

2. ALTERNATIVES

This chapter describes the alternatives considered by the Federal Highway Administration (FHWA) for this action. FHWA has evaluated a range of potential alternatives to replace public access between Richmond Highway (U.S. Route 1) and Telegraph Road (VA 611) and This evaluation is continual through the National Environmental Policy Act (NEPA) process.

2.1 Alternatives Development Process

Development and review of alternatives for a connector road between Richmond Highway and Telegraph Road was included in the 2003 study by the U.S. Army Corps of Engineers (*USACE Feasibility Study*). This *Environmental Assessment* (EA) builds on that previous evaluation. FHWA has also conducted an independent review of the USACE process, and alternatives, and has considered other alternatives. This section briefly reviews the process applied.

2.1.1 USACE Screening

In order to provide a replacement roadway for the closed Beulah Street and Woodlawn Road, the *2003 USACE Feasibility Study* developed numerous alternatives. That study narrowed those to seven, which in turn were evaluated in more detail. Those alternatives were labeled A through G. See **Figure 2-1**. Appendix G of the *Feasibility Study* detailed the criteria applied for that alternatives evaluation. The USACE engaged several agencies and the public during its study. At the completion of the *Feasibility Study*, the Army identified the corridor Alternative C, which extends Old Mill Road through Fort Belvoir and Humphreys Engineer Center (HEC) property, as its preferred alternative. Fairfax County Board of Supervisors endorsed Alternatives A, B or C, or a combination thereof.

2.1.2 NEPA Scoping

Shortly after the initiation of this EA study, FHWA conducted an agency scoping meeting in January 2005. Given the regulatory concern for protecting wetlands and Huntley Meadows Park, FHWA recommended eliminating the *Feasibility Study's* Alternatives E, F, and G from further consideration, because they all traversed portions of the park. Huntley Meadows Park is protected under the U.S. Department of Interior land transfer agreement as well as Section 4(f) of the U.S. Department of Transportation Act of 1966 (49 U.S.C. 303); the latter binds FHWA from using any publicly owned park or wildlife refuge where a prudent and feasible alternative exists. FHWA also explained that relocating access several miles distant from the closed roadways does not serve the purpose and need for the project.

FHWA presented this recommendation at a Public Information Meeting in February 2005. Issues such as avoiding parks and wetlands, historic preservation, and avoiding residential impacts were among the key concerns voiced by agencies and the public.

2.1.3 FHWA Screening of USACE Alternatives

As part of the analysis under NEPA, FHWA conducted an independent review of the remaining alternatives and the factors used to evaluate them. Through geographic information system (GIS) data layers available from Fairfax County and Fort Belvoir, FHWA largely replicated the estimated quantities of impact by each alternative corridor. Additionally, FHWA assessed Alternatives A, B, C and D or some combination between them for relative impacts, achievement of the purpose and need, and appeal to all of the key stakeholders. Preliminary alternatives under consideration included:

- *Alternative A* – Reopened Beulah Street and Woodlawn Road
- *Alternative B* – Relocated Beulah Street creating new location alignment through the Fort Belvoir golf course before aligning with extension of Old Mill Road
- *Alternative C* – New location alignment extending Old Mill Road generally along unpaved Mulligan Road and connecting to new location intersection of Telegraph Road
- *Alternative D* – New location alignment extending Old Mill Road generally along unpaved Mulligan Road before veering northward to connect along the northern boundary of HEC
- *Combination A/B* – Reopened Beulah Street then veered through two holes of the Fort Belvoir golf course, connecting with Alternative C alignment to Old Mill Road.

Both Alternative A and B, or a combination of A and B, have the transportation connectivity appeal of using Beulah Street at Telegraph Road as a terminus. (Prior to 2001, Fairfax County and VDOT had performed major improvements to this intersection.) However, reusing Post roadways is not an option favored by DoD for national security concerns.

The security concerns include distancing the public from military and other facilities, “hardening” transportation facilities within the garrison, and providing separate access to Department of Defense personnel. These alternatives would require construction of additional access points and additional (separated from public use) roadways for internal connectivity within the Fort.

