

Chapter 8

AADT: Annual Average Daily Traffic



AADT vs. ADT

AADT

Annual average daily traffic - taken over year and divided by the number of days within the year; normalizes seasonal, special event, and other fluctuations (used for crash analyses)

ADT

Average daily traffic - taken over a period of a few days or weeks; does not normalize seasonal, special event, and other fluctuations (NOT used for crash analyses)

AADT Data

Connect NCDOT
BUSINESS PARTNER RESOURCES

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CADD Environmental Geotechnical Hydraulics Materials & Tests Products Specifications State Roads Structures Traffic Safety

TEAAS Resources and Information

Mileposting, TEAAS Links

Resources Traffic Safety TEAAS Resources and Information

TEAAS Mileposting

Mileposting is the process of determining the location of features on a road, in miles, from the beginning of the road, and is a fundamental requirement of the Traffic Engineering and Accident Analysis System (TEAAS) necessary for crash studies and analyses, crash rates, and ordinance overlap checks. Mileposts are based on information in NCDOT's Linear Referencing System (LRS) maintained by the Geographic Information Systems (GIS) Unit, and are used to determine where crashes occurred, or where ordinances are located, in relation to roadway features. Features requiring mileposts are intersections and interchanges, at-grade railroad crossings, mile markers, structures (that carry the road), and political boundaries (municipal, county, and state lines).

Mileposting Links

- Exclusion List (LRS synchronization)
- Guidelines.pdf
- High Order Routes Sheet.zip

Employee Directory

Staff contacts for Transportation Safety and Mobility.

Local City Crash Reports

- Charlotte Crash Reports
- Greensboro Police Reports
- Raleigh Crash Reports
- Wilmington Police Reports
- Winston-Salem Crash Reports

Links and Information

Links and Information

[Bridge Document Management System \(BridgeDocs\)](#)

[County GIS Maps](#)

[Crash Rates](#)

[DMV CrashWeb](#)

[DMV CrashWeb Access North Carolina Identity Management Service \(NCID\)](#)

[DMV CrashWeb NCID New Account Instructions](#)

[DMV User Management Application \(UMM\)](#)

[Historical Roadway Characteristics Data \(MLI1\)](#)

[Information, Mapping, & Graphics \(IMG\)](#)

[List of County Information](#)

[MANTIS Bug Tracking System](#)

[NCDOT GIS Data Layers](#)

[NCDOT GIS Unit](#)

[Project Breakdown Maps](#)

[Project Search](#)

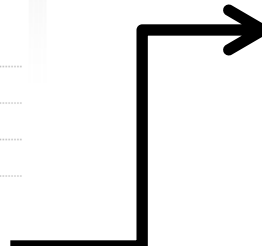
[Project Server \(bey let date\)](#)

[SR Number Lookup](#)

[TEAAS Website](#)

[TRACS Website](#)

[Volume \(AADT\) Maps](#)



<https://connect.ncdot.gov/resources/safety/Pages/TEAAS%20Information.aspx>

AADT Data (cont.)

- Mainline interstates, freeways, and major arterials are generally counted every year
- Collectors and most local routes are generally counted every other year
- Low volume local routes may never be counted and, therefore, their volumes may have to be estimated
- Municipal street volumes are usually not maintained by the NCDOT

AADT Data (cont.)

The screenshot shows the NCDOT website's navigation menu and content area. The navigation menu includes: Business, DMV, Newsroom, Programs, Projects, and Travel & Maps. The content area is titled "Traffic Volume Maps" and includes a breadcrumb trail: Home » Travel & Maps » State Mapping Resources » Traffic Volume Maps. Below the title, there is a paragraph explaining that Traffic Volume (AADT) Maps are created by the Traffic Survey Group in cooperation with the SRMU Mapping Section. It states that the county and urban maps serve as a foundation for Traffic Survey employees to identify locations known as "count stations". Traffic Surveys labels each of these stations with the Annual Average Daily Traffic counts. PDF's of the current AADT maps are available below. There is a link to a website for more information. Below that, there is a link to contact the NCDOT Traffic Survey Group. A paragraph explains that by clicking on the Traffic Volume Map links below, you can access the individual county sheets in PDF format. The name of the county will be followed by a number. These numbers represent each sheet, i.e., Sheet 2 of 9. If you do not know which sheet you need, click on the "sheet key". If a sheet key is not available, you can ALWAYS find a sheet key on the 1st sheet for each county. There are two sections: "Urban Area AADT Traffic Maps" and "County Area AADT Maps by Year". The "Urban Area AADT Traffic Maps" section lists 16 counties: Asheville, Burlington, Chapel Hill, Charlotte, Concord & Kannapolis, Durham, Fayetteville, Gastonia, Goldsboro, Greensboro, Greenville, Hickory, High Point, Jacksonville, Rocky Mount, and Winston Salem. There is a link "View All Available Urban Traffic Maps". The "County Area AADT Maps by Year" section lists years from 1999 to 2011.

