

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT



Connecting Arkansas Program (CAP)

Traffic Count Plan, Traffic Projection Plan and Traffic Forecast

**CA0601 – I-30 Widening,
Highway 70 to Sevier Street**

May 6, 2014

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1. Base Traffic Counts
2. ESAL Calculations
3. Forecast Data Spreadsheets
4. Synchro Files

CHAPTER 1

INTRODUCTION AND OVERVIEW

With the passage of the temporary Arkansas one-half cent sales tax program in November 2012, the Arkansas State Highway and Transportation Department (AHTD) will finance an accelerated \$1.8 billion four-lane State Highway Construction and Improvement Program (Program) that will be completed within approximately ten years called - Connecting Arkansas Program (CAP).

As part of the CAP, traffic forecasting was performed for each project. This report will document the traffic forecasting process, including a project description, traffic count and projection plan, and the traffic forecast. The report was submitted to AHTD in two Phases whereas Phase 1 consisted of Chapters 1 through 4 and Phase 2 consisted of Chapters 5 and 6.

Chapter 1 – Introduction and Overview

Chapter 2 – Project Description

Chapter 3 – Traffic Count Plan

Chapter 4 – Traffic Projection Plan

Chapter 5 – Traffic Forecast

Chapter 6 – Equivalent Single Axle Load Forecast

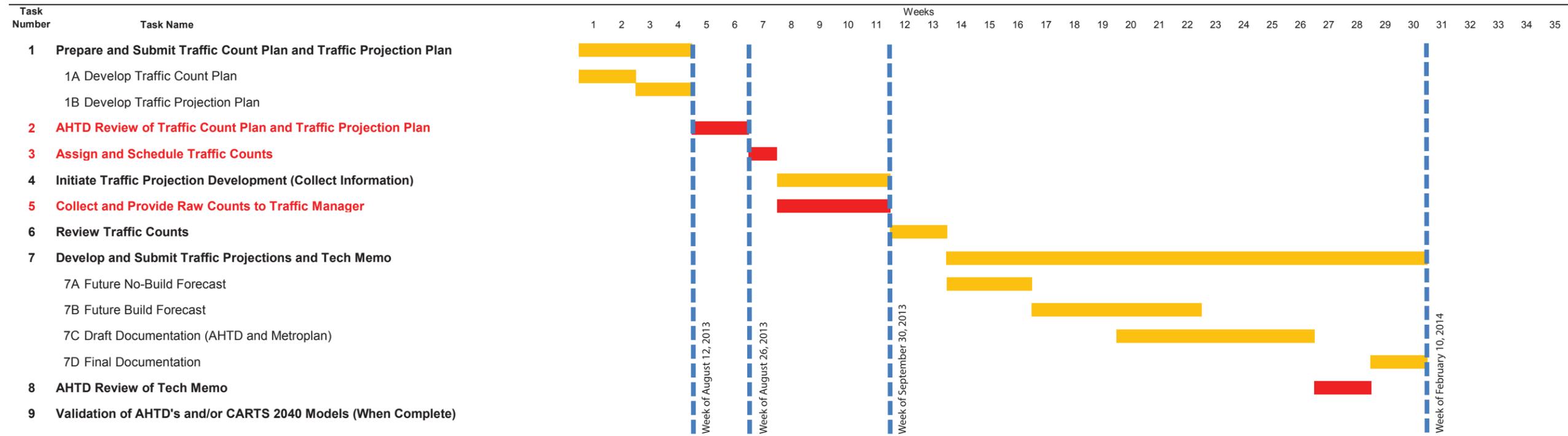
The primary resource that was used to define the Traffic Count and Projection Plans was the AHTD *Traffic Monitoring System Handbook* (Draft November 2013). This handbook offers procedures on traffic monitoring practices and techniques used by AHTD staff and consultants providing traffic information for project design, planning studies, and environmental documentation. This handbook provides instructions for Traffic Forecasting, Turning Movement Count Forecasting, Equivalent Single Axle Loading (ESAL) Forecasting, Testing and Certification Procedures for Equipment, and development of Highway Performance Monitoring System data.

Exhibit 1 shows the traffic forecasting schedule for this project. This schedule indicates that data collection was completed by September 30, 2013 and the Technical Memo was finalized by February 19, 2014.

EXHIBIT 1

CA0601 - I-30 Widening Highway 70 to Sevier Street Traffic Forecasting Schedule

AHTD
Connecting Arkansas Program (CAP)
Traffic Forecasting Schedule
CA0601 - I-30 Widening, Highway 70 to Sevier Street



Note: Red tasks are AHTD tasks



CHAPTER 2

PROJECT DESCRIPTION

CA0601 – I-30, I-30 Widening, Highway 70 to Sevier Street will widen I-30 from Highway 70 to Sevier Street for a project length of 4.94 miles. The project will add one lane in each direction to the existing four lane roadway. Interchange improvements may also be made. The project is located in Saline County in the Little Rock metropolitan area. Figure 1 shows the location of the project within the state. Exhibit 2 provides a more detailed description of the project and the surrounding roadway network.

Figure 1
CAP Statewide Projects including
CA0601 – I-30 Widening, Highway 70 to Sevier Street

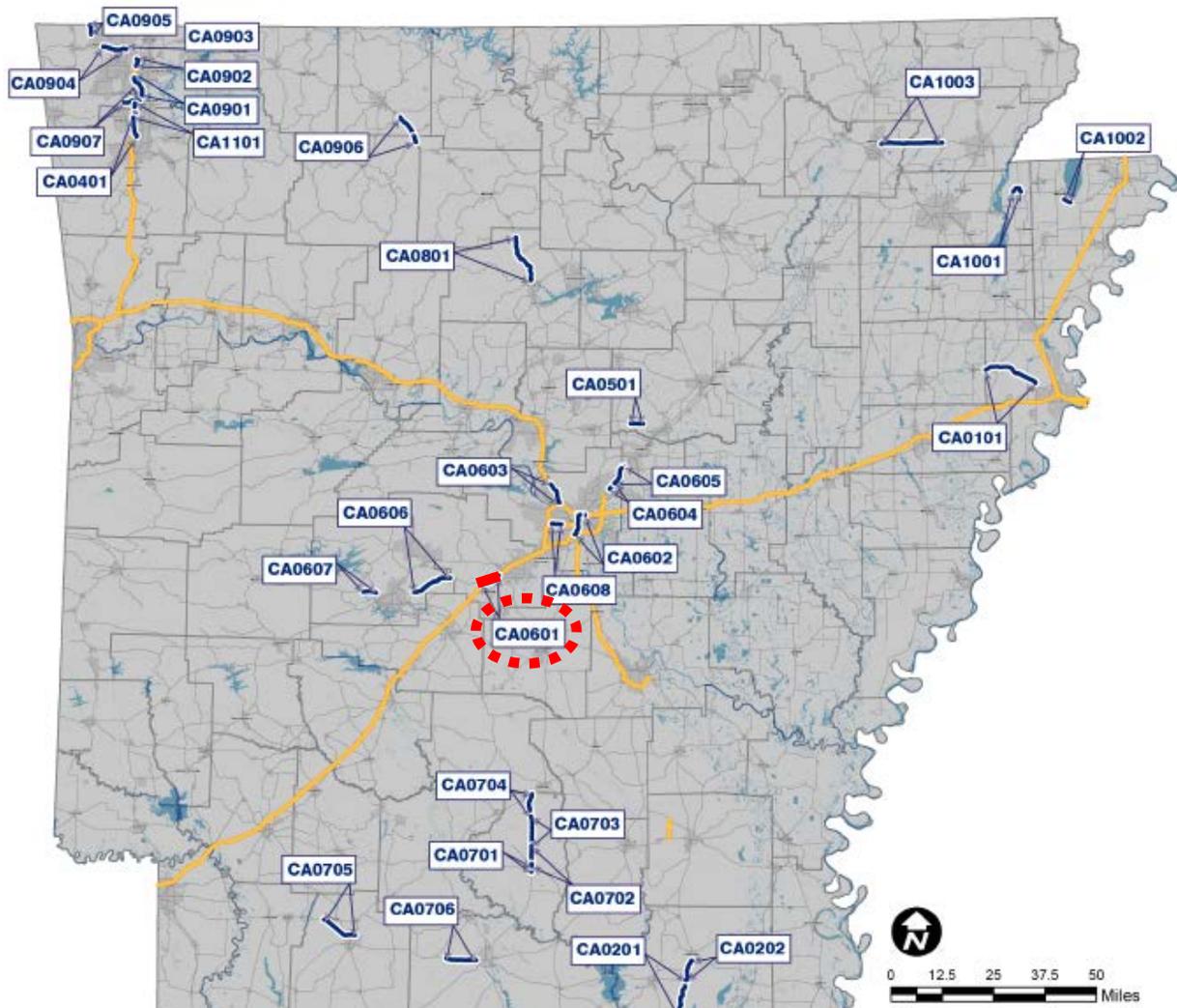
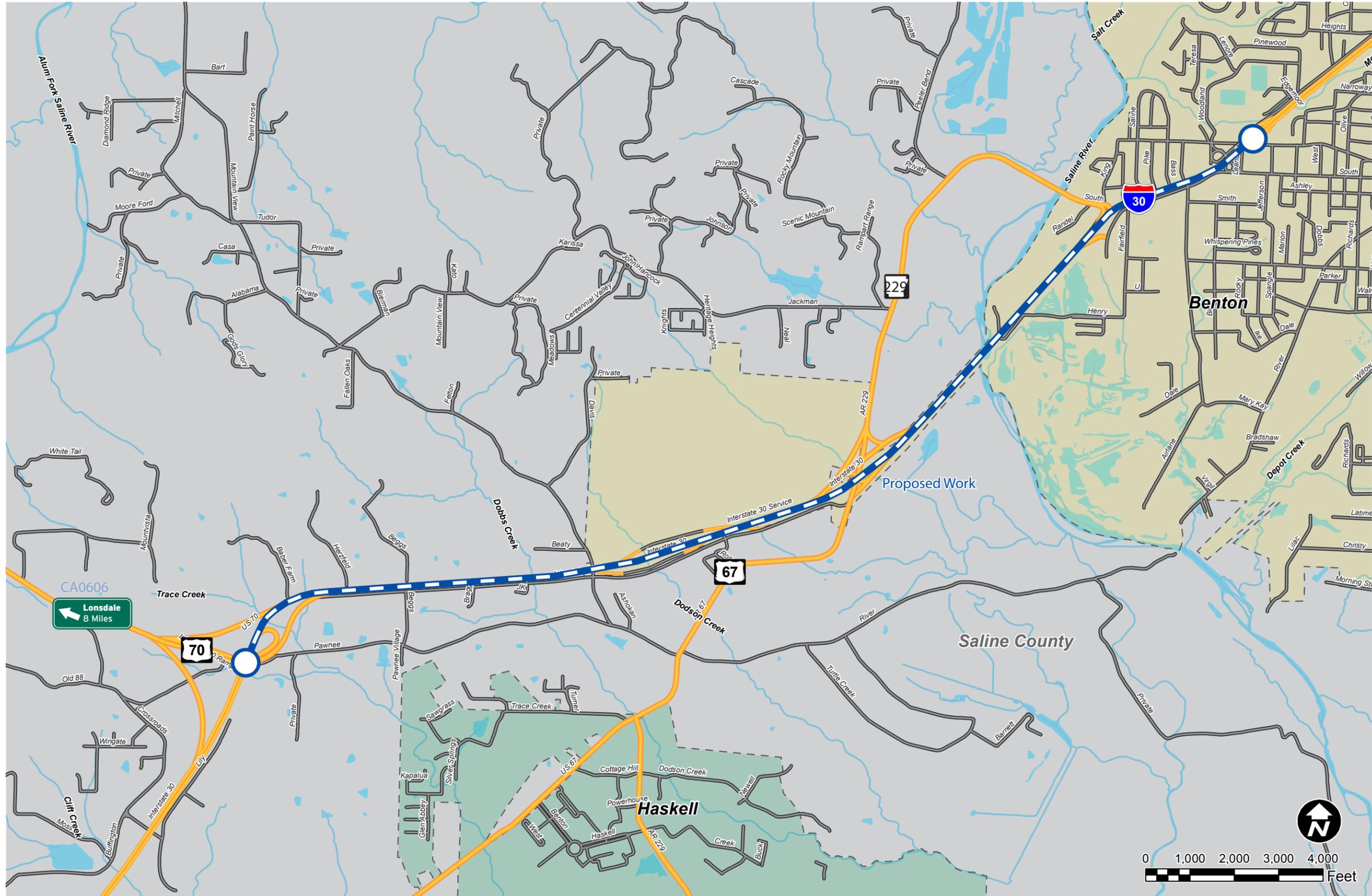


EXHIBIT 2

CA0601 - I-30 Widening Highway 70 to Sevier Street Project Location



CHAPTER 3

TRAFFIC COUNT PLAN

The following chapter outlines the traffic count plan for the CA0601 – I-30 Widening, Highway 70 to Sevier Street.

Approach

The general traffic count plan approach collected historical and existing traffic volumes within the project study area. Traffic counts were collected along the highway mainline and the interchange ramp terminals. Both daily and peak hour traffic counts were collected.

- Historical traffic data were collected from the AHTD website
- Current traffic data was collected by the AHTD
 - Traffic data collection methodology followed the AHTD guidelines
 - 48-hour counts were collected on both ends of the corridor
 - Turning Movement Counts (TMC) were collected at appropriate locations defined in the following section.

Data Needs from AHTD

The data needs for the traffic count plan are listed below and shown on Exhibit 3. Traffic counts were collected based on the methodology outlined in the AHTD *Traffic Monitoring System Handbook* (November 2013). Traffic Counts were collected one interchange beyond the proposed work interchange in most cases in preparation for an Interchange Justification Report.

- A. 48-hour counts at each end of the project. Counts were performed in 15-minute increments and included vehicle classification and speed (Shown as “A” on Exhibit 3).
 - A1 – I-30 northeast of Sevier Street, video count
 - A2 – I-30 southwest of I-30/Highway 70 junction
 - A3 – Highway 70 west of I-30/Highway 70 junction
- B. Turning Movement Counts were collected at the locations listed below (Shown as “B” on Exhibit 3).
 - Sevier Ramp
 - B1 – W. Sevier Street/EB I-30 Frontage Road/EB on-ramp
 - Highway 229/W. South Street Ramp
 - B2 – Highway 229/W. South Street/WB on-ramp
 - Highway 229/Highway 67/I-30 Interchange

B3 – EB on-ramp

B4 – EB off-ramp (including Pawnee Drive)

B5 – WB to SB off-ramp and NB to WB on-ramp (including EB movements from Frontage Road)

C. Supplementary 24-hour counts. Counts were performed in 15-minute increments and vehicle classification was collected (Shown as “C” on Exhibit 3). These counts are needed on ramps where no ramp terminal exists due to free-flow travel conditions.

C1 – Highway 5 EB On-ramp (slip ramp)

C2 – Highway 5 WB Off-ramp (slip ramp)

C3 – Highway 5 EB Off-ramp (slip ramp)

C4 – Highway 5 WB On-ramp (slip ramp)

C5* – WB off-ramp to W. South Street (slip ramp)

C6* – EB off-ramp to Frontage Road near Fairfield Road

C7* – I-30 WB off-ramp to Highway 229 NB

C8 – Highway 229 SB to I-30 WB on-ramp

C9 – WB on- ramp from Frontage Road to I-30 at Highway 229/Highway 67 (slip ramp)

C10 – EB off- ramp to Pawnee Drive, south of Highway 229/Highway 67 (slip ramp)

C11 – WB off-ramp to Inspection Station, south of Highway 229/Highway 67

C12 – EB off-ramp to Inspection Station, south of Highway 229/Highway 67

C13* – Highway 70 EB ramp to I-30 EB

C14 – I-30 EB to Highway 70 WB

C15 – I-30 WB to Highway 70 WB

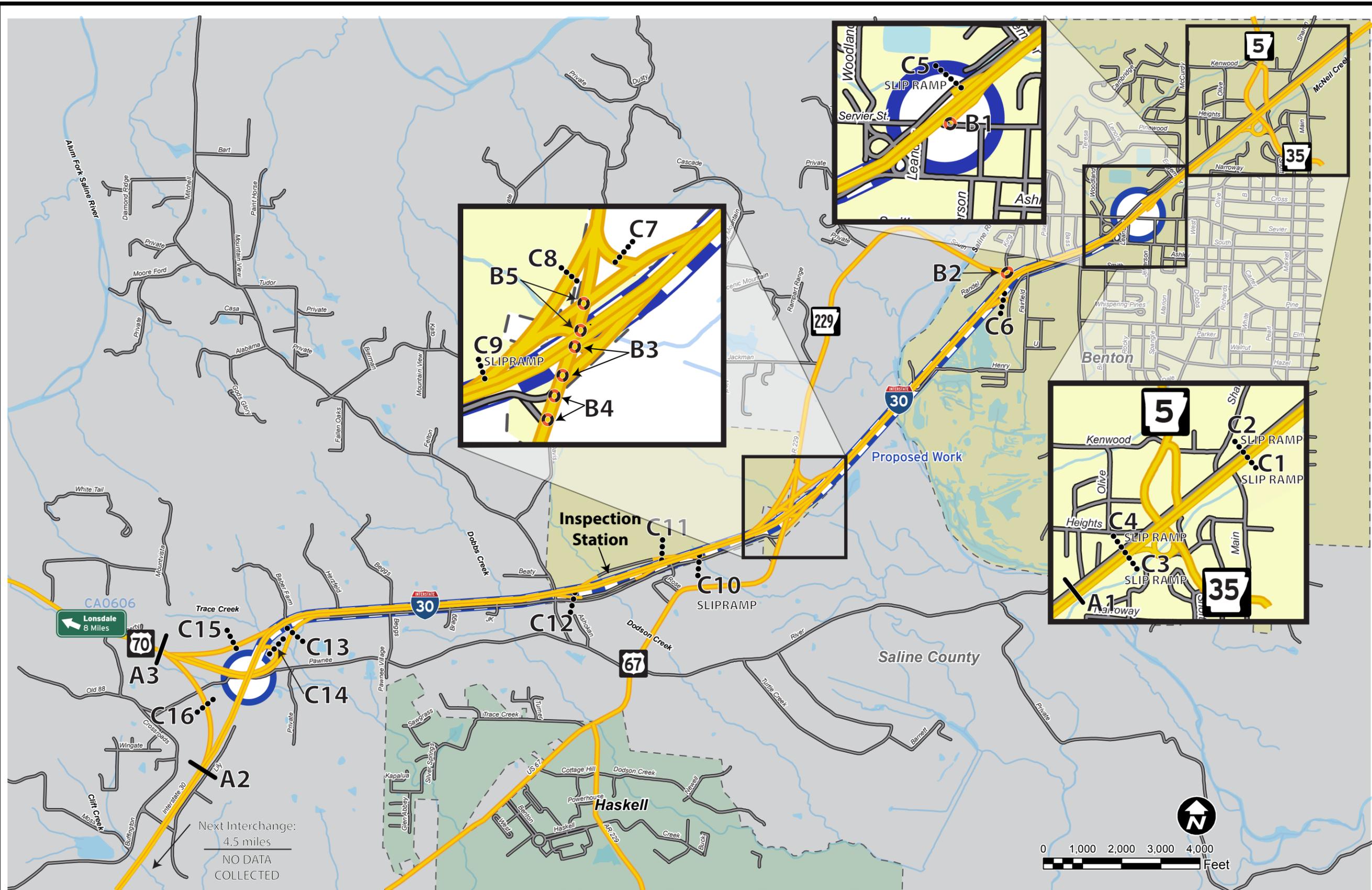
C16 – Highway 70 EB to I-30 WB

* A 48 Hour Count

Counts A, B and C were counted at the same time, where possible. The schedule indicates that data collection was completed by September 30, 2013.

EXHIBIT 3

CA0601 - I-30 Widening Highway 70 to Sevier Street Traffic Count Plan



Legend

- 48-hour counts
- 24-hour counts
- Turning movement count (including 24-hour inbound/outbound counts)
- Proposed Work



CHAPTER 4

TRAFFIC PROJECTION PLAN

The following section outlines the traffic projection plan for the CA0601 – I-30, Highway 70 to Sevier Street (Widening) (S) project.

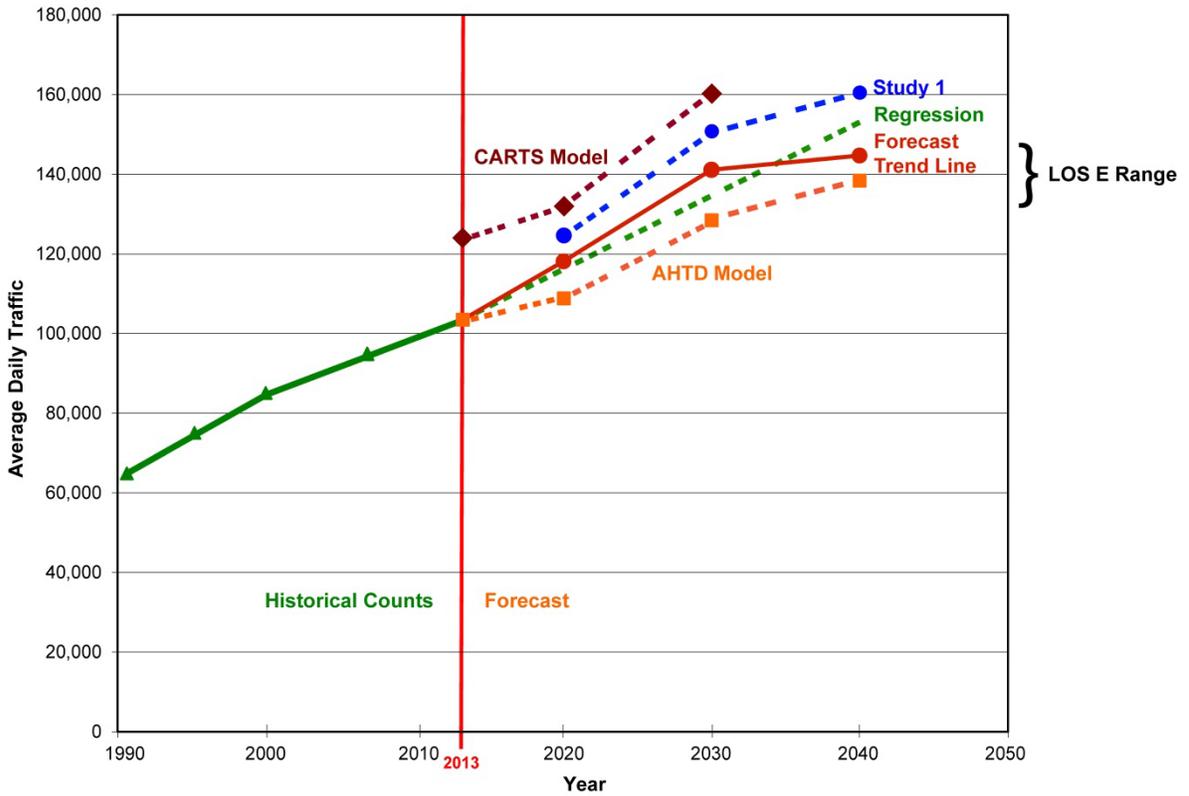
Approach

The general traffic projection plan approach was to use available information to develop **2018** opening year and **2038** design year traffic forecasts. The forecasts were based on historical trends, State and MPO (where available) travel demand model data, previous forecasts from other studies, capacity constraints and discussions with local planning partners of known projects that could impact traffic forecasts.

- Visited site to collect geometric information (number of lanes, access points, etc.)
- Obtained CARTS Travel Demand Model and coordinated with Metroplan and the AHTD
- Obtained the AHTD Statewide Travel Demand Model and coordinated with the AHTD
- Met with stakeholders to understand future land use
- Collected historical traffic counts from the AHTD website
- Used traffic data from the AHTD (truck percentages, seasonal factors, K factor, D factor, peak hour factor, etc.)
- Collected previous studies
 - Draft Final CARTS Area Freeway Study Phase 1 and 2

A graph containing both historical traffic and forecasted traffic profiles from available travel models was developed in Excel. Other study forecasts were included in the graph. A regression line based on historical data was also shown. LOS E capacity was added to the graph to show the theoretical constraints of the roadway. Figure 2 is an example of what a forecast graph looks like. Based on the information above and meetings with the planning partners to understand future land use, a 2038 projection was developed. All of the information included in the forecast graph, including the travel demand models, were tools in the forecasting toolbox and required engineering judgment to develop the final forecasts. The projected traffic growth was applied to the base year counts collected. Maps of forecasted No-Build and Build ADT and peak hour turning movements were developed.

Figure 2
Example Daily Traffic Forecast Graph



Note: 2038 is the forecasted design year for CA0601.

Data Needs from AHTD

The data used to create the traffic projection plan is listed below.

- AHTD County Growth Rates
- Requested Traffic Data
- Previous Studies
 - Draft Final CARTS Area Freeway Study, Phase 1 and 2

Communications Outreach

In order to gain a comprehensive understanding of traffic growth potential, meetings with the following community planning partners were set up:

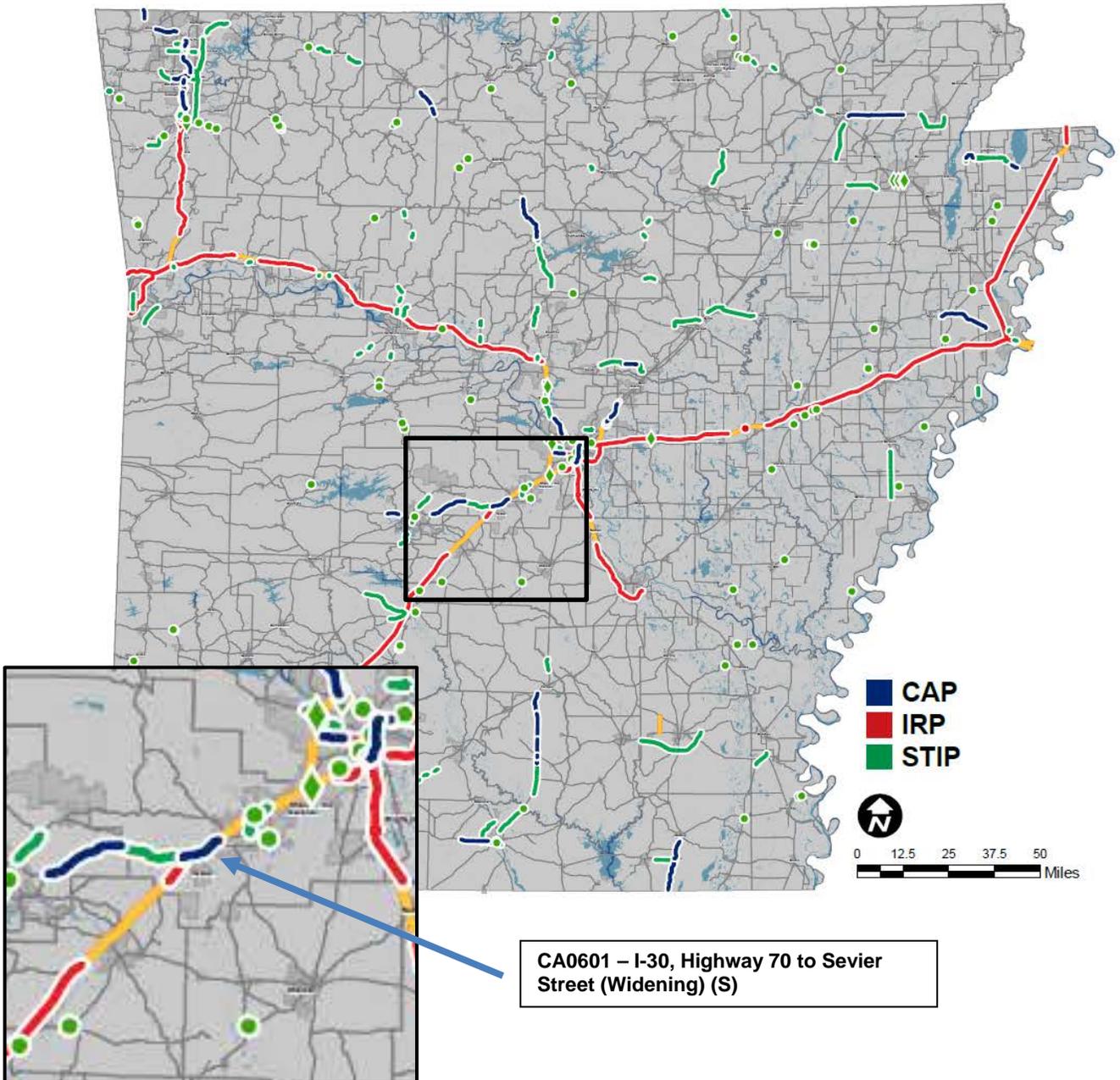
- City of Benton
- City of Haskell
- Saline County
- Metroplan

The goals of the meetings were to:

1. Present the project and purpose of the traffic forecasting task,
2. Understand the population and employment growth projections, and
3. Understand the local factors (including planned and committed CAP, IRP and STIP projects, as shown in Figure 3) that could affect land use and traffic growth within and outside the study area.