Alternative D generally was co-located with a major overhead power transmission line. It would require land from a residential community, or involve significant impacts to wetlands on HEC, or both. It placed the connector road through a large portion of the Fort’s Forest and Wildlife Corridor and close to the Jackson Miles Abbot Wetland Refuge. (See Sections 3.2 and 4.2, Natural Environmentally Sensitive Areas.)

FHWA presented the general results of the study area constraints, traffic issues, and ongoing stakeholder discussions to the public at a second Public Information meeting in October 2005. FHWA reiterated the project purpose, citing that traffic projections verify the need for the connector road facility. FHWA explained that, as noted above, further review indicated that none of the Alternatives A, B, D, or combinations between them, or alternative connection points along either U.S. Route 1 or Telegraph Road offered a positive alternative to Alternative C. In several instances, the impacts to certain resources would be worse with the other alternatives. FHWA noted the on-going discussions with agency stakeholders and others suggesting the consensus to focus on variations of Alternative C. See **Figure 2-2**. The several constraints noted on the figure (security buffers, wetlands, parks, historic resources, streams, etc.) are identified and discussed in Chapters 3 and 4.

2.1.4 Facility Size

As mentioned in Chapter 1, the public had enjoyed the use of many roadways on Fort Belvoir prior to the events of September 11, 2001, including Woodlawn Road and Beulah Street. These two roads offered connections between U.S. Route 1 and Telegraph Road (VA 611). These two routes provided accessibility for local users and connected with Fort-maintained roads such as Meeres and Kingman Roads that in turn offered numerous routings.

Traffic forecasts indicate that a replacement facility would have volumes of approximately 20,300 in 2010 and 23,600 in 2030 at U.S. Route 1; at Telegraph Road, a connector road would have volumes of approximately 19,000 in 2010 and 21,200 in 2030.¹ Fairfax County policy dictates new location roadways with projected traffic volumes greater than 8,000 ADT be at least four-lane facilities. FHWA concurred with VDOT and Fairfax County to consider development of a four-lane arterial facility. Ancillary facilities such as sidewalks and on-road bicycle lanes also were initially considered. Details of intersection layouts would be dependent upon turning movement counts for future traffic conditions.

2.1.5 Early Concepts - Old Mill Road

With Alternatives B, C, and D or some variations thereto funneling to the vicinity of Old Mill Road, FHWA initiated discussions with the National Trust for Historic Preservation (Trust), owners of Woodlawn Plantation, a National Historic Landmark located along Old Mill Road at U.S. Route 1. These discussions involved review of potential options of widening Old Mill Road and use of land from Woodlawn Plantation to accommodate a connector road facility. FHWA is bound by law (see Section 3.3 Cultural Resources) to avoid impacts to significant cultural resources unless agreement can be reached to mitigate these impacts.

FHWA considered a number of preliminary options along Old Mill Road. Some required residential and commercial relocations; some required land from Woodlawn Plantation; some required a combination of both. Building upon both the *USACE Feasibility Study* and a 2001 VDOT study² of widening U.S. Route 1, FHWA considered ways to connect the replacement road with U.S. Route 1. Among the options considered were: 1) maintaining the current offset intersection, 2) routing Old Mill Road to a dog-leg near the IMP building, 3) providing one-way pairs with both the dog-leg and existing roadway and existing offset. Traffic analyses suggested that independent (greater separation between) intersections would render a better Level of Service (LOS) for each; however, much of the same traffic would use both intersections, rendering the combination a net decrease in traffic flow. VDOT and Fairfax County DOT supported alignment of Old Mill Road with Mount Vernon Memorial Highway.

FHWA reviewed these options with the Trust, and proceeded to develop concept options for possible relocation of the Woodlawn Plantation entrance drive, which currently sits opposite Mount Vernon Highway (VA Route 235). The Trust provided guidance, such as creating a "pastoral gateway", for landscape designers to develop concepts. Working with the Trust, FHWA developed ten concept options altogether, continuing to revise based on reviews by traffic and highway engineers, and the Trust needs. The Preferred Alternative, described below, incorporates the results of that coordination.

