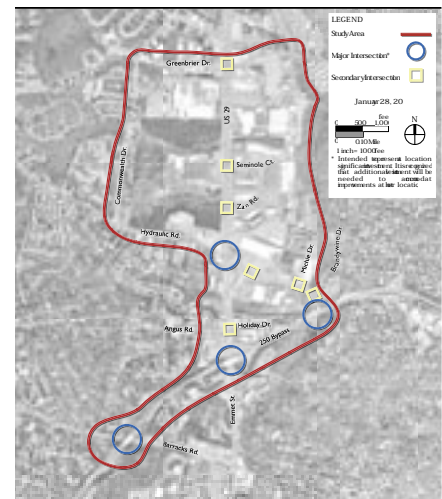


Introduction

This project is a continuation of the *29H250 Intersections Study*, completed in May 2003. The study area is expanded northward to include the Greenbrier and US29 intersection and westward to the Barracks Road and US250 Bypass interchange.

An efficient, highly inclusive process was used to develop and evaluate several solutions that met the following goals:

- Improved function for all transportation types (regional and local auto, truck, transit, pedestrian, bicycle, and ADA)
- Access and safety maintained during construction
- Financially feasible in terms of construction cost and minimizing lost tax revenue.
- Near-term economic impacts are balanced with long-term gains.
- A road network that supports redevelopment opportunities and a mix of uses.
- Improved landscape quality and stormwater systems, and the visual character of private development and streetscape are enhanced.



Project Study Area

Recommended Design

The collaborative process resulted in three multi-modal design options each emphasizing a different path for regional traffic through the area. The findings support recommendation of Option B, which emphasizes improving US29 to serve regional trips and changing the character of Hydraulic Road between US29 and the US250 Bypass. The Option B designs deliver a similar level of regional travel improvement as the other two options, while providing more cost effective construction, and resulting in a higher overall fiscal return from ensuing development opportunities.

The basic Option B design includes:

- Improving the US29/US250 Bypass interchange by adding a lane to the southbound to westbound on-ramp;
- Adding an auxiliary lane on the US250 Bypass westerly to the Barracks Road interchange;
- Configuration of US29 north of Hydraulic Road, eight-through-lanes-plus-turn-lanes, would be extended south to the US250 Bypass interchange were additional lanes on US29 are added and dropped in conjunction with the interchange redesign;
- South of the interchange area, Emmet Street would retain its current cross section;
- Increasing parallel local roadway capacity by constructing the Hillsdale extension from Greenbrier Road to Hydraulic Road and extending it further south of Hydraulic to Holiday;
- The westbound US250 Bypass ramp to US29 is redesigned connecting to a realigned Holiday/Angus intersection;
- The Hydraulic and US250 Bypass intersection remains a signalized intersection with access revisions to provide right-in/right-out access on Rugby Road and Hydraulic Road. Left-out access from Hydraulic is permitted, but left turns onto Hydraulic from eastbound US250 Bypass are not allowed
- Hydraulic Road would be reconstructed as a two-lane cross section with a landscaped median from US250 Bypass to US29 with modern roundabouts at intersections in place of traffic signals and stop signs.



Hydraulic Road (existing above, redesign below)



Option B Concept Plan

Continued

Recommended Design (continued)

The recommended design revises Option B in four locations making it more effective in meeting future demands throughout the 20-year design horizon:

- **US29/US250 Bypass Interchange** - a more cost-effective design is achieved with a diamond off-ramp configuration with one loop ramp rather than the existing modified cloverleaf design. The recommended design replaces the heavily-used eastbound-to-southbound loop ramp with a direct ramp to US29/Emmet Street.
- **Barracks Road and US250 Bypass** - the existing design's traffic signals at the ramp terminals are more cost effective in the near-term than Option B's double roundabouts. Roundabouts may be needed in the long-term as traffic on Barracks Road increases. The recommended design includes a merge (escape) lane in the westbound direction to accommodate traffic that wants to continue west on US250 Bypass from the new auxiliary lane.
- **US29/Hydraulic Road** - a grade separation of the intersection is necessary to meet the long-term traffic projections. A single point urban interchange configuration with US29 under Hydraulic is recommended.
- **North of Hydraulic on US29** - a non-boulevard cross section would be more economical as it would minimize the reconstruction of US29. However, the recommended design at US29/Hydraulic is compatible with either a boulevard or non-boulevard cross section to the north. The decision about the cross section on US29 north of Hydraulic should be linked with the findings of the upcoming expanded US29 corridor study.

