



Erie County, Pennsylvania

Department of Planning

Erie County Court House
140 West 6th Street - First Floor: Room 119
Erie, PA 16501

Final Report

US 6N CORRIDOR LAND USE & TRANSPORTATION STUDY



November 2008



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Final Report

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November 2008

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NOTE: All appendices are included on an enclosed CD in electronic PDF-format only, except for those portions of Appendices "A" through "C" marked below by an asterisk (), which are also included in hard-copy format. All materials may be found at the end of this report.*

Appendix A: Public Involvement Summaries

- * Public Meeting 1
- * Public Meeting 2
- Public Advisory Committee Meetings

Appendix B: Amendments for the Borough of Edinboro

- * Zoning Ordinance
- * SALDO

Appendix C: Amendments for Washington Township

- * Zoning Ordinance
- * SALDO
- * Driveway Ordinance

Appendix D: Existing Planning Documents

- Edinboro Zoning Ordinance
- Washington Township Zoning Ordinance
- Franklin Township Zoning Ordinance
- Erie County Citizen Survey
- Erie County Demographic Study
- Erie County Land Use Plan
- Erie County Twelve Year Transportation Program
- Erie County 2030 Transportation Plan

Appendix E: Traffic Data

- Automatic Traffic Recorder Data (Volume, Class, Speed, Gap)
- Turning Movement Count Data
- Travel Time Data
- Origin-Destination Survey Summary
- Roundabout References / Resources

Appendix F: Traffic Analyses

- Crash Analysis Summary
- Synchro Output Summary (Signalized / Unsignalized Intersections)
- SIDRA Output Summary (Roundabouts)

Appendix G: Conceptual Quantity and Cost Estimates

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LIST OF ABBREVIATIONS

AAA	- American Automobile Association
AADT	- Average Annual Daily Traffic
AASHTO	- American Association of Highway and Transportation Officials
ADA	- Americans with Disabilities Act
ADT	- Average Daily Traffic
ATR	- Automatic Traffic Recorder
BDA	- Biological Diversity Area
CBD	- Central Business District
CMAQ	- Congestion Mitigation and Air Quality
DEP	- Pennsylvania Department of Environmental Protection
DMS	- Dynamic Message Sign
EB	- Eastbound
EDU	- Equivalent Dwelling Units
EMTA	- Erie Metropolitan Transit Authority
FEMA	- Federal Emergency Management Agency
FHWA	- Federal Highway Administration
GPD	- Gallons Per Day
GPS	- Global Positioning System
HAR	- Highway Advisory Radio
HOP	- Highway Occupancy Permit
ITE	- Institute of Transportation Engineers
ITMS	- Internet Traffic Monitoring System
KOZ	- Keystone Opportunity Zone
LOS	- Level of Service
MGD	- Million Gallons Per Day
MPH	- Miles per Hour
MPO	- Metropolitan Planning Organization
NB	- Northbound
NCHRP	- National Cooperative Highway Research Program
O-D	- Origin-Destination
PAC	- Public Advisory Committee
PaMPC	- Pennsylvania Municipalities Planning Code

LIST OF ABBREVIATIONS (Continued)

PennDOT	- Pennsylvania Department of Transportation
RWIS	- Road Weather Information System
SALDO	- Subdivision and Land Development Ordinance
SB	- Southbound
SR ####	- State Route (route number varies, for example SR 3006, SR 3008, etc.)
T###	- Township Road (road number varies, for example T313, T540, etc.)
TIP	- Transportation Improvement Program
TMC	- Turning Movement Count
TRB	- Transportation Research Board
TWLTL	- Two Way Left Turn Lane
VPD	- Vehicles per Day
VPH	- Vehicles per Hour
WB	- Westbound



Executive Summary



EXECUTIVE SUMMARY

INTRODUCTION

In September 2005, the *2007 Twelve Year Transportation Program* for Erie County, Pennsylvania, identified regional upgrades of various urban-rural corridors in southeast Erie County, including US 6N, as an “immediate priority” related to safety and mobility improvements. That same year the communities of Edinboro, Franklin Township, and Washington Township adopted a multi-municipal comprehensive plan. As an outgrowth of those undertakings, the Erie County Department of Planning administered this *US 6N Corridor Land Use and Transportation Study* to focus on those portions of the US 6N corridor located in Washington Township and the Borough of Edinboro ([Exhibit A](#)).

The goals of this study were to establish an overall vision for and spell out the future needs of the US 6N corridor specifically, and then to identify enabling ordinances and locally-preferred transportation improvement alternatives that may be developed and implemented to address those needs. Based on guidance from and coordination with a Project Advisory Committee (PAC), a set of project-specific goals and objectives were defined as follows:

- Encourage growth within the desired areas
- Enhance pedestrian and bicycle circulation
- Improve traffic flow, including:
 - Manage truck traffic within the Borough of Edinboro
 - Improve safety along the corridor
 - Better accommodate special events or unexpected incidents along area roadways
 - Reduce traffic congestion

BACKGROUND DATA

To begin to assess the study area and establish current conditions, various sets of background data were collected and utilized throughout this study. Efforts first focused on land use to include the following:

- Research current land use policies, ordinances, and their implications.
- Assess current land use, zoning, and development patterns.
- Establish future land use assumptions.

Other data focused on the study area’s transportation system. Specific tasks included field surveys of the existing transportation network, including roads and intersections, as well as pedestrian, bicycle, and transit systems. Traffic volume counts and related data were collected at 4 roadway segment locations and 28 different intersections. Origin-destination surveys, travel time measurements, and crash histories were also conducted and/or reviewed to help identify existing conditions and deficiencies throughout the study area.

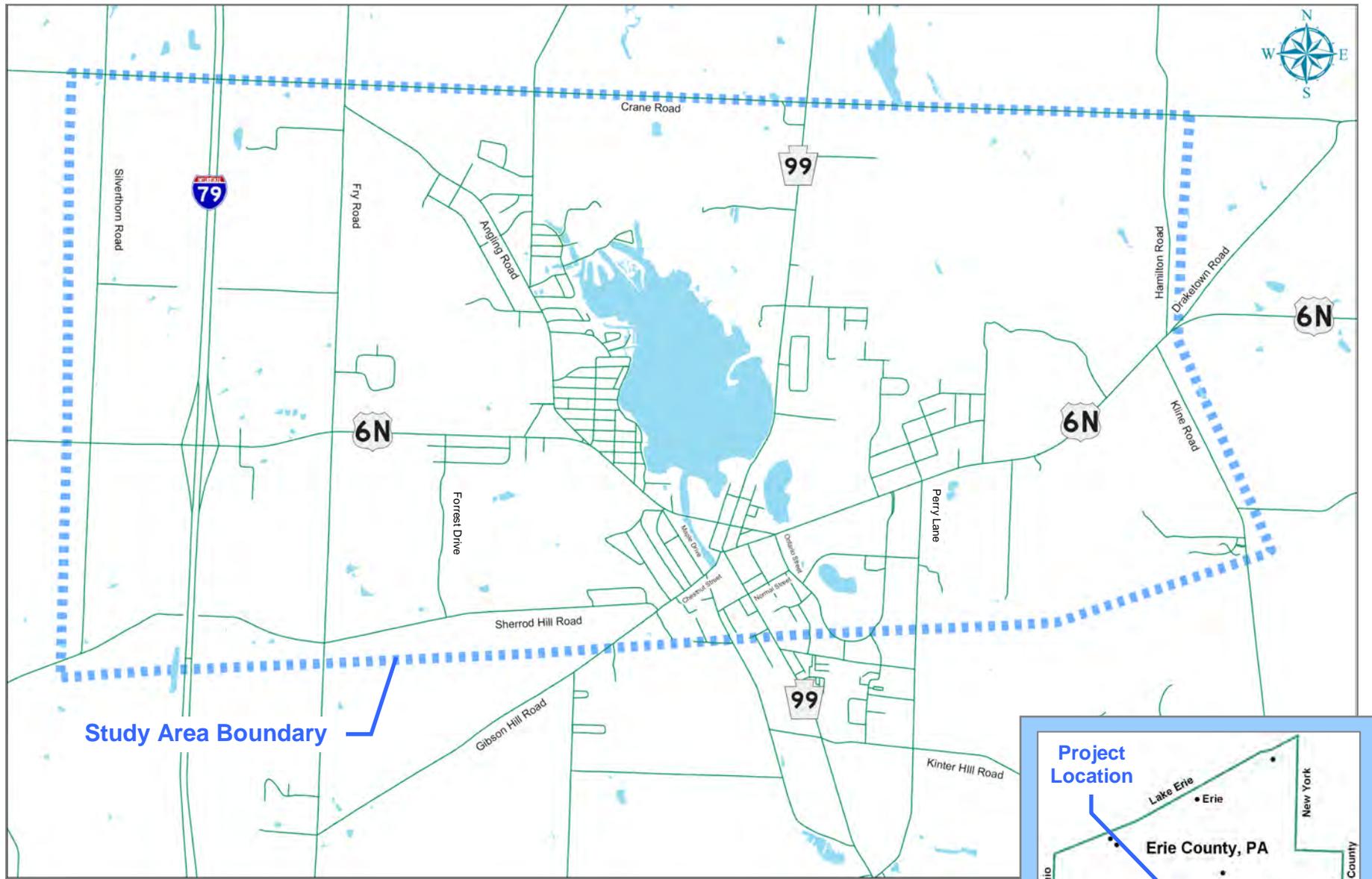


Exhibit A: Project Location Map



EXISTING CONDITIONS

Input from Public Meeting #1 identified several recurring themes as follows: improve intersections, add traffic lights, add bypasses, reduce congestion, and enhance bicycle / pedestrian circulation. These themes were generally consistent with findings from the analysis of existing conditions, which notably included the following:

- The sidewalk and bicycle networks were disconnected with several missing segments. Transit stops typically lacked shelters and were not accessible per Americans with Disabilities (ADA) standards.
- Various crash clusters were identified with trends related to driver error, inclement weather, and side-street delays or access problems.
- From an access-perspective, a full one-third of the stop-controlled side-street approaches that were analyzed were failing or operating marginally.
- From a mobility-perspective, existing congestion along US 6N was heavily-focused at the single failing intersection of US 6N and SR 99.

FUTURE NEEDS AND PROJECTIONS

Considering various physical and funding limitations, anticipated right-of-way issues, existing and projected developments, and the overall community context of the study area, PennDOT's Smart Transportation philosophy was considered to blend the needs of the community with the needs and constraints of the transportation infrastructure.

These needs were first defined in terms of land use in which most future development is expected in Washington Township ([Exhibit B](#)). Future development that will impact the US 6N corridor thus amounts to 650 residential units, 362,000 square feet of new retail development, and 60,000 square feet of new industrial development through future year 2030. Network-wide, this development results in approximately 45% growth in traffic between years 2007 and 2030.

Without improvements, this level of growth will cause intersection failures at over half of the locations that were analyzed, including failures at almost every intersection along US 6N, as well as "severe" congestion and increased safety concerns along US 6N between I-79 and SR 99. To address these concerns, a broad range of transportation improvement alternatives would be investigated, with particular emphasis on reducing congestion while also improving mobility, access, and safety.

6N Corridor Study: Future Development Areas

Future Development Areas

- Area 1
- Area 2
- Area 3
- Area 4
- Area 5

Other Development Considerations

- Golf Course
- Wal Mart
- Kline Road Sewage Treatment Plant
- PA 99 Commercial Corridor
- Goodell Farm
- Walker Drive Area
- Edinboro University
- Lakeside

Study Area Acreages:
 Edinboro Borough 1,187 Acres
 Franklin Township 714 Acres
 Washington Township 6,131 Acres

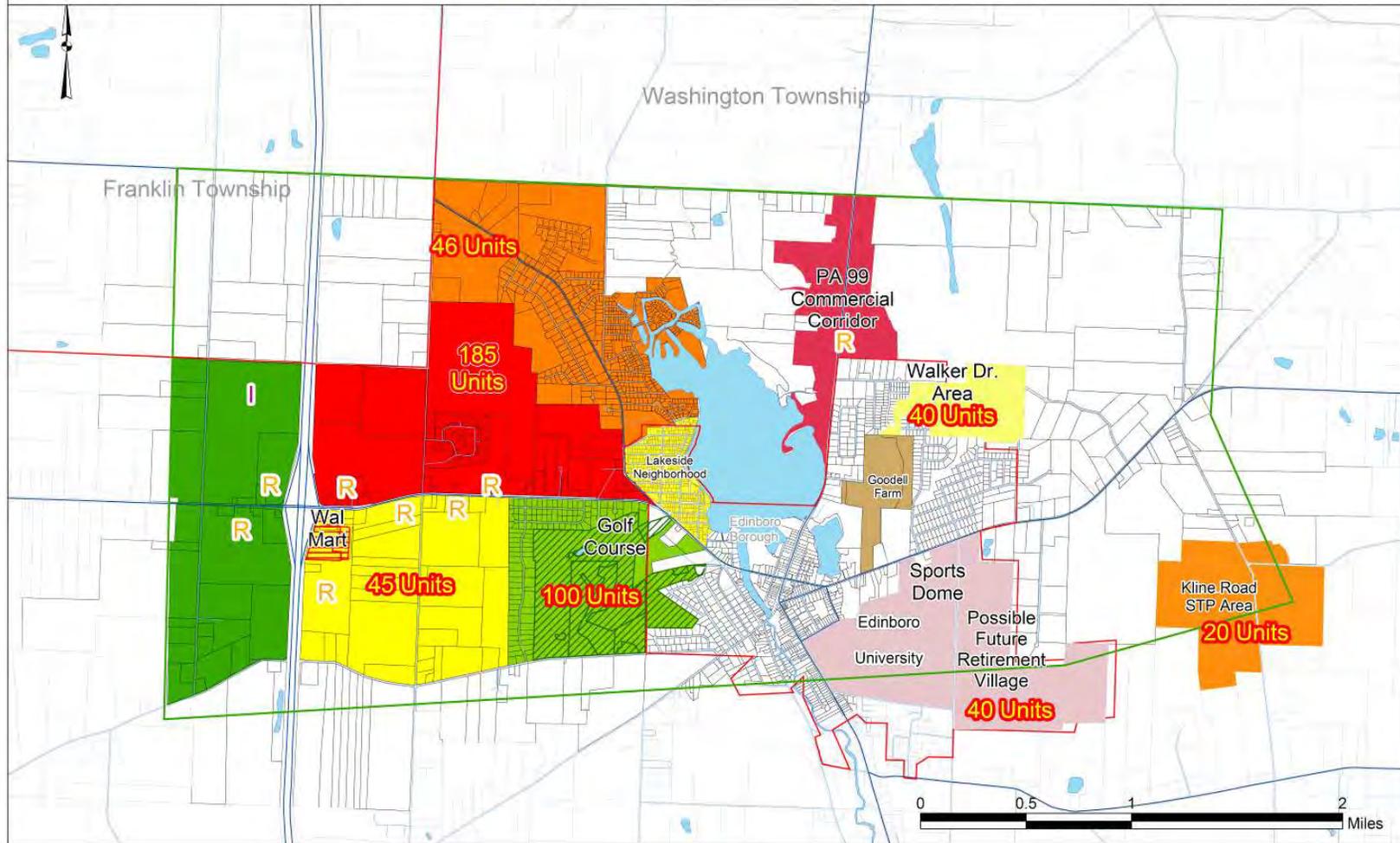


Exhibit B: Future Development Areas

LOCALLY-PREFERRED ALTERNATIVES

Numerous improvement alternatives were reviewed in-line with the project-specific goals and objectives including several independent options related to land use, pedestrian and bicycle circulation, truck traffic, corridor safety, special events and incident management. Specifically along the US 6N corridor, overall upgrades focused on the following packages:

- Traditional roadway widening alternatives with full-access at most intersections
 - 3-Lane Alternative
 - 5-Lane Alternative
- Limited roadway widening with controlled-access at most intersections
 - 2-Lane Median Alternative
- Combination alternatives that incorporate system upgrades (i.e., new or improved local roadway connections that make more efficient use of the existing facilities)
 - 3-Lane Alternative with System Upgrades
 - 2-Lane Median Alternative with System Upgrades

Based on feedback from Public Meeting #2, approximately 72% of the respondents preferred either the Three-Lane Alternative or the Three-Lane Alternative with System Upgrades. Combined with the findings of this report and extensive coordination with the PAC and other community stakeholders, locally-preferred land-use and transportation improvement alternatives (centering on the Three-Lane Alternative with System Upgrades) were selected to help achieve the project-specific goals and objectives. For ease of reference and to consolidate the improvements into a reasonable set of projects and actions that would help to facilitate efficient planning, programming, and implementation, the locally-preferred alternatives were organized into groups as part of a final “Project Action Plan” ([Exhibits C and D](#)).

Each project or action was also reviewed to assign responsible parties, conceptual cost estimates, and assumed priorities based on the anticipated location, scope, type, and cost. When combined, it is projected that the groups of preferred alternatives will satisfy all of the project goals and objectives to encourage growth within the desired areas, enhance pedestrian and bicycle circulation, and improve traffic flow throughout the study area. These benefits will include improving safety along the study area roadways and eliminating all intersection failures identified in this report, as well as the ultimate goal of achieving the desired long-term vision for US 6N and the surrounding communities.

Exhibit D: Project Action Plan

Group ID	Project or Action	Responsible Party	Conceptual Cost^{1,2}	Priority Rating³
1	Land Use Planning			
(1A)	Future Land Use Plan	Borough, Township	N/A	Complete
(1B)	Ordinance Updates (Borough of Edinboro)	Borough	Nominal ⁴	A
(1C)	Ordinance Updates (Washington Township)	Township	Nominal ⁴	A
(1D)	Official Map (Borough of Edinboro)	Borough	Nominal ⁴	A
2	Pedestrian Circulation Enhancements			
(2A)	Sidewalk Segments	Borough, Developers	\$85,000	A/B
(2B/3B)	Multi-Use Path / Sidewalk	Borough, Township, PennDOT	\$545,000	A
(2C)	Park & Ride Lot	EMTA, Edinboro University	\$1,009,000	B
(2D)	Transit Access Enhancements	EMTA, PennDOT	\$64,000	B
(2E)	Regional Transit Center Investigation	EMTA, Edinboro University	Project Driven	B
3	Bicycle Circulation Enhancements			
(3A)	Signed Bike Route	Borough, PennDOT	\$2,000	A
(2B/3B)	Multi-Use Path / Sidewalk	See Group 2	See Group 2	See Group 2
4	Roadway System Upgrades			
(4A)	US 6N Merge Lane Extension	PennDOT	\$138,000	A
(4B)	Fry Road Improvements and Shoulder Upgrades	Township, PennDOT	\$732,000	A
(4C)	Crane Road Improvements and Shoulder Upgrades	Township, PennDOT	\$955,000	A
(4D)	Marginal Access Roads (Local Street Connections)	Borough, Township	Project Driven	B
(4E)	Marginal Access Roads (I-79 / US 6N Development Area)	Developers (Cost), Township, PennDOT (Permits)	Developer Driven	B/C
(4F)	Marginal Access Roads (US 6N / Golf Course Development Area)	Developers (Cost), Township, PennDOT (Permits)	Developer Driven	B/C

Exhibit D: Project Action Plan (Continued)

Group ID	Project or Action	Responsible Party	Conceptual Cost ^{1,2}	Priority Rating ³
5	US 6N Corridor Upgrades			
(5A)	US 6N (Fry Road to Angling Road) 3-Lane Section	PennDOT	\$1,348,000	B
(5B)	US 6N (Angling Road to Outlet Bridge) Phase 1 (3-Lane w/ Re-Striping)	PennDOT	\$22,000	A
(5C) Option 1	US 6N (Angling Road to Outlet Bridge) Phase 2 (Option 1, 3-Lane w/ Widening)	PennDOT	\$584,000	B
(5C) Option 2	US 6N (Angling Road to Outlet Bridge) Phase 2 (Option 2, 2-Lane w/ Median)	PennDOT	\$199,000	B
(5D)	US 6N (Silverthorn Road to Fry Road) 5-Lane Section	PennDOT, Future Developers	Developer Driven	C
6	Intersection Upgrades			
(6A)	Traffic Signal (US 6N / Silverthorn Road)	Developers (Cost), Township, PennDOT (Permits)	\$162,000	B
(6B)	Traffic Signal (US 6N / I-79 Southbound Ramp)	Developers (Cost), Township, PennDOT (Permits)	\$162,000	B
(6C)	Traffic Signal (US 6N / Fry Road)	Developers (Cost), Township, PennDOT (Permits)	\$162,000	B
(6D)	Roundabout (US 6N / Angling Road)	Borough, PennDOT	\$953,000	A/B
(6E)	Roundabout (SR 99 / Chestnut St / Waterford St)	Borough, PennDOT	\$560,000	A/B
7	Intersection Spot-Improvements			
(7A)	SR 99 / Crane Road Phase 1 (No-Passing Zones)	Township, PennDOT	\$16,000	A
(7B)	SR 99 / Crane Road Phase 2 (EB Left-Turn Lane)	Township, PennDOT	\$147,000	A
(7C)	SR 99 / Crane Road Phase 3 (SB Right-Turn Lane)	Township, PennDOT	\$32,000	A
(7D)	US 6N / SR 99 Phase 1 (Left-Turn Prohibitions)	PennDOT	\$31,000	B
(7E)	US 6N / SR 99 Phase 2 (4-Lane West / NB Dual Left-Turns)	PennDOT	\$250,000	C
(7F)	US 6N / SR 99 Phase 3 (4-Lane East / WB Dual Through-Lanes)	PennDOT	\$250,000	C
(7G)	US 6N / Scotland Road (WB Left-Turn Lane)	PennDOT, Edinboro University	\$276,000	C

Exhibit D: Project Action Plan (Continued)

Group ID	Project or Action	Responsible Party	Conceptual Cost ^{1,2}	Priority Rating ³
8	Other General Improvements			
(8A)	Winter Weather Driver Education and Public Outreach	Edinboro University, PennDOT, Borough, Township	Nominal	Ongoing
(8B)	Monitor Localized Issues / Concerns (Truck Traffic)	Borough, Township	Nominal	Ongoing
(8C)	Monitor Localized Issues / Concerns (Special Events / Incident Management)	Borough, Township	Nominal	Ongoing
-	TOTAL			
All	Total Package of All Improvements Above, minus Project or Developer-Driven Costs	Varies	\$8,684,000	Varies

Note 1: Estimates are intended for conceptual use only, are based on year 2008 dollars rounded to the nearest \$1000, and include 15% contingency, 12% engineering, and 8% construction inspection costs.

Note 2: Estimates do not include potentially substantial costs related to right-of-way, utilities, and environmental impacts or related mitigation.

Note 3: Priority ratings were assigned as "A" for immediate, "B" for short to mid-term, "C" for long-term and "Ongoing" for continuous or regular tasks such as monitoring of certain conditions.

Note 4: Nominal costs would include staff time and legal advertisement.

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Section 1.0 - Project Introduction



1.0 PROJECT INTRODUCTION

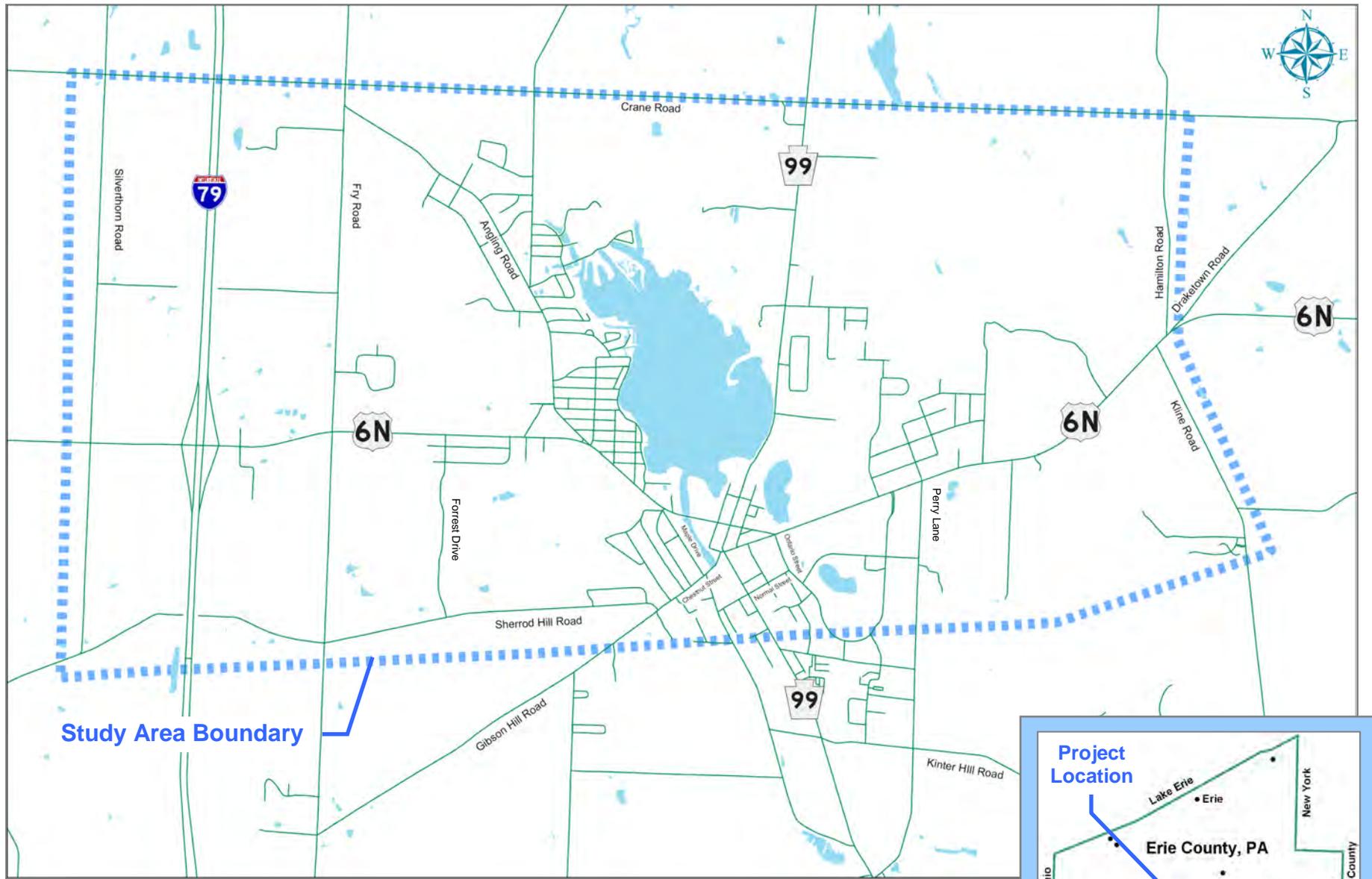
1.1 DESCRIPTION AND PURPOSE

In September 2005, the *2007 Twelve Year Transportation Program* for Erie County, Pennsylvania, identified regional upgrades of various urban-rural corridors in southeast Erie County, including US 6N, as an “immediate priority” related to safety and mobility improvements. That same year the communities of Edinboro, Franklin Township, and Washington Township adopted a multi-municipal comprehensive plan. As an outgrowth of those undertakings, the Erie County Department of Planning administered the *US 6N Corridor Land Use and Transportation Study* which focused on those portions of the US 6N corridor located in Washington Township and the Borough of Edinboro.

The multi-municipal comprehensive plan recommended that this *US 6N Corridor Land Use and Transportation Study* be completed to establish an overall vision for and spell out the future needs of the US 6N corridor specifically. In keeping with the Pennsylvania Department of Transportation’s (PennDOT’s) current “Smart Growth” initiatives, this study focused on working with the local governments and communities to develop context-sensitive solutions to enhance the local transportation network while concentrating development so as not to encourage sprawl. As opposed to a more traditional approach of simply adding capacity to corridors (adding lanes) to account for the long-term transportation needs, “Smart Growth” initiatives focus on a multi-modal approach, the context of the community, and the direct interaction between transportation and land use. The goals of this study are to identify enabling ordinances and locally-preferred transportation improvement alternatives that may be developed and implemented as practical.

1.2 LOCATION AND STUDY AREA

As shown by [Exhibit 1](#), this project is located in the south-central part of Erie County, Pennsylvania, and encompasses most of the Borough of Edinboro, a large portion of Washington Township, and a small portion of the southeast corner of Franklin Township. The approximate study area limits are: Silverthorn Road (T438) to the west, Kline Road (T540) to the east, Crane Road (SR 3008) to the north, and Sherrod Hill Road (T313). This study area was defined to include most of the future development growth that will utilize the US 6N corridor and impact the need for potential future transportation improvements.



Study Area Boundary

Exhibit 1: Project Location Map



1.3 GOALS & OBJECTIVES

To gain valuable guidance and insight throughout this study, the project team relied on input from a Project Advisory Committee (PAC), community stakeholders, and the general public. One of the first and most critical functions of the PAC was to establish a set of project-specific goals and objectives that would help keep the study focused and on-track by serving as the guiding principles throughout the study and the development of all alternatives. These goals and objectives were defined as follows:

- Encourage growth within the desired areas
- Enhance pedestrian and bicycle circulation
- Improve traffic flow, including:
 - Manage truck traffic within the Borough of Edinboro
 - Improve safety along the corridor
 - Better accommodate special events or unexpected incidents along area roadways
 - Reduce traffic congestion

1.4 METHODOLOGY AND DOCUMENT ORGANIZATION

The basic methodology utilized by the project team to accomplish the project goals and objectives may be categorized into the following general steps:

- Define the study area
- Establish the PAC and the public involvement process
- Define the project goals and objectives
- Establish and evaluate the existing conditions
- Establish and develop future land use assumptions
- Project future traffic volumes
- Establish the corridor transportation needs
- Develop alternatives to meet the transportation needs
- Determine the preferred alternatives
- Establish an implementation and funding plan
- Prepare enabling ordinances

The details, findings and conclusions of these basic steps are summarized throughout this report. Sections 1.0 through 3.0 establish and evaluate the existing conditions; Sections 4.0 through 6.0 investigate future conditions and alternatives; and Sections 7.0 through 8.0 compile the locally-preferred alternatives into a logical set of projects, actions, and funding.

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Section 2.0 - Background Data



2.0 BACKGROUND DATA

This section of the report outlines various sets of background data used throughout the study. This background data focuses on the following:

- Section 2.1 – Agency and Public Involvement
- Section 2.2 – The Land Use Component
- Section 2.3 – Community Facilities
- Section 2.4 – Development Limitations
- Section 2.5 – Traffic / Transportation Data

2.1 AGENCY AND PUBLIC INVOLVEMENT

To gain guidance and insight throughout this study, a three-tiered agency and public involvement process was utilized, including a Project Advisory Committee (PAC), community stakeholders, and the general public.

2.1.1 Project Advisory Committee

The PAC was established early-on to champion the US 6N study within the local communities, assist in the establishment of project-specific goals and objectives, and help keep the study focused and on-track. Through a series of six meetings, PAC members also worked directly with the project consultant team to provide various data and project-related information, serve as a sounding board and source of information with regard to the development and consideration of all alternatives, and make key project decisions. Designated PAC members and their representative agencies included:

- Jake Welsh, Erie County Department of Planning
- E. Mariah Hanson, PennDOT District 1-0
- Erin Wiley Moyers, PennDOT District 1-0
- T.J. Jemetz, Borough of Edinboro
- David Anthony, Washington Township
- Bill Coleman, Edinboro University

One of the first and most critical functions of the PAC was to establish the project-specific goals and objectives:

- Encourage growth within the desired areas
- Enhance pedestrian and bicycle circulation
- Improve traffic flow, including:
 - Manage truck traffic within the Borough of Edinboro
 - Improve safety along the corridor

- Better accommodate special events or unexpected incidents along area roadways
- Reduce traffic congestion

2.1.2 Stakeholder Coordination

Based on input from the PAC, additional key stakeholders were identified from the various communities throughout the study area to help provide local guidance and insight throughout the project. Stakeholder involvement was solicited through a series of four meetings, scheduled to address the following:

- Stakeholder Meeting 1:
 - Introduce the project
 - Establish the existing conditions
- Stakeholder Meeting 2:
 - Approve the land use assumptions
 - Discuss the preliminary future transportation needs
- Stakeholder Meeting 3:
 - Present preliminary improvement alternatives and gather feedback
- Stakeholder Meeting 4:
 - Determine the preferred alternatives
 - Establish an implementation and funding plan
 - Present enabling municipal ordinances

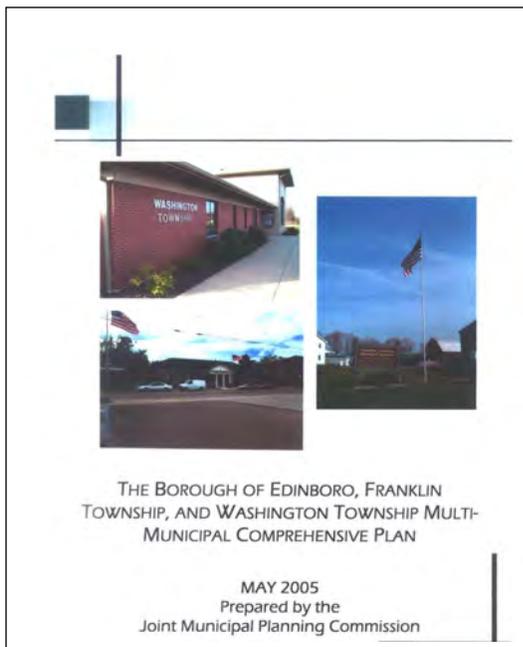
2.1.3 Public Involvement

Two public meetings were held. Public Meeting #1 introduced the project, displayed preliminary findings along the corridor, and solicited direct public input via official comment forms, sketch maps, and interaction with project staff. Public Meeting #2 helped to establish the future needs of the corridor and presented the preliminary improvement alternatives for discussion. Feedback gathered during these public meetings was utilized to refine the direction of the project and help establish the preferred alternatives that would be carried forward as part of a project-specific action plan.

2.2 THE LAND USE COMPONENT

2.2.1 Preface

In 2004 and 2005, the communities of Edinboro, Franklin Township, and Washington Township joined together to prepare a multi-municipal comprehensive plan. That plan, adopted in 2005, serves as the basis for this land use component of the Route U.S. 6N Corridor Study. In fact, this study is an outgrowth of that plan. It is based upon both official concern for this Corridor as well as those same issues raised by area citizens.



For the purpose of this report, the study area and municipal boundaries are shown by [Exhibit 2](#). Generally, the area is bordered on the north by Crane Road, on the east by Hamilton and Kline Roads, on the south by a line south of Sherrod Hill Road, and on the west by Silverthorn Road. This area includes a small corner of Franklin Township, most of the Borough of Edinboro, and a good deal of Washington Township.

In all, there are 8,032 acres in the 6N Corridor study area:

- Edinboro Borough – 1,187 acres
- Franklin Township – 714 acres
- Washington Township – 6,131 acres

Please Note: As shown by [Exhibit 3: Study Area Map with Parcel Boundaries](#), this acreage includes parcels which extend beyond the study area boundaries but do abut on study area roads. Figures do exclude road right-of-ways.

Land use patterns have a profound impact upon both traffic patterns and generation. The purpose of this element of the U.S. 6N Corridor Study is multiple:

- An examination of current land use policy
- Existing land use ordinances and their implications
- Existing land use
- Existing zoning patterns
- Future land use assumptions

6N Corridor Study: Study Area

- State Highways
- Local Roads
- Municipal Boundaries
- Study Area Boundary

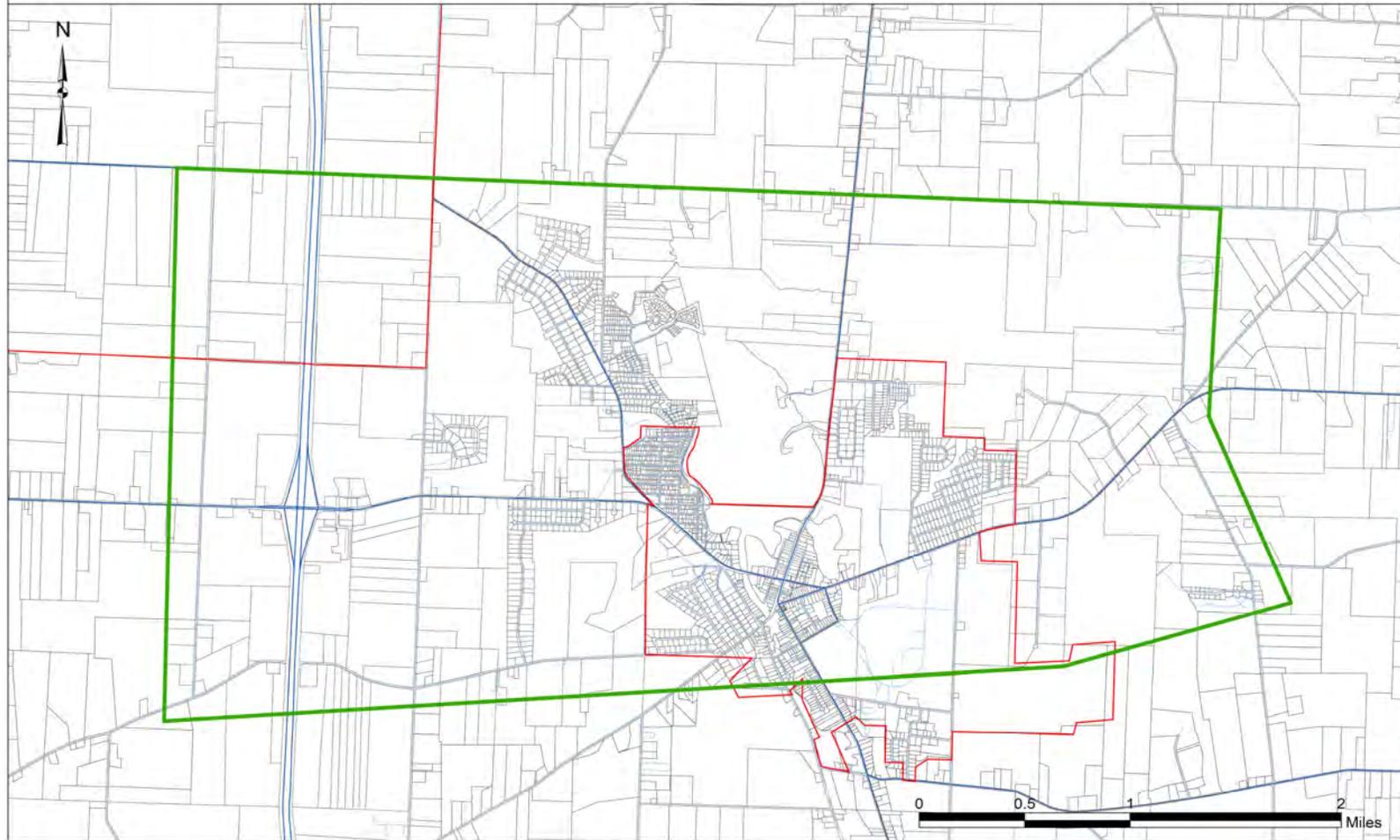


Exhibit 2: Study Area Map with Municipal Boundaries

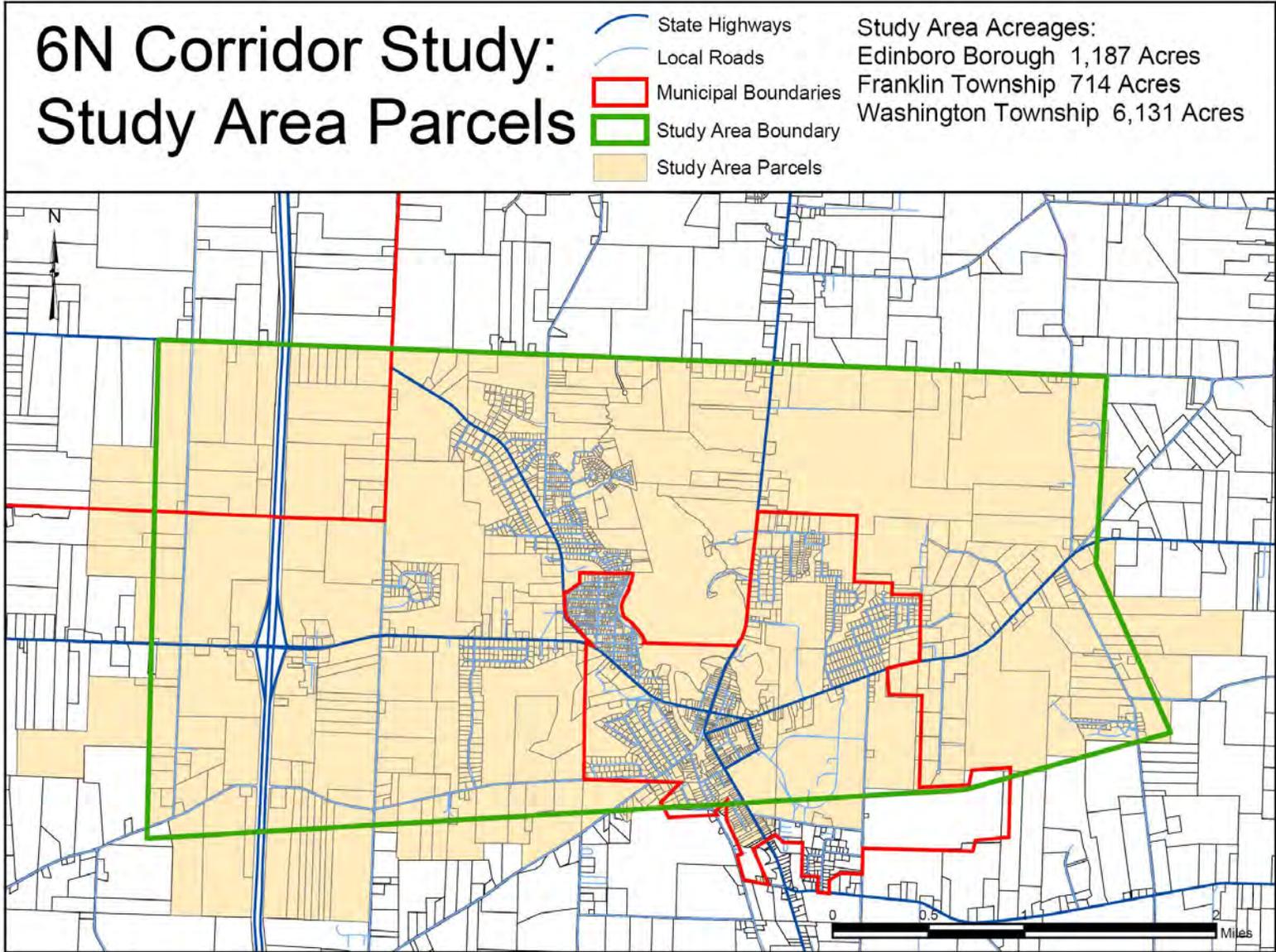


Exhibit 3: Study Area Map with Parcel Boundaries

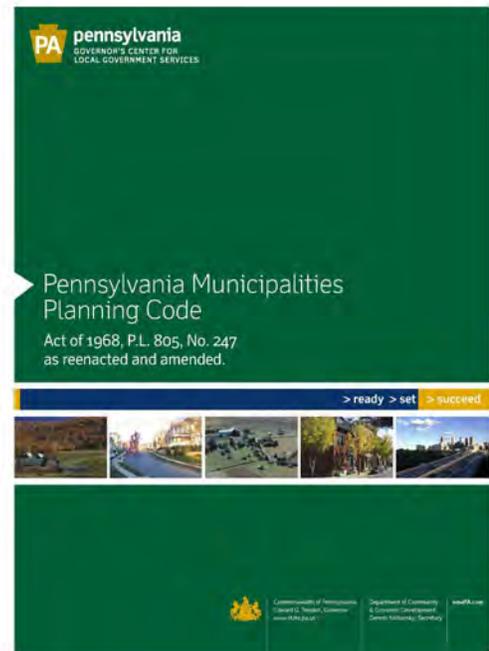
2.2.2 Current Land Use Policy

In Pennsylvania, the comprehensive plan is the official planning document that sets forth the community's development policy. In 2005, the Borough of Edinboro, Franklin Township, and Washington completed work on a multi-municipal comprehensive plan, which was then adopted. There are two elements of that plan which are of immediate concern to this study: Land Use and Community Facilities.

The relationship between land use ordinances and the Land Use Plan seems obvious. However, prior to the 2000 amendments to the Planning Code (Acts 67 and 68), that relationship was tenuous, at best. After the watershed acts in 2000, that relationship was strengthened. As now amended, Article VI, Zoning, of the Pennsylvania Municipalities Planning Code (PaMPC) requires *"Zoning ordinances . . . shall be generally consistent with the . . . multi-municipal plan."* It also states that *"If a municipality amends its zoning ordinance in a manner not generally consistent with its comprehensive plan, it shall concurrently amend its comprehensive plan . . ."* [See 603(j) of the MPC.]

The impact of the Community Facilities Plan is perhaps not as obvious. Yet, in Erie County, intense development, of any zoning classification, is dependent upon water and sewer facilities. This has been increasingly important in the 6N Corridor, as DEP has severely limited new system tap-ins. In addition, most zoning ordinances require lower density standards for those properties which use on-lot sewer and water facilities versus areas with these public utilities.

The Future Land Use (2005 Study), as it applies to the Corridor Study Area, is shown on the next page on [Exhibit 4](#). Generally, the areas included in this Plan are described in the Comprehensive Plan as the "Core Development Area" and the "Extension-Core Development West." The "Core Development" area includes lands south of Crane Road to the Erie/Crawford County border, from Fry to Hamilton Roads. The Core Area West includes the I-79/6N Interchange area, as well as the Franklin KOZ area. Essentially, all of the Corridor Study is contained in these areas.



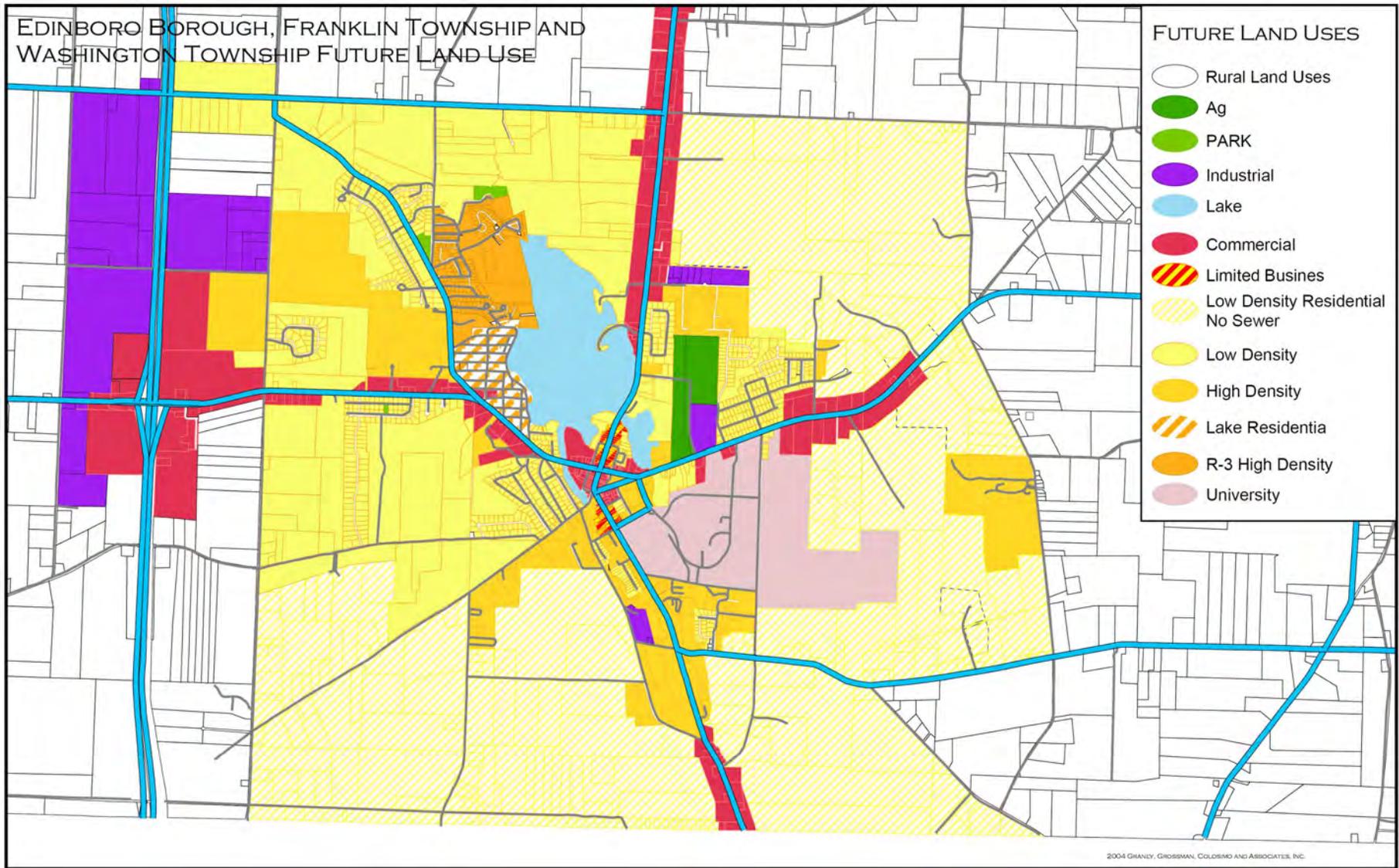


Exhibit 4: Edinboro Borough, Franklin Township, and Washington Township Future Land Use

The primary land use designations are:

- Agriculture
- Commercial
- Limited Business
- Lake Residential (Lakeside)
- Low-Density Residential—Low-density residential is divided into two classification areas, one where public water and sewer are available; the second relies upon on-lot systems.
- High-Density Residential
- Rural
- Edinboro University



These designations are fairly obvious and were tied to the densities of the existing zoning ordinances. However, some clarification of certain uses is appropriate. The “Agricultural” designation within the 6N Corridor relates to two areas. One is the Goodell Farm, located in Edinboro. The second are traditional rural areas found in Franklin and Washington townships. The “Limited Business” designation is a category of use primarily designed for Edinboro. It is intended as a district where residential uses and non-retail commercial uses (offices, etc.) are allowed. The

Lakeside District was specifically structured for the cottage area to the immediate west of Edinboro Lake. It extends into adjacent areas of Washington Township. However, densities in the Washington Township sector are somewhat lower; minimum lots (per zoning) are 5,000 square feet versus the 3,600 standard in the Borough.

The policy of the Plan is also obvious. It was to focus development in the “Core” areas. In the short term, those lands designated as “Low-Density-No Sewers” would be limited to allowable on-lot requirements. In general, this would yield a net of one dwelling unit per acre or less. Septic system permits are issued by the Erie County Department of Health. Current permitting practice for on-lot “septic” systems in Erie County call for a backup area for the drain field in the event the primary one fails. This often means a lot larger than one acre, or the reservation of usable land on a common lot. The “No-Sewer” sections included much of Washington Township south of Sherrod Hill Road, Kinter Hill Road, and east of Route 99. These designations were heavily influenced by the lack or the low probability of sanitary sewer services.

The Land Use Plan, as set forth in the 2005 Plan, reflected both future policy and recent trends in land use development.

2.2.3 Current Land Use Controls

No land use regulation impacts upon community development more than zoning. In this section, the current zoning ordinances of the three participating municipalities are examined. A generalized zoning map is shown in [Exhibit 5](#).

Edinboro Borough

The Borough has had zoning for many years, with its most recent edition adopted in 1993. Though much of this ordinance is standard for smaller urban places in western Pennsylvania, there are unusual elements in this regulation. An overall description of the Borough's zoning follows.

"Agricultural" District is unusual for the Borough. In Edinboro, it is specifically intended for the Goodell farm, a single farm property nearly in the heart of the Borough. There is another special purpose district, the "Recreation" District. It is intended for only Borough-owned recreational land. The final special purpose district is the University District. As its name clearly indicates, it was developed to accommodate Edinboro State University. The other districts are more traditional.

Edinboro has four residential districts. The R-1 and R-1A are essentially single-family districts, R-2 a medium-density district, and the R-4 a multi-family district. The R-3 is specifically designed for the Lakeside cottage area to the west of Edinboro Lake. It is mirrored by Washington Township's R-3 District.

The Residential Limited Business District is a district designed to accommodate non-retail business and residential uses in older neighborhoods near the downtown and along main streets.

The two commercial districts are aimed at the Downtown (C-1) and its adjoining areas (C-2). Industrial uses are accommodated in the I-Industrial District.

A brief analysis of each district follows:

Agricultural, University, and RC-Recreational Districts: These are special purposes as noted previously, but are more fully described below:

A-Agricultural District: As noted, designed for the "Goodell Farm." Minimum lot size is 10 acres, only single-family dwellings and agriculture are permitted with cemeteries as a conditional use.

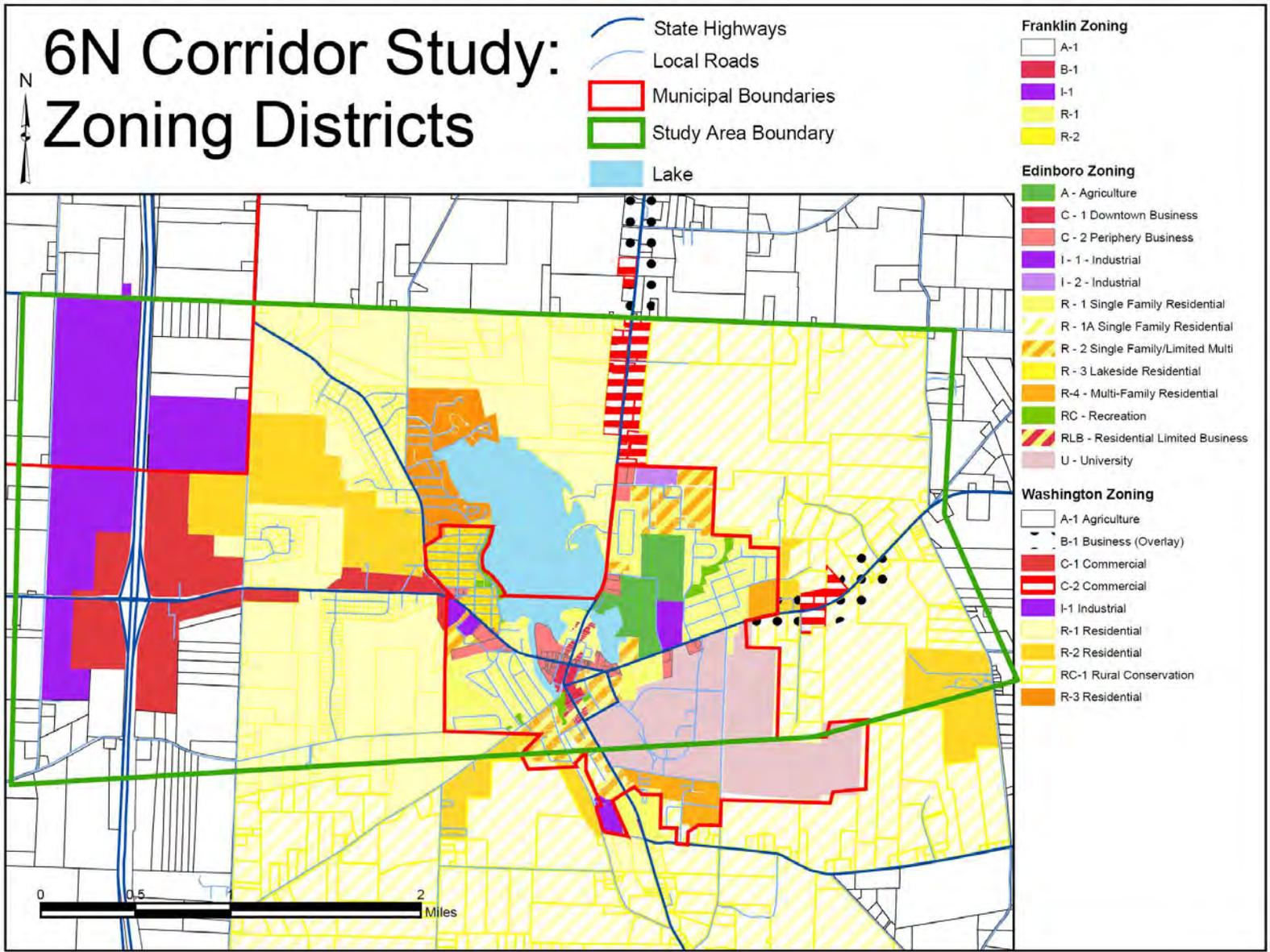


Exhibit 5: Current Zoning Districts

U-University District: This district permits a wide range of uses common to a major state university; the minimum lot size is 10 acres. There are no yard restrictions, except when any new development is within 100 feet of an “R” District. Then the setbacks of that district are to be used.

RC-Recreation District: This district is for recreational use and has no specific lot sizes. One unusual aspect is that “restaurants” are included as a conditional use.

R-1 Residential District: This is primarily a single-family district with related uses. Lot size is 20,000 square feet, or a density of 2.2 dwelling units per acre. The zone is used in the more recently developed areas of the Borough.

R-1A Residential District: The uses in this district are the same as the R-1, but the density is greater, at approximately 4.4 dwelling units an acre. R-1A areas are limited and found off Water Street, Terrace Drive, and Stonehaven Drive.

The R-2 District, a medium-density zone, is used extensively. One area surrounds the downtown; another area is off Walker Drive; and a third is off West Plum, behind the former House of Edinboro facility. Uses focus on one- and two-family dwellings, though limited multi-family dwellings are allowed (up to 6 units). Single-family densities are 4.4 dwelling units an acre, duplexes at 7.3 units, and multi-family approximately 13 units per acre. A PRD (Planned Residential Development) can be placed in this district. A PRD can enjoy density bonuses of up to 37%, depending upon the amenities included in the development. This is the only zoning district which allows that option.

The RLB District has the same density as the R-2 zone; however, it includes a number of office- and service-type commercial uses as well as the standard residential activities.

