would continue to require travelling south on SR 33 to SR 35 to reach US 321 or using a disconnected network of local roads. Forecasted traffic volumes on SR 33 in 2040 under the Preferred Alternatives compared with the No Build are shown in the table below. The segments between SR 35 and existing Pellissippi Parkway (SR 162) decline under the Preferred Alternative in 2040; the segments north of Pellissippi																																

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				<i>Park tenants, the Village residents can travel from SR 33 to SR 335 to access the commercial/industrial areas along SR 335 and the McGhee Tyson Airport where SR 335 terminates into US 129.</i>	Parkway increase under the Preferred Alternative in 2040, which reflects the attractiveness of the proposed project as a route for travel to and from areas to the east of Maryville and Alcoa. <table><tr><th>Section of SR 33 (Old Knoxville Highway)</th><th>2040 No-Build AADT</th><th>2040 Preferred AADT</th><th>% reduction</th></tr><tr><td>SR 35 to Wildwood Rd</td><td>21,510</td><td>19,130</td><td>12%</td></tr><tr><td>Wildwood Rd to Hunt Rd</td><td>19,470</td><td>17,210</td><td>13%</td></tr><tr><td>Hunt Road to SR 162 (Pellissippi Pkwy)</td><td>36,330</td><td>36,130</td><td>1%</td></tr><tr><td>SR 162 (Pellissippi Pkwy) to Sam Houston School Rd</td><td>17,050</td><td>19,240</td><td>-11%</td></tr><tr><td>Sam Houston School Rd to Knox County</td><td>11,940</td><td>17,360</td><td>-31%</td></tr></table> Source: Update to Traffic Operations Technical Report, April 2016, Figure 2. Also, traffic on existing Pellissippi Parkway between US 129 to SR 33 will increase substantially (27 to 61%) under the Preferred Alternative, pointing to the attractiveness of the proposed project to carry traffic to and from the east side of Maryville and Alcoa (see page 3-5 of the FEIS).	Section of SR 33 (Old Knoxville Highway)	2040 No-Build AADT	2040 Preferred AADT	% reduction	SR 35 to Wildwood Rd	21,510	19,130	12%	Wildwood Rd to Hunt Rd	19,470	17,210	13%	Hunt Road to SR 162 (Pellissippi Pkwy)	36,330	36,130	1%	SR 162 (Pellissippi Pkwy) to Sam Houston School Rd	17,050	19,240	-11%	Sam Houston School Rd to Knox County	11,940	17,360	-31%
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EPA— Recommendations	EPA 11	5	3-5; 3-24 (Fig. 3-6); also Traffic Report	Purpose and Need - Example #4: FHWA/TDOT’s forecast for the Wildwood Road segment between Pellissippi Place Access Road and Sam Houston School Road does not demonstrate substantial movement of [sic] traffic must travel through the Maryville core. Wildwood intersects SR 33 north of the Maryville core. It does not connect to the Pellissippi Place Access Road. The Preferred Action is proposed to intersect Wildwood Road. This referenced Wildwood segment is northeast of the proposed action, northeast of Eagleton Village, and in a rural area containing large tracts of farmlands. Given the existence of these large tracks of farmland, it is unclear how “substantial” the forecasted 62% increase in AADT actually is for this segment of Wildwood Road, which is alleged to be 58% lower than the ‘No Action.’ FHWA/TDOT did not provide actual AADT numbers for this segment as it did for the others. EPA cannot ascertain the reasoning for this omission.	Wildwood Road provides generally an east-west route in the northeastern portion of Blount County, connecting Sevier County with Maryville and Alcoa, and the McGhee Tyson Airport. It is part of the existing radial road network, which does not provide non-radial access. The Preferred Alternative would provide additional connections to Alcoa, the airport and points west for travelers to and from the northeastern portion of Blount County or western Sevier County who now use Wildwood Road between SR 33 and the area east of the proposed crossing of the Preferred Alternative. The 62% increase in AADT for Wildwood Road for 2040 quoted in the FEIS (page 3-5) refers to the change in the design year Build Alternative forecasts from the 2011 traffic model to the 2013 updated traffic model. The 2011 Knoxville Regional TPO model forecasted 5,570 ADT for 2034 traffic for the section between Pellissippi Place Access Road and Sam Houston School Road; while the 2013 TPO model forecasted 17,870 for that section in 2040. The difference between the 2035 forecast and the updated 2040 forecast is 62%. This comparison is found in Table 5 of the 2014 Reevaluation of the DEIS. AADT numbers for Wildwood Road are include in the <i>Addendum to the Traffic Operations Technical Report</i>, dated February 2014 (found in Technical Appendix B of the FEIS); 2040 No-Build AADTs for Wildwood Road are found in Table 5 (page 13) and Preferred Alternative AADTS are found in Table 7 (page 21) of the 2014 technical report. As shown on FEIS Figure 3-6 Conceptual Land Use Map (page 3-24), Wildwood Road cuts through the area labeled as Suburbanizing – High to Medium Density Development. FEIS Figure 3-7 Urban Growth Boundaries (page 3-25) also shows Wildwood Road in the vicinity of the proposed project as being within the established “Urban Growth Boundary;” this designation means that the land is expected to develop over the next 20 years. Land in this area is already starting to change over from farmlands to residential and commercial. For example, the land on which the Pellissippi Place research and development park sits was part of a large farm prior to the initiation of this EIS in 2006. The developers of the updated TPO travel demand model took into account updated population and economic forecasts.																								

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					According to the <i>Regional Mobility Plan 2040</i>, the Pellissippi Place Access Road will be extended to Wildwood Road by 2029, as a four-lane roadway with a center median lane. The intent of the access road is to provide access to Pellissippi Place and additional network connectivity. The FEIS references important studies, technical reports or other key documents in drawing its main conclusions.
EPA— Recommendati ons	EPA 12	5	Likely refers to Attach B maps	Purpose and Need: <i>northwest/east connection east of Alcoa and Maryville to serve expanding residential development occurring in eastern Alcoa and Maryville and northeastern Blount County. FHWA/TDOT did not conclude from their travel and growth studies that the proposed action will address this reported need. FHWA/TDOT should consider the evaluation of the updated projections that substantial growth has been moving east from US 129 past SR 33 and moving south from Wildwood Road toward the southern city limits of Maryville. The proposed action is geographically north of this substantial growth. The provided map indicates growth radiated out from but concentrated around the Maryville core, particularly along the major highways: US 129, SR 33, US 411, and US 321.</i>	Since the proposed action extends between SR 33 and US 321, it is an area of Blount County that has been experiencing growth radiating eastward out from Maryville and Alcoa. The proposed action provides a connection between the north side of the county and areas in the northeast quadrant, including areas east of Maryville on US 321 toward Townsend and the Great Smoky Mountains National Park, as called for in the local and regional plans. Pellissippi Parkway Extension is well located to accommodate the growth trends EPA notes. The concept of a “Southern Loop” around Maryville was discussed in the past, to connect to the southern terminus of the proposed action at US 321 and extend on to the south and southwest into an area that is also experiencing substantial growth. By 2005, the concept of a four-lane divided Southern Loop was replaced by a series of roadway improvements and short new roadway segments to enhance circumferential movement. That concept was in the previous <i>Regional Mobility Plan</i>, but is not in the 2040 <i>Regional Mobility Plan</i>.
EPA— Recommendati ons	EPA 13	5	1-10 to 1- 13, Fig 1-4	Purpose and Need – demand for trips between Maryville and Alcoa and the Knoxville area to the north as shown by current high traffic volumes between the areas on US 129 (approximately 40,090 vehicles per day) and SR 33 (approximately 6,230 vehicles per day). <i>The FHWA/TDOT does not conclude the proposed action will address the above reported demand for trips. The trip origin study indicates 88.7 percent of trips within the study area are local in nature or have different destinations than traveling between the Maryville and Alcoa area and Knoxville. Moreover, the FHWA/TDOT’s AADT data indicate that the highest traffic volumes occur on the SR 115 segment of US 129, which lies south of the existing Pellissippi Parkway and north of SR 35. Additionally the FHWA/TDOT’s AADT data indicates that the highest traffic volumes are on the Old Knoxville Highway segment of SR 33, which also lies south of the existing Pellissippi Parkway and north of SR 335. These high volume areas are all contained in the Alcoa and Maryville area.</i>	The purpose of this project includes increasing mobility options, particularly to serve a northwest/east connection east of Alcoa and Maryville to serve existing and expanding residential development, and enhancing the regional transportation system linkages. This project is not intended to address all of the demand for travel between Maryville and Alcoa and the Knoxville Area. Rather, the intent of the statement was to demonstrate that there is a traffic user base of trips that travel from the Maryville and Alcoa area and travel to Knoxville.
EPA— Recommendati ons	EPA 14	6	1-22 to 1- 24;	Purpose and Need – <i>safety issues on roadways in the area. FHWA/TDOT do not conclude from their travel studies that the proposed action will address the safety issues on existing roadways. The FHWA/TDOT’s LOS analysis does not demonstrate any improvements associated with the proposed action.</i> <i>The EPA contends that the proposed action will merely provide a new road in a largely unpopulated area of larger tracts of farmland, which will then be connected to the congested areas around SR 33 and US 129. From other transportation projects, it is generally known to the EPA and other agencies that building new roadways does not necessary correct safety conditions on existing roadways.</i>	In response to FEIS comments on safety and the crash analysis that was reported in the FEIS, TDOT prepared an updated traffic safety analysis for the major roadways impacted by the proposed construction of the Pellissippi Parkway Extension. The approved <i>Crash Analysis Technical Report</i> (July 2017) is contained in Appendix D of the ROD. The updated crash analysis concluded that the Selected Alternative, as a freeway, should be inherently safer than the No-Build Alternative or Alternative D, which are local roadways with points of conflict such as at-grade intersections, traffic signals or stop signs, direct property access/driveways, narrow traffic lanes, narrow or non-existent shoulders, and inadequate clear zones. In addition, under the Selected Alternative, many of the study area roadways are forecasted to have lower traffic volumes in both 2020 and 2040, including roadways that serve the Maryville core, compared with the No-Build Alternative. The updated evaluation of recent crash data identified several of the road segments in the Maryville core as having more crashes than is statistically probable based on random occurrence. The migration of traffic from existing non-freeway roadways to the proposed freeway of the Selected Alternative represents a shift from roadways with higher typical average crash rates to a roadway with a lower typical average crash rate. This migration of traffic would be expected

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					to reduce the overall crash risk for the Selected Alternative relative to the No-Build Alternative. Thus, the Selected Alternative supports the project’s Purpose and Need of enhancing roadway safety in the proposed project area, including roads within the Maryville core area. As discussed in FEIS Section 3.2.1.2, Future Land Use, the area encompassing the proposed project and the Pellissippi Place research and development park is within the established urban growth boundaries for Blount County, Maryville, Alcoa, and Maryville. The areas within the urban growth boundary are expected to develop by 2027 and beyond. The land use plans and growth strategies for Blount County and Maryville anticipate that the rural farmlands in this area will be converted to higher density residential and commercial uses. Pellissippi Place is an example of the conversion of farmland to a commercial use. The proposed project has been envisioned by local plans (including the Blount County Growth Strategy (2005), the Maryville Urban Growth Strategy (2005), and the 2008 Blount County Policies Plan Update) as a necessary infrastructure investment to connect developed and developing areas.
EPA— Recommendati ons	EPA 15	6	3-13 to 3- 16	Purpose & Need – traffic congestion and poor levels of traffic operation on major arterial roads (in particularly US 129, SR 33 and US 411) and intersections in the study area. FHWA/TDOT do not conclude from their travel studies the proposed action will address congestion and poor levels of traffic operation. FHWA/TDOT have not demonstrated this situation exists except for the SR 115 segment of US 129. The geographic location of the proposed action precludes it from potentially alleviating this problem for the SR 115 segment. Additionally, FHWA/TDOT do not conclude nor explain how the proposed action will address their identified red (bad) segments of its LOS. For example, the red segments identified on US 411, Wildwood Road, US 129 and SR 33. The FEIS does not fully explain how the proposed action may impact the LOS on the existing Parkway and US 129. The entire US 321 remains “green” for all of the years that were analyzed by the transportation agencies. Consequently, the need to connect to US 321, where the Preferred Action has the greatest environmental impacts, remains unexplained. The red segments on Wildwood Road (2040) and US 411 (all years) do not correspond with traffic issues identified on SR 35 in the Maryville core. SR 35 is ‘green’ LOS on the Hall Road segment but the Washington Street segment was not studied. However, Washington Street is in the Maryville core.	Multiple needs were identified in this project including traffic congestion and poor levels of traffic operation. One of the purposes for the project was stated in the FEIS as: <i>Assist in achieving acceptable traffic operations on the transportation network or avoid adversely affecting traffic operations on the existing transportation network.</i> The traffic analysis conducted for the study demonstrated that traffic volumes in the project area are expected to continue to grow because of population and employment growth in the area. As noted in the FEIS, the level of service on existing Pellissippi Parkway between US 129 and SR 33 will be worse under the Preferred Alternative than under the No-Build Alternative because the traffic on existing Pellissippi Parkway will increase substantially (27 to 61%) under the Preferred Alternative. This points to the attractiveness of the proposed project to carry traffic to and from the east side of Maryville and Alcoa. On the other hand, Wildwood Road through the project area will experience lower traffic volumes and a desirable LOS (C versus E) with the Preferred Alternative in 2040. There will be improvements on some other roadways, including segments of US 321 and Hall Road. For the remainder for the roadways, there will be no difference in LOS. The project is not expected to be the singular solution to traffic congestion in the project area. Addressing traffic congestion is not the only or most important purpose of the project. As demonstrated in the FEIS, the project will provide a new travel option (route) for motorists to the county’s existing radial roadway network, and enhance regional transportation system linkages by connecting the eastern portions of Blount County more directly with western parts of Knox County and with Oak Ridge.
EPA— Recommendati ons	EPA 16	6	3-13 to 3- 16	Regarding the red segments of the Intersection LOS, it is unclear how the proposed action will impact all the ‘red’ intersections. Moreover, it is unclear whether a study to improve traffic synchronizing or replacing stop signs with traffic signal might prove a more effective alternative. The EPA notes that a traffic signal/management study was not performed and included in the FEIS.	<i>The Addendum to Traffic Operations Technical Report, dated February 2014 (found in Technical Appendix B of the FEIS)</i> Intersection LOS - Section 3.3 of the <i>Traffic Operations Technical Report Addendum</i> (February 2014) noted that the proposed project would improve the LOS at eight intersections. This improvement is the result of reduced traffic through the intersections. Table 20 in the <i>Technical Report Addendum</i> identifies the specific intersections and their associated improvement. Concurrent with the preparation of the EIS for this project, Alcoa and Maryville conducted signal timing optimization studies and implemented signal upgrades and fiber optic installation to upgrade traffic sign control infrastructure and improve multi-jurisdictional communication interconnects in Blount County. In 2012, the Maryville-Alcoa Central Traffic Operations (MACTO) was created in part to oversee the continual optimization of the various coordinated signal

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					systems. In 2015, the two cities initiated a program of expanded fiber optic communications, a central signal control system/software, a traffic operations center (TOC), and various signal upgrades. During the updated traffic analysis conducted in 2014 for the Pellissippi Parkway Extension Project, TDOT obtained from the MACTO Traffic Operations Manager the signal timing for several of the signalized intersections for the current year; the 2040 scenario assumes coordination/optimization of the signalized intersections. The 2014 traffic operations analysis for the project incorporated the Maryville/Alcoa coordinated/optimized roadway system. In an email dated December 31, 2015, the MACTO manager stated that “we need both strategies of signal timing optimization, and capacity improvements such as building the Pellissippi Parkway extension.” In February 2016, the MACTO manager provided a comparison of the changes in delay between the uncoordinated operations (without the signal optimization) and the coordinated / optimized scenario (with the signal optimization) for the following roadway segments: - SR 35 corridor including the segments in Alcoa (Hall Rd) as well as the Washington St and Sevierville Rd segments in Maryville; and - SR 33 (Old Knoxville Highway) The table below summarizes the findings of the comparison of delay on SR 35 and SR 33. <table><tr><th colspan="5">System 1: SR35/Hall Rd/Washington ST/US 321</th></tr><tr><th rowspan="2">Scenario</th><th colspan="2">AM</th><th colspan="2">PM</th></tr><tr><th>Total Delay (hours)</th><th>% Change</th><th>Total Delay (hours)</th><th>% Change</th></tr><tr><td>Uncoordinated</td><td>64.8</td><td></td><td>181.3</td><td></td></tr><tr><td>Coordinated</td><td>61.6</td><td>4.9%</td><td>132.7</td><td>26.9%</td></tr></table> <table><tr><th colspan="5">System 6: SR 33 (Old Knoxville Highway)</th></tr><tr><th rowspan="2">Scenario</th><th colspan="2">AM</th><th colspan="2">PM</th></tr><tr><th>Total Delay (hours)</th><th>% Change</th><th>Total Delay (hours)</th><th>% Change</th></tr><tr><td>Uncoordinated</td><td>35.5</td><td></td><td>42.4</td><td></td></tr><tr><td>Coordinated</td><td>18.0</td><td>49.3%</td><td>26.2</td><td>38.2%</td></tr></table> The comparison demonstrates that each roadway system experienced an improvement in intersection delay as a result of signal control infrastructure. The percent reduction in delay for SR 35/Hall Rd/Washington St/US 321 is about 5% to 27%, while for SR 33, the reduction is delay is more substantial (38% to 48%). As mentioned above, the 2014 traffic operations analysis for the project included the coordinated networks.	System 1: SR35/Hall Rd/Washington ST/US 321					Scenario	AM		PM		Total Delay (hours)	% Change	Total Delay (hours)	% Change	Uncoordinated	64.8		181.3		Coordinated	61.6	4.9%	132.7	26.9%	System 6: SR 33 (Old Knoxville Highway)					Scenario	AM		PM		Total Delay (hours)	% Change	Total Delay (hours)	% Change	Uncoordinated	35.5		42.4		Coordinated	18.0	49.3%	26.2	38.2%
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Scenario	AM		PM																																																		
	Total Delay (hours)	% Change	Total Delay (hours)	% Change																																																	
Uncoordinated	35.5		42.4																																																		
Coordinated	18.0	49.3%	26.2	38.2%																																																	

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EPA— Recommendati ons	EPA 17	6	1-29	Purpose & Need – Pellissippi Place Research and Technology Park – According to FHWA/TDOT, local officials see the extension of Pellissippi Parkway as an important component of the financial viability of Pellissippi Place, a mixed use development. The FHWA/TDOT has not demonstrated the need to connect Pellissippi Place to large tracts of rural farmland for its viability.	As discussed in FEIS Section 3.2.1.2, Future Land Use, the area encompassing the proposed project and the Pellissippi Place research and development park is within the established urban growth boundaries for Blount County, Maryville, Alcoa, and Maryville. The areas within the urban growth boundary are expected to develop by 2027 and beyond. The land use plans and growth strategies for Blount County and Maryville anticipate that the rural farmlands in this area will be converted to higher density residential and commercial uses. The project area’s rural farmlands are already being converted to higher density residential and commercial uses even without the presence of Pellissippi Parkway Extension. Pellissippi Place is an example of the conversion of farmland to a commercial use. New homes have been built in the project area, along Sam Houston School Road, Peppermint Road, Helton Road and Hitch Road, and in the Sweetgrass Plantation subdivision, and a new church has been built adjacent to the southern terminus of the project on US 321. All of this has occurred since the DEIS was initiated. The proposed project has been envisioned by local plans as a necessary infrastructure investment to connect developed and developing areas, including Pellissippi Place. The <i>Blount County Growth Strategy</i> (2005), the <i>Maryville Urban Growth Strategy</i> (2005), and the <i>2008 Blount County Policies Plan Update</i> all recognize the need for infrastructure enhancements in the area of the proposed Pellissippi Parkway Extension, among other areas in the county, to help address and support future developments.
EPA— Recommendati ons	EPA 18	6-7	Section 3.14.2, see Tables 3-27, 3-30, and 3-31	Alternatives Analysis – The EPA strongly encourages FHWA/TDOT to select the least environmentally damaging practicable alternative (LEDPA) pursuant to the Clean Water Act Section 404(b) (1) guidelines. The Mitigation Rule requires the US Army Corps of Engineers (USACE) to consider whether the proposed project represents the LEDPA. Both the USACE and the EPA follow the Mitigation Rule’s defined process prior to the issuance of a 404 permit...The first step requires the applicant to rebut the Mitigation Rule’s presumption of the existence of a LEDPA (40 CFR 230.10(a)). The FHWA/TDOT have shown in the FEIS that the Preferred Alternative has the greatest impacts to streams, wetlands, and floodplains of all the alternatives evaluated. FHWA/TDOT identified three other alternatives with less impacts to aquatic resources and waters of the U.S.	Statement noted. The FEIS complies with all applicable standards for legal sufficiency established under NEPA and the implementing regulations of both the Council of Environmental Quality (40 CFR § 1500-1508) and FHWA’s own NEPA regulations (23 CFR § 771).
EPA— Recommendati ons	EPA 19	7	2-8 to 2-11	Furthermore, in contrast to the Preferred Alternative, Alternatives C and D appear to avoid the identified environmental justice community. The TDOT indicated it ruled out Alternatives C and D for archaeological-resources purposes. However, TDOT’s Preferred Alternative is a realignment to avoid an archaeological site.	Statement noted. Alternatives C and D were not ruled out for archaeological resources purposes. The 2012 Preferred Alternative had 5 potentially eligible archaeology sites as did Alternative C. Alternative D did not have any sites as was noted in Table 2-4 of the FEIS. The east and west shifts of the 2012 Preferred Alternative were developed after studies confirmed the presence of a National Register eligible archaeological site near the southern terminus of the 2012 Preferred Alternative.
EPA— Recommendati ons	EPA 20	7	Table 3-37, throughout Chapter 3; Section 3-5, start on page 3-42	FHWA/TDOT should reevaluate the Preferred Alternative for one that terminates at US 411 instead of US 321, or select an alternative that avoids or minimizes impacts to waters of the U.S., the environmental justice community, and prime farmlands. A ‘US 411’ alternative would avoid impacts to Gravelly Creek and Flag Branch, just upstream of their confluence with each other, and their confluence with Crooked Creek (which in turns confluent with the Little River). Furthermore, a ‘US 411’ alternative avoids impacts to residents of Kensington Place, an environmental justice community, including noise, and avoids the need (and cost) to construct a noise barrier.	Terminating the project at US 411 fails to achieve a long established regional plan to extend Pellissippi Parkway between I-40 in Knoxville and US 321 east of Maryville. US 411 is a two-lane roadway in Blount County east of SR 33, while US 321 is a major four-lane divided highway that carries substantially higher volumes of traffic. US 411 would require a substantial upgrade to carry the traffic that will be generated by the proposed action. A “US 411” alternative would not serve the intent of the new roadway, to connect with US 321 and allow travelers more mobility options to the primarily radial existing road network. As to the selection of an alternative that avoids or minimizes impacts to waters of the U.S., the environmental justice community, and prime farmlands - given the area of potential impacts, the least damaging alternatives were carried forward for study in the DEIS and the FEIS.

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					The DEIS did initially considered another alternative (Alternative B) between SR 33 and US 321 that was farther east of the Preferred Alternative and Alternatives C and D. While Alternative B met the purpose and need for the project, it was dismissed from further consideration early in the process based on its stream (including proximity to the Little River) and floodplain impacts as well as substantial residential relocation impacts.
EPA— Recommendati ons	EPA 21	7	3-93	<i>FHWA/TDOT incorrectly states in the FEIS that Crooked and Gravelly Creeks are no longer listed as impaired. These water bodies are subject to total maximum daily loads (TMDLs) for siltation and pathogens. Moreover, the downstream receiving stream, the Little River, has been identified as “threatened due to a documented decline in diversity at biological stations. [EPA footnoted the Proposed Final Version Year 2014 303(d) List available at http://www.tennessee.gov/assets/entities/environment/attachments/2014-proposed-final-303d-list.pdf.]</i>	Gravelly Branch was not named in either the 2012 or the 2014 303(d) lists; however, as stated in the FEIS, “Flag Branch is already merged into Gravelly Creek upstream of Alternative D.” Thus, Gravelly Creek would be assumed to be included in the 303(d) listing of the upstream Flag Branch. A review of the 2012 list determined that the FEIS incorrectly stated that Crooked Creek was no longer 303(d) listed; the 2012 list did include Crooked Creek, and it is included in the more recent 2014 list. This correction will be addressed in the ROD.
EPA— Recommendati ons	EPA 22	7	1-12	<i>FHWA/TDOT should also re-evaluate its Preferred Alternative for the proposed Pellissippi Place Access Road Extension. The ‘Extension’ is listed in the Regional Mobility Plan Projects for the Project Area. As described, the Extension proposes to widen an existing two-lane road to four, between the existing Parkway’s terminus with SR 33 and Wildwood Road. It also includes a center median lane. The Preferred Alternative proposes to extend the existing Parkway from its terminus with SR 33 to US 321 as a new four-lane divided highway with three interchanges. Because Wildwood Road lies between SR 33 and US 411, it will be crossed by the Preferred Alternative. The proposed Pellissippi Place Access Road Extension has less environmental impacts than the above proposed new alternative. Moreover, the ‘Expansion Project’ is on the Regional Mobility Plan and it should be described in the FHWA/TDOT’s ‘No-Action’ alternative discussions. The FHWA/TDOT indicate this [Pellissippi Place Access Road Extension] was the only project in the Mobility Plan that was not included in the “select link analyses.”</i>	The comment is unclear. The Pellissippi Place Access Road Extension is intended as a local road to serve directly the enterprises within the technology park rather than through traffic, which would be served by Pellissippi Parkway Extension. On page 1-12 of the FEIS, it states “Select link analyses were conducted along SR 33 and US 129 for the 2040 existing plus committed projects network. This includes projects in the <i>Regional Mobility Plan 2040</i> minus the Pellissippi Parkway Extension.” The Pellissippi Place Access Road Extension is included in the select link analysis; the “Expansion Project” referred to by the EPA is the Pellissippi Parkway Extension, the subject of this EIS, which would not be in the No-Build Alternative.
EPA— Recommendati ons	EPA 23	8	No specific page	<i>FHWA/TDOT should consider the CEQ requirement that all alternatives be rigorously explored and objectively evaluated (40 CFR 1502.14(a)). The alternatives analysis should present the environmental impacts of the proposal and the alternatives in comparative form, thus “sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public. A decision-maker must, in fact, consider all the alternatives discussed in an EIS.” (40 CFR 1505.1(e)).</i>	The CEQ regulations have been followed in the analysis of alternatives for the proposed action. The FEIS presents and compares the impacts of the Preferred Alternative, the alternatives considered in DEIS and alternatives identified after the selection of the initial Preferred Alternative. Tables 2-7 and 3-37 of the FEIS present the impacts of these alternatives in a comparative form, in addition to the discussion under each section in FEIS Chapter 3. Based on public comments received on the FEIS, in December 2015 TDOT and FHWA determined that the traffic analysis for Alternative D should be expanded to the same level as the No-Build and Preferred Alternative, prior to the issuance of a ROD. The <i>Update to the Traffic Operations Technical Report</i> (April 2016) reports on the more detailed analysis of Alternative. This analysis confirms the finding reported in the FEIS that under Alternative D traffic operation on roadways and intersections along its general route (Sam Houston School Road, Peppermint Road, Helton Road and Hitch Road) would be at LOS F when compared to the No-Build condition (LOS A-D) in 2040. The analysis and comparison presented provides a sharp definition of the issues and provides a clear basis for the choice of the Preferred Alternative. The FEIS, and the DEIS, Reevaluation, and technical studies by incorporation, provide the decision-makers with sufficient information on all of the alternatives to make an informed and rational decision on the Preferred Alternative.
EPA—	EPA 24	8	C-1-45	<i>The EPA recommended in its 2010 DEIS comments, for TDOT to “...look at the measures that</i>	The EPA’s comment on the 2010 DEIS, addressed the DEIS section, “Measures to Avoid or Minimize

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Recommendations				<i>would be required by alternative [to avoid impacts to streams], the unavoidable impacts by alternative and the effectiveness of measures by alternative.” TDOT’s response in the FEIS is noted: “A comparison by alternative of measures to avoid impacts, unavoidable impacts and effectiveness of measures would not likely assist in determining the selection of the Preferred Alternative.” This assertion contradicts CEQ’s NEPA implementing regulations.</i>	Impacts to Aquatic Resources.” Prior to the comment listed in this table, EPA had asked for an explanation of what specific measures will be taken and how will they minimize impacts. TDOT responded by providing additional details to the Preliminary Mitigation Measures for Aquatic Resources. TDOT also noted in the response to EPA’s 2010 DEIS comment that “During final design, TDOT will confirm and evaluate measures to avoid, minimize or mitigate impacts of the project on aquatic resources.” The comment in Table C-1 in Attachment C of the FEIS quoted by EPA was meant to explain that because of the proximity of the alternatives and the conceptual nature of the design, the range of potential mitigation measures would essentially be the same among all the alternatives. A comparison of the effectiveness of mitigation measures by alternative would not likely provide a clear differentiation among the alternatives at this point. During final design, measures to avoid, minimize or mitigate impacts of the project on aquatic species will be confirmed and evaluated based on more detailed survey data and the Environmental Boundaries Survey. Based on comments of EPA and several other agencies during the DEIS comment period and the TESA Concurrence Point 4 (under the original TESA agreement, see response to EPA-33 comment below), a commitment was added to the FEIS regarding the development of mitigation measures during final design: “TDOT will provide USACE with copies of the Environmental Boundaries Study and Mitigation Memorandum prior to submitting the permit application. TDOT will invite USACE to participate in a field review to make a jurisdiction determination for any of the streams and wetlands that will be impacted by the project, at USACE’s discretion. TDOT will carry out any required mitigation for jurisdictional stream and wetland impacts, which is a condition of the permit.” This project was developed in accordance with the Tennessee Streamlining Agreement (TESA) originally executed in 2008. The TESA process for this project concluded with the completion of TESA Concurrence Point (CP4) in May 2012. The revised TESA agreement, executed in 2014, provided for a revised CP 4 package (Final Draft Mitigation), which occurs after the issuance of the decision document (CE, FONSI or ROD) and prior to the permit application. Even though the TESA process for this project is considered complete, this ROD contains the environmental commitment to give current TESA agencies involved with wetlands and streams and the EPA the opportunity to review and comment on the Final Draft Mitigation package for the project prior to TDOT’s submittal of permit applications.
EPA—Recommendations	EPA 25	8	Traffic – 3-13 and 3-15;	<i>FHWA/TDOT did not provide consistent traffic analysis and environmental information for all the alternatives considered, which made its evaluation of the ‘CEQ-required alternative comparison’ difficult.</i>	Alternative D is an improved two-lane roadway that would be constructed using the existing roadway alignment where possible while straightening curves, realigning intersections, and using new locations to provide a continuous route. The corridor LOS analysis demonstrated that the projected volumes on Alternative D would exceed the carrying capacity for a two-lane road. Given the failure of Alternative D’s corridor LOS analysis, the 2014 <i>Addendum to the Traffic Operations Technical Report</i> (found in Technical Appendix B of the FEIS) did not include an intersection analysis for this alternative because it is expected that the intersection LOS analysis would also yield poor results. As described above in response to Comment EPA-23, after consideration of public comments on the FEIS, the traffic analysis was updated for Alternative D to the same level as the No-Build and Preferred Alternatives. The updated traffic analysis for Alternative D (reported in the April 2016 <i>Update to the Traffic Operations Report</i>) confirm the findings reported in the FEIS. Given the volumes associated with Alternative D, intersection operations at key new intersections associated with that alternative would fail (experience LOS F) in the future year 2040 due to inadequate capacity of the two-lane alternative to process the additional projected traffic volumes. This is

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					true with either stop-controlled operations or signalized traffic operations.
EPA— Recommendati ons	EPA 26	8	streams – 3-88, 3-47, 2-10	As a general example of inconsistent environmental information, <i>Alternative D’s environmental impacts are inaccurately stated. FHWA/TDOT state that Alternative D “affects more linear feet of ecologically diverse downstream reaches compared with Alternatives A and C.”</i> EPA also quotes as an example, the FEIS statement, “<i>the Sam Houston School Road portion [of Alternative D] is near a bend in the Little River, which is the County’s primary source for drinking water and a designated Exceptional Tennessee Water.</i>” Regarding the Exceptional Tennessee Water designation, it is the Little River segment within the Great Smoky Mountains that is classified by TDEC as an Outstanding National Resource Water (ONRW) and an ecoregion reference site. <i>The ecologically diverse downstream reaches and the Exceptional Tennessee Water designations do not occur in the Little River segment flowing through the study area, specifically north of Alternative D. Within the study area, the State has identified the Little River as “threatened” due to a documented decline in diversity at biological monitoring stations for a 17.6 mile segment. This river segment supports several protected aquatic species, provides municipal water for most of Blount County and is heavily used for recreational purposes. Three creeks - Pistol, Short, and Crooked Creeks – join the Little River in the vicinity of the drinking water supply segment. All three are listed as impaired waters. Their impairment have contributed to the Little River’s “threatened status.” The pollutants of concern, which will also be associated with the proposed action, are siltation, land development, urban runoff/storm sewers and nutrients. The proposed action will increase stormwater runoff and associated pollution impacts to the drinking water supply and protected aquatic species.</i> <i>Moreover the Preferred Action’s intersection with US 321 will likely have direct construction and operation impacts on two impaired streams, Flag Branch and Gravelly Creek, directly above their confluence with Crooked Creek, and from there, will impact the Little River. The EPA understands that Alternative D impacts 1,695 linear stream feet: 3,237 feet less than the Preferred Alternative (PA), 2,060 feet less than the original PA with the East Shift, 2,622 feet less than the original PA [2012 Preferred Alternative], and 925 feet less than Alternative C.</i>	The assessment of Alternative D’s potential to impact “more linear feet of ecologically diverse downstream reaches” was derived in part from the TN Department of Environment and Conservation (TDEC) comments on the draft DEIS (in a letter dated January 6, 2010). In that letter, TDEC stated “<i>Alternative D provides the least separation from the Little River of the proposed alternative alignments. While the impacts to linear feet of streams is expected to be less than Alternatives A & C, the stream reaches that would be impacted include greater lengths of more ecologically diverse downstream reaches. Alternative D closely approaches the Little River in an area where it could adversely impact drinking water and known habitat of certain T&E species.</i>” EPA correctly noted that the Exceptional Tennessee Water (ETW) designation applies to that segment of the Little River that lies within the Great Smoky Mountains National Park. In several locations in the FEIS, the text describes the Little River as a designated Exceptional Tennessee Water (see pages S-3, 2-8, 3-47), but fails to specify that the actual designation is upstream of the project area, within the national park. The specific references should be revised to acknowledge that the ETW location is within the park and not in the project area. This correction will be noted in the ROD. We acknowledge that the Little River through the project area is 303(d) listed; the 2014 303(d) listing states, “<i>This 17.6- mile section of the Little River has been identified as “threatened” due to a documented decline in diversity at biological stations at miles 7.6 and 9.6.</i>” Streams in the project area that flow into the Little River have previously been affected by farming activities, stormwater runoff, siltation, and land development. With Alternative D, which is physically closer to the Little River, runoff would have less time to be diluted before reaching the Little River. The mitigation measures that will be incorporated into the project will minimize the project’s impacts on the affected streams that flow into the Little River.
EPA— Recommendati ons – Environmental Impacts	EPA 27	9	Section 3.5.2, page 3-44 to 3- 47; also 3- 38 (first full paragraph)	Environmental Justice – <i>FHWA/TDOT do not address the proposed action’s potential impacts to the affected Kensington Place community’s ingress and egress on/from US 321.</i>	The proposed PPE will not obstruct ingress and egress for the Kensington Place community to US 321. A trumpet interchange is currently being considered for the US 321 interchange to the east of Perry Payton Drive, which serves to connect the mobile home community to US 321. The project is not expected to adversely impact the community’s access to and from US 321. TDOT will monitor the traffic patterns in this area once the project is built and determine whether traffic controls are warranted. The FEIS complies with Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (Executive Order 12898), the U.S. Department of Transportation (USDOT) EJ Order 5610.2(a), and the FHWA EJ Order 6640.23A.
EPA— Recommendati ons – Environmental Impacts	EPA 28	9	Section 3.11.2, page 3-65	Environmental Justice – <i>FHWA/TDOT do not address the proposed action’s potential impacts to the affected Kensington Place community’s [...] potential air toxics impacts to residents, particularly children. The EPA remains concerned regarding TDOT’s lack of analysis related to Mobile Source Air Toxics (MSATs). The alternatives being considered under the NEPA process can and should be properly compared using their potential impacts related to MSATs as one of the measures for comparison at the project level. EPA believes the existing</i>	The Air Quality analysis presented in the <i>Air Quality Technical Report Update</i> dated June 2014 (found in Technical Appendix E of the FEIS) used FHWA’s current MSATs guidance, <i>Interim Guidance Update on Air Toxic Analysis in NEPA Documents</i> (FHWA 2012). The purpose of the guidance is to advise on when and how to analyze MSATs in the NEPA process for highways. This guidance is interim because MSAT science is still evolving.

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				<i>tools are adequate to compare the potential impacts of different alternatives as part of the NEPA analysis.</i>	There is a lack of a national consensus on an acceptable level of risk. Because of the limitations in the methodologies for forecasting health impacts, any predicted difference in health impacts between alternatives is likely to be much smaller than the margin of error associated with predicting the impacts. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than safe or acceptable. Table 4 in the <i>Air Quality Technical Report Update</i> shows that the VMT for the four-lane alternatives was assumed to be the same because the Knoxville Regional TPO indicated that the differences between the alternatives were not significant for the purposes of traffic projections. The Preferred Alternative (including the Preferred Alternative with East Shift and the 2012 Preferred Alternative A) and Alternative C share the same alignment for about a third of the project length and then split and generally run parallel with a maximum separation of about 3,300 feet. These small differences in alignment would not affect travel behavior, which is why the VMTs and overall MSAT effects would not differ between alternatives. Modeling data was not available for Alternative D at the time of the FEIS analysis but an evaluation was completed as described in the report and Table 5 of the report. In FHWA’s view, information to predict the project specific health impacts due to changes in MSAT emissions associated with a set of highway alternatives is incomplete and unavailable to predict in any credible way. The FEIS complies with Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (Executive Order 12898), the U.S. Department of Transportation (USDOT) EJ Order 5610.2(a), and the FHWA EJ Order 6640.23A.
EPA— Recommendati ons – Environmental Impacts	EPA 29	9	3-45 to 3- 46	Environmental Justice – <i>TDOT has committed to construct a noise barrier along the Kensington Place Community. However TDOT did not identify the anticipated reduction in noise associated with this barrier. Even with the proposed mitigation, the noise could still be above unacceptable levels.</i> <i>FHWA’s noise regulations, 23 CFR 772.11(f) require “views of the impacted residents will be a major consideration in reach a decision on the reasonableness of abatement measures to be provided.”</i> <i>EPA suggested that a noise barrier should have been compared to views of the Great Smoky Mountains.</i>	The predicted sound levels for Kensington Place with and without the proposed noise barrier are shown in Appendix F of the noise report. (Noise Analysis 4 – Alternative A West Shift). As indicated, sound levels with the barrier are below the FHWA Noise Abatement Criteria (NAC) of 67 dBA for all of the residences in Kensington Place. In fact, sound levels at the majority of residences will be between 55 and 60 dBA. In accordance with FHWA’s regulations and TDOT’s Noise Abatement Policy, residents in the Kensington Place mobile home community will be provided an opportunity to provide their views on the noise barrier. If the majority of benefited residents and property owners give their approval, TDOT will build the wall. If the majority of benefited residents and property owners object, then TDOT will not build the wall. TDOT will follow the process defined in the current TDOT Noise Procedures to solicit input from affected property owners and residents. Per Section 2.3.2.4 Viewpoints of Benefited Property Owners and Residents of the Noise Procedures, affected property owners and residents will be given the opportunity to provide input regarding the proposed noise barriers at the design public hearing or other public meetings during final design. The procedures further define that the public advertisement for the hearing or meeting(s) will specifically state that noise barriers will be discussed. The process also requires that the comment card for the hearing or meeting will provide a dedicated space for noise barrier comments. The Noise Procedures also provide for a certified mail survey to solicit the views of benefited property owners and residents in the event there is no clear consensus during the hearing or meeting. EPA appears to be referencing the previous FHWA noise regulation. In Section 772.11 (f) of the previous regulation, “views” meant viewpoints or opinions. The regulation was updated in July 2010.

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EPA— Recommendati ons – Environmental Impacts	EPA 30	9	2-14; Costs- 2-7 to 2-8	Environmental Justice – FHWA/TDOT state: <i>“Since the Kensington Place mobile home community is not completely occupied, displaced residents who want to stay in their existing community may be able to relocate to one of the numerous site pads available if they so choose.” This relocation may incur a cost and one the FHWA/TDOT have not identified as a project relocation expense.</i>	Whether displaced residents chose to move within the mobile home community or to another location, any relocation costs are incurred as part of the overall project costs. The capital cost estimate includes relocation costs as part of the project contingency at this preliminary stage of design.
EPA— Recommendati ons – Environmental Impacts	EPA 31	9	3-81	Mitigation Measures – <i>The EPA acknowledges that FHWA/TDOT discussed mitigation measures. However, the mitigation measures are not included in the FEIS’ Environmental Commitments section. EPA requests that these mitigation measures be included in the ROD as environmental commitments. Similarly EPA requests that the proposed floodplain mitigation measures be included in the ROD as environmental commitments despite their status as “standard procedure.” EPA also recommends that the ROD should address CEQ’s guidance on appropriate use of mitigation and monitoring.</i>	Comment Noted. Several mitigation measures that are specific to this project are listed in the Environmental Commitments Green Sheet at the front of the FEIS. These items will be included in the ROD as environmental commitments. The Green Sheet also states that TDOT’s <i>Standard Specifications for Road and Bridge Construction</i> will be followed. TDOT does not include standard procedures on the Green Sheet. Environmental Commitments shown on the Green Sheet are those that are beyond or more project specific than what would be done in standard practice. Mitigation measures will be further defined as we move into final design, prior to permitting. The ROD will define the mitigation measures that will be implemented for the project and TDOT will ensure that the mitigation measures and any required monitoring will be conducted.
EPA— Recommendati ons – Environmental Impacts	EPA 32	10	Section 3.11.3, page 3-67 to 3-69	Greenhouse Gas (GHG) Emissions – <i>The EPA recommends that FHWA/TDOT address the proposed action’s GHG impacts in the context of the CEQ’s draft 2014 Climate Change Guidance. FHWA and TDOT have not evaluated the GHG emissions associated with road construction and maintenance. Moreover the metric Tennessee Motor Vehicles use is a statewide number. However, out-of-state visitors to the area including tourism may not be reflected in this number. Furthermore, the proposed action converts land use currently conducive to CO2 sequestration and storage. CEQ recommends agency attribute, “specific climate impacts to individual projects through the use of projected GHG emissions, potential changes in carbon sequestration and storage, as a proxy for assessing a proposed action’s potential climate change impacts. (40CFR 1502.16, 1508.9). The agency can then present the environmental impacts of the proposed action in clear terms and with sufficient information to make a reasoned choice among the no-action and proposed alternatives and mitigations, and ensure the professional and scientific integrity of the discussion and analysis.” (40 CFR 1500.1, 1502.24).</i> The CEQ recognizes that: <i>many agency NEPA analyses to date have concluded that GHG emissions from an individual agency action have small, if any potential climate change effects. Government action occurs incrementally, program-by-program and step-by-step and climate impacts are not attributable to any single action, but are exacerbated by a series of smaller decisions, including decisions made by the government. Therefore, the statement that emissions from a government action or approval represent only a small fraction of global emissions is more a statement about the nature of the climate change challenge, and is not an appropriate basis for deciding whether to consider climate impacts under NEPA. Moreover, these comparisons are not an appropriate method for characterizing the potential impacts associated with a proposed action and its alternatives and mitigations. This approach does not reveal anything beyond the nature of the climate change challenge itself; the fact that diverse individual sources of emission each make relatively small additions to global atmospheric GHG concentrations that collectively have huge impact.”</i>	The Council on Environmental Quality (CEQ) has withdrawn its final guidance for Federal agencies on how to consider greenhouse gas emissions and the effects of climate change in <i>National Environmental Policy Act</i> (NEPA) reviews, a Notice of Availability for which was published on August 5, 2016 (81 FR 51866). As explained in the Notice of Availability, the withdrawn guidance was not a regulation. Pursuant to Executive Order 13783, “Promoting Energy Independence and Economic Growth,” of March 28, 2017, the guidance has been withdrawn for further consideration. The withdrawal of the guidance does not change any law, regulation, or other legally binding requirement.
EPA—	EPA 33	10	Section	The TESA Concurrence Process – <i>The EPA recommends that FHWA/TDOT’s ROD should</i>	The EPA was a signatory agency to the original Tennessee Environmental Streamlining Agreement

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Recommendations			4.2.2, page 4-7 to 4-9	<i>reflect the EPA’s inability to concur with any of the proposed action’s concurrence points...The EPA notes that any TESA-related concurrence forms were signed in 2008 and before substantially [sic] changes were made to the proposed project. More importantly, the EPA’s 2010 Parkway DEIS formal comments indicate that it does not concur with any of the above concurrence points. The EPA’s 2010 DEIS recommendations have not been, for the most part, incorporated into the FEIS. The EPA recommends that the ROD reflect the above factual statements.</i>	(TESA) agreement, signed in 2008. The TESA process was revised in 2014 and EPA elected not to participate in the revised process. This project was reviewed under the original TESA agreement (signed in 2008). For Concurrence Point (CP) 1 (Purpose and Need and Study Area) the EPA did not return the concurrence signature page or otherwise provide comments to the package in 2008; under TESA, those agencies that did not return signature pages are automatically assumed to concur. For Concurrence Points 2, 3 and 4, the EPA provided advisory comments along with the signed forms that stated its concurrence with the packages. Concurrence Point 4 was completed in 2012, under the original TESA agreement. The table below summarizes the TESA process followed for this project. <table><tr><th>Concurrence Point (CP) (original agreement)</th><th>EPA Concurrences</th><th>Date of Form Submitted</th></tr><tr><td>1 - Purpose and Need and Study Area</td><td>Did not sign concurrence form or ask for an extension, so under original TESA, EPA was automatically assumed to concur</td><td>N/A</td></tr><tr><td>2 – Project Alternatives to be Evaluated in the DEIS</td><td>Yes – advisory comments submitted</td><td>07-22-2008</td></tr><tr><td>3 – Preliminary Draft DEIS</td><td>Yes – advisory comments submitted</td><td>12-18-2009</td></tr><tr><td>4 – Preferred Alternative and Preliminary Mitigation</td><td>Yes – advisory comments submitted</td><td>05-15-2012</td></tr></table> EPA concurred with the CP 3 package and did not provide an advisory comment that indicated in any way their previous concurrences were invalid or that they did not concur. Further, EPA participated in the review of the CP 4 package and submitted a signed concurrence form with two advisory comments, neither of which withdrew its prior concurrences.	Concurrence Point (CP) (original agreement)	EPA Concurrences	Date of Form Submitted	1 - Purpose and Need and Study Area	Did not sign concurrence form or ask for an extension, so under original TESA, EPA was automatically assumed to concur	N/A	2 – Project Alternatives to be Evaluated in the DEIS	Yes – advisory comments submitted	07-22-2008	3 – Preliminary Draft DEIS	Yes – advisory comments submitted	12-18-2009	4 – Preferred Alternative and Preliminary Mitigation	Yes – advisory comments submitted	05-15-2012
Concurrence Point (CP) (original agreement)	EPA Concurrences	Date of Form Submitted																		
1 - Purpose and Need and Study Area	Did not sign concurrence form or ask for an extension, so under original TESA, EPA was automatically assumed to concur	N/A																		
2 – Project Alternatives to be Evaluated in the DEIS	Yes – advisory comments submitted	07-22-2008																		
3 – Preliminary Draft DEIS	Yes – advisory comments submitted	12-18-2009																		
4 – Preferred Alternative and Preliminary Mitigation	Yes – advisory comments submitted	05-15-2012																		
City of Alcoa TN Planning and Codes Department (PCD) November 18, 2015																				
PCD	1	1	3-20	<i>The sidewalk requirements set forth within the city of Alcoa’s Standards for Land Subdivision have been incorrectly referenced [...]. The city does require sidewalks, a minimum of 5 feet in width, on each side of the street for those classified arterial, collector or local. These references, as also attached, are located on pages 19-23 of the city’s Standards for Land Subdivision (Article III, General Requirements and Minimum Standards of Design) adopted July 1997/latest Revision March 2015.</i>	The City of Alcoa’s current sidewalk requirements has been included in the ROD.															
City of Alcoa TN Public Works and Engineering Department (PWED) November 18, 2015																				
PWED	1	1	n/a	<i>This letter is submitted in full support of the <u>completion</u> of Pellissippi Parkway to its planned terminus at East Lamar Alexander Parkway (SR 73/US 321). All studies (traffic, environmental, etc.) associated with this project support its completion. Old Knoxville Highway (SR 33), the highway’s current terminus, is sorely inadequate and terribly congested</i>	Comment noted.															

Agency Date of Comment	Comment #	Page # of Comment	FEIS Page #	Summary of Agency Comments	Responses
				during both the morning and afternoon peaks. Completion of the project to SR 73 will not only alleviate traffic in this area but should also reduce congestion along Hall Road/Washington Street (SR 35) in Alcoa and Maryville. Some improvement to traffic on Alcoa Highway (SR 115/US 129) should also be realized between its junctions with SR 36 and SR 162.	
Greg McClain, Maryville City Manager November 18, 2015					
Greg McClain	1	1	n/a	The completion of this Parkway is vital to our long-term viability as a community. The urban core is already experiencing traffic congestion beyond our ability to engineer away. Connecting these significant corridors together will ease the traffic struggles in the fast growing communities of Maryville and Alcoa and at the same time reduce emissions and wait times moving through corridors with so many traffic lights.	Comment noted.
Ed Mitchell, Blount County Mayor November 18, 2015					
				It has long been recognized the need for the Pellissippi Pkwy extension. As far back to the late 60's leadership at both state and local levels have understood the benefit that this extension would provide to this area in both tourism as well as economic growth. With the increase in population and the demand on our infrastructure due to high traffic volume in Blount County. The safety of our citizens now becomes an even more pressing issue that the parkway extension will immediately address. As we continue to grow we cannot let any more delays happen that will extend the completion date of the Pellissippi Parkway	Comment noted.
Ellen Zavisca, Knoxville Regional TPO September 18, 2015					
Ellen Zavisca	1	1	S-12, 3-19, 3-20	I have some questions and concerns regarding the elimination of travel facilities for pedestrians and bicyclists	Based on comments received from the representative of the Knoxville Regional TPO, as well as the Great Smoky Mountains Regional Greenway Council and several individuals, the following commitment is included in the ROD: “ Bicycle and Pedestrian Facilities —During the design process, TDOT will investigate the provision of bicycle and pedestrian facilities within the project right-of-way. If TDOT determines that the provision of such facilities is feasible, the facilities will be developed as a separate project and TDOT will work with the Knoxville Regional Transportation Planning Organization (TPO) and local governments to determine sources of funding for the construction and maintenance of the bicycle and pedestrian facilities.”
	1.1	1	S-12	The note at the bottom of Page S-12 states that a previous commitment to the inclusion of pedestrian and bicycle facilities within the project right of way has been vacated because the new roadway will be designed to Interstate standards <i>Based on TDOT's 2010 Bicycle and Pedestrian Policy, designation of a roadway as Interstate does not preclude inclusion of facilities for pedestrian and bicycle accommodations. Exception 1 states that in such cases "a greater effort may be necessary to accommodate bicyclists and pedestrians elsewhere within the same transportation corridor." With a proposed right of way of 300 feet, and a typical cross-</i>	Based on comments received from the representative of the Knoxville Regional TPO, as well as the Great Smoky Mountains Regional Greenway Council and several individuals, the following commitment is included in the ROD: “ Bicycle and Pedestrian Facilities —During the design process, TDOT will investigate the provision of bicycle and pedestrian facilities within the project right-of-way. If TDOT determines that the provision of such facilities is feasible, the facilities will be developed as a separate project and TDOT will work with the Knoxville Regional Transportation Planning Organization (TPO) and local governments to determine sources of funding for the construction and maintenance of the bicycle and pedestrian facilities.”

Agency Date of Comment	Comment #	Page # of Comment	FEIS Page #	Summary of Agency Comments	Responses
				<i>section taking up 120 feet, surely a 10- to 12-foot greenway trail could be included in the project corridor.</i>	
	1.2	1	3-19, 3-20	<i>Pages 3-19 and 3-20 reference the Knox/Blount Regional Greenway Master Plan for Maryville, Alcoa, and Blount County, Phase One, which was funded by TDEC and the Great Smoky Mountains Regional Greenway Council. The EIS mischaracterizes the position that the greenway plan takes on inclusion of the greenway within the Pellissippi Parkway Extension ROW.</i> <i>In fact, the plan identifies the potential Pellissippi Parkway extension as an opportunity to create "an important link in the greenway system." The fact that the plan does not identify a greenway along the Pellissippi Parkway extension as the first choice among greenway users in no way exempts TDOT from its obligation to include safe, accessible routes for walkers and bicycle riders in its projects.</i>	Comment noted.
	1.3	1	3-20	<i>Later on Page 3-20, TDOT's Bicycle and Pedestrian Policy is discussed, and Exception 1 is cited as the reason for eliminating pedestrian and bicycle accommodation from this project. As noted above, Exception 1 also calls for the inclusion of pedestrian and bicycle facilities in the ROW for projects where pedestrians and bicyclists are excluded from the primary transportation facility. There are multiple examples in the Knoxville region of greenway trails being included within the ROW of Interstate highways, both running along the highway and in culverts under the highway. Does TDOT have any further documentation of how its decision to seek exemption from its Bicycle and Pedestrian Policy was reached?</i>	Based on comments received from the representative of the Knoxville Regional TPO, as well as the Great Smoky Mountains Regional Greenway Council and several individuals, the following commitment is included in the ROD: "Bicycle and Pedestrian Facilities —During the design process, TDOT will investigate the provision of bicycle and pedestrian facilities within the project right-of-way. If TDOT determines that the provision of such facilities is feasible, the facilities will be developed as a separate project and TDOT will work with the Knoxville Regional Transportation Planning Organization (TPO) and local governments to determine sources of funding for the construction and maintenance of the bicycle and pedestrian facilities."

APPENDIX A-2

Disposition of Non-governmental Organizations Comments on the FEIS (including CAPPE and Great Smoky Mountains Regional Greenway Council)

CAPPE Comments on FEIS and TDOT Responses

Comments, Citizens Against the Pellissippi Parkway Extension, Inc. November 18, 2015				
<i>Text in italics in the Comment Summary column is a direct quote from CAPPE's comments.</i>				
Comment	Page #	Page # in FEIS	Comment Summary	Response
I. Introduction and Summary				
This initial section of CAPPE's formal comments introduces and summarizes the organization's concerns and general comments regarding the FEIS; Sections II through XII provide the detailed comments. The detailed comments are identified and addressed in the following sections of this matrix.				
II. Project rationale (Purpose and Need) undermined by repeatedly diminished objectives and questionable analysis				
II.1	3	1-7 to 1-8; DEIS 1-6, 1-7	<i>The Purpose and Need of the project has been revised and reduced multiple times over the past 12 years. Original objectives have been challenged in agency comments, then abandoned by TDOT and replaced with less significant objectives. The ever-shifting and evanescent purpose and need for this project is indicative of an arbitrary decision to proceed with this project whether it meets any transportation needs or not.</i>	The Purpose and Need statement was drafted in 2007. Other federal and state agencies participated in a collaborative process for review and comment on the Purpose and Need, including consideration of public comments, during the NEPA scoping process in accordance with CEQ regulations at 40 C.F.R. §1502.13. The Purpose and Need Statement was agreed to by each of the participating federal, state and local agencies. The FEIS (Section 1.3) states that the purpose of the project is to: • Provide travel options for motorists to the county's existing radial roadway network; • Enhance the regional transportation system linkages; • Enhance roadway safety on the county's roadway network, including the Maryville core; and • Assist in achieving acceptable traffic operations on the transportation network or avoid adversely affecting traffic operations on the existing transportation network. The only difference in the stated purpose of the project between the DEIS (Section 1.3) and the FEIS (Section 1.3) is in the 4th bullet. In the DEIS, the bullet stated "Assist in achieving acceptable traffic flow (LOS) on the transportation network or not adversely affect traffic flows on the existing transportation

CAPPE Comments on FEIS and TDOT Responses

Comments, Citizens Against the Pellissippi Parkway Extension, Inc. November 18, 2015				
<i>Text in italics in the Comment Summary column is a direct quote from CAPPE's comments.</i>				
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				network. The reason for the revision of the wording "traffic flow (LOS)" to "traffic operations" was to include other measures for evaluating the effect of the project on traffic operations in the study area.
II.2	3	1-7, 1-8	<i>The traffic studies in the 2010 DEIS showed the PPE would produce little or no benefit to traffic congestion, no improvement to poor levels of service on major arterial roads, no change to the poor local road network with substandard cross sections, and questionable impact on safety. In response to evidence that the project would not improve roadway LOS, the 2015 FEIS now diminishes expectations even further and shifts attention away from roadway LOS to other measures, the analysis of which is suspect.</i>	Roadway LOS was not "eliminated as an objective" as CAPPE maintains. It is just one indicator of roadway operations. As explained in responses to the Environmental Protection Agency's comments on the DEIS, (see page C-1-32 of FEIS Attachment C) the LOS rating is only one means for categorizing traffic operations. Additional measures are used to quantify traffic congestion, including delay. The DEIS provided LOS for roadways (corridor LOS) as well as intersection LOS. TDOT determined the need to expand the traffic operations analysis based on public comments received on the DEIS. The additional analysis (documented in the June 2011 <i>Addendum to Traffic Operations Technical Report (with minor corrections September 7, 2011, on file with TDOT Environmental Division and on the project website)</i> and in the <i>Addendum to the Traffic Operations Technical Report</i>, dated February 2014 (found in Technical Appendix C of the FEIS)) looked at the amount of delay that traffic would experience at intersections. Consideration of various measures of traffic operation including corridor and intersection LOS, intersection delay, and travel time savings contributes to a better understanding of the effect of project alternatives on traffic congestion in the study area because of the project, rather than just corridor LOS.

CAPPE Comments on FEIS and TDOT Responses

Comments, Citizens Against the Pellissippi Parkway Extension, Inc. November 18, 2015				
<i>Text in italics in the Comment Summary column is a direct quote from CAPPE's comments.</i>				
Comment	Page #	Page # in FEIS	Comment Summary	Response
II.3	3	1-7, 1-8	<i>For the 2015 FEIS, project objectives have been reduced and new, smaller scale objectives have been substituted for former objectives that the project clearly will not fulfill. Even with dramatically reduced traffic volumes, the project will not improve LOS on major arterials, and conditions that lead to crashes will not be altered.</i>	As demonstrated in the 2014 <i>Addendum to Traffic Operations Technical Report</i> , the Preferred Alternative would result in improved LOS at eight of nine key intersections and substantial reduction in delay at most major intersections, thereby helping to achieve the purpose of the project.
2a Purpose and Need in the 2015 FEIS are substantially diminished from the 2010 DEIS				
2.a.1	3	1-7, 1-8	<i>In project objectives, the early emphasis was on improving LOS to relieve congestion. This objective was then reduced to "acceptable LOS and/or not adversely affecting LOS" and the much less-specific "improving traffic operations." Intersections were added for analysis after the 2010 DEIS directly stated congestion would not be improved and after agency comments questioned the purpose and need of the project.</i>	The Purpose and Need statement was drafted in 2007. Other federal and state agencies participated in a collaborative process for review and comment on the Purpose and Need, including consideration of public comments, during the NEPA scoping process in accordance with CEQ regulations at 40 C.F.R. §1502.13. The Purpose and Need Statement was agreed to by each of the participating federal, state and local agencies. The FEIS (Section 1.3) states that the purpose of the project is to: • Provide travel options for motorists to the county's existing radial roadway network; • Enhance the regional transportation system linkages; • Enhance roadway safety on the county's roadway network, including the Maryville core; and • Assist in achieving acceptable traffic operations on the transportation network or avoid adversely affecting traffic operations on the existing transportation network. The only difference in the stated purpose of the project between the DEIS (Section 1.3) and the FEIS (Section 1.3) is in the 4th

CAPPE Comments on FEIS and TDOT Responses

Comments, Citizens Against the Pellissippi Parkway Extension, Inc. November 18, 2015				
<i>Text in italics in the Comment Summary column is a direct quote from CAPPE's comments.</i>				
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				bullet. In the DEIS, the bullet stated "Assist in achieving acceptable traffic flow (LOS) on the transportation network or not adversely affect traffic flows on the existing transportation network. The reason for the revision of the wording "traffic flow (LOS)" to "traffic operations" was to include other measures for evaluating the effect of the project on traffic operations in the study area.
2.a.2	4	S-2, 2-8, 2-9, 3-8, C-1-7 through C-1-9, C-1-30	<i>Three needs identified in the 2010 DEIS are unaddressed by the project according to the 2015 FEIS:</i> • <i>assist in achieving acceptable traffic flows (LOS);</i> • <i>improve the poor local road network with substandard cross sections;</i> • <i>improve traffic congestion and poor levels of service on the major arterial roads in the study area (US 129/Alcoa Highway, SR 33, US 411/SR 35 and US 321/SR 73)</i>	The following bullets address each of the points raised by CAPPE in this comment: • Assist in achieving acceptable traffic flows (LOS) - see responses to Section II. The Preferred Alternative will improve LOS at eight key intersections and substantially reduce delay at most major intersections, thereby helping to achieve the purpose of the project. • Improve the poor local road network with substandard cross sections – CAPPE's assertion that the DEIS and FEIS state that "the project will not improve the poor local road network" is not accurate. FEIS Table 2-3, page 2-10, presents the summary of impact for the 2010 DEIS alternatives, stating that there would be "no substantial improvement of corridor LOS on existing network." The project addresses the need for improving the poor local road network by providing an alternative route for faster moving through traffic between SR 33, US 411 and US 321 in this area of the county; many of those trips now use the local roads (many of which have substandard cross sections) through the study area.

CAPPE Comments on FEIS and TDOT Responses

Comments, Citizens Against the Pellissippi Parkway Extension, Inc. November 18, 2015				
<i>Text in italics in the Comment Summary column is a direct quote from CAPPE's comments.</i>				
Comment	Page #	Page # in FEIS	Comment Summary	Response
				• improve traffic congestion and poor levels of service on the major arterial roads ... As demonstrated in the 2014 <i>Addendum to Traffic Operations Technical Report</i>, the Preferred Alternative would result in improved LOS at eight of nine key intersections and substantial reduction in delay at most major intersections, thereby helping to achieve the purpose of the project.
2.a.3	4	S-2, 2-8, 2-9, 3-8	<i>The FEIS demonstrates that the "Preferred Alternative" option and the "No-Build" option yield virtually identical projected levels of service in terms of outcomes for net traffic function. <u>Whether the PPE is built or not</u>, road segments projected to be failing in the future tend to be the same across the board, as do those anticipated to be functioning acceptably. (FEIS 3-8, Table 3-1)</i>	CAPPE's comment is correct and representative of the results of the corridor LOS analysis prepared for the project, which is one measure of traffic operations. It is often the most cited measure; however, intersection delay and travel time savings are other valid measures of traffic operations.

CAPPE Comments on FEIS and TDOT Responses

Comments, Citizens Against the Pellissippi Parkway Extension, Inc. November 18, 2015				
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Comment	Page #	Page # in FEIS	Comment Summary	Response
2.a.4	4	2-8	<i>Further, safety, congestion, and LOS do not appear in the rationale for selection of Preferred Alternative (A) (FEIS 2-8).</i>	The improvement in level of service on the roadway network is not the sole or primary purpose for this project. As articulated in the project's Purpose and Need statement, there are limited mobility options in the northeastern portion of Blount County because of the county's primarily radial roadway network. The existing road network in the northeastern portion of the county (east of Alcoa and Maryville) radiates out of Maryville, with connections between the primary radial routes (SR 33, Wildwood Road, US 411 and US 321/SR 73) being a series of disconnected and circuitous two-lane local roads. A northwest/east connection is lacking to help serve expanding residential development in eastern Alcoa and Maryville and northeastern Blount County. The project, as a new four-lane roadway, would complete Pellissippi Parkway (SR 162) as envisioned by local and regional plans since the 1970s. The proposed extension is included in current local and regional plans and is an important project to improve mobility. The project would also assist in achieving acceptable traffic operations on the transportation network.
2.a.5	5	C-1-7 through C-1-9, C-1-30 (EPA-L-1)	<i>In responses to EPA's [DEIS comments] questions about LOS, directions for further study and consideration of solutions with less environmental impact, TDOT eliminated LOS as an objective and redirected attention to a different issue, intersection delay. In responses to EPA's [DEIS comments] questions about LOS, directions for further study and consideration of solutions with less environmental impact, TDOT eliminated LOS as an objective and redirected</i>	Based on comments received on the DEIS, the traffic analysis was expanded to address traffic operations more broadly to include other measures for evaluating the effect of the project on traffic operations in the study area, including intersection delay. Consideration of various measures of traffic operation including corridor and intersection LOS, intersection delay, and travel time savings contributes to a better understanding of the effect of project alternatives on traffic congestion in the study area

CAPPE Comments on FEIS and TDOT Responses

Comments, Citizens Against the Pellissippi Parkway Extension, Inc. November 18, 2015				
<i>Text in italics in the Comment Summary column is a direct quote from CAPPE's comments.</i>				
Comment	Page #	Page # in FEIS	Comment Summary	Response
			<i>attention to a different issue, intersection delay.</i> <i>This record of abandonment of objectives and sequence of repeated reduction in what the project would accomplish, along with the significantly reduced traffic volumes in the study area, further undermine any "need" for the PPE.</i>	because of the project, rather than just corridor LOS.
2.b Significantly reduced volumes undermine the need for the project				
2.b	6	S-1, 3-14	<i>The 2015 FEIS revisits traffic volumes using the new Travel Demand Model. The FEIS contains adjusted and significantly lower projections for both traffic and population, based on the updated Travel Demand Model, which "resulted in substantial reductions in the forecasted travel demand volumes for the project." (FEIS S-1)⁶ These reductions of as much as 50% in volumes on the PPE and 40% lower on the Relocated Alcoa Highway undermine the justification or "need" for the project...</i>	As discussed in the July 2014 reevaluation of the DEIS (page 25), the change in forecasted traffic on the Pellissippi Parkway Extension (PPE) because of the updated Regional Travel Demand Model does not alter the need for the project and the selection of the Preferred Alternative. The project, as a four-lane roadway, continues to be justified even with the reduction in traffic forecasts from the updated model. Based on the <i>Highway Capacity Manual</i> (2010), the project still attracts sufficient traffic volumes (25,240 to 38,040 vehicles per day (vpd)) to justify a four-lane roadway.

CAPPE Comments on FEIS and TDOT Responses

Comments, Citizens Against the Pellissippi Parkway Extension, Inc. November 18, 2015				
<i>Text in italics in the Comment Summary column is a direct quote from CAPPE's comments.</i>				
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2.c Determination of need is impossible because the FEIS provides no origin/destination data and only a very limited select/link analysis				
2.c.1	6	Attachment A, A-17; 1-12, 1-13	<i>The FEIS relies on a limited select/link analysis that does not provide a comprehensive picture of origins and destinations for all travel through the study area. The limitations of the select/link analysis means it is impossible to determine where travelers are going to and from.⁷</i> <i>Moreover the FEIS acknowledges that the evaluation is "approximate since a formal origin-destination study was not conducted to evaluate this traffic pattern; rather the information was determined by approximation through available sources." (FEIS Attachment A, A-17) [...]For the PPE study area, a comprehensive select link analysis would include not only origins/destinations along the eastern side of Maryville, but would also include origins/destinations around the entire periphery of the study area. Without comprehensive origin and destination data, the FEIS cannot describe the pattern of traffic through the study area and therefore cannot determine need.</i>	In developing the current Knoxville Regional Transportation Planning Organization (Knoxville Regional TPO) travel demand forecasting model, the TPO combined household travel behavior surveys conducted in 2000 and 2008. The current model incorporates those two data sets at the level of traffic analysis zones (TAZ) that cover the entire TPO region, including the study area. The traffic analyses prepared for the DEIS reevaluation and the FEIS, and the 2016 traffic analysis for Alternative used data from the current TPO model. A project-specific origin and destination study was not conducted for the DEIS reevaluation or the FEIS; the Knoxville Regional TPO staff confirmed in December 2016 that a new travel behavior study has not been conducted since 2008.
2.c.2	6	Attachment C, C-1-35	<i>In detailed comment on the DEIS, EPA notes that higher volumes of traffic are north and south and not east and west, and asked TDOT to address how PPE would improve LOS for north-south travelers.</i>	EPA's comment was addressed with the following response that appears in Table C-1, page C-1-35 of FEIS Attachment C. "The proposed PPE would reduce the amount of delay experienced at several intersections along the North/South corridors. This includes reducing the delay at the SR 33/Wildwood Road intersection and the SR 33/E. Broadway Avenue intersection."

CAPPE Comments on FEIS and TDOT Responses

Comments, Citizens Against the Pellissippi Parkway Extension, Inc. November 18, 2015				
<i>Text in italics in the Comment Summary column is a direct quote from CAPPE's comments.</i>				
Comment	Page #	Page # in FEIS	Comment Summary	Response
2.d Project contributes to unsafe conditions				
2.d.1	7	1-22	<i>Contrary to the claims in the FEIS, the project will increase unsafe conditions in the project area. None of the conditions listed in the FEIS that contribute to crashes will be addressed by the project...</i> <i>Lack of access management along roads</i> <i>Numerous curb cuts for driveways and intersections</i> <i>Lack of exclusive turn lanes or passing lane</i>	The project is not intended to resolve all of the traffic and safety concerns in the county and the project area, nor would it be possible to do so as a single project. The Knoxville Regional TPO's current long range transportation plan, <i>Mobility Plan 2040: Connecting People and Places</i> (Mobility Plan 2040, adopted April 2017) contains several projects in this part of Blount County, each designed to address specific issues.
2.d.2	7	1-22; Technical Appendix C: Crash Analysis Report Update	<i>The FEIS shows that unimproved and unsafe routes in the County and the project area will continue to carry substantial and increasing traffic. The Preferred Alternative will not alter the conditions referred to in the following statement from the 2010 DEIS:</i> <i>"There are numerous roadways in the region that were not designed to accommodate the type and amount of suburban development that is occurring, which leads to unsafe operating conditions." (DEIS Traffic Operations Report, 3).</i>	This project is not intended to resolve deficiencies of all of state and local roads in the project vicinity. Other projects in the current Mobility Plan 2040 address some of the deficiencies of other roadways in the project vicinity: - US 411 (project 09-250, reconstruct two-lane section with addition of turn lanes, Maryville City limits to Chapman Highway, in the 2035-2040 time frame). - US 411 (project 09-214, reconstruct two-lane road with continuous center turn lane and bicycle/pedestrian facilities, from Everett High Road to Maryville City limits, in 2023-2026 time frame). - US 411 (project 09-245, reconstruct two-lane road with continuous center turn lane and bicycle/pedestrian facilities, from SR 35 (Washington Street) to Walnut Street, in 2017-2022 time frame). - SR 33 (project 09-212, reconstruct two-lane section with

CAPPE Comments on FEIS and TDOT Responses

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				addition of turn lanes, Wildwood Road to Hunt Road in the 2031-2034 time frame). • SR 33 (project 09-231, reconstruct two-lane section with addition of turn lanes, Pellissippi Parkway to Knox County Line, in the 2035-2040 time frame). • US 129 (project 09-218, widening to a 6-lane divided highway, from Hall Road to proposed interchange at Tyson Boulevard, extend Tyson Boulevard under SR-115 and reconstruct Hunt Road overpass, in the 2017-2022 time frame). • US 129 (project 09-216, widening to a 6-lane divided highway from Pellissippi Parkway to Knox County line, with a new interchange at Topside Road and reconfiguration of existing Pellissippi Parkway interchange and signalized ramps, in the 2023-2026 time frame). • Relocated Alcoa Highway (Projects 09-257 and 09-258, a new four-lane roadway from Tyson Boulevard to South Singleton Station Road, with new interchanges at Tyson Boulevard, Wright Road, Pellissippi Parkway, and Singleton Station Road, in the 2023 to 2026). Two project listed with funding in the later years of the previous Mobility Plan are listed in the current Mobility Plan as unfunded. Through the process of selection these two projects were determined not to be regional priorities. Listing as unfunded means that if additional funding becomes available, they may advance to the priority list.

CAPPE Comments on FEIS and TDOT Responses

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				- Wildwood Road (Project #09-234, reconstruct two-lane road with addition of turn lanes from Maryville city limits to US 411). - Sam Houston School Road (project 09-247, reconstruct two-lane road with addition of continuous center turn lane and bicycle/pedestrian facilities from SR 33 to Wildwood Road). The Selected Alternative includes improving the typical section of US 411 to a 5-lane urban section through the proposed interchange area. Along with project 09-250, travelers using US 411 between the new interchange and the Blount/Sevier County line will be able to drive on an improved roadway. Roadways in Tennessee functionally classified as freeways (also referred to as interstate highways) have statewide average crash rates lower than all other roadway types. Due to their design features, freeways are safer than other roads because freeways control traffic flow and restrict access to and from the highway. The Selected Alternative will be a freeway meeting interstate level design standards. Thus, it should be inherently safer than the No-Build Alternative, which uses local roadways with points of conflict such as at-grade intersections, traffic signals or stop signs, direct property access/driveways, narrow traffic lanes, narrow or non-existent shoulders, and inadequate clear zones. In addition, under the Selected Alternative, many of the study area roadways are forecasted to have lower traffic volumes in both 2020 and 2040, including roadways that serve the Maryville core, compared with the No-Build Alternative. The updated evaluation of recent crash data identified several of the road

CAPPE Comments on FEIS and TDOT Responses

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				segments in the Maryville core as having more crashes than is statistically probable based on random occurrence. The migration of traffic from existing non-freeway roadways to the proposed freeway of the Selected Alternative represents a shift from roadways with higher typical average crash rates to a roadway with a lower typical average crash rate. This migration of traffic would be expected to reduce the overall crash risk for the Selected Alternative relative to the No-Build Alternative.
2.d.3	7	3-8 to 3-10	<i>The continuing poor LOS on many of the area's heavily traveled and unsafe and substandard roads is further evidence that the project will not enhance safety.</i>	The project is not intended to resolve all of the traffic and safety concerns in the county and the project area, nor would it be possible to do so as a single project. The Knoxville Regional TPO's current long range transportation plan, <i>Mobility Plan 2040: Connecting People and Places</i> (Mobility Plan 2040, adopted April 2017) contains at least ten projects in this part of Blount County, each designed to address specific issues. These other projects are identified in the immediately preceding response (2.d.2).
2.d.4	8	Attachment A-8	<i>The FEIS fails to note that travelers from eastern Blount County and Sevier County will have to use unimproved US411N to get access to the project at the new interchange...</i>	The Knoxville Regional TPO's current long range transportation plan, <i>Mobility Plan 2040</i> (adopted April 2017), includes a project (#09-250, in 2035-2040 time frame) to improve the two-lane US 411 and add turn lanes between the Maryville City Limits and Chapman Highway (US 441/SR 71), through the project area. Traffic will thus have an improved roadway to travel. In addition, as stated in the FEIS, the proposed improved typical section of US 411 through the proposed interchange area with the project will be a five-lane urban section. (FEIS 2-15).

CAPPE Comments on FEIS and TDOT Responses

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Comment	Page #	Page # in FEIS	Comment Summary	Response
2.d.5	8	3-15	<i>The FEIS did not evaluate safety of the new interchange at US321/73, stating "it will have no intersection." (FEIS 3-15)</i> <i>This intersection should have been evaluated for safety as it will be introducing new traffic onto a four-lane road (two lanes each direction) with no traffic signal to control access onto and off the PPE.</i>	The new interchange at US 321 will not be a signalized at-grade intersection, like the proposed diamond interchanges with SR 33 and US 411. Instead, the new interchange at US 321 will be a trumpet interchange with directional loop ramps that allow free-flow access to and from the proposed road. Such a design precludes the need for traffic signals.
2.d.6	8	1-22, 1-23, 3-5 to 3-7; Technical Appendix B: Addendum to Traffic Technical Report	<i>As noted in Section III: Flaws in Transportation Analysis, TDOT's analysis of safety in the 2015 FEIS and the updated Crash Report are inadequate since they present no conclusions from the safety data collected and analyzed. However, an important conclusion which can be made from the data and analysis provided in the Crash Report and the 2015 FEIS is that the Preferred Alternative INCREASES (not decreases) number of crashes area wide. The Preferred Alternative would result in an increase (relative to No Build) of 63 annual crashes on the Pellissippi Parkway in the study area. This is obtained by applying the statewide average crash rate of 0.981 crashes per million VMT (2015 FEIS Table 1-5) to the increase in annual vehicle miles of travel (VMT) on the Pellissippi Parkway (2014 Addendum, Tables 5 and 7). On the other hand, the reduction in traffic on roads (other than the Pellissippi Parkway) throughout the study area would result in a reduction of around 42 crashes. This is obtained by applying a rate of 4.0 crashes per million VMT (typical for roads with traffic reductions due to the Preferred Alternative) to the reduction in travel on these roads due to the Preferred Alternative.</i>	TDOT's traffic safety consultant attempted to replicate the approach and results offered in CAPPE's comments, but was not able to do so for several reasons. The problems with CAPPE's method include: 1) assuming that current crash patterns will be the same into the future, and 2) assuming that crash rates are the same for roadways within the same class and type and thus ignoring site-specific characteristics that influence crashes. That approach cannot provide useful conclusions about the relative safety of the design alternatives. CAPPE's computations using current crash rates assumed a linear relationship exists between exposure and crashes. Most current research demonstrates a non-linear relationship between traffic volume and crash frequency that varies for each road type and setting (urban versus rural). Using an average crash rate to estimate and compare crash frequencies for a facility at different traffic volume levels is not appropriate. At this time, TDOT's standard practice is to use a qualitative approach to address the safety of new or improved roadways. After consultation with FHWA, TDOT confirmed that a qualitative approach to address the anticipated safety performance of the

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			<i>For the entire study area, therefore, the crash rates from the 2015 FEIS (Table 1-5) and the Crash Analysis applied to the year 2040 vehicle miles of travel (2014 Addendum, Tables 5 and 7) results in the projection of an INCREASE of 21 crashes annually in the year 2040 Preferred Alternative as compared to the year 2040 No-Build.</i>	proposed PPE is appropriate.
2e Changes in the area road system further undermine the "need" for PPE				
2.e	9	2-1, 3-118	<i>The FEIS asserts the need for circumferential mobility, but provides no way to gauge adequate circumferential mobility by any alternative. Indeed with proposed termination at US321 and the removal of the "Southern Loop Beltway" from local transportation plans, the PPE is not a circumferential route.</i>	The Purpose and Need statement does not mention circumferential mobility as CAPPE suggests; rather the purpose of the project acknowledges the need for travel options to the county's existing radial roadway network. The FEIS explains that a Southern Loop had been suggested in the past to help relieve some of the congestion through Maryville, to connect on the east with the southern terminus of the PPE at US 321. Growth policy plans in 2005 and 2008 recommended in place of the Southern Loop, a series of arterial and collector road segments to "create a circumferential system" (FEIS 2-1). The proposed PPE project has been a part of the regional transportation plans since 1995. The 2005 and 2008 growth plans acknowledge the PPPE as a part of the planned road network.

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2.f The FEIS reports none of the usual benefits of transportation projects				
2.f.1	10	3-8	<i>The FEIS claims the project will improve the road network, but reports no data to support this assertion. Instead, the FEIS contains ample evidence that the project will make little difference:</i> <i>The FEIS demonstrates that the "Preferred Alternative" option and the "No-Build" option yield virtually identical projected levels of service in terms of outcomes for net traffic function. Whether the PPE is built or not, road segments projected to be failing in the future tend to be the same across the board, as do those anticipated to be functioning acceptably. (FEIS 3-8, Table 3-1.)</i>	Comparison of Tables 3 through 9 and Table 26 of the April 2016 <i>Update to the Traffic Operations Technical Report</i> (see Appendix C of this ROD) demonstrates that the build alternatives, including the Preferred Alternative, show improved service measures (such as delay, average travel speed, and percent time-spent-following) throughout the study area relative to the No-Build Alternative. As such, the FEIS correctly states that the Preferred Alternative is projected to improve traffic operating conditions within the study area.
2.f. 2	10	3-66	<i>The Preferred Alternative is delivering neither of the two most important travel benefits (reduction in VMT and VHT) for which road improvements are usually made: [...]</i> <i>These increments in year 2040 VMT and VHT indicate that, compared to the No-Build throughout the study area the Preferred Alternative adds to travel time and distance when these are aggregated over the study area.</i>	VMT and VHT increase in the Preferred Alternative relative to the No-Build Alternative because the total number of vehicles on study area roadways increases in the Preferred Alternative. Aggregate VMTs and VHTs are not reasonable metrics to use when comparing alternatives with differing aggregate traffic volumes. The addition of a new roadway, coupled with no closures or realignments of existing roadways, would not result in an increase in travel distance for a given vehicle trip.

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2.g The PPE Preferred Alternative benefit/cost ratio is near zero or possibly negative				
2.g	10	1-8, 1-23	<i>In computing the benefit/cost ratio of a road project, the travel-related components of the benefits typically include reductions in travel time, reductions in vehicle miles of travel and reduction in number and severity of crashes.</i> <i>The Preferred Alternative fails to yield benefits in any of these three categories. Specifically, the Preferred Alternative, compared to the No-Build, increases vehicle hours of travel (VHT) in the year 2040, and also <u>increases</u> vehicle miles of travel (VMT) in the year 2040. Applying crash rates (2015 FEIS Table 1-5) to the year 2040 vehicle miles of travel (VMT) as given in the 2014 Addendum, Tables 5 and 7 results in an <u>increase</u> of 21 crashes in the year 2040.</i> <i>Since all of the primary needs of the project as stated in the Purpose and Needs (2015 FEIS page 1-8) are travel related (as opposed to, say, economic development) the negative values in all three categories of travel related benefits (VHT, VMT and safety) support a conclusion that the Preferred Alternative has a benefit/cost ratio of zero or less, indicative of an extraordinarily poor use of public funds.</i>	VMT and VHT Increases VMT and VHT increase in the Preferred Alternative relative to the No-Build Alternative because the total number of vehicles on study area roadways increases under the Preferred Alternative. Aggregate VMTs and VHTs are not reasonable metrics to use when comparing alternatives with differing aggregate traffic volumes. The addition of a new roadway, coupled with no closures or realignments of existing roadways, would not result in an increase in travel distance for a given vehicle trip. Safety and Crashes In response to CAPPE's comment on safety and future crashes, TDOT prepared an updated traffic safety analysis that is documented in the <i>Crash Analysis Technical Report</i> (July 2017), contained in Appendix D of the ROD. TDOT's traffic safety consultant attempted to replicate the approach and results offered in CAPPE's comments, but was not able to do so for several reasons. The problems with CAPPE's method include: 1) assuming that current crash patterns will be the same into the future, and 2) assuming that crash rates are the same for roadways within the same class and type and thus ignoring site-specific characteristics that influence crashes. That approach cannot provide useful conclusions about the relative safety of the design alternatives. CAPPE's computations using current crash rates assumed a linear relationship exists between exposure and crashes. Most current

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				research demonstrates a non-linear relationship between traffic volume and crash frequency that varies for each road type and setting (urban versus rural). Using an average crash rate to estimate and compare crash frequencies for a facility at different traffic volume levels is not appropriate. At this time, TDOT's standard practice is to use a qualitative approach to address the safety of new or improved roadways. After consultation with FHWA, TDOT confirmed that a qualitative approach to address the anticipated safety performance of the proposed PPE is appropriate. Roadways in Tennessee functionally classified as freeways (also referred to as interstate highways) have statewide average crash rates lower than all other roadway types, including roadways in the Maryville core. Due to their design features, freeways are safer than other roads because freeways control traffic flow and restrict access to and from the highway. A controlled access freeway has no traffic signals, intersections, or direct property access, and no at-grade (intersection) crossings with other roads, railroads, or bike/pedestrian paths. Full access control reduces the potential traffic incidents compared with other roadway classifications. The Selected Alternative will be a freeway meeting interstate level design standards. Thus, it should be inherently safer than the No-Build Alternative, which uses local roadways with points of conflict such as at-grade intersections, traffic signals or stop signs, direct property access/driveways, narrow traffic lanes, narrow or non-existent shoulders, and inadequate clear zones.

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				In addition, under the Selected Alternative, many of the study area roadways are forecasted to have lower traffic volumes in both 2020 and 2040, including roadways that serve the Maryville core, compared with the No-Build Alternative. The updated evaluation of recent crash data identified several of the road segments in the Maryville core as having more crashes than is statistically probable based on random occurrence. The migration of traffic from existing non-freeway roadways to the proposed freeway of the Selected Alternative represents a shift from roadways with higher typical average crash rates to a roadway with a lower typical average crash rate. This migration of traffic would be expected to reduce the overall crash risk for the Selected Alternative relative to the No-Build Alternative. Benefit/Cost Ratio CAPPE's statement that the benefit/cost ratio is near zero is sweeping based on the components they cite. A cost/benefit analysis of this project would consider more than the three components presented in this comment. A benefit-cost analysis (BCA) is an analytical tool that that is available for DOTs to use to measure the efficiency of spending transportation funding on a highway investment from the perspective of benefits and costs to society. BCA assigns a dollar value to the stream of benefits and costs to society generated by a transportation investment over a specific time period (e.g. 20 years from construction). BCAs typically consider agency costs (such as design and engineering, land acquisition, construction reconstruction/rehabilitation, preservation/routine maintenance,

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				and mitigation), user costs and benefits association with construction (delay, crashes and vehicle operating costs), user costs/benefits associated with operation of the highway (travel time and delay, crashes, and vehicle operating costs), and externalities (nonuser impacts such as emissions and noise). (Source: FHWA Research and Technology, <i>Public Roads</i>, FHWA-HRT-12-003, Volume 75, Number 5, March/April 2012) TDOT does not typically use benefit/cost quantification in preparing environmental evaluations because of the subjectivity in assigning numerical values to all the components. TDOT follows a systematic and interdisciplinary approach to thoroughly identifying and evaluating technical and environmental impacts based on its standard methodologies, which are outlined in TDOT's <i>Environmental Procedures Manual</i> (2011, https://www.tn.gov/assets/entities/tdot/attachments/local_programs_2011_Revised_Tenn_Envir_Procedures_Manual.pdf). A team of planners, environmental specialists, engineers and others participate in the identification and analysis of project concepts, impacts and mitigation measures. The analysis identifies adverse impacts as well as project benefits. Resources and other agencies are encouraged to participate in the identification of impacts and mitigation strategies, and the public is provided opportunities to learn about the project and provide informed input at several stages in the planning and environmental review of the EIS. TDOT and FHWA then balance the tradeoffs in making the decision on the Preferred Alternative.

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2.h The Pellissippi Parkway (I-140/SR162) already has a logical terminus				
2.h	12	1-30, DEIS 1-26	<i>The current terminus of I-140/SR162 at SR33 meets the criteria of Logical Termini and Independent Utility. Indeed the current terminus at SR33 is far more "logical" than the proposed terminus at US321/SR73. The current terminus is a destination - the 400+ acre Pellissippi Place Research and Development Park and SR33 - and the current terminus has traffic signal- controlled on and off access between SR33 and I-140. In contrast, the proposed terminus of the PPE at US321/SR73 will require a bridge or traffic signals to ensure safe entry/exit for PPE travelers turning east on US321 or for travelers coming east on US321 who want to get onto PPE, all of whom will have to cross two lanes of traffic to enter or exit the PPE.</i>	The proposed project has been determined to have independent utility and logical termini, which was explained previously in the DEIS (1-26). The use of an interchange at the proposed terminus at US 321 does not negate a finding of independent utility and logical termini for this finding, since the project connects to an existing four-lane highway. A trumpet interchange is currently proposed for the project's terminus at US 321/SR-73. This southern terminus of the project has been shown in related plans for Pellissippi Parkway since 1986, as part of the 1986 <i>Urgent Highway Needs Plan</i> and the 1995 regional long range transportation plan and all subsequent updates.
III. Flaws in Transportation Analysis				
3.1 The FEIS fails to meet the requirement of "rigorously exploring and objectively evaluating all reasonable alternatives."				
3.1	13		<i>The analysis of alternatives is the "heart" of the EIS. 40 C.F.R. § 1502.14. Accordingly, TDOT and the FHWA must "rigorously explore and objectively evaluate all reasonable alternatives." 40 C.F.R. § 1502.14(a) (emphasis added), and the failure to consider an alternative adequately renders an EIS inadequate. See <u>AWRTA v. Morrison</u>, 67 F. 3d 723, 729 (9th Cir. 1995). The FEIS fails to meet these requirements in multiple ways outlined in sections 3.1 and 3.2.</i>	This is an introductory statement to Comments 3.1a-3.2.c. See specific responses below to those statements below. The FEIS complies with all applicable standards for legal sufficiency established under NEPA and the implementing regulations of both the Council of Environmental Quality (40 CFR § 1500-1508) and FHWA's own NEPA regulations (23 CFR § 771).