Home » Travel & Maps » State Mapping Resources » Traffic Volume Maps

Traffic Volume Maps

Traffic Volume (AADT) Maps are a product created by the Traffic Survey Group in cooperation with the SRMU Mapping Section. The county and urban maps supplied by the mapping section serve as a foundation for Traffic Survey employees to identify locations known as "count stations". Traffic Surveys labels each of these stations with the **Annual Average Daily Traffic** counts. PDF's of the current AADT maps are available below.

If you are interested in learning more about Traffic Survey's mission, traffic data collection process and traffic data products, please visit their [website](#).

If you have further questions concerning Traffic Count Data Information, please contact the NCDOT Traffic Survey Group.

By clicking on the Traffic Volume Map links below, you can access the individual county sheets in PDF format. The name of the county will be followed by a number. These numbers represent each sheet, i.e., Sheet 2 of 9. If you do not know which sheet you need, click on the "sheet key". If a sheet key is not available, you can ALWAYS find a sheet key on the 1st sheet for each county.

Urban Area AADT Traffic Maps

To view available Urban AADT Maps, please click one of these links:

- Asheville
- Burlington
- Chapel Hill
- Charlotte
- Concord & Kannapolis
- Durham
- Fayetteville
- Gastonia
- Goldsboro
- Greensboro
- Greenville
- Hickory
- High Point
- Jacksonville
- Raleigh
- Rocky Mount
- Wilmington
- Winston Salem

[View All Available Urban Traffic Maps](#)

County Area AADT Maps by Year

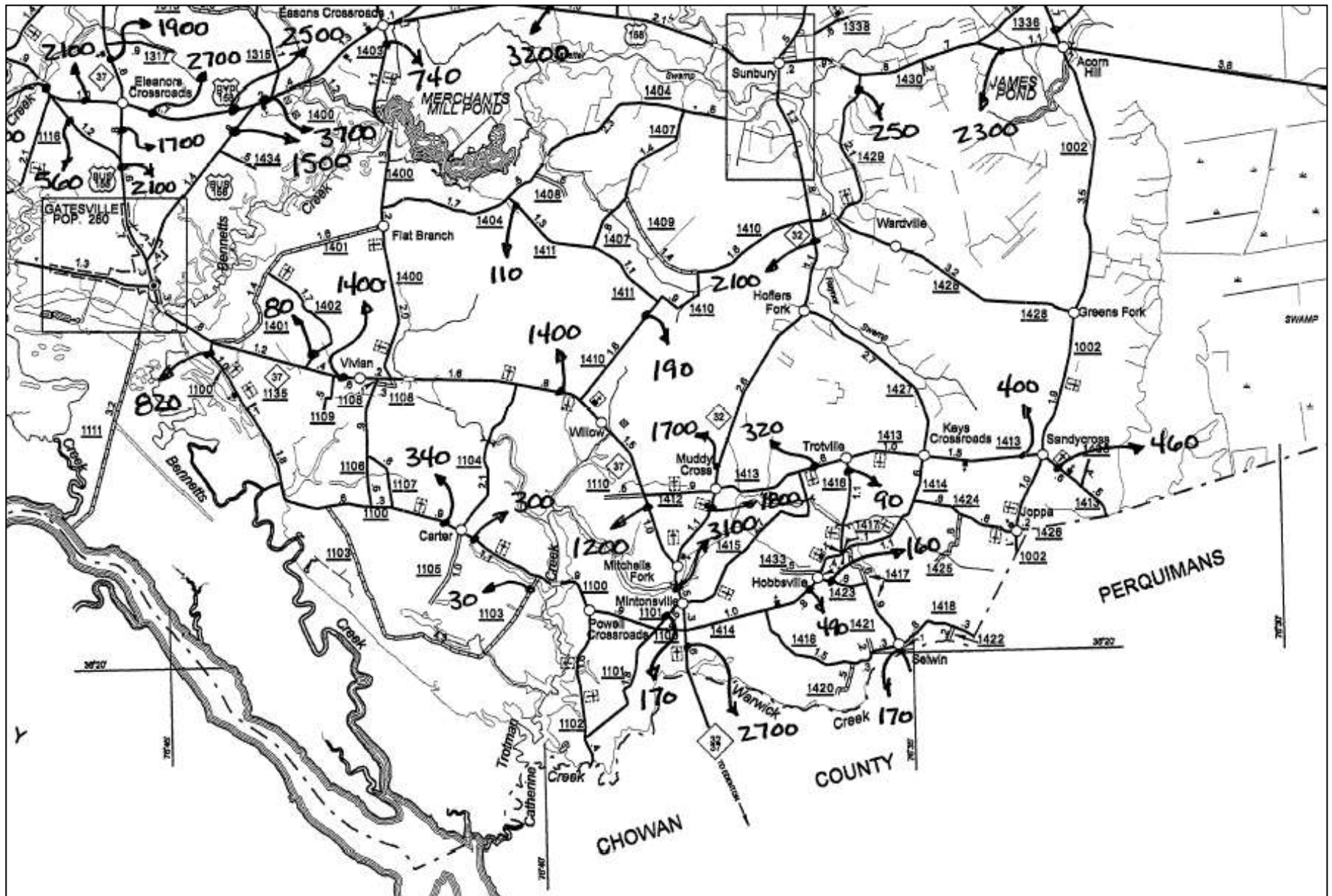
To view available County AADT Maps, please click on of these links:

