



Summary

**US 52 Operational Improvements
Forsyth County
Federal-Aid Project No. NHF-52 (4)
State Project No. 8.1622801
TIP Project No. U-2826B
WBS No. 34871**

1. Type of Action

This is a Federal Highway Administration (FHWA) Environmental Assessment (EA).

2. Description of Action

The North Carolina Department of Transportation (NCDOT) proposes to improve approximately 12 miles of US 52 through Winston-Salem in Forsyth County, North Carolina. The section of US 52 currently under study extends from I-40 to the future Northern Beltway interchange near NC 65 (Bethania-Rural Hall Road). This section of US 52 is a busy four-lane urban freeway with closely spaced interchanges, a high crash rate, and frequent traffic congestion. The improvements proposed as part of this project are included in the approved *North Carolina Department of Transportation (NCDOT) 2008-2015 State Transportation Improvement Program (STIP)* and the most current *Draft 2008-2015 STIP* as STIP Project U-2826B. The estimated budget for this project is \$18.2 million for construction and right-of-way costs. Construction improvements considered for this proposed project include the limited use of existing shoulders as additional travel lanes, Intelligent Transportation Systems (ITS), ramp closures and modifications, and traffic management improvements. Right-of-way acquisition is scheduled to begin in fiscal year (FY) 2008 and construction is scheduled to begin in FY 2009.

Project U-2826B is intended to be an interim solution to address issues related to safety and congestion on US 52. In 2003, the City of Winston-Salem completed a long-range (20-year) improvement plan for the US 52 corridor (*US 52 Corridor Land Use and Transportation Plan, 2003*), which evaluated facility improvements required to meet interstate design standards. The recommendations for this project have been developed in coordination with the long-range plan in an effort to eliminate the cost and effort that would result if interim improvements had to be retrofitted to accommodate planned long-term improvements. **Section 3.2.2** describes the correlation between this project and the *US 52 Corridor Land Use and Transportation Plan* in more detail.



3. Action Required by Other Federal Agencies

Actions required from other governmental agencies include a permit from the U.S. Army Corps of Engineers under the provisions of the Federal Water Pollution Control Act Amendments of 1972 and Section 404 of the Clean Water Act of 1977. Section 404 requires the application for and approval of a permit before wetlands or other waters can be dredged or filled. The United States Fish and Wildlife Service's (USFWS) responsibilities include review of Section 404 permits. Encroachment into floodways will be coordinated with the Federal Emergency Management Agency (FEMA).

4. Alternatives Considered

No alternative corridor locations were considered to be competitive with the existing, well-defined corridor. The alternatives recommended for further study include:

No-Build Alternative (Alternative 0)

The No-Build Alternative means no actions would be implemented under this project (STIP Project U-2826B). Under this alternative, only "committed" state projects would be implemented.

Alternative 9

Alternative 9 includes the following elements, in addition to the "committed" projects included in the STIP:

- Close US 52 ramps and loop at Stadium Drive (contingent on the completion of the Salem Creek Connector between Vargrave Street and Martin Luther King, Jr. Drive, which is part of STIP Project U-2925)
- Convert shoulders (north and south bound) to travel lanes full time from Business 40/US 421 at US 52 interchange to the Martin Luther King, Jr. Drive at US 52 interchange
- Close US 52 ramps at 3rd and 5th Streets
- Build Akron Drive interchange modifications
 - Southbound on-ramp – remove two-way traffic from Leo Street, allowing one-way movement into Northside Shopping Center
 - Southbound off-ramp – delete two-way movements and remove Leo Street tie-in (north side of Leo Street)
 - Leo Street – wrap Leo Street around and tie into Sheridan Street
- ITS Improvements
 - Provide enhanced 511 service (ITS)
 - Expand use of dynamic message signs and closed-circuit cameras (ITS)
 - Implement adaptive signal control and detection on parallel arterials (ITS)



- Install truck rollover warnings (ITS)

The following improvements are included as approved mitigation and enhancements for Alternative 9 as of this document:

- Mitigation for closing 3rd and 5th Street ramps. Mitigation of the loss of access to downtown Winston-Salem and the Research Park is included in the form of operational and intersection improvements along the Martin Luther King, Jr. Drive corridor and reversion of Fifth and Fourth Streets from one-way to two-way traffic. Traffic signals are removed on Fourth Street due to reduce traffic volumes.
 - Martin Luther King Jr. Drive at Business 40/US 421 Interchange – revise loops to tie at intersections of First and Lowery Streets, remove slip ramp/access to Lowery from loop, and change access to Lowery Street from the on-ramp to right in / right out only
 - Martin Luther King, Jr. Drive at Excelsior Street/Lowery Street – lengthen southbound left turn lane to approximately 530 feet
 - Martin Luther King Jr. Drive at C.E. Gray Drive– change eastbound to right in / right out only
 - Martin Luther King, Jr. Drive at First Street – add new southbound left turn lane, rebuild westbound off-ramp from Business 40/US 421 at Martin Luther King, Jr. Drive interchange to tie directly to First Street (resulting in the closure of First Street from Martin Luther King, Jr. Drive to Dunleith Avenue), deadend/cul-de-sac of Wheeler Street prior to First Street, and tying/wrapping the eastern section of First Street into Dunleith Avenue
 - Martin Luther King Jr. Drive at Lawrence Street – change eastbound to right in / right out only
 - Martin Luther King Jr. Drive at Second Street – change eastbound and westbound to right in / right out only
 - Martin Luther King, Jr. Drive at 3rd Street – on 3rd Street add new eastbound shared through-left lane, change eastbound through-right lane to right turn lane, on Martin Luther King, Jr. Drive lengthen northbound left turn lane to approximately 300 feet and lengthen southbound left turn lane, provide approximately 100 feet of storage
 - Reversion of Fifth and Fourth Streets from one-way to two-way traffic
 - Martin Luther King, Jr. Drive at Fourth Street – change eastbound (west side) through-right lane to right in / right out only and change eastbound (east side) to a right in / right out only, remove traffic signal
 - Martin Luther King, Jr. Drive at Fifth Street – add new northbound left turn lane, provide approximately 325 feet of storage, lengthen southbound left turn lane, provide approximately 150 feet of storage



ENVIRONMENTAL ASSESSMENT US 52 OPERATIONAL IMPROVEMENTS

- Martin Luther King, Jr. Drive at New Walkertown Road – lengthen southbound left turn lane, provide approximately 440 feet of storage
- Martin Luther King, Jr. Drive at US 52 northbound off-ramp – restripe ramp approach to include a shared left-right turn lane, install traffic signal
- Martin Luther King, Jr. Drive at US 52 southbound off-ramp – add westbound right turn lane, restripe ramp approach to include a left turn, through and right turn lanes, install traffic signal
- Martin Luther King, Jr. Drive at US 52 interchange – add new southbound on-ramp
- Martin Luther King, Jr. Drive at Patterson Avenue – add northbound right turn lane on Patterson Avenue and restripe northbound Patterson Avenue to include a left turn, through and right turn lanes
- Fourth Street – remove traffic signals at Fourth Street/Maple Street and Fourth Street/Metropolitan Drive
- Mitigation and enhancement for converting shoulders on northbound and southbound US 52 to travel lanes. Since shoulder areas will be converted to travel lanes, mitigation is required to provide a safe alternative for drivers who need to stop suddenly in these areas.
 - Replace existing curbs with rollover type curbs.
- Mitigation and enhancement for Akron Drive interchange modifications. Mitigation is required to guide drivers to the shopping center via an indirect route.
 - Enhance signage from Akron Drive to “shopping center” using route via Sheraton Street and Patterson Avenue.
- Emergency services mitigation. Mitigation may be required for emergency medical service vehicles due to the loss of access as a result of closing 3rd and 4th Streets. If EMS response time is negatively affected by the proposed changes, this mitigation will be considered.
 - Traffic signal pre-emption for emergency medical service (EMS) vehicles will be considered after the project is in place to mitigate for any potential problems for EMS access.
- Landscaping enhancement.
 - NCDOT will work with the City to develop a landscaping plan for the areas impacted by this project.

The following improvements are under consideration as mitigation and enhancements for Alternative 9 as of this document:

- Enhancement for closing US 52 ramps and loop at Stadium Drive
 - Enhance streetscape on Stadium Drive
 - Enhance access to Salem Creek Greenway



ENVIRONMENTAL ASSESSMENT US 52 OPERATIONAL IMPROVEMENTS

- Mitigation and enhancement for converting shoulders on northbound and southbound US 52 to travel lanes. Additional mitigation may be required following the conversion of shoulders to travel lanes to provide adequate safety measures for drivers.
 - Modify ramp merge and diverge areas to provide comparable or more area to merge and diverge
 - Widen to provide and replace auxiliary lanes between successive on- and off-ramps.
 - Increase number and service time of the Incident Management Assistance Patrol (IMAP) trucks.
 - Invest in one or more trucks with plows to “push” disabled vehicles out of the travelway.
 - Build retaining walls as needed to create areas for disabled vehicles to move off the highway.
- Enhancement for Akron Drive interchange modifications
 - Enhance access, safety, and security on existing pedestrian bridge over US 52 near Happy Hills.