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3.1.a The 2015 FEIS fails to rigorously explore and compare alternatives				
3.1.a	13	2-6 to 2-7;	<i>In exploring Alternative D, only one design option, a rural 50 miles-per-hour design speed with 44 feet of pavement in a 150 foot right of way was considered. This heavy-handed design would result in numerous property takings as well as large construction cost. Options with a far smaller footprint more appropriate for a suburban area were not examined. [...]</i> <i>The Preferred Alternative, at various stages in its development, was "tweaked" to improve its performance and reduce its cost impacts. Alternative D was not given equivalent treatment.</i>	While applying a smaller cross section for Alternative D would have reduced potential property impacts, it would not reduce the forecasted traffic volumes and operations for the alternative, which in turn would not meet the purpose and need of the project. Based on public comments received on the FEIS, TDOT and FHWA determined that the traffic analysis for Alternative D should be expanded to the same level as the No-Build and Preferred Alternative, prior to the issuance of a Record of Decision (ROD). The updated analysis of Alternative D confirms the findings in the FEIS that the traffic volumes are sufficiently high so that corridor LOS for Alternative D would fall to LOS E, compared to No-Build conditions ranging from LOS A to LOS D. In addition, the updated analysis demonstrates that with the increased traffic volumes, intersections in the vicinity of Alternative D would also fail, similar to the No-Build Alternative. This results in failing operations on the stop sign controlled approaches. Additional analysis was conducted to determine if signalizing these intersections would alleviate the congestion. Given the volumes associated with this alternative, the capacity is still exceeded at these intersections, resulting for the most part in failing operations (LOS F). The findings of the updated analysis of Alternative D are reported in the April 2016 <i>Update to the Traffic Operations Technical Report</i> (see Appendix C of the ROD). They confirmed the finding of the FEIS that this alternative would provide poor traffic

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				operation (LOS E or F) on roadways and intersections along its general route (Sam Houston School Road, Peppermint Road, Helton Road and Hitch Road) when compared to the No-Build condition.
3.1.b The 2015 FEIS falls far short of objectively evaluating Alternative D				
3.1.b	13	3-4 through 3—15; 2016 Addendum to Traffic Operations Tech Report	<i>Two traffic-related evaluation measures of Alternative D appear in FEIS Table S-1. The first -- that "Traffic volumes would exceed the carrying capacity of a two lane road" -- is erroneous, possibly a result of attempting to apply a method intended for analyzing rural highways to an urban situation. The Highway Capacity Manual (HCM), properly applied, gives a capacity of up to 23,000 daily vehicles for a well-designed two-lane street, well beyond the year 2040 daily volumes of 14,890 – 20,580 projected (May 14, 2014 Memorandum) .</i> <i>The second -- that because of "volumes expected to exceed capacity" in Alternative D, intersections throughout the study area "would perform poorly" -- is totally subjective, unsupported by any analysis done for the 2015 FEIS and unsupportable by any accepted LOS analysis method. ¹⁰</i> <i>¹⁰ The 2015 FEIS did not, for Alternative D, analyze intersection LOS throughout the study area nor did it provide a traffic forecast on which to base such an analysis. The only such analysis of LOS for intersections throughout the study area under Alternative D was prior to the 2015 FEIS in the June 30, 2011 Addendum, made obsolete by the</i>	The traffic operations analysis presented in the April 2016 <i>Update to the Traffic Operations Technical Report</i> in Appendix C of this ROD and in previous documents used the latest methods and procedures available in the 2010 <i>Highway Capacity Manual</i> (HCM). Both the 2014 traffic operations analysis and the 2016 update for Alternative D appropriately use the Class III methodology, described as being for moderately developed areas that may travel through small towns or unincorporated communities. This is the most "urban" classification available for the analysis of two-lane roadways. The HCM does not provide guidance on the maximum capacity for a two-lane roadway based on daily traffic volumes. As noted in HCM Chapter 15, Section II, the theoretical maximum capacity of a two-lane highway under base conditions is 1,700 passenger cars per hour in one direction, with a limit of 3,200 passenger cars per hour in both directions. As such the daily volumes of 14,890 to 20,580 vehicles per day projected in 2040 have little bearing on the hourly capacity of the facility, used to measure level of service. As noted in the April 2016 <i>Update to the Traffic Operations Technical Report</i>, the peak hour volumes for

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			<i>2013 Traffic Model used for the 2015 FEIS.</i>	Alternative D range between 2,234 and 2,688 passenger cars per hour in both directions, resulting in level of service "E" or "F" for the facility, both below the acceptable operating standard.
3.1.c The FEIS fails to apply consistent methodologies for all alternatives				
3.1.c.1	14	FEIS Section 3.1, pg. 3-2 through 3-17	<i>The 2015 FEIS fails to apply consistent measures at all stages of the travel forecasting and traffic operations analysis [...].</i>	Based on public comments received on the FEIS, TDOT and FHWA determined that the traffic analysis for Alternative D should be expanded to the same level as the No-Build and Preferred Alternative, prior to the issuance of a Record of Decision (ROD). The findings of the updated analysis of Alternative D are reported in the April 2016 <i>Update to the Traffic Operations Technical Report</i> (see Appendix C of the ROD). They confirmed the finding of the FEIS that this alternative would provide poor traffic operation (LOS E or F) on roadways and intersections along its general route (Sam Houston School Road, Peppermint Road, Helton Road and Hitch Road) when compared to the No-Build condition.
3.1.c.2	14	3-4 through 3-15; Technical Appendix A – 2013 Traffic Forecast Report; 2016 Update to Traffic	<i>In its presentation of the Preferred Alternative, the 2015 FEIS fails to include a traffic forecast for the four segments of road (Helton Road, Hitch Road, Peppermint Road and Sam Houston School Road) which comprise Alternative D.</i> <i>The selective exclusion of the four Alternative D segments from the Preferred Alternative traffic forecast (2014 Addendum, Figure 2) is not explained, nor is there any apparent reason for this lapse in reporting the most basic traffic data.</i>	Forecasts for Sam Houston School Road, Peppermint Road, Hitch Road and Helton Road under the Preferred Alternative were prepared as part of the 2013 <i>Traffic Forecast Study</i> . The forecasts can be found on pages 116-123, 134-141, 152-159, and 170-177 of the 2013 <i>Traffic Forecast Report</i> (included in Technical Appendix A of the FEIS). The schematic figure on page 105 of the report failed to include the forecast for these four roads under the Preferred Alternative. This figure has been updated to show the 2013 forecasts for these roads (see Figure 2 in the <i>Update to the Traffic Operations Technical Report, April</i>

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		Operations Tech Report		2016, in Appendix C to this ROD). In addition, the 2016 traffic operations update includes corridor ADTs and segment LOS for these four roads for the 2020 and 2040 Preferred Alternative (Table 6, 7 and 11, Figures 7 and 8). This information is provided in the ROD.
3.1.d Failure to project traffic for Alternative D				
3.1.d	15	Technical Appendix A: Traffic Forecast Study 2013; 2016 Traffic Forecast Study	<i>The 2015 FEIS and its supporting documents project year 2040 traffic volumes for only the four road segments comprising Alternative D (i.e., Sam Houston School Road, Peppermint Road, Hitch Road and Helton Road). The 2015 FEIS and its supporting documents do not provide a forecast of the year 2040 traffic volumes for any of the other 32 road segments in Alternative D, although year 2040 projections are given for these segments for the No-Build (32 segments) and Preferred Alternatives (34 segments) in the 2014 Addendum.</i> <i>The presumed explanation for the absence of data for Alternative D – that Alternative D was eliminated on the basis of the earlier 2009 Traffic Model and therefore needs no further analysis – is not valid because:</i> <i>Failure to update Alternative D to the same forecast violates the requirement to “objectively evaluate alternatives”</i> <i>Throughout the study area, traffic for the year 2040 based on the 2013 Traffic Model is significantly less</i>	Based on public comments received on the FEIS, TDOT and FHWA determined that the traffic analysis for Alternative D as presented in the FEIS should be expanded to the same level as the No-Build and Preferred Alternative, prior to the issuance of a Record of Decision (ROD). The findings of the updated analysis of Alternative D are reported in the April 2016 <i>Update to the Traffic Operations Technical Report</i> (see Appendix C of the ROD). They confirmed the finding of the FEIS that this alternative would provide poor traffic operation (LOS E or F) on roadways and intersections along its general route (Sam Houston School Road, Peppermint Road, Helton Road and Hitch Road) when compared to the No-Build condition. As discussed in the July 2014 reevaluation of the DEIS (page 25), the change in forecasted traffic on the PPE as a result of the updated Regional Travel Demand Model does not alter the need for the project and the selection of the Preferred Alternative. The project, as a four-lane roadway, continues to be justified even with the reduction in traffic forecasts from the updated model. Based on the <i>Highway Capacity Manual</i> (2010), the project still attracts sufficient traffic volumes (25,240 to 38,040 vehicles per

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			<i>than year 2035 traffic from the 2009 model. <u>This decrease in traffic and its resultant decrease in "need" for the Preferred Alternative mandates an update, using the 2013 traffic model, of the only build alternative (i.e., Alternative D) other than the Preferred Alternative</u> regardless of whether it was previously "eliminated" on the basis of the now-obsolete 2009 Traffic Model.</i>	day (vpd)) to justify a four-lane roadway.
3.1.e The FEIS lacks computable measures of accomplishment of purpose and need statements that would enable reviewers to "evaluate their comparative merits"				
3.1.e	15	1-8, 2-10	<i>Three (of the four) travel-related objectives of the project lack measures of effectiveness that would enable them to be applied to the alternatives:</i> <i>"Provide travel options ... to the county's existing radial road network"</i> <i>"Enhance the regional transportation system linkage"</i> <i>"Assist in achieving acceptable traffic operation ... or avoid adversely affecting traffic operations on the existing transportation network"</i> <i>The FEIS offers no definition, criteria or further measures to evaluate the first two objectives. [...]</i> <i>These evaluation measures fall far short of the rigorous and wide-ranging measures of effectiveness that should be applied to the above two objectives in the course of meeting the FHWA directive to "devote substantial treatment to each alternative ... so that reviewers may evaluate their comparative merits" (FHWA, NEPA and Transportation</i>	As noted in the responses to comments in Section II, the FEIS and the February 2014 <i>Addendum to the Traffic Operations Technical Report</i> compare in detail the operations-related service measures and LOS of the various alternatives, including the Preferred Alternative and the No-Build Alternative. Regardless of whether such a statement is obvious, construction of any of the Build Alternatives would indeed provide greater travel options to the county's existing roadway network as well as enhance the linkage of the system relative to the No-Build Alternative. The measures proposed by CAPPE are not applicable for the alternatives involving a limited-access facility (including the Preferred Alternative). The proposed project would not, by design, include many points of access, multimodal accommodations, or direct access to public facilities. Inclusion of the proposed CAPPE measures would be counterproductive to the effectiveness of a limited-access facility. While the measures would be applicable to Alternative D, the

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			<i>Decisionmaking). Such measures, easily computable from data already developed in the project, might include:</i> <i>Number of points of access to the new "circumferential"</i> <i>Flexibility to add future connections, as new interchanges or local street connections.</i> <i>Flexibility for new extensions of existing streets and roads to intersect or cross the "circumferential" connector</i> <i>Suitability of the "connector" as a school bus route</i> <i>Multi-mode capability of the "connector" to serve as a bicycle and pedestrian route</i> <i>Suitability of the "connector" to serve as an "address" for public facilities, such as parks, fire stations, schools, etc.</i>	updated analysis of Alternative D demonstrates that the alternative would provide poor traffic operations on roadways and intersections along the route.
3.2 The FEIS relies on traffic forecasting and capacity analysis methods that do not conform to standard practice				
3.2.a.1	16	Table 3-1, 3-8	<i>In its most important summary of traffic operations, the 2015 FEIS (Table 3-1) dismisses Alternative D as having no traffic benefit in the entire study area with the assertion: "traffic operations on those roads [the 32 road segments other than those four comprising Alternative D] are assumed to be similar to the No-Build Alternative."</i>	Based on public comments received on the FEIS, TDOT and FHWA determined that the traffic analysis for Alternative D as presented in the FEIS should be expanded to the same level as the No-Build and Preferred Alternative, prior to the issuance of a Record of Decision (ROD). The findings of the updated analysis of Alternative D are reported in the April 2016 <i>Update to the Traffic Operations Technical Report</i> (see Appendix C of the ROD). They confirmed the finding of the FEIS that this alternative would provide poor traffic operation (LOS E or F) on roadways and intersections along its general route (Sam Houston School Road, Peppermint Road, Helton Road and Hitch Road) when compared

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				to the No-Build condition.
3.2.a.2	16	Table 3-1, 3-8	<i>Total lack of documentation: The 2015 FEIS and its supporting documents do not provide any further information supporting the assertion (above) made in the 2015 FEIS Table 3-1.</i>	Based on public comments received on the FEIS, TDOT and FHWA determined that the traffic analysis for Alternative D as presented in the FEIS should be expanded to the same level as the No-Build and Preferred Alternative, prior to the issuance of a Record of Decision (ROD). The findings of the updated analysis of Alternative D are reported in the April 2016 <i>Update to the Traffic Operations Technical Report</i> (see Appendix C of the ROD). They confirmed the finding of the FEIS that this alternative would provide poor traffic operation (LOS E or F) on roadways and intersections along its general route (Sam Houston School Road, Peppermint Road, Helton Road and Hitch Road) when compared to the No-Build condition.
3.2.a.3	16-17	Table 3-1 (page 3-10, footnote 4)	<i>Lack of accepted methodology: The use of the phrase "over capacity" [FEIS Table 3-1, Footnote 4] suggests that no conventionally accepted traffic analysis methodology was applied. The term "over capacity" cannot be found in LOS analysis methodology. A road can no more be "over capacity" than a water glass can be filled to "over capacity". Proper use of a traffic model for Alternative D would have revealed that as roads approach their capacity, the equilibrium-seeking features of the trip assignment algorithm become more aggressive in dispersing traffic to other, less congested routes.</i>	"Over-capacity" refers to the volume-to-capacity ratio (v/c). The capacity of the roadway does not refer to the absolute maximum number of vehicles that can fit on the pavement, but to the maximum number of vehicles that can travel on the roadway at or near free-flow speeds. Volume-to-capacity ratios exceeding 1.0 (e.g., a roadway being "over capacity") result in LOS "F." A travel demand model will only assign trips to alternate routes insofar as that alternate provides a travel time benefit. Further, as noted in the model documentation for the Knoxville TPO 2040 model, roadways of lower classes are assigned travel time penalties to better reflect realistic route choices that are biased towards roadways of higher classes (such as the Preferred Alternative). If there are no alternate routes that can provide comparable travel times to even a congested roadway, the

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				model will assign additional trips to the roadway even as v/c approaches 1.0. This is reflective of real-world driver behavior; given the unpredictable nature of traffic flows when v/c approaches 1.0 it is difficult to expect a driver to consciously select a route adding several minutes of travel time because of possibly encountering unstable traffic flows on the shortest route.
3.2.a.4	17	Table 3-1, 3-10	<i>Vague, non-operational conclusion: The statement that Alternative D "would not significantly reduce volumes on existing routes" lacks the precision that is accorded to the description of traffic volumes on these routes in other alternatives (2015 FEIS Table 3-1).</i>	Based on public comments received on the FEIS, TDOT and FHWA determined that the traffic analysis for Alternative D as presented in the FEIS should be expanded to the same level as the No-Build and Preferred Alternative, prior to the issuance of a Record of Decision (ROD). The findings of the updated analysis of Alternative D are reported in the April 2016 <i>Update to the Traffic Operations Technical Report</i> (see Appendix C of the ROD). They confirmed the finding of the FEIS that this alternative would provide poor traffic operation (LOS E or F) on roadways and intersections along its general route (Sam Houston School Road, Peppermint Road, Helton Road and Hitch Road) when compared to the No-Build condition.
3.2.a.5	17	Table 2-4, 2-10	<i>Non-reproducible finding: ...It is unlikely in the extreme that qualified technicians, given the traffic forecast data for the Alternative D road segments, would uniformly arrive at a conclusion that this level of traffic on Alternative D would "not improve Corridor LOS" or even more unbelievably that Alternative D "increases delay at most intersections" (2014 [sic] FEIS, Table 2-4).</i>	The referenced statements from the FEIS are supported by the additional traffic forecasts for all project area road sections and the updated traffic operations analysis conducted in 2016 (and documented in the February 2016 <i>Traffic Forecast Study</i> and the April 2016 <i>Update to Traffic Operations Technical Report</i> , in Appendix C of this ROD

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3.2.a.6	17	1-10 to 1-13	<i>Absence of professional judgment: Had in fact any data shown that Alternative D, with its projected year 2040 volume of 14,890 – 20,580 daily vehicles was yielding no significant change in any traffic volumes throughout the study area, proper engineering judgment would have mandated further investigation into such an anomaly. The 2013 Traffic Model and its outputs support readily accessible (but apparently unused by the 2015 FEIS) approaches to exploring anomalous results. Such approaches include (1) screenline analysis, a simple manual computation from published data which can explain how traffic shifts among routes as the network is changed and (2) select link analysis, a readily obtained procedure based on the 2013 Traffic Model which can trace the origins and destinations (O/D's) of traffic travelling through a designated "select link". The 2015 FEIS (page 1-13) does report one narrowly-focused select link analysis, limited to two "select links" (US 129/SR 115 and SR 33) and through those links, only those trips between Knox County and eastern Blount County. This analysis, revealing only a small volume of year 2040 trips between Knoxville and eastern Blount County (2015 FEIS, Table 1-1) raises the obvious question of "where then, if not to/from eastern Blount County, are trips to/from Knox County going and coming?" This question could have been readily answered by a more comprehensive select link analysis, looking not just at destinations to the east of Maryville</i>	The 2016 update of traffic forecasts and traffic analysis for Alternative D (included in Appendix C) confirm the findings reported in the FEIS. As part of the original traffic forecast study in 2006, a license plate survey was conducted. From this survey, some O-D information was available related to travel between eastern Blount County and Knox County. To update this information, the 2013 Knoxville Regional Travel Demand Model was consulted to perform a select link analysis for this traffic flow. Major trip attractions in the area are to the north (Knoxville) and the Sevierville / Gatlinburg area to the east. This is why traffic flow was evaluated to / from the north and to / from the east to see what effect the project would have related to this flow. A more detailed analysis including movements to / from the south and west was not prepared because those movements have less population centers to draw from and would not have as great of an impact as the other movements.

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			<i>but also to the south and west. However, no such analysis was performed.</i>	
3.2.b Unexplained forecasting procedures for Alternative D				
3.2.b.1	17-18	Appendix B - 2014 Traffic Technical Report Addendum; 2016 Traffic Forecasting Study, FEIS Table 3-1	<i>The 2015 FEIS and its supporting 2014 Addendum "did not include updated forecasts and analyses for DEIS Alternative D" (May 14, 2014 Memorandum, 1). Accordingly, traffic model results are presented only for the No-Build and the Preferred Alternative (2014 Addendum, Figures 2 and 3). The only travel forecast for any part of Alternative D is a forecast for the four road segments (Helton Road, Hitch Road, Peppermint Road and Sam Houston School Road) comprising Alternative D (May 14, 2014 Memorandum). No forecasts were made for the other 32 road segments throughout the study area in Alternative D. <u>In the absence of any traffic model results for Alternative D, it was assumed that "Alternative D would not significantly reduce volumes on existing routes" (2015 FEIS, Table 3-1).</u></i>	Based on public comments received on the FEIS, TDOT and FHWA determined that the traffic analysis for Alternative D as presented in the FEIS should be expanded to the same level as the No-Build and Preferred Alternative, prior to the issuance of a Record of Decision (ROD). Forecasts were included for the other 32 road segments in the study. The findings of the updated analysis of Alternative D are reported in the April 2016 <i>Update to the Traffic Operations Technical Report</i> (see Appendix C of the ROD). They confirmed the finding of the FEIS that this alternative would provide poor traffic operation (LOS E or F) on roadways and intersections along its general route (Sam Houston School Road, Peppermint Road, Helton Road and Hitch Road) when compared to the No-Build condition.
3.2.b.2	18	Appendix B - 2014 Traffic Technical Report Addendum; 2016 Traffic Forecasting Study	<i>The May 14, 2014 Memorandum (page 2) states that forecasts for the four road segments comprising Alternative D were made "using existing volumes and the updated regional model". However, no updated (presumably 2013) model results for Alternative D are shown in the 2015 FEIS or any of its supporting documents. There is no explanation of how an updated regional model was used to forecast traffic volumes on the four Alternative D road segments. Possibly, some sort of "growth factor" derived from model runs for</i>	Based on public comments received on the FEIS, TDOT and FHWA determined that the traffic analysis for Alternative D as presented in the FEIS should be expanded to the same level as the No-Build and Preferred Alternative, prior to the issuance of a Record of Decision (ROD). Forecasts were included for the other 32 road segments in the study. The procedure and results of the 2016 traffic forecasting study for Alternative D are presented in the February 2016 <i>Traffic Forecast Study, included in the Technical Appendix to this ROD.</i>

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			<i>the No-Build and Preferred alternatives was applied to the Alternative D forecasts made for the 2010 DEIS. However, these computations and results cannot be reproduced from the information provided.</i>	
3.2.c Continued use of incorrect Level of Service (LOS) procedures for Alternative D				
3.2.c	18-19	Technical Appendix B - 2014 Traffic Technical Report Addendum, Page 5	<i>[...] the 2015 FEIS persists in analyzing the traffic Level of Service (LOS) of the four road segments comprising the Alternative D route as "Class III Highways", a category characterized by the 2010 Highway Capacity Manual (HCM) as having rural driving conditions.</i> <i>Traffic Level of Service (LOS), defined by the HCM, is a qualitative measure of how drivers are likely to perceive traffic service. For suburban roads, the HCM correlates LOS primarily to the traffic volume, and therefore congestion, in the direction of travel. However, for the HCM's two-lane "Class III Highway" capacity methodology, LOS is determined primarily by the ability to freely overtake ("pass") slower vehicles. [...]</i> <i>Linking LOS to the ability to freely pass, while appropriate for travel through rural areas, is inappropriate to the point of absurdity for the suburban areas surrounding the Alternative D route. Few of the trips on Alternative D would have characteristics typical of rural travel (long trip length and irregular frequency of travel on roads where passing is allowed) for which the ability to pass is important. To the contrary, the overwhelming majority of trips on Alternative</i>	The 2010 <i>Highway Capacity Manual</i> added a new classification of highway, Class III, described as being for moderately developed areas that may travel through small towns or unincorporated communities. On such roads, local traffic often mixes with through traffic and the density of unsignalized roadway access points is noticeably higher than in a purely rural area. For Class III highways, passing restrictions are not typically the main concern, so LOS is based on the percent of free-flow speed. The 2014 traffic operations analysis and the 2016 update for Alternative D appropriately use the Class III methodology.

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			<i>D are "suburban" in character (short trips most of which are made on a daily basis, on roads where passing is prohibited). For these "suburban" trips, the ability to pass other vehicles is far less important than reliability, efficient traffic control devices (traffic signals, roundabouts) and freedom from congestion. The HCM Class III method for LOS addresses none of these qualities of travel.</i> <i>Although the HCS 10 proprietary software does not offer a module for it, the HCM itself does provide a clear way to compute the LOS on two-lane suburban roads, simply by adjusting the Multi-Lane Highways methods (Chapter 14 of the HCM) to two-lane roads. Various state DOT's [sic], most notably Florida's, have published shortcut versions [...] permitting an easily computed estimate of the capacity and LOS on urban two-lane streets.</i>	
3.3 The FEIS fails to compute the safety impact of the Preferred Alternative				
3.3	19	1-22 to 1-24	<i>The FEIS also fails to "rigorously explore" the Preferred Alternative, 40 C.F.R. §1502.14(a), and fails to provide a "full and fair" discussion of the impacts of the Preferred Alternative. 40 C.F.R. § 1502.1.</i> <i>[...] the 2015 FEIS does not discuss the impact, on safety, of the Preferred Alternative.</i> <i>[...] the 2015 FEIS offers only the conjecture that "a transportation option [Preferred Alternative] that would divert some through travelers away from...roadways in the Maryville core could help reduce the number of crashes".</i>	In response to CAPPE's comment on safety and future crashes, TDOT prepared an updated traffic safety analysis that is documented in the <i>Crash Analysis Technical Report</i> (July 2017), contained in Appendix D of the ROD. TDOT's traffic safety consultant attempted to replicate the approach and results offered in CAPPE's comments, but was not able to do so for several reasons. The problems with CAPPE's method include: 1) assuming that current crash patterns will be the same into the future, and 2) assuming that crash rates are the same for roadways within the same class and type and thus

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			<i>(2015 FEIS, p. 1-24)</i> <i>The 2015 FEIS offers no information about the number of crashes projected for the Preferred Alternative for any year of its operation. Nor does the 2015 FEIS offer any information about the number of crashes for the No-Build, the "baseline" to which the Preferred Alternative could be compared. Such projections are computable, from crash rates reported 2015 FEIS Table 1-5 combined with the segment traffic volumes given in the 2014 Addendum, Tables 5 and 7. [...]</i> <i>Failure to conclude the safety impact of the Preferred Alternative from the reported data falls short of standard practice for NEPA [...]</i>	ignoring site-specific characteristics that influence crashes. That approach cannot provide useful conclusions about the relative safety of the design alternatives. CAPPE's computations using current crash rates assumed a linear relationship exists between exposure and crashes. Most current research demonstrates a non-linear relationship between traffic volume and crash frequency that varies for each road type and setting (urban versus rural). Using an average crash rate to estimate and compare crash frequencies for a facility at different traffic volume levels is not appropriate. At this time, TDOT's standard practice is to use a qualitative approach to address the safety of new or improved roadways. After consultation with FHWA, TDOT confirmed that a qualitative approach to address the anticipated safety performance of the proposed PPE is appropriate. Roadways in Tennessee functionally classified as freeways (also referred to as interstate highways) have statewide average crash rates lower than all other roadway types, including roadways in the Maryville core. Due to their design features, freeways are safer than other roads because freeways control traffic flow and restrict access to and from the highway. A controlled access freeway has no traffic signals, intersections, or direct property access, and no at-grade (intersection) crossings with other roads, railroads, or bike/pedestrian paths. Full access control reduces the potential traffic incidents compared with other roadway classifications The Selected Alternative will be a freeway meeting interstate

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				level design standards. Thus, it should be inherently safer than the No-Build Alternative, which uses local roadways with points of conflict such as at-grade intersections, traffic signals or stop signs, direct property access/driveways, narrow traffic lanes, narrow or non-existent shoulders, and inadequate clear zones. In addition, under the Selected Alternative, many of the study area roadways are forecasted to have lower traffic volumes in both 2020 and 2040, including roadways that serve the Maryville core, compared with the No-Build Alternative. The updated evaluation of recent crash data identified several of the road segments in the Maryville core as having more crashes than is statistically probable based on random occurrence. The migration of traffic from existing non-freeway roadways to the proposed freeway of the Selected Alternative represents a shift from roadways with higher typical average crash rates to a roadway with a lower typical average crash rate. This migration of traffic would be expected to reduce the overall crash risk for the Selected Alternative relative to the No-Build Alternative.
3.4 Failure to obtain basic origin/destination data misrepresents transportation needs in the study area				
3.4	20	1-12, 1-13	<i>The 2015 FEIS and its supporting documents make no mention, nor report any findings, of any comprehensive origin/destination ("O/D") data for the study area.</i> <i>For the PPE study area, a comprehensive select link analysis would include not only origins/destinations along the eastern side of Maryville, but would also include origins/destinations around the entire periphery of the study</i>	In developing its current Knoxville Regional TPO travel demand forecasting model, the Knoxville Regional TPO combined household travel behavior surveys conducted in 2000 and 2008. The current model incorporates those two data sets at the level of traffic analysis zones (TAZ) that cover the entire Knoxville Regional TPO region, including the study area. The traffic analyses prepared for the DEIS reevaluation and the FEIS, and the

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			<i>area. The 2015 FEIS, gathering no comprehensive O/D data of this scope, is therefore unable to describe the pattern of traffic through the study area.</i> <i>The absence of comprehensive O/D data for the Pellissippi Parkway Extension project precludes any answer to the question of "what is the real transportation problem in the area?"</i>	2016 traffic analysis for Alternative D used data from the current TPO model. A project-specific origin and destination study was not conducted for the DEIS reevaluation or the FEIS; the Knoxville Regional TPO staff confirmed in December 2016 that a new travel behavior study has not been conducted since 2008.
3.5 The 2015 FEIS reports internally contradictory information				
3.5.a Contradiction between Intersection LOS and traffic model results produces overstatement of traffic and overstatement of delay				
3.5.a	20-22	Appendix B - 2014 Traffic Technical Report Addendum	<i>The year 2040 intersection Level of Service (LOS) analysis (2015 FEIS Table 3-2) bases its findings on projections from the 2013 Traffic Model as summarized in the 2014 Addendum, but yields travel times that, aggregated for the study area, differ drastically from those computed by that model.</i> <i>For the four signalized intersections along Washington Street analyzed in the intersection capacity analysis for the Year 2040 No Build Alternative (2014 Addendum, Table 13) the total intersection travel time (delay plus run time) for the two peak hours (AM and PM) is 946 hours. Yet the traffic model reports that the total vehicle hours of travel (incorporating delay) on the road segments though these intersections is only 365 hours for the <u>entire day</u> in the year 2040.</i> <i>The intersection capacity analysis, therefore, <u>projects delay</u></i>	While based on the same methodology outlined in the HCM, macroscopic traffic flow models do not project delay in the same manner as microscopic models or programs that analyze individual roadway components, such as HCS. Due to the limitations of processing time and power, macroscopic models approximate operating conditions for roadways using broad service measures, rather than analyzing all of the conditions that affect operations as described in the HCM. As such, it is not unexpected that the Knoxville TPO travel demand model and project-specific analyses arrive at dissimilar conclusions with respect to operations. The intersection delays reported in the 2008 <i>Traffic Operations Technical Report</i> dated October 2008 and its subsequent updates do not correspond directly to vehicle-hours traveled. Delay in this sense refers to the additional amount of time (in seconds) required by a single vehicle to traverse an intersection under the

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			<i>for the peak hours alone that is 2.6 times the travel time (delay plus run time) for the entire day as projected by the traffic model.</i> <i>There are no published guidelines for correspondence between vehicle hours of travel (VHT) as projected by a traffic model and that obtained from intersection capacity analysis using traffic projections from that model. In theory, the two estimates of travel time should be comparable, since they both are based on the same projection of future traffic and compute delay from algorithms that while differing in detailed methodology are both derived from the Highway Capacity Manual, the definitive source of capacity computation.</i> <i>Beyond guidelines, <u>engineering judgment and common sense dictate that capacity calculations based on identical source data but varying in their conclusions (as do the traffic model and capacity analysis above) by over 250 percent cannot constitute a reliable basis for action.</u> Such a variation in calculations would lead to an unreasonably wide variation in designs: for example, six lanes instead of four, traffic signal instead of STOP control, etc.</i> <i>Three components of the analysis in the Traffic Forecast Study contribute to the discrepancy between the VHT from the capacity analysis (2014 Addendum) based on the Traffic Forecast Study traffic projections and the VHT (2015 FEIS, Appendix E):</i> • K factors and D factors based on past conditions, not	specified operating parameters relative to free and unimpeded flow through that intersection. By comparison, the vehicle-hours traveled as reported in the travel demand model for a roadway segment refer to the total travel times of all vehicles traversing that roadway segment. In addition to the differences in calculating operating conditions described above, these two metrics measure neither the same roadway components, the same operating times, nor the number of users, which makes comparisons between them particularly specious. Regarding the cited segments of Washington Street, CAPPE asserts that the "traffic model" reports 365 vehicle-hours traveled on Washington Street between State Route 33 (East Broadway Avenue / Old Knoxville Highway) and State Route 73 (US Route 321) per day for the No-Build Alternative in 2040. This number is roughly analogous to the product of projected AADT of these segments of roadway and the free-flow travel time, in hours, required to fully traverse them. However, this does not include any projected delays incurred by traffic from signal operations, roadway characteristics, or other factors. In contrast, CAPPE claims that the total intersection delay for the four signalized intersections along Washington Street, in addition to the "run time" (presumably the free-flow travel time described above) is 946 hours for the AM and PM peak periods. These values describe two separate metrics and cannot be compared directly. The idea that differences in operating conditions reported by travel demand models and capacity analysis software should halt any further conclusion fails to consider the intended purposes of

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			anticipating a reduction in these factors reflecting a continued transition to more urban environment - Intersection capacity analysis method (HCS 2010) most likely computes a peak hour delay based on the peak 15 minutes of the peak hour, extended to the full peak hour... greatly overstates the delay under distant future conditions, - The intersection LOS analysis assumes a continuation of existing road conditions, and does not appear to account for the improvements in intersection traffic engineering and improvements in local plans that would routinely occur over the next thirty years. <i>At four of the five signalized intersections analyzed in the intersection capacity analysis, the analysis starts with daily traffic projections (AADT's) that correspond well with the modeled volumes of traffic on the same links (i.e., entering the intersections). However, at the most critical intersection (i.e., South Washington Street at SR 73/US 321) with the greatest projected delay of any intersection, the capacity analysis is based on an entering traffic volume (24,560 daily vehicles, No Build in 2040) that is substantially greater than the 19,510 vehicles projected in the traffic model. This difference in approach volumes (5,050 vehicles or around one quarter of the modeled volume) calls into question the validity of the analysis of this location, the most critical in the entire study area. As traffic volumes approach the saturation level, as they do at this location, the peak hour</i>	these programs. The examples of design decisions cited by CAPPE (e.g., laneage, intersection controls, etc.) would not occur because of operating calculations from macroscopic models. In fact, these are decisions made during the planning and design phases of a specific project, at which point it becomes both feasible and prudent to study traffic operations in further detail, as done in this project. The "engineering judgment and common sense" to which CAPPE refers implores users to use macroscopic modeling for regional planning and microscopic simulation for project-level improvements. At this stage in project development, the more detailed results available from simulations and programs such as HCS takes precedence over the more generalized results offered in the travel demand model. The assumptions made in the traffic operations analysis conform to TDOT and national best practices. Delay calculations based on peak 15-minute periods are commonplace in traffic studies and appear in the latest versions of the HCM, as noted by CAPPE. The travel demand model, the traffic forecasts, and the operations analysis all include future committed projects that appear in local and regional plans in the No-Build Alternative, such as the proposed Alcoa Highway relocation. The operations analysis does not speculate on the future implementation of "improvements in intersection traffic engineering" outside of what is described in approved plans, nor does it modify k-factors and directional distributions beyond what is accounted for and included in the travel demand model; generally, these sorts of assumptions in traffic and operations projections should be minimized.

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			delay increases disproportionately faster than the increase in entering traffic. <u>Thus, the 25 percent overstatement of traffic entering from the major approach results in an overstatement of delay far greater than 25 percent.</u>									
3.5.b Inexplicable variations in screenline volumes for Alternative D undermine traffic assignment figures and therefore undermine traffic analysis in the 2015 FEIS												
3.5.b	22-24	Appendix B - 2014 Traffic Technical Report Addendum	<i>Table 2 Summary of Screenline Analysis</i> <table><tr><th>Alternative</th><th>Screenline Volumes Year 2040 AADT</th></tr><tr><td>No-Build</td><td>125,090</td></tr><tr><td>Alternative D</td><td>139,710</td></tr><tr><td>Difference</td><td>14,620</td></tr></table> <i>Source: No-Build traffic volumes from 2014 Addendum, Figure 1, Year 2040. Alternative D traffic volumes from May 14, 2014 Memorandum and 2015 FEIS, Table 3-1, FN 4, which states that all Alternative D segments (other than the 4 “Alternative D segments) traffic operations are “assumed to be similar to the No-Build.”</i> <i>The enormous variation in screenline volumes (14,620 daily trips, Table 2 above) is far beyond the range of screenline variation typical among alternatives being evaluated in standard transportation planning practice. However, the 2015 FEIS offers no explanation for this deviation.</i> <i>Possible explanations for the anomalous variation in screen line volumes all raise further questions about the validity of</i>	Alternative	Screenline Volumes Year 2040 AADT	No-Build	125,090	Alternative D	139,710	Difference	14,620	The total vehicle-miles traveled (and by extension aggregate traffic volumes) in the study area increases in Alternative D relative to the No-Build Alternative. Thus, a given screenline will show greater volumes for Alternative D (or the Selected Alternative) than for the No-Build Alternative.
Alternative	Screenline Volumes Year 2040 AADT											
No-Build	125,090											
Alternative D	139,710											
Difference	14,620											

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			<i>the Alternative D traffic forecast:</i> <i>External trips to/from outside the study area: One possible factor which could contribute to the anomalous variation in screenline volumes might be a large volume of “external” traffic (i.e., with neither origin nor destination within the study area), currently not passing through the study area but attracted through the study area by Alternative D. However, such a situation is hardly likely. For example, is traffic between Knoxville and the destinations along Route 321 to the east of the study area going to shift from some other route, currently entirely outside the study area, to new routes within the study area? No such reasonable shifts are apparent.</i> <i>Increase in internal trip generation: Another possible factor which could contribute to the anomalous variation in screenline volumes for Alternative D might be a large increase in “internal” trips, having origin or destination or both within the study area. However, attempting to explain the presence of such a large increment of internal trips raises questions further eroding the validity of the traffic forecast. For example, are different sets of traffic model inputs (zone-by-zone social and economic data) being used for the different alternatives? If so, why such deviations from standard modeling practice?</i>	

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3.6 The 2015 FEIS presents "new" information that is not included in its supporting Attachments or Appendices				
3.6.a Select Link Analysis Percentages cannot be duplicated from information provided				
3.6.a	24	1-12, to 1-13, Attachment A - #5	<i>The select link analysis in the 2015 FEIS shows an interestingly small amount of through traffic, specifically a total of 1,494 daily vehicles in the year 2040 (2015 FEIS Table 1-1). This through traffic comprises only 1.6 percent of the total traffic on the select links (US 129/SR 115 and SR 33) examined. Other percentages shown in Table 1-1 cannot be duplicated from information given in the 2015 FEIS or Attachment A.</i> <i>Three conclusions can be drawn from the select link analyses, but these are not presented in the FEIS:</i> <i>(1) The Preferred Alternative will carry only a small percentage of the study area's through traffic</i> <i>(2) Almost all traffic on the Preferred Alternative is local in nature</i> <i>(3) The appropriate additions to the road network for local traffic are new, better- connected and expanded local roads, not high-speed limited-access freeways.</i>	The percentages in the FEIS Table 1-1 are the model result differentials between 2010 and 2040. TDOT's standard approach is to use model differentials and not exact model output given the relative source in error in model numbers. The links selected on each of the roadways evaluated (Wildwood, US 411, and US 321) are near the intersections of Sam Houston, Davis Ford, and Helton Roads. It is possible the analysis would have shown more traffic using these links if the eastern end of the links were adjusted to the east, to reflect a more regional evaluation (including traffic to and from western Sevier County and far eastern Blount County). It should also be noted that while the current demand is low, that could be due to the fact that there is no desirable route for the model to assign the traffic to. All of these percentages are without the PPE. Looking at an evaluation with the PPE, approximately 48 percent of the total trips from the north / east would use the new route.
3.7 The 2015 FEIS misrepresents project impacts by not reporting conclusions supported by the data provided				
3.7.a The Preferred Alternative adds area-wide VMT and VHT				
3.7.a	24-25	3-66	<i>The 2015 FEIS (Table 3-21) reports that the Preferred Alternative would result in a year 2040 increment of 8.6</i>	VMT and VHT increase in the Preferred Alternative relative to the No-Build Alternative because the total number of vehicles on

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			<i>percent (1,476,516 versus 1,359,807) in daily vehicle miles of travel (VMT) over the same year (2040) No-Build.</i> <i>Information provided by TDOT (letter from Jim Ozment, TDOT to Nina Gregg, October 24, 2014) reports that the Preferred Alternative would result in a year 2040 increment in daily VHT from 32,752 hours to at least (and possibly more than) 33,543 hours over the same year (2040) No-Build.</i> <i>These increments in year 2040 VMT and VHT indicate that, compared to the No-Build throughout the study area, the Preferred Alternative is delivering neither of the two most important travel benefits (reduction in VMT and VHT) for which road improvements are usually made. While improving (compared to the No-Build) LOS at some intersections, the Preferred Alternative adds to travel time and distance when these are aggregated over the study area.</i>	study area roadways increases in the Preferred Alternative. Aggregate VMTs and VHTs are not reasonable metrics to use when comparing alternatives with differing aggregate traffic volumes. The addition of a new roadway, coupled with no closures or realignments of existing roadways, would not result in an increase in travel distance for a given vehicle trip.
3.7.b The Preferred Alternative increases (not decreases) the number of crashes area-wide				
3.7.b.	25	1-22, 3-5, 3-6, 3-17, 3-1; Crash Analysis	<i>The Preferred Alternative would result in an increase (relative to No Build) of 63 annual crashes on the Pellissippi Parkway in the study area. This is obtained by applying the statewide average crash rate of 0.981 crashes per million</i>	In response to CAPPE's comment on safety and future crashes, TDOT prepared an updated traffic safety analysis that is documented in the <i>Crash Analysis Technical Report</i> (July 2017), contained in Appendix D of the ROD. TDOT's traffic safety

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		Report	<i>VTM (2015 FEIS Table 1-5) to the increase in annual vehicle miles of travel (VTM) on the Pellissippi Parkway (2014 Addendum, Tables 5 and 7). On the other hand, the reduction in traffic on roads (other than the Pellissippi Parkway) throughout the study area would result in a reduction of around 42 crashes. This is obtained by applying a rate of 4.0 crashes per million VTM (typical for roads with traffic reductions due to the Preferred Alternative) to the reduction in travel on these roads due to the Preferred Alternative.</i> <i>For the entire study area, therefore, the crash rates from the 2015 FEIS (Table 1-5) and the Crash Analysis applied to the year 2040 vehicle miles of travel (2014 Addendum, Tables 5 and 7) <u>results in the projection of an increase of 21 crashes annually in the year 2040 Preferred Alternative as compared to the year 2040 No-Build.</u></i>	consultant attempted to replicate the approach and results offered in CAPPE's comments, but was not able to do so for several reasons. The problems with CAPPE's method include: 1) assuming that current crash patterns will be the same into the future, and 2) assuming that crash rates are the same for roadways within the same class and type and thus ignoring site-specific characteristics that influence crashes. That approach cannot provide useful conclusions about the relative safety of the design alternatives. CAPPE's computations using current crash rates assumed a linear relationship exists between exposure and crashes. Most current research demonstrates a non-linear relationship between traffic volume and crash frequency that varies for each road type and setting (urban versus rural). Using an average crash rate to estimate and compare crash frequencies for a facility at different traffic volume levels is not appropriate. At this time, TDOT's standard practice is to use a qualitative approach to address the safety of new or improved roadways. After consultation with FHWA, TDOT confirmed that a qualitative approach to address the anticipated safety performance of the proposed PPE is appropriate. Roadways in Tennessee functionally classified as freeways (also referred to as interstate highways) have statewide average crash rates lower than all other roadway types, including roadways in the Maryville core. Due to their design features, freeways are safer than other roads because freeways control traffic flow and restrict access to and from the highway. A controlled access

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				freeway has no traffic signals, intersections, or direct property access, and no at-grade (intersection) crossings with other roads, railroads, or bike/pedestrian paths. Full access control reduces the potential traffic incidents compared with other roadway classifications The Selected Alternative will be a freeway meeting interstate level design standards. Thus, it should be inherently safer than the No-Build Alternative, which uses local roadways with points of conflict such as at-grade intersections, traffic signals or stop signs, direct property access/driveways, narrow traffic lanes, narrow or non-existent shoulders, and inadequate clear zones. In addition, under the Selected Alternative, many of the study area roadways are forecasted to have lower traffic volumes in both 2020 and 2040, including roadways that serve the Maryville core, compared with the No-Build Alternative. The updated evaluation of recent crash data identified several of the road segments in the Maryville core as having more crashes than is statistically probable based on random occurrence. The migration of traffic from existing non-freeway roadways to the proposed freeway of the Selected Alternative represents a shift from roadways with higher typical average crash rates to a roadway with a lower typical average crash rate. This migration of traffic would be expected to reduce the overall crash risk for the Selected Alternative relative to the No-Build Alternative.

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3.8 Uncertain time horizons render the entire analysis unreliable				
3.8	25-26	2-4	<i>Throughout the FEIS and the supporting documents, the Relocated Alcoa Highway (RAH) Parkway and segmented improvements to US129 are factored into the traffic analysis. Therefore the asserted benefit of PPE depends on other projects with acknowledged uncertainty as to time horizons and actual completion. The FEIS does not analyze the impact on traffic operations of the PPE on its own, which means there is no way to evaluate its independent impact on traffic volumes, traffic operations, or safety.</i> <i>[...]</i> <i>In fact, the FEIS acknowledges the unreliability of project schedules, contradicting assertions of impacts on area roadway volumes and reliability of projections, and therefore renders all projections suspect and unreliable...</i>	The Knoxville Regional TPO's current long range transportation plan, Mobility Plan 2040, includes the Relocated Alcoa Highway (Alcoa Highway Parkway – New Road) and improvements to US 129/SR 115 Alcoa Highway in its financially constrained project list, for a horizon year of 2026. A ROW reevaluation was approved in September 2016 for the Relocated Alcoa Highway project and an authorization of \$28.6 million (Federal portion was \$22.9 million) was approved for ROW acquisition/utilities relocation. Thus the inclusion of these projects in the No-Build Alternative is entirely appropriate and is standard practice. In addition, since TDOT issued its list of backlog project and new projects (http://www.tn.gov/tdot/news/19418), Congress passed and the President signed the Fixing America's Surface Transportation Act (FAST Act) in December 2015. This is the first long term transportation act in 10 years, and is expected to provide long term funding certainly for highway and other surface transportation projects. Inclusion of a project in the region's constrained long-range plan renders it reasonably foreseeable, and thus its inclusion in the analysis is appropriate.

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3.9 Accessibility and time savings benefits rely on speculation, not data				
3.9.	26-27	3-16 to 3-17; Appendix D, Addendum to 2009 Economic and Fiscal Impact Analysis (12, Footnote 6)	Accessibility and time savings benefits rely on speculation, not data. <i>The FEIS attempts to demonstrate accessibility and time savings benefits from the project, but these presumed benefits are speculation based on assumptions, not data.</i> <i>The travel time analysis relies on undocumented "current traveler behavior" and an unproven assumption regarding the "alternate route" travelers would use in the absence of the project, resulting in unreliable "time savings" with the project.</i> <i>The FEIS provides no data to support the assertion of "current traveler behavior." Further, the "next best alternative" described in the FEIS and used to calculate travel time savings was "assumed based upon discussions with a Senior Transportation Engineer at the Knoxville Regional TPO." (FEIS Appendix D, Addendum to 2009 Economic and Fiscal Impacts Analysis 2015, at 12, Footnote 6)</i> <i>Therefore "travel time savings" reported in the FEIS is entirely speculative.</i>	As described in Section 1.4.1 of the FEIS, in June 2013, the Knoxville Regional TPO adopted a major update of the regional travel demand model, which was the first major update since the initial traffic study was prepared for this project in 2007. The updated model included extensive revisions to the model's structure, network, socio-economic assumptions and calibration, all aimed at improving the model's accuracy. The model incorporates household travel behavior surveys conducted in 2000 and 2008, at the TAZ level that cover the entire TPO region, including the study area. The alternative routes used to calculate travel times were based on outputs of the 2013 regional travel demand model and interviews with TPO staff who are experienced in running the model and analyzing its outputs.

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IV. Geology				
IV.	27	3-77 to 3-80	<i>Thorough field studies were not performed to assess impact of the project on geologic and hydrologic conditions for water quality and threatened and endangered species. These additional investigations should have been performed prior to selecting a preferred alternative route for public comment and review because all direct, indirect, and cumulative impacts could not be defined by the studies in the DEIS.</i>	This is an introductory statement to Comments 4.a-4.e. See responses below to Comments 4.a through 4.e.
4.a The 2015 FEIS reports on geological studies done after the 2010 DEIS but still fails to thoroughly explore and document the impacts of the project on geologic and hydrologic conditions and water quality				
4.a.1	27-28	3-77, 3-94	<i>The FEIS continued the failure of the DEIS to thoroughly discuss the possible connection of surface water drainage into the bedrock drainage system, did not identify any springs outside the corridor that would be groundwater discharge points from sinkholes to surface waters (e.g. Little River), and did not discuss the impact of surface water flow introduced into the bedrock drainage system on threatened and endangered species that are known to exist in the Little River and Pistol Creek. Drainage into sinkholes would be expected to discharge into receiving streams and the direct, indirect, and cumulative impacts of that discharge have not yet been defined.</i> <i>TDOT failed to perform thorough field studies. Moreover, these additional investigations should have been performed</i>	TDOT conducted field studies of the project area in 2008 and 2013-2014, the findings of which are reported in the 2009 <i>Ecology Report</i> (revised January 2010), the February 2009 <i>Preliminary Geologic Report</i>, the July 2013 <i>Addendum to the 2009 Ecology Report</i> and the June 2014 <i>Ecology Study for Alternatives C and D</i>. During those investigations, field personnel looked for the presence of sinkholes within the proposed alignments. The dye trace studies proposed by CAPPE and its consultant are not part of TDOT's standard methodology for environmental surveys during the NEPA phase. Instead, TDOT's conventional practice is to conduct a subsurface program (with auger drilling and potential core drilling) along the selected alignment) and develop a project-specific geotechnical and geologic design. The

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			<i>prior to selecting a preferred alternative route for public comment and review because all direct, indirect, & cumulative impacts could not be defined by the studies in the DEIS.</i>	design of the project will address the protection of aquatic species and groundwater in the area during and after project construction. TDOT will comply with the requirements of the Clean Water Act and State permit programs by obtaining Aquatic Resource Alteration Permit (ARAP) or a §401 Water Quality Certification, §402 and §404 permits. These permit programs are administered through the Tennessee Department of Environment and Conservation (TDEC) and the United States Army Corps of Engineers (USACE) and authorize the alteration of waters of the State, the discharge of dredged or fill material into waters of the United States and the discharge of pollutants, i.e. stormwater, such that water quality is protected. Where stormwater discharge into a sinkhole or to the subsurface is proposed, TDOT will submit an underground injection control (UIC) application to TDEC for authorization. Permits will be obtained as needed for construction of the roadway and Best Management Practices (BMPs), including Erosion Prevention and Sediment Control Measures (EPSC), will be implemented to protect resources. BMPs, often in a series, provide a "treatment train" for the runoff so that the BMP at the outfall point is not overwhelmed by receiving the runoff from the outfall drainage area. Also, wherever possible, off-site run-off is diverted around or through the disturbed area to limit the amount of runoff that is exposed to bare soil. TDOT will monitor activities in compliance with authorized permits. Long term stormwater management will be compliant with the requirements of TDOT's National Pollutant Discharge Elimination

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				System (NPDES) Municipal Separate Storm Sewer System (MS4) permit.
4.a.2	28	3-94	<i>Many of the shortcomings we noted in the DEIS are not addressed adequately or addressed at all in the FEIS. CAPPE reiterates the importance of these studies, especially given the potential negative impacts to Little River, which has been designated by TDEC as an Exceptional Tennessee Water because it supports federal and state threatened and endangered species (FEIS 3-94). Little River is home to a number of species that have been designated as endangered, threatened, or in need of management, and it is also the source of Blount County's water supply.</i>	The FEIS erred in describing the Little River through the project area as being an Exceptional Tennessee Water (ETW). The ETW designation applies to that segment of the Little River that lies within the Great Smoky Mountains National Park, several miles upstream of the project area, within the national park. This correction will be noted in the ROD. The Little River through the project area is impaired (303(d) listed) "due to a documented decline in diversity at biological stations at miles 7.6 and 9.6." Streams in the project area that flow into the Little River have previously been affected by farming activities, stormwater runoff, siltation, and land development. The Preferred Alternative has the greatest physical distance/separation from the Little River. (See page 2-8 of the FEIS.)
4.b The FEIS does not include a detailed karst inventory and field survey completed outside of the proposed corridor (i.e., between the corridor and possible receiving streams)				
4.b	28	3-77, 3-94	<i>The FEIS reports on additional on-the-ground field surveys in 2013 and 2014 (FEIS 3-77), but these surveys were only performed within the corridor of the Preferred Alternative. Thus, instead of searching for springs outside the corridors and along receiving streams where sinkhole drainage would emerge and discharge, the field surveys only attempted to identify springs where they emerge along and within the corridor (PB 2013, p 1).</i>	TDOT conducted field studies of the project area in 2008 and 2013-2014, the findings of which are reported in the 2009 Ecology Report (revised January 2010), the February 2009 Preliminary Geologic Report, the July 2013 Addendum to the 2009 Ecology Report and the June 2014 Ecology Study for Alternatives C and D. During those investigations, field personnel looked for the presence of sinkholes within the proposed alignments.

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			<i>A detailed karst inventory and field survey should be completed outside of the corridor for the Preferred Alternative that maps all sinkholes, springs, and exposed bedrock joint patterns from Little River and its tributaries to the corridor of the Preferred Alternative.</i>	The dye trace studies proposed by CAPPE and its consultant are not part of TDOT's standard methodology for environmental surveys during the NEPA phase. Instead, TDOT's conventional practice is to conduct a subsurface program (with auger drilling and potential core drilling) along the selected alignment) and develop a project-specific geotechnical and geologic design. The design of the project will address the protection of aquatic species and groundwater in the area during and after project construction. TDOT will comply with the requirements of the Clean Water Act and State permit programs by obtaining Aquatic Resource Alteration Permit (ARAP) or a §401 Water Quality Certification, §402 and §404 permits. These permit programs are administered through the Tennessee Department of Environment and Conservation (TDEC) and the United States Army Corps of Engineers (USACE) and authorize the alteration of waters of the State, the discharge of dredged or fill material into waters of the United States and the discharge of pollutants, i.e. stormwater, such that water quality is protected. Where stormwater discharge into a sinkhole or to the subsurface is proposed, TDOT will submit an underground injection control (UIC) application to TDEC for authorization.

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4.c FEIS has not adequately identified sinkhole groundwater discharge points and therefore the FEIS's report on impact on receiving streams is inadequate. TDOT will not be able to avoid these areas and impacts on receiving streams during design, construction, and post-construction development.				
4.c	29	3-98, 3-101; S-13	<i>Without thorough studies, including dye trace of hydraulic connections between sinkholes, receiving streams and discharges, TDOT will not have the information needed to implement the extraordinary BMPs necessary to protect area waterways from the impacts of this project. In a letter from the Tennessee Wildlife Resources Agency (TWRA; 18 May 2012; Appendix K: Ecology Reports 2012-2014) to TDOT, TWRA requested, "... that the Tennessee Department of Transportation initiate a subsurface program designed to assess surface and groundwater connectivity to area streams, which may require dye-tracing studies, and commit to the protection of these unique resources which may be inhabited by species yet to be determined."</i> <i>CAPPE's geology consultant emphasized that "dye trace studies should be completed to determine what sinkholes are hydraulically connected to the receiving streams and where the discharges occur relative to protected species habitat. That information can then be used to avoid sensitive areas during design and construction and to implement extraordinary best management practices (BMPs) during and post-construction to prevent off-site contaminant transport to receiving streams." Unless dye trace studies are performed to understand sinkhole drainage, its connection to receiving streams, and its impact on threatened and endangered species, the FEIS cannot</i>	The TDOT Environmental Procedures Manual (2011) defines the area for natural resource field studies during a NEPA analysis as an area 250 feet on either side of the centerline of the proposed alignments (page 5-20, https://www.tn.gov/assets/entities/tdot/attachments/local_programs_2011_Revised_Tenn_Envir_Procedures_Manual.pdf). TDOT conducted field studies of the project area in 2008 and 2013-2014, the findings of which are reported in the 2009 Ecology Report (revised January 2010), the February 2009 Preliminary Geologic Report, the July 2013 Addendum to the 2009 Ecology Report and the June 2014 Ecology Study for Alternatives C and D. During those investigations, field personnel looked for the presence of sinkholes within the proposed alignments. The dye trace studies proposed by CAPPE and its consultant are not part of TDOT's standard methodology for environmental surveys during the NEPA phase. Instead, TDOT's conventional practice is to conduct a subsurface program (with auger drilling and potential core drilling) along the selected alignment) and develop a project-specific geotechnical and geologic design. The design of the project will address the protection of aquatic species and groundwater in the area during and after project construction.

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			<i>disclose adequately these impacts and the design cannot avoid or minimize these impacts.</i>	
4.d Field investigations should be performed to inspect the habitat <u>between</u> the corridor of the Preferred Alternative and receiving streams to locate actual threatened and endangered species relative to groundwater discharge points				
4.d.1	30	3-77, 3-97	<i>In addition to detailed inventory and map of karst topography both within and outside the corridor of the Preferred Alternative to assess the potential direct, indirect, and cumulative impacts from construction and post-construction on threatened and endangered species, field investigations should be performed to inspect the habitat <u>between</u> the corridor and receiving streams to locate actual threatened and endangered species relative to groundwater discharge points.</i>	During the design phase of the project TDOT will prepare an Environmental Boundaries Survey and Mitigation Memo for the Selected Alternative that will include detailed field studies. During final design, TDOT will conduct a subsurface program and develop a project-specific geotechnical and geologic design. This program will allow for further assessment of surface water and groundwater connectivity to the area streams; thus, the potential impacts to federal and state threatened and endangered species can be further assessed. To address the TWRA comment of May 18, 2012, the ROD contains the following commitment: "During final design and construction, TDOT will take special care to minimize unnecessary impacts to the habitat of the numerous karst features (specifically sinkholes) in the study area. TDOT will abide by all permit terms, including those through the UIC program."
4.d.2		3-77, 3-97	<i>[...] they [TDOT] did not perform any investigations to determine where known populations of threatened or endangered species occur in Little River in relation to groundwater discharge points.</i>	TDOT's conventional practice is to conduct a subsurface program (with auger drilling and potential core drilling) along the selected alignment) and develop a project-specific geotechnical and geologic design. The design of the project will address the protection of aquatic species and groundwater in the area during

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				and after project construction.
4.e FEIS is inconsistent and contradictory in its definition and assessment of sinkholes				
4.e.1	30-31	3-77 to 3-79,	FEIS is inconsistent and contradictory in its definition and assessment of sinkholes <i>TDOT identified several sinkhole locations within and surrounding the corridor of the Preferred Alternative from reviews of USGS topography maps, the findings of the 2009 Preliminary Geologic Report, and the field surveys (FEIS 3-77; Figure 3-15). However, because TDOT's field surveys did not identify any "openings" (or any that they deemed karst topography) or sinkholes associated with watercourses within the corridor of the Preferred Alternative, the FEIS reported "zero" sinkholes existing in the corridor of the Preferred Alternative (FEIS, Table 2-7). This finding is inconsistent with TDEC's sinkhole definition: "The Tennessee Department of Environment and Conservation (TDEC) has noted that a sinkhole is considered to be the entire closed depression whether there is an open throat or not and not just the area near an open throat" (FEIS 3-79).</i> <i>Furthermore, the FEIS acknowledges, "The sinkholes in the project area likely connect to the Little River; thus, impacted sinkholes could potentially impact the water supply intakes of the City of Maryville and the City of Alcoa along the Little River" (FEIS 7-79). These inconsistencies in the FEIS regarding sinkholes illustrate the deficiency of the reported studies concerning karst topography.</i>	The FEIS does not state that "zero" sinkholes exist in the corridor. The FEIS noted that reviews of USGS topography maps, the findings of the 2009 Preliminary Geologic Report, and the 2008 field surveys identified several sinkhole locations in the project area. None of the sinkholes were found to be associated with watercourses or provided habitat for listed threatened and endangered species, and no openings (indicating a potential cave) or flooding were observed during the 2008 field surveys. During the 2013 ecological field surveys, one opening to a potential cave site was identified near the southern terminus of the proposed project that was not observed during the 2008 field surveys. After further investigation by TDOT, it was determined that the opening was not a cave or karst topography and it did not pose any concern to the proposed project. No other sinkholes or cave sites were identified during the 2013 and 2014 field surveys that were not previously identified during the 2008 field surveys. During the design phase of the project TDOT will prepare an Environmental Boundaries Survey and Mitigation Memo for the Selected Alternative that will include detailed field studies. For any project that affects water flowing into an open sinkhole or cave, or for any impact that may affect ground water via a sinkhole, TDOT must submit UIC permit application to TDEC.

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4.e.2	31		<i>Missing entirely from the FEIS is any mention of a sinkhole on the Robert DeLozier farm, located well within the ROW of the Preferred Alternative. In years past, Robert DeLozier has seen large amounts of water gushing into the hole in the bottom of the sink and never back up. This natural structure could be an entrance to an underground water body in this area, but it was not mentioned in any section of the FEIS or accompanying reports. Based on flags found on the Robert DeLozier property, contractors for TDOT never looked at that area at all even though it lies well within the impact area of the Preferred Alternative.</i>	Based on the GIS mapping for the project and the location of the alignment of the Preferred Alternative, the sinkhole on the Robert DeLozier farm does not appear to lie within the footprint of the Preferred Alternative. It is possible that the DeLozier farm sinkhole drains into an underground water body, but it is also possible that the water drains into a network (limited or substantial) of solution features (joints and fissures) instead of a water body. The 2009 Ecology Report (revised January 2010) and the February 2009 Preliminary Geologic Report serve as planning tools to assess the alternatives being considered. Following the identification of the Selected Alternative when detailed project plans are being developed, TDOT will conduct more detailed field investigations for that alternative. Detailed mitigation measures and permit applications will be prepared at that stage.
V. Impacts on Water				
5.a The FEIS gave the wrong watershed location for the project and its impacts on water				
5.a	31	3-88	<i>The FEIS incorrectly stated "The proposed project will affect streams and ponds within the Watts Bar Lake Watershed." (FEIS 3-88) The project is located in the Little Tennessee River Watershed. This obvious error, and the other inadequacies outlined below, are indicative of the Final EIS's failure to take a hard look at this project as required by NEPA.</i>	The 2009 Ecology Report (revised January 2010) correctly identified the project's location in the Watts Bar Lake Watershed, which is identified by the 8-digit hydrologic unit code (HUC) 06010201. (source: http://water.usgs.gov/GIS/huc_name.html#Region06) The 8-digit HUC is further subdivided into 10-digit HUCs, with the project being located in the Little River Watershed (06010201-02).

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5.b The FEIS and Reevaluation of the DEIS are inconsistent regarding the impact to streams				
5.b	31	Table S-1, Table 3-30 and Attachment I (Table I-1)	<i>The increased impact to streams as a result of the West Shift (i.e., the Preferred Alternative) is acknowledged in both the FEIS and the Re-evaluation. However, the estimate of length (linear feet) of streams impacted is inconsistent in the documents:</i> <i>In the FEIS (Table S-1) & 2014 Reevaluation DEIS (Table 22, Table 24), the linear feet of stream impacts given for the Preferred Alt (with West shift) is given as 4,962 feet. However, in Table I-1 (Attachment I Ecology Resource Tables, Biological Assessment and Agency Coordination), the length is given as 5,637 feet.</i>	Table I-1 in FEIS Attachment I erroneously reports the estimated length of Stream 1 as 1,015 feet; the correct estimate is 340 feet as reported in July 2013 <i>Addendum to the 2009 Ecology Report</i> (Table 3-1). The total length of streams impacted by the Preferred Alternative is 4,962, as reported in Table S-1 of the FEIS and the Reevaluation Tables 22 and 24. The error in Table I-1 of FEIS Attachment I will be noted and corrected in the ROD.
5.c The calculation for linear feet of streams that will be impacted by the Preferred Alternative should include "braided" stream channels that are currently in the wetland adjacent to Flag Branch (WTL-6)				
5.c	32	Attachment I, Table I-1	The calculation for linear feet of streams that will be impacted by the Preferred Alternative should include "braided" stream channels that are currently in the wetland adjacent to Flag Branch (WTL-6). <i>CAPPE's consultant (Sulkin 2013) conducted a field study of the impact of the West alignment shift (i.e., the Preferred Alternative) on streams and wetlands. [...] In addition to the main channel of Flag Branch, Sulkin also noted the braided, or secondary, channels <u>flowing through</u> the wetland (see photographs in Sulkin 2013) and stressed that calculation of linear feet of streams impacted should include these</i>	The FEIS shows the estimated impact quantity for Stream 9 (Flag Branch) as 1,143 feet; this represents Flag Branch to the south and north of US 321. The estimated linear feet of impact to streams was calculated as follows: the 2013 field GPS files were transferred into GIS and then into a stream shapefile. Impacts were then measured in GIS using the measurement tool. GIS evaluation of Flag Branch shows a portion that goes through the large wetland (WTL-6) along the main roadway alignment, as well as a portion that goes through the interchange area in the very southern end of the project limits. Both of these areas have been accounted for in the impact calculations. The field ecologist

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			<i>"braided" channels.</i> <i>It is impossible to determine from the contents of the FEIS how the length of impacted streams are calculated. This problem is further exacerbated by the inconsistencies in the documents (e.g., FEIS & Reevaluation) regarding the estimate for linear feet of streams impacted (see 5.c above).</i>	did not document a braided or secondary channel. However, within the large wetland that Flag Branch flows through, there was an area of concentrated flow. Rather than calling this area a "stream," it was included it as part of the large wetland because the area did not have a consolidated bottom, a bed and bank, or an ordinary high water mark, and it had vegetation growing within it.
5.d Questions stemming from TDOT's delineation of waterways during the 2008 field study remain unanswered				
5.d	32	FEIS – Fig 3-15, pg. 3-89, pg. 3-116; 2013 Ecology Addendum - Table 3-2, pg. 15	<i>In the 2010 field verification of the Ecology Report, our consultant discovered that some of the water resources described as wet weather conveyances (WWC) were actually streams. As a result, we included these apparent discrepancies in CAPPE's comments on the DEIS. Although it appears that most of these discrepancies have been corrected (i.e. reclassified) by TDOT in the FEIS & accompanying reports, it is unclear whether the discrepancy associated with WWC-1 was clearly resolved (see details below).</i> <i>In CAPPE's comments on the DEIS, we wrote (under "Alt A, WWC-1"), "recent development activities have severely damaged this stream [i.e., WWC-1], but this damage does not make it a WWC or remove it from regulatory jurisdiction and protection.</i> <i>During their 2013 field surveys, TDOT discovered that some of the non-wetland waters determined in 2008 to be wet weather conveyances were actually more representative of</i>	The July 2013 <i>Addendum to the 2009 Ecology Report</i> states that the construction in the Pellissippi Place development resulted in damage to WWC-1. The professional ecologists conducting the survey did not find specific evidence to change the designation from a wet weather conveyance to a stream in 2013. The description of this resource in the 2013 Ecology Addendum is: "As of the 2013 field surveys, only remnants of this conveyance remain as it has been impacted by a four lane road and retention pond (PND-1A)." (Table 3-2, page 15). The FEIS' indirect impacts assessment acknowledges the potential for "water quality degradation from roadway-induced development" (page 3-116). The FEIS' cumulative impact analysis includes the Pellissippi Place development as one of the reasonably foreseeable future projects within the area, and provides an analysis of cumulative impacts on water quality of the PPE project and other past, present and future land development and transportation projects.

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			<i>a wetland, intermittent stream, or a perennial stream. Based on these findings, TDOT appears to have made the appropriate reclassifications. However, we are still unclear and question how TDOT "reclassified" WWC-1.</i> <i>Unfortunately, the damage to WWC-1, acknowledged in the FEIS as a tributary to the Little River, is an example of the secondary and cumulative impacts that can accompany new transportation projects, and these impacts need to be fully described and considered in the environmental review.</i>	
5.e The FEIS did not adequately address the broader consequences of wetland disturbance and loss				
5.e	33	2-11 to 14; 3-95 to 97,	<i>This is a sizeable wetland [WTL-6] for East Tennessee, and a significant portion of which will be lost or otherwise impacted by this project with the West-shift. Sulkin (2013, at 5) observes:</i> <i>The West-shift will have increased direct and indirect impacts on water quality. It will cause an approximate doubling of the amount of wetlands and length of streams that will be lost due to filling and other alterations in this section of road. The filling of wetlands will result in the loss of natural flood storage in the immediate area. Mitigation to replace the lost wetlands will likely be required, but such replacement is often at another location, such as a mitigation bank away from the impact site, thus not serving the same benefit to the adjacent areas. To place the road in this West-shift location, more lengths of stream channel will have to be</i>	In making the determination of the West Shift, TDOT considered the number and types of impacts of each shift and the potential to mitigate adverse effects. TDOT also considered public input received during the May 30, 2013 Community Briefing and the associated comment period (DEIS Reevaluation, page 7, found on project website, https://www.tn.gov/tdot/article/pellissippi-library). Wetland disturbance and loss was just one of the factors considered, and TDOT determined that the wetland impacts could be minimized during the design and permitting phases of the project. TDOT will coordinate with USACE and TDEC to obtain the permits required for the project and will follow through on the mitigation commitments and permit conditions.

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			<i>covered, re-routed and/or placed in pipes and culverts. These new channels will obviously be unnatural and likely less beneficial for uses such as recreation, fish and aquatic life, livestock watering and wildlife. [...]</i> <i>While such off-site mitigation may create more and better wetlands and streams in general across the state, it may not benefit the water quality at or near the project. Therefore, especially with the West-shift, if off-site mitigation is allowed, there will be further water-related adverse impacts in the immediate area of the community and the waterways of which the altered wetlands and streams are a part." The FEIS does not adequately address these further adverse impacts to waterways in the immediate area and the waterways of which the altered wetlands are a part.</i> <i>The sizable difference in impacts to streams and wetlands from the West-shift versus the East-shift was also noted by numerous government entities. [...] Despite these recommendations from engaged government entities, TDOT still chose the West-shift and ignored the route that would have the least impact on water resources.</i>	
5.f The FEIS failed to adequately address the potential hazards to aquatic ecosystems that could result from groundwater contamination & siltation				
5.f	34-36	3-91, 3-94, 3-101	<i>Given the history of failure of BMPs to protect aquatic ecosystems and aquatic species in the past, the usual procedures are insufficient to avoid or minimize impacts of this project.</i>	According to the regulations (EPA and TDEC), TDOT must design erosion control measures to a two-year or five-year storm event. TDOT designs all projects to meet a five-year storm event. In addition, the cost vs. benefit ratio does not justify a 25-year

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			<i>[...] Measures to Minimize Harm", while greatly improved over past road construction projects, are grossly insufficient to honor the level of prevention warranted by the imperilment of the aquatic species that might be impacted downstream during construction activities. In particular, and given how much more frequent extreme weather events have been in recent years, we consider the "Typical" two-year storm event design for all BMP's grossly negligent and recommend replacement with at least a 25-year plan. Preventable "Acts of God" events should not be excusable. Weekly stormwater and BMP inspections and subsequent maintenance are a laudable baseline schedule, but should always be augmented before forecast storm events and immediately afterwards to ascertain function and to reduce failures." (Rakes 2015)</i>	storm event for all projects. If there are specific concerns to specific streams, TDOT will consider increasing the erosion control measures at that site if a higher standard is justified. In a letter dated July 26, 2013, the USFWS noted that because TDOT has committed to stringent water quality measures (including BMPs designed for a five-year storm event), the USFWS concurs with the determination of "not likely to adversely affect for federally listed aquatic species.
VI. Threatened & Endangered Species				
VI.	36-40		<i>NEPA recognizes the unique importance of threatened and endangered species and consequent significance of thorough and adequate analysis and consideration of these species. 40 C.F.R. §§ 1502.25, 1508.27(9). The following sections outline the multiple ways in which the Final EIS failed to take a hard look at threatened and endangered species.</i>	This is an introductory statement to Comments 6.a-6.d. See responses below to Comments 6.a through 6.d.

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6.a TDOT did not adequately survey for the presence of Indiana bats (<i>Myotis sodalis</i>) or long-eared bats (<i>Myotis septentrionalis</i>) within the corridor of the Preferred Alternative				
6.a	36-38	S-12, 3-98, Technical Appendix G (Addendum to 2009 Ecology Report)	<i>Due to a minimal effort using antiquated methods to survey for Indiana bats in 2012 (CEC 2012), it remains unclear whether Indiana or northern long-eared bats actually occur within the corridor of the Preferred Alternative.</i> CAPPE consulted with University of Tennessee Ecology Postdoctoral Associate, Riley Bernard Ph.D. and with Joy O'Keefe, Ph.D., Associate Professor of Ecology, to review the bat study efforts. Professor O'Keefe offers suggestions for updated surveys prior to construction. <i>After reviewing the 2012 Indiana Bat Mist Net and Acoustical Survey Report (CEC 2012), Riley Bernard, Ph.D., has concluded "although they [TDOT] did follow the USFWS survey guidelines based on the April 2007 draft recovery plan, there are several issues that must be addressed before this project can continue." (Bernard Report). [...]</i> <i>In light of the recent updates to the Indiana bat surveillance guidelines and the listing of the northern long-eared bat, to comply with NEPA, TDOT must conduct a new survey for the presence/probable absence of Indiana and northern long-eared bats. At minimum, previously recorded acoustic data should be reanalyzed with the most recent versions of the zero-crossing analysis software suggested by the USFWS (BCID v2.7b, EchoClass v3.1, and Kaleidoscope Pro v3.0.0, USFWS 2015b). As it stands, the acoustic data CEC [i.e.,</i>	As explained in the FEIS (page 3-98) the USFWS concurred with the findings of the 2012 Bat Survey report in a letter dated October 11, 2012; that letter stated that the concurrence was valid until April 1, 2015. In a letter dated May 5, 2015, TDOT requested a project update from the USFWS and that the finding of "not likely to adversely affect" be continued until the signing of the ROD by FHWA. USFWS acknowledged in their May 28, 2015 letter that the agency had no new information indicating the presence of the Indiana bat or Northern long-eared bat in the project area. USFWS acknowledged that since TDOT had committed to re-coordinating with USFWS prior to construction, the requirements of Section 7 of the ESA are fulfilled. The 2015 FEIS contains the commitment that TDOT will re-coordinate with the USFWS for potential impacts to listed or proposed species prior to the construction of the project. At that time, TDOT will consult with USFWS on the appropriate methodology/methodologies to be used to conduct the bat studies. The issues that CAPPE quotes are not deficiencies; TDOT's approach, approved by USFWS, indicated that TDOT took a "hard look" at the project's impacts on listed bat species. TDOT followed a standard approach that led to USFWS's concurrence of <i>not likely to adversely affect</i> the bats.

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			<i>TDOT] are basing their conclusion of 'probable absence' on were analyzed using out of date software, which has a high probability of providing false negative results. TDOT also should resurvey the area at the beginning and end of the summer season (May 15 to August 15), as bats may be using the proposed project area as they migrate to and from summer maternity sites throughout the region.</i> <i>In light of these deficiencies, TDOT has not taken a "hard look" at the PPE's likely impacts on threatened and endangered bats, and TDOT's conclusion that the PPE is not likely to adversely affect the Indiana bat or northern long-eared bat is arbitrary and capricious.</i>	
6.b The FEIS failed to adequately address the direct, indirect, and cumulative impacts of the Preferred Alternative on aquatic species found in Little River that are rare, threatened, or endangered (RTE)				
6.b.1	38	3-98, 3-94, 3-101	<i>TDOT's determination that this project is not likely to adversely affect the listed aquatic species downstream in Little River is arbitrary and capricious because it disregarded the role of karst topography and potential impact to receiving streams.</i> <i>[...] Unfortunately, TDOT did not perform a single investigation to determine where known populations of RTE species occur in Little River in relation to groundwater discharge points.</i> <i>At minimum, TDOT should have performed "dye traces" to determine what sinkholes are hydraulically connected to the receiving streams and where the discharges occur relative to</i>	Per EPA and TDEC regulations, TDOT must design erosion control measures to a two-year or five-year storm event. TDOT designs all projects to meet a five-year storm event. In addition, the cost vs. benefit ratio does not justify a 25-year storm event for all projects. If there are specific concerns to specific streams, TDOT will consider increasing the erosion control measures at that site if a higher standard is justified. In a letter dated July 26, 2013, the USFWS noted that because TDOT has committed to stringent water quality measures (including BMPs designed for a five-year storm event), the USFWS concurs with the determination of "not likely to adversely affect for federally listed aquatic species.

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			<i>protected species habitat (Global Environmental 2010). Without this knowledge, the potential adverse effects on the RTE species in Little River cannot possibly be understood, analyzed, or disclosed as required under NEPA.</i>	TDOT conducted field studies of the project area in 2008 and 2013-2014, the findings of which are reported in the 2009 Ecology Report (revised January 2010), the February 2009 Preliminary Geologic Report, the July 2013 Addendum to the 2009 Ecology Report and the June 2014 Ecology Study for Alternatives C and D. During those investigations, field personnel looked for the presence of sinkholes within the proposed alignments. The dye trace studies proposed by CAPPE and its consultant are not part of TDOT's standard methodology for environmental surveys during the NEPA phase. Instead, TDOT's conventional practice is to conduct a subsurface program (with auger drilling and potential core drilling) along the selected alignment) and develop a project-specific geotechnical and geologic design. The design of the project will address the protection of aquatic species and groundwater in the area during and after project construction.
6.b.2	39	3-91 to 3-97	<i>According to aquatic ecologist Patrick Rakes, "the 'Measures to Minimize Harm', while greatly improved over past road construction projects, are grossly insufficient to honor the level of prevention warranted by the imperilment of the aquatic species that might be impacted downstream during construction activities. In particular, and given how much more frequent extreme weather events have been in recent years, we consider the 'Typical' two-year storm event design for all BMP's grossly negligent and recommend replacement with at least a 25-year plan." (Rakes)</i>	According to EPA and TDOT regulations, TDOT must design to a two-year or five-year storm event; however TDOT is designing all projects to meet a five-year storm event regardless of the stream's standing. In addition, the cost vs. benefit ratio does not justify higher storm event for all projects. If there are specific concerns to specific streams, TDOT will consider increasing the erosion control measures at that site if a higher standard is justified.

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6c TDOT's "not likely to adversely affect" conclusion is not supported by the 2013 Biological Assessment (TDOT 2013) or TDOT's long history of failures to control sediment runoff				
6c	39-40	FEIS- Table 3-32, pg. 3-99; Attachment I	TDOT's "not likely to adversely affect" conclusion is not supported by the 2013 Biological Assessment (TDOT 2013) or TDOT's long history of failures to control sediment runoff. <i>TDOT's conclusion that the proposed project is not likely to adversely affect the snail darter (<i>Percina tanasi</i>), marbled darter (<i>Etheostoma marmorpinnum</i>), fine-rayed pigtoe (<i>Fusconaia cuneolus</i>), ashy darter (<i>Etheostoma cinereum</i>), or longhead darter (<i>Percina macrocephala</i>) is arbitrary and capricious because, although the listed species noted are not found in the project right of way or tributaries crossed, they are found short distances downstream from every one of them in the Little River, which is where sediment that is allowed to leave the project has the potential to adversely affect the aquatic species present in these streams.</i>	In a letter dated July 26, 2013, the USFWS noted that because TDOT has committed to stringent water quality measures (including BMPs designed for a five-year storm event), the USFWS concurs with the determination of "not likely to adversely affect" for federally listed aquatic species.
6.d The FEIS failed to acknowledge the updated status of the Sickie Darter (<i>Percina williamsi</i>; formerly the Longhead Darter, <i>Percina macrocephala</i>) which is currently petitioned for federal listing, and neglected to consider other rare species that should be considered important assessment indicators of the Exceptional Tennessee Water status of the Little River				
6.d	40	FEIS- Table 3-32, pg. 3-99; Attachment I	The FEIS failed to acknowledge the updated status of the Sickie Darter (<i>Percina williamsi</i> ; formerly the Longhead Darter, <i>Percina macrocephala</i>) which is currently petitioned for federal listing, and neglected to consider other rare species that should be considered important assessment	The previously described Longhead darter (<i>Percina macrocephala</i>) population in the Little River was re-allocated to the Sickie darter (<i>Percina williamsi</i>) in 2007. However, the 2013 data base (TDEC Natural Heritage Inventory) used for the 2013 Biological Assessment (BA) still referred to this species as the

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			indicators of the Exceptional Tennessee Water status of the Little River. <i>TDOT further failed to take a hard look in its failure to acknowledge the updated taxonomic status of the sickle darter and [its] unwillingness to consider the other "assessment" species. Specifically, TDOT ignored equally important "assessment" indicators of the Exceptional Tennessee Water status of the Little River, including the Blotchside Logperch, Percina burtoni, the Tangerine Darter, P. aurantiaca, and the Eastern Hellbender, Cryptobranchus alleganiensis. The more recent Biological Assessment and references to it throughout the FEIS now appropriately recognize the Marbled Darter, Etheostoma marmorpinnum, but still fail to acknowledge the updated taxonomic status of the Sickle Darter, P. williamsi, formerly the Longhead Darter, Percina macrocephala. These changes in taxonomic status result in far greater imperilment due to decreased range and narrower endemism and make the Sickle Darter a species currently petitioned for federal listing (Federal Register, 2011, 76 FR 59835).</i>	Longhead darter. The 2013 BA was prepared using the best available data at that time. The Longhead darter was listed as threatened in Tennessee, a designation that now applies to the Sickle darter. Although this change does essentially decrease the range for the species, it still has no official federal status other than being petitioned for listing. As the project is designed and developed, any changes in the status of the state and/or federally listed species that might be impacted by project construction will be updated as needed to the satisfaction of the respective state and or federal agencies. As pointed out by the EPA in its comments on the FEIS (dated 10-18-2015), the Exceptional Tennessee Water (ETW) designation of the Little River only applies to that segment of the river that lies within the Great Smoky Mountains National Park, which is more than 15 miles upstream of the project area. The ROD will acknowledge that the Little River does not have ETW designation through the project area.
VII. Impacts on Air and Health				
7. The FEIS, like the 2010 DEIS, is inadequate in its dismissal of likely impacts of the PPE on air quality				
7	40	3-66	<i>During the TESA Concurrence Process for the 2010 DEIS, the EPA made a number of observations on December 18, 2009 disagreeing with TDOT's assumptions and data, including modeling, relative to VMT trends, Traffic Level of Service</i>	This is an introductory statement to Comments 7.a-7.b. See responses below to Comments 7a through 7.b.

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			<i>(LOS), local Smart Growth Strategies, prime farmland impacts, noise abatement and most importantly, TDOT's analyses and modeling for MSATs and the potential indirect and cumulative impacts to air quality in the region including the GSMNP.</i> <i>In particular, EPA observed that the data relied upon by TDOT to draw its conclusion that air quality will not be impacted significantly appeared to be lacking. For example, the DEIS said the PPE will not have a negative impact on air quality because EPA's national control programs will reduce emissions, even though the PPE is predicted to increase regional vehicle miles traveled (FEIS Table 3-21).</i>	
7.a The FEIS relies on speculation about the future regarding reductions in emissions				
7.a.1	40-41	3-65, 3-66	<i>In the FEIS, we find the same assumption that national control programs will reduce emissions, but many people continue to drive older vehicles, and Blount County, Tennessee does not require motor vehicle emissions testing for vehicle registration. As noted in the FEIS, localized increases in MSAT concentrations are likely before any reductions occur: [...]</i>	The overall MSATs reductions discussed in the FEIS are primarily the result of federal regulations governing engines and fuels. The purpose of EPA's Final Rule on the Control of Hazardous Air Pollutants from Mobile Sources (also known as the MSAT rule) (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007) was to reduce MSAT emissions through cleaner fuels and engines. EPA states the following in the MSAT rule: “These controls will significantly reduce emissions of benzene and other mobile source air toxics such as 1,3-butadiene, formaldehyde, acetaldehyde, acrolein, and naphthalene. There will be additional substantial benefits to public health and welfare because of significant reductions in emissions of

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				particulate matter from passenger vehicles.” EPA's MSATs website (https://www3.epa.gov/otaq/toxics.htm) further states the following regarding the MSAT rule” “EPA estimates that in 2030 this rule would reduce total emissions of mobile source air toxics by 330,000 tons and VOC emissions (precursors to ozone and PM2.5) by over 1 million tons.” Regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by over 80 percent from 2010 to 2050. Additionally, EPA's Tier 3 Vehicle Emission and Fuel Standards Program sets new emission standards for vehicles that will be phased in between 2017 and 2025. EPA's “Control of Air Pollution from Motor Vehicles: Tier 3 Motor Vehicle Emission and Fuel Standards Final Rule Regulatory Impact Analysis” (EPA, EPA-420-R-14-005, March 2014) states the following regarding the effects of the Tier 3 program: “The final Tier 3 standards will reduce concentrations of multiple air pollutants (ambient concentrations of ozone, particulate matter (PM), nitrogen dioxide (NO2), and mobile source air toxics (MSATs)) across the country and help state and local agencies in their efforts to attain and maintain health-based National Ambient Air Quality Standards (NAAQS).” Older vehicles in in the Knoxville area, including Blount County,

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				will continue to be replaced by new or newer vehicles that will be much cleaner regardless of the existence of a vehicle inspection and maintenance program. The updated analysis included outputs from the Motor Vehicle Emissions Simulator (MOVES) model, which was introduced in the updated December 6, 2012 MSAT guidance. The findings of the analysis are contained in the <i>Air Quality Technical Report Update</i> (June 2014), which was included in the DEIS reevaluation approved on July 17, 2014, and included in FEIS Technical Appendix E.
7.a.2	41	3-64 thru 3-64	<i>Moreover the FEIS acknowledges that two new signalized intersections (Pellissippi Parkway (SR 162/I-140) and Old Knoxville Highway (SR 33) and Old Knoxville Highway (SR 33) and Sam Houston School Road) are likely to have an impact on air quality because "both of these intersections are predicted to operate at LOS D or worse in the design year during both the morning and afternoon peak hours, under the Preferred Alternative as well as the other alternatives considered." (FEIS 3-65) Additional signalized intersections have been installed since the CO hot spot analysis was conducted, contributing to the cumulative impact on air quality of traffic operations across the study area.</i> <i>Relocated Alcoa Highway and improvements to US 129 fit the definition of "foreseeable future actions" and are factored into the traffic analysis of the PPE. The cumulative impact of all of these road projects on air quality should be thoroughly evaluated.</i>	A carbon monoxide (CO) hot-spot analysis was completed in 2014 for the project alternatives' signalized intersections that were predicted to operate at LOS D or worse in accordance with EPA's <i>Guideline for Modeling Carbon Monoxide from Roadway Intersections</i>. This analysis reflects the latest design year forecasts (2040) and operations for the project, using the 2013 Knoxville Regional travel demand model. The model includes the Relocated Alcoa Highway and improvements to US 129. This analysis was conducted to determine if CO concentrations in the vicinity of the intersections would approach the CO NAAQS. The results indicated that CO concentrations at these intersections will be substantially lower than the NAAQS. These results mean that the project does not cause or contribute to the exceedance of the CO NAAQS. The proposed project must have a direct and/or indirect effect on a specific resource in order to exert a cumulative influence; otherwise, there is no need to consider cumulative effects to that

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				resource. The cumulative impact assessment presented in the FEIS (Section 3.16.6.2 Potential Cumulative Impacts, page 3-121) addresses air quality. The finding is that the proposed project as well as other transportation projects are included in the conforming Regional Mobility Plan 2040 (LRTP), and that MSAT emissions are expected to be lower than present levels because of EA's national control programs.
7.b The FEIS fails to address health risks of proximity to high volume traffic				
7.b	41-42	C-1-18	<i>EPA expressed concern about the health impacts of the project: "The DEIS has appropriately identified several locations of sensitive populations. It would be helpful to estimate the concentrations of MSATs at these locations to estimate the locations where higher concentrations of MSATs resulting from construction and operation of the different alternatives are likely to occur, and to identify these locations, concentrations, and potential health effects in the FEIS. Many reports published in peer-reviewed journals have linked proximity to high volume traffic with health effects. This literature should also be discussed in the FEIS." (FEIS C-1-18)</i>	The project is in regional Transportation Improvement Program (TIP) and conforms to the State Implementation Plan (SIP) for air quality; project emissions for PM_{2.5} are therefore below the State's conforming budget. The FEIS confirmed the earlier determination that the project is of no air quality concern for PM_{2.5} of which ultrafine particulates (UFP) is a subset. MSATs, including diesel particulate matter are predicted to go down (refer to the response to Comment 7.a) in the future based on federal regulations of vehicle exhaust emissions that will be phased in between now and 2030. It is well documented that concentrations of some pollutants are highest near major highways and diminish with distance and changing atmospheric conditions. EPA has established NAAQS for many pollutants including CO, PM (PM₁₀ and PM_{2.5} including black carbon), and NO_x (NO₂ and ozone) for which health effects are well documented. Research continues on the effects of other

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				pollutants including UFPs for which there are currently no NAAQS. In February 2015 EPA held a workshop on UFPs in recognition of the growing relevance of the NAAQS for particulate matter as well as vehicle emissions. According to the conference summary https://www.dieselnet.com/news/2015/02epa.php, "there has been a growing body of evidence about the health effects of UFP emissions. Most of the evidence, however, has been provided by toxicological [laboratory] studies—at this time there is no epidemiological [real life] evidence suggesting that UFP exposures can account in substantial ways for the PM2.5 effects. The EPA [J. Sacks] considered UFP in their review of NAAQS for particulate matter completed in 2012. The review classified the health effects evidence for UFP as "suggestive" for cardiovascular and respiratory effects, for short term exposures. Contrary to PM2.5, no causal relationship between exposure and mortality and/or other long term effects could be determined for UFPs. The EPA has not proposed a separate indicator for UFP (in addition to PM10/PM2.5) in their 2012 assessment." https://www.dieselnet.com/news/2015/02epa.php Among the conclusions of workshop was that more epidemiological research is needed to understand the potential health effects related to UFP exposures. EPA has identified a number of approaches that appear promising for reducing air quality pollution near roadways, including noise walls, cut sections, and roadside vegetation. TDOT has committed to building a noise wall on the east side of

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				the Kensington Place mobile home community that may also help to reduce air pollutants for those residents close to the new roadway.
VIII. Visual Impacts				
8.a The FEIS presents a "visual impact assessment" but provides no evidence of consulting with 'associated viewers' and fails to acknowledge the scope and impact of the project on the visual environment and on the physical and mental health of residents				
8.a	42-43	2-6, 3-59, 3-62	<i>There is description but no data provided to support the 'evaluation' and conclusions of the FEIS visual impact assessment, which is supposed to assess "the change in the visual resources that would be introduced by the project and the <u>associated viewer responses</u>." (3-59, emphasis added) There is no evidence presented to show that any associated viewers were consulted. This omission explains the astonishing insensitivity expressed in this section's flawed description of the visual impact on residents living in proximity to the highway, including residents whose home places are farms in active production or are adjacent to agricultural land: [sic] [...]</i> <i>The "new interchange with US 411/Sevierville Road [that] will be approximately 20 feet high" most certainly will "result in a loss of visual connectivity for residents within the study area." (3-62) Six lanes¹⁷ of interstate highway with barrier fencing carrying automobiles and trucks at 60+ mph, dividing agricultural land currently in production, most certainly will "result in a loss of visual connectivity for</i>	The visual impact assessment (VIA) for the project was conducted in 2009 and followed the original (1981) FHWA <i>Visual Impact Assessment for Highway Projects</i> guidelines. The project's visual impact assessment was reviewed as part of the FEIS to ensure that there were no substantial changes in the project area. In January 2015, FHWA announced its new <i>Guidelines for the Visual Impact Assessment of Highway Project</i>; the new guidelines represent "FHWA's current thinking about best practices on this topic. " However, a new VIA for the project based on the new guidelines was not determined to be necessary. TDOT had followed its general process and no substantive comments on visual impacts were made by the public as part of the DEIS comment period. As noted by CAPPE, the DEIS and FEIS analysis acknowledged and evaluated the substantial visual change as a result of the Preferred Alternative (2012 Preferred Alternative (A) with alternative east and west shifts), and offered mitigation for the adverse impacts.

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			<i>residents within the study area." To question these impacts, or to assert that "the viewshed for adjacent residents whose views are important to them will be altered somewhat" (3-62, emphasis added) is simply ignorant of the documented evidence of the role of landscape in human health and well-being and in the lives, experiences, and values of people who are active stewards of the land.</i> <i>The FEIS fails to address the impact of the altered visual landscape on the physical and mental health of area residents.</i>	
8.b The FEIS failed to address the contradiction between the proposed project and the values expressed in the Blount County Green Infrastructure Plan (July 2009)				
8.b	43-44	1-28 and 1-29; 3-22 through 3-25	<i>The FEIS references several regional plans to rationalize the project, but the FEIS failed to reference the Blount County Green Infrastructure Policy Plan (2009)</i> <i>[...]</i> <i>The acknowledged impacts of the proposed project conflict with the following priorities of the Blount County Green Infrastructure Plan:</i> <i>"Approximately 25 percent of land area is in the Great Smoky Mountains National Park and is protected, but much of the remainder is subject to varying degrees of growth pressure. This green space is valued by the citizens of the county, and by those visiting the county as tourists. The value of green space indicates a need to address its long term integrity in the face of continued growth." (9)</i>	As noted, the FEIS did not mention the 2009 <i>Blount County Green Infrastructure Plan</i>, although it does mention and discuss the local growth management plans (<i>Blount County Growth Strategy</i> (2005), <i>Maryville Urban Growth Strategy</i> (2005), and the <i>Blount County Policies Plan</i> [2008].) The <i>Blount County Policies Plan</i> acknowledges both the need to preserve "the rural, small town and natural character of the county" (Guiding Policy 1) and to improve and maintain county roads "to a level consistent with present development and expected future development" (Guiding Policy 4). The plan's Objective Policy 4C addressed the need to prepare for future increases in traffic demands. There is no inherent contradiction between the proposed project and the "values" of the <i>Green Infrastructure Plan</i>. Rather the development of the <i>Green Infrastructure Plan</i> is complementary

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			<i>"Farmland should be preserved both for open space and to conserve prime agricultural production areas." (9)</i> <i>"Food Production. Productive farmlands are an important part of green infrastructure, and provide products for consumption and sale. Farmlands are also an important part of the rural character of the county valued by citizens." (12)</i> <i>These unacknowledged conflicts and other failures render the FEIS inadequate in its analysis and disclosure of visual impacts.</i>	to the development of other infrastructure to support its residential and commercial growth. As shown on FEIS Figure 3-6 Conceptual Land Use Map (page 3-24), the Preferred Alternative cuts through the area labeled as Suburbanizing – High to Medium Density Development. FEIS Figure 3-7 Urban Growth Boundaries (page 3-25) also shows the Preferred Alternative as being within the established "Urban Growth Boundary;" this designation means that the land is expected to develop over the next 20 years. Land in this area is already physically changing from farmlands to both residential and commercial uses.
IX. Impacts on Farmland				
9.a The FEIS relied on flawed assumptions about local zoning and planning practices				
9.a.1	44-45	3-22 through 3-25; 3-50, 3-51	<i>...the analysis of impact of the PPE on farmland relied on flawed assumptions about the zoning policies and planning practices of local authorities. TDOT references the guiding policies for the 2008 Blount County Growth Policies Plan, which include "to preserve the area's rural character." The PPE is inconsistent with this policy as it takes active farmland out of production and, as the FEIS shows, produces marginal and short-lived benefit.</i>	The proposed project is not inconsistent with the 2008 <i>Blount County Policies Plan</i>. The 2008 Policies Plan acknowledges both the need for preservation of the rural, small town and natural character of the county <u>and</u> the need to "improve and maintain county roads to a level consistent with present development and expected future development." It is erroneous to interpret the plan to preclude the proposed project; the plan emphasizes the importance of promoting the values of the natural and social resources and character of the County and institutionalize the consideration of these elements in the overall planning process.

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9.a.2	44-45	3-22 through 3-25; 3-50, 3-51	<i>The FEIS fails to address the contradiction between the proposed project and the priorities in the Blount County Green Infrastructure Plan (July 23, 2009), [...]</i>	The proposed project is not inconsistent with the <i>Blount County Green Infrastructure Plan</i> . The <i>Green Infrastructure Plan</i> looks at how to address, implement, and fund green infrastructure, and develop a set of strategies "as a start for what should be a long term commitment to systematically addressing green infrastructure in Blount County." The plan should not be interpreted to preclude the proposed project, but rather to emphasize the importance of promoting the values of the natural and social resources and character of the County and institutionalize the consideration of these elements in the overall planning process.
9.b The FEIS continues to fail to recognize farms as businesses and fails to assess displaced farmland as displaced businesses				
9.b	45	S-13, 3-40 and-41; 3-49 to 3-52; Table 3-19	<i>The FEIS continues the failure of the 2010 DEIS to recognize that farming operations are businesses and as such should be included in the assessment of business displacements due to the project</i>	The discussion of business displacements does not include farming operations because the project is not displacing any individual farms as complete entities. The Preferred Alternative will take a portion of several individual farms but should not displace the farming operations. The Preferred Alternative, modified with the West Shift, also minimizes impacts to the operation of two farms. Based on input from members of the public, including persons who identified themselves as farmers directly affected by the projects, TDOT has committed to work with agricultural land owners to identify potential design measures to minimize impacts to farmlands, including minimizing the amount of division of farms and to ensure that remnants are economically viable. This commitment is included in the FEIS.

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9.c The FEIS's discussion of project impacts on farmland does not include input from farmers				
9.c	45-46	S-13. C-1-8, C-1-14	<i>EPA recommended TDOT "identify mitigation measures to lessen impacts to the farming community and conduct an aggressive outreach effort to the farming community to solicit their input." (FEIS C-1-8). EPA further requested that TDOT "outreach to farmers and the NCRS to determine the least impacting alternative to farmlands. EPA also requests that farmer and NRCA input should be solicited and more thoroughly discussed in the Final EIS." (FEIS C-1-14)</i> <i>There is nothing in the FEIS that suggests TDOT has done any outreach to the local farming community, and there is no discussion of farmer input in the FEIS.</i>	TDOT held five public meetings and one public hearing during the EIS process, during which time members of the public, including persons with specific interest in farmlands, were provided opportunities to comment on the project and ask questions. At the meetings and hearing, TDOT representatives were present to address questions and receive input. Based on comments received on the DEIS, including farmers directly affected by the projects, TDOT committed to work with the farming community during final design to reduce the impact of the project on farmlands as much as possible based on available design solutions. This commitment was made in both the DEIS reevaluation and the FEIS.
X. Noise				
10.a The FEIS' deference to local regulations and local developers to avoid or limit noise sensitive development near the project is unrealistic				
10.a	46	S-5, S-12, 3-75	<i>Beyond the significant noise impact at Kensington, the FEIS notes noise increases all along the highway and suggests local regulators and developers avoid development that would be impacted by noise from highway: [...]</i> <i>This is an unrealistic recommendation, as the FEIS (and TPO staff) readily acknowledge that Blount County's development process does not generally consider smart growth principles and local realtors have no policy requiring that they inform clients that homes being shown are located</i>	Statement noted. TDOT's Noise Policy (adopted July 13, 2011) complies with FHWA's regulations for the identification of highway traffic noise impacts, contained in 23 CFR 772 Procedures for Abatement of Highway Traffic Noise and Construction Noise.