Documentation of the meetings is shown in Chapter 5.

Figure 3
CAP, IRP and STIP Statewide Project Map



CHAPTER 5

TRAFFIC FORECAST

The following section outlines the traffic forecast for the CA0601 – I-30, Highway 70 to Sevier Street (Widening) (S) project.

Communications Outreach

In order to gain a comprehensive understanding of traffic growth potential, meetings with stakeholders in the I-30 corridor were held. Below is a summary of the key issues discussed that could affect traffic forecasts.

Cities of Benton and Haskell, September 26, 2013, 9:30 AM to 10:30 AM

The study team met with Lamont Cornwell (City of Benton, Community Development Director), Frank Baptist (City of Benton, Alderman), Dave Mattingly (City of Benton, Mayor), Jim Towe (City of Benton, Community Development Supervisor), Tony Floyd (City of Benton, Street Department Manager), Robert Burson (City of Haskell, Public Works), and Jeff Arey (City of Haskell, Mayor).

- AHTD general preference is to reduce the number of two-way frontage roads with slip ramps.
- Alcoa Road will be widened to a 4-lane divided road south of I-30.
- The City of Benton is concerned about I-30 drainage into their community.
- Riverside Park – The Benton citizens approved a half-cent park tax on November 12, 2013 for a number of community facilities including a community center to be located on the grounds of the old Saline County Airport. Next to the community center would be a public pool and water-sports center being called the Natatorium. In addition the city plans to build a senior adult activity center, a Boys & Girls Club of Saline County in Benton with the ability to take around 800 children into its afternoon and summer programs along with other related facilities. 2016 is the estimated opening date.
- Benton Town Center – A proposed private development located off Mountain View Road and I-30 with 800,000 sq.ft. commercial, 800 – 1,000 homes and 2 major subdivisions that could add another 1,000 homes, and more than 2,000 employees. The project could break ground in 2014.

- The City mentioned a planned Mountain View Road and I-30 Interchange that would connect Highway 67 to Haskell. A separate request for an interchange will need to be submitted to AHTD for further study.
- Any change to the frontage roads or the existing ramps will likely require an Interchange Justification Report.
- State may build a veterans nursing home near the Veterans State Hospital in Haskell (600 - 800 employees) south on Highway 67.
- Exit 114 (Highway 229/Highway 67) is the City of Benton's biggest growth area.
- Industrial plant Rhine Company off Highway 229.
- Hotels and restaurants around Exit 116.

Saline County, September 26, 2013, 1:00 PM to 2:00 PM

The study team met with Marty Polk (Saline County, Road Superintendent), Randy Maness (Saline County, Engineer), and other County employees.

- The County recently improved Narrows Road on Highway 70.
- The City has put sewer and water at the Benton Town Center site, so it will be annexed by the City of Benton soon.
- No planned improvements to County Roads near I-30.
- Super elevation on I-30 curve at Highway 70 is a safety issue when roads become icy. Trucks get stuck and back up the interstate for miles during ice events.
- Sevier Street Bridge has low clearance.
- Would recommend removing I-30 inspection station when AHTD widens.
- No county land use plan exists.

Metroplan, August 19, 2013, 1:00 PM to 2:00 PM

The study team met with Jim McKenzie, Casey Covington, and Nelson Galeano (Metroplan).

- Metroplan is currently working on Metro 2030.2 (Long-Range Transportation Plan) updates.
- CARTS model has 2010 and 2030 forecast years. The 2040 model is still under development, but doesn't grow much over 2030.

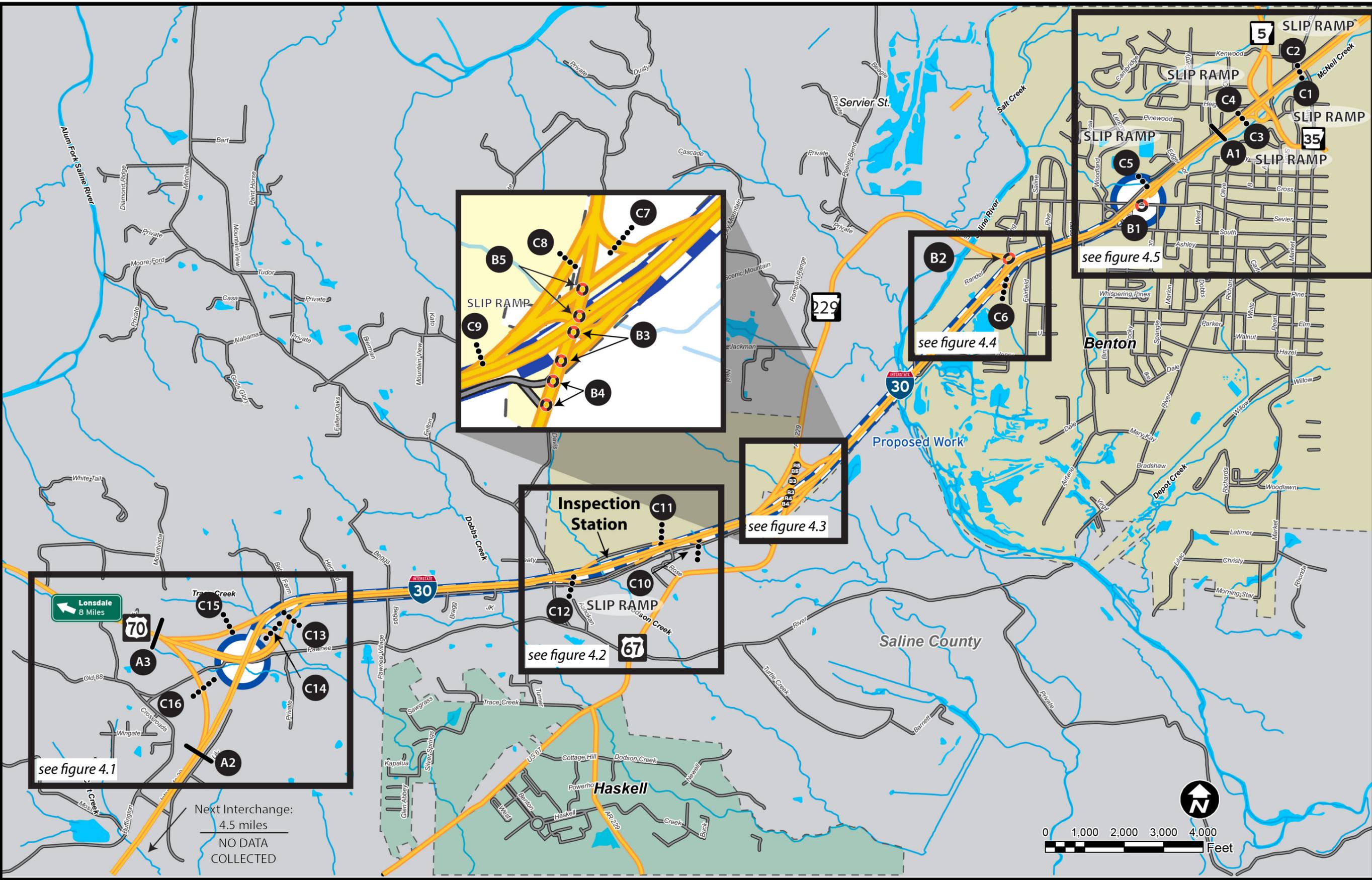
- Metroplan provided two model runs: one run with CAP/STIP/IRP as shown in the LRTP, one with North Beltway and I-430 added. The assignment without the North Beltway and I-430 project was used to develop the traffic forecast.
- CARTS model is validated to mainline volumes. Not validated at ramp level.
- Internal truck model, but they generally assume existing truck percentages for the future.

Existing Traffic Counts

Existing traffic counts at the locations identified in Exhibit 3 were obtained in September 2013. Existing traffic counts are shown on Exhibit 4.1 through 4.5. Existing traffic counts are the baseline for the traffic forecast. Future traffic volumes are grown from existing traffic counts.

EXHIBIT 4

CA0601 - I-30 Widening Highway 70 to Sevier Street Existing 2013 Traffic Counts



see figure 4.1

Next Interchange:
4.5 miles
NO DATA
COLLECTED

see figure 4.2

see figure 4.3

see figure 4.4

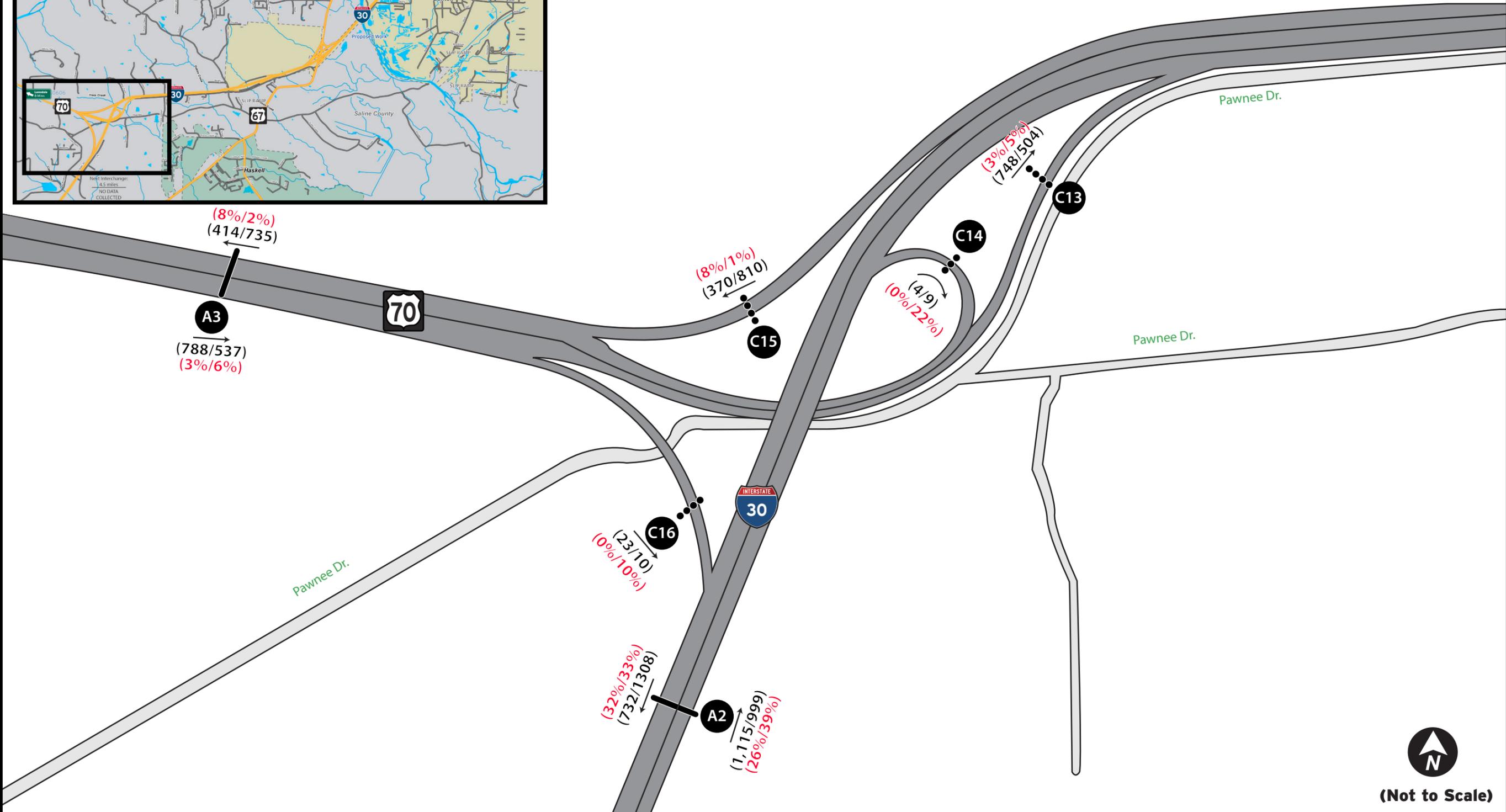
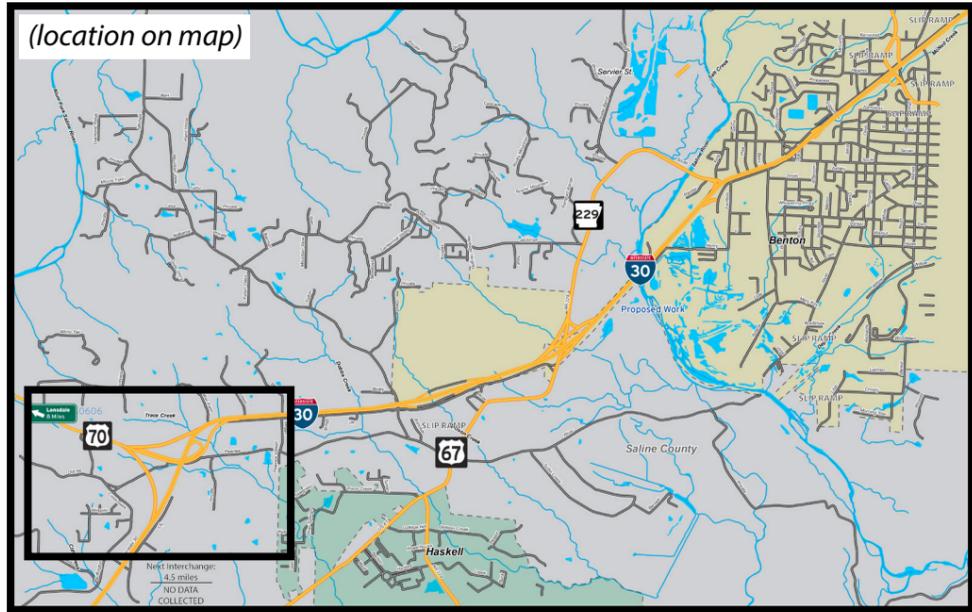
see figure 4.5

- Legend**
- 48-hour counts
 - 24-hour counts
 - Turning movement locations (including 24-hour inbound/outbound counts)
 - Count Location
 - Project Limits

January 2014

EXHIBIT 4.1

CA0601 - I-30 Widening Highway 70 to Sevier Street Existing 2013 Traffic Counts



(Not to Scale)

Legend

— 48-hour counts ●●●● 24-hour counts

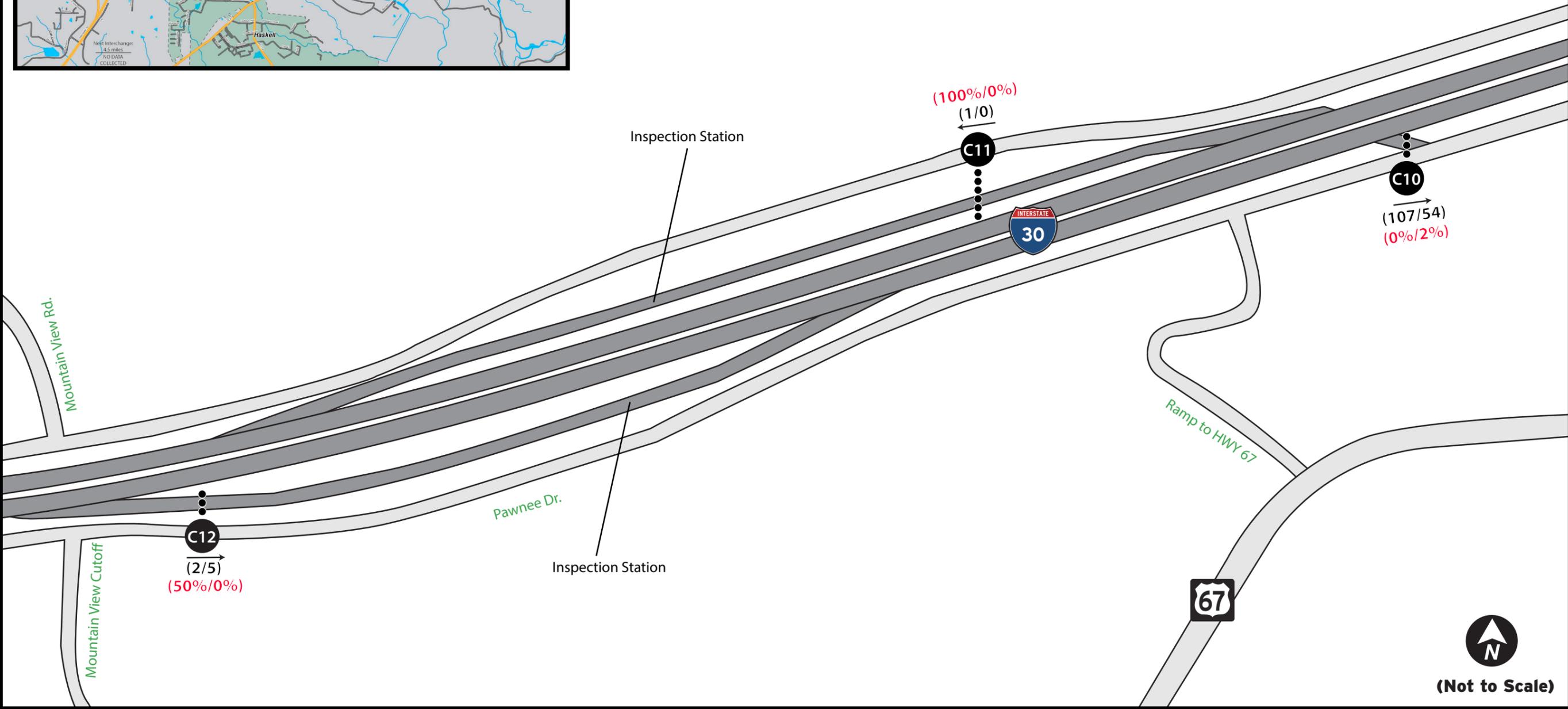
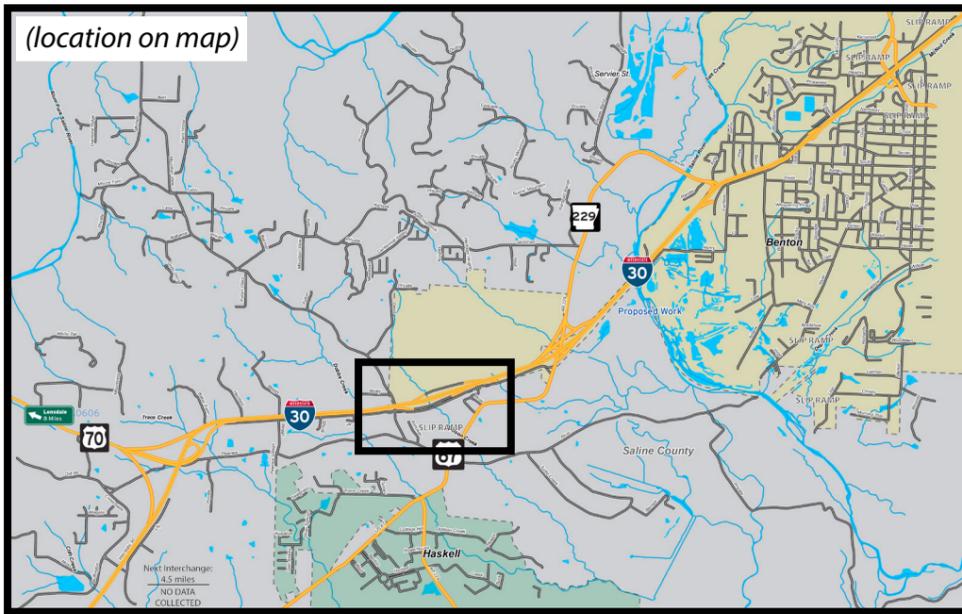
- A** Mainline Count
- B** Turning movement count
- C** Ramp count

(AM/PM) Traffic Counts [Volumes shown are raw counts taken September 2013]
 (AM/PM) Truck Percent
 Peak hour Times: 7:00AM-8:00 AM and 4:30 PM-5:30 PM



EXHIBIT 4.2

CA0601 - I-30 Widening Highway 70 to Sevier Street Existing 2013 Traffic Counts



Legend

— 48-hour counts ●●●● 24-hour counts

- Ⓐ Mainline Count
- Ⓑ Turning movement count
- Ⓒ Ramp count

(AM/PM) Traffic Counts [Volumes shown are raw counts taken September 2013]
 (AM/PM) Truck Percent
 Peak hour Times: 7:00AM–8:00 AM and 4:30 PM–5:30 PM



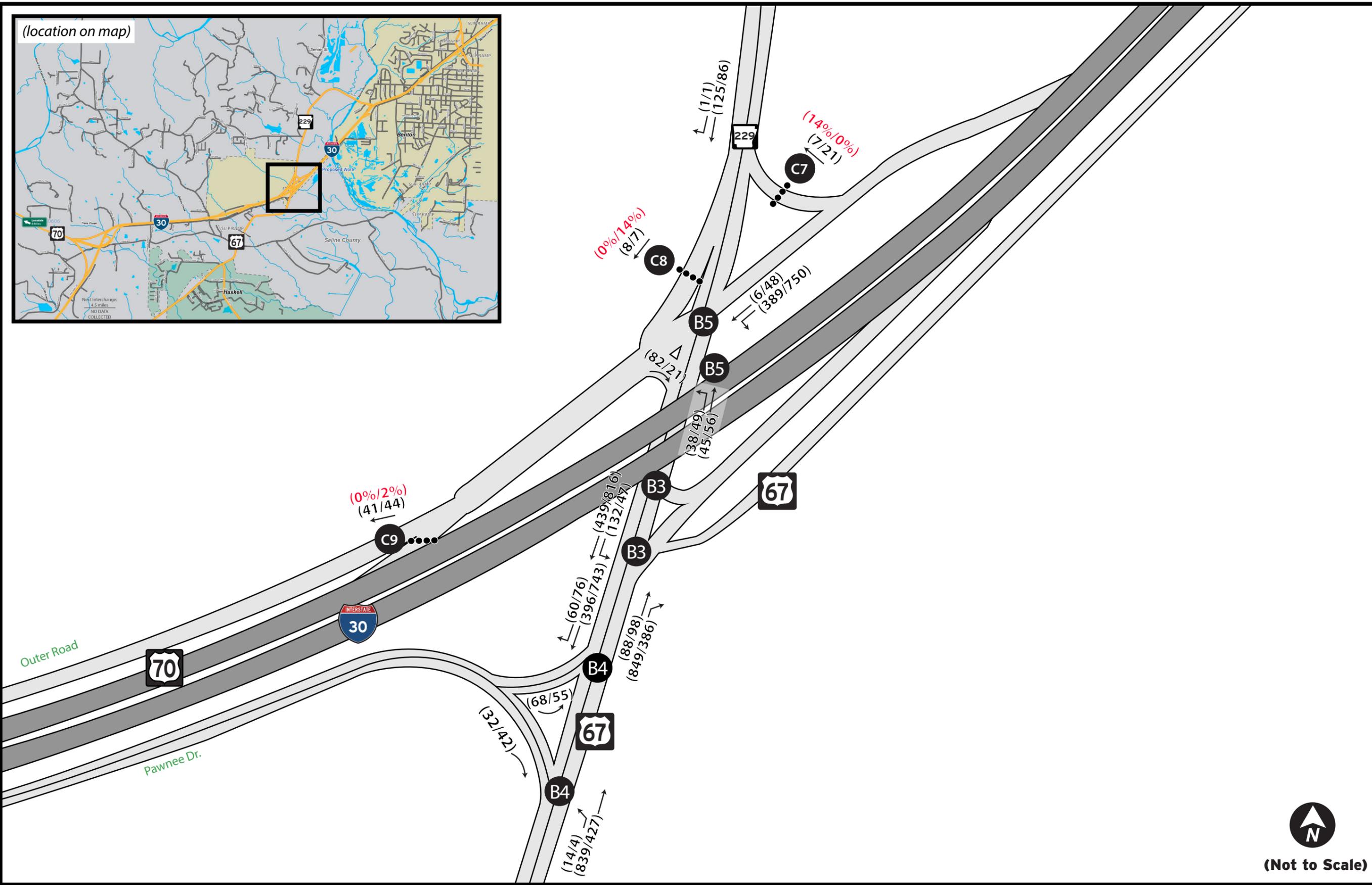
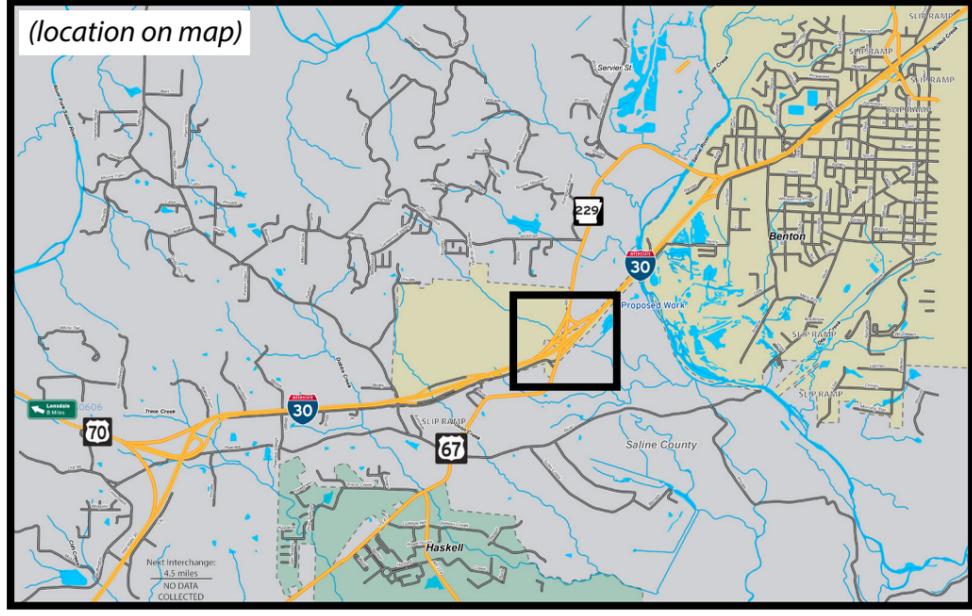
(Not to Scale)



January 2014

EXHIBIT 4.3

CA0601 - I-30 Widening Highway 70 to Sevier Street Existing 2013 Traffic Counts



(Not to Scale)

Legend

— 48-hour counts 24-hour counts

- A** Mainline Count
- B** Turning movement count
- C** Ramp count

(AM/PM) Traffic Counts [Volumes shown are raw counts taken September 2013]
 (AM/PM) Truck Percent
 Peak hour Times: 7:00AM-8:00 AM and 4:30 PM-5:30 PM

