



CONCEPTUAL ALTERNATIVE SOLUTIONS

Identification of Conceptual Alternative Solutions

In Step 3 of the Project Development Process, the Project Team and Implementation Committee developed several Conceptual Alternative Solutions (“concepts”) to address the identified needs. These concepts were developed by the project team, reviewed by ODOT, and presented to the Implementation Committee on March 14, 2005. The team met with geometric design specialists from ODOT’s Office of Roadway Engineering Services on March 16, 2005, to obtain opinions on the interchange concepts. In addition, the team met with the City of Cincinnati on March 24, 2005, to discuss each interchange area in more detail. Comments have been reflected in the development and evaluation of the concepts presented in this report.

All options are listed in the evaluation matrix on the following page and described in the pages that follow. The discussion of concepts is divided into two sections – I-75 Mainline options and Interchange Options. Within each section, there is a description of all of the concepts recommended for advancement, as well as those that were considered and dismissed. In the subsequent section, Recommendations, additional information is provided for each concept that has been recommended for further consideration in Step 5 of the PDP.

In addition to tight physical constraints, such as the existing railroad facilities and the channelized Mill Creek, the I-75 Mill Creek Expressway study area includes numerous community issues. The area contains several community parks and recreational facilities, state parks, churches, schools and several noteworthy cemeteries. In addition, several emergency service locations are sited within the study area. Currently, thirteen of the fifteen census tracts within the study area have a higher unemployment rate than the Cincinnati Metropolitan Area (Cincinnati/Hamilton CMSA). The study area contains a higher numbers of minority persons, persons living below the poverty level and those with disabilities compared to the region as a whole. The needs of the community and the potential impacts to important social, economic and environmental resources were considered in evaluation of solutions to address the transportation needs, in addition to safety, mobility, and cost factors. For more detail on the evaluation factors, please refer to the evaluation matrix on the following page.



I-75 Mainline Concepts

Based upon the future no-build traffic volumes, capacity analyses were conducted to develop an initial estimate on the number of lanes needed to achieve LOS D in 2030. The findings are presented in the tables below. Those shown with an asterisk (*) represent the existing number of lanes in that section.

2030 Interstate 75 Freeway Segments					
Segment		Southbound		Northbound	
From	To	AM	PM	AM	PM
Western Hills Viaduct	Hopple Street	6 lanes	5 lanes	5 lanes	6 lanes
Hopple Street	Bates Avenue	6 lanes	5 lanes	4 lanes*	5 lanes
Bates Avenue	I-74			5 lanes	6 lanes
I-74	Mitchell Avenue	4 lanes	5 lanes	5 lanes	4 lanes
Mitchell Avenue	SR 562	5 lanes	5 lanes	5 lanes	4 lanes
SR 562	Towne Street	5 lanes	5 lanes	5 lanes	4 lanes*
Towne Street	Paddock Road			5 lanes	5 lanes
2030 Interstate 74 Freeway Segments					
Segment		Westbound		Eastbound	
From	To	AM	PM	AM	PM
I-75	Spring Grove/Elmore	4 lanes*	4 lanes*	4 lanes	3 lanes*
Spring Grove/Elmore	Colerain	3 lanes*	4 lanes		
Colerain	Montana	3 lanes*	4 lanes	3 lanes*	3 lanes*
2030 SR 562 Freeway Segments					
Segment		Westbound		Eastbound	
From	To	AM	PM	AM	PM
I-75	Paddock	2 lanes*	2 lanes*	3 lanes	2 lanes*

These results are based upon the No Build volumes. Travel demand modeling will be conducted to determine how much additional traffic will be drawn to I-75 under each mainline improvement scenario. Because early traffic model results indicate that providing additional capacity on I-75 will continue to draw traffic off other routes, achieving the acceptable standard of LOS D for all sections within the I-75 Mill Creek Expressway project may not be achievable.

Therefore, the ODOT and the Implementation Committee have agreed to further consider three I-75 Mainline concepts – Four-Lane Continuity with Auxilliary Lanes, Five-Lane Continuity, and Four-Lane Continuity with Elevated Express Lanes. During Step 5, the potential transportation benefits may be more accurately compared to the potential impacts and costs. The actual number of lanes ultimately planned for I-75 will be determined based upon public involvement, physical constraints, impacts, costs and revised traffic model results developed during Step 5 of the PDP.



I-75 Mainline Concepts – Recommended for Further Work

I-75-NB – No Build. This concept would involve no improvements other than routine maintenance. No capacity improvements would be made. This option would fail to meet the Purpose and Need of the project, but will be carried forward for comparison in future steps.