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			<i>near the proposed route of the PPE.</i>	
10.b The FEIS give insufficient attention to noise abatement measures other than one physical barrier				
10.b	46-47	S-5, C-1-14	The FEIS give insufficient attention to noise abatement measures other than one physical barrier. CAPPE noted that the only noise abatement method discussed is a physical barrier and quoted an EPA comment on the DEIS related to noise abatement measures: <i>As EPA commented, "23 CFR 722.13 discusses more than just noise barriers as noise abatement measures that should be considered in the noise abatement analysis. As cited in 722.11 (d), "When noise abatement measures are being considered, every reasonable effort shall be made to obtain substantial noise reductions." (FEIS C-1-14) EPA continues, citing 722.13(d): "noise abatement measures other than those listed in 722.13(c) of this chapter may be proposed for Types I and II projects by the highway agency." (FEIS C-1-14)</i>	EPA appears to be referencing the previous FHWA noise regulation. The current FHWA noise regulation in 23 CFR 772 became effective in July 2010. The references in the comment to 23 CFR 722 are assumed to be to 23 CFR 772. Section 772.13(c)(1) of the current regulation states that "At a minimum, the highway agency shall consider noise abatement in the form of a noise barrier." This statement is repeated in TDOT's noise policy. Section 772.15(c) of the current FHWA noise regulation indicates that FHWA will participate in some alternative noise mitigation strategies if they are shown to be both feasible and reasonable. Thus, TDOT's noise policy states that other abatement measures may be considered on a case-by-case basis. The alternative strategies include traffic management measures, alteration of horizontal and vertical alignments, acquisition of real property, and noise insulation of Category D land uses. Traffic management measures such as modified speed limits and vehicle restrictions would not provide the required noise reductions for the measures to be both feasible and reasonable and would be contrary to the project purpose of providing a direct and efficient route between the existing SR 162 terminus and SR 73. TDOT has no plans to acquire additional property beyond what is needed for the project and the project will not impact any Category D land uses. Finally, the FEIS noise analysis was based on functional project plans that do not include roadway profiles or

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				cross-sections which are needed to evaluate the effects of changes to the horizontal or vertical alignments. The <i>Noise Technical Report</i> (2014) contains a noise abatement evaluation that analyzes the feasibility and reasonableness of noise barriers for 16 noise analysis areas for the Preferred Alternative and other Build Alternatives in accordance with the FHWA noise regulation and TDOT's noise policy. Two noise barriers were determined to be preliminarily feasible and reasonable: one in Kensington Place if the Preferred Alternative is constructed, and one on Belfair Lane on the west side of Alternative D north of Wildwood Road. The barrier at Kensington Place was identified as "likely," while the barrier at Belfair Lane was identified as "possible" since the location could pose sight distance and other design or construction issues that cannot be fully assessed at this time. TDOT is required to update the noise analysis and associated feasibility and reasonableness determinations for the Preferred Alternative during final design. Noise barriers for all impacted areas will be reevaluated and feasible and reasonable noise barriers will be included in the project plans. TDOT will also evaluate the effects of horizontal and vertical alignment changes that can be accommodated within the proposed right-of-way during final design. TDOT has committed to conducting outreach with the affected residents during final design of the project, encouraging residents and the general public to provide input during the design public hearing, and final decisions regarding the use of noise abatement measures will be made following the public

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				involvement.
XI. Economic and Fiscal Impacts				
XI.	47	3-39, 3-111 to 3-114	<i>The most significant changes in economic and fiscal impacts from the 2010 EEIS come from dramatically reduced projections for growth in population, employment and traffic. Even with these updates and associated reductions in projected economic benefits, the FEIS failed to take a hard look because it relied on unsupported assertions and incomplete analysis regarding the economic impacts of the PPE.</i>	This is an introductory statement to Comments 11.a-11.c. See responses below to Comments 11.a – 11.c.
11.a FEIS asserted positive economic impact from taxpayer funds spent to construct the project, but there are no requirements that funds be spent locally				
11.a	47	S-7, 3-39, 3-111	<i>One-time job creation is not a defensible rationale for transportation projects. Moreover, there is no requirement that contracts for construction of the project be awarded to a local company, or that the successful bidders hire local workers, or that they purchase materials from local suppliers. Without such requirements, there is no assurance that one-time spending of \$165 million for this project will generate "substantial benefit" for any local residents or businesses.</i> <i>Beyond the one-time construction jobs, the FEIS projects a very small number (41-79) of jobs (Table 3-35, 3-111) from induced development, with no way to determine the type, compensation, or duration of those jobs nor whether local people would be hired.</i>	Job creation is not the rationale or goal for the proposed project. The purpose and need statement for the project does not include economic development as a purpose; rather economic development may be a benefit of the project. Currently the State of Tennessee does not have local hire regulations or local preference in awarding contracts.

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11.b Blount County already has an enviable record of recruitment of new business investment and job growth without the Pellissippi Parkway Extension				
11.b	47-48	S-10, 1-29	<i>The FEIS contains an unattributed statement that "Local officials see the extension of Pellissippi Parkway as an important component in the financial viability of Pellissippi Place." (S-10, 1-29) The FEIS provides no citation, no evidence, no analysis, no data, nor any explanation to support this statement. Further, the FEIS offers no explanation of the relationship between the PPE and Pellissippi Place. The website for marketing of Pellissippi Place contains no reference to Pellissippi Parkway Extension (http://www.pellissippiplace.com/). Contrary to the FEIS, the Pellissippi Place website accurately asserts that Pellissippi Place has "4-lane access"... "with interstate highway 140 at its doorstep" and is "supported by an excellent transportation network that includes I-140 and S.R. 33."</i>	Statement noted. The unattributed statement was originally included in the DEIS (page 1-26). The Pellissippi Place project is a joint project of Blount County, Alcoa, Maryville and Knox County. Local officials of the Blount County jurisdictions have endorsed the road project and the research and development (R&D) park prior to and during the preparation of this EIS. The plan for the R&D park on the east side of SR 33 at the current terminus of Pellissippi Place was announced in May 2006, the same month that the Notice of Intent for the PPE EIS was published. The 2007 Master Plan for the R&D park showed an approximate location of Pellissippi Place Extension through the development, even though the DEIS alternatives had not yet been determined (the alignment shown on the Master Plan was generally based on the alignment of the 2002 EA/FONSI Alternative A). At a public open house on March 22, 2007, representatives of the Blount County Chamber of Commerce discussed the R&D park and how the proposed extension of Pellissippi Parkway would run through it. In February 2008, representatives from Maryville, Alcoa, Blount County and the Pellissippi Place designer met with TDOT officials to present the conceptual Master Plan and discuss the two projects. While the R&D Park Master Plan showed a depressed roadway concept, TDOT informed the representatives that the planned roadway would be at grade. In addition, a consultant for the R&D Park design attended the October 25, 2007 public meeting for the PPE project and spoke to the court

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				reporter on behalf of the Economic Development Board of Blount County and the local governments regarding the R&D Park. He entered a copy of the R&D Park Master Plan into the official record and stated that "Pellissippi Parkway and its expansion is very important to the success of this project [Pellissippi Place]." Following the DEIS publication, the governing bodies of Maryville, Alcoa and Blount County provided signed resolutions supporting the project and the selection of Alternative A as the preferred alternative, with full knowledge that the alternative would cut through the R&D park.
11.c The 2015 FEIS continues the failure of the 2010 DEIS to recognize that farming operations are businesses, to assess the economic impact of the project on those businesses, or to include farming businesses in assessments of displacement of existing businesses				
11.c	48	S-13, 3-40, 3-41; 3-49 through 3-52; Table 3-19	<i>The Economic and Fiscal Impact Analysis does not assess the impact of the project on the agricultural sector in Blount County. The project will take active farmland out of production, with a distinct economic impact on the affected farming business owners and additional impact on the services supported by agricultural activity.</i> <i>Farms are not included in the Table 3-14, Displacement of Existing Businesses. Agricultural operations should be included in the assessment of business displacements caused by the project. (FEIS 3-40 and 3-41)</i> <i>The FEIS fails to document the impact on the local economy of taking farmland out of production and the secondary impact on the agriculture economy of construction of a</i>	The economic impact analysis was conducted to determine the construction-induced economic output of the proposed Pellissippi Parkway alternatives (Preferred Alternative and Alternatives C and D) on the various sectors of the economy. The agricultural sector was not called out specifically but fell into the category of "All Other Sectors." The economic analysis identified induced residential and commercial development potential from the proposed transportation project. The fiscal impact analysis was conducted to estimate the net positive or negative fiscal implications of the development program on the annual operating revenues and expenses of Blount County. Table 3-14 does not identify farmland displacements because the project alternatives would not displace entire farms; the alternatives would affect portions of farmlands. Table 3-19

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			<i>limited access highway through an active agricultural area.</i>	acknowledges the acres of farmland that would be acquired for new right-of-way. Preferred Alternative, modified with the West Shift, minimizes impacts to the operations of two active farms. Section 3.6.3, Impacts to Farmlands discussed impacts to farmlands and describes the coordination that was conducted with the Natural Resource Conservation Service (NRCS) under the Farmland Preservation Policy Act. TDOT has committed to work with agricultural land owners to identify potential design measures to minimize impacts to farmlands, including minimizing the amount of division of farms and to ensure that remnants are economically viable.
11.d The FEIS projects positive economic impact on the Knoxville airport but fails to note this would generate increased traffic on unimproved US411N, adding to already unsafe driving conditions				
11.d	49	3-17	<i>The FEIS failed to disclose that the twelve miles of unimproved US411 from Sevier County to the new interchange will experience even more traffic as travelers from eastern Blount County and Sevier County will have to use US411N to reach the new interchange on Sevierville Road.</i>	The current long range transportation plan for the region, Mobility Plan 2040, includes a separate project to improve US 411 between Maryville city limits and Chapman Highway (US 511/SR 71). (The plan can be found at http://knoxmobility.org/wp-content/uploads/2017/05/Mobility-Plan-2040-Appendix.pdf). The Mobility Plan 2040 Project #09-250, in the 2035-2040 time frame, is to improve the two-lane roadway and add shoulders. Additionally, the Preferred Alternative includes improving the typical section of US 411 to a five-lane urban section through the proposed interchange area. Thus, travelers using US 411 between the proposed interchange and the Blount/Sevier county line will be able to drive on an improved roadway.

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11.e The FEIS's projected travel time savings, used as a factor in projecting induced growth from the project, is based on assumptions, not data, and is therefore entirely speculative and unreliable				
11.e	49	Appendix D	<i>The FEIS analysis of travel time savings relied on undocumented "current traveler behavior" and an unproven assumption regarding the "alternate route" travelers would use in the absence of the project, resulting in unreliable "time savings" with the project and therefore an unreliable conclusion regarding induced growth.</i> <i>The FEIS provides no data to support the assertion of "current traveler behavior." Further, the "next best alternative" described in the FEIS and used to calculate travel time savings was "assumed based upon discussions with a Senior Transportation Engineer at the Knoxville Regional TPO." (FEIS Appendix D, Addendum to 2009 Economic and Fiscal Impacts Analysis 2015, p 12, Footnote 6)</i> <i>Therefore, the "travel time savings" reported in the FEIS is entirely speculative and is an unreliable factor in the economic analysis.</i>	As described in Section 1.4.1 of the FEIS, in June 2013, the Knoxville Regional TPO adopted a major update of the regional travel demand model, which was the first major update since the initial traffic study was prepared for this project in 2007. The updated model included extensive revisions to the model's structure, network, socio-economic assumptions and calibration, all aimed at improving the model's accuracy. The model incorporates household travel behavior surveys conducted in 2000 and 2008, at the TAZ level that cover the entire TPO region, including the study area. The alternative routes used to calculate travel times were based on outputs of the 2013 regional travel demand model and interviews with TPO staff who are experienced in running the model and analyzing its outputs.
11.f Different models were used for analysis of Economic and Fiscal Impacts in the DEIS and the FEIS, rendering comparison between the DEIS and the FEIS needlessly complex for members of the public, and the explanation given in the FEIS for the change in methods is not sustainable				
11.f	50	Appendix D	<i>The 2009 Economic and Fiscal Impacts analysis reported in the 2010 DEIS used the Regional Input-output Modeling System II (RIMS II). The Economic and Fiscal Impacts analysis reported in the 2015 FEIS used a different model (IMPLAN).</i>	At the time the update to the economic and fiscal impact analysis was being initiated (early January 2015), the BEA had stated on its website that RMIS II multipliers were no longer being produced. It was not clear at that time that BEA was continuing

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			<i>The explanation for using a different model appears in Appendix D of the FEIS:</i> <i>"In 2014, the Bureau of Economic Analysis (BEA) announced that it would no longer produce the multipliers because of sequestration and reduced funding levels. Thus, the updated economic impact analysis uses the IMPLAN input-output impact model." (FEIS Appendix D, Addendum to 2009 Economic and Fiscal Impacts Analysis, April 2015 PB, p 3)</i> <i>However, BEA continued to provide RIMS multipliers during and after sequestration: "Last year, as a result of budget sequestration and reduced funding levels, BEA discontinued updates to RIMS II. <u>Orders for RIMS II multipliers, however, have continued to be accepted because the cost of fulfilling these orders is covered by a nominal processing fee.</u>" (https://bea.gov/regional/rims/rimsii/ accessed 12 November 2015) (emphasis added).</i>	to take orders for multipliers. Based on that information, the economic analysis utilized IMPLAN as the alternative input-output impact model for the update. IMPLAN is another commonly accepted economic methodology and is a valid approach to estimating the impacts resulting from changes to an economy.
XII. Conclusion				
12.a	50		<i>This FEIS violated NEPA because it failed to take a hard look at multiple aspects of this project, including (1) inadequate consideration of and failure to objectively evaluate Alternative D, and inadequate analysis of the Preferred Alternative; (2) a constantly-shifting and evanescent purpose and need because the project carries little, if any, transportation benefits, and (3) multiple flaws in the analyses of environmental impacts, as described in these comments. Accordingly, TDOT should choose the no action</i>	The EIS has taken a hard look at the potential project impacts and has documented the analysis and consideration. Comments by the public and agencies on the DEIS and FEIS have been given due consideration, and responses to those comments have been provided in the FEIS and now in the ROD. With regard to item 1) in this comment, TDOT and FHWA determined that the traffic analysis for Alternative D as presented in the FEIS should be expanded to the same level as the No-Build and Preferred Alternative, prior to the issuance of a

CAPPE Comments on FEIS and TDOT Responses

Comments, Citizens Against the Pellissippi Parkway Extension, Inc. November 18, 2015				
<i>Text in italics in the Comment Summary column is a direct quote from CAPPE's comments.</i>				
Comment	Page #	Page # in FEIS	Comment Summary	Response
			<i>alternative and spend its limited resources on other, more effective projects.</i>	Record of Decision (ROD). The findings of the updated analysis of Alternative D are reported in the April 2016 <i>Update to the Traffic Operations Technical Report</i> (see Appendix C of the ROD). With regard to item 2) in this comment, the only difference in the stated purpose of the project between the DEIS (Section 1.3) and the FEIS (Section 1.3) is in the 4th bullet. In the DEIS, the bullet stated "Assist in achieving acceptable traffic flow (LOS) on the transportation network or not adversely affect traffic flows on the existing transportation network. The reason for the revision of the wording "traffic flow (LOS)" to "traffic operations" in the FEIS was to include additional measures for evaluating the effect of the project on traffic operations in the study area. With regard to item 3) in this comment, detailed responses to the individual FEIS comments have been provided in this Appendix. Where appropriate, additional studies were undertaken to address comments (i.e., updated <i>Crash Analysis Technical Report</i>, July 2017, included in Appendix D).
12.b	50		<i>If TDOT continues to pursue this project, it should prepare a supplemental EIS that complies with NEPA by addressing the flaws outlined in these comments.</i>	A reevaluation of the DEIS was initiated in 2013 because more than three years had passed since the DEIS was circulated in 2010. As part of the reevaluation, the following new or updated technical studies were prepared: • <i>Traffic Forecast Study</i> (2013) • <i>Addendum to Traffic Operations</i> (2014) • <i>Crash Analysis Report Update</i> (2014) • <i>Conceptual Stage Relocation Report</i> (2014) • <i>Archaeological Assessment of 40BT122 Eastern and Western</i>

CAPPE Comments on FEIS and TDOT Responses

Comments, Citizens Against the Pellissippi Parkway Extension, Inc. November 18, 2015				
<i>Text in italics in the Comment Summary column is a direct quote from CAPPE's comments.</i>				
Comment	Page #	Page # in FEIS	Comment Summary	Response
				<i>Avoidance Alternatives (2013)</i> • <i>Phase II Archaeological Testing of Sites 40BT100, 40BT122, 40BT125, 40BT202, and 40BT203 (2013)</i> • <i>Air Quality Technical Report Update (2014)</i> • <i>Noise Technical Report (2014)</i> • <i>Phase II Preliminary Site Investigation Report (2012)</i> • <i>Ecology Report: Study for Alternatives C and D (2014)</i> • <i>Addendum to 2009 Ecology Report (2013)</i> • <i>Indiana Bat Survey Report (2012)</i> • <i>Biological Assessment for Snail Darter, Marbled Darter, Fine-Rayed Pigtoe, Indiana Bat, Ashy Darter, Longhead Darter (2013)</i> The reevaluation found that the modification of the Preferred Alternative and other changes in the project and in the project area since the DEIS was circulated would not result in significant environmental impacts that had not been evaluated in the approved DEIS. Therefore, a SDEIS or a new DEIS was not warranted. FHWA approved the reevaluation on July 17, 2014. In addition to the new or updated technical studies prepared for the reevaluation, the following studies were prepared for and included in the FEIS: • <i>Addendum to 2009 Economic and Fiscal Impacts Analysis (2015)</i> • <i>Update to 2009 Indirect and Cumulative Indirect and Cumulative Effects Analysis Methodology and Background Information (2015)</i> • <i>Update to the Traffic Operations Technical Report (2016)</i>

CAPPE Comments on FEIS and TDOT Responses

Comments, Citizens Against the Pellissippi Parkway Extension, Inc. November 18, 2015				
<i>Text in italics in the Comment Summary column is a direct quote from CAPPE's comments.</i>				
Comment	Page #	Page # in FEIS	Comment Summary	Response
				<i>Traffic Forecast Study: Alternative D (2016)</i> The Lead Agencies do not believe a Supplemental EIS is needed. Title 23 CFR, Section 771.130, Supplemental Environmental Impact Statements (SEIS) states that an EIS shall be supplemented whenever the Administration determines that changes to the proposed action would result in significant environmental impacts that were not evaluated in the EIS; or new information or circumstances relevant to the environmental concerns and bearing on the proposed action or its impacts would result in significant environmental impacts not evaluated in the EIS. For this project, none of these conditions currently exist, and therefore, an SEIS is not warranted.

Great Smoky Mountains Regional Greenway Council Comments on FEIS and TDOT Responses

Comments, Great Smoky Mountains Regional Greenway Council October 16, 2015				
<i>Text in italics in the Comment Summary column is a direct quote from GSMRGC comments.</i>				
Comment	Page Number	Page Number FEIS	Comment Summary	Response
1	1	S-12, 3-19 and 3-20	The Council's chairman submitted a comment <i>in regard to a noted redirection from the July 2014 reevaluation that bicycle and pedestrian facilities be investigated within the right-of-way, as part of the Context Sensitive Solutions (SCC) design process. This redirection in the FEIS now prohibits such facilities. I would like to ask that this change be reconsidered during the CSS design process for the following reasons:</i> <i>The Knox-Blount Greenway Master Plan for Maryville, Alcoa and Blount County (Phase One), developed by Barge Waggoner Sumner and Cannon, identified the Pellissippi Parkway extension as an opportunity for future consideration to create a connection in the greenway network;</i> <i>Greenway segments, of which the Pellissippi Parkway extension could serve to connect, have been constructed nearby (i.e., Clayton and Pellissippi Place) and another is funded, and currently under design by the City of Alcoa (i.e., Clayton to Meadowood Apartments/ Springbrook Park area); and,</i>	Based on comments received from the representative of the Knoxville Regional TPO, as well as the Great Smoky Mountains Regional Greenway Council and several individuals, the following commitment is included in the ROD: "Bicycle and Pedestrian Facilities —During the design process, TDOT will investigate the provision of bicycle and pedestrian facilities within the project right-of-way. If TDOT determines that the provision of such facilities is feasible, the facilities will be developed as a separate project and TDOT will work with the Knoxville Regional TPO and local governments to determine sources of funding for the construction and maintenance of the bicycle and pedestrian facilities."

**Great Smoky Mountains Regional Greenway Council Comments on FEIS
and TDOT Responses**

Comments, Great Smoky Mountains Regional Greenway Council October 16, 2015				
<i>Text in italics in the Comment Summary column is a direct quote from GSMRGC comments.</i>				
Comment	Page Number	Page Number FEIS	Comment Summary	Response
			3. <i>The Maryville to Townsend Greenway Master Plan, developed by Equinox Environmental, utilizes the existing Lamar Alexander Parkway (SR73/US321) for construction of a parallel greenway. Considerations for incorporating greenway improvements into the overall interchange design of the Pellissippi Parkway extension and the existing Lamar Alexander Parkway will be necessary.</i>	(response on previous page)

APPENDIX A-3

Summary of General Public Comments on the FEIS

Appendix A-3 Summary of General Public Comments on FEIS															Record of Decision	
#	LAST NAME	NAME	SUPPORT	OPPOSE	OTHER	FIX IT FIRST PHILOSOPHY	TRAFFIC/ROADS/SAFETY	LAND USE	FARMLANDS	WATER QUALITY/RESOURCES	MULTIMODAL	ECONOMIC DEVELOPMENT/ TOURISM	COMMUNITY DEVELOPMENT/ IMPACT	FINANCIAL	FEIS PURPOSE AND NEED	GENERAL
1	Abbott	Clint Abbott	X													The project should have been finished a long time ago.
2	Alexander	Jean J. Alexander		X		Fix It First. Blount County does not need a new interstate especially if there is more than a \$6 billion backlog of transportation projects in TN.										
3	Anderson	Doug Anderson	X				With the growth of new businesses and residences comes vehicular traffic that is becoming increasingly heavy and dangerous. US 321 between Townsend and Maryville is constantly congested. Common sense tells us that if there were a link from US 321 to the current terminus of I-140, it would divert much of this traffic.									
4	Ansley	Brad Ansley		X		With the deplorable state of existing roads, current roadways should be maintained or repaired first. Examples include US 411 from Chapman Highway to Maryville and US 129 from Knox County to Foothills Mall. Other roads are Morganton Rd, Montvale Rod and Calderwood Highway (US 129).						The Extension would direct traffic away from the only commercially significant areas within the county - Maryville and Alcoa.		The budget for the project has nearly doubled in the last 10 years. What will the final bill be?		
5	Bell	Brenda S. Bell		X		Fix It First. Blount County does not need a new interstate especially if there is more than a \$6 billion backlog of transportation projects in TN.	Safety: project will add much more traffic to US 411 between Maryville and Seymour, which is currently at unacceptable LOS, and there are no plans or funds to improve it beyond the imprint of the PPE.	Land use patterns will likely change substantially and lead to urban sprawl and higher taxes to pay for new infrastructure.	A number of farm parcels will be either taken entirely or impacted significantly.	Increases in runoff and the potential for ground water contamination because of conversion of rural lands and farms will negatively impact the Little River watershed if PPE is built.			Maintain the rural character of Blount County.		The studies and the FEIS do not demonstrate TDOT's objectives for the road, including substantial reduction of congestion or improvement in safety on existing road network	
6	Bennett	Dave Bennett	X				Project will improve the safety and well being of our citizens and guests.									
7	Bolton	Lynn Bolton	X													Our community will be well served by the extension.
8	Braun	Kathleen M Braun		X		Fix It First. Blount County does not need a new interstate especially if there is more than a \$6 billion backlog of transportation projects in TN.										
9	Braun	Thomas A. Braun		X		Fix It First. Blount County does not need a new interstate especially if there is more than a \$6 billion backlog of transportation projects in TN.										
10	Brunger	Ann Owens Brunger		X		Fix It First. Fixing the existing roadway should be a higher priority than building the PPE.			Opposed to paving over farmland and wooded areas.				Opposed to displacing residents.	Opposed to spending \$165 Million on this project when there is a backlog of other projects. Maintaining existing roadways to be a priority over constructing new roadways.		
11	Buchanan	Rachel Buchanan	X				The extension will benefit the Blount, Knox, Oak Ridge and other surrounding communities in many ways, further enhancing connectivity and improving roadway safety. It will reduce traffic congestion.								Agrees with the purposes and needs outlined on the website.	
12	Bunde	Terry Bunde		X		Fix It First. Blount County does not need a new interstate especially if there is more than a \$6 billion backlog of transportation projects in TN. It seems prudent to use limited construction funds to improve feeder roads with high traffic volumes like US 411 N.	Adding an interchange at US 411 will add more cars onto a narrow roadway with poor or non-existent shoulders.	Several historic "century farms" may be lost due to the project. Land use patterns will usher in an increase in urban sprawl, putting more pressure on these farms.		The construction of the Extension may adversely impact the water quality of the Little River and the fish species in the river. The project presents a threat to ground water and surface water from runoff due to the roadway itself and the increased development pressure.				The project will cost over \$700 per foot and will be the biggest waste of funds in the history of the state.	The rationale for the project has changed several times; one must conclude that this project is for an incredibly expensive road in search of a purpose. This is not a way to spend precious state road construction funds. The studies and the FEIS do not support the purpose and need for the project. It will not meet the objectives of improvement in safety and reduction of congestion on our existing road network.	The beauty of the county must be preserved.
13	Bunse	Frances M Bunse		X		Fix It First. Blount County does not need a new interstate especially if there is more than a \$6 billion backlog of transportation projects in TN.										
14	Cox	Douglas Cox		X		Adopt the motto, Fix it First. A new interstate highway is not needed.										The rural and scenic beauty of Blount County should be preserved.

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15	Crisp	Tony Crisp	X													The project is important to the future of the area.	
16	Daffron	Tom Daffron	X				Support the extension to alleviate traffic congestions, pollution and more importantly the loss of life from the dangerous Alcoa Highway area. There are few alternative routes around Alcoa Highway and a lot of congestion could be eliminated with this extension if there is an accident on Alcoa Highway.				The Extension could assist in on-time arrival at McGhee Tyson airport.	Business development along the Extension could bring revenue and jobs to Blount County.					
17	Daniels	Bryan Daniels	X				We live within 1,000 feet of the proposed interchange on US 411, and we feel our family is safer being closer to an interstate instead of relying on so many curvy roads to navigate through Blount County.									Our home overlooks the proposed interstate and we do not feel it will adversely affect us or be a blight in any way.	
18	DeLozier	Betty DeLozier		X		Fix It First. Blount County does not need a new interstate especially if there is more than a \$6 billion backlog of transportation projects in TN.											
19	Deter	Leah Deter		X		Fix it First should be guiding principle	The Extension will create worse traffic congestion on US 411 N.								State monies would be better spent improving state roads in this area.	FEIS data does not support a purpose of improving traffic congestions or levels of service.	
20	DuBois	Sue DuBois		X		Fix It First. Blount County does not need a new interstate especially if there is more than a \$6 billion backlog of transportation projects in TN.											
21	Evans	Elizabeth Evans	X				Rural roads in the area are narrow, winding, poorly maintained and difficult to drive.										
22	Evans	Robert Evans	X				Rural roads in the area are dangerous to drive.										
23	Farner	Brenda S. Farner	X				Traffic congestion is heavy on roads that are narrow in the area and the Extension can help to eliminate some of the congestion. It is time to complete this roadway.										
24	Fitzgerald	Marian Fitzgerald		X		Maintenance of existing infrastructure and truly useful improvements should trump other considerations. A higher priority should be placed on making Alcoa highway safer and scrap the proposed PPE.	A four-lane highway already exists to meet the needs of travel between Knoxville and southeast Blount County. Increasing levels of traffic on US 411 points to the need for improvement of this stretch to facilitate east-west travel. A new four-lane road running in the wrong direction will not serve this need-or any other. Traffic projections and safety - how can US 411 traffic be 40% higher on the east side of the PPE interchange but be lower on the west side of the interchange? The FEIS does not address the impacts of adding traffic to US 411 from Hitch Road eastward to Seymour. How can PPE improve intersection LOS at the junctions of US 411 with Peppermint and Hitch Roads, given the 40% increase in traffic projected for this area?	We should be careful stewards of rural areas and scenic rivers. Losing productive farmland is a major concern.	Loss of productive farmland and pleasing natural greenspace - This project runs counter to the citizens desire to preserve our rural and natural heritage.	A thorough investigation of potential pollution sources, effects of increased runoff and the percolation patterns of groundwater in the area should be done. She is concerned for all wildlife in the watershed not just endangered species and for the protection of our river as a recreational asset and reliable water supply.				The cost for the project has escalated dramatically over the past 5+ years. Spend taxpayer dollars on the backlog of Tennessee projects which currently lack funding.	The project will not fulfill the objectives stated in the FEIS, except for providing a new "travel option," which does not appear to be generally useful.	The travel times savings are and other travel benefits are too slight to justify construction of such a costly project.	
25	Forster	Carolyn Forster	X				Our community has waiting almost 25 years [for the completion of the highway]. Traffic on our secondary roads is becoming increasingly heavier and more dangerous.										
26	Frink	Robert and Martha Frink		X		Fix It First. Blount County does not need a new interstate especially if there is more than a \$6 billion backlog of transportation projects in TN.											
27	Gawet	Monica Gawet	X									Business relies heavily on an adequate road systems for bringing goods in for manufacturing and for good road systems that bring products out of TN to other parts of the nation. Our roadways are critical components that help keep businesses competitive.					
28	Grolhjohn	Harry Grolhjohn		X		Fix It First. Blount County does not need a new interstate especially if there is more than a \$6 billion backlog of transportation projects in TN.											

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29	Guevdat	Lyn Guevdat		X												The project will ruin the idyllic, peaceful landscape.
30	Guillaome	Wendy Guillaome		X		Fix It First. Blount County does not need a new interstate especially if there is more than a \$6 billion backlog of transportation projects in TN.										
31	Halloy	Christian P. Halloy		X		Fix It First. Existing roadways should be maintained before any new roadways are constructed.								The overall cost for the Preferred Alternative in the FEIS has increased 71% since the 2010 DEIS. The overall cost is nearly \$38 million per mile. Funding in Maryville/Blount County can be used in a more cost effective way on other infrastructure projects.	The rationale for the project has changed over the years and is far from compelling.	
32	Hamby	Chris Hamby	X													
33	Hammon	Bill Hammon	X				The regional transportation system would be hard pressed to handle the local and regional traffic without the existing Pellissippi Place that current terminates at SR 33. The Extension will enhance congestion mitigation of future transportation needs in the region.									
34	Harris	Gail Harris		X		Fix It First. Blount County does not need a new interstate especially if there is more than a \$6 billion backlog of transportation projects in TN.		The Extension will destroy dwindling farmland in Blount County.								
35	Haun	Ingrid Haun		X			The Preferred Alternative and the No-Build options yield virtually identical projected [corridor] LOS in terms of outcomes for net traffic function. Differences between the Preferred Alternative and No-Build - in terms of actual seconds of delay at intersections - were insubstantial.									
36	Headrick	Sandy Headrick	X				PPE will be a very good addition to the transportation infrastructure for the eastern part of Blount County.				Hopes that the Greenway for bicycles will be included in final plans.	A good highway system is needed to bring travelers to the Townsend Area of Blount County. Linking Knoxville to the Great Smoky Mountains National Park will boost the economy of Blount and Knox counties.				
37	Henighan	Lucy Henighan		X		Fix It Now. Improve US 411.				The Little River and rural quality of Blount County should be protected.						
38	Henighan	Richard Henighan		X		Fix It Now. Improve US 411.	US 411 is a high volume road that is already dangerous. It cannot accept the increased volume the PPE will deliver.									The FEIS does not lay out fairly the negative effects of the Extension.
39	Hensley	Gary H. Hensley	X				The through streets of Maryville/Alcoa are overburdened and will become more so without this much needed roadway.									
40	Hill	Robert M. Hill		X			Alcoa Highway is being improved and has good connectivity to Maryville, Alcoa, the Parkway, and McGhee Tyson Airport. The state of the local road network will not be improved by Alternative A. Congestion will not be improved by the project. Safety issues on roadways are best handled on a spot by spot basis.						It is a real social justice issue for existing residents of the area. Development in this area will maximize adverse impacts on schools, utilities, roads and streets and public facilities along the path of PPE.			
41	Hitch	Marion Hitch	X													It is in the best interest of people in the area to finish the extension.
42	Hopper	Erica T. Hopper		X		Fix It First. Blount County does not need a new interstate especially if there is more than a \$6 billion backlog of transportation projects in TN.										
43	Hopper	William Hopper		X		Fix It First. Blount County does not need a new interstate especially if there is more than a \$6 billion backlog of transportation projects in TN.										

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44	Hopps	Eddie Hopps		X		Existing roadways should be maintained first before new roads are constructed (Fix It First).	US 411 Safety: Traffic congestion along Sevierville Road (US 411) will increase due to the project. US 411 is narrow and unsafe and the PPE will add more traffic without improving US 411.	Land use patterns in northeastern Blount County will likely change substantially and “pave” the way for urban sprawl and higher taxes. impacted.	A number of farm parcels will either be taken entirely or impacted significantly if PPE is built. These farms represent family businesses and help to preserve the rural character of Blount County.	Increases in runoff and the potential for ground water contamination because of conversion of rural lands and farms will negatively impact the Little River watershed if PPE is built.		To the extent the PPE functions as a bypass around southeastern Maryville, it may remove traffic and have a negative impact on existing businesses there as well as in town.		It will cost taxpayers more than \$37.8 million per mile	Rationale: Over the years the rationale for the project has shifted. First it was to supposed to save travel time and ease visitation to the Smokies. Then it was to bypass Maryville to the east, with the eventual intention of enclosing the urban area in a ring road via the "southern loop." Now TDOT is emphasizing the need to decrease congestion in the town "core" and increase highway safety. If a good reason to build the highway actually exists, this rock-hopping justification for it would be unnecessary. The FEIS and studies clearly show that PPE will not meet TDOT objectives for PPE including substantial reduction in congestion or improvement in safety on our existing road network.	
45	Hopps	Lynn T. Hopps		X		Existing roadways should be maintained first before new roads are constructed (Fix It First).	US 411 Safety: Traffic congestion along Sevierville Road (US 411) will increase due to the project. US 411 is narrow and unsafe and the PPE will add more traffic without improving US 411.	Land use patterns in northeastern Blount County will likely change substantially and “pave” the way for urban sprawl and higher taxes. impacted.	A number of farm parcels will either be taken entirely or impacted significantly if PPE is built. These farms represent family businesses and help to preserve the rural character of Blount County.	Increases in runoff and the potential for ground water contamination because of conversion of rural lands and farms will negatively impact the Little River watershed if PPE is built.		To the extent the PPE functions as a bypass around southeastern Maryville, it may remove traffic and have a negative impact on existing businesses there as well as in town.		It will cost taxpayers more than \$37.8 million per mile	Rationale: Over the years the rationale for the project has shifted. First it was to supposed to save travel time and ease visitation to the Smokies. Then it was to bypass Maryville to the east, with the eventual intention of enclosing the urban area in a ring road via the "southern loop." Now TDOT is emphasizing the need to decrease congestion in the town "core" and increase highway safety. If a good reason to build the highway actually existing , this rock-hopping justification for it would be unnecessary. The FEIS and studies clearly show that PPE will not meet TDOT objectives for PPE including substantial reduction in congestion or improvement in safety on our existing road network.	
	Jackson	Rachel Jackson	X				The Pellissippi extension desperately needs to be approved and completed. Cites issues with large trucks and RVs passing through Alcoa on their way to the Smokies and other businesses in Maryville, congestion and speeding on back roads to avoid downtown congestion, dangerous driving on Alcoa highway near airport.									
46	Jagger	John Jagger	X				The road system in Maryville is radial, which means you often have to drive into the central park of town and then back out to get from one location to another. While completion of SR 162 (Pellissippi Parkway) will not totally resolve this situation, it will be a great help to those of us who live on the east side of town. It will also provide an alternative route to GSMNP for people in and traveling through the greater Knoxville area.									
47	Johnson	David M Johnson		X		Fix It First. Blount County does not need a new interstate especially if there is more than a \$6 billion backlog of transportation projects in TN.										
48	Kant	Elaine M Kant		X		The money would be best allocated to improving US 411 between Seymour and Maryville, and SR 33 from Knox County into Maryville.	The project will not solve any current traffic problems.							The Extension is too costly to be built and too costly for the damage it will cause to the land.		
49	Kant	Kenneth J. Kant		X		The money (to fund the extension) would be better allocated to improving US 411 between Seymour and Maryville, and SR 33 from Knox County into Maryville.						Any time saved for tourists [to the Smokies] is meaningless since there is still a two-lane road between Walland and Townsend. Shunting traffic from Maryville and the proposed business development in Alcoa can only hurt any local business that is not in the path of the proposed extension.		The cost of the Extension seems prohibitively high.		

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50	Keeble	Thomas A. Keeble			X - not opposed		Highly concerned about the intersection at Sevierville Road and U.S. Hwy. 411N in Maryville, which will allow heavy vehicles to use it as a bypass around Knoxville via I-140. Local traffic and farm equipment are already safety issues, along with high-volume of oversized vehicle for a very narrow 2-lane road with no room for error.									
51	Keller	John & Susan Keller		X		Fix It First. Blount County does not need a new interstate especially if there is more than a \$6 billion backlog of transportation projects in TN.	Technical studies and the FEIS show that the PPE will not reduce congestion or improve safety.		They are troubled that farms are not recognized as businesses by the EIS.	Loss of land will greatly affect the Little River; the project means more runoff into the river which is the main water supply for most of Blount County.					The rational for building this road has changed over the years. If a good reason to build the highway actually existed these changing justifications would be unnecessary. Technical studies and the FEIS do not support the purpose and need for the PPE.	
52	Kerr	Bruce Kerr	X				Completion of the Parkway will immediately offset congestion along US 129 and other lesser routes in Blount County. It will provide a direct and efficient route for Walland and Townsend resident, and beyond.						Completion of the Parkway will allow development of areas currently unattractive due to inadequate roadways.			
53	Kyle	Renee Kyle		X		Instead of wasting millions of dollars on this unnecessary project, adopt the Fix It First motto.										
54	Leath	Dudley Leath		X		Fix It First. Blount County does not need a new interstate especially if there is more than a \$6 billion backlog of transportation projects in TN.										
55	Leath	Patricia Leath		X		Fix It First. Blount County does not need a new interstate especially if there is more than a \$6 billion backlog of transportation projects in TN.										
56	Maples	Richard Maples	X				The project will help with safety issues on the crowded Alcoa Highway.					The project will be good for economic development and tourism for Blount and Knox counties.				
	Marshall	Glen Marshall		X		Blount County does not need a new interstate highway; work on the maintenance and upgrading of transportation in Tennessee and Blount County is needed.				Pollution will be created in the Little River if the project goes forward.						
57	Metz	Fred Metz	X				The extension is a vital link in our community's transportation plan.					The growing job base in the area needs the infrastructure for quality growth.				
58	Miller	William B. Miller		X		Use the funds to maintain other roads in the county.	Traffic issues with be magnified with the Extension. The intersection with Highway 321 near Heritage High School is a real concern.		Concerned that the project would interfere with so many productive farms.	Any extension would interfere with the area watershed		The current ending of the Parkway is an excellent ending point. Alcoa and Maryville are presently developing future growth projects at the ending of the present Pellissippi Parkway, and it could help East Maryville and Rockford.				
59	Millsaps	Jarrod Millsaps	X				The Extension would provide a safer passage through Maryville and on Alcoa Highway.									
60	Minser	Billy Minser		X		Improve existing state roads, specifically Hwy. 33, US 411 N, and Montvale Road.	The data in the FEIS does not support the FEIS assertion that the PPE will improve traffic congestion. The project will create more traffic especially on the heavily travelled US 411 N as people use it to access the airport and businesses in West Knoxville.		Leave our farmlands alone!							
61	Montoya	Gary and Angela Montoya		X			The project will cause increased traffic congestion on Sevierville Road (US 411), which is narrow, with poor shoulders and deep ditches. Improve currently unsafe roads first before spending funds on this project.						Increased congestion on Sevierville Road (US 411) will cause safety issues with emergency vehicles and a new school.	Spending millions of dollars on the project is a misuse of public funds.	Project does not result in significant if any improvement in stated goals to improve traffic congestion or LOS on road network.	
62	Moon	Jerome Moon	X										The projected population growth of this region should make this a high priority.			
63	Morgan	Sophia Morgan		X		Fix It First. Blount County does not need a new interstate especially if there is more than a \$6 billion backlog of transportation projects in TN.										

Appendix A-3 Summary of General Public Comments on FEIS															Record of Decision	
#	LAST NAME	NAME	SUPPORT	OPPOSE	OTHER	FIX IT FIRST PHILOSOPHY	TRAFFIC/ROADS/SAFETY	LAND USE	FARMLANDS	WATER QUALITY/RESOURCES	MULTIMODAL	ECONOMIC DEVELOPMENT/ TOURISM	COMMUNITY DEVELOPMENT/ IMPACT	FINANCIAL	FEIS PURPOSE AND NEED	GENERAL
64	Nordstrom	Colleen R. Nordstrom		X		Fix It First. Blount County does not need a new interstate especially if there is more than a \$6 billion backlog of transportation projects in TN.										
65	Oakes	Lester C. Oakes	X				The Extension will alleviate having to drive through the lights and traffic of downtown Maryville to reach US 321 from the end of current parkway.									The EIS shows no bad environmental effects.
66	Ostby	Brian Ostby		X			Funding would be better used to bring narrow unshouldered roads to a safe standard							Funding the Extension is a bad economic decision. The current roadway system can't be maintained as it is.		
67	Ostby	Dee Ann Dunwoody Ostby		X		Use the funding for the Extension instead to upgrade existing roadways (i.e., US 411 and Wildwood Road).	Adding extra vehicles to US 411 and Wildwood Road to access the proposed interchanges would result in even more opportunities for crash injuries and fatalities.									
68	Overly	Lisa Overly		X		Fix It First. Existing roadways should be improved and maintained before constructing a new project.		Land use patterns in northeastern Blount County will likely change substantially and "pave" the way for urban sprawl and higher taxes. impacted.	Most important issue to her family: A number of farm parcels will either be taken entirely or impacted significantly if PPE is built. These farms represent family businesses and help to preserve the rural character of Blount County.			The Great Smoky Mountains National Park is already accessible via East Lamar Alexander Parkway.			TDOT's own studies do not support the purpose and need for the project They show that PPE will not meet TDOT's objectives for a substantial reduction in congestion and improvement in safety on the existing road network.	
69	Pearson	Jeremy Pearson	X				This is a needed facility to improve Blount County's overall transportation system.				Interested in alternative modes of transportation and would like this explored during a context sensitive solution design process.					
70	Rakes	Patrick Rakes		X						Several rare aquatic species (that lack federal or state threatened or endangered status) should be considered equally important assessment indicators of the Exceptional Tennessee Water status of the Little River are not recognized by the FEIS. The measures to minimize harm in the FEIS are "grossly insufficient to protect against construction impacts to aquatic species. He disagrees with the finding of "not likely to adversely affect aquatic species" conclusion of the 2013 Biological Assessment. FEIS fails to acknowledge the updated status of Sickie Darter.						
71	Reed	Hugh W. Reed	X				Extending SR-162 would divert heavy traffic away from his home near the SR-162 exit at SR-33. The build-out of Pellissippi Place at SR-33 will increase traffic congestion.					The extension will help the local economy. Travel to/from Townsend and the Great Smoky Mountain National Park will be improved.				
72	Rigell	Juli Rigell		X		Fix It First. Blount County does not need a new interstate especially if there is more than a \$6 billion backlog of transportation projects in TN.										
73	Rochelle	John Rochelle	X				The Extension will help traffic by bypassing the drive through Maryville and Alcoa. It will shorten the route to the mountains.					The extension will also open up new areas for development which will help the economy.				
74	Roe	Jim Roe		X			Sees no traffic problems.							The project wastes time and taxpayer dollars.	Sees no traffic problems.	
75	Roe	Kristi Roe		X			Sees no traffic problems.					Understands the extension to be a bypass around Maryville; if people bypass Maryville, what will become of it?	The extension will bring a bevy of retail that will surely devour the beauty of the area.		Sees no traffic problems.	

Appendix A-3 Summary of General Public Comments on FEIS															Record of Decision	
#	LAST NAME	NAME	SUPPORT	OPPOSE	OTHER	FIX IT FIRST PHILOSOPHY	TRAFFIC/ROADS/SAFETY	LAND USE	FARMLANDS	WATER QUALITY/RESOURCES	MULTIMODAL	ECONOMIC DEVELOPMENT/ TOURISM	COMMUNITY DEVELOPMENT/ IMPACT	FINANCIAL	FEIS PURPOSE AND NEED	GENERAL
76	Rush	John Rush		X		The money could be better spent on improving US 411 and the local non-state roads in Blount County. That is the real road need in Blount County.	The Extension will have a negative impact on LOS for roads that will be intersected by PPE. Traffic safety issues will be created by the project. Alternative D would improve local roads that could minimize impacts to local residents.	The Extension will have negative land use impacts. The statement in the FEIS that the Preferred Alternative would not encourage extensive growth is not true. A better and thorough analysis of land use impacts at proposed interchanges is needed.				Increasing tourism is not a big enough justification to construct the Extension. The scenic value of US 321 will be diminished.	US 321 is a designated Tennessee Scenic Highway. The proposed interchange of PPE will create development on US 321 and the impact of that development will diminish the scenic value of the highway.		Getting visitors to Townsend and the Great Smoky Mountains National Park seems to be the real reason the extension is being pushed and it should be acknowledged in the FEIS. This is not a big enough need to build the extension.	
77	Rutherford	Steve Rutherford		X		Fix It First. Blount County does not need a new interstate especially if there is more than a \$6 billion backlog of transportation projects in TN.										
78	Skinner	John and Kathleen Skinner		X		Existing roads should be improved, specifically Hwy. 33, US 411 N, Montvale Road, and Alcoa Highway (Hwy 129).	The data in the FEIS does not support the assertion that the PPE will "improve traffic congestion or levels of service." In fact the PPE will induce traffic especially on the already heavily travelled US 441N as people come from Sevier County and Maryville to access the airport and businesses in West Knoxville.									
79	Soro	Christopher J. Soro	X				Would like consideration given to using an urban section for the roadway segment through Pellissippi Place (from SR 33 to Wildwood Road.)				Supports a bike/ped component that would enhance the link from Knoxville to the Great Smoky Mountains National Park.					
80	Stinnett	Barbara Stinnett	X				The Extension is a positive approach to handling some of the traffic in Blount County.					This project will enhance tourism to the GSMNP.				
81	Swafford	Baron Swafford	X													
82	Swann	Joe Swann	X				This is a vital link in our community's transportation plan.					The growing job base for our county and area must have the infrastructure for quality growth and this is what this will help provide.				
83	Taddie	Daniel and Ann K. Taddie		X		Fix It First. Blount County does not need a new interstate especially if there is more than a \$6 billion backlog of transportation projects in TN.										
84	Tedford	Ann Tedford		X		Existing roadways should be maintained first before new roads are constructed (Fix It First).	US 411 Safety: Traffic congestion along Sevierville Road (US 411) will increase due to the project. US 411 is narrow and unsafe and the PPE will add more traffic without improving US 411.	Land use patterns in northeastern Blount County will likely change substantially and "pave" the way for urban sprawl and higher taxes.	A number of farm parcels will either be taken entirely or impacted significantly if PPE is built. These farms represent family businesses and help to preserve the rural character of Blount County.	Increases in runoff and the potential for ground water contamination because of conversion of rural lands and farms will negatively impact the Little River watershed if PPE is built.		Local Business: To the extent the PPE functions as a bypass around southeastern Maryville, it may removed traffic and have a negative impact on existing businesses there as well as in town.		Estimated Cost: It will cost taxpayers more than \$37.8 million per mile	Rationale: Over the years the rationale for the project has shifted. First it was to supposed to save travel time and ease visitation to the Smokies. Then it was to bypass Maryville to the east, with the eventual intention of enclosing the urban area in a ring road via the "southern loop." Now TDOT is emphasizing the need to decrease congestion in the town "core" and increase highway safety. If a good reason to build the highway actually exists, this rock-hopping justification for it would be unnecessary. The FEIS and studies clearly show that PPE will not meet TDOT objectives for PPE including substantial reduction in congestion or improvement in safety on our existing road network.	
85	Tedford	James C. Tedford		X		Fix It First. Blount County does not need a new interstate especially if there is more than a \$6 billion backlog of transportation projects in TN.										
86	Whitehouse	Rhonda S. Whitehouse		X												A resident of the Kensington Place mobile home community expressed concern that the project would interfere with the peace and quiet of their environs.
87	Williams	Clarence Williams	X													

APPENDIX A-4

**Disposition of Substantive Public Comments and
General Public Comments on the FEIS**

Substantive General Public Comments on FEIS			
<i>Text in italics in the Comment Summary column is a direct quote from the commenter.</i>			
Comment #	FEIS Page Number	Comment Summary	Response
Marian Fitzgerald, October 15, 2015			
MH-1	3-5	The prediction for traffic patterns on US 411 by 2040 is “incomprehensible.” The commenter questions the model results that US 411 traffic would be lower under the Preferred Alternative, with the exception of the section from the proposed interchange on US 411 to Hitch Road, where the traffic would be 40 percent higher. The model seems to be <i>blind to the larger numbers of locals and other drivers who will be using US 411 to access the PPE, from both directions. It is obvious that the new highway and interchange on US 411 will increase traffic along the entire length of US 411 from Washington Avenue to Chapman Highway.</i>	The statement in the 5th bullet (second set of bullets on page 3-5) is in error; it was not updated to reflect the traffic forecasts of 2011 and 2014. The bullet should have read as follows: “US 411 traffic west of the proposed interchange and Washington Avenue would be lower with the Preferred Alternative. East of the proposed interchange the traffic would be higher than the No-Build. From the interchange to Hitch Road, the traffic would be about 5 percent higher, and from Hitch Road to the end of the study area the traffic would increase about 26 percent by 2040.” This revised statement is included as a correction in the ROD.
MH-2	3-8	<i>The FEIS does not address the impacts of adding traffic to US 411 from Hitch Road eastward to Seymour [...]. Is it acceptable to build a highway project that will increase traffic load on an existing highway with an already failing LOS? Doing so would adversely affect traffic operations on the existing highway, and would certainly be imprudent with regard to public safety.</i>	The traffic analysis for study area for this project extends along US 411 to the Little River. It does not specifically address traffic on US 411 from Little River to Seymour. However, the Preferred Alternative includes improving the typical section of US 411 to a five-lane urban section through the proposed interchange area. In addition, the traffic demand model used for the Preferred Alternative corridor LOS analysis includes a separate project to improve US 411 between Maryville city limits and Chapman Highway (US 511/SR 71). The Mobility Plan 2040 Project #09-250, in the 2034-2040 time frame is to reconstruct the two-lane section and add turn lanes. Thus, travelers using US 411 between the proposed interchange and the Blount/Sevier county line will be able to drive on an improved roadway.
MH-3	3-5; 3-13 thru	<i>The addition of intersection LOS data to the FEIS is interesting but far from convincing as an attempt to justify</i>	The statement in the 5 th bullet (second set of bullets on page 3-5) is in error; it was not updated to reflect the traffic forecasts of 2011 and

Substantive General Public Comments on FEIS			
<i>Text in italics in the Comment Summary column is a direct quote from the commenter.</i>			
Comment #	FEIS Page Number	Comment Summary	Response
	3-15	<i>building the PPE. In at least on instance, the data on intersection LOS appears to conflict with the 411 traffic forecast cited above. On pages 3-13 through 3-15, we find the astonishing claim that the new PPE will improve intersection LOS at the junctions of [US] 411 with Peppermint and Hitch Roads. How can that be possible, given the 40% increase in traffic on [US 411] for this area?</i>	2014. The bullet should have read as follows: “US 411 traffic west of the proposed interchange and Washington Avenue would be lower with the Preferred Alternative. East of the proposed interchange the traffic would be higher than the No-Build. From the interchange to Hitch Road, the traffic would be about 5 percent higher, and from Hitch Road to the end of the study area the traffic would increase about 26 percent by 2040.” This revised statement is included as a correction in the ROD.
Patrick Rakes, Conservation Fisheries, Inc. November 12, 2015			
PR-1	3-99 and 3-100	While the species may lack federal or state threatened or endangered status, other rare species (such as the Blotchside Logperch, Tangerine Darter, and Eastern Hellbender) should be considered equally important assessment indicators of the Little River’s Exceptional Tennessee Water status.	As pointed out by the EPA in its comments on the FEIS (dated 10-18-2015), the Exceptional Tennessee Water (ETW) designation of the Little River only applies to that segment of the river that lies within the Great Smoky Mountains National Park, which is more than 15 miles upstream of the project area. The ROD acknowledges that the Little River does not have ETW designation through the project area. Species lacking state or federal designation as a threatened or endangered species are not required to be investigated as part of a NEPA-level analysis.
PR-2	3-99 and 3-100	The FEIS fails to acknowledge the updated status of the Sickle Darter (formerly the Longhead Darter). The change in taxonomic status results in <i>far greater imperilment due to decreased range and narrower endemism and makes the Sickle Darter a species currently petitioned for federal listing.</i>	The previously described Longhead darter (<i>Percina macrocephala</i>) population in the Little River was re-allocated to the Sickle darter (<i>Percina williamsi</i>) in 2007. However, the 2013 data base (TDEC Natural Heritage Inventory) used for the 2013 Biological Assessment (BA) still referred to this species as the Longhead darter. The 2013 BA was prepared using the best available data at that time. The Longhead darter was listed as threatened in Tennessee, a designation that now applies to the Sickle darter. Although this change does essentially

Substantive General Public Comments on FEIS			
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			decrease the range for the species, it still has no official federal status other than being petitioned for listing. The sickle darter is currently under review by the USFWS. As the project is designed and developed, any changes in the status of the state and/or federally listed species that might be impacted by project construction will be updated as needed to the satisfaction of the respective state and or federal agencies.
PR-3	3-91; 3-94	<i>Measures to Minimize Harm”, while greatly improved over past road construction projects, are grossly insufficient to honor the level of prevention warranted by the imperilment of the aquatic species that might be impacted downstream during construction activities. In particular, and given how much more frequent extreme weather events have been in recent years, we consider the “Typical” two-year storm event design for all BMP’s grossly negligent and recommend replacement with at least a 25-year plan. Preventable “Acts of God” events should not be excusable. Weekly stormwater and BMP inspections and subsequent maintenance are a laudable baseline schedule, but should always be augmented before forecast storm events and immediately afterwards to ascertain function and to reduce failures.”</i>	According to the regulations (EPA and TDEC), TDOT must design to a two-year or five-year storm event; TDOT is designing all projects to meet a five-year storm event regardless of the stream’s standing as an Exceptional Tennessee Water (ETW). In addition, the cost vs. benefit ratio does not justify a 25-year storm event for all projects. If there are specific concerns to specific streams, TDOT will consider increasing the erosion control measures at that site if a higher standard is justified. In a letter dated July 26, 2013, the USFWS noted that because TDOT has committed to stringent water quality measures (including BMPs designed for a five-year storm event), the USFWS concurs with the determination of “not likely to adversely affect for federally listed aquatic species.”
PR-4	3-100	The commenter disagrees with the “not likely to adversely affect” conclusion for aquatic species. <i>Although the listed species noted are not found in the project right of way or tributaries crossed, they are found short distances downstream from every one of them in the Little River, which is where sediment that is allowed to leave the</i>	According to the regulations (EPA and TDEC), TDOT must design to a two-year or five-year storm event; TDOT is designing all projects to meet a five-year storm event regardless of the stream’s standing as an Exceptional Tennessee Water (ETW). In addition, the cost vs. benefit ratio does not justify a 25-year storm event for all projects. If there are specific concerns to specific streams, TDOT will consider increasing the

Substantive General Public Comments on FEIS			
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Comment #	FEIS Page Number	Comment Summary	Response
		<i>project has the potential to adversely affect the aquatic species present in these streams. Road construction projects have a long history of too little effort and too little money and too little vigilance expended to prevent sediment runoff even where far less biologically valuable and imperiled resources have occurred.</i>	erosion control measures at that site if a higher standard is justified. In a letter dated July 26, 2013, the USFWS noted that because TDOT has committed to stringent water quality measures (including BMPs designed for a five-year storm event), the USFWS concurs with the determination of “not likely to adversely affect for federally listed aquatic species.”
Ingrid Haun. November 10, 2015			
IH-1	3-8 thru 3-10	Detailed data for corridor level of service (LOS) shows no significant difference in LOS whether or not the project is constructed. <i>For 22 out of 23 segments, LOS projections were identical for year 2020. LOS projections show no advantage for the Preferred Alternative over the No-Build in 2040.</i> The commenter noted that for intersection LOS, <i>the differences between Preferred Alternative and No-Build—in terms of actual “seconds saved” at intersections—were insubstantial.</i>	These statements are representative of the results of the corridor LOS analysis prepared for the project, which is one measure of traffic operations. It is often the most cited measure; however, intersection delay and travel time savings are other valid measures of traffic operations. As demonstrated in the 2014 <i>Addendum to Traffic Operations Technical Report</i> , the Preferred Alternative would result in improved LOS at eight of nine key intersections and substantial reduction in delay at most major intersections, thereby helping to achieve the purpose of the project.
IH-2	S-8 and S-9; 1-5; 2-15; 3-124	Actual omission of key LOS scores from tables in the FEIS. <i>At least four tables in the FEIS omit LOS data crucial to making any comparisons between all alternatives. Neither policy makers nor the public are well-served by obfuscation. [...]</i> <i>The flaws in the tables, more disconcertingly, make it hard not to conclude the No-Build alternative have been given short-shrift in the FEIS.</i>	This is an introduction to the Comments 2.1 through 2.4 below.

Substantive General Public Comments on FEIS			
<i>Text in italics in the Comment Summary column is a direct quote from the commenter.</i>			
Comment #	FEIS Page Number	Comment Summary	Response
IH-2.1	S-8 and S-9	Table S-1: Characteristics and Impacts of the Preferred Alternative and Other Alternatives Considered <i>Confoundingly, this front and center “summary” does not even include the No-Build Alternative. So not only is the LOS data missing, all No-Build data is missing.</i>	The commenter’s statement is correct. The emphasis of Table S-1 is the comparison of the Preferred Alternatives to the other two-lane and four-lane alternatives considered. The No-Build Alternative is the baseline for comparison; the summary provided in Table S-1 provides the impact of the project compared with the No-Build.
IH-2.2	1-16	Table 1-3: Roadway Level of Service (2013, 2020 and 2040) <i>Only scores for Existing (2013), No-Build 2020 and No-Build 2040 scenarios are charted. The table does not include the “Preferred Alternative” scores; as a result it is impossible to draw any conclusion about how the Preferred Alternative LOS would compare to No-Build. (If there is a difference between “Roadway Level of Service” and “Corridor Level of Service,” it is not explained.) Table 1-3 does not contain the data required to make a comparison.</i>	The purpose of Table 1-3 was to present how well traffic currently operates on the existing roadway network and how well it would operate in the future if Pellissippi Parkway were not extended (that is, the No-Build Alternative). It is an established approach in FHWA NEPA guidance that Introduction/Purpose and Need chapter establishes transportation needs and the transportation-related purpose for a project and should not discuss solutions. Thus, the Preferred Alternative and other alternatives considered would not be introduced or discussed until Chapter 2, Alternatives Considered. Comparisons of the Preferred Alternative and other alternatives with the No-Build are made in Chapter 3, Environmental Resources, Consequences and Mitigation.
IH-2.3	2-15	Table 2-7: Comparison of Alternatives <i>Does not include the No-Build Alternatives. Not only is LOS data missing, all No-Build data is missing.</i>	Table 2-7 summarizes the characteristics and comparisons of the Preferred Alternative and the other build alternatives from the reevaluation of the DEIS. The reevaluation document (which was a Technical Appendix to the FEIS) contained the tables showing LOS data for each route for the No-Build and Preferred Alternative. Comparison of the Preferred Alternative and other build alternatives are made in Chapter 3.
IH-2.4	3-124	Table 3-37: Summary of Effects (Transportation Impacts) – <i>The area for LOS expectations for the No-Build is left blank, without explanation—making it impossible to compare projections to any of the five other options</i>	Table 3-37 is intended to compare the Preferred Alternative and the other build alternative against the No-Build condition. For LOS, the measure is a very high level of comparison. Table 3-1 provides the details for the corridor LOS for No-Build, the Preferred Alternative and

Substantive General Public Comments on FEIS			
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		<i>included.</i>	the other alternatives considered while Table 3-3 provides the intersection LOS for the No-Build and Preferred Alternatives.

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Comment #	FEIS Page #	Comment Summary	Response
Fix It First Philosophy			
1	1-8	Blount County does not need a new interstate especially if there is more than a \$6 billion backlog of transportation projects in TN. Fixing the existing roadway should be a higher priority than building the PPE. Existing roadways should be maintained first before new roads are constructed (Fix It First).	The first of seven Guiding Principles stated in TDOT's 25-Year Long-Range Transportation Policy Plan is "Preserve and Manage the Existing System (embodied in the "Fix It First" philosophy). This principal is described as balancing maintenance and preservation needs with critical capacity enhancements and operations. Another Guiding Principle is TDOT's commitment to investing in transportation infrastructure that "advances quality economic development and redevelopment, economic competitiveness, tourism, and increased access to people, places, goods and service." The Pellissippi Parkway Extension is the final section of a four-lane divided highway between I-40/I-75 on the west side of Knoxville and US 321/SR 73 east of Maryville; the overall project was identified in the 1986 <i>Urgent Highway Needs Plan</i> enacted by the Tennessee General Assembly and has been included in the Knoxville Region's transportation plan updates since 1995. The proposed extension of Pellissippi Parkway from SR 33 and US 321/SR 73 will complete a long-envisioned regional transportation linkage, and will expand travel options to the Blount County's primarily radial roadway network extending out from Maryville; these are identified purposes of the project (FEIS page 1-8). TDOT must balance the competing needs of fixing existing roadways and improving existing/constructing new roadways and other transportation options, within the funding constraints; to do so, TDOT is seeking to maximize Tennessee's share of federal transportation dollars and develop alternative funding strategies.
2	2-3 (Table 2-1)	Fix US 411 first	The current long range transportation plan for the region, Mobility Plan 2040, includes a separate project to improve US 411 between Maryville city limits and Chapman Highway (US 511/SR 71) in Sevier County. (The plan can be found at

Responses to General Public Comments on FEIS			
Comment #	FEIS Page #	Comment Summary	Response
			http://www.knoxtrans.org/mobilityplan .) The Mobility Plan 2040 Project 09-250, in the 2035-2040 time frame, is to improve the two-lane roadway and add turn lanes from Maryville City limits to Chapman Highway (US 441). Project 09-214 would reconstruct the two-lane US 411 with a continuous center turn land and bicycle/pedestrian facilities between Everett High Road to Maryville City limits, in the 2023-2026 timeframe. Additionally, the Preferred Alternative includes improving the typical section of US 411 to a five-lane urban section through the proposed interchange area. Thus, travelers using US 411 between the proposed interchange and the Blount/Sevier county line will be able to drive on an improved roadway.
3	2-3 (Table 2-1)	The money could be better spent on improving US 411, SR 33, US 129 and the local non-state roads in Blount County, including Wildwood Road.	The current long range transportation plan for the region, <i>Mobility Plan 2040</i>, includes a separate project to improve US 411 between Maryville city limits and Chapman Highway (US 511/SR 71) in Sevier County. (The plan can be found at http://www.knoxtrans.org/mobilityplan.) The Mobility Plan 2040 Project 09-250, in the 2035-2040 time frame, is to improve the two-lane roadway and add turn lanes from Maryville City limits to Chapman Highway (US 441). Project 09-214 would reconstruct the two-lane US 411 with a continuous center turn land and bicycle/pedestrian facilities between Everett High Road to Maryville City limits, in the 2023-2026 timeframe. Additionally, the Preferred Alternative includes improving the typical section of US 411 to a five-lane urban section through the proposed interchange area. Thus, travelers using US 411 between the proposed interchange and the Blount/Sevier county line will be able to drive on an improved roadway. The Knoxville Regional TPO's Mobility Plan 2040 includes improvements to other roads in Blount County, including: • SR 33 (project 09-212, reconstruct two-lane section with turn lanes, Wildwood Road to McArthur Road, in the 2031-2034 time frame). • US 129 (project 09-218, widening to a 6-lane divided highway, from

Responses to General Public Comments on FEIS			
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			Hall Road to proposed interchange at Tyson Boulevard, extend Tyson Boulevard under SR-115 and reconstruct Hunt Road overpass, in the 2017-2022 time frame). - US 129 (project 09-216, widening to a 6-lane divided highway from Pellissippi Parkway to Knox County line, with a new interchange at Topside Road and reconfiguration of existing Pellissippi Parkway interchange and signalized ramps, in the 2023-2026 time frame). - Relocated Alcoa Highway (Projects 09-257 and 09-258, a new four-lane roadway from Tyson Boulevard to South Singleton Station Road, with new interchanges at Tyson Boulevard, Wright Road, Pellissippi Parkway, and Singleton Station Road, in the 2023 to 2026). Two project listed with funding in the later years of the previous Mobility Plan are listed in the current Mobility Plan as unfunded. Through the process of selection these two projects were determined not to be regional priorities. Listing as unfunded means that if additional funding becomes available, they may advance to the priority list. - Wildwood Road (Project #09-234, reconstruct two-lane road with addition of turn lanes from Maryville city limits to US 411). - Sam Houston School Road (project 09-247, reconstruct two-lane road with addition of continuous center turn lane and bicycle/pedestrian facilities from SR 33 to Wildwood Road).
Traffic/Roads/Safety			
4	2-3; 3-5	US 411 Safety: US 411 Safety: Traffic congestion along Sevierville Road (US 411) will increase due to the project. US 411 is narrow and unsafe and the PPE will add more traffic without improving US 411.	The statement in the 5th bullet (second set of bullets on page 3-5) is in error; it was not updated to reflect the traffic forecasts of 2011 and 2014. The bullet should have read as follows: “US 411 traffic west of the proposed interchange and Washington Avenue would be lower with the Preferred Alternative. East of the proposed interchange the traffic would be higher than the No-Build.

Responses to General Public Comments on FEIS			
Comment #	FEIS Page #	Comment Summary	Response
			From the interchange to Hitch Road, the traffic would be about 5 percent higher, and from Hitch Road to the end of the study area the traffic would increase about 26 percent by 2040.” This revised statement is included as a correction in the ROD. While traffic will increase on US 411 east of the proposed interchange, the Selected Alternative includes improving the typical section of US 411 to a five-lane urban section through the proposed interchange area. The Mobility Plan 2040 also includes other improvements to US 411. The Mobility Plan 2040 Project 09-250, in the 2035-2040 time frame, is to improve the two-lane roadway and add turn lanes from Maryville City limits to Chapman Highway (US 441). Project 09-214 would reconstruct the two-lane US 411 with a continuous center turn land and bicycle/pedestrian facilities between Everett High Road to Maryville City limits, in the 2023-2026 timeframe. Thus, travelers using US 411 between the proposed interchange and the Blount/Sevier county line will be able to drive on an improved roadway.
5	2-6	Adding an interchange at US 411 will add more cars onto a narrow roadway with poor or non-existent shoulders.	The Preferred Alternative includes improving the typical section of US 411 to a five-lane urban section through the proposed interchange area. And the Mobility Plan 2040 includes other improvements to US 411.
6	2-6	Adding extra vehicles to US 411 and Wildwood Road to access the proposed interchanges would result in even more opportunities for crash injuries and fatalities.	The Preferred Alternative includes improving the typical section of US 411 to a five-lane urban section through the proposed interchange area. And the Mobility Plan 2040 includes other improvements to US 411. In addition, a project for Wildwood Road is listed in the current Mobility Plan 2040 as unfunded. Through the process of selection this project was determined not to be a regional priority. Listing as unfunded means that if additional funding becomes available, this project may advance to the priority list. Project #09-234 would

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			reconstruct the two-lane road with addition of turn lanes from Maryville city limits to US 411.
7	Pg 35 of 2016 Update to Traffic Tech Report	The Extension will have a negative impact on LOS for roads that will be intersected by PPE. Traffic safety issues will be created by the project. Alternative D would improve local roads that could minimize impacts to local residents.	While sections of Sam Houston School Road, Peppermint Road, Hitch Road, and Helton Road would be improved as part of Alternative D., the traffic operations analysis reported in the 2016 <i>Update to the Traffic Technical Report</i> demonstrated that traffic volumes on those roads are sufficiently high so that corridor LOS for Alternative D would fall to LOS E, compared to No-Build conditions ranging from LOS A to LOS D. Under the Preferred Alternative, these roads would experience LOS A, B and C. Between the project termini at SR 33 and US 321, there would be one planned interchange, at US 411. As discussed in the response to Comment 4 above, the project includes improvements to US 411 through the interchange area. And the Mobility Plan 2040 includes other improvements to US 411, including bringing the two lanes up to current standards and adding turn lanes.
8	3-15 and 3-16	The Preferred Alternative and the No-Build options yield virtually identical projected [corridor] LOS in terms of outcomes for net traffic function. Differences between the Preferred Alternative and No-Build - in terms of actual seconds of delay at intersections - were insubstantial.	Corridor LOS is one measure for categorizing traffic operations; other measures to quantify traffic congestion include intersection LOS, intersection delay, and travel time savings. The 2014 <i>Addendum to the Traffic Operations Technical Report</i> demonstrated that the Preferred Alternative shows a “substantial reduction” in delay for most of the intersections in the Alcoa/Maryville core. The seconds of delay range between 1 second to 63 seconds. One intersection (SR 35/S Washington Street at US 411/Sevierville Road) would experience the “insubstantial increase of 1.4 seconds in the AM and 9.4 seconds in the PM. The intersection of S. Washington Street at US 321 would experience a 106-second and 162.7-second improvement in delay in the AM and the PM, respectively, which is not an insubstantial improvement.
9	N/A	Alcoa Highway is being improved and has good connectivity to Maryville, Alcoa, the Parkway, and	Statement noted.

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		McGhee Tyson Airport. The state of the local road network will not be improved by Alternative A. Congestion will not be improved by the project. Safety issues on roadways are best handled on a spot by spot basis.	
10	N/A	The road system in Maryville is radial, which means you often have to drive into the central park of town and then back out to get from one location to another. While completion of SR 162 (Pellissippi Parkway) will not totally resolve this situation, it will be a great help to those of us who live on the east side of town. It will also provide an alternative route to GSMNP for people in and traveling through the greater Knoxville area.	Statement noted.
11	N/A	This is a needed facility to improve Blount County's overall transportation system.	Statement noted.
12	N/A	The Extension will help traffic by bypassing the drive through Maryville and Alcoa. It will shorten the route to the mountains.	Statement noted.
13	3-15 and 3-16	Technical studies and the FEIS show that the PPE will not reduce congestion or improve safety.	Traffic Operations Consideration of various measures of traffic operation including corridor and intersection LOS, intersection delay, and travel time savings contributes to a better understanding of the effect of project alternatives on traffic congestion in the study area as a result of the project, rather than just corridor LOS. The DEIS provided LOS for roadways (corridor LOS) as well as intersection LOS. TDOT determined the need to expand the traffic operations analysis based on public comments received on the DEIS. The additional analysis (documented in the June 2011 <i>Addendum to Traffic Operations Technical Report (with minor corrections September 7, 2011, on file with TDOT Environmental Division and on the project website)</i> and in the

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			<i>Addendum to the Traffic Operations Technical Report</i>, dated February 2014 (found in Technical Appendix B of the FEIS) investigated the amount of delay that traffic would experience at intersections. The analysis found that the Preferred Alternative would improve LOS at eight key intersections and substantially reduce delay at most major intersections. Safety In response to CAPPE's comment on safety and future crashes, TDOT prepared an updated traffic safety analysis that is documented in the Crash Analysis Technical Report (July 2017), contained in Appendix D of the ROD. TDOT's traffic safety consultant attempted to replicate the approach and results offered in CAPPE's comments, but was not able to do so for several reasons. The problems with CAPPE's method include: 1) assuming that current crash patterns will be the same into the future, and 2) assuming that crash rates are the same for roadways within the same class and type and thus ignoring site-specific characteristics that influence crashes. That approach cannot provide useful conclusions about the relative safety of the design alternatives. CAPPE's computations using current crash rates assumed a linear relationship exists between exposure and crashes. Most current research demonstrates a non-linear relationship between traffic volume and crash frequency that varies for each road type and setting (urban versus rural). Using an average crash rate to estimate and compare crash frequencies for a facility at different traffic volume levels is not appropriate. At this time, TDOT's standard practice is to use a qualitative approach to address the safety of new or improved roadways. After consultation with FHWA, TDOT confirmed that a qualitative approach to address the anticipated safety performance of the proposed PPE is appropriate. Roadways in Tennessee functionally classified as freeways (also referred to as interstate highways) have statewide average crash rates lower

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			than all other roadway types, including roadways in the Maryville core. Due to their design features, freeways are safer than other roads because freeways control traffic flow and restrict access to and from the highway. A controlled access freeway has no traffic signals, intersections, or direct property access, and no at-grade (intersection) crossings with other roads, railroads, or bike/pedestrian paths. Full access control reduces the potential traffic incidents compared with other roadway classifications The Selected Alternative will be a freeway meeting interstate level design standards. Thus, it should be inherently safer than the No-Build Alternative, which uses local roadways with points of conflict such as at-grade intersections, traffic signals or stop signs, direct property access/driveways, narrow traffic lanes, narrow or non-existent shoulders, and inadequate clear zones. In addition, under the Selected Alternative, many of the study area roadways are forecasted to have lower traffic volumes in both 2020 and 2040, including roadways that serve the Maryville core, compared with the No-Build Alternative. The updated evaluation of recent crash data identified several of the road segments in the Maryville core as having more crashes than is statistically probable based on random occurrence. The migration of traffic from existing non-freeway roadways to the proposed freeway of the Selected Alternative represents a shift from roadways with higher typical average crash rates to a roadway with a lower typical average crash rate. This migration of traffic would be expected to reduce the overall crash risk for the Selected Alternative relative to the No-Build Alternative.
14	N/A	Completion of the Parkway will immediately offset congestion along US 129 and other lesser routes in Blount County. It will provide a direct and efficient route for Walland and Townsend resident, and beyond.	Statement noted.

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15	N/A	The Extension would provide a safer passage through Maryville and on Alcoa Highway.	Statement noted.
16	2-4 and Figure 2-2	Would like consideration given to using an urban section for the roadway segment through Pellissippi Place (from SR 33 to Wildwood Road.)	TDOT will consider design options during final design of the project.
Land Use			
17	3-110 thru 3-111	Land use patterns will likely change substantially and lead to urban sprawl and higher taxes to pay for new infrastructure.	As part of the FEIS evaluation, an updated Economic and Fiscal Impact Analysis was conducted (<i>Addendum to the 2009 Economic and Fiscal Analysis</i>, 2015). The study found that a four-lane Build Alternative has moderate potential to spur land use changes in the study area. The primary driver of induced development in the study area would be the travel time savings resulting from the new extension. As travel times between Blount and Knox Counties and between Blount County and Oak Ridge are reduced due to the extension, more residents and commercial establishments may find it viable to live farther away from the main centers of employment and closer to the unincorporated areas of the County. However, the new residential and non-residential-induced development would not be extensive. The study predicted 27 to 49 new residences along with 13,300 to 24,100 square feet of commercial development as the total induced development from this project to 2025. Lack of adequate services in the unincorporated areas and a moderate projection of population and employment growth rates in the study area will, however, limit the extent of induced development. Other factors are anticipated to contribute to residential and non-residential development in this portion of the county. This portion of Blount County is already experiencing growth with the conversion of farmland to new subdivisions. Most of the area through which the Preferred Alternative would pass is

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			zoned as S – Suburbanizing by Blount County. The stated purpose and intent of the S district is to regulate suburbanizing development of expected high to moderate density around the cities of Alcoa and Maryville. The first two phases of the Pellissippi Place are zoned for Research and Development Park (RDP), while the remainder of Pellissippi Place is zoned Limited Restriction (I). A representative of the City of Maryville Planning and Codes Department, in a conversation on December 5, 2016 regarding the zoning in Pellissippi Place, explained that the I zone is a holding designation and that it is expected that the area would be future commercial as the park is build out.
18	3-110 thru 3-111	A better and thorough analysis of land use impacts at proposed interchanges is needed	The <i>Addendum to the 2009 Economic and Fiscal Impact Analysis</i> (2015) addressed induced land use impacts as a result of the proposed project. A detailed land use study of the interchange areas by Blount County or the cities of Maryville and Alcoa would be appropriate prior to the completion of construction of the new roadway and interchanges.
Farmlands			
19	3-24; 3-25; 3-50 thru 3-51	Several historic "century farms" may be lost due to the project. Land use patterns will usher in an increase in urban sprawl, putting more pressure on these farms.	The project is not displacing any individual farms as complete entities. The Preferred Alternative will take a portion of several individual farms but should not displace the farming operations. FEIS Figure 3-6 Conceptual Land Use Map (page 3-24) shows the Preferred Alternative traveling through the area labeled as Suburbanizing – High to Medium Density Development. FEIS Figure 3-7 Urban Growth Boundaries (page 3-25) also shows the Preferred Alternative as being within the established "Urban Growth Boundary;" this designation means that the land is expected to develop over the next 20 years. Land in this area is already physically changing from farmlands to both residential and commercial uses.
20	N/A	Losing productive farmland is a major concern.	Statement noted.
21	3-22;	Loss of productive farmland and pleasing natural greenspace - This project runs counter to the citizens'	The <i>Blount County Policies Plan</i> (adopted 2008) acknowledges both the need to preserve "the rural, small town and natural character of the

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	3-23	desire to preserve our rural and natural heritage.	county” (Guiding Policy 1) and to improve and maintain county roads “to a level consistent with present development and expected future development” (Guiding Policy 4). The plan’s Objective Policy 4C addresses the need to prepare for future increases in traffic demands as the county grows.
22	3-51; S-13	A number of farm parcels will either be taken entirely or impacted significantly if PPE is built. These farms represent family businesses and help to preserve the rural character of Blount County.	The project is not displacing any individual farms as complete entities. The Preferred Alternative will take a portion of several individual farms but should not displace the farming operations. FEIS Figure 3-6 Conceptual Land Use Map (page 3-24) shows the Preferred Alternative traveling through the area labeled as Suburbanizing – High to Medium Density Development. FEIS Figure 3-7 Urban Growth Boundaries (page 3-25) also shows the Preferred Alternative as being within the established “Urban Growth Boundary;” this designation means that the land is expected to develop over the next 20 years. Land in this area is already physically changing from farmlands to both residential and commercial uses. Based on input from members of the public, including persons who identified themselves as farmers directly affected by the projects, TDOT has committed to work with agricultural land owners to identify potential design measures to minimize impacts to farmlands, including minimizing the amount of division of farms and to ensure that remnants are economically viable. This commitment was included in both the Reevaluation of the DEIS and is in this ROD.
23	2-13 (Table 2-5) 3-41; 3-50	Farmlands are not recognized as businesses in the EIS	The discussion of business displacements does not include farming operations because the project is not displacing any individual farms as complete entities. The Preferred Alternative will take a portion of several individual farms but should not displace the farming operations. The Preferred Alternative also minimizes impacts to the operation of two farms.

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Water Quality / Water Resources			
24	3-93; 3-94	Increases in runoff and the potential for ground water contamination because of conversion of rural lands and farms will negatively impact the Little River watershed if PPE is built.	TDOT will obtain the appropriate state and federal permits needed for construction of the roadway and will implement Best Management Practices (BMPs), including Erosion Prevention and Sediment Control Measures (EPSC), to protect resources. BMPs, often in a series, provide a “treatment train” for the runoff so that the BMP at the outfall point is not overwhelmed by receiving the runoff from the outfall drainage area. Also, wherever possible, off-site run-off is diverted around or through the disturbed area to limit the amount of runoff that is exposed to bare soil. TDOT will monitor activities in compliance with authorized permits. Long term stormwater management will be compliant with the requirements of TDOT’s National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit.
25	3-88 thru 3-93; 3-100; 3-101	The construction of the Extension may adversely impact the water quality of the Little River and the fish species in the river. The project presents a threat to ground water and surface water from runoff due to the roadway itself and the increased development pressure.	TDOT will obtain the appropriate state and federal permits needed for construction of the roadway and will implement Best Management Practices (BMPs), including Erosion Prevention and Sediment Control Measures (EPSC), to protect resources. BMPs, often in a series, provide a “treatment train” for the runoff so that the BMP at the outfall point is not overwhelmed by receiving the runoff from the outfall drainage area. Also, wherever possible, off-site run-off is diverted around or through the disturbed area to limit the amount of runoff that is exposed to bare soil. TDOT will monitor activities in compliance with authorized permits. Long term stormwater management will be compliant with the requirements of TDOT’s National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit. In addition, in a letter dated July 26, 2013, the USFWS noted that because TDOT has committed to stringent water quality measures (including BMPs designed for a five-year storm event), the USFWS concurs with the determination of “not likely to adversely affect for

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			federally listed aquatic species.
26	3-93; 3-94	Loss of land will greatly affect the Little River; the project means more runoff into the river which is the main water supply for most of Blount County.	TDOT will obtain the appropriate state and federal permits needed for construction of the roadway and will implement Best Management Practices (BMPs), including Erosion Prevention and Sediment Control Measures (EPSC), to protect resources. BMPs, often in a series, provide a “treatment train” for the runoff so that the BMP at the outfall point is not overwhelmed by receiving the runoff from the outfall drainage area. Also, wherever possible, off-site run-off is diverted around or through the disturbed area to limit the amount of runoff that is exposed to bare soil. TDOT will monitor activities in compliance with authorized permits. Long term stormwater management will be compliant with the requirements of TDOT’s National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit.
Multimodal			
27	S-12; 3-20	Supports a bike/ped component that would enhance the link from Knoxville to the Great Smoky Mountains National Park.	The July 2014 reevaluation of the DEIS included an environmental commitment for design features that stated TDOT would also investigate the provision of bicycles and pedestrian facilities within the project right-of-way, as part of a Context Sensitive Solutions design process. The FEIS stated that the commitment had been vacated because the new four-lane roadway would be designed to interstate standards, which would prohibit bicycles and pedestrians from using the roadway. Based on comments received from the representative of the Knoxville Regional TPO, as well as the Great Smoky Mountains Regional Greenway Council and several individuals during the FEIS circulation period, the following commitment is included in the ROD: “Bicycle and Pedestrian Facilities —During the design process, TDOT will investigate the provision of bicycle and pedestrian facilities within the project right-of-way. If TDOT determines that the provision of such facilities is feasible, the facilities will be developed as a separate project and TDOT will work with the Knoxville Regional Transportation Planning Organization (TPO) and local governments to determine sources of

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			funding for the construction and maintenance of the bicycle and pedestrian facilities.”
Economic Development / Tourism			
28	3-5	The Extension would direct traffic away from the only commercially significant areas within the county - Maryville and Alcoa. To the extent the PPE functions as a bypass around southeastern Maryville, it may remove traffic and have a negative impact on existing businesses there as well as in town.	The Preferred Alternative would reduce average daily trips on several roads in and around the Maryville core, including Hall Road, Washington Street, SR 35 (US 411), US 321 and SR 33. The analysis of average annual daily traffic (AADTs) for the No-Build and Preferred Alternatives in 2020 and 2040 (in the 2014 <i>Addendum to Traffic Technical Report</i>) shows a decline in AADTs for the Preferred Alternative compared with the No-Build Alternative. This is to be expected with an improvement in mobility options to the radial roadway network. The cities of Maryville and Alcoa and Blount County have adopted zoning ordinances that contain provisions for allowable land uses and economic activities in each zone.
29	N/A	Business development along the Extension could bring revenue and jobs to Blount County. Business relies heavily on an adequate road systems for bringing goods in for manufacturing and for good road systems that bring products out of TN to other parts of the nation. Our roadways are critical components that help keep businesses competitive.	Statement noted.
30	N/A	A good highway system is needed to bring travelers to the Townsend Area of Blount County. Linking Knoxville to the Great Smoky Mountains National Park will boost the economy of Blount and Knox counties.	Statement noted.
32	N/A	Any time saved for tourists [to the Smokies] is meaningless since there is still a two-lane road between Walland and Townsend. The Great Smoky Mountains	Statement noted.

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		National Park is already accessible via East Lamar Alexander Parkway (US 321).	
33	N/A	The growing job base in the area needs the infrastructure for quality growth.	Statement noted.
34	1-8 thru 1- 10	The current ending of the Parkway is an excellent ending point. Alcoa and Maryville are presently developing future growth projects at the ending of the present Pellissippi Parkway, and it could help East Maryville and Rockford.	Terminating the project at SR 33 fails to achieve a long established regional plan to extend Pellissippi Parkway between I-40 in Knoxville and US 321 east of Maryville. The current terminus does not serve the intent of the new roadway to allow travelers more mobility options to the primarily radial existing road network.
35	1-8	Increasing tourism is not a big enough justification to construct the Extension. The scenic value of US 321 will be diminished.	The identified purposes of the project do not include enhancing or increasing tourism. Increasing tourism may be an end result of the project, which is intended to provide mobility options, enhance transportation linkages, enhance roadway safety, and assist in achieving acceptable traffic operations (or not adversely affecting) on the existing roadway network.
Community Development / Impact			
36	3-22; 3-23	Maintain the rural character of Blount County.	The <i>Blount County Policies Plan</i> (adopted 2008) acknowledges both the need to preserve “the rural, small town and natural character of the county” (Guiding Policy 1) and to improve and maintain county roads “to a level consistent with present development and expected future development” (Guiding Policy 4). The plan’s Objective Policy 4C addresses the need to prepare for future increases in traffic demands as the county grows.
37	3-113 thru 3-114	It is a real social justice issue for existing residents of the area. Development in this area will maximize adverse impacts on schools, utilities, roads and streets and public facilities along the path of PPE.	The <i>Addendum to the 2009 Economic and Fiscal Analysis</i> , 2015) found that a four-lane Build Alternative has moderate (not extensive) potential to spur land use changes in the study area. The 2015 Addendum also include an estimation of the fiscal implications of the induced development. The study reported that at project build-out (2025), the induced development is expected to

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			generate more revenue for the County than it demands in costs for operations.
38	2-3 (Table 2-1); 3-5	Increased congestion on Sevierville Road (US 411) will cause safety issues with emergency vehicles and a new school.	The long-range transportation plan, Mobility 2040, includes two projects on US 411 that will improve the road from Everett High Road to Chapman Highway (US 441). (See response to Comments 2 and 4 above). The traffic on US 411 in the vicinity of the new interchange will be lower under the Preferred Alternative, from Washington Avenue to the proposed interchange. East of the proposed interchange to Hitch Road, the traffic would be about 5 percent higher than the No-Build. From Hitch Road to the end of the study area the traffic would increase about 26 percent by 2040.
39	N/A	The projected population growth of this region should make this a high priority.	Statement noted
40	N/A	Completion of the Parkway will allow development of areas that are currently unattractive to new development due to inadequate roadways.	Statement noted.
41	3-110 thru 3-111	The extension will bring a bevy of retail that will surely devour the beauty of the area.	Statement noted. The cities of Maryville and Alcoa and Blount County have adopted zoning ordinances that contain provisions for allowable land uses and economic activities in each zone. In addition, an assessment of indirect impacts on land use and induced development (<i>Addendum to the 2009 Economic and Fiscal Impact Analysis, 2015</i>) demonstrates that the Preferred Alternative would not encourage extensive growth that would be inconsistent with past growth trends or would substantially differ from the No-Build Alternative. Table 3-35 in the FEIS shows that the total induced commercial development along the corridor is expected to be between 13,300 and 24,100 square feet.
42	3-110 thru	US 321 is a designated Tennessee Scenic Highway. The proposed interchange of PPE will create development on	Statement noted.

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	3-111	US 321 and the impact of that development will diminish the scenic value of the highway.	The cities of Maryville and Alcoa and Blount County have adopted zoning ordinances that contain provisions for allowable land uses and economic activities in each zone. In addition, an assessment of indirect impacts on land use and induced development (<i>Addendum to the 2009 Economic and Fiscal Impact Analysis</i>, 2015) demonstrates that the Preferred Alternative would not encourage extensive growth that would be inconsistent with past growth trends or would substantially differ from the No-Build Alternative. Table 3-35 in the FEIS shows that the total induced commercial development along the corridor is expected to be between 13,300 and 24,100 square feet. Any building proposed for the interchange area must be in accordance with Tennessee's Scenic Highway System Act of 197, codified in accordance with Tennessee Code Annotated 54-17-115, Building restrictions near scenic highways.
Financial			
43	2-7 thru 2-8	The budget for the project has nearly doubled in the last 10 years. What will the final bill be? The overall cost for the Preferred Alternative in the FEIS has increased 71% since the 2010 DEIS. The overall cost is nearly \$38 million per mile, which seems prohibitively high. Funding in Maryville/Blount County can be used in a more cost effective way on other infrastructure projects. It is a misuse of public funds.	Cost estimates based on functional level plans were prepared for the DEIS, and then updated for the FEIS based on the latest available data and unit costs. These cost estimates include large contingencies to account for the lack of more complete design details. The cost estimates will be refined during the design phase of the project as more specific information becomes available, and the amount of contingencies can be reduced.
Purpose and Need			
44	1-8; 3-7 thru 3-17	The studies and the FEIS do not demonstrate TDOT's objectives for the road, including substantial reduction of congestion or improvement in safety on existing road network. FEIS data does not support a purpose of improving traffic	The FEIS (Section 1.3) states that the purpose of the project is to: • Provide travel options for motorists to the county's existing radial roadway network; • Enhance the regional transportation system linkages; • Enhance roadway safety on the county's roadway network,

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		congestions or levels of service. Technical studies and the FEIS do not support the purpose and need for the PPE.	including the Maryville core; and Assist in achieving acceptable traffic operations on the transportation network or avoid adversely affecting traffic operations on the existing transportation network. Addressing traffic congestion is not the only or most important purpose of the project. As demonstrated in the FEIS, the project will provide a new travel option (route) for motorists to the county's existing radial roadway network, and enhance regional transportation system linkages by connecting the eastern portions of Blount County more directly with western parts of Knox County and with Oak Ridge. As demonstrated in the 2014 <i>Addendum to Traffic Operations Technical Report</i>, the Preferred Alternative would result in improved LOS at eight of nine key intersections and substantial reduction in delay at most major intersections, thereby helping to achieve the purpose of the project. As described in the 2017 <i>Crash Analysis Report</i> (see Appendix D of the ROD), the Selected Alternative will be a freeway meeting interstate level design standards. Thus, it should be inherently safer than the No-Build Alternative, which uses local roadways with points of conflict such as at-grade intersections, traffic signals or stop signs, direct property access/driveways, narrow traffic lanes, narrow or non-existent shoulders, and inadequate clear zones. In addition, under the Selected Alternative, many of the study area roadways are forecasted to have lower traffic volumes in both 2020 and 2040, including roadways that serve the Maryville core, compared with the No-Build Alternative. The updated evaluation of recent crash data identified several of the road segments in the Maryville core as having more crashes than is statistically probable based on random occurrence. The migration of traffic from existing non-freeway roadways to the proposed freeway of the Selected Alternative represents a shift from

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			roadways with higher typical average crash rates to a roadway with a lower typical average crash rate. This migration of traffic would be expected to reduce the overall crash risk for the Selected Alternative relative to the No-Build Alternative.
45	1-4 thru 1-5; 1-8; 1-13 thru 1-16; 1-24 thru 1-27; 3-22 thru 3-25 (Land Use)	The project will not fulfill the objectives stated in the FEIS, except for providing a new "travel option" which does not appear to be generally useful.	The purpose of the project is stated above in the response to Comment 44. The project would provide the new travel option for persons in the northeastern and eastern portion of the county, an area of the county that is experiencing growth. In addition, the project would complete the Pellissippi Parkway from north of I-40 to US 321, which has been in the regional long range transportation plan since 1995; this would serve to enhance the regional transportation system by linking West Knoxville and I-40 with US 321. The Preferred Alternative would result in improved LOS at eight of nine key intersections and substantial reduction in delay at most major intersections.
46	1-8 (FEIS); 1-6 thru 1-7 (DEIS)	Over the years the rationale for the project has shifted. First it was to supposed to save travel time and ease visitation to the Smokies. Then it was to bypass Maryville to the east, with the eventual intention of enclosing the urban area in a ring road via the "southern loop." Now TDOT is emphasizing the need to decrease congestion in the town "core" and increase highway safety. If a good reason to build the highway actually exists, this rock-hopping justification for it would be unnecessary. The FEIS and studies clearly show that PPE will not meet TDOT objectives for PPE including substantial reduction in congestion or improvement in safety on our existing road network.	The purpose of the project is listed in the response to Comment 44 above. The only difference in the stated purpose of the project between the DEIS (Section 1.3) and the FEIS (Section 1.3) is in the 4 th bullet. In the DEIS, the bullet stated "Assist in achieving acceptable traffic flow (LOS) on the transportation network or not adversely affect traffic flows on the existing transportation network. The reason for the revision of the wording "traffic flow (LOS)" to "traffic operations" was to include other measures for evaluating and better understanding the effect of the project on traffic operations in the study area. See the response to Comment 45 above for a discussion of how the project meets the identified objectives.

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47	1-8	Getting visitors to Townsend and the Great Smoky Mountains National Park seems to be the real reason the extension is being pushed and it should be acknowledged in the FEIS. This is not a big enough need to build the extension.	The proposed extension may be used by travelers to Townsend and the National Park; however, the purposes of the project are broader. The proposed extension would provide local and regional traffic with a mobility option and enhance regional linkages, as well as reducing delay at key intersections, and promoting traffic safety in the Maryville core by removing some through traffic.
General			
48	N/A	The project is important to the future of the area. It is time for this roadway to be completed.	Statement noted.
49	N/A	The comment states that their home overlooks the proposed roadway and he does not feel the roadway will have an adverse effect or blight on his property	Statement noted.
50	N/A	The travel time savings and other travel benefits are too slight to justify construction of such a costly project.	Statement noted.
51	2-15 (Table 2-7); 3-1 thru 3-127; 3-124 thru 3-123; 3-124 thru 3-127 (Table 3-37)	The FEIS does not lay out fairly the negative effects of the Extension.	The FEIS explains the adverse and beneficial effects of the Preferred Alternative and other alternatives considered. Table 2-7 provides a one-page description and comparison of the Preferred and other alternatives considered. Chapter 3 of the FEIS, Environmental Resources, Consequences and Mitigation, identifies the existing conditions and discusses the impacts on the human and natural environment of the No-Build Alternative, the Preferred Alternative, and the other alternatives considered. Table 3-37 at the conclusion of Chapter 3 summarizes the potential impacts, adverse and beneficial, of the Preferred Alternative compared with the No-Build Alternative and the other alternatives considered.
52	3-44 thru 3-46;	A resident of the Kensington Place mobile home community expressed concern that the project would affect the peace and quiet of the area surrounding the	Statement noted. For residents in the Kensington Place community, a noise barrier is proposed to reduce the noise impact of the new roadway. The

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	3-48	mobile home community.	proximity of the proposed noise barrier to remaining residences will be both a benefit and an adverse impact. The wall will substantially reduce the noise levels for the residents in the community from a new four-lane roadway within their community. The presence of the wall will be a major change in view, from the open view of natural vegetation and agricultural lands to that of a wall up to 1,300 feet in length and 15 feet in height. As mitigation for the visual impact, TDOT will seek input from community residents regarding the landscaping and color/pattern of the barrier wall.

APPENDIX B

FY 2017-2020 Transportation Improvement Program (TIP)

Project Page

Knoxville Regional Transportation Planning Organization

TRANSPORTATION IMPROVEMENT PROGRAM FY 2017-2020

TIP No.	17-2014-025	Revision No.	0	Mobility Plan No.	09-232
TDOT PIN	101423.00	STIP No.	1705040		
Project Name	Pellissippi Pkwy. (SR-162) Extension				
Lead Agency	TDOT				
Total Project Cost	\$63,549,200				

Project Description	HPP #TN053 (Section 1602-TEA21). Construct new 4 lane.				
Termini/Intersection	Old Knoxville Hwy (SR-33) to SR-73 (US-321)				
Counties	Blount				
City/Agency	Alcoa				
Length	4.4	(miles)	Conformity Status	Non-Exempt	

Additional Details	The construction funds are for staged construction.				