Hydraulic Road's change in character and access and the extension of Hillsdale Drive provide for more highly valued development in the City, similar to that proposed by Albemarle Place in the County. These opportunities allow public and private investment to implement development and transportation patterns that achieve the quality of life, transportation choice, and economic vitality desired by the community.

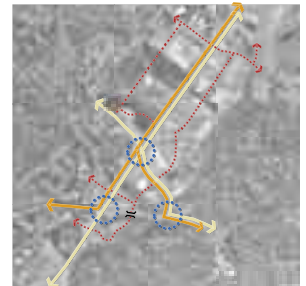


Concepts for road network and future development in areas to the east and west of US 29

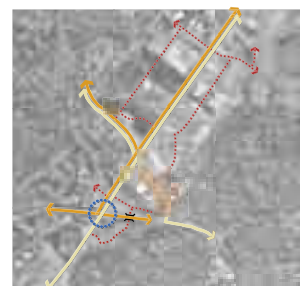
Initial Design Concepts

US29-Hydraulic-US250 'Triangle' Concepts

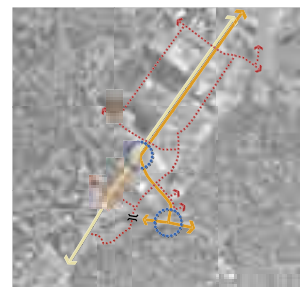
The Phase 1 designs are the starting point for developing the concepts. Influences from inside and outside the area identified the overlapping of regional and local traffic in the corridor and illustrated movement patterns on Hydraulic Road and US29. From these patterns, three distinct transportation concepts were developed. Appropriate access management, intelligent transportation systems, and travel demand management techniques were used in all options.



Concept A



Concept B



Concept C

Concept A: Continue the existing pattern of movement where both US29 and Hydraulic Road carry regional and local traffic. Concept A draws directly from the Phase 1 findings.

Concept B: Focus regional traffic movements on US29 by improving the interchange at US250 Bypass. De-emphasize Hydraulic Road as a regional route and restrict the intersection of Hydraulic/US250 Bypass to right-in/right-out movements. The emphasis on US29 allows Hydraulic Road to become more local-serving east of US29, encouraging pedestrian-supportive development.

Concept C: Reroute regional traffic onto Hydraulic and reconfigure the Hydraulic/US250 Bypass interchange. Redesign US29 south of Hydraulic to be more local serving. This concept would allow for pedestrian-oriented development on US29, creating a character more similar to that of Emmet Street south of US250 Bypass.

Network Concepts

All the concepts include additional local-serving roadways parallel to US29 for connectivity among land uses in the county and city. The Hillsdale Drive extension, currently under study, and the north-south street proposed for Albemarle Place are included in the circulation framework of smaller blocks. Converting US29 north of Hydraulic Road to a multi-way boulevard would complement the smaller block pattern formed by the local-serving parallel roadways, providing for pedestrian-scale development along US29, while maintaining through traffic capacity.

Concept Evaluation & Refinement

The concepts were refined through a series of workshops and public meetings into five design alternatives. The evaluation took into account various technical, economic, and quality of life/environmental criteria. Detailed simulation modeling tested the effectiveness of traffic operations under future traffic volumes. Urban design options were developed testing the ability of the alternatives to accept development and to evaluate their pedestrian-supportive character. Stormwater and natural systems were evaluated for continuity and the connectivity of bicycle, transit, and pedestrian circulation. Costs for design and construction were also evaluated.

