

Comment	Response
Text and tables repeated in chapters. Clean this up.	Corrected
How many people were interviewed during the public input phase?	Approximately 15
Define the Committed Improvements in terms of the 2018 STIP	Noted; being addressed
Need to include time-line of project development from planning to opening of project to project in Implementation section	Suggestion being addressed
Project will need to be developed under are planning and environmental document	Suggestion being addressed
Add traffic year for HCS software reference	Revised
Double check Historic Properties description of tiering	Noted; being addressed
STIP #U-6071 is not a Committed Project	Reviewing for revision (Note: U-6071 is scheduled for ROW in 2024 and construction in 2026)
45 MPH max posted speed for C&G.	Noted and revised
I would recommend putting the Short-Range Improvements in order of relevance. From our meeting Friday we heard a lot of these measures are considered safety improvements but were not specifically an issue that was seen on NC 54.	Noted and incorporating
Centerline and Shoulder Rumble Strips / Safety Edge – Runoff crashes out there appeared to be more reactionary or avoidance and not identified as a true run off.	This potential countermeasure is identified as part of a menu of options which may be appropriate at specific locations. Avoidance could be a significant cause of runoffs, in which case widening may be a more effective solution. However a more detailed safety audit/analysis would be needed to make that determination.
A comment was made that cars are running off the road intentionally to avoid stopped vehicles and not necessarily drifting off	Possibly true, but difficult to quantify. Specific safety audits/analyses would be needed to determine the cause and appropriate countermeasure. If a significant occurrence, widening may be the most effective solution.
People complain about the noise of rumble strips and bikers complain about the discomfort riding over them on the shoulder.	These are valid points; all solutions present trade-offs. Suitable locations may be identified in the design stages of various improvement projects.
High-Friction Surface Treatment – No specific wet crash locations were identified.	This countermeasure was identified as one of a set of potential solutions to be considered as a generalized recommendation; more rigorous analysis (such as is being conducted for STIP # R-5821A) will be needed to determine appropriate candidate locations and priorities.
Intersection Lighting – I don’t think night crashes were an apparent crash problem in the data.	This was more for enhanced wayfinding, and to address anticipated increases in pedestrian crossings.
Is there a VPD limit? How does a roundabout work with a 4-lane divided roadway?	Peak hour capacity is more meaningful than daily, given directional and peaking variations. Analysis determined the recommended roundabouts function very well in the locations suggested, with more than adequate capacity. The fact that all are 3-leg intersections simplifies and improves operations. In some cases, the outer lanes may be set up as bypass lanes for immediate right turns to/from the side street, or for through movements opposite the intersection road.
“Enhance lighting, pavement marking, and signage as needed to maintain visibility” – Change “maintain” to “improve” and add “where appropriate”.	Noted; incorporating changes.

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Roundabout max posted speed = 20 MPH	Likely, although we are familiar with 25-MPH roundabouts. Will incorporate discussion.
Roundabout examples show urban setting. What about rural settings?	This example is actually at a commercial/suburban node in a relatively low-density rural/recreational area. However, the specific intent of these images is to show a real-world example of how on-road cyclists can access a shared-use path to negotiate a multi-lane roundabout, as well as typical pedestrian accommodations. These elements would not vary much from what could be implemented on NC 54.
Example of median U-turns in Figure 32 Left turns into side streets?	The proposed configuration does not permit left-overs at the intersection. Such a variation could be considered, depending on left-turn volumes.
Is the median U-turn on Figure 32 correct? Are there left overs at the intersection?	The proposed configuration does not permit left-overs at the intersection. Such a variation could be considered, depending on left-turn volumes.
NCDOT is investigating Neville Road and Hatch Road	Noted; considering revised text.
Mention US-5821 during description of Old Fayetteville operations	Noted and incorporating.
NC 54 and Dodsons Crossroads/Butler Road – Can we balance green times during PM travel?	Not sure what is being asked. It should be possible to optimize signal timing and phasing, but directional differences/imbances in volumes may complicate ability to achieve maximum efficiency.
There are currently two candidate widening projects for this corridor in STOP 5.0 (not none as listed)	Identifying and revising. There are two P5.0 submitted widening projects in the study area. These include H141391, which would widen NC 54 from Orange Grove Road to NC 119, and H140374-A, which would widen NC 54 from Old Fayetteville Road to Orange Grove Road.
Phase I has sections of the corridor that are already failing, and the end of Phase I is late.	The recommended timeframe represents the likely earliest opportunity to complete the recommended widening.
Add note to Figure 33 - Time of project development and construction figure.	Being revised
Phase 1 - According to the charts on page 80, two lane capacity is already exceeded.	In some locations, 2-lane capacity is already exceeded. The recommended timeframe represents the likely earliest opportunity to complete the recommended widening.
Put paragraph into past tense, add NCDOT as Study Team member	Being revised
Add traffic year for Figure 13	Being revised
Add traffic year for Table 4 and Table 5	Being revised
Add traffic year for Table 6	Being revised
Are the southbound poor LOS intersections due to waiting to turn left?	Yes, primarily
Access management is a set of techniques that state and local governments can use to control access to highways, major arterials, and other roadways. The proactive management of vehicular access points to land parcels.	Revision pending.
What about mobility? You haven't addressed mobility.	Paragraph at bottom of page 72 addresses preservation of mobility, and balancing access and mobility across modes. Considering additional explanation/emphasis.
"The relatively low volumes closer to the middle of the corridor are less sensitive to the difference between 1.0% and 1.5% growth...." – This sentence is confusing. Does the statement about adequate LOS apply only to part of the middle section?	Yes. Paragraph revised for clarity.