The R-3 District is the Lakeside area. Here, smaller lots are permitted (3,600 square feet), yielding densities of 12 dwelling units an acre. Uses are limited to one- and two-family dwellings, along with some recreational and lake-related commercial functions. There is little area left for development in Lakeside.

R-4 District: This is the Borough’s *multi-family* district. Essentially, one-family and two-family development densities are similar to the R-1A, R-2, and RLB Districts (4.4 and 7.3 units per acre). Multi-family dwellings are only constrained by lot size. A 10-unit apartment would require a lot of 22,000 square feet, yielding a density of about 20 dwelling units an acre, while a 20-unit apartment has a density of 23.5 units an acre. In the R-4 District, the first two-family units require 12,000 square feet of lot. Each

additional dwelling unit calls for an additional 1,500 square feet. The R-4 District is essentially residential in nature, with complementary uses allowed (bed and breakfast, day care, personal care boarding homes, etc.). Finally, uses to accommodate University students are found here, such as dormitories, fraternities, and sororities.

The C-1 and C-2 Commercial Districts have no minimum lot requirements and allowed uses are similar, except the C-2 does allow some multi-family developments with limits (6 units per lot, density at R-2 level, maximum of 13 units per acre), while the C-1 provides second-story residential.

The Industrial District has a minimum lot size of 10,000 square feet with lot coverage and side yard requirements that promote open space. Light industrial uses, warehousing, and offices are permitted uses, while more intense uses are special exceptions with specific criteria.

The PRD element of the ordinance looks for larger developments (10 acres or more) and does allow for density bonuses of up to 37%, depending upon proposed amenities. It is only available in the R-2 District.

Although it has several districts, the ordinance is internally consistent and is designed to meet the needs of special uses within the Borough's borders.

Edinboro's SALDO is about a decade old. It is a standard western Pennsylvania ordinance. The land development regulations of that ordinance only apply when a building or group of buildings exceed 10,000 square feet in size. Consequently, fast food restaurants and convenience stores are not covered. Though a parking/access plan is required for larger developments, there are only limited guidelines for them.

Franklin Township

The ordinance was adopted in 1981 and amended in 1991, 1993, 1997, and 1999. The body of this ordinance is based upon models from the 1960s and 1970s. The ordinance has nine articles. Like Edinboro, it is written in a "permissive format." Uses are delineated in Article III, while lot and yard regulations are contained in Chart 1/Chart 2, which was amended in both 1997 and 1999.

This ordinance has six districts. There are two rural districts, Agricultural and Conservation; two residential, R-1 Low Density and R-2 Medium Density; a commercial district, B-1; and an industrial district, I-1. The A-2 Conservation District is a floodplain area, and uses are limited to agriculture, open recreation, and some utilities. Only two districts are in the study area, the A-1 Agricultural District and the I-Industrial District.

The A-1 Agricultural District is essentially a farm, single-family area, with a variety of other uses either allowed or as a conditional use. Density is one dwelling unit per two acres. This district comprises most of the Township.

The I-Industrial District permits a variety of light industrial and office uses. Conditional uses include industrial parks, “*all uses not permitted*” elsewhere subject, to “*the highest attainable standards.*” I zones are along Koman Road and Crane Road. Some of the Koman/Crane area is a KOZ district.

As noted, Franklin Township adopted the Erie County Subdivision and Land Development Ordinance. Once more, this is a practical western Pennsylvania SALDO. Article XI contains land development standards. Section 1104.5 does require a parking and access plan. It states, “The developer shall demonstrate that the proposed parking/access layout is adequate for the proposed development. . .”

Washington Township

Enacted October 2, 1990, this ordinance replaced one from 1969. It has six districts and a Floodplain Overlay District. Districts include A-1 Agricultural, R-1Rural Residential, R-2 Suburban Residential, R-3 Suburban Residential, C-1 Commercial, and I Industrial. Once more, it is permissive in nature.

The A-1 Agricultural District allows a variety of open space, agricultural, and single-family dwellings, as well as some five special exceptions and eight conditional uses. The minimum lot size of 80,000 square feet yields a density of just over one-half dwelling unit per acre. Generally, the A-1 zone is along the peripheral areas of the Township.

In the R-1 District, the lot size drops to 30,000 square feet for single homes, for on-lot sewer* and water, or about 1.5 units per acre. In areas where one or both utilities are allowed, this density can increase to either 2.2 or 2.9 (both utilities) dwelling units an acre. Though the ordinance lists several uses, essentially this is a residential and agricultural district. The R-1 District is primarily east of Fry Road and south of Crane Road.

The R-2 District permits lot sizes of 10,000 square feet to 20,000 square feet, depending upon the presence of public water and sewer*. Possible densities range from 2.2 to 4.4 dwelling units per acre. The use schedule is similar to the R-1 District, except multi-family dwellings in a variety of configurations are allowed. With public water and sewer, multi-family residential density could approach 5.5 dwelling units per acre. This district abuts Edinboro Borough on the east and south sides.

The R-3 District is essentially a continuation of Edinboro’s Lakeside R-3 zone. Primarily, this district is intended for the Lakeside area developed prior to the 1969 zoning ordinance. Single homes and complementary residential uses are permitted. Smaller lots are allowed, with densities ranging from 4.4 to 10.9 units per acre. This district is just west of Lake Edinboro.

The C-1 District requires one-acre lots, and permits a variety of commercial and agricultural uses. Conditional uses and special exceptions allow for an additional eleven uses. The C-1 District follows 6N east and west of Edinboro and Route 99 north and south of Edinboro.

The I Industrial District requires a one-acre lot. It allows light manufacturing and open/agricultural uses. Heavy industry is a special exception and such uses as auto salvage yards and landfills are conditional uses. This district sits between Silverthorn Road and I-79, north and south of Route 6N.

**On-lot septic systems permits are issued by the Erie County Health Department.*

The Township's Subdivision and Land Development Ordinance (SALDO) was adopted in 1982, with amendments through to 2002. Generally, this is a standard SALDO, which does contain a Growing Greener option. The land development section does include "Traffic, parking and pedestrian plan" standards (119-26.B). In addition, Section 119-34, "Street design and construction standards," contains a provision for a "Traffic impact study," when the Township engineer determines it is needed, but does not include any standards for it.

2.2.4 Summary

These three ordinances are very distinct in their use patterns and their density requirements (See [Exhibit 6](#)). It must be noted that although a land use sharing scheme was suggested in the multi-municipal comprehensive plan, it has not yet been implemented. However, Washington Township has amended their zoning ordinance to reflect the Land Use Plan adopted in 2005.

One Final Note: Regardless of allowable lot sizes, some parcels used for development will rely upon on-lot septic systems. Permits for these systems are issued by the Erie County Department of Health. Typically, an acre to an acre-plus of land is needed to properly site an on-lot system. One dwelling unit per 1.5 acres is a valid development density assumption.

The purpose of describing the three zoning ordinances is to ascertain developmental densities in future years. Though Franklin Township is planning to completely revise its ordinance and development pressure may cause Washington Township to make zoning map changes, the future densities are likely to remain similar to current zoning standards.

In Washington Township, Conservation Design Development, *low density*, has four options in the A-1, R-1, and R-2 Districts, with overall densities of 80,000 square feet, 60,000 square feet, 160,000 square feet, or 10 acres per dwelling unit. Conservation Design District, *moderate density*, also has four options in the R-1 and R-2 Districts. They are 40,000 square feet, 60,000 square feet, 120,000 square feet, or 7 acres per dwelling unit.

Exhibit 6: Development Density Factors

Zoning	Net Density	Remarks
Edinboro		
A-Agriculture	1 lot per 10 acres	See narrative
U-University	1 lot per 10 acres	See narrative
R-C Recreation	None listed	No impact projected
R-1 Single-Family	2.2 dwelling units/acre	A single-family district
R-1A Single Family	4.4 dwelling units/acre	Duplexes allowed, but rarely used
R-2 Single/Limited Multi-Family	Single Family – 4.4 dwelling units/acre Two-Family – 7.3 dwelling units/acre Multi-Family – 20 dwelling units/acre	This density will vary, but 20 units per acre is an acceptable average
PRD	Densities vary with development	
R-3 Lakeside	Single Family and Two-Family – 12.1 dwelling unit/acre	This area is nearly fully developed
R-4 Multi-Family	Single Family – 4.4 dwelling units/acre Two-Family – 7.3 dwelling units/acre Multi-Family – 22 dwelling units/acre	This area is already heavily developed
C-1 Commercial	None	Downtown area, fully developed
C-2 Commercial	None	Most of the commercial area is fully developed
I-1 Industrial	10,000 square feet	The industrial areas are fully developed
Franklin Township		
A-1 Agriculture	½ dwelling unit/acre	
I-1 Light Industrial	Minimum lot 25,000 square feet	No sewer and sewer service
Washington Township		
A-1 Agriculture	½ dwelling unit/acre	Not in study area
RC-1 Rural Conservation	1.0 dwelling unit/acre*	Sewerage not expected
R-1 Residential Single-Family	1.5 dwelling units/acre* 2.2 dwelling units/acre* 2.9 dwelling units/acre	On-lot water and sewer Either water and sewer Both water and sewer
R-2 Residential Single-Family Multi-Family Multi-Family Multi-Family Modular Parks	4.0 dwelling units/acre 4.4 dwelling units/acre 4.4 dwelling units/acre* 4.8 dwelling units/acre* 5.4 dwelling units/acre 5.4 dwelling units/acre	Either water or sewer Both water and sewer On-lot water and sewer Either water or sewer With water and sewer Assume central water and sewer
R-3 Residential Single-Family Single-Family Single-Family Two-Family Two-Family Two-Family Other Uses	4.4 dwelling units/acre 8.7 dwelling units/acre* 8.7 dwelling units/acre 4.4 dwelling units/acre* 8.7 dwelling units/acre* 10.9 dwelling units/acre Lot 7,500 square feet	On-lot sewer and water Either water or sewer With water and sewer On-lot sewer and water Either water or sewer
C-1 Commercial	Lot 40,000 square feet Lot 43,560* square feet	Both water and sewer On-lot water and sewer
C-2 Commercial	Lot 40,000 square feet Lot 60,000* square feet	Both water and sewer On-lot water and sewer
I-1 Industrial	Lot 43,560* square feet	All uses
B-1 Business Overlay	Lot 40,000* square feet	On-lot water and sewer
*Please see comments relative to on-lot sewer permitting. Water and sewer facilities, either community service or on-lot		

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2.3 COMMUNITY FACILITIES

2.3.1 Community Facilities

Although parks, schools, and libraries are important for successful communities, it is water and sewer facilities that facilitate development in northwestern Pennsylvania. In the context of this study, “public” means a sewer or water system owned by a municipality, a municipal authority, has a central treatment facility and is reasonably available where extensions are feasible.

Washington Township

The Township has three sanitary sewer systems. One is the Kline Road plant. This system was originally developed for the Majestic Heights Mobile Home Park. Historically, this plant has experienced modest usage, averaging just 10% to 15% of its 80,000 gallons per day (gpd) capacity. However, lines are now being extended to a nearby development. In theory, this system could add another 100 to 200 EDU (equivalent dwelling units) and still operate within its design capacity.

Some Township residents are currently on the Borough’s system. About 50,000 gpd of current Borough capacity are reserved for these users. Primarily, they are users along the border between Edinboro and Washington. Most Township customers are along Dundon Road and Route 99 south.

The Angling Road System: This system is the Township’s primary sanitary sewer. Coverage of the collection systems follows Angling and Lay Road, Route 6N, Obed Heights, the Conneauttee development and Forrest Drive.

The Township’s current treatment plant is on Angling Road. Originally, its outfall was to Whipple Run and thence to Edinboro Lake. That outfall has been terminated, and a temporary outfall to a tributary of Conneauttee Creek below Edinboro Lake is now used. It will be converted to a collection line when effluent is transported directly to the Borough plant.

As a result of joint studies, it has been decided that the Angling Road plant will be abandoned, and the Township will send its wastewater to the Edinboro sewage treatment plant. While the Township was considering its sewage options, they could only accept a limited number of new users on line. This effectively dropped new housing starts in the Township by more than half—from its average 20-plus a year. This was a result of a 537 Sewage Facilities Plan.

The new arrangement will require an increase in the Borough’s plant capacity. Washington Township will have 600,000 gpd at the enlarged Edinboro treatment facility, in lieu of their current capacity of 200,000 gpd.

Township officials note that their collection system does have water infiltration and inflow (I&I) problems during heavy rain. They are now working on this issue. Therefore, for planning

purposes, some 400,000 gpd of additional treatment capacity should be available in the future—about 1,300 additional EDUs. (*Note: EDU = equivalent dwelling units. The typical EDU generates about 300 gallons of flow per day.*) Once the Borough can accept Township effluent, the current tap-in restrictions will be lifted (target date is May of 2009).

The Washington Township water system has over 150 customers. This system uses well water from a well field in Lake Isle Estates near Edinboro Lake. The system has a 326,000-gallon storage tank on the southeast quadrant of the I-79 and 6N interchange (just behind Wal-Mart). This system is slightly over ten years old and has current capacity to service additional customers. In addition, the system can be easily expanded.

Edinboro Borough

Edinboro's sanitary sewer system effectively services the entire Borough. The current hydraulic capacity of the Borough plant is 1.2 mgd. This will be increased to accept up to 600,000 gpd to accommodate the Township. As noted in the prior section, the project completion date is set for May of 2009. Although the increase in plant capacity will resolve many of the sewerage issues in the Township relative to future growth, it will still not resolve the Route 99 (North) corridor problems. Limitations in this sector are due to the restricted capacity of the Borough's collection system to accept increased Township flows.

Edinboro's water system relies upon two wells located on the Edinboro University campus. Similar to its sewer system it effectively services the entire municipality.

With the increase in the Borough's sewer treatment plant, future growth along 6N should not be limited.

2.4 DEVELOPMENT LIMITATIONS

Certainly, the zoning ordinance establishes the type of land use, the legal intensity of uses, and typical lot sizes. However, the land itself is a limiting factor. Steep slopes, wetlands, floodplains, or soils can be as effective in limiting development options as land use ordinances.

The Study Area does have some areas of steep slope, but they have not constrained most development options. The primary issues that affect the 6N Study Area are wetlands and floodplains.

Wetland limitations generally are seen along the major streams that feed Edinboro Lake. The Conneauttee Creek enters Edinboro Lake at its northeast corner and the Shenango Creek from the northwest. These areas are shown on the plate "Wetland Areas." Beyond those associated with these streams, other identified wetlands are quite scattered.

Floodplains again follow the two previously named streams, along with areas around the lake itself and a small area along Darrow's Creek.

In Edinboro, the Flood Insurance map shows an effective date of June 15, 1981, with the flood zone designation shown as "Zone A." These areas closely follow Conneauttee Creek from its outlet from Edinboro Lake south to the corporate Borough limits. The other flood zone follows Darrow's Creek, with a great deal of this flood zone on the Edinboro University campus. Other areas shown are a pond north of 6N and east of Route 99 and areas immediately adjacent to Edinboro Lake. Generally, existing development has respected the natural floodplain areas. The floodplains, as designated by the "FEMA" maps, should not constrain future development.

In Washington Township, the FEMA maps are dated May 19, 1981, and five are of most interest. There are two designations on the Township's map "A" the 100-Year floodplain and some limited "B" designations (the area between the 100 and 500-year flood limits). Once more, existing development patterns have generally respected the floodplains. Newer developments have, in fact, kept these areas as open spaces. Although there are more floodplain areas in the Township than the Borough, they are not extensive enough to significantly affect future development. The Township does have a floodplain ordinance, originally adopted in 1981.

The Natural Heritage Inventory for Erie County was completed in 1993 by the Western Pennsylvania Conservancy and adopted by the Erie County Council in 1994. The Inventory identifies the French Creek "BDA" (Biological Diversity Area) as a place of exceptional significance. This area generally follows the Conneauttee Creek to Edinboro Lake and in the lake area, surrounding land, and then follows the Conneauttee as it flows through Edinboro Borough (see plate Heritage Inventory). The Inventory identifies various plants and natural communities of importance. *Please note, this watershed is considered as part of the French Creek area in the Inventory study.*

Although the BDA includes a large tract of land in the 6N Study Area, much of it is either water or wetlands. However, there are other quite significant areas in this BDA that have developed for some time; namely, much of the Borough of Edinboro and Washington Township, including the “Lakeside” and adjoining region. More recently, the Obed Heights and Shenango developments have been built in this area. As the Township has a “Growing Greener” option in its land use ordinances, developers are placing some of the more sensitive BDA lands into conservation areas.

In all, wetlands, floodplains, and the French Creek BDA will influence future development, especially in Washington Township, and to a lesser extent, Edinboro. However, these limitations should not significantly decrease future development patterns. Such restraints have been in place for some time, and the local development community has adapted to them.

2.5 TRAFFIC / TRANSPORTATION DATA

Various types of new and historic traffic / transportation data were collected for review at the outset of this project. The majority of any new data was collected during the fall season (September-October) of 2007 during periods when all local schools, including Edinboro University, were in session.

2.5.1 Field Survey

Field surveys were conducted to observe and document general traffic conditions throughout the study area, including existing geometric conditions, traffic signal operations, and basic field observations. GPS point data was also collected using hand-held equipment to identify the exact location of the following along US 6N and SR 99:

- Sidewalk begin / end points
- Bicycle lane begin / end points
- Driveway locations
- Bus stop locations
- Posted speed limit boundaries

The GPS point data was overlaid onto a model of the study area in geographic information systems (GIS) format. Points in the GIS model were then connected to display where each of the elements listed above were, and were not, located within the study area.

Based on these field surveys and related background research, summary descriptions of the study area roadways are as follows:

US 6N Corridor

Typical roadway cross-sections vary along approximately five miles of the US 6N (SR 3006) corridor within the study area. Generally, US 6N can be classified as a rural or urban principal arterial consisting of one 11-12' lane in each direction, 2'-4' shoulders, dedicated turn lanes only at select intersections, and sidewalk only within the most urbanized areas. Specific variations in this section are shown graphically in [Exhibit 7](#) and as follows:

- In the vicinity of the I-79 interchange, the corridor widens to five lanes, including a center left-turn lane with signalized access to commercial development at Washington Towne Boulevard. The five lane section transitions back to two lanes just west of Fry Road.



Exhibit 7: Summary Illustration of Existing Conditions

- Approximately between Angling Road and Maple Drive, the corridor consists of three lanes, including one lane in each direction plus a continuous, dedicated right-turn lane heading westbound.
- Approximately between Maple Drive and Ontario Street, the corridor consists of two to three lanes to accommodate segments of a center two-way left-turn lane (TWLTL) west of SR 99, dedicated left-turn lanes at the signalized intersection of US 6N and SR 99, and dedicated through and westbound right-turn lanes (the mainline US 6N movement in this case) at the signalized intersection of US 6N and Ontario Street / Waterford Street.

Speed limits along US 6N also vary from 35 to 55 MPH. Approximate boundaries are shown in Exhibit 8.

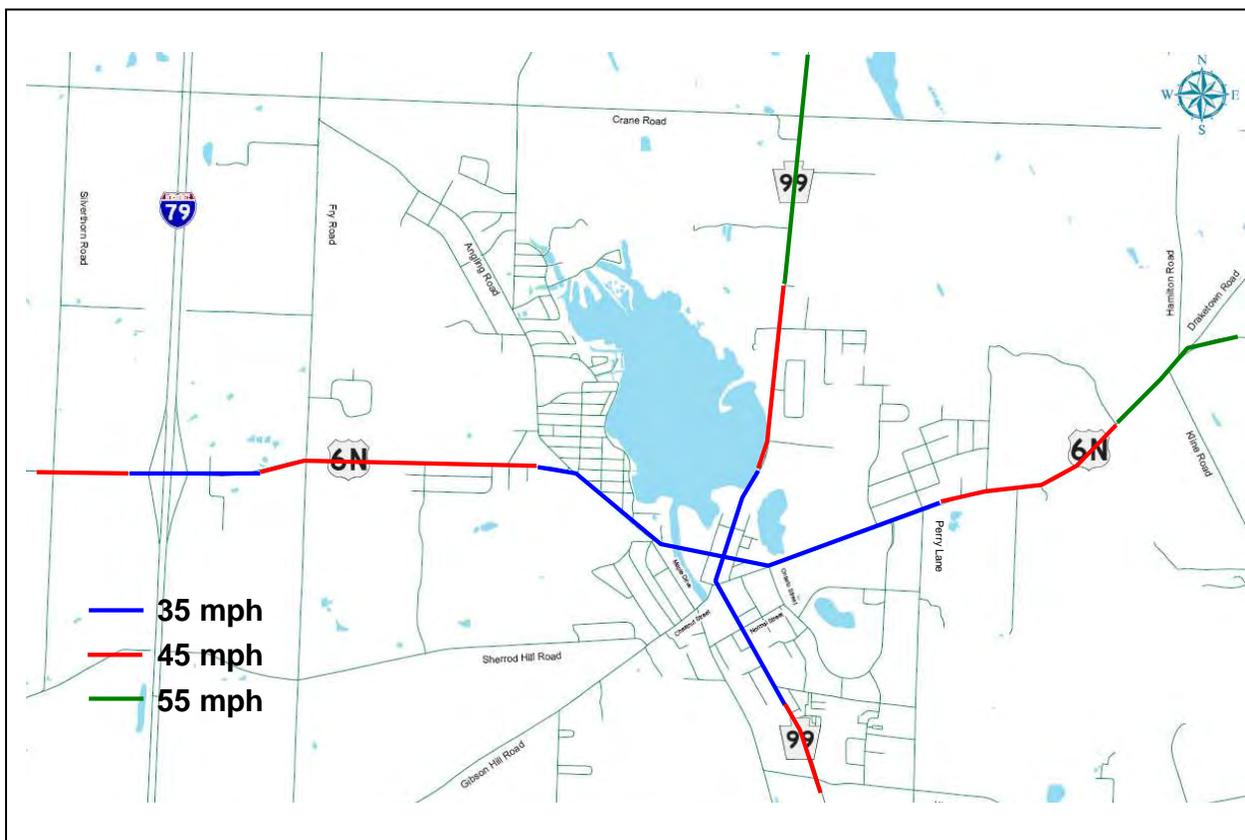


Exhibit 8: US 6N and SR 99 Existing Posted Speed Limits

SR 99 Corridor

The typical roadway cross-section along approximately 2.4 miles of the SR 99 corridor within the study area consists of one lane in each direction with minimal shoulders, sidewalk only in the most urbanized areas, and turn lanes only at critical intersections in the urbanized areas. SR 99 is classified as an urban minor arterial within the boundaries of Edinboro, or a rural major collector outside of those boundaries. Other roadway variations are as follows:



- South of US 6N, much of the SR 99 corridor allows on-street parking on both sides of the roadway to serve the CBD businesses and residences. This area also typically includes sidewalks, streetscaping, and higher levels of pedestrian activity, much of it related to CBD traffic and Edinboro University.
- Between approximately Chestnut Street / Waterford Street and US 6N, the SR 99 section widens to include angled parking on both sides of the street, as well as additional northbound and southbound dedicated turn lanes at the signalized intersection of US 6N and SR 99.
- In the vicinity of Crane Road and other northern portions of the corridor, SR 99 maintains its two-lane section but allows passing zones delineated by the existing signing and pavement markings.

Speed limits along SR 99 also vary from 35 to 55 MPH. Approximate boundaries are shown in the previously-referenced [Exhibit 8](#).

Other Corridors

Several other corridors or local roadways that will be discussed throughout this study can be classified as urban or rural collector roads and local roads that typically consist of two-lane sections with narrow shoulders, no turn lanes, and no sidewalk. Posted speed limits vary from 35 MPH in the more developed or residential areas (such as Maple Drive) to 45 or 55 MPH in the less developed, more rural locations (such as Crane Road).



Some of the more notable streets with regard to the findings and conclusions of this study can be located on the previously-referenced study area map ([Exhibit 1](#)) and, from west to east, include:

- Silverthorn Road (T438)
- Fry Road (T448)
- Crane Road (SR 3008)
- Sherrod Hill Road (T313)
- Forrest Drive (T490)
- YMCA Drive
- Angling Road (SR 3023)
- Lakeside Drive
- Maple Drive
- Chestnut Street (T321)
- Waterford Street
- Ontario Street
- Scotland Road
- Kline Road (T540)
- Hamilton Road (T520)

It should be noted that at the time this study was being written, Lakeside Drive consisted of a two-way roadway similar to other facilities in the area. However, the Borough of Edinboro was in the process of implementing an approved plan to convert this street from two-way to one-way northbound, beginning at US 6N and ending at approximately Cherry Street.

2.5.2 [ATR Data](#)

Automatic Traffic Recorders (ATR's) were used to collect hourly volumes, vehicle classifications, speeds, and gap measurements near each edge of the study area. Each ATR station recorded data in both directions of travel for a minimum of five consecutive days per location. Four ATR stations were located as follows:

- ATR Site 01: US 6N, East of I-79 (specifically near YMCA Drive)
- ATR Site 02: SR 99, South of US 6N (specifically north of Perry Lane)
- ATR Site 03: US 6N, East of Edinboro University (specifically west of Kline Road)
- ATR Site 04: SR 99, North of US 6N (specifically north of Walker Drive)

Detailed locations, data, and results from the ATR stations have been included in electronic format in [Appendix E](#), as well as related data from PennDOT's Internet Traffic Monitoring System (ITMS) where available for the study area roadways. Summary volume data and calculated average annual daily traffic (AADT) estimates indicate a wide range of volumes throughout the study area with US 6N between I-79 and SR 99 as the most heavily traveled segment of roadway ([Exhibit 9](#), [Exhibit 10](#), and [Exhibit 11](#)).

Exhibit 9: ATR Data – Existing AADT Summary

Location	AADT
US 6N, East of I-79	14,000
US 6N, East of Edinboro Univ.	4,000
SR 99, South of US 6N	5,800
SR 99, North of US 6N	7,200

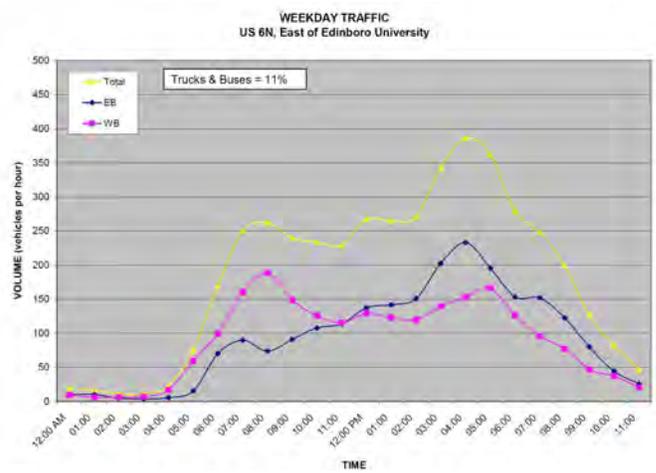
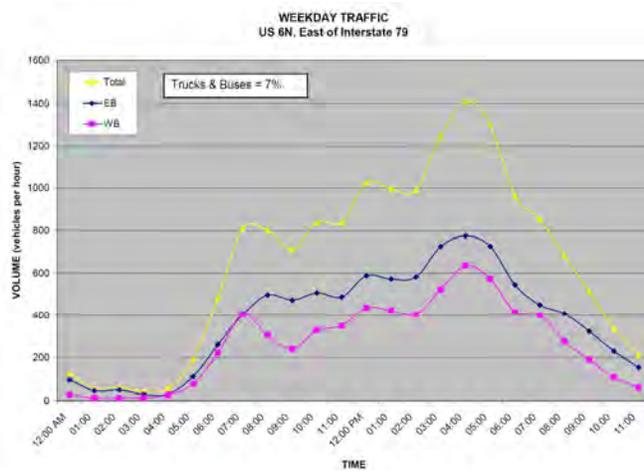


Exhibit 10: ATR Data – US 6N Existing Hourly Volumes

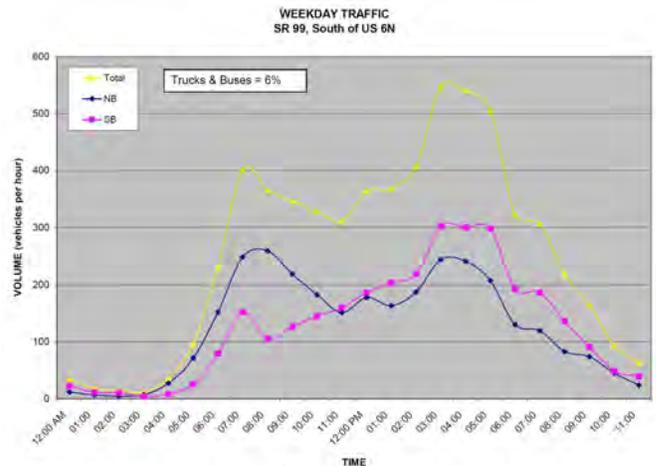
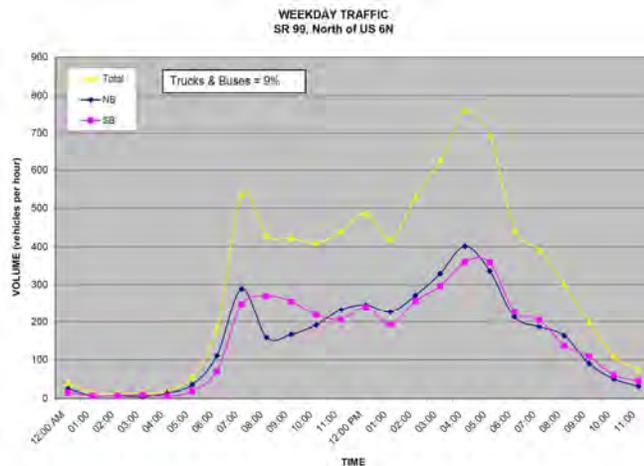


Exhibit 11: ATR Data – SR 99 Existing Hourly Volumes

The total percentage of heavy vehicles throughout the study area ranges from approximately 4% to 9% (Exhibit 12). A further breakdown of that total shows that buses account for approximately 1%, single-unit trucks account for 3% to 5%, and tractor-trailer trucks account for less than 1% to 2% of the overall weekday traffic volume.

Exhibit 12: ATR Data – Existing Vehicle Classification Summary

Location	Passenger Vehicles	Total Heavy Vehicles	Bus	Single-Unit Trucks	Tractor-Trailer Trucks
US 6N, East of I-79	≈ 95%	4.5%	0.4%	3.3%	0.8%
US 6N, East of Edinboro Univ.	≈ 91%	8.6%	0.9%	5.3%	2.4%
SR 99, South of US 6N	≈ 95%	5.0%	0.5%	3.7%	0.7%
SR 99, North of US 6N	≈ 94%	6.3%	0.7%	5.2%	0.4%

The measured average travel speeds and 85th percentile speeds – the speed at or below which 85% of motorists are traveling – are typically in line with the existing posted speed limits (Exhibit 13). The gap data, explained in more detail in the following paragraph, verifies that unsignalized access from any side-street onto US 6N between I-79 and SR 99 is likely very difficult for much of a typical day.

Exhibit 13: ATR Data – Existing Speed and Gap Summary

Location	Posted Speed	Average Speed	85th Percentile Speed	Assumed Critical Gap	Hours < Critical Gap
US 6N, East of I-79	45 MPH	43 MPH	49 MPH	7.1 sec.	13 Hr.
US 6N, East of Edinboro Univ.	55 MPH	51 MPH	59 MPH	7.1 sec.	0 Hr.
SR 99, South of US 6N	55 MPH	52 MPH	59 MPH	7.1 sec.	0 Hr.
SR 99, North of US 6N	55 MPH	52 MPH	60 MPH	7.1 sec.	1 Hr.

A review of the gap data helps to provide a general sense of how easy or difficult it may be to access US 6N from side streets. The ATR stations measure vehicle gaps as the amount of time (in seconds) that elapse between the rear bumper of one vehicle and the front bumper of the following vehicle; or, in other words, the amount of time that a side-street vehicle has available to pull out onto US 6N in between vehicles.

The *Highway Capacity Manual* (HCM) further defines a “critical gap” as the “minimum time between successive major-stream vehicles in which a minor-street vehicle can make a maneuver”; below the critical gap, it becomes difficult for side-street traffic to enter US 6N. The HCM, developed and maintained by the Transportation Research Board (TRB), is the primary source document used by transportation practitioners and researchers nationwide with regard to the industry-standard data and techniques used to evaluate the quality of service and operations for intersections and roadways. The HCM-defined critical gap for a left-turn from a stop-controlled side-street is 7.1 seconds. The measured gap along US 6N east of I-79 was less than this critical gap for approximately 13 hours per day (8:00 AM to 9:00 PM), verifying public comments that access onto US 6N from any side-street in this area is often difficult ([Exhibit 13](#) and [Exhibit 14](#)).

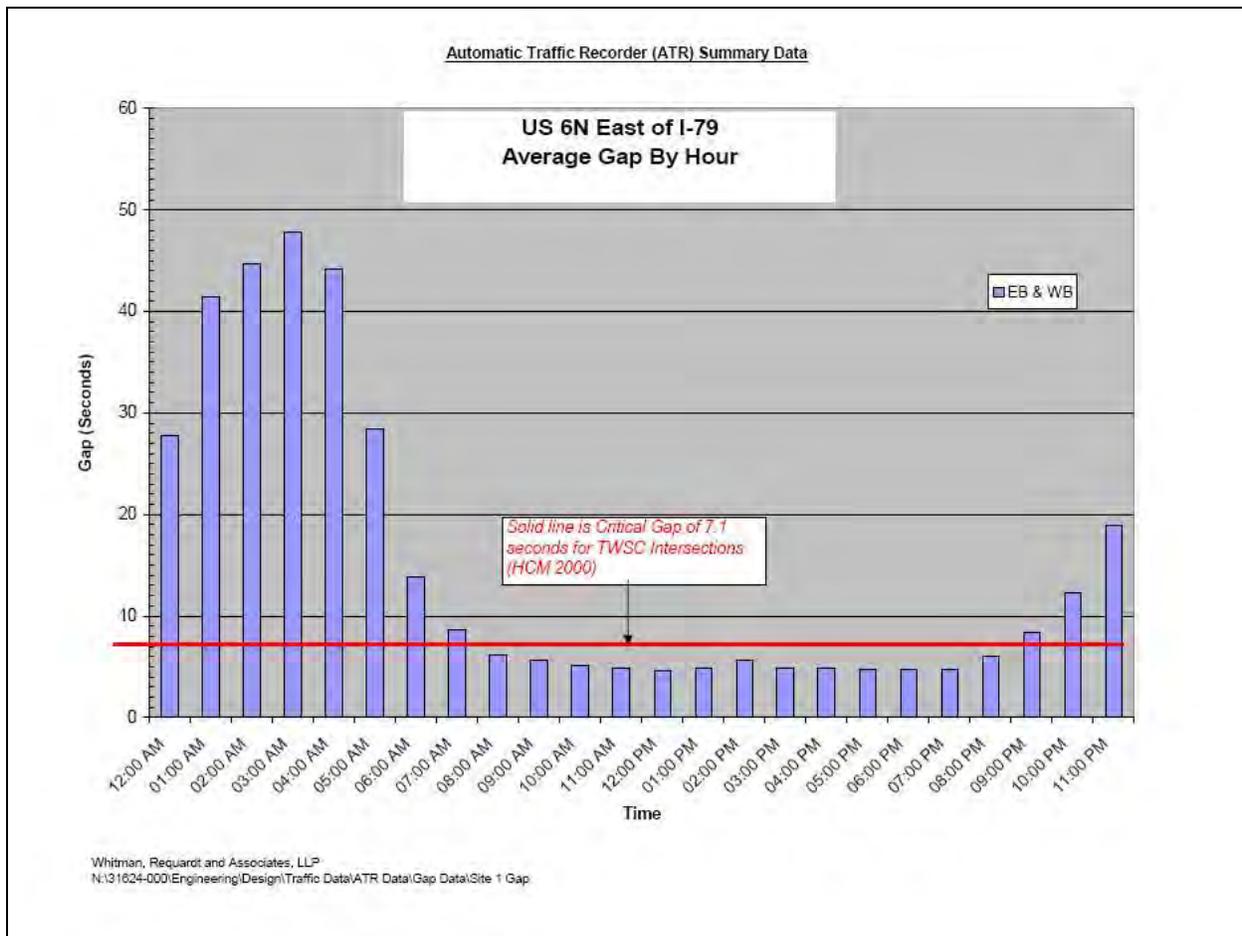


Exhibit 14: Average Gap Data for US 6N, East of I-79

Measured gaps for US 6N east of Edinboro University were adequate (typically 20 seconds or more) for most of the day. Measured gap data for the SR 99 segments was also typically acceptable, but with marginal gaps (less than 10-seconds) for approximately 3 to 7 hours per day. These conditions would indicate that access from side-streets onto SR 99 may not be a severe or constant problem, but may occasionally result in some delays during the busiest travel periods.

2.5.3 TMC Data

Turning Movement Counts (TMC's) detail the total number of vehicles during the count period that turn each direction (left, through, right) on each approach to a given intersection, as well as manual classification data identifying small trucks and large trucks. For TMC data collection purposes, small trucks included single-unit trucks with up to four-axes; large trucks included buses and all tractor-trailer combinations. TMC's were conducted at 28 locations throughout the study area ([Exhibit 15](#) and [Appendix E](#)).

Project-specific TMC's were mostly collected in September/October 2007 during typical weekday afternoons between approximately 3:00 PM to 6:00 PM, which was the highest travel period of the day. Count durations varied between 30-minutes, 1-hour, or 2-1/2 hours, depending on the relative importance and/or amount of traffic anticipated at a particular count location. All counts were compared, manually adjusted, and loosely balanced on a corridor-wide basis to develop a complete set of estimated PM peak hour turning movement volumes for the existing conditions.

- | | |
|--|---|
| Site 01: US 6N @ I-79 SB Ramps | Site 15: US 6N @ Jefferson Street |
| Site 02: US 6N @ I-79 NB Ramps | Site 16: US 6N @ Washington Street |
| Site 03: US 6N @ Fry Road | Site 17: US 6N @ Lakeside Drive |
| Site 04: US 6N @ Forrest Drive | Site 18: SR 99 @ Chestnut St. / Waterford St. |
| Site 05: US 6N @ Angling Road | Site 19: US 6N @ Washington Towne Blvd. |
| Site 06: US 6N @ Maple Drive | Site 20: Crane Road @ Lay Road |
| Site 07: US 6N @ SR 99 | Site 21: Crane Road @ Fry Road |
| Site 08: US 6N @ Ontario St. / Waterford St. | Site 22: Sherrod Hill Road @ Fry Road |
| Site 09: SR 99 @ Crane Road | Site 23: Sherrod Hill Road @ Forrest Drive |
| Site 10: US 6N @ YMCA Drive | Site 24: Sherrod Hill Road @ Gibson Hill Road |
| Site 11: Chestnut Street @ Maple Drive | Site 25: US 6N @ Perry Lane |
| Site 12: SR 99 @ Normal Street | Site 26: US 6N @ Hamilton Road |
| Site 13: US 6N @ Scotland Drive | Site 27: US 6N @ Draketown Road |
| Site 14: US 6N @ Kline Road | Site 28: US 6N @ Silverthorn Road |

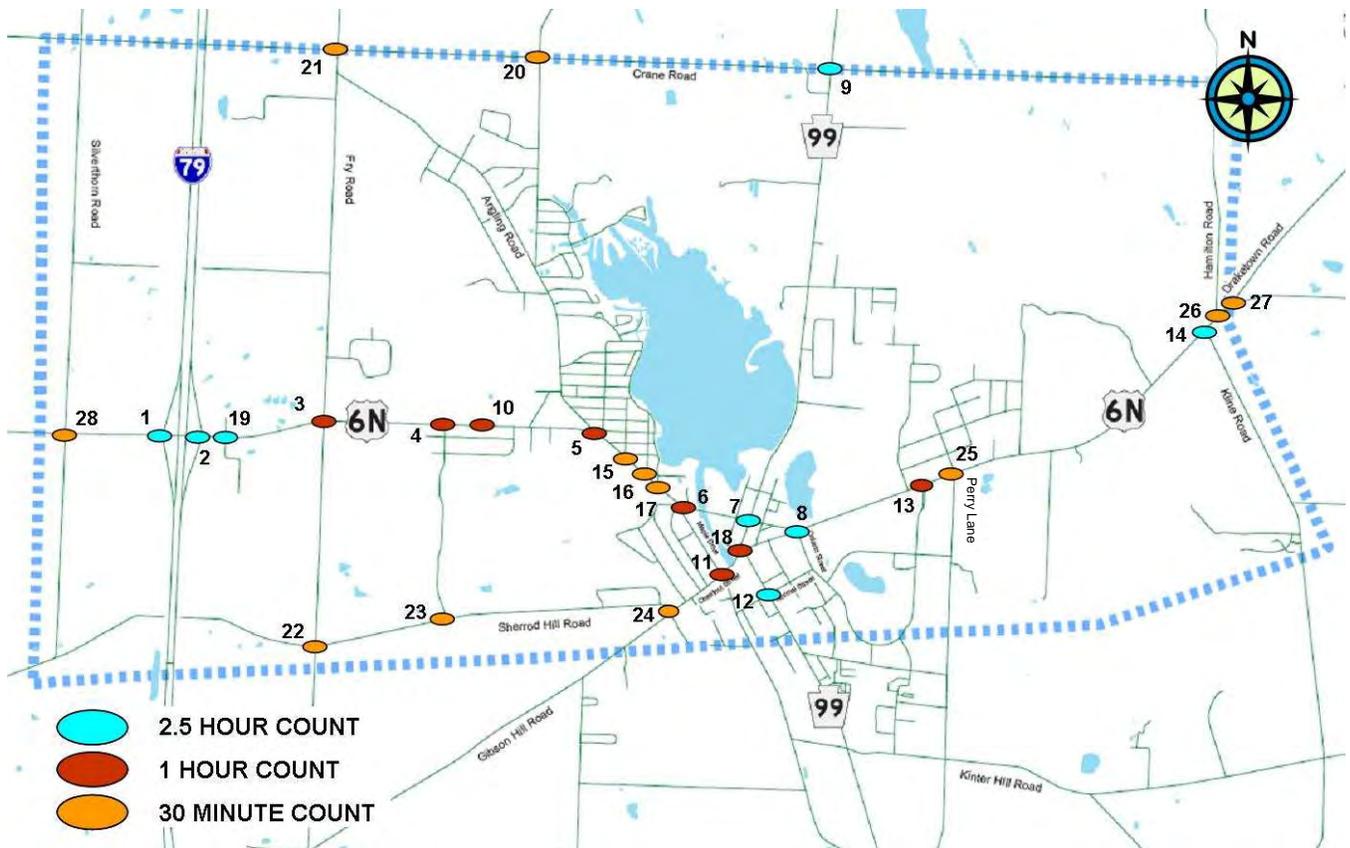


Exhibit 15: Intersection Turning Movement Count (TMC) Locations

Volumes along US 6N were found to vary considerably by corridor segment and generally decreased from west (near I-79) to east (near Kline Road) ([Exhibit 16](#)). Volumes on SR 99 likewise varied considerably as the roadway passed through downtown Edinboro and intersected with US 6N.

Exhibit 16: PM Peak Hour Volume Summary for Existing Conditions

Road (Segment)	Weekday PM Peak Hour Volume Estimate		
	2-Way	EB / NB	WB / SB
US 6N (at Washington Towne Boulevard)	1200	605	595
US 6N (at Angling Road)	1415	650	765
US 6N (at SR 99)	1395	620	775
US 6N (at Scotland Road)	780	405	375
US 6N (at Kline Road)	470	265	205
SR 99 (at Normal Street)	920	480	440
SR 99 (at US 6N)	995	525	470
SR 99 (at Crane Road)	875	405	470
Fry Road	105	55	50
Crane Road	90	50	40
Angling Road	270	160	110
Sherrod Hill Road	30	15	15

2.5.4 Origin-Destination Survey

An Origin-Destination (O-D) Survey was conducted to identify existing travel patterns through the study area. The O-D Survey was conducted on Thursday, October 18, 2007, as a license plate study in which the first four digits of a vehicle's license plate, plus the vehicle color, were recorded at each of 13 entry/exit locations ([Exhibit 17](#)). Data sets from each origin and destination pairing were then reviewed to identify matching combinations of license plate numbers and vehicle colors between and entry and exit station. For example, a through-vehicle might enter the study area at Site 2 and leave via Site 12. Such matches were then compiled into an overall O-D matrix to be used for traffic forecasting tasks later in this study ([Exhibit 18](#) and [Appendix E](#)).

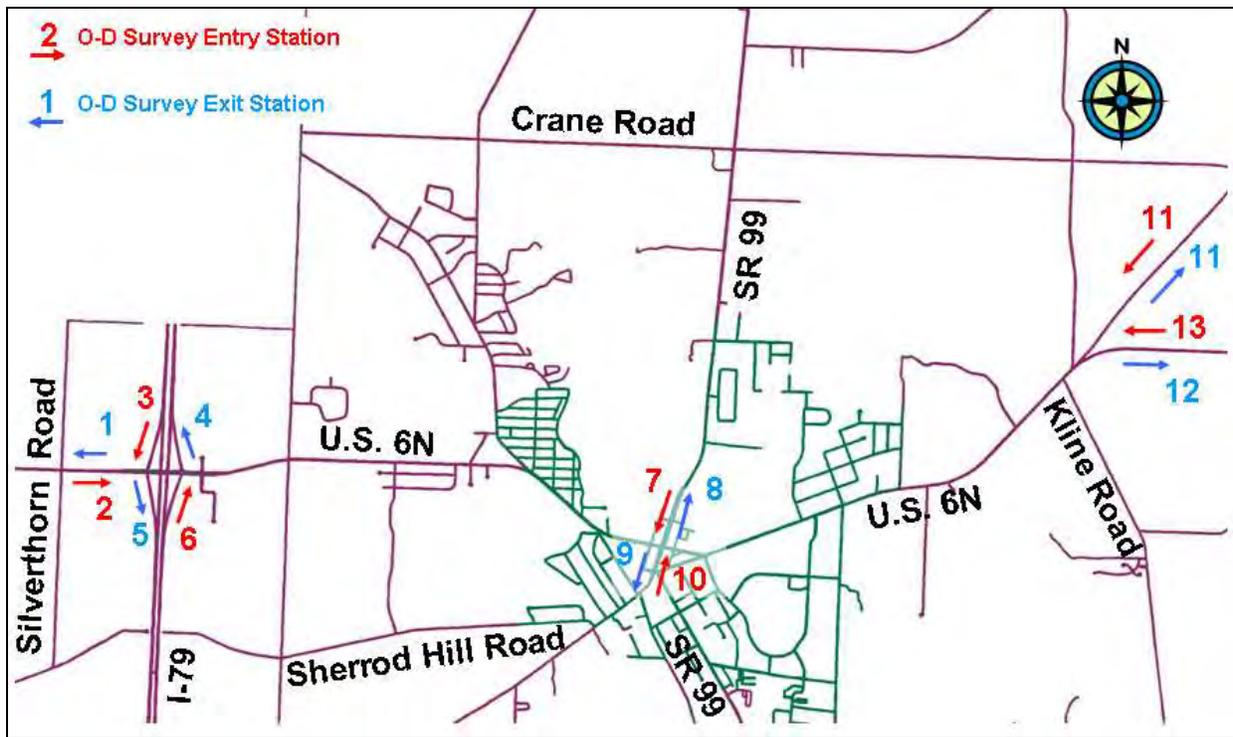


Exhibit 17: O-D Survey Site Locations

Exhibit 18: O-D Summary Matrix by Percentage of Observed Vehicles

		To Zone	1	12	4	5	8	9	11	-
			US 6N (West)	US 6N (East)	I-79 (North)	I-79 (South)	SR 99 (North)	SR 99 (South)	Draketown	Not Matched
From Zone		Totals	-	-	-	-	-	-	-	-
2	US 6N (West)	100%	0%	4%	7%	8%	6%	10%	3%	61%
13	US 6N (East)	100%	3%	0%	2%	2%	5%	3%	10%	75%
3	I-79 (North)	100%	7%	5%	0%	12%	7%	18%	2%	50%
6	I-79 (South)	100%	14%	9%	11%	0%	8%	13%	1%	44%
7	SR 99 (North)	100%	4%	3%	7%	3%	0%	20%	2%	61%
10	SR 99 (South)	100%	8%	6%	10%	4%	17%	0%	2%	54%
11	Draketown	100%	9%	16%	3%	2%	14%	10%	0%	46%
-	Not Matched	100%	17%	17%	14%	9%	19%	20%	4%	0%

A review of the O-D Survey data indicates that US 6N primarily serves traffic to and from various local origins and destinations. For example:

- From the west end of US 6N (Site 2) to the far east end (Site 12), only 4% matches were obtained for continuous eastbound travel through the study area, whereas 34% matches were found to access I-79, SR 99, or Draketown Road.
- From I-79 north (Site 3), only 5% matches were found to travel US 6N completely through to the east end of the study area (Site 12), whereas 27% matches were found to access SR 99 or Draketown Road (Sites 8, 9, and 11), and an additional 12% matches returned to I-79 South (Site 5), likely following stops at nearby gas stations, restaurants, or shops.

The findings are also in-line with a review of how traffic volumes change throughout the corridor based on TMC data ([Exhibit 16](#)). Considering these findings, it becomes apparent that the existing role for US 6N within this study area is less related to through-traffic and more related to study area origins and destinations.

2.5.5 Travel Times

Travel time runs through the study area were conducted to further document existing conditions along US 6N and SR 99 ([Exhibit 19](#)). Travel times were measured during a typical weekday PM peak period on October 24, 2007, using a “floating car” methodology. In this method, a test vehicle was driven at an average speed through the arterial, allowing vehicular speed to be dictated by the traveling platoon speed, not the posted speed limit. Travel times and stops were collected using Global Positioning System (GPS) equipment that (1) recorded the latitude/longitude position of the test vehicle every second along the study corridors and (2) calculated the speed and position of the vehicle within the study network. This GPS data was verified against manual stopwatch measurements and analyzed in detail using the PC-Travel software program ([Appendix E](#)).

The most significant existing source of delay and queuing for all directions of travel through the study area is the signalized intersection of US 6N and SR 99. This intersection typically accounted for well over half, and as high as 83%, of the measured travel time delay in any direction.

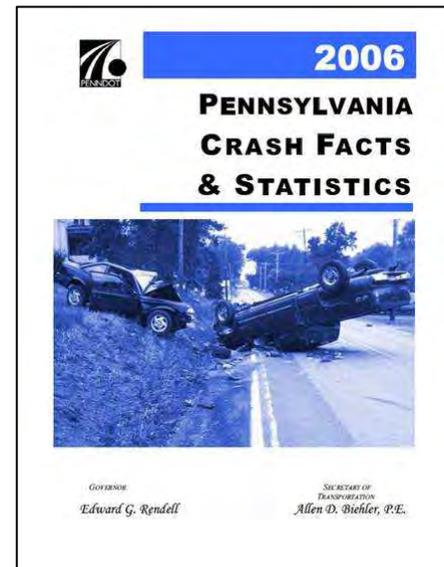
Exhibit 19: PM Peak Period Travel Time Summary for Existing Conditions

Route (Segment Limits)	Travel Time	# Stops	Average Speed	Total Delay	Delay due to US 6N / SR 99
US 6N EB (Silverthorn to Kline)	9.7 minutes	2.6	30.6 MPH	2.5 minutes	58%
US 6N WB (Kline to Silverthorn)	9.9 minutes	2.3	30.0 MPH	2.9 minutes	83%
SR 99 NB (Kinter Hill to Crane)	5.5 minutes	1.5	30.8 MPH	1.4 minutes	45%
SR 99 SB (Crane to Kinter Hill)	6.1 minutes	1.5	28.0 MPH	2.0 minutes	68%

2.5.6 Crash Data

Historical crash data for select corridors within the study area was supplied by PennDOT for the five-year period from 1/1/2002 through 12/31/2006. Crash locations were plotted onto maps of the project area based on roadway segment and offset data included in the crash reports. Data was then reviewed and compiled to locate any notable crash clusters, calculate and compare crash rates, and identify any trends in the crash statistics based on crash type, condition, or probable cause. Five state route corridors included in the crash analyses were:

- I-79 (SR 0079)
- US 6N (SR 3006)
- SR 99 (SR 0099)
- Angling Road (SR 3023)
- Crane Road (SR 3008)



Based on the crash data, identifiable – but typically not statistically significant – crash clusters were located along I-79 Northbound in the vicinity of the Crane Road overpass; along US 6N at Fry Road, Angling Road, and SR 99; and along SR 99 at Crane Road and Waterford Street. Additional summary findings are documented in [Appendix F](#) and will be detailed further in [Section 3.3.3](#) of this report. It is important to note that only reportable crashes available in PennDOT’s database were reviewed as part of this study. A “reportable crash” is defined by PennDOT’s *2006 Pennsylvania Crash Facts & Statistics* booklet as “a crash resulting in a death within 30 days of the crash; or injury in any degree, to any person involved; or crashes resulting in damage to any vehicle serious enough to require towing”. Based on anecdotal evidence, there may be additional minor, “non-reportable”, or unreported crashes that may have occurred. If so, it would be expected that those crashes have or follow characteristics similar to the data that was reviewed and, as such, would be addressed or improved by the same set of alternatives or recommendations developed throughout this study.



Section 3.0 - Existing Conditions



3.0 EXISTING CONDITIONS

This section of the report summarizes an evaluation of the existing conditions throughout the study area, which forms the baseline from which all future analyses and improvement alternatives will be developed. The evaluation focuses on the following:

- Section 3.1 – Public Perspective / Public Meeting #1
- Section 3.2 – Current Land Use
- Section 3.3 – Current Transportation

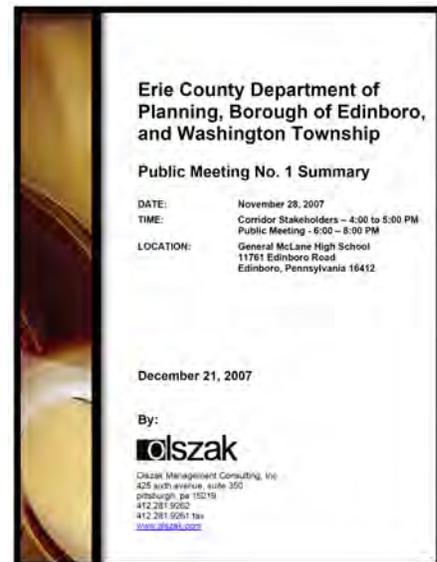
3.1 PUBLIC PERSPECTIVE / PUBLIC MEETING #1

To help establish the existing conditions and to begin focusing efforts on locally-perceived problems and concerns, the perspective of the general public was solicited via Public Meeting #1, held on November 28, 2007 at General McLane High School in Edinboro. The advertised purpose of the meeting was to “introduce the project, present preliminary traffic study findings, and gather public input on study goals and objectives as well as identification of trouble spots along the corridor.”

A complete summary of Public Meeting #1 and associated comments can be found in a December 21, 2007 report compiled and prepared by Olszak Management Consulting, Inc. ([Appendix A](#)).

There were 88 attendees at Public Meeting #1 and 30 attendees at the Corridor Stakeholders Meeting held just prior. In total, 72 comment forms were received, mostly from residents who traveled the corridor daily, plus a detailed letter from Mr. Steve Halmi, a consulting engineer for the Borough of Edinboro and Washington Township. Overall, the majority of the respondents (75%) were in agreement with the study goals; and while there were many specific comments (refer to [Appendix A](#)), several recurring themes emerged, including requests to:

- Improve intersections
- Add traffic lights
- Add bypasses
- Reduce congestion
- Enhance bicycle / pedestrian circulation



Related details that would eventually be investigated as the study progressed included the following:

- Several comments qualified their stance with the project goal to “encourage” growth, indicating that growth must be “managed”, “carefully considered”, or “well thought out”.
- Several comments repeated specific locations of concerns, including Fry Road, Angling Road, Maple Drive, and others. These locations were consistent with areas of concern that were previously documented in the Comprehensive Plan, specifically including the US 6N intersections at I-79, Fry Road, Angling Road, and SR 99, plus the intersection of SR 99 and Crane Road.
- Overall responses clearly showed that access onto US 6N from most side-streets was perceived to be problematic, excessively delayed, or potentially unsafe.
- Pedestrian and bicycle-related comments often focused on adding connections and improving safety along and across US 6N, particularly for the area of the Lakeside Drive community, the new library location south of that community, Angling Road, and the developed areas near Washington Towne Boulevard.
- Bypass-related comments typically focused on recommending a new interchange on I-79, often south of the existing US 6N interchange and/or in the vicinity of Irish Road in Crawford County.

3.2 CURRENT LAND USE

3.2.1 Washington Township

In Washington Township, the current policy encourages future development to follow historic development patterns. These are reflected in the adopted Comprehensive Plan, and can be summarized as follows:

- Commercial development follows major road corridors (6N and Route 99).
- Residential development is focused in the 6N study area. West of Route 99 residential development can be placed in three categories: low-density and two high-density categories. One area is an extension of the Lakeside cottage area (i.e., small lots); the other is a more traditional high-density residential designation (see the next section, “Existing Land Use Ordinances and Their Implications”).
- Low-density residential east of Route 99 will primarily use on-lot system, except for a small area along Kline Road.
- Industrial areas are essentially planned west of I-79 and the 6N Interchange

Recent Development

This section addresses recent development in the Township and the Borough.

Housing

New housing in Washington Township is generally one of two types. Some homes, using on-lot systems, are scattered throughout the municipality. These depend upon soil suitability and the availability of property. Other new homes are the result of subdivision developments where both sewer and water services are available. Over the past three years (2005, 2006, 2007) there have been 37 new homes built. Of these, 16 have had sewer service; the balance used on-lot systems. Without the DEP issues relative to the sewer plant, some 60 new homes would probably be constructed.

Historic levels of residential development are difficult to gauge. According to Census data, 1970 through 2000, the Township averaged 4.8 additional dwellings per year, significantly under more recent patterns.