The following improvement was previously proposed as mitigation, and is now included as part of the ITS portion of Alternative 9:

- Enhance ITS measures to detect vehicle breakdowns more quickly where converting shoulders on northbound and southbound US 52 to travel lanes.

Alternative 10

Alternative 10 includes the following elements, in addition to the “committed” improvements included in the STIP:

- Close US 52 ramps and loop at Stadium Drive (contingent on the completion of the Salem Creek Connector between Vargrave Street and Martin Luther King, Jr. Drive, which is part of STIP Project U-2925)
- Build auxiliary lanes on southbound US 52 from Martin Luther King, Jr. Drive to 5th Street
- Close US 52 ramps at 3rd and 5th Streets
- Build Akron Drive interchange modifications
 - Southbound on-ramp – remove two-way traffic from Leo Street, allowing one-way movement into Northside Shopping Center
 - Southbound off-ramp – delete two-way movements and remove Leo Street tie-in (north side of Leo Street)
 - Leo Street – wrap Leo Street around and tie into Sheridan Street
- ITS Improvements



ENVIRONMENTAL ASSESSMENT US 52 OPERATIONAL IMPROVEMENTS

- Provide enhanced 511 service (ITS)
- Expand use of dynamic message signs and closed-circuit cameras (ITS)
- Implement adaptive signal control and detection on parallel arterials (ITS)
- Install truck rollover warnings (ITS)

The following improvements are included as approved mitigation and enhancements for Alternative 10 as of this document:

- Mitigation for closing 3rd and 5th Street ramps Mitigation of the loss of access to downtown Winston-Salem and the Research Park is included in the form of operational and intersection improvements along the Martin Luther King, Jr. Drive corridor and reversion of Fifth and Fourth Streets from one-way to two-way traffic.
 - Martin Luther King Jr. Drive at Business 40/US 421 Interchange – revise loops to tie at intersections of First and Lowery Streets, remove slip ramp/access to Lowery from loop, and change access to Lowery Street from the on-ramp to right in / right out only
 - Martin Luther King, Jr. Drive at Excelsior Street/Lowery Street – lengthen southbound left turn lane to approximately 530 feet
 - Martin Luther King Jr. Drive at C.E. Gray Drive– change eastbound to right in / right out only
 - Martin Luther King, Jr. Drive at First Street – add new southbound left turn lane, rebuild westbound off-ramp from Business 40/US 421 at Martin Luther King, Jr. Drive interchange to tie directly to First Street (resulting in the closure of First Street from Martin Luther King, Jr. Drive to Dunleith Avenue), deadend/cul-de-sac of Wheeler Street prior to First Street, and tying/wrapping the eastern section of First Street into Dunleith Avenue
 - Martin Luther King Jr. Drive at Lawrence Street – change eastbound to right in / right out only
 - Martin Luther King Jr. Drive at Second Street – change eastbound and westbound to right in / right out only
 - Martin Luther King, Jr. Drive at 3rd Street – on 3rd Street add new eastbound shared through-left lane, change eastbound through-right lane to right turn lane, on Martin Luther King, Jr. Drive lengthen northbound left turn lane to approximately 300 feet and lengthen southbound left turn lane, provide approximately 100 feet of storage
 - Reversion of Fifth and Fourth Streets from one-way to two-way traffic
 - Martin Luther King, Jr. Drive at Fourth Street – change eastbound (west side) through-right lane to right in / right out only and change eastbound (east side) to a right in / right out only, remove traffic signal



