

NORTH CAROLINA TURNPIKE AUTHORITY

STIP PROJECTS R-3329/R-2559

Upgrade Existing US 74 Alternatives Study



Submitted To:

NC Turnpike Authority

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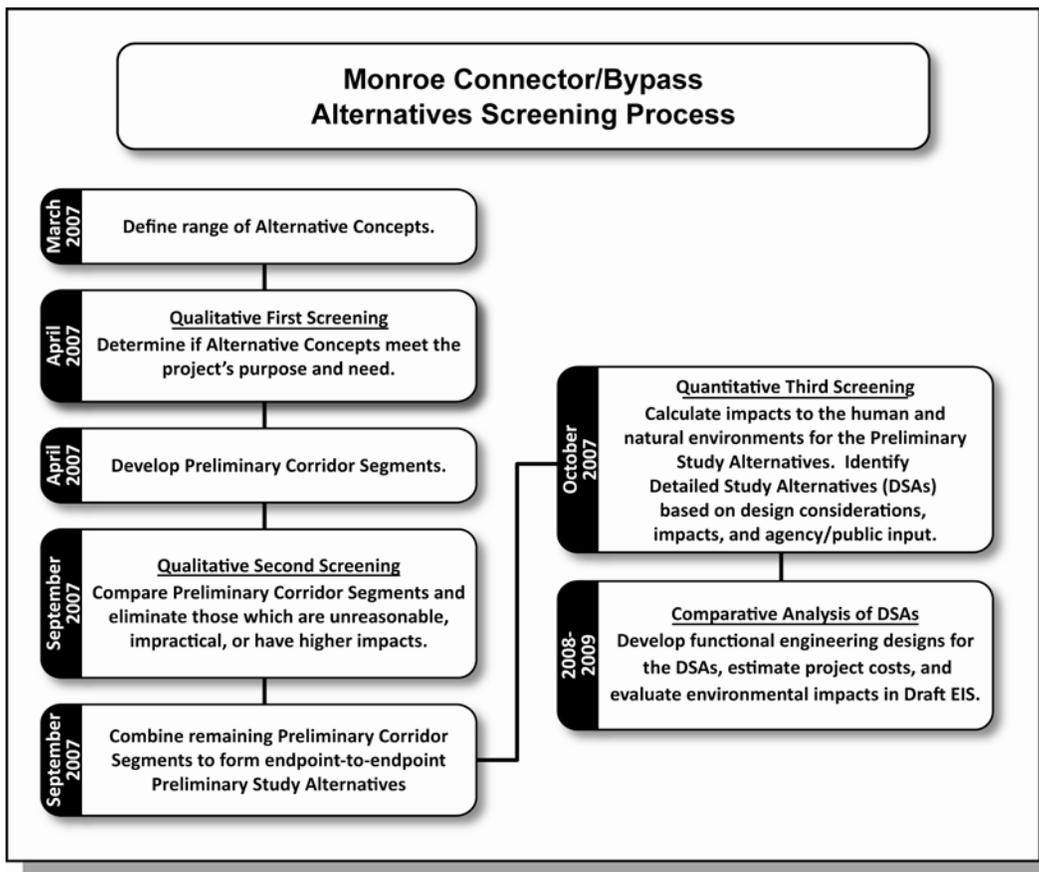
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1.0 PROJECT DESCRIPTION AND BACKGROUND

The NCTA, in cooperation with the FHWA and the NCDOT, proposes to construct a project known as the Monroe Connector/Bypass, which would be a limited-access toll road extending from US 74 near I-485 in Mecklenburg County to US 74 between the towns of Wingate and Marshville in Union County, a distance of approximately 20 miles. The proposed action is included in the NCDOT's 2009–2015 State Transportation Improvement Program (STIP) as Project R-3329 (Monroe Connector) and Project R-2559 (Monroe Bypass). The project is known as the “Monroe Connector/Bypass.”

1.1 Alternatives Development and Screening

A three-step alternatives screening process was used to develop and evaluate a range of alternatives and ultimately determine the Detailed Study Alternatives (DSAs) that are considered in the Draft EIS. This process is documented in the Alternatives Development and Analysis Report (PBS&J, April 2008) and summarized in the following chart.



As part of the development and analysis of alternative concepts for the Monroe Connector/Bypass project, three versions of the Upgrade Existing US 74 Alternative concept were developed and screened, each of which would involve improvements to existing US 74 from near I-485 to between the towns of Wingate and Marshville:

- Standard Arterial Widening – this concept included the addition of two to four lanes to create an 8-lane arterial facility; signalized intersections and driveways remained. There was no new location component to this concept.
- Superstreet – this concept involved the conversion of the existing facility to a superstreet. The superstreet configuration would add capacity at intersections by restricting left turns and through movements from cross-streets. The US 74 mainline would operate as a pair of one-way streets controlled, when necessary, by two-phase signals. The left turning and through movements from the cross-streets would be rerouted to make a right turn onto US 74, travel to a downstream U-turn location (typically located 1,000 feet downstream) and make a U-turn onto US 74 where they can continue on US 74 or make a right turn onto a cross-street. The U-turn locations on US 74 would operate as yield-controlled or signalized intersections depending on traffic volumes and geometric conditions. There was no new location component to this concept.
- Controlled-Access Highway – this concept would include upgrading existing US 74 from I-485 to between the towns of Wingate and Marshville to a controlled-access freeway. In order to accommodate a controlled-access toll facility, a free alternate route is required; therefore, constructing the project along an existing roadway corridor would require frontage roads to provide the free alternate route. This concept assumes a 6-lane freeway section with 2-lane, one-way frontage roads on either side to provide access to adjacent properties. There would be no new location component to this concept.

In the first step of the screening process, it was determined that only the Controlled-Access Highway concept would meet the stated purpose of the project – to improve mobility and capacity within the US 74 corridor that allows for high-speed regional travel consistent with the designations of the NC Strategic Highway Corridor System and the NC Intrastate System, while maintaining access to properties along existing US 74. The Controlled-Access Highway concept version of the Upgrade Existing US 74 Alternative was carried forward to the second step of the screening process, where Preliminary Corridor Segments were developed and qualitatively evaluated and compared. The corridor segments along existing US 74 were carried forward to the third step of the screening process, where they were connected to form end-to-end Preliminary Study Alternatives (PSAs) and quantitatively assessed for potential impacts on human and natural resources. PSA G was a Preliminary Study Alternative that followed existing US 74 through the length of the project study area from NC 51 (west of I-485) to east of Forest Hills School Road (just west of the Town of Marshville), a distance of approximately 22.5 miles.

NCTA recommended that PSA G be eliminated from further consideration based on the results of the quantitative third screening, particularly impacts to businesses and community resources. In the *Alternatives Development and Analysis Report*, PSA G was estimated to impact 499 businesses along existing US 74, which is more than 10 percent of the total businesses in Union County.

1.2 Agency Comments on PSA G

The complete alternatives screening process is documented in the Alternatives Development and Analysis Report (PBS&J, April 2008). The Draft Alternatives Development and Analysis Report (PBS&J, November 2007) was distributed to environmental resource and regulatory agencies and the public for review and comment in November 2007. Written comments were received from six agencies – US Army Corps of Engineers (USACE), US Environmental Protection Agency (USEPA), US Fish and Wildlife Service (USFWS), NC Department of Environment and Natural Resources-Division of Water Quality (NCDENR-DWQ), NC Department of Cultural Resources-Historic Preservation Office (NCDCR-HPO), and NC Wildlife Resources Commission (NCWRC). NCTA's recommended DSAs and proposed elimination of PSA G from further consideration were discussed at Turnpike Environmental Agency Coordination (TEAC) meetings on December 5, 2007, February 5, 2008, July 8, 2008, and September 23, 2008. Agency letters and minutes of these meetings are included in **Appendix A**. Below is a summary of each agency's comments:

- USEPA requested that PSA G “be carried forward in the NEPA document as a baseline of comparison to the remaining new location alternatives”; however, USEPA recognized “the potentially substantial impacts to businesses along existing US 74” and that the alternative would not be selected as the preferred alternative. In addition, USEPA identified an “environmental concern” regarding the PSA G typical section with frontage roads, specifically the proposed 74-foot median width.
- USFWS requested that PSA G be analyzed in a preliminary Indirect and Cumulative Impact Assessment (ICI). The USFWS noted that the results of the preliminary ICI should determine whether or not PSA G is carried forward for analysis in the Draft EIS. NCWRC and USFWS noted that new location alternatives generally result in increased urban sprawl.

USFWS also requested an evaluation of the operations of US 74 with both the new location alternative and with the upgrade existing US 74 alternative.

- USACE also requested an evaluation of potential indirect and cumulative effects prior to eliminating PSA G and suggested adding indirect and cumulative effects to the alternatives screening process. USACE also noted that for Clean Water Act Section 404 compliance, alternatives can be considered and eliminated prior to detailed study as long as the process and decisions are documented either in a technical report or in the Draft EIS. USACE warned against losing sight of the cumulative impacts to natural resources associated with PSA G and potentially hundreds of business relocations, each requiring new Nationwide Permits. USACE also stated that for purposes of a Section 404 permit, PSA G is not a practicable alternative.
- NCDENR-DWQ agreed that additional information on potential indirect and cumulative impacts of PSA G should be evaluated before eliminating the alternative from consideration.
- NCWRC commented that PSA G and a hybrid alternative of improve existing and new location should be carried forward for detailed study; however, other agencies did not agree that a hybrid alternative should be studied in detail. NCWRC expressed concern with the typical section for PSA G that the 74-feet between the freeway section and the frontage road was excessive.

1.3 Additional Studies of PSA G and Purpose of this Report

In light of agency comments requesting further information on PSA G, NCTA agreed to complete additional studies of PSA G, including traffic forecasting and analysis, impact evaluation and cost estimating, and an assessment of potential indirect and cumulative impacts. The additional studies confirmed this alternative should be eliminated from consideration, and as such, PSA G is not being considered a Detailed Study Alternative for evaluation in the Draft Environmental Impact Statement (DEIS).

This report documents the additional studies related to PSA G undertaken by NCTA. These studies utilize a traffic forecast for PSA G prepared by Wilbur Smith Associates, Inc. (*Technical Memorandum for TIP Projects R-2559 & R-3329 US74 Upgrade Scenario*, June 2008). The traffic forecast and applicable portions of the technical memorandum are included in this report; however, this report includes updated cost and impact estimates for PSA G as further described below. This report supersedes the evaluation and conclusions related to PSA G included in the June 2008 technical memorandum. For purposes of this report, “Updated PSA G” refers to the updated estimates for the original version of PSA G.

In addition to studies related to PSA G, NCTA developed a “Revised PSA G” alternative in an attempt to improve operations, minimize impacts, and reduce costs associated with PSA G. In general, Revised PSA G is a lower-impact, lower-cost version of PSA G, with a narrower construction footprint, which is made possible by more extensive use of retaining walls. The analysis of Revised PSA G is also described in this report.

PSA G and Revised PSA G were both designed and refined by PBS&J as part of their work for NCTA on the Monroe Connector/Bypass Draft EIS.

2.0 PRELIMINARY STUDY ALTERNATIVE G

This section describes original development and evaluation of PSAG, as presented in the *Alternatives Development and Analysis Report* (PBS&J, April 2008). This section also includes the updated cost and impact data for PSA G.

2.1 PSA G Design Assumptions for Alternatives Screening

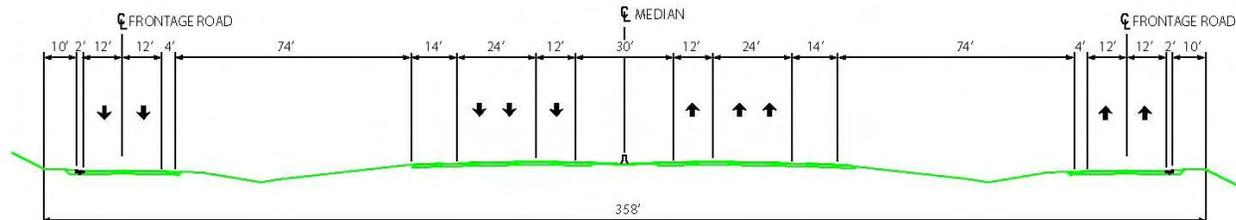
Design criteria for PSA G were established in the *Alternatives Development and Analysis Report* (PBS&J, April 2008). For PSA G, a tolled, controlled-access freeway facility would be provided in the existing US 74 corridor. A frontage road system would be needed in addition to the main travel lanes to provide access to adjacent properties and to serve as the free alternate route to the tolled freeway. Based on anticipated traffic volumes, the improvements were assumed to include six lanes for the toll facility and two-lane, one-way frontage roads on either side, for a total of ten lanes. Six lanes were assumed to be needed for the toll facility in the existing US 74 corridor (as opposed to four lanes for the new location toll alternatives) because the facility constructed along existing US 74 would be carrying both through traffic and some local traffic.

Access between the frontage roads and freeway was assumed to be provided by slip ramps. Major cross-streets would have a signalized intersection with each frontage road. A dedicated U-turn lane (sometimes referred to as a Texas U-turn) would be provided for alignments on

US 74 at major cross-streets to allow frontage road traffic to change direction without traveling through the signalized intersection.

The typical section for PSA G is approximately 360 feet wide. The typical section of PSA G is shown in **Figure 1**.

Figure 1. Typical Section for PSA G



Typical Section No. 1
MAINLINE WITH FRONTAGE ROADS (Shoulder)

The width of the typical section was held constant for the length of PSA G, which extended from NC 51 (west of I-485) to east of Forest Hills School Road (just west of the Town of Marshville). The 74-foot median between the main travel lanes and the frontage roads allows room for slip ramps and drainage features, and provides for a safe distance between the travel lanes of the freeway and those of the frontage roads without a barrier.

This typical section was used in the *Alternatives Development and Analysis Report* (PBS&J, April 2008) to establish a conceptual right-of-way limit for the alternative and quantitatively evaluate potential impacts of PSA G on natural, cultural, and human resources. Based on this impact evaluation, NCTA recommended PSA G be eliminated from further consideration but agreed to provide additional information on the alternative to satisfy agency comments.

2.2 Developing a Traffic Forecast for PSA G

To confirm the typical cross-section assumed in the *Alternatives Development and Analysis Report* (PBS&J, April 2008), a traffic forecast for the Upgrade Existing US 74 Alternative was prepared by Wilbur Smith Associates (*Technical Memorandum for TIP Projects R-2559 & R-3329 US74 Upgrade Scenario*, June 2008, see **Appendix B**).

For purposes of WSA's traffic analysis, interchanges for PSA G were assumed at the following cross-streets:

- Stallings Road (SR 1365)
- Indian Trail Road/Fairview Road (SR 1520)
- Sardis Church (SR 1516)/Wesley Chapel-Stouts Road (SR 1377)
- Rocky River Road (SR 1514)
- US 601/NC 200
- NC 200/Morgan Mill Road
- Pageland Highway/Metro Medical Center Campus (US 601)
- Main Street/Austin Chaney Road (SR 1758)
- Forest Hills School Road

These are the same interchange locations assumed for the DSAs, with the addition of an interchange at Pageland Highway/Metro Medical Center Campus (US 601). All other cross-streets would be connected by the eastbound and westbound frontage roads. Some of these cross-streets are projected to carry substantial volumes of traffic, including Wesley-Chapel Stouts Road (SR 1377), Fowler-Secret Road, and Secret Shortcut Road (SR 1501).

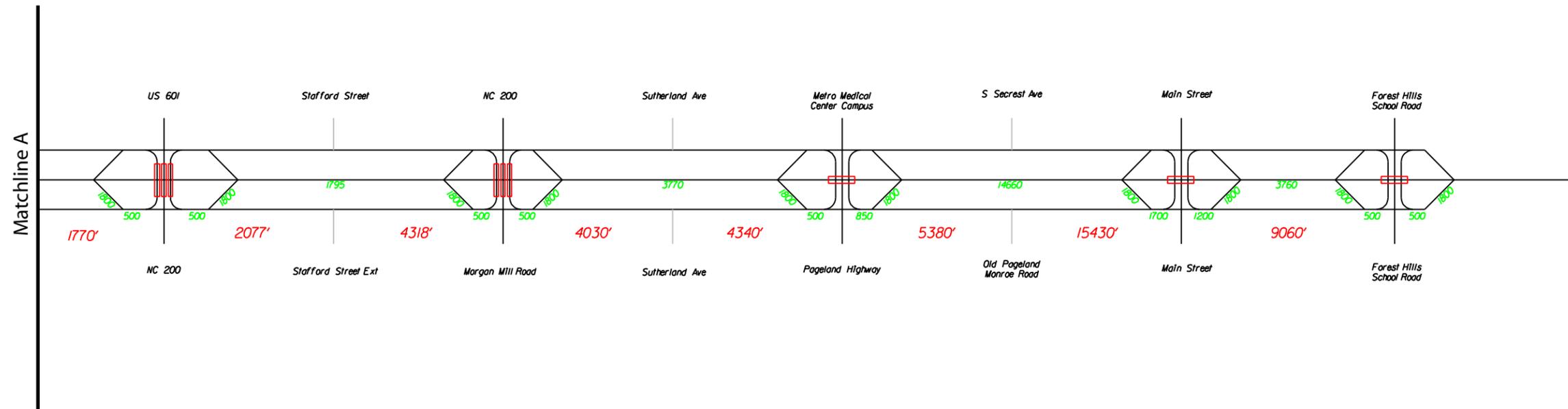
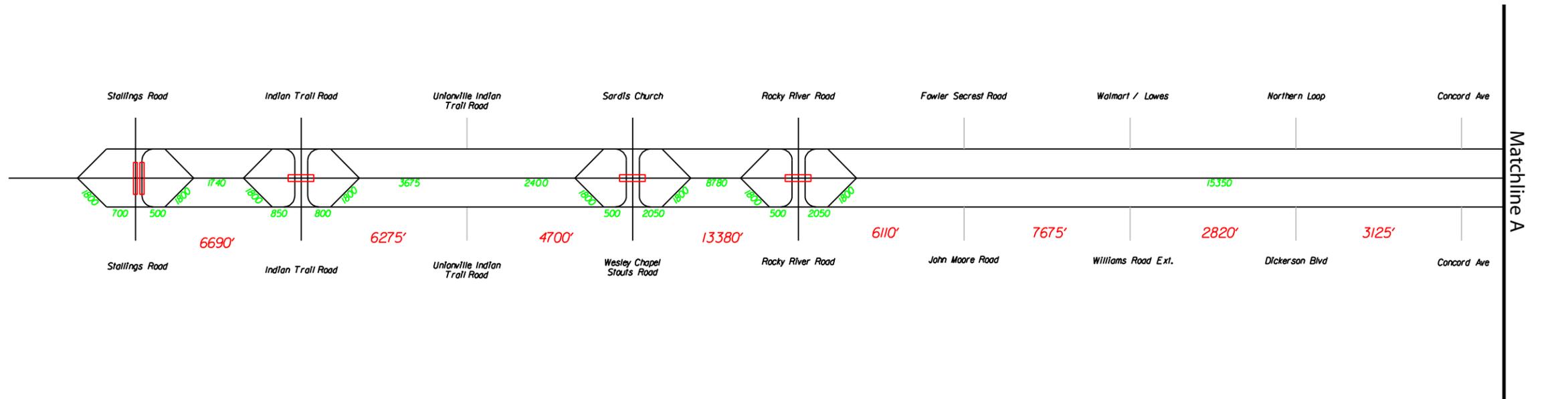
In addition, the forecast assumed the following:

- The frontage roads will have right-in/right-out access only.
- All vehicles that were previously turning left onto US 74 from intersecting streets or driveways would now turn right onto a frontage road, then turn left onto a cross-street that has access to US 74, and then left onto the opposite frontage road.
- All vehicles that previously made through movements across US 74 from intersecting streets or driveways will now turn right onto a frontage road, then left onto a cross-street that crosses US 74, then left onto the opposite frontage road to complete the US 74 crossing maneuver. This does not apply to streets that form interchanges with US 74.
- It is assumed that all movements from the cross-streets streets and driveways would use a frontage road to arrive at their destination.
- Roadway improvements included in the NCDOT's 2009-2015 STIP were assumed to be implemented including the programmed widenings of other routes.

In other words, cross-streets that intersect existing US 74 and do not have an interchange included as part of PSA G do not have access across US 74. These streets connect to the one-way non-tolled frontage roads. Vehicles would access the tolled US 74 freeway facility, and interchange ramps would be provided to/from the frontage roads at the nine previously mentioned interchange locations. Grade-separated Texas U-turn movements would be provided from frontage road to frontage road only at interchange locations. A third lane would be provided on the frontage roads between the interchange ramps and Texas U-turns. This additional lane also would require a wider typical section and additional right of way (ROW) for these sections of the frontages roads. The interchange and Texas U-turn movement locations are shown in **Figure 2**.

For purposes of these forecasts, the tolled freeway section and the non-tolled frontage roads were modeled as two separate facilities. This was done to match the model developed for the NEPA forecasts and to allow for comparison between the forecasts. The tolled highway section was modeled as a single bi-directional (east/west) facility. The non-tolled frontage roads were also modeled as a single bi-directional (east/west) facility and not as two one-way facilities (one for eastbound and one for westbound). Then, in order to develop the project-level forecast for the frontage roads, these bi-directional traffic volumes were split into one-way eastbound and one-way westbound traffic volumes.

Since the freeway and frontage roads are modeled separately, the model will not divert traffic from the frontage roads onto the freeway regardless of how congested the frontage roads get. Therefore, it is possible that some of the congestion on the frontage roads is simply a function of the limitations of the model; it is reasonable to anticipate that, under the highly congested conditions projected for the frontage roads, some trips would divert from the frontage roads onto the tolled freeway lanes of US 74. Nonetheless, the main conclusion of the analysis – that the frontage roads would be highly congested under PSA G – remains valid. A major contributor to the high level of congestion on the frontage roads is the need for north-south trips to use the east-west frontage roads, as described above.

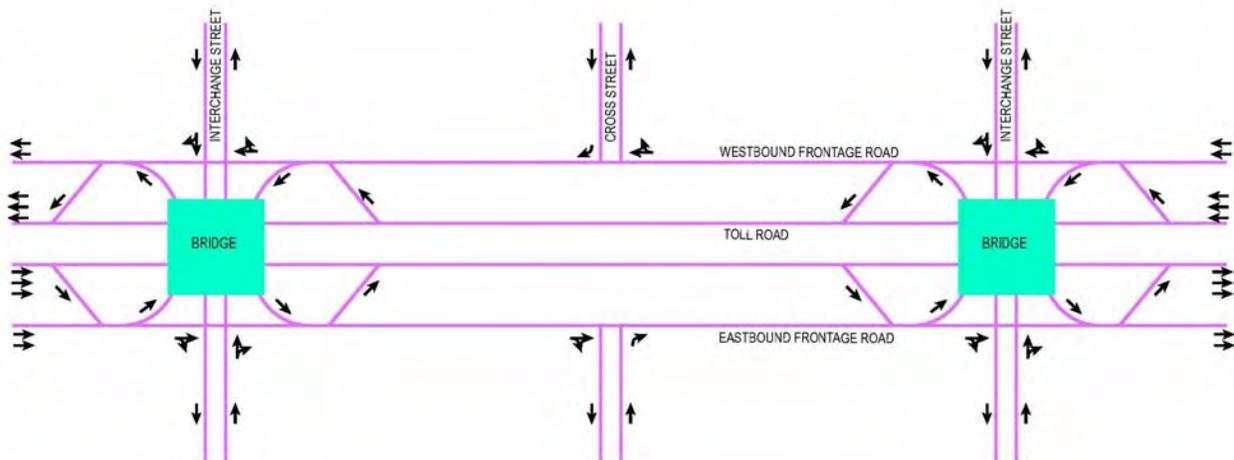


LEGEND		Upgrade Existing US 74 Study
		Preliminary Study Alternative G
	NOT TO SCALE	DATE: March 2009
		FIGURE 2

Under PSA G, as a cross-street approaches US 74, a right-in/right-out intersection is created with the non-tolled one-way frontage roads along US 74. In order for a vehicle on a cross-street to access the tolled freeway or cross US 74 to continue on the cross-street, a vehicle would first have to turn right onto the non-tolled one-way frontage road. A vehicle would then have to travel along the non-tolled one-way frontage road to the next interchange. At the interchange the vehicle would have access to the tolled freeway in either direction of travel. To cross US 74 to continue on the cross-street, the vehicle would then make a U-turn onto the non-tolled one-way frontage road going in the other direction until the frontage road intersects the cross-street. This configuration results in a circuitous rerouting of trips and adds a substantial amount of additional trips to the frontage roads.

For example, a vehicle traveling northbound on a cross-street that has a destination across US 74, the vehicle would instead turn right on to the frontage road, proceed to the next interchange, cross US 74, and proceed back along the opposite frontage road to turn right and continue the northbound cross-street trip. This example adds two trips to the US 74 east/west corridor on the frontage roads. Similar processes will be required for vehicles turning left from the cross-street onto frontage roads and for vehicles on the frontage roads to turn left on to a cross-street. The cumulative effect of these rerouted trips is a substantial amount of additional vehicle trips along the frontage roads and reduced capacity for through trips. For comparison purposes, this rerouting of trips does not occur with the new location alternatives. **Figure 3** shows a cross-street forming a T-intersection with the frontage roads and a right-in/right-out movement at the intersection.

Figure 3. Cross-street without Connection or Texas U-Turn



2.3 PSA G Traffic Operations Analysis

In order to determine whether the assumed typical section and lane configurations assumed for PSA G would operate adequately, an operational analysis of the PSA G traffic forecast was prepared. Frontage roads in the study area as well as sections of US 74 and intersections with US 74 were analyzed using the methods outlined in the Highway Capacity Manual.

For the US 74 freeway facility, "Multilane Highway" methodology was used to determine levels of service (LOS) in various sections along the studied route. LOS are based on typical speed-flow and density-flow relationships. Criteria used to determine LOS includes free flow speed in

miles per hour (mph), maximum density in passenger cars per mile per lane (pc/mi/ln), average speed (mph), maximum volume to capacity ratio (v/c), and maximum service flow rate (pc/h/ln). For purposes of this analysis, a free flow speed of 55 mph for the freeway lanes was assumed.

For the frontage roads, "Urban Street" methodology was used to determine levels of service for various sections along each frontage road. This methodology uses traffic signal density (signals per mile), free flow speed, cycle length, effective green ratio and other criteria to express levels of service based on the number of lanes provided. For the purposes of the evaluations, a free flow speed of 40 mph and three traffic signals per mile was assumed for the frontage roads.

The traffic analysis found that the westbound segments from Unionville Indian Trail Road to Rocky River Road and from Austin Chaney Street to the US 74 merge will operate at an acceptable LOS in 2035. For the eastbound direction, the only segment that operates at an acceptable LOS is from Main Street to the US 74 merge during the PM peak hour. The highest volumes are found near intersections that provide access for Texas U-turns. The summary tables from *Technical Memorandum for TIP Projects R-2559 & R-3329 US74 Upgrade Scenario*, (Wilbur Smith Associates, Inc., June 2008) are shown in **Appendix C**.

2.4 Impacts of PSA G

Upgrading the existing US 74 would require a longer construction timeframe than building a new location facility, as traffic would need to be maintained in the corridor throughout the construction period. Construction for the new location alternatives would take approximately three and a half years, which would involve minimal disruption to existing US 74 itself (except for the "Segment 2" portion of some alternatives). By contrast, upgrading the existing US 74 corridor would require six years to ten years to complete including a substantial amount of night construction. The impacts of this lengthy construction schedule on commuters and travelers through the corridor would be substantial, including numerous and constant lane closures and shifts, potential temporary detours, disruptions to business visibility and access along the corridor. Additionally, motorists may choose to detour onto other local roads in order to avoid the construction zone, clogging other roads such as Old Monroe Road/Old Charlotte Road (SR 1009), Secrest Shortcut Road (SR 1514), or NC 218.

2.5 Consideration of PSA G (Upgrade Existing US 74 Alternative) in the *Indirect and Cumulative Effects Assessment*

While not a DSA, PSA G was evaluated in the *Indirect and Cumulative Effects Assessment* (HNTB, January 2009) as the Upgrade Existing US 74 Alternative qualitative analysis scenario based on agency requests to compare the potential indirect impacts and cumulative effects of this alternative with those of a new location alternative. The assessment found that the indirect impacts and cumulative effects of the upgrade US 74 scenario and the new location alternatives would be similar in terms of the potential for induced development in portions of the project study area east of US 601, where accessibility and travel time to Charlotte and Mecklenburg County would be improved substantially with either option. Additionally, the assessment noted that PSA G would result in up to 499 business displacements along existing US 74. Many of these businesses may choose to relocate within the project study area. Construction of new facilities to accommodate these relocations would be considered an indirect effect of this alternative.

2.6 Updating PSA G for Comparison with the New Location Detailed Study Alternatives

For this report, the analysis of PSA G has been updated from to allow for better comparison of PSA G with the new location alternative DSAs. Because PSA G is not considered a DSA, it has not been developed to the same level of detail as the new location alternative DSAs. However, while the level of detail is not identical, the updated analysis does allow for a more direct comparison of PSA G with the DSAs.

First, Corridor Segment 0 (I-485 west to NC 51) was removed from PSA G. This segment was originally included in PSA G, as well as all of the new location PSAs; however, it is no longer included in any of the new location DSAs. Therefore, for consistency, it is not included in the updated cost and impact estimates for PSA G. Removing this segment results in a reduction in the length of PSA G of 0.5 miles. Additionally, eliminating this segment results in reductions in business impacts and potential hazardous materials site conflicts.

Originally, PSA G was estimated to impact 499 businesses along US 74. Removing Segment 0 from PSA G would reduce the number of business impacts to 481, still a significant number of businesses. Nearly all of these 481 business relocations would occur in Union County, and would represent about 11 percent or one out of nine, of all the businesses in the county.

Table 1. PSA G – Original vs. Revised

	PSA G – Original	PSA G - Updated	Difference
Business Relocations	499	481	-18
Buildings and Parcels Taken	390	372	-18
Parcels Only Taken	379	375	-4
Total Parcels Taken	769	747	-22
Total ROW Cost*	--	\$577,233,487	--

In addition, cost estimates were updated for PSA. Cost estimates included in the *Alternatives Development and Analysis Report* were based only on average per-mile cost estimates for similar facilities (number of lanes, interchanges, etc.). Other costs, including right of way, environmental mitigation, administrative, and utility, were not assessed. Costs were expressed in current (2007) dollars.

To allow for a more accurate comparison between alternatives, a cost estimate for PSA G (PSA G - Updated) was prepared using anticipated construction quantities based on design schematics and accounting for other costs (right of way, environmental mitigation, administrative, and utilities). The costs in 2009 dollars were then inflated to the anticipated year of expenditure for this alternative based on a projected opening year of 2018. The cost for PSA G would be approximately \$1,126.1 million to \$1,403.6 million. **Table 2** provides a summary of the cost estimates of the PSA G option.

Table 2. Cost Summary for PSA G

Item	Low	Median	High
Construction	\$416,300,000	\$455,400,000	\$514,500,000
Administrative	\$62,000,000	\$68,300,000	\$74,300,000
Mitigation	\$8,800,000	\$9,400,000	\$10,300,000
ROW & Utilities	\$639,000,000	\$717,300,000	\$804,500,000
Total	\$1,126,100,000	\$1,250,500,000	\$1,403,600,000

Elements of the cost estimate were calculated as follows:

- Construction cost – construction quantities were estimated using conceptual design plans. Major items estimated include pavement, bridges, drainage, traffic control, signing, signals, tolling equipment, and construction contingencies. Approximate quantities of pavement and structure elements were calculated. Other elements have not been designed and were estimated on a per-mile or per-each basis.
- Administrative costs – Includes engineering and design fees, constructing engineering and inspection, construction management, reserve funds for construction overruns, rating agency maintenance fees, and stipends. The majority of these costs are based on a percentage of estimated construction costs.
- Mitigation cost – Environmental mitigation costs are based on GIS data (NWI wetland and stream information) and include total impacts to perennial streams plus a percentage of impacts to intermittent streams. The amount of intermittent streams was calculated based on the average percentage of linear feet of intermittent streams qualifying for mitigation for the DSAs (NCDENR-DWQ stream rating greater than or equal to 26). This was determined to be an appropriate extrapolation for estimation purposes because the DSAs, although in a different location, would cross the same streams and watersheds as PSA G. Mitigation costs are based on the latest NC Ecosystem Enhancement Program (NCEEP) unit costs for impacts.
- ROW & Utilities – ROW costs were determined using the methodology in **Appendix C**. Utility relocation costs were estimated on a per mile basis for existing highway corridors. Historical trends and averages were used to develop the per mile cost.

The total cost estimate was developed utilizing the same procedures that are used to develop cost estimates for the DSAs. A computer simulation software program was used to develop the range of costs with an 80% certainty. Inputs into the simulation included likely ranges of unit costs and quantities for most of the project cost items. Project costs were inflated to future year dollars using a variable range of inflation rates. There is an 80% probability that the project cost will be between the low and high end projections. There is a 10% probability that the cost will be below the low estimate, and a 10% probability that the cost will be above the high estimate.

2.7 Conclusion

The evaluation of Preliminary Study Alternative G concluded that there would be substantial impacts and costs, as well as poor operations. In the *Alternatives Development and Analysis Report*, PSA G was determined not to be a reasonable alternative based on its substantial impacts to businesses, high cost, and low performance for traffic operations. The updated analysis of PSA G results in slightly lower business relocations, much higher cost estimates, and no change in performance for traffic operations. Based on this updated information, the decision to eliminate PSA G remains valid.

3.0 REVISED PRELIMINARY STUDY ALTERNATIVE G

In an effort to ensure a thorough analysis of alternatives, NCTA decided to develop use the existing US 74 corridor but would address some of the key concerns with PSA G – specifically, the high cost, high relocation impacts, and poor traffic operations. This new alternative – known as “Revised PSA G” – is documented in this report.

