# Lane Avenue Traffic Study

Joy Lanham & Jackie Thiel – June 15th, 2020 Council Meeting

City of Upper Arlington

# Traffic Study

Purpose

- Evaluate Existing Capacity
- Determine Future Demand
- Future Needs for Development
- Recommend Improvements

# Study Area

Whole Corridor - Riverside Dr to SR-315

“Downtown Core” = Northwest Blvd to Northstar Rd

# Traffic Data

83% of Corridor traffic is not complete cut-through

# Traffic Operations

| Level of Service | Control delay per vehicle (in seconds) for unsignalized intersections | Control delay per vehicle (in seconds) for signalized intersections |
|---|---|---|
| A | < 10 | < 10 |
| B | 10 - 15 | 10 - 20 |
| C | 15 - 25 | 20 - 35 |
| D | 25 - 35 | 35 – 55 |
| E | 35 - 50 | 55 – 80 |
| F* | > 50 | > 80 |

***LOS F is given to any approach with volume exceeding capacity**

# 2019 Existing Traffic Operations – AM Peak

Downtown UA intersections – Most delay is along side streets

| AM Peak Hour LOS | | | | | | |
|---|---|---|---|---|---|---|
| Intersection | Control | EB | WB | NB | SB | Overall |
| Northwest Blvd | Signal | D | B | D | D | D |
| Brandon Rd | TWSC | A | A | D | C | A |
| Chester Rd | Signal | A | A | D | E | A |
| Westmont Blvd | TWSC | A | A | C | C | A |
| The Lane | TWSC | A | A | - | B | A |
| Wellesley Dr | Signal | A | A | D | D | A |
| Beaumont Rd/Vassar Pl | TWSC | A | A | C | D | A |
| North Star Rd | Signal | C | C | D | C | C |

# 2019 Existing Traffic Operations – PM Peak

Downtown UA intersections – Most delay is along side streets

| PM Peak Hour LOS | | | | | | |
|---|---|---|---|---|---|---|
| Intersection | Control | EB | WB | NB | SB | Overall |
| Northwest Blvd | Signal | C | C | D | D | C |
| Brandon Rd | TWSC | A | A | C | E | A |
| Chester Rd | Signal | A | A | E | E | A |
| Westmont Blvd | TWSC | A | A | C | D | A |
| The Lane | TWSC | A | A | - | B | A |
| Wellesley Dr | Signal | A | A | D | D | A |
| Beaumont Rd/Vassar Pl | TWSC | A | A | D | F | A |
| North Star Rd | Signal | B | C | C | C | C |

