

Muncy Area Corridor Access Management Plan

*Hughesville and Muncy Borough, Muncy, Muncy Creek and Wolf Township,
Lycoming County, PA*



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Table of Contents

| | Page |
|---|-----------|
| Executive Summary | 1 |
| <hr/> | |
| Introduction | 3 |
| <hr/> | |
| <i>Overview</i> | 3 |
| <i>Process</i> | 3 |
| <i>Land Use Assumptions</i> | 4 |
| Existing Transportation Network | 6 |
| <hr/> | |
| <i>Transportation Service Areas</i> | 6 |
| <i>Roadway Characteristics</i> | 6 |
| <i>Existing Traffic Volumes</i> | 8 |
| Existing Transportation Conditions | 10 |
| <hr/> | |
| <i>Analysis Methodology</i> | 10 |
| <i>Preferred Levels of Service</i> | 10 |
| <i>Programmed Improvements</i> | 11 |
| <i>Existing Levels of Service</i> | 11 |
| <i>Existing Improvement Plan</i> | 11 |
| Future Traffic Conditions | 12 |
| <hr/> | |
| <i>Future Traffic Components</i> | 12 |
| <i>Trip Generation</i> | 12 |
| <i>Trip Distribution</i> | 13 |
| <i>2034 Future Pass-Through Traffic</i> | 13 |
| <i>2034 Future Pass-Through Traffic Levels of Service</i> | 14 |
| <i>2034 Future Pass-Through Improvement Plan</i> | 14 |
| <i>2034 Future Development Traffic</i> | 14 |
| <i>2034 Future Development Traffic Levels of Service</i> | 14 |
| <i>2034 Future Development Improvement Plan</i> | 16 |
| <i>Access Management Guidelines</i> | 20 |
| <i>Multi-Modal Considerations</i> | 20 |
| Transportation Capital Improvement Plan | 21 |
| <hr/> | |
| <i>Opinions of Cost for Capital Improvements</i> | 21 |
| <i>Future Development Transportation Capital Improvement Plan</i> | 22 |
| <i>Impact Fee</i> | 38 |

Appendix A – Meeting Agendas

Appendix B – Land Use Assumptions Report

Appendix C – Traffic Count Data and Field Information

Appendix D – Level of Service Methodology

Appendix E – Existing Capacity/Level of Service Analysis Worksheets

Appendix F – Trip Generation Estimates

Appendix G – Future (2034) Pass-Through Capacity/Level of Service Analysis Worksheets

Appendix H – Future (2034) Development Capacity/Level of Service Analysis Worksheets

Appendix I – Access Management Concepts

Appendix J – Multi-Modal Considerations

List of Tables

| Number | | Page |
|---------------|--|-------------|
| 1. | Land Use Assumptions Report 2034 Build-out Summary – LUAR 1/3 Full Build-Out Assumption | 5 |
| 1A. | Land Use Assumptions Report 2034 Build-out Summary – Reduced Growth Assumptions for Analyses (15% Full Build-Out Assumption) | 5 |
| 2. | Existing Transportation Network Summary | 7 |
| 3. | Study Intersections | 7 |
| 4. | Preferred Level-of-Service Criteria | 10 |
| 5. | Future Weekday Morning and Afternoon Peak Hour Trip Generation, LUAR 1/3 Full Build-Out Growth Assumption | 12 |
| 5A. | Future Weekday Morning and Afternoon Peak Hour Trip Generation, Reduced Growth Alternative | 12 |
| 6. | Directions of Approach and Departure TSA 1 Development | 13 |
| 7. | Development Improvements - Reduced Growth Alternative (15% Full Build-Out) | 18 |
| 7A. | Alternative Development Improvements | 19 |
| 8. | Development Improvements Cost Estimates (15% Full Build-Out) | 23 |
| 8A. | Development Improvements Cost Estimates (15% Full Build-Out) with PA 405 Bridge Widening | 28 |
| 8B. | Development Improvements Cost Estimates with Additional Improvements to PA 405 Corridor | 33 |

List of Figures

- 1: Existing Peak Hour Traffic Volumes
- 2: Existing Peak Hour Level of Service
- 3: 2014 Existing AADT and Directions of Approach/Departure
- 4: 2034 Pass-Through Peak Hour Traffic Volumes
- 5: 2034 Pass-Through Peak Hour Level of Service
- 6: 2034 Development Peak Hour Traffic Volumes (LUAR 1/3 Full Build-Out Growth Assumption)
- 6A: 2034 Development Peak Hour Traffic Volumes (Reduced Growth Alternative)
- 7: 2034 Development Peak Hour Level of Service (LUAR 1/3 Full Build-Out Growth Assumption)
- 7A: 2034 Development Peak Hour Level of Service (Reduced Growth Alternative)
- 8: 2034 Development Peak Hour Level of Service with Improvements (LUAR 1/3 Full Build-Out Growth Assumption)
- 8A: 2034 Development Peak Hour Level of Service with Improvements (Reduced Growth Alternative)

Executive Summary

The Muncy Area Corridor Access Management Plan examined twenty-one intersections along the key corridors in five municipalities, which included Hughesville and Muncy Boroughs as well as Muncy, Muncy Creek and Wolf Townships. The study area included one Transportation Service Area (TSA) and was developed so this area will not to exceed seven square miles, in order to be consistent with PA Act 209, if pursued in the future. The key corridors included portions of S.R. 2014, S.R. 2036, S.R. 2049, S.R. 0220 and S.R. 0405. Additional public hearings are required to implement an Act 209 traffic impact fee in the future, but the analyses were conducted with Act 209 criteria in mind.

The County provided various plans relevant to this study, and organized the Regional Corridor Study Committee. We coordinated with representatives from each municipality to gather information, including traffic impact studies, comprehensive plans, etc., as well as to solicit input regarding current conditions along the corridors, including safety concerns, access management issues, constraints along the corridors, and existing and proposed land use challenges.

We compiled and review the existing land use plans/policies/ordinances and traffic data as made available by the County, PennDOT, and participating municipalities. We also reviewed recent significant land development traffic impact studies as provided by the local municipalities or the County for additional or updated traffic counts and land use projections. We incorporated existing traffic and land use data for compatibility with Act 209 requirements, in the event that the municipalities should choose to use this corridor management plan to help establish Transportation Impact Fees in accordance with PA Act 209.

Early in the process, a study area field view driving tour with representatives from the participating municipalities and key stakeholders occurred in order to collectively document the existing conditions and refine the corridor issues. This allowed our team to move beyond documentation of the issues more expeditiously, in order to focus on the solutions by driving State Route 2014, State Route 2036, State Route 0220, and State Route 0405 through Muncy, Muncy Creek and Wolf Townships and Muncy and Hughesville Boroughs with local representatives who experience the issues on the corridors firsthand. As part of field view driving tour, areas prime for development were noted, as well as current or projected traffic issues such as heavy vehicle impacts, geometric (radii and bridge width) and sight distance restrictions, and areas experiences longer peak periods.

For consistency with PA Act 209, the transportation improvement analyses, corridor improvements and recommendations were completed in Act 209 format. With regards to the recommendations throughout the various analyses scenarios, the general recommended corridor improvements were developed through coordination and meetings with PennDOT, County, and municipal officials. A 20-year Transportation Capital Improvement Plan was outlined. The recommendations considered a preferred overall intersection level of service (LOS D) as developed in discussions with the committee and included traffic signal and roadway widening improvements to accommodate future traffic growth. It should be noted

that the improvements were developed with the intent to address capacity issues, in accordance with PA Act 209, but any recommendation would need to be fully evaluated through the typical design process before implementation and may not be implemented for safety or operational reasons.

The associated *Land Use Assumptions Report (LUAR)* included recommendations with regards to future land use and zoning. We also provided a document that will serve as a toolbox for Access Management Concepts, which could be implemented through land development policies that promote access management. Additionally, we have provided a Multi-Modal toolbox for consideration when implementing the recommended improvements in the future.

We have prepared conceptual opinions of cost for the recommended improvements, considering a 15% Full Build-Out Growth Alternative (with and without the PA 405 bridge widening over Muncy Creek) and additional improvements to better accommodate potential one-third Full Build-Out Growth for the PA 405 corridor due to this being an active growth area. We have identified potential responsibility for the improvements, such as development or PennDOT.

Introduction

Overview

This report has been prepared consistent with the criteria outlined in the Muncy Area Corridor Access Management Plan Scope of Work on behalf of the Lycoming County Planning Commission as well as in general consistency with the requirements set forth in Pennsylvania Act 209. Pennsylvania Act 209 was signed into law effective December 19, 1990, and it amends the Pennsylvania Municipalities Code (Act 247 of 1968, as amended) to permit municipalities to assess transportation impact fees on new development within their boundaries, provided they have adopted a municipal transportation impact fee ordinance in accordance with the procedures set forth in the Act. The Muncy Area Corridor Access Management Plan study area includes key corridors in the Boroughs of Muncy and Hughesville as well as Muncy, Muncy Creek, and Wolf Townships. The key corridors included portions of S.R. 2014, S.R. 2036, S.R. 2049, S.R. 0220 and S.R. 0405. This report parallels the *Roadway Sufficiency Analysis* report typically prepared for a Pennsylvania Act 209 study for consistency and ease of future use in establishing Transportation Impact Fees should the municipalities choose to do so.

Impact fees under Act 209 generally may only be used for those costs incurred for improvements designated in the adopted transportation capital improvements plan of the municipality that are attributable to new development. The impact fees cannot be used for municipal, non-transportation-related capital improvements; for the repair, maintenance, or operation of existing or new municipal transportation capital improvements; or for the upgrade or replacement of existing municipal transportation capital improvements due to operational or safety deficiencies not related to new development. The Act specifically and only applies to off-site transportation capital improvements attributable to new development; it neither applies to, nor restricts the procedures or powers of the municipality to require on-site transportation improvements to remedy impacts of new development, nor is it intended to replace the municipality's ordinance requirements for submission of traffic impact studies.

All appendices supporting the recommendations referenced in this report are contained in a separate bound document entitled *Muncy Area Corridor Access Management Plan Study Technical Appendices*, dated November 9, 2015.

Process

The process that Lycoming County has undertaken includes the completion of the analyses and reports consistent with the Act 209 legislation, as follows:

1. The organization of a Regional Corridor Study Committee, with representation from each municipality, tasked with providing input and reviewing progress of the study. In order to establish transportation impact fees in the future, a committee (also referred to as a Traffic Impact Fee Advisory Committee) would need to be appointed in accordance with Act 209 (PA Act No. 1990-209, Article V-A, Section 504-A). The geographic area of the municipalities that would be subject to such a transportation impact fee ordinance has been defined in the *Muncy Corridor Access Management Plan*

LUAR, and is limited to seven square miles consistent with the Act 209 transportation service area requirement. The meeting agendas of the Regional Corridor Study Committee, which provided an overview of discussions, are included in **Appendix A**.

2. Development of land use assumptions for future adoption within the municipalities and the designated geographic area known as the Transportation Service Area (TSA), which together with existing development are the subject of a roadway sufficiency analysis and development of a transportation capital improvement plan.
3. Completion and approval of a roadway sufficiency analysis for the Transportation Service Area, identifying traffic deficiencies and needed improvements attributable to existing traffic, future traffic not originating from within the service area (i.e., pass-through traffic), and future traffic originating from new development within the service area for a preferred level(s) of service in terms of desired traffic operations during the designated peak hour of study.
4. Development of a transportation capital improvement plan for future adoption, including costs, implementation priorities, and funding sources, specifically and separately addressing improvements required to remedy:
 - a. current traffic deficiencies resulting from **existing** traffic volumes and capacity limitations;
 - b. traffic deficiencies attributable to future **pass-through** traffic after existing deficiencies have been remedied; and
 - c. traffic deficiencies attributable to expected **new development** within the service area after pass-through traffic and after existing deficiencies have been remedied.
5. Calculation of a Transportation Impact Fee Ordinance based on the total cost of identified transportation improvements attributable to **new development** within the Transportation Service Area to be assessed on a “per trip” basis, as applicable.

A 20-year planning horizon has been selected for the purpose of this analysis, and the future year 2034 will be considered the design year. However, this document is not a static, “one-time” effort, as the County and municipalities may decide to finalize this document in accordance with the Act 209 legislation, which also has provisions for periodic updates of the roadway sufficiency analysis, capital improvement plan, and impact fees as changes in the land use assumptions, transportation improvement needs, or funding conditions occur.

Land Use Assumptions

For consistency with Act 209, the Muncy Area Corridor Access Management Plan includes a *Land Use Assumptions Report*, dated December 30, 2014, as prepared by Thomas Comitta Associates, Inc. In pursuance of a potential impact fee ordinance at a later time, the advisory committee would need to adopt the *Land Use Assumptions Report* by resolution as required by Act 209. A copy of the *Land Use Assumptions Report* is provided in **Appendix B**.

The *Land Use Assumptions Report* identifies the anticipated long-term development full build-out within the study area, as well as the projected short-term 2034 build-out. This 2034 projected build-out, one-third full build-out assumption, was the basis of an initial analysis to identify the transportation improvements needed to accommodate traffic under 2034 development conditions.

Mitigation of future traffic conditions under this initial one-third full build-out assumption would require a roadway cross-section with six or more lanes along multiple corridors in conjunction with multiple grade-separated intersection treatments and bridge replacements. These roadway improvements were deemed infeasible when considering the long-term goals of the study area municipalities and the potential costs of capital improvements. The projected 2034 one-third full build-out is summarized below in **Table 1**.

The build-out assumption was modified considering intersection capital improvements and roadway cross-sections that preserve the existing land use contexts of the study area corridors while still accommodating robust residential and non-residential growth. **Table 1A** summarizes the residential and non-residential growth under the modified or reduced growth assumption, which cut the twenty-year projected build-out of developable land roughly in half (from one-third to fifteen percent) of the initial LUAR projections. In pursuance of a future impact fee ordinance, the advisory committee would need to adopt a modified *Land Use Assumptions Report* with this reduced growth assumption that is the basis of the *Corridor Access Management Plan Report* and *Capital Improvement Plan*.

Table 1. Land Use Assumptions Report 2034 Build-Out Summary – LUAR 1/3 Full Build-Out Assumption

| Land Use Classification | 20-Year Build-Out Summary |
|--------------------------------|----------------------------------|
| Residential | 923 Dwelling Units |
| Non-Residential | 9,403,000 S.F. |

Table 1A. Land Use Assumptions Report 2034 Build-Out Summary – Reduced Growth Assumptions for Analysis (15% Full Build-Out Assumption)

| Land Use Classification | 20-Year Build-Out Summary |
|--------------------------------|----------------------------------|
| Residential | 445 Dwelling Units |
| Non-Residential | 4,260,700 S.F. |

Existing Transportation Network

This section includes a designation of the roadways and intersections selected to be evaluated as part of this study, as well as an inventory of physical and operational characteristics of the existing Township transportation system required for the completion of the *Corridor Access Management Plan*. This section also delineates the Transportation Service Area consistent with the Act 209 legislation.

Transportation Service Areas

Act 209 requires the establishment of specific study boundaries, or transportation service areas, for evaluation and application of transportation impact fees. By law, each transportation service area is required to be completely contiguous and is limited to a maximum size of seven square miles. Moreover, traffic impact fees for each transportation service area are applicable only to development located within that respective service area, and therefore, development traffic from one service area is considered pass-through traffic within the other service area(s). Further explanation of pass-through and development traffic will be provided in subsequent sections.

The Committee established a single transportation service area within the study area municipalities consistent with the requirements of Act 209, which is hereafter referred to as Transportation Service Area 1. The contiguous transportation service area measures less than the maximum seven square miles required by the Act 209 legislation. A more definitive delineation of the service area boundaries is included in Map 1 in the LUAR in Appendix B.

Transportation Service Area 1

Transportation Service Area 1 (TSA 1) comprises the land adjacent to the main roadway corridors in the study area, including the Boroughs of Muncy and Hughesville as well as Muncy, Muncy Creek, and Wolf Townships. The twenty-one (21) study area intersections located within the nearly 7 square mile service area are defined in **Table 3** and shown in **Figure 1**.

Roadway Characteristics

The Muncy Corridor Access Management Plan study area roadway system, as illustrated in Figure 1, consists primarily of two-lane, undivided roadways. Many of the roadways in the study area are two-lane suburban and rural roads. Major regional access to the study area municipalities is provided via Interstate 180.

