

EXECUTIVE SUMMARY

This Alternatives Analysis report documents the analysis of improvement concepts, alternatives and the detailed study work completed for the Delaware Department of Transportation's (DeIDOT) West Dover Connector Project. The purpose of the West Dover Connector Project is to improve mobility across the Norfolk Southern Railroad for all travel modes to and from the west side of Dover, reduce congestion at key intersections in the study area, improve connectivity of the roadway network for regional and local travel, reduce through traffic volume on local streets, and improve safety including emergency service access.

A. ALTERNATIVES EVALUATION PROCESS

The development and evaluation of concepts and alternatives for a West Dover Connector was undertaken by DeIDOT using a progressive, three-step alternatives evaluation process consisting of the following elements:

Step One – Performance related to the project's Purpose and Need

Step Two – Performance related to specific traffic, engineering, and environmental parameters

Step Three – Detailed study of design and operations; refined environmental evaluation

Alternatives found to be responsive to the evaluation criteria in each step progressed to the next step. Alternatives that failed to respond or responded poorly to the evaluation criteria were eliminated from further consideration at their point of failure in the three-step process. The exception was the No-Build alternative which was retained throughout the alternatives evaluation. The No-Build alternative served as a baseline by which the other alternatives were compared.

B. EVALUATION RESULTS

During the alternatives evaluation, 25 build concepts/alternatives¹ (consisting of 14 core concepts/alternatives with permutations) and the No-Build alternative were assessed, comprising the full range of alternatives for the project. The concepts/alternatives were developed in consultation with the West Dover Connector Working Group (an advisory group made up of elected officials, and members of community organizations and other stakeholders), the environmental resource agencies and the public. Descriptions and depictions of the alternatives are provided in Section III.B of this report. Table ES-1 summarizes the findings of the three-step evaluation and can be found at the end of the Executive Summary.

i. Step One – Purpose and Need

In Step One, the 25 build concepts and the No-Build alternative were evaluated according to specific elements of the project Purpose and Need. At the end of Step One, 20 concepts/alternatives were found to meet the project Purpose and Need at some level and were recommended for Step Two study. Some concepts/alternatives, such as 4 and 5C, would perform very well in all five areas of the Purpose and Need. Other concepts/alternatives, such as 2A, 2B, 2C, 2D, 14A and 14B, would perform well in a few areas of the Purpose and Need, but would perform poorly in other areas. These latter concepts/alternatives were categorized as weak performers in responding to the project Purpose and Need. Six concepts/alternatives were eliminated as they did not meet the project Purpose and Need (6, 8, 9, 10, 11 and 13).

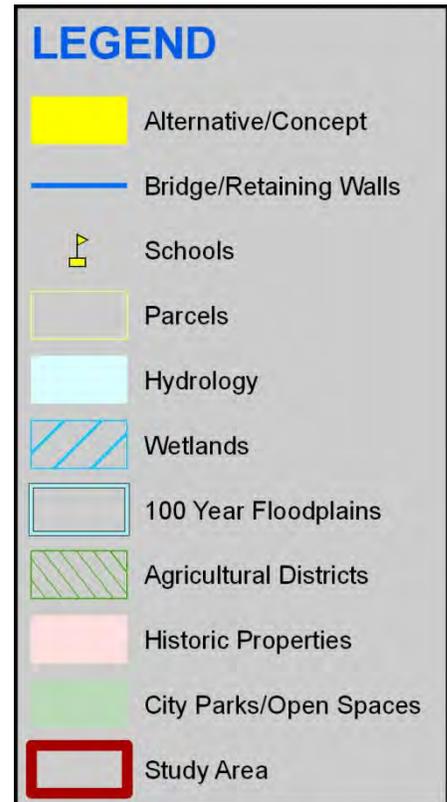
¹ As described in section ii., potential solutions were called "concepts" during Step One. After Step One, surviving concepts were developed into alternatives.

ii. Step Two – Preliminary Traffic, Engineering and Environmental Evaluation

In Step Two, the 20 surviving alternatives from Step One were evaluated according to the feasible and prudent standards in terms of performance related to specific traffic, engineering and environmental parameters, as well as input from the Working Group, the resource agencies and the public. At the end of Step Two, five alternatives were retained for detailed study (1, 4, 5C, 7C and 7D) and 15 alternatives were eliminated (2A through 2D, 3, 5A, 5B, 5C Spur, 7A, 7B, 7C Spur, 12A, 12B, 14A, and 14B). The traffic analysis and comparison with other surviving alternatives in Step Two determined that the retained alternatives would address more elements of the Purpose and Need more effectively than the alternatives that were eliminated. In particular, nine of the alternatives were found to have greater adverse traffic, social, and/or environmental impacts than the surviving alternatives with no compensating benefit.