# 2030 No Build – No New Developments

## 2030 PM No Build – WB 2 Thru Lanes


## 2030 PM No Build – WB 1 Thru Lane

# 2030 No Build – No New Developments

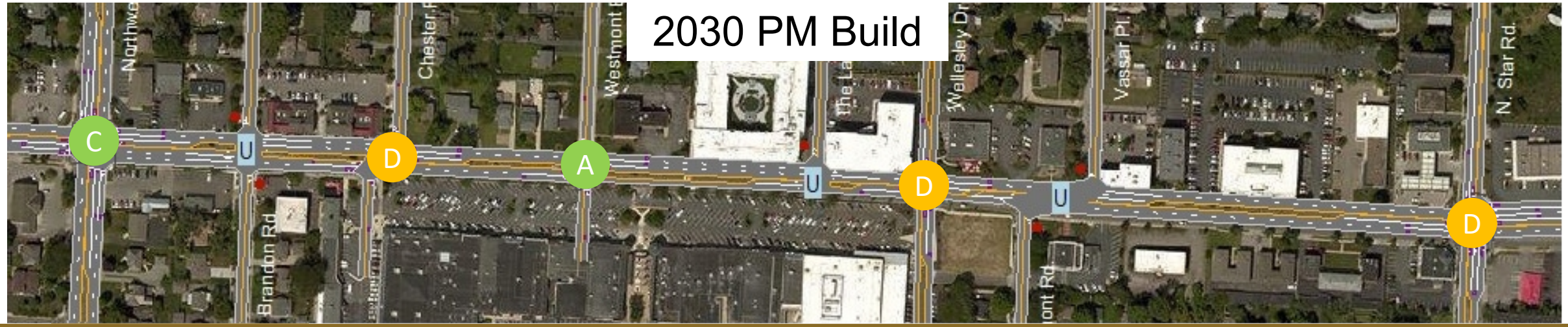
## 2030 PM No Build – WB 2 Thru Lanes


## 2030 PM No Build – WB 1 Thru Lane

# 2030 Build - New Developments

- Includes potential future redevelopment
- Maximum density possible for each land use
- Includes parking structures

# 2030 Build - With New Developments

# Recommended Improvements

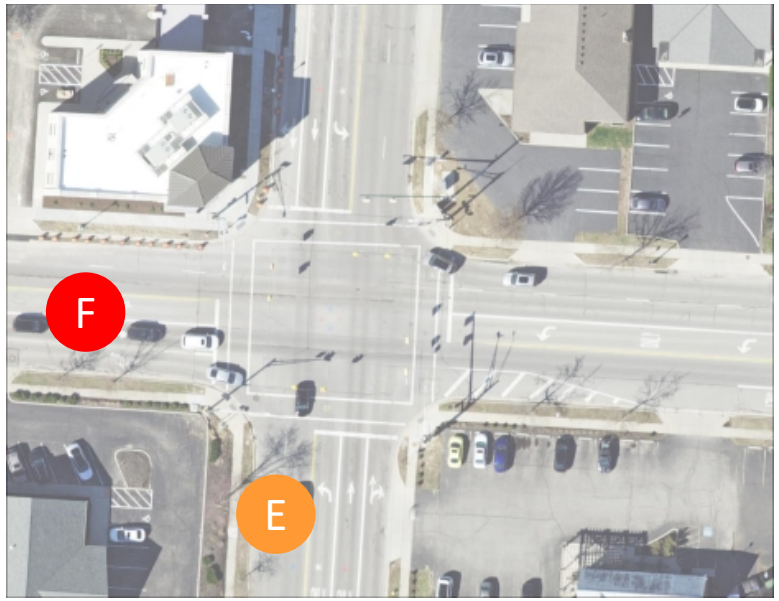
- Existing, Short Term, Long Term Concept Layouts
- Intersection LOS/Delay and Approaches E or F
- Short Term = Can be done now or w/CIP project
- Medium/Long Term = Future improvement to occur with redevelopment

# Northwest Boulevard and Lane Avenue

## Existing

AM LOS/Delay = E/76

PM LOS/Delay = D/48




## Short Term

AM LOS/Delay = C/23

PM LOS/Delay = D/46


- Restripe eastbound approach to extend second through lane, move drop right turn lane to Chester Road.

## Long Term

AM LOS/Delay = C/21

PM LOS/Delay = D/42

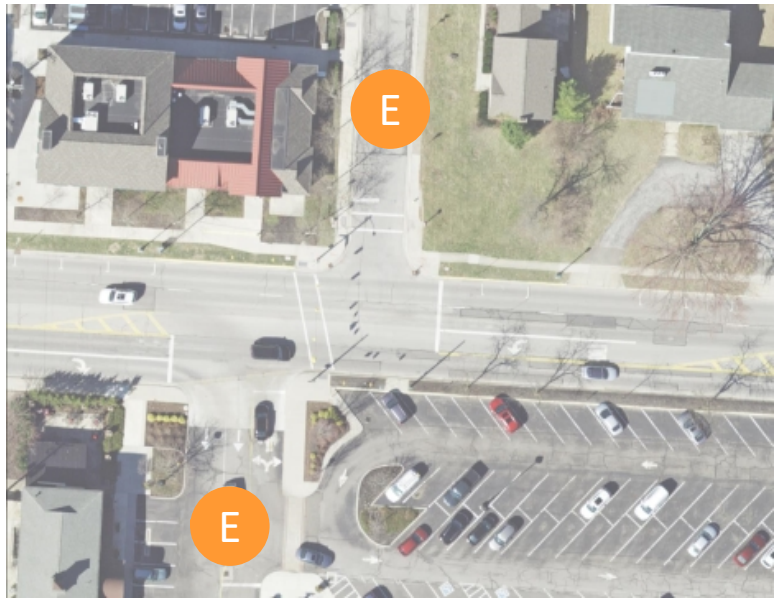
- Add a northbound right turn lane
- Widen intersection