Lycoming Mall Drive (SR 2014) is a principal arterial linking the study area municipalities with the Montoursville/East Williamsport area. John Brady Drive, PA 405, and US 220 are minor arterial roadways that link together the study area municipalities, connect the study area to neighboring municipalities, and provide access from collector roads to Interstate 180.

The operating characteristics of each of the major study roadways are summarized as shown in **Table 2**.

Table 2. Existing Transportation Network Summary

| Roadway | Roadway Classification ¹ | Roadway Ownership | Posted Speed Limit (mph) |
|--------------------------------|--|--------------------------|---------------------------------|
| Lycoming Mall Drive | Principal Arterial | State | 45 |
| Lycoming Mall Road | Major Collector | State | 40 |
| US 220 | Minor Arterial | State | 45/55 |
| Beacon Light/Rabbittown Road | Minor Collector | State | 40 |
| Middle Road/Quaker Church Road | Minor Collector | State | 35/50 |
| Village Road | Minor Collector | Muncy Township | 25 |
| I-180 | Interstate Highway | State | 65 |
| Lime Bluff Road | Minor Collector | State | 45 |
| SR 0405 | Minor Arterial | State | 35/40/55 |
| Chippewa Road | Minor Collector | State | 40 |
| John Brady Drive/Main Street | Minor Arterial | State | 40/45 |
| SR 0442 | Minor Arterial | State | 45 |
| Industrial Park Road | Minor Collector | Muncy Creek Township | 25/35 |

(1) Based on PennDOT's iTMS database.

Several other municipal roadways also comprise the transportation roadway network of the municipalities; however, these roadways are generally classified as local roadways that provide access to the arterials and collector roadways, but limited accessibility through the study area. Map 1 in the *Land Use Assumptions Report* shows the boundaries of the study area/single transportation service area.

Twenty-one (21) study intersections have been selected by the Lycoming County Planning Commission and study area municipalities to be evaluated and included in the *Corridor Access Management Plan*, and include the following intersections, as indicated in **Table 3** and shown in Figure 1:

Table 3. Study Intersections

| ID No. | TSA | Intersection | Current Traffic Control |
|---------------|------------|--|--------------------------------|
| 1 | 1 | Lycoming Mall Road & I-180 WB Ramps | Traffic Signal |
| 2 | 1 | Lycoming Mall Road & I-180 EB Ramps | Traffic Signal |
| 3 | 1 | Lycoming Mall Road & Lycoming Mall Drive | Traffic Signal |
| 4 | 1 | Lycoming Mall Drive & John Brady Drive | Traffic Signal |
| 5 | 1 | I-180 EB Ramps & US 220 | Traffic Signal |
| 6 | 1 | I-180 WB Ramps & US 220 | Traffic Signal |
| 7 | 1 | Village Road & US 220 | Stop Sign |
| 8 | 1 | Middle Road & US 220 | Stop Sign |
| 9 | 1 | Rabbittown Road & US 220 | Stop Sign |
| 10 | 1 | Lime Bluff Road & US 220 | Stop Sign |
| 11 | 1 | PA 405 & PA 118 | Traffic Signal |
| 12 | 1 | Industrial Park Road & John Brady Drive | Stop Sign |

| | | | |
|----|---|---|----------------|
| 13 | 1 | Industrial Parkway & Industrial Park Road | Stop Sign |
| 14 | 1 | Lime Bluff Road & John Brady Drive | Stop Sign |
| 15 | 1 | North Main Street & Industrial Park Road | Stop Sign |
| 16 | 1 | I-180 EB Ramps & PA 405 | Stop Sign |
| 17 | 1 | I-180 WB Ramps & PA 405 | Stop Sign |
| 18 | 1 | PA 442 & PA 405/Penn Street | Traffic Signal |
| 19 | 1 | PA 405 & Chippewa Road | Stop Sign |
| 20 | 1 | Lime Bluff Road & PA 405 | Stop Sign |
| 21 | 1 | Main Street/SR 2014 & Water Street/PA 405 | Traffic Signal |

Existing Traffic Volumes

Traffic operating conditions are influenced by the relationships between traffic volumes and the service capacities of the roadways or intersections. In order to evaluate the existing conditions on area roadways, manual turning movement traffic count data was obtained for 14 intersections that were included in the recently completed *Lycoming County Growth Area Land Use and Transportation Study* and manual turning movement traffic counts were conducted at 7 other study intersections during the weekday morning (7:00 AM to 9:00 AM) and weekday afternoon (4:00 PM to 6:00 PM) peak periods. The actual traffic counts are provided in **Appendix C**.

The additional traffic counts were completed in September and October 2014 and the traffic counts from the *Lycoming County Growth Area Land Use and Transportation Study* were adjusted to the existing conditions study year 2014, and this traffic count/volume data should be considered the baseline of the study area for determining new development or redevelopment’s effect on the study roadway network, based upon the vacancy/occupancy levels of each property at the time of the study. These traffic counts were tabulated by fifteen-minute periods to establish the four highest consecutive 15-minute periods, which constitute the weekday morning and weekday afternoon peak hour, and serve as the basis for this analysis. It is noted that the Transportation Advisory Committee would need to select a single peak hour for the calculation of transportation impact fees, if implemented, but for the purposes of this report the weekday afternoon peak hour is assumed for a future potential impact fee as this peak hour typically encompasses both residential and non-residential peak periods. Figure 1 illustrates the 2014 existing weekday afternoon peak hour traffic volumes at the study area intersections.

Data was obtained from PennDOT’s iTMS database to determine the traffic volumes typically entering and exiting the study area along the major study roadways and subsequently establish current traffic patterns along the area roadways. The 2014 average daily traffic volumes were obtained at the following locations and are summarized in **Figure 3**:

1. Lycoming Mall Road north of I-180
2. I-180/Susquehanna Beltway west of Lycoming Mall Road
3. Lycoming Mall Road north of Lycoming Mall Drive
4. Lycoming Mall Drive west of Lycoming Mall Road

5. Lycoming Mall Drive east of Lycoming Mall Road
6. US 220 between the I-180 EB and I-180 WB Ramps
7. US 220 east of Village Road
8. Middle Road south of US 220
9. Quaker Church Road north of Village Road
10. Rabbittown Road north of US 220
11. Lime Bluff Road south of US 220
12. US 220 east of Lime Bluff Road
13. Main Street/SR 0405 north of US 220
14. Main Street/SR 0405 south of US 220
15. Water Street/SR 0118 east of Main Street/SR 0405
16. John Brady Drive southeast of Lycoming Mall Drive
17. Industrial Park Road northwest of Industrial Parkway
18. North Main Street south of Industrial Park Road
19. SR 0405 east of Main Street
20. I-180/Susquehanna Beltway south of SR 0405
21. SR 0405 east of I-180
22. Penn Street/SR 2044 west of SR 0442
23. SR 0442 south of SR 0405
24. Chippewa Road northwest of SR 0405
25. Lime Bluff Road north of SR 0405

Existing Transportation Conditions

Evaluation of the existing transportation network is based on the physical (i.e., traffic control, intersection geometry, lane usage, etc.) and operational (i.e., traffic volumes, signal timing/phasing) characteristics of the study intersections during the peak operational periods.

Analysis Methodology

The peak hour traffic volumes shown in Figure 1 were analyzed to determine the existing operating conditions, in accordance with the standard techniques contained in the *Highway Capacity Manual (2010)*. These standard capacity/level-of-service analysis techniques, which calculate total control delay, are more thoroughly described in **Appendix D** for both signalized and unsignalized intersections, as well the correlation between average total control delay and the respective level of service (LOS) criteria for each intersection type.

Preferred Levels of Service

Consistent with the Act 209 legislation, the Regional Corridor Study Committee has adopted preferred level-of-service criteria for the study intersections. The preferred level of service is considered the operational design standard by which each study intersection must operate under existing conditions, future pass-through conditions, and future development conditions in this study. Capacity improvements are identified for any deficient (worsened) operations that do not satisfy the preferred levels of service at the study intersections.

According to Act 209, the preferred level of service may be waived at individual intersections or roadway segments based upon difficulty in implementing various improvements (i.e., geometric design limitations, topographic limitations, or the unavailability of necessary right-of-way). Similarly, for unsignalized intersections where the preferred level of service criterion is not satisfied, often signalization can mitigate the traffic deficiency; however, where traffic volumes do not meet traffic signal warrant criteria, as required by PennDOT, these intersections cannot be improved through signalization. Therefore, the required signalization/improvement must be waived or deferred until traffic volumes warrant signalization. As shown in **Table 4**, the Regional Corridor Study Committee has adopted specific preferred level-of-service criteria for the purposes of this study.

Table 4. Preferred Level-of-Service Criteria

| Intersection/ Roadway Type | Study Area/TSA 1 |
|---------------------------------------|-------------------------|
| Signalized | LOS D overall |
| Unsignalized (including roundabouts) | LOS D overall |

The preferred levels of service indicated above apply to overall intersection operations. No criteria was selected by movement/approach for the study area.

Programmed Improvements

The following are previously planned for, but not completed, improvements at the Muncy Area Corridor Access Management Plan study roadway segments and intersections which will directly affect traffic operations:

- **Realignment of Shady Lane and the Emergency Department expansion of Muncy Valley Hospital** – as part of the hospital expansion, Shady Lane will be shifted approximately 280' to the east where it will align with the PA 405/I-180 EB ramp. A channelized yield-controlled right-turn lane will provide egress from Shady Lane onto PA 405. A westbound right-turn lane and eastbound left-turn lane will also be added at the site/Shady Lane ingress on PA 405. No traffic signal installation is proposed as part of the realignment/Emergency Department expansion.
- **ARLE Grant application proposed improvements in Muncy Borough** – purchased and demolishing building on northeast corner to improve truck turning movements/sight line and possibly include a short WB right turn lane from PA 405/Water Street onto N. Main Street.

It should also be noted that PennDOT is currently in the process of evaluating and improving the intersection of **PA 405 and US 220**, and therefore this intersection was not studied as part of this project.

Existing Levels of Service

The existing weekday peak hour traffic volumes presented in Figure 1 were subject to detailed capacity/level-of-service analysis according to the methodology previously described. The results of the analysis are illustrated in **Figure 2**, and the detailed capacity/level-of-service analysis worksheets are contained in **Appendix E**.

As shown in Figure 2, all 21 study intersections presently operate with acceptable levels of service with respect to the preferred levels of service during the weekday morning and afternoon peak hours.

Existing Improvement Plan

Under present conditions, all 21 study area intersections meet the preferred level of service. No improvements are needed at the study area intersections in order to mitigate current deficiencies.

It is noted that the recommended transportation improvements contained herein do not preclude the necessity or desirability of improvements at other non-study intersections/roadways within the study area municipalities, or any other intersection/roadways where operational deficiencies or the need for traffic-calming measures may be identified in the future.

Future Traffic Conditions

A twenty-year timeframe was selected by the Lycoming County Planning Commission and study area municipalities for the Muncy Area Corridor Access Management Plan traffic analysis, which is consistent with the development projections contained in the *Land Use Assumptions Report*, and produces a forecast year of 2034.

Future Traffic Components

Total future traffic volume forecasts for 2034 include three components: existing traffic, pass-through traffic, and development traffic. The first component, **existing traffic** was described in the previous section. The second component of future traffic projections is **pass-through traffic**, which includes traffic generated by specific known future developments located within the adjacent municipalities or within the study municipalities themselves, but outside the designated transportation service area, as well as a regional background traffic growth factor of 0.39 percent per year, compounded for 20 years to 2034 (or 8.1 percent total).

Development traffic that is generated by new development within each respective/designated transportation service area constitutes the third and final component of future 2034 traffic volumes. Therefore, this section first addresses trip generation for the study area, based upon the development projections contained in the *Land Use Assumptions Report* and a reduced growth alternative, as well as the trip distribution assumptions utilized in the analysis.

Trip Generation

Based upon the *Land Use Assumptions Report*, vehicular trip generation was estimated for the 2034 weekday morning and afternoon peak hours utilizing the Institute of Transportation Engineers publication, *Trip Generation, 9th Edition*. The resulting 2034 weekday morning and afternoon peak hour trip generation for the one-third full build-out growth assumption is summarized in **Table 5**. The 2034 weekday morning and afternoon peak hour trip generation under the reduced growth alternative (15% full build-out) assumption is summarized in **Table 5A**. In addition, the detailed trip generation estimates are included in **Appendix F**.

Table 5. Future Weekday Morning and Afternoon Peak Hour Trip Generation, LUAR 1/3 Full Build-Out Growth Assumption

| LUAR 1/3 Full Build-Out Growth Assumption | Daily | WEEKDAY AM PEAK | | | WEEKDAY PM PEAK | | |
|---|---------|-----------------|-------|-------|-----------------|--------|--------|
| | | In | Out | Total | In | Out | Total |
| Total Trips, Excess Land Use on Existing Parcels | 47,680 | 2,198 | 1,054 | 3,252 | 1,858 | 2,409 | 4,267 |
| Total Trips, New Development | 169,347 | 3,857 | 1,841 | 5,698 | 6,278 | 8,143 | 14,421 |
| Total Trips (Entire Study Area), New Development & Excess Land Use on Ex. Parcels | 217,027 | 6,055 | 2,895 | 8,950 | 8,136 | 10,552 | 18,688 |

Table 5A. Future Weekday Morning and Afternoon Peak Hour Trip Generation, Reduced Growth Alternative

| <i>Reduced Growth (15%) Alternative</i> | Daily | WEEKDAY AM PEAK | | | WEEKDAY PM PEAK | | |
|---|--------------|----------------------------|------------|--------------|----------------------------|------------|--------------|
| | | In | Out | Total | In | Out | Total |
| Total Trips, Excess Land Use on Existing Parcels | 26,577 | 1,121 | 566 | 1,687 | 1,016 | 1,308 | 2,324 |
| Total Trips, New Development | 101,146 | 2,234 | 1,092 | 3,326 | 3,652 | 4,708 | 8,420 |
| Total Trips (Entire Study Area), New Development & Excess Land Use on Ex. Parcels | 127,723 | 3,355 | 1,658 | 5,013 | 4,668 | 6,016 | 10,744 |

Trip Distribution

Vehicular traffic volumes generated by new development over the next 20 years were generally distributed to the area roadway network based on existing travel patterns determined from the existing peak hour and daily traffic volumes entering and exiting the study area, illustrated in Figure 1, as well as the location of specific future development parcels with respect to the study roadway network and other major traffic generators and destinations. The resultant overall directions of approach and departure are indicated in **Table 6**.

Table 6. Directions of Approach and Departure Transportation Service Area 1 Development

| Roadway | External Location (to/from) | Arrival/Departure |
|---------------------------|------------------------------------|--------------------------|
| I-180/Susquehanna Beltway | Montoursville/Williamsport (east) | 32 % |
| Lycoming Mall Road | North of I-180 | 1 % |
| Quaker Church Road | North | 1 % |
| Rabbittown Road | North | 2 % |
| Main Street/SR 0405 | North/Picture Rocks Borough | 8 % |
| Water Street/SR 0118 | East | 5 % |
| SR 0442 | Southeast/Clarkstown | 5 % |
| Penn St/SR 2044/2055 | Muncy Borough | 4 % |
| I-180/Susquehanna Beltway | South | 17 % |
| SR 0405 | West/Muncy Borough | 11 % |
| Main Street | South/Muncy Borough | 6 % |
| Lycoming Mall Drive | West/Montoursville | 8 % |

2034 Future Pass-Through Traffic

Traffic generated by new development was generally assigned to the study intersections based on the trip distribution assumptions previously described. Also, an annual traffic growth rate

of 0.39 percent per year was applied to the existing peak hour traffic volumes to reflect regional traffic growth.

Moreover, future development traffic associated with three approved developments in the municipalities surrounding the study area municipalities have also been included in the future traffic projections. The approved developments in the adjacent municipalities that are anticipated to generate some traffic that may impact the study intersections include the Moxie Liberty Power Generation Plant in Clinton Township, as well as the mixed commercial and residential developments of Fairfield Crossings and Oakwoods in Fairfield Township.

The 2034 future pass-through weekday afternoon peak hour traffic volumes are illustrated in **Figure 4**.