¹ Vanasse Hangen Brustlin, Inc. *Connector Road Study, Technical Memorandum*, for FHWA, January 2006.

² VDOT, *Environmental Assessment: U.S. Route 1 Section C*, 2001.

2.2 Other Transportation Alternatives Considered but Rejected

FHWA considered several alternatives to roadway construction; however, none satisfy the purpose and need of the project to provide a replacement roadway for the lost access of Beulah Street and Woodlawn Road through Fort Belvoir.

2.2.1 Transit

Regional (WMATA³) and local (Fairfax County Connector) entities provide bus service in the area. Bus service exists along U.S. Route 1 and Beulah Street and portions of Telegraph Road. Fairfax County continues to work with VDOT and Fort Belvoir in placing a transit center along the U.S. Route 1 corridor. Fairfax County and VDOT are also considering a rapid transit scenario (light rail or bus lane) along U.S. Route 1.

The closest Metrorail station is Franconia, the terminus of the Blue Line, about one-mile west of the intersection of Beulah Street and Franconia-Springfield Parkway. WMATA has conducted a preliminary study for extending the line; Fairfax County also plans to conduct studies to consider extending the line towards Fort Belvoir. Such an extension could offer additional opportunities to support the expected employment growth in the area.

Providing additional bus service or extending Metrorail does not return the public roadway accessibility removed due to the closure of the VDOT roadways through Fort Belvoir. In considering a bus-only connector, FHWA determined that the private automobile users would not regain accessibility, thus this option does not meet the project purpose and need.

2.2.2 Transportation System Management (TSM)

TSM constitutes a range of strategies and options that look to maximize the efficiency of the present transportation system. For roadway projects, TSM alternatives could include automated traffic signal timing to respond to changing traffic conditions, improved lane striping, or variable message signs or sophisticated radio transmissions. While some of these may be applicable and attractive to improving current infrastructure conditions, they would not provide the lost access and thus not meet the project purpose and need.

2.2.3 Transportation Demand Management (TDM)

TDM offers measures that reduce the demand on highway facilities. These measures are often coordinated with major employers in a region, whose employees can be a major generator of work related Single Occupancy Vehicle (SOV) trips. Potential TDM measures include carpooling/ridesharing, employee telecommute and flex-time, or subsidized mass transit. While some of these may be attractive from local and regional perspectives, they would not provide the lost access and thus not meet the project purpose and need.

2.3 Alternatives Carried Forward – No Build Alternate

Under the No Build Alternative, the FHWA would not construct the Connector Road. Former public users of the closed sections of Beulah Street and Woodlawn Road would continue to

³ Washington Metropolitan Area Transit Authority.

find other publicly available roadway routings between U.S. Route 1 and Telegraph Road. These routings are circuitous and distant.

As mentioned, the Army views reopening of Beulah Street or Woodlawn Road through the Post as a breach of their security requirements. The difficulty in reopening these roadways to public access is compounded by three issues: 1) the required “hardening” of the roadways, 2) the elimination of any unsecured access, and 3) the necessary internal circulation for DoD personnel that must be separated from public roadways.

The No Build alternative is not compatible with the project’s purpose and need, nor compatible with local transportation plans.

2.4 Alternatives Carried Forward – Build Alternate 4CR

The general location of the Preferred Alternate originates at a reconfigured Old Mill Road, adjacent to the Woodlawn Plantation property, and proceeds northward through Fort Belvoir and HEC land to a point on Telegraph Road east of Piney Run, approximately $\frac{3}{4}$ mile from Beulah Street. See **Figure 2-3**. The alignment has been named 4CR. It runs approximately $\frac{1}{2}$ mile along Old Mill Road and approximately 1.5 miles through Fort Belvoir and HEC. Intersection improvements occur both along U.S. Route 1 and Telegraph Road.

The Preferred Alternative includes realignment of Mount Vernon Memorial Highway to line up with the improved Old Mill Road at a common intersection, and additional turning lanes on U.S. Route 1. Approximately 1,000 feet of Mount Vernon Memorial Highway would be realigned northward towards the commercial properties. No new lanes would be added to Mount Vernon Memorial Highway.