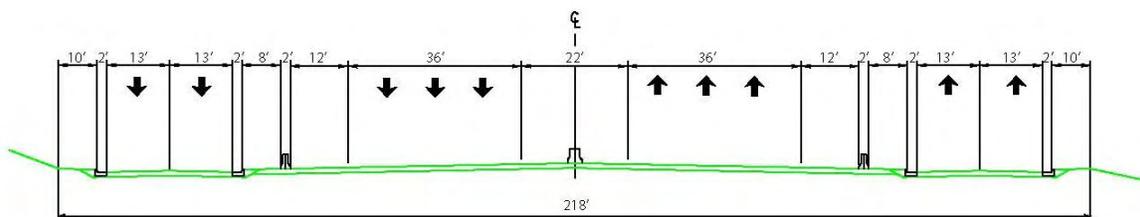
3.1 Design Assumptions for Revised PSA G

Like PSA G, the Revised PSA G option includes US 74 as a tolled, controlled-access six-lane freeway facility with one-way two-lane frontage roads on either side to allow access to adjacent facilities. However, a combination of two typical sections was developed for the Revised PSA G option.

- Typical Section 2 (Curb-and-Gutter). A narrower 230-foot wide curb and gutter typical section was used in areas with higher concentrations of businesses and development adjacent to the existing ROW (Typical Section 2, see **Figure 4A**). At interchanges or cross-streets with crossovers, this typical section widens to 270 feet to accommodate ramps between the frontage roads and freeway, and uses retaining walls to maintain the narrow section.
- Typical Section 3 (Shoulders). The second typical section, used in areas with less development, is a 275-foot wide section with shoulders (Typical Section 3, see **Figure 4B**). This section would also be wider (approximately 315 feet) in areas at interchanges or crossovers to accommodate ramps. The shoulder section was used where possible because it is substantially less expensive than the curb and gutter section.

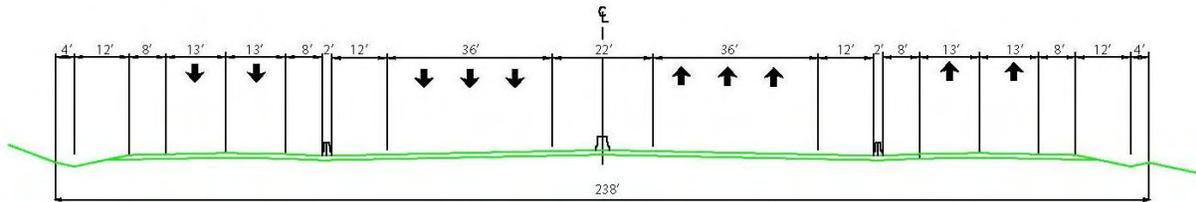
As noted in the description of Revised PSA G, this alternative would require the extensive use of retaining walls to maintain the narrower cross section that minimizes relocations of businesses. Approximately 7.6 miles of Revised PSA G (or 38 percent of the 19.7-mile long alternative) would be on retaining walls.

Figure 4A. Typical Section for Revised PSA G (Curb and Gutter)



Typical Section No. 2
MAINLINE WITH FRONTAGE ROADS (Curb and Gutter)

Figure 4B. Typical Section for Revised PSA G (Shoulder)



Typical Section No. 3
MAINLINE WITH FRONTAGE ROADS (Shoulder)

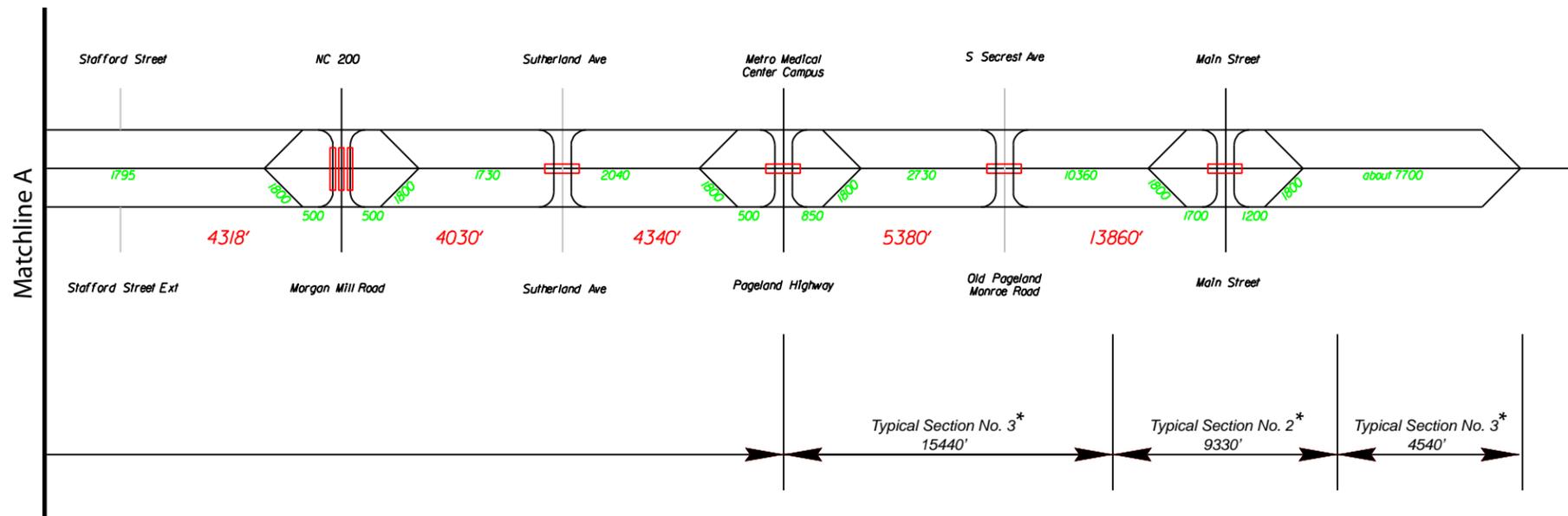
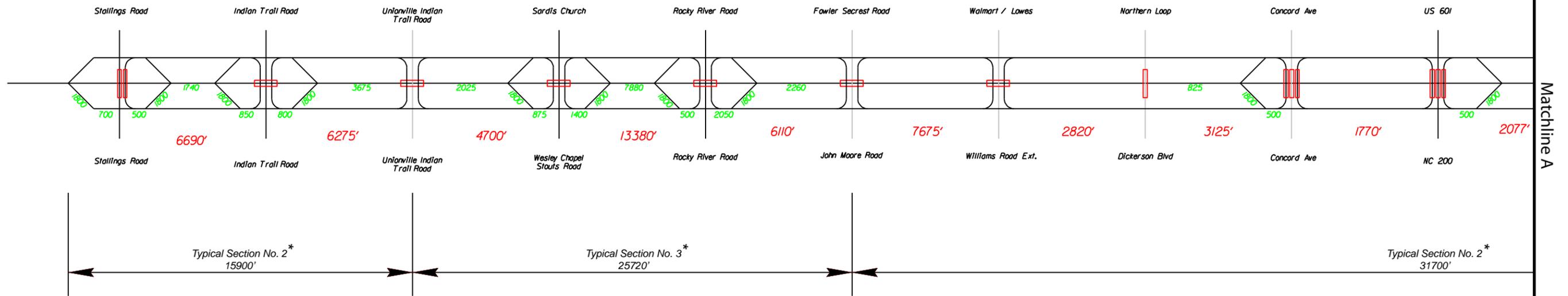
The interchanges for the Revised PSA G option vary slightly from those included in PSA G. Revised PSA G includes a half interchange at Concord Avenue and US 601/NC 200 due to the spacing and no interchange at Forest Hills School Road. The following interchanges were included in the Revised PSA G:

- Stallings Road (SR 1365)
- Indian Trail Road/Fairview Road (SR 1520)
- Sardis Church (SR 1516)/Wesley Chapel-Stouts Road (SR 1377)
- Rocky River Road (SR 1514)
- Concord Avenue & US 601/NC 200
- NC 200/Morgan Mill Road
- Metro Medical Center/Pageland Highway (US 601)
- Main Street/Austin Chaney Road (SR 1758)

The Revised PSA G option also has one-way, two-lane, non-tolled frontage roads included in PSA G. It was determined that the original design of PSA G would produce longer than usual trip distances due to the limited number of grade-separated Texas U-turn movements from the frontage roads. Because this was determined to be one of the biggest operational problems with PSA G (i.e., the lack of access across US 74), the traffic forecast was evaluated to determine where the addition of grade-separated cross-streets could alleviate volumes on the frontage roads. Providing grade separations would reduce congestion on the frontage roads by removing some of the north/south cross-street trips from the frontage roads and decreasing the travel distance of some of the rerouted cross-street trips. Grade-separated Texas U-turn movements for cross-streets and access to frontage roads were included at:

- Unionville-Indian Trail Road (SR 1367)
- Fowler-Secret Road/John Moore Road
- Wal-Mart/Williams Road Extension
- Sutherland Avenue
- Secret Avenue/Old Pageland Monroe Road (SR 1941)

There is also a crossover at future Northern Loop/Dickerson Boulevard without Texas U-turns. Additional crossovers would not be feasible due to spacing and grade issues. Any additional crossovers would be located too close to the interchanges and limit visibility on US 74 for the ramps. The locations of the Revised PSA G interchanges and Texas U-turn movements are displayed in **Figure 5**.



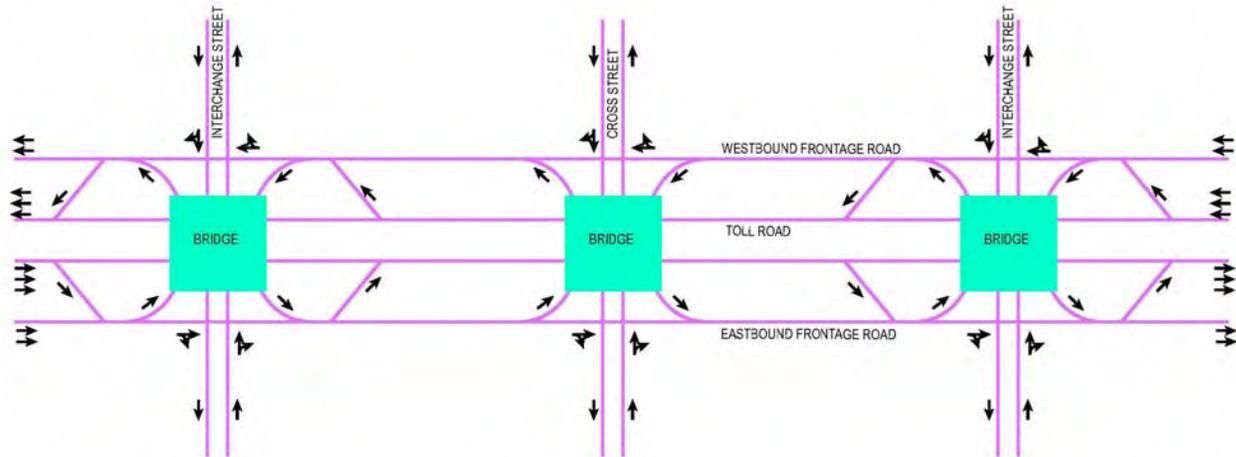
* NOTE: TYPICAL SECTIONS CAN BE FOUND ON FIGURE 3.



LEGEND		Upgrade Existing US 74 Study
		Revised Preliminary Study Alternative G
	NOT TO SCALE	DATE: March 2009
		FIGURE 5

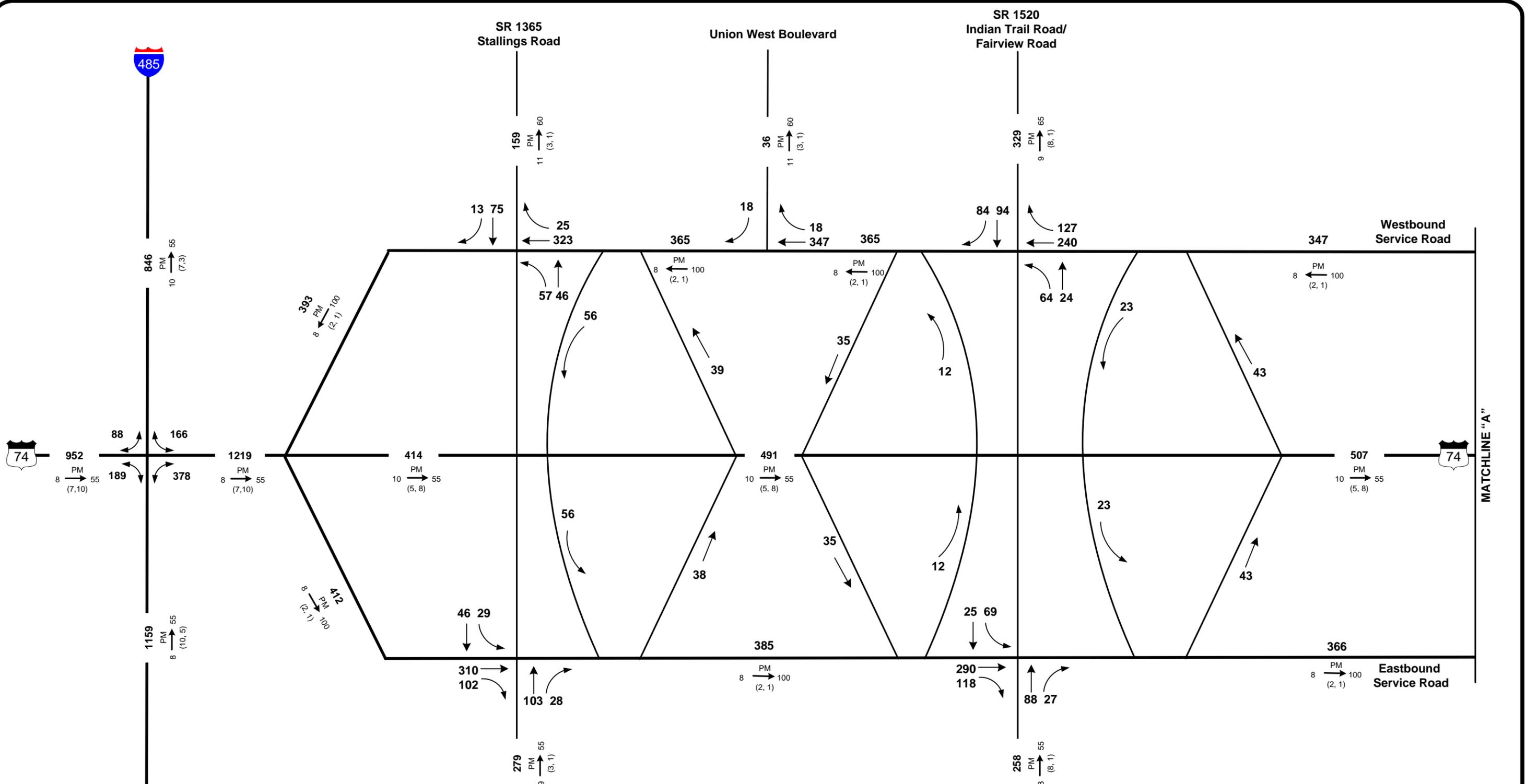
Figure 6 shows a grade separated connection over US 74 for the cross-street with intersections at both frontage roads with Texas U-Turn movements.

Figure 6. Cross-street with Connection and Texas U-Turn



3.2 Traffic Forecast for Revised Preliminary Study Alternative G

A traffic forecast was developed for Revised PSA G. For the Revised PSA G, the same laneage on US 74 and the frontage roads was assumed as PSA G. The freeway portion would have three lanes in each direction for a total of six lanes. Each one-way frontage road would have two lanes. The PSA G traffic forecast from *Traffic Forecast for TIP Projects R-2559 & R-3329 Monroe Connector/Bypass (Wilbur Smith & Associates, July 2008)* was used to develop the Revised PSA G forecast with the traffic manually diverted to the new crossovers and the Texas U-turns. The interchange locations are slightly different than the location for the PSA G forecast. **Figure 5** shows the layout assumed for the Revised PSA G Traffic Forecast. The Revised PSA G Traffic Forecast for 2035 is shown in **Figures 7A-7H**.



MATCHLINE "A"

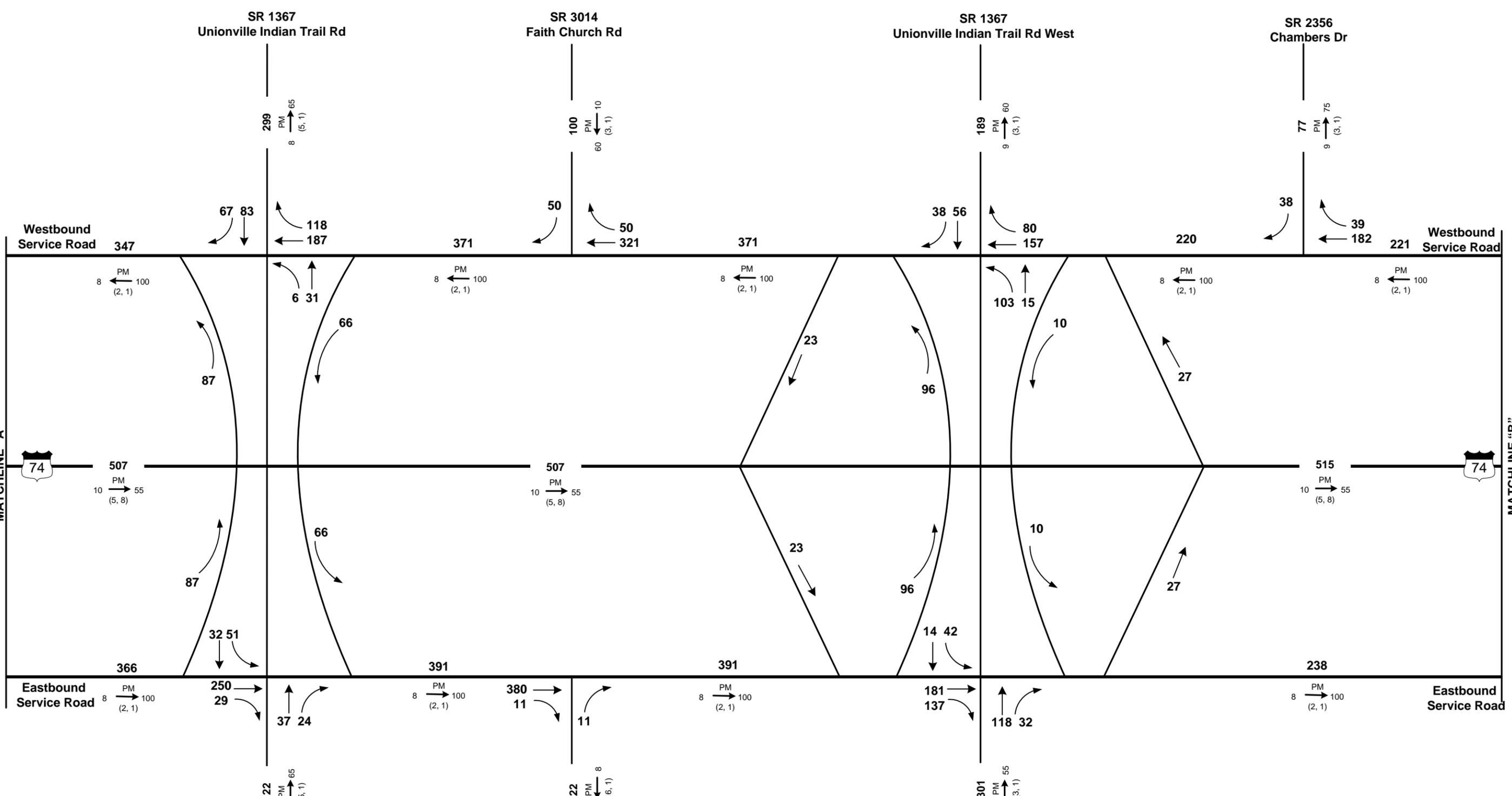
LEGEND XXX = No. of Vehicles Per Day (VPD) in 100s		Upgrade Existing US 74 Study	
		Revised Preliminary Study Alternative G	
	NOT TO SCALE	DATE: March 2009	
		FIGURE 7A	



HNTB HNTB, North Carolina, PC
 343 East Six Forks Rd Suite 200
 Raleigh, North Carolina 27609

MATCHLINE "A"

MATCHLINE "B"



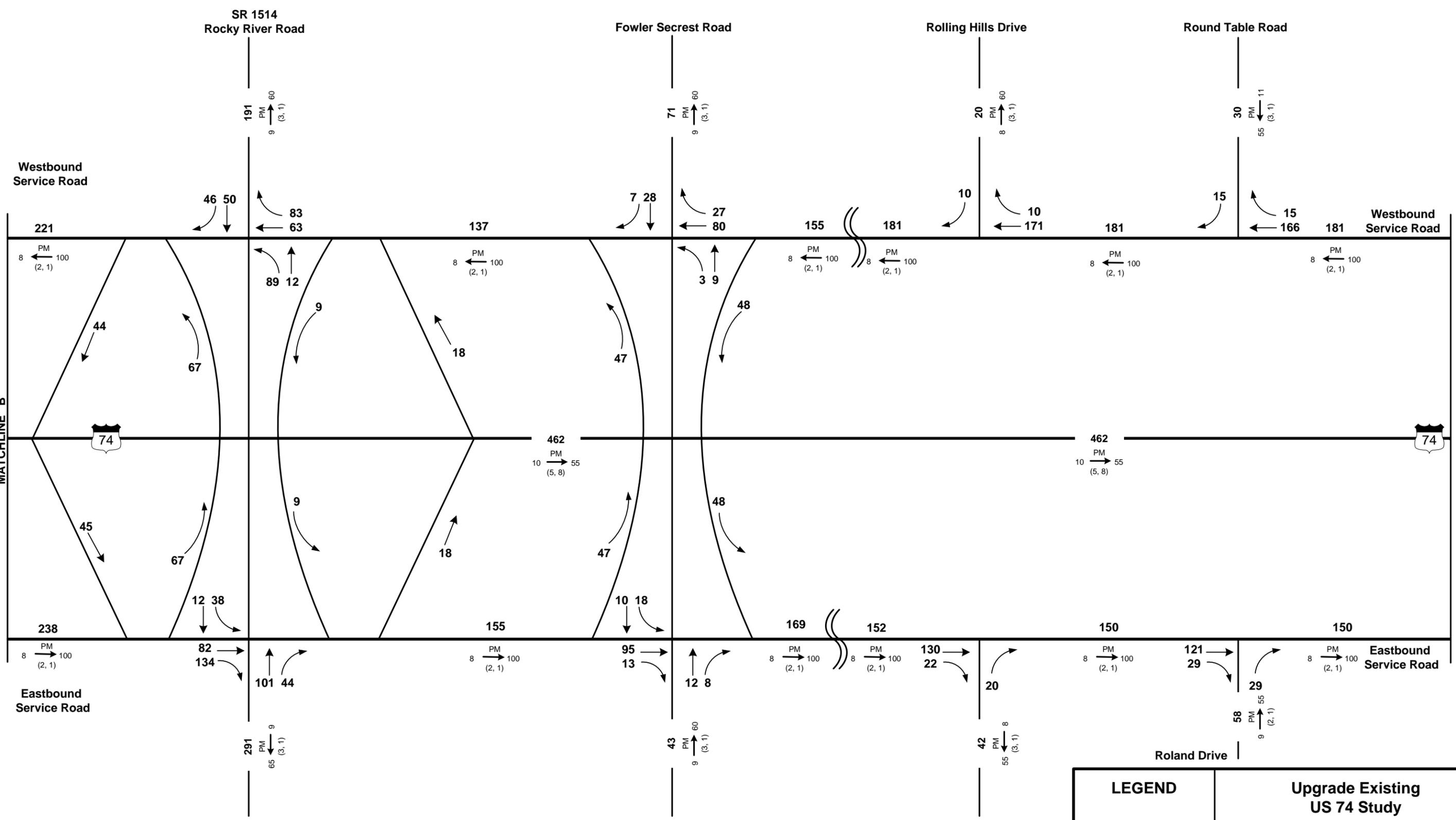
LEGEND		Upgrade Existing US 74 Study	
XXX = No. of Vehicles Per Day (VPD) in 100s		Revised Preliminary Study Alternative G	
	NOT TO SCALE	DATE: March 2009	
		FIGURE 7B	



HNTB HNTB, North Carolina, PC
 343 East Six Forks Rd Suite 200
 Raleigh, North Carolina 27609

MATCHLINE "B"

MATCHLINE "C"



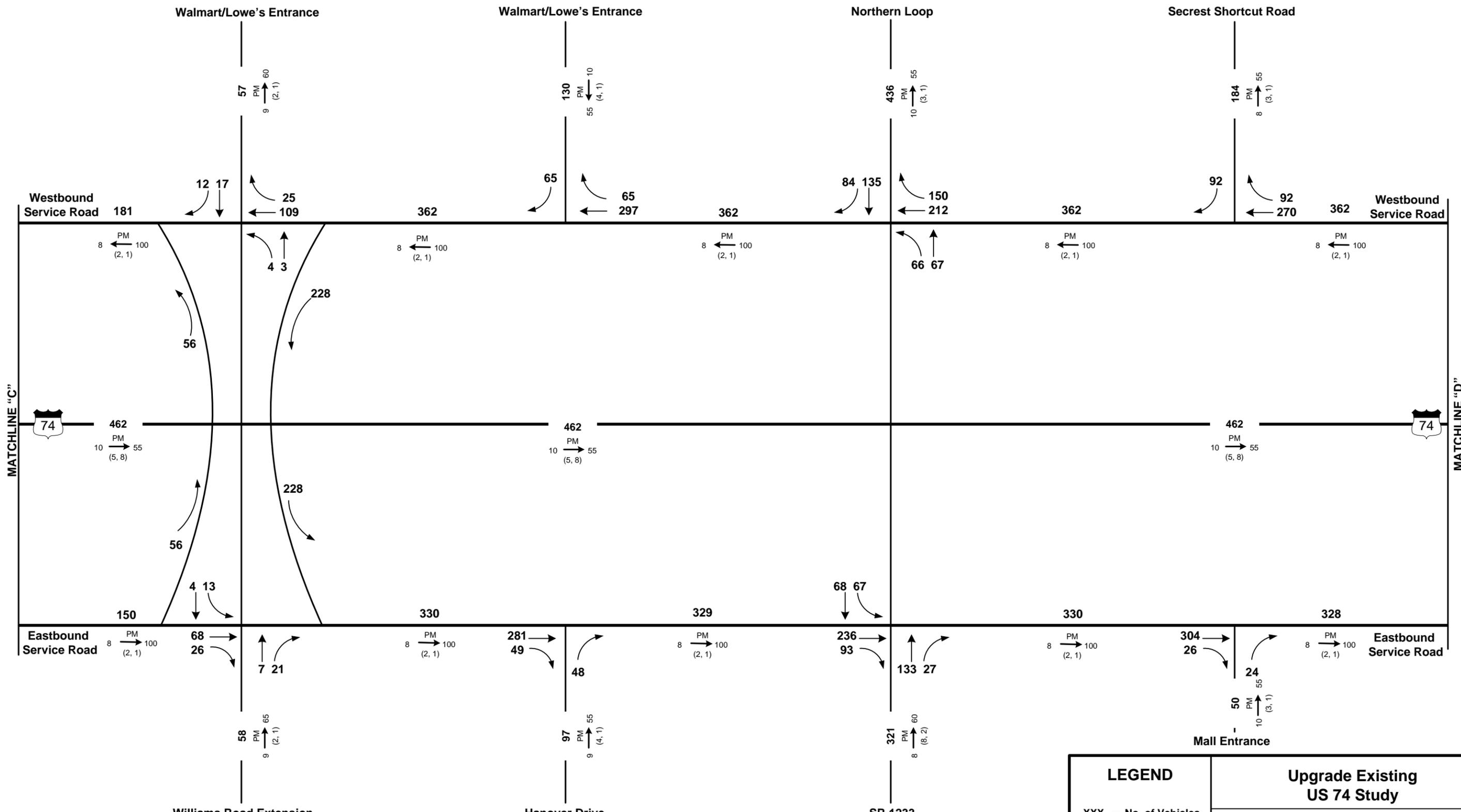
LEGEND		Upgrade Existing US 74 Study
XXX = No. of Vehicles Per Day (VPD) in 100s		Revised Preliminary Study Alternative G
	NOT TO SCALE	DATE: March 2009
		FIGURE 7C



HNTB, North Carolina, PC
 343 East Six Forks Rd Suite 200
 Raleigh, North Carolina 27609

MATCHLINE "C"

MATCHLINE "D"



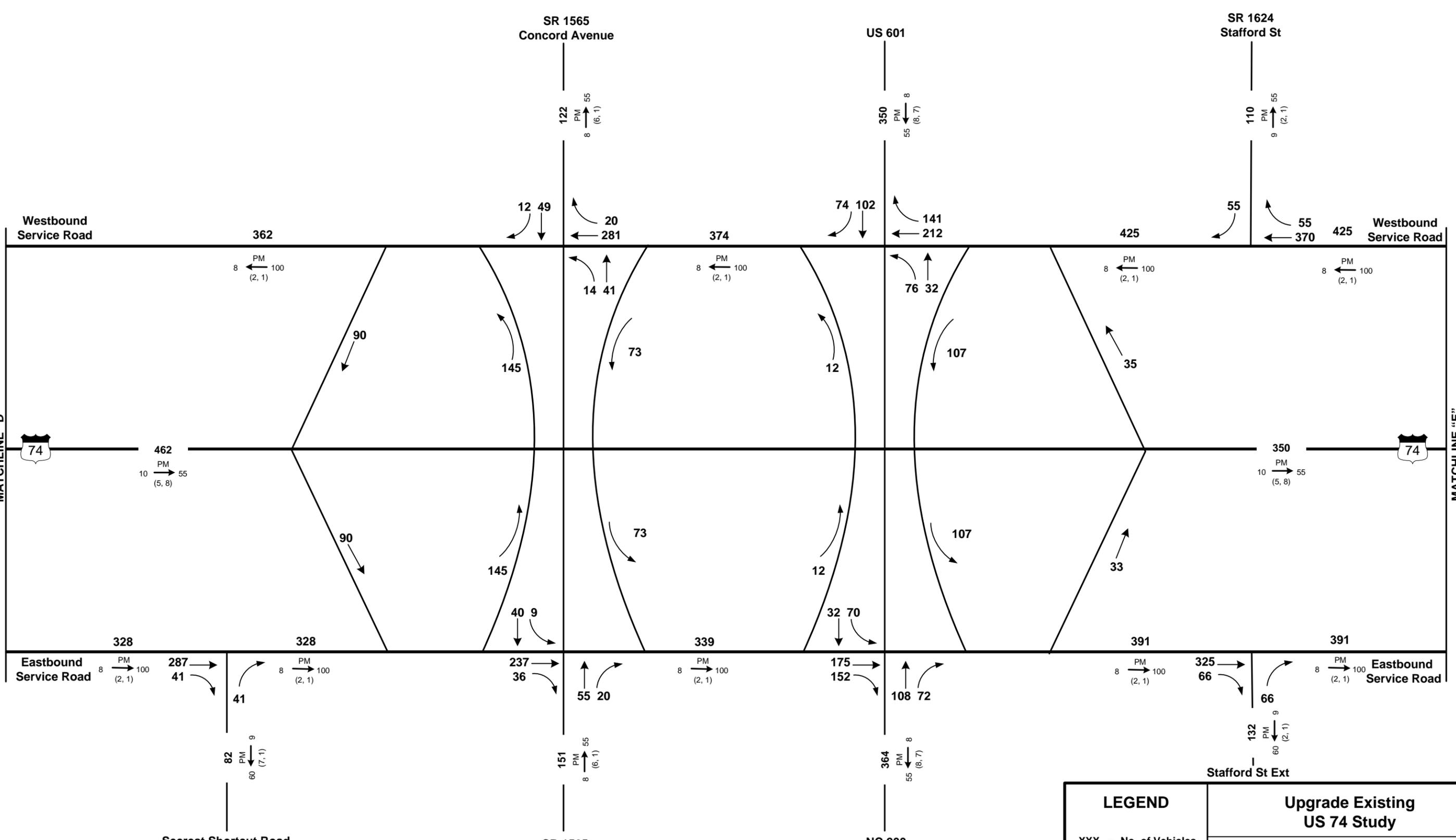
LEGEND		Upgrade Existing US 74 Study
XXX = No. of Vehicles Per Day (VPD) in 100s		
	NOT TO SCALE	Revised Preliminary Study Alternative G
		DATE: March 2009
		FIGURE 7D



HNTB HNTB, North Carolina, PC
343 East Six Forks Rd Suite 200
Raleigh, North Carolina 27609

MATCHLINE "D"

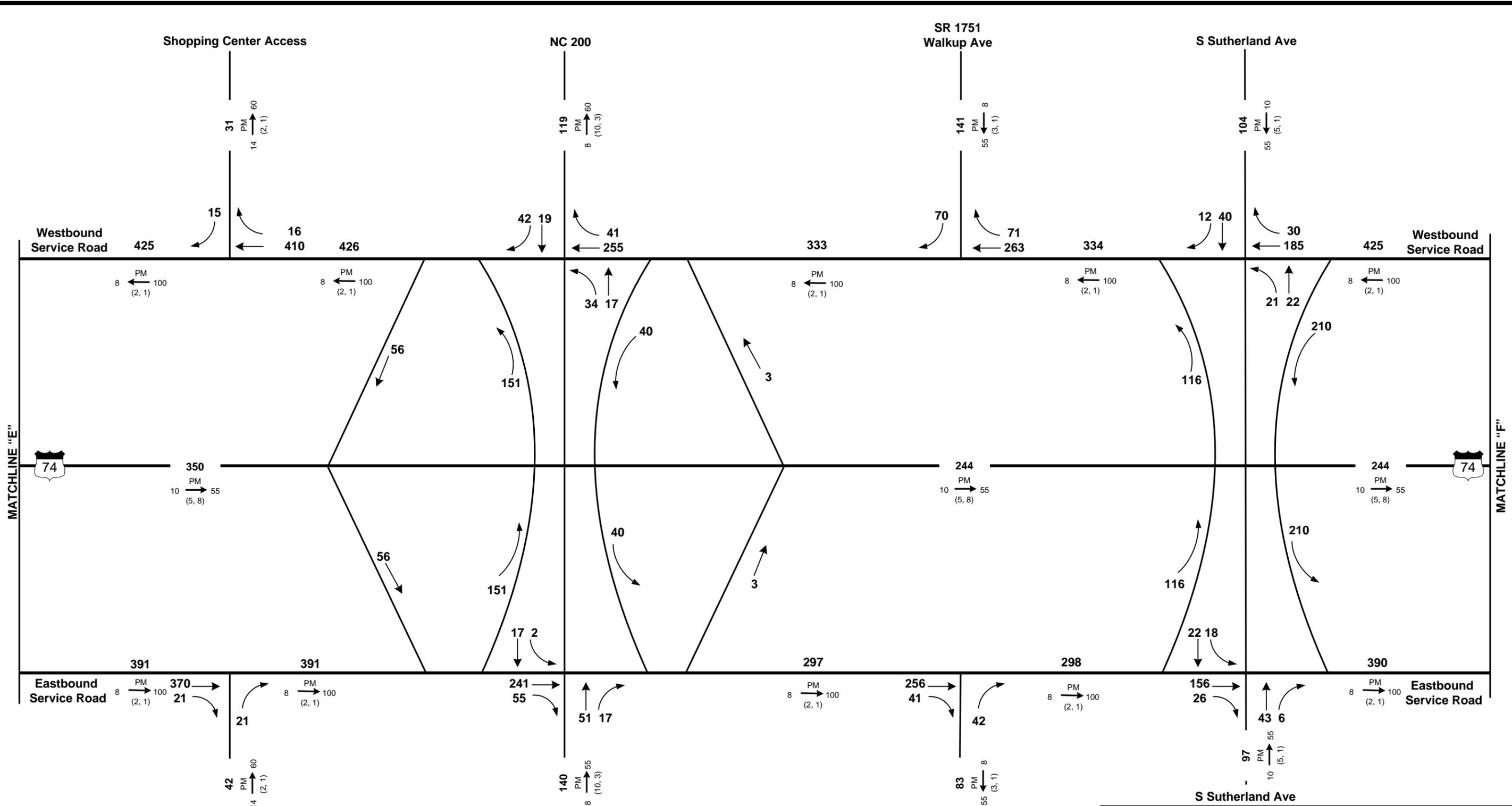
MATCHLINE "E"