2034 Future Pass-Through Traffic Levels of Service

The future 2034 pass-through traffic volumes illustrated in Figure 4 were subject to the previously described capacity/level-of-service analysis procedures to determine 2034 pass-through levels of service, and the detailed analyses are provided in **Appendix G**. Consistent with Act 209, the future conditions analysis was completed for future 2034 pass-through volumes for each study intersection, assuming implementation of the improvements identified in the Existing Improvement Plan, in order to determine the incremental traffic impacts and required mitigation of future pass-through traffic.

Figure 5 summarizes the results of the 2034 future pass-through traffic capacity/level-of-service analyses for the study intersections. Under 2034 future pass-through conditions, all 21 study area intersections meet the preferred level of service.

2034 Future Pass-Through Improvement Plan

No additional improvements are required to accommodate 2034 future pass-through traffic.

2034 Future Development Traffic

As previously explained, the traffic generated by new development internal to the designated transportation service areas constitutes the third and final component of future 2034 traffic. The 2034 future development traffic volumes were determined based on assignment of development traffic within the study area, and were added to 2034 future pass-through traffic volumes.

Assignment of the development trip generation to the study intersections results in 2034 future development traffic volumes, which are illustrated in **Figure 6 and 6A** for the LUAR 1/3 Full Build-Out Growth Alternative and 15% Full Build-Out Growth Alternative, respectively.

2034 Future Development Traffic Levels of Service

The future development traffic volumes presented in Figures 6 and 6A were subject to the previously described capacity/level-of-service analysis procedures to determine future 2034

development levels of service, and the detailed analyses are provided in **Appendix H**. The 2034 future development conditions are illustrated in **Figures 7 and 7A**. Under the LUAR 1/3 Full Build-Out growth assumption, the following 18 study intersections will not satisfy the preferred level of service criteria and require further improvements beyond the previously identified existing conditions improvements and programmed/committed improvements.

TSA 1 – Deficient Intersections (LUAR 1/3 Full Build-Out Growth Assumption)

- Lycoming Mall Road & I -180 WB Ramps
- Lycoming Mall Road & I-180 EB Ramps
- Lycoming Mall Road & Lycoming Mall Drive
- Lycoming Mall Drive & John Brady Drive
- I-180 EB Ramps & US 220
- I-180 WB Ramps & US 220
- Middle Road & US 220
- Rabbittown Road & US 220
- Lime Bluff Road & US 220
- PA 405 & PA 118
- Industrial Park Road & John Brady Drive
- Lime Bluff Road & John Brady Drive
- I-180 EB Ramps & PA 405
- I-180 WB Ramps & PA 405
- PA 442 & PA 405/Penn Street
- PA 405 & Chippewa Road
- Lime Bluff Road & PA 405
- Main Street/SR 2014 & Water Street/PA 405

Under the Reduced Growth Alternative (15% Full Build-Out) conditions, the following 16 study intersections will not satisfy the preferred level of service criteria and require further improvements beyond the previously identified existing conditions improvements and programmed/committed improvements. It should be noted that some of deficient study

intersections are the same under both the LUAR 1/3 Full Build-Out Growth Assumption and the Reduced Growth Alternative (15% Full Build-Out), but there are substantial differences in the intersection level of service and/or delay between the two growth assumption alternatives.

TSA 1 – Deficient Intersections (Reduced Growth Alternative)

- Lycoming Mall Road & I-180 WB Ramps
- Lycoming Mall Road & I-180 EB Ramps
- Lycoming Mall Road & Lycoming Mall Drive
- Lycoming Mall Drive & John Brady Drive
- I-180 EB Ramps & US 220
- Rabbittown Road & US 220
- Lime Bluff Road & US 220
- PA 405 & PA 118
- Industrial Park Road & John Brady Drive
- Lime Bluff Road & John Brady Drive
- I-180 EB Ramps & PA 405
- I-180 WB Ramps & PA 405
- PA 442 & PA 405/Penn Street
- PA 405 & Chippewa Road
- Lime Bluff Road & PA 405
- Main Street/SR 2014 & Water Street/PA 405

2034 Future Development Improvement Plan

Improvements were examined for both the LUAR 1/3 Full Build-Out Growth Alternative (**Figure 8**) and 15% Full Build-Out Growth Alternative (**Figure 8A**). The improvements necessary to achieve the preferred level of service criteria under 2034 Reduced Growth Alternative development traffic conditions at the study intersections are summarized in **Table 7**, and are also illustrated in **Figure 8A**. For the LUAR 1/3 Full Build-Out Growth Assumption, the improvements necessary to achieve the preferred level of service at each study intersection are illustrated in **Figure 8**. The Reduced Growth Alternative improvements are the basis of the Transportation Capital Improvement Plan and cost estimates further detailed in this report. As

discussed with the committee, an alternative cost estimate was also prepared for the improvements under the LUAR 1/3 Full Build-Out Growth Alternative for the intersections between PA 405/I-180 WB ramp and PA 405/Lime Bluff Road, which is an active growth area, along with the improvements to accommodate the 15% Full Build-Out Growth Alternative at the remaining intersections.

It should be noted that the improvements were developed with the intent to address capacity issues, in accordance with PA Act 209, but any recommendation would need to be fully evaluated through the typical design process before implementation and may not be implemented for safety or operational reasons. Under 2034 Reduced Growth Alternative development conditions, improvements are required at 16 study intersections to accommodate development-generated traffic within the transportation service areas in order to achieve the preferred levels of service. Additionally, the intersection of US 220 and the I-180 WB ramps meets the preferred LOS, but requires signal timing modifications due to signal timing changes recommended for other coordinated traffic signals. Of these 17 intersections, two intersections that would require signalization in order to meet preferred level of service are not included in the Future Development Improvement Plan, as they either do not meet warrants for installation of a traffic signal (Middle Road/US 220) or are not desired by the Regional Corridor Study Committee (Rabbittown Road/US 220) due to the current geometry and speed of the roadway.

Furthermore, two intersections, PA 405/PA 118 in Hughesville Borough and Main Street/PA 405 in Muncy Borough, have minor improvements included (the installation of short left turn lanes on the major street approach), but will fail to meet the preferred level of service under development conditions even with these improvements. Meeting the preferred intersection level of service at these two intersections would require significant property impacts and major geometric improvements that would be inconsistent with the Borough environment and desire to encourage walkability as described in the 2010 report *Creating Safe, Walkable and Healthy Communities in the Middle Susquehanna Region* (participatory planning report including Muncy and Hughesville Borough).

Lastly, it is noted that additional roadway and intersection improvements beyond those identified herein may be required due to developments that may develop at a greater intensity than assumed for this study, that may generate higher traffic volumes outside the weekday morning and afternoon peak hours, or that ultimately provide different access configurations than assumed for the purposes of this study. As such, traffic impact studies completed for these developments should be prepared to determine if additional improvements are required for sufficient traffic mitigation beyond the identified improvements in this study, and these additional improvements should ultimately be provided to ensure adequate traffic operations.

Table 7. Development Improvements - Reduced Growth Alternative (15% Full Build-Out)

| Int No. | Intersection | Current Traffic Control | Recommended Capacity Improvements |
|---------|---|-------------------------|--|
| 1 | Lycoming Mall Road & I-180 WB Ramps | Traffic Signal | Install 100' southbound left turn lane, 75' northbound left turn lane, dual 350' westbound left turn lanes. Modify traffic signal timings, time-based coordination with Intersection 2 (EB Ramps). |
| 2 | Lycoming Mall Road & I-180 EB Ramps | Traffic Signal | Install 250' eastbound left and right turn lanes, 100' northbound right turn lane, and 2nd southbound through lane. Modify signal timings, time-based coordination with Intersection 1 (WB Ramps). |
| 3 | Lycoming Mall Road & Lycoming Mall Drive | Traffic Signal | Install 2nd 250' southbound left turn lane and 2nd westbound through lane. Modify signal timings. |
| 4 | Lycoming Mall Drive & John Brady Drive | Traffic Signal | Install 200' westbound left turn lane, re-align eastbound right turn lane from separate slip lane to a channelized right turn at the intersection. Modify signal timings. |
| 5 | I-180 EB Ramps & US 220 | Traffic Signal | Install 300' southbound left turn lane and 2nd eastbound through lane. Modify signal timings, time-based coordination with Intersection 6 (WB Ramps). |
| 6 | I-180 WB Ramps & US 220 | Traffic Signal | Modify signal timings, time-based coordination with Intersection 5 (EB Ramps). |
| 7 | Village Road & US 220 | Stop Sign | No improvements recommended. |
| 8 | Middle Road & US 220 | Stop Sign | No improvements recommended. |
| 9 | Rabbittown Road & US 220 | Stop Sign | Traffic signal installation required to meet preferred level of service. Regional Corridor Study Committee does not recommend traffic signal installed at this location due to geometric configuration and speed of roadway. |
| 10 | Lime Bluff Road & US 220 | Stop Sign | Install traffic signal and 75' westbound left turn lane. |
| 11 | PA 405 & PA 118 | Traffic Signal | Install 75' northbound and southbound left turn lanes (restripe and remove on-street parking). Modify traffic signal timing. |
| 12 | Industrial Park Road & John Brady Drive | Stop Sign | Install traffic signal. Install 2nd through lanes in both directions on John Brady Drive and prohibit trucks/heavy vehicles from turning to/from Industrial Park Road at John Brady Drive. |
| 13 | Industrial Parkway & Industrial Park Road | Stop Sign | No improvements recommended. |
| 14 | Lime Bluff Road & John Brady Drive | Stop Sign | Install traffic signal. Install dual 275' southeastbound left turn lanes, 275' southwestbound right turn lane, and 75' northwestbound left turn lane. Install 2nd northwestbound through lane. |
| 15 | North Main Street & Industrial Park Road | Stop Sign | No improvements recommended. |

| | | | |
|----|---|----------------|--|
| 16 | I-180 EB Ramps & PA 405 | Stop Sign | Install traffic signal, time-based coordination with Intersection 17 (I-180 WB Ramps) |
| 17 | I-180 WB Ramps & PA 405 | Stop Sign | Install traffic signal, time-based coordination with Intersection 16 (I-180 EB Ramps). Install 2nd eastbound through lane. |
| 18 | PA 442 & PA 405/Penn Street | Traffic Signal | Install 2nd northbound through lane and 75' 2nd westbound right turn lane. Modify signal timings (time-based coordination with Intersections 19 and 20 (PA 405/Chippewa Rd & PA 405/Lime Bluff Rd). |
| 19 | PA 405 & Chippewa Road | Stop Sign | Install 75' eastbound left turn lane, dual 250' southbound left turn lanes, westbound 75' right turn lane, and 2nd westbound through lane. Install traffic signal (time-based coordination with Intersections 18 and 20 (PA 442/405/Penn St & PA 405/Lime Bluff Rd). |
| 20 | Lime Bluff Road & PA 405 | Stop Sign | Install 75' southbound left turn lane. Install minor shadow westbound left turn lane. Install 2nd eastbound and westbound through lanes. Install traffic signal (time-based coordination with Intersections 18 and 19 (PA 442/405/Penn St & PA 405/Chippewa Rd). |
| 21 | Main Street/SR 2014 & Water Street/PA 405 | Traffic Signal | Install 75' northbound and southbound left turn lanes (restripe and remove on-street parking). Modify traffic signal timing. |

Table 7A. Alternative Development Improvements (*Additional Improvements along PA 405 Corridor noted with italics*)*

| | | | |
|----|-----------------------------|----------------|--|
| 17 | I-180 WB Ramps & PA 405 | Stop Sign | Install traffic signal, time-based coordination with Intersection 16 (I-180 EB Ramps). Install 2nd eastbound through lane. <i>Install separate northbound left turn lane.</i> |
| 18 | PA 442 & PA 405/Penn Street | Traffic Signal | Install 2nd northbound through lane and 75' 2nd westbound right turn lane. Modify signal timings (time-based coordination with Intersections 19 and 20 (PA 405/Chippewa Rd & PA 405/Lime Bluff Rd). <i>Install 2nd westbound left turn lane.</i> |
| 19 | PA 405 & Chippewa Road | Stop Sign | Install 75' eastbound left turn lane, dual 250' southbound left turn lanes, westbound 75' right turn lane, and 2nd westbound through lane. Install traffic signal (time-based coordination with Intersections 18 and 20 (PA 442/405/Penn St & PA 405/Lime Bluff Rd). <i>Install 3rd through lane on PA 405 eastbound and westbound.</i> |
| 20 | Lime Bluff Road & PA 405 | Stop Sign | Install 75' southbound left turn lane. Install minor shadow westbound left turn lane. Install 2nd eastbound and westbound through lanes. Install traffic signal (time-based coordination with Intersections 18 and 19 (PA 442/405/Penn St & PA 405/Chippewa Rd). <i>Install 3rd through lane on PA 405 eastbound and westbound.</i> |

*These alternative improvements are for an active growth area in the study area, and therefore additional improvements at these intersections (17-20) as illustrated in Figure 8 were estimated to better accommodate growth more consistent with the LUAR 1/3 Full Build-Out Assumption.

Access Management Guidelines

Along with the improvements outlined above, it is important to consider access management along these key corridors as this is critical for commercial corridors where accesses to businesses must be provided safely and efficiently. Minimizing the frequency of accesses along the key corridors by encouraging desirable access alignment, joint accesses and adequate spacing will improve the operations and flow of traffic. We have prepared a document that will serve as a toolbox for Access Management Concepts, which could be implemented through land development policies that promote access management (**Appendix I**).

Additional details are provided in this set of Guidelines in the Appendix, including the following considerations and examples of potential applications:

- Road and Driveway Alignments
- Nearby Access Roads and Lanes
- Spacing of Street and Driveway Intersections
- Curb Cuts: Spacing and Width
- Sidewalks
- Crosswalks
- Street Trees
- Bicycle Lanes

Multi-Modal Considerations

Within the overall study area, consideration was given to pedestrian, bicyclists, and mass transit availability. Bicycle and pedestrians facilities should be considered based on the types of users supported, design requirements, safety and aesthetic features, connections to existing facilities, and other existing conditions. Examples of these facilities include sidewalks, sidepaths, multi-use trails, on-street bicycle lanes, shared lanes, and paved shoulders. As land development continues along the key corridors, pedestrian accommodations should be included in any new or modified traffic signal design. Bicycle facilities, such as bike lanes or adequate shoulders to share the road, should be included in areas designated as bicycle routes.

Also, when significant traffic generating development occurs in the study area, developers should be encouraged to work with the local transit authority (*River Valley Transit*) to coordinate appropriate addition of bus stops and/or bus routes. There are currently multiple bus routes in the study area, which may need to be expanded as development occurs. A current route map for the study area is included in the Appendix.

We have provided a Multi-Modal toolbox for consideration when implementing the recommended improvements in the future (**Appendix J**). In general, the participating municipalities may want to consider amending their ordinances to incorporate requirements related to facilities described in the toolbox, or they may desire to amend their zoning or subdivision and land development ordinances to require sidewalk widths in compliance with ADA requirements, as applicable.

Transportation Capital Improvement Plan

This section summarizes Muncy Area Corridor Access Management Plan's *Transportation Capital Improvement Plan* directly resulting from this study. If desired, in accordance with Act 209, the following requirements would need to be met in order to enact legally binding transportation impact fees in the future:

1. Converting/updating the *Corridor Access Management Plan Report* into a *Roadway Sufficiency Analysis*.
2. Public notice of a public hearing on the *Land Use Assumption Report* and *Transportation Capital Improvement Plan* to be published in two successive weeks, between seven and thirty days from the date of the hearing, in a local newspaper.
3. Making the *Transportation Capital Improvement Plan* available for public inspection at the municipal building of each study area municipality at least ten working days prior to the hearing.
4. A public hearing held to receive comments on each of the *Land Use Assumption Report* and *Transportation Capital Improvement Plan*.
5. Following the public hearings, adoption by resolution of a *Land Use Assumption Report* and *Roadway Sufficiency Analysis and Transportation Capital Improvement Plan* by study area municipalities as recommended by the Regional Corridor Study Committee.

A *Transportation Capital Improvement Plan* typically consists of three sections: an ***Existing Transportation Capital Improvement Plan***, a ***Future Pass-Through Transportation Capital Improvement Plan***, and a ***Future Development Transportation Capital Improvement Plan***. As no improvements are required nor recommended under existing and future pass-through conditions in order to meet the preferred level of service, the *Transportation Capital Improvement Plan* consists solely of the ***Future Development Transportation Capital Improvement Plan***.

