## East Hempfield and West Hempfield Townships

Truck Restriction Study Lancaster County, PA

## tABLE OF CONTENTS

Page
INTRODUCTION ..... 1
OVERVIEW OF TRUCK RESTRICTION CRITERIA ..... 1
ROADWAY CHARACTERISTICS ..... 3
General Roadway Characteristics ..... 3
Pavement Conditions ..... 6
Travel Counts ..... 7
Existing Truck Restriction in the Area ..... 8
Overall Sight Distance Evaluation ..... 9
Crash Evaluation ..... 9
Truck Turning Evaluation ..... 9
Travel Time and Corridor Operations ..... 11
CONCLUSION AND RECOMMENDATIONS ..... 13
APPENDIX A - Study MapsAPPENDIX B - Publication 212, Section 117 Excerpts and FHWA Vehicle Classification
APPENDIX C - Traffic Count Data

APPENDIX D - Truck Turning Templates

Also Included - Crash Summary and "Heat" Map - This information is confidential

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## Introduction

East Hempfield Township requested their traffic engineer, McMahon, a Bowman Company, evaluate and address concerns raised by residents surrounding truck traffic along several north/south corridors within the Township.

- Stony Battery Road; Township Roadway T-368
- Centerville Road; Township Roadway T-607
- Good Drive; Township Roadway T-506

Additionally, West Hempfield requested that Broad Street be evaluated.

- Broad Street; Township Roadway T-709

A map of the study area and the PennDOT Type 5 Maps are provided in Appendix A.
Roadway, safety, and mobility conditions along the noted corridor were evaluated to identify any safety, capacity, and/or operational concerns along each of the corridors. The focus of this evaluation was to determine if there is sufficient justification to restrict tractor trailers or certain other truck classifications, fully or partially, in accordance with the regulations as stated in PennDOT Publication 212, "Official Traffic Control Devices", Chapter 212, Section 117. The corresponding and referenced pages from Publication 212, as well as, a summary of vehicle classification based on Federal Highway Administration's Vehicle Category Classification chart is provided in Appendix B.

## Overview of Truck Restriction Criteria

Truck restrictions on roadways within Pennsylvania are based upon Section 4902 of Title 75 (Vehicles) of the Pennsylvania Code. This law allows local authorities to prohibit the operation of vehicles, regarding weight or size, from using a highway or bridge based upon an engineering and traffic study. These restrictions, however, do not apply to school buses, emergency vehicles, vehicles making local deliveries or pick-ups. The code states that the exemptions for local delivery or pick-up may NOT include traffic going to, or coming from, a site at which minerals or natural resources are developed, such as a quarry.

PennDOT Publication 212 provides a summary of the guidelines to perform a truck restriction study along with the four main criteria required to restrict truck traffic. These criteria are as follows:

1. Weight restrictions based on the condition of a bridge can be applied when one or more of the following conditions are present:
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- The safe load capacity of the bridge is exceeded by the load effect of any of the legal road configurations.
- Engineering judgment indicates that the condition or material of construction of one or more components of a bridge is such that further use by heavy vehicles may damage, because of severe impact, fatigue, or other reasons; or
- The bridge is damaged due to fire, a vehicle crash, or environmental deterioration, and engineering judgment indicates that a vehicle weight restriction is necessary to ensure an adequate level of safety.

2. Weight restrictions based on the condition of the highway can be applied when based upon an engineering evaluation focusing on structural analyses, testing, engineering judgement, or a combination thereof, when one or more of the following conditions are present:

- The highway pavement or shoulders have inadequate structural capacity or have been weakened due to deterioration, high traffic volumes, or climactic condition, and may be seriously damaged unless a restriction is imposed; or
- An engineering evaluation of previous similar climactic conditions on the highway or, on similar highways, indicates that vehicles over a certain weight should have been prohibited.

