

# COMPASS BUSINESS PARK

## *Traffic Impact Study*

**Joliet, Illinois**

**April 2020**

Prepared for:

**NorthPoint Development**

**Kimley»»Horn**

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## EXECUTIVE SUMMARY

Kimley-Horn and Associates, Inc., (Kimley-Horn) has prepared a traffic impact study for Compass Business Park, an industrial development in unincorporated Will County, Illinois and generally bounded by IL 53 to the west, Cherry Hill Road to the east, Breen Road to the north, and Hoff Road to the south. The proposed development includes approximately 31 million square feet of industrial warehouse/distribution use. As part of the development, a bridge would be constructed along Walter Strawn Drive to provide grade-separated access over the Union Pacific Railway and IL 53. Site-generated truck traffic would be required to enter Compass Business Park via the bridge and would not be permitted to use any other site access driveways. A secondary bridge would be constructed over Manhattan Road in order to facilitate truck access to buildings near the northern site boundary. Passenger vehicle access to the site would be provided at a number of locations along IL 53, Manhattan Road, and Hoff Road.

The proposed development is expected to be completed in phases. With an anticipated absorption rate of approximately 1 million square feet per year, each phase of development is estimated to be a three-year period (total 3 million square feet per phase). The purpose of this traffic study is to quantify the impact of the overall Compass Business Park, and to define improvements necessary to support the initial phases of development. Accordingly, this study evaluates an Existing (2020) Full Buildout condition, which adds site-generated traffic at full buildout to existing traffic volumes within the study area. This provides a baseline of potential impacts – and their associated mitigation – for considering Compass Business Park as a whole. The analysis of Phase A reflects a Year 2024 scenario with approximately 3 million square feet of development and Phase B represents Year 2027 conditions with an estimated 6.2 million square feet of development.

To provide a long-range planning perspective that considers regional traffic growth within the study area, Year 2050 No-Build and Build conditions were also evaluated. For purposes of this analysis, background traffic growth was estimated using data obtained from the Chicago Metropolitan Agency for Planning (CMAP). However, based on a review of historical traffic count data and area development patterns, the traffic growth rates derived from the CMAP data may be overstated for the area roadway network. Therefore, the improvements contemplated to support Year 2050 traffic conditions are considered highly conceptual; as development progresses and background traffic volumes are realized, the Year 2050 analysis will be updated and refined.

Based on an evaluation of existing and future traffic conditions, a number of recommendations were identified to manage projected traffic demand within the study area under the Existing (2020) Full Buildout, Year 2024 Phase A, and Year 2027 Phase B scenarios. A summary of these recommendations is outlined in **Table A.1**. The recommendations are based on criteria and design standards outlined in the Will County Department of Highways *Permit Regulations and Access Control Regulations* and the Illinois Department of Transportation (IDOT) *Bureau of Design and Environment (BDE) Manual*. Additional details related to these recommendations are outlined in this report. Further, a detailed summary of the preliminary recommendations identified to support Year 2050 traffic conditions is presented in this report.

**Table A.1. Summary of Recommended Improvements**

Intersection	Recommended Improvements		
	Existing (2020) Full Buildout	Year 2024 Phase A	Year 2027 Phase B
EIP Road / Arsenal Road	<p>Provide dual right-turn lanes on the west leg. The turn lanes should be channelized and controlled by the signal.</p> <p>Construct an additional southbound through lane.</p> <p>Add an additional northbound through lane.</p>	N/A	<p>Provide dual right-turn lanes on the west leg. The turn lanes should be channelized and controlled by the signal.</p>
EIP Road / Walter Strawn Drive	<p>Install a traffic signal per MUTCD Warrant 1, Conditions A, B (<i>Signal Warrant Analyses</i>) and IDOT design criteria. Based on proximity to the at-grade railroad crossing, coordination with BNSF is anticipated.</p> <p>Add a free-flow right-turn lane on the east leg. The turn lane should provide 215 feet of storage with a 220-foot taper.</p> <p>Provide an additional northbound through lane on EIP Road from Walter Strawn Drive to Mississippi Avenue.</p>	N/A	<p>Install a traffic signal per MUTCD Warrant 1, Conditions A, B (<i>Signal Warrant Analyses</i>) and IDOT design criteria. Based on proximity to the at-grade railroad crossing, coordination with BNSF is anticipated.</p>
IL 53 / Breen Road	<p>Install a left-turn lane on the north leg. The turn lane should provide 265 feet of storage with a 265-foot taper.</p>	N/A	N/A
IL 53 / Manhattan Road	<p>Remove the existing traffic signal and install a multi-lane roundabout.</p>	N/A	N/A
Rowell Road / Manhattan Road	<p>Install a single-lane roundabout.</p>	N/A	N/A
Ridge Road / Manhattan Road	<p>Install a single-lane roundabout. A right-turn slip lane should be provided on the south leg in order to facilitate outbound traffic from Compass Business Park.</p>	N/A	N/A
Cherry Hill Road / Manhattan Road	<p>Install a single-lane roundabout.</p>	N/A	N/A



Table A.1. Summary of Recommended Improvements (continued)

Intersection	Recommended Improvements		
	Existing (2020) Full Buildout	Year 2024 Phase A	Year 2027 Phase B
Gougar Road / Manhattan Road	Install a single-lane roundabout.	N/A	N/A
US 52 / Manhattan Road	Install a dedicated right-turn lane on the west leg. The turn lane should provide 145 feet of storage with a 175-foot taper.  Modify the striping on the east leg to provide a dedicated left-turn lane and a shared thru/right-turn lane. The dedicated left-turn lane should provide 115 feet of storage with a 135-foot taper.	N/A	Install a dedicated right-turn lane on the west leg. The turn lane should provide 145 feet of storage with a 175-foot taper.  Modify the striping on the east leg to provide a dedicated left-turn lane and a shared thru/right-turn lane. The dedicated left-turn lane should provide 115 feet of storage with a 135-foot taper.
US 52 / North Street	Complete additional analysis of turning movements in order to verify the lane geometry at this intersection will accommodate truck traffic and evaluate restriping the existing shoulder on North Street to provide an exclusive right-turn lane. Based on the spacing distance from the at-grade rail crossing, the turn lane should provide 125 feet of storage with a 105-foot taper.	N/A	Complete additional analysis of turning movements in order to verify the lane geometry at this intersection will accommodate truck traffic and evaluate restriping the existing shoulder on North Street to provide an exclusive right-turn lane. Based on the spacing distance from the at-grade rail crossing, the turn lane should provide 125 feet of storage with a 105-foot taper.
US 52 / Gougar Road	Install a traffic signal per MUTCD Warrant 1, Condition A ( <i>Signal Warrant Analyses</i> ) and IDOT design criteria.	N/A	N/A
Bridge Road / Mississippi Avenue	Install a single-lane roundabout. The roundabout should be designed to accommodate truck movements.	Install a single-lane roundabout. The roundabout should be designed to accommodate truck movements.	Install a single-lane roundabout. The roundabout should be designed to accommodate truck movements.
Chicago Road / Mississippi Avenue	Install a single-lane roundabout. The roundabout should be designed to accommodate truck movements.	Install a single-lane roundabout. The roundabout should be designed to accommodate truck movements.	Install a single-lane roundabout. The roundabout should be designed to accommodate truck movements.
Rowell Road / Mississippi Avenue	Install a single-lane roundabout. The roundabout should be designed to accommodate truck movements.	Install a single-lane roundabout. The roundabout should be designed to accommodate truck movements.	Install a single-lane roundabout. The roundabout should be designed to accommodate truck movements.

## 1. INTRODUCTION

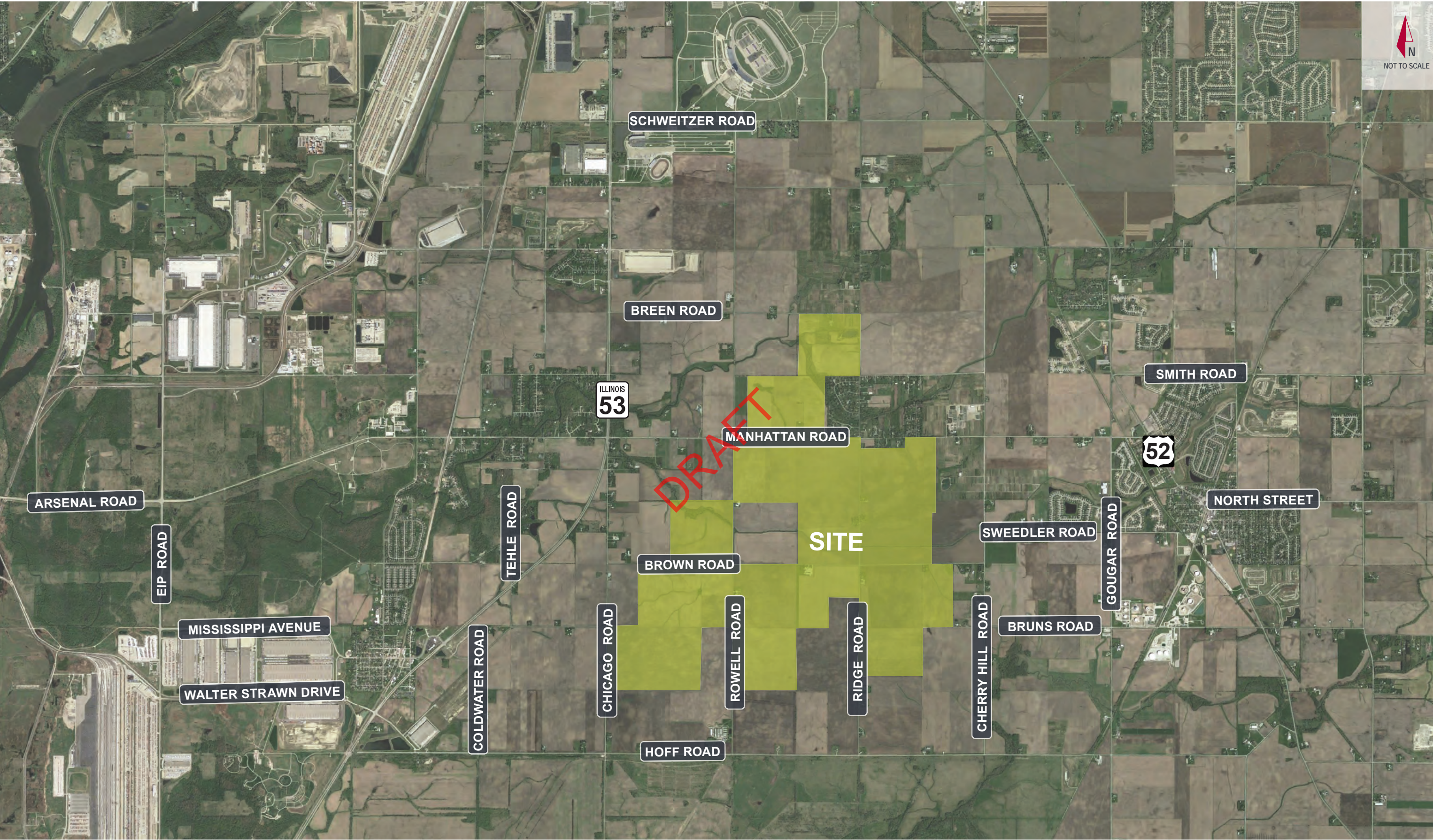
Kimley-Horn was retained by NorthPoint Development to perform a traffic impact study for Compass Business Park, an industrial development located within unincorporated Will County. The project site is generally bounded by IL 53 to the west, Cherry Hill Road to the east, Breen Road to the north, and Hoff Road to the south. The proposed development includes approximately 31 million square feet of industrial warehouse/distribution use. The subject property is presented in **Exhibit 1**. A conceptual site plan is provided in the appendix.

