



EXECUTIVE SUMMARY

This Conceptual Alternative Study (CAS) Report was prepared for the HAM-75-2.30 Project (I-75 Mill Creek Expressway study) as part of Step 5 of the Ohio Department of Transportation's (ODOT's), Project Development Process (PDP) for Major Projects.

The CAS includes a summary of the previous documents submitted and approved by ODOT. They include the Draft Purpose and Need, Existing and Future Conditions Report, Red Flag Summary and Planning Study Report Summary, whose contents were utilized in the determination of the conceptual alternatives. An update of the Public Involvement Plan is also included, listing relevant project meetings, mobile display locations and public comments received to date.

The subsequent section, Development of Conceptual Alternatives, summarizes the methodology utilized to develop the Conceptual Alternatives in Step 5 and provides a detailed description of each.

The conceptual alternatives were evaluated based on design issues and preliminary environmental evaluations. The results of these analyses are summarized *by impact/issue* in the Evaluation of Conceptual Alternatives.

These analyses are summarized *by alternative* in the Comparison Matrices and Conclusions section. Based upon the provided evaluations, alternatives will be recommended for advancement. The Feasible Alternatives that are chosen for further work will be analyzed in greater detail in Step 6 of the PDP, with additional environmental investigations and coordination.

Important conclusions from the Step 5 are summarized below.

The mainline alternatives to be carried forward to Step 6 include:

- I75-A: 4-Lane Continuity Alternative, which provides an additional through lane north of the I-74 interchange northbound and southbound, and
- I75-D: 5/4-Lane Alternative, which provides one additional through lane throughout the project limits, for four lanes in each direction north of I-74 and five lanes in each direction south of I-74.

Neither of these alternatives will achieve Level of Service D throughout the project limits. However, the consideration of additional lanes was eliminated based upon public input from the North South Transportation Initiative (NSTI), impacts and costs. More information on this topic is provided in a technical memorandum in Appendix 4.



Interchange alternatives carried forward from the Planning Study Report were evaluated in greater detail. The majority are recommended for continued consideration in Step 6 of the PDP, with the following noted exceptions, which were eliminated due to concerns with operational or geometric feasibility.

- The HOP-B: Offset Roundabout Diamond Interchange was replaced with the HOP-B1 Offset Diamond Interchange which utilizes a signalized intersection in lieu of a roundabout.
- The I74-A: Fully Directional Interchange with Local Access Maintained will require additional analysis during Step 6 due to vertical infeasibility of the southbound I-75 to Colerain ramp.



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INTRODUCTION

The purpose of the Conceptual Alternatives Study (CAS) is to develop and evaluate alternatives that avoid or minimize impacts to design and environmental red flag areas within the study area during Step 5 of the Ohio Department of Transportation's (ODOT's) 14-Step Project Development Process (PDP) for Major Projects. (For reference, a graphic of this process has been included in Exhibit A.) The CAS is the combined design and environmental document that refines and analyzes the transportation improvements selected for further study in Step 4. This report is based on the information provided in the Planning Study Report and includes the information developed throughout Step 5.

By Step 5, the design team has developed and evaluated horizontal alignments for the I-75 mainline and several interchange concepts. At this point in the Project Development Process, the design of concepts and evaluation of their potential impacts are based upon: topographic mapping from aerial photography by ODOT, property information from CAGIS, previous geotechnical evaluations, information provided by major utilities, and information on social, economic and environmental resources available from secondary sources. At this stage, field studies are limited to traffic analysis, ecological survey, Environmental Site Assessment screening, Phase I History/Architecture evaluation, and field reviews as needed by planners and engineers to understand existing conditions.

This report does not reflect final design details nor complete environmental studies, coordination or mitigation. It is the first major submission for early consideration of these issues, which will be expanded upon in future steps of the process.