3. Size restriction based on the condition of a bridge or highway when one or more of the following conditions are present based upon an engineering evaluation:

- A bridge has poor alignment, substandard horizontal or vertical clearance, or creates problems for vehicles with low ground clearance, or the restriction is otherwise necessary to protect the bridge from vehicle crashes or damage.
- A highway has inadequate turning radii, horizontal width, or creates concerns for vehicles with low ground clearance at one or more locations.

4. Weight and size restrictions based on traffic conditions apply when the traffic on a highway or bridge may be prohibited or restricted when an engineering evaluation of the horizontal and vertical alignment, prevailing traffic speeds, compatibility of the various types of traffic, history of vehicle crashes or vehicular characteristics indicate that the movement of certain vehicles constitutes a safety hazard. Restrictions may include weight, height, width, or length of vehicles or their loads; types of cargo; speed or gearing; stopping requirements; specified travel lanes; and hours of operation.

Once conditions are met that justify restrictions to vehicles of certain weights and/or sizes, then area signs are erected notifying drivers of the restriction. These signs should be appropriately placed in a manner to notify drivers of the restriction and to allow for the use of an alternate travel route to avoid the route with the restriction.

## Roadway Characteristics

A field evaluation was performed along each of the study corridors to document existing conditions. The focus of these evaluations was to travel the study corridor and observe the roadway geometrics, document existing pavement marking and signage, observe the presence of truck traffic, and generally to assess vehicle maneuverability and safety to determine if any of the criteria to restrict truck traffic, based upon the weight and/or size, is present based upon the roadway geometrics and characteristics.

## General Roadway Characteristics

## STONY BATTERY ROAD

Stony Battery Road, Township Roadway T-368 is defined as a major collector route per the PennDOT County Functional Classification map for Lancaster County. The study section included the section from Main Street through Marietta Pike. It should be noted that the section from Church Street through Marietta Pike is a state road. The typical section of the roadway consists of a single travel lane and shoulders in both directions from Marietta Pike. From Huntington Place to just north of Links Avenue, the typical section consists of single travel lane and shoulder with a center turn lane. From the area north of Links Avenue to Main Street, the typical section returns to a single travel lane and shoulders in both directions. Stony Battery Road has a posted speed limit of 35 MPH . It has curve warning signs along several of the turns/curves. These curve warning "chevron" signs are in advance of the curves located adjacent to Old Stony Battery Road (northbound), Brant Boulevard, and Broad Street. Curve warning signs with advisory 25 MPH speed plaques are located adjacent to the former QVC main driveway and curve warning signs with a 15 MPH advisory plaque at the curve just north of the intersection with Marietta Pike. The lane widths along Stony Battery Road varies between 11 and 12 feet with variable shoulders, with curbed and uncurbed sections. There is no sidewalk along the corridor except for a limited area adjacent to the intersection on Main Street and Stony Battery Road. The corridor is residential from Marietta Pike to Pinetree Way, a mix of residential and commercial from Pinetree Way to Ivy Drive where the corridor becomes more industrial in nature proceeding north. The corridor is a mix of residential and industrial from Ivy Drive to Kaufman Road and then residential in nature north of Kaufman Road.

The following intersections along the corridor operate with a traffic control signal:
a. Stony Battery Road / Marietta Pike; Permit Number (87-27)
b. Stony Battery Road / Church Street/ Corporate Boulevard; Permit Number (87-138)

The intersections along the corridor operate with stop-control on the minor street. Stony Battery Road is free flow for the entire length of the study corridor. Stony Battery Road has terrain defined as level, with no significant grades along the length of the corridor. Vertical grades measured along the centerline ranged from $2-4 \%$. There is no mid-block or marked pedestrian crossings within the study corridor. There are no bridges within the corridor.