Opinions of Cost for Capital Improvements

Preliminary opinions of costs for the identified capital improvements were developed based on readily available information from aerial images and field visits. Opinions of construction costs reflect estimates for material quantities and costs for construction items derived from recently bid construction projects and past project experience, as well as estimates for mobilization, maintenance and protection of traffic, erosion and sediment control, and drainage.

Additionally, the total project cost opinions include the following components:

- Engineering (10% - 15% of construction costs)
- Legal and Planning (5% of construction costs)
- Right-of-Way Acquisition
- Construction Inspection (10% - 15% of construction costs)
- Contingency (10% of project subtotal)

Future Development Transportation Capital Improvement Plan

The Future Development Transportation Capital Improvement Plan is summarized in **Table 8** and details the improvements recommended based on the preferred levels of service under future 2034 development traffic conditions under the Reduced Growth Alternative (15% Full Build-Out). Table 8 also provides a cost allocation of the improvements indicating the portions of the total cost for which PennDOT and future development are responsible, consistent with Act 209. **The total cost of the Future Development Transportation Capital Improvement Plan (15% Full Build-Out) without PA 405 Bridge Widening is approximately \$23,037,460 for TSA 1, with \$11,787,893 allocated to Development.** The anticipated completion year for each of the improvements is also included in Table 8.

In order to mitigate peak hour traffic queuing issues on PA 405 in the corridor between Intersection 18 (PA 442 & PA 405/Penn Street) and Intersection 20 (PA 405 & Lime Bluff Road), widening of the bridge that carries PA 405 over Muncy Creek would be required (in order to extend turn lanes at PA 442 & PA 405/Penn Street). A modified Future Development Transportation Capital Improvement Plan has been prepared and included to reflect these costs and is summarized in **Table 8A**. **The total cost of the Future Development Transportation Capital Improvement Plan (15% Full Build-Out) with PA 405 Bridge Widening is approximately \$45,324,360 for TSA 1, with \$22,931,343 allocated to Development.**

Additionally, as discussed with the committee, an alternative cost estimate was also prepared for the improvements under the LUAR 1/3 Full Build-Out Growth Alternative for the intersections between PA 405/I-180 WB ramp and PA 405/Lime Bluff Road, which is an active growth area, along with the improvements to accommodate the 15% Full Build-Out Growth Alternative at the remaining intersections as supplemented in Table 7A. This Alternative Future Development Transportation Capital Improvement Plan has been prepared and included to reflect these costs and is summarized in **Table 8B**. **The total cost of the Alternative Future Development Transportation Capital Improvement Plan with additional improvements along the PA 405 corridor is approximately \$50,171,380 for TSA 1, with \$25,354,853 allocated to Development.**

**Table 8 (15% Full Build-Out)
Development Improvements Cost Estimates - TSA 1**

| Int. No. | Intersection or Corridor | Improvements Required | Description | Total Project Cost | Allocated Funding | | Developer Costs | Construction Completion |
|----------|--|------------------------------|----------------------------|--------------------|-------------------|--------------|-----------------|-------------------------|
| | | | | | PennDOT Costs | Others Costs | | |
| 1 | Lycoming Mall Road & I-180 WB Ramps | Traffic Signal Modifications | [Description] | \$199,500 | \$74,813 | | \$124,688 | 2034 |
| 1 | Lycoming Mall Road & I-180 WB Ramps | Turn Lane (1) | NB & SB Left Turn Lanes | \$540,500 | \$270,250 | | \$270,250 | 2034 |
| 1 | Lycoming Mall Road & I-180 WB Ramps | Turn Lane (2) | WB Dual Left Turn Lanes | \$591,120 | \$295,560 | | \$295,560 | 2034 |
| 2 | Lycoming Mall Road & I-180 EB Ramps | Traffic Signal Modifications | [Description] | \$199,500 | \$74,813 | | \$124,688 | 2034 |
| 2 | Lycoming Mall Road & I-180 EB Ramps | Turn Lane (1) | NB Right Turn Lane | \$262,220 | \$131,110 | | \$131,110 | 2034 |
| 2 | Lycoming Mall Road & I-180 EB Ramps | Turn Lane (2) | EB Left & Right Turn Lanes | \$272,300 | \$0 | | \$272,300 | 2034 |
| 2 | Lycoming Mall Road & I-180 EB Ramps | Additional Through-Lane (1) | SB Second Through Lane | \$555,180 | \$277,590 | | \$277,590 | 2034 |
| 3 | Lycoming Mall Road & Lycoming Mall Drive | Traffic Signal Modifications | [Description] | \$119,800 | \$59,900 | | \$59,900 | 2034 |
| 3 | Lycoming Mall Road & Lycoming Mall Drive | Turn Lane (1) | Second SB Left Turn Lane | \$818,260 | \$409,130 | | \$409,130 | 2034 |

**Table 8 (15% Full Build-Out)
Development Improvements Cost Estimates - TSA 1**

| Int. No. | Intersection or Corridor | Improvements Required | Description | Total Project Cost | Allocated Funding | | Developer Costs | Construction Completion |
|----------|--|------------------------------|---|--------------------|-------------------|--------------|-----------------|-------------------------|
| | | | | | PennDOT Costs | Others Costs | | |
| 3 | Lycoming Mall Road & Lycoming Mall Drive | Additional Through-Lane (1) | Second WB Through Lane | \$1,021,800 | \$510,900 | | \$510,900 | 2034 |
| 4 | Lycoming Mall Drive & John Brady Drive | Traffic Signal Modifications | [Description] | \$279,300 | \$104,738 | | \$174,563 | 2034 |
| 4 | Lycoming Mall Drive & John Brady Drive | Turn Lane (1) | WB Left Turn Lane | \$599,820 | \$299,910 | | \$299,910 | 2034 |
| 4 | Lycoming Mall Drive & John Brady Drive | Other Improvement (1) | Re-align EBR from slip lane to channelized right turn at intersection | \$577,400 | \$288,700 | | \$288,700 | 2034 |
| 5 | I-180 EB Ramps & US 220 | Traffic Signal Modifications | [Description] | \$79,800 | \$39,900 | | \$39,900 | 2034 |
| 5 | I-180 EB Ramps & US 220 | Turn Lane (1) | SB (Off-Ramp) Left Turn Lane | \$245,500 | \$122,750 | | \$122,750 | 2034 |
| 5 | I-180 EB Ramps & US 220 | Additional Through-Lane (1) | EB Second Through Lane | \$240,800 | \$120,400 | | \$120,400 | 2034 |
| 6 | I-180 WB Ramps & US 220 | Traffic Signal Modifications | [Description] | \$79,800 | \$39,900 | | \$39,900 | 2034 |
| 6 | I-180 WB Ramps & US 220 | Additional Through-Lane (1) | 2nd EB Through Lane (carried through from Int 5) | \$704,000 | \$352,000 | | \$352,000 | 2034 |

**Table 8 (15% Full Build-Out)
Development Improvements Cost Estimates - TSA 1**

| Int. No. | Intersection or Corridor | Improvements Required | Description | Total Project Cost | Allocated Funding | | Developer Costs | Construction Completion |
|----------|---|------------------------------|-----------------------------|--------------------|-------------------|--------------|-----------------|-------------------------|
| | | | | | PennDOT Costs | Others Costs | | |
| 10 | Lime Bluff Road & US 220 | Install Traffic Signal | [Description] | \$199,500 | \$99,750 | | \$99,750 | 2034 |
| 10 | Lime Bluff Road & US 220 | Turn Lane (1) | WB Left Turn Lane | \$728,260 | \$364,130 | | \$364,130 | 2034 |
| 11 | PA 405 & PA 118 | Traffic Signal Modifications | [Description] | \$119,800 | \$44,925 | | \$74,875 | 2034 |
| 11 | PA 405 & PA 118 | Turn Lane (1) | NB & SB Left Turn Lane | \$68,800 | \$34,400 | | \$34,400 | 2034 |
| 12 | Industrial Park Road & John Brady Drive | Install Traffic Signal | [Description] | \$199,500 | \$66,500 | | \$133,000 | 2034 |
| 12 | Industrial Park Road & John Brady Drive | Additional Through Lane (1) | NWB & SEB 2nd Through Lanes | \$1,666,100 | \$833,050 | | \$833,050 | 2034 |
| 14 | Lime Bluff Road & John Brady Drive | Install Traffic Signal | [Description] | \$359,000 | \$179,500 | | \$179,500 | 2034 |
| 14 | Lime Bluff Road & John Brady Drive | Turn Lane (1) | SWB Right Turn Lane | \$279,800 | \$139,900 | | \$139,900 | 2034 |
| 14 | Lime Bluff Road & John Brady Drive | Turn Lane (2) | SEB Dual Left Turn Lanes | \$1,067,820 | \$533,910 | | \$533,910 | 2034 |

**Table 8 (15% Full Build-Out)
Development Improvements Cost Estimates - TSA 1**

| Int. No. | Intersection or Corridor | Improvements Required | Description | Total Project Cost | Allocated Funding | | Developer Costs | Construction Completion |
|----------|------------------------------------|------------------------------|---------------------------------------|--------------------|-------------------|--------------|-----------------|-------------------------|
| | | | | | PennDOT Costs | Others Costs | | |
| 14 | Lime Bluff Road & John Brady Drive | Turn Lane (3) | [Description] | \$267,200 | \$133,600 | | \$133,600 | 2034 |
| 14 | Lime Bluff Road & John Brady Drive | Additional Through Lane (1) | NWB 2nd Through Lane + Left Turn Lane | \$1,858,600 | \$929,300 | | \$929,300 | 2034 |
| 16 | I-180 EB Ramps & PA 405 | Install Traffic Signal | [Description] | \$375,000 | \$187,500 | | \$187,500 | 2034 |
| 17 | I-180 WB Ramps & PA 405 | Install Traffic Signal | [Description] | \$359,000 | \$179,500 | | \$179,500 | 2034 |
| 17 | I-180 WB Ramps & PA 405 | Additional Through Lane (1) | Second EB Through Lane | \$914,880 | \$457,440 | | \$457,440 | 2034 |
| 18 | PA 442 & PA 405/Penn Street | Traffic Signal Modifications | [Description] | \$119,800 | \$59,900 | | \$59,900 | 2034 |
| 18 | PA 442 & PA 405/Penn Street | Turn Lane (1) | Second WB Right Turn Lane | \$147,700 | \$73,850 | | \$73,850 | 2034 |
| 18 | PA 442 & PA 405/Penn Street | Additional Through Lane (1) | Second NB Through Lane | \$390,800 | \$195,400 | | \$195,400 | 2034 |
| 19 | PA 405 & Chippewa Road | Install Traffic Signal | [Description] | \$336,900 | \$169,450 | | \$169,450 | 2034 |

**Table 8 (15% Full Build-Out)
Development Improvements Cost Estimates - TSA 1**

| Int. No. | Intersection or Corridor | Improvements Required | Description | Total Project Cost | Allocated Funding | | Developer Costs | Construction Completion |
|---------------|--|------------------------------|---|--------------------|-------------------|--------------|-----------------|-------------------------|
| | | | | | PennDOT Costs | Others Costs | | |
| 19 | PA 405 & Chippewa Road | Turn Lane (1) | Dual SEB Left Turn Lanes | \$746,200 | \$373,100 | | \$373,100 | 2034 |
| 19 | PA 405 & Chippewa Road | Additional Through-Lane (1) | 2nd WB Through Lane, EB & WB Left Turn Lanes, WBR Turn Lane | \$540,500 | \$270,250 | | \$270,250 | 2034 |
| 20 | Lime Bluff Road & PA 405 | Install Traffic Signal | [Description] | \$303,100 | \$151,550 | | \$151,550 | 2034 |
| 20 | Lime Bluff Road & PA 405 | Turn Lane (1) | SB Left Turn Lane | \$281,700 | \$140,850 | | \$140,850 | 2034 |
| 20 | Lime Bluff Road & PA 405 | Additional Through-Lane (1) | Second EB Through Lane, Second WB Through Lane | \$1,479,700 | \$739,850 | | \$739,850 | 2034 |
| 21 | Main Street/SR 2014 & Water Street/PA 405 | Traffic Signal Modifications | [Description] | \$119,800 | \$59,900 | | \$59,900 | 2034 |
| 21 | Main Street/SR 2014 & Water Street/PA 405 | Turn Lane (1) | NB & SB Left Turn Lanes | \$104,400 | \$52,200 | | \$52,200 | 2034 |
| A | Roadway widening - John Brady Drive (Intersections 12 <-> 14 | Additional Through-Lane (1) | [Description] | \$2,615,000 | \$1,307,500 | | \$1,307,500 | 2034 |
| Totals | | | | \$23,037,460 | \$11,249,568 | \$0 | \$11,787,893 | |

**Table 8A (15% Full Build-Out with PA 405 Bridge Widening)
Development Improvements Cost Estimates - TSA 1**

| Int. No. | Intersection or Corridor | Improvements Required | Description | Total Project Cost | Allocated Funding | | Developer Costs | Construction Completion |
|----------|--|------------------------------|----------------------------|--------------------|-------------------|--------------|-----------------|-------------------------|
| | | | | | PennDOT Costs | Others Costs | | |
| 1 | Lycoming Mall Road & I-180 WB Ramps | Traffic Signal Modifications | [Description] | \$199,500 | \$74,813 | | \$124,688 | 2034 |
| 1 | Lycoming Mall Road & I-180 WB Ramps | Turn Lane (1) | NB & SB Left Turn Lanes | \$540,500 | \$270,250 | | \$270,250 | 2034 |
| 1 | Lycoming Mall Road & I-180 WB Ramps | Turn Lane (2) | WB Dual Left Turn Lanes | \$591,120 | \$295,560 | | \$295,560 | 2034 |
| 2 | Lycoming Mall Road & I-180 EB Ramps | Traffic Signal Modifications | [Description] | \$199,500 | \$74,813 | | \$124,688 | 2034 |
| 2 | Lycoming Mall Road & I-180 EB Ramps | Turn Lane (1) | NB Right Turn Lane | \$262,220 | \$131,110 | | \$131,110 | 2034 |
| 2 | Lycoming Mall Road & I-180 EB Ramps | Turn Lane (2) | EB Left & Right Turn Lanes | \$272,300 | \$0 | | \$272,300 | 2034 |
| 2 | Lycoming Mall Road & I-180 EB Ramps | Additional Through-Lane (1) | SB Second Through Lane | \$555,180 | \$277,590 | | \$277,590 | 2034 |
| 3 | Lycoming Mall Road & Lycoming Mall Drive | Traffic Signal Modifications | [Description] | \$119,800 | \$59,900 | | \$59,900 | 2034 |
| 3 | Lycoming Mall Road & Lycoming Mall Drive | Turn Lane (1) | Second SB Left Turn Lane | \$818,260 | \$409,130 | | \$409,130 | 2034 |

**Table 8A (15% Full Build-Out with PA 405 Bridge Widening)
Development Improvements Cost Estimates - TSA 1**

| Int. No. | Intersection or Corridor | Improvements Required | Description | Total Project Cost | Allocated Funding | | Developer Costs | Construction Completion |
|----------|--|------------------------------|---|--------------------|-------------------|--------------|-----------------|-------------------------|
| | | | | | PennDOT Costs | Others Costs | | |
| 3 | Lycoming Mall Road & Lycoming Mall Drive | Additional Through-Lane (1) | Second WB Through Lane | \$1,021,800 | \$510,900 | | \$510,900 | 2034 |
| 4 | Lycoming Mall Drive & John Brady Drive | Traffic Signal Modifications | [Description] | \$279,300 | \$104,738 | | \$174,563 | 2034 |
| 4 | Lycoming Mall Drive & John Brady Drive | Turn Lane (1) | WB Left Turn Lane | \$599,820 | \$299,910 | | \$299,910 | 2034 |
| 4 | Lycoming Mall Drive & John Brady Drive | Other Improvement (1) | Re-align EBR from slip lane to channelized right turn at intersection | \$577,400 | \$288,700 | | \$288,700 | 2034 |
| 5 | I-180 EB Ramps & US 220 | Traffic Signal Modifications | [Description] | \$79,800 | \$39,900 | | \$39,900 | 2034 |
| 5 | I-180 EB Ramps & US 220 | Turn Lane (1) | SB (Off-Ramp) Left Turn Lane | \$245,500 | \$122,750 | | \$122,750 | 2034 |
| 5 | I-180 EB Ramps & US 220 | Additional Through-Lane (1) | EB Second Through Lane | \$240,800 | \$120,400 | | \$120,400 | 2034 |
| 6 | I-180 WB Ramps & US 220 | Traffic Signal Modifications | [Description] | \$79,800 | \$39,900 | | \$39,900 | 2034 |
| 6 | I-180 WB Ramps & US 220 | Additional Through-Lane (1) | 2nd EB Through Lane (carried through from Int 5) | \$704,000 | \$352,000 | | \$352,000 | 2034 |

