SECTION 1
SUMMARY

1.1 Description of the Proposed Project

I-75, the main north-south roadway through Oakland County, is experiencing congestion in the peak periods that will get more severe and extend through greater portions of the day as the future unfolds. It provides three lanes in each direction through most of the county except for a section between Square Lake Road and a point west of M-24 (Figure 1-1). A fourth lane also is present between M-102 (8 Mile Road) and I-696, but this lane is considered an auxiliary lane,[1] not a through travel lane, as it serves the weave movements to and from the many ramps in this section.

The *I-75 Corridor Study in Oakland County* (Feasibility Study),[2] completed in November 2000, recommended providing four through travel lanes in each direction throughout Oakland County. It also recommended the improvement of several interchanges and arterial streets near I-75. The federal action proposed by the Michigan Department of Transportation (MDOT) and covered by this Draft Environmental Impact Statement (DEIS) addresses the reconstruction of I-75 and its widening of I-75 from three to four through travel lanes in each direction between M-102 (8 Mile Road - exit 59) and M-59 (exit 77), a distance of 18 miles. The next six miles, north to Joslyn Road (exit 83) has already been widened to four through travel lanes. The Feasibility Study recommended that MDOT widen I-75 north of Joslyn Road. The proposed improvements between M-102 and M-59 have independent utility, i.e., they can stand alone and provide transportation benefits without relying upon the development of other projects. The proposed project will connect with the four-lane section north of Square Lake Road and south of M-102.

The proposed improvements include reconstructing the 12 Mile and 14 Mile Road interchanges. Modifications to the Crooks/Long Lake interchange and the I-75/M-59 interchange are separate projects and, as such, are not covered in this DEIS. The I-75/M-59 project extends south to about South Boulevard. Therefore, the environmental analysis of the proposed project covered in this DEIS extends north to South Boulevard from M-102. Other independent, but related MDOT projects in the area include a new pedestrian bridge over I-75 south of Auburn Road and noise mitigation in the Square Lake Road area.

This DEIS is a product of the I-75 Oakland County Planning/Environmental Study, which is listed in the Southeast Michigan Council of Government's (SEMCOG's) 2025 Regional Transportation Plan, in SEMCOG's Transportation Improvement Program (TIP), and in the Michigan Department of Transportation's (MDOT's) Five-Year Road & Bridge Program (Volume V – 2003 to 2007) for the Metro Region.

This section summarizes the DEIS, addressing: 1) the project purpose and need; 2) alternatives considered; 3) the affected environment and project impacts; 4) areas of controversy; 5) permits and proposed mitigation; 6) unresolved issues; and, 7) the project's status.

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[1] An auxiliary lane is one that begins as an on-ramp, but never fully merges with the mainline. Instead it continues as the rightmost lane of the freeway to the next exit, where is becomes an "exit only" lane. So it functions as a travel lane between two interchanges. The advantage is that it adds some mainline capacity and lengthens the decision-making distance and time for merges and diverges.

[2] *I-75 Corridor Study in Oakland County*; The Corradino Group for the Michigan Department of Transportation, the Southeast Michigan Council of Governments, the Road Commission for Oakland County and the Traffic Improvement Association; November 2000.

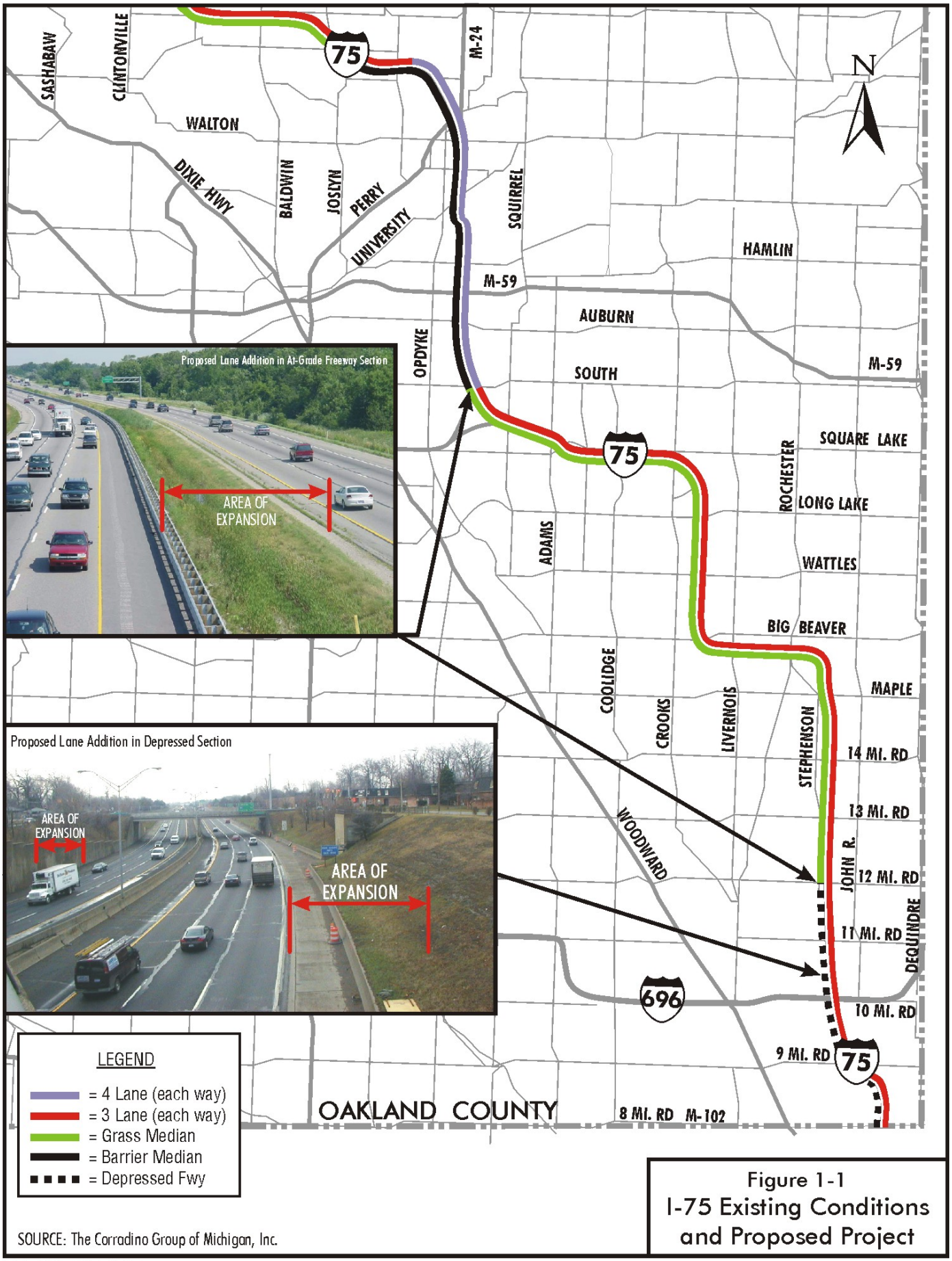

Figure 1-1
I-75 Existing Conditions and Proposed Project

SOURCE: The Corradino Group of Michigan, Inc.

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1.2 Alternatives

This section summarizes the alternatives considered. More detail is provided in Section 3.

No Build, Mass Transit, and several "build" alternatives were analyzed for this DEIS, together with Transportation Systems Management (TSM) techniques, Transportation Demand Management (TDM) techniques, and Intelligent Transportation System (ITS) measures. TSM techniques are designed to maximize the efficiency of the arterial street system. TDM involves strategies for managing transportation demand - usually to reduce it or to shift it to different times, locations, routes, or modes. ITS measures involve the collection and dissemination of information to drivers in real time (overhead message boards on freeways), incident management (clearing crashes quickly), traffic signal systems that respond to demand, and similar measures.

A recommended alternative will not be selected until after the public hearing and comment period are concluded and all comments have been considered.

1.2.1 No Build Alternative

The No Build Alternative consists of continued regular maintenance of I-75. Built in the 1960s, I-75 needs major reconstruction. The No Build Alternative would require no additional right-of-way. It would result in a breakdown of traffic flow through much of the day.

1.2.2 Transportation Systems Management (TSM) Techniques

Transportation Systems Management (TSM) techniques apply to the arterial street system, which, in large part, is under the control of local units of government and the Road Commission for Oakland County. Maximizing capacity on the arterial network cannot meet the project purpose and need. Only a lane addition on I-75 can meet that need. TSM techniques are and will continue to be included as area roadway improvements are made.

1.2.3 Transportation Demand Management (TDM) Techniques

Transportation Demand Management (TDM) means reducing demand or shifting it to different times, locations, routes, or modes. It focuses principally on administrative actions, such as working with major employers to support carpool and vanpool programs, or programs that encourage transit use. MDOT works actively with SEMCOG to promote alternative transportation modes. TDM techniques will continue, but will not alone meet the project purpose and need. These activities would expand, if the High-Occupancy Vehicle (HOV) Lane Alternative were selected.

1.2.4 Intelligent Transportation Systems

Intelligent Transportation System (ITS) measures often involve the use of technology in transportation to save lives, time, and money. The measures have particular utility for freeways. Techniques include the collection and dissemination of information to drivers in real time (overhead message boards on freeways), incident management (clearing crashes and stopped vehicles quickly), coordinating traffic signals at ramp ends with the surrounding signal system, providing intelligent signal systems that adjust to traffic demand, and other similar measures. ITS maximizes use of the existing transportation infrastructure, but cannot substitute for physical

expansion of roadway capacity, once efficiency is maximized. For this reason, while ITS will be an ongoing component of traffic management on I-75 and on the surrounding roadway network, it will not alone meet the project purpose and need.

1.2.5 Mass Transit

This DEIS analyzed whether a rapid transit system can meet the purpose and need for the project. Rapid transit has potential in the Woodward Corridor (which parallels I-75) south of 9 Mile Road, but analysis shows rapid transit and an extensive supporting bus system have little effect on the traffic volumes on I-75 and do not eliminate the need for the proposed lane addition on I-75 between M-102 (8 Mile Road) and M-59.[3] Principal reasons are: 1) Oakland County residential development is dispersed; 2) many trips are internal to Oakland County and not easily diverted to transit; and, 3) demand in the I-75 corridor exceeds capacity, so any diversion to transit would be quickly replaced by others wishing to use I-75.

1.2.6 Build Alternatives

The "build alternatives" include adding a through travel lane between M-102 (8 Mile Road) and M-59 to bring the total lanes to four in each direction.[4] The lane could be used by all vehicles or be restricted to use by High-Occupancy Vehicles (HOV), with two or more persons, in peak hours. The proposed project includes reconstruction of the 12 Mile and 14 Mile Road interchanges, modification of the ramps from eastbound and westbound I-696 to northbound I-75, reconstruction of the existing pedestrian bridges over I-75,[5] and separation of the storm water from I-75 from the combined sewer system in the south section of the corridor. The project also considers modifying curves on I-75 near 9 Mile Road and Big Beaver Road, changing ramps at Square Lake Road. The planned connections to the separate I-75/M-59 project are discussed. The build alternatives will be referred to henceforth as the GP (General Purpose lane) and HOV (High-Occupancy Vehicle lane) alternatives.

I-75 Lane Addition for General Purpose Use – GP Alternative

Between M-102 (8 Mile Road) and Gardenia Avenue (the first cross street south of 12 Mile Road) I-75 is in a "cut" section, i.e., below grade level. The addition of a fourth through lane would occur by cutting into the existing side slopes. North of Gardenia Avenue, I-75 comes to grade or is elevated (refer to Figure 1-1). The lane addition would be constructed in the existing median from this point to Square Lake Road. From Square Lake Road to beyond M-59 there are already four through lanes and a lane addition is not required. The north limit of this I-75 lane addition project is north of South Boulevard, where the two lanes (eastbound-to-northbound) from Square Lake Road join the four northbound lanes of I-75 to form the six lanes planned with the I-75/M-59 project. This alternative would meet full, modern standards with the exception of the "S" curve south of 9 Mile Road.