## CENTERVILLE ROAD

Centerville Road, Township Roadway T-607, is defined as a minor arterial route per the PennDOT County Functional Classification map for Lancaster County. The study section included the section from Marietta Pike through Harrisburg Pike. The Typical section of the roadway consists of a single travel lane, and shoulders in both directions with turn lanes at key intersections from Marietta Pike to Gloucester Street. From Gloucester Street to the elementary school driveway, the typical section consists of a single travel lane and shoulder with a center turn lane. From the area north of the elementary school driveway to Harrisburg Pike, the typical section returns to a single travel lane and shoulders in both directions with turn lanes at key intersections.

Centerville Road has a posted speed limit of 25 MPH from Marietta Pike to just south of the Nolt Road intersection, it then changes to 35 MPH . In the southbound direction, the speed limit changes from 35 MPH to 25 MPH at the Elementary School. Centerville Road has curve warning signs along several of the turns/curves. There are curve warning signs at the curve adjacent to Nissley Road intersection and at the curve south of Nolt Road. These curve warning signs do not have speed advisory plaques. The lane widths along Centerville Road vary. The typical section is 11 -foot lanes with shoulders that vary from one to two feet from Marietta Pike to Gloucester Street. North of Gloucester Street to north of the elementary school, the typical section consists of 12 ' lanes with variable shoulders. North of the elementary school the typical section is 11 to 12 -foot with shoulders that vary from one to two feet. The corridor has terrain defined as level, with no significant grades from Marietta Pike to Hunters Path. From Hunters Path to Harrisburg Pike the vertical grades are more significant and were as high as $10 \%$ when measured along the centerline. The curb is variable, and there is no sidewalk along the corridor. The corridor is primarily residential from Marietta Pike to Harrisburg Pike.

The following intersections along the corridor operate with a traffic control signal:
a. Centerville Road and Marietta Pike; Permit Number (6065)
b. Centerville Road and Nolt Road; Permit Number (87-126)
c. Centerville Road and Harrisburg Pike; Permit Number (6641)

The intersections along the corridor operate with stop-control on the minor streets.
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## GOOD DRIVE

Good Drive, Township Roadway T-506, is defined as a major collector route per the PennDOT County Functional Classification map for Lancaster County. The study section included the section from Columbia Avenue through Harrisburg Pike. The typical section of the roadway consists of a single travel lane, and shoulders in both directions with a median and turn lanes at key locations. Good Drive has a posted speed limit of 35 MPH . There is a rail crossing approximately 1000 -feet north of the Marietta Avenue Intersection. There are curve warning signs posted for the curve at the intersection of Parklawn Court with 25 MPH speed advisory plaques in both directions. The lane widths along Good Drive are consistent. The typical section is 11 -foot lanes with 2 -foot shoulders. The median is a consistent 12 -feet. The corridor has terrain defined as level, with no significant grades. The curb is consistent through the corridor and there is sidewalk along most of the corridor with a few missing links. The corridor is a mix of commercial and professional office buildings.

The following intersections along the corridor operate with a traffic control signal:
a. Good Drive and Columbia Ave; Permit Number (3288)
b. Good Drive and Lowes/Lidl Driveway; Permit Number (15684)
c. Good Drive and Noll Drive; Permit Number (10587)
d. Good Drive and Marietta Pike; Permit Number (8642)
e. Good Drive and Orville Road; Permit Number (16606)
f. Good Drive and LGH Driveway \#3 Road; Permit Number (10588)
g. Good Drive and Harrisburg Pike; Permit Number (3264)

The intersections along the corridor operate with stop-control on the minor streets.

## BROAD STREET

Broad Street, West Hempfield Township Roadway T-709, is defined as a local roadway per the PennDOT County Functional Classification map for Lancaster County. The study section included the section from Spooky Nook Road to Stony Battery Road. The typical section of the roadway consists of a single 10 -foot travel lane, and 1 to 2 -foot shoulders in both directions. Broad Street has a posted speed limit of 25 MPH . The corridor is a residential neighborhood. Residential parking occurs along several sections of the roadway. The corridor has terrain defined as level, with no significant grades. There is no curb along the road. There is a small section of sidewalk along Broad Street, however, most of the corridor does not have sidewalk. The intersection of Broad Street and Prospect Road is stop-controlled on Broad Street. This intersection is skewed and has challenging geometry; however, sight distance is adequate given the stop-controlled nature of the intersection. The intersections along the corridor operate with stop-control on the minor streets. Broad Street between Spooky Nook Road and Prospect Road is part of the Green Route Detour of Route 283.