1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011

Urban AADT maps are available for the years 1997 through 2011 (depending on the urban area)

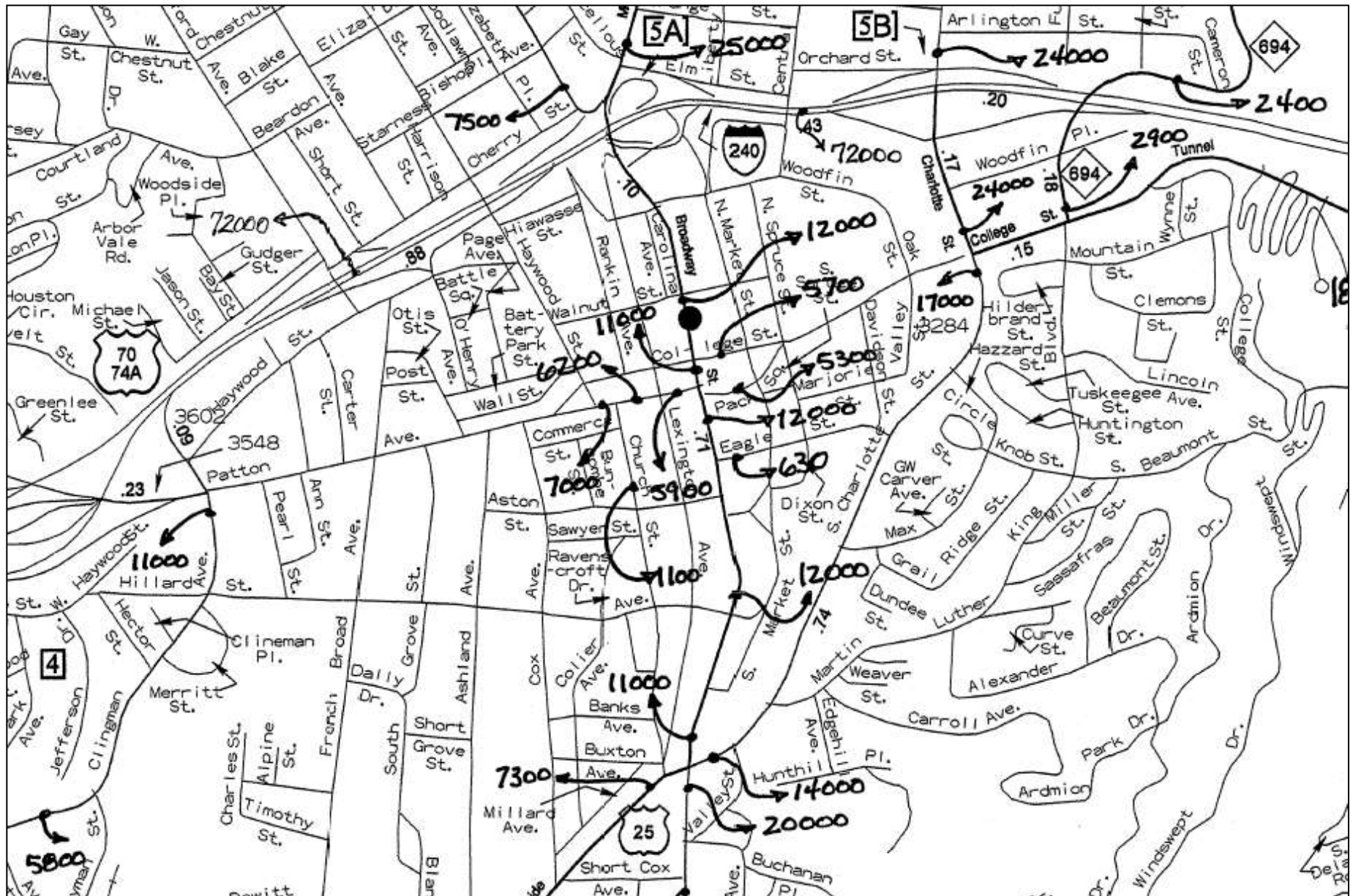
County AADT maps are available for the years 1999 through 2011

AADT Data (Cont.)



county map AADT counts (state-maintained roads only)

AADT Data (Cont.)



urban AADT counts (state-maintained roads + some local roads)

AADT Data (Cont.)

