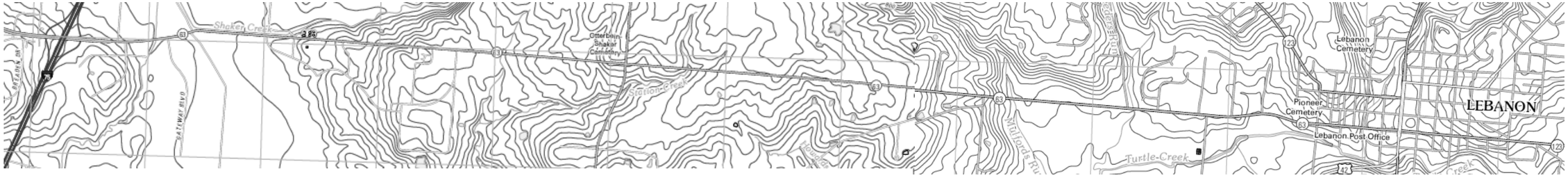
S C O P I N G S T U D Y

State Route 63 between Union Road and Neil Armstrong Way/SR 123 (WAR-63-0.00/6.33)

Warren County, Ohio



Warren County Transportation Improvement District, in cooperation with the Ohio Department of Transportation, District 8

April 2017

FINAL REPORT

PREPARED FOR THE WARREN COUNTY TRANSPORTATION IMPROVEMENT DISTRICT AND ITS PARTNERS

With the assistance of
The Warren County Engineers Office
And
The Ohio Department of Transportation – District 8

RL RECORD LLC
Consultants in Transportation and Major Infrastructure
Cincinnati, Ohio

In association with

SHA Engineering LLC
Mason, Ohio

TABLE OF CONTENTS

LIST OF FIGURES

APPENDICIES

EXECUTIVE SUMMARY

Problem

State Route 63 in Warren County is a long-historied transportation corridor that was established in routing and right-of-way in the early 1800's, and functions today with travelled-way conditions that date mostly from the 1950's. The facility today, about 5.4 miles in length, is a designated primary rural arterial and functions as an important regional connector, despite having only two travel lanes and significant design deficiencies. Traffic has grown at a steady rate over the period of record, and today travel demand exceeds capacity for stable operation. Crash rates are more than double the statewide average for same type facilities. Heavy trucks and commercial traffic have become a significant component of the traffic, most with regional or national origins or destinations out of the corridor. Just considering baseline forecast traffic growth, Level of Service will degrade to F, or E/F, along the whole of the corridor within the planning horizon. On top of baseline growth, significant new traffic-generating development - totally thousands of acres of land use change - is planned for the corridor, which cannot be accommodated by the existing facility.

Process

A Scoping Study was undertaken by the Warren County Transportation Improvement District, with the cooperation and assistance of the Ohio Department of Transportation District 8. The study goal was to identify appropriate long-term transportation strategies for the corridor, and begin the steps to put prioritized improvement project steps in motion. Criteria based on corridor context, as well as consideration of Purpose and Need, were used to identify balanced recommendations.

Recommendations

The study evaluated a total of six long-term corridor level strategies, as well as six near-term improvement projects, to provide direction and transition to the next phase of project development.

A four-lane rural section with a grass median (width to be determined) was advanced for the sections both east and west of SR 741 as the best long-term solution for corridor needs, including context-based criteria. Short-term safety counter-measures were identified for the corridor. Near-term improvement projects were recommended, west to east along the corridor, beginning in first priority with the SR 63 transition safety improvement "Gateway Project", to be followed by the LCI/WCI access consolidation and section upgrade project, and the SR 63/SR 741 intersection project. Projects east of SR 741 can be phased based on build-out of Union Village, a major development that will directly influence traffic patterns and demands in that section. Other important policy and operational recommendations were made.

The next phase should include development and performance of a Public Involvement Plan to inform and validate the Scoping Study findings.

The SR 63 corridor is pressured by a growing mix of local and regional traffic, including commercial components, that already exceeds the facility capacity for roadway and terrain conditions. Planned development actions along the corridor will increase the friction between trip types and vehicular modes.

[NOT USED]

PURPOSE OF THE STUDY

The SR 63 Scoping Study identifies problems, contributing factors, possible solutions, environmental context and constraints, and prioritized transportation strategies for the heavily traveled highway corridor between Monroe and Lebanon in Warren County. It establishes the scope and direction of subsequent stages of work in project delivery. It also provides a transportation planning construct for relationship to land use and development considerations and related community plans.

Role of Scoping

In transportation, 'scoping' involves the consolidated processes of facilities planning: assessment, problem identification, consideration of context, and identification of possible solutions to be carried forward into more detailed evaluation. Scoping defines the *range of actions* that may be required to address the problem, related order-of-magnitude costs, and possible phasing and priority considerations. These actions can include capital (construction) and operational/management alternatives, or component parts. By defining the range of actions and priorities, the TID and ODOT can best focus resources, and also appropriately frame and constrain required work in next steps.

Just as importantly, scoping also identifies environmental assets that require consideration in the development and evaluation of alternatives, as well as in eventual design and implementation of a preferred alternative. The environment includes both the natural and man-made features that compose the context of the area of study. Scoping defines the *range of environmental issues* that will require examination and evaluation in subsequent stages of project development, and expectations for reporting under the National Environmental Policy Act. This can help reduce and control work required in subsequent stages.

In best practice, scoping also begins to frame a decision-making process that provides effective support to identifying and delivering the most effective strategy. For the State Route 63 corridor scoping study, elements of *context and criteria* have been identified by the study team that speak to the range of issues in the study area, and that are important to decision-making. Public involvement was not included within the current scope of work; therefore, other issues, and relative importance among all, may be identified from required stakeholder and public input in subsequent stages of work.

As a direct outcome objective, this Scoping Study is intended to identify improvements for the SR 63 corridor in Warren County, and to provide policy makers with information pertinent to decision-making about programming, funding, and next steps.

Study Area and Transportation Issues

The study area, defined as the SR 63 corridor in Warren County, Ohio, extending from the City of Monroe corporation line on the west, to the City of Lebanon corporation line on the east, is the focal point of a rapidly changing development landscape. At the same time, the regional travel demands being placed on the existing transportation corridor, served by a capacity-limited 2 lane facility with a segment length of about 5.4 miles, are growing more quickly than, and even beyond, future traffic planning forecasts.

The combination of issues is important:

1) Existing traffic on this important major rural arterial highway is already exceeding the highway's capacity,

2) Growth in traffic using the corridor, without any new development, will continue to increase, and

2) Emerging major development changes in and along the SR 63 corridor will add significant new traffic to the highway.

Changing Development Landscape

Exhibit A-0 on **Page 5** provides a map of the study corridor showing general location of the change issues described in this section.

Three big changes regarding new development occurred during the period of the Scoping Study work:

Union Village: The Warren County Regional Planning Commission approved *Union Village PUD Stage 2*, a major new expansion of the Otterbein Lebanon retirement community campus located along the north side of the SR 63 Corridor east of State Route 741. The Union Village

PUD Stage 2 development site consists of 1,430 acres of what is currently farmland and open space. The Union Village development involves creation of an urban village, featuring a mixed-use town center, an estimated 4,500 dwelling units and up to 350,000 square feet of retail space.

Shaker Run: The Warren County Regional Planning Commission approved the Shaker Run Planned Unit Development, comprised of a large acreage of open space to be replaced with 1,320 residential units, located north of SR 63 and west of State Route 741. Another housing development in the SR 63 Corridor, a 66-acre residential subdivision with 264 single family lots located just east of the proposed Union Village development, had previously been approved.

Correctional Institution Lands: Just recently in the study process, the State of Ohio Department of Rehabilitation and Corrections officially announced its intention to cease farming operations currently linked to the Lebanon Correctional Institution and Warren Correctional Institution located along the SR 63 Corridor, and disinvest itself of the large acreage of lands currently used for that purpose, making them available to private development opportunities. This involves sale and conversion of major portions of approximately 1,600 acres of land on the north and south side of SR 63 west of SR 741. The sale of the lands by the State is imminent, and will no doubt be followed major development plans and proposals.

These developments, along with continuing industrial, distribution center and logistics services growth in both the City of Monroe and the City of Mason to the west and south of the study area, respectively, will significantly impact the traffic volumes and trip types served by the SR 63 corridor. All of these changing conditions require careful planning and policy responses in order to ensure both economic and environmental sustainability for the region.

Limited Transportation Capacity

One of the key underlying factors in the issues facing the SR 63 Corridor is the limited capacity of the existing roadway facility. Factors influencing the capacity picture include:

- Two-lane opposing traffic condition
- lane and shoulder width
- grades and vertical curves
- sight distance and high extent of no-passing zones
- access points and turns
- high percentage of truck traffic
- directional distribution of travel demand
- peak period conditions

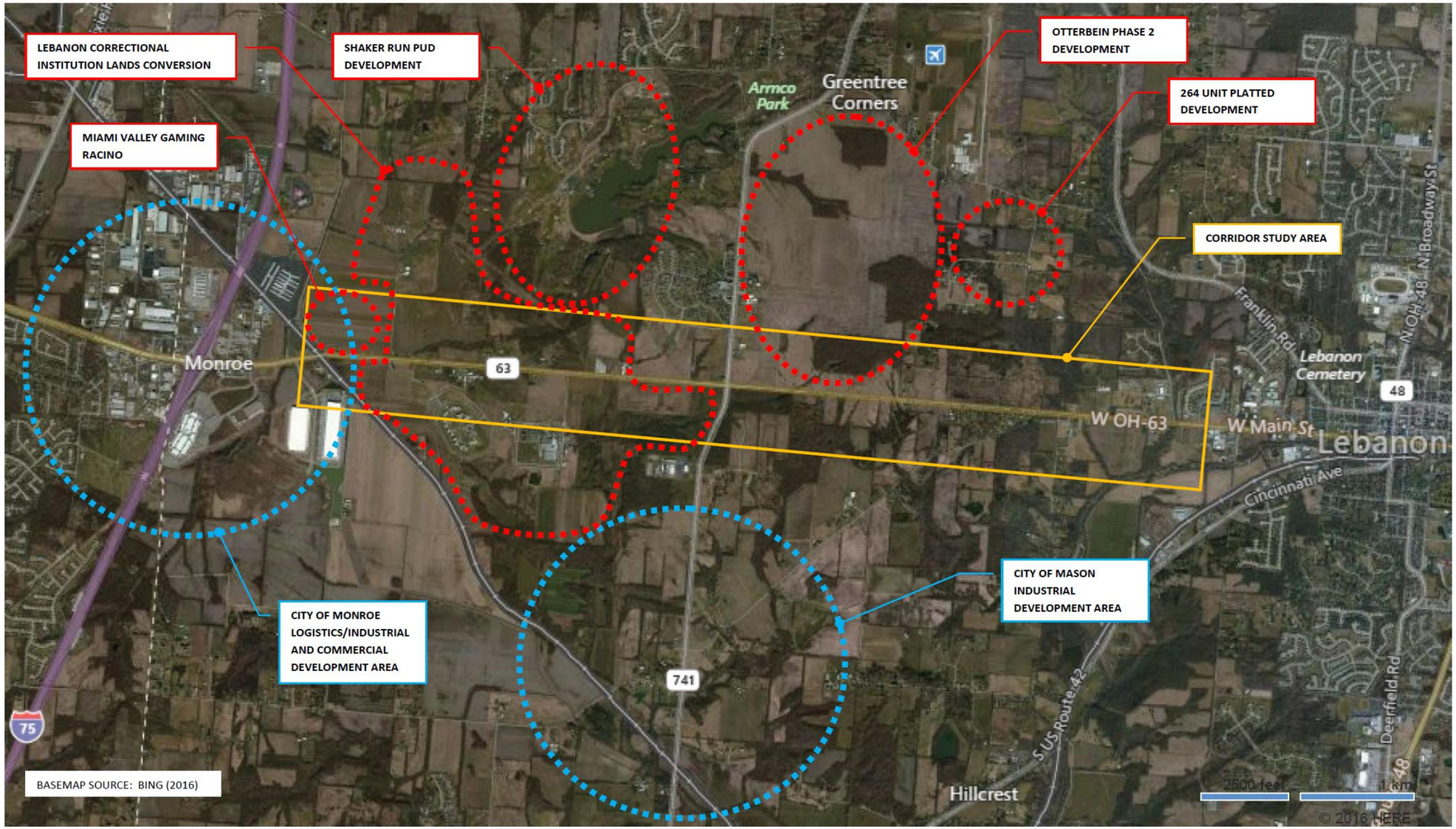
Motorist familiarity with the road, visibility and wayfinding, and driver expectation are difficult to quantify, but definitely affect the resultant ability of a roadway to accommodate traffic.

When all of these factors are considered, the nominal capacity for the existing SR 63 corridor overall, under a "Good" Level of Service condition, is in the order of 9,000 to 11,000 vehicles per day. Current traffic is in the range of 12,000 to 17,000 vehicles per day.

A combination of factors limit the effective capacity of the existing roadway in the SR Corridor, most stemming from its two-lane configuration and travel demand characteristics.

County and ODOT Collaboration

The SR 63 corridor is an Ohio Department of Transportation route. The Warren County TID recognized the emerging pressures on the SR 63 corridor and invited the Ohio Department of Transportation to participate in a scoping study to identify these pressures and possible solutions. The TID engaged a preliminary development consultant to assist both the County and ODOT in evaluating the current and future condition and needs of the corridor. The Warren County Engineer, along with his deputy and two assistant engineers, participated actively in the study. ODOT committed a project manager, along with design, traffic and environmental engineers to participate in the examination. Both agencies provided direction and contribution to the investigation and its outcomes.



WARREN COUNTY
Transportation Improvement District

JUNE 2016

RL RECORD

STATE ROUTE 63 SCOPING STUDY

OVERALL STUDY AREA AND ISSUES

A-0

[NOT USED]

HISTORY AND CONTEXT OF THE SR 63 CORRIDOR

Historical Development of the Corridor

State Route 63 began in the earliest settlement days of Warren County as a trail connecting outposts (and, later, an unimproved farm-to-market wagon road) running east-west along land section lines in Turtlecreek Township. The first settlement in the Township was made at Bedle's Station in 1795 in the area around the intersection of the present-day State Route 63 and State Route 741[1]. About the same time, the first settlers became established in Lebanon to the east, and the town was laid out in 1802. To the west, other connected outpost settlements came into existence, with the connecting settlement "trail" leading west to what is today Hamilton, established in 1791 as Fort Hamilton. The trail grew into a wagon road known as "Hamilton-Lebanon Road", a name that persisted though the mid-1900s and is still occasionally referenced today.

The earliest references to the road as a public road indicate that it was established as a County road in 1809, with a 60-foot wide right of way (not the 66-foot wide right-of-way required of the earliest state roads established by the legislature). Much of the right-of-way along existing SR 63 today remains at the original 60-foot width. The road was completed in its present day location by 1839[2].

The corridor has been historically dominated by agricultural and rural activities and land uses. By 1805, members of the Shaker religious society had arrived in the corridor with a cluster of farm residences around Bedles Station[3]. By 1835, the extensive Shaker community of Union Village had been developed, centered just north of the corridor on what is today State Route 741. By 1875, the Shakers owned and farmed more than 4,500 acres along the corridor. In 1912, the Shaker holdings were purchased by the United Brethren Church to establish the Otterbein Home for orphans and missionaries; about 1250 acres were retained and managed Otterbein, and the remaining lands were leased back to area farmers. Today, the Lebanon Correctional Intuition, opened in 1960, by the State of Ohio sits on 1,900 acres[4] of the original Shaker holdings.

[1] Bedles Station, a small blockhouse outpost, is largely recognized as the first permanent settlement in Warren County (*The History of Warren County*, W.H. Beers Co, Chicago, IL, 1882; p. 240.)
[2] Bogan, Dallas R. *Early Transportation in Warren County*, Warren County Historical Society, Lebanon, Ohio,. 1992; pp 68-71.
[3] Bauer, Cheryl. *The Shakers of Union Village*, Arcadia Publishing, 2007; p. 14.
[4] Until recently, much of the land has been used for agricultural/food production for the prison population.

Geographic and Economic

Today's SR 63 is a two lane primary arterial highway cutting across Warren County between I-75 to I-71 and the cities of Monroe to the west and Lebanon to the east. SR 63 also connects northern Mason to I-75 via SR 741. The roadway is located north of the I-275 loop in the rapidly growing I-75 Cincinnati-Dayton corridor and the I-71 Mason-Lebanon corridor. The roadway traverses a rural landscape of rolling hills.

SR 63 serves an area poised for major new economic and residential development.

The termini of SR 63 are both economic engines spurred by their direct access to I-75 and I-71. Major economic projects at the Monroe interchange include the Miami Valley Gaming Racino and the Cincinnati Premium Outlet mall. These developments have been catalysts for additional smaller development including restaurants. New industrial development on the east side of the interchange, south of SR 63, includes a Home Depot regional distribution center.

Development in Lebanon has been less dramatic, but still healthy. Industrial development on the south side of Lebanon is still strong, including a Federal Express distribution center. SR 63 is an important arterial for businesses that need access to the I-75 corridor and points north and south.

The City of Mason continues to attract industrial development. Mason has approximately 234 acres of industrial zoned land along SR 741. Businesses with a need for access to I-75 will use SR 741 and SR 63.

Landscape and Land Use

With the exception of the correctional institutions located on the western edge of SR 63, the existing land use along the corridor is primarily agriculture and low density single family residential. The views from SR 63 include rolling terrain, pasture, tilled farmland and forest. Shaker Run Creek flows along the north side of SR 63 between Union Road and SR 741. There are very few structures located along SR 63 between SR 741 and County Road 71.

However over the next forty years this will drastically change given development plan approvals and potential ownership changes along the corridor. These proposed developments are significant and will require capacity improvements to SR 63 to accommodate the increased traffic volume.

Adopted Land Use Plans

The Board of Warren County Commissioners have adopted two major local land use plans developed by the Warren County Regional Planning Commission that impact SR 63: The *Gateway Plan - West* and the *Union Village Plan*. The Commissioners have also adopted the WCRPC Comprehensive Plan for the entire county.

The Gateway Plan - West (see **Appendix D**) has set out future land use designations for land along the north and south sides of SR 63 from the City of Monroe east to SR 741. The area around Miami Gaming has been designated for office use. This land is zoned MXU-C Mixed Use Center Zone, which permits a variety of commercial land uses including lodging, retail, restaurants and professional office.

The land on the south side of SR 63, the current site of the Warren County and Lebanon Correctional Institutions has been designated for Institutional/Civic Uses.

The land at the intersection of SR 63 and SR 741 has been designated for Mixed Use Neighborhood development. This land is the site of the proposed Union Village new urbanism mixed use project.

Union Village

The most significant proposed development within the corridor is Union Village (see **Appendix D).** This urban village, mixed use project will be located on approximately 1,417 acres (including the Otterbein campus) on the north side of SR 62 at the intersection of SR 741. The project has received Stage 2 Planned Unit Development approval from the Warren County Commissioners in January 2016. The proposed build-out period is 40 years.

The project will feature a mixed use town center, an estimated 4,500 dwelling units and 200,000–350,000 square feet of retail. The project could also include a satellite college, performing arts center and a regional athletic facility. The first phase of the project will be the town center located across SR 741 from the existing Otterbein facility.

The proposed retail development will be located on the northeast corner of the intersection of SR 63 and SR 741. The developer is actively seeking a big box grocery store with satellite retail for the site. As part of the Stage 2 process, a detailed traffic impact study will be prepared for the project.

Residential Subdivision Plans

Just east of the proposed Union Village project, a 66 acre residential subdivision has been under concept development for consideration by the Warren County Regional Planning Commission. The proposed subdivision would have 264 lots with one access point onto SR 63. According to ITE[5] traffic generation rates, this single family subdivision could generate 2,640 daily trips.

An approved revision to the Shaker Run Planned Unit Development Plan will permit an additional 120 condominium units to be constructed bringing the total number of approved residential units in the PUD to 1,304. The newly approved condominiums could generate roughly an additional 700 daily trips in and out of the Shaker Run PUD.

Correctional Institution Property

The Lebanon Correctional Institution and the Warren County Correctional Institution, both located on the south side of SR 63 west of SR 741, are two of the major existing land uses on SR 63 in Warren County. The facilities currently hold 4,050 inmates, employ 600 people and operate 24/7. Both facilities are at capacity and no expansion of the facilities is planned. With employees and visitors there are approximately 450 daily trips in and out of these facilities.

The Ohio Bureau of Rehabilitation and Corrections owns 1,600 acres of land on the north side of SR 63 opposite the Lebanon Correctional Institution. This land is currently used by the Lebanon Correctional Institution for its dairy and crop operations. The Ohio Bureau of Rehabilitation and Corrections will be ceasing the agriculture operations on the land and offering the land for sale.

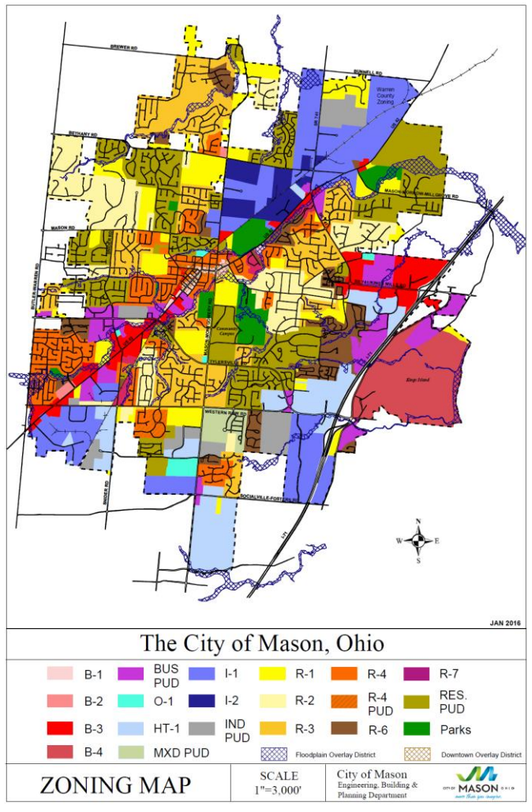
Such a change in ownership will have a significant impact on the potential land uses on the 1,600 acres. Miami Valley Gaming, located on the north side of SR 63, has expressed interest in the past in purchasing some of this land to develop hospitality uses such as hotels and restaurants to serve their

[5] Institute of Transportation Engineers, *Trip Generation Manual*, 8th Ed.

current operation. Although the Gateway West Land Use Plan designates this land for professional office development, the current zoning will permit hospitality land uses. Should the land be developed as hospitality or mixed use, the traffic generation would be expected to be substantially higher than for professional office. For example, a single six acre site within this area would accommodate the following development options with associated daily trip generation: 1) Professional Office 40,000 SF (441 trips); 2) Hotel 120 Rooms (980 trips); or 3) Full Service Restaurant 10,000 SF (1272 trips). In any case, development of these lands will dramatically change travel demand in the SR 63 corridor. Even assuming only a 50% net site utility rate, 800 acres of Professional Office would generate 58,800 new trips per day in the corridor, more than 4 times the current average daily traffic on SR 63.

Industrial Development

The City of Mason, located directly south of the SR 63 Corridor, continues to aggressively attract to new industries to the city. The City has designated through land use and zoning approximately 264 acres of land on SR 741 located on the north side of the City that is available for new development. (blue areas in north area in *Mason Zoning Map* at right). This industrial land lies just 3 miles south of SR 63, and has easy access to the interchange at I-75 and SR 63.



Development of this land will increase vehicular and truck traffic on SR 741 and SR 63 (and has already begun to influence traffic and truck routing on SR 63). This increased traffic volume will place additional pressure on the intersection of SR 63 and SR 741, as well as on the west and east segments of SR 63.

According to ITE, a 100,000 square foot light industrial facility, which typically can be sited on 10 or fewer acres and is the target development type for this area, can generate 400 daily trips.

Changing Role in the Transportation Network

The development pressure within the corridor will significantly change the role of the existing transportation network. The proposed development, when built out, will change the transportation network from a rural/suburban context to a more urban context, depending on how access and mainline capacity and function is managed. There will be a significant increase in vehicular trips not only on SR 63, but also on roadways feeding into SR 63, particularly SR 741 and Union Road. The operational impacts of increasing traffic from intersecting roads and access points are significant to the future of SR 63. For example, additional cycle times will be needed to accommodate crossing volumes which, in turn, degrades level of service on SR 63.

Peak hour trips to out of area employment centers will increase on SR 63 as residents of new homes travel SR 63 to I-75 or I-71 to commute to work. As a result of new home construction non-personal vehicle trips will increase. There will be an increase in school bus, mail carrier and trash hauler trips within the corridor. Given all the roads within the corridor are two lanes, the stop and go nature of these trips will create conflicts between these vehicle types and personal cars.

New retail economic development within the corridor will increase both shopping trips and delivery trips mixing more truck traffic with personal vehicles. Without advanced planning access to retail destinations off the existing two lane highway conflicts will occur with left turning movements.

New industrial development and changes in food operations and service deliveries at the LCI/WCI corrections complex will add more trucks to the SR 63 corridor, placing additional pressures on ingress/egress, safety and basic capacity issues, including at the intersections at SR 63 and Union Road and SR 63 and SR 741.

Aerial reference mapping of the general study corridor area is found in **Figure A-1** on **Pages 10-12.**

Reference mapping of the existing SR 63 highway corridor plan and profile is found in **Appendix A**.

BASEMAP SOURCE: USGS (2011)

WARREN COUNTY
Transportation Improvement District

SEPTEMBER 2015

RL RECORD

STATE ROUTE 63 SCOPING STUDY

GENERAL STUDY CORRIDOR AERIAL MAP

A-1A

BASEMAP SOURCE: USGS (2011)

WARREN COUNTY
Transportation Improvement District

SEPTEMBER 2015

RL RECORD

STATE ROUTE 63 SCOPING STUDY

GENERAL STUDY CORRIDOR AERIAL MAP

A-1B

BASEMAP SOURCE: USGS (2011)

WARREN COUNTY
Transportation Improvement District

SEPTEMBER 2015

RL RECORD

STATE ROUTE 63 SCOPING STUDY

GENERAL STUDY CORRIDOR AERIAL MAP

A-1C

EXISTING TRAFFIC

State Route 63 in Warren County is a heavily travelled route subjected to many different trip purposes and vehicle types in the daily mix traffic, including a high truck volume. And this heavy mix of car and truck traffic is assigned to two travel lanes of limited capacity, challenging conditions, and substandard design.

The existing route is designated as a Primary Arterial Roadway, and functions as an important link in the regional and local roadway network (see **Figure A-2** on **Page 14**).

SR 63 west of SR 741 is effectively the highest traffic volume 2-lane facility[6] in unincorporated Warren County. Among 2,050 state and federal 2-lane highway segments monitored by ODOT in the seven counties that make up District 8, this part of SR 63 is in the top 4% of all 2-lane segments in terms of total traffic volume accommodated in non-incorporated areas. And it is the seven-county district's #1 ranked 2-lane non-municipal segment for heavy truck traffic as a percent of ADT; it is the only 2-lane segment of greater than 0.5 miles in length with more than 7 percent trucks[7] in District 8.

Historical Data

State Route 63 between Monroe and Lebanon has a long history of steady traffic growth. Over the past 34 years (since 1982), traffic data collected and compiled by ODOT indicates a historical annual traffic growth rate in excess of 3%. On average, daily volumes of both cars and heavy trucks have more than tripled since 1982 on the facility, which has remained largely unchanged in traveled way, pavement and cross section condition since the 1950's.

Over the past 34 years, the rate of traffic growth on SR 63 has been 2.7 times greater than the relative same-period growth on the I75 Corridor in Cincinnati[8].

Complied historical traffic data for the SR 63 study corridor is found in **Appendix E** of this document.

[6] Among roadways on the state system; a 2-lane section of SR 48 in unincorporated Warren County has a slightly higher (1%) total traffic volume, but heavy truck volumes are only 62% of that on SR 63.
[7] ODOT TIMS data
[8] At Mile Point 2.51, Western Hills Viaduct

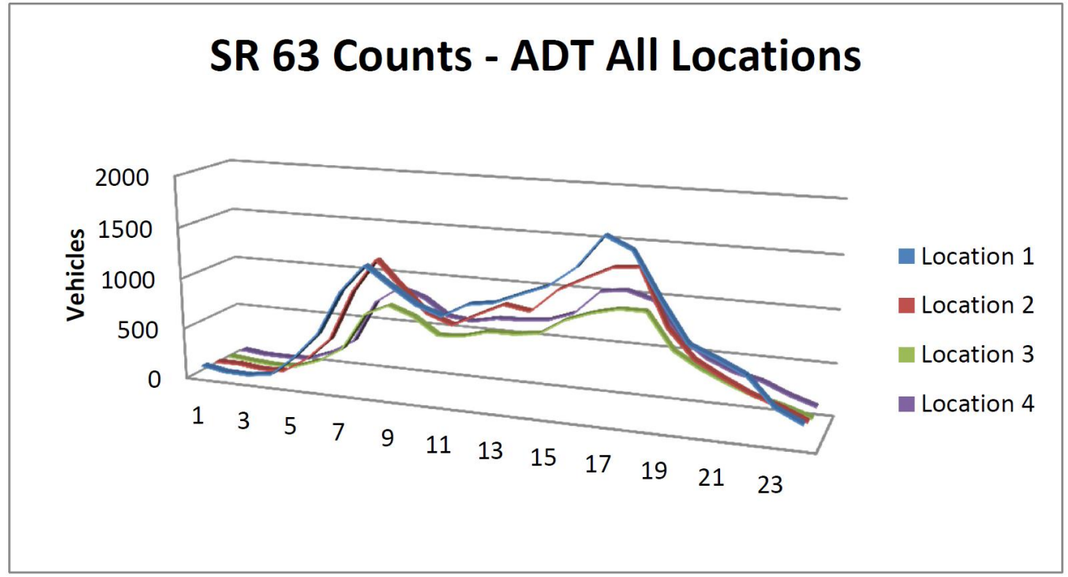
Current Data

At the beginning of this Scoping Study, 24-hour traffic counts were taken at four locations along SR 63 in Warren County. Automated digital based data collection and processing equipment and software[9] was employed to determine total directional volumes, hourly volumes and heavy truck volumes.

The four count locations along SR 63 and total 24-hour traffic volumes observed were:

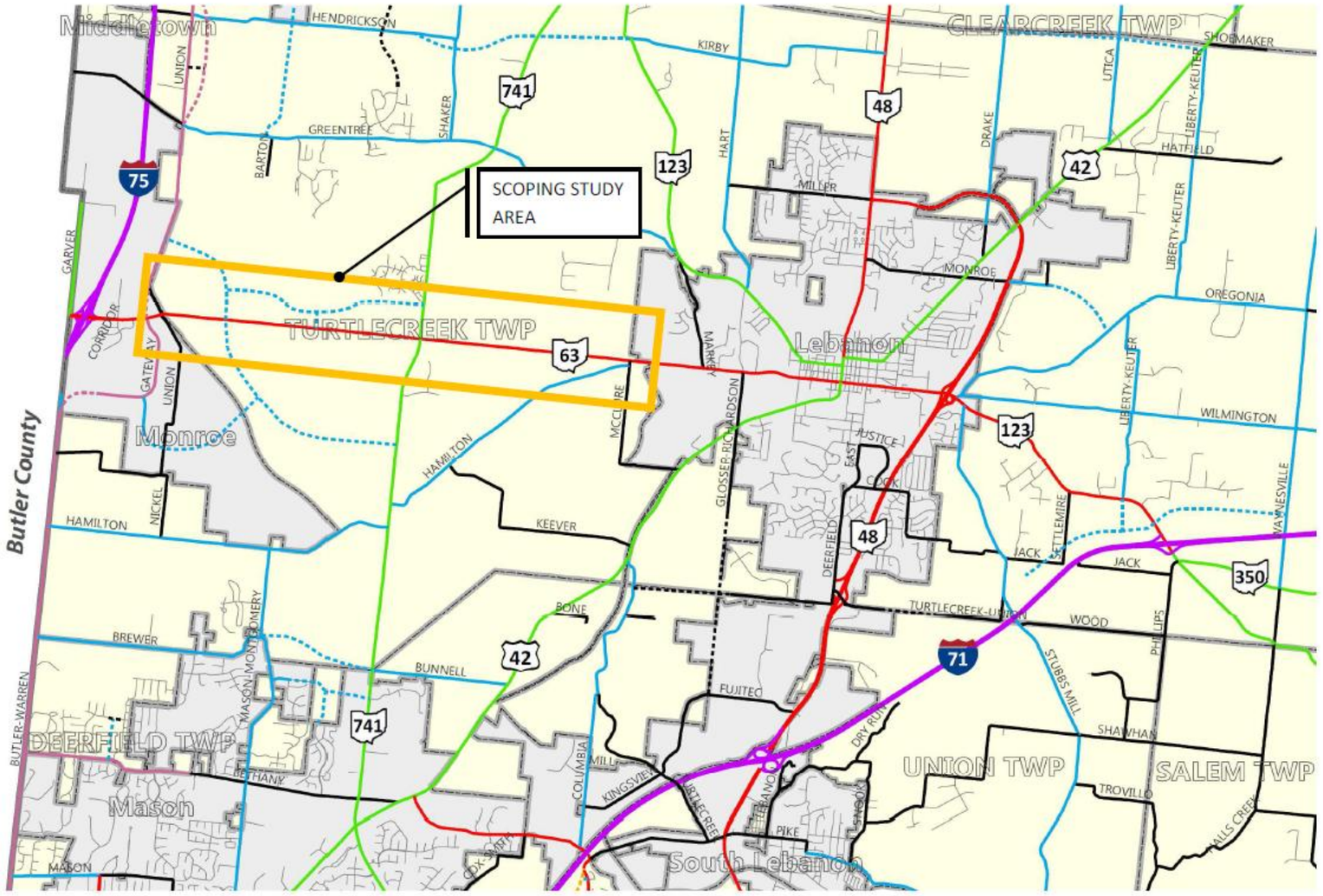
LOCATION 1	BETWEEN UNION ROAD AND MIAMI VALLEY GAMING	19,267
LOCATION 2	WEST OF STATE ROUTE 741	16,133
LOCATION 3	STATE ROUTE 63 EAST OF STATE ROUTE 741	10,851
LOCATION 4	STATE ROUTE 63 ABOUT 1500' WEST OF MARKEY ROAD	12,137

The graphic below summarizes traffic count results by 24-hour distribution are illustrated as follows (total vehicles per hour, seasonally adjusted); more complete data summaries are found in **Appendix B:**



Current Hourly Traffic Volume Distribution on SR 63 in Warren County at Four Locations Along Length of Corridor (based on 24-hour automated field count data, November 2015)

[9] Miovision Industries, Inc.



Functional Classifications: West Area

Legend

- COUNTY BOUNDARIES
- POLITICAL SUBDIVISIONS
- MUNICIPALITIES
- TOWNSHIPS
- LOCAL ROADS

FUNCTIONAL CLASSIFICATIONS

Existing

- Collector
- Interstate
- Local Road
- Major Collector/Distributor
- Primary Arterial
- Primary Collector/Distributor
- Secondary Arterial
- Vacation

Future

- Collector
- Interstate
- Local Road
- Major Collector/Distributor
- Primary Arterial
- Primary Collector/Distributor
- Secondary Arterial
- Vacation

SOURCE: Warren County Engineer's Office and Warren County Regional Planning Commission (August 2015)

WARREN COUNTY
Transportation Improvement District
SEPTEMBER 2015
RL RECORD

STATE ROUTE 63 SCOPING STUDY

ADOPTED THOROUGHFARE PLAN IN STUDY AREA

A-2

As evident in the ADT graphic above, the hourly distribution of traffic is similar at all locations along the corridor. Peak travel typically occurs in the 5 to 7 PM period, with a sustained climb in traffic beginning around noon each day. The morning peak is slightly less pronounced and typically occurs in the 7 to 9 AM period.

Within the total volumes, truck volumes as raw numbers are most prevalent between 5 AM and 7 PM, with greatest hourly numbers typically between 8 and 11 AM. However, truck volumes are sustained over the typical 24 hour period; in the overnight hours, heavy trucks comprise as much as 22% of all traffic.

In addition to 24-hour mainline traffic counts, turn movement counts were also collected at six intersections during PM Peak Hour periods:

- Gateway Boulevard (entrance to trucking logistics campus)
- Union Road (entrance to regional flea market on north, local connector roadway on south)
- Miami Valley Gaming (entrance to regional gaming facility on north)
- State Route 741 (important rural secondary arterial north and south)
- McClure Road (local connector roadway on south)
- Markey Road (local connector roadway on north)
- State Route 123 (important secondary arterial north and south)

The intersection turn movement results and other Traffic Data are found in **Appendix B.**

Trip Type and Mode

In process of completing traffic and facility surveys and other field observations in the course of this Scoping Study, the following vehicle and mode types were observed using or traversing the SR corridor:

On-Roadway Motor Vehicles
- **Personal Vehicles**
- **Service and Delivery Vehicles**
- **Emergency Vehicles**
- **School and Transit Vehicles**
- **Heavy Trucks**

Off-Road Equipment
Bike
Pedestrian
Rail

Table 1 below correlates observed vehicle types/modes of travel to trip scale type and relative occurrence:

Table 1 – Observed Vehicle Type and Mode in the SR 63 Corridor Versus Trip Type

VEHICLE TYPE/MODE	TRIP SCALE TYPE[10]			REMARKS
	LOCAL	THROUGH	REGIONAL	
Personal Vehicles	✓	✓	✓	Common/dominant by volume; automobiles and light trucks
Service and Delivery Vehicles	✓	✓		Frequent and relatively dominant due to stopping/turning movements for local trips; includes UPS, FedEx, and USPS, as well as utility, delivery and maintenance services
Emergency Vehicles	✓	✓		Common/at least weekly emergency runs by fire, EMT, or sheriff, including some through runs to support out-of-jurisdiction support calls
School and Transit Vehicles	✓	✓	✓	SCHOOL: Frequent in season; Lebanon City Schools services whole of corridor and has 17 student bus trips/day on corridor, all but one east of SR 741 TRANSIT: Occasional and variable; on demand jitney service by Warren County Transit; less frequent long haul coaches traverse corridor or to MVG destination
Heavy Trucks	✓	✓	✓	Frequent and relatively dominant in scale and condition of roadway; local heavy truck service to LCI/WCI, corridor businesses; observed significant heavy truck through/regional travel between I-75 and I-71
Off Road Vehicles	✓			Infrequent maintenance-of-way (ODOT, mowing and ditch work) and agricultural vehicles longitudinal/travel use (LCI/LCI and local farmers) ; frequent ag vehicle crossings (up to 70+/day at LCI/WCI)
Bike	✓	✓	✓	Infrequent but occurs; very infrequent regional trekkers
Pedestrian	✓			Very infrequent longitudinal pedestrian use; at least daily crossings in residential areas (roadside mail box-related)
Rail	✓	✓	✓	Very low volume/low speed/infrequent at-grade gated crossing at west end of study corridor; short line railroad

[10] Observed, extracted from data, or concluded based on field review. LOCAL = origin or destination within corridor; THROUGH = end-to-end travel between Lebanon and Monroe; REGIONAL = though-connection to larger regional network via interstate system or other.

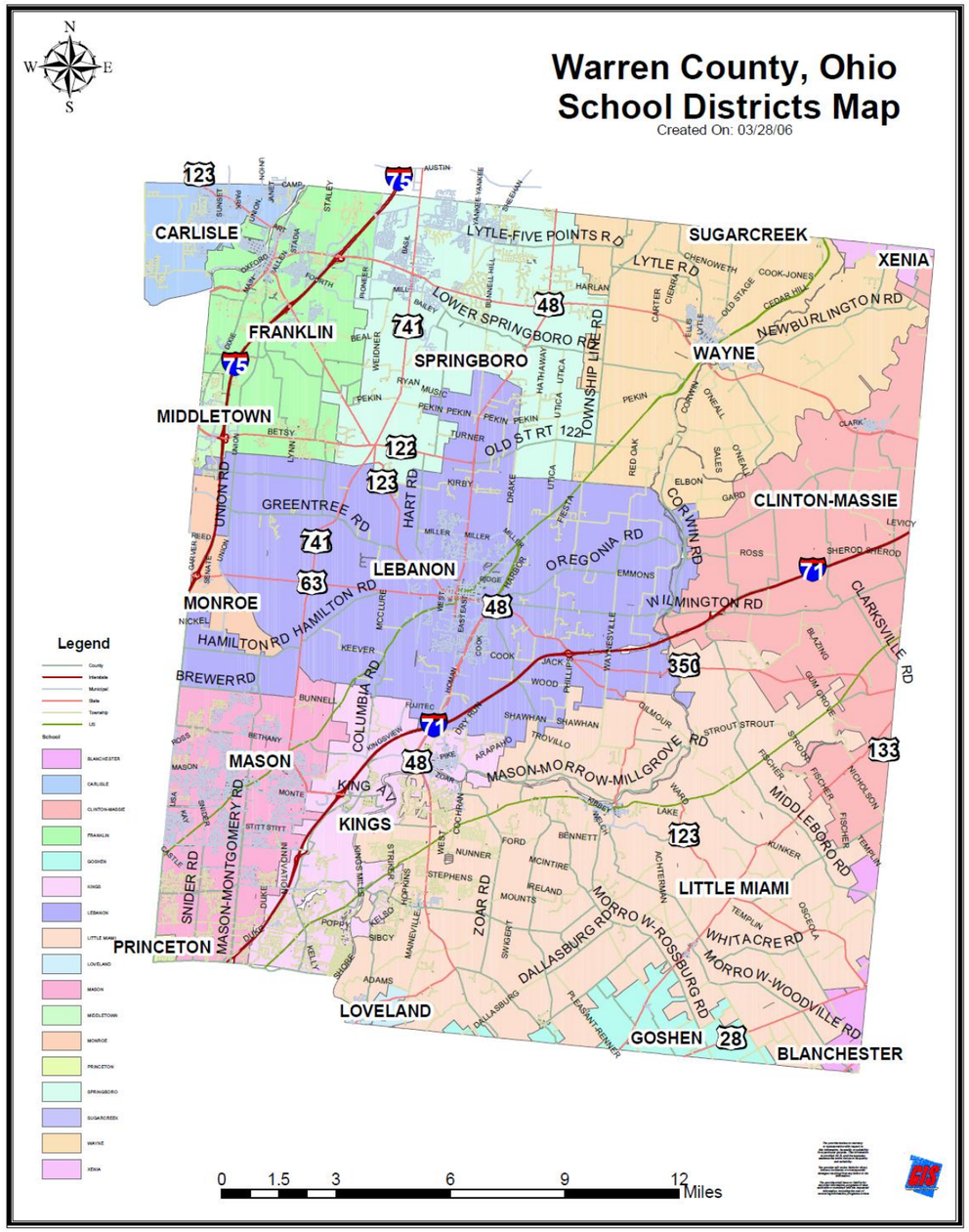
No Recreational Vehicles, Taxis or Cars for Hire[11] were observed using the corridor during the period of study, but occasional/infrequent use no doubt occurs. Trip services such as Uber and Lyft are likely growing parts of the travel option environment in the corridor, but were not specifically assessed.

Trip <u>purpose</u> types known, observed or assumed to exist in the SR 63 Corridor include:

- Home-to-Work (commuting)
- Home-to-School
- Freight
- Service/Delivery
- Maintenance
- Emergency
- Recreation/Pleasure/Event
- Shopping/Convenience
- Personal Visit

While total traffic and heavy trucks have been on the steady rise since the 1982 start of ODOT's traffic records, it can also be reasonably assumed that other important component parts within those traffic numbers, as listed in Table 1, have also been mirroring or perhaps exceeding those relative growth rates:

- Service and delivery vehicle traffic growth is booming nationally with no abatement in sight, this linked to growing consumer shifts to online shopping; this is consistent with observed traffic in the SR 63 Corridor.
- Increases in emergency vehicle runs are linked to continuing demographic shifts to older populations, and conversion of rural lands to residential and commercial uses; land use plans for the SR 63 Corridor can be expected to accelerate this trend. Demand service transit (jitney bus) has a similar relationship to demographics and land use.
- School bus and related school trip travel is an important part of the traffic picture on SR 63: the Lebanon City School District area encompasses the whole of the SR 63 Corridor in Warren County (see **Map** at right), and SR 63 is an important link in the district's bus routing. It can also be assumed that a home-to-school personal vehicle trips are made on SR 63 each school-year day. As the corridor area grows and develops to include more residential use, the school traffic component will increase in response.