## Pavement Conditions

STONY BATTERY ROAD

A joint East Hempfield/West Hempfield paving project is underway on Stony Battery Road. Was completed the Spring/Summer of 2023. Existing pavement deficiencies will be addressed by the project. The Limits of which are from Meadow Springs to Main Street.

CENTERVILLE ROAD
Pavement conditions throughout the corridor are in good condition.
GOOD DRIVE
Pavement conditions throughout the corridor are in good condition.

## BROAD STREET

Pavement conditions throughout the corridor are in good condition.

Travel Counts

To determine the type of vehicles currently using the corridors, Automatic Traffic Recorder (ATR) counts were conducted over a one-week period at several locations within the corridor study area to determine average daily traffic (ADT) and truck traffic. Below is a summary of Traffic Data Collection efforts.

Table 1: Count Locations and ATR Summary

| Location | Total ADT | $\begin{gathered} \mathrm{T} \%^{(2)} \\ \text { (\# of Trucks) } \end{gathered}$ | Single Unit <br> (Class 5-7) | Tractor Trailer (Class 8-13) |
| :---: | :---: | :---: | :---: | :---: |
| Good Drive <br> South of Harrisburg Pike | 9,138 | 5.1\% (465) | 444 (4.9\%) | 22 (0.2\%) |
| Good Drive <br> South of Community Way | 9,812 | 5.4\% (530) | 506 (5.2\%) | 24 (0.2\%) |
| Centerville Road South of Harrisburg Pike | 9,618 | 8.2\% (786) | 771 (8.0\%) | 14 (0.2\%) |
| Centerville Road North of Nolt Road | 9,466 | 6.1\% (580) | 573 (6.0\%) | 8 (0.1\%) |
| Centerville Road South of Knights Lane | 8,551 | 7.3\% (627) | 593 (6.9\%) | 34 (0.4\%) |
| Stony Battery Road North of Broad Street | 3,787 | 10.0\% (377) | 318 (8.4\%) | 60 (1.6\%) |
| Stony Battery Road South of Broad Street | 6,356 | 9.3\% (589) | 491 (7.7\%) | 98 (1.6\%) |
| Stony Battery Road North of Kauffman Road | 6,316 | 12.1\% (763) | 654 (10.4\%) | 110 (1.7\%) |
| Broad Street <br> East of Holland Street | 3,024 | 10.4\% (313) | 268 (8.9\%) | 45 (1.5\%) |

Detailed ATR count data is provided in Appendix C.
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## Existing Truck Restrictions

Figure 1: Location of Existing Truck Restrictions


## STONY BATTERY ROAD

There is a truck restriction in place through a deed restriction for the industrial developments located at 620, 701, and 791 (For study purposes the "Stony Battery Industrial Complex") Stony Battery Road. All trucks must exit the developments and travel south.

## CENTERVILLE ROAD

There is an existing truck restriction in place on Centerville Road from Marietta Pike to Harrisburg Pike. The existing truck restriction is signed in accordance with PennDOT Pub 236 "Handbook of Approved Signs"

## GOOD DRIVE

There is a "Weight Limit 5 Ton Local Delivery Only" restriction in place on Good Drive.

## BROAD STREET

There are no truck restrictions in place.
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## Overall Sight Distance Evaluation

## STONY BATTERY ROAD

Based on field observations, travelling in both directions along Stony Battery Road, and based off a review of the crash data along the study corridor, no sight distance issues or limitations for vehicles travelling Stony Battery Road were observed. It should be noted that the intersection of Stony Battery Road and Marietta Pike has challenging geometrics. These geometrics, coupled by the structure and landscaping at the northwest quadrant of the intersection, limit the available sight distance.