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[3] *I-75 Corridor Planning/Environmental Study Refined Analysis of Transit and HOV Concepts (Technical Memorandum No. 2)* by The Corradino Group for the Michigan Department of Transportation, October 2002.

[4] During the 2000 Feasibility Study the concept of a reversible lane was considered. However, north-south travel demand is so balanced that a reversible lane was not reasonable.

[5] Reconstruction of the Harry Avenue pedestrian bridge would require relocation of three homes, so an option is not to replace this bridge.

Redesigning the north section of the "S" curve south of 9 Mile Road to meet current standards would push I-75 into the adjacent neighborhood to the west. More than 150 parcels, including approximately 100 homes and 20 businesses, would likely be affected. Therefore, redesigning this curve was not considered practical.

I-75 Lane Addition for HOV Use – HOV Alternative

The proposed fourth through lane could be dedicated to use only by high-occupancy vehicles in peak traffic hours. The proposal is to limit the use of this lane to vehicles carrying two or more persons (carpools, vanpools, and buses) during the morning and afternoon peak periods (preliminary analysis of traffic data suggest a morning period of 7 to 9 AM, and an afternoon period of 4 to 6 PM). So, for twenty hours of the day, the HOV lane would operate as a general purpose lane like the other lanes. Analysis indicates that limiting the HOV lane to 3 or more persons restricted its use to the point that the lane is not viable.

HOV Lane

Three HOV options, varying in their length of application and the degree to which direct access is provided, were considered.[6] Analysis concluded that special facilities such as exclusive HOV ramps generated little additional use of the HOV lane, but led to substantial relocations, impacts and costs. As these impacts could not be justified, only the basic HOV concept was advanced for consideration in this DEIS. For the HOV lane to be effective, enforcement must be strict.[7]

1.2.7 Additional Design Considerations

Several design options considered for inclusion in the build alternatives are discussed below.

Ten-Foot Median Shoulders

Ten-foot inside shoulders meet modern design standards, but 12-foot inside (median) shoulders are preferred to 10-foot shoulders when more than 250 trucks are present in the peak travel hour, as would be the case on I-75. I-75 is now designed with 10-foot shoulders. To add the two feet would require total reconstruction of all the bridges from 12 Mile Road north to the north project limit (rather than widening), result in an inconsistent cross section along I-75 in Wayne and Oakland counties, affect four church and four residential parcels, likely cause the relocation of Our Savior Lutheran Church, and potentially cost up to $100 million.

[6] Ibid.
[7] *I-75 Corridor Planning/Environmental Study Refined Analysis of Transit and HOV Concepts (Technical Memorandum No. 2)* by The Corradino Group for MDOT, October 2002.

Curve at Big Beaver Road

I-75 at Big Beaver Road was originally considered a rural highway section. It is now urbanized. Redesigning the curve south of the Big Beaver Road interchange to rural standards would require at least partial reconstruction of the interchange. Depending on the design approach, a motel and buildings of the City of Troy government complex on the inside of the curve would be affected, or, the ramp curves within the interchange would be tightened, increasing the potential for more crashes. Redesigning this curve, especially as it is now urban, was not considered practical.

Eliminating the Left Exit/Entrance on Northbound I-75 at Square Lake Road

For safety reasons, left exits and entrances are not desirable. To convert the left exit and entrance to a right exit and entrance on northbound I-75 at Square Lake Road would require the construction of flyovers, one for a right exit, another for a right entrance. Both would require new right-of-way and result in substantial relocations. An examination of travel patterns (movements from Square Lake Road to M-59, I-75 to M-59, and the reverse movements) supported the existing design. Therefore, the recommendation was to leave the left exit and left entrance as they are. Changing the exit and entrance was not considered practical.

Auxiliary Lanes, I-75 from M-59 to Square Lake Road

The M-59 interchange with I-75 is a separate project. The five southbound lanes of that project will match the five southbound lanes of the proposed project near South Boulevard. Similarly, northbound, two lanes from Square Lake Road will join the three existing, plus one proposed, lanes of I-75 to form the six-lane section that will match to the I-75/M-59 project north of South Boulevard. Therefore, the build alternatives would not require any additional changes north of South Boulevard beyond those planned for the separate I-75/M-59 interchange project.

I-696 Interchange

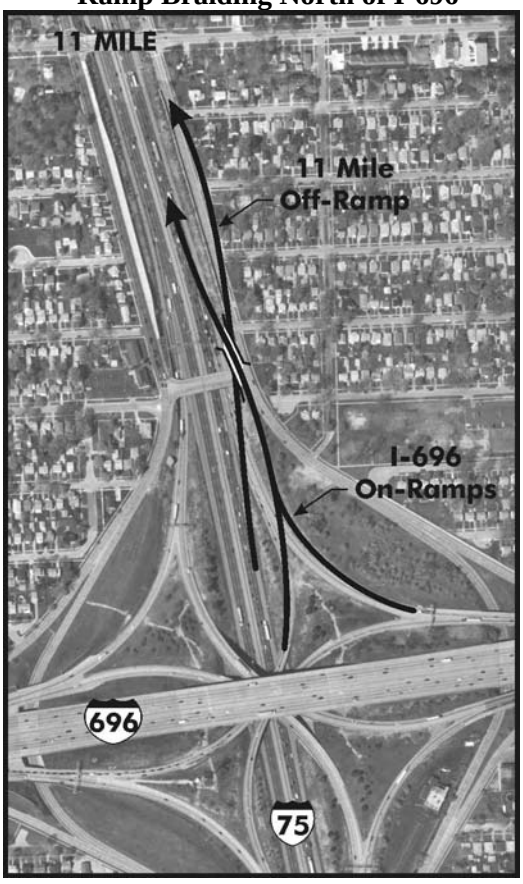
Traffic exiting eastbound I-696 to northbound I-75 backs up frequently. The primary cause of backups at this location is an inability to merge into the northbound traffic flow on I-75. The recommendation is to have the northbound off-ramp to 11 Mile Road pass under the northbound on-ramps from I-696 to prevent merge/diverge conflicts. This is called “braiding” the ramps (see figure on next page).

12 Mile Road and 14 Mile Road Interchanges

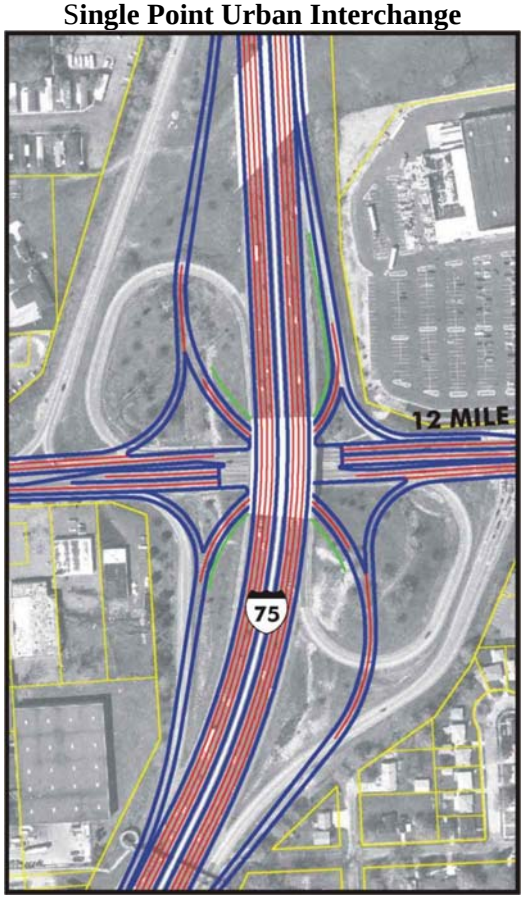
There are two options at the 12 Mile Road interchange. It could be reconstructed to retain some of its existing geometrics, or be rebuilt as a Single-Point Urban Interchange (SPUI). A SPUI brings all ramp ends together at a single point and provides for a three-phase signal operation at the resulting intersection. The three phases control: 1) left turns from the ramps ends; 2) left turns to the entrance ramps; and, 3) the through movement of 12 Mile Road. This control aids pedestrian movements. Optionally, the interchange could retain some of its current configuration. As the southbound exit ramp to 12 Mile Road is now positioned too close to Stephenson Highway, the loop ramp serving westbound to southbound traffic would be eliminated. This would allow the southbound off-ramp to shift east, away from Stephenson Highway. The westbound to southbound movement would be accommodated instead by a left turn from 12 Mile Road to the southbound entrance ramp in the southwest quadrant of the interchange (see figure on next page).

The I-75 Feasibility Study (2000) anticipated the 14 Mile Road interchange would benefit from a SPUI design. However, more detailed analysis found that a modification of the existing interchange would serve traffic better. So, through capacity is proposed to be added on 14 Mile Road, and left-turn capacity from 14 Mile Road to I-75 would be increased. These changes will necessitate the reconstruction of the I-75 bridges over 14 Mile Road. Other improvements to 14 Mile Road are being addressed independently with the stakeholders on 14 Mile Road, as it is under the jurisdiction of the Road Commission for Oakland County.

Ramp Braiding North of I-696



Single Point Urban Interchange



1.2.8 Practical Alternatives

Analysis finds that mass transit is viable in the Woodward Corridor, but clearly shows that even under the best-case scenario a Mass Transit Alternative cannot eliminate the need for four travel lanes in each direction through the project length. Nevertheless, the transit concept has been included in the background system, along with the roadways in the cost-feasible *Regional Transportation Plan*. TSM, TDM, and ITS are also incorporated into all alternatives. The practical alternatives carried forward through this DEIS are:

- No Build – Continued regular maintenance with no capacity improvements.
- GP Alternative – Addition of a general-purpose travel lane between M-102 and north of Square Lake Road to bring the number of through travel lanes to four in each direction.

- HOV Alternative – Addition of an HOV lane in the same manner as the GP lane, but signed and striped for HOV use during peak hours (7-9 AM and 4-6 PM). The northbound HOV lane is carried through the Square Lake Road interchange.

The GP and HOV alternatives would be accompanied by improvements at the 12 Mile and 14 Mile Road interchanges, the ramp braiding north of I-696, reconstruction of the pedestrian bridges over the depressed section of the freeway, construction of a new storm water system in the south part of the corridor, and new storm water retention in the north section of the corridor. Both alternatives would tie to auxiliary lanes that are planned with the separate I-75/M-59 project. The I-75/M-59 and Crooks/Long Lake interchanges, while not part of this project and DEIS, are considered part of the background system. The designs of all three projects will be integrated, although each has independent utility.

These practical alternatives will be carried to the public hearing.

1.3 Impacts

The following is a summary of the impacts associated with the No Build Alternative, the GP Alternative, and the HOV Alternative (Table 1-1). The GP and HOV alternatives have almost the same impacts. A more detailed description of impacts is found in Section 4. Proposed mitigation measures are found in Section 5.

1.3.1 Traffic and Safety

Either build alternative will improve traffic flow over the No Build Alternative.[8] The mainline lanes over most of the corridor will operate at a Level of Service (LOS) D or better in the design year (2025), with the GP or HOV Alternative, compared to breakdown conditions (LOS F) with the No Build Alternative. A *Crash Analysis* has identified patterns and concentrations of crashes and developed a set of countermeasures to improve safety with project construction.[9] Countermeasures are summarized in Section 2.2.6. They include such measures as glare screens, warnings signs and flashers, and lengthening ramps.

1.3.2 Relocations and Community Cohesion

Right-of-way acquisition and access changes can affect the cohesion of a neighborhood. Physical features of the I-75 project that will require new or additional right-of-way are:

- The lane addition;
- 12 Mile Road and I-75 interchange;
- "Braiding" of ramps north of I-696;
- Reconstruction of pedestrian bridges; and
- Storm water detention.

The proposed lane addition itself will not require relocation of dwelling units, but two businesses in Hazel Park would be relocated. Parking from several businesses and a church would also be necessary. Right-of-way acquisition for the lane addition will be only about an acre.

[8] *Traffic Analysis Report*, The Corradino Group, November 2003.
[9] *Crash Analysis*, The Corradino Group, June 2003.