Comment	Response
"On the other hand, a single unanticipated subdivision or industrial/commercial site of adequate size could substantially increase volumes in this vicinity." – Are the chances high that this will occur?	Difficult to say, but certainly possible. Revising to better reflect key point: that relatively minor changes in future assumptions could have a disproportionate impact in this lower-volume portion of the corridor.
1.0% Annual Growth – Year 2045 (West of Mebane Oaks, West of Orange Grove, and East of Orange Grove) – Where are they disappearing to?	Volumes are not disappearing. Trips are distributing via Mebane Oaks Rd (2017 AADT = 2600), Saxapahaw Bethlehem Ch Rd (2017 AADT = 1600) Stanford Rd (2016 AADT = 170), Gold Mine Rd, Morrow Mill Rd (2017 AADT = 1300), and Orange Grove Rd (2017 AADT = 1500), as well to/from dozens of businesses and residences with direct access only to NC 54. For example, there are 30+ driveways and intersections (many serving multiple residences and mobile homes), between Mebane Oaks & Orange Grove Roads, including Stanford Rd, Goldmine Rd, and Morrow Mill Rd. Also: Rigmor House, a convenience store, a garden center, a UNC-CH facility, and several other businesses and farms. All of these volumes are forecast to increase over time, and the pattern of volume changes is consistent with land use and the surrounding road network.
Typical LOS E Capacity Range - "E" shows failure. What about showing the "D" range as well? Graph details are not legible	Higher resolution graphics are being developed. Since LOS D is generally acceptable, it was decided to focus on "ultimate capacity" (LOS E), which is rarely considered acceptable in a rural/suburban setting. Showing both would further complicate the image, and dilute the message. LOS E is also more simply and reliably estimated, and easier to explain and understand; LOS D is more variable and covers a broader range of volumes. It can be inferred that volumes just below the LOS E capacity would be experiencing some congestion problems.
AADT West of Mebane Oaks - So, East of Mebane Oaks Road there is a jump in traffic?	Yes; this is reflected in historic traffic counts as well. Traffic to/from Saxapahaw/Mebane Oaks Roads is more heavily oriented to the east than to the west. Also, count locations are not immediately east and west of this intersection; there are some intervening access points.
Project development design year for improvements is 2045.	This is consistent with study assumptions, analysis, and recommendations.
"Without signalization and intersection lane additions, most of the subject intersections fail." - This is a triage approach? At what point are superstreets analyzed...maybe with a signal at U-turn bulb to provide a gap for U-turn traffic.	To some extent, the prioritization of improvements in a competitive, fiscally-constrained programming environment does require a strategy resembling triage. Superstreet treatments were evaluated where conventional intersections performed poorly, required extensive widening/reconstruction, or were otherwise constrained. Median U-turns are recommended at NC 119 and at Old Fayetteville Road.
"Overlapping peaks of school and manufacturing plant traffic generate congestion.....Honda manufacturing plant could also become a more significant problem as traffic increases." – Are these the same considerations that are taken into account for the sentence "The relatively low volumes closer to the middle of the corridor are less sensitive to the difference between 1.0% and 1.5% growth...." taken from page 74	No.