Future travel times for regional trips on US29 and the US250 Bypass, and for more local-serving routes were assessed. The analyses showed that without road improvements, future travel times would be considerably longer than current conditions. With the proposed improvements the future travel times, particularly for US29 to and from US250 Bypass to the west, would be equivalent to or less than today's.



Redesign of Hydraulic Road/ US29 into a SPUI (left); Redesign of Hydraulic Road with roundabouts and medians (right)

The evaluation showed that recommended improvements would provide the most cost-effective and flexible design. Following are reasons that Option B is preferred:

Deemphasizing Hydraulic as a major connector between US29 and US250 allows it to:

- Function for more local level transportation trips;
- Support a vital commercial and mixed-use area between Greenbrier and US250; and,
- Provides good access to businesses and services for pedestrians, bicyclists, and transit.

Transportation and urban design improvements for Hydraulic Road with sidewalks, bicycle lanes, park-like medians and roundabouts transforms its character from a street dominated by freeway traffic to one that:

- Provide an improved streetscape and multi-modal access that encourages new commercial and mixed-use development to front onto the street;
- Safely accommodates the important east/west bicycle connection;

- Provides safe and pleasant pedestrian environment, access, and circulation, and safe pedestrian crossings with median refuges;
- Creates an attractive streetscape with wide sidewalks, street trees, medians, and pedestrian-scale lighting;
- Connects development within the parcels in the triangle area and that north of Hydraulic Road; and,
- Provides a higher potential for 'Green Streets' landscaped water-quality treatments in proposed medians.

Construction of a single point urban interchange (SPUI) at US29/Hydraulic Road supports multi-modal, economic, and urban design goals. If designed correctly, it:

- Protects pedestrians and bicyclists from exposure to heavy traffic on US29 and provides a safe connection between areas east and west of US29;
- Works most efficiently with existing topography in the area;
- The SPUI can work well with the concept of a multi-way boulevard to the north, if that proves to be a desired choice in the future corridor planning effort;
- Can be phased to follow the other planned improvements to satisfy building impact and project financing issues;
- Supports the deemphasizing of Hydraulic; and,
- Fits with the redirection of more local trips to the Hillsdale extension and connector roads to the west of US29.



Redesign of US29 interchanges with the US250 Bypass and Hydraulic Road

The reconfiguration of the US29/US250 interchange supports transportation, fiscal, and urban design goals as it:

- Reduces the amount of land occupied by off/on ramps, and creates new developable land in the triangle area;

Continued

Concept Evaluation and Refinement, Continued

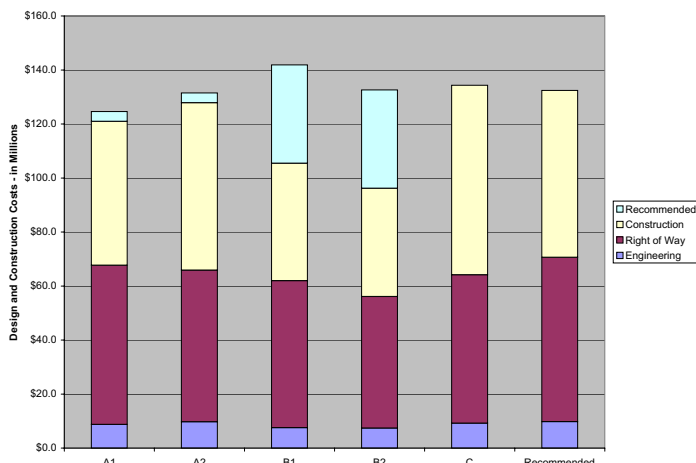
- Provides high-quality access to Bodo's and nearby businesses, and creates the potential to expand the site to the north;
- Requires pedestrian and bicycle access improvements through the interchange similar to the other options, but with particularly high-quality access potential on the east side of US 29; and,
- Allows a sequence of construction that leaves the existing interchange in operation until the new interchange ramps are built, which minimizes regional delay