The western half of the Lebanon City School District is oriented around the SR 63 Corridor (source: Warren County GIS)

[11] "Cars For Hire" has traditionally included livery and limousine services and dedicated cars furnished with driver, all usually visually recognizable in the traffic mix and especially destination zones. Services such as Uber and Lyft have pushed the boundaries on this category.

Truck Considerations

Heavy truck traffic is significant in the SR 63 Corridor in Warren County. At 8% of Average Daily Traffic, truck volumes significantly influence level of service, safety and mobility on the existing facility.

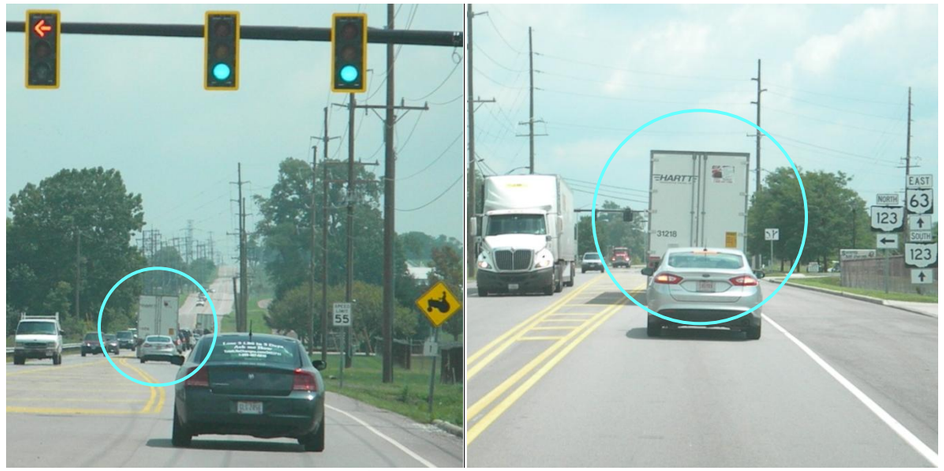
In round numbers, daily truck volumes on SR 63 are roughly 1300 west of State Route 741, and 900 east of SR 741. Based on land use and field observation, very few of these truck trips are generated directly within the SR 63 study corridor. And the great majority of truck trips on SR 63 are passing entirely though the corridor on the way to regional or national destinations.

A limited assessment of heavy truck origin/destination and routing behavior was undertaken as part of the traffic field work in the corridor. The purpose was to establish a snapshot of heavy truck travel purposes in the corridor, and to make an initial assessment of how many trucks are making through/regional connecting trips between Interstates 75 and 71 via SR 63[12]. The findings of this assessment were as follows:

- An estimated 15% of all heavy trucks have a local origin or destination either within or directly adjoining the corridor[13]. A notable local generator is the collection of truck-based distribution centers located just beyond the west end of the corridor on Gateway Boulevard.

This growing cluster of distribution centers at the west end of the corridor, though a significant truck traffic generator, is responsible for only an estimated 10% or less of heavy truck traffic found today on SR 63 between Monroe and Lebanon

- The remaining 85% of trucks are making through trips beyond the SR 63 corridor, most to unknown regional and national destinations via linkages to IR 75 to the west and IR 71 to the east[14]. Random truck follow surveys on a single date in September 2015 found that 100% of westbound trucks sampled entering the SR 63 corridor made full through-corridor trips on toward IR-75. For eastbound trucks entering the corridor, 71% made full though-corridor trips on to either IR-71 north or south via SR 123, or to US 42 south (also presumably on to IR-71 south), and 29% exited the corridor south on SR 741 (and on to or toward IR-71 south).



About 85% of heavy trucks, like this one, don't have local origins or destinations and use the SR 63 Corridor for through-trips and regional and national connections (west end of corridor at left, east end at right; both looking eastbound).

Directional Considerations

Based on actual traffic count data, the direction distribution of traffic for Peak Hour traffic in peak direction is typically in the range of 55 to 60%, with the dominant direction being eastbound for PM peak hour conditions, and westbound for AM peak hour conditions.

Peak Period Considerations

Based on actual traffic count data, PM peak hourly traffic is about 8.7% of 24-hour volume ADT (5-6 PM period), and the AM peak is typically about 7.8% of ADT (7-8 AM period).

[12] For example, Southbound on IR75, to eastbound on SR 63 and SR 123 or US 42 to IR71, and continuing Southbound on IR71 from there.

[13] Based on land use and activity observations; estimated <2% directly within corridor, and remainder in directly adjoining areas at west end (Monroe area east of IR 75), at mid-point/SR 741 (Otterbein and ODOT District 8) and east end (City of Lebanon)

[14] Based on turn movement counts and field observation of randomly-sampled corridor truck trips conducted September 2015.

[NOT USED]

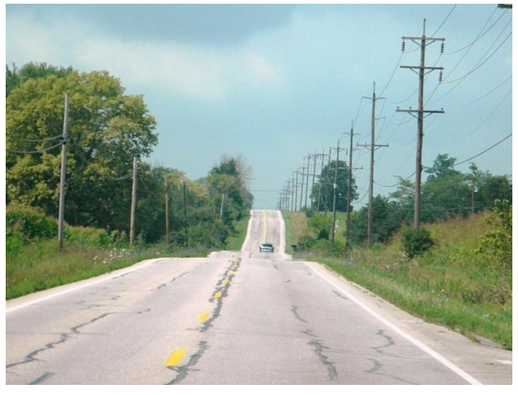
EXISTING FACILITY PHYSICAL AND OPERATIONAL CONDITIONS, INCLUDING SAFETY

Physical Conditions

Physical conditions of the roadway elements in the SR 63 Corridor, including the right-of-way, affect how the roadway performs relative to capacity, safety, efficiency and access.

Typical Section and ROW

The typical roadway section along existing SR 63 consists of two 12-foot (nominal) travel lanes, with paved outside shoulder width ranging from 1½ to 8 feet, and graded grassed recovery area of 0 to 6 feet, depending on location.

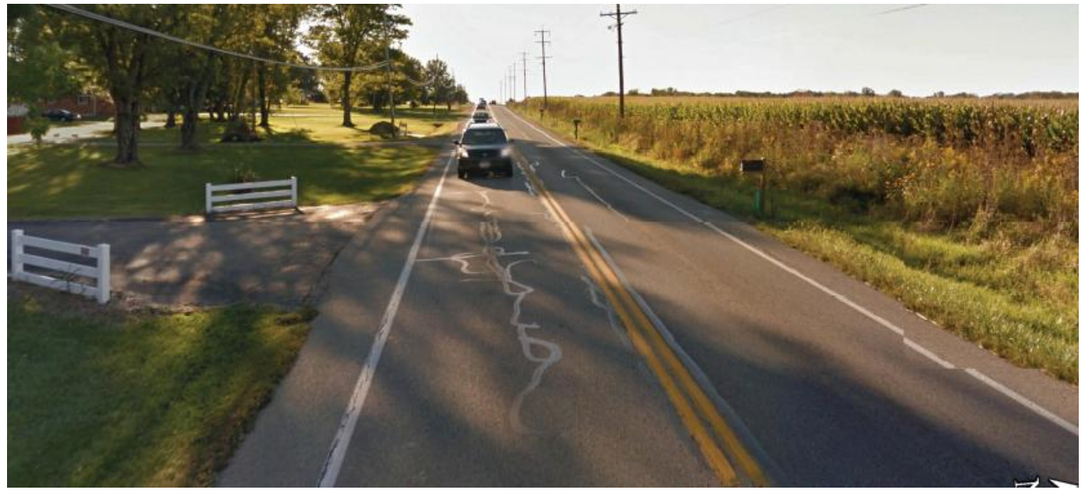


East of SR 741, paved shoulder widths of 1½ to 2 feet are typical (looking westbound near MP 4). Shoulder widths are highly variable throughout the corridor, and variations in travel lane width also occur.

West of SR 741, paved shoulder widths of up to 8 feet occur in an improved stretch near LCI (shown here), although narrower and variable widths of 2 to 6 feet are also found in this section (looking westbound at MP 2.5) .

Much of the existing corridor is located in the original 60-foot Right-of-Way dating from the original Hamilton-Lebanon Road establishment in 1809. At some locations, the ROW has been widened over time to accommodate intersection improvements and drainage structure repair and replacement. The maximum width in these widened areas is in the range of 60 to 120 feet.

Few sections of existing SR 63 have full 12-foot travel lanes. At most locations, actual travel width rarely exceeds an estimated 11 feet. Lane widths in the recently improved (2013) section near the Miami Valley Gaming facility are about 12 feet.



Some sections of existing SR 63 have actual land widths of significantly less than the 12-foot standard. The Honda compact SUV in this image has an out-to-out width dimension of 5.97 feet. The estimated actual travel lane width at this location is about 10½ feet. (Looking west on SR 63 near MP 6; image: GoogleEarth)

Pedestrian and Bike Accommodation

Except for sidewalks and crosswalks provided at the east end of the existing corridor at SR 63's transition into a 3-lane urban roadway section at Neil Armstrong Way in the City of Lebanon, there are no separated or controlled provisions for pedestrian or bike traffic.

Transit Accommodation

In the whole of the corridor, there are no special provisions for accommodation of transit operations (pull offs, designated stops, dedicated lanes, park-and-ride, etc). There are no dedicated route transit operations using the corridor. However, Warren County Transit provides on-call demand-scheduled

jitney bus transit throughout the county, providing service for about 40,000 trips per year. In recent actions, the transit service announced plans for regular "loop" service in the Lebanon area, including a dedicated stop on the Otterbein-Lebanon retirement community campus. Otterbein-Lebanon also operated its own jitney service for its residents to various destinations in the Warren County community and larger region.

Bus transit vehicles operated by both Warren County Transit and Otterbein-Lebanon regularly and frequently use the existing SR 63 corridor, and can be expected to do so in the future, likely with increased frequency and extended service duration as the corridor develops.

Profile and Horizontal Curves

Horizontal curves are insignificant in the entirety of the corridor, excepting for a combination of minor reverse curves at the west corridor terminus in transition to an improved section in the City of Monroe. The remainder of existing SR 63 alignment closely follows the original dead-straight section lines of lands laid out in early settlement periods.

Vertical curves and tangent grades that make up the existing roadway profile are another matter. The SR 63 profile grade is "active" and variable along the length of the corridor. True tangent grade sections[15] are few and scattered, totaling 12 locations with an approximate total length of 4,140 feet, or only about 14% of the total 5.5 mile corridor. The three highest maximum grades found in these approximate tangent sections are 8% grade for a 200-foot section between Stations 183 and 185, 9% grade for a 200-foot section between Stations 331 and 333, and 9% grade for a 410-foot section between Stations 346+30 and 350+40.

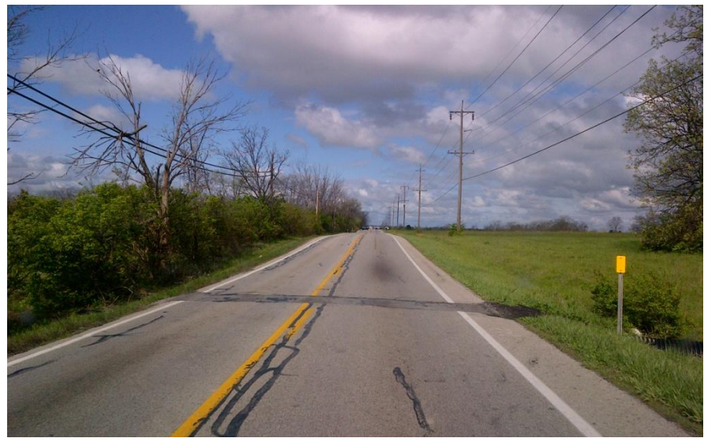
Pavement

From west to east, SR 63 pavement conditions transition from Very Good to Fair[16].

Beginning at Union Road, the pavement condition rating (PCR) for the segment of SR 63 from approximately the .85 milepost to about the 1.25 milepost (slightly the past Miami Valley Gaming Facility) is 94 or "Very Good". A PCR of "very good" means the pavement is stable, with no cracking, patching or deformation, and exhibits excellent riding qualities. No treatment is necessary. This section of pavement was improved with the opening of the Miami Valley Gaming Facility,

Just east of the Gaming Facility, the PCR for the segment of SR 63 from approximately the 1.25 milepost to about the 3.35 milepost (just east of the intersection with SR 741), is rated 88-87, which falls in the "Good" range.

Beginning just east of the intersection with SR741, the segment of SR63 from approximately the 3.35 milepost to about the 6 milepost (just west of Neil Armstrong Boulevard), is rated 77 or "Fair". A "fair" rating means the pavement is generally stable, with minor structural weakness and good riding qualities. Distress may include deformation with rutting depths up to ¾", and with noticeable thermal cracks or longitudinal cracks appearing in wheel paths. Maintenance projects like crack sealing may be considered.



This section of SR 63 between MP 3.35 and MP 6 has a Pavement Condition Rating of "Fair". Longitudinal cracking as well as transverse deformation (in this case, from past culvert work) is visible in this photo (looking westbound).

Beginning at about the 6 milepost, the PCR is again rated 98 or "Very Good" where SR 63 intersects with the recently completed Neil Armstrong Boulevard.

[15] Estimated only, from available terrain model and topo mapping; detailed survey has not been conducted.
[16] Based on data from ODOT Transportation Management Information System (TIMS), 2016

Drainage

Except for urban transition sections at the west and east end of the corridor, all of existing SR 63 has an open/rural design drainage system. Highway pavement, shoulder, recovery area and backslope drainage within the Right-of-Way is routed by open ditch or overland flow to swales or natural drainage features. There are 16 pipe culverts of various sizes along the corridor providing drainage routing connections.

Structures (Bridges)

There are three structures along the SR 63 study corridor greater than ten feet in span length[17], and therefore considered to be bridges. All pertain to drainage feature crossings. None are load limited.

From west to east:

Station Creek: Structure File Number (SFN) 8301514, located .33 miles east of SR 741, built in 2004, carries 2 lanes of traffic on SR 63 over Station Creek. It is a filled concrete culvert with a 14-foot span. It has a sufficiency rating[18] of 94.1, and a general appraisal[19] of 9, meaning it is in excellent condition. It carries no utilities and has no special features. Guard and end rails meet acceptable standards.

Culvert bridge structure, 14-foot span, at Station Creek, looking downstream (south)

[17] Based on data from ODOT Transportation Management Information System (TIMS), 2016
[18] A bridge sufficiency rating is an overall rating on a scale of 0 to 100 percent, of a bridge's fitness for the duty it performs based on a large number of individual rating factors that include structural integrity and functional design.
[19] A bridge general appraisal rating is a summary on a scale of 0 to 9, with 0 being failure, of separately rated conditions of the structural components of a bridge, including deck, superstructure, and substructure conditions.

Mulfords Run: Structure File Number (SFN) 8301530, located 2 miles east of SR 741, built in 1950, carries 2 lanes of traffic on SR 63 over Mulfords Run, a tributary to Turtle Creek. It is simple concrete slab bridge with a single 27-foot span and an overall length of 29 feet. It has a sufficiency rating of 93.2, and a general appraisal of 7, it is generally in good condition. It carries no utilities and has no special features. Railings, transitions, guard and end rails meet acceptable standards.

Bridge structure, 27-foot span, at Mulfords Run, looking upstream (north)

Reeders Run: Structure File Number (SFN) 8301565, located 1.24 miles west of SR 42, built in 1947, carries 2 lanes of traffic on SR 63 over Reeders Run, a tributary of Turtle Creek. It is a simple pre-stressed concrete box beam with a single 47-foot span and an overall length of 49 feet. It has a sufficiency rating of 74.6, and a general appraisal of 7. It is in fair condition. It carries no utilities and has no special features. Railings, transitions, guard and end rails do not meet acceptable standards.

Bridge structure, 47-foot span, at Reeders Run, looking upstream (north)

Lighting

Except in transitions zones at the west and east end of the corridor, there is no roadway lighting provided along the existing SR 63 Corridor.

Signage and Pavement Markings

A detailed signage and pavement marking survey was not conducted as part of this Scoping Study. In general, signage and striping is consistent with ODOT standards and FHWA's Manual on Uniform Traffic Control Devices (MUTCD). However, the condition of MUTCD items is not consistent over the length of the corridor. Poor visibility of pavement striping, for example, has been cited in some ODPS crash reports for SR 63 over the past several years.

Traffic Control

Signalized intersections are found at three locations in the study corridor, west to east:

1) At Miami Valley Gaming site driveway entrance (T-leg north, with protected left turn lane and dedicated right turn lane on SR 63 mainline)
2) At State Route 741 (4-way with protected left turns on SR 63 mainline and SR 741 N)
3) At Neil Armstrong Way/SR 123 North (4-way with protected left turns on SR 63 mainline)

A fourth signalized intersection lies just outside the study corridor to the west, with Gateway Boulevard forming the south leg, and the driveway entrance to Traders World flea market forming the north leg.

Three other public road intersections occur within the corridor, all unsignalized, sign and stop bar control only:

- Union Road South (T-leg south; west terminus of study corridor)[20]
- McClure Road (T-leg south)
- Markey Road (T-leg north)

[20] Local plans are for this intersection to be eliminated by relocating Union Toad south to a tie-in to Gateway Boulevard, and routing Union Road traffic to SR 63 via that 4-way signalized intersection, located 700 feet to the west. Similarly, it is planned that Union Road north (currently stubbed out) will be reconnected to SR 63 on the north leg of the Gateway Boulevard intersection, with the Traders World driveway access incorporated and maintained via that intersection.

Rail Crossings

There is one rail crossing at the west end of the SR 63 Corridor, a skewed at-grade crossing lying just east of and adjacent to Union Road. The Indiana and Ohio Railway operates on this single track line linking Mason and Monroe, and Class I yards beyond. Trains are very infrequent, typically very short and operate at very slow speeds due to track and crossing conditions. The crossing is not gated or lighted, and is marked only by cross-bucks and yield signs. The long term viability of this rail line is unknown.

Clear Zone Obstacles

For speeds and grade/side slope conditions of the existing SR 63 corridor, an obstacle-free zone of at least 40 feet or more from edge of travelled way is desired, and in no case should be less than 30 feet, the minimum clear zone width per ODOT standards. Few locations on the existing corridor provide this clearance: with a total right of way width as narrow as 60 feet, utility poles, mailboxes, headwalls, fences, and trees are as close as 20 feet or less.

Access Management

Access management in the corridor is currently "By Permit" through ODOT, including consideration in the local development process. There is no formal access management plan.

Operational Conditions

Design and Posted Speed

Design speed of the original "modern" facility dating from the 1950's and earlier is unknown. More recent improvements and rehabilitations by ODOT list a Design Speed of 55 MPH on limited plan sets requiring statement of design speed.

Posted speed is 55 MPH, except in step-down sections to 50 MPH at either end of the corridor leading into Lebanon and Monroe incorporated areas.

Free Flow Speed

Field studies conducted in November 2015 confirmed an average free flow speed of approximately 58 MPH in the west segment and 55 MPH in the east segment.

Level of Service

Capacity analysis[21] of the existing facility free-flow segments, based on actual adjusted traffic 24-hour data, vehicle mix, and physical roadway conditions, found the following for controlling peak period conditions:

East of SR 741	Level of Service D (Poor, approaching Unstable)
West of SR 741	Level of Service E (Unstable Flow, approaching Failure)

A key factor in both segments is the extent of no passing zones, coupled with extent of "follow" traffic, largely a function of high percentage of trucks.

Intersection Delay

Delay at the SR 741 signalized intersection was analyzed using HCS software for current conditions. Overall calculated LOS is C/D, with about 29 seconds of average intersection delay, and LOS D on 3 of 4 left turns, for PM peak period traffic using default cycle times. This is generally consistent with field observations, although current controller set up is observed to generate very long queues on the eastbound PM peak approach, with delay extended over multiple cycles. It is evident that, under current most conditions, segment capacity controls overall travel efficiency, and intersection control is currently secondary. This could change under certain development scenarios.

Trip Type and Mode Conflicts

Trip type and vehicular mode are major concerns in the dynamics of operational behavior of the SR 63 Corridor. These factors are discussed in the previous section, **EXISTING TRAFFIC**, and are an important consideration in the identification of best plans for future improvements of the corridor. Truck traffic is the most visible component among numerous and growing trip type and mode conflicts.

Trip type and vehicular mode conflicts are a major issue of consideration in planning future improvements for the SR 63 Corridor

Geometric Conflicts

Geometric conflicts are limited to challenging vertical curve and grade sections, and narrow travelled way and shoulder widths. Some minor side road intersections have radius limitations.

Pedestrian and Non-Motorized Vehicles

These are currently insignificant elements in the corridor, but need to be planned for in any improvement program. The condition of the existing facility and limited accommodation is a major factor.

[21] HCS 2010: Two-Lane Highways Release 6.70, McTrans; analyses by SHA

Agricultural and Related Conflicts

This has historically been a major and looming traffic planning and safety issue: at peak operation, the LCI/WCI complex was generating more than 70 agricultural equipment crossings of SR 63 each day. Ag operations recently have been permanently ceased at the penal institutions. Other farm vehicle activity in the corridor is limited, but does occur, including heavy (and slow) farm-to-market grain trucks during harvest season.

Speed Enforcement

Speed enforcement by motor patrol is not a major presence in the corridor. It is hypothesized that, in large part, there is no safe shoulder area in the system to pull over during enforcement actions.

Emergency Access

Emergency vehicles regularly use SR 63 in responding to calls in the general area and Turtlecreek Township, including responding to crashes on SR 63 itself.

Incident Management

There is no formal incident management support assignment to the corridor. It is noted that most serious/injury crashes shut down or seriously impede the highway for several hours or part of a day due to difficult access and lack of safety shoulder.

Safety

Summary crash information is presented in **Figure A-3** on **Page 26**.

Compiled crash data for the period 2013-2015 is found in **Appendix C**.

Two Safety Integrated Priority Project (SIP) locations are located along the SR 63 Corridor in the study area. The first is located immediately east of Gateway Blvd., outside of the Monroe Corporation line. This is a High Priority Segment. Additionally, a Low Cost Improvement Section is located east of the Markey Rd. Intersection.

Crash Trends

The SR63 Corridor is currently experiencing crash rates at more than twice the statewide average for similar facilities[22]. The average crash rate for the entire 5.4 mile corridor in the 2013-2015 analysis period was 3.75 crashes per Million Vehicle Miles, about 2.2 times the statewide average. Breaking this down further, the rate was 3.20 per MVM west of SR741, and 4.55 per MVM east of SR741. Crash frequency is increasing as traffic volumes increase. This indicates that the facility is approaching its "tipping point", that level where the crash rate increases abruptly due to saturation of the roadway capacity, increased stops and turns, and increased opposing traffic, leaving no margin for driver error. This correlates with a high crash frequency during peak periods. The single largest hour for crash occurrence is the 5 to 6 PM period (12.2%), and more than half of all crashes occur in the noon to 7 PM high travel period.

Crashes are occurring while vehicles are slowing, or stopped in traffic. Rear-end collisions account for 49% of crashes, with "following too closely/failure to provide assured clear distance" also cited in 49% of crashes. Rear end crashes are often the result of unexpected reductions in speed or sight distance.

Geometry plays a role in crash location. Approximately 200 feet of vertical relief occurs along the study corridor. One 830-foot stretch of roadway exhibits grades in excess of 7%. About 31% of all crashes in the study area occur on horizontally straight, vertical grade conditions. Ten crashes occurred at log points 4.12 – 4.22, a sag curve with several drives and limited sight distance.

[22] The 2013 Ohio Statewide average for 2-lane undivided rural highways was 1.68/MVM

After rear end collisions, fixed object "run off the road" crashes, account for the second highest crash frequency type at 17%. These crashes are often the result of trying to avoid a rear-end collision, or loss of control.

Following rear-end and fixed object crashes, angle crashes and collisions with animals are next most common, accounting for 7 and 6% of all reported crashes, respectively. Animal crashes often go unreported if there is no significant damage or injury, so actual frequency is unknown.

While 77% of crashes are described as "not at an intersection", a significant number occurred at several high frequency locations proximal to problematic access points: in the MVG Gaming area, approaching the SR 741 intersection, in high driveway count areas east of SR 741, and in the high access point transition zone to the City of Lebanon. These crash concentrations are likely result of introduction of unexpected maneuvers, including slowing and stopping near access points.

Crashes with injuries or fatalities generally correlate to more severe accidents of greater concern in safety planning. About 26% of all accidents in the SR 63 corridor have injuries (including fatalities). The distribution and clustering of these injury/fatality accidents was examined separately, with the general findings illustrated on **Figure A-3** on **Page 26**. The red ellipses on Figure A-3 indicate where concentrations of the most severe and injury-causing crashes have been occurring, out of proportion to the rest of the corridor.

Contributing Factors and Emerging Issues

Driver Expectations – SR63 has historically functioned as a rural arterial connecting the cities of Lebanon and Monroe. Because of its mostly rural setting and character, the roadway does not exhibit the cues that motorists associate with the need for caution. Narrow shoulders, open ditches, utility poles, adjacent visual encroachments, unpredictable driveways and access points, and confusing lane transitions combine to create a "busy" cognitive condition for motorists, especially those not familiar with the route.

Trip Type and Modal Conflicts – Changes in user mix and and traffic volumes, including the introduction of a significant fraction of heavy truck trips and increased commuter and convenience trips are still travelling on the original two-lane facility, resulting in growing conflicts in travel speed and driver behavior among vehicles.

Access Management – A number of problematic access points, some exacerbated by vertical curve and sight distance conditions exist along the route. Legacy residential drives, institutional entrances with increased ingress/egress volumes, slow moving farm and maintenance vehicles, along with the introduction of drivers not familiar with the area, have amplified the importance of access improvements.

Roadway Geometric Characteristics – Although the roadway is extremely straight with very few horizontal curves, its vertical geometry – significant ups and downs with associated sight distance problems – contributes to unpredictable speeds and driver behavior.

Potential Countermeasures

The following counter-measures could reduce impacts of crashes regardless of long-range strategies or short-term projects selected:

Widen Shoulders – Widening shoulders could reduce the impact of fixed object accidents, as well as reduce road closures due to accidents.

Widen Substandard Lanes – Lane widths in some sections is well less than the standard and driver-expected 12 feet.

Flatten Vertical Curves – Significant sight and stopping distance problems associated with the vertical profile of the roadway exist.

Protect Turning Movements – Alternative intersection designs could reduce unexpected movements resulting from unprotected access points.

Traffic Calming –Rumble strips could reduce speeds on vertical curves.

Access Management – Reducing the number of conflict points should be part of a long-range sustainable solution.

Enhanced Warning Signage – Animals generally develop repeatable habits. Next generation warning signs could identify concentrated crossing zones.

Way finding – Clear directions reduce driver distraction and improve safety.

WARREN COUNTY
Transportation Improvement District

JULY 2016

RL RECORD

STATE ROUTE 63 SCOPING STUDY

SAFETY CONSIDERATIONS

A-3

FUTURE TRAFFIC

A 2040 planning horizon year was identified by the study team to be the basis of assessment of future traffic conditions for the corridor.

Macroscale Corridor Future Traffic

Macroscale traffic modeling forecasts from the Ohio-Kentucky-Indiana Regional Council of Governments were obtained and examined. Comparative trend-based forecasts from the Ohio Department of Transportation were also obtained and reviewed.

The ODOT forecast, using agency SHIFT[23] software, was used in this study[24] to estimate baseline traffic growth in the SR 63 corridor.

Pertinent information related to the traffic projections are found in **Appendix E**, and summarized in **Figure A-4** on **Page 28**. On Figure A-4, the red band indicating "Good" Level of Service in the "B" to "C" range is based on Highway Capacity Manual evaluation assuming existing roadway and traffic mix conditions (e.g. lane width, shoulder, profile grade, access, heavy truck percentage) for non-intersection control segments.

Internal Corridor Future Traffic

The existing SR 63 corridor produces relatively little "internal" traffic in its mostly rural condition, compared to overall traffic volumes on SR 63. An estimated 90% of the AADT on the road today is generated external to the corridor.

This will change as the corridor develops. Under different planning and development scenarios, the ratio of internal trip fraction could grow to 50% or even more of total volume, even as baseline[25] traffic growth continues upward.

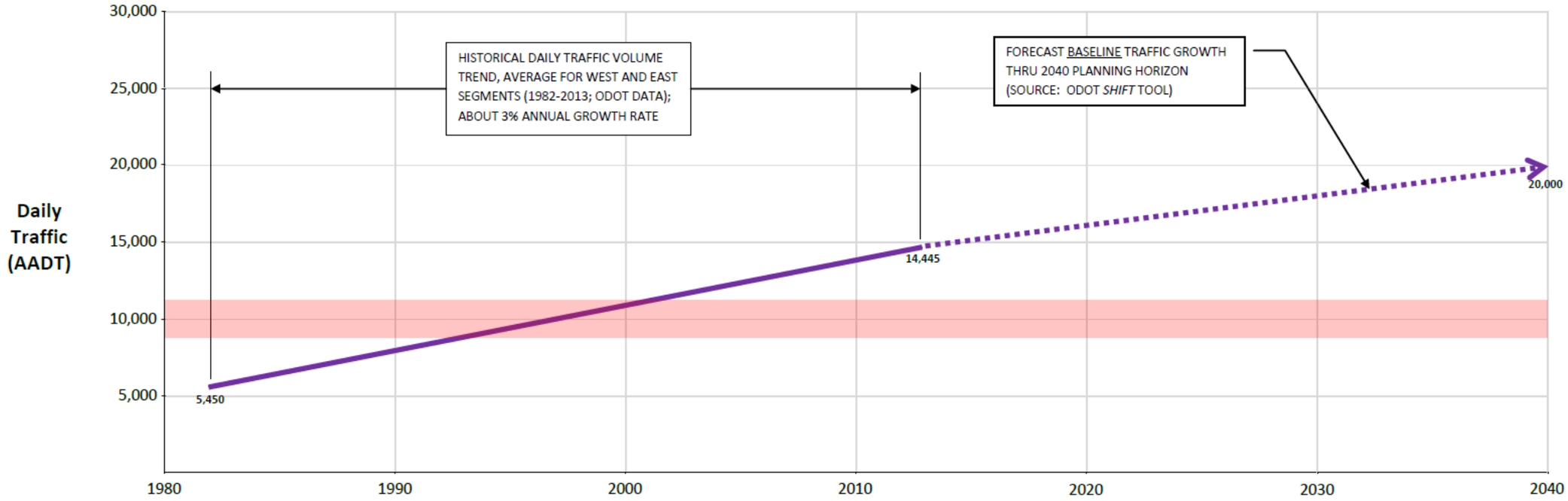
Growth in the current internal traffic (the 10%±) in the corridor is accounted for in the forecasts provided by the ODOT SHIFT output. Other traffic from major new development needs to be separately developed.

Planning-level Composite Scenarios and Volumes

In separate examinations, the study team developed and evaluated, on a preliminary basis, the traffic forecasts and impacts from various development scenarios evolving in the corridor. These are not included in the Future Traffic discussion at this time, pending updated development proposal information.

The Baseline traffic forecast provided in this Scoping Study gives a basis of assessment of change and needed transportation capacity accommodations stemming from major new development.

[23] Simplified Highway Forecasting Tool.
[24] The OKI output did not correlate well with existing traffic conditions.
[25] Baseline traffic is the mostly external traffic that uses the corridor today (does not include major new development).



NOTE: BASELINE GROWTH ONLY REFLECTS BACKGROUND TRAFFIC INCREASES WITH ORIGINS AND DESTINATIONS MOSTLY EXTERNAL TO THE SR 63 CORRIDOR; SPECIFIC IN-CORRIDOR DEVELOPMENT AND RELATED TRAFFIC IMPACT ARE NOT ILLUSTRATED OR SPECIFICALLY ACCOUNTED FOR IN THE ODOT *SHIFT* TOOL.

WARREN COUNTY
Transportation Improvement District

JULY 2016

RL RECORD

STATE ROUTE 63 SCOPING STUDY

FUTURE TRAFFIC FORECAST

A-4

ENVIRONMENTAL CONTEXT

A preliminary assessment or environmental features, conditions and constraints – or *environmental context* - was completed to give scoping guidance to the development and consideration of detailed alternatives for near-term and long-term improvements in the SR 63 corridor.

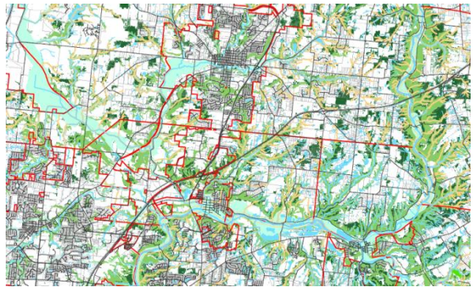
The transportation planning work undertaken as part of the Scoping Study concluded that future improvements for SR 63 will focus on the existing roadway alignment and right-of-way, closely following and making maximum use of the existing right-of-way corridor. Therefore, for the purpose of establishing Environmental Context, an area with a width of not less than 1000 feet either side of the existing SR 63 centerline, and running the approximate 5½ mile length of the corridor between Monroe and Lebanon, was used as a study area guide to compile and consider environmental features, conditions and constraints of potential importance.

The environmental features, conditions and constraints identified in this preliminary assessment are summarized below and on **Plates A-5 and A-6** beginning on **Page 30**.

Natural Systems

Natural systems include physical and biological components of that shape and characterize the non-manmade parts of the environment. There are no natural systems in the SR 63 corridor today that have not been influenced or modified by prior human action or activity. Nonetheless, natural systems are an important part of Environmental Context, both in service value to ecological communities, and in intrinsic value to the human environment.

Citizens, leaders and stakeholders linked to the SR 63 corridor recognize these natural systems as important parts of the community. This is reflected in various aspects the Warren County Regional Planning Commission's adopted plans and strategies for the area, and also incorporated in guidance, policy and actions from local agencies ranging from soil and water conservation to storm water management to public water supply to parks and natural areas, as well as the county engineer's office.



The Warren County community has embraced identifying and enhancing priority environmental features and natural systems (map source: WCRPC)

Landscape, Physiography and Soils

The SR 63 Corridor is located in the glacial Till Plains section of the Central Lowlands physiographic province, an area characterized by a soil surface of deep loamy till with zones of moraine glacial deposits, and incised by large and small stream valleys filled with glacial outwash to varying extents. These conditions are evident in the rolling landscape along the corridor today, historically dominated by agricultural activity on the rich surface soils. Buried valleys are common in the Till Plains, filled with glacial outwash and comprising current day groundwater aquifers, as found today in the westernmost part of the SR 63 corridor.

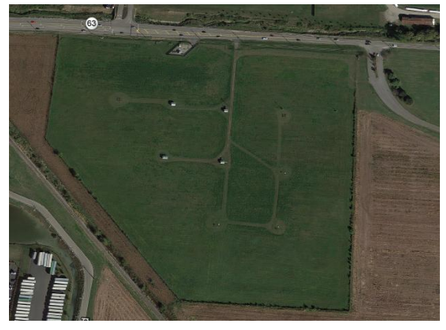
Streams that traverse the SR 63 corridor are cut into cobble and gravel outwash in broad post-glacial valleys.

One of the most evident manifestations of the physiographic history of the corridor is the varied surface landscape that contributes to the notable aesthetic character of the area.

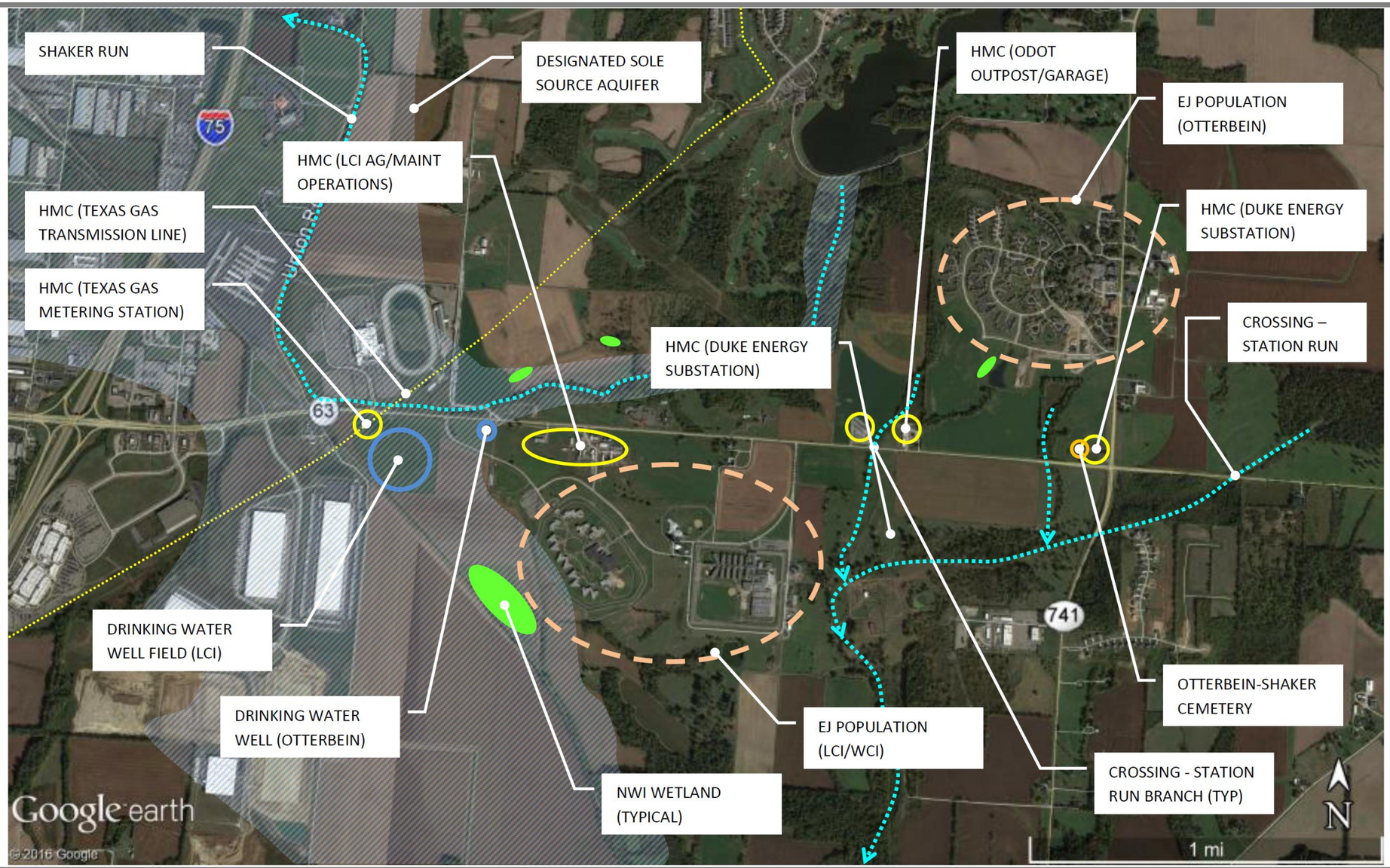
Aquifers and Groundwater

Important groundwater resources occur in parts of the SR 63 corridor. At the west end of the corridor, a significant lens of the Great Miami Buried Valley Aquifer loops into flat terrace lands east of I-75. A large well field providing drinking water to the Warren Correctional Institute, as well as two wells serving the Otterbein campus, are found along the south side of existing SR 63 in this area. Yields of 1000 gallons per minute in Sand-Gravel formations at depths of about 100 feet are reported (ODNR, 1986).

A narrow finger of the GMBVA loops to the south and extends into the east end of the SR 63 corridor in the Markey Road/City of Lebanon area. Wells in this Sand-Gravel zone are shallower (75 feet) and typically yield 400 gallons per minute.



A drinking water well field serving the Warren County Correctional Institute is located along existing SR 63 at the west end of the corridor.