Table 1-1

Summary of Impacts – General Purpose & HOV Lane Alternatives

Impact Category	Expected Impact
Traffic and Safety	Mainline I-75 Level of Service D or better (exception I-696 to 11 Mile Road), compared to LOS F with No Build. Safety will improve.
Relocations	Eleven single-family residences and two businesses.
Community Cohesion	Improved access across I-75 for pedestrians and bicyclists.
Environmental Justice	No disproportionately high and adverse human health or environmental effects on minority or low-income populations.
Land Use	Consistent with local and regional planning documents.
Farmland/Act 451, Part 361 Land	No prime or unique farmlands. No Act 451, Part 361 lands.
Economics	Added capacity responds to growth and supports the focal point of Michigan's economic growth. Tax base losses insignificant.
Air Quality	Lower emissions from improved traffic flow. No violations of the National Ambient Air Quality Standard for carbon monoxide.
Noise	430 dwelling units, 1 school, and 5 churches would be exposed to noise levels exceeding the 66 dBA criterion under future no build conditions compared to 466 dwelling units, 1 school, and 5 churches with the project. Mitigation would substantially reduce impacts under build conditions.
Surface Water Impacts	Two crossings of River Rouge and 10 of county drains. Storm water quantity will increase, flow rate will not. Storm water in depressed section will be separated from current combined sewer system.
Wetlands	HOV Alternative affects 0.41 acres of Palustrine Emergent, and Palustrine Shrub-Scrub. Potential 0.61 acres of mitigation at an identified site. The GP and No Build have no impacts.
Threat/Endangered Species	None.
Cultural Resources	No potential *National Register* eligible sites or districts affected.
Parks/Recreation	No effect on any park. No Section 4(f) involvement.
Visual Conditions	Reduction of grassy banks and landscape plantings from 8 Mile to 12 Mile (depressed section) and grass median north to Square Lake Road (at-grade and elevated section).
Contaminated Sites	One site recommended for Phase II testing.
Soils	Cutting into banks of depressed section could undermine some existing noise walls, requiring stabilization or reconstruction. Poor soils in north project area, potentially affecting noise wall cost, but no anticipated problems with roadway construction.
Utility Systems	Utility relocation on I-75 bridges. No effect on high-tension electric line at 12 Mile Road or any cell towers. Relocation of MDOT traffic surveillance equipment necessary.
Indirect and Cumulative	Project responds to growth, consistent with local planning. Together with other regional projects there will be future impacts to resources from development, subject to local, state, and federal laws and regulations.
Energy	Energy used during construction. Fuel savings upon opening.
Project Costs (2003 dollars)	Approximately $530 million. A SPUI at 12 Mile Road adds $6 million. HOV adds $6 million

Source: The Corradino Group of Michigan, Inc.

Right–of-way acquisition will be required for the "braiding" of ramps north of I-696. This safety and operational improvement could involve relocation of occupants of eight single-family dwellings in Madison Heights and a total of approximately 1.5 acres of land.

Right-of-way would be acquired with reconstruction of six pedestrian bridges. Reconstruction must conform to the Americans with Disabilities Act (ADA), which requires gradually sloping ramps and therefore, more land. Steps, in addition to the ramps, will be provided where feasible, to allow more direct movements for ambulatory persons. The right-of-way acquisition could affect three dwelling units and approximately an acre of land in Hazel Park. These impacts will be refined during the design phase when more detailed information is available.

Storm water detention requirements in the north section of the project may require as much as seven acres of right-of-way acquisition. This acquisition in Troy would relocate no homes or businesses.

In summary, the braid would take eight homes, a pedestrian bridge three more, and the lane addition two businesses.

Community cohesion will not change appreciably as the basic footprint of I-75 will not change. Access across the freeway will be improved where bridges are replaced with the project. Sidewalks or shoulders will be provided on bridges.

1.3.3 Land Use

Rapid growth in mid- and north Oakland County puts continued pressure on I-75. Much of this growth has occurred while no significant capacity improvement in the project length has occurred since construction in the 1960s. While communities in the northern and western parts of Oakland County have grown, a number of communities in the southern part of the corridor have shown population declines. SEMCOG attributes land use changes during the period 1990-2000 to:[10]

- Local planning and zoning;
- Land availability;
- Transportation;
- Sewer and water services; and,
- Social and policy dynamics, including:
  - ✓ Residential segregation by race and income;
  - ✓ Federal tax subsidies for home mortgage interest and property taxes;
  - ✓ School funding and quality;
  - ✓ Crime and public safety;
  - ✓ Societal ideals of lifestyle and urban design;
  - ✓ Constitutional protection of property rights;
  - ✓ Infrastructure financing policies; and,
  - ✓ The extent of personal vehicle ownership and use.

The cumulative impact analysis found that some farmland conversion occurs because the land is uneconomic for farming purposes. Further, the farming community is aging, and it is likely that some farmers are selling their farms as they move toward retirement.[11]

[10] *Land Use Change in Southeast Michigan: Causes and Consequences*, SEMCOG, March 2003.
[11] *Draft Environmental Impact Statement, M-15 from I-75 to I-69 – Oakland and Genesee Counties*, The Corradino Group, December 2001.

SEMCOG concludes that undeveloped land will continue to develop as population shifts north and west in Oakland County, as well as to areas in western Wayne County, central Macomb County, Ann Arbor, and southeast Livingston County. Job growth will not be as dispersed as population growth. New jobs will be concentrated in fewer suburban communities, reflecting the stronger role of transportation access and the need to centralize jobs. The City of Detroit will experience continued job loss until 2020, when the situation will become more stable.[12]

The proposed improvements to I-75 are consistent with local and regional transportation and land use planning, including Oakland County's *Composite Master Plan Map* and SEMCOG's *Regional Transportation Plan*.

1.3.4 Environmental Justice

The project will not result in disproportionately high and/or adverse human health or environmental effects on minority or low-income populations. Nevertheless, a continuing effort will be made to identify disproportionately high and adverse impacts to minority and low-income populations during subsequent phases of this project. If such effects are identified, every effort will be made to actively involve minority or low-income populations in the project development process, and to avoid or mitigate any potential disproportionately adverse impacts that may result from the proposed project.

1.3.5 Economics

Economic activity in the project area is generated by a variety of market sectors including retail trade, services, distribution, industry, education, and public administration. The corridor has been subject to rapid development at its north end. South of M-59 this trend is expected to slow.[13] Further north, where developable land is available, and where local planning and zoning permits (and sometimes encourages), this growth is expected to continue.[14]

Between M-102 and M-59, I-75 provides access to substantial residential concentrations, linking these to jobs both south (Detroit) and north (especially near I-75 interchanges such as Big Beaver Road, Crooks Road, and University Drive). Commercial activities, such as the Oakland Mall and the Great Lakes Crossing Mall (and associated retail areas) are heavy generators of traffic. Adding capacity to I-75 is a response to the growth that has already occurred and the growth predicted by the local political jurisdictions in the corridor.

Property acquisition will result in a reduction in real property tax revenues of about $121,000, based on the right-of-way cost estimate. This represents only very minor percentages of the property taxes collected by Hazel Park, Royal Oak, Madison Heights, and Troy. The largest effect in terms of the percent of tax base would be on Hazel Park, at two hundredths of one percent. Any loss is important to that community, but the increase in State Equalized Value of properties over the coming years will outweigh potential losses. Because there are few anticipated business or residential relocations, replacement commercial space and housing is available and is not an issue.

[12] *2030 Regional Development Forecasts,* SEMCOG.
[13] Ibid.
[14] *Land Use Change in Southeast Michigan*: Causes and Consequences, SEMCOG, March 2003.

1.3.6 Air Quality

Air quality along I-75 will improve to the extent there will be less idling and smoother traffic flow. A test of carbon monoxide (CO) concentrations along I-75 and at the busiest intersections near I-75, at locations where humans might be present for periods of an hour or more, found one-hour and eight-hour ambient air quality standards for CO would not be violated under either build or no build conditions. The differences between the HOV and GP Alternatives are negligible. However, on a regional basis, the HOV Alternative would be associated with a slightly lower pollutant burden, as the same number of trips would be made in fewer vehicles.

Approval of the Final EIS requires that the project be added to the Transportation Improvement Program (TIP) and Regional Transportation Plan of the Southeast Michigan Council of Governments (SEMCOG) after a determination of air quality conformity.

1.3.7 Noise

There would be no discernable difference between the HOV and GP alternatives with respect to noise. For most of the corridor the noise levels with the project will increase in an imperceptible way. In a situation where noise is already continuous, a doubling of traffic in the loudest hour must occur before most people can discern an increase in noise. This equates to a 3-decibel increase. Based on the proposed improvement in roadway capacity, the noise increase will be just over one decibel in most locations. Nevertheless, because many homes are already exposed to noise levels above abatement criteria, abatement is warranted in several locations.

The analysis found that 430 dwelling units, one school, and five churches would be exposed to noise levels exceeding the 66 dBA criterion (the threshold for determining residential impacts) under future no build conditions compared to 466 dwelling units, one school, and five churches with the proposed project. With the build alternatives, noise mitigation, likely walls, will be included as a normal part of the project's federal funding (subject to local review and approval of property owners). This mitigation will reduce the number of dwelling units exposed to undesirable noise levels by about 400 dwelling units.

With the No Build Alternative, mitigation would be considered "Type II." This means that mitigation would be a "retrofit" project and not be eligible for federal funding. While MDOT does undertake Type II projects, funding is very limited. Under the MDOT's *Noise Policy*[15] only the southern section of the corridor would be eligible for walls, as the communities to the north allowed residential development to occur in areas too close to the freeway.

A *Noise Study*[16] using the FHWA's TNM2.1 computer model finds that approximately 4.3 miles of noise walls are warranted. These would provide at least a six-decibel noise reduction in the loudest hour, and "benefit" (defined as a 5-decibel reduction) about 400 dwelling units.

1.3.8 Ecological Resources

Forty-one wetland areas were identified between 12 Mile Road and South Boulevard.[17] South of 12 Mile Road, I-75 is depressed and there are no wetlands. North of South Boulevard, changes to I-75 are a part of the separate I-75/M-59 project. Most wetlands in the corridor are associated

[15] *Noise Abatement*, Michigan State Transportation Commission Policy, July 31, 2003.
[16] *Noise Study Report*, The Corradino Group, October 2003.
[17] *Wetland Report*, Tilton & Associates, Inc., October 2003.

with roadside ditches. As the proposal is to widen I-75 using the median, effects on wetlands are limited to the proposed HOV lane through the Square Lake Road interchange.

Approximately 0.41 acres of wetlands would be directly affected by the HOV Alternative as the HOV lane traverses the Square Lake Road interchange. Neither the GP Alternative, nor the No Build Alternative would affect wetlands, other than the increased pollutant load from storm water runoff from increased traffic volumes. Affected wetlands will require replacement through agreement with the Michigan Department of Environmental Quality (MDEQ).

No known federal threatened or endangered species or state-listed species will be affected. The project traverses a developed, largely urbanized corridor.

1.3.9 Storm Water

The No Build Alternative would not change existing drainage patterns or flow. However, storm water will increase with the project due to the increased impervious surface of the additional lanes. A *Drainage Study*[18] was performed to determine how best to handle the increase in storm water runoff from the GP or HOV alternatives (which would have almost identical impacts).

In the south section of the corridor (the depressed section) storm water now flows into the combined (sewage and storm water) sewer system in that section of the corridor. The proposed project will separate I-75 storm water from this system. The combined system flow now goes through Detroit's regional treatment plant. During storms, the plant cannot accommodate the flow rates and the overflow of sewage and storm water there bypasses the plant. By providing its own system for I-75 storm water, MDOT will positively affect water quality by: 1) reducing flow in the combined sewer system so that overflows of sewage into the Red Run Drain occur less frequently; and, 2) reducing flow to the Detroit wastewater treatment plant, so that facility treats less storm water.

In the north section, where I-75 has a rural design, the proposed project will reduce the retention area now provided by the median and increase impervious surface. Both actions will increase storm water flow. Therefore, detention has been included at a number of locations to maintain existing flow rates. This will prevent peak flows during storm events (50-year storms) from exceeding existing rates.