**Table 8A (15% Full Build-Out with PA 405 Bridge Widening)
Development Improvements Cost Estimates - TSA 1**

| Int. No. | Intersection or Corridor | Improvements Required | Description | Total Project Cost | Allocated Funding | | Developer Costs | Construction Completion |
|----------|---|------------------------------|-----------------------------|--------------------|-------------------|--------------|-----------------|-------------------------|
| | | | | | PennDOT Costs | Others Costs | | |
| 10 | Lime Bluff Road & US 220 | Install Traffic Signal | [Description] | \$199,500 | \$99,750 | | \$99,750 | 2034 |
| 10 | Lime Bluff Road & US 220 | Turn Lane (1) | WB Left Turn Lane | \$728,260 | \$364,130 | | \$364,130 | 2034 |
| 11 | PA 405 & PA 118 | Traffic Signal Modifications | [Description] | \$119,800 | \$44,925 | | \$74,875 | 2034 |
| 11 | PA 405 & PA 118 | Turn Lane (1) | NB & SB Left Turn Lane | \$68,800 | \$34,400 | | \$34,400 | 2034 |
| 12 | Industrial Park Road & John Brady Drive | Install Traffic Signal | [Description] | \$199,500 | \$66,500 | | \$133,000 | 2034 |
| 12 | Industrial Park Road & John Brady Drive | Additional Through Lane (1) | NWB & SEB 2nd Through Lanes | \$1,666,100 | \$833,050 | | \$833,050 | 2034 |
| 14 | Lime Bluff Road & John Brady Drive | Install Traffic Signal | [Description] | \$359,000 | \$179,500 | | \$179,500 | 2034 |
| 14 | Lime Bluff Road & John Brady Drive | Turn Lane (1) | SWB Right Turn Lane | \$279,800 | \$139,900 | | \$139,900 | 2034 |
| 14 | Lime Bluff Road & John Brady Drive | Turn Lane (2) | SEB Dual Left Turn Lanes | \$1,067,820 | \$533,910 | | \$533,910 | 2034 |

**Table 8A (15% Full Build-Out with PA 405 Bridge Widening)
Development Improvements Cost Estimates - TSA 1**

| Int. No. | Intersection or Corridor | Improvements Required | Description | Total Project Cost | Allocated Funding | | Developer Costs | Construction Completion |
|----------|------------------------------------|------------------------------|---------------------------------------|--------------------|-------------------|--------------|-----------------|-------------------------|
| | | | | | PennDOT Costs | Others Costs | | |
| 14 | Lime Bluff Road & John Brady Drive | Turn Lane (3) | [Description] | \$267,200 | \$133,600 | | \$133,600 | 2034 |
| 14 | Lime Bluff Road & John Brady Drive | Additional Through Lane (1) | NWB 2nd Through Lane + Left Turn Lane | \$1,858,600 | \$929,300 | | \$929,300 | 2034 |
| 16 | I-180 EB Ramps & PA 405 | Install Traffic Signal | [Description] | \$375,000 | \$187,500 | | \$187,500 | 2034 |
| 17 | I-180 WB Ramps & PA 405 | Install Traffic Signal | [Description] | \$359,000 | \$179,500 | | \$179,500 | 2034 |
| 17 | I-180 WB Ramps & PA 405 | Additional Through Lane (1) | Second EB Through Lane | \$914,880 | \$457,440 | | \$457,440 | 2034 |
| 18 | PA 442 & PA 405/Penn Street | Traffic Signal Modifications | [Description] | \$119,800 | \$59,900 | | \$59,900 | 2034 |
| 18 | PA 442 & PA 405/Penn Street | Turn Lane (1) | Second WB Right Turn Lane | \$147,700 | \$73,850 | | \$73,850 | 2034 |
| 18 | PA 442 & PA 405/Penn Street | Additional Through Lane (1) | Second NB Through Lane | \$390,800 | \$195,400 | | \$195,400 | 2034 |
| 19 | PA 405 & Chippewa Road | Install Traffic Signal | [Description] | \$336,900 | \$169,450 | | \$169,450 | 2034 |

**Table 8A (15% Full Build-Out with PA 405 Bridge Widening)
Development Improvements Cost Estimates - TSA 1**

| Int. No. | Intersection or Corridor | Improvements Required | Description | Total Project Cost | Allocated Funding | | Developer Costs | Construction Completion |
|---------------|---|------------------------------|---|--------------------|-------------------|--------------|-----------------|-------------------------|
| | | | | | PennDOT Costs | Others Costs | | |
| 19 | PA 405 & Chippewa Road | Turn Lane (1) | Dual SEB Left Turn Lanes | \$746,200 | \$373,100 | | \$373,100 | 2034 |
| 19 | PA 405 & Chippewa Road | Additional Through Lane (1) | 2nd WB Through Lane, EB & WB Left Turn Lanes, WBR Turn Lane | \$540,500 | \$270,250 | | \$270,250 | 2034 |
| 20 | Lime Bluff Road & PA 405 | Install Traffic Signal | [Description] | \$303,100 | \$151,550 | | \$151,550 | 2034 |
| 20 | Lime Bluff Road & PA 405 | Turn Lane (1) | SB Left Turn Lane | \$281,700 | \$140,850 | | \$140,850 | 2034 |
| 20 | Lime Bluff Road & PA 405 | Additional Through Lane (1) | Second EB Through Lane, Second WB Through Lane | \$1,479,700 | \$739,850 | | \$739,850 | 2034 |
| 21 | Main Street/SR 2014 & Water Street/PA 405 | Traffic Signal Modifications | [Description] | \$119,800 | \$59,900 | | \$59,900 | 2034 |
| 21 | Main Street/SR 2014 & Water Street/PA 405 | Turn Lane (1) | NB & SB Left Turn Lanes | \$104,400 | \$52,200 | | \$52,200 | 2034 |
| A | Roadway widening - John Brady Drive (Intersections 12 <-> 14) | Additional Through Lane (1) | [Description] | \$2,615,000 | \$1,307,500 | | \$1,307,500 | 2034 |
| B | PA 405 bridge replacement/widening | Other Improvement (1) | PA 405 Bridge Widening/Replacement | \$22,286,900 | \$11,143,450 | | \$11,143,450 | 2034 |
| Totals | | | | \$45,324,360 | \$22,393,018 | \$0 | \$22,931,343 | |

**Table 8B (1/3 Full Build-Out Growth Improvements on PA 405 Corridor)
Development Improvements Cost Estimates - TSA 1**

| Int. No. | Intersection or Corridor | Improvements Required | Description | Total Project Cost | Allocated Funding | | Developer Costs | Construction Completion |
|----------|--|------------------------------|----------------------------|--------------------|-------------------|--------------|-----------------|-------------------------|
| | | | | | PennDOT Costs | Others Costs | | |
| 1 | Lycoming Mall Road & I-180 WB Ramps | Traffic Signal Modifications | [Description] | \$199,500 | \$74,813 | | \$124,688 | 2034 |
| 1 | Lycoming Mall Road & I-180 WB Ramps | Turn Lane (1) | NB & SB Left Turn Lanes | \$540,500 | \$270,250 | | \$270,250 | 2034 |
| 1 | Lycoming Mall Road & I-180 WB Ramps | Turn Lane (2) | WB Dual Left Turn Lanes | \$591,120 | \$295,560 | | \$295,560 | 2034 |
| 2 | Lycoming Mall Road & I-180 EB Ramps | Traffic Signal Modifications | [Description] | \$199,500 | \$74,813 | | \$124,688 | 2034 |
| 2 | Lycoming Mall Road & I-180 EB Ramps | Turn Lane (1) | NB Right Turn Lane | \$262,220 | \$131,110 | | \$131,110 | 2034 |
| 2 | Lycoming Mall Road & I-180 EB Ramps | Turn Lane (2) | EB Left & Right Turn Lanes | \$272,300 | \$0 | | \$272,300 | 2034 |
| 2 | Lycoming Mall Road & I-180 EB Ramps | Additional Through-Lane (1) | SB Second Through Lane | \$555,180 | \$277,590 | | \$277,590 | 2034 |
| 3 | Lycoming Mall Road & Lycoming Mall Drive | Traffic Signal Modifications | [Description] | \$119,800 | \$59,900 | | \$59,900 | 2034 |
| 3 | Lycoming Mall Road & Lycoming Mall Drive | Turn Lane (1) | Second SB Left Turn Lane | \$818,260 | \$409,130 | | \$409,130 | 2034 |

**Table 8B (1/3 Full Build-Out Growth Improvements on PA 405 Corridor)
Development Improvements Cost Estimates - TSA 1**

| Int. No. | Intersection or Corridor | Improvements Required | Description | Total Project Cost | Allocated Funding | | Developer Costs | Construction Completion |
|----------|--|------------------------------|---|--------------------|-------------------|--------------|-----------------|-------------------------|
| | | | | | PennDOT Costs | Others Costs | | |
| 3 | Lycoming Mall Road & Lycoming Mall Drive | Additional Through-Lane (1) | Second WB Through Lane | \$1,021,800 | \$510,900 | | \$510,900 | 2034 |
| 4 | Lycoming Mall Drive & John Brady Drive | Traffic Signal Modifications | [Description] | \$279,300 | \$104,738 | | \$174,563 | 2034 |
| 4 | Lycoming Mall Drive & John Brady Drive | Turn Lane (1) | WB Left Turn Lane | \$599,820 | \$299,910 | | \$299,910 | 2034 |
| 4 | Lycoming Mall Drive & John Brady Drive | Other Improvement (1) | Re-align EBR from slip lane to channelized right turn at intersection | \$577,400 | \$288,700 | | \$288,700 | 2034 |
| 5 | I-180 EB Ramps & US 220 | Traffic Signal Modifications | [Description] | \$79,800 | \$39,900 | | \$39,900 | 2034 |
| 5 | I-180 EB Ramps & US 220 | Turn Lane (1) | SB (Off-Ramp) Left Turn Lane | \$245,500 | \$122,750 | | \$122,750 | 2034 |
| 5 | I-180 EB Ramps & US 220 | Additional Through-Lane (1) | EB Second Through Lane | \$240,800 | \$120,400 | | \$120,400 | 2034 |
| 6 | I-180 WB Ramps & US 220 | Traffic Signal Modifications | [Description] | \$79,800 | \$39,900 | | \$39,900 | 2034 |
| 6 | I-180 WB Ramps & US 220 | Additional Through-Lane (1) | 2nd EB Through Lane (carried through from Int 5) | \$704,000 | \$352,000 | | \$352,000 | 2034 |

**Table 8B (1/3 Full Build-Out Growth Improvements on PA 405 Corridor)
Development Improvements Cost Estimates - TSA 1**

| Int. No. | Intersection or Corridor | Improvements Required | Description | Total Project Cost | Allocated Funding | | Developer Costs | Construction Completion |
|----------|---|------------------------------|-----------------------------|--------------------|-------------------|--------------|-----------------|-------------------------|
| | | | | | PennDOT Costs | Others Costs | | |
| 10 | Lime Bluff Road & US 220 | Install Traffic Signal | [Description] | \$199,500 | \$99,750 | | \$99,750 | 2034 |
| 10 | Lime Bluff Road & US 220 | Turn Lane (1) | WB Left Turn Lane | \$728,260 | \$364,130 | | \$364,130 | 2034 |
| 11 | PA 405 & PA 118 | Traffic Signal Modifications | [Description] | \$119,800 | \$44,925 | | \$74,875 | 2034 |
| 11 | PA 405 & PA 118 | Turn Lane (1) | NB & SB Left Turn Lane | \$68,800 | \$34,400 | | \$34,400 | 2034 |
| 12 | Industrial Park Road & John Brady Drive | Install Traffic Signal | [Description] | \$199,500 | \$66,500 | | \$133,000 | 2034 |
| 12 | Industrial Park Road & John Brady Drive | Additional Through Lane (1) | NWB & SEB 2nd Through Lanes | \$1,666,100 | \$833,050 | | \$833,050 | 2034 |
| 14 | Lime Bluff Road & John Brady Drive | Install Traffic Signal | [Description] | \$359,000 | \$179,500 | | \$179,500 | 2034 |
| 14 | Lime Bluff Road & John Brady Drive | Turn Lane (1) | SWB Right Turn Lane | \$279,800 | \$139,900 | | \$139,900 | 2034 |
| 14 | Lime Bluff Road & John Brady Drive | Turn Lane (2) | SEB Dual Left Turn Lanes | \$1,067,820 | \$533,910 | | \$533,910 | 2034 |

**Table 8B (1/3 Full Build-Out Growth Improvements on PA 405 Corridor)
Development Improvements Cost Estimates - TSA 1**

| Int. No. | Intersection or Corridor | Improvements Required | Description | Total Project Cost | Allocated Funding | | Developer Costs | Construction Completion |
|----------|------------------------------------|------------------------------|---|--------------------|-------------------|--------------|-----------------|-------------------------|
| | | | | | PennDOT Costs | Others Costs | | |
| 14 | Lime Bluff Road & John Brady Drive | Turn Lane (3) | [Description] | \$267,200 | \$133,600 | | \$133,600 | 2034 |
| 14 | Lime Bluff Road & John Brady Drive | Additional Through Lane (1) | NWB 2nd Through Lane + Left Turn Lane | \$1,858,600 | \$929,300 | | \$929,300 | 2034 |
| 16 | I-180 EB Ramps & PA 405 | Install Traffic Signal | [Description] | \$375,000 | \$187,500 | | \$187,500 | 2034 |
| 17 | I-180 WB Ramps & PA 405 | Install Traffic Signal | [Description] | \$359,000 | \$179,500 | | \$179,500 | 2034 |
| 17 | I-180 WB Ramps & PA 405 | Additional Through Lane (1) | Second EB Through Lane, NB Off-Ramp Left Turn Lane | \$1,123,980 | \$561,990 | | \$561,990 | 2034 |
| 18 | PA 442 & PA 405/Penn Street | Traffic Signal Modifications | [Description] | \$239,300 | \$119,650 | | \$119,650 | 2034 |
| 18 | PA 442 & PA 405/Penn Street | Turn Lane (1) | Second WB Right Turn Lane, Second WB Left Turn Lane | \$644,800 | \$322,400 | | \$322,400 | 2034 |
| 18 | PA 442 & PA 405/Penn Street | Additional Through Lane (1) | Second NB Through Lane | \$635,780 | \$317,890 | | \$317,890 | 2034 |
| 19 | PA 405 & Chippewa Road | Install Traffic Signal | [Description] | \$474,700 | \$237,350 | | \$237,350 | 2034 |

**Table 8B (1/3 Full Build-Out Growth Improvements on PA 405 Corridor)
Development Improvements Cost Estimates - TSA 1**

| Int. No. | Intersection or Corridor | Improvements Required | Description | Total Project Cost | Allocated Funding | | Developer Costs | Construction Completion |
|---------------|--|------------------------------|--|--------------------|-------------------|--------------|-----------------|-------------------------|
| | | | | | PennDOT Costs | Others Costs | | |
| 19 | PA 405 & Chippewa Road | Turn Lane (1) | Dual SEB Left Turn Lanes | \$846,900 | \$423,450 | | \$423,450 | 2034 |
| 19 | PA 405 & Chippewa Road | Additional Through Lane (1) | 2 Additional WB Through Lanes, 3rd EB Through Lane, EB & WB Left Turn Lanes, WBR Turn Lane | \$963,920 | \$481,960 | | \$481,960 | 2034 |
| 20 | Lime Bluff Road & PA 405 | Install Traffic Signal | [Description] | \$438,800 | \$219,400 | | \$219,400 | 2034 |
| 20 | Lime Bluff Road & PA 405 | Turn Lane (1) | SB Left Turn Lane | \$304,320 | \$152,160 | | \$152,160 | 2034 |
| 20 | Lime Bluff Road & PA 405 | Additional Through Lane (1) | Two additional EB through lanes, two additional WB through lanes | \$4,437,800 | \$2,218,900 | | \$2,218,900 | 2034 |
| 21 | Main Street/SR 2014 & Water Street/PA 405 | Traffic Signal Modifications | [Description] | \$119,800 | \$59,900 | | \$59,900 | 2034 |
| 21 | Main Street/SR 2014 & Water Street/PA 405 | Turn Lane (1) | NB & SB Left Turn Lanes | \$104,400 | \$52,200 | | \$52,200 | 2034 |
| A | Roadway widening - John Brady Drive (Intersections 12 <-> 14 | Additional Through Lane (1) | [Description] | \$2,615,000 | \$1,307,500 | | \$1,307,500 | 2034 |
| B | PA 405 bridge replacement/widening | Other Improvement (1) | PA 405 Bridge Widening/Replacement | \$22,286,900 | \$11,143,450 | | \$11,143,450 | 2034 |
| Totals | | | | \$50,171,380 | \$24,816,528 | \$0 | \$25,354,853 | |

Impact Fee

The impact fee calculations for development improvements are summarized in **Table 9** for the transportation service area for each of the alternatives considered.