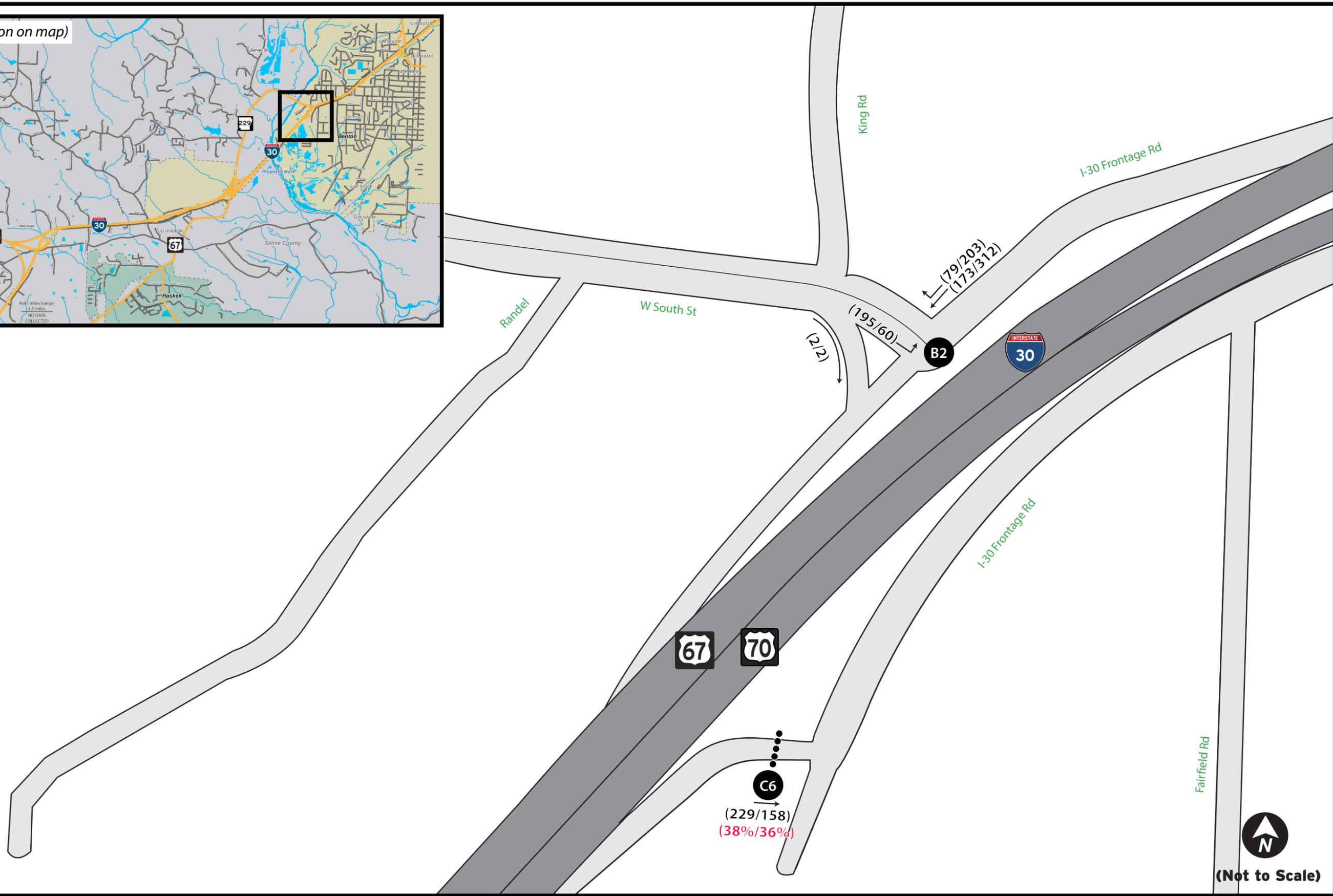
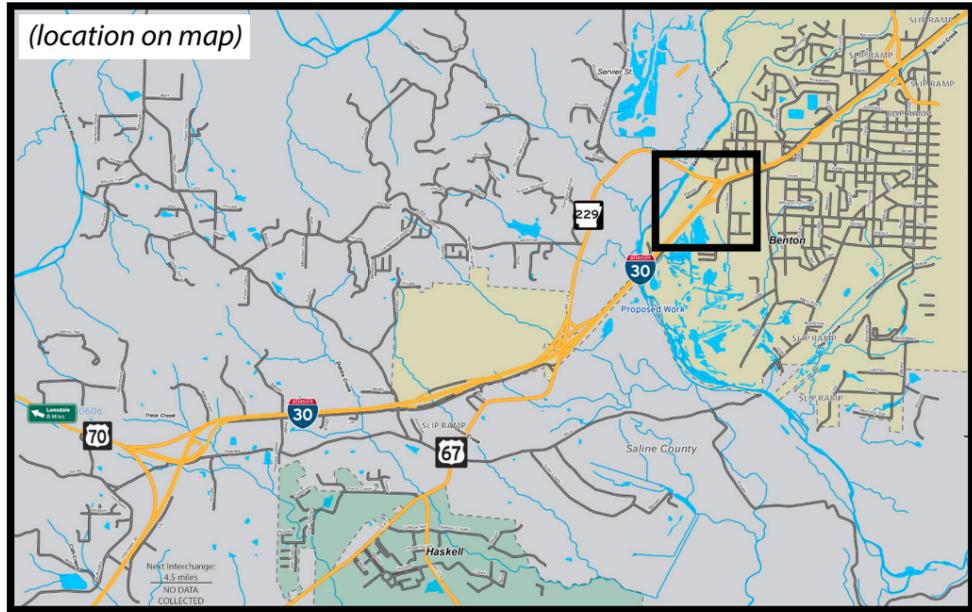
A-21



January 2014

EXHIBIT 4.4

CA0601 - I-30 Widening Highway 70 to Sevier Street Existing 2013 Traffic Counts



Legend

— 48-hour counts ●●●● 24-hour counts

- A** Mainline Count
- B** Turning movement count
- C** Ramp count

(AM/PM) Traffic Counts [Volumes shown are raw counts taken September 2013]
(AM/PM) Truck Percent
Peak hour Times: 7:00AM-8:00 AM and 4:30 PM-5:30 PM

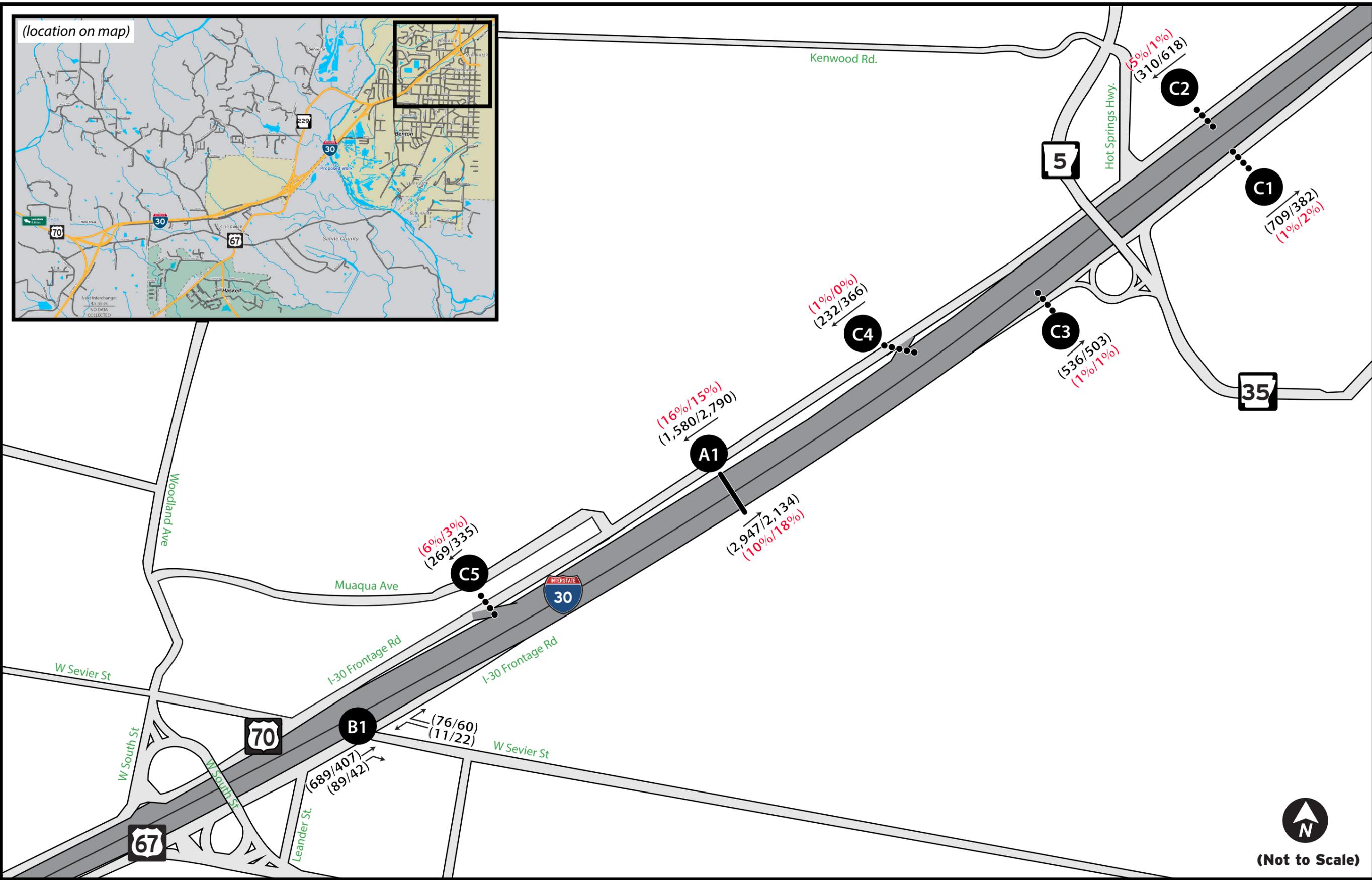
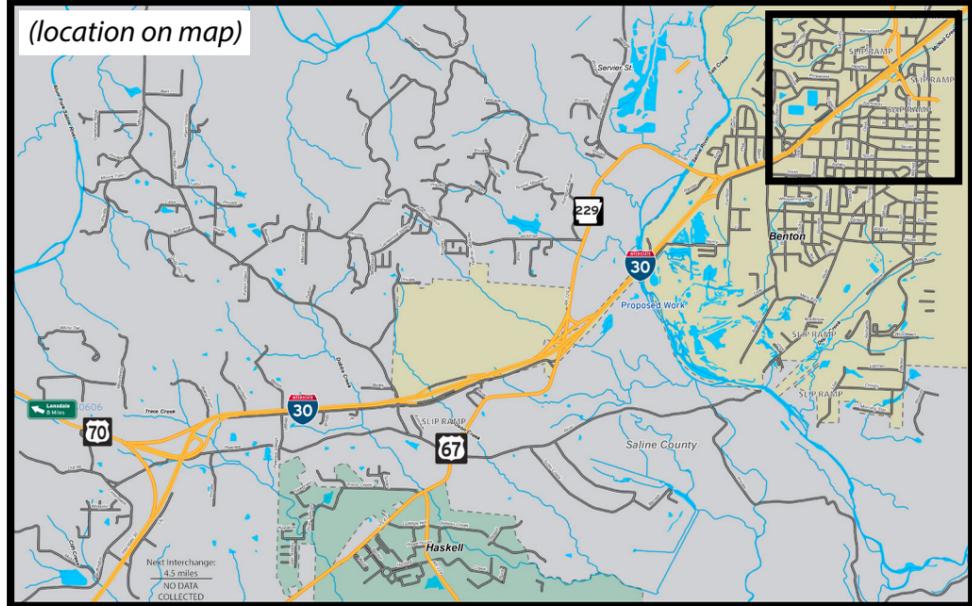
A-22



January 2014

EXHIBIT 4.5

CA0601 - I-30 Widening Highway 70 to Sevier Street Existing 2013 Traffic Counts



(Not to Scale)

Legend

— 48-hour counts ●●●● 24-hour counts

- A** Mainline Count
- B** Turning movement count
- C** Ramp count

(AM/PM) Traffic Counts [Volumes shown are raw counts taken September 2013]
(AM/PM) Truck Percent
Peak hour Times: 7:00AM-8:00 AM and 4:30 PM-5:30 PM

A-23



January 2014

Seasonal Adjustment

Seasonal adjustments are used to estimate average annual daily traffic (AADT) from a single raw traffic count. ATR data were used to compute these factors. Adjustments for each facility type are used as appropriate. Existing traffic volumes were collected in September, 2013 and adjusted before they were forecasted.

Traffic Forecast

The traffic forecast was developed based on discussions with stakeholders and the historical and forecasted traffic profiles shown in Figures 4 - 6. The historical and forecasted traffic profile summary is shown in Table 1.

Table 1
A1, A2 and A3 Annual Growth Rates

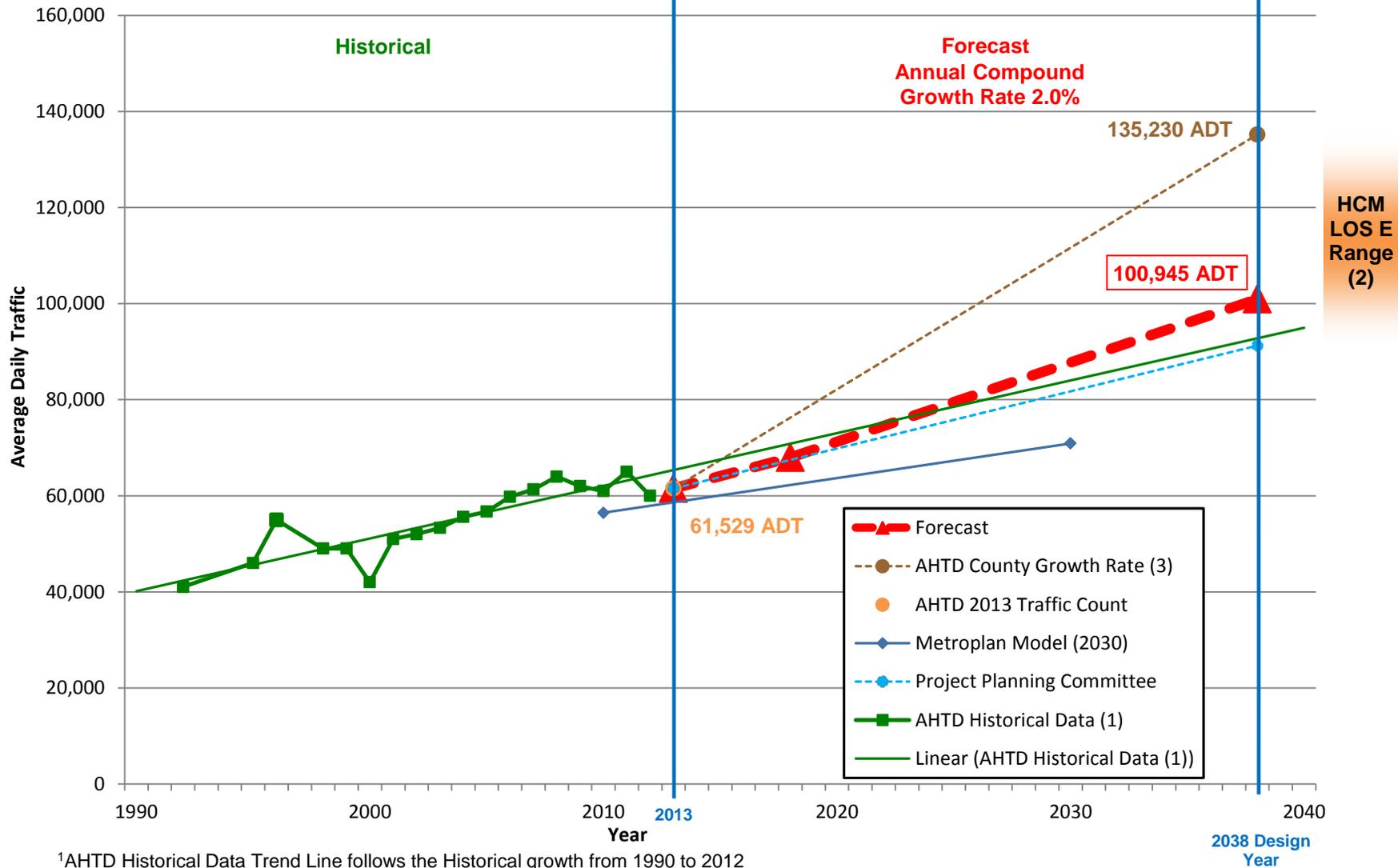
Available Data	A1 I-30 northeast of Sevier Street	A2 I-30 southwest of I-30/US 70 Junction	A3 US 70 west of I-30/US 70 Junction
Historical 2000 – 2012	3.0%	0.8%	2.8%
CARTS Model Year - 2035	1.1%	1.5%	1.4%
AHTD Saline County Growth Rate	3.2%	3.2%	3.2%
Recommended	2.0%	2.0%	2.5%

Compounded growth rate

The recommended annual mainline growth rates of 2.0% and 2.5% represent the best fit growth rate of the available data with the capacity of the facility. This annual growth rate was applied to existing traffic counts to develop the forecasted traffic volumes.

Figure 4: CA0601 - Location A1 - I-30 South of AR 5

Improved to 6-Lane
(See Exhibit 4)



¹AHTD Historical Data Trend Line follows the Historical growth from 1990 to 2012

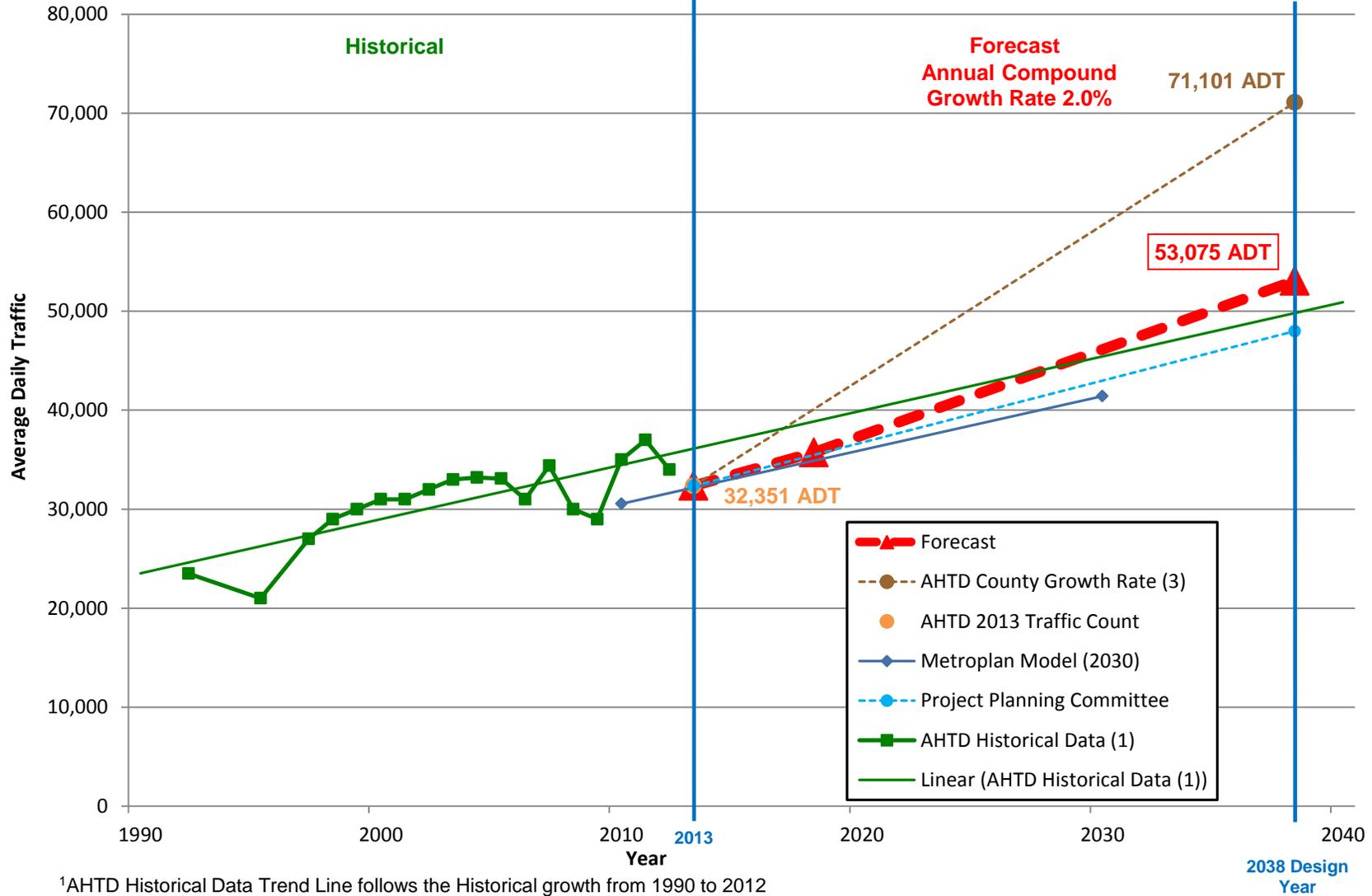
²Highway Capacity Manual (HCM) LOS E capacity range for proposed facility

³Saline County Annual Growth Rate is 3.2%

Figure 5: CA0601 - Location A2 - I-30 South of US 70

Existing 4-Lane
(See Exhibit 4)

HCM LOS E
is 91,000
ADT (2)
Out of Range



¹AHTD Historical Data Trend Line follows the Historical growth from 1990 to 2012

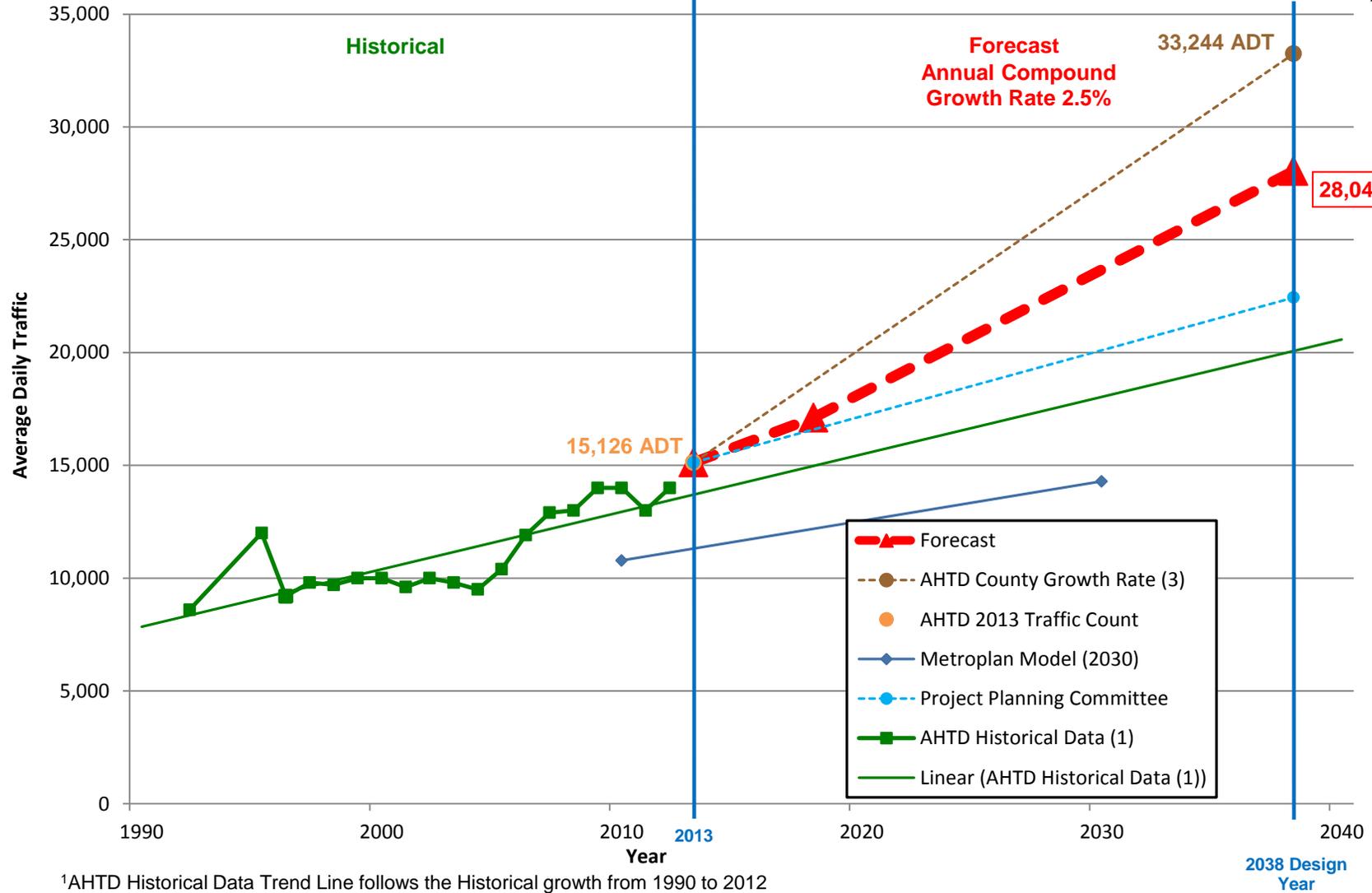
²Highway Capacity Manual (HCM) LOS E capacity range for proposed facility

³Saline County Annual Growth Rate is 3.2%

Figure 6: CA0601 - Location A3 - US 70 West of I-30

Improved to 5 Lane
(See Exhibit 4)

HCM LOS E
is 91,000
ADT (2)
Out of Range



¹AHTD Historical Data Trend Line follows the Historical growth from 1990 to 2012

²Highway Capacity Manual (HCM) LOS E capacity range for proposed facility

³Saline County Annual Growth Rate is 3.2%

Cross street growth rates are based on available data and may differ from mainline growth rates. Future growth rates of mainline and cross street data are shown on the future traffic volume exhibits.

Future Traffic Volumes

Future traffic volumes at the locations identified in Exhibit 3 were developed based on growth rates developed from the historical and forecasted traffic profiles shown in Figures 4 through 6. Existing and Future average daily traffic (ADT) are shown in Table 2.

**Table 2
Mainline Average Daily Traffic at “A” Sites**

	A1 I-30 northeast of Sevier Street	A2 I-30 southwest of I-30/US 70 Junction	A3 US 70 west of I-30/US 70 Junction
Existing ¹	61,529	32,351	15,126
2018 Opening Year	68,000	35,500	16,500
2038 Design Year	101,000	53,000	28,000

¹ Existing data is a raw count.

Exhibits 5 and 6 show projected Annual Daily Traffic volumes. Future peak hour traffic volumes for opening year 2018 of the project are shown on Exhibit 7 (including 7.1 through 7.5) and design year 2038 are shown on Exhibit 8 (including 8.1 through 8.5). When developing future volumes, numbers were balanced throughout the corridor. This caused some volumes to balance higher compared to what the actual growth rate indicates. In addition to balancing, numbers were rounded according to AASHTO standards, meaning some volumes may appear to have not changed.

In addition to the future opening and design year traffic based on traffic growth rates shown in Table 1, two large developments were added to the future traffic forecasts. The two developments in the study corridor are planned but not yet built. These two developments are Riverside Park (exit 116) and Benton Town Center / Riverside Center (exit 114) and described

in more detail in the Truth-in-Data section. Exhibits 5 through 8, including their insets, provide traffic forecasts with and without these two developments. Trip generation for the two proposed developments are available in the Electronic Appendix. Trip generation is considered to be conservative as no pass by trips were assumed.

Truth-In-Data Principle

The controlling truth-in-data principle for making traffic forecasts is to document the sources and any uncertainties in the forecast.

1. Sources of data have been documented in previous sections in this report.
2. Uncertainties in the forecast include:

A. Special Generators (source: City of Benton, AR)

Riverside Park (Exit 116)

- a. 5 Girls softball fields
- b. Boys and Girls club – 800 to 1,000 children at any one time
- c. The River Center Convention Center – 2,000 – 2,400 seats for AAU basketball and trade shows
- d. Aquatic Center – Olympic size pool with swim meets
- e. Senior Center – 400 to 500 seniors serviced
- f. 3 soccer fields

Estimated total trips generated: 244/227 (AM/PM)

This estimate does not include Saline County Fairgrounds events next to Riverside Park. Pass by trips were not accounted for.