1.3.10 Cultural Resources and Parkland

A *Cultural Resources Survey* found no evidence of adverse effects to archaeological (below ground) resources.[19] It also found that of the 165 buildings and structures surveyed within the approved Area of Potential Effect (APE), none are potentially eligible for the *National Register of Historic Places.* Resources that are eligible for the *Register* are afforded special protection under federal law. The State Historic Preservation Officer has concurred in these findings (see letters dated October 1, 2002 and May 14, 2003 in Appendix B, Section 2).

Maddock Park in Royal Oak is adjacent to the southbound I-75 service drive. It is separated from I-75 by a noise wall. A grading permit may be necessary along the park, but effects on the park will be avoided. The Troy Family Aquatic Center and Huber Park in Troy are adjacent to

[18] *Drainage Study*, Orchard, Hiltz & McCliment and Rowe, Inc., October 2003.
[19] *Phase I Cultural Resources Survey of the Proposed I-75 Freeway Improvements, Oakland County, Michigan,* Commonwealth Cultural Resources Group, Inc., December 2002.

northbound I-75, but are separated from the road by a berm. This recreation area will not be affected.

1.3.11 Visual Conditions

Visual effects relate to the view of the road and from the road for each of I-75's two distinct sections. The southern, depressed section, between M-102 and 12 Mile Road, is now flanked by grassy banks and occasional ornamental trees (Figure 1-1). Drivers see only the road, bridges over I-75, embankments on either side, and adjacent buildings. With the project some remnants of grassy banks may remain in wider areas of the depressed section, but overall there will be a more monolithic concrete visual environment, including a concrete median safety barrier. Portions of the depressed section between I-696 and Gardenia are bordered by brick noise walls at the top of the grassy banks. The noise walls will remain (though some may be relocated). Additional noise walls will be built, subject to final analysis and community acceptance. The view of the road in the depressed section is limited, as the road is below grade level. This will change where noise walls are added. The walls will be evident from the surrounding area with the project.

The northern at-grade/elevated section has a grassy median. Construction of either build alternative will remove this vegetation.

North of 12 Mile Road, I-75 is generally above the surrounding landscape at cross roads, so the adjacent land uses are visible. These views will not change as a result of the project. Since construction during the 1960s, vegetation has grown up along the fence lines. The mature vegetation along fence lines should not be disturbed with the project except in areas where noise walls are built. The view from the road would change only in these areas where noise walls are built. Likewise the view of the road will not change as the widening is within the median. Some clearance of vegetation is recommended for safety purposes (sight distance) within interchanges at Big Beaver Road and Rochester Road.

Design elements of the proposed project would be refined in conjunction with the Crooks/Long Lake I-75 Interchange Project and the I-75/M-59 Interchange Project for continuity.

1.3.12 Hazardous Materials

No substantial problems with contaminated materials are anticipated. One site in Royal Oak where right-of-way acquisition is expected was identified as a possible former gas station with underground storage tanks. This site was rated medium/high for contamination potential and additional investigation of the site (Phase II) is recommended.

1.3.13 Soils and Utilities

Mucky and peat soils are present in some locations in the north portion of the corridor. This could affect the cost of noise wall construction, but is not expected to affect roadway construction. Geotechnical studies have been performed to support project cost estimates.

A high-tension electrical line in the north section of the 12 Mile Road interchange would not be affected as the towers are not affected. Similarly, a cell tower at Square Lake Road and Adams Road that is close to I-75 would not be affected. Other cell towers are similarly unaffected.

There will, however, be an effect on MDOT traffic monitoring equipment, some of which is located in the median.

Effects on utilities will be consistent with normal utility relocation for roadway projects. Particularly, in the depressed section as utilities are carried across I-75 on the crossroad bridges.

1.3.14 Indirect and Cumulative Impacts

Indirect impacts have been examined by determining which roads might be affected by a capacity increase (lane addition) on I-75. The effects of the GP and HOV alternatives are very similar. Roads that would experience an increase in congestion and would be over capacity, were identified. The assumption is that if congestion increases, the next step would be to widen a road and create impacts. Where this was the case, the impacts of roadway widening were estimated. These indirect impacts are summarized in Section 4-18.

Cumulative effects occur when other planned improvements are examined in conjunction with the lane addition to I-75. Regardless of changes to I-75, growth will continue to occur as individuals and commercial entities develop their properties, consistent with local zoning. The population in the project area has grown dramatically for years with no improvement to I-75. In response, many roadway projects are planned. Analysis found that when these projects are combined with the lane addition on I-75, additional links not identified in the indirect impact modeling show congestion increases. Effects of widening these additional links have been estimated and are considered cumulative impacts.

A review of trends in the economy including: the auto industry; population shifts away from the core of Detroit, especially during the 1970s; the decline in farming and conversion of land to residential and commercial uses; the implementation of wetland protection; and other factors, finds that development along I-75 reflects a complex mix of forces, such that widening I-75 will not have significant cumulative effects. Cumulative effects are discussed further in Section 4.18.

1.3.15 Energy

Fuel savings to motorists should be realized in the long term due to improved traffic flow and more constant traveling speeds.

1.3.16 Cost

The base cost of the build alternatives would be about $530 million (2003 dollars). This includes right-of-way and relocation costs of $11 million. If the 12 Mile Interchange were built as a SPUI the cost would be approximately $6 million more than if it were reconstructed in its same general configuration. The cost associated with the signing and striping for the HOV, plus the cost of building bridges to carry an HOV lane north through the Square Lake Road interchange, would be $6 million. Note that the costs of separating I-75 storm water from the combined sewer system in the south section of the corridor are built into the overall construction costs, but amount to $11 million.

1.4 Areas of Controversy

A principle concern expressed by citizens attending public meetings is that noise walls be constructed with the project. Noise walls will be constructed in accordance with established noise criteria and warrants as contained in MDOT's Noise Policy.[20]

Several studies in the past have called for rapid transit development in the Detroit-Ann Arbor corridor and Woodward corridor.[21] Extensive analysis of mass transit performed for this DEIS supports the view that transit is viable along the Woodward Corridor, but that it cannot substantially change the need for the I-75 project. A concern expressed by some transit supporters is that spending highway dollars diminishes the potential for mass transit development, but major transit projects generally draw largely from distinct (non-highway) federal funding sources. Major transit projects may draw upon Surface Transportation Program funding that is usually used for highway purposes. However, there is most often a capital expenditure on the part of the Federal Transit Administration through "new start" funding authorized by Congress separately from highway funds.

1.5 Permits

Proposed construction activities will involve the need for permits. Impacts on bodies of water such as rivers, drains, and wetlands will require permits under federal and state law:

- Federal Executive Order 11990 protects wetlands.
- The federal Clean Water Act of 1977, as amended requires: state Water Quality Certification of projects (Section 401); permitting of the quality of storm water (Section 402(p) - National Pollutant Discharge Elimination System); and, avoidance, minimization, and mitigation of wetland impacts (Section 404).
- Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, Part 31, Water Resource Protection, regulates placement of fill material within any part of a floodplain with a drainage area of two square miles or more.
- PA 451, Part 301, Inland Lakes and Streams, regulates work below the ordinary high-water mark of any inland lake, stream, or drain, including the placement of any permanent or temporary river or stream structure.
- PA Act 451, Part 303, Wetland Protection, regulates any wetland disturbance, permanent, as well as temporary. The Part 303 permit is reviewed and issued with the Part 301 permit.
- PA Act 451, Part 365, Endangered Species Protection, is required from the MDNR Wildlife Division for any activity that may affect a state-listed threatened or endangered fish, plant, or animal species. No endangered or threatened species were found; however, if any were identified during project implementation, all activity in the immediate area would cease. Coordination with the U.S. Fish and Wildlife Service would be initiated as required by Section 7 of the Endangered Species Act of 1973, and appropriate state and federal permits would be sought.

[20] Michigan Department of Transportation's *Procedures and Rules for Implementation of the State Transportation Commission Policy 10136 – Noise Abatement*, July 2003.
[21] *Improving Transit in Southeast Michigan: A Framework for Action*, SEMCOG, October 2001.

Final mitigation measures proposed in areas requiring the above permits will be developed in consultation with the appropriate agencies, and will be included in the permit application for implementing the project.

Permits will also be required where Oakland County Roads are involved and where Oakland County drains are involved. These come from the Road Commission for Oakland County and the Oakland County Drain Commission, respectively.

1.6 Project Status

Before this project can receive environmental clearance, it must be included in SEMCOG's *Transportation Improvement Program (TIP)* and *Regional Transportation Plan (RTP)* for construction. It is presently in these plans as a study. The project must be shown to be in conformance with the Clean Air Act. When a Final EIS is completed, a Record of Decision (ROD) for the project is signed, and funding is identified, final design and right-of-way acquisition can begin.

This project is listed as a study in MDOT's Five-Year Road and Bridge Program (Volume V – 2003 to 2007), which outlines roadway expenditures over the next five years. Design and construction of the proposed improvement is not yet scheduled.

If the outcome of the public hearing for this project is to reconstruct I-75, design and construction will await available funding. A number of capacity improvement projects statewide have been deferred, as MDOT is dedicated to a "preserve first" philosophy. This philosophy is to improve the existing infrastructure, and the goal is to restore 95 percent of Michigan's freeways and 85 percent of its non-freeways to a "good" condition by 2007. Deferred projects will be added to the Five-Year Program on a priority basis, based on available funding, when MDOT can meet and sustain the condition goal and when additional revenues are available.

SECTION 2
PURPOSE AND NEED FOR ACTION

This section sets forth the purpose of the proposed action, including a brief history of activity related to the corridor, then explains in greater detail the need for the project in terms of existing and projected travel demand, existing road conditions on I-75, the physical condition of bridges that do not meet modern engineering design standards, and safety issues.

2.1 Purpose of the Proposed Action

The purpose of the proposed project is to increase the capacity of the transportation infrastructure in the I-75 corridor to meet travel demand for personal mobility and goods movement.

Meeting the purpose of the project will improve motorist safety, travel efficiency, and reliability. These are essential both to personal mobility and to the movement of freight.

I-75 will continue to play a role as a link in the nation's national system of Interstate and Defense Highways. I-75 connects Detroit and its international border crossings with the expanding economic development in Oakland County. Oakland County has the largest employment base of any county in Michigan and the most manufacturing plants, and is home to over 65 percent of the Detroit Metropolitan Statistical Areas[22] major automotive equipment suppliers. I-75 also links the Southeast Michigan region with the rest of the state to the north. It is the sole means of high-speed freight movement to a large section of Michigan.

2.1.1 Project Background

I-75 is a transcontinental highway connecting Miami, Florida, and Sault Ste. Marie, Michigan. It is a vital component of the overall transportation system in Michigan and the United States. In Michigan, I-75 is the major north-south highway, connecting with other freeways in 16 locations. Within the project area, I-75 provides important access to the cities of Hazel Park, Ferndale, Madison Heights, Royal Oak, Troy, Bloomfield Township, Auburn Hills, and Pontiac. In the study area, I-75 connects with the following state trunklines: M-102 (8 Mile Road), I-696, I-75 BL/BR 24 (Square Lake Road), and M-59.

I-75 was laid out in a stair-step manner following section and property lines to minimize impacts to what development existed at that time (1960s). Its northwest/southeast orientation was designed to roughly parallel Woodward Avenue (M-1) and Dixie Highway (U.S. 24 in portions), serving destinations separated by long distances such as Flint and points north. The diagonal orientation of I-75 forces it to act, in some measure, as a local roadway. It is used by many Oakland County residents and workers for intra-county/local trips. The north/south and east/west local roadway grid system does not serve I-75 travel needs well and does a poor job of providing alternative, direct access between development nodes that have been created along the diagonal of I-75.

[22] Metropolitan statistical areas consist of one or more counties, as defined by the US Census for a variety of analysis purposes. The Detroit MSA consists of Lapeer, Livingston, Macomb, Oakland, St. Clair, and Wayne counties.