# Chester Road and Lane Avenue

**Existing**

AM LOS/Delay = B/23

PM LOS/Delay = B/17




**Short Term**

AM LOS/Delay = B/13

PM LOS/Delay = B/17


- Extend two EB through lanes from Northwest Blvd to Chester Road

**Long Term**

AM LOS/Delay = A/5

PM LOS/Delay = A/8

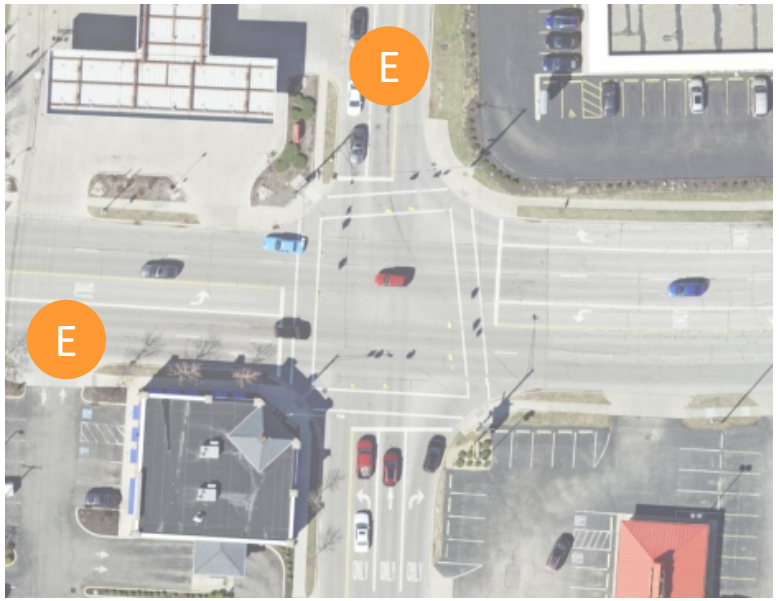
- Realign Chester Road

# North Star Road and Lane Avenue

**Existing**

AM LOS/Delay = D/43

PM LOS/Delay = C/34




**Long Term Options Explored**

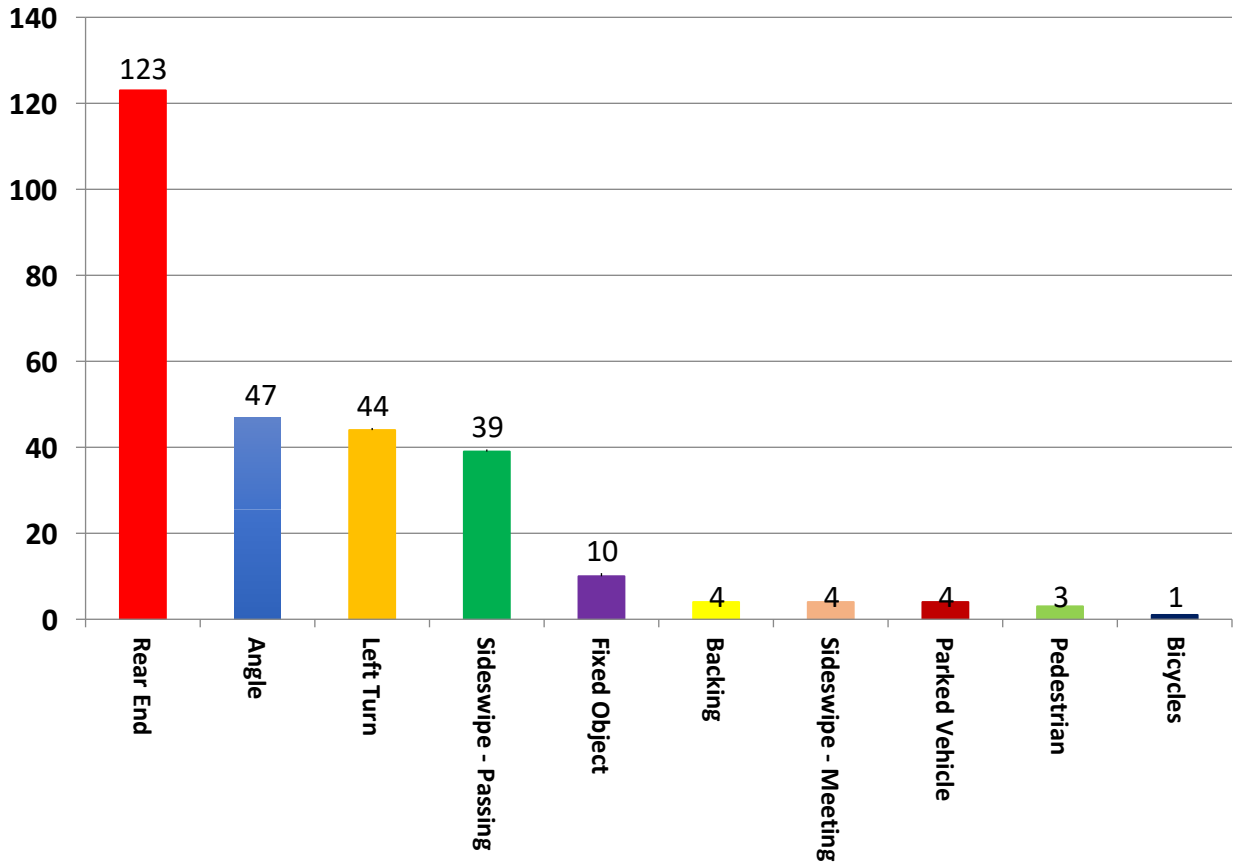