Programmed Funds

FY	Phase	Funding Type	Total Funds	Federal	State	Local	Other
2019	ROW	HPP	\$10,090,162	\$8,072,130	\$2,018,032	\$0	\$0
2020	CON	NHPP	\$37,300,000	\$29,840,000	\$7,460,000	\$0	\$0
Total			\$47,390,162	\$37,912,130	\$9,478,032	\$0	\$0

Revision Date	
Revision Details	
Previous TIP No.	2002-030, 2004-020, 2006-017, 2008-039, 2011-025, 2014-025



APPENDIX C
Update to Traffic Operations Technical Report
April 2016

SR 162 (PELLISSIPPI PARKWAY EXTENSION)

UPDATE TO TRAFFIC OPERATIONS TECHNICAL REPORT

**BLOUNT COUNTY, TENNESSEE
P.I.N. 101423.00**

Prepared for:

Tennessee Department of Transportation

Prepared by:

Parsons Brinckerhoff

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April 2016

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LIST OF ACRONYMS

AASHTO – American Association of State Highway and Transportation Officials

CAPPE – Citizens Against Pellissippi Parkway Extension

DHV – Design Hour Volumes

EIS – Environmental Impact Statement

EPA – Environmental Protection Agency

FHWA – Federal Highway Administration

HCM 2010 – Highway Capacity Manual 2010

HCS 2010 – Highway Capacity Software 2010

LOS – Level of Service

NEPA – National Environmental Policy Act

pc/mi/lm – passenger cars per mile per lane

RAH – Relocated Alcoa Highway

ROD – Record of Decision

SR – State

TPO – Knoxville Regional Transportation Planning Organization

TDOT – Tennessee Department of Transportation

TRIMS – Tennessee Roadway Information Management System

v/c – volume-to-capacity

1.0 INTRODUCTION

The Tennessee Department of Transportation (TDOT), in cooperation with the Federal Highway Administration (FHWA), is proposing to extend and construct Pellissippi Parkway (State Route 162 or SR 162/Interstate 140 or I-140) from its current terminus at SR 33 (Old Knoxville Highway) to US 321/SR 73 (Lamar Alexander Highway) in Blount County.

TDOT and FHWA have prepared an Environmental Impact Statement (DEIS) in accordance with the National Environmental Policy Act (NEPA). The Draft EIS (DEIS), approved for circulation in April 2010, incorporated the results of the *Preliminary Traffic Operations Technical Report* (October 2007). In response to comments on the DEIS traffic analysis from members of the general public, Citizens Against the Pellissippi Parkway Extension, Inc. (CAPPE), US Environmental Protection Agency (EPA), City of Alcoa, and the Knoxville Regional Transportation Planning Organization (TPO), TDOT prepared an update to the original traffic analysis in 2011. The *Addendum to Traffic Operations Technical Report* (September 2011) sought to clarify the traffic volumes used in the analysis, and to provide more specific information on the level of improvement that may result from Build Alternative D.

Subsequent to the 2011 traffic report update, the Knoxville TPO updated its Regional Travel Demand Model (adopted in June 2013 for horizon year 2034). As a result of the updated model, TDOT determined the need to prepare new traffic forecasts to 2040 (the outer year of the traffic model) and to conduct a new traffic operations analysis for the Preferred Alternative (including the minor alignment modification). TDOT contracted with Sain Associates, Inc. to prepare new traffic forecasts for the study area; the results are included in the *Traffic Forecasts Study*, December 23, 2013. The *Addendum to the Traffic Operations Technical Report* (February 2014) included the evaluation of the No-Build Alternative and the Preferred Alternative, incorporating the 2013 traffic forecasts.

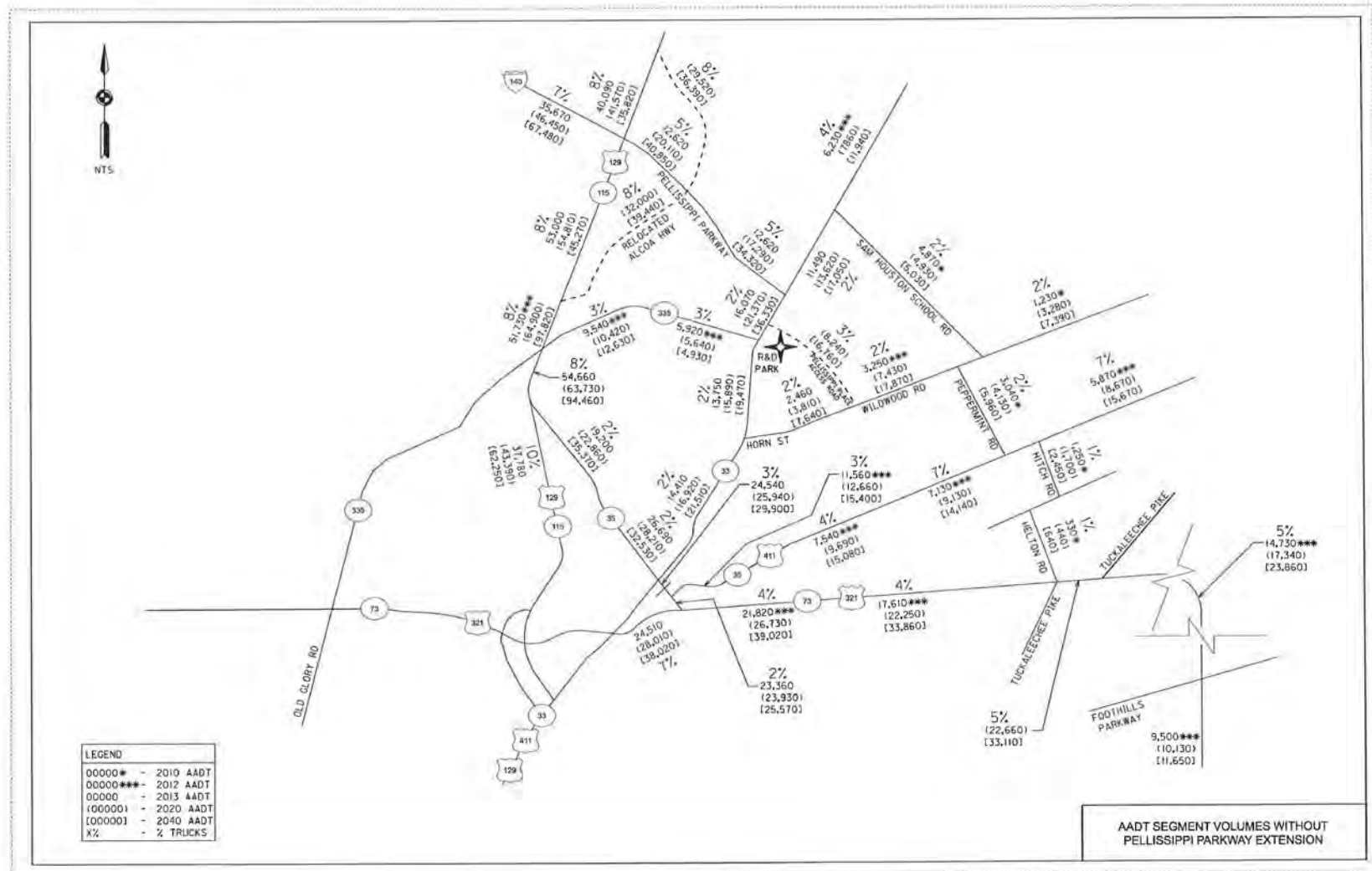
Based on public comments received on the Final EIS (FEIS), in December 2015 TDOT and FHWA determined that the traffic analysis for Alternative D should be expanded to the same level of evaluation as the No-Build Alternative and Preferred Alternative, prior to the issuance of a Record of Decision (ROD). This latest traffic operations report updated the 2015 traffic operations addendum to incorporate a more detailed evaluation of Alternative D for a comparison of traffic operations.

The scenarios presented in the February 2014 update remain the same.

- No-Build (Years 2013, 2020 and 2040)
- Preferred Alternative (Years 2020 and 2040)
- Alternative D (Years 2020 and 2040)

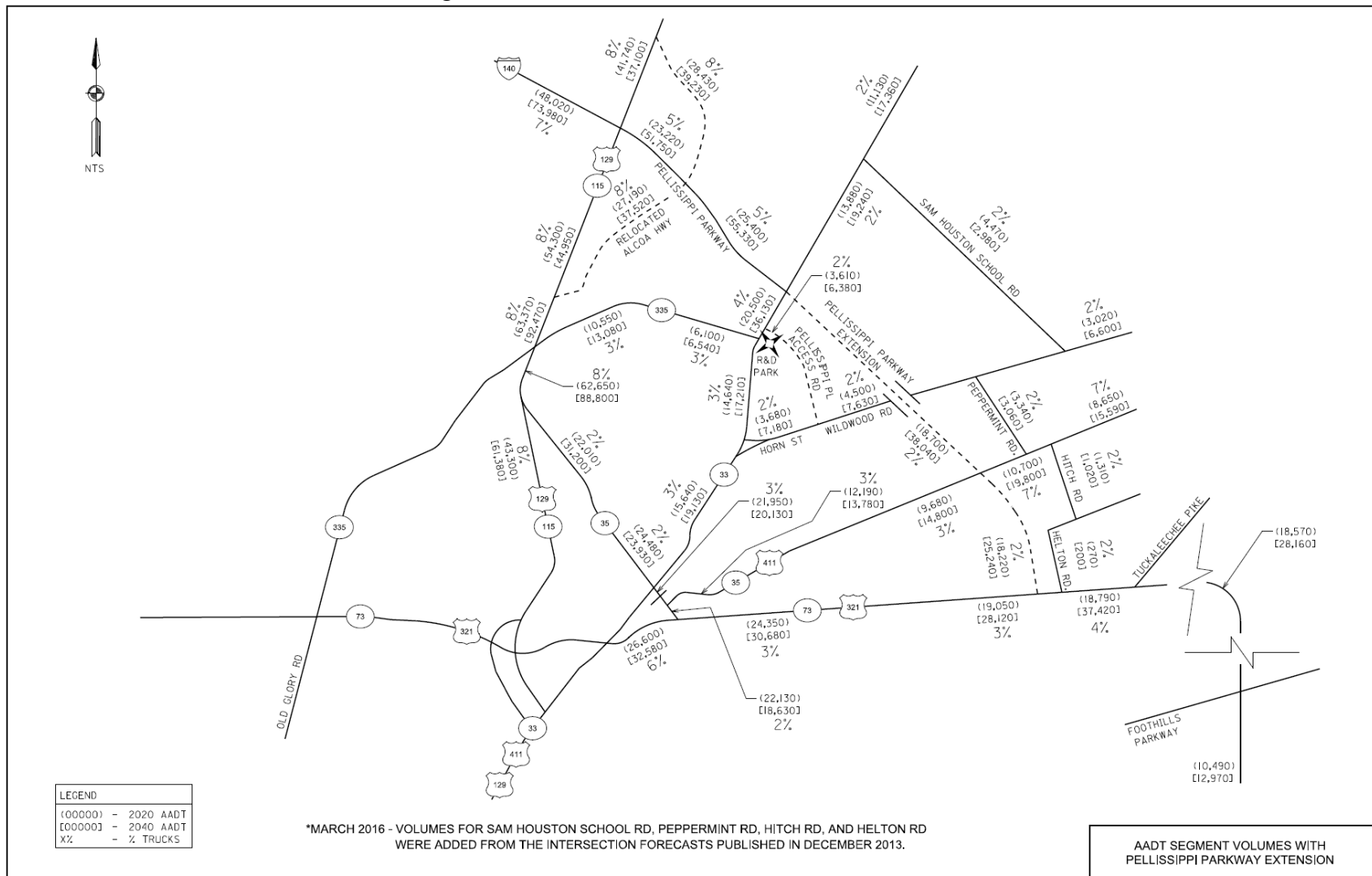
For reference, the traffic forecasts for all scenarios are shown in **Figures 1, 2, and 3** on the following pages. The subsequent sections provide the updated analysis for each of these alternatives.

Figure 1: No-Build Forecasted AADT



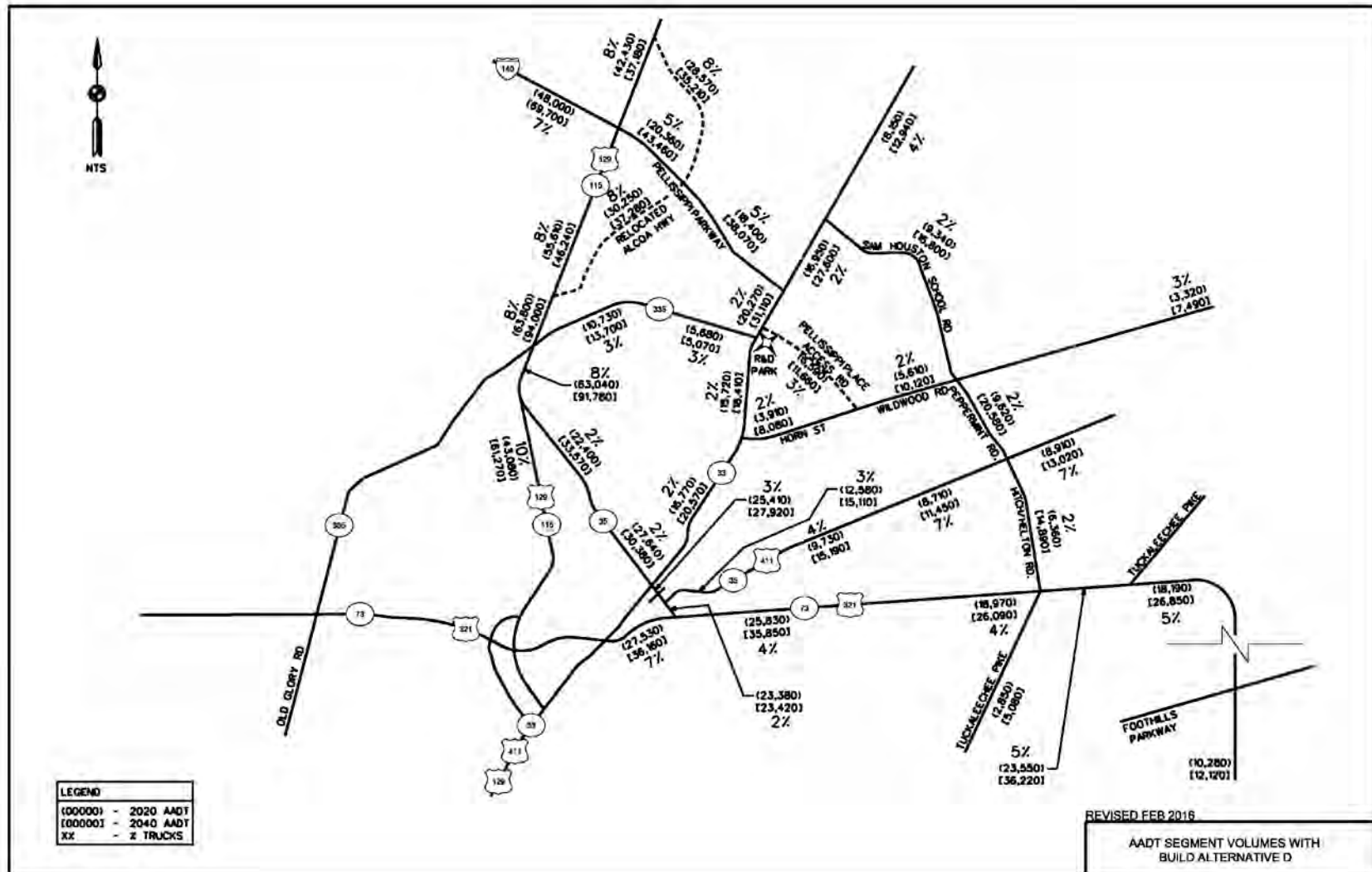
Source: Sain Associates, Traffic Forecast Study, 2016.

Figure 2: Preferred Alternative Forecasted AADT



Source: Sain Associates, Traffic Forecast Study, 2013.

Figure 3: Alternative D Forecasted AADT



Source: Sain Associates, Traffic Forecast Study, 2016.

2.0 CORRIDOR LEVEL OF SERVICE ANALYSIS

To evaluate the effects of the project on traffic in the study area, a corridor-level traffic operations analysis (Level of Service or LOS) was conducted for the No-Build Alternative, Preferred Alternative, and Alternative D for the years 2020 and 2040. The purpose of the analysis was to determine the LOS of the project area road sections under the various scenarios identified in **Section 1.0**. Existing (2013) LOS was determined for comparison purposes. The analysis was conducted for Design Hour Volumes (DHV). The methodology and updated results for the corridor level traffic analysis are presented in the following subsections. **Section 3.0** follows with the updated results for the LOS at project area intersections.

2.1 Study Area Roadways

The following roadways were identified as either routes along proposed interchanges with an extension of Pellissippi Parkway or as routes currently used in lieu of the proposed Pellissippi Parkway Extension.

- East Broadway / Old Knoxville Highway (SR 33)
- US 411 (SR 35)
- Lamar Alexander Parkway (SR 73 / US 321)
- Alcoa Highway (SR 115 / US 129)
- Hall Road (SR 35)
- Washington Street (SR 35)
- Wildwood Road
- Sam Houston School Road
- Peppermint Road
- Hitch Road
- Helton Road

Each of these roadways has been evaluated for all analysis years to determine the effects of the proposed project on existing and future traffic operations in the vicinity of the project.

The proposed Relocated Alcoa Highway (RAH), which would extend east of the existing Alcoa Highway (SR 115 / US 129) generally between Cusick Road and south of the Blount / Knox County line, is included in this analysis. It is part of the 2020 and 2040 No-Build and Preferred Alternative analysis since it is included in the region's long range transportation plan, *Regional Mobility Plan 2040*, as a constrained roadway project for the period 2016-2019.

A concept for a Southern Loop was originally included in the 2035 Future Build Analysis for earlier iterations of the traffic analysis for this project. The Southern Loop is not

included in the *Regional Mobility Plan 2040* and therefore is not considered as part of the traffic operations analysis for this update.

2.2 Methodology

LOS is a qualitative measure of traffic conflicts, delay, driver discomfort, and congestion. LOS is described according to a letter rating system ranging from LOS A (free flow, minimal or no delays – best conditions) to LOS F (stop and go conditions, very long delays – worst conditions). There are several ways to estimate LOS depending on the type of facility. The analysis methodologies used for this study are described below.

Between the October 2011 and February 2014 updates to the project's traffic operations report, the Highway Capacity Software (HCS) underwent a substantial update to the operating system, which is based on the updates to the *Highway Capacity Manual 2010* (HCM 2010). The current version is HCS 2010, which replaces the HCS Plus version used for the 2011 analysis. Any comparisons to previous traffic operation evaluations from October 2011 or earlier should note that there are some differences in the analysis methodology and cannot be directly compared for a magnitude in change.

Two-Lane Highway Analysis

The HCS 2010 two-lane road analysis software module based on the HCM 2010 was used to evaluate two-lane highways (e.g., SR 33, US 411, Wildwood Road, Sam Houston School Road, Peppermint Road, Hitch Road, and Helton Road). For this method, there are three classes of roadways: Class I highways that include higher speed arterials and daily commuter routes; Class II highways that include lower speed collector roadways and roads primarily designed to provide access; and Class III highways that serve moderately developed areas. The two-lane roadways in this study area are either Class I or Class III; there are no identified Class II roadways in the study area.

As SR 33 and US 411 are major state and nationally designated routes in this section of Tennessee, they were assumed to be Class I highways.

As they currently exist, Wildwood Road, Sam Houston School Road, Peppermint Road, Hitch Road, and Helton Road, were assumed to be Class III highways based on their lower speeds limits (between 25 mph and 45 mph) and the fact that they are within a moderately developed area, including small towns and unincorporated communities.

LOS for Class I highways is based on the estimated average travel speeds and percent time vehicles spend following other vehicles. For Class II highways, LOS is based on the percent time vehicles spend following other vehicles only. For Class III highways, passing restrictions are not typically the main concern. Therefore, LOS is based on the percent of free-flow speed. The LOS criteria for two-lane highways is shown in **Table 1**.

Table 1: LOS Criteria for Two-Lane Highways

LOS	Class I Highways		Class II Highways	Class III Highways
	Percent Time Spent Following (%)	Average Travel Speed (mi/h)	Percent Time Spent Following (%)	Percent of Free Flow Speed (%)
A	≤ 35	>55	≤ 40	>91.7
B	>35 – 50	>50 – 55	>40 – 55	>83.3 – 91.7
C	>50 – 65	>45 – 50	>55 – 70	>75.0 – 83.3
D	>65 – 80	>40 – 45	>70 – 85	>66.7 – 75.0
E	>80	≤40	>85	≤66.7
F	LOS F applies whenever the flow rate exceeds the capacity*			

Source: *Highway Capacity Manual 2010*

*Capacity is 3,200 passenger cars per hour (pc/h) for the two-way flow rate

LOS D is the threshold for desirable traffic operations in this study. According to the *AASHTO-Geometric Design of Highways and Streets* reference manual, a LOS D threshold for freeways and arterials can be an appropriate threshold in developed areas. While the study area is not currently a heavily developed, urbanized area, substantial development pressures may be expected in the future due to the population growth occurring in Blount County. This also includes the consideration of on-going and future development such as the Pellissippi Place research and development park currently under construction east of SR 33 in the vicinity of the proposed Pellissippi Parkway Extension. Therefore, as most of the study area fits this criterion (or will in the foreseeable future) it is acceptable practice to use LOS D as the traffic operations threshold. LOS below this threshold (i.e., LOS E or F) is noted as undesirable and warranting improvement.

Multilane Highway Analysis

To analyze traffic operations for the four-lane or greater highway sections (US 129, SR 35, US 321, and the RAH) the HCS 2010 multilane analysis module was used. This is based on the HCM 2010 methodology. For each section, the estimated travel speed and the resulting LOS was calculated.

LOS for multilane highway sections is based on density in terms of passenger cars per mile per lane (pc/mi/ln) as shown in **Table 2**. Density is used to define LOS because it is an indicator of freedom to maneuver within the traffic stream and the proximity to other vehicles. Speed in terms of mean passenger-car speed and volume-to-capacity (v/c) ratios are interrelated with density and can be used to characterize a multilane highway segment.

Similar to the two-lane highway analysis, LOS D is the lowest threshold for desirable traffic operations used in this study. For multilane highways, LOS D corresponds to a density between 26 and 35 pc/mi/ln. Refer to the Chapter 14, Volume 2 of HCM 2010 for more specific information.

Table 2: LOS Criteria for Multilane Highways

LOS	Density Range (pc/mi/ln)
A	0 – 11
B	> 11 – 18
C	> 18 – 26
D	>26 – 35
E (55 mph)	> 35 – 41
E (45 mph)	> 35 – 45
F	Demand exceeds capacity*
F (55 mph)	> 41
F (45 mph)	> 45

Source: *Highway Capacity Manual 2010*
*Capacity depends on Free Flow Speed (FFS) & ranges from 1,900 to 2,200 pc/h/ln

Freeway Analysis

To analyze peak hour traffic operations for existing Pellissippi Parkway (I-140) and the proposed four-lane Pellissippi Parkway Extension (Preferred Alternative), the HCS 2010 Freeways analysis package, which is also based on the HCM 2010 methodology, was used. For each section, the estimated travel speed and the resulting LOS were calculated. LOS for freeway sections is also based on density similar to the ranges used for multilane highways (refer to **Table 2**). Again, LOS D is the threshold for desirable traffic operations used in this study. For freeways, a LOS D corresponds to a density between 26 and 35 passenger cars per mile per lane. (Refer to Chapter 11, Volume 2 of the HCM 2010 for more specific information.)

2.3 No-Build Corridor LOS Results

The 2013 average annual daily traffic volumes and forecasted traffic volumes (2020 and 2040) for the No-Build Alternative were provided as part of the 2013 *Traffic Forecast Study* prepared for this project by Sain Associates, Inc. Also included in the 2013 *Traffic Forecast Study* were truck percentages for all analysis years. Design Hour Volume (DHV) for highway segments were calculated using a K-factor¹ obtained from TDOT's Tennessee Roadway Information Management System (TRIMS) Blount County Traffic Database. Functional classification, median type, directional split, current lane widths, shoulder widths, percent passing, speed limit, and access points per mile were also obtained from TRIMS as well as from observations of roadways during field visits.

The RAH (also referred to as the proposed Alcoa Highway Bypass) is shown for the future years of 2020 and 2040. For RAH, several geometric assumptions were made based on initial design plans and the current operating characteristics of existing Alcoa Highway (US 129). These assumptions include an assumed K-factor of 0.100, a 55 mph posted speed, four access points per mile, three lanes per direction, and a 55/45 directional percentage split of traffic. The percent trucks were provided in the traffic forecast.

Generally, TRIMS provides most highway characteristics for the non-state-maintained roads of Sam Houston School Road, Peppermint Road, Hitch Road, and Helton Roads. Several assumptions were made for these roadways for the operational analysis including:

- Class III Roadway
- No passing zones
- Eight (8) access points per mile
- Zero (0) percent recreational vehicles

The calculated LOS for each highway segment is shown in **Tables 3** through **5** and on **Figures 4** through **6**. Sections with an associated speed less than 45 mph were not analyzed because the HCS 2010 software are not calculate a LOS if the free-flow speed (conservatively assumed to be the posted speed limit for the purpose of analysis) is less than 45 mph. Typically these sections are in an urbanized area where traffic signals

¹ The K-factor is used to compute design hour volumes (DHV) and is based on the 30th highest hourly volume of the year.

dictate the traffic operations. Therefore, to determine the operations along these sections please refer to the intersection traffic analysis provided in **Section 3.0** of this report.

The shading on the tables and figures indicates acceptable versus poor operating conditions. Green shading was used to indicate acceptable traffic operations (LOS D or better) with red used to indicate poor traffic operations (LOS E or F). Gray shading indicates that the LOS could not be calculated due to the inability of these software modules to determine the corridor LOS for urban streets with speeds less than 45 mph.

Table 3: 2013 Existing Corridor LOS

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2013 ADT	K-Factor	2013 DHV	Posted Speed Limit (mph)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
Wildwood Road	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 0.000	Reservoir Rd MP 1.309	1.31	2,460	0.110	271	45	2.0%	34.1	54.7	N/A	B
	2	Reservoir Rd MP 1.309	Sam Houston School Rd MP 2.650	1.34	3,250	0.110	358	45	2.0%	32.8	59.7	N/A	B
	3	Sam Houston School Rd MP 2.650	End of Study Area MP 4.740	2.09	1,230	0.110	135	45	2.0%	36.4	44.4	N/A	A
Pellissippi Parkway	1	Topside Rd MP 0.810	Alcoa Hwy (SR 115/US 129) MP 2.240	1.43	35,670	0.120	4280	60	7.0%	60.0	N/A	21.9	C
	2	Alcoa Hwy (SR 115/US 129) MP 2.240	Relocated Alcoa Highway MP 3.240	1.00	12,620	0.120	1514	60	5.0%	60.0	N/A	7.5	A
	3	Relocated Alcoa Highway MP 3.240	E. Broadway/Old Knoxville Hwy (SR 33) MP 4.710	1.47	12,620	0.130	1641	60	5.0%	60.0	N/A	8.2	A
Lamar Alexander Parkway (SR 73 / US 321)	3	E. Broadway/Old Knoxville Hwy (SR 33) MP 11.650	Jones Ave MP 12.526	0.87	24,510	0.100	2451	40	7.0%				
	4	Jones Ave MP 12.520	Merritt Rd MP 13.980	1.46	21,820	0.100	2182	50	4.0%	50.0	N/A	16.7	B
	5	Merritt Rd MP 13.980	Tuckaleechee Pk MP 17.020	3.04	17,610	0.100	1761	50	4.0%	50.0	N/A	12.6	B
	6	Tuckaleechee Pk MP 17.020	Melrose Station Rd MP 20.020	3.00	14,730	0.100	1473	55	5.0%	55.0	N/A	8.9	A
	7	Melrose Station Rd MP 20.020	Foothills Pkwy MP 22.400	2.38	9,500	0.100	950	55	5.0%	55.0	N/A	5.8	A
Hall Road (SR 35)	1	Alcoa Hwy (SR 115/US 129) MP 0.000	Bessemer St MP 1.520	1.52	19,200	0.110	2112	45	2.0%	45.0	N/A	15.0	B
	2	Bessemer St MP 1.520	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	1.07	26,690	0.100	2669	35	2.0%				
Washington Street (SR 35)	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	US 411 (SR 35) MP 2.820	0.23	25,540	0.100	2554	30	3.0%				
	2	US 411 (SR 35) MP 0.000	Lamar Alexander Pkwy (SR 73/US 321) MP 0.160	0.16	23,360	0.100	2336	30	2.0%				
US 411 (SR 35)	1	Washington St (SR 35) MP 2.820	S. Everett High Rd MP 3.690	0.87	11,560	0.100	1156	40	3.0%				
	2	S. Everett High Rd MP 3.690	Westfield Dr 4.527	0.84	7,540	0.100	754	45	4.0%	24.2	73.4	N/A	E
	3	Westfield Dr 4.527	Hitch Rd 7.254	2.73	7,130	0.110	784	45	7.0%	26.4	74.4	N/A	E
	4	Hitch Rd 7.254	End of Study Area 7.990	0.74	5,870	0.110	646	45	7.0%	27.2	71.3	N/A	E

Table 3: 2013 Existing Corridor LOS (cont.)

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2013 ADT	K-Factor	2013 DHV	Posted Speed Limit (mph)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
E. Broadway / Old Knoxville Highway (SR 33)	3	Hall Rd MP 12.340	Wildwood Rd MP 14.206	1.87	14,410	0.100	1441	30	2.0%				
	4	Wildwood Rd MP 14.206	Hunt Rd MP 15.470	1.26	13,750	0.100	1375	40	2.0%				
	5	Hunt Rd MP 15.470	Pellissippi Pky MP 15.920	0.45	16,070	0.110	1768	40	2.0%				
	6	Pellissippi Pky MP 15.920	Sam Houston School Rd MP 16.370	0.45	11,490	0.130	1494	40	2.0%				
	7	Sam Houston School Rd MP 16.370	County Line MP 20.660	4.29	6,230	0.140	872	50	4.0%	34.7	77.1	N/A	E
Alcoa Highway (SR 115 / US 129)	3	Louisville Rd (MP 13.020)	Hall Rd (SR 35) MP 14.280	1.26	37,780	0.110	4156	55	10.0%	54.8	N/A	27.1	D
	4	Hall Rd (SR 35) MP 14.280	Hunt Rd MP 15.020	0.74	54,660	0.110	6013	55	8.0%	51.3	N/A	40.9	E
	5	Hunt Rd MP 15.020	Cusick Rd MP 16.000	0.98	51,730	0.110	5690	50	8.0%	*	N/A	*	F
	6	Cusick Rd MP 16.000	Pellissippi Pky MP 17.660	2.64	53,000	0.110	5830	50	8.0%	*	N/A	*	F
	7	Pellissippi Pky MP 17.660	County Line MP 20.400	2.74	40,090	0.110	4410	55	8.0%	50.0	N/A	28.0	D
Sam Houston	1	SR 33 MP 0.000	Wildwood Rd MP 2.650	2.65	4,870	0.160	779	45	2.0%	31.1	72.1	N/A	C
Peppermint Road	1	Wildwood Rd MP 0.000	Sevierville Rd MP 1.100	1.10	3,040	0.130	395	35	2.0%	28.3	61.7	N/A	C
Hitch Road	1	Sevierville Rd MP 1.202	Davis Ford Rd MP 0.000	1.20	1,250	0.150	188	25	1.0%	26.4	48.6	N/A	B
Helton Road	1	Davis Ford Rd MP 0.875	Lamar Alexander Pkwy MP 0.000	0.88	330	0.150	50	25	1.0%	28.3	35.0	N/A	A

LOS A, B, C or D

LOS E or F

HCS 2010 Software cannot calculate LOS for segments with a speed less than 45 mph

This measure of effectiveness is not calculated based on the HCM methodology.

Exceeds operations parameters and cannot be calculated by the HCS software.

N/A

*

Table 4: 2020 No-Build Corridor LOS

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2020 ADT	K-Factor	2020 DHV	Posted Speed Limit (mph)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
Wildwood Road	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 0.000	Reservoir Rd MP 1.309	1.31	3,810	0.110	419	45	2.0%	32.4	64.0	N/A	C
	2	Reservoir Rd MP 1.309	Sam Houston School Rd MP 2.650	1.34	7,430	0.110	817	45	2.0%	30.2	74.2	N/A	C
	3	Sam Houston School Rd MP 2.650	End of Study Area MP 4.740	2.09	3,280	0.110	361	45	2.0%	32.8	60.1	N/A	B
Pellissippi Parkway	1	Topside Rd MP 0.810	Alcoa Hwy (SR 115/US 129) MP 2.240	1.43	46,450	0.120	5574	60	7.0%	59.8	N/A	28.6	D
	2	Alcoa Hwy (SR 115/US 129) MP 2.240	Relocated Alcoa Highway MP 3.240	1.00	20,110	0.120	2413	60	5.0%	60.0	N/A	12.0	B
	3	Relocated Alcoa Highway MP 3.240	E. Broadway/Old Knoxville Hwy (SR 33) MP 4.710	1.47	17,290	0.130	2248	60	5.0%	60.0	N/A	11.2	B
Lamar Alexander Parkway (SR 73 / US 321)	3	E. Broadway/Old Knoxville Hwy (SR 33) MP 11.650	Jones Ave MP 12.526	0.87	28,010	0.100	2801	40	7.0%				
	4	Jones Ave MP 12.520	Merritt Rd MP 13.980	1.46	26,730	0.100	2673	50	4.0%	50.0	N/A	20.4	C
	5	Merritt Rd MP 13.980	Tuckaleechee Pk MP 17.020	3.04	22,250	0.100	2225	50	4.0%	50.0	N/A	16.0	B
	6	Tuckaleechee Pk MP 17.020	Tuckaleechee Pk MP 17.320	0.30	22,660	0.100	2266	55	5.0%	55.0	N/A	13.8	B
	7	Tuckaleechee Pk MP 17.320	Melrose Station Rd MP 20.020	2.70	17,340	0.100	1734	55	5.0%	55.0	N/A	10.5	A
	8	Melrose Station Rd MP 20.020	Foothills Pkwy MP 22.400	2.38	10,130	0.100	1013	55	5.0%	55.0	N/A	6.1	A
Hall Road (SR 35)	1	Alcoa Hwy (SR 115/US 129) MP 0.000	Bessemer St MP 1.520	1.52	22,860	0.110	2515	45	2.0%	45.0	N/A	17.9	B
	2	Bessemer St MP 1.520	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	1.07	28,210	0.100	2821	35	2.0%				
Washington Street (SR 35)	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	US 411 (SR 35) MP 2.820	0.23	25,940	0.100	2594	30	3.0%				
	2	US 411 (SR 35) MP 0.000	Lamar Alexander Pkwy (SR 73/US 321) MP 0.160	0.16	23,930	0.100	2393	30	2.0%				
US 411 (SR 35)	1	Washington St (SR 35) MP 2.820	S. Everett High Rd MP 3.690	0.87	12,660	0.100	1266	40	3.0%				
	2	S. Everett High Rd MP 3.690	Westfield Dr 4.527	0.84	9,690	0.100	969	45	4.0%	22.8	79.7	N/A	E
	3	Westfield Dr 4.527	Hitch Rd 7.254	2.73	9,130	0.110	1004	45	7.0%	25.0	80.5	N/A	E
	4	Hitch Rd 7.254	End of Study Area 7.990	0.74	8,670	0.110	954	45	7.0%	25.3	79.2	N/A	E

Table 4: 2020 No-Build Corridor LOS (cont.)

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2020 ADT	K-Factor	2020 DHV	Posted Speed Limit (mph)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
E. Broadway / Old Knoxville Highway (SR 33)	3	Hall Rd MP 12.340	Wildwood Rd MP 14.206	1.87	15,640	0.100	1564	30	3.0%				
	4	Wildwood Rd MP 14.206	Hunt Rd MP 15.470	1.26	14,640	0.100	1464	40	3.0%				
	5	Hunt Rd MP 15.470	Pellissippi Pky MP 15.920	0.45	20,500	0.110	2255	40	4.0%				
	6	Pellissippi Pky MP 15.920	Sam Houston School Rd MP 16.370	0.45	13,880	0.130	1804	40	2.0%				
	7	Sam Houston School Rd MP 16.370	County Line MP 20.660	4.29	11,130	0.140	1558	50	2.0%	30.2	89.5	N/A	E
Alcoa Highway (SR 115 / US 129)	3	Louisville Rd (MP 13.020)	Hall Rd (SR 35) MP 14.280	1.26	43,300	0.110	4763	55	8.0%	53.7	N/A	31.7	D
	4	Hall Rd (SR 35) MP 14.280	Hunt Rd MP 15.020	0.74	62,650	0.110	6892	55	8.0%	*	N/A	*	F
	5	Hunt Rd MP 15.020	Relocated Alcoa Hwy MP 16.000	0.98	63,370	0.110	6971	50	8.0%	*	N/A	*	F
	6	Relocated Alcoa Hwy MP 16.000	Pellissippi Pky MP 17.660	2.64	54,300	0.110	5973	50	8.0%	*	N/A	*	F
	7	Pellissippi Pky MP 17.660	County Line MP 20.400	2.74	41,740	0.110	4591	55	8.0%	49.8	N/A	29.2	D
Sam Houston	1	SR 33 MP 0.000	Wildwood Rd MP 2.650	2.65	4,470	0.160	715	45	2.0%	31.5	70.0	N/A	C
Peppermint Road	1	Wildwood Rd MP 0.000	Sevierville Rd MP 1.100	1.10	3,340	0.130	434	35	2.0%	28.1	64.5	N/A	C
Hitch Road	1	Sevierville Rd MP 1.202	Davis Ford Rd MP 0.000	1.20	1,310	0.150	197	25	2.0%	26.2	20.6	N/A	B
Helton Road	1	Davis Ford Rd MP 0.875	Lamar Alexander Pkwy MP 0.000	0.88	270	0.150	41	25	2.0%	28.4	34.2	N/A	A
Relocated Alcoa Highway	1	Alcoa Highway (SR 115 / US 129)	Pellissippi Pky	Not Determined	27,190	0.100	2719	55	8.0%	50.0	N/A	11.3	B
	2	Pellissippi Pky	Alcoa Highway (SR 115 / US 129)	Not Determined	28,430	0.100	2843	55	8.0%	50.0	N/A	11.8	B

LOS A, B, C or D

LOS E or F

HCS 2010 Software cannot calculate LOS for segments with a speed less than 45 mph

This measure of effectiveness is not calculated based on the HCM methodology.

Exceeds operations parameters and cannot be calculated by the HCS software.

N/A

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Table 5: 2040 No-Build Corridor LOS

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2040 ADT	K-Factor	2040 DHV	Posted Speed Limit (mph)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
Wildwood Road	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 0.000	Reservoir Rd MP 1.309	1.31	7,640	0.110	840	45	2.0%	30.0	74.1	N/A	C
	2	Reservoir Rd MP 1.309	Sam Houston School Rd MP 2.650	1.34	17,870	0.110	1966	45	2.0%	21.6	94.4	N/A	E
	3	Sam Houston School Rd MP 2.650	End of Study Area MP 4.740	2.09	7,390	0.110	813	45	2.0%	30.2	74.2	N/A	C
Pellissippi Parkway	1	Topside Rd MP 0.810	Alcoa Hwy (SR 115/US 129) MP 2.240	1.43	67,480	0.120	8098	60	7.0%	45.7	N/A	54.3	F
	2	Alcoa Hwy (SR 115/US 129) MP 2.240	Relocated Alcoa Highway MP 3.240	1.00	40,850	0.120	4902	60	5.0%	60.0	N/A	24.4	C
	3	Relocated Alcoa Highway MP 3.240	E. Broadway/Old Knoxville Hwy (SR 33) MP 4.710	1.47	34,320	0.130	4462	60	5.0%	60.0	N/A	22.2	C
Lamar Alexander Parkway (SR 73 / US 321)	3	E. Broadway/Old Knoxville Hwy (SR 33) MP 11.650	Jones Ave MP 12.526	0.87	38,020	0.100	3802	40	7.0%				
	4	Jones Ave MP 12.520	Merritt Rd MP 13.980	1.46	39,020	0.100	3902	50	4.0%	49.7	N/A	30.0	D
	5	Merritt Rd MP 13.980	Tuckaleechee Pk MP 17.020	3.04	33,860	0.100	3386	50	4.0%	50.0	N/A	24.3	C
	6	Tuckaleechee Pk MP 17.020	Tuckaleechee Pk MP 17.320	0.30	33,110	0.100	3311	55	5.0%	55.0	N/A	20.1	C
	7	Tuckaleechee Pk MP 17.320	Melrose Station Rd MP 20.020	2.70	23,860	0.100	2386	55	5.0%	55.0	N/A	14.5	B
	8	Melrose Station Rd MP 20.020	Foothills Pkwy MP 22.400	2.38	11,650	0.100	1165	55	5.0%	55.0	N/A	7.1	A
Hall Road (SR 35)	1	Alcoa Hwy (SR 115/US 129) MP 0.000	Bessemer St MP 1.520	1.52	35,370	0.110	3891	45	2.0%	45.0	N/A	27.7	D
	2	Bessemer St MP 1.520	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	1.07	32,530	0.100	3253	35	2.0%				
Washington Street (SR 35)	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	US 411 (SR 35) MP 2.820	0.23	29,900	0.100	2990	30	3.0%				
	2	US 411 (SR 35) MP 0.000	Lamar Alexander Pkwy (SR 73/US 321) MP 0.160	0.16	25,570	0.100	2557	30	2.0%				
US 411 (SR 35)	1	Washington St (SR 35) MP 2.820	S. Everett High Rd MP 3.690	0.87	15,400	0.100	1540	40	3.0%				
	2	S. Everett High Rd MP 3.690	Westfield Dr 4.527	0.84	15,080	0.100	1508	45	4.0%	19.2	89.1	N/A	E
	3	Westfield Dr 4.527	Hitch Rd 7.254	2.73	14,140	0.110	1555	45	7.0%	21.1	89.2	N/A	E
	4	Hitch Rd 7.254	End of Study Area 7.990	0.74	15,670	0.110	1724	45	7.0%	19.9	91.3	N/A	E

Table 5: 2040 No-Build Corridor LOS (cont.)

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2040 ADT	K-Factor	2040 DHV	Posted Speed Limit (mph)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
E. Broadway / Old Knoxville Highway (SR 33)	3	Hall Rd MP 12.340	Wildwood Rd MP 14.206	1.87	19,130	0.100	1913	30	3.0%				
	4	Wildwood Rd MP 14.206	Hunt Rd MP 15.470	1.26	17,210	0.100	1721	40	3.0%				
	5	Hunt Rd MP 15.470	Pellissippi Pky MP 15.920	0.45	36,130	0.110	3974	40	4.0%				
	6	Pellissippi Pky MP 15.920	Sam Houston School Rd MP 16.370	0.45	19,240	0.130	2501	40	2.0%				
	7	Sam Houston School Rd MP 16.370	County Line MP 20.660	4.29	17,360	0.140	2430	50	2.0%	23.5	98.3	N/A	F
Alcoa Highway (SR 115 / US 129)	3	Louisville Rd (MP 13.020)	Hall Rd (SR 35) MP 14.280	1.26	61,380	0.110	6752	55	8.0%	*	N/A	*	F
	4	Hall Rd (SR 35) MP 14.280	Hunt Rd MP 15.020	0.74	88,800	0.110	9768	55	8.0%	*	N/A	*	F
	5	Hunt Rd MP 15.020	Relocated Alcoa Hwy MP 16.000	0.98	92,470	0.110	10172	50	8.0%	*	N/A	*	F
	6	Relocated Alcoa Hwy MP 16.000	Pellissippi Pky MP 17.660	2.64	44,950	0.110	4945	50	8.0%	43.4	N/A	39.6	E
	7	Pellissippi Pky MP 17.660	County Line MP 20.400	2.74	37,100	0.110	4081	55	8.0%	50.0	N/A	25.9	C
Sam Houston	1	SR 33 MP 0.000	Wildwood Rd MP 2.650	2.65	2,980	0.160	477	45	2.0%	32.8	66.5	N/A	C
Peppermint Road	1	Wildwood Rd MP 0.000	Sevierville Rd MP 1.100	1.10	3,060	0.130	398	35	2.0%	28.3	61.8	N/A	C
Hitch Road	1	Sevierville Rd MP 1.202	Davis Ford Rd MP 0.000	1.20	1,020	0.150	153	25	2.0%	26.9	45.8	N/A	B
Helton Road	1	Davis Ford Rd MP 0.875	Lamar Alexander Pkwy MP 0.000	0.88	200	0.150	30	25	2.0%	28.6	33.6	N/A	A
Relocated Alcoa Highway	1	Alcoa Highway (SR 115 / US 129)	Pellissippi Pky	Not Determined	37,520	0.100	3752	55	8.0%	50.0	N/A	15.6	B
	2	Pellissippi Pky	Alcoa Highway (SR 115 / US 129)	Not Determined	39,230	0.100	3923	55	8.0%	50.0	N/A	16.3	B

LOS A, B, C or D

LOS E or F

HCS 2010 Software cannot calculate LOS for segments with a speed less than 45 mph

This measure of effectiveness is not calculated based on the HCM methodology.

Exceeds operations parameters and cannot be calculated by the HCS software.

N/A

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Figure 4: 2013 Existing Corridor LOS

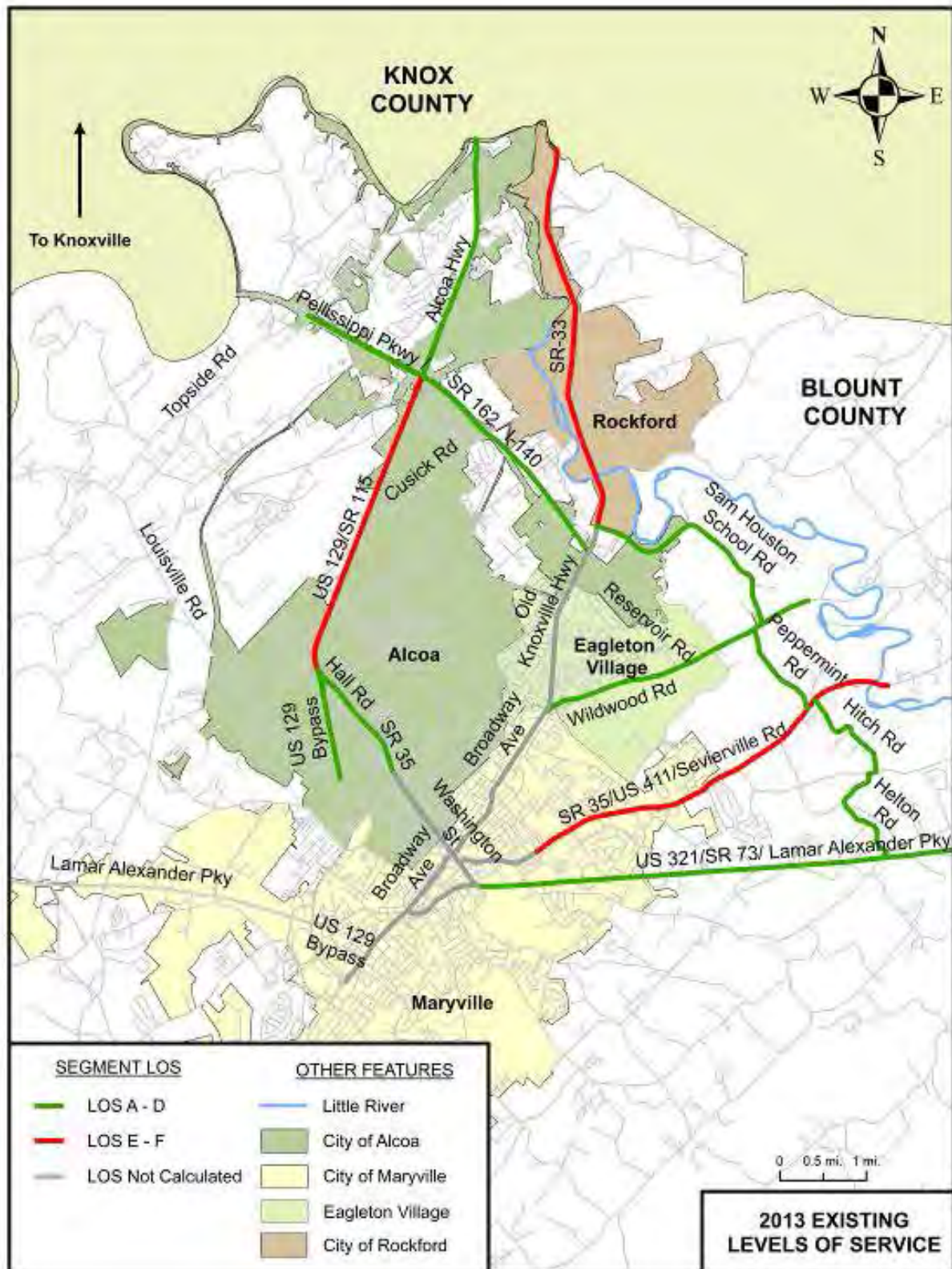


Figure 5: 2020 Corridor No-Build LOS

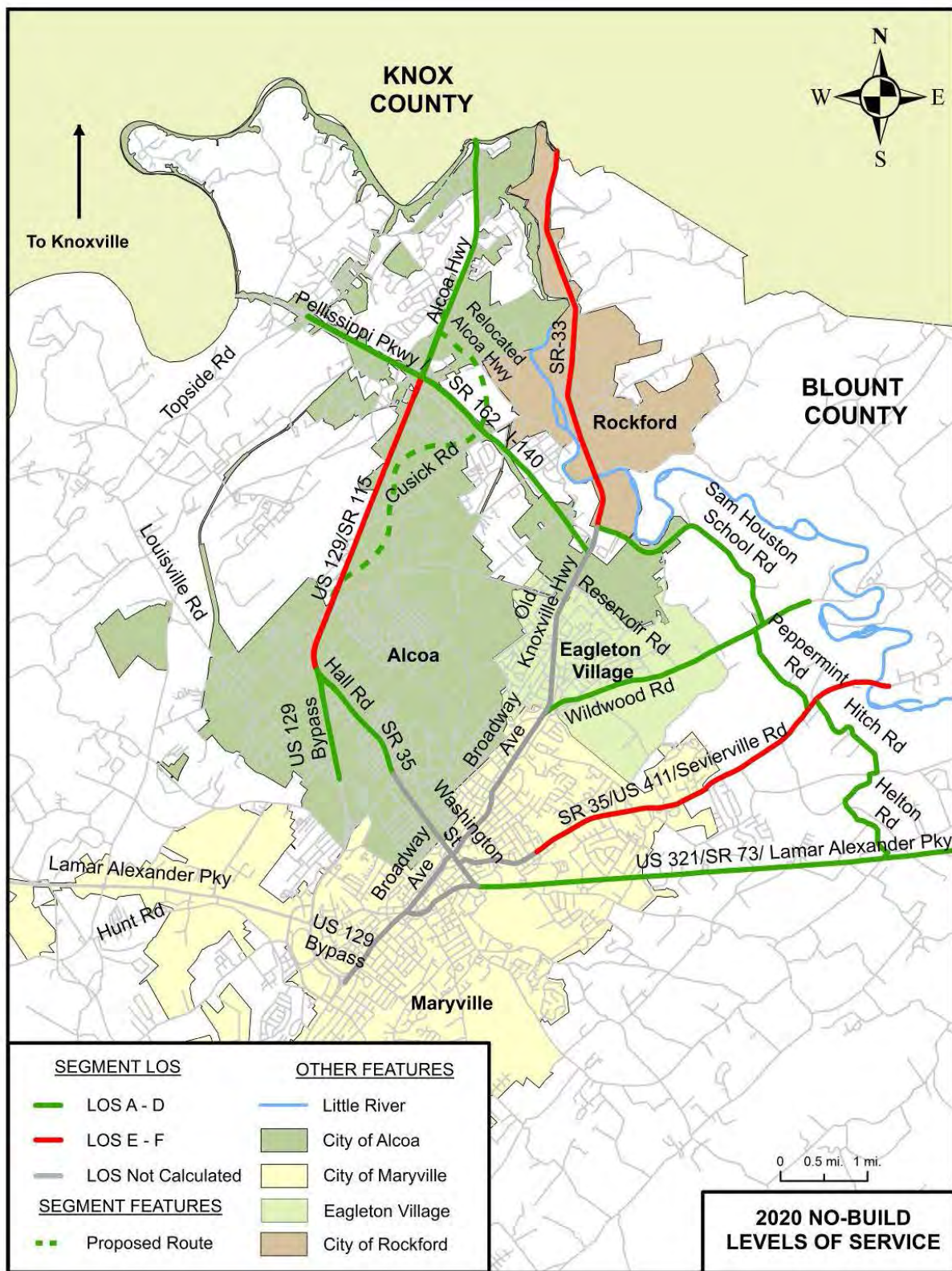
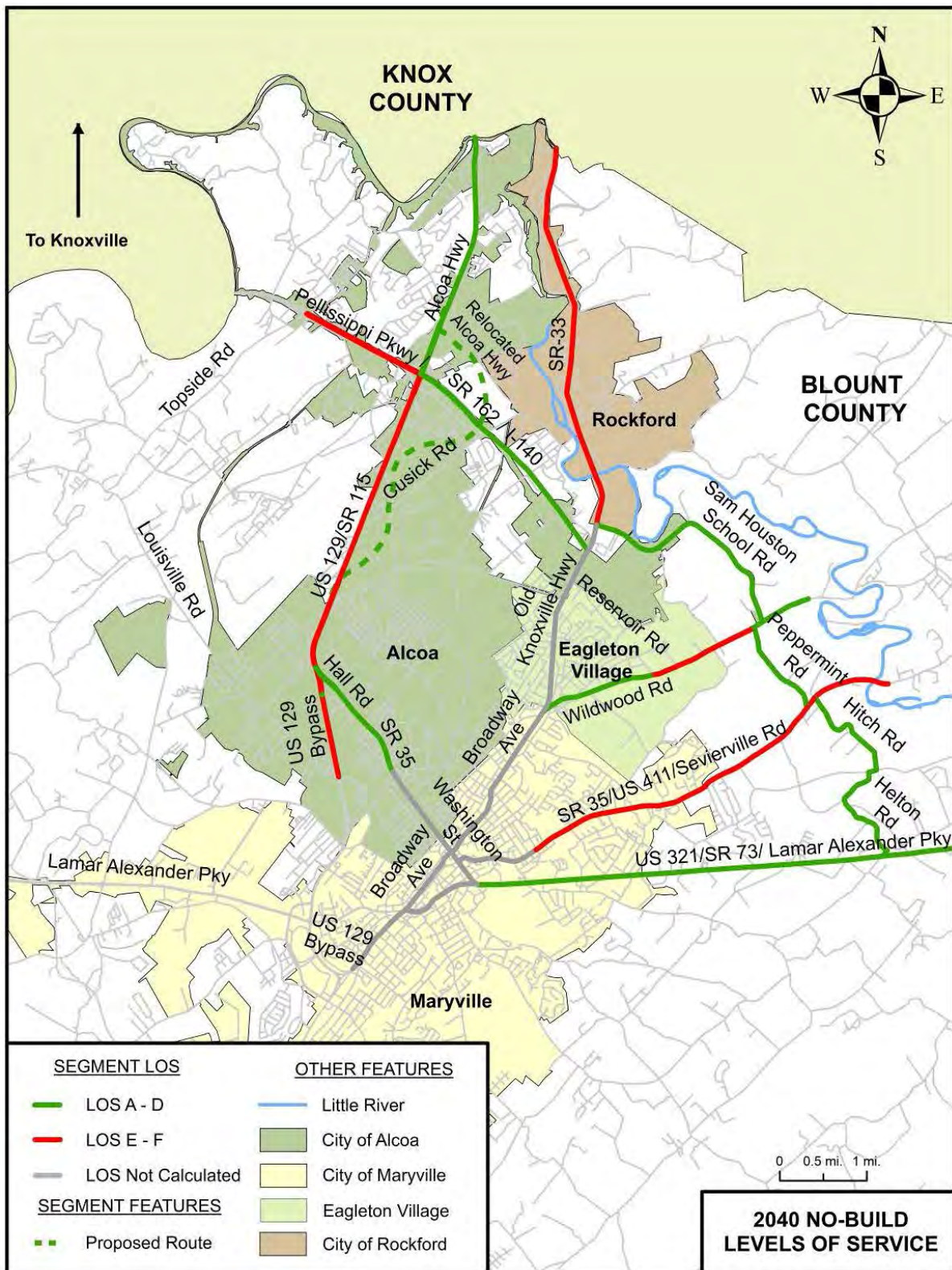


Figure 6: 2040 Corridor No-Build LOS



2.4 Preferred Alternative Corridor LOS Results

The forecasted Preferred Alternative traffic volumes (2020 and 2040) (from the 2013 *Traffic Forecast Study* prepared by Sain Associates, Inc.) were used to determine corridor LOS. To assist with comparison of operations, the traffic forecasts were updated by Sain Associates in February 2016 to include volumes for Sam Houston School Road, Peppermint Road, Hitch Road, and Helton Road.

The same methodology used to evaluate the No-Build analysis was used in the analysis of the Preferred Alternative.

Tables 6 and 7 and **Figures 7 and 8** show the resulting LOS for the Preferred Alternative.

Table 6: 2020 Preferred Alternative Corridor LOS

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2020 ADT	K-Factor	2020 DHV	Posted Speed Limit (mph)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
Wildwood Road	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 0.000	Reservoir Rd MP 1.309	1.31	3,680	0.110	405	45	2.0%	32.5	61.7	N/A	C
	2	Reservoir Rd MP 1.309	Sam Houston School Rd MP 2.650	1.34	4,500	0.110	495	45	2.0%	32.0	66.1	N/A	C
	3	Sam Houston School Rd MP 2.650	End of Study Area MP 4.740	2.09	3,020	0.110	332	45	2.0%	33.1	58.4	N/A	B
Pellissippi Parkway	1	Topside Rd MP 0.810	Alcoa Hwy (SR 115/US 129) MP 2.240	1.43	48,020	0.120	5762	60	7.0%	59.5	N/A	29.7	D
	2	Alcoa Hwy (SR 115/US 129) MP 2.240	Relocated Alcoa Highway MP 3.240	1.00	23,220	0.120	2786	60	5.0%	60.0	N/A	13.9	B
	3	Relocated Alcoa Highway MP 3.240	E. Broadway/Old Knoxville Hwy (SR 33) MP 4.710	1.47	25,400	0.130	3302	60	5.0%	60.0	N/A	16.4	B
	4	E. Broadway/Old Knoxville Hwy (SR 33) MP 4.710	US 411 (SR 35)	Not Determined	18,700	0.130	2431	60	2.0%	60.0	N/A	11.6	B
	5	US 411 (SR 35)	Lamar Alexander Pkwy (SR 73 / US 321)	Not Determined	18,220	0.130	2369	60	2.0%	60.0	N/A	11.3	B
Lamar Alexander Parkway (SR 73 / US 321)	3	E. Broadway/Old Knoxville Hwy (SR 33) MP 11.650	Jones Ave MP 12.526	0.87	26,600	0.100	2660	40	6.0%				
	4	Jones Ave MP 12.520	Merritt Rd MP 13.980	1.46	24,350	0.100	2435	50	3.0%	50.0	N/A	18.6	C
	5	Merritt Rd MP 13.980	Tuckaleechee Pk MP 17.020	3.04	19,050	0.100	1905	50	3.0%	50.0	N/A	13.7	B
	6	Tuckaleechee Pk MP 17.020	Tuckaleechee Pk MP 17.320	0.30	18,790	0.100	1879	55	4.0%	55.0	N/A	11.4	B
	7	Tuckaleechee Pk MP 17.320	Melrose Station Rd MP 20.020	2.70	18,570	0.100	1857	55	5.0%	55.0	N/A	11.3	B
	8	Melrose Station Rd MP 20.020	Foothills Pkwy MP 22.400	2.38	10,490	0.100	1049	55	5.0%	55.0	N/A	6.4	A
Hall Road (SR 35)	1	Alcoa Hwy (SR 115/US 129) MP 0.000	Bessemer St MP 1.520	1.52	22,010	0.110	2421	45	2.0%	45.0	N/A	17.2	B
	2	Bessemer St MP 1.520	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	1.07	24,480	0.100	2448	35	2.0%				
Washington Street (SR 35)	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	US 411 (SR 35) MP 2.820	0.23	21,950	0.100	2195	30	3.0%				
	2	US 411 (SR 35) MP 0.000	Lamar Alexander Pkwy (SR 73/US 321) MP 0.160	0.16	22,130	0.100	2213	30	2.0%				
US 411 (SR 35)	1	Washington St (SR 35) MP 2.820	S. Everett High Rd MP 3.690	0.87	12,190	0.100	1219	40	3.0%				
	2	S. Everett High Rd MP 3.690	Westfield Dr 4.527	0.84	9,680	0.100	968	45	3.0%	22.8	79.7	N/A	E
	3	Westfield Dr 4.527	Hitch Rd 7.254	2.73	9,680	0.110	1065	45	3.0%	24.6	82.0	N/A	E
	4	Hitch Rd 7.254	End of Study Area 7.990	0.74	10,700	0.110	1177	45	7.0%	23.9	84.0	N/A	E

Table 6: 2020 Preferred Alternative Corridor LOS (cont.)

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2020 ADT	K-Factor	2020 DHV	Posted Speed Limit (mph)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
E. Broadway / Old Knoxville Highway (SR 33)	3	Hall Rd MP 12.340	Wildwood Rd MP 14.206	1.87	15,640	0.100	1564	30	3.0%				
	4	Wildwood Rd MP 14.206	Hunt Rd MP 15.470	1.26	14,640	0.100	1464	40	3.0%				
	5	Hunt Rd MP 15.470	Pellissippi Pky MP 15.920	0.45	20,500	0.110	2255	40	4.0%				
	6	Pellissippi Pky MP 15.920	Sam Houston School Rd MP 16.370	0.45	13,880	0.130	1804	40	2.0%				
	7	Sam Houston School Rd MP 16.370	County Line MP 20.660	4.29	13,880	0.140	1943	50	2.0%	28.6	93.5	N/A	E
Alcoa Highway (SR 115 / US 129)	3	Louisville Rd (MP 13.020)	Hall Rd (SR 35) MP 14.280	1.26	43,300	0.110	4763	55	8.0%	53.7	N/A	31.7	D
	4	Hall Rd (SR 35) MP 14.280	Hunt Rd MP 15.020	0.74	62,650	0.110	6892	55	8.0%	*	N/A	*	F
	5	Hunt Rd MP 15.020	Relocated Alcoa Hwy MP 16.000	0.98	63,370	0.110	6971	50	8.0%	*	N/A	*	F
	6	Relocated Alcoa Hwy MP 16.000	Pellissippi Pky MP 17.660	2.64	54,300	0.110	5973	50	8.0%	*	N/A	*	F
	7	Pellissippi Pky MP 17.660	County Line MP 20.400	2.74	41,740	0.110	4591	55	8.0%	49.8	N/A	29.2	D
Sam Houston	1	SR 33 MP 0.000	Wildwood Rd MP 2.650	2.65	4,470	0.160	715	45	2.0%	31.5	70.0	N/A	C
Peppermint Road	1	Wildwood Rd MP 0.000	Sevierville Rd MP 1.100	1.10	3,340	0.130	434	35	2.0%	28.1	64.5	N/A	C
Hitch Road	1	Sevierville Rd MP 1.202	Davis Ford Rd MP 0.000	1.20	1,310	0.150	197	25	2.0%	26.2	20.6	N/A	B
Helton Road	1	Davis Ford Rd MP 0.875	Lamar Alexander Pkwy MP 0.000	0.88	270	0.150	41	25	2.0%	28.4	34.2	N/A	A
Relocated Alcoa Highway	1	Alcoa Highway (SR 115 / US 129)	Pellissippi Pky	Not Determined	27,190	0.100	2719	55	8.0%	50.0	N/A	11.3	B
	2	Pellissippi Pky	Alcoa Highway (SR 115 / US 129)	Not Determined	28,430	0.100	2843	55	8.0%	50.0	N/A	11.8	B

LOS A, B, C or D

LOS E or F

HCS 2010 Software cannot calculate LOS for segments with a speed less than 45 mph

This measure of effectiveness is not calculated based on the HCM methodology.

Exceeds operations parameters and cannot be calculated by the HCS software.

N/A

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Table 7: 2040 Preferred Alternative Corridor LOS

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2040 ADT	K-Factor	2040 DHV	Posted Speed Limit (mph)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
Wildwood Road	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 0.000	Reservoir Rd MP 1.309	1.31	7,180	0.110	790	45	2.0%	30.3	73.9	N/A	C
	2	Reservoir Rd MP 1.309	Sam Houston School Rd MP 2.650	1.34	7,630	0.110	839	45	2.0%	30.0	74.1	N/A	C
	3	Sam Houston School Rd MP 2.650	End of Study Area MP 4.740	2.09	6,600	0.110	726	45	2.0%	30.7	71.9	N/A	C
Pellissippi Parkway	1	Topside Rd MP 0.810	Alcoa Hwy (SR 115/US 129) MP 2.240	1.43	73,980	0.120	8878	60	7.0%	37.0	N/A	73.6	F
	2	Alcoa Hwy (SR 115/US 129) MP 2.240	Relocated Alcoa Highway MP 3.240	1.00	51,750	0.120	6210	60	5.0%	58.8	N/A	31.5	D
	3	Relocated Alcoa Highway MP 3.240	E. Broadway/Old Knoxville Hwy (SR 33) MP 4.710	1.47	55,330	0.130	7193	60	5.0%	54.5	N/A	39.4	E
	4	E. Broadway/Old Knoxville Hwy (SR 33) MP 4.710	US 411 (SR 35)	Not Determined	38,040	0.130	4945	60	2.0%	60.0	N/A	23.6	C
	5	US 411 (SR 35)	Lamar Alexander Pkwy (SR 73 / US 321)	Not Determined	25,240	0.130	3281	60	2.0%	60.0	N/A	15.6	B
Lamar Alexander Parkway (SR 73 / US 321)	3	E. Broadway/Old Knoxville Hwy (SR 33) MP 11.650	Jones Ave MP 12.526	0.87	32,580	0.100	3258	40	6.0%				
	4	Jones Ave MP 12.520	Merritt Rd MP 13.980	1.46	30,680	0.100	3068	50	3.0%	50.0	N/A	23.5	C
	5	Merritt Rd MP 13.980	Tuckaleechee Pk MP 17.020	3.04	28,120	0.100	2812	50	3.0%	50.0	N/A	20.2	C
	6	Tuckaleechee Pk MP 17.020	Tuckaleechee Pk MP 17.320	0.30	37,420	0.100	3742	55	4.0%	55.0	N/A	22.7	C
	7	Tuckaleechee Pk MP 17.320	Melrose Station Rd MP 20.020	2.70	28,160	0.100	2816	55	5.0%	55.0	N/A	17.1	B
	8	Melrose Station Rd MP 20.020	Foothills Pkwy MP 22.400	2.38	12,970	0.100	1297	55	5.0%	55.0	N/A	7.9	A
Hall Road (SR 35)	1	Alcoa Hwy (SR 115/US 129) MP 0.000	Bessemer St MP 1.520	1.52	31,200	0.110	3432	45	2.0%	45.0	N/A	24.4	C
	2	Bessemer St MP 1.520	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	1.07	23,930	0.100	2393	35	2.0%				
Washington Street (SR 35)	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	US 411 (SR 35) MP 2.820	0.23	20,130	0.100	2013	30	3.0%				
	2	US 411 (SR 35) MP 0.000	Lamar Alexander Pkwy (SR 73/US 321) MP 0.160	0.16	18,630	0.100	1863	30	2.0%				
US 411 (SR 35)	1	Washington St (SR 35) MP 2.820	S. Everett High Rd MP 3.690	0.87	13,780	0.100	1378	40	3.0%				
	2	S. Everett High Rd MP 3.690	Westfield Dr 4.527	0.84	14,800	0.100	1480	45	3.0%	19.4	88.6	N/A	E
	3	Westfield Dr 4.527	Hitch Rd 7.254	2.73	14,800	0.110	1628	45	3.0%	20.6	90.6	N/A	E
	4	Hitch Rd 7.254	End of Study Area 7.990	0.74	19,800	0.110	2178	45	7.0%	16.3	95.9	N/A	E

Table 7: 2040 Preferred Alternative Corridor LOS (cont.)

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2040 ADT	K-Factor	2040 DHV	Posted Speed Limit (mph)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
E. Broadway / Old Knoxville Highway (SR 33)	3	Hall Rd MP 12.340	Wildwood Rd MP 14.206	1.87	19,130	0.100	1913	30	3.0%				
	4	Wildwood Rd MP 14.206	Hunt Rd MP 15.470	1.26	17,210	0.100	1721	40	3.0%				
	5	Hunt Rd MP 15.470	Pellissippi Pky MP 15.920	0.45	36,130	0.110	3974	40	4.0%				
	6	Pellissippi Pky MP 15.920	Sam Houston School Rd MP 16.370	0.45	19,240	0.130	2501	40	2.0%				
	7	Sam Houston School Rd MP 16.370	County Line MP 20.660	4.29	17,360	0.140	2430	50	2.0%	23.5	98.3	N/A	F
Alcoa Highway (SR 115 / US 129)	3	Louisville Rd (MP 13.020)	Hall Rd (SR 35) MP 14.280	1.26	61,380	0.110	6752	55	8.0%	*	N/A	*	F
	4	Hall Rd (SR 35) MP 14.280	Hunt Rd MP 15.020	0.74	88,800	0.110	9768	55	8.0%	*	N/A	*	F
	5	Hunt Rd MP 15.020	Relocated Alcoa Hwy MP 16.000	0.98	92,470	0.110	10172	50	8.0%	*	N/A	*	F
	6	Relocated Alcoa Hwy MP 16.000	Pellissippi Pky MP 17.660	2.64	44,950	0.110	4945	50	8.0%	43.4	N/A	39.6	E
	7	Pellissippi Pky MP 17.660	County Line MP 20.400	2.74	37,100	0.110	4081	55	8.0%	50.0	N/A	25.9	C
Sam Houston	1	SR 33 MP 0.000	Wildwood Rd MP 2.650	2.65	2,980	0.160	477	45	2.0%	32.8	66.5	N/A	C
Peppermint Road	1	Wildwood Rd MP 0.000	Sevierville Rd MP 1.100	1.10	3,060	0.130	398	35	2.0%	28.3	61.8	N/A	C
Hitch Road	1	Sevierville Rd MP 1.202	Davis Ford Rd MP 0.000	1.20	1,020	0.150	153	25	2.0%	26.9	45.8	N/A	B
Helton Road	1	Davis Ford Rd MP 0.875	Lamar Alexander Pkwy MP 0.000	0.88	200	0.150	30	25	2.0%	28.6	33.6	N/A	A
Relocated Alcoa Highway	1	Alcoa Highway (SR 115 / US 129)	Pellissippi Pky	Not Determined	37,520	0.100	3752	55	8.0%	50.0	N/A	15.6	B
	2	Pellissippi Pky	Alcoa Highway (SR 115 / US 129)	Not Determined	39,230	0.100	3923	55	8.0%	50.0	N/A	16.3	B

LOS A, B, C or D

LOS E or F

HCS 2010 Software cannot calculate LOS for segments with a speed less than 45 mph

This measure of effectiveness is not calculated based on the HCM methodology.

Exceeds operations parameters and cannot be calculated by the HCS software.

N/A

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Figure 7: 2020 Preferred Alternative Corridor LOS

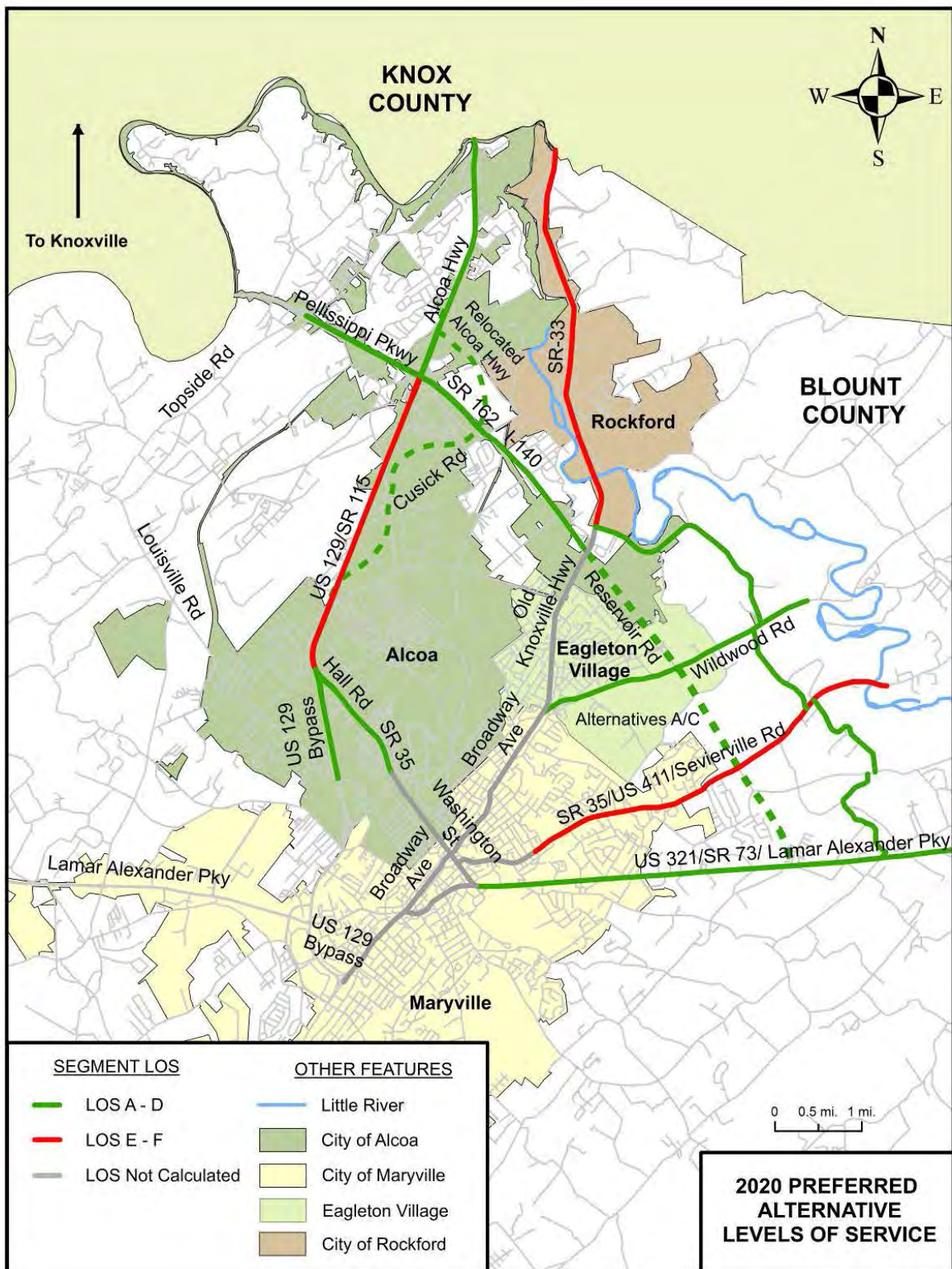
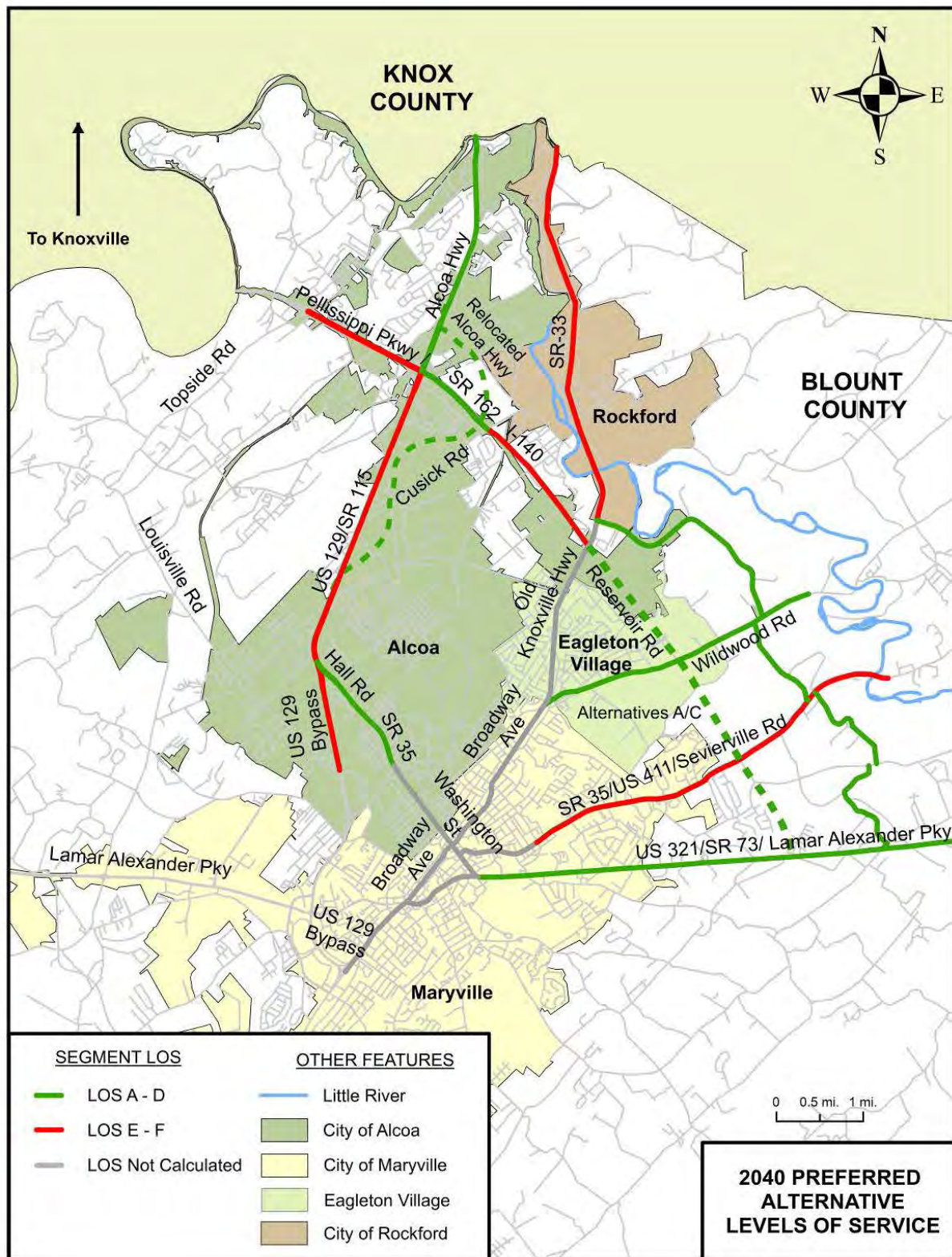


Figure 8: 2040 Preferred Alternative Corridor LOS



2.5 Alternative D Corridor LOS Results

The forecasted traffic volumes for Alternative D (prepared by Sain Associates, Inc., February 2016) were used to determine corridor LOS. The same methodology used for the No-Build and Preferred Alternative analysis (described in **Section 2.2**) was applied to the analysis of Alternative D. For reference, Alternative D is an improved two-lane highway, generally following the existing local routes of Sam Houston School Road, Peppermint Road, Hitch Road, and Helton Road but with some areas on new locations.

The 2011 and 2014 corridor-level analyses for Alternative D only included the four local routes as part of the analysis; traffic operations on the other project area roadways were assumed to be similar to the No-Build Alternative. The analysis assumed that Alternative D would not substantially reduced volumes on existing routes given that Alternative D was projected to operate at or over capacity in 2020 and 2040. Based on public comments received on the FEIS, TDOT and FHWA determined that the traffic analysis for Alternative D should be expanded to the same level of detail as the No-Build Alternative and Preferred Alternative.

Tables 8 and 9 and **Figures 9 and 10** show the resulting LOS for Alternative D.

Table 8: 2020 Alternative D Corridor LOS

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2020 ADT	K-Factor	2020 DHV	Posted Speed Limit (mph)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
Wildwood Road	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 0.000	Reservoir Rd MP 1.309	1.31	3,910	0.110	430	45	2.0%	32.4	64.4	N/A	C
	2	Reservoir Rd MP 1.309	Sam Houston School Rd MP 2.650	1.34	5,610	0.110	617	45	2.0%	31.3	68.4	N/A	C
	3	Sam Houston School Rd MP 2.650	End of Study Area MP 4.740	2.09	3,320	0.110	365	45	3.0%	32.7	60.4	N/A	C
Pellissippi Parkway	1	Topside Rd MP 0.810	Alcoa Hwy (SR 115/US 129) MP 2.240	1.43	48,000	0.120	5760	60	7.0%	59.5	N/A	29.7	D
	2	Alcoa Hwy (SR 115/US 129) MP 2.240	Relocated Alcoa Highway MP 3.240	1.00	20,360	0.120	2443	60	5.0%	60.0	N/A	12.2	B
	3	Relocated Alcoa Highway MP 3.240	E. Broadway/Old Knoxville Hwy (SR 33) MP 4.710	1.47	18,400	0.130	2392	60	5.0%	60.0	N/A	11.9	B
Lamar Alexander Parkway (SR 73 / US 321)	3	E. Broadway/Old Knoxville Hwy (SR 33) MP 11.650	Jones Ave MP 12.526	0.87	27,530	0.100	2753	40	7.0%				
	4	Jones Ave MP 12.520	Merritt Rd MP 13.980	1.46	25,830	0.100	2583	50	4.0%	50.0	N/A	19.8	C
	5	Merritt Rd MP 13.980	Tuckaleechee Pk MP 17.020	3.04	18,970	0.100	1897	50	4.0%	50.0	N/A	13.6	B
	6	Tuckaleechee Pk MP 17.020	Tuckaleechee Pk MP 17.320	0.30	23,550	0.100	2355	55	5.0%	55.0	N/A	14.3	B
	7	Tuckaleechee Pk MP 17.320	Melrose Station Rd MP 20.020	2.70	18,190	0.100	1819	55	5.0%	55.0	N/A	10.9	A
	8	Melrose Station Rd MP 20.020	Foothills Pkwy MP 22.400	2.38	10,280	0.100	1028	55	5.0%	55.0	N/A	6.2	A
Hall Road (SR 35)	1	Alcoa Hwy (SR 115/US 129) MP 0.000	Bessemer St MP 1.520	1.52	22,400	0.110	2464	45	2.0%	45.0	N/A	17.5	B
	2	Bessemer St MP 1.520	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	1.07	27,640	0.100	2764	35	2.0%				
Washington Street (SR 35)	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	US 411 (SR 35) MP 2.820	0.23	25,410	0.100	2541	30	3.0%				
	2	US 411 (SR 35) MP 0.000	Lamar Alexander Pkwy (SR 73/US 321) MP 0.160	0.16	23,380	0.100	2338	30	2.0%				
US 411 (SR 35)	1	Washington St (SR 35) MP 2.820	S. Everett High Rd MP 3.690	0.87	12,580	0.100	1258	40	3.0%				
	2	S. Everett High Rd MP 3.690	Westfield Dr 4.527	0.84	9,730	0.100	973	45	4.0%	22.8	79.5	N/A	E
	3	Westfield Dr 4.527	Hitch Rd 7.254	2.73	8,710	0.110	958	45	7.0%	25.3	79.0	N/A	E
	4	Hitch Rd 7.254	End of Study Area 7.990	0.74	8,910	0.110	980	45	7.0%	25.1	80.5	N/A	E

Table 8: 2020 Alternative D Corridor LOS (cont.)

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2020 ADT	K-Factor	2020 DHV	Posted Speed Limit (mph)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
E. Broadway / Old Knoxville Highway (SR 33)	3	Hall Rd MP 12.340	Wildwood Rd MP 14.206	1.87	16,770	0.100	1677	30	2.0%				
	4	Wildwood Rd MP 14.206	Hunt Rd MP 15.470	1.26	15,720	0.100	1572	40	2.0%				
	5	Hunt Rd MP 15.470	Pellissippi Pky MP 15.920	0.45	20,270	0.110	2230	40	2.0%				
	6	Pellissippi Pky MP 15.920	Sam Houston School Rd MP 16.370	0.45	16,950	0.130	2204	40	2.0%				
	7	Sam Houston School Rd MP 16.370	County Line MP 20.660	4.29	8,150	0.140	1141	50	4.0%	33.0	84.4	N/A	E
Alcoa Highway (SR 115 / US 129)	3	Louisville Rd (MP 13.020)	Hall Rd (SR 35) MP 14.280	1.26	43,080	0.110	4739	55	10.0%	53.8	N/A	31.5	D
	4	Hall Rd (SR 35) MP 14.280	Hunt Rd MP 15.020	0.74	63,040	0.110	6934	55	8.0%	*	N/A	*	F
	5	Hunt Rd MP 15.020	Relocated Alcoa Hwy MP 16.000	0.98	63,800	0.110	7018	50	8.0%	*	N/A	*	F
	6	Relocated Alcoa Hwy MP 16.000	Pellissippi Pky MP 17.660	2.64	55,610	0.110	6117	50	8.0%	*	N/A	*	F
	7	Pellissippi Pky MP 17.660	County Line MP 20.400	2.74	42,430	0.110	4667	55	8.0%	49.8	N/A	29.7	D
Sam Houston	1	SR 33 MP 0.000	Wildwood Rd MP 2.650	2.65	9,340	0.160	1494	50	2.0%	33.9	88.1	N/A	E
Peppermint Road	1	Wildwood Rd MP 0.000	Sevierville Rd MP 1.100	1.10	9,620	0.130	1251	50	2.0%	35.6	83.9	N/A	E
Hitch Road	1	Sevierville Rd MP 1.202	Davis Ford Rd MP 0.000	1.20	6,360	0.150	954	50	2.0%	37.6	77.4	N/A	E
Helton Road	1	Davis Ford Rd MP 0.875	Lamar Alexander Pkwy MP 0.000	0.88	6,360	0.150	954	50	2.0%	37.6	77.4	N/A	E
Relocated Alcoa Highway	1	Alcoa Highway (SR 115 / US 129)	Pellissippi Pky	Not Determined	30,250	0.100	3025	55	8.0%	50.0	N/A	12.5	B
	2	Pellissippi Pky	Alcoa Highway (SR 115 / US 129)	Not Determined	28,570	0.100	2857	55	8.0%	50.0	N/A	11.8	B

LOS A, B, C or D

LOS E or F

HCS 2010 Software cannot calculate LOS for segments with a speed less than 45 mph

This measure of effectiveness is not calculated based on the HCM methodology.

Exceeds operations parameters and cannot be calculated by the HCS software.

N/A

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Table 9: 2040 Alternative D Corridor LOS

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2040 ADT	K-Factor	2040 DHV	Posted Speed Limit (mph)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
Wildwood Road	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 0.000	Reservoir Rd MP 1.309	1.31	8,080	0.110	889	45	2.0%	29.7	75.6	N/A	C
	2	Reservoir Rd MP 1.309	Sam Houston School Rd MP 2.650	1.34	10,120	0.110	1113	45	2.0%	28.2	81.4	N/A	D
	3	Sam Houston School Rd MP 2.650	End of Study Area MP 4.740	2.09	7,490	0.110	824	45	3.0%	30.1	74.1	N/A	C
Pellissippi Parkway	1	Topside Rd MP 0.810	Alcoa Hwy (SR 115/US 129) MP 2.240	1.43	69,700	0.120	8364	60	7.0%	43.0	N/A	59.7	F
	2	Alcoa Hwy (SR 115/US 129) MP 2.240	Relocated Alcoa Highway MP 3.240	1.00	43,460	0.120	5215	60	5.0%	60.0	N/A	26.0	C
	3	Relocated Alcoa Highway MP 3.240	E. Broadway/Old Knoxville Hwy (SR 33) MP 4.710	1.47	38,070	0.130	4949	60	5.0%	60.0	N/A	24.6	C
Lamar Alexander Parkway (SR 73 / US 321)	3	E. Broadway/Old Knoxville Hwy (SR 33) MP 11.650	Jones Ave MP 12.526	0.87	36,160	0.100	3616	40	7.0%				
	4	Jones Ave MP 12.520	Merritt Rd MP 13.980	1.46	35,850	0.100	3585	50	4.0%	50.0	N/A	27.4	D
	5	Merritt Rd MP 13.980	Tuckaleechee Pk MP 17.020	3.04	26,090	0.100	2609	50	4.0%	50.0	N/A	18.7	C
	6	Tuckaleechee Pk MP 17.020	Tuckaleechee Pk MP 17.320	0.30	36,220	0.100	3622	55	5.0%	55.0	N/A	22.0	C
	7	Tuckaleechee Pk MP 17.320	Melrose Station Rd MP 20.020	2.70	26,850	0.100	2685	55	5.0%	55.0	N/A	16.0	B
	8	Melrose Station Rd MP 20.020	Foothills Pkwy MP 22.400	2.38	12,120	0.100	1212	55	5.0%	55.0	N/A	7.4	A
Hall Road (SR 35)	1	Alcoa Hwy (SR 115/US 129) MP 0.000	Bessemer St MP 1.520	1.52	33,570	0.110	3693	45	2.0%	45.0	N/A	30.0	D
	2	Bessemer St MP 1.520	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	1.07	30,380	0.100	3038	35	2.0%				
Washington Street (SR 35)	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	US 411 (SR 35) MP 2.820	0.23	27,920	0.100	2792	30	3.0%				
	2	US 411 (SR 35) MP 0.000	Lamar Alexander Pkwy (SR 73/US 321) MP 0.160	0.16	23,420	0.100	2342	30	2.0%				
US 411 (SR 35)	1	Washington St (SR 35) MP 2.820	S. Everett High Rd MP 3.690	0.87	15,110	0.100	1511	40	3.0%				
	2	S. Everett High Rd MP 3.690	Westfield Dr 4.527	0.84	15,190	0.100	1519	45	4.0%	19.1	89.3	N/A	E
	3	Westfield Dr 4.527	Hitch Rd 7.254	2.73	11,450	0.110	1260	45	7.0%	23.3	85.2	N/A	E
	4	Hitch Rd 7.254	End of Study Area 7.990	0.74	13,020	0.110	1432	45	7.0%	22.1	88.0	N/A	E

Table 9: 2040 Alternative D Corridor LOS (cont.)

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2040 ADT	K-Factor	2040 DHV	Posted Speed Limit (mph)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
E. Broadway / Old Knoxville Highway (SR 33)	3	Hall Rd MP 12.340	Wildwood Rd MP 14.206	1.87	20,570	0.100	2057	30	2.0%				
	4	Wildwood Rd MP 14.206	Hunt Rd MP 15.470	1.26	18,410	0.100	1841	40	2.0%				
	5	Hunt Rd MP 15.470	Pellissippi Pky MP 15.920	0.45	31,110	0.110	3422	40	2.0%				
	6	Pellissippi Pky MP 15.920	Sam Houston School Rd MP 16.370	0.45	27,600	0.130	3588	40	2.0%				
	7	Sam Houston School Rd MP 16.370	County Line MP 20.660	4.29	12,940	0.140	1812	50	4.0%	28.2	92.8	N/A	E
Alcoa Highway (SR 115 / US 129)	3	Louisville Rd (MP 13.020)	Hall Rd (SR 35) MP 14.280	1.26	61,270	0.110	6740	55	10.0%	*	N/A	*	F
	4	Hall Rd (SR 35) MP 14.280	Hunt Rd MP 15.020	0.74	91,780	0.110	10096	55	8.0%	*	N/A	*	F
	5	Hunt Rd MP 15.020	Relocated Alcoa Hwy MP 16.000	0.98	94,000	0.110	10340	50	8.0%	*	N/A	*	F
	6	Relocated Alcoa Hwy MP 16.000	Pellissippi Pky MP 17.660	2.64	46,240	0.110	5086	50	8.0%	43.1	N/A	41.1	E
	7	Pellissippi Pky MP 17.660	County Line MP 20.400	2.74	37,180	0.110	4090	55	8.0%	50.0	N/A	25.9	C
Sam Houston	1	SR 33 MP 0.000	Wildwood Rd MP 2.650	2.65	16,800	0.160	2688	50	2.0%	24.2	100.0	N/A	F
Peppermint Road	1	Wildwood Rd MP 0.000	Sevierville Rd MP 1.100	1.10	20,580	0.130	2675	50	2.0%	24.3	100.0	N/A	F
Hitch Road	1	Sevierville Rd MP 1.202	Davis Ford Rd MP 0.000	1.20	14,890	0.150	2234	50	2.0%	28.0	96.4	N/A	E
Helton Road	1	Davis Ford Rd MP 0.875	Lamar Alexander Pkwy MP 0.000	0.88	14,890	0.150	2234	50	2.0%	28.0	96.4	N/A	E
Relocated Alcoa Highway	1	Alcoa Highway (SR 115 / US 129)	Pellissippi Pky	Not Determined	37,280	0.100	3728	55	8.0%	50.0	N/A	15.5	B
	2	Pellissippi Pky	Alcoa Highway (SR 115 / US 129)	Not Determined	35,210	0.100	3521	55	8.0%	50.0	N/A	14.6	B

LOS A, B, C or D

LOS E or F

HCS 2010 Software cannot calculate LOS for segments with a speed less than 45 mph

This measure of effectiveness is not calculated based on the HCM methodology.

Exceeds operations parameters and cannot be calculated by the HCS software.