LEGEND		Upgrade Existing US 74 Study	
XXX = No. of Vehicles Per Day (VPD) in 100s		Revised Preliminary Study Alternative G	
	NOT TO SCALE	DATE: March 2009	
		FIGURE 7E	



HNTB, North Carolina, PC
 343 East Six Forks Rd Suite 200
 Raleigh, North Carolina 27609



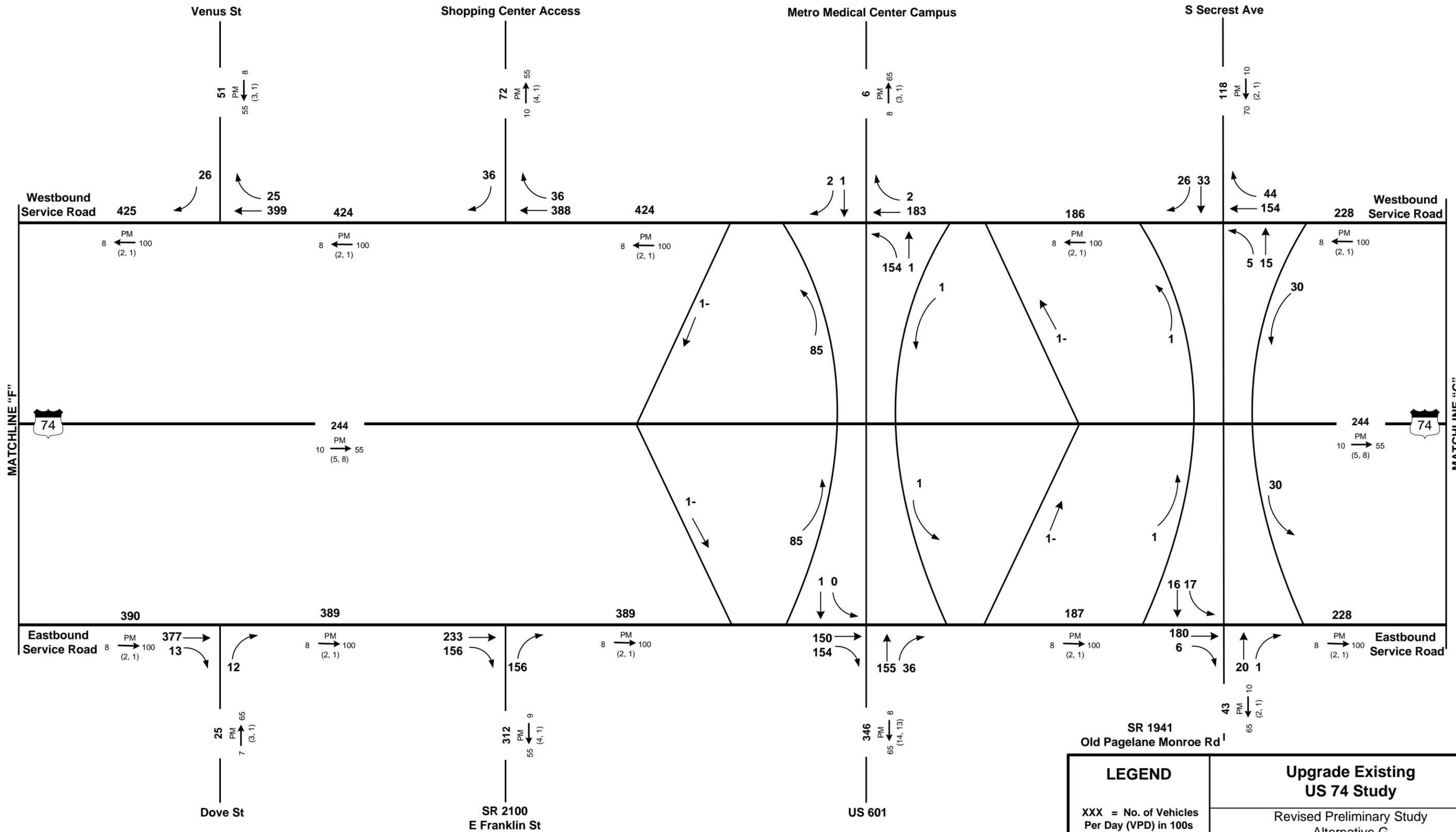
LEGEND		Upgrade Existing US 74 Study
XXX = No. of Vehicles Per Day (VPD) in 100s		
	NOT TO SCALE	Revised Preliminary Study Alternative G
		DATE: March 2009
		FIGURE 7F



HNTB HNTB, North Carolina, PC
343 East Six Forks Rd Suite 200
Raleigh, North Carolina 27609

MATCHLINE "F"

MATCHLINE "G"

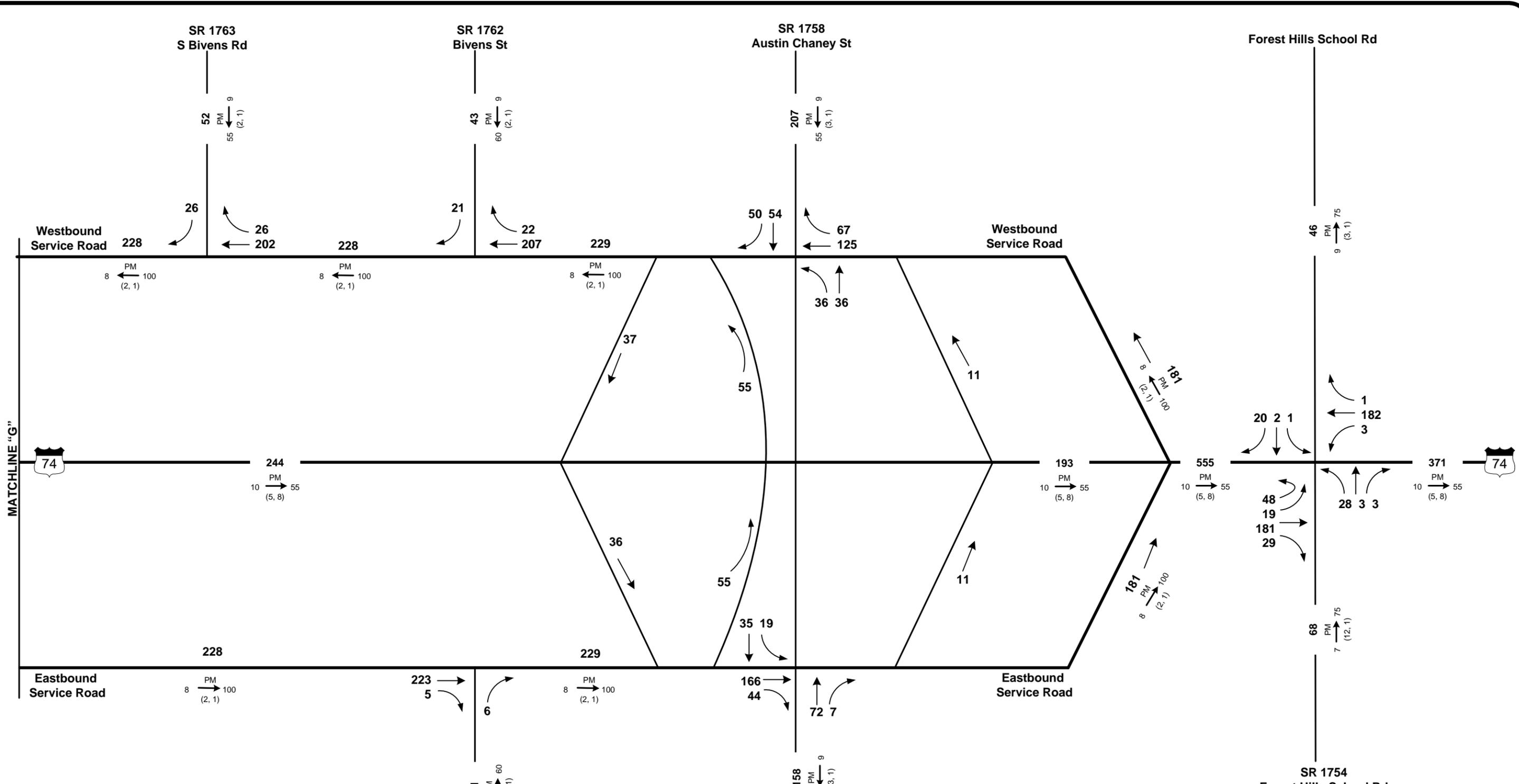


SR 1941
Old Pagelane Monroe Rd¹

LEGEND		Upgrade Existing US 74 Study
XXX = No. of Vehicles Per Day (VPD) in 100s		
	NOT TO SCALE	DATE: March 2009
		FIGURE 7G



HNTB HNTB, North Carolina, PC
343 East Six Forks Rd Suite 200
Raleigh, North Carolina 27609



LEGEND		Upgrade Existing US 74 Study
XXX = No. of Vehicles Per Day (VPD) in 100s		
	NOT TO SCALE	Revised Preliminary Study Alternative G
		DATE: March 2009
		FIGURE 7H

3.3 Operations Analysis of Revised PSA G

An analysis was done comparing the volume to capacity ratios (V/C Ratios) for the freeway segments as shown in **Table 5**. The V/C ratios for the upgraded sections of US 74 as a tolled freeway facility show that only one segment will operate over capacity with a V/C Ratio greater than one. The same PSA G segment will operate over capacity when the forecasted volumes are converted to V/C ratios.

For the US 74 frontage roads, six segments will operate over capacity. Every segment from Stallings Road to US 601/Metro Medical Center Campus will operate with a V/C Ratio greater than one except for the segment from Unionville Indian Trail Road/Wesley Stouts Road to Rocky River Road. The largest V/C Ratio, of 1.49, will exist for the frontage road segment from US 601 to US 601/Metro Medical Center Campus.

3.4 Impacts of Revised PSA G

Revised PSA G would impact substantially fewer businesses than the original PSA G (499) or the updated PSA G (481). Approximately 124 buildings including 235 businesses would be relocated. While this business relocation figure is more than five times greater than any of the DSAs, it is a significant reduction from original PSA G due to the use of the narrower typical section in more densely developed areas. An additional 506 parcels would have some impact that would require right-of-way acquisition. See **Table 3**.

Table 3. ROW Cost and Impact Comparison

	PSA G (Updated)	Revised PSA G	Difference
Business Relocations	481	235	-146
Buildings and Parcels Taken	372	124	- 248
Parcels Only Taken	375	506	+ 131
Total Parcels Taken	747	630	- 117
Total ROW Cost*	\$577,233,487	\$201,311,601	- \$375,921,886

As noted in the description of Revised PSA G, this alternative would require the extensive use of retaining walls to maintain the narrower cross section that minimizes relocations of businesses. Approximately 7.6 miles of Revised PSA G (or 38 percent of the 19.7-mile long alternative) would be on retaining walls. Constructing this long length of retaining wall along US 74, which is located in relatively level topography, would be a substantial adverse visual impact. The retaining walls also would reduce visibility to the remaining businesses along the frontage roads. While businesses may be visible from the freeway portion of the facility, they may be difficult to access due to the limited number of interchanges. Further, businesses would not be visible from frontage roads on the opposite side of the freeway.

As with the original PSA G, Revised PSA G would require six to ten years to construct in the existing US 74 corridor. This would be a substantial impact to traffic using the corridor. People would avoid the corridor and utilize other alternate routes. This would be true for businesses along the corridor as well – given the option, people would use a comparable business somewhere else.

This corridor is heavily used by the freight trucking industry, as it is the primary route between the port at Wilmington and the multimodal transfer center in Charlotte. Traffic congestion during construction would lead to substantial delays and cost implications for this industry. Trucks

would likely seek alternate routes to avoid delays, most of which were not designed to accommodate heavy volumes of large trucks.

Other impacts from Revised PSA G to the human and natural environments are included in **Table 6**.

A cost estimate was also prepared for Revised PSA G option for comparison with the original PSA G option, as well as the new location DSAs. The cost for the Revised PSA G option was calculated based on estimated construction quantities from a schematic design, as well as estimated right-of-way, environmental mitigation, administrative, and utilities costs. The costs in 2009 dollars were then inflated to the anticipated year of expenditure for this alternative based on a projected opening year of 2018. The cost for Revised PSA G would be \$888.1 million to \$1,102.6 million. **Table 4** provides a summary of the cost comparisons of the Revised PSA G option.

Table 4. Construction Cost Summary for Revised PSA G

Item	Low	Median	High
Construction	\$555,900,000	\$608,200,000	\$687,400,000
Administrative	\$80,600,000	\$88,900,000	\$96,900,000
Mitigation	\$6,700,000	\$7,200,000	\$7,800,000
ROW & Utilities	\$244,900,000	\$275,700,000	\$310,500,000
Total	\$888,100,000	\$980,000,000	\$1,102,600,000

Cost estimates for the components of the cost estimate were developed as described for PSA G in Section 2.5 above. As with the cost estimate for PSA G, the cost estimate for Revised PSA G was developed utilizing the same procedures that are used to develop cost estimates for the DSAs. There is an 80% probability that the project cost will be between the low and high end projections.

4.0 COMPARISON OF PSA G AND REVISED PSA G

4.1 Traffic Operations

The freeway portions of the Upgrade US 74 Alternatives (PSA G and Revised PSA G) generally perform at an acceptable level of service, as do the new location alternatives (the DSAs). It is important to note that the freeway portion of PSA G and Revised PSA G includes six lanes, because they would have to accommodate through trips as well as a portion of local traffic on existing US 74. The projected traffic is adequately accommodated by the six lanes assumed on the freeway facility under PSA G and Revised PSA G. The new location alternatives would include four freeway lanes, which would provide adequate level of service through the design year; the new location alternatives would not preclude expansion to six lanes in the future, within the median, as traffic volumes warrant. For further information regarding the performance of the freeway portions, see *Traffic Forecast for TIP Projects R-2559 & R-3329 Monroe Connector/Bypass (Wilbur Smith & Associates, July 2008)*.

The upgrade existing alternatives (PSA G and Revised PSA G) and the new location alternatives (the DSAs) would differ substantially in terms of their effects on traffic operations on existing US 74. In the case of PSA G and Revised PSA G, existing US 74 would be served by the frontage roads, while with the new location alternatives, existing US 74 would remain US 74

in its current configuration. The new location alternatives would have the greatest benefit for traffic continuing to use existing US 74.

As shown in **Table 5**, the traffic volumes continuing to use existing US 74 are the least with the new location alternatives. The traffic volumes are the greatest with PSA G due to the north/south trips circulating on the frontage roads. The addition of crossovers to Revised PSA G would reduce the volumes substantially on the frontage roads by eliminating a portion of the circulating traffic, but Revised PSA G would still cause much greater volumes on the US 74 frontage roads than would use US 74 under the new location alternatives.

The traffic forecasts indicated that traffic volumes on the proposed two-lane frontage road systems would exceed the capacity of those roads in the design year 2035. For PSA G and Revised PSA G, six segments of the frontage road systems would operate at V/C Ratio greater than one, and the average annual daily traffic (AADT) on portions of the frontage road system would exceed the maximum projected volumes on the tolled US 74 freeway facility due to the toll diversion (diversion of traffic to the free facility to avoid paying the toll). A few of the V/C Ratios are lower for the Revised PSA G scenario versus PSA G. For the same DSA Business 74 segments, at most two would operate with a V/C Ratio greater than 1.

Based on projected traffic volumes, the addition of a third through lane in each direction to the frontage road systems could improve expected operations in some areas; however, up to four or five lanes in each direction would be required in others to improve operations to an acceptable V/C Ratio. These additional lanes would result in substantial additional right-of-way acquisition, parcel impacts, and relocations.

Table 5. Projected 2035 Traffic Volumes and Roadway Capacities

SEGMENT	ANALYSIS TYPE	2035 No-Build			2035 Preliminary Study Alternatives						2035 Detailed Study Alternatives					
		No-Build			Preliminary Study Alternative G			Revised Preliminary Study Alternative G			New Location Scenario 1A			New Location Scenario 3A		
		Volume	Capacity	V/C Ratio	Volume	Capacity	V/C Ratio	Volume	Capacity	V/C Ratio	Volume	Capacity	V/C Ratio	Volume	Capacity	V/C Ratio
US 74 Business – Stallings Rd. to Indian Trail Rd/Fairview Rd	Arterial	134,300	50,900	2.64	61,400	54,700	1.12	75,000	54,700	1.37	66,300	50,900	1.30	67,400	50,900	1.32
US 74 Business – Indian Trail Rd/Fairview Rd to Unionville Indian Trail Rd	Arterial	124,500	50,900	2.45	71,300	54,700	1.30	76,200	54,700	1.39	50,100	50,900	0.98	52,400	50,900	1.03
US 74 Business – Unionville Indian Trail Rd/Wesley Chapel Stouts Rd to N. Rocky River Rd	Arterial	116,500	50,900	2.29	32,500	54,700	0.59	45,900	54,700	0.84	35,700	50,900	0.70	38,200	50,900	0.75
US 74 Business – N. Rocky River Rd to Dickerson Blvd	Arterial	121,300	54,400	2.23	129,900	54,700	2.37	69,200	54,700	1.27	45,800	54,400	0.84	48,000	54,400	0.88
US 74 Business – Dickerson Blvd to US 601.	Arterial	121,400	78,000	1.56	129,100	54,700	2.36	71,300	54,700	1.30	45,900	78,000	0.59	48,100	78,000	0.62
US 74 Business – US 601 to NC 200	Arterial	116,200	78,000	1.49	69,600	54,700	1.27	81,700	54,700	1.49	55,200	78,000	0.71	57,200	78,000	0.73
US 74 Business – NC 200 to US 601/Metro Medical Center Campus	Arterial	101,400	78,000	1.30	101,600	54,700	1.86	81,500	54,700	1.49	59,300	78,000	0.76	60,000	78,000	0.77
US 74 Business – US 601/Metro Medical Center Campus to S. Secrest Ave.	Arterial	77,800	54,300	1.43	47,100	54,700	0.86	37,300	54,700	0.68	35,700	54,300	0.66	36,600	54,300	0.67
US 74 Business – S. Secrest Ave. to Austin Chaney St/Main St	Arterial	75,300	40,200	1.87	47,200	54,700	0.86	45,800	54,700	0.84	33,200	40,200	0.83	34,100	40,200	0.85
US 74 Business – Austin Chaney St/Main St to Forest Hills School Rd	Arterial	51,700	40,200	1.29	26,600	54,700	0.48	36,200	54,700	0.66	26,600	40,200	0.66	26,100	40,200	0.65
US 74 Business – East of Forest Hills School Rd	Arterial	44,200	51,000	0.87	21,700	54,700	0.40	N/A	N/A	N/A	21,700	51,000	0.43	20,700	51,000	0.41
US 74 – I-485 to Stallings Rd	Freeway	N/A	N/A	N/A	112,900	86,900	1.30	112,900	86,900	1.30	N/A	N/A	N/A	N/A	N/A	N/A
US 74 – Stallings Rd. to Indian Trail Rd/Fairview Rd.	Freeway	N/A	N/A	N/A	49,100	57,400	0.86	49,100	57,400	0.86	N/A	N/A	N/A	N/A	N/A	N/A
US 74 – Indian Trail Rd/Fairview Rd to Unionville Indian Trail Rd	Freeway	N/A	N/A	N/A	50,700	57,400	0.88	50,700	57,400	0.88	N/A	N/A	N/A	N/A	N/A	N/A
US 74 – Unionville Indian Trail Rd to N. Rocky River Rd	Freeway	N/A	N/A	N/A	51,500	57,400	0.90	51,500	57,400	0.90	N/A	N/A	N/A	N/A	N/A	N/A
US 74 – N. Rocky River Rd. to US 601	Freeway	N/A	N/A	N/A	46,200	57,400	0.80	46,200	57,400	0.80	N/A	N/A	N/A	N/A	N/A	N/A
US 74 – US 601 to NC 200	Freeway	N/A	N/A	N/A	35,000	57,400	0.61	35,000	57,400	0.61	N/A	N/A	N/A	N/A	N/A	N/A
US 74 – NC 200 to Austin Chaney St/Main St	Freeway	N/A	N/A	N/A	24,400	57,400	0.43	24,400	57,400	0.43	N/A	N/A	N/A	N/A	N/A	N/A
US 74 – Austin Chaney St/Main St to Forest Hills School Rd.	Freeway	N/A	N/A	N/A	19,300	57,400	0.34	19,300	57,400	0.34	N/A	N/A	N/A	N/A	N/A	N/A
US 74 – East of Forest Hills Rd	Freeway	N/A	N/A	N/A	15,400	57,400	0.27	37,100	51,000	0.73	N/A	N/A	N/A	N/A	N/A	N/A
Monroe Connector/Bypass - I-485 to Stallings Rd	Freeway	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	41,400	46,800	0.88	95,600	70,800	1.35
Monroe Connector/Bypass - Stallings Road to Indian Trail Rd./Fairview Rd.	Freeway	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	49,100	46,800	1.05	48,200	46,800	1.03
Monroe Connector/Bypass - Indian Trail Rd./Fairview Rd. to Unionville Indian Trail Rd.	Freeway	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	50,700	46,800	1.08	51,200	46,800	1.09
Monroe Connector/Bypass - Unionville Indian Trail Rd. to N. Rocky River Rd.	Freeway	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	51,500	46,800	1.10	52,300	46,800	1.12
Monroe Connector/Bypass - N. Rocky River Rd. to US 601	Freeway	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	46,200	46,800	0.99	46,600	46,800	1.00
Monroe Connector/Bypass – US 601 to NC 200	Freeway	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	35,000	46,800	0.75	35,200	46,800	0.75
Monroe Connector/Bypass – NC 200 to Austin Chaney St.	Freeway	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	24,400	46,300	0.53	24,800	46,300	0.54
Monroe Connector/Bypass – Austin Chaney St. to Forest Hills School Rd.	Freeway	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	19,300	46,300	0.42	19,600	46,300	0.42
Monroe Connector/Bypass – Forest Hills School Rd. to US 74	Freeway	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	15,400	46,300	0.33	16,400	46,300	0.35

4.2 Impacts

Table 6 is a reproduction of Table 4-2 from the *Alternatives Development and Analysis Report* (PBS&J, April 2008). It summarizes impacts for PSA G and Revised PSA G for the screening factors evaluated in the quantitative third screening of preliminary study alternatives. It should be noted that the impacts included in this table for PSA G are not the same as those included in Table 4-2 of the *Alternatives Development and Analysis Report*, because the impacts here represent the updated PSA G as described in Section 2.1.

The impacts for PSA G and Revised PSA G are generally similar. However, Revised PSA G has fewer impacts to businesses, as well as lower impacts to natural resources including wetlands, streams, and floodplains. Although the number of crossings of these natural resources would be the same, as both alternatives follow the same corridor, Revised PSA G includes a narrower footprint, and therefore, reduced impacts to these resources.

Table 6. Impacts to PSA G and Revised PSA G

Screening Factor	Impact Estimate Method	Data Source	PSA G (Updated)*	Revised PSA G
Number of Interchanges	Number along corridor	Design concepts	9	8 (+5)
Construction Cost (Millions \$)	Calculated	Based on per mile costs	1,226,100,000	945,300,000
Number of Minor Road Crossings	Number counted along corridors	GIS databases	63	63
Number of Major Power Easement Crossings	Number counted along corridors	GIS databases, aerial photography	1	1
Number of Railroad Line Crossings	Number counted along corridors	GIS databases, aerial photography	1	1
Parcels Impacted	Number counted within conceptual right of way	GIS databases, tax parcel mapping, aerial photography	747	630
Business Relocations	Number counted within conceptual right of way	GIS databases, tax parcel mapping, aerial photography	481	235
Low-Income Populations	Presence within corridors	Census data	No	No
Minority Populations	Presence within corridors	Census data	Yes	Yes
Parks/Recreation Sites	Number counted within conceptual right of way	GIS databases, Alexandria Drafting Company (ADC) Mapping, aerial photography, and site visits	2	2
Schools/Libraries/ Fire Stations	Number counted within conceptual right of way	GIS databases, ADC Mapping, aerial photography, and site visits	0	0
Churches	Number counted within conceptual right of way	GIS databases, ADC Mapping, aerial photography, and site visits	0	0
Cemeteries	Number counted within conceptual right of way	GIS databases and ADC Mapping	1	1
Properties on or eligible for the National Register of Historic Places	Number counted within conceptual right of way	NC State Historic Preservation Office, GIS databases, studies for Monroe Connector /Bypass	0	0
Hazardous Materials and Superfund Sites	Number counted within corridors	GIS databases, NCDENR	12	12
Stream Crossings	Number of crossings based on the corridor centerline	GIS databases and previous surveys	62	62
Perennial Streams (linear feet)	Linear feet within conceptual right of way	GIS databases and previous surveys	5,018	4,791

Screening Factor	Impact Estimate Method	Data Source	PSA G (Updated)*	Revised PSA G
Intermittent Streams (linear feet)	Linear feet within conceptual right of way	GIS databases and previous surveys	25,493	16,487
NWI Wetlands (acres)	Acres calculated within conceptual right of way	USFWS National Wetland Inventory (NWI) Maps	2.6	1.2
Ponds (acres)	Acres calculated within conceptual right of way	GIS databases and previous surveys	2.4	0.8
Floodplains (acres)	Acres calculated within conceptual right of way	GIS databases	44.1	32.7
Natural Heritage Program Occurrences/Sites	Number counted within corridors	NC Natural Heritage Program	0	0
Protected Species	Known locations	NC Natural Heritage Program, USFWS, previous surveys	0	0
Watersheds (Lake Twitty)	Presence within corridor	GIS databases, NCDENR-Division of Water Quality	Yes	Yes
303(d) Listed Streams	Number counted within conceptual right of way	NCDENR Division of Water Quality	2	2

* Impacts based on PSA G as updated as discussed in Section

4.3 Cost

Revised PSA G is substantially less expensive than PSA G, primarily due to the reduced amount of right of way required. Although the construction cost of Revised PSA G is higher because of the use of a curb and gutter section and periodic retaining walls to maintain the narrow footprint, these construction costs would be offset by the substantial right-of-way savings gained. The DSAs range in cost from \$753 to 786 million. While PSA G would be substantially more expensive at \$1,126.1 million to \$1,403.6 million, Revised PSA G would be \$888.1 to \$1,102.6 million. The median cost for Revised PSA G is 25-30% greater than the DSAs.

5.0 Conclusion

While substantial modifications to the definition of the improve existing US 74 alternative have been evaluated since the *Alternatives Development and Analysis Report* (PBS&J, April 2008), there is no reasonable configuration of the improve existing US 74 alternative that would operate at an acceptable LOS (generally LOS D or better), avoid and minimize impacts to the human and natural environments, and be cost effective. Revised PSA G would operate better and is less expensive than original PSA G; however, the impacts associated with the alternative, which have been avoided and minimized to the maximum extent practicable, still result in the conclusion that this alternative is not reasonable. The number of business relocations – 235 – would have a significant impact on the economy and tax base of Union County, by impacting one out of 20 businesses countywide. In addition, the length of the construction period, which would be approximately 6 to 10 years along the existing corridor, would be an extreme inconvenience for commuters and other travelers.

This additional analysis confirms that significant impacts to businesses, human resources, and motorists along the US 74 corridor would result from implementing PSA G or Revised PSA G (upgrading existing US 74). Therefore, this alternative is not a reasonable or practicable alternative and has been eliminated from consideration. PSA G and Revised PSA G are not being considered DSAs for evaluation in the Draft EIS.

Appendix A – Agency Letters and Meeting Minutes



Turnpike Environmental Agency Coordination (TEAC) Meeting

MEETING MINUTES

Date: December 5, 2007
9:00 am to 11:00 am
NC Turnpike Authority Office Board Room (Suite 400)

Project: STIP U-4763B Triangle Parkway

Triangle Parkway Spotlight:

Attendees:

Eric Alsmeyer, USACE
Kathy Matthews, USEPA
George Hoops, FHWA
Rob Ridings, NCDENR-DWQ
Travis Wilson, NCWRC
Steve DeWitt, NCTA
Jennifer Harris, NCTA
Julie Ryan, NCTA
Nicole Hackler, NCDOT-Alt. Delivery
Nilesh Surti, NCDOT-Alt. Delivery
Barney Blackburn, NCDOT-REU

Dewayne Sykes, NCDOT-RDU
Anne Gamber, NCDOT-Hydraulics
Anne Redmond, HNTB
Adin McCann, HNTB
Elizabeth Scherrer, EcoScience
Richard Bollinger, Transite
Jay Bissett, Mulkey
Michelle Fishburne, Mulkey
Jeff Reck, Mulkey
Cindy Carr, Mulkey

Presentation Materials: (All materials have been posted on the TEAC website)

- Meeting Agenda
- Half-size draft public hearing map
- Draft Permit Drawings
- Pre-Application Wetland Permit Impact Summary
- Handout 2 updated from November 14, 2007 TEAC Meeting – Natural Resource Impacts Figures
- Draft Minutes from the November 14, 2007 TEAC meeting

Purpose:

The purpose of this meeting was to provide a brief project status update, discuss any comments received on 30% Hydraulic Design Plans, review changes to the 30% Hydraulic Plans, and review the draft permit drawings.

General Discussion:

The following information was discussed during the meeting:

- **Project Status Update** – An update on the project status was provided to the meeting attendees. This update included the following information:
 - The EA is going through internal review and is expected to be signed in January 2008, with a public hearing held in March 2008.
 - FHWA and NCDOT will review the quantitative MSAT analysis which will be included in the EA.
 - Cash and cashless toll collection scenarios will be described in the EA. The cash toll collection plazas will remain in the EA for the evaluation of impacts since it provides a “worst-case” scenario

for right-of-way requirements; there are no differences in stream and wetland impacts between the two tolling scenarios.

- NCTA conducted additional coordination with the State Historic Preservation Office (SHPO) regarding the widening of eastbound NC 540 and the flyover ramp, as well as the extension of the NC 147 median widening north of I-40. Based on this coordination, the SHPO has stated that they do not anticipate any impacts to historic properties or archaeological resources within the limits of the Preferred Alternative. Consequently, no further studies will be performed. NCTA plans to conduct similar coordination with the USFWS.
- A quantitative Mobile Source Air Toxics (MSAT) analysis is currently underway. After the analysis report is reviewed by FHWA and NCDOT, the findings will be incorporated into the EA document.
- NCDOT provided their comments on the designs and the revisions are being incorporated into the EA and public hearing map.

USEPA commented that if the 404/401 permit application public notice is issued before they have reviewed a FONSI, the USEPA may recommend denial of the permit application in order to assure their concerns have been adequately addressed in the FONSI. The USEPA is concerned about having sufficient time to review the EA, make comments, and review the response to those comments prior to the permit being issued. USACE commented that the permit application public notice was being posted to coincide with the public hearing so that comments would be received concurrently. USEPA stated that under Merger process there are two opportunities to comment in response to public notice. USACE recommended submitting the permit application after approval of the FONSI as a means of avoiding USEPA's possible recommendation for denial of the permit. NCTA and Mulkey acknowledged there will be opportunity for USEPA to provide comment prior to approval of the 404/401 permit. NCTA stated that delaying permit application would result in an overall project implementation delay of two years. The regional air conformity determination assumes that Triangle Parkway is open by 2010.

The Rapanos determination forms are currently under internal review by NCTA. NCTA intends to distribute the Rapanos forms to the USACE prior to submission of the 404/401 permit application. The 30% Hydraulics Plans are currently under review by NCDOT. The plans have been reviewed in detail by the NCTA and its General Engineering Consultant, so it is believed that any comments will be minor in nature. NCTA stated that it would be prepared to discuss any spot changes at the next TEAC meeting in January. USACE commented that another meeting in January to review spot changes would not be necessary from their perspective. It was decided that any major changes to the drainage plans could be discussed directly with USACE and NCDENR-DWQ.

Review of the Draft Permit Drawings:

Jeff Reck proceeded with the review of the Draft Permit Drawings noting changes that had been made to the 30% hydraulic plans based on comments received at the November TEAC meeting. The following is a discussion of each wetland or stream site being impacted by the project:

General

- There are crossings at Burdens Creek, Kit Creek, and their tributary waters; all waters within the project are Class 'C' nutrient sensitive waters.
- There are no Water Supply Watersheds or 303(d) waters in the project boundaries.
- The project falls within the Cape Fear River Basin.
- Grass swale treatment will occur throughout the project in the median and in areas where flat slopes can be maintained.
- Rip rap has been removed from stream channels where requested.
- Pre-formed scour holes will also be utilized as treatment measures.
- Proposed culverts will be buried 1-foot to provide for fish passage.
- Cross pipes in jurisdictional perennial and intermittent streams will be buried 1-foot for pipes greater than 48 inches and 20% of the pipe diameter for culverts less than 48 inches in diameter.