- Add exclusive EB RT lane
  - Can only be done with redevelopment
- Add 2nd SB LT lane
  - Hurts overall operations

# Access Management

- Traffic Impact Study Required
  - Traffic Volume Projections
  - Level of Service Improvements
  - Minimize number of driveways

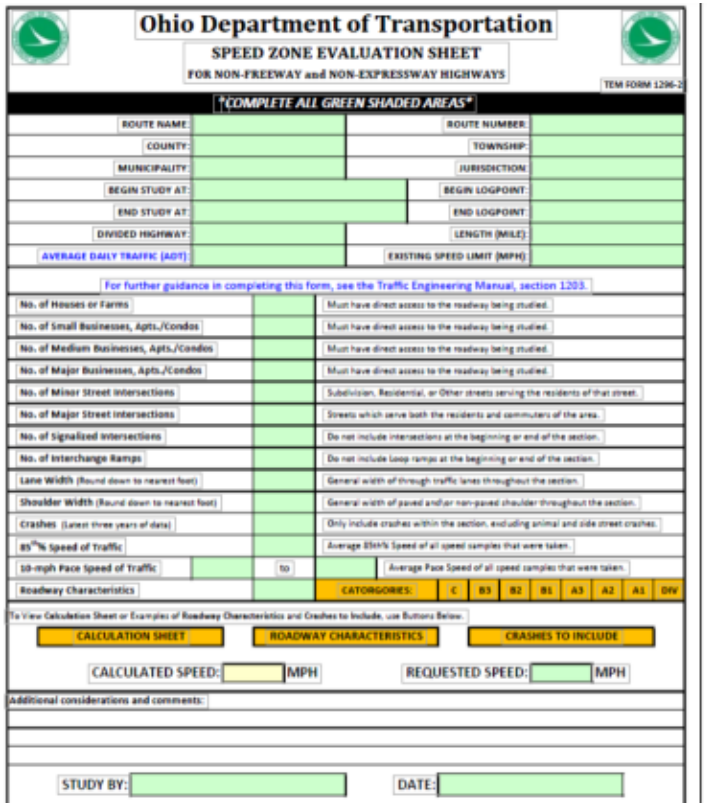
# Crash Data

- 279 Crashes from 2016-2018
- Majority during peak hours and at signals
- Lane/North Star #3 in UA on MORPC's list – not in Top 100