Construction of the Hillsdale Drive extension on the east of US29 and the county parallel connector road on the west support:

- Near- to long-term private reinvestment on both sides of US29 which will improve Charlottesville's and Albemarle County's sales and property tax base;
- High quality pedestrian and bicycle areas to the east and west of US29 that can be connected to transit service and multi-use paths along US29;
- Opportunities for public/private cost sharing;
- the Hillsdale extension integrates with the redesign of the US250 west-bound off-ramp, the redesign of Hydraulic, and the catalyst development opportunities in the Triangle and the Brandywine properties to significantly improve the economic and urban design character of this part of Charlottesville; and,
- Potential for mixed-use development in the area that will be more economically and environmentally sustainable.

Construction Cost:

- When design, right of way, and construction cost is considered, Option B is lowest of the alternatives;
- When recommended design enhancements are added to Options A and B, the overall costs are roughly equal, at about \$130 million for all the alternatives;



Comparison of design and construction costs for considered Options

- The recommended alternative is slightly more costly than Option A and slightly less costly than Option C; and,
- Overall costs could be significantly less with right of way preferred, and potential private construction of some portions in conjunction with redevelopment.

Revenue Implications

Under Option B, less than five percent of the land and building square footage are taken off the tax rolls as a result of the transportation improvements. Much of this is along existing property lines, providing increased road frontage at the same time. Property value alone is projected to increase by one-third to two-thirds (depending on the Option) within seven years of investment. The long term implications will be even more significant as redevelopment becomes a viable economic option.

Net New Tax Revenues Seven Years After Transportation Improvements				
Area	A-1	A-2	B-1/2	C
Hillsdale	\$554,400	\$554,400	\$554,400	\$554,400
Kmart Area	\$220,800	\$194,500	\$635,000	\$69,000
Triangle Area	\$480,400	\$468,500	\$853,700	\$376,100
250 Interchange Area	\$97,300	\$97,300	-\$31,600	\$97,400
Best Buy Area	\$216,900	\$216,400	\$216,900	\$222,400
Holiday Inn Area	\$27,300	-\$29,400	\$26,400	\$40,000
Barracks Road Area	\$32,461	\$32,461	\$0	\$0
Net New Revenue	\$1,629,561	\$1,534,161	\$2,254,800	\$1,359,300

Comparison of future tax revenues after transportation improvements (source: ZHA, Inc.)

Tax revenues are projected to increase under all Options. Property, meal and sales tax revenues (largely in the City) are projected to increase by \$1.4 to \$2.2 million per year depending upon the transportation Option selected. At an interest rate of 5 percent over 20 years this stream of new tax revenue could generate \$17 to \$28 million in capital. (Note: these figures do not include increases in value and revenue in County due to Albemarle Place development, which could equal these numbers).

From a real estate investment perspective Option B offers the greatest opportunity. It has minimal negative impact on existing land use, and maximum positive impact. It benefits the property owners by enhancing access, creating near term development opportunities and potential for higher density, mixed-use development in the long term.

Comparing seven year net new City revenues from impacted properties to the cost of the options demonstrates the following:

- Tax revenue associated with near term development does not fully justify the transportation improvements;
- Option B-2's fiscal impacts almost offset the annual costs of construction in year seven;
- Option C is the most problematic from a cost/land use impact standpoint.

Phasing/ Implementation

The recommended design provides flexibility for 1) construction timing of future improvements and 2) the sequence of construction for each improvement. This allows the package of improvements to be implemented as a series of independent roadway projects. Many individual design elements can be implemented concurrent with redevelopment activities. The recommended design also provides for existing interchange movements to operate relatively unimpeded during construction of the new ramps. The following sequencing of design elements is suggested, although planning, design, and right-of-way acquisition for these elements may need to start in the short term. The recommended sequencing should also be adjusted to meet specific development plans of major property owners in the study area.