## CENTERVILLE ROAD

Based on field observations, travelling in both directions along Centerville Road, and based off a review of the crash data along the study corridor, no sight distance issues or limitations for vehicles travelling Stony Battery Road were observed.

## GOOD DRIVE

Based on field observations, travelling in both directions along Good Drive, and based off a review of the crash data along the study corridor, no sight distance issues or limitations for vehicles travelling Good Drive were observed.

## BROAD STREET

Based on field observations, travelling in both directions along Broad Street, and based off a review of the crash data along the study corridor, no sight distance issues or limitations for vehicles travelling Stony Battery Road were observed

## Crash Evaluation

As part of this evaluation, a crash evaluation was conducted. This information is confidential pursuant to 75 Pa. C.S. 3754 and 23 U.S.C. 409 and may not be published, reproduced, released, or discussed without the written permission of the PA Department of Transportation. As such, this information is published in a separate document.

## Truck Turning Evaluation

Most of the intersections within the study area have been found, through visual inspection, to have adequate radii to accommodate trucks. Truck Turning Templates can be seen in Appendix E. Turning templates were evaluated at the intersection of Main Street and Stony Battery Road, with the corresponding observations provided:

1. Stony Battery Road and Main Street

- This section of Stony Battery Road consists of a unique geometry as Stony Battery intersects Main Street at an acute angle.
- WB-67 Tractor Trailer turning movements using turning movement templates were evaluated for all movements. The following movements were found to be acceptable: eastbound right turn from Main Street onto Stony Battery Road and the northbound left turn from Stony Battery Road to Main Street. The westbound left turn from Main Street to Stony Battery and the northbound right turn from Stony Battery Road to Main Street were deemed deficient. Vehicles such as a WB67 tractor trailer, cannot navigate the intersection without encroaching onto opposing lanes, private property, or without modification/widening to the existing cartways.


## Travel Time and Corridor Operations

Travel time for trucks was evaluated for the corridors. These travel times were determined using a passenger vehicle during off-peak hours, as most trucking and logistics trips occur during offpeak hours.

STONY BATTERY ROAD


Travel time for trucks along the corridor was evaluated utilizing the central location of the Kaufman Road intersection. The current restriction requires trucks to proceed south from the Stony Battery Industrial Complex warehouses. For a truck with a destination of Harrisburg, the required route is to proceed south on Stony Battery Road to Marietta Pike, proceed eastbound along Marietta Pike to Centerville Road and southbound to Route 30. Then take Route 30 east to Route 283 west. This is a travel time of approximately 19 minutes in a passenger vehicle, likely longer in a tractor trailer. By comparison going north on Stony Battery to Main Street and then to South Esbenshade Road to westbound Route 283 is 8 minutes by Passenger vehicle, more than likely a little longer by tractor trailer but, still half of the estimated time. This significant difference in travel time is a factor in why trucks are utilizing northbound Stony Battery Road.

CENTERVILLE ROAD


Travel time for trucks along the corridor was evaluated utilizing the industrial sites located on Yellow Goose Road. The current restriction requires trucks destined for the southwest to proceed north on Centerville Road to Route 283 east to Route 30 west for points southwest. The Centerville Road interchange was utilized as the final destination for the evaluation. Utilizing State Road, Route 283, Route 30, the travel time of 9 minutes is very similar to the direct Centerville Road southbound route. An additional route for trucks that head south on State Road and come upon the truck restriction at the intersection of Centerville Road and Harrisburg Pike was also evaluated. This route utilized Harrisburg Pike eastbound to Rohrerstown Road to Route 30. This route also had similar travel times.