ENVIRONMENTAL ASSESSMENT US 52 OPERATIONAL IMPROVEMENTS

- Martin Luther King, Jr. Drive at Fifth Street – add new northbound left turn lane, provide approximately 325 feet of storage, lengthen southbound left turn lane, provide approximately 150 feet of storage
- Martin Luther King, Jr. Drive at New Walkertown Road – lengthen southbound left turn lane, provide approximately 440 feet of storage
- Martin Luther King, Jr. Drive at US 52 northbound off-ramp – restripe ramp approach to include a shared left-right turn lane, install traffic signal
- Martin Luther King, Jr. Drive at US 52 southbound off-ramp – add westbound right turn lane, restripe ramp approach to include a left turn, through and right turn lanes, install traffic signal
- Martin Luther King, Jr. Drive at US 52 interchange – add new southbound on-ramp
- Martin Luther King, Jr. Drive at Patterson Avenue – add northbound right turn lane on Patterson Avenue and restripe northbound Patterson Avenue to include a left turn, through and right turn lanes
- Mitigation and enhancement for Akron Drive interchange modifications. Mitigation is required to guide drivers to the shopping center via an indirect route.
 - Enhance signage from Akron Drive to “shopping center” using route via Sheraton Street and Patterson Avenue.
- Emergency services mitigation. Mitigation may be required for emergency medical service vehicles due to the loss of access as a result of closing 3rd and Fourth Streets. If EMS response time is negatively affected by the proposed changes, this mitigation will be considered.
 - Traffic signal pre-emption for emergency medical service (EMS) vehicles will be considered after the project is in place to mitigate for any potential problems for EMS access.
- Landscaping enhancement.
 - NCDOT will work with the City to develop a landscaping plan for the areas impacted by this project.

The following improvements are under consideration as mitigation and enhancements for Alternative 10 as of this document:

- Enhancement for closing US 52 ramps and loop at Stadium Drive
 - Enhance streetscape on Stadium Drive
 - Enhance access to Salem Creek Greenway
- Enhancement for Akron Drive interchange modifications
 - Enhance access, safety, and security on existing pedestrian bridge over US 52 near Happy Hills.



Alternative 12

Alternative 12 includes the following elements, in addition to the “committed” improvements included in the STIP:

- Close US 52 ramps and loop at Stadium Drive (contingent on the completion of the Salem Creek Connector between Vargrave Street and Martin Luther King, Jr. Drive, which is part of STIP Project U-2925)
- Build auxiliary lanes on southbound US 52 from Martin Luther King, Jr. Drive to 5th Street
- Build Akron Drive interchange modifications
 - Southbound on-ramp – remove two-way traffic from Leo Street, allowing one-way movement into Northside Shopping Center
 - Southbound off-ramp – delete two-way movements and remove Leo Street tie-in (north side of Leo Street)
 - Leo Street – wrap Leo Street around and tie into Sheridan Street
- ITS Improvements
 - Provide enhanced 511 service (ITS)
 - Expand use of dynamic message signs and closed-circuit cameras (ITS)
 - Implement adaptive signal control and detection on parallel arterials (ITS)
 - Install truck rollover warnings (ITS)

The following improvements are under consideration as mitigation and enhancements for Alternative 12 as of this document:

- Enhancement for closing US 52 ramps and loop at Stadium Drive
 - Enhance streetscape on Stadium Drive
 - Enhance access to Salem Creek Greenway
- Enhancement for Akron Drive interchange modifications
 - Enhance access, safety, and security on existing pedestrian bridge over US 52 near Happy Hills.

5. Environmental Impacts

The proposed project will provide for safer and more efficient travel along the US 52 corridor. This project is consistent with the plans and goals of the City of Winston-Salem, the region, and the state. The proposed improvements are consistent with the *Winston-Salem Urban Area 2030 Multi-Modal Long Range Transportation Plan* and the *2005 Winston-Salem/Forsyth County Thoroughfare Plan*.



The No-Build Alternative would not incur any direct impacts. However, the No-Build Alternative would not meet any of the purposes identified in Chapter 1 of this report. The build alternatives (Alternatives 9, 10, and 12) would have impacts as summarized below. More detail on impacts is provided in Chapter 4.

All three build alternatives would impact travel patterns by closing and modifying interchange ramps that serve largely minority communities. Mitigation is included as part of the project to improve access and connectivity in these areas. A positive impact would be to improve the visibility of local businesses. Impacts are not expected to be disproportionate based on race or ethnicity.

Overall, Alternative 12 has less impact on access and travel patterns than Alternatives 9 and 10. One residential relocation is anticipated by Alternatives 9 and 10. Alternatives 9 and 10 would require the relocation of the existing RJ Reynolds distribution buildings, but this is not expected to result in loss of jobs. No relocations are anticipated by Alternative 12.

The project has only minor noise impact in this urban setting; will not have any impacts to streams, wetlands, floodplains, or floodways; will not affect any biotic communities; and will not adversely affect protected species. The project will not affect properties under Section 6(f) of the Department of Transportation Act. Based on concurrence with the State Historic Preservation Office, the Federal Highway Administration (FHWA) has issued a *DeMinimus* impact finding on one Section 4(f) resource, which was determined to have No Adverse Effect.