Sheet 2-DET-1

- Site 15 (Sheet 9 of 83)
 - Remove "ditch" text at culvert inlet (south of - Y3 -).

Sheet 4

- Rip rap was removed from the stream bed and is now located above the ordinary high water level at the culvert outfall. Permanent impact calculations include rip rap placement downstream of the culvert. Temporary impact calculations include 10 feet beyond the proposed construction limits. Outlet and Inlet details will be included with the final permit drawings.
- Sheet 16 of 83, culvert will be buried one foot.
- Site 2 (Sheet 14 of 83)
 - Rip rap was removed from stream bed and is now located above ordinary high water level at culvert outfall. Permanent impact calculations include rip rap placement downstream of culvert. Temporary impact calculations include 10 feet beyond proposed construction limits. Outlet and Inlet details will be included with the final permit drawings.
 - Permanent wetland impacts include wetland area draw-down limits due to excavation. Mechanized Clearing limits extend 10 feet beyond the slope stakes. There is about 5.5 feet of Mechanized Clearing that is not included in the drawdown limits.
 - Sheet 17 of 83, culvert at STN 99 + 37 will be buried 1-foot for fish passage.
- Site 3 (Sheet 12 of 83)
 - Site 3: Define construction limits and add note to construction drawings for contractor to avoid direct wetland impacts (no clearing) at draw-down areas.
- General Comment
 - Plan Sheets 6, 7, and 12 show ditch locations where storm water treatment will occur.
 - EPA asked for level spreaders to be used where possible to dissipate energy. USACE commented that level spreaders are not normally required. NCDOT-Hydraulics stated that the use of level spreaders may be difficult due to topography.

Sheet 5

- Site 4 (Sheet 18 of 83)
 - Intermittent stream impact calculations include the area 10 feet beyond cut/fill slope.

Sheet 6

- Site 5 (Sheet 22 of 83)
 - Dual box culvert with sill will be buried one foot for fish passage.
 - Temporary impact calculations include area beyond culvert inlet headwall and at rip rap.
 - Lateral ditch will discharge directly to stream; ditch has rip rap due to high velocities. High velocities limit opportunities for treatment in this area.
 - 15-inch CSP pipe at steep slope has direct stormwater discharge due to grades.
 - Intermittent stream impact calculated as a total take.
 - Rip rap was removed from stream bed and is now located above ordinary high water level at culvert outfall. Permanent impact calculations include rip rap placement downstream of culvert. Temporary impact calculations include 10 feet beyond proposed construction limits. Outlet and Inlet details will be included with the final permit drawings.
- Site 6 (sheet 22 of 83)
 - Stream impacts occur at culverts, including impacts between back-to-back culverts.
 - Wetland impact calculated as a complete take.
 - Temporary impact calculation includes the area 10 feet beyond construction limits.
 - Sheet 24 of 83 shows wetland impacts calculated as total take.
 - Rip rap was removed from stream bed and is now located above ordinary high water level at culvert outfall. Permanent impact calculations include rip rap placement downstream of culvert. Temporary impact calculations include 10 feet beyond proposed construction limits. Outlet and Inlet details will be included with the final permit drawings.
- Site 7 (sheet 26 of 83)
 - Impacts from temporary fill in channel at extension of existing pipe.

- Site 8 (sheet 24 of 83)
 - Stream impacts calculated up to construction limits because of cut area for lateral ditch.
 - USACE requested that secondary impacts be avoided by including natural channel design structure in channel to prevent a headcut from developing in stream because of storm water flow off adjacent parking lot.
 - Mulkey noted that stream has areas of surface bedrock in channel; this should be confirmed and noted as it will prevent development of a headcut in the channel.
 - The impacts will be reduced to 10 feet beyond the construction limits of the proposed ditch.

- Site 9 (sheet 24 of 83 and Sheet 34 of 83)
 - Permanent impacts occur to entire stream length (both intermittent and perennial segments).
 - Majority of relocated channel (west side of – SR 2 –) is intermittent flow. Natural channel design is not required for relocated intermittent channels. Relocated channel will be rip rap because it is located in a steeper area upslope of existing location. [note: ditch profile is shown on Sheet 74 of 83.]
 - Mulkey noted that velocity control design considers (in sequence) use of V-ditch, grass-lined base ditch, check dam, and then rip rap. Steep topography and additional off-site drainage requires use of rip rap in grassed swale at this location.
 - NCWRC suggested that monthly site visits during construction might be a good solution to ensure erosion is not occurring. If grass is not being established, recommendations and adjustments can be made in the field.
 - The use of a pre-formed scour hole (PSH) at the end of the 60-inch pipe was requested by EPA. USACE noted that a 60-inch pipe is too large for use of pre-formed scour hole (PSH).
 - Primary roadway drainage will flow to a grassed swale created between – SR 2 – and – L – roadway.
 - Sheet 28 of 83 through Sheet 31 of 83 are culvert profiles. Culverts have sills and are buried one foot for fish passage.

- General Comments
 - EPA noted that hydraulic design plans will need to comply with NPDES permit requirements.
 - EPA requested that stormwater velocities be addressed in upland areas (where possible) before discharge occurs so that receiving water channel does not need to be armored with rip rap.
 - USACE noted that DWQ erosion control will require armor at stormwater outlets because of potential for channel failure.

Sheet 7

- Site 10 (Sheet 32 of 83 and Sheet 34 of 83)
 - This intermittent stream drains storm water from adjacent parking lot.
 - Permit drawings will clearly show rip rap in base ditches and application package to include design detail sheets.

- Site 11 (Sheet 36 of 83)
 - Permanent impacts occur to the intermittent stream segment in this location.

Sheet 8

- Site 11 (Sheet 38 of 83)
 - Stream NSD changes from intermittent to perennial flow beginning at STN 185 + 21. Permanent impacts that are a total take occur to both intermittent and perennial stream segments.
 - Storm water flow is being relocated through 48-inch pipe from right (east) side of roadway to ditch on west side of roadway.
 - At approximately STN 188, flow is relocated through 72-inch pipe from west side of roadway back to east side of roadway. This is to address grade and bedrock near surface and to mimic existing stream characteristics.
 - Lateral ditches between 48-inch pipe and 72-inch pipe are two foot deep with rip rap lined channel with rip rap. The back side of the cut slope will be rip rap lined to prevent failure from erosion at critical locations.
 - Existing CMP at power line crossing (near STN 180) is an existing impact and should not be included in permit impact calculations.
 - Sheet 42 of 83 shows the 72-inch pipe profile with outlet being buried one foot below existing channel elevation.

- General Comments
 - Ditch contour detail missing from permit drawing between approximately STN 188 and STN 194. The ditch contours will be added to the revised permit drawings.

Sheet 9

- Site 11 (Sheet 40 of 83)
 - The 72-inch pipe was realigned to better connect to the existing receiving stream channel (shown on Sheet 40 of 83). There is rip rap in the channel at the outfall to stabilize the channel.
 - USACE stated rip rap should not be above the existing channel elevation but should be excavated and keyed-into the channel.
- Site 12 (Sheet 40 of 83)
 - A meander bend of the stream that flows through wetland NWE is located at the toe of the slope at the draw-down limits of the wetland. The two ends of the stream will be connected by a ditch.
 - NCDOT-Hydraulics stated that they do not calculate draw-down effects for excavation in wetlands less than 1 foot.
 - Mechanized clearing in wetlands are calculated to be 10 feet beyond slope stakes.

Sheet 10

- Site 13 (Sheet 43 of 83)
 - Wetland impacts at NWD are a total take.
- Site 14 (Sheet 43 of 83)
 - Wetland impacts to NWC at Burdens Creek is a total take. This site continues to the left side of Sheet 45 of 83.

Sheet 11

- Site 14 (Sheet 45 of 83)
 - Continuation of the total take from wetland impacts at bridge end bent fill slope.
 - Permanent wetland impacts occur to NWH from bridge bent. Temporary impacts occur from construction.
 - Temporary stream impacts from placement of rip rap at top of bank occur at Burdens Creek where lateral base ditch ties into stream channel (northwest side of bridge). USACE states this impact can be calculated as square footage to waters rather than linear foot impact; mitigation will not be required.

Sheet 12

- Site 15 (Sheet 47 of 83)
 - Culvert extension will have energy dissipater pad and basin at outfall. Detail drawings for dissipater basin will be added to the permit drawings for the 404/401 permit application.
 - Storm water will be treated in median of roadway between approximately STN 236 and STN 245.

Sheet 13

- Site 16 (Sheet 50 of 83)
 - Temporary intermittent stream impacts from replacement of two existing cross pipes; the pipes will be buried one foot. Permanent impacts will occur where cross pipes are extended.
- Site 17 (Sheet 50 of 83)
 - Perennial stream impacts will occur from the extension of culvert under – Y4RPC – ramp.
 - Rip rap was removed from stream bed and is now located above ordinary high water level at culvert outfall. Permanent impact calculations include rip rap placement downstream of culvert. Temporary impact calculations include 10 feet beyond proposed construction limits. Outlet and Inlet details will be included with the final permit drawings.
 - Permit application will reference back to culvert profile sheet.
- Site 18 (Sheet 50 of 83)
 - Intermittent stream impacts occur from burying stream.

Sheet 29

- Site 18 (Sheet 54 of 83)
 - Continuation from Sheet 50 of 83. The existing exit ramp (Exit 273) to T.W. Alexander Drive will change from a T-intersection with a stop sign to a wider free-flow ramp. Fill slopes for the widened ramp will create intermittent stream impacts (shown near STN 20+50).
 - Storm water treatment will occur in the median at this location.

Sheet 56 of 83 through Sheet 83 of 83 are elevation profiles.

- **Previous Action Items:**

- None

- **New Action Items:**

- The permit application package will note any changes to hydraulic design that result from NCDOT Hydraulics Unit review.

Mulkey will complete internal review of Rapanos jurisdictional determination forms and provide them to the NCTA for review by December 11, 2007. Rapanos forms will be provided to the USACE and DWQ prior to submittal of the 404/401 permit application package.

- **Resolutions:**

- USACE anticipates that unless there are major design changes there is no need to review the permit drawings at the January 2008 TEAC meeting. USACE requested that NCTA itemize any changes made since the 30% hydraulic review and permit drawing review TEAC meetings. Any changes in culvert sizes resulting from the NCDOT review of the 30% Hydraulic Plans and draft culvert structure reports should also be noted and should not require another TEAC meeting.

- **Next Steps:**

- The EA will be available for review in January 2008.
- The 404/401 permit application will be submitted in late January/early February 2008.

Date: December 5, 2007
1:00 pm to 4:30 pm
NC Turnpike Authority Office Board Room (Suite 400)

Project: TIP R-3329 Monroe Connector – NHF-74(21)
TIP R-2559 Monroe Bypass – NHF-74(8)

Monroe Connector / Bypass Spotlight:

Attendees:

Donnie Brew, FHWA	Ryan White, NCDOT-PDEA
George Hoops, FHWA	Steve DeWitt, NCTA
Chris Militscher, USEPA	Jennifer Harris, NCTA
Kathy Matthews, USEPA	Julie Ryan, NCTA
Steve Lund, USACE (by phone)	Christy Shumate, HNTB
Marella Buncick, USFWS	Jerry McCrain, EcoScience
Renee Gledhill-Early, NCDCCR-HPO	Michael Gloden, EcoScience
Marla Chambers, NCWRC	Carl Gibilaro, PBS&J
Polly Lespinasse, NCDENR-DWQ	Kiersten Giugno, PBS&J
Dewayne Sykes, NCDOT–Roadway	

Presentation Materials: (All materials have been posted on the TEAC website)

- Meeting Agenda
- Draft TEAC Meeting Minutes (November 14, 2007)
- USFWS Comments on Draft Alternatives Development and Analysis Report (email, December 4, 2007)
- USEPA Comment on Draft Alternatives Development and Analysis Report (letter, December 4, 2007)
- Local Government comments on alternatives
- Preliminary Study Corridors Map (September 24, 2007)
- Recommended Detailed Study Alternatives Map (November 2007)
- Table 4-2 Quantitative Screening of Preliminary Alternatives from Draft Alternatives Development and Analysis Report
- Draft Alternatives Development and Analysis Report Figures 4-1a through 4-1d

Purpose:

The purpose of this meeting was to discuss agency and public comments on Draft Alternatives Development and Analysis Report and recommended detailed study alternatives.

General Discussion:

- **Draft Alternatives Development and Analysis Report** – a Draft Alternatives Development and Analysis Report was distributed for public and agency review on November 6, 2007.
 - A project newsletter was distributed to the project mailing list of 25,000 people announcing the availability of the Draft Alternatives Development and Analysis Report for public review. However, the newsletter contained a typographical error in one of the three references for the contact email address. In response to public concern about this error, the comment period has been extended from December 5, 2007 to December 21, 2007.
- **Summary of Public Comments on Draft Alternatives Development and Analysis Report** – Since the Draft Alternatives Development and Analysis Report was distributed in November, NCTA has received 68 emails, four form letters, and one letter from Central Piedmont Community College (CPCC) in opposition to Corridor Segment 18A. In addition, NCTA has received resolutions from the Town of Stallings, the Town of Matthews, and the City of Monroe in opposition to Segment 18A. The Town of Stallings, the City of Monroe and the CPCC support Segment 2. The comment letter from the Town of Indian Trail noted that Corridor Segments 2 and 22A are not consistent with the adopted Transportation Network Plan of the Town of Indian Trail Comprehensive Plan; however, the town supports the project.

The primary opposition to Corridor Segment 18A has to do with its proximity to the Stallings Elementary School, currently under construction. However, it was clarified that due to the corridor width, direct impacts to the school could continue to be avoided. Impacts associated with potential land use conflicts between the school and the project (e.g., noise, air quality) would be analyzed and presented in the Draft Environmental Impact Statement (DEIS).

- **Agency Discussion on Draft Alternatives Development and Analysis Report** – Since the Draft Alternatives Development and Analysis Report was distributed in November, NCTA has received written comments from USEPA (letter dated December 4, 2007) and USFWS (email dated December 4, 2007).

USEPA noted that of the new location alternatives, Alternatives A and C would have the fewest human and natural impacts. Alternatives B and D would result in additional impacts and cost. At this point Mr. Gibilaro informed the group that segment 22A, included in Alternatives A and C, as examined in the draft report does not include an interchange at Rocky River Road. However, he was recently informed by a representative from the City of Monroe that the city would like an interchange at this location for access to the regional airport. In addition, the MUMPO Long Range Transportation Plan (LRTP) does include an interchange at this location. With an interchange, the level of impacts associated with Alternatives A and C would be similar to those stated for B and D. USEPA noted that based on this new information, Alternatives B and D could not be eliminated at this time and that the agency will need traffic data to justify the inclusion of an interchange at Rocky River Road. USEPA also expressed concerns with any interchange at Rocky River Road because of possible degradation of the 303d listed stream in the vicinity. For Corridor Segment 30, there would be potential runoff and stormwater impacts to the floodplain and stream in this area.

Without an interchange at Rocky River Road the project would not be consistent with the LRTP and that the FHWA would not be able to approve the Final EIS. As such, either this interchange will need to be included in Alternatives A and C, or the LRTP will need to be revised to delete the interchange from the LRTP.

NCWRC raised a concern that NCTA's proposed detailed study alternatives essentially fall within a single large corridor. NCWRC proposed that NCTA either 'bulb out' areas where the current alternatives are closest and then conduct a detailed analysis to determine alignment location within the expanded corridor or break the study area into four sections, and through detailed study, compare each section to determine alignment location. USEPA and USFWS agreed with the NCWRC regarding the range of alternatives. The USEPA requested that Alternative G (improve existing) be carried forward as a detailed study alternative in the DEIS to serve as a baseline to provide a comparison between alternatives. USEPA added that it was obvious that the improve existing alternative would not be selected as the preferred alternative but felt it should be studied in detail.

NCWRC noted that Alternative G and a hybrid alternative of improve existing and new location should be carried forward for detailed study; however, other agencies, including USEPA, did not agree that a hybrid alternative should be studied in detail. NCWRC expressed concern with the typical section for upgraded facilities that the 74-feet between the freeway section and the frontage road (see Figure 4-2 of the Draft Alternatives Development and Analysis Report) is excessive and requested clarification regarding the requirement that the NCTA provide a free alternative route. The NCTA responded that by law an existing facility can not be tolled without providing a free alternate route and that in doing so approximately 500 business relocations would result from Alternative G. USEPA noted that the business and residential relocations associated with the new alignment alternatives are well below the State average (12 businesses/mile, 9 residences/mile, values provided by USEPA).

NCWRC noted that 292 comments from the June 2007 Citizens Informational workshops preferred improvements to Secret Shortcut Road. The NCTA responded that these comments were included on form letter in opposition to Corridor Segment 22 and were received prior to the development of Corridor Segment 22A that avoids impacts to the subdivision that was most outspoken against Corridor segment 22. Since that time, the public has not requested improvements to Secret Shortcut Road.

USFWS requested that because indirect and cumulative impacts on the Goose Creek watershed were not considered in the screening process, Alternative G should be analyzed in a preliminary Indirect and Cumulative Impact Assessment (ICI). The USFWS noted that the results of the preliminary ICI should determine whether or not Alternative G is carried forward for analysis in the DEIS. NCWRC and USFWS noted that new location alternatives generally result in increased urban sprawl. USEPA commented that growth would likely not be significant beyond the interchange areas. USFWS also suggested that NCTA consider eliminating the interchange at US 601 with new location alternatives to reduce potential indirect impacts on the Goose Creek watershed. NCDENR-DWQ agreed that additional information on potential indirect and cumulative impacts of the upgrade existing alternative should be evaluated before eliminating the alternative from consideration.

NCTA asked the USACE (participating via telephone) for input. USACE noted there may be a benefit to adding indirect and cumulative impacts to the alternative screening process, but warned against losing sight of the cumulative impacts to natural resources associated with hundreds of business relocations, each requiring new Nationwide Permits. USACE also noted that for purposes of a Section 404 permit, Alternative G is not a practicable alternative.

- **Conclusion** - The NCTA will consider including Alternative G in a preliminary ICI study and eliminate it from further consideration at that time if data shows it is not a reasonable or practicable alternative. USEPA does not feel that the information given so far is sufficient to make any decisions.

Previous Action Items:

- Agencies to review the ***Draft Alternatives Development and Analysis Report*** when it is made available on November 5, 2007, provide written comments, and be prepared to discuss at the December 5, 2007 TEAC meeting.
[The Draft Alternatives Development and Analysis Report was distributed on November 6, 2007. As of December 5, 2007, written comments were received from USEPA and USFWS.]

New Action Items:

- Agencies will submit written comments on the Draft Alternatives Development and Analysis Report by January 1, 2008.

Resolutions:

- None

Next Steps:

- There will not be a January TEAC meeting.
- Functional designs will be prepared for detailed study alternatives.
- Environmental field studies will be conducted for detailed study alternatives.

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 4 RALEIGH OFFICE
TERRY SANFORD FEDERAL COURTHOUSE
310 NEW BERN AVENUE
RALEIGH, NORTH CAROLINA 27601

Date: December 4, 2007

Ms. Jennifer Harris, P.E.
North Carolina Turnpike Authority
1578 Mail Service Center
Raleigh, North Carolina 27699-1578

RE: USEPA Comments: Draft Alternatives Development and Analysis Report
Monroe Connector/Monroe Bypass Toll Project; From I-485 to US 74
Mecklenburg and Union Counties
TIP Project Numbers: R-3329 and R-2559

Dear Ms. Harris:

The U.S. Environmental Protection Agency (EPA) Region 4 Office has reviewed the November 5, 2007, above referenced report from the North Carolina Turnpike Authority (NCTA) and Federal Highway Administration (FHWA) for the Monroe Connector/Monroe Bypass project. EPA understands that the proposed facility is expected to be a 4-lane, divided highway that would ultimately be re-signed as Interstate 74 between Marshville and I-485 (Charlotte Outer Loop) for an approximate distance of 22 miles. NCTA requested comments from Section 6002 participating agencies by December 5, 2007. The project is not proposed for the NEPA/Section 404 Merger 01 process. EPA's records indicate that the connector portion of the project was previously a Merger 'pipeline' project when with the N.C. Department of Transportation.

The draft alternatives report includes a quantitative geographical information system (GIS) analysis screening of preliminary study alternatives. Ms. Kathy Matthews and I specifically met to review the draft report and discuss the alternatives that EPA believes should be carried forward for further analysis in the NEPA document (i.e., Draft Environmental Impact Statement – DEIS).

Based upon our review of the draft report and the screening information provided, EPA offers the following recommendations. From Table 4-2, there are 25 preliminary study alternatives. However, there are 7 primary alternative corridors (i.e., A, B, C, D, E, F and G) under consideration to be carried forward in the NEPA document with variations included for all but Corridor G (Improve existing for the entire project length). EPA concurs with the NCTA recommendation to eliminate Alternatives E and F, including E1, F1, E2, F2, E3 and F3. These alternatives compared to some of the others have significant impacts to both the human and natural environment and offer no discernible traffic benefits. Similarly, preliminary study alternatives B, B1, B2, B3, D,

D1, D2, and D3 have substantially higher impacts to both human and natural resources compared to the A and C corridor alternatives. EPA recommends that the B and/or D alternatives be eliminated from further detailed study.

As previously discussed as several “TEAC” meetings for this and other turnpike projects, EPA requests that Alternative G be carried forward in the NEPA document as a baseline of comparison to the remaining new location alternatives (Alternatives A and C). EPA recognizes the potentially substantial impacts to businesses along existing US 74. The ‘no-build’ alternative does not meet the stated purpose and need identified by NCTA and FHWA for the proposed project. Council on Environmental Quality (CEQ) and implementing NEPA regulations require that a full range of alternatives be considered. The new location Alternatives A and C, by themselves or compared to the ‘no-build’, do not provide that ‘full range’ that EPA believes is needed for comparison purposes. Some of the ‘ability to meet project purpose and need’ comments that are included in Section 1.2.6, Improve Existing US 74 support this general position.

EPA has identified an environmental concern regarding the typical new location section and the proposed median width of 70 feet and the ‘improve existing’ typical section with frontage roads and a 74-foot median width (Figure 4-2). EPA requests further clarification and justification regarding the need for the proposed expanded median widths in the DEIS.

EPA also has a general comment regarding the presentation of technical data at this preliminary screening level based upon GIS data. Based upon recent conversations, FHWA and other agencies recognize the potential accuracy and precision issues for developing quantitative impact numbers at this stage of planning and using GIS data. Stream impacts are presented to the ‘foot’. NWI wetlands and pond impacts are represented to the ‘tenth of an acre’. Floodplain impacts are also shown in the tables to the nearest foot. EPA believes that this level of accuracy of impacts to natural resources is neither necessary for the purpose of alternative screening nor required for DEIS comparison purposes. FHWA and NCTA might consider reasonable ‘rounding’ to significant estimates at this stage in planning.

Based upon recent correspondence received from the public and NCTA’s response, EPA requests that a detailed analysis and disclosure be conducted regarding air conformity requirements for the combined Monroe Bypass/Monroe Connector projects. As part of this analysis, the NCTA may also need to consider the potential cumulative effects to air quality from the Gaston East-West project (U-3321) which is another potentially large NCTA candidate project, as well as other NCDOT TIP projects proposed in Mecklenburg, Union and Gaston counties (e.g., R-2123CE, R-2248E, R-2248F, R-4902, R-3101, R-2632A, U-2507, U-3603, U-3633, etc.).

This proposed NCTA project might also be a ‘pilot’ for a full quantitative analysis for Mobile Source Air Toxics (MSATs) that are required to be analyzed under Section 202 of the Clean Air Act and are more fully addressed in the Final Rule on Controlling Emissions of Hazardous Air Pollutants from Mobile Sources (66 Federal Register 17229;

3/29/2001). Currently, FHWA's interim guidance includes a very general qualitative analysis and cites that project specific information is unavailable. NCTA has recently stated that the public's concern for MSATs will be further examined in the DEIS.

EPA again requests that a more 'robust' quantitative analysis needs to be conducted for this project, including development of an emissions inventory, obtaining 'near-roadside' baseline monitoring data, and an evaluation of the potential health impacts (including cancer risk estimates based upon published values) for the different detailed study alternatives A, C and G. The quantitative analysis should include the identification of existing and potential 'near-roadside' sensitive receptors, such as day care facilities, nursing homes, hospitals, etc. Please feel free to contact EPA Region 4's Air Toxics Assessment and Implementation Section for further guidance on performing a technically sound, project specific analysis for the 21 MSAT compounds that are found for highway projects.

EPA appreciates the opportunity for early comments on the draft alternatives report and to highlight some of the issues of environmental concern on this proposed toll facility under SAFETEA-LU Section 6002. Should you have any questions, please feel free to contact me at 919-856-4206. Thank you.

Sincerely,

Christopher A. Militscher, REM, CHMM
Merger Team Representative
NEPA Program Office - Raleigh

For: Heinz J. Mueller, Chief
EPA Region 4 NEPA Program Office

cc: Steve Lund, USACE
George Hoops, FHWA
Brian Wrenn, NCDWQ



**North Carolina Department of Cultural Resources
State Historic Preservation Office**

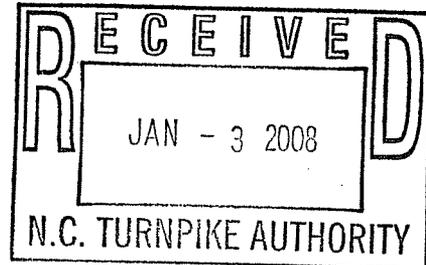
Peter B. Sandbeck, Administrator

Michael F. Easley, Governor
Lisbeth C. Evans, Secretary
Jeffrey J. Crow, Deputy Secretary

Office of Archives and History
Division of Historical Resources
David Brook, Director

December 21, 2007

Jennifer H. Harris, PE
NC Turnpike Authority
1578 Mail Service Center
Raleigh, NC 27699-1578



RE: Draft Alternatives Development & Analysis Report and Reconnaissance Report on Historic Architectural Resources, Monroe Connector/Bypass, R-3329 & 2559, Mecklenburg and Union Counties, CH03-3581

Dear Ms. Harris:

Thank you for your letter of November 5, 2007, transmitting the draft Alternatives Development and Analysis Report. We also received and reviewed the above referenced reconnaissance report, prepared by the Department of Transportation's Historic Architectural Unit, for the same project. Given the relationship of the two documents to one another, we offer our comments in this single letter.

The architectural report correctly lists and describes properties that are listed in the National Register of Historic Places and those previously determined eligible for listing. It also provides a list of three properties with exceptional architectural merit, which were identified as part of a visual survey of 100% of the Area of Potential Effects (APE) and would require additional study. Because the survey work was only a reconnaissance level, there may be other properties in the APE that could be eligible for listing under Criteria A, B, or D and were not identified. Once the alternatives for in-depth study are selected, additional architectural survey work may be needed.

As for archaeological resources, we understand that a plan for survey and testing will be developed once a preferred/least environmentally damaging alternative is selected. This is acceptable to us.

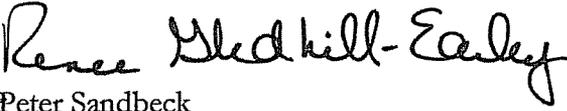
Although the three sites identified for additional study are not on the alternatives map, we understand that this is likely due to the timing of the two reports. However, we would note that the Indian Trail Presbyterian Church, which was previously determined eligible for listing in the National Register is not shown on Figure 4-1a.

At this point in the process of narrowing alternatives, we find that improve the existing and any of the alternatives with an interchange near the Secret Farm and Hiram Secret House are also likely to adversely affect these resources.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919-733-4763. In all future communication concerning this project, please cite the above referenced tracking number.

Sincerely,


Peter Sandbeck

cc: Mary Pope Furr, NCDOT/OHE
Matt Wilkerson, NCDOT/OHE

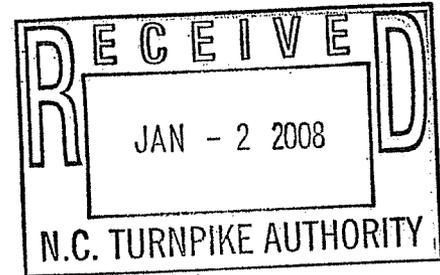


United States Department of the Interior

FISH AND WILDLIFE SERVICE

Asheville Field Office
160 Zillicoa Street
Asheville, North Carolina 28801.

December 26, 2007



Ms. Jennifer H. Harris, P.E.
Staff Engineer
North Carolina Turnpike Authority
1578 Mail Service Center
Raleigh, North Carolina 27699-1578

Dear Ms. Harris:

Subject: Comments on the Draft Alternatives Development and Analysis Report for the Proposed Monroe Connector/Bypass Project, Mecklenburg and Union Counties, North Carolina (TIP Nos. R-3329 and R-2559)

This letter responds to a request for our review and comments regarding the selection of alternatives for detailed study for the subject project. Our comments are provided in accordance with the Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-667e), and section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543).

The North Carolina Turnpike Authority (NCTA) continues to study improvements to US 74 from east of Monroe, North Carolina, to the I-485 Charlotte Outer Loop. We have participated in the NCTA's interagency meetings to discuss various levels of screening to help determine appropriate alternatives to carry forward for detailed study, and the NCTA has held several public meetings and has published a newsletter to gather public input regarding alternatives to study in detail. Currently, the NCTA is proposing to carry forward four primary alternatives (Alternatives A-D) with variations (1-3) of each, which have minor differences from the primary alternatives. Alternatives E, F, and G are proposed to be dropped from further consideration. These three alternatives involve partially or completely improving the existing US 74 route. When viewed at a large scale, the four alternatives that are proposed to remain for detailed study represent one single corridor with three variations.

General Concerns - We are concerned about the direct impacts from new location alternatives to streams, wetlands, fish and wildlife habitat, and sensitive species in the project area. The current proposal--to study only those alternatives that will be built on new location--greatly limits the opportunity to avoid impacts to the natural environment. The proposed project study corridors contain portions of Richardson Creek, North and South Fork Crooked Creek, Stewart's

Creek, and East Fork Stewart's Creek and their tributaries. Richardson Creek supports populations of native freshwater mussels, including two federal species of concern--the Savannah lilliput (*Toxolasma pullus*) and the Carolina creekshell (*Villosa vaughaniana*). North and South Fork Crooked Creek contain the Savannah lilliput and Carolina creekshell as well as a third mussel that is also a federal species of concern--the Atlantic pigtoe (*Fusconaia masoni*). These populations of the Savannah lilliput are among the few remaining populations of this species in the Yadkin-Pee Dee River basin and are in decline.

Federally Listed Species - The currently proposed project corridors are just south of the Goose Creek watershed, which supports one of ten remaining populations of the federally endangered Carolina heelsplitter (*Lasmigona decorata*) and is designated as critical habitat for the heelsplitter. This population is considered vital to the continued existence of the species. Although there likely will be no direct effects to the Goose Creek watershed associated with the project, we believe there is the potential for indirect and cumulative impacts from development induced by construction of this highway project. Implementing measures to protect the Goose Creek watershed and its habitat are essential to maintaining the heelsplitter in North Carolina. We continue to recommend protective measures as described in our letter dated February 13, 2007, in which we responded to a request for our review and comments regarding the initiation of scoping for this project.

At this time we recommend that Alternative G--improving the existing US 74 corridor alternative--remain an option for study. This alternative minimizes direct impacts to natural resources and is physically the farthest from the Goose Creek basin. Alternative G will likely have the least amount of induced development, and whatever development does result from implementing the project will be concentrated in an already-developed area. Alternative G also provides a more realistic comparison to the new-location alternatives for all impacts (direct, indirect, and cumulative) than does the no-build alternative. In addition to the proposed set of alternatives, we recommend that at least one alternative eliminate the interchange at US 601. This interchange has the potential to induce development directly in the Goose Creek watershed through improvements to US 601 itself as well as through the growth and development along US 601 that will be facilitated by the new highway.

We appreciate the opportunity to provide comments at this early stage in project planning. If you have questions about these comments, please contact Ms. Marella Buncick of our staff at 828/258-3939, Ext. 237. In any future correspondence concerning this project, please reference our Log Number 4-2-07-132.

Sincerely,



Brian P. Cole
Field Supervisor

cc:

Ms. Marla J. Chambers, Western NCDOT Permit Coordinator, North Carolina Wildlife
Resources Commission, 12275 Swift Road, Oakboro, NC 28129

Ms. Polly Lespinasse, Mooresville Regional Office, North Carolina Division of Water Quality,
610 East Center Avenue, Suite 301, Mooresville, NC 28115

Mr. Steve Lund, Asheville Regulatory Field Office, U.S. Army Corps of Engineers, 151 Patton
Avenue, Room 208, Asheville, NC 28801-5006

Mr. Chris Militscher, Environmental Protection Agency, 1313 Alderman Circle, Raleigh, NC
27603

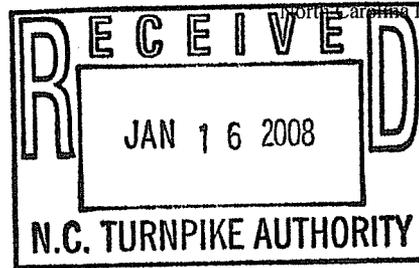
Mr. John F. Sullivan, III, Division Administrator, Federal Highway Administration, 310 New
Bern Avenue, Suite 410, Raleigh, NC 27601



Michael F. Easley, Governor

William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Coleen H. Sullins, Director
Division of Water Quality



January 11, 2008

Ms. Jennifer Harris, P.E.
North Carolina Turnpike Authority
1578 Mail Service Center
Raleigh, NC 27699-1578

SUBJECT: Comments on Proposed Draft Alternatives Development and Analysis Report for the Monroe Connector/Bypass, Dated November 5, 2007, Union and Mecklenburg Counties, STIP Project Nos. R-3329 and R-2559

Dear Ms. Harris:

This letter is being provided in response to the North Carolina Turnpike Authority's (NCTA) request for comments from the North Carolina Division of Water Quality (NCDWQ) for the above referenced project. The purpose of the above referenced project is to improve mobility and capacity in the US 74 corridor from I-485 in Mecklenburg County to the area just west of the Town of Marshville in Union County, for a distance of approximately 20 miles.