NOT SHOWN THIS MAP: T&E SPECIES, PRIME FARMLAND, WATERSHEDS, FLOODPLAINS

WARREN COUNTY
Transportation Improvement District

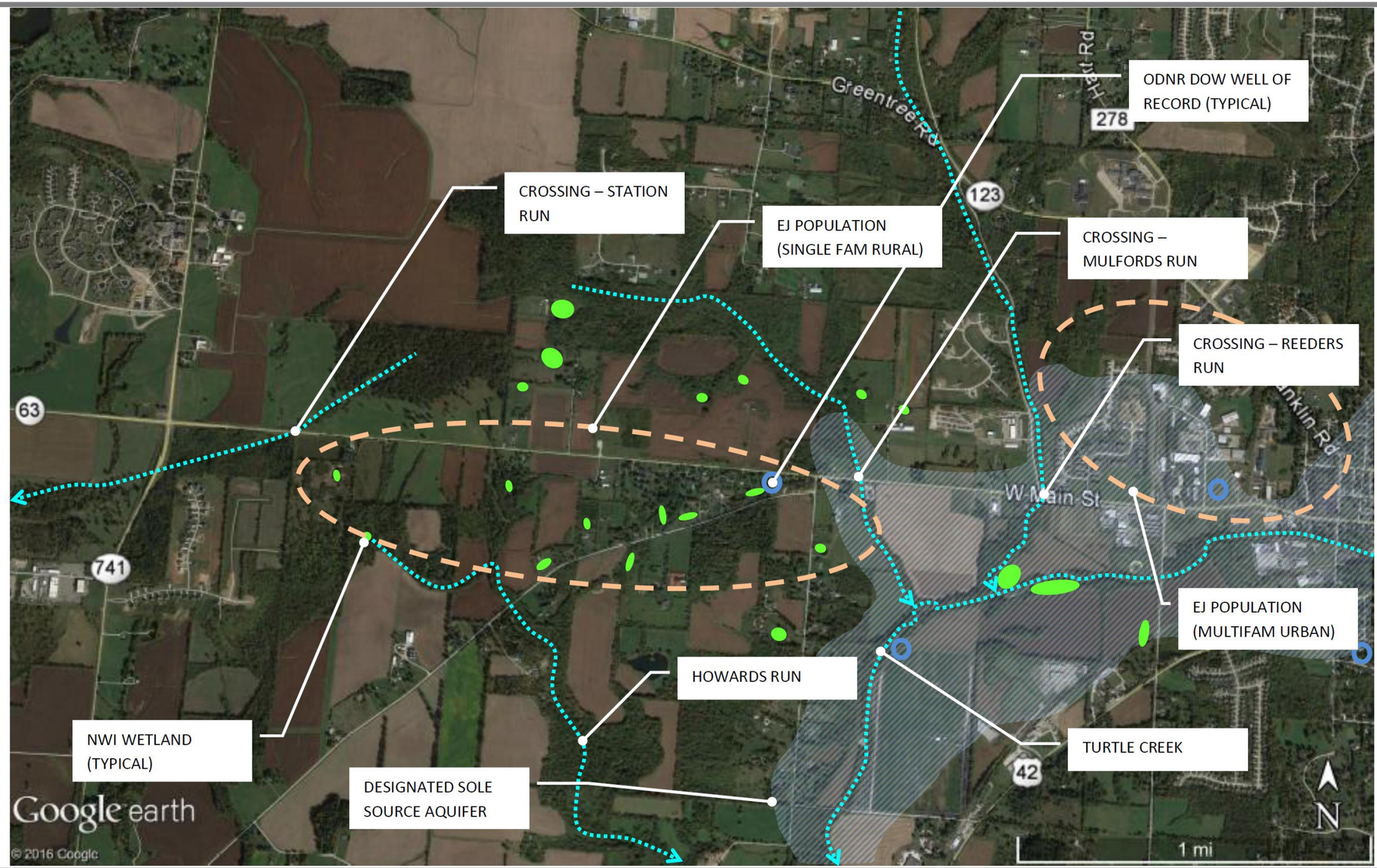
JUNE 2016

RL RECORD

STATE ROUTE 63 SCOPING STUDY

ENVIRONMENTAL CONSIDERATIONS AND CONSTRAINTS

A-5a



NOT SHOWN THIS MAP: T&E SPECIES, PRIME FARMLAND, WATERSHEDS, FLOODPLAINS

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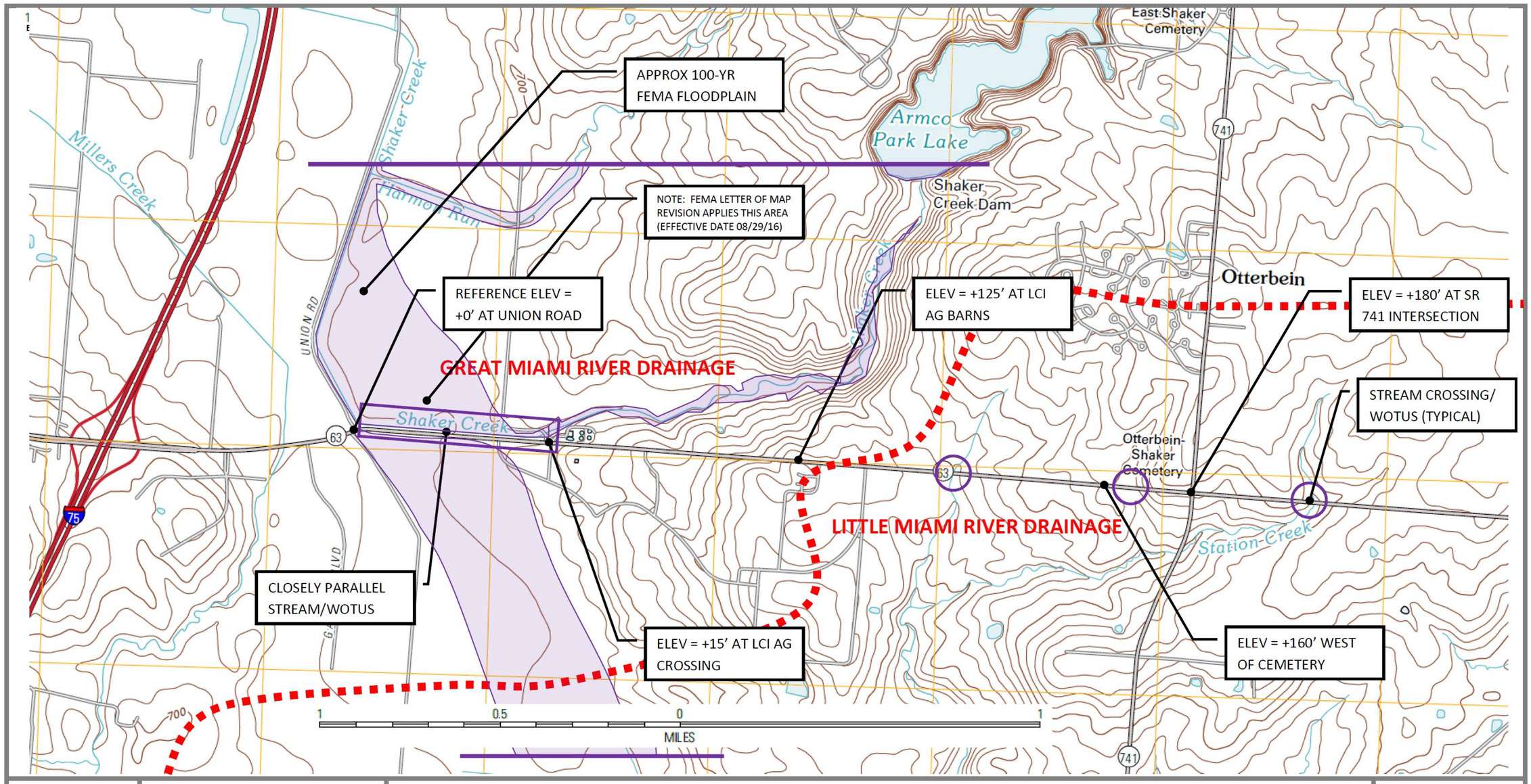
RL RECORD

STATE ROUTE 63 SCOPING STUDY

ENVIRONMENTAL CONSIDERATIONS AND CONSTRAINTS

A-5b



WARREN COUNTY
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JUNE 2016

RL RECORD

STATE ROUTE 63 SCOPING STUDY

ENVIRONMENTAL CONSIDERATIONS AND CONSTRAINTS - TOPO

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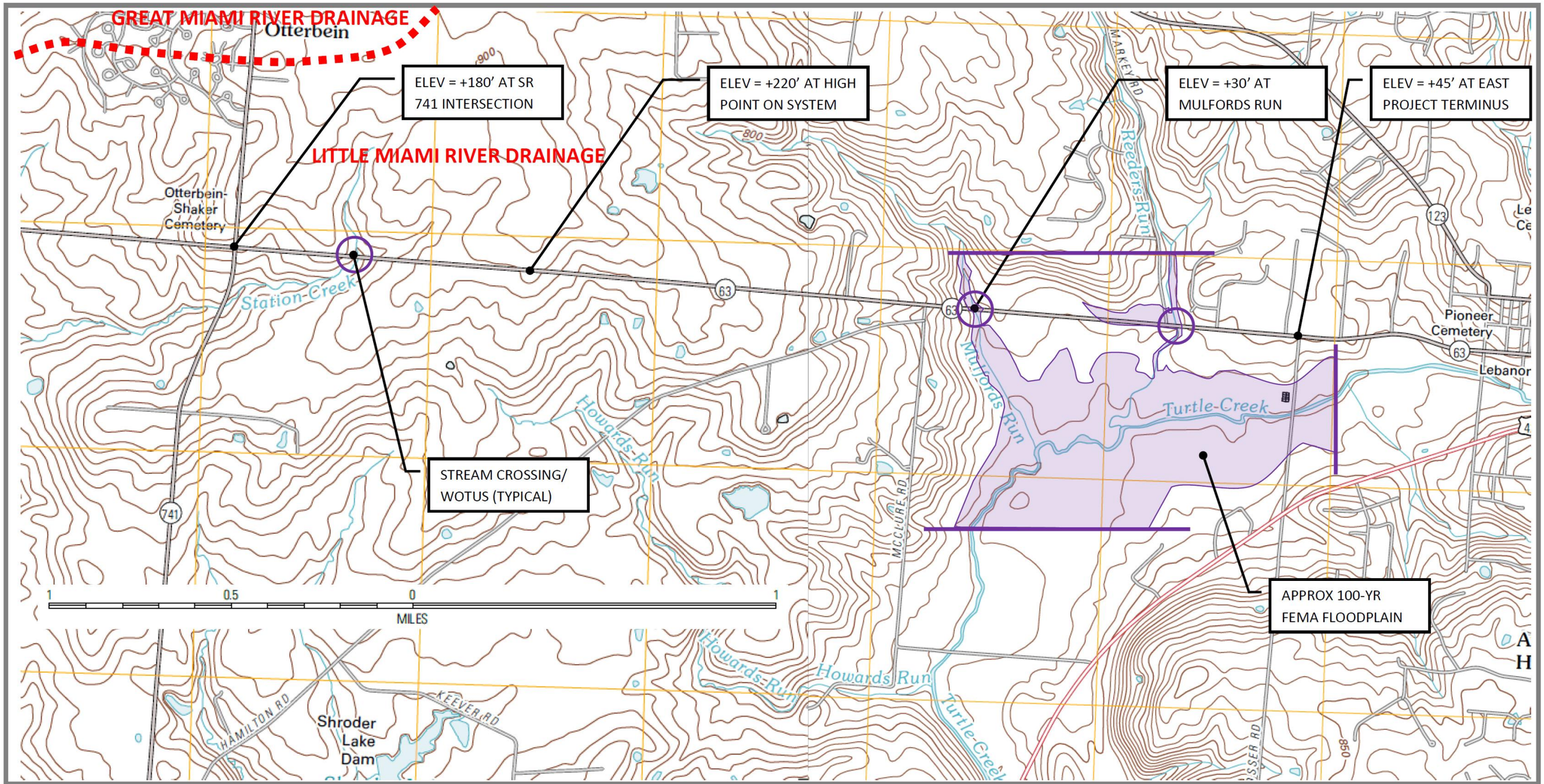


WARREN COUNTY
Transportation Improvement District

JUNE 2016

RL RECORD

STATE ROUTE 63 SCOPING STUDY

ENVIRONMENTAL CONSIDERATIONS AND CONSTRAINTS - TOPO

A-6b

All of the aquifer and well field areas require special consideration and protection in subsequent stages of SR 63 corridor project development[26].

Watersheds, Streams and Wetlands

The SR63 corridor straddles the Great Miami and Little Miami river watershed. The drainage breakpoint is about one mile west of the SR 741 intersection.

Reeders Run is the largest stream feature crossing the SR corridor, part of the Little Miami River watershed

There are five Waters of the U.S. stream crossings along the existing roadway corridor, all within the Little Miami drainage. Reeders Run and Mulfords Run are the largest features, both direct tributaries to Turtle Creek in the east end of the corridor and part of the Little Miami River watershed. Reeders Run is located just east of Markey Road, and Mulfords Run is located east of McClure Road at SR 63. To the west, to the east and west of SR 741, there are three smaller crossings of branches of Station Creek, a tributary to Little Muddy Creek in the Turtle Creek and Little Miami watersheds.

There are no direct stream crossings of the corridor in the Great Miami watershed portion of the study area. Millers Run crosses the corridor to the west within the City of Monroe. But at the western terminus of the study corridor, a ½ mile segment of Shaker Run closely parallels the existing roadway corridor. Although this is not a natural stream channel, having been relocated and channelized to a straight ditch condition in the 1800's to improve drainage of Shaker community land holdings, it is still a significant constraint or consideration to future roadway improvements.

Wetlands occur in isolated locations along the surrounding lands of the SR 63, but none of significance identified in the National Wetland Inventory occur in the lands abutting the existing SR 63 corridor right of way. There are some minor, unmapped potential wetland features that occur along some drainage features.

Surface water features in the SR 63 corridor are important but not limiting elements. Nonetheless, special planning and design accommodation is required to obtain a best long-term outcome consistent with local plans, including disposition and management of highway runoff.

Designated Floodplain

A broad swath of FEMA-designated 100-year floodplain, associated with Shaker Run creek, is found along either side of existing SR 63 at the western end of the corridor. Near the intersection with Union Road, the 100-year flood elevation slightly exceeds the SR 63 pavement elevation. The hydraulic and hydrologic conditions in this zone are complex, owing to past stream modifications, low hydraulic gradient, flow restrictions and changes in land cover.

There are narrow and limited designated floodplain zones in the eastern part of the corridor at Mulfords Run and Reeders Run.

Looking west from Miami Valley Gaming entrance along Shaker Run and, to left, existing SR 63. Floodplain extends from either side of roadway, due to Shaker Run and backwater conditions from Millers Creek to west.

As for surface water features, floodplains are important in the corridor, and require special planning and design accommodation to obtain a workable solution.

Terrestrial Habitats

There are no regionally unique terrestrial ecological habitats within and along the corridor. Most lands have been modified, since early settlement clearing in the 18th century, from long periods of agricultural, institutional and, more recently, residential land management. Today, the highest ecological value terrestrial habitats found in the corridor are those wooded/mixed vegetation zones and corridors associated with streams and drainage features. Value increases further where connection among habitat zones and types occurs.

This wooded/mixed growth terrestrial habitat occurs along the headwaters of Station Creek.

[26] Detailed well logs and records have not been checked as part of this study.

Terrestrial habitats in the corridor have value in association with other elements, including threatened and endangered species. Continuity and connectedness of habitat, where prudent, should be considered in planning and design of future transportation improvements in the SR 63 corridor.

Threatened and Endangered Species

Six plant and animal species are Federally listed as Threatened or Endangered for Warren County. Indiana Bat (Endangered), Northern Long-eared Bat (Threatened), Rayed Bean mussel (Endangered), and Running Buffalo Clover (Endangered) have habitat and occurrence potential in the corridor area, and will required follow up surveys in subsequent stages of work. Bald Eagle (Special Concern) and Eastern Massasauga rattlesnake (Proposed Threatened) do not have suitable habitat in the corridor and little potential for occurrence.

Designated Natural Areas

There are no designated public or private natural areas or preserves with special habitat or wildlife protection management operations in the SR 63 corridor area or environs.

Built Environment

Communities and Developed Areas

The SR 63 Corridor extends between two significant communities and population/development centers: the City of Lebanon on the east, and the City of Monroe on the west. Lebanon is closely coupled to the SR 63 corridor: the existing SR 63 route terminates in the southern part of the Lebanon central business district, and junctions there to SR 123 (east) and US 42 (south) to routing linkage to Interstate 71. Monroe is also closely linked to SR 63: the route[27] slips along the north edge of the historical center of Monroe on the west side of I-75, and on the east side of I-75, SR 63 bisects more recently annexed areas that have been developed to warehouse, freeway services, and regional retail uses. The SR-63 interchange with I-75, recently expanded and upgraded by ODOT to an efficient Single-Point Urban Interchange design type, is an important and attractive feature to development and commerce considerations.

In conventional terms, the corridor itself is rural and lightly populated in its current state of development, with pockets of low-density suburban and rural housing along existing SR 63.

However, more substantial residential development is found in recent and currently underway PUD-type subdivisions extending from the Lebanon core, and in lands lying visually removed from the main SR 63 spine. More of this type of development is in the pipeline or planned in the SR 63 corridor travelshed.

Beyond conventional subdivision development, there are three pockets of unconventional development that are significant to current and future travel demand in the SR 63 corridor. From west to east along the corridor, they are as follows:

1. Miami Valley Gaming - This is a "racino" gaming and horse racing facility developed to its current state in 2013. Miami Valley Gaming has a significant regional draw as a recreational attraction. The MVG facility has parking for 3,200 automobiles and 23 buses on its 120 acre site along the north side of existing SR 63.

   The facility has 1,600 gaming machines, six restaurants, and racing grandstanding seating for 3,000. Although open for gaming 24 hours, peak travel activity on most dates is generally between 5 and 9 PM.

The Miami Valley Gaming facility was developed in 2013 at the west end of the study corridor (image: GoogleEarth)

2. Lebanon and Warren Correctional Institutions – The two facilities on the south side of SR 63 share a campus and service and access driveway, and are owned and operated by the State of Ohio through its Department of Rehabilitation and Correction. The LCI[28] was opened in 1960 as close-security facility, with a current inmate population of 2,365 and a staff population of 511.

[27] In this area, as a four-lane divided highway with grass median and full shoulders.

[28] The official ODRC acronym for the Lebanon Correctional Institute is LeCI; however, in the local community it is referred to as "LCI" and that version is used throughout this document.

The entire land area of the original LCI site totals 1,900 acres, including significant agricultural production fields and facilities to serve the inmate population. The WCI opened in 1989 as a medium security transition facility on 45 acres within the overall site, with an inmate population of 1,328 and a staff population of 376. Virtually all staff commute in and out of the campus daily, and both facilities have significant daily visitors and service deliveries.

The combined Lebanon and Warren Correctional Institutions have a significant inmate, staff and day-visitor populations in the SR 63 corridor (image: McClatchy)

3. Otterbein Lebanon – This is a senior lifestyle community situated on 1,400 acres and affiliated with the United Methodist Church, with access off of SR 741 on the north side of the SR 63 corridor. The Otterbein campus currently includes 550 residences, and additional care and nursing accommodations; current on-campus population is estimated at about 1,000 resident and 300 staff. The campus has extensive amenities, and driving and non-driving residents are accommodated thru garage, surface parking and shuttle bus facilities and services. Otterbein Lebanon has major development expansion plans underway ("Union Village") which would provide up to 5,000 new homes and up to 300,000 square feet of commercial services.

The Otterbein Lebanon campus is slated for major expansion and population increase.

At either end of the corridor, both Lebanon (population 21,000, with business, government and retail attractions) and Monroe (population 13,000, with trucking/logistics, outlet and vendor retail, and Interstate 75 connection attractions) both are growing, vital cities that generate significant travel to and though the SR 63 corridor.

All of these components of communities and development are significant to transportation needs and context of improvement planning, design and delivery for the SR 63 corridor.

Land Use Plans and Policies

The Warren County Regional Planning Commission has developed extensive land planning examinations for the future of the areas contiguous to the SR 63 Corridor. Three WCRPC documents of record have specific application to the SR 63 Corridor relative to land use plans and polices: 1) The *Warren County Comprehensive Plan* and 2030 Land Use Plan, which examines the whole of the county, 2) the *Gateway Plan West*, which deals specifically with the western third of the county along the I-75 boundary, which includes the western half of the SR 63 Corridor, and 3) site-specific plans and approvals dealing with the planned major development and expansion at Otterbein Lebanon ("Union Village").

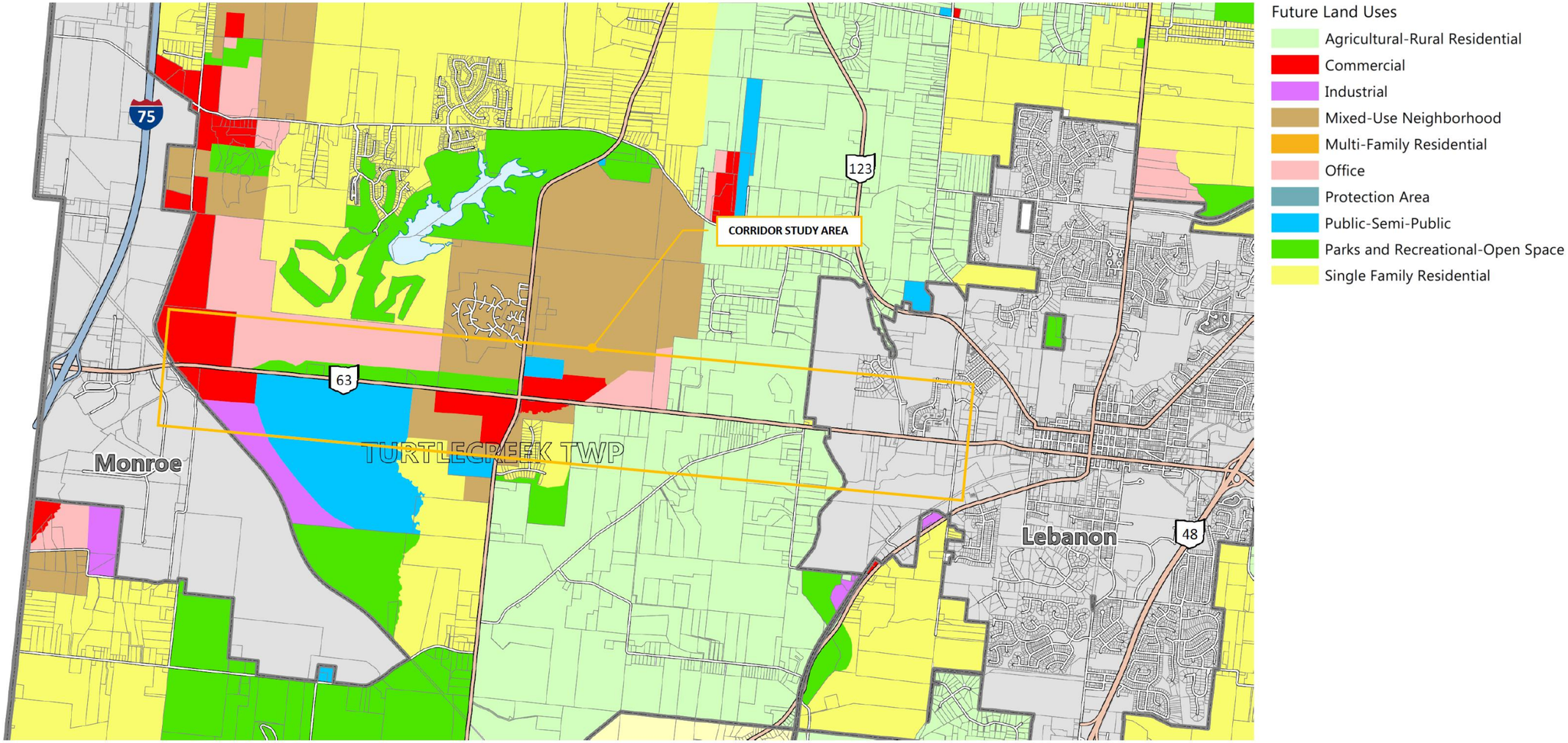
The 2030 Land Use Plan from the county's adopted comprehensive plan, shown for the area in the vicinity of the SR 63 Corridor, is found on **Figure A-7** on the following page. Pertinent portions of other approved and adopted plans are provided in **Appendix D**.

Much of the adopted plans are framed in the form of goals and recommendations. These have been reviewed in the process of this Scoping Study, and appropriate elements to support and facilitate the adopted plan have been incorporated in the strategy evaluation criteria and Purpose and Need portions of the Study.

Key elements or representations of adopted plans with significance to the SR Corridor are as follows:

- In terms of future land use change, the SR 63 Corridor is expected to have as much or more change and development activity as any place in the county.
- Preservation and enhancement of greenspace, achieving environmental benefits, improved stormwater outcomes, and aesthetic considerations in transportation are important themes.
- The Gateway West part of the county will undergo tremendous change, driven by a combination of available lands and market access through transportation, and the condition and quality of the SR 63 corridor is a key part of that change.
- Approved plans for the Union Village development alone will have a major impact on nature of the SR 63 corridor and operational behavior of area roadways.

In summary, it is evident that the future of the SR 63 corridor is targeted for major change relative to land use and development, with corresponding major changes in travel demand, traffic volumes and transportation needs.



BASEMAP SOURCE: Warren County Regional Planning, 2015

WARREN COUNTY
Transportation Improvement District

JULY 2016

RL RECORD

STATE ROUTE 63 SCOPING STUDY

ADOPTED 2030 LAND USE PLAN

A-7

Land Forms, Land Modification and Viewsheds

On the macroscale, the land forms of the SR 63 corridor are largely unchanged since early settlement days. The rolling landscape created by glacial activity and subsequent surface drainage has mostly been sustained by agricultural use. Minor site modification and grading has occurred on residential parcels, farmsteads, and on institutional sites (Otterbein, LCI/WCI). The existing SR 63 roadway profile offers some relief from the wagon road profile established in the 1800's, but it is much closer to the original than different. Modern-era road shoulder cut and fill zones are evident, but are minor visual elements compared to the original landscape. At most locations, owing to narrow right of way and close conformity with terrain, the view of the existing road is limited and not at all dominant except within 100-300 feet of the facility, depending on location.

The view from the existing roadway is varied, undulating and of visual interest, and in two locations offers notable vistas, or viewsheds; all of this contributes to a positive aesthetic character. Eastbound, motorists have a long view of the Turtle Creek valley and the City of Lebanon at about MP 4 (about 200 feet of relief). Westbound, west of MP 3, a long view toward Monroe opens up descending into the broad Great Miami valley (about 160 feet of relief).

For the purposes of scoping for future transportation improvements, consideration should be given to the issues of view of the roadway corridor, and from the roadway corridor.

Environmental Justice

Ohio DOT projects must consider the risk of disproportionate impacts to minority and low income populations (Environmental Justice populations). For the SR 63 corridor, distribution and occurrence of EJ populations is somewhat unconventional, due to the presence of major incarceration facility and retirement community elements.

Based on initial review of USEPA data, no significant minority populations occur in the corridor except at the LCI/WCI correctional institution campus; it may be inferred that additional minority population use, in terms of visits to the campus, also are part of the EJ picture here, and will need to be accounted for in project development.

Low income population concentrations are found associated with the Otterbein Lebanon retirement community campus. Other areas of low income are the rural density area along the south side of the corridor east of SR 741, and on the north side of the corridor east of Markey Road (at the east end of the corridor). Low income data is not available for parts of the corridor, including the LCI/WCI area.

Among other population considerations, significant concentrations in the corridor are as follows:

- Elderly (Over Age 64[29]): Otterbein Lebanon area; rural area south side of corridor
- Less than High School Education: LCI/WCI area
- Linguistically Isolated (non-English speaking): no concentrations in corridor

Historic Resources

Based on initial review of Ohio Historic Preservation Office records, there are no features within the SR 63 corridor that are listed on the National Register of Historic Places. There are other OHPO inventory features that occur in and along the corridor to be considered in the scope of subsequent stages of work:

- Eight prior-located archaeological sites (none are NR-listed) in scattered locations along some drainage features and some upland areas, including four on the south side of SR 63 at the SR 741 intersection (two either side of SR 741), and
- An Ohio Genealogical Society-listed cemetery in NW quadrant of SR 63/SR 741 intersection ("Otterbein-Shaker Cemetery").

The Otterbein-Shaker Cemetery is an active cemetery operated by the Otterbein Lebanon Retirement Community. Otterbein is the successor to the large property holdings of the original Union Village Shaker community dating from the 1800's. This cemetery is located in the general vicinity of one of the original Shaker burial grounds, which is thought to have spanned either side of Hamilton-Lebanon Road (today's SR 63) west of current day SR 741.

The Otterbein-Shaker Cemetery, with grave markers visible NW of the SR 741 intersection, is an important constraint in the SR 63 corridor. Other cultural resource features occur, or may occur, in this intersection area.

The Shakers typically did not provide markers on individual grave sites; as such, the gravestones present in the Otterbein-Shaker Cemetery today mark the burial places of individuals who died in 1916 or later.

[29] Federal nomenclature; infers persons 65 and older.

The intersection of current day SR 63 and SR 741 has had known historical and prehistoric activity. Archeological surveys completed by ODOT along the south side of SR 63 (for a lane widening at the intersection) found evidence of prehistoric use of this high ground area at four locations. The northeast quadrant of the intersection was the site of a cluster of Shaker community buildings known to be extant in 1867 ("South Family" buildings). This same quadrant (or possibly northwest) is thought to be the original site of Beedle's Station, named for the first Warren County settlement blockhouse built in 1795.

All of this requires examination for occurrence and significance in subsequent stages of work for the SR 63 corridor.

Parks and Recreation Areas

There are no public parks or recreation areas in and along the SR 63 Corridor.
Warren County's Armco Park is a major park facility north of the corridor on SR 741. This is a 311 acre complex with varied active sports and passive recreation/greenspace provisions, and draws visitors from a large area. It is estimated that more than 100,000 citizens visit the park annually, with peak days seeing nearly 1,000 visitors[30]. Most of these visitors use the SR 63 corridor to access Armco Park.

Prime Farmland

Much of the rural land in and extending from the SR 63 Corridor is in agricultural use, including row crops, grains, beef and dairy cattle, hay, and fallow lands. The LCI/WCI campus has historically been the dominant single ag operator in the corridor, farming lands totaling more than 1,000 acres both north and south of existing SR 63 to produce foods for the prison populations[31].

The majority of ag lands along the SR 63 corridor are classified as Prime Farmland by the USDA. A preliminary evaluation of approximately 1,000 acres along and abutting the SR 63 Corridor found that about 84% of all soil mapping units in that area are classified as Prime Farmland, exclusive of past modification and current non-ag use considerations.

[30] Warren County Park District, 2016.
[31] In a recent operational and facilities change, the prison ag operations have been ceased and much of the institution-owned production lands sold off. Some ag operation is expected to continue in the near-term under land rent agreements to local farmers.

Further consideration of the relationship of transportation improvements to prime farmland is an important scoping item for project development.

Air Quality Considerations

Primary air quality considerations for the SR 63 Corridor are transportation relationships to ozone (internal combustion engine sources) and fine particulate matter (diesel exhaust sources).

The SR 63 Corridor and Warren County are part of the OKI Region nine county marginal nonattainment area for ozone designated by USEPA in May 2012, pursuant to provisions of the Clean Air Act Amendments 1990, under the 2008 ozone standard. Probable capacity improvement actions are included in OKI's air quality-conforming long range transportation plan, so ozone management implications have been accounted for in conforming with USEPA requirements.

In 2011, USEPA found the OKI region to be in attainment of the annual fine particulate (PM2.5) standard, so particulates are not a primary consideration. However, if future improvements in the SR 63 corridor include new alignment options, particulate impacts may require analysis and consideration.

Noise Considerations

Traffic noise is an important consideration in transportation facilities planning. There are few noise-sensitive receptors along the SR 63 Corridor. Residential receptors are mostly sparse and scattered, or distant, from existing traffic noise sources[32]. Some physical shielding (from grade differences and terrain) occurs, and there are no known non-residential noise sensitive sites or uses.

Future roadway system improvements in the SR 63 corridor will likely require traffic noise analysis. While it not likely that extensive noise abatement in the form of sound barrier walls will be warranted or feasible, they could be required at limited locations under certain conditions. In any case, it is recommended that future improvements for the SR 63 corridor consider proactive noise management provisions, including pavement design[33], profile/earthwork[34], and vegetation/soil profile[35] considerations.

[32] The most significant area is a linear cluster of 10 homes fronting the south side of existing SR 63 west of McClure Road.
[33] Minimization of tire noise, particularly from heavy trucks.
[34] Maximize noise shielding and energy absorption for future uses.

Hazardous Materials

There are no known major hazardous materials or contaminated sites in the SR 63 Corridor. However, there are several locations that will require at least screening-level assessment for any future major roadway improvements to ensure that no unreasonable risks to current or future transportation corridor right-of-way are present (listed west to east):

- Rail grade crossing near Union Road,
- Texas Gas pipeline crossing and metering station,
- Ag operations buildings and ASTs (and possible USTs) and former wastewater plant at LCI,
- Duke Energy substation, and
- ODOT Warren County maintenance garage and ASTs.

None of these sites are expected to pose major problems in improvement project development, based on corridor windshield survey.

Public and Private Utilities

Significant utilities in the SR 63 Corridor fall into six categories:

- Telecom and related,
- Electric power,
- Public water and sewer,
- Private water,
- Natural gas, and
- Interstate gas transmission.

Overhead telecom is provided by CenturyLink and AT&T Ohio vendors mostly piggybacked to power distribution poles.

Overhead electrical power transmission and distribution is provided by Duke Energy Ohio. A Duke substation is located on the north side of SR 63 west of SR 741. The entire SR 63 corridor has power/telecom poles on at least one side of the ROW; an estimated 70% of the total corridor has poles on both sides, with a number of overhead cross-over wiring leads.

Public water and sewer service in the SR 63 Corridor is provided by Warren County Water and Sewer Department, the City of Lebanon, and the City of Monroe. Distribution and coverage details have not been assessed as part of this study.

Private water systems associated with the LCI/WCI and Otterbein facilities are found along the corridor. The Lebanon Correctional Institute developed a well field just west of the LCI/WCI campus and south of existing SR 63. Nine producing wells in rotation provide all the drinking and process water for the prison operations through a local transmission and distribution network. A separate location with two wells produces drinking and process water for the Otterbein Lebanon campus, piped about 1½ miles to the northeast via a local transmission and distribution network. These well production areas require special attention for protection in development of transportation improvements in the SR 63 corridor.

Two wells in a compact array (clump of trees, left) produce drinking water for the Otterbein Lebanon campus 1½ miles to the northeast (looking west on SR 63; image: GoogleEarth)

Natural gas distribution in the SR 63 corridor area is provided by Columbia Gas of Ohio, Duke Energy Ohio, and Knox Energy Cooperative Association. Knox supplies gas to two major users of natural gas, The MVG Gaming facility, and the WCI/LCI campus, via a service connection direct tap to the Texas Gas pipeline that traverses the corridor; related underground distribution piping is found in, along and crossing the SR 63 corridor.

Natural gas transmission facilities of significance are found at one location in the SR 63 Corridor. A 30-inch high pressure interstate gas transmission line (Texas Gas) crosses the corridor at a skew angle, traversing part of the MVG property and the LCI well field. The origin of the line dates from World War 2 when it was built to transfer ship bunker oil from Texas oilfields and refineries to east coast shipyards; today it has been converted to carry natural gas. The transmission line includes a metering and valving station, as well as a local service tap (Knox Energy), in a small fenced but un-barriered site just south of the existing SR 63 right of way. This station and pipeline require special attention for protection in development of transportation improvements in the SR 63 corridor.

Texas Gas metering station, looking along skew angle of underground 30-inch transmission line (looking west on SR 63; image: GoogleEarth)

[35] Optimize for sustained plantings; minimal but important benefit to noise propagation.

Scoping Issues for Environmental Engineering

From preliminary examination, the following is a summary of key scoping issues for Environmental Engineering in subsequent project development for SR 63 corridor improvements (in no particular order):

Aquifer Protection – The Sole Source Aquifer areas and drinking water wells and wellfields in the corridor require impact avoidance, protection and impact risk mitigation. Well owners and aquifer protection groups need to be engaged in this process at the appropriate juncture.

Stormwater and Highway Runoff – The Warren County Engineer's Office, the Warren County Regional Planning Commission and the Warren County Soil and Water Conservation District all have a role and expectations in the long-term relationship of the SR 63 corridor to stormwater outcomes, ranging from specific minimum requirements to best practices guidelines. Provisions for management of highway runoff from the SR 63 corridor need to respond to local plans, rules and expectations for the long-term benefit of the County and townships and their citizens and stakeholders.

Land Use Plans – Adopted local land use plans, and corresponding approved development plans, establish a strong framework to which any transportation improvement in the SR 63 corridor must respond. In best practice, the transportation investments will facilitate adopted plans and growth, or growth management and preservation, as appropriate. Effective environmental engineering phase efforts will be required.

Aesthetics - An extension of adopted local plans, there are strong expectations for an aesthetically pleasing and effective outcome for an improved SR 63 corridor. This is expressed not only in formal planning frameworks for the corridor area, but also from stakeholders and elected officials in informal conversation. Aesthetic design needs to be integrated in decision making for future improvements.

Threatened and Endangered Species – Specific surveys and assessments for T&E species will be required. Measures regarding impact avoidance or minimization may be required in development of improvement plans. Impact management or mitigation strategies may be required in the form of special design provisions, or participation in off-site habitat banking programs.

Hazardous Materials – Environmental Site Assessment screening will be required for at least five sites on six properties. Phase 1 assessments may be required for an estimated two of these locations (Texas Gas and LCI WWTP site).

Traffic Noise – Assuming new capacity is part of the improvement picture for the SR 63 Corridor, traffic noise impact analysis will be required. Extensive abatement measures in the form of noise walls are not anticipated to be warranted or feasible at most locations, but other proactive noise management measures need to be integrated in project development.

Utilities – Special considerations and details will be required to protect operations and assets of the Texas Gas pipeline and metering station, including public safety and security.

Stream Crossings and Waterway Permits – Any major capacity improvement to the SR 63 corridor will involve some impacts to stream and the Waters of the U.S. Depending on design refinement and phasing, it is possible that the improvements will meet the conditions of Corps of Engineers Regional General Permit A, with Pre-Construction Notification, as a best scenario. A more conservative assumption is that Individual Section 404 Permits (Corps), with Section 401 Water Quality Certifications (Ohio EPA), may be required.

Prime Farmland – Due to expected right of way needs, it is possible that improvements in the SR 63 corridor will require farmland conversion impact rating (FCIR) assessment. It is more likely that that the final improvement scheme will be below the FCIR threshold, once site specifics are examined. In either case, some examination of farmland impact issues is required.

Cultural Resources – A few areas in the SR 63 Corridor have undergone Cultural Resources surveys for pipeline and utility work, and past minor road widenings. These constitute only a small part of the corridor area and possible capacity improvement footprint. Some parts of the likely improvement footprint are within prior disturbed right of way or other prior disturbed or modified lands. A Section 106 scoping request form will need to be prepared and filed to determine extent of new CR work required.

Environmental Justice – EJ populations in the corridor will require examination for relationship to possible corridor improvements, and planning and design adjustments where warranted and feasible to minimize or mitigate any disproportionate impacts. EJ concerns include scattered rural low income households served by the corridor, as well as concentrated minority populations at LCI/WCI, and concentrated low income populations at Otterbein-Lebanon.

Balance Required

To obtain and sustain the best solution for the community, all of these elements of Environmental Context require careful consideration and accommodation, under not less than the Section 102 “balance” proviso of the National Environmental Policy Act of 1969, in development and delivery of future transportation improvements in the SR 63 Corridor.

This recommended “balance” approach is consistent with Purpose and Need, community goals, context sensitive solution approaches, and performance-based practical design.

PURPOSE AND NEED

For purposes of project scoping, a preliminary statement of Purpose and Need has been developed, per 40 CFR 1502.13. This will be refined in subsequent stages of work as project information is developed and focused.

Need for the Proposed Action[36]

The need for the proposed action, *State Route 63 Corridor Improvements*, extends from a set a concurrently-developing transportation problems related to facility age, design elements, traffic growth, modal demands, and regional land use and development issues.

- Degradation in Level of Service: Overall, the SR 63 Corridor between the City of Lebanon and the City of Monroe currently operates at a nominal Level of Service of "D" (Poor). Contributing factors to this poor level of service include: overall traffic growth, single lane capacity, vertical curves and sustained grades, poor sight distance at several locations, high truck percentages, and high percentage of no passing zones. Based on expected travel demand, traffic growth, heavy truck volumes and corridor development trends, LOS can be expected to continue to decline.

- Increasing Travel Demand: Vehicular traffic in the corridor, directly related to Travel Demand, has been increasing steadily, at about 3% per year, since 1982. Trucks and cars have increased at about the same rate. Today, traffic on SR 63 is roughly three times what is was in 1982. An estimated 90% of all travel on SR 63 in the study corridor is through or regional demand. ODOT forecasts show sustained traffic growth of the current baseline condition, not including planned new major developments in the corridor. Planned development alone could more than double travel demand and traffic in the corridor[37], as well as exacerbate trip type and mode conflict issues (further discussion below in this section).

- Emerging Safety Issues: The SR 63 Corridor currently has notably elevated accident rates, at 4.55 per MVM east of SR 741, and 3.20 per MVM west of SR 741, more than twice the statewide average for similar facilities in Ohio[38]. Rear end and fixed object crashes are most common, and will continue to increase as disparities in single-lane traffic platoon speed continue to increase (due to increases traffic density, different types of trips, heavy truck volumes and new points of access). More than 25% of all crashes on SR 63 involve injuries, indicative of severe accidents requiring emergency fire or medical response. Injury crashes occur once a week on the SR 63 corridor on average, causing partial or complete shutdown of lanes or through traffic, this owing to the narrow and confined cross section of the two-lane facility.

- Changes in Roadway Conditions and Driver Expectations: Over the length of the study corridor, SR 63 presents visual and operational challenges to safe and efficient travel. Despite a mostly rural setting and character, the fairly narrow width of right of way coupled with ditching, utility poles, strong vertical curves, adjacent visual encroachments, opposing and same direction heavy truck traffic, unpredictable driveways and varying shoulder widths and adjacent grade transitions make for a "busy" cognitive condition for motorists, especially those not familiar with the route.

- Increasing Trip Type and Mode Conflicts: For many years, this segment of SR 63 functioned as a city-to-city and farm-to-market rural arterial connecting Lebanon and Hamilton, Ohio[39] and familiar to, and mostly used by, local area travelers. Today's road in Warren County is still two lanes and follows the original line and grade[40], but the user mix has changed. Land use changes have brought more short-haul convenience and daily work commute trips to the roadway, as well as a significant fraction of heavy trucks[41]. Through-trips, local access "turn movement" trips, and interstate-connecting heavy truck trips make for growing conflicts in travel speed and driver behavior among vehicles, at least indirectly affecting roadway efficiency and safety.

- Current and Evolving Access Management Problems: There are a number of problematic access points on the route, some exacerbated by vertical curve and sight distance conditions, ranging from residential driveways to institutional entrances with higher ingress/egress volumes and challenged turn movements (Lebanon Correctional Institute main entrance) to slow-moving or unexpected access by farm or maintenance vehicles (LCI service and agricultural access; ODOT maintenance garage entrance). Approved land use changes and development plans along the corridor will put more access-point pressure on SR 63, with related roadway efficiency and safety negative impacts.

[36] At this stage of project development, specific actions and alternatives beyond "no-build" have not been identified; the items in this section speak to problems to be addressed for any alternative and an overall corridor transportation improvement.
[37] Including the introduction of new levels of demand in transit as well as pedestrian and bike travel in the corridor.
[38] The 2013 Ohio Statewide average for 2-lane undivided rural highways was 1.68 accidents per Million Vehicle Miles.
[39] Still identified as "Hamilton-Lebanon Road" as late as 1947.
[40] Other parts of SR 63 (remnants of Hamilton-Lebanon Road) in Butler County to the west have long ago been improved to a four through-lane rural section with a grass median.
[41] Nearly insignificant in volume prior to 1980 (historical anecdotal observation; RL RECORD staff), heavy truck traffic on SR 63 now averages 8% of ADT.

Summary of Transportation Need

From the assessment of factors above, improvements are needed in the SR 63 Corridor to:

- Obtain an acceptable travel Level of Service across the whole of the corridor,
- Accommodate existing and future travel demand,
- Establish safer travel and safety conditions in the corridor, and proactively address evolving safety risk issues attached to roadway physical deficiencies and operating conditions,
- Improve corridor travel conditions, including facility physical and operational elements, to better match driver expectations.
- Better accommodate different types of trips and vehicles, and
- Establish a firm and formally adopted access management plan for the whole of the corridor that addresses existing access point issues and provides an acceptable framework for coming land use and development changes.

Purpose of the Proposed Action[42]

The purpose of the proposed action for the SR 63 corridor is to improve mobility, safety and access along a heavily traveled portion of SR 63 in Warren County between Monroe and Lebanon, **addressing each of the needs identified above**, and effectively achieving the following outcomes:

- *Maintains Effective Connectivity* – SR 63 currently functions as the de-facto east-west corridor for commerce traveling between IR71 on the east and IR75 on the west. The *Southwest Warren County Transportation Plan*[43], a previous planning examination covering a large part of Warren County, suggested various roadway widening improvements (such as Columbia and Butler-Warren roads), and incorporating new roadway on new alignment options, in an attempt to provide improved east-west capacity and mobility for Warren County. Certain of these recommendations proved to be extremely controversial and have not been further developed. New roadway connection recommendations were dropped from the adopted plan, and replaced by recommendations to improve existing corridors to address that need, including SR 63. **Transportation improvements in the SR 63 corridor will maintain effective cross-county connectivity between IR71 and IR75, as well as between Lebanon and Monroe, by addressing Travel Demand accommodation deficiencies in the corridor.**

- *Improves Safety and Reduce Crash Risk* – The expanding mix of modes and trip types[44], along with the increased pressure of development, requires a solution that addresses the emerging tipping point, where the crash rate can be expected to increase abruptly due to increasing saturation of roadway capacity and related factors (increased vehicle-to-vehicle crash opportunity, more cross-traffic and vehicle type conflicts, access point turbulence and risk) leaving no margin for driver error. Crashes happen twice a week in the corridor now; most cause significant impedance to travel in at least one direction, or even shut-down of the entire highway for extended periods. **Transportation improvements in the SR 63 corridor will establish a safer, more reliable travel corridor.**

- *Realizes Effective Accommodation of Different Trip Types and Modes* – The function of SR 63 in the transportation network is dynamically changing from its historic role. The rural arterial is now experiencing increased diversity of trip types including the introduction of a significant fraction of heavy truck trips and increased commuter and convenience trips, resulting in growing conflicts in travel speed and driver behavior. **Transportation improvements in the SR 63 corridor will reconcile and provide improved long-term accommodation of trip type and mode disparities.**

- *Provides a Balanced Transportation Solution for Land Use and Environmental Context Issues* – Effectively designed transportation facilities enhance both the economic and environmental sustainability of a region while addressing transportation need. The transportation improvements must consider open space and development needs along the corridor in crafting a transportation solution that supports adopted long-term growth plans, while also accounting for and protecting, to the extent practicable, important landscape, aesthetic and environmental attributes that extend from the rural character of the area. **Transportation improvements in the SR 63 corridor will meet transportation needs in a balanced solution that considers land use and environmental context issues, and supports and enhances economic and environmental sustainability.**

[42] At this stage of project development, specific actions and alternatives beyond "no-build" have not been identified; the items in this section speak to Project Purposes to be addressed by any alternative in an overall corridor transportation improvement action.