Project History

In 2000, the Ohio-Kentucky-Indiana Regional Council of Governments (OKI) and the Miami Valley Regional Planning Commission (MVRPC) cooperated on a regional multi-modal transportation plan and Major Investment Study named the North South Transportation Initiative (NSTI). The primary focus of the NSTI was to determine how to improve the safety, efficiency and reliability of transportation networks within Southwest Ohio, Northern Kentucky and Southeast Indiana. Analysis of the existing and future travel corridors was combined with input obtained from stakeholders and the public. As a result, several projects were established to address the original focus of the NSTI. One of the most important corridors established by the public and stakeholders was Interstate 75. The I-75 Mill Creek Expressway study is intended to build upon this major investment study and refine the recommendations within this portion of the I-75 corridor.

The NSTI's original preferred program of projects was divided into three classifications: Corridor



Capacity Alternatives, Systems Modification Alternatives and Access Modification Alternatives. Listed below are the NSTI projects that are directly related to the I-75 Mill Creek Expressway study.

Corridor Capacity – 4-lane Continuity with Auxiliary Lanes. The NSTI used information from previous travel demand model runs, including Average Daily Travel (ADT), per-lane capacity and number of lanes, to create a planning-level study to determine the approximate number of through lanes needed on the interstate mainline. At minimum, this alternative would provide 4-lane continuity along the I-75 mainline with possible additional lanes should they be warranted. Within the I-75 Mill Creek Expressway study area, this applies north of the I-74 interchange to the northern extents of the study area (mile marker 10.10, north of the Paddock Road Interchange).

The NSTI study determined that the I-75 mainline from I-74 to SR 126 Ronald Reagan Cross County Highway (located within the HAM-75-10.10 Thru the Valley Project) would need at least 6 lanes to receive a level of service (LOS) D. However, the feasibility of additional lanes (beyond 4-lanes) includes numerous factors beyond achieving acceptable level of service.

System Modification - I-74/75 Interchange, Hopple Street Interchange, Mitchell Interchange and Local improvements. This alternative recommended improvements to the I-74 and I-75 interchange along with the nearest southern interchange, Hopple Street, and the nearest northern interchange, Mitchell Avenue. The project was adopted as the number one priority system modification in the entire region and appears in OKI's 2030 Transportation Plan (# 636).

Access Modifications. The final element of the NSTI was the evaluation of access points along the interstate mainlines. Based upon identified need and possible funding sources, the modifications were classified into three categories.

- Category I Project: A high priority project to be completed in 0 to 15 years.
- Category II Project: A medium priority project to be completed in 15 to 25 years.
- Category III Project: A low priority project to be completed beyond a 25-year threshold.

The following access modification projects, along with their categorization, are within the I-75 Mill Creek Expressway study area:

Location	Category	Identification Location	Dollars (millions)
Norwood Lateral Interchange	Category I	OKI's 2030 Transportation Plan (#635)	\$18.1
Towne Street Interchange	Category I	OKI's 2030 Transportation Plan (#633)	\$12.6
Paddock Road Interchange	Category I	Not specifically identified, but included with OKI's 2030 Transportation Plan (#639)	Not Listed
Western Hills Viaduct	Category II	OKI's 2030 Transportation Plan (#698)	\$13.3