Benton Town Center / Riverside Center (Exit 114)

- a. Up to 2,000 single family homes (off Mountain View Road)
- b. Estimated 800,000 SF commercial mall (370,000 SF for 2018 forecast based on the Benton Town Center Traffic Study and assignment was doubled to represent 2038 forecast)

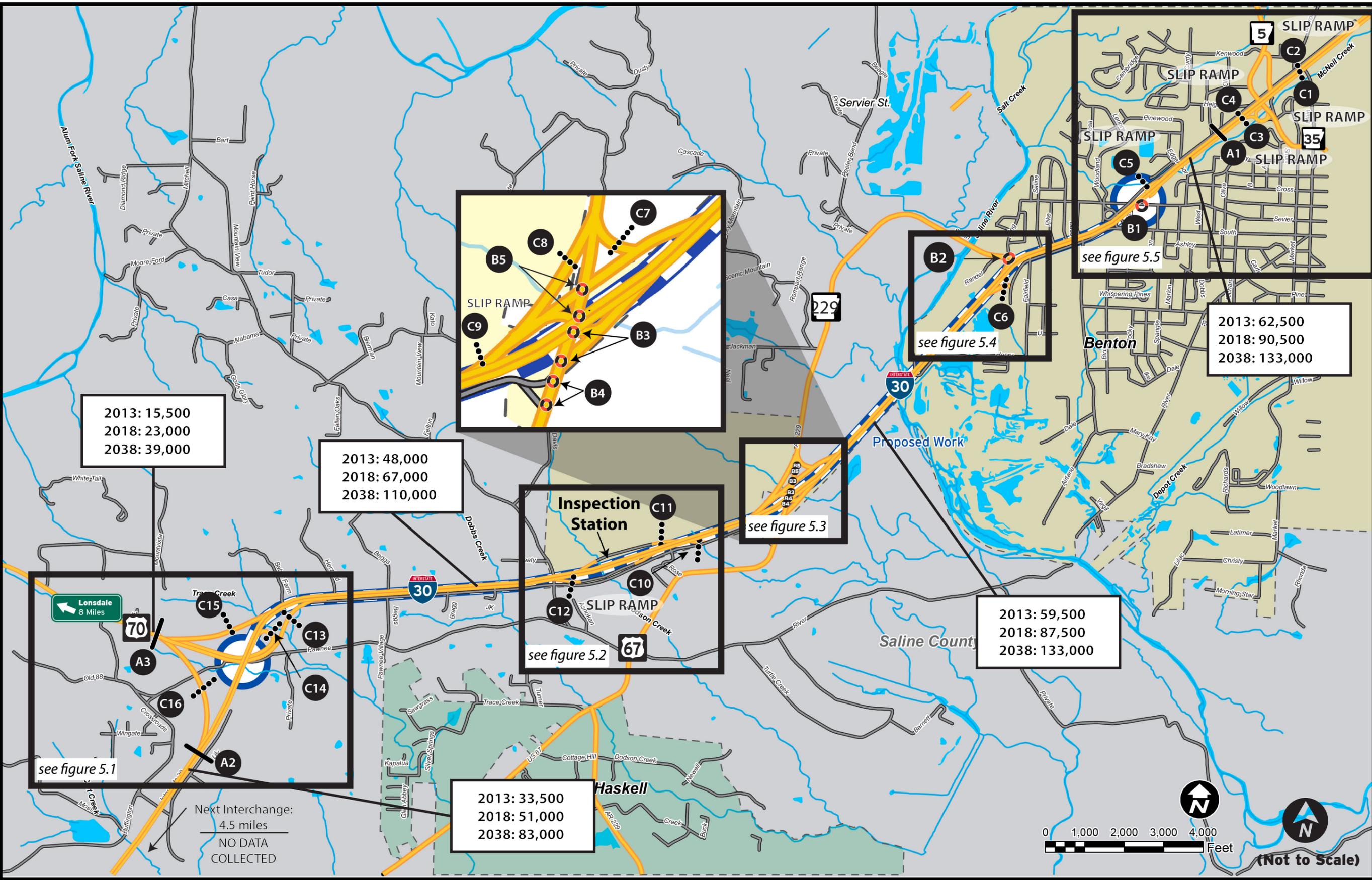
Estimated total trips generated: 1,235/3,397(AM/PM)

Pass by trips were not accounted for.

- B. Existing frontage roads are two-way. Conversion to one-way could impact traffic in the corridor.
- C. The State may build a veterans nursing home near the Veterans State Hospital in Haskell (600 - 800 employees) south on Highway 67. At this time, no decision has been made.
- D. The City of Benton discussed the possibility of a new interchange at Mountain View Road and I-30. Since the interchange is not included in Metro 2030.2 (Metroplan's Long Range Transportation Plan), it was not included in the forecast. A separate request for an interchange will need to be submitted to AHTD for further study.
- E. Proposed event center could impact traffic volumes in study area, but impacts would be inconsistent and would vary based on event size and time of day.
- F. Changes in economic conditions could have impacts on the forecast.
- G. Unexpected growth or special generators outside the study area may influence the study area forecast.
- H. Metroplan provided two model assignments. The assignment with the CAP/STIP/IRP projects shown in the LRTP was used to develop the growth rates in the corridor. If an alternative assignment were used that included the North Beltway and I-430 projects, growth rates could be expected to decrease by less than 0.5% having minimal impact on the traffic forecasts.

EXHIBIT 5

CA0601 - I-30 Widening Highway 70 to Sevier Street Annual Daily Traffic (ADT) - With Development



Legend

- A** Mainline Count
- B** Turning movement count
- C** Ramp count

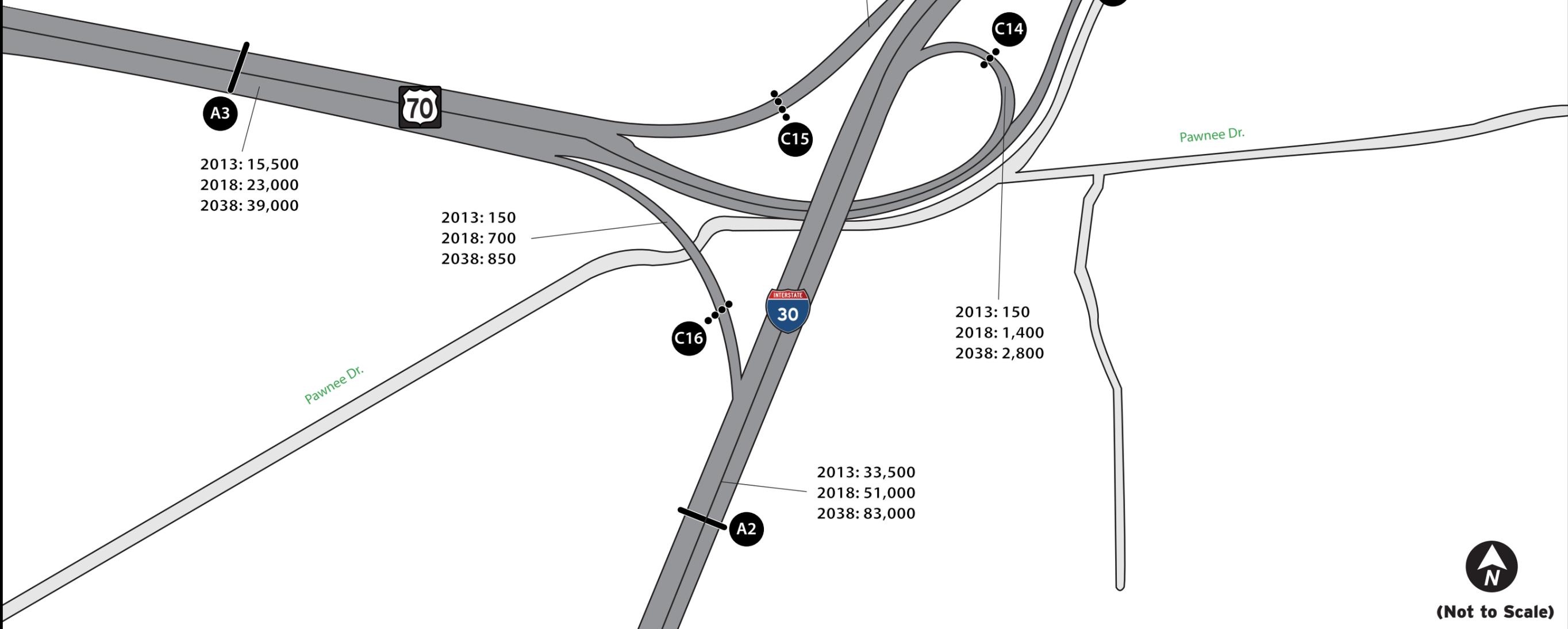
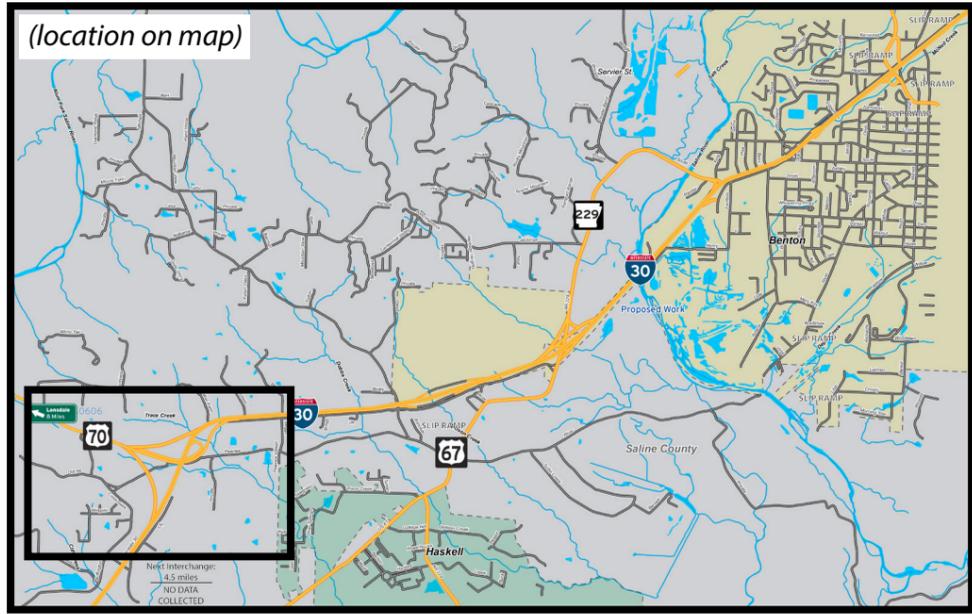
**2013: Existing Count
2018: Opening Year
2038: Design Year**

***Volumes may not balance due to rounding**



**EXHIBIT
5.1**

**CA0601 - I-30 Widening
Highway 70 to Sevier Street
Annual Daily Traffic (ADT) - With Development**



(Not to Scale)

Legend

- A** Mainline Count
- B** Turning movement count
- C** Ramp count

2013: Existing Count
2018: Opening Year
2038: Design Year

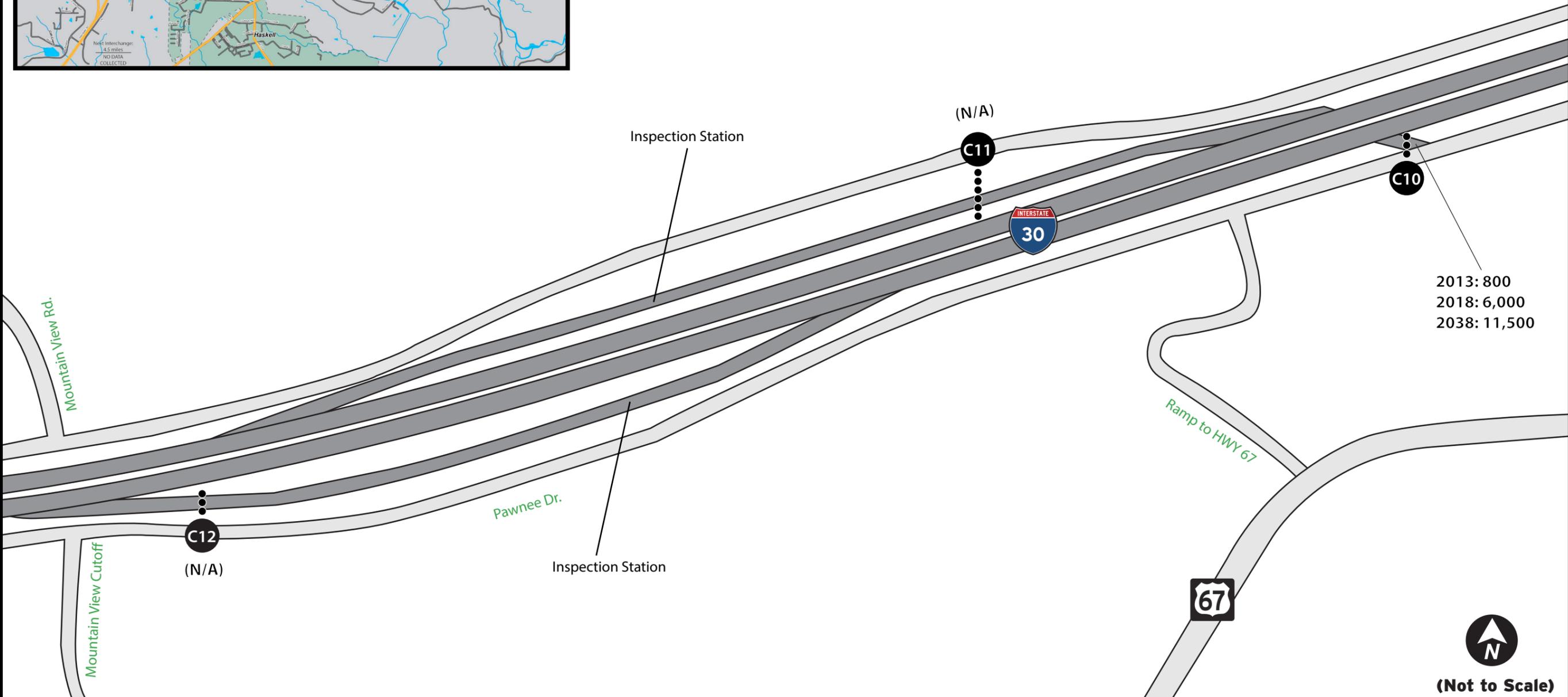
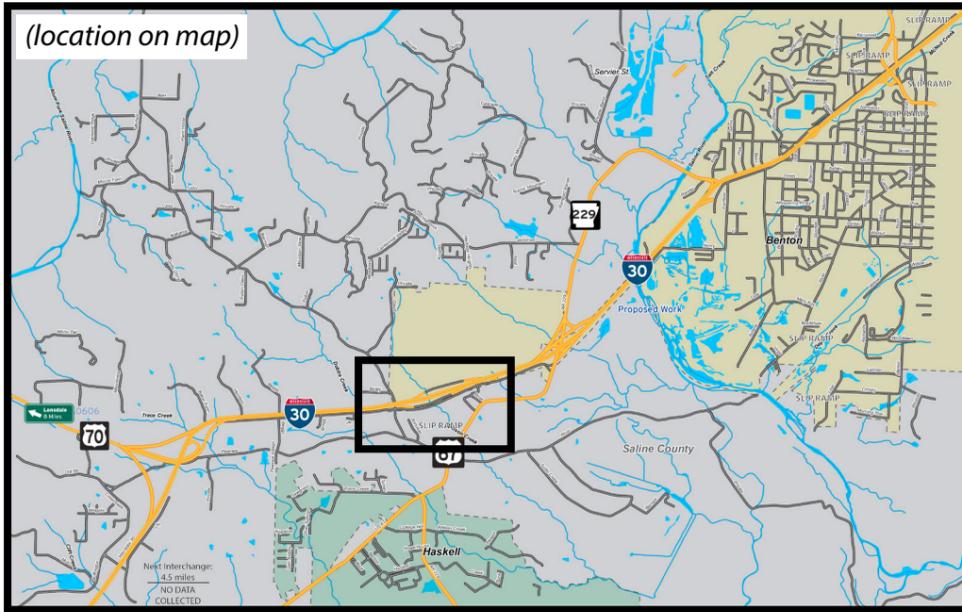
*Volumes may not balance due to rounding



January 2014

EXHIBIT 5.2

CA0601 - I-30 Widening Highway 70 to Sevier Street Annual Daily Traffic (ADT) - With Development



Legend

- A** Mainline Count
- B** Turning movement count
- C** Ramp count

2013: Existing Count
2018: Opening Year
2038: Design Year

*Volumes may not balance due to rounding
(N/A): Counts not forecasted - Minimal Usage on Ramp

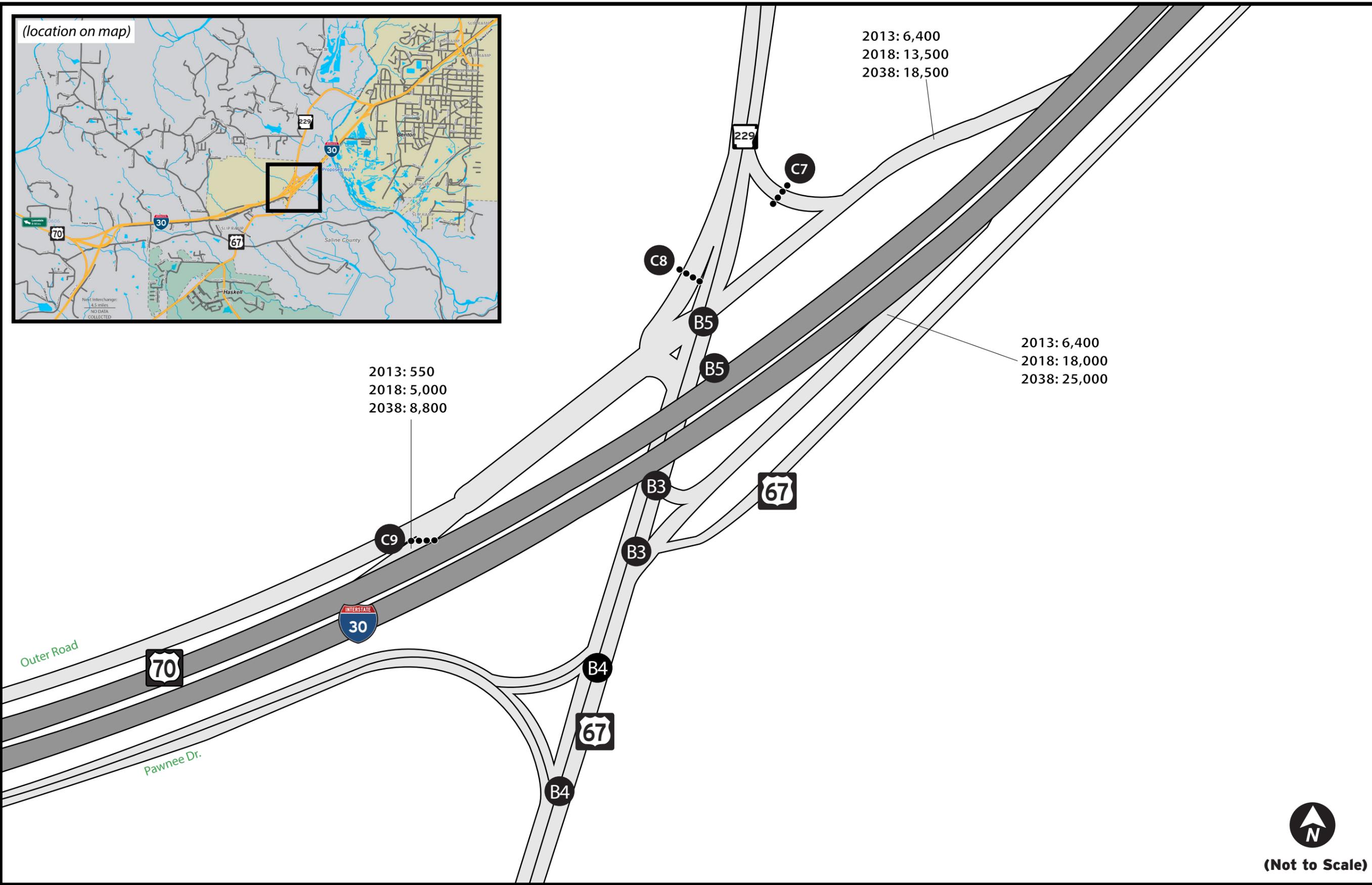
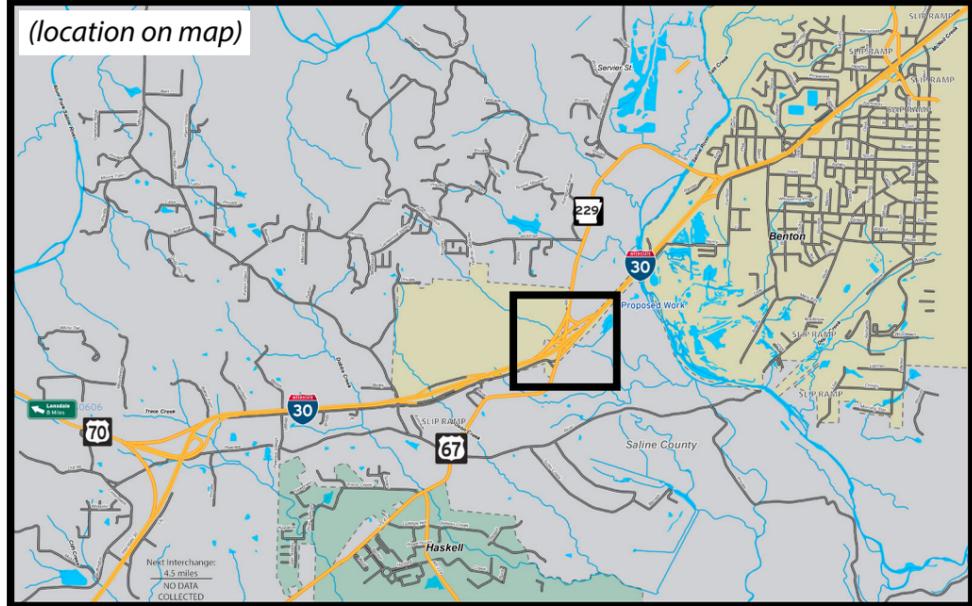
A-33



January 2014

**EXHIBIT
5.3**

**CA0601 - I-30 Widening
Highway 70 to Sevier Street
Annual Daily Traffic (ADT) - With Development**



(Not to Scale)

Legend

- A** Mainline Count
- B** Turning movement count
- C** Ramp count

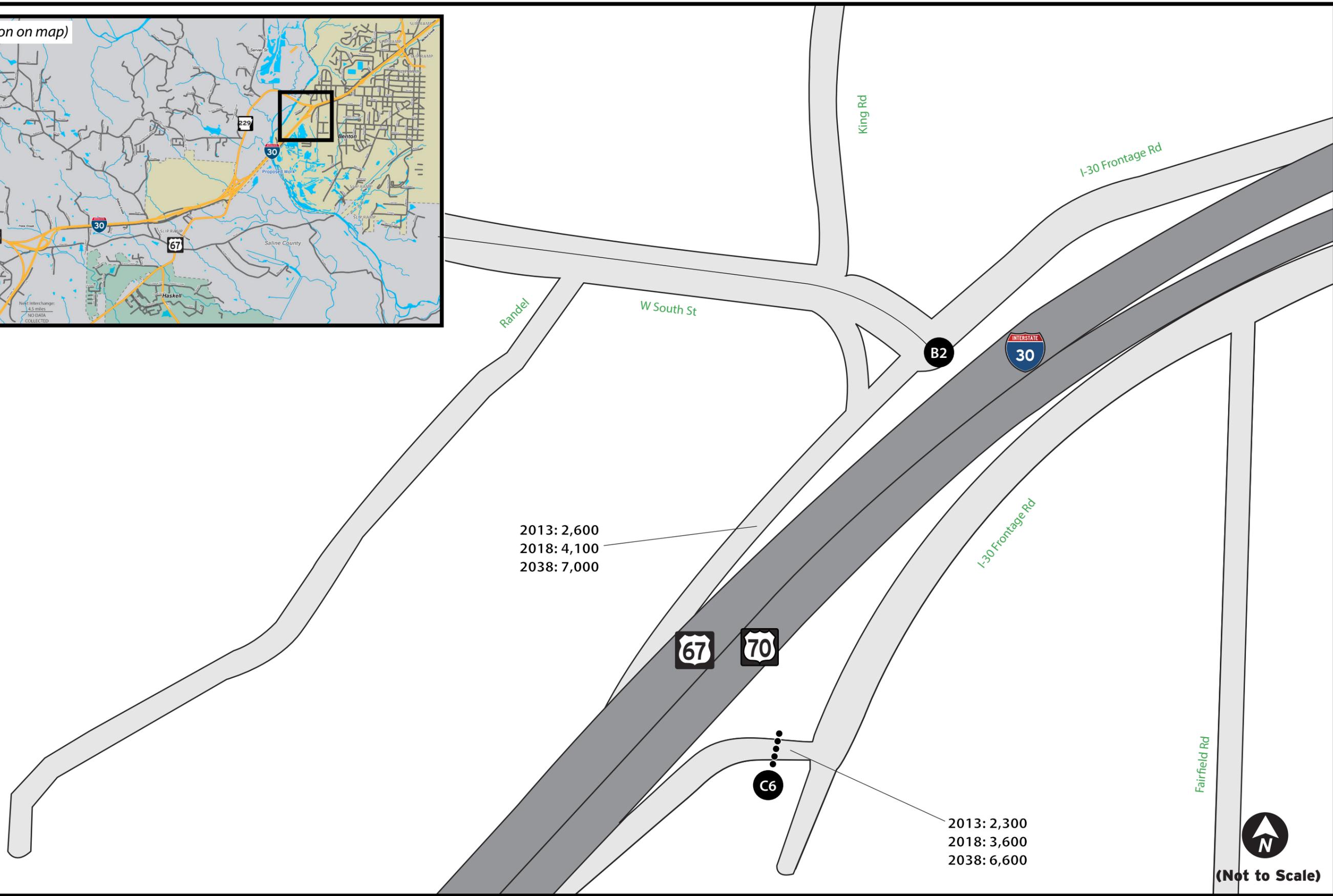
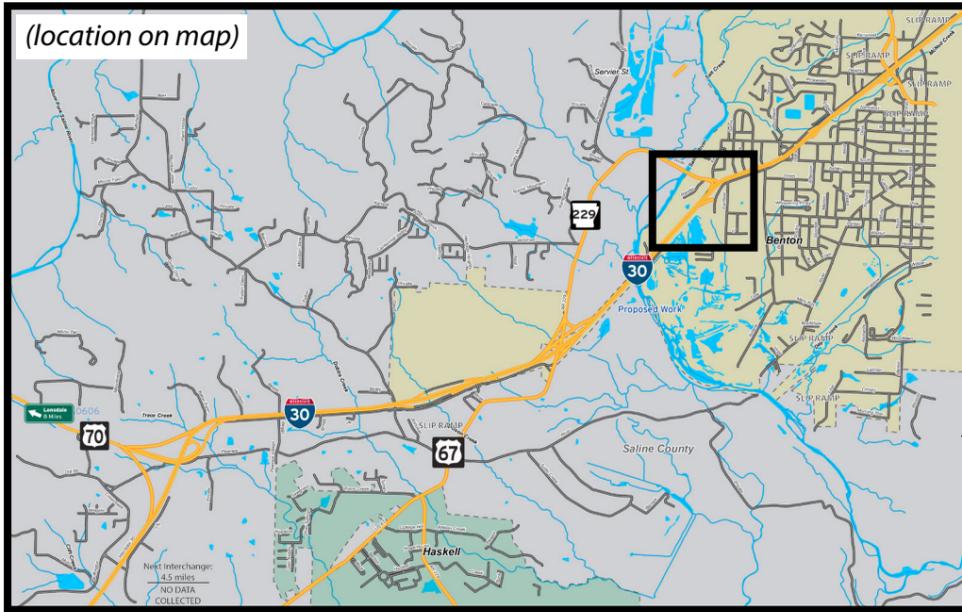
**2013: Existing Count
2018: Opening Year
2038: Design Year**

*Volumes may not balance due to rounding



EXHIBIT 5.4

CA0601 - I-30 Widening Highway 70 to Sevier Street Annual Daily Traffic (ADT) - With Development