The Preferred Alternative connects to a 2-lane section of Telegraph Road, but assumes Telegraph Road would be widened to 4-lanes. Preliminary engineering for the Preferred Alternative accommodates the necessary turn-lanes for the Connector Road intersection, and also shows how Telegraph Road would be extended to the 4-lane section from just north of Beulah Street as well as would taper to match the existing widened pavement south of the Hayfield High School.

Access to the Preferred Alternate will be at Telegraph Road, Pole Road, and along Old Mill Road. HEC will have a closed gated access for emergency use only near the John J. Kingman Road overpass. For natural resources impact mitigation, FHWA proposes that the Preferred Alternative not be fenced; similarly, FHWA proposes to limit street lighting in the forested portions of the corridor. The alignment generally follows along ridgelines within undeveloped areas, reducing clearing and drainage impacts or impacts to wildlife.

2.4.1 Typical Section

The Preferred Alternative is a 4-lane roadway. FHWA coordinated with VDOT and Fairfax County DOT in determining a proposed typical section. See **Figure 2-4**. VDOT standards for an arterial roadway offer the criteria for NEPA purposes. These include 12-foot travel lanes. In an attempt to reduce the amount of right-of-way required, FHWA proposes a 16-foot median, consistent with similar new facilities in Fairfax County. The speed limit anticipated for the Pole Road to Telegraph Road section is 45 miles per hour (mph), with a possible 35 mph posting for the Pole Road to U.S. Route 1 section. U.S. Route 1, Telegraph Road, and Mount Vernon Highway are currently posted at 45 mph. Pole and Old Mill Roads are

currently posted for 35 mph. During design, FHWA proposes to continue pursuing with VDOT and Fairfax County DOT, the recommendation for reducing the posted speed of the Connector from 45 mph to 35 mph (for the length of the roadway). FHWA will also continue to work with VDOT and Fairfax County to explore possibilities of reducing lane widths in an effort to further reduce the project's "footprint" and resulting impacts. Preliminary discussions between the agencies have been favorable towards a reduction of the roadway's footprint and design speed.

Details for median treatment such as landscaping, types of curb and gutter, and utility easements will be refined during the project design phase, should the project advance. The section of roadway between Pole Road and Telegraph Road could be more open and less "urban" looking than along Old Mill Road. Further consideration to reducing width of shoulders and other features will occur during design.

Early suggested typical sections included 4-foot on-road bicycle lanes, consistent with typical sections used by VDOT and Fairfax County, for example on Telegraph Road between Beulah Street and the Fairfax County Parkway. FHWA has reduced the typical section to eliminate the on-road bicycle lanes; however, a shared-use path would be provided along the length of the project. Options include placement immediately adjacent to the roadway or a more meandering facility, as envisioned on the Woodlawn Plantation property. Crosswalks at intersections are planned. Details for the path locations would be determined following additional coordination during design.

Along Old Mill Road (between U.S. Route 1 and Pole Road) the existing sidewalk on the north side of Old Mill Road would remain (subject to some reconstruction).

The total width for the roadway facility is expected to be approximately 97 feet.

2.4.2 Termini Considerations

To create a connection that would be suitable to the transportation network, FHWA evaluated each terminus for alignment, traffic considerations and environmental impacts.

2.4.2.1 Southern Terminus – Richmond Highway/Old Mill Road/Mount Vernon Memorial Highway Intersection

The southern terminus presented several challenges, especially regarding the Woodlawn Plantation property. **Figure 2-5** illustrates the Preferred Alternative at U.S. Route 1, aligning Old Mill Road with Mount Vernon Memorial Highway. The figure superimposes the expected pavement surfaces and turning lanes for the proposed facility over the existing roadway pavement. (An aerial rendering appears in Chapter 4, Figure 4-1.)