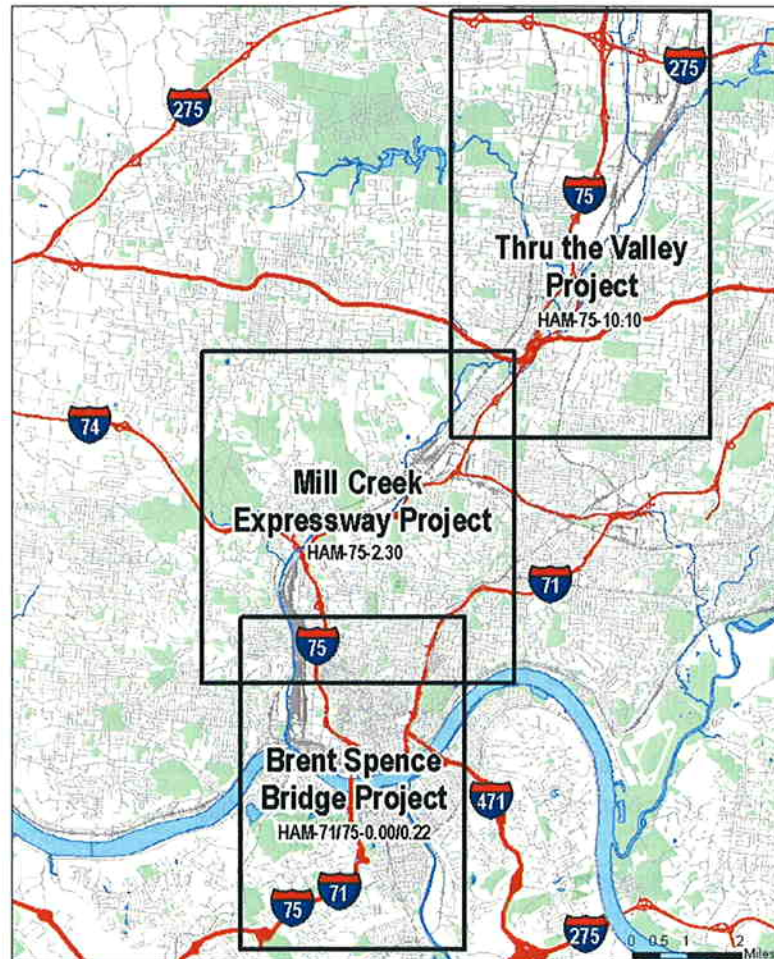
Source: North South Transportation Initiative (NSTI), 2000.



I-75 Projects and Adjacent Studies

This project serves as the link between two additional I-75 studies within Hamilton County, shown on the graphic below. To the north, the **Thru the Valley** project involves the evaluation of I-75 from Paddock Road (on the south) to I-275 (on the north). To the south, the **Brent Spence Bridge Corridor** project involves a study of the replacement or rehabilitation of the functionally obsolete bridge that carries both I-75 and I-71 over the Ohio River connecting Ohio and Kentucky. The study area for the Brent Spence Corridor begins at the Western Hills Viaduct and continues to the Kyle's Lane Interchange in Northern Kentucky.

Sharing the eastern boundary of the I-75 Mill Creek Expressway project is the **Uptown Transportation Study** which is examining the transportation infrastructure within the Cincinnati neighborhoods of Avondale, Clifton, Clifton Heights, Corryville, East Walnut Hills, Evanston, Fairview/University Heights, Mt. Auburn, North Avondale, and Walnut Hills. The Uptown area is home to institutions such as the University of Cincinnati, Cincinnati Zoo and Botanical Garden, U.S. Environmental Protection Agency, Children's Hospital, VA Hospital and the Tri-Health and Health Alliance hospitals. A major component of the Uptown Transportation Study is the access to interstate highways bordering the Uptown area, including I-75.





Study Area and Logical Termini

As part of the North South Transportation Initiative (NSTI), capacity improvements were recommended for the I-75 corridor through Hamilton County from the Brent Spence Bridge on the south, where I-75 crosses into Kentucky, to I-275 on the north. The NSTI was a planning study conducted by the Ohio-Kentucky-Indiana Regional Council of Governments (OKI) that evaluated overall transportation needs at a broad level and considered substantial public input.

ODOT also has recognized the need for capacity, access, and safety improvements on the I-75 corridor. ODOT's Highway Safety Program and the Congestion and Safety Initiative both identified major portions of the I-75 corridor for study to address capacity issues and high accident rates.

Improvements to the I-75 corridor and its interchanges would be extremely expensive and unlikely to be pursued in entirety within the typical planning horizon of twenty years. According to the OKI Travel Demand Model, of the roughly 160,000 vehicles per day utilizing I-75 in Hamilton County, only about 25,000 (16%) are truly through-trips, with both the origin and destination north of I-275 or south of the Brent Spence Bridge. Therefore, ODOT believes that benefits may be provided to the majority of motorists even if only portions of the corridor are improved at any given time. In other terms, well-defined projects on I-75 within Hamilton County would have independent utility even if the entire corridor were not improved. The NSTI planning study considered the corridor only at a broad level, which did not allow for any detailed examination of needs or the impacts or benefits of any proposed solutions. Therefore, ODOT desires to consider the I-75 corridor in several specific, more detailed studies in order to develop a proposed program of projects for implementation over a span of many years.