Table 9. Transportation Impact Fee by Service Area

| Transportation Service Area | Development Capital Improvement Cost¹ | New Development Trips | Impact Fee^{2,3} |
|---|---|------------------------------|---------------------------------|
| TSA 1 (Reduced Growth - 15%) | \$11,826,269 | 10,744 | \$1,100 |
| TSA 1 (Reduced Growth - 15% with PA 405 Bridge Widening) | \$22,969,288 | 10,744 | \$2,137 |
| TSA 1 (1/3 Full Build-Out Growth Improvements on PA 405 Corridor Only, 15% Growth Improvements Otherwise) | \$25,392,755 | 10,744 | \$2,363 |

(1) – Inclusive of the cost to prepare of the *Roadway Sufficiency Analysis (RSA)* that is attributable to development.

(2) – To be assessed on a per new weekday afternoon peak hour trip basis.

(3) – Development capital improvement costs divided by new development trips (rounded down to nearest dollar).

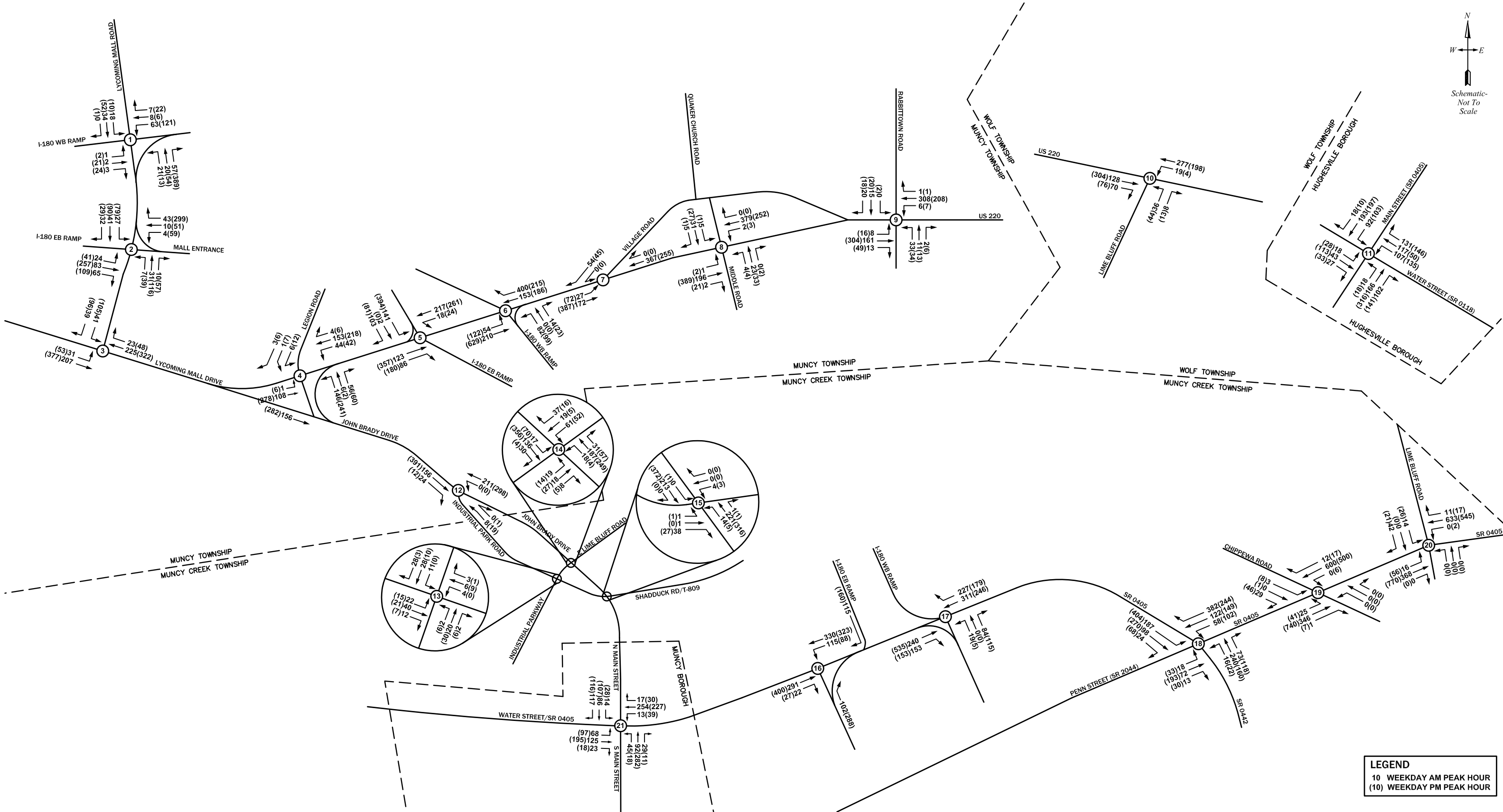
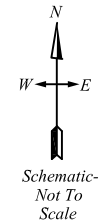


FIGURE 1
 Existing Peak Hour Traffic Volumes
MUNCY AREA CORRIDOR ACCESS MANAGEMENT PLAN
 LYCOMING COUNTY, PA



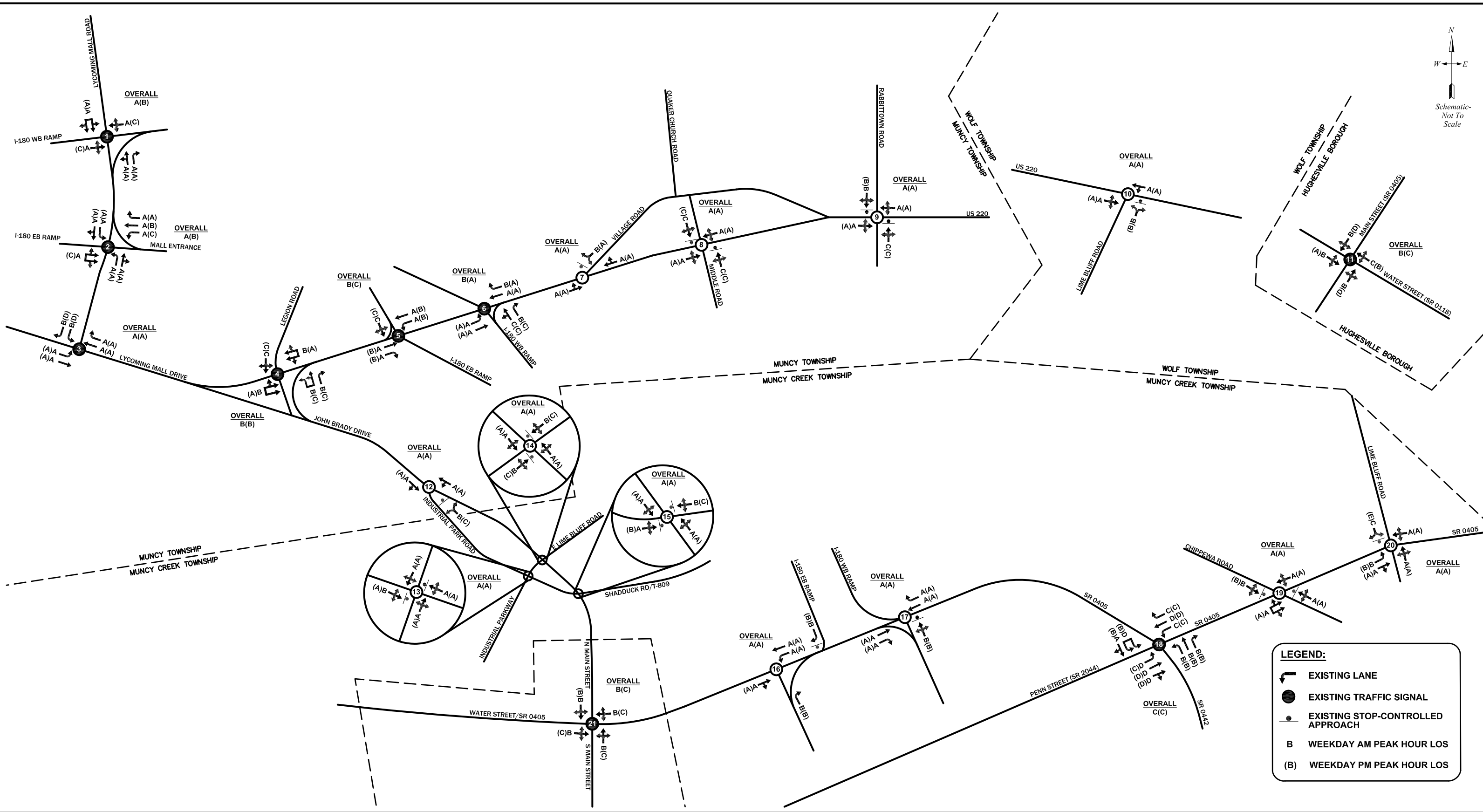


FIGURE 2
 Existing Peak Hour Level of Service
MUNCY AREA CORRIDOR ACCESS MANAGEMENT PLAN
 LYCOMING COUNTY, PA



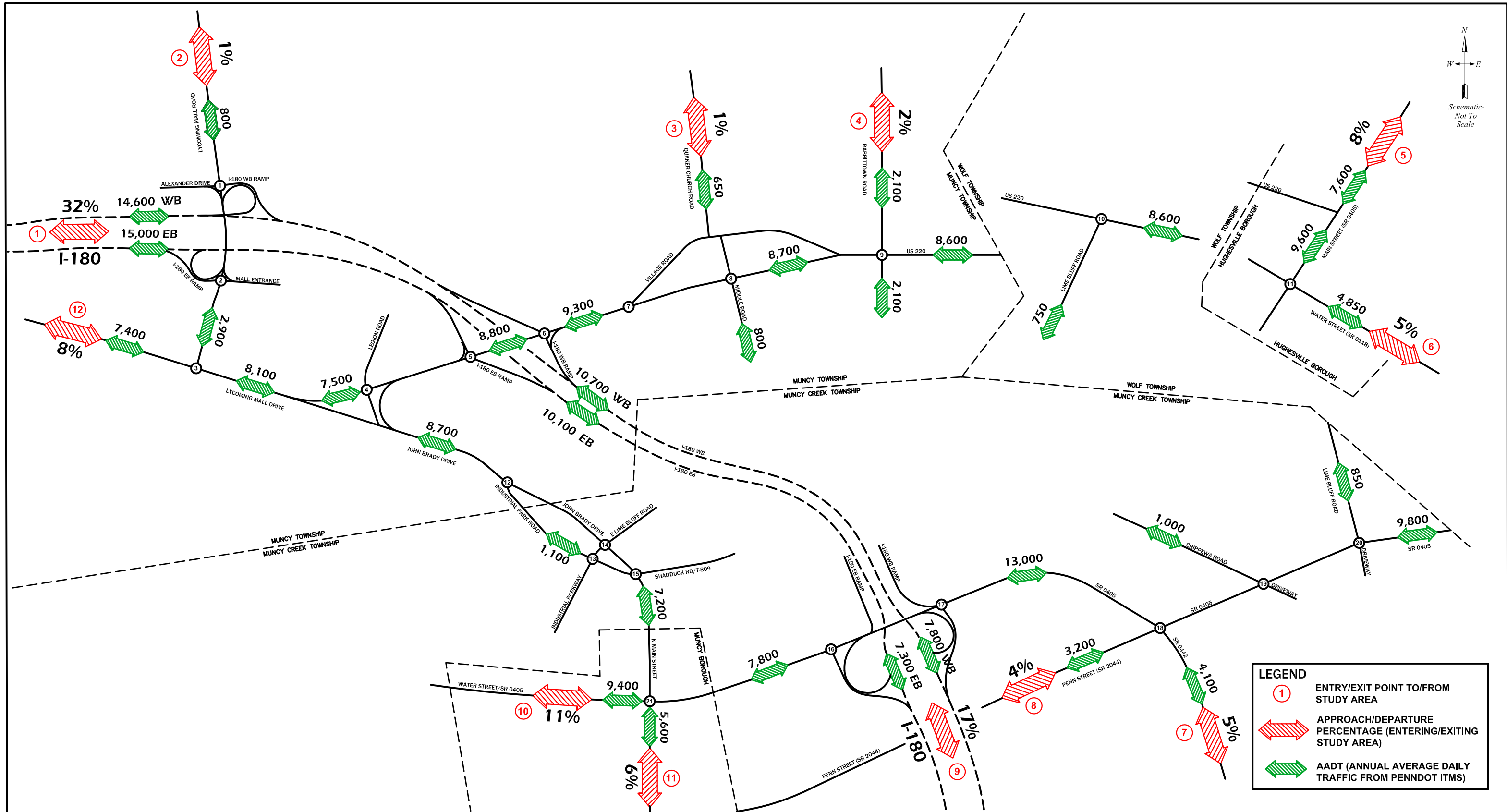
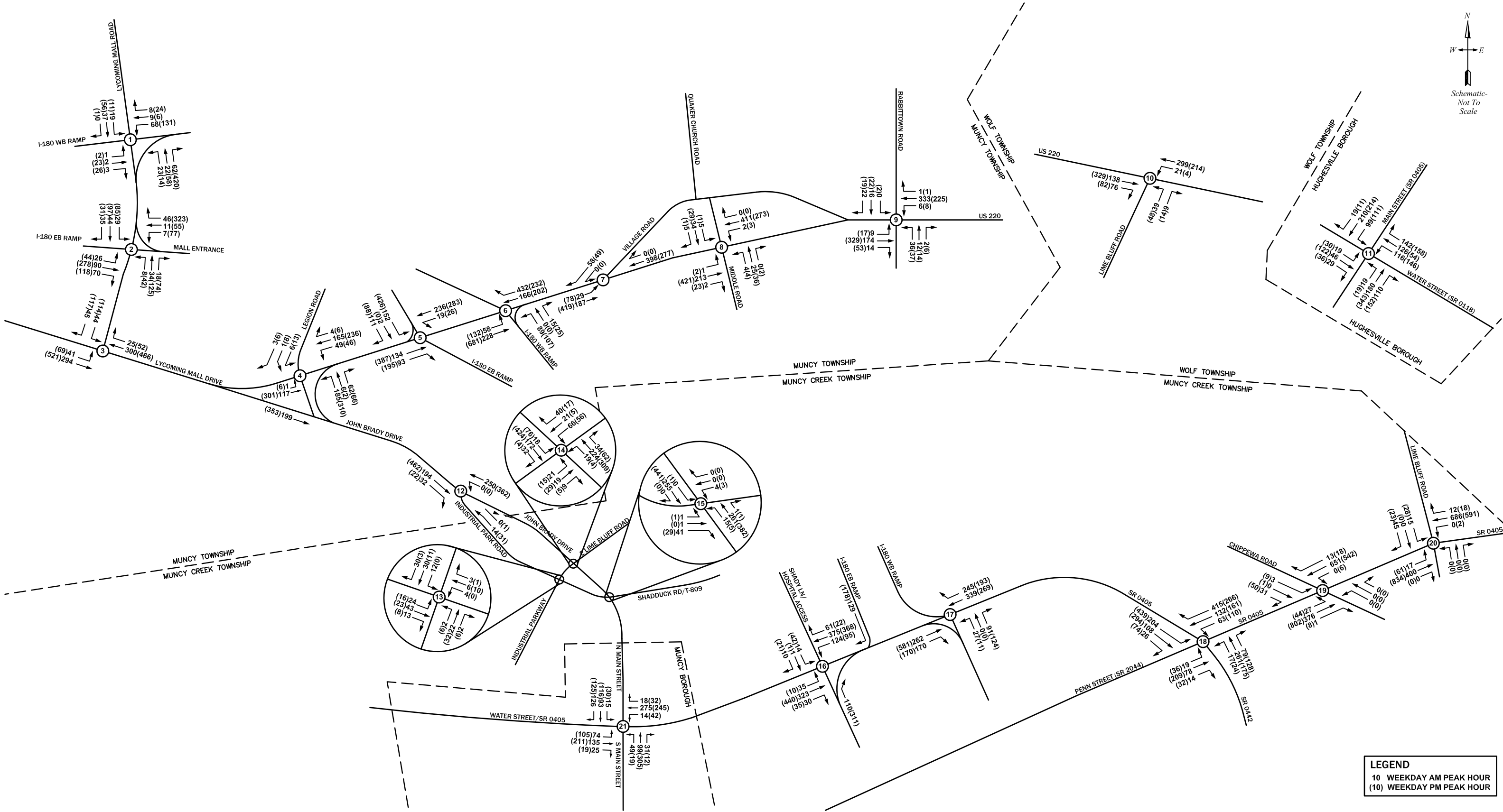
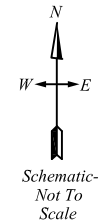


