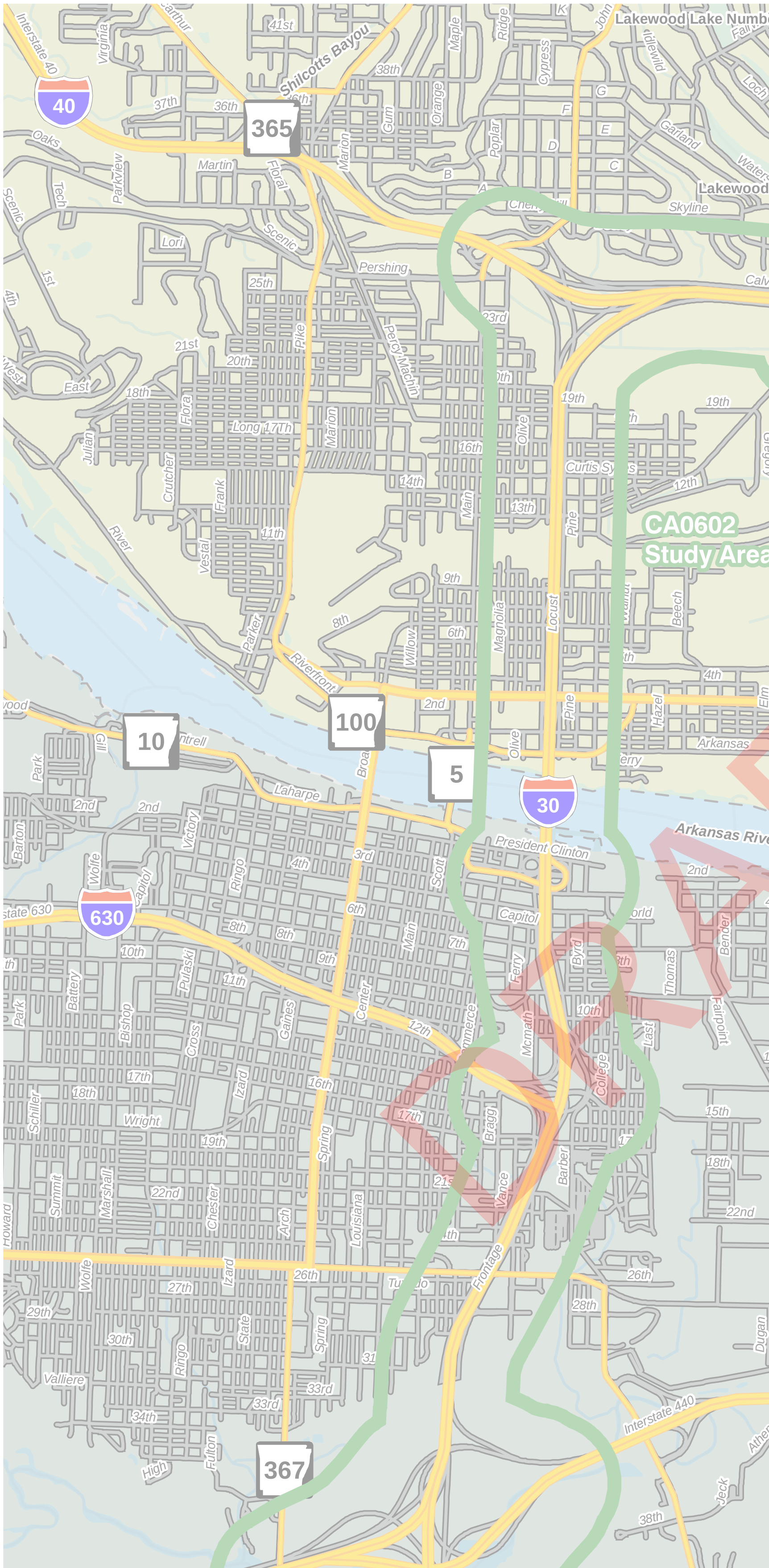

PLANNING AND ENVIRONMENTAL LINKAGES PURPOSE AND NEED TECHNICAL REPORT

INTERSTATE
30

CA0602

Interstate 530 – Highway 67

November 2014

CONNECTING ARKANSAS PROGRAM
CAP

Arkansas State Highway & Transportation Department

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
AHTD

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1.0 INTRODUCTION

This document provides background information and data to support the purpose and need for improvements along I-30 from I-530 to I-40 and along I-40 from the I-30/I-40 interchange to United States Highway 67/167 (Hwy. 67/167). Data and analysis from previous studies, as well as an assessment of current and future conditions, are provided to assist in defining the key problems and potential solutions to address future mobility needs within the study area. The purpose and need discussed in this document is part of the Planning and Environmental Linkages (PEL) Study process.

2.0 BACKGROUND

2.1 I-30 PEL Study Area

The proposed I-30 PEL study area is located in central Arkansas, and stretches approximately 6.7 miles through Little Rock and North Little Rock. The study area begins at I-530 in the south, extends to I-40 in the north, and then east along I-40 to its interchange with Hwy. 67/167 in North Little Rock, as detailed in **Attachment A-1**.

2.2 Previous Studies and Planning Context

A number of studies have been completed that provide background on the study area. The most recent and relevant to the study area is the *Central Arkansas Regional Transportation Study Areawide Freeway Study, Phase 1 Arkansas River Crossing Study* from 2003. Other past relevant studies, summarized in **Attachment A-2,** include:

- Central Arkansas Regional Transportation Study (CARTS), Areawide Freeway Study, Phase 1 Arkansas River Crossing Study Final Report and Phase 2 Areawide Study, 2003;
- River Rail Airport Study, Phase 2 Final Report, 2011;
- I-630 Fixed Guideway Alignment Study, 2010;
- The Six Bridges Framework Plan 6 Bridges Study, late 1990s; and
- I-630 (from I-430 to I-30) Final Environmental Impact Statement (FEIS), 1978.

2.3 Regional Planning Context

Metroplan, the Metropolitan Planning Organization (MPO) for central Arkansas is responsible for long-range transportation planning for central Arkansas. The most recently approved long range metropolitan transportation plan (LRMTP) is *METRO 2030.2*, adopted March 24, 2010. The MPO policy on freeway system capacity improvements, as reflected in *METRO 2030.2* and other policy documents, is to build the regional freeway system to six through lanes and to meet demand over that capacity with a robust regional arterial network and public transit. The strategy behind the policy, is to use finite resources to achieve transportation system balance once the regional freeway network is built out to six through lanes. *METRO 2030.2* does identify the interstate-to-interstate/highway interchanges at I-40/Hwy. 67/Hwy. 167, I-40/I-30 and I-30/I-530/I-440 as in need of reconstruction to add capacity and improve safety. It also mentions the segment of I-30 between the North Terminal (I-30/I-40 interchange) and South Terminal (I-30/I-530/I-440 interchange) as needing study because of the very high number of interstate-to-interstate/highway interchanges and interstate/highway-to-arterial interchanges in those five miles of interstate. A description of planned improvements within the study area as well as how the proposed PEL study relates to the LRMTP is presented in **Attachment A-3**. Metroplan's *Policy on Freeways and Expressways* is presented in **Attachment A-4**.

With a view towards achieving consistency with local and regional planning efforts, it is anticipated that the PEL process and its subsequent recommendations will be submitted to the MPO to inform future updates/amendments to the LRMTP financially constrained plan and to the CARTS Transportation Improvement Program (TIP), as well as to the Arkansas State Highway and Transportation Department (AHTD) to inform future Statewide Transportation Improvement Program (STIP) updates/amendments. Additionally, the PEL process and associated documents will be developed in accordance with the CARTS Agreement of Understanding between Metroplan and the local jurisdictions and transit authorities, which is included in **Attachment A-5**.

3.0 NEED FOR IMPROVEMENTS IN THE PEL STUDY AREA

The following sections provide a summary of the current and future conditions in and around the study area which support the need for improvements to the I-30 corridor, with additional supporting data provided in the referenced appendices. These needs include:

- Traffic Congestion (**Section 3.1**);
- Roadway Safety Issues (**Section 3.2**);
- Roadway Structural and Functional Deficiencies (**Section 3.3**)
- Navigational Safety Issues (**Section 3.4**)
- Structural and Functional Bridge Deficiencies (**Section 3.5**).

3.1 Traffic Congestion

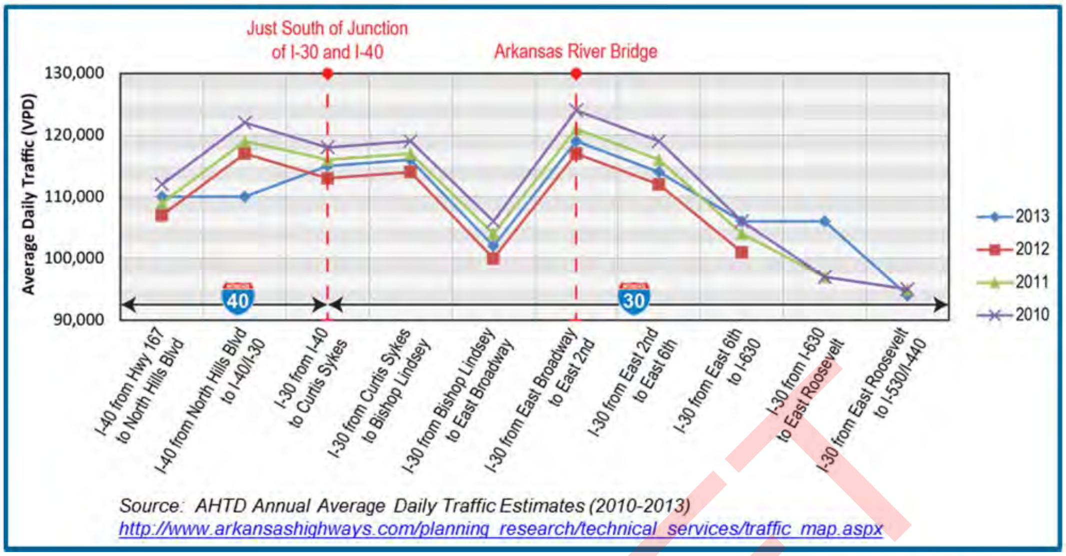
Traffic was analyzed along I-30 and I-40, with the I-30 limits extending from the I-30/I-530/I-440 interchange to the south to the I-30/I-40 interchange to the north; and the I-40 limits extending from the I-30/I-40 interchange to the west to the I-40/Hwy. 67/Hwy. 167 interchange to the east.

3.1.1 Traffic Demand

I-30 and I-40 within Little Rock and North Rock are the heaviest traveled roads in Arkansas, with I-30 principally serving local access to Little Rock and North Little Rock (including I-630) and I-40 serving a mix of through and local trips. I-30 and I-40 connect six interstates within the Little Rock and North Little Rock metropolitan area (I-40 northwest, I-40 northeast, I-630, I-30 southwest, I-530 and I-440) to the larger region. Metroplan maintains the regional travel demand model, which is a tool that forecasts traffic demand and travel characteristics based on future land use assumptions developed by the community.

Daily traffic demand along I-30/I-40 is depicted in **Figure 1.** In order to ensure that the trends are typical, multiple years of data (2010 - 2013) from AHTD were included in the traffic demand analysis. As shown in **Figure 1**, 2013 traffic volumes on I-30/I-40 range from 94,000 to 119,000 daily vehicles. As expected, the I-30 Bridge has the highest volume at 119,000 daily vehicles.

Figure 1. I-30/I-40 Annual Average Daily Traffic by Location (2010 – 2013)



3.1.2 Capacity and Traffic Operations

Motorist mobility and traffic operation problems were based on stakeholder and public input, field observations and technical analysis.

Stakeholder input was obtained via interviews conducted with staff from the Cities of Little Rock and North Little Rock, Metroplan and AHTD in May 2014; and public input was obtained through public meetings held on August 12th and 14th of 2014 in North Little Rock and Little Rock, respectively. Field observations were conducted in the I-30/I-40 study area by driving during the morning and afternoon peak periods in May 2014. A summary of stakeholder and public input, as well as field observations are provided in the adjacent inset boxes. A more comprehensive listing of stakeholder input and field observations are presented in **Attachments B-2** and **B-3** respectively; and feedback obtained from the public meetings is presented in **Attachment A-6**.

Stakeholder & Public Input

Stakeholder and Public Input

- *Weaving problems*
- *Peak hour mainline congestion*
- *Congestion on some arterial roadways*
- *Short ramp and acceleration/deceleration lanes*
- *Substandard interchanges*
- *Maintenance problems related to lighting*
- *Too many on-ramps and off–ramps that are spaced too closely together*
- *Heavy pedestrian/vehicle conflict at Cantrell Interchange*
- *Signage/wayfinding improvements needed*
- *Some interchanges do not have full access*
- *Discontinuous frontage roads*
- *Separation of local and through traffic*
- *Reconnect neighborhoods*
- *Reclaim land for both park and economic purposes*
- *Interstate is a barrier to bikes and pedestrians*
- *Other modes of transportation are needed*

Field Observations

Field Observations

- *Most congestion on mainline*
- *Congestion at a few interchange ramp and arterial cross street intersections during peak periods, as observed by long vehicle delays and queues*
- *Consistent congestion on I-30 Bridge during all AM (westbound) and PM (eastbound) peak hour movements*
- *Lanes into Little Rock generally congested in the AM and outbound lanes generally congested in PM*
- *Mainline bottlenecks observed near Curtis Sykes, Broadway, Cantrell/Clinton and I-630 due to ramps backing up onto the I-30 mainline.*

3.1.3 Causes of Congestion

Observed congestion on I-40 is primarily related to 1) the weaving of through traffic on I-40 between I-30 and Hwy. 67, 2) queuing from I-30 that spills onto I-40, 3) traffic demand, and 4) non-recurring congestion such as accidents.

Observed congestion on I-30 is primarily caused by 1) high volume merge/diverge ramps (I-630 and Hwy. 10) and inadequate merge distances, 2) number and location of ramps resulting in high weaving volumes, 3) conflicts between through and local traffic, 4) high traffic volumes that exceed available capacity, and 5) non-recurring congestion such as accidents.

3.1.4 Traffic Analysis

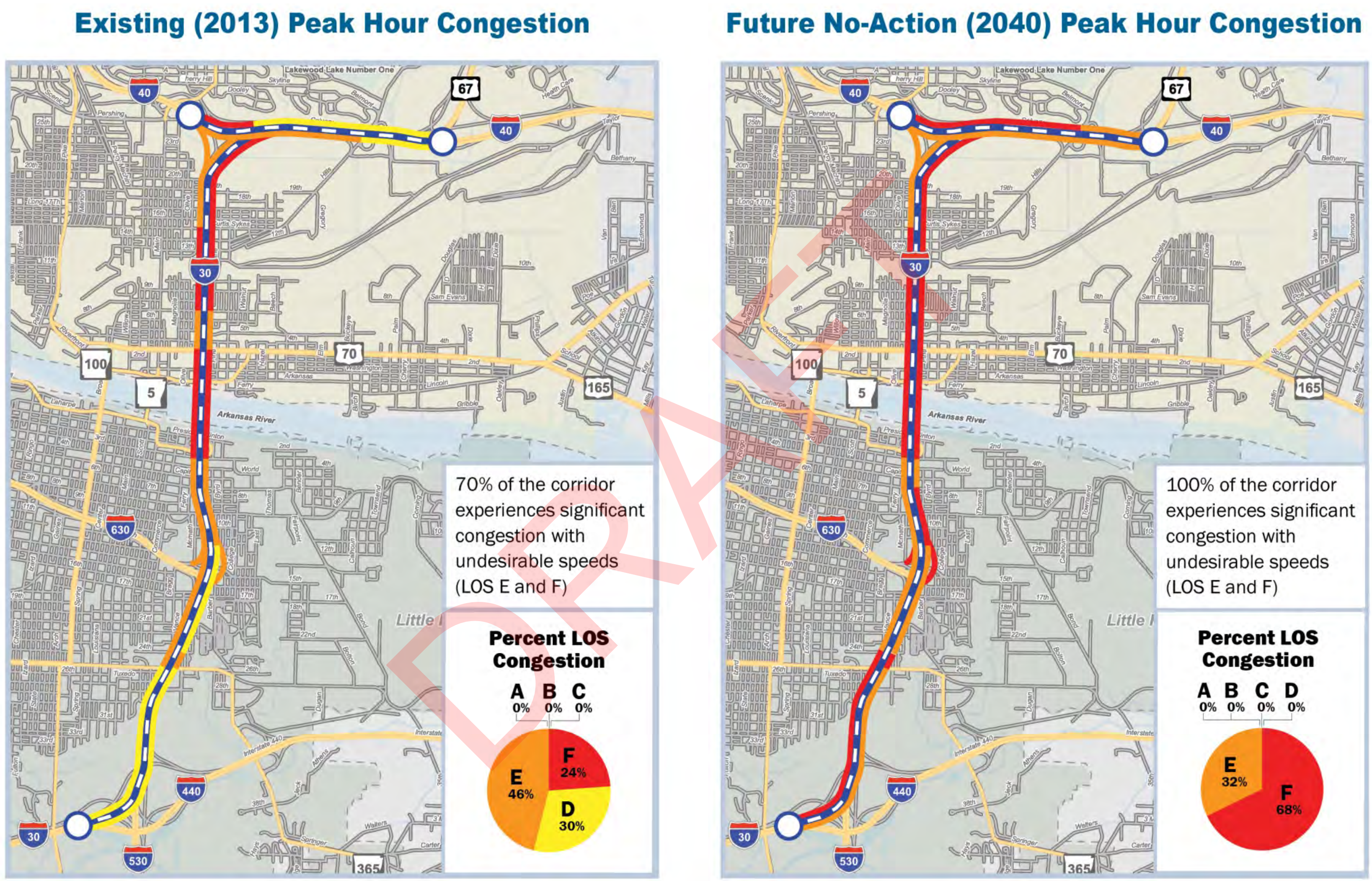
Traffic analysis will include a multi-modal comprehensive analysis of I-30/I-40 mobility and safety and the supporting transportation network for the existing traffic (2013) and projected traffic (2040) using Metroplan's Travel Demand Model (TDM). The traffic analysis will include level of service (LOS) operational analysis of the I-30/I-40 mainlines, ramps, weaving, cross roads, and frontage roads. Other mobility measures will include travel time to key destinations, travel speed, duration of congestion, vehicle miles traveled (VMT), vehicle hours traveled (VHT), and average delay per motorist.

Table 1. LOS Designations

A	**Free Flow Traffic** No Delays
B	**Light/Moderate Traffic** No Delays
C	**Steady Traffic** Minimal Delays
D	**Speeds Begin to Decline** Minimal Delays
E	**Traffic at Capacity** Significant Delays
F	**Heaviest Congestion** Considerable Delays

LOS is a standard Federal Highway Administration (FHWA) and AHTD measure of traffic flow. LOS is a letter designation that describes the quality of traffic flow on a particular type of roadway. As shown in **Table 1**, LOS is represented by the letters "A" (most favorable) through "F" (least favorable). **Figure 2** presents a summary of the LOS conditions on I-30/I-40. AHTD's desirable design year LOS is D. Under existing conditions, 70 percent of the corridor experiences severe congestion with undesirable speeds (LOS E and F). This percentage increases to 100 percent by 2040 under future No-Action conditions. Without improvements, many sections of I-30 are anticipated to operate under 20 miles per hour (mph) during peak periods. A more detailed breakdown of existing (2013) and future (2040) LOS is presented in **Attachment B-4**. As previously described, the traffic analysis will involve measures of mobility other than LOS, to be completed during subsequent phases of the PEL process. As these analyses are completed, they can be incorporated as part of the purpose and need via attachment or addendum, and will be included as part of the I-30 PEL Traffic and Safety Analysis and PEL Final Report.

Figure 2. Comparison of Existing and Future No-Action LOS for I-30/I-40



Notes: Future 2040 traffic demand grown by one percent annually based on historical trends.

3.1.5 Roadway Users

Roadway users are subdivided into 1) those with destinations within the study area, 2) those traveling through the study area, and 3) those traveling to and from I-630. Each of these users has different transportation needs within the corridor, as described below.

1) **Local Access** – Local access trips include those with destinations within the I-30 PEL study area. For local access trips providing a reliable travel time, safe merging opportunities and access to jobs and/or entertainment in Little Rock and North Little Rock is paramount.
2) **Through Trips** – Through trips include those drivers that travel from the North Terminal to the South Terminal interchanges. For through trips, congestion is related to slower travel speeds and conflicts that are caused by local traffic on I-30.
3) **Travel to/from I-630** - Trips traveling to and from I-630 are interregional trips and likely use I-630 to access downtown Little Rock. These trips are concerned with delay and safe merging and diverging to and from I-30. These drivers would like to minimize conflicts with traffic using local ramps.

The Study Team coordinated with Metroplan using the travel demand model, which determined future 2040 motorist trip characteristics for traffic on I-30 and I-40. **Table 2** shows that a high percent of the traffic using the I-30 corridor accesses local interchanges along I-30 to downtown Little Rock and North Little Rock or uses I-630.[2] When the through traffic on I-40 is removed, only a small number of trips use I-30 for through traffic. The table does not include local interchange to local interchange trips, but these trip patterns are expected to be low.

Table 2. I-30 Estimated Daily Trip Characteristics in 2040[1, 2]

Trip Type	I-30	From I-40 WB
Local Access	45%	71%
Through Trips[3]	17%	4%
Travel to I-630	38%	25%
Total Trips	**100%[4]**	**100%[4]**

Notes: [1]Metroplan 2040 Travel Demand Model; [2] Figures B-1 through B-1c in Attachment B-1 further illustrate trip characteristics along I-30. [3]Through trips are vehicle trips that start and end outside the PEL study limits (External trips are considered vehicle trips that are outside the PEL study limits); [4]Does not include local to local trips.

Details outlining the regional significance of I-30 are presented in **Attachment B-1**.

3.2 Roadway Safety

3.2.1 Existing Conditions

Crashes from 2010, 2011, and 2012 (the latest three years of available data) were reviewed along I-30 from the I-30/I-530/I-440 interchange to the south to the I-40/Hwy.

[2] Source: Metroplan 2040 Travel Demand Model.

107/JFK Boulevard interchange to the north; and along I-40 to just east of the I-40/Hwy. 67/Hwy. 167 interchange. Of the total crashes from 2010 – 2012, approximately 1/3 occurred during the PM peak period from 3:30 PM – 6:00 PM, 1/3 occurred during the daytime hours from 8:30 AM – 3:30 PM; and the remaining 1/3 occurred either during the AM peak period from 6:30 AM – 8:30 AM or during the nighttime hours from 6:00 PM to 6:30 AM. Crash rates were calculated for total collisions (all severity types) as well as fatal (K) and serious injury (A) collisions (KA Crash Rate). A detailed breakdown of the safety analysis is presented in **Attachment C-1** and a summary of the results is presented in **Table 3.**

Table 3. Crash Numbers and Rates along I-30/I-40

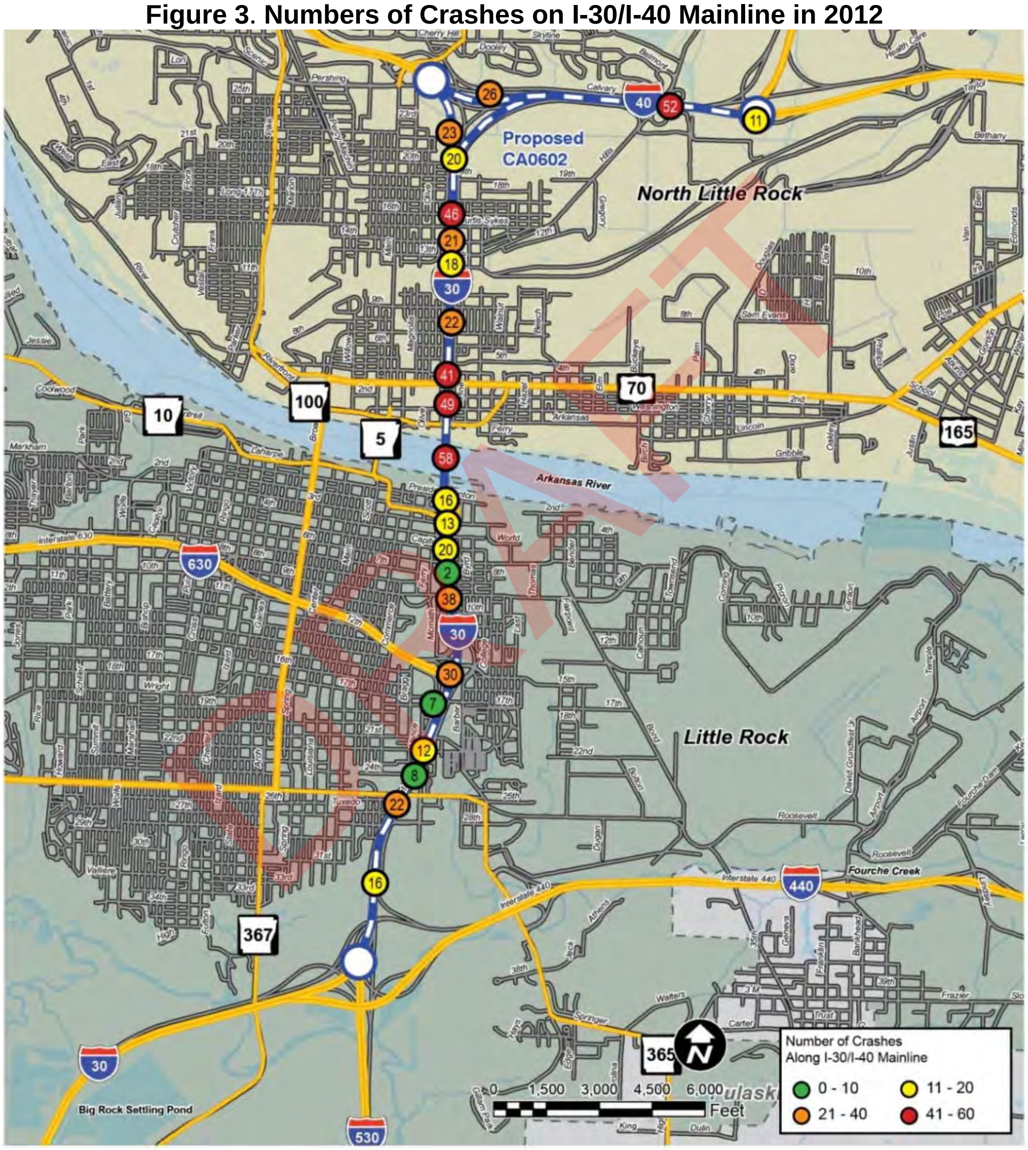
Year	# Crashes		Crash Rate per MVMT [1]		Arkansas Average Crash Rate for 6-lane Urban Interstates		Conclusions
	All Severity Types	KA [2]	All Severity Types	KA	All Severity Types	KA	
I-30 from I-530/I-440 to I-630							
2010	99	8	2.19	0.18	1.53	0.06	Total crash rates (all severity types) were slightly higher compared to other 6 or more-lane urban interstates in Arkansas. KA crash rates were generally higher than the statewide average.
2011	62	2	1.37	0.04	1.22	0.06	
2012	64	6	1.42	0.13	0.95	0.05	
I-30 from I-630 to I-40							
2010	471	9	4.74	0.09	1.53	0.06	Total crash rates (all severity types) were three to four times higher compared to other 6 or more-lane urban interstates in Arkansas. KA crash rates were also elevated reaching as high as four and a half times the statewide average.
2011	371	21	3.81	0.22	1.22	0.06	
2012	406	14	4.31	0.15	0.95	0.05	
I-40 from I-30 to Hwy. 67/Hwy. 167							
2010	66	3	0.94	0.04	1.53	0.06	Total crash rates (all severity types) were slightly lower compared to other 6 or more-lane urban interstates in Arkansas, though still higher than desired. KA crash rates were slightly higher than the statewide average.
2011	75	7	1.09	0.10	1.22	0.06	
2012	58	6	0.85	0.09	0.95	0.05	

Notes: [1] MVMT = million vehicle miles traveled; [2]KA = fatal (K) and serious injury (A) collisions
Source: AHTD and Arkansas State Police Database

As shown in **Table 3**, both the overall and the KA crash rates are much higher than the Arkansas average crash rate for 6 or more-lane urban interstates. This study area experienced 6 fatal collisions and 70 serious injury collisions from 2010-2012. These crash rates demonstrate a need for improvements along I-30/I-40. Some key locations on I-30/I-40 in the study area exhibited large clusters of crashes over the three year analysis period (2010 – 2012). For example, **Figure 3** shows that in 2012, crashes were particularly concentrated along the I-30 mainline at the following locations (south to north): along I-30 at the I-630 interchange (30 crashes), at 9th Street (38 crashes), on the Arkansas River Bridge (58 crashes), near E. Washington Avenue (49 crashes), at

East Broadway Street (41 crashes), and at Curtis Sykes Drive (46 crashes); and along the I-40 mainline at North Hills Boulevard (52 crashes). Similar crash trends were generally exhibited at these locations in 2010 and 2011, with a particularly high number of crashes experienced in 2010 along the I-30 mainline at E. Broadway Street (80 crashes) and Curtis Sykes Boulevard (76 crashes) in North Little Rock. The number and location of crashes experienced along the I-30/I-40 mainline and cross-streets/ramps within the study area for 2010 - 2012 are graphically depicted in **Attachment C-1.**

Figure 3. Numbers of Crashes on I-30/I-40 Mainline in 2012



The safety analysis also evaluated the locations of only fatal and serious injury (KA) crashes, as detailed in **Attachment C-2**. The segment of I-30 between I-630 and I-40 experienced the most serious injury crashes over the three year analysis period; 43 total serious injury crashes from 2010 – 2012. In regard to fatal crashes, the interchange of I-

40/Hwy. 67/Hwy. 167 experienced two fatal collisions in 2011 and one fatal collision in 2010. All three of these crashes were rear-end type collisions, and two of the three occurred in the westbound direction. Two fatal collisions occurred along I-30 during the three years analyzed: one near 19th Street in 2012 and one at the interchange of I-30 and I-630 in 2010. Both of these collisions involved a single vehicle travelling westbound, and one collision sited alcohol as a contributing factor.

Evaluating collisions by type gives further insight into the reasons that collisions occurred. **Figure 4** depicts the types of crashes experienced along the I-30/I-40 mainline from 2010-2012, the majority of which were rear end collisions followed by sideswipe (same direction) collisions. **Figure 5** shows a similar pattern for KA crashes with rear-end collisions being most predominant. However, the KA crashes showed single vehicle crashes being the second most common followed by sideswipe (same direction) crashes. When evaluating crash severity, the majority of mainline crashes along I-30 and I-40 involved property damage or resulted in minor injuries. Serious injury and fatal crashes accounted for 4.2 percent and 0.4 percent of overall crashes, respectively, from 2010-2012, as shown in **Figure 6**.

Figure 4. I-30/I-40 Main Lane Crash Types (2010-2012)

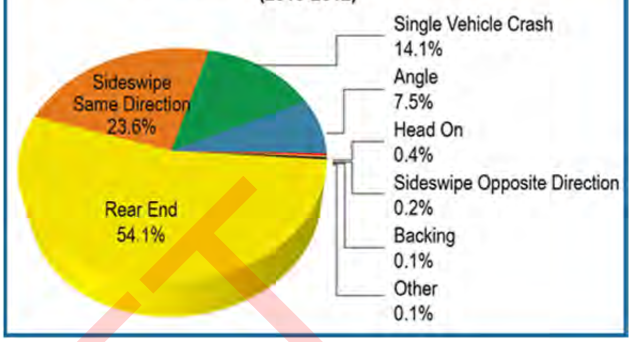


Figure 5. I-30/I-40 Main Lane KA Crash Types (2010-2012)

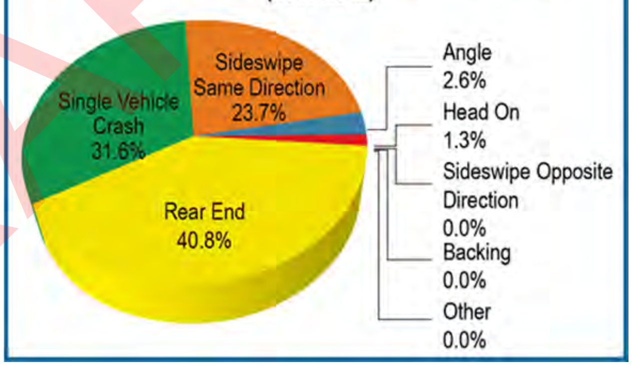
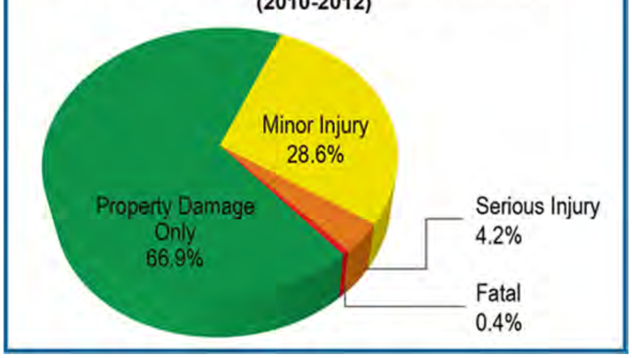


Figure 6. I-30/I-40 Main Lane Crash Severity (2010-2012)



As was demonstrated in **Figure 3**, large clusters of crashes occurred along I-30 north of the river. Accordingly, crashes from the I-30 Arkansas River Bridge to 19th Street were evaluated separately by crash type and KA crash type as shown in **Figures 7** and **8**. As these figures show, this area experienced especially high percentages of rear-end collisions, most likely attributable to congestion. Sudden stops often occur due to slowing traffic and lengthy queues on the mainline, leading to rear-end collisions. Congestion also likely attributes to sideswipe (same direction) collisions, as impatient vehicles switch lanes suddenly or as merging vehicles experience difficulty finding adequate gaps in traffic for safe merging.