In December 1991, the *I-75 Corridor Study for Northern Oakland County*[23] was completed. It identified roadway needs and costs in northern Oakland County in response to rapid growth in the I-75 corridor. It also summarized land use tools available to manage growth. The project report was used as a blueprint for regional roadway development in subsequent years. Since the 1991 study, progress has been made in meeting transportation needs by the Road Commission for Oakland County, MDOT, and local jurisdictions and agencies. Roads have been widened, signal timings have been improved and coordinated, and turning lanes have been added.

The 1991 study was stimulated, in part, by anticipated development in the area, including the Great Lakes Crossing Mall. Development throughout Oakland County made it evident that the comprehensive examination of transportation needs applied to northern Oakland County in the 1991 study needed to be extended to I-75 throughout the county.

In November 2000, a second study called the *I-75 Corridor Study in Oakland County*[24] was completed. That study devised an overall strategy of improvements to I-75, plus the local transportation network complementing it in Oakland County. The study recommended adding a lane in each direction to I-75 throughout Oakland County in areas where there were fewer than four through lanes per direction. The study also recommended improvements to interchanges, improvements to arterial streets, ITS improvements, and a study of how the transit infrastructure could be strengthened and expanded to improve transit's share of travel in the I-75 corridor. The 2000 feasibility study led to the development of this DEIS.

2.2 Need for the Proposed Action

I-75 was built in the 1960s. Other sections of I-75 in Southeast Michigan have been reconstructed. By the time this project can be constructed, it will require major reconstruction. This reconstruction is a part of the project. The project need for increased corridor capacity is driven by the growth that has occurred along I-75 since its original construction. The reasons for land use change, are noted in Section 1.3.3. Migration of people and jobs to Oakland County have increased travel demand. The most important factors influencing traffic volumes are population and employment (Tables 2-1 and 2-2). The following subsections present population and employment trends that are relevant to existing and future traffic volumes in the project area. Decreased household size, more women in the work force, and longer commutes have also increased overall travel demand.[25]

2.2.1 Population and Employment Growth

There has been extensive growth in Oakland County in both employment and population and a shift in population and employment north from Detroit and its closest suburbs. Between 1980 and 1990, the population of Oakland County increased seven percent from 1,012,000 to 1,084,000. By 2000, it had increased nearly 10 percent more to 1,194,000. It is expected to grow an additional 13 percent to 1,346,000 over the next 30 years. Employment increased by 34 percent from 681,000 to 910,000 over the last decade. It is expected to grow by an additional 19

[23] *I-75 Corridor for Northern Oakland County*, The Corradino Group for the Michigan Department of Transportation, December 1991.
[24] *I-75 Corridor Study in Oakland County*; The Corradino Group for the Michigan Department of Transportation, the Southeast Michigan Council of Governments, the Road Commission for Oakland County and the Traffic Improvement Association, November 2000.
[25] *2025 Regional Transportation Plan*, Southeast Michigan Council of Governments, June 2000.

Table 2-1
Oakland County I-75 Corridor -Population 1980 to 2030

	POPULATION				PERCENT CHANGE		
PLACE	1980	1990	2000	2030 est.	80 to 90	90 to 00	00 to 30
Hazel Park	20,914	20,051	18,963	15,860	-4.1%	-5.4%	-16.4%
Ferndale	26,227	25,084	22,105	17,880	-4.4%	-11.9%	-19.1%
Madison Heights	35,375	32,196	31,101	26,564	-9.0%	-3.4%	-14.6%
Royal Oak	70,893	65,410	60,062	52,233	-7.7%	-8.2%	-13.0%
Troy	67,102	72,884	80,959	77,046	8.6%	11.1%	-4.8%
Bloomfield Township	42,876	42,473	43,023	39,180	-0.9%	1.3%	-8.9%
Pontiac	76,715	71,166	66,337	75,544	-7.3%	-6.7%	13.9%
Pontiac Township/ Auburn Hills[a]	15,388	17,076	19,837	21,013	11.0%	16.2%	5.9%
Orion Township	19,566	21,019	30,748	40,948	7.4%	46.3%	33.2%
Independence Township	20,569	23,717	32,581	38,103	15.3%	37.4%	16.9%
Springfield Township	8,295	9,927	13,338	20,326	19.7%	34.4%	52.4%
Holly Township	3,612	3,257	3,902	7,167	-9.8%	19.8%	83.7%
Groveland Township	4,114	4,705	6,150	7,239	14.4%	30.7%	17.7%
Corridor Total	411,646	408,935	429,106	439,103	-0.7%	4.9%	2.3%
Oakland County	1,011,793	1,083,592	1,194,156	1,346,185	7.1%	10.2%	12.7%
Michigan	9,262,044	9,295,287	9,938,444	NA	0.4%	6.9%	NA

Source: *Historical Population and Employment by Minor Civil division, Southeast Michigan*, SEMCOG, June 2002
[a] Auburn Hills was incorporated in 1983 from Pontiac Township

Table 2-2
Oakland County I-75 Corridor -Employment 1990 to 2030

	EMPLOYMENT			PERCENT CHANGE	
PLACE	1990	2000	2030 est.	90 to 00	00 to 30
Hazel Park	5,003	4,883	4,099	-2.4%	-16.1%
Ferndale	10,577	11,312	11,173	6.9%	-1.2%
Madison Heights	27,407	28,848	27,538	5.3%	-4.5%
Royal Oak	34,871	42,252	43,583	21.2%	3.2%
Troy	104,494	135,977	144,882	30.1%	6.5%
Bloomfield Township	15,013	24,943	33,161	66.1%	32.9%
Pontiac	56,308	63,070	76,787	12.0%	21.7%
Pontiac T./Auburn Hills[a]	22,202	54,253	77,684	144.4%	43.2%
Orion Township	7,379	9,057	17,232	22.7%	90.3%
Independence Township	4,445	7,725	10,990	73.8%	42.3%
Springfield Township	1,244	2,685	6,805	115.8%	153.4%
Holly Township	326	815	1,789	150.0%	119.5%
Groveland Township	417	926	2,143	122.1%	131.4%
Corridor Total	289,686	386,746	457,866	33.5%	18.4%
Oakland County	681,037	910,441	1,087,399	33.7%	19.4%
Michigan	4,826,388	5,654,522	NA	17.2%	NA

Source: *Historical Population and Employment by Minor Civil division, Southeast Michigan*, SEMCOG, June 2002
[a]Auburn Hills was incorporated in 1983 from Pontiac Township

percent to about 1,100,000 over the next 30 years.[26] In 2020 Oakland County is expected to have nearly 19 percent of the state of Michigan's total employment and more than 29 percent of its total earnings.[27]

I-75 is used by Oakland County commuters and by through travelers. When I-75 was built, urban land uses extended north only to about 12 Mile Road. As development expanded northward, it focused around I-75's interchanges, without the support of a local grid of arterial streets. Thus, I-75 became the only good way to get to many major traffic generators.

The major traffic generators that developed along I-75 include: the Oakland and Somerset Malls; many large office buildings (especially at Big Beaver Road and Crooks Road), including many corporate headquarters; the Palace of Auburn Hills; and the Pontiac Silverdome.

2.2.2 Existing Traffic and Level of Service

The *Traffic Analysis Report*[28] confirms the need for four through travel lanes throughout the project length. Level of Service (LOS) is a standard measure that reflects the degree of congestion and amount of delay experienced by motorists. LOS is expressed as a letter between A and F. LOS A represents a situation where motorists experience minimal congestion, minimal delays, and free flow travel conditions. LOS F represents a situation where motorists experience extreme congestion, long delays, and severely impeded traffic flows. Generally LOS D, i.e., some congestion, is considered the minimally acceptable LOS for freeways, except in highly urbanized areas, as is the case with I-75, where LOS E is acceptable in peak travel periods. With LOS E traffic flow is continuous, but speeds and maneuverability are reduced.

I-75 in the project area operates from LOS C (light congestion) to LOS F (extremely congested) along the mainline during today's peak periods (Table 2-3 and Figures 2-1 and 2-2). Generally the peaks today are from 6:30 to 8:30 AM and 3:30 to 6:30 PM. Volumes on I-75 are relatively balanced for the northbound and southbound directions of travel. Furthermore, they are relatively consistent from 6 AM to 8 PM each weekday. This means the full capacity of the road is currently being used.

Analysis of today's LOS for each freeway segment by direction used the latest software from the Transportation Research Board *Highway Capacity Manual 2000* (HCM), Chapters 23 and 25, and 2002 traffic counts from MDOT.[29] Considering both northbound and southbound conditions in the PM peak hour, the analysis determines the LOS would be F (extremely congested) for four segments, as noted by shading in Table 2-3. The situation is similar in the AM peak. Crashes on I-75 (an average of 3.3 per day) add to delays and lane blockages that are not modeled. It is clear that I-75 operates at severe congestion levels, if not at breakdown conditions (LOS F), in the three-lane sections during the existing peak traffic periods. The result is reduced overall speeds, queuing, and lower observed volumes.

[26] *2030 Regional Development Forecast for Southeast Michigan*, Southeast Michigan Council of Governments (SEMCOG), 2001.
[27] *1999 State Profile; Michigan*, Woods and Poole Economics, Inc.
[28] *Traffic Analysis Report*, The Corradino Group, November 2003.
[29] MDOT does ramps counts less frequently, so data ranges from 1997 to 2002.

Table 2-3
Existing (2002) Peak Hour Traffic Volumes and LOS for I-75

SEGMENT	AM PEAK				PM PEAK			
	VOLUME		LOS		VOLUME		LOS	
	NB	SB	NB	SB	NB	SB	NB	SB
8 Mile Road to 9 Mile Road	4,030	5,260	C	C	5,850	5,370	D	D
9 Mile Road to I-696	4,670	5,600	C	D	6,220	6,060	D	D
I-696 to 11 Mile Road	4,670	6,000	C	E	6,300	6,080	D	E
11 Mile Road to 12 Mile Road	5,210	4,800	F	F	5,900	5,050	F	F
12 Mile Road to 14 Mile Road	5,550	4,380	E	D	5,830	4,500	E	D
14 Mile Road to Rochester Road	5,110	4,040	D	C	4,840	4,300	D	D
Rochester Road to Big Beaver Road	4,710	3,940	D	C	4,120	4,210	D	D
Big Beaver Road to Crooks Road	4,180	4,810	D	D	3,850	4,000	C	C
Crooks Road to Adams Road	3,460	4,980	C	D	3,790	3,640	C	C
Adams Road to Square Lake Road	3,590	5,080	F	F	4,240	3,110	F	F
Square Lake Road (I-75 BL) to M-59	4,720	6,140	C	D	6,090	4,150	D	C