[43] Ohio-Kentucky-Indiana Council of Governments, 2005

[44] See discussion under **Existing Traffic** beginning on **Page 13**.

Other Goals and Objectives

There are other Goals and Objectives that have a valid and valuable place in the Purpose and Need of any transportation improvement program or action for the SR 63 Corridor. These are needs that extend beyond fundamental transportation elements enumerated above, but that clearly have a relationship to transportation Purpose.

Some of the categorical areas for these other Goals and Objectives preliminarily identified for the SR 63 Corridor include:

- Support for adopted land use and community plans
- Facilitation of economic development efforts
- Forwarding local stormwater and water resource management objectives
- Linking corridor improvement actions to local greenspace programs and aesthetic objectives

The Warren County Regional Planning Commission has developed (and is in the process of detailing and refining) a number of planning objectives for the corridor that must be reconciled with transportation investments in the SR 63 Corridor. Further coordination and collaboration with the WCRPC, as well as other key stakeholders, will be required in subsequent stages of Project Development.

[NOT USED]

CONTEXT AND CRITERIA FOR DEVELOPMENT AND EVALUATION OF ALTERNATIVES

Strategy and Project Selection Process: Context-Based Criteria

The third step in the transportation planning "scoping" process is to identify the *possible range of actions* that should be advanced for more detailed evaluation. This includes framing and evaluating long-term transportation strategies for the corridor, from which specific alternatives can be identified and carried forward into project development and the preliminary and environmental engineering/NEPA phase. This narrowing process, based on criteria that address Purpose and Need in the context of the corridor, also allows priority near-term improvement projects that are *consistent with* the range of preferred long term strategies to be safety and confidently identified and moved forward.

Addressing Purpose and Need

Using data collected during the *problem identification* process, corridor level strategies to address identified "transportation needs" were developed. Included are a no-build, low-build and four new capacity options. These are described in **Table C** in the following section, **CONCEPT-LEVEL ALTERNATIVES FOR PROJECT DEVELOPMENT**. Each of the Build strategies developed has, necessarily, the ability to meet transportation Purpose and Need *at some level*[45]. The question becomes which strategy(ies) best meet Purpose and Need *in the context of the corridor condition*, considering issues linked to transportation actions, but perhaps not directly under the transportation scope of work. This question was seen by the study team as critically important in order to identify an effective and implementable strategy.

Criteria for Consideration of Corridor Strategies

Evaluation Criteria, shown at right, were developed by the study team in *consideration of context.* These criteria, once refined and established in a review process, were used to rank the six corridor strategies.

[45] The No-Build strategy does not meet Purpose and Need, but is required by regulation under NEPA to be evaluated and considered for comparative purposes.

CRITERIA FOR EVALUATION OF LONG-TERM STRATEGIES, BASED ON CORRIDOR CONTEXT

Changes over Time –Accommodates both the significant changes that have occurred since the original transportation network was developed including changes in land use, technology, standards, and also the expectations and planned changes in future land use and function. Addresses the need for both economic and environmental sustainability.

Consistent with Adopted Plans – Considers plans adopted by the Warren County Commissioners in design of thoroughfare plan.

Regional Accessibility – Provides access to I-75 and I-71. Regional access also includes healthy functioning of intersections.

Mobility – Provides a choice of transportation alternatives, and strengthens intermodal connections, including the ease of transitioning from one mode to another. Modes include bike and pedestrian facilities.

Transportation Amenities, Aesthetics and Design Elements – Improves the attractiveness of transportation facilities and the availability of associated conveniences.

Context and Green Infrastructure – Considers the unique cultural aspects and historical values of the area, and points travelers toward destinations. Plans for green infrastructure integration, including setbacks and other opportunities to preserve and enhance natural elements.

Connectivity – Effectively uses the local street grid, and efficiently manages connections to the larger system. (Access Management)

Safety – Addresses geometric problems that cause crashes.

Interagency Coordination – Appreciates that no infrastructure project is exclusively the province of any given agency or discipline, whether a transportation, waterworks, sewer or development project. Understands that all projects have unanticipated impacts and that regular inter-agency consultation is critical to the success of the endeavor. Each agency should establish a protocol for consultation and coordination.

Market Driven Implementation – Presents a solid business case for advancing the project, including economic development opportunity, jobs creation, economic impact, financial feasibility, project costs and funding availability. Investigates alternative procurement and financing strategies including private investment.

Operations and Function – Considers context sensitive alternatives to traditional traffic management. Balances needs of commuters with those of local residents.

Public Safety – Considers elements of fire and rescue operations in design including full shoulders.

Scalability – Affords opportunity to develop in phases over time.

Application of the Criteria to Long-Term Strategies

Since conditions differ along the corridor, the criteria were applied both east and west of SR-741 for consideration of long-term transportation strategies.

Individual criteria for each strategy were ranked as high, medium or low based on their ability to meet the objective. A strategy that does not address, or has a negative impact on the stated objective was rated as low; a strategy that significantly contributes to achieving the stated objected was rated as high. If neither applies, the strategy was rated as medium.

As detailed in the following section (**CONCEPT-LEVEL ALTERNATIVES FOR PROJECT DEVELOPMENT,** beginning on **Page 50)**, this evaluation resulted in the selection of Strategy A3-C, a 4-Lane Rural Section with a grassed median, as the preferred option for meeting long-term needs in the context of the corridor.

Extending the Process to Priority Near-Term Actions

Following selection of a preferred corridor level strategy, 6 possible near-term improvement projects that address immediate transportation problems were identified, as described in the following section, **CONCEPT-LEVEL ALTERNATIVES FOR PROJECT DEVELOPMENT**. These projects were then evaluated using FHWA Surface Transportation Program project scoring criteria as administered by the Ohio-Kentucky-Indiana Council of Governments. Three projects west of SR-741 scored above 60, in the range of projects historically awarded STP funds.

Decision Criteria, including *consistency with long-term strategy, estimated OKI score, availability of local match, and order of magnitude cost*, were identified to evaluate these candidate priority projects.

The SR-63 transition safety improvement project – identified as the "Gateway Project" - best satisfied these criteria, and was selected as the priority near-term project. It offers near-term relief from significant capacity and safety concerns, and also provides a logical terminus for future phases of the long-range strategy.

Consideration of the No-Build Strategy

The No-Build, or No-Action, strategy consists of maintaining the exiting transportation assets in a serviceable condition "as-is" for the long term. Maintenance actions such as re-paving, culvert replacement, and traffic control repair are included in a No-Build strategy, but roadway widenings, lane additions, and any other form of built (constructed) capacity improvements are not included. No-Build is always an option of consideration in the transportation development process.

In short, No Build equals Maintain Existing.

As a reference point in consideration of various "Build" strategies, following is a summary of how the "No-Build" option was found to rate in response to the Evaluation Criteria:

Changes over Time – **Low**

No-build strategy does not account for increased VMT, changes in geometric standard, or changes in land use

Economic Sustainability – **Low**

Does not support increased travel demand necessary to sustain proposed economic activity

Environmental Sustainability – **Medium**

Limits impact of induced demand, but increased congestion has negative impact on air quality and other environmental qualities

Consistent with Adopted Plans – **Low**

Does not consider adopted Union Village PUD or other approved plans in corridor

Regional Accessibility – **Low**

No-Build sustains congestion, delay and unreliability that limits accessibility and linkage to regional transportation facilities

Mobility – **Low**

Does not address alternative modes of transportation or offer transportation choices

Transportation Amenities, Aesthetics and Design Elements – **Low**

No significant change in appearance or aesthetic relationship to overall corridor

Context and Green Infrastructure – **Medium**

No-Build maintains rural context, but is ineffective in protecting it for long-term

Connectivity – **Low**

Does not safely control or expedite turn movements

Safety – **Low**

Does a not address profile or shoulder inadequacy, or risks from closely opposing traffic

Interagency Coordination – **Low**

No coordination among entities with shared needs occurs

Market Driven Implementation – **Medium**

No-Build does not support economic development or jobs creations, but does not require significant investment

Operations and Function – **Low**

Under No-Build, SR 63 over time will become a local collector by default

Public Safety – **Low**

Does not address public safety or road closures due to crashes

Scalability – **Low**

No-Build will limit improvements to spot safety issues address as they rise to the level of priority location

Changes over Time - **Low**

No-Build strategy does not account for increased VMT, changes in geometric standard, or changes in land use

[NOT USED]

CONCEPT-LEVEL ALTERNATIVES FOR PROJECT DEVELOPMENT

Alternatives Eliminated from Consideration for Project Development

There are an array of capital and management concept alternatives that were considered for suitability as long-term transportation strategies for the SR 63 Corridor, and eliminated in initial screening based on being either 1) not technically feasible, or not prudent, per FHWA guidelines; or 2) not effective for meeting basic transportation elements of Purpose and Need; or 3) inconsistent with local and regional plans. The following table summarizes the results of the screening considerations:

CONCEPT ALTERNATIVE ELIMINATED	REASON FOR ELIMINATION FROM CONSIDERATION		
	NOT TECHNICALLY FEASIBLE, OR NOT PRUDENT	NOT EFFECTIVE FOR PURPOSE AND NEED	INCONSISTENT WITH LOCAL AND REGIONAL PLANS
ENHANCED BUS TRANSIT	X	X	
BRT ON DEDICATED WAY	X	X	X
LRT ON DEDICATED WAY	X	X	X
HIGH CAPACITY BIKE AND PED ON DEDICATED WAY	X	X	
TRUCK RESTRICTIONS	X	X	X
ITS AND ENHANCED MANAGEMENT	X	X	
FREIGHT AND THROUGH TRAFFIC ONLY ON DEDICATED WAY, NEW ALIGNMENT	X	X	X
TDM AND EXTENSIVE LAND USE CONTROLS AND DEVELOPMENT RESTRICTIONS	X	X	X

In the above tabulation, the concept alternatives consist of the following attributes:

- ENHANCED BUS TRANSIT: Saturating the existing roadway network in the SR 63 travelshed with fixed route and on-demand bus service to reduce number of personal vehicles using the SR 63 corridor.
- BRT ON DEDICATED WAY: Constructing a new dedicated busway on new alignment/new ROW along SR 63 corridor to reduce number of personal vehicles using the SR 63 corridor.
- LRT ON DEDICATED WAY: Constructing a new Light Rail Transit on new alignment/new ROW along SR 63 corridor to reduce number of personal vehicles using the SR 63 corridor.
- HIGH CAPACITY BIKE AND PED ON DEDICATED WAY: Constructing a new high capacity/expanded width on new alignment/new ROW, with grade separations, along SR 63 corridor to reduce number of personal vehicles using the SR 63 corridor.
- TRUCK RESTRICTIONS: Institute policy to restrict/eliminate heavy trucks from using SR 63 corridor to reduce capacity demand.
- ITS AND ENHANCED MANAGEMENT: Construct and manage a corridor and travelshed-wide Intelligent Transportation System to better manage travel demand, available capacity and incidents.
- FREIGHT AND THROUGH TRAFFIC ONLY ON DEDICATED WAY, NEW ALIGNMENT: Constructing a new truck-only roadway on new alignment/new ROW, with grade separations, providing direct linkage between IR-75 and IR-71, to reduce number of heavy trucks using the SR 63 corridor.
- TDM AND EXTENSIVE LAND USE CONTROLS AND DEVELOPMENT RESTRICTIONS: Institute policy changes and land use controls and restrictions to achieve Travel Demand Management levels that to reduce number of personal and commercial vehicles using the SR 63 corridor.

Although not feasible or effective as stand-alone long-term strategies for the SR 63 corridor, parts or selected scaled-down elements of the Enhanced Bus Transit, Bike and Pedestrian, and ITS concepts can provide transportation benefits in the corridor, warranting consideration in final alternatives in the next stages of project development.

Long-Term Strategies

The following concept options were developed and evaluated for effectiveness as long-term transportation strategies for the SR 63 Corridor, in three general categories, A1 through A3:

A1 NO-BUILD

The no-build concept maintains the existing 2-lane facility with minor spot improvements implemented as opportunity permits, with no changes to basic capacity or vertical profile or access control. Driveways are subject to permit. Intersections are a mix of signalized and un-signalized crossings as warrants permit. The paved width is maintained at the current range of twenty-five to thirty-four feet, and the right-of-way is maintained at the original/current width of sixty to one hundred feet with no additional acquisitions required. The resulting nominal level of service is calculated as E/F (Poor/Failing) west of SR 741, and E (Poor) east of SR 741, assuming the base-line level of growth.

The No-Build option would maintain existing capacity conditions on SR 63, shown here, looking westbound near MP 5.

A2 LOW-BUILD/HIGH ACCESS MANAGEMENT

The low-build, high access management option optimizes the 2-lane facility with uniform 12-foot lanes, an 8-foot minimum safety shoulder, and spot access consolidation. Vertical curves are eased at several locations but no major grade or centerline changes are contemplated. Access points are limited and consolidated in critical zones, direct private driveways permitted but only by exception. The paved section increases to forty to forty-eight feet in width, with minimal to minor strip-takes, generally less that 20-feet required. Level of service resulting from a Low-Build strategy is estimated at D- (Poor) west of SR 741, and D+ in the segment east of SR 741.

The Low Build option would optimize 2-lane capacity by easing grades and restricting access points and driveways, as on this improved section of Route 113 near Newark, Delaware.

Sub-alternatives include a **Super-2 section** with barrier; a **third passing lane** on upgrades, **aggressive access control**, or a third **two-way left turn lane**.

By eliminating all but highly-controlled points of access, and providing a median barrier to eliminate left turns and cross-over crash risk (and mitigate capacity erosion due to closely opposing traffic), maximum capacity can be extracted from a 2-lane facility, such as on this "Super 2" section of the Chisholm Trail Parkway near Dallas/Ft. Worth.

A five-lane paved section can provide a big capacity boost and improvement in Level of Service, but is vulnerable to capacity degradation by frequent points of access, visible in this image of recently improved US 58 in Virginia.

A3 NEW CAPACITY/GEOMETRIC IMPROVEMENTS

The following variations of Major New Capacity alternatives all contemplate a minimum of four through travel lanes.

A. Five-lane paved section

The five-lane paved concept envisions a continuous center turn lane or traversable median and eight-foot minimum paved shoulders. It involves some vertical curve and grade easing. Access points are consolidated in critical zones, with driveways subject to permit. All crossroads are signalized with dedicated turn lanes. The paved section is anticipated to be approximately seventy-six to eighty-four feet, with right of way extending from eighty to one hundred feet. Under this scenario, level of service is expected to improve to B (Good) in the SR 63 segment west of SR 741 and A (Excellent) east of SR 741. However, actual LOS is highly limited by and dependent on access control decisions; a more conservative and realistic LOS estimate for this option is C (Average, and Acceptable under most conditions), and could easily degrade further under access and development pressures.

B. Four-lane section with barrier

Assuming truck volumes of less than 250 DDHV, the four-lane barrier section concept anticipates a restricted nine-foot minimum (ten-foot assumed) paved median with a concrete-barrier and minimum six-foot paved shoulder, and significant easing of grade and vertical curves. Access would be consolidated and signalized with dedicated turn lanes. Right-in, right-out access and permitted U-turns would facilitate local access. Typical paved section would measure about seventy feet with approximately seventy to eighty feet of right-of-way required. Additional right-of-way may be necessary to achieve access consolidation. This treatment results in an estimated level of service of B (Good) for west of SR 741, and A (Excellent) for east of SR 741.

The paved median with barrier concept provides a stable, safe long-term strategy for the SR 63 corridor, but has limitations in turn movements and requires a high degree of access management, as shown in this illustration of proposed improvements to State Route 502 in Battle Ground, Washington

C. Four-lane section with grass median

The four-lane alternative with a grass median assumes an expanded section with a twenty-eight foot median, and four-foot inside and ten-foot outside paved shoulders, and significant easing of grades and vertical curves. Access would be consolidated and signalized with dedicated turn lanes. Right-in, right-out access and permitted U-turns would facilitate local access. Total pavement width would range from one hundred to one hundred and six feet, with necessary right of way totaling 224 to 242 feet. This treatment results in an estimated level of service of B (Good) in the SR 63 segment west of SR 741, and A (Excellent) for the segment east of SR 741.

The four-lane section with grass median concept typically uses “open” drainage and provides physical and visual separation of opposing directions of traffic; this example is SR 48 in Warren County, looking north toward Lebanon

D. Four-lane urban section

The four lane urban section would include curb and gutter, a planted median, and higher intersection density to accommodate local movements. It requires significant profile adjustment. Access points are consolidated in critical zones, with driveways subject to permit. Signalized intersections provide full-movement urban crossings accommodating bicycle and pedestrian movements. The paved section ranges from seventy-six to eighty-four feet, with right-of way needs ranging from one hundred to a hundred and sixty feet. Level of service would be reduced to some extent from a rural section by the need to accommodate additional movements, and higher intersection density. The level of service has not been estimated for this cross-section configuration.

(ILLUSTRATION FOLLOWING PAGE)

The four-lane urban section option would integrate a plantable median with left turn lanes at permitted points of access, but would ultimately require a curbed outboard section (typically with sidewalks and tree planting zones, and requiring a piped storm drainage system), as shown in this photo of improved section of Page Mill Road near Palo Alto, California. An option of this type would also typically limit permitted vehicular speed to ≤ 50 MPH, and would also be subject (usually) to pedestrian and bike crossings.

Comparison and Ranking of Long-Term Strategies

Following the steps outlined in the prior section, **Context and Criteria for Development and Evaluation of Alternatives**, the Long-Term Transportation Improvement Strategies described above were examined by the study team, evaluated for ability to meet the Context-based Criteria established for the Corridor, and ranked by relative performance among those criteria.

Each option was evaluated for "fit" and ranking in the west (of SR 741) and east segments of the corridor, to account for different conditions found in each segment. For example, the west segment has slightly higher traffic volumes and is currently dominated by institutional land use, while the east segment has more driveway points of access assigned to homes and farms along the highway.

The summation of the evaluation and ranking process is presented in **Tables D1 and D2** (for West of SR 741 and East of SR 741, respectively) on following **Pages 56 and 57.** [46]

The comparative evaluation of the different long-term strategies completed by the study team found that the 4-Lane Section with Grass Median option (A3-C in Tables C, D1 and D2) had the strongest correlation to meeting the corridor criteria, for both the west and east segments of the Corridor, and was selected as the Preferred Long-Term Strategy. Overall, this strategy was tied for having the most "HIGH" ratings for Ability to Meet Objective" and was the only strategy to have no "LOW" ratings for any criteria category.

Priority Segment Considerations

The entire length of the SR 63 Corridor in Warren County, from Monroe to Lebanon, needs to be widened within the 2040 planning year horizon to address growing capacity and level of service deficiencies. Based on assessment of existing and projected baseline traffic, significant improvements and capacity upgrades will be required first on the western segment of the corridor (SR 741 to Monroe). The eastern segment (SR 741 to Lebanon) is of slightly lower priority, but possibly could be considered more vulnerable to developing land-use conversion pressures[47]

Extending from a preferred long-term improvement strategy, and a relative priority among east and west segments of the corridor, a set of potential Near-Term Improvements, consistent with the overall corridor long-term improvement strategy, was developed to put lower-cost/higher-benefit actions in motion (see **Near-Term Improvements** beginning on **Page 58**).

[46] In Tables D-1 and D-2, the columns at the far right were set up, but not used at this stage, for possible weighting of different criteria by the study team and key stakeholders in subsequent stages of project development.
[47] With additional traffic not part of baseline forecast.

TABLE C SUMMARY OF BASIC FEATURES OF POSSIBLE LONG-TERM TRANSPORTATION STRATEGIES, SR 63 CORRIDOR

Strategy		General Concept	Vertical Profile	Access Control	Intersection Control	Out-to-Out Paved Section (Range, width)	Nominal New ROW Needs (Range, width)	Nominal LOS 2040 No Devel'm't		Remarks
								West	East	
A1 No Build		*Maintain existing 2-lane facility with minor spot improvements as opportunity permits*	No change	No change (driveway by permit)	Mixed: signalized and unsignalized	28 to 34'	None	E/F	E	60' original ROW; now wider at some locations to 100'±
A2 Low Build		*Optimize 2-lane facility; uniform 12-foot lanes, 8' min full safety shoulder; spot access consolidation*	Ease VC's at several locations; no major grade or GL changes	Mixed: driveway by permit, and access point consolidation in critical zones	All signalized with dedicated turn lanes (staged implementation),	40 to 48'	None to Minimal or Minor (strip, <20' typical)	[D-]	[D+]	Sub-options: Barriered Super 2 section; third lane/passing lane on upgrades; aggressive access improvements and control
A3 New Capacity Build		*Variations on Major New Capacity, all with four 12-foot travel lanes*								
A	A3-A: 5-Lane Section, Paved	*Continuous center turn lane/traversable median; 8' min paved shoulder*	Some VC and grade easing	Mixed: driveway by permit, and access point consolidation in critical zones	All signalized with dedicated turn lanes	76 to 84'	80 to 100'	[B]	[A]	Potential for LOS degradation by access actions
B	A3-B: 4-Lane Section, Barrier	*Restricted section: 10' paved median with hard barrier, 6' paved shoulder*	VC and grade easing (>A)	Right-in, right-out only plus access point consolidation	All signalized with dedicated turn lanes: U-turn permitted	70'	70 to 80' excl ap	[B]	[A]	Access convenience penalty and additional ROW for consolidation
C	A3-C: 4-Lane Section, Grass	*Expanded section: 24' plantable median with 4' median shoulder and 8' min paved shoulder*	VC and grade easing (>A)	Right-in, right-out only plus access point consolidation	All signalized with dedicated turn lanes: U-turn permitted	96 to 104'	100 to 120'+	[B]	[A]	Maybe best for motorist expectation and stability over time for multiple demands
D	A3-D: 4-Lane Urban Section	*Urban section: curb and gutter, planted median, high intersection density*	Significant profile adjustment required	Mixed: driveway by permit, and access point consolidation in critical zones	All signalized full movement urban (bike, ped x-ings)	76 to 84'	100' to 160'	?	?	Big policy decision; probable LOS no better than C, likely lower; vulnerable to access-point capacity erosion

Table D1

Analysis of Strategies for Addressing Travel Demand on Warren County SR63 - LONG TERM

West of SR 741

Identification and Description of Evaluation Criteria *(Objectives)*	STRATEGY																				RANKING					
	A1-NO BUILD Maintain Existing				A2-LOW BUILD Optimize 2-Lane Facility				A3A-NEW CAPACITY BUILD 5-Lane Section				A3B- NEW CAPACITY BUILD 4-Lane, Barrier Median				A3C-NEW CAPACITY BUILD 4-Lane, Grass Median				A3D-NEW CAPACITY BUILD 4-Lane Urban Section										
	ABILITY TO MEET OBJECTIVE				ABILITY TO MEET OBJECTIVE				ABILITY TO MEET OBJECTIVE				ABILITY TO MEET OBJECTIVE				ABILITY TO MEET OBJECTIVE				ABILITY TO MEET OBJECTIVE										
	HIGH	MED	LOW	REMARKS	HIGH	MED	LOW	REMARKS	HIGH	MED	LOW	REMARKS	HIGH	MED	LOW	REMARKS	HIGH	MED	LOW	REMARKS	HIGH	MED	LOW	REMARKS	ODOT	WCEO	RPC	LCI/WCI	Lebanon/ Monroe	Average
Changes Over Time																														
Accomodates both the significant changes that have occurred since the original transportation network was developed including changes in land use, technology, standards, and also the expectations and planned changes in future land use and function.			X	Does not account for increased VMT, changes in geometric standards or land use			X	Does not adequately account for increased VMT, changes in geometric standards or land use		X		Addresses capacity, anticipated land use changes, and design standards, but at risk	X			Addresses capacity, anticipated land use changes, and design standards	X			Addresses capacity, anticipated land use changes, and design standards	X			Addresses capacity, anticipated land use changes, and design standards						
Economic Sustainabilty																														
Supports planned and organic future development			X	Does not support increase travel demand			X	Does not adequately support increased travel demand		X		Supports increaed travel demand associated with future deveopment, but shorter view	X			Supports increaed travel demand associated with future deveopment	X			Supports increaed travel demand associated with future deveopment	X			Supports increaed travel demand associated with future deveopment						
Environmental Sustainability																														
Limits impact of planned and organic future development		X		Limits impact of induced demand, but increased congestion has negative impact on air quality		X		Limits impact of induced demand, but increased congestion has negative impact on air quality			X	Causes trip reassignment		X		Causes trip reassignment but limits spraw/drives		X		Causes trip reassignment but limits spraw/drives		X		Causes trip reassignment but limits spraw/drives						
Consistent with Adopted Plans																														
Considers Plans adopted by the Warren County RPC			X	Does not consider adopted PUD			X	Does not adequately address traffic associated with plans adopted by Warren County RPC		X		Addresses capacity but not aestetic expectations of adopted plans		X		Addresses capacity but not aestetic expectations of adopted plans	X			Addresses capacity and matches rural sections to the wet	X			Considers capacity needs and reflects village character desired by Otterbein developers						
Regional Accessibilty																														
Provides access to both I-75 and I-71. Provides for healthy functioning of intersections			X	Congestion, delay and reliabilty limits accessibility			X	Congestion, delay and reliabilty limits accessibility		X		Maintains access to interstates, but mainline degredation over long-term	X			Maintains access to interstates	X			Maintains access to interstates	X			Maintains access to interstates						
Mobility																														
Provides a choice of transportation alternatives, and strengthens intermodal connections, including the ease of transitioning from one mode to another. Modes include transit, bike and pedestrian.			X	Does not address alternative modes			X	Does not address alternative modes, although bicycles could use paved shoulder (safety issue)		X		Could accommodate transit, bicycle and ped are problematic		X		Could accommodate transit, bicycle and ped are problematic		X		Section could easily include bike/ped path; could accommodate transit with special provisions	X			Section includes bike/ped /transit accommodations						
Transportation Amenities, Aesthetics and Design Elements																														
Improves the attractiveness of transporation facilities and the availability of associated conveniences			X	No significant change in appearance			X	No significant change in appearance			X	Significant change in cross section with potentially negative impacts			X	Significant change in cross section		X		Significant change in cross section, but consistent with adjacent sections and rural character	X			Best reflects village character desired by Otterbein developers						
Context and Green Infrastructure																														
Considers the unique cultural aspects and historical values of the area, and points travelers toward destinations (wayfinding). Plans for green infrastructure integration, including setbacks and other opportunities to enhance natural elements.		X		Maintains rural context, but ineffectively for long term		X		Maintains rural context			X	Introduces suburan clutter (Beechmont/Colerain), Setbacks require negotiation			X	Hard visual barrier		X		Consistent with rural character			X	Changes character from rural to urban						
Connectivity																														
Effectively uses the local street grid, and efficiently manages connections to the larger system (access management)			X	Does not limit left turn movements			X	Does not limit left turn movements		X		Provides relief for left turn movements	X			Limits left turn movements, reduces sprawl	X			Limits left turn movements, reduces sprawl		X		Provides relief for left turn movements						
Safety																														
Addresses geometric problems that cause crashes.			X	Does not address profile or shoulders		X		Addresses significant profile issues and provides full width paved shoulders		X		Addresses significant profile issues. TWLT has safety problems	X			Addresses significan profile and shoulder issues	X			Addresses significan profile and shoulder issues	X			Addresses significan profile and shoulder issues						
Interagency Coordination																														
Appreciates that no infrastructure project is exclusively the province of any given agency, department, or discipline, whether a transportation, waterworks, sewer or development project. Understands that all projects have unanticipated consequences and that regular inter-agency consultation is critical to success. Establishes protocol for agency consultation and coordination.			X	No coordination occurs			X	Minimum coordination	X			Requires signifcant coordination with planning, waterworks, sanitary and stormwater agencies	X			Requires signifcant coordination with planning, waterworks, sanitary and stormwater agencies	X			Requires signifcant coordination with planning, waterworks, sanitary and stormwater agencies	X			Requires signifcant coordination with planning, waterworks, sanitary and stormwater agencies						
Market Driven Implementation																														
Presents a solid business case for advancing the project, including economic development opportunities, jobs creation, economic impact, financial fesibility, project costs and funding availability. Investigates alternative procurement and financing strategies including private investment.			X	Does not support economic development or jobs creation			X	Does not adequately support economic development or jobs creation		X		Supports economic development and job creation, but is a costly alternative unless assigned to development		X		Supports economic development and job creation, but is a costly alternative unless assigned to development		X		Supports economic development and job creation, but is a costly alternative unless assigned to development			X	Supports economic development and job creation, but is most costly alternative unless assigned to development						
Operations and Function																														
Considers context sensitive alternatives to traditional traffic management. Balances needs of commuters with those of local residents.			X	Over time will become local collector by default			X	Over time will become local collector by default		X		Potential to evolve from rural arterial to urban arterial	X			Maintains function of rural arterial	X			Maintains function of rural arterial		X		Becomes urban collector/arterial depending on intensity of non-residential development						
Public Safety																														
Considers elements of fire, rescue and mainenance of traffic in design including full shoulders.			X	Does not address public safety or road closures due to crashes	X			Addresses ability of public safety vehicles to access crash locations without road closures	X			Provides emergency access to crash location without road closures		X		Barrier reduces access for public safety responders	X			Provides emergency access to crash location without road closures	X			Provides emergency access to crash location without road closures						
Scalabilty																														
Affords opportunity to develop in phases over time			X	Spot safety issues addressed as they rise to level of priority location		X		Improvements can be identified and scheduled	X			Improvements can be accomplished in three distinct phases	X			Improvements can be accomplished in three distinct phases	X			Improvements can be accomplished in three distinct phases	X			Improvements can be accomplished in three distinct phases						

Table D2

Analysis of Strategies for Addressing Travel Demand on Warren County SR63 - LONG TERM

East of SR 741

Identification and Description of Evaluation Criteria *(Objectives)*	STRATEGY																								RANKING					
	A1-NO BUILD Maintain Existing				A2-LOW BUILD Optimize 2-Lane Facility [NOTE 1]				A3A-NEW CAPACITY BUILD 5-Lane Section				A3B- NEW CAPACITY BUILD 4-Lane, Barrier Median				A3C-NEW CAPACITY BUILD 4-Lane, Grass Median				A3D-NEW CAPACITY BUILD 4-Lane Urban Section									
	ABILITY TO MEET OBJECTIVE				ABILITY TO MEET OBJECTIVE				ABILITY TO MEET OBJECTIVE				ABILITY TO MEET OBJECTIVE				ABILITY TO MEET OBJECTIVE				ABILITY TO MEET OBJECTIVE									
	HIGH	MED	LOW	REMARKS	HIGH	MED	LOW	REMARKS	HIGH	MED	LOW	REMARKS	HIGH	MED	LOW	REMARKS	HIGH	MED	LOW	REMARKS	HIGH	MED	LOW	REMARKS	ODOT	WCEO	RPC	LCI/WCI	Lebanon/ Monroe	Average
Changes Over Time																														
Accomodates both the significant changes that have occurred since the original transportation network was developed including changes in land use, technology, standards, and also the expectations and planned changes in future land use and function.			X	Does not account for increased VMT, changes in geometric standards or land use			X	Does not adequately account for increased VMT, changes in geometric standards or land use		X		Addresses capacity, anticipated land use changes, and design standards, but at risk	X			Addresses capacity, anticipated land use changes, and design standards	X			Addresses capacity, anticipated land use changes, and design standards	X			Addresses capacity, anticipated land use changes, and design standards						
Economic Sustainabilty																														
Supports planned and organic future development			X	Does not support increase travel demand			X	Does not adequately support increased travel demand		X		Supports increaed travel demand associated with future deveopment, but shorter view	X			Supports increaed travel demand associated with future deveopment	X			Supports increaed travel demand associated with future deveopment	X			Supports increaed travel demand associated with future deveopment						
Environmental Sustainability																														
Limits impact of planned and organic future development		X		Limits impact of induced demand, but increased congestion has negative impact on air quality		X		Limits impact of induced demand, but increased congestion has negative impact on air quality			X	Causes trip reassignment		X		Causes trip reassignment but limits sprawl/drives		X		Causes trip reassignment but limits sprawl/drives		X		Causes trip reassignment but limits sprawl/drives						
Consistent with Adopted Plans																														
Considers Plans adopted by the Warren County RPC			X	Does not consider adopted PUD			X	Does not adequately address traffic associated with plans adopted by Warren County RPC		X		Addresses capacity but not aestetic expectations of adopted plans		X		Addresses capacity but not aestetic expectations of adopted plans	X			Addresses capacity and matches rural sections to the west of I-75	X			Considers capacity needs and reflects village character desired by Otterbein developers						
Regional Accessibilty																														
Provides access to both I-75 and I-71. Provides for healthy functioning of intersections			X	Congestion, delay and reliabilty limits accessibility			X	Congestion, delay and reliabilty limits accessibility		X		Maintains access to interstates, but mainline degredation over long-term	X			Maintains access to interstates	X			Maintains access to interstates	X			Maintains access to interstates						
Mobility																														
Provides a choice of transportation alternatives, and strengthens intermodal connections, including the ease of transitioning from one mode to another. Modes include transit, bike and pedestrian.			X	Does not address alternative modes			X	Does not address alternative modes, although bicycles could use paved shoulder (safety issue)		X		Could accommodate transit, bicycle and ped are problematic		X		Could accommodate transit, bicycle and ped are problematic		X		Section could easily include bike/ped path; could accommodate transit with special provisions	X			Section includes bike/ped /transit accommodations						
Transportation Amenities, Aesthetics and Design Elements																														
Improves the attractiveness of transporation facilities and the availability of associated conveniences			X	No significant change in appearance			X	No significant change in appearance			X	Significant change in cross section with potentially negative impacts			X	Significant change in cross section		X		Significant change in cross section, but consistent with adjacent sections and rural character	X			Best reflects village character desired by Otterbein developers						
Context and Green Infrastructure																														
Considers the unique cultural aspects and historical values of the area, and points travelers toward destinations (wayfinding). Plans for green infrastructure integration, including setbacks and other opportunities to enhance natural elements.		X		Maintains rural context, but ineffectively for long term		X		Maintains rural context			X	Introduces suburan clutter (Beechmont/Colerain), Setbacks require negotiation			X	Hard visual barrier		X		Consistent with rural character			X	Changes character from rural to urban						
Connectivity																														
Effectively uses the local street grid, and efficiently manages connections to the larger system (access management)			X	Does not provide efficient accomdation of turn demand or effective network connection			X	Can improve accommodation of turn demand, but limited benefit to network connection		X		Improves accommodation of turn demand, but low long term benefit to network connectivity	X			Controls and concentrates turn movements, improves network connectivity, reduces sprawl	X			Controls and concentrates turn movements, improves network connectivity, reduces sprawl		X		Controls and concentrates turn movements, but some cost to connectivity (development)						
Safety																														
Addresses geometric problems that cause crashes.			X	Does not address profile or shoulders, section condtions		X		Addresses some profile issues and provides full width paved shoulders, improved section		X		Addresses significant profile and shoulder issues, but median turn safety problems	X			Addresses significant profile and shoulder issues, improved section	X			Addresses significant profile and shoulder issues, improved section	X			Addresses significant profile and shoulder issues, improved section						
Interagency Coordination																														
Appreciates that no infrastructure project is exclusively the province of any given agency, department, or discipline, whether a transportation, waterworks, sewer or development project. Understands that all projects have unanticipated consequences and that regular inter-agency consultation is critical to success. Establishes protocol for agency consultation and coordination.			X	No coordination occurs			X	Minimum coordination	X			Requires signifcant coordination with planning, waterworks, sanitary and stormwater agencies	X			Requires signifcant coordination with planning, waterworks, sanitary and stormwater agencies	X			Requires signifcant coordination with planning, waterworks, sanitary and stormwater agencies	X			Requires signifcant coordination with planning, waterworks, sanitary and stormwater agencies						
Market Driven Implementation																														
Presents a solid business case for advancing the project, including economic development opportunities, jobs creation, economic impact, financial fesibility, project costs and funding availability. Investigates alternative procurement and financing strategies including private investment.			X	Does not support economic development or jobs creation			X	Does not adequately support economic development or jobs creation		X		Supports economic development and job creation, but is a costly alternative unless assigned to development		X		Supports economic development and job creation, but is a costly alternative unless assigned to development		X		Supports economic development and job creation, but is most costly alternative unless assigned to development			X	Supports economic development and job creation, but is most costly alternative unless assigned to development						
Operations and Function																														
Considers context sensitive alternatives to traditional traffic management. Balances needs of commuters with those of local residents.			X	Over time will become local collector by default			X	Over time will become local collector by default		X		Potential to evolve from rural arterial to urban arterial	X			Maintains function of rural arterial	X			Maintains function of rural arterial		X		Becomes urban collector/arterial depending on intensity of non-residential development						
Public Safety																														
Considers elements of fire, rescue and mainenance of traffic in design including full shoulders.			X	Does not address public safety or road closures due to crashes	X			Addresses ability of public safety vehicles to access crash locations without road closures	X			Provides emergency access to crash location without road closures		X		Barrier reduces access for public safety responders	X			Provides emergency access to crash location without road closures	X			Provides emergency access to crash location without road closures						
Scalabilty																														
Affords opportunity to develop in phases over time			X	Spot safety issues addressed as they rise to level of priority location		X		Improvements can be identified and scheduled	X			Improvements can be accomplished in three distinct phases	X			Improvements can be accomplished in three distinct phases	X			Improvements can be accomplished in three distinct phases	X			improvements can be accomplished in three distinct phases						

Near-Term Improvements

Following selection of a corridor level strategy, 6 possible near-term improvement projects that address immediate problems were identified. These projects were then evaluated using OKI STP scoring criteria (**TABLE E** on **Page 60**). Three projects west of SR-741 scored above 60, in the range of projects historically awarded STP funds.

Decision Criteria (**TABLE F** on **Page 61**), including *consistency with long-term strategy, estimated OKI score, availability of local match, and order of magnitude cost*, were identified to evaluate these projects.

The SR-63 transition safety improvement project "Gateway Project" best satisfied these criteria, and was selected as the priority near-term project. It offers both near-term relief from significant capacity and safety concerns, and also provides a logical terminus for future phases of the long-range strategy. This project was submitted to OKI for Surface Transportation Program consideration during the 2016 funding cycle, but funding was not awarded because I-71/Fields Ertel Road Interchange improvement project took precedence for STP funding priority in Warren County.

Projects Indentified

The six possible near-term improvement projects that were identified are described below.

SR 63/SR741 INTERSECTION IMPROVEMENTS
Redesign and construction of the SR 63/SR 741 Intersection

FULL LENGTH SHOULDER SAFETY IMPROVEMENT
Provide full eight-foot paved shoulders along the entire SR 63 study corridor to reduce run-off-the-road fixed object accidents and prevent road closures resulting from serious accidents.

UNION ROAD/MIAMI VALLEY GAMING ENTRANCE IMPROVEMENTS (GATEWAY PROJECT)
Improvement of an irregular, high-accident section of SR 63 extending from the City of Monroe corporation boundary at Union Road, eastward and through a transitional section fronting the Miami Valley Gaming facility that has confusing lane assignment and lane continuity conditions.

LCI ACCESS POINTS SAFETY IMPROVEMENT
Consolidation of multiple access points and elimination of problematic farm implement crossings

MCCLURE AND MARKEY ROADS INTERSECTION IMPROVEMENTS
Improvement of an off-set intersection on a sag curve

SR 63 EAST 3-LANE SECTION IMPROVEMENTS
Interim solution to capacity issues east of SR 741

Priority Segment Considerations

Decision criteria, including consistency with long-term strategy, logical termini, independent utility, estimated OKI score, availability of local match, and order of magnitude cost, were identified to evaluate and prioritize the projects.