iii. Step Three – Detailed Study

Detailed study of the five retained alternatives (1, 4, 5C [renamed 5C Modified], 7C and 7D) involved conceptual engineering design of each retained alternative, initial refinement of design elements to avoid or minimize impacts, and refined calculations of traffic and environmental performance. This closer look provided for a clearer understanding of the potential functions, operations and impacts of the each alternative, enabling a more refined assessment of advantages and disadvantages. The five retained alternatives are shown on Figure ES-1. The legend for the basemap for many graphics in this report is shown to the right.



Project Need

The performance of each retained alternative in response to the project need was refined during detailed study. Specifically, a closer look at the alternatives in the context of each of the project need elements determined that Alternative 5C Modified would perform the best of the retained alternatives. Alternative 5C Modified would outperform the other alternatives in addressing existing and future congestion, accommodating projected growth, enhancing system linkage and continuity, reducing through traffic on local streets, improving emergency service accessibility, and improving safety.

Alternative 4 would respond to the project needs at a moderate level, while Alternatives 7C and 7D would perform the least. In fact, the combined drawbacks of Alternatives 7C and 7D directly contradict the purpose of the West Dover Connector project. Both alternatives capture insufficient through traffic; provide an indirect connection to US 13; increase traffic on New Burton Road; create a potential for increasing cut-through traffic on lower classification streets east of New Burton Road; and exhibit dramatically high friction for mainline corridor traffic because of the number of intersections, driveways and turning movements. These compromises, considered in conjunction with the existence of high performing alternatives, render Alternatives 7C and 7D not prudent.

The detailed study results support the preliminary screening finding (Chapter IV) that the No-Build Alternative would be unresponsive to the project needs. Given the presence of other higher performing alternatives, the No-Build Alternative is determined to be not prudent.

Environmental and Engineering Factors

During detailed study, the performance of each retained alternative in terms of environmental impacts and engineering factors was also examined. Potential impacts on floodplains, wetlands, streams, preserved agricultural land were quantified based on more refined engineering. Likewise, property displacement impacts and partial impacts on existing properties were quantified.

Potential impacts on listed and eligible historic properties were also identified during detailed study. The determination of approximate roadway cross-section right-of-way requirements in detailed study made it possible to assess the potential to avoid or minimize impacts on historic properties as well as to determine unavoidable impacts. Coordination with the Delaware State Historic Preservation Office (DE SHPO) in April 2006 led to the definition of an area of potential effects (APE) and a determination as to the historic properties of concern: the National Register-listed Eden Hill Farm, the eligible Kesselring Farm, the eligible H. Jenkins House and the National Register-listed Brecknock farmhouse. Consultation with the DE SHPO in accordance with Section 106 of the National Register of Historic Places Act is on-going; determinations of project effect are pending selection of the preferred alternative.

The results of detailed study are that Alternatives 4 and 5C Modified have fewer right-of-way acquisition impacts while Alternatives 7C and 7D have fewer natural environment impacts. These differences largely relate to Alternatives 4 and 5C Modified being primarily off-alignment (new roadway) while 7C and 7D would be on-alignment (using existing roadways).

Taking a closer look at the impact quantities in Table V-3 indicates that, whereas the environmental and engineering impacts of the alternatives vary, the differences in the totals for some parameters are quite small. For example, the area of fill in floodplains and wetlands varies by tenths or hundredths of an acre among the alternatives. In contrast, the absolute numbers of right-of-way impacts are, in many cases, dramatically different. For example, 17 partial impacts under Alternative 5C Modified is significantly smaller than 102 partial impacts under Alternative 7D. Alternative 7D also has the potential for disproportionate effects on qualifying environmental justice populations along Webbs Lane, in part as a result of partial impacts.