Legend

- A** Mainline Count
- B** Turning movement count
- C** Ramp count

2013: Existing Count
2018: Opening Year
2038: Design Year

*Volumes may not balance due to rounding



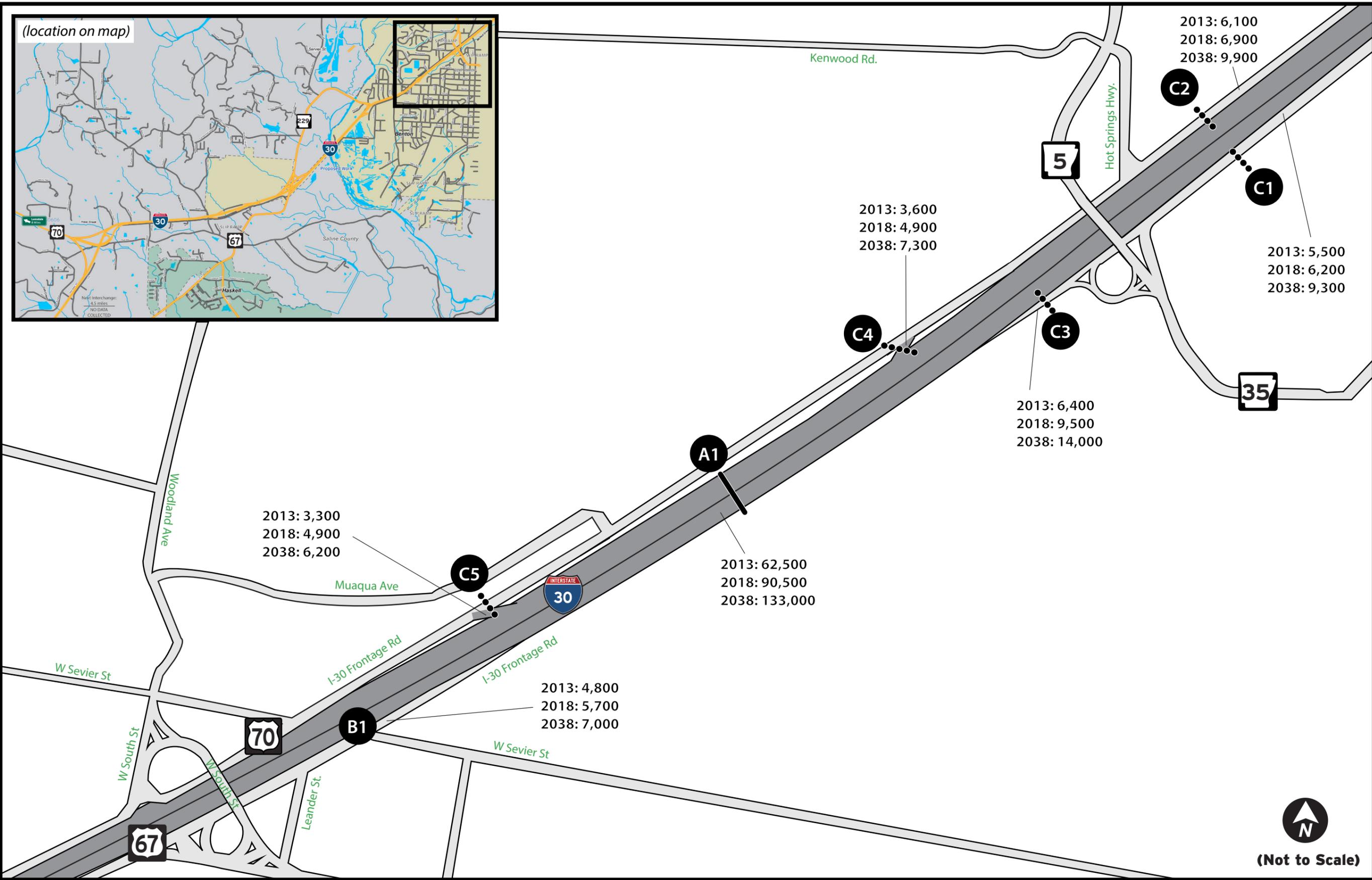
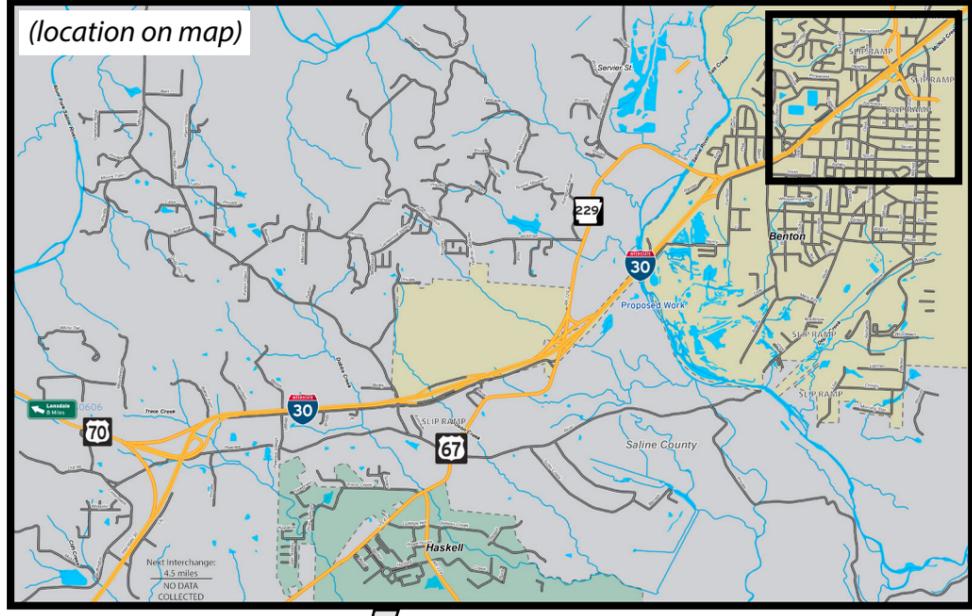
(Not to Scale)



January 2014

EXHIBIT 5.5

CA0601 - I-30 Widening Highway 70 to Sevier Street - With Development Annual Daily Traffic (ADT) - With Development



(Not to Scale)

Legend

- A** Mainline Count
- B** Turning movement count
- C** Ramp count

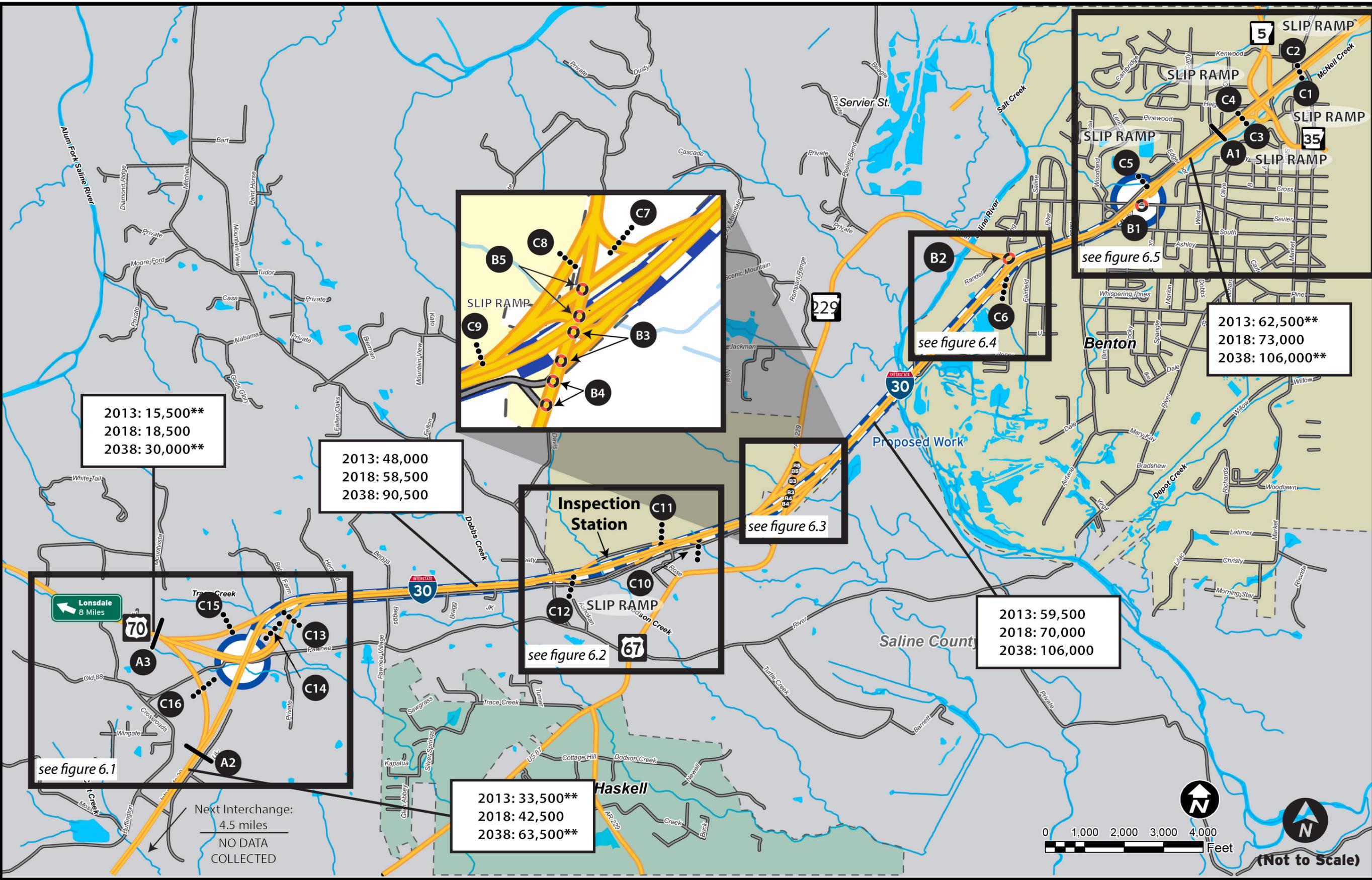
2013: Existing Count
2018: Opening Year
2038: Design Year

*Volumes may not balance due to rounding



EXHIBIT 6

CA0601 - I-30 Widening Highway 70 to Sevier Street Annual Daily Traffic (ADT) - Without Development



2013: 15,500**
 2018: 18,500
 2038: 30,000**

2013: 48,000
 2018: 58,500
 2038: 90,500

B5
B3
B4
B3
B4
B5
C8
C7
C9
 SLIP RAMP

B2
C6
 see figure 6.4

B3
B4
B3
B4
 see figure 6.3

C11
C10
C12
 Inspection Station
 SLIP RAMP
67
 see figure 6.2

5 SLIP RAMP
C2
C1
 SLIP RAMP
35
A1
C3
 SLIP RAMP
C4
C5
B1
 see figure 6.5

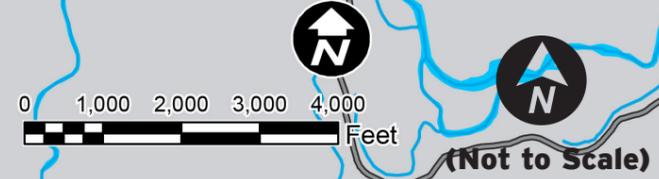
2013: 62,500**
 2018: 73,000
 2038: 106,000**

2013: 59,500
 2018: 70,000
 2038: 106,000

2013: 33,500**
 2018: 42,500
 2038: 63,500**

A3
A2
C15
C13
C14
C16
 see figure 6.1

Next Interchange:
 4.5 miles
 NO DATA
 COLLECTED



Legend

- A** Mainline Count
- B** Turning movement count
- C** Ramp count

2013: Existing Count
2018: Opening Year
2038: Design Year

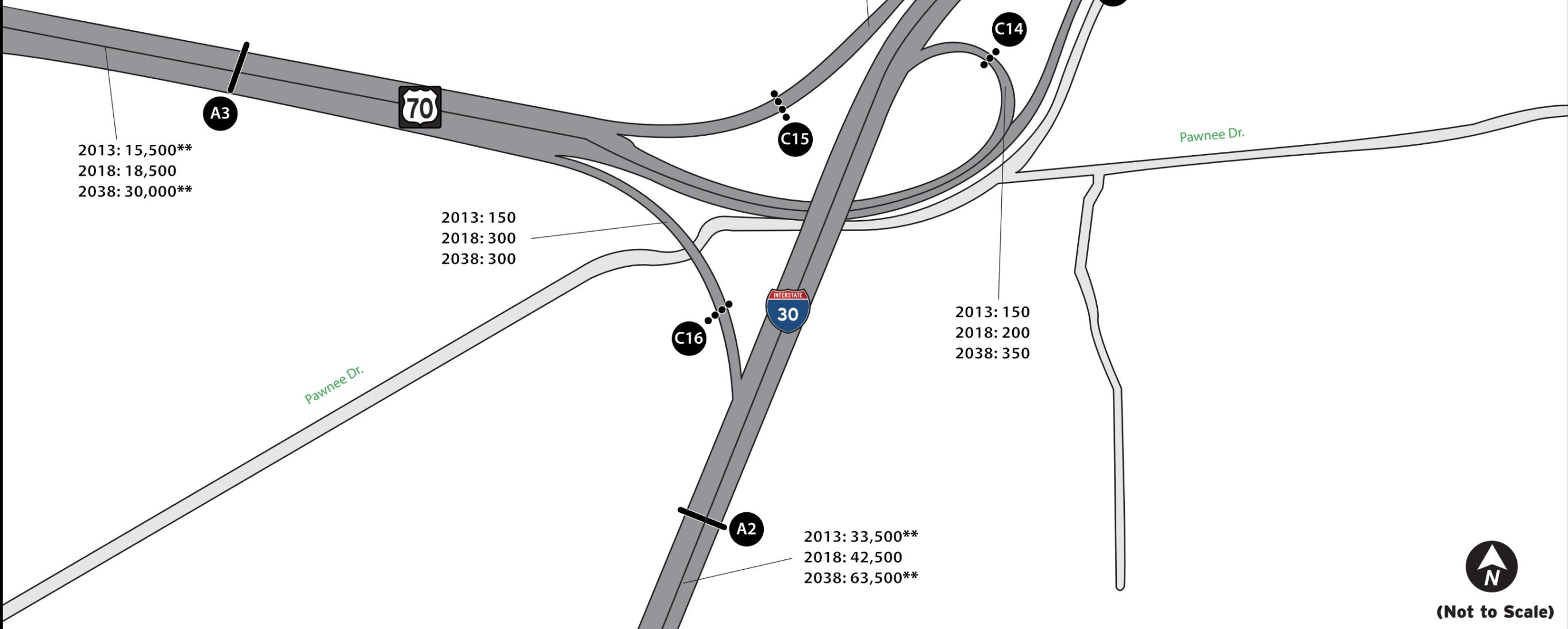
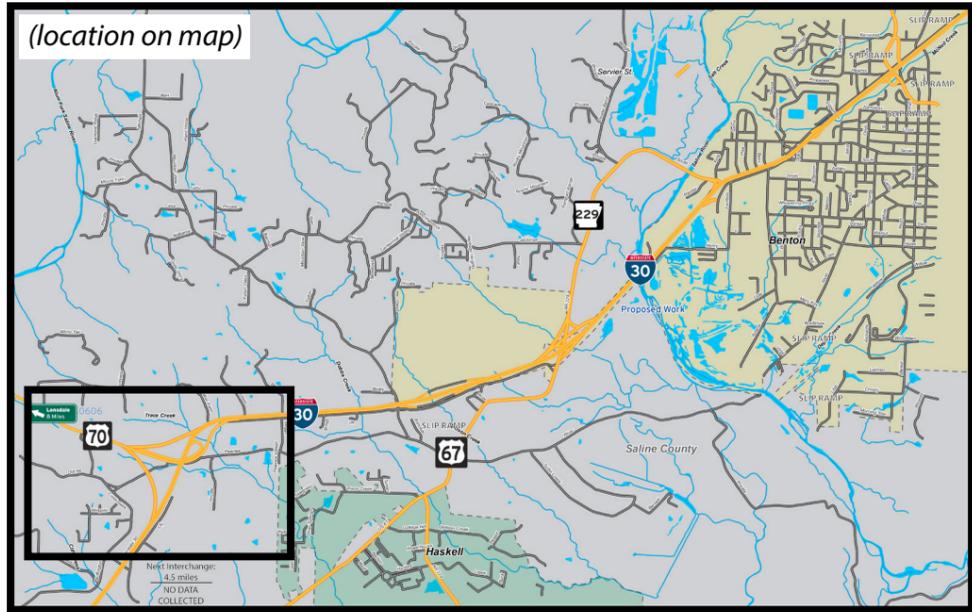
*Volumes may not balance due to rounding
 **Volumes may not match Figures 4-6 due to rounding and balancing.



February 2014

**EXHIBIT
6.1**

**CA0601 - I-30 Widening
Highway 70 to Sevier Street
Annual Daily Traffic (ADT) - Without Development**



Legend

- A** Mainline Count
- B** Turning movement count
- C** Ramp count

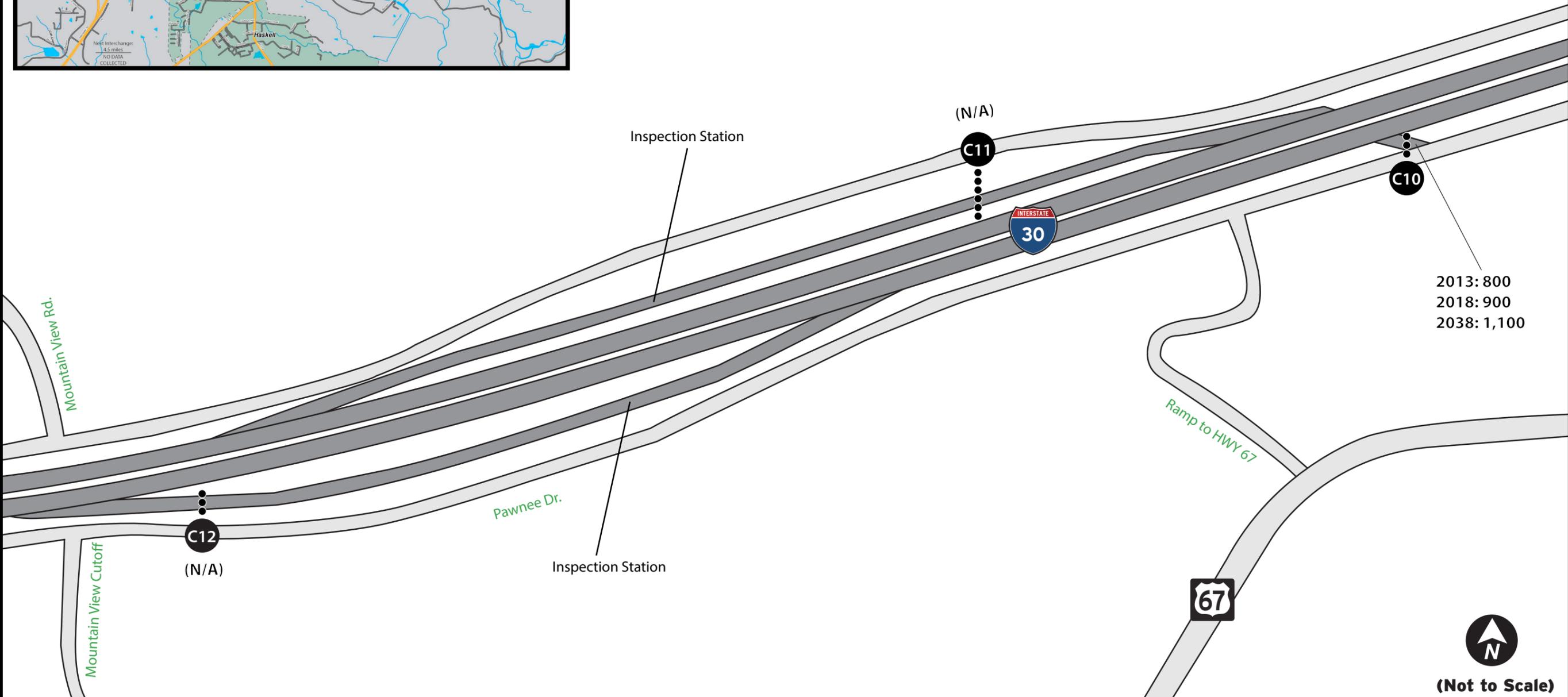
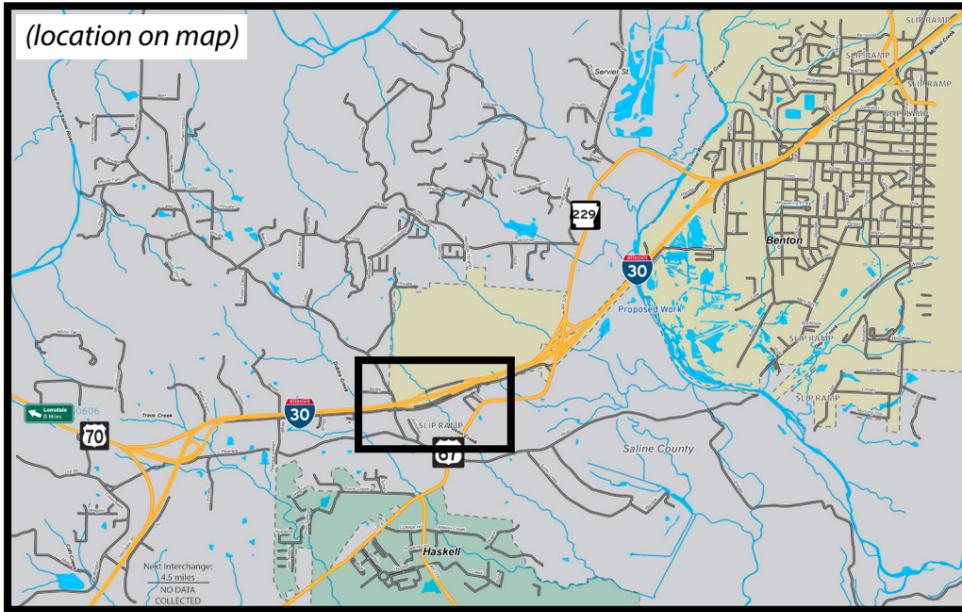
**2013: Existing Count
2018: Opening Year
2038: Design Year**

***Volumes may not balance due to rounding
Volumes may not match Figures 4-6 due to rounding and balancing.



**EXHIBIT
6.2**

**CA0601 - I-30 Widening
Highway 70 to Sevier Street
Annual Daily Traffic (ADT) - Without Development**



Legend

- A** Mainline Count
- B** Turning movement count
- C** Ramp count

2013: Existing Count
2018: Opening Year
2038: Design Year

***Volumes may not balance due to rounding**
(N/A): Counts not forecasted - Minimal Usage on Ramp

A-39



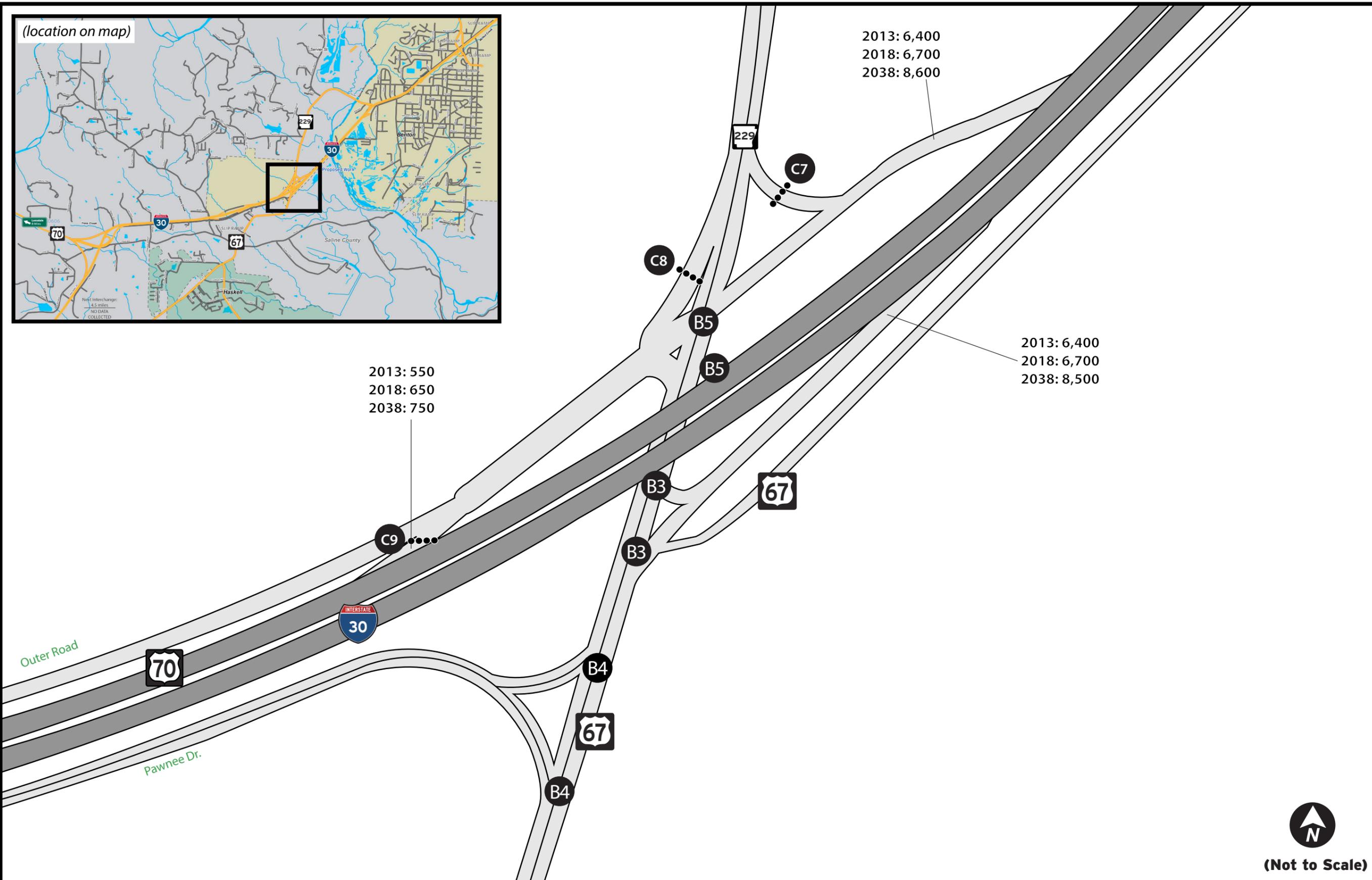
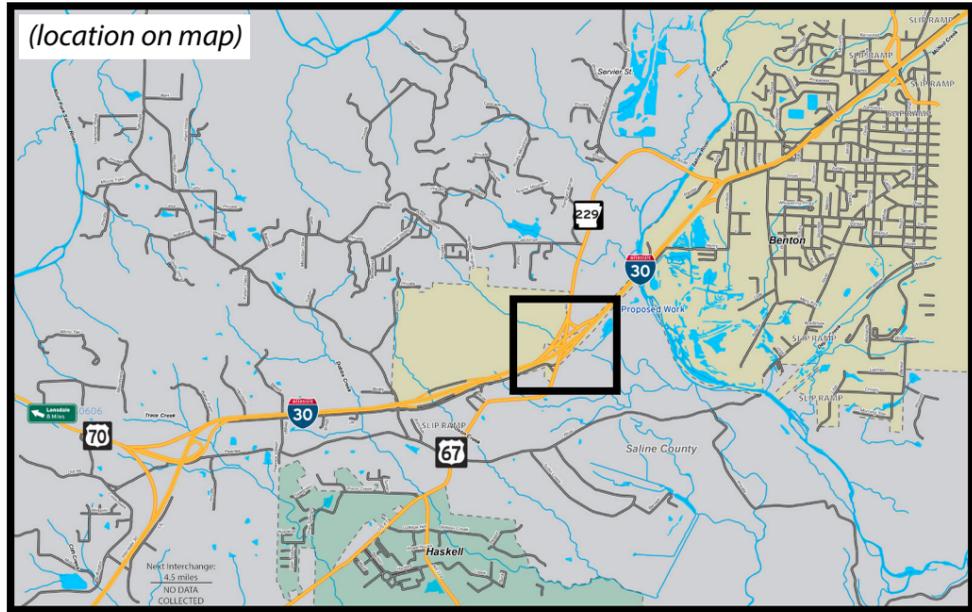
(Not to Scale)