Short-term: (1-5 years)

- Construct Hillsdale north of Hydraulic (the current City/VDOT project), and
- Expand southbound-to-westbound ramp at US29/US250 Bypass (near Best Buy) with auxiliary lane to Barracks Road off-ramp

Mid-term (5-15 years)

- Construct Hillsdale extension south Hydraulic as property redevelops
- Construct eastbound to northbound/southbound off-ramp at US29/US250 Bypass
- Close eastbound to northbound/southbound off-loop at US29/US250 Bypass and reconstruct northbound to eastbound on-ramp
- Construct new off-ramp at Holiday
- Reconstruct Hydraulic Road from US29 to US250
- Reconstruct southbound to eastbound on-loop at US29/US 250 Bypass

- Construct westbound merge lane on US250 Bypass at Barracks Road interchange

Long-term (15-20 years)

- Replace US29/Hydraulic intersection with single point urban interchange



Local street network, initial phase (above) potential future phase (below)



The SPUI configuration requires careful design to create high-quality pedestrian and bicycle access



US29/Hydraulic Single-point Urban Interchange (existing above, redesign below)



Illustrative sketch of potential for pedestrian-supportive development to the north of Hydraulic Road

Next Steps

The key Phase 2 findings summarized here are detailed in the full Technical Report, to be completed by mid-August and available at www.tjpd.org

Review of Recommendations

- The Technical Report will be available for comments through September, which will be either answered in the final report, addressed in project design and engineering, or in the Phase 3 29N Project.
- More detailed review by developers and locality staff reviewing specific project proposals is encouraged, and their concerns will be incorporated into the final report.

Phase 3 29N Project

- Planning and fund raising is under way to conduct the long-awaited multimodal study of the full 29 North Corridor from the 29H250 area to the University Research Park, north of Airport Road.
- This next phase would be conducted in concert with Albemarle County's Northern Development Area Master Plan, with an added goal of fully linking County land use and development plans and regulations with VDOT and local transportation project planning.

Implementation

- The Hillsdale Extension project is completing the Location phase, and should proceed into the Design phase shortly. Care should be taken to incorporate the multimodal and redevelopment goals of this study.



"Green infrastructure" integrates water quality treatment with street design

Negotiations should be conducted between the City, VDOT, and landowners to determine the feasibility of accelerating construction via a combination of proffered right of way, construction contributions, concurrent re-development, and financing instruments.

- Funding should be allocated for the second recommended short-term project, expansion of the southbound to westbound on-ramp at US29/US250 Bypass with auxiliary lane to Barracks Road off-ramp.
- Explore establishment of a Regional Transportation Authority (City, County, MPO) to demonstrate localities' willingness to 1) work together on transportation and development projects, and 2) raise public-private funding contributions to accelerate project completion.

Credits

This study was conducted by an interagency technical team from the County of Albemarle, City of Charlottesville, Virginia Department of Transportation (VDOT), Thomas Jefferson Planning District Commission (TJPD) and Charlottesville-Albemarle Metropolitan Organization (MPO). Added to the staff team were three consultant firms with expertise in alternative street design (Meyer Mohades Associates), urban design (Community Design + Architecture), and economic impacts analysis (ZHA). Funding for this study was provided by VDOT, with a local match added by the TJPD and significant staff time provided by each locality and agency.

In addition to extensive public workshops and focus groups, community members served in advisory capacities. Representatives from the business community were appointed to a Study Steering Committee with a focus on the economic impacts analysis. The MPO's CHART Citizens Committee helped design and facilitate the public process.



Public workshop for 29H250

The 29H250 report is available at www.tjpd.org, along with PowerPoint presentations from the public workshops for both phases of the Study.

Contact Information

Thomas Jefferson Planning District Commission
 300 East Main Street, PO Box 1505
 Charlottesville, VA 22902
 phone: (434) 979-7310; fax: (434) 979-1597
 e-mail: info@tjpd.org