Traffic volumes tend to increase over time. Because traffic volumes are used to calculate crash rates, it is recommended that the median year's volume is used in crash analyses so that crash rates (CR) are not artificially inflated or deflated:

$$\text{CR} = \frac{\text{Crashes}}{\text{Exposure}}$$

Larger volume in denominator can artificially decrease the crash rate

Traffic Volume



Median year is recommended

Smaller volume in denominator can artificially increase the crash rate

$$\text{Exposure} = (\text{volume})(\text{distance})(\text{time})$$

AADT Data (cont.)

- Used in calculating crash rates on the Intersection and Strip Analysis reports.
- Estimates the vehicle traffic through the study area
- Use the median year's AADT for a study.
- AADT data can be estimated by assuming an AADT growth rate of 3% per year.

NOTE: Only use AADT data from NCDOT Traffic AADT maps, volume counts, or some other accurate source!

AADT Data (cont.)

- For intersections, if the AADT for a leg is missing then the AADT from the opposite leg may be extended through the intersection
- If an AADT is not given, local knowledge can be used to estimate an AADT
- Growth rates other than the usual 2% and 3% may be used if based on other information or local knowledge
- A modification rate of ± 1.03 may be used instead of the adjustment formula
- **Averages and estimates are now acceptable!**

AADT Adjustment Formula

This formula is used if the AADT is not in the median year and the AADT needs to “grow” or “shrink” to the median year. Standard adjustment rates of 2% for rural locations and 3% for urban locations are used.

$$\text{Adjusted AADT} = \text{AADT} * \left(1 + \% \right)^n$$

Where:

n = Number of years (positive if adjusting up and negative if adjusting down)

% = adjustment rate (rural or urban)

AADT Adjustment Example

A study is being completed in a rural location with a date range of January 1, 2000 through December 31, 2002. The desired median year is 2001. However, the only AADT available is a 1999 AADT of 3,000 vehicles per day (VPD). The AADT would need to be adjusted for two years at a 2% growth rate:

$$\begin{aligned}\text{Adjusted AADT} &= 3,000 * \left(1 + 0.02 \right)^2 \\ &= 3121 \approx 3,100\end{aligned}$$

AADT Averages and Estimates

AADT averages and estimates can be calculated as follows...

Example 1: (missing year in middle)

<u>Year</u>	<u>Volume</u>
2007	17,000
2006	?
2005	13,000

$$2006 = 15,000 \text{ VPD}$$
$$((17,000 + 13,000)/2)$$

Example 2: (multiple missing years)

<u>Year</u>	<u>Volume</u>
2009	25,000
2008	?
2007	?
2006	?
2005	18,000

$$(25,000 - 18,000) / (2009 - 2005)$$
$$= 7,000 / 4 = 1,750$$

Therefore,

$$2006 = (18,000 + 1,750) = 19,750$$
$$2007 = (19,750 + 1,750) = 21,500$$
$$2008 = (21,500 + 1,750) = 23,250$$

AADT Averages and Estimates (Cont.)

AADT averages and estimates can be calculated as follows...

**Example 3:
(missing future year)**

<u>Year</u>	<u>Volume</u>
2011	?
2010	9,800
2009	9,400

Growth rate 2009 to 2010 is
 $(9,800 - 9,400) / 9,400$
 $= 0.0425 = 4.3\%$

Therefore, assume same rate:
 $2011 = 9,800 + (9,800 * 4.3\%)$
 $= 10,217$
(rounded to 10,200 VPD)

AADT Averages and Estimates Exercise

What are the volumes for 2007 and 2008?

<u>Year</u>	<u>Volume</u>
2009	10,000
2008	?
2007	?
2006	6,400

AADT Averages and Estimates Exercise

What are the volumes for 2007 and 2008?

<u>Year</u>	<u>Volume</u>
2009	10,000
2008	8,800
2007	7,600
2006	6,400

$$(10,000 - 6,400) / (2009 - 2006) \\ = 3,600 / 3 = 1,200$$

Therefore:

$$2007 = 6,400 + 1,200 = 7,600$$

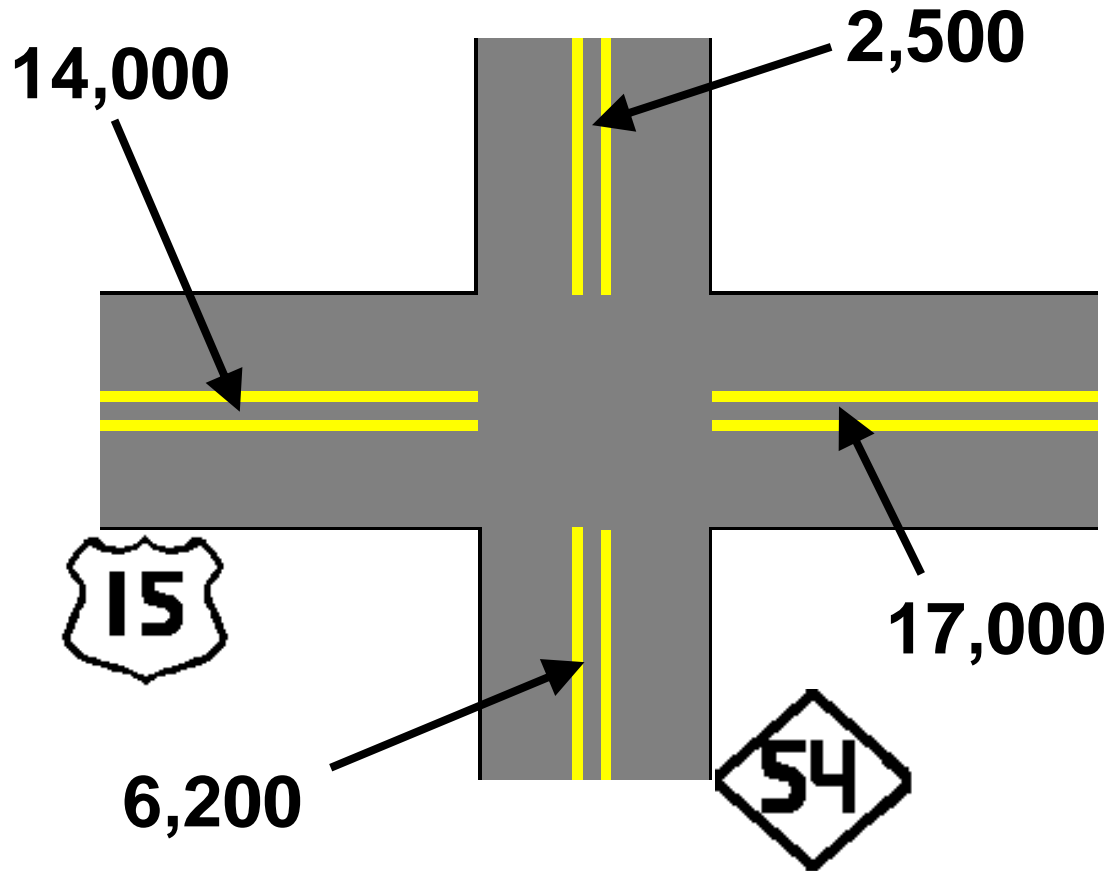
$$2008 = 7,600 + 1,200 = 8,800$$

Intersection AADT Calculation

Calculate AADT for an intersection by:

- 1) Adding up the counts from all the legs
- 2) Dividing the total AADT by 2
(Done to counteract the fact that each vehicle passing through intersection is counted twice, once entering and once leaving)
- 3) Round the result (usually to the nearest hundred)

Intersection AADT Calculation Example

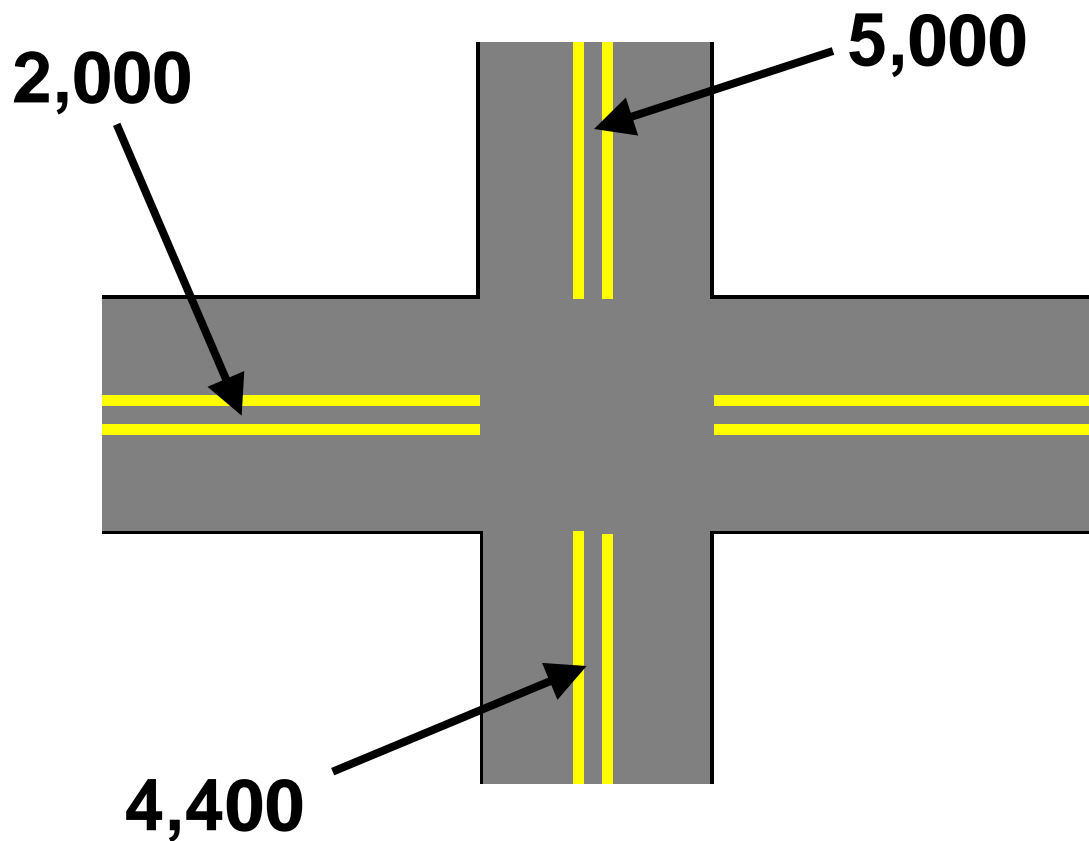


$$\begin{array}{r} 14,000 \\ 17,000 \\ 6,200 \\ + 2,500 \\ \hline 39,700 \end{array}$$