February 2014

**EXHIBIT
6.3**

**CA0601 - I-30 Widening
Highway 70 to Sevier Street
Annual Daily Traffic (ADT) - Without Development**



Legend

- A** Mainline Count
- B** Turning movement count
- C** Ramp count

2013: Existing Count
2018: Opening Year
2038: Design Year

*Volumes may not balance due to rounding



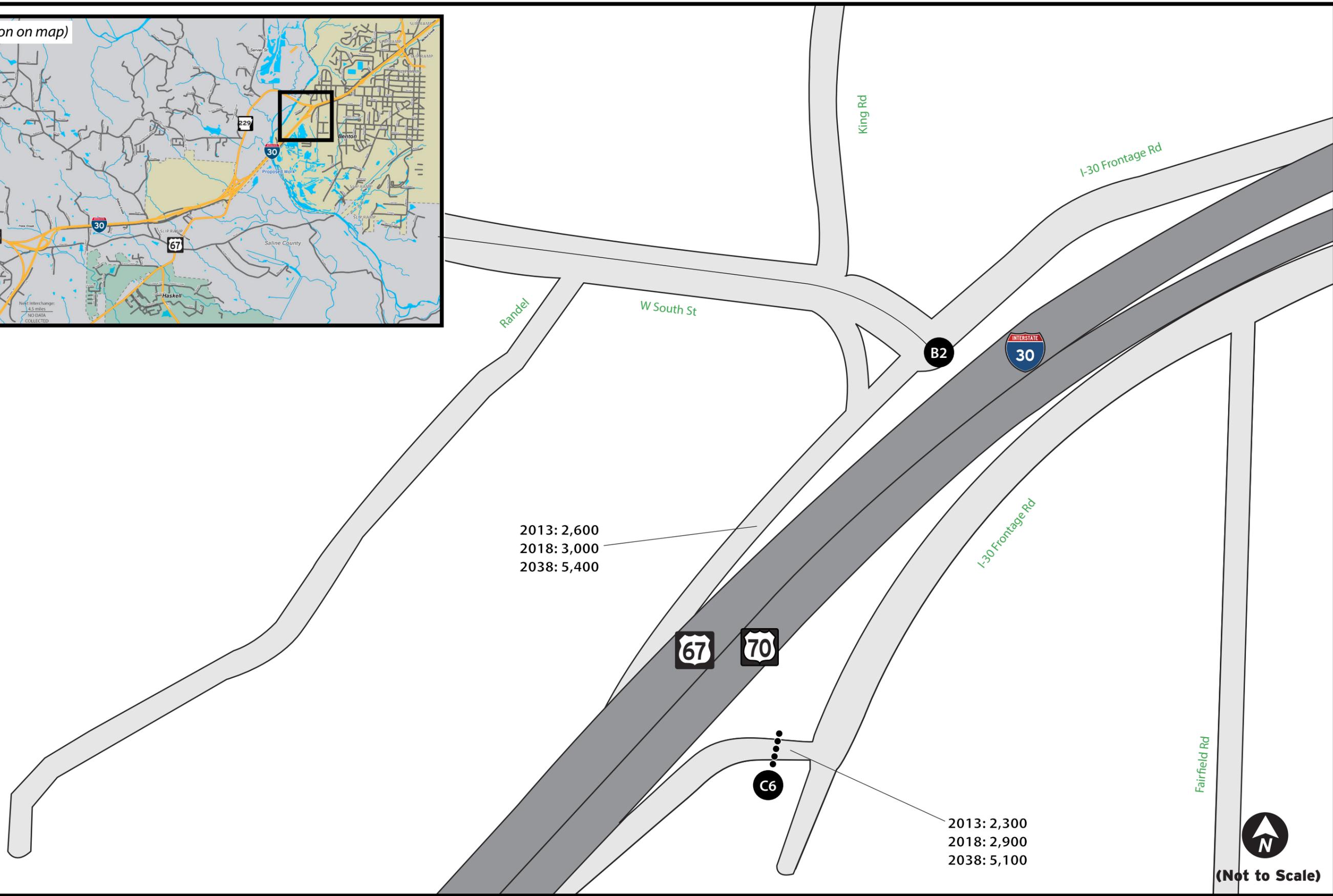
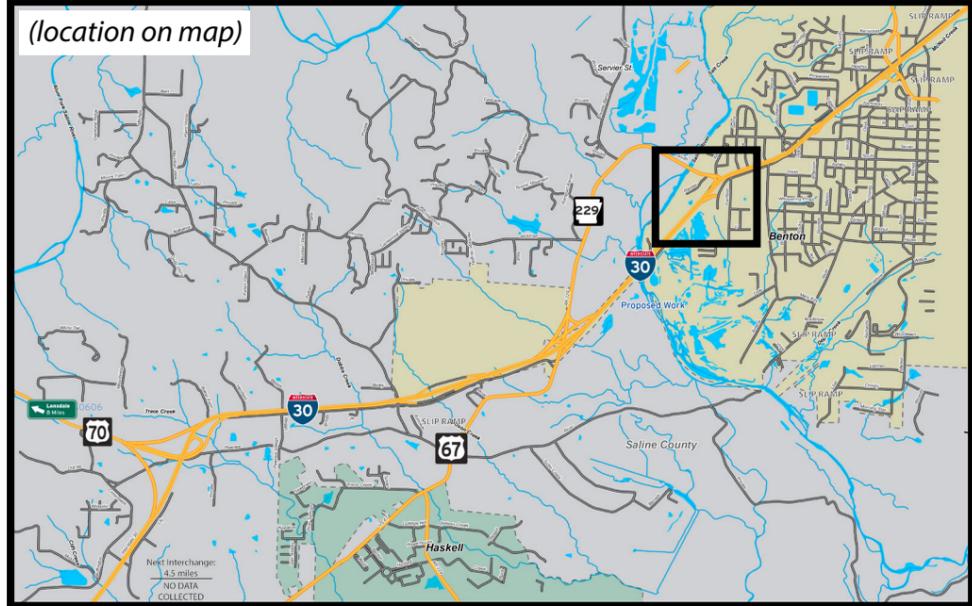
(Not to Scale)



February 2014

**EXHIBIT
6.4**

**CA0601 - I-30 Widening
Highway 70 to Sevier Street
Annual Daily Traffic (ADT) - Without Development**



Legend

- A** Mainline Count
- B** Turning movement count
- C** Ramp count

**2013: Existing Count
2018: Opening Year
2038: Design Year**

**Volumes may not balance due to rounding*



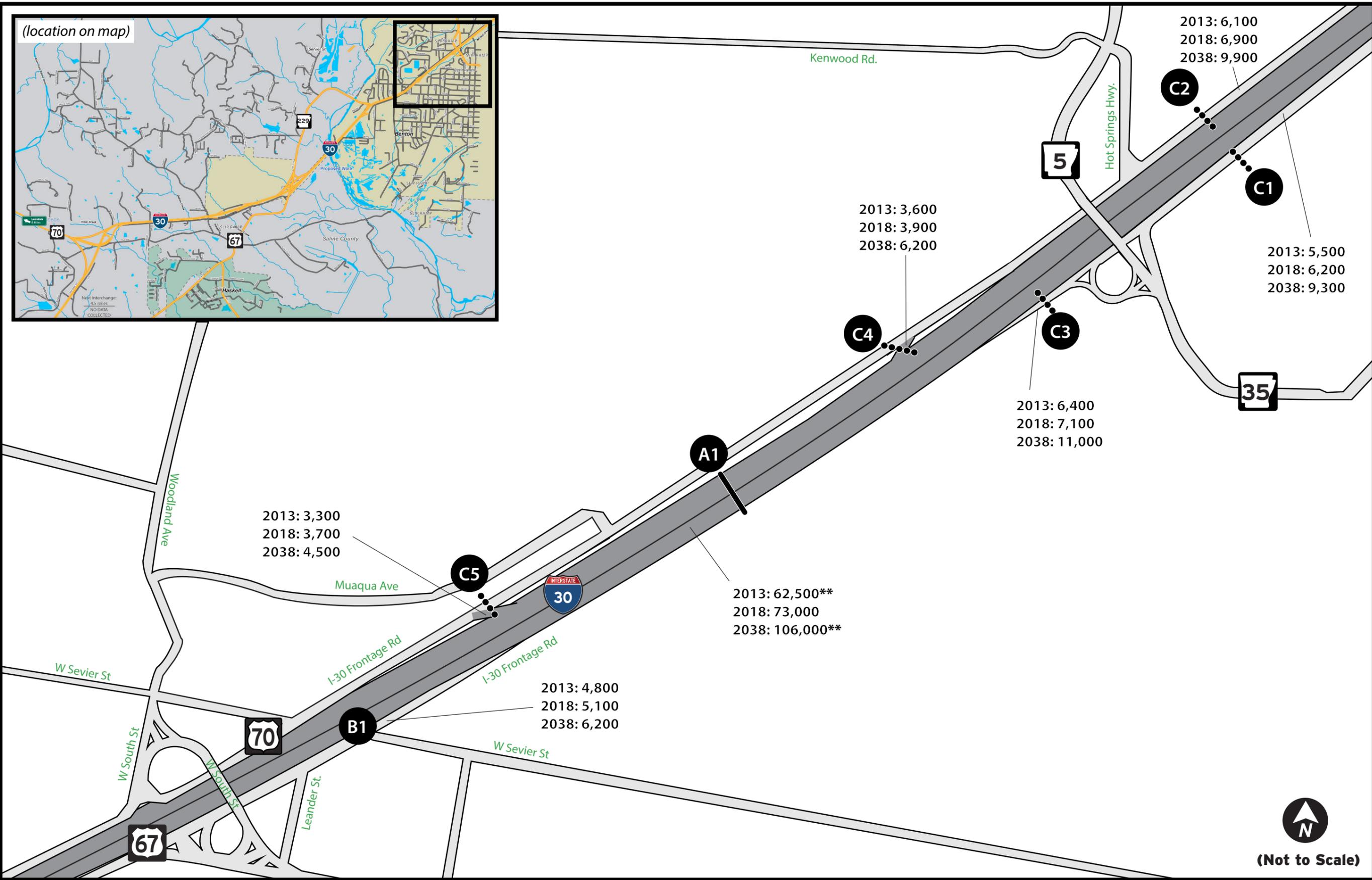
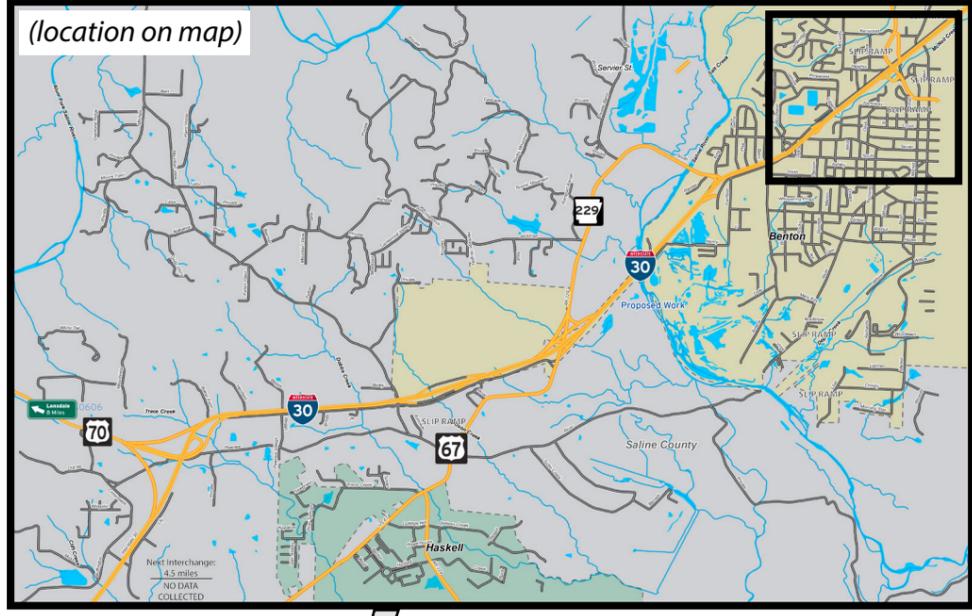
A-41



February 2014

**EXHIBIT
6.5**

**CA0601 - I-30 Widening
Highway 70 to Sevier Street - Without Development
Annual Daily Traffic (ADT) - Without Development**



Legend

- A** Mainline Count
- B** Turning movement count
- C** Ramp count

2013: Existing Count
2018: Opening Year
2038: Design Year

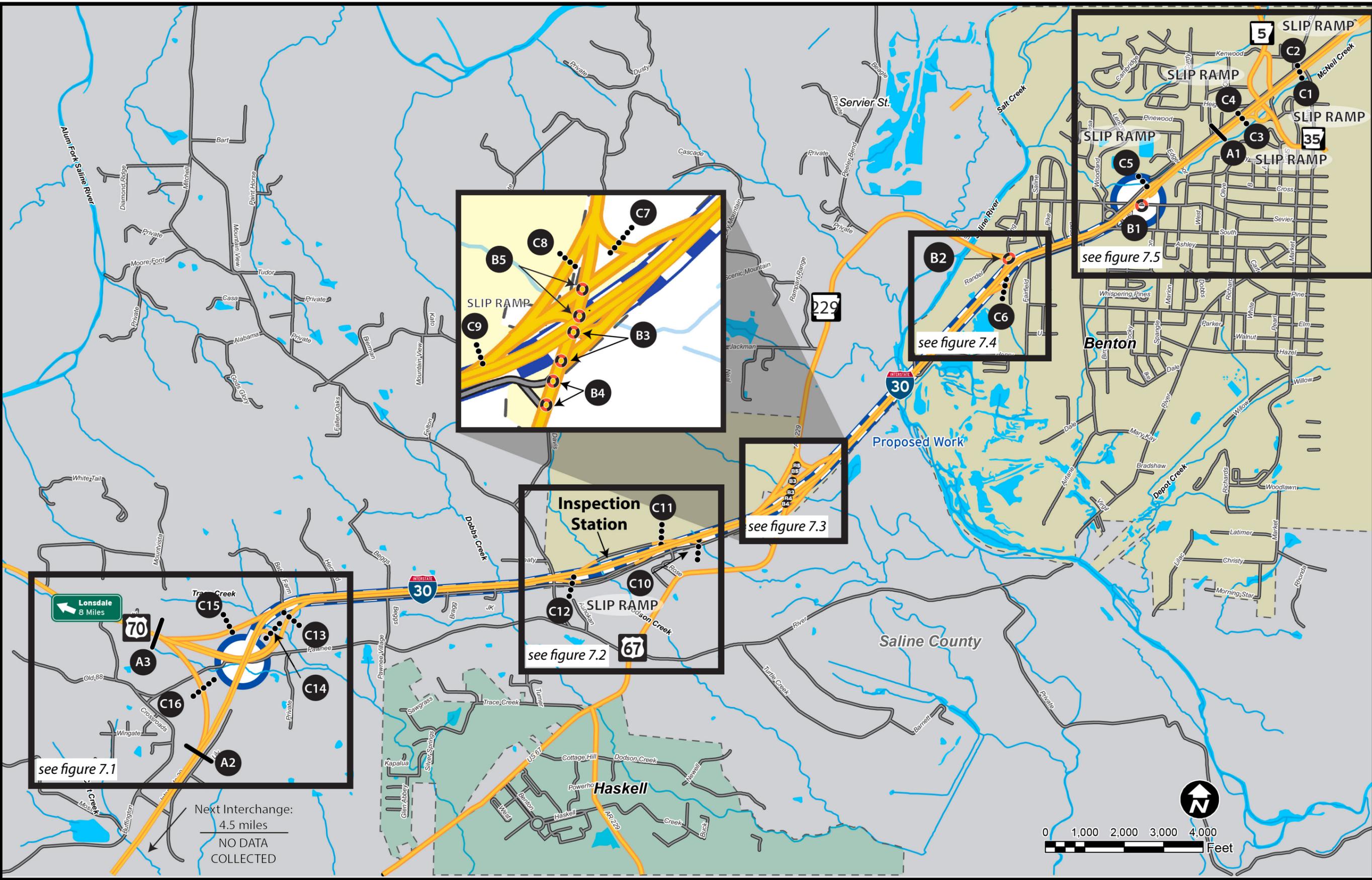
***Volumes may not balance due to rounding**
****Volumes may not match Figures 4-6 due to rounding and balancing.**



(Not to Scale)



**CA0601 - I-30 Widening
Highway 70 to Sevier Street
Opening Year 2018 Traffic Forecast**



see figure 7.1

Lonsdale 8 Miles

70

A3

A2

C15

C13

C14

C16

Next Interchange:
4.5 miles
NO DATA
COLLECTED

see figure 7.2

Inspection Station

C11

C12

SLIP RAMP

67

see figure 7.3

B3

B4

see figure 7.4

B2

C6

see figure 7.5

B5

C8

C7

B3

B4

C9

SLIP RAMP

see figure 7.5

B1

C5

SLIP RAMP

5

SLIP RAMP

C2

C1

SLIP RAMP

35

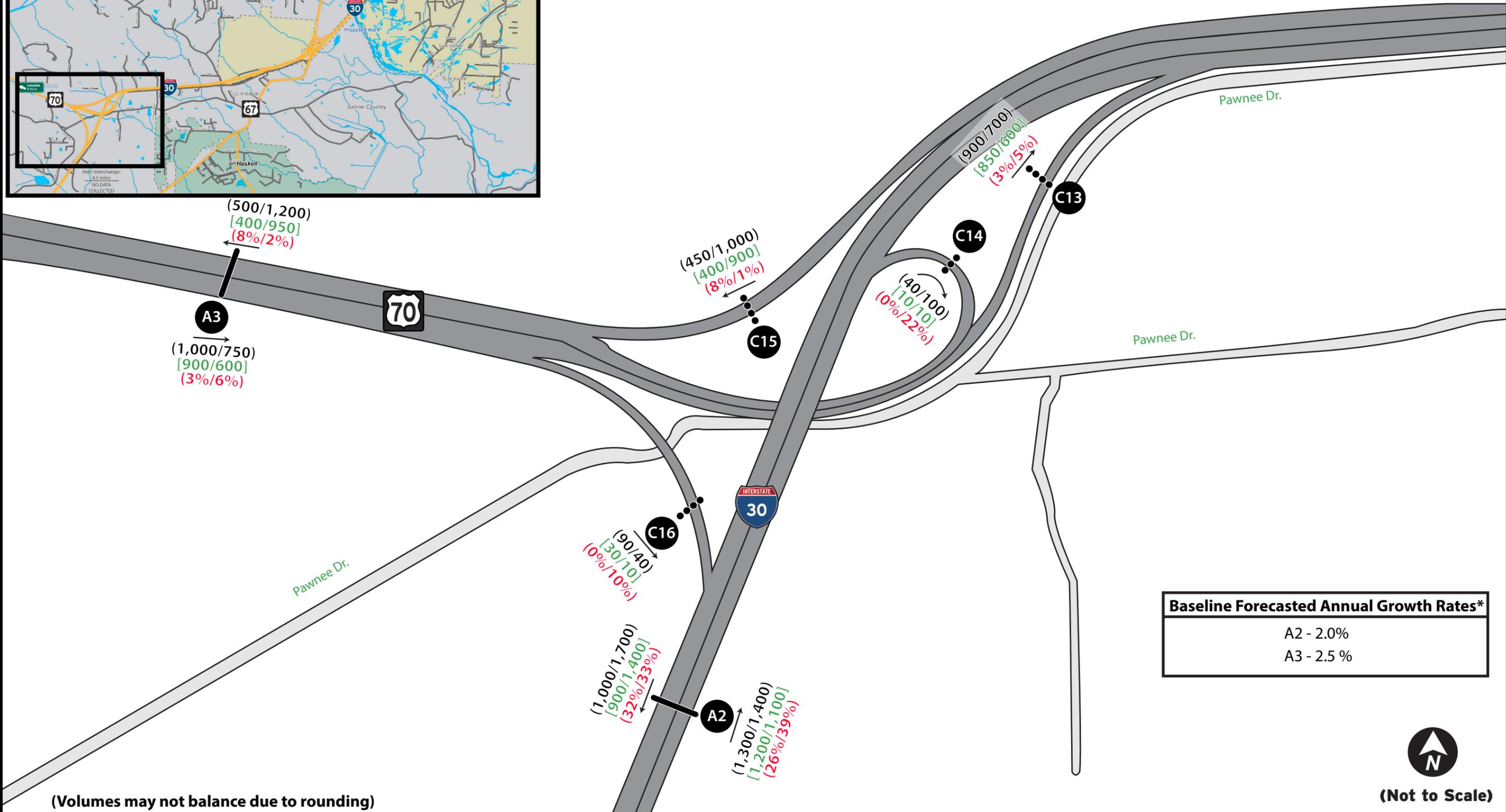
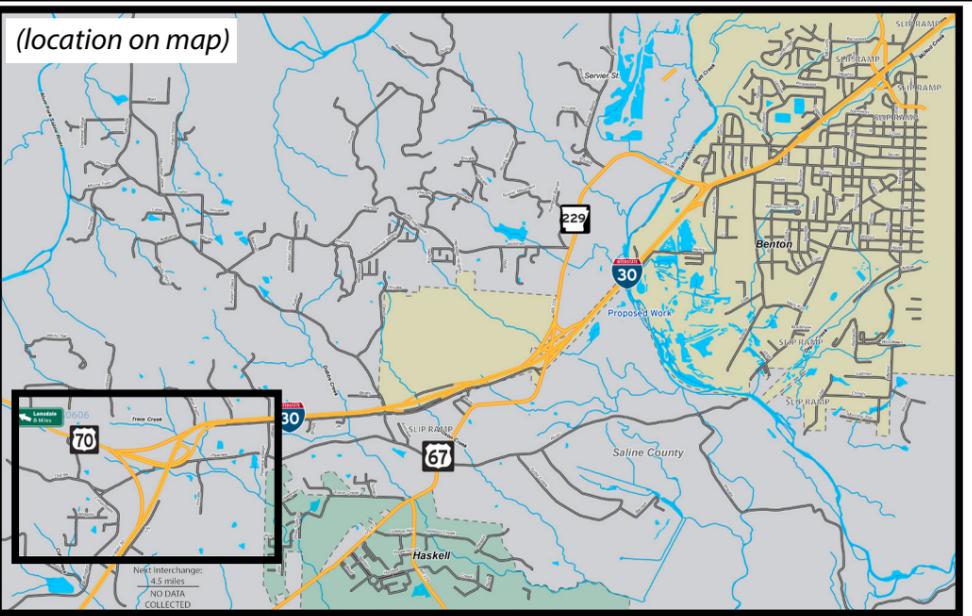
SLIP RAMP

Benton

- Legend**
- 48-hour counts
 - 24-hour counts
 - Turning movement locations (including 24-hour inbound/outbound counts)
 - Count Location
 - Project Limits

EXHIBIT 7.1

CA0601 - I-30 Widening Highway 70 to Sevier Street Opening Year 2018 Traffic Forecast



Legend

- 48-hour counts
- 24-hour counts
- A** Mainline Count
- B** Turning movement count
- C** Ramp count

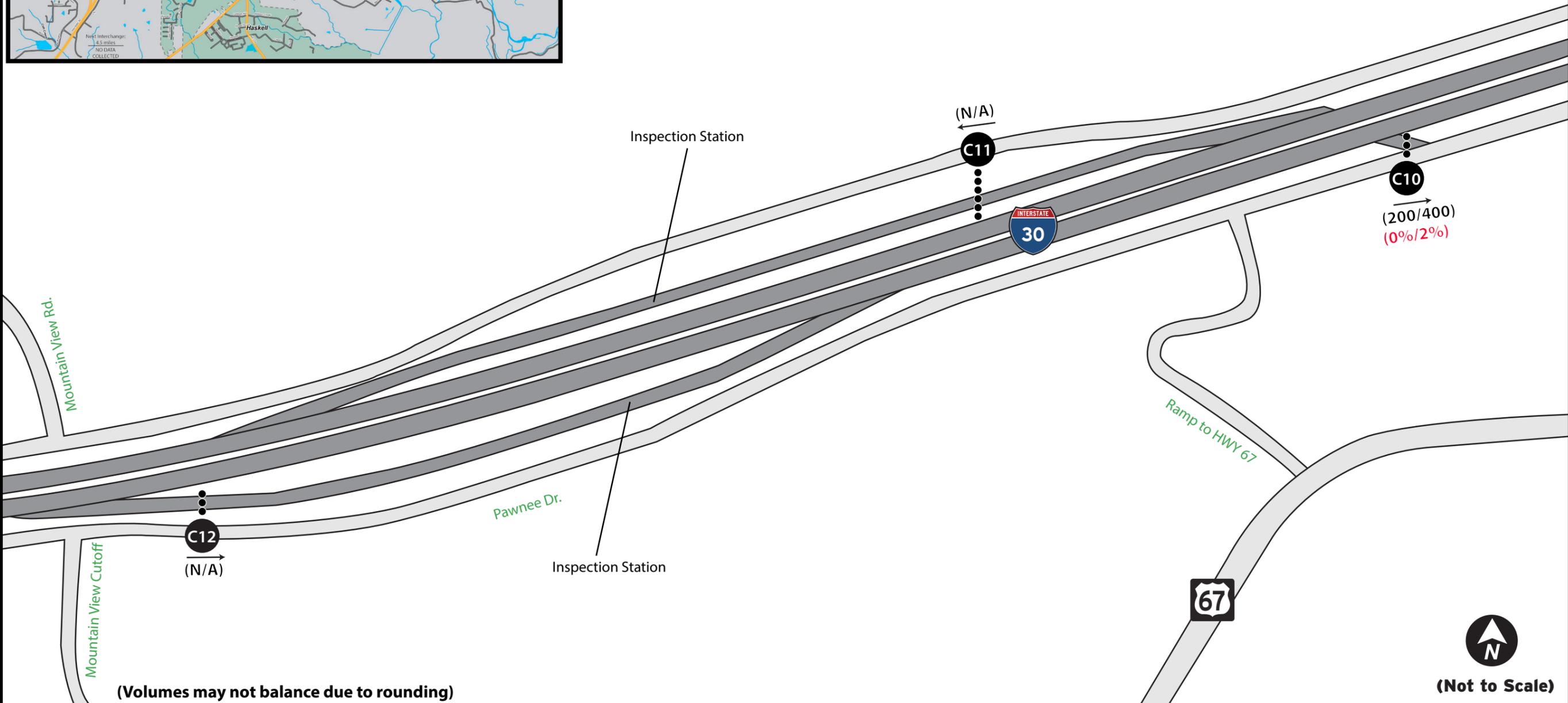
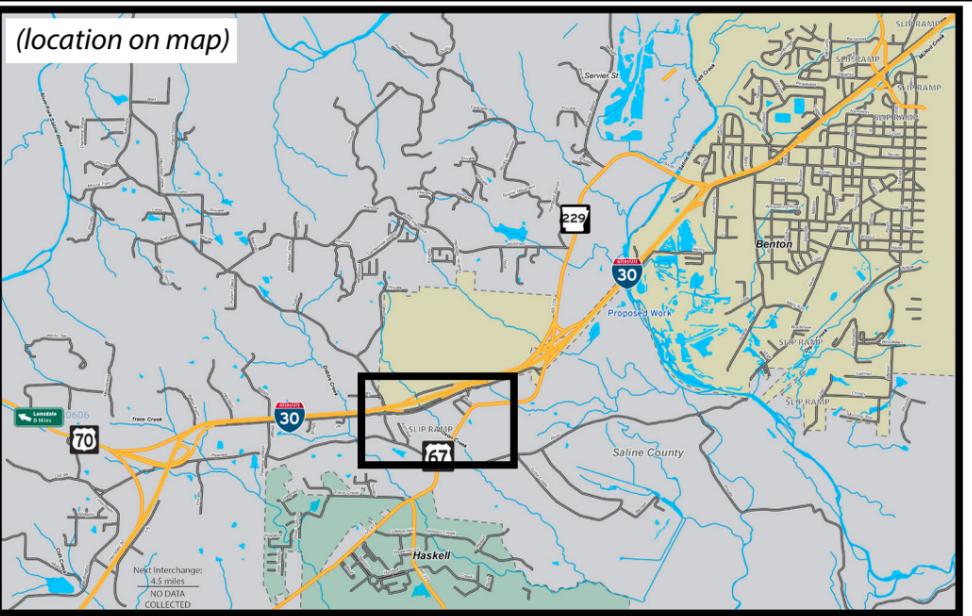
(AM/PM) Traffic Counts with development
[AM/PM] Traffic Counts without development
(AM/PM) Truck Percent
Peak Hour: 7:15AM-8:15 AM and 4:30 PM-5:30 PM

*Baseline Growth Rates do not include Development

February 2014

**EXHIBIT
7.2**

**CA0601 - I-30 Widening
Highway 70 to Sevier Street
Opening Year 2018 Traffic Forecast**



Legend

- 48-hour counts
- 24-hour counts
- Mainline Count
- Turning movement count
- Ramp count

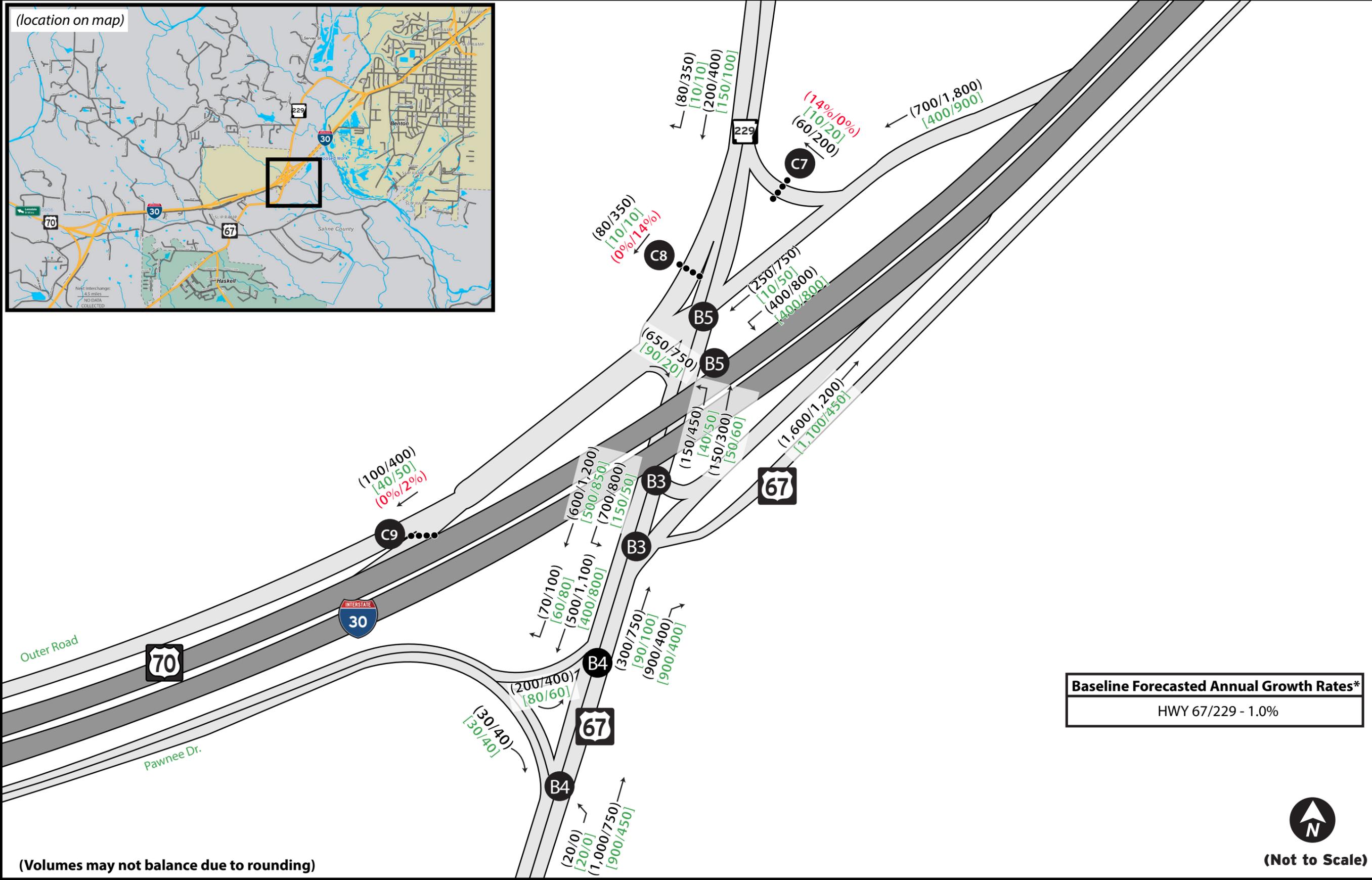
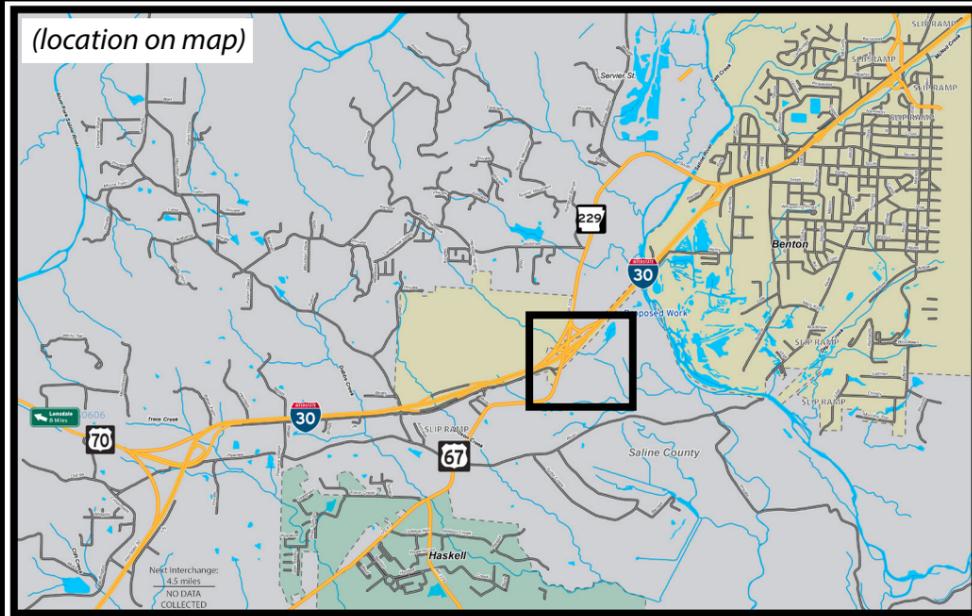
(AM/PM) Traffic Counts with development
 [AM/PM] Traffic Counts without development
 (AM/PM) Truck Percent
 Peak Hour: 7:15AM-8:15 AM and 4:30 PM-5:30 PM

*Baseline Growth Rates do not include Development
 (N/A): Counts not forecasted - Minimal Usage on Ramp

February 2014

EXHIBIT 7.3

CA0601 - I-30 Widening Highway 70 to Sevier Street Opening Year 2018 Traffic Forecast



(Volumes may not balance due to rounding)

- Legend**
- 48-hour counts
 - 24-hour counts
 - A** Mainline Count
 - B** Turning movement count
 - C** Ramp count

(AM/PM) Traffic Counts with development
 [AM/PM] Traffic Counts without development
 (AM/PM) Truck Percent
 Peak Hour: 7:15AM-8:15 AM and 4:30 PM-5:30 PM

*Baseline Growth Rates do not include Development



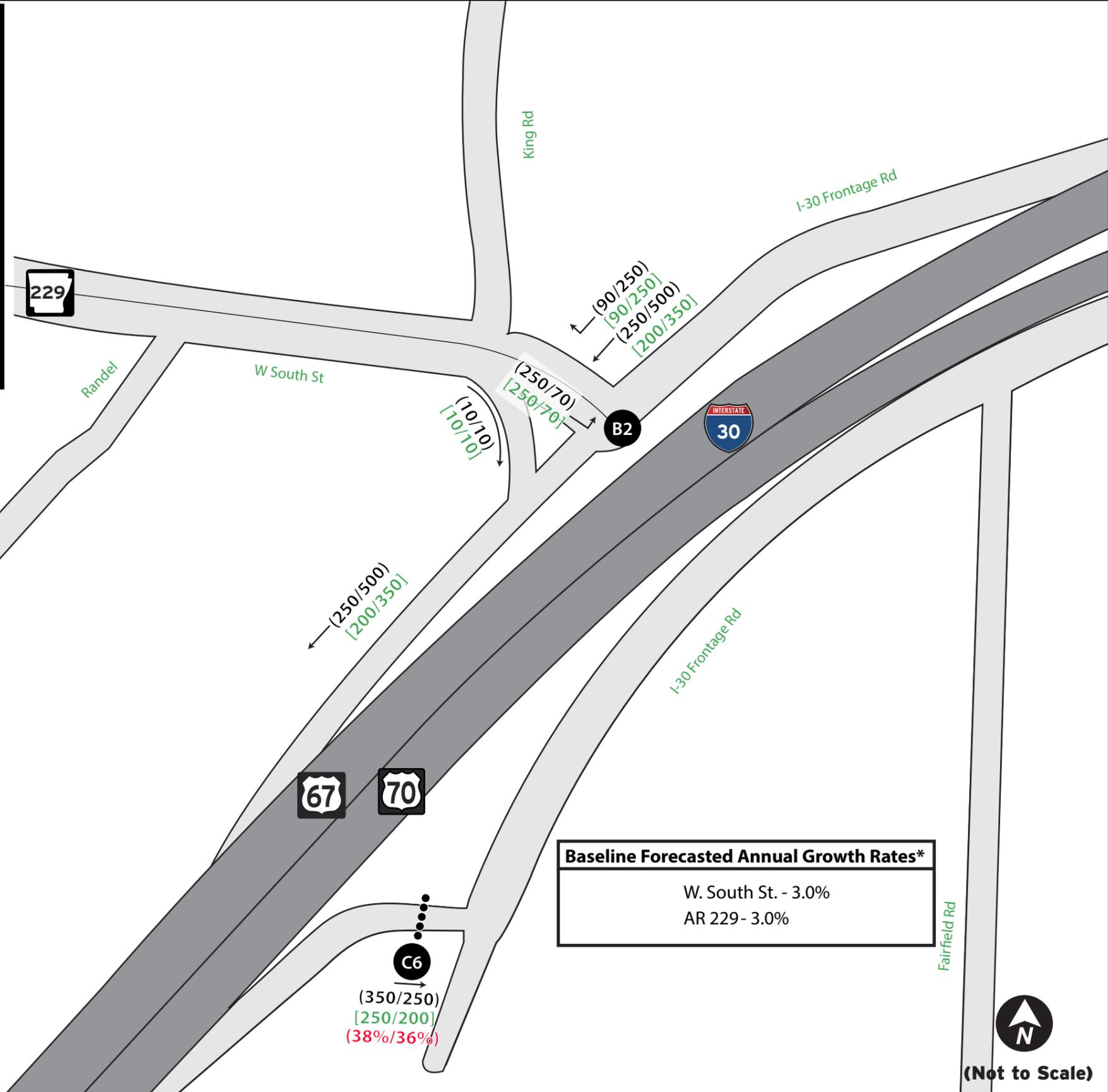
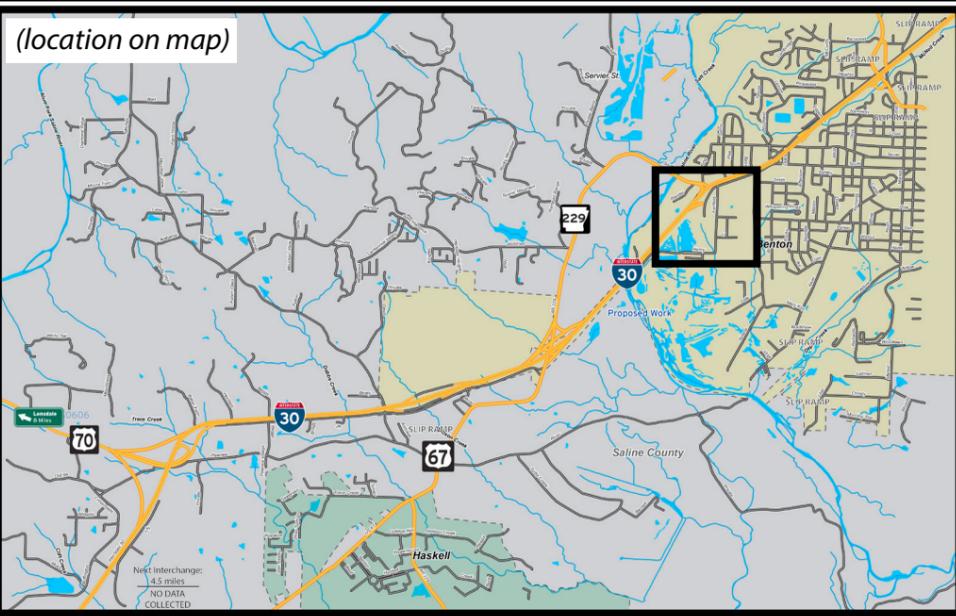
(Not to Scale)



February 2014

EXHIBIT 7.4

CA0601 - I-30 Widening Highway 70 to Sevier Street Opening Year 2018 Traffic Forecast



Baseline Forecasted Annual Growth Rates*	
W. South St.	- 3.0%
AR 229-	- 3.0%

(Volumes may not balance due to rounding)



Legend

- 48-hour counts
- Mainline Count
- Turning movement count
- Ramp count
- 24-hour counts

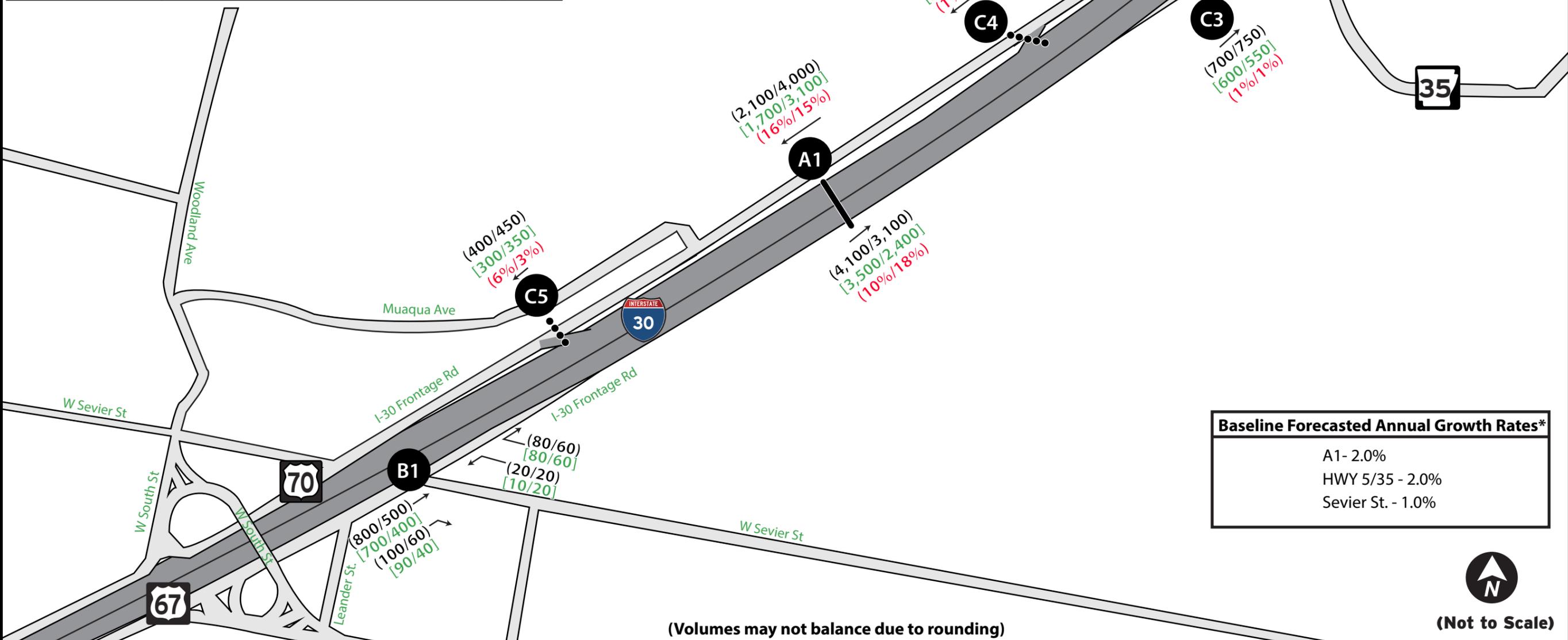
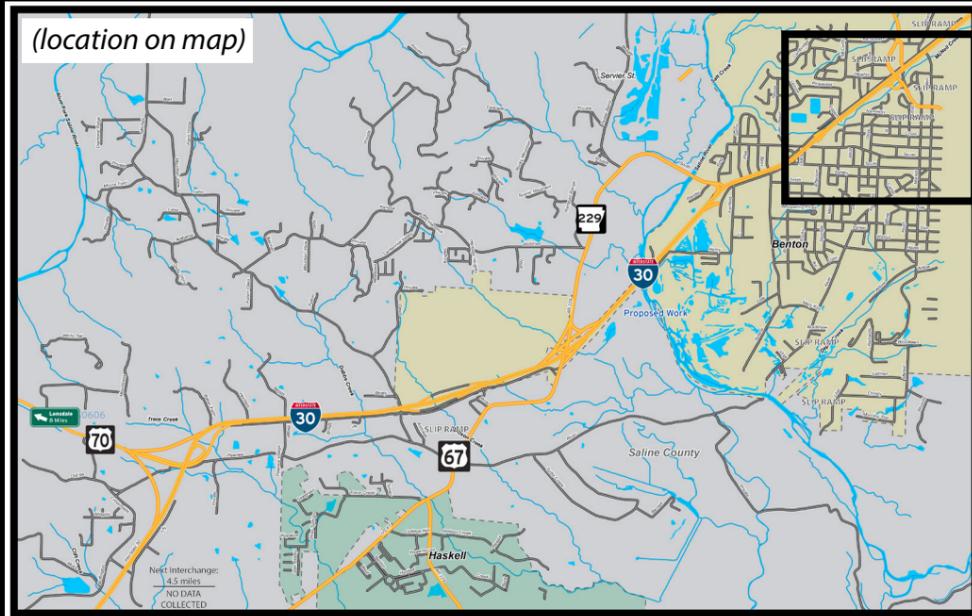
(AM/PM) Traffic Counts with development
[AM/PM] Traffic Counts without development
(AM/PM) Truck Percent
Peak Hour: 7:15AM-8:15 AM and 4:30 PM-5:30 PM

*Baseline Growth Rates do not include Development

February 2014

EXHIBIT 7.5

CA0601 - I-30 Widening Highway 70 to Sevier Street Opening Year 2018 Traffic Forecast



Legend
 — 48-hour counts
 ●●●● 24-hour counts

A Mainline Count
B Turning movement count
C Ramp count

(Volumes may not balance due to rounding)
 (AM/PM) Traffic Counts with development
 [AM/PM] Traffic Counts without development
 (AM/PM) Truck Percent
 Peak Hour: 7:15AM-8:15 AM and 4:30 PM-5:30 PM

*Baseline Growth Rates do not include Development

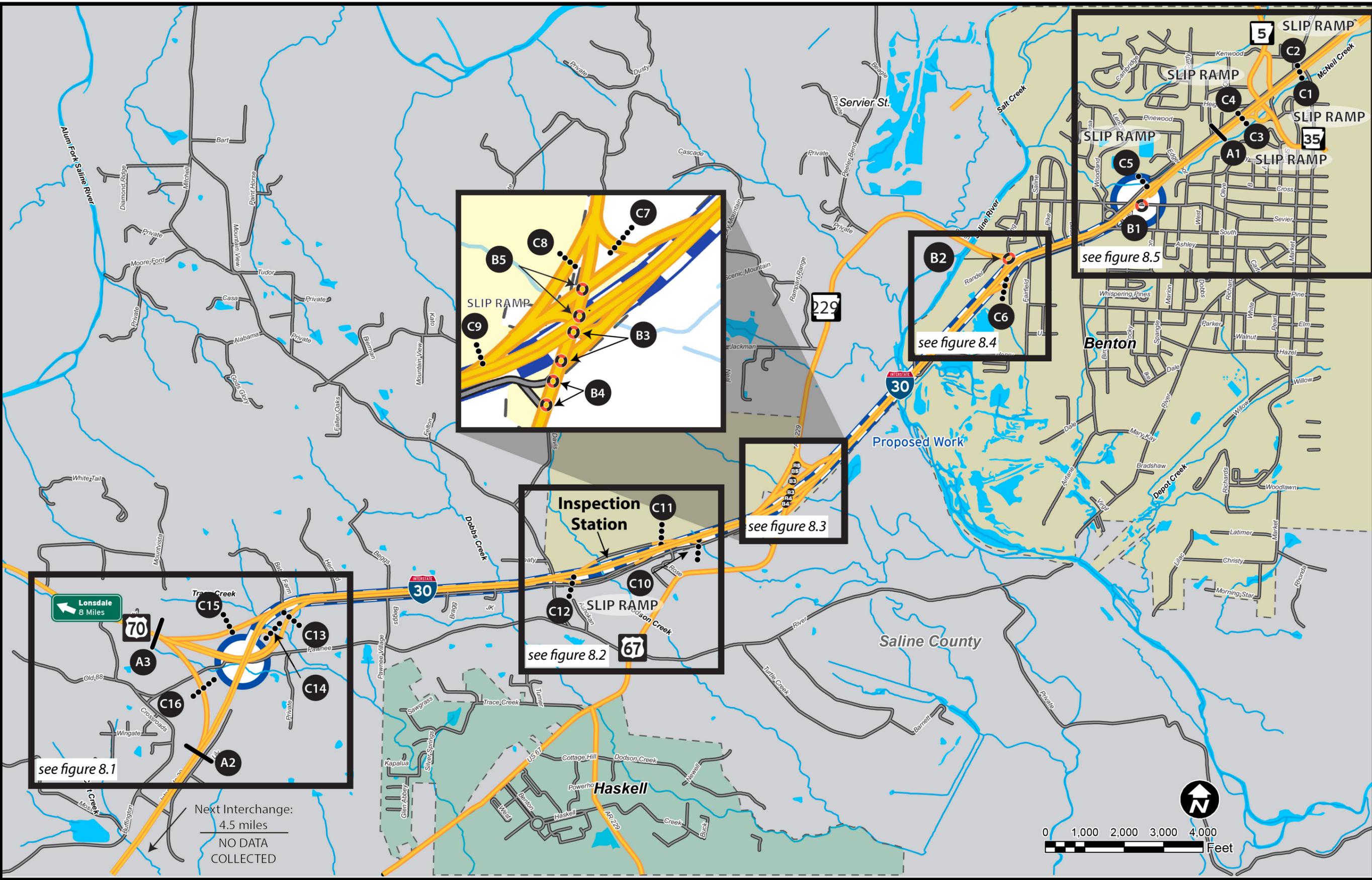


(Not to Scale)



February 2014

**CA0601 - I-30 Widening
Highway 70 to Sevier Street
Design Year 2038 Traffic Forecast**



see figure 8.1

Next Interchange:
4.5 miles
NO DATA
COLLECTED

see figure 8.2

see figure 8.3

see figure 8.4

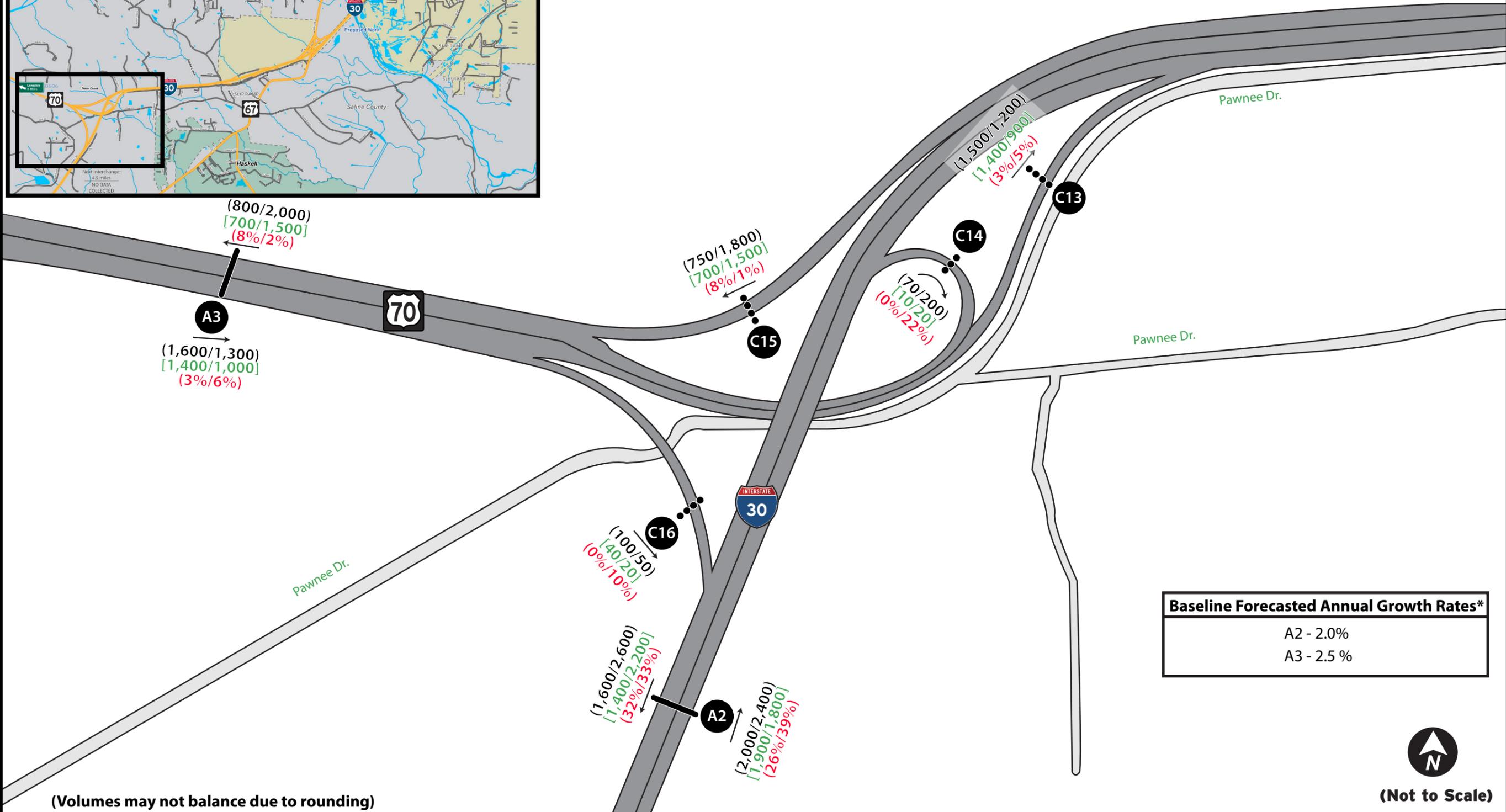
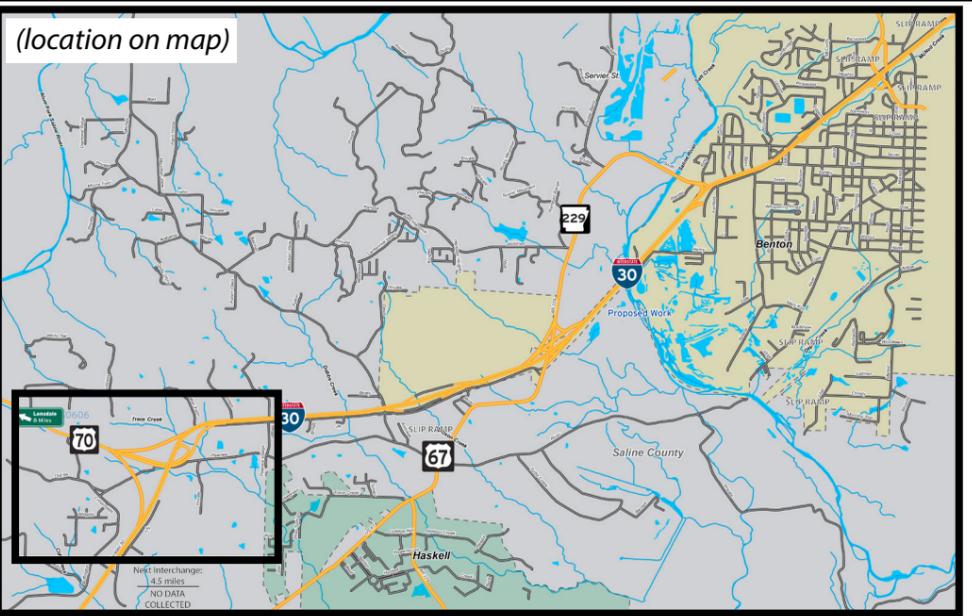
see figure 8.5