FIGURE 3
 2014 Existing AADT and Directions of Approach/Departure
MUNCY AREA CORRIDOR ACCESS MANAGEMENT PLAN
 LYCOMING COUNTY, PA





LEGEND
 10 WEEKDAY AM PEAK HOUR
 (10) WEEKDAY PM PEAK HOUR

FIGURE 4
 2034 Pass-Through Peak Hour Traffic Volumes
MUNCY AREA CORRIDOR ACCESS MANAGEMENT PLAN
LYCOMING COUNTY, PA



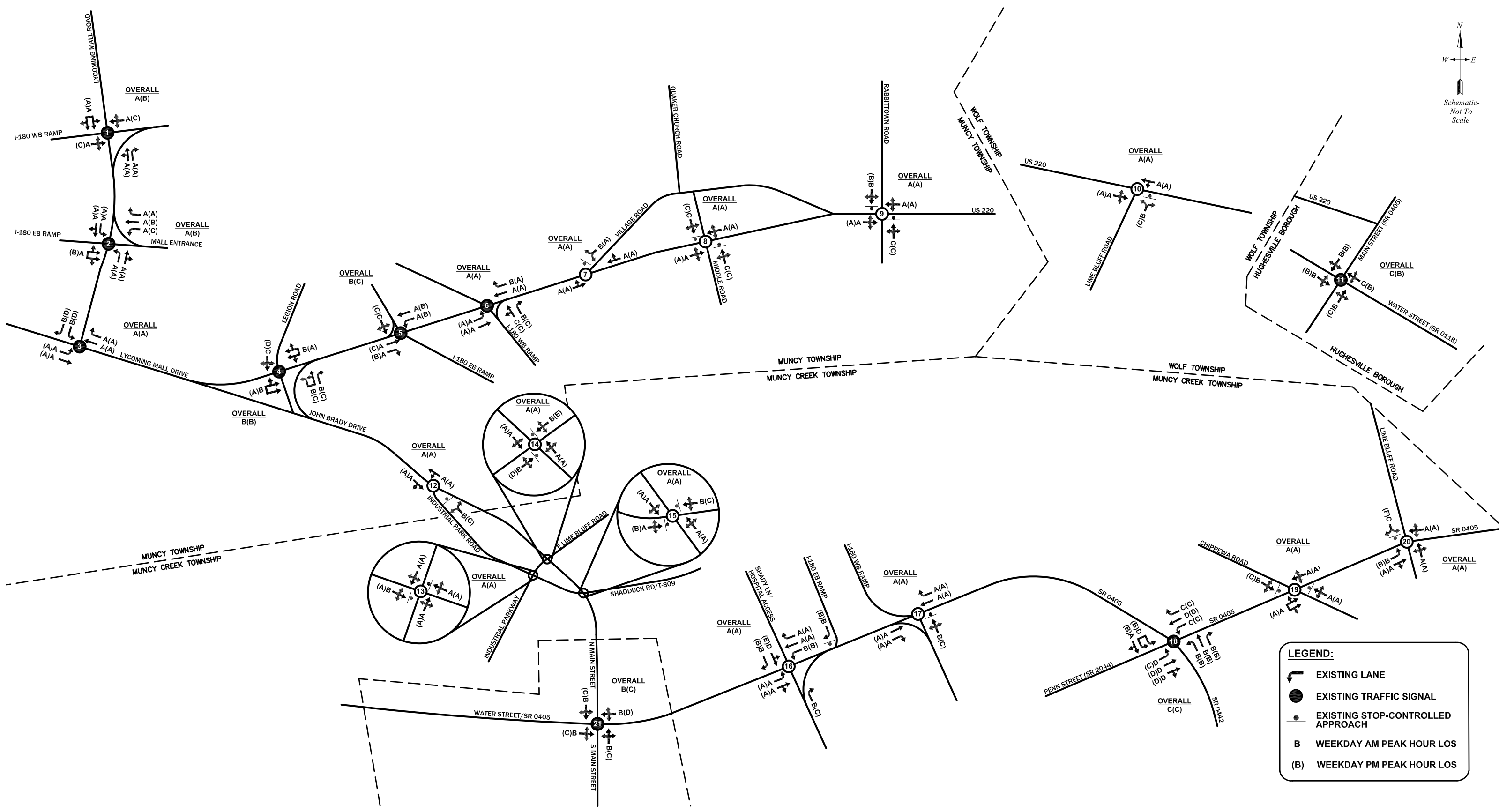
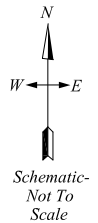


FIGURE 5
 2034 Pass-Through Peak Hour Level of Service
MUNCY AREA CORRIDOR ACCESS MANAGEMENT PLAN
LYCOMING COUNTY, PA



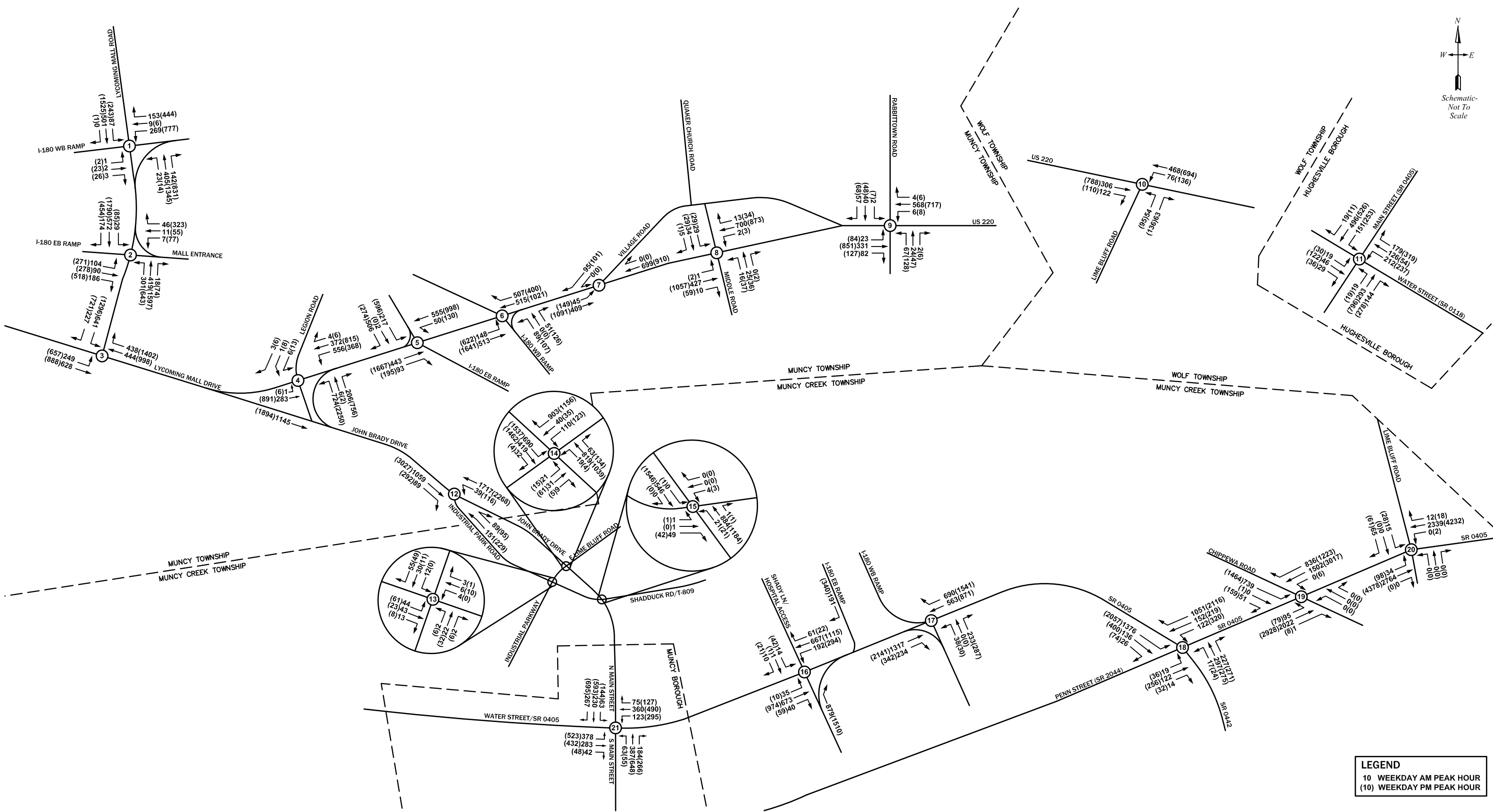
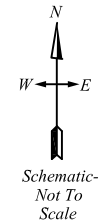


FIGURE 6
 2034 Development Peak Hour Traffic Volumes (LUAR 1/3 Full Build-Out Growth Assumption)
MUNCY AREA CORRIDOR ACCESS MANAGEMENT PLAN
LYCOMING COUNTY, PA



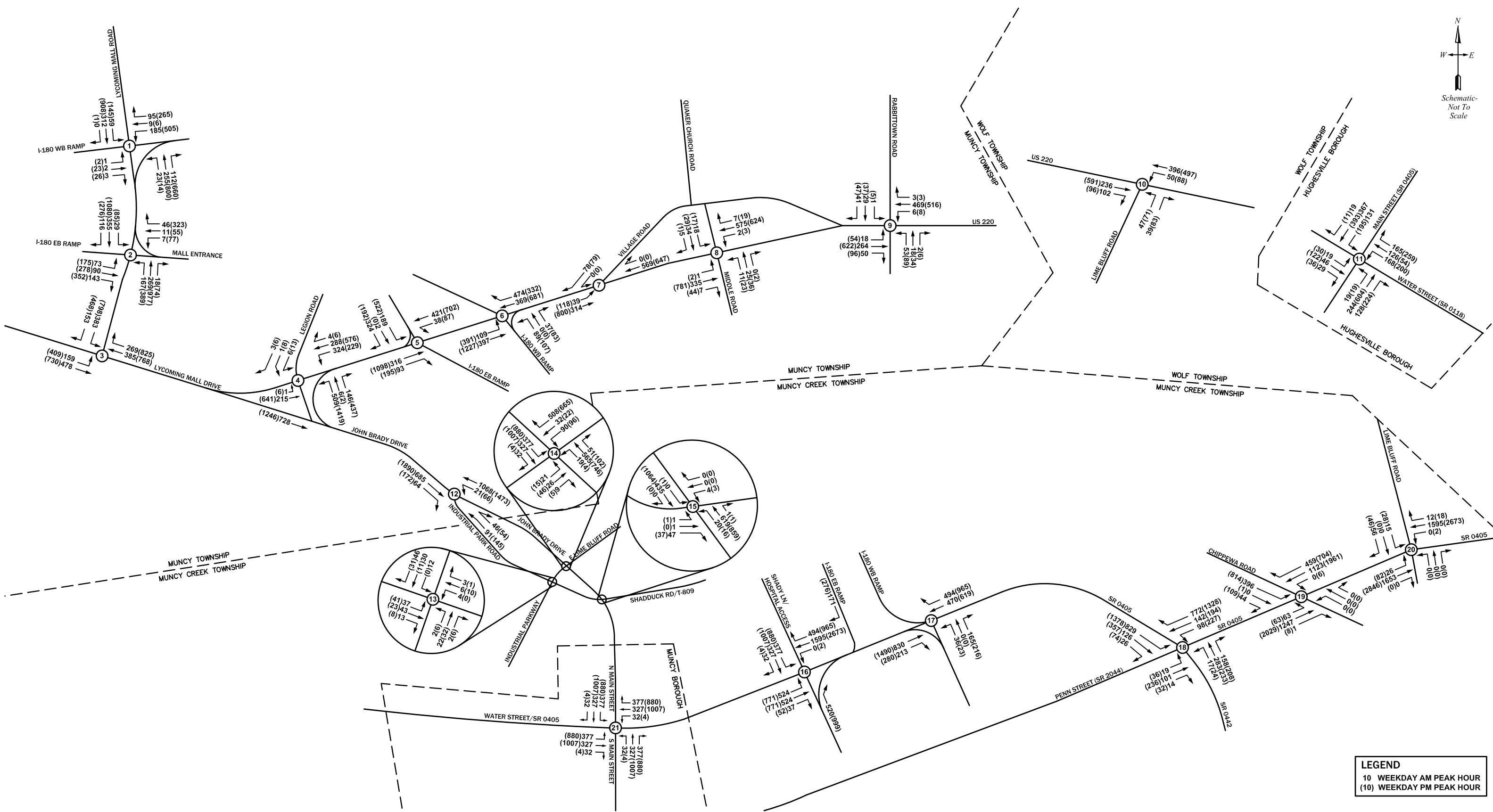
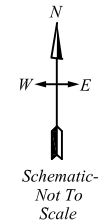


FIGURE 6A
 2034 Development Peak Hour Traffic Volumes (Reduced Growth Alternative)
MUNCY AREA CORRIDOR ACCESS MANAGEMENT PLAN
LYCOMING COUNTY, PA