As Alternatives 4 and 5C Modified were determined during detailed study to be the only prudent alternatives to pursue in terms of addressing project need, the performance of these alternatives in the context of engineering and environmental factors was considered. This analysis shows that while Alternative 4 would have slightly less impact on floodplains, Alternative 5C Modified would have significantly fewer partial impacts and fewer potential indirect impacts on historic properties. In addition, while Alternative 4 has the potential for disproportionate effects on qualifying environmental justice populations along Webbs Lane,² Alternative 5C Modified would avoid that potentially adverse effect. Both alternatives would have similar or the same impacts on wetlands, streams, and direct historic property effects. Thus, each alternative has its trade-offs; neither alternative has the least impacts in all environmental areas.

As indicated in Chapter IV, the resource agencies favored the alternatives with fewer natural and historic resources impacts while the Working Group and public favored alternatives that minimized new property impacts and displacements. The Working Group and public also indicated concerns about pedestrian safety along Webbs Lane, particularly of school children at the Reilly Brown Elementary School on Webbs Lane, in Alternatives 4 and 7C. These preferences, in combination with the environmental and engineering findings, favor Alternative 5C Modified over Alternative 4.

When this finding is combined with the results of the project need analysis, Alternative 5C Modified (shown on Figure ES-2) is the prudent choice as it would be the best performer in terms of the project need by a substantial margin and it would edge out Alternative 4 by incurring the least overall environmental harm.

C. SELECTION OF A PREFERRED ALTERNATIVE

Detailed study, Step Three, yielded refined and more comprehensive analysis results for the four retained build alternatives and the No-Build alternative. DeIDOT has reported these results to stakeholders, the public and the environmental resource agencies and continues seek their feedback. Based on the results of the three-step alternatives evaluation and continued public involvement and resource agency coordination, DeIDOT expects to select Alternative 5C Modified as the state's recommended preferred alternative. If the Federal Highway Administration concurs with this selection, a decision will subsequently be made to advance the preferred alternative, at which time a National Environmental Policy Act document and Section 4(f) evaluation will be completed.

² Qualifying populations meet or exceed City of Dover's percentage of minority population as reported by the 2000 Census, U.S. Census Bureau.