# Speed Zones

- Speed limits are set by ORC Section 4511.21
- Revisions require local resolution/ordinance, speed zone study, and ODOT approval



Ohio Department of Transportation

SPEED ZONE EVALUATION SHEET

FOR NON-FREEWAY and NON-EXPRESSWAY HIGHWAYS

TEM FORM 1296-2

*COMPLETE ALL GREEN SHADED AREAS*

ROUTE NAME: | ROUTE NUMBER:

COUNTY: | TOWNSHIP:

MUNICIPALITY: | JURISDICTION:

BEGIN STUDY AT: | BEGIN LOGPOINT:

END STUDY AT: | END LOGPOINT:

DIVIDED HIGHWAY: | LENGTH (MILE):

AVERAGE DAILY TRAFFIC (ADT) | EXISTING SPEED LIMIT (MPH)

For further guidance in completing this form, see the Traffic Engineering Manual, section 1203.

| | |
|---|---|
| No. of Houses or Farms | Must have direct access to the roadway being studied. |
| No. of Small Businesses, Apts./Condos | Must have direct access to the roadway being studied. |
| No. of Medium Businesses, Apts./Condos | Must have direct access to the roadway being studied. |
| No. of Major Businesses, Apts./Condos | Must have direct access to the roadway being studied. |
| No. of Minor Street Intersections | Subdivision, Residential, or Other streets serving the residents of that street. |
| No. of Major Street Intersections | Streets which serve both the residents and commuters of the area. |
| No. of Signalized Intersections | Do not include intersections at the beginning or end of the section. |
| No. of Interchange Ramps | Do not include loop ramps at the beginning or end of the section. |
| Lane Width (Round down to nearest foot) | General width of through traffic lanes throughout the section. |
| Shoulder Width (Round down to nearest foot) | General width of paved and/or non-paved shoulder throughout the section. |
| Crashes (Latest three years of data) | Only include crashes within the section, excluding animal and side street crashes. |
| 85TH% Speed of Traffic | Average 85th% Speed of all speed samples that were taken. |
| 10-mph Pace Speed of Traffic | to — Average Pace Speed of all speed samples that were taken. |
| Roadway Characteristics | CATORGORIES: C \| B3 \| B2 \| B1 \| A3 \| A2 \| A1 \| DIV |

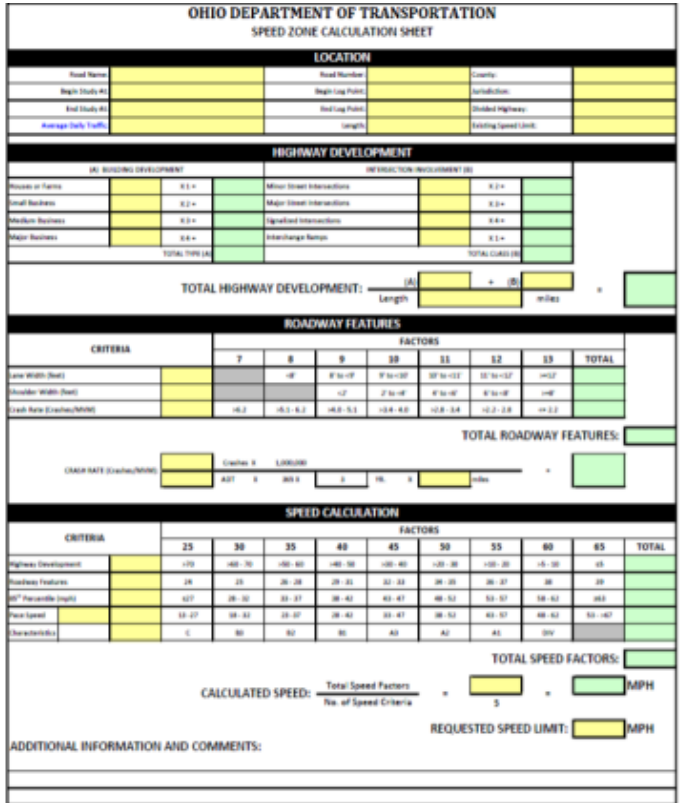
To View Calculation Sheet or Examples of Roadway Characteristics and Crashes to Include, use Buttons Below.