ODOT has identified three specific projects along the I-75 corridor that will be manageable for evaluation of needs and detailed consideration of alternative solutions, yet have logical termini, independent utility and are lengthy enough to consider environmental effects on a broad scale. These are shown on the graphic of adjacent studies on the previous page.

In order to illustrate these issues, the following summary for each project will demonstrate:

- The end points are at meaningful locations in the roadway network; and
- The project limits will be several miles in length through areas that have common environmental and social concerns, allowing for a meaningful examination of impacts.



Since the I-75 Mill Creek Expressway project is in the middle, this discussion of logical termini provides information on all three projects. Please note that the three projects described below are anticipated to be used for planning and environmental approvals. The improvements recommended by each of the three studies most likely will be further subdivided for design and construction according to availability of funding and maintenance of traffic needs.

Brent Spence Bridge Corridor (HAM-71/75-0.00/0.22, PID 75119)

The KYTC and ODOT are jointly planning for the replacement or widening of the Brent Spence Bridge, which conveys I-75 over the Ohio River between Kentucky and Ohio. The southern terminus for the Brent Spence Bridge Corridor project (BSB) was identified in coordination with the KYTC based upon the needed lanes over the bridge as well as plans for improvements to I-75 in Kentucky. The southern terminus is expected to be the 12th Street Exit in Covington. Therefore, the study area extends to the next interchange at Kyle's Lane.

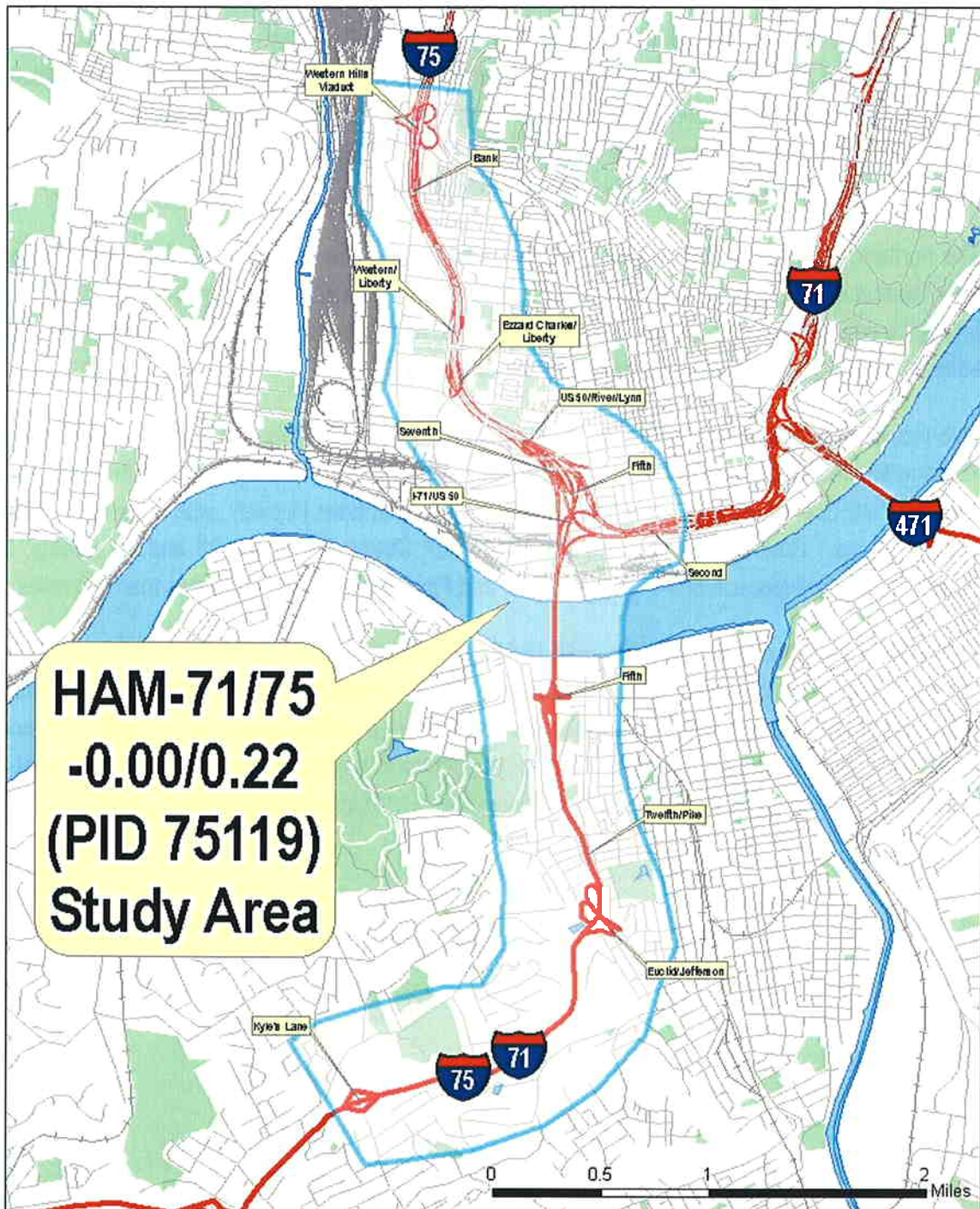
The northern terminus of this project is the I-75 interchange with Western Hills Viaduct. Western Hills Viaduct is the first interchange north of the downtown area where connectivity is provided to a primary east-west arterial. South of this interchange, all of the connections are provided to local streets or to arterials that connect into the downtown area.