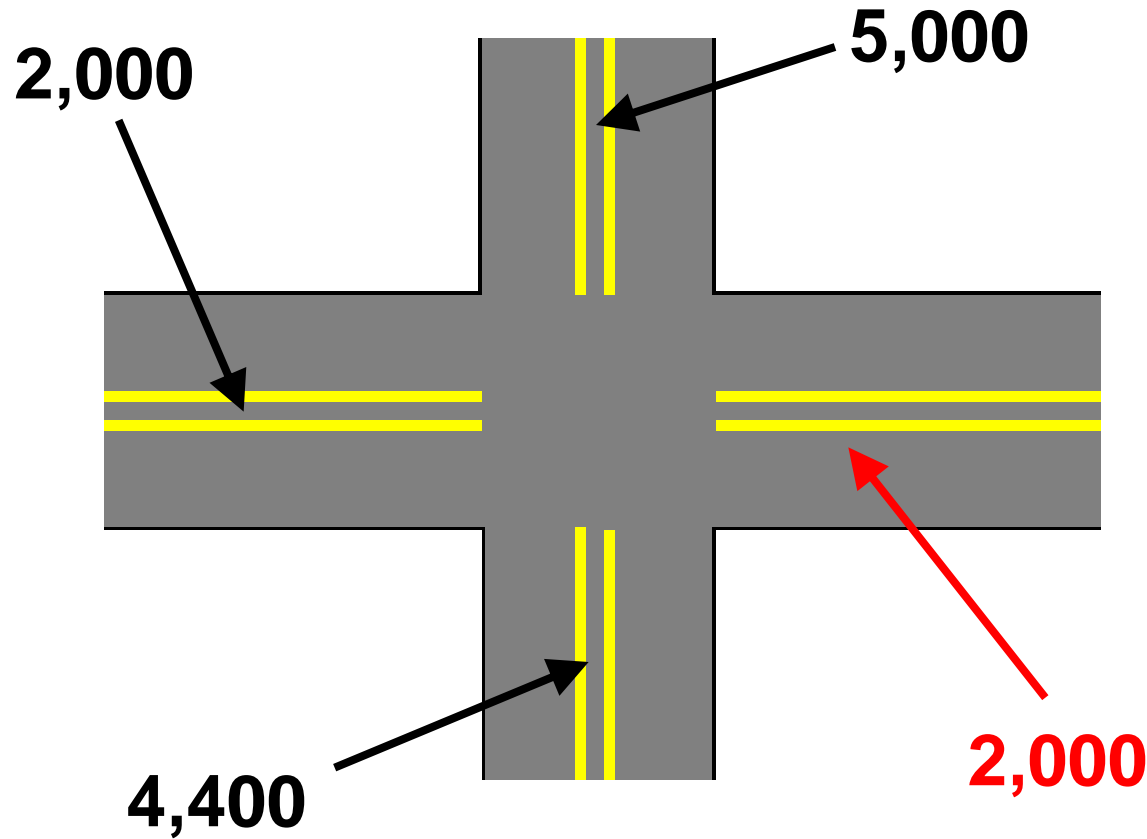
$$\frac{39,700}{2} = 19,850 \approx 19,900$$

Remember – if the AADT for a leg is missing then the AADT from the opposite leg may be extended through the intersection

Intersection AADT Calculation Exercise



Intersection AADT Calculation Exercise



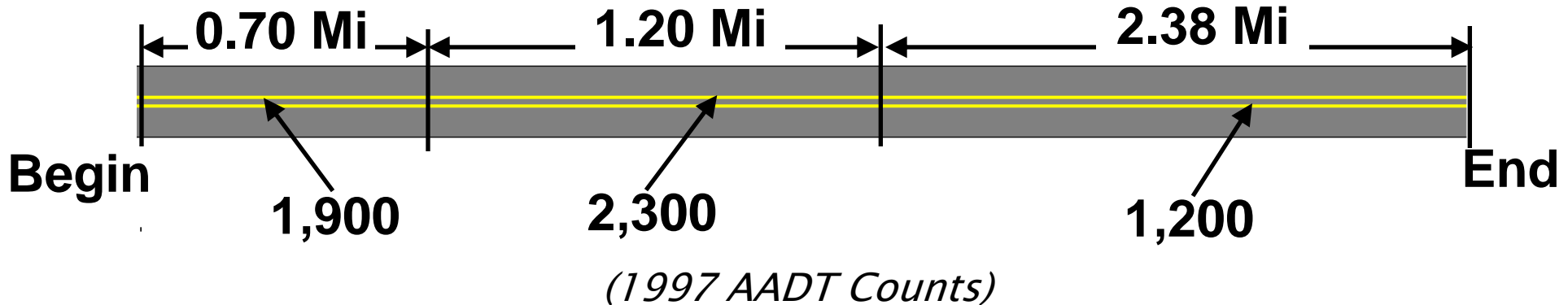
$$\begin{array}{r} 2,000 \\ 5,000 \\ 2,000 \\ + 4,400 \\ \hline 13,400 \end{array} \quad \frac{13,400}{2} = 6,700$$