In reviewing development patterns in the Township, they are heavily influenced by public utilities, especially sanitary sewer services. Intense residential development can be seen along Forrest Drive, off Angling and Lay Roads, and off Fry Road (Obed Heights). Most of these areas also have public water, though water service is not as extensive as that for sewers. A property

map of the Township shows the influence of these key utilities. Where these utilities are not available, parcels are generally along existing roads and tend to have larger lots.

New residential development in Washington Township has generally occurred in land zoned as R-1 or R-2 Residential. Net density for an R-1 lot with utilities would be 2.9 dwelling units per acre. However, where a major subdivision is created, density would likely be between 2.3 and 2.5 dwelling units per net acre, allowing for roads and unbuildable land. A development of 20 homes would consume about 8-plus acres in land and be home to about 63 persons (Census 2000). The net residential/population density for new development could be estimated at 7 to 8 persons per acre. Using data from the “American Community Survey” (2006, Census Bureau), it is safe to assume that the average homeowner would have at least two vehicles, and perhaps three.

There is comparatively undeveloped land zoned R-2 where sewer and water would be reasonably available. These areas are just off of Fry Road or Angling Road. Township policy has historically been to make developers responsible for the extension of sanitary sewer services.

It is likely future development in the Township will follow past patterns—that is, single-family dwellings on lots of 15,000 square feet. Yet, the Erie County demographics are changing. Multi-family homes, condos, and patio homes are beginning to emerge in the local housing market. In fact, a 35-unit, “55-plus,” is being proposed along Route 6N in the study area, behind the YMCA (see Edinboro University). And, as the population ages, these housing options will become more popular. The County’s demographic projections estimate over 18% of its citizens will be over 65 in 2020, and over 22% by 2030.

Non-Residential Development

Currently, the primary new commercial development in Washington Township is occurring on the northeast quadrant of the I-79 and Route 6N Interchange, off Washington Township Boulevard. A motel is under construction. There is also discussion that a family restaurant is being planned for that area.

Though most new residential development in the Township will follow traditional patterns in future years, more dwellings for older citizens can be expected. Though such developments will be denser in terms of dwelling units per acre, the occupancy per unit will be below that of traditional housing.

3.2.2 Edinboro Borough

The Borough of Edinboro appears fully developed. Yet, development continues to occur. Between 2002 and 2007, some 73 new dwelling units were added to the Borough, just less than 15 units per year. The most significant year was 2007. Once again, this is in contrast to historic Census data, which indicated 4.6 units annually between 1970 and 2000.

In reviewing aerial photographs of the Borough and current land use maps, there are vacant residential parcels that appear can be developed. Some of the development over the past five years used these vacant parcels in Beau Drive, Dunbarton and the Scots Glen area. However, a few parcels in these developments are owned by abutting properties, and are likely to be used as buffer parcels, at least in the short term. The principal development in 2007 was the completion of the Scots Glen Plan. Some 29 new single-family units were built. Recent residential growth in Edinboro does demonstrate that some continued growth is possible.



There are, however, other areas that have developmental potential. These are discussed in the Overview of Future Development.

3.2.3 Franklin Township

Only a corner of Franklin Township is included. Here, the future land use designation was influenced by the presence of a KOZ area of approximately 177 acres, located to the immediate west of I-79. Though the land is flat and has road access, it has no public water and sewer facilities which limit its potential. The primary current development is the Buffalo Nickel Farm. Situated on the corner of Koman Road, just east of I-79, the bulk of land is farm, but there are a gift shop and restaurant on the premises.

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3.3 CURRENT TRANSPORTATION

3.3.1 Pedestrian and Bicycle Circulation

Based on the GPS data and GIS mapping mentioned previously, locations of existing sidewalk, bicycle lanes, and bus stops throughout the study area were mapped ([Exhibit 20](#)). Notable observations of the existing facilities for pedestrian and bicycle circulation were as follows:

- Both the sidewalk and bicycle networks throughout the study area are disconnected with several missing segments. Sidewalk and crosswalk installations were specifically missing in the primary areas of concern, including the Lakeside Community and the nearby proposed library location, that were identified during Public Meeting #1.
- Many of the existing bicycle lane segments were observed to have worn or faded pavement markings and rough or debris-covered surface conditions.
- Sidewalk curb ramps typically were not located uniformly throughout the study area, were often in a state of disrepair, and conformance to current and applicable Americans with Disabilities Act (ADA) requirements was questionable.
- Transit stops typically lacked shelters and were not ADA accessible.

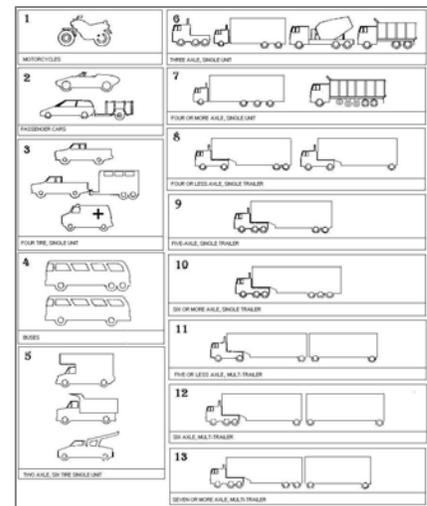




Exhibit 20: Existing Sidewalk, Bicycle Lane, and Bus Stop Locations

3.3.2 Truck Traffic

The total heavy vehicle percentage through the study area averages approximately 4% to 9%, which includes mostly single-unit trucks and less than 1% to 2% tractor-trailer trucks (Exhibit 12). These percentages are reasonable for corridors such as US 6N or SR 99 and do not indicate an excessive volume of truck traffic within the study area. A brief review of several communities surrounding Edinboro and Washington Township verified that US 6N is likely the principle east-west corridor for trucks to and from Edinboro, and at least as far as the communities of Union City, Corry, and Warren. As such, some amount of heavy vehicle traffic should be expected to utilize this corridor, and the project dilemma becomes one that has been summarized by TRB’s NCHRP Synthesis 314, *Strategies for Managing Increasing Truck Traffic*, as follows:



“Transportation organizations are increasingly faced with the dilemma of (1) needing to accommodate trucking to foster economic development and sustain the quality of life associated with the consumer economy, while (2) dealing with a public that is increasingly vocal in its demands that truck traffic, truck noise, and truck-related development be eliminated or minimized whenever possible.”

Although various comments and concerns have been voiced, no significant truck-related problems such as constant truck-specific congestion, restricted turn clearance issues, truck cut-through traffic via residential streets, etc., were observed during field-visits to the study area. Considering the relatively low percentage of truck traffic utilizing the study area roadways, it is possible that any historically-observed problems were, in fact, off-peak or isolated occurrences and/or at least partly attributable to other causes. For example, heavy background congestion, queuing, or signal delays along US 6N would also affect any trucks that happen to be in the traffic stream. Such delays, although not caused by truck traffic, may create a domino-effect associated with truck traffic if they increase truck start/stop occurrences, increase noise associated with intermittent acceleration and braking, or increase risks associated with traction, stopping distance, or similar operational limitations of heavy vehicles, particularly during congested traffic flows and/or inclement weather.

3.3.3 Corridor Safety

As indicated previously, the crash analyses conducted for this study identified various crash clusters, but these clusters were typically not statistically significant. This determination indicates that compared to statewide average crash rates and considering the volume of traffic utilizing the roadway, the historical level of crash activity does not present an immediate or clear-cut safety concern, an area of unusually excessive problems, or conditions that are otherwise unlike similar facilities. However, notable findings of the crash study are still able to highlight potential areas of improvement based on the following:

- Within the identifiable crash clusters along I-79 in the vicinity of the Crane Road overpass, 75% of the northbound crashes and 40% of the southbound crashes were cited to be related to speeding. PennDOT has a separate *I-79 Section A14 Project* that was tentatively planned for June 2008 to overlay the I-79 travel lanes in that area. This overlay would improve surface traction and potentially reduce the number of crashes that may be related to loss of control at higher speeds. Regardless, additional enforcement of speeding in that location may be warranted.
- 91% of crashes in the study area were cited as being related to some type of driver error. Aside from direct driver error, it is possible that existing levels of congestion or queuing, access difficulties entering or exiting the US 6N mainline traffic stream, or related existing conditions account for at least part of this 91% statistic. Such conditions may contribute to increased levels of driver confusion, impatience, or poor judgment that ultimately appear as “driver error” on any given crash report.
- 36% of crashes in the study area occurred during rain, snow, or fog; and 46% occurred during wet, snow, or ice-covered road conditions – approximately twice the statewide averages for these factors. Some of this trend is likely attributable to the general weather patterns, lake-effect snows, and harsher winters in the Erie County area compared to statewide. However, they could also be higher depending on road maintenance or salting practices during inclement weather, or due to possible driver inexperience related to a younger and/or out-of-town driving population associated with Edinboro University.



- Rear-end, angle, and left-turn collisions were the most common crash types throughout the study area. Specifically along US 6N between Fry Road, Angling Road, and SR 99, approximately 39% to 42% of crashes were rear-end collisions. These types of collisions would be typical for a congested two-lane corridor such as US 6N with frequent, unsignalized side-street access. The rear-end collisions specifically could be attributable to general stop and go traffic along US 6N, failure to yield to queued traffic during peak periods of congestion, failure to yield to vehicles waiting to turn from US 6N into any unsignalized side-street, failure to yield to traffic signal indications at the SR 99 intersection, etc.

3.3.4 Special Events / Incident Management

As a mostly two-lane corridor in the vicinity of a major interstate and a large university, certain events or incidents can result in a dramatic increase in traffic congestion along the US 6N corridor. Such events can be viewed in two basic categories as follows:

- Special events typically include scheduled or predictable occurrences such as sporting events, community activities, university “move-in” days, holiday traffic surges, or similar types of occurrences.
- Incidents typically included unexpected or unpredictable events such as weather-related problems, crashes on local roadways, or detour traffic due to crashes on other area roadways such as I-79.

No specific special events were directly observed during the field-visits for this study. However, ATR counters were in-place along US 6N for two consecutive Saturdays that included a home football game for Edinboro University (September 22, 2007), and an away-game / non-event weekend (September 29, 2007). A comparison of this data set reveals that daily traffic volumes along US 6N were approximately 14% higher during the home-game Saturday versus the non-event Saturday. However, measured traffic volumes during the Saturday midday peaks were still lower than a typical weekday afternoon peak, which is the primary focus of this study’s analysis.

Additionally, no specific unexpected incidents were directly observed during the limited field-visits for this study. However, anecdotal evidence indicates that weather-related, crash-related, or other unexpected problems contribute to congestion along the US 6N and SR 99 corridors. The crash analyses highlighted inclement weather as a contributing factor in crash characteristics along this corridor. Various concerns voiced at the public meetings meshed with this finding, often citing issues related to slick surfaces, poor traction, and existing grades in the vicinity of the US 6N and Fry Road intersection. Other comments indicated that US 6N occasionally serves as an alternate route for heavy traffic volumes avoiding incidents on nearby sections of I-79 or I-90. During one of the last PAC Meetings, PennDOT representatives verified that the current emergency detour routes for I-79 and I-90 are not posted to officially utilize

US 6N or SR 99 through Edinboro. Although not part of the official routes, it is still possible that interstate-related incidents would result in some motorists diverting to the US 6N and/or SR 99 corridors of their own accord.

3.3.5 Traffic Operations

To quantify traffic operations, a capacity and level of service (LOS) analysis was conducted using Synchro software. The Synchro model accounts for input such as turning movement volumes, lane arrangements, type of intersection control, traffic signal timing, etc., to estimate intersection capacity, delay, and LOS in accordance with standard procedures outlined in the Transportation Research Board's (TRB's) "Highway Capacity Manual".

Intersection LOS is a letter-grade based on the average delay per vehicle due to the traffic control in place at an intersection ([Exhibit 21](#)). Letter-grades range from A through F, with LOS A representing the best operating conditions and LOS F representing the worst. Generally, an acceptable range of operations is defined as LOS C or better in rural areas and LOS D or better in urban areas. These criteria are specific to intersection control type based on the notion that higher levels of delay are generally expected and accepted at signalized intersections, whereas motorists' tolerance of delay at unsignalized intersections is typically lower.

Exhibit 21: Intersection Level of Service (LOS) Criteria

LOS	Control Delay (Seconds)	
	Signalized Intersections	Unsignalized Intersections
A	≤ 10	≤ 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50

Synchro analyses were conducted for the 4 existing signalized intersections and 24 unsignalized intersections in the study area for a typical afternoon rush hour ([Exhibit 22](#), [Exhibit 23](#), and [Appendix F](#)).

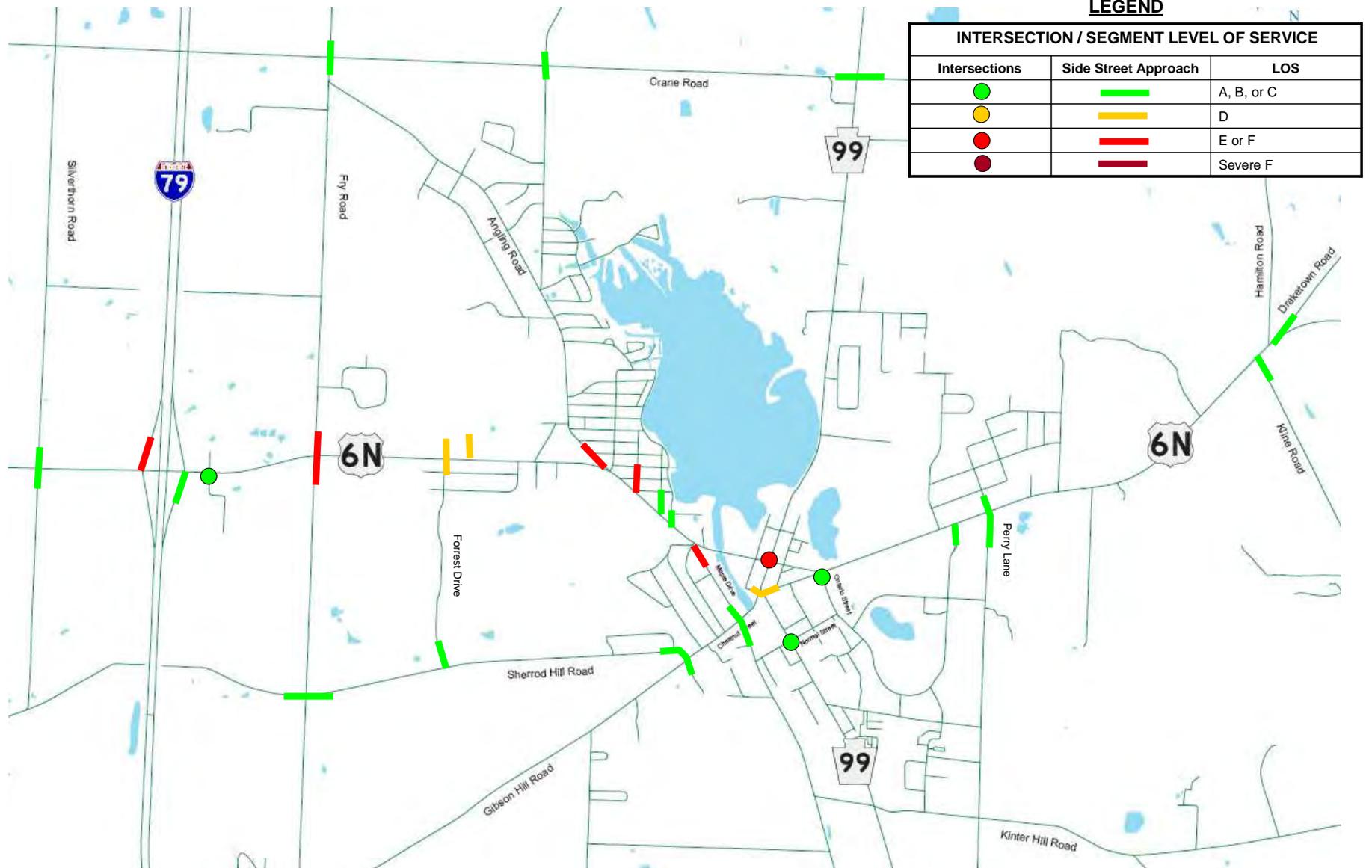


Exhibit 22: LOS Graphic for Existing Conditions

Exhibit 23: LOS Table for Existing Conditions

Signalized Operations		Number of Existing Intersections
Acceptable	Overall LOS A, B, or C	3
Marginal	Overall LOS D	0
Failing	Overall LOS E or F	1
Unsignalized Operations		Number of Existing Intersections
Acceptable	Side-Street LOS A, B, or C	16
Marginal	Side-Street LOS D	3
Failing	Side-Street LOS E or F	5

Signalized Intersections

Based on the signalized LOS results, existing congestion along US 6N is focused at the single failing intersection of US 6N and SR 99, which impact the mobility of traffic along US 6N and SR 99. This result is consistent with previous findings from the travel time data in which well over half the travel delay for the overall US 6N and SR 99 corridors occurred at this intersection (refer back to [Exhibit 19](#)). It is important to also note that while existing LOS results are calculated as “acceptable” for the nearby signalized intersections of US 6N / Ontario Street and SR 99 / Normal Street, both of those locations are close enough that excessive delays and queue spillback from the US 6N / SR 99 intersection negatively impact their operations.

Existing traffic signal timing and phasing at the US 6N / SR 99 intersection was briefly reviewed to determine if any simple improvements were possible. It was concluded that the existing operations are more or less optimized and that only marginal decreases in queuing or delay could potentially be achieved through simple timing adjustments alone. As a critical junction along both corridors with approximately 470-620 vehicles per hour on each approach during the weekday PM peak hour, the primary problem is one of limited capacity. The overall amount of traffic attempting to enter this intersection is 106% of what it is capable of handling, and as high as 119% for the heaviest individual movement.

Unsignalized Intersections

Based on the unsignalized LOS results, a full one-third of the stop-controlled side-street approaches that were analyzed are failing or operating marginally. All of these locations are located along US 6N west of SR 99, with the exception of Chestnut Street at SR 99. This result is consistent with previous findings that the measured gaps in the mainline traffic stream were less than the critical gap for more than half of a typical weekday ([Exhibit 13](#) and [Exhibit 14](#)). The result is also consistent with recurrent comments from Public Meeting #1 with regard to difficulties accessing US 6N from many of the local side-streets in that area, including Fry Road, Forrest Drive, YMCA Drive, Angling Road, various streets from the Lakeside Community, and Maple Drive. The findings are even more compelling when coupled with the previously-discussed crash characteristics of 39% to 42% rear-end collisions in this segment. Such figures imply that the short-supply of reasonable gaps between passing vehicles is also a problem for mainline vehicles waiting to turn off of US 6N.

Taken individually, none of the side-streets mentioned above would typically be considered as “high volume”. The highest side-street volumes occur at Angling Road or Maple Drive with just around 100 vehicles per hour (vph) each; typical volumes at most remaining side-streets range from only 10 to 50 vph. Under such low volume conditions and with no remarkable crash history, none of these locations were found to completely satisfy the traffic signal warrant criteria that are typically required to justify installation of a new traffic signal. Only one location, Maple Drive, was found to marginally satisfy the peak hour volume thresholds listed specifically for the peak hour volume warrant. Intersections at Fry Road and Angling Road did not currently meet these thresholds, but they were close enough to note that the thresholds may be met with a moderate increase in side-street volumes, whether due to future traffic growth or due to diverted traffic volumes as a result of potential modifications to access control, local street connections, etc. Overall, regardless of the specific volumes or signal warrant analyses, access-related difficulties are clearly a primary concern in the western half of the study area.

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Section 4.0 - Future Needs and Projections



4.0 FUTURE NEEDS AND PROJECTIONS

This section of the report provides an overview of the future development assumptions and projections and the “No-Build” transportation conditions that would result if no improvements were made to the existing transportation network. These tasks are essential to defining the specific future needs of the study area and establishing a benchmark to which any future improvement alternatives will be compared. Tasks focus on the following:

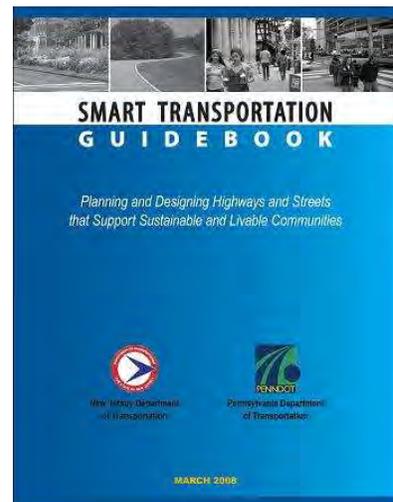
- Section 4.1 – Smart Transportation Philosophy
- Section 4.2 – Future Development
- Section 4.3 – Future Traffic Projections
- Section 4.4 – Future No-Build Traffic Operations

4.1 SMART TRANSPORTATION PHILOSOPHY

Up to this stage of the study, most public comments, the project’s established goals and objectives, and various preliminary findings such as the need to balance access and mobility demands along the corridor, have all meshed well with PennDOT’s “Smart Transportation” philosophy. This section serves as a brief overview of that philosophy on the premise that understanding its basic themes and guiding principles will be important throughout the development and assessment of improvement alternatives.

Historical Design and Development Perspective

Historically, if traffic volumes and/or congestion along any given corridor would begin to approach or exceed unacceptable levels, improvement projects would be developed and implemented to simply increase the capacity of that corridor. In other words, the corridor would be widened because more lanes would allow it to carry more traffic. However, over a period of time the increase in capacity would attract more development and more traffic, eventually resulting in a new round of congestion, and potentially requiring the corridor to be widened again to solve the new round of problems. This process can repeat itself each time a corridor is widened, ultimately resulting in a very wide roadway cross-section and theoretically reaching a point where it may no longer be feasible to add additional lanes ([Exhibit 24](#)).



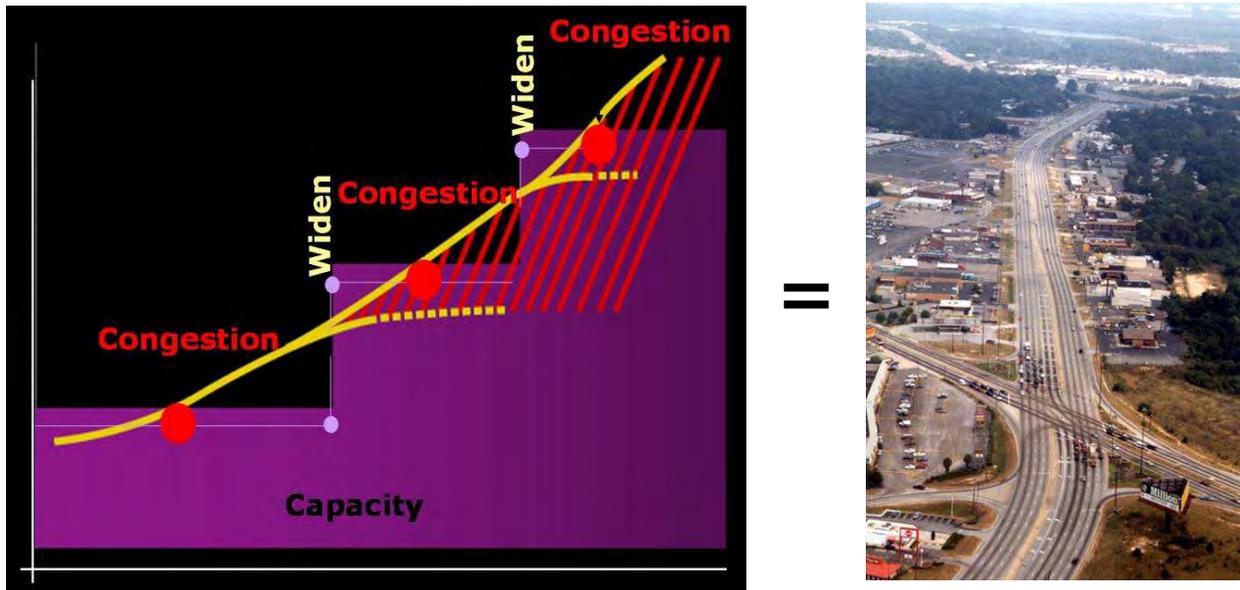


Exhibit 24: Historical Road Design Dilemma

Source: *Smart Transportation: PennDOT Partner Workshop Presentation*

Traditional design and development patterns have also often occurred in a very isolated or disconnected manner. For example, separate developments such as a shopping mall, apartment complex, housing community, or school campus may be located directly adjacent to one another, but each with independent access points that connect only via the main corridor (Exhibit 25). In this configuration, every link in any series of trips that might occur, such as from a home to the school to the mall and back, must traverse the main road for every individual leg of the trip.

If the corridor also lacks facilities for pedestrian, bicycle, or transit links, or even with such links if the very nature of the corridor (due to roadway width, congestion, noise, etc.) is such that it simply discourages these alternate modes of travel, then even more of the population would be forced into an automobile and onto the roadway. The net increase in traffic volumes demanding to use the main corridor can be a serious problem, can eventually push congestion to a point where additional widening is simply not feasible, and can radically affect the fabric of the surrounding communities.

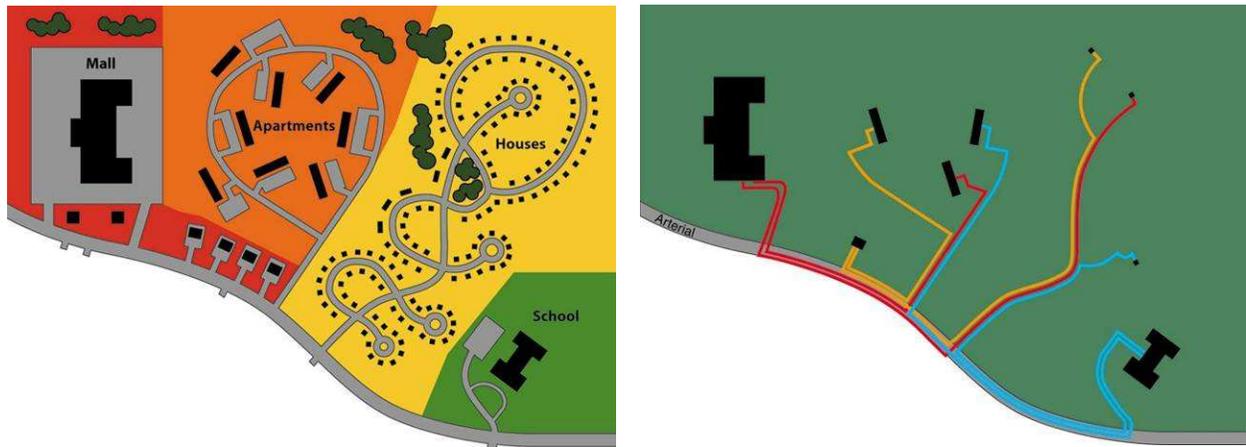


Exhibit 25: Historical Design and Development Patterns

Source: *Smart Transportation: PennDOT Partner Workshop Presentation*

The Smart Transportation Perspective

In contrast to the trends and related problems mentioned above, PennDOT's *Smart Transportation Guidebook* states that "Smart Transportation proposes to manage capacity by better integrating land use and transportation planning. The desire to go "through" a place must be balanced with the desire to go "to" a place. Roadways have many purposes, including providing local and regional mobility, offering access to homes and businesses, and supporting economic growth." This mentality yields an approach that PennDOT has summarized into ten essential themes as follows:

- Money counts.
- Choose projects with high value to price ratio.
- Enhance the local network.
- Look beyond level-of-service.
- Safety first, and maybe safety only.
- Accommodate all modes.
- Leverage and preserve existing investments.
- Build towns and not sprawl.
- Understand the context; plan and design within the context.
- Develop local governments as strong land use partners.



The overall combination of these themes can be summarized into three critical guiding principles for Smart Transportation:

- Integrate transportation with land use, economic development, and environmental policies.
- Give the highest priority to the core network.
- Incorporate stringent expansion criteria.

In contrast to a traditional development pattern ([Exhibit 25](#)), a Smart Transportation example ([Exhibit 26](#)) may have the same four developments located adjacent to one another; but instead of being isolated via single, independent access points, they are interconnected by way of a network of local streets and cross-streets, similar to a more traditional grid pattern found in many older towns or urban areas. In this configuration, trips between any pair of developments have several paths to choose from and are not forced to utilize the main corridor. The traffic demand is spread throughout the overall network, which reduces the need for a single, wide corridor and allows the development of tighter sections that typically fit better within existing right-of-way limits. This combination also creates additional opportunities to enhance streetscaping and to build or improve pedestrian, bicycle, and transit facilities. Together, these opportunities can further decrease automobile demand and tie an entire transportation network into the fabric of a community.

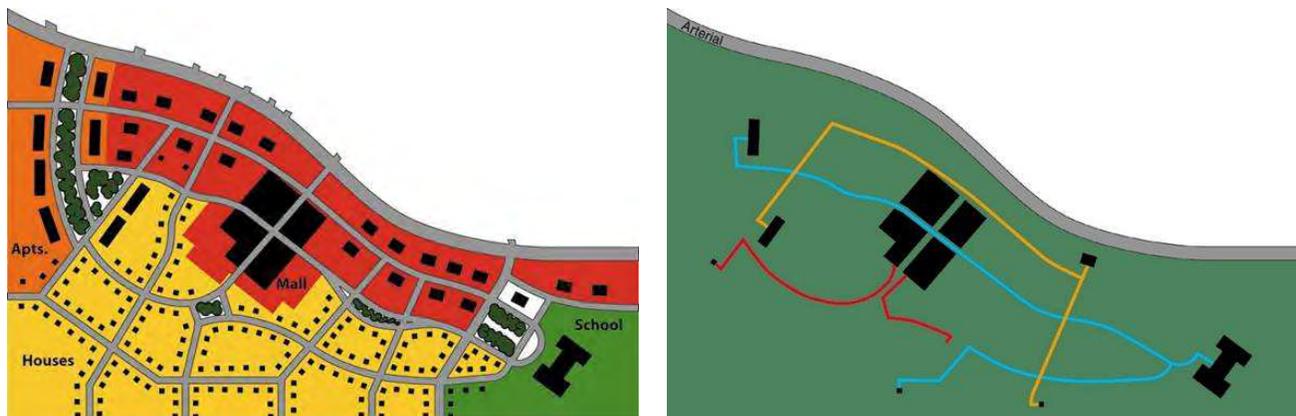


Exhibit 26: Smart Transportation Design and Development Patterns

Source: Smart Transportation: PennDOT Partner Workshop Presentation

Considering various physical and funding limitations, anticipated right-of-way issues, existing and projected developments, and the overall community context of the study area, the Smart Transportation philosophy, themes, and guiding principles discussed above will be directly applicable and extremely valuable throughout the development and assessment of future improvement alternatives along US 6N.

4.2 FUTURE DEVELOPMENT

The purpose of this overview is to forecast future development patterns within the 6N Corridor study area. This forecast is driven by the following considerations:

- Past development patterns
- The availability of public water and sewer facilities
- Discussions with local public and University officials
- Current density patterns
- Demographic expectations

Within the study area, there are four major institutions which will influence future development patterns. Three are municipal governments. Their influence is generated by the policy of land use ordinances as well as the availability of water and sewer services. Obviously, this last consideration is primarily a short-term issue for Washington Township. The final institution is Edinboro University of Pennsylvania. The University is the major economic “engine” of the study area. Its future means more than student population. Its continued viability is critical to the economic well being of the entire region.

4.2.1 Washington Township

The Township has the greatest growth potential. The study area includes most of the core area of the Township and those areas which currently have needed utilities or where these utilities can be reasonably extended.

There are three considerations relative to growth in Washington Township. First is the fact that they are currently under a sewer “tap-in” ban. Those few buildings being currently constructed that are connected to the Township’s sewer system were issued building permits prior to the imposition of the ban. However, this is a temporary situation, as a new 537 Sewage Facilities Plan has been prepared and adopted, and an agreement for effluent treatment with Edinboro Borough signed. Based upon current schedules, the ban should be lifted by May of 2009. A second issue is soil suitability for on-lot systems. Development using on-lot systems in Washington are normally at a minimum density of one dwelling unit per acre, or less. The final consideration is the Township’s long-term policy of not funding utility system extensions via Township money. To date, extensions of their water and sewer systems have been financed by developers.

The expected growth areas are set forth in the approximate order in which development is expected (See [Exhibit 27](#)). Areas #1 and #2 will likely experience development concurrently. The deciding factors will be property availability and sewer line access. Although Area #1, the Angling/Lay Road, appears to have an edge on the latter quality, Area #2 may have an advantage, especially to denser development.

Area #2 already enjoys extensive commercial development, with a motel under development, as the study was initiated, and a family restaurant proposed.

Area #3 embraces both western quadrants of the I-79 and 6N interchange area. In 2008, both public water and sewer will be extended to those areas. Currently, both quadrants are used for storage—the northwest for a “self-store” facility and the southwest stores semi-truck trailers. Their zoning anticipates both industrial and commercial activity. Development timing here will be difficult to predict.

Area #5 includes the area between development on Forrest Drive and the Borough line. Current development (except in Conneautee) is low-density residential. However, this area also includes the Culbertson Hill Country Club property. For years, this area has been rumored as the site for residential development, though nothing has occurred to date. (*Note: This property extends into the Borough.*) Between the Township and Borough, up to 100 dwelling units are expected in this area.

Area #4 includes the southeast quadrant of I-79 and Route 6N as well as Fry Road South. A Wal-Mart, fast-food restaurant, a small strip plaza, and a convenience store are located here. However, the area has three issues. First, there is limited sanitary sewer service, and the Fry Road area is somewhat hilly, complicating extensions. Finally, the property owners in that area have expressed opposition to intense development, and that opposition was reflected in the adopted Future Land Use Plan of the 2005 document.

Route 99 North: Future development along Route 99 North is problematic. The sewer line which services the area has quite limited capacity. Based upon past studies, it would need to be replaced before extensive sewer service could be provided to Route 99 in Washington Township. Based on historic trends, a few homes and some modest new business uses are anticipated.

4.2.2 Edinboro Borough

Though Edinboro appears fully developed, there is development potential within its boundary. These are:

- **Culberston Hills Golf Course:** This property sits astride the Edinboro and Washington boundary, south of Route 6N. For many years, there has been discussion of the conversion of the golf course to a residential development. There are about 31 acres within the Borough. Zoned R-1. As noted above, about 100 dwelling units could be accommodated by the “golf course” property.
- **Goodell Farm:** There are no current plans to develop any of Goodell’s property. However, the land is flat and reasonably accessible to utilities.

6N Corridor Study: Future Development Areas

Future Development Areas

- Area 1
- Area 2
- Area 3
- Area 4
- Area 5

Other Development Considerations

- Golf Course
- Wal Mart
- Kline Road Sewage Treatment Plant
- PA 99 Commercial Corridor
- Goodell Farm
- Walker Drive Area
- Edinboro University
- Lakeside

Study Area Acreages:
 Edinboro Borough 1,187 Acres
 Franklin Township 714 Acres
 Washington Township 6,131 Acres

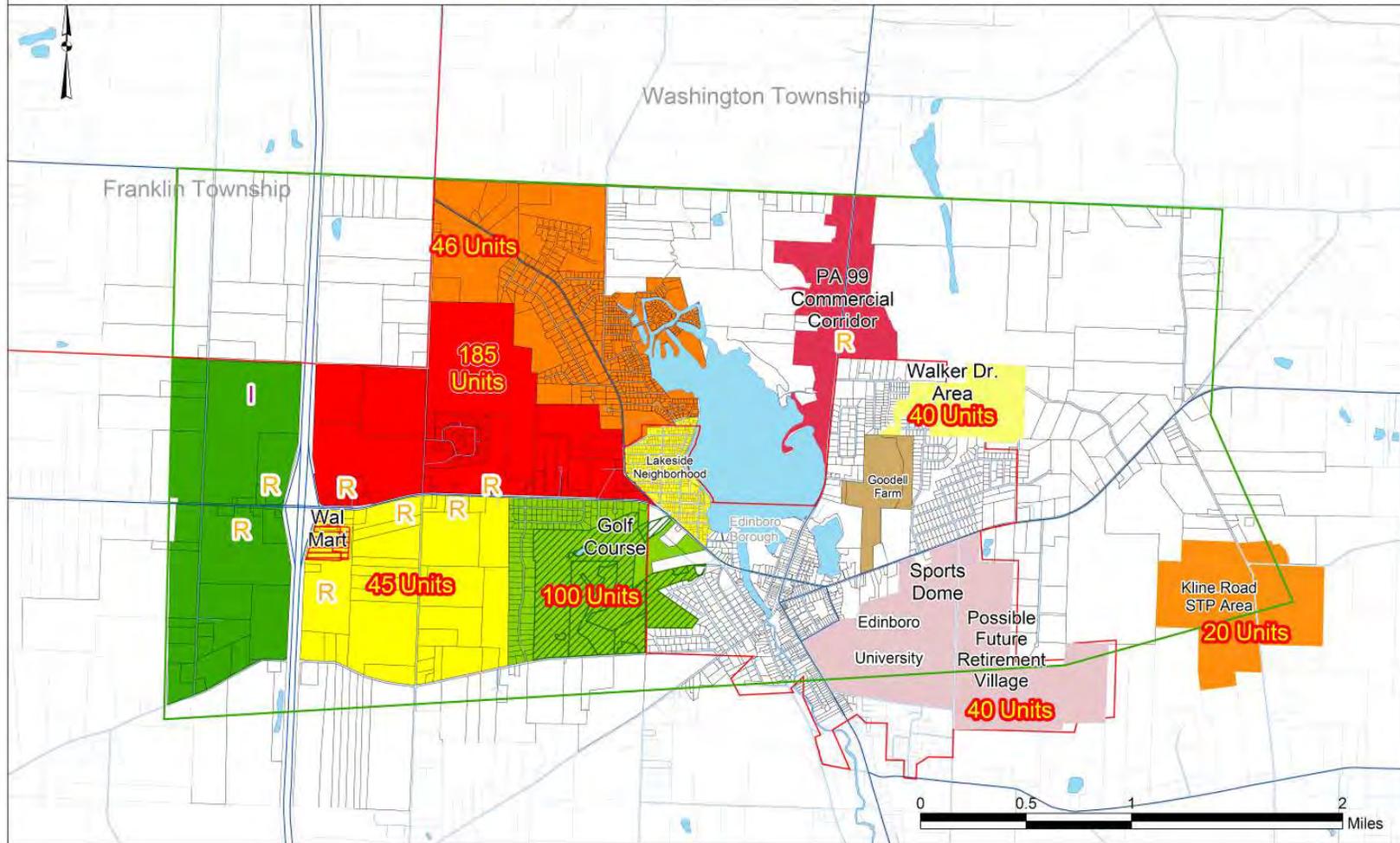


Exhibit 27: Future Development Areas

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- **Walker Drive:** The land to the immediate east of Scots Glen has some developable areas. Borough officials estimate 40 new units of housing could be constructed on this property.
- **Property of Edinboro University:** The University owns two parcels with over 220 acres off (east) of Perry Lane. This land could be used for housing (see comments under Edinboro University).

4.2.3 Franklin Township

The corner of Franklin Township which is included in the study area runs from Koman Road to Crane Road and from Silverthorn Road to Fry Road. It is bisected by I-79, though it does not have direct access to the Interstate. This area is primarily zoned industrial, due to the designation of certain properties as a Keystone Opportunity Zone in 1999. However, development was hampered, due to a lack of water and sewer facilities and the fact that only Crane Road was paved. The KOZ designation is due to expire on December 31, 2010, and any utility improvements are some years away. Currently, the area is composed of a few homes; some farm land, the Buffalo Nickel Farm; open areas; and wooded tracts. No significant change is seen for the next decade.

4.2.4 Edinboro University of Pennsylvania

The Edinboro University of Pennsylvania is not only a major university in the State's system, but it is also the principal economic resource of the 6N Corridor. Obviously, its future plans will have an impact upon the area.

Currently, Edinboro has an enrollment of 6,413, down from its 7,029 enrollment in 2003. The freshman class has also dropped to 1,290, down 165 students in 2003, yet, an improvement over the prior year. However, under its new president, the University is now recruiting more aggressively.

One of the major strategies to attract more students includes the replacement of the existing student dormitory housing (2,068 beds). A \$105 million two-phase development is to replace traditional dormitories with suite and semi-suite student residential complexes. Essentially, this is a nearly one-to-one replacement program, but, when completed, there will be a reduction of total campus beds. In fact, when completed in 2011, the total beds on campus may drop to 1,800.

This policy is in anticipation of a reduction in available freshmen in future years. In Phase I of the housing program, some 796 beds are under construction. As these new beds are added, some existing dormitory facilities will be razed or converted. The new structures will be located between Perry Lane and Scotland, south of Scot Road. Phase I has a price tag of \$56 million. This housing will replace Shafer and Scranton Halls in that same area (already demolished) and will not change campus traffic patterns. The Sports Dome will be primarily for the University use, so no major traffic is seen.

The only immediate use change in the area is the relocation of the softball field on Scot Road, northward, and the construction of a new “Sports Dome.”

In the longer term, some new residential development is in the very preliminary planning phase. A “retirement” community, aimed at Edinboro alumni, is now being discussed by the Edinboro University Foundation. No numbers or timeline for the realization of this proposal have been set. For planning purposes, a value of 40 units has been set. The property is east of Perry Lane.

4.2.5 Expected Development Summary

In general terms, most future development is expected in Washington Township. As seen previously on [Exhibit 27](#), Future Development Areas, some nine areas have been identified:

- Area 1 – 46 residential units (primarily single family)
- Area 2 – 184 residential units (mixed)
- Area 3 – Commercial and industrial development
- Area 4 – Golf course area (mixed residential – 100 units)
- Area 5 – 45 units (primarily single family)
- Kline Road – 20 units (single family)
- Route 99 Corridor – Limited development (primarily commercial)
- Walker Drive – 40 residential units (mixed)
- University Area – 40 units (likely older residents)

In summary, continued development is seen in the area over the next 20-plus years (2030). In recap, the estimated figures are listed in the table below:

Exhibit 28: Expected Development Summary

Use	Estimated Development 2030
Residential	650 Units
New Retail	362,000 Square Feet
New Industrial	60,000 Square Feet

This development will impact the 6N Corridor.

4.3 FUTURE TRAFFIC PROJECTIONS

In order to assess the future traffic conditions and develop improvement alternatives, the future land use and projected development plans discussed in the previous section must first be translated into a set of future traffic projections. For this project, the “existing” or base-year 2007 traffic data was projected to a design-year of 2030. The future volumes were developed using a project-specific VISUM travel demand model and a multi-step process summarized below, and detailed in the sections that follow:

- Develop the base-year travel demand model.
- Establish background traffic growth due to conditions outside the study area.
- Establish internal traffic growth due to future development within the study area.
- Combine the background and internal traffic growth to project total 2030 volumes.

4.3.1 Base-Year 2007 Travel Demand Model

A base year 2007 travel demand model was created using PTV’s VISUM software package to model the roadways, intersections, and O-D pairs throughout the study area. To model the existing roadway network, GIS data covering the Borough of Edinboro, Washington Township and Franklin Township within the study area was field verified and coded into VISUM. The study area was then divided into a series of travel analysis zones (TAZ’s) that would model groups of origins and destinations for vehicular travel to, from, and within the study area ([Exhibit 29](#)). A finer, more detailed, TAZ structure was used along the US 6N corridor in order to capture the traffic pattern and land use details necessary for analysis of that corridor; larger TAZ’s were used in the outlying areas of the study area.

Existing traffic volumes for each TAZ were estimated using a combination of project-specific intersection TMC’s and O-D data, as well as existing land use information and trip generation estimates from the Institute of Traffic Engineers’ (ITE) *Trip Generation Manual*. This manual is an industry-standard resource used by transportation practitioners to estimate the amount of traffic (or “trips”) generated by a specific type of land use. ITE Land Use Codes were assigned to individual developments along the US 6N corridor and to aggregated groups of development in the outlying portions of the study area. Total trips were converted to origins and destinations based on the entering / exiting percentages documented in the *Trip Generation Manual*. All of this data was then compiled into a project-specific trip table that would assign traffic to the study area’s roadway network using the VISUM software. VISUM’s trip assignment and distribution results were calibrated to match the existing intersection TMC’s, road segment volumes, and O-D results ([Exhibit 30](#)).

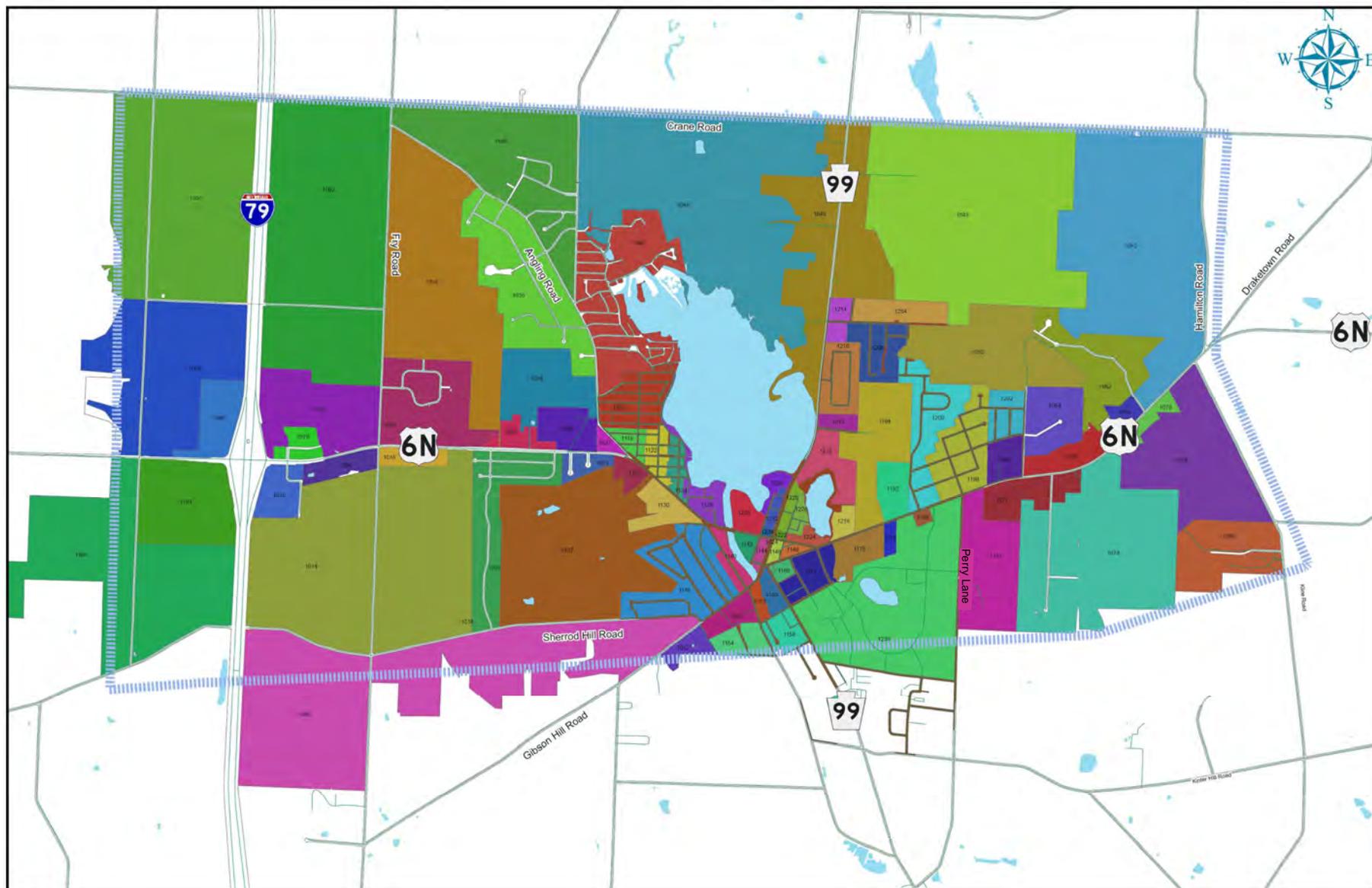


Exhibit 29: Travel Analysis Zones (TAZ's)

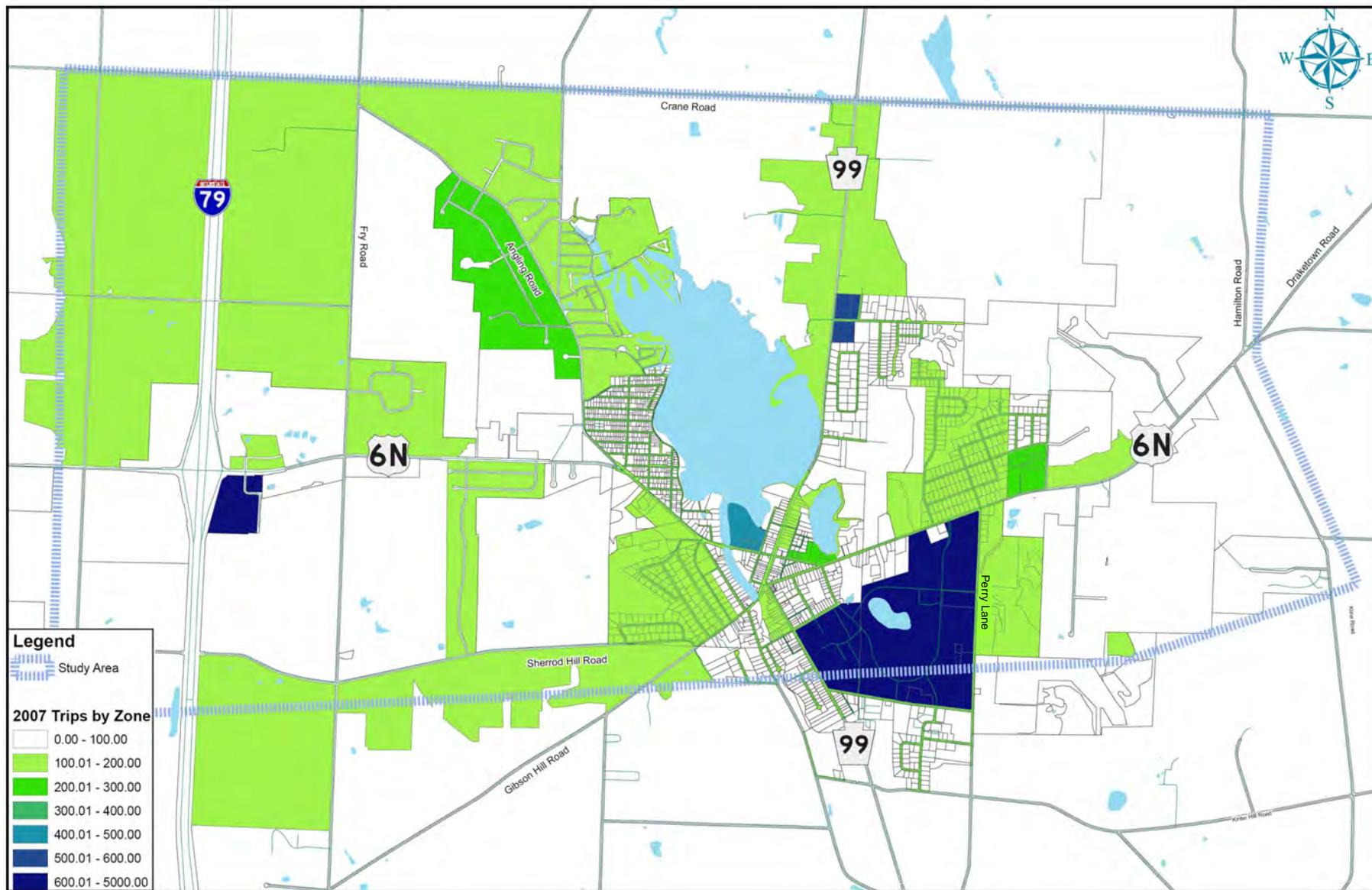


Exhibit 30: 2007 Gradient Map of Trips by Zone

4.3.2 Future-Year 2030 Travel Demand Model

Background Traffic Growth

Growth in traffic which does not originate in or is not destined for the study area, but uses study area roadways, was based on historic traffic growth and projected growth rates from the area's multi-municipal plan.

Internal Traffic Growth

Growth in traffic that begins or ends within the study area was determined by estimating the traffic generated by the projected development within the study area. The rates of projected trips for each development were based on trip rates for similar land uses in the *ITE Trip Generation Manual*.

Future-Year Model

The calibrated base-year VISUM model was used to combine and re-assign all background and internal traffic growth to project the total future-year 2030 volumes throughout the study area ([Exhibit 31](#) and [Exhibit 32](#)). The future-year volumes will be utilized throughout the analysis of future-year conditions and the development of improvement alternatives. Network-wide, the future volumes represent approximately 45% growth in traffic between years 2007 and 2030.

Exhibit 31: PM Peak Hour Volume Summary for 2030 No-Build Conditions

Road (Segment)	Existing			2030 No-Build		
	2-Way	EB / NB	WB / SB	2-Way	EB / NB	WB / SB
US 6N (at Washington Towne Blvd.)	1200	605	595	2170	1095	1075
US 6N (at Angling Road)	1415	650	765	2440	1130	1310
US 6N (at SR 99)	1395	620	775	2315	1030	1285
US 6N (at Scotland Road)	780	405	375	1110	555	555
US 6N (at Kline Road)	470	265	205	580	345	235
SR 99 (at Normal Street)	920	480	440	1370	730	640
SR 99 (at US 6N)	995	525	470	1455	790	665
SR 99 (at Crane Road)	875	405	470	1055	480	575
Fry Road	105	55	50	190	75	115
Crane Road	90	50	40	95	50	45
Angling Road	270	160	110	325	195	130
Sherrod Hill Road	30	15	15	130	65	65

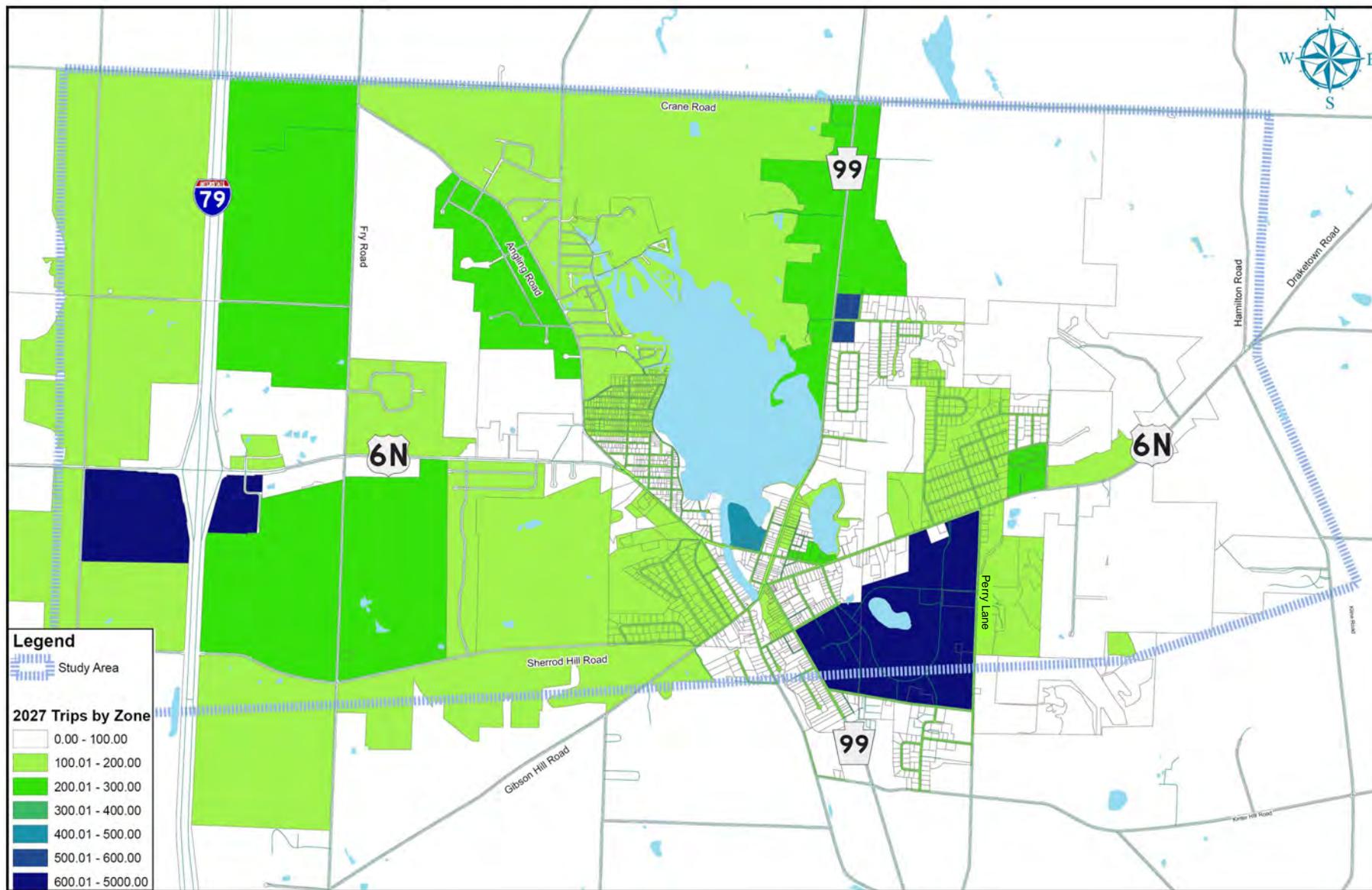


Exhibit 32: 2030 Gradient Map of Trips by Zone

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4.4 FUTURE NO-BUILD TRAFFIC OPERATIONS

Future No-Build traffic operations establish the benchmark to which any future improvement alternatives will be compared. The No-Build scenario represents the year 2030 transportation conditions that would result assuming future year traffic volumes and no other changes or improvements to the existing transportation network ([Exhibit 33](#) through [Exhibit 35](#)), with the exception of incorporating any committed transportation projects that are currently on record ([Exhibit 36](#)). The most direct impact on future traffic operations would be the new traffic signal at the intersection of US 6N and the I-79 Southbound Off-Ramp, which was assumed to be installed per existing agreements with a private developer.