N/A

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Figure 9: 2020 Alternative D Corridor LOS

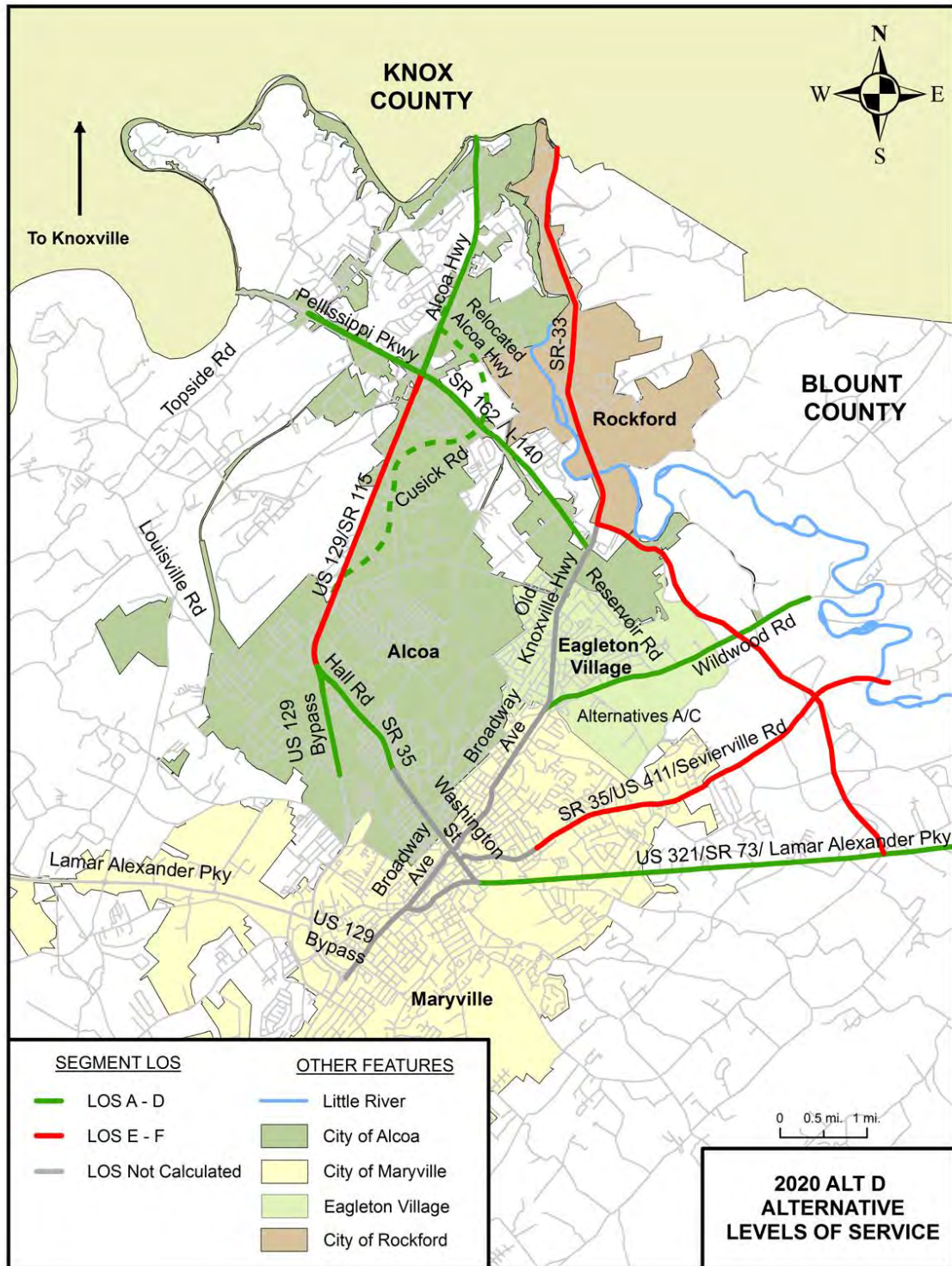
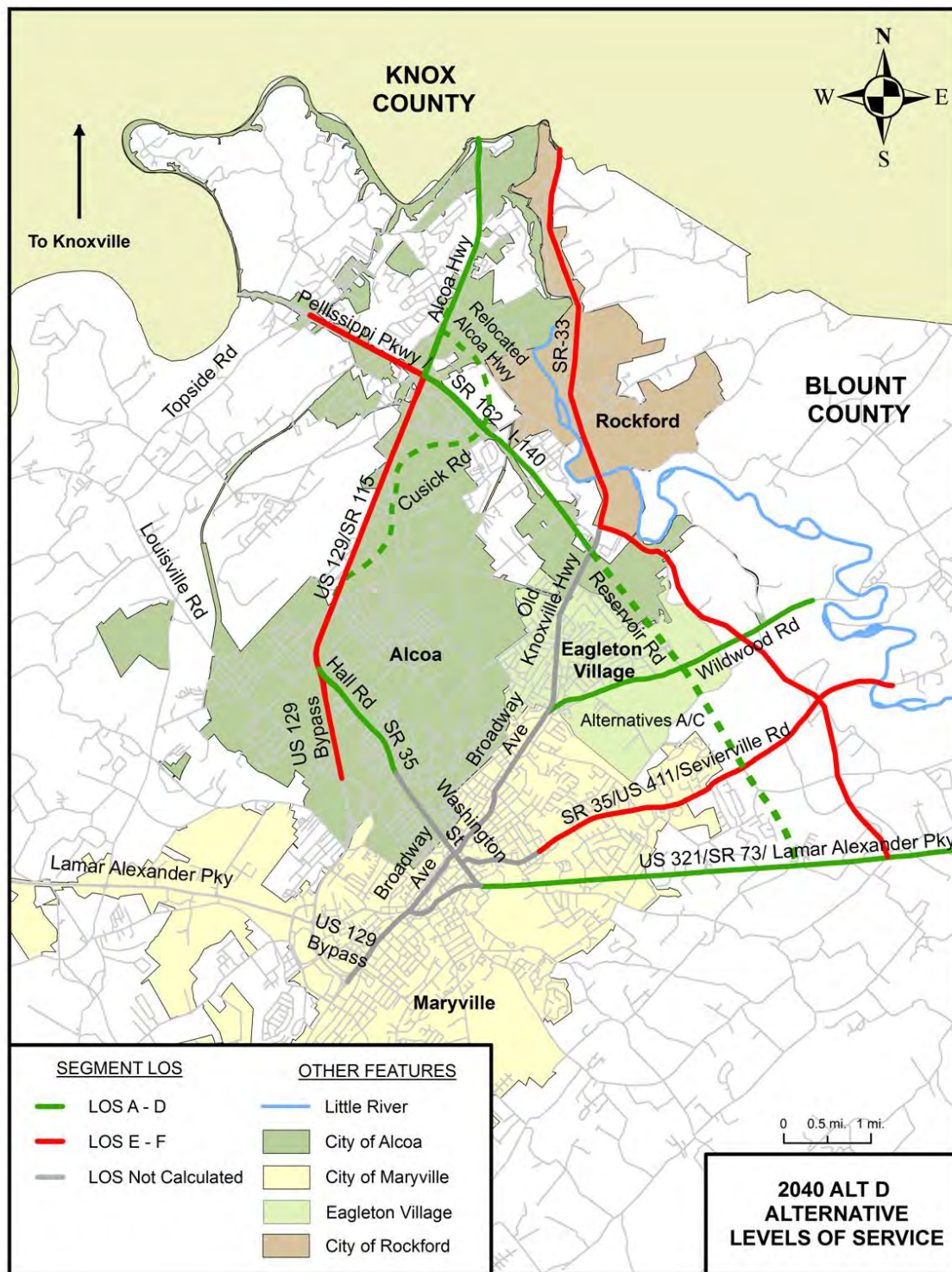


Figure 10: 2040 Alternative D Corridor LOS



2.6 Summary of Corridor LOS Results

The following tables present a comparative summary of the No-Build, Preferred Alternative, and Alternative D. **Table 10** lists the LOS for sections of existing and proposed Pellissippi Parkway (SR 162) under the No-Build Alternative, Preferred Alternative and Alternative D. **Table 11** lists the corresponding LOS for the other study area roadways for the three evaluation scenarios.

Table 10: Basic Freeway Corridor LOS Summary

Route	Section	Begin Milepoint	End Milepoint	2013 Existing	2020 No-Build	2040 No-Build	2020 Preferred Alternative	2040 Preferred Alternative	2020 Alternative D	2040 Alternative D
Pellissippi Parkway	1	Topside Rd	Alcoa Hwy (SR 115/US 129)	C	D	F	D	F	D	F
	2	Alcoa Hwy (SR 115/US 129)	Relocated Alcoa Hwy	A	B	C	B	D	B	C
	3	Relocated Alcoa Hwy	E. Broadway / Old Knoxville Hwy (SR 33)	A	B	C	B	E	B	C
	4	E. Broadway/Old Knoxville Hwy (SR 33)	US 411 (SR 35)	N/A	N/A	N/A	B	C	N/A	N/A
	5	US 411 (SR 35)	Lamar Alexander Pkwy (SR 73/US 321)	N/A	N/A	N/A	B	B	N/A	N/A

LOS A, B, C or D

LOS E or F

HCS 2010 Software cannot calculate LOS for segments with a speed less than 45 mph

N/A

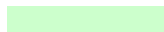
The Preferred Alternative would not be constructed for these segments under the existing, No-Build Alternative and Alternative D scenarios; thus no LOS could be determined.

Table 11: Study Area Highways Corridor LOS Summary

Route	Section	Begin Milepoint	End Milepoint	2013 Existing	2020 No-Build	2040 No-Build	2020 Preferred Alternative	2040 Preferred Alternative	2020 Alternative D	2040 Alternative D
Wildwood Road	1	E. Broadway / Old Knoxville Hwy (SR 33)	Reservoir Rd	B	C	C	C	C	C	C
	2	Reservoir Rd	Sam Houston School Rd	B	C	E	C	C	C	C
	3	Sam Houston School Rd	End of Study Area	A	B	C	B	C	C	C
Lamar Alexander Parkway (SR 73 / US 321)	3	E. Broadway / Old Knoxville Hwy (SR 33)	Jones Ave							
	4	Jones Ave	Meritt Rd	B	C	D	C	C	C	D
	5	Meritt Rd	Tuckaleechee Pk	B	B	C	B	C	B	C
	6	Tuckaleechee Pk	Tuckaleechee Pk	A	B	C	B	D	B	C
	7	Tuckaleechee Pk	Melrose Station Rd	A	A	B	B	B	A	B
	8	Melrose Station Rd	Foothills Pkwy	A	A	A	A	A	A	A
Hall Road (SR 35)	1	Alcoa Hwy (SR 115 / US 129)	Bessemer St	B	B	D	B	C	B	D
	2	Bessemer St	E. Broadway / Old Knoxville Hwy (SR 33)							
Washington Street (SR 35)	1	E. Broadway / Old Knoxville Hwy (SR 33)	US 411 (SR 35)							
	2	US 411 (SR 35)	Lamar Alexander Pkwy (SR 73 / US 321)							
US 411 (SR 35)	1	Washington St (SR 35)	S. Everett High Rd							
	2	S. Everett High Rd	Westfield Dr	E	E	E	E	E	E	E
	3	Westfield Dr	Hitch Rd	E	E	E	E	E	E	E
	4	Hitch Rd	End of Study Area	E	E	E	E	E	E	E

Table11: Study Area Highways Corridor LOS Summary (cont.)

Route	Section	Begin Milepoint	End Milepoint	2013 Existing	2020 No-Build	2040 No-Build	2020 Preferred Alternative	2040 Preferred Alternative	2020 Alternative D	2040 Alternative D
E. Broadway / Old Knoxville Highway (SR 33)	3	Hall Rd	Wildwood Rd							
	4	Wildwood Rd	Hunt Rd							
	5	Hunt Rd	Pellissippi Pkwy							
	6	Pellissippi Pkwy	Sam Houston School Rd							
	7	Sam Houston School Rd	County Line	E	E	E	E	F	E	E
Alcoa Highway (SR 115 / US 129)	3	Louisville Rd	Hall Rd (SR 35)	D	D	F	D	F	D	F
	4	Hall Rd (SR 35)	Hunt Rd	E	F	F	F	F	F	F
	5	Hunt Rd	Cusick Rd	F	F	F	F	F	F	F
	6	Cusick Rd	Pellissippi Pkwy	F	F	E	F	E	F	E
	7	Pellissippi Pkwy	County Line	D	D	C	D	C	D	C
Sam Houston	1	SR 33 MP 0.000	Wildwood Rd MP 2.650	C	C	C	C	C	E	F
Peppermint Road	1	Wildwood Rd MP 0.000	Sevierville Rd MP 1.100	C	C	D	C	C	E	F
Hitch Road	1	Sevierville Rd MP 1.202	Davis Ford Rd MP 0.000	B	B	C	B	B	E	E
Helton Road	1	Davis Ford Rd MP 0.875	Lamar Alexander Pkwy MP 0.000	A	A	A	A	A	E	E
Relocated Alcoa Highway	1	Alcoa Hwy (SR 115 / US 129)	Pellissippi Pky	Not Determined	B	B	B	B	B	B
	2	Pellissippi Pky	Alcoa Highway (SR 115 / US 129)	Not Determined	B	B	B	B	B	B

 LOS A, B, C or D

 LOS E or F

 HCS 2010 Software cannot calculate LOS for segments with a speed less than 45 mph

The following observations are made regarding the analysis provided in the previous tables:

- The proposed sections of Pellissippi Parkway from SR 33 to SR 73 / US 321 operate at an acceptable level through the analysis year 2040.
- Traffic operations on existing Pellissippi Parkway west of Alcoa Highway decline to LOS F for each alternative in 2040. Between the RAH and SR 33 in 2040 the LOS for existing Pellissippi Parkway declines to LOS E for the Preferred Alternative as traffic volumes increase substantially from 34,320 to 55,330 AADT (likely due to the attractiveness of the new sections of Pellissippi Parkway Extension).
- Lamar Alexander Parkway (US 321/SR 73) under all scenarios, traffic operations remain generally at an acceptable LOS (LOS D or better) through 2040.

- Alcoa Highway (SR 115/US 129) operates at poor traffic conditions (LOS E or F) under most scenarios between SR 35 and Pellissippi Parkway. Between Louisville Road and Hall Road/SR 35, Alcoa Highway would continue to operate at LOS D in 2020 each alternative, but by 2040 it would decline to LOS F under all alternatives.
- The proposed RAH operates at acceptable traffic levels under all scenarios.
- Wildwood Road declines to LOS E (poor) under 2040 No-Build conditions; under the 2040 Preferred Alternative and Alternative D, it will operate at LOS C (acceptable).
- Sam Houston School Road, Peppermint Road, Helton Road, and Hitch Road:
 - o Alternative D – the roads fall to LOS E by 2020 and remain at LOS through 2040.
 - o Preferred Alternative and No-Build – the roads operate at LOS A to LOS D for 2020 and 2040.
- Other project area roadways under Alternative D have similar LOS compared to the No-Build, with the exception of Wildwood Road under the No-Build Alternative in 2040. Under that scenario, Wildwood between Reservoir Road and Sam Houston School Road declines to LOS E. Under Alternative D, the roadway section operates at LOS C.

3.0 INTERSECTION LOS ANALYSIS

An intersection LOS analysis was conducted for the No-Build Alternative and Preferred Alternative and Alternative D for the years 2020 and 2040, along with the Existing (2013) for comparison purposes. The methodology and results are presented in the following sections.

3.1 Study Area Intersections

The major study area intersections are listed below. For the 2040 update, several intersections were removed (intersections 3, 4, 8 and 12) from the analysis since the traffic forecasting stage determined they would not be influenced by the Pellissippi Parkway Extension.

1. Alcoa Highway (SR 115/US 129) @ Pellissippi Parkway/I-140 (Interchange – two STOP Controlled Ramp Terminals)
2. Alcoa Highway (SR 115/US 129) @ SR 35 (Interchange – STOP Controlled Ramp Terminals)
3. Alcoa Highway (SR 115/US 129) @ SR 73 / US 321 (Signalized) - Removed
4. SR 33/US 411 @ Alcoa Highway (SR 115/US 129) (Interchange - two STOP Controlled Ramp Terminals) - Removed
5. SR 33 @ Pellissippi Parkway/I-140 (STOP Controlled)
6. SR 33 @ Wildwood Road (STOP Controlled)
7. SR 33 / E. Broadway Avenue @ S. Washington Street/SR 35 (Signalized)
8. SR 33 @ SR 73 / US 321 (Signalized) - Removed
9. Hall Road/S. Washington Street/SR 35 @ US 411/Sevierville Road (Signalized)
10. S. Washington Street/SR 35 @ High Street/SR 35 (Signalized)
11. S. Washington Street/SR 35 @ SR 73/US 321 (Signalized)
12. SR 73/US 321 @ SR 335/Old Glory Road (Signalized) - Removed

The existing ramp terminal intersections that currently operate without signal control were not initially evaluated as part of the LOS analysis (Intersections 1 and 2 above). The highway segments surrounding the interchanges were evaluated as part of the corridor analysis.

TDOT provided Signing and Striping design plans for proposed improvements to SR 33, which include changes to the configuration of the SR 33 and Pellissippi Parkway intersections. The layouts proposed were used for the future analysis years 2020 and 2040 for the No-Build scenarios. Installation of a traffic signal at the off-ramp intersection was included along with the re-configuration. As a result, the future year analysis for this intersection is being conducted assuming a signalized intersection. The Preferred Alternative considers some modifications to the ramp terminal intersections for SR 33 and Pellissippi Parkway which includes the additional ramps leading to the extension.

SR 33 at Wildwood Road was originally evaluated as a signalized intersection. Following the 2014 traffic analysis, the intersection has been re-routed and now follows a portion of Horn Street and is considered a STOP controlled intersection for this analysis.

In addition, two new intersections would be created by the Preferred Alternative. **Figure 11** shows the location of each new intersection in a green circle, indicated by number as shown below.

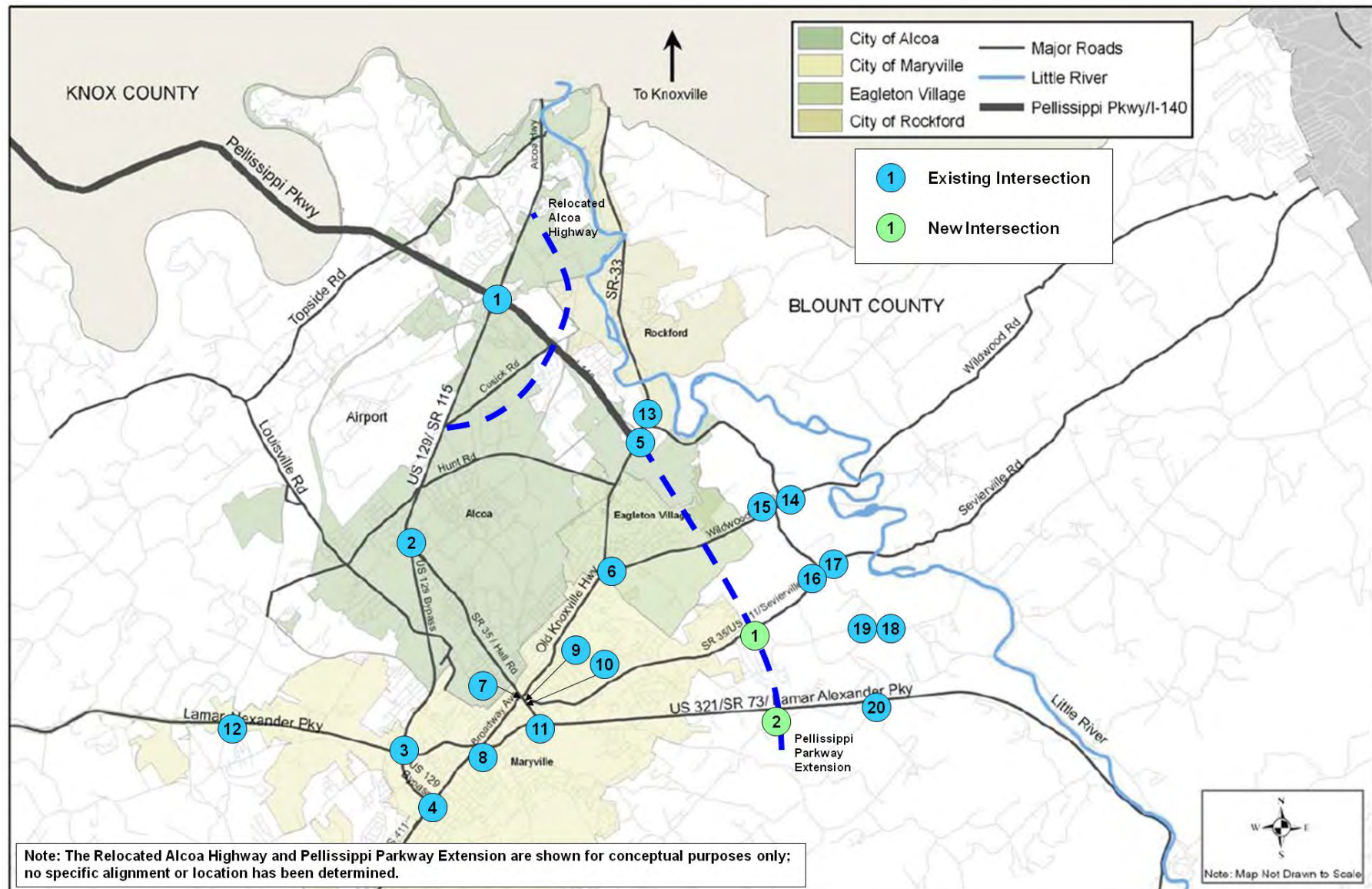
1. Pellissippi Parkway Extension @ SR 35 / US 411 / Sevierville Road (Interchange – two Signalized Ramp Terminal intersections)
2. Pellissippi Parkway Extension @ US 321 (Interchange – loop ramps, i.e., no intersections)

For this analysis, a typical diamond interchange has been assumed for Preferred Alternative at SR 35/US 411/Sevierville Road interchange (Site 1 depicted in the green circle), resulting in the creation of two new intersections. LOS and delay were calculated for the same scenarios as discussed above for the SR 33 / I-140 interchange. The Preferred Alternative at US 321 may include directional loop ramps as opposed to a diamond interchange that includes intersections regulated by a traffic control device (i.e. either STOP controlled or signalized). Therefore in the absence of intersections, this interchange was not included in this evaluation.

Several additional intersections were evaluated for the existing, No-Build, Preferred Alternative and Alternative D scenarios. **Figure 11** shows the location of each intersection in a blue circle, indicated by number as shown below:

13. SR 33 @ Sam Houston School Road (Signalized)
14. Sam Houston School Road @ Wildwood Road (STOP Controlled)
15. Peppermint Road @ Wildwood Road (STOP Controlled)
16. SR 35 / US 411 / Sevierville Road @ Peppermint Road (STOP Controlled)
17. SR 35 / US 411 / Sevierville Road @ Hitch Road / Peppermint Hills Drive (STOP Controlled)
18. Davis Ford Road @ Helton Road (STOP Controlled)
19. Davis Ford Road @ Hitch Road (STOP Controlled)
20. SR 73 / US 321 @ Helton Road / Tuckaleechee Pike (STOP Controlled)

Figure 11: Intersection Location Map



3.2 Methodology

For this analysis, HCS 2010 was used to analyze the AM and PM peak hour traffic operating conditions. This software package implements the HCM 2010 intersection analysis methodology (signalized and two-way STOP-controlled intersections) to compute LOS. Typically in an urban street facility, there are points and links that comprise the analysis elements. A point typically represents an intersection and governs the flow of the link, which is the length of roadway between two points. For each study intersection, average vehicle delays were calculated to determine the resulting LOS. The HCM 2010 defines intersection LOS based on the average delay due to signal or STOP control as shown in **Table 12**.

Table 12: LOS Criteria for Intersections

LOS	Signalized Intersections Control Delay (seconds per vehicle)	Unsignalized Intersections Control Delay (seconds per vehicle)
A	≤ 10	≤ 10
B	$>10 - 20$	$>10 - 15$
C	$>20 - 35$	$>15 - 25$
D	$>35 - 55$	$>25 - 35$
E	$>55 - 80$	$>35 - 50$
F	>80	>50

Source: Highway Capacity Manual 2010

In general terms, a facility is considered to have reached its physical capacity at LOS E. TDOT typically uses LOS D as the threshold for acceptable traffic service for all but the more rural roads. Because of the generally urban and suburban character of the study area, LOS D is used as the threshold. Operations below this threshold are noted as undesirable and warrant improvement. LOS D corresponds to ≤ 55 seconds of delay per vehicle at a signalized intersection and ≤ 35 seconds of delay at an unsignalized intersection. (Refer to the Chapters 18 & 19, Volume 3 of HCM 2010 for more details.)

3.3 Intersection LOS Results

Turning movement volumes for the AM and PM peak hours were provided in the updated 2013 *Traffic Forecast Study* for the No-Build and Preferred Alternative (in Technical Appendix A of the FEIS). The turning movement volumes for Alternative D were provided in the 2016 update of the *Traffic Forecast Study*; this study is included in the attached appendix for reference. Using these volumes, intersection LOS was developed for the existing (2013), 2020 and 2040 No-Build, and the 2020 and 2040 Preferred Alternative and Alternative D scenarios.

Optimized signal timings were assumed for all future analysis years for the signalized intersections.

For Alternative D, intersection operations were assumed to be STOP controlled on the local route approaches (i.e. Sam Houston School Road, Peppermint Road, Hitch Road, and Helton Road). To determine if signalizing the intersections would adequately handle the increased traffic volumes, operations were evaluated for these intersections under a signalized scenario as well as the STOP controlled scenario.

Versions of the analysis prior to the February 2014 iteration of this traffic analysis addendum / memorandum utilized the Highway Capacity Software Plus (HCS+) version. The current

analysis and the February 2014 analysis utilized the HCS 2010 version. The changes between versions were substantial enough such that direct comparisons should not be made between previous values and those provided in this update.

Tables 13 through **23** show the intersection LOS for each scenario.

Table 13: 2013 Existing Intersection LOS

Intersection	Type	Approach	AM Peak Hour Avg. Delay (sec)	LOS	PM Peak Hour Avg. Delay (sec)	LOS
5: SR 33 @ I-140 Off-Ramp	STOP Controlled	Eastbound	17.8	C	70.1	F
		Northbound	-	-	-	-
		Southbound	-	-	-	-
5: SR 33 @ I-140 On-Ramp	STOP Controlled	Eastbound	-	-	-	-
		Northbound	62.6	F	19.1	C
		Southbound	-	-	-	-
4: SR 33 @ Wildwood (Horn) Road	STOP Controlled	Westbound	26.4	D	50.9	F
		Northbound	-	-	-	-
		Southbound	8.8	A	9.9	A
7: SR 33 / E. Broadway Avenue @ SR 35 / S. Washington Street	Signalized	Eastbound	34.4	C	112.9	F
		Westbound	34.1	C	132.6	F
		Northbound	38.9	D	89.6	F
		Southbound	24.6	C	29.4	C
		Whole Int.	32.6	C	70.5	E
9: SR 35 / S. Washington Street @ Sevierville Road	Signalized	Eastbound	38.5	D	45.0	D
		Westbound	39.5	D	47.2	D
		Northbound	12.5	B	19.5	B
		Southbound	10.7	B	21.7	C
		Whole Int.	14.6	B	24.0	C
10: S. Washington Street / SR 35 @ High Street / SR 35	Signalized	Eastbound	42.3	D	50.3	D
		Westbound	37.9	D	45.6	D
		Northbound	27.2	C	39.6	D
		Southbound	21.6	C	26.4	C
		Whole Int.	27.9	C	34.5	C
11: S. Washington Street @ SR 73 / US 321	Signalized	Eastbound	278.7	F	465.1	F
		Westbound	56.9	E	52.6	D
		Northbound	31.7	C	161.6	F
		Southbound	114.7	F	265.4	F
		Whole Int.	135.8	F	275.9	F

Table 13: 2013 Existing Intersection LOS (cont.)

Intersection	Type	Approach	AM Peak Hour Avg. Delay (sec)	LOS	PM Peak Hour Avg. Delay (sec)	LOS
13: SR 33 @ Sam Houston School Road	Signalized	Westbound	21.3	C	21.3	C
		Northbound	20.1	C	20.1	C
		Southbound	15.9	B	15.9	B
		Whole Int.	19.5	B	19.5	B
14: Sam Houston School Road @ Wildwood Road	STOP Controlled	Eastbound	9.0	A	7.7	A
		Westbound	-	-	-	-
		Southbound	12.9	B	12.3	B
15: Peppermint Road @ Wildwood Road	STOP Controlled	Eastbound	-	-	-	-
		Westbound	7.8	A	8.2	A
		Northbound	12.7	B	13.5	B
16: SR 35 / US 411 / Sevierville Road @ Peppermint Road	STOP Controlled	Eastbound	9.0	A	8.1	A
		Westbound	-	-	-	-
		Southbound	21.5	C	22.2	C
17: SR 35 / US 411 / Sevierville Road @ Hitch Road / Peppermint Hills Drive	STOP Controlled	Eastbound	8.3	A	7.8	A
		Westbound	7.9	A	8.5	A
		Northbound	20.1	C	17.1	C
		Southbound	11.4	B	12.4	B
18: Davis Ford Road @ Hitch Road	STOP Controlled	Eastbound	7.5	A	7.4	A
		Westbound	-	-	-	-
		Southbound	10.1	B	9.6	A
19: Davis Ford Road @ Helton Road	STOP Controlled	Eastbound	-	-	-	-
		Westbound	7.3	A	7.3	A
		Northbound	8.7	A	8.6	A
20: SR 73 / US 321 @ Helton Road / Tuckaleechee Pike	STOP Controlled	Eastbound	11.3	B	9.2	A
		Westbound	9.6	A	10.7	B
		Northbound	16.3	C	17.3	C
		Southbound	89.9	F	32.3	D

Table 14: 2020 No-Build Intersection LOS

Intersection	Type	Approach	AM Peak Hour Avg. Delay (sec)	LOS	PM Peak Hour Avg. Delay (sec)	LOS
5: SR 33 @ I-140 Off-Ramp	Signalized	Eastbound	47.3	D	87.9	F
		Northbound	44.9	D	46.1	D
		Southbound	11.8	B	17.7	B
		Whole Int.	39.7	D	56.5	E
5: SR 33 @ I-140 On-Ramp	STOP Controlled	Eastbound	-	-	-	-
		Northbound	215.0	F	44.4	E
		Southbound	-	-	-	-
4: SR 33 @ Wildwood (Horn) Road	STOP Controlled	Westbound	88.2	F	239.7	F
		Northbound	-	-	-	-
		Southbound	9.1	A	11.0	B
7: SR 33 / E. Broadway Avenue @ SR 35 / S. Washington Street	Signalized	Eastbound	41.8	D	199.9	F
		Westbound	41.5	D	188.5	F
		Northbound	41.0	D	113.5	F
		Southbound	25.5	C	29.3	C
		Whole Int.	35.8	D	95.5	F
9: SR 35 / S. Washington Street @ Sevierville Road	Signalized	Eastbound	38.6	D	44.8	D
		Westbound	39.0	D	46.8	D
		Northbound	13.4	B	21.4	C
		Southbound	11.5	B	25.1	C
		Whole Int.	15.4	B	26.4	C
10: S. Washington Street / SR 35 @ High Street / SR 35	Signalized	Eastbound	46.4	D	54.2	D
		Westbound	41.3	D	87.8	F
		Northbound	30.0	C	43.6	D
		Southbound	24.9	C	28.1	C
		Whole Int.	31.1	C	42.1	D
11: S. Washington Street @ SR 73 / US 321	Signalized	Eastbound	235.4	F	615.0	F
		Westbound	56.7	E	52.4	D
		Northbound	98.5	F	234.7	F
		Southbound	206.4	F	286.6	F
		Whole Int.	168.4	F	358.7	F

Table 14: 2020 No-Build Intersection LOS (cont.)

Intersection	Type	Approach	AM Peak Hour Avg. Delay (sec)	LOS	PM Peak Hour Avg. Delay (sec)	LOS
13: SR 33 @ Sam Houston School Road	Signalized	Westbound	25.2	C	31.8	C
		Northbound	27.6	C	11.6	B
		Southbound	19.3	B	5.1	A
		Whole Int.	24.4	C	11.6	B
14: Sam Houston School Road @ Wildwood Road	STOP Controlled	Eastbound	11.2	B	8.2	A
		Westbound	-	-	-	-
		Southbound	23.1	C	24.0	C
15: Peppermint Road @ Wildwood Road	STOP Controlled	Eastbound	-	-	-	-
		Westbound	8.3	A	9.5	A
		Northbound	46.2	E	62.1	F
16: SR 35 / US 411 / Sevierville Road @ Peppermint Road	STOP Controlled	Eastbound	9.9	A	8.4	A
		Westbound	-	-	-	-
		Southbound	55.7	F	71.7	F
17: SR 35 / US 411 / Sevierville Road @ Hitch Road / Peppermint Hills Drive	STOP Controlled	Eastbound	8.7	A	7.3	A
		Westbound	8.1	A	7.2	A
		Northbound	41.5	E	15.6	C
		Southbound	12.6	B	27.9	D
18: Davis Ford Road @ Hitch Road	STOP Controlled	Eastbound	7.6	A	7.5	A
		Westbound	-	-	-	-
		Southbound	10.8	B	10.0	B
19: Davis Ford Road @ Helton Road	STOP Controlled	Eastbound	-	-	-	-
		Westbound	7.4	A	7.3	A
		Northbound	8.8	A	8.6	A
20: SR 73 / US 321 @ Helton Road / Tuckaleechee Pike	STOP Controlled	Eastbound	13.6	B	10.1	A
		Westbound	10.8	B	13.0	B
		Northbound	44.0	E	29.3	D
		Southbound	630.7	F	74.2	F

Table 15: 2040 No-Build Intersection LOS

Intersection	Type	Approach	AM Peak Hour Avg. Delay (sec)	LOS	PM Peak Hour Avg. Delay (sec)	LOS
5: SR 33 @ I-140 Off-Ramp	Signalized	Eastbound	469.0	F	393.1	F
		Northbound	248.1	F	304.1	F
		Southbound	17.7	B	29.1	C
		Whole Int.	284.9	F	307.4	F
5: SR 33 @ I-140 On-Ramp	STOP Controlled	Eastbound	-	-	-	-
		Northbound	1375.0	F	741.9	F
		Southbound	-	-	-	-
4: SR 33 @ Wildwood (Horn) Road	STOP Controlled	Westbound	847.8	F	2782.0	F
		Northbound	-	-	-	-
		Southbound	10.0	B	16.0	C
7: SR 33 / E. Broadway Avenue @ SR 35 / S. Washington Street	Signalized	Eastbound	85.0	F	449.8	F
		Westbound	54.5	D	263.0	F
		Northbound	63.5	E	77.6	E
		Southbound	29.2	C	129.2	F
		Whole Int.	53.8	D	170.1	F
9: SR 35 / S. Washington Street @ Sevierville Road	Signalized	Eastbound	39.0	D	53.2	D
		Westbound	38.1	D	55.2	E
		Northbound	16.0	B	26.4	C
		Southbound	13.6	B	37.7	D
		Whole Int.	17.5	B	35.5	D
10: S. Washington Street / SR 35 @ High Street / SR 35	Signalized	Eastbound	50.2	D	158.5	F
		Westbound	83.5	F	176.8	F
		Northbound	48.7	D	52.5	D
		Southbound	23.4	C	48.1	D
		Whole Int.	46.0	D	74.8	E
11: S. Washington Street @ SR 73 / US 321	Signalized	Eastbound	430.6	F	892.6	F
		Westbound	51.7	D	56.8	E
		Northbound	276.7	F	345.8	F
		Southbound	373.3	F	542.4	F
		Whole Int.	350.0	F	571.3	F

Table 15: 2040 No-Build Intersection LOS (cont.)

Intersection	Type	Approach	AM Peak Hour Avg. Delay (sec)	LOS	PM Peak Hour Avg. Delay (sec)	LOS
13: SR 33 @ Sam Houston School Road	Signalized	Westbound	36.4	D	54.7	D
		Northbound	31.3	C	15.0	B
		Southbound	30.5	C	6.7	A
		Whole Int.	32.6	C	15.9	B
14: Sam Houston School Road @ Wildwood Road	STOP Controlled	Eastbound	80.0	F	10.5	B
		Westbound	-	-	-	-
		Southbound	174.2	F	940.3	F
15: Peppermint Road @ Wildwood Road	STOP Controlled	Eastbound	-	-	-	-
		Westbound	11.0	B	22.0	C
		Northbound	3226.0	F	9169.0	F
16: SR 35 / US 411 / Sevierville Road @ Peppermint Road	STOP Controlled	Eastbound	12.7	B	9.2	A
		Westbound	-	-	-	-
		Southbound	747.7	F	756.5	F
17: SR 35 / US 411 / Sevierville Road @ Hitch Road / Peppermint Hills Drive	STOP Controlled	Eastbound	9.6	A	8.5	A
		Westbound	8.6	A	10.4	B
		Northbound	497.6	F	93.8	F
		Southbound	17.1	C	22.3	C
18: Davis Ford Road @ Hitch Road	STOP Controlled	Eastbound	7.7	A	7.6	A
		Westbound	-	-	-	-
		Southbound	12.9	B	11.2	B
19: Davis Ford Road @ Helton Road	STOP Controlled	Eastbound	-	-	-	-
		Westbound	7.5	A	7.4	A
		Northbound	9.1	A	8.8	A
20: SR 73 / US 321 @ Helton Road / Tuckaleechee Pike	STOP Controlled	Eastbound	21.5	C	12.5	B
		Westbound	15.4	C	24.3	C
		Northbound	1799.0	F	781.3	F
		Southbound	*	F	599.5	F

*Delay too high to calculate

Table 16: 2020 Preferred Alternative Intersection LOS

Intersection	Type	Approach	AM Peak Hour Avg. Delay (sec)	LOS	PM Peak Hour Avg. Delay (sec)	LOS
4: SR 33 @ Wildwood (Horn) Road	STOP Controlled	Westbound	56.3	F	136.0	F
		Northbound	-	-	-	-
		Southbound	8.9	A	10.6	B
7: SR 33 / E. Broadway Avenue @ SR 35 / S. Washington Street	Signalized	Eastbound	39.1	D	50.4	D
		Westbound	39.9	D	46.1	D
		Northbound	28.8	C	70.7	E
		Southbound	20.8	C	43.5	D
		Whole Int.	29.0	C	52.6	D
9: SR 35 / S. Washington Street @ Sevierville Road	Signalized	Eastbound	38.6	D	45.1	D
		Westbound	39.4	D	47.2	D
		Northbound	12.6	B	19.6	B
		Southbound	10.8	B	21.5	C
		Whole Int.	14.7	B	24.0	C
10: S. Washington Street / SR 35 @ High Street / SR 35	Signalized	Eastbound	42.2	D	49.9	D
		Westbound	37.4	D	55.4	E
		Northbound	27.5	C	37.8	D
		Southbound	22.5	C	24.4	C
		Whole Int.	28.5	C	34.5	C
11: S. Washington Street @ SR 73 / US 321	Signalized	Eastbound	274.3	F	573.1	F
		Westbound	57.3	E	52.9	D
		Northbound	39.4	D	217.6	F
		Southbound	256.6	F	222.5	F
		Whole Int.	167.2	F	322.7	F

Table 16: 2020 Preferred Alternative Intersection LOS (cont.)

Intersection	Type	Approach	AM Peak Hour Avg. Delay (sec)	LOS	PM Peak Hour Avg. Delay (sec)	LOS
13: SR 33 @ Sam Houston School Road	Signalized	Westbound	42.2	D	51.5	D
		Northbound	42.0	D	9.8	A
		Southbound	19.0	B	4.3	A
		Whole Int.	35.4	D	11.4	B
14: Sam Houston School Road @ Wildwood Road	STOP Controlled	Eastbound	9.1	A	7.9	A
		Westbound	-	-	-	-
		Southbound	13.5	B	13.4	B
15: Peppermint Road @ Wildwood Road	STOP Controlled	Eastbound	-	-	-	-
		Westbound	7.9	A	8.5	A
		Northbound	15.7	C	18.6	C
16: SR 35 / US 411 / Sevierville Road @ Peppermint Road	STOP Controlled	Eastbound	8.8	A	8.0	A
		Westbound	-	-	-	-
		Southbound	18.0	C	18.3	C
17: SR 35 / US 411 / Sevierville Road @ Hitch Road / Peppermint Hills Drive	STOP Controlled	Eastbound	8.1	A	7.8	A
		Westbound	7.8	A	8.4	A
		Northbound	17.4	C	15.5	C
		Southbound	11.0	B	11.9	B
18: Davis Ford Road @ Hitch Road	STOP Controlled	Eastbound	7.4	A	7.4	A
		Westbound	-	-	-	-
		Southbound	9.9	A	9.4	B
19: Davis Ford Road @ Helton Road	STOP Controlled	Eastbound	-	-	-	-
		Westbound	7.3	A	7.3	A
		Northbound	8.7	A	8.5	A
20: SR 73 / US 321 @ Helton Road / Tuckaleechee Pike	STOP Controlled	Eastbound	10.6	B	8.9	A
		Westbound	9.2	A	10.2	B
		Northbound	14.1	B	14.9	B
		Southbound	57.8	F	26.4	D

Table 17: 2020 Preferred Alternative New SR 33 at I-140 / Pellissippi Parkway Extension (PPE) Intersection LOS

Intersection	Type	Approach	AM Peak Hour Avg. Delay (sec)	LOS	PM Peak Hour Avg. Delay (sec)	LOS
SR 33 @ I-140 / PPE North of Pellissippi Pkwy	Signalized; Dual Turn Lanes for NB Left, All others Single Lanes	Westbound	19.8	B	27.4	C
		Northbound	17.4	B	3.8	A
		Southbound	10.3	B	3.0	A
		Whole Int.	15.6	B	5.4	A
SR 33 @ I-140 / PPE South of Pellissippi Pkwy	Signalized; Separate Turn Lane for All Movements	Eastbound	23.8	C	48.7	D
		Northbound	25.6	C	23.5	C
		Southbound	18.8	B	31.3	C
		Whole Int.	23.9	C	29.8	C

Table 18: 2020 Preferred Alternative New US 411 at PPE Intersection LOS

Intersection	Type	Approach	AM Peak Hour Avg. Delay (sec)	LOS	PM Peak Hour Avg. Delay (sec)	LOS
US 411 @ PPE West of Pellissippi Pkwy	Signalized; Separate Turn Lanes for All Movements	Eastbound	7.8	A	9.5	A
		Westbound	5.3	A	5.8	A
		Southbound	32.1	C	25.6	C
		Whole Int.	9.6	A	12.3	B
US 411 @ PPE East of Pellissippi Pkwy	Signalized; Separate Turn Lanes for All Movements	Eastbound	4.8	A	4.4	A
		Westbound	10.9	B	8.0	A
		Northbound	36.1	D	26.9	C
		Whole Int.	12.8	B	9.1	A

Table 19: 2040 Preferred Alternative Intersection LOS

Intersection	Type	Approach	AM Peak Hour Avg. Delay (sec)	LOS	PM Peak Hour Avg. Delay (sec)	LOS
4: SR 33 @ Wildwood (Horn) Road	STOP Controlled	Westbound	531.4	F	1484.0	F
		Northbound	-	-	-	-
		Southbound	9.6	A	14.0	B
7: SR 33 / E. Broadway Avenue @ SR 35 / S. Washington Street	Signalized	Eastbound	35.2	D	51.6	D
		Westbound	36.0	D	51.0	D
		Northbound	42.7	D	123.7	F
		Southbound	25.8	C	87.3	F
		Whole Int.	34.6	C	85.0	F
9: SR 35 / S. Washington Street @ Sevierville Road	Signalized	Eastbound	33.4	C	44.0	D
		Westbound	33.6	C	46.0	D
		Northbound	14.1	B	21.7	C
		Southbound	12.2	B	23.0	C
		Whole Int.	16.1	B	26.2	C
10: S. Washington Street / SR 35 @ High Street / SR 35	Signalized	Eastbound	36.9	D	35.9	D
		Westbound	32.0	C	43.3	D
		Northbound	32.6	C	204.4	F
		Southbound	24.4	C	35.5	D
		Whole Int.	30.2	C	86.1	F
11: S. Washington Street @ SR 73 / US 321	Signalized	Eastbound	354.2	F	487.8	F
		Westbound	63.6	E	58.8	E
		Northbound	99.4	F	276.1	F
		Southbound	365.3	F	551.8	F
		Whole Int.	243.6	F	408.6	F

Table 19: 2040 Preferred Alternative Intersection LOS (cont.)

Intersection	Type	Approach	AM Peak Hour Avg. Delay (sec)	LOS	PM Peak Hour Avg. Delay (sec)	LOS
13: SR 33 @ Sam Houston School Road	Signalized	Westbound	48.4	D	51.5	D
		Northbound	76.0	E	9.8	A
		Southbound	23.4	C	4.3	A
		Whole Int.	51.9	D	11.4	B
14: Sam Houston School Road @ Wildwood Road	STOP Controlled	Eastbound	9.0	A	7.9	A
		Westbound	-	-	-	-
		Southbound	13.6	B	13.4	B
15: Peppermint Road @ Wildwood Road	STOP Controlled	Eastbound	-	-	-	-
		Westbound	8.2	A	8.5	A
		Northbound	26.0	D	18.6	C
16: SR 35 / US 411 / Sevierville Road @ Peppermint Road	STOP Controlled	Eastbound	8.3	A	8.0	A
		Westbound	-	-	-	-
		Southbound	13.8	B	18.3	C
17: SR 35 / US 411 / Sevierville Road @ Hitch Road / Peppermint Hills Drive	STOP Controlled	Eastbound	7.9	A	7.8	A
		Westbound	7.7	A	8.4	A
		Northbound	13.7	B	15.5	C
		Southbound	10.3	B	11.9	B
18: Davis Ford Road @ Hitch Road	STOP Controlled	Eastbound	7.4	A	7.4	A
		Westbound	-	-	-	-
		Southbound	9.5	A	9.4	B
19: Davis Ford Road @ Helton Road	STOP Controlled	Eastbound	-	-	-	-
		Westbound	7.3	A	7.3	A
		Northbound	8.6	A	8.5	A
20: SR 73 / US 321 @ Helton Road / Tuckaleechee Pike	STOP Controlled	Eastbound	9.6	A	9.6	A
		Westbound	8.6	A	8.6	A
		Northbound	14.1	B	11.6	B
		Southbound	57.8	F	31.5	D

Table 20: 2040 Preferred Alternative New SR 33 at I-140 / PPE Intersection LOS

Intersection	Type	Approach	AM Peak Hour Avg. Delay (sec)	LOS	PM Peak Hour Avg. Delay (sec)	LOS
SR 33 @ I-140 / PPE North of Pellissippi Pkwy	Signalized; Dual Turn Lanes for NB Left, All others Single Lanes	Westbound	169.1	F	49.5	D
		Northbound	182.3	F	53.3	D
		Southbound	9.0	A	6.1	A
		Whole Int.	133.8	F	41.4	D
SR 33 @ I-140 / PPE South of Pellissippi Pkwy	Signalized; Separate Turn Lane for All Movements; Dual EB Left Turn Lanes	Eastbound	195.8	F	187.7	F
		Northbound	110.9	F	125.7	F
		Southbound	41.9	D	144.1	F
		Whole Int.	120.4	F	147.4	F

Table 21: 2040 Preferred Alternative New US 411 at PPE Intersection LOS

Intersection	Type	Approach	AM Peak Hour Avg. Delay (sec)	LOS	PM Peak Hour Avg. Delay (sec)	LOS
US 411 @ PPE West of Pellissippi Pkwy	Signalized; Separate Turn Lanes for All Movements	Eastbound	36.6	D	96.5	F
		Westbound	22.2	C	34.2	C
		Southbound	37.4	D	67.0	E
		Whole Int.	31.4	C	70.6	E
US 411 @ PPE East of Pellissippi Pkwy	Signalized; Separate Turn Lanes for All Movements	Eastbound	24.2	C	12.1	B
		Westbound	25.9	C	5.5	A
		Northbound	53.7	D	57.5	E
		Whole Int.	27.7	C	12.7	B

Table 22: 2020 Alternative D Intersection LOS

Intersection	Type	Approach	AM Peak Hour Avg. Delay (sec)	LOS	PM Peak Hour Avg. Delay (sec)	LOS
5: SR 33 @ I-140 Off-Ramp	Signalized	Eastbound	32.6	C	53.7	D
		Northbound	18.5	B	41.8	D
		Southbound	9.7	A	17.3	B
		Whole Int.	20.7	C	42.3	D
5: SR 33 @ I-140 On-Ramp	STOP Controlled	Eastbound	-	-	-	-
		Northbound	327.7	F	68.8	F
		Southbound	-	-	-	-
4: SR 33 @ Wildwood (Horn) Road	STOP Controlled	Westbound	88.1	F	243.2	F
		Northbound	-	-	-	-
		Southbound	9.1	A	11.0	B
7: SR 33 / E. Broadway Avenue @ SR 35 / S. Washington Street	Signalized	Eastbound	42.9	D	189.4	F
		Westbound	42.1	D	166.6	F
		Northbound	36.1	D	96.8	F
		Southbound	24.6	C	29.3	C
		Whole Int.	34.0	C	86.9	F
9: SR 35 / S. Washington Street @ Sevierville Road	Signalized	Eastbound	38.1	D	45.8	D
		Westbound	39.4	D	47.6	D
		Northbound	12.7	B	18.3	B
		Southbound	10.8	B	19.9	B
		Whole Int.	14.6	B	22.5	C
10: S. Washington Street / SR 35 @ High Street / SR 35	Signalized	Eastbound	46.5	D	54.5	D
		Westbound	41.8	D	66.5	E
		Northbound	27.8	C	40.0	D
		Southbound	23.7	C	26.5	C
		Whole Int.	29.8	C	37.5	D
11: S. Washington Street @ SR 73 / US 321	Signalized	Eastbound	116.5	F	400.5	F
		Westbound	57.6	E	53.0	D
		Northbound	84.8	F	228.0	F
		Southbound	175.2	F	221.3	F
		Whole Int.	112.4	F	266.9	F

Table 22: 2020 Alternative D Intersection LOS (cont.)

Intersection	Type	Approach	AM Peak Hour Avg. Delay (sec)	LOS	PM Peak Hour Avg. Delay (sec)	LOS
13: SR 33 @ Sam Houston School Road	Signalized	Westbound	51.4	D	46.1	D
		Northbound	74.0	E	18.7	B
		Southbound	43.4	D	10.2	B
		Whole Int.	56.5	E	19.7	B
14/15: Sam Houston School Road / Peppermint Road @ Wildwood Road	STOP Controlled	Eastbound	7.6	A	7.6	A
		Westbound	8.5	A	8.5	A
		Northbound	1782.0	F	*	F
		Southbound	118.7	F	360.6	F
16/17: SR 35 / US 411 / Sevierville Road @ Peppermint Road / Hitch Road	STOP Controlled	Eastbound	9.6	A	8.4	A
		Westbound	7.7	A	8.5	A
		Northbound	*	F	*	F
		Southbound	*	F	71.7	F
18/19: Davis Ford Road @ Hitch Road / Helton Road	STOP Controlled	Eastbound	7.5	A	7.4	A
		Westbound	7.4	A	7.3	A
		Northbound	39.5	E	10.9	B
		Southbound	46.9	E	13.7	B
20: SR 73 / US 321 @ Helton Road / Tuckaleechee Pike	STOP Controlled	Eastbound	19.1	C	10.2	B
		Westbound	10.0	B	11.6	B
		Northbound	*	F	31.2	D
		Southbound	*	F	1531.0	F

*Delay too high to calculate

Table 22: 2020 Alternative D (Signalized Intersections) Intersection LOS (cont.)

Intersection	Type	Approach	AM Peak Hour Avg. Delay (sec)	LOS	PM Peak Hour Avg. Delay (sec)	LOS
13: SR 33 @ Sam Houston School Road	Signalized	Westbound	51.4	D	46.1	D
		Northbound	76.3	E	19.2	B
		Southbound	43.4	D	10.2	B
		Whole Int.	57.7	E	19.9	B
14/15: Sam Houston School Road / Peppermint Road @ Wildwood Road	Signalized	Eastbound	41.8	D	45.4	D
		Westbound	38.0	D	21.5	C
		Northbound	49.1	D	31.9	C
		Southbound	33.2	C	33.8	C
		Whole Int.	42.3	D	33.9	C
16/17: SR 35 / US 411 / Sevierville Road @ Peppermint Road / Hitch Road	Signalized	Eastbound	105.3	F	42.1	D
		Westbound	137.8	F	36.2	D
		Northbound	102.1	F	31.0	C
		Southbound	53.0	D	27.5	C
		Whole Int.	98.6	F	34..5	C
18/19: Davis Ford Road @ Hitch Road / Helton Road	Signalized	Eastbound	29.0	C	27.4	C
		Westbound	32.2	C	28.2	C
		Northbound	19.8	B	9.0	A
		Southbound	15.4	B	12.9	B
		Whole Int.	20.0	C	15.9	B
20: SR 73 / US 321 @ Helton Road / Tuckaleechee Pike	Signalized	Eastbound	15.5	B	31.3	C
		Westbound	75.1	E	22.3	C
		Northbound	215.1	F	31.9	C
		Southbound	172.9	F	37.5	D
		Whole Int.	85.7	F	28.8	C

Table 23: 2040 Alternative D Intersection LOS

Intersection	Type	Approach	AM Peak Hour Avg. Delay (sec)	LOS	PM Peak Hour Avg. Delay (sec)	LOS
5: SR 33 @ I-140 Off-Ramp	Signalized	Eastbound	255.9	F	376.7	F
		Northbound	159.8	F	355.8	F
		Southbound	17.4	B	34.0	C
		Whole Int.	176.1	F	333.4	F
5: SR 33 @ I-140 On-Ramp	STOP Controlled	Eastbound	-	-	-	-
		Northbound	2851.0	F	1183.0	F
		Southbound	-	-	-	-
4: SR 33 @ Wildwood (Horn) Road	STOP Controlled	Westbound	498.3	F	2560.0	F
		Northbound	-	-	-	-
		Southbound	9.8	A	15.9	C
7: SR 33 / E. Broadway Avenue @ SR 35 / S. Washington Street	Signalized	Eastbound	45.1	D	226.6	F
		Westbound	43.8	D	244.6	F
		Northbound	57.1	E	183.2	F
		Southbound	30.1	C	31.9	C
		Whole Int.	44.2	D	129.4	F
9: SR 35 / S. Washington Street @ Sevierville Road	Signalized	Eastbound	43.4	D	55.4	E
		Westbound	43.5	D	56.2	E
		Northbound	13.5	B	20.3	C
		Southbound	11.2	B	23.5	C
		Whole Int.	15.6	B	26.3	C
10: S. Washington Street / SR 35 @ High Street / SR 35	Signalized	Eastbound	55.1	E	53.3	D
		Westbound	49.3	D	152.5	F
		Northbound	35.6	D	70.4	E
		Southbound	31.3	C	31.2	C
		Whole Int.	38.0	D	60.8	E
11: S. Washington Street @ SR 73 / US 321	Signalized	Eastbound	287.1	F	564.1	F
		Westbound	62.3	E	52.9	D
		Northbound	185.3	F	416.8	F
		Southbound	196.1	F	336.7	F
		Whole Int.	221.9	F	432.6	F

Table 23: 2040 Alternative D Intersection LOS (cont.)

Intersection	Type	Approach	AM Peak Hour Avg. Delay (sec)	LOS	PM Peak Hour Avg. Delay (sec)	LOS
13: SR 33 @ Sam Houston School Road	Signalized	Westbound	418.5	F	310.3	F
		Northbound	269.0	F	168.5	F
		Southbound	49.0	D	110.6	F
		Whole Int.	308.2	F	170.2	F
14/15: Sam Houston School Road / Peppermint Road @ Wildwood Road	STOP Controlled	Eastbound	10.3	B	7.9	A
		Westbound	9.0	A	11.9	B
		Northbound	*	F	*	F
		Southbound	*	F	*	F
16/17: SR 35 / US 411 / Sevierville Road @ Peppermint Road / Hitch Road	STOP Controlled	Eastbound	11.8	B	9.1	A
		Westbound	7.9	A	9.1	A
		Northbound	*	F	*	F
		Southbound	*	F	*	F
18/19: Davis Ford Road @ Hitch Road / Helton Road	STOP Controlled	Eastbound	7.7	A	7.5	A
		Westbound	7.4	A	7.4	A
		Northbound	*	F	*	F
		Southbound	*	F	171.3	F
20: SR 73 / US 321 @ Helton Road / Tuckaleechee Pike	STOP Controlled	Eastbound	248.6	F	13.9	B
		Westbound	11.8	B	15.1	C
		Northbound	*	F	*	F
		Southbound	*	F	*	F

*Delay too high to calculate

Table 23: 2040 Alternative D (Signalized Intersections) Intersection LOS (cont.)

Intersection	Type	Approach	AM Peak Hour Avg. Delay (sec)	LOS	PM Peak Hour Avg. Delay (sec)	LOS
13: SR 33 @ Sam Houston School Road	Signalized	Westbound	418.5	F	310.3	F
		Northbound	269.0	F	168.5	F
		Southbound	49.0	D	110.6	F
		Whole Int.	308.2	F	170.2	F
14/15: Sam Houston School Road / Peppermint Road @ Wildwood Road	Signalized	Eastbound	258.8	F	306.9	F
		Westbound	192.8	F	164.9	F
		Northbound	304.6	F	113.0	F
		Southbound	36.3	D	200.9	F
		Whole Int.	228.7	F	197.6	F
16/17: SR 35 / US 411 / Sevierville Road @ Peppermint Road / Hitch Road	Signalized	Eastbound	288.0	F	108.7	F
		Westbound	723.6	F	131.1	F
		Northbound	485.3	F	70.9	E
		Southbound	228.7	F	134.8	F
		Whole Int.	412.9	F	120.2	F
18/19: Davis Ford Road @ Hitch Road / Helton Road	Signalized	Eastbound	48.7	D	44.8	D
		Westbound	54.7	D	46.5	D
		Northbound	298.0	F	11.3	B
		Southbound	59.1	E	19.5	B
		Whole Int.	174.2	F	21.7	C
20: SR 73 / US 321 @ Helton Road / Tuckaleechee Pike	Signalized	Eastbound	22.6	C	57.0	E
		Westbound	462.4	F	55.7	E
		Northbound	404.0	F	63.5	E
		Southbound	571.0	F	190.9	F
		Whole Int.	399.6	F	90.9	F

The following observations are made regarding the intersection LOS analysis for each alternatives.

No- Build Alternative

Several of the intersections currently operate at a poor LOS (LOS E or F) with some additional intersections having failing operations by the year 2040 (SR 33 at the I-140 Ramp, SR 33 at Wildwood Road, and S. Washington Street at High Street / SR 35) in the No-Build scenario. The stop controlled intersections evaluated along Sam Houston School Road, Peppermint Road, Hitch Road, and Helton Road generally operate at an acceptable LOS in the No-Build scenario for the existing year (2013) with a decrease in operations by the year 2020, and some failing operations by the year 2040.

Preferred Alternative

The construction of the Preferred Alternative would degrade the LOS at one intersection, although the intersection would still operate at an acceptable LOS. The LOS for the intersection of SR 33 with Sam Houston School Road goes from a LOS B in the 2020 No-Build to a LOS D in the 2020 Preferred Alternative and from a LOS C in the 2040 No-Build to a LOS D in the 2020 Preferred Alternative during the AM peak hour. The westbound and northbound approaches experience the increase in delay which leads to the decrease in overall intersection operations.

The proposed project would improve the LOS at eight intersections. The locations include:

- SR 33 / E. Broadway Avenue and SR 35 / S. Washington Street intersection. Improvements include LOS D to a LOS C in the AM peak hour and LOS F to LOS D in the 2020 PM peak hour.
- SR 35 / S. Washington Street and Sevierville Road intersection. The LOS improves from LOS D to LOS C in the 2040 PM peak hour.
- S. Washington Street / SR 35 at High Street / SR 35 intersection. The LOS improves from LOS D in the No-Build scenario to LOS C in the Preferred Alternative scenario in the 2040 AM peak hour. In the PM peak hour, The LOS for the year 2020 is LOS C for the Preferred Alternative which is an improvement over the LOS D for the No-Build scenario. However, for the year 2040 in the PM peak hour, the LOS declines to a LOS F in the Preferred Alternative compared to a LOS E for the No-Build scenario.
- Sam Houston School Road at Wildwood Road. The Preferred Alternative improves the LOS to B in both the AM and PM peak hours for both analysis years (2020 and 2040).
- Peppermint Road at Wildwood Road. The Preferred Alternative improves the LOS to LOS C for both the AM and PM peak hours in the year 2020. In the year 2040, the LOS is improved to LOS D for the AM peak hour and remains at a LOS C in the PM peak hour.
- SR 35 / US 411 / Sevierville Road at Peppermint Road. The Preferred Alternative improves the LOS to LOS C for both the AM and PM peak hours for the analysis year 2020. In the year 2040 the LOS improves to LOS B for the AM peak hour and remains at LOS C for the PM peak hour.
- SR 35 / US 411 / Sevierville Road at Hitch Road / Peppermint Hills. The Preferred Alternative improves the LOS to LOS C for both the AM and PM peak hours for the analysis year 2020. In the year 2040 the LOS improves to LOS B for the AM peak hour and remains at LOS C for the PM peak hour.

- SR 73 / US 321 at Helton Road / Tuckaleechee Pike. In the year 2040 in the PM peak hour, the Preferred Alternative improves the LOS to D.

The new interchanges created by the Preferred Alternative at SR 33 and US 411 are shown to operate at an acceptable level in the year 2020. By the year 2040, some of the movements / operations begin to degrade given the volumes forecasted for these intersections. Further consideration would need to be given to the specific design for these interchanges in future project stages.

Table 24 provides a summary of the intersection LOS.

Alternative D

Alternative D would result in intersection operations similar in general to those for the No-Build scenario. However, with increased traffic volumes at the SR 33/Sam Houston School Road, this intersection declines under Alternative D from a LOS B/C to a LOS E/F in the AM peak hour and a LOS B to a LOS B/F in the PM peak hour. It was not possible to directly compare the intersection operations along the Alternative D route to those currently existing as the slight realignment associated with Alternative D will result in the combination of offset intersections. Initially it was assumed the new intersections would be STOP controlled northbound/southbound, leaving the east-west routes free-flowing (Wildwood Road, SR 35 / US 411 / Sevierville Road, Davis Ford Road, and SR 73 / US 321); however, that results in failing operations on the STOP controlled approaches. Additional analysis was conducted to determine if signalizing these intersections would alleviate the congestion. Given the high volumes associated with this alternative, the capacity is still exceeded at these intersections, resulting for the most part in failing operations (LOS F).

Table 25 presents a summary of the new intersections between SR 33 and US 321 for 2020 and 2040.

Table 24: Intersection LOS Summary

Intersection	AM Peak Hour							PM Peak Hour						
	2013 Existing	2020 No-Build	2040 No Build	2020 Preferred Alternative	2040 Preferred Alternative	2020 Alternative D	2040 Alternative D	2013 Existing	2020 No-Build	2040 No Build	2020 Preferred Alternative	2040 Preferred Alternative	2020 Alternative D	2040 Alternative D
SR 33 @ I-140 Off-Ramp	C	D	F	B*	F*	C	F	F	E	F	A*	D*	D	F
SR 33 @ I-140 On-Ramp	F	F	F	C*	F*	F	F	C	E	F	C*	F*	F	F
SR 33 @ Wildwood Rd	D	F	F	F	F	F	F	F	F	F	F	F	F	F
SR 33 / E. Broadway Ave @ SR 35 / S. Washington St	C	D	D	C	C	C	D	E	F	F	D	F	F	F
SR 35 / S. Washington St @ Sevierville Rd	B	B	B	B	B	B	B	C	C	D	C	C	C	C
S. Washington St / SR 35 @ High St / SR 35	C	C	D	C	C	C	D	C	D	E	C	F	D	E
S. Washington St @ SR 73 / US 321	F	F	F	F	F	F	F	F	F	F	F	F	F	F
SR 33 @ Sam Houston School Road	B	B	C	D	D	E	F	B	B	B	B	B	B	F
Sam Houston School Road @ Wildwood Road	B	C	F	B	B	**	**	B	C	F	B	B	**	**
Peppermint Road @ Wildwood Road	B	F	F	C	D	**	**	B	F	F	C	C	**	**
SR 35 / US 411 / Sevierville Road @ Peppermint Road	C	F	F	C	B	**	**	C	F	F	C	C	**	**
SR 35 / US 411 / Sevierville Road @ Hitch Road / Peppermint Hills Drive	C	D	F	C	B	**	**	C	D	F	C	C	**	**
Davis Ford Road @ Hitch Road	B	B	B	A	A	**	**	A	B	B	B	B	**	**
Davis Ford Road @ Helton Road	A	A	A	A	A	**	**	A	A	A	A	A	**	**
SR 73 / US 321 @ Helton Road / Tuckaleechee Pike	F	F	F	F	F	**	**	D	F	F	D	D	**	**

*LOS considers reconfiguration of the intersection to accommodate additional ramps for the PPE.

**LOS is not shown due to reconfiguration of intersection as part of Alternative D and are not directly comparable to existing conditions or the Preferred Alternative.

Table 25: Alternative D New Intersections LOS Summary

Intersection	AM				PM			
	2020 Alternative D STOP Controlled	2040 Alternative D STOP Controlled	2020 Alternative D Signalized	2040 Alternative D Signalized	2020 Alternative D STOP Controlled	2040 Alternative D STOP Controlled	2020 Alternative D Signalized	2040 Alternative D Signalized
SR 33 @ Sam Houston School Road	E	F	E	F	B	F	B	F
Sam Houston School Road / Peppermint Road @ Wildwood Road	F	F	D	F	F	F	C	F
SR 35 / US 411 / Sevierville Road @ Peppermint Road / Hitch Road	F	F	F	F	F	F	C	F
Davis Ford Road @ Hitch Road / Helton Road	E	F	C	F	B	F	B	C
SR 73 / US 321 @ Helton Road / Tuckaleechee Pike	F	F	F	F	F	F	C	F

Note: SR 33 @ Sam Houston School Road is signalized for all scenarios.

3.4 Intersection Delay Results

The delay associated with the LOS is another measure to determine changes in traffic operations. Delay is a measure of the additional travel time experienced by a driver through an intersection. The average delay per movement is shown on the previous tables (**Tables 13 – 23**), which detail intersection LOS. To provide a summary of the impacts associated with the Preferred Alternative and Alternative D, the delay was compared to the No-Build Alternative. **Table 26** summarizes the expected change in the amount of delay (in terms of seconds of delay) at key intersections in the Maryville core in 2040 for the Preferred Alternative and Alternative D in comparison with the No-Build Alternative. (The Maryville core is defined as the downtown area in the vicinity of SR 35/Washington Street between Broadway Avenue and US 321.)

Table 26: 2040 Intersection Delay Change at Key Intersections in Maryville Core

Intersection	Preferred Alternative*		Alternative D*	
	AM Change in Delay (seconds)	PM Change in Delay (seconds)	AM Change in Delay (seconds)	PM Change in Delay (seconds)
SR 33/E Broadway Ave @ SR 35/S Washington St	19.2	85.1	9.6	40.7
SR 35/S Washington St @ Sevierville Rd	1.4	9.3	1.9	9.2
S Washington St/SR 35 @ High St/SR 35	15.8	-11.3	8.0	14.0
S Washington St @ SR 73/US 321	106.4	162.7	128.1	138.7

 Preferred Alternative operates better than No-Build
 Preferred Alternative operates worse than No-Build

*- Compared with No-Build

Figure 12 displays the percentage difference in delay between the No-Build and the Preferred Alternative at those intersections in 2040. **Figure 13** displays the percentage difference in delay between the No-Build and Alternative D at those intersections in 2040.

As shown in **Table 26** and **Figure 12**, the Preferred Alternative shows substantial improvement in delay in most of the intersections in the Maryville core. The improvements range from 8 percent reduction in delay to 50 percent reduction in delay (compared to the No-Build). In actual terms of seconds of delay, these improvements correspond to a reduction in delay of between 1 second and 163 seconds over the No-Build.

Figure 12: Intersection Delay Comparison between 2040 No-Build and Preferred Alternative

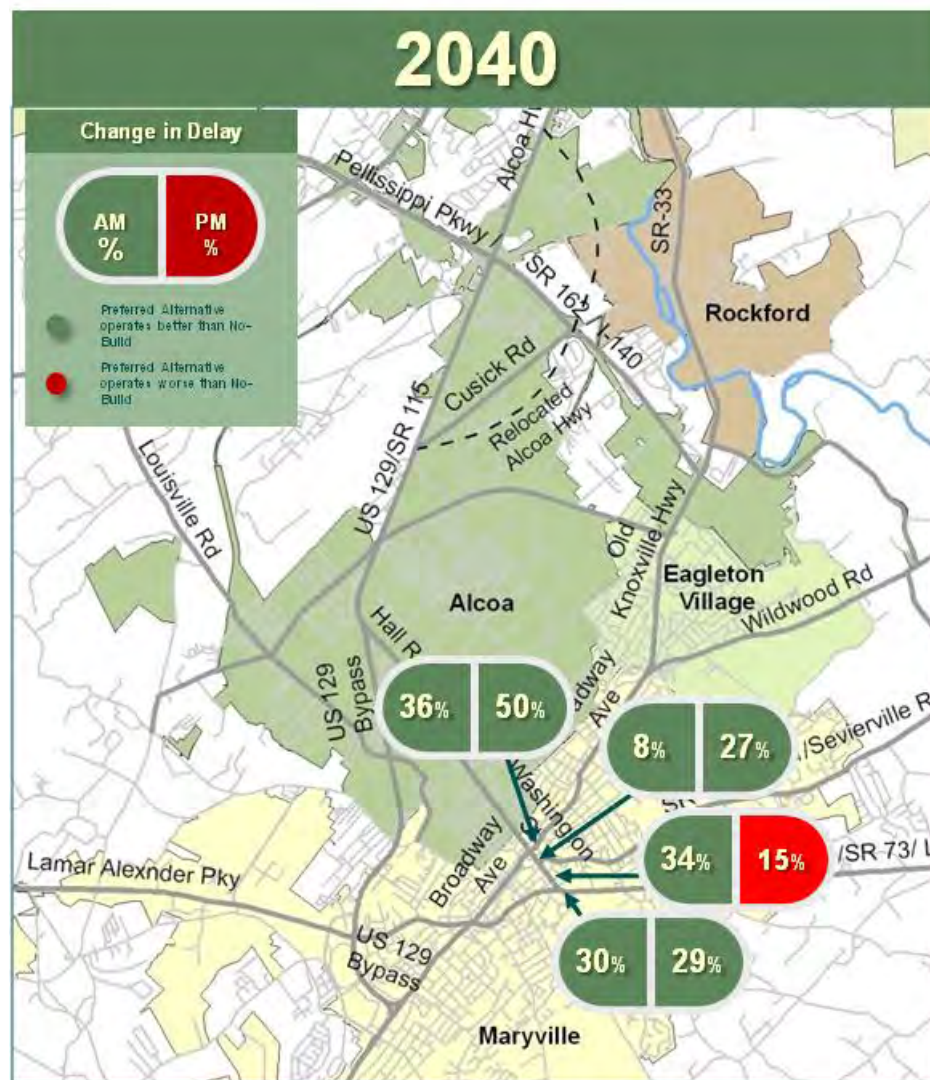
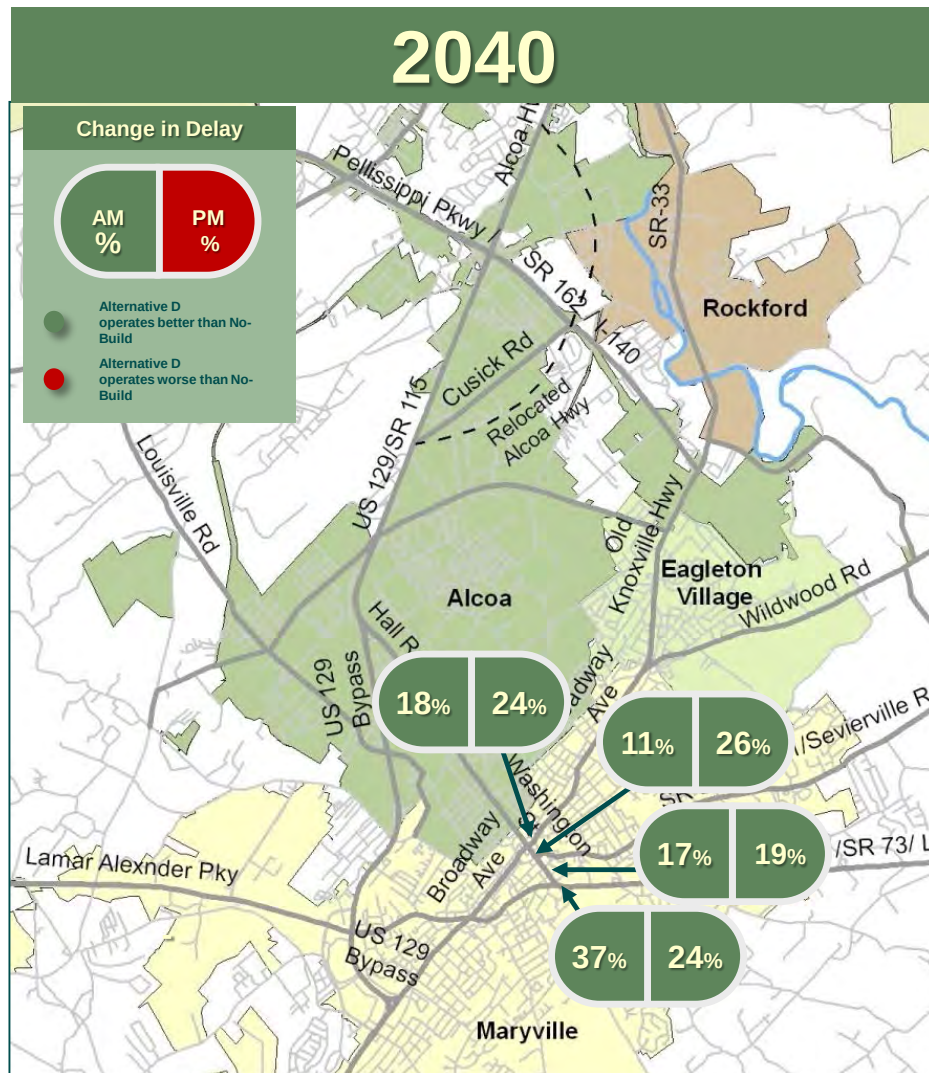


Table 26 and **Figure 13** illustrate that Alternative D results in improvement in delay in all four intersections evaluated in the Maryville core. The reduction in delay ranges from 11 percent to 37 percent compared to the No-Build Alternative. In actual terms of seconds of delay, these improvements correspond to a reduction in delay of between 2 seconds and 139 seconds over the No-Build.

Figure 13: Intersection Delay Comparison between 2040 No-Build and Alternative D



4.0 SUMMARY OF CHANGES

Following the 2013 update to the Knoxville Regional Travel Demand Model, TDOT updated that the traffic operations analysis for the Pellissippi Parkway Extension EIS. A new *Traffic Forecast Study*, prepared by Sain Associates, Inc. (December 31, 2013), was used in the 2014 traffic operations analysis (reported in the *Addendum to Traffic Operations Technical Report*, February 2014). The results of that analysis was reported in the FEIS, approved by FHWA in September 2015. Among the public comments that TDOT received on the FEIS was that Alternative D was not evaluated at the same level of detail as the No-Build Alternative and the Preferred Alternative. TDOT and FHWA determined that the level of analysis of Alternative D should be upgraded so that Alternative D can be directly comparable with the other alternatives. The update included more robust intersection LOS analysis and corridor LOS analysis for other project area roadway sections (beyond Sam Houston School Road, Peppermint Road, Helton Road, and Hitch Road) for Alternative D. To support the additional evaluation of Alternative D, traffic forecasts for all Alternative D roadway segments and intersections were developed by Sain Associates, Inc. (February 2016).

Key points related to this update include the following:

- The Preferred Alternative will operate at an acceptable LOS (LOS D or higher) through the analysis year 2040.
- Several key intersections in the Maryville core area show reductions in delay (measured in seconds) as a result of the Preferred Alternative and Alternative D.
- Under the Preferred Alternative, intersections in the eastern portion of the study area with the local roads (i.e. Sam Houston School Road at Wildwood Road, Peppermint Road at Wildwood Road, US 411 at Peppermint Road, and US 411 at Hitch Road) improve to an acceptable LOS. Also, three key intersections in the Maryville core show substantial improvements over the No-Build in 2040, although one key intersection in the core (S. Washington Street at High Street) has a reduction of 11 seconds in the PM peak period in 2040.
- Under Alternative D, operations at the new intersections have failing operations (LOS E or F) in 2040 resulting from inadequate capacity of the two-lane alternative to process the additional projected traffic volumes. This is true with either STOP controlled operations or signalized traffic operations. The four key intersections evaluated in the Maryville core show improvement in 2040 over the No-Build.

APPENDIX

Pellissippi Parkway Extension Traffic Forecasts Study February 29, 2016

TRAFFIC FORECAST STUDY

PELLISSIPPI PARKWAY EXTENSION, ALTERNATE D

From: SR-33 to SR-73/US-321, Blount County

PIN 101423.00



TENNESSEE DEPARTMENT OF TRANSPORTATION

PREPARED BY SAIN ASSOCIATES, INC.

for the

Strategic Transportation Investments Division

Approved by:	Signature	DATE
DIRECTOR, STRATEGIC TRANSPORTATION INVESTMENTS DIVISION		2-29-16

This document is covered by 23 USC § 409 and its production pursuant to fulfilling public planning requirements does not waive the provisions of § 409.



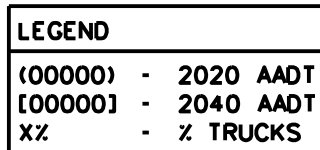
MEMORANDUM

TO: **Tony Armstrong, TDOT**
FROM: **Becky White**
DATE: **February 25, 2016**
SUBJECT: **Pellissippi Parkway Alternative D
Final Traffic Forecasts for Approval**

The attached report documents segment and intersection-level traffic forecasts for horizon years 2020 and 2040 for the Alternative D alignment of Pellissippi Parkway. These forecasts were developed as requested by TDOT and were reviewed by you. All of your comments, communicated by telephone on 2/25/16 have been addressed.

The methodology used to develop these forecasts is the same as that used for development of the No Build and Build alternative forecasts that were issued in December 2013. The forecasts are based upon outputs from the Knoxville Transportation Planning Organization's adopted travel demand model for horizon year 2034.

The attached report contains a diagram of AADT Segment Volumes with Alternative D, intersection AADT and DHV volumes for year 2020, and intersection AADT and DHV volumes for year 2040.

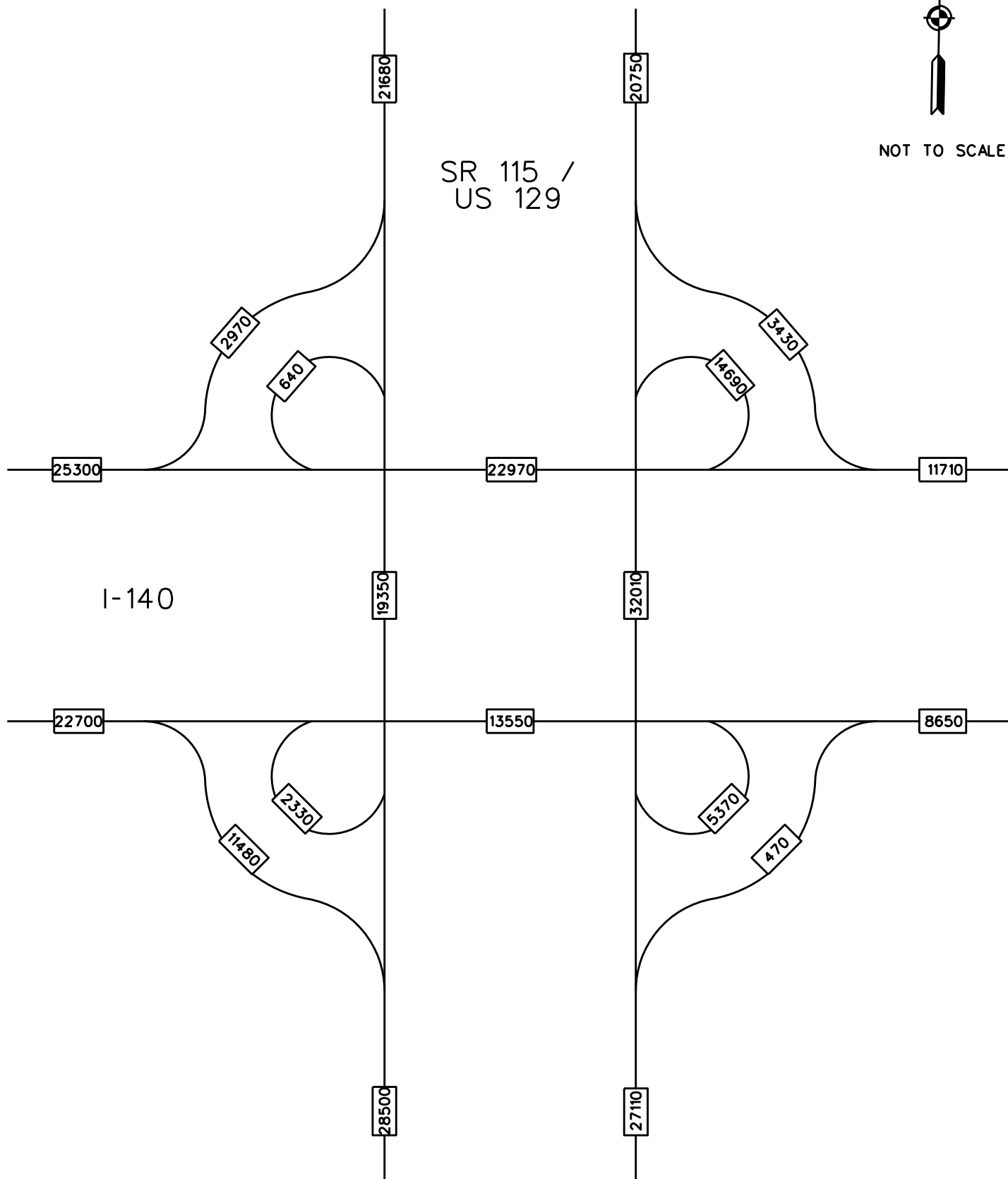


AADT SEGMENT VOLUMES WITH BUILD ALTERNATIVE D



NOT TO SCALE

SR 115 /
US 129

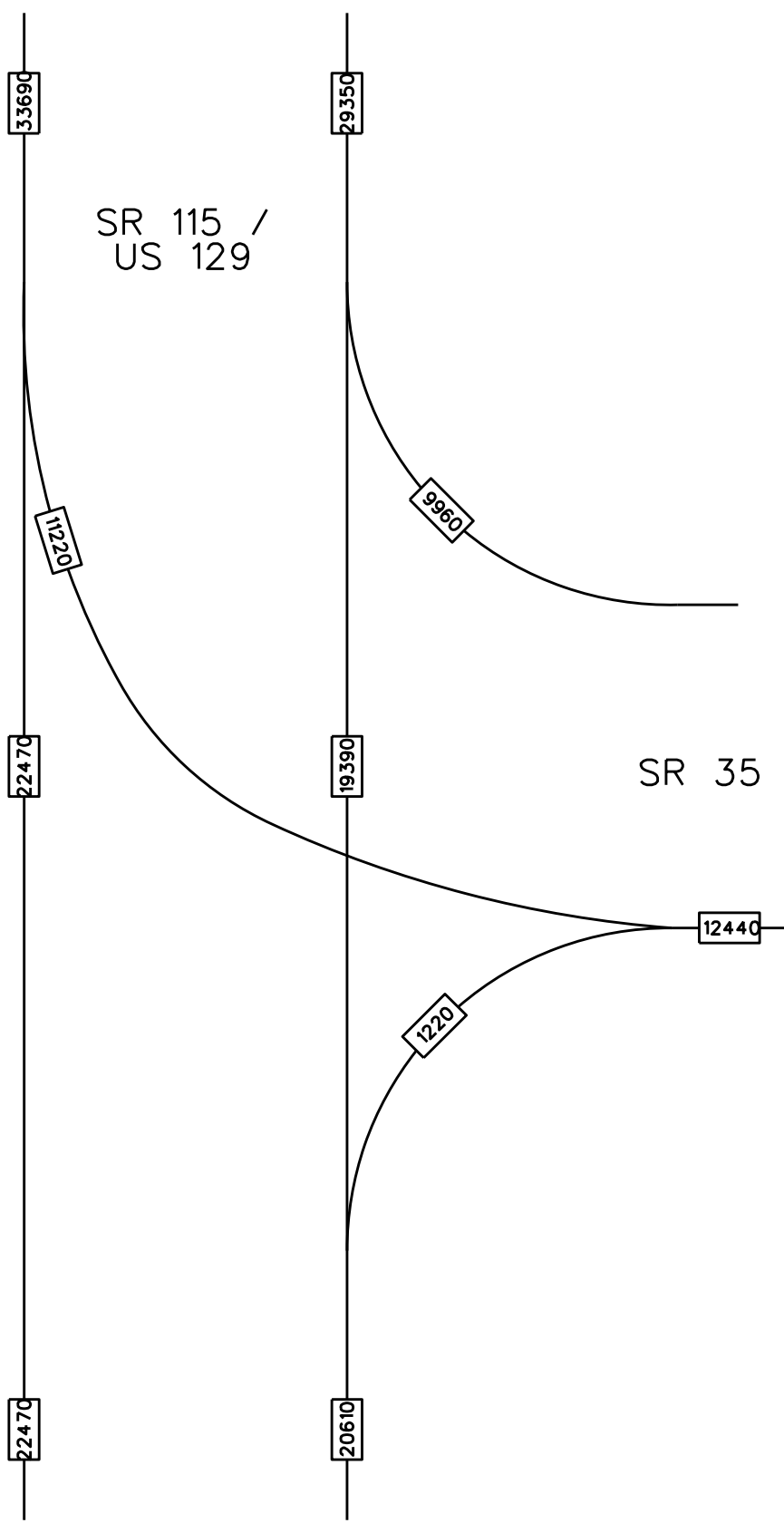


2020 AADT WITH PPE (ALT D)

SR 115/US 129 @
I-140 / PELLISSIPPI PARKWAY



NOT TO SCALE

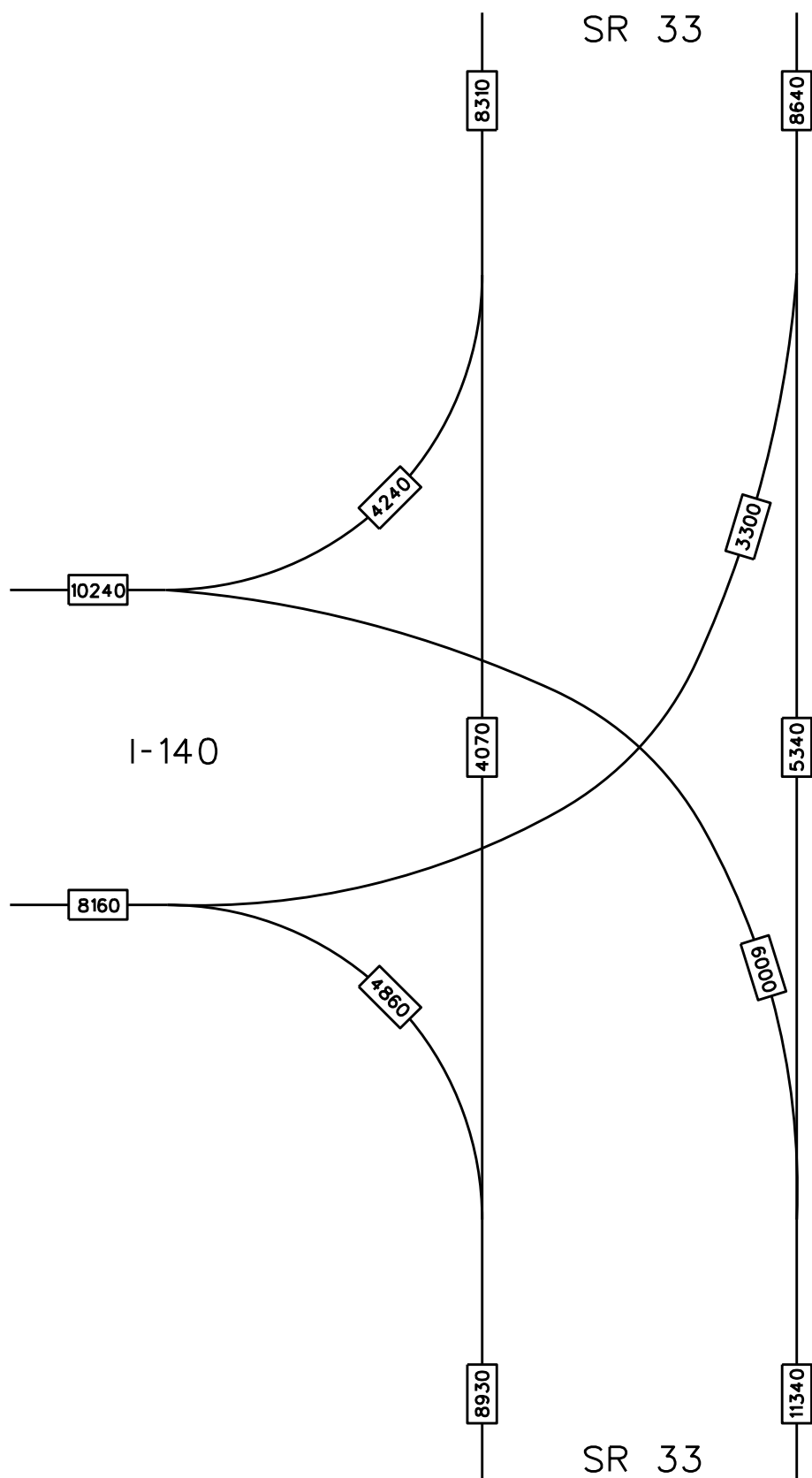


2020 AADT WITH PPE (ALT D)

SR 115/US 129 @ SR 35

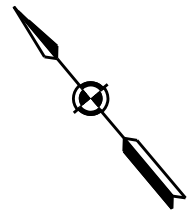


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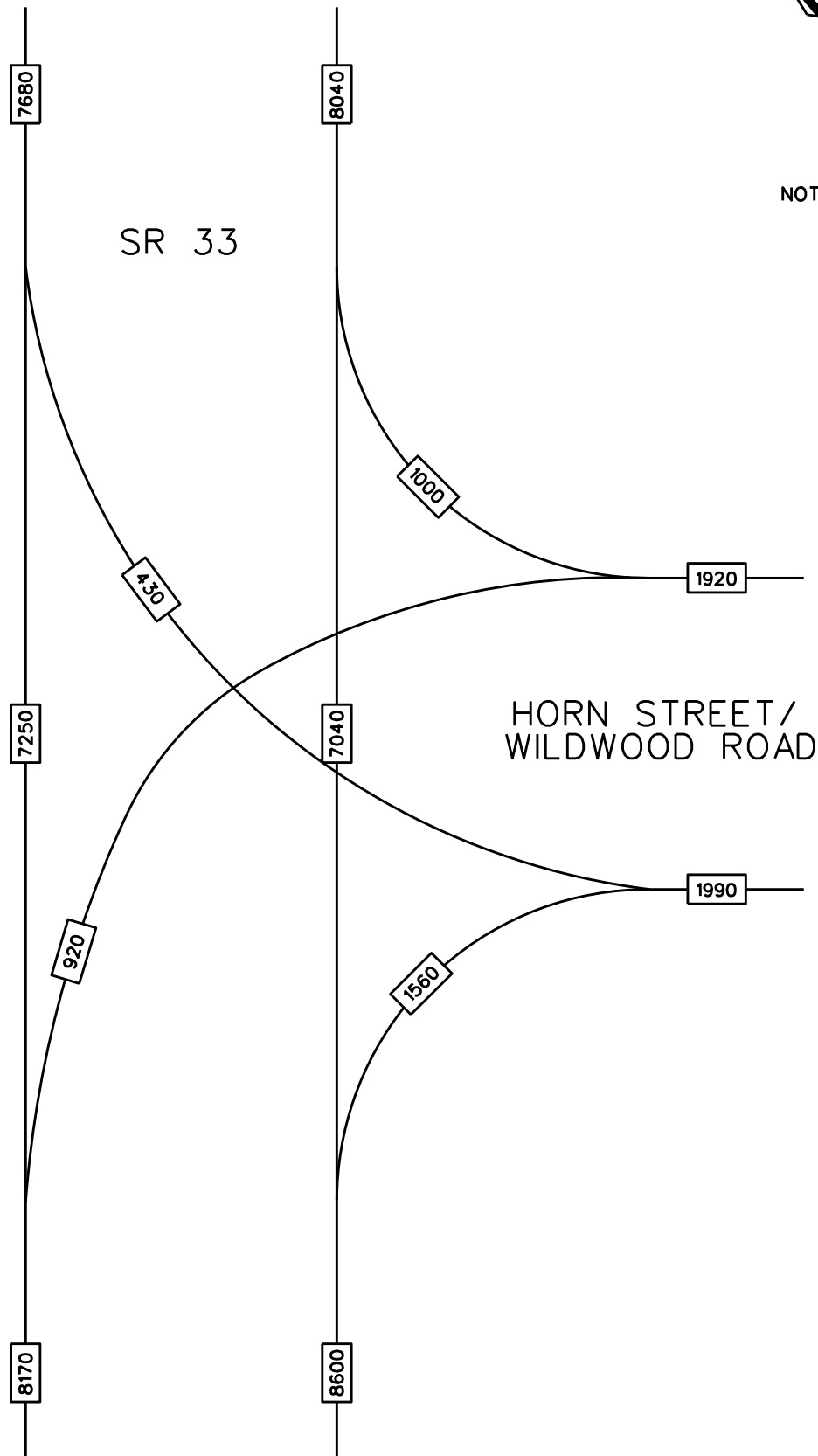


2020 AADT WITH PPE (ALT D)

SR 33 @ I-140

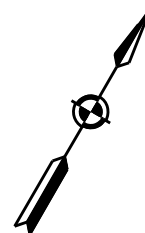


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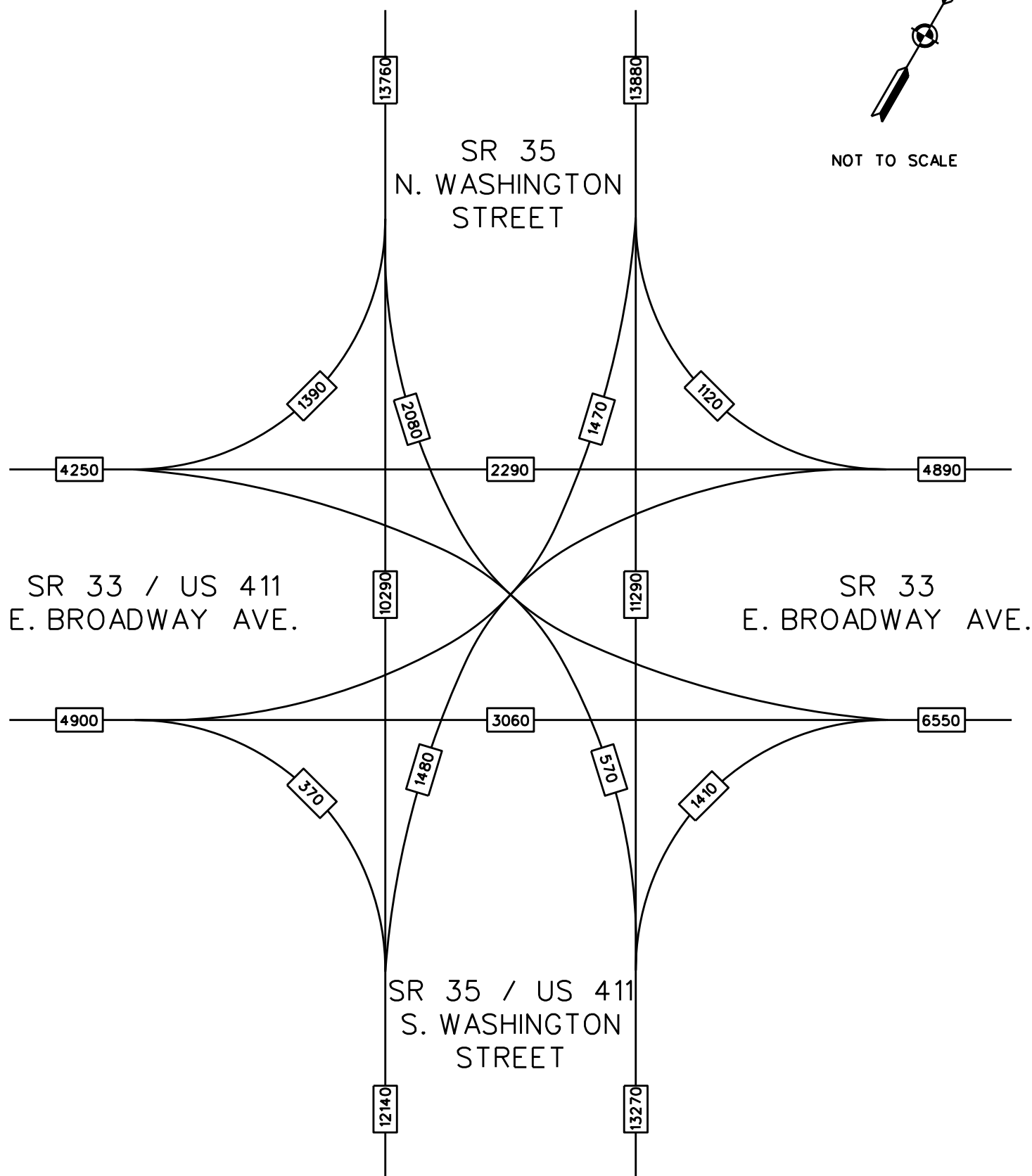