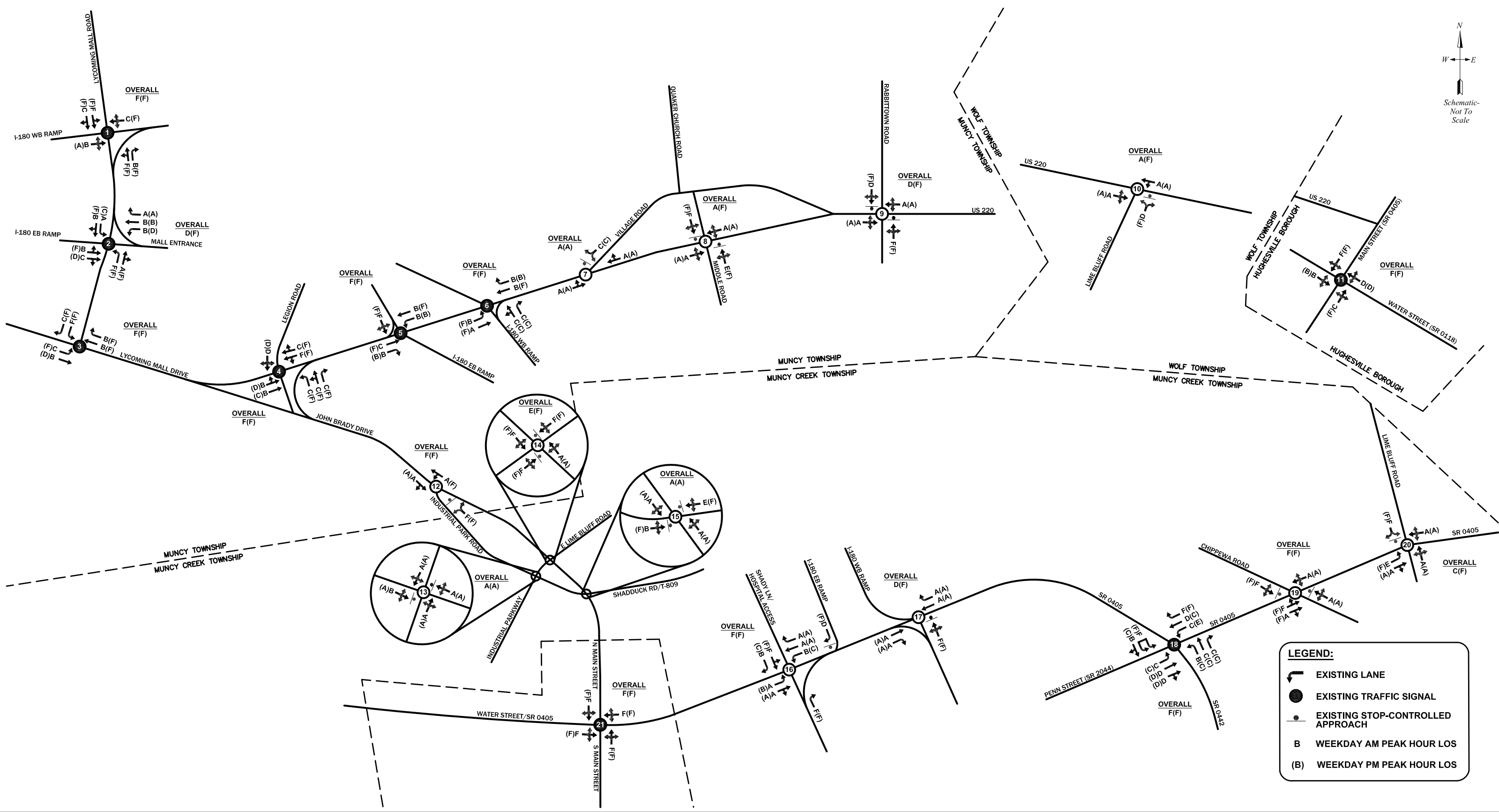
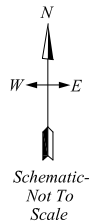


FIGURE 7
 2034 Development Peak Hour Level of Service (LUAR 1/3 Full Build-Out Growth Assumption)
MUNCY AREA CORRIDOR ACCESS MANAGEMENT PLAN
LYCOMING COUNTY, PA



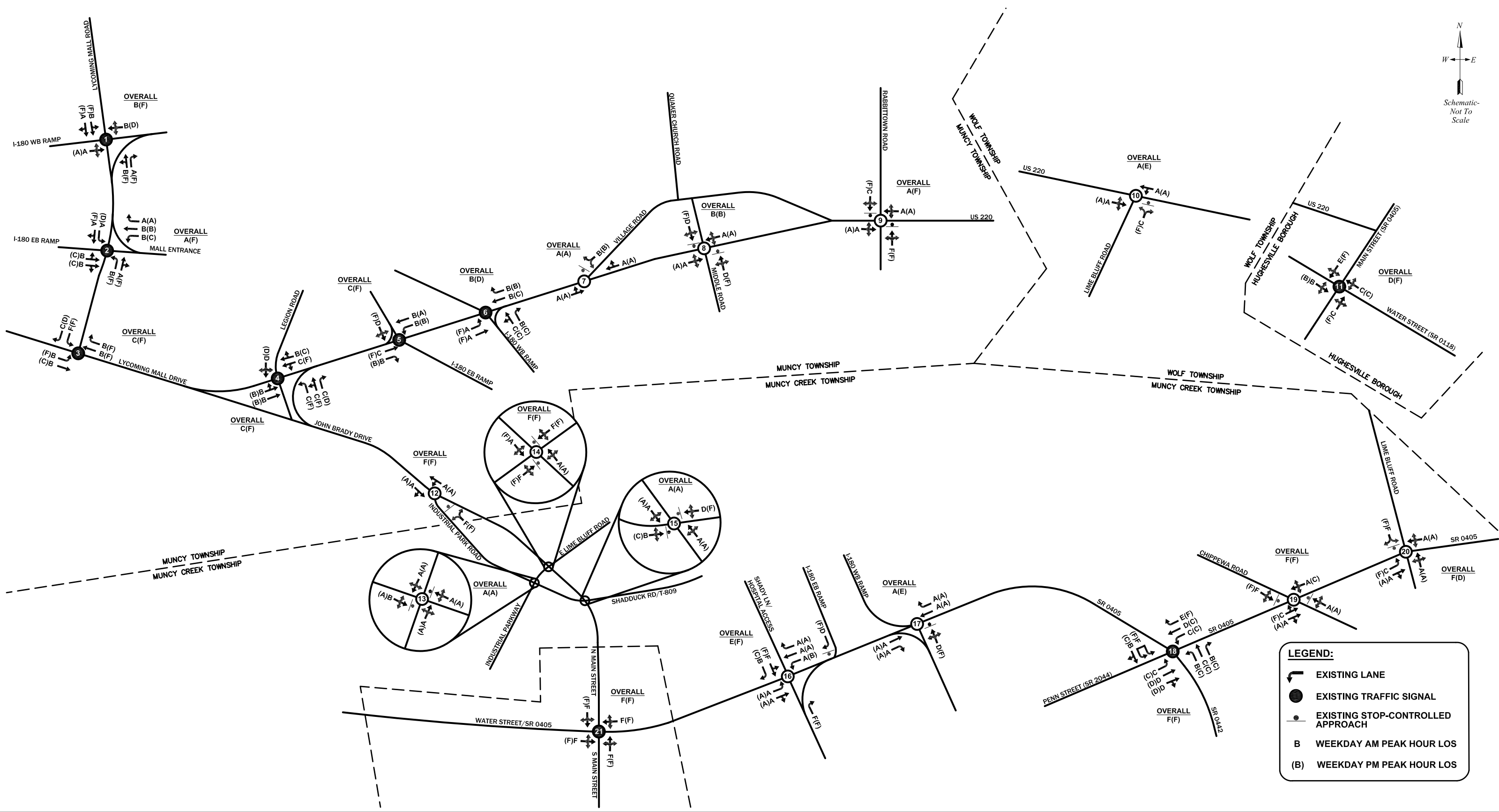
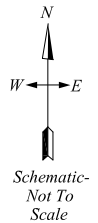
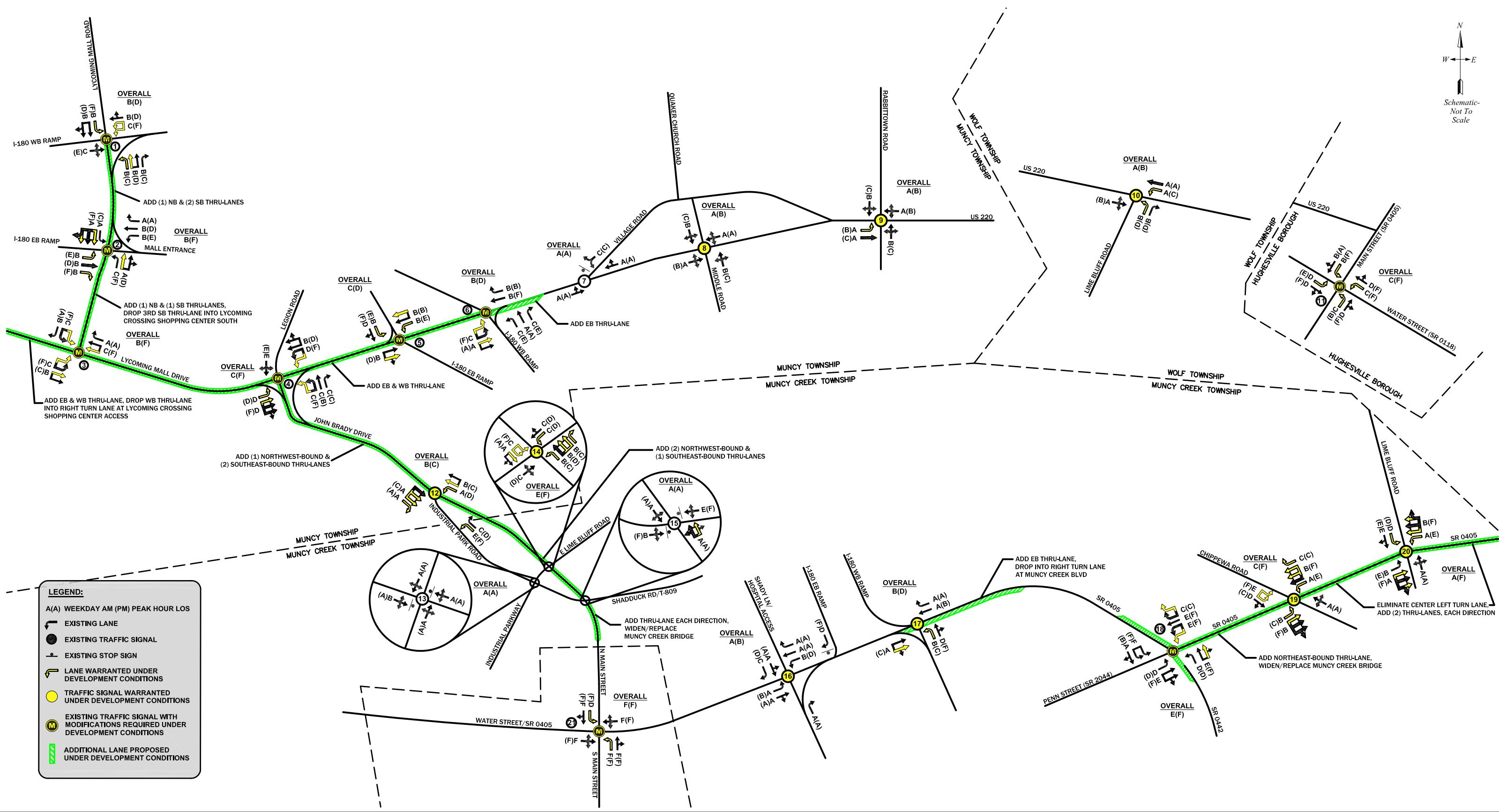
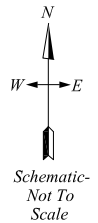


FIGURE 7A
 2034 Development Peak Hour Level of Service (Reduced Growth Alternative)
MUNCY AREA CORRIDOR ACCESS MANAGEMENT PLAN
LYCOMING COUNTY, PA



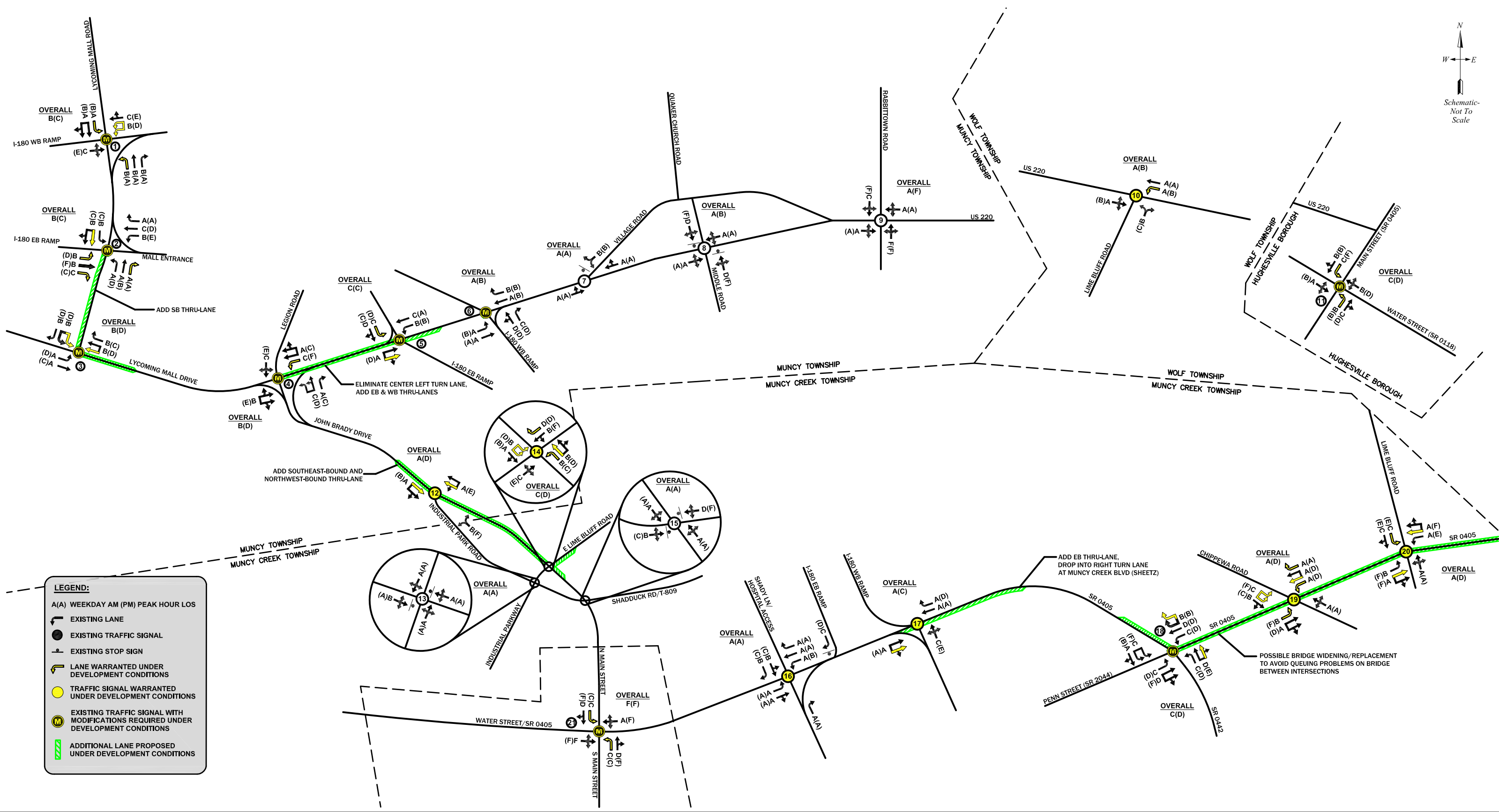
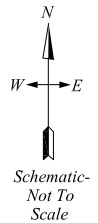


LEGEND:

- A(A) WEEKDAY AM (PM) PEAK HOUR LOS
- ← EXISTING LANE
- EXISTING TRAFFIC SIGNAL
- ⊥ EXISTING STOP SIGN
- ↔ LANE WARRANTED UNDER DEVELOPMENT CONDITIONS
- TRAFFIC SIGNAL WARRANTED UNDER DEVELOPMENT CONDITIONS
- Ⓜ EXISTING TRAFFIC SIGNAL WITH MODIFICATIONS REQUIRED UNDER DEVELOPMENT CONDITIONS
- ▬ ADDITIONAL LANE PROPOSED UNDER DEVELOPMENT CONDITIONS

FIGURE 8
 2034 Development Peak Hour Level of Service with Improvements (LUAR 1/3 Full Build-Out Growth Assumption)
MUNCY AREA CORRIDOR ACCESS MANAGEMENT PLAN
 LYCOMING COUNTY, PA





LEGEND:

- A(A) WEEKDAY AM (PM) PEAK HOUR LOS
- EXISTING LANE
- EXISTING TRAFFIC SIGNAL
- EXISTING STOP SIGN
- LANE WARRANTED UNDER DEVELOPMENT CONDITIONS
- TRAFFIC SIGNAL WARRANTED UNDER DEVELOPMENT CONDITIONS
- EXISTING TRAFFIC SIGNAL WITH MODIFICATIONS REQUIRED UNDER DEVELOPMENT CONDITIONS
- ADDITIONAL LANE PROPOSED UNDER DEVELOPMENT CONDITIONS

FIGURE 8A
 2034 Development Peak Hour Level of Service with Improvements (Reduced Growth Alternative)
MUNCY AREA CORRIDOR ACCESS MANAGEMENT PLAN
 LYCOMING COUNTY, PA