This project is approximately 2.5 miles in length through Hamilton County, Ohio. This portion of I-75 traverses the urban core of Cincinnati, ultimately joining with I-71 before crossing the Ohio River via the Brent Spence Bridge. This area is typical of a downtown freeway, with numerous closely spaced ramps. Connections are made to US 50, 5th Street, 6th Street, 7th and 8th Streets, 9th Street, Freeman Avenue, Ezzard Charles Drive, and Findlay Street, all within less than two miles.

This area is central city in character, with buildings located in close proximity to the right-of-way among a maze of ramp connections. According to 2000 census data, this area possesses a much higher population density than areas to the north, has more persons below poverty level, and more households with no vehicle available. These are factors that will be important in development of alternatives and consideration of impacts that are unique compared to adjacent sections.



This section of I-75 is currently four-lanes in each direction. It is anticipated that one additional through lane will be constructed. The key issue in this section will be gaining capacity and safety improvements through reconfigurations of access and auxiliary lanes. Therefore, these access and safety improvements would not be expected to add to or influence congestion in adjacent sections and could therefore be constructed even if no additional improvements are made elsewhere.





I-75 Mill Creek Expressway (HAM-75-2.30, PID 76257)

The I-75 Mill Creek Expressway project (HAM-75-2.30) begins at the northern terminus of the Brent Spence Bridge Corridor project, just south of the I-75 interchange with Western Hills Viaduct. The project ends just north of the Paddock Road interchange, for a total project length of approximately 7.8 miles.

Beginning with Western Hills Viaduct, this section is the core of I-75, including interchanges with US 52 (Hopple Street), US 27 (Bates Avenue), I-74, Mitchell Avenue, SR 562 (Norwood Lateral), Towne Street, and SR 4 (Paddock Road).