2020 AADT WITH PPE (ALT D)

SR 33
@ HORN STREET/WILDWOOD ROAD



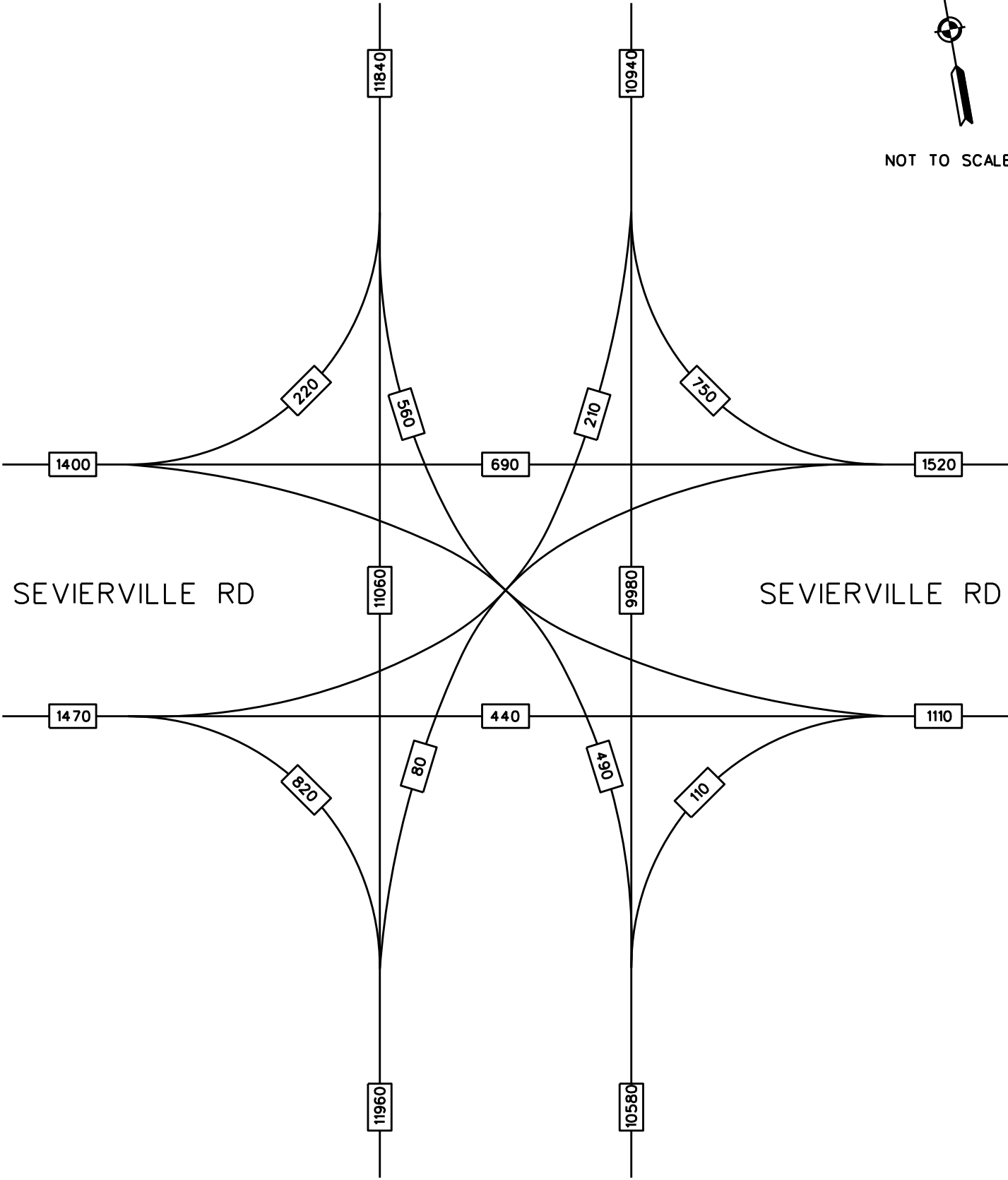
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SR 35/N. WASHINGTON ST



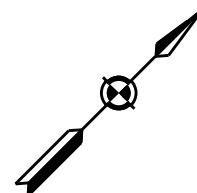
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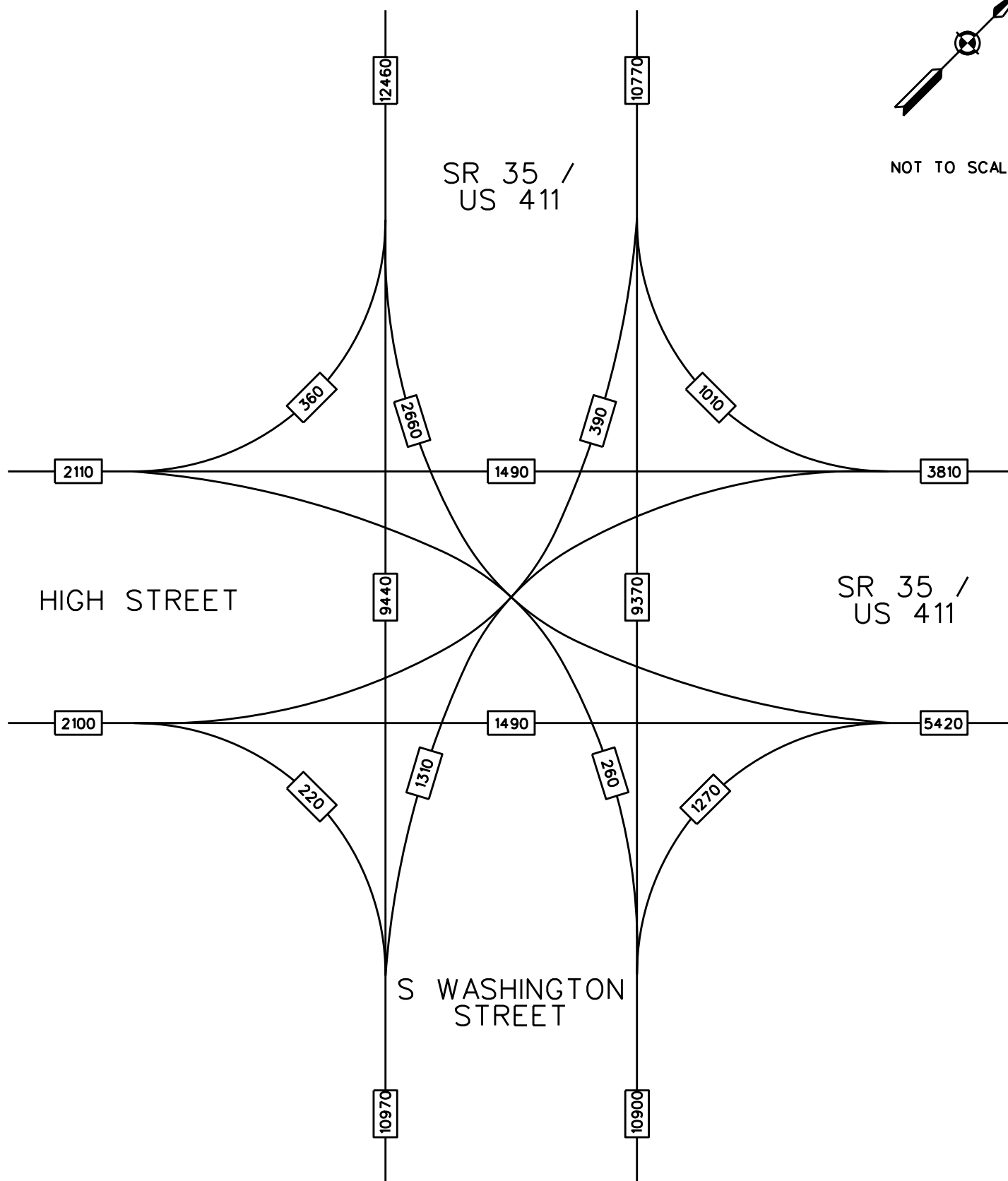
SR 35/US 411 S. WASHINGTON ST

2020 AADT WITH PPE (ALT D)

SEVIERVILLE RD @
SR 35/US 411 WASHINGTON ST

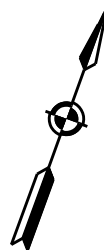


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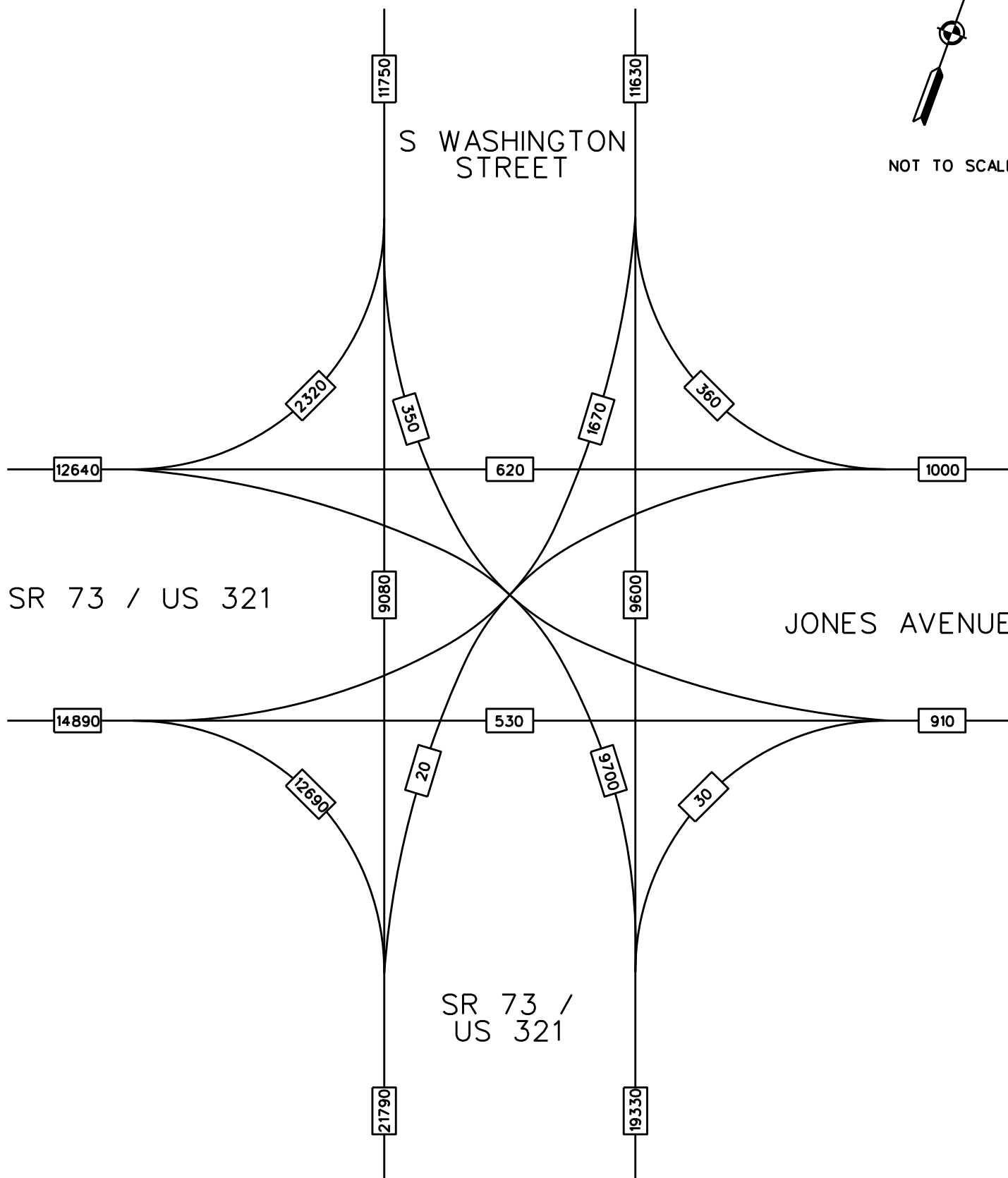


2020 AADT WITH PPE (ALT D)

S WASHINGTON ST / SR 35
@ HIGH ST / SR 35

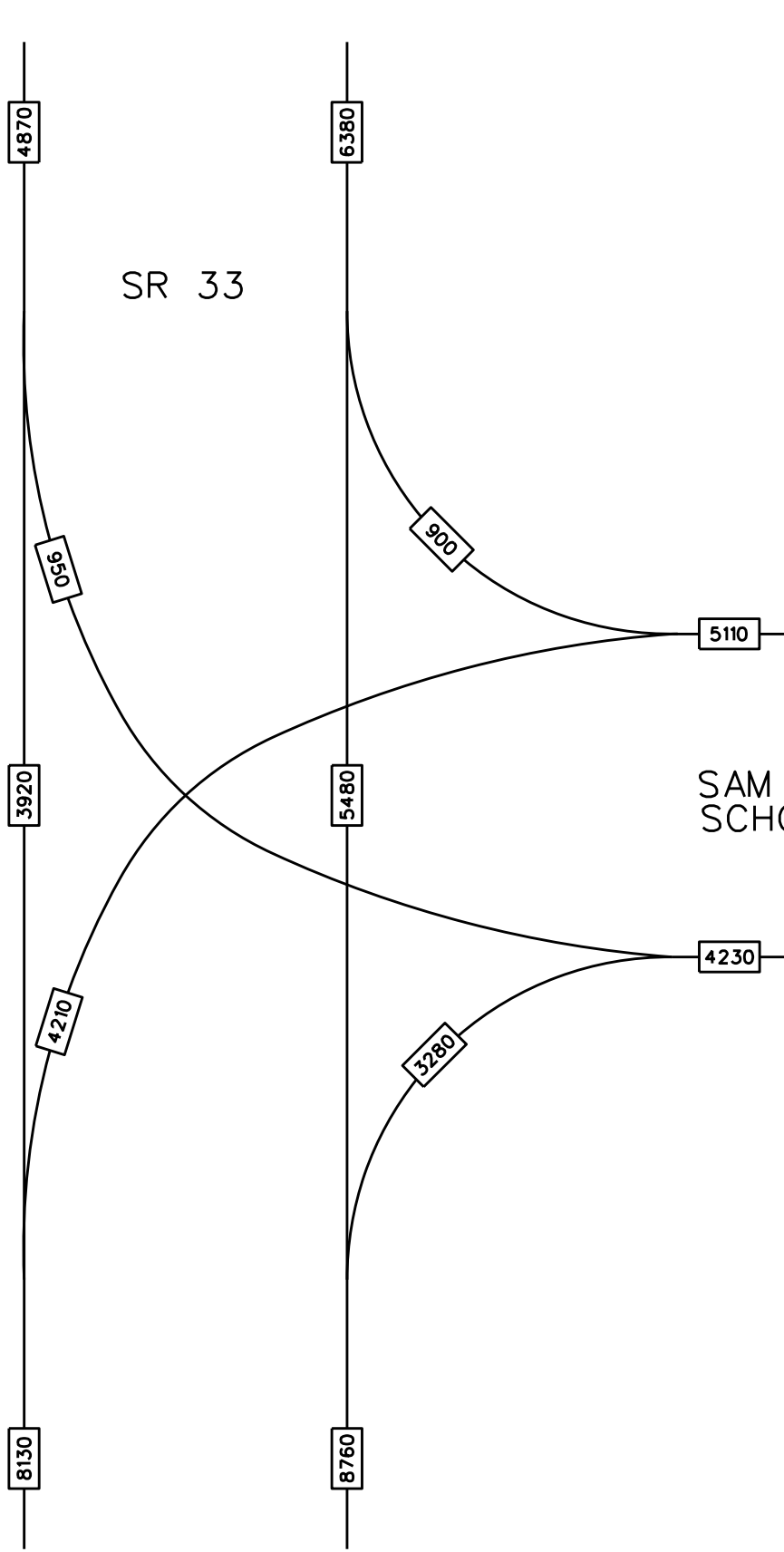


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S WASHINGTON ST
@ SR 73/ US 321



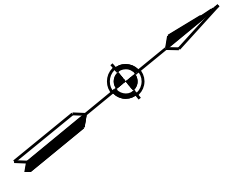
SR 33

SAM HOUSTON
SCHOOL ROAD

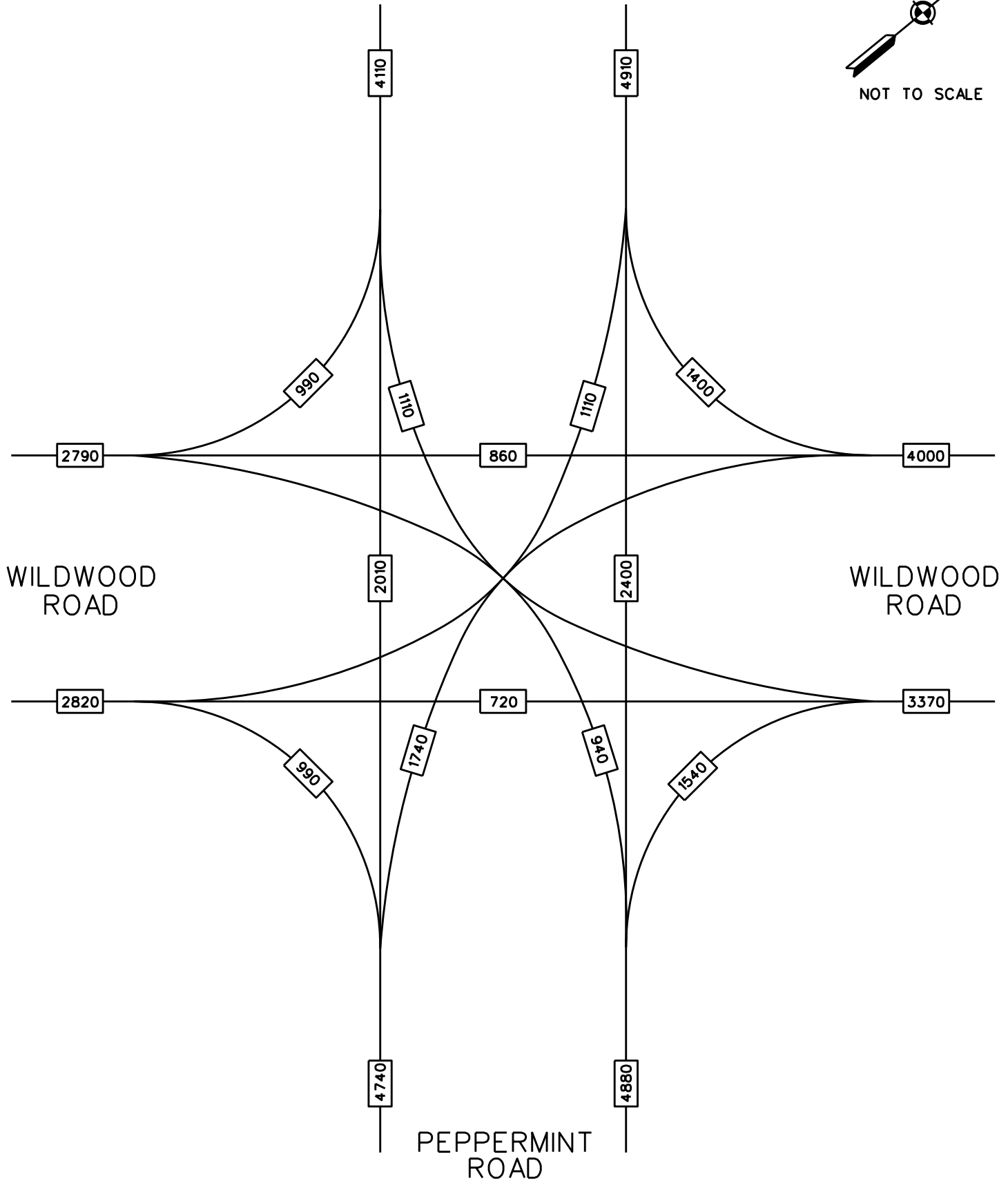
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SR 33 @
SAM HOUSTON SCHOOL ROAD

SAM HOUSTON SCHOOL ROAD

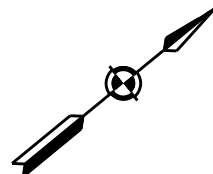


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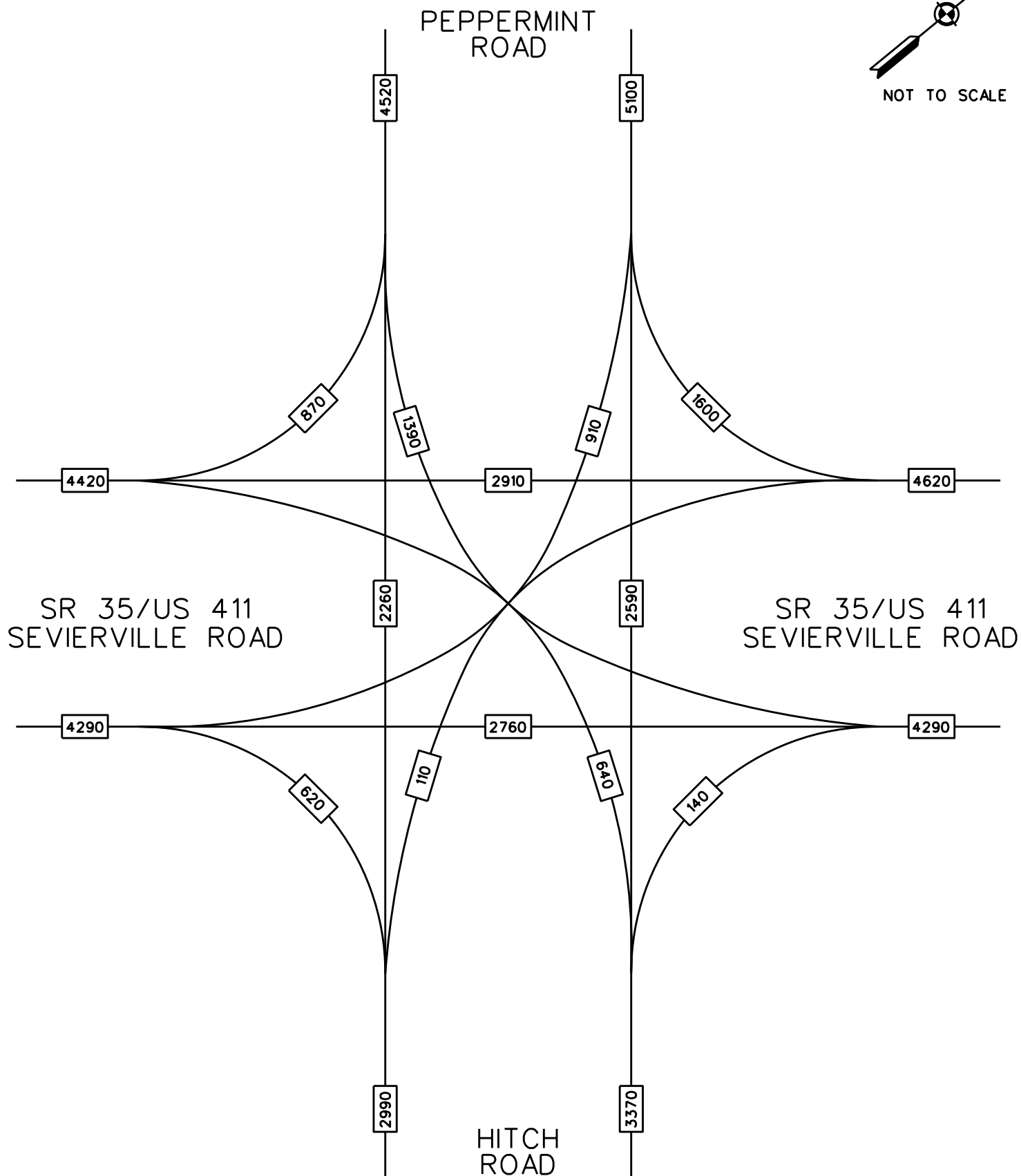


2020 AADT WITH PPE (ALT D)

WILDWOOD ROAD @ PEPPERMINT
ROAD/SAM HOUSTON SCHOOL ROAD

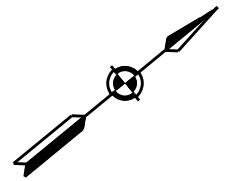


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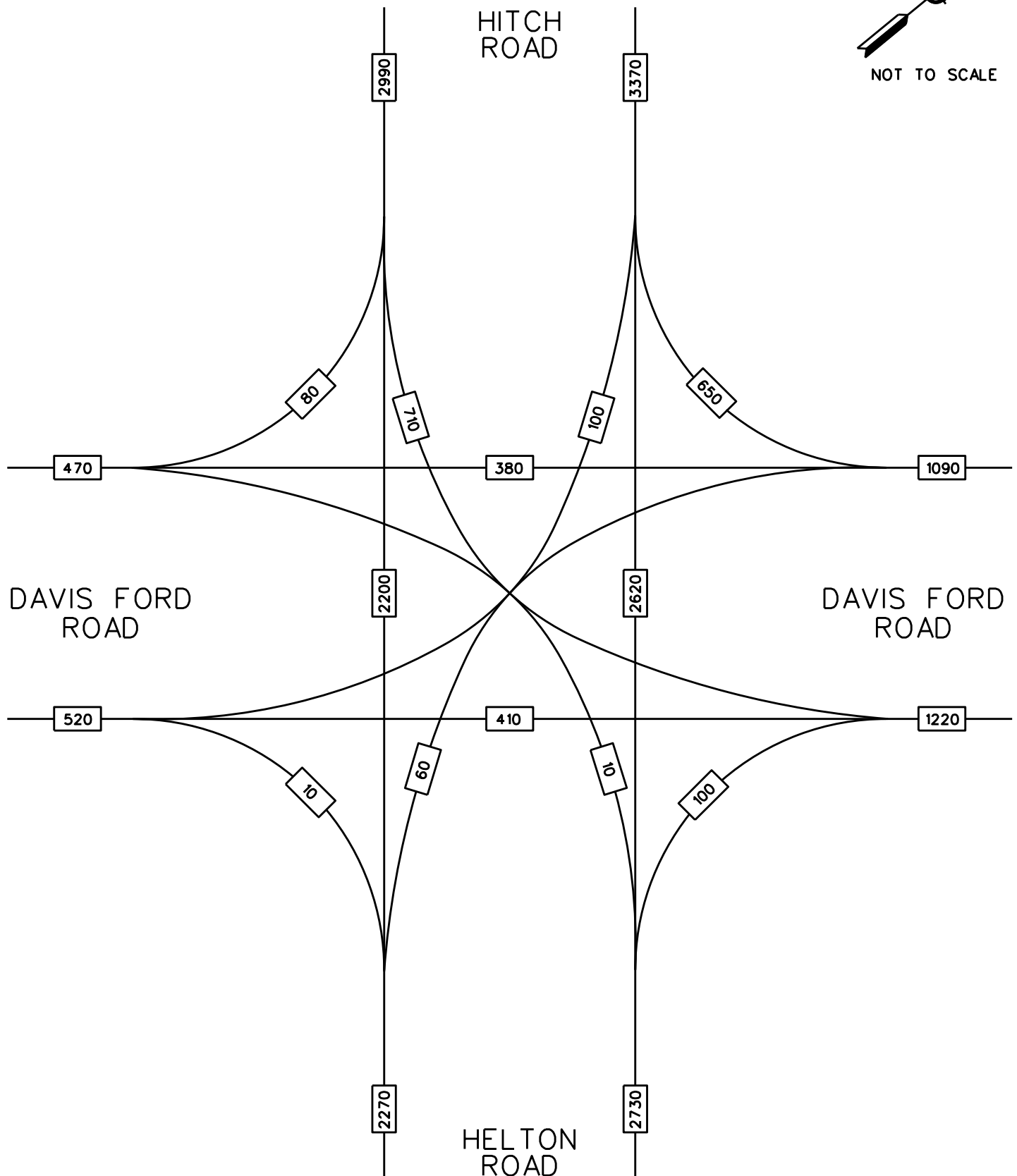


2020 AADT WITH PPE (ALT D)

SR 35/US 411/SEVIERVILLE ROAD @
PEPPERMINT ROAD/HITCH ROAD



NOT TO SCALE

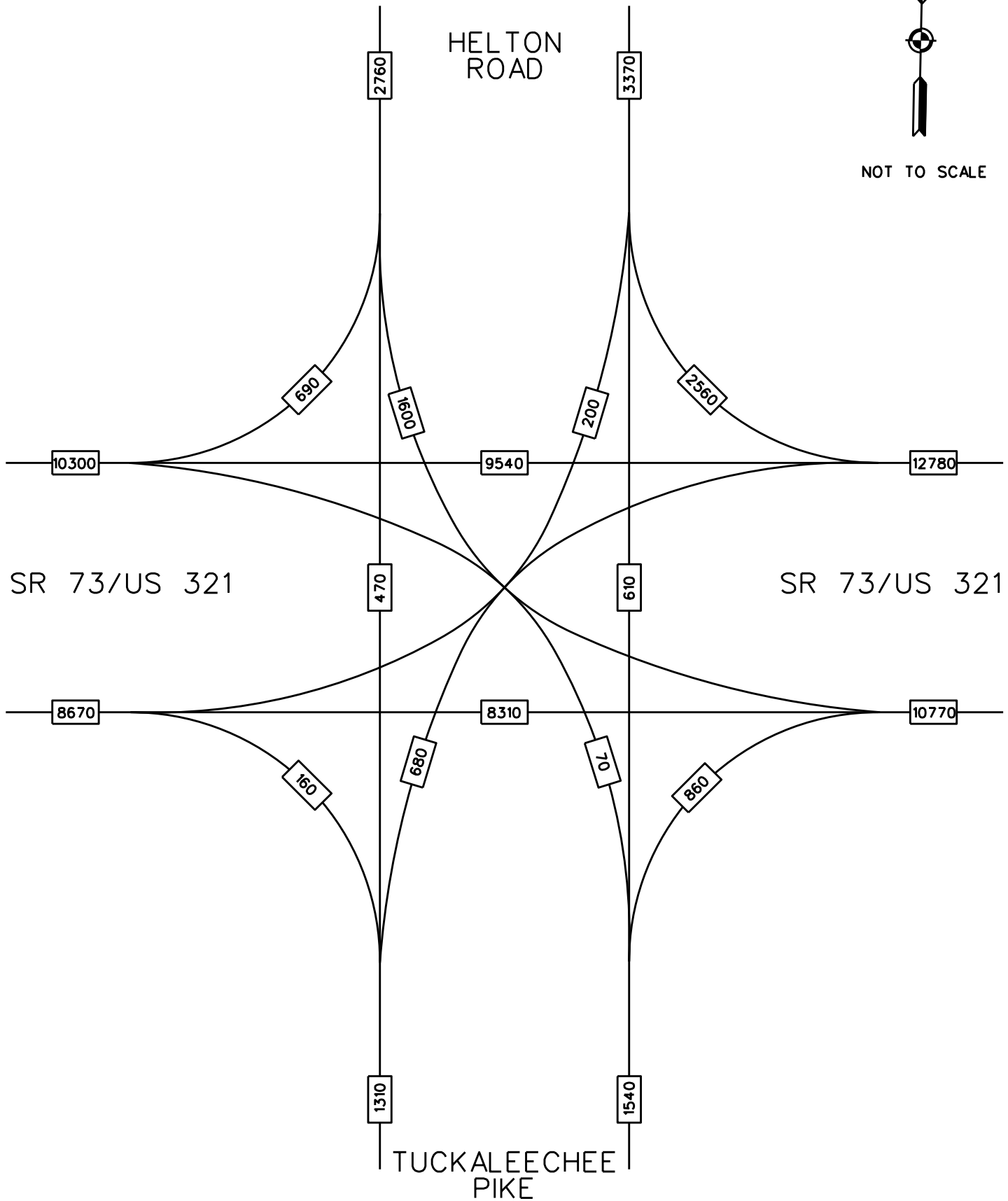


2020 AADT WITH PPE (ALT D)

DAVIS FORD ROAD @
HITCH ROAD/HELTON ROAD



NOT TO SCALE

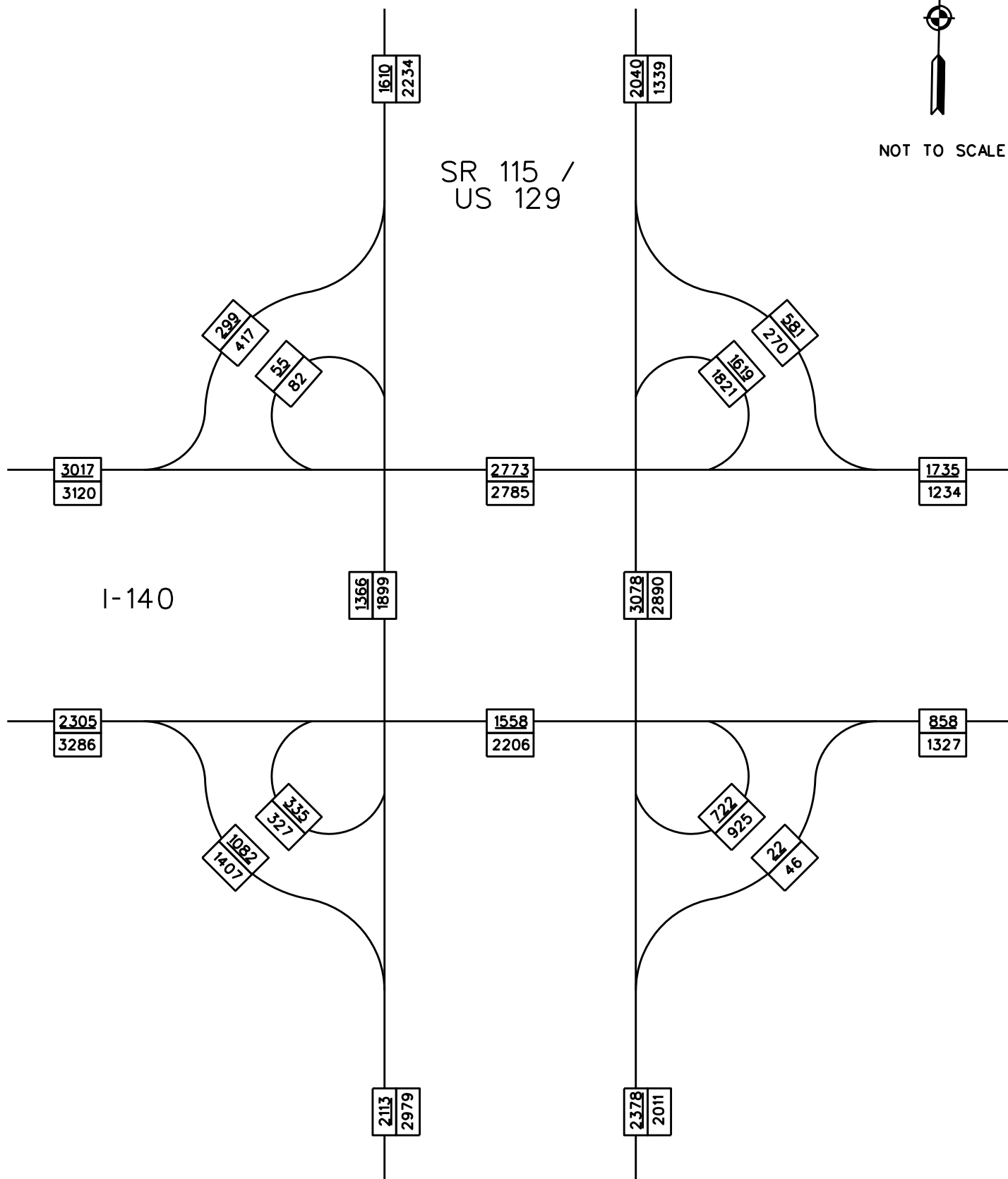


2020 AADT WITH PPE (ALT D)

SR 73/US 321 @
HELTON ROAD/TUCKALEECHEE PIKE

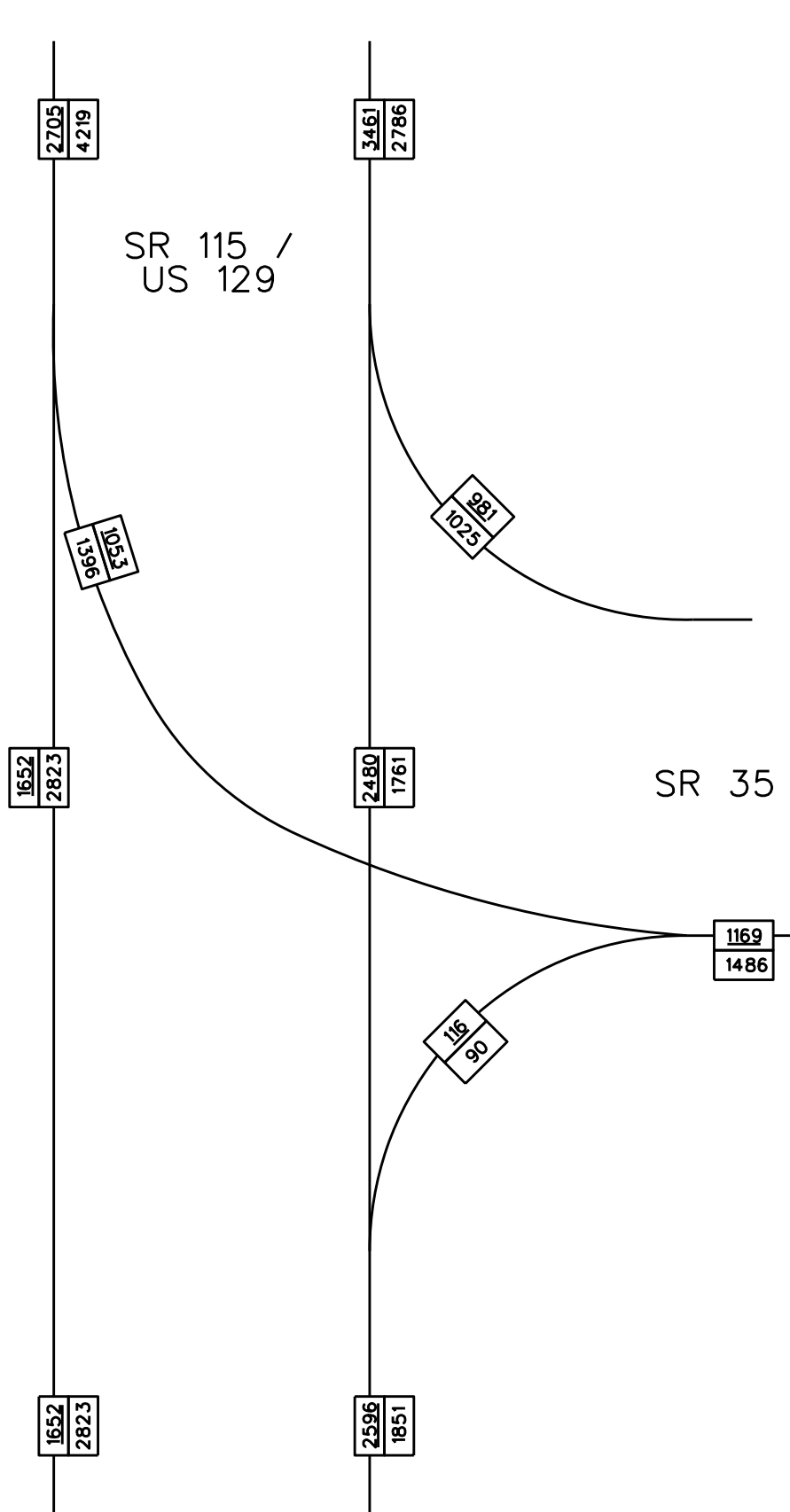


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2020 DHV WITH PPE (ALT D)
AM / PM

SR 115/US 129 @
I-140 / PELLISSIPPI PARKWAY



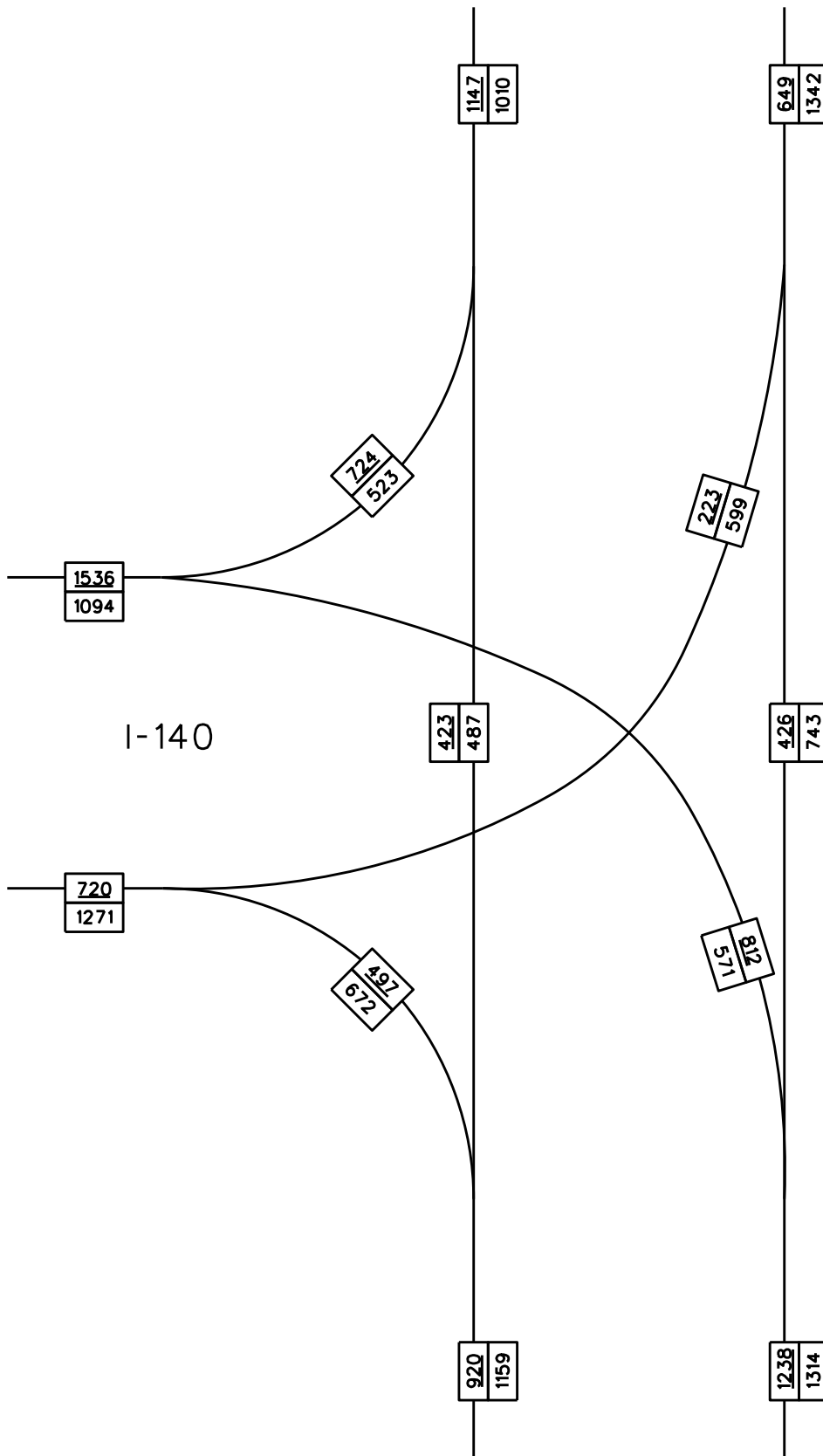
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SR 33



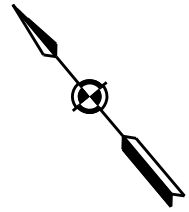
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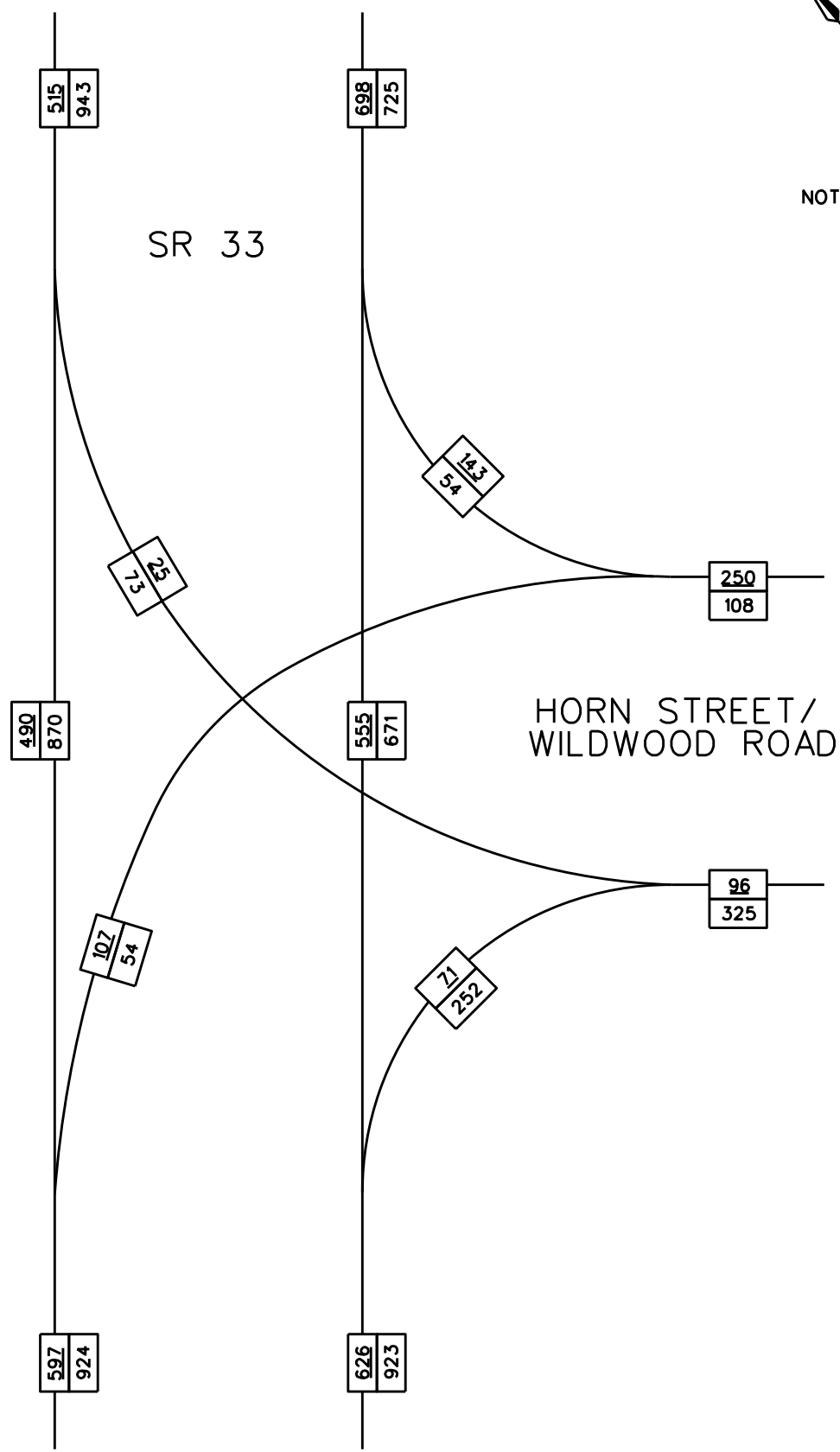
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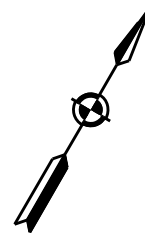
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AM / PM

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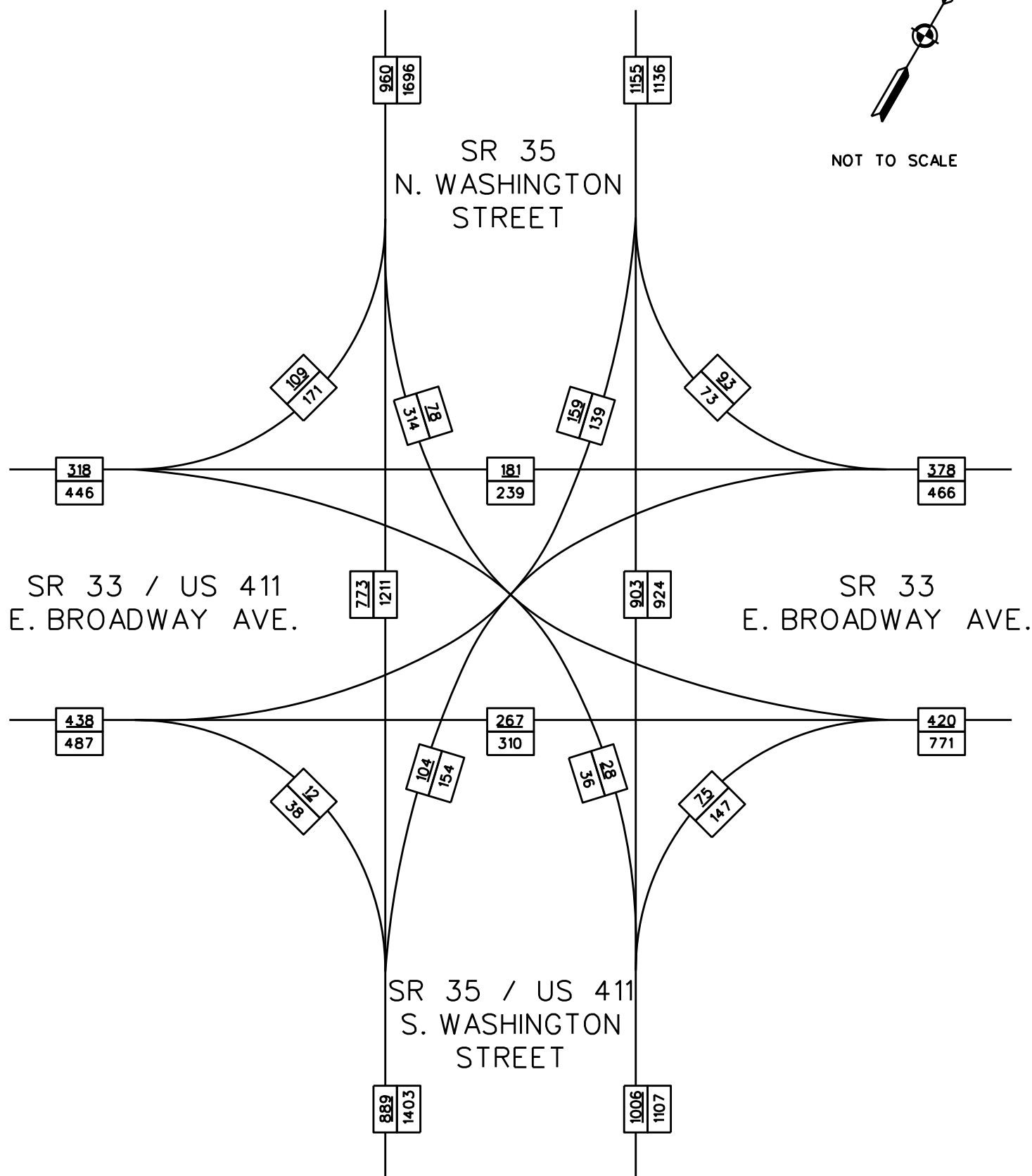


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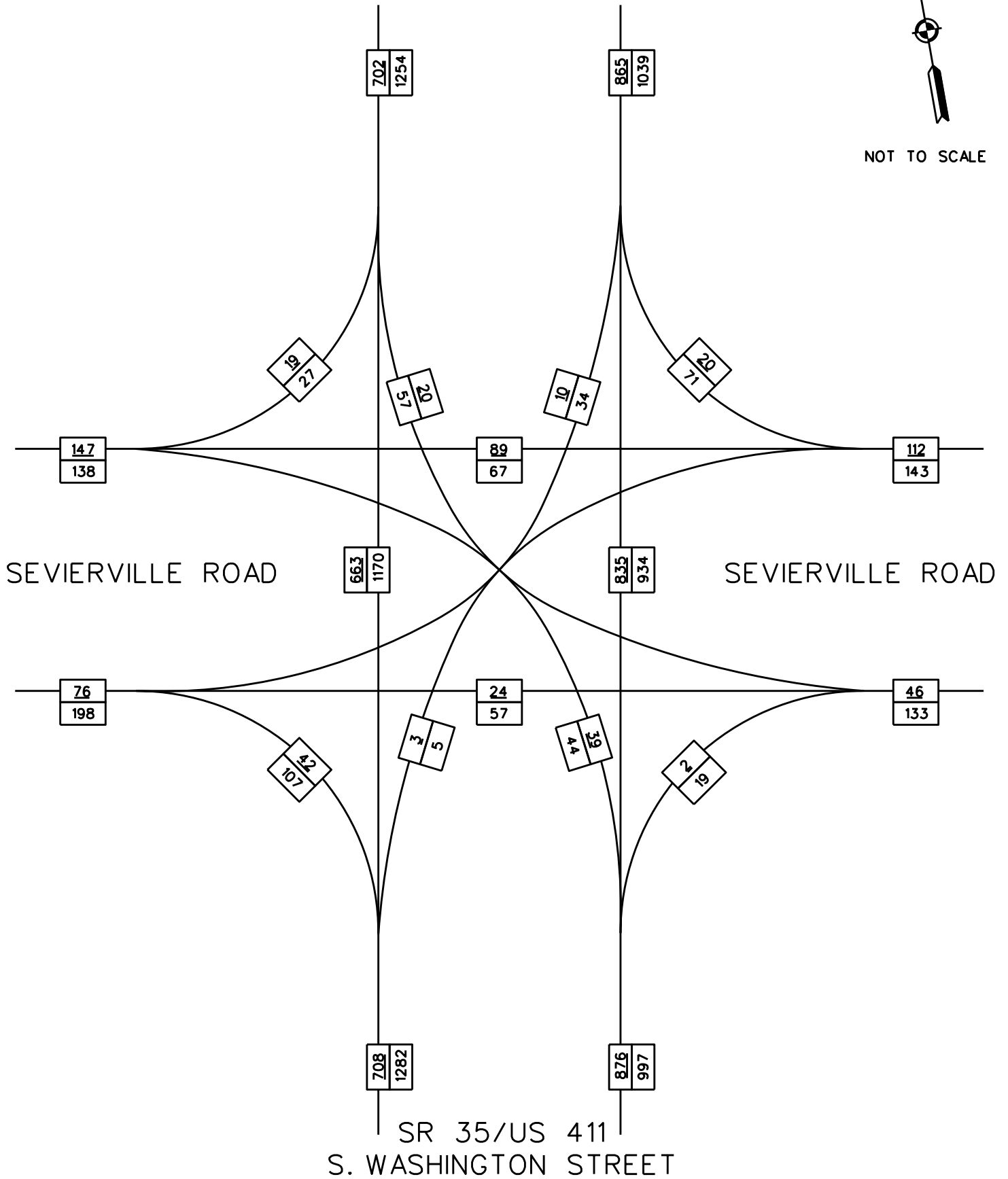
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AM / PM

SR 33 @ SR 35

SR 35/ N. WASHINGTON STREET

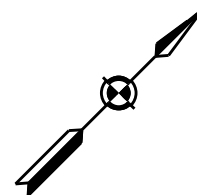


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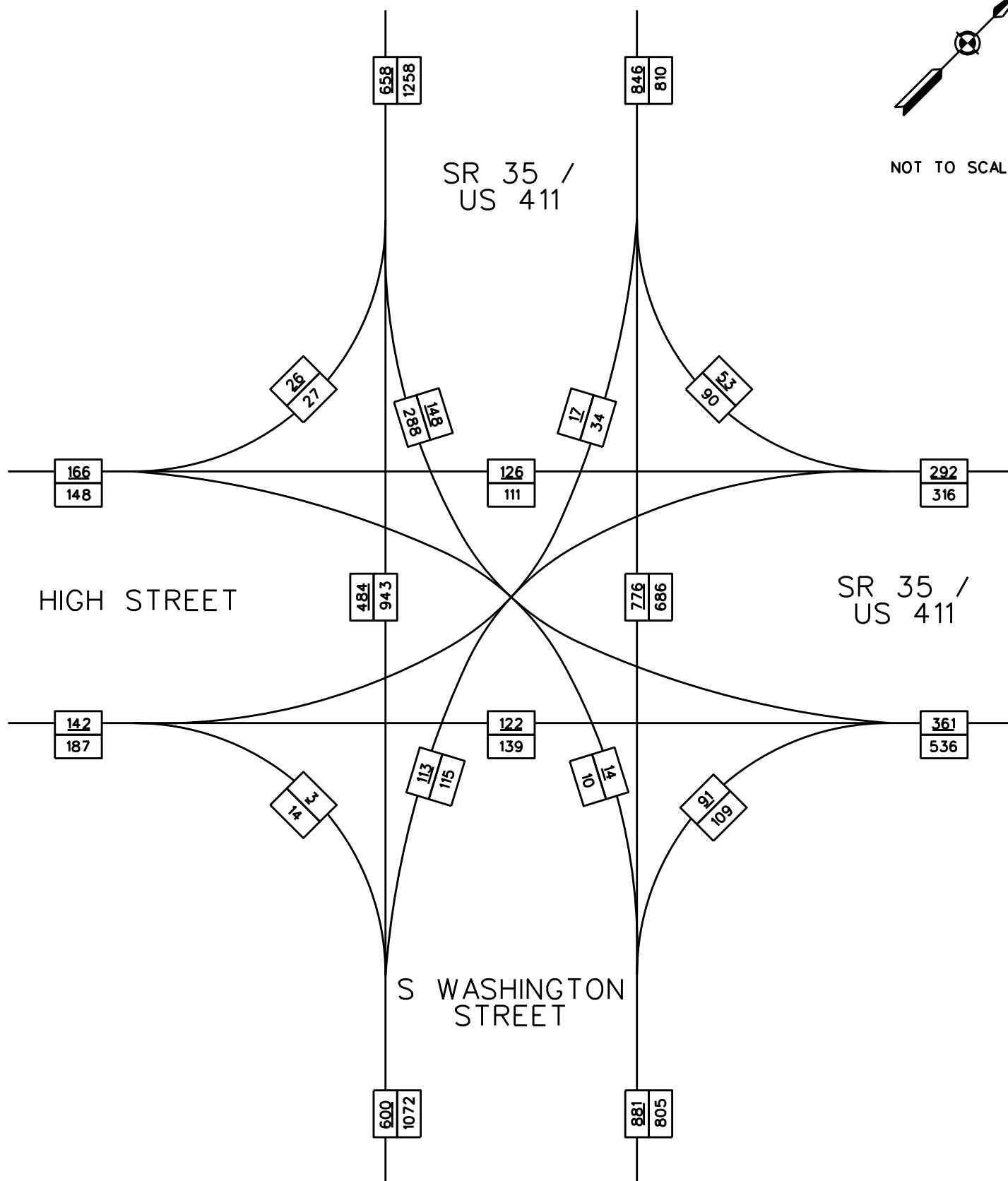


2020 DHV WITH PPE (ALT D)
AM / PM

SEVIERVILLE ROAD @
SR 35/WASHINGTON STREET

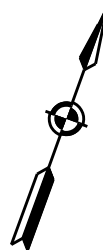


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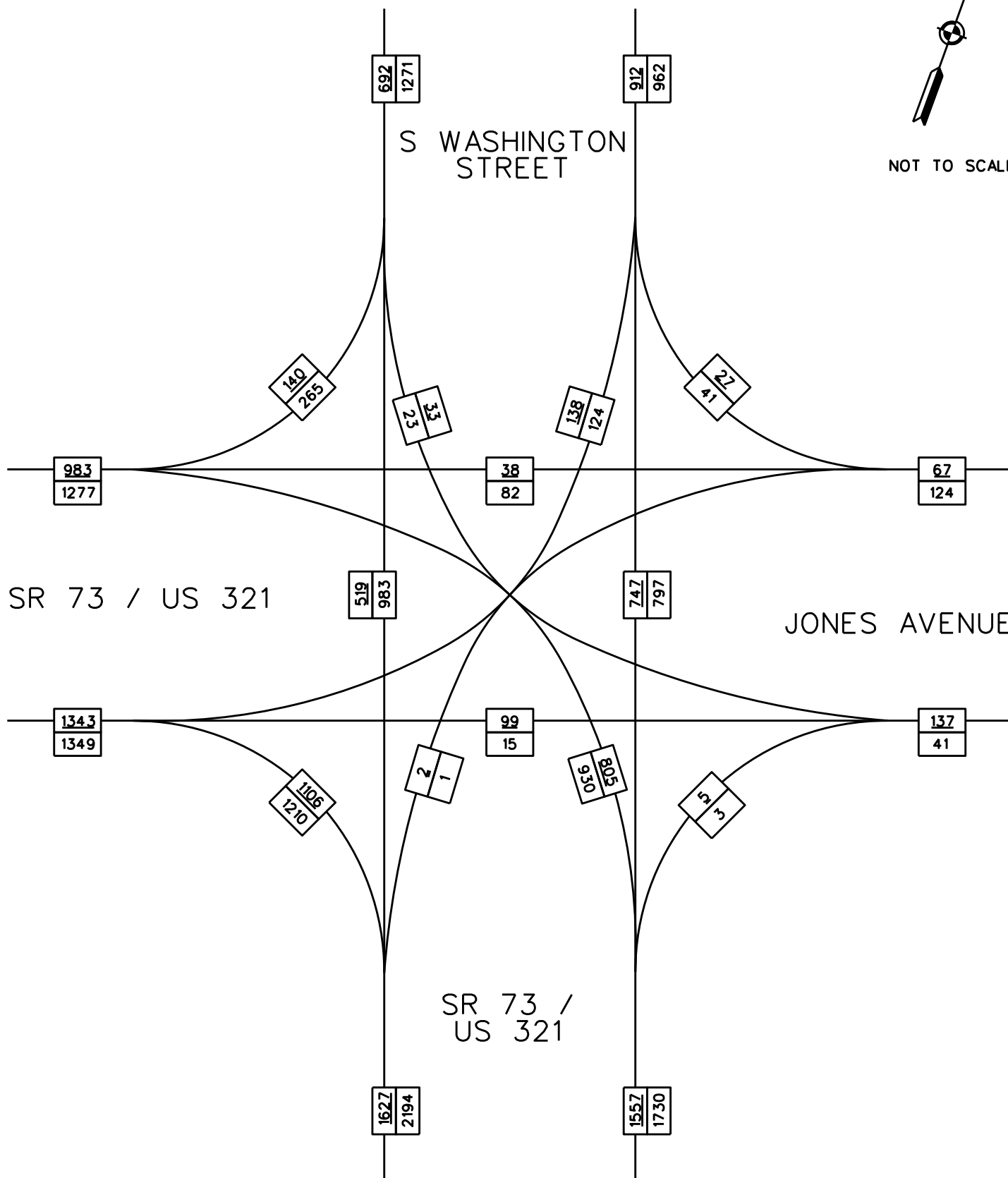


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AM / PM

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@ HIGH ST / SR 35

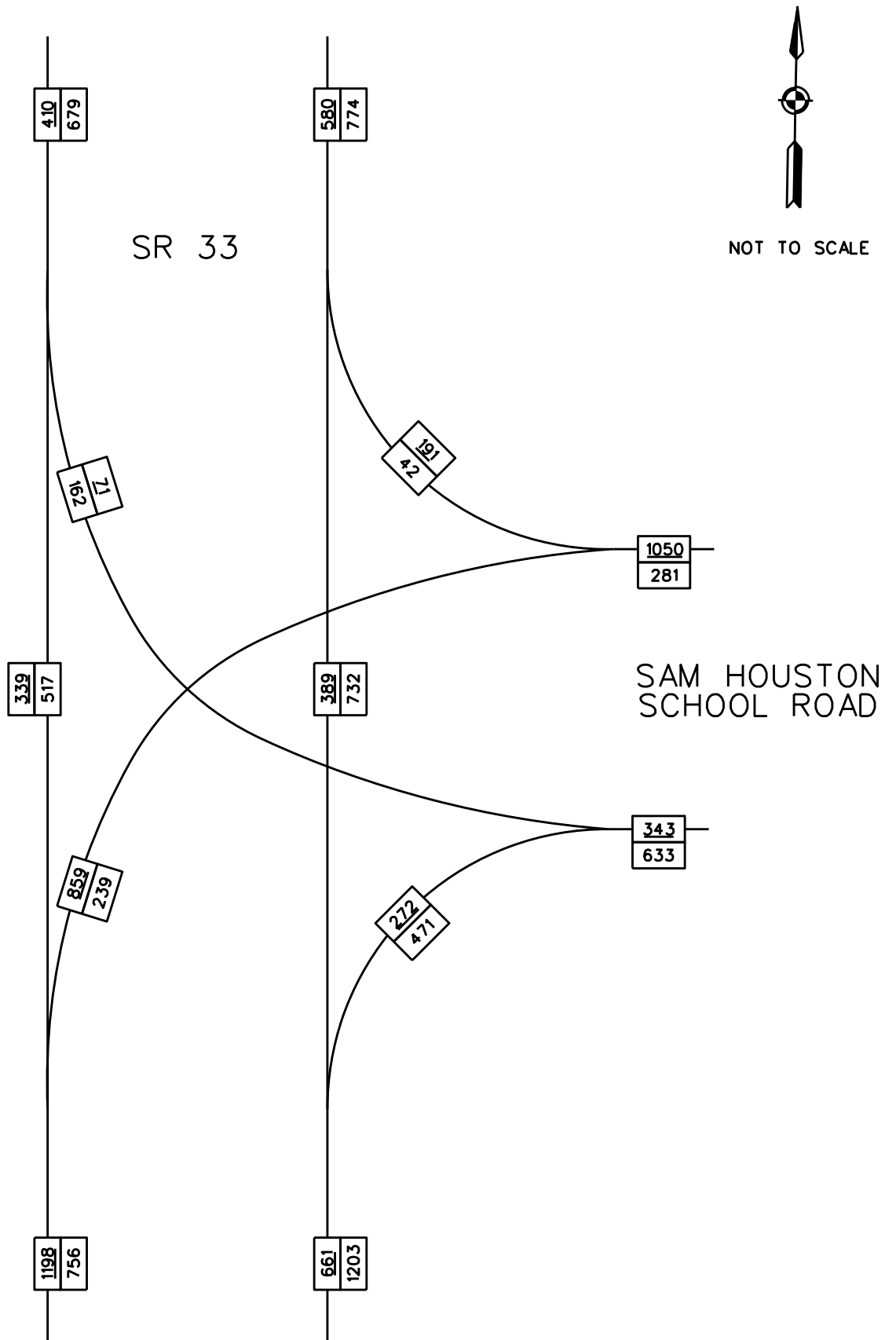


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AM / PM

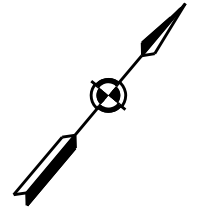
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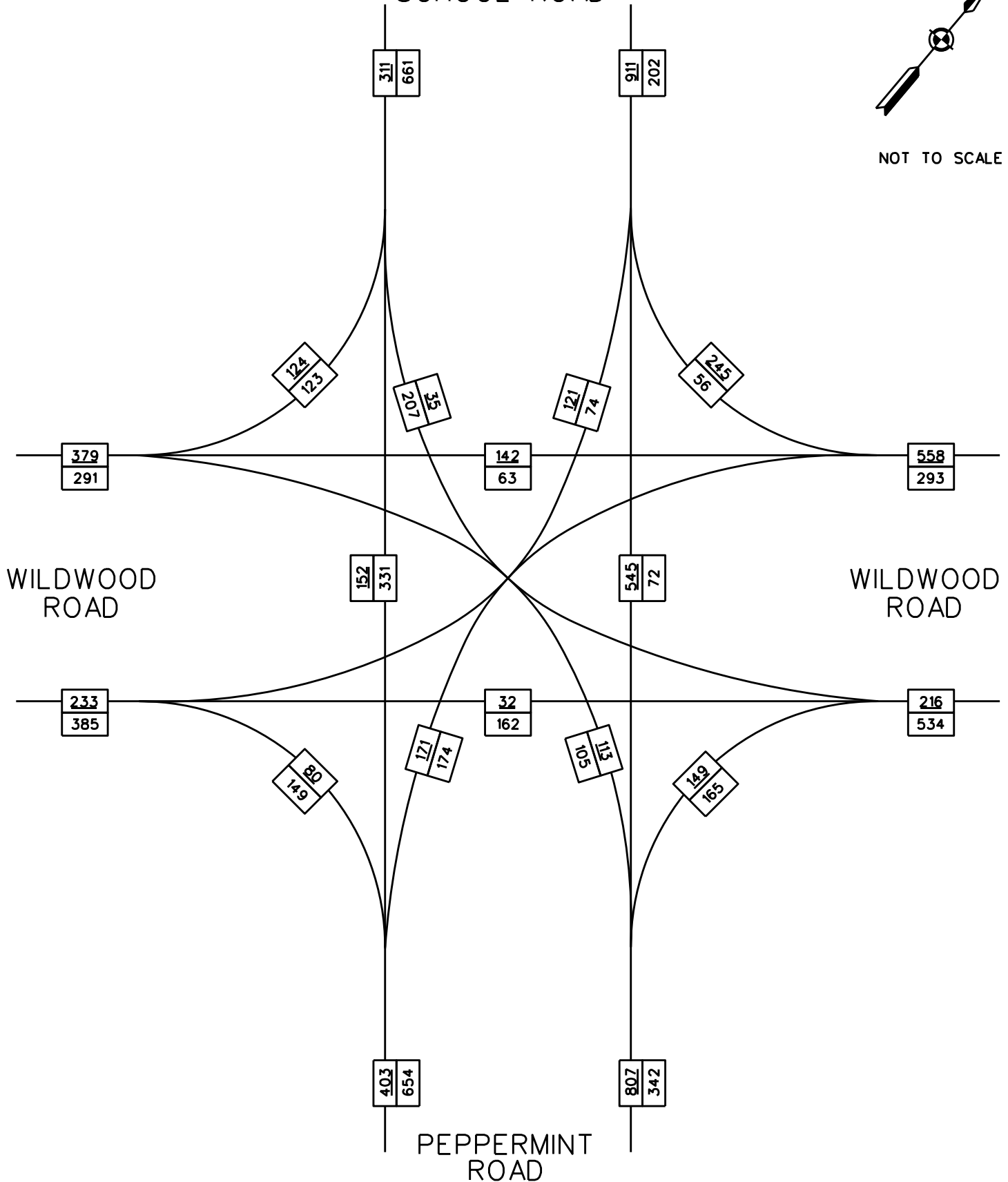
2020 DHV WITH PPE (ALT D)
AM / PM

SR 33 @
SAM HOUSTON SCHOOL ROAD

SAM HOUSTON SCHOOL ROAD

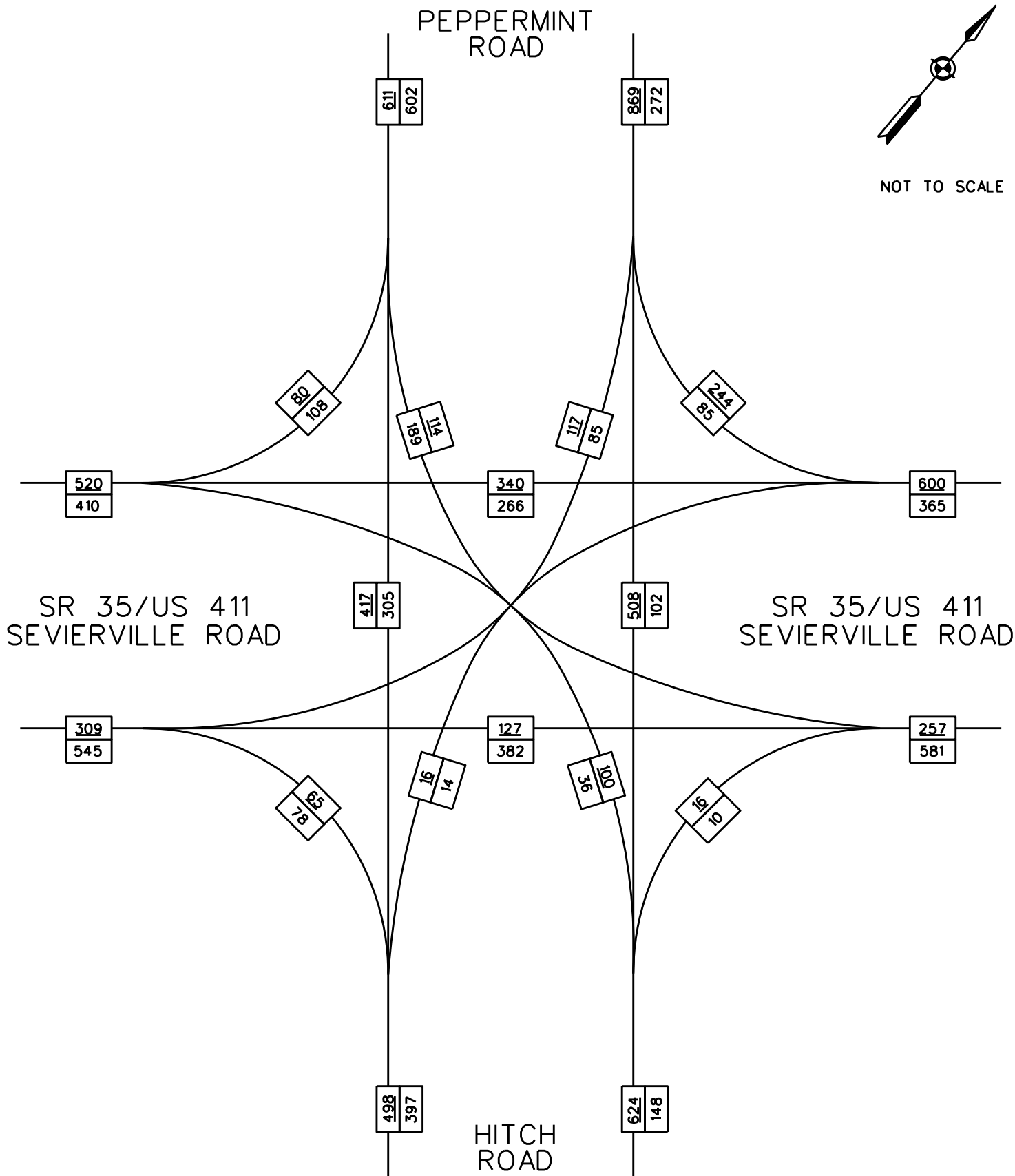


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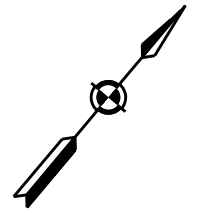
2020 DHV WITH PPE (ALT D)
AM / PM

WILDWOOD ROAD @ PEPPERMINT
ROAD/SAM HOUSTON SCHOOL ROAD

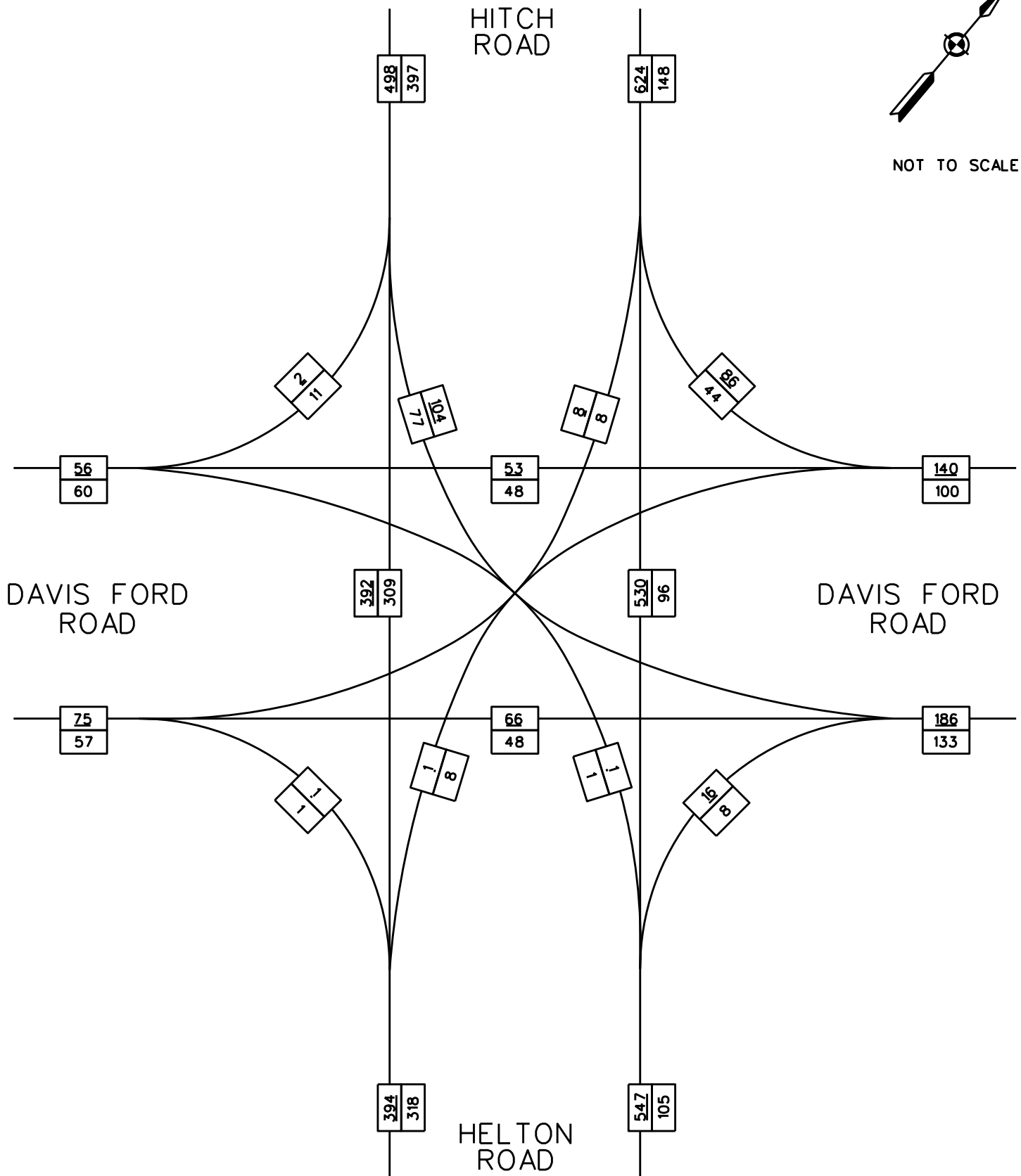


2020 DHV WITH PPE (ALT D)
AM / PM

SR 35/US 411/SEVIERVILLE ROAD @
PEPPERMINT ROAD/HITCH ROAD

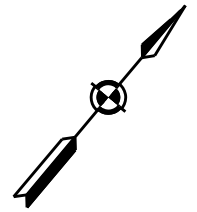


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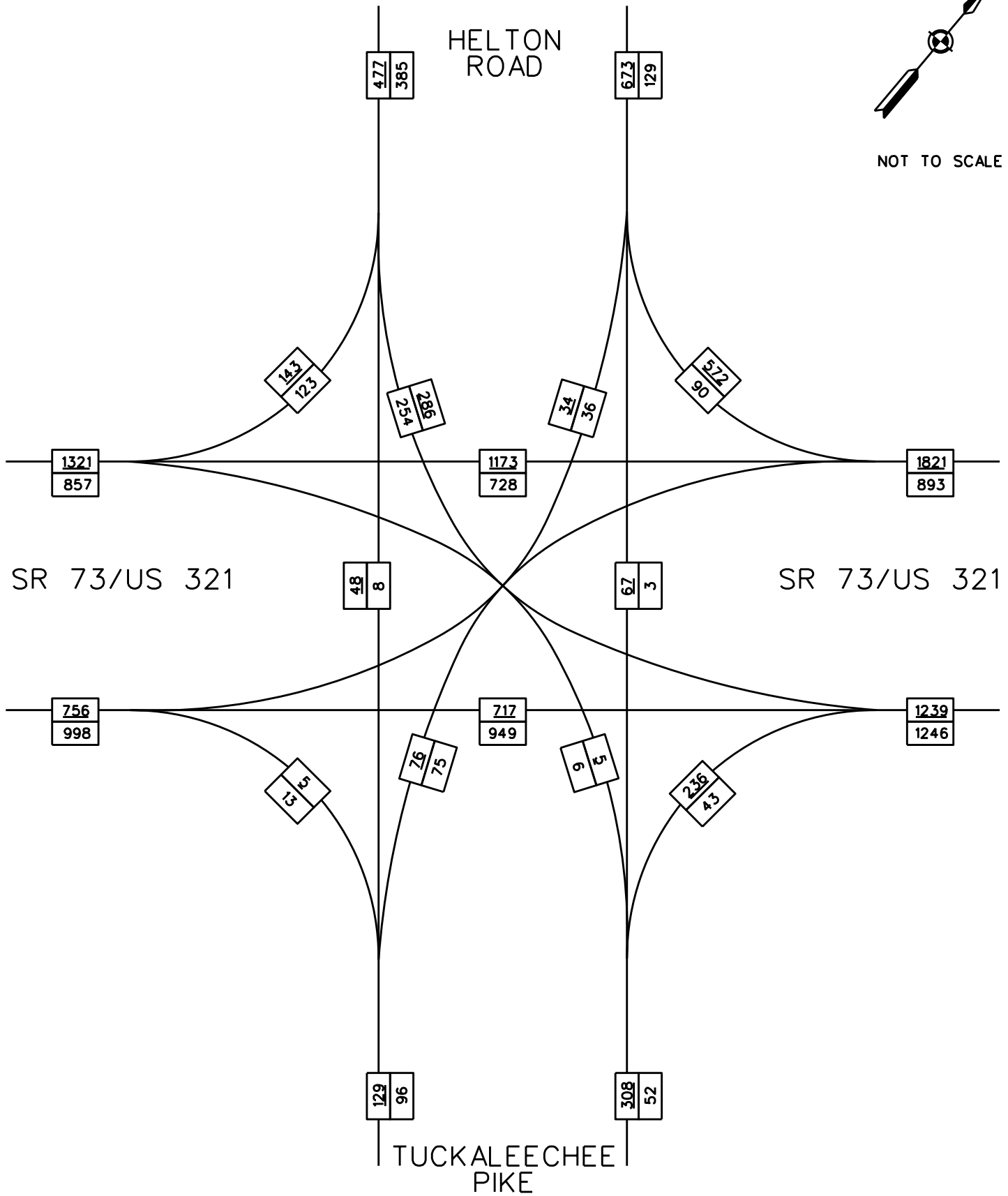


2020 DHV WITH PPE (ALT D)
AM / PM

DAVIS FORD ROAD @
HITCH ROAD/HELTON ROAD



NOT TO SCALE



2020 DHV WITH PPE (ALT D)
AM / PM

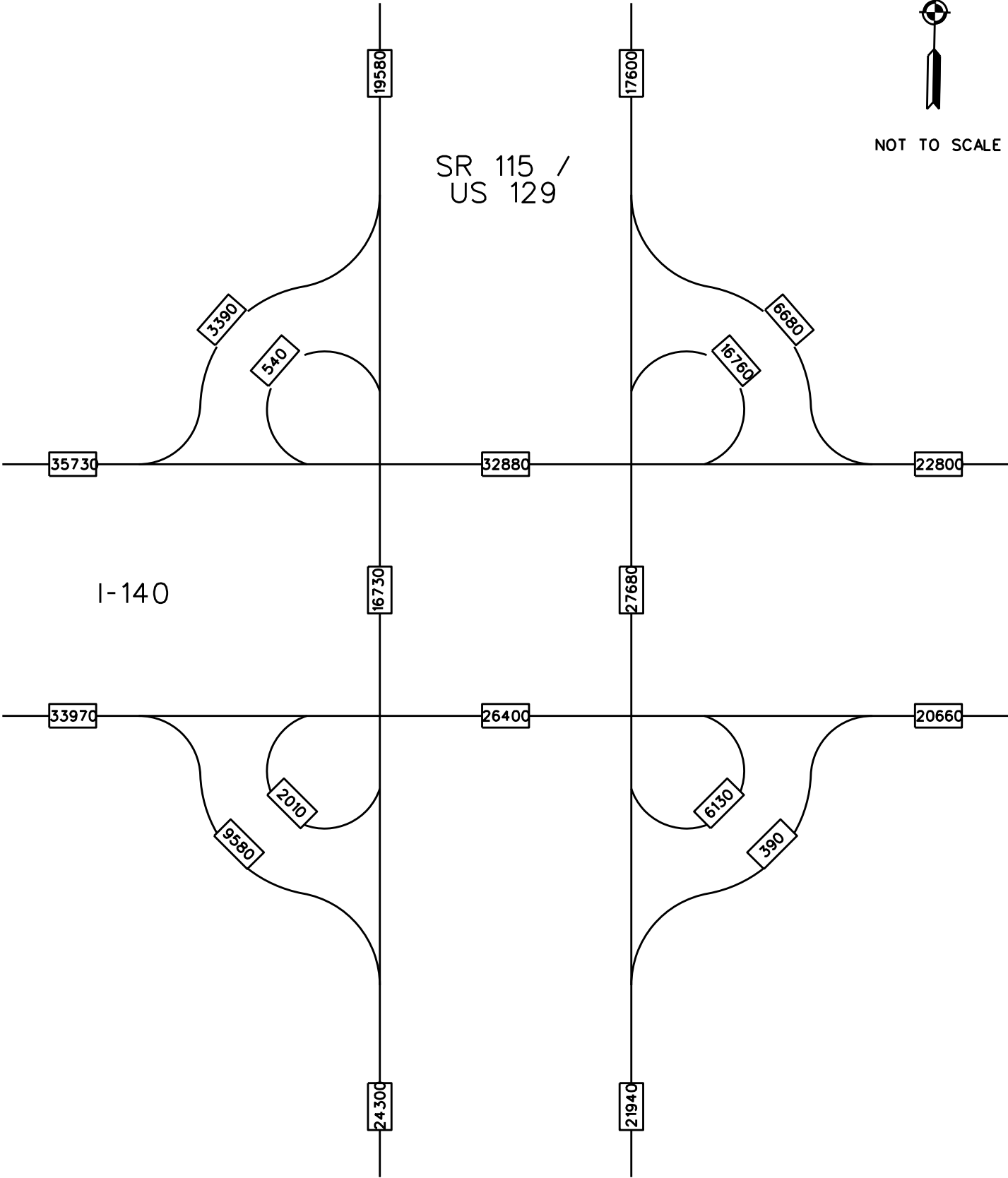
SR 73/US 321 @
HELTON ROAD/TUCKALEECHEE PIKE



NOT TO SCALE

SR 115 /
US 129

I-140

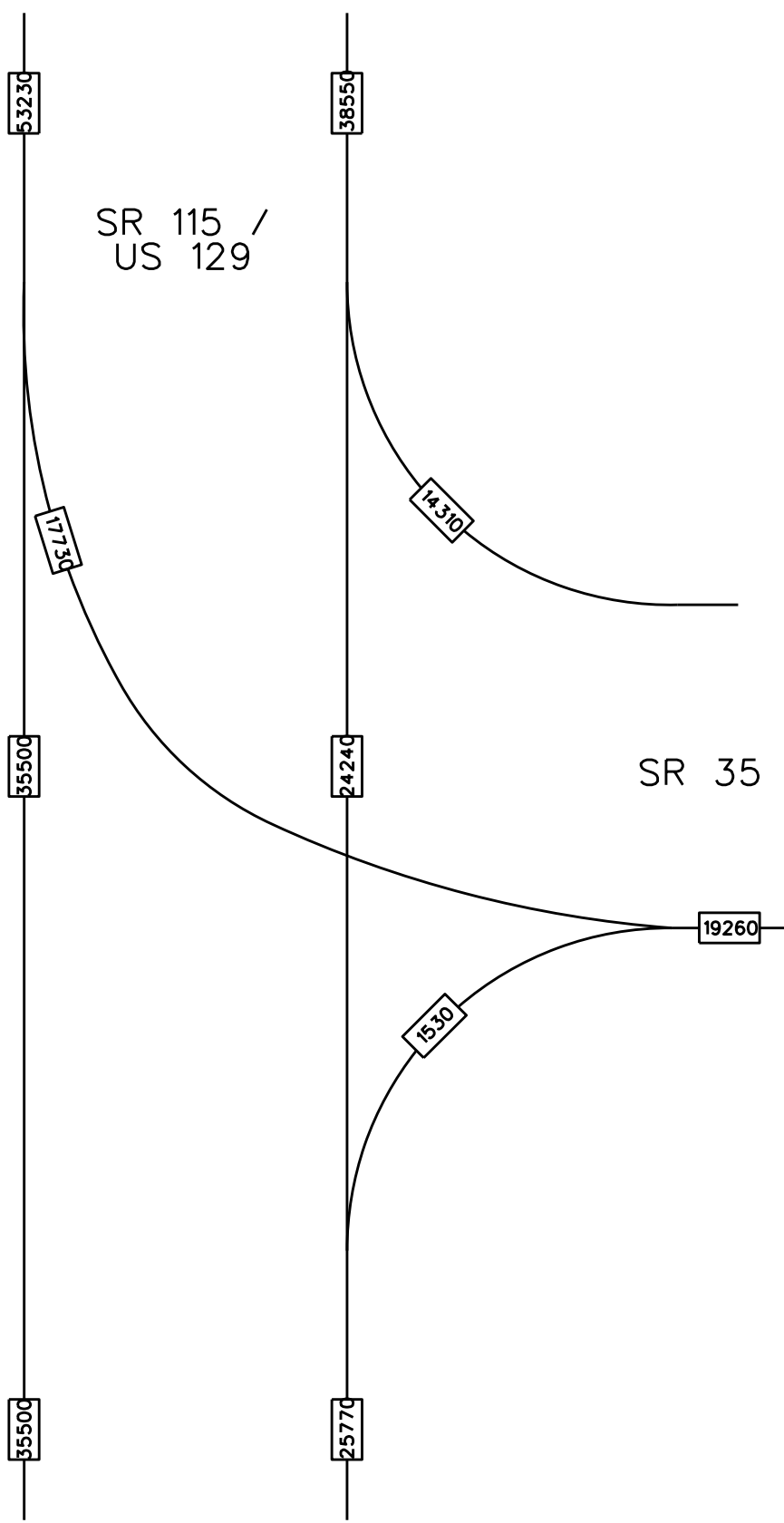


2040 AADT WITH PPE (ALT D)

SR 115/US 129 @
I-140 / PELLISSIPPI PARKWAY



NOT TO SCALE



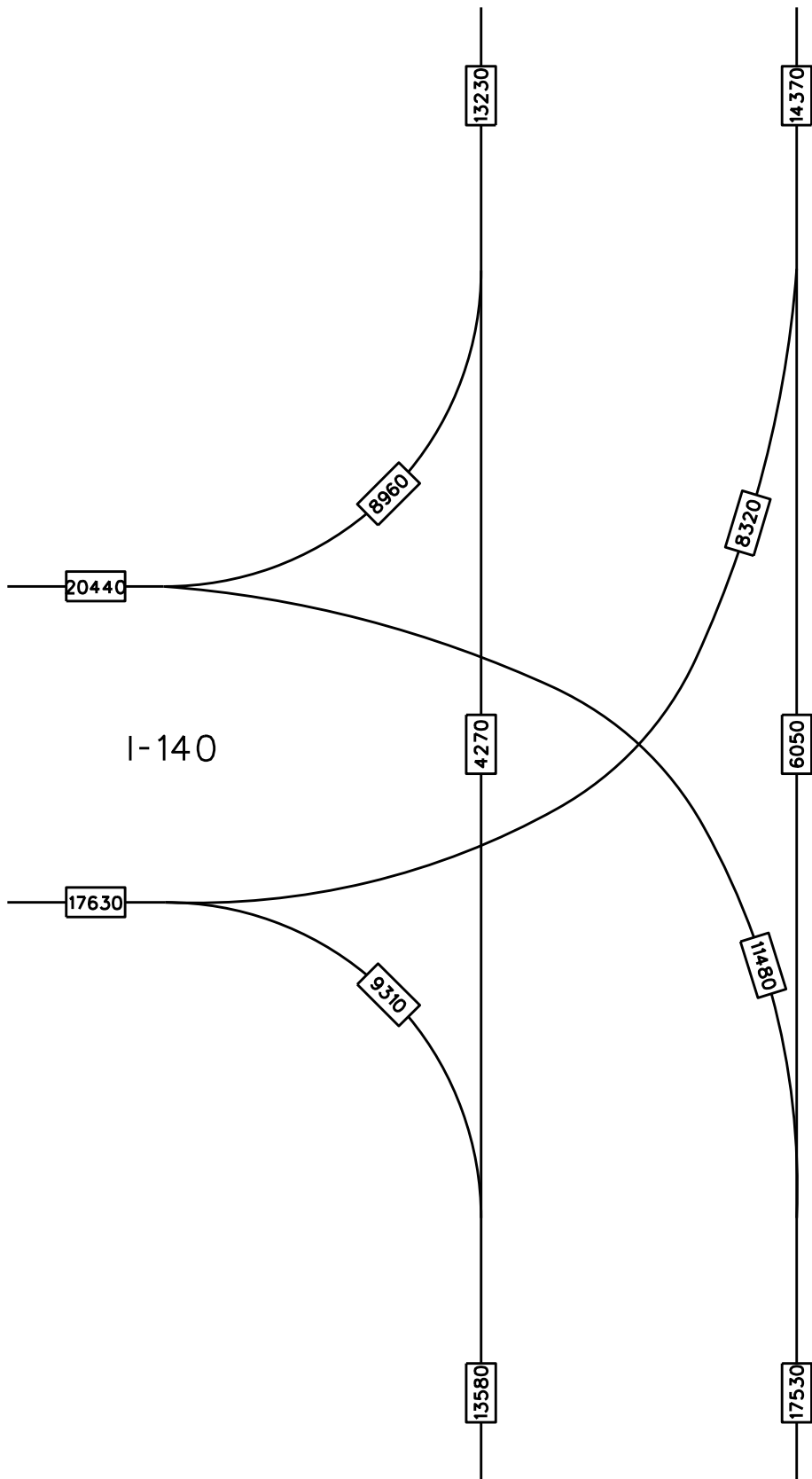
2040 AADT WITH PPE (ALT D)