Alternatives for the project were developed and then screened to determine whether they had the ability to meet "purpose and need" and whether the alternatives would be "practical and reasonable". Based on this screening process, 25 Preliminary Study Alternatives (PSAs) progressed to the Quantitative Third Screening. Subsequently, as a result of the Quantitative Third Screening, the NCTA is recommending that nine (9) PSAs be eliminated from further study in the Draft Environmental Impact Statement (DEIS) due to overall higher impacts than the remaining 16 PSAs.

At this time, NCDWQ is prepared to recommend elimination of Alternatives E and F, including E1, E2, E3 F1, F2 and F3 due to overall substantially higher impacts associated with these alternatives. However, NCDWQ is not prepared to eliminate any other alternatives at this time, including Alternative G and any alternative which incorporates Section 22A (all A and C alternatives).

Alternative G (improve existing US 74 – controlled access highway), as documented in the report, meets the purpose and need of the project. The remaining alternatives, A, B, C and D, appear to represent a single "corridor" with only minor variations in location. Based on this information, NCDWQ does not believe that eliminating Alternative G, at this time, allows for consideration of "all" feasible alternatives, specifically since this alternative continues to meet the purpose and need of the project. As discussed in the meeting on December 5, 2007, it is recommended that a "limited" Indirect and Cumulative Impacts (ICI) evaluation be conducted on the remaining alternatives, including Alternative G, which may provide information that allows for further elimination of additional alternatives.

Stream impacts for Alternatives A and C (A, A1, A2, A3, C, C1, C2 and C3) do not accurately reflect the estimated amount of stream impact due to a proposed interchange which is included in the Mecklenburg-Union Metropolitan Planning Organization's (MUMPO) Long Range Transportation Plan (LRTP). Currently, Table 4-2 in the Draft Alternatives Development and Analysis Report does not include stream impact estimates for an interchange on this segment at Rocky River Road.

One
North Carolina
Naturally

North Carolina Division of Water Quality
Internet: h2o.enr.state.nc.us

610 East Center Avenue, Suite 301
 Mooresville, NC 28115

Phone (704) 663-1699
Fax (704) 663-6040

Ms. Jennifer Harris
Page Two

Additional impacts associated with this interchange would be incurred to the South Fork of Crooked Creek, which is currently on the NCDWQ 303d List for impaired biological integrity. Prior to recommending the elimination of any alternatives, NCDWQ requests that the table be updated to accurately reflect additional stream impacts associated with an interchange on this segment.

NCDWQ appreciates the opportunity to provide comments on the Draft Alternatives Development and Analysis Report and looks forward to our continued working relationship on this project. If you have any questions or need additional information, please contact Polly Lespinasse at (704) 663-1699.

Sincerely,

A handwritten signature in black ink, appearing to read "R. Krebs", with a long horizontal stroke extending to the right.

Robert B. Krebs
Regional Supervisor
Surface Water Protection Section

Cc: Polly Lespinasse, NCDWQ Mooresville
Brian Wrenn, Supervisor, Transportation Permitting Unit, Raleigh
Steve Lund, USACE Asheville Field Office
Marella Buncick, USFWS
Marla Chambers, NCWRC
Chris Militscher, EPA



⊠ North Carolina Wildlife Resources Commission ⊠

TO: Jennifer Harris, P.E.
North Carolina Turnpike Authority

FROM: Marla Chambers, Western NCDOT Permit Coordinator *Marla Chambers*
Habitat Conservation Program, NCWRC

DATE: January 14, 2008

SUBJECT: Review of the Draft Alternatives Development and Analysis Report for the Monroe Connector/Bypass, Union and Mecklenburg Counties. TIP No. R-3329 and R-2559.

As a participating agency and in accordance with Section 6002 of SAFETEA-LU, staff biologists with the North Carolina Wildlife Resources Commission (NCWRC) have reviewed the Draft Alternatives Development and Analysis Report prepared for the North Carolina Turnpike Authority (NCTA) and have participated in Turnpike Environmental Agency Coordination (TEAC) meetings regarding the subject project. Screening of preliminary alternatives for the Monroe Connector/Bypass was discussed at TEAC meetings on 15 August 2007, 27 September 2007, 17 October 2007, and 5 December 2007.

NCWRC commented previously on this project, formerly two projects under the North Carolina Department of Transportation (NCDOT) – the Monroe Bypass and the Monroe Connector, which is now being developed as a toll road by NCTA. If ultimately it does not become a toll facility, the project would go back to NCDOT and it should be noted that the screening process for alternatives would need to be repeated for a non-toll facility as ability to toll was a crucial screening factor in the process.

NCWRC provided information on a number of state and federally listed species inhabiting streams in the project area, such as North Fork and South Fork Crooked Creek, and Richardson Creek, in comments dated 16 August 2002 and 14 January 2004. Although the streams were identified and their 303(d) list status provided, the sensitive nature of the streams was not mentioned and it does not appear these species were fully accounted for in Table 4-2 in the “Natural Heritage Program Occurrences/Sites” screening criteria.

A major concern we have with this report is that the alternatives remaining after the second qualitative screening and those remaining after the third quantitative screening are portrayed as more numerous than they actually are, which makes the analysis more confusing and more complex than need be. The “Relative Segment Comparison Assessment” (section 3.3) looked at four areas where several route options exist to get from one point to another within the same area. While the number of routes was reduced in some areas, each of the four areas carried two route options to the third screening level. Figure 3-13 illustrates the alternatives to be carried to the third quantitative screening, which shows essentially four alternative corridors, however they are portrayed as 25 separate Preliminary Study Alternatives (see Table 3-1) and evaluated in the extensive Table 4-2. After the third quantitative screening, the 16 alternatives proposed to be carried forward for detailed study in the Draft Environmental Impact Statement (DEIS) are depicted in Figure 4-5; however, they are essentially minor variations of one alternative corridor, differing only by the similar parallel segments in the four aforementioned areas.

We recommend that the four pairs of similar segments be illustrated as widened areas of the alternative corridors and be analyzed the same as other portions of the alternatives, using a best-fit conceptual design. A different approach would be to put the four pairs of segments through the quantitative third screening first to choose between each pair, and then connect segments from endpoint to endpoint for the analysis between the basic remaining corridors. It appears the basic corridors after the second level screening are widen existing (Alternative G), new location (Alternatives A, B, C, D and variations containing these letters), and two alternatives with both new location and existing roadway segments (Alternatives E and F and their variations).

We would also like to reiterate that segment 26, which has a number of issues including historic resources, should be adjusted westward to provide a best-fit connection to segment 24 in the vicinity of the ridgeline (see email comments dated 10/11/2007). Together segments 26 and 24 provide one of the two connections between the new location and existing roadway portions of the alternatives. We are concerned that essentially one alternative corridor is proposed to be studied in detail and recommend that at least one other viable alternative be carried forward in order to provide a thorough assessment and comparison of potential alternatives. Analysis of more than one corridor may help the public and agency reviewers of the DEIS to support the eventual preferred alternative.

In addition, the following minor comments and suggestions are to assist in completing the final alternatives report:

1. Figures that show alternative segments on a map may need segment labels repositioned for clarity. For example, on Figure 2-5 labels for segments 2 and 13 appear to be located on existing US 74.
2. It is helpful that the color of segments in the figures are consistent throughout the document, however on Figure 3-13 segment 34 changed from green to brown.
3. Section 1.1.1 – the second paragraph is a repeat of most of the first paragraph.
4. Section 3.1 – a word is missing in the last sentence of “Relative Segment Comparison” bullet.

5. Section 3.2.2.3 – in the first paragraph, the reference to Section 3.2.3 likely should be Section 3.3 or 3.3.2 as Section 3.2.3 wasn't found in the report.
6. Section 3.3.2 – the crossings in the second and third bullet under “Comparison” (page 3-8) could be better identified in Figure 3.6.
7. Table 4-1 – “Watersheds” should be “Protected Watersheds” or “Water Supply Watersheds” and the impacts for it, and for “Floodplains”, should be in acres for better comparison.
8. Section 4.2.1 – “Stream Impacts” discussed perennial and intermittent streams separately, however it may be useful to also report total stream impacts.
9. Table 4-2 – footnotes are not defined.

Thank you for the opportunity to review and comment on this document. If you have any questions regarding these comments, please contact me at (704) 984-1070.

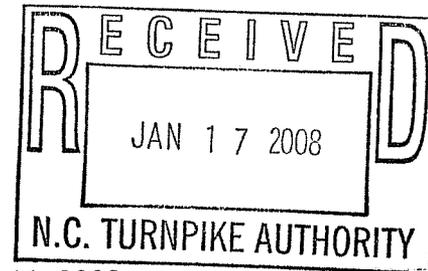


REPLY TO
ATTENTION OF:

**DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
151 PATTON AVENUE
ROOM 208
ASHEVILLE, NORTH CAROLINA 28801-5006**

CESAW-RG-A

January 11, 2008



MEMORANDUM FOR MS. JENNIFER HARRIS, NORTH CAROLINA TURNPIKE
AUTHORITY, 1578 MAIL SERVICE CENTER, RALEIGH, NORTH CAROLINA 27699-
1578

SUBJECT: Comments on Monroe Connector/Bypass, TIP Nos. R-3329 and R-2559

1. Reference your request of November 5, 2007 for our comments on the Draft Alternatives Development and Analysis Report for the subject project located in Union and Mecklenburg Counties.
2. We have completed our review of this report and offer the following comments in the context of our role as a cooperating agency in the preparation of the Draft and Final Environmental Impact Statements (EIS) for the project and as a regulatory agency with responsibilities under Section 404 of the Clean Water Act of 1977, as amended.
3. We would like to see an evaluation of the potential effects of induced and relocated development on aquatic resources of the area prior to dropping all alternatives that involve upgrading all or portions of the existing US Highway 74. We are particularly concerned with the potential effects from relocating large numbers (potentially hundreds) of businesses on streams within the US Highway 74 corridor. This could be accomplished by including an evaluation of potential cumulative effects for the preliminary study alternatives in the quantitative third screening. Alternatively, we recommend that Alternative G (upgrade existing US 74) be carried forward on an interim basis until such time as additional information on cumulative impacts can be developed and evaluated.
4. We concur with the decision to carry the new location Alternatives A-D forward for detailed evaluation. These four alternatives essentially form one corridor with variations of each. There are however, sufficient differences among these variations in residential and business relocations, hazardous materials sites, total linear feet of stream within the right-of-way and potential floodplain impacts to warrant detailed evaluation. As indicated in Item 3 above, Alternative G should also be carried forward at this time.
5. The screening process, as included in this report, is an integral part of the alternatives evaluation required by the 404(b)(1) Guidelines of the Clean Water Act as well as the NEPA process. As such, the entire Alternatives Development and Analysis Report should be included in the Draft EIS.
6. The term "isolated wetlands" has specific regulatory implications under Section 404 of the Clean Water Act and should not be used in the report except in this regulatory context (see Chapter 3, Section 3.3.3).

7. If you have any questions, please contact me at telephone (828) 271-7980 or by email at steven.w.lund@usace.army.mil

A handwritten signature in black ink that reads "Steven W. Lund". The signature is written in a cursive style with a large, looping initial 'S'.

Steven W. Lund
Project Manager
Asheville Regulatory Field Office



Turnpike Environmental Agency Coordination (TEAC) Meeting

MEETING MINUTES

Date: February 5, 2008
1:30 PM to 2:30 PM
NC Turnpike Authority Office Board Room (Suite 400)

Project: STIP R-2576 Mid-Currituck Bridge Study - BRS-OOOS(35)

Mid-Currituck Bridge Spotlight:

Attendees:

Bill Biddlecome, USACE	George Hoops, FHWA
Christopher Militscher, USEPA	Donnie Brew, FHWA
Kathy Matthews, USEPA	Dewayne Sykes, NCDOT-Roadway
Gary Jordan, USFWS	Sam St. Clair, NCDOT-Roadway
Ron Sechler, NMFS (via phone)	Jennifer Harris, NCTA
Cathy Brittingham, NCDENR-DCM	Christy Shumate, HNTB
David Wainwright, NCDENR-DWQ	Jens Geratz, EcoScience
Sara Winslow, NCDENR-DMF (via phone)	John Page, PB
Travis Wilson, NCWRC	Chris Lloyd, PB
Renee Gledhill-Earley, NCDENR-HPO	

Presentation Materials: (All materials have been posted on the TEAC website)

- Meeting Agenda
- Mid-Currituck Workshop Postcard Notification (February 2008)

Purpose:

The purpose of the meeting was to prepare for distribution of the Alternatives Study Report and provide an overview of upcoming Citizens Informational Workshops.

General Discussion:

The following information was discussed at the meeting:

- **Statement of Purpose and Need and Alternatives Study Report Status** – The Statement of Purpose and Need is being updated to incorporate 2035 No-Build traffic forecast data to correspond to the design year used for the project.

NCTA is continuing work on the complete draft Alternatives Study Report, which will summarize the alternatives development and analysis process and document NCTA's recommended detailed study alternatives. The completed report will be distributed for agency and public review to obtain comment on the Statement of Purpose and Need and alternatives considered for the project. A

summary of the public comments will be provided to the agencies before the April 2008 TEAC meeting.

- **Two, Three, and Four Lane Bridge Discussion** – PB provided an overview of the differences between 2, 3 and 4 lane bridge scenarios for the Mid Currituck Bridge. Under the 2035 travel demand forecast, a two lane bridge operates at an acceptable Level of Service (LOS D) during the Summer Weekday. The four lane bridge scenario operates a better LOS but affords a travel time savings of just a few minutes over the two lane bridge. The four lane bridge will have a capital cost of approximately \$122 million more than the two lane bridge.

A three lane bridge scenario was evaluated but is subject to a series of operational issues that impact safety and costs. Three lane scenarios under a fixed lane overhead signal system were evaluated, but found to be problematic when dealing with seasonal users. This system works best under a commuter pattern where daily users have adjusted their driving behavior to accommodate the signals which control lane access. A movable barrier was considered as another three lane option but is costly to implement and has safety concerns for the operating staff and users.

The interchange with US 158, the intersection with NC 12 as well as the approaches to the bridge will be sized to accommodate summer weekend peak traffic to avoid back-ups entering and existing the bridge.

All 2, 3 and 4 lane bridge conditions assume a toll bridge.

- **Citizens Informational Workshops February 26th, 27th and 28th (4:00 to 8:00 PM)** – Citizens Informational Workshops have been scheduled for February 26, 27 and 28. The workshops (4:00 to 8:00 PM) will be informal with no presentation provided. The intent is to provide attendees the opportunity to review project information on the purpose and need, study area, and alternatives under consideration and solicit and respond to attendee comments and inquiries. Presentations to Currituck and Dare County officials will occur on February 26 (Currituck County) and 28 (Dare County) before the workshops. Approximately 12,000 postcards announcing the workshops will be mailed to property owners, officials and citizens who are on the mailing list. After the workshops a newsletter will be distributed.
- **East Carolina University** – NCTA provided an update on the progress of work being completed by East Carolina University (ECU). ECU received a SAFETEA-LU earmark to do research on the Mid-Currituck Bridge project, and are providing support for indirect and cumulative impacts assessment, socioeconomic analysis, and supplemental traffic operations evaluations.
- **Maple Swamp** – NCTA provided recent news regarding clear cut operations that have occurred on a 100-acre parcel just north of Aydlett Road. NCTA noted that ECU is looking into preservation opportunities for Maple Swamp as part of their work.

Q&A:

1. *USEPA asked if hurricane evacuation times vary with 2, 3 and 4 lane bridge options.*
The number of lanes on the bridge does not affect hurricane evacuation time because the critical link to hurricane evacuation is US 158 between the Wright Memorial Bridge and NC 12.
2. *NCDCR-HPO inquired if tolls would be collected for both directions of travel.*
NCTA currently plans to collect tolls for both directions of travel on the bridge. FHWA added that tolls would be suspended under emergency evacuation orders.
3. *NCDENR-DCM asked how the C1/C2 touchdown point options will be addressed.*
NCTA assured that they will all be included in the DEIS as part of the alternatives assessment discussion. Additionally, public input will be collected at Citizens Informational Workshops in February, and agency input will be further assessed at the next TEAC

meeting, planned for April 2008. PB provided additional comments on the operational and land constraints that will influence the ultimate configuration of the C1 and C2 alignments.

PB also elaborated on the configurations of the interchanges under study at US 158. The interchange configuration will be influenced by the need to reduce wetland and high quality resource impacts balanced against the space constraints of fitting the toll plazas, offices, maintenance facilities and access roads into the interchange. All of these considerations will be provided in the Alternatives Study Report and DEIS. PB further asserted that all alternatives will be presented at the Citizens Informational Workshops; however, more emphasis will be placed on the ER and MCB build alternatives.

4. *USACE inquired about the availability of revised Statement of Purpose & Need and Alternatives Study Report before the Citizens Informational Workshops.* NCTA confirmed the intent is to have both documents available before the workshops. Hard copies will be distributed to the agencies, and the documents will be posted to the NCTA website for public review. USACE was pleased with the language used in the workshop postcard notification.

Previous Action Items:

- Obtain comments on conceptual interchange and alignment options for bridge corridors. *[Comments were received from NCDENR-DCM (10/22/07) and USEPA (12/14/07) on conceptual interchange and alignment options for bridge corridors.]*
- Distribute invitation letters to participating and cooperating agencies. *[Responses to participating agency invitations were received from NCDENR-DCM, NCDENR-DMF, NCDENR-DWQ, NCWRC, and NCDCCR-HPO. The USACE accepted the invitation to become a cooperating and participating agency.]*

New Action Items:

- NCTA will distribute the Alternatives Study Report for agency and public comment.

Resolutions:

- None

MEETING MINUTES

Date: February 5, 2008
2:30 pm to 3:30 pm
NC Turnpike Authority Office Board Room (Suite 400)

Project: STIP R-3329 Monroe Connector – NHF-74(21)
STIP R-2559 Monroe Bypass – NHF-74(8)

Monroe Connector / Bypass Spotlight:

Attendees:

Donnie Brew, FHWA	Ryan White, NCDOT-PDEA
George Hoops, FHWA	Dewayne Sykes, NCDOT-RDU
Kathy Matthews, USEPA	Bob Cook, MUMPO (by phone)
Chris Militscher, USEPA	Steve DeWitt, NCTA
Steve Lund, USACE	Jennifer Harris, NCTA
Marella Buncick, USFWS (by phone)	Christy Shumate, HNTB
Renee Gledhill-Early, NCDCCR-HPO	Anne Redmond, HNTB
Marla Chambers, NCWRC (by phone)	Carl Gibilaro, PBS&J
Polly Lespinasse, NCDENR-DWQ (by phone)	Kiersten Giugno, PBS&J
Anne Gamber, NCDOT-Hydraulics	Jill Gurak, PBS&J
John Conforti, NCDOT-PDEA	Michael Gloden, EcoScience

Presentation Materials: (all materials have been posted to the TEAC website)

- Meeting Agenda
- Draft TEAC Meeting Minutes (December 5, 2007)
- Summary of Public Comments and Summary of Agency Comments and Responses

Purpose:

The purpose of this meeting was to discuss agency and public comments on the Draft Alternatives Development and Analysis Report.

General Discussion:

- **Summary of Public Comments on Draft Alternatives Development and Analysis Report**
 - The Draft Alternatives Development and Analysis Report was distributed to the agencies and posted to the NCTA website in early November 2007. No comments on the analyses included in the report were received from the public. The vast majority of comments were regarding specific corridor segments. The following summary of public comments was provided:
 - Twenty-two inquiries about impacts to individual properties.
 - Two comments regarding improvements needed on US 601 between US 74 and the North Carolina/South Carolina border.
 - One comment to use NC 218 as the route for the Monroe Connector/Bypass.
 - Two emails supporting alternatives that include Corridor Segment 18A.
 - Sixty-seven emails opposing alternatives that include Corridor Segment 18A.
 - The Town of Stallings, Town of Matthews, and City of Monroe commented via letters and/or local resolutions in support of routes that do not include Corridor Segment 18A.
 - CPCC commented in opposition to Corridor Segment 18A.
 - Approximately 2,300 signatures, including 1,693 petitions and 609 copies of a form letter, were received in opposition to alternatives that include Corridor Segment 18A.
 - Village of Lake Park opposed alternatives that include upgrading existing US 74, including alternatives that include Corridor Segment 2.

- The Town of Indian Trail indicated that Corridor Segments 2 and 22A are inconsistent with local land use plans and expresses concern that Corridor Segment 2 would impact the Old Hickory Industrial Park.
- **Summary of Agency Comments on Draft Alternatives Development and Analysis Report** – Several agencies requested additional information on Alternative G, upgrading existing US 74, including potential indirect and cumulative impacts. Based on these comments, NCTA will carry Alternative G forward on an interim basis until additional information can be evaluated on traffic forecasts, direct community impacts, and potential indirect and cumulative impacts. Alternative G will be included in the qualitative indirect and cumulative impact analysis (ICI). NCTA still recommends Alternative G be eliminated from further consideration based on the information provided in the Draft Alternatives Development and Analysis Report. Once the additional analysis is complete, the data will be presented at a TEAC meeting for discussion.

Several agencies also commented on interchange locations for the project. At this time, interchanges for the detailed study alternatives will correspond to those in the Long Range Transportation Plan; however, due to potential natural resource impacts, NCTA will evaluate all alternatives with and without an interchange at Indian Trail Fairview Road. This will allow for an equal comparison of the alternatives.

NCWRC commented that impacts from Alternative G would likely make it impractical and suggested that Alternative E should also be considered further. It was noted that this alignment would substantially impact a residential area (Hamilton Place), which exhibited strong opposition when the alignment was presented previously as part of the Monroe Bypass project and more recently as part of this project, as well as two historic properties (Secret Farm and Hiram Secret House). NCWRC noted that if the study team is comfortable with studying essentially one build alternative for the project, then she would agree as well. USEPA commented that a full analysis of feasible alternatives should be conducted and warned that the narrower the range of alternatives may equate to an increase in litigation risk. USACE noted that for Section 404 compliance, alternatives can be considered and eliminated prior to detailed study as long as the process and decisions are documented either in a technical report or in the Draft EIS. FHWA noted that the comment to consider another alternative would be considered; however, FHWA is comfortable with the range of alternatives as presented in the screening document. Over many meetings in 2007, the screening process was presented to the agencies for comment.

- **Indirect and Cumulative Impacts** – HNTB is currently preparing a draft qualitative ICI, which is scheduled to be presented to the group for discussion in May 2008. Data collection has begun. The following approach will be used to complete the ICI analyses:
 - The growth impact study area has been identified and provided to FHWA for approval. The growth impact study area will be refined as the ICI moves forward and additional data is available.
 - The ICI will primarily look at growth around proposed interchange areas. The ICI will assume the same interchanges as presented in the Long Range Transportation Plan, but will analyze the project with and without a US 601 interchange.
 - Existing and new land use ordinances will be reviewed to determine existing and future land use. Applicable policies and regulations (e.g., stream buffers and water quality) will also be reviewed.
 - Indicators will be developed in coordination with appropriate agencies to assist in evaluating impacts.
 - Meetings with local planners will be coordinated between various team members. A list of questions will be prepared and provided to the planners in advance of the meetings.
 - The ICI will assume the typical sections included in the Draft Alternatives Development and Analysis Report for new location and upgrade existing roadway segments.

Previous Action Items:

- Obtain agency input on quantitative third screening and recommended detailed study alternatives.
[Written comments received from USACE, USEPA, USFWS, NCDENR-DWQ, NCDCCR-HPO, and NCWRC.]

New Action Items:

- None.

Resolutions:

- Concluded discussion on detailed study alternatives – Alternatives A, B, C, D, A1, A2, A3, B1, B2, B3, C1, C2, C3, D1, D2, and D3 will be evaluated as detailed study alternatives in the Draft Environmental Impact Statement.
- Alternative G (upgrading existing US 74) will be carried forward on an interim basis until such time as additional information can be developed and evaluated, including potential indirect and cumulative impacts.

Next Steps:

- No TEAC meeting in March 2008; next anticipated TEAC meeting is April 2008.
- Indirect and Cumulative Impact Assessment
- Community Impact Assessment
- Functional Designs
- Environmental Field Studies

MEETING MINUTES

Date: February 5, 2008
3:30 pm to 4:30 pm
NC Turnpike Authority Office Board Room (Suite 400)

Project: STIP U-3321 Gaston E-W Connector – STP-1213(6)

Gaston E-W Connector Spotlight:

Attendees:

George Hoops, FHWA	Steve DeWitt, NCTA
Donnie Brew, FHWA	Jennifer Harris, NCTA
Steve Lund, USACE	Michael Gloden, EcoScience Corp.
Kathy Matthews, EPA	Jeff Dayton, HNTB
Dewayne Sykes, NCDOT-Roadway Design	Jill Gurak, PBS&J
Kristina Solberg, NCDOT-PDEA	Carl Gibilaro, PBS&J
Anne Gamber, NCDOT-Hydraulics	
Bill Barrett, NCDOT-PDEA	

Via Telephone:

Marella Buncick, USFWS
Polly Lespinasse, NCDENR – DWQ
Marla Chambers, NCWRC

Presentation Materials (Posted on TEAC Website):

- Meeting Agenda
- Handout 1 - Proposed Approach to Bridging Decisions

Purpose:

The purpose of this meeting was to provide a project status update and to discuss the approach for bridging decisions for the Detailed Study Alternatives (Concurrence Point 2a).

General Discussion:

The following information was discussed during the meeting:

- **Planning Process to be Used on the Project** - To date, the project environmental review process has been following the Section 404 NEPA Merger Process for the Gaston East-West Connector project, although the NCTA is not a signatory to the merger process Memorandum of Understanding.

Concurrence Point 1 (CP1) (Purpose and Need) and CP 2 (Detailed Study Alternatives) have been obtained for the project, with abstentions from the USEPA, USFWS, and NCWRC on CP 2.

A formal decision has not been made on the environmental review process that will be used. The North Carolina Merger Process is not yet compliant with Section 6002 of SAFTEA-LU. However, Mr. Sykes noted that the proposed changes to make it compliant are close to being finalized and approved by the FHWA. At this time, the NCTA envisions to at least follow a process that mirrors the Merger Process.

A Coordination Plan as required by Section 6002 of SAFTEA-LU has not been completed for the project. The Coordination Plan and a decision on the environmental review process to follow for the project will be made after a Section 6002 compliant Merger Process is approved and NCTA has a chance to review it.

- **Updates to the Purpose and Need Statement** - The Purpose and Need Statement was finalized in August 2002. In preparation for producing the DEIS, the data in the Purpose and Need Statement needs to be refreshed. This includes updating the No-Build traffic forecasts from year 2025 forecasts to year 2030 forecasts. Since August 2002, transportation and land use plans have been updated and more recent socioeconomic data is available. Also since 2002, the Strategic Highway Corridor Program was adopted by NCDOT, and the project was designated a Strategic Highway Corridor.

An updated Purpose and Need Statement will be prepared. The updated Purpose and Need Statement will be made available to the resource agencies and the public. NCTA currently is in the process of developing the 2030 No-Build forecasts and it is anticipated the update will be completed in a few months.

- **Alternatives Development and Analysis Report Addendum** - An addendum to the Alternatives Development and Analysis Report is planned and will include the new information about Detailed Study Corridor Segment K1D and recommendation for elimination from detailed study, 2030 Build Toll traffic forecasts, and a discussion of the project now being studied as a toll facility. The Alternatives Development and Analysis Report Addendum will be made available to the resource agencies and the public.
- **Public Involvement** - The NCTA is planning on holding citizens informational workshops since the last workshops were held in 2006. The updated Purpose and Need Statement, the Alternatives Development and Analysis Report, and Alternatives Development and Analysis Report Addendum will be provided for public and agency comment in accordance with Section 6002 public involvement requirements.
- **Approach to Discussing Concurrence Point 2a (Bridging Decisions)** - Although the environmental review process has not been finalized, the NCTA envisions at this time to at least follow a process that mirrors the Merger Process.

The attendees agreed that it was acceptable to move forward with bridging decision discussions.

The term Concurrence Point 2a is being used in this meeting since the agencies are familiar with the term and the types of information presented and discussed at CP 2a meetings are the same types of information to be presented for the Gaston East-West Connector project. The NCTA wants input on bridging decisions for the project, regardless of the environmental review process ultimately adopted for the project.

The handout that describes the proposed approach for discussing bridging for the project was summarized by Ms. Gurak. She noted that the approach proposed in the handout is based on informal discussions held with representatives from USEPA and USACE during the site visits held December 17 and 18, 2007, where a desire was expressed to try to narrow down the numbers of crossings needing to be discussed in detail.

Currently, according to the final Preliminary Hydraulic Technical Memorandum, there are 129 crossings requiring a major structure (bridge, box culvert, or pipe 72 inches in diameter or greater) throughout the 12 Detailed Study Alternatives.

The proposed approach would include all crossings requiring a bridge for hydraulic purposes, all triple box culverts, all crossings of high quality wetlands, all crossings of 303d-listed streams, and those non-bridge major crossings where engineering judgment warrants a comparison of the costs of a bridge versus the recommended structure. Excluding the last screening item, this results in a minimum of 32 crossings to be discussed. The last screening item will result in more crossings, but it is not known at this time how many more.

USEPA stated they have some concerns about the screening based on high quality wetlands. She stated that many of the forested wetlands in the corridors that she would consider of high value are not scored high on the currently available rating forms. She would like information on all the

crossings in order to determine if she would like any additional ones discussed. She stated USEPA would like to talk with NCTA about using the NC WAM forms for the Least Environmentally Damaging Practicable Alternative (LEDPA). USEPA believes these forms provide a better picture of the value of wetlands. USEPA also noted they would be sending comments to NCTA on the December site visit summary.

NCWRC stated they thought more that 32 crossings would need to be discussed. They also would like more information on all the crossings before agreeing to a certain set to discuss.

The NCDOT-Hydraulics Unit asked if floodplain issues were considered. The final Preliminary Hydraulic Technical Memorandum was prepared to NCDOT standards. The report evaluated a 50-year storm event and used urban regression equations, as directed by NCDOT's Hydraulics Unit.

The Natural Resources Technical Report (NRTR) currently is available on the TEAC website, without impact calculations or discussion of Rapanos forms. The NRTR version that includes these items will be made available in February and hard copies will be sent to those who would like one. However, the new Figure 3 from the NRTR that shows the jurisdictional resources, corridor boundaries, and preliminary engineering designs, is available now and will be posted to the TEAC site in the next couple days.

The NCTA is open to suggestions on which crossings should be discussed and comments from the agencies are requested within a couple weeks. The USACE commented that this proposed approach was a good place to start with bridging decisions. Also noted by NCTA was that additional avoidance and minimization (including bridging) discussions can and will be discussed for the LEDPA.

Wrap-Up / Next Steps:

- NCTA will be updating the Purpose and Need Statement and preparing the Alternatives Development and Analysis Report Addendum.

Previous Action Items:

- None

New Action Items:

- NCTA will post updated Figure 3 from the NRTR to the TEAC website.
- NCTA will make a decision on an environmental review process for the project after a Section 6002 compliant Merger Process is approved and NCTA has a chance to review it.
- Agencies will provide input on which crossings should be discussed for potential bridging.
- USEPA will provide comments on the minutes from the December 17-18 field visit.



Turnpike Environmental Agency Coordination (TEAC) Meeting

MEETING MINUTES

Date: July 8, 2008
10:00 AM to 12:00 PM
NC Turnpike Authority Office Board Room (Suite 400)

Project: STIP R-2576 Mid-Currituck Bridge Study - BRS-OOOS(35)

Mid-Currituck Bridge Spotlight:

Attendees:

Bill Biddlecome, USACE	Brian Yamamoto, NCDOT-PDEA
Kathy Matthews, USEPA	Ted Devens, NCDOT-PDEA
Gary Jordan, USFWS	Dewayne Sykes, NCDOT-Roadway Design
Sara Winslow, NCDENR-DMF (via phone)	David Joyner, NCTA
Cathy Brittingham, NCDENR-DCM	Steve DeWitt, NCTA
Jim Hoadley, NCDENR-DCM	Jennifer Harris, NCTA
David Wainwright, NCDENR-DWQ	Reid Simons, NCTA
Travis Wilson, NCWRC	Bill Malley, Perkins Coie
George Hoops, FHWA	Christy Shumate, HNTB
Donnie Brew, FHWA	Spencer Franklin, HNTB
Lonnie Brooks, NCDOT-Structure Design	Michael Gloden, EcoScience
Renee Roach, NCDOT-Traffic (via phone)	John Page, PB
BenJetta Johnson, NCDOT-Congestion Management (via phone)	Eric Misak, PB
	Don Brown, PB

Presentation Materials: (All materials have been posted on the TEAC website)

- Meeting Agenda
- Section 6002 Project Coordination Plan (dated July 2, 2008)
- Letter from Jennifer Harris dated July 2, 2008 (with attachments)– Response to Agency Comments regarding Statement of Purpose and Need and Alternatives Screening Report
- Letter from David Joyner dated July 2, 2008 – Decision on Advancing Existing Road Alternatives for Detailed Study
- Handout 13 – May 2008 Citizens Purpose and Need and Alternatives Screening Report Comments Summary
- Handout 14 – Summary of Agency Comments Received May 2008
- Handout 15 – Scope for Evaluating ER2 and MCB2 as Detailed Study Alternatives in the DEIS

Purpose:

The purpose of the meeting was to discuss NCTA's response to agency comments on the Statement of Purpose and Need and Draft Alternatives Screening Report, as well as the scope of work for proceeding with detailed studies of the ER2 and MCB2 alternatives.