CALCULATION SHEET | ROADWAY CHARACTERISTICS | CRASHES TO INCLUDE

CALCULATED SPEED: MPH REQUESTED SPEED: MPH

Additional considerations and comments:

STUDY BY: DATE:



OHIO DEPARTMENT OF TRANSPORTATION

SPEED ZONE CALCULATION SHEET

LOCATION

| | | | | | |
|---|---|---|---|---|---|
| Road Name | | Road Number | | County | |
| Begin Study At | | Begin Log Point | | Jurisdiction | |
| End Study At | | End Log Point | | Divided Highway | |
| Average Daily Traffic | | Length | | Existing Speed Limit | |

HIGHWAY DEVELOPMENT

| (A) BUILDING DEVELOPMENT | | | | INTERSECTION INVOLVEMENT (B) | | | |
|---|---|---|---|---|---|---|---|
| Houses or Farms | | X 1 = | | Minor Street Intersections | | X 2 = | |
| Small Business | | X 2 = | | Major Street Intersections | | X 3 = | |
| Medium Business | | X 3 = | | Signalized Intersections | | X 4 = | |
| Major Business | | X 4 = | | Interchange Ramps | | X 5 = | |
| TOTAL TYPE (A) | | | | TOTAL CLASS (B) | | | |

TOTAL HIGHWAY DEVELOPMENT: (A) + (B) / Length miles =

ROADWAY FEATURES

| CRITERIA | FACTORS 7 | 8 | 9 | 10 | 11 | 12 | 13 | TOTAL |
|---|---|---|---|---|---|---|---|---|
| Lane Width (feet) | | >9' | 8' to <9' | 9' to <10' | 10' to <11' | 11' to <12' | >=12' | |
| Shoulder Width (feet) | | | <2' | 2' to <4' | 4' to <6' | 6' to <8' | >=8' | |
| Crash Rate (Crashes/MVM) | >6.2 | >5.1 - 6.2 | >4.0 - 5.1 | >3.4 - 4.0 | >2.8 - 3.4 | >2.2 - 2.8 | <= 2.2 | |

TOTAL ROADWAY FEATURES:

CRASH RATE (Crashes/MVM): Crashes X 1,000,000 / ADT X 365 X Yr. X miles =

SPEED CALCULATION

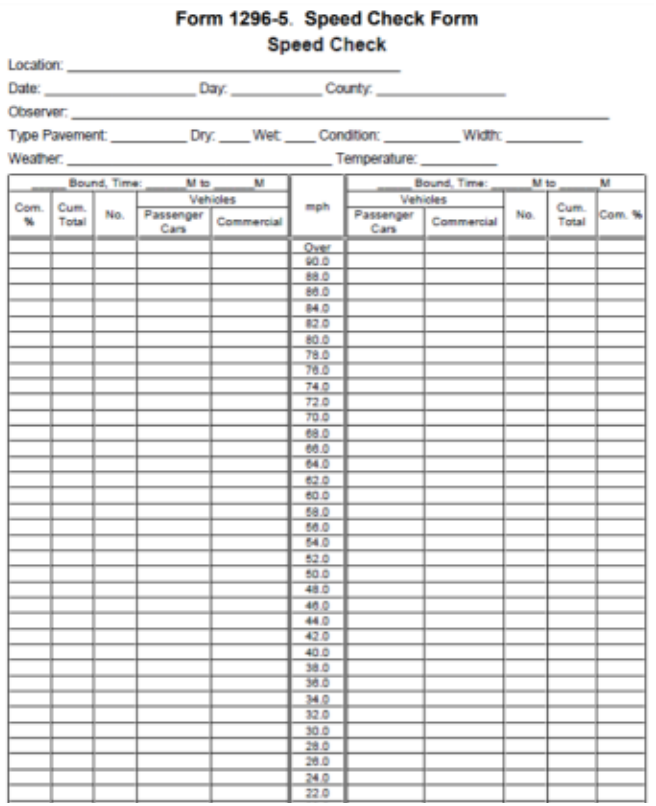
| CRITERIA | FACTORS 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| Highway Development | >=70 | >60 - 70 | >50 - 60 | >40 - 50 | >30 - 40 | >20 - 30 | >10 - 20 | >5 - 10 | <5 | |
| Roadway Features | 24 | 23 | 26 - 28 | 29 - 31 | 32 - 33 | 34 - 35 | 36 - 37 | 38 | 39 | |
| 85TH Percentile (mph) | <27 | 28 - 32 | 33 - 37 | 38 - 42 | 43 - 47 | 48 - 52 | 53 - 57 | 58 - 62 | >62 | |
| Pace Speed | 22 - 27 | 28 - 32 | 23 - 37 | 28 - 42 | 33 - 47 | 38 - 52 | 43 - 57 | 48 - 62 | 53 - >67 | |
| Characteristics | C | B3 | B2 | B1 | A3 | A2 | A1 | DIV | | |

TOTAL SPEED FACTORS:

CALCULATED SPEED: Total Speed Factors / No. of Speed Criteria = / 5 = MPH

REQUESTED SPEED LIMIT: MPH

ADDITIONAL INFORMATION AND COMMENTS:



Form 1296-5. Speed Check Form

Speed Check

Location: _____

Date: _____ Day: _____ County: _____

Observer: _____

Type Pavement: _____ Dry: ___ Wet: ___ Condition: _____ Width: _____

Weather: _____ Temperature: _____

| Bound, Time: M to M | | | | | mph | Bound, Time: M to M | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Com. % | Cum. Total | No. | Vehicles: Passenger Cars | Vehicles: Commercial | | Vehicles: Passenger Cars | Vehicles: Commercial | No. | Cum. Total | Com. % |
| | | | | | Over | | | | | |
| | | | | | 90.0 | | | | | |
| | | | | | 88.0 | | | | | |
| | | | | | 86.0 | | | | | |
| | | | | | 84.0 | | | | | |
| | | | | | 82.0 | | | | | |
| | | | | | 80.0 | | | | | |
| | | | | | 78.0 | | | | | |
| | | | | | 76.0 | | | | | |
| | | | | | 74.0 | | | | | |
| | | | | | 72.0 | | | | | |
| | | | | | 70.0 | | | | | |
| | | | | | 68.0 | | | | | |
| | | | | | 66.0 | | | | | |
| | | | | | 64.0 | | | | | |
| | | | | | 62.0 | | | | | |
| | | | | | 60.0 | | | | | |
| | | | | | 58.0 | | | | | |
| | | | | | 56.0 | | | | | |
| | | | | | 54.0 | | | | | |
| | | | | | 52.0 | | | | | |
| | | | | | 50.0 | | | | | |
| | | | | | 48.0 | | | | | |
| | | | | | 46.0 | | | | | |
| | | | | | 44.0 | | | | | |
| | | | | | 42.0 | | | | | |
| | | | | | 40.0 | | | | | |
| | | | | | 38.0 | | | | | |
| | | | | | 36.0 | | | | | |
| | | | | | 34.0 | | | | | |
| | | | | | 32.0 | | | | | |
| | | | | | 30.0 | | | | | |
| | | | | | 28.0 | | | | | |
| | | | | | 26.0 | | | | | |
| | | | | | 24.0 | | | | | |
| | | | | | 22.0 | | | | | |

# Questions?