Exhibit 33: LOS Table for 2030 No-Build Conditions

Signalized Operations		Number Intersections	
		Existing	No-Build
Acceptable	Overall LOS A, B, or C	3	4
Marginal	Overall LOS D	0	0
Failing	Overall LOS E or F	1	0
Severe Failure	Severe LOS F	0	1
Unsignalized Operations		Number of Intersections	
		Existing	No-Build
Acceptable	Side-Street LOS A, B, or C	16	10
Marginal	Side-Street LOS D	3	0
Failing	Side-Street LOS E or F	5	8
Severe Failure	Severe LOS F	0	5

Signalized Intersections

Based on the signalized LOS results for the 2030 No-Build conditions ([Exhibit 33](#), [Exhibit 35](#), and [Appendix F](#)), existing mobility problems along US 6N remain focused at the single failing intersection of US 6N and SR 99. However, the increase in future traffic degrades this intersection from “failing” to what has been qualitatively referred to as “severe failure”. Total peak hour traffic entering this intersection increased from 2,085 vph under existing conditions to 3,030 vph under future No-Build conditions. As a result, congestion will worsen severely as the overall intersection is projected to carry 169% of the traffic that it is capable of handling during a single hour.

EXISTING AND FUTURE NO-BUILD



PROS

- ◆ No impacts due to construction.

CONS

- ◆ Existing access and mobility problems further deteriorate.
- ◆ Does not address any of the project's goals or objectives

LAND USE AND TRANSPORTATION STUDY



Exhibit 34: Summary Illustration of No-Build Alternative

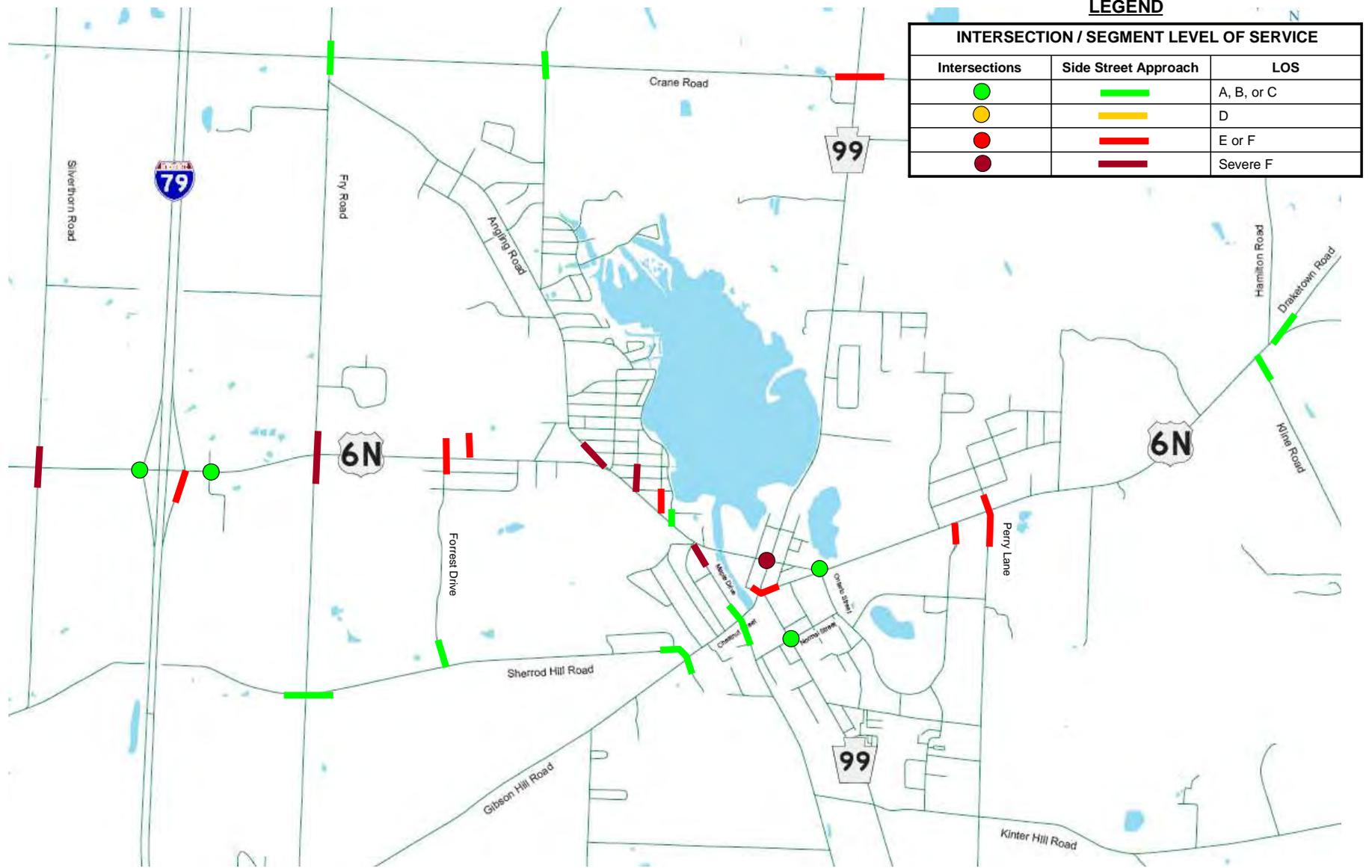


Exhibit 35: LOS Graphic for 2030 No-Build Conditions

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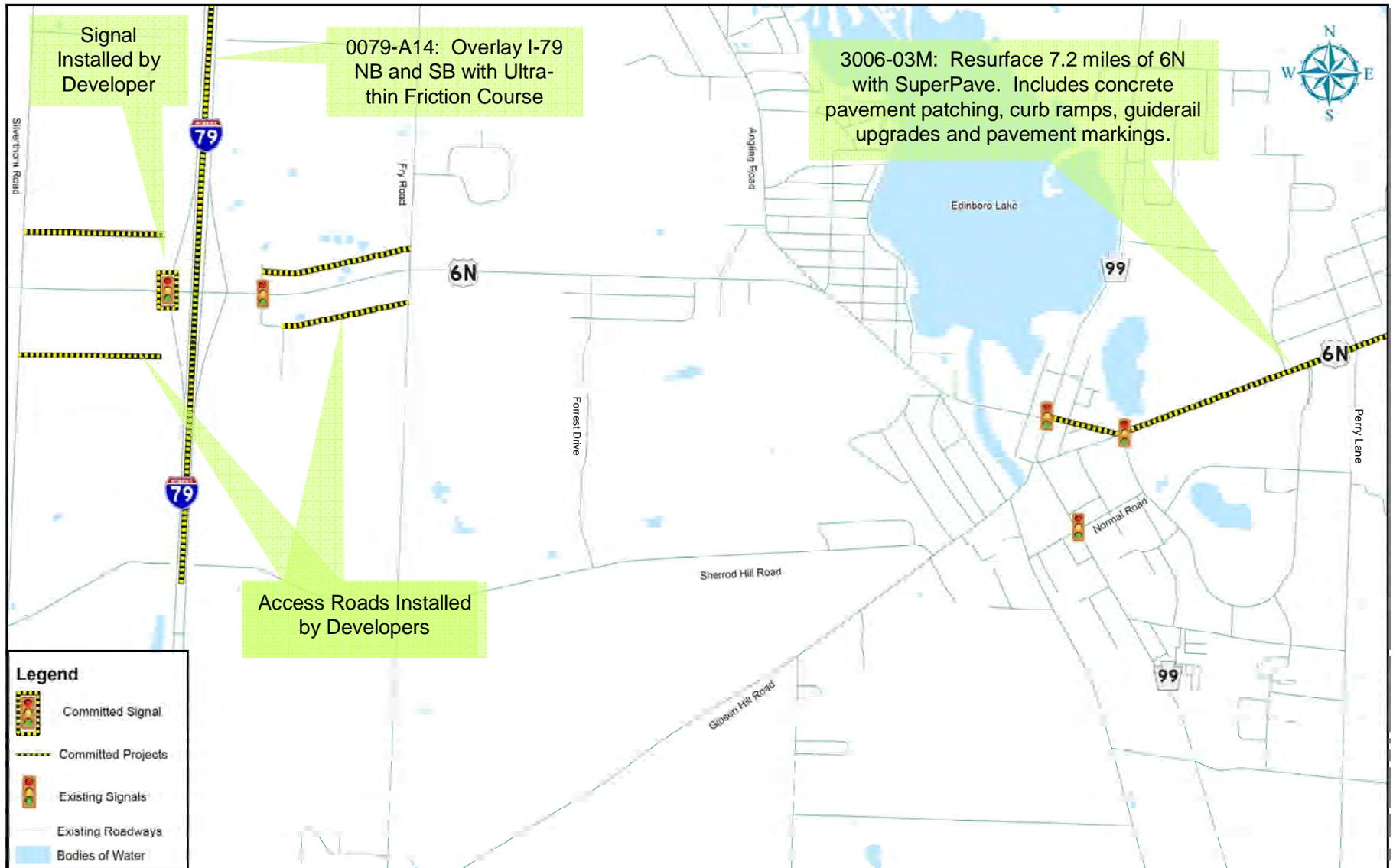


Exhibit 36: Future-Year Committed Transportation Projects

Under such severe capacity limitations, simple improvements such as optimization of traffic signal timing and phasing will have a negligible effect. Severe delays and queue spillback from the US 6N / SR 99 intersection will also negatively impact the upstream intersection operations at US 6N / Ontario Street and SR 99 / Normal Street.

The remaining signals in the study area, including US 6N / Washington Towne Boulevard and the proposed signal at US 6N / I-79 Southbound Off-Ramp, are projected to operate at acceptable levels. The existing five-lane section along US 6N and the multi-lane side-street configurations through that area provide the necessary capacity to accommodate the projected increase in traffic. However, the increase in volume along US 6N may exacerbate any existing merge problems where the eastbound travel lanes drop from two lanes to one between Washington Towne Boulevard and Fry Road. Any additional delays, queuing, or erratic maneuvers approaching that merge area could spillback through the upstream signal at Washington Towne Boulevard and negatively impact the peak travel periods.

Unsignalized Intersections

Based on the unsignalized LOS results for the 2030 No-Build conditions, over half of the stop-controlled side-street approaches that were analyzed are projected to fail. These failures include almost every intersection along US 6N, including failures at Perry Lane and Edinboro University access at Scotland Road. They also include five “severe failures” in the western half of the corridor, including US 6N at Silverthorn Road, Fry Road, Angling Road, Jefferson Street, and Maple Drive.

Along SR 99 south of US 6N, the projected failure at Chestnut Street / Waterford Street, while not classified as a severe failure based solely on the isolated intersection delay, is likely to worsen dramatically due to the anticipated queue spillback from the US 6N / SR 99 traffic signal. Coupled with on-street parking, pedestrian activity, business access and related activities in the vicinity of this downtown junction, congestion and vehicle-vehicle or pedestrian-vehicle conflicts may become serious problems.

North on SR 99, a failure at Crane Road is due to the delay for the relatively low-volume westbound approach. The increase in delay gives rise for concern in light of the existing crash characteristics at that location. Anecdotal evidence indicates that travel along SR 99 in that area runs at higher speeds (the posted speed limit is 55 MPH) and includes an allowable passing zone in the immediate vicinity of the Crane Road intersection. These conditions would increase driver hesitation and potential difficulties when accessing SR 99 from Crane Road, and additional delay could aggravate this situation.



Section 5.0 - Land Use Alternatives



5.0 LAND USE ALTERNATIVES

This section of the report presents local regulations, ordinances, standards, definitions and related alternatives that can be developed to help guide, shape, and control future land use development and its interface with the transportation network throughout the study area. Ultimately such tools are intended to help achieve the desired vision for the US 6N corridor and the surrounding communities. Sections focus on the following:

- Section 5.1 – Implementation
- Section 5.2 – Proposed Standards
- Section 5.3 – Definitions
- Section 5.4 – Minimum Use Driveway
- Section 5.5 – Access Standards
- Section 5.6 – Traffic Access and Impact Studies
- Section 5.7 – Other Options

5.1 IMPLEMENTATION

5.1.1 Current Regulations

The primary local regulations which can directly impact upon transportation issues are the land use ordinances. For the 6N Study, both Washington Township and Edinboro’s ordinances will have a very direct impact, while those of Franklin Township would have only a secondary one.

In this section, a brief analysis of current regulations is presented, as these directly impact transportation. This is then followed by a set of standards that can then be used as the basis to amend current zoning and SALDO ordinances.

Washington Township

The Township zoning ordinance is discussed in detail under the Land Use section. This element will focus on those provisions concerning parking and transportation.

Section 150-24 deals with off-street loading and parking. Section “A” deals with the off-street loading standards. Each space is to be 14 feet wide, 55 feet long, with a vertical height of 14 feet. There are seven separate categories listed in this section. The ones of primary interest to this study are shown in [Exhibit 37](#) on the following page:

Exhibit 37: Loading Space Requirements – Washington Township

Use	Floor Area (Square Feet)	Required Spaces
Hotels and Offices	10,000	1
Wholesale	15,000 to 40,000	2
Commercial	10,000 to 25,000	1
Manufacturing	40,000 to 60,000	3
Manufacturing and Storage	60,000 to 100,000 for each additional 50,000 square feet for major fraction	1 additional

As is typical for western Pennsylvania, the ordinance does not discuss the locations of spaces, maneuvering room, or the difference between single-unit “straight” trucks and tractor trailer combination.

Parking regulations are found at 150-24.B. Its major design restrictions are:

- Each parking space – 10 feet by 20 feet (200 square feet)
- Access drives – 15 feet one way, or 20 feet for two-way (minimum)
- Well-defined locations – no unrestricted access
- Parking can be off lot – 400 feet maximum distance
- Landscaping – 5 vehicles or more, facing or adjoining a dwelling, school, hospital, etc.
- Surfacing required

The ordinance also has a list of 24 uses and the required parking spaces for each, usually per building size. Some key provisions are:

- Dwellings – 2/unit*
- Banks (professional offices) – 1/100 square feet
- Church – 1 per every 4 seats
- Food supermarkets – 1/200 square feet
- Hotels and motels – 1 each sleeping unit
- Manufacturing – 1/500 square feet
- Restaurants – 1/each 100 square feet
- Retail – 1/each 200 square feet

**150-35 imposes additional standards when there are over 4 occupants in a unit (1 per each 2 persons).*

Section 150-53 added standards for a “Light Industrial Park.” Section I addresses off-street park and requires 1 parking space per 800 square feet of building. This also sets standards for internal streets (60 feet right-of-way and 30 feet cartway).

Roads and parking issues are addressed in two sections of the Washington Township Subdivision and Land Development Ordinance.

Article VI contains the traditional elements relative to new township roads. Section 119-34.C.(3) requires a “traffic impact study” when “in the opinion of the Township Engineer, the proposed project will significantly affect the system of streets in the Township.” This section further requires impact analysis, future estimated volumes, the identification of problems, and suggested solutions. Section (11) of that same section addresses driveway access, with a general statement “feasibility of safe driveway access. . .”

Exhibit 38 contains the Township standards included in the SALDO for new streets.

Exhibit 38: Township of Washington – Street Design Standards

[Amended 7-2-2002 by Ordinance No. 4-02]

	Arterial Street ¹	Collector Streets	Minor Streets Serving Industrial Properties	Minor Streets Serving Commercial Properties	Marginal Access Streets	Minor Streets Serving Residential Properties	Alleys, Lanes or Shared Drives
Right-of-way width, minimum (feet)	80	60	60	50	60	50	20
Cartway paving width, minimum (feet)	24	24	30	22	22	20	12 (10 for shared)
Grade, maximum (percent)	7%	7%	10%	10%	10%	10%	--
Angle of intersection, minimum (feet)	80°	80°	80°	75°	75°	75°	--
Side of clear sight triangle, minimum (feet)	150	100	75	75	75	75	75
Distance between intersections, minimum (feet)	800	300	150	150	150	150	150
Shoulder width, minimum (feet)	6	6	6	6	6	4	2 (3 for shared)
<p><i>Note:</i> ¹ Arterial street design criteria are recommended values only. Arterial street design criteria shall be determined by the Township on a case-by-case basis after consultation with the Pennsylvania Department of Transportation and the Township Engineer.</p>							

Exhibit 38 also contains the standards for clear sight triangles, 75 feet for minor roads, 100 feet for collectors, and 150 feet for arterials. The other element of the ordinance that deals with traffic and parking is Article V. This section is concerned with land development.

Section 119-26.B requires a traffic parking and pedestrian circulation plan and specifies that plan is “in conformance with Chapter 150, Zoning.”

The final ordinance impacting on transportation is Chapter 116 of the Township’s Code of Ordinances, Streets and Sidewalks. Article IV relates to driveway permits and includes definitions, driveway permits, traffic control, sight distance, and other standards. Section 116-21 gives regulations on sight distances. It uses PennDOT standards for its base. Some other standards relate to location, specifically:

- Driveways near signalized areas
- Prohibited at interchanges or ramp areas
- Access to properties on two highways
- Driveway location in relation to other driveways

Edinboro Borough

The Borough of Edinboro has both a zoning ordinance and a SALDO. These were covered in some detail under the Land Use section. It must be noted that much of the Borough’s frontage along 6N is developed. Because of this, the application of their regulations will only apply for new development or redevelopment. The new drug store at the southeast corner of Route 6N and Route 99 intersection is a good example of that occurrence.

Section 407 of the Borough’s zoning ordinance addresses both loading and parking regulations. The ordinance notes both the Downtown D-1 District and the University District, U-1 are exempted from compliance. However, some downtown residential uses do have parking requirements (308.24).

Off-street loading spaces are listed for six general categories of use, with subheadings comprising of 16 separate options. Unloading spaces are specified at 10 feet wide and 40 feet in length. Key requirements are:

Exhibit 39: Loading Space Requirements – Borough of Edinboro

	First Berth (Space)	Second Berth
Manufacturing	5,000 square feet	40,000 square feet
Retail	10,000 square feet	40,000 square feet
Restaurants	10,000 square feet	25,000 square feet
Office Buildings	10,000 square fee	100,000 square feet

Each off-street parking space is to have 162 square feet (18 feet by 9 feet). Access drives shall be at least 10 feet wide and, like the Township ordinance, restricts access to well-defined locations. Single driveways can range from 10 to 12 feet in width, double drives, up to 24 feet with reasonable radius flairs. A separation of 15 feet between driveways is required with a 5-foot separation to a fire hydrant, catch basin, or street intersection radius. Selected parking standards follow:

Exhibit 40: Parking Standards – Borough of Edinboro

Use	Parking Spaces
Duplex and Single Family	2 per dwelling
Hotels and Motels	1 per room, plus employees
Medical Offices	8 per doctor
Retail	1/200 square feet
Fast Food/Drive-Ins	1/50 square feet
Restaurants	1 / 2.5 patron seats

Parking can be provided off lot up to 400 feet from the principal use, if approved by the zoning hearing board. Some landscaping and surfacing requirements are included. Section 308.31 sets standards for drive-in (through) restaurants.

The SALDO covers roads in Article VIII, Design Standards. These are set forth by the Table 802.1.A.

Exhibit 41: Design Standards – Borough of Edinboro

Type of Street	Cartway With Curbs	Cartway No Curbs	Right-of-Way	Shoulders
Cul-de-sac	32 feet	28 feet	50 feet	3 feet*
Minor/Local	32 feet	28 feet	50 feet	3 feet
Collector/Commercial	38 feet	28 feet **	60 feet	9-12 feet **
Industrial	38 feet	28 feet **	60 feet	9-12 feet**
Arterial	As prescribed by the Pennsylvania Department of Transportation			
*Paved, rolled gutter				
**The exact figure to be set by the Borough Engineer				

Street classifications are determined by vehicle volume and cul-de-sacs are limited to 250 trips per day (about 25 single-family homes). Trip generation figures are given for key residential uses, taken from the publication Residential Streets. Curb intersection radii are set from 25 feet to 50 feet, depending upon road use. Sight line distances are set for minor, collector, and arterial streets. Intersection offset and grade standards are included.

Section XIII covers land development standards. Sections 1304.1, 1304.4, and 1304.7 cover access parking and circulation issues. General standards include:

- Access connections to be safe with adequate sight distances and adequate capacity
- Parking and access plan
 - Estimated traffic flows to be provided
 - Demonstrate access is adequate
 - For developments over 70,000 square feet, the parking and access plan must be prepared by an engineer
- Complete interior pedestrian plan is required

Please Note: Building developments less than 10,000 square feet in size are exempted from these requirements.

Franklin Township

There are only 714 acres of the Township in the study area, and it does not abut Route 6N. This area is zoned A-1 and industrial, but not yet developed beyond a few homes and some limited farming. Section 407 of the Franklin zoning ordinance covers off-street parking. Residential requirements are 2 per dwelling unit, there are no specific requirements for manufacturing, and retail is set at one space for each 100 square feet of floor area.

The Township has adopted the Erie County SALDO by reference. Design standards are found in Article VIII, Street Standards, under Section 802. Table 802.1 sets forth street standards. Section 802 has provisions for:

- Cul-de-sacs (250 vehicles per day, up to 1,000 feet in length)
- Free sight triangles (80 feet for a minor street, 120 feet arterial or collector)
- Street intersections, angles, and separations between streets are set

Article XI sets land development standards. The language is similar to Edinboro's but not as detailed. A parking and access plan is required along with a pedestrian circulation plan.

5.2 PROPOSED STANDARDS

5.2.1 Introduction

In order to promote consistency between the communities involved in the Route 6N Corridor Study, a set of standards will be established. These will be used to develop specific land use amendments. Though not all the topics listed on the first page of this section will be used for all classes of driveways, such standards are presented beginning at the minimum use driveway, the one used for the typical home, and then moving to more intense land developments.

Generally, in the development of the standards contained in this section, those set forth by the Pennsylvania Department of Transportation are followed. Yet, other sources were also helpful. One particularly useful source was from the Florida Department of Transportation. Their illustrations and examples were particularly clear. Below is a table borrowed from the Florida Department of Transportation which relates various driveway types to typical developments. These criteria are the same as those used by PennDOT.

Exhibit 42: Various Driveway Types, Designations and Uses

Driveway Designation	Typical Uses
Minimum Use Driveway – 25 or few vehicles/day	1 or 2 single-family homes
Low Volume Driveway – 25 to 750 vehicles/day	Apartments, or housing developments of 3 to 75 units
Medium Use Driveway – 750 to 1,500 vehicles per day	Small offices, smaller local retail businesses, larger residential developments
High Volume Driveway – Over 1,500 vehicles per day	This can range from a smaller strip shopping center (20,000 to 75,000 square feet) to convenience stores (Sheetz) to super centers.

This latter designation is one that is not uniform between the states. In practice, the treatment of very large land developments varies across the United States. Often, they are considered as a full intersection with a traffic light, and quite often individual designs are used for the specific development, rather than a “one-size-fits” all.

5.2.2 What are Driveways?

Driveways function like an intersection. In this case however, rather than accessing another road, it is an entrance into a private development. That development could be as diverse as a single-family dwelling or a big-box super center. It is apparent that these two types of development warrant different technical treatment. Yet, the overall goals for driveway access be it the home or super center is similar. It is expressed very well at 441.7, Title 67 of the Pennsylvania Code; in summary, these goals are:

- Adequate sight distance for those entering and leaving via the driveway
- Free movement of highway traffic
- The driveway will not create a hazard

- The driveway will not create undue traffic congestion

The most common land use regulation that directly impacts upon road safety and capacity is the driveway permit. In Pennsylvania, PennDOT has jurisdiction over driveway entrances on State highways, however they are known as highway occupancy permits (HOPs) and not driveway permits. Though their permit process does allow for local input, the effectiveness of that consultation varies. To assist in this process, the following standards are being suggested. Such standards should help the local municipality in their discussions with the State. Also, if a local municipality wishes to be formally involved in the review process along State highways, they should file such a request with the District PennDOT office and its Erie County Maintenance Garage (see Title 67, Section 441.3(j) of the Pennsylvania Code). Making these suggested standards as an official part of the municipal land use ordinances gives the municipality a uniform manner to address access to local roads as well as in its review of larger developments which front on State highways.

Perhaps, the biggest challenge in devising these guidelines is to set adequate standards for driveways of various use intensity, while not creating such a nightmare of regulations that both developer and local permit officials become frustrated. These suggested standards attempt to set a reasonable middle ground. In the last analysis, however, their adequacy must be judged by the community and their professional advisors.

There is a variety of sources to obtain information about driveways and access control. The major national ones are the Transportation Research Board, the Institute of Traffic Engineers and the American Association of Highway and Transportation Officials' (AASHTO) via their very famous "Greenbook." In Pennsylvania, PennDOT has extensive published regulations as well as offering suggested standards on this topic in an advisory booklet "Access Management Model Ordinances for Pennsylvania Municipalities (February 2006)." Pennsylvania is not the only state which addresses such topics. Florida, North Carolina, Missouri, and others have similar publications.

Given this wide range of sources, the first issue to be determined, what are the important elements of driveways that need to be considered? In this section the following topics will be covered:

- Definitions
- Driveway radius at the highway
- Driveway width
- Clearance between driveways, intersections and other traffic features
- Angle of the driveway
- Sight distance
- For more intensely used driveways, throat length is important
- The number of driveway lanes and their orientation
- Relation to structures

5.3 DEFINITIONS

There are certain key definitions that provide for a common basis for the regulation of driveways, and other aspects of access management. The following are taken from the PennDOT guidelines and should be included as an amendment to local land-use regulations:

Access: A driveway, street, or other means of passage of vehicles between the highway and abutting property, including acceleration and deceleration lanes and such drainage structures as may be necessary for property construction and maintenance thereof. (67 PA Code Chapter 441)

Auxiliary Lane: The portion of the roadway adjoining the through lane that is used for speed change, turning, storage for turning, deceleration, acceleration, weaving, and other purposes supplementary to through traffic movement.

Average Daily Traffic (ADT): The total volume of traffic during a number of whole days (more than one day) and less than one year divided by the number of days in that period. *Note: PennDOT now uses the acronym AADT (Annual Average Daily Traffic) for their count data.*

Driveway: Every entrance or exit used by vehicular traffic to or from properties abutting a highway. [The term includes proposed streets, lanes, alleys, courts, and ways.] *We recommend the words in brackets be omitted in local ordinances—too confusing.* (67 PA Code Chapter 441)

Egress: The exit of vehicular traffic from abutting properties to a street.

High Volume Driveway: A driveway used or expected to be used by more than 1,500 vehicles per day. (67 PA Code Chapter 441)

Ingress: The entrance of vehicular traffic to abutting properties from a street.

Interchange: A grade-separated system of access to and from highways that includes directional ramps for access to and from the crossroads.

Internal Trips: Site-generated trips that occur between two (2) or more land uses on the subject site without exiting onto the intersecting street.

Level of Service (LOS): A qualitative measure describing the operational conditions within a section of roadway or at an intersection that includes factors such as speed, travel time, ability to maneuver, traffic interruptions, delay, and driver comfort. Level of service is described as a letter grade system (similar to a school grading system) where delay (in seconds) is equivalent to a certain letter grade from A (free flowing) through F (worst rating).

Local Road: Every public highway other than a State highway. The term includes existing streets, lanes, alleys, courts, and ways. (67 PA Code Chapter 441)

Low Volume Driveway: A driveway used or expected to be used by more than 25 but less than 750 vehicles per day. (67 PA Code Chapter 441)

Medium Volume Driveway: A driveway used or expected to be used by more than 750 but less than 1,500 vehicles per day. (67 PA Code Chapter 441)

Minimum Use Driveway: A residential or other driveway that is used or expected to be used by not more than 25 vehicles per day. (67 PA Code Chapter 441)

Outparcel: A lot that is adjacent to the roadway that interrupts the frontage of another lot.

Stopping Sight Distance: The distance required by a driver traveling at a given speed to stop the vehicle after an object on the roadway becomes visible to the driver.

Storage Length: Lane footage needed for a right or left turn lane to store the maximum number of vehicles likely to accumulate during a peak period of travel.

Taper: The widening of the roadway to allow the redirection or transition of vehicles into or around an auxiliary lane.

Trip: A one-directional vehicular trip to or from a site.

Trip Generation: The total number of vehicular trips going to and from a particular land use on a specific site during a specific time period.

Special Note – Illustrations: Most of the recommendations used in this report are taken from, or similar to, those recommended by “Access Management Model Ordinances for Pennsylvania Municipalities Handbook,” February 2006. Another very helpful reference is the “Driveway Handbook,” Florida Department of Transportation (March 2005). Both of these references can be downloaded from the internet.

5.4 MINIMUM USE DRIVEWAYS

This section is intended for minimum use driveways in either Edinboro Borough or Washington Township. These driveways are usually for a single dwelling, or perhaps two residential units. In general, the guidelines established by PennDOT are reasonable and are used. A few extra considerations were added due the circumstances of the Township.

Guidelines: Minimum Use Driveways

- Location: A driveway will not be any closer than

Township

- 30 feet to any road intersection.
- 30 feet to any other driveway on this same side of the road.
- If a driveway exists on the opposite side of the road, and is within 20 feet of the proposed driveway, then the proposed driveway shall be aligned with the existing driveway if site conditions allow.

Borough

- 5 feet to the end radius of any road intersection.
 - 20 feet to any other driveway on the same side of the street.
 - If a driveway exists on the property on the opposite side of the street, if feasible, the proposed driveway shall be aligned with it.
- Width: Minimum Use Driveways shall be 10 feet to 12 feet in width with a reasonable radius flare of 15 feet to 20 feet where it connects the roadway. The Borough may wish to opt for more modest radius standards of 5 feet to 10 feet.
 - Number of Driveways per Property: For most properties, only one driveway will be allowed. (Along Township roads in the A-1 District, where the lot is at least 200 feet in width, a second driveway may be approved if it meets all criteria of this ordinance and there is at least 30 feet in distance from the other property driveway, designed for Washington Township.)
 - Sight Distances: Driveways shall provide a safe sight distance for those using the driveway. Locations on vertical or horizontal curves which limit sight distances will be avoided. Plantings shall be avoided where they might hinder safe sight distances.*

- When the physical circumstance of any lot makes the application of these standards infeasible, the Township/Borough may grant minimal relief after consultation with the Township/Borough Engineer.

**In Washington Township, some of this is covered by Section 116-21 of the Township Code with a reference to an Appendix A.*

5.5 ACCESS STANDARDS

5.5.1 Driveways

The following shall apply to all but minimum use driveways. *Please Note:* The issue of driveway location, both from the nearest intersection and from another driveway, is essentially one of safety. There are several considerations related to this issue:

- Speed of the road
- Safe stopping distance
- Design of the driveway
- Other access points; options for the driver

For example, a vehicle which exits the northbound I-79 lane at 6N and proceeds east is faced with a variety of issues:

- Do I turn north for Sheetz?
- Do I turn south for Wal-Mart, Wendy's, Country Fair, etc.?
- Do I go straight toward Edinboro; and if I do, I encounter a lane reduction.

Each of these options can confuse the first-time visitor. And, quite often, such confusion leads to a driver slowing to well below the posted speed limit, increasing the chance for rear-end collisions.

1. Driveway Standards – Regulations for low-, medium-, and high-volume driveways on Route 6N
2. Number of Driveways:
 - a. Only one (1) access shall be permitted for a property, or each four hundred (400) feet of frontage. *This number is a starting point. Lot width in the C-1 Zone in Washington is two hundred (200) feet for commercial and two hundred twenty-five (225) feet for industrial. In Edinboro, there is no minimum lot width given for commercial districts. One hundred (100) feet is used for industrial parcels.*
 - b. An additional access or driveway shall be permitted if the applicant demonstrates that additional access is necessary to accommodate traffic to and from the site and it can be achieved in a safe and efficient manner.
 - c. For a property that abuts two (2) or more roadways, the Township/Borough may restrict access to only that roadway that can more safely and efficiently accommodate traffic.
 - d. If the Township/Borough anticipates that a property may be subdivided and that the subdivision may result in an unacceptable number or arrangement of

driveways, or both, the Township shall require the property owner to enter into an access covenant to restrict future or control access.

3. **Corner Clearance:**

- a. Corner clearance shall be at least four hundred (400) feet. (See prior comments.)
- b. Access shall be provided to the roadway where corner clearance requirements can be achieved.
- c. If the minimum driveway spacing standards cannot be achieved due to constraints, the following shall apply in all cases:
 - (1) There shall be a minimum twenty- (20) foot tangent distance between the end of the intersecting roadway radius and the beginning radius of a permitted driveway.
 - (2) The distance from the nearest edge of cartway of an intersecting roadway to the beginning radius of a permitted driveway shall be a minimum of forty-five (45) feet.
- d. If no other reasonable access to the property is available, and no reasonable alternative is identified, the driveway shall be located the farthest possible distance from the intersecting roadway. In such cases, directional connections (i.e., right in/right out only, right in only or right out only) may be required.
- e. The Township/Borough shall require restrictions at the driveway if the Township/ Borough engineer determines that the location of the driveway and particular ingress or egress movements will create safety or operational problems.

4. **Safe Sight Distance and Driveway Spacing:** The purpose of this section is to help determine the spacing between driveways on the same side of the road for Route 6N. For local roads and streets, current local practice would apply.

- a. At least minimum safe sight distance shall be available for all permitted turning movements at all driveway intersections according to the table below. However, optimal sight distance is preferable to minimum sight distance along a property frontage and should be provided where possible per 67 Pa. Code § 441.8.

Highway Speed (mph)	Minimum Sight Distance (feet)
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645

- b. All driveways and intersecting roadways shall be designed and located so that the sight distance is optimized to the degree possible without jeopardizing other requirements such as intersection spacing, and at least minimum sight distance requirements are met. In any case, where a driveway is to access Route 6N in an area posted at forty-five (45) miles per hour, a minimum of four hundred (400) feet separation between driveways is required.

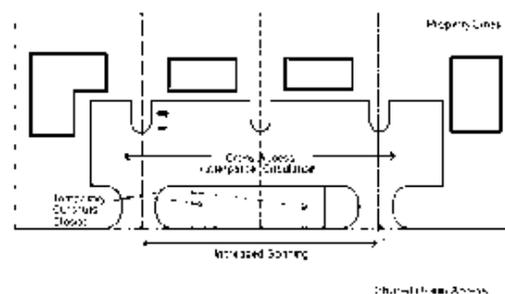
5. Driveway Channelization

- a. For high- and medium-volume driveways, channelization islands and medians shall be used to separate conflicting traffic movements into specified lanes to facilitate orderly movements for vehicles and pedestrians. For low-volume driveways, physical channelization will not be required; however, ingress and egress lanes shall be clearly marked using pavement markings. As possible, the white (outside edge) and double yellow line (lane separation) format shall be used.
- b. Where it is found to be necessary to restrict particular turning movements at a driveway, due to the potential disruption to the orderly flow of traffic or a result of sight distance constraints, the Township/Borough may require a raised channelization island.
- c. Raised channelization islands shall be designed with criteria consistent with the latest AASHTO publication entitled *A Policy on Geometric Design of Highways and Streets*.

6. Joint and Cross Access:

- a. The Township/Borough may require a joint driveway in order to achieve the four hundred (400) foot driveway spacing standards.
- b. Adjacent non-residential properties shall provide a joint or cross-access driveway to allow circulation between sites wherever feasible along Route 6N. The following shall apply to joint and cross-access driveways:
 - (1) The driveway shall have a design speed of 10 mph and have sufficient width to accommodate two-way traffic including the largest vehicle expected to frequently access the properties.

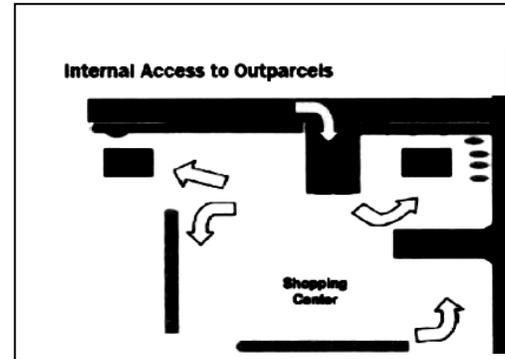
Joint Driveways and Cross Access



Source: TRB Access Management Manual, 2003.

- (2) A circulation plan that may include coordinated or shared parking shall be required.
 - (3) Features shall be included in the design to make it visually obvious that abutting properties shall be tied in to provide cross access.
- c. The property owners along a joint or cross-access driveway shall:

- (1) Record an easement with the deed allowing cross access to and from other properties served by the driveway.
- (2) Record an agreement with the Township/Borough so that future access rights along the driveway shall be granted at the discretion of the Township/Borough and the design shall be approved by the Township/Borough engineer.
- (3) Record a joint agreement with the deed defining the maintenance responsibilities of each of the property owners located along the driveway.



7. Access to Outparcels:

- a. For commercial and office developments under the same ownership and consolidated for the purposes of development or phased developments comprised of more than one building site, the Township/ Borough shall require that the development be served by an internal road that is separated from the main roadway.
- b. All access to outparcels shall be internalized using the internal roadway.
- c. The driveways for outparcels shall be designed to allow safe and efficient ingress and egress movements from the internal road. The required driveway throat area shall not be compromised.
- d. The internal circulation roads shall be designed to avoid excessive queuing across parking aisles.
- e. The design of the internal road shall be in accordance with all other sections of this Ordinance.
- f. All necessary easements and agreements required under Section 6.c shall be met.
- g. The Township/Borough may require an access covenant to restrict an outparcel to internal access only.

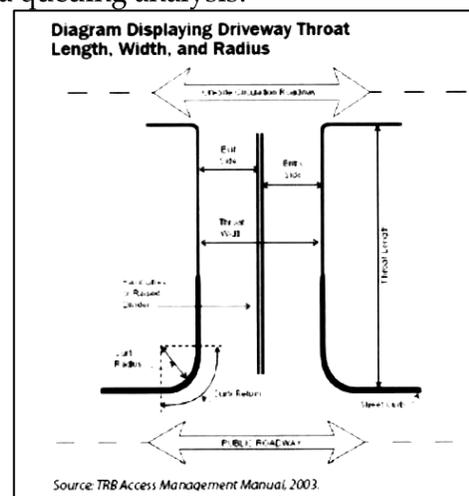
5.5.2 Driveway Design Elements

1. Driveway Throat Length:

- a. For low-volume driveways, the throat length shall be a minimum of fifty (50) feet or as determined by queuing analysis.
- b. For medium-volume driveways, the throat length shall be a minimum of one hundred twenty (120) feet or as determined by a queuing analysis.
- c. For high-volume driveways, the throat length shall be a minimum of one hundred fifty (150) feet or as determined by a queuing analysis.

2. Driveway Throat Width:

- a. For driveways without curb:
 - (1) Low- and medium-volume driveways shall have a minimum width of ten (10) feet for one-way operation and a minimum width of twenty (20) feet for two-way operation.
 - (2) The design of high-volume driveways shall be based on analyses to determine the number of required lanes.



- b. For driveways with curb, two (2) feet should be added to the widths contained in Section a. (1) and a. (2).
- c. The Township/Borough may require additional driveway width to provide turning lanes for adequate traffic flow and safety.
- d. The Township/Borough may require that the driveway design include a median to control movements. Where medians are required or permitted, the minimum width of the median shall be four (4) feet to provide adequate clearance for signs.

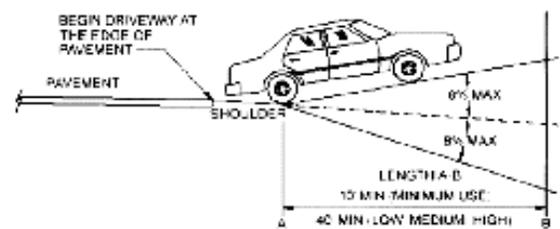
3. Driveway Radius:

- a. The following criteria shall apply to driveway radii:
 - (1) For low-volume driveways, the radii shall be a minimum of fifteen (15) feet uncurbed and twenty-five (25) feet curbed.

- (2) The medium-volume driveways, the radii shall be a minimum of twenty (20) uncurbed and twenty-five (25) feet curbed.
 - (3) For high-volume driveways, the design should be reviewed by the Township/Borough engineer on local roads and PennDOT on State-maintained roadways, with local consultation.
- b. For all driveways, the radii shall be designed to accommodate the largest vehicle expected to frequently use the driveway.
 - c. Except for joint driveways, no portion of a driveway radius may be located on or along the frontage of an adjacent property.
4. Driveway Profile:
- a. Driveway grade requirements where curb is not present on the intersecting street:
 - (1) Shoulder slopes may vary from four percent (4%) to six percent (6%). When shoulders are present, the existing slope shall be maintained across the full shoulder width.
 - (2) The change in grade between the cross slope of the connecting roadway or shoulder and the driveway shall not exceed six percent (6%).
 - (3) The driveway grade shall not exceed six percent (6%) within forty (40) feet for low-, medium-, and high-volume driveways.
 - (4) A forty- (40) foot minimum vertical curve should be used for a high-volume driveway.
 - b. Driveway grade requirements where curbs and sidewalks are present:
 - (1) The difference between the cross slope of the roadway and the grade of the driveway apron may not exceed six percent (6%).
 - (2) The driveway grade shall not exceed six percent (6%) within forty (40) feet for low-, medium-, and high-volume driveways.
 - (3) If a planted area exists between the sidewalks and curb, the following shall apply:
 - (a) The grade of the planted area shall not exceed six percent (6%).

- (b) If the driveway grade would exceed six percent (6%) in the area between the curb and the sidewalk, the outer edge (street side) of the sidewalk may be depressed to enable the driveway grade to stay within six percent (6%). A maximum sidewalk cross slope of two percent (2%) must be maintained.

Driveway Profile



Source: TRB Access Management Manual, 2003.

- (c) If the sidewalk cross slope exceeds two percent (2%), the entire sidewalk may be depressed. The longitudinal grade of the sidewalk may not exceed six percent (6%).

- c. Although site conditions may not allow strict adherence to these guidelines in this Ordinance, every effort should be made to design and construct the safest and most efficient access onto the Township or State roadway.
5. **Angle of Intersection:** All driveways shall intersect the street at a ninety-degree (90°) angle. If this is physically not possible, the Township/Borough Engineer may allow a variance to a sixty-degree (60°) angle.

5.5.3 Auxiliary Lanes

This is an optional section for additional "in" and "out" lanes for high-volume driveways – 1,500 vehicles a day or more.

Auxiliary Lanes: Auxiliary lanes separate turning vehicles from through traffic, thus they increase capacity and improve operations at intersections. They reduce the potential for rear-end crashes and interference or disruption of the flow of through traffic. They may (shall) be required for high-volume driveways.

1. Right Turn Lane/Deceleration Lane

a. Unsignalized Intersections:

- (1) A right turn lane shall be considered on the major road (not stop-controlled) at an unsignalized intersection when any one or a combination of the following conditions exists:

- (a) Speed in excess of 40 mph.

- (b) High average daily traffic on the through roads (5,000 vehicles per day or more).

Design Criteria

- (1) The desirable width for a right turn lane is fourteen (14) feet with curb and twelve (12) feet without curb. The minimum width of right turn lanes shall be thirteen (13) feet with curb and eleven (11) feet without curb. If not curbed, shoulders shall be designed in accordance with PennDOT 3R criteria found in PennDOT Publication 13M: *Design Manual Part II*, or the appropriate successor regulations.
- (2) The required lengths of right turn lanes shall consider the following components as may be applicable:
 - (a) Deceleration distance in accordance with AASHTO publication *A Policy on Geometric Design of Highways and Streets*.
 - (b) Taper length in accordance with AASHTO publication *A Policy on Geometric Design of Highways and Streets*.
 - (c) The right turn or deceleration lane shall be designed based on an analysis that projects traffic volumes for a ten- (10) year period from the anticipated opening of the proposed development.

2. Left Turn Lane

a. Unsignalized Intersections:

- (1) For the arterial highway, Highway Research Record 211 (HRR 211) provides warrants for requiring a left turn lane.
- (2) A left turn lane shall be required when the appropriate HRR 211 nomograph indicates that the warrant for a one hundred (100) foot long left turn lane is met for the anticipated completion date of the development.
- (3) A left turn lane shall be required if the visibility to the rear of a vehicle stopped to turn left into the proposed access does not meet minimum sight distance requirements and no alternative is available.

b. Signalized Intersections:

A left turn lane shall be required when a capacity analysis indicates that the operation of an intersection, approach, or movement will operate at unacceptable levels of service and the operation of the intersection, approach, or movement

can be improved with the installation of one or more left turn lanes. Levels of service E and F should be considered unacceptable in rural areas and a level of service F should be considered unacceptable in urban areas.

c. Design Criteria:

- (1) The desirable width for left turn lanes is twelve (12) feet. The minimum width shall be ten feet (10), unless the percent of trucks will exceed five percent (5%), then eleven (11) feet shall be the minimum width.
- (2) The length of a left turn lane shall consider the following components as applicable:
 - (a) Storage bay length.
 - (i) Shall accommodate the ninety-fifth (95th) percentile queue length for signalized intersections.
 - (ii) Shall be determined from the appropriate nomograph in HRR 211 for the uncontrolled approach of an unsignalized intersection.

Deceleration length in accordance with AASHTO publication *A Policy on Geometric Design and Highways and Streets*.

- (b) Taper length in accordance with AASHTO publication *A Policy on Geometric Design of Highways and Streets*.

3. Acceleration Lane

- a. May be required on arterial highways where operating speeds are in excess of 40 mph and where access points are located a sufficient distance apart to permit the installation of acceleration lanes.
- b. The design length and width shall follow criteria found in the latest edition of *A Policy on Geometric Design of Highways and Streets* and shall conform to PennDOT requirements on State-maintained highways.

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5.6 TRAFFIC ACCESS AND IMPACT STUDIES

For larger developments, simply following the criteria contained in the zoning ordinance/subdivision land development ordinance may not be sufficient. In these events, a Traffic Access and Impact Study will be required. Two levels of study will be required based upon peak-hour trips that the development will generate. Trip generation will be determined by use of the most recent edition of the ITE Trip Generation manual. Such studies shall be completed by a professional traffic engineer.

For sites generating 100 to 500 peak-hour trips, the following items will be required. For sites generating over 500 peak-hour trips, see the subsequent section on Level II Study Requirements.

5.6.1 Level I Study Requirements

I. Introduction

- A. Description of site including a location map
- B. Type of project
 - 1. If residential, number and type of dwelling units
 - 2. If commercial or industrial, square footage and type of development
- C. Other planning data which may be pertinent
- D. Map of project with proposed access points shown

II. Existing Conditions

- A. Directional traffic counts on roads adjacent to property with access to development
 - 1. Traffic counts should be not more than two years old
- B. Level of service of intersection(s) (if applicable)
 - 1. Highway Capacity Software (HCS) or Synchro is recommended
 - 2. Other nationally recognized software can be used

III. Trip Generation Rates

- A. Listing of trip generation rates
- B. Listing of sources for rates used

1. *ITE Trip Generation* manual, latest edition
 2. If the type proposed development is not addressed in the ITE manual, then other rates may be used as long as they are documented and have been approved by the municipality.
- C. Calculation of trip ends by type of generator
1. Traffic generated by phase
 2. 100 percent occupancy and development to be assumed

IV. Trip Distribution

- A. Assumptions as to the directional distribution of traffic to and from the development.
- B. Assumptions as to the peak hour percentages
- C. Assumptions as to the peak hour directional splits
- D. Assumptions as to the pass-by trips, if applicable – must be approved by the municipality

V. Analysis

- A. Horizon year traffic projections
 1. Document background traffic growth based on outside sources or other approved methods.
 2. Project traffic volumes to a horizon year equal to the anticipated opening year of the development, assuming full build-out and occupancy.
- B. Level of Service (LOS) and capacity analysis for peak periods
 1. Compute the projected LOS and capacity analysis for each access point and control point to the adjacent road system based on the development by phase
 2. Compare LOS before development to LOS after development, if applicable, for the assumed horizon year
 3. Link analysis, if applicable
- C. Intersection and Roadway Geometry – Existing and Proposed
 1. Distances from existing streets, driveways, and/or median cuts

2. Alignment with existing streets, driveways, and/or median cuts
 3. Intersection layout
 4. Sight distance
 5. Right-of-way width
 6. Lane width(s)
 7. Between Fry Road and Silverthorn Road, distance from access point to nearest ramp radius
- D. Site Circulation
- E. Transit Stop(s)

VI. Recommendations

- A. Site Access
- B. Intersection Improvements
1. Traffic control device(s) – modify existing or need for new
 2. Left and/or right turn lanes
 3. Acceleration and/or deceleration lanes
 4. Length of storage bays
- C. Off-Site Improvements
- D. Improvements by phasing (if applicable)

VII. Appendix

- A. Raw Traffic Count Data
- B. Documentation of Analysis

5.6.2 Level II Study Requirements

In addition to the preceding information required for Level I studies, the following information on Trip Assignment and Additional Horizon Year shall be provided in a Level II study:

I. Trip Assignment

- A. Show existing ADTs, proposed development traffic, and total traffic for all affected links on map which identifies the project and the surrounding roads.

- B. Show A.M. and P.M. peak hour turning movements for the existing traffic, the proposed development traffic, and the combined traffic at all project entrance intersections, and affected intersections within the study area.
- C. Discuss the effects of phasing of the proposed project.

II. Additional Horizon Year

- A. Conduct analyses for horizon years equal to the anticipated opening year of the development, assuming full build-out and occupancy, and 10 years after the opening date.

5.6.3 Review Requirements

The study will be reviewed by a professional consultant(s) selected by the municipality as well as the municipality's staff. The Erie County Metropolitan Planning Organization shall be invited to participate in this review.

Note: All costs of study review, consistent with the provisions of the Pennsylvania Municipalities Planning Code, will be the developer's responsibility.

5.6.4 Application and Implementation of Standards

To translate the standards as set forth in the preceding pages, they were set forth as ordinance amendments. In Edinboro, these amendments included both the zoning ordinance and the SALDO. In Washington Township, the amendments were placed in three ordinances: the zoning ordinance, the SALDO, and the Driveway Ordinance.

5.7 OTHER OPTIONS

In the prior sections of this report, the focus has been on land use and permit ordinances as tools for access control. There are adjunct tools which can also assist in access control—the developer’s agreement and the official map.

5.7.1 Developer’s Agreement

The developer’s agreement will be an essential tool to insure those who develop land along Route 6N fairly pay for needed improvements along the corridor. A good example is the traffic light and access roads at the Wal-Mart/Sheetz location. Through a developer’s agreement, the costs of these improvements were paid by the developer. Likewise, the marginal access roads required by the Township’s Official Map Ordinance will be the developer’s responsibility. Such improvements are costly, often over \$100,000, and should not fall on the general taxpayer.

In some instances, a single development may not initially create enough traffic to meet needed warrants for such improvements as traffic signals. In those cases, the developer’s agreement should include a provision for “deferred obligations” for a set number of years (5 to 10 years is suggested). Essentially, the agreement would obligate the developer to pay for a pro-rata share of any future improvement if future development(s), added to the developer’s volumes, would call for a traffic safety improvement. Unlike the Municipal Capital Improvement, this would only deal with safety projects directly benefiting the developer’s parcel and not address off-site improvement. Given the anticipated development levels in the area, it is questionable if a Municipal Capital Improvement ordinance is feasible.

5.7.2 Official Map

The second planning tool is the official map. Article IV of the Pennsylvania Municipalities Planning Code sets forth the process to develop an official map. Section 401(a) empowers a municipality to adopt an official map and includes such purposes as “proposed public streets” and pedestrian ways and easements. Washington Township has already prepared an official map for the I-79 and Route 6N area.

Another specific area that is recommended for is the potential “golf course” development. Some one hundred homes could be constructed here, along with commercial lots; and the addition of such additional traffic on Route 6N will have a decided impact. In addition, the issue of a pedestrian crossing across Route 6N in this area has long been needed. By the use of a marginal access road, under the official map power, the Borough or Township could channel traffic to a preplanned site. That site could also be used as an intersection location, including a pedestrian crossing.

5.7.3 Adoption of Official Map

Step 1 – Prepare a map and ordinance.

Step 2* – Refer to municipal planning commission (up to 45 days for review).

Step 3* – Copy to County Planning Department and adjacent municipality. [Read 408(c) of the Code. Likely, Edinboro and Washington are the only ones affected.] A copy can also be sent to local authorities and boards.

Step 4 – Public hearing with public notice.

Step 5 – Adoption of ordinance (check with solicitor on any needed notices).

Step 6 – Record at Erie County Recorder of Deeds (60 days).

Step 7 – Copy to County Planning and adjacent municipalities (30 days).

*Recommend concurrent action.



Section 6.0 - Transportation Alternatives



6.0 TRANSPORTATION ALTERNATIVES

This section of the report explores various improvement alternatives for the transportation network to manage future traffic conditions that are anticipated as a result of the projected land use. Categories of alternatives typically follow the project goals and objectives as follows:

- Section 6.1 – Pedestrian and Bicycle Circulation
- Section 6.2 – Truck Traffic
- Section 6.3 – Corridor Safety
- Section 6.4 – Special Events / Incident Management
- Section 6.5 – Traffic Operations

6.1 PEDESTRIAN AND BICYCLE CIRCULATION

6.1.1 Sidewalk and Transit Improvements

Based upon a review of the existing facilities, the most direct method to enhance the existing pedestrian circulation system, including pedestrian linkages to transit stops, would be to complete the missing links of the system while maintaining or improving any infrastructure that is already in-place ([Exhibit 43](#)). Options to build upon the existing sidewalk system, fill in any gaps, and expand transit service are:

New Sidewalk with Development

Construct segments of new sidewalk concurrent with new development. For example, proposed and developer-supported marginal access roads between Washington Towne Boulevard and Fry Road should be designed to incorporate sidewalks.

New Sidewalk Segments

Construct segments of new sidewalk wherever there are gaps in the existing sidewalk network. Specifically, such gaps exist along most of US 6N west of approximately Maple Drive and east of approximately Ontario Street. Placement of any new sidewalk segments should be planned carefully in order to best integrate with localized needs, destinations, right-of-way or topographical constraints, etc.

Multi-Use Paths

In lieu of pedestrian sidewalk only; consider multi-use paths to consolidate resources and serve the pedestrian and bicycle communities simultaneously. Refer to Section 6.1.2 for additional detail.

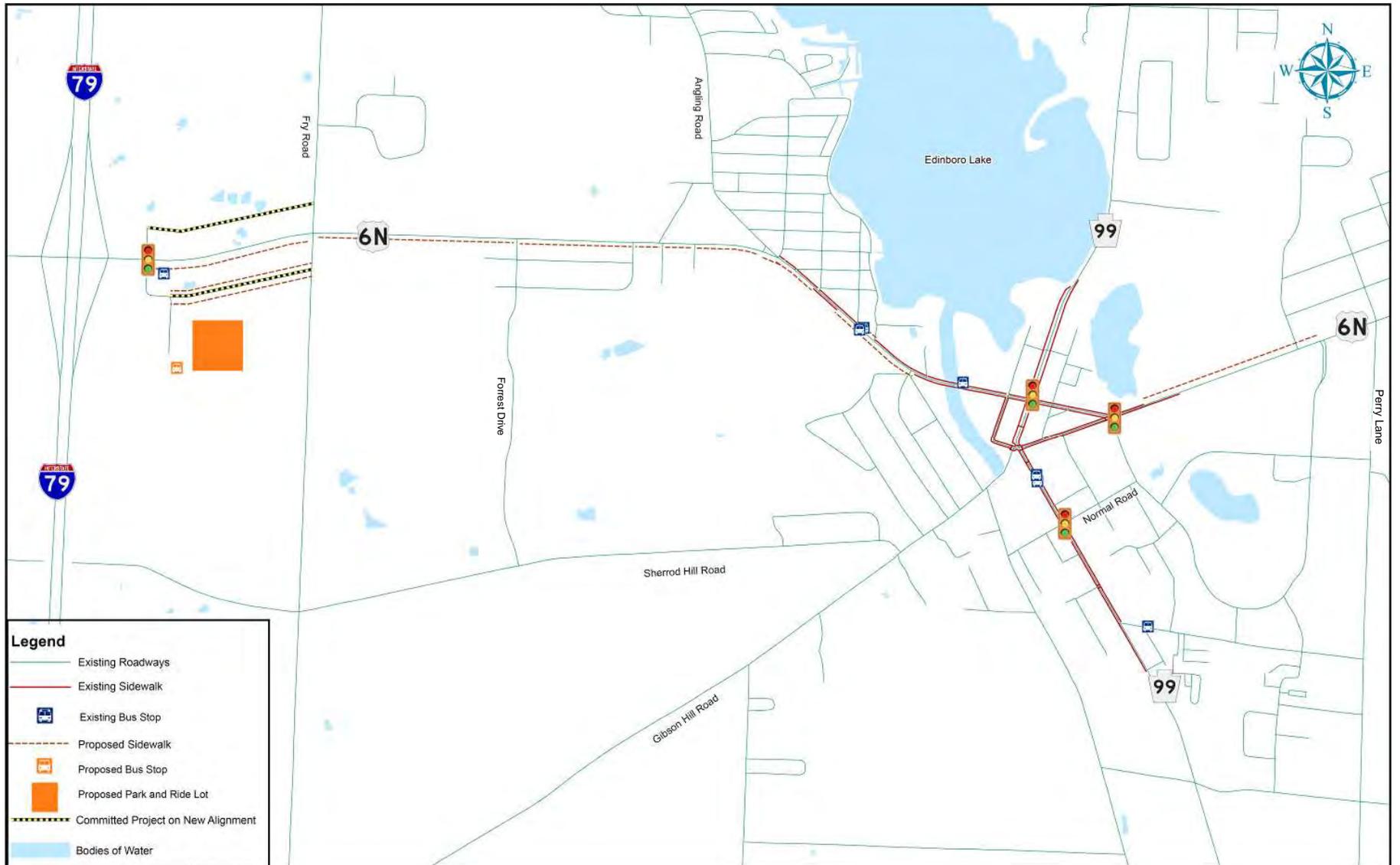


Exhibit 43: Sidewalk and Transit Improvement Options

Pedestrian Crossings

Construct adequate pedestrian crossing facilities. Sidewalk could be installed on one or both sides of US 6N depending on needs and constraints as mentioned above, but appropriate pedestrian crossings must ensure connectivity of the entire system. As an example, existing and planned developments along both the north and south sides of US 6N in the Angling Road area are viable pedestrian attractions. North side developments include the YMCA, Edinboro Elementary School, and the lakeside residential communities; south side developments include a golf course and future library. Both sides of the road must be connected to form a complete, safe, and efficient pedestrian system.