General Discussion:

The following information was discussed at the meeting:

- **Letter from Jennifer Harris dated July 2, 2008 – Response to Agency Comments regarding Statement of Purpose and Need and Alternatives Screening Report** – Agencies were emailed a copy of, and were provided a hard copy of, a letter from NCTA in response to agency comments received on the Statement of Purpose and Need (April 2008) and Alternatives Screening Report (April 2008). A copy of the letter was distributed to meeting attendees and the major points reviewed.
 - The newly added need statement (the 4th bullet) in the Statement of Purpose and Need (“The need to improve system efficiency by providing an additional link between the Currituck County mainland and its Outer Banks”) will be removed. Substantiating information for this need, such as inclusion of the Mid-Currituck Bridge in planning and legislative documents, will remain in the document. Agencies agreed.
 - NCTA will retain ER2, MBC2, and MCB4 alternatives for detailed study in the Draft EIS. ER1 and MCB1 will be eliminated from further study, as will other conceptual alternatives discussed in the Alternatives Screening Report, including transit, shifting rental times, transportation systems management, and ferry alternatives. There were no other suggestions for other alternatives to be considered. Agencies agreed.
 - MCB3 will also be eliminated from further study due to its similarity to MCB4. Agencies agreed.
 - Bridge corridors C1 and C2 will be evaluated in detail in the Draft EIS. Other corridors will not be considered further. Agencies agreed.
 - The 1995 Notice of Intent (NOI) for the project was rescinded and a new NOI was issued by FHWA in June. Copies of these notices are attached to the letter.
 - NCTA anticipates the additional studies for ER2 and MCB2 will take approximately 6 months to complete. Therefore, the revised project schedule is:
 - Draft EIS – January 2009
 - Final EIS – August 2009
 - Record of Decision – October 2009
 - Participating and cooperating agency invitation letters were distributed by NCTA and FHWA prior to issuing the new NOI. NCTA noted that these invitations and all responses received are still considered valid. Agencies agreed.

NCDENR-DCM noted appreciation for NCTA’s decision to evaluate ER2 as a detailed study alternative in the Draft EIS.

The Statement of Purpose and Need and Alternatives Screening Report will be revised to reflect these decisions and made available for agency review by August 10.

- **Letter from David Joyner dated July 2, 2008 – Decision on Advancing Existing Road Alternatives for Detailed Study** – The North Carolina General Assembly approved \$99 million of annual funding for Turnpike projects, including \$15 million per year for the Mid-Currituck Bridge project. This money is allowed to be used to assist in paying debt service for the toll revenue bonds used to finance the project. There is currently no money in the STIP to build roads in the project area.

Mr. Joyner suggested that the NCTA and the agencies continue to talk together over the next few months about project financing. He noted that by law, NCTA cannot toll an existing road; therefore, an alternative with existing road improvements only can not be funded with toll revenues and non-bridge components of a bridge alternative may not be able to be funded with

toll revenues. NCTA issued a request for qualifications for private partners interested in developing, constructing, operating, maintaining, and financing the project, and statements of qualifications were received from four teams.

- **Handout 15 – Scope for Evaluating ER2 and MCB2 as Detailed Study Alternatives in the DEIS** – ER2 and MCB2 will be evaluated as detailed study alternatives to the same level as MCB4 has been. This will include detailed environmental studies – wetland/stream delineations, natural resource community mapping, historic resources, hazardous materials identification, and other information typically gathered. NCTA wants any suggestions for additional information the agencies would like to see included in the Draft EIS. Agencies offered the following:
 - NCDENR-DCM stated that NCTA should discuss submerged aquatic vegetation (SAV) impacts, SAV mitigation, sea level rise, and wetland mitigation. Specifically, impacts to SAV and SAV habitat should be calculated for areas of Currituck Sound less than 6 feet deep.
 - USEPA noted that wetland impacts on the Outer Banks may need to be mitigated for on the Outer Banks, as NC EEP may not be able to provide adequate compensatory mitigation for these impacts. USEPA will check on the status of a guidance document/interagency agreement discussing this issue.
 - NCDENR-DWQ requested that impacts for wetlands be presented by corridor and distinguished between the Outer Banks and the mainland. NCTA will include this information in the meeting minutes. *(See “Table 2” and “Table 4” attached – these tables have been revised from the Alternatives Screening Report; also note that the impacts have been corrected from those presented in the April 2008 report to reflect the current preliminary design and bridge width.)*
 - USFWS noted that NCTA should consider potential secondary effects of the ER2 and MCB2 alternatives in the non-road accessible areas north of Corolla, adding that widening NC 12 may make it easier to bring pre-fabricated homes into that area.
 - NCDENR-DWQ also noted that potential for development in the Aydlett area near the proposed bridge terminus should be fully evaluated.
 - NCDENR-DCM added that the permit application for Phase 2 of the Corolla Bay development near the C2 bridge corridor alternative is under review.

Studies for ER2 and MCB2 include advancing the functional designs to preliminary designs. Road drainage will have to be addressed. Currently, there are no outfalls in Southern Shores, and in Duck there are outfalls draining to Currituck Sound. USEPA offered to provide a recent document available on infiltration systems. NCDENR-DCM said that filter systems are being installed on ocean outfalls in Nags Head. NCDENR-DCM is not permitting any new ocean outfalls, but may permit rehabilitation of existing outfalls.

There is a one-mile section in Duck that is already three lanes and will not be altered for alternatives ER2 and MCB2. Left turn restrictions will be placed on some subdivision intersections to facilitate traffic movement. On US 158 between the Wright Memorial Bridge and NC 12, a superstreet typical section is being discussed with NCDOT in lieu of arterial widening. NCDOT’s US 158/NC 12 interchange project (STIP No. R-4457) will remain a separate project.

Q&A:

1. *USACE asked about documentation for eliminating bridge corridors further to the south. Documentation for this decision is included in the April 2008 Alternatives Screening Report in Section 3.2. These corridors were generally eliminated from consideration due to impacts to the community of Poplar Branch on the mainland, a group of marsh islands in Currituck Sound (a Significant Natural Heritage Area), and the Pine Island Audubon Sanctuary (a Coastal Barrier Resources Act area), as well as due to traffic considerations – a bridge further south would have introduced additional congestion into already*

congested areas of Dare County and Duck and caused additional community disruption and displacement, particularly since the existing NC 12 right of way is only 60-foot wide in this area.

2. *USACE asked how much of the non-tolled portions of the project a private partner could be expected to finance.*

NCTA will be asking potential private partners to provide additional information on this topic during the procurement process for the predevelopment agreement to help answer this question, specifically with regards to improvements included in the MCB2 alternative.

3. *USACE requested information on the history of STIP funding for the project.*

NCTA will provide this information via email to agencies following the meeting.

4. *NCDENR-DCM asked how financial feasibility will be considered in the NEPA and permitting processes, noting that this differs from the NCDOT process where funding is almost never considered during project planning.*

This issue is something that NCTA is also learning. NCTA will work with FHWA and the agencies over the coming months to determine how best to incorporate financial feasibility into project decisions; however, it is NCTA's belief that it is an issue that must be considered in project planning and in determining if alternatives are reasonable and feasible.

5. *USEPA asked if construction phasing would be discussed in the Draft EIS.*

Construction phasing will likely be discussed in the Draft EIS, in terms of project financing, meeting traffic operational needs, and minimizing environmental impacts during initial construction.

Previous Action Items:

- Agencies will provide any additional comments on the Statement of Purpose and Need and Alternatives Screening Report by May 16, 2008.
[Written comments were received from USACE (May 21, 2008), USEPA (May 5, 2008), NCDENR-DCM (May 6, 2008), NCDENR-DMF (May 12, 2008), NCDCCR-HPO (April 30, 2008), and NCWRC (May 13, 2008) and NCDENR-DWQ (April 29, 2008 and May 16, 2008).]
- Agencies will provide any additional comments on the revised Section 6002 Project Coordination Plan.
[No comments were received.]
- NCTA will provide a link to the FHWA's "NEPA Analysis of Toll Roads" guidance document [http://www.environment.fhwa.dot.gov/guidebook/NEPA_tollroads.asp].
[NCTA provided this to agencies via email on May 6, 2008.]
- NCTA will provide an updated summary of public comments on the Statement of Purpose and Need and Alternatives Screening Report following the close of the public comment period on May 15, 2008.
[Handout 13 is a summary of public comments on the Statement of Purpose and Need and Alternatives Screening Report.]

New Action Items:

- NCTA to revise and recirculate the Statement of Purpose and Need and Alternatives Screening Report based on decisions presented in Letter from Jennifer Harris dated July 2, 2008 by August 10, 2008.
- NCTA will provide history of STIP funding for R-2576.
[NCTA provided this to agencies via email on July 10, 2008.]
- USEPA will provide new guidance on infiltration basins and will check on guidance document/interagency agreement discussing wetland impacts and mitigation on the Outer Banks.
[Guidance on Class V UIC wells received on July 10, 2008.]
- Agencies will provide additional comments on topics and issues they would like to see addressed in the Draft EIS.
[Additional comments have been received via email from USFWS and NCDENR-DCM and are attached to these minutes. In response to questions from NCDENR-DCM regarding impacts to SAV habitat for areas of Currituck Sound 6 feet deep or less, please see "Table 6" attached – this

table has been revised from the April 2008 Alternatives Screening Report to include this information. Additionally, impacts have been corrected to reflect current preliminary designs.]

Resolutions:

- NCTA will evaluate ER2, MCB2, and MCB4 as detailed study alternatives in the Draft EIS.

MEETING MINUTES

Date: July 8, 2008
1:00 pm to 3:00 pm
NC Turnpike Authority Office Board Room (Suite 400)

Project: STIP R-3329 Monroe Connector – NHF-74(21)
STIP R-2559 Monroe Bypass – NHF-74(8)

Monroe Connector / Bypass Spotlight:

Attendees:

Donnie Brew, FHWA	Reid Simons, NCTA
George Hoops, FHWA	Bill Malley, Perkins Coie
Kathy Matthews, USEPA	Christy Shumate, HNTB
Steve Lund, USACE	Donna Keener, HNTB
Marella Buncick, USFWS	David Bass, PBS&J
Marla Chambers, NCWRC (via phone)	Clint Morgan, PBS&J
Polly Lespinasse, NCDENR-DWQ	Jill Gurak, PBS&J
John Conforti, NCDOT-PDEA	Michael Gloden, EcoScience
Dewayne Sykes, NCDOT-Roadway Design	Paul Petigout, ESI
Steve DeWitt, NCTA	
Jennifer Harris, NCTA	

Presentation Materials: (all materials have been posted to the TEAC website)

- Meeting Agenda
- Map of project segments

Purpose:

The purpose of this meeting was to present an overview of the functional design plans under development and obtain agency feedback.

General Discussion:

The following information was discussed at the meeting:

- **Project Update** – The agencies last met in February 2008 to discuss this project. At that time, NCTA recommended 16 Detailed Study Alternatives extending from I-485 in Mecklenburg County to US 74 near Marshville. Since then, NCTA has been working on detailed studies for these alternatives, including traffic forecasts for design year 2035 with tolls (including scenarios with and without certain interchanges as requested by agency comments during alternatives development); traffic capacity analysis; and environmental field studies, including wetland and stream delineations. Field meetings to review delineated wetlands and streams were held with USACE and NCDENR-DWQ on May 28 and 29 and June 2. Qualitative indirect and cumulative impact studies and community impact assessments are also underway. Findings from the indirect and cumulative impact study will be presented at the August TEAC meeting.

Additionally, agencies had requested that additional information be provided for the upgrade existing US 74 alternative before agreeing to eliminate it as a detailed study alternative. NCTA has pursued this alternative further to determine the appropriate typical section, including obtaining additional traffic forecasts. This traffic data reflects that even more traffic than originally predicted would utilize the free frontage roads rather than the tolled freeway lanes; therefore, additional frontage road lanes would be needed, and the overall footprint of this alternative would be larger than assumed in the Alternatives Development and Analysis Report (April 2008). This information will be distributed to agencies prior to the August TEAC meeting and discussed at that meeting.

- **Overview of Functional Designs** – Functional designs were reviewed by project segment from west to east, noting interchange configurations, y-line improvements and crossings, natural

resource avoidance and minimization efforts implemented, and other constraints. Engineers also noted where designs had been altered from previous studies conducted by NCDOT. Segments discussed were 18A, 21, 30, 31, 36, 41, 43, 1, 1A, 2, 22A, 34, 40, and 42. Interchanges are proposed at I-485/Stallings Road (Segment 18A) or US 74 east of Stallings Road (Segment 1/1A/2), Indian Trail Fairview Road, Unionville Indian Trail Road, Rocky River Road, US 601, NC 200, Austin Chaney Road, Forest Hills School Road, and US 74.

When asked, USACE agreed that NCTA's efforts to avoid and minimize impacts to natural resources during the design process were evident. USFWS commented that NCTA should include a discussion of community impacts resulting from proposed road closures and aesthetics of the proposed project in the Draft EIS.

NCTA will have mapping of the functional designs available in August or September once reviews are completed by NCTA, NCDOT, and FHWA. Preliminary hydraulics analysis and bridging decisions will be presented and discussed in September and/or October with the agencies.

- **Project Schedule** – NCTA anticipates completing the Draft EIS for signature in December 2008 and circulating for agency and public review and comment in January 2009. NCTA is planning to recommend a preferred alternative in the Draft EIS. This would be subject to agency and public comment. The Final EIS is scheduled for release in August 2009, and the Record of Decision is scheduled for October 2009.

Q&A:

1. *Has NCTA identified locations for toll collection facilities and the potential impacts from those?*
The project will have all electronic toll collection.
2. *Plans show an interchange at Rocky River Road for all alternatives, but the Alternatives Development and Analysis Report did not.*
At this point, we are going to include all interchanges in designs for all alternatives for purposes of calculating and comparing impacts and costs in the Draft EIS; however, we may have further discussions about interchange locations as part of avoidance and minimization for the preferred alternative.

Previous Action Items:

- Conclude discussion on selection of detailed study alternatives.

New Action Items:

- NCTA to schedule August TEAC meeting for week of August 4 in Charlotte-Gastonia area. *[This meeting has been scheduled for Thursday, August 7 at 9:00 AM. The meeting will be held at PBS&J's Charlotte Office (5200 77 Center Dr., Suite 500, Charlotte, NC 28217) or via video conference at PBS&J's Raleigh Office (1616 East Millbrook Road, Suite 310, Raleigh, NC 27609).]*
- NCTA to provide information on additional studies of upgrade existing US 74 alternative.

Resolutions:

- None.

MEETING MINUTES

Date: July 8, 2008
3:00 pm to 5:00 pm
NC Turnpike Authority Board Room

Project: STIP U-3321 Gaston E-W Connector – STP-1213(6)

Gaston E-W Connector Spotlight:

Attendees:

George Hoops, FHWA
Donnie Brew, FHWA
Steve Lund, USACE
Kathy Matthews, USEPA
Marella Buncick, USFWS
Polly Lespinasse, NCDENR-DWQ
Maria Chambers, NCWRC (via phone)
Hank Graham, GUAMPO (via phone)
Randi Gates, GUAMPO (via phone)
Jennifer Harris, NCTA
Dewayne Sykes, NCDOT-Roadway Design

Tristram Ford, NCDOT-HEU
Bill Malley, Perkins Coie
Jeff Dayton, HNTB
Anne Redmond, HNTB
Michael Gloden, PBS&J
Jill Gurak, PBS&J
Scott Lane, Louis Berger Group
Julie Flesch-Pate, Louis Berger Group
Lisa Murphy, Louis Berger Group
Chris Walsh, Louis Berger Group

Presentation Materials: (all materials have been posted to the TEAC website)

- Meeting Agenda.
- Powerpoint presentations for the Draft Indirect and Cumulative Effects (ICE) Assessment Review, Updated Purpose & Need Statement and Alternatives Report Addendum.
- ICE Figures, including maps for growth potential with and without the Project.
- Updated Draft Purpose and Need Statement.

Purpose:

The purposes of the meeting were to discuss the analysis and results from the Draft ICE Assessment, present the Updated Draft Purpose and Need Statement, discuss the items updated and added in the Addendum to the Alternatives Development and Evaluation Report, provide an update on the status of the Section 6002 Coordination Plan for the project, and announce the upcoming Citizens Informational Workshops.

General Discussion:

The following information was discussed at the meeting:

- **Presentation on the ICE Study** - Scott Lane from Louis Berger group began the powerpoint presentation by providing an overview of the analysis methods, data, and results for the ICE study. He stated that scoping meetings were held in June and July 2007 with the resource agencies to discuss the ICE study and topics to include in the analysis. He noted that, as an example, the topic of habitat fragmentation, was suggested during the study scoping process.

Mr. Lane also described the various study areas used in the analysis and the stakeholder interview process. Over 36 interviews were conducted with project area stakeholders such as local planning staff, real estate agents, riverkeepers, and developers. The interviewee's responses were weighted based on the interviewee's knowledge of each study district.

Lisa Murphy described the data collected and its limitations, and how it was used in the spatial grid analysis. As an example, farmland and forested land information was collected from the National Land Cover database (2002). This 2002 database was corrected to 2006 using aerial photography.

Julie Flesch-Pate reviewed the ICE study steps 4 and 5 relating to identifying effect-causing activities and identifying potential indirect and cumulative effects for further analysis.

- **Presentation on the Updated Purpose and Need Statement and the Addendum to the Alternatives Development and Evaluation Report** - Jill Gurak from PBS&J gave a brief powerpoint presentation. She began with a description of the major topics included in the Updated Draft Purpose and Need Statement. A description of major updates in the Addendum to the Alternatives Development and Evaluation Report included the incorporation of 2030 traffic forecasts, the inclusion of tolling, and the elimination of corridor segment K1D.
- **Upcoming Citizens Informational Workshops** - The NCTA will be conducting Citizens Informational Workshop Series #3 this summer on the following dates:
 - August 6 at Olympic High School in Charlotte
 - August 7 at Southpoint High School in Belmont
 - August 11 at the Gastonia Adult Recreation Center in Gastonia

The purpose of the workshops is to present and ask for input on the Updated Draft Purpose and Need Statement, Addendum to the Alternatives Development and Evaluation Report (including the elimination of Corridor Segment K1D), and the potential elimination of the US 29-74 interchange. The right of way limits for the preliminary engineering designs and the study corridor boundaries will also be presented on large-scale aerial photographs.

- **Section 6002 Coordination Plan Update** - The status of the project's Section 6002 Coordination Plan not changed much over the past few months. The plan will include early public involvement and state that a notification of project initiation letter from NCTA to FHWA will be prepared. The coordination plan also will state that the project will follow a process that will mirror the 6002 compliant merger process soon to be adopted by the NCDOT, FHWA, and resource agencies, even though the NCTA will not be a signatory to the Memorandum of Agreement.

The NCTA will be requesting that the resource agencies re-sign Concurrence Points 1 and 2 based on the Updated Draft Purpose and Need Statement and the Addendum to the Alternatives Development and Evaluation Report, once the agencies have a chance to review those reports and after the public has commented. After CP1 and CP2 are re-signed, the NCTA will request concurrence on CP2a.

The USFWS would like to see the public comments from the upcoming Citizens Informational Workshops and any resulting changes to these documents, before re-signing CP1 and CP2 and signing CP2a. Other resource agencies in attendance agreed.

The comment period on these items will likely extend through August, so a summary will be available in September.

Q&A:

1. *When will the ICE report be available for review?*
The report is under final review by the NCDOT. It is expected to be available for distribution in one to two weeks. Mr. Lund, Ms. Buncick, Ms. Chambers, and Mr. Militscher will be provided hard copies of the report. Mr. Graham, Ms. Lespinasse, and Ms. Matthews requested a CD.
2. *Why is the potential for growth effects low in York County, SC? How well are they following their plans?*
Interviewees from York County stated they feel they are far enough away to not be substantially affected by the proposed project. One issue of concern they did mention was the potential for increased school attendance resulting from increased growth. Overall, interviewees felt that the growth trends are already occurring and they are not directly in anticipation of the proposed project.

3. *In the results table, why is Gaston County shown as having a high potential for growth acceleration due to the project, but shown as having a moderate cumulative effect?*

The growth trends are already there and the potential for cumulative effect can also depend on how well an area follows their land use plans. Mr. Lane stated that, in their research, the project area jurisdictions were found to be generally following their plans.

4. *Were connections between Natural Heritage Areas taken into account, or did you just consider them as point locations (blobs)?*

Connections between Natural Heritage Areas were considered on a 1 square mile grid basis. GIS layering allowed the report preparers to consider both the location and reported occurrences of Natural Heritage elements. Additionally, composites of areas having the potential for future land use change were considered in the vicinity of the Natural Heritage Areas to determine the potential for wildlife corridor fragmentation. The analysis was qualitative in nature and focused on wildlife corridors not necessarily particular species. The assessment of Threatened and Endangered Species looked at the habitat requirements of particular species.

Previous Action Items:

- Conclude discussion on Concurrence Point 2a.

New Action Items:

- NCTA to provide a copy of the Draft Indirect and Cumulative Effects Assessment and the Addendum to the Alternatives Development and Evaluation Report once the NCDOT reviews are complete.
- NCTA to provide the public comments from the August workshops after the comment period has passed.
- Agencies will provide any comments on the Updated Draft Purpose and Need Statement, Addendum to the Alternatives Development and Evaluation Report, and the Draft ICE by the end of August.

Resolutions:

- None.



Turnpike Environmental Agency Coordination (TEAC) Meeting

MEETING MINUTES

Date: September 23, 2008
1:00 pm to 3:00 pm
NC Turnpike Authority Board Room

Project: STIP R-3329 Monroe Connector – NHF-74(21)
STIP R-2559 Monroe Bypass – NHF-74(8)

Monroe Connector / Bypass Spotlight:

Attendees:

Donnie Brew, FHWA	Jennifer Harris, NCTA
George Hoops, FHWA	Reid Simons, NCTA (via phone)
Kathy Matthews, USEPA	John Conforti, NCDOT–PDEA
Marella Buncick, USFWS	Dewayne Sykes, NCDOT–Roadway Design
Polly Lespinasse, NCDENR-DWQ	Christy Shumate, HNTB
Amy Simes, NCDENR	Carl Gibilaro, PBS&J
Marla Chambers, NCWRC	Michael Gloden, PBS&J

Presentation Materials: (posted on the TEAC Website unless otherwise noted)

- Agenda
- Draft TEAC Meeting Minutes (July 8, 2008)
- Upgrade Existing US 74 Alternative Summary (handout)
- Indirect and Cumulative Effects Assessment, Part 1 – Overview (PowerPoint Presentation)
- Functional design plans (posted to the NCTA website at www.ncturnpike.org/projects/monroe/functionaldesign.asp)

Purpose: Discuss elimination of upgrade US 74 alternative; begin discussion of qualitative indirect and cumulative effects studies; and begin discussions on preliminary hydraulics analysis.

General Discussion:

- **Upgrade Existing US 74 Alternative** – At the request of some of the participating agencies at the December 5, 2007 TEAC meeting, the improve existing US 74 alternative was investigated further in order to confirm design assumptions and projected impacts. At the time the *Draft Alternatives Development and Analysis Report* was prepared, the design assumptions included a 6-lane tolled freeway section along with two 2-lane, one-way frontage roads adjacent to the toll facility. With this typical section, approximately 500 businesses along US 74 would be impacted.

Based on agency comments, NCTA performed additional traffic forecasting for the Upgrade Existing US 74 Alternative. Initial traffic projections indicated that a substantial number of vehicles would choose to use the frontage roads instead of the toll facility thus requiring 3-lanes on each one-way frontage road. A typical section of this width would result in approximately 1,000 business impacts along the US 74 corridor, almost double what was anticipated in the

alternatives report. It is NCTA's opinion that impacts of this magnitude are unacceptable and that this alternative is not reasonable.

If the Connector/Bypass is built on a new location, portions of existing US 74 will still have undesirable levels of service (LOS) E or F in the 2035 design year because of additional conflicts associated with vehicles traveling along the many side streets and signalized intersections along US 74.

USFWS noted that it should be demonstrated that existing US 74 would improve with a new location alternative. This would allow for an apples to apples comparison between the upgrade and new location alternatives. The group was reminded that the purpose of this study was not to improve existing US 74, but rather to provide for high-speed east-west travel in the region. It was agreed that the project was not intended to fix US 74, but rather doing a thorough analysis and considering impacts. It was noted there are no projects currently planned for US 74 beyond the Connector / Bypass in the current Long Range Transportation Plan. It was suggested that this aspect should be addressed in the DEIS because some people's expectation may be that existing US 74 will be improved.

The suggestions presented include developing measures of effectiveness for three scenarios: improving existing US 74, Connector/Bypass on new alignment, and doing nothing. The overall network (US 74 and Y-lines) should be evaluated and statistics such as vehicle miles traveled (VMT), congested VMT, vehicle hours traveled (VHT), congested VHT, and travel times could be developed to make these comparisons.

- **Qualitative Indirect and Cumulative Effects Assessment** – The Qualitative Indirect and Cumulative Effects (ICE) Assessment is nearing completion and will be discussed in more detail at the October and November TEAC meetings. The report is being formatted into 5 steps, similar to the Gaston East-West Connector report, and the presentation at this meeting focused on the first 3 steps (defining the study area, identifying the study area directions and goals, and inventorying notable features). The study will evaluate the No-Build Alternative, New Location Alternative (including scenarios with and without US 601 interchange), and Upgrade US 74 Alternative.

Study areas have been developed for these scenarios, as follows:

- New Location Alternative – 5 mile buffer
[note it was determined that there is no difference among the new location detailed study alternatives in terms of potential for indirect and cumulative impacts]
- Upgrade US 74 Alternative – 2 mile buffer

However, NCTA is reevaluating and may expand the Upgrade US 74 Alternative study area to account for the number of businesses that would be impacted and relocated under this alternative. In addition, the study area has been further subdivided into five zones for discussion of potential indirect impacts. Zones were determined based current and future land use, zoning, and development trends, as follows:

- Zone 1 – Mecklenburg County
- Zone 2 – northern portion of study area, generally north of Ildewild Road including Fairview, Unionville, and portions of Indian Trail
- Zone 3 – areas along US 74 corridor, including incorporated Stallings, Indian Trail, and Monroe
- Zone 4 – south of Old Monroe Road, including Weddington and Wesley Chapel
- Zone 5 – east of NC 200, Wingate, Marshville, unincorporated areas of Union County

USEPA noted that the I-73 EIS (South Carolina) included acreages of potential indirect and cumulative impacts to wetlands based on development of the roadway in its analysis. It was felt

that this method may be beneficial as part of this study. She also noted that the Gaston East-West Connector ICE is vague in regard to existing stormwater rules, and requested that the Monroe ICE report include more detail about how local rules are developed and enforced. USEPA will look for and provide examples for stormwater discussion. She does appreciate the concentration on resources for cumulative effects discussions in lieu of just reviewing land use in the Monroe ICE report.

NCTA anticipates the report will be circulated in November 2008 for agency review and comment.

- **Functional Designs** – The functional designs that have been developed for the detailed study alternatives were presented. These designs were presented the week of September 8, 2008 at three public open houses held throughout the project study area. Copies of the functional designs can be found on the NCTA website at: <http://ncturnpike.org/projects/monroe/functionaldesign.asp>. The designs as presented will be used to complete impact calculations for the Draft EIS, with the exception of bridging decisions. Hydraulic analysis is still underway and final decisions on bridging have yet to be made. Bridging will be discussed at the October 7, 2008 TEAC meeting. NCTA plans to use the same methodology as used on the Gaston project to identify potential bridging locations, and the agencies agreed that was appropriate.

NCTA also pointed out the locations of two populations of Schweinitz sunflower near the proposed Unionville Indian Trail Road interchange identified in field surveys of the project area in fall 2007. There would be no direct impacts to the populations; however, the biological conclusion in the *Draft Natural Resources Technical Report* will be unresolved until NCTA/FHWA and USFWS coordinate further on this issue. NCTA will be having the area resurveyed this fall to reconfirm the extent of the populations. Also of note, the Town of Indian Trail has approved a commercial development, including a Harris Teeter, for the area.

Q&A:

1. *Have any other projects had relocations of the magnitude that would result from the Upgrade Existing US 74 Alternative?*

The Winston Salem Beltway was indicated as an example having a substantial number of relocations, but is currently in litigation.

2. *Would a new alignment alternative provide an opportunity to make small spot improvements along existing US 74?*

Improvements along existing US 74 would not be precluded by the project, but nothing is planned either as part of this project or as a separate project at this time. A TSM study is being prepared by MUMPO for US 74.

Previous Action Items:

- NCTA to schedule August TEAC meeting for week of August 4 in Charlotte-Gastonia area. *[This meeting was cancelled.]*
- NCTA to provide information on additional studies of upgrade existing US 74 alternative. *[Additional information was posted to the TEAC website under August 7, 2008 and provided at the September 23, 2008 TEAC meeting.]*

New Action Items:

- NCTA to provide additional statistics on upgrade existing US 74 alternative.
- NCTA to continue development of Qualitative ICE Assessment and present findings at upcoming meetings.

Resolutions:

- None.

MEETING MINUTES

Date: September 23, 2008
3:00 pm to 5:00 pm
NC Turnpike Authority Board Room

Project: STIP U-3321 Gaston E-W Connector – STP-1213(6)

Gaston E-W Connector Spotlight:

Attendees:

George Hoops, FHWA	BenJetta Johnson, NCDOT-Congestion Management
Jennifer Harris, NCTA	Kristina Solberg, NCDOT-PDEA
Kathy Matthews, USEPA	Jeff Dayton, HNTB
Marella Buncick, USFWS	Jill Gurak, PBS&J
Polly Lespinasse, NCDENR-DWQ	Michael Gloden, PBS&J
Marla Chambers, NCWRC	Amanda Huber, PBS&J
Dewayne Sykes, NCDOT-Roadway Design	
Tony Houser, NCDOT-Roadway Design	

Via Telephone:

Renee Gledhill-Earley, NCDCCR-HPO
Reid Simons, NCTA

Presentation Materials (Posted on TEAC Website unless otherwise noted):

- Meeting Agenda
- Handout – Citizens Informational Workshop Series #3 Summary
- Brochure from the Citizens Informational Workshop Series #3 (not posted)
- August 12, 2008 – Memo – Potential Mill Site at the Babington Property
- Draft Section 6002 Coordination Plan (dated September 23, 2008)
- Signature Form for Concurrence Points 1, 2, and 2a

Purpose:

Discuss agency comments on the Draft Updated Purpose and Need Statement and Draft Addendum to the Final Alternatives Development and Analysis Report; review public comments received at August Citizens Informational Workshops; discuss agency comments on the Indirect and Cumulative Effects Assessment; and discuss 6002/Merger 01 Process.

General Discussion:

The following information was discussed at the meeting:

Ms. Harris opened the meeting with introductions. She noted that Steve Lund from USACE could not attend. She briefly reviewed the updates made to the *Purpose and Need Statement* and the changes/updates in the *Addendum to the Final Alternatives Development and Evaluation Report*. These reports were distributed to the agencies on August 11, 2008. The *Indirect and Cumulative Effects Assessment* was distributed on September 2, 2008.

- **Updated Purpose and Need Statement** - None of the agencies were prepared to comment. NCDWQ and USFWS stated they did not anticipate any major issues with the revisions since they had already been presented and the changes are just updates to data. Ms. Matthews stated that she couldn't make any comments on behalf of USEPA and would defer to Mr. Militscher to provide comments on NEPA related issues.
- **Addendum to the Final Alternatives Development and Evaluation Report** - None of the agencies were prepared to comment. NCDWQ, USFWS, NCWRC, and USEPA stated they needed more time

to review but did not anticipate any major issues. Ms. Gurak provided a brief summary of where major changes were included in the report, including the incorporation of Year 2030 traffic forecasts and operations analyses. She pointed out that the Table of Contents is color-coded to track what changed. Red headings indicate a new section. Blue headings indicate sections that have updated text. Black headings indicate sections with no changes. Within the body of the document, dashed lines along the left side of paragraphs indicate the paragraph is either new or has updated information.

Ms. Harris noted that NCTA is in the process of preparing the DEIS and is using the updated purpose and need statement and alternatives addendum as references. Agencies were requested to provide their comments by the October 7, 2008 TEAC meeting.

- **Citizens Informational Workshop Series #3 Summary** - Ms. Gurak provided a summary of Citizens Informational Workshop Series #3, held August 6, 7, and 11, 2008, as included in the meeting. Attendance at the Local Officials Meeting held on August 6 prior to the workshops was well attended with 32 officials attending the meeting. Over 1,000 people signed in at the three workshops. There were 205 written comment forms received through September 1.

Ms. Gurak reviewed the summary of comments received. In general, comments were divided regarding the need for the project. Regarding particular alternatives, there were several comments opposing Corridor Segment K4A (the southern corridor across the Belmont peninsula). Several subdivisions have been actively participating in the project. Small group meetings were held with Misty Waters and River Lakes since the workshops.

There was a question on the comment form regarding the need for the US 29-74 interchange. This was an issue that the environmental regulatory and resource agencies requested be brought to the public. There were 23 comments received that stated there was no need for the interchange and 25 comments received that stated there was a need. The GUAMPO has not provided formal comments regarding this interchange, but they were receptive to studying its removal. The interchange is part of the project included in the 2030 LRTP.

Ms. Gurak stated that reductions in impacts that would occur with the removal of the interchange range from about 550 linear feet of stream impact reduction for Corridor Segment H1A to about 1,300 linear feet for Corridor Segment H3 to about 2,700 linear feet for Corridor Segment H2B. Wetland impact reductions would be around 1.8 acres.

One other item of note is the potential old mill site located on property owned by Jon and Becky Babington on Gaither Road on the west bank of the South Fork Catawba River. Mr. Brian Overton, an archaeologist with NCDOT, is scheduled to conduct a site visit in September. After the site visit, Mr. Overton will coordinate with the HPO regarding eligibility. If the mill is determined to be worthy of preservation in place, then NCTA will need to study modifying the design in Corridor Segment K3A to see if it's possible to avoid the site. At initial glance, the NCDOT didn't think this property would be eligible.

- **Indirect and Cumulative Effects Analysis** - The agencies present had not reviewed the report yet. Ms. Matthews stated it was desirable to have as much quantitative information included in the report as possible, particularly for aquatic resources but acknowledged that it may be too late to incorporate these suggestions. Ms. Matthews will try to provide NCTA with examples. Ms. Lespinasse noted that the State of South Carolina is in the process of suing the State of North Carolina regarding water quality issues in the Catawba River Basin. There is no court decision yet.
- **Section 6002 Coordination Plan** - NCTA's intent for the Gaston East-West Connector Project is to follow a merger-like process. Since NCTA is not signatory to the NEPA/404 Merger Agreement, the process used can not officially be Merger 01. The environmental review process also needs to be compliant with Section 6002 of SAFETEA-LU. The coordination plan presented includes the intent to follow a merger-like process and adhere to Section 6002. The dispute resolution process is proposed to be the same as included in the Coordination Plan for the Monroe Connector/Bypass project. The attendees generally agreed with the approach, but needed time to review the draft plan.