The National Trust for Historic Preservation (Trust) owns one side of Old Mill Road. Woodlawn Plantation is the first property purchased by the Trust and is a National Historic Landmark. Multi-family housing and townhouses constitute the majority of the other side of Old Mill Road and beyond. At the U.S. Route 1 intersection, commercial use occurs on two quadrants not owned by the Trust. FHWA considered alternate configurations along Old Mill Road in order to reduce the amount of pavement and land required from the Trust; however, all would require residential or commercial buildings. FHWA evaluated options to align Mount Vernon Memorial Highway with Old Mill Road, and performed preliminary engineering to relocate Mount Vernon Memorial Highway within the VDOT right-of-way. In aligning the

roadways, FHWA proposes relocating the entrance to Woodlawn Plantation along U.S. Route 1. This relocated access offers a safer dedicated entrance to the historic property.

As part of the realignment, there are anticipated reciprocal transfers of property from the Trust to the Commonwealth of Virginia and from the U.S. Army to the Commonwealth of Virginia (for the purposes of transferring the property to the Trust). The parcel proposed to provide reciprocity for the Trust's land taken along Old Mill Road is a 2.5 acre parcel at the Woodlawn Gate.

2.4.2.2 Northern Terminus – Telegraph Road Intersection

Topography, national security interests, sight distances and wetlands considerations caused FHWA to locate the terminus approximately 150 feet northeast of Piney Run on Telegraph Road. See **Figure 2-6a**. Along Piney Run lies an expanse of wetlands, use of which likely would not be permitted under Section 404 of the Clean Water Act. Southwest of this wetland area is the DCEETA facility on Fort Belvoir, a special security area; northeast of the wetland area is a special security area on HEC.

Along Telegraph Road towards the HEC entrance, transportation constraints for locating the Connector Road include a recent subdivision access road and Old Telegraph Road. FHWA placed the Preferred Alternative terminus such that access could remain to the subdivision as well as provide sufficient weaving distance with Old Telegraph Road.

Telegraph Road is currently a two-lane facility between Beulah Street and Franconia Road. The FY07-12 VDOT Fairfax County Secondary Six Year Program funded the widening of Telegraph Road to four lanes between Hayfield Road and South Kings Highway by 2012. The segment between Beulah Street and Hayfield Road is partially funded for widening, with a balance of approximately \$12 million required beyond 2012. The typical section constructed between Fairfax County Parkway and Beulah Street represents the intended facility improvements of Telegraph Road.

Initially, FHWA highway and traffic engineers determined the length along Telegraph Road for the intersection to operate, and then tapered to the existing two-lane pavement. Future projects would then accomplish the remainder of the widening of Telegraph Road.

Upon review with key agency stakeholders and a Citizens Task Force, FHWA included two small segments of unimproved Telegraph Road as part of the NEPA documentation for the Preferred Alternative. Thus, the preliminary engineering for the Preferred Alternative shows an additional approximately 2,000 feet to the southwest and approximately 700 feet to the northeast along Telegraph Road, in order to tie-in to the 4-lane divided section near Beulah Street; and to the existing wider pavement towards Hayfield Road (approximately 200 feet beyond the HEC entrance but before the high school). **Figure 2-6b** illustrates the two ends of the Telegraph Road improvements. The dark line in the figure shows the existing pavement of Telegraph Road.

2.4.3 Costs

FHWA developed preliminary engineering cost estimates for the Preferred Alternative. Estimates include: earthwork, mobilization, drainage, pavement, erosion and sediment control, signals, utilities relocation, right-of-way, multi-purpose trail and maintenance of traffic. The total estimate (in 2008 dollars) is \$72 million for the ultimate 4-lane facility.

In the event funding availability does not allow construction of the full project at one time, costs for distinct portions are as follows (all in 2008 dollars):

- Construct interim two-lane facility, with appropriate intersection improvements at Telegraph Road and U.S. Route 1 (including aligning Mount Vernon Memorial Highway and Old Mill Road): \$31 million.
- Convert from two-lane to four-lane facility, with appropriate intersection improvements at Telegraph Road and U.S. Route 1: \$18 million.
- Perform widening of Telegraph Road: \$23 million.

While potential sources of participation and timing for such authorizations are not germane to the NEPA process, FHWA can only proceed to construct portions with committed funding.