ADA Compliance

Improve existing facilities, and construct any new facilities, to meet current ADA standards. Existing curb ramps, sidewalk sections, sign placement, crossing facilities, etc., may need to be repaired or replaced to fully conform to ADA requirements.

Enhanced Design Features

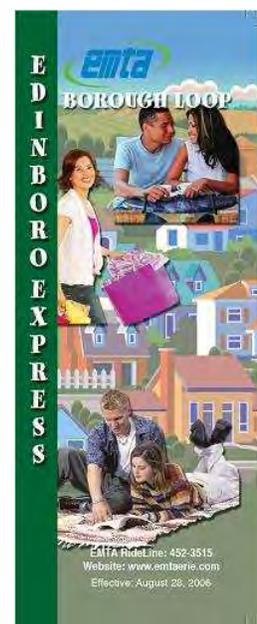
Incorporate enhanced design features, lighting, landscaping, prompt maintenance practices, etc., into any new or existing pedestrian facilities to promote and ensure a safe and enjoyable pedestrian system. Develop features with the likely demographic of the facility's final users in mind.

Bus Stop Enhancements

Enhance existing transit facilities such as bus stops and related signing, by adding benches, shelters, lighting, landscaping, etc. Ensure that bus stops are directly connected to the overall sidewalk system and ADA accessible in order to encourage increased or more frequent transit usage.

Park & Ride Lots

Expand transit service to include the installation of new bus stops and park & ride lots. A proposed park & ride lot near Wal-Mart ([Exhibit 43](#)) could help to reduce automobile demand along the busiest segments of US 6N. As a new bus stop near the retail and commercial areas of Washington Towne Boulevard, the expanded service could shuttle riders to that area from the east, including downtown Edinboro and Edinboro University. As a new park & ride lot near the I-79 interchange, the expanded service could shuttle commuting workers and students toward downtown Edinboro and the university; it could also be heavily utilized during special, sporting, or community events.



6.1.2 Bicycle Improvements

Similar to the strategies considered for enhancing pedestrian facilities, bicycle improvements also should focus on completing the missing links of the system while maintaining or improving any infrastructure that is already in-place. Several options to complete a continuous east-west bicycle route through the study area ([Exhibit 44](#)) follow:

Signed Bike Route along US 6N

([Exhibit 44](#), Purple Route). Accommodate bicycle travel via dedicated or shared-use lanes along US 6N, similar to the segments of the existing bike lane in-place today. This type of treatment has the advantage of providing the most direct route between two endpoints and of presenting bicycle travel as a clear and integral part of the overall transportation network. However, it has the disadvantage of placing bicycle travel along the main corridor and adjacent to traffic congestion and noise. It also requires additional right-of-way to accommodate a wider roadway cross-section, which may be a serious issue in the more densely-developed segments of US 6N.

Signed Bike Route along Local Roadways

([Exhibit 44](#), Blue, Dark Green, or Light Green Routes). In lieu of following the US 6N alignment, the designated bike route could be signed to follow other local roadways, thereby reducing or eliminating the disadvantages listed above. Three possible alignments that were reviewed were:

- The Blue Route, which avoids the longest stretch of US 6N by using Fry Road, Sherrod Hill Road, and Chestnut Street to reach SR 99.
- The Dark Green Route, which avoids the most congested segment of US 6N by using Maple Drive, Chestnut Street, and Waterford Street to divert around the US 6N / SR 99 signal.
- The Light Green Route, which also avoids the US 6N / SR 99 signal by using Maple Drive, Normal Street, and Ontario Street.



Exhibit 44: Bicycle Improvement Options

Multi-Use Path / Sidewalk

(Exhibit 44, Red Route). In lieu of providing a bike route along the actual roadway, a multi-use path or sidewalk could be installed parallel to the corridor and integrate both pedestrian and bicycle accommodations. As a separate path, bi-directional bicycle traffic could be accommodated on just one side of US 6N, as opposed to integral bike lanes being required in both directions of the roadway. This treatment would reduce the width of the roadway cross-section and allow for some flexibility to meander the multi-use path around existing right-of-way or topographic constraints. It would provide positive, physical separation of the automobile and pedestrian / bicycle corridors, thereby improving safety and opening up opportunities for landscaping or other aesthetic design enhancements. It would also connect residential developments along US 6N to primary attractions such as the YMCA, library, and Edinboro Elementary School.

Off-Road Trail

(Exhibit 44, Yellow Route). Installation of an off-road trail for bicycle travel would be similar to the Multi-Use Path / Sidewalk option, except that the trail itself may not parallel any particular roadway. The overall route may be less direct than other bicycle improvement options, and the trail itself may function more for recreation or local access purposes than for continuous end-to-end bicycle travel. While this treatment would allow the greatest flexibility in laying out a specific alignment for the trail, it may not eliminate the need to maintain an official signed bike route elsewhere along the existing roadway system. The sample Yellow Route in Exhibit 44 was assumed to tie into US 6N via Fry Road and Angling Road, and to follow a combination of property boundaries, local street connections, and potential future development sites to connect the east-west ends.

6.2 TRUCK TRAFFIC

Based on *NCHRP Synthesis 314, Strategies for Managing Increasing Truck Traffic*, and considering the levels of truck activity that were observed and documented throughout the US 6N study area, potential truck management strategies that could be selectively applied to this corridor include:

Improved Highway Design

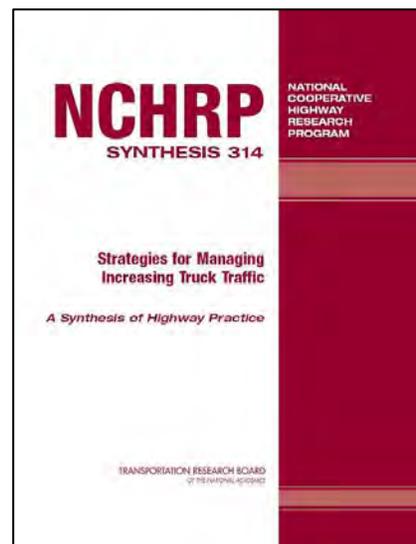
Any new or existing elements that are part of the overall highway or roadway design could be improved as needed to better accommodate truck traffic. Specific improvements may upgrade roadway geometrics such as curve or corner radii to improve truck turning clearances, grades, pavement or shoulder design to repair or strengthen the road itself, or structures and bridges to remove existing weight, width, or height restrictions. Each of these types of projects can be dealt with on a case-by-case basis where there are identifiable truck-related problems or design deficiencies. Local design standards, such as driveway access, curb radii, etc., can also be reviewed to verify they conform to the latest AASHTO or PennDOT criteria in order to minimize any new truck-conflicts with new construction.

Truck Restrictions or Prohibitions

Truck restrictions or prohibitions can be implemented to reduce certain truck conflicts or problems. Restricting or prohibiting trucks from using certain roads, bridges, or local streets can address issues such as weight, size, or geometric constraints, as can parking restrictions. Truck-related noise issues can be controlled via street prohibitions, time-of-day travel or loading restrictions, or “No Jake Brake” limits. In all cases, clear, complete and understandable signage is critical to conveying such restrictions.

Improved Guide Signing

Unlike restrictions or prohibitions that simply tell trucks what they should not do, improved signing can be installed to provide positive guidance as to what trucks should do. Signing may focus on warning, directional, or informational messages. If installed appropriately, providing the positive guidance that a typical truck driver needs to safely and easily follow a route or complete a delivery can potentially be more effective than simple restrictions or prohibitions alone.



Improved Traffic Flow

Improving traffic flow and reducing congestion in any location benefits not only the average automobile, but also truck traffic. As discussed under the existing conditions, any congestion that forces trucks into a slowed or stop-and-go situation results in a domino-effect of more noise, more congestion, and more potential conflicts. Clearing up congestion allows trucks to move along their way with much less impact on the local road network and the local community.

Improved Incident Management

While incident management is discussed separately in Section 6.4, it is important to note that any traffic detour, whether planned or unplanned, must consider the specific needs and limitations of truck traffic that may end up on the detour route. Planned detours that are part of pre-existing Incident Management Plans should select routes capable of accommodating truck traffic, or designate truck-specific detours, truck staging areas, or other special accommodations. Detour signage and trail-blazing along such routes must also provide the necessary guidance for trucks to re-route safely and efficiently to their desired destination.

Emergency or unplanned detours must consider the same issues with only a limited amount of time or resources. In an emergency, additional traffic control along a detour can help to guide trucks through an unfamiliar or unsigned route, and truck staging or pull-off areas can provide short-term relief or a location for trucks to stop and plan a new route.

6.3 CORRIDOR SAFETY

Potential improvements with safety considerations were reviewed to address identifiable crash clusters, trends, characteristics, or related concerns identified during the course of this study. The resulting improvement options focused on three general categories: corridor segments, intersections, and weather-related issues.

6.3.1 Corridor Segment Improvements

Crash analyses have previously identified a high percentage of rear-end, angle, and left-turn collisions throughout the study area, particularly along US 6N from Fry Road to SR 99. To help address this trend, general corridor segment improvements should focus on reducing congestion, reducing queuing, and easing side-street access onto and off of US 6N. Incorporation of dedicated left-turn lanes, access control, alternate connections, or similar upgrades should be considered specifically to improve access and related safety considerations.

6.3.2 Intersection Spot-Improvements

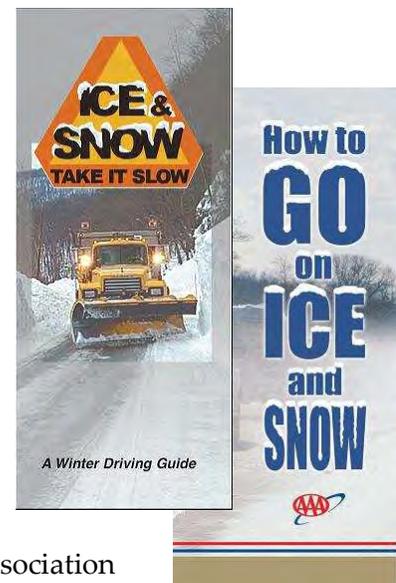
Crash analyses have previously identified crash clusters at specific intersections throughout the study area including US 6N at Fry Road, Angling Road, and SR 99; and SR 99 at Crane Road and Waterford Street. To help address these trends, and in conjunction with the development of any corridor segment improvements, special attention should be given to exploring intersection spot-improvement options at these locations. The focus of such options would be on the intersection-specific traffic operations and may relate to dedicated turn-lanes, sight-distance, signalization or alternative intersection treatments.

6.3.3 Weather-Related Improvements

Crash analyses have previously identified that certain weather-related crash characteristics are approximately twice the applicable statewide averages. To help address this trend, various improvements should be considered to develop, expand, and/or enhance weather education and weather warning / advisory systems. Potential improvement options could include:

Driver Education / Public Outreach

Programs and information focusing on tips, techniques, and related considerations for driving in inclement weather could help to educate the motoring public and raise driver awareness and skill levels. Existing educational information can be obtained from sources such as PennDOT or the American Automobile Association (AAA). Delivery of such information could focus on the community at-large via pamphlets, flyers, media announcements, scheduled seminars, community event booths,



etc., particularly as a reminder each year as the winter months approach. Delivery could also focus on the university population via campus orientation packets, special seminars or training events, or the involvement or sponsorship of various student groups and associations, thereby directly engaging a yearly influx of younger, less-experienced drivers.

Roadway Weather Information System



PennDOT’s Roadway Weather Information System (RWIS) is a group of data collection sites that utilize meteorological and pavement sensors to report critical weather and roadway surface information. Weather data includes air temperature, wind speed and direction, visibility, precipitation type, etc.; roadway data includes pavement temperature, surface characteristics (wet, dry, frost, frozen), and in some cases traffic volume, speed, and video.

RWIS data links are available on PennDOT’s website and include one existing site at the I-79 / US 6N interchange. The availability of that information could be advertised to and referenced by the local community and university populations as a source of real-time information to assist in making prudent travel decisions during inclement weather. It could also be referenced by local public safety and/or maintenance forces to assist in the preparation of real-time travel advisories, public announcements, or maintenance decisions regarding snow and ice control. RWIS expansion to add new data collection sites elsewhere on US 6N or SR 99 could also be considered to increase the availability and variety of data for the specific local area.

Legend:
 Dry
 Wet or Damp
 Icy
 Snow
 Site Under Maint

Click on the Site
 I-80 exit 019 at I-79
 SR 0077 at Green
 I-80 exit 035 at MP
 SR 0027 at Pleasant
 SR 0285 at Pymat
 SR 0059 at Kinzua
 I-80 Exit 015 at MP
 SR 4034 Winter G
 A-80 SR4034
 SR0005 at Starbuck
 I-80 Exit 037 at I-88
 I-79 Exit 130 North
 SR0062 at Preside
 I-79 Exit 166 at SR
 I-79 Exit 183 at Conrail Bridge Erie Co

I-79 Exit 166 @ SR0006 North Erie Co

Weather Data

Air Temperature	72.00°
Dew Point	57°
Humidity	80%
Precipitation	None
Visibility	10171 (feet)
Wind Direction	N
Wind Speed	0 mph

Site Meteorological Data Reported at 08/13/2008 05:29 PM

Road Surface Data

Last Reported	
Surface Temperature	+89.1
Surface Condition	Dry
ADI Agent	
Freeze Point	
Sub Grade Temperature	

Exhibit 45: PennDOT Online RWIS Data

Dynamic Message Sign Systems

Public travel advisories and weather-related information could be conveyed directly to passing motorists via one or more dynamic (or changeable) message signs (DMS) located strategically throughout the study corridor. Portable or permanent DMS installations could be utilized with remote access to manually change messages based, for example, on real-time information from PennDOT's RWIS, other weather services, or in conjunction with emergency incident management.



Warning message sequences such as “CAUTION – ICY ROADS POSSIBLE”, “REDUCE SPEEDS – PONDING WATER ON ROADWAY” or “CRASH AHEAD – SLOW DOWN NOW” can be effective if utilized with discretion and for specific local conditions that will be meaningful to the traveling public. However, excessively frequent or generic DMS usage can also breed motorist familiarity and/or disregard, essentially reducing the effectiveness of a DMS warning system.

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6.4 SPECIAL EVENTS / INCIDENT MANAGEMENT

Whether scheduled or unexpected, planning can help to manage or mitigate both special events and emergency incidents. Planning can include any combination of the following:

6.4.1 Special Event Planning

Signing

Special event signing may include temporary, event-specific signing such as trailblazing to the event site, specific parking lots, vendor areas, designated truck loading zones, etc. Special event signing may also include permanent destination or wayfinding signing for area attractions, such as Edinboro University. Permanent signs typically fall under one of the standard signing categories per PennDOT's *Publication 212 – Official Traffic Control Devices*, or *Publication 236M – Handbook of Approved Signs*, including specific service signs (gas, food, lodging, etc.), recreational and cultural interest area signs, or tourist-oriented directional signs. Requests to maintain or expand permanent wayfinding signs for major destinations such as Edinboro University should be coordinated through PennDOT for additional guidance related to the tourist-oriented directional sign program.

Signal Timing

Event-specific signal timing plans could be designed in advance to accommodate any expected changes in traffic volumes or traffic patterns. Such plans could modify cycle lengths, increase or decrease the maximum available green-time for a specific movement or approach, or under certain circumstances modify the specific phasing through an intersection. Multiple plans could be designed to favor traffic flow differently for pre-event or post-event patterns, such as before and after an Edinboro University home football game. Each plan could be programmed into the signal controller in advance to automatically start/stop at the appropriate times based on the event schedule. Implementation of the signal plans could be accomplished by a signal engineer or technician directly in the field or, with the appropriate signal equipment upgrades, from a centralized, remote location.

Transit Coordination

The use of remote parking areas, park & ride lots, and transit / shuttle service could be used to help manage traffic demands for larger special events such as community or sporting events. This study has identified one potential park & ride location in the vicinity of Washington Towne Boulevard ([Exhibit 43](#)); during special events, other existing parking lots could be temporarily contracted for the same purpose. For increased effectiveness, plans for special event(s) and transit coordination could be developed in conjunction with other transit, pedestrian, and/or bicycle improvement options detailed under [Section 6.1](#).

6.4.2 Incident Planning

Incident Management Plan

Pre-determined Incident Management Plans (IMP) could be developed for US 6N or SR 99. The purpose of a typical IMP is to outline various procedures, guidelines, and requirements needed to expedite incident response, reduce the duration and impact of an incident, and improve the safety of motorists, crash victims, and incident responders. Critical components of an IMP typically include detailed emergency contact lists, agency responsibilities, incident response and clearance protocols, and pre-defined emergency detour routes. For incident-related closures (crashes, fires, etc.) along routes such as US 6N or SR 99, potential emergency detour routes could include Fry Road, Crane Road, etc., and could be locally trailblazed with emergency detour signing or controlled as needed by local fire/police personnel. Weather-related emergencies (snow, ice, etc.) must also consider road and travel conditions throughout the roadway network; in such cases, it may be desirable for incident management scenarios to avoid detours to any secondary roads, focusing instead on motorist information, advance warning, incident clearance, etc.

Intelligent Transportation Systems

The use of intelligent transportation systems (ITS) and devices such as Highway Advisory Radio (HAR), DMS, or RWIS can be used to provide additional warning messages and related guidance to the motoring public during any incident. Devices may be portable, temporary, or permanent and located strategically throughout the study area. Locations and messages may be customized for a specific traffic or weather event, or they may be pre-determined / pre-recorded in conjunction with the development of a corridor or scenario-specific IMP.



Emergency Signal Timing

Similar to the event-specific signal timing plans, various emergency signal timing plans could also be included for unplanned traffic or weather-related incidents. Beyond the potential signal changes mentioned previously, timing plans for weather-related emergencies, for example, may also modify the traffic signal change and clearance intervals (yellow/red times) to account for reduced traction, reduced speeds, or increased stopping distances that may accompany inclement weather.

6.5 TRAFFIC OPERATIONS

Improvements in the area of traffic operations cover a broad range of options aimed at addressing the project goal to “reduce traffic congestion.” Based on the findings of this study, and on public and stakeholder feedback, that goal can be expanded as follows:

- Reduce congestion and improve mobility by:
 - Improving connectivity within the roadway network
 - Improving US 6N traffic flow
- Reduce congestion and improve access by:
 - Adding traffic signals where applicable
 - Improving unsignalized intersections

In addition to these goals, proposed traffic operations improvements must also mesh with the future land use projections, and they should integrate or enable the pedestrian and bicycle circulation, truck traffic, corridor safety, and special event / incident management improvement options. Traffic operations improvements are detailed in the sections that follow in terms of roadway options, intersection options, and interchange options.

6.5.1 Roadway Options / System Upgrades

System upgrades can be considered a sub-set of the potential roadway improvement options that may be applied independently of other alternatives in the study area. In line with the Smart Transportation theme of enhancing the local network, system upgrades were aimed at improving various existing roadways or adding/extending new roadway segments to improve connectivity with the existing roadways. These upgrades would directly improve mobility and access for local travel by providing the new connections or alternate routes. They would also indirectly help to improve mobility along the mainline routes by diverting some portion of the projected traffic volumes off of various segments of US 6N or SR 99 and onto the new connections or alternate routes. In many cases, this benefit would specifically reduce volumes through the US 6N / SR 99 intersection which could be of critical importance. Several system upgrade options are detailed on the pages that follow ([Exhibit 46](#)).

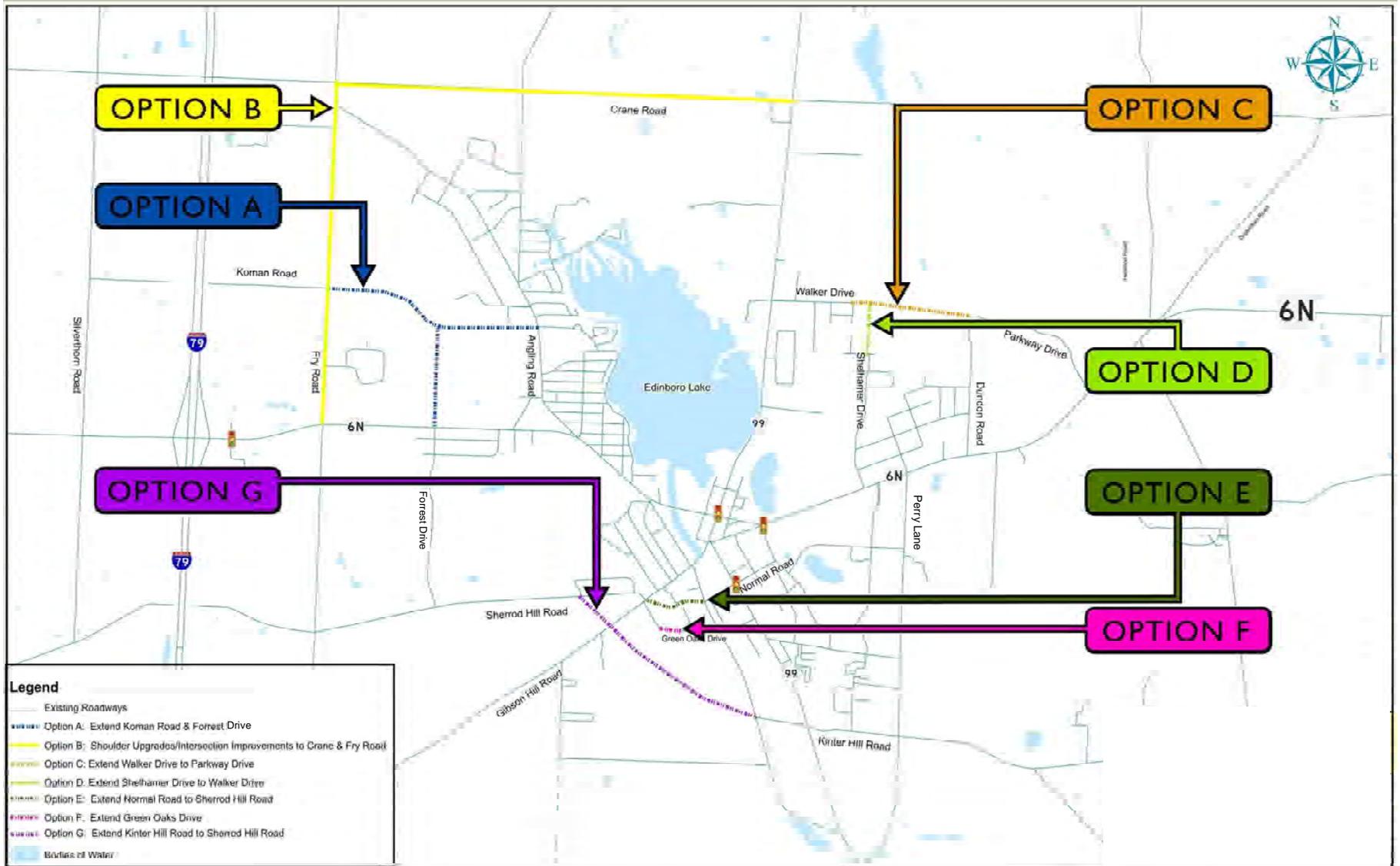


Exhibit 46: System Upgrade Options

System Upgrade Option A

Option A extends Koman Road east to Angling Road, and extends Forrest Drive north to connect with the Koman Road extension. The intent of Option A was to weave local roadway connections through an area of potential future development, and to provide alternate routes off of US 6N for travel to/from the Lakeside communities east of Angling Road.

System Upgrade Option B

Option B implements minor shoulder upgrades and local intersection improvements to Fry Road and Crane Road. The intent of Option B was for the Fry Road / Crane Road combination to serve as a safe and viable alternate route between US 6N, I-79, and SR 99 north. This route would avoid the US 6N / SR 99 intersection, and it would also mesh with potential future development and frontage roads west of Fry Road, north of US 6N.

System Upgrade Option C

Option C extends Walker Drive to Parkway Drive. The intent of Option C was to improve localized connections for nearby residential areas and to provide an alternate connection from those areas to SR 99 that avoids the US 6N / SR 99 intersection.

System Upgrade Option D

Option D extends Shelhamer Drive to Walker Drive. Similar to Option C, the intent of Option D was to improve localized connections for nearby residential areas and to provide alternate local connections between US 6N and SR 99.

System Upgrade Option E

Option E extends Normal Street to Sherrod Hill Road. The intent of Option E was to link the university area and points south on SR 99 directly to Sherrod Hill Road, thereby increasing the attractiveness of Sherrod Hill Road, Fry Road or Forrest Drive to be used in combination as an alternate route off of US 6N and away from the US 6N / SR 99 intersection.

System Upgrade Option F

Option F extends Green Oaks Drive to create a continuous link between Sherrod Hill Road and SR 99 and essentially serves as an alternative to Option E.

System Upgrade Option G

Option G extends Kinter Hill Road to Sherrod Hill Road and essentially serves as another alternative to Options E and F. The intent of Options E, F, and G were identical; however, Options E and F would more directly serve the university and downtown Edinboro

populations, whereas Option G is located farther south and may be more effective at diverting traffic off of mainline SR 99 from points south.

Short-Term US 6N Operational Improvements

As opposed to the new or improved roadway connections detailed under Options A through G, short-term operational improvements include a general roadway improvement in the vicinity of US 6N eastbound approaching Fry Road. Concerns have been voiced regarding the abrupt eastbound merge condition where US 6N transitions from two lanes to one between Washington Towne Boulevard and Fry Road. Short-term improvements would extend the eastbound merge lane by approximately 300', thereby addressing these concerns and potentially tying together with other intersection or corridor improvements that commence in the vicinity of Fry Road.

6.5.2 Roadway Options / US 6N Corridor

The roadway improvements detailed in this section comprise the end-to-end alternatives specific to the US 6N corridor. Not including the No-Build Alternative, which by comparison has no construction impacts, but does not address any of the project's goal or objectives and results in further deterioration of the existing access and mobility problems, five sets of alternatives were reviewed as follows:

- Traditional roadway widening alternatives with full-access at most intersections
 - 3-Lane Alternative
 - 5-Lane Alternative
- Limited roadway widening with controlled-access at most intersections
 - 2-Lane Median Alternative
- Combination alternatives that incorporate system upgrades
 - 3-Lane Alternative with System Upgrades
 - 2-Lane Median Alternative with System Upgrades

Traffic volumes for the projected weekday afternoon peaks were developed by coding each alternative into the project-specific VISUM travel demand model. The alternative models accounted for changes in the corridor lane arrangements, intersection traffic control, new connections and related system upgrades to reassign and redistribute the future year 2030 No-Build traffic onto the revised VISUM alternative network. VISUM volume projections were then entered into the Synchro models to analyze the traffic operations for each alternative ([Exhibit 47](#), [Exhibit 48](#), and [Appendix F](#)).

Detailed descriptions, advantages, disadvantages, and related discussions for each alternative follow. Segment limits were set for conceptual analysis purposes only; it is anticipated that limits would be refined upon selection of a set of preferred alternatives and again once the project enters the design stages.

Exhibit 47: PM Peak Hour Volume Summary for 2030 Traffic Operations Alternatives

Road (Segment)	2-Way Segment Volumes					
	No Build	3-Lane	5-Lane	2-Lane Median	3-Lane Upgrade	2-Lane Upgrade
US 6N (at Washington Towne Blvd.)	2170	2170	2170	2170	2010	2015
US 6N (at Angling Road)	2440	2470	2470	2520	1985	2080
US 6N (at SR 99)	2315	2315	2315	2315	1575	1940
US 6N (at Scotland Road)	1110	1110	1110	1110	1110	1110
US 6N (at Kline Road)	580	580	580	580	580	580
SR 99 (at Normal Street)	1370	1370	1370	1370	1330	1370
SR 99 (at US 6N)	1455	1455	1455	1455	810	1405
SR 99 (at Crane Road)	1055	1045	1045	1045	780	880
Fry Road	190	190	190	190	370	370
Crane Road	95	100	95	95	105	95
Angling Road	325	355	355	325	330	305
Sherrod Hill Road	130	130	130	130	130	130

Exhibit 48: LOS Table for 2030 Traffic Operations Alternatives

Signalized Operations		Number Intersections					
		No Build	3-Lane	5-Lane	2-Lane Median	3-Lane Upgrade	2-Lane Upgrade
Acceptable	Overall LOS A, B, or C	4	6	8	6	8	6
Marginal	Overall LOS D	0	1	1	1	0	1
Failing	Overall LOS E or F	0	1	0	0	0	0
Severe Failure	Severe LOS F	1	1*	0	1*	1*	1*
Unsignalized Operations		Number of Intersections					
		No Build	3 Lane	5 Lane	2 Lane Median	3 Lane Upgrade	2 Lane Upgrade
Acceptable	Side-Street LOS A, B, or C	10	10	12	13	10	14
Marginal	Side-Street LOS D	0	1	3	1	6	3
Failing	Side-Street LOS E or F	8	8**	4**	6**	3**	3**
Severe Failure	Severe LOS F	5	0	0	0	0	0

* Section 6.5.3 addresses US 6N / SR 99 separately.

** Section 6.5.4 addresses SR 99 / Chestnut Street, SR 99 / Crane Road, and US 6N / Scotland Road separately.

US 6N Corridor 3-Lane Alternative

The 3-Lane Alternative modifies US 6N between approximately Fry Road and Scotland Road to include a 3-lane section consisting of one lane in each direction plus a center TWLTL ([Exhibit 49](#)). West of Fry Road, it was assumed that a 5-lane section would be extended to Silverthorn Road in conjunction with future development. East of Scotland Road it was assumed that the existing 2-lane section would be maintained. Based on a review of this alternative and the analysis results ([Exhibit 50](#)), the following highlights apply:

- Potential advantages of the 3-Lane Alternative are as follows:
 - It will improve mobility and access along US 6N. It will specifically eliminate the severe failures projected under No-Build conditions for various unsignalized side-streets, although several intersections will continue to fail.
 - It will likely reduce the number of crashes throughout the corridor, largely due to the provision for a shared left-turn lane or dedicated left-turn pockets along the corridor, particularly between Fry Road and SR 99.
 - It will improve bicycle and pedestrian circulation if designed to incorporate bicycle lanes, sidewalk, or related improvement options.
 - It will provide full access at all intersections and driveways; no access, side-street, or turn restrictions are proposed.
- Potential disadvantages of the 3-Lane Alternative are as follows:
 - It will result in moderate community and environmental impacts due to widening and the required right-of-way to accommodate the 3-lane section.
 - It will result in moderate costs associated with the roadway design, construction, and right-of-way.
 - Overall, it will not reduce congestion or solve mobility or access goals by itself. Other system upgrades and traffic diversions are needed to achieve acceptable signal and side-street operations.

THREE-LANE SECTION



PROS

- ◆ Improves mobility and access along US 6N
- ◆ Expected reduction in crashes
- ◆ Improves bicycle and pedestrian circulation
- ◆ Provides full access at all intersections / driveways

CONS

- ◆ Moderate community and environmental impacts
- ◆ Moderate Construction / right-of-way costs
- ◆ Diversion to enhanced Fry/Crane Road needed for acceptable signal and side-street operations

LAND USE AND TRANSPORTATION STUDY

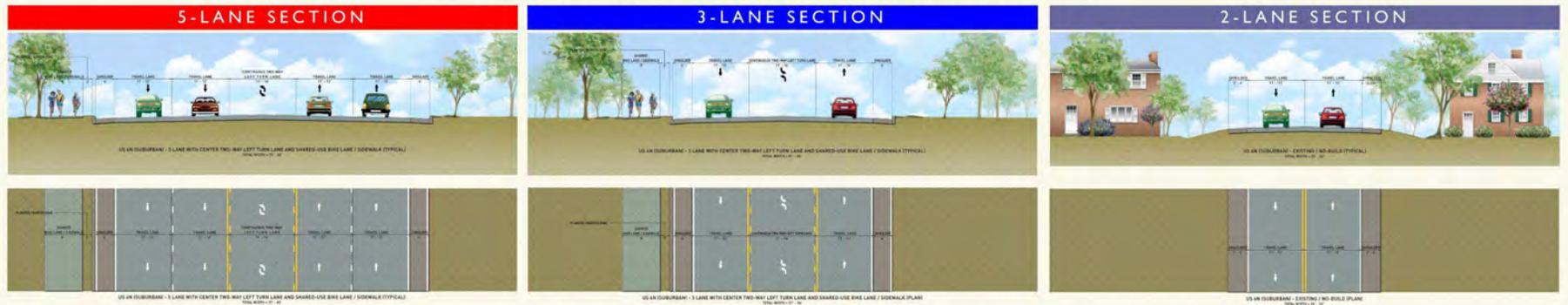


Exhibit 49: Summary Illustration of 3-Lane Alternative

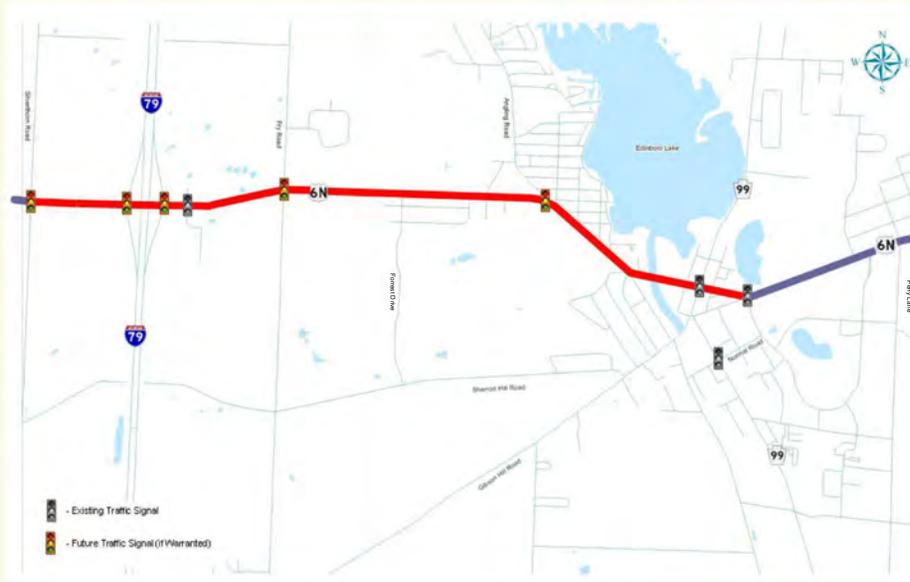
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US 6N Corridor 5-Lane Alternative

The 5-Lane Alternative modifies US 6N by widening from approximately Fry Road to Ontario Street to accommodate a continuous 5-lane section consisting of two lanes in each direction plus a center TWLTL, similar to the existing section near Washington Towne Boulevard ([Exhibit 51](#)). Between Ontario Street and Perry Lane, it was assumed that the 5-lane section would quickly transition back to the existing 2-lane section. Based on a review of this alternative and the analysis results ([Exhibit 52](#)), the following highlights apply:

- Potential advantages of the 5-Lane Alternative are as follows:
 - It will improve mobility and access along US 6N. It will specifically increase capacity throughout the corridor and result in acceptable operations at all but four locations, most of which can be addressed via spot-improvements.
 - It will likely reduce the number of crashes throughout the corridor, largely due to the provision of a shared left-turn lane or dedicated left-turn pockets, as well as a decrease in overall congestion and queuing.
 - It will improve bicycle and pedestrian circulation if designed to incorporate bicycle lanes, sidewalk, or related improvement options.
 - It will provide full access at all intersections and driveways; no access, side-street, or turn restrictions are proposed.
- Potential disadvantages of the 5-Lane Alternative are as follows:
 - It will result in significant community and environmental impacts due to widening and the required right-of-way to accommodate the 5-lane section. The roadway footprint would effectively triple the paved area in suburban sections of the corridor and would result in a 50% increase in pavement in urbanized areas.
 - It will result in high costs associated with the roadway design, construction, and right-of-way.
 - Overall, it will not comply with PennDOT's Smart Transportation goals.

FIVE-LANE SECTION



PROS

- ◆ Improves mobility and access along US 6N
- ◆ Expected reduction in crashes
- ◆ Improves bicycle and pedestrian circulation
- ◆ Acceptable operations at most intersections
- ◆ Provides full access at all intersections / driveways

CONS

- ◆ Significant community and environmental impacts.
- ◆ High construction/right-of-way costs
- ◆ Does not meet PENNDOT's "smart transportation" goals

LAND USE AND TRANSPORTATION STUDY

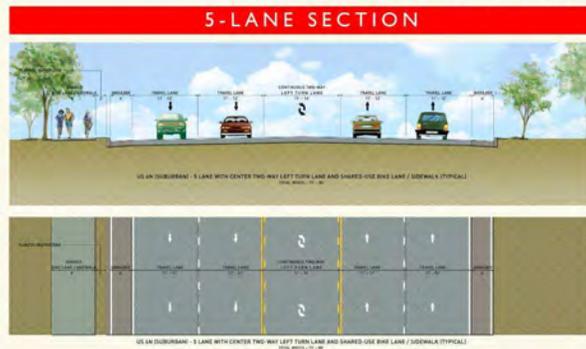


Exhibit 51: Summary Illustration of 5-Lane Alternative

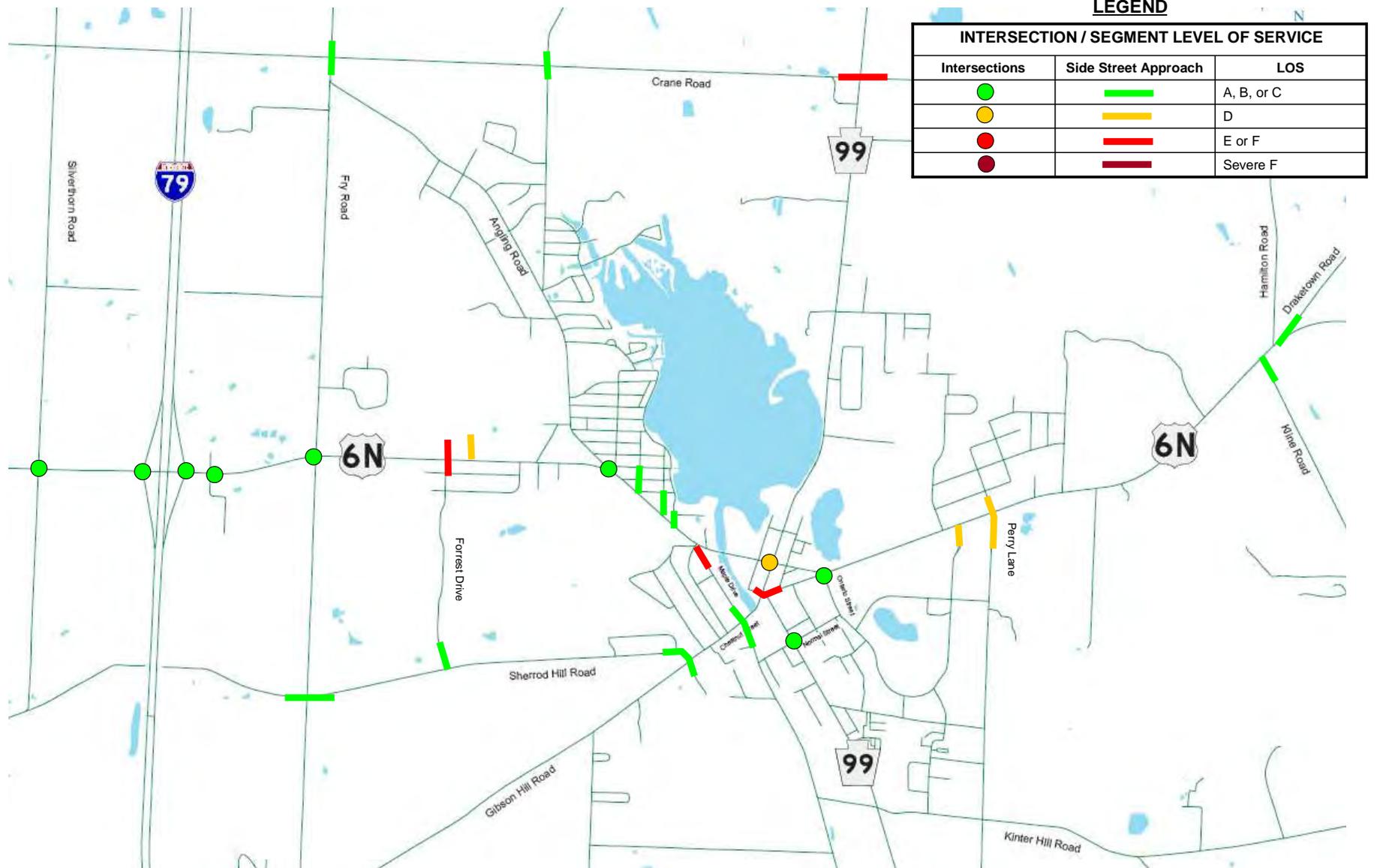


Exhibit 52: LOS Graphic for 2030 5-Lane Alternative

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US 6N Corridor 2-Lane Median Alternative

The 2-Lane Median Alternative modifies US 6N by widening the existing 2-lane section between approximately Fry Road and SR 99 to accommodate a raised median to physically separate the eastbound and westbound travel lanes ([Exhibit 54](#)). West of Fry Road, it was assumed that a 5-lane section would be extended to Silverthorn Road in conjunction with future development. East of SR 99, it was assumed that a new 3-lane section would be installed to Scotland Road, similar to the proposed 3-Lane Alternative. Analysis results for this alternative ([Exhibit 55](#)) and operations unique to this alternative are discussed in the paragraphs the follow.

In lieu of traditional roadway widening with full-access like the 3-Lane and 5-Lane Alternatives, the 2-Lane Median Alternative introduces a level of access control to help organize traffic flow, reduce conflict points, and consolidate intersection improvements. To accommodate access across the median barrier, provisions for U-turn locations must be incorporated into the roadway design. Various intersection designs can accommodate U-turns, including signalized U-turns, jughandle intersections, mid-block turnarounds, or roundabouts. Considering the intersection requirements and limited right-of-way in the US 6N corridor, roundabouts were assumed as the most reasonable solution to the U-turn issue.

Typical 1-lane and 2-lane roundabout designs are shown below in [Exhibit 53](#), and additional resource documents have been included for basic reference in [Appendix E](#).

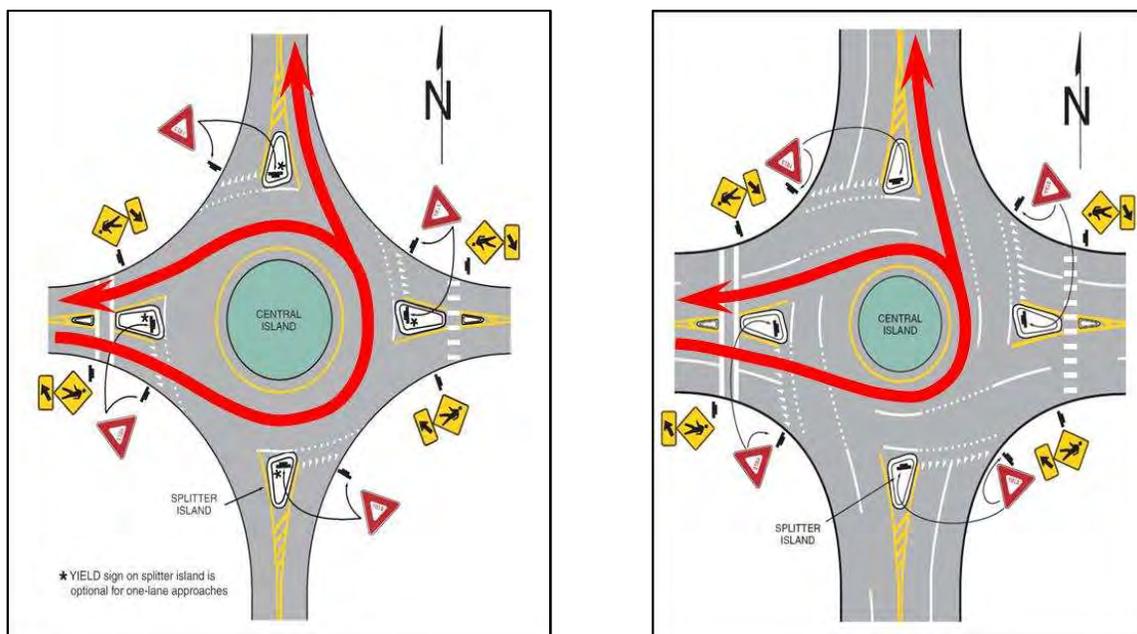
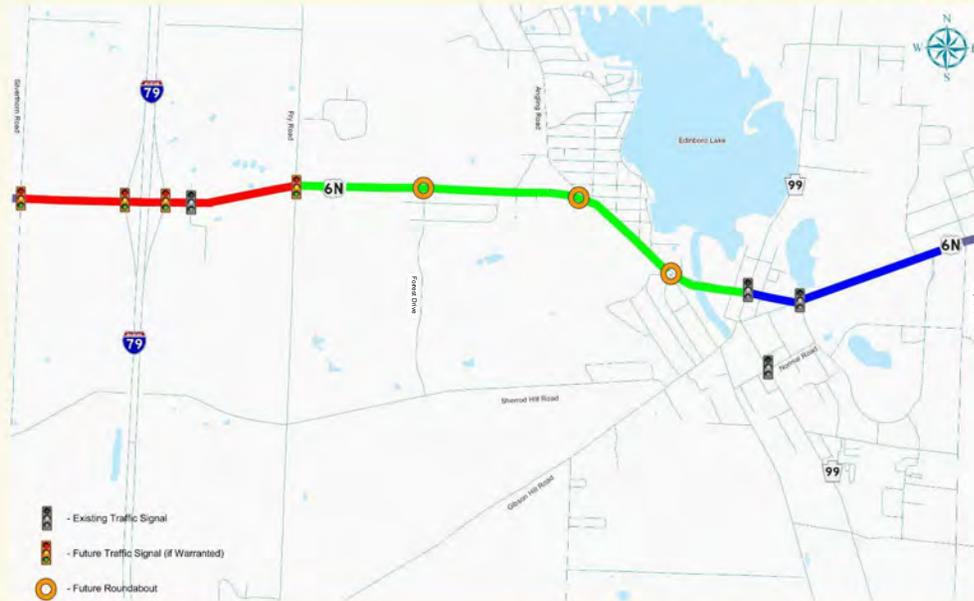


Exhibit 53: Typical Roundabout Designs

TWO LANE with MEDIAN OPTION



PROS

- ◆ Improves mobility and access along US 6N
- ◆ Expected reduction in number and severity of crashes
- ◆ Improves bicycle and pedestrian circulation
- ◆ Acceptable operations at most intersections

CONS

- ◆ Moderate community and environmental impacts
- ◆ Moderate Construction / right-of-way costs
- ◆ Diversion to enhanced Fry/Crane Road needed for acceptable single-lane roundabout operations
- ◆ Side-street access controlled at non-roundabout locations

LAND USE AND TRANSPORTATION STUDY

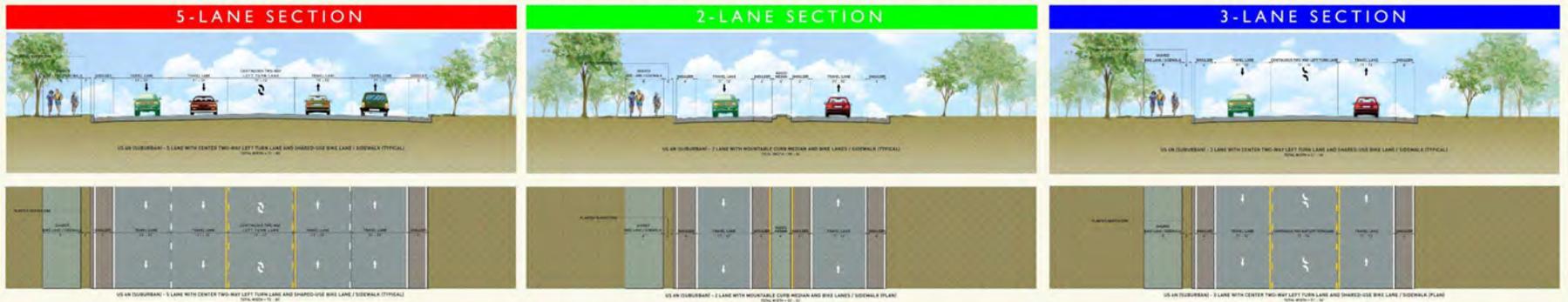


Exhibit 54: Summary Illustration of 2-Lane Median Alternative

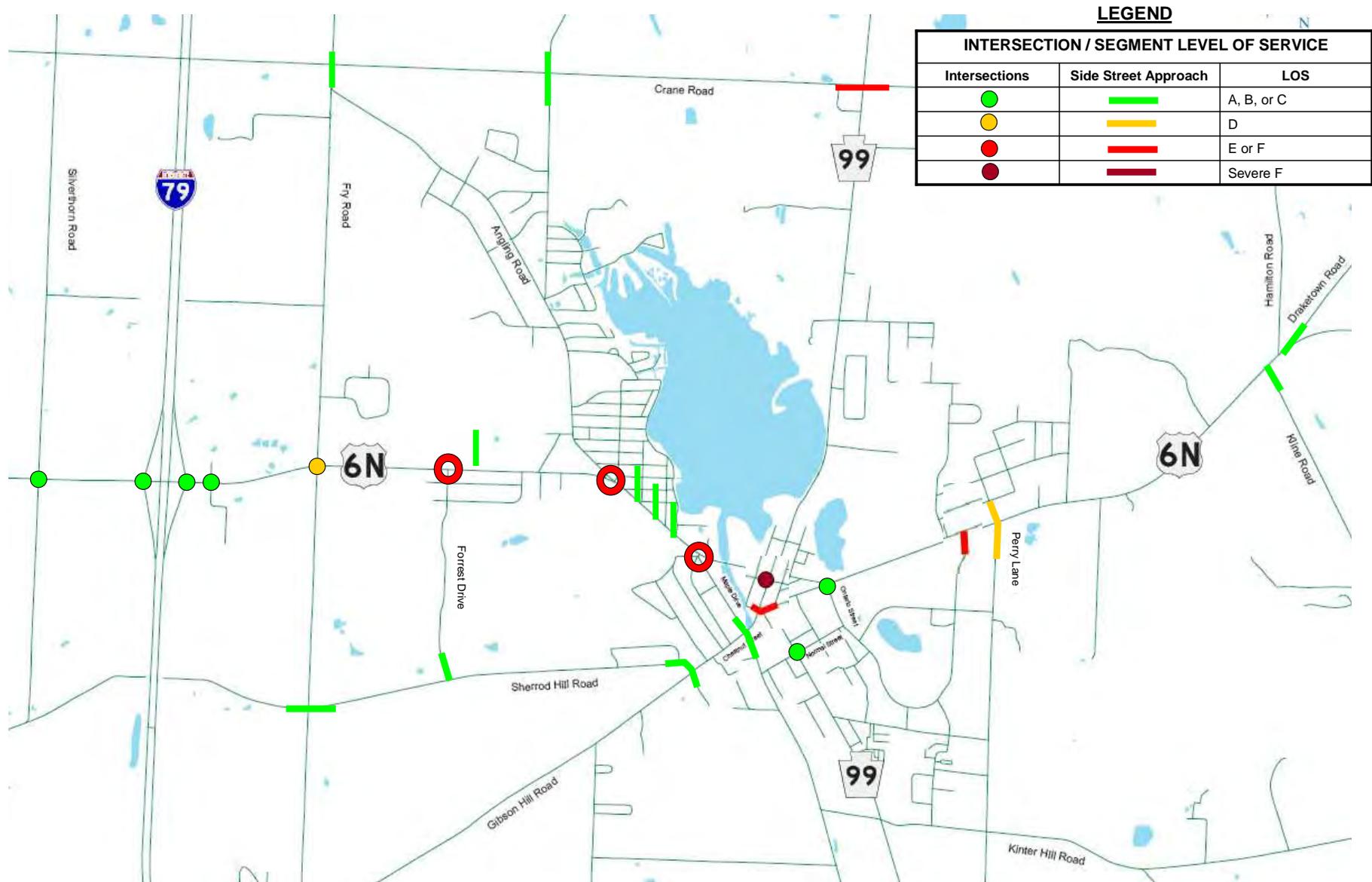
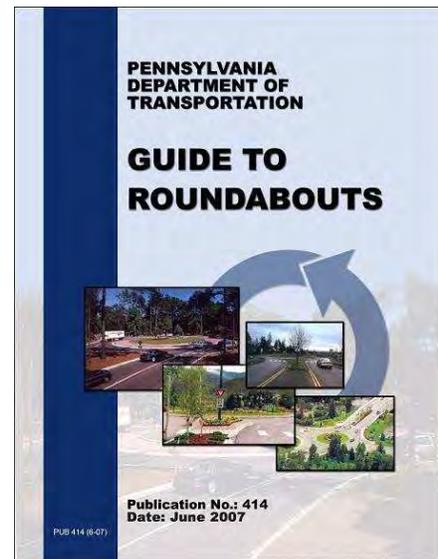


Exhibit 55: LOS Graphic for 2030 2-Lane Median Alternative

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A brief description of the modern roundabout and how it would function on US 6N is as follows:

- The modern roundabout functions as an unsignalized intersection. Vehicles on every approach must yield to vehicles already inside the roundabout.
- Turns, including U-turns, are accomplished by circulating around the central island as shown in [Exhibit 53](#). Through-movements also are subject to a slight change in their travel course as they divert around the right half of the central island.
- All movements require speed reductions as vehicles enter the roundabout, and typical design speeds inside the roundabout are 15-20 MPH, resulting in an inherent traffic calming effect at a roundabout location.
- [Exhibit 53](#) also shows typical methods for incorporating pedestrian crossings into a roundabout design. Compared to two-way stop-controlled intersections, pedestrian safety at such crossings can benefit from the aforementioned speed reductions through a roundabout.
- To accommodate heavy vehicle traffic and snow-plow operations through a roundabout, designs often incorporate a separate paved apron surrounding the central island. This apron essentially functions as a large shoulder that is not used by normal vehicle traffic, but that allows the trailing ends of larger vehicles to easily track through the intersection.



Considering the findings of this study, including specific access concerns and crash characteristics between Fry Road and SR 99, it was assumed that candidate roundabout locations would include US 6N at Forrest Drive, Angling Road, and Maple Drive. Under the 2-Lane Median Alternative, side-street access between these intersections would be blocked by a median island. Vehicles turning left to/from any blocked side-street would be forced to travel US 6N past their intended destination to turn around via the nearest roundabout and access the side-street from the opposite direction. While Synchro was utilized to analyze all signalized and unsignalized intersections, roundabout capacity was analyzed using AASidra, a software package that is more appropriate for roundabout analysis. Where applicable, AASidra analysis results are included separate from the Synchro results in [Appendix F](#).

Based on this review of the 2-Lane Median Alternative and the analysis results ([Exhibit 55](#)), the following highlights apply:

- Potential advantages of the 2-Lane Median Alternative are as follows:
 - It will improve mobility and access along US 6N. It will specifically improve access, safety, and related operations for all intersections between Fry Road and Maple Drive, particularly for those side-streets that are converted to right-in / right-out operations where cross-traffic is blocked by a median.
 - It will likely reduce the number and/or severity of crashes throughout the corridor, largely due to the physical separation between eastbound and westbound travel along US 6N, as well as the controlled-access provisions and slower-speed roundabout operations in 2-lane sections.
 - It will improve bicycle and pedestrian circulation if designed to incorporate bicycle lanes, sidewalk, or related improvement options. The narrower 2-lane section may also ease issues surrounding the acquisition of additional right-of-way to accommodate any bicycle or pedestrian improvements.
- Potential disadvantages of the 2-Lane Median Alternative are as follows:
 - It will result in moderate community and environmental impacts due to widening and the required right-of-way to accommodate the section.
 - It will result in moderate costs associated with the roadway design, construction, and right-of-way.
 - It will not provide full access at all intersections and driveways; access-control, a physical median, and turn restrictions are part of the design.
 - Overall, while the design incorporates new roundabouts, acceptable single-lane roundabout operations cannot be achieved with this alternative by itself. Other system upgrades and traffic diversions are needed to achieve acceptable single-lane roundabout operations.

US 6N Corridor 3-Lane Alternative with System Upgrades

To address certain disadvantages of the 3-Lane Alternative, a combination was analyzed to develop the 3-Lane Alternative with System Upgrades. Based on coordination with the PAC, stakeholders, and the general public, System Upgrade Option B – improving existing Fry Road and Crane Road – was assumed to be included. As shown by the forecasted traffic volumes ([Exhibit 47](#)), upgrading those roadways potentially draws 500 or more vehicles off of US 6N during the peak hour compared to the 3-Lane Alternative without system upgrades.

In contrast to what the 3-Lane Alternative could achieve by itself without system upgrades, the decrease in traffic along US 6N effectively improves most of the intersection operations to acceptable levels ([Exhibit 56](#)). Not including anticipated problems at the intersection of US 6N and SR 99, only three unsignalized intersections will fail, which is one less failure than what was projected under the 5-Lane Alternative, and with a much narrower, less impactive roadway section. The failing intersections – US 6N / SR 99, SR 99 / Chestnut Street, SR 99 / Crane Road, and US 6N / Scotland Road – may be addressed with intersection spot-improvements that are essentially independent of the overall corridor upgrade ([Sections 6.5.3](#) and [6.5.4](#))

US 6N Corridor 2-Lane Median Alternative with System Upgrades

To address certain disadvantages of the 2-Lane Median Alternative, a combination was analyzed to develop the 2-Lane Median Alternative with System Upgrades. Similar to the 3-Lane Alternative with System Upgrades, Option B – improving existing Fry Road and Crane Road – was assumed to be included. As shown by the forecasted traffic volumes ([Exhibit 47](#)), upgrading those roadways draws 500 or more vehicles off of US 6N compared to the 2-Lane Alternative without system upgrades.