A single form for Concurrence Points 1, 2, and 2a was handed out for review.

The USFWS requested clarification in the Coordination Plan for what the concurrence forms obligate the agencies to. NCTA agreed to provide that clarification. The NCTA and agencies agreed that there is no need to sign the Coordination Plan, and no need for Cooperating/Participating letters to be sent out. The agencies agreed to provide any additional comments on the Coordination Plan by the October 7, 2008 TEAC meeting.

Q&A:

1. *NCDOT asked if removing the interchange at US 29-74 invalidate the purpose and need since part of the purpose and need is congestion relief on US 29-74?*
The removal of the interchange would not invalidate the purpose and need because most of the traffic diversion occurs on the east end of the project.
2. *What were some of topics discussed at the Local Officials Meeting?*
Most of the questions and discussions were related to funding, construction phasing, the project schedule, and toll technology. Most local officials were supportive of the project.
3. *Would the Gaston East-West Connector include toll plazas?*
Neither the Gaston East-West Connector nor the Monroe Connector Bypass are proposed to have toll plazas where vehicles would need to stop to pay a toll. Ms. Simons added that the NC General Assembly has passed legislation that allows open road tolling.

Previous Action Items:

- NCTA to provide a copy of the *Draft Updated Purpose and Need Statement, the Draft Addendum to the Final Alternatives Development and Evaluation Report, and the Draft Indirect and Cumulative Effects Assessment*, once the NCDOT reviews are complete.
[Copies distributed on August 11, 2008 and September 2, 2008.]
- NCTA to provide the public comments from the August workshops after the comment period has passed.
[Comments discussed at the September 23, 2008 TEAC meeting.]
- Agencies will provide any comments on the *Draft Updated Purpose and Need Statement, Draft Addendum to the Final Alternatives Development and Evaluation Report, and the Draft Indirect and Cumulative Effects Assessment* by the end of August.
[Comments anticipated from the Agencies by the October 7, 2008 TEAC meeting.]

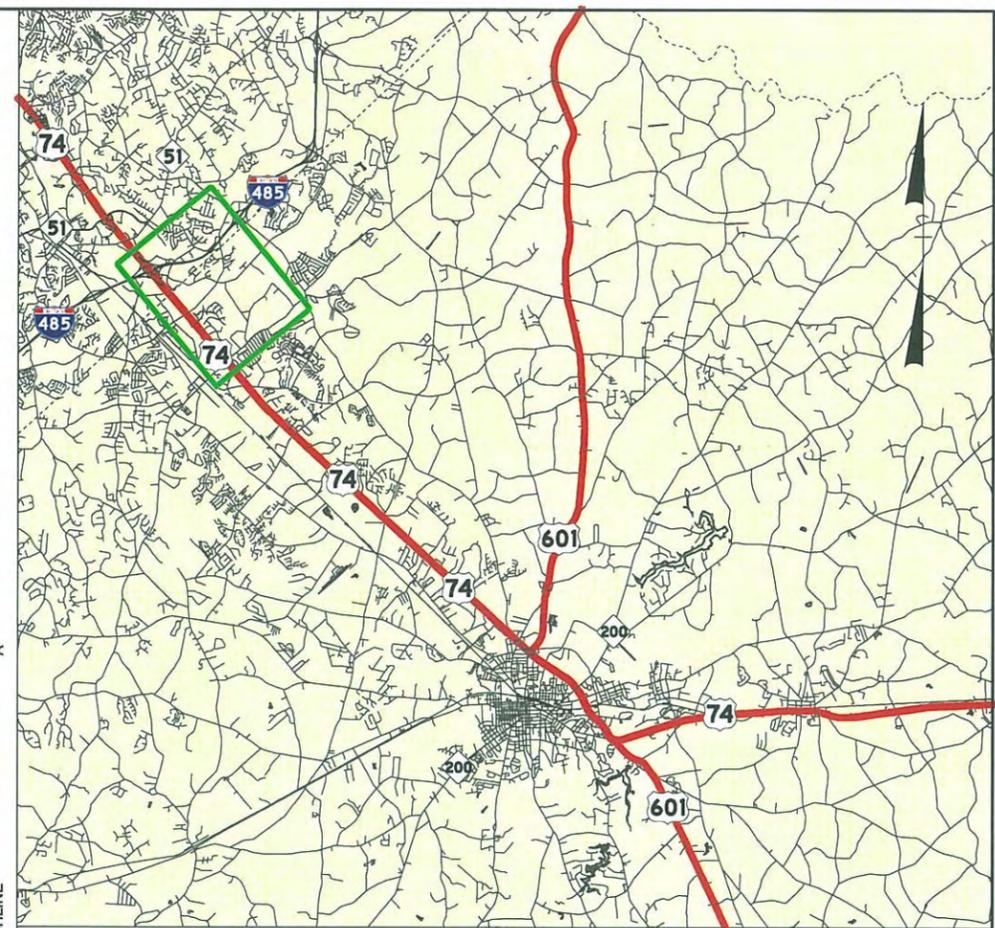
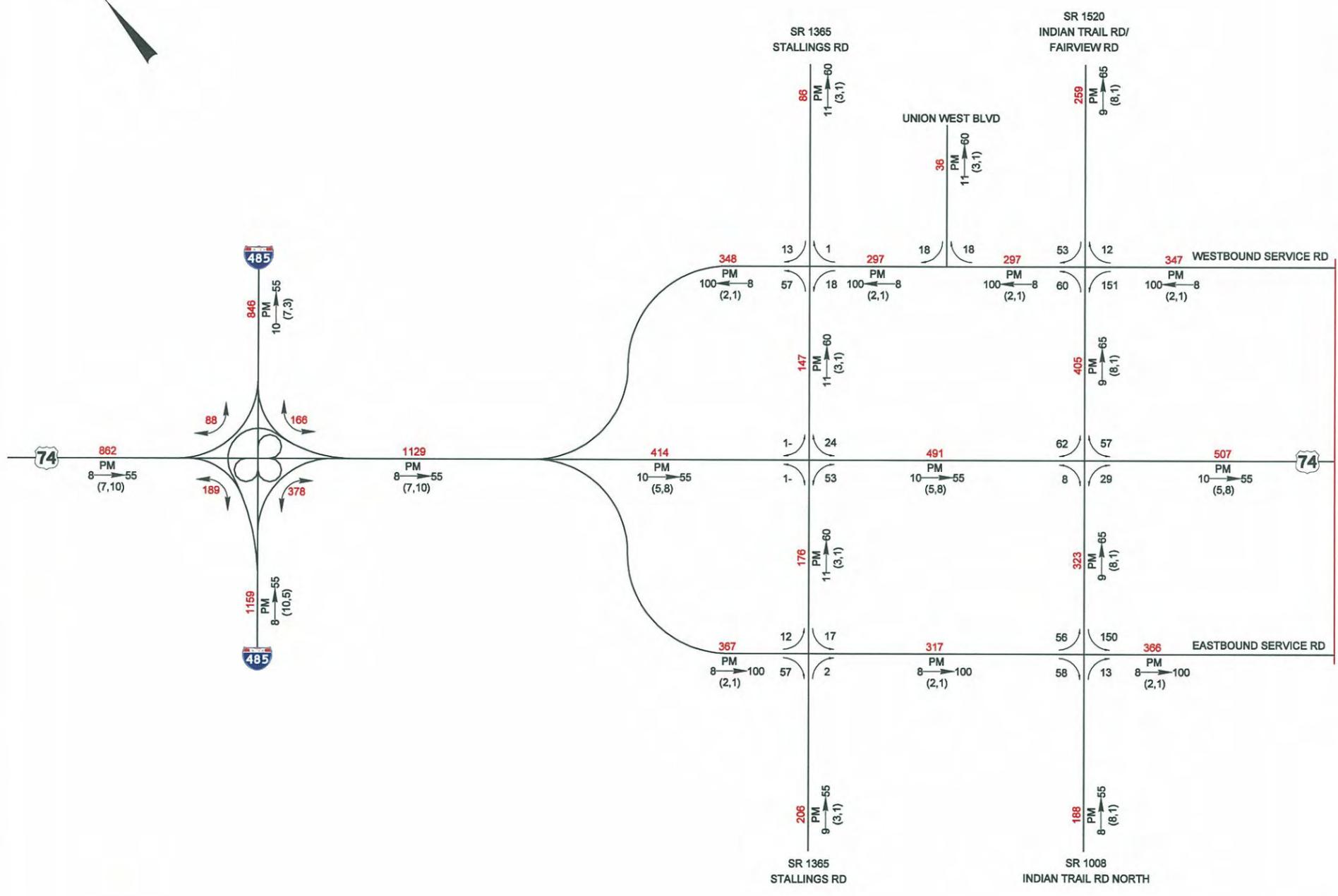
New Action Items:

- Agencies will provide comments on the Updated Purpose and Need Statement, Draft Addendum to the Final Alternatives Development and Evaluation Report, and the Indirect and Cumulative Effect Assessment by October 7, 2008.
- Agencies to provide comments on the Section 6002 Coordination Plan. NCTA will provide a revised Draft Coordination Plan based on comments from the September 23, 2008 meeting.
- Obtain agency comments and signature on Concurrence Points 1, 2, and 2a at the October 7, 2008 TEAC Meeting.

Resolutions:

- None.

**Appendix B – 2035 Build Traffic Forecast for
Preliminary Study Alternative G**



2035 BUILD "TOLL" US 74 UPGRADE SCENARIO

AVERAGE ANNUAL DAILY TRAFFIC WITH TRUCK, DHV AND DIRECTIONAL FACTORS

TIP: R-3329/R-2559 LOCATION: US 74 in Mecklenburg and Union Counties

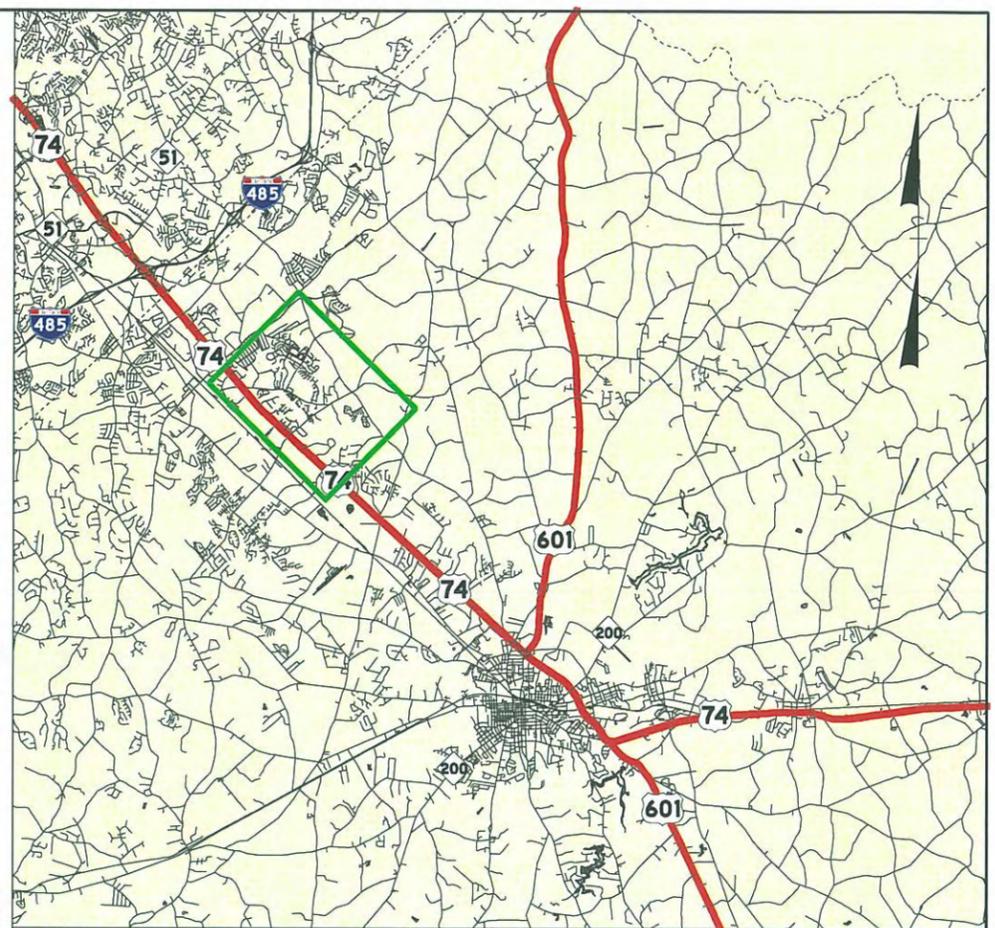
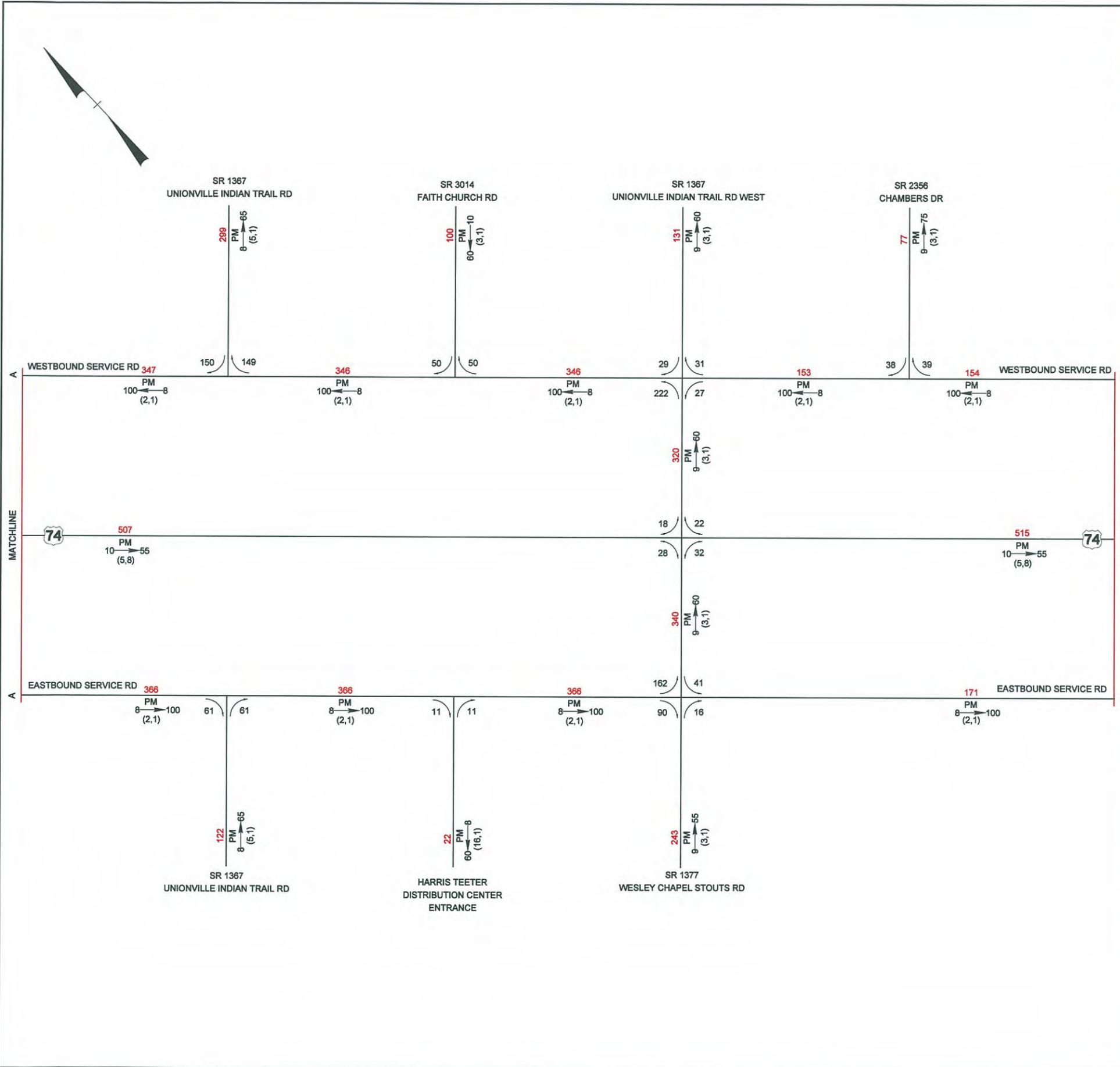
PROJECT: US 74 Upgrade with Frontage Roads SHEET NUMBER: 1

DIVISION: 10 DATE: June 2008 PREPARED BY: Wilbur Smith Associates

LEGEND

- DHV $\frac{PM}{(d, t)}$ D DHV Design Hourly Volume (%) = K_{30}
- PM PM Peak Period
- D D Peak Hour Directional Split (%)
- \rightarrow Indicates Direction of D
- (d, t) (d, t) Duals, TTST (%)
- ### No. of Vehicles Per Day (VPD) in 100s
- 1- Less than 50 VPD
- ### Turning volume (VPD)





2035 BUILD "TOLL" US 74 UPGRADE SCENARIO

AVERAGE ANNUAL DAILY TRAFFIC WITH TRUCK, DHV AND DIRECTIONAL FACTORS

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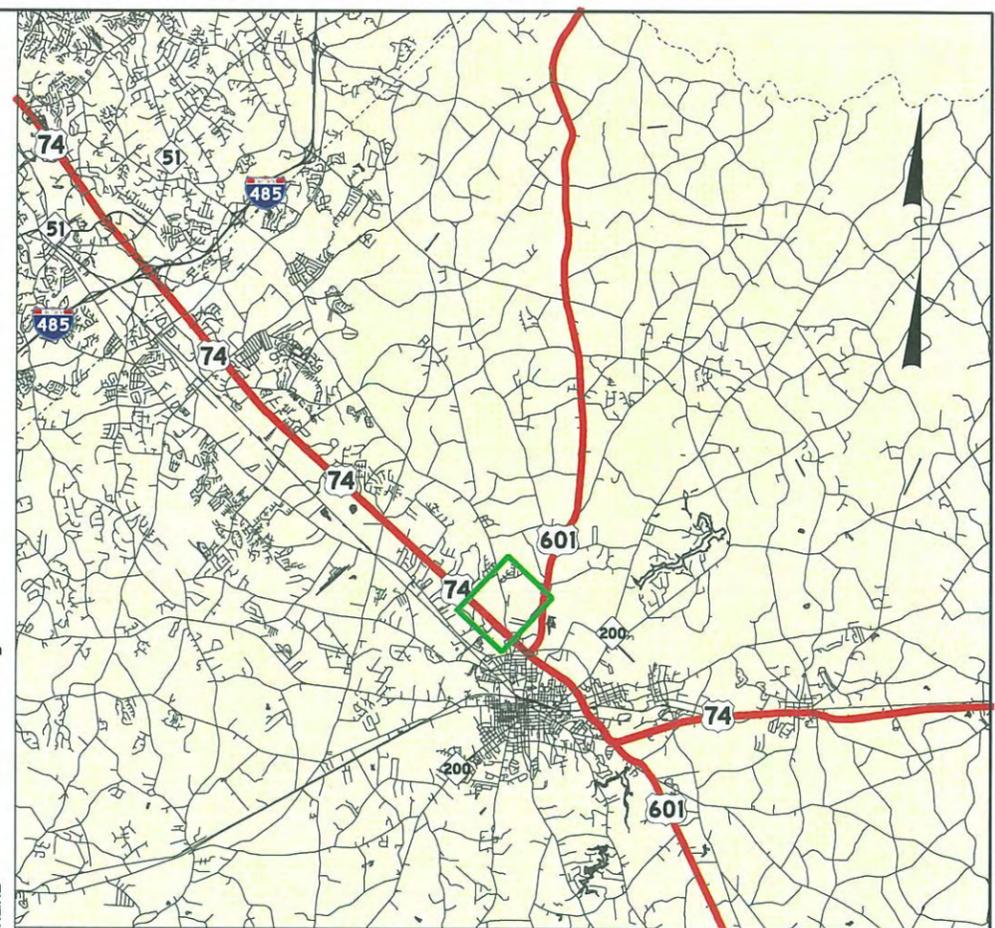
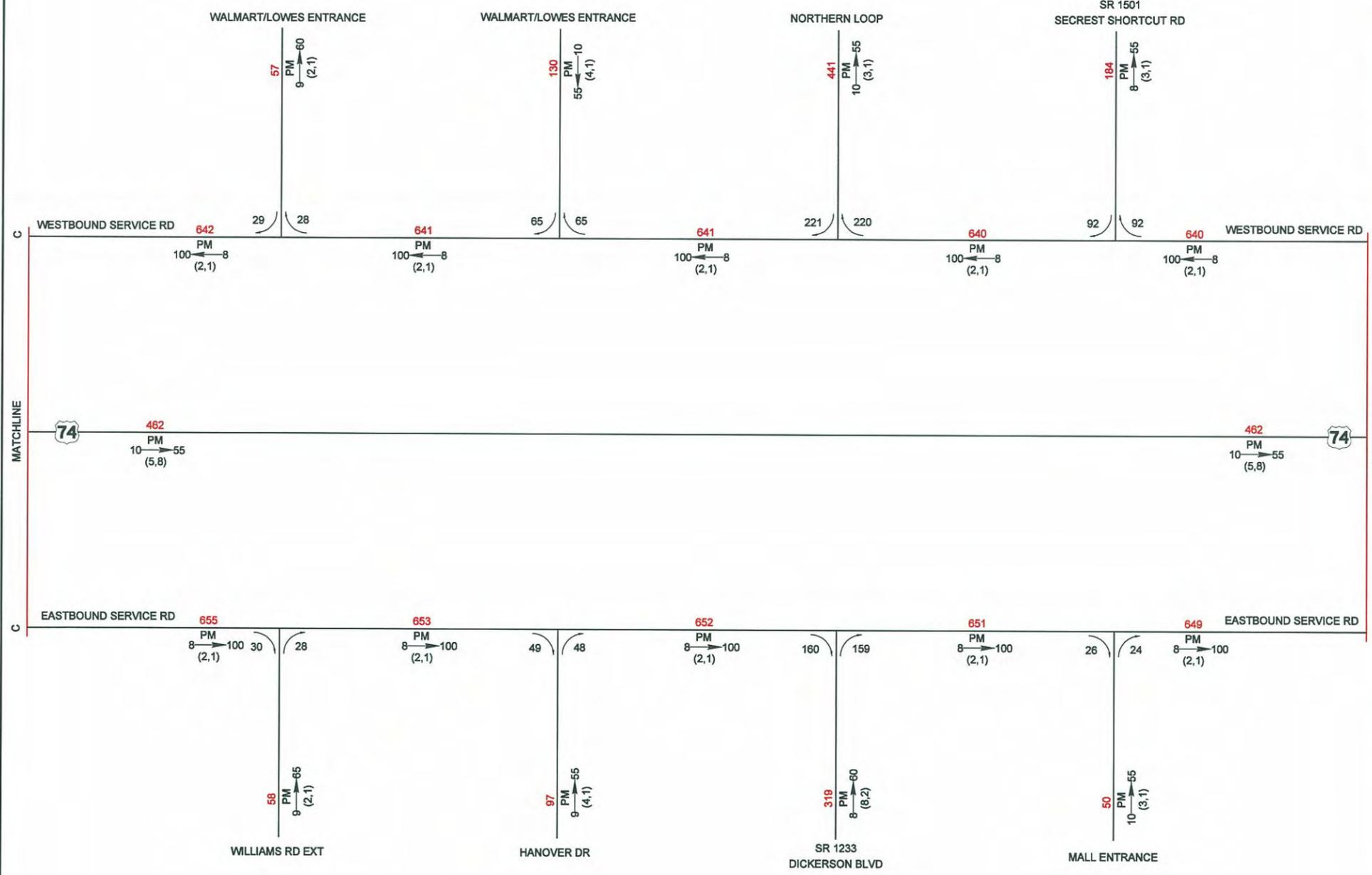
PROJECT: US 74 Upgrade with Frontage Roads SHEET NUMBER: 2

DIVISION: 10 DATE: June 2008 PREPARED BY: Wilbur Smith Associates

LEGEND

DHV	Design Hourly Volume (%) = K_{30}	###	No. of Vehicles Per Day (VPD) in 100s
PM	Peak Period	1-	Less than 50 VPD
D	Peak Hour Directional Split (%)	###	Turning volume (VPD)
→	Indicates Direction of D		
(d, t)	Duals, TTST (%)		





2035 BUILD "TOLL" US 74 UPGRADE SCENARIO

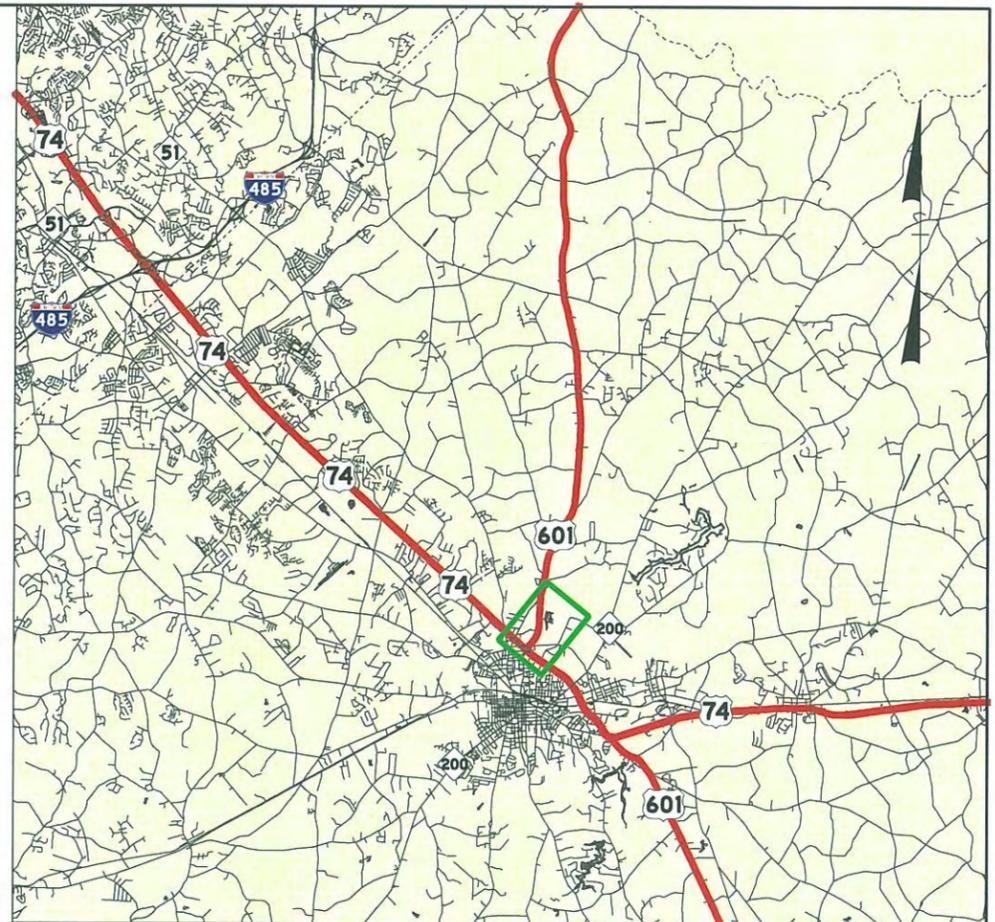
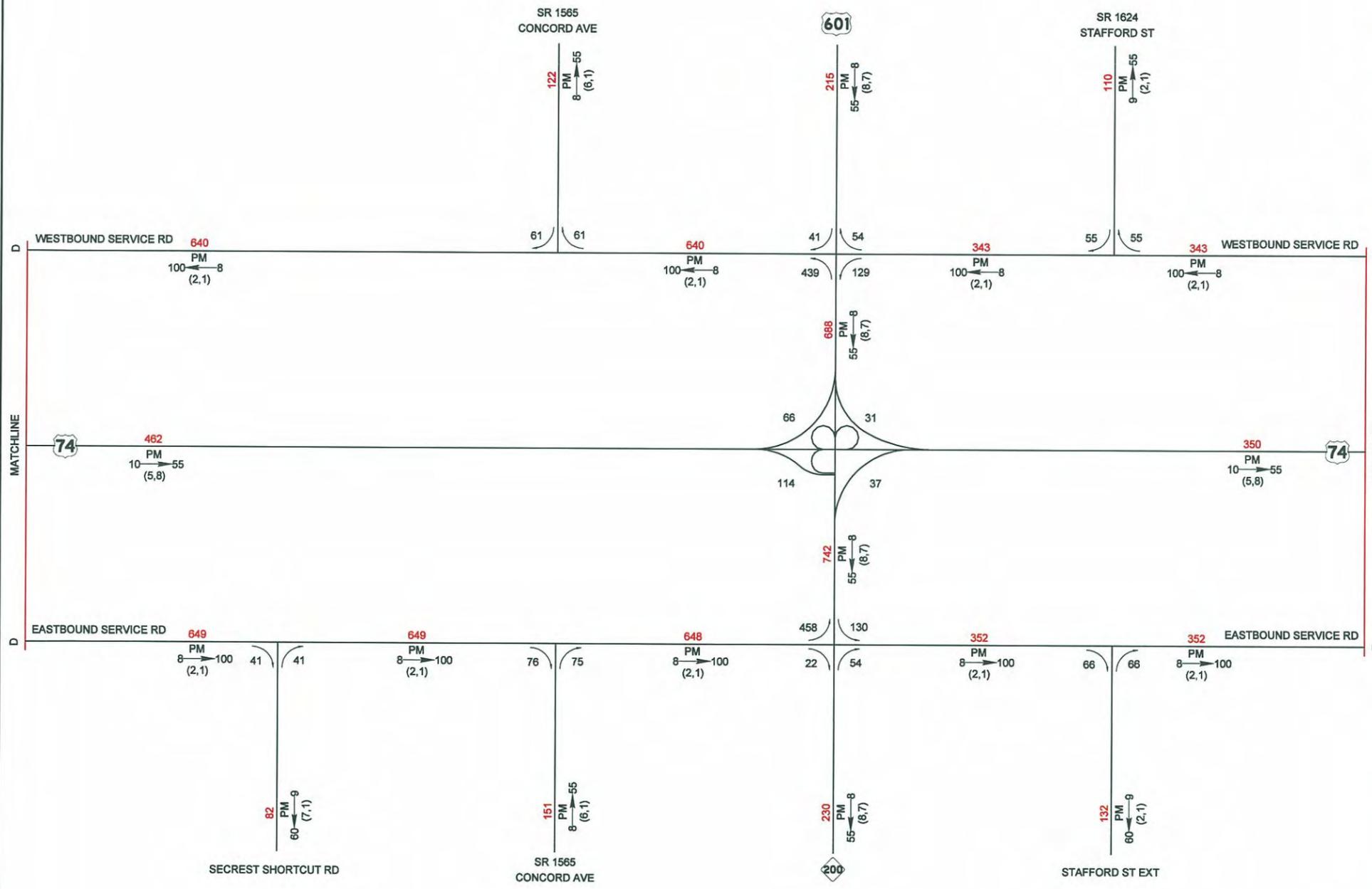
AVERAGE ANNUAL DAILY TRAFFIC WITH TRUCK, DHV AND DIRECTIONAL FACTORS

TIP: R-3329/R-2559		LOCATION: US 74 in Mecklenburg and Union Counties
PROJECT: US 74 Upgrade with Frontage Roads		SHEET NUMBER: 4
DIVISION: 10	DATE: June 2008	PREPARED BY: Wilbur Smith Associates

LEGEND

DHV	Design Hourly Volume (%) = K_{30}	###	No. of Vehicles Per Day (VPD) in 100s
PM	Peak Period	1-	Less than 50 VPD
D	Peak Hour Directional Split (%)	###	Turning volume (VPD)
→	Indicates Direction of D		
(d, t)	Duals, TTST (%)		