## Conclusions and Recommendations

STONY BATTERY ROAD

After an evaluation of existing roadway conditions, crash data, mobility needs of all legal road users, in accordance with PennDOT Publication 212 "Official Traffic Control Devices" (Chapter 212, Section 117), the following recommendations and next steps were developed for Stony Battery Road:

1. Based on the evaluation of the turning templates, a ban of trucks with 3 or more axels is recommended at the following locations to address physical constraints:
a. Stony Battery Road at Main Street:
i. The westbound left turn from Main Street to Stony Battery
ii. The northbound right turn from Stony Battery Road to Main Street
2. The Township should install turn restriction signs in advance of the intersection and routinely enforce these restrictions.
3. Complete the PennDOT TE-109 form entitled "ENGINEERING AND TRAFFIC STUDY FOR RESTRICTIONS AS TO WEIGHT, SIZE, KIND OR CLASS, OR TYPE OF LOAD, BASED ON HIGHWAY, BRIDGE, OR TRAFFIC CONDITIONS" and adopt the findings.
4. The Township should notify the operators of the buildings within the Stony Battery Industrial Complex of the turn restrictions.
5. No further truck restrictions are warranted. The recommended tractor trailer route for vehicles destined to and from the Stony Battery Industrial Complex should be defined in the following manner.
a. For destinations utilizing Route 30 eastbound or westbound, all truck traffic shall continue to use southbound Stony Battery Road.
b. For destinations utilizing Route 283 Eastbound, all truck traffic shall continue to use southbound Stony Battery Road.
c. For destinations utilizing Route 283 westbound, all truck traffic shall be permitted to use Stony Battery Road northbound and Main Street westbound.
6. Work with West Hempfield Township on a joint project to upgrade the intersection of Marietta Pike and Stony Battery Road to maximize sight distance and realign the intersection.

After an evaluation of existing roadway conditions, crash data, mobility needs of all legal road users, in accordance with PennDOT Publication 212 "Official Traffic Control Devices" (Chapter 212, Section 117), the following recommendations and next steps were developed for Centerville Road:

1. This study validates previous attempts at restricting trucks along this corridor. The current restriction should remain based on the following:
a. The $10 \%$ vertical grade of Centerville Road, south of the intersection of Harrisburg Pike, is a contributing factor in several accidents.
b. The roadway is narrow with 11 -foot lanes with shoulders that vary from one to two feet.
c. There are acceptable alternate routes with similar travel times.
d. The setting of the roadway is residential in nature.
e. It is recommended that the current truck restriction be signed as a ban of trucks with 3 or more axels, for ease of enforcement.
f. Complete the PennDOT TE-109 form entitled "ENGINEERING AND TRAFFIC STUDY FOR RESTRICTIONS AS TO WEIGHT, SIZE, KIND OR CLASS, OR TYPE OF LOAD BASED ON HIGHWAY, BRIDGE, OR TRAFFIC CONDITIONS" and adopt the findings.
g. The Township should sign the alternate truck routes noted below.
h. Work with area trucking companies to educate their drivers on the alternate routes and reinforce the importance of adhering to the restrictions.


## GOOD DRIVE

Remove the current restriction, as development, patterns and uses within the corridor have changed and the restriction in operation is not needed nor necessary.

## BROAD STREET

After an evaluation of existing roadway conditions, crash data, mobility needs of all legal road users, in accordance with PennDOT Publication 212 "Official Traffic Control Devices" (Chapter 212, Section 117), the following recommendations were developed. We recommend that should West Hempfield Township wish to restrict trucks, an alternative route for trucks would be necessary. Broad Street is a unique issue, in that the Route 283 interchange in effect, funnels traffic destined for Salunga and Landisville onto Broad Street, which is a township road, and was not constructed nor intended to serve as such. An option to use Prospect Road as an alternate truck route for Broad Street was investigated. The sight distance was field measured at the intersection of Main Street and Prospect Road was deemed insufficient. A potential solution would be for East and West Hempfield Township to work collaboratively with PennDOT to designate a truck route for the Salunga/Landisville area that has trucks exit Route 283 at the Esbenshade Interchange. Have them utilize Main Street/Harrisburg Pike instead of the Spooky Nook Road/ Broad Street route many currently utilize.