In contrast to what the 2-Lane Median Alternative could achieve by itself without system upgrades, the decrease in traffic along US 6N effectively allows the proposed single-lane roundabouts to function at acceptable or marginal levels, eliminating the previously-projected roundabout failures ([Exhibit 57](#)). Not including anticipated problems at the intersection of US 6N and SR 99, only three unsignalized intersections will fail, which is one less failure than what was projected under the 5-Lane Alternative, and with a much narrower, less impactive roadway section. The failing intersections – US 6N / SR 99, SR 99 / Chestnut Street, SR 99 / Crane Road, and US 6N / Scotland Road – may be addressed with intersection spot-improvements that are essentially independent of the overall corridor upgrade ([Sections 6.5.3](#) and [6.5.4](#)).

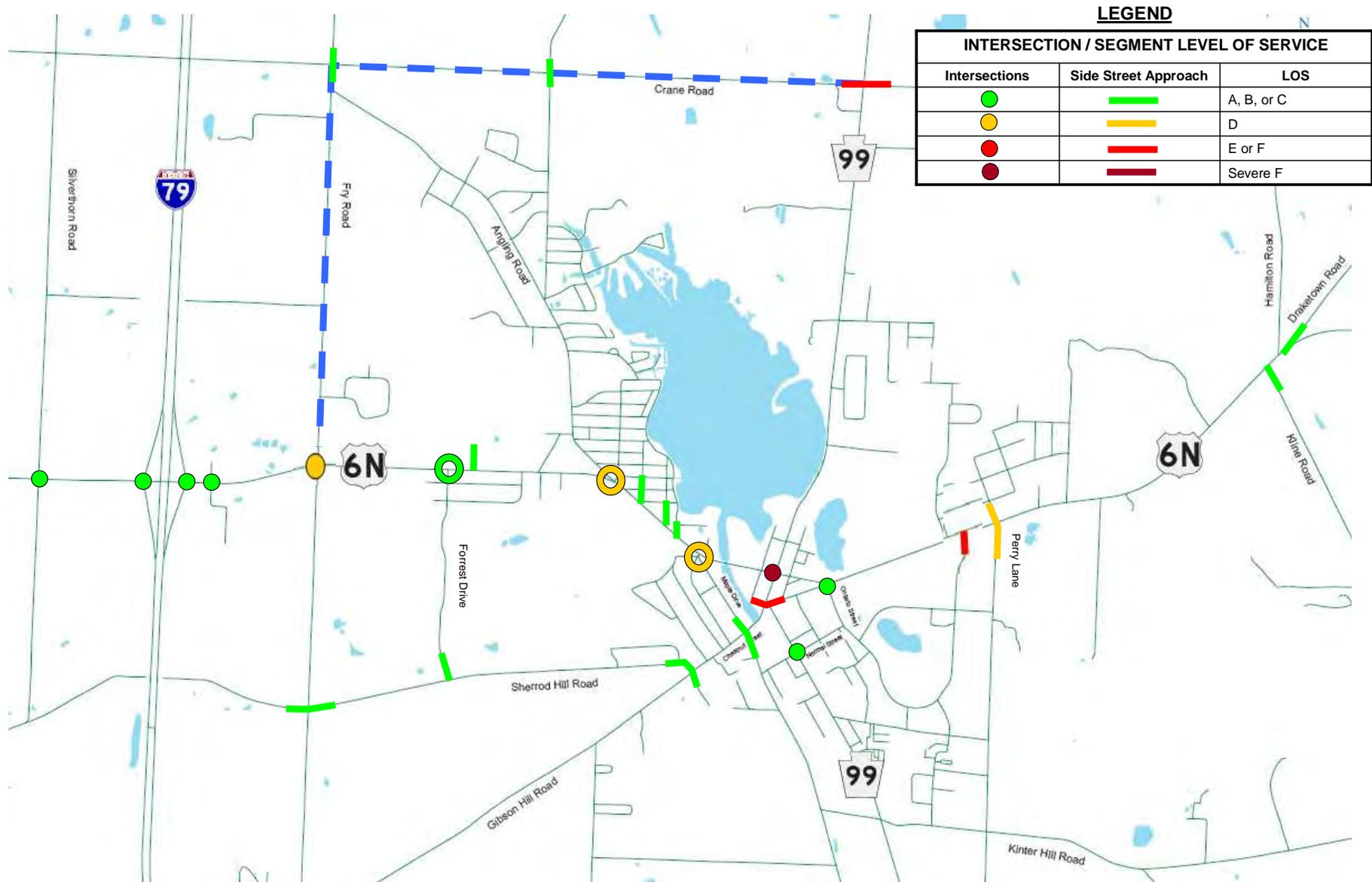


Exhibit 57: LOS Graphic for 2030 2-Lane Median Alternative with System Upgrades

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6.5.3 Intersection Options / US 6N @ SR 99

Previous findings related to travel time, intersection delay, existing capacity deficiencies, etc., verify that the intersection of US 6N and SR 99 is the most problematic source of congestion within the entire study area. Under future traffic conditions, severe failures at this intersection will continue under all US 6N corridor improvement options presented in the previous section, with the exception of the 5-Lane Alternative ([Exhibit 48](#)).

To begin to address these concerns, US 6N @ SR 99 was isolated and reviewed in more detail to identify potential improvements that may be incorporated into any one of the previously-mentioned US 6N corridor options. Including variations on the No-Build Alternative, five intersection-specific Options (A through E) were reviewed ([Exhibit 58](#)). Detailed Synchro reports for each option are included in electronic-format in [Appendix F](#), and comparative results are summarized in [Exhibit 59](#) and the sections that follow.

US 6N @ SR 99 Option A – No-Build

US 6N @ SR 99 Option A is potentially more than just a “No-Build” alternative since it could be in-place as part of other corridor-wide improvements. Based on a review of this alternative and the summary results ([Exhibit 59](#)), assuming no improvements to the intersection, the following highlights apply:

- Potential advantages of Option A are as follows:
 - It will incur no cost or right-of-way impacts.
 - It will incur no physical reconstruction or community / business impacts.
- Potential disadvantages of Option A are as follows:
 - It will result in failing operations on all approaches.
 - It will yield future congestion and delay of 2-3 times their current levels.
 - It will not meet the project goals and objectives.

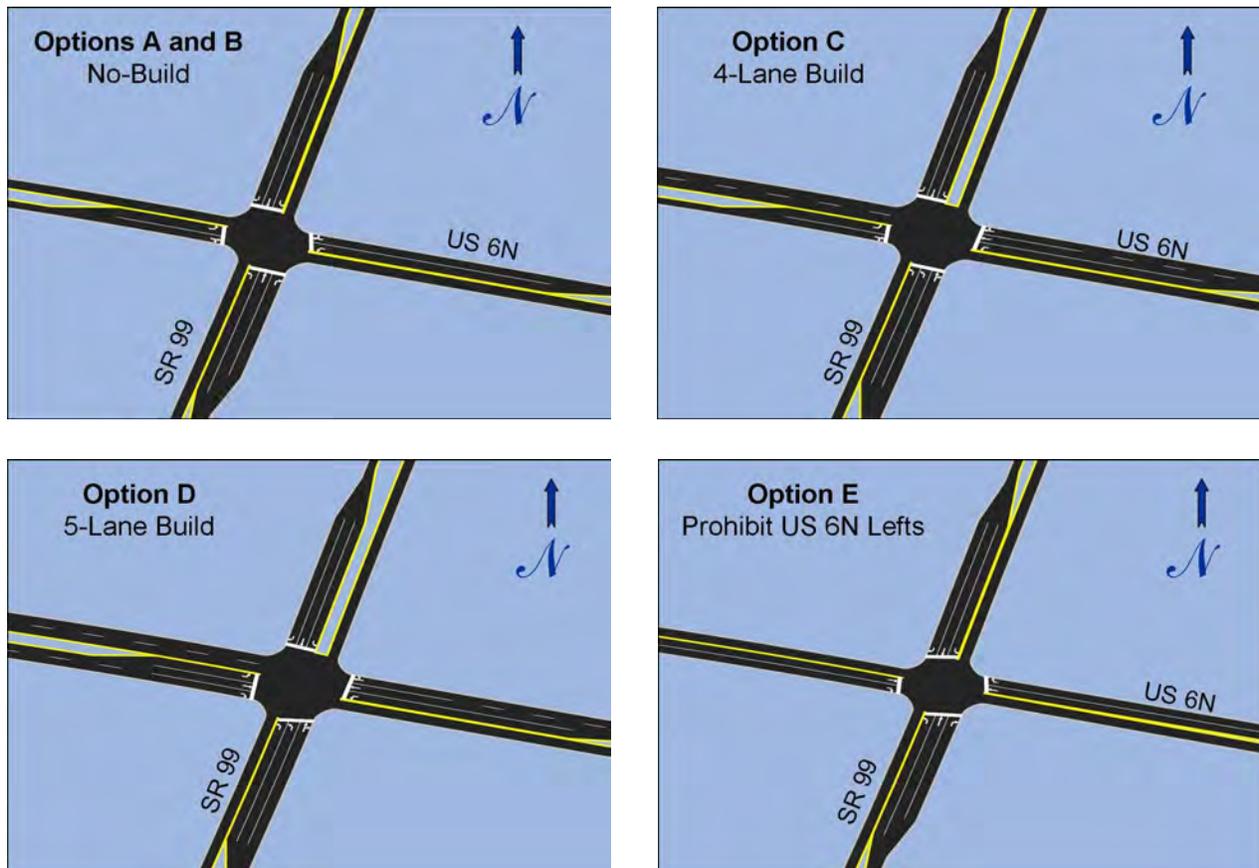


Exhibit 58: Summary Illustrations of US 6N @ SR 99 Intersection Options

Exhibit 59: LOS Table for US 6N @ SR 99 Intersection Options

Option – Description	Level of Service (Seconds of Delay per Vehicle)				
	Overall	EB	WB	NB	SB
Existing	E (63)	B (18)	F (97)	F (103)	D (42)
A – No-Build	F (171)	F (109)	F (232)	F (284)	E (63)
B – No-Build w/ System Upgrades	F (157)	F (96)	F (186)	F (251)	E (72)
C – 4-Lane Build	F (82)	F (143)	D (42)	E (57)	E (59)
D – 5-Lane Build w/ EB Lane Drop	D (41)	C (23)	D (50)	D (47)	D (52)
E – Prohibit US 6N Left Turns	E (63)	C (25)	F (88)	F (82)	E (72)

US 6N @ SR 99 Option B – No-Build with System Upgrades

US 6N @ SR 99 Option B is identical to Option A, except that it assumes that upgrades to Fry Road and Crane Road have been incorporated into the corridor-wide 3-Lane and 2-Lane Median Alternatives with System Upgrades. The system upgrades result in a decrease in traffic volumes through the US 6N / SR 99 intersection, which yields a slight reduction in the intersection delays versus Option A. However, this reduction in delay will not be significant, and system upgrades alone will not mitigate severe congestion at this location. Advantages and disadvantages of Option B will otherwise be identical to Option A.

US 6N @ SR 99 Option C – 4-Lane Build

US 6N @ SR 99 Option C modifies the intersection by adding an additional westbound through-lane on US 6N, in effect creating a short 4-lane section through the intersection consisting of one lane eastbound, two lanes westbound, and one lane to accommodate the dedicated left-turn lanes at the signal. The extra westbound lane also creates an additional receiving lane that allows the northbound SR 99 approach to be reconfigured within the existing pavement limits to accommodate double left-turn lanes onto US 6N. Based on a review of this alternative and the summary results ([Exhibit 59](#)), the following highlights apply:

- Potential advantages of Option C are as follows:
 - It will “manage” future congestion such that the projected delays for the westbound, northbound, and southbound approaches are similar to the current levels of congestion.
- Potential disadvantages of Option C are as follows:
 - It will not completely mitigate the failing operations, and delays for the eastbound approach will be particularly severe.
 - It will result in moderate to high construction and right-of-way costs.
 - It will result in moderate community / business impacts, particularly with regard to potential right-of-way requirements.
 - It will likely require some modification and/or reduction in on-street parking along SR 99 to accommodate the double left-turn lanes.
 - It does not fall within the umbrella of Smart Transportation.

US 6N @ SR 99 Option D – 5-Lane Build with Eastbound Lane Drop

US 6N @ SR 99 Option D modifies the intersection by adding an additional westbound through-lane on US 6N and accommodating double left-turn lanes from northbound SR 99 (both the same as with Option C) and by further adding an eastbound right-turn lane on US 6N. In effect, these modifications create a short 5-lane section west of SR 99 consisting of one eastbound right-turn lane, one eastbound through-lane, a dedicated eastbound left-turn lane, and two westbound travel lanes. The eastbound right-turn lane, which serves a critical movement to SR 99 south, is dropped at the intersection such that US 6N east of SR 99 continues as a 4-lane section that is identical to Option C. Based on a review of this alternative and the summary results ([Exhibit 59](#)), the following highlights apply:

- Potential advantages of Option D are as follows:
 - It will result in acceptable operations with all approaches at LOS D or better.
- Potential disadvantages of Option D are as follows:
 - It will result in significant construction and right-of-way costs.
 - It will result in significant community / business impacts, particularly with regard to potential right-of-way requirements.
 - It will likely require some modification and/or reduction in on-street parking along SR 99 to accommodate the double left-turn lanes.
 - It does not fall within the umbrella of Smart Transportation.

US 6N @ SR 99 Option E – Prohibit US 6N Left Turns

US 6N @ SR 99 Option E modifies the intersection by prohibiting left-turns from US 6N onto SR 99. The existing pavement may then be re-striped and widened, as needed, to shift the eastbound and westbound through-lanes into the center roadway area that currently accommodates the dedicated left-turn lanes, thereby allowing the creation of dedicated eastbound and westbound right-turn lanes to the outside. Accommodations for the prohibited left-turns would be as follows:

- Eastbound left-turns to SR 99 north:
 - The projected PM peak hour left-turn volume to be diverted is 160 vph under No-Build conditions. However, assuming System Upgrade Option B, which improves Fry Road and Crane Road, that volume drops to only 35 vph.
 - Access onto SR 99 north for the prohibited eastbound left-turn may be accommodated via the upgraded Fry Road / Crane Road route; or they may

be shifted locally at the US 6N / SR 99 intersection onto SR 99 south and routed as a U-turn back to SR 99 north if installed in conjunction with a new roundabout at the intersection of SR 99 and Chestnut Street.

- Westbound left-turns to SR 99 south:
 - The projected PM peak hour westbound left-turn volume to be diverted is relatively low at 20-30 vph.
 - Access into the downtown area and onto SR 99 south for the prohibited westbound left-turns may be accommodated via Waterford Street from the upstream traffic signal at US 6N and Waterford Street / Ontario Street.

Based on a review of this alternative and the summary results ([Exhibit 59](#)), the following highlights apply:

- Potential advantages of Option E are as follows:
 - It will “manage” future congestion such that the projected delays for all approaches are similar to the current levels of congestion.
 - It can be implemented with minimal cost.
 - It will result in minimal community / business impacts and no right-of-way issues.
- Potential disadvantages of Option E are as follows:
 - It will not completely mitigate the failing operations, with three of four approaches projected to remain at failure.
 - It will require additional preliminary engineering and investigation to verify its feasibility with regard to widening requirements and/or potential lane-alignment conflicts between the opposing through-lanes that are shifted.
 - It will require prohibition of the eastbound and westbound left-turns from US 6N, which will result in inconvenience for some motorists.
 - It may result in left-turn violations from motorists who are not aware of, or not willing to follow, the left-turn prohibitions. Such violations may not be expected by oncoming or trailing motorists. The revised roadway configuration will also no longer include dedicated left-turn lanes, creating the potential for left-turn violations to block the mainline travel lanes.

6.5.4 Intersection Options / Spot-Improvement Locations

In addition to the intersection of US 6N and SR 99, there are other locations throughout the study area that continue to operate at failure or experience other problems that are not solved with the installation of the US 6N corridor improvement alternatives detailed in previous sections of this report. Locations requiring additional spot-improvements include:

- SR 99 at Chestnut Street
- SR 99 at Crane Road
- US 6N at Scotland Road

SR 99 @ Chestnut Street

The unsignalized intersection of SR 99 and Chestnut Street is projected to fail under every scenario analyzed thus far. Additionally, depending on the selected improvements, queue spillback and additional delays from the US 6N / SR 99 intersection can be expected to negatively influence Chestnut Street operations. Side-street access problems, pedestrian conflicts, and potential safety-related issues further make this intersection a candidate location for additional improvements.

Both two-way and all-way stop-control would fail at this location. Due to its proximity to the existing US 6N / SR 99 signal (less than 700 feet away) and the anticipated spillback from that intersection, signalization at Chestnut Street also would function poorly. Considering the location of this intersection within the heart of the downtown area, turn restrictions or other means of access control would also likely range from unpopular to simply infeasible. One promising alternative that was reviewed was the installation of a new roundabout at the intersection of SR 99 / Chestnut Street and Waterford Street.

Based on brief field review of the site, it appeared that a roundabout could be installed with minimal right-of-way issues. Conceptual analysis of a single-lane roundabout also reveals that adequate capacity would exist on all approaches and, therefore, the roundabout would operate acceptably. During peak periods, the possibility for traffic from SR 99 at US 6N to spillback through the roundabout will still exist. However, the lower speeds, right-of-way rules, and related operational characteristics of a roundabout may actually help to manage that spillback and potential blockages at Chestnut Street, thus improving safety, operations, and access in comparison to a signalized or unsignalized alternative at this intersection. Overall, the roundabout appears to be a feasible solution for problems at this intersection; however, this study has focused on a conceptual solution only and has made no attempt to analyze any specific construction or right-of-way issues or constraints that may be encountered. Such issues will need to be investigated during future stages of design.

SR 99 @ Crane Road

Considering potential system upgrades that will increase volumes along Crane Road and Fry Road, intersection turn-lane improvements should be considered at the SR 99 / Crane Road intersection to accommodate the additional traffic while ensuring safe and acceptable operations. Specific turn lane additions would include an eastbound left-turn lane from Crane Road to SR 99 north, and a southbound right-turn lane from SR 99 to Crane Road west.



Based on anecdotal evidence and the crash characteristics at this intersection, additional modifications should be considered to simplify turning maneuvers and access from Crane Road onto SR 99. These modifications would include re-striping and re-signing of the existing passing zone along SR 99 in the vicinity of the intersection to designate the local segment as a “no-passing” zone. Regular maintenance should also verify that the stop sign and stop bar installations along eastbound and westbound Crane Road are in good condition with adequate reflectivity, and that visibility of the signs and sightlines onto SR 99 are unobstructed by vegetation or other obstructions.

US 6N @ Scotland Road

Based on the future traffic analyses and assuming that any US 6N corridor-wide alternatives would tie into the existing US 6N roadway section approximately between SR 99 and Ontario Street, it appears that all intersections east of SR 99 will operate at acceptable levels with no required modifications except at one location – US 6N @ Scotland Road. Projected traffic increases in the vicinity of this intersection result in LOS E conditions for the northbound Scotland Road traffic leaving the university area.

Based on the side-street volumes, left-turn traffic is the predominant movement, and the installation of additional turn lanes on the side-street approach would have negligible effect. Projected traffic volumes also would not meet warrant criteria to justify the installation of a new traffic signal, and a signal may not be appropriate regardless since the side-street peak periods are likely infrequent or short in duration if tied to university class schedules or sporting events.

Alternative methods to improve access from the side-street would include the installation of a new roundabout or the installation of a refuge area on US 6N to allow for a two-stage crossing, when necessary, from Scotland Road. These options may be compared as follows:

- For the roundabout:
 - Preliminary analyses indicate that a single-lane roundabout would function with more than adequate capacity under future traffic conditions.

- Other potential advantages of a roundabout at this location are that it could be incorporated as a “landmark gateway” marking the entrance to Edinboro University, and it could have a traffic calming effect for westbound US 6N traffic as it approaches downtown.
- Potential disadvantages of the roundabout may include costs or other impacts related to construction or right-of-way for the roundabout, or possible congestion or reduced-access issues during traffic surges for any major university events, such as sporting events.
- For the two-stage crossing:
 - A two-stage crossing could be accommodated by the installation of a westbound left-turn lane from US 6N onto Scotland Road. The necessary local widening that would be needed to accommodate the left-turn lane would, in effect, create a refuge area (similar to a shared TWLTL) on the west leg of the intersection. During the heaviest peaks, that refuge area would give northbound left-turns a two-stage crossing opportunity in which they would first cross eastbound US 6N, pause if needed in the center refuge area, and then enter the westbound travel stream.
 - Allowing for a two-stage crossing would improve side-street operations to acceptable levels under future traffic conditions. Provisions for the westbound left-turn lane would also provide an operational and safety benefit for westbound travel along US 6N.
 - Potential disadvantages of this option may include costs or other impacts related to construction or right-of-way for the left-turn lane. Drivers may also be more reluctant or unfamiliar with turning left as a two stage crossing, thereby capping the benefits that this improvement can realistically achieve.

6.5.5 Interchange Options

Based on feedback from the public meetings, a common suggestion to address traffic concerns along US 6N was to construct a new interchange along I-79 that would, in effect, feed an alternate or bypass route into the area or, more specifically, into the area around Edinboro University. Various suggestions have included locations south of the existing I-79 / US 6N interchange in the vicinity of Irish Road, Florek Road, or Sherrod Hill Road; or north of the existing interchange in the vicinity of Crane Road. Consideration of any new interchange would require detailed coordination between Erie and Crawford Counties, various local municipalities, PennDOT District 1-0, and the Federal Highway Administration (FHWA), including completion of a comprehensive point-of-access study that, altogether, was deemed to be beyond the scope of this corridor study. However, the interchange option was reviewed to specifically determine if the overall concept could benefit the US 6N corridor and potentially improve or mitigate the traffic-related concerns detailed for the US 6N study area. As a sample location, discussions here will focus mainly on an Irish Road interchange, which would be located in Crawford County, approximately 3.3 miles to the south of US 6N (Exhibit 60).

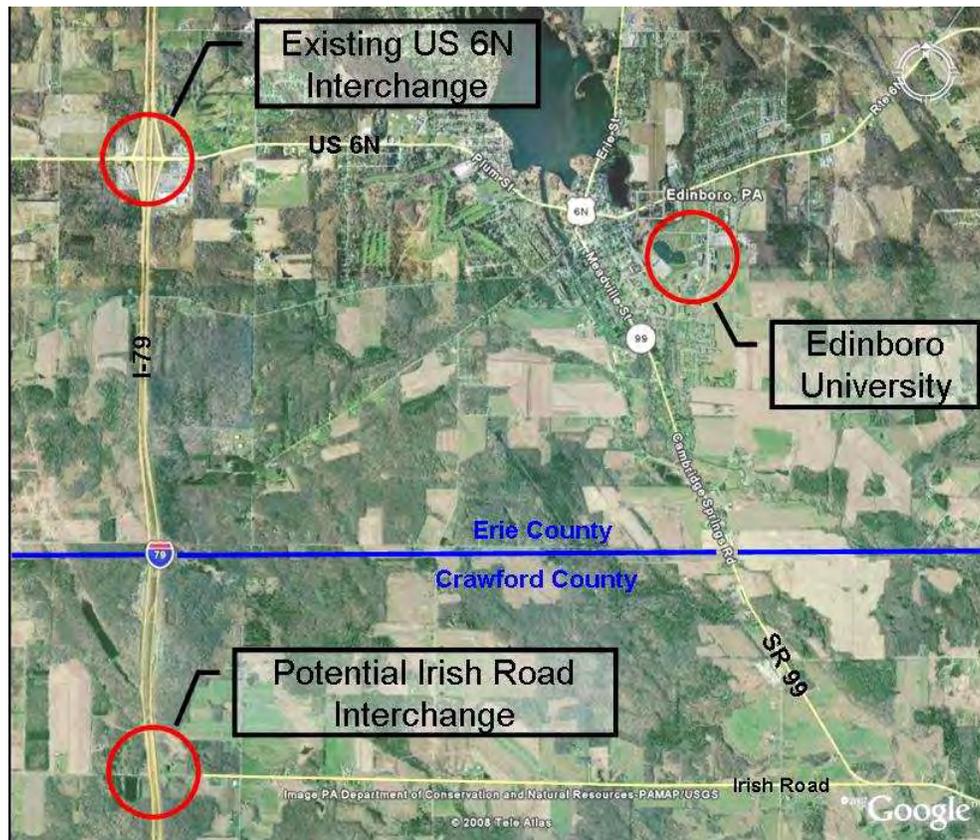


Exhibit 60: Irish Road Interchange Location Map

Source: Background mapping from Google Earth

A key consideration to the feasibility of a new interchange would be the importance and/or volume of the traffic demand that interchange would serve. In order to assess that demand, the origin-destination data within the VISUM model for this project was reviewed to identify where traffic along I-79 comes from. Key points from that review are listed below:

- Approximately two-times as much traffic currently comes to the US 6N study area from I-79 north than from I-79 south. When focused on travel from I-79 specifically to SR 99 south of US 6N, or to US 6N east of Kline Road, that difference is almost three-times as follows:
 - Around 170 trips travel from I-79 north to SR 99 south or US 6N east.
 - Around 60 trips travel from I-79 south to SR 99 south or US 6N east.
- Traffic diversion to a new interchange would be highly dependent on the potential travel time and distance benefit. For example, an interchange at Irish Road would require an additional 10 miles of travel for traffic coming from I-79 north and going to the study area via Irish Road. Given the disparity in distance and even accounting for some delay along the US 6N corridor, traffic from the north, in this case, would not likely bypass the existing US 6N interchange in favor of Irish Road.
- Most of the future growth in traffic for the US 6N study area is destined for the locations closest to the I-79 / US 6N interchange, which was a community goal. That traffic would also not likely divert to any new interchange / bypass combination outside of its local destination.

Based on the above review of the actual travel demand in the area, a new I-79 / Irish Road interchange would not be expected to divert a significant volume of traffic off of the US 6N corridor; other suggested locations at Florek Road, Sherrod Hill Road, or Crane Road would be subject to similar conclusions. Additionally, all suggested interchange locations would be too close to the existing interchange following modern design standards, and the routing of any bypass would have to avoid existing pinch-points such as US 6N at SR 99, thereby resulting in consequences elsewhere such as impacts to existing residential areas or other resources. Any new interchange / bypass combination may also be detrimental to existing downtown businesses in Edinboro in that it will divert some amount of traffic, and it may promote urban sprawl by attracting new development to the new interchange / bypass locations.

Overall, a new interchange may improve, but will not likely eliminate, congestion along US 6N; and the potential disadvantages are note-worthy: the new construction may be extremely expensive and environmentally impactful; the resulting closely-spaced interchanges along I-79 could be problematic; the option would not meet the project goal of encouraging growth in the desired areas; and it would not fit within the Smart Transportation philosophy detailed earlier in this report. It may be assumed, therefore, that a new interchange alternative would not effectively accomplish the goals and objectives identified for this US 6N corridor study.



Section 7.0 - Locally-Preferred Alternatives

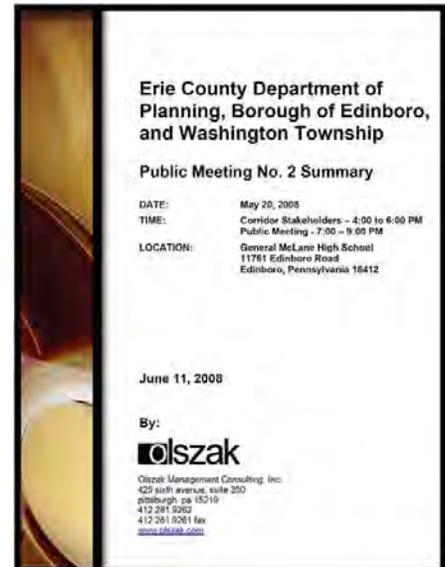


7.0 LOCALLY-PREFERRED ALTERNATIVES

7.1 PUBLIC PERSPECTIVE / PUBLIC MEETING #2

To present the improvement alternatives and related findings to the general public, Public Meeting #2 was held on May 20, 2008 at General McLane High School in Edinboro. The advertised purpose of the meeting was to “gather public feedback on a set of alternatives for addressing the project goals and objectives surrounding encouraging growth in designated areas, enhancing pedestrian and bicycle circulation and improving traffic flow.” That feedback, plus additional coordination with the PAC and corridor stakeholders, would ultimately help in the selection of a set of locally-preferred alternatives.

A complete summary of Public Meeting #2 and associated comments can be found in a June 11, 2008 report compiled and prepared by Olszak Management Consulting, Inc. ([Appendix A](#)). There were 71 attendees at Public Meeting #2 and 7 attendees at the Corridor Stakeholders Meeting held just prior. In total, 62 comment forms were received, mostly from residents who traveled the corridor daily. Overall, the majority of the respondents agreed with the proposed strategies; however, specific comments and viewpoints as to the best options were often mixed or conflicted. Key findings are:



- 90% of the respondents agreed with the future growth projections for the corridor.
- 75% of the respondents agreed with strategies to improve pedestrian and bicycle circulation. Pedestrian access across US 6N, particularly in the area of Angling Road and the future library, were common concerns. Bicycle improvements were generally well-supported, although many respondents questioned whether it was realistic to expect people to use their bicycles to access Wal-Mart due to existing hills/grades, or often enough due to the area’s harsh winters.
- 72% of the respondents preferred either the Three-Lane Alternative or the Three-Lane Alternative with System Upgrades, with many comments highlighting the safety benefit of the center turn-lane on US 6N. Responses in favor of each of the remaining alternatives were minimal, and only 2% of the respondents were in favor of the Five-Lane Alternative.
- Reactions to improvements at the US 6N / SR 99 intersection were mixed with 35% preferring the No-Build and 42% preferring the Four-Lane Alternative.

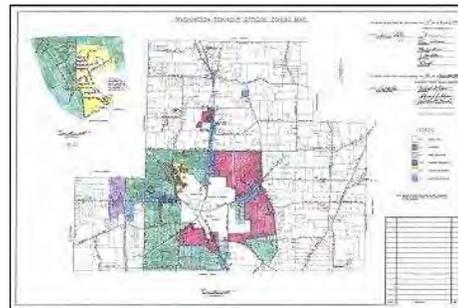
7.2 FINAL LIST OF PREFERRED ALTERNATIVES

Based on the findings of this report and extensive coordination with the PAC, community stakeholders, and the public, locally-preferred land-use and transportation improvement alternatives were selected to help achieve the project-specific goals and objectives. For ease of reference and to consolidate the improvements into a reasonable set of projects and actions that may help to facilitate efficient planning, programming, and implementation, the preferred alternatives ([Exhibit 61](#)) were organized into groups as follows:

- Group 1 – Land Use Planning
- Group 2 – Pedestrian Circulation Enhancements
- Group 3 – Bicycle Circulation Enhancements
- Group 4 – Roadway System Upgrades
- Group 5 – US 6N Corridor Upgrades
- Group 6 – Intersection Upgrades
- Group 7 – Intersection Spot-Improvements
- Group 8 – Other General Improvements

7.2.1 Group 1 – Land Use Planning

Group 1 improvements include tasks or actions related to land use planning ([Section 5.0](#)). The preferred improvements, which are intended to manage future development in the direction of the approved land use scenario and to help guide future improvements to the transportation infrastructure, are listed below.



- (1A) *Future Land Use Plan*: This task – the analysis and compilation of a set of future growth assumptions and projections into an approved land use plan - was completed as a critical early step in the overall process of this US 6N study. The approved land use plan, which was based on the land use analyses and coordination with the PAC, community stakeholders, and the public, was utilized to develop the future traffic volume forecasts for the analysis of transportation improvements. The preferred transportation improvements were thus developed under conditions that reflected the approved land use scenario.
- (1B) *Ordinance Updates (Borough of Edinboro)*: Implement future land use and access management within the Borough of Edinboro via applicable amendments ([Appendix B](#)) to the following:
 - Borough of Edinboro Zoning Ordinance
 - Borough of Edinboro SALDO

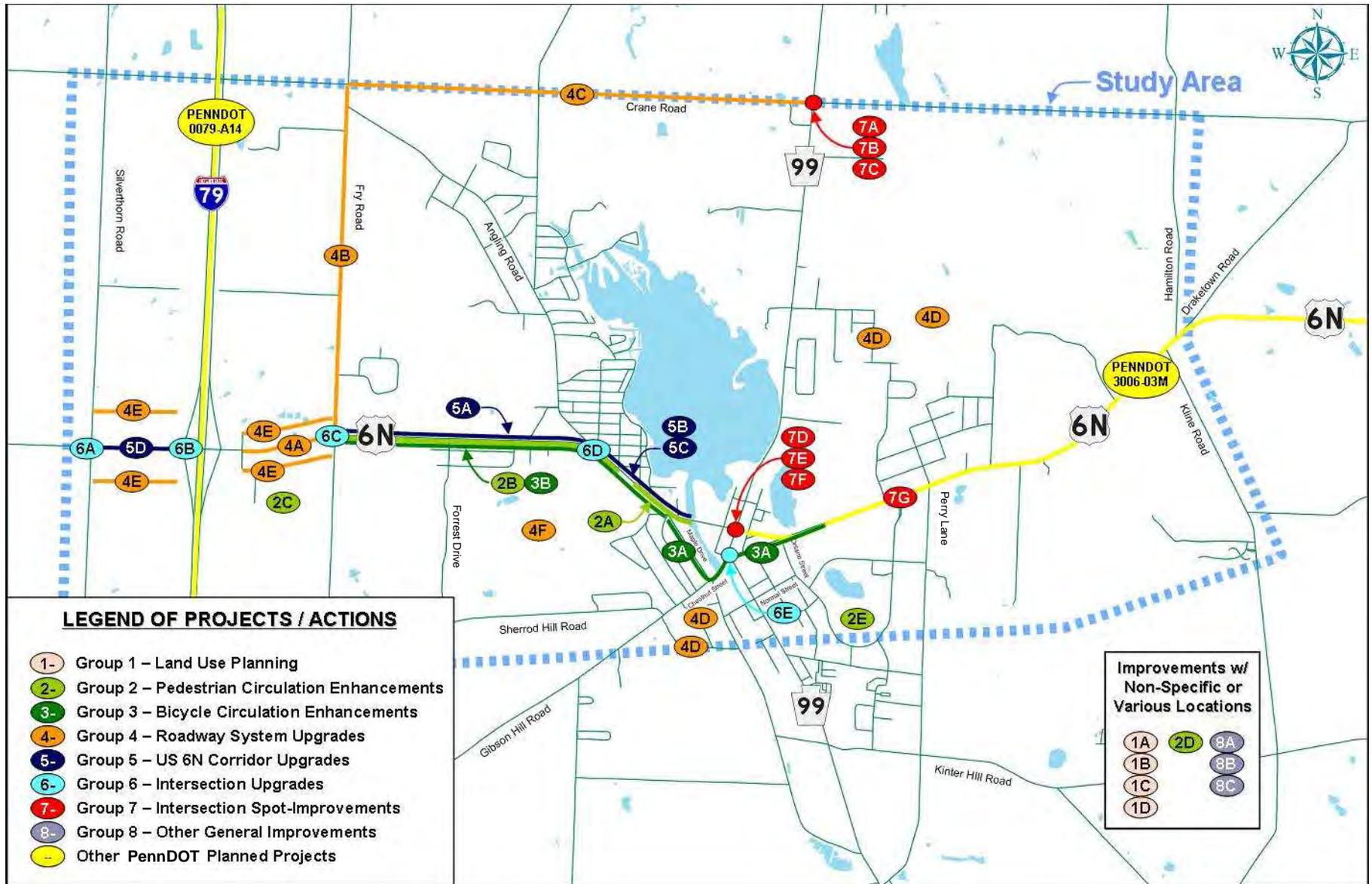


Exhibit 61: Preferred Alternative Index Map

- (1C) *Ordinance Updates (Washington Township)*: Implement future land use and access management within Washington Township via applicable amendments ([Appendix C](#)) to the following:
 - Washington Township Zoning Ordinance
 - Washington Township SALDO
 - Washington Township Driveway Ordinance
- (1D) *Official Map (Borough of Edinboro)*: Plan for the implementation of local road connections (See (4D)), marginal access roads (See (4E), (4F)), pedestrian ways, required easements, or similar pre-planned facilities, as applicable, via the preparation and adoption of an “Official Map” for the Borough of Edinboro, similar to the existing “Official Map” for Washington Township.

7.2.2 Group 2 – Pedestrian Circulation Enhancements

The preferred Group 2 improvements ([Exhibit 61](#)) focus on enhancing the existing pedestrian network and intermodal connections with transit as outlined below:



- (2A) *Sidewalk Segments*: Fill in gaps in any missing sidewalk segments along US 6N with like material. Estimates in this report are specifically for the missing sections located approximately between Jefferson Street and Maple Drive. Additional sidewalk segments at other locations may be installed and paid for by future developers once the applicable Township or Borough ordinances are updated to reflect such requirements.
- (2B/3B) *Multi-Use Path / Sidewalk*: Construct an 8'-wide concrete sidewalk or bituminous trail along the north or south side of US 6N approximately between Fry Road and Jefferson Street to jointly serve pedestrian and bicycle users. Coordinate planning and installation of this facility with other US 6N corridor improvements in the vicinity (See (5A) through (5C), and (6D)).
- (2C) *Park & Ride Lot*: Construct a park & ride lot south of US 6N, near Washington Towne Boulevard; commence shuttle service to Edinboro University.
- (2D) *Transit Access Enhancements*: Enhance bus stops, bus shelters, and curb ramps where applicable, including upgrades to ensure ADA accessibility and amenities.
- (2E) *Regional Transit Center Investigation*: Investigate the feasibility and potential benefits of constructing / locating a regional transit center at Edinboro University.

7.2.3 Group 3 – Bicycle Circulation Enhancements

The preferred Group 3 improvements ([Exhibit 61](#)) focus on enhancing the existing bicycle network as outlined below:



- (3A) *Signed Bike Route*: Post a signed bike route along Maple Drive, Chestnut Street, and Waterford Street, which will divert bicyclists away from the US 6N / SR 99 intersection.
- (2B/3B) *Multi-Use Path / Sidewalk*: Construct a facility to jointly serve pedestrian and bicycle users between Fry Road and Jefferson Street as previously detailed under the Group 2 Pedestrian Circulation Enhancements.

7.2.4 Group 4 – Roadway System Upgrades

The preferred Group 4 improvements ([Exhibit 61](#)) focus on enhancing the system-wide transportation network and improving overall operations and connectivity along the existing roadways by implementing a series of minor roadway improvements, local street connections, or marginal access roads as outlined below:

- (4A) *US 6N Merge Lane Extension*: Extend the US 6N eastbound merge lane approaching Fry Road by approximately 300’.



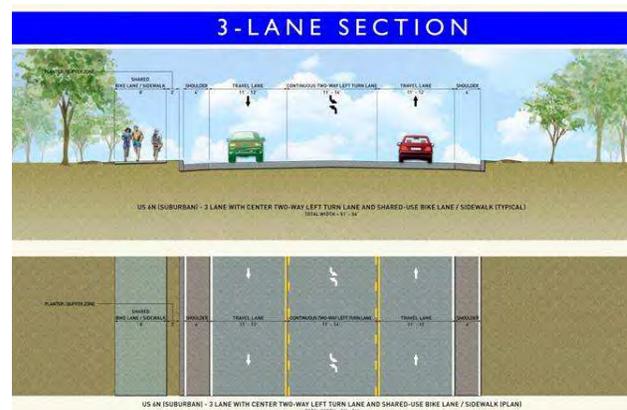
- (4B) *Fry Road Improvements / Shoulder Upgrades*: Construct minor roadway improvements and shoulder upgrades along Fry Road between US 6N and Crane Road as part of implementing “System Upgrade Option B” (See [Section 6.5.1](#)). As part of this process, investigate opportunities to conduct a road ownership “swap” in which Washington Township would take ownership of Angling Road (currently SR 3023) from PennDOT, in exchange for PennDOT taking ownership of Fry Road (currently T448) from Washington Township.
- (4C) *Crane Road Improvements / Shoulder Upgrades*: Construct minor roadway improvements and shoulder upgrades along Crane Road between Fry Road and SR 99 as part of implementing “System Upgrade Option B” (See [Section 6.5.1](#)).
- (4D) *Marginal Access Roads (Local Street Connections)*: Monitor and investigate localized (neighborhood-level) needs and potential concerns, benefits, or opportunities pertaining to the installation of additional local street connections throughout the study area. Links such as “System Upgrade Options C-D” that

connect to Walker Drive, or “Options E-F” that connect to Sherrod Hill Road (See [Section 6.5.1](#)) would not significantly contribute to solving congestion along US 6N, but could have a notable benefit for local residents with regard to access convenience or as an alternate local travel path that avoids the US 6N / SR 99 intersection. Based on localized feedback or in conjunction with future development plans, preferred connections could be advanced to design and construction or incorporated into Washington Township’s or Edinboro’s “Official Map” (See (1D)).

- (4E) *Marginal Access Roads (I-79 / US 6N Development Area)*: Continue to monitor localized (development-level) needs and potential opportunities for the installation of a series of marginal access roads in all four quadrants of the I-79 / US 6N interchange. These access roads are currently called for on Washington Township’s “Official Map”. Installation priority will be contingent on market forces which prompt development. Related costs, which are anticipated to be covered by the developers, will be contingent on the design and applicable construction standards of the final proposed facility.
- (4F) *Marginal Access Roads (US 6N / Golf Course Development Area)*: Continue to monitor localized (development-level) needs and potential opportunities for the incorporation of a marginal access road into the potential “Golf Course” development within the Borough of Edinboro. To implement this access, the Borough must adopt its own version of an “Official Map” based upon the recommendations of the Borough Engineer (See (1D)). Installation priority will be contingent on market forces which prompt development. Related costs, which are anticipated to be covered by the developers, will be contingent on the design and applicable construction standards of the final proposed facility.

7.2.5 Group 5 – US 6N Corridor Upgrades

Group 5 improvements ([Exhibit 61](#)) focus on upgrading roadway segments specifically along the US 6N corridor to improve operations, access, and safety. Generally, the preferred improvement was the “3-Lane Alternative with System Upgrades” (See [Section 6.5.2](#)), with the exception of 5-lanes west of Fry Road, and No-Build with various intersection spot-improvements (See (7D) through (7G)) essentially beginning at SR 99 and heading east. The preferred improvements are outlined below:



- (5A) US 6N (Fry Road to Angling Road) / 3-Lane Section: Approximately between Fry Road and Angling Road, construct a new 3-lane section along US 6N to include a center left-turn lane and multi-use path / sidewalk (See (2B/3B)) along the north or south side of the roadway as part of implementing the “3-Lane Alternative with System Upgrades” (See [Section 6.5.2](#)).
- (5B) US 6N (Angling Road to Outlet Bridge) / Phase 1 (3-Lane w/ Re-striping): Approximately between Angling Road and the Outlet Bridge located west of SR 99, re-stripe US 6N to accommodate a 3-lane section within the existing paved-width. Provide one travel lane in each direction, a center left-turn lane, and outside shoulders, as space permits.
- (5C, Option 1) US 6N (Angling Road to Outlet Bridge) / Phase 2 (Option 1, 3-Lane w/ Widening): Approximately between Angling Road and the Outlet Bridge located west of SR 99, re-construct US 6N to include minor widening, curb and gutter installation, and sidewalk relocation/reconstruction, as applicable, to accommodate a new 3-lane section consistent with the proposed upstream segments (See (5A)). Alternatively, to reduce costs and impacts related to right-of-way and widening requirements, consider Option 2 below (See (5C, Option 2)).
- (5C, Option 2) US 6N (Angling Road to Outlet Bridge) / Phase 2 (Option 2, 2-Lane w/ Median): Approximately between Angling Road and the Outlet Bridge located west of SR 99, maintain the existing roadway width and convert the existing 3-lane section to a 2-lane section by installing a mountable curb median to physically separate the eastbound and westbound travel lanes and re-striping the travel lanes and shoulders as necessary. The median will restrict left-turn access; required maneuvers will be consolidated to the proposed roundabout at the intersection of US 6N / Angling Road (See (6D)).
- (5D) US 6N (Silverthorn Road to Fry Road) / 5-Lane Section: In conjunction with and as driven by future planned development along US 6N, extend the existing 5-lane section west of its current end segment to Silverthorn Road.

7.2.6 Group 6 – Intersection Upgrades

Group 6 improvements ([Exhibit 61](#)) focus on upgrading or reconstructing existing unsignalized intersections to accommodate new traffic signal or roundabout installations in conjunction with other groups of improvements. The preferred improvements are highlighted as follows:

- (6A) *Traffic Signal (US 6N / Silverthorn Road)*: Install a new traffic signal when warranted in conjunction with future anticipated development and in coordination with other planned roadway improvements (See (4E) and (5D)).
- (6B) *Traffic Signal (US 6N / I-79 Southbound Ramp)*: Install a new traffic signal when warranted in conjunction with future anticipated development and in coordination with other planned roadway improvements (See (4E) and (5D)).
- (6C) *Traffic Signal (US 6N / Fry Road)*: Install a new traffic signal when warranted in conjunction with future anticipated development and in coordination with other planned roadway improvements (See (4E) and (5D)).
- (6D) *Roundabout (US 6N / Angling Road)*: Construct a new roundabout to improve intersection operations, safety, and access. Construction should be coordinated with related corridor improvements along US 6N (See (5A) through (5C)).
- (6E) *Roundabout (SR 99 / Chestnut Street / Waterford Street)*: Construct a new roundabout at this location to improve intersection operations, safety, and access.

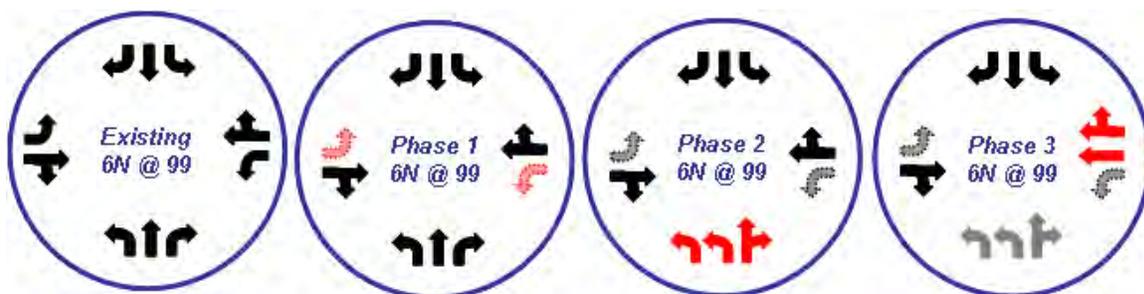


7.2.7 Group 7 – Intersection Spot-Improvements

Group 7 improvements ([Exhibit 61](#)) focus on specific intersection spot-improvements such as re-striping, turn lane additions or modifications, or traffic signal revisions at the following locations: SR 99 / Crane Road, US 6N / SR 99, and US 6N / Scotland Road. The preferred improvements are highlighted as follows:

- (7A) *SR 99 / Crane Road Phase 1 (No-Passing Zones)*: Re-stripe and re-sign the existing passing-zones along SR 99 approaching Crane Road with “No-Passing” zones to improve operations and safety through the intersection.
- (7B) *SR 99 / Crane Road Phase 2 (EB Left-Turn Lane)*: Construct a new eastbound left-turn lane on Crane Road at SR 99 to improve intersection operations and to help accommodate traffic pattern changes as part of “System Upgrade Option B” (See [Section 6.5.1](#)).

- (7C) SR 99 / Crane Road Phase 3 (SB Right-Turn Lane): Construct a new southbound right-turn lane on SR 99 at Crane Road to improve intersection operations and to help accommodate traffic pattern changes as part of “System Upgrade Option B” (See Section 6.5.1).
- (7D) US 6N / SR 99 Phase 1 (Left-Turn Prohibitions): Prohibit eastbound and westbound left-turns from US 6N during peak periods only via the installation of fiber-optic blank-out signs and corresponding traffic signal modifications. Note that additional preliminary engineering and investigation of this option should first be completed to verify its feasibility. If coupled with re-striping, through-lane shifts, and the addition of dedicated right-turn lanes in lieu of dedicated left-turn lanes (Refer to Section 6.5.3), additional widening and/or other improvements may be required to avoid lane-alignment conflicts between the opposing through-lanes. Implementation of any left-turn prohibitions should also be coordinated with appropriate re-routing of the desired movements as follows:
 - Access onto SR 99 north for the prohibited eastbound left-turn may be accommodated via the upgraded Fry Road / Crane Road route (See (4B) and (4C)); or they may be shifted locally at the US 6N / SR 99 intersection onto SR 99 south and routed as a U-turn back to SR 99 north if installed in conjunction with a new roundabout at the intersection of SR 99 and Chestnut Street / Waterford Street (See (6E)).
 - Access into the downtown area and onto SR 99 south for the prohibited westbound left-turns may be accommodated via Waterford Street from the upstream traffic signal at US 6N and Waterford Street / Ontario Street. Subsequent access from Waterford Street onto SR 99 may also be eased if installed in conjunction with a new roundabout at the intersection of SR 99 and Chestnut Street / Waterford Street (See (6E)).



- (7E) *US 6N / SR 99 Phase 2 (4-Lane West / NB Dual Left-Turns)*: Construct a 4-lane segment on US 6N west of the intersection to allow for the installation of northbound dual left-turn lanes from SR 99.
- (7F) *US 6N / SR 99 Phase 3 (4-Lane East / WB Dual Through-Lanes)*: Construct a 4-lane segment on US 6N east of the intersection to allow for the installation of westbound dual through-lanes crossing SR 99.
- (7G) *US 6N / Scotland Road (WB Left-Turn Lane)*: Construct roadway widening along US 6N to provide a westbound left-turn lane accessing Scotland Road, as well as a potential center lane refuge area for two-stage left-turns from northbound Scotland Road.

7.2.8 Group 8 – Other General Improvements

- (8A) *Winter Weather Driver Education and Public Outreach*: Develop and implement various programs to help educate the local driving population with regard to safe driving tips/techniques for use during inclement weather. Activities may especially focus on the Edinboro University population or others who may not be as experienced with safe driving practices during inclement weather. This education and outreach can be accomplished using any of the methods detailed in [Section 6.3.3](#), including providing links to the PennDOT RWIS information via the University’s communications and internet system, or providing PennDOT informational brochures on winter weather driving to Edinboro University students and their families.
- (8B) *Monitor Localized Issues / Concerns (Truck Traffic)*: Within the limited scope and boundaries of this study, no definitive or compelling problems related to truck traffic were identified. Both Washington Township and the Borough of Edinboro should continue monitoring any recurring truck-related complaints or locally-perceived problems to determine if there are specific issues or concerns that may need to be addressed in the future. Strategies to manage or mitigate various types of truck-related issues are detailed in [Section 6.2](#). Of those strategies, “Improved Traffic Flow” will be an inherent benefit along US 6N for all vehicles, including trucks, as a result of other improvement alternatives generated by this study.
- (8C) *Monitor Localized Issues / Concerns (Special Events / Incident Management)*: Within the limited scope and boundaries of this study, no definitive or compelling problems related to special events or incident management were identified. Both Washington Township and the Borough of Edinboro should continue monitoring any recurring events, planned or unplanned, that may dictate the need to develop a pre-determined event-specific, area-specific, or corridor-specific incident management plan. Typical requirements and strategies for developing such a plan are detailed in [Section 6.4](#).

When combined, it is projected that the above groups of preferred alternatives will satisfy all of the project goals and objectives, improve safety along the study area roadways, and eliminate all intersection failures that were previously identified throughout this report.

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Section 8.0 - Project Action Plan



8.0 PROJECT ACTION PLAN

A final “Project Action Plan” was developed as a complete set of locally-preferred alternatives for this *US 6N Land Use and Transportation Study* with references to specific groups of projects or actions, responsible parties, cost estimates, and assumed priorities ([Exhibit 62](#)). A summary description of each alternative may be found in the previous section of this report ([Section 7.2](#)), and additional details are included throughout this document and its appendices.

Conceptual cost estimates ([Exhibit 62](#) and [Appendix G](#)) were developed based on reasonable quantity, unit-price, and related assumptions for the anticipated project or action. It should be noted that the estimates prepared for this study do not account for three potentially significant categories of items – right-of-way, utilities, and environmental impacts or related mitigation requirements. It is anticipated that costs associated with any one of those categories will need to be addressed during subsequent conceptual or preliminary design stages for any given project or action.

The assignment of a “Responsible Party” and “Priority Rating” ([Exhibit 62](#)) was based on engineering judgment considering the anticipated location, scope, type, and cost associated with any project or action. The “Priority Rating” was not intended to represent a specific calendar schedule or group; rather it balances the relative level of need for a specific alternative with the anticipated timeframe within which that alternative can be reasonably implemented. Ratings were assigned as “A” for immediate, “B” for short to mid-term, “C” for long-term, and “Ongoing” for continuous or regular tasks such as monitoring of certain conditions.

It should be emphasized that most PennDOT-funded transportation projects must be reviewed and approved through the Erie County MPO / PennDOT process before being placed on the Transportation Improvements Program (TIP) list. Realistically, this process could take five to seven years from proposal to project initiation. During the interim, Washington Township and the Borough of Edinboro should take action on access management ordinances or other alternatives that do not require extensive funds or processing through the formal TIP / Long-Rang Plan process. Both municipalities should explore cooperative efforts with each other, PennDOT, Edinboro University, EMTA, local developers, or other applicable parties. Both municipalities should also explore the potential of promoting certain projects as “3R” maintenance activities, identify opportunities for developer-funded improvements, or consider alternate sources of funding such as grants, transportation enhancements funds, or specific programs such as the Highway Safety Improvement Program, Safe Routes to School, Main Street or Elm Street programs, or Congestion Mitigation and Air Quality (CMAQ) funding.

Over time, as more and more of the locally-preferred alternatives are implemented, it is anticipated that significant strides will be made toward the fulfillment of the project-specific goals and objectives to encourage growth within the desired areas, enhance pedestrian and bicycle circulation, and improve traffic flow throughout the study area – all with the ultimate goal of achieving the desired long-term vision for US 6N and the surrounding communities.

Exhibit 62: Project Action Plan

Group ID	Project or Action	Responsible Party	Conceptual Cost^{1,2}	Priority Rating³
1	Land Use Planning			
(1A)	Future Land Use Plan	Borough, Township	N/A	Complete
(1B)	Ordinance Updates (Borough of Edinboro)	Borough	Nominal ⁴	A
(1C)	Ordinance Updates (Washington Township)	Township	Nominal ⁴	A
(1D)	Official Map (Borough of Edinboro)	Borough	Nominal ⁴	A
2	Pedestrian Circulation Enhancements			
(2A)	Sidewalk Segments	Borough, Developers	\$85,000	A/B
(2B/3B)	Multi-Use Path / Sidewalk	Borough, Township, PennDOT	\$545,000	A
(2C)	Park & Ride Lot	EMTA, Edinboro University	\$1,009,000	B
(2D)	Transit Access Enhancements	EMTA, PennDOT	\$64,000	B
(2E)	Regional Transit Center Investigation	EMTA, Edinboro University	Project Driven	B
3	Bicycle Circulation Enhancements			
(3A)	Signed Bike Route	Borough, PennDOT	\$2,000	A
(2B/3B)	Multi-Use Path / Sidewalk	See Group 2	See Group 2	See Group 2
4	Roadway System Upgrades			
(4A)	US 6N Merge Lane Extension	PennDOT	\$138,000	A
(4B)	Fry Road Improvements and Shoulder Upgrades	Township, PennDOT	\$732,000	A
(4C)	Crane Road Improvements and Shoulder Upgrades	Township, PennDOT	\$955,000	A
(4D)	Marginal Access Roads (Local Street Connections)	Borough, Township	Project Driven	B
(4E)	Marginal Access Roads (I-79 / US 6N Development Area)	Developers (Cost), Township, PennDOT (Permits)	Developer Driven	B/C
(4F)	Marginal Access Roads (US 6N / Golf Course Development Area)	Developers (Cost), Township, PennDOT (Permits)	Developer Driven	B/C

Exhibit 62: Project Action Plan (Continued)

Group ID	Project or Action	Responsible Party	Conceptual Cost ^{1,2}	Priority Rating ³
5	US 6N Corridor Upgrades			
(5A)	US 6N (Fry Road to Angling Road) 3-Lane Section	PennDOT	\$1,348,000	B
(5B)	US 6N (Angling Road to Outlet Bridge) Phase 1 (3-Lane w/ Re-Striping)	PennDOT	\$22,000	A
(5C) Option 1	US 6N (Angling Road to Outlet Bridge) Phase 2 (Option 1, 3-Lane w/ Widening)	PennDOT	\$584,000	B
(5C) Option 2	US 6N (Angling Road to Outlet Bridge) Phase 2 (Option 2, 2-Lane w/ Median)	PennDOT	\$199,000	B
(5D)	US 6N (Silverthorn Road to Fry Road) 5-Lane Section	PennDOT, Future Developers	Developer Driven	C
6	Intersection Upgrades			
(6A)	Traffic Signal (US 6N / Silverthorn Road)	Developers (Cost), Township, PennDOT (Permits)	\$162,000	B
(6B)	Traffic Signal (US 6N / I-79 Southbound Ramp)	Developers (Cost), Township, PennDOT (Permits)	\$162,000	B
(6C)	Traffic Signal (US 6N / Fry Road)	Developers (Cost), Township, PennDOT (Permits)	\$162,000	B
(6D)	Roundabout (US 6N / Angling Road)	Borough, PennDOT	\$953,000	A/B
(6E)	Roundabout (SR 99 / Chestnut St / Waterford St)	Borough, PennDOT	\$560,000	A/B
7	Intersection Spot-Improvements			
(7A)	SR 99 / Crane Road Phase 1 (No-Passing Zones)	Township, PennDOT	\$16,000	A
(7B)	SR 99 / Crane Road Phase 2 (EB Left-Turn Lane)	Township, PennDOT	\$147,000	A
(7C)	SR 99 / Crane Road Phase 3 (SB Right-Turn Lane)	Township, PennDOT	\$32,000	A
(7D)	US 6N / SR 99 Phase 1 (Left-Turn Prohibitions)	PennDOT	\$31,000	B
(7E)	US 6N / SR 99 Phase 2 (4-Lane West / NB Dual Left-Turns)	PennDOT	\$250,000	C
(7F)	US 6N / SR 99 Phase 3 (4-Lane East / WB Dual Through-Lanes)	PennDOT	\$250,000	C
(7G)	US 6N / Scotland Road (WB Left-Turn Lane)	PennDOT, Edinboro University	\$276,000	C

Exhibit 62: Project Action Plan (Continued)

Group ID	Project or Action	Responsible Party	Conceptual Cost ^{1,2}	Priority Rating ³
8	Other General Improvements			
(8A)	Winter Weather Driver Education and Public Outreach	Edinboro University, PennDOT, Borough, Township	Nominal	Ongoing
(8B)	Monitor Localized Issues / Concerns (Truck Traffic)	Borough, Township	Nominal	Ongoing
(8C)	Monitor Localized Issues / Concerns (Special Events / Incident Management)	Borough, Township	Nominal	Ongoing
-	TOTAL			
All	Total Package of All Improvements Above, minus Project or Developer-Driven Costs	Varies	\$8,684,000	Varies

Note 1: Estimates are intended for conceptual use only, are based on year 2008 dollars rounded to the nearest \$1000, and include 15% contingency, 12% engineering, and 8% construction inspection costs.