Near-term projects were priority ranked from west to west:

1. Union Road/Miami Valley Gaming Entrance Section Improvements (Gateway Project)
2. LCI Access Points Safety Project
3. SR 63/SR741 Intersection Improvements
4. The Full Length Shoulder Safety Improvements will be incorporated with projects 1 through 3.
5. McClure and Markey Roads Intersection Improvements
6. Other Improvements East of SR 741

WARREN COUNTY SR 63 SCOPING STUDY

Table E - EVALUATION OF POSSIBLE NEAR-TERM IMPROVEMENTS

OKI Evaluation Criteria			PROJECT DESCRIPTION					
Transportation Factors	**Measure**	**Points**	**1. SR 741 Intersection Improvements**	**2. Full Length Shoulder Safety Improvement**	**3. Union Road/ MVG Entrance Section Improvement**	**4. LCI Access Points Safety Improvement**	**5. McClure and Markey Rds. Intersection Improvements**	**6. SR 63 East 3-Lane Section Improvement**
Safety	More than 1000 crashes per HMVM	5	0	0	0	0	0	0
	750 - 1000 crashes per HMVM	4	0	0	0	0	0	0
	500 - 750 crashes per HMVM	3	0	0	0	0	0	0
	250 - 500 crashes per HMVM	2	0	0	0	0	0	0
	100 - 250 crashes per HMVM	1	0	0	0	0	0	0
	< 100 crashes per HMVM	0	0	0	0	0	0	0
Positive Impact of Safety	High Impact	5	0	0	5	5	0	0
	Medium Impact	3	3	3	0	0	0	3
	Low Impact	1	0	0	0	0	1	0
	No Impact	0	0	0	0	0	0	0
Average Daily Traffic (ADT)	Over 40,000	5	5	5	5	5	0	0
	Over 30,000	4	0	0	0	0	0	0
	Over 20,000	3	0	0	0	0	3	3
	Over 10,000	2	0	0	0	0	0	0
	Over 5,000	1	0	0	0	0	0	0
	< 5,000	0	0	0	0	0	0	0
Roadway Classification	Freeway or Principal Arterial	5	5	5	5	5	5	5
	Minor Arterial	4	0	0	0	0	0	0
	Collector	3	0	0	0	0	0	0
Travel Time Index	> 2.0	5	0	0	0	0	0	0
	Between 2.0 and 1.2	3	3	3	3	3	3	3
	< 1.2	0	0	0	0	0	0	0
Positive Impact on Travel Time	High	5	5	0	0	0	0	0
	Medium	3	0	3	3	3	3	3
	Low	1	0	0	0	0	0	0
	None	0	0	0	0	0	0	0
Freight Volumes *(Truck traffic %)*	> 12%	5	0	0	0	0	0	0
	9% - <12%	4	0	0	0	0	0	0
	6% - <9%	3	3	3	3	3	3	3
	3% - <6%	2	0	0	0	0	0	0
	1% - <3%	1	0	0	0	0	0	0
	< 1%	0	0	0	0	0	0	0
Pavement Conditions *(IRI Range)*	> 220	5	0	0	0	0	0	0
	95-220	3	0	0	0	0	0	0
	< 95	0	0	0	0	0	0	0
Bridge Conditions *(Sufficiency Rating)*	< 30	5	0	0	0	0	0	0
	30-50	4	0	0	0	0	0	0
	50-80	3	0	0	0	0	0	0
	> 80	0	0	0	0	0	0	0
Complete Streets *(One point for each mode)*	Motor Vehicle	1	1	1	1	1	1	1
	Fixed Transit	1	1	1	1	1	1	1
	Pedestrian facility	1	1	1	1	1	1	0
	Bicyle facility	1	1	1	1	1	1	0
	Traffic calming	1	0	0	0	0	0	0
Status of Project	Construction Plans Complete	5	0	0	0	0	0	0
	ROW plans and Environment Clearance Complete	4	0	0	0	0	0	0
	Initial request for construction funding only	3	3	3	3	3	3	3
	Initial request for construction, ROW and utility funding	2	0	0	0	0	0	0
	Initial request for construction, ROW, Utility and Design funding	1	0	0	0	0	0	0
SUBTOTAL TRANSPORTATION FACTORS			**31**	**29**	**31**	**31**	**25**	**25**

Planning Factors	**Measure**	**Points**						
Environmental Justice	Net Benefit excellent - good	5 - 4	4	0	0	5	0	0
	Net Benefit good - fair	3 - 2	0	3	2	0	2	2
	Net Benefit fair - none	1 - 0	0	0	0	0	0	0
Existing Employment *(within 1/2 mile of project area)*	>5,000	5	0	0	0	0	0	0
	2,500 - 4,999	4	0	0	0	0	0	0
	1,000 - 2,499	3	0	0	0	0	0	0
	750 - 999	2	0	2	2	0	0	0
	500 - 749	1	1	0	0	1	0	0
	1 - 499	0	0	0	0	0	0	0
Investment Bonus	> $20M	5	0	0	0	0	0	0
(Applicant must provide evidence from a study using generally accepted principals of economic analysis. Higher significance is placed on % of employment with earnings above state median income.)			0	0	0	0	0	0
	$15M - $20M	4						
	$10M - $15M	3	0	0	0	0	0	0
	$5M - $10M	2	0	0	0	0	0	0
	$1M - $5M	1	0	0	0	0	0	0
OR	<$1M	0	0	0	0	0	0	0
Employment Bonus *(New jobs within 1/2 mile of project)*	>200	5	0	0	0	0	0	0
(Applicant must provide evidence from a study using generally accepted principals of economic analysis. Demonstrate net gain of jobs to region, not redistribution)	100 - 200	4	4	0	0	0	0	0
	75 - 99	3	0	0	0	0	0	0
	50 - 74	2	0	0	0	0	0	0
	25 - 49	1	0	0	1	1	0	0
	0 - 24	0	0	0	0	0	0	0
Air Quality and Energy Usage *(measured by VMT, VHT, Emissions Reductions)*	2 + reduced	6 - 10	9	6	8	6	6	8
	1 + reduced	0 - 5	0	0	0	0	0	0
Intermodal Elements	Introduction or connections of 3 or more modes	5	5	5	5	5	0	0
	Introduction or connections of 2 or more modes	3	0	0	0	0	3	3
	No introduction or connection of modes	0	0	0	0	0	0	0
Replacement vs. Expansion	100% replacement	5	0	0	0	0	0	0
	75%/25% replacement/expansion	4	0	4	0	4	4	0
	50%/50% replacement/expansion	3	3	0	3	0	0	3
	25%/75% replacement/expansion	2	0	0	0	0	0	0
	100% expansion	1	0	0	0	0	0	0
Strategic Reginal Policy Plan	Subjective	0 - 5	4	3	5	5	2	2
Is project located in a town/neighborhood center or CBD?			No	No	No	No	No	No
Is project located in mixed use area with a central focus?			Yes	Yes	Yes	Yes	Yes	No
Is project located along major collector or higher with urban development characteristics?			No	No	Yes	Yes	Yes	No
Is project located in area experiencing strong growth pressures or planned as a mixed use multi-modal center?			Yes	Yes	Yes	Yes	No	No
Will project serve brownfield or greyfield properties or areas where existing infrastructure is underutilized?			No	No	Yes	Yes	Yes	No
Are efforts to avoid minimize or mitigate for environmental impacts planned as part of the project?			Yes	Yes	Yes	Yes	Yes	Yes
Are green infrastructure strategies planned as part of this project? (Remediation, contiguous corridors to reduce habitat fragmentation, innovative stormwater management techniques, etc.)			Yes	Yes	Yes	Yes	Yes	Yes
Does the project abut or directly impact any potentially sensitive environmental resources?			No	No	No	No	No	No
Local Planning Effort	Consistent with complete and current comprehensive plan	5	0	0	0	0	0	0
	Consistent with comprehsive plan requiring udating or improvement	3	3	3	3	3	3	3
	No comprehensive plan	0	0	0	0	0	0	0
Local Share	>50%	10	0	0	0	0	0	0
	45% - 49%	8	0	0	0	0	0	0
	40% - 44%	6	0	0	0	0	0	0
	35% - 39%	4	0	0	0	0	0	0
	30% - 34%	2	0	0	0	0	0	0
	20% - required local amount	0	0	0	0	0	0	0
History of Project Delivery	1 project slipped past program year	-3	0	0	0	0	0	0
	2+ projects slipped past program year	-5	0	0	0	0	0	0
SUBTOTAL PLANNING FACTORS			**33**	**26**	**29**	**30**	**20**	**21**
GRAND TOTAL TRANSPORTATION + PLANNING FACTORS			**64**	**55**	**60**	**61**	**45**	**46**

WARREN COUNTY SR 63 SCOPING STUDY

Table F - EVALUATION OF POSSIBLE NEAR-TERM IMPROVEMENTS - DECISION CRITERIA

Decision Criteria	PROJECT DESCRIPTION					
Transportation Factors	**1. SR 741 Intersection Improvements**	**2. Full Length Shoulder Safety Improvement**	**3. Union Road/ MVG Entrance Section Improvement**	**4. LCI Access Points Safety Improvement**	**5. McClure and Markey Rds. Intersection Improvements**	**6. SR 63 East 3-Lane Section Improvement**
Consistency with long-term strategy	Uncertain	Medium	High	High	Medium	Medium
Estimated OKI Score	64	55	60	61	45	45
Local match	Possible State safety funding available, but not eligible for local match	None	Possible Tiff funds available	Possible State Contribution	None	None
Order of magnitude cost	$6.0 M (2.8 - 6.5M)	$4.3 M	$ 6.4 M (5.4 - 8.0 M)	A: $19.0 M (15.0-20.0M) B: $6.2M (5.0-7.0M)	Not determined	Not determined
Comments on OOM Cost	Wide range depends on approach lane treatment on SR 63; $6M number accounts for 4 lane section + turn lanes on SR 63; includes 0.8M for ROW and storm green infrastructure	5.5 mi at $0.65M mi; includes 1.2 EF for drainage modifcations, temp minor permnanent ROW, spot access consolidations where possible.	0.6 mi section at $7.9 M/mi; includes 1.35 EF for 1) well field protection and relocation, 2) mitigation and restoration/enhancement of Shaker Run, 3) ROW.	Two options: A) four lane section @ 160' ROW STA 144 at Shaker Run thru 741 intersection - 2.0 mi at $7.9M/mi, including 1.2 EF for ROW and utilities; B) 0.7 mi section (STA 144 t0 180) with grading and ROW for future 4-lane and restore to reprofiled 2 on exsiting CL at $4.5 M.mi, plus 1.35 SF for ROW and MOT issues, plus $1.5 M for access point consolidation, plus $0.45M for ag underpass RCA or built plate structure.		

[NOT USED]

RECOMMENDATIONS

The study evaluated a total of six long-term corridor level strategies, and six near-term improvement projects, together an assemblage of prioritized and ranked actions as a jumping-off point for the next phase of project development.

Major projects recommendations are illustrated as to sequence and priority on **Figure A-8** on **Page 66.**

The following summary of recommendations is based on analysis of information available to date. Other factors and dynamics are at work in the corridor and will need to be accommodated in updates to the Recommendations, as well as the Scopes of Work for implementation for various improvement segments.

Policy

Baseline Improvements

The Scoping Study established the baseline traffic growth expected along the SR 63 corridor resulting from regional growth trends absent the specific impacts of anticipated land conversion discussed in Section II. This provides a basis for identifying the required level of public investment in the facility. Impacts resulting from land use conversions should be evaluated using traffic impact study methodologies and correlated to updates or addendums to the Scoping Study.

The Baseline Improvements require that SR63 be upgraded to a multi-lane facility integrating access management and community goals to improve travel efficiency and safety. Two travel lanes each direction are needed for current and baseline future traffic. The preferred concept configuration is a rural roadway section with open drainage, 55 MPH design speed, and an open grassed median that can accommodate future capacity or traffic safety/operations additions at a later date.

The Baseline Improvements can be staged and phased, both by segment and, if appropriate, by physical elements within segments (such as additional turn lanes, or access consolidation), to target performance-based project delivery and design benefits.

Funding and Financing

Required improvements stemming from background growth and system conditions are best funded through traditional transportation mechanisms, including state and federal highway funds, accessed through OKI and TRAC. Other travel demand components, beyond baseline levels, stemming from major new development should be assessed for impact and possible funding contribution based on effect on various corridor implementation segments identified on **Figure A-8**.

Private Participation

Developers are partners in advancing the improvements directly associated with individual land use conversion projects and should look toward non-traditional sources for funding. These include direct private contributions, tax increment financing districts, and other special improvement districts identified in the Ohio Revised Code. The private sector is best served by helping to accelerate the implementation of the suggested capacity expansion recommendations to preserve the integrity of the roadway that serves as economic catalyst for the development.

Right of Way Preservation

Active and specific steps to achieve ROW preservation in the western corridor segment need to be taken, in concert with access management. Planning recommendations have been submitted separately. This should be a principal policy priority for the WCTID, in concert with ODOT and the State of Ohio.

Access Management

Access management is needed to ensure roadway safety and efficient operations while providing reasonable access to the adjacent land use.

It is critical that effective access management concepts be formally established and strictly applied in proactive response to development pressures anticipated along SR 63 in Warren County. This is necessary in order to preserve capacity at a reasonable cost to developers and taxpayers alike, as well as mitigate the increasing costs related to accidents and continued erosion of motorist safety.

Internal Circulation

Providing sufficient internal circulation routing and capacity, as well as modal alternatives to accommodate all local trip types, in the process of corridor development planning and approval is critical in maintaining highway capacity. There is a principal role for the Warren County Regional Planning Commission in this effort.

Public Involvement

The next phase of work should include crafting and executing a robust Public Involvement Plan to inform and validate the Scoping Study findings. The recommendations of this Scoping Study should be used to develop and frame an appropriate outreach effort.

Operations

Public Services

Public services delivery along the SR 63 corridor should consider pedestrian safety when planning routes and stops. Interim shoulder improvements may be warranted to support public services including mail delivery, school and church bus service and trash removal. Further coordination with public services is required in the next phases of work,

In the near term, USPS should consider locating post boxes along both sides of SR 63. Once improved, SR 63 will support pull-off of mail delivery vehicles along both outside shoulders, or mail boxes may be relocated off-corridor in the process of access-point consolidation.

Bus stops should be located where there is sufficient pedestrian safety protection provided.

Long-Term Improvement Strategies

Baseline Improvements

Based on the preferred strategy identified in the Scoping process, the Long-Term corridor Baseline Improvements need to be move firmly into the ODOT Project Development Process. The preferred concept of a four lane rural section with a grass median is the baseline and starting point for developing an initial Project Initiation Package, with the west segment the priority. Other alternatives, including No-Build, will be considered and evaluated in the required environmental process.

Design and location alternatives within the preferred strategy that should be evaluated include centerline location (hold existing, shift north, shift south) with specific consideration to impacts, constructability and maintenance of traffic, as well as vertical profile options (with specific regard to best practical design goals as well as impacts). Alternatives regarding access management will also need to be accounted for.

Access Management and ROW Preservation

Access management and ROW preservation actions need to proceed immediately in critical areas. Initial considerations and options for access management under the Long-Term Improvement Strategy are shown in **Figures A-9A and A-9B** on **Pages 67 and 68.** Capacity (and resultant travel efficiency and safety) must be maintained on the mainline in order to meet baseline and likely additional growth, and all points of access erode capacity; a balanced combination of throughput and access is required in project delivery.

Near-Term Improvement Opportunities

The SR 63 transition safety improvement project “Gateway Project” is recommended for immediate development and implementation as best satisfying near-term project criteria. It offers near-term relief from significant capacity and safety concerns, and also provides a logical terminus for future phases of long-range strategies. Concept level plans based on preliminary engineering for this priority near-term improvement are found in **Appendix F**.

Safety Countermeasures

The following counter-measures should be considered for employment to reduce the number, severity and impacts of crashes, regardless of the long-range strategies or short-term project actions:

Widen Shoulders
Widening shoulders will reduce both the impact of fixed object accidents, as well as road closures due to accidents.

Pavement Lane Widening
Substandard lanes, in the east segment in particular, should be widened to 12 feet.

Protect Turning Movements
Alternative intersection designs could reduce unexpected movements resulting from unprotected access points.

Traffic Calming
Rumble strips should be located along the highway centerline to reduce crossover crashes, and along the outside shoulders in a manner that alters motorists run-off-the road crashes, but allows for bicyclists to travel on the shoulder. Rumble strips could also be used to reduce speeds on vertical curves.

Access Management
Reducing the number of conflict points should be part of a long-range sustainable solution.

Enhanced Animal Crossing Warning Signage
Animals generally develop repeatable habits. Next generation warning signs could identify concentrated crossing zones.

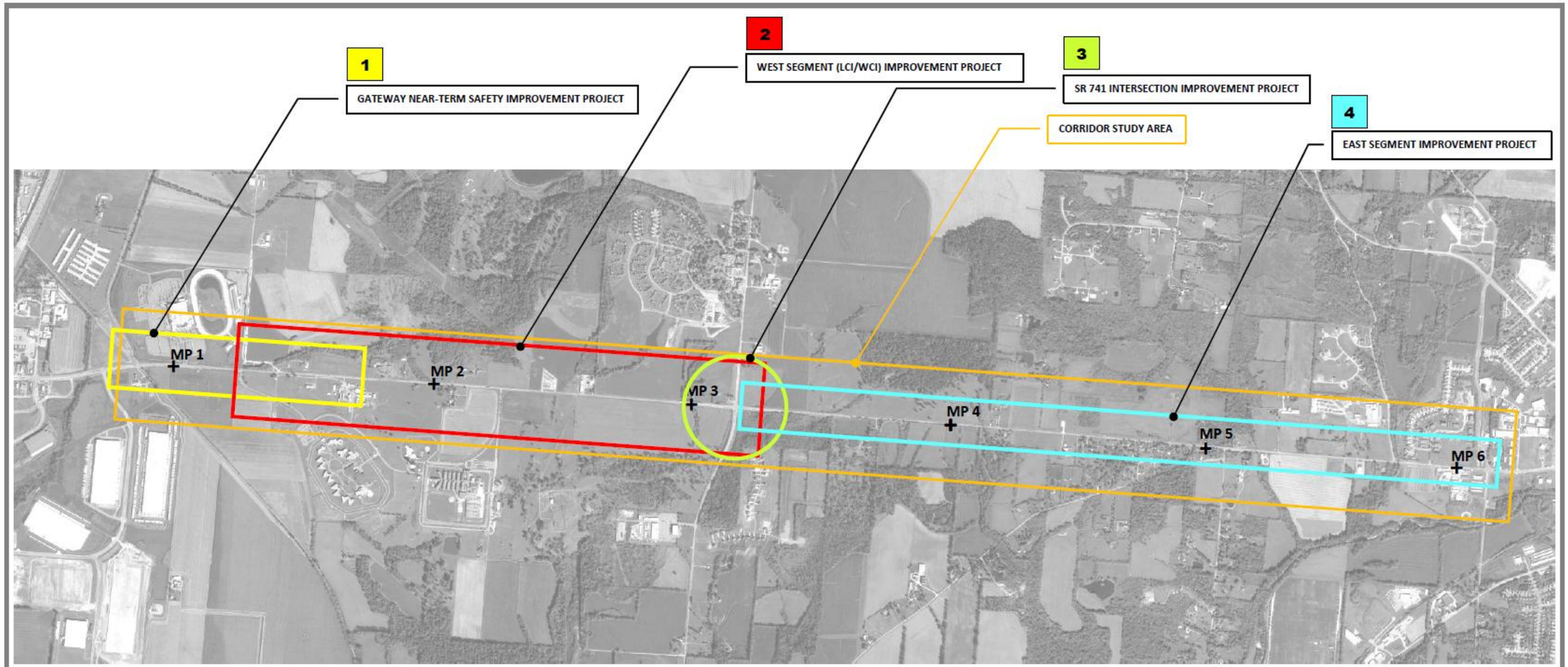
Way finding
Clear directions reduce driver distraction and improve safety.

Summary of Recommended Improvement Segments and Priorities

In summary, the recommended overall improvement program for the SR 63 corridor is comprised of the following project segments, listed below in recommended order of priority and sequence:

SEGMENT	DESCRIPTION
1	GATEWAY NEAR-TERM SAFETY IMPROVEMENT PROJECT
2	WEST SEGMENT (LCI/WCI) IMPROVEMENT PROEJCT
3	SR 741 INTERSECTION IMPROVEMENT PROJECT
4	EAST SEGMENT IMPROVEMENT PROJECT

These segments and priorities are illustrated on **Figure A-8** on the following page. Various near-term improvements and safety countermeasures, consistent with long-term strategies, may be "nested" within these overall segments as opportunities arise.



WARREN COUNTY
Transportation Improvement District

JULY 2016

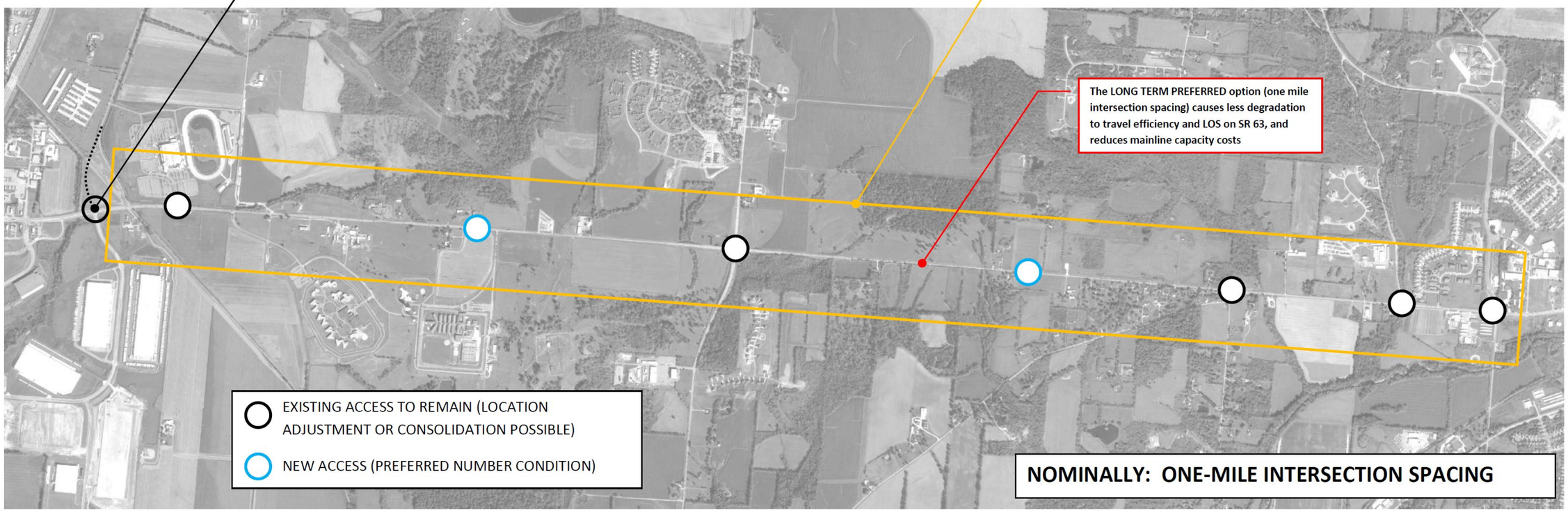
RL RECORD

STATE ROUTE 63 SCOPING STUDY

GENERAL RECOMMENDATIONS AND PRIORITIES

A-8

NOTE: For the SR 63 corridor, ODOT Access Management Category III is appropriate ("rural arterials and high speed urban arterials"). Under Category III, intersection spacing of one mile is recommended for rural highway sections (applicable to the preferred rural arterial section strategy identified for the corridor), and not less than ½ mile spacing where no reasonable access alternatives exist.



BASEMAP SOURCE: GoogleEarth Pro, 2016

WARREN COUNTY
Transportation Improvement District

JULY 2016

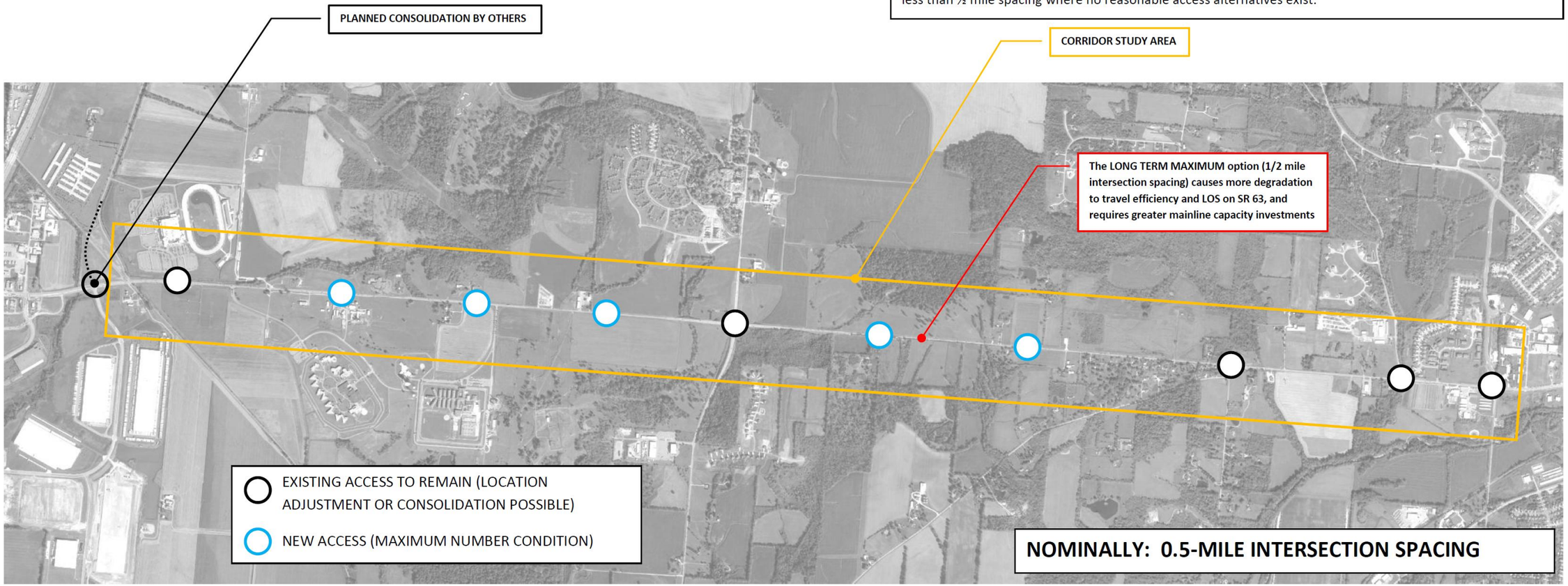
RL RECORD

STATE ROUTE 63 SCOPING STUDY

RECOMMENDED ACCESS – LONG TERM PREFERRED

A-9A

NOTE: For the SR 63 corridor, ODOT Access Management Category III is appropriate ("rural arterials and high speed urban arterials"). Under Category III, intersection spacing of one mile is recommended for rural highway sections (applicable to the preferred rural arterial section strategy identified for the corridor), and not less than ½ mile spacing where no reasonable access alternatives exist.



BASEMAP SOURCE: GoogleEarth Pro, 2016

0 0.5 1.0 2.0
MILES

WARREN COUNTY
Transportation Improvement District
JULY 2016
RL RECORD

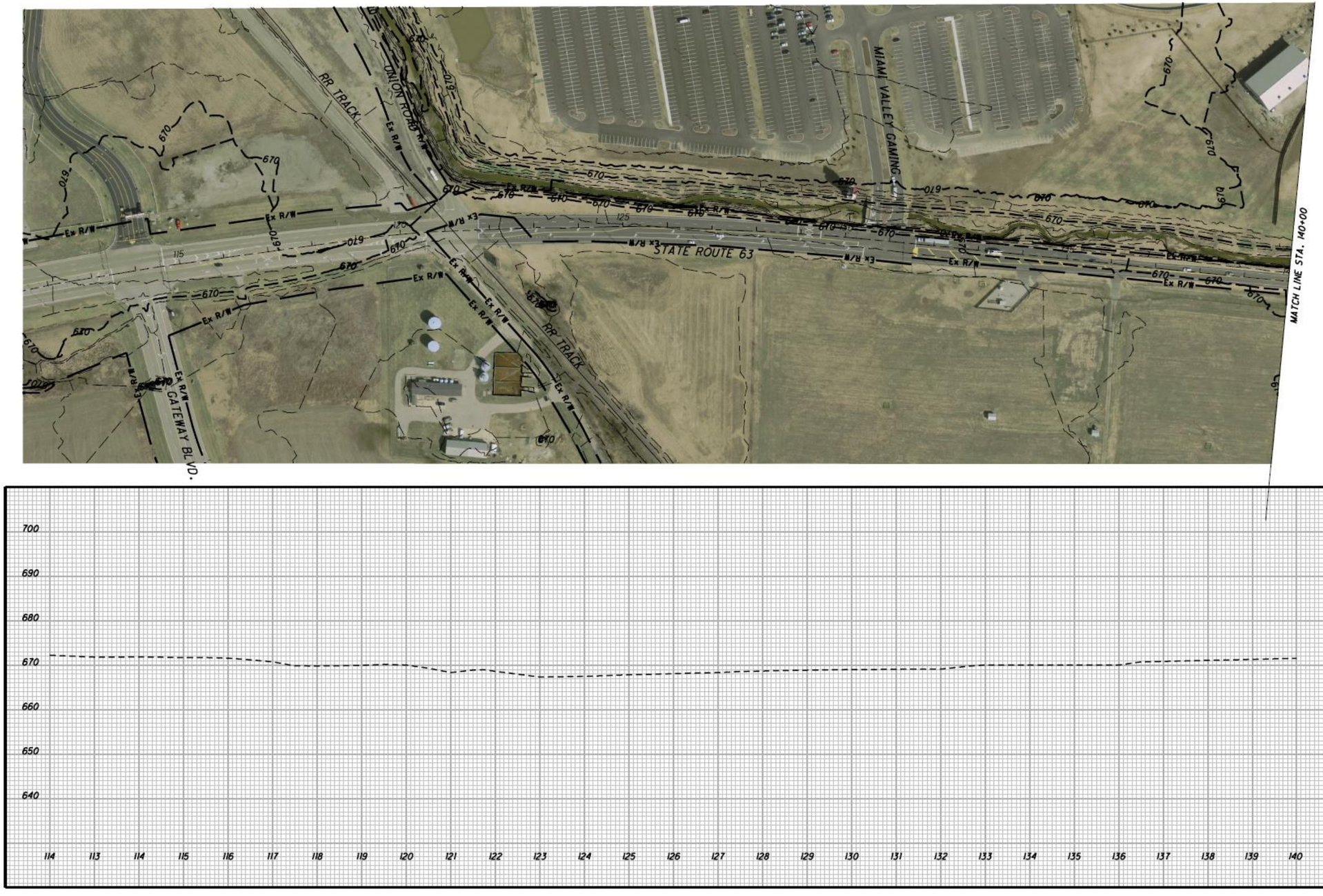
STATE ROUTE 63 SCOPING STUDY

RECOMMENDED ACCESS – LONG TERM MAXIMUM

A-9B

APPENDIX A

EXISTING SR 63 CORRIDOR PLAN AND PROFILE



PLAN AND PROFILE STATE ROUTE 63
STA. 112+00 TO STA 140+00

CTY-RTE-SECTION

01
11

CALCULATED XXX
CHECKED XXX

0 50 100
HORIZONTAL SCALE IN FEET
0 20 40

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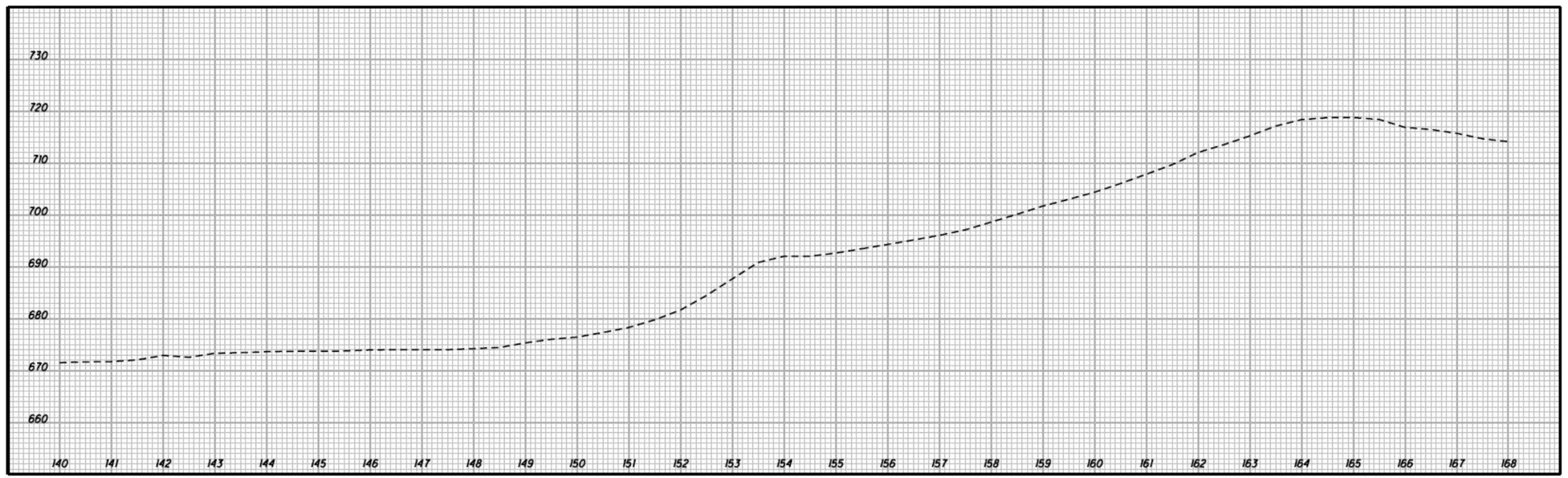

PLAN AND PROFILE STATE ROUTE 63
STA. 140+00 TO STA. 168+00

CTY-RTE-SECTION

02
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CHECKED XXX

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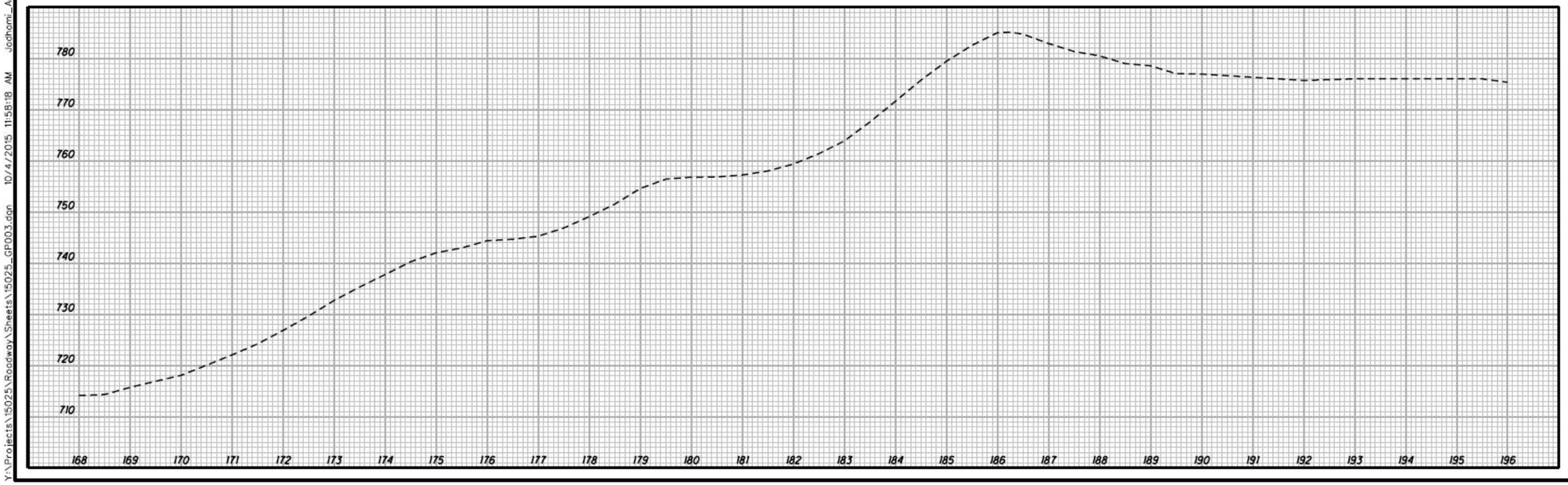

PLAN AND PROFILE STATE ROUTE 63
STA. 168+00 TO 196+00

CTY-RTE-SECTION

Q3
11

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CHECKED XXX

HORIZONTAL SCALE IN FEET
0 100 200

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PLAN AND PROFILE STATE ROUTE 63
STA. 196+00 TO 224+00

WAR-63-0.00

CALCULATED XXX
CHECKED XXX

HORIZONTAL SCALE IN FEET
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Q4
11

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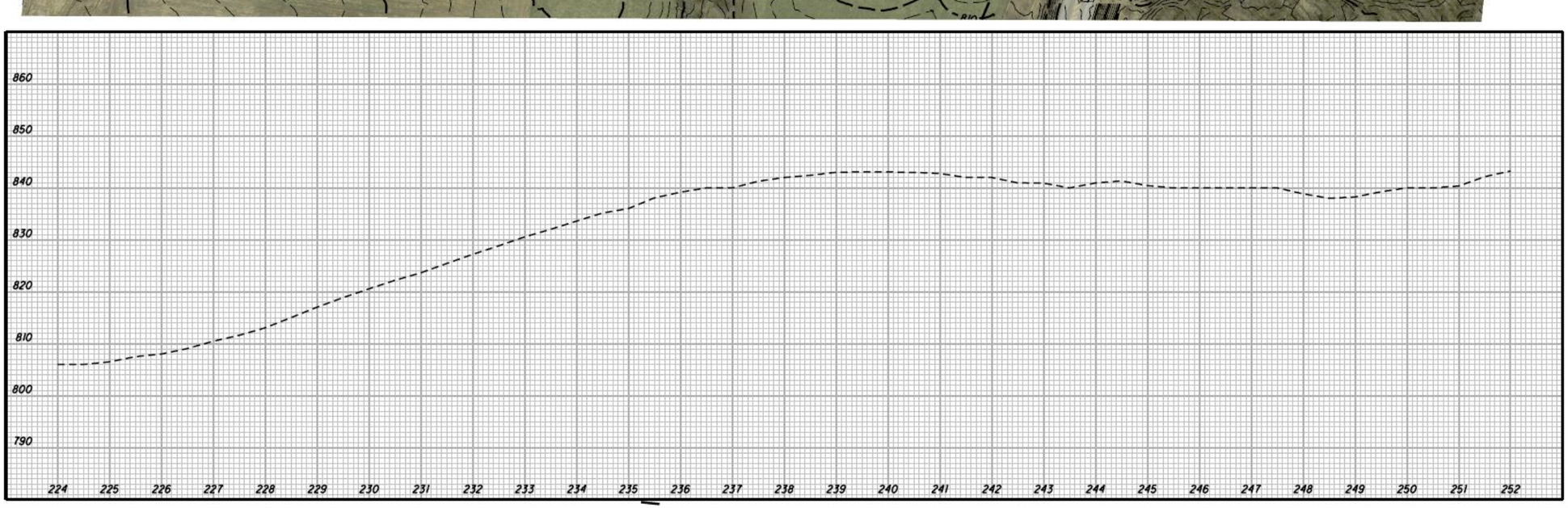

PLAN AND PROFILE STATE ROUTE 63
STA. 224+00+00 TO 252+00

WAR-63-0.00

05

CALCULATED XXX
DRAWN XXX

HORIZONTAL SCALE IN FEET
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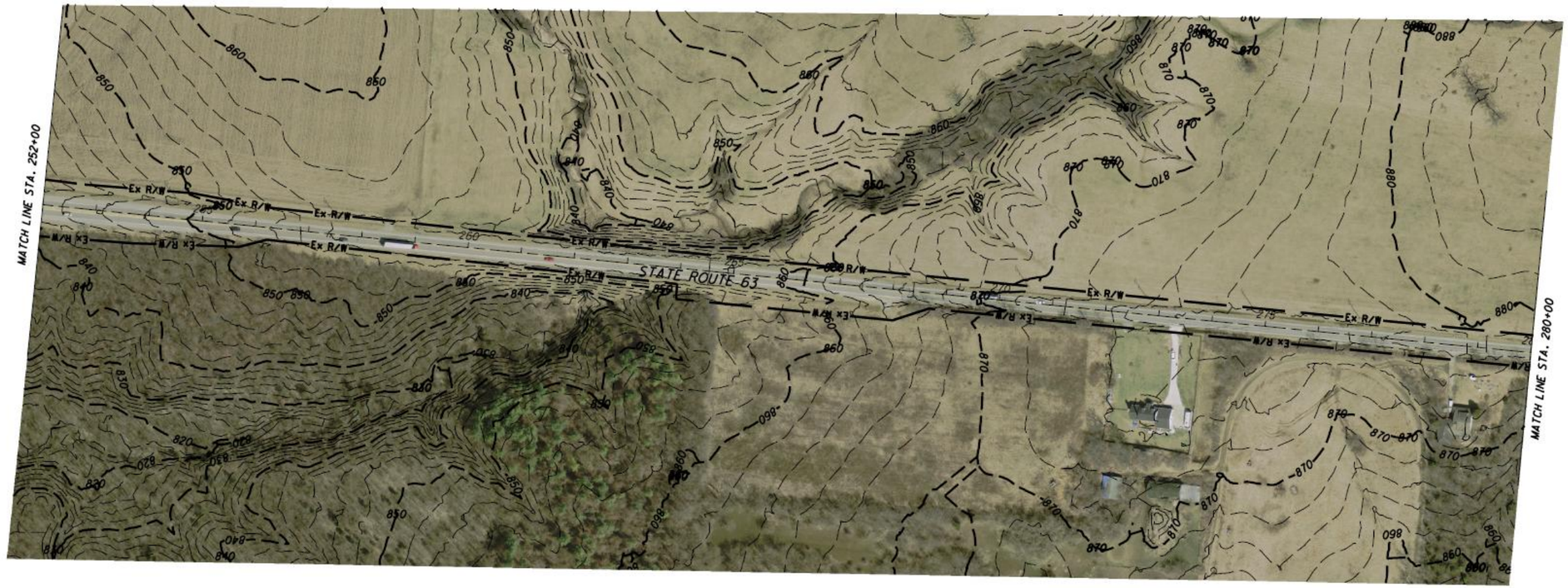

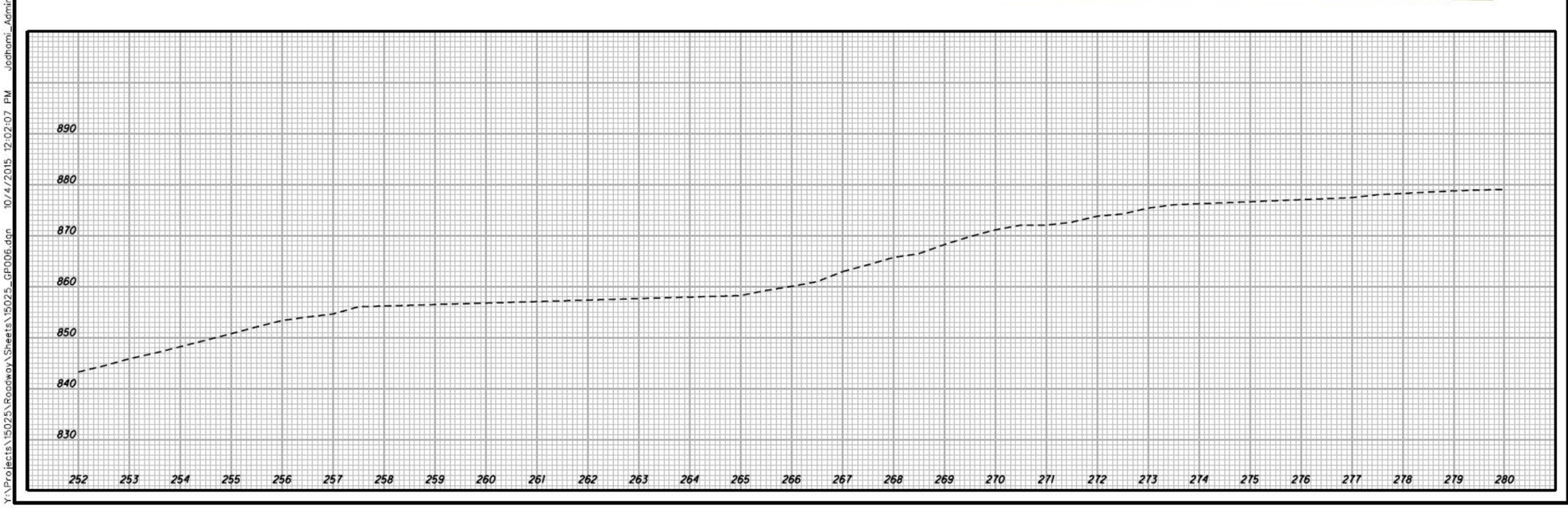

PLAN AND PROFILE STATE ROUTE 63
STA. 252+00 TO 280+00

WAR-63-0.00

06
11

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CHECKED: XXX

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N

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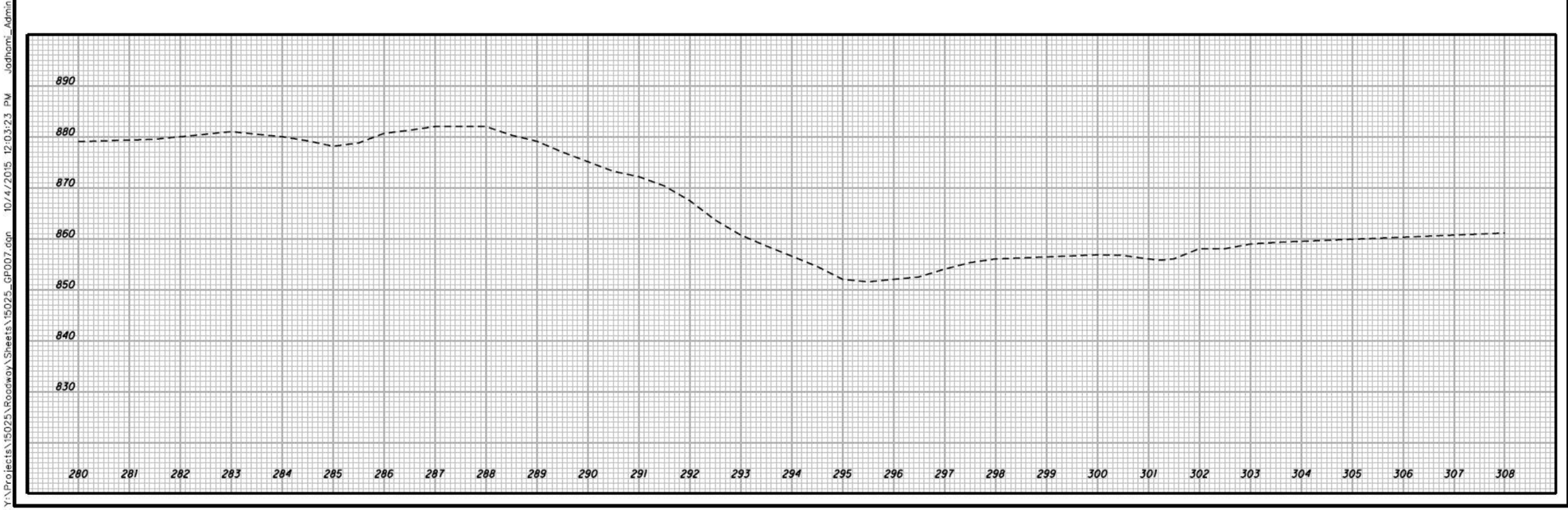

PLAN AND PROFILE STATE ROUTE 63
STA. 280+00 TO 308+00

CALCULATED XXX
CHECKED XXX

HORIZONTAL SCALE IN FEET
0 50 100 200

WAR-63-0.00

07
11

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PLAN AND PROFILE STATE ROUTE 63
STA. 308+00 TO 336+00