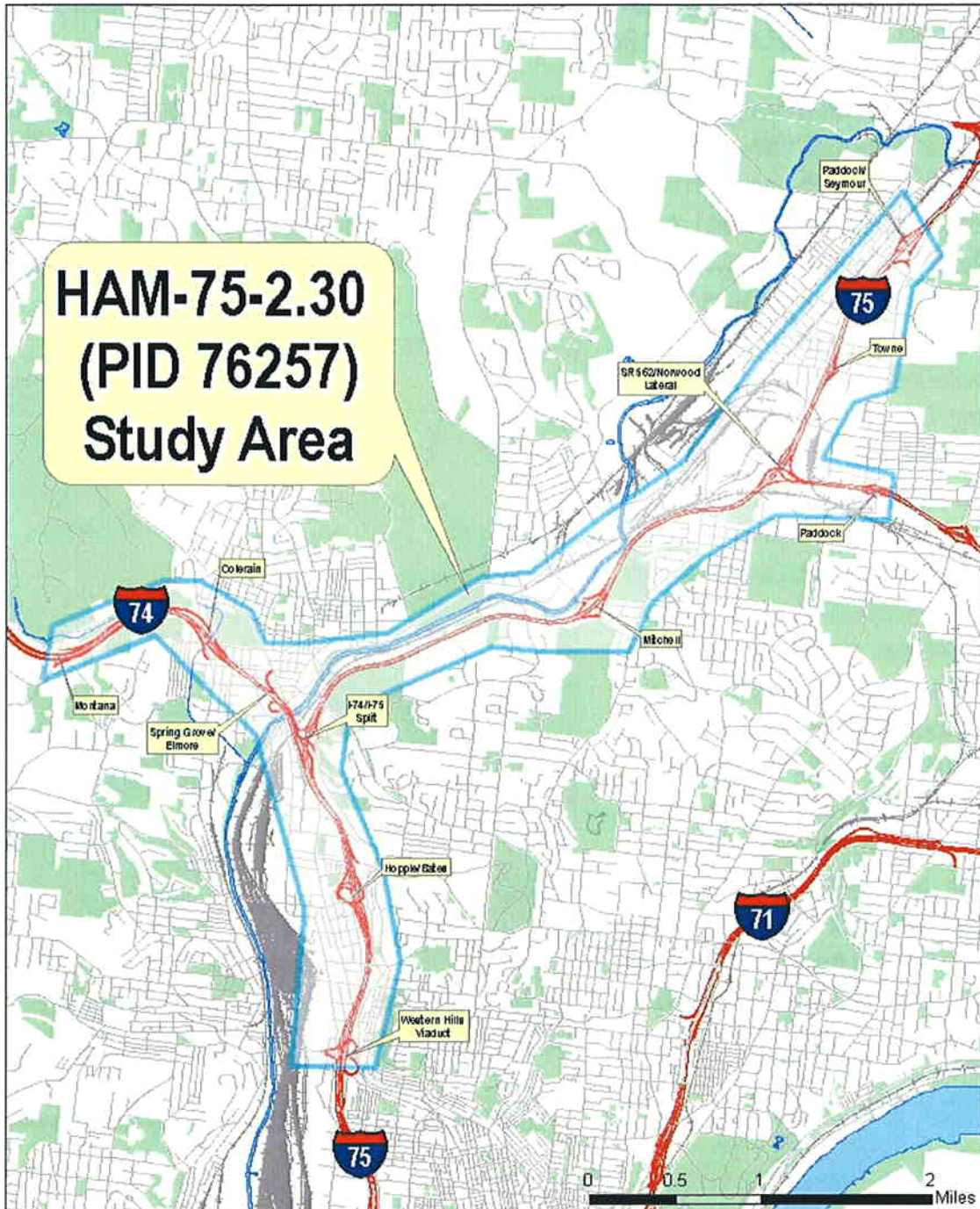
The northern terminus operationally would be expected to be the Norwood Lateral. The Norwood Lateral is the first freeway north of downtown connecting I-75 to I-71. However, the next two interchanges to the north (Towne and Paddock) are operationally linked and important to the relationship of the Norwood Lateral to I-75. Paddock Road, the last interchange south of SR 126 (Ronald Reagan Cross County Highway), is a north-south route with connection at the first interchange on the Norwood Lateral east of I-75. Towne Street is a partial interchange just north of the ramp from the Norwood Lateral to I-75 northbound. Vehicles desiring to return southbound must use Towne Street to SR 4 (Paddock Road) to the Norwood Lateral and then back to I-75 southbound. Southbound I-75 vehicles desiring to access the Towne Street area must use the Paddock Road exit. Because of this relationship, these interchanges are considered as a system and, as a group, form the northern terminus from an operational perspective. Therefore, the Paddock Road interchange is the northern terminus of the I-75 Mill Creek Expressway project.