2035 BUILD "TOLL" US 74 UPGRADE SCENARIO

AVERAGE ANNUAL DAILY TRAFFIC WITH TRUCK, DHV AND DIRECTIONAL FACTORS

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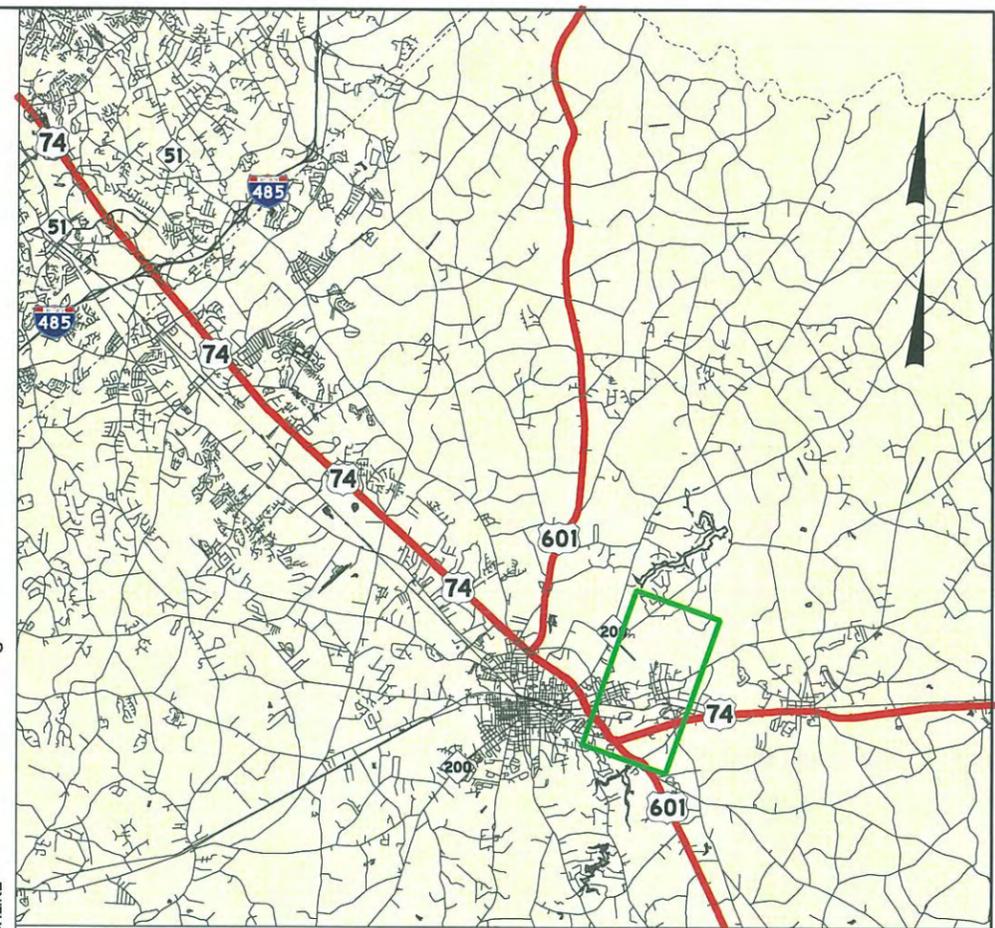
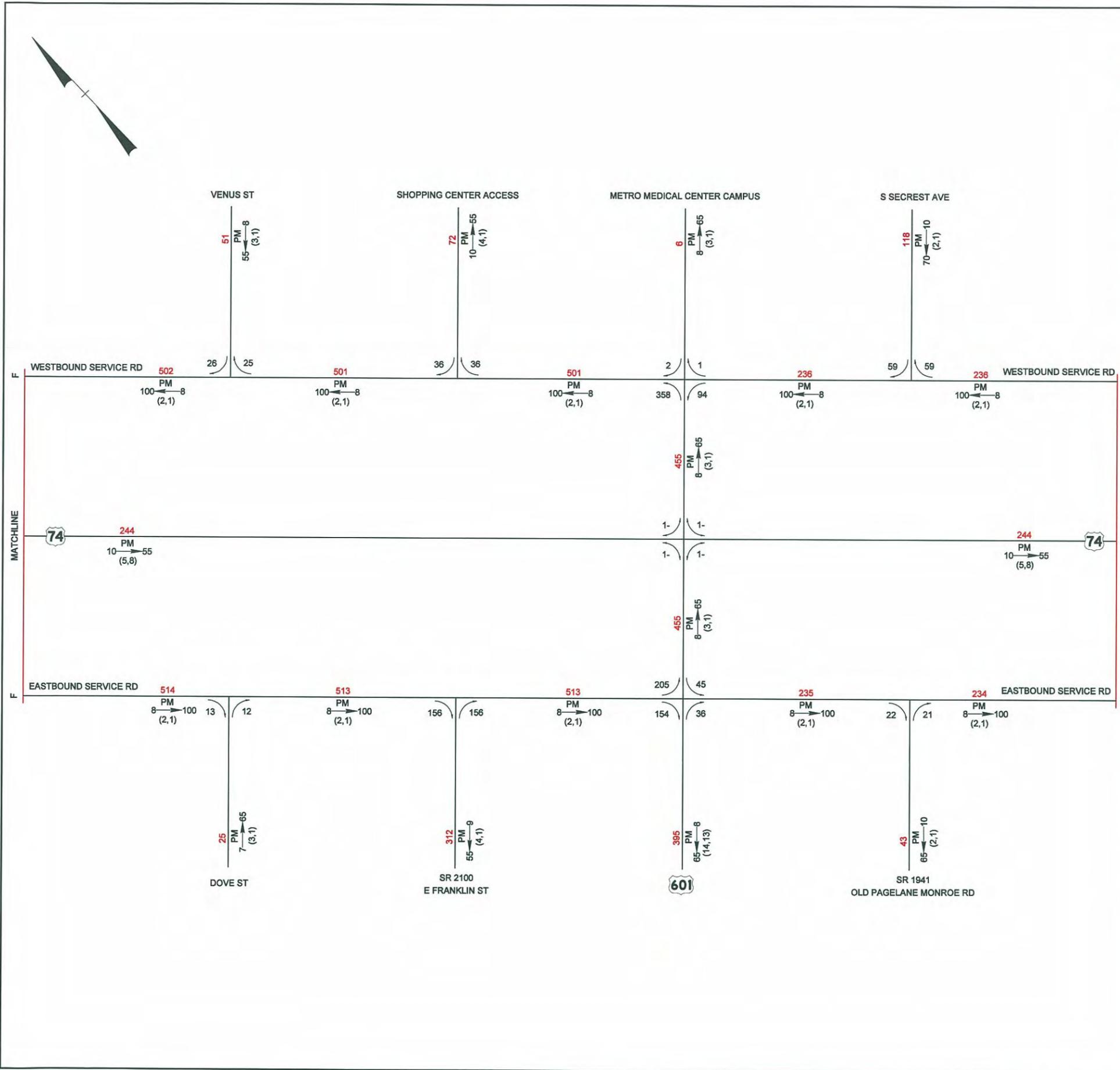
PROJECT: US 74 Upgrade with Frontage Roads SHEET NUMBER: 5

DIVISION: 10 DATE: June 2008 PREPARED BY: Wilbur Smith Associates

LEGEND

- DHV Design Hourly Volume (%) = K_{30}
- PM Peak Period
- D Peak Hour Directional Split (%)
- Indicates Direction of D
- (d, t) Duals, TTST (%)
- ### No. of Vehicles Per Day (VPD) in 100s
- 1- Less than 50 VPD
- ### Turning volume (VPD)





2035 BUILD "TOLL" US 74 UPGRADE SCENARIO

AVERAGE ANNUAL DAILY TRAFFIC WITH TRUCK, DHV AND DIRECTIONAL FACTORS

TIP: R-3329/R-2559 LOCATION: US 74 in Mecklenburg and Union Counties

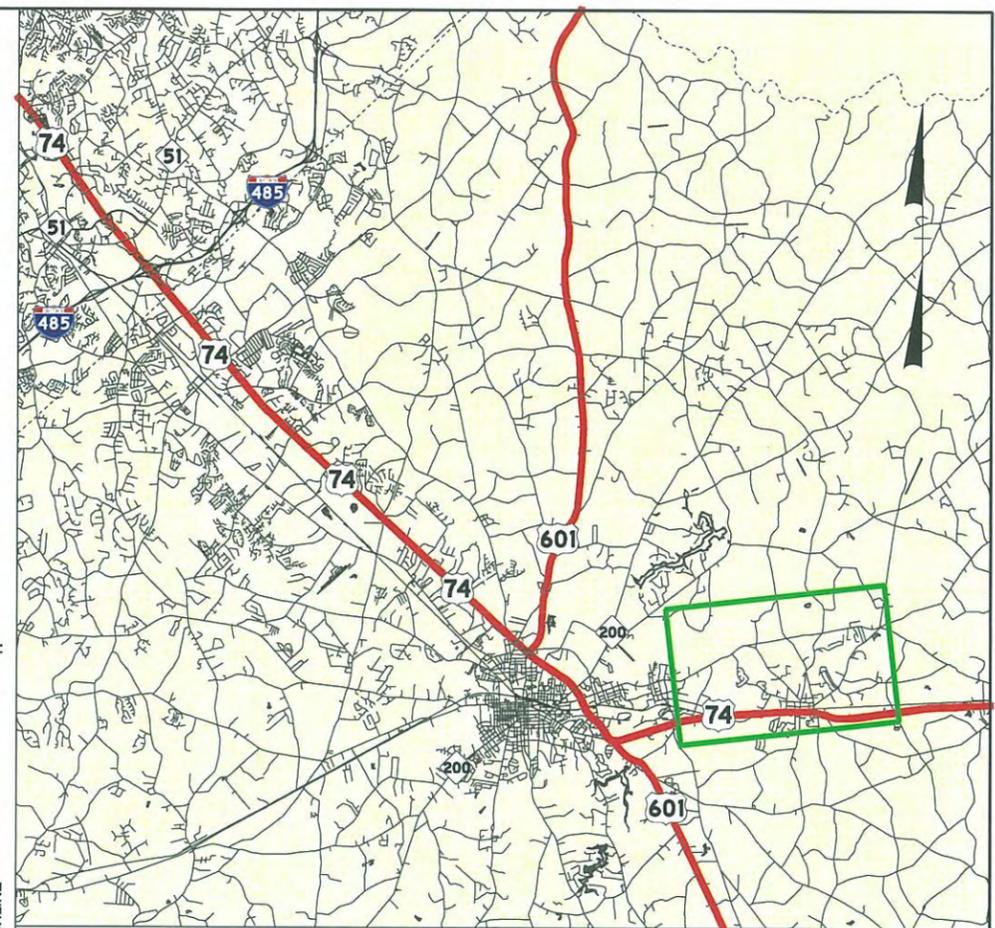
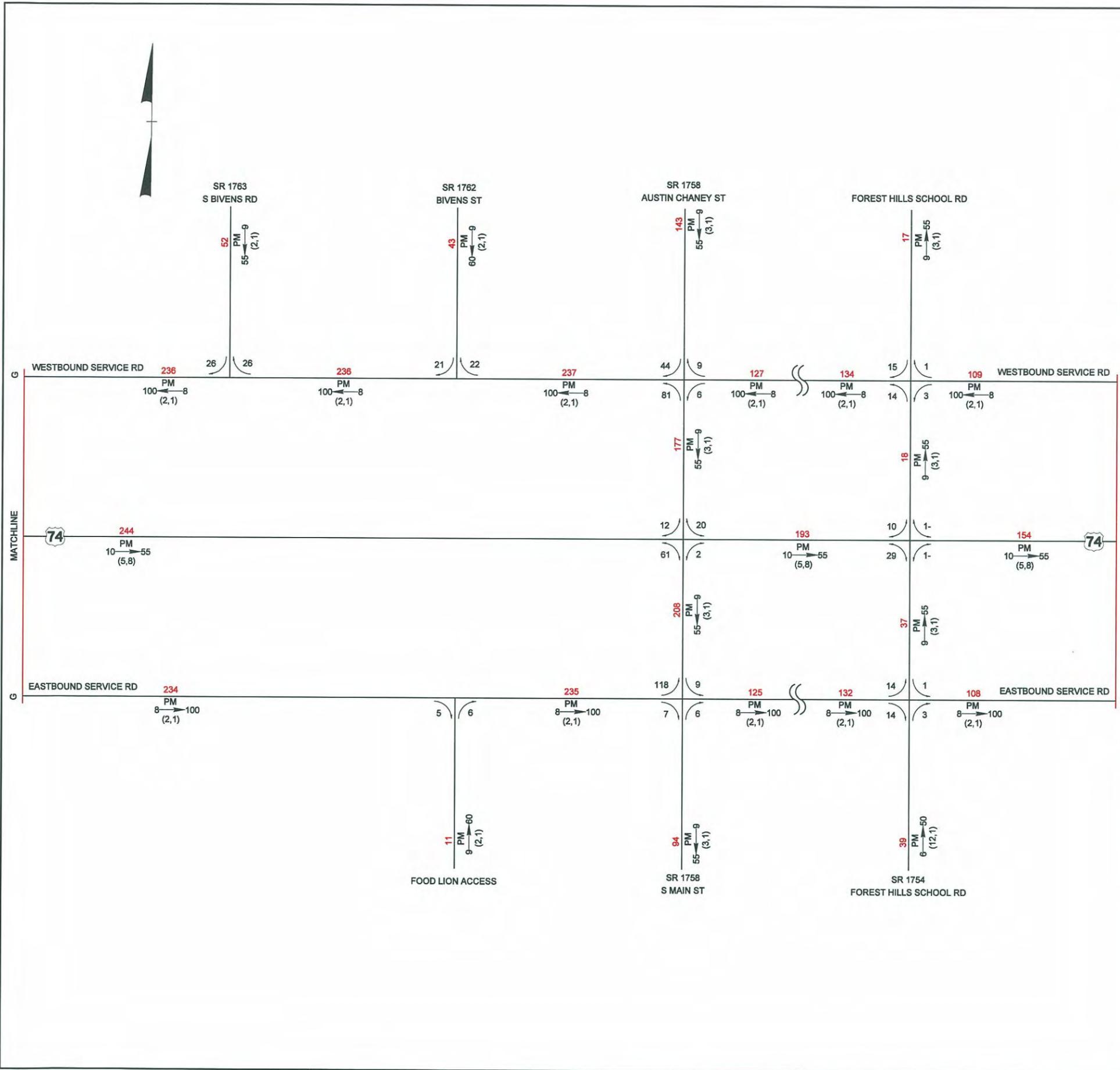
PROJECT: US 74 Upgrade with Frontage Roads SHEET NUMBER: 7

DIVISION: 10 DATE: June 2008 PREPARED BY: Wilbur Smith Associates

LEGEND

DHV	PM	D	DHV Design Hourly Volume (%) = K_{30}	###	No. of Vehicles Per Day (VPD) in 100s
(d, t)			PM Peak Period	1-	Less than 50 VPD
			D Peak Hour Directional Split (%)	###	Turning volume (VPD)
			Indicates Direction of D		
			(d, t) Duals, TTST (%)		





2035 BUILD "TOLL" US 74 UPGRADE SCENARIO

AVERAGE ANNUAL DAILY TRAFFIC WITH TRUCK, DHV AND DIRECTIONAL FACTORS

TIP: R-3329/R-2559 LOCATION: US 74 in Mecklenburg and Union Counties

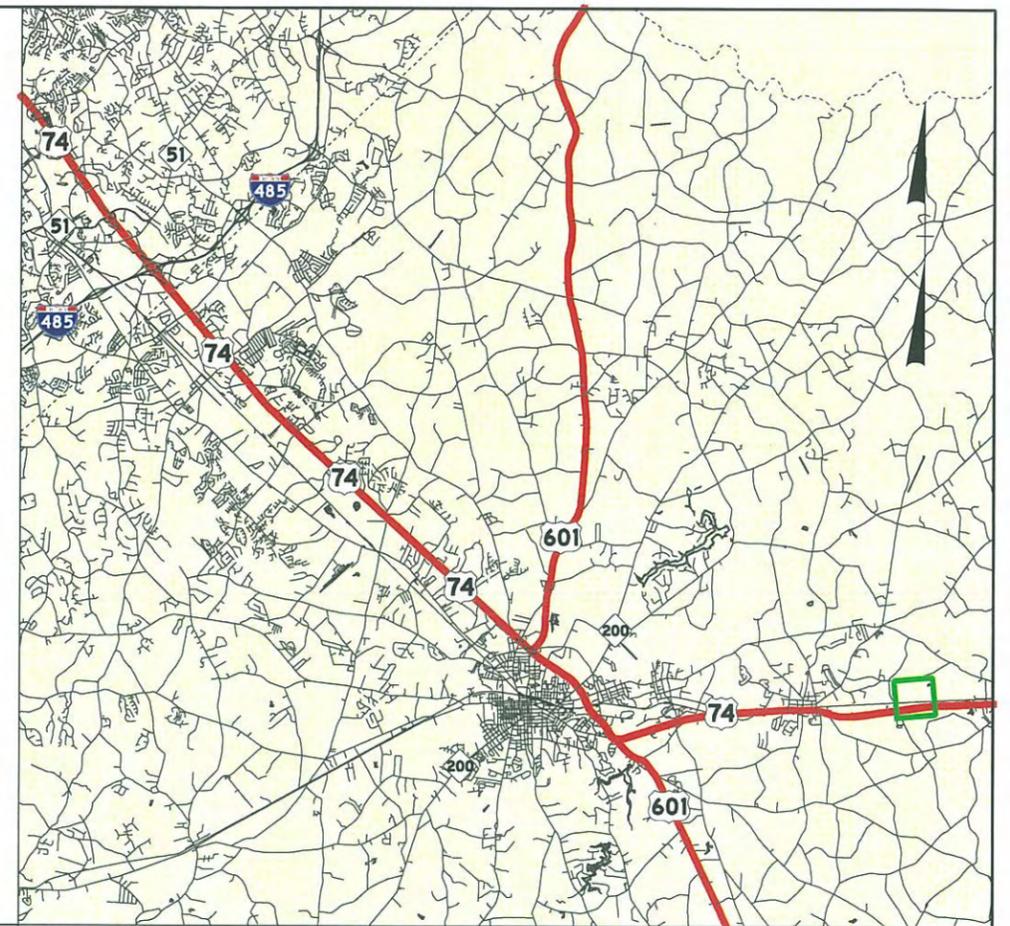
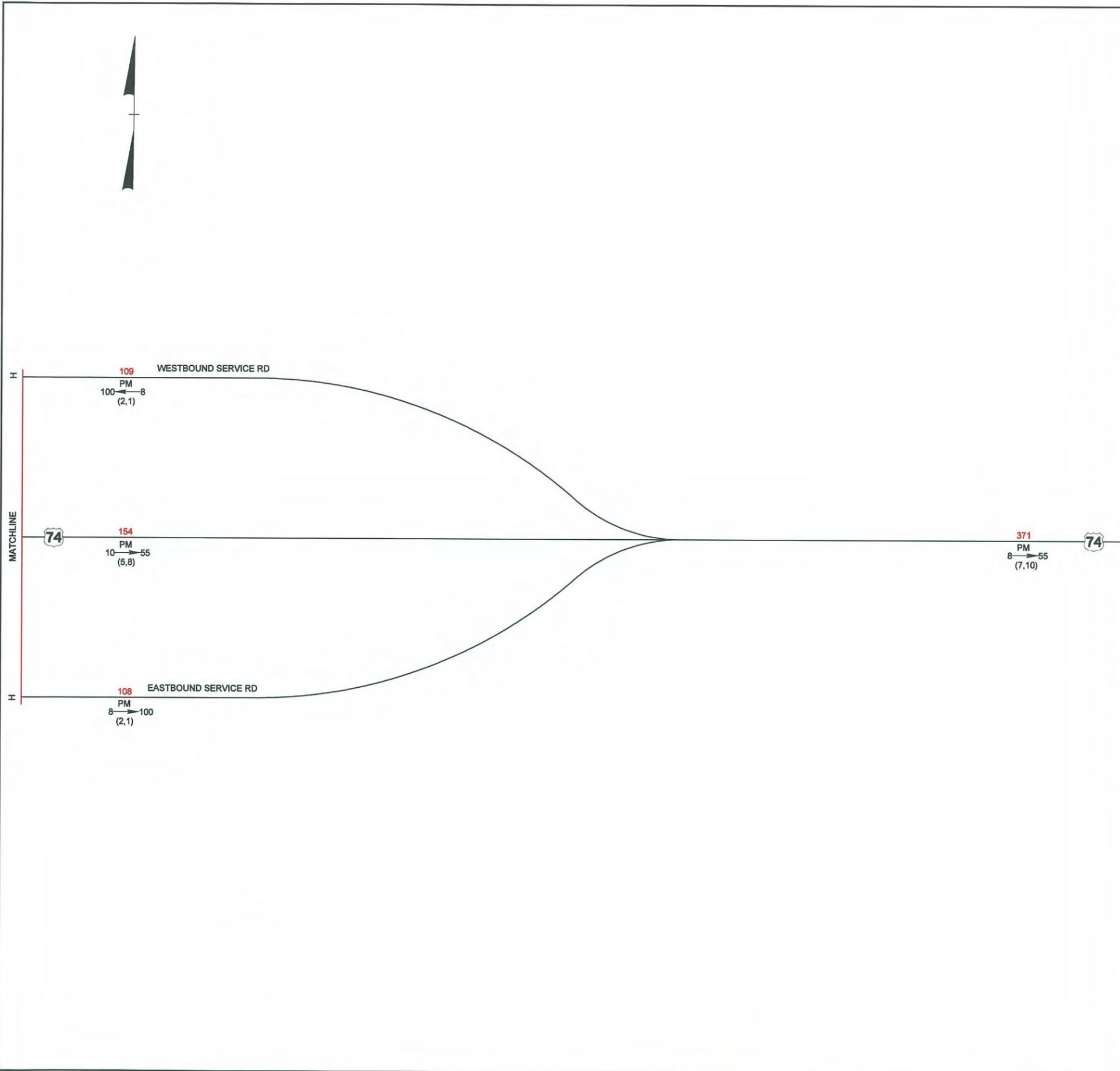
PROJECT: US 74 Upgrade with Frontage Roads SHEET NUMBER: 8

DIVISION: 10 DATE: June 2008 PREPARED BY: Wilbur Smith Associates

LEGEND

DHV	Design Hourly Volume (%) = K_{30}	###	No. of Vehicles Per Day (VPD) in 100s
PM	Peak Period	1-	Less than 50 VPD
D	Peak Hour Directional Split (%)	###	Turning volume (VPD)
→	Indicates Direction of D		
(d, t)	Duals, TTST (%)		





2035 BUILD "TOLL" US 74 UPGRADE SCENARIO

AVERAGE ANNUAL DAILY TRAFFIC WITH TRUCK, DHV AND DIRECTIONAL FACTORS

TIP: R-3329/R-2559

LOCATION: US 74 in Mecklenburg and Union Counties

PROJECT: US 74 Upgrade with Frontage Roads

SHEET NUMBER: 9

DIVISION: 10

DATE: June 2008

PREPARED BY: Wilbur Smith Associates

LEGEND

- DHV $\xrightarrow{\text{PM}} \text{D}$
(d, t)
- PM Peak Period
- D Peak Hour Directional Split (%)
- \rightarrow Indicates Direction of D
- (d, t) Duals, TTST (%)
- ### No. of Vehicles Per Day (VPD) in 100s
- 1- Less than 50 VPD
- ### Turning volume (VPD)



Appendix C – Frontage Road Level of Service

WESTBOUND FRONTAGE ROAD

Road 1	Road 2	AADT b/w Road 1 & Road 2 (in 100's)	K- Factor	Peak Hour Volume (vph)	LOS
Stallings Road	Union West Blvd	308	8%	2,464	F
Union West Blvd	Indian Trail Road	308	8%	2,464	F
Indian Trail Road	Unionville Indian Trail Road	347	8%	2,776	F
Unionville Indian Trail Road	Faith Church Road	346	8%	2,768	F
Faith Church Road	Unionville Indian Trail Road West	346	8%	2,768	F
Unionville Indian Trail Road West	Chambers Drive	153	8%	1,224	C
Chambers Drive	North Rocky River Road	154	8%	1,232	C
North Rocky River Road	Fowler Secrest Road	610	8%	4,880	F
Fowler Secrest Road	Rolling Hills Drive	611 / 642	8% / 8%	4,888 / 5,136	F / F
Rolling Hills Drive	Round Table Road	642	8%	5,136	F
Round Table Road	Wal-Mart/Lowe's Entrance (west)	642	8%	5,136	F
Wal-Mart/Lowe's Entrance (west)	Wal-Mart/Lowe's Entrance (east)	641	8%	5,128	F
Wal-Mart/Lowe's Entrance (east)	(Proposed) Northern Loop	641	8%	5,128	F
(Proposed) Northern Loop	Secrest Shortcut Road	640	8%	5,120	F
Secrest Shortcut Road	Concord Avenue	640	8%	5,120	F
Concord Avenue	US 601	640	8%	5,120	F
US 601	Stafford Street	343	8%	2,744	F
Stafford Street	Shopping Center Access	343	8%	2,744	F
Shopping Center Access	NC 200	344	8%	2,752	F
NC 200	Walkup Avenue	501	8%	4,008	F
Walkup Avenue	S. Sutherland Avenue	502	8%	4,016	F
S. Sutherland Avenue	Venus Street	502	8%	4,016	F
Venus Street	Shopping Center Access	501	8%	4,008	F
Shopping Center Access	Metro Medical Center Campus	501	8%	4,008	F
Metro Medical Center Campus	South Secrest Avenue	236	8%	1,888	F
South Secrest Avenue	South Bivens Road	236	8%	1,888	F
South Bivens Road	Bivens Street	236	8%	1,888	F
Bivens Street	Austin Chaney Street	237	8%	1,896	F
Austin Chaney St	Forest Hills School Rd	127 / 134	8% / 8%	1,016 / 1,072	C / C
Forest Hills School Road	US 74 merge	109	8%	872	B

Source: Exhibit 10-7 Service Volumes for Urban Streets, Highway Capacity Manual 2000, TRB

EASTBOUND FRONTAGE ROAD

Road 1	Road 2	AADT b/w Road 1 & Road 2	K -Factor	Peak Hour Volume (vph)	LOS
Stallings Road	Indian Trail Road North	317	8%	2,536	F
Indian Trail Road North	Unionville Indian Trail Road	366	8%	2,928	F
Unionville Indian Trail Road	Harris Teeter Distribution Center	366	8%	2,928	F
Harris Teeter Distribution Center	Wesley Chapel Stouts Road	366	8%	2,928	F
Wesley Chapel Stouts Road	North Rocky River Road	171	8%	1,368	C
North Rocky River Road	John Moore Road	628	8%	5,024	F
John Moore Road	Carroll Street	625 / 657	8% / 8%	5,000 / 5,256	F / F
Carroll Street	Roland Drive	655	8%	5,240	F
Roland Drive	Williams Road Extension	655	8%	5,240	F
Williams Road Extension	Hanover Street	653	8%	5,224	F
Hanover Street	Dickerson Boulevard	652	8%	5,216	F
Dickerson Boulevard	Mall Entrance	651	8%	5,208	F
Mall Entrance	Secret Shortcut Road	649	8%	5,192	F
Secret Shortcut Road	Concord Avenue	649	8%	5,192	F
Concord Avenue	NC 200	648	8%	5,184	F
NC 200	Stafford Street Extension	352	8%	2,816	F
Stafford Street Extension	Boyte Street	352	8%	2,816	F
Boyte Street	Morgan Mill Road	352	8%	2,816	F
Morgan Mill Road	Walkup Avenue	512	8%	4,096	F
Walkup Avenue	S. Sutherland Avenue	513	8%	4,104	F
S. Sutherland Avenue	Dove Street	514	8%	4,112	F
Dove Street	East Franklin Street	513	8%	4,104	F
East Franklin Street	US 601	513	8%	4,104	F
US 601	Old Pageland Monroe Road	235	8%	1,880	F
Old Pageland Monroe Road	Food Lion Access	234	8%	1,872	F
Food Lion Access	South Main Street	235	8%	1,880	F
South Main Street	Forest Hills School Road	125 / 132	8% / 8%	1,000 / 1,056	C / C
Forest Hills School Road	US 74 merge	108	8%	864	B

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Note: The values represented in all tables are approximate and for illustration purposes only.

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Note: The values represented in all tables are approximate and for illustration purposes only.

Appendix D – Right-of-Way Cost

Date
3/4/09

To
Spencer Franklin, PE
Christy Shumate, AICP



From
Padam Singh, AICP
Adin McCann, PE

**PROJECT
CORRESPONDENCE**

Subject
Monroe Connector/Bypass
STIP Project Nos. R-3329/R-2559
Preliminary Study Alternative G and
Preliminary Study Alternative G Revised
Opinion of Probable Costs for Right-of-Way

The following outlines the data, assumptions, and methodology used to develop an opinion of probable right-of-way costs associated with the upgrade of existing US 74 as part of the Monroe Bypass/Connector Project. The upgrade of existing US 74 alternative has been identified as Preliminary Study Alternative (PSA) G and PSA G Revised.

Data Sources:

For the purposes of this right-of-way (ROW) analysis, the following datasets were utilized:

- Union County GIS parcel dataset
 - Obtained 3/3/09
 - Based on interviews with Union County GIS staff, Union County has recently (Jan. 08) completed the county-wide parcel appraisal process. Consequently, the appraised value of the land and associated buildings contained in the GIS shapefile(s) was utilized as the primary input for the analysis.
- Mecklenburg County parcel dataset
 - Obtained July 2008
- GIS impact analysis summary tables provided by PBS&J
- GIS impact analysis shapefiles provided by PBS&J for PSA G and PSA G Revised, including:
 - Impacted building footprint shapefile
 - Impacted parcel shapefiles for both alignment options (PSA G and PSA G Revised)
 - Corridor footprint

Assumptions:

The methodology used to determine probable ROW costs is based on following assumptions:

- The appraisal information provided in the Union County GIS files is the most accurate information available on the value of land and associated buildings found within Union County. The total parcel value is comprised of the appraised land value and associated building values for each parcel.

- Smaller parcels are more prone to a reduction in market value if a substantial portion of the property is acquired. Consequently, parcels less than 2 acres in size are treated differently than parcels greater than 2 acres in size.
 - If the affected parcel (parcel where the alignment touches the property) is less than 2 acres in size and the alignment takes up more than 20% of the parcel than it is assumed that the entire parcel is taken including any building that is on the property.
- If the alignment touches a building, then the entire building is taken.
- If the alignment does not touch a building, then only the land value is assessed.
- No analysis was completed to determine if a parcel would be taken due to factors such as loss of parking, access or septic field.
- Based on NCDOT experience, a 50% right-of-way acquisition contingency is applied to the total right-of-way cost determined from the GIS analysis.

Methodology:

The following steps were taken to develop the opinion of probable right-of-way costs for PSA G and PSA G Revised:

1. For each provided corridor, parcels were divided into two groups:

Group 1 - Parcels with affected buildings (i.e., anticipated construction footprint touches a building) - these parcels were considered as total takes and probable costs were assessed for both buildings and land.

Group 2 - Parcels with no affected buildings - these parcels were assessed for probable costs related only to land.

2. When buildings are affected, the entire building is considered to be taken and the appraised structure value is used from the GIS datasets. Parcels were then selected based on their size (i.e., acreage). A two (2) acre threshold was used to determine the type of analysis undertaken to estimate costs. The two different analyses completed are described below:
 - Parcels Less than 2 Acres - If the affected size is more than 20% of the original parcel size, then it is assumed the entire parcel will be acquired at the total parcel value. Otherwise, only a portion of the land will be acquired. The cost of this partial acquisition was determined by multiplying the percentage of the affected parcel by the total appraised parcel value.
Since a large portion of the parcels abutting US 74 are businesses and affecting 20% or more land in the front will change the parking, it will alter the viability of those businesses.
 - Parcels Greater than 2 Acres - If the remaining parcel (original parcel area minus the affected parcel area) is less than 2 acre, then it is assumed the entire parcel will be acquired at the total appraised parcel value. Otherwise, only a portion of the land will be acquired. The cost of this partial acquisition was determined by multiplying the percentage of the affected parcel by the total appraised parcel value.

When buildings are not affected, the affected parcels are selected based on their size. As mentioned previously, a two (2) acre threshold was used to determine the type of analysis used to estimate the acquisition cost. The two different analyses completed are described below:

- Parcels Less than 2 Acres - If the affected size was more than 20% of the original parcel size, then it was assumed the entire parcel will be acquired at the total appraised parcel value. Otherwise, only a portion of the land will be acquired. The cost of this partial acquisition was determined by multiplying the percentage of the affected parcel by the total appraised parcel value.
 - Parcels greater than 2 Acres - If the remaining parcel (original parcel area minus the affected parcel area) was less than 2 acre, then it was assumed the entire parcel will be acquired at the total appraised parcel value. Otherwise, only a portion of the land will be acquired. The cost of this partial acquisition was determined by multiplying the percentage of the affected parcel by the total appraised parcel value.
3. The probable ROW cost was sub-totaled by adding the value of the affected buildings and the value of the affected land.
 4. A 50% acquisition contingency was added to the sub-total cost determined in Step 3 to provide the final opinion or probable cost for right-of-way.

For Old option –

Total Parcels = 747

Total intersect acres = 398 ac

- If all affected parcels are taken then the ROW cost = \$861,626,940 + 50% contingency = **\$1,292,440,410**
- If only the intersected area is taken then the ROW cost = \$167,009,996 + 50% contingency = **\$250,514,994**

UNION COUNTY

Building take

- Total Parcels = 372

Parcels less than 2 acres

- Parcels Acres ≤ 2 acres & Pct_Take $\geq 20\%$
 - Total number of parcels = 263
 - Total Value = \$159,993,990
- Parcels Acres ≤ 2 acres & Pct_Take $\leq 20\%$
 - Total number of parcels = 20
 - Total Bld Value = \$3,869,710 (All building value)
 - Total Land Value = \$808,074 (% of land that is being taken, so % of land value)

Parcels greater than 2 acres

- Parcels Acres ≥ 2 acres & left over parcel ≤ 2 acre
 - Total number of parcels = 18
 - Total Value = \$22,055,990
- Parcels Acres ≥ 2 acres & left over parcel ≥ 2 acre
 - Total number of parcels = 71
 - Total Bld Value = \$88,574,000 (All building value)
 - Total Land Value = \$17,709,013 (% of land that is being taken, so % of land value)

Total ROW cost where buildings are taken is = **\$293,010,777**

Parcel take

- Total Parcels = 375

Parcels less than 2 acres

- Parcels Acres ≤ 2 acres & Pct_Take $\geq 20\%$
 - Total number of parcels = 158
 - Total Value = \$50,628,250
- Parcels Acres ≤ 2 acres & Pct_Take $\leq 20\%$
 - Total number of parcels = 53
 - Total Land Value = \$994,678

Parcels greater than 2 acres

For Improved option –

Total Parcels = 630

Total intersect acres = 159 ac

- If all affected parcels are taken then the ROW cost = **\$742,722,450.00** + 50% contingency = **\$ 1,114,083,675**
- If only the intersected area is taken then the ROW cost = **\$68,153,947.08** + 50% contingency = **\$102,230,920**

UNION COUNTY

Building take

- Total Parcels = 124

Parcels less than 2 acres

- Parcels Acres ≤ 2 acres & Pct_Take $\geq 20\%$
 - Total number of parcels = 84
 - Total Value = \$ 46,412,310
- Parcels Acres ≤ 2 acres & Pct_Take $\leq 20\%$
 - Total number of parcels = 19
 - Total Bld Value = \$3,443,580 (All building value)
 - Total Land Value = \$528,101 (% of land that is being taken, so % of land value)

Parcels greater than 2 acres

- Parcels Acres ≥ 2 acres & left over parcel ≤ 2 acre
 - Total number of parcels = 3
 - Total Value = \$4,263,380
- Parcels Acres ≥ 2 acres & left over parcel ≥ 2 acre
 - Total number of parcels = 18
 - Total Bld Value = \$15,325,890 (All building value)
 - Total Land Value = \$1,903,447 (% of land that is being taken, so % of land value)

Total ROW cost where buildings are taken is = **\$71,876,708**

Parcel take

- Total Parcels = 506

Parcels less than 2 acres

- Parcels Acres ≤ 2 acres & Pct_Take $\geq 20\%$
 - Total number of parcels = 94
 - Total Value = \$30,334,920
- Parcels Acres ≤ 2 acres & Pct_Take $\leq 20\%$
 - Total number of parcels = 219
 - Total Land Value = \$6,875,564

Parcels greater than 2 acres

- Parcels Acres ≥ 2 acres & left over parcel ≤ 2 acre