WAR-63-0.00

08
11

CALCULATED XXX
CHECKED XXX

HORIZONTAL SCALE IN FEET
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PLAN AND PROFILE STATE ROUTE 63
STA. 336+00 TO 364+00

WAR-63-0.00

CALCULATED: XXX
CHECKED: XXX

HORIZONTAL SCALE IN FEET
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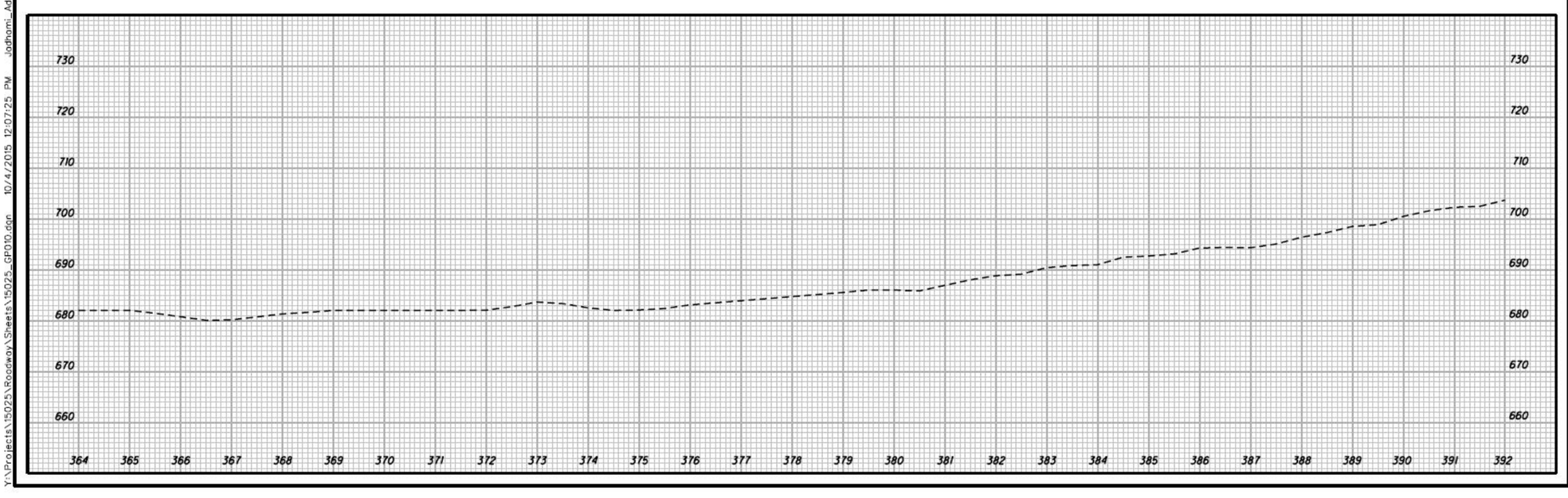

PLAN AND PROFILE STATE ROUTE 63
STA. 364+00 TO 392+00

WAR-63-0.00

CALCULATED XXX
CHECKED XXX

HORIZONTAL SCALE IN FEET
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10
11

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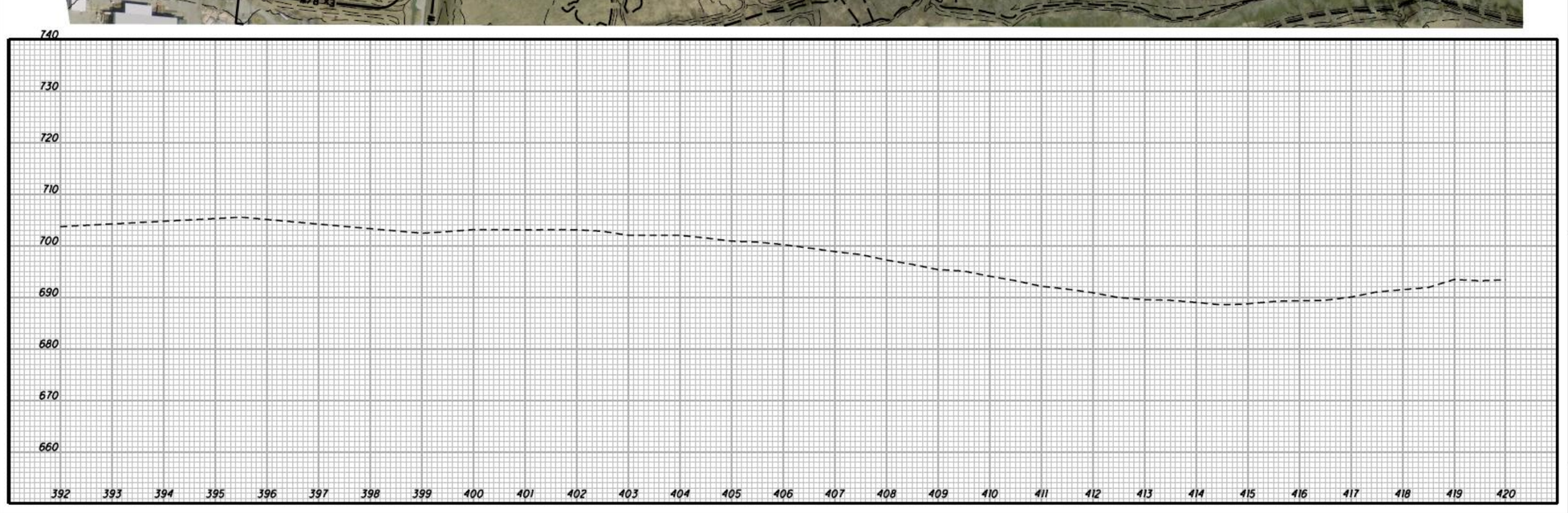

PLAN AND PROFILE STATE ROUTE 63
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WAR-63-0.00

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CHECKED XXX

HORIZONTAL SCALE IN FEET
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Y:\Projects\15025\Roadway\Sheets\15025_GP011.dgn 10/4/2015 12:08:44 PM Jodhomi_Admin

APPENDIX B

TRAFFIC DATA

SR 63 CORRIDOR- WARREN COUNTY, OHIO

Unsignalized Intersections

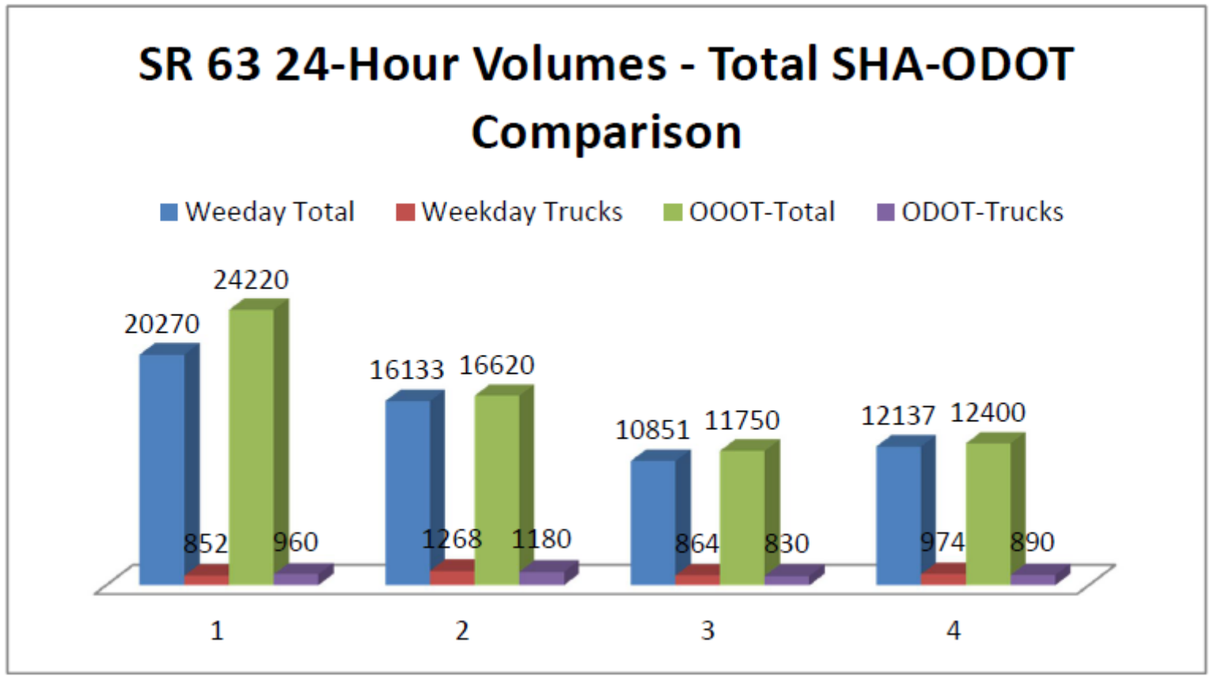
Signalized Intersections

Traffic Count Locations – weekdays and Weekends 24-hour counts

Signalized Intersection (Outside Study Area)

Intersection Turning Movement Counts may be required at six intersections within the Project Limits. Additional TMC may be needed at the intersection of SR 63 and Gateway Blvd.

SHA Engineering LLC
June 02, 2015



24-HOUR TRAFFIC COUNT LOCATIONS

LOCATION 1 – STATE ROUTE 63 BETWEEN UNION ROAD AND MIAMI VALLEY GAMING

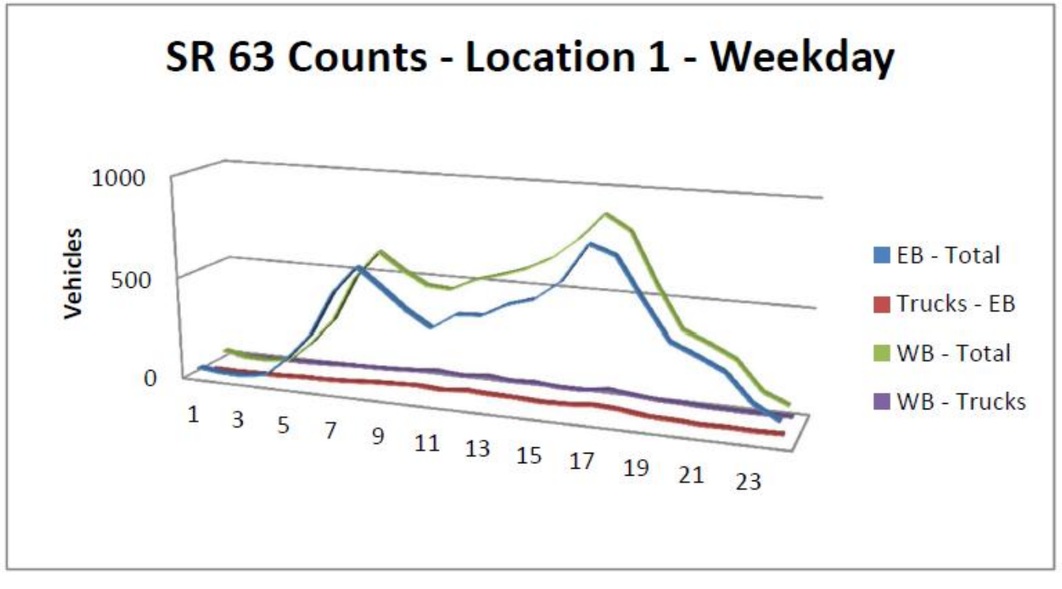
LOCATION 2 – STATE ROUTE 63 WEST OF STATE ROUTE 741

LOCATION 3 – STATE ROUTE 63 EAST OF STATE ROUTE 741

LOCATION 4 – STATE ROUTE 63 ABOUT 1500' WEST OF MARKAY ROAD

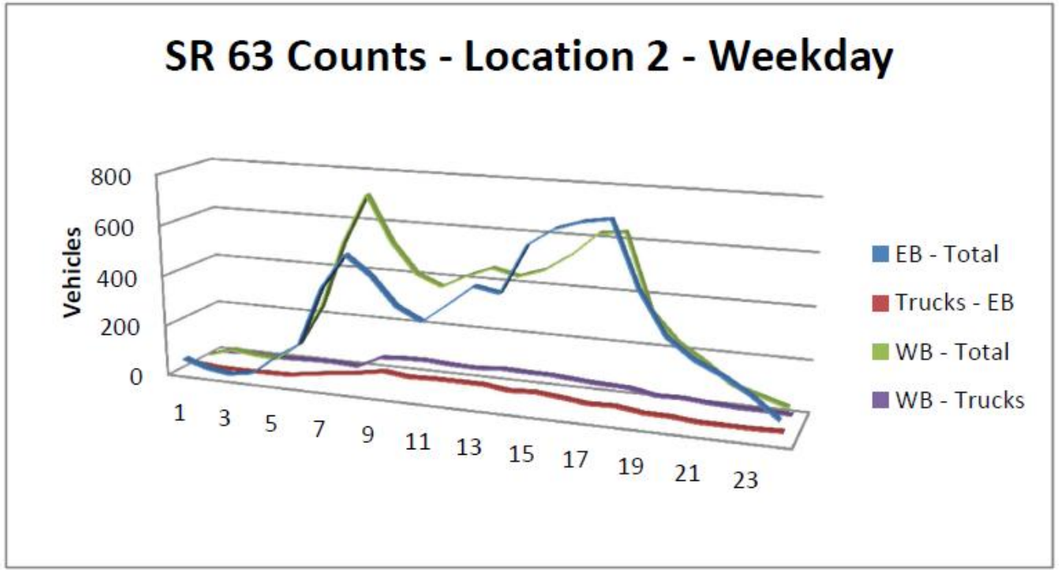
Start Date	9/16/2015											
Start Time						**Location 1**						
Site Code	SHA Eng Services - Location 1											

Start Time	Westbound				Eastbound				Both Directions			
	Cars	Trucks		Total	Cars	Trucks		Total	Cars	Trucks		Total
		No.	Percent			No.	Percent			No.	Percent	
12:00 AM	62	4	6.06%	66	44	5	10.20%	49	106	9	7.83%	115
1:00 AM	38	3	7.32%	41	30	3	9.09%	33	68	6	8.11%	74
2:00 AM	32	6	15.79%	38	25	7	21.88%	32	57	13	18.57%	70
3:00 AM	49	7	12.50%	56	44	7	13.73%	51	93	14	13.08%	107
4:00 AM	145	10	6.45%	155	138	12	8.00%	150	283	22	7.21%	305
5:00 AM	267	15	5.32%	282	260	14	5.11%	274	527	29	5.22%	556
6:00 AM	488	18	3.56%	506	470	19	3.89%	489	958	37	3.72%	995
7:00 AM	621	21	3.27%	642	594	28	4.50%	622	1215	49	3.88%	1264
8:00 AM	534	27	4.81%	561	498	33	6.21%	531	1032	60	5.49%	1092
9:00 AM	459	37	7.46%	496	398	38	8.72%	436	857	75	8.05%	932
10:00 AM	460	27	5.54%	487	334	29	7.99%	363	794	56	6.59%	850
11:00 AM	504	40	7.35%	544	399	41	9.32%	440	903	81	8.23%	984
12:00 PM	550	28	4.84%	578	411	35	7.85%	446	961	63	6.15%	1024
1:00 PM	585	32	5.19%	617	476	33	6.48%	509	1061	65	5.77%	1126
2:00 PM	655	23	3.39%	678	518	26	4.78%	544	1173	49	4.01%	1222
3:00 PM	752	22	2.84%	774	605	30	4.72%	635	1357	52	3.69%	1409
4:00 PM	864	38	4.21%	902	774	41	5.03%	815	1638	79	4.60%	1717
5:00 PM	807	24	2.89%	831	740	33	4.27%	773	1547	57	3.55%	1604
6:00 PM	584	14	2.34%	598	570	16	2.73%	586	1154	30	2.53%	1184
7:00 PM	387	11	2.76%	398	400	12	2.91%	412	787	23	2.84%	810
8:00 PM	341	6	1.73%	347	355	5	1.39%	360	696	11	1.56%	707
9:00 PM	284	4	1.39%	288	296	6	1.99%	302	580	10	1.69%	590
10:00 PM	147	4	2.65%	151	170	4	2.30%	174	317	8	2.46%	325
11:00 PM	94	5	5.05%	99	100	6	5.66%	106	194	11	5.37%	205
Daily Totals	**9709**	**426**	**4.20%**	**10135**	**8649**	**483**	**5.29%**	**9132**	**18358**	**909**	**4.72%**	**19267**

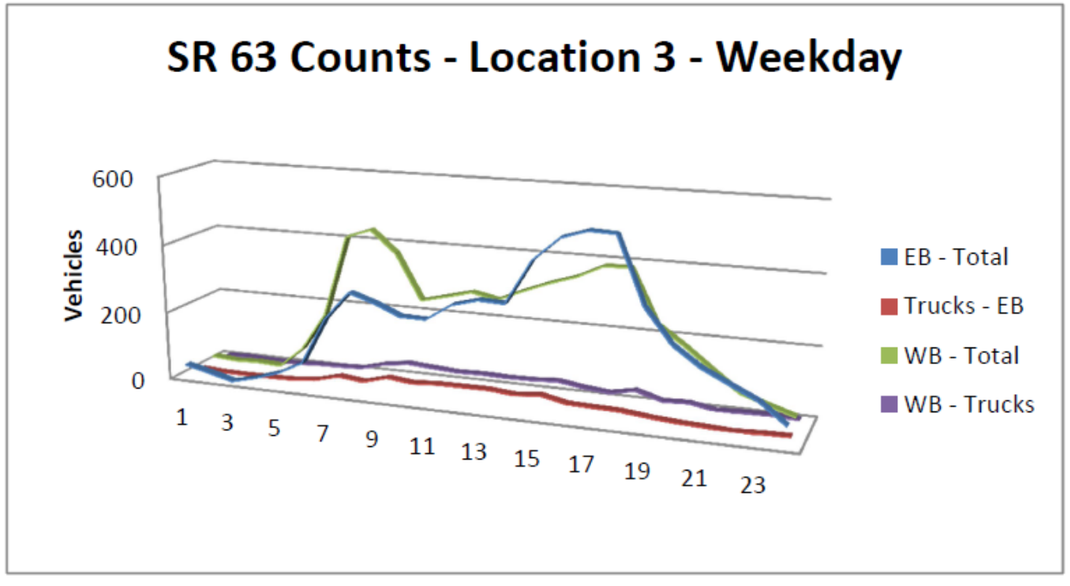


Start Date	11/10/2015											
Start Time	11:00 PM (on 11/9)						**Location 2**					
Site Code	150564 - SHA Eng Services											

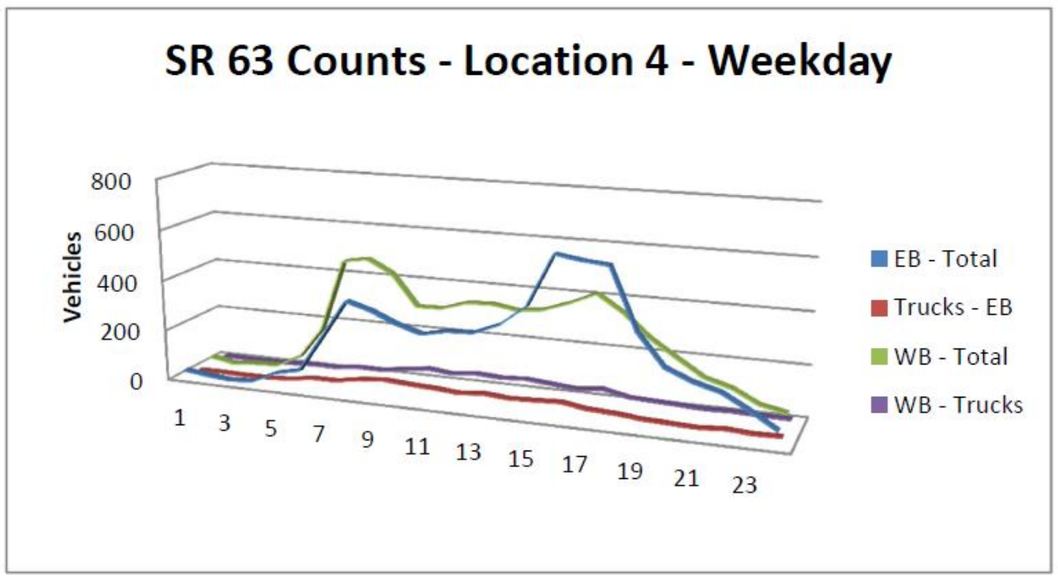
Start Time	Westbound				Eastbound				Both Directions			
	Cars	Trucks		Total	Cars	Trucks		Total	Cars	Trucks		Total
		No.	Percent			No.	Percent			No.	Percent	
12:00 AM	17	3	15.00%	20	52	8	13.33%	60	69	11	13.75%	80
1:00 AM	42	9	17.65%	51	29	1	3.33%	30	71	10	12.35%	81
2:00 AM	34	3	8.11%	37	17	0	0.00%	17	51	3	5.56%	54
3:00 AM	30	3	9.09%	33	31	3	8.82%	34	61	6	8.96%	67
4:00 AM	101	7	6.48%	108	105	5	4.55%	110	206	12	5.50%	218
5:00 AM	262	9	3.32%	271	149	20	11.83%	169	411	29	6.59%	440
6:00 AM	533	3	0.56%	536	367	34	8.48%	401	900	37	3.95%	937
7:00 AM	679	50	6.86%	729	491	46	8.57%	537	1170	96	7.58%	1266
8:00 AM	492	56	10.22%	548	402	63	13.55%	465	894	119	11.75%	1013
9:00 AM	375	58	13.39%	433	304	52	14.61%	356	679	110	13.94%	789
10:00 AM	342	51	12.98%	393	253	55	17.86%	308	595	106	15.12%	701
11:00 AM	395	49	11.04%	444	326	56	14.66%	382	721	105	12.71%	826
12:00 PM	425	57	11.83%	482	405	55	11.96%	460	830	112	11.89%	942
1:00 PM	405	54	11.76%	459	401	42	9.48%	443	806	96	10.64%	902
2:00 PM	439	53	10.77%	492	582	48	7.62%	630	1021	101	9.00%	1122
3:00 PM	512	45	8.08%	557	657	38	5.47%	695	1169	83	6.63%	1252
4:00 PM	606	39	6.05%	645	701	26	3.58%	727	1307	65	4.74%	1372
5:00 PM	620	36	5.49%	656	714	29	3.90%	743	1334	65	4.65%	1399
6:00 PM	352	17	4.61%	369	485	15	3.00%	500	837	32	3.68%	869
7:00 PM	243	19	7.25%	262	326	13	3.83%	339	569	32	5.32%	601
8:00 PM	187	11	5.56%	198	261	4	1.51%	265	448	15	3.24%	463
9:00 PM	117	6	4.88%	123	216	3	1.37%	219	333	9	2.63%	342
10:00 PM	89	5	5.32%	94	156	3	1.89%	159	245	8	3.16%	253
11:00 PM	63	0	0.00%	63	75	6	7.41%	81	138	6	4.17%	144
Daily Totals	**7360**	**643**	**8.03%**	**8003**	**7505**	**625**	**7.69%**	**8130**	**14865**	**1268**	**7.86%**	**16133**

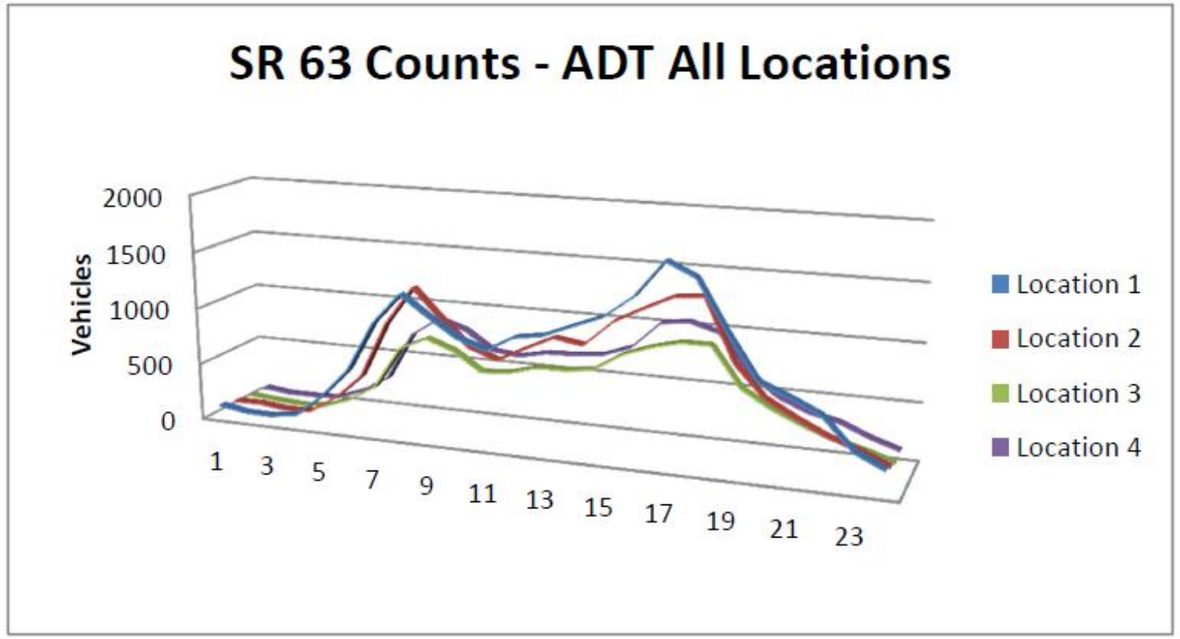


Study Name	SR 63 east of SR 741 - ATR											
Start Date	11/10/2015				Location 3							
Start Time	11:00 PM (on 11/9)											
Site Code	150564 - SHA Eng Services											
Start Time	Westbound				Eastbound				Both Directions			
	Cars	Trucks		Total	Cars	Trucks		Total	Cars	Trucks		Total
		No.	Percent			No.	Percent			No.	Percent	
12:00:00 AM	19	4	17.39%	23	34	6	15.00%	40	53	10	15.87%	63
1:00 AM	11	6	35.29%	17	21	2	8.70%	23	32	8	20.00%	40
2:00 AM	17	3	15.00%	20	4	1	20.00%	5	21	4	16.00%	25
3:00 AM	15	1	6.25%	16	21	2	8.70%	23	36	3	7.69%	39
4:00 AM	72	6	7.69%	78	43	4	8.51%	47	115	10	8.00%	125
5:00 AM	180	8	4.26%	188	73	11	13.10%	84	253	19	6.99%	272
6:00 AM	415	11	2.58%	426	191	30	13.57%	221	606	41	6.34%	647
7:00 AM	422	30	6.64%	452	282	22	7.24%	304	704	52	6.88%	756
8:00 AM	349	40	10.28%	389	238	42	15.00%	280	587	82	12.26%	669
9:00 AM	223	35	13.57%	258	215	34	13.65%	249	438	69	13.61%	507
10:00 AM	246	30	10.87%	276	209	39	15.73%	248	455	69	13.17%	524
11:00 AM	263	32	10.85%	295	256	40	13.51%	296	519	72	12.18%	591
12:00 PM	250	30	10.71%	280	276	40	12.66%	316	526	70	11.74%	596
1:00 PM	281	31	9.94%	312	279	34	10.86%	313	560	65	10.40%	625
2:00 PM	305	36	10.56%	341	398	41	9.34%	439	703	77	9.87%	780
3:00 PM	340	25	6.85%	365	480	25	4.95%	505	820	50	5.75%	870
4:00 PM	383	18	4.49%	401	506	23	4.35%	529	889	41	4.41%	930
5:00 PM	370	33	8.19%	403	505	21	3.99%	526	875	54	5.81%	929
6:00 PM	239	11	4.40%	250	325	13	3.85%	338	564	24	4.08%	588
7:00 PM	184	14	7.07%	198	236	7	2.88%	243	420	21	4.76%	441
8:00 PM	140	0	0.00%	140	186	4	2.11%	190	326	4	1.21%	330
9:00 PM	79	4	4.82%	83	153	0	0.00%	153	232	4	1.69%	236
10:00 PM	53	5	8.62%	58	113	4	3.42%	117	166	9	5.14%	175
11:00 PM	33	1	2.94%	34	54	5	8.47%	59	87	6	6.45%	93
Daily Totals	**4889**	**414**	**7.81%**	**5303**	**5098**	**450**	**8.11%**	**5548**	**9987**	**864**	**7.96%**	**10851**



Study Name	SR 63 near Markey - ATR											
Start Date	11/12/2015				Location 4							
Start Time	12:00 AM											
Site Code	150564 - SHA Eng Services											
Start Time	Westbound				Eastbound				Both Directions			
	Cars	Trucks		Total	Cars	Trucks		Total	Cars	Trucks		Total
		No.	Percent			No.	Percent			No.	Percent	
12:00 AM	26	5	16.13%	31	30	3	9.09%	33	56	8	12.50%	64
1:00 AM	11	3	21.43%	14	17	5	22.73%	22	28	8	22.22%	36
2:00 AM	18	4	18.18%	22	11	2	15.38%	13	29	6	17.14%	35
3:00 AM	22	4	15.38%	26	17	3	15.00%	20	39	7	15.22%	46
4:00 AM	64	9	12.33%	73	56	8	12.50%	64	120	17	12.41%	137
5:00 AM	188	9	4.57%	197	62	23	27.06%	85	250	32	11.35%	282
6:00 AM	459	20	4.18%	479	207	23	10.00%	230	666	43	6.06%	709
7:00 AM	477	18	3.64%	495	337	40	10.61%	377	814	58	6.65%	872
8:00 AM	413	32	7.19%	445	300	49	14.04%	349	713	81	10.20%	794
9:00 AM	279	45	13.89%	324	265	42	13.68%	307	544	87	13.79%	631
10:00 AM	291	35	10.74%	326	240	38	13.67%	278	531	73	12.09%	604
11:00 AM	311	46	12.89%	357	269	30	10.03%	299	580	76	11.59%	656
12:00 PM	321	40	11.08%	361	264	39	12.87%	303	585	79	11.90%	664
1:00 PM	299	46	13.33%	345	313	31	9.01%	344	612	77	11.18%	689
2:00 PM	321	37	10.34%	358	386	35	8.31%	421	707	72	9.24%	779
3:00 PM	364	29	7.38%	393	581	40	6.44%	621	945	69	6.80%	1014
4:00 PM	397	40	9.15%	437	581	24	3.97%	605	978	64	6.14%	1042
5:00 PM	355	18	4.83%	373	576	20	3.36%	596	931	38	3.92%	969
6:00 PM	273	14	4.88%	287	355	10	2.74%	365	628	24	3.68%	652
7:00 PM	213	9	4.05%	222	240	6	2.44%	246	453	15	3.21%	468
8:00 PM	154	5	3.14%	159	202	2	0.98%	204	356	7	1.93%	363
9:00 PM	123	8	6.11%	131	168	9	5.08%	177	291	17	5.52%	308
10:00 PM	76	4	5.00%	80	119	3	2.46%	122	195	7	3.47%	202
11:00 PM	56	4	6.67%	60	56	5	8.20%	61	112	9	7.44%	121
Daily Totals	**5511**	**484**	**8.07%**	**5995**	**5652**	**490**	**7.98%**	**6142**	**11163**	**974**	**8.03%**	**12137**



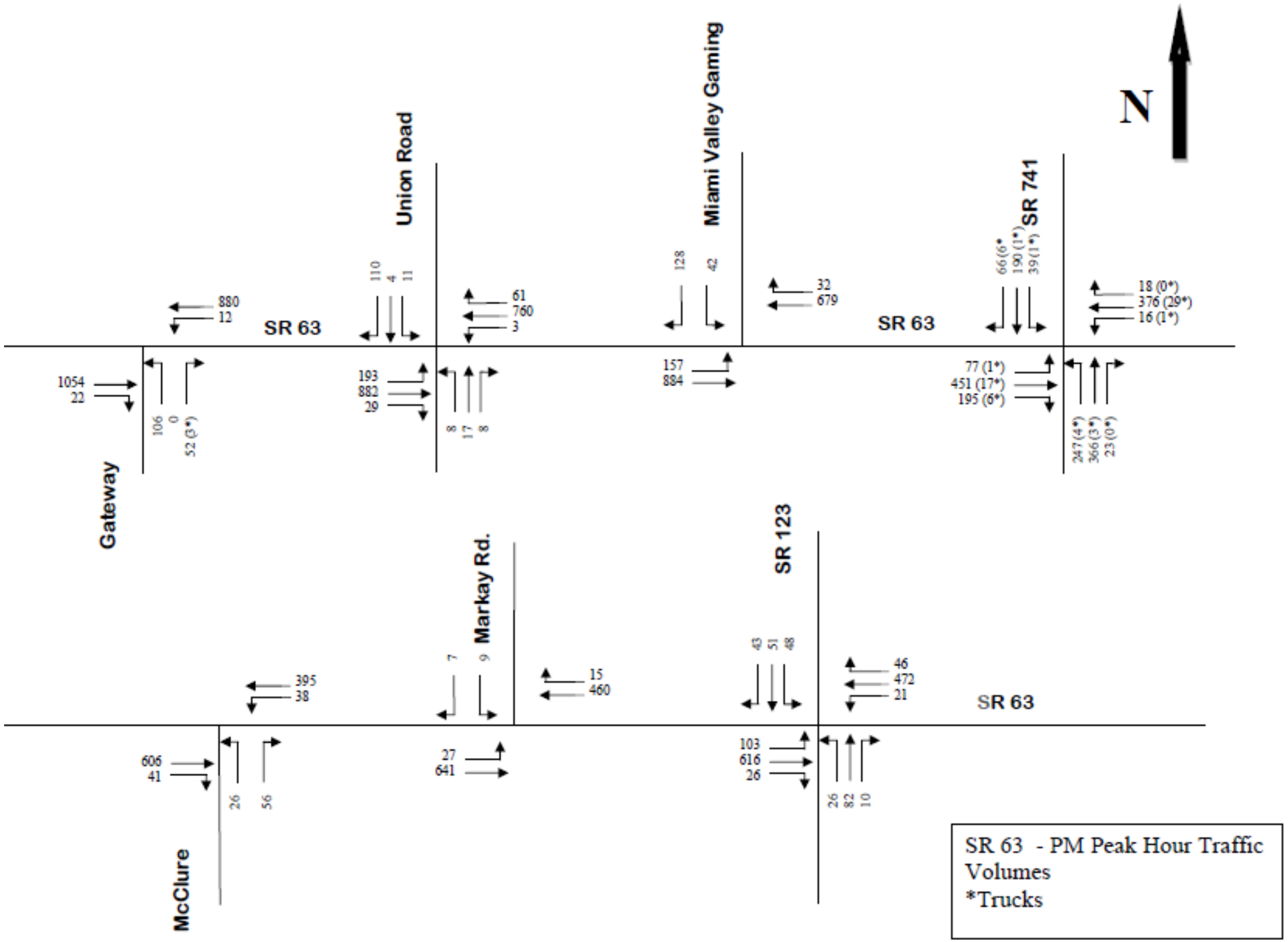

SR 63 Counts - ADT All Locations
Vehicles
2000
1500
1000
500
0
1
3
5
7
9
11
13
15
17
19
21
23
Location 1
Location 2
Location 3
Location 4


SR 63 Counts - ADT All Locations
2000
1500
1000
500
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Location 1
Location 2
Location 3
Location 4

Study Name	**SR 63 at SR 741 - PM Peak**
Start Date	**11/10/2015**
Start Time	**4:00 PM**
Site Code	**150564 - SHA Eng Services**
Project	

Horuly Totals

Start Time		SB SR 741 Southbound				SR 63 Westbound				NB SR 741 Northbound				SR 63 Eastbound			
		Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn
4:00 - 5:00 PM	Cars	43	212	69	0	15	344	21	0	195	253	26	0	71	439	186	
	Hea. Veh.	1	3	8	0	1	22	0	0	10	8	2	0	3	18	5	
		2.27%	1.40%	10.39%		6.25%	6.01%	0.00%		4.88%	3.07%	7.14%		4.05%	3.94%	2.62%	
	Total	44	215	77	0	16	366	21	0	205	261	28	0	74	457	191	
4:15 - 5:5: PM	Cars	44	205	66	0	13	371	21	0	196	302	28	0	88	461	189	
	Hea. Veh.	1	3	8	0	2	29	0	0	8	8	2	0	3	16	6	
		2.22%	1.44%	10.81%		13.33%	7.25%	0.00%		3.92%	2.58%	6.67%		3.30%	3.35%	3.08%	
	Total	45	208	74	0	15	400	21	0	204	310	30	0	91	477	195	
4:30 - 5:30 PM	Cars	40	194	63	0	15	373	20	0	220	338	23	0	80	455	187	
	Hea. Veh.	1	1	5	0	1	30	0	0	8	4	2	0	3	14	7	
		2.44%	0.51%	7.35%		6.25%	7.44%	0.00%		3.51%	1.17%	8.00%		3.61%	2.99%	3.61%	
	Total	41	195	68	0	16	403	20	0	228	342	25	0	83	469	194	
4:45 - 5:45 PM	Cars	38	189	60	0	15	347	18	0	243	363	23	0	76	434	189	
	Hea. Veh.	1	1	6	0	1	29	0	0	4	3	0	0	1	17	6	
		2.56%	0.53%	9.09%		6.25%	7.71%	0.00%		1.62%	0.82%	0.00%		1.30%	3.77%	3.08%	
	Total	39	190	66	0	16	376	18	0	247	366	23	0	77	451	195	
5:00 -6:00 PM	Cars	35	176	57	0	18	338	15	0	231	351	18	0	73	454	189	
	Hea. Veh.	0	0	2	0	2	30	0	0	4	4	0	0	1	21	7	
		0.00%	0.00%	3.39%		10.00%	8.15%	0.00%		1.70%	1.13%	0.00%		1.35%	4.42%	3.57%	
	Total	35	176	59	0	20	368	15	0	235	355	18	0	74	475	196	

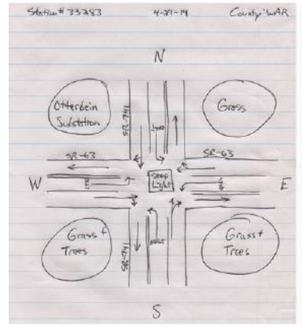

N
Gateway
Union Road
Miami Valley Gaming
SR 741
SR 123
Markay Rd.
McClure
SR 63
SR 63
SR 63
1054
22
106
0
52 (3*)
880
12
193
882
29
110
4
11
8
17
8
61
760
3
157
884
128
42
32
679
77 (1*)
451 (17*)
195 (6*)
66 (6*
190 (1*)
39 (1*)
247 (4*)
366 (3*)
23 (0*)
18 (0*)
376 (29*)
16 (1*)
606
41
26
56
395
38
27
641
7
9
15
460
103
616
26
43
51
48
26
82
10
46
472
21
SR 63 - PM Peak Hour Traffic Volumes
*Trucks

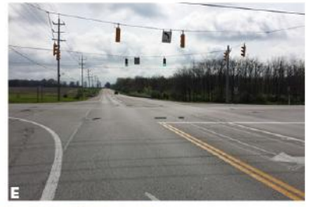
Study Name	WAR-63 & SR-741 TMC
Start Date	Thursday, October 09, 2014 7:00 AM
End Date	Thursday, October 09, 2014 6:00 PM
Site Code	

Report Summary

		Southbound						Westbound						Northbound						Eastbound					
Time Period	**Class.**	**R**	**T**	**L**	**U**	**I**	**O**	**R**	**T**	**L**	**U**	**I**	**O**	**R**	**T**	**L**	**U**	**I**	**O**	**R**	**T**	**L**	**U**	**I**	**O**	**Total**
Peak 1	Lights	241	357	35	0	633	733	77	252	32	0	361	213	29	452	12	0	493	406	17	149	204	0	370	505	1857
Specified Period	%	94%	87%	92%	0%	90%	94%	95%	96%	91%	0%	97%	94%	94%	94%	63%	0%	93%	87%	81%	98%	93%	0%	94%	95%	93%
7:00 AM - 9:00 AM	Other Vehicles	15	54	3	0	72	50	4	4	3	0	11	8	2	30	7	0	39	61	4	3	16	0	23	26	145
One Hour Peak	%	6%	13%	8%	0%	10%	6%	5%	2%	9%	0%	3%	4%	6%	6%	37%	0%	7%	13%	19%	2%	7%	0%	6%	5%	7%
7:15 AM - 8:15 AM	Total	256	411	38	0	705	783	81	256	35	0	372	221	31	482	19	0	532	467	21	152	220	0	393	531	2002
	PHF	0.78	0.87	0.68	0	0.82	0.83	0.72	0.83	0.51	0	0.82	0.79	0.6	0.87	0.68	0	0.92	0.88	0.66	0.83	0.79	0	0.95	0.87	0.97
	Approach %					15%	39%					19%	11%					27%	23%					20%	27%	
Peak 2	Lights	105	236	47	0	388	432	50	94	29	0	173	175	39	248	12	0	299	283	18	89	134	0	241	211	1101
Specified Period	%	89%	86%	96%	0%	88%	90%	98%	96%	97%	0%	97%	96%	98%	88%	92%	0%	89%	88%	90%	96%	92%	0%	93%	92%	91%
11:00 AM - 12:00 PM	Other Vehicles	13	37	2	0	52	47	1	4	1	0	6	7	1	34	1	0	36	40	2	4	12	0	18	18	112
One Hour Peak	%	11%	14%	4%	0%	12%	10%	2%	4%	3%	0%	3%	4%	2%	12%	8%	0%	11%	12%	10%	4%	8%	0%	7%	8%	9%
11:00 AM - 12:00 PM	Total	118	273	49	0	440	479	51	98	30	0	179	182	40	282	13	0	335	323	20	93	146	0	259	229	1213
	PHF	0.87	0.81	0.82	0	0.85	0.89	0.91	0.88	0.83	0	0.93	0.91	0.77	0.86	0.54	0	0.9	0.82	0.83	0.8	0.91	0	0.94	0.94	0.93
	Approach %					34%	39%					15%	15%					28%	27%					21%	19%	
Peak 3	Lights	127	269	41	0	437	467	58	91	37	0	186	143	29	289	21	0	339	329	23	73	120	0	216	239	1178
Specified Period	%	92%	91%	95%	0%	92%	89%	94%	96%	93%	0%	94%	95%	97%	88%	95%	0%	89%	91%	88%	94%	91%	0%	92%	94%	91%
12:00 PM - 1:00 PM	Other Vehicles	11	27	2	0	40	55	4	4	3	0	11	8	1	39	1	0	41	33	3	5	12	0	20	16	112
One Hour Peak	%	8%	9%	5%	0%	8%	11%	6%	4%	8%	0%	6%	5%	3%	12%	5%	0%	11%	9%	12%	6%	9%	0%	8%	6%	9%
12:00 PM - 1:00 PM	Total	138	296	43	0	477	522	62	95	40	0	197	151	30	328	22	0	380	362	26	78	132	0	236	255	1290
	PHF	0.84	0.92	0.83	0	0.92	0.89	0.82	0.85	0.56	0	0.85	0.84	0.62	0.88	0.61	0	0.87	0.96	0.72	0.81	0.82	0	0.86	0.86	0.96
	Approach %					17%	40%					15%	12%					29%	28%					18%	20%	
Peak 4	Lights	198	625	97	0	920	713	62	159	54	0	275	440	34	416	28	0	478	706	27	309	235	0	571	385	2244
Specified Period	%	96%	98%	99%	0%	97%	94%	95%	99%	100%	0%	99%	100%	100%	95%	100%	0%	95%	98%	90%	100%	98%	0%	99%	98%	97%
4:00 PM - 6:00 PM	Other Vehicles	8	16	1	0	25	33	3	1	0	0	4	2	0	24	0	0	24	17	1	1	6	0	8	9	61
One Hour Peak	%	4%	2%	1%	0%	3%	4%	5%	1%	0%	0%	1%	0%	0%	5%	0%	0%	5%	2%	4%	0%	2%	0%	1%	2%	3%
4:45 PM - 5:45 PM	Total	206	641	98	0	945	746	65	160	54	0	279	442	34	440	28	0	502	723	28	310	241	0	579	394	2305
	PHF	0.79	0.98	0.91	0	0.94	0.87	0.74	0.87	0.79	0	0.87	0.95	0.65	0.89	0.7	0	0.9	0.98	0.78	0.95	0.76	0	0.88	0.91	0.95
	Approach %					41%	32%					12%	19%					22%	31%					25%	17%	