I-75-A – Four Lane Continuity with Auxiliary Lanes. This concept would involve adding a fourth lane on the outside in each direction north of I-74. Four lanes currently exist south of I-74. This alternative was recommended by the NSTI for further consideration. This option provides the opportunity to improve safety and congestion to a limited degree while minimizing property impacts and costs.

I-75-B – Five Lane Continuity - This concept would involve providing five continuous freeway lanes through the study area, adding one lane in each direction south of I-74 and two lanes in each direction north of I-74. This option would provide additional capacity improvement, but at a higher cost and impacts.

I-75-C – Four Lane Continuity with Elevated Express Lanes – This concept would involve providing four lanes at-grade through the study area, adding one through lane in each direction north of I-74, plus the construction of elevated express lanes. This option has the potential to provide superior improved capacity and safety benefits; however, it would be expected to be extremely expensive and intrusive to the surrounding communities. This option may be less problematic if implemented for only a portion of the study area and will be carried forward for further evaluation.

I-75 Mainline Concepts – Considered and Dismissed

I75-1 Existing 4 / 3 Lanes Plus Collector-Distributor System - The addition of a collector-distributor (C-D) system throughout the Study Area would improve traffic operations and reduce congestion by eliminating excessive weaving and separating through traffic from local traffic. However, assuming a minimum of two lanes each way for the C-D system, the additional space required and interchange infrastructure would make this alternative prohibitively expensive. Additionally, with more space between interchanges north of I-74, the C-D system would provide diminishing value as it extends north.

I75-2 Existing 4 / 3 Lanes Plus Elevated Express Lanes - Adding elevated express lanes to convey traffic traveling through the Study Area would benefit from this arrangement by provided dedicated lanes, however, much like the C-D system, the cost to build the elevated roadways would be prohibitive. The existing at-grade lanes would not have adequate capacity, requiring more than two elevated lanes in each direction to be necessary.

I75-3 Existing 4 / 3 Lanes Plus Elevated Reverse Flow Special Designation Lanes - This alternative would include constructing special lanes to be used for high occupancy vehicles (HOV) and



would be reversible. This configuration provides a poor level of service by not increasing the at-grade freeway capacity and servicing an expected small relative volume of HOV vehicles.

I75-4 Existing 4 / 3 Lanes Plus Elevated Reverse Flow Lanes - Reverse flow lanes can be very beneficial when there exists substantial directional volumes, however, through the Study Area, traffic volumes appear directionally balanced. For this reason, reverse flow lanes would not be appropriate.

I75-5 Four Lane Continuity Plus Collector-Distributor System - A C-D system can provide operational benefits by separating local traffic from through traffic, thus reduce excessive weaving. However, an at-grade C-D system through the Study Area corridor would result in substantial property impacts and the need for extensive use of retaining walls.

I75-6 Four Lane Continuity Plus Frontage Roads - This alternative was dismissed for the same reasons as Alternative I75-1 above.

I75-7 Four Lane Continuity Plus Express Lanes - The probable arrangement of lanes for this alternative would be to construct express lanes on the inside adjacent to the median and non-express lanes to the outsides. Such a cross section would be very wide and result in substantial property impacts and cost compared to the expected traffic benefits.

I75-8 Four Lane Continuity Plus Reverse Flow Lanes - As discussed above, reverse flow lanes provide best utility when there exists substantial directional volumes, which are not present on I-75 through the Study Area.

I75-9 Four Lane Continuity Plus Elevated Reverse Flow Lanes - See Alternative I75-8.

I75-10 Four Lane Continuity Plus Elevated Reverse Flow Special Designation Lanes - A lack of any significant volume of HOV traffic and balanced directional traffic flows combined with the high cost of elevating the reverse flow lanes caused this alternative to be dismissed.

I75-11 Four Lane Continuity Double Stack Plus Collector-Distributor System - While this alternative would reduce the overall cross sectional width by stacking the freeway lanes, it is cost prohibitive. The structure carrying vehicles the length of the Study Area combined with elevated ramps at interchanges results in the alternative not feasible from cost alone.

I75-12 Four Lane Continuity Plus Elevated Truck Lanes - Although truck volumes are relatively high within the I-75 corridor, the volumes are primarily local and, thus would not benefit from a separate truck facility that could not be accessed at service interchanges.

I75-13 Five Lane Continuity Double Stack - See Alternative I75-11.