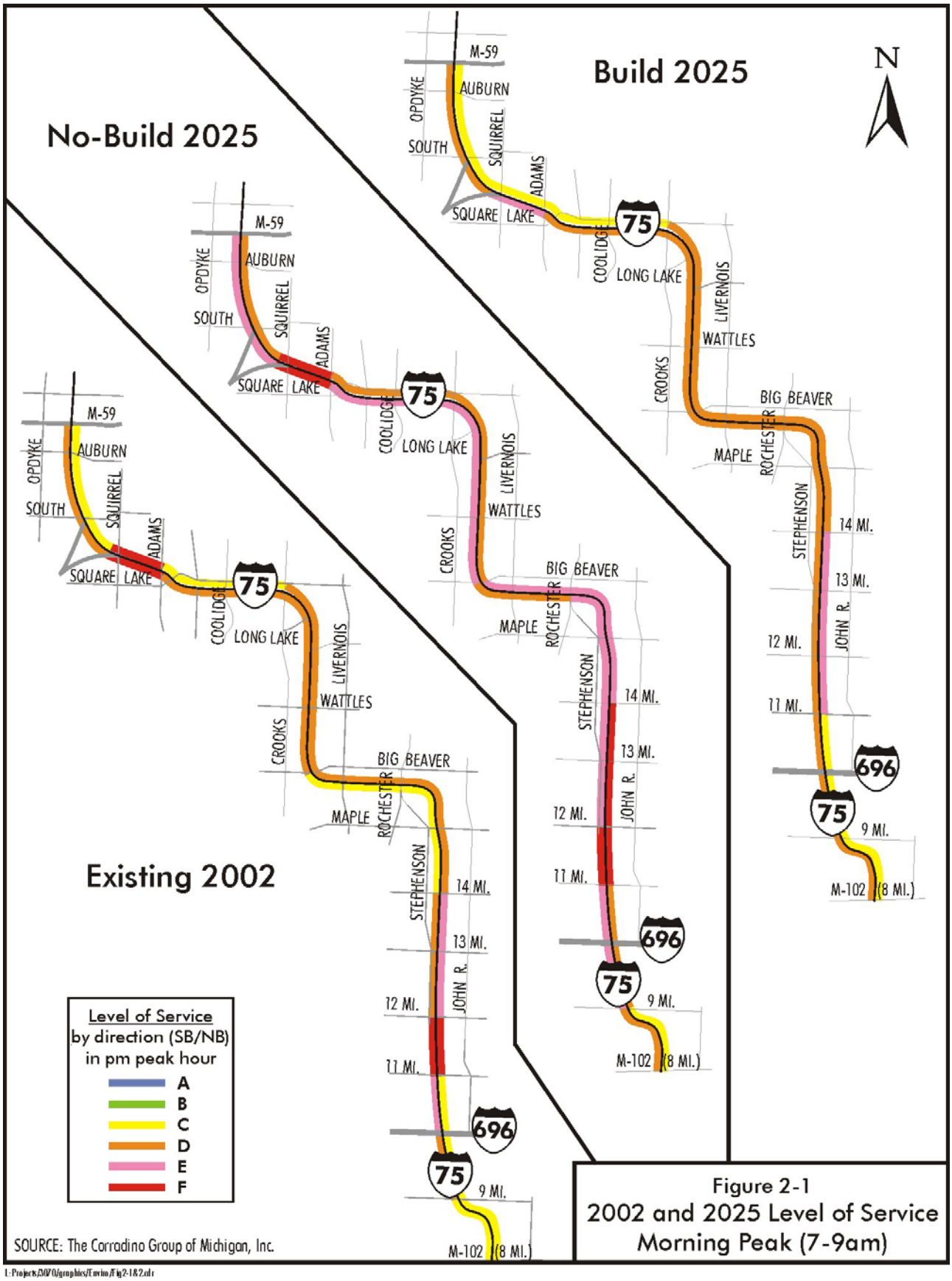
Source: The Corradino Group of Michigan, Inc.

2.2.3 Future Traffic and Level of Service

In order to assess the need for the project, i.e. the build alternatives, SEMCOG's model, as modified by the consultant to account for the analysis of afternoon peak hour conditions as well as transit and HOV testing, was used to forecast traffic conditions with and without the proposed project for the year 2025. The No Build Alternative assumes that projected population and employment growth will occur, and that committed/cost-feasible road improvements will be built, but that no capacity improvements will be made to I-75 within the project area, other than normal maintenance. The year 2025 was selected because projects constructed with federal funds must address traffic needs projected for at least 20 years into the future.[30] These projections demonstrate that in 2025, without improvements, I-75 will experience severe congestion throughout the project length (Table 2-4 and Figures 2-1 and 2-2). In the AM peak hour, LOS F would be experienced in five segments (shaded in the table). In the PM peak, the situation would be worse with 10 segments at LOS F.

With the project, one lane would be added where needed to bring I-75 to four through lanes between M-102 and M-59 (Table 2-5). It already provides four through lanes to the north and south of these points. In the AM and PM peak hours, there would be no segments where LOS F is expected in either direction. In both peak periods, 13 segments would be at LOS D and either three (AM peak) or four (PM peak) would be LOS E. These are acceptable conditions under limited circumstances in the constrained urban situations.

[30] SEMCOG is updating the horizon year of region's transportation model to 2030, but that work is not sufficiently complete to be used in this EIS.



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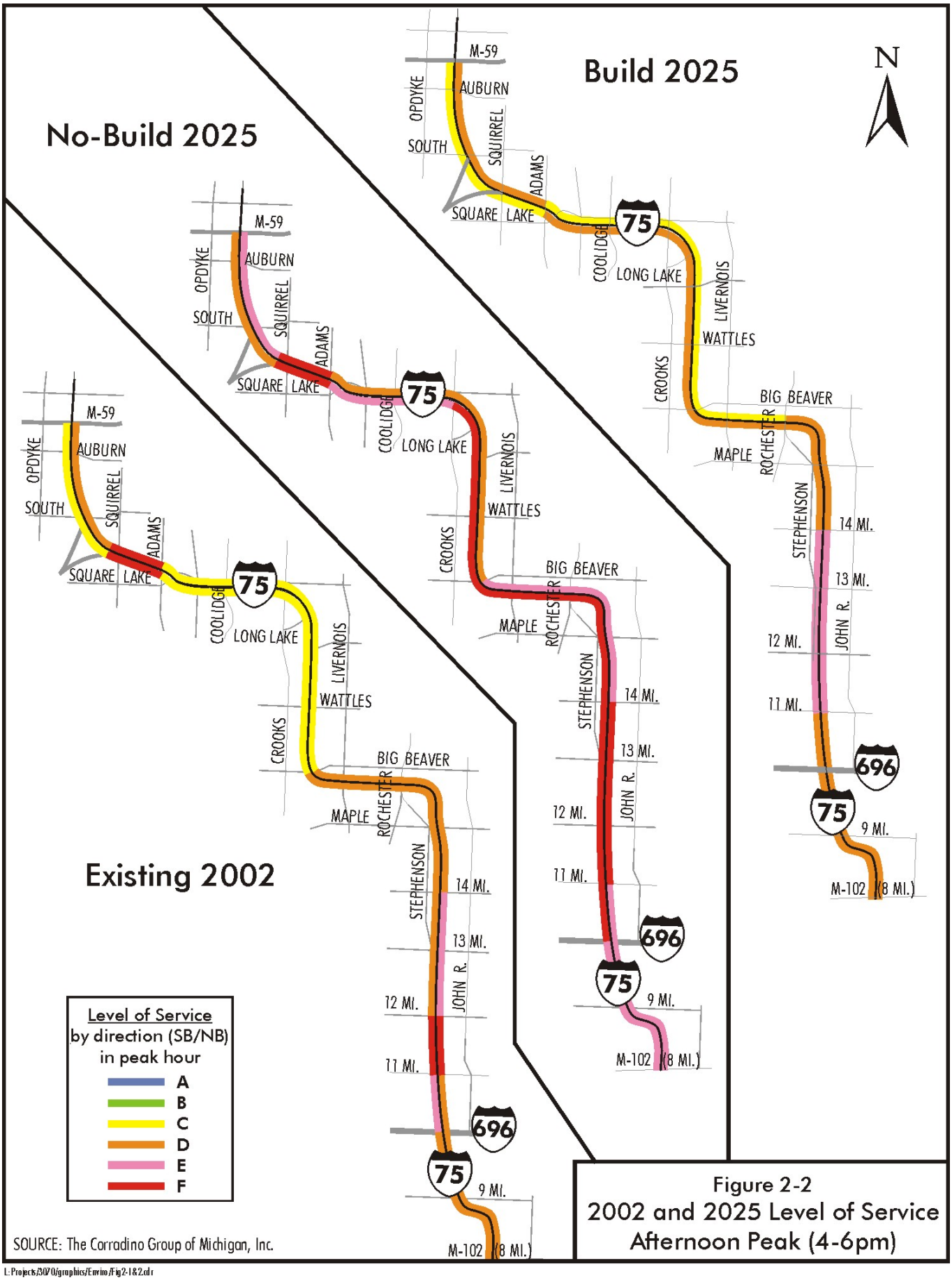

Figure 2-2
2002 and 2025 Level of Service
Afternoon Peak (4-6pm)

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Table 2-4
2025 Peak Hour Traffic Volumes and LOS for I-75 – No Build Alternative

SEGMENT	AM PEAK				PM PEAK			
	VOLUME		LOS		VOLUME		LOS	
	NB	SB	NB	SB	NB	SB	NB	SB
8 Mile Road to 9 Mile Road	5,000	6,790	C	D	7,190	7,450	E	E
9 Mile Road to I-696	5,640	7,130	D	E	7,560	8,140	E	E
I-696 to 11 Mile Road	5,670	7,530	D	E	7,640	8,410	E	F
11 Mile Road to 12 Mile Road	6,140	6,250	F	F	7,240	7,380	F	F
12 Mile Road to 14 Mile Road	6,520	5,870	F	E	7,220	6,740	F	F
14 Mile Road to Rochester Road	6,080	5,420	E	E	6,180	6,590	E	F
Rochester Road to Big Beaver Road	5,800	5,050	E	D	5,460	6,710	E	F
Big Beaver Road to Crooks Road	5,140	6,130	D	E	5,300	6,500	D	F
Crooks Road to Adams Road	4,240	6,220	D	E	5,040	6,055	D	E
Adams Road to Square Lake Road	4,400	6,350	F	F	5,530	5,555	F	F
Square Lake Road (I-75 BL) to M-59	5,810	7,670	D	E	7,380	6,555	E	D

Source: The Corradino Group of Michigan, Inc.

Table 2-5
2025 Peak Hour Traffic Volumes and LOS for I-75 – Build Alternatives

SEGMENT	AM PEAK				PM PEAK			
	VOLUME		LOS		VOLUME		LOS	
	NB	SB	NB	SB	NB	SB	NB	SB
8 Mile Road to 9 Mile Road	6,030	7,185	C	D	7,280	7,900	D	D
9 Mile Road to I-696	6,740	7,525	C	D	7,690	8,640	D	D
I-696 to 11 Mile Road	6,740	7,925	C	D	7,850	9,015	D	D
11 Mile Road to 12 Mile Road	7,340	6,645	E	D	7,540	8,045	E	E
12 Mile Road to 14 Mile Road	7,690	6,145	E	D	7,450	7,355	E	E
14 Mile Road to Rochester Road	6,935	5,860	D	D	6,220	6,855	D	D
Rochester Road to Big Beaver Road	6,655	5,490	D	D	5,450	6,965	C	D
Big Beaver Road to Crooks Road	6,195	6,570	D	D	5,110	6,745	C	D
Crooks Road to Adams Road	4,895	7,240	C	D	5,360	5,745	C	D
Adams Road to Square Lake Road	5,055	7,370	C	E	5,830	5,055	D	C
Square Lake Road (I-75 BL) to M-59	6,465	8,690	C	D	7,470	5,855	D	C

Source: The Corradino Group of Michigan, Inc.

2.2.4 I-75 and Existing Design Standards

I-75 was built in the 1960s to design standards of that time. This section discusses the relationship of the existing road to current design standards. Section 3 discusses how the proposed project will address those areas where I-75 falls short of today's standards. Table 2-6 identifies locations where I-75 does not meet modern standards, based on a review of existing design plans for the road. Specific features include:

- Horizontal alignment
- Vertical clearance and alignment
- Stopping sight distance
- Cross section
- Ramp exit and entrance design
- Ramp spacing

Speed limits on I-75 are now posted at 65 mph from M-102 to Square Lake Road and 70 mph north of this point. There is advisory signing through the 9 Mile curve of 50 mph and through the Rochester curve of 55 mph. No change in posted speed limits is anticipated with the proposed improvements. The anticipated design speed for the project is 70 mph.

Horizontal Alignment

The horizontal alignment of a road encompasses the radii of curves (i.e., how "sharp" a curve is), their length, and superelevation (i.e., the vertical distance between the heights of the inner and outer edges of the road or how the freeway is "banked"). The steepness of the banking – superelevation - is related to the sharpness of the curve and the design speed. The standards are set to maximize the safety of the curves for a given curve radius and design speed. There are more than 20 locations in the study area where I-75 does not meet modern standards for superelevation rates, superelevation transition lengths, and radius of curvature. These inadequacies reduce travel efficiency and safety, and contribute to traffic congestion. Minor changes in curve radii together with superelevation increases could bring all locations to full, modern standards, except the 9 Mile Road curve (Section 3.7).