Station #33283 Warren County
4-29-2014
SR 741 / SR 63





OHIO DEPARTMENT OF TRANSPORTATION – DIVISION OF PLANNING -
OFFICE OF TECHNICAL SERVICES

INTERSECTION TRAFFIC COUNT SHOWING TURNING MOVEMENTS

Co.	Station No.	Route	Log	Location	City/Town	FC	Year
WAR	33283	SR-63	3.20	SR-63 @ SR-741	West of Lebanon	16	2014

Recorder	Hour	Period	Day	Date	Weather	Road Condition
Eggeman Eng.	07:00 AM	11:00 AM	THU	05/01/2014	UNKNOWN	
Eggeman Eng.	02:00 PM	06:00 PM	THU	05/01/2014	UNKNOWN	

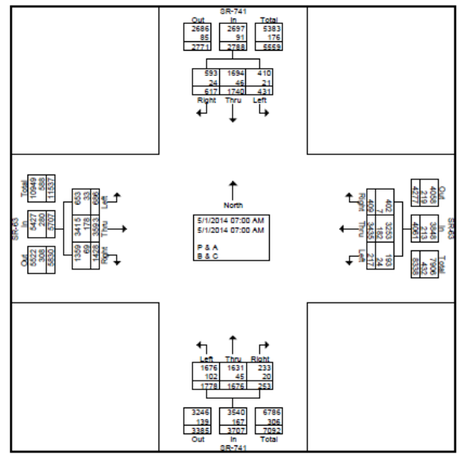
Leg Names:
N – SR-741
S – SR-741
E – SR-63
W – SR-63

Expansion Factor P&A:	1.74
Expansion Factor B&C:	1.35
Seasonal Factor P&A:	0.87
Seasonal Factor B&C:	0.66
Combined Factor P&A:	1.51
Combined Factor B&C:	0.89

***Note:** Expansion factor used – Portable Count # 13483 (2013)

Ohio Department of Transportation
Office of Technical Services
1980 W Broad St., Columbus, Ohio 43223
614-466-3728

File Name : 33283
Site Code : 00033283
Start Date : 5/1/2014
Page No : 1



Ohio Department of Transportation

Office of Technical Services
1980 W Broad St., Columbus, Ohio 43223
614-466-3728

Weather: Dry
Serial Number: TU-0515
Collected By: Eggeman Engineering
Other Notes: Raw Data

File Name : 33283
Site Code : 00033283
Start Date : 5/1/2014
Page No : 1

Groups Printed- P & A

	SR-741 From North				SR-63 From East				SR-741 From South				SR-63 From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
07:00 AM	21	64	6	91	8	84	8	100	2	20	43	65	36	54	8	98	354
07:15 AM	24	73	2	99	5	111	1	117	7	26	60	93	36	66	8	110	419
07:30 AM	18	82	3	103	7	101	3	111	2	29	51	82	50	59	13	122	418
07:45 AM	10	64	3	77	5	56	2	63	3	41	28	72	34	41	11	86	298
Total	73	283	14	370	25	352	14	391	14	116	182	312	156	220	40	416	1489
08:00 AM	14	44	4	62	5	62	1	68	5	23	42	70	29	44	8	81	281
08:15 AM	15	51	3	69	9	83	3	95	9	36	30	75	27	69	19	115	354
08:30 AM	11	50	5	66	8	78	5	91	3	27	31	61	38	61	5	104	322
08:45 AM	12	35	6	53	8	69	5	82	4	25	29	58	24	44	13	81	274
Total	52	180	18	250	30	292	14	336	21	111	132	264	118	218	45	381	1231
09:00 AM	2	17	4	23	13	36	0	49	2	19	20	41	9	25	6	40	153
09:15 AM	12	28	10	50	5	51	4	60	2	28	24	54	16	33	14	63	227
09:30 AM	7	23	9	39	13	54	3	70	3	16	29	48	15	36	9	60	217
09:45 AM	10	20	8	38	6	38	6	50	2	21	26	49	7	40	8	55	192
Total	31	88	31	150	37	179	13	229	9	84	99	192	47	134	37	218	789
10:00 AM	3	16	10	29	11	53	1	65	4	16	29	49	14	34	11	59	202
10:15 AM	9	20	6	35	5	54	1	60	7	22	24	53	18	46	10	74	222
10:30 AM	12	18	9	39	4	46	2	52	3	15	21	39	15	41	10	66	196
10:45 AM	14	21	7	42	8	56	3	67	1	20	24	45	14	42	8	64	218
Total	38	75	32	145	28	209	7	244	15	73	98	186	61	163	39	263	838
*** BREAK ***																	
02:00 PM	9	27	17	53	9	57	4	70	1	28	28	57	35	77	18	130	310
02:15 PM	11	17	5	33	1	46	3	50	5	22	25	52	31	50	13	94	229
02:30 PM	19	9	8	36	5	51	4	60	4	27	52	83	16	53	12	81	260
02:45 PM	12	40	16	68	11	71	5	87	3	45	37	85	34	64	19	117	357
Total	51	93	46	190	26	225	16	267	13	122	142	277	116	244	62	422	1156
03:00 PM	16	36	10	62	4	60	7	71	14	37	33	84	30	91	16	137	354
03:15 PM	8	30	14	52	6	71	2	79	5	55	44	104	31	74	19	124	359
03:30 PM	15	27	13	55	12	89	6	107	14	56	64	134	29	97	20	146	442
03:45 PM	11	20	10	41	10	71	8	89	5	39	40	84	25	102	20	147	361
Total	50	113	47	210	32	291	23	346	38	187	181	406	115	364	75	554	1516

Ohio Department of Transportation

Office of Technical Services
1980 W Broad St., Columbus, Ohio 43223
614-466-3728

Weather: Dry
Serial Number: TU-0515
Collected By: Eggeman Engineering
Other Notes: Raw Data

File Name : 33283
Site Code : 00033283
Start Date : 5/1/2014
Page No : 2

Groups Printed- P & A

	SR-741 From North				SR-63 From East				SR-741 From South				SR-63 From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
04:00 PM	11	31	13	55	18	64	2	84	7	46	35	88	36	97	21	154	381
04:15 PM	10	40	10	60	3	66	1	70	4	48	35	87	31	112	14	157	374
04:30 PM	18	33	9	60	13	72	3	88	6	54	25	85	40	131	14	185	418
04:45 PM	18	43	12	73	7	83	5	95	9	35	35	79	37	83	16	136	383
Total	57	147	44	248	41	285	11	337	26	183	130	339	144	423	65	632	1556
05:00 PM	4	23	3	30	11	71	6	88	2	30	25	57	30	109	7	146	321
05:15 PM	14	48	5	67	10	93	7	110	3	54	45	102	39	133	21	193	472
05:30 PM	8	47	17	72	12	79	8	99	3	57	38	98	48	130	18	196	465
05:45 PM	13	25	11	49	10	78	4	92	5	63	38	106	27	126	22	175	422
Total	39	143	36	218	43	321	25	389	13	204	146	363	144	498	68	710	1680
Grand Total	391	1122	268	1781	262	2154	123	2539	149	1080	1110	2339	901	2264	431	3596	10255
Apprch %	22	63	15		10.3	84.8	4.8		6.4	46.2	47.5		25.1	63	12		
Total %	3.8	10.9	2.6	17.4	2.6	21	1.2	24.8	1.5	10.5	10.8	22.8	8.8	22.1	4.2	35.1	

Ohio Department of Transportation

Office of Technical Services
1980 W Broad St., Columbus, Ohio 43223
614-466-3728

Weather: Dry
Serial Number: TU-0515
Collected By: Eggeman Engineering
Other Notes: Raw Data

File Name : 33283
Site Code : 00033283
Start Date : 5/1/2014
Page No : 1

Groups Printed- B & C

	SR-741 From North				SR-63 From East				SR-741 From South				SR-63 From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
07:00 AM	3	0	0	3	0	3	1	4	0	0	7	7	1	3	1	5	19
07:15 AM	1	2	1	4	0	5	1	6	2	2	1	5	6	4	0	10	25
07:30 AM	0	0	1	1	0	6	1	7	1	0	0	1	6	8	4	18	27
07:45 AM	2	0	0	2	0	6	0	6	0	1	3	4	2	6	0	8	20
Total	6	2	2	10	0	20	3	23	3	3	11	17	15	21	5	41	91
08:00 AM	0	2	1	3	2	4	3	9	1	3	3	7	0	7	3	10	29
08:15 AM	1	4	0	5	0	8	0	8	4	5	8	17	2	12	1	15	45
08:30 AM	1	2	0	3	0	4	0	4	0	1	2	3	3	9	0	12	22
08:45 AM	0	1	0	1	1	8	0	9	0	1	2	3	0	14	0	14	27
Total	2	9	1	12	3	24	3	30	5	10	15	30	5	42	4	51	123
09:00 AM	0	2	0	2	0	5	1	6	0	1	8	9	1	6	0	7	24
09:15 AM	0	3	1	4	1	5	0	6	1	3	1	5	7	8	2	17	32
09:30 AM	1	2	2	5	0	7	0	7	0	0	5	5	6	6	1	13	30
09:45 AM	0	1	1	2	0	7	2	9	0	2	4	6	2	7	1	10	27
Total	1	8	4	13	1	24	3	28	1	6	18	25	16	27	4	47	113
10:00 AM	0	0	0	0	1	8	0	9	0	1	1	2	3	3	0	6	17
10:15 AM	1	1	0	2	0	7	0	7	0	3	3	6	4	3	1	8	23
10:30 AM	0	2	1	3	0	3	0	3	0	2	4	6	5	6	3	14	26
10:45 AM	0	3	0	3	1	6	0	7	0	1	6	7	2	7	2	11	28
Total	1	6	1	8	2	24	0	26	0	7	14	21	14	19	6	39	94
*** BREAK ***																	
02:00 PM	0	1	0	1	0	1	1	2	1	4	5	10	3	3	2	8	21
02:15 PM	2	2	1	5	0	8	3	11	0	1	5	6	1	4	0	5	27
02:30 PM	1	2	0	3	0	4	0	4	2	2	6	10	4	2	0	6	23
02:45 PM	0	3	1	4	0	6	1	7	1	1	1	3	5	5	2	12	26
Total	3	8	2	13	0	19	5	24	4	8	17	29	13	14	4	31	97
03:00 PM	1	2	0	3	0	4	1	5	1	0	7	8	5	9	3	17	33
03:15 PM	0	2	3	5	0	10	1	11	0	0	5	5	2	15	3	20	41
03:30 PM	3	1	0	4	0	12	1	13	1	2	3	6	0	4	0	4	27
03:45 PM	0	1	1	2	0	10	1	11	0	2	2	4	2	4	0	6	23
Total	4	6	4	14	0	36	4	40	2	4	17	23	9	32	6	47	124

Ohio Department of Transportation

Office of Technical Services
1980 W Broad St., Columbus, Ohio 43223
614-466-3728

Weather: Dry
Serial Number: TU-0515
Collected By: Eggeman Engineering
Other Notes: Raw Data

File Name : 33283
Site Code : 00033283
Start Date : 5/1/2014
Page No : 2

Groups Printed- B & C

	SR-741 From North				SR-63 From East				SR-741 From South				SR-63 From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
04:00 PM	1	2	1	4	0	10	2	12	0	1	3	4	0	6	2	8	28
04:15 PM	2	0	2	4	0	11	0	11	2	3	4	9	0	9	0	9	33
04:30 PM	1	1	0	2	1	9	1	11	0	2	1	3	1	3	0	4	20
04:45 PM	2	1	0	3	0	8	0	8	3	0	2	5	2	6	1	9	25
Total	6	4	3	13	1	38	3	42	5	6	10	21	3	24	3	30	106
05:00 PM	1	2	0	3	0	4	0	4	0	1	1	2	0	2	1	3	12
05:15 PM	0	0	0	0	0	6	1	7	0	0	2	2	1	10	0	11	20
05:30 PM	0	1	2	3	0	6	0	6	0	0	3	3	0	4	0	4	16
05:45 PM	0	0	2	2	0	4	2	6	0	1	4	5	0	5	0	5	18
Total	1	3	4	8	0	20	3	23	0	2	10	12	1	21	1	23	66
Grand Total	24	46	21	91	7	205	24	236	20	46	112	178	76	200	33	309	814
Apprch %	26.4	50.5	23.1		3	86.9	10.2		11.2	25.8	62.9		24.6	64.7	10.7		
Total %	2.9	5.7	2.6	11.2	0.9	25.2	2.9	29	2.5	5.7	13.8	21.9	9.3	24.6	4.1	38	

APPENDIX C

SAFETY AND CRASH DATA

CRASH_SEVERITY	Number	%
Fatal Crash	1	0.3%
Injury Crash	78	25.7%
Property Damage Crash	224	73.9%
Grand Total	303	100.0%

TRAFFIC_CRASH_YEAR	Number	%
2013	95	31.4%
2014	104	34.3%
2015	104	34.3%
Grand Total	303	100.0%

DAY_OF_WEEK	Number	%
Tuesday	58	19.1%
Wednesday	54	17.8%
Friday	45	14.9%
Thursday	45	14.9%
Saturday	39	12.9%
Monday	32	10.6%
Sunday	30	9.9%
Grand Total	303	100.0%

HOUR_OF_DAY	Number	%
0	4	1.3%
1	3	1.0%
2	1	0.3%
3	1	0.3%
4	2	0.7%
5	9	3.0%
6	16	5.3%
7	14	4.6%
8	16	5.3%
9	16	5.3%
10	11	3.6%
11	10	3.3%
12	19	6.3%
13	17	5.6%
14	23	7.6%
15	20	6.6%
16	26	8.6%
17	37	12.2%
18	15	5.0%
19	12	4.0%
20	7	2.3%
21	6	2.0%
22	11	3.6%
23	7	2.3%
Grand Total	303	100.0%

TYPE_OF_CRASH	Number	%
Rear End	147	48.5%
Fixed Object	51	16.8%
Angle	22	7.3%
Animal	18	5.9%
Left Turn	13	4.3%
Sideswipe - Passing	12	4.0%
Sideswipe - Meeting	12	4.0%
Other Non-Collision	11	3.6%
Backing	10	3.3%
Parked Vehicle	2	0.7%
Head On	2	0.7%
Other Object	2	0.7%
Pedestrian	1	0.3%
Grand Total	303	100.0%

WEATHER_CONDITION	Number	%
Clear	157	51.8%
Cloudy	89	29.4%
Rain	32	10.6%
Snow	19	6.3%
Sleet, Hail	2	0.7%
Fog, Smog, Smoke	2	0.7%
Other/Unknown	2	0.7%
Grand Total	303	100.0%

ROAD_CONDITION	Number	%
Road - Dry	225	74.3%
Road - Wet	60	19.8%
Road - Snow	12	4.0%
Road - Ice	5	1.7%
Road Condition Not Stated	1	0.3%
Grand Total	303	100.0%

LIGHT_CONDITION	Number	%
Daylight	209	69.0%
Dark - No Lights	55	18.2%
Dark - Lighted	21	6.9%
Dusk	8	2.6%
Dawn	8	2.6%
Light Not Stated	2	0.7%
Grand Total	303	100.0%

NUMBER_OF_VEHICLES	Number	%
(blank)	303	100.0%
Grand Total	303	100.0%

LOCATION	Number	%
Not An Intersection	234	77.2%
Four-Way Intersection	43	14.2%
T-Intersection	17	5.6%
Driveway/Alley Access	7	2.3%
Y-Intersection	1	0.3%
Unknown	1	0.3%
Grand Total	303	100.0%

CRASH_MONTH_NBR	Number	%
1	29	9.6%
2	19	6.3%
3	20	6.6%
4	24	7.9%
5	21	6.9%
6	21	6.9%
7	22	7.3%
8	21	6.9%
9	26	8.6%
10	39	12.9%
11	27	8.9%
12	34	11.2%
Grand Total	303	100.0%

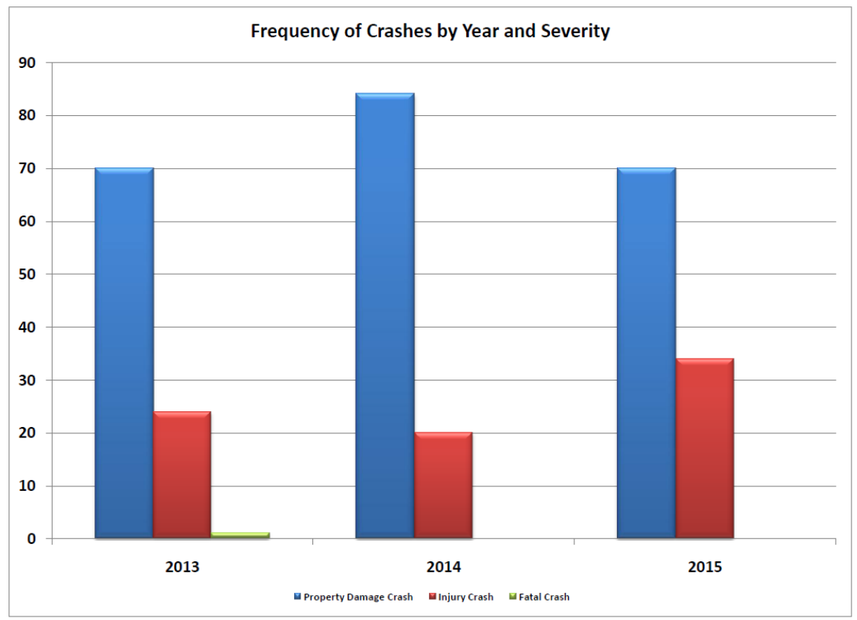
ROAD_CONTOUR	Number	%
Straight - Level	209	69.0%
Straight - Grade	93	30.7%
Curve - Level	1	0.3%
Grand Total	303	100.0%

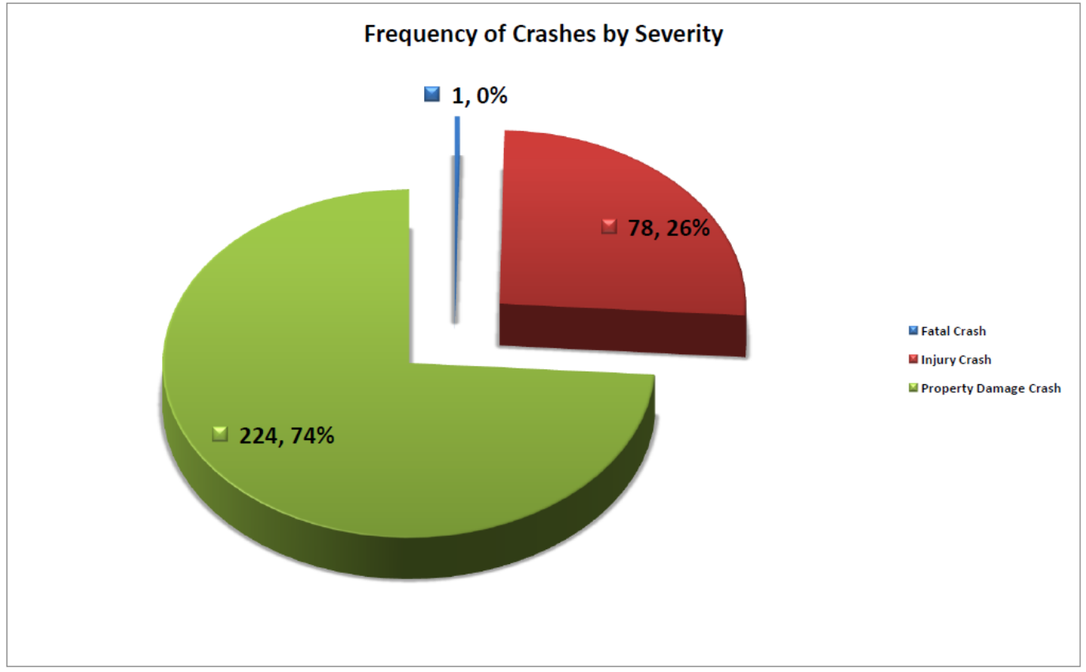
SPECIAL_AREA	Number	%
Unknown or Not in Work Zone	289	95.4%
Activity Area	8	2.6%
Advance Warning Area	4	1.3%
Transition Area	1	0.3%
Before First Work Zone Warning Sign	1	0.3%
Grand Total	303	100.0%

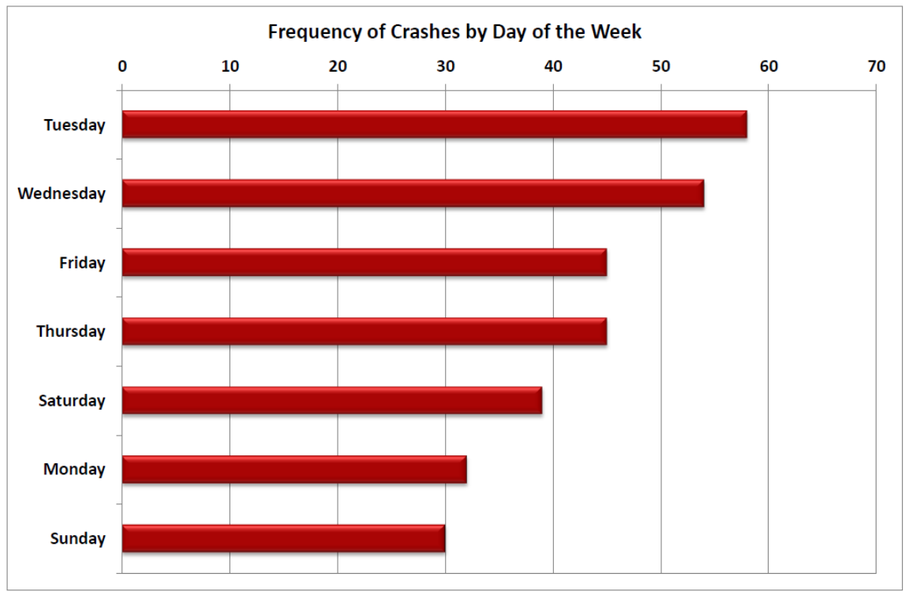
ANIMAL_TYPE	Number	%
Animal Not Stated	285	94.1%
Deer Hit	16	5.3%
Other Animal	2	0.7%
Grand Total	303	100.0%

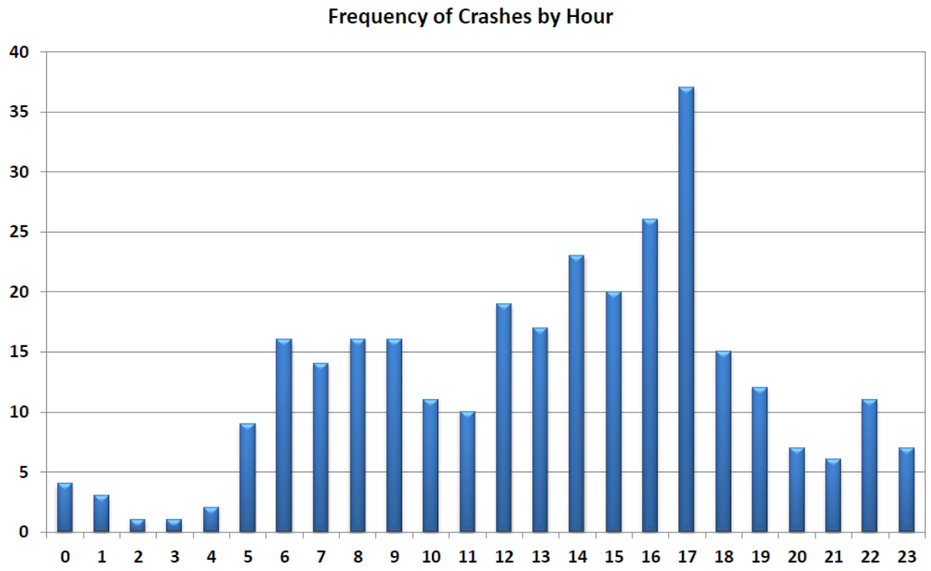
ACTION1	Number	%
Straight Ahead	225	74.3%
Making Left Turn	25	8.3%
Slowing Or Stopped In Traffic	18	5.9%
Backing	10	3.3%
Changing Lanes	6	2.0%
Making Right Turn	6	2.0%
Unknown	4	1.3%
Overtaking/Passing	4	1.3%
Entering Traffic Lane	2	0.7%
Making U-Turn	1	0.3%
Other Motorist Action	1	0.3%
Leaving Traffic Lane	1	0.3%
Grand Total	**303**	**100.0%**

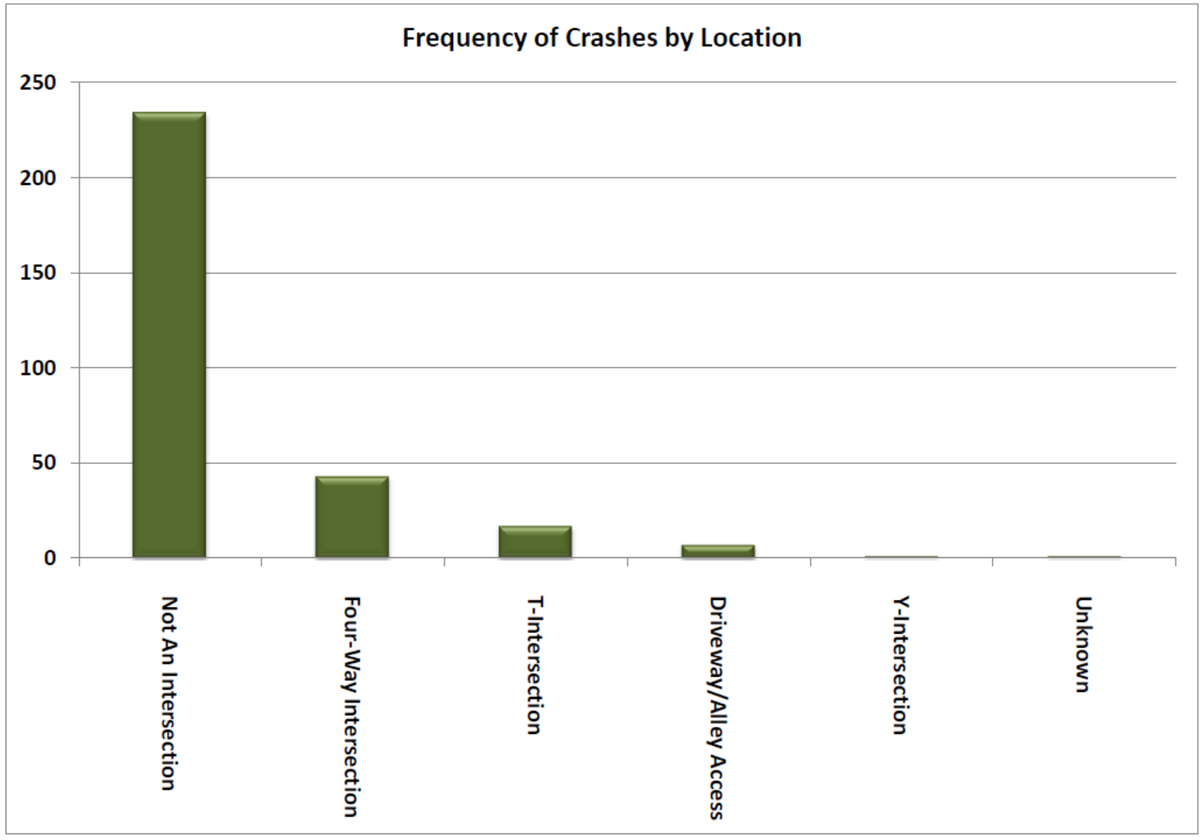
CONTRIBUTING_FACTOR1	Number	%
Followed Too Closely/ACDA	147	48.5%
Improper Lane Change/Passing/Offroad	27	8.9%
Failure To Yield	24	7.9%
None	21	6.9%
Unsafe Speed	15	5.0%
Failure To Control	14	4.6%
Left Of Center	13	4.3%
Improper Backing	7	2.3%
Improper Turn	7	2.3%
Unknown	6	2.0%
Ran Red Light	4	1.3%
Operating Vehicle In Negligent Manner	4	1.3%
Load Shifting/Falling/Spilling	3	1.0%
Swerving To Avoid	3	1.0%
Operating Defective Equipment	3	1.0%
Wrong Side/Wrong Way	1	0.3%
Vision Obstruction	1	0.3%
Other Improper Action	1	0.3%
Ran Stop Sign	1	0.3%
Improper Start From Parked Position	1	0.3%
Grand Total	**303**	**100.0%**

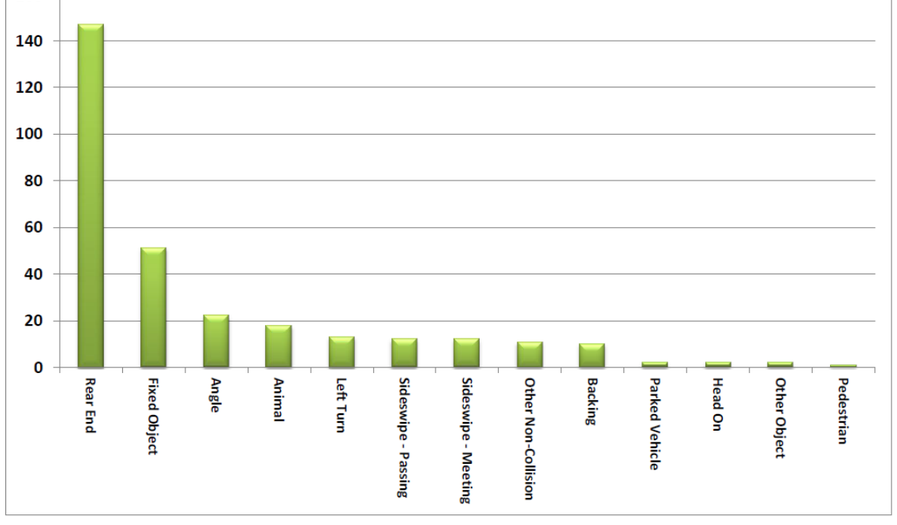


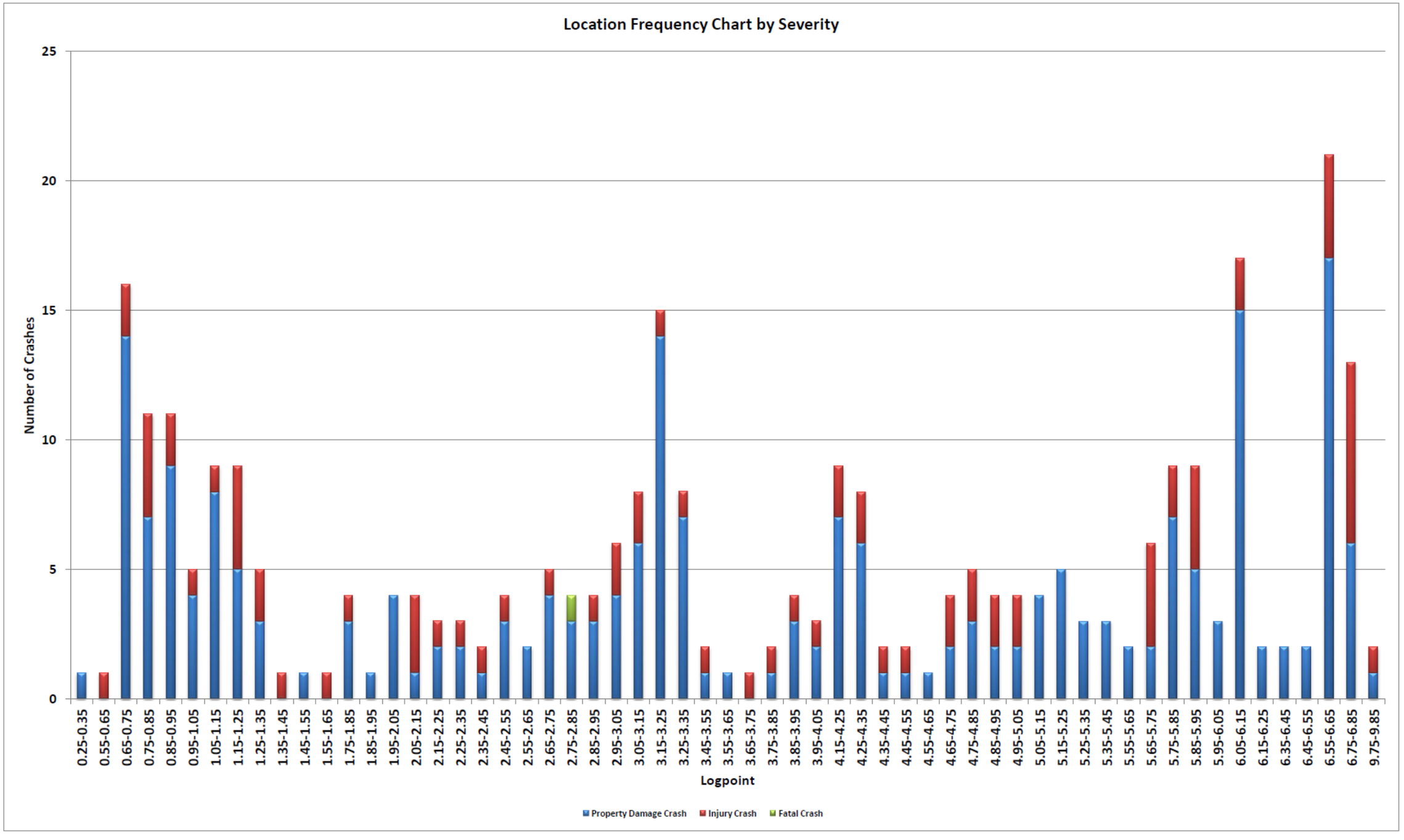





Frequency of Crashes by Hour
40
35
30
25
20
15
10
5
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23


Frequency of Crashes by Location
250
200
150
100
50
0
Not An Intersection
Four-Way Intersection
T-Intersection
Driveway/Alley Access
Y-Intersection
Unknown


Frequency of Crashes by Type of Crash
160
140
120
100
80
60
40
20
0
Rear End
Fixed Object
Angle
Animal
Left Turn
Sideswipe - Passing
Sideswipe - Meeting
Other Non-Collision
Backing
Parked Vehicle
Head On
Other Object
Pedestrian


Location Frequency Chart by Severity
Number of Crashes
25
20
15
10
5
0
0.25-0.35
0.55-0.65
0.65-0.75
0.75-0.85
0.85-0.95
0.95-1.05
1.05-1.15
1.15-1.25
1.25-1.35
1.35-1.45
1.45-1.55
1.55-1.65
1.75-1.85
1.85-1.95
1.95-2.05
2.05-2.15
2.15-2.25
2.25-2.35
2.35-2.45
2.45-2.55
2.55-2.65
2.65-2.75
2.75-2.85
2.85-2.95
2.95-3.05
3.05-3.15
3.15-3.25
3.25-3.35
3.45-3.55
3.55-3.65
3.65-3.75
3.75-3.85
3.85-3.95
3.95-4.05
4.15-4.25
4.25-4.35
4.35-4.45
4.45-4.55
4.55-4.65
4.65-4.75
4.75-4.85
4.85-4.95
4.95-5.05
5.05-5.15
5.15-5.25
5.25-5.35
5.35-5.45
5.55-5.65
5.65-5.75
5.75-5.85
5.85-5.95
5.95-6.05
6.05-6.15
6.15-6.25
6.35-6.45
6.45-6.55
6.55-6.65
6.75-6.85
9.75-9.85
Logpoint
Property Damage Crash
Injury Crash
Fatal Crash

APPENDIX D

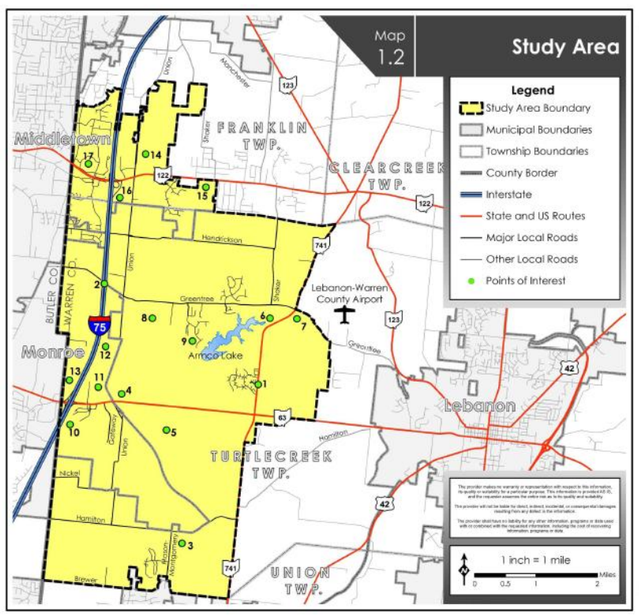
COUNTY AND COMMUNITY PLANS

VISION & ACTION PLAN FOR 2030

GATEWAY PLAN | WEST

TURTLECREEK TOWNSHIP | MIDDLETOWN | MONROE

WCRPC



THE STUDY AREA

The Gateway Plan contains the 17 points of interest listed below. Each represents a defining feature of the area it is located in and many are (or will be) important assets to the community that will be discussed in greater detail throughout the Plan.

Turtlecreek Township

1. Union Village/Otterbein
2. Potential Interchange at Greentree Rd.
3. Cincinnati Zoo
4. Racino
5. State Property
6. Armco Park
7. Turtlecreek Township Park
8. Greentree Golf Course
9. Shaker Run Golf Course

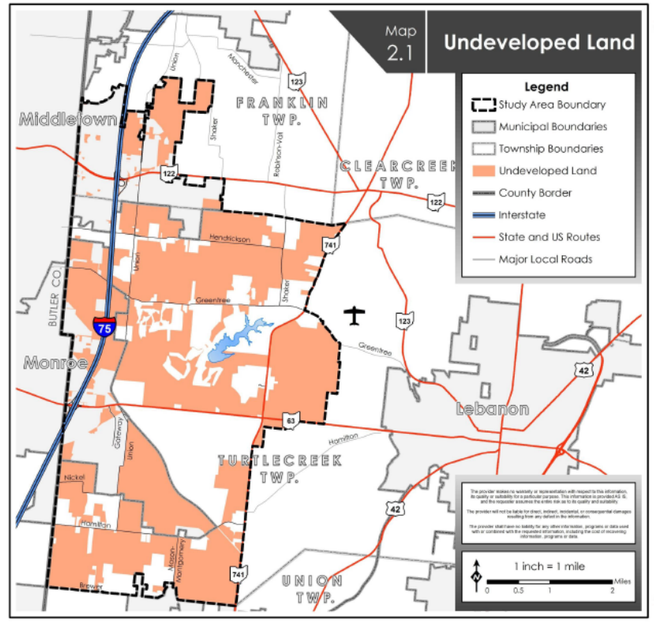
Monroe

10. Cincinnati Premium Outlets
11. Trader's World
12. Solid Rock Church
13. Treasure Aisles

Middletown

14. Atrium Medical Center
15. Bishop Fenwick High School
16. Middletown Christian School
17. Towne Mall

The study area contains 26 square miles across three jurisdictions; Turtlecreek Township, the City of Monroe, and the City of Middletown. The suggestions and recommendations of the Plan are largely tied to the Township; however, all three jurisdictions are vital to the success of Warren County's western gateway.



Opportunities

Availability of Land:

Plenty of open land along the I-75 corridor is available for future development. Developers can easily select sites and develop them quickly, rather than tearing down or rehabbing old buildings and infrastructure. The large amount of open space for development, from a planning perspective, also presents a huge opportunity to greatly impact the management and coordination of growth with zoning and other regulatory strategies.

Mixed-Use:

The existing zoning code regulations, adopted in 2012, allow for mixed-use development. The combination of compatible land uses creates unique places to live and work, often promoting walkability, interesting architecture, and a mixture of housing options.

Quality Housing:

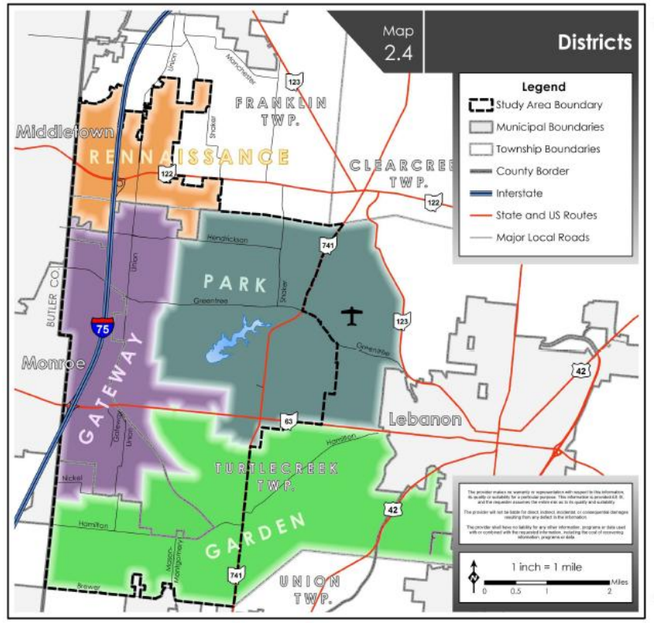
A major strength of the corridor is the existing housing stock. The continued promotion of quality housing and a high standard of living is another way of setting the tone for the area.

Beautification:

Aesthetic improvements such as landscaping, tree lined streets, boulevards, gateway signage, and civic landmarks can greatly enhance community image. These aesthetic elements are not only pleasing to the eye, but also announce arrival into a special place.

Open Space and Natural Resource Preservation:

Greenways, natural vegetation, open spaces, and viewsheds are important resources to protect and should not be taken for granted. A careful balance of the natural and built environments is essential to good community design.



Park District:

Armco Park and Turtlecreek Township Park are the central features of the Park District and will be excellent amenities for Township residents. This district will be defined by dense, carefully planned neighborhoods as it contains Union Village, a new-urban style development. Union Village will be a cultural hub and the source of identity for Turtlecreek Township. The dense development within Union Village and the district will also help preserve agricultural land and open space elsewhere in the Township. Conservation design for new subdivisions can also help preserve and protect land within the district. Shaker Run, Trails of Shaker Run, and Vistas of Shaker Run (all named after the Shaker community that historically occupied this area of Warren County – see Box 2.1) are other notable existing or planned subdivisions located within the Park District.

Box 2.1 | Shaker History

Turtlecreek Township has a rich Shaker history. The Shakers were widely known for their lively dancing and "shaking" during their worship services. Shakers are also well known for their expert furniture-making skills. They even invented the flat-head broom.

The creation of the Shaker community started with John Meacham, Benjamin S. Young, and Issachar Bates. They were invited to the community church and eventually converted the Turtlecreek congregation along with Rev. McNemar. Shortly after this large conversion, the Shaker Community was named "Union Village." Over time Union Village grew and was the second largest Shaker Community in the 1830s. Years later on March 5, 1912, the Shakers sold their 4,005 acres to the Evangelical United Brethren Church. The Shakers' history and heritage will continue to serve as a fascinating part of the Turtlecreek area.

Source: Warren County Historical Society

"SD5" Special District 5: The SD5 portion of the regulating master plan as illustrated on page D5 shall be implemented unless Owner does not transfer title to the SD5 area to the Warren County Convention and Visitors Bureau (CVB) on or before November 1, 2017 due to a failure of contingencies in the contract between the Owner and CVB. Should the title to the SD5 area not be timely transferred, the SD5 (residential alternative) plan as illustrated on page D6 of this document will become the plan of record that shall be implemented.