Strip AADT Calculation

- The AADT used for a strip location is a weighted average
- Calculate AADT for a strip by:
 - 1) Multiply the AADT counts along the strip by the distance that each AADT value represents
 - 2) Sum all of the AADT counts x distances
 - 3) Divide by the total length of the strip
 - 4) Round the result (usually to the nearest hundred)

Strip AADT Calculation Example

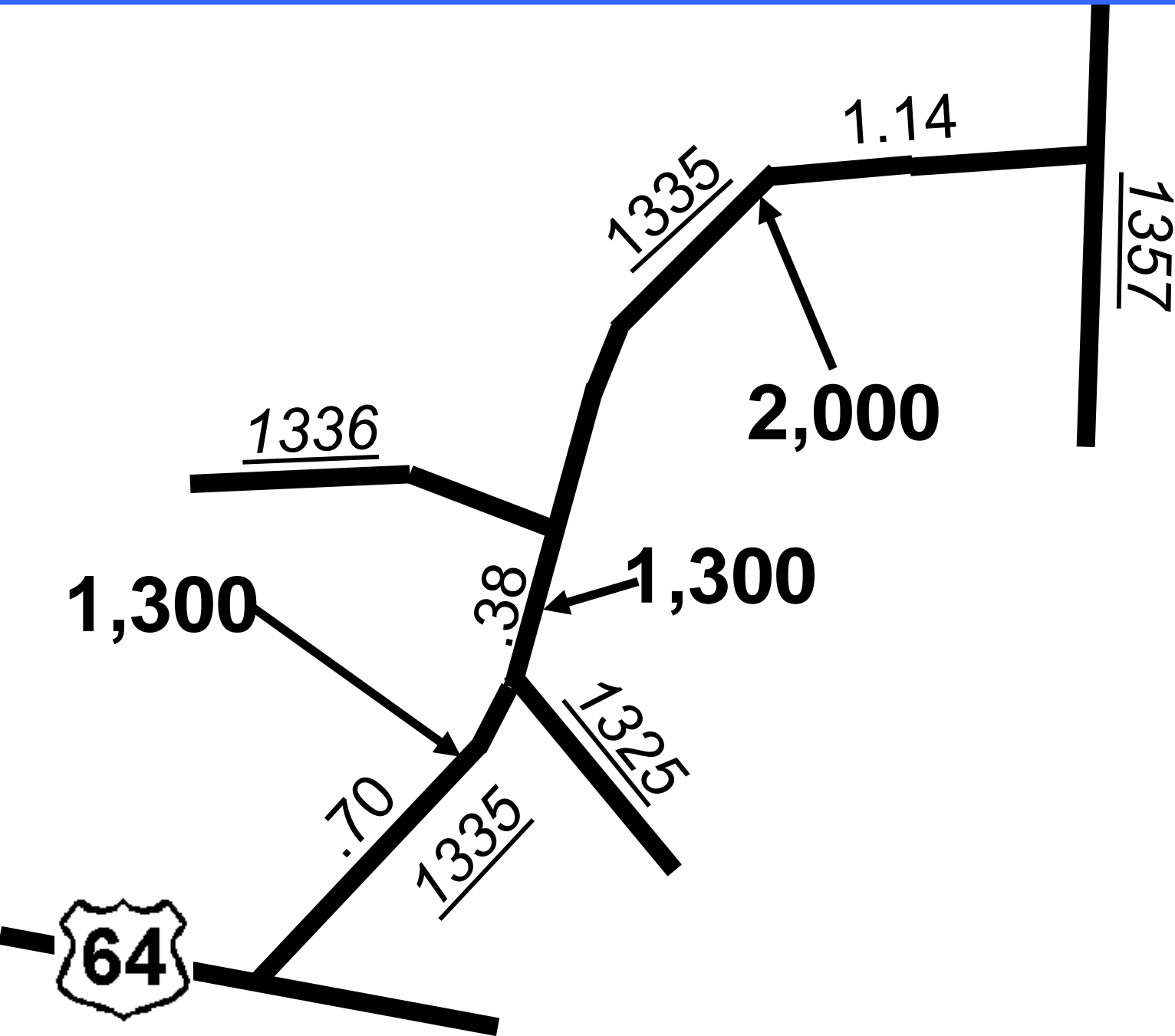
Calculate the 1998 AADT for this strip using 1997 AADT data



$$\begin{array}{rcl} .70 \text{ mi} * 1,900 & = & 1,330 \\ 1.20 \text{ mi} * 2,300 & = & 2,760 \\ 2.38 \text{ mi} * 1,200 & = & \underline{+ 2,856} \\ & & 6,946 \end{array} \Rightarrow \frac{6,946}{4.28} = 1,623$$