SR 115/US 129 @ SR 35

SR 33

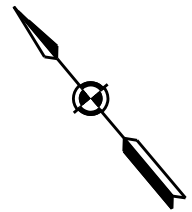


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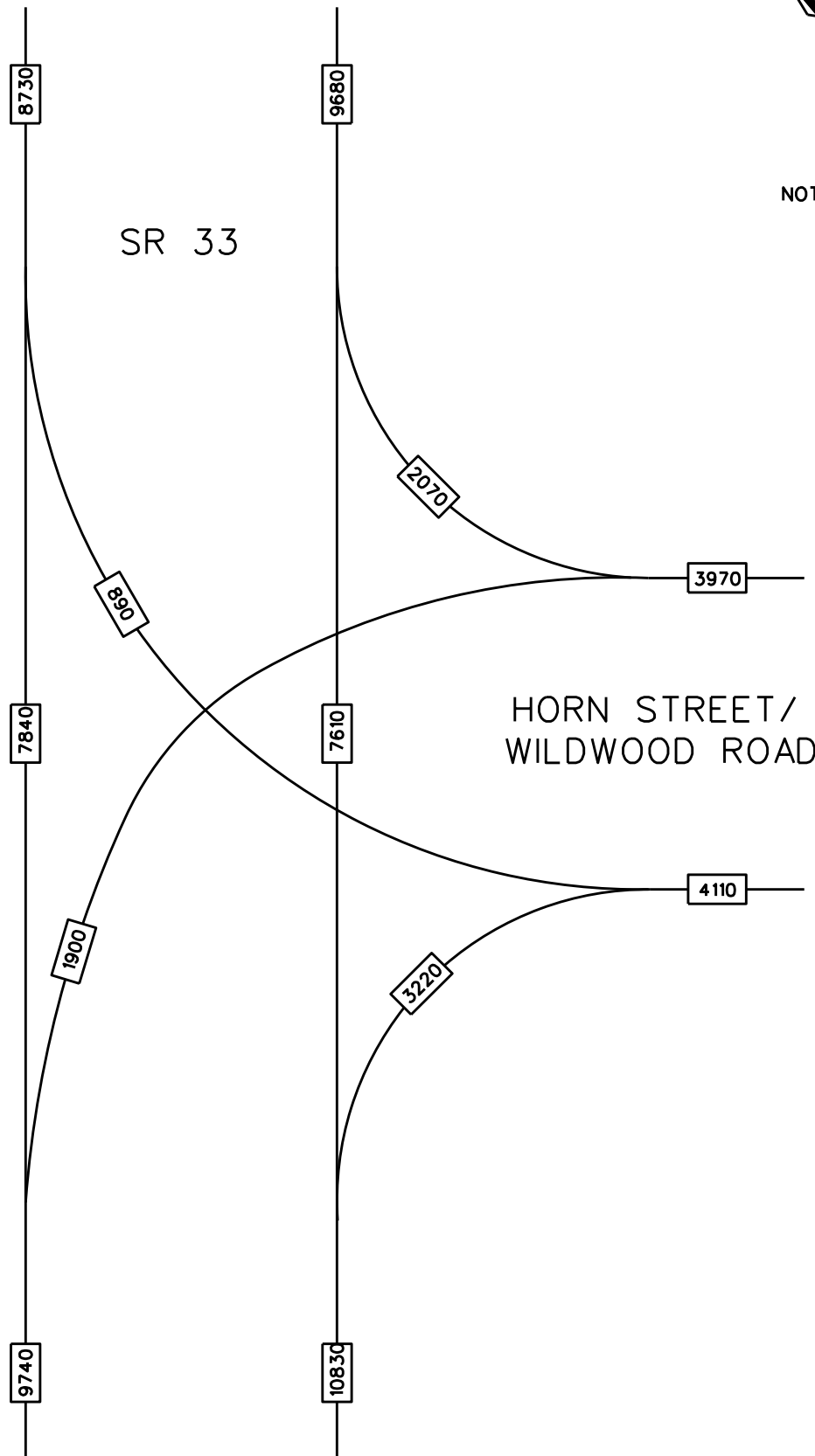


2040 AADT WITH PPE (ALT D)

SR 33 @ I-140

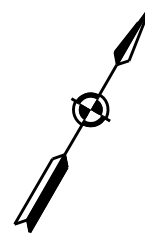


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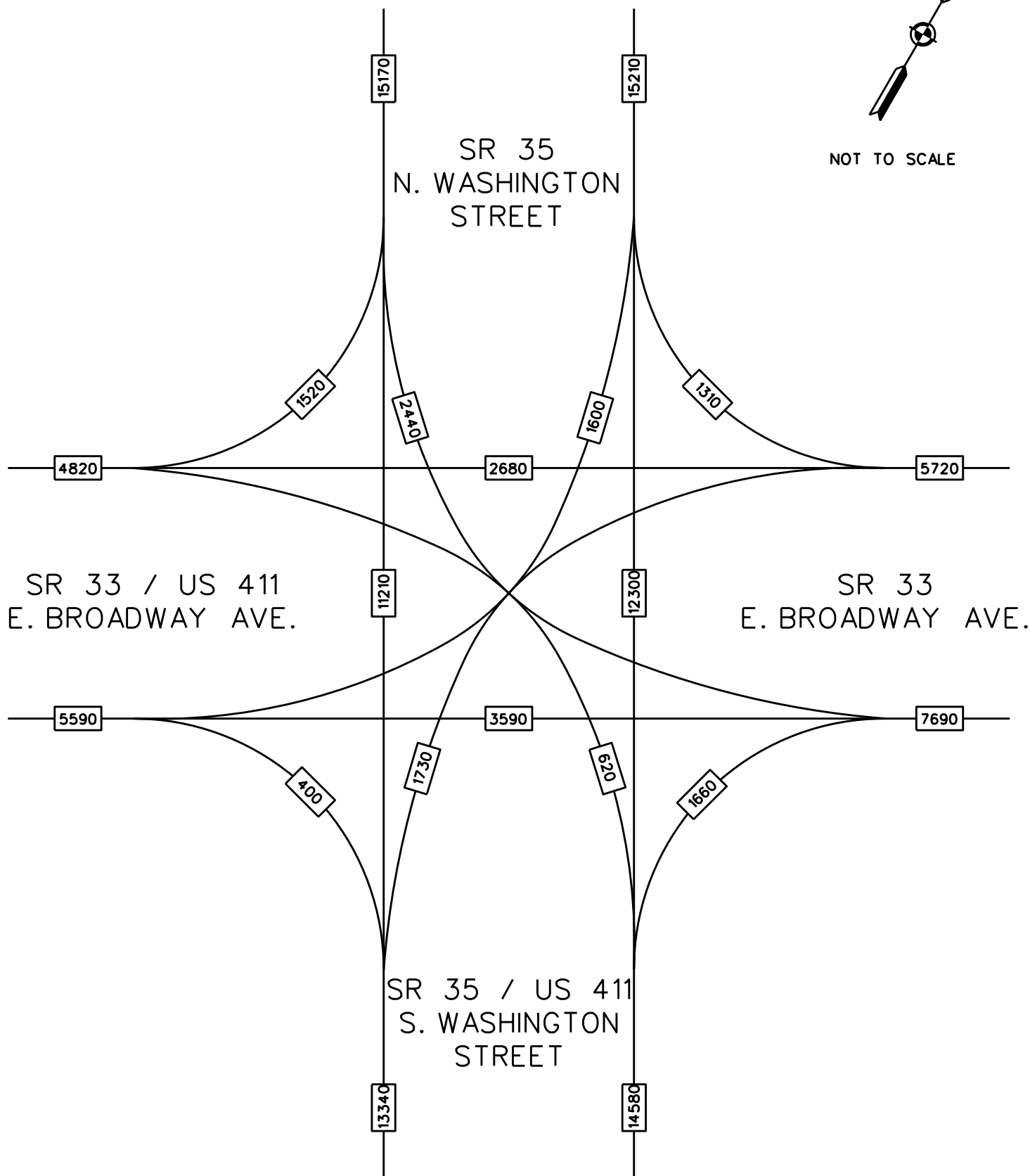


2040 AADT WITH PPE (ALT D)

SR 33
@ HORN STREET/WILDWOOD ROAD



NOT TO SCALE



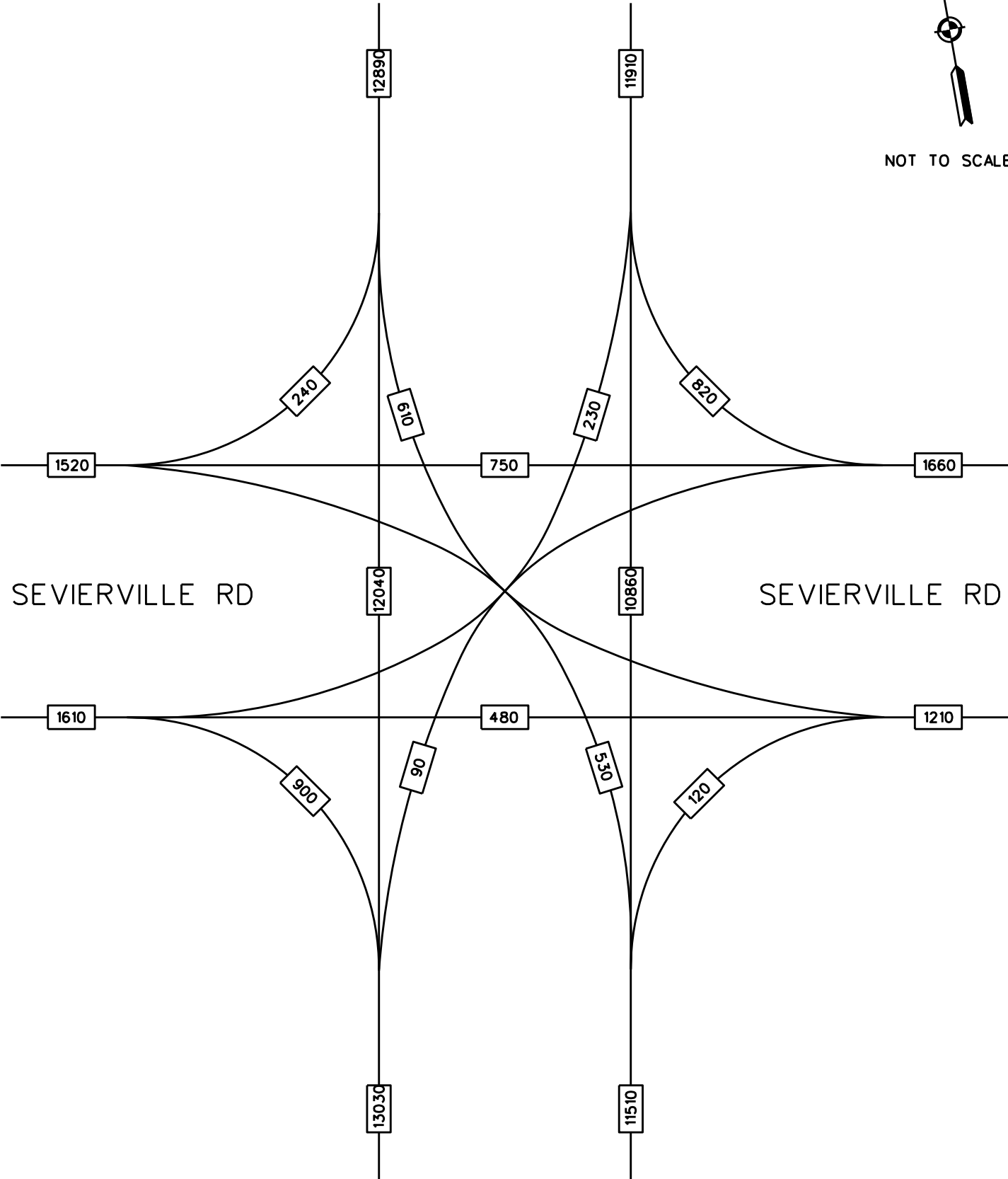
2040 AADT WITH PPE (ALT D)

SR 33 @ SR 35

SR 35/N. WASHINGTON ST



NOT TO SCALE



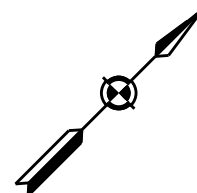
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SEVIERVILLE RD

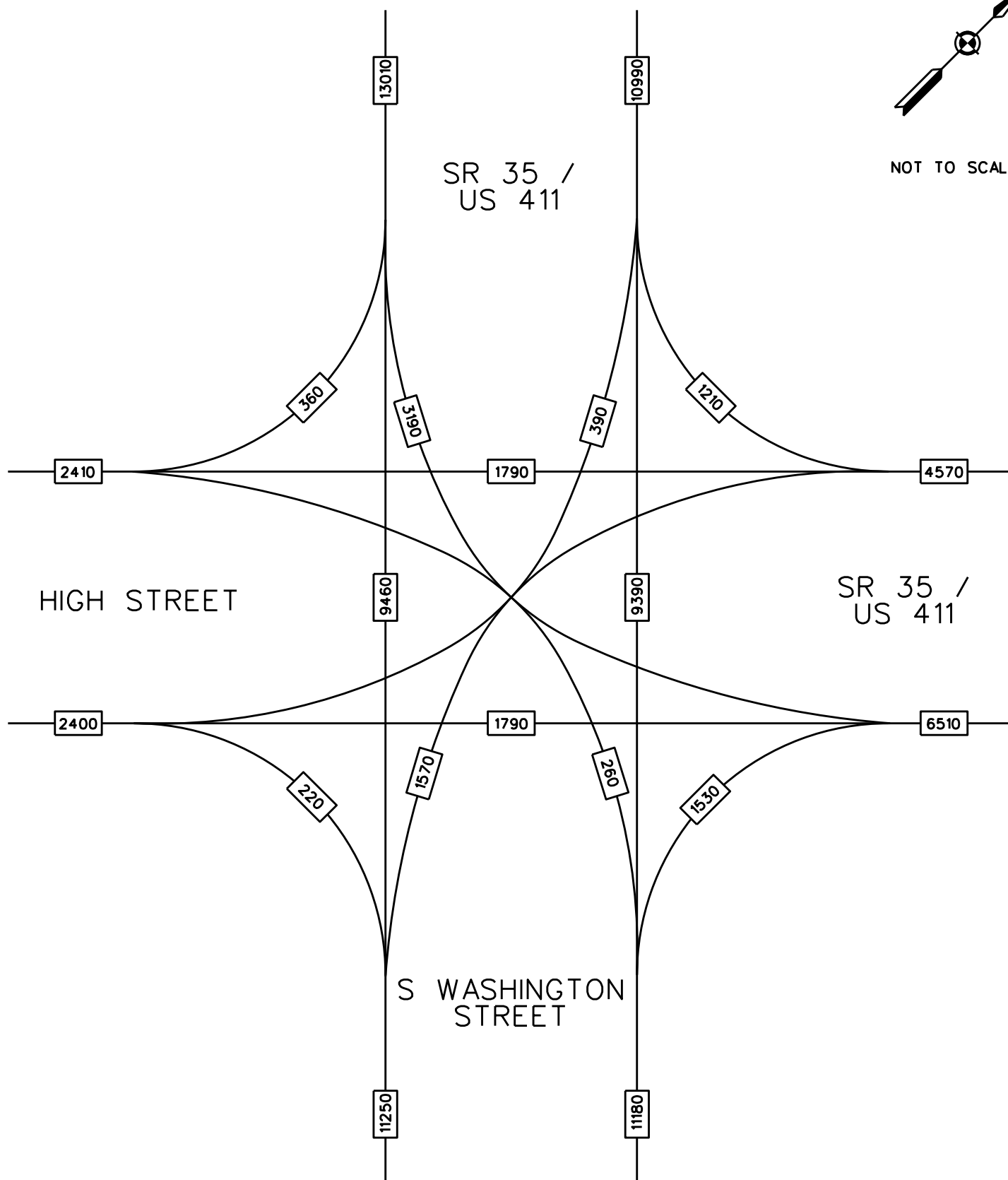
SR 35/US 411 S. WASHINGTON ST

2040 AADT WITH PPE (ALT D)

SEVIERVILLE RD @
SR 35/US 411 WASHINGTON ST

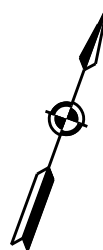


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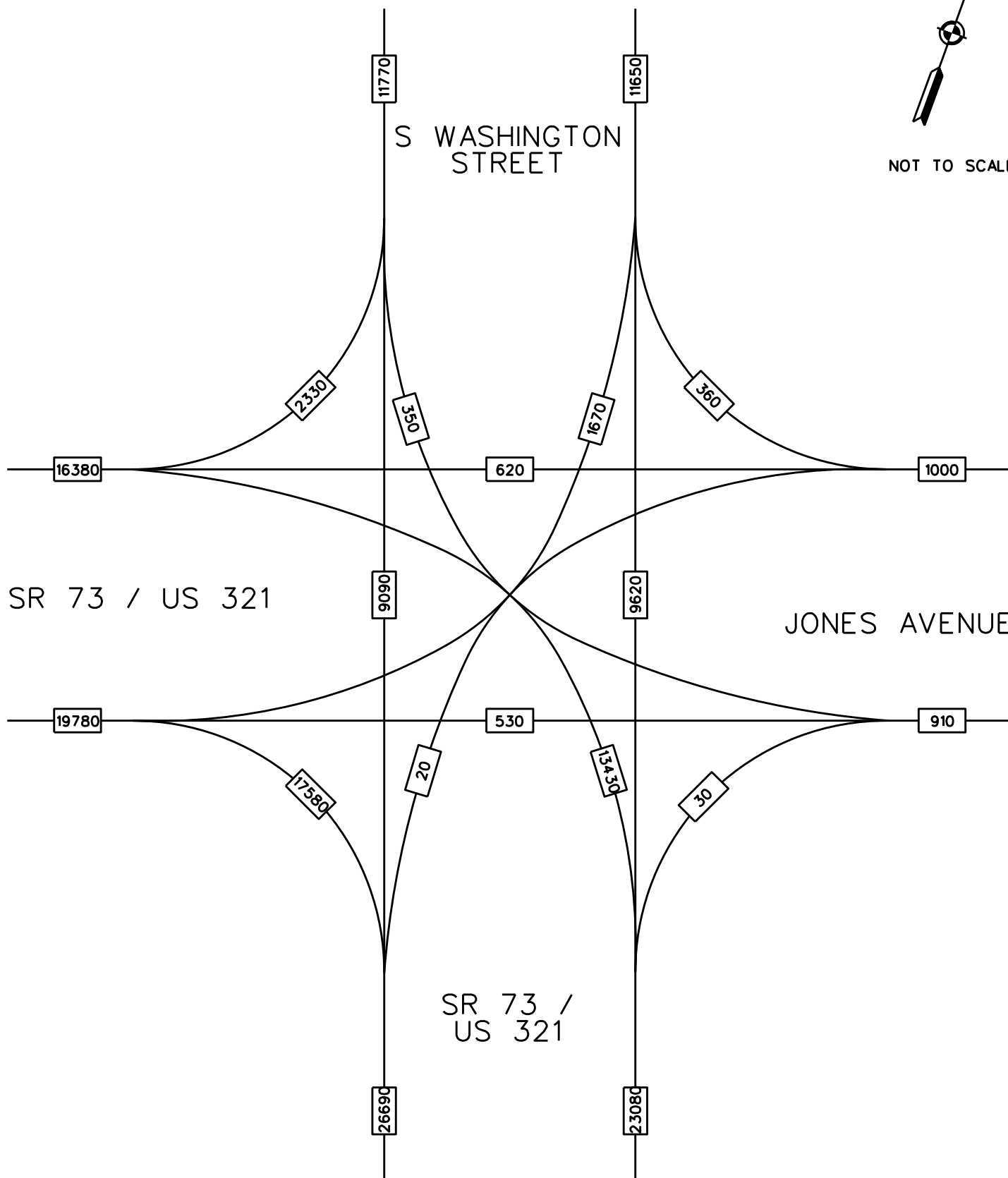


2040 AADT WITH PPE (ALT D)

S WASHINGTON ST / SR 35
@ HIGH ST / SR 35



NOT TO SCALE

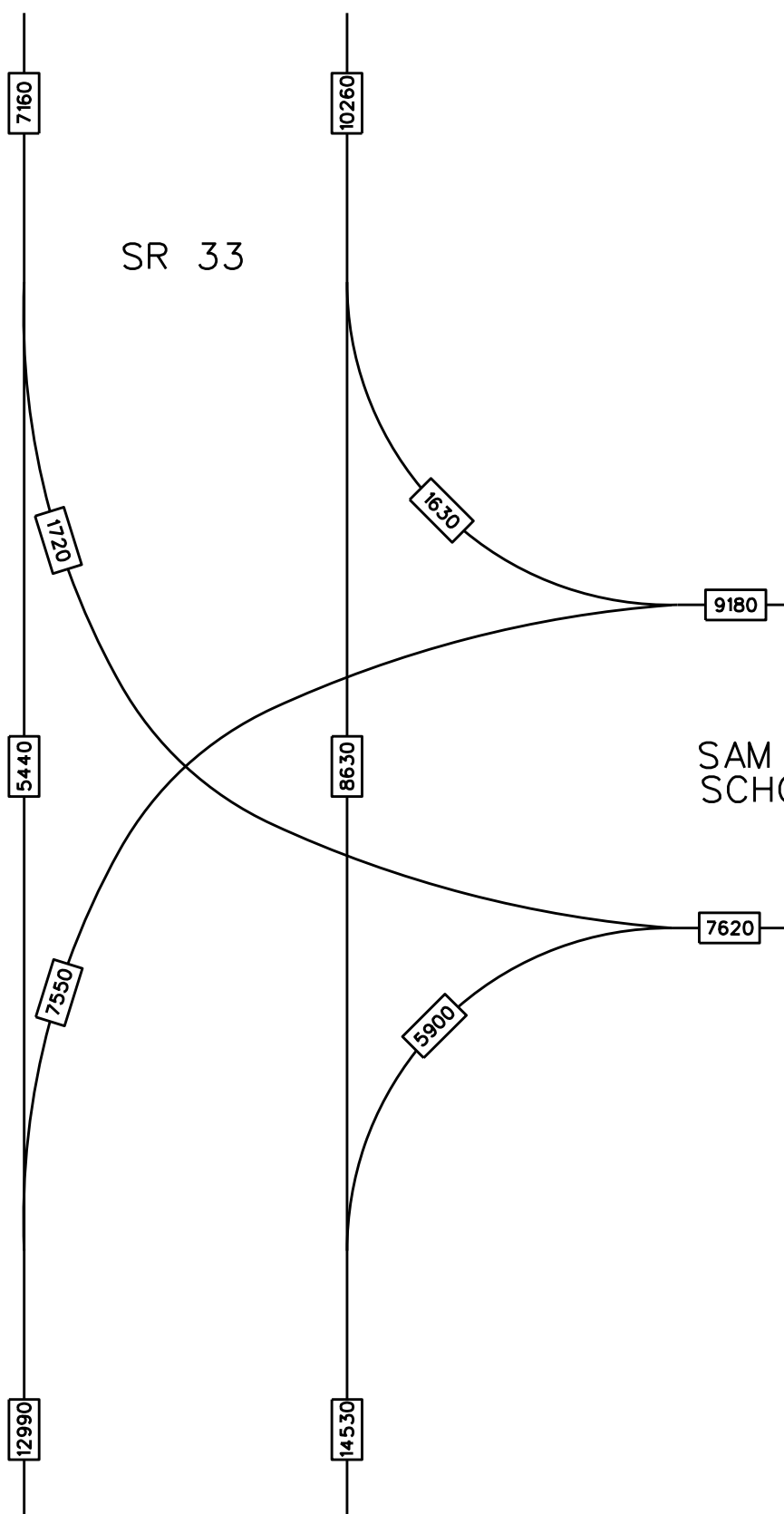


2040 AADT WITH PPE (ALT D)

S WASHINGTON ST
@ SR 73/ US 321



NOT TO SCALE



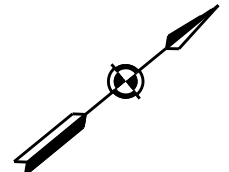
SR 33

SAM HOUSTON
SCHOOL ROAD

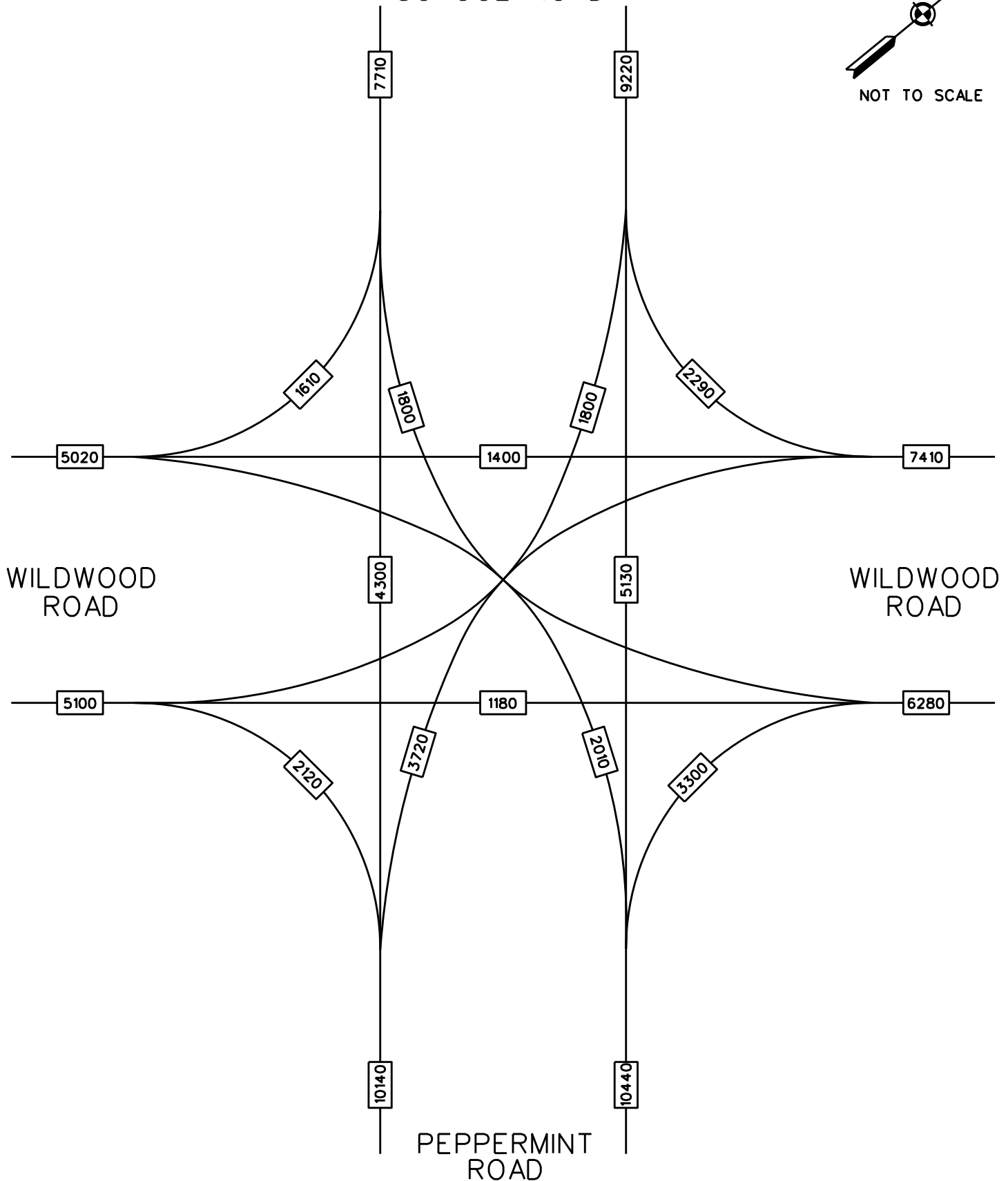
2040 AADT WITH PPE (ALT D)

SR 33 @
SAM HOUSTON SCHOOL ROAD

SAM HOUSTON SCHOOL ROAD

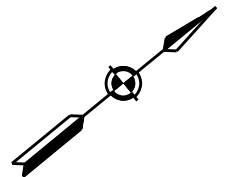


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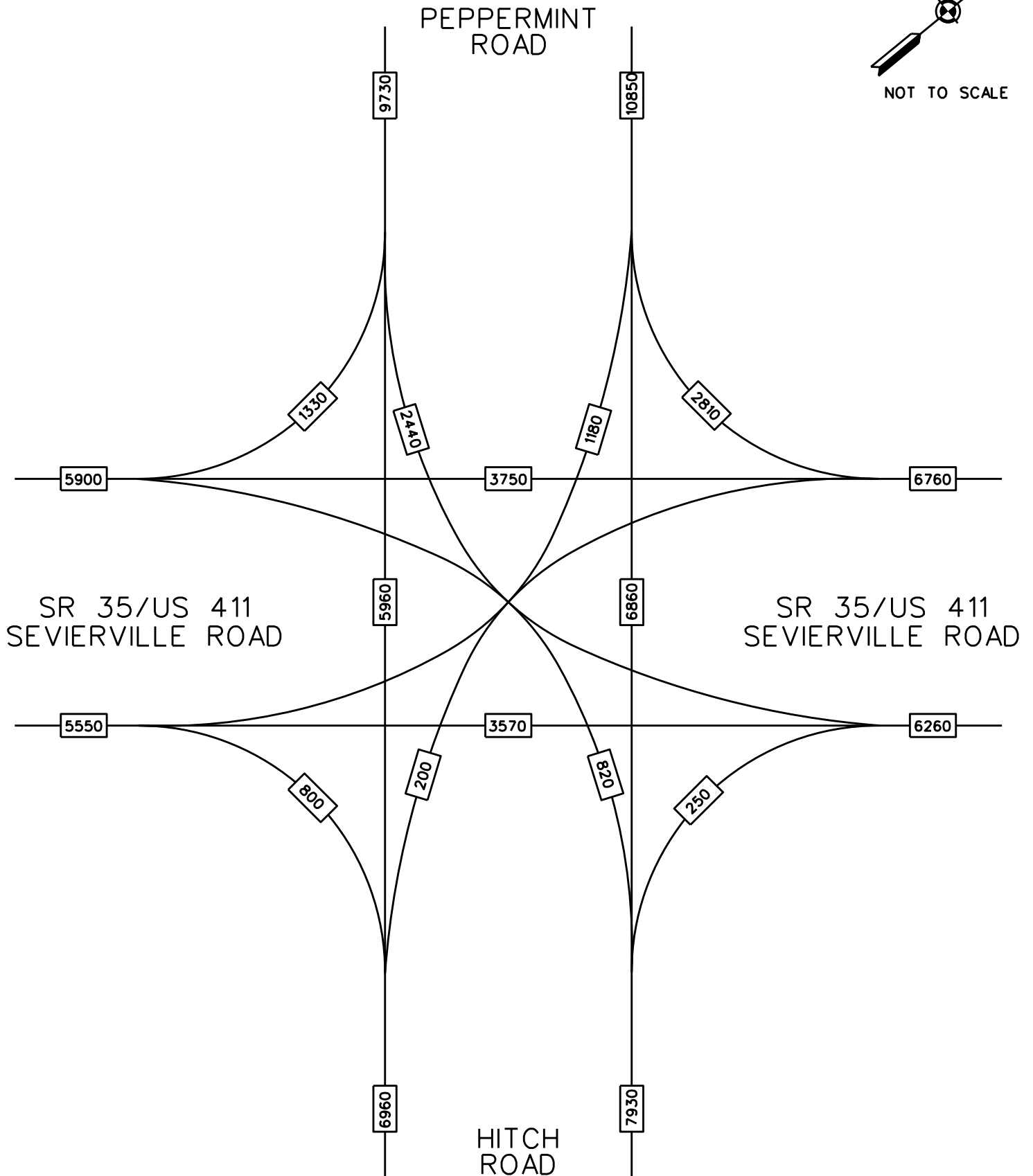


2040 AADT WITH PPE (ALT D)

WILDWOOD ROAD @ PEPPERMINT
ROAD/SAM HOUSTON SCHOOL ROAD

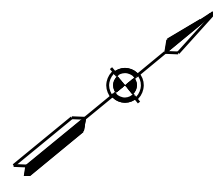


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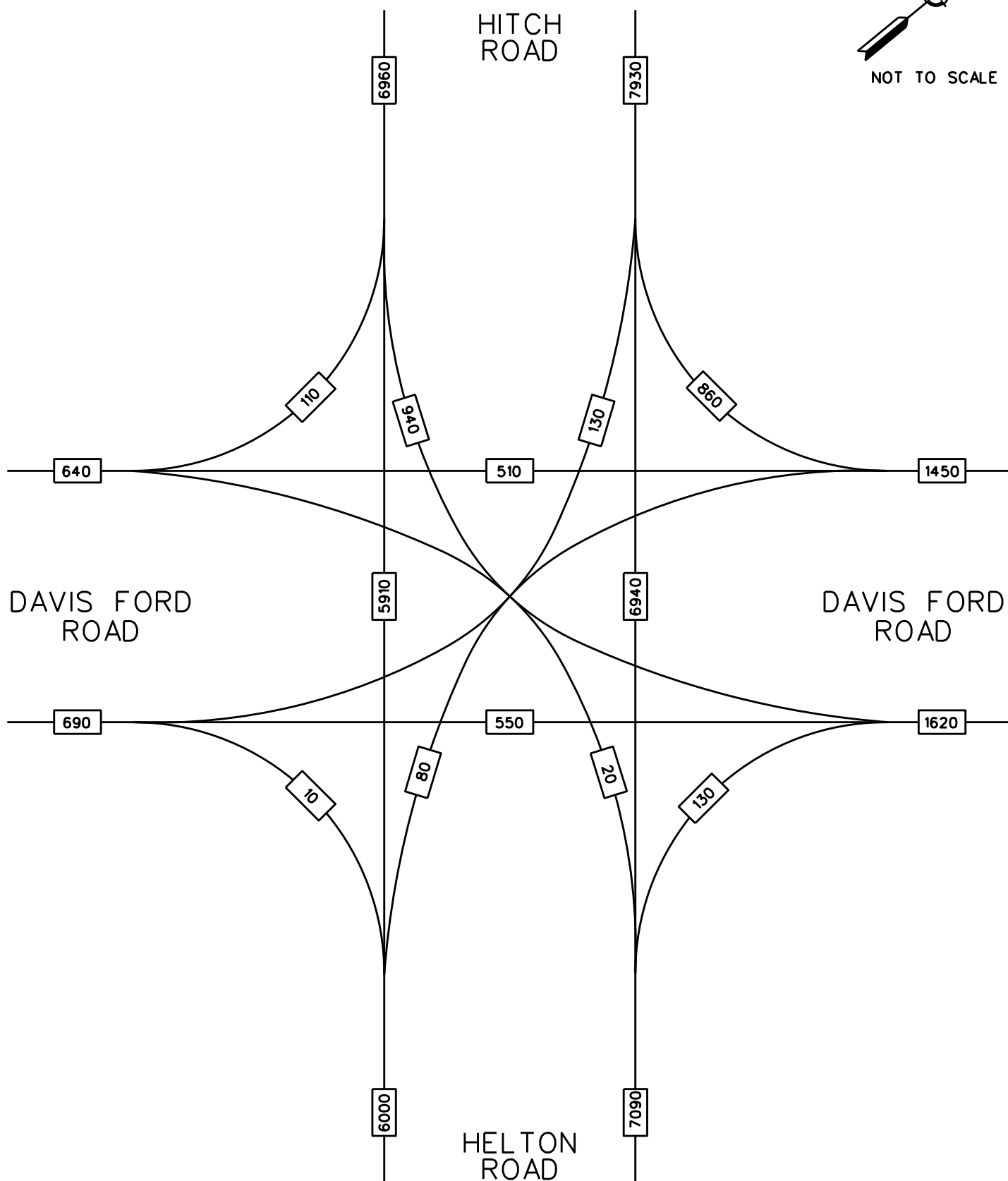


2040 AADT WITH PPE (ALT D)

SR 35/US 411/SEVIERVILLE ROAD @
PEPPERMINT ROAD/HITCH ROAD



NOT TO SCALE

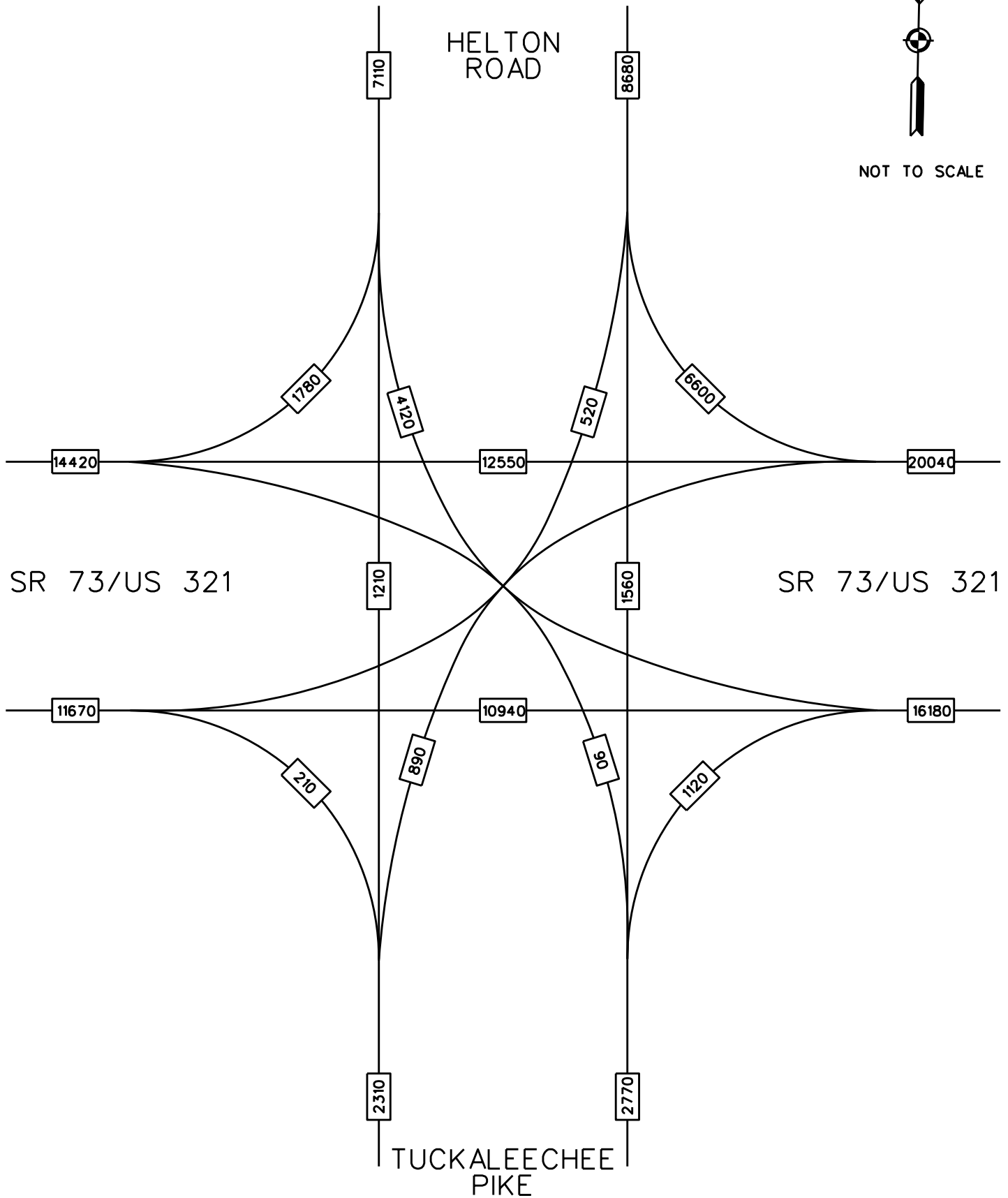


2040 AADT WITH PPE (ALT D)

DAVIS FORD ROAD @
HITCH ROAD/HELTON ROAD



NOT TO SCALE



2040 AADT WITH PPE (ALT D)

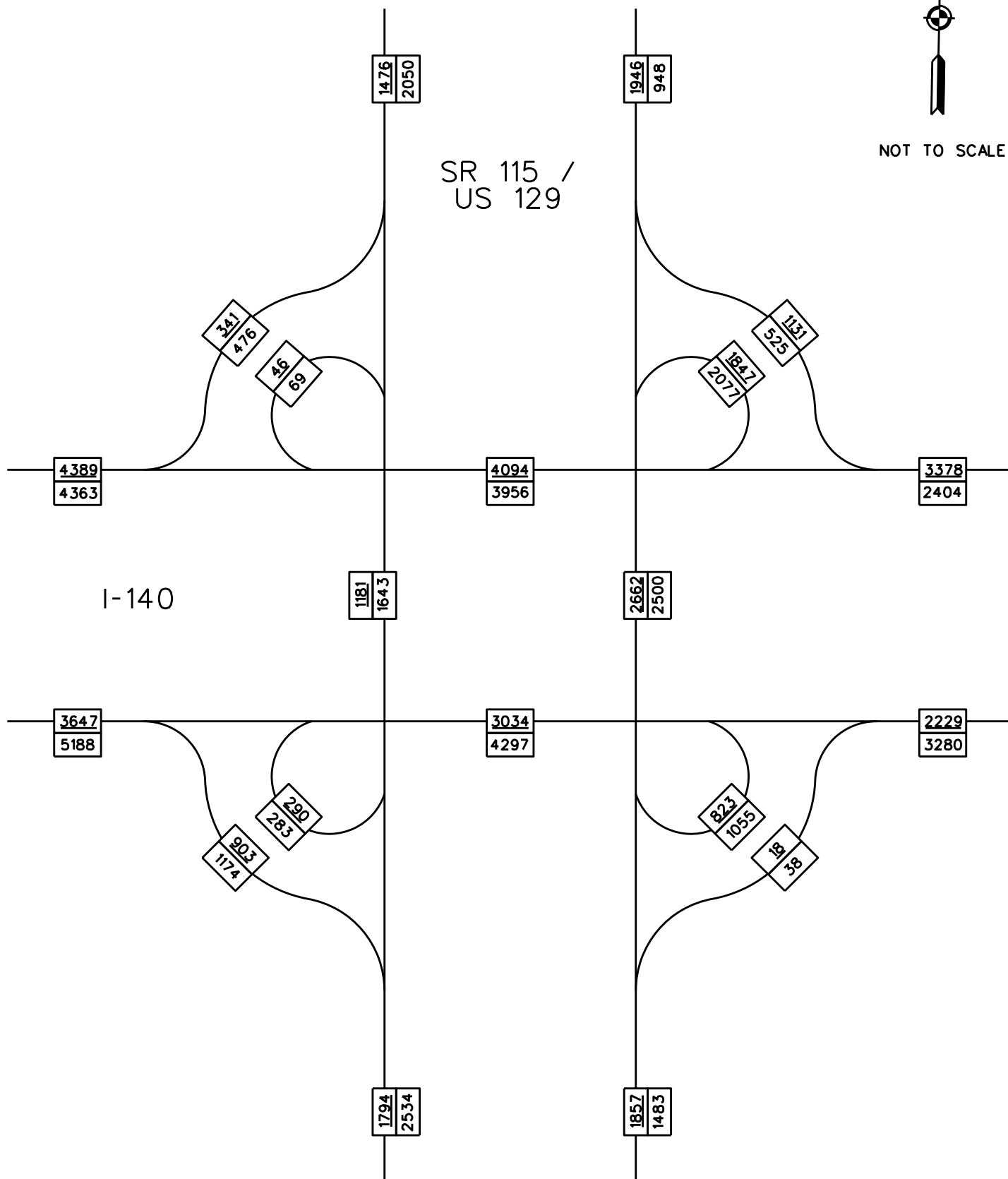
SR 73/US 321 @
HELTON ROAD/TUCKALEECHEE PIKE



NOT TO SCALE

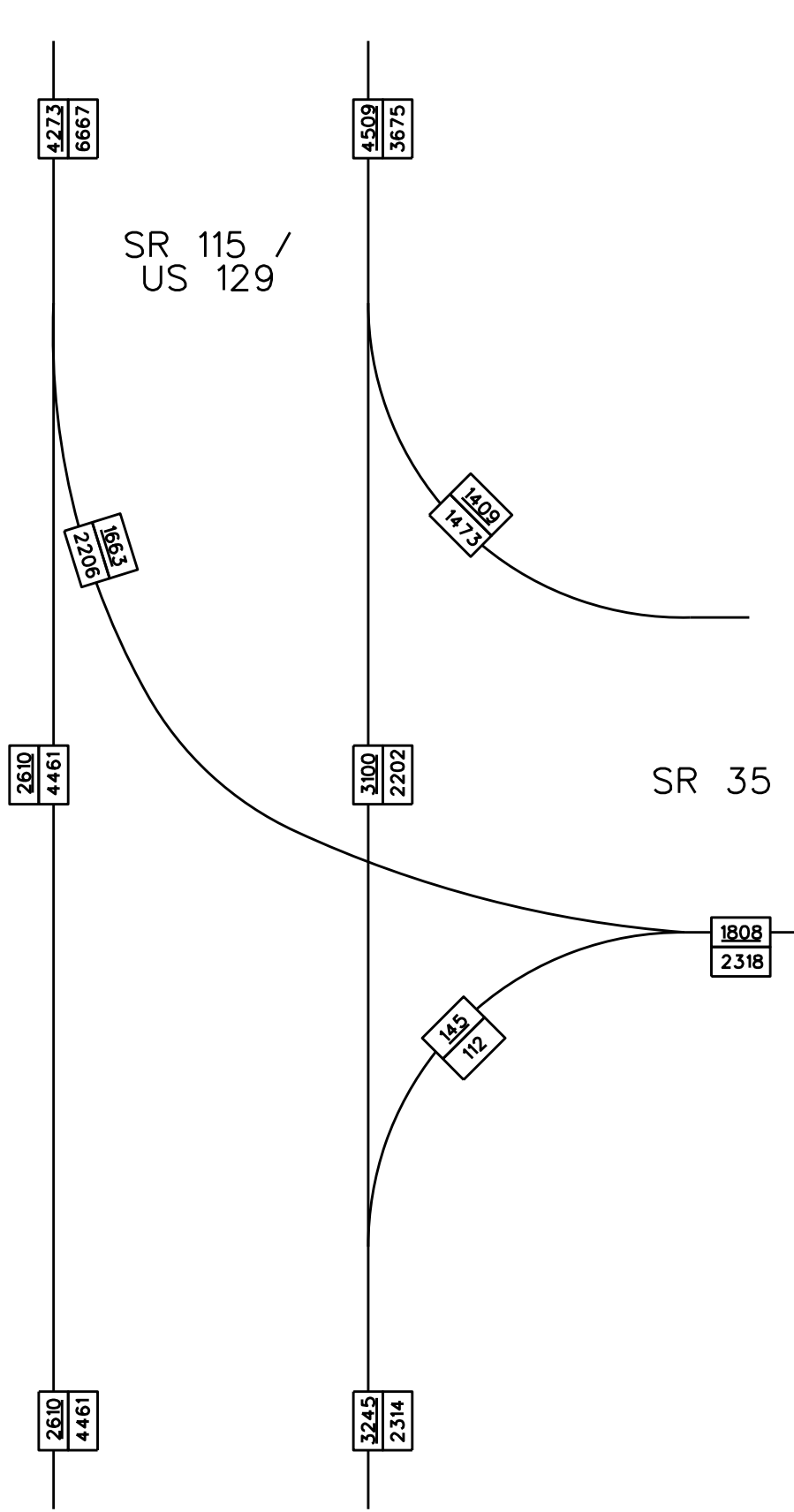
SR 115 /
US 129

I-140



2040 DHV WITH PPE (ALT D)
AM / PM

SR 115/US 129 @
I-140 / PELLISSIPPI PARKWAY

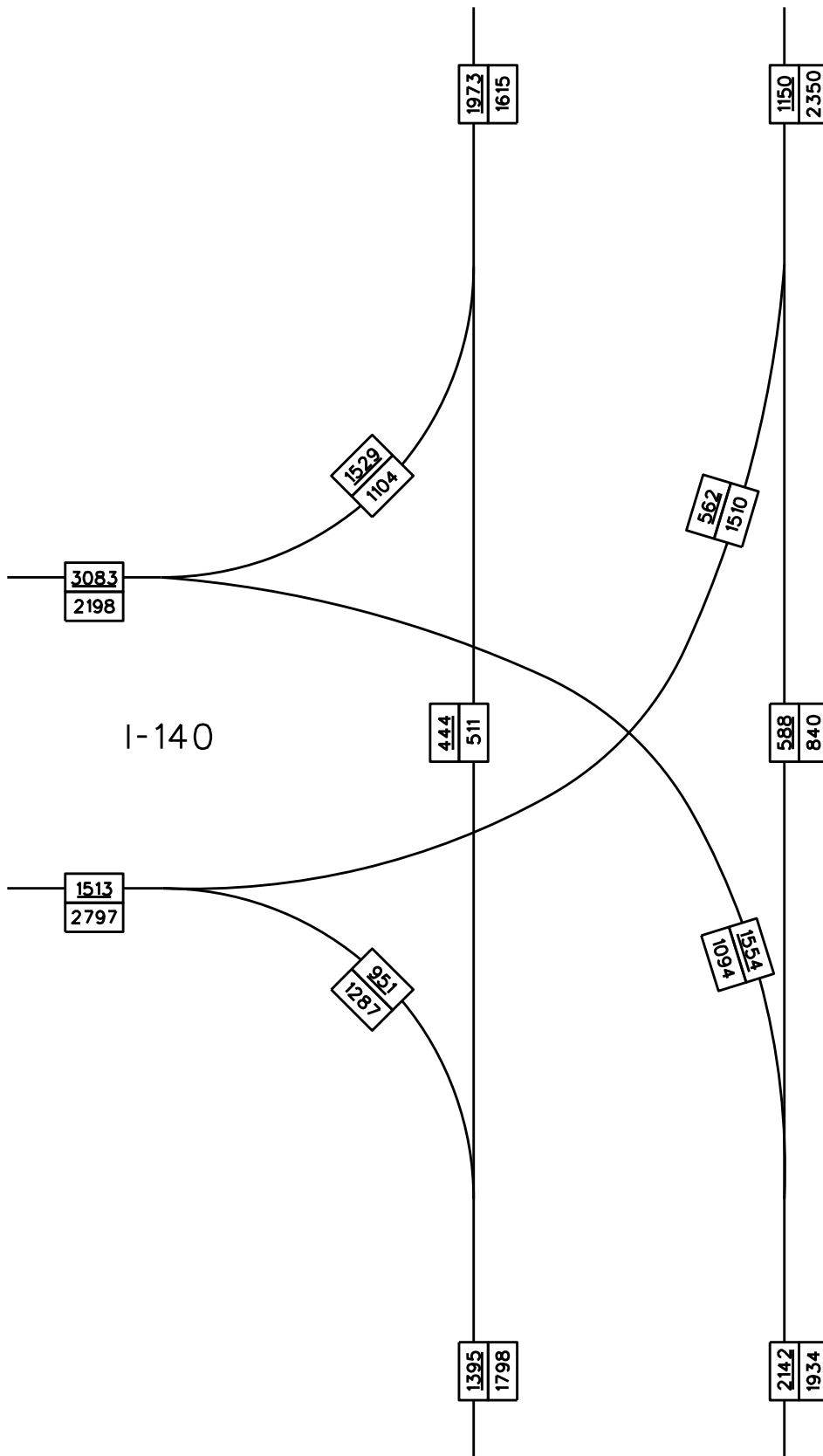


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SR 33

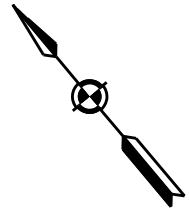


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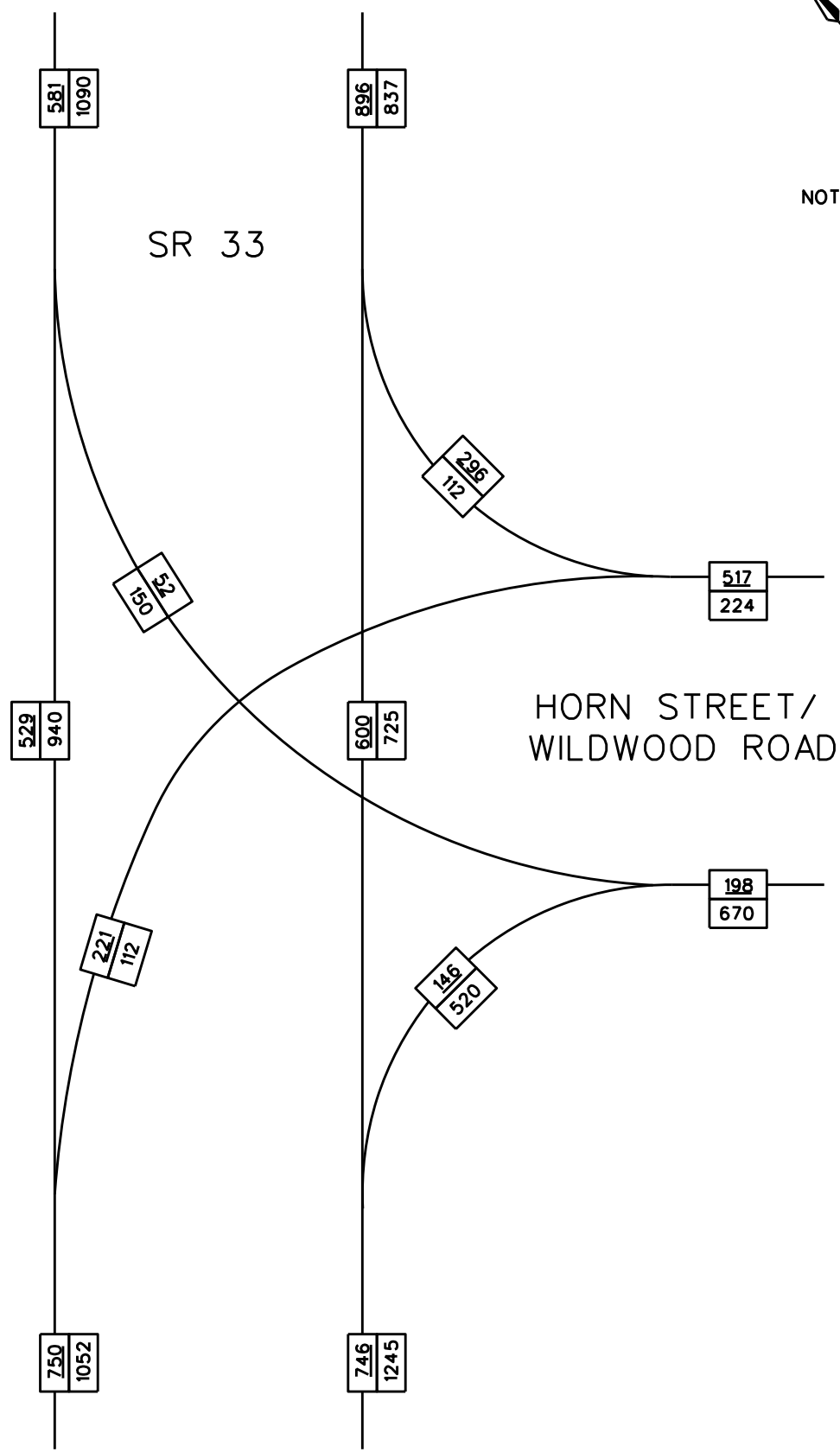


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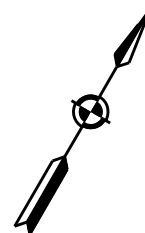


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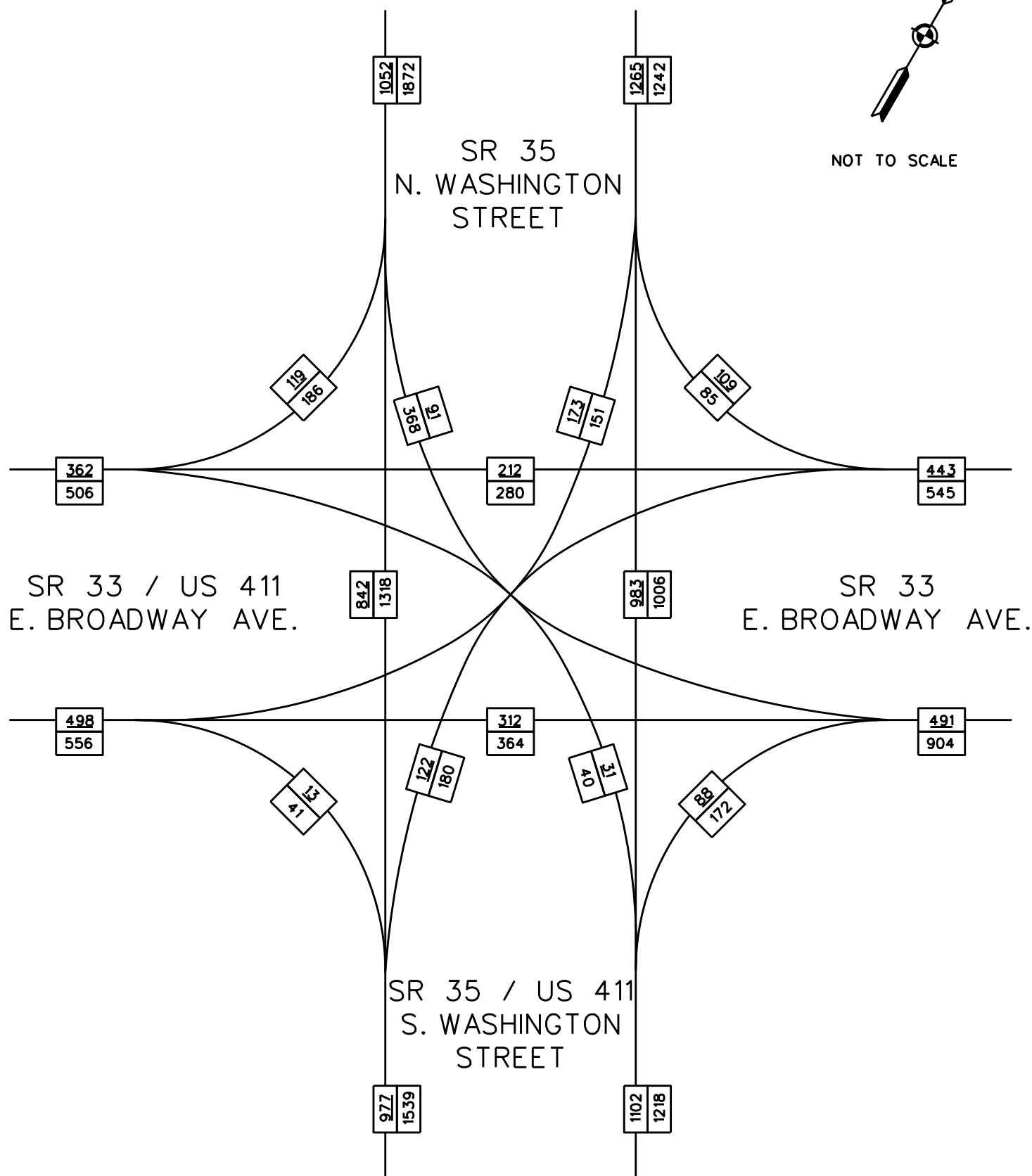


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@ HORN STREET/WILDWOOD ROAD



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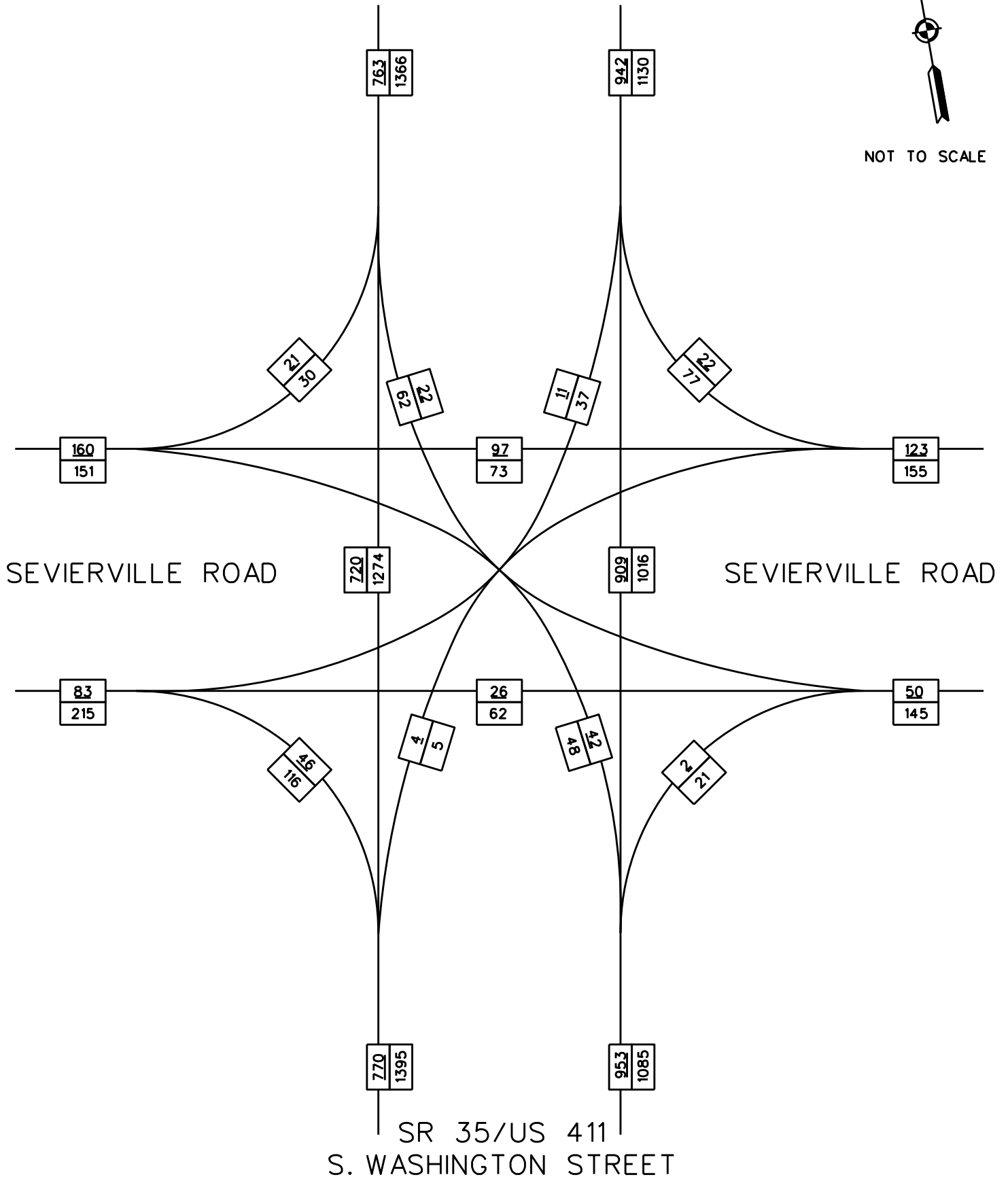
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SR 35/ N. WASHINGTON STREET

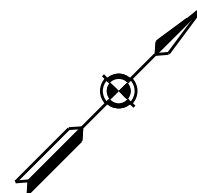


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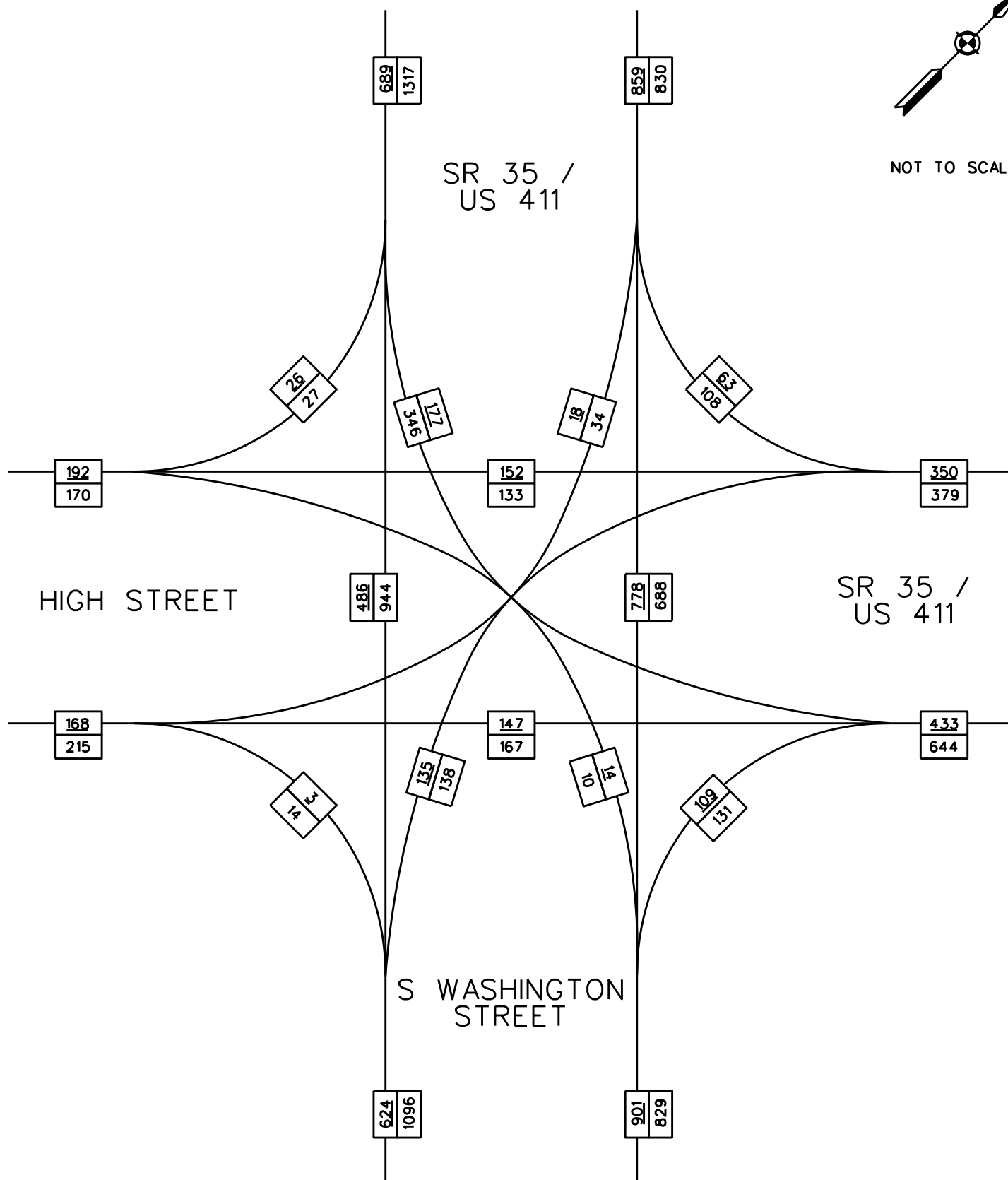


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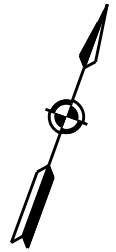


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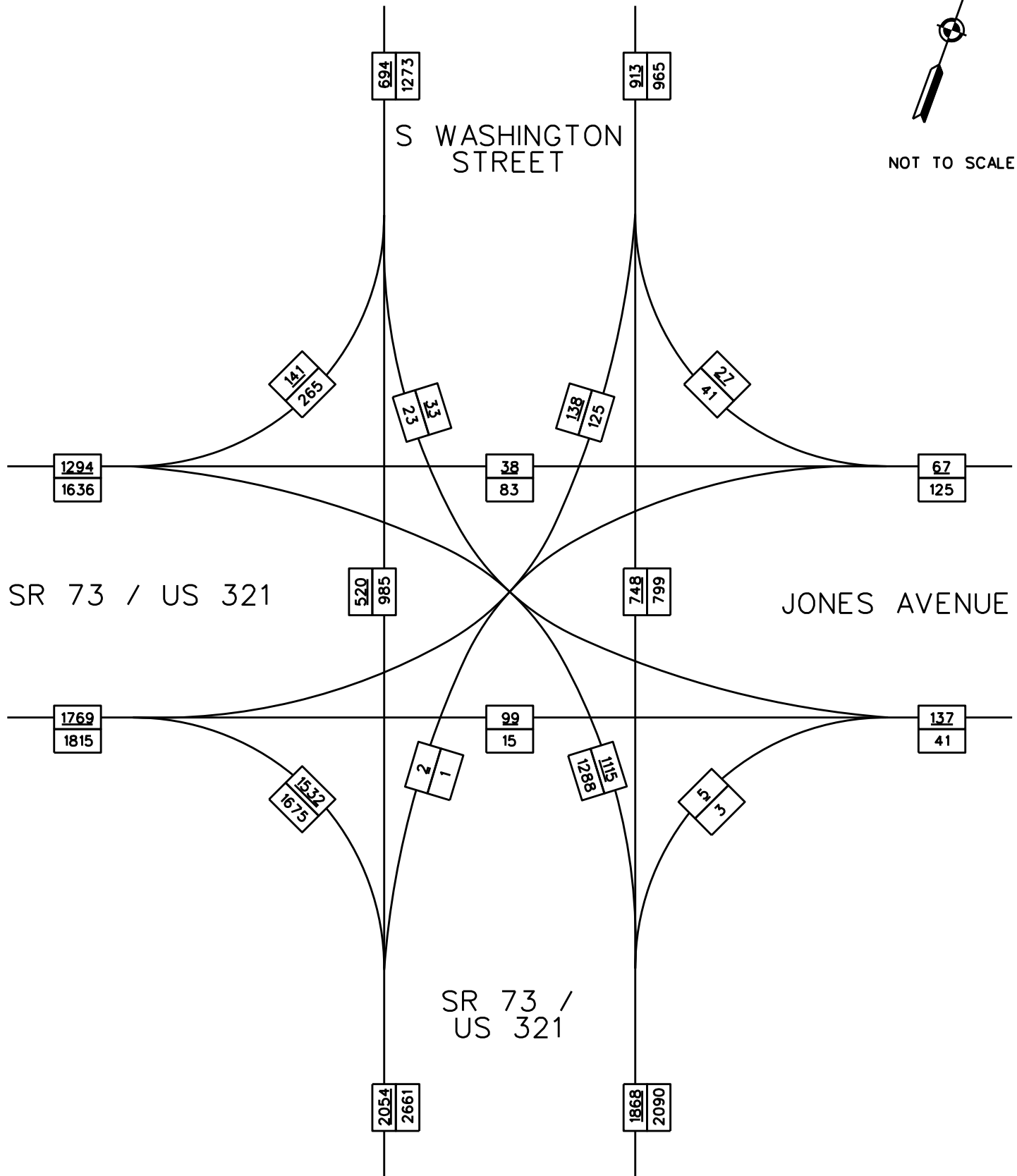


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S WASHINGTON ST / SR 35
@ HIGH ST / SR 35



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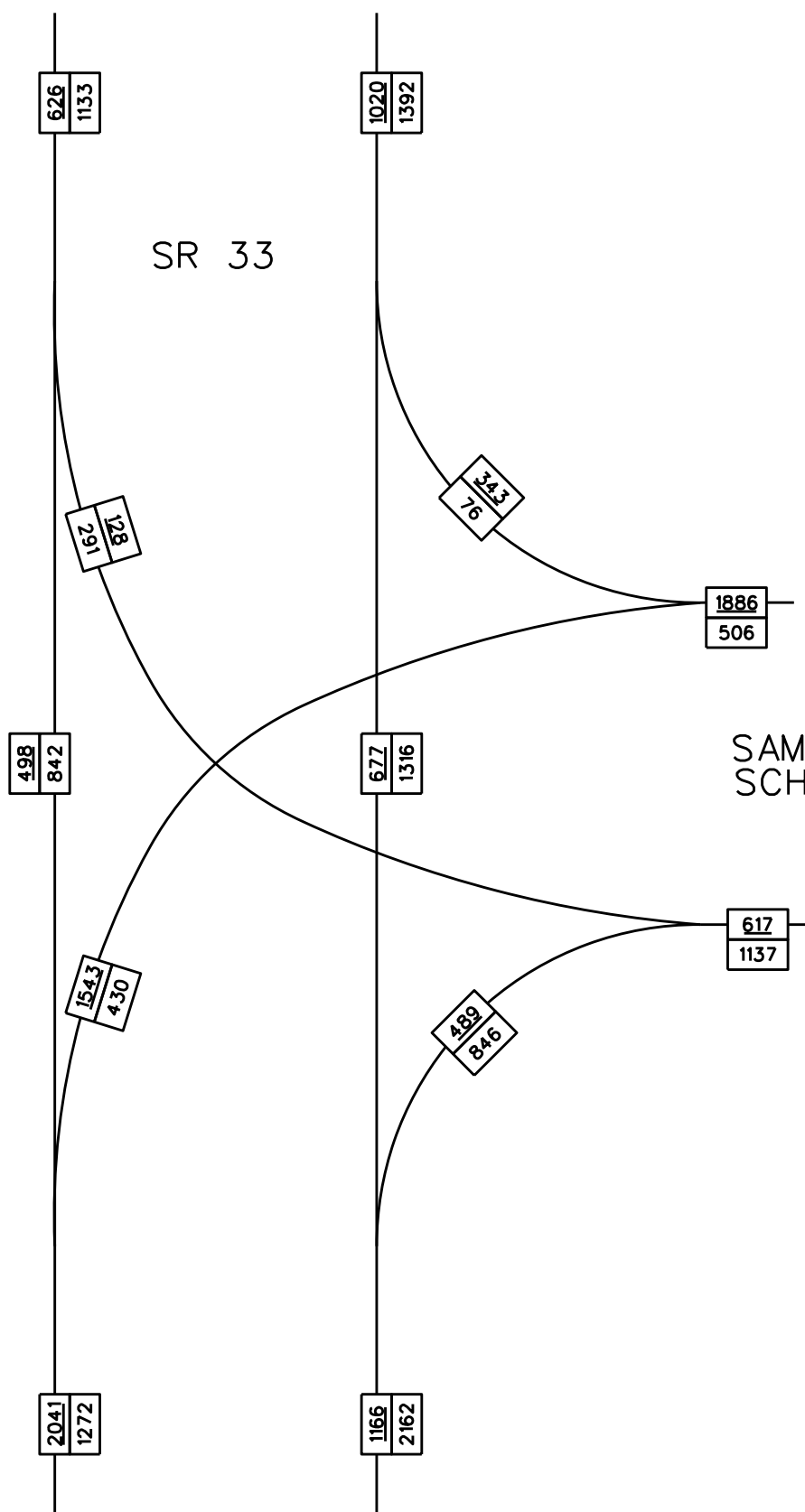


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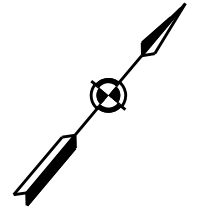
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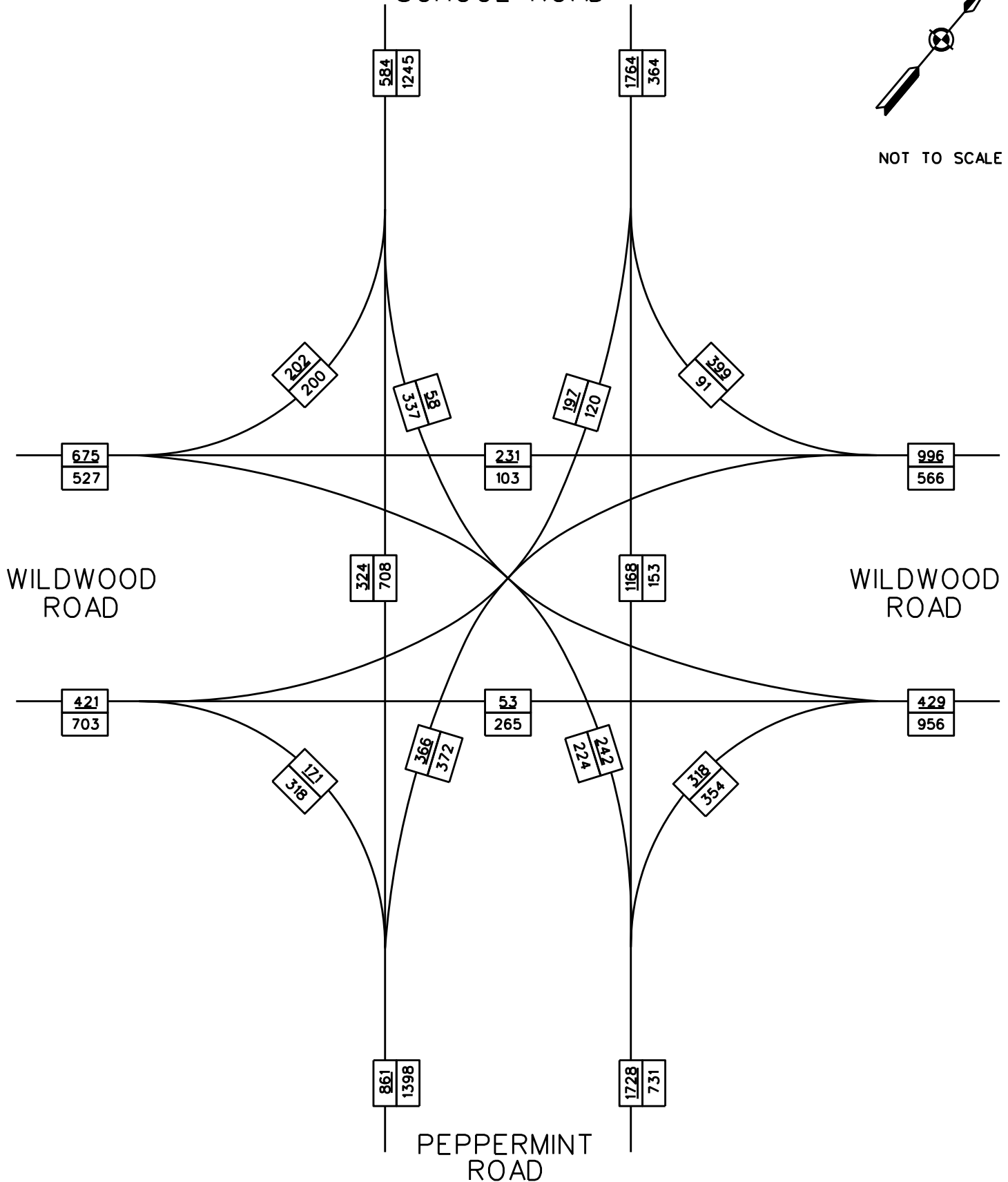
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AM / PM

SR 33 @
SAM HOUSTON SCHOOL ROAD

SAM HOUSTON SCHOOL ROAD

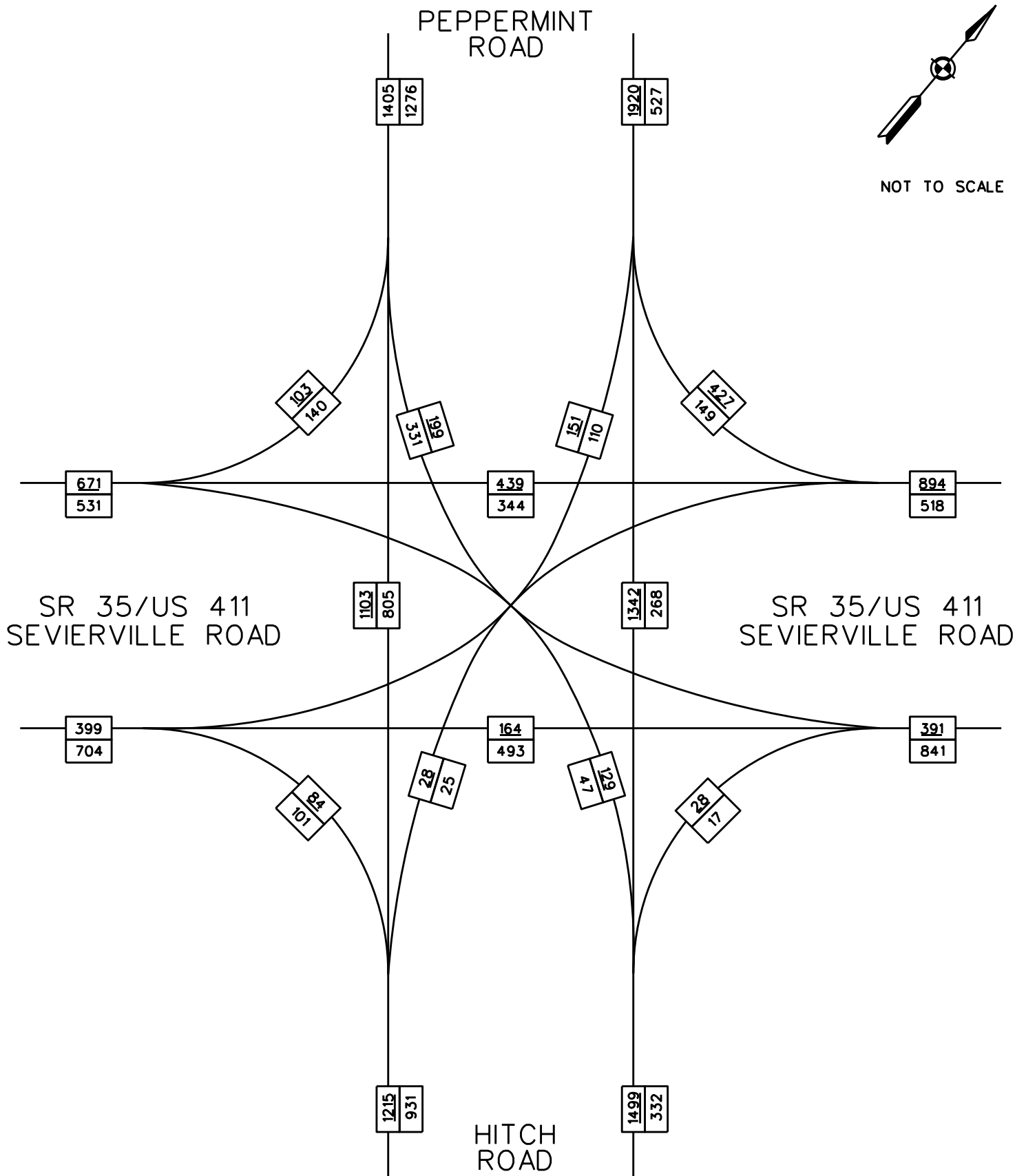


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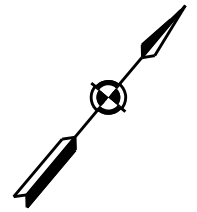
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WILDWOOD ROAD @ PEPPERMINT
ROAD/SAM HOUSTON SCHOOL ROAD

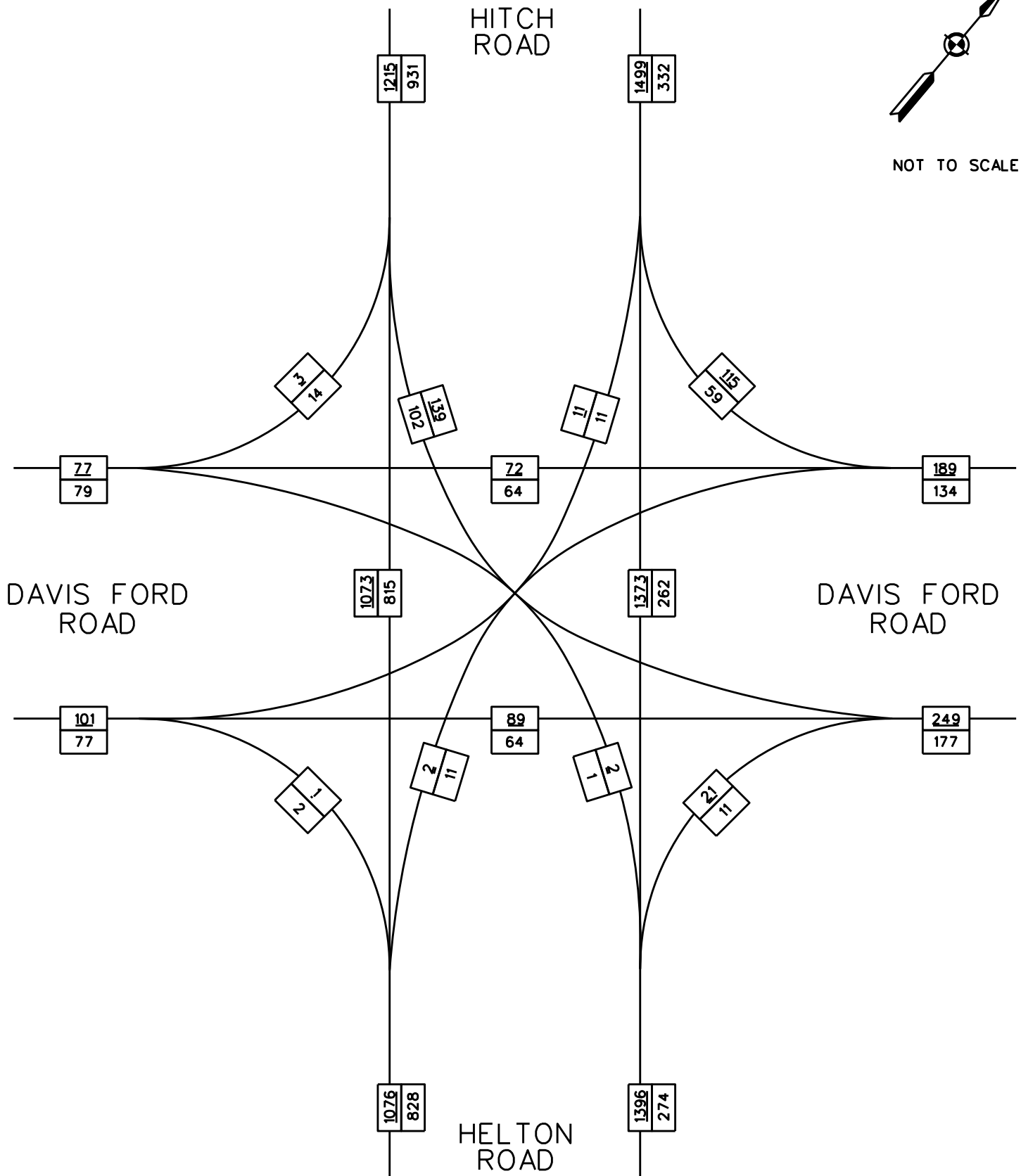


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AM / PM

SR 35/US 411/SEVIERVILLE ROAD @
PEPPERMINT ROAD/HITCH ROAD

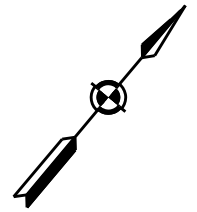


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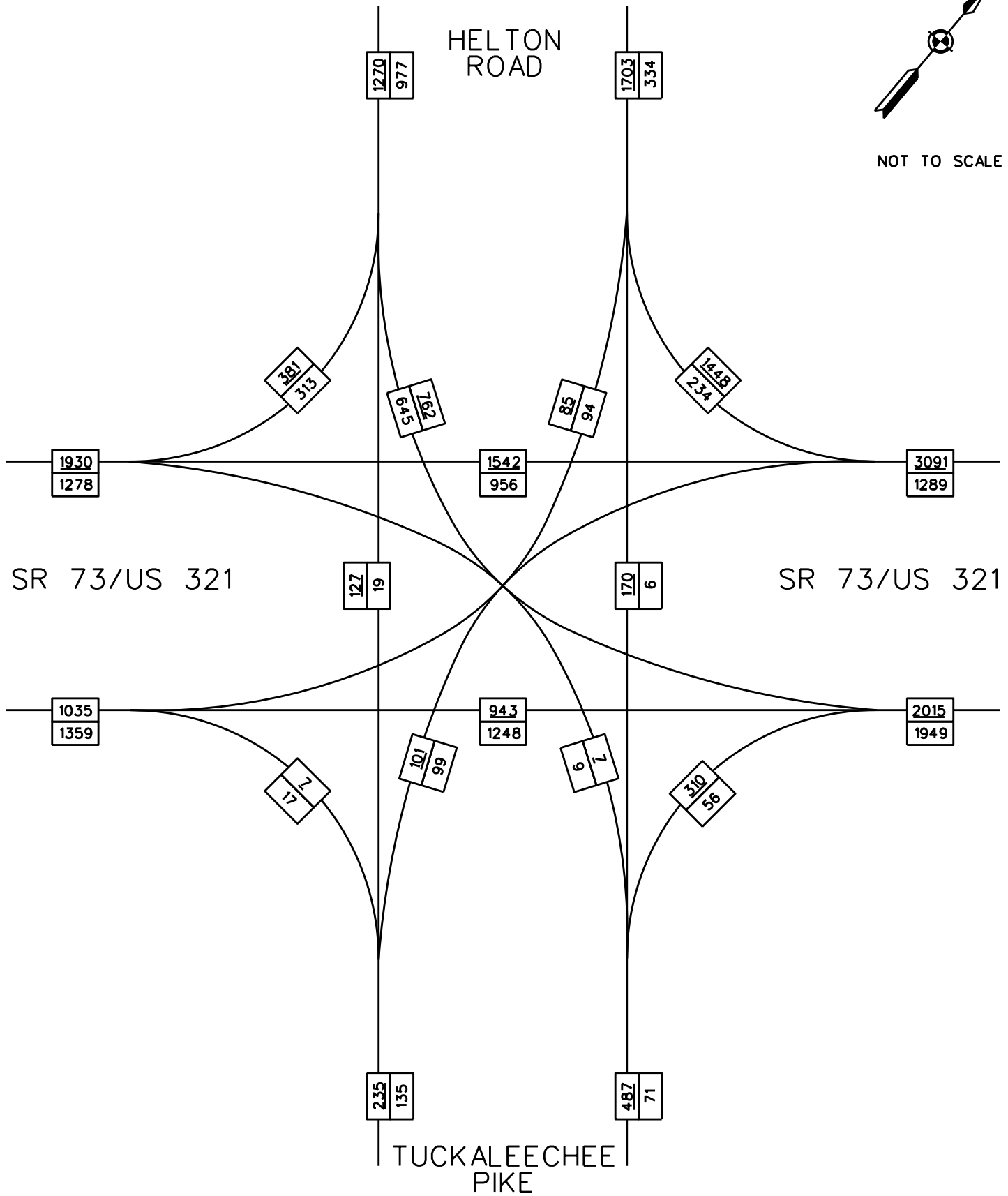


2040 DHV WITH PPE (ALT D)
AM / PM

DAVIS FORD ROAD @
HITCH ROAD/HELTON ROAD



NOT TO SCALE



2040 DHV WITH PPE (ALT D)
AM / PM

SR 73/US 321 @
HELTON ROAD/TUCKALEECHEE PIKE

APPENDIX D
Crash Analysis Technical Report
August 3, 2017

SR 162 (PELLISSIPPI PARKWAY EXTENSION)

CRASH ANALYSIS TECHNICAL REPORT

BLOUNT COUNTY, TENNESSEE

P.I.N. 101423.00

Prepared for:



Prepared by:

WSP USA Inc. (formerly WSP | Parsons Brinckerhoff, Inc.)

2100 West End Avenue, Suite 630
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August 3, 2017

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List of Acronyms

AADT	Annual Average Daily Traffic
CAPPE	Citizens Against Pellissippi Parkway Extension
DEIS	Draft Environmental Impact Statement
E	Exposure Rate
EIS	Environmental Impact Statement
FEIS	Final Environmental Impact Statement
FHWA	Federal Highway Administration
HSM	Highway Safety Manual
I-140	Interstate 140
Incap	Incapacitating injury
LM	Log Mile
MVM	Million Vehicle Miles
NEPA	National Environmental Policy Act
Non-incap	Non-incapacitating injury
PDO	Property Damage Only crash
PPE	Pellissippi Parkway Extension
R	Actual Crash Rate
RA	Statewide Average Crash Rate
RAH	Relocated Alcoa Highway
RC	Critical Crash Rate
R/RC	Actual-to-Critical Crash Rate Ratio
ROD	Record of Decision
SI	Severity Index
SPF	Safety Performance Functions
SR	State Route
TDOT	Tennessee Department of Transportation
TITAN	Tennessee Integrated Traffic Analysis Network
TPO	Knoxville Regional Transportation Planning Organization
TRIMS	Tennessee Roadway Information Management System
TWLTL	Continuous Two-way Left Turn Lane
US	US Route
VMT	Vehicle Miles Traveled
Z	Critical value

1 INTRODUCTION

This report documents an updated traffic safety analysis conducted for the major roadways impacted by the proposed construction of the State Route (SR) 162 (Pellissippi Parkway) extension in Blount County, Tennessee. The analysis consists of a review of historical crash data from the study area to determine historical trends in crashes, and a discussion of the potential impacts the proposed project alternatives may have on future crashes in the study area.

1.1 Project Description and Background

The Tennessee Department of Transportation (TDOT) proposes to extend and construct a new section of Pellissippi Parkway (SR 162) in Blount County, Tennessee. The project begins at the current terminus of Pellissippi Parkway/Interstate 140 (I-140) at SR 33 (Old Knoxville Highway) and extends to US Route (US) 321/SR 73 (Lamar Alexander Parkway) in Blount County. The project is 4.38 miles in length. **Figure 1** illustrates the project area.

TDOT and the Federal Highway Administration (FHWA) have prepared an Environmental Impact Statement (EIS) in accordance with the National Environmental Policy Act (NEPA) for this project. FHWA approved the Draft EIS (DEIS) for circulation on April 14, 2010, a reevaluation of the DEIS on July 17, 2014, and the Final EIS (FEIS) on September 10, 2015. The FEIS identified the Preferred Alternative, a four-lane divided highway on new location, as shown in **Figure 1**. (Alternative D, an improved two-lane alternative that was studied in the DEIS, also is shown on **Figure 1** and examined in this study as a comparison to the No-Build Alternative and the Preferred Alternative.)

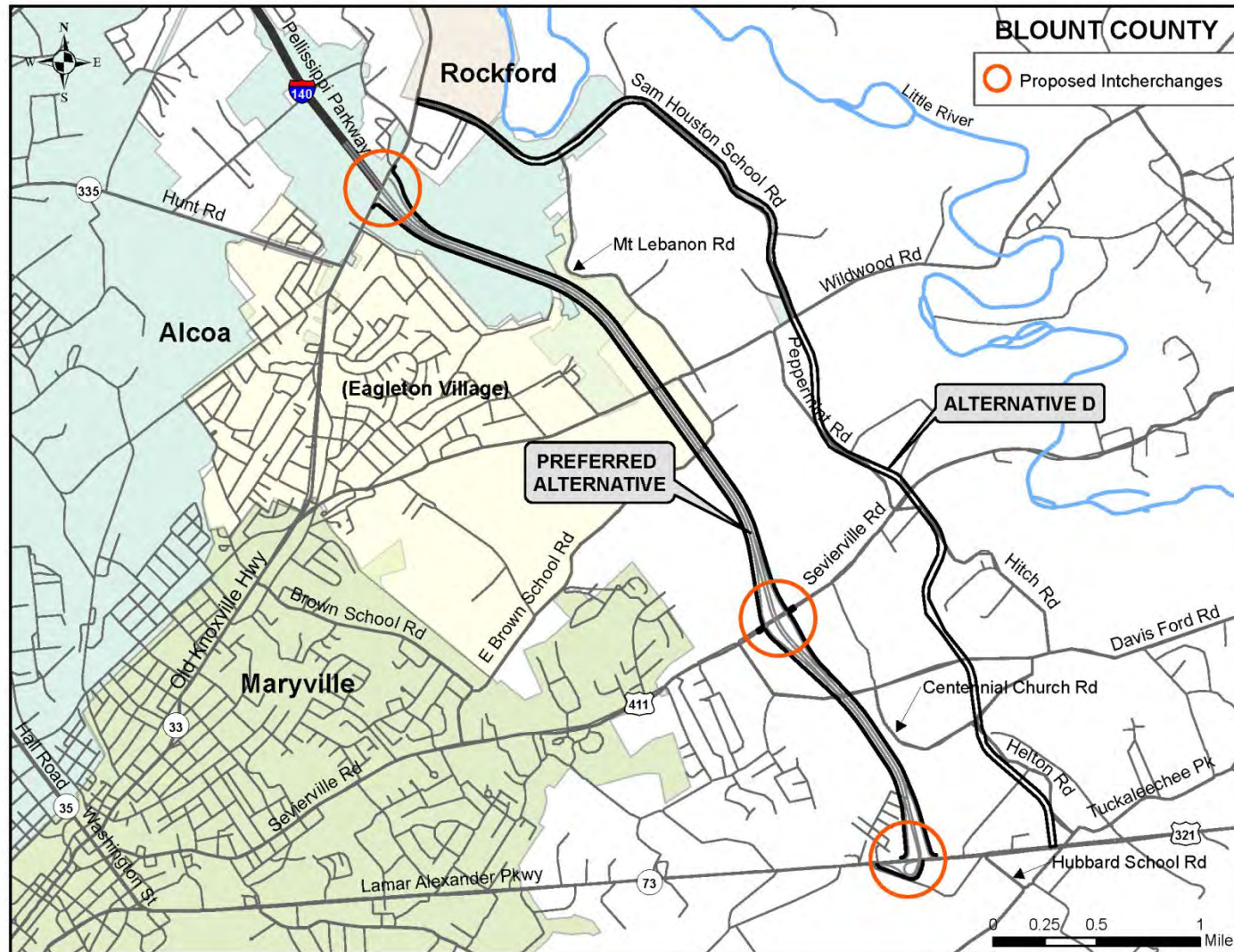
FHWA published the Notice of Availability of the FEIS in the *Federal Register* on September 18, 2015. During the 60-day FEIS review period (ending November 18, 2015), TDOT and FHWA received comments from federal and local agencies and members of the public. TDOT and FHWA reviewed the comments and determined the appropriate responses. Included among the comments were those addressing the analysis of traffic safety. These and other comments received will be resolved prior to the preparation and issuance of a Record of Decision (ROD) for this project.