UNION VILLAGE

PUD ZONING STANDARDS
REGULATING PLAN - ZONING MAP

Transect Zones

- T3 Neighborhood Edge Zone
- T4 Neighborhood General Zone
- T5 Neighborhood Center Zone

Civic Spaces & Buildings

- Civic Space
  note: Civic Spaces may include tree stands, ponds, trails, recreation fields, buildings, cemeteries, playgrounds, pavilions, recreation related structures, and the like.
- Civic Buildings
  note: Civic Buildings may include premises available for not-for-profit organizations dedicated to religion, arts and culture, education (including schools), government, social service, transit, post offices, and the like.

Special Districts

- (1) SD1: Otterbein Campus
- (2a) SD2a: College Campus, Housing (See next page for alternative zoning)
- (2b) SD2b: College Campus, Other (See next page for alternative zoning)
- (3) SD3: (Regional) Commercial
- (4) SD4: (Regional) Commercial (See next page for alternative zoning)
- (5) SD5: Sports and Recreation Complex (See next page for alternative zoning)

Special Requirements
(to be added at Stage 1 and/or Site Plan Review)

- Required Storefront Frontage
- Recommended Storefront Frontage
- Common Lawn Frontage
- Required Terminated Vista
- Recommended Terminated Vista

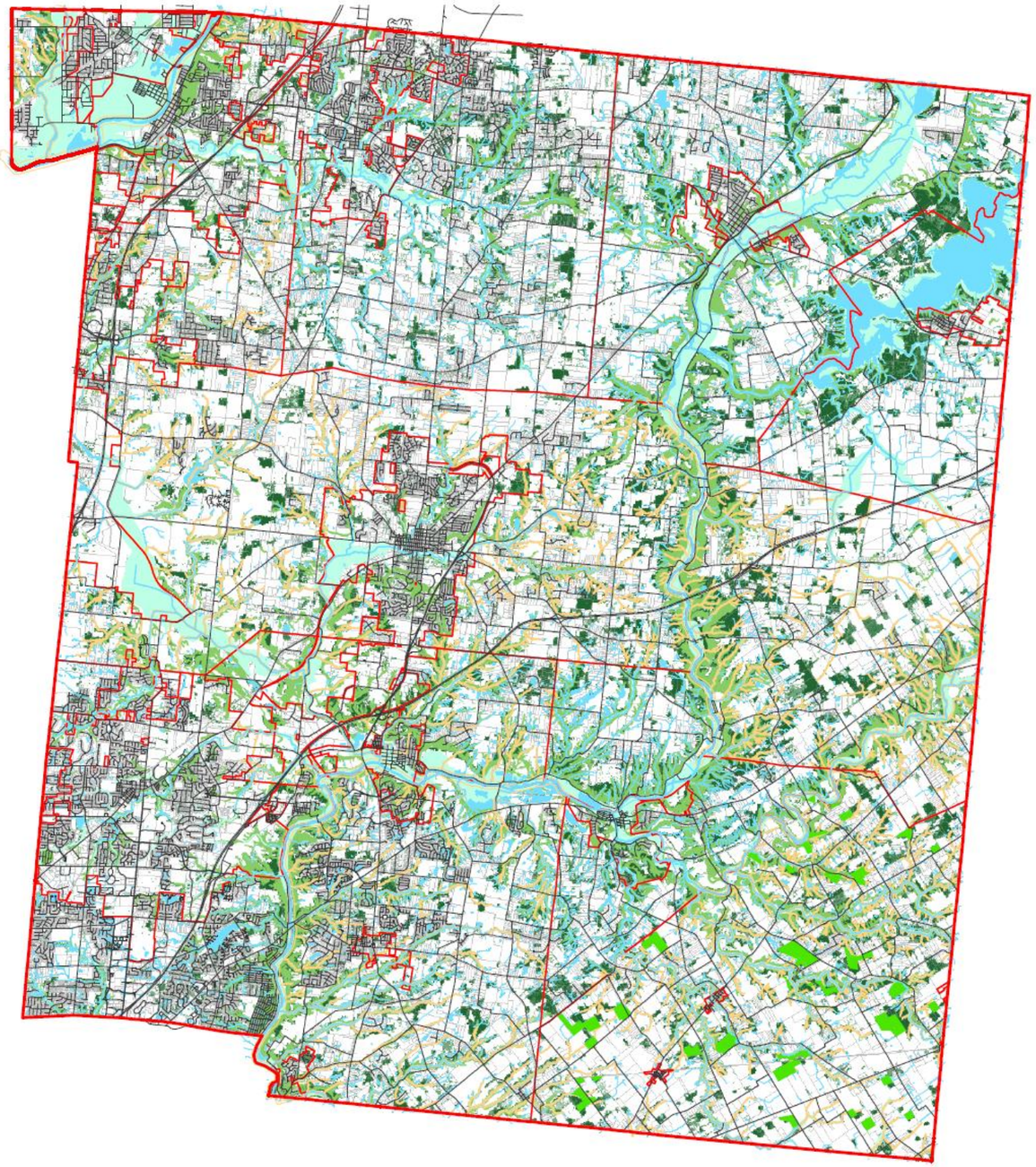
Thoroughfares

See Thoroughfares (D.9-D.14)

D.5

Map 3

Warren County Areas Of Environmental Significance



County Boundary
Local Jurisdication Boundaries
Public Roads
Parcel Boundaries
Rivers, Creeks & Streams
Lakes & Ponds
100 Year Floodplain
Recommended Stream Setbacks
Steep Sloped Areas
ODNR Protection Woodlands

Woodlands Rating
0 - 15 Lowest Value
15+ to 40
40+ to 59
59+ to 76
76+ to 100 Highest Value

0 6,000 12,000 24,000 36,000 48,000 Feet

Scale: 1 Inch = 12,000 Feet

Source: Warren County Regional Planning Commission & GIS Department

APPENDIX E

TRAFFIC PROJECTIONS

TABLE A - ODOT Historical Traffic Counts Versus Current and Forecast Values

Year	Traffic Component	SR 63 SEGMENT: East Monroe Corp Line to SR 741	SR 63 SEGMENT: East of SR 741 to McClure Road	SR 63 SEGMENT: McClure Road to West Lebanon Corp Line
	ODOT HISTORICAL COUNTS			
1982	Passenger + A Commercial	4900	3940	5200
	Truck B+C Commercial	400	320	400
	TOTAL	**5300**	**4260**	**5600**
1986	Passenger + A Commercial	5100	4060	6430
	Truck B+C Commercial	500	320	440
	TOTAL	**5600**	**4380**	**6870**
1990	Passenger + A Commercial	7960	5520	8270
	Truck B+C Commercial	630	450	450
	TOTAL	**8950**	**5970**	**8720**
1994	Passenger + A Commercial	8980	5830	7430
	Truck B+C Commercial	780	530	660
	TOTAL	**9760**	**6360**	**8090**
1997	Passenger + A Commercial	10490	6250	7440
	Truck B+C Commercial	1100	510	420
	TOTAL	**11590**	**6760**	**7860**
1999	Passenger + A Commercial	11760	9470	10360
	Truck B+C Commercial	1560	980	1060
	TOTAL	**13320**	**10450**	**11420**
2002	Passenger + A Commercial	11470	7730	8610
	Truck B+C Commercial	1520	800	880
	TOTAL	**12990**	**8530**	**9490**
2006	Passenger + A Commercial	12220	8310	9230
	Truck B+C Commercial	1620	860	940
	TOTAL	**13840**	**9170**	**10170**
2010	Passenger + A Commercial	13030	9080	10340
	Truck B+C Commercial	840	640	820
	TOTAL	**13870**	**9720**	**11160**
2013	Passenger + A Commercial	15440	10920	11470
	Truck B+C Commercial	1180	830	890
	TOTAL	**16620**	**11750**	**12360**
	CURRENT STUDY FIELD COUNTS - NOV 2015, SEASONALLY ADJUSTED			
2015	Passenger + A Commercial	14494	9738	10884
	Truck B+C Commercial	1236	842	950
	TOTAL	**15730**	**10580**	**11834**
	YEAR 2040 FORECAST VOLUMES - OKI			
2040	Passenger + A Commercial	14436	10468	11656
	Truck B+C Commercial	724	598	602
	TOTAL	**15160**	**11066**	**12258**

TABLE B - Average Annual Traffic Growth Rate by Segment (1982-2013)

Years	Traffic Component	SR 63 SEGMENT [1]: East Monroe Corp Line to SR 741	SR 63 SEGMENT [1]: East of SR 741 to McClure Road	SR 63 SEGMENT [1]: McClure Road to West Lebanon Corp Line
1982-2013	Passenger + A Commercial	3.77%	3.34%	2.58%
	Truck B+C Commercial	3.55%	3.12%	2.61%
	ALL TRAFFIC	**3.76%**	**3.33%**	**2.59%**

[1] Compound Average Annual Growth Rates calculated from ODOT published historical data for years 1982-2013.

TABLE C - Projected Future Year 2040 Traffic Based on Historical Growth Rates by Segment (1982-2013), Extended from 2013 ODOT Values

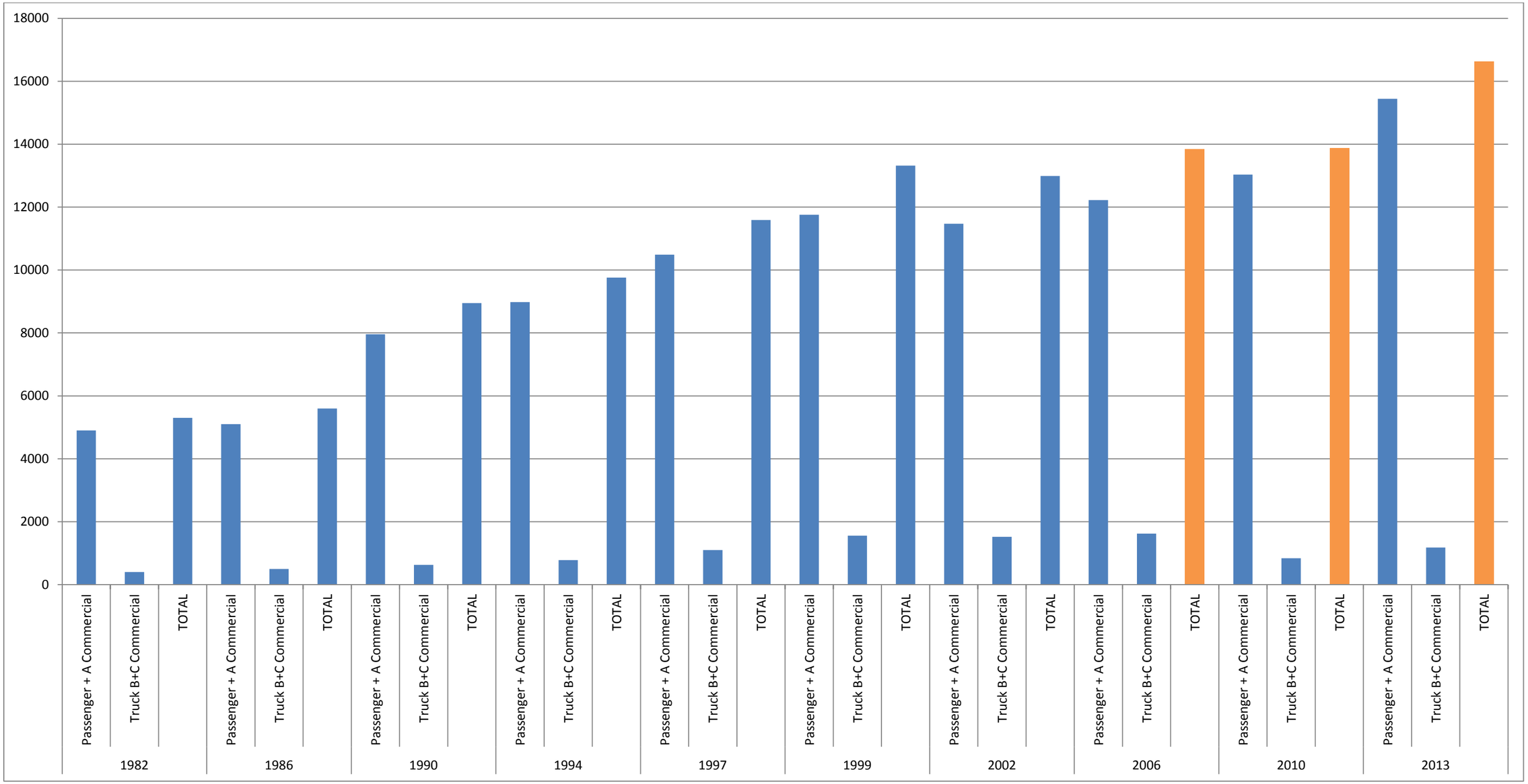
Year	Traffic Component	SR 63 SEGMENT [2]: East Monroe Corp Line to SR 741	SR 63 SEGMENT [2]: East of SR 741 to McClure Road	SR 63 SEGMENT [2]: McClure Road to West Lebanon Corp Line
2040	Passenger + A Commercial	41936	26514	22817
	Truck B+C Commercial	3026	1903	1784
	ALL TRAFFIC	**44962**	**28417**	**24601**

[2] Based on Average Annual Growth Rates in Table B.

TABLE D - Projected Future Year 2040 Traffic Based on Assumed 1.5% Average Annual Growth Rate for All Segments and Modes, Extended from 2013 ODOT Values

Year	Traffic Component	SR 63 SEGMENT [3]: East Monroe Corp Line to SR 741	SR 63 SEGMENT [3]: East of SR 741 to McClure Road	SR 63 SEGMENT [3]: McClure Road to West Lebanon Corp Line
2040	Passenger + A Commercial	23079	16323	17145
	Truck B+C Commercial	1764	1241	1330
	ALL TRAFFIC	**24843**	**17564**	**18475**

[3] Based on Average Annual Growth Rate of 1.5% for all segements and components.


18000
16000
14000
12000
10000
8000
6000
4000
2000
0
Passenger + A Commercial
Truck B+C Commercial
TOTAL
1982
1986
1990
1994
1997
1999
2002
2006
2010
2013

Simplified HIghway Forecasting Tool (SHIFT)
Design Designation

Ver 2.4, 6-1-2015 Modeling & Forecasting | 11/20/2015 12:39:40 PM | jelston

CMS DB Version June 2015 | war 63 Study

Opening Year: 2015 Design Year: 2035

Route ID	Log From	Log To	Length	Opening ADT	Design ADT	DHV	K	D	T24	TD
SWAR00063R	0.85	3.18	2.33	17,000	19,000	1,700	0.09	0.53	0.06	0.04
SWAR00063R	3.18	5.09	1.91	12,000	17,000	1,500	0.09	0.51	0.05	0.04
SWAR00063R	5.09	5.75	0.66	13,000	19,000	1,700	0.09	0.5	0.05	0.05

Simplified HIghway Forecasting Tool (SHIFT)
Design Designation

Ver 2.4, 6-1-2015 Modeling & Forecasting | 12/28/2015 2:32:47 PM | jelston

CMS DB Version June 2015 | WAR-63-Scoping Study - No. 2

Opening Year: 2015 Design Year: 2040

Route ID	Log From	Log To	Length	Opening ADT	Design ADT	DHV	K	D	T24	TD
SWAR00063R	0.85	3.18	2.33	17,000	20,000	1,800	0.09	0.53	0.06	0.04
SWAR00063R	3.18	5.09	1.91	12,000	18,000	1,600	0.09	0.51	0.05	0.04
SWAR00063R	5.09	5.75	0.66	13,000	20,000	1,800	0.09	0.5	0.04	0.04

SUMMARY MEMORANDUM ON CURRENT AND FUTURE TRAFFIC CONDITIONS IN THE STATE ROUTE 63 CORRIDOR IN WARREN COUNTY

February 2016

State Route 63 in Warren County, a two-lane primary arterial highway segment extending from the City of Lebanon to the City of Monroe, is an important link in the region's roadway network. Growth in traffic volumes, increases in truck traffic, changes in the types of trips and travel purposes, and limiting roadway physical conditions (only two lanes, narrow shoulders, and up-and-down- vertical alignment) are combining to reduce travel efficiency and increase safety risk for the motoring public.

Historical Traffic Growth – Since detailed traffic records have been compiled by the Ohio Department of Transportation in 1982, traffic growth on WAR-63 has increased steadily at a little more than 3% per year. Sustained over the past 34 years, traffic volume today is more than 3 times what is was in 1982. Growth on the segment between SR 741 and the Butler County line has been closer to 4% per year.

Current Traffic and Level of Service Conditions – In rounded numbers, current total daily traffic volumes on SR 63 are 16,000 west of SR 741, and 12,000 east of SR 741. Within these numbers are roughly 1,000 heavy trucks daily. When these traffic volumes are analyzed for Level of Service (LOS)[1] on the current roadway, we find that SR 63 is providing poor level of service under today's traffic volumes: LOS D east of SR 741, and LOS E west of SR 741. Vertical grades, differential speeds among vehicle types, and two-lane conditions are the limiting factors. In summary, the entire roadway corridor is operating "over-capacity".

Types of Trips and Travel Purposes, Including Trucks – The nature of travel of WAR-63 has changed over the years. Once known as Lebanon-Hamilton Road, this section-line road has roots starting in the early days of motoring travel as an important inter-city and commerce (including agriculture) rural route. Today, the types of trips using the route are more varied and complex, including access to local development, school and pleasure trips, logistics and freight/package delivery trips, and daily commuter trips. All of these trips involve different vehicle types, or different vehicle operating conditions, which in turn cause friction and conflicts in the over-capacity corridor. The continued growth in different trip types is a big consideration in planning for the future of the roadway. For example, in 1982, heavy trucks on SR 63 numbered 300 to 400 per day. Today, that number averages closer to 1,000 and over 1,200 at some locations.

Projection and Forecast of Future "Baseline" Traffic – Planning for the future of the WAR-63 corridor involves looking at expected traffic conditions for the Year 2040 (this planning horizon year was established in coordination with ODOT). ODOT utilizes a traffic forecast tool to establish likely future traffic conditions for the state highway network. Using this tool, ODOT estimates future traffic on WAR-63 to be about 20,000 vehicles per day west of SR 741, and about 18,000 vehicles east of 741. By comparison, if traffic continues to grow by 1.5% from today through 2040, volumes would be about 25,000 west of 741, and 18,000 east of 741. If, on the other hand, in another scenario, traffic continues to grow at the observed historical 3%± rate from today, the volumes in the 2040 planning year will be 45,000 west of 741, and 28,000 east of 741, two to three times today's traffic.

In all of these values, the forecasts represent "Baseline" growth conditions, and do not specially account for major new development or traffic generators within the WAR-63 corridor itself.

[1] A standard measure of travel efficiency in traffic engineering and transportation planning, typically ranked "A" through "F", where LOS A = best (very low traffic density) and LOS F = worst/failing (high traffic density, delay and congestion).

Growth and Development Considerations, Including Otterbein – Despite the importance of this primary arterial highway to the County and the region, development in and along the corridor has been fairly limited. Most of the traffic growth seen on WAR-63 (3% per year actual since 1982) has been due to "external" and regional scale travel factors. These include, for example, increased travel to and from the City of Lebanon, the City of Mason and the City of Monroe/I-75 corridor. These external travel demands continue to increase and develop, and are generally reflected in the "Baseline" future conditions discussed above. Of possible "new" development of major scale, the most significant is the Otterbein community development, which has received Stage 2 conditional approval from the Warren County Regional Planning Commission.

Potential traffic effects from the Otterbein development proposal were assessed as part of WAR-63 corridor study. If all of the proposed development (full "build-out" traffic) for the Otterbein site[2] were realized *today*, traffic on SR 63 would likely be about 2½ times[3] the volumes motorists see in 2016, *not including* the "baseline" growth discussed above. If "baseline" growth is included[4], Year 2040 traffic with Otterbein at full build out[5] will be 3 times today's volumes if the background traffic growth rate is sustained at only 1½%, and close to *4 times or more* greater than today's 2016 volumes if the background growth rate stays at its 34-year historical 3% rate. This assumes all of the Otterbein development, residential and commercial, is completed by the year 2040.

Projection of Future Traffic and Expected Level of Service for Motorists – Under any scenario, traffic conditions on WAR-63 will be under significant pressure in future years. The additional traffic load expected to be exerted by the Otterbein development will roughly double future year east-west traffic in the corridor compared to 2040 baseline conditions. However, the net relative effect may change somewhat depending on actual build out rate. Basic (rounded) traffic numbers and service conditions under different years and scenarios are as follows:

Year	Scenario	West of SR 741		East of SR 741	
		Daily Traffic	LOS[6]	Daily Traffic	LOS
2016	Existing Traffic	16,000	E	12,000	D
2040	Baseline Forecast (ODOT SHIFT tool forecast output, no Otterbein development)	20,000	[E/F]	18,000	[E]
2040	Baseline Forecast (assuming 1½% Annual Growth Rate from 2016, no Otterbein development)	25,000	[F]	18,000	[E]
2040	Baseline Forecast (assuming 3% Annual Growth Rate from 2016, no Otterbein development)	45,000	[F]	28,000	[F]
2040	Total Forecast (ODOT SHIFT tool forecast output, full Otterbein development by 2040)	48,480	[F]	35,088	[F]
2040	Total Forecast (ODOT SHIFT tool forecast output, Otterbein development, all phases, at rate proportional to suggested residential build rate, for net at 2040[7])	35,200	[F]	27,100	[F]

See also **Figure 1** on the following page.

[2] Also including a nearby platted/approved subdivision.
[3] Depending on location and trip generation and assignment assumptions.
[4] In this, no special provision or accounting for traffic generation and traffic growth influence has been made for new industrial and commercial development to the south in the SR 741 corridor by the City of Mason.
[5] Assuming Otterbein build-out, all phases, by Year 2040.
[6] For LOS, assumes no improvement to SR 63; values in [brackets] are estimates only based on comparison to existing traffic.
[7] Otterbein has suggested that, while a total of 4,500 new residential units are planned, all phases, the actual build rate might only be 80 to 100 units per year. Assuming that rate at 100/year for 24 years from today through 2040, this would equate to about 53.3% of the total build by 2040. Therefore, this possible scenario assigns only 53.3% of the total potential site traffic (all phases, residential and commercial) to the public roadway network, including WAR-63, in the Year 2040. This is only a scenario and not a suggested planning framework.

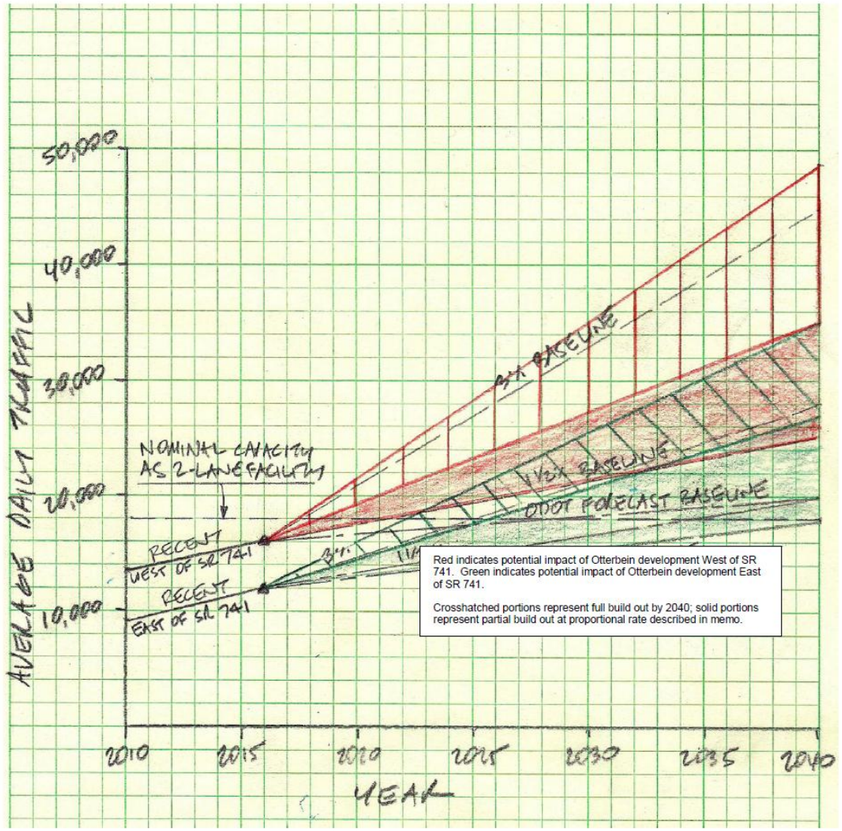
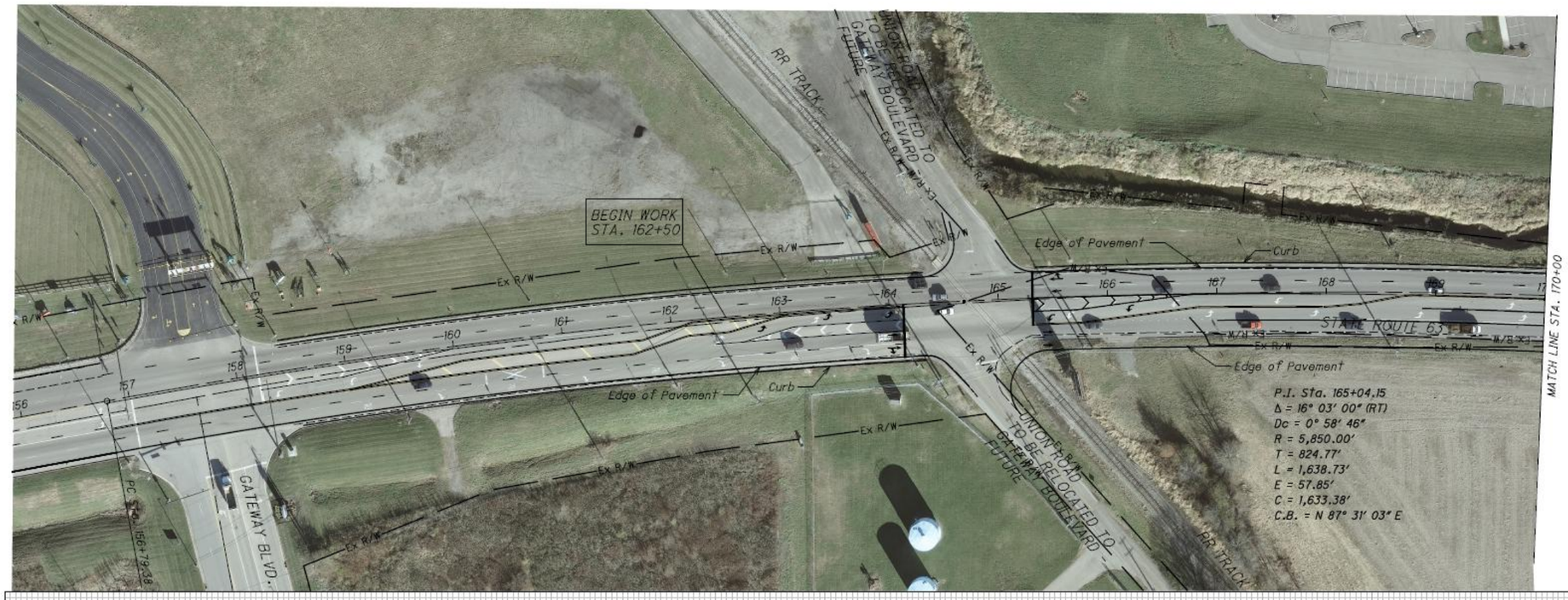
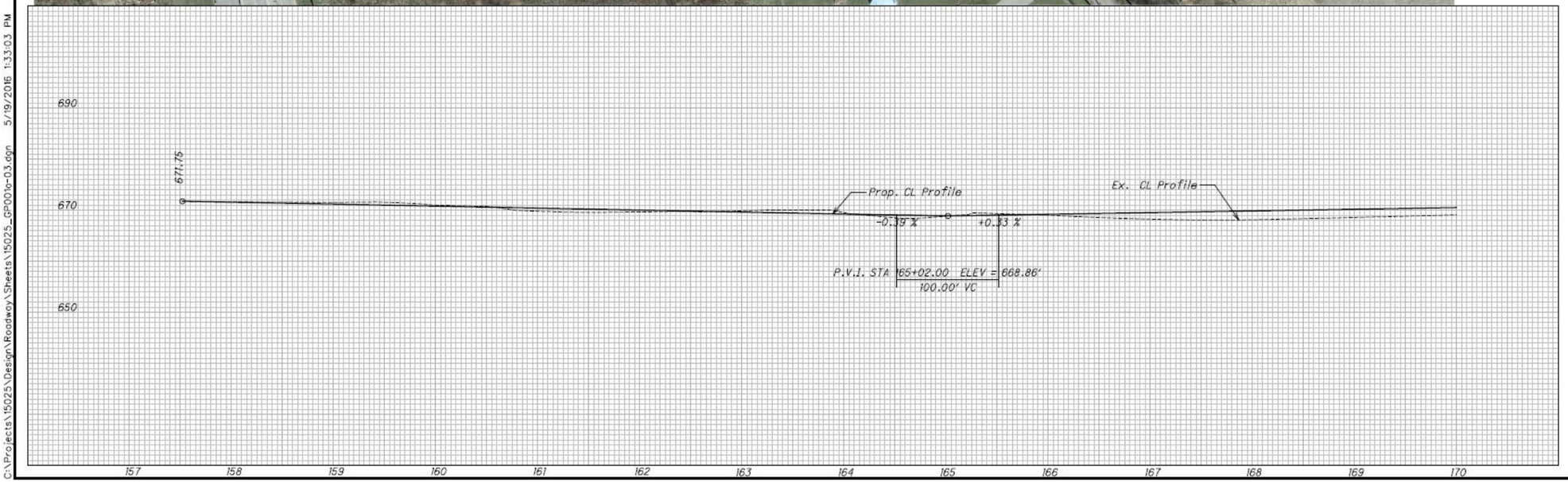


FIGURE 1 – Graphic representation of future traffic scenarios for SR-63 in Warren County

APPENDIX F

GATEWAY PRIORITY SEGEMENT CONCEPT DESIGN





PLAN AND PROFILE STATE ROUTE 63
STA. 157+00 TO STA. 170+00

WAR-63-0.80/1.85
GATEWAY PROJECT

01
07

CALCULATED JA
CHECKED JA

HORIZONTAL SCALE IN FEET
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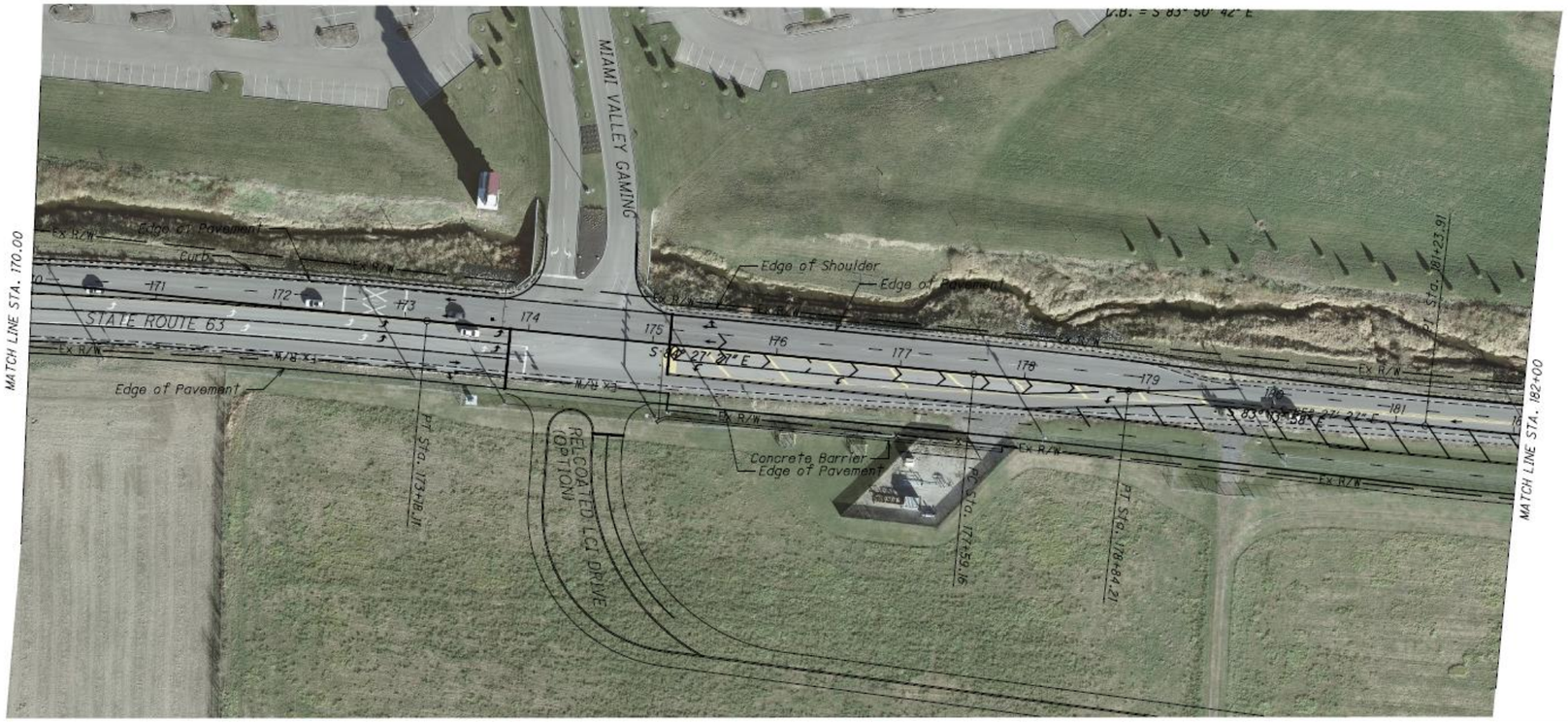

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PLAN AND PROFILE STATE ROUTE 63
STA. 170+00 TO STA. 182+00

WAR-63-0.80/1.85
GATEWAY PROJECT

02
07

PLAN AND PROFILE STATE ROUTE 63
STA. 182+00 TO STA. 194+00

WAR-63-0.80/1.85
GATEWAY PROJECT

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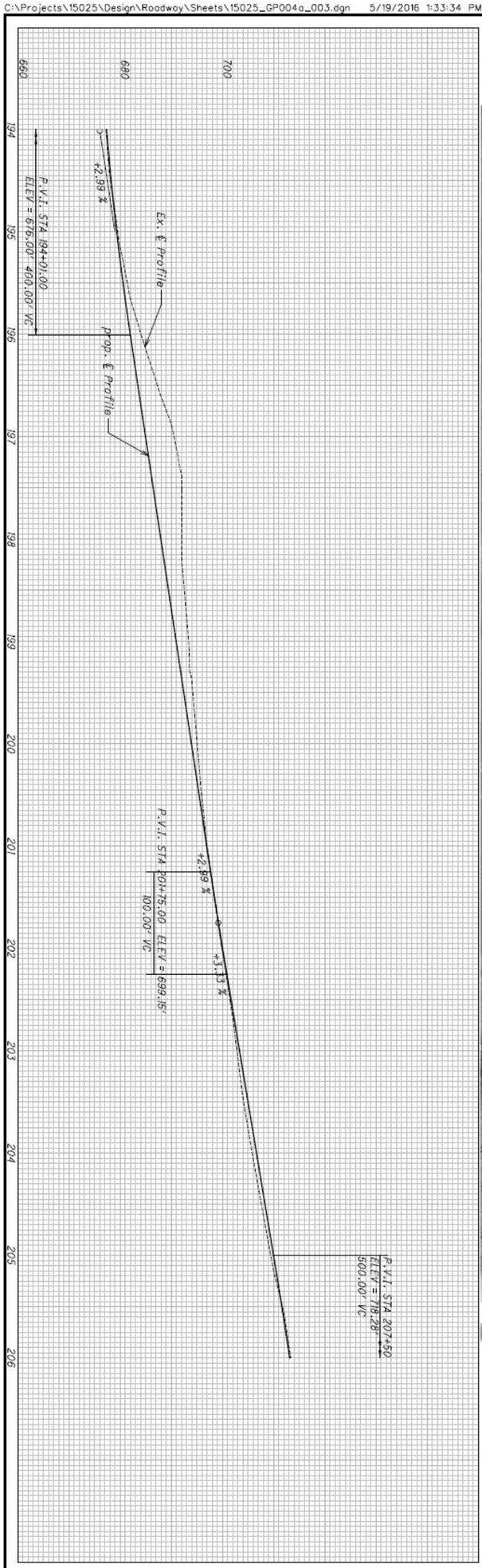

04 / 07	WAR-63-0.80/1.85 GATEWAY PROJECT	PLAN AND PROFILE STATE ROUTE 63 STA. 194+00 TO STA. 206+00	CALCULATED JA / CHECKED JA	0 50 25 100 HORIZONTAL SCALE IN FEET

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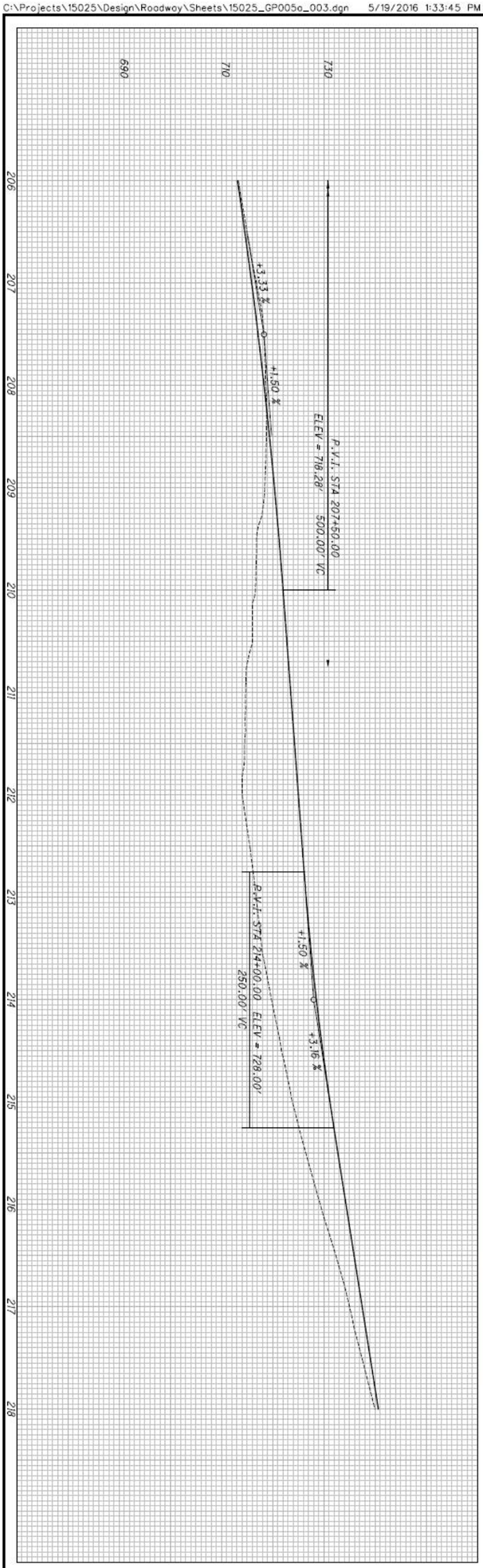

07 / 05	WAR-63-0.80/ 1.85 GATEWAY PROJECT	PLAN AND PROFILE STATE ROUTE 63 STA. 206+00 TO STA. 218+00

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HORIZONTAL SCALE IN FEET

SEEDING

END WIDTH	SQ. YDS.

673.12
184+00.00
671.89

672.88
182+00.00
671.08

272.29
177+00.00
670.61

671.83
174+00.00
670.15

END AREA		VOLUME	
CUT	FILL	CUT	FILL

675
670
665

50 40 30 20 10 0 10 20 30 40 50 60 70 80

CALCULATED JA
CHECKED JA

CROSS SECTIONS STATE ROUTE 63
STA. 174+00, 177+00, 182+00 AND 184+00

WAR-63-0.80/1.85
GATEWAY PROJECT

06
07

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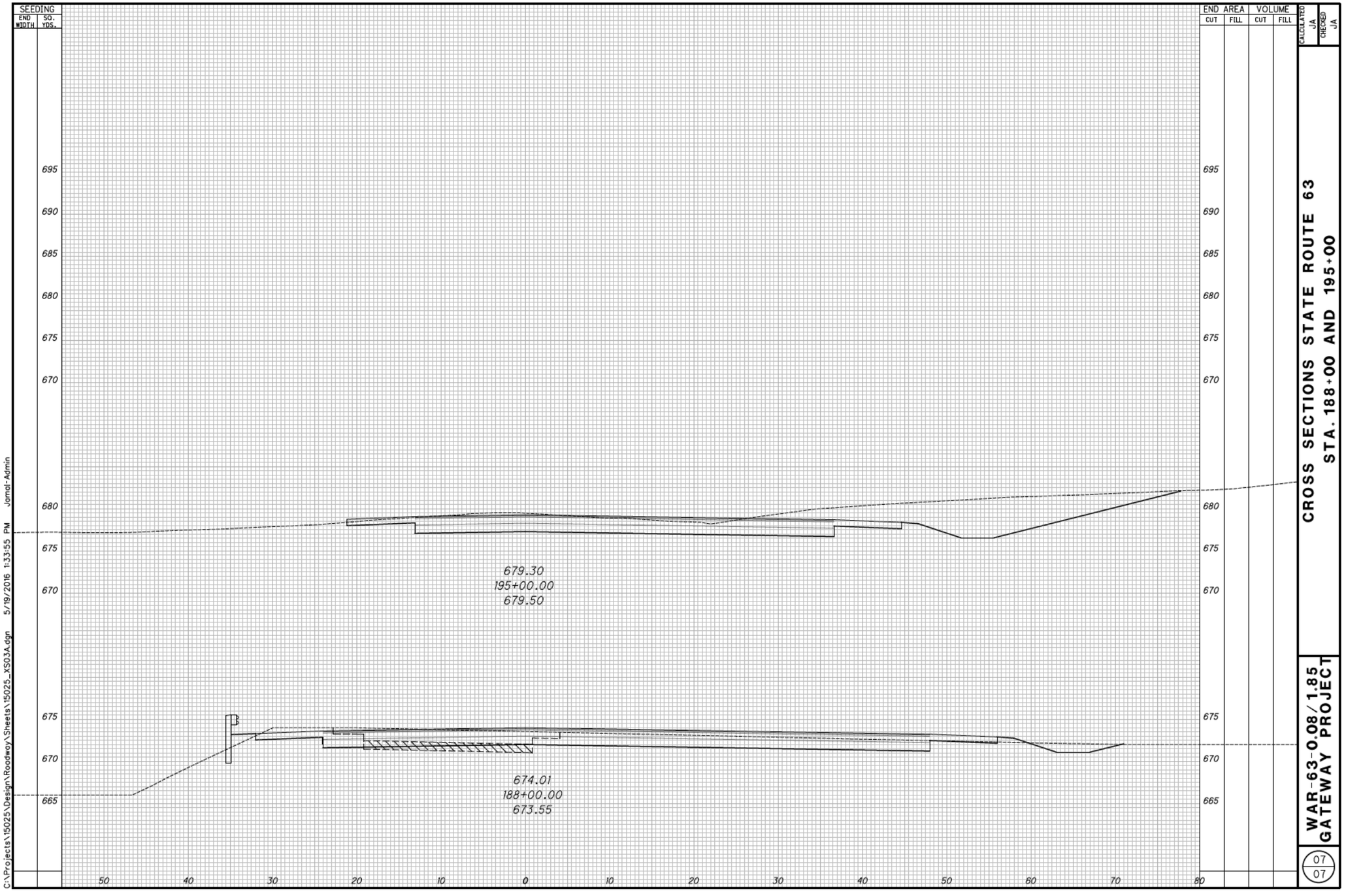
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CROSS SECTIONS STATE ROUTE 63
STA. 188+00 AND 195+00
WAR-63-0.08/1.85
GATEWAY PROJECT
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