Vertical Clearance and Alignment

Vertical clearance is defined as the distance between the traveling surface of the roadway and the bottom of an overhead bridge structure. Poor (substandard) bridge clearances occasionally result in trucks crashing into bridge beams and require some larger trucks to take alternate routes. Modern standards require a vertical clearance for bridges over I-75 of 16'3". The proposed I-75 reconstruction will meet this standard north of I-696. South of I-696, the clearance is allowed to be 14'9" as the interstate system in the core of Detroit is gauged to that earlier standard. Vertical under-clearance of pedestrian bridges over service drives in the depressed section of the corridor will be 17'3". This allows an extra margin of safety for the pedestrian bridges.

The road's alignment includes vertical grade (i.e., how steep hills are), vertical curves (i.e., the sharpness of crests of hills and dips), and vertical sight distance. These issues affect travel efficiency, traffic congestion, and safety. All locations on I-75 in the study area meet the modern standards for vertical grade and vertical sight distance. However, there are two locations where the sags (dips) and four locations where the crests on I-75 do not meet the modern standards for the length of vertical curves. These occur in the depressed section of freeway. They could be fixed with the proposed project by modifying the roadway profile. The roadway profile is set by the need to go under bridges, and then to rise in order to connect to on and off-ramps. Changing the profile of the mainline would require changing the profile of the ramps.

Table 2-6
Existing I-75 Roadway Features in Relation to Modern Standards

ISSUE	LOCATION RELATIONSHIP TO MODERN STANDARDS	FEATURE	COMMENTS
HORIZONTAL ALIGNMENT	I-75, south of John R. bridge (between Meyers & Highland)	Superelevation rate	Existing superelevation @ 5% is insufficient for 70 mph design speed (required 7%).
	I-75, south of John R. bridge (between Highland & Rhodes)	Superelevation transition length	Existing transition length between superelevated sections not to standard.
	I-75, north of John R. bridge (between Rhodes & 9 Mile Road) [a]	Superelevation rate Length of curve Radius of curvature	Existing radius of 1315' with existing 5% superelevation is insufficient. 1922' radius is required for required 7% superelevation
	I-75 northbound at Gardenia	Superelevation rate Radius of curvature	Existing radius of 2360' with existing 5% superelevation is insufficient. 1922' radius is required for required 7% superelevation.
	I-75 southbound at Gardenia	Superelevation rate Radius of curvature	Existing radius of 2360' with existing 5% superelevation is insufficient. 1922' radius is required for required 7% superelevation
	I-75, bridge over 12 Mile Road	Superelevation rate Length of curve Radius of curvature	Existing radius of 1932' with existing 5% superelevation is insufficient. 1922' radius is required for required 7% superelevation
	I-75, north of 15 Mile Road thru Rochester Road	Superelevation rate	Existing superelevation @ 5% is insufficient for 70 mph design speed (required 6.3%).
	I-75, Livernois Road thru north of Big Beaver Road	Superelevation rate	Existing superelevation @ 5% is insufficient for 70 mph design speed (required 6.3%).
	I-75, north of Big Beaver Road thru Squirrel Road	Superelevation rate	Existing superelevation @ 5% is insufficient for 70 mph design speed (required 6.3%).
	I-75, under Squirrel Road	Superelevation rate	Existing superelevation @ 2% is insufficient for 70 mph design speed (required 7%).
	I-75, bridge over Clinton River	Superelevation rate	Existing superelevation @ 5% is insufficient for 70 mph design speed (required 6.1%).
	I-75, Squirrel Rd. thru South Boulevard	Superelevation rate	Existing superelevation @ 5% is insufficient for 70 mph design speed (required 6.3%).
	Grades along I-75 from M-102 (8 Mile Road) to M-59	Longitudinal grades	All locations meet minimum and maximum criteria for longitudinal grades (min 0.3%, max 3.0%).
VERTICAL AND CLEARANCE ALIGNMENT	I-75, under John R. bridge I-75, under 9 Mile Road bridge	Length of vertical curve (sag) at these two locations	Two consecutive sag vertical curves, existing length of either curve is less than standard for 70 mph design speed.
	I-75, north of Meyers Avenue I-75, north of John R. I-75, north of 9 Mile Road on-ramps I-75, at 4th Road	Length of vertical curve (crest) at these four locations	Crest vertical curve, existing length of curve is less than standard for 70 mph design speed.

Table 2-6 (continued)
Existing I-75 Roadway Features in Relation to Modern Standards

ISSUE	LOCATION RELATIONSHIP TO MODERN STANDARDS	FEATURE	COMMENTS
STOPPING SITE DISTANCE	I-75, north of 8 Mile Road, south of Meyers Avenue I-75, under Meyers Avenue bridge I-75, north of Meyers Avenue bridge I-75, under John R. bridge I-75, north of John R. bridge I-75, under 9 Mile Road bridge I-75, north of 9 Mile Road bridge I-75, south of Woodward Heights Bridge I-75, at Woodward Heights Bridge I-75, at Middlesex Road I-75, under 11 Mile Road bridge I-75, under Squirrel Road bridge I-75, at merger of 9 Mile Road on-ramp I-75, at merger of 11 Mile Road on-ramp	Stopping sight distances are not met at these 14 locations	Stopping sight distance for crest curve is less than standard for 70 mph design speed.
CROSS SECTION	Eight Mile to Twelve Mile	None	Existing pavement width and shoulder width meet modern standards.
RAMP EXIT AND ENTRANCE DESIGN	West side of I-75, north of Eight Mile Road West side of I-75, south of John R. Road West side of I-75, north of Nine Mile Road East side of I-75, north of Nine Mile Road West side of I-75, south of Eleven Mile Road East side of I-75, south of Eleven Mile Road West side of I-75, north of Eleven Mile Road East side of I-75, north of Eleven Mile Road 12 Mile Rd. 14 Mile Rd. Rochester Rd. Adams Rd	Ramp exits and entrances do not meet modern standards at these 12 locations.	Profile grades, vertical curves, decision sight distances, and transition lengths do not meet modern standards.
RAMP SPACING	Eight Mile to Twelve Mile	None	Ramp spacing meets modern standards.

Source: The Corradino Group of Michigan, Inc., OHM, and Rowe, Inc. based on MDOT Design Plans (1960s)

Stopping Sight Distance

Stopping sight distance is the distance a motorist must be able to see in order to stop safely should an object or other threat require. As speeds increase, stopping sight distance requirements also increase. Obstructed views (i.e., inadequate stopping sight distance) can contribute to crashes when motorists do not have sufficient time and distance to reduce speeds. There are 14 areas where stopping sight distances do not meet modern standards. Two of these also do not meet the standard for decision sight distance for merging ramp traffic. These deficiencies could also be addressed by changing the roadway profile.

Cross Section

The cross section of a road includes travel lane width, shoulder width (both inside and outside shoulders), median width, the cross slope of the travel lanes, shoulder slope, cut/fill slopes, and the ditch slopes. In the project area, the I-75 cross section meets modern standards. With the addition of a fourth through lane in each direction, the I-75 cross section will continue to meet modern standards.

Ramp Exit and Entrance Design

The ramp entrance and exit designs do not meet modern standards at 12 locations. Here, the decision sight distance (the distance that motorists have to make decisions about lane changes) and/or ramp taper lengths for acceleration and deceleration are inadequate. In these situations, vehicles traveling on I-75 need to slow down and/or change lanes to allow other motorists to enter or exit the freeway. These problems cause inefficient freeway operations and may contribute to crashes. The deficiencies at these locations could be met by lengthening ramps and/or providing a parallel exit.

Ramp Spacing

In urban settings, interchanges are typically spaced at least one mile from each other, as required by the Federal Highway Administration (FHWA). This spacing is required to provide adequate distance for motorists to perform merges and exit safely and efficiently. Inadequate interchange separation can create "weaving" conflicts between motorists entering and exiting the freeway. These conflicts result in traffic congestion and may contribute to crashes, in some situations. I-75 interchange ramp spacing meets modern standards in the project area. However, heavy volumes and weaving movements cause problems and necessitate the need for braiding north of I-696. Braiding allows one ramp to pass over another so the traffic from the two are not in conflict.

2.2.5 Physical Condition and Relative Performance of I-75

The condition of the existing roadway and of some bridges contribute to the need for the project. Because of the age of this roadway (built in the 1960s), it will require major reconstruction. This will have to occur with or without the proposed project. MDOT monitors its roadway system, in part, by means of "sufficiency ratings." Every trunkline roadway segment is scored based on the condition of its surface pavement, the condition of the roadway base on which that pavement rests, the roadway's crash experience, and its capacity (Table 2-7). The four ratings are summed and compared to a possible total of 100 points. In this case no data are available in the sufficiency ratings on crash experience ratings, so this category has been dropped and the totals must be compared to a maximum of 70 total points. See the discussion of crashes below (Section

2.6.6), which is based on the most recent data. A variety of locations show need with respect to crash experience.

Table 2-7
Existing I-75 Sufficiency Ratings

	NORTHBOUND I-75				SOUTHBOUND I-75			
	Surf.	Base	Cap.	Total	Surf.	Base	Cap.	Total
MAXIMUM POSSIBLE POINTS	25	15	30	70	25	15	30	70
Link Start Point								
M-102 (8 Mile Road)	8	15	8	31	8	15	8	31
9 Mile Road	8	15	7	30	8	15	7	30
I-696	8	15	8	31	6	15	8	29
11 Mile Road	8	15	6	29	6	15	6	27
Gardenia Avenue	8	15	6	29	8	15	6	29
12 Mile Road	24	15	7	46	24	15	7	46
13 Mile Road	25	15	7	47	25	15	7	47
14 Mile Road	25	15	9	49	25	15	9	49
Rochester Road	25	15	12	52	25	15	12	52
Big Beaver Road	25	15	9	49	25	13	9	47
Crooks Road	25	15	8	48	25	15	8	48
Adams Road	25	15	8	48	25	15	8	48
South Limit Square Lake Rd.	24	15	6	45	25	15	6	46
North Limit Square Lake Rd.	25	15	17	57	25	15	11	51

Source: MDOT Sufficiency Ratings

The roadway base of I-75 is in good condition. The surface is likewise in good condition north of 13 Mile to M-59, as it was paved in summer 2003. Pavement conditions are poor south of 12 Mile Road. I-75 is consistently rated poor in capacity, scoring for the most part 6 to 8 on a scale of 30. The proposed project will substantially improve the capacity ratings.

2.2.6 Safety

A *Crash Analysis*[31] was prepared for this DEIS. From January 1995 to the end of 2001, more than 8,500 crashes were reported on I-75 between M-102 (8 Mile Road) and M-59. Rear-end crashes were most common (58%), followed by single-vehicle (18%) and sideswipe (14%) crashes. There were 2,444 crashes with injuries, and 24 with fatalities. Alcohol was involved in 11 of the fatal crashes and two pedestrians were killed. Nine of the fatal crashes were rear-end, and an equal number were single-vehicle crashes. The fatal crashes involved three head-on, two angle, and one sideswipe/opposite direction incidents.

The average crash rate for the entire corridor is 1.31 crashes per million vehicle miles. The state average for urban freeways is 1.77 crashes per million vehicle miles.[32] For purposes of analysis,

[31] *Crash Analysis*, The Corradino Group, June 2003.
[32] *Comparison of Crash Rates and Characteristics in Eight States by Roadway Class*; Transportation Research Board, Paper Number 97, 1997.

the corridor was divided into 15 segments. Segments with crash rates above 1.31 are in bold type in Table 2-8. These segments were analyzed to determine whether crash countermeasures could improve safety. Details of the countermeasures are provided in the *Crash Analysis*.