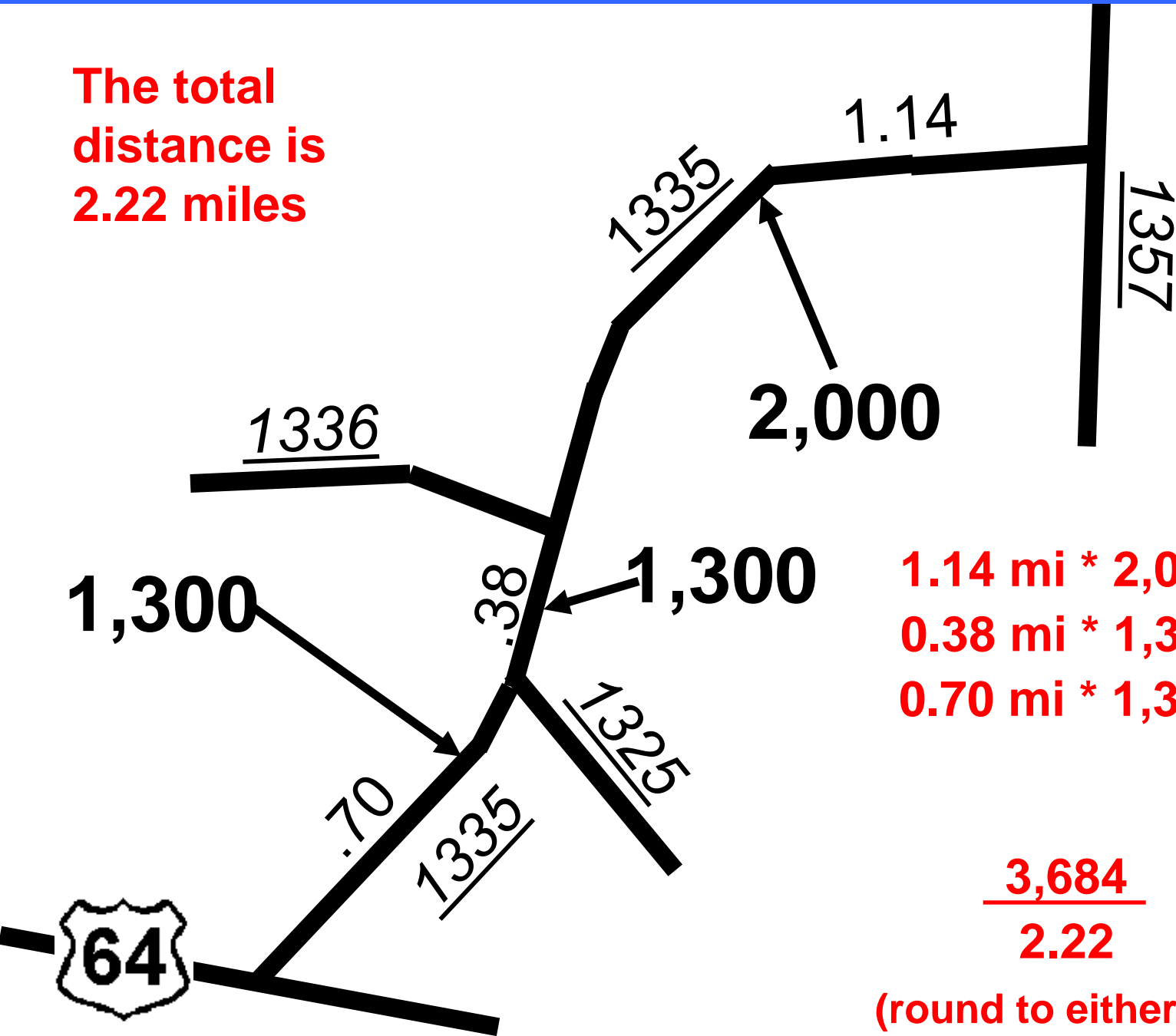
Update AADT to 1998 figures: $1623 * 1.03 = 1,672 \approx 1,700$

Strip AADT Calculation Exercise



Strip AADT Calculation Exercise

The total distance is 2.22 miles



$$\begin{array}{r} 1.14 \text{ mi} * 2,000 = 2,280 \\ 0.38 \text{ mi} * 1,300 = 494 \\ 0.70 \text{ mi} * 1,300 = + 910 \\ \hline 3,684 \end{array}$$

$$\frac{3,684}{2.22} = 1,659$$

(round to either 1,700 or 1,650)