Northern Terminus of I-75 Mill Creek Expressway



In order to properly evaluate options at I-74/I-75, the study also includes the adjacent Colerain interchange on I-74. When improvements to an interchange are being considered, studies are required to evaluate the conditions to the next adjacent interchange. Therefore, traffic data was collected and evaluated on I-75 from the Western Hills Viaduct to Paddock Road, on I-74 from the Montana Avenue interchange to I-75, and on the Norwood Lateral from I-75 to the Paddock Road interchange.





The I-75 Mill Creek Expressway section of I-75 has a different character from the Brent Spence Bridge Corridor to the south. This area provides a larger distance between interchanges and gives very few connections to local streets. The majority of this section of I-75 abuts the railroad and a channelized section of Mill Creek on the west side of the right-of-way. Elsewhere, parks, cemeteries, and extreme slopes with known geotechnical challenges are adjacent to the roadway. There are portions of the roadway abutting residential areas and small communities of St. Bernard and Elmwood Place.

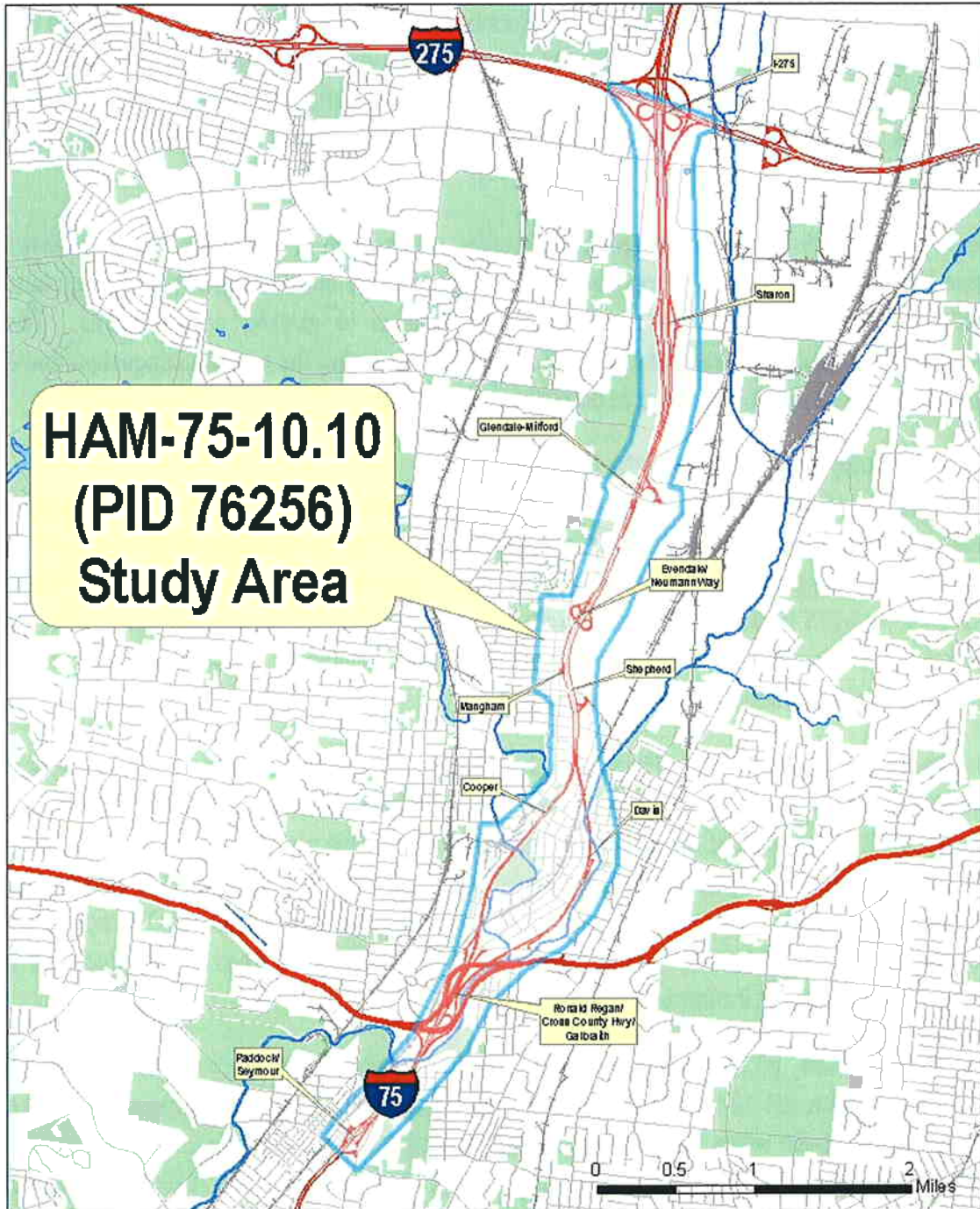
South of I-74, I-75 has four lanes in each direction. From north of I-74, the roadway is currently three lanes in each direction. Proposed improvements include the addition of one through lane in each direction and safety and operational improvements to existing access points. These improvements could be constructed without noticeably increasing the existing congestion levels in adjacent sections and therefore could be built independently.