Comment	Response
"Skepticism of projected vehicle volume growth rates through the year 2045;" – Skepticism that projections are low or high?	Our forecasts are based on the best available information, and considered a range of likely outcomes. Portions of the corridor are already operating at or beyond capacity. One reason for the proposed implementation phases is specifically to reduce the risk of significant variation from forecasts. Each phase can be revisited and programmed to better coincide with actual demand. (Assuming funding is available.)
R-5821A is SEPA not NEPA/Merger.	Noted and revising.
"Findings from this corridor study will serve as baseline information and integrate into the purpose..... " Replace with "help to develop".	Noted and revising.
"The purpose of this near-term project is to address operational and visibility concerns without duplicating or conflicting with the efforts of this NC 54 corridor study. Right of way acquisition is scheduled for 2018 with construction in 2018. " Remove latter half.	Noted and revising.
"The second potential cross-section...." – Move this paragraph under Figure 24.	Noted. Revision pending
The 9.5' min between Back of Curb and SUP may vary in a steep cut or a fill section, requiring guardrail.	True. Reviewing text for clarification.
Should we mention cost share for Shared Use Path?	It is cited in Appendix, but can be emphasized in text.
Specify what sections are failing LOS now in CRITICAL ISSUES Congestion subsection	Noted & being addressed
Opposes widening NC-54, based on the rationale: increasing lanes results in more cars on the road, this escalates negative impacts on air quality and subsequent impacts on climate change	Forecasts from 4 models consulted all confirm traffic growth regardless of widening, due to continuing development in the area served by NC 54. Recent trends also indicate a sharp increase in traffic volumes, although there has been no widening. Statistically, the recommended cross-section will also lower crash rates, a significant benefit separate from mobility or capacity benefits.
Make intersection improvements first, add passing lanes second	This is consistent with our recommendations.
Provide a dedicated transit lane and improve transit services between all service providers along the corridor, this includes: Better coordinated currently provided services by PART and Chapel Hill Transit; Adding additional services by Go Triangle and Orange County Public Transit; Include Bus Rapid Transit (BRT) as a preferred recommendation to widening	Transit improvements are included in corridor recommendations. Funding for additional services is a significant challenge, especially when multiple agencies are involved, all of which already have unmet needs that may be higher priorities, or which provide more service-per-dollar. The bus ridership needed to eliminate or even delay the need for widening is substantial. East of Dodsons Crossroads, for example, more than 5,000 cars would need to be removed. Assuming 1.2 persons/car yields 6,000 riders, or about a 25% mode share, both of which are extremely high for a long, rural corridor of this type.

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<p>Recommend Bus Rapid Transit (BRT) sooner (before additional lanes) rather than later.</p>	<p>The advantages of BRT result from travel-time benefits (shorter, and more reliable) gained by operating buses in their own lanes, separated from general traffic. In addition, traffic signals can be managed to give buses the right-of-way. Sometimes combined with queue-jumps, this tactic can eliminate or reduce signal delays. Other elements are also designed to favor bus operations, often including low-floor, articulated buses; covered, rail-like platform stations; real-time bus arrival displays; and pre-boarding payment. Buses are very frequent, sometimes with headways of only a few minutes, so schedules are not even needed during peak periods.</p> <p>This level of service and investment is being planned in Raleigh and other urban areas along congested, high-volume corridors with multiple lanes and multiple established bus routes serving larger, denser mixed-use development. The BRT is part of an overall plan to increase density. In such conditions, BRT competes favorably with the automobile in terms of travel time and reliability, as well as costs.</p> <p>No examples of plans for adding dedicated bus lanes to a rural 2-lane highway could be found, especially for 14 miles. The costs and environmental/community impacts of adding bus lanes would be essentially equivalent to the recommended 4-laning, but would not improve the capacity or crash problems identified for NC 54, since a similar volume of traffic would still be constrained to two travel lanes. More importantly, travel times for buses in these dedicated lanes would not be significantly less than for those same buses travelling on the recommended 4-lane divided roadway. Even at optimistic 15-minute headways, the bus lanes would be vacant throughout most of the service day, and entirely empty outside of service hours. Minimal benefits would result from substantial costs, an investment that could undoubtedly be used more effectively on other transit projects. Or roadway, pedestrian, and bicycle improvements, as well as more modest and appropriate transit services.</p>
<p>Recommend increased transit and improved coordination among all transit agencies along the corridor.</p>	<p>Further mention of increased transit service and coordination will be added; however, given budgetary constraints, unmet needs on more productive routes, and relatively low densities and long distances along NC 54, it is difficult to envision an affordable service that could significantly lower traffic volumes. However, rapidly-evolving technologies and service models could lead to non-conventional transit services that are more viable in this corridor than traditional fixed route service. At the same time, advances in connected/ autonomous vehicle (C/AV) technology could also render park-&-ride services obsolete...or at least less attractive.</p>