Table 2-8
Crash Data by Segment

SEGMENT	SEGMENT OF I-75	EXISTING AADT[a]	NB[b]	SB[b]
1	8 Mile Road to South of 9 Mile Road	173,000	0.93	1.22
2	**South of 9 Mile Road to South of I-696**	182,000	***2.51***	***1.45***
3	**South of I-696 to North of I-696**	185,000	***2.44***	***1.41***
4	**North of 1-696 to South of 12 Mile Road**	187,000	***2.02***	1.26
5	**South of 12 Mile Rd. to North of 12 Mile Rd.**	186,000	***1.60***	***1.40***
6	North of 12 Mile Rd. to North of 13 Mile Rd.	175,000	1.00	0.87
7	**North of 13 Mile Rd. to North of 14 Mile Rd.**	158,000	1.33	***2.28***
8	**North of 14 Mile Rd. to North of Maple Rd.**	141,000	0.90	***1.61***
9	**North of Maple Road to East of Livernois**	127,000	0.86	***1.94***
10	**East of Livernois to Wattles Road**	119,000	***1.64***	***1.94***
11	Wattles Road to Long Lake Road	125,000	0.42	0.59
12	Long Lake Road to North of Crooks Road	120,000	0.74	0.60
13	North of Crook Road to South of Adams Road	116,000	0.55	0.30
14	**South of Adams Road to Square Lake Road**	119,000	***2.68***	0.67
15	Square Lake Road to M-59 Ramps	124,000	1.18	1.02

Source: The Corradino Group of Michigan, Inc., Traffic Improvement Association of Oakland County and MDOT
Note: Segments in **bold** were analyzed for crash countermeasures. See text.
[a] Average Annual Daily Traffic
[b] Crashes per million vehicle miles

Superelevations will be improved with the project. Generally this means the "banking" of the curves will increase, tending to keep vehicles on the road better. Adding an additional lane of capacity will increase maneuverability. Lengthening on-ramps and providing parallel style exits ramps, where feasible, will allow smoother merges and diverges (exits). This, in turn, will reduce lane shifts in congested ramp areas which can reduce crashes. Other recommended countermeasures that appear to be feasible are related to improving sight distance, drainage, and sag and vertical curves.

Countermeasures are summarized below by segment. Only those segments with crash rates above 1.31 per million vehicle miles of travel are discussed. Some countermeasures are considered short-term and some are considered long-term. Long-term measures will be considered for implementation during design of the proposed project. Short-term measures could be implemented sooner, if funding becomes available.

Segment 2 - South of 9 Mile Road to South of I-696

Northbound - Straightening the "S" curve at 9 Mile Road was analyzed, but is not considered reasonable because of significant socioeconomic impacts. Short-term measures include additional advance warning signs and flashers to slow excessive vehicle speeds at the curves. Glare screens mounted on the median barrier to minimize “gawker” behavior when incidents occur in the opposite direction are also recommended. Finally, soft attenuation or cushion walls on barriers would reduce the risk of severe injuries. In the long-term, resurfacing the pavement and improving the drainage will help with slick pavement conditions. Relocation to the south of the 8 Mile Road northbound on-ramp, and improving the entrance taper would improve safety. There is a spillback effect from the I-696 northbound on-ramps that will be discussed below.

Southbound – In the short term, additional advance warning signs and flashers would be appropriate to slow excessive vehicle speeds and warn drivers of the lane drop at 8 Mile Road. Glare screens would reduce gawker behavior. In the long-term, resurfacing and improving the drainage will help with slick pavement conditions. Relocation to the south of the 8 Mile Road southbound off-ramp, and improving the entrance taper would also reduce crashes.

Adding a lane will reduce the potential for crashes due to unexpected stopping and congestion in both directions.

Segment 3 - South of I-696 to North of I-696

Northbound - Adding a lane will reduce the potential for crashes due to unexpected stopping and congestion; however, this segment, like segment 2 above, has unexpected stopping resulting from the northbound merging traffic coming from I-696. Analysis finds that the northbound on-ramps from I-696 should be “braided” with the off-ramp to 11 Mile Road (see Figure 3-11). The latter ramp would be relocated further south to accomplish the braid. The existing crossover bridge at Dallas Avenue would be removed because it conflicts with the braiding. It would shift north to a point near Lincoln Avenue. This improvement is planned as part of the proposed project. In the short term, advance signing would inform drivers of potential slowdowns and glare screens could minimize distraction from opposing traffic.

Southbound - Adding a lane will improve operations and reduce the potential for crashes due to unexpected stopping and congestion associated with turbulent merging operations. Advance warning signs and glare screens are considered short-term measures.

Segment 4 – North of I-696 to South of 12 Mile Road

Northbound – As noted above, this segment of I-75 experiences crashes from turbulent merging operations that occur as two lanes from I-696 merge with mainline traffic and then exit to 11 Mile Road occur less than 2600’ away. Adding a lane will reduce the potential for crashes due to unexpected stopping and congestion, but lengthening the merge/diverge area is also key. The recommended braiding allows this. The continuation of the glare screen through this segment would be a short-term measure.

Southbound - Adding a lane will improve operations and reduce the potential for crashes due to unexpected stopping and congestion associated with turbulent merging operations. Moving the 11 Mile Road southbound on-ramp to the north would increase the merge distance available to users of that ramp. The merge length is limited by the subsequent diverge to the exit for I-696.

Segment 5 - South of 12 Mile Road to North of 12 Mile Road

Northbound – Reconstruction of the 11 Mile Road on-ramp will improve the merge length and sight distance. Glare screens would continue through the depressed part of this segment as a short-term measure. Reconstruction of the 12 Mile interchange as a Single Point Urban Interchange (SPUI) will allow elimination of a poor crest vertical curve and lengthening of the merge ramps. Eliminating loop ramps will improve ramp acceleration to meet freeway speed.

Southbound – Reconstruction of the 12 Mile Road interchange will lengthen the on-ramp, which is now shorter than desirable, and eliminate the loop ramp, which restricts acceleration to freeway speed.

Segment 7 - North of 13 Mile Road to North of 14 Mile Road

Southbound – Reconstruction of the 14 Mile Road interchange will lengthen the off-ramps for improved deceleration. This, with the lane capacity addition will reduce conflicts.

Segment 8 - North of 14 Mile Road to North of Maple

Southbound – The lane capacity addition will smooth traffic flow and aid in reducing the rear-end crashes that predominate in this segment (which are largely the result of downstream, e.g., 14 Mile Road, backups).

Segment 9 - North of Maple to East of Livernois

Southbound - The majority of the crashes in this segment occur at the Rochester Road on-ramp. They include rear-end, single-vehicle and sideswipe crashes at the merge point that results in part from the low entry speeds from the tight loop ramp. Lengthening this on-ramp will help reduce conflicts. This could be accomplished as a short-term measure.

Segment 10 - East of Livernois to Wattles Road

Northbound – Crashes occur at the Big Beaver Road exit and entrance ramps and through the curve at Big Beaver Road. A tall glare screen is recommended through the curve as a short-term measure. Full implementation of MDOT's ITS Information Management System in this segment could provide better advance warning of slowed conditions. In the long-term, ramps should be lengthened.

Southbound – The southbound condition is similar. Adding capacity and lengthening ramps will help reduce conflicts.

Segment 14 - South of Adams to Square Lake Road

Northbound – Most crashes in this segment are rear-end, and likely reflect the lack of through capacity on northbound I-75 at Square Lake Road that was remedied in 2002. With the lane addition northbound at this location, the number of crashes, particularly rear-end, will decrease.

Ramps

Countermeasures could be implemented for several ramps as follows:

- I-696 to I-75 ramps – warning signs: "Congestion Ahead"
- Big Beaver - northbound off-ramp – warning signs to slow upon approach to Big Beaver intersection. Clearing of vegetation on inside of curve to improve sight distance.
- Big Beaver - southbound off-ramp – warning signs to slow upon approach to Big Beaver intersection. Clearing of vegetation on inside of curve to improve sight distance.

- Crooks Road - southbound off-ramp – warning signs to slow upon approach to Crooks Road intersection. Clearing of vegetation on inside of curve to improve sight distance.
- Adams Road - northbound off-ramp - warning signs to slow upon approach to Adams Road intersection.
- Square Lake - southbound ramp - warning signs to slow upon approach to Square Lake Road intersection. Clearing of vegetation on inside of curve to improve sight distance.

Intersections

MDOT, the Road Commission for Oakland County, and local communities have completed two of three phases to optimize traffic signals throughout Oakland County. Significant operational and safety benefits at these intersections have, and will continue to be realized. Countermeasures noted for consideration at intersections are:

- 9 Mile Road - overhead signing and better channelization of traffic.
- 11 Mile Road at northbound service drive – larger, updated or additional traffic control devices.
- 14 Mile Road at northbound off-ramp – improvements on 14 Mile Road in the Oakland Mall area would likely benefit the intersection of the ramp ends with 14 Mile Road.
- Rochester Road at northbound off-ramp/northbound on-ramp – improved pavement markings or barriers to prevent left-turn conflicts between movements to/from these ramps.

Potential short-term and long-term crash countermeasures are summarized in Table 2-9.

2.2.7 Conclusion

I-75 is an important component of the transportation system in Michigan and the Midwest. As a result of population increases, land use changes, and increasing local, regional, and national commerce, traffic volumes have been increasing along I-75 in the project area. Coupled with road features that do not meet modern standards, existing traffic volumes are now causing traffic congestion problems. By the year 2025, increased traffic will cause severe congestion through extended periods of the day. Collectively, these problems demonstrate the need to upgrade the existing I-75 mainline and interchanges in the project area to: improve travel efficiency and motorist safety; increase personal mobility; support goods movement for industry; and, maintain the freeway's connectivity with other freeway systems.

Table 2-9
Summary of Crash Countermeasures

LOCATION	SHORT-TERM					LONG-TERM		
Segment	**Warn. Signs**	**Warn. Flashers**	**Glare Screens**	**Cushion Walls on Barriers**	**ITS**	**Main Line Lane Addition**	**Pavement/ Drainage Improve.**	**Comments**
S of 9 Mile to S of I-696 – NB	X	X	X	X		X	X	Shift NB 8 Mile On-ramp to the south.
S of 9 Mile to S of I-696 – SB	X	X	X	X		X	X	Shift SB 8 Mile Off-ramp to the south.
S of I-696 to N of I-696 – NB	X		X			X	X	Braid NB I-696 on ramps with I-75 NB exit to 11 Mile.
S of I-696 to N of I-696 – SB	X		X			X	X	
N of I-696 to S of 12 Mile – NB			X			X	X	Braid NB I-696 on ramps with I-75 NB exit to 11 Mile.
N of I-696 to S of 12 Mile – SB			X			X	X	Shift SB 11 Mile On-ramp to the north.
S of 12 Mile to N of 12 Mile - NB			X			X	X	Braid NB I-696 on ramps with I-75 NB exit to 11 Mile. Improve 12 Mile ramps with interchange reconstruction.
S of 12 Mile to N of 12 Mile – SB			**X**			X	X	Improve 12 Mile ramps with interchange reconstruction.
N of 13 Mile to N of 14 Mile - SB						X	X	Improve 14 Mile ramps with interchange reconstruction.
N of 14 Mile to N of Maple – SB						X	X	
N of Maple to E of Livernois - SB						X	X	Lengthen SB Rochester Road On-ramp.
E of Livernois to Wattles – NB			X		X	X	X	Lengthen Big Beaver On-ramps.
E of Livernois to Wattles – SB			X		X	X	X	Lengthen Big Beaver On-ramps.
S of Adams to Square Lake – SB					X	X	X	Improve Adams Off-ramp.
Ramps								
I-696 to I-75	X				X			Warning signs: “Congestion Ahead”.
Big Beaver NB Off-ramp	X							Clear vegetation on inside of curve. Advisory speed sign.
Big Beaver SB Off-ramp	X							Clear vegetation on inside of curve. Advisory speed sign.
Crooks SB Off-ramp	X							Clear vegetation on inside of curve.
Adams NB Off-ramp	X							
Square Lake SB Off-ramp	X							Clear vegetation on inside of curve.
Intersections								
9 Mile Road								Overhead signing and better channelization of traffic. Access management.
11 Mile Road @ NB Service Dr.								Improved traffic control devices.
14 Mile Road @ NB Off-ramp								Improvements on 14 Mile Road.
Rochester Road @ NB Ramps								Improved markings/barriers to prevent conflicts.

Source: The Corradino Group of Michigan, Inc.
Note: NB means northbound and SB means southbound