Thru the Valley (HAM-75-10.10, PID 76256)

The Thru the Valley project begins at the northern terminus of the I-75 Mill Creek Expressway project, just north of Paddock Road and just south of the I-75 interchange with SR 126. Operationally, the southern terminus is SR 126. It is a major east-west freeway spanning Hamilton County from I-275 to US 22. The northern terminus is I-275, the outer beltway which completely encircles the greater Cincinnati area in both Ohio and Kentucky. Environmental approval is pending for improvements to I-275 in this area.

The Thru the Valley section of I-75 is currently three lanes in each direction, with interchanges with SR 126, Galbraith Road, Davis Street/Cooper Avenue, Shepherd Lane, Industrial Distributor north and south, Glendale-Milford Road, Sharon Road, and I-275. This area is different in character from the adjacent section of I-75. The southern half, from the SR 126 to Shepherd Lane, is bifurcated – it splits and surrounds Arlington Heights and portions of the Village of Lockland. The northern half has the community of Lincoln Heights on the west, and substantial areas of manufacturing and industrial development, including General Electric.

The Thru the Valley project is approximately 6.7 miles in length. With the volumes getting on and off I-75 from both SR 126 and I-275, this section could be improved to provide congestion and safety relief to traffic within this area without further increasing congestion problems to the south. Therefore, improvements could be constructed and have independent utility from adjacent sections.





OKI's 2030 Transportation Plan

The OKI 2030 Regional Transportation Plan, originally composed in 2001 and updated in 2004, serves as a blueprint for transportation projects in Southwest Ohio, Northern Kentucky and Southeast Indiana through the year 2030. The plan addresses current and future needs created by growth and development. At the same time, it responds to Federal Highway Administration and Clean Air Act requirements to mitigate congestion, and to address air quality and other environmental, social and financial issues. The following plans and projects are listed in OKI's 2030 Transportation Plan 2004 Update as either having committed funding (2004-2007 TIP) or as future projects.

OKI's Western Hamilton County Corridor Study. This major investment study will incorporate functionally-classified roadways of the western portion of Hamilton County stretching from approximately Colerain Avenue and the Mill Creek on the east, to the Indiana state line on the west; Butler County, Ohio on the north, to the Ohio River on the south. The study will focus on improving mobility and safety for residents, commuters, and freight. The study area is very large and comprised of numerous individual transportation corridors and therefore will take into consideration recommendations from several recent and on-going studies and projects including the I-75 Mill Creek Expressway project.

Regional Light Rail Plan. The Regional Light Rail Plan includes several proposed corridors within Southwest Ohio and Northern Kentucky. Several proposed corridors are located within the existing I-75 Mill Creek Expressway Study Area. Installation of a starter line is estimated to cost about \$800 million. Preliminary Engineering and Draft Environmental Impact Statements are estimated to cost \$20 million.

Intercity Passenger Rail. The Cleveland-Columbus-Cincinnati High Speed Rail Study and the Midwest Regional Rail System Study include proposed corridors within Southwest Ohio. Both studies include corridors paralleling the Mill Creek and I-75.

Spring Grove/Central Parkway Modifications. Access management and signal priority system modifications are expected to be implemented along both roadways within the next ten years. It is estimated to cost \$800,000.