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Introduction of Transit in the Corridor – TCC members supported the use of park-and-ride and bus service in the corridor to serve employees at UNC that use the corridor to get to work. There are several locations in the corridor that could support at park-and-ride lot. However, any new transit service in the corridor should not be shifted from existing services because of the demand on current routes like GoTriangle’s ODX or PART Route 4. Those services should not be diminished to serve the NC 54 corridor. Transit accommodations west of Carrboro could help alleviate Carrboro’s concerns about the widening of NC 54.	Since the regional bus route using NC 54 was shifted to I-40/NC 86, productivity appears to have increased substantially due to faster, more efficient, and more reliable routes serving greater concentrations of trip origins and destinations. Although the earlier route followed NC 54, only a small portion of its ridership came from this corridor segment. It would be counter-productive to compete with successful existing services, and "cannibalizing" riders. Westward extension of routes from Carrboro could prove beneficial, especially in combination with suitable park-&-ride lot locations. An eastward extension of service from Graham could yield similar benefits.
Prioritize Park and Ride lot in the study, including potential sites like the UNC facility at intersection of Cinder Fox Trail and NC-54.	Park-&-ride service is noted as an option in the corridor with a relatively high potential for viability. The suggested location will be added to a set of potential candidates for further evaluation.
Incorporate recent advancements in Intelligent Transportation System (ITS) technologies at intersections.	This recommendation will be made more explicit, although specific and appropriate recommendations will be developed during project design, given variations in individual location characteristics, and the rapid pace of ITS evolution.
Provide more information on Lighting issues in the corridor and how they will be addressed.	Specific recommendations require more detailed analysis and design beyond the scope of this study. This would typically be accomplished in the design of a particular signal or roadway improvement project.
Estimates do not include utility improvements necessary to accommodate development in the area nor the relocation of any existing utilities	Generalized utility relocation costs appropriate for a planning level analysis are incorporated in the cost estimates; more precise estimates require design-level details (field surveys and finalized alignments). Our analysis was based on development assumed in the current long-range plans and models relevant to the corridor; utility impacts of future development should be addressed in those plans. It was not part of the scope of this study.
Prioritize pedestrian crossings along the corridor not just at intersections but throughout.	Recognizing that not all desired improvements can be simultaneously implemented due to cost and bandwidth constraints, major intersections were identified as locations providing the greatest benefits vs. costs, due to the level of exposure to conflicts. Locations with significant pedestrian activity were also identified and recommended for improvement (although these were associated with intersections). Any location with significant pedestrian crossing volumes (or potential for crossings due to complementary land use) should be reviewed; such locations were not observed apart from intersections. The addition of shared-use paths or other pedestrian facilities would warrant further review to locate any additional and appropriate crossing treatments.

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<p>Median U-Turn at NC 54 and NC 119 Intersection – Several TCC and TAC members commented that using a non-traditional intersection design at this location was problematic due to heavy truck and school bus traffic.</p>	<p>This is an unconventional intersection design. However, the design can be tailored to accommodate trucks and buses. A more traditional design can be implemented, but the result is a much wider, less efficient intersection (with dual left-turns and lengthy, complex signal phases) that is less accommodating to pedestrians and bicyclists, and still generates long queues. Widening of NC 119 in front of the school and Honda plant could be problematic. Changes to school and plant access (such as a new access road/driveway off NC 54 NW of the campus could significantly decrease traffic conflicts at the existing intersection, reducing the extent of improvements needed at NC 119.</p>
<p>Widening of NC 54 throughout the entire corridor is a good project, and scores well in SPOT, and therefore should be supported by all three planning organizations sooner rather than later.</p>	<p>Widening the entire corridor by 2045 appears inevitable, based on anticipated traffic growth. Plans for widening certain segments that are already experiencing capacity and crash problems are probably past due, given the time required to implement new projects. Given logistical, fiscal, and prioritization constraints, it seems unlikely that the entire corridor could be undertaken as a single project, or that it necessarily has to be.</p> <p>A phased approach appears more viable, although planning and design for the entire corridor is needed even for phased implementation, and should be completed as soon as possible.</p>
<p>Shared use path should be on both sides of NC 54</p>	<p>The additional costs--including environmental and property impacts--of constructing and maintaining shared-use paths (SUPs) along both sides of NC 54 do not appear warranted by potential benefits gained. Putting the SUP on the side with the least impacts will provide essentially the same benefits at significantly less than half the total cost.</p>