## SMCMAHON

## Appendix A

## Study Maps




## GMCMAHON

## Appendix B

## Publication 212, Section 117 Excerpts and FHWA Vehicle Classification

 DEPARTMENT OF TRANSPORTATION Bureau of Highway Safety and Traffic Engineering

Pub 212 (3-06)

## § 212.117. Weight, size and load restrictions.

(a) Weight restriction based on condition of bridge. Traffic on a bridge may be prohibited or restricted by weight of vehicle, number of vehicles, or kinds or classes of vehicles when an engineering evaluation conducted by a professional engineer establishes the need. Engineering evaluation of a bridge or bridge component may be based on structural analysis and rating computations, testing, engineering judgment or a combination thereof. Restriction is warranted when one or more of the following conditions are present:
(1) The safe load capacity of the bridge is exceeded by the load effect of any of the legal load configurations. The capacity and load effects are to be determined in accordance with the Bridge Safety Inspection Manual (Department Publication 238).
(2) Engineering judgment indicates that the condition or material of construction of one or more portions or components of a bridge is such that further use by heavy vehicles may damage the bridge because of severe impact, fatigue or other reasons.
(3) The bridge is damaged due to fire, a vehicle crash or environmental deterioration, and engineering judgment indicates that a vehicle weight restriction is necessary to ensure an adequate level of safety.
(b) Weight restriction based on condition of highway. Traffic on a highway may be prohibited or restricted by weight of vehicle, or kinds or classes of vehicles when warranted by an engineering evaluation. Engineering evaluation may be based on structural analysis, testing, engineering judgment or a combination thereof. A restriction is warranted when one or more of the following conditions are present:
(1) The highway pavement or shoulders have inadequate structural capacity or have been weakened due to deterioration, high traffic volumes or climatic condition, and may be seriously damaged unless a restriction is imposed.
(2) An engineering evaluation of previous similar climatic conditions on the highway or on similar highways indicates that vehicles over a certain weight should have been prohibited.
(c) Size restriction based on condition of bridge or highway. Traffic on a bridge or highway may be restricted by size of vehicle or kinds or classes of vehicles when, after an engineering evaluation, one or more of the following conditions are found to be present:
(1) A bridge has poor alignment, substandard horizontal or vertical clearance, or creates problems for vehicles with low ground clearance, or the restriction is otherwise necessary to protect the bridge from vehicle crashes or damage.
(2) A highway has inadequate turning radii, horizontal width or creates concerns for vehicles with low ground clearance at one or more locations.
(d) Weight and size restrictions based on traffic conditions. Traffic on a highway or bridge may be prohibited or restricted by weight or size of vehicle, or kinds or classes of vehicles when, an engineering evaluation of the horizontal and vertical alignment, prevailing traffic speeds, compatibility of the various types of traffic, history of vehicle crashes or vehicular characteristics, indicates that the movement of certain vehicles constitutes a safety hazard. Restrictions may include weight; height, width or length of vehicles or their loads; types of cargo; speed or gearing; stopping requirements; specified travel lanes; and hours of operation.
(e) Erection of signs. Appropriate signs shall be erected within 25 feet of each end of a restricted portion of a highway or bridge whenever vehicles are prohibited under subsection (a), (b), (c) or (d). In the case of a restriction on a highway or bridge which does not begin or end at an intersection with an unrestricted highway, an advance information sign shall also be erected at the intersection nearest each end of the restricted highway or bridge to allow drivers to avoid the restricted highway or bridge.
(f) Alternate routes. An alternate route shall be established whenever vehicles are prohibited under subsection (a) or (b) on either a numbered traffic route or a Statedesignated highway on the National Highway System, as established by the Federal Highway Administration, when the following apply:
(1) A reasonable alternate route exists which is not readily perceived by drivers.
(2) The alternate route can legally, safely, structurally and physically accommodate the weight and size of vehicles and their loads that are being detoured.
(3) Five or more vehicles per day are estimated to be prohibited from using the original route.