Note 2: Estimates do not include potentially substantial costs related to right-of-way, utilities, and environmental impacts or related mitigation.

Note 3: Priority ratings were assigned as "A" for immediate, "B" for short to mid-term, "C" for long-term and "Ongoing" for continuous or regular tasks such as monitoring of certain conditions.

Note 4: Nominal costs would include staff time and legal advertisement.



Section 9.0 - References



9.0 REFERENCES

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Manual on Uniform Traffic Control Devices (MUTCD). Federal Highway Administration. 2003 Edition, including Revision 1 dated November 2004.

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Publication 236M: Handbook of Approved Signs. Pennsylvania Department of Transportation. 2006.

Publication 414: Guide to Roundabouts. Pennsylvania Department of Transportation. June 2007.

Publication 578: Single Lane Roundabout – General Information and Driving Tips for Motorists. Pennsylvania Department of Transportation. June 2006.

Publication 579: Single Lane Roundabout – General Information for Bicyclists and Pedestrians. Pennsylvania Department of Transportation. June 2006.

Publication 580: Multi-Lane Roundabout – General Information and Driving Tips for Motorists. Pennsylvania Department of Transportation. June 2006.

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VISUM. PTV America. Wilmington, Delaware.



Appendices



APPENDIX A: PUBLIC INVOLVEMENT SUMMARIES

The materials listed below are included in Appendix A. For ease of reference, the public meeting summary reports marked by an asterisk () have been included in hard-copy format. All other materials are included in electronic-format only on an enclosed CD at the end of this report.*

Appendix A1: Public Meeting 1

- * November 28, 2007, Meeting Summary Report
- November 28, 2007, Meeting Presentation
- November 28, 2007, Meeting Display Boards

Appendix A2: Public Meeting 2

- * May 20, 2008, Meeting Summary Report
- May 20, 2008, Meeting Presentation
- May 20, 2008, Meeting Display Boards

Appendix A3: PAC Meetings

- PAC #1 Meeting Presentation (August 22, 2007)
- PAC #2 Meeting Presentation (September 26, 2007)
- PAC #3 Meeting Presentation (April 8, 2008)
- PAC #4 Meeting Presentation (May 7, 2008)
- PAC #5 Meeting Presentation (June 23, 2008)

APPENDIX B: AMENDMENTS FOR THE BOROUGH OF EDINBORO

The materials listed below are included in Appendix B. For ease of reference, Appendix B is included in both hard-copy and electronic-format on an enclosed CD at the end of this report.

Appendix B1: Zoning Ordinance

Appendix B2: SALDO

APPENDIX C: AMENDMENTS FOR WASHINGTON TOWNSHIP

The materials listed below are included in Appendix C. For ease of reference, Appendix C is included in both hard-copy and electronic-format on an enclosed CD at the end of this report.

Appendix C1: Zoning Ordinance

Appendix C2: SALDO

Appendix C3: Driveway Ordinance

APPENDIX D: EXISTING PLANNING DOCUMENTS

The materials listed below are included in Appendix D. All materials are included in electronic-format only on an enclosed CD at the end of this report.

Appendix D1: Zoning Ordinance (Borough of Edinboro)

Appendix D2: Zoning Ordinance (Washington Township)

Appendix D3: Zoning Ordinance (Franklin Township)

Appendix D4: Erie County Documents

- Citizen Survey (March 2002)
- Demographic Study (January 2003)
- Land Use Plan (December 2003)
- 2007 Twelve Year Plan (September 22, 2005)
- 2030 Transportation Plan, Part IV – Transportation Needs (August 17, 2007)

APPENDIX E: TRAFFIC DATA

The materials listed below are included in Appendix E. All materials are included in electronic-format only on an enclosed CD at the end of this report.

Appendix E1: ATR Data (Volume)

Appendix E2: ATR Data (Class)

Appendix E3: ATR Data (Speed)

Appendix E4: ATR Data (Gap)

- Site 1 Summary (US 6N, East of I-79)
- Site 2 Summary (SR 99, South of US 6N)
- Site 3 Summary (US 6N, East of Edinboro University)
- Site 4 Summary (SR 99, North of US 6N)
- Summary (PENNDOT ITMS Comparison)

Appendix E5: TMC Data

- Raw TMC Data – Sites 01 through 28
- TMC Location Map

Appendix E6: OD Survey

- Survey Site Map and Sample Data Sheet
- Summary Results

Appendix E7: Travel Times

- SR 99 (Node Map, NB, SB)
- US 6N Travel Time (Westbound)

Appendix E8: Roundabout Resources

- PENNDOT Publication 414 (*Guide to Roundabouts*)
- PENNDOT Publication 578 (*Single Lane Roundabout – General Information and Driving Tips for Motorists*)
- PENNDOT Publication 579 (*Single Lane Roundabout – General Information for Bicyclists and Pedestrians*)
- PENNDOT Publication 580 (*Multi-Lane Roundabout – General Information and Driving Tips for Motorists*)
- 2005 Technical Article (*Roundabout Lighting*)
- 2008 Technical Article (*Selling Roundabouts: A Work in Progress*)
- Miscellaneous Roundabout Website Links

APPENDIX F: TRAFFIC ANALYSIS

The materials listed below are included in Appendix F. All materials are included in electronic-format only on an enclosed CD at the end of this report.

Appendix F1: Crash Analysis Summary

Appendix F2: Synchro Output

- Base
- No-Build
- 3-Lane Alternative
- 5-Lane Alternative
- 2-Lane Median Alternative
- 3-Lane Alternative with System Upgrades
- 2-Lane Median Alternative with System Upgrades
- US 6N @ SR 99 Options
- 3-Lane Preferred Alternative

Appendix F3: SIDRA Output

- Select Roundabout Analysis / Base Conditions
- Select Roundabout Analysis / Future 1-Lane Roundabouts
- Select Roundabout Analysis / Future 2-Lane Roundabouts
- Select Roundabout Analysis / Roundabouts with Future Diversion
- Select Roundabout Analysis / US 6N @ SR 99

APPENDIX G: CONCEPTUAL QUANTITY AND COST ESTIMATES

The materials listed below are included in Appendix G. All materials are included in electronic-format only on an enclosed CD at the end of this report.

Appendix G1: Conceptual Quantity Estimates

Appendix G2: Conceptual Cost Estimates

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WELCOME TO EDINBORO



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300 Seven Fields Boulevard - Suite 130 • Seven Fields, PA 16046



Appendix A: Public Involvement Summaries



Erie County Department of Planning, Borough of Edinboro, and Washington Township

Public Meeting No. 1 Summary

DATE: November 28, 2007
TIME: Corridor Stakeholders – 4:00 to 5:00 PM
Public Meeting - 6:00 – 8:00 PM
LOCATION: General McLane High School
11761 Edinboro Road
Edinboro, Pennsylvania 16412

December 21, 2007

By:



Olszak Management Consulting, Inc.
425 sixth avenue, suite 350
pittsburgh, pa 15219
412.281.9262
412.281.9261 fax
www.olszak.com

Executive Summary

Purpose of Meeting:

The purpose of the meeting is to introduce the project, present preliminary traffic study findings, and gather public input on study goals and objectives as well as identification of trouble spots along the corridor.

Who Was Invited:

Meeting invitation postcards were mailed to corridor stakeholders including local, county and state public officials, businesses, emergency services, and others. Meeting flyers were posted by the Borough of Edinboro and Washington Township and mailed to property owners along the corridor. Erie County also issued a press release to local media announcing the public meeting and encouraging participation. Copies of the meeting invitation postcard and flyer are included in the appendices A and B.

Meeting Attendees:

There were thirty (30) attendees who signed in at the Corridor Stakeholder meeting and eighty-eight (88) who signed in for the public meeting.

Project Advisory Committee (PAC) Representatives

Jake Welsh	Erie County Department of Planning
Mathew Elwell	Erie County Department of Planning
John Morgan	Erie County Department of Planning
T. J. Jemetz	Borough of Edinboro
Erin Wiley Moyers	PennDOT District 1-0
David Anthony	Washington Township

Consultant Team Representatives

Scott Thompson-Graves	W, R & A
Chad Reese	W, R & A
Laura Rice	W, R & A
Tom Graney	GCCA
Glenda Murphy	Olszak Management Consulting, Inc.

Format of the Meeting:

The meeting format included a welcome by PennDOT and Erie County Department of Planning followed by a brief PowerPoint presentation introducing the project, reviewing goals and objectives, presenting traffic study findings and a brief land use recap from the comprehensive plan. Following a brief question and answer period, attendees were encouraged to complete comment forms and view the corridor maps. PAC and consultant staff members were available to address comments and questions.

The remainder of this summary focuses on a recap of the comments and comment forms provided on November 28, 2007 or subsequently mailed to the consultant team.

Comment Form Summary

A total of seventy-two (72) comment forms were received. These comments were combined with those recorded with the corridor maps following the presentation. Key findings include:

- Most respondents were residents of the corridor and most traveled the Route 6N corridor daily.
- While the majority of respondents (75%) indicated that they agreed with the study goals, some wanted further clarification/qualification on goal number one, 'Encourage growth'.
- There were several themes about what should be done within the corridor that emerged from the open-ended responses.

Theme	Q 4. Additional goals and objectives	Q 5. Additional information	Additional Comments	Total
Improve intersections	4	8	13	25
Add traffic lights	4	9	6	19
Add bypasses	4	3	6	13
Reduce congestion	5	6	1	12
Enhance bicycle / pedestrian circulation	3	3	5	11
Future development	3	4	2	9
Enforce speed limits	2	2	5	9
University impacts	2	3	-	5
Lake impacts	-	2	1	3
Other	7	8	-	15

The following reports the specific comments provided.

1. Please indicate your interest in the US 6N Corridor Land Use and Transportation Study (check all that apply)

- Most (82%) of the participants were residents of the project area.
- Nearly two-thirds (65%) shop or do personal business (banking, medical appointments, etc.) in the project area.
- Percentages add up to more than 100% due to multiple responses.

Response	Number	Percent
I am a resident in the project area	59	82%
I shop or do personal business in the project area	47	65%
I visit the project area for recreation, etc.	30	42%
I work or run a business in the project area	22	31%
I attend school in the project area	2	3%
Other: Government official	5	7%
Property owner	4	6%
Other - Developer	4	6%
- Travel through		
- Spouse of University employee		
- Not specified		

2. I travel within the US 6N Corridor:

Response	Number	Percent
Daily	63	88%
2-3 times/week	4	6%
Occasionally	1	1%
Never	-	--
No answer	4	6%
Total	72	100%

- Most (88%) of the participants travel through the corridor on a daily basis. Some respondents indicated that they do so multiple times a day.

3. Do you agree with the following goals and objectives for the US 6N Corridor Study?

- Three-fourths (75%) answered "Yes" to this question, while the rest gave no answer.
- Twenty-four respondents (33%) qualified their answers by indicating specific goals/objectives that they did or did not agree with. A table of responses is shown below.
- Some respondents were not in complete agreement with the first goal on the list— Encourage Growth within the Desired Areas—and indicated that they preferred "managed" growth, "careful" growth or no growth at all. These are shown at the bottom of the table.

Specified Goal	Number	Percent (N=24)
Encourage Growth within the Desired Areas*	2	3%
Improve Traffic Flow	12	17%
▪ Reduce Traffic Congestion	3	4%
▪ Improve Safety Along the Corridor	6	8%
▪ Better Accommodate Events/Incidents	3	4%
▪ Manage Truck Traffic within the Borough	3	4%
Enhance Pedestrian and Bicycle Circulation	9	13%

- *Qualified Growth within the Desired Areas
- | | | |
|--|---|-----|
| • Manage growth, not encourage (3) | 3 | 13% |
| • Encourage growth - "no" (2) | 2 | 8% |
| • Encourage "careful" growth | 1 | 4% |
| • "concerned that it be well-planned and thoughtful" | 1 | 4% |
| • Encourage growth - "don't know" | 1 | 4% |
| • Encourage growth - "no, enough now" | 1 | 4% |

4. Do you think there are additional goals and objectives that should be considered?

- As with Question 3, many respondents did not check a response, but commented instead.
- All of the comments, regardless of the response checked, are categorized and displayed below.

Response	Number	Percent
Yes	22	31%
No answer, but commented below	14	19%
No Answer	28	39%
No	8	11%
Total	72	100%

- Reduce traffic congestion (5)
 - It would be terrific if traffic of day students for the university could be diverted so as to avoid the main 6N/99 intersection.
 - In reducing traffic congestion, managing truck traffic, and better accommodating special events, do not increase these problems in low density residential areas such as Sherrod Hill and most of Fry Road.
 - Consider options for re-routing truck traffic.
 - Other options for better managing/reducing traffic volume in general. Target specific problem areas (Maple Drive, Angling Rd., Perry Lane, Fry Rd.) to improve safety/flow of traffic onto 6N from these roads.
 - Improve traffic flow and take some traffic off of township roads.

- Add traffic lights (4)
 - A traffic light is absolutely needed at Angling Road to enter and exit Lakeside subdivision.
 - Traffic lights at Maple Dr. and Angling Rd.
 - Traffic light at Fry Rd.
 - Traffic lights.

- Add bypasses, new exits (4)
 - Future new exit by Irish to take traffic, east to college and East 6N.
 - Reduce traffic volume. We need an I-79 exit south of Edinboro that connects to Rt. 99. It could serve SCI Albion, SCI Cambridge Springs, and the University.
 - Bypass to I-79 Finish Perry Lane Bridge. Another I-79 exit possible Irish Rd. and Old State Rd.
 - Lessening the traffic that travels along 6N with a bypass or a new exit south of the Edinboro/Albion exit.

- Improve safety of intersections (4)
 - Intersection of 6N and Lakeside Dr. parking at the bagel shop limits visibility for traffic leaving Lakeside and trying to turn right or left onto 6N.
 - Dangerous intersections- Fry and 6N; Angling and 6N; Maple Drive and 6N; Perry Lane and 6N.
 - Curve on Rt. 6N where Draketown Rd. intersects appears to be a straight continuation of Rt. 6N. Additional curve signage could prevent accidents.

- Better control on traffic speed (current speed limits are often exceeded greatly). Consider options for re-routing truck traffic. Other options for better managing/reducing traffic volume in general. Target specific problem areas (Maple Drive, Angling Rd., Perry Lane, Fry Rd.) to improve safety/flow of traffic onto 6N from these roads.
 - You should consider 6N and Perry Lane, 6N and YMCA
- Enhance additional development (3)
- Educate the public re travel times and [that] the area is developing and more traffic will inevitably result in some reduction in travel time.
 - Develop means for further growth before problems are acute.
 - Prepare for future development.
- Enhance pedestrian and bicycle circulation (3)
- Safe bike and pedestrian access
 - The new library will be in the plaza where the new Coldwell Bankers building is located. There are no sidewalks to the area nor is there any way to cross the 6N (for walkers) to get to the new library.
 - Heavy promotion of bicycle, pedestrian and handicap travel, especially in connection with college and shopping areas.
- Enforce speed limits (2)
- Better control on traffic speed (current speed limits are often exceeded greatly).
 - 35 miles per [hour] in front of our house. That is not enforced. We have two lanes of traffic in AM. Then the same in the evening.
- Reduce university impacts (2)
- It would be terrific if traffic of day students for the University could be diverted so as to avoid the main 6N/99 intersection.
 - Did congestion at game times - near university - get considered?
- Other (7)
- 3 lanes from Fry east to Edinboro
 - I think the problem areas indicated are accurate.
 - Should 6N be widened? What are those considerations? Does PennDOT consider berming sides of 6N rather than ditches?
 - The idea of continuing to make 6N the main corridor through Edinboro is short-sighted and folly.
 - To get started to alleviate problems soon. The DOT study should be adapted to our situation and applied! (Randy Brink knows the study). Gary Hoffman, P.E./s/ Dep. Sec. for Highway Administration.
 - Any changes should take into account the daily lives and driving of the people that

live along 6N.

- Safety and what timetable will the improvements have? You (PennDOT) knew that Washington Towne Blvd. and 6N was dangerous five years ago.

5. Is there any additional information that you would like to share with the project team?

➤ Traffic lights (9)

- Those of us living on Lakeside need a way to access 6n east to town. Maybe lights at 6n-Angling-Monroe and at Maple Drive.
- Perhaps an advanced warning light (flashes or turns/changes color when actual light changes) west of Fry on 6N (eastbound on 6N) and a light at Fry Rd. would work and eliminate possible accidents at 6N and Fry.
- Please consider additional traffic lights on 6N between Rt. 99 and I-79 i.e. Fry Rd. and at the YMCA.
- Light needed at Fry Road.
- A long overdue traffic light at 6N and Fry Rd. Every day traffic jams, because of so many fender benders and accidents.
- Safety concerns at Angling Rd. outlet Fry Rd. needs light for N/S, E/W traffic safety
- [It is] very hard to get onto 6N from Lakeside Area where I live. Wal-mart traffic coming and going plus other traffic into and out of town. Do we need some traffic lights?
- As per a traffic light at Fry and 6N, please consider the icy conditions on this hill.
- No traffic light on Fry Rd. – [it will] make bigger problems.

➤ Intersections (8)

- The intersection of Maple, Sunset, Fairway and 6N is a mess. No one knows where and when to go. The stop sign on Maple is ignored a lot of the time- or people think it means they should stop at 6N, not 100 feet back at the sign.
- There is also a pole (Penelee?) right on the corner which also hampers visibility. Even if Lakeside becomes a one-way drive, any traffic coming out onto 6N (no matter where from the Lakeside area) will have difficulty getting into the flow of 6N traffic.
- Access to YMCA is very dangerous turning north into facility. Line of sight. Turning off 6N into...
- I've sat at Washington St. and counted about 100 cars go by before I could get out. Just about [the] time cars coming east get by, cars are coming west out of town.
- Traffic volume on 6N is horrible! The intersection at Angling Rd. and 6N is an accident waiting to happen. [Put] turn[ing] lanes throughout the entire 6N corridor.
- Difficulty in entering 6N from Lakeside
- Consideration of a center turning lane from I-79 east along 6N
- We have signage along Rte. 6N. Regular accidents happen by Agway near my office. Hill to Wal-mart backs up in the winter some days. Events congest area by light to EUP.

- Traffic congestion (6)
 - Good Samaritans in proximity to the SR 99 and Rt. 6N intersection disrupt flow patterns and prevent the planned operation of traffic signals.
 - I've sat at Washington St. and counted about 100 cars go by before I could get out. Just about [the] time cars coming east get by, cars are coming west out of town.
 - Traffic volume on 6N is horrible! The intersection at Angling Rd. and 6N is an accident waiting to happen. [Put] turn[ing] lanes throughout the entire 6N corridor.
 - Hill to Wal-mart backs up in the winter some days. Events congest area by light to EUP.
 - Fry Road is being used by traffic as a bypass from 6N both north and south. It can take 20 minutes to get out on 6N at peak times safely. Projected development (hotel) of Highlander will make this worse as this traffic will also use Fry Rd.
 - As one who lives and works along this corridor, [I think] you can make your life a lot easier if you do not travel it between 3 to 5 PM (M-F).

- Pedestrian/bicycle circulation (3)
 - Children and adults should be able to walk and bicycle to the new library location, the lake, and small businesses along 6N, as should senior citizens and students be able to get safely to grocery stores and small businesses. Manage growth and add sidewalks and lanes and limit traffic lights to maintain and increase these types [of] uses.
 - Enhancing pedestrian sidewalks/bicycle routes would greatly benefit our community (and perhaps reduce some car traffic!). I would love to see sidewalks/bike lanes all the way to Wal-Mart and to the new (to be) library from both directions (Sidewalks only on the opposite side of the road right now).
 - It is very difficult to cross 6N between the outlet bridge and west to Lakeside Drive. Many people walk that route especially during the summer. There really needs to be some way to safely cross 6N in that area.

- Lake impacts (2)
 - All development needs to be mindful of the lake. We must protect it and be careful how we develop.
 - Consideration of beauty of the area in all plans for further construction.

- Speed limits (3)
 - Speed limits on Fry Road and Crane Road need to be considered.
 - Yes. Slow down traffic from 35 to 20 [MPH].
 - When traveling east on 6N at the Wal-mart, the two lanes leading into town become a raceway.

- University impacts (2)
 - I think a new road from Torbell Rd. to 6N around the East side of the part straight to 6N. A large percentage of traffic goes to the university.
 - Events congest area by light to EUP.

- Additional development (4)
 - Access management with growth of township housing units.
 - Reminder that Goodell Garden is a growing enterprise.
 - We would share our development plan, actual and proposed, including Comfort Inn Suites, Northwest Savings Bank, etc.
 - A copy of Goodell Gardens' master plan will be attached for the consideration of the project team concerning potential future traffic circulation within the study area.

- Bypass/exit (3)
 - We need another exit off 6N.
 - Enclosed is a bypass suggestion for Edinboro [126.pdf]. I believe 90% of all college traffic would use this bypass and will leave the traffic in center of town.
 - Take the route south of Edinboro to Florek; hook Florek to Perry Lane and I-79.

- Other
 - Storm water problem [at 6N and Angling].
 - Connecting Washington Towne Boulevard to Fry Road concerns me.
 - Service roads from Fry south to light at Wal-Mart and continuation of road from Fry north up to Comfort Inn and Sheetz.
 - Accident data needs to be taken into consideration.
 - I own the land at the end of Kline Rd. across 6N. You have a major drain that dumps onto my land. I request that you properly ditch across that part of my land instead of making the field a[n] impossible piece of land to farm.
 - Need an attitude adjustment by residents as well. Not used to heavy traffic in borough. Patience needed.
 - Make citizens responsible through media/experiment.
 - We have signage along Rte. 6N. Regular accidents happen by Agway near my office

6. How did you learn of the Public Meeting?

Response	Number	Percent (n=72)
Postcard	36	50%
Newspaper	21	29%
Letter	8	11%
Local government	4	6%
Friend/relative	3	4%
Television	2	3%
Other	2	3%
No answer	6	8%

7. I am satisfied with the information presented at tonight's meeting.

- Half (50%) agreed with this statement. No one indicated disagreement.
- However, the other half of the respondents either did not check off any responses or selected "neutral"..

<u>Response</u>	<u>Number</u>	<u>Percent</u>
Strongly Agree	7	10%
Agree	29	40%
Neutral	11	15%
Disagree	--	--
Strongly Disagree	--	--
No Answer	25	35%
Total	72	100%

8. Were your questions and/or concerns addressed?

<u>Response</u>	<u>Number</u>	<u>Percent</u>
Yes	26	36%
No	5	7%
No Answer	41	57%
Total	72	100%

If not, what additional information do you need?

- | | |
|----------------------------------|---|
| More details | <ul style="list-style-type: none"> ▪ Has any study been done to count traffic using the Wal-mart plaza and gas stations and coming from the west or 79 and returning to the west and I-79 and NOT using any of 6N east? ▪ I would have appreciated a review of the land use recommendations of the comprehensive plan as it was not shared well as it was being developed. ▪ This was only informational. But if 99 in Crawford Co. is not included, then a real solution will not be forthcoming. An I-79 exit at Irish Rd. (Crawford Co.) will help with the 6N corridor immensely. ▪ Nothing concrete was presented. ▪ This meeting was just an introduction to the project and very little specific information was presented. ▪ I want to see what recommendations are made by the team. |
| Clarification about speed limits | <ul style="list-style-type: none"> ▪ The PennDOT staff person's comment about speed limits was confusing and implied that no change is possible. As noted above, I am very concerned about current speed limits in the borough (35 MPH) which are often exceeded, sometimes greatly. Surely that is a problem that can be solved. ▪ On the question of speed, it sounded as though the PennDOT man said the way to address speed was to give in to the wacko drivers and everyone else be damned. |
| Concerns | <ul style="list-style-type: none"> ▪ Angling Road needs a light or some type of improvement. Need to protect |

- the lake since everything impacts it.
 - Widening of 6N between Fry and Angling. Backyard backs up to 6N; concerned about speed and noise.
 - Need a 35 MPH speed limit and a [couple] of traffic signals.
-
- Missed it
- Sorry I could not stay for the meeting. What I did see looks okay. I'm not sure it is the best, but it is a step to solving the problem at hand.
 - I would like to have heard about tentative plans for 6N but I couldn't attend.
 - Couldn't attend.
- No concerns
- So far - great!
- Other
- Should have had more planning when I-79 was built. Area [is] many years behind [the] times.

Additional Comments

The comments categorized below were taken from 3 sources:

- Space provided for Additional Comments on the comment forms
- Comments recorded on the clipboard.
- Notations made on the maps.

These comments echoed those made in response to other questions. They covered a large range of topics, the most prominent of which were intersection and traffic light issues.

➤ Intersections

Number	Action	Comment
13	Improve	Angling Rd. and Maple Drive is a bad intersection. You can't make left turns.
		People have problems getting out of YMCA. [There have] been several accidents.
		Fry Rd. is very dangerous - especially with those turning left.
		Could use a light at Fry Rd. However, in the winter it will be a problem due to the hill.
		[I] have a terrible time turning left off of Woodland Drive onto 6N; [a] light is needed.
		[There have] been times when I have had to go up to Angling Rd. to Crane Rd. in order to get out on 6N.
		[I] drive through the area to work, etc. [It is] hard to get onto 6N from side streets at times.
		Exit of Culberts on Pool!
		Suggest you add this one: Concern area starting to develop is also Maple Drive to 6N. Entrance difficult.
		Need turning lane at Fry and 6N.
		Residents of Conneautee have difficult if not impossible time of turning west onto 6N from Forrest Drive.
		YMCA entrance [is] very dangerous [6N and Forest-Blue Spruce-Cedar].
		Fix [6N at Angling Road] - get rid of concrete triangle.

➤ Traffic Lights

Number	Action	Comment
6	Add	Lighted crosswalks on 6N for library.
		Light is needed at 6N and Angling Rd.
		[Is] there any possibility of putting a light at 6N and Fry Rd.?

Number	Action	Comment
		Traffic traveling west as it enters Edinboro [is] usually much over speed limit. A blinky light [is needed] to warn of the town ahead (Perry Lane and 6N).
		Would be good to have a light or traffic calming at the elementary school.
		Need a light at Forest Drive and 6n.
2	Enhance	Have somebody manually change the lights on 6N.
		Get the lights more in sync with each other.
1	Restrict	Signals help reduce turning accidents, but increase rear end accidents. The more signals you put [in], the more delay and then you need to eventually widen the road.

➤ Bypasses/Exits

Number	Action	Comment
6	Add	Want a bypass for college students to use since they currently aren't stopping at town.
		New bypass and new exit off I-79 and building new segment through Farm Field (see sketch and Richard Walker).
		Is there a bypass on there? I hope so; they talked about it years ago.
		I'd like to see more cooperation between Crawford and Erie County and have an I-79 Interchange on the border line.
		The best solution would be to put an interchange off 79 to Irish Road to the University or use Floric Rd.
		Connect Walker Drive to Dundon Road for a by-pass going from 6N to 99 North.
1	Prevent	A bypass would kill the downtown area. Need to slow the traffic down to get people to look around at the downtown businesses.

➤ Pedestrian/Bicycle Circulation

Number	Action	Comment
5	Enhance	Need to create walking community due to the YMCA, library, and pool being over by Lakeside.
		Wide white crossing strips for bike and pedestrians
		EUP has a large population of students with disabilities. Enhancing pedestrian [walk]ways could be a huge benefit to those students.
		Very important from Boro to Interstate and from Boro to General McLane.
		Pedestrian access crossing 6N [is] important for lake/library access. New library with no sidewalks on [south] side of the street and no easy way for pedestrians to cross 6N from the north side to the south side at the library [6N between Maple and Angling] .
1	Add	Sidewalk and bikeway all the way to Wal-mart including the YMCA and library.

Number	Action	Comment
1	Other	All the kids are bused to the elementary school.

➤ Speed Limits

Number	Action	Comment
5	Reduce	One solution [is] to lower speed limits from Wal-mart to Perry Lane. There are regulations for setting speed limits. How to establish speed limits within 5 MPH of the 85th percentile. Speed- it is impossible to get out Woodlawn Dr. 6N and Perry Lane- speed issue Placing dots on 6N like they have out in Scranton at Fry Road to help people to slow down. Frequency of signs would have something to get people's attention. [The] regulation [is that they] have to be 1/2 mile apart.
1	Other	I'm not convinced that the speed at which you can (or should be able to) travel from east to west or vice versa along the corridor is most important.

➤ Additional Development

Number	Action	Comment
1	Enhance	Main square in Edinboro [is] entirely inadequate. CVS pharmacy location will compound the problem.
1	Reduce	No more growth until what traffic we have is under control.
2	Other	Highlander Golf Course is going to be developed either commercially or residentially. [There are a] number of mechanisms you can use for developers - traffic impact fee, traffic impact analysis.

➤ Traffic Congestion

Number	Action	Comment
1	Reduce	[I] want to get the traffic out of town.
3	Other	Perry Lane bridge to be replaced. Once it is, it will bring more truck traffic and traffic in general. 6N & Maple [is very] commonly used by commuters to Edinboro University. Busy at many times. (Map comment): 6N between traffic light at unnamed cross street near I-79 and traffic light at intersection with Erie - 6N segment highlighted in yellow with the caption "slow traffic"

➤ Lake Impacts

- My main concern is this lake

Appendix A

Corridor Stakeholder Invitation Postcard

US 6N Corridor Stakeholder Meeting

THE ERIE COUNTY DEPARTMENT OF PLANNING, BOROUGH OF EDINBORO,
WASHINGTON TOWNSHIP, AND THE PENNSYLVANIA DEPARTMENT OF
TRANSPORTATION (PENNDOT) INVITE YOU TO ATTEND
THE FIRST CORRIDOR STAKEHOLDERS MEETING FOR THE
**US 6N CORRIDOR LAND USE
AND TRANSPORTATION STUDY**

- ▶ The project area includes US 6N from Silverthorn Road, west of Interstate 79 in Washington Township, through the Borough of Edinboro to Kline Road, all within Erie County.
- ▶ The purpose of the meeting is to introduce the corridor stakeholders to the project, present preliminary traffic study findings, and gather public input on study goals and objectives as well as identification of trouble spots along the corridor.
- ▶ Study representatives will be available for discussion and to answer questions.

Please plan to attend ▶▶▶
Wednesday, November 28, 2007
4:00 PM to 5:00 PM
General McLane High School
11761 Edinboro Road
Edinboro, Pennsylvania 16412

The meeting location is compliant with the Americans with Disabilities Act (ADA). For more information about the project, contact Jake Walsh, Director, Erie County Department of Planning at (814) 451-7003.

Appendix B

Public Meeting Flyer

PUBLIC MEETING ANNOUNCEMENT

THE ERIE COUNTY DEPARTMENT OF PLANNING, BOROUGH OF EDINBORO,
WASHINGTON TOWNSHIP, AND THE PENNSYLVANIA DEPARTMENT OF
TRANSPORTATION (PENNDOT) INVITE YOU TO ATTEND THE FIRST PUBLIC MEETING
FOR THE

US 6N CORRIDOR LAND USE AND TRANSPORTATION STUDY

Please plan to attend ►►►

Wednesday, November 28, 2007

6:00 PM to 8:00 PM

General McLane High School

11761 Edinboro Road

Edinboro, Pennsylvania 16412

There will be a brief presentation at 6:30 p.m.

The meeting location is compliant with the Americans with Disabilities Act (ADA). For more information about the project, contact Jake Welsh, Director, Erie County Department of Planning at (814) 451-7003.

- ▶ The project area includes US 6N from Silverthorn Road, west of Interstate 79 in Washington Township, through the Borough of Edinboro to Kline Road, all within Erie County.
- ▶ The purpose of the meeting is to introduce the project, present preliminary traffic study findings, and gather public input on study goals and objectives as well as identification of trouble spots along the corridor.
- ▶ Study representatives will be available for discussion and to answer questions. All interested persons are invited to attend.

WE WANT TO HEAR FROM YOU!

Erie County Department of Planning, Borough of Edinboro, and Washington Township

Public Meeting No. 2 Summary

DATE: May 20, 2008
TIME: Corridor Stakeholders – 4:00 to 6:00 PM
Public Meeting - 7:00 – 9:00 PM
LOCATION: General McLane High School
11761 Edinboro Road
Edinboro, Pennsylvania 16412

June 11, 2008

By:



Olszak Management Consulting, Inc.
425 sixth avenue, suite 350
pittsburgh, pa 15219
412.281.9262
412.281.9261 fax
www.olszak.com

Executive Summary

Purpose of Meeting:

The purpose of the meeting is to gather public feedback on a set of alternatives for addressing the project goals and objectives surrounding encouraging growth in designated areas, enhancing pedestrian and bicycle circulation and improving traffic flow.

Who Was Invited:

Meeting invitation postcards were mailed to corridor stakeholders including local, county and state public officials, businesses, emergency services, and others. Meeting flyers were posted by the Borough of Edinboro and Washington Township and mailed to property owners along the corridor. Erie County also issued a press release to local media announcing the public meeting and encouraging participation. Copies of the meeting invitation postcard and flyer are included in the appendices A and B.

Meeting Attendees:

There were seven (7) attendees who signed in at the Corridor Stakeholder meeting and seventy-one (71) who signed in for the public meeting.

Project Advisory Committee (PAC) Representatives

Jake Welsh	Erie County Department of Planning
Mathew Elwell	Erie County Department of Planning
John Morgan	Erie County Department of Planning
T. J. Jemetz	Borough of Edinboro
Bill Coleman	Edinboro University of Pennsylvania
Erin Wiley Moyers	PennDOT District 1-0
Don Hall	PennDOT District 1-0
Randy Brink	PennDOT District 1-0

Consultant Team Representatives

Scott Thompson-Graves	W, R & A
Chad Reese	W, R & A
Laura Rice	W, R & A
Tom Graney	GCCA
Glenda Murphy	Olszak Management Consulting, Inc.

Format of the Meeting:

The meeting format included a welcome Erie County Department of Planning followed by a brief PowerPoint presentation that included a review of goals and objectives and a presentation of alternatives to meet the study goals. Following a question and answer period, attendees were encouraged view the displays. PAC and consultant staff members were available to address comments and questions.

The remainder of this summary focuses on a recap of the comments and comment forms provided on May 20, 2008 or subsequently mailed to the consultant team.

Comment Form Summary

A total of 62 comment forms were received. Key findings include:

- Most respondents were residents of the corridor and most traveled the Route 6N corridor daily.
- While many responders agreed with the strategies as presented there were many non-responders to individual strategy evaluation questions
- 72% of respondents preferred the two three-lane alternatives for reducing congestion as compared to the other alternatives.
- There appears to be a mixed reaction to the alternatives for addressing the US 6N at 99 intersection. While 35% of respondents preferred the no-build option, 42% preferred the four-lane option.
- There was great interest in improving bicycle and pedestrian circulation and most folks were in favor. Concerns were recorded about adding additional bike lanes adjacent to US 6N itself as well as how realistic was it to expect people to use their bicycles for shopping at a big box store, like Wal-Mart.
- There continues to be great interest in lowering the speed limit along US 6N.
- While there appears to be a mixed reaction to roundabouts, some of the concerns may be addressed with more education as to how roundabouts work.

Characteristics of the Respondents

- 90% are residents or own property in the area
- 83% travel through the corridor daily

1. Please indicate your interest in the US 6N Corridor Land Use and Transportation Study.

Response	Number	Percent
I am a resident and/or own property in the project area.	56	90%
I shop or do personal business (banking, medical, etc.) in the project area.	35	58%
I visit the project area for recreation, entertainment, dining out, etc.	23	38%
I work, or run a business in the project area.	20	33%
I attend school in the project area.	2	3%
I travel through the area on my way to and from work.	2	3%
I am a public official in the area.	1	2%

2. I travel with the US 6N corridor:

Response	Number	Percent
Daily	52	84%
5-6 times per week	1	2%
3-5 times per week	1	2%
2-3 times per week	7	10%
Occasionally	1	2%
Never	-	-
Total	62	100%

Perspectives on Strategies

Percent who agreed with strategies regarding:

- Growth projections 90%¹
- Pedestrian/transit access 75%
- Truck traffic 69%
- Safety improvements 81%
- Special/unexpected events 74%

The percent of respondents who agreed is based on the total number of people who responded to the question and does not reflect non-responders.

3. Do you agree with the growth projections as presented for the corridor?

Response	Number	Percent	Valid %
Yes	45	73%	90%
No	4	7%	8%
Not sure	1	2%	2%
No Answer	12	19%	-
Total	62	100%	100%

If not, why not?

- Pretty ambitious.
- I think it's a high estimate.

- I think growth over the next 10 years is going to be much greater.
- Growth has greatly increased in the past 8 years.

- Don't have enough information, could change depending on the economy.
- Don't have enough info to comment - [the] numbers seem high but maybe that's wise for planning purposes.
- A lot of information I was not aware of - lots to consider.

4. Do you agree with strategies to enhance pedestrian circulation and transit access?

Response	Number	Percent	Valid %
Yes	27	44%	75%
No	5	7%	14%
Not sure	4	6%	11%
No Answer	26	43%	-
Total	60	100%	100%

¹ Based on the "valid percent" which excludes non-responses.

If not, why not?

Theme	Response
Need more	<ul style="list-style-type: none"> ▪ I like a bike/walk trail idea. ▪ Need pedestrian crosswalks that have the ability to actually stop traffic in both directions in order for people to cross safely. This would be on 6N west from the outlet especially at the new library. ▪ [This] proposal is an improvement, but more attention is needed for some key locations, especially a safe crossing at our new library site.
Usage	<ul style="list-style-type: none"> ▪ With our winter weather [the chances of] people walking 2 miles to Wal-Mart is slim! ▪ Maybe, any studies on pedestrian/bike usage? I would love a bike trail to Wal-Mart, but would a) people use them, or b) use it enough given our winter weather?
Quality of life	<ul style="list-style-type: none"> ▪ Increase speed and decrease outdoor quality of living for residents - walking and playing ▪ Must be cognizant of cost to our "long-time" residents. They live on a fixed income and should NOT have to pay for sidewalks! ▪ Increased traffic speed and number is not safe for our street.
Need more specifics	<ul style="list-style-type: none"> ▪ Did not really get the suggestion. ▪ I don't think the problem was addressed. ▪ They were unclear. ▪ I'm not sure what the strategies are - information is vague. ▪ Somewhat agree to some of the strategies suggested ▪ Unable to agree or disagree as you've listed a series of possible strategies, some of which I like and some I don't.
Other	<ul style="list-style-type: none"> ▪ Good luck, this is a tough job! I'm sure you will come up with the best alternatives. ▪ I agree with walk/bike paths and 3 lanes (one for turning on 6N). Not as convinced on turnabouts and do not agree with a light at Forrest Drive.

5. Which of the bicycle circulation strategies do you prefer?

	Number	Percent
Between existing bike lane (east of Ontario St.) and Maple Drive		
▪ Sign Bike Route along Ontario Street/Normal Road/Maple Drive	17	25%
▪ Sign Bike Route along Waterford Street and Maple Drive	14	22%
Between Maple Drive and WalMart/I-79		
▪ Add shared use path between Angling Road and Fry Road	25	40%
▪ Add a shared use plan along the south side of US 6N.	23	37%
▪ Sign bike route along Fry Road and Sherrod Hill Road	19	30%

6. Do you agree with strategies to address truck traffic in the corridor?

Response	Number	Percent	Valid %
Yes	25	40%	69%
No	8	13%	22%
Not sure	3	5%	8%
No Answer	26	42%	-
Total	62	100%	100%

If not, why not? (These responses include "no answer")

Theme	Response
Trucks are a problem	<ul style="list-style-type: none"> ▪ Trucks need an [alternate] route. ▪ A lot of concrete and tri-axle trucks who maybe could go around town don't, and go straight through town instead. ▪ Dangerous, too much traffic to accommodate truck traffic, noise, pollutants ▪ Truck traffic should be limited by size, weight, speed. Do not allow 18 wheel trucks from 99 to I-79 via 6N.
Not a problem	<ul style="list-style-type: none"> ▪ I don't think trucks are causing problems at this time.
Need specifics	<ul style="list-style-type: none"> ▪ Strategies are not very detailed. Reducing speed of trucks is my main interest. I would also like to see through-traffic of trucks re-routed, but I didn't see that addressed. ▪ All that was said was they would slow down - any change in traffic pattern? ▪ There were none. ▪ These are still unclear. ▪ Unable to agree or disagree as you've listed a series of possible strategies, some of which I like and some I don't. ▪ No suggestions [were] made to change anything. ▪ Again, not sure of specifics. Jake (?) brake signs should consider residential areas.
Other	<ul style="list-style-type: none"> ▪ Turnabout seems [to be an] unlikely solution to traffic. ▪ I think there are more trucks- it sure seems like it! Don't know for sure.

7. Do you agree with the strategies for safety improvements within the corridor?

Response	Number	Percent	Valid %
Yes	30	48%	81%
No	4	6%	11%
Not sure	3	5%	8%
No Answer	25	40%	-
Total	62	100%	100%

If not, why not?

Category	Response
Fix it now	<ul style="list-style-type: none"> ▪ Something needs [to be] done NOW. ▪ Light at Fry and 6N is needed very soon - not 7 years.
Can't respond	<ul style="list-style-type: none"> ▪ What were they? A turning lane in the middle and sending more traffic on Fry to Crane? That doesn't address 6N. ▪ Unable to agree or disagree as you've listed a series of possible strategies, some of which I like and some I don't. ▪ These are still unclear. ▪ Not covered. ▪ Again, not sure of specifics.
Other	<ul style="list-style-type: none"> ▪ Sidewalks will help, [but more attention is needed, especially a safe crossing at the] new library site. Safety is a major concern for library patrons, especially pedestrians/bicyclists visiting the library. ▪ No roundabout. 3 lanes might be okay. ▪ They do not limit traffic speed yet they encourage traffic growth.

8. Do you agree with the strategies for handling special/unexpected events within the corridor?

Response	Number	Percent	Valid %
Yes	26	42%	74%
No	5	8%	14%
Not sure	4	6%	11%
No Answer	27	44%	-
Total	62	100%	100%

Category	Response
Yes	I-79 is rarely closed, and when it does happen it usually isn't for long. For soccer events on campus, the event organizers would be held responsible for improved traffic handling.
No	Between Angling Road and up to Wal-Mart, there should not be any special events, just a steady vehicle flow.

Category	Response
Not clear	<ul style="list-style-type: none"> ▪ Too vague ▪ Not addressed. ▪ I am not really sure what the plan was. ▪ Already in place with EUP ▪ What were they? ▪ What was the plan? ▪ Not sure I totally heard this answered. ▪ Unable to agree or disagree as you've listed a series of possible strategies, some of which I like and some I don't. ▪ I don't think this was discussed in detail, other than the plan would be made to address it. ▪ These are still unclear.
Other	<ul style="list-style-type: none"> ▪ We have special events now and traffic signals are not changed in Edinboro to accommodate traffic needs. ▪ Roundabout at feed mill would allow for more traffic movement - also allow traffic to get out of the way during an emergency situation. ▪ Need communication to PennDOT or whoever to stake out the road ways.

9. Which of the following alternatives for reducing traffic congestion presented at today's meeting do you prefer? (select one)

Response	Number	Percent	Valid %
Three Lanes with System Upgrade	20	32%	40%
Three Lanes	16	26%	32%
Two Lanes with System Upgrade	5	8%	10%
Five Lanes	1	2%	2%
Future No Build	3	5%	6%
Multiple responses	5	8%	10%
Two Lanes with Median	-	-	-
No response	12	20%	-
Total	62	100%	100%

10. Why do you prefer this alternative?

Preference	Reasons
Three Lanes with System Upgrade	<ul style="list-style-type: none"> ▪ I live on 6N and hate the 5-lane idea. Three lanes would help the turning problem. ▪ The traffic flow does not bother me. Having breaks in traffic so that one can pull in is important. ▪ [With roundabout at Agway] It will slow down traffic and be safer, easy to get out of side streets ▪ At Maple Drive and 6N there needs to be a traffic light with the roundabouts further west on 6N. Also the connectors on the secondary roads should receive top priority. ▪ It would not destroy the integrity of the community ▪ Upgrades at Fry & Crane. Turning lanes. ▪ Most improvement with acceptable cost ▪ We think this is the most logical choice ▪ Hard to get out of Forrest Drive to get on 6N. ▪ Connectors for alternative routes look good. Roundabouts at Angling and Forrest. Traffic signal at Maple Drive. ▪ Traffic has to be slowed down. There are not enough speed limit signs. ▪ It would divert some traffic and make access easy. ▪ Seems to address all traffic flow on 6N and intersecting roads. ▪ Best for traffic flow. ▪ Of those listed, this is best. But the list is generalized, grouping all system upgrades together. ▪ Will improve traffic flow. Need to slow down traffic speed with a light/roundabout at Lakeside Drive. Bypass connecting Sherrod Hill to Kinter would allow college traffic to bypass town. ▪ I think that you should move immediately on securing all the systems upgrades and do the three lane after that. This would allow traffic to flow through all the surrounding area and keep them off 6N.
Three Lanes	<ul style="list-style-type: none"> ▪ Promote a smoother traffic lane with a turning lane. ▪ Not enough room to add more than 3 lanes - keeps traffic flowing. ▪ It will allow traffic to keep moving as individuals are turning left off of 6N. Improving Fry Road to Crane to 99 will reduce congestion along 6N. ▪ [With center turn lane] helps solve the problem - not as invasive as 5-lane - I like using the roads already in existence - Fry, Crane. ▪ A 3 lane would keep traffic moving and a steady flow with safety in mind. ▪ I am not in favor of improvements or system upgrades on Fry Road and Crane Road. ▪ Will allow traffic to move while cars are waiting to turn left. ▪ I am hugely in favor of roundabouts. However, I do not think people will like making u-turns and backtracking to turn left. Therefore, sadly, three-lane is more acceptable as it allows easier left-hand turns. ▪ [Combined with traffic lights, roundabouts and center turning lanes] There would be somewhere for people turning left to go to get out of the main stream of traffic. ▪ [Accessible turning lane] Flow of traffic to allow safe turn into business and residential area ▪ Improvement with minimum cost
Five Lanes	Full bikeway - not bikeway on shoulder.

Preference	Reasons
Future No Build	<ul style="list-style-type: none"> ▪ The money could be better spent! ▪ I've spoken with many homeowners who would much rather live with the very minor congestion. There are not traffic jams. We don't need more traffic! Increasing lanes encourages increased speed and use of small neighborhood streets.
Multiple responses	<ul style="list-style-type: none"> ▪ Two lane and median works with more signals at more intersections ▪ [Turn Lane] Sensible cost factors ▪ [Two lane with median/with system upgrade] Produces the best traffic flow at all intersections. Has potential to be effective beyond 2030. May save money in long run to construct it now. Supports growth area in Washington Township.
No answer	<ul style="list-style-type: none"> ▪ Where? ▪ I'm not sure I like the roundabouts. Wouldn't they take more property? Say at Maple & 6N - what property would you use? ▪ Under system upgrades - Option C and option D hooking Shelhammer and Dundon Roads onto Walker Drive would save hundreds of local people daily from having to go thru 6N & 99 red light - either one or both of these are excellent and fairly cheap quick fixes to avoiding our one red light in town.

11. Which of the following US 6N @ SR 99 Intersection options do you prefer? (Select one)

Response	Number	Percent	Valid %
Existing/No Build	15	24%	35%
Four-Lane Build	18	29%	42%
Five-Lane Build	8	13%	19%
Prohibit US 6N Lefts	1	2%	2%
Multiple	1	2%	2%
No answer	19	31%	-
Total	62	100%	100%

Why do you prefer this option?

Preference	Reason
Four-Lane Build	<ul style="list-style-type: none"> ▪ Would get traffic moving more smoothly in and out of town. ▪ The no-lefts would be prohibited. ▪ Less confusing than "No US 6N left turns". Requires less land than 5-lane build. Answer to question 9 [two lane with median/with system upgrade] may reduce traffic at intersection to make this option effective. ▪ Less [congestion]! ▪ Don't really know - what do the experts suggest? ▪ Do not use Mill St. and Short St. bypasses--that will be a mess!! ▪ Creating alternate routes is not practical. ▪ Allows for turning and also keeping traffic moving. It is a difficult intersection because of businesses. "Where will [the] road be?"
Existing/No Build	<ul style="list-style-type: none"> ▪ There is not much room to expand and widen the road. ▪ Present turning options are OK - but improved traffic signaling is needed.

Preference	Reason
	<ul style="list-style-type: none"> ▪ No other options here are viable ▪ It may be a little inconvenient to enter 6N but it is not worth spending the money. ▪ How can you widen this out any more than it is? ▪ All that is needed is a left turn light westbound. There is one going eastbound. ▪ I think this allows for traffic flow with the lights you have. The only other item would be to convert to three lanes in all four directions until you are out of town a short distance. ▪ Allow our community to grow slowly or to not grow. This plan only increases access and encourages use that <u>many</u> of us do not want.
Five-Lane Build	<ul style="list-style-type: none"> ▪ [Center lane would] be a turn lane. ▪ Quicker traffic flow ▪ Most options in busy areas ▪ Maximizes improvement ▪ Full bikeway - not bikeway on shoulder.
Prohibit US 6N Lefts	Most effective, fast.
No answer	When you open up the roadway that much, I feel that the speed would be very fast in flowing with many more than 3 lanes not needed. I live on 6N and awareness to slow down should always be there.

12. Is there any additional information that you would like to share with the project team?

The topics of most interest/concern to respondents were the following:

- Bicycle/Pedestrian Access (15 comments)
- Speed Issues (11 comments)
- Roundabouts (7 comments)

Transcribed comments are shown starting at the top of the next page.

Topic	Comment
Bikes/Peds	<ul style="list-style-type: none"> ▪ Thank you for addressing the bikeways. ▪ There [will need] to be a safe pedestrian crossing at the Angling-Monroe St.-6N intersections. The library draws a large number of walkers and it will increase once it is located near Lakeside. With the large amount of large trucks it won't provide enough protection to ask traffic moving at 25-35 mph to yield to pedestrians. ▪ Extend current path from Maple Drive to Angling Road. ▪ [Bicycle circulation strategies] What about the homeowners who lose their back yards or their privacy? There is a nice natural wood boundary that will be lost and if replanted will take 10 years or more to restore privacy. ▪ [Bicycle circulation between Maple Drive and Wal-Mart/I-79] Why would they bike uphill to Wal-Mart? ▪ [Bicycle circulation strategies] What is the strategy? ▪ [Bicycle circulation strategies] should be compatible with plans for commercial development. Will people bike up the hill to Wal-Mart and carry their goods back? ▪ [Shared use path between Angling & Fry] Then they park [the] bike and walk up hill? What is the point of Fry Road? ▪ I would not recommend any bike or pedestrian traffic at all on the 6N corridor. The amount of traffic on it and people not paying attention to driving (yakking on cell phones) would make it unsafe for them let alone all the carbon dioxide fumes. ▪ Pedestrian / Bicycle travel: we strongly support improving pedestrian / bicycle routes and feel the proposal would offer a lot more options for non-motorized travel within the study area. For example, the dedicated pedestrian / bicycle route along RT 6N to the Wal-Mart shopping center would be a great improvement. We feel that this is a step in the right direction and that additional improvements would make pedestrian / bicycle travel safer. See comment below regarding traffic signals. ▪ Please take a survey on who would use bike lane. ▪ We are in favor of a signaled Pedestrian cross walk at the new Edinboro Branch Library site. This expanded public facility will benefit many current and future area residents, especially children and families who may opt to walk or bike rather than drive if there is a safe means of crossing RT 6N. This pedestrian signal as well as a traffic signal at Maple Drive would also facilitate access to our community pool. ▪ We have very little bike traffic on the existing bikeways. ▪ There is a lot of vacant land behind my store and the Episcopal Church, Ogdens, Edinboro Inn, Colbertson Golf Course, right up to Culbertson Drive and beyond. This would be a good place for a bike path. There are a lot of bikes, peds and even wheelchairs that travel past my store to and from Wal-Mart. ▪ Very important! All progressive innovative and conscious towns have bike and pedestrian lanes! It would cut down on car traffic!
Process	<ul style="list-style-type: none"> ▪ This seems to be a very time-consuming process and should be stepped up. ▪ Please get this project started ASAP ▪ Encourage improvements in a more timely manner. ▪ What is the process from here? When is the next meeting and what will be done by then? ▪ Any chance of seeing the final draft that results from this meeting? ▪ I like the PennDOT idea of smart planning, not just making everything bigger. ▪ NOW

Topic	Comment
Speed	<ul style="list-style-type: none"> ▪ There have been countless accidents and 2 deaths in front of my store in the 11 years I've been there, the biggest reason being speed. The university should address this with a campaign to imbed safe driving into all students. This is a small town with a large % of elderly and professional people that like the quiet, slow pace. Students and tourists come from the big city and expect they have to drive like they did at home. ▪ Slow[ing] the traffic down to a slower speed from I-79 Wal-Mart to 99/ would lessen accidents! ▪ I am worried about "improving" Fry and Crane Rd. Cars and trucks go very fast now and with improved roads, I can only assume that not only traffic will increase but also go faster. ▪ If the speed limit were lowered to 35 mph, it would be easier to get onto 6N and to exit 6N. Spend the money on bike and pedestrian lane! Only attended the original meeting. Do not know the details of all options. ▪ Change speed limit to a consistent 35 mph! ▪ One of the main reasons there are more accidents during wet, snowy and icy conditions is that people drive too fast along the corridor. Lights would slow down traffic. Lights at Fry Road & 6N, Maple & 6N and Angling & 6N would 1) improve access to the road (corridor); 2) eliminate the need to take so much property from landowners (from making roundabouts). ▪ Other than roundabouts, there is very little being done to slow traffic down. What about reducing the speed limit and using police enforcement to help? ▪ Five lanes would just speed things up and promote more dangerous driving. Turning lanes vs. roundabouts, I would need more info. Slowing traffic down, driver education is key. I'd like to see an education and an incentive program for professional truck drivers to drive responsibly. Scott Rastetter, Scott's Carpet Showcase." ▪ There was a strong feeling expressed at the fall public meeting that traffic speeds need to be reduced along RT 6N. However, except for the round-about proposal, there was little attention to this important issue. ▪ "We are homeowners who have lived on Rt. 6N since 1999, and we intend to live here for the foreseeable future. During the past 9 years, we have seen a steady increase in both traffic volume and flow, and we anticipate that this trend will continue with future development in this area, as was discussed at the public meeting. Doing nothing will only make the current problems worse. For example, over the years we have observed many close calls as individual pedestrians, families on bicycles, and EUP students in wheelchairs have attempted to cross RT 6N at the Maple Drive intersection. Traffic speed as well as volume are major difficulties in crossing that busy street now, and the problem will likely get worse without some effective change. As another example, at least once and sometimes twice a week, we have observed cars on RT 6N speed right past a stopped school bus (with flashing lights on) that is either picking up or dropping off students. We feel that traffic speed contributes to this safety hazard. ▪ We are in favor of reducing the posted speed limit to 25mph along RT 6N between Maple Drive and Ontario Street. This would be consistent with the current speed limit on RT 99 from RT 6N to Normal Street.