- Legend**
- 48-hour counts
 - 24-hour counts
 - Turning movement locations (including 24-hour inbound/outbound counts)
 - Count Location
 - Project Limits

February 2014

EXHIBIT 8.1

CA0601 - I-30 Widening Highway 70 to Sevier Street Design Year 2038 Traffic Forecast



- Legend**
- 48-hour counts
 - 24-hour counts
 - Ⓐ Mainline Count
 - Ⓑ Turning movement count
 - Ⓒ Ramp count

(AM/PM) Traffic Counts with development
 [AM/PM] Traffic Counts without development
 (AM/PM) Truck Percent
 Peak Hour: 7:15AM-8:15 AM and 4:30 PM-5:30 PM

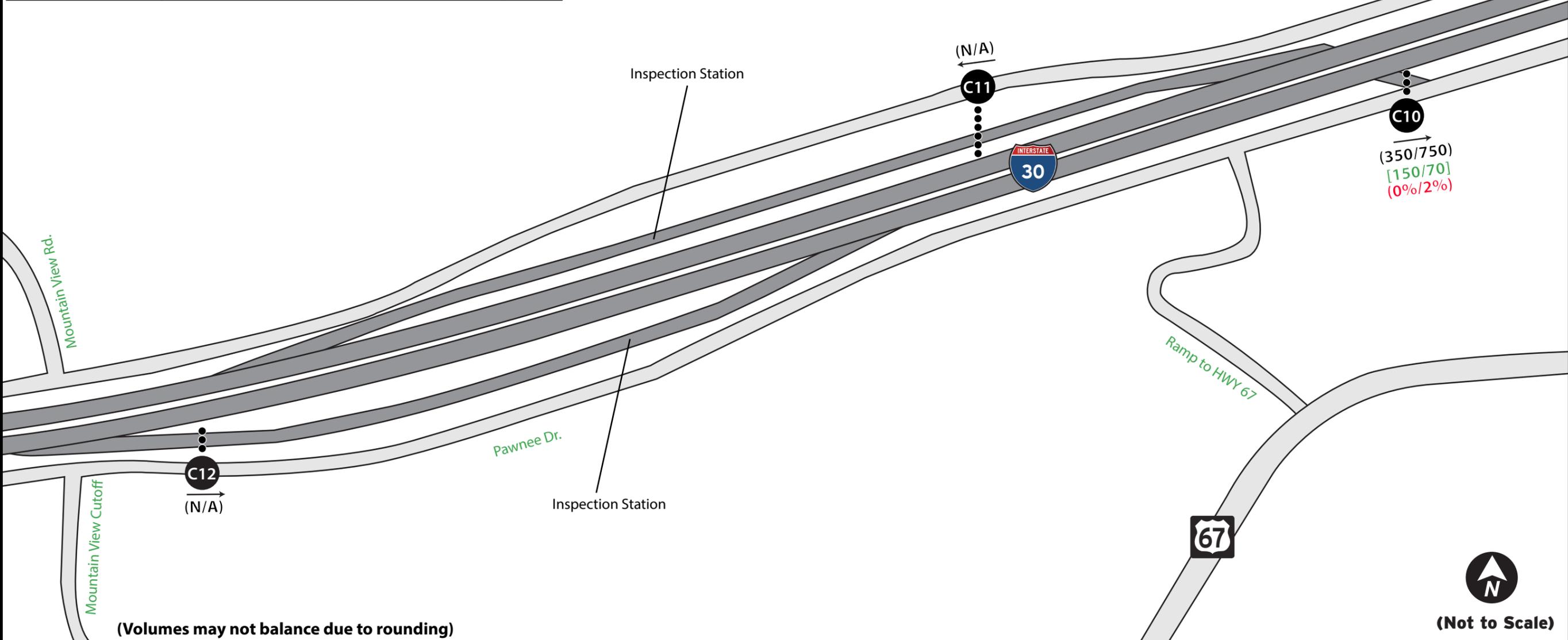
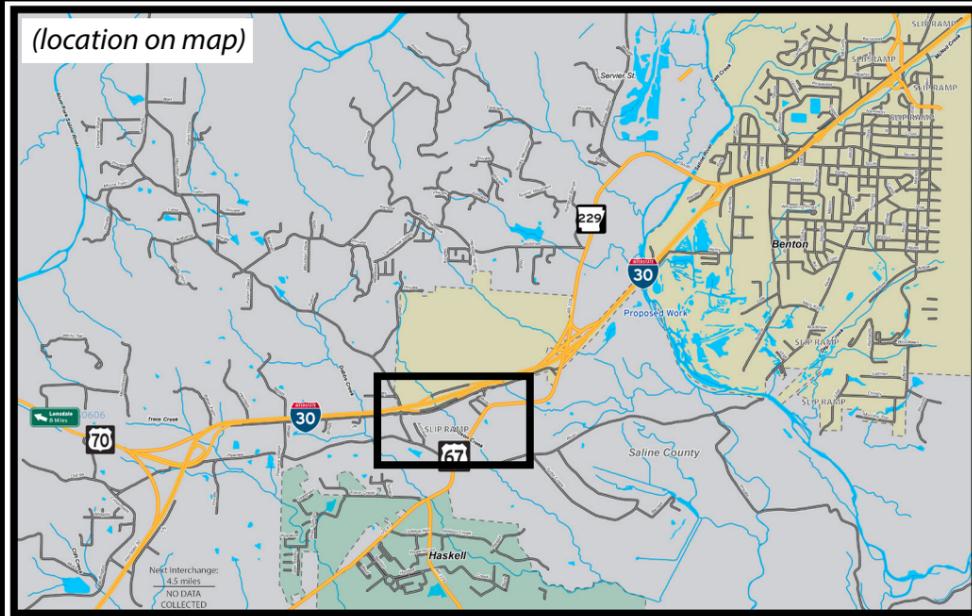
*Baseline Growth Rates do not include Development



February 2014

EXHIBIT 8.2

CA0601 - I-30 Widening Highway 70 to Sevier Street Design Year 2038 Traffic Forecast



Legend

- 48-hour counts
- 24-hour counts

- A** Mainline Count
- B** Turning movement count
- C** Ramp count

(AM/PM) Traffic Counts with development
 [AM/PM] Traffic Counts without development
 (AM/PM) Truck Percent
 Peak Hour: 7:15AM-8:15 AM and 4:30 PM-5:30 PM

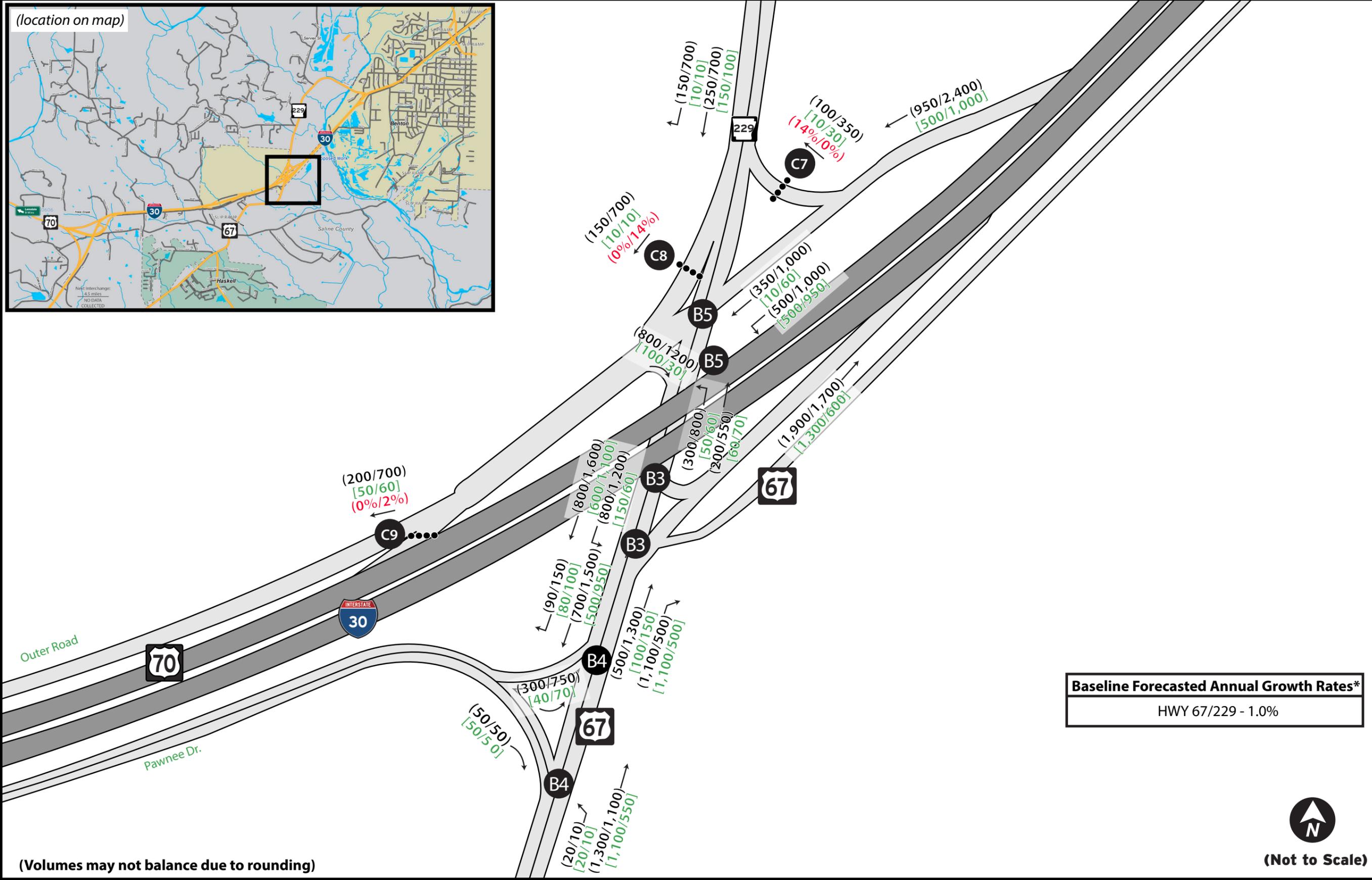
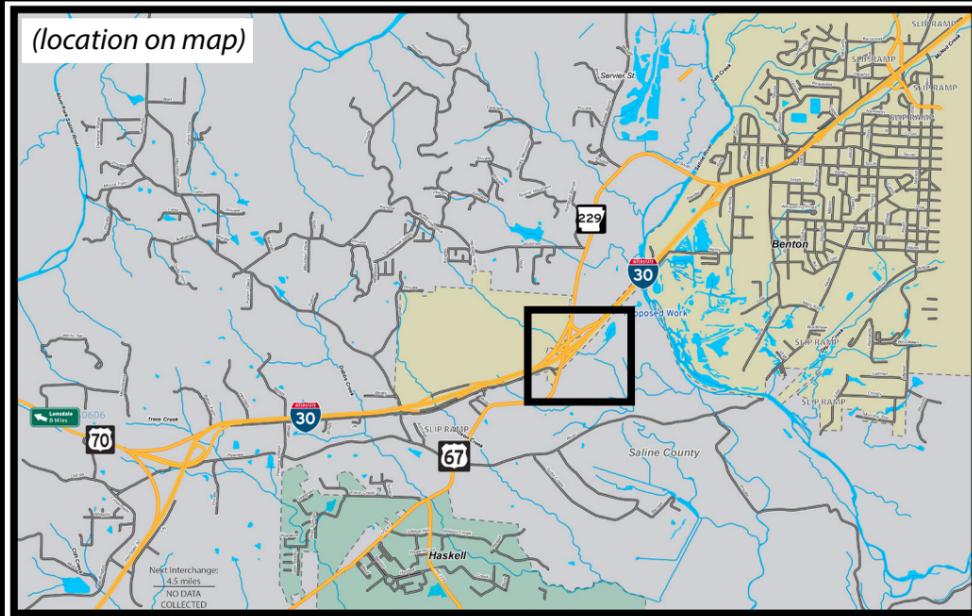
*Baseline Growth Rates do not include Development
 (N/A): Counts not forecasted - Minimal Usage on Ramp



February 2014

EXHIBIT 8.3

CA0601 - I-30 Widening Highway 70 to Sevier Street Design Year 2038 Traffic Forecast



(Volumes may not balance due to rounding)

Legend	— 48-hour counts	● Mainline Count	(AM/PM) Traffic Counts with development	*Baseline Growth Rates do not include Development
	●●●● 24-hour counts	● Turning movement count	[AM/PM] Traffic Counts without development	
		● Ramp count	(AM/PM) Truck Percent	
			Peak Hour: 7:15AM-8:15 AM and 4:30 PM-5:30 PM	



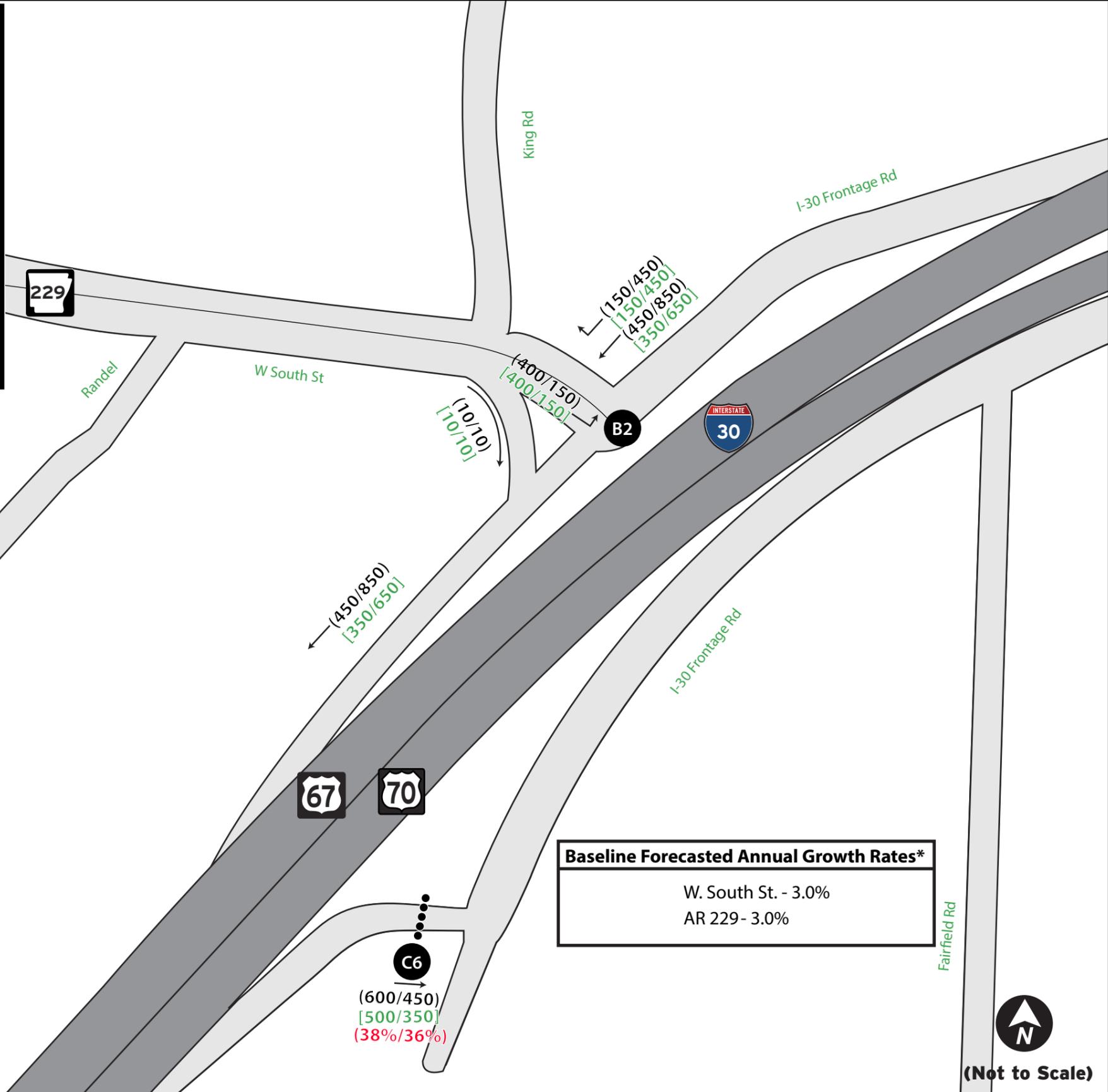
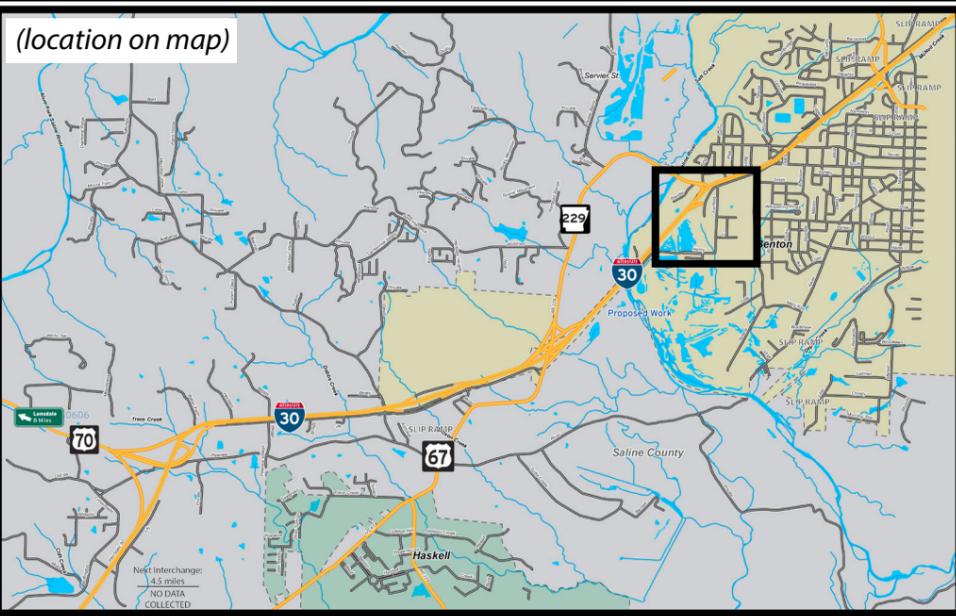
(Not to Scale)



February 2014

EXHIBIT 8.4

CA0601 - I-30 Widening Highway 70 to Sevier Street Design Year 2038 Traffic Forecast



(Volumes may not balance due to rounding)

Legend

- 48-hour counts
- 24-hour counts
- A** Mainline Count
- B** Turning movement count
- C** Ramp count

(AM/PM) Traffic Counts with development
[AM/PM] Traffic Counts without development
(AM/PM) Truck Percent
Peak Hour: 7:15AM-8:15 AM and 4:30 PM-5:30 PM

*Baseline Growth Rates do not include Development



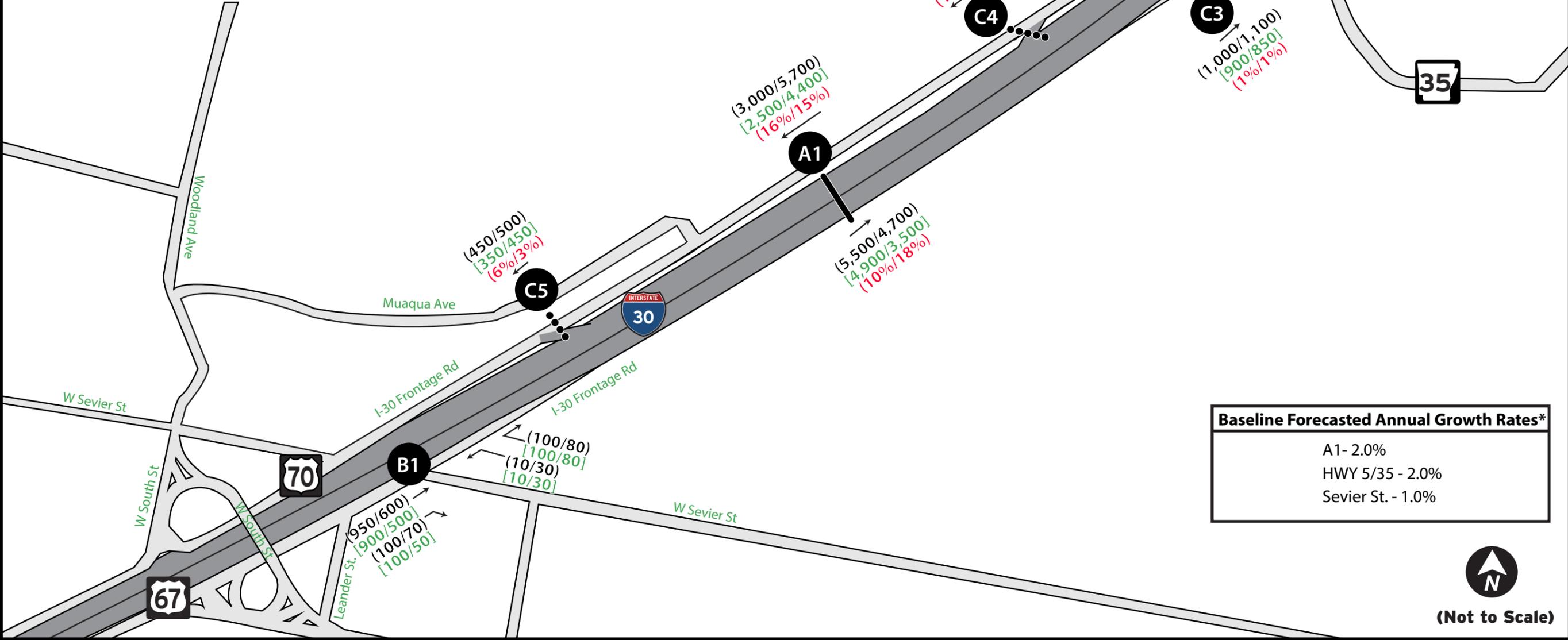
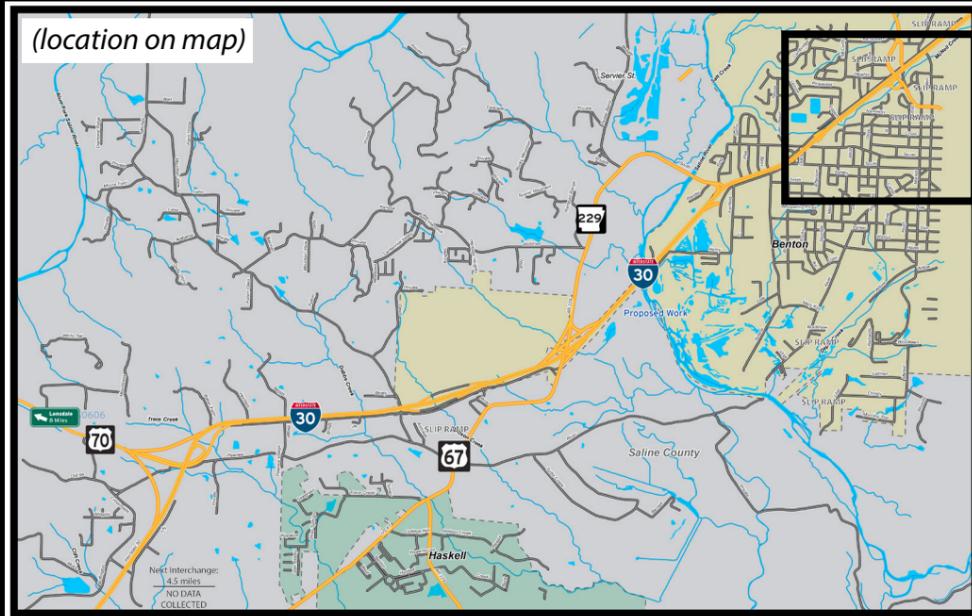
(Not to Scale)



February 2014

EXHIBIT 8.5

CA0601 - I-30 Widening Highway 70 to Sevier Street Design Year 2038 Traffic Forecast



Baseline Forecasted Annual Growth Rates*	
A1 -	2.0%
HWY 5/35 -	2.0%
Sevier St. -	1.0%



(Not to Scale)

Legend

- 48-hour counts
- 24-hour counts
- A** Mainline Count
- B** Turning movement count
- C** Ramp count

(AM/PM) Traffic Counts with development
 [AM/PM] Traffic Counts without development
 (AM/PM) Truck Percent
 Peak Hour: 7:15AM-8:15 AM and 4:30 PM-5:30 PM

*Baseline Growth Rates do not include Development



February 2014

CHAPTER 6

EQUIVALENT SINGLE AXLE LOAD FORECAST

The following section outlines the equivalent single axle load forecast (ESALs) for the CA0601 – I-30, Highway 70 to Sevier Street (Widening) (S) project. To calculate the ESALs the following information was used:

1. Projected ADT and Truck % based on 2016 letting year and 2036 design year forecast
2. Roadway inventory code
3. Cross reference with functional class table to get correct table # to put in ESAL calculation excel sheet.
4. Enter data in 18keals_2000.xls worksheet

Table 3 includes a summary of the data needed to calculate the project ESALs with special generator development traffic included, as defined in the Truth-in-Data Principle Section, and Table 4 represents ESAL data without special generator development traffic. Project ESAL information is located in the electronic Appendix. I-30 mainline, southwest of Sevier Street, where EASL data is provided, was chosen because it is within the project limits. Whereas, count locations A1, A2 and A3 are outside of the project limits.

Table 3
ESAL Summary Data with Development

	I-30 Mainline Southwest of Sevier Street	Hwy. 67/Hwy. 229 at I-30 Interchange	I-30 Frontage Road at Hwy. 229
Projected (2016) Letting Year ADT	79,000	8,200	3,100
Projected (2036) Letting Year + 20 Year ADT	127,000	20,000	6,000
Projected T%	17%	3%	30%
Functional class	11/12, Urban Interstate & Expressway	06, All Rural Minor Arterials	14, All Urban Principal Arterials
Table number	6	48	46
SN and/or D ^a	SN6 or Between D12 and D13	Between SN4 and SN5	Between SN5 and SN6

^a Structural Number (SN) is the function of layer coefficients based upon material types and layer thicknesses. Depth (D), in inches, as determined by the structural number and coefficient of the material type used.

^b Consultant to perform Structural Number calculation based on geotechnical report.

Table 4
ESAL Summary Data without Development

	I-30 Mainline Southwest of Sevier Street	Hwy. 67/Hwy. 229 at I-30 Interchange	I-30 Frontage Road at Hwy. 229
Projected (2016) Letting Year ADT	69,000 ^c	7,400	3,000
Projected (2036) Letting Year + 20 Year ADT	102,000 ^c	9,100	5,500
Projected T%	17%	3%	30%
Functional class	11/12, Urban Interstate & Expressway	06, All Rural Minor Arterials	14, All Urban Principal Arterials
Table number	6	48	46
SN and/or D ^a	SN6 or Between D11 and D12	Between SN4 and SN5	Between SN5 and SN6

^a Structural Number (SN) is the function of layer coefficients based upon material types and layer thicknesses. Depth (D), in inches, as determined by the structural number and coefficient of the material type used.

^b Consultant to perform Structural Number calculation based on geotechnical report.

^c Numbers may not match Figure 4 due to balancing and rounding

APPENDIX

Electronic Appendix of Data Submitted to AHTD

1. Base Traffic Counts
2. ESAL Calculations
3. Forecast Data Spreadsheets
4. Synchro Files