Table 1 provides a comparison of the probable cost for each of the Detailed Study Alternatives based on the preliminary engineering designs. The preliminary budget was \$15 million, which has been increased to \$18.29 million in the *2008-2015 STIP*. The costs of all three alternatives are within this budget. The unit cost values used were based on NCDOT construction cost estimates.

Table 1. Opinion of Planning Level Cost (2007)

Alternative	Probable Cost*			
	Construction	Right of Way	Utilities Relocation	Total Cost
9	\$13,658,000	\$2,589,000	\$199,302	\$16,446,302
10	\$11,558,000	\$2,589,000	\$199,302	\$14,346,302
12	\$7,708,000	\$265,000	\$53,291	\$8,026,291

* Unit cost values provided by NCDOT

6. Preferred Alternative

Alternative 9 has been selected as the Preferred Alternative for STIP Project U-2826B. Following the third citizens workshop, a preferred alternative was selected by NCDOT based on input from regional leaders, stakeholders, interested citizens, the consultant's



recommendation, and the recommendation of a 15-member Study Advisory Committee. The Study Advisory Committee was comprised of representatives from FHWA, NCDOT, and local planning staff, and their recommendation was based on consensus that Alternative 9 best met the purposes of this project. The project purposes include reducing the number of crashes along US 52, improving mobility for traffic traveling along US 52 through the Winston-Salem area, and conforming to adopted land use and transportation plans for US 52 in the Winston-Salem area.

The Preferred Alternative is consistent with local land use plans, zoning ordinances, and transportation plans. There are no direct impacts on community facilities and services from the Preferred Alternative. The Preferred Alternative will change access at the Stadium Drive interchange, 3rd Street, 5th Street, Martin Luther King, Jr. Drive, and the Akron Drive interchange. Mitigation is included as part of the project to improve access and connectivity in these areas.

The Preferred Alternative will require relocation of one residence. It will require relocation of one business, the RJ Reynolds Trucking Facility warehouse, but is not expected to result in the loss of jobs.

The Preferred Alternative will not impact utilities or potentially hazardous material sites. No adverse long-term impacts to soils and topography are expected; the Preferred Alternative will not impact streams, wetlands, floodplains, or floodways; and the Preferred Alternative will not impact biotic communities. The Preferred Alternative is not likely to affect any federally listed protected, endangered, or threatened species.

The Preferred Alternative has No Effect on properties listed on or eligible for the National Register. It has No Adverse Effect on the East Winston Historic District, which has been determined eligible for the National Register. FHWA has issued a *DeMinimus* impact finding on one Section 4(f) property, and the Preferred Alternative will not directly impact any of the Section 6(f) Properties located in the study area.

The Preferred Alternative is not predicted to cause exceedances of the National Ambient Air Quality Standard for carbon monoxide in 2005, 2010, or 2025. Although noise levels are expected to exceed the noise abatement criteria in 2025, on average the noise levels would decrease between the existing conditions and the future build condition. Noise barrier walls are not expected to be reasonable along US 52 or Martin Luther King, Jr. Drive.

The Preferred Alternative may have temporary construction impacts on water quality and drainage, air quality, noise, construction waste, utility service, and accessibility.

7. Coordination

Comments were requested from the following federal, state, and local agencies (agencies marked with an asterisk provided a response, which is included in **Appendix B** of this report):



- US Fish and Wildlife Service
- US Army Corps of Engineers
- US Environmental Protection Agency
- NC Division of Archives and History (State Historic Preservation Office)*
- NC Department of Administration (State Clearinghouse)*
- NC Department of Public Instruction
- NC Wildlife Resources Commission*
- NC Department of Environment and Natural Resources*
- NC Division of Water Quality
- Northwest Piedmont Council of Governments (Rural Planning Organization)*
- City of Winston-Salem*

Three Citizen Informational Workshops have been held to present information and request feedback from the public. In addition, three newsletters have been sent to the public. Two public officials meetings have been held, individual interviews have been conducted with community leaders, and NCDOT has participated in meetings and presentations at the request of various groups in Winston-Salem.

A public hearing will be scheduled following this document to discuss the project with interested citizens. Comments from citizens attending the hearing will be considered in selection of the Preferred Alternative.

8. Additional Information

Additional information concerning this project can be obtained by contacting either of the following:

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