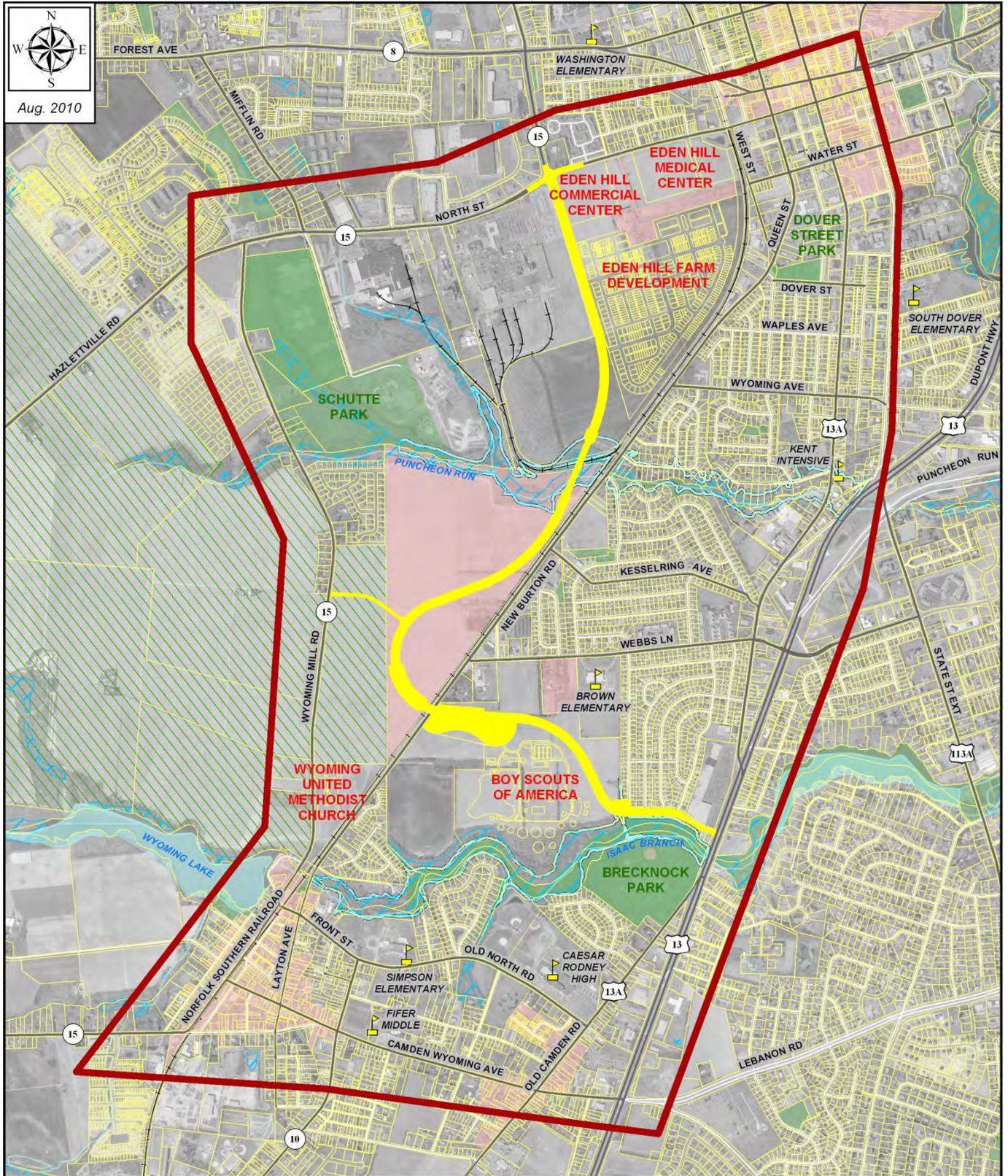


Figure ES-2: Alternative 5C Modified

Table ES-1 Summary of Alternatives Evaluation

Concept/ Alternative	Step One Meets Purpose & Need?	Step Two Retained for Detailed Study?	Step Three Feasible & Prudent?	Rationale
1 - No-Build	No	Yes	No	Does not meet Purpose and Need
2A, 2B, 2C, 2D	Yes, but weak	No	No, not retained for detailed study	Weak on Purpose and Need; no connection to US 13; no reduction in cut-through traffic; large structures with no compensating benefit; other alternatives avoid or minimize natural and right-of-way impacts; lack of Working Group support; public opinion mixed
3	Yes	No	No, not retained for detailed study	Other alternatives avoid or minimize right-of-way impacts better; lack of Working Group and public support
4	Yes	Yes	No	Moderately responsive to Purpose and Need; moderate environmental impacts; Working Group and public concerns regarding child and pedestrian safety along Webbs Lane in the vicinity of Reilly Brown Elementary School; potential disproportionate effects on minority populations along Webbs Lane
5A, 5B	Yes	No	No, not retained for detailed study	Other alternatives avoid or minimize right-of-way impacts better; public support mixed
5C (Modified)	Yes	Yes	Yes	Strong on Purpose and Need (best performer); moderate environmental impacts; Working Group and public support: would remove through traffic from local roads; would avoid Webbs Lane
5C Spur	Yes	No	No, not retained for detailed study	Impacts to Brecknock Park and Isaac Branch undesirable or infeasible; lack of Working Group, resource agency and public support
6	No	No	No, not retained for detailed study	Does not meet Purpose and Need
7A, 7B	Yes	No	No, not retained for detailed study	Other alternatives avoid or minimize social and traffic impacts better; lack of Working Group support; public opinion mixed
7C, 7D	Yes	Yes	No	Least responsive to Purpose and Need; least to moderate environmental impacts; Working Group and public concerns: high right-of-way impacts undesirable; adverse effect of channeled traffic on Webbs Lane on child and pedestrian safety in vicinity of Reilly Brown Elementary School; potential for disproportionate effects on minority populations along Webbs Lane (7D only)
7C Spur	Yes	No	No, not retained for detailed study	Impacts to Brecknock Park and Isaac Branch undesirable or infeasible; lack of Working Group, resource agency and public support
8	No	No	No	Does not meet Purpose and Need
9	No	No	No	Does not meet Purpose and Need
10	No	No	No	Does not meet Purpose and Need
11	No	No	No	Does not meet Purpose and Need
12A, 12B	Yes	No	No, not retained for detailed study	Relocation of railroad determined infeasible; lack of Working Group support for 12A; potential for disproportionate effects on minority populations along Webbs Lane (12A only)
13	No	No	No	Does not meet Purpose and Need
14A	Yes, but weak	No	No, not retained for detailed study	Weak on Purpose and Need; lack of Working Group support
14B	Yes, but weak	No	No, not retained for detailed study	Weak on Purpose and Need; other alternatives avoid or minimize right-of-way impacts; engineering, operational limitations at New Burton Road