Figure 7. I-30 Main Lane Crash Types - Arkansas River Bridge to 19th Street (2010-2012)

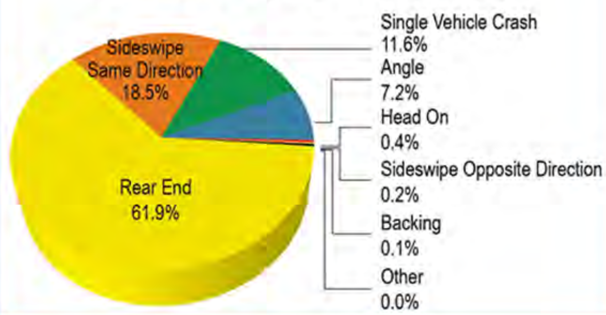
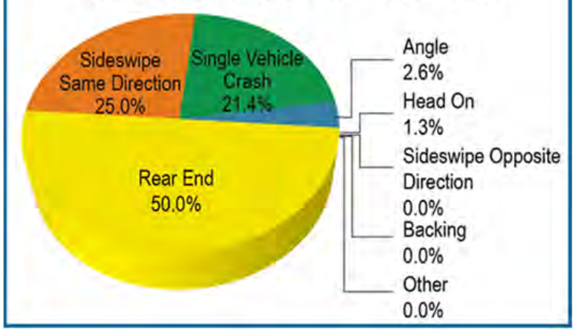


Figure 8. I-30 Main Lane KA Crash Types - Arkansas River Bridge to 19th Street (2010-2012)



Wrong-Way Collisions

Each year, AHTD conducts a review of all wrong-way crashes on freeway systems within Arkansas. The reviews for 2010, 2011, and 2012 were investigated to identify any wrong-way collisions occurring within the study area. Upon investigation, no wrong-way collisions were identified within the study area in 2010. In 2011, one wrong-way collision was reported at the I-30/I-630 interchange. The driver at fault was driving westbound on the I-30 eastbound lanes and caused a sideswipe-opposite direction collision that resulted in property damage only. According to the police report, the driver most likely entered I-30 the wrong way via the Exit 140 off-ramp which connects to a frontage road that provides access to 9th Street and 12th Street. All pavement markings and signs were in place according to the Manual of Uniform Traffic Control Devices (MUTCD)[3] standards, but according to the police report, additional signs were needed and some signs were in need of replacing in order to meet AHTD standards. The collision occurred at night, therefore the unusual geometry of this ramp with the frontage road along with the reduced visibility during the night likely both contributed to this collision. In 2012, a head-on collision occurred in this same location. This driver was intoxicated, and the collision resulted in incapacitating injuries. Upon reinvestigation of this site, all signs and pavement markings were found to be in conformance to MUTCD and AHTD standards at the exit ramp. However, plans were made to increase the size of the *Do Not Enter* sign from 36”x36” to 48”x48” and to install a 54”x18” *One Way* sign on the east side of the road. In addition, plans were made to replace the *Wrong Way* signs prior to the 9th Street and 12th Street intersections to be consistent with AHTD standard sizes and to install a *Wrong Way* sign prior to the 10th Street intersection.

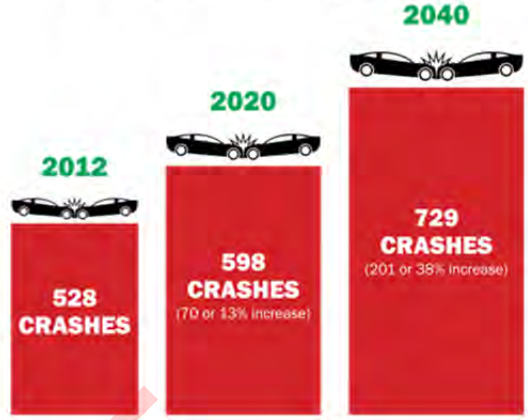
3.2.2 Future No-Action Conditions

To develop the future No-Action conditions, an average crash rate from the 2010-2012 crash data was applied to the projected No-Action traffic volumes. While existing crash rates may not actually remain constant into the future, the existing crash rate was used as a conservative value. Due to vehicle-to-vehicle (V2V) communication technologies

[3] The MUTCD defines the standards used by road managers nationwide to install and maintain traffic control devices on all public streets, highways, bikeways, and private roads open to public traffic. The MUTCD is published by the FHWA under 23 Code of Federal Regulations (CFR), Part 655, Subpart F. Source: http://mutcd.fhwa.dot.gov/

and other safety features in the auto industry, the actual number of crashes could be less than the projection. This analysis assumed that roadway conditions and all other factors would remain the same and that no safety measures would be implemented. In summary, a 13 percent increase in crashes was predicted for 2020 compared to 2012; and a 38 percent increase in crashes was projected by 2040 compared to 2012, as shown in **Figure 9**. Average crash rates and projected numbers of crashes under future No-Action conditions for 2020 and 2040 along I-30/I-40 are further detailed in **Attachment C-1**.

Figure 9. Existing and Projected Number of Annual Crashes along I-30/I-40



In addition to vehicular crashes, pedestrian and bicycle crashes were evaluated from 2001 to 2010, which are summarized below and detailed in **Attachment C-3**:[4]

- High concentration of pedestrian crashes at Broadway Street interchange in North Little Rock and Markham Street interchange in Little Rock (near ramp termination at Cumberland Street);
- Several bicycle crashes at the Curtis Sykes interchange area; and
- Bicycle/pedestrian fatalities: I-630 interchange (one), Broadway Street interchange (one), between the I-30/I-40 interchange and North Hills Boulevard interchange (three); and the Hwy. 67/Hwy. 167 interchange (one).

3.3 Structural and Functional Roadway Deficiencies

3.3.1 Structural Roadway Deficiencies

Pavement Distress (Cracking) along I-30 In Study Area

*Note: Photo also demonstrates inadequate shoulder widths and curb and gutter immediately adjacent to travel lanes (**Section 4.3.2**)*

Cracks are usually the first noticeable sign of pavement deterioration, causing a rough ride and also allowing water to seep into the base beneath the pavement. If cracked pavement is not repaired in a timely manner, water entering the cracks causes the pavement to deteriorate more rapidly, leading to unsafe conditions for the driver.

The 2012 existing surface conditions show moderate to severe levels of cracking along the I-40 and I-30 facilities. Details about the different types of roadway distress experienced along I-30/I-40 are provided in **Attachment C-4**. Portions of I-30/I-40 in the study area will likely require some level of pavement

[4] Source: Metroplan's *CARTS Pedestrian/Bicyclist Crash Analysis* (January 9, 2012). Pedestrian and bicycle crash data obtained from the Arkansas State Police Database.

rehabilitation within the expected timeframe of this project to meet adequate structural performance for the typical 20 year design life utilized for pavement analysis.

3.3.2 Functional Roadway Deficiencies

Functional deficiencies are features that prevent the roadway from handling the normal traffic volume expected of a major highway. Functional deficiencies within the study area include the following, which are illustrated and mapped in **Attachment C-5**:

- 8 locations with curves that do not meet design standards;
- 9 locations with inadequate shoulder widths, including 2 locations where the curb and gutter is immediately adjacent to the travel lanes[5] (see above photo in **Section 3.3.1**);
- 10 ramps lack recommended lane lengths and/or are below standard acceleration/deceleration and taper lengths; and
- 12 locations lack required spacing to safely allow weaving operations between entrance/exit ramps.

*Typically, the desired ramp spacing in an urban area is defined as two ramps per direction per mile. **

*This corridor has 33 ramps in a five mile section – **That is 70% higher than the recommended number.***

** Based on the American Association of State Highway and Transportation Officials' (AASHTO) A Policy on Geometric Design of Highways and Streets (2004)*

Additionally, one major weaving area of concern is located between the I-30/I-40 interchange and the I-40/Hwy. 67/Hwy. 167 interchange. This movement is complicated by the existence of the North Hills Boulevard interchange located within this weaving section, which is less than a mile from the adjacent interchanges.

3.4 Navigational Safety

The I-30 Bridge is one of six bridge structures that cross the McClellan-Kerr Arkansas River Navigation System (MKARNS) within a 1.4 mile stretch of the Arkansas River in the downtown areas of Little Rock and North Little Rock. Having a total length of 445 miles, the MKARNS provides a means for the transportation of commodities from Oklahoma through Arkansas to the Mississippi River. On average, 12 million tons of commodities, valued at $2-3 billion, are transported annually via this economically vital navigation system.[6] A portion of the MKARNS channel, showing the Clinton, I-30, Junction and Main Street Bridges is shown in **Figure 10**.

For bridges crossing a navigation channel, the two most important features are the vertical clearance provided from the water surface to the bottom of the bridge and the horizontal clearance between the bridge piers (vertical supports within the water). The United States Coast Guard (USCG) typically requires vertical and horizontal clearances of 52 feet and 300 feet, respectively for the section of the MKARNS within the study area. Of the six bridges, only the I-30 Bridge fails to meet the typically prescribed 300-

[5] Current design standards recommend that curb and gutter not be placed adjacent to travel lanes on high speed facilities because of potential safety issues, such a vehicle vaulting upward and losing control from hitting the curb.

[6] Valued by the Institute for Water Resources and the National Agricultural Statistics Service; Source: United States Army Corps of Engineers (USACE) Little Rock District.

foot minimum horizontal clearance for the MKARNS within the study area, as illustrated in **Figure 10**.[7]

In addition to the substandard horizontal navigation clearance, the pier configuration of the I-30 Bridge poses an obstruction to river navigation. The five other bridge structures have an open span across the entire navigation channel. However, as shown in **Figure 10**, the I-30 Bridge has a pier within the middle of the channel which divides the channel into two navigation spans as further discussed in **Attachment D-1**. The reduced horizontal clearance and pier obstruction is cumbersome to navigate and restricts the operational speed of the barges. Barge collision data, provided by the USCG, indicates a total of five barge strikes have occurred at the I-30 Bridge site since 2001, with the two most recent of these strikes having occurred since August 2013.[8]

On August 21, 2014, the Arkansas Waterways Commission submitted a letter to the AHTD recommending that the I-30 Bridge pier that divides the navigation channel be removed and a navigation channel of 332 feet be established; and that the vertical clearance of the I-30 Bridge be no lower than the soon-to-be constructed Broadway Bridge (vertical clearance of 62.4 feet). A copy of the Arkansas Waterways Commission letter is provided in **Attachment D-2**.

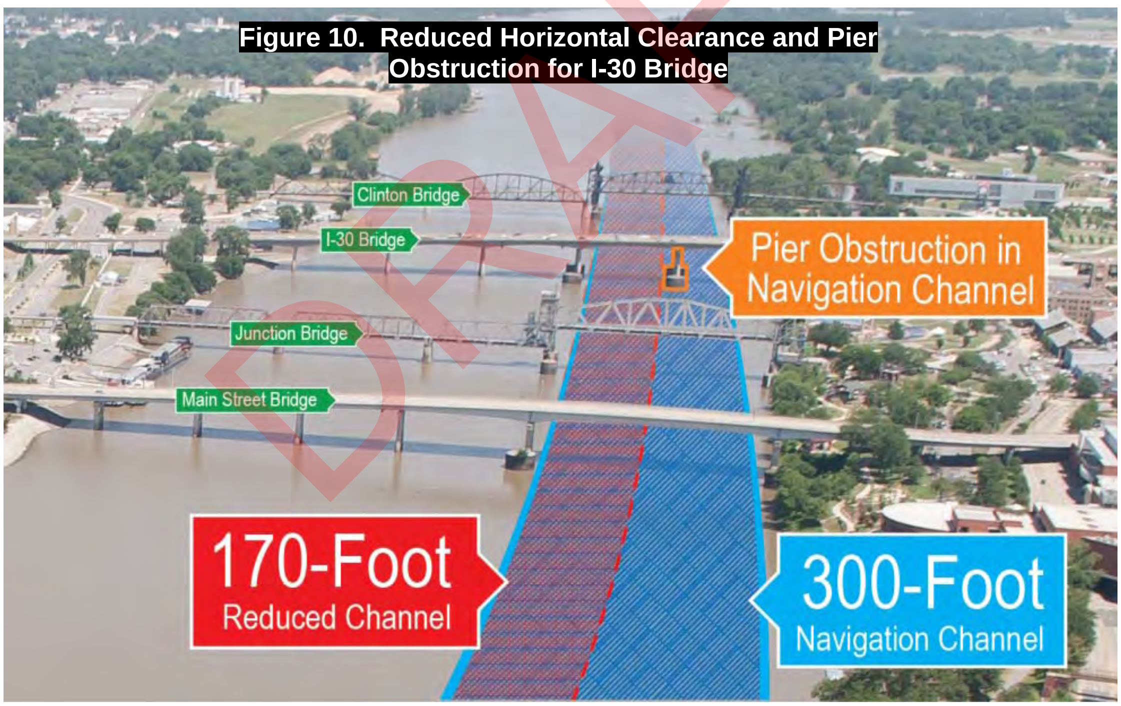


Figure 10. Reduced Horizontal Clearance and Pier Obstruction for I-30 Bridge

[7] All six bridges meet the USCG vertical clearance requirements.
[8] The barge collision data provided by the USCG does not differentiate between a strike on the protection cells and the bridge itself; and therefore, there is no information available to quantify the damage the bridge sustained during each strike.

3.5 Structural and Functional Bridge Deficiencies

3.5.1 Structural Bridge Deficiencies

The 2003 *Arkansas River Crossing Study* rated the I-30 Bridge across the Arkansas River to be in fair condition. As the result of an October 2013 inspection by AHTD, the I-30 Bridge has been downgraded to Structurally Deficient[9]. The Structure Inventory and Appraisal Sheet developed following the 2013 inspection indicates that the substructure of the bridge is rated as "Poor". An AHTD memorandum outlining some of the major deficiencies identified as a result of the October 2013 inspection is presented in **Attachment D-3.**

The fact that a bridge is classified as "structurally deficient" does not imply that it is unsafe. A structurally deficient bridge, when left open to traffic, typically requires maintenance and repair to remain in service and eventual rehabilitation or replacement to address deficiencies.

Source: Federal Highway Administration, Status of the Nation's Highways, Bridges and Transit: Conditions and Performance Report to Congress, 2008

3.5.2 Functional Bridge Deficiencies

In addition to structural deficiencies of the I-30 Bridge, the width of the existing bridge is less than desirable. Although the bridge meets the minimum width requirements, the shoulders on the bridge are below current standards for new construction. The reduction in the shoulder width can lead to driver discomfort resulting in decreased speed and increased congestion. A reduced bridge width can also lead to an increase in traffic accidents because there is no additional space to maneuver around an obstacle in the roadway. Furthermore, the lack of adequate shoulders doesn't allow for the storage of disabled vehicles and the passage of emergency response, which causes further congestion after an accident.

3.6 Summary of Needs

As presented in **Sections 3.1** through **3.5**, the need for improvements to I-30 and I-40 in the study area include:

- Traffic Congestion;
- Roadway Safety Issues;
- Structural and Functional Roadway Deficiencies
- Navigational Safety Issues; and
- Structural and Functional Bridge Deficiencies.

[9] Bridges are considered structurally deficient if significant load carrying elements are found to be in poor condition due to deterioration. Source: *FHWA 2010 Status of the Nation's Highways, Bridges, and Transit: Conditions and Performance*; *AHTD Bridge Inspection, Oversight, and Maintenance Performance Audit (November 2008).*

4.0 PURPOSE AND STUDY GOALS AND OBJECTIVES

4.1 Purpose

The purpose of the proposed project is to address the transportation needs identified in **Section 3.4** by:

- Relieving Traffic Congestion;
- Improving Roadway Safety ;
- Addressing Structural and Functional Roadway Deficiencies; and
- Improving Navigation Safety; and

  Addressing Structural and Functional Bridge Deficiencies

4.2 Study Goals/Objectives

In addition to the purpose and need, other project elements were established to balance transportation and environmental goals and objectives. Input sought from agencies and the public was incorporated to develop goals and guiding principles.[10] A listing of the study goals/objectives is presented in the inset box and a listing of the guiding principles is provided below. Goals identified by the public and/or agencies are notated by asterisks, as described in the inset box. A more comprehensive summary of the feedback obtained from the public meetings is presented in **Attachment A-6**.

Study Goals/Objectives
(Listed in no particular order)

- *Improve opportunity for east-west connectivity***
- *Enhance mobility**
- *Improve local vehicle access to downtown Little Rock and North Little Rock**
- *Connect bicycle pedestrian friendly facilities**
- *Accommodate existing transit and future transit**
- *Minimize roadway disruptions during construction**
- *Minimize river navigation disruptions during/after construction*
- *Follow through on commitment to voters to improve I-30 as part of the CAP*
- *Optimize opportunities for economic development*
- *Avoid and/or minimize impacts to the human and natural environment*, including historic and archeological resources***
- *Sustain public and agency input and support for the I-30 corridor improvements**
- *Improve system reliability**
- *Maximize I-30 cost efficiency*
- *Improve safety**

Notes: ** indicates a goal identified mutually by the Study Team and agencies/public; ** indicates a new goal identified by agencies/public that was incorporated into the goals and objectives or guiding principles*

Guiding principles that will influence the overall project include (listed in no particular order):

- Accelerated Project Delivery;
- Context Sensitive Solutions*/Aesthetically Pleasing Facility*;
- Minimize the real, perceived and visual barrier of the freeway**;
- Open public participation process**; and
- Support of Local, Regional and Statewide Transportation Plan.

[10] Agency (local, state and federal) input gathered through technical work groups; public input gathered through public meetings held on August 12, 2014 in North Little Rock and August 14, 2014 in Little Rock.

Attachment A: Background Information

Attachment A-1: Study Area
Attachment A-2: Previous Studies
Attachment A-3: Regional Planning Context
Attachment A-4: Metroplan Policy and Plan Statements on Freeway Capacity
Attachment A-5: CARTS Agreement
Attachment A-6: Public Meeting Feedback

Study Area

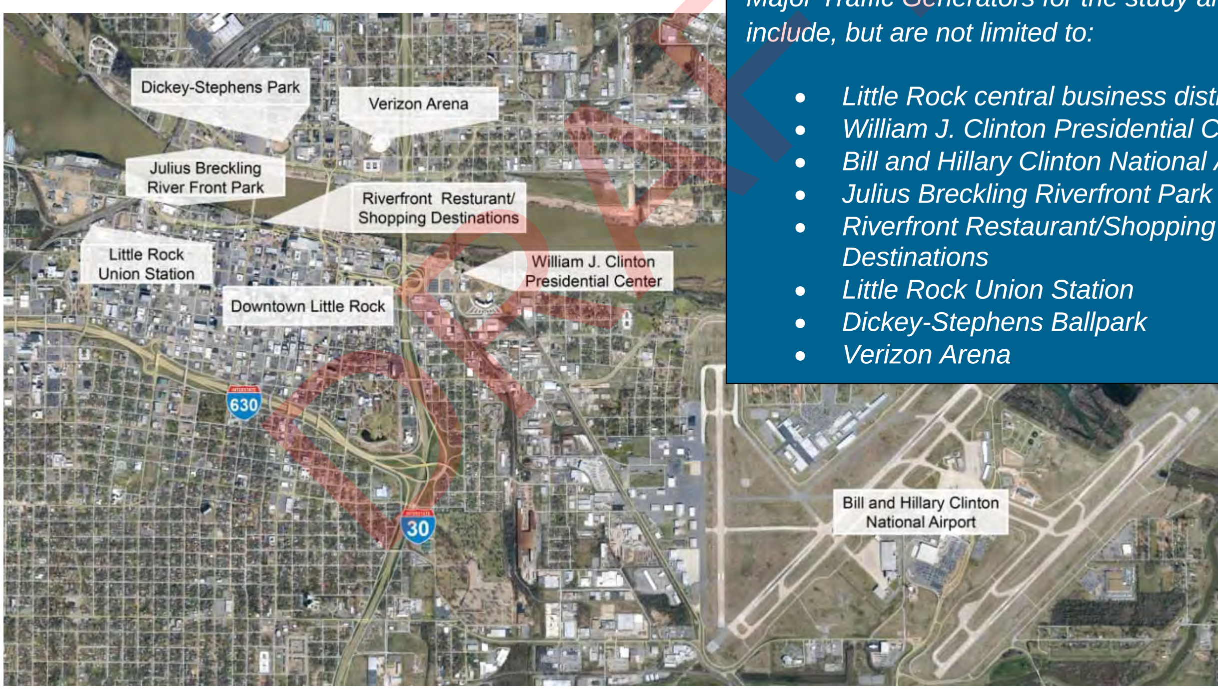
The I-30 PEL study area consists of a quarter-mile wide buffer along each side of I-30. The study area extends approximately 6.7 miles through portions of Little Rock and North Little Rock in central Arkansas as shown on **Appendix A-1, Page 2.** The study area begins at I-530 to the south and extends northerly to I-40, then easterly along I-40 to its interchange with Hwy. 67.

The I-30 project was included as part of the voter endorsed constitutional amendment passed during the November 2012 election for a 10-year, half-cent sales tax to improve highway and infrastructure throughout the state of Arkansas. Additionally, a similar study area was previously assessed as part of the CARTS *Areawide Freeway Study - Phase 1 Arkansas River Crossing Study*, completed in 2003, which concluded that widening I-30 to 10-lanes (5-lanes in each direction) would be necessary to provide an acceptable level of service for all Arkansas River crossings.

Major traffic generators for the study area are shown in the map below.

Major Traffic Generators for the study area include, but are not limited to:

- *Little Rock central business district*
- *William J. Clinton Presidential Center*
- *Bill and Hillary Clinton National Airport*
- *Julius Breckling Riverfront Park*
- *Riverfront Restaurant/Shopping Destinations*
- *Little Rock Union Station*
- *Dickey-Stephens Ballpark*
- *Verizon Arena*



There are a total of 11 interchanges (4 system-to-system and 7 service interchanges) and eight underpasses/overpasses within the study area. All but five of these crossings provide pedestrian crossing infrastructure. There are a variety of interchange types in the study area consisting of fully directional, partial cloverleaf, diamond, split diamond, and modified trumpet. An outer frontage road runs along the majority of both sides of I-30 and I-40. The frontage road consists of two-lane, one-way roads with northbound traffic on the east side of I-30 and southbound traffic on the west side. Stop signs and signals are used for traffic control at the end of entrance and exit ramps along I-30.


CA0602
Interstate 530 – Highway 67
Interstates 30/40
Sherwood
North Little Rock
Little Rock
Pulaski County
Arkansas River
UPRR Railroad
Lakewood Lake Number Three
Lake Number Two
Lakewood Lake Number One
Fivemile Creek
Fourche Creek
Map Key
Interstate
Highways
Small Roads
Pond/River
City Limits
CA0602 Study Area
0 1,500 3,000 4,500 6,000
Feet

Previous Studies

A number of studies have been completed that provide background on the study area. The most recent and relevant to the study area was the Central Arkansas Regional Transportation Study (CARTS) Areawide Freeway Study, Phase I: Arkansas River Crossing Study from 2003. This and other relevant studies are described below.

CARTS Areawide Freeway Study, Phase I: Arkansas River Crossing Study and Phase II: Areawide Study, 2003. The purpose of the Phase I Arkansas River Crossing Study was to evaluate the Arkansas River Bridge crossing needs, including the need for an additional river crossing. The existing vehicular bridge crossings evaluated included I-30, Main Street, and Broadway Street; and an extension of Pike Avenue across the river was also analyzed. The Phase I Study examined existing traffic conditions, crash rates, and structural conditions for all of the existing bridges; evaluated future traffic conditions (bridge and area traffic, estimated trip lengths, volumes and levels of service) for the river crossings; assessed the potential impact of transit to bridge needs; and evaluated multiple widening and interchange improvements for the bridge crossings, including conducting a cost benefits analysis for the alternatives assessed.

The Phase I Study evaluated 6 alternatives as follows:

- No-Action.
- Widen I-30 (8-lanes) and Broadway Intersection Improvements (i.e., improve intersections on the approaches to the Broadway Bridge).
- Full Widening of I-30 (10-lanes) along I-30.
- Pike Avenue Extension across the Arkansas River.
- Combination Alternative A: Widening I-30 (8-lanes) between 2nd Street and Broadway, Broadway Intersection Improvements, and installing the River Rail streetcar line on the Main Street Bridge.
- Combination Alternative B: Widening I-30 to 8-lanes, Broadway Intersection Improvements, and the Pike Avenue Extension.

The Phase I Study did not make any recommendations; however, the following observations were made based on the cost-benefit, level of service and construction cost analyses:

- Transit would result in a three percent decrease in vehicular traffic crossing the bridges, which would not alter the need for bridge crossing improvements.
- It was not cost beneficial to widen I-30 to 8-lanes, nor was Combination Alternative A cost beneficial; and neither achieved the goal for LOS D on the I-30 Bridge.
- The Pike Avenue Extension would not relieve congestion levels on I-30, which would remain at LOS F, and it had the third highest cost and second highest cost-benefit ratio.
- Combination Alternative B was the most expensive, but had the highest benefits of all alternatives analyzed.

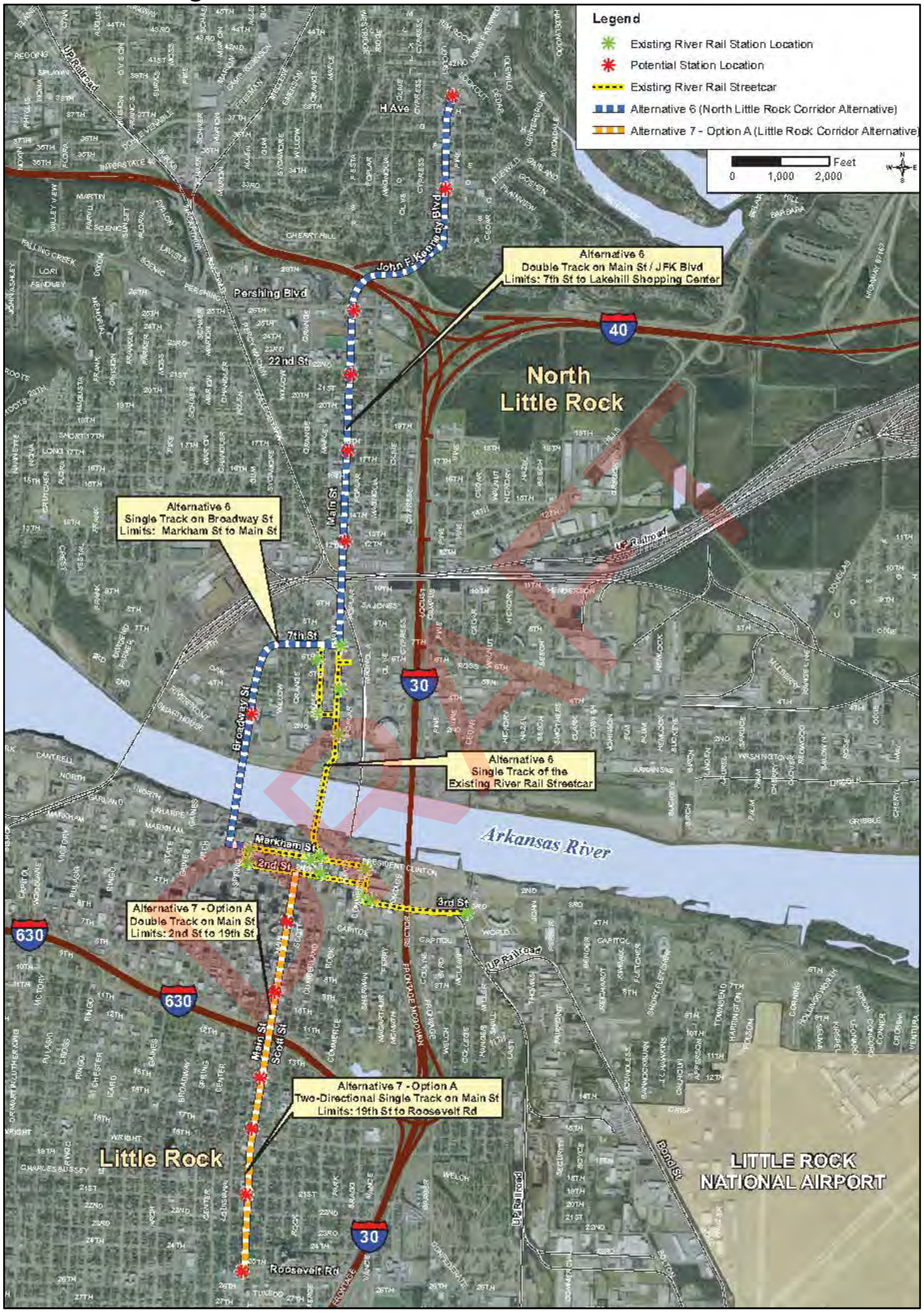
- The widening of I-30 (10-lanes) had the highest cost and lowest cost-benefit ratio, but was the only alternative to achieve the LOS D (or better) goal for I-30.

A second phase of the CARTS Areawide Freeway Study was also completed in 2003. It evaluated the entire freeway system within the CARTS boundary[1]. Existing and forecast needs over a 25 year horizon were identified; and this freeway plan included operations and management improvements that were incorporated into the regional transportation plan.

River Rail Airport Study, Phase II Final Report, 2011. The River Rail Airport Study, completed by Metroplan, was divided into two study phases. Phase I was completed in October 2009 and evaluated the extension of streetcar service between Downtown Little Rock and the Bill and Hillary Clinton National Airport, which was generally determined not feasible due to overall cost, projected ridership and a lack development potential. In 2010, Metroplan initiated Phase II which looked at other potential options for connecting streetcar service to the Bill and Hillary Clinton National Airport as well as to and from North Little Rock. The existing River Rail streetcar crosses I-30 (east-west) at 3rd street. Corridor alternatives evaluated included a single-track alignment on Broadway Street and a double-track alignment on Main Street/JFK Boulevard in North Little Rock; and an alignment along Main Street to Roosevelt Road (single track from 2nd to 19th Streets and double track from 19th Street to Roosevelt Road) in Little Rock (see **Figure A-2a)**. No Phase II River Rail extensions were proposed to cross I-30.

[1] Pulaski, Saline, Lonoke, and Faulkner Counties

Figure A-2a. River Rail Phase II Alternatives



Source: Image from River Rail Airport Study, Phase II Final Report, 2011.

I-630 Fixed Guideway Alignment Study, 2010. The purpose of the I-630 Fixed Guideway Study was to identify and preserve right-of-way for transit in the I-630 corridor. Three primary alignments and various station locations were studied. **Figure A-2b** shows the 12.3-mile-long preferred alignment with 12 initial station locations and two future station locations. Stations proposed within the vicinity of the I-30 PEL study area include a River Cities Travel Center station (Capital Avenue between Cumberland and Rock Streets) and a Clinton Presidential Library/Heifer International station (One World Avenue). The identified preferred alignment would cross I-30 at 4th Street. The study concluded that the preferred alignment was suitable and could be preserved for a future fixed guideway in central Arkansas. Contingent on federal funding being secured, next steps identified included advancing the project through the Federal Transit Administration's process for evaluating fixed guideway projects, which requires a more robust evaluation of technology, alignments, ridership and engineering. Lack of funding was identified as a key issue for moving the project forward.

Figure A-2b. I-630 Fixed Guideway Proposed Corridor Alignment and Station Locations

Source: Image from I-630 Fixed Guideway Alignment Study, 2010.

Six Bridges Framework Plan Report. The purpose of this study, completed by the University of Arkansas at Little Rock in the late 1990s, was to guide future development along the downtown riverfronts of Little Rock and North Little Rock in the area near the "six bridges" crossing the Arkansas River. Strategies were identified for promoting and directing the area's future growth, which included (but was not limited to) development of the riverfront, enhancing streets with streetscape improvements, and improving connections between downtown and the riverfronts.

I-630 (from I-430 to I-30) Final Environmental Impact Statement (EIS), 1978. This environmental document evaluated the impacts associated with a proposed new location highway, I-630, to serve as a connection between I-430 and I-30, for a distance of approximately 7.4 miles in Little Rock. The need for the project was established given the forecasted growth and development at the time for the west and southwest portions of Little Rock. Although this project primarily studied an area outside of the I-30 PEL study area, the I-630/I-30 interchange does serve as an overlapping point for these two studies. At the time, a four-level directional type interchange was recommended for the I-630 and I-30 interchange. MacArthur Park, a Section 4(f) property near the I-630/I-30 interchange was evaluated for potential impacts as part of the I-630 EIS. A buffer zone was created between I-630 and MacArthur park to maintain the park's integrity; and accordingly, it was determined that Section 4(f) regulations did not apply to the proposed I-630 improvements.

Regional Planning Context

Metroplan, the Metropolitan Planning Organization (MPO) for central Arkansas is responsible for long-range transportation planning in the Little Rock and North Little Rock metropolitan areas. The most recently approved long range transportation plan for central Arkansas is *METRO 2030.2*, adopted March 24, 2010. There is currently one interchange improvement project within the study area that is included in the fiscally constrained plan of *METRO 2030.2*, as described below and shown in **Attachment A-3**, **Page 2** (see the third line item):

Location: I-30/I-440/I-530
Description: Modifications and improvements limited to the interchange

Additionally, freeway and other interchange improvements within the study area are included within the Metropolitan Transportation Vision Plan portion of *METRO 2030.2*. The MPO policy on freeway system capacity improvements, as reflected in *METRO 2030.2* and other policy documents, is to build the regional freeway system to six through lanes and to meet demand over that capacity with a robust regional arterial network and public transit. The strategy behind the policy is to use finite resources to achieve transportation system balance once the regional freeway network is built out to six through lanes. *METRO 2030.2* does identify the interstate-to-interstate/highway interchanges at I-40/US-67/US-167, I-40/I-30 and I-30/I-530/I-440 as in need of reconstruction to add capacity and improve safety. It also mentions the segment of I-30 between the North Terminal (I-30/I-40 interchange) and South Terminal (I-30/I-530/I-440 interchange) as needing study because of the very high number of interstate-to-interstate/highway interchanges and interstate/highway-to-arterial interchanges in those five miles of interstate.

With a view towards achieving consistency with local and regional planning efforts, it is anticipated that the PEL process and its subsequent recommendations will determine refinements to the next long-range Metropolitan Transportation Plan (MTP), developed by Metroplan, and the CARTS Transportation Improvement Program (TIP) and Statewide Transportation Improvement Program (STIP). Additionally, the PEL process and associated documents will be developed in accordance with the CARTS Agreement of Understanding between Metroplan and the local jurisdictions and transit authorities, which is included in **Attachment A-5**).

Figure 15-4

Roadway Network Improvements - Year of Expenditure (YOE) - METRO 2030.2 LRP

Line #	RAN Priority	RAN Corr. #	Highway/Road	Limits	From	To	Improvements	Priority	Imp Type	Jurisdiction	Cost Est. Year	Cost Est.	2010-2013 2010 Cost	2011 Cost	2012 Cost	2013 Cost	2014-2019 Cost	2020-2030 Cost	TOTAL
1			I-630/I-430	Interchange			Modifications Phase III	COM	Reconstruction	LR	2009	6,120,316		86,308,000	7,715,699				94,023,699
2			I-40	Interchange			New Interchange	COM	New	MAU	2005	12,277,000	696,000				18,816,380		19,512,380
3			30/440/530	Interchange			Modifications	COM	Reconstruction	LR	2005	1,290,000	1,350,000						1,350,000
4			Hwy 67	Redmond Rd to Vandenburg Blvd.			Widen from 4 to 6	COM	WID	JAX	2005	27,171,193			7,049,000	4,387,000	41,644,009		53,080,009
5			I-40/Hwy 65	Interchange			Modifications	COM	Reconstruction	CON	2005	10,500,000	assumed in line item 140						0
6			Hwy 67	Interchange @ Hwy 5			Modifications	COM	Reconstruction	CAB	2005	9,702,000	798,000				14,869,799		15,667,799
7			North Belt	I-40/I-430 to I-440/Hwy 67			New 4 Lane Interstate	COM	NEW	JAX/SHW/NI	2008	200,000,000					16,478,430	685,287,704	701,766,134
8			South Loop	Mablevale Road to Alexander Road			New 2 Lane Facility	COM	NEW	LR	2005	2,722,000	assumed in line item 17						0
9			Hwy 67	Kiehl to 440			Widen from 4 to 6	COM	WID	SHW/JAX	2005	20,200,000	12,731,000						12,731,000
10			University Ave	19th to Asher Av			Widen from 4 to 6	COM	WID	LR	2005	8,474,000							0
11			Military Rd	Congo Rd to I-30			Widen from 2 to 4	COM	WID	Benton	2005	3,100,000	8,250,000						8,250,000
12			Hwy 107	N of Jacksonville Cutoff to Bayou Meto			Widen from 2 to 4	COM	WID	PULCO	2005	6,400,000							0
13			Brockington Road	Maryland to Kiehl Av			Widen from 2 to 4	COM	WID	SHW	2005	5,000,000							0
14			Graham Road	E Center to JP Wright Loop Road			Widen from 2 to 4	COM	WID	JAX	2009	9,491,926	2,026,000	7,995,824					10,021,824
15			Crystal Hill Road	Crystal Hill Rd/I-40 to Old Crystal Hill Rd			Widen from 2 to 4	COM	WID	NLR	2005	4,400,000						8,256,478	8,256,478
16									Committed Roadway Improvements		Subtotal		25,851,000	94,303,824	14,764,699	4,387,000	91,808,618	693,544,182	924,659,324
17			South Loop	UPRR @ South Loop			New rail grade overpass	COM	NEW	LR	2005	4,800,000	6,803,690						6,803,690
18			Geyer Springs	UPRR @ Geyer Springs			New rail grade overpass	COM	NEW	LR	2005	6,439,000	734,000				9,868,752		10,602,752
19			JP Wright Loop	UPRR @ JP Wright Loop			New rail grade overpass	MT	NEW	JAX	2005	3,332,000					5,106,800		5,106,800
20			Hwy 89 Extension	North of Hwy 89 @ Hwy 365			New rail grade overpass	MT	NEW	MAY	2005	5,944,000					9,110,089		9,110,089
21			McCain/Fairfax	UPRR @ Fairfax			New rail grade overpass	MT	NEW	NLR	2005	13,635,000		1,070,000	3,434,700	11,185,000			15,689,700
22			Springer Blvd	UPRR @ Springer Blvd			New rail grade overpass	MT	NEW	LR	2005	4,684,000					7,178,946		7,178,946
23									Rail Grade Separations		Subtotal		7,537,690	1,070,000	3,434,700	11,185,000	31,264,588	0	54,491,978
		1	Hwy 107/N. Main St./Scott St.								2005	22,176,820					33,989,369		33,989,369
		2	Chicot Rd./University Ave.								2005	14,609,670					22,391,554	1,208,448	23,600,002
		3	Hwy 65B/ Harkrider/Hwy 365								2005	9,949,245	2,555,000				4,691,591		7,246,591
		5	Hwy 10/Chester St.								2005	17,339,717				10,341,000	17,437,506	7,951,330	35,729,836
		6	Military Rd./Hwy 5/Asher		NOTE: FOR LINES 24 - 122						2005	13,088,601		2,361,000			18,048,704		20,409,704
		7	Hwy 161/Hwy 70/Broadway		Individual optimization projects are summarized						2005	20,269,463					19,847,709	3,236,915	23,084,624
		8	Hwy 36/Saltillo Rd./Clinton Rd./Pike/S. Broadway		By RAN Corridor/Critical Segment (CS) Number						2005	64,495,866				49,351,000	56,199,272	367,788	105,918,060
		9	Chenal/Financial Center Pkwy/Kanis Rd								2005	3,213,260					4,202,167		4,202,167
		10	Hwy 367								2005	2,476,798					3,796,072		3,796,072
		11	Hwy 64								2005	4,513,936					6,830,170		6,830,170
		12	Roosevelt Rd./Lindsey Rd.								2005	19,056,083				7,128,000	22,709,149		29,837,149
		13	Hwy 107/Brockington Dr.								2005	2,274,998					3,486,782		3,486,782
		14	Kanis Rd/Markham/3rd St.								2005	18,741,109					18,741,109		18,741,109
		15	Hwy 60/Hwy 65B/Industrial Blvd								2005	6,331,826					6,331,826		6,331,826
		16	Hwy 89/Sayles Rd./Batesville Pike/Tates Mill Rd.								2005	5,024,236					5,024,236	453,168	5,477,404
		CS13	Congo Rd.								2005	250,724					250,724		250,724
		CS18	Remount Rd.								2005	760,580					760,580		760,580
		CS09	Camp Robinson Rd.								2005	110,159					110,159		110,159
123									RAN Optimization Improvements		Subtotal		2,555,000	2,361,000	0	66,820,000	244,848,680	13,217,649	329,802,329
127			LUZA - Proposed Projects								2009		3,122,982	2,838,054	2,611,131	878,832			9,450,999
128			Scott Hamilton	Baseline Rd to JE Davis	Base Line Rd	JE Davis Drive	Widen		WID	LR	2009	2,991,000	2,991,000						2,991,000
129									LUZA Group Line/Previous Project		Subtotal		6,113,982	2,838,054	2,611,131	878,832	0	0	12,441,999
131	New		Conway Western Arterial Loop	I-40 So.Terminal Interchange to	I-40 S	I-40 N	New interstate interchange and new 4 la		NEW	Conway	2009	2,436,000	2,436,000						2,436,000
132	New		Conway Western Arterial Loop	I-40 So.Terminal Interchange	Hwy 365	Sturgis Rd	New 4 lane arterial		NEW	Conway	2009	5,532,000				7,376,143			7,376,143
133	New		Conway South Interchange	I-40 So.Terminal Interchange	I-40	Hwy 365	New interstate interchange and new 2 la		NEW	Conway	2009	23,000,000		13,979,000		13,700,000			27,679,000
134	New		Hwy 5	Saline Co. to Otter Creek Rd	County Line Rd	Otter Creek Rd	Widen		WID	LR	2009	12,000,000	13,643,000						13,643,000
135	New		Hwy 5 Drainage Structure				Reconstruction		BRG	BRY	2009	1,000,000		1,262,000					1,262,000
136	New		Hwy 367 UPRR Overpass		W 34th Street		Reconstruction		BRG	LR	2009	6,200,000			6,724,000				6,724,000
137	New		Hwy 10 UPRR Viaduct				Safety Improvements		SAFETY	LR	2009	1,700,000			2,254,000				2,254,000
138	New		Hwy 67 Cable Median Barrier	Jacksonville to Cabot	Vandenburg	Hwy 89	Safety Improvements		SAFETY	JAX/CAB	2009	1,500,000			1,990,000				1,990,000
139	New		I-30 Cable Median Barrier	Benton to Hwy 70	Sevier Street	Hwy 70	Safety Improvements		SAFETY	JAX/CAB	2009	1,700,000			1,700,000				1,700,000
140	New		I-40 Widening	I-40 Widening	Conway	Pulaski County	Interchange reconstruction and addition		WID	Conway	2009	36,000,000			42,420,000				42,420,000
141	New		Hwy 25 Relocation	I-40 to Hwy 25	I-40	Existing Hwy 25	New 2 lane arterial		WID	Conway	2009	9,000,000				10,002,000			10,002,000
142	New		Hwy 107	Bayou Meto to north of Arnold D	Bayou Meto	North of Arnold Drive	Widen to 4 lane		WID	JAX		8,695,313				11,593,975			11,593,975
143	New		Benton Parkway	Hwy 35 to River Street	Hwy 35	River Street			NEW	Benton		19,000,000				25,333,824			25,333,824
									NEWLY PROPOSED PROJECTS		Subtotal		16,079,000	15,241,000	55,088,000	68,005,942	0	0	154,413,942
											Grand SubTotal		58,136,672	115,813,878	75,898,530	151,276,774	367,921,886	706,761,831	1,475,809,571
											Estimated $ for Maintenance		26,735,982	32,570,966	41,730,981	81,281,820	293,299,053	17,345,888	492,964,690
											Fund Mark Comparison		11,837,693	-31,582,830	8,822,598	-38,489,588	437,481,119	1,306,047,495	1,680,184,486
											Four Yr TIP Balance\ Total Budget					401,125,854			3,155,994,057
																182,319,749			
																-49,412,128			
																351,713,726			

<u>**Metroplan Policy and Plan Statements on Freeway Capacity**</u>

1) **Metroplan Policy on Freeways and Expressways**

The below text was taken directly from the *CARTS Study Area Roadway Design Standards and Implementation Procedures*:

"The Metroplan Board has adopted the following policy with regard to Freeways and Expressways in the CARTS area:

> *The metropolitan freeway system should be built to six through lanes. It is the Metroplan Board's intent that demand over that capacity be met with a robust regional arterial network and public transit.*

If the Arkansas State Highway and Transportation Department sees the need to widen metropolitan freeways beyond six through lanes, it should consult with the Metroplan Board for its concurrence. Prior to planning for widening beyond six through lanes, the Department is expected to do a thorough analysis of alternative methods of meeting travel demand in the corridor with improved arterials and public transit. A thorough analysis of the impact of the induced traffic demand on local roadways as a result of the widening beyond six through lanes would also be required. The Metroplan Board may also consider conducting an independent analysis of widening proposals over six through lanes for its use and benefit."

2) METRO 2030.2: Metropolitan Freeway System-Capacity Improvements

The below text was taken directly from *METRO 2030.2*, Chapter 17: Vision Plan:

"The freeway network within the metropolitan area should be completed and expanded to six through travel lanes by 2030. That means completing the Northbelt Freeway. It also means widening I-40 to six lanes between I-430 and Conway at Hwy. 65 and eastward into Lonoke County. It calls for extending the widening of Hwy. 67/167 beyond its planned terminus at Redmond Road in Jacksonville to the Vandenberg/LRAFB exit in the short-term and then on to Cabot and Hwy. 89 by the end of the plan period, plus extending the widening of I-30 southwest from Sevier Street in Benton to at least Hwy. 67.

Nearly all the freeway-to-freeway interchanges in the metropolitan area need some level of reconstruction to increase capacity and safety. The I-630/I-430 Interchange is one of the highest needs, but the I- 630/I-30, I-40/Hwy. 67/167, I-430/I-40, I-30/I-40 (North Terminal) and the I-30/I-530/I-440 (South Terminal) also need attention.

The recently completed Areawide Freeway Study also indicated that additional capacity may be needed at some point in the future on a) I- 30 between the North and South Terminals where five interstate highways merge and diverge within five miles, b) I-430 south of I-40 to I-630, c) I-630 from I-430 to University Avenue, d) I-30 from South

Terminal to 65th Street and e) I-440 from South Terminal to Lindsey Road (Map 17-2). At an appropriate time, these freeway segments should be studied consistent with the regional policy on freeway capacity."

Central Arkansas Regional Transportation Study
Agreement of Understanding

Between and Among

Faulkner County, Lonoke County, Pulaski County, Saline County, the City of Alexander, the City of Austin, the City of Benton, the City of Bryant, the City of Cabot, the City of Cammack Village, the City of Conway, the City of Haskell, the City of Jacksonville, the City of Little Rock, the City of Maumelle, the City of North Little Rock, the City of Shannon Hills, the City of Sherwood, the City of Vilonia, the City of Ward, the City of Wrightsville, the City of Mayflower, the Central Arkansas Transit Authority, South Central Arkansas Transit, the Arkansas State Highway and Transportation Department, and other jurisdictions or agencies that may, in the future, be admitted to this agreement

In Cooperation With

The United States Department of Transportation

To Participate In

The responsibilities and functions of a continuing, comprehensive and cooperative transportation planning process for Central Arkansas through METROPLAN, the designated Metropolitan Planning Organization (MPO) for the Little Rock/North Little Rock Metropolitan Statistical Area.

Whereas, it is the desire of the participating jurisdictions and agencies that there be a continuing, comprehensive, and cooperative (3C) transportation planning process, pursuant to United States Department of Transportation regulations and in accordance with Titles 23 and 49 of the US Code, that is responsive to the needs of the urban and urbanizing areas of central Arkansas and to changes in those areas; and

Whereas, the goal of this planning process is an approved central Arkansas regional transportation plan accepted by all participating jurisdictions and formally approved as the plan for implementation by the MPO Board;

Whereas, it is understood that this agreement does not transfer any constitutional or legislative authority possessed by the participating jurisdictions; and

Whereas, it is understood that the planning process and the relationship between the partners in the planning process is complex and evolves over time;

THEREFORE, IT IS AGREED that the designated metropolitan planning organization shall be the forum for cooperative transportation decision making for the Central Arkansas Regional Transportation Study Area pursuant to United States Department of Transportation regulations and in accordance with US Code.

The MPO may establish advisory committees and hire staff and/or consultants to assist it in its decision making. The organization, composition, responsibilities, and functions of CARTS advisory committees and MPO staff shall be at the direction of the MPO Board.

IT IS FURTHER AGREED that the specific relationships in the planning process and specific responsibilities for conducting planning studies shall be specified in the Unified Planning Work Program as adopted by the MPO and other agreements between the Arkansas State Highway and Transportation Department, the transit provider(s) and the MPO as may be deemed mutually desirable.

IT IS FURTHER AGREED that all existing master street plans, and area-wide road, highway, transit, bikeway, waterport, airport, or pedestrian plans, or any such plans for improvement of transportation facilities within the CARTS boundary shall be consistent with the approved central Arkansas regional transportation plan.

IT IS FURTHER AGREED, that in cooperation with MPO, the participating governments and agencies will take appropriate action to implement the Transportation Improvement Program as approved by the MPO. The Transportation Improvement Program shall be updated at least biennially. The MPO shall publish the approved TIP and TIP updates.

IT IS FURTHER AGREED that modifications to this Agreement must be approved by the MPO Board and submitted to each signatory jurisdiction and agency for ratification. Failure to adopt this Agreement or to ratify proposed modifications will signal that the jurisdiction or agency does not wish to participate in the regional transportation planning process.

Faulkner County BY: ____________________

Lonoke County BY: ____________________

Pulaski County BY: ____________________

Saline County BY: ____________________

City of Alexander BY: ____________________

City of Austin BY: ____________________

City of Benton BY: ____________________

City of Bryant BY: ____________________

City of Cabot BY: ____________________

City of Cammack Village BY: ____________________

City of Conway BY: ____________________

City of Haskell BY: ____________________

City of Jacksonville BY: ____________________

City of Little Rock BY: ____________________

City of Maumelle BY: ____________________

City of North Little Rock BY: ____________________

City of Shannon Hills BY:

City of Sherwood BY:

City of Vilonia BY:

City of Ward BY:

City of Wrightsville BY:

City of Mayflower BY:

Central Arkansas Transit Authority BY:

Arkansas State Highway and Transportation Department BY:

Adopted on 26th day of March, 1998

Public Meeting Feedback

In order to foster an open and collaborative process when developing the purpose and need for the I-30 PEL Study, attendees of the first public meetings (conducted on August 12, 2014 in North Little Rock and August 14, 2014 in Little Rock) were asked to provide input on problems they have experienced or would like to share, as well as their ideas for improvements or goals. As shown in the photographs below, this was accomplished by including a station at the public meetings where attendees were asked to write their ideas/concerns on post-it notes, which were then displayed on large exhibit boards for all attendees to review.

Below is a summary of the problems and goals identified by the public at the public meetings. These problems and goals have been considered as part of the purpose and need, goals and objectives, or Universe of Alternatives.

Problems

- Congestion on I-30/I-40*
- Congestion at I-630 and College Street*
- Ramping Issues*
  - Ramps too close, interchanges too close, safety issues due to ramps too close
- Weaving problems*
  - In particular, along I-40 between I-30 and Hwy. 67
- Safety Issues along the I-30/I-40 Corridor*
  - Better lighting and striping
- Safety Issues with arterial streets*
  - More stop signs and/or lights; better lighting
- Drainage Issues with arterial streets**
- Bridge replacement and/or widening*
  - I-30 bridge pier is out of alignment with other bridge piers – should be replaced
- Other modes of transportation are needed**
- Interstate is a barrier to bikes and pedestrians**

Goals

- Improve access to downtown areas*
- Divert truck traffic around the city**
- Provide fewer exit ramps*
- More flyovers needed**
- Double deck the bridge**
- Do not add lanes/consider alternative ways to alleviate congestion*
- Provide/improve bike and pedestrian facilities*
- Support current transit*
- Provide an effective public transportation system**
- Implement light rail/plan for light rail in the future by providing rail right-of-way**
- Evaluate alternative modes (High Occupancy Vehicle lanes, etc.)*
- Provide better communication to the public during the construction process*
- Do not just rehabilitate I-40 – improve interchanges and widen**
- Reconnect Riverfront Park and all green space in the corridor*
- Depress I-30 to reconnect the city above**
- Cover the interstates to create parks**
- Create an observation deck and charge a fee for the vantage point**
- Provide better East-West Connectivity*
- Create an aesthetically pleasing bridge*
- Create a bridge that aesthetically matches the other river crossings*
- Provide an additional river crossing (e.g., Chester Street Bridge)**
- Minimize impacts to historic and archeological resources/conduct robust cultural resources surveys/historic preservation*
- Improve signage along the project corridor**
- Minimize disruptions to traffic during construction*
- Reduce traffic noise using aesthetically pleasing mitigation measures*

*Issue or Goal previously identified by the Study Team

**Issue identified by the public as a problem or a Goal that will be addressed in the Alternatives Screening Process, through CSS visioning workshops, or in future analyses.

Attachment B: Traffic Data

Attachment B-1: I-30 as a Regionally Significant Roadway
Attachment B-2: Stakeholder Input
Attachment B-3: Field Observations
Attachment B-4: I-30/I-40 Existing and Future Levels of Service

I-30 as a Regionally Significant Roadway

The following summarizes the I-30 corridor in Little Rock, AR as a regionally significant roadway. This definition is based on the one provided in federal regulations (23 CFR § 450.104).

> ***23 CFR § 450.104:***
> *"Regionally significant project means a transportation project (other than an exempt project) that is on a facility which serves regional transportation needs (such as access to and from the area outside of the region, major activity centers in the region, major planned developments such as new retail malls, sports complexes, etc., or transportation terminals as well as most terminals themselves) and would normally be included in the modeling of a metropolitan area's transportation network, including at a minimum all principal arterial highways and all fixed guide way transit facilities that offer an alternative to regional highway travel."*

Regionally Significant Roadways include:

- **Roadways on the federally-adopted National Highway System (NHS)**: I-30 is part of the NHS.
- **Roadways on the Metroplan Long Range Transportation Plan (LRTP):** I-30 is included on Metroplan's LRTP.
- **Regional Connectivity:** I-30 is the regional transportation spine that connects seven interstates within approximately 4.5 mile core of the metropolitan area.
    - North: I-40 East, I-40 West and US 67/167
    - West: I-630
    - South: I-30, I-530 and I-440
- **Traffic Demand:** According to AHTD, in 2013, I-30 carried 79.5 percent of the daily traffic of the three downtown river bridges of Broadway (21,000 ADT), Main Street (9,600 ADT) and I-30 (119,000 ADT). This represents 3.8 times more traffic on I-30 than Broadway and Main Street traffic combined.
- **Trip Characteristics**: As part of the I-30 PEL Study traffic analysis, Metroplan's 2040 daily travel demand model determined the following characteristics:

I-30 Estimated Daily Trip Characteristics in 2040[1, 2]

Trip Type	I-30	From I-40 WB
Local Access	45%	71%
Through Trips[3]	17%	4%
Travel to I-630	38%	25%
Total Trips	**100%**[4]	**100%**[4]

Notes: [1]Metroplan 2040 Travel Demand Model; [2] Figures B-1a through B-1c in Attachment B-1 further illustrate trip characteristics along I-30. [3]Through trips are vehicle trips that start and end outside the PEL study limits (External trips are considered vehicle trips that are outside the PEL study limits); [4]Does not include local to local trips.

Figures B-1a through **B-1c f**urther illustrate trip characteristics along I-30.

- The 2003 *Phase 1: Arkansas River Crossing Study* noted that I-30 serves longer distance trips whereas Broadway and Main Street serve more local trips when compared to each other. The Phase 1 Study identified the following trip length percentages for trips greater than 15 miles: I-30 carried 44% trips, Broadway carried 10% and Main Street carried 11%.

Figure B-1a. Flow of Traffic Entering North Terminal to I-30 SB

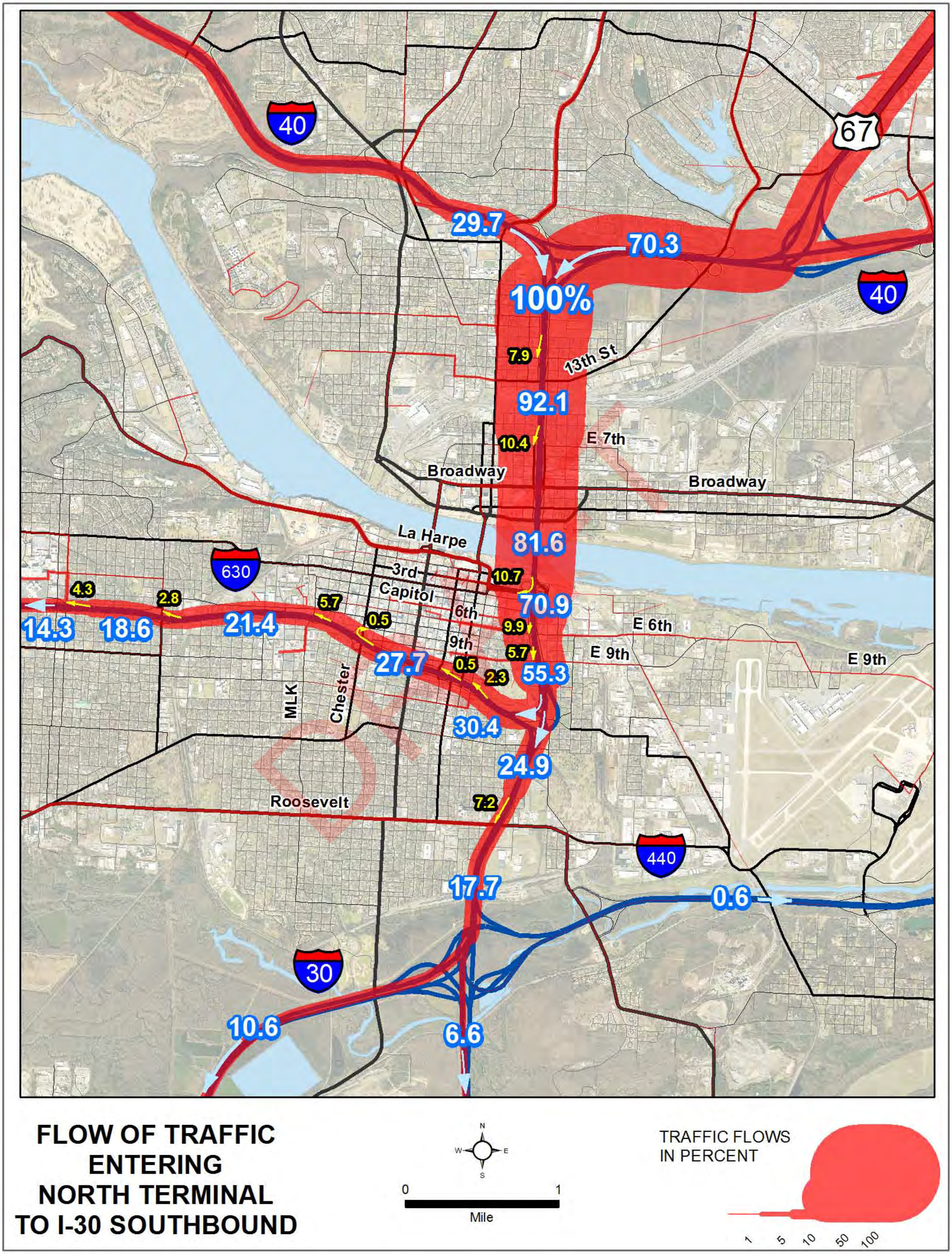


Figure B-1b. Flow of Traffic Entering South Terminal to I-30 NB

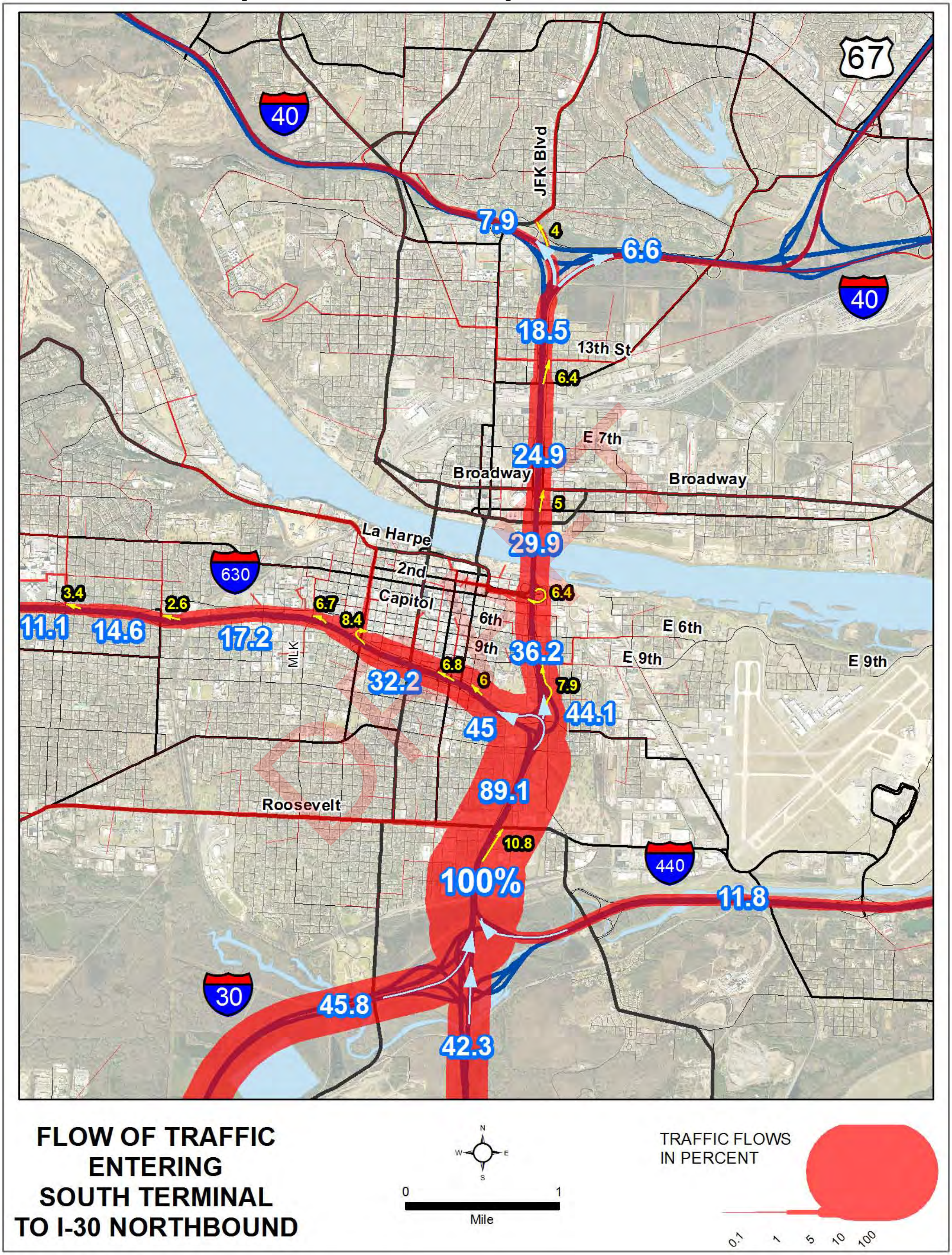
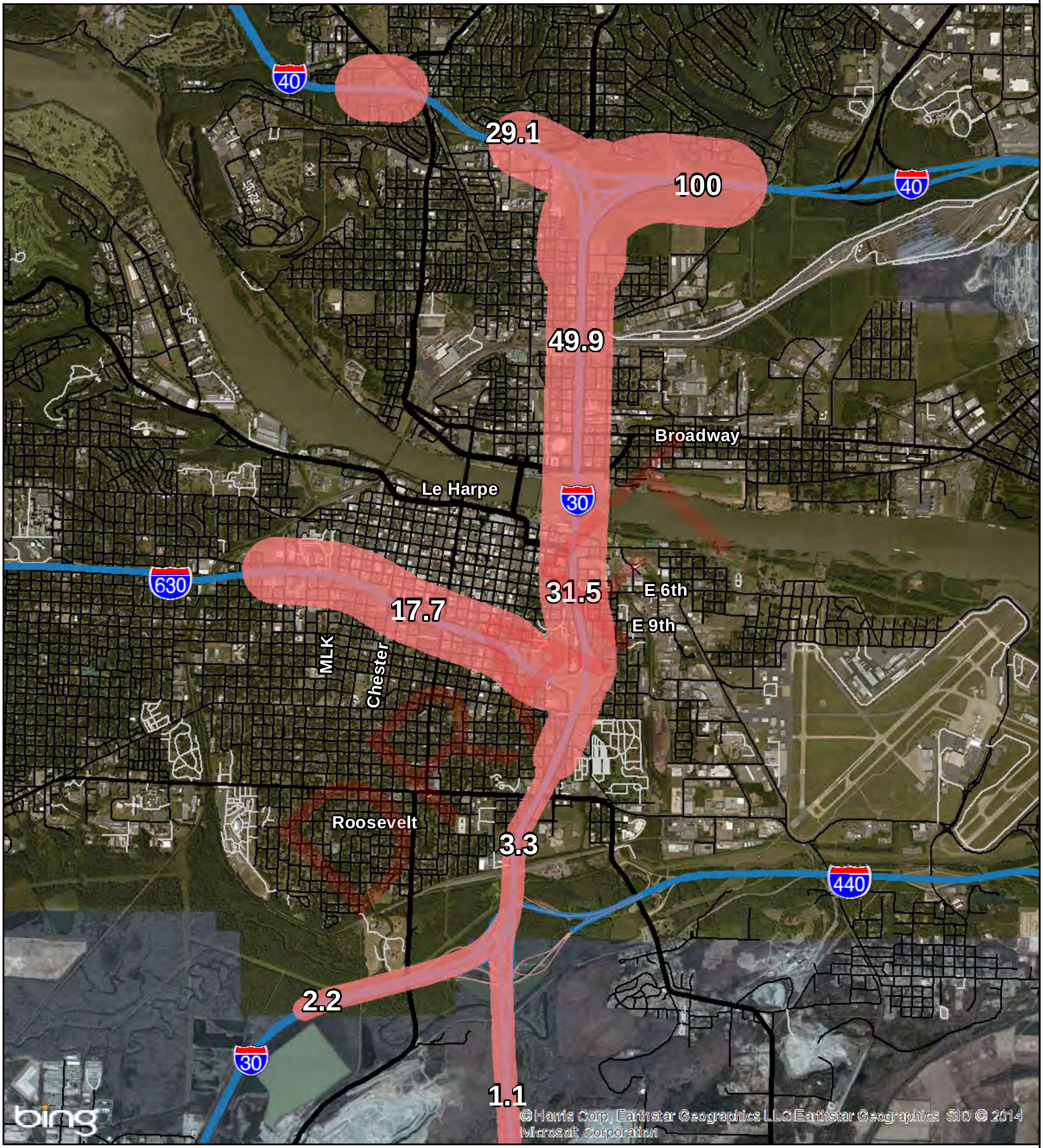
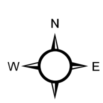


Figure B-1c. Flow of Traffic WB I-40



FLOW OF TRAFFIC WEST BOUND I-40



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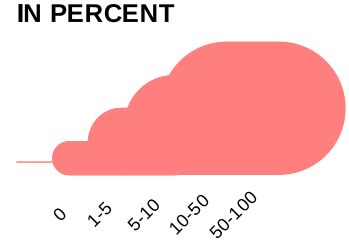
TRAFFIC FLOWS IN PERCENT



Stakeholder Input

Meetings were held with the City of Little Rock, North Little Rock, Metroplan and AHTD in May 2014. The purpose of these meetings was to discuss existing traffic and safety concerns along I-30/I-40 in the study area. A summary of their comments is presented below.

Existing I-30 Issues Discussion Summary
(Little Rock, North Little Rock, Metroplan and AHTD)

1. Short ramps
2. Weaving problems
3. Cantrell (highway 10) tight circle interchange
4. I-630 EB to I-30 NB congestion
5. Hard to maintain median lighting
6. 9th St. access is preferred over 6th St.
7. 6th St. has become less important
8. Future growth north of Airport expected
9. SB on-ramp at McArthur Park is a sight distance problem
10. 6th St. between 3rd St. and 6th St. frontage road is dangerous
11. SB I-30 at Roosevelt
12. I-30 and Roosevelt is a high accident location
13. Hwy. 10 at I-30 and I-630 at I-30 are the major problems
14. Broadway is a congested parallel roadway
15. Discontinuous frontage road is a problem
16. Schools on the east side with students on the west side of I-30
17. Signal improvements were not thought to improve existing problems
18. City has a traffic operations center but there is no regional ITS infrastructure
19. Too many ramps
20. I-30 is a north/south barrier
21. Six freeways merge within six miles
22. Inadequate interchange designs and to many
23. I-30 bridge used to be 4-lanes with shoulders
24. Weaving problems on I-40 from I-30 to Hwy 67
25. Lane split – one to I-30 NB and one to JFK
26. Cantrell is on 4 sq. blocks of prime real estate
27. Heavy pedestrian crossings near Cantrell (700 peds/hr)
28. Improvements to the existing frontage roads needed
29. Cap freeway and reconnect east/west street grid
30. Broadway bridge has been designed for rail in the future
31. Signage/wayfinding improvements needed
32. N. Hills Interchange is difficult
33. Main St./ JFK Interchange is difficult with missing movements
34. Consider access to underutilized Hwy. 100 on north side of river
35. Signal improvements at Broadway may improve operations
36. NB off ramp to Broadway backs up onto I-30.
37. Consider emergency access and schools in corridor
38. AHTD is considering high friction pavement surface for ramps at Cantrell and I-630
39. Focus on locations that are 2-lane ramps necked down to 1-lane
40. Deceleration occurs in I-30 through lanes due to short deceleration lanes
41. Poor ramp geometrics at I-630
42. I-30 SB to I-530 on-ramp problems
43. AHTD considers LOS D as the goal but may consider LOS E or worse and duration of impacts
44. Separation of local and through traffic
45. Reconnecting neighborhoods
46. Reclaiming land for both park and economic purposes

Source: Individual stakeholder meetings May 20th and 21st, 2014.

Field Observations

Firsthand knowledge of I-30 and I-40 within the study area is an essential part to understanding its traffic operational strengths and shortcomings. Field observations were performed along the I-30 and I-40 facility during the peak periods. A total of four peak times were observed, as follows:

- AM Peak
  - Tuesday, May 20, 2014 from 7-9am
  - Wednesday, May 21, 2014 from 6:30-9am
- PM Peak
  - Monday, May 19, 2014 from 4-6pm
  - Tuesday, May 20, 2014 from 3:30-6pm

Exhibit B-3a presents a graphical summary of the field observations. The following text provides an overview of the field observations. Numbers next to each summary correspond to the numbers shown in **Exhibit B-3a**.

In general, most congestion appeared to occur on the mainline. Only a few intersections displayed signs of congestion during the peak periods. All AM and PM peak hour movements (WB in the morning, EB in the evening) were consistently congested on the bridge over the Arkansas River. Generally speaking, lanes heading into Little Rock were congested in the morning and outbound lanes were congested in the evening. Bottlenecks on the mainline were observed near the Curtis Sykes entrance/exit ramps, the Broadway entrance ramps, the 2nd Street entrance ramps, and the I-630 interchange.

AM Peak Observation

1) I-30 WB North of I-630 Interchange

In both morning observations, congestion I-30/I-440 was noted from the point where I-40 West and Hwy. 67 South converge until the Curtis Sykes Drive exit. I-40 East also experienced congestion between JFK Boulevard and Curtis Sykes Drive. For southbound drivers, the location of the Curtis Sykes Drive exit shortly after the I-40/I-30 interchange caused weaving for the I-40 West drivers who are trying to exit at Curtis Sykes Drive.

On both days, traffic became less congested south of Curtis Sykes Drive. However, it became congested again at the entrance from Broadway and cleared up after the 2nd Street ramps.

2) I-30 EB South of I-630 Interchange

Heavy but uncongested traffic was observed both days starting west of the I-530/I-440/I-30 interchange. After the interchange, traffic became congested. It remained congested until just north of the I-630 interchange. An incident was noted on the shoulder where I-30 East and I-530 North merge during the second AM observation.

3) I-40 WB Off ramp to JFK Boulevard

The only intersection to have notable delay during the AM peak was at the I-40 West off ramp onto JFK Blvd. This intersection was showing backups on the first day of observation. No other notable backups occurred at this location.

PM Peak Observation

4) I-30 WB South of I-630 Interchange

Starting south of the I-630 interchange, congestion on I-30 WB was noted in both PM observations. Free flow conditions were cited as soon as traffic reached the I-530/I-440/I-30 interchange.

5) I-30 EB North of I-630 Interchange

On both days, traffic was stop-and-go between the I-630 ramp and Curtis Sykes Drive. At one point during the observation, the I-630 EB to I-30 EB on ramp was backed up all the way to mainline I-630. It was noted that the I-630 ramp transitions from two lanes down to one lane just before merging with I-30 East.

Two separate incidents (one in each of the PM observations) occurred in the same approximate location just north of the I-360/I-30 eastbound merge. One was a minor crash and the other was a stalled vehicle.

The looped on-ramp to I-30 EB from 2nd Street was also experiencing backups related to the congestion on I-30 EB. Backups on the ramp can be partially attributed to the fact that three separate on-ramps merge into one before merging with mainline traffic.

6) N Cypress Street/E. Broadway Street/N. Locust Street

During the first PM Peak, backups at the Cypress/Broadway/Locust intersection were noted from several directions. The most prominent backup was on the I-30 EB off ramp due to traffic trying to use the through lane. It appeared that the left turn lane was hardly used, while the single through lane was backed up.

On both days, delays were noted for EB through traffic on Broadway Street. Cars were observed being in the queue for up to two full signal cycles. Much of the traffic appeared to be going through the Cypress Street intersection and turning left onto Locust Street.

7) LaHarpe Boulevard and Markham Street

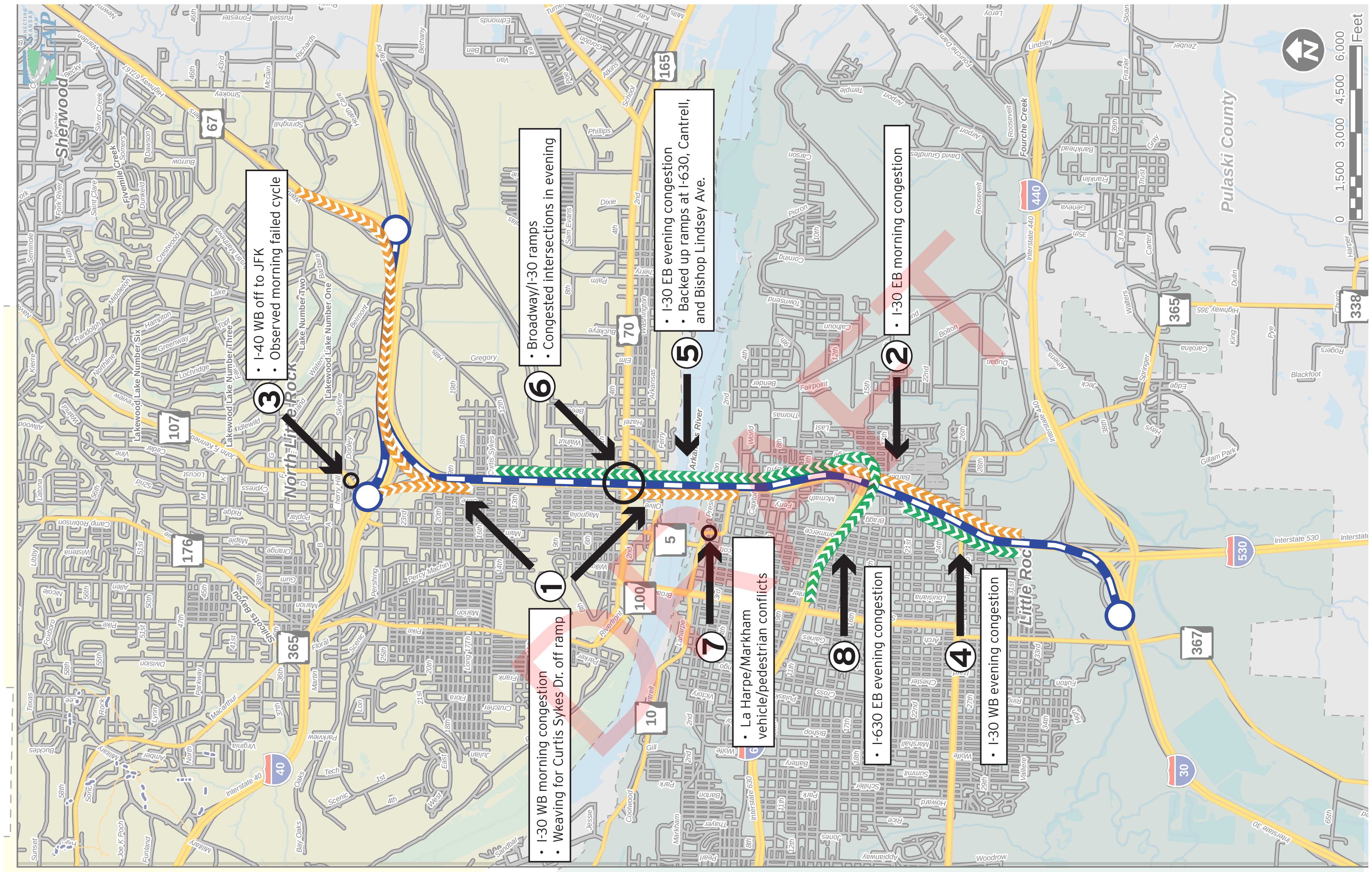
On the first day of observation, a near 5 minute delay was noted for south bound traffic at the LaHarpe Boulevard and Markham Street intersection. The traffic was backed up for approximately 3½ blocks. However, this congestion was not noted again after the first day. A significant number of pedestrians cross at this intersection.

8) I-630 EB west of I-30

In the EB direction, congestion was observed from the I-630 EB to I-30 EB and WB movements that had a vehicle queue back up of approximately 1 mile. The problem appeared to be the I-30 EB congestion that backs onto the I-630 EB to I-30 EB ramp. The other part of the problem is the I-630 EB to I-30 WB ramp merges to one lane before merging onto I-30 WB. This caused backups onto I-630 EB.

EXHIBIT B-3a

CA0602- I-30 PEL
Interstate 530 to Highway 67
Field Observations



Legend

AM Congestion

PM Congestion

I-30/I-40 Existing and Future Levels of Service

Traffic was analyzed along I-30 and I-40, with the I-30 limits extending from the I-30/I-530/I-440 interchange to the south to the I-30/I-40 interchange to the north; and the I-40 limits extending from the I-30/I-40 interchange to the west to the I-40/Hwy. 67/Hwy. 167 interchange to the east.

1. Existing Conditions (2013)

Table B-4a shows the existing (2013) design hour roadway level of service (LOS).

Table B-4a. Existing (2013) Design Hour[1] Roadway LOS (Basic Mainline and Weaves)

ID	Facility	Location	Lanes	Volume	LOS	Density[2]	Speed	Analysis
9	I-40 EB	US 67 int - N Hills Blvd	4	6600	D	27.9	65.5	Basic Mainline
10	I-40 WB	US 67 int - N Hills Blvd	4	6600	D	27.9	65.5	Basic Mainline
11	I-40 EB	N Hills blvd-I-30 int	4	3492	E	35.9	51.7	Weave
12	I-40 WB	N Hills Blvd - I-30 int	4	7140	D	31.3	63	Basic Mainline
13	I-40 EB	I-30 int-JFK Blvd	4	5040	E	37.3	46	Weave
14	I-40 WB	I-30 int - JFK Blvd	2	5040	F	68.4	40.7	Basic Mainline
17	I-30 EB	I-40 int - Curtis Sykes Dr	3	6900	F	51.9	49	Basic Mainline
18	I-30 SB	I-40 int-Curtis Sykes Dr	4	6900	E	70.6	36.2	Weave
19	I-30 EB	Curtis Sykes Dr - Bishop Lindsey	3	6960	F	53.1	48.3	Basic Mainline
20	I-30 WB	Curtis Sykes Dr - Bishop Lindsey	3	6960	F	53.1	48.3	Basic Mainline
21	I-30 EB	Bishop Lindsey Ave - E Broadway St	3	6120	E	39.6	57	Basic Mainline
22	I-30 WB	Bishop Lindsey Ave - E Broadway St	3	6120	E	39.6	57	Basic Mainline
23	I-30 EB	E Broadway St - Hwy 10/La Harpe Blvd	3	7140	F	57	46.2	Basic Mainline
24	I-30 WB	E Broadway St - Hwy 10/La Harpe Blvd	3	7140	F	57	46.2	Basic Mainline
25	I-30 EB	2nd St-6th St	4	5775	E	37.7	48.3	Weave
26	I-30 WB	2nd St-6th St	4	5855	E	37.8	48.2	Weave
27	I-30 EB	9th St Off-Ramp - I-630 Off-Ramp	3	6360	E	42.8	54.8	Basic Mainline
28	I-30 WB	9th St On-Ramp - I-630 On-Ramp	3	6360	E	42.8	54.8	Basic Mainline
31	I-30 EB	I-630 int-Roosevelt	4	3976	D	32	52.8	Weave
32	I-30 WB	I-630 int-Roosevelt	4	4023	E	40.9	41.3	Weave
33	I-30 EB	24th St - Roosevelt	3	6360	E	42.8	54.8	Basic Mainline
34	I-30 WB	24th St - Roosevelt	3	6360	E	42.8	54.8	Basic Mainline
35	I-30 EB	Roosevelt Rd-I-440 int	4	4250	D	31.3	47.9	Weave
36	I-30 WB	Roosevelt Rd - I-440 int	3	5640	D	34.1	61	Basic Mainline
45	I-30 EB	6th St On-Ramp - 9th St On-Ramp	3	6360	E	42.8	54.8	Basic Mainline

Source: HCM 2010
Assumptions (DD = 60%, DHV = 0.94, k Factor = 10%, HV = 8%)
[1] Peak hour in each direction
[2] Density is the number of passenger's cars per mile per lane

Existing LOS results indicate that congestion (LOS E and F) exists primarily between I-30/JFK Boulevard interchange and I-30 and 24th/Roosevelt interchange. Outside of these limits, LOS D conditions primarily exist.

2. Future No-Action Conditions (2040)

Table B-4b shows the future (2040) No-Action design hour roadway LOS.

Table B-4b. Future (2040) No-Action Design Hour[1] Roadway LOS

ID	Facility	Location	Lanes	Volume	LOS	Density[2]	Speed	Analysis
9	I-40 EB	US 67 Interchange - N Hills Blvd	4	8,634	E	44.5	53.6	Basic Mainline
10	I-40 WB	US 67 Interchange - N Hills Blvd	4	8,634	E	44.5	53.6	Basic Mainline
11	I-40 EB	N Hills blvd - I-30 int	4	4,568	E	50.9	47.7	Weave
12	I-40 WB	N Hills Blvd - I-30 Interchange	4	9,341	F	54.1	47.8	Basic Mainline
13	I-40 EB	I-30 Interchange - JFK Blvd	4	6,593	E	55	40.8	Weave
14	I-40 WB	I-30 Interchange - JFK Blvd	2	6,593	F	6736.1	0.5	Basic Mainline
17	I-30 EB	I-40 Interchange - Curtis Sykes Dr	3	9,027	F	210.1	16	Basic Mainline
18	I-30 SB	I-40 Interchange - Curtis Sykes Dr	4	9,027	F	210.1	16	Weave
19	I-30 EB	Curtis Sykes Dr - Bishop Lindsey	3	9,105	F	86	34.4	Basic Mainline
20	I-30 WB	Curtis Sykes Dr - Bishop Lindsey	3	9,105	F	86	34.4	Basic Mainline
21	I-30 EB	Bishop Lindsey Ave - E Broadway St	3	8,006	F	298.6	11.5	Basic Mainline
22	I-30 WB	Bishop Lindsey Ave - E Broadway St	3	8,006	F	298.6	11.5	Basic Mainline
23	I-30 EB	E Broadway St - 2nd St	3	9,341	F	54.7	43.5	Basic Mainline
24	I-30 WB	E Broadway St - 2nd St	3	9,341	F	54.7	43.5	Basic Mainline
25	I-30 EB	2nd St - 6th St	4	7,555	E	103.9	29.5	Weave
26	I-30 WB	2nd St - 6th St	4	7,660	E	103.9	29.5	Weave
27	I-30 EB	9th St Off-Ramp - I-630 Off-Ramp	3	8,948	F	44.5	49.7	Basic Mainline
28	I-30 WB	9th St On-Ramp - I-630 On-Ramp	3	8,948	F	63.9	34.6	Basic Mainline
31	I-30 EB	I-630 Interchange - Roosevelt	4	5,201	E	45.6	43.1	Weave
32	I-30 WB	I-630 Interchange - Roosevelt	4	5,263	E	63	43.2	Weave
33	I-30 EB	24th St - Roosevelt	3	8,320	F	103.9	29.5	Basic Mainline
34	I-30 WB	24th St - Roosevelt	3	8,320	F	103.9	29.5	Basic Mainline
35	I-30 EB	Roosevelt Rd - I-440 Interchange	4	1,871	E	45.6	43.1	Weave
36	I-30 WB	Roosevelt Rd - I-440 Interchange	3	3,689	F	63	43.2	Basic Mainline
45	I-30 EB	6th St On-Ramp - I-630 On-Ramp	3	8,948	F	175.1	18.8	Basic Mainline

Source: HCM 2010
Assumptions (DD = 60%, DHV = 0.94, k Factor = 10%, HV = 8%)
[1]Peak hour in each direction
[2]Density is the number of passenger's cars per mile per lane

Figure 2 of the I-30 PEL Purpose and Need Technical Report shows a graphical representation of the existing and future peak-hour LOS conditions along I-30 and I-40. Under existing conditions, 70 percent of the corridor experiences congestion levels with undesirable speeds (LOS E and F), according to current AHTD standards (AHTD's desirable design year LOS is D). This percentage increases to 100 percent by 2040 under future No-Action conditions. Without improvements, many sections of I-30 are anticipated to operate under 20 miles per hour (mph) during the peak periods.

Attachment C: Roadway Data

Attachment C-1: Crash Data
Attachment C-2: Severe Injury and Fatal Crash Data
Attachment C-3: Bicycle and Pedestrian Crash Data
Attachment C-4: Structural Roadway Deficiencies
Attachment C-5: Functional Roadway Deficiencies

Crash Data

Crash Data for 2010, 2011, and 2012

Crashes from 2010, 2011, and 2012 (the latest three years of available data) were reviewed along I-30 from the I-30/I-530/I-440 interchange in the south to the I-40/Hwy. 107/JFK Boulevard interchange in the north; and along I-40 to just east of the I-40/Hwy. 67/Hwy. 167 interchange. The location and number of crashes along the main lanes and cross roads throughout the study area are plotted graphically in **Exhibits C-1a** through **C-1l**; and histograms showing the distribution of crash types and locations are shown in **Exhibits C-1m** through **C-1p**.

As shown by these exhibits, a few key locations exhibit large clusters of crashes consistently throughout the three year study period. The I-30 at East Broadway Street area is notable with consistently high numbers of crashes both along I-30 and along the crossroads (S. Cypress Street and S. Locust Street). Other areas with elevated numbers of crashes include the I-30 at Curtis Sykes Drive, Main Street at W. Pershing Boulevard along with the nearby intersection of Hwy. 107/JFK Boulevard at I-40 Access Road, and Hwy. 67/Hwy. 167 at McCain Boulevard.

Numbers of crashes and crash rates (all severity types) were calculated for each of the three years of crash data in order to evaluate the safety performance of the study corridor with similar highways in Arkansas. These crash numbers and rates are shown in **Table C-1a** below.

Table C-1a. Historical Crash Numbers and Rates along I-30/I-40

I-30, Section 230, Log Mile 138.39-139.67 (I-530/I-440 to I-630)							
Year	**Length (miles)**	**Weighted ADT**	**# Crashes**	**Crash Rate**	**AR Avg. Crash Rate**	**Type**	**Crash Rate AR Avg. Crash Rate**
2010	1.28	96,219	99	2.19	1.53	6 or more-Lane Access Control Urban Interstates in AR	1.43
2011	1.28	96,219	62	1.37	1.22	6 or more-Lane Access Control Urban Interstates in AR	1.12
2012	1.28	96,219	64	1.42	0.95	6 or more-Lane Access Control Urban Interstates in AR	1.50
I-30, Section 230, Log Mile 139.68-142.02 (I-630 to I-40)							
Year	**Length (miles)**	**Weighted ADT**	**# Crashes**	**Crash Rate**	**AR Avg Crash Rate**	**Type**	**Crash Rate AR Avg Crash Rate**
2010	2.35	115,740	471	4.74	1.53	6 or more-Lane Access Control Urban Interstates in AR	3.10
2011	2.35	113,336	371	3.81	1.22	6 or more-Lane Access Control Urban Interstates in AR	3.12
2012	2.35	109,817	406	4.31	0.95	6 or more-Lane Access Control Urban Interstates in AR	4.54
I-40, Section 330, Log Mile 153.25-154.88 (I-30 to Hwy. 67/Hwy. 167)							
Year	**Length (miles)**	**Weighted ADT**	**# Crashes**	**Crash Rate**	**AR Avg Crash Rate**	**Type**	**Crash Rate AR Avg Crash Rate**
2010	1.63	118,503	66	0.94	1.53	6 or more-Lane Access Control Urban Interstates in AR	0.61
2011	1.63	115,503	75	1.09	1.22	6 or more-Lane Access Control Urban Interstates in AR	0.89
2012	1.63	113,503	58	0.85	0.95	6 or more-Lane Access Control Urban Interstates in AR	0.90

Note: The number of crashes occurring along I-30 within the I-630 interchange were split evenly between the segment from I-530/I-440 to I-630 and the segment from I-630 to I-40. Half of the crashes occurring along I-40 within the Hwy. 67/Hwy. 167 interchange were assumed to fall within the segment from I-40 to Hwy. 67/Hwy. 167.

As exhibited in **Table C-1a**, crash rates were about three to four times the statewide average for other 6-lane urban interstates along I-30 between I-630 and I-40 in 2010 and 2011, and in 2012 it was nearly five times the statewide average for other 6 or more-lane urban interstates. For the segment of I-30 between I-440/I-530 and I-630, crash rates were slightly higher than statewide averages for other 6 or more-lane urban interstates for all three years. Crash rates were slightly below average for all three years along I-40 between I-30 and Hwy. 67/Hwy. 167. These crash rates indicate a great need for improvements along I-30, particularly the portion between I-630 and I-40. In addition to having a crash rate over three times the statewide average for other 6 or more-lane urban interstates, this segment also contains the interchange at East Broadway Street which shows the highest number of crashes for any single location within the study area. The crashes in this area were elevated both along I-30 and along the cross roads.

Future No-Action Conditions

Based on the above analysis of traffic data for 2010 – 2012, an average crash rate between the three study years was estimated for sections of the I-30 and I-40 main lanes. With the assumption that the roadway conditions would remain the same and no safety measures would be implemented, the average crash rate was assumed to remain constant through the design year. To project the number of crashes for the years 2020 and 2040, the average crash rate was applied to the future No-Build volumes. Average crash rates and projected numbers of crashes for 2020 and 2040 are shown in **Table C-1b**.

Table C-1b. Projected Crash Numbers and Rates along I-30/I-40

I-30, Section 230, Log Mile 138.39-139.67 (I-530/I-440 to I-630)							
Year	**Length (miles)**	**Average Crash Rate (MVMT)**	**Projected Weighted ADT (No Build)**	**Projected # Crashes**	**AR 2012 Avg Crash Rate**	**Type**	**Avg Crash Rate / AR 2012 Avg Crash Rate**
2020	1.28	1.66	113,646	88	0.95	6 or more-Lane Access Control Urban Interstates in AR	1.75
2040	1.28	1.66	138,670	108	0.95	6 or more-Lane Access Control Urban Interstates in AR	1.75
I-30, Section 230, Log Mile 139.68-142.02 (I-630 to I-40)							
Year	**Length (miles)**	**Average Crash Rate (MVMT)**	**Projected Weighted ADT (No Build)**	**Projected # Crashes**	**AR 2012 Avg Crash Rate**	**Type**	**Avg Crash Rate / AR 2012 Avg Crash Rate**
2020	2.35	4.29	122,023	449	0.95	6 or more-Lane Access Control Urban Interstates in AR	4.51
2040	2.35	4.29	148,891	547	0.95	6 or more-Lane Access Control Urban Interstates in AR	4.51
I-40, Section 330, Log Mile 153.25-154.88 (I-30 to Hwy. 67/Hwy. 167)							
Year	**Length (miles)**	**Average Crash Rate (MVMT)**	**Projected Weighted ADT (No Build)**	**Projected # Crashes**	**AR 2012 Avg Crash Rate**	**Type**	**Avg Crash Rate / AR 2012 Avg Crash Rate**
2020	1.63	0.96	106,194	61	0.95	6 or more-Lane Access Control Urban Interstates in AR	1.01
2040	1.63	0.96	129,577	74	0.95	6 or more-Lane Access Control Urban Interstates in AR	1.01

As exhibited in **Table C-1b**, the average crash rate along I-30 between I-530/I-440 and I-630 was nearly twice that of the statewide 2012 average for other 6 or more-lane urban interstates in 2020 and 2040; and was nearly five times the statewide 2012 average for other 6 or more-lane urban interstates along I-30 between I-630 and I-40 in 2020 and 2040. Along I-40 between I-30 and Hwy. 67/Hwy. 167, the average crash rate was about the same as that of the statewide 2012 average for other 6 or more-lane urban interstates in 2020 and 2040.

Exhibit C-1a

CA0602

I-30/I-40, North Little Rock

2010 Main Lane Crash Locations

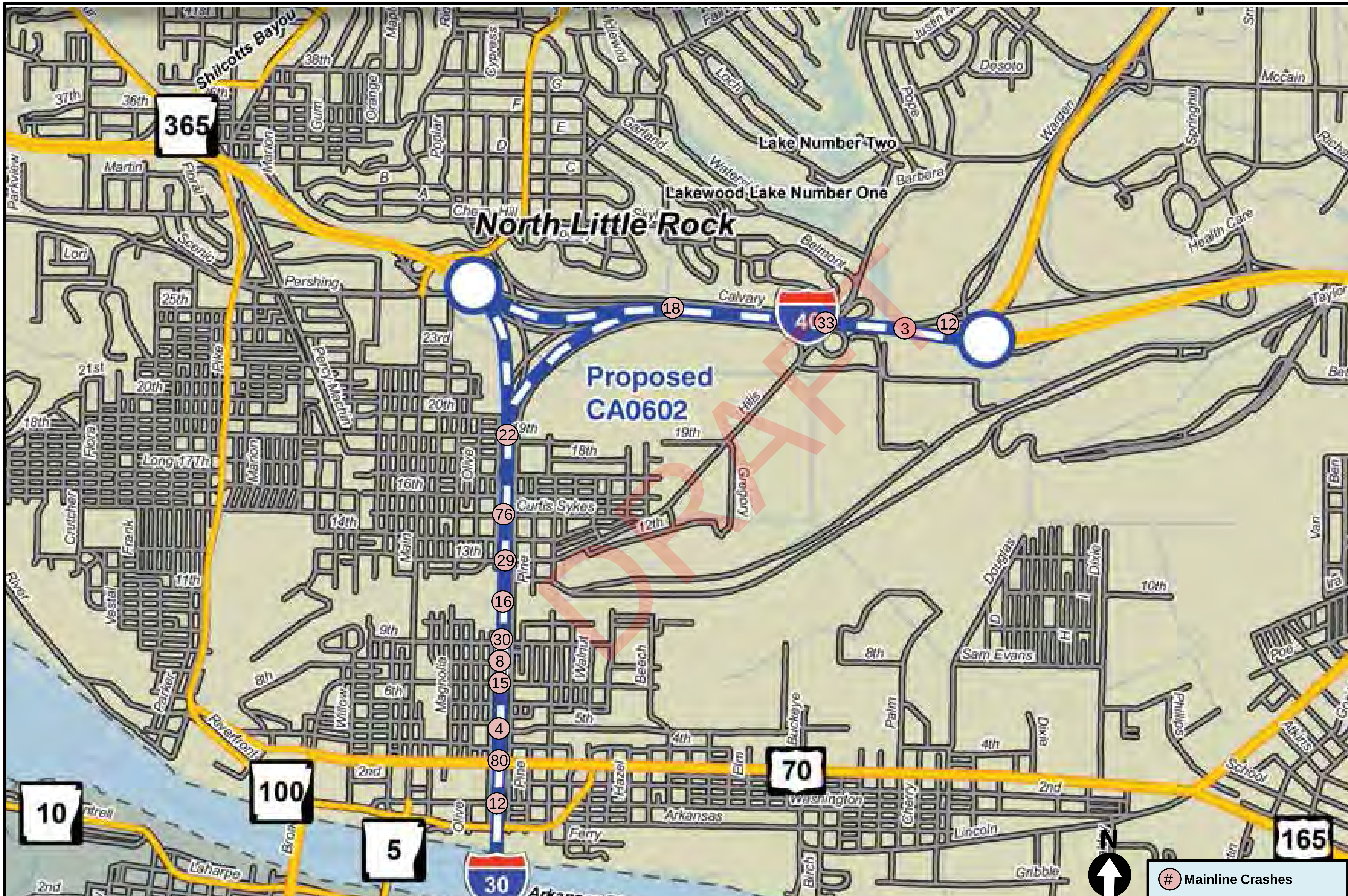
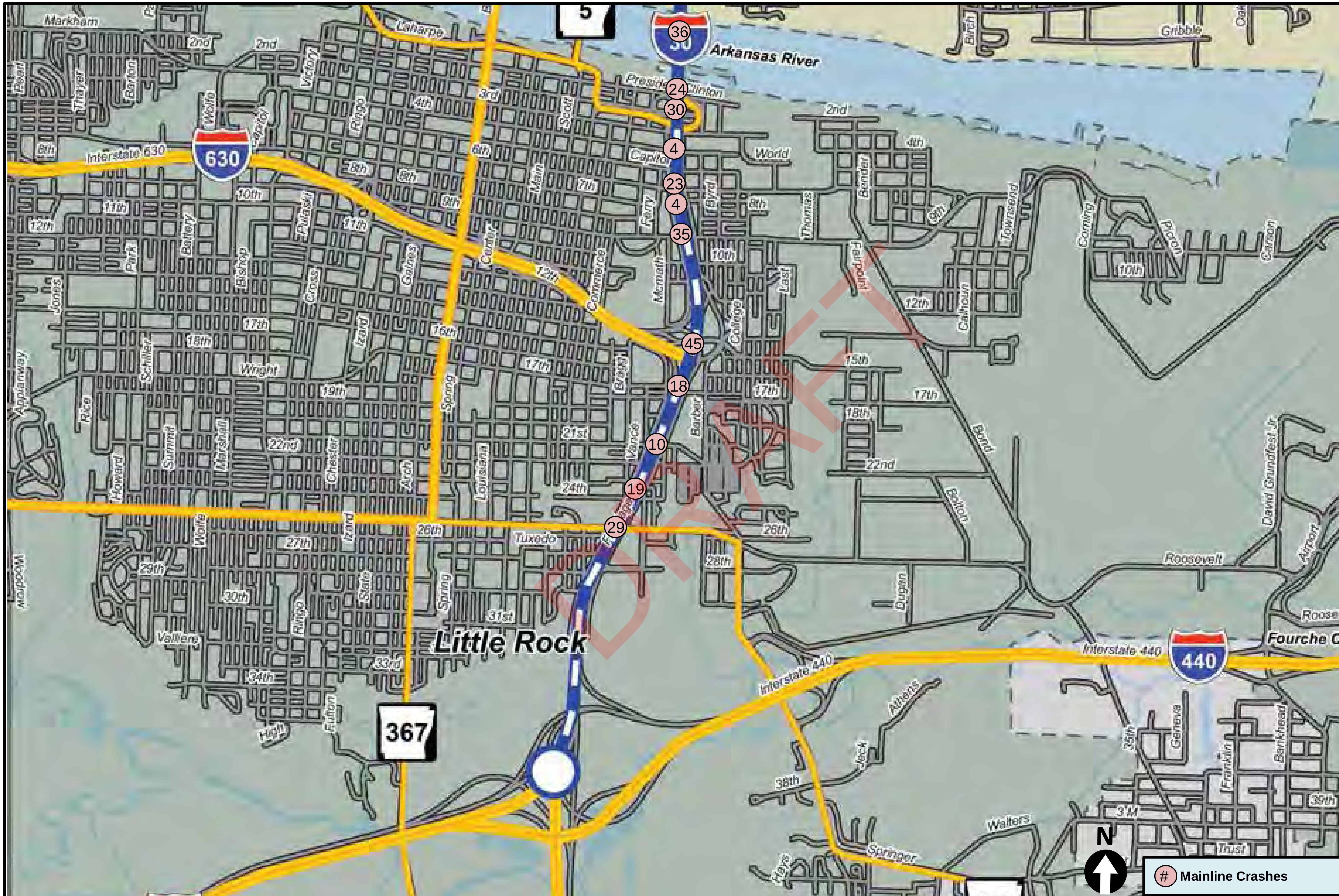


Exhibit C-1b

CA0602 I-30/I-40, Little Rock

2010 Main Lane Crash Locations



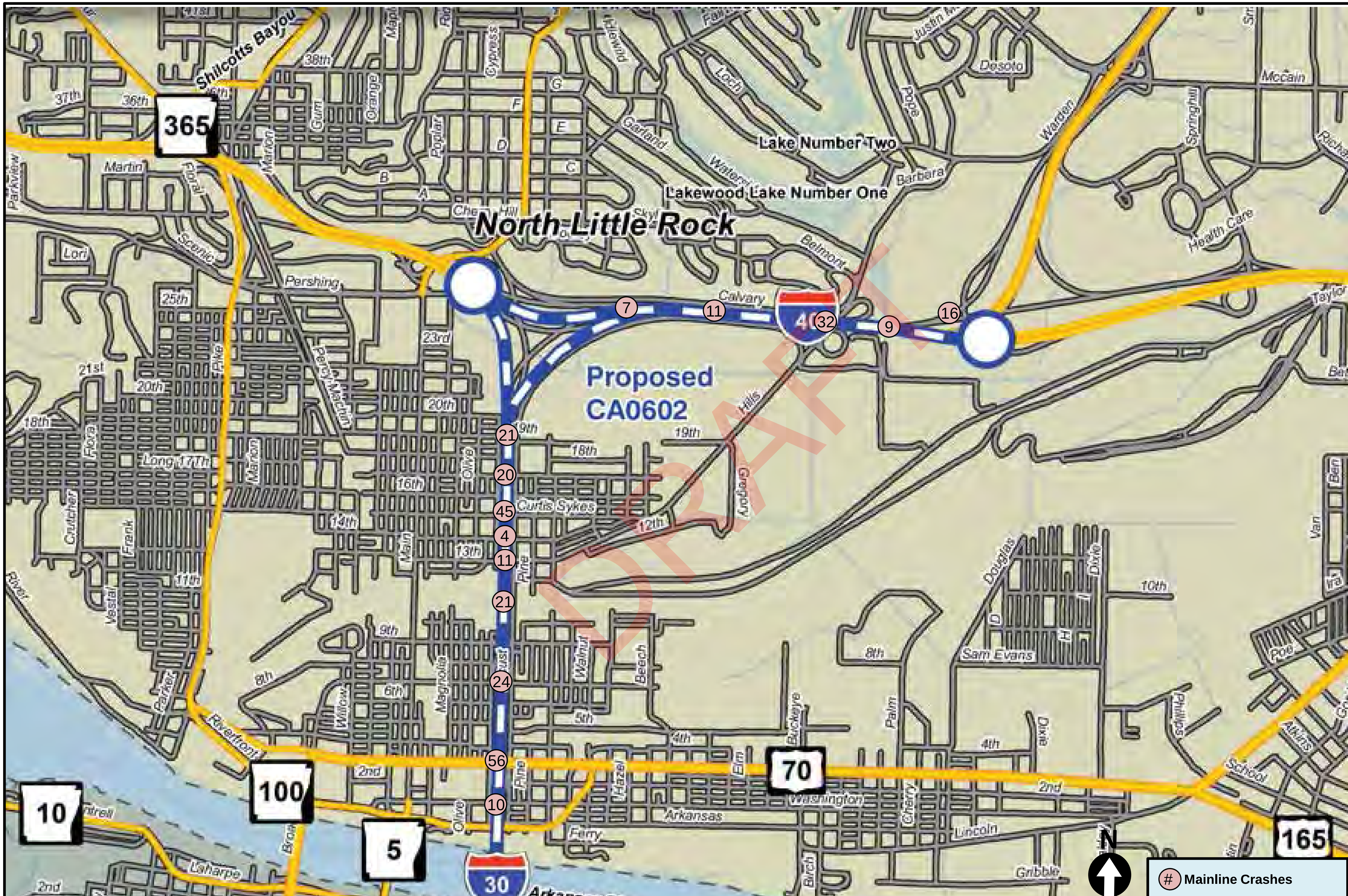
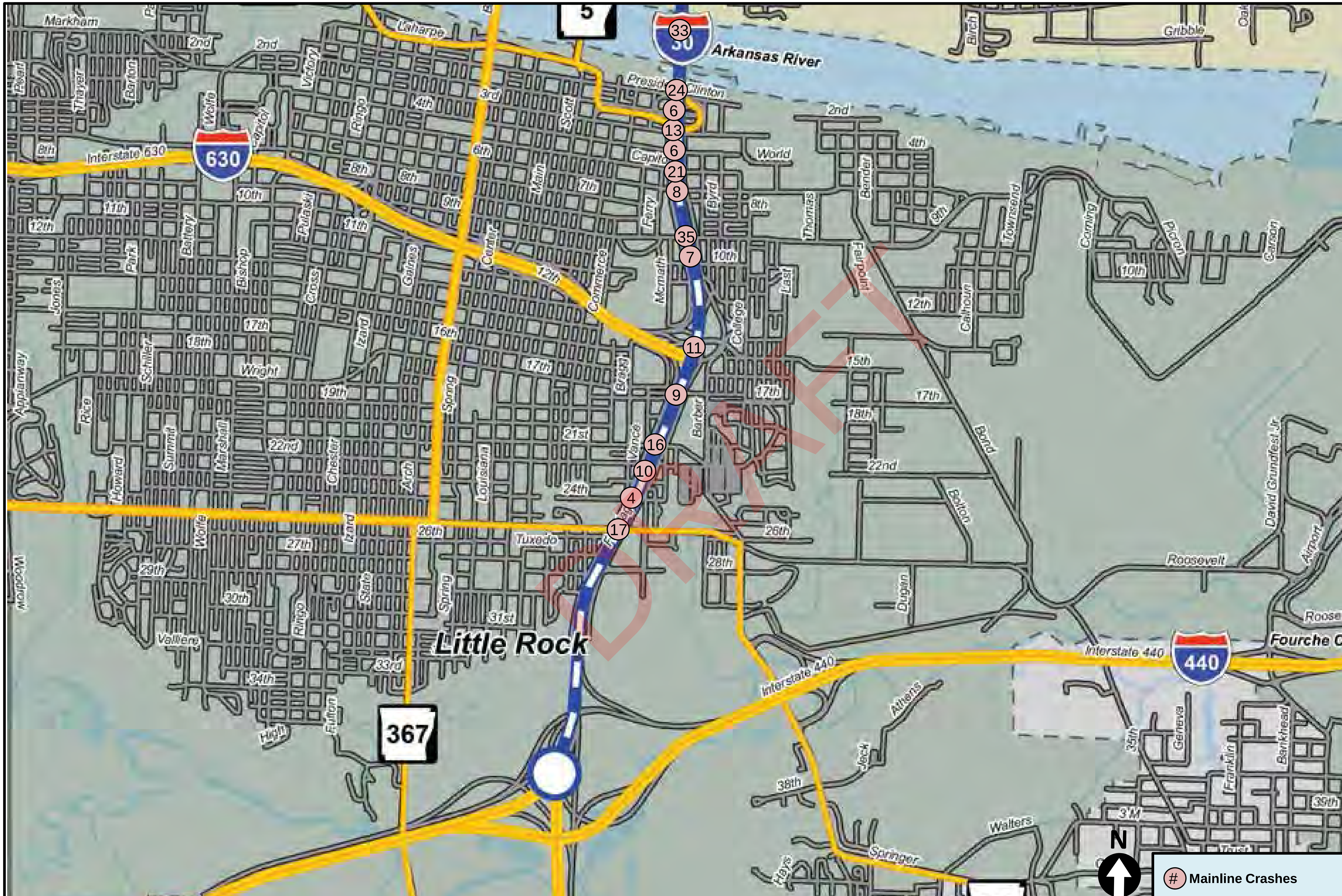


Exhibit C-1c

CA0602
I-30/I-40, North Little Rock
2011 Main Lane Crash Locations

Exhibit C-1d



CA0602
I-30/I-40, Little Rock
2011 Main Lane Crash Locations

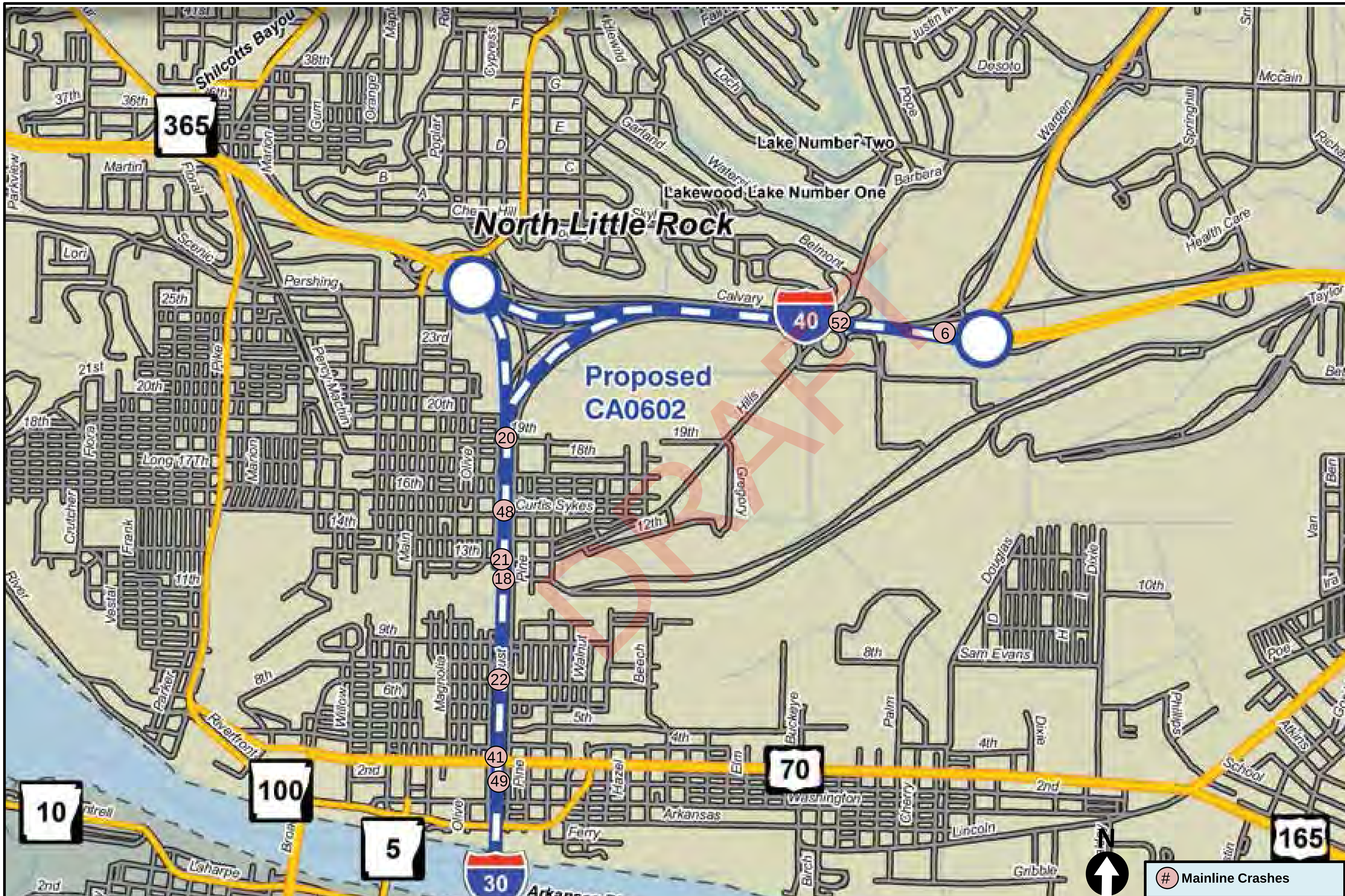


Exhibit
C-1e

CA0602
I-30/I-40, North Little Rock
2012 Main Lane Crash Locations

CONNECTING ARKANSAS PROGRAM
CAP

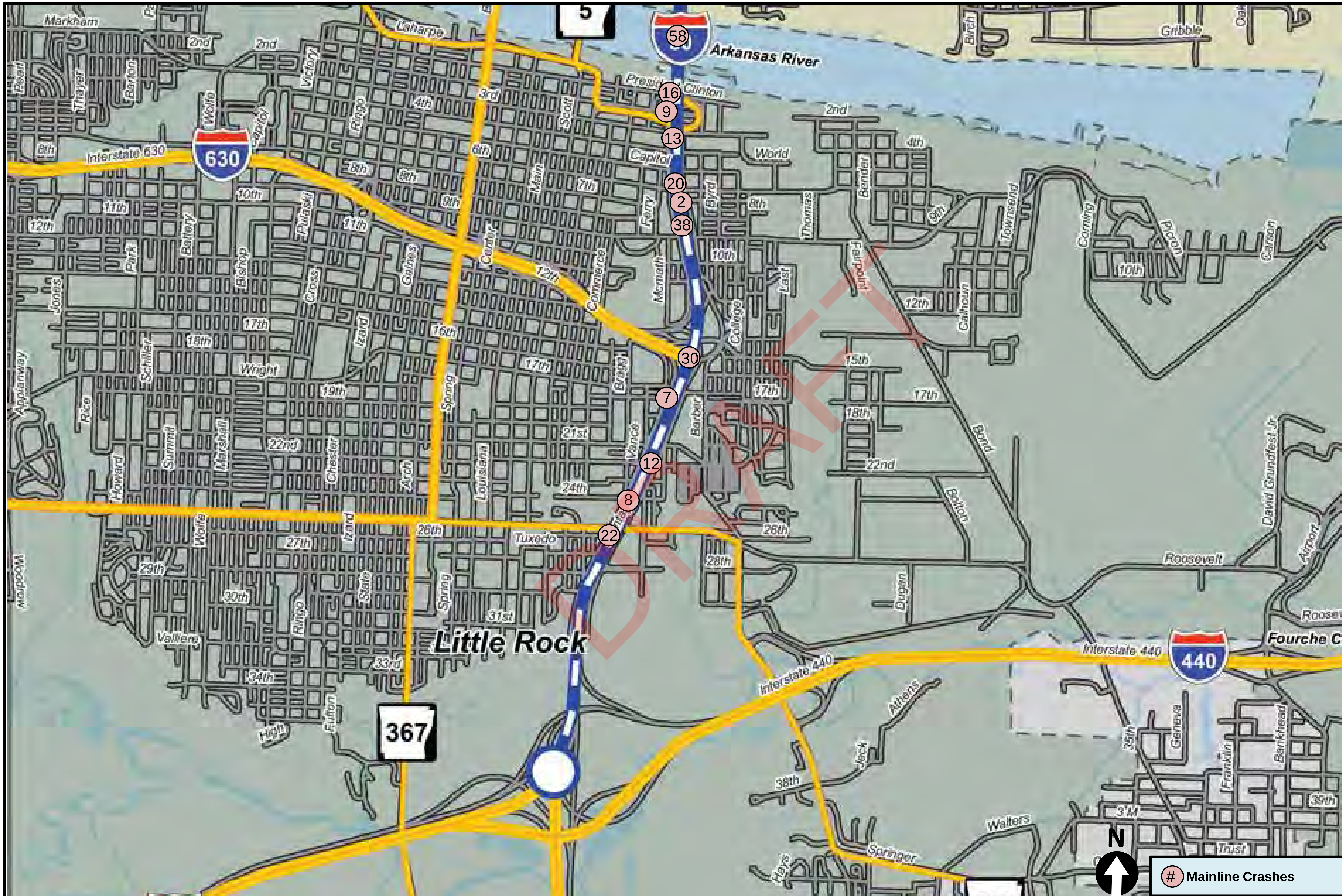


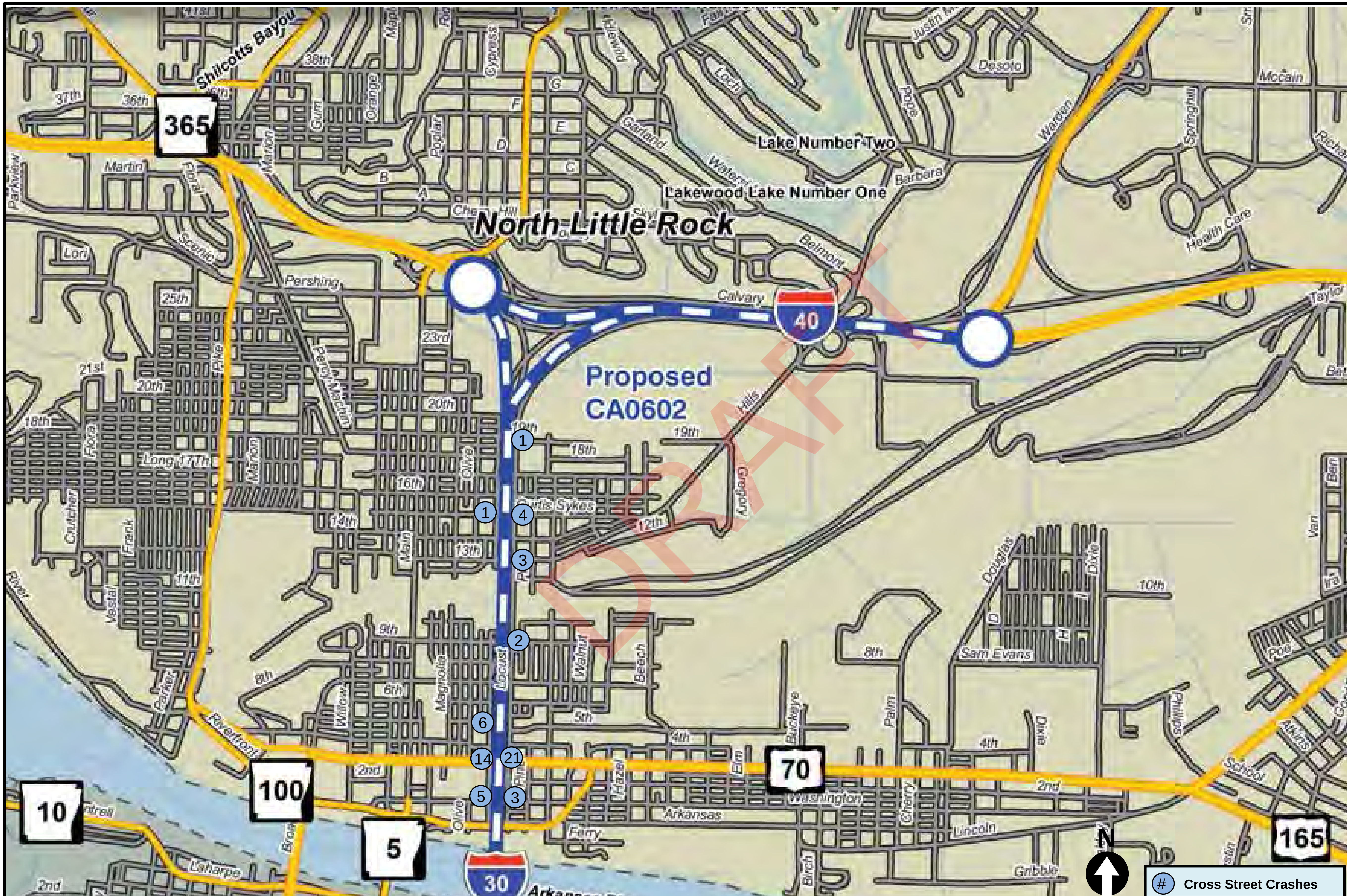
Exhibit C-1f

CA0602
I-30/I-40, Little Rock
2012 Main Lane Crash Locations

CONNECTING ARKANSAS PROGRAM
CAP

Exhibit C-1g

CA0602
I-30/I-40, North Little Rock
2010 Cross Road Crash Locations



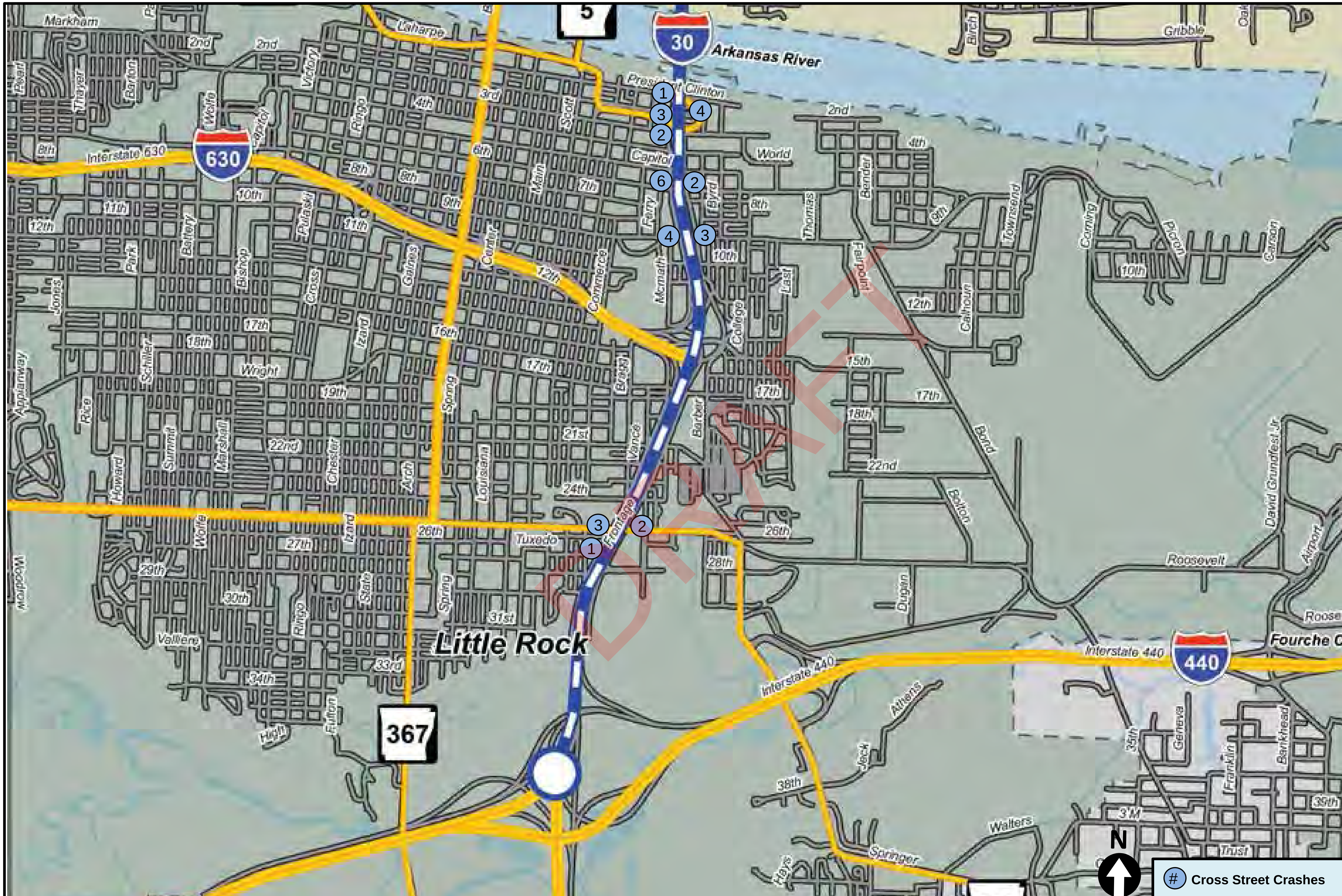


Exhibit
C-1h

CA0602
I-30/I-40, Little Rock
2010 Cross Road Crash Locations

CONNECTING ARKANSAS PROGRAM
CAP

Exhibit
C-1i

CA0602
I-30/I-40, North Little Rock
2011 Cross Road Crash Locations

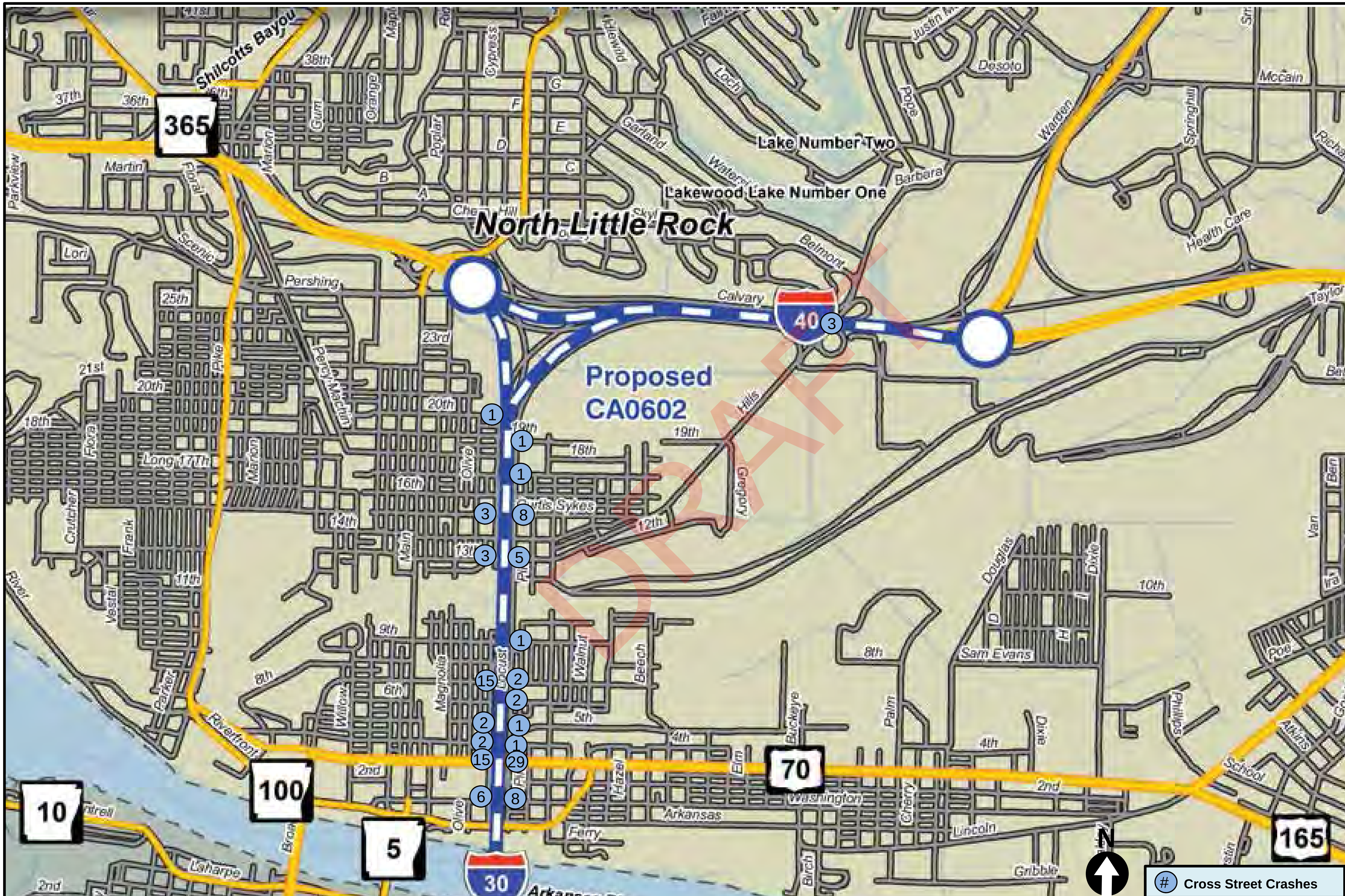
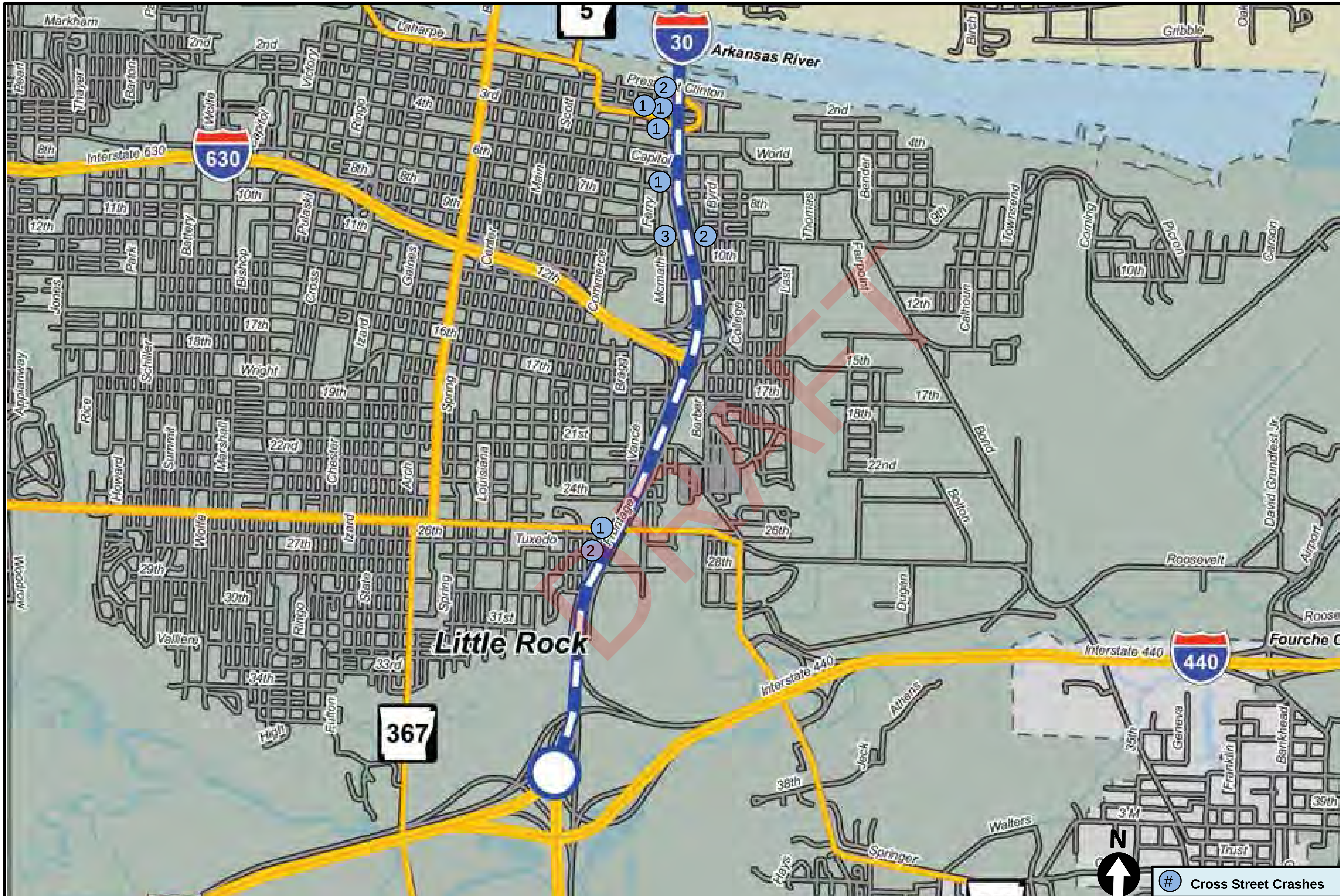


Exhibit C-1j



CA0602
I-30/I-40, Little Rock
2011 Cross Road Crash Locations

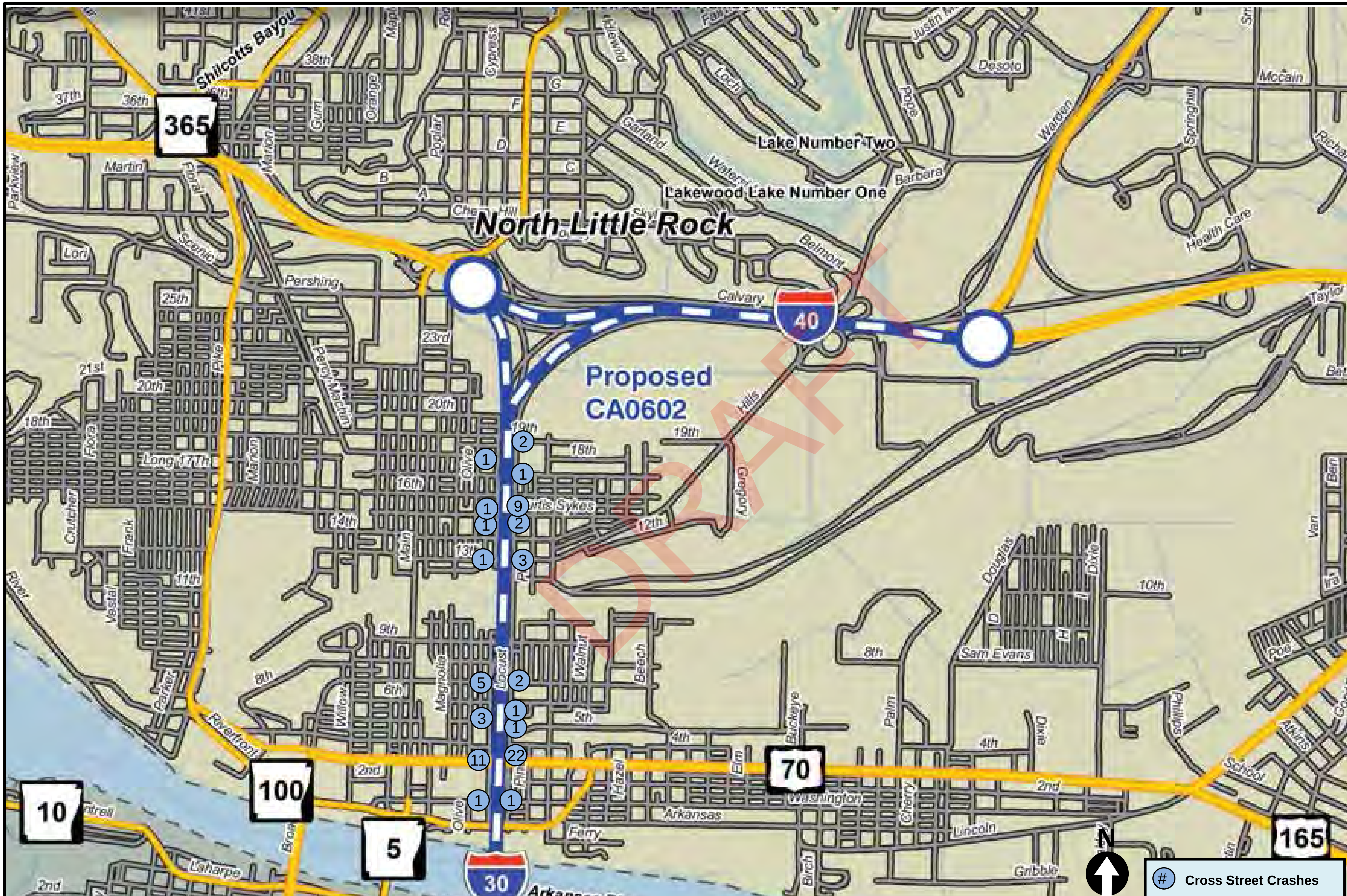
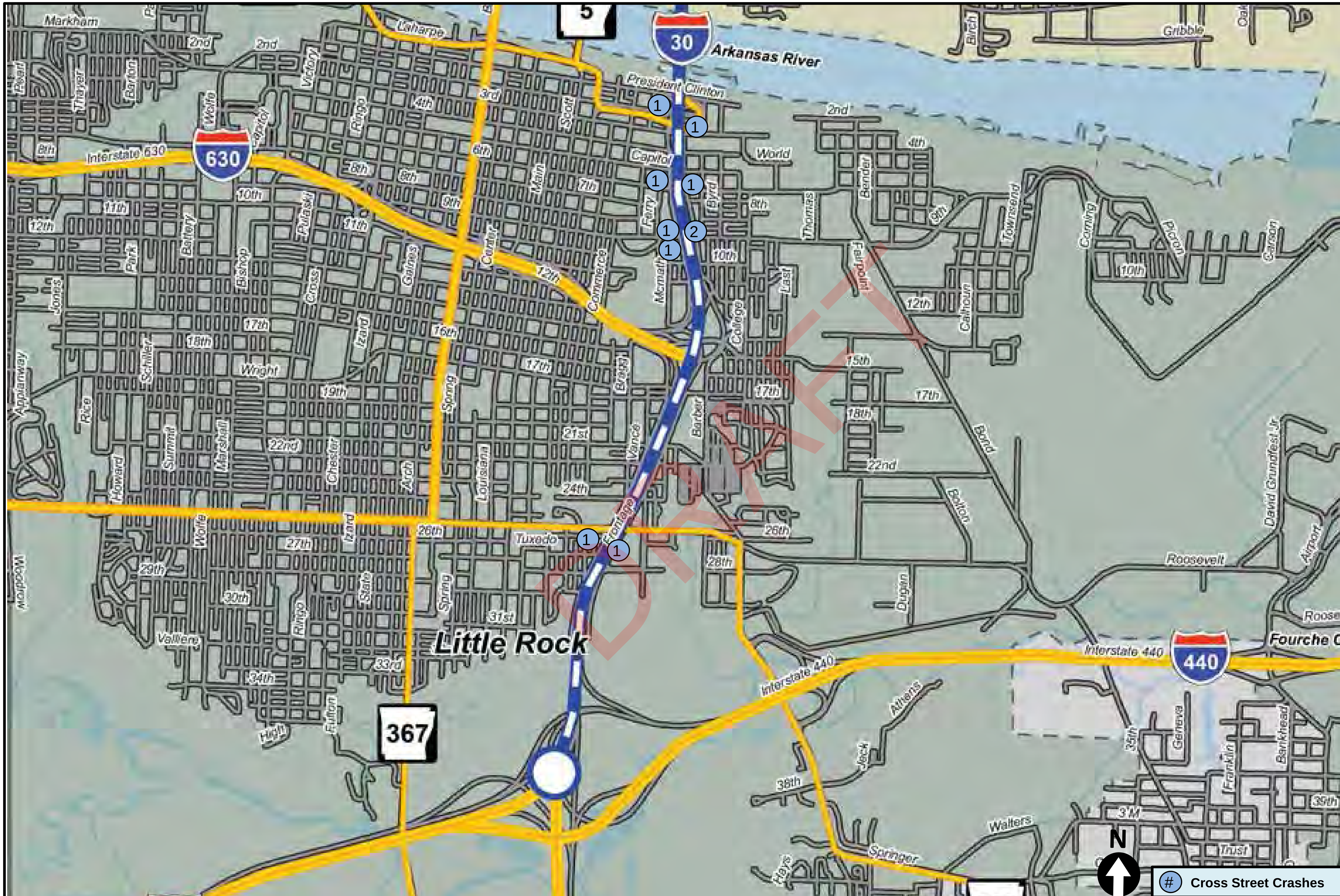


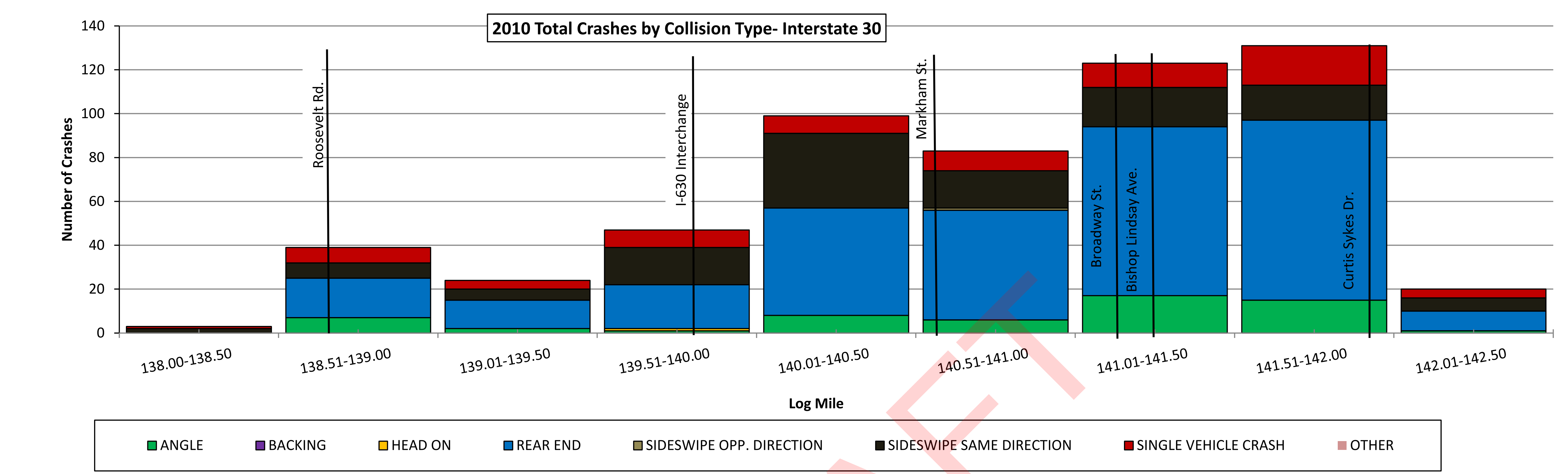
Exhibit C-1k

CA0602
I-30/I-40, North Little Rock
2012 Cross Road Crash Locations

Exhibit C-1l

CA0602
I-30/I-40, Little Rock
2012 Cross Road Crash Locations





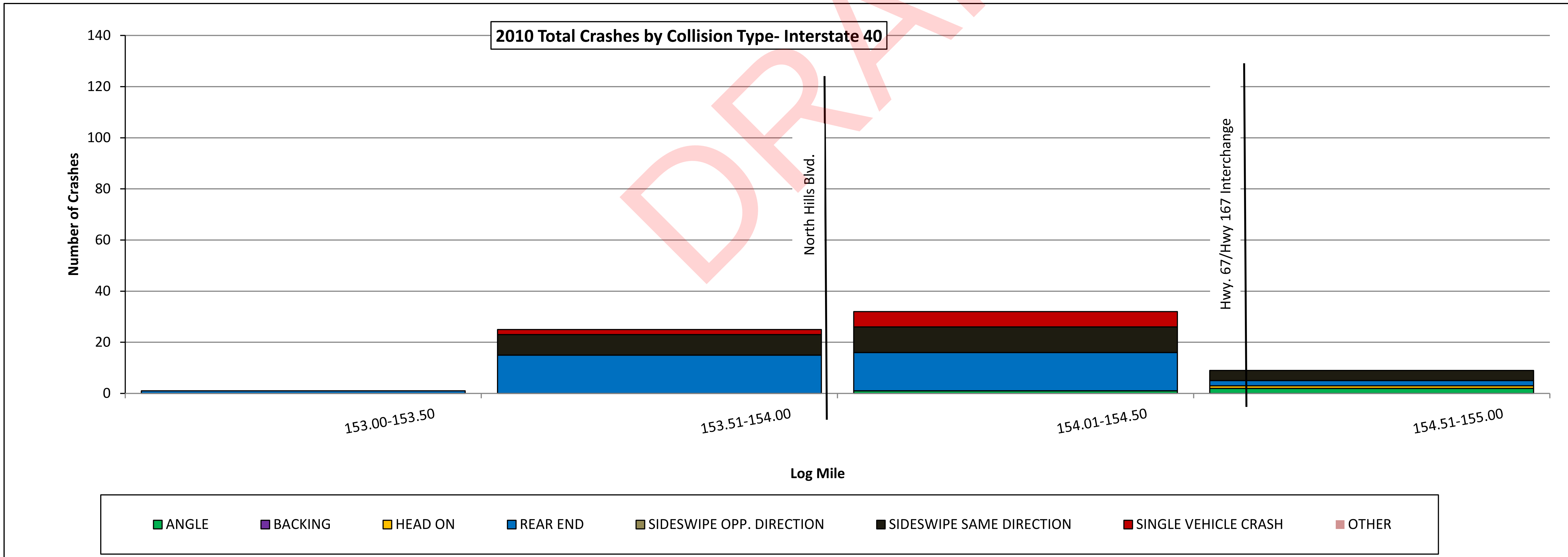


Exhibit C-1m

CA0602
I-30/I-40, Little Rock
2010 Crash Type & Location Histogram

CONNECTING ARKANSAS PROGRAM CAP

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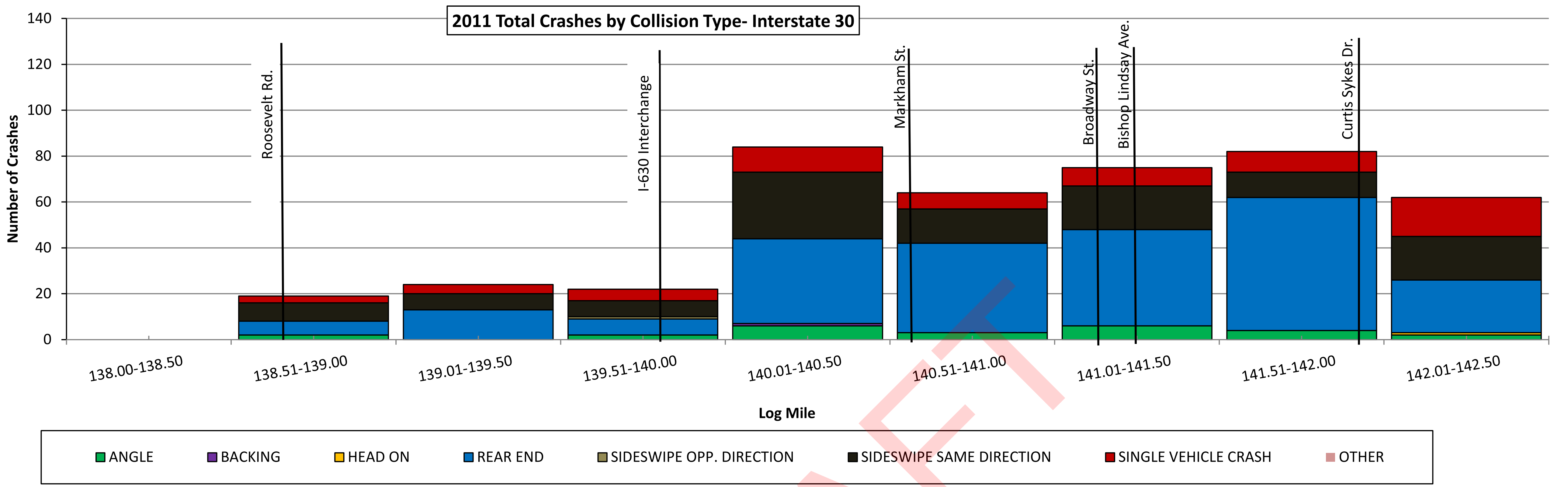


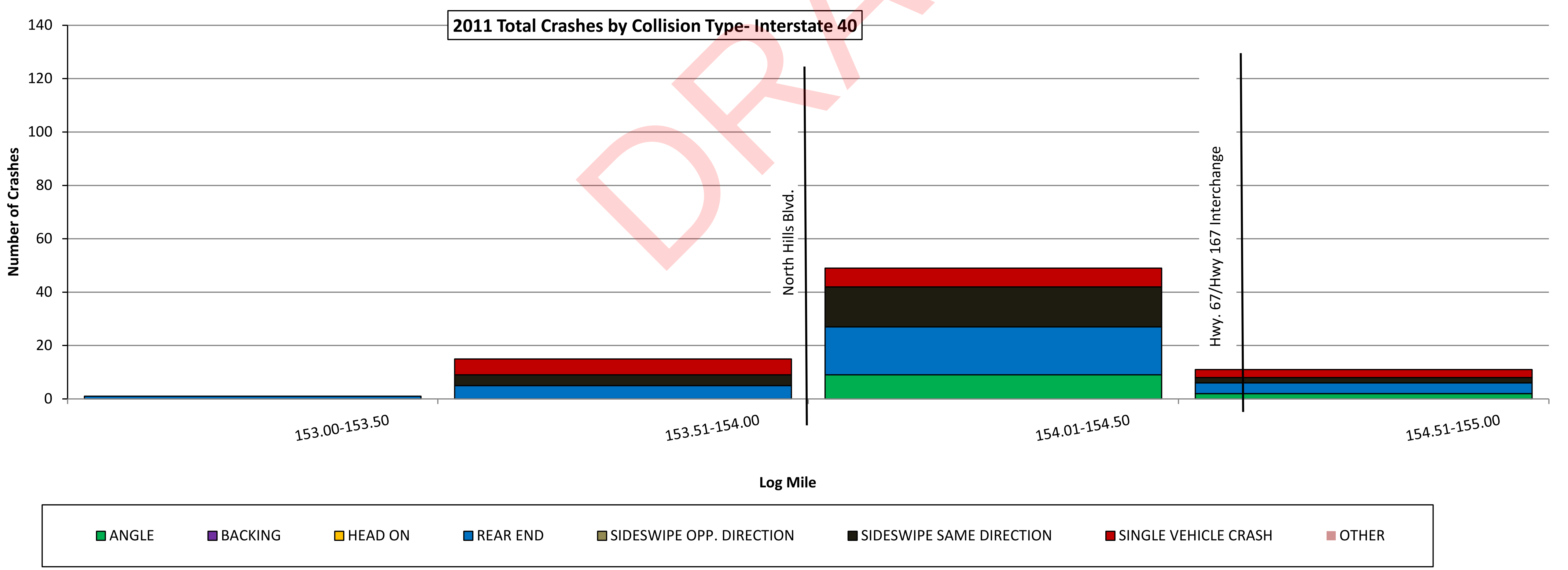
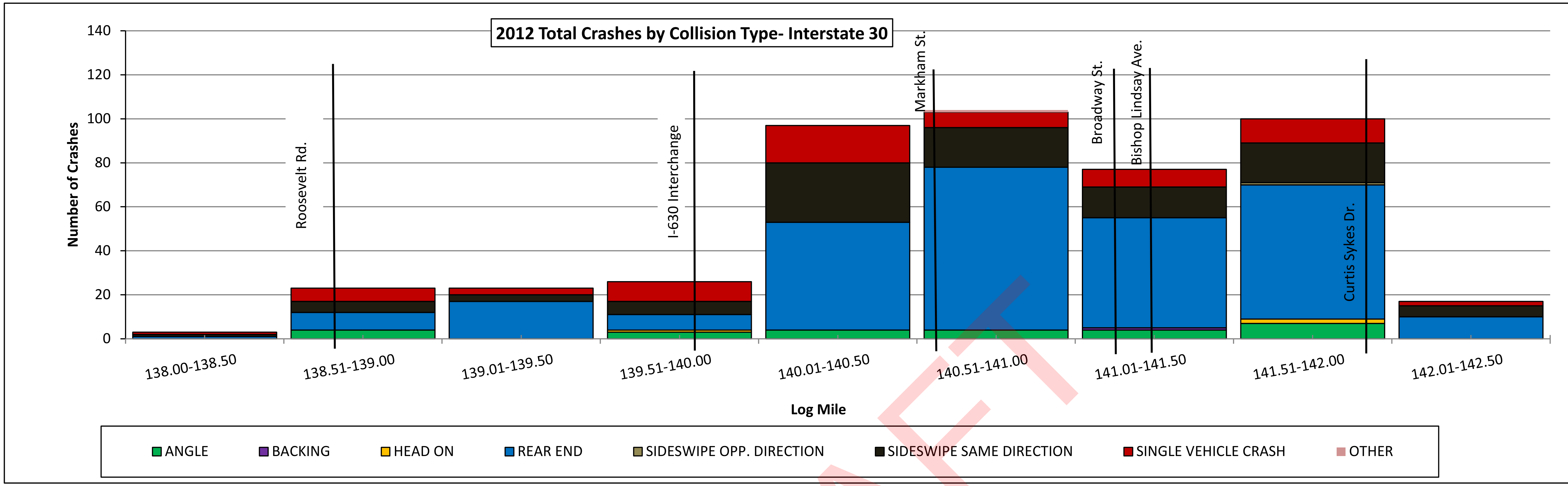


Exhibit C-1n

CA0602
I-30/I-40, Little Rock
2011 Crash Type & Location Histogram



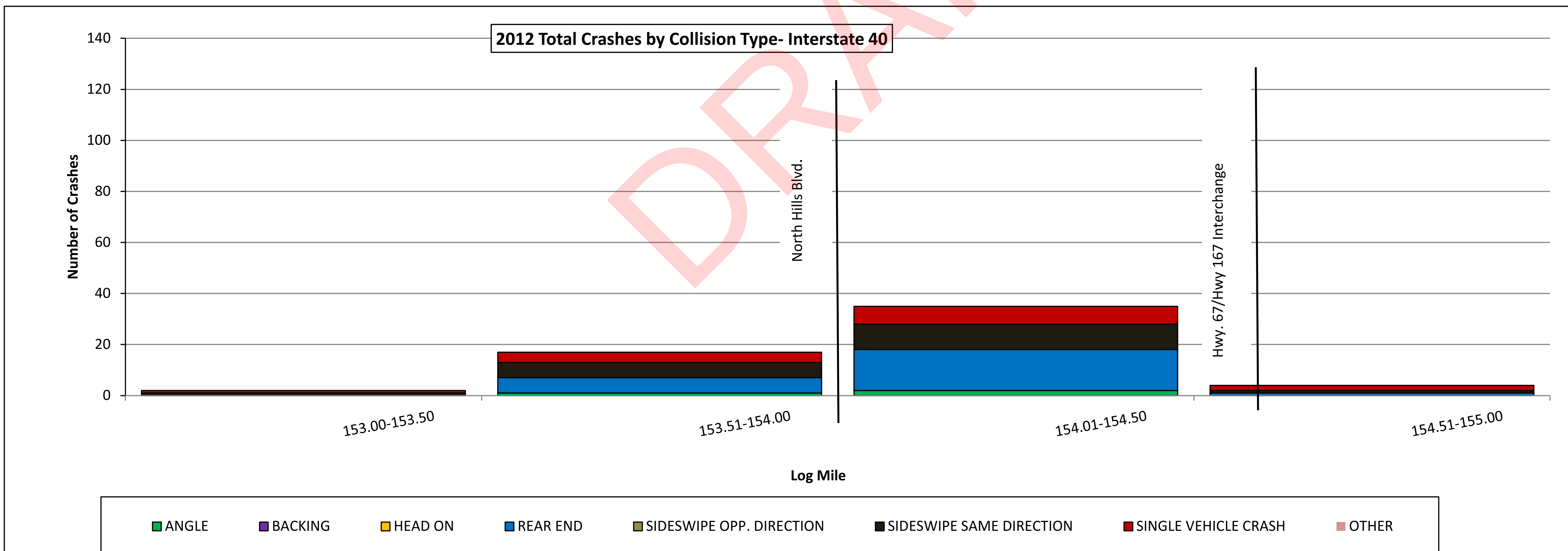
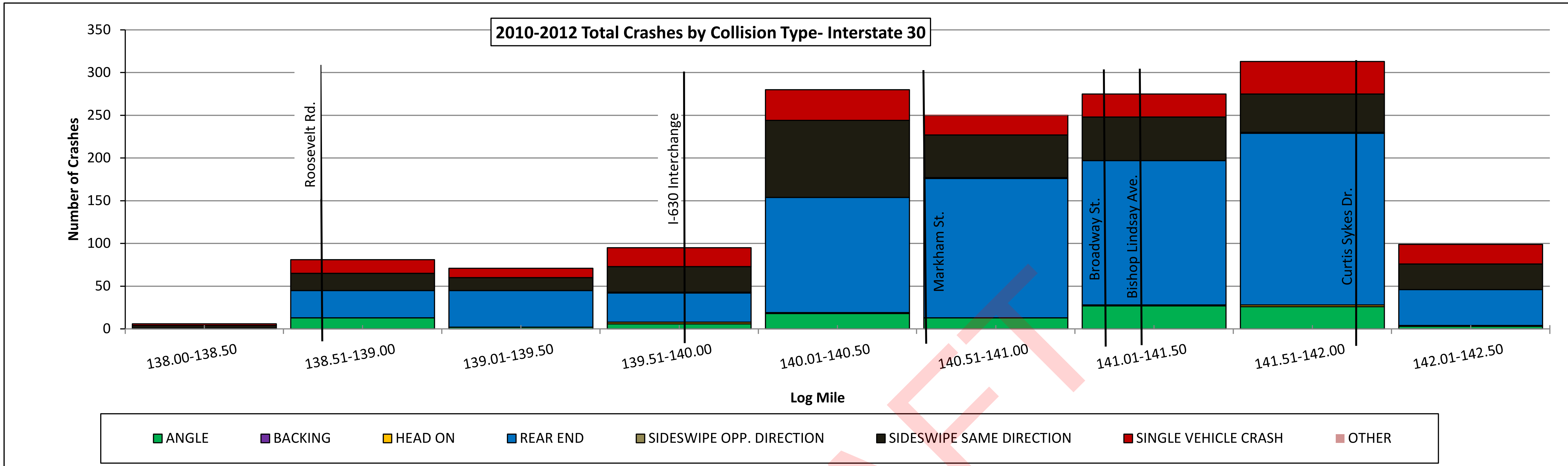


Exhibit C-1o

CA0602
I-30/I-40, Little Rock
2012 Crash Type & Location Histogram



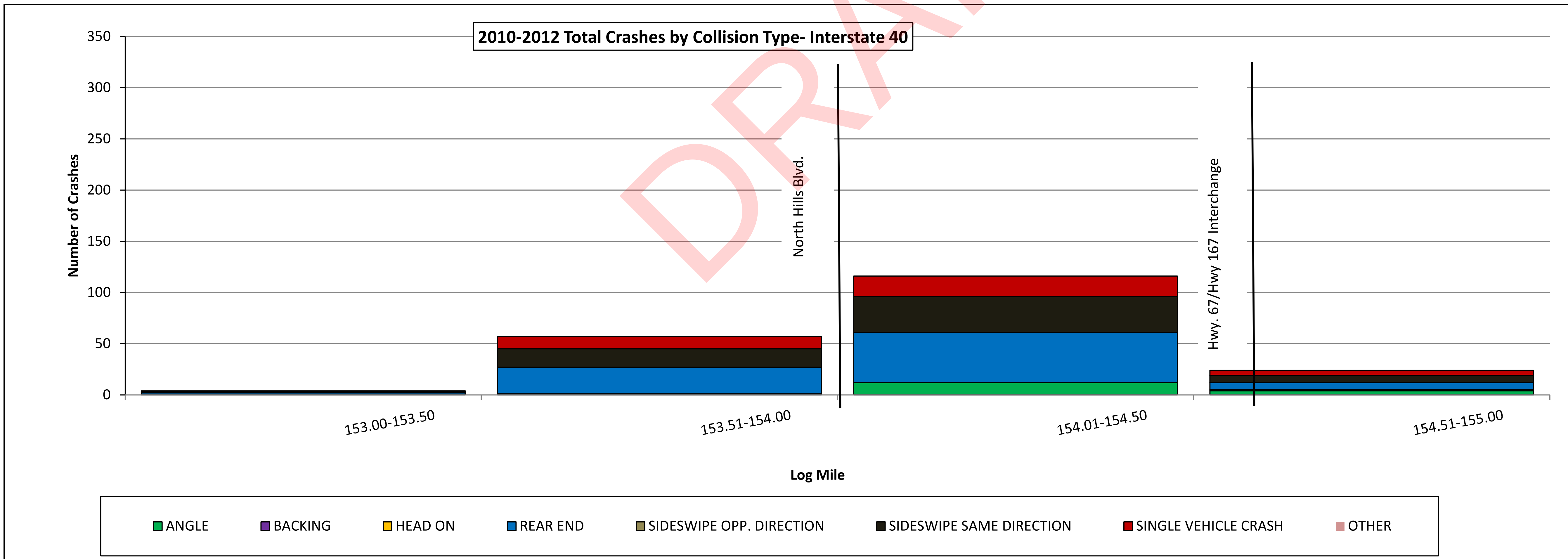


Exhibit C-1p

CA0602
I-30/I-40, Little Rock
2010-2012 Crash Type & Location Histogram

Serious Injury and Fatal Crash Data

The collisions within the study area were narrowed to view the locations of only fatal and serious injury crashes, as shown in **Exhibits C-2a** through **C-2f**. These exhibits show that the same segment of I-30 between I-630 and I-40, which has the extremely high total crash rates (all severity types) year after year, also contains most of the serious injury crashes during these time periods. However, the fatal crashes are mostly concentrated in the interchange areas. The interchange of I-40/Hwy. 67/Hwy. 167 experienced two fatal collisions in 2011 and one fatal collision in 2010. All three of these crashes were rear-end type collisions, and two of these three collisions occurred in the westbound direction. Two fatal collisions occurred along I-30 during the three years analyzed. One fatal collision occurred near 19th Street in 2012, and one fatal collision occurred at the interchange of I-30 with I-630 in 2010. Both of these collisions involved a single vehicle travelling westbound, and one of these collisions sited alcohol as a contributing factor. None of the collisions on the cross streets were fatal, and only a few were serious. The locations of these serious injuries along cross streets were not consistent and did not tend to cluster in any particular area.

Crash rates were calculated for fatal (K) and serious injury (A) collisions (KA Crash Rate) for the crashes occurring along the I-30/-40 main lane. The number of fatal and serious injury crashes occurring along the I-30/I-40 main lane and the corresponding KA crash rates are summarized in **Table C-2a** below.

Table C-2a. Fatal and Serious Injury Crash Locations

Interstate 30, Section 230, Log Mile 138.39-139.67 (Interstate 530/Interstate 440 to Interstate 630)								
Year	**Length (miles)**	**Weighted ADT**	**# Fatal (K) Crashes**	**# Serious (A) Crashes**	**KA Crash Rate**	**AR Avg. KA Crash Rate**	**Type**	**KA Crash Rate/AR Avg. Crash Rate**
2010	1.28	96,219	1	7	0.18	0.06	6 or more-Lane Access Control Urban Interstates in AR	3.21
2011	1.28	96,219	0	2	0.04	0.06	6 or more-Lane Access Control Urban Interstates in AR	0.75
2012	1.28	96,219	0	6	0.13	0.05	6 or more-Lane Access Control Urban Interstates in AR	2.62
Interstate 30, Section 230, Log Mile 139.68-142.02 (Interstate 630 to Interstate 40)								
Year	**Length (miles)**	**Weighted ADT**	**# Fatal (K) Crashes**	**# Serious (A) Crashes**	**KA Crash Rate**	**AR Avg. KA Crash Rate**	**Type**	**KA Crash Rate/AR Avg. Crash Rate**
2010	2.35	115,740	0	9	0.09	0.06	6 or more-Lane Access Control Urban Interstates in AR	1.64
2011	2.35	113,336	0	21	0.22	0.06	6 or more-Lane Access Control Urban Interstates in AR	3.64
2012	2.35	109,817	1	13	0.15	0.05	6 or more-Lane Access Control Urban Interstates in AR	2.92
Interstate 40, Section 330, Log Mile 153.25-154.88 (Interstate 30 to Highway 67/Highway 167)								
Year	**Length (miles)**	**Weighted ADT**	**# Fatal (K) Crashes**	**# Serious (A) Crashes**	**KA Crash Rate**	**AR Avg. KA Crash Rate**	**Type**	**KA Crash Rate/AR Avg. Crash Rate**
2010	1.63	118,503	1	2	0.04	0.06	6 or more-Lane Access Control Urban Interstates in AR	0.77
2011	1.63	115,503	2	5	0.10	0.06	6 or more-Lane Access Control Urban Interstates in AR	1.72
2012	1.63	113,503	1	5	0.09	0.05	6 or more-Lane Access Control Urban Interstates in AR	1.75

Note: The number of crashes occurring along I-30 within the I-630 interchange were split evenly between the segment from I-530/I-440 to I-630 and the segment from I-630 to I-40. Half of the crashes occurring along I-40 within the Hwy 67/Hwy 167 interchange were assumed to fall within the segment from I-40 to Hwy. 67/Hwy. 167.

As shown in **Table C-2a**, the KA crash rate for the segment of I-30 between I-440/I-530 and I-630 in 2010 and 2012 roughly three times the statewide average for other 6 or more-lane urban interstates. The KA crash rate for the segment of I-30 between I-630 and I-40 was consistently elevated for all three years with rates of one and a half to over three and a half times the statewide average for other 6 or more-lane urban interstates. The segment of I-40 from I-30 to Hwy. 67/Hwy. 167 displayed slightly elevated KA crash rates in 2011 and 2012 as compared to the statewide average for other 6 or more-lane urban interstates.

The collisions within the study area were particularly concentrated along I-30 at East Broadway Street and at Curtis Sykes Drive. Therefore, the collisions at these two locations were investigated in further detail. Neither location reported many collisions occurring in a construction zone, so construction can be eliminated as a cause for the high number of collisions at this location. The collisions reported in these areas resulted in mostly property damage only or very low severity injuries. The types of collisions were examined along the I-30 main lane, ramps, and intersections at Cypress Street and Locust Street for both the East Broadway Street and the Curtis Sykes Drive exits. The results are shown in **Table C-2b** below.

Table C-2b. Collision Types at East Broadway Street and at Curtis Sykes Drive

Number of Collisions 2010								
	I-30 at East Broadway Street				I-30 at Curtis Sykes Drive			
Type	I-30 Main Lane	I-30 Ramps	East Broadway St at Cypress St	East Broadway St at Locust St	I-30 Main Lane	I-30 Ramps	Curtis Sykes Dr at Cypress St	Curtis Sykes Dr at Locust St
Angle	1	6	4	9	1	2	5	5
Backing	0	0	0	1	0	0	0	0
Rear End	32	23	6	4	25	19	0	2
Sideswipe Same Direction	6	6	2	7	8	4	0	0
Single Vehicle	4	2	2	0	8	1	0	0
Number of Collisions 2011								
	I-30 at East Broadway Street				I-30 at Curtis Sykes Drive			
Type	I-30 Main Lane	I-30 Ramps	East Broadway St at Cypress St	East Broadway St at Locust St	I-30 Main Lane	I-30 Ramps	Curtis Sykes Dr at Cypress St	Curtis Sykes Dr at Locust St
Angle	5	0	6	13	0	1	1	1
Backing	0	1	1	0	0	0	0	0
Rear End	20	11	6	14	23	9	1	0
Sideswipe Same Direction	9	4	0	3	1	1	0	0
Single Vehicle	5	1	1	0	4	3	1	0
Number of Collisions 2012								
	I-30 at East Broadway Street				I-30 at Curtis Sykes Drive			
Type	I-30 Main Lane	I-30 Ramps	East Broadway St at Cypress St [1]	East Broadway St at Locust St	I-30 Main Lane	I-30 Ramps	Curtis Sykes Dr at Cypress St	Curtis Sykes Dr at Locust St
Angle	3	0	0	0	2	0	1	6
Backing	0	0	0	1	0	0	0	1
Head On	0	0	0	0	0	0	1	0
Rear End	52	10	0	0	29	4	0	2
Sideswipe Same Direction	11	6	0	0	6	2	0	0
Single Vehicle	5	2	0	1	2	0	0	2

Note: [1] Based on information obtained from the City of North Little Rock Traffic Department and North Little Rock Police Department, it is anticipated that the reduction in the number of collisions at East Broadway St. at Cypress St. in 2012 compared to 2011 and 2010 could be accounted for based on the following factors: 1) Widening/drainage improvements along the East Broadway corridor that were completed for 2012; 2) increased usage of Riverfront Drive by the citizens of North Little Rock during entertainment events to by-pass the downtown area; and 3) a reduction in the number of entertainment events at Verizon Arena.

As depicted in **Table C-2b**, crashes occurred mostly along the I-30 main lane followed by the ramps and the intersections at Locust Street, with the majority of these collisions being rear end collisions. Within the East Broadway Street area, the collisions occurring at the intersections had about as many angle collisions as rear end collisions. Within the Curtis Sykes area, angle collisions were most common at the intersections.

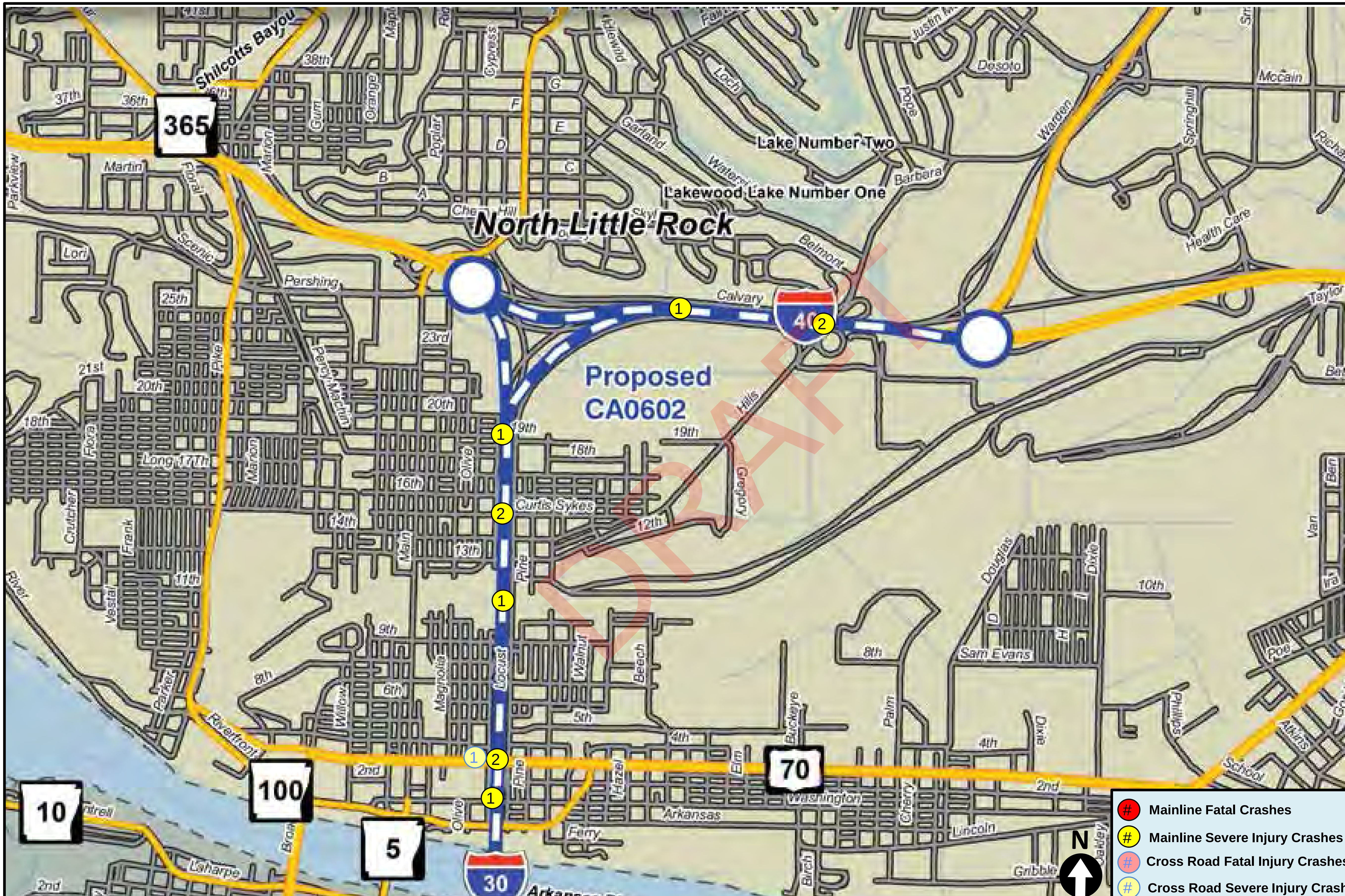


Exhibit C-2a

CA0602
I-30/I-40, North Little Rock
2010 Severe and Fatal Crash Locations

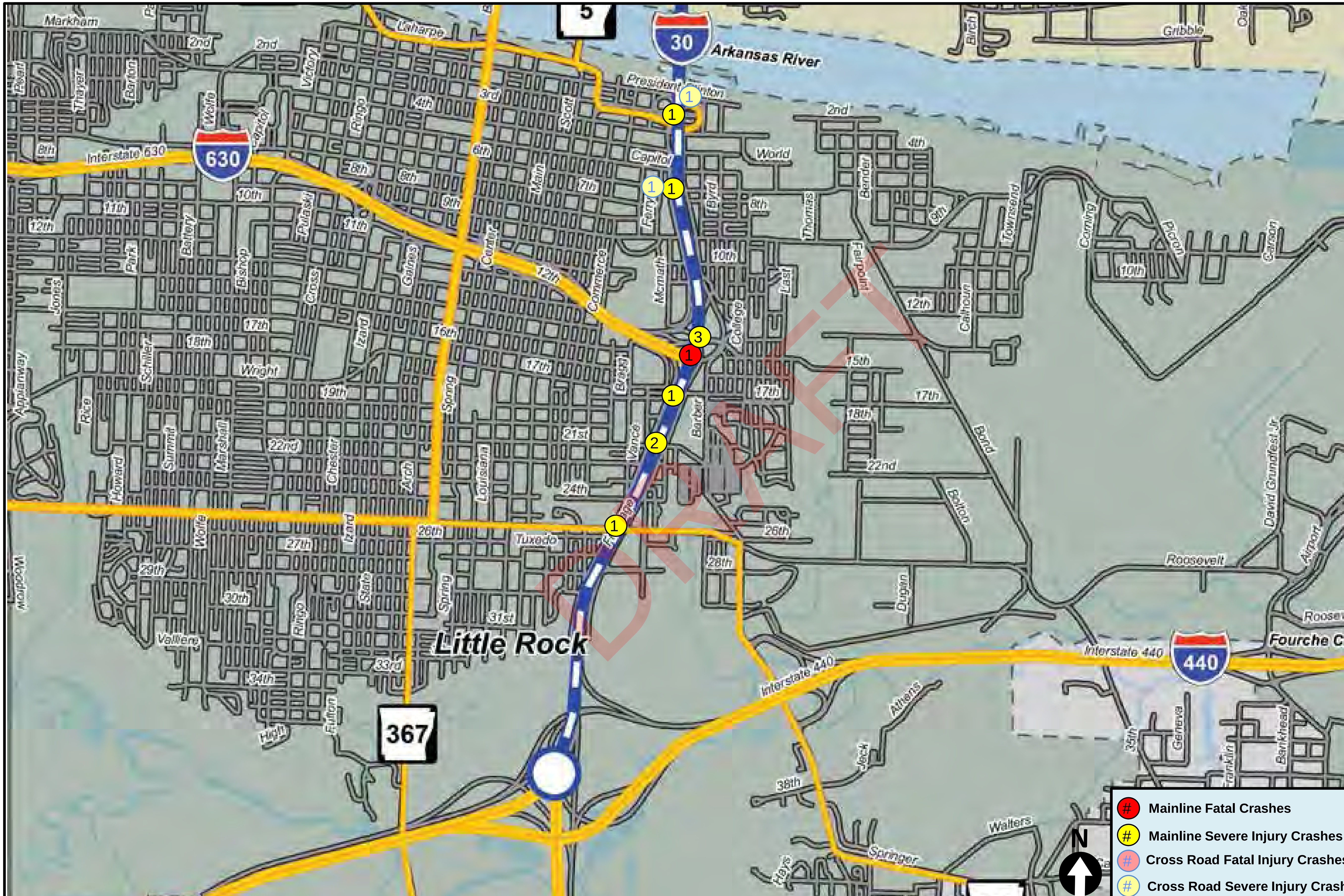
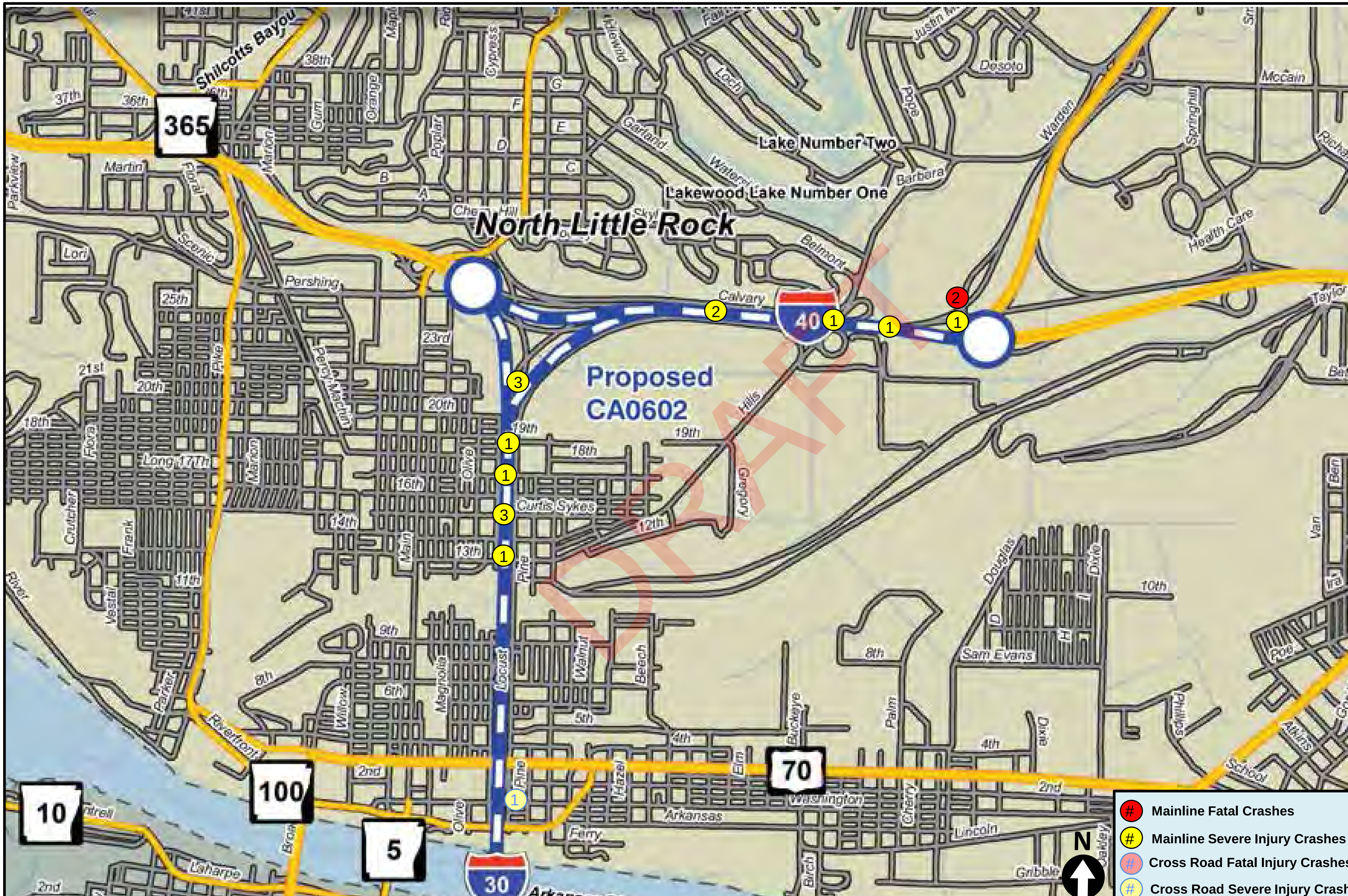


Exhibit C-2b

CA0602
I-30/I-40, Little Rock
2010 Severe and Fatal Crash Locations

Exhibit
C-2c

CA0602
I-30/I-40, North Little Rock
2011 Severe and Fatal Crash Locations



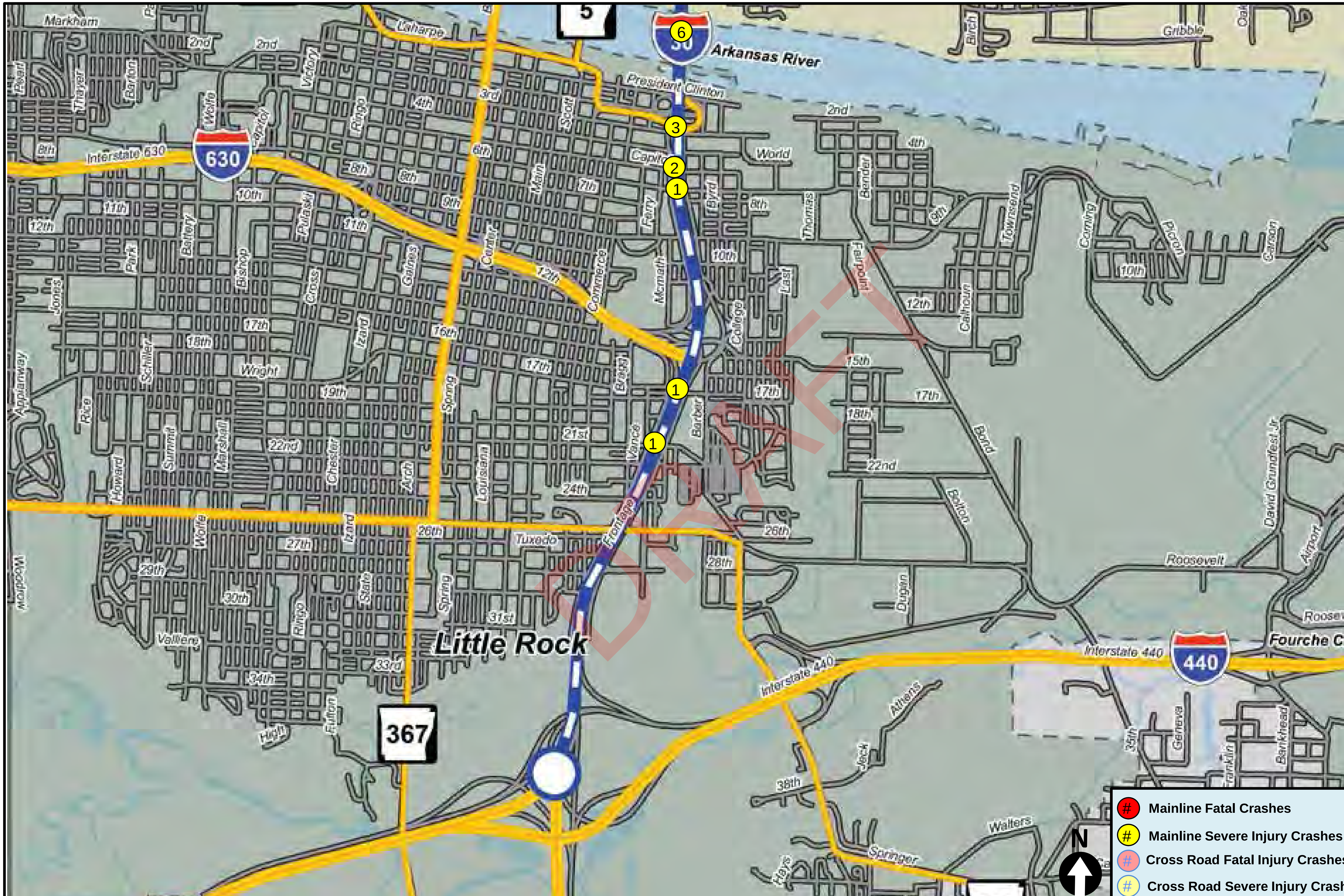
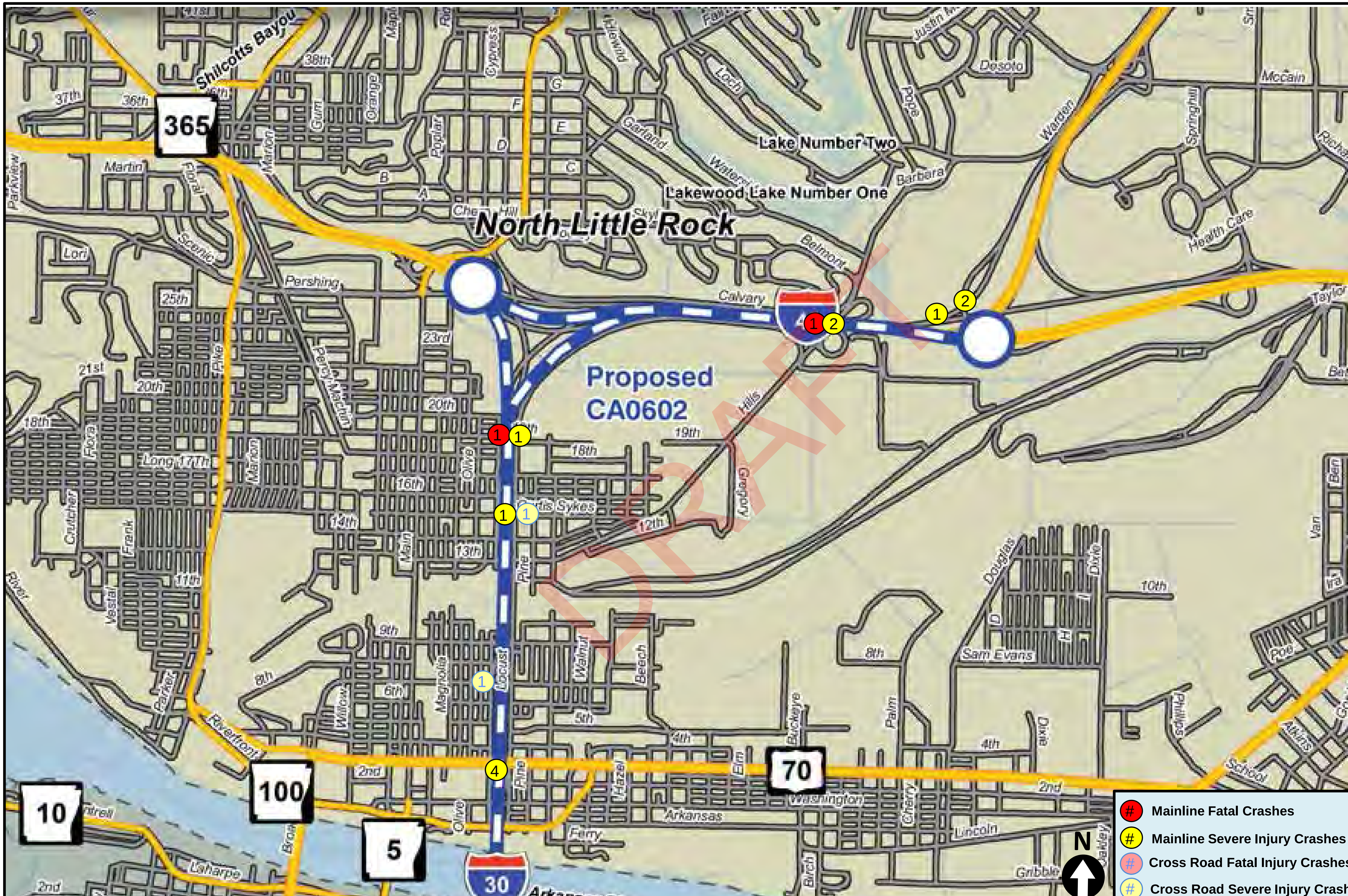


Exhibit C-2d

CA0602
I-30/I-40, Little Rock
2011 Severe and Fatal Crash Locations

Exhibit
C-2e

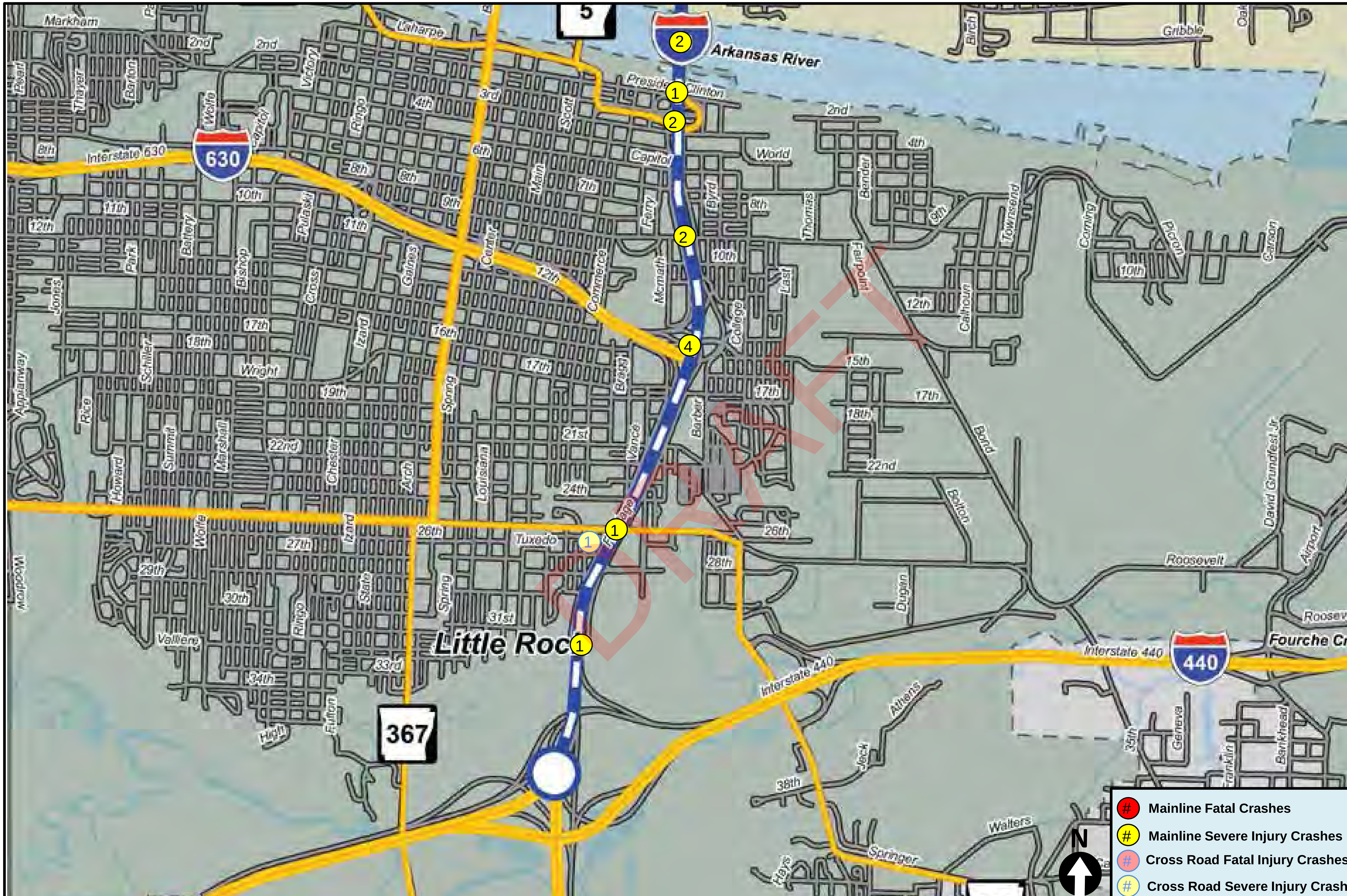
CA0602
I-30/I-40, North Little Rock
2012 Severe and Fatal Crash Locations



CONNECTING ARKANSAS PROGRAM
CAP

Exhibit C-2f

CA0602
I-30/I-40, Little Rock
2012 Severe and Fatal Crash Locations

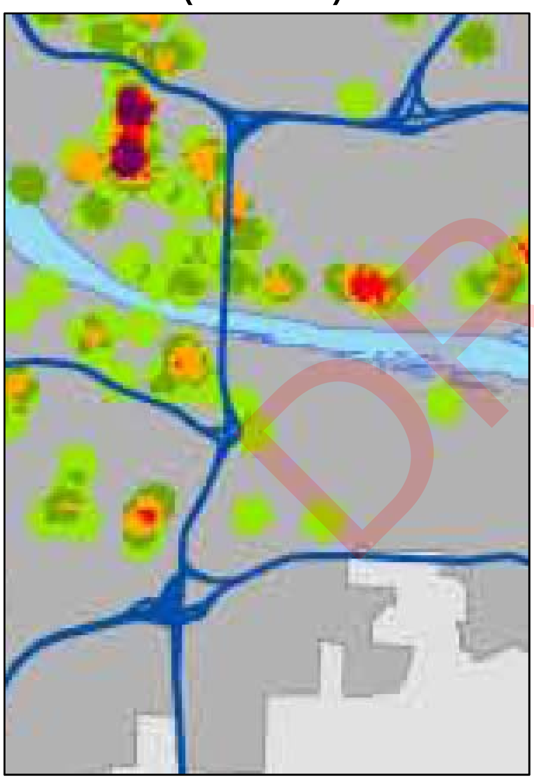


<u>**Bicycle and Pedestrian Crash Data**</u>

The following presents bicycle and pedestrian crash data along the I-30 PEL study area. Data presented below was obtained from Metroplan's CARTS Pedestrian / Bicyclist Crash Analysis dated January 9, 2012, from which pedestrian and bicycle crashes from the Arkansas State Police Database were mapped using GIS.

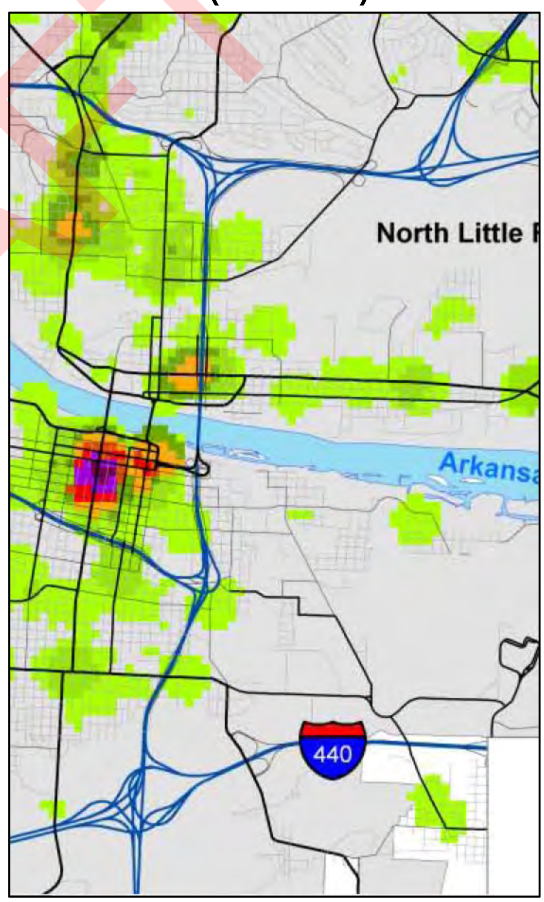
Figures C-3a and C-3b show the pedestrian and bicycle crash clusters in the study area from 2001 to 2010. As shown, there was a high concentration of pedestrian crashes at the Broadway Street interchange in North Little Rock and at the Markham Street interchange in Little Rock, especially near the ramp termination at Cumberland Street. Both of these areas attract pedestrians, especially during the evening. A lesser concentration of bicycle clusters was in the Curtis Sykes interchange area.

Figure C-3a. Bicycle Crash Clusters (2001-2010)



Source: CARTS Pedestrian/Bicyclist Crash Analysis

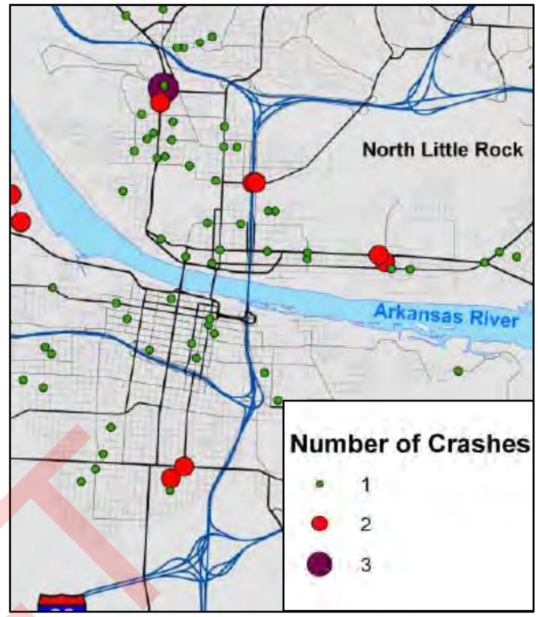
Figure C-3b. Pedestrian Crash Clusters (2001-2010)



Source: CARTS Pedestrian/Bicyclist Crash Analysis

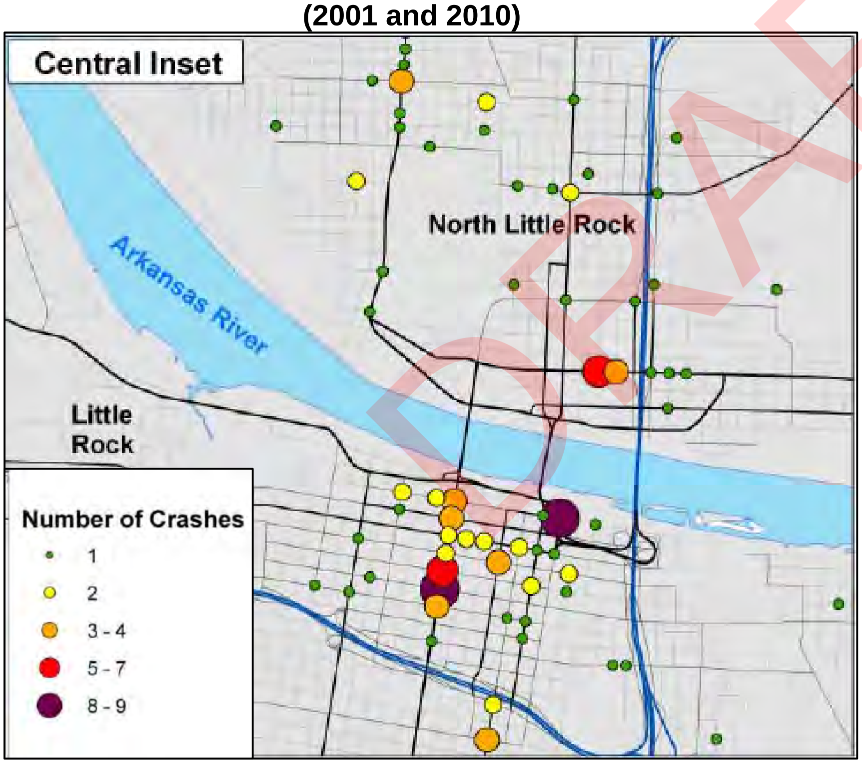
Figures C-3c and C-3d show the number of crashes for both pedestrians and vehicles. The majority of bicycle crashes in the central area are not along the corridor with the exception of the ramp intersections at 13th Street. The number of pedestrian crashes was greatest near the west ramp termini at the Markham Street interchange. From the study, the intersection of Markham Street at Cumberland Street/LaHarpe Boulevard had a total of 9 pedestrian crashes during the study period. The intersection of East Broadway Street at Magnolia Street had 5 pedestrian crashes during the study period. There were also multiple pedestrian crashes just west of the Broadway Street interchange in addition to a single pedestrian crash at the Broadway Street ramp intersection.

Figure C-1c. Bicycle Crash Intersection Analysis (2001 and 2010)



Source: CARTS Pedestrian/Bicyclist Crash Analysis

Figure C-3d. Pedestrian Crash Intersection Analysis (2001 and 2010)



Source: CARTS Pedestrian/Bicyclist Crash Analysis

Metroplan cited one pedestrian/bicycle fatality at the I-630 interchange, one fatality just north of the Broadway Street interchange, three fatalities between the North Terminal and the North Hills Boulevard interchange, and one at the Hwy. 67/Hwy. 167 interchange (http://www.metroplan.org/files/53/ped_bike2001_2010.pdf).

Structural Roadway Deficiencies

The I-30 pavement section was originally constructed in the 1960s with 10 inch jointed concrete pavement over 8 inches of aggregate material. In the early 1980s, this section was overlaid with a ½ inch stress absorbing membrane and 5.5 inches of asphalt. Likewise, the I-40 pavement section was originally constructed in the 1960s with 10 inches of concrete pavement over 9 to 11 inches of aggregate material. In the mid-1980s, the section was overlaid with 1 inch of asphalt and 6 inches of continuously reinforced concrete pavement.

Existing surface conditions for I-30 and I-40 in 2012 are noted below and depicted graphically in **Figures C-4a** through C**-4g**.

The 2012 existing surface conditions show the following along I-30 (asphalt):

- Moderate levels of alligator cracking (**Figure C-4a**);
- Moderate to severe levels of joint reflection cracking (**Figure C-4b**);
- Moderate levels of longitudinal and transverse cracking (**Figure C-4c**); and
- Moderate levels of raveling in isolated areas along I-30 (**Figure C-4d**).

The 2012 existing surface conditions show the following along I-40 (concrete):

- Moderate levels of lane/shoulder joint separation (**Figure C-4e**);
- Moderate to severe levels of patch deterioration (**Figure C-4f**); and
- Severe levels of linear cracking (**Figure C-4g**).

Data source: AHTD Pavement Management Section; Pavement performance data and pavement imagery collected via the Automatic Road Analyzer (ARAN).

Figure C-4a. Alligator Cracking on I-30

Figure C-4b. Joint Reflection Cracking on I-30

Figure C-4c. Longitudinal and Traverse Cracking on I-30

Figure C-4d. Raveling on I-30

Figure C-4e. Lane and Shoulder Joint Separation on I-40

Figure C-4f. Patch Deterioration on I-40

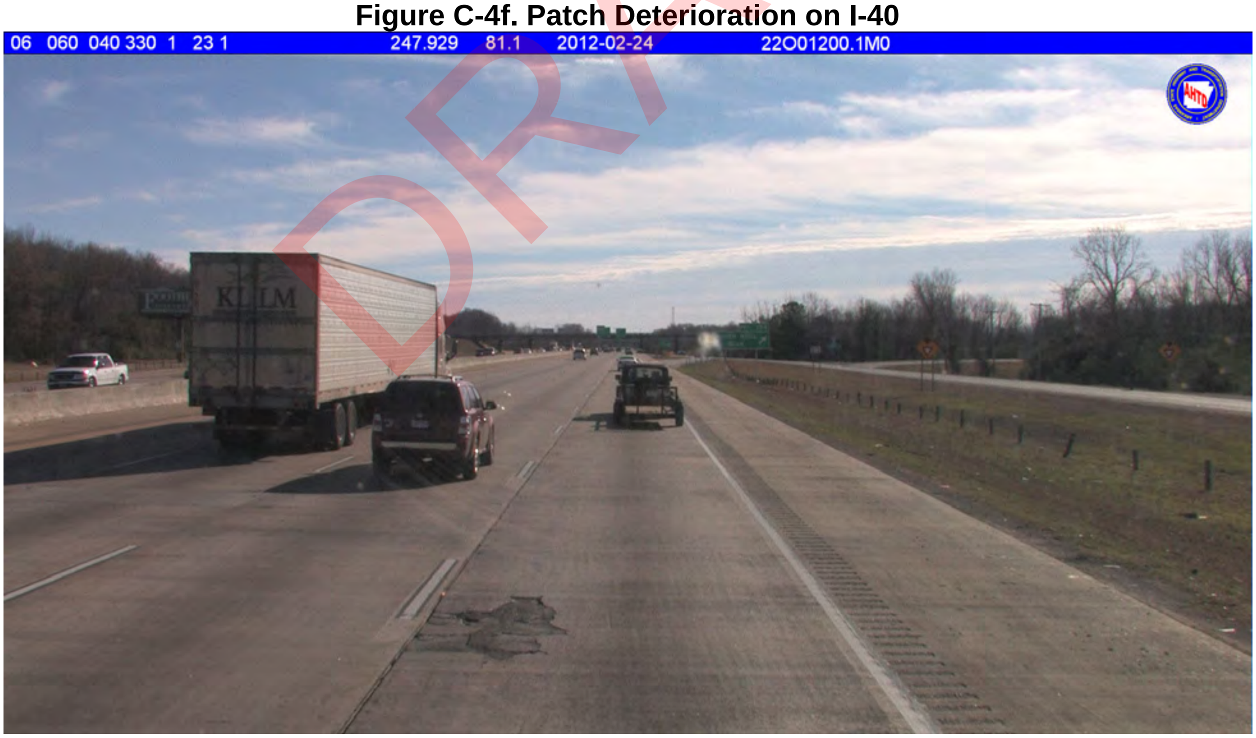


Figure C-4g. Linear Cracking on I-40

<u>**Functional Roadway Deficiencies**</u>

Functional deficiencies are features that prevent the roadway from handling the normal traffic volume expected of a major highway, such as narrow lane widths, lack of shoulders and sharp curves. The project study area contains many roadway features that do not meet current recommended design standards.

The existing I-30 facility contains two horizontal curves that have inadequate stopping sight distance due to the median barrier obstructing the driver's vision in the inside travel lane. The I-30 existing vertical profile also contains three sag curves as depicted in **Figure C-5a** that fall short of the recommended rate of vertical curvature for the current 60 miles per hour speed limit. In addition, there are three additional sag curves and one crest curve shown in **Figure C-5b** that are extremely close to being inadequate and may fall short of the minimum rates of vertical curvature once a more detailed level of existing topography is obtained.

The existing interstate facilities within the study corridor contain nine locations of inadequate shoulder widths, including two areas where the curb and gutter is immediately adjacent to the travel lanes as shown in **Figure C-5c**.

Most of the interchange locations do not meet the minimum one mile spacing that is recommended between urban interchanges. This corridor has 33 ramps in a five mile section, which is 70% higher than the recommended number. These interchange areas contain inadequate features, including three exit ramps lacking recommended deceleration lane lengths outside of the interstate travel lanes, seven entrance ramps lacking recommended acceleration lane lengths (**Figure C-5d**), and twelve locations between entrance and exit ramps that lack the required spacing to safely allow weaving operations (**Figure C-5e**). One major weaving area of concern is located between the I-30/I-40 interchange and the I-40/Hwy.67 interchange (**Figure C-5f**). This movement is complicated by the existence of the North Hills Boulevard interchange located within this weaving section, which is less than a mile from the adjacent interchanges.

Figures C-5g through **C-5j** map the locations of the functional roadway deficiencies described above and summarized as follows:

- 8 locations with curves that do not meet design standards (**Figure C-5g**);
- 9 locations with inadequate shoulder widths, including 2 locations where the curb and gutter is immediately adjacent to the travel lanes (**Figure C-5h**);
- 10 ramps lack recommended lane lengths and/or are below standard acceleration/deceleration and taper lengths (**Figure C-5i**); and
- 12 locations lack required spacing to safely allow weaving operations between entrance/exit ramps. (**Figure C-5j**).

Figure C-5a. Sag Curve Illustration

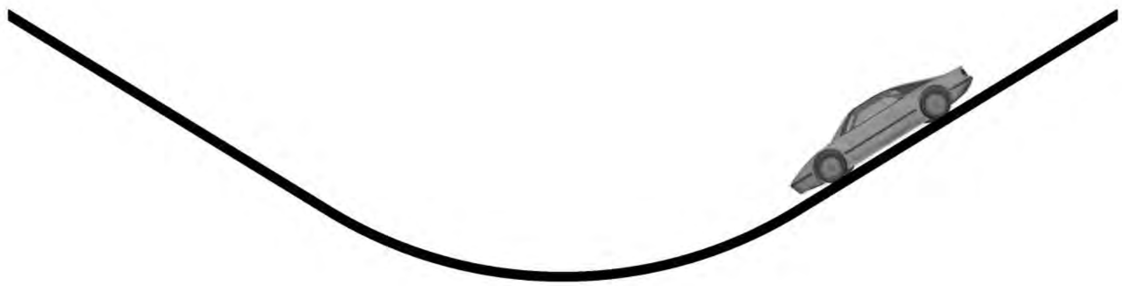


Figure C-5b. Crest Curve Illustration

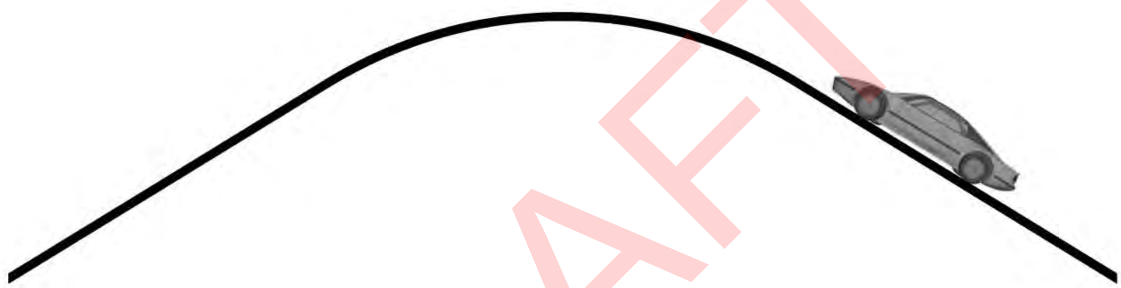


Figure C-5c. Inadequate Shoulders and Curb and Gutter Adjacent to I-30

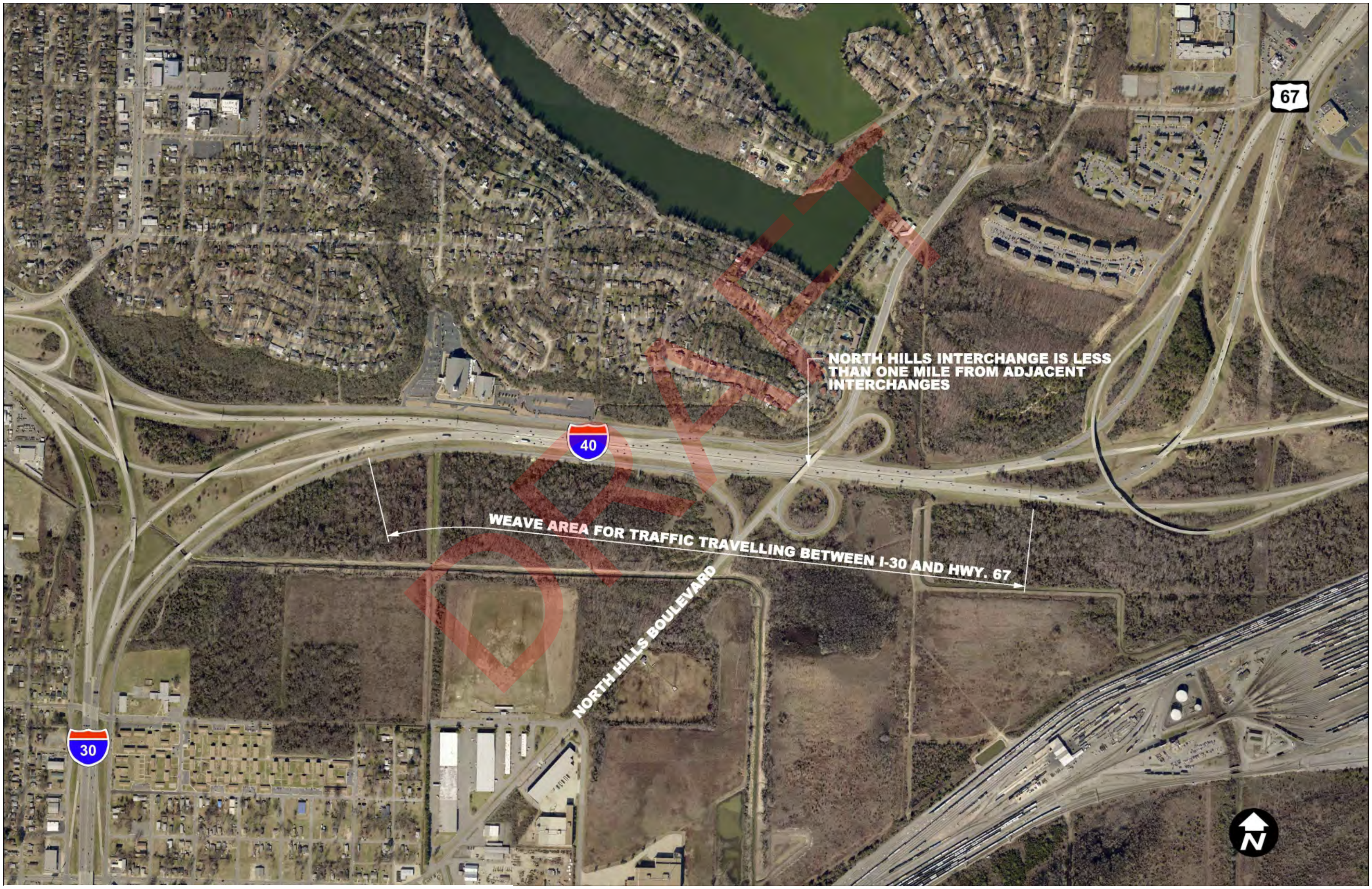
Figure C-5d. Inadequate Acceleration Distance at I-30 Entrance Ramp

Source: 2013 Pulaski County Aerial Photograph

Figure C-5e. Inadequate Ramp Spacing and Weaving along I-30

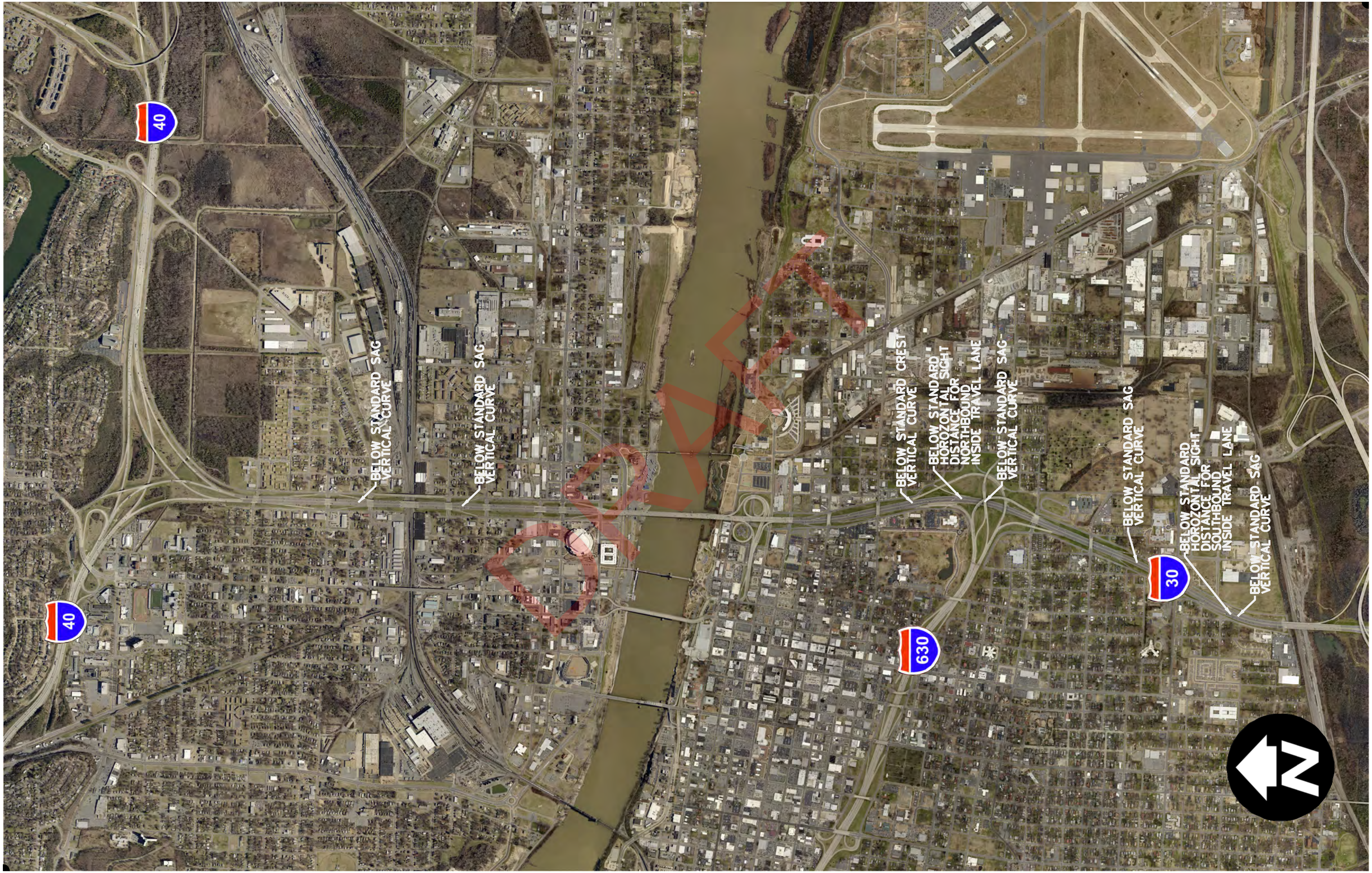
Source: 2013 Pulaski County Aerial Photograph

Figure C-5f. Weaving Problem along I-40 between I-30 and Hwy. 67



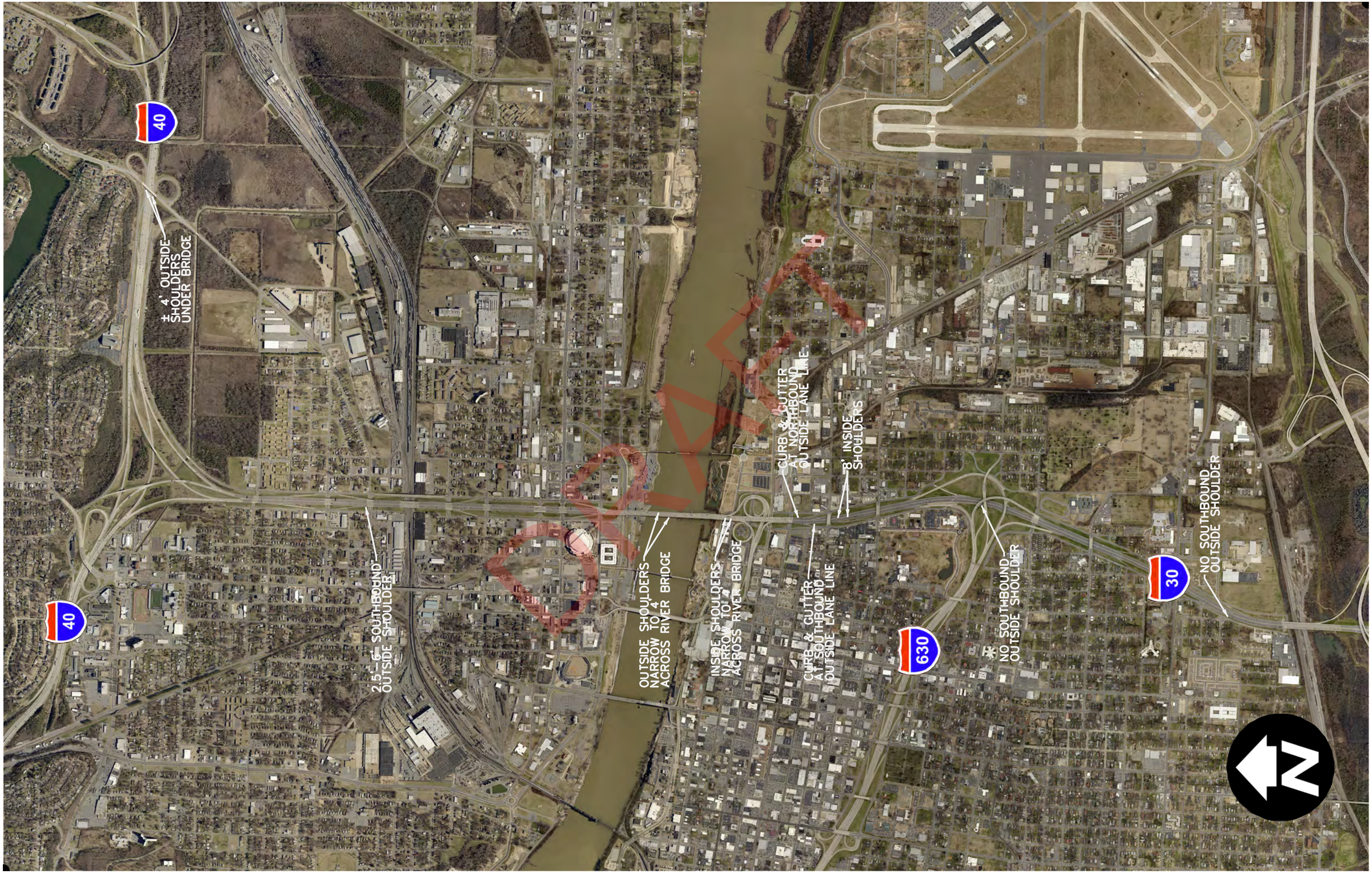
Source: 2013 Pulaski County Aerial Photograph

Figure C-5g. Locations with Curves Below Design Standards



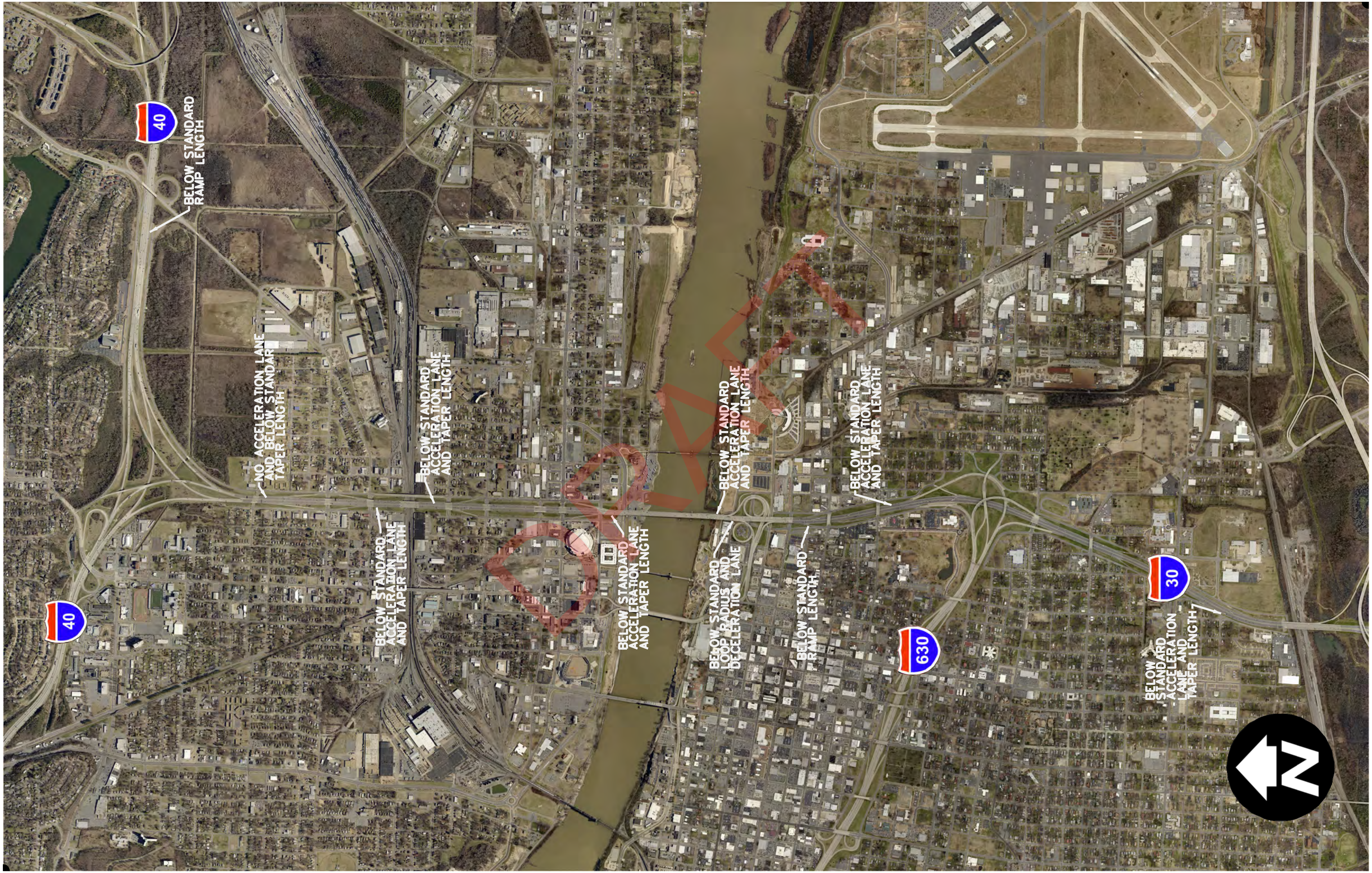
Source: 2013 Pulaski County Aerial Photograph

Figure C-5h. Locations with Inadequate Shoulder Widths



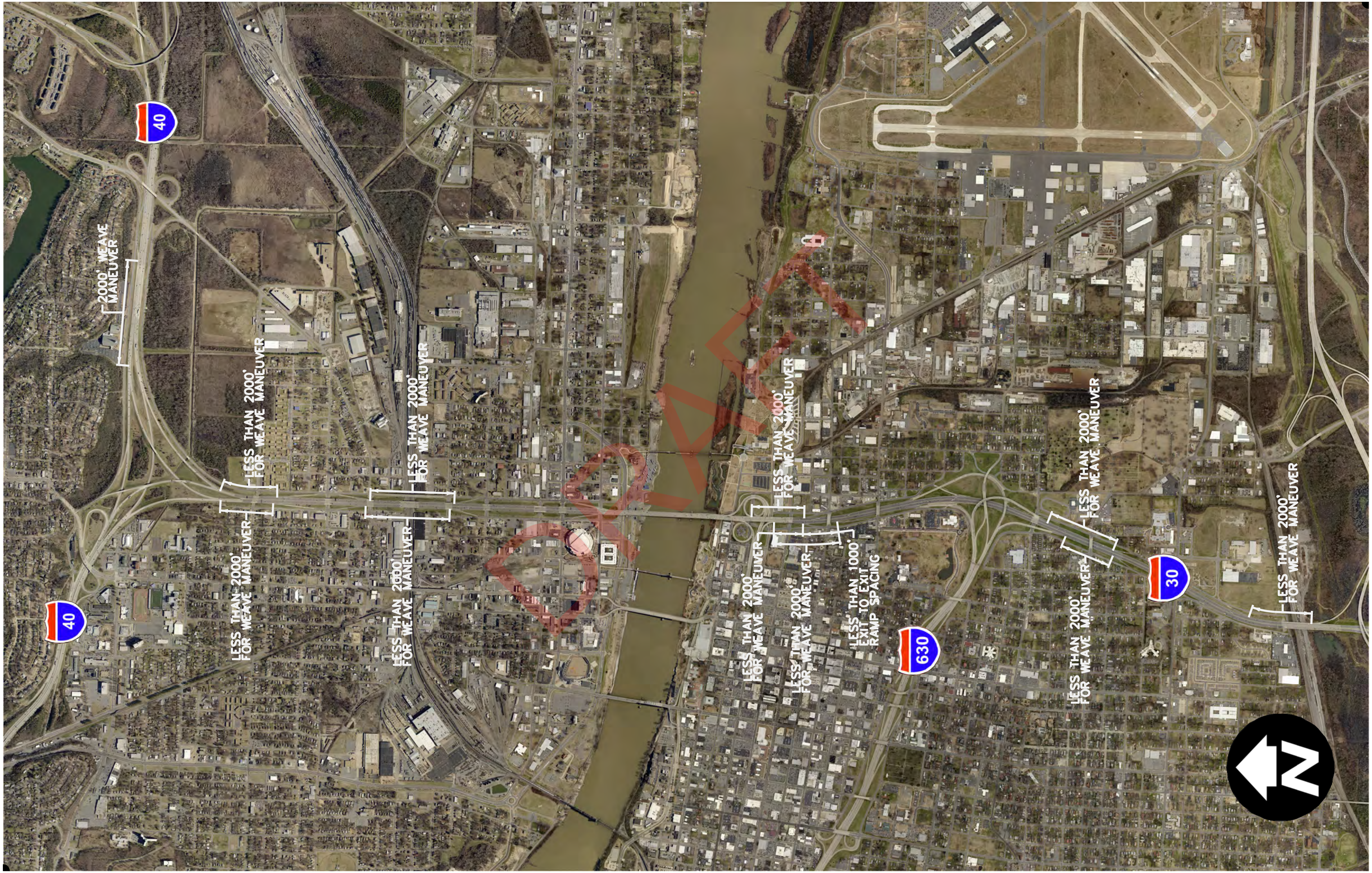
Source: 2013 Pulaski County Aerial Photograph

Figure C-5i. Locations with Inadequate Ramp Lengths



Source: 2013 Pulaski County Aerial Photograph

Figure C-5j. Locations with Inadequate Spacing for Safe Weaving Operations

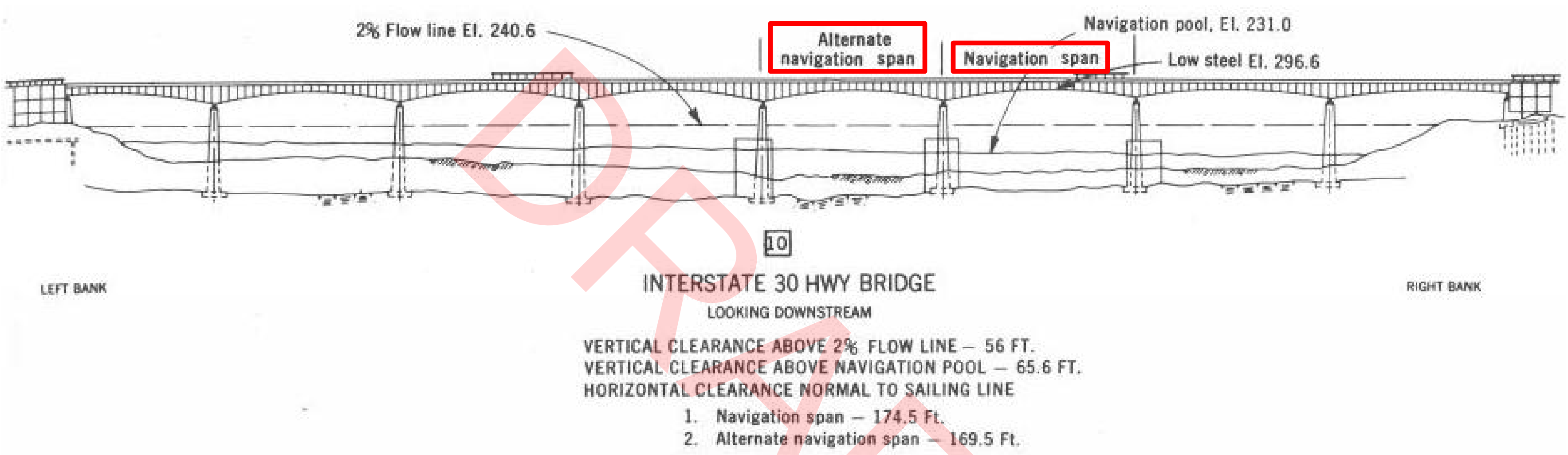


Source: 2013 Pulaski County Aerial Photograph

Attachment D: Bridge Data

Attachment D-1: I-30 Bridge Navigation Spans
Attachment D-2: Arkansas Waterways Commission Letter to AHTD
Attachment D-3: I-30 Bridge Conditions Memorandum

I-30 Bridge Navigation Spans



As shown in the above figure, taken from the USACE navigation chart, the southern span is designated as the "Navigation Span" whereas the northern span is designated as the "Alternate Navigation Span". Based on conversations with barge operators familiar with navigating this section of the river, the "Alternate Navigation Span" is normally used due to its alignment with the adjacent bridges.

C: Ralph - reply for my sig.
Lorie
Mike
Keli

RECEIVED
AUG 2? 2014
DIRECTOR'S OFFICE
ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

Arkansas Waterways Commission

Mike Beebe, Governor

Gene Higginbotham, Executive Director

August 21, 2014

Mr. Scott Bennett
Director
Arkansas State Highway and Transportation Department
P.O. Box 2261
Little Rock, Arkansas 72203

RE: Proposed Interstate 30 Bridge, Arkansas River

Dear Mr. Bennett,

On behalf of the Arkansas Waterways Commission, I write to comment on the Proposed Interstate 30 Bridge Expansion (Arkansas Waterway, Mile 118.5, Little Rock, Pulaski County, Arkansas).

The Interstate 30 Bridge carries the highest amount of vehicular traffic across the Arkansas River in Metropolitan Little Rock area. To make this bridge safer for both navigation and the vehicular traffic moving across it, we would recommend the bridge pier that divides the navigation channel be removed and a navigation channel of 332 feet (horizontal width) be established. This horizontal width is the navigation channel width at the Junction Bridge (mile 118.7), which is the closest adjacent bridge. We would also recommend that the deck of the proposed Interstate 30 Bridge be no lower than that of the soon-to-be constructed Broadway Bridge (mile 119.1), which has a proposed vertical clearance of 62.4 feet above pool. Currently the Interstate 30 Bridge does not meet current AASHTO Standards and while the current pier protection system offers optimal protection for frontal collision, there remains a great potential for damage from a vessel collision from the side which is unprotected. Any design plans that would call for reinforcement to the existing pier in the navigation channel would reduce the width of the navigation channel and could possibly lead to more incidents as traffic continues to grow on the McClellan–Kerr Arkansas River Navigation System.

As construction is approved on the Interstate 30 bridge, we would request that the left descending channel remain open at all times. We would also request that any construction done to piers or the deck should be scheduled to minimize the impact to navigation.

Thank you for the opportunity to comment on this issue. If you have any questions regarding my comments, I can be reached at (501) 682-1173.

Sincerely,

Gene Higginbotham

Gene Higginbotham

RECEIVED
AUG 22 2014
DEPUTY DIRECTOR AND CHIEF ENGINEER'S OFFICE

cc: Governor Mike Beebe
Ms. Sandra L. Otto, FHWA Arkansas Division
Mr. Eric Washburn, USCG Eighth Coast Guard District (dwb)

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

INTER OFFICE MEMORANDUM

Scott -
I concur
— For your
Approval
Ralph

April 3, 2014

TO: Ralph J. Hall, Deputy Director and Chief Engineer

THRU: Michael D. Fugett, Assistant Chief Engineer for Design

FROM: Carl J. Fuselier, Bridge Engineer CJF

SUBJECT: Bridge over Arkansas River
Interstate 30, Pulaski County

I concur.
SEB

DRAFT

A project is programmed to increase the number of lanes on Interstate 30 in Little Rock/North Little Rock, Arkansas. The existing Interstate 30 bridge over the Arkansas River is within the project limits and will need to be either replaced by a new structure or widened to accommodate the additional lanes.

The construction of the existing bridge began in 1958 and was built under several contracts. It currently has a sufficiency rating of 55.0 and is classified as structurally deficient. The structure has numerous deficiencies in addition to the following major deficiencies:

1. The webs of the steel beams in the north and south approach spans currently have fatigue cracks in forty-one locations. Maintenance Division has attempted to remediate these cracks but some have continued to progress. Once fatigue cracks appear in steel beams, experience has proven that more cracks will appear at other locations.

2. The steel bent caps for the north and south approach spans currently have cracks and section loss from corrosion. Also, there is section loss from corrosion in the steel columns for these bents.

3. Pier 20 in the river has a large horizontal crack that appears to pass completely through the foundation. The recent underwater inspection has indicated that the foundation has shifted along this crack.

4. The structure is not designed for seismic resistance.

The extensive modifications required for rehabilitating these deficiencies is not cost effective for a bridge of this age. Therefore, based on the above discussion, I recommend that the existing structure be replaced with a new structure in lieu of rehabilitating and widening the existing structure.

Additional benefits from this recommendation include the elimination of a fracture critical structure that utilizes pin and hanger assemblies and the elimination of the most restrictive bridge for navigation in the Little Rock Harbor in regards to horizontal clearance. A new structure with an appropriate span length over the navigation channel will relieve concerns of the U.S. Coast Guard and U.S. Army Corps of Engineers as expressed in letters to my office.

Attachment E: References

References

American Association of State Highway and Transportation Officials (AASHTO). "Practitioner's Handbooks." Center for Environmental Excellence by AASHTO. August 2007. AASHTO Web. December 2010. http://environment.transportation.org/pdf/programs/PG07.pdf

Arkansas State Highway and Transportation Department (AHTD). Annual Average Daily Traffic Estimates (2010-2013). http://www.arkansashighways.com/planning_research/technical_services/traffic_map.aspx. Accessed June 2014.

AHTD Bridge Inspection, Oversight, and Maintenance Performance Audit. November 2008.

AHTD. I-630 (from I-430 to I-30) Final Environmental Impact Statement, Little Rock, Arkansas, 1978.

Central Arkansas Regional Transprotation Study (CARTS). Areawide Freeway Study, Phase I: Arkansas River Crossing Study, Final Report. April 2003. The Louis Berger Group.

CARTS. Areawide Freeway Study, Phase II: Areawide Study, Final Report. August 2003. The Louis Berger Group.

CARTS. Pedestrian/Bicyclist Crash Analysis. http://www.metroplan.org/files/53/ped_bike2001_2010.pdf. Accessed June 2014.

Central Arkansas Transit Authority System Map. http://www.cat.org/wp-content/uploads/2013/05/System-Map1.pdf. Accessed June 2014.

Federal Highway Administration (FHWA). Status of the Nation's Highways, Bridges, and Transit: Conditions and Performance. 2010.

Metroplan. I-630 Fixed Guideway Alignment Study. 2010. Jacobs.

Metroplan. Metro 2030.2. The Long-Range Transportation Plan for Central Arkansas. Adopted March 24, 2010.

Metroplan. River Rail Airport Study. Phase II Final Report. 2011. URS.

Metroplan. 2040 Travel Demand Model.

Transportation Research Board (TRB) Highway Capacity Manual (HCM). 2010.

Urban Studies & Design, University of Arkansas at Little Rock. The Six Bridges Framework Plan.