| Class I <br> Motorcycles | $B$ | Class 7 <br> Four or more axle, single unit |  |
| :---: | :---: | :---: | :---: |
| Class 2 <br> Passenger cars | 6-10 | Class 8 <br> Four or less axle, single trailer |  |
|  | $6$ |  | -000 ${ }^{\text {Pa }}$ |
|  | 5000 |  |  |
|  | - $\square^{\text {a }}$ |  | O- |
| Class 3 <br> Four tire, single unit | + |  |  |
|  | - | Class 9 <br> 5-Axle tractor semitrailer |  |
|  | - |  | 000000000 |
| Class 4 <br> Buses | - | Class 10 <br> Six or more axle, single trailer |  |
|  | -17\% 0 - |  |  |
|  | - | Class II <br> Five or less axle, multi trailer |  |
| Class 5 <br> Two axle, six tire, single unit |  | Class 12 <br> Six axle, multitrailer |  |
|  |  |  |  |
|  | $\frac{\mathrm{DH}}{0}$ | Class 13 <br> Seven or more axle, multi-trailer |  |
| Class 6 <br> Three axle, single unit | $\frac{N}{00}+\frac{\sigma^{0}}{}$ |  |  |
|  |  |  |  |
|  | $0$ |  |  |

Source: Federal Highway Administration (TMG 2013).

## SMCMAHON

## Appendix C

## Traffic Count Data

Table 1. Automatic Traffic Recorder Summary ${ }^{(1)}$

| Location | Total ADT | T\% (2) <br> (\# of Trucks) | Single Unit <br> (Class 5-7) | Tractor Trailer <br> (Class 8-13) |
| :---: | :---: | :---: | :---: | :---: |
| Good Drive <br> South of Harrisburg Pike | 9,138 | $5.1 \%(465)$ | $444(4.9 \%)$ | $22(0.2 \%)$ |
| Good Drive <br> South of Community Way | 9,812 | $5.4 \%(530)$ | $506(5.2 \%)$ | $24(0.2 \%)$ |
| Centerville Road <br> South of Harrisburg Pike | 9,618 | $8.2 \%(786)$ | $771(8.0 \%)$ | $14(0.2 \%)$ |
| Centerville Road <br> North of Nolt Road | 9,466 | $6.1 \%(580)$ | $573(6.0 \%)$ | $8(0.1 \%)$ |
| Centerville Road <br> South of Knights Lane | 8,551 | $7.3 \%(627)$ | $593(6.9 \%)$ | $34(0.4 \%)$ |
| Stony Battery Road <br> North of Broad Street <br> Stony Battery Road <br> South of Broad Street | 6,787 | $10.0 \%(377)$ | $318(8.4 \%)$ | $60(1.6 \%)$ |
| Stony Battery Road <br> North of Kauffman Road | 6,316 | $9.3 \%(589)$ | $491(7.7 \%)$ | $98(1.6 \%)$ |

(1) Based on automatic traffic recorder counts conducted January 18-26, 2023.
(2) Includes all counted FHWA Class 5 and above

## SMCMAHON

## Appendix D

## Truck Turning Templates

## TRUCK ROUTE STUDY



## TRUCK ROUTE STUDY



## TRUCK ROUTE STUDY



## TRUCK ROUTE STUDY




## TRUCK ROUTE STUDY

WEST MAIN ST \& PROSPECT RD RIGHT TURN (EASTBOUND)

## TRUCK ROUTE STUDY



## TRUCK ROUTE STUDY





## TRUCK ROUTE STUDY



WEST MAIN ST \& PROSPECT RD
LEFT TURN (WESTBOUND)

## SCALE

$\qquad$

## TRUCK ROUTE STUDY



WEST MAIN ST \& PROSPECT RD
LEFT TURN (SOUTHBOUND)

## TRUCK ROUTE STUDY



## TRUCK ROUTE STUDY