Topic	Comment
Roundabouts	<ul style="list-style-type: none"> ▪ No roundabouts without more info. ▪ Install a rotary at Chestnut Drive and Route 99. Implement a traffic signal between Forest Drive and Lakeside Drive on 6N, complemented by rotaries. ▪ Roundabout at Angling Road. ▪ Several options placed a traffic light (roundabout) at Forrest Dr. Forrest is a residential neighborhood and those options will increase traffic on Forrest. If there is a traffic signal at Forrest & 6N [the] Edinboro community will be speeding (it is a straight shot) up Sherrod Hill and cutting through our neighborhood to get to 6N (Wal-Mart). Your traffic solutions need to take traffic to Fry, etc. which is a "road", not through a residential neighborhood. In addition, turnabouts all up 6N will have community people speeding up Sherrod so that they can avoid the circles. ▪ On first hearing about the roundabouts we were intrigued by their possible benefits, especially that they may help slow traffic. However, upon further reflection, we are seriously concerned about how they may impact pedestrian safety. Since roundabouts are designed to keep traffic flowing, we do not feel that pedestrians could safely cross a busy RT 6N at a round-about. ▪ Roundabouts might work on flat stretches of roadway but 6N from the elementary school west especially at YMCA - a roundabout at Forrest Drive would be blocked by the knoll to the east. The curve at Fry Road and the hill to the west would also make a roundabout in an area that is not flat [fail] to allow drivers to see other oncoming traffic. ▪ Seems to me a roundabout is a great way to eliminate some of the problems [at] Angling and 6N.
YMCA	<ul style="list-style-type: none"> ▪ Address the YMCA driveway outlet by shaving the hill just [to] the east. ▪ Common turn lane from YMCA to Lakeside Drive. ▪ Cut down the hill which prohibits clear sight out the YMCA.
Wal-Mart	<ul style="list-style-type: none"> ▪ I wish there was a way to get to Wal-Mart Plaza without getting on 6N! ▪ For the people who live in the overall area, they would know how to get around through the area of route 6. I thought having a back roadway from Wal-Mart to come out on the South side of Route 6 onto Fry was a good idea and let the area people get out and around various areas and not even having to go onto Route 6 at all.
Turns	<ul style="list-style-type: none"> ▪ Intersection at "Wal-Mart light" heading east is VERY dangerous. That left lane that goes "nowhere" is deathly. People race through it and crowd those who have the right of way off the road. The left lane should be the through lane and the right should have to turn into the gas station (currently Country Fair). ▪ Also- 6N and Angling at Agway is dangerous when traffic is allowed to turn left from both the stop signs. [Diagram] Traffic at the Westerly stop sign should only be allowed to turn right and traffic at the east stop sign should turn left. When both lanes (currently) are permitted to turn left, there is a dangerous competition for "whose turn" it is. ▪ No left turns on 6N, it is a horrible idea. Diverting eastbound traffic would cause greater headaches and congestion.
Trucks	<p>Truck traffic: The proposal seemed vague as presented, and it was difficult to evaluate how / whether truck traffic issues would be resolved. More details would be needed to clearly understand what alternatives are being proposed.</p>

Topic	Comment
Traffic lights	<ul style="list-style-type: none"> ▪ Traffic light at Angling Road & 6N. ▪ Traffic signals at Lakeside Drive - YMCA - Fry Road. ▪ In our view, additional traffic signals were not adequately included in the alternatives presented at the public meeting. We feel that some of the problems at key intersections along RT 6N could benefit from the installation of "smart" traffic signals. For example: at Scots Road, at Maple Drive, at Angling / Monroe Roads, at Forest Drive, and at Fry Road. We also feel that it would be much safer for pedestrians to cross at a signal. ▪ The traffic signals (discussed above) would have the added benefit of reducing traffic speed elsewhere in the corridor.
Lanes	<ul style="list-style-type: none"> ▪ I own a business on 6N and making the roadway 5 lanes would cause our driveway into the businesses to be very steep because [it] sits up on a hill. People and delivery trucks would have a hard time getting up the hill in the winter because there would be no room to increase speed to make it up the hill. ▪ I am concerned about the future of the front property of my house. My house is the one that is closest to 6N. With the extension of 6N to 5 lanes a possibility, when will the decision be made? Even with a 3-lane extension, how does this affect me? ▪ No five-lane road! ▪ I wanted to add that on Peach Street which was always a 4 lane highway for years and there were always a lot of accidents. Four years ago approximately they added that the middle lane will be used as a turn lane for cars turning in from any direction to turn. The middle lane with these changes solved all the problems and fewer accidents. Go see for yourself. I am really concerned that if you add more than 3 lanes, noise will be a factor to all houses which there front and back yards face Route 6N, and fast cars and trucks would continue to speed by, with notice awareness. ▪ We strongly oppose the 5-lane alternative for RT 6N. This would drastically change the character of Edinboro and, based on the comments heard at the public meeting it likely would not solve the current or future traffic issues. ▪ We have an unusually high number of young drivers with the university students. They have a tendency to exceed posted speed limits, ignore stop signs and weave around turning cars, bikes, and slower drivers. Increased lanes will provide more space and a perception of room for increased recklessness.
Intersections	<ul style="list-style-type: none"> ▪ [I'm] anxious to see what is done [about]: a) Angling & 6N; b) Forest Dr & 6N; c) YMCA. [These are] accidents waiting to happen. ▪ There should be no consideration of the one drawing where Forrest becomes an intersection with a new road over to/through Obed Heights.
Growth	<ul style="list-style-type: none"> ▪ I am wondering what, in the present economy, will be driving economic growth in Edinboro. ▪ Increasing use of 6N and connecting side streets is dangerous to our residents (especially children and walkers). <u>ENOUGH!</u> Leave Edinboro as a smaller, slower community.

Topic	Comment
Exits	<ul style="list-style-type: none"> ▪ Consider Crane Road exit off I-79. Continue Walker Drive Extension around Edinboro through to University at Perry Lane. ▪ Build out the service roads west of Fry Road and north & south of 6N, and improve Frey & Crane. Exit on I-79 North just north of the rest stop for traffic to the university. Another exit-entry at Old State Road and I-79. ▪ I have concerns about safety at a proposed Fry Road and 6N traffic light, especially at winter time. How about an I-79 Crane Road Interchange? This may be a good by-pass solution. ▪ An I-79 exit at Flock Road would take college traffic directly south of Edinboro and not 10 miles out of the way. ▪ I-79 exit at Crane Road would reduce congestion on 6N.
Bypass	<ul style="list-style-type: none"> ▪ The correct bypass for Sherrod to Kinter would be taking the road through the 52-acre parcel owned by Culbertson Mills Golf Course. This would line up with the Capp & Gibbon Hill intersection and follow the sewer connection to Boro plant. When the sewer upgrade is complete, the trailer park will probably be gone. This would result in nobody being asked to relocate.
Other	<ul style="list-style-type: none"> ▪ Publicize the proposals by a web page; buy newspaper reports in Erie Times News, Meadville paper, local Edinboro paper. Seek responses through each of these. ▪ I think an access road behind Goodell Gardens towards 6N by Giant Eagle or the Edinboro Medical Center would involve less private property. ▪ The people who attending the meeting do not represent a cross-section of Edinboro/Washington Township residents. Everyone who came deserves credit for coming, but the average of the people in the room was around seventy years old. If this is the only way community input is acquired the data is bound to be flawed. ▪ Didn't receive any flyer about meeting, otherwise I would have been there. ▪ After living 59 years at the I-79/6N intersection and waiting for something to be done, I am extremely disappointed in what was discussed tonight. ▪ We also support the proposed improvements of Fry and Crane Roads to offer an alternative connection between RT 6N and RT 99. We hope future phases of this study will explore other such improvements that would help alleviate traffic volume on RT 6N. For example, improving Hamilton Road to Crane Road to RT 99 may offer another alternative route on the east side of the study area. ▪ I don't feel like I understand these strategies well enough to agree or disagree. ▪ I requested to be added to the mailing list at the last public meeting but I received no notice of this meeting. I own property on 6N. ▪ Viable solutions that address pedestrian/bicycle safety, traffic speed, and traffic volume are paramount in our view.

The Meeting

- 54% heard about the meeting via postcard
- 55% felt satisfied with the information presented
- 63% said their questions/concerns were fully addressed

13. How did you learn of the Public Meeting?

Response	Number	Percent	Valid %
Postcard	31	50%	54%
Newspaper	15	25%	26%
Friend/relative	7	11%	12%
TV	8	13%	14%
Other: Email, letter, council meeting	3	5%	6%
No answer	5	8%	-
Total	62	100%	100%

14. I am satisfied with the information presented at tonight's meeting.

Response	Number	Percent	Valid %
Strongly Agree	2	3%	4%
Agree	25	40%	51%
Neutral	20	32%	41%
Disagree	-	-	-
Strongly Disagree	2	2%	4%
No Answer	13	21%	-
Total	62	100%	100%

15. Were your questions and/or concerns addressed?

Response	Number	Percent	Valid %
Yes	19	31%	63%
No	9	13%	31%
Not sure	1	2%	3%
Some	1	2%	3%
No Answer	32	52%	-
Total	62	100%	100%

If not, what additional information do you need?

Category	Comment
Specific topics	<ul style="list-style-type: none"> ▪ What would the speed limit be on a bypass road? ▪ Need help to safely exit west on Forrest Drive at 6N ▪ Is PennDOT in the business of making improvements to promote growth or solve current problems? [To me], expanding 6N will facilitate growth and more congestion. Until you fix the problems in the Boro, you are going to have problems on 6N. ▪ Addressing speed along 6N is a high priority for me within the Borough. ▪ Survey on trails where it would be practical. ▪ My residence is on the corridor between I-79 and Angling Road. If the desired commercial growth area is in that space, I need to know how soon to sell.
Need more details	<ul style="list-style-type: none"> ▪ Would have liked info before meeting to study. ▪ Some, not specifics though. ▪ Some [questions were addressed], but there are a lot more. ▪ Not enough info. ▪ Need more specifics. ▪ Need more comparative info with past projects - mistakes and successes. ▪ Is there a plan? Or was this just an informational meeting in which you're gathering input? Not clear! Heard some ideas, but nothing concrete.

Appendix A

Invitation Postcard

CORRIDOR STAKEHOLDERS MEETING ANNOUNCEMENT

THE ERIE COUNTY DEPARTMENT OF PLANNING, BOROUGH OF EDINBORO,
WASHINGTON TOWNSHIP, AND THE PENNSYLVANIA DEPARTMENT OF
TRANSPORTATION (PENNDOT) INVITE YOU TO ATTEND
THE THIRD CORRIDOR STAKEHOLDERS MEETING FOR THE

US 6N CORRIDOR LAND USE AND TRANSPORTATION STUDY

- ▶ The project area includes US 6N from Silverthorn Road, west of Interstate 79 in Washington Township, through the Borough of Edinboro to Kline Road, all within Erie County.
- ▶ The purpose of the meeting is to gather public feedback on a set of alternatives for addressing the project goals and objectives surrounding encouraging growth in designated areas, enhancing pedestrian and bicycle circulation and improving traffic flow.
- ▶ Study representatives will be available for discussion and to answer questions. All interested persons are invited to attend.

Please plan to attend ▶▶▶

Tuesday, May 20, 2008

4:00 PM to 6:00 PM

General McLane High School

11761 Edinboro Road

Edinboro, Pennsylvania 16412

The meeting location is compliant with the Americans with Disabilities Act (ADA). For more information about the project, contact Jake Walsh, Director, Erie County Department of Planning at (814) 451-6336.

Appendix B

Public Meeting Flyer

PUBLIC MEETING ANNOUNCEMENT

THE ERIE COUNTY DEPARTMENT OF PLANNING, BOROUGH OF EDINBORO,
WASHINGTON TOWNSHIP, AND THE PENNSYLVANIA DEPARTMENT OF
TRANSPORTATION (PENNDOT) INVITE YOU TO ATTEND
THE SECOND PUBLIC MEETING FOR THE

US 6N CORRIDOR LAND USE AND TRANSPORTATION STUDY

Please plan to attend ►►►

Tuesday, May 20, 2008

7:00 PM to 9:00 PM

General McLane High School

11761 Edinboro Road

Edinboro, Pennsylvania 16412

The meeting location is compliant with the Americans with Disabilities Act (ADA). For more information about the project, contact Jake Welsh, Director, Erie County Department of Planning at (814) 451-6336.

- The project area includes US 6N from Silverthorn Road, west of Interstate 79 in Washington Township, through the Borough of Edinboro to Kline Road, all within Erie County.
- The purpose of the meeting is to gather public feedback on a set of alternatives for addressing the project goals and objectives surrounding encouraging growth in designated areas, enhancing pedestrian and bicycle circulation and improving traffic flow.
- Study representatives will be available for discussion and to answer questions. All interested persons are invited to attend.

WE WANT TO HEAR FROM YOU!



Appendix B: Amendments for the Borough of Edinboro



Suggested Amendments to the Borough of Edinboro Zoning Ordinance

1. Article 2 – Definitions will be amended by the inclusion of the following terms, to be inserted in proper alphabetical order.

Access: A driveway, street, or other means of passage of vehicles between the highway and abutting property, including acceleration and deceleration lanes and such drainage structures as may be necessary for property construction and maintenance thereof. (67 PA Code Chapter 441)

Auxiliary Lane: The portion of the street adjoining the through lane that is used for speed change, turning, storage for turning, deceleration, acceleration, weaving, and other purposes supplementary to through traffic movement.

Average Daily Traffic (ADT): The total volume of traffic during a number of whole days (more than one day) and less than one year divided by the number of days in that period. *Note: PennDOT now uses the acronym AADT (Annual Average Daily Traffic) for their count data.*

Driveway: Every entrance or exit used by vehicular traffic to or from properties abutting a highway. *We recommend the words in brackets be omitted in local ordinances—too confusing.* (67 PA Code Chapter 441)

Egress: The exit of vehicular traffic from abutting properties to a street.

High Volume Driveway: A driveway used or expected to be used by more than 1,500 vehicles per day. (67 PA Code Chapter 441)

Ingress: The entrance of vehicular traffic to abutting properties from a street.

Interchange: A grade-separated system of access to and from highways that includes directional ramps for access to and from the crossroads.

Level of Service (LOS): A qualitative measure describing the operational conditions within a section of street or at an intersection that includes factors such as speed, travel time, ability to maneuver, traffic interruptions, delay, and driver comfort. Level of service is described as a letter grade system (similar to a school grading system) where delay (in seconds) is equivalent to a certain letter grade from A (free flowing) through F (worst rating).

Local Road: Every public highway other than a State highway. The term includes existing streets, lanes, alleys, courts, and ways. (67 PA Code Chapter 441)

Low Volume Driveway: A driveway used or expected to be used by more than 25 but less than 750 vehicles per day. (67 PA Code Chapter 441)

Medium Volume Driveway: A driveway used or expected to be used by more than 750 but less than 1,500 vehicles per day. (67 PA Code Chapter 441)

Minimum Use Driveway: A residential or other driveway that is used or expected to be used by not more than 25 vehicles per day. (67 PA Code Chapter 441)

Outparcel: A lot that is adjacent to the street that interrupts the frontage of another lot.

Stopping Sight Distance: The distance required by a driver traveling at a given speed to stop the vehicle after an object on the street becomes visible to the driver.

Storage Length: Lane footage needed for a right or left turn lane to store the maximum number of vehicles likely to accumulate during a peak period of travel.

Taper: The widening of the street to allow the redirection or transition of vehicles into or around an auxiliary lane.

Trip: A one-directional vehicular trip to or from a site.

Trip Generation: The total number of vehicular trips going to and from a particular land use on a specific site during a specific time period.

2. Section 407 is amended by adding the following new sections:

407.3 Driveway Standards: The purpose of this section is to set design standards for driveways in the Borough:

a. Minimum Use Driveways shall follow the following design standards:

- (1) **Separation Distances:** Driveways shall be separated at least 5 feet from the end radius of any street intersection, at least 20 feet from any other driveway on the same side of the street, and if a driveway exists on the property on the opposite side of the street, if feasible, the proposed driveway will be aligned with it.
- (2) **Width:** Minimum Use Driveways shall be 10 feet to 12 feet in width with a reasonable radius flare of 5 feet to 10 feet where it connects the street.
- (3) **Number of Driveways per Property:** Only one driveway will be allowed per property.
- (4) **Sight Distances:** Driveways shall provide a safe sight distance for those using the driveway. Locations on vertical or horizontal curves which limit sight distances will be avoided. Plantings shall be avoided where they might hinder safe sight distances.
- (5) **When the physical circumstance of any lot makes the application of these standards infeasible, the Borough Zoning Officer may grant minimal relief after consultation with the Borough Engineer.**

1. **Driveway Standards – Regulations for low-, medium-, and high-volume driveways on Route 6N**
2. **Number of Driveways:**
 - a. Only one (1) access shall be permitted for a property, or each one hundred (100) feet of frontage.
 - b. An additional access or driveway shall be permitted if the applicant demonstrates that additional access is necessary to accommodate traffic to and from the site and it can be achieved in a safe and efficient manner.
 - c. For a property that abuts two (2) or more streets, the Borough may restrict access to only that street that can more safely and efficiently accommodate traffic.
 - d. If the Borough anticipates that a property may be subdivided and that the subdivision may result in an unacceptable number or arrangement of driveways, or both, the Borough shall require the property owner to enter into an access covenant to restrict future or control access.
3. **Corner Clearance**
 - a. Corner clearance shall be at least thirty (30) feet.
 - b. Access shall be provided to the street where corner clearance requirements can be achieved.
 - c. If the minimum driveway spacing standards cannot be achieved due to constraints, the following shall apply in all cases:
 - (1) There shall be a minimum twenty- (20) foot tangent distance between the end of the intersecting street radius and the beginning radius of a permitted driveway.
 - (2) The distance from the nearest edge of cartway of an intersecting street to the beginning radius of a permitted driveway shall be a minimum of thirty (30) feet.
 - d. If no other reasonable access to the property is available, and no reasonable alternative is identified, the driveway shall be located the farthest possible distance from the intersecting street. In such cases, directional connections (i.e., right in right out only, right in only or right out only) may be required.
 - e. The Borough shall require restrictions at the driveway if the Borough engineer determines that the location of the driveway and particular ingress or egress movements will create safety or operational problems.
4. **Safe Sight Distance and Driveway Spacing:** The purpose of this section is to help determine the spacing between driveways on the same side of the road for Route 6N. For local roads and streets, current local practice would apply.
 - a. At least minimum safe sight distance shall be available for all permitted turning movements at all driveway intersections according to the table below. However,

optimal sight distance is preferable to minimum sight distance along a property frontage and should be provided where possible per 67 Pa. Code § 441.8.

Highway Speed (mph)	Sight Distance (feet)
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645

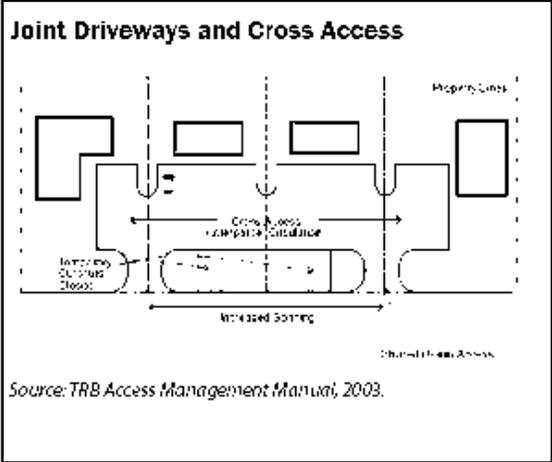
- b. All driveways and intersecting streets shall be designed and located so that the sight distance is optimized to the degree possible without jeopardizing other requirements such as intersection spacing, and at least minimum sight distance requirements are met.

5. Driveway Channelization

- a. For high- and medium-volume driveways, channelization islands and medians shall be used to separate conflicting traffic movements into specified lanes to facilitate orderly movements for vehicles and pedestrians. For low-volume driveways, physical channelization will not be required; however, ingress and egress lanes shall be clearly marked using pavement markings. As possible, the white (outside edge) and double yellow line (lane separation) format shall be used.
- b. Where it is found to be necessary to restrict particular turning movements at a driveway, due to the potential disruption to the orderly flow of traffic or a result of sight distance constraints, the Borough may require a raised channelization island.
- c. Raised channelization islands shall be designed with criteria consistent with the latest AASHTO publication entitled *A Policy on Geometric Design of Highways and Streets*.

6. Joint and Cross Access

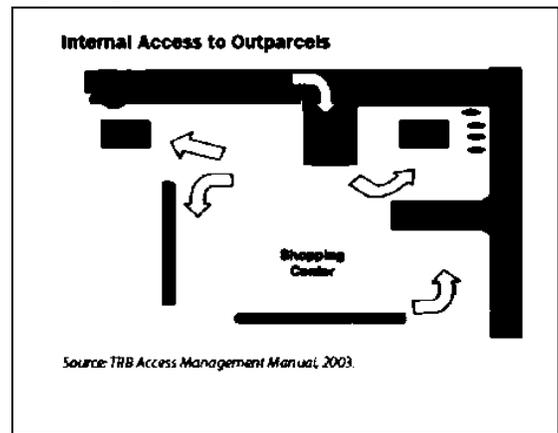
- a. The Borough may require a joint driveway in order to achieve the one hundred (100) foot driveway spacing standards.
- b. Adjacent non-residential properties shall provide a joint or cross-access driveway to allow circulation between sites wherever feasible along Route 6N. The following shall apply to joint and cross-access driveways:



- (1) The driveway shall have a design speed of 10 mph and have sufficient width to accommodate two-way traffic including the largest vehicle expected to frequently access the properties.
 - (2) A circulation plan that may include coordinated or shared parking shall be required.
 - (3) Features shall be included in the design to make it visually obvious that abutting properties shall be tied in to provide cross access.
- c. The property owners along a joint or cross-access driveway shall:
- (1) Record an easement with the deed allowing cross access to and from other properties served by the driveway.
 - (2) Record an agreement with the Borough so that future access rights along the driveway shall be granted at the discretion of the Borough and the design shall be approved by the Borough engineer.
 - (3) Record a joint agreement with the deed defining the maintenance responsibilities of each of the property owners located along the driveway.

7. Access to Outparcels

- a. For commercial and office developments under the same ownership and consolidated for the purposes of development or phased developments comprised of more than one building site, the Borough shall require that the development be served by an internal road that is separated from the main street.
- b. All access to outparcels shall be internalized using the internal street.
- c. The driveways for outparcels shall be designed to allow safe and efficient ingress and egress movements from the internal road. The required driveway throat area shall not be compromised.
- d. The internal circulation roads shall be designed to avoid excessive queuing across parking aisles.
- e. The design of the internal road shall be in accordance with all other sections of this Ordinance.
- f. All necessary easements and agreements required under Section 6.c shall be met.
- g. The Borough may require an access covenant to restrict an outparcel to internal access only.



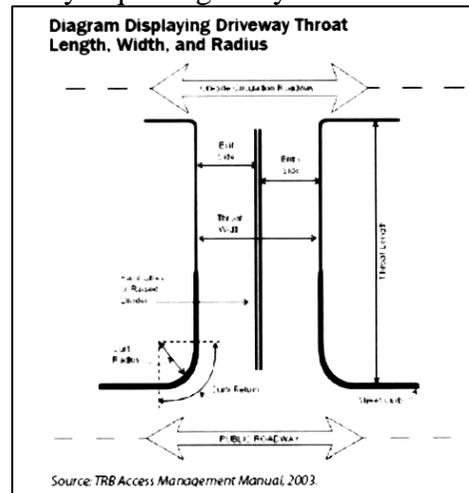
8. Driveway Design Elements: Regulations for low-, medium-, and high-volume driveways on Route 6N

a. **Driveway Throat Length:**

1. For low-volume driveways, the throat length shall be a minimum of fifty (50) feet or as determined by queuing analysis.
2. For medium-volume driveways, the throat length shall be a minimum of one hundred twenty (120) feet or as determined by a queuing analysis.
3. For high-volume driveways, the throat length shall be a minimum of one hundred fifty (150) feet or as determined by a queuing analysis.

b. **Driveway Throat Width:**

1. For driveways without curb:
 - (a) Low- and medium-volume driveways shall have a minimum width of ten (10) feet for one-way operation and a minimum width of twenty (20) feet for two-way operation.
 - (b) The design of high-volume driveways shall be based on analyses to determine the number of required lanes.

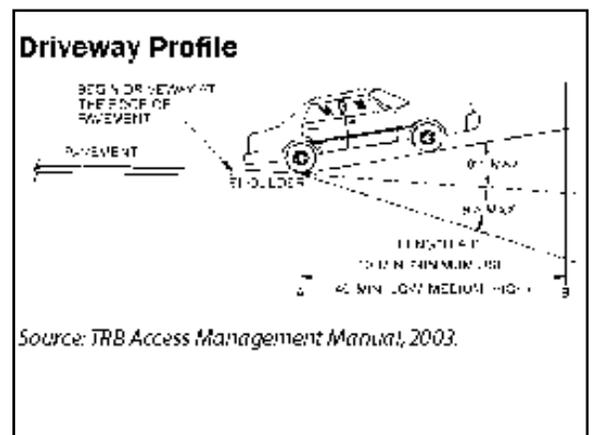


2. For driveways with curb, two (2) feet should be added to the widths contained in Section a. (1) and a. (2).
3. The Borough may require additional driveway width to provide turning lanes for adequate traffic flow and safety.
4. The Borough may require that the driveway design include a median to control movements. Where medians are required or permitted, the minimum width of the median shall be four (4) feet to provide adequate clearance for signs.

c. **Driveway Radius:**

- a. The following criteria shall apply to driveway radii:
 - (1) For low-volume driveways, the radii shall be a minimum of fifteen (15) feet uncurbed and twenty-five (25) feet curbed.
 - (2) The medium-volume driveways, the radii shall be a minimum of twenty (20) uncurbed and twenty-five (25) feet curbed.
 - (3) For high-volume driveways, the design should be reviewed by the Borough engineer on local roads and PennDOT on State-maintained streets, with local consultation.
- b. For all driveways, the radii shall be designed to accommodate the largest vehicle expected to frequently use the driveway.

- c. Except for joint driveways, no portion of a driveway radius may be located on or along the frontage of an adjacent property.
- 9. **Angle of Intersection:** All driveways shall intersect the street at a ninety-degree (90°) angle. If this is physically not possible, the Borough Engineer may allow a variance to a sixty-degree (60°) angle
- 10. **Driveway Profile:**
 - a. Driveway grade requirements where curb is not present on the intersecting street:
 - (1) Shoulder slopes may vary from four percent (4%) to six percent (6%). When shoulders are present, the existing slope shall be maintained across the full shoulder width.
 - (2) The change in grade between the cross slope of the connecting street or shoulder and the driveway shall not exceed six percent (6%).
 - (3) The driveway grade shall not exceed six percent (6%) within forty (40) feet for low-, medium-, and high-volume driveways.
 - (4) A forty- (40) foot minimum vertical curve should be used for a high-volume driveway.
 - b. Driveway grade requirements where curbs and sidewalks are present:
 - (1) The difference between the cross slope of the street and the grade of the driveway apron may not exceed six percent (6%).
 - (2) The driveway grade shall not exceed six percent (6%) within forty (40) feet for low-, medium-, and high-volume driveways.
 - (3) If a planted area exists between the sidewalks and curb, the following shall apply:
 - (a) The grade of the planted area shall not exceed six percent (6%).
 - (b) If the driveway grade would exceed six percent (6%) in the area between the curb and the sidewalk, the outer edge (street side) of the sidewalk may be depressed to enable the driveway grade to stay within six percent (6%). A maximum sidewalk cross slope of two percent (2%) must be maintained.
 - (c) If the sidewalk cross slope exceeds two percent (2%), the entire sidewalk may be depressed. The longitudinal grade of the sidewalk may not exceed six percent (6%).



- b. Although site conditions may not allow strict adherence to these guidelines in this Ordinance, every effort should be made to design and construct the safest and most efficient access onto the Borough street or State highway.

Suggested Amendments to the Borough of Edinboro Subdivision and Land Development Ordinance

1. Article 2 – Definitions will be amended by the inclusion of the following terms, to be inserted in proper alphabetical order.

Access: A driveway, street, or other means of passage of vehicles between the highway and abutting property, including acceleration and deceleration lanes and such drainage structures as may be necessary for property construction and maintenance thereof. (67 PA Code Chapter 441)

Auxiliary Lane: The portion of the street adjoining the through lane that is used for speed change, turning, storage for turning, deceleration, acceleration, weaving, and other purposes supplementary to through traffic movement.

Average Daily Traffic (ADT): The total volume of traffic during a number of whole days (more than one day) and less than one year divided by the number of days in that period. *Note: PennDOT now uses the acronym AADT (Annual Average Daily Traffic) for their count data.*

Egress: The exit of vehicular traffic from abutting properties to a street.

High Volume Driveway: A driveway used or expected to be used by more than 1,500 vehicles per day. (67 PA Code Chapter 441)

Ingress: The entrance of vehicular traffic to abutting properties from a street.

Level of Service (LOS): A qualitative measure describing the operational conditions within a section of street or at an intersection that includes factors such as speed, travel time, ability to maneuver, traffic interruptions, delay, and driver comfort. Level of service is described as a letter grade system (similar to a school grading system) where delay (in seconds) is equivalent to a certain letter grade from A (free flowing) through F (worst rating).

Local Road: Every public highway other than a State highway. The term includes existing streets, lanes, alleys, courts, and ways. (67 PA Code Chapter 441)

Low Volume Driveway: A driveway used or expected to be used by more than 25 but less than 750 vehicles per day. (67 PA Code Chapter 441)

Medium Volume Driveway: A driveway used or expected to be used by more than 750 but less than 1,500 vehicles per day. (67 PA Code Chapter 441)

Minimum Use Driveway: A residential or other driveway that is used or expected to be used by not more than 25 vehicles per day. (67 PA Code Chapter 441)

Outparcel: A lot that is adjacent to the street that interrupts the frontage of another lot.

Stopping Sight Distance: The distance required by a driver traveling at a given speed to stop the vehicle after an object on the street becomes visible to the driver.

Storage Length: Lane footage needed for a right or left turn lane to store the maximum number of vehicles likely to accumulate during a peak period of travel.

Taper: The widening of the street to allow the redirection or transition of vehicles into or around an auxiliary lane.

Trip: A one-directional vehicular trip to or from a site.

Trip Generation: The total number of vehicular trips going to and from a particular land use on a specific site during a specific time period.

2. Article XIII – Other Standards for Land Development shall be amended as follows:
3. Section 1302: Paragraph one is amended by deleting the last sentence and inserting the following: “Not all land developments shall be required to follow the procedures set forth in this article. If a development involves a building or buildings of less than ten thousand (10,000) square feet in aggregate size and its daily traffic generation is estimated at less than 1,500 vehicles per day (for reference on traffic volumes the Institute of Transportation Engineers Trip Generation Manual or a comparable source will be used) then the successful filing of a permit under the Borough’s Zoning ordinances will be regarded as compliance with this Article.
4. Section 1304. will be amended as follows:

Section 1304.1: Shall be amended by adding the following: All developments must show full compliance with Section 407 of the Borough’s Zoning Ordinance. When warranted, the developer shall prepare a traffic access and impact study, as set forth in the following:

Required Specifications for Traffic Access and Impact Studies – Report Requirements – Level I Studies

- I. Introduction: A formal traffic access and impact study will be required when the proposed development will meet any of the following criteria:
 - Generate an average daily traffic volume of 3,000 vehicles or more
 - During any one hour period 100 or more trips are generated
 - Significantly impact the Borough’s road system in the opinion of the Borough Engineer or professional consultant.
- A. Description of site including a location map
- B. Type of project
 1. If residential, number and type of dwelling units
 2. If commercial or industrial, square footage and type of development
- C. Other planning data which may be pertinent
- D. Map of project with proposed access points shown

II. Existing Conditions

- A. Directional traffic counts on roads adjacent to property with access to development
 - 1. Traffic counts should be not more than two years old
- B. Level of service of intersection(s) (if applicable)
 - 1. Highway capacity software (HCS) or Synchro is recommended
 - 2. Other nationally recognized software can be used

III. Trip Generation Rates

- A. Listing of trip generation rates
- B. Listing of sources for rates used
 - 1. *ITE Trip Generation* manual, latest edition
 - 2. If the type proposed development is not addressed in the ITE manual, then other rates may be used as long as they are documented and have been approved by the municipality.
- C. Calculation of trip ends by type of generator
 - 1. Traffic generated by phase
 - 2. 100 percent occupancy and development to be assumed

IV. Trip Distribution

- A. Assumptions as to the directional distribution of traffic to and from the development.
- B. Assumptions as to the peak hour percentages
- C. Assumptions as to the peak hour directional splits
- D. Assumptions as to the pass-by trips, if applicable – must be approved by the municipality

V. Analysis

- A. Horizon year traffic projections
 - 1. Document background traffic growth based on outside sources or other approved methods.
 - 2. Project traffic volumes to a horizon year equal to the anticipated opening year of the development, assuming full build-out and occupancy.
- B. Level of Service (LOS) and capacity analysis for peak periods
 - 1. Compute the projected LOS and capacity analysis for each access point and control point to the adjacent road system based on the development by phase
 - 2. Compare LOS before development to LOS after development, if applicable, for the assumed horizon year
 - 3. Link analysis, if applicable

- C. Intersection and Roadway Geometry – Existing and Proposed
 - 1. Distances from existing streets, driveways, and/or median cuts
 - 2. Alignment with existing streets, driveways, and/or median cuts
 - 3. Intersection layout
 - 4. Sight distance
 - 5. Right-of-way width
 - 6. Lane width(s)
 - D. Site Circulation
 - E. Transit Stop(s)
- VI. Recommendations
- A. Site Access
 - B. Intersection Improvements
 - 1. Traffic control device(s) – modify existing or need for new
 - 2. Left and/or right turn lanes
 - 3. Acceleration and/or deceleration lanes
 - 4. Length of storage bays
 - C. Off-Site Improvements
 - D. Improvements by phasing (if applicable)
- VII. Appendix
- A. Raw Traffic Count Data
 - B. Documentation of Analysis

Additional Requirements – Level II Studies

- Level II Studies will be required when expected traffic volumes will exceed 500 or more peak hour trips.

In addition to the preceding information required for Level I studies, the following information on Trip Assignment and Additional Horizon Year shall be provided in a Level II study:

- I. Trip Assignment
 - A. Show existing ADTs, proposed development traffic, and total traffic for all affected links on map which identifies the project and the surrounding roads.
 - B. Show A.M. and P.M. peak hour turning movements for the existing traffic, the proposed development traffic, and the combined traffic at all project entrance intersections, and affected intersections within the study area.
 - C. Discuss the effects of phasing of the proposed project.
- II. Additional Horizon Year

- A. Conduct analyses for horizon years equal to the anticipated opening year of the development, assuming full build-out and occupancy, and 10 years after the opening date.

Review of the Traffic Access and Impact Study

The study will be reviewed by a professional consultant(s) selected by the municipality as well as the municipality's staff. The Erie County Metropolitan Planning Organization shall be invited to participate in this review.

Note: All costs of study review, consistent with the provisions of the Pennsylvania Municipalities Planning Code, will be the developer's responsibility.

Section 1304.4: Shall be amended by adding the following: All developments must show full compliance with Section 407 of the Borough's Zoning Ordinance.

Section 1304.7: Shall be amended by addition of the following: For retail developments of seventy thousand (70,000) square feet of floor area or more, the pedestrian plans shall include provisions for transit stops, bicycle parking and shall demonstrate safe pedestrian flows to the main entrance(s) of the development. These Plans shall be reviewed and approved or denied using such standard references as Transportation and Land Development (2nd Edition), Institute of Transportation Engineers (ITE). See Chapter 8 of that source for additional guidance.

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Appendix C: Amendments for Washington Township



**Zoning Ordinance Amendment
Washington Township**

General Note: The Zoning Ordinance, in Section 150-24 should contain a general reference “See also the Townships Subdivision and Land Development Ordinance and also Section 116.18 of the Townships Code of Ordinances Re: Driveways.

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Washington Township Subdivision and Land Development Ordinance

The current Section 119-34.(3). Will be deleted and the following inserted.

Proposed Amendment to Section 119-34.(3). Traffic Impact Analysis: Traffic Impact Analysis will be required in the following circumstances. These studies can be in one of two levels.

Required Specifications for Traffic Access and Impact Studies – Report Requirements – Level I Studies

- I. Introduction: A formal traffic access and impact study will be required when the proposed development will meet any of the following criteria:
 - Generate an average daily traffic volume of 3,000 vehicles or more
 - During any one-hour period 100 or more trips are generated
 - Significantly impact the Township’s road system in the opinion of the Township Engineer or professional consultant.
- A. Description of site including a location map
- B. Type of project
 1. If residential, number and type of dwelling units
 2. If commercial or industrial, square footage and type of development
- C. Other planning data which may be pertinent
- D. Map of project with proposed access points shown
- II. Existing Conditions
 - A. Directional traffic counts on roads adjacent to property with access to development
 1. Traffic counts should be not more than two years old
 - B. Level of service of intersection(s) (if applicable)
 1. Highway capacity software (HCS) or Synchro is recommended
 2. Other nationally recognized software can be used
- III. Trip Generation Rates
 - A. Listing of trip generation rates
 - B. Listing of sources for rates used
 1. *ITE Trip Generation* manual, latest edition
 2. If the type proposed development is not addressed in the ITE manual, then other rates may be used as long as they are documented and have been approved by the municipality.
 - C. Calculation of trip ends by type of generator

1. Traffic generated by phase
2. 100 percent occupancy and development to be assumed

IV. Trip Distribution

- A. Assumptions as to the directional distribution of traffic to and from the development.
- B. Assumptions as to the peak hour percentages
- C. Assumptions as to the peak hour directional splits
- D. Assumptions as to the pass-by trips, if applicable – must be approved by the municipality

V. Analysis

- A. Horizon year traffic projections
 1. Document background traffic growth based on outside sources or other approved methods.
 2. Project traffic volumes to a horizon year equal to the anticipated opening year of the development, assuming full build-out and occupancy.
- B. Level of Service (LOS) and capacity analysis for peak periods
 1. Compute the projected LOS and capacity analysis for each access point and control point to the adjacent road system based on the development by phase
 2. Compare LOS before development to LOS after development, if applicable, for the assumed horizon year
 3. Link analysis, if applicable
- C. Intersection and Roadway Geometry – Existing and Proposed
 1. Distances from existing streets, driveways, and/or median cuts
 2. Alignment with existing streets, driveways, and/or median cuts
 3. Intersection layout
 4. Sight distance
 5. Right-of-way width
 6. Lane width(s)
 7. Between Fry Road and Silverthorn Road, the distance from access point to nearest ramp radius
- D. Site Circulation
- E. Transit Stop(s)

VI. Recommendations

- A. Site Access
- B. Intersection Improvements
 1. Traffic control device(s) – modify existing or need for new
 2. Left and/or right turn lanes

3. Acceleration and/or deceleration lanes
 4. Length of storage bays
- C. Off-Site Improvements
 - D. Improvements by phasing (if applicable)
- VII. Appendix
- A. Raw Traffic Count Data
 - B. Documentation of Analysis

Additional Requirements – Level II Studies

- Level II Studies will be required when expected traffic volumes will exceed 500 or more peak hour trips.

In addition to the preceding information required for Level I studies, the following information on Trip Assignment and Additional Horizon Year shall be provided in the Level II study:

I. Trip Assignment

- A. Show existing ADTs, proposed development traffic, and total traffic for all affected links on map which identifies the project and the surrounding roads.
- B. Show A.M. and P.M. peak hour turning movements for the existing traffic, the proposed development traffic, and the combined traffic at all project entrance intersections, and affected intersections within the study area.
- C. Discuss the effects of phasing of the proposed project.

II. Additional Horizon Year

- A. Conduct analyses for horizon years equal to the anticipated opening year of the development, assuming full build-out and occupancy, and 10 years after the opening date.

Review of the Traffic Access and Impact Study

The study will be reviewed by a professional consultant(s) selected by the municipality as well as the municipality's staff. The Erie County Metropolitan Planning Organization shall be invited to participate in this review.

Note: All costs of study review, consistent with the provisions of the Pennsylvania Municipalities Planning Code, will be the developer's responsibility.

Article V of the Township's SALDO will be amended as follows:

Section 119-26.B: Design Standards will be amended to add the following sentence: See also Section 116-18 of the Township Code of Ordinances, re: Driveways.

Section 119-26.B: Design Standards will be amended to delete the last sentence and insert the following:

“For retail developments of seventy thousand (70,000) square feet of floor area or more, the parking lot plans shall include provisions for transit stops, bicycle parking and shall demonstrate safe pedestrian flows to the main entrance(s) of the development. These Plans shall be reviewed and approved or denied using such standard references as Transportation and Land Development (2nd Edition), Institute of Transportation Engineers (ITE). Specific reference is made to Chapter 8 of that book.”

Section 119-26.F will be added to the current ordinance as follows:

Section 119-26.F Sidewalks: Any development which fronts on a road with an estimated average daily traffic volume of 10,000 vehicles per day will provide a sidewalk. The sidewalk shall be concrete, be built six (6) feet in width, built to current PennDOT 408 standards and have at least a twenty- (20) foot buffer to the edge of the cartway. If a pedestrian/bikeway is officially planned, or constructed, and that facility will effectively serve the proposed development, the Township may waive the requirement for sidewalks.

Washington Township Driveway Ordinance

Following are the proposed amendments to Section 116-18 Driveways, etc.

Section 116-18. Driveways; Permits and Fees is amended by adding the following sections:

D. Definitions

There are certain key definitions that provide for a common basis for the regulation of driveways, and other aspects of access management.

Access: A driveway, street, or other means of passage of vehicles between the highway and abutting property, including acceleration and deceleration lanes and such drainage structures as may be necessary for property construction and maintenance thereof. (67 PA Code Chapter 441)

Auxiliary Lane: The portion of the roadway adjoining the through lane that is used for speed change, turning, storage for turning, deceleration, acceleration, weaving, and other purposes supplementary to through traffic movement.

Average Daily Traffic (ADT): The total volume of traffic during a number of whole days (more than one day) and less than one year divided by the number of days in that period.
Note: PennDOT now uses the acronym AADT (Annual Average Daily Traffic) for their count data.

Driveway: Every entrance or exit used by vehicular traffic to or from properties abutting a highway or road. (67 PA Code Chapter 441)

Egress: The exit of vehicular traffic from abutting properties to a street.

High Volume Driveway: A driveway used or expected to be used by more than 1,500 vehicles per day. (67 PA Code Chapter 441)

Ingress: The entrance of vehicular traffic to abutting properties from a street.

Interchange: A grade-separated system of access to and from highways that includes directional ramps for access to and from the crossroads.

Internal Trips: Site-generated trips that occur between two (2) or more land uses on the subject site without exiting onto the intersecting street.

Level of Service (LOS): A qualitative measure describing the operational conditions within a section of roadway or at an intersection that includes factors such as speed, travel time, ability to maneuver, traffic interruptions, delay, and driver comfort. Level of service is described as a letter grade system (similar to a school grading system) where delay (in seconds) is equivalent to a certain letter grade from A (free flowing) through F (worst rating).

Local Road: Every public highway other than a State highway. The term includes existing streets, lanes, alleys, courts, and ways. (67 PA Code Chapter 441)

Low Volume Driveway: A driveway used or expected to be used by more than twenty-five (25) but less than seven hundred fifty (750) vehicles per day. (67 PA Code Chapter 441)

Medium Volume Driveway: A driveway used or expected to be used by more than seven hundred fifty (750) but less than one thousand five hundred (1,500) vehicles per day. (67 PA Code Chapter 441)

Minimum Use Driveway: A residential or other driveway that is used or expected to be used by not more than twenty-five (25) vehicles per day. (67 PA Code Chapter 441)

Outparcel: A lot that is adjacent to the roadway that interrupts the frontage of another lot.

Stopping Sight Distance: The distance required by a driver traveling at a given speed to stop the vehicle after an object on the roadway becomes visible to the driver.

Storage Length: Lane footage needed for a right or left turn lane to store the maximum number of vehicles likely to accumulate during a peak period of travel.

Taper: The widening of the roadway to allow the redirection or transition of vehicles into or around an auxiliary lane.

Trip: A one-directional vehicular trip to or from a site.

Trip Generation: The total number of vehicular trips going to and from a particular land use on a specific site during a specific time period.

E. Minimum Use Driveways

This section is intended for minimum use driveways in Washington Township. These driveways are usually for a single dwelling, or perhaps two residential units.

1. **Location:** A driveway will not be any closer than
 - 30 feet to any road intersection.
 - 30 feet to any other driveway on this same side of the road.
 - If a driveway exists on the opposite side of the road, and is within twenty (20) feet of the proposed driveway, then the proposed driveway shall be aligned with the existing driveway if site conditions allow.
2. **Width:** Minimum Use Driveways shall be ten (10) feet to twelve (12) feet in width with a reasonable radius flare of fifteen (15) feet to twenty (20) feet where it connects the roadway.
3. **Number of Driveways per Property:** For most properties, only one driveway will be allowed. Along Township roads in the A-1 District, where the lot is at least two hundred (200) feet in width, a second driveway may be approved if it meets all criteria of this ordinance and there is at least thirty (30) feet in distance from the other property driveway.

4. Sight Distances: Driveways shall provide a safe sight distance for those using the driveway. Locations on vertical or horizontal curves which limit sight distances will be avoided. Plantings shall be avoided where they might hinder safe sight distances.*
5. When the physical circumstance of any lot makes the application of these standards infeasible, the Township may grant minimal relief after consultation with the Township Engineer.

**See also Section 116-21 of the Township Code and Appendix A.*

F. Driveways: Driveway Standards – Regulations for low-, medium-, and high-volume driveways on Route 6N

1. Number of Driveways

- a. Only one (1) access shall be permitted for a property, or each four hundred (400) feet of frontage. An additional access or driveway shall be permitted if the applicant demonstrates that additional access is necessary to accommodate traffic to and from the site and it can be achieved in a safe and efficient manner.
- b. For a property that abuts two (2) or more roadways, the Township may restrict access to only that roadway that can more safely and efficiently accommodate traffic.
- c. If the Township anticipates that a property may be subdivided and that the subdivision may result in an unacceptable number or arrangement of driveways, or both, the Township shall require the property owner to enter into an access covenant to restrict future or control access.

2. Corner Clearance

- a. Corner clearance shall be at least four hundred (400) feet.
- b. Access shall be provided to the roadway where corner clearance requirements can be achieved.
- c. If the minimum driveway spacing standards cannot be achieved due to constraints, the following shall apply in all cases:
 - (1) There shall be a minimum twenty- (20) foot tangent distance between the end of the intersecting roadway radius and the beginning radius of a permitted driveway.
 - (2) The distance from the nearest edge of cartway of an intersecting roadway to the beginning radius of a permitted driveway shall be a minimum of forty-five (45) feet.
- d. If no other reasonable access to the property is available, and no reasonable alternative is identified, the driveway shall be located the farthest possible distance from the intersecting roadway. In such cases, directional connections (i.e., right in/right out only, right in only or right out only) may be required.

- e. The Township shall require restrictions at the driveway if the Township engineer determines that the location of the driveway and particular ingress or egress movements will create safety or operational problems.
3. **Safe Sight Distance and Driveway Spacing:** The purpose of this section is to help determine the spacing between driveways on the same side of the road for Route 6N. For local roads and streets, current local practice would apply.
- a. At least minimum safe sight distance shall be available for all permitted turning movements at all driveway intersections according to the table below. However, optimal sight distance is preferable to minimum sight distance along a property frontage and should be provided where possible per 67 Pa. Code § 441.8.

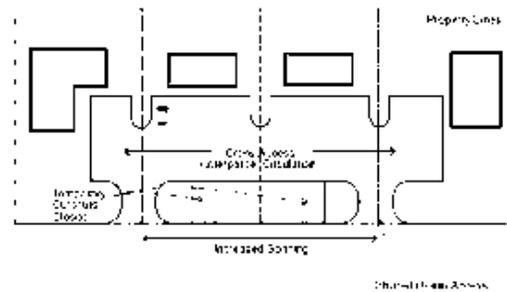
Highway Speed (mph)	Sight Distance (feet)
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645

- b. All driveways and intersecting roadways shall be designed and located so that the sight distance is optimized to the degree possible without jeopardizing other requirements such as intersection spacing, and at least minimum sight distance requirements are met. In any case, where a driveway is to access Route 6N in an area posted at forty-five (45) miles per hour, a minimum of four hundred (400) feet separation between driveways is required.
4. **Driveway Channelization**
- a. For high- and medium-volume driveways, channelization islands and medians shall be used to separate conflicting traffic movements into specified lanes to facilitate orderly movements for vehicles and pedestrians. For low-volume driveways, physical channelization will not be required; however, ingress and egress lanes shall be clearly marked using pavement markings. As possible, the white (outside edge) and double yellow line (lane separation) format shall be used.
 - b. Where it is found to be necessary to restrict particular turning movements at a driveway, due to the potential disruption to the orderly flow of traffic or a result of sight distance constraints, the Township may require a raised channelization island.
 - c. Raised channelization islands shall be designed with criteria consistent with the latest AASHTO publication entitled *A Policy on Geometric Design of Highways and Streets*.

5. Joint and Cross Access:

- a. The Township may require a joint driveway in order to achieve the four hundred (400) foot driveway spacing standards.
- b. Adjacent non-residential properties shall provide a joint or cross-access driveway to allow circulation between sites wherever feasible along Route 6N. The following shall apply to joint and cross-access driveways:

Joint Driveways and Cross Access



Source: TRB Access Management Manual, 2003.

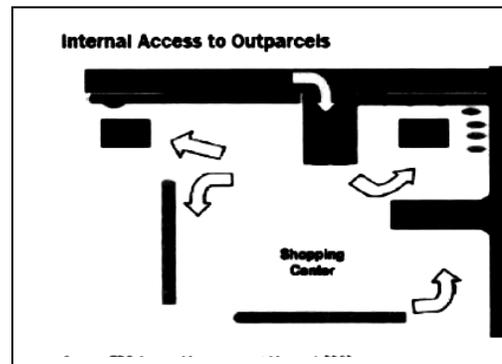
- (1) The driveway shall have a design speed of 10 mph and have sufficient width to accommodate two-way traffic including the largest vehicle expected to frequently access the properties.
- (2) A circulation plan that may include coordinated or shared parking shall be required.
- (3) Features shall be included in the design to make it visually obvious that abutting properties shall be tied in to provide cross access.

c. The property owners along a joint or cross-access driveway shall:

- (1) Record an easement with the deed allowing cross access to and from other properties served by the driveway.
- (2) Record an agreement with the Township so that future access rights along the driveway shall be granted at the discretion of the Township and the design shall be approved by the Township engineer.
- (3) Record a joint agreement with the deed defining the maintenance responsibilities of each of the property owners located along the driveway.

6. Access to Outparcels:

- a. For commercial and office developments under the same ownership and consolidated for the purposes of development or phased developments comprised of more than one building site, the Township shall require that the development be served by an internal road that is separated from the main roadway.
- b. All access to outparcels shall be internalized using the internal roadway.
- c. The driveways for outparcels shall be designed to allow safe and efficient ingress and egress movements from the internal road. The required driveway throat area shall not be compromised.



- d. The internal circulation roads shall be designed to avoid excessive queuing across parking aisles.
- e. The design of the internal road shall be in accordance with all other sections of this Ordinance.
- f. All necessary easements and agreements required under Section 6.c shall be met.
- g. The Township may require an access covenant to restrict an outparcel to internal access only.

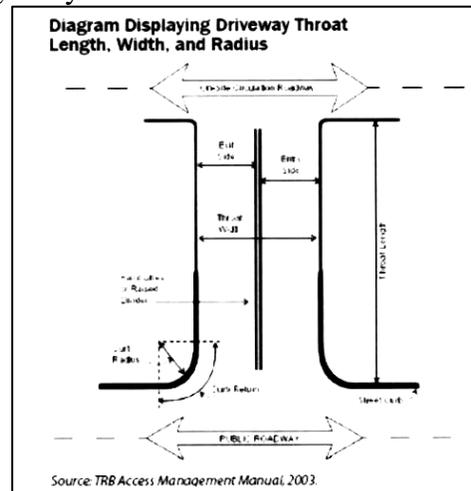
G. Driveway Design Elements

1. Driveway Throat Length:

- a. For low-volume driveways, the throat length shall be a minimum of fifty (50) feet or as determined by queuing analysis.
- b. For medium-volume driveways, the throat length shall be a minimum of one hundred twenty (120) feet or as determined by a queuing analysis.
- c. For high-volume driveways, the throat length shall be a minimum of one hundred fifty (150) feet or as determined by a queuing analysis.

2. Driveway Throat Width:

- a. For driveways without curb:
 - (1) Low- and medium-volume driveways shall have a minimum width of ten (10) feet for one-way operation and a minimum width of twenty (20) feet for two-way operation.
 - (2) The design of high-volume driveways shall be based on analyses to determine the number of required lanes.



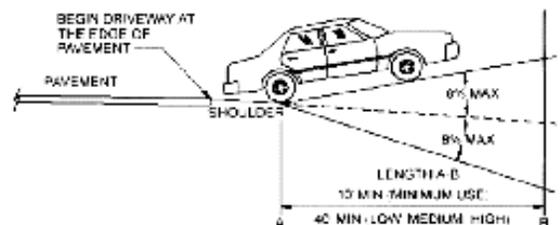
- b. For driveways with curb, two (2) feet should be added to the widths contained in Section a. (1) and a. (2).
- c. The Township may require additional driveway width to provide turning lanes for adequate traffic flow and safety.
- d. The Township may require that the driveway design include a median to control movements. Where medians are required or permitted, the minimum width of the median shall be four (4) feet to provide adequate clearance for signs.

3. Driveway Radius:

- a. The following criteria shall apply to driveway radii:
 - (1) For low-volume driveways, the radii shall be a minimum of fifteen (15) feet uncurbed and twenty-five (25) feet curbed.

- (2) The medium-volume driveways, the radii shall be a minimum of twenty (20) uncurbed and twenty-five (25) feet curbed.
 - (3) For high-volume driveways, the design should be reviewed by the Township engineer on local roads and PennDOT on State-maintained roadways, with local consultation.
- b. For all driveways, the radii shall be designed to accommodate the largest vehicle expected to frequently use the driveway.
 - c. Except for joint driveways, no portion of a driveway radius may be located on or along the frontage of an adjacent property.
4. **Angle of Intersection:** All driveways shall intersect the street at a ninety degree (90°) angle. If this is physically not possible, the Township Engineer may allow a variance to a sixty-degree (60°) angle.
5. **Driveway Profile:**
- a. Driveway grade requirements where curb is not present on the intersecting street:
 - (1) Shoulder slopes may vary from four percent (4%) to six percent (6%). When shoulders are present, the existing slope shall be maintained across the full shoulder width.
 - (2) The change in grade between the cross slope of the connecting roadway or shoulder and the driveway shall not exceed six percent (6%).
 - (3) The driveway grade shall not exceed six percent (6%) within forty (40) feet for low-, medium-, and high-volume driveways.
 - (4) A forty- (40) foot minimum vertical curve should be used for a high-volume driveway.
 - b. Driveway grade requirements where curbs and sidewalks are present:
 - (1) The difference between the cross slope of the roadway and the grade of the driveway apron may not exceed six percent (6%).
 - (2) The driveway grade shall not exceed six percent (6%) within forty (40) feet for low-, medium-, and high-volume driveways.
 - (3) If a planted area exists between the sidewalks and curb, the following shall apply:
 - (a) The grade of the planted area shall not exceed six percent (6%).
 - (b) If the driveway grade would exceed six percent (6%) in the area between the curb and the sidewalk, the outer edge (street side) of the sidewalk may be depressed to enable the driveway grade to stay within six

Driveway Profile



Source: TRB Access Management Manual, 2003.

percent (6%). A maximum sidewalk cross slope of two percent (2%) must be maintained.

- (c) If the sidewalk cross slope exceeds two percent (2%), the entire sidewalk may be depressed. The longitudinal grade of the sidewalk may not exceed six percent (6%).
- b. Although site conditions may not allow strict adherence to these guidelines in this Ordinance, every effort should be made to design and construct the safest and most efficient access onto the Township or State roadway.

This is an optional section for additional “in” and “out” lanes for high-volume driveways – 1,500 vehicles a day or more.

Auxiliary Lanes: Auxiliary lanes separate turning vehicles from through traffic, thus they increase capacity and improve operations at intersections. They reduce the potential for rear-end crashes and interference or disruption of the flow of through traffic. They may (shall) be required for high-volume driveways.

1. Right Turn Lane/Deceleration Lane

a. Unsignalized Intersections:

- (1) A right turn lane shall be considered on the major road (not stop-controlled) at an unsignalized intersection when any one or a combination of the following conditions exists:
 - (a) Speed in excess of 40 mph.
 - (b) High average daily traffic on the through roads (5,000 vehicles per day or more).

Design Criteria

- (1) The desirable width for a right turn lane is fourteen (14) feet with curb and twelve (12) feet without curb. The minimum width of right turn lanes shall be thirteen (13) feet with curb and eleven (11) feet without curb. If not curbed, shoulders shall be designed in accordance with PennDOT 3R criteria found in PennDOT Publication 13M: *Design Manual Part II*, or the appropriate successor regulations.
- (2) The required lengths of right turn lanes shall consider the following components as may be applicable:
 - (a) Deceleration distance in accordance with AASHTO publication *A Policy on Geometric Design of Highways and Streets*.
 - (b) Taper length in accordance with AASHTO publication *A Policy on Geometric Design of Highways and Streets*.
 - (c) The right turn or deceleration lane shall be designed based on an analysis that projects traffic volumes for a ten- (10) year period from the anticipated opening of the proposed development.

2. Left Turn Lane

a. Unsignalized Intersections:

- (1) For the arterial highway, Highway Research Record 211 (HRR 211) provides warrants for requiring a left turn lane.
- (2) A left turn lane shall be required when the appropriate HRR 211 nomograph indicates that the warrant for a one hundred (100) foot long left turn lane is met for the anticipated completion date of the development.

- (3) A left turn lane shall be required if the visibility to the rear of a vehicle stopped to turn left into the proposed access does not meet minimum sight distance requirements and no alternative is available.

b. Signalized Intersections:

A left turn lane shall be required when a capacity analysis indicates that the operation of an intersection, approach, or movement will operate at unacceptable levels of service and the operation of the intersection, approach, or movement can be improved with the installation of one or more left turn lanes. Levels of service E and F should be considered unacceptable in rural areas and a level of service F should be considered unacceptable in urban areas.

c. Design Criteria:

- (1) The desirable width for left turn lanes is twelve (12) feet. The minimum width shall be ten feet (10), unless the percent of trucks will exceed five percent (5%), then eleven (11) feet shall be the minimum width.
- (2) The length of a left turn lane shall consider the following components as applicable:
 - (a) Storage bay length.
 - (i) Shall accommodate the ninety-fifth (95th) percentile queue length for signalized intersections.
 - (ii) Shall be determined from the appropriate nomograph in HRR 211 for the uncontrolled approach of an unsignalized intersection.

Deceleration length in accordance with AASHTO publication *A Policy on Geometric Design of Highways and Streets*.

- (b) Taper length in accordance with AASHTO publication *A Policy on Geometric Design of Highways and Streets*.

3. Acceleration Lane

- a. May be required on arterial highways where operating speeds are in excess of 40 mph and where access points are located a sufficient distance apart to permit the installation of acceleration lanes.
- b. The design length and width shall follow criteria found in the latest edition of *A Policy on Geometric Design of Highways and Streets* and shall conform to PennDOT requirements on State-maintained highways.