As part of the development, a bridge would be constructed along Walter Strawn Drive to provide grade-separated access over the Union Pacific Railway and IL 53 in order to access Compass Business Park; the existing intersection at IL 53/Walter Strawn Drive/IRA Morgan Street would be removed as part of this project. Site-generated truck traffic would be required to enter Compass Business Park via the bridge and would not be permitted to use any other site access driveways. The site access driveways would be constructed to allow truck turnaround movements in order to redirect trucks to the closed loop bridge access at Walter Strawn Drive. In addition to truck access, the bridge would also facilitate passenger vehicle access to the site. As part of the proposed development, an internal spine roadway network would be developed to provide access to the individual buildings within Compass Business Park. In order to facilitate truck access to the buildings located north of Manhattan Road, a secondary bridge would be constructed immediately east of Rowell Road. Passenger vehicle access to the site would be provided at a number of locations along IL 53, Manhattan Road, and Hoff Road.

It is anticipated the proposed development would be completed in phases. As this development progresses, infrastructure improvements may be necessary to allow site access and support the addition of site-generated traffic on the local roadway network. In order to quantify the impact of site-generated traffic, and to identify potential infrastructure needs, this study evaluates an Existing (2020) Full Buildout condition, which adds site-generated traffic at full buildout to existing traffic volumes within the study area. Additionally, the first two phases of development, referred to as Year 2024 Phase A and Year 2027 Phase B, were analyzed in order to identify near-term improvements. Because further infrastructure improvements may be needed to support continued traffic growth within the study area, Year 2050 No-Build and Build conditions were also evaluated to analyze the impact of future background traffic and site-generated traffic at full buildout.

Data provided by the Chicago Metropolitan Agency for Planning (CMAP) was used to estimate future background traffic growth for the Year 2024 Phase A, Year 2027 Phase B, and Year 2050 scenarios. In addition to area background growth, trips estimated for approved development in the Village of Elwood were also added to the roadway network. Site trip generation characteristics were then established for the proposed development and added to background traffic volumes in order to assess the site's impact on the area roadway network. This report presents and documents Kimley-Horn's data collection, summarizes the evaluation of traffic conditions on the surrounding roadways, and identifies recommendations to address the potential impact of site-generated traffic on the adjacent roadway network.







## 2. EXISTING CONDITIONS

Kimley-Horn conducted a field visit to collect relevant information pertaining to existing land uses in the surrounding area, the adjacent street system, current traffic volumes and operating conditions, lane configurations and traffic controls at nearby intersections, and other key roadway characteristics. The findings of this field investigation are detailed as follows.

### 2.1. Area Connectivity & Land Uses

The subject property is generally bounded by IL 53 to the west, Cherry Hill Road to the east, Breen Road to the north, and Hoff Road to the south. The project site is located within unincorporated Will County. The subject site is largely agricultural in nature with some single-family residences.

North of the subject site, many properties fronting IL 53 are currently developed with industrial warehouse/distribution facilities. North of the subject area also includes residential, agricultural, and recreational uses. The area south of the subject site is undeveloped and protected as the Midewin National Tallgrass Prairie. The Abraham Lincoln National Cemetery is located southwest of the subject site, accessed via the intersection of IL 53/Hoff Road.

Regional access to the subject site is provided via Interstate 55 (I-55), which provides a full interchange with Arsenal Road west of the subject site. Access is also provided via Interstate 80 (I-80) to the north via a full interchange provided at IL 53, less than six miles north of the IL 53/Manhattan Road intersection.

### 2.2. Existing Roadway Characteristics

The primary study area roadways within the vicinity of the proposed development include IL 53, US 52, Manhattan Road, and EIP Road. Descriptions of each study roadway are summarized below.

**Elwood International Port (EIP) Road** is a north-south roadway located west of the study site. South of Arsenal Road, EIP Road is classified as a major collector by IDOT. North of Arsenal Road, EIP Road is known as Baseline Road and is classified as a local road. North of Mississippi Avenue, EIP Road provides two travel lanes in each direction; south of Mississippi Avenue, EIP Road provides one travel lane in each direction. At its signalized intersection with Arsenal Road, EIP Road provides one dedicated left-turn lane, one through lane, and two dedicated right-turn lanes on the north leg; one dedicated left-turn lane, one through lane, and one shared through/right-turn lane is provided on the south leg. During field observations, the east leg of the intersection was temporarily closed, so turning movements onto the east leg of Arsenal Road were prohibited. At its all-way stop-controlled intersection with Mississippi Avenue, EIP Road provides two dedicated left-turn lanes, one through lane, and one shared through/right-turn lane on the north leg; one dedicated left-turn lane, one through lane, and one shared through/right-turn lane is provided on the south leg. At its all-way stop-controlled intersection with Walter Strawn Drive/BNSF Logistics Park Chicago, EIP Road provides one dedicated left-turn lane, one through lane, and one dedicated right-turn lane on the north leg; the south leg provides one dedicated left-turn lane and one shared through/right-turn lane. Through the study area, EIP Road has a speed limit of 45 miles per hour (MPH). EIP Road is under the jurisdiction of the Village of Elwood.

**Walton Drive** is a north-south roadway located immediately east of EIP Road and provides access to CenterPoint Intermodal Center. Classified by IDOT as a local road, Walton Drive provides a single travel lane in each direction with a two-way center turn lane. Right-turn channelization is provided at two private access driveways on the east side of the street. At its T-intersections with both Mississippi Avenue and Walter Strawn Drive, Walton Drive provides separate left- and right-turn lanes and operates under minor-leg stop-control. Walton Drive has a posted speed limit of 45 MPH. Walton Drive is under the jurisdiction of the Village of Elwood.

**Deer Run** is a north-south local roadway located west of IL 53. Deer Run provides a single travel lane in each direction. At its T-intersection with Walter Strawn Drive, Deer Run operates under minor-leg stop-control and provides separate left- and right-turn lanes. Deer Run has a posted speed limit of 25 MPH and is under the jurisdiction of the Village of Elwood.

**Illinois Route 53 (IL 53)** is a north-south roadway located west of the subject property. Through the study area, IL 53 travels in a northeast-southwest direction; however, for purposes of this study, it was considered a north-south roadway. IDOT classifies IL 53 as a Strategic Regional Arterial (SRA) roadway. The SRA system was established by IDOT to promote mobility on key routes throughout the Chicago area by applying various strategies, such as access control and limited signalization. Through the study area, IL 53 provides two travel lanes in each direction with a landscape center median. Left-turn channelization is provided at key intersections along IL 53, including Schweitzer Road, Manhattan Road, D Hutchinson Road, Mississippi Avenue, IRA Morgan Street, and Hoff Road. A summary of the IL 53 lane geometry at the study intersections is outlined below.

- At its intersection with Schweitzer Road, IL 53 operates under free-flow condition with minor-leg stop-control. At this intersection, IL 53 provides a dedicated left-turn lane, a through lane, and a shared through/right-turn lane on the north leg; a shared left-turn/through lane and a shared through/right-turn lane is provided on the south leg.
- At the T-intersection of Breen Road, IL 53 operates under free-flow condition with minor-leg stop-control. IL 53 provides one shared left-turn/through lane and one through lane on the north leg; on the south leg, one through lane and a shared through/right-turn lane is provided.
- At its signalized intersection with Manhattan Road, IL 53 provides a dedicated left-turn lane, one through lane, and one shared through/right-turn lane on both the north and south legs.
- At the T-intersection with D Hutchinson Road, IL 53 operates under free-flow condition with minor-leg stop-control. On the north leg, IL 53 provides a dedicated left-turn lane and two through lanes; on the south leg, a through lane and a shared through/right-turn lane is provided.
- At its minor-leg stop-controlled intersection with Mississippi Avenue, IL 53 provides a dedicated left-turn lane, two through lanes, and a dedicated left-turn lane on the north leg. On the south leg, IL 53 provides a dedicated left-turn lane, one through lane, and a shared through/right-turn lane.
- At its signalized intersection with IRA Morgan Street, IL 53 provides a dedicated left-turn lane, two through lanes, and a dedicated right-turn lane on each leg. However, the west leg of the intersection is currently closed. Therefore, the northbound left-turn and southbound right-turn movements onto Walter Strawn Drive are currently prohibited.

- At its signalized intersection with Hoff Road, IL 53 provides a dedicated left-turn lane, two through lanes, and a dedicated right-turn lane on the north leg. On the south leg, IL 53 provides a dedicated left-turn lane, one through lane, and a shared through/right-turn lane.
- At its signalized intersection with River Road, IL 53 provides one through lane and a dedicated right-turn lane on the north leg; a dedicated left-turn lane and one through lane are provided on the south leg.

Through the study area, IL 53 has a posted speed limit of 55 MPH. IL 53 is under IDOT jurisdiction.

**Tehle Road** is a local road which extends from Manhattan Road to Mississippi Avenue. Tehle Road provides a single travel lane in each direction. At its intersection with IL 53, Tehle Road provides a single shared lane on each leg and operates under minor-leg stop-control. No speed limit is posted on Tehle Road, so 55 MPH was assumed for analysis purposes. Tehle Road is under the jurisdiction of Jackson Township.

**Coldwater Road** is a north-south roadway that extends south of Mississippi Avenue to Midewin National Tallgrass Prairie. Classified as a local road, Coldwater Road provides a single travel lane in each direction. At its intersection with Hoff Road, Coldwater Road provides a single lane on the north and south legs. A stop sign is posted on the north leg of Coldwater Road at Hoff Road; for purposes of this analysis, a stop sign was assumed for the south leg. The south leg of the intersection is gated for restricted access to Midewin National Tallgrass Prairie. No speed limit is posted on Coldwater Road, so the statutory maximum 55 MPH was assumed for analysis purposes. A 25 MPH speed limit was assumed for the restricted access gravel segment located south of Hoff Road. The northern segment of Coldwater Road (approximately 2,700 linear feet as measured south from Mississippi Avenue) is under the jurisdiction of the Village of Elwood; the southern segment (approximately 1,400 linear feet as measured north from Hoff Road) is under Jackson Township jurisdiction.

**Chicago Road** is a north-south roadway with a single travel lane in each direction. Chicago Road extends from a cul-de-sac north of D Hutchinson Road to Midewin National Tallgrass Prairie south of Hoff Road. At its intersections with D Hutchinson Road and Brown Road, Chicago Road operates under free-flow condition with a single shared lane provided on the north and south legs. At its all-way stop-controlled intersection with Hoff Road, Chicago Road provides a single shared lane on the north and south legs. The south leg provides access to public parking for Midewin National Tallgrass Prairie and the Twin Oaks Trail. There is no posted speed limit on Chicago Road, so 55 MPH was used for analysis purposes. A 25 MPH speed limit was assumed for the Midewin National Tallgrass Prairie access located south of Hoff Road. Chicago Road is classified by IDOT as a local road and is under Jackson Township jurisdiction.

**Rowell Road** is a north-south roadway that extends south from Schweitzer Road to its southern terminus at Hoff Road. Classified by IDOT as a local road, Rowell Road provides a single travel lane in each direction. At its intersection with Schweitzer Road, Rowell Road operates under minor leg stop-control and provides one shared travel lane on the south leg. The north leg of the intersection provides access to the Chicagoland Speedway. This access was closed during the data collection and field observation periods. At its intersections with Breen Road, Manhattan Road, and Brown Road, Rowell Road provides one shared travel lane on the north and south legs. At Breen Road and

Manhattan Road, Rowell Road operates under minor-leg stop control. At Brown Road, Rowell Road operates under yield control. Based on the limitations of Synchro's HCM 6<sup>th</sup> Edition reporting, and to provide a conservative analysis of traffic conditions, Rowell Road was assumed to operate under stop control at its intersection with Brown Road. At its T-intersection with Hoff Road, Rowell Road provides a single shared lane on the north leg and operates under minor-leg stop-control. There is no posted speed limit on Rowell Road, so 55 MPH was used for analysis purposes. Rowell Road is under the jurisdiction of Jackson Township.

**Ridge Road** is a north-south roadway that extends south from Schweitzer Road to its southern terminus at Hoff Road. South of Hoff Road, Ridge Road transitions to a gravel roadway with restricted access to Midewin National Tallgrass Prairie. Classified by IDOT as a local road, Ridge Road is minor-leg stop-controlled at its T-intersection with Schweitzer and provides one shared travel lane on the south leg. At its intersection with Breen Road, Ridge Road provides one shared travel lane on the north and south legs and operates under a free-flow condition with minor-leg stop-control. Ridge Road provides a single travel lane in each direction and operates under minor-leg stop-control at its intersection with Manhattan Road. At its yield-controlled intersection with Brown Road, Ridge Road provides a single travel lane in each direction. North of Manhattan Road, the posted speed limit along Ridge Road is 45 MPH. South of Manhattan Road there is no posted speed limit on Ridge Road, so 55 MPH was used for analysis purposes. Ridge Road is under the jurisdiction of Jackson Township.

**Cherry Hill Road** is a north-south local road which extends from north of Schweitzer Road to Hoff Road east of the project site. Classified by IDOT as a local road, Cherry Hill Road provides a single travel lane in each direction through the study area. At its intersections with Schweitzer Road, Manhattan Road, and Brown Road, Cherry Hill Road provides a single shared lane on both the north and south legs and operates under minor-leg stop-control. At its T-intersection with Hoff Road, Cherry Hill Road provides a single shared lane and operates under minor-leg stop-control. There is a posted speed limit of 55 MPH along Cherry Hill Road within the vicinity of the subject area. Cherry Hill Road is under the jurisdiction of Manhattan Township.

**Gougar Road** is a north-south local road located east of the project site that transitions to a northeast-southwest road to its northern terminus with US 52. Gougar Road extends from US 52 to south of Hoff Road. At its intersection with US 52, Gougar Road operates under minor-leg stop-control and provides dedicated left- and right-turn lanes. At its all-way stop-controlled intersection with Manhattan Road, Gougar Road provides one shared travel lane on the north and south legs. North of Manhattan Road, Gougar Road has a posted speed limit of 40 MPH; south of Manhattan Road, Gougar Road has a posted speed limit of 35 MPH. Between US 52 and Manhattan Road, Gougar Road is under the jurisdiction of Manhattan Township; south of Manhattan Road to Sweedler Road, Gougar Road is under the jurisdiction of the Village of Manhattan. South of Sweedler Road, Gougar Road is under the jurisdiction of Manhattan Township.

**US Route 52 (US 52)** is a north-south roadway located east of the subject site. Classified by IDOT as a Minor Arterial, US 52 provides a single travel lane in each direction. At its intersection with Smith Road, US 52 provides one shared travel lane on the north and south legs and operates under a free-flow condition with minor-leg stop-control. At its intersection with Gougar Road, US 52 provides one through lane and a dedicated right-turn lane on the north leg; on the south leg, a dedicated left-turn

lane and one through lane is provided. At Gougar Road, US 52 operates under a free-flow condition with minor-leg stop-control. At its signalized intersection with Manhattan Road, US 52 provides a dedicated left-turn lane and one shared through/right-turn lane on the north leg; the south leg provides a dedicated left-turn lane, one through lane, and one dedicated right-turn lane. At its intersection with Hoff Road, US 52 operates under a free-flow condition and provides a single shared lane on the north and south legs. North of Manhattan Road, US 52 has a posted speed limit of 45 MPH; south of Manhattan Road, US 52 has a posted speed limit of 35 MPH through the Village of Manhattan. Near its intersection with Hoff Road, US 52 has a posted speed limit of 55 MPH. US 52 is under IDOT jurisdiction.

**Schweitzer Road** is an east-west local road located north of the project site. Schweitzer Road extends from west of IL 53 to US 52. At its intersection with IL 53, Schweitzer Road is minor-leg stop-controlled and provides one shared lane on the west leg; one shared left-turn/through lane and one shared through/right-turn lane is provided on the east leg. At its intersections with Rowell Road, Cherry Hill Road, and Ridge Road, Schweitzer Road provides a single shared lane on each leg and operates under free-flow condition with minor-leg stop-control. West of IL 53, Schweitzer Road has a posted speed limit of 30 MPH; east of IL 53, Schweitzer Road has a posted speed limit of 45 MPH. Schweitzer Road is under the jurisdiction of the City of Joliet through the study area.

**Breen Road** is an east-west local road which extends from its western terminus at IL 53 to Ridge Road on the east. At its T-intersection with IL 53, Breen Road operates under minor-leg stop-control and provides a shared travel lane on the east leg. At its intersection with Rowell Road, Breen Road provides a single shared lane on the east and west leg and operates under a free-flow condition with minor-leg stop-control. At its T-intersection with Ridge Road, Breen Road is minor-leg stop-controlled and provides a shared travel lane on the west leg. There is no posted speed limit on Breen Road, so 55 MPH is assumed for analysis purposes. Near its intersection with IL 53, a portion of Breen Road is under the jurisdiction of the City of Joliet. The east segment of Breen Road is under the jurisdiction of Jackson Township.

**Smith Road** is an east-west local road located east of the project site. Smith Road extends east from its western terminus at US 52. At its T-intersection with US 52, Smith Road operates under minor-leg stop-control and provides one shared travel lane on the east leg. The west leg of the intersection is permanently closed as a result of the Gougar Road realignment. A speed limit of 30 MPH is posted on Smith Road. Smith Road is under the jurisdiction of the Village of Manhattan through the study area.

**Arsenal Road** is an east-west roadway located northwest of the subject site. Arsenal Road provides access to I-55 and EIP Road; east of its intersection with EIP Road, Arsenal Road transitions to Manhattan Road. Classified by IDOT as a Major Collector, Arsenal Road provides two travel lanes in each direction near its intersection with EIP Road. At its signalized intersection with EIP Road, Arsenal Road provides two dedicated left-turn lanes, two dedicated through lanes and one channelized right-turn lane on the west leg. On the east leg, Arsenal Road provides a dedicated left-turn lane, one through lane, and one shared through/right-turn lane. West of EIP Road, the posted speed limit on Arsenal Road is 50 MPH; east of the intersection, the posted speed limit is 55 MPH. Arsenal Road is under IDOT jurisdiction west of EIP Road. Between EIP Road and IL 53, segments



of Arsenal Road/Manhattan Road are under the jurisdiction of Will County Division of Transportation, Jackson Township, and the Village of Elwood.

**Manhattan Road** is an east-west roadway with a single travel lane in each direction. Manhattan Road extends east of EIP Road to its transition to US 52 as a north-south roadway. Near EIP Road, Manhattan Road transitions to Arsenal Road. Through the study area, Manhattan Road is classified by IDOT as a Major Collector. At its signalized intersection with IL 53, Manhattan Road provides a single shared lane on the east and west legs. At its intersections with Rowell Road, Ridge Road, and Cherry Hill Road, Manhattan Road provides a single lane on each leg and operates under a free-flow condition with minor-leg stop-control. At its signalized intersection with US 52, Manhattan Road provides a single shared lane on the west approach. The east approach is known as Foxford Drive and provides a shared left-turn/through lane and a dedicated right-turn lane. West of IL 53, Manhattan Road has a posted speed limit of 45 MPH; east of IL 53 the posted speed is 55 MPH. West of its intersection with Gougar Road, Manhattan Road has a posted speed limit of 40 MPH; east of Gougar Road, the posted speed limit is reduced to 35 MPH. Manhattan Road is under the jurisdiction of Will County Division of Transportation.

**North Street** is an east-west roadway that extends east from US 52. East of downtown Manhattan, North Street is known as Manhattan-Monee Road. Classified by IDOT as a Minor Arterial, North Street provides a single travel lane in each direction. At its intersection with US 52, North Street provides a single shared lane and operates under minor-leg stop-control. Near its intersection with US Rte 52, the posted speed limit is 30 MPH. North Street is under IDOT jurisdiction between US 52 and Center Road.

**D Hutchinson Road** is an east-west local roadway that extends east from IL 53 to Chicago Road. At its intersections with IL 53 and Chicago Road, D Hutchinson Road operates under minor-leg stop-control and provides a single travel lane in each direction. D Hutchinson Road is assumed to have a speed limit of 25 MPH. D Hutchinson Road is under the jurisdiction of Jackson Township.

**Sweedler Road** is an east-west local road that provides access between Cherry Hill Road and Gougar Road. West of Gougar Road, Sweedler Road transitions to Brown Street. Sweedler Road provides a single travel lane in each direction. At its intersections with Cherry Hill Road and Gougar Road, Sweedler Road provides a single shared lane and operates under minor-leg stop-control. The posted speed limit is 35 MPH. Sweedler Road is under the jurisdiction of Manhattan Township from Cherry Hill Road to approximately 2,700 feet east; the east segment is under the jurisdiction of the Village of Manhattan.

**Brown Road** is an east-west local road that provides access between Chicago Road and Cherry Hill Road. Throughout the subject site, Brown Road provides a single travel lane in each direction. At its T-intersections with Chicago Road and Cherry Hill Road, Brown Road provides a single shared lane and operates under minor-leg stop-control. At its intersection with Rowell Road, Brown Road provides a single shared lane on each approach and operates under a free-flow condition with yield control posted on Rowell Road. At its intersection with Ridge Road, Brown Road provides a single shared lane on each approach and operates under a free-flow condition with minor-leg stop control posted

on Ridge Road. There is no posted speed limit on Brown Road, so a 35 MPH limit was assumed for the purpose of this analysis. Brown Road is under the jurisdiction of Jackson Township.

**Bruns Road** is an east-west local road that extends east from Cherry Hill Road to its terminus at Cedar Road outside the study area. Bruns Road provides a single travel lane in each direction. At its intersections with Cherry Hill Road and Gougar Road, Bruns Road provides a single shared lane and operates under minor-leg stop-control. The posted speed limit on Bruns Road is 45 MPH. Bruns Road is under the jurisdiction of Manhattan Township.

**Mississippi Avenue** is an east-west roadway that runs from its western terminus at EIP Road to its eastern terminus at Chicago Road. Classified by IDOT as a local road, Mississippi Avenue provides a single travel lane in each direction. At its four-way stop-controlled intersection with EIP Road, Mississippi Avenue provides one dedicated left-turn lane and one shared through/right-turn lane on the east leg; one shared travel lane is provided on the west leg. At its intersection with IL 53, Mississippi Avenue provides a dedicated left-turn lane and a shared through/right-turn lane on both the east and west legs and operates under minor-leg stop-control. Between Walton Drive and EIP Road, the speed limit is 40 MPH. West of IL 53, the posted speed limit on Mississippi Avenue is 25 MPH. East of IL 53, the speed limit along Mississippi Avenue is 30 MPH. Mississippi Avenue is under the jurisdiction of the Village of Elwood.

**Walter Strawn Drive** is an east-west roadway that extends from EIP Road to its eastern terminus at the Union Pacific Railway Crossing located west of IL 53. The Walter Strawn Drive at-grade crossing of the Union Pacific Railway is closed per the Illinois Commerce Commission final order dated May 10, 2017. Classified by IDOT as a Major Collector, Walter Strawn Drive provides a single lane in each direction with left-turn channelization provided at key intersections. At its all-way stop-controlled intersection with EIP Road, Walter Strawn Drive provides a dedicated left-turn lane and a shared through/right-turn lane on the east leg. At its intersections with Walton Drive and Deer Run, Walter Strawn Drive provides a dedicated left-turn lane and one through lane on the west leg and a shared through/right-turn lane on the east leg; Walter Strawn Drive operates under a free-flow condition at these intersections with minor-leg stop-control. West of Deer Run, the posted speed limit along Walter Strawn Drive is 45 MPH; east of Deer Run, the posted speed limit is 35 MPH. Walter Strawn Drive is under the jurisdiction of the Village of Elwood.

**IRA Morgan Street** is a roadway that extends east of IL 53 to its eastern cul-de-sac terminus. Through access to Hoff Road via IRA Morgan Street is currently prohibited due to an emergency vehicle only gate located within the cul-de-sac. Classified as a local road, IRA Morgan Street provides a single travel lane in each direction. At its signalized intersection with IL 53, IRA Morgan Street provides a dedicated left-turn lane, one through lane, and one dedicated right-turn lane. Westbound through movements are currently prohibited from IRA Morgan Street to Walter Strawn Drive due to the closure of the west leg of the intersection. There is no posted speed limit on IRA Morgan Street, so 25 MPH was used for analysis purposes. IRA Morgan Street is under jurisdiction of the Village of Elwood.

**Hoff Road** is an east-west roadway located south of the subject site. Classified by IDOT as a local road, Hoff Road provides a single travel lane in each direction. Hoff Road extends east from IL 53 to

its eastern terminus at US 52. At its signalized intersection with IL 53, Hoff Road provides a single shared lane on the east leg. At its intersection with Coldwater Road, Hoff Road provides a single shared lane on each leg and operates under free-flow condition with minor-leg stop control. At its all-way stop-control intersection with Chicago Road, Hoff Road provides a single shared lane on each leg. At its intersections with Rowell Road, Ridge Road, and Cherry Hill Road, Hoff Road provides a single shared lane on each leg and operates under free-flow condition with minor-leg stop control. At its T-intersection with US 52, Hoff Road provides a single shared lane and operates under minor-leg stop-control. The posted speed limit along Hoff Road is 55 MPH. Hoff Road is under the jurisdiction of Will County Division of Transportation.

**Abraham Lincoln National Cemetery Access Driveway** is an east-west private driveway located on the west leg of Hoff Road at IL 53. This two-lane roadway serves as the primary access driveway to Abraham Lincoln National Cemetery. At its signalized intersection with IL 53, the private driveway provides a single shared left-turn/through lane and a channelized right-turn lane on the west leg; the east leg is Hoff Road. The posted speed limit along the private driveway is 25 MPH.

**River Road** is an east-west roadway located south of the project site. Classified as Other Principal Arterial and Class II truck route by IDOT, River Road provides connectivity between I-55 and IL 53. At its signalized intersection with IL 53, River Road provides dedicated left- and right-turn lanes. There is no posted speed limit on River Road, so 45 MPH is assumed for analysis purposes. River Road is under the jurisdiction of Will County Division of Transportation.

### 2.3. Traffic Count Data

Weekday turning movement count data was collected in January 2020 at the study intersections listed below. Counts were performed for a 12-hour period during a typical weekday. The count period included the morning and evening peak periods (6:00-9:00AM and 3:00-6:00PM, respectively), consistent with Will County Division of Transportation and IDOT requirements.

1. IL 53 / Schweitzer Road
2. IL 53 / Breen Road
3. IL 53 / Manhattan Road
4. IL 53 / D Hutchinson Road
5. IL 53 / Tehle Road
6. IL 53 / Mississippi Avenue
7. IL 53 / Walter Strawn Drive / IRA Morgan Street
8. IL 53 / Hoff Road / Abraham Lincoln National Cemetery Access Driveway
9. IL 53 / River Road
10. EIP Road / Arsenal Road
11. EIP Road / Mississippi Avenue
12. EIP Road / Walter Strawn Drive
13. Walter Strawn Drive / Walton Drive
14. Walter Strawn Drive / Deer Run
15. Rowell Road / Schweitzer Road
16. Schweitzer Road / Ridge Road
17. Schweitzer Road / Cherry Hill Road

18. Breen Road / Rowell Road
19. Breen Road / Ridge Road
20. Manhattan Road / Rowell Road
21. Manhattan Road / Ridge Road
22. Manhattan Road / Cherry Hill Road
23. Cherry Hill Road / Sweedler Road
24. Cherry Hill Road / Bruns Road
25. Gougar Road / Manhattan Road
26. Gougar Road / Sweedler Road
27. Bruns Road / Gougar Road
28. Hoff Road / Coldwater Road
29. Hoff Road / Chicago Road
30. Hoff Road / Rowell Road
31. Hoff Road / Ridge Road
32. Hoff Road / Cherry Hill Road
33. Hoff Road / IL 53
34. Hoff Road / Gougar Road
35. US 52 / Smith Road
36. US 52 / Gougar Road
37. US 52 / Manhattan Road / Foxford Drive
38. US 52 / North Street
39. US 52 / Bruns Road
40. US 52 / Hoff Road

During the traffic count period, the east leg of EIP Road/Arsenal Road was barricaded; traffic movements to/from this segment were prohibited. As the road closure is temporary, traffic volumes to/from the east leg of the intersection were estimated using 2017 traffic count data and a growth rate derived from a comparison of 2017 and 2020 traffic counts.

The resulting count data reveals that peak traffic volumes occur within the study area from 6:15-7:15AM and 3:00-4:00PM. For purposes of this analysis, existing peak hour volumes were rounded to the nearest multiple of five and balanced between intersections. Based on the spacing distance between intersections, presence of traffic-generating uses, and multiple days used for data collection, balancing was not completed along the following segments:

- Manhattan Road between EIP Road and IL 53
- Walter Strawn Drive between EIP Road and Deer Run
- IL 53 between Schweitzer Road and Breen Road
- IL 53 between Hoff Road and River Road
- Hoff Road between Rowell Road and US 52
- US 52 between Manhattan Road and Hoff Road

Existing peak hour traffic volumes are presented in **Exhibit 2A** through **Exhibit 2C**. A summary of the traffic count data is provided in the appendix.

The data collection reveals that traffic volumes along EIP Road are relatively balanced in the northbound and southbound directions during the peak hours. Peak hour traffic volumes along IL 53 are slightly higher in the northbound direction during the morning peak hour and generally balanced in each direction during the evening peak hour. Peak hour traffic volumes are generally higher in the northbound direction during the morning peak hour, and higher in the southbound direction during the evening peak hour.

Traffic volumes on Schweitzer Road east of IL 53 are generally balanced in each direction during the morning peak hour. During the evening peak hour, traffic volumes on Schweitzer Road are higher in the eastbound direction. Along Arsenal Road at its intersection with EIP Road, traffic volumes are higher on the west leg during the peak hours. Heavy left- and right-turn movements were observed during each peak hour, which is likely attributable to traffic coming to and from the CenterPoint Intermodal Center and BNSF Logistics Park Chicago. Along Manhattan Road, near its intersection with IL 53, traffic volumes are higher in the westbound direction during the morning peak hour, and higher in the eastbound direction during the evening peak hour. Peak hour traffic volumes on Hoff Road are generally balanced in the eastbound and westbound directions.

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**LEGEND**

**xx**

Weekday AM Peak  
(6:15 – 7:15am)

**(xx)**

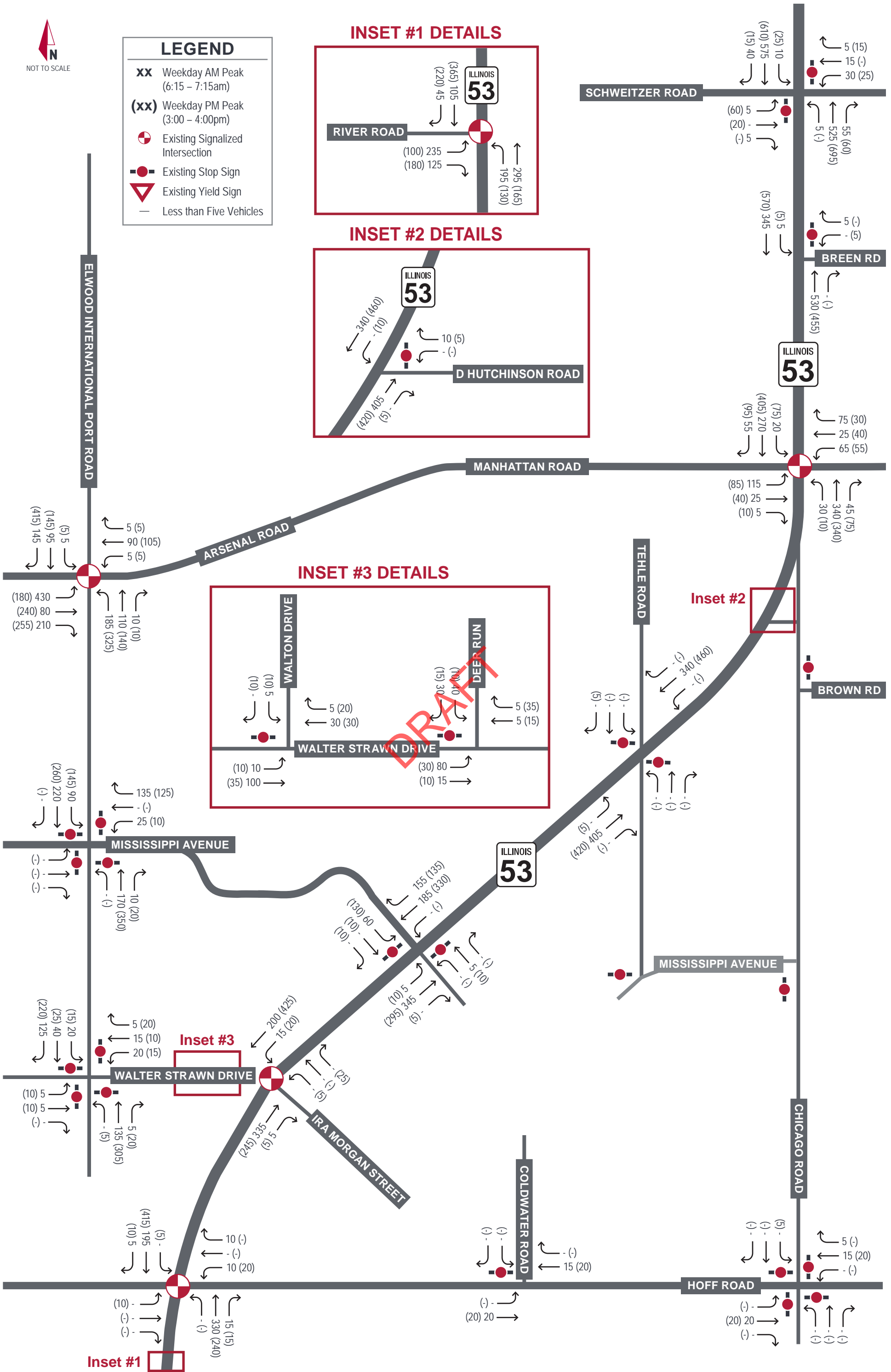
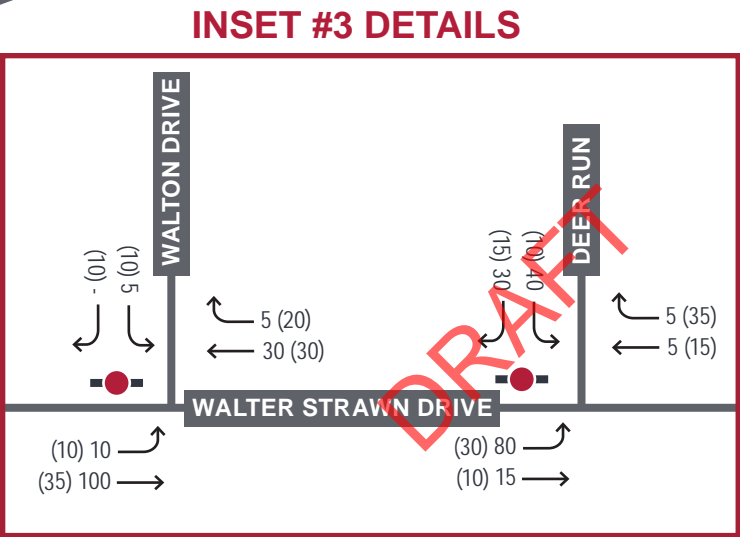
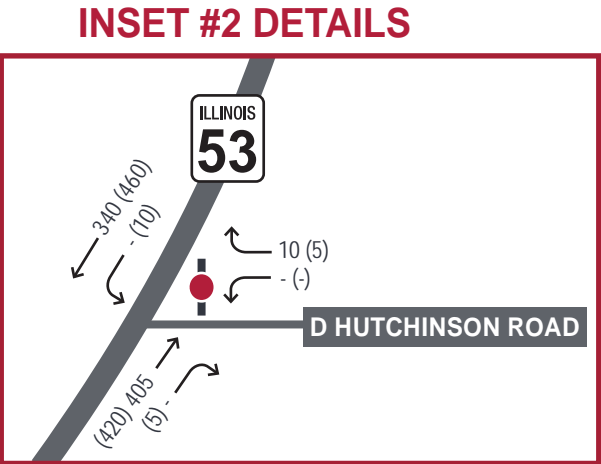
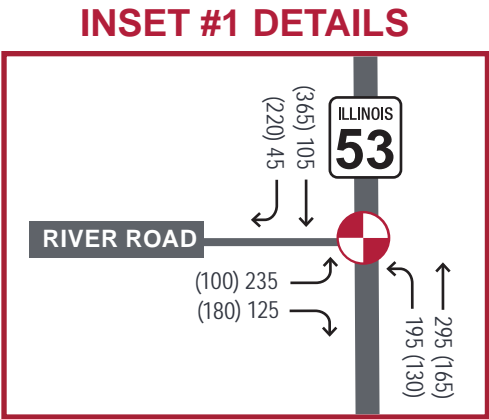
Weekday PM Peak  
(3:00 – 4:00pm)

Existing Signalized  
Intersection

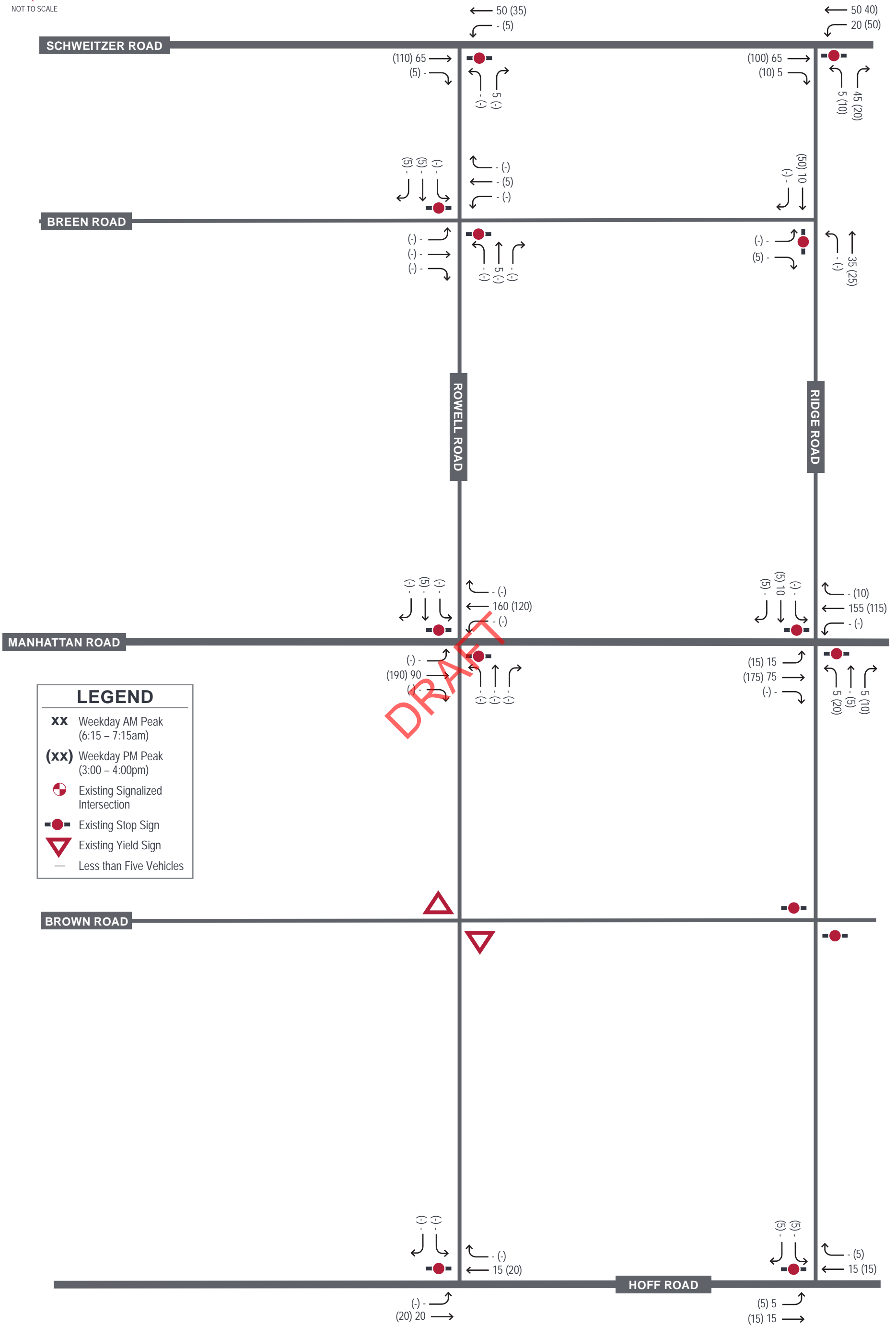
Existing Stop Sign

Existing Yield Sign

Less than Five Vehicles









LEGEND

xx

Weekday AM Peak  
(6:15 – 7:15am)

(xx)

Weekday PM Peak  
(3:00 – 4:00pm)

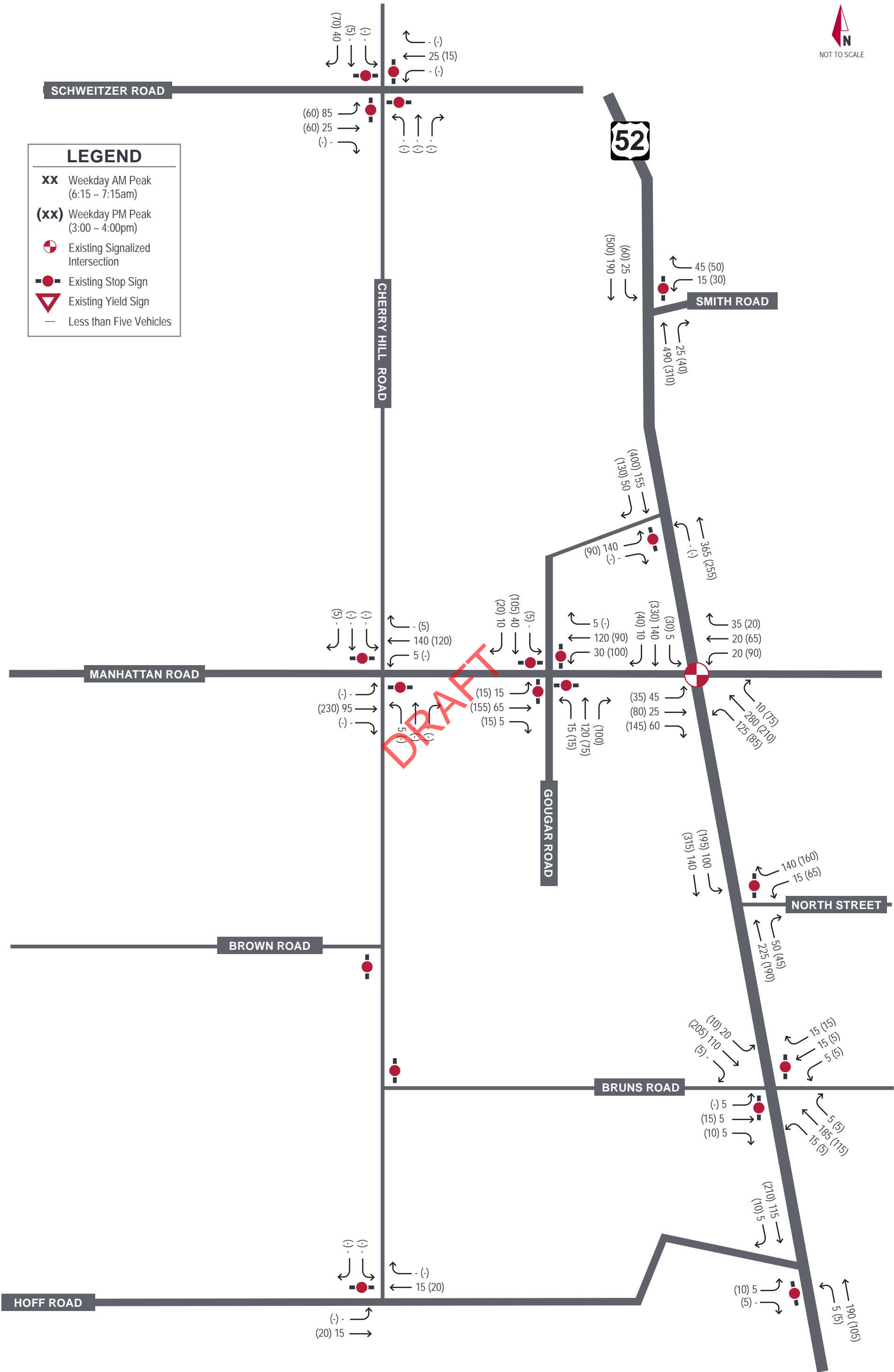
Existing Signalized  
Intersection

Existing Stop Sign

Existing Yield Sign

—

Less than Five Vehicles



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## 2.4. Existing Capacity Analyses

Per IDOT standards, Synchro capacity software was used to evaluate existing operational conditions at the study intersections during the weekday peak hours. The capacity of an intersection quantifies its ability to accommodate traffic volumes and is expressed in terms of level of service (LOS), measured in average delay per vehicle. LOS grades range from A to F, with LOS A as the highest (best traffic flow and least delay), LOS E as saturated or at-capacity conditions, and LOS F as the lowest (oversaturated conditions). The lowest LOS grade typically accepted by jurisdictional transportation agencies in Northeastern Illinois is LOS D, and a minimum LOS C is required for through movements on SRA routes such as IL 53.

The LOS grades shown below, which are provided in the Transportation Research Board's Highway Capacity Manual (HCM), quantify and categorize the driver's discomfort, frustration, fuel consumption, and travel times experienced as a result of intersection control and the resulting traffic queuing. A detailed description of each LOS rating can be found in **Table 2.1**.

Table 2.1. Level of Service Grading Descriptions<sup>1</sup>

Level of Service	Description
A	Minimal control delay; traffic operates at primarily free-flow conditions; unimpeded movement within traffic stream.
B	Minor control delay at signalized intersections; traffic operates at a fairly unimpeded level with slightly restricted movement within traffic stream.
C	Moderate control delay; movement within traffic stream more restricted than at LOS B; formation of queues contributes to lower average travel speeds.
D	Considerable control delay that may be substantially increased by small increases in flow; average travel speeds continue to decrease.
E	High control delay; average travel speed no more than 33 percent of free flow speed.
F	Extremely high control delay; extensive queuing and high volumes create exceedingly restricted traffic flow.

<sup>1</sup>Highway Capacity Manual, 6<sup>th</sup> Edition

The range of control delay for each rating (as detailed in the HCM) is shown in **Table 2.2**. Because signalized intersections are expected to carry a larger volume of vehicles and stopping is required during red time, note that higher delays are tolerated for the corresponding LOS ratings.

Table 2.2. Level of Service Grading Criteria<sup>1</sup>

Level of Service	Average Control Delay (s/veh) at:	
	Unsignalized Intersections	Signalized Intersections
A	0 – 10	0 – 10
B	> 10 – 15	> 10 – 20
C	> 15 – 25	> 20 – 35
D	> 25 – 35	> 35 – 55
E	> 35 – 50	> 55 – 80
F <sup>2</sup>	> 50	> 80

<sup>1</sup>Highway Capacity Manual, 6<sup>th</sup> Edition

<sup>2</sup>All movements with a Volume to Capacity (v/C) ratio greater than 1 receive a rating of LOS F.

The results of capacity analysis for existing conditions are summarized in **Table 2.3**. In this table, operation on each approach is quantified according to the average delay per vehicle and the corresponding LOS. Overall intersection operations are reported for all signalized intersections but not reported for minor-leg stop-controlled intersections, since the majority of vehicles are able to move through the intersection with little to no delay.

Based on information obtained from IDOT, the traffic signals at the intersections of IL 53/Manhattan Road, IL 53/IRA Morgan Street, IL 53/Hoff Road, IL 53/River Road, US 52/Manhattan Road, and EIP Road/Arsenal Road currently are “free” running stand-alone traffic signals and are not currently on a coordinated signal system. In order to evaluate traffic conditions and reflect the responsive nature of the signal cycles, the signals were optimized with an assumed minimum cycle length of 90 seconds. Per IDOT requirements, right-turn on red (RTOR) movements were not included in the analysis.

The results presented in Table 2.3 are based on Synchro’s HCM 6<sup>th</sup> Edition with one exception. For the intersection of EIP Road/Mississippi Avenue, the HCM 6<sup>th</sup> Edition reports are unable to produce results for unsignalized intersections with dual left-turn lanes (as is provided on the north leg of EIP Road); as such, the capacity results for this intersection are based on the results of SimTraffic analysis. Copies of the capacity analysis reports are provided in the appendix.

Table 2.3 Existing (Year 2020) Levels of Service

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
IL 53 / Schweitzer Road $\triangle$				
Eastbound	14	B	25+	D
Westbound	17	C	17	C
Northbound (Left)	9	A	9	A
Southbound (Left)	9	A	10+	B
IL 53 / Breen Road $\triangle$				
Westbound	11	B	12	B
Southbound (Left)	9	A	8	A
IL 53 / Manhattan Road $\star$				
Eastbound	15	B	15	B
Westbound	15	B	15	B
Northbound	9	A	11	B
Southbound	9	A	10-	A
<i>Intersection</i>	<i>11</i>	<i>B</i>	<i>11</i>	<i>B</i>
IL 53 / D Hutchinson Road $\triangle$				
Westbound	10-	A	11	B
Southbound (Left)	8	A	9	A
IL 53 / Tehle Road $\triangle$				
Eastbound	12	B	11	B
Westbound	12	B	13	B
Northbound (Left)	8	A	9	A
Southbound (Left)	8	A	8	A
IL 53 / Mississippi Road $\triangle$				
Eastbound	12	B	14	B
Westbound	13	B	14	B
Northbound (Left)	9	A	10+	B
Southbound (Left)	8	A	8	A
IL 53 / IRA Morgan Street $\star$				
Westbound	14	B	15	B
Northbound	6	A	6	A
Southbound	7	A	6	A <sup>2</sup>
<i>Intersection</i>	<i>6</i>	<i>A</i>	<i>7</i>	<i>A</i>

$\star$  – Signalized Intersection     $\blacktriangle$  – All-Way Stop-Controlled Intersection     $\triangle$  – Minor-Leg Stop-Controlled Intersection

<sup>1</sup>Left-turn movement operates at LOS F.

<sup>2</sup>Left-turn movement operates at LOS E.

<sup>3</sup>Left-turn movement operates at LOS F and thru movement operates at LOS E.

Table 2.3 Existing (Year 2020) Levels of Service (continued)

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
IL 53 / Hoff Road / Abraham Lincoln National Cemetery Access Driveway *				
Eastbound	42	D	26	C
Westbound	23	C	23	C
Northbound	10-	A	10-	A <sup>1</sup>
Southbound	9	A <sup>2</sup>	12	B <sup>1</sup>
Intersection	10+	A	12	B
IL 53 / River Road *				
Eastbound	18	B	19	B
Northbound	8	A	6	A
Southbound	10+	B	10+	B
Intersection	12	B	11	B
EIP Road / Arsenal Road *				
Eastbound	22	C	28	C
Westbound	35-	C <sup>1</sup>	35-	C <sup>1</sup>
Northbound	26	C	36	D
Southbound	25	B <sup>1</sup>	38	D <sup>3</sup>
Intersection	25	C	34	C
EIP Road / Mississippi Avenue ▲				
Eastbound	4	A	3	A
Westbound	4	A	6	A
Northbound	8	A	10+	B
Southbound	9	A	10+	B
Intersection	8	A	10-	A
EIP Road / Walter Strawn Drive ▲				
Eastbound	9	A	10+	B
Westbound	10-	A	11	B
Northbound	11	B	23	C
Southbound	10-	A	14	B
Intersection	10+	B	18	C
Walter Strawn Drive / Walton Drive △				
Eastbound (Left)	8	A	8	A
Southbound	10+	B	10-	A
Walter Strawn Drive / Deer Run △				
Eastbound (Left)	7	A	7	A
Southbound	9	A	9	A

\* – Signalized Intersection    ▲ – All-Way Stop-Controlled Intersection    △ – Minor-Leg Stop-Controlled Intersection

<sup>1</sup>Left-turn movement operates at LOS F.

<sup>2</sup>Left-turn movement operates at LOS E.

<sup>3</sup>Left-turn movement operates at LOS F and thru movement operates at LOS E.



Table 2.3 Existing (Year 2020) Levels of Service (continued)

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Schweitzer Road / Rowell Road $\Delta$				
Westbound (Left)	7	A	8	A
Northbound	9	A	9	A
Schweitzer Road / Ridge Road $\Delta$				
Westbound (Left)	7	A	8	A
Northbound	9	A	9	A
Schweitzer Road / Cherry Hill Road $\Delta$				
Eastbound (Left)	7	A	7	A
Westbound (Left)	7	A	7	A
Northbound	10+	B	10+	B
Southbound	9	A	9	A
Breen Road / Rowell Road $\Delta$				
Eastbound (Left)	7	A	7	A
Westbound (Left)	7	A	7	A
Northbound	9	A	9	A
Southbound	9	A	9	A
Breen Road / Ridge Road $\Delta$				
Eastbound	9	A	9	A
Northbound (Left)	7	A	7	A
Manhattan Road / Rowell Road $\Delta$				
Eastbound (Left)	8	A	8	A
Westbound (Left)	7	A	8	A
Northbound	10+	B	11	B
Southbound	10+	B	11	B
Manhattan Road / Ridge Road $\Delta$				
Eastbound (Left)	8	A	8	A
Westbound (Left)	7	A	8	A
Northbound	10+	B	11	B
Southbound	11	B	11	B
Manhattan Road / Cherry Hill Road $\Delta$				
Eastbound (Left)	8	A	8	A
Westbound (Left)	8	A	8	A
Northbound	11	B	11	B
Southbound	10+	B	10-	A

★ – Signalized Intersection    ▲ – All-Way Stop-Controlled Intersection     $\Delta$  – Minor-Leg Stop-Controlled Intersection

<sup>1</sup>Left-turn movement operates at LOS F.

<sup>2</sup>Left-turn movement operates at LOS E.

<sup>3</sup>Left-turn movement operates at LOS F and thru movement operates at LOS E.

Table 2.3 Existing (Year 2020) Levels of Service (continued)

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Manhattan Road / Gougar Road ▲				
Eastbound	9	A	11	B
Westbound	9	A	10+	B
Northbound	9	A	10-	A
Southbound	8	A	10-	A
Intersection	9	A	10+	B
Sweedler Road / Cherry Hill Road △				
Westbound	9	A	9	A
Southbound (Left)	7	A	7	A
Sweedler Road / Gougar Road ▲				
Eastbound	7	A	7	A
Westbound	7	A	7	A
Northbound	7	A	7	A
Southbound	7	A	8	A
Intersection	7	A	8	A
Bruns Road / Cherry Hill Road △				
Westbound	8	A	8	A
Southbound (Left)	8	A	8	A
Bruns Road / Gougar Road △				
Eastbound (Left)	8	A	8	A
Westbound (Left)	7	A	7	A
Northbound	9	A	9	A
Southbound	9	A	9	A
Hoff Road / Coldwater Road △				
Eastbound (Left)	7	A	7	A
Southbound	9	A	9	A
Hoff Road / Chicago Road ▲				
Eastbound	7	A	7	A
Westbound	7	A	7	A
Northbound	7	A	7	A
Southbound	7	A	8	A
Intersection	7	A	7	A
Hoff Road / Rowell Road △				
Eastbound (Left)	7	A	7	A
Southbound	9	A	9	A

★ – Signalized Intersection    ▲ – All-Way Stop-Controlled Intersection    △ – Minor-Leg Stop-Controlled Intersection

<sup>1</sup>Left-turn movement operates at LOS F.

<sup>2</sup>Left-turn movement operates at LOS E.

<sup>3</sup>Left-turn movement operates at LOS F and thru movement operates at LOS E.

Table 2.3 Existing (Year 2020) Levels of Service (continued)

Intersection		Weekday AM Peak		Weekday PM Peak	
		Delay (s/veh)	LOS	Delay (s/veh)	LOS
Hoff Road / Ridge Road	△				
Eastbound (Left)		7	A	7	A
Southbound		9	A	9	A
Hoff Road / Cherry Hill Road	△				
Eastbound (Left)		8	A	8	A
Southbound		9	A	9	A
Hoff Road / Gougar Road	△				
Eastbound (Left)		7	A	7	A
Westbound (Left)		7	A	7	A
Northbound		9	A	9	A
Southbound		9	A	9	A
US 52 / Smith Road	△				
Westbound		14	B	16	C
Southbound (Left)		9	A	8	A
US 52 / Gougar Road	△				
Eastbound		15+	C	17	C
Northbound (Left)		8	A	9	A
US 52 / Manhattan Road	*				
Eastbound		28	C	37	D
Westbound		23	C	41	D
Northbound		14	B	18	B
Southbound		17	B	30	C
Intersection		18	B	29	C
US 52 / North Street	△				
Westbound		12	B	21	C
Southbound (Left)		8	A	8	A
US 52 / Bruns Road	△				
Eastbound		11	B	11	B
Westbound		11	B	10+	B
Northbound (Left)		8	A	8	A
Southbound (Left)		8	A	8	A
US 52 / Hoff Road	△				
Eastbound		10+	B	11	B
Northbound (Left)		8	A	8	A

\* – Signalized Intersection    ▲ – All-Way Stop-Controlled Intersection    △ – Minor-Leg Stop-Controlled Intersection

<sup>1</sup>Left-turn movement operates at LOS F.

<sup>2</sup>Left-turn movement operates at LOS E.

<sup>3</sup>Left-turn movement operates at LOS F and thru movement operates at LOS E.

Based on the analysis, traffic operation is generally satisfactory throughout the study area. The north-south through movements on IL 53 currently operate at LOS C or better, consistent with IDOT requirements for an SRA route. At the study intersections, the estimated 95<sup>th</sup> percentile queues are accommodated within the existing storage lanes during both peak hours.

At the intersection of IL 53/Walter Strawn Drive/IRA Morgan Street, the overall intersection operates at LOS A during both peak hours; however, the southbound left-turn movement operates at LOS E during the evening peak hour. The estimated delay is a result of the low volume of traffic to IRA Morgan Street (Walter Strawn Drive is closed) and the associated short green time allocated to the southbound left-turn movement. Delay of this magnitude is not atypical under these circumstances and given that a low volume of traffic was observed utilizing IRA Morgan Street during either peak hour, the impact of this estimated delay is relatively minor.

At IL 53/Hoff Road/Abraham Lincoln National Cemetery Access Driveway, the eastbound approach currently operates at LOS E during the morning peak hour. Additionally, the northbound and southbound left-turn movements operate at LOS F during both peak hours. The estimated delay is largely a function of the relatively low traffic volumes observed for these movements/approaches and signal priority given to north-south traffic on IL 53. During both peak hours the 95<sup>th</sup> percentile queues are accommodated within the existing storage lanes.

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### 3. FUTURE CONDITIONS – EXISTING (2020) FULL BUILDOUT

This section of the report evaluates full buildout of the proposed industrial park under existing traffic conditions. The purpose of this analysis is to quantify the impact of site-generated traffic on the roadway network and identify potential improvements where appropriate. A summary of the overall development plan (full buildout) is outlined below.

#### 3.1. Development Characteristics & Site Access

The proposed Compass Business Park is generally bounded by IL 53 to the west, Cherry Hill Road to the east, Breen Road to the north, and Hoff Road to the south. At full buildout, the proposed development includes approximately 31 million square feet of industrial warehouse/distribution use. A conceptual site plan is provided in the appendix.

As part of the development, a bridge would be constructed along Walter Strawn Drive to provide grade-separated access over the Union Pacific Railway and IL 53 in order to access Compass Business Park; the existing signalized intersection at IL 53/Walter Strawn Drive would be removed as part of this project. Site-generated truck traffic would be required to enter Compass Business Park via the bridge and would not be permitted to use any other site access driveways. In order to facilitate truck access to the buildings located north of Manhattan Road, a secondary bridge would be constructed immediately east of Rowell Road. The secondary bridge would provide internal access to Compass Business Park; all trucks would be required to enter and exit the development via the bridge over IL 53 at Walter Strawn Drive. The site access driveways would be constructed to allow truck turnaround movements in order to redirect trucks to the closed loop bridge access at Walter Strawn Drive. In addition to truck access, the bridge would also facilitate passenger vehicle access to the site. Passenger vehicle access to the site would be provided at a number of locations along IL 53, Manhattan Road, and Hoff Road.

As part of the proposed development, an internal spine roadway network would be developed to provide access to the individual buildings within Compass Business Park. With the internal roadway network, a new roadway would extend southwest from the existing intersection of Mississippi Avenue/Coldwater Road (Bridge Road) and would provide connectivity to the new bridge over IL 53. Additionally, the existing east-west segment of Mississippi Road would be extended east of Chicago Road to east of Rowell Road. The internal roadway network includes construction of the following new roadway segments. These new roadway segments are highlighted in the conceptual site plan provided in the appendix.

- **Access 1:** A new cul-de-sac on the north side of Mississippi Avenue, located immediately west of Building 5A.
- **Access 2:** A new cul-de-sac which would extend south of Mississippi Avenue, situated between Building 3 and Building 4A/Building 4B.
- **Access 3:** A new roadway which would extend north of Mississippi Avenue and terminate with a cul-de-sac north of Brown Road. From Mississippi Avenue to Brown Road, the roadway would be located between Building 5B and Building 6; north of Brown Road, the roadway would be between Building 9 and Building 10.

- **Access 4:** A new roadway which would extend both north and south of Mississippi Avenue, east of Rowell Road. On the south side of the Mississippi Avenue extension, Access 4 would be located along the eastern boundary of Building 8A/Building 8B. North of the Mississippi Avenue extension, Access 4 would be located east of Building 8C/Building 8D.
- **Access 5:** A new east-west roadway which would extend east of Rowell Road to approximately halfway between Ridge Road and Cherry Hill Road.
- **Access 6:** A new north-south roadway located east of Rowell Road, and more specifically planned between Building 11 and Building 12. Access 6 would extend north from Access 5.
- **Access 7:** Located south of Brown Road, this east-west roadway would extend east from Ridge Road. Between Building 25 and Buildings 26A/26B, Access 7 would transition to a north-south roadway and terminate with a cul-de-sac just south of Manhattan Road.
- **Access 8:** Located west of Ridge Road, Access 8 would extend north and south from Access 5. North of Access 5, Access 8 would be located between Building 32 and Building 33. South of Access 5, Access 8 would be located between Building 27 and Building 28.

The internal roadway network would facilitate access to the parking and loading facilities supporting each proposed building.

### 3.2. Trip Generation

In order to calculate trips generated by the proposed industrial warehouse/distribution use, data was referenced from the Institute of Transportation Engineers (ITE) manual Trip Generation, Tenth Edition. Trip generation data for the ITE Land Use Code (LUC) corresponding to the proposed uses are shown in **Table 3.1**.

Table 3.1 ITE Trip Generation Data by Land Use

ITE Land Use	Unit	Type	Trip Generation Rate		
			Daily	AM Peak	PM Peak
High-Cube Transload and Short-Term Storage Warehouse (LUC 154)	Per 1,000 sq. ft.	Passenger Vehicles	0.946X 50% in/50% out	0.056X 77% in/23% out	0.077X 28% in/72% out
		Heavy Vehicles <sup>1</sup>	0.454X 50% in/50% out	0.024X 77% in/23% out	0.023X 28% in/72% out

X = 1,000 square feet gross floor area

<sup>1</sup>The ITE Trip Generation, Tenth Edition manual does not provide data for heavy vehicles. Per guidance provided in the ITE manual for LUC 154, data provided in the *High-Cube Warehouse Vehicle Trip Generation Analysis*, published in October 2016 was assumed. Tables 5-7 of the *High-Cube Warehouse Vehicle Trip Generation Analysis* outline the daily and peak hour trip generation rates for heavy vehicles. A copy of the supplemental data is provided in the appendix. The in/out distribution percentages were obtained from the Trip Generation, Tenth Edition manual.

The ITE data was compared to empirical trip generation data obtained from studies conducted at existing industrial facilities located in Will County. Based on this review, and as documented in the *Elwood International Port Trip Generation Study*, prepared by Kimley-Horn, the ITE data provided for both car and heavy vehicles is generally higher than the observed trip generation characteristics in Will County. Therefore, IDOT approved the use of factors (percentages) to be applied to the ITE rates for LUC 154 (Table 3.1). A summary of the IDOT-approved factors is presented in **Table 3.2**. Details



associated with the variables used to develop these factors are outlined in the *Elwood International Port Trip Generation Study* which is provided in the appendix.

**Table 3.2 IDOT-Approved Factors for Compass Business Park Trip Generation**

Time Period	Trip Generation Factor <sup>1</sup>	
	Cars	Heavy Vehicles
Daily	60%	75%
AM Peak Hour	80%	75%
PM Peak Hour	100%	75%

<sup>1</sup>The factor is applied to the ITE trip generation data presented in Table 3.1.

Using these factors and the ITE trip generation data presented in Table 3.1, the trip generation rates used to estimate site-generated traffic for Compass Business Park are presented in **Table 3.3**.

**Table 3.3 Trip Generation Data for Compass Business Park**

Trip Type	Weekday		
	Daily	AM Peak	PM Peak
Passenger Vehicles (Cars)	0.5676X 50% in/50% out	0.0448X 77% in/23% out	0.077X 28% in/72% out
Heavy Vehicles (Trucks)	0.3405X 50% in/50% out	0.018X 77% in/23% out	0.01725X 28% in/72% out

X = 1,000 square feet gross floor area

Based on the trip generation rates in Table 3.3, the trip generation estimates for full buildout of Compass Business Park are provided in **Table 3.4**.

**Table 3.4 Site-Generated Traffic Projections<sup>1</sup>**

Size	Trip Type	Site-Generated Trips (Weekday)						
		Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
30,967,180 sq. ft.	Cars	17,570	1,065	320	1,385	665	1,720	2,385
	Trucks	10,370	425	125	550	145	380	525
<i>Total New Trips (Full Buildout)</i>		<i>27,940</i>	<i>1,490</i>	<i>445</i>	<i>1,935</i>	<i>810</i>	<i>2,100</i>	<i>2,910</i>

<sup>1</sup>In/Out volumes are rounded to the nearest multiple of five. For rounding purposes, the total volumes are a sum of in and out trips.

For purposes of estimating the distribution characteristics of the proposed development, workforce home location data was reviewed for the surrounding area. Using 2014 U.S. Census origin-destination employment statistics prepared by Ruettiger, Tonelli & Associates, Inc. (dated June 21, 2017), the geographic distribution of potential Compass Business Park employees was mapped and evaluated relative to potential travel routes. A summary of the U.S. Census origin-destination employment data is provided in the appendix. The distribution of site-generated truck traffic was based on prevailing truck traffic volumes/patterns and the planned closed loop truck access via a bridge along Walter Strawn Drive to Compass Business Park. The distribution of truck traffic assumes

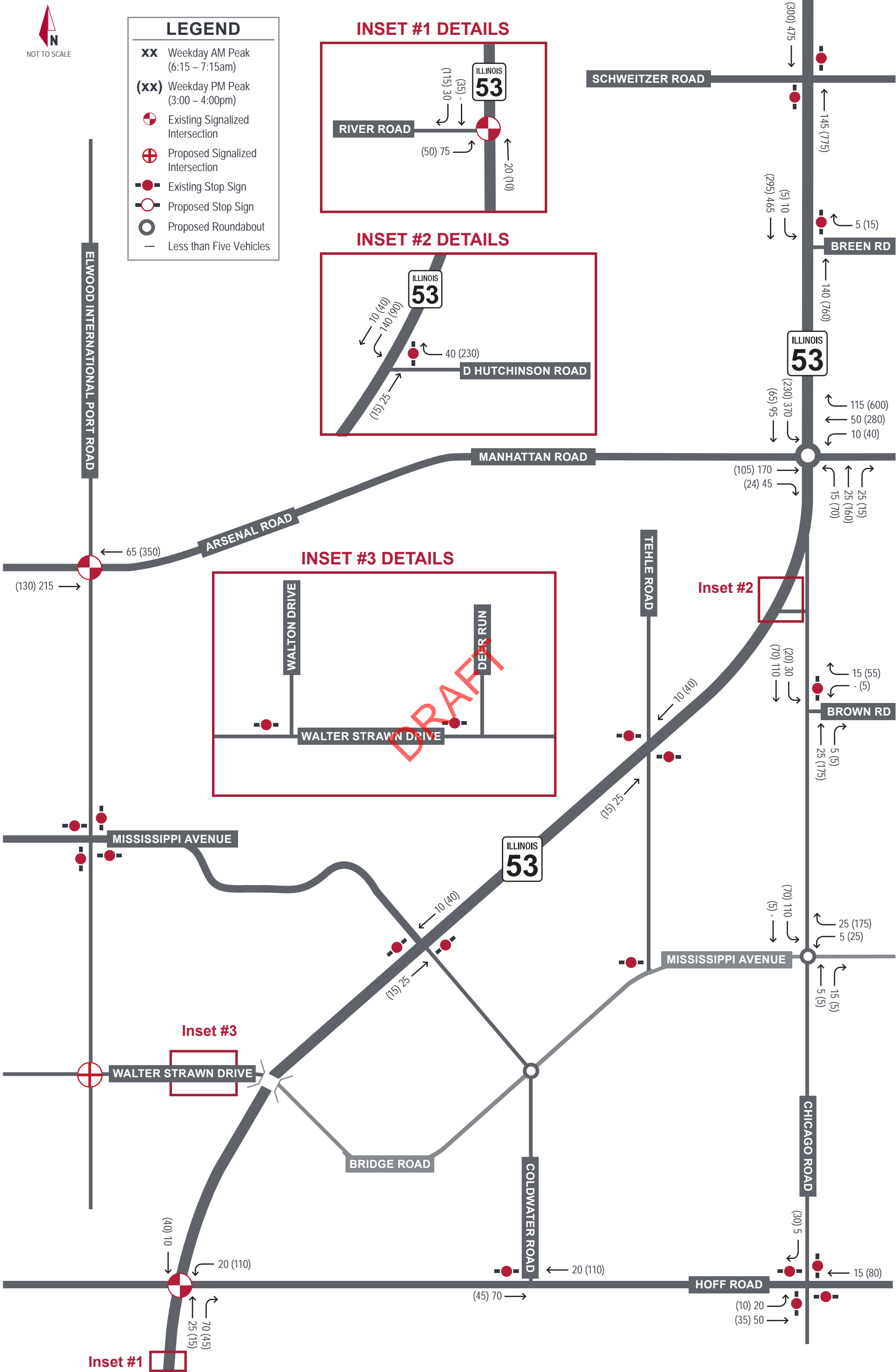
future construction of Houbolt bridge, which would provide an alternate route for trucks from I-80 over the Des Plaines River and into the Centerpoint Intermodal Center. With the planned bridge, it is anticipated a portion of site-generated truck traffic would travel north-south through the intersection of EIP Road/Arsenal Road. The anticipated directional distribution of site-generated trips is outlined in **Table 3.5**.

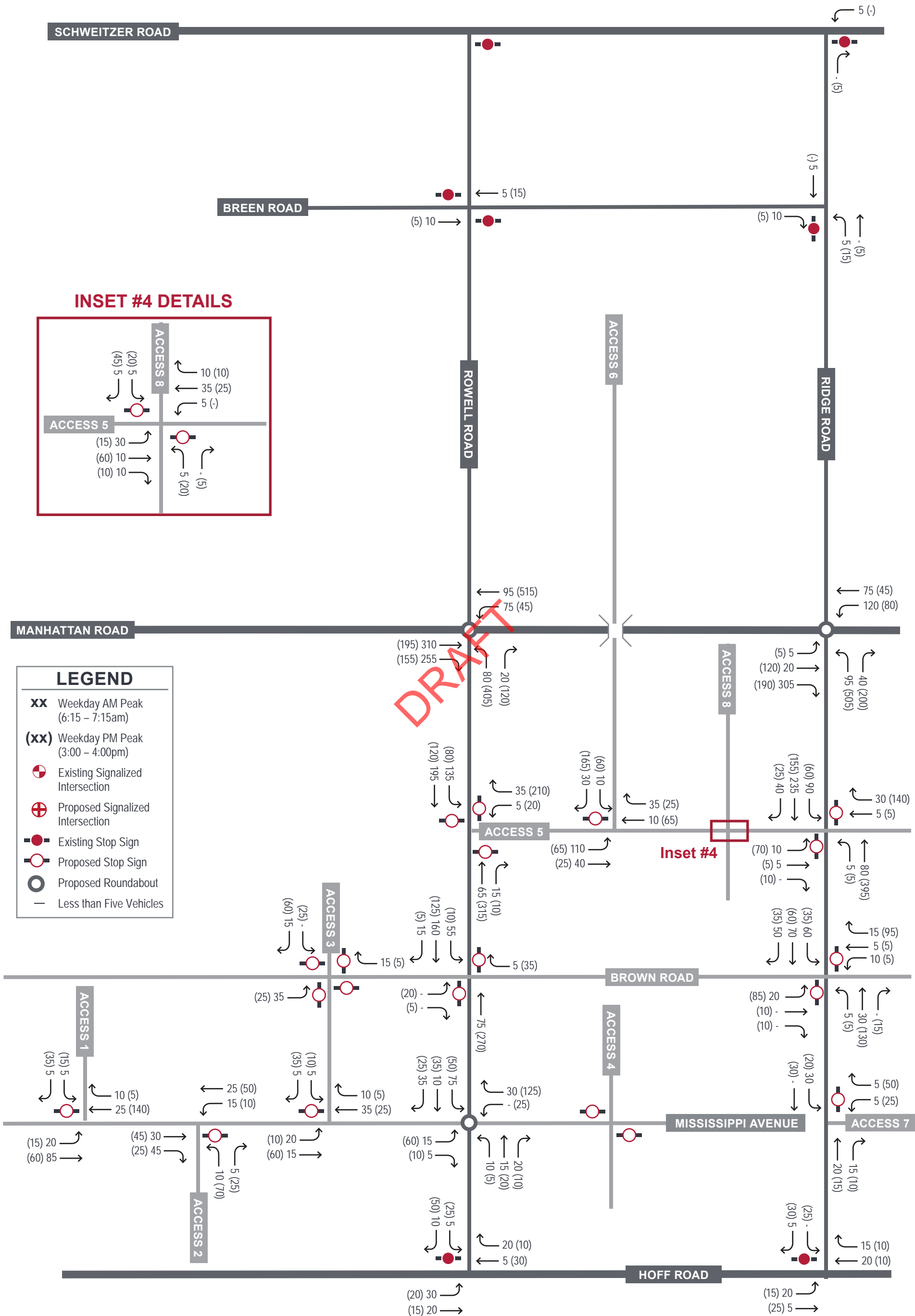
**Table 3.5 Estimated Trip Distribution**

Traveling to/from:	Car Trips	Truck Trips
North via IL 53	45%	--
South/Southwest via IL 53	9%	--
North via US 52	15%	--
South via US 52	4%	--
East/Northeast via Manhattan-Monee Road	7%	--
West via Arsenal Road (I-55)	20%	25%
North via EIP Road	--	50%
South via EIP Road	--	15%
West via Walter Strawn Drive	--	10% <sup>1</sup>
Total	100%	100%

<sup>1</sup>Reflects outbound trips from Compass Business Park to BNSF Logistics Park Chicago. Based on the access configuration at BNSF Logistics Park Chicago, inbound trips (10 percent) would originate south via EIP Road for a total of 25 percent.

Based on the preceding assumptions and trip distribution percentages, site traffic (Table 3.4) was assigned to the study intersections. Car trips for the proposed development are shown in **Exhibit 3A** through **Exhibit 3C**; truck trips are depicted in **Exhibit 4A** through **Exhibit 4C**; and total site-generated trips at full buildout are shown in **Exhibit 5A** through **Exhibit 5C**.









**LEGEND**

xx

Weekday AM Peak  
(6:15 – 7:15am)

(xx)

Weekday PM Peak  
(3:00 – 4:00pm)

Existing Signalized  
Intersection