1.2 Safety-Related Elements of the Project's Purpose and Need

The Purpose and Need for this project identified the following safety-related transportation needs:

- Poor local road network with substandard cross sections (with narrow lanes, sharp curves, and insufficient shoulders) in the eastern portion of the county.
- Safety issues on roadways in the area, including roads in the Maryville core. People traveling between the north and western portions of the county and the eastern portions of the county must pass through the Maryville core. Numerous rear-end crashes and angle crashes have been reported due to high volumes of traffic and lack of access management along the roadways.

One of the objectives of the project is to “enhance roadway safety on the county's roadway network, including the Maryville core.

Figure 1 — Project Area Showing the Preferred Alternative and Alternative D

Source: WSP USA Inc., 2017.

1.3 Purpose of this Report

This report is intended to update the February 2014 *Crash Analysis Report Update*¹ that was prepared for the FEIS and address public comments received on the FEIS regarding the future safety of the Preferred Alternative. TDOT's current traffic safety procedures specify the analysis of the latest three full years of available data. Use of high quality and accurate data at the time of analysis is the standard for NEPA documents (40 CFR 1500.1(b)) and fosters better decision making. The 2014 *Crash Analysis Report Update* analyzed data for the period 2010 to 2012, the latest available at that time. For this updated analysis, crash data is available for the period 2014-2016; thus this update evaluates crashes that occurred between January 1, 2014 and December 31, 2016.

1.3.1 Crash Comments Received

The Citizens Against Pellissippi Parkway Extension (CAPPE) provided comments dated November 18, 2015, stating that the FEIS failed to draw conclusions of future crashes from the safety data collected and analyzed in the 2014 crash report and that the project would contribute to unsafe conditions. In its comments, CAPPE presented a summary of its own analysis and drew its conclusions comparing the No-Build Alternative to the Preferred Alternative. CAPPE described their approach and findings as:

The Preferred Alternative INCREASES (not decreases) number of crashes area wide. The Preferred Alternative would result in an increase (relative to No-Build) of 63 annual crashes on the Pellissippi Parkway in the study area. This is obtained by applying the statewide average crash rate of 0.981 crashes per million VMT (2015 FEIS Table 1-5) to the increase in annual vehicle miles of travel (VMT) on the Pellissippi Parkway (2014 Addendum [to the Traffic Operations Technical Report], Tables 5 and 7). On the other hand, the reduction in traffic on roads (other than the Pellissippi Parkway) throughout the study area would result in a reduction of around 42 crashes. This is obtained by applying a rate of 4.0 crashes per million VMT (typical for roads with traffic reductions due to the Preferred Alternative) to the reduction in travel on these roads due to the Preferred Alternative.

For the entire study area, therefore, the crash rates from the 2015 FEIS (Table 1-5) and the Crash Analysis applied to the year 2040 vehicle miles of travel (2014 Addendum, Tables 5 and 7) results in the projection of an INCREASE of 21 crashes annually in the year 2040 Preferred Alternative as compared to the year 2040 No-Build. (CAPPE Comments, November 18, 2015, page 8, comment # 2.d.6.)

CAPPE used statewide average crash rates and vehicle miles of travel (VMT) to calculate an increase in crashes on the Pellissippi Parkway, and applied crash rates from the FEIS to the 2040 VMT for the Preferred Alternative and the No-Build Alternative. No more specific details of CAPPE's approach were offered.

¹ Parsons Brinckerhoff, *Crash Analysis Report Update*, February 2014, found on project webpage <https://www.tn.gov/tdot/article/pellissippi-library>

1.3.2 Efforts to Produce Future Crash Rates

TDOT's traffic safety consultant attempted to replicate the approach and results offered in CAPPE's comments, but was not able to do so for several reasons. The problems with CAPPE's method include: 1) assuming that current crash patterns will be the same into the future, and 2) assuming that crash rates are the same for roadways within the same class and type and thus ignoring site-specific characteristics that influence crashes. That approach cannot provide useful conclusions about the relative safety of the design alternatives.

CAPPE's computations using current crash rates assumed a linear relationship exists between exposure and crashes. Most current research demonstrates a non-linear relationship between traffic volume and crash frequency that varies for each road type and setting (urban versus rural). Using an average crash rate to estimate and compare crash frequencies for a facility at different traffic volume levels is not appropriate.

The 2010 American Association of State Highway and Transportation Officials (AASHTO) Highway Safety Manual (HSM) is a relatively new methodology for quantifying predicted crashes (frequency and severity) for many roadway types and intersections. However, for the Pellissippi Parkway Extension (PPE) project, a major limitation is a lack of Tennessee calibrated HSM Safety Performance Functions (SPFs) for local conditions. Since the HSM SPFs for the relevant roadway, intersection, and ramp types were calibrated using data from different states, and since shifts in traffic between roadways of different types is a significant factor in assessing the safety performance impacts of the PPE project, the lack of Tennessee calibration factors is critical.

At this time, TDOT's standard practice is to use a qualitative approach to address the safety of new or improved roadways. After consultation with FHWA, TDOT confirmed that a qualitative approach to address the anticipated safety performance of the proposed Pellissippi Parkway Extension is appropriate.

1.4 Organization of this Report

To address the FEIS comments on the traffic safety performance of the Preferred Alternative, TDOT has updated the historical crash analysis to the latest available full three years of crash data (2014-2016), and examined qualitatively the potential impact of the project alternatives on future roadway safety in the project area.

The remaining sections of this report are organized as follows:

2.0 – Existing and Forecasted Traffic in the Study Area. This section describes the characteristics of the roadway segments in the study area and presents the historical traffic volume data collected by TDOT, and the forecasted traffic volumes for the proposed project alternatives.

3.0 – Historic Crash Analysis. This section analyzes the latest available three-year crash data (2014-2016) for the study area to determine crash trends and locations or areas for safety improvements.

4.0 – Relative Safety of Project Alternatives. This section qualitatively compares the safety of freeways with lower classification roads in the study area and discusses the influence of traffic migration for roadway safety.

5.0 – Conclusions. This section summarizes the key findings of the report for historical crash and future safety of the project alternatives.

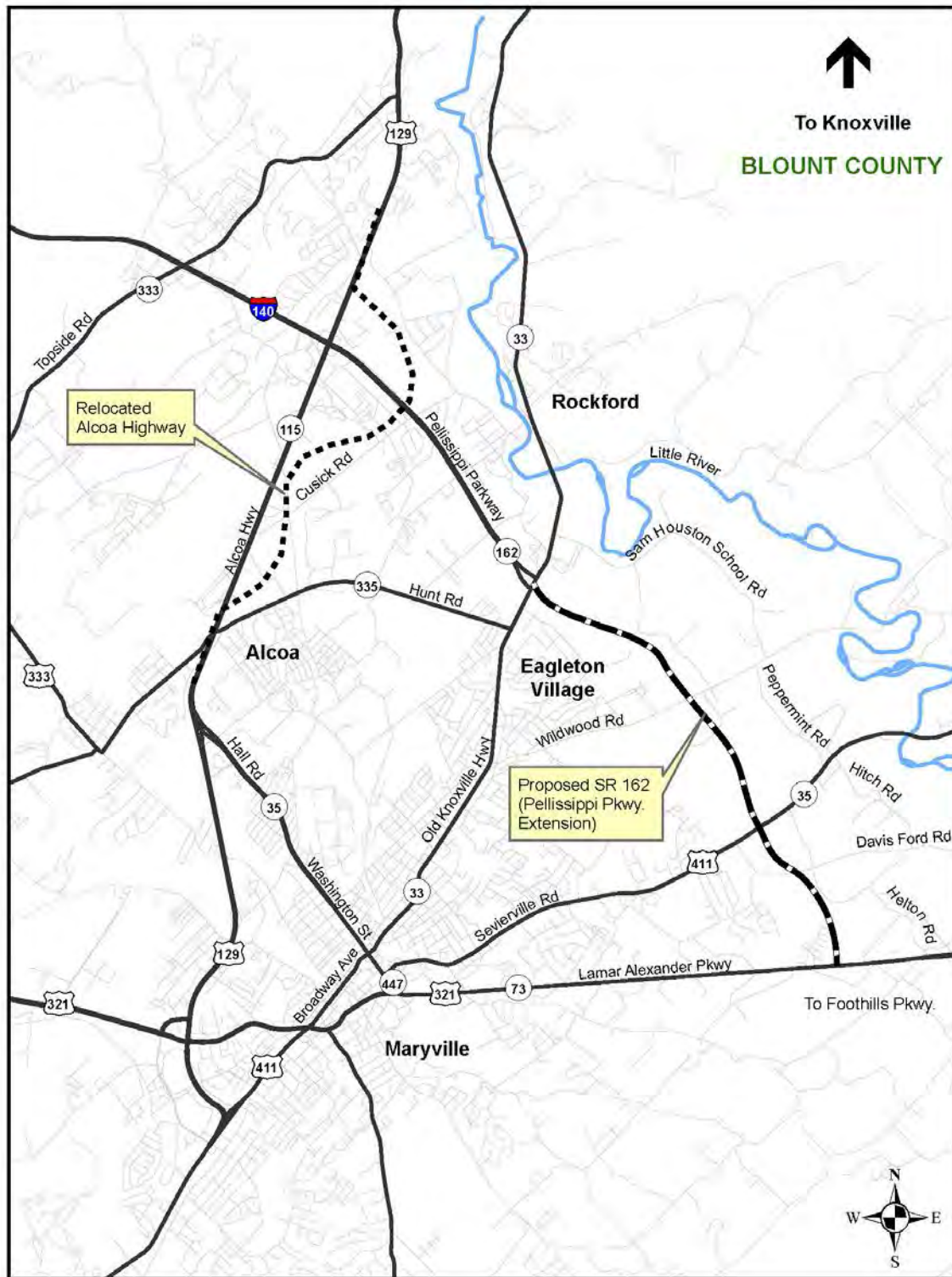
2 EXISTING AND FORECASTED TRAFFIC IN THE STUDY AREA

The study area includes approximately 60 miles of existing roadways in eastern Blount County where the proposed project will affect traffic patterns. These roadways include the following:

- **SR 33 (Broadway Avenue/Old Knoxville Highway)** from SR 35 (Washington Street) (log mile (LM) 12.35) to the Knox County line (LM 20.66), a distance of approximately 8.31 miles;
- **US 411/SR 35 (Hall Road/Washington Street/High Street/Sevierville Road)** from US 129/SR 115 (Alcoa Highway) (LM 0.00) to the Little River (LM 7.93), a distance of approximately 7.93 miles;
- **US 321/SR 73 (Lamar Alexander Parkway)** from SR 33 (West Broadway Avenue) (LM 11.66) to Foothills Parkway (LM 22.40), a distance of approximately 10.74 miles;
- **US 129/SR 115 (Alcoa Highway)** from Louisville Road (LM 13.02) to the Knox County line (LM 20.40), a distance of approximately 7.38 miles;
- **SR 162 (Pellissippi Parkway/Interstate 140 [I-140])** from SR 333 (Topside Road) (LM 0.81) to SR 33 (Old Knoxville Highway) (LM 4.71), a distance of approximately 3.90 miles;
- **SR 335 (Hunt Road)** from US 129/SR 115 (Alcoa Highway) (LM 7.79) to SR 33 (East Broadway Avenue / Old Knoxville Highway) (LM 4.71), a distance of approximately 2.47 miles;
- **SR 447 (South Washington Street)** from US 411/SR 35 (South Washington Street/High Street) (LM 0.00) to US 321/SR 73 (Lamar Alexander Parkway) (LM 0.16), a distance of approximately 0.16 miles;
- **Wildwood Road** from SR 33 (East Broadway Avenue) (LM 0.00) to the Little River (LM 3.75), a distance of approximately 3.75 miles;
- **Sam Houston School Road** from SR 33 (Old Knoxville Highway) (LM 0.00) to Wildwood Road (LM 2.65), a distance of approximately 2.65 miles;
- **Peppermint Road** from Wildwood Road (LM 0.00) to US 411/SR 35 (Sevierville Road) (LM 1.10), a distance of approximately 1.10 miles;
- **Helton Road** from Davis Ford Road (LM 0.00) to US 321/SR 73 (Lamar Alexander Parkway) (LM 0.88), a distance of approximately 0.88 miles;
- **Hitch Road** from US 411/SR 35 (Sevierville Road) (LM 0.00) to Davis Ford Road (LM 1.20), a distance of approximately 1.20 miles; and
- **Relocated Alcoa Highway** (proposed) from US 129/SR 115 (Alcoa Highway) near Hall Road to US 129/SR 115 (Alcoa Highway) at South Singleton Station Road.

Figure 2 shows these roadways.

Figure 2 — Study Area Location Map



Source: WSP USA Inc., 2017.

2.1 Roadway Conditions of Assessed Roadways

To account for differences in roadway conditions that influence crashes (such as geometry, roadway surface, lane configuration, access density, and traffic volume), the roadways assessed as part of this crash analysis have been further divided into segments that feature similar conditions throughout. **Table 1** lists these segments by route, termini (by LM and the nearest feature), and length in miles.

Table 1 — Roadway Segments and Types in Study Area

Roadway	Begin Segment		End Segment		Length (mi.)	Route Type	Rural / Urban	Highway Type
	LM	Feature	LM	Feature				
SR 33 (Broadway Ave. / Old Knoxville Hwy.)	12.35	SR 35 (Washington St.)	14.32	Wildwood Rd.	1.97	State Route	Urban	2- or 3-Lane
	14.32	Wildwood Rd.	15.47	SR 335 (E. Hunt Rd.)	1.15	State Route	Urban	2- or 3-Lane
	15.47	SR 335 (E. Hunt Rd.)	15.92	SR 162 (Pellissippi Pkwy./I-140)	0.45	State Route	Urban	2- or 3-Lane
	15.92	SR 162 (Pellissippi Pkwy./I-140)	16.37	Sam Houston School Rd.	0.45	State Route	Urban	2- or 3-Lane
	16.37	Sam Houston School Rd.	20.66	Knox County Line	4.29	State Route	Urban	2- or 3-Lane
SR 35 (Hall Rd. / Washington St. / High St. / Sevierville Rd.)	0.00	US 129/SR 115 (Alcoa Hwy.)	1.52	Bessemer St.	1.52	State Route	Urban	4-Lane Divided
	1.52	Bessemer St.	2.59	US 411/SR 33 (Broadway Ave.)	1.07	State Route	Urban	4-Lane w/ TWLTL*
	2.59	US 411/SR 33 (Broadway Ave.)	2.82	SR 447 (S. Washington St.)	0.23	State Route	Urban	4-Lane w/ TWLTL*
	2.82	SR 447 (S. Washington St.)	3.69	S. Everett High Rd.	0.87	State Route	Urban	2- or 3-Lane
	3.69	S. Everett High Rd.	4.53	Proposed Pellissippi Pkwy. Extension	0.84	State Route	Urban	2- or 3-Lane
	4.53	Proposed Pellissippi Pkwy. Extension	7.25	Hitch Rd.	2.72	State Route	Urban	2- or 3-Lane
	7.25	Hitch Rd.	7.93	Bridge over Little River	0.68	State Route	Urban	2- or 3-Lane
US 321/SR 73 (Lamar Alexander Pkwy.)	11.66	US 411/SR 33 (W. Broadway Ave.)	12.53	SR 447 (S. Washington St.)	0.87	State Route	Urban	4-Lane Divided
	12.53	SR 447 (S. Washington St.)	13.98	Merritt Rd.	1.45	State Route	Urban	4-Lane Divided
	13.98	Merritt Rd.	17.02	Helton Rd.	3.04	State Route	Urban	4-Lane Divided
	17.02	Helton Rd.	20.02	Tuckaleechee Pike	3.00	State Route	Rural	4-Lane Divided
	20.02	Tuckaleechee Pike	22.40	Foothills Pkwy.	2.38	State Route	Rural	4-Lane Divided

Table 1 — Roadway Segments and Types in Study Area, continued

Roadway	Begin Segment		End Segment		Length (mi.)	Route Type	Rural / Urban	Highway Type
	LM	Feature	LM	Feature				
US 129/SR 115 (Alcoa Hwy.)	13.02	Louisville Rd.	14.28	SR 35 (N. Hall Rd.)	1.26	State Route	Urban	4-Lane Divided
	14.28	SR 35 (N. Hall Rd.)	15.02	SR 335 (W. Hunt Rd.)	0.74	State Route	Urban	4-Lane Divided
	15.02	SR 335 (W. Hunt Rd.)	16.00	Relocated Alcoa Hwy.	0.98	State Route	Urban	4-Lane Divided
	16.00	Relocated Alcoa Hwy.	17.66	SR 162 (Pellissippi Pkwy./I-140)	1.66	State Route	Urban	4-Lane Divided
	17.66	SR 162 (Pellissippi Pkwy./I-140)	20.40	Knox County Line	2.74	State Route	Urban	4-Lane Divided
SR 162 (Pellissippi Pkwy./I-140)	0.81	Louisville Rd.	2.24	SR 35 (N. Hall Rd.)	1.43	State Route	Urban	Freeway
	2.24	SR 35 (N. Hall Rd.)	3.24	SR 335 (W. Hunt Rd.)	1.00	State Route	Urban	Freeway
	3.24	SR 335 (W. Hunt Rd.)	4.71	Relocated Alcoa Hwy.	1.47	State Route	Urban	Freeway
SR 162 (Pellissippi Pkwy.) Extension	4.71	SR 33 (Old Knoxville Hwy.)	6.43	US 411/SR 35 (Sevierville Rd.)	1.72	State Route	Urban	Freeway
	6.43	US 411/SR 35 (Sevierville Rd.)	9.09	US 321/SR 73 (Lamar Alexander Pkwy.)	2.66	State Route	Urban	Freeway
SR 335 (Hunt Rd.)	7.790	US 129/SR 115 (Alcoa Hwy.)	9.30	Russell Rd.	1.51	State Route	Urban	2- or 3-Lane
	9.300	Russell Rd.	10.50	SR 33 (Old Knoxville Hwy.)	1.20	State Route	Urban	2- or 3-Lane
SR 447 (S. Washington St.)	0.00	US 411/SR 35 (Sevierville Rd.)	0.16	US 321/SR 73 (Lamar Alexander Pkwy.)	0.16	State Route	Urban	4-Lane w/ TWLTL*
Wildwood Rd.	0.00	SR 33 (E. Broadway Ave.)	1.31	Reservoir Rd.	1.31	Local Route	Urban	2- or 3-Lane
	1.31	Reservoir Rd.	2.65	Sam Houston School Rd.	1.34	Local Route	Urban	2- or 3-Lane
	2.65	Sam Houston School Rd.	3.75	Bridge over Little River	1.10	Local Route	Urban	2- or 3-Lane

Table 1 — Roadway Segments and Types in Study Area, continued

Roadway	Begin Segment		End Segment		Length (mi.)	Route Type	Rural / Urban	Highway Type
	LM	Feature	LM	Feature				
Sam Houston School Rd.	0.00	SR 33 (Old Knoxville Hwy.)	2.65	Wildwood Rd.	2.65	Local Route	Rural	2- or 3-Lane
Peppermint Rd.	0.00	Wildwood Rd.	1.10	US 411/SR 35 (Sevierville Rd.)	1.10	Local Route	Rural	2- or 3-Lane
Helton Rd.	0.00	Davis Ford Rd.	0.88	US 321/SR 73 (Lamar Alexander Pkwy.)	0.88	Local Route	Rural	2- or 3-Lane
Hitch Rd.	0.00	US 411/SR 35 (Sevierville Rd.)	1.20	Davis Ford Rd.	1.20	Local Route	Rural	2- or 3-Lane
Relocated Alcoa Hwy. ¹	0.00	US 129/SR 115 (Alcoa Hwy.) near Hall Road	3.00	SR 162 (Pellissippi Pkwy./I-140)	3.00	State Route	Urban	Freeway
	3.00	SR 162 (Pellissippi Pkwy./I-140)	4.50	US 129/SR 115 (Alcoa Hwy.) at South Singleton Station Road	1.50	State Route	Urban	Freeway
TOTAL LENGTH (MI.)					10.33			

* TWLTL – continuous two-way left turn lane

1 – Relocated Alcoa Highway is a planned facility in the study area. It is listed in the Knoxville Region's latest regional long range transportation plan, *Mobility 2040 Plan* (adopted April 2017), as Projects 116 and 117, with a horizon year of 2026.

Source: WSP USA Inc., 2017.

2.2 Historic Traffic Volumes

TDOT collects traffic data annually at count stations on state and local roadways throughout Tennessee; this data is then processed to determine the annual average daily traffic (AADT) for the roadway at the station, defined as the total volume of vehicles passing a point on a facility in a year, divided by the number of days in a year. **Table 2** lists the AADT for each year within the study period, 2014-2016.

Table 2 — TDOT Count Stations in Study Area

Sta. No.	Roadway Name	Recorded AADT		
		2014	2015	2016
009000014	US 129/SR 115 (Alcoa Hwy.)	52,174	53,739	54,276
009000016	SR 335 (E. Hunt Rd.)	10,043	9,989	10,295
009000025	SR 33 (Old Knoxville Hwy.)	15,949	16,427	18,147
009000026	Wildwood Rd.	3,470	3,287	4,000
009000027	SR 33 (Old Knoxville Hwy.)	12,888	12,740	14,380
009000042	SR 35 (N. Hall Rd.)	18,084	18,496	20,760
009000043	US 411/SR 35 (Sevierville Rd.)	9,897	10,758	12,360
009000045	US 321/SR 73 (Lamar Alexander Parkway)	22,829	24,180	25,126
009000090	US 321/SR 73 (Lamar Alexander Parkway)	11,701	11,818	11,936
009000098	US 129/SR 115 (Alcoa Hwy.)	37,480	41,548	38,030
009000104	SR 35 (N. Washington St.)	24,864	26,105	23,864
009000105	SR 35 (S. Washington St.)	23,632	23,937	22,379
009000112	SR 33 (E. Broadway Ave.)	10,248	9,647	9,894
009000125	US 129/SR 115 (Alcoa Hwy.)	51,823	56,877	52,875
009000139	US 411/SR 35 (Sevierville Rd.)	7,313	7,995	8,075
009000147	SR 35 (N. Hall Rd.)	25,204	23,520	24,610
009000153	SR 335 (E. Hunt Rd.)	6,876	6,607	7,073
009000159	US 321/SR 73 (Lamar Alexander Parkway)	21,235	20,793	21,222
009000173	US 321/SR 73 (Lamar Alexander Parkway)	19,421	19,707	20,601
009000176	SR 33 (Old Knoxville Hwy.)	6,659	6,635	7,034
009000183	SR 447 (S. Washington St.)	22,456	24,152	21,542
009000191	SR 162 (Pellissippi Pkwy./I-140)	37,670	40,447	40,484

Table 2 — TDOT Count Stations in Study Area, continued

Sta. No.	Roadway Name	Recorded AADT		
		2014	2015	2016
009000216	SR 162 (Pellissippi Pkwy./I-140)	10,720	14,974	13,565
009000220	US 129/SR 115 (Alcoa Hwy.)	47,141	47,276	50,010
009000227	SR 162 (Pellissippi Pkwy./I-140)	11,155	11,166	13,078
009000232	Sam Houston School Rd.	4,399	4,389	4,309
009000013	Peppermint Rd.	2,910	3,027	3,537

Source: TDOT, 2017.

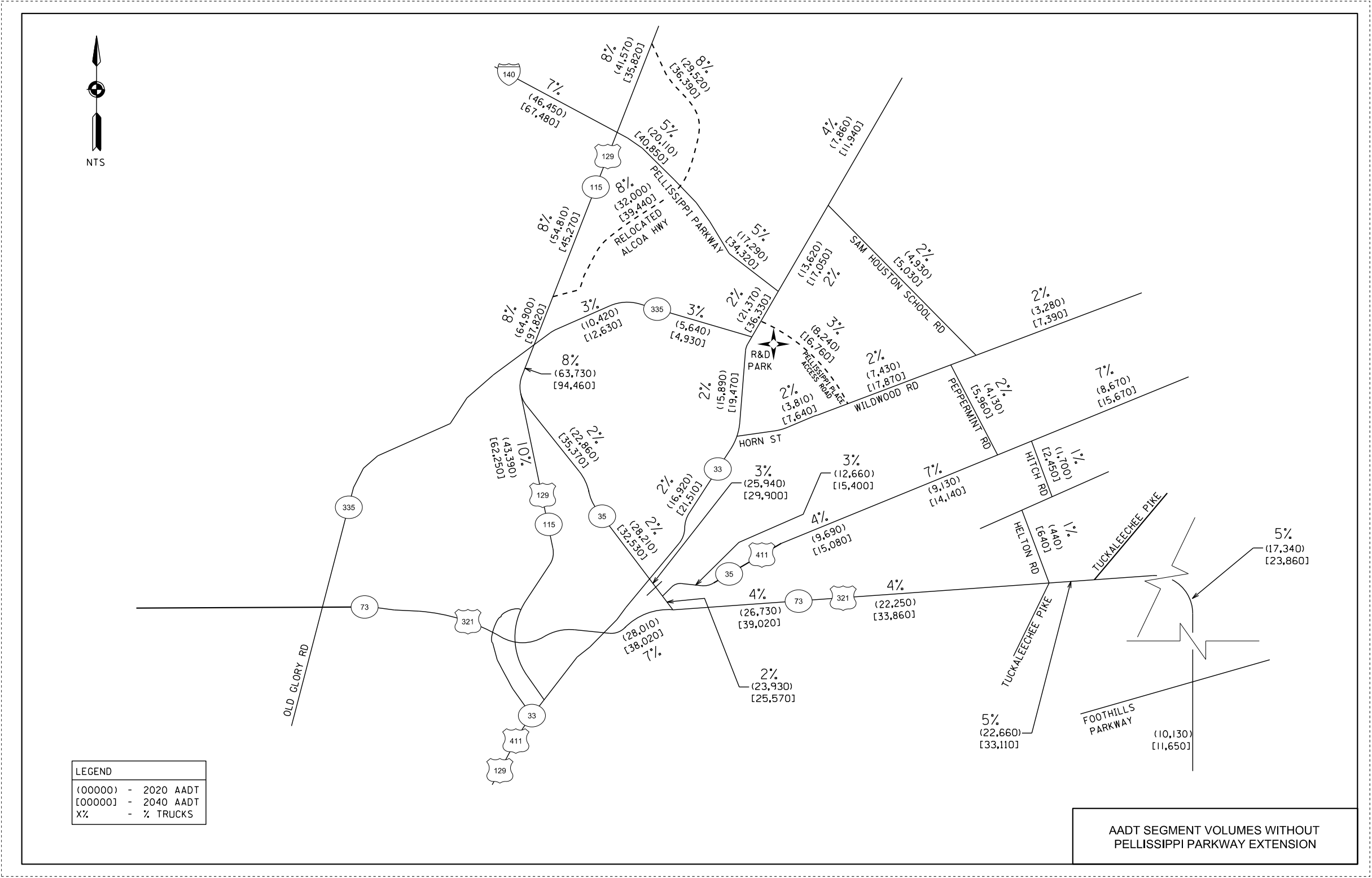
2.3 Traffic Volume Forecasting

TDOT updated traffic counts and forecasts for the No-Build Alternative and the Preferred Alternative in 2013 in response to a new travel demand model adopted by the Knoxville Regional Transportation Planning Organization (Knoxville Regional TPO) in June 2013. TDOT used the 2013 traffic volume projections for the traffic analysis reported in the February 2014 *Addendum to Traffic Operations Technical Report* and in the September 2015 FEIS. New traffic counts were not conducted for Alternative D in 2013 since the two-lane alternative had not been selected as the Preferred Alternative and a traffic analysis conducted in 2011² had demonstrated that the two-lane alternative would perform poorly in future years. For the FEIS analysis, forecasts for Alternative D for years 2020 and 2040 were prepared using existing volumes and the updated travel demand model.

As a result of public comments on the FEIS, TDOT determined that the traffic analysis for Alternative D should be expanded to the same level as the No-Build and Preferred Alternative. In addition, minor corrections were made for the No-Build and Preferred Alternative forecasts. The traffic volume projections were subsequently updated for inclusion in the April 2016 *Update to Traffic Operations Technical Report*. **Figure 3**, **Figure 4**, and **Figure 5** display the updated (2016) forecasted base year and design year AADT for the No-Build Alternative, the Preferred Alternative, and Alternative D, respectively. These forecasts are referenced in Section 4 in the discussion on the relative safety of project alternatives.

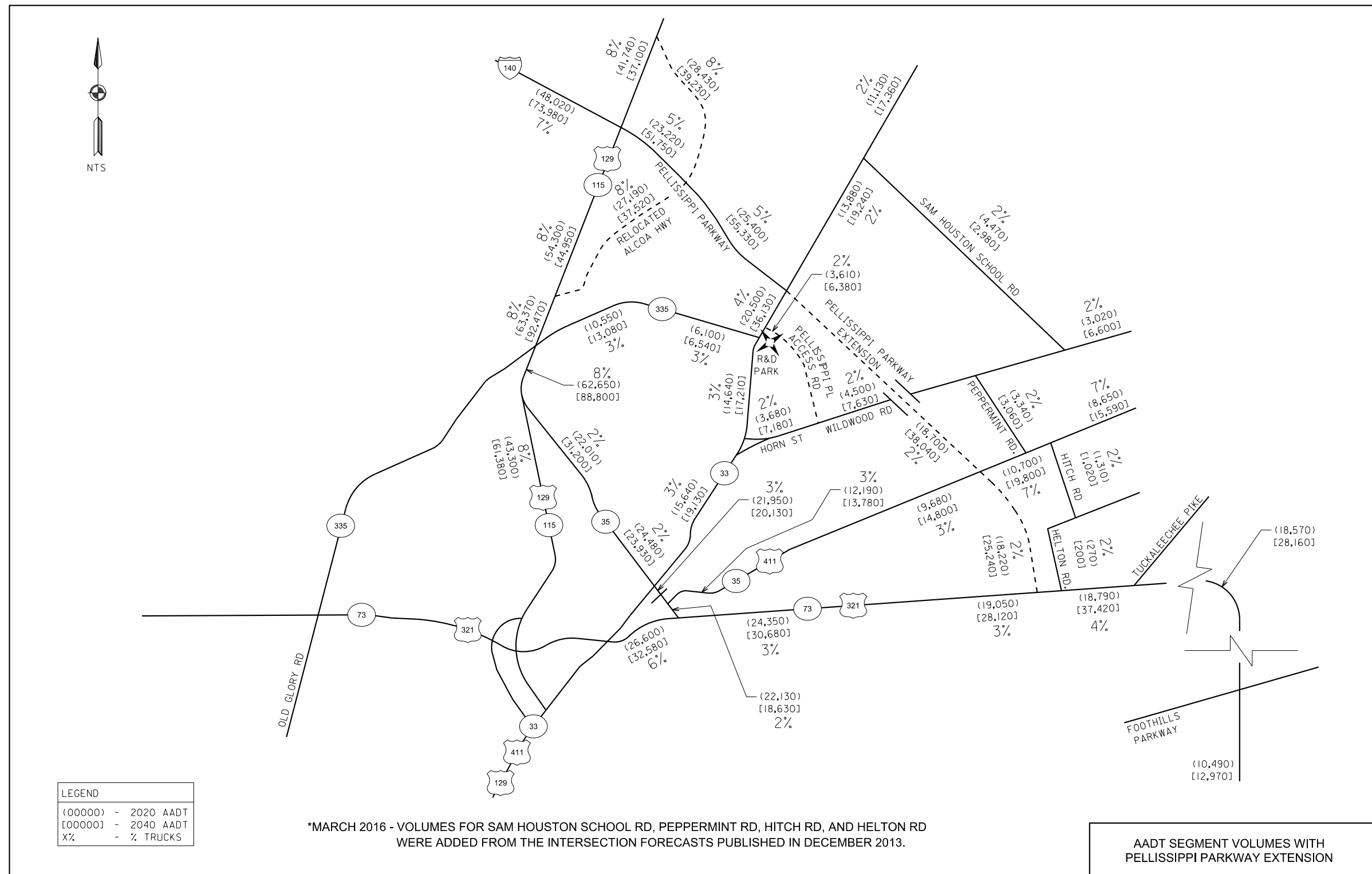
² Parsons Brinckerhoff, *Addendum to Traffic Operations Technical Report*, June 2011, found on project webpage - <https://www.tn.gov/tdot/article/pellissippi-library>.

Figure 3 — Forecasted AADT, No-Build Alternative, 2020 and 2040 (2016 Forecasts)



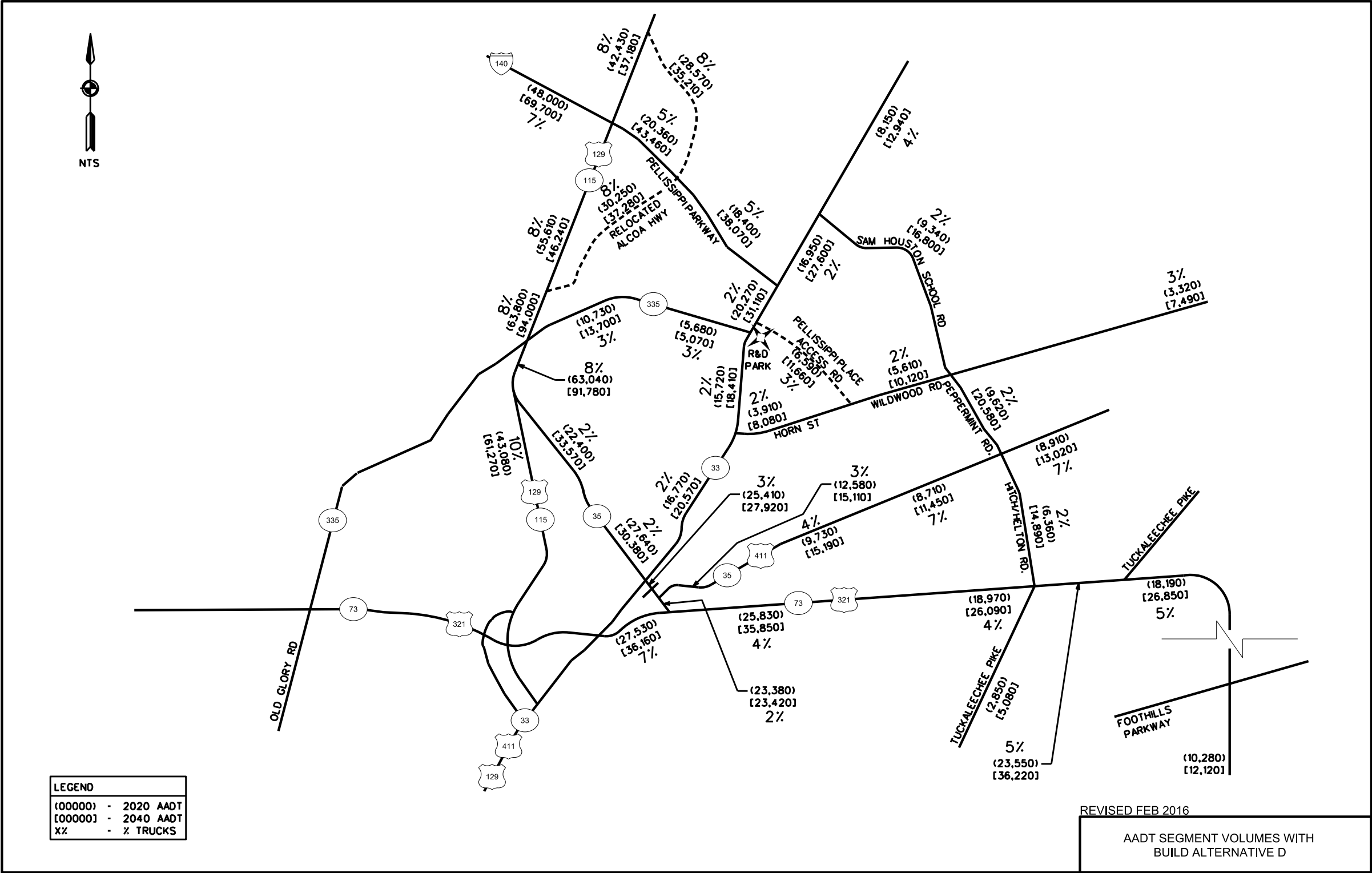
Source: Sain Associates, Inc., Traffic Forecast Study, February 2016.

Figure 4 — Forecasted AADT, Preferred Alternative, 2020 and 2040 (2016 Forecasts)



Source: Sain Associates, Inc., Traffic Forecast Study, February 2016.

Figure 5 — Forecasted AADT, Alternative D, 2020 and 2040 (2016 Forecasts)



Source: Sain Associates, Inc., Traffic Forecast Study, February 2016.

3 HISTORICAL TRAFFIC SAFETY ANALYSIS

The historical traffic safety analysis includes a review of historical crash data (2014-2016) for the study area to characterize crash trends and locations where crashes occur.

Historical crash data for the study area is available via the *Tennessee Roadway Information Management System* (TRIMS) and the *Tennessee Integrated Traffic Analysis Network* (TITAN). The historical crash data includes information such as location, date, time of day, severity (including the total number of involved vehicles, injuries, and fatalities), crash events, weather conditions, and lighting conditions. The safety analysis is limited to a three-year period of available data to minimize the impact of changes in traffic patterns, roadway construction, and trip origins and destinations on statistical trends in crashes in the study area. This three-year interval is referred to as the *study period*.

3.1 Crash Severity

Crash severity measures the level of injury sustained by any person involved in a crash. TDOT divides crash severity into four general types of crashes, as follows:

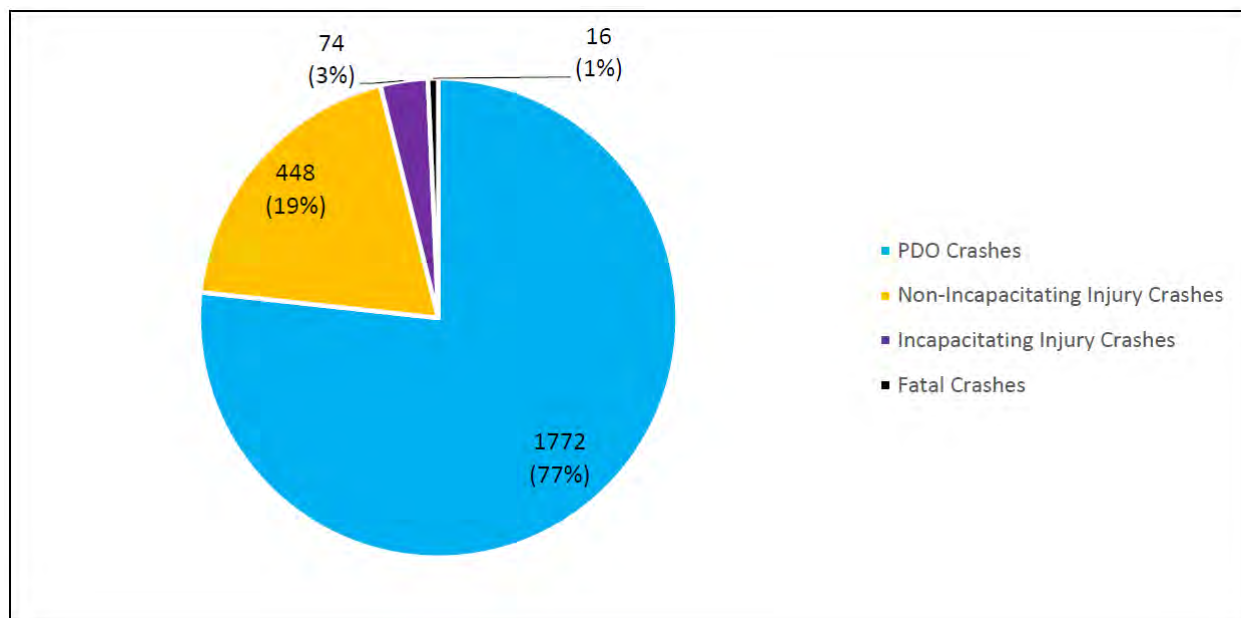
- A *fatal crash*, in which one or more persons involved in the crash suffers an injury that results in death within 30 days following the crash;
- An *incapacitating injury crash*, in which at least one person involved in the crash exhibits physical evidence of a serious, non-fatal injury;
- A *non-incapacitating injury crash*, in which at least one person involved in the crash exhibits physical evidence of or reports an injury that is neither fatal nor incapacitating in nature; and
- A *property-damage-only (PDO) crash*, in which no person involved in the crash exhibits physical evidence of injury or reports any change in their normal functions.

During the three-year study period, 2,310 reported crashes occurred within the study area. Of these, 1,772 crashes (approximately 77% of the total reported crashes) involved only property damages, while 448 crashes (approximately 19%) resulted in 643 non-incapacitating injuries, 74 crashes (approximately 3%) resulted in 99 incapacitating injuries, and 16 crashes (approximately 1%) resulted in 18 fatalities.

Approximately half (about 53%) of the total crashes (1,233) occurred at intersections; of those crashes, 968 crashes (approximately 79%) involved only property damage, while 227 crashes (about 18%) resulted in 342 non-incapacitating injuries, 32 crashes (approximately 3%) resulted in 49 incapacitating injuries, and 6 crashes (less than 1%) resulted in 7 fatalities. Many of these intersection-related rear-end and angle crashes are associated with high volumes of traffic on the Maryville core roadways.

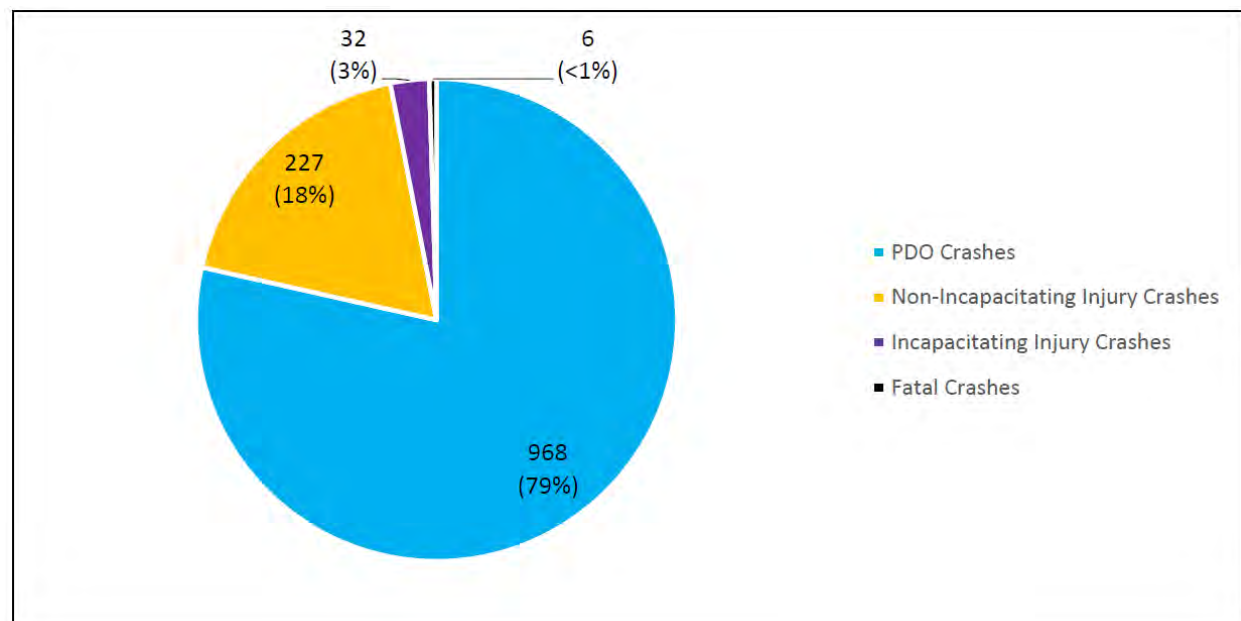
Figure 6 displays the recorded crashes occurring within the study area during the study period by crash severity. As demonstrated, most of the crashes during that period were minor, that is, without physical injuries to the persons involved in the crash, or with only non-incapacitating injuries. **Figure 7** displays the recorded crashes occurring at intersections within the study area during the study period by crash severity.

**Figure 6 — Recorded Crash Proportions by Severity, 2014–2016:
All Crashes**



Source: TDOT, 2017.

Figure 7 — Recorded Intersection Crash Proportions by Severity, 2014–2016



Source: TDOT, 2017.

Table 3 catalogues the 16 recorded fatal crashes during this three-year period. Most crashes involved an angle collision with another vehicle, in daylight or lighted conditions.

Table 3 — Recorded Fatal Crashes

Roadway	LM	Date / Time	Location	Most Harmful Event	Manner of First Collision	Weather Conditions	Lighting Conditions
Sam Houston School Road	0.355	2015-10-17 / 13:15	Along Roadway	Vehicle in Transport	Angle	Clear	Daylight
Sam Houston School Road	0.711	2015-02-06 / 13:47	Along Roadway	Vehicle in Transport	Head-on	Clear	Daylight
SR 162 (Pellissippi Pkwy. /I-140)	1.797	2014-01-12 / 08:15	Along Roadway	Vehicle in Transport	Head-on	Clear	Daylight
SR 33 (Old Knoxville Hwy.)	16.766	2015-12-22 / 04:18	Along Roadway	Ditch	No Collision w/ vehicle	Clear	Dark-Not Lighted
SR 33 (Old Knoxville Hwy.)	17.839	2015-06-09 / 00:00	Along Roadway	Standing Tree	No Collision w/ vehicle	Unknown	Unknown
US 321/SR 73 (Lamar Alexander)	15.620	2015-02-08 / 12:44	At an Intersection	Vehicle in Transport	Angle	Cloudy	Daylight
US 321/SR 73 (Lamar Alexander)	16.961	2015-05-22 / 18:29	Along Roadway	Vehicle in Transport	Head-on	Clear	Daylight
US 321/SR 73 (Lamar Alexander)	20.140	2014-06-30 / 14:00	At an Intersection	Vehicle in Transport	Angle	Cloudy	Daylight
US 129/SR 115 (Alcoa Hwy.)	15.150	2014-12-29 / 06:37	At an Intersection	Vehicle in Transport	Angle	Rain	Dark-Lighted
US 129/SR 115 (Alcoa Hwy.)	17.976	2015-07-17 / 11:00	Along Roadway	Vehicle in Transport	Rear-end	Clear	Daylight

Table 3 —Recorded Fatal Crashes, continued

SR 115	18.570	2015-05-14 / 18:08	At an Intersection	Vehicle in Transport	Angle	Cloudy	Daylight
US 129/SR 115 (Alcoa Hwy.)	18.686	2014-02-17 / 09:45	At an Intersection	Vehicle in Transport	Angle	Cloudy	Daylight
US 129/SR 115 (Alcoa Hwy.)	19.506	2014-05-04 / 00:00	Along Roadway	Utility Pole	No Collision w/ vehicle	Clear	Daylight
US 129/SR 115 (Alcoa Hwy.)	19.910	2015-01-08 / 12:38	At an Intersection	Vehicle in Transport	Angle	Clear	Daylight
US 129/SR 115 (Alcoa Hwy.)	20.245	2014-07-10 / 14:31	Along Roadway	Ditch	No Collision w/ vehicle	Clear	Daylight
SR 162 (Pellissippi Pkwy./I-140)	1.303	2014-07-19 / 06:06	Along Roadway	Pedestrian	No Collision w/ vehicle	Rain	Dark-Not Lighted

Source: TDOT, 2017.

Crash severity is further analyzed using the *severity index* (SI), defined as the weighted ratio of the sum of injury and fatal crashes to the sum of all crashes for a roadway segment or intersection. In the SI value, fatal crashes are assigned a weight of 4, and incapacitating injury crashes are assigned a weight of 2. Other crashes (PDO and non-incapacitating injury crashes are each assigned a weight of 1). **Table 4** lists the total crashes for each roadway segment within the study area by severity as well as the calculated severity index for each segment during the study period.

Table 4 — Study Area Segment Recorded Crashes by Severity, 2014–2016

Roadway	Begin LM	End LM	Crashes by Severity				Total Crashes	Severity Index (SI)
			PDO	Non-Incap. Injury	Incap. Injury	Fatal		
SR 33 (Old Knoxville Hwy.)	12.350	14.320	163	32	2	0	197	0.183
	14.320	15.470	68	20	5	0	93	0.323
	15.470	15.920	57	12	1	0	70	0.200
	15.920	16.370	7	8	0	0	15	0.533
	16.370	20.660	42	19	4	2	67	0.522
SR 35 (Hall Rd. / Washington St. / High St. / Sevierville Rd.)	0.000	1.520	59	13	1	0	73	0.205
	1.520	2.590	119	31	1	0	151	0.219
	2.590	2.820	20	2	0	0	22	0.091
	2.820	3.690	28	3	1	0	32	0.156
	3.690	4.530	31	7	0	0	38	0.184
	4.530	7.250	57	16	2	0	75	0.267
SR 73 (US 321, Lamar Alexander Pkwy.)	7.250	7.930	7	1	1	0	9	0.333
	11.660	12.530	166	25	2	0	193	0.150
	12.530	13.980	162	34	4	0	200	0.210
	13.980	17.020	79	27	7	2	115	0.426
	17.020	20.020	26	9	1	0	36	0.306
SR 115 (US 129, Alcoa Hwy.)	20.020	22.400	7	4	1	1	13	0.769
	13.020	14.280	89	18	5	0	112	0.250
	14.280	15.020	24	5	0	0	29	0.172
	15.020	16.000	65	21	2	1	89	0.326
	16.000	17.660	172	41	4	0	217	0.226
SR 162 (Pellissippi Pkwy./ I-140)	17.660	20.400	127	49	23	6	205	0.580
	0.810	2.240	48	8	1	1	58	0.241
	2.240	3.240	12	3	0	0	15	0.200
SR 335 (Hunt Rd.)	3.240	4.710	3	1	1	1	6	1.167
	7.790	9.300	38	14	0	0	52	0.269
SR 447 (S. Washington St.)	9.300	10.500	10	1	0	0	11	0.091
	0.000	0.160	19	0	0	0	19	0.000 ¹

Table 4 — Study Area Segment Recorded Crashes by Severity, 2014–2016, continued

Roadway	Begin LM	End LM	Crashes by Severity				Total Crashes	Severity Index (SI)
			PDO	Non-Incap. Injury	Incap. Injury	Fatal		
Wildwood Rd.	0.000	1.310	16	4	0	0	20	0.200
	1.310	2.650	12	3	0	0	15	0.200
	2.650	3.750	8	6	1	0	15	0.533
Sam Houston School Rd.	0.000	2.650	15	6	1	2	24	0.667
Peppermint Rd.	0.000	1.100	7	3	2	0	12	0.583
Helton Rd.	0.000	0.880	4	0	0	0	4	0.000 ¹
Hitch Rd.	0.000	1.200	5	2	1	0	8	0.500
TOTAL			67	24	5	2	98	0.286

¹A SI of 0.000 means there were no reported injury or fatal crashes on those segments during the study period.

Note: Incap – incapacitating crash; Non-incap – non-incapacitating crash; PDO – property only damage.

Source: WSP USA Inc., 2017.

3.2 Crash Rates

Several parameters are used to define the frequency and severity of crashes during the study period and locate any statistical trends in the crash data. The parameters include:

- *Exposure rate (E)*, defined as the distance traveled by vehicles on a segment of roadway and measured in the analysis by million vehicle-miles (MVM);
- *Actual crash rate (R)*, defined as the number of crashes per MVM; and
- *Average crash rate (R_A)*, defined as the average crash rate on roadways with similar lane configurations and functional classifications throughout Tennessee.

Because crashes are random and relatively infrequent occurrences, comparing the actual crash rate of a roadway segment, spot, or intersection to statewide average crash rates alone does not imply statistical significance. Instead, the *critical crash rate (R_C)* is used to determine whether the actual crash rate is significantly higher than average. The critical crash rate is a threshold value, calculated for a given roadway segment, spot, or intersection, that determines whether the actual crash rate of that segment, spot, or intersection significantly deviates from the average statewide crash rate for facilities with similar characteristics.

The critical crash rate is computed using the average statewide crash rate of the set of roadway segments, spots, or intersections and the exposure rate as follows:

$$R_C = R_A + \frac{1}{2 \times E} + Z \sqrt{\frac{R_A}{E}}$$

Source: TDOT, 2017.

Where:

- R_C is the critical crash rate;
- R_A is the average crash rate for a set of roadway segments, spots, or intersections with similar characteristics;
- E is the exposure rate of a given roadway segment, spot, or intersection; and
- Z is a *critical value* that represents an expected upper boundary (when determining high-crash locations) for the crash rate, R , at 99% confidence level.

Exposure is expressed in million vehicle miles. The formula is (AADT x 365 x Miles x Years)/1,000,000.

The critical crash rate provides a statistical test for the crash rate of a given roadway segment, spot, or intersection. If the observed or expected crash rate for a given roadway segment, spot, or intersection exceeds the critical crash rate (expressed as an *actual-to-critical crash rate ratio*, R/R_C , over 1.0), then the roadway segment, spot, or intersection tested has, to the 99% confidence level given in the Z-score, a significantly high crash rate not attributable to random variation. In other words, if the critical crash rate (R_C) exceeds 1.0, then that roadway section has more crashes than is statistically probable based on random occurrence.

Table 5 lists crash rates and other parameters by segment for the study period. As shown, the actual-to-critical crash rate ratio exceeds 1.0 for several roadway segments (highlighted in pink) within the study area.

The roadway segments with actual-to-critical crash rate ratios exceeding 1.0 are listed below. Several of these roadway segments are within the Maryville core, as noted:

- SR 33 (Broadway Avenue/Old Knoxville Highway) from LM 12.35 to LM 15.92. (LM 12.35 to LM 14.32 is within the Maryville core.)
- SR 35 (Hall Road/Washington Street/High Street/Sevierville Road) from LM 0.00 to LM 2.59 and LM 2.82 to LM 7.25. (LM 1.52 to LM 3.69 is within the Maryville core.)
- US 321/SR 73 (Lamar Alexander Parkway) from LM 11.66 to LM 13.98 and LM 17.02 to LM 20.02. (LM 11.66 to LM 13.98 is within the Maryville core.)
- US 129/SR 115 (Alcoa Highway) from LM 13.02 to LM 14.28 and LM 16.00 to LM 17.66.
- SR 335 (Hunt Road) from LM 7.79 to LM 9.30.
- SR 447 (South Washington Street) from LM 0.00 to LM 0.16. (This section is within the Maryville core.)

Table 5 — Calculated Crash Parameters by Segment, 2014-2016

Roadway	Beg LM	End LM	Total Crashes	E (MVM) ¹	Crash Rates (crashes/MVM)			R / R _c
					R	R _A ²	R _c	
SR 33 (Old Knoxville Hwy.)	12.350	14.320	197	28.796	6.841	2.403	2.709	2.525
	14.320	15.470	93	21.228	4.381	2.403	2.763	1.586
	15.470	15.920	70	8.307	8.427	2.403	3.001	2.808
	15.920	16.370	15	8.307	1.806	2.403	3.001	0.602
	16.370	20.660	67	31.861	2.103	2.403	2.693	0.781
SR 35 (Hall Rd. / Washington St. / High St. / Sevierville Rd.)	0.000	1.520	73	31.844	2.292	1.828	2.083	1.100
	1.520	2.590	151	29.252	5.162	3.091	3.433	1.504
	2.590	2.820	22	5.877	3.743	3.091	3.901	0.960
	2.820	3.690	32	10.495	3.049	2.403	2.929	1.041
	3.690	4.530	38	7.176	5.295	2.403	3.051	1.735
	4.530	7.250	75	23.237	3.228	2.403	2.746	1.175
SR 73 (US 321, Lamar Alexander Pkwy.)	7.250	7.930	9	5.809	1.549	2.403	3.132	0.495
	11.660	12.530	193	20.104	9.600	1.828	2.154	4.456
	12.530	13.980	200	38.214	5.234	1.828	2.060	2.541
	13.980	17.020	115	80.117	1.435	1.828	1.985	0.723
	17.020	20.020	36	38.859	0.926	0.662	0.805	1.150
SR 115 (US 129, Alcoa Hwy.)	20.020	22.400	13	30.828	0.422	0.662	0.825	0.511
	13.020	14.280	112	53.883	2.079	1.828	2.021	1.028
	14.280	15.020	29	43.681	0.664	1.828	2.044	0.325
	15.020	16.000	89	57.353	1.552	1.828	2.015	0.770
	16.000	17.660	217	97.149	2.234	1.828	1.970	1.134
SR 162 (Pellissippi Pkwy./I-140)	17.660	20.400	205	144.578	1.418	1.828	1.944	0.729
	0.810	2.240	58	61.962	0.936	1.087	1.228	0.763
	2.240	3.240	15	14.343	1.046	1.087	1.397	0.749
SR 335 (Hunt Rd.)	3.240	4.710	6	19.013	0.316	1.087	1.352	0.233
	7.790	9.300	52	16.730	3.108	2.403	2.812	1.105
SR 447 (S. Washington St.)	9.300	10.500	11	9.012	1.221	2.403	2.975	0.410
	0.000	0.160	19	3.983	4.770	3.091	4.097	1.164
Wildwood Rd.	0.000	1.310	20	5.149	3.884	3.372	4.278	0.908
	1.310	2.650	15	5.267	2.848	3.372	4.267	0.667
	2.650	3.750	15	4.323	3.470	3.372	4.371	0.794
Sam Houston School Rd.	0.000	2.650	24	12.679	1.893	2.771	3.278	0.577
Peppermint Rd.	0.000	1.100	12	3.808	3.151	2.771	3.755	0.839
Helton Rd.	0.000	0.880	4	3.046	1.313	2.771	3.889	0.338
Hitch Rd.	0.000	1.200	8	4.154	1.926	2.771	3.708	0.519
TOTAL			2,310	980.42	2.356			

LM = Log mile; MVM = million vehicle miles.

¹ Exposure rates in this table are calculated from 2014–2016 AADTs as measured at TDOT count stations, for the three-year period.² R_A represents statewide average crash rates on roadways with similar lane configurations and functional classifications throughout Tennessee.

Source: WSP USA Inc., 2017.

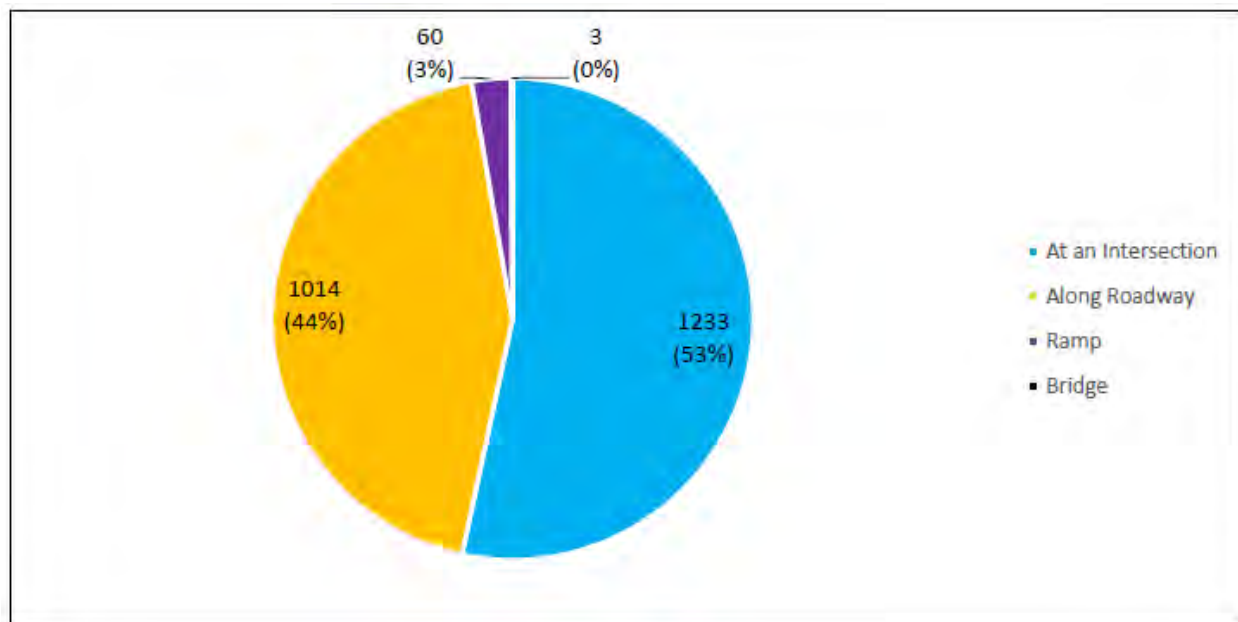
3.3 Crash Dates and Times

Analysis of crash data by the date and time the crash occurred may reveal trends in crash patterns. The historical crash data for the study area were analyzed by month of year, day of week, and time of day. The analysis found that crashes for the study area occurred during typical dates and times relative to state and national data, with no unusual defining trends observed.

3.4 Crash Characteristics

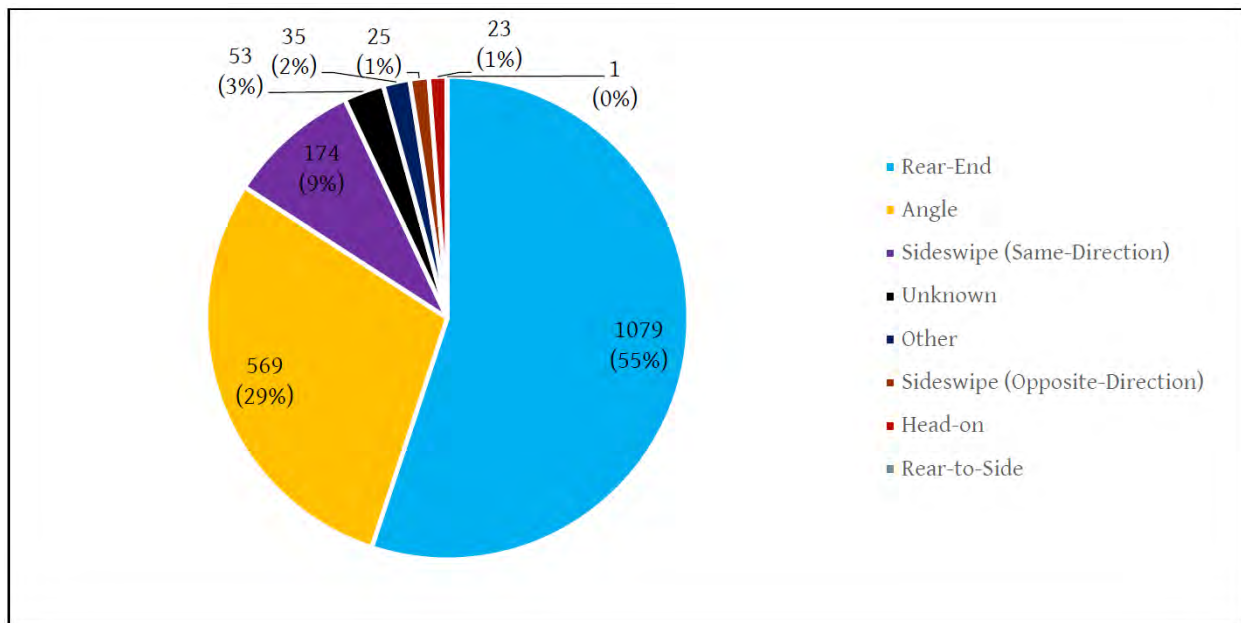
Figure 8 displays the recorded crashes by the type of location where the crash occurred. Of the recorded crashes occurring within the study area during the study period, 1,233 crashes (approximately 53% of the total recorded crashes) occurred at an intersection, while 1,014 crashes (approximately 44%) occurred along a roadway, 60 crashes (approximately 3%) occurred on an on- or off-ramp, and 3 crashes (less than 1%) occurred on or under a bridge.

Figure 8 — Recorded Crashes by Location Type, 2014–2016



Source: WSP USA Inc., 2017.

Figure 9 displays the proportions of multi-vehicle crashes by manner of collision. Of the 2,310 recorded crashes occurring within the study area during the study period, 1,959 crashes (approximately 85%) involved two or more vehicles. Of the multi-vehicle crashes, 1,079 crashes (approximately 55% of the total recorded multi-vehicle crashes) involved a rear-end collision, 569 crashes (approximately 29%) involved an angle collision, 174 crashes (approximately 9%) involved a same-direction sideswipe, 25 crashes (approximately 1%) involved an opposite-direction sideswipe, 23 crashes (approximately 1%) involved a head-on collision, and 1 crash (less than 1%) involved a rear-to-side collision. Additionally, 53 crashes (approximately 3%) involved another type of collision, while 35 crashes (approximately 2%) involved a collision of unknown type.

Figure 9 — Recorded Multi-Vehicle Crashes by Manner of Collision, 2014–2016

Source: WSP USA Inc., 2017.

4 RELATIVE SAFETY PERFORMANCE OF PROJECT ALTERNATIVES

As discussed in **Section 1.3.2**, a qualitative assessment of the relative safety of the roadway network in the future with the project alternatives is appropriate based on the available data for this study area and the current state of traffic safety analysis.

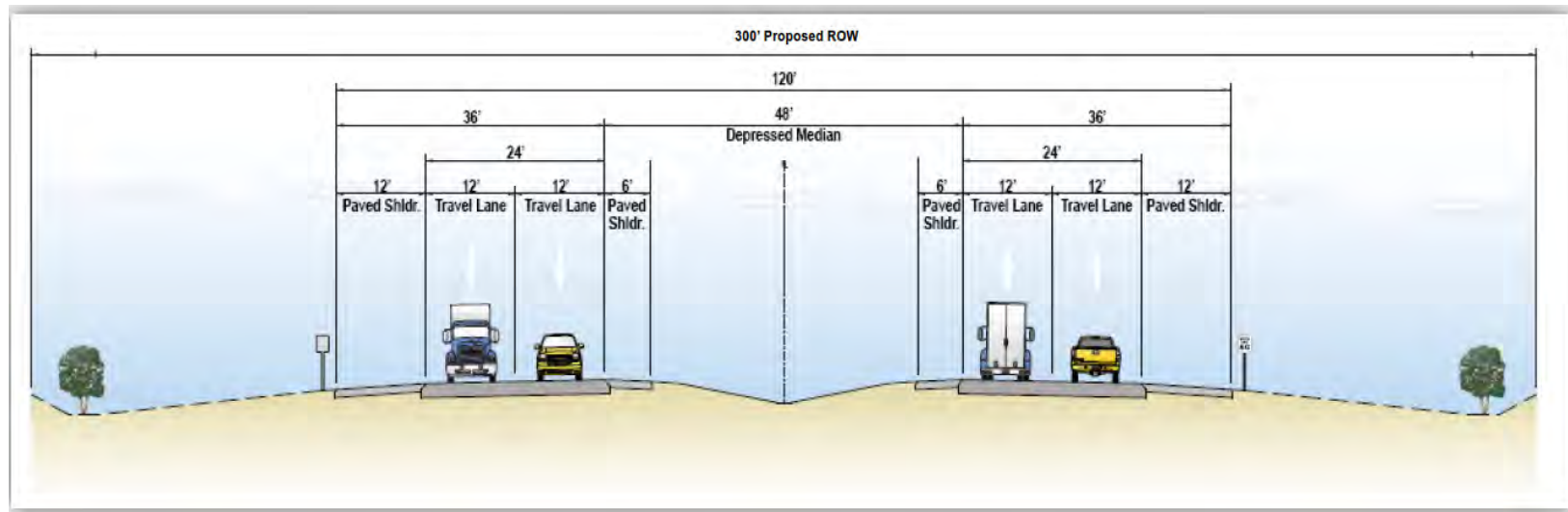
4.1 Safety of Freeways versus Area Roadways

Due to their design features, freeways/interstates are safer than other roads because freeways/interstates control traffic flow and restrict access to and from the roadway. (The terms “freeway” and “interstate” are used interchangeably in this discussion). A controlled access freeway has no traffic signals, intersections, or direct property access, and no at-grade (intersection) crossings with other roads, railroads, or bike/pedestrian paths. Opposing traffic is separated by a median strip or a traffic barrier. Freeway travel lanes are generally 12 feet wide, with wide, paved shoulders, and roadside clear zones in the event a vehicle leaves the roadway.

The sixth edition (2011) of AASHTO's *A Policy on Geometric Design of Highways and Streets* (the “Green Book”) explains that “the most significant design factor contributing to low crash frequencies for roadways is the provision of full access control. Full access control reduces the number, frequency, and variety of events which drivers encounter” (Section 2.8, page 2-82).

Non-freeway roads are generally bi-directional, often without median dividers. The prevalence of direct property access and curb cuts, intersections, and at-grade crossings creates opportunities for vehicular conflicts as well as conflicts with non-motorized vehicles and pedestrians.

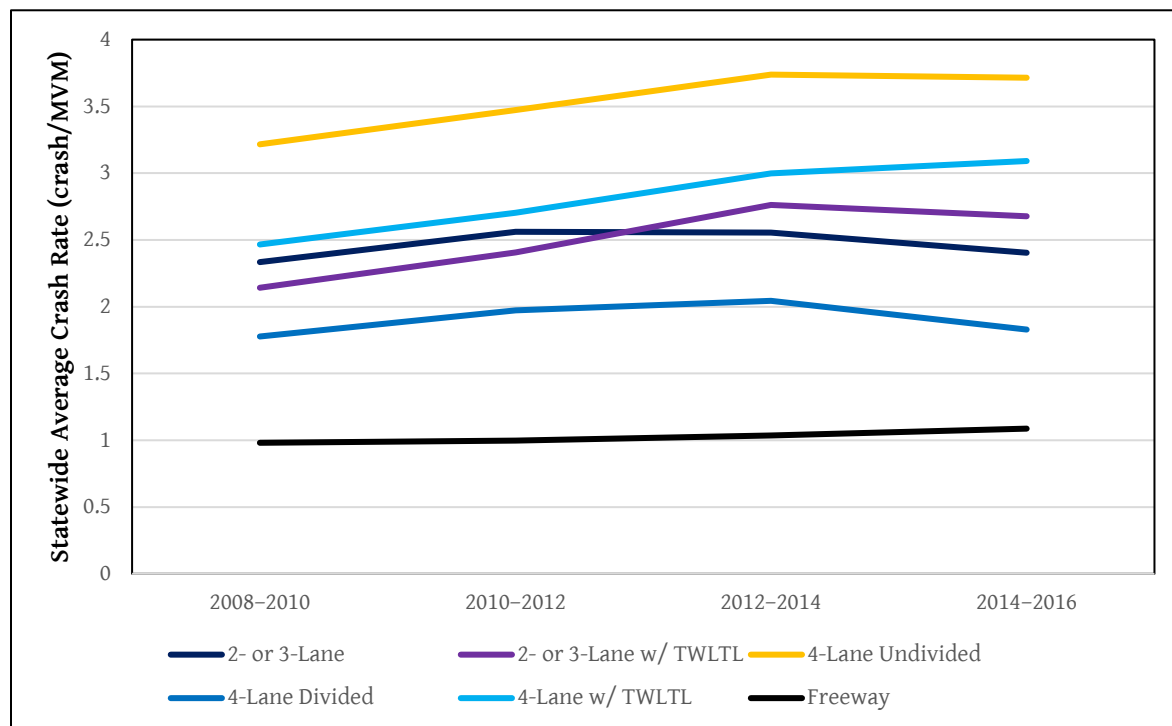
The Preferred Alternative is a freeway meeting interstate level design standards (see typical section of the Preferred Alternative is shown in **Figure 10**). These facilities have consistently had the lowest crash rates over all other roadway types. Thus, the Preferred Alternative should be inherently safer than the No-Build Alternative or Alternative D, which are local roadways with points of conflict such as at-grade intersections, traffic signals or stop signs, direct property access/driveways, narrow traffic lanes, narrow or non-existent shoulders, and inadequate clear zones.

Figure 10 — Preferred Alternative's Typical Section

Source: Parsons Brinckerhoff, 2009.

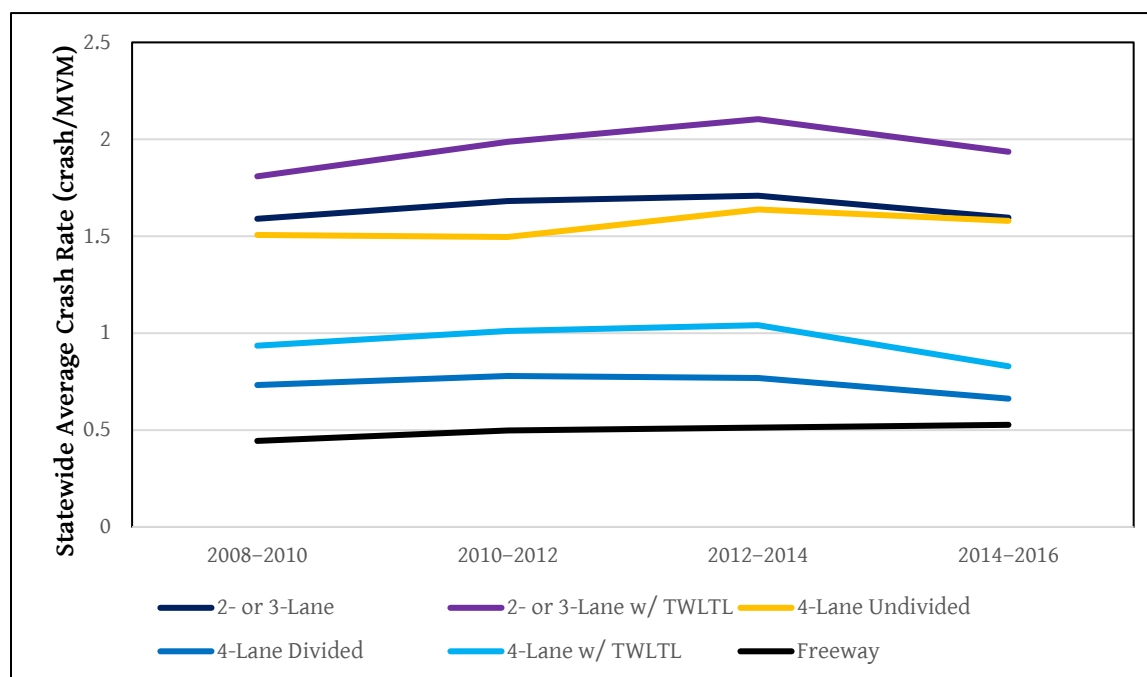
A comparison of TDOT's most recent four sets of three-year statewide average crash rates, from 2008 through 2016, demonstrates the relative safety of freeways compared with other roadway types. **Figure 11** and **Figure 12** illustrate recent statewide average crash rates by roadway type for rural and urban roadways, respectively, for each of the three-year periods. (The use of four sets of statewide average crash is necessary to establish a trend line that adequately conveys the relative safety of each roadway type. An average crash rate is reported for each three-year period at two-year intervals, so the trend line represents four data points for each roadway type.) For urban state routes, the statewide average crash rates for freeways are about 1.0, substantially lower than the other roadway types. The roadway type with the highest statewide average crash rates in urban areas is four-lane undivided state routes. For rural state routes, the statewide average crash rates for freeways are about 0.5, although four-lane divided routes are not substantially higher. The rural roadway type with the highest statewide average crash rate is two- to three-lane state routes with a continuous left turn lane, where there is no physical separation between opposing traffic.

Figure 11 — Statewide Average Crash Rates, Urban State Route Sections, 2008–2016



Note: TWLTL – continuous two-way left turn lane

Source: WSP USA Inc., 2017.

Figure 12 — Statewide Average Crash Rates, Rural State Route Sections, 2008–2016

Note: TWLTL – continuous two-way left turn lane

Source: WSP USA Inc., 2017.

4.2 Shifts in Traffic to Proposed Alternatives

Table 6 and Table 7 display the roadway segment projected AADTs (as shown in Figure 3, Figure 4, and Figure 5, and in the February 2014 *Update to the Traffic Operations Technical Report*). These tables also provide the calculated exposure rates and the differences in exposure rate between the No-Build, the Preferred Alternative, and Alternative D for 2020 and 2040, respectively. As shown, the proposed project is expected to shift study area traffic from existing, non-freeway roadways to the Preferred Alternative or to Alternative D. The roadway segments highlighted in blue in the tables below are those segments that are not counted in the total difference in exposure rates between the No-Build Alternative and the Preferred Alternative, and between the No-Build Alternative and Alternative D. The blue-highlighted segments include existing and proposed freeway segments (I-140/Pellissippi Parkway and the Relocated Alcoa Highway) for the Preferred Alternative and Alternative D since those segments offer higher speed travel and fewer obstructions. For Alternative D, the blue-highlighted segments include the freeway segments as well as those roads that would be improved and incorporated as part of Alternative D (Sam Houston School Road, Peppermint Road, Helton Road, and Hitch Road). The highlighted segments were not totaled in the difference in exposure rate between the existing non-freeway roadways and the proposed project as they all consist of either freeway-level roadways or the project itself.

4.2.1 Shift in Traffic to Preferred Alternative

If constructed, the Preferred Alternative would be expected to result in a reduction of approximately 4.084 annual million vehicle miles (MVM) on existing non-freeway roadways in 2020 and a reduction of approximately 21.166 annual MVM on existing non-freeway roadways in 2040.

As noted in **Section 4.1**, average crash rates for freeways in Tennessee are typically lower than average crash rates for non-freeway roadways, which include most existing roadways in the study area. The migration of traffic from existing study area roadways to the Preferred Alternative would represent a shift from roadways with higher typical average crash rates to roadways with lower typical average crash rates, which should reduce the overall crash rate of the study area for the Preferred Alternative relative to the No-Build Alternative.

4.2.2 Shift in Traffic to Alternative D

If constructed, Alternative D would be expected to result in a shift of traffic from existing non-freeway roadways of approximately 3.507 annual MVM in 2020 and approximately 15.586 annual MVM in 2040.

Because Alternative D is a non-freeway roadway type, it does not feature as great a potential for crash reduction that exists when shifting traffic from non-freeway roadways to freeways (as in the Preferred Alternative). However, Alternative D would provide a realigned facility built to modern design standards, which may introduce safety features not present in the older, non-freeway roadways elsewhere in the study area. Shifts in traffic from those older facilities to the new Alternative D would likely result in some crash reductions.

Table 6 — Projected Traffic Volume Comparison for Existing Segments, 2020

Segment	Log Mile (LM)		Seg. Lgth (mi.)	Projected AADT (vehicles/day)					Projected Exposure Rate (MVM)				
	Beg	End		No-Bld. Alt.	Pref. Alt.	Pref. Alt. Diff.	Alt. D	Alt. D Diff.	No-Bld. Alt.	Pref. Alt.	Pref. Alt. Diff.	Alt. D	Alt. D Diff.
SR 33	12.35	14.32	1.97	16,920	15,640	-1,280	16,770	-150	12.166	11.246	-0.920	12.058	-0.108
	14.32	15.47	1.15	15,890	14,640	-1,250	15,720	-170	6.670	6.145	-0.525	6.598	-0.071
	15.47	15.92	0.45	21,370	20,500	-870	20,270	-1,100	3.510	3.367	-0.143	3.329	-0.181
	15.92	16.37	0.45	13,620	13,880	260	16,950	3,330	2.237	2.280	0.043	2.784	0.547
	16.37	20.66	4.29	7,860	11,130	3,270	8,150	290	12.308	17.428	5.120	12.762	0.454
SR 35	0.00	1.52	1.52	22,860	22,010	-850	22,400	-460	12.683	12.211	-0.472	12.428	-0.255
	1.52	2.59	1.07	28,210	24,480	-3,730	27,640	-570	11.017	9.561	-1.457	10.795	-0.223
	2.59	2.82	0.23	25,940	22,130	-3,810	25,410	-530	2.178	1.858	-0.320	2.133	-0.044
	2.82	3.69	0.87	12,660	12,190	-470	12,580	-80	4.020	3.871	-0.149	3.995	-0.025
	3.69	4.53	0.84	9,690	9,680	-10	9,730	40	2.971	2.968	-0.003	2.983	0.012
	4.53	7.25	2.72	9,130	9,680	550	8,710	-420	9.064	9.610	0.546	8.647	-0.417
	7.25	7.93	0.68	8,670	10,700	2,030	8,910	240	2.152	2.656	0.504	2.211	0.060
US 321/ SR 73	11.66	12.53	0.87	28,010	26,600	-1,410	27,530	-480	8.895	8.447	-0.448	8.742	-0.152
	12.53	13.98	1.45	26,730	24,350	-2,380	25,830	-900	14.147	12.887	-1.260	13.671	-0.476
	13.98	17.02	3.04	22,250	19,050	-3,200	18,970	-3,280	24.689	21.138	-3.551	21.049	-3.639
	17.02	20.02	3.00	17,340	18,570	1,230	18,190	850	18.987	20.334	1.347	19.918	0.931
	20.02	22.40	2.38	10,130	10,490	360	10,280	150	8.800	9.113	0.313	8.930	0.130
US 129/ SR 115 (Alcoa Hwy.)	13.02	14.28	1.26	43,390	43,300	-90	43,080	-310	19.955	19.914	-0.041	19.812	-0.143
	14.28	15.02	0.74	63,730	62,650	-1,080	63,040	-690	17.213	16.922	-0.292	17.027	-0.186
	15.02	16.00	0.98	64,900	63,370	-1,530	63,800	-1,100	23.215	22.667	-0.547	22.821	-0.393
	16.00	17.66	1.66	54,810	54,300	-510	55,610	800	33.209	32.900	-0.309	33.694	0.485
	17.66	20.40	2.74	41,570	41,740	170	42,430	860	41.574	41.744	0.170	42.434	0.860
SR 162 (Pellissippi Pkwy.)	0.81	2.24	1.43	46,450	48,020	1,570	48,000	1,550	24.245	25.064	0.819	25.054	0.809
	2.24	3.24	1.00	20,110	23,220	3,110	20,360	250	7.340	8.475	1.135	7.431	0.091
	3.24	4.71	1.47	17,290	25,400	8,110	18,400	1,110	9.277	13.628	4.351	9.873	0.596
SR 335 (Hunt Rd.)	7.79	9.30	1.51	10,420	10,550	130	10,730	310	5.743	5.815	0.072	5.914	0.171
	9.30	10.50	1.20	5,640	6,100	460	5,680	40	2.470	2.672	0.201	2.488	0.018

Table 6 — Projected Traffic Volume Comparison for Existing Segments, 2020, continued

SR 447	0.00	0.16	0.16	23,930	22,130	-1,800	23,380	-550	1.398	1.292	-0.105	1.365	-0.032
Wildwood Rd.	0.00	1.31	1.31	3,810	3,680	-130	3,910	100	1.822	1.760	-0.062	1.870	0.048
	1.31	2.65	1.34	7,430	4,500	-2,930	5,610	-1,820	3.634	2.201	-1.433	2.744	-0.890
	2.65	3.75	1.10	3,280	3,020	-260	3,320	40	1.317	1.213	-0.104	1.333	0.016
Sam Houston School Rd.	0.00	2.65	2.65	4,870	4,470	-400	9,340	4,470	4.711	4.324	-0.387	9.034	4.324
Peppermint Rd.	0.00	1.10	1.10	3,040	3,340	300	9,620	6,580	1.221	1.341	0.120	3.862	2.642
Helton Rd.	0.00	0.88	0.88	330	270	-60	6,360	6,030	0.106	0.087	-0.019	2.043	1.937
Hitch Rd.	0.00	1.20	1.20	1,250	1,310	60	6,360	5,110	0.548	0.574	0.026	2.786	2.238
Relocated	0.00	3.00	3.00	32,000	27,190	-4,810	30,250	-1,750	35.040	29.773	-5.267	33.124	-1.916
Alcoa Hwy.	3.00	4.50	1.50	29,520	28,430	-1,090	28,570	-950	16.162	15.565	-0.597	15.642	-0.520
Projected Exposure Rate Difference (excluding freeway and proposed segments) (MVM) =											-4.084		-3.507

Note: Numbers highlighted in Pink represent lower exposure rates for the Preferred Alternative or Alternative D, compared with the Build Alternative. The numbers highlighted in Blue represent freeway segments and/or roadway segments that include the proposed project; these segments were not included in the total differences in exposure rate between the Preferred Alternative and the No-Build Alternative, or Alternative D and the No-Build Alternative.

Source: WSP USA Inc., 2017.

Table 7 — Projected Traffic Volume Comparison for Existing Segments, 2040

Segment	Log Mile (LM)		Seg. Lgth (mi.)	Projected AADT (vehicles/day)					Projected Exposure Rate (MVM)				
	Beg	End		No-Bld. Alt.	Pref. Alt.	Pref. Alt. Diff.	Alt. D	Alt. D Diff.	No-Bld. Alt.	Pref. Alt.	Pref. Alt. Diff.	Alt. D	Alt. D Diff.
SR 33	12.35	14.32	1.97	21,510	15,640	-5,870	20,570	-940	15.467	11.246	-4.221	14.791	-0.676
	14.32	15.47	1.15	19,470	14,640	-4,830	18,410	-1,060	8.173	6.145	-2.027	7.728	-0.445
	15.47	15.92	0.45	36,300	36,130	-170	31,110	-5,190	5.962	5.934	-0.028	5.110	-0.852
	15.92	16.37	0.45	17,050	19,240	2,190	27,600	10,550	2.800	3.160	0.360	4.533	1.733
	16.37	20.66	4.29	11,940	17,360	5,420	12,490	550	18.696	27.183	8.487	19.557	0.861
SR 35	0.00	1.52	1.52	35,370	31,200	-4,170	33,570	-1,800	19.623	17.310	-2.314	18.625	-0.999
	1.52	2.59	1.07	32,530	23,930	-8,600	30,380	-2,150	12.705	9.346	-3.359	11.865	-0.840
	2.59	2.82	0.23	29,900	20,130	-9,770	27,920	-1,980	2.510	1.690	-0.820	2.344	-0.166
	2.82	3.69	0.87	15,400	13,780	-1,620	15,110	-290	4.890	4.376	-0.514	4.798	-0.092
	3.69	4.53	0.84	15,080	14,800	-280	15,190	110	4.624	4.538	-0.086	4.657	0.034
	4.53	7.25	2.72	14,140	14,800	660	11,450	-2,690	14.038	14.693	0.655	11.368	-2.671
	7.25	7.93	0.68	15,670	19,800	4,130	13,020	-2,650	3.889	4.914	1.025	3.232	-0.658
US 321/ SR 73	11.66	12.53	0.87	38,020	32,580	-5,440	36,160	-1,860	12.073	10.346	-1.727	11.483	-0.591
	12.53	13.98	1.45	39,020	30,680	-8,340	35,850	-3,170	20.651	16.237	-4.414	18.974	-1.678
	13.98	17.02	3.04	33,860	28,120	-5,740	26,090	-7,770	37.571	31.202	-6.369	28.949	-8.622
	17.02	20.02	3.00	23,860	28,160	4,300	26,850	2,990	26.127	30.835	4.709	29.401	3.274
US 129/ SR 115 (Alcoa Hwy.)	20.02	22.40	2.38	11,650	12,970	1,320	12,120	470	10.120	11.267	1.147	10.529	0.408
	13.02	14.28	1.26	62,250	61,380	-870	61,270	-980	28.629	28.229	-0.400	28.178	-0.451
	14.28	15.02	0.74	94,460	88,800	-5,660	91,780	-2,680	25.514	23.985	-1.529	24.790	-0.724
	15.02	16.00	0.98	97,820	92,470	-5,350	94,000	-3,820	34.990	33.077	-1.914	33.624	-1.366
	16.00	17.66	1.66	45,270	44,950	-320	46,240	970	27.429	27.235	-0.194	28.017	0.588
SR 162 (Pellissippi Pkwy.)	17.66	20.40	2.74	35,820	37,100	1,280	37,180	1,360	35.824	37.104	1.280	37.184	1.360
	0.81	2.24	1.43	67,480	73,980	6,500	69,700	2,220	35.221	38.614	3.393	36.380	1.159
	2.24	3.24	1.00	40,850	51,750	10,900	43,460	2,610	14.910	18.889	3.979	15.863	0.953
SR 335 (Hunt Rd.)	3.24	4.71	1.47	34,320	55,330	21,010	38,070	3,750	18.414	29.687	11.273	20.426	2.012
	7.79	9.30	1.51	12,630	13,080	450	13,700	1,070	6.961	7.209	0.248	7.551	0.590
	9.30	10.50	1.20	4,930	6,540	1,610	5,070	140	2.159	2.865	0.705	2.221	0.061

Table 7 — Projected Traffic Volume Comparison for Existing Segments, 2040, continued

Segment	Log Mile (LM)		Seg. Lgth (mi.)	Projected AADT (vehicles/day)					Projected Exposure Rate (MVM)				
	Beg	End		No-Bld. Alt.	Pref. Alt.	Pref. Alt. Diff.	Alt. D	Alt. D Diff.	No-Bld. Alt.	Pref. Alt.	Pref. Alt. Diff.	Alt. D	Alt. D Diff.
SR 447	0.00	0.16	0.16	25,570	18,630	-6,940	23,420	-2,150	1.493	1.088	-0.405	1.368	-0.126
Wildwood Rd.	0.00	1.31	1.31	7,640	7,180	-460	8,080	440	3.653	3.433	-0.220	3.863	0.210
	1.31	2.65	1.34	17,870	7,630	-10,240	10,120	-7,750	8.740	3.732	-5.008	4.950	-3.791
	2.65	3.75	1.10	7,390	6,600	-790	7,490	100	2.967	2.650	-0.317	3.007	0.040
Sam Houston School Rd.	0.00	2.65	2.65	5,030	2,980	-2,050	16,800	11,770	4.865	2.882	-1.983	16.250	11.385
Peppermint Rd.	0.00	1.10	1.10	5,960	3,060	-2,900	20,580	14,620	2.393	1.229	-1.164	8.263	5.870
Helton Rd.	0.00	0.88	0.88	640	200	-440	14,890	14,250	0.206	0.064	-0.141	4.783	4.577
Hitch Rd.	0.00	1.20	1.20	2,450	1,020	-1,430	14,890	12,440	1.073	0.447	-0.626	6.522	5.449
Relocated Alcoa Hwy.	0.00	3.00	3.00	39,440	37,520	-1,920	37,280	-2,160	43.187	41.084	-2.102	40.822	-2.365
	3.00	4.50	1.50	36,390	39,230	2,840	35,210	-1,180	19.924	21.478	1.555	19.277	-0.646
Projected Exposure Rate Difference (excluding freeway and proposed segments) (MVM) =											-21.166		-15.586

Note: Numbers highlighted in Pink represent lower exposure rates for the Preferred Alternative or Alternative D, compared with the Build Alternative. Numbers highlighted in Blue represent freeway segments and/or roadway segments that include the proposed project; these segments were not included in the total differences in exposure rate between the Preferred Alternative and the No-Build Alternative, or Alternative D and the No-Build Alternative.

Source: WSP USA Inc., 2017.

5 CONCLUSIONS OF ANALYSIS

As shown in **Figure 11** and **Figure 12**, roadways in Tennessee functionally classified as freeways have statewide average crash rates lower than all other roadway types, including roadways in the Maryville core. The migration of traffic to a freeway facility would reduce the overall crash risk for users.

The Preferred Alternative supports the project's Purpose and Need of enhancing roadway safety in the proposed project area, including roads within the Maryville core area. Compared with the No-Build Alternative, many of the study area roadways are forecasted to have lower traffic volumes under the Preferred Alternative in both 2020 and 2040, including roadways that serve the Maryville core. Of the existing area roads identified as having actual-to-critical crash rate ratios exceeding 1.0 for the current period (see **Table 5**), the following segments would experience a reduction in traffic volumes with the Preferred Alternative in 2040:

- SR 33 (Broadway Avenue / Old Knoxville Highway) from SR 35 (Washington Street) (LM 12.35) to SR 162/I-140 (Pellissippi Parkway) (LM 15.92). The section of SR 33 from SR 35 (Washington Street) (LM 12.35) to Wildwood Road (LM 14.32) is within the Maryville core.
- SR 35 (Hall Road / North Washington Street) from US 129/SR 115 (Alcoa Highway) (LM 0.00) to US 411/SR 33 (Broadway Avenue) (LM 2.59). The section of SR 35 from Bessemer Street (LM 1.52) to US 411/SR 33 (Broadway Avenue) (LM 2.59) is within the Maryville core.
- SR 35 (High Street / Sevierville Road) from SR 447 (South Washington Street) (LM 2.82) to the proposed Pellissippi Parkway Extension (LM 4.53). The section of SR 35 from SR 447 (South Washington Street) (LM 2.82) to South Everett Road (LM 3.69).
- US 321/SR 73 (Lamar Alexander Parkway) from SR 33 (US 411, West Broadway Avenue) (LM 11.66) to Merritt Road (LM 13.98). This section of US 321/SR 73 is within the Maryville core.
- SR 335 (West Hunt Road) from US 129/SR 115 (Alcoa Highway) (LM 7.79) to Russell Road (LM 9.30).
- SR 447 (South Washington Street) from LM 0.00 to LM 0.16. This section is within the Maryville core.

During 2014-2016, 2,310 reported crashes occurred within the study area. Of those crashes, the vast majority (96%) were minor crashes (property damage only or non-incapacitating injuries to drivers and passengers). Approximately 3% were serious injury (incapacitating) and 1% were fatal. More than half of the crashes occurred at intersections and were rear-end or angle crashes with multiple vehicles involved.

Overall, the severity index (the ratio of injury and fatal crashes to total crashes) for the period is 0.286 (about 29%).

The migration of traffic from existing non-freeway roadways to the proposed freeway of the Preferred Alternative represents a shift from roadways with higher typical average crash rates to a roadway with a lower typical average crash rate. This migration of traffic would be expected to reduce the overall crash risk for the Preferred Alternative relative to the No-Build Alternative, thereby helping to achieve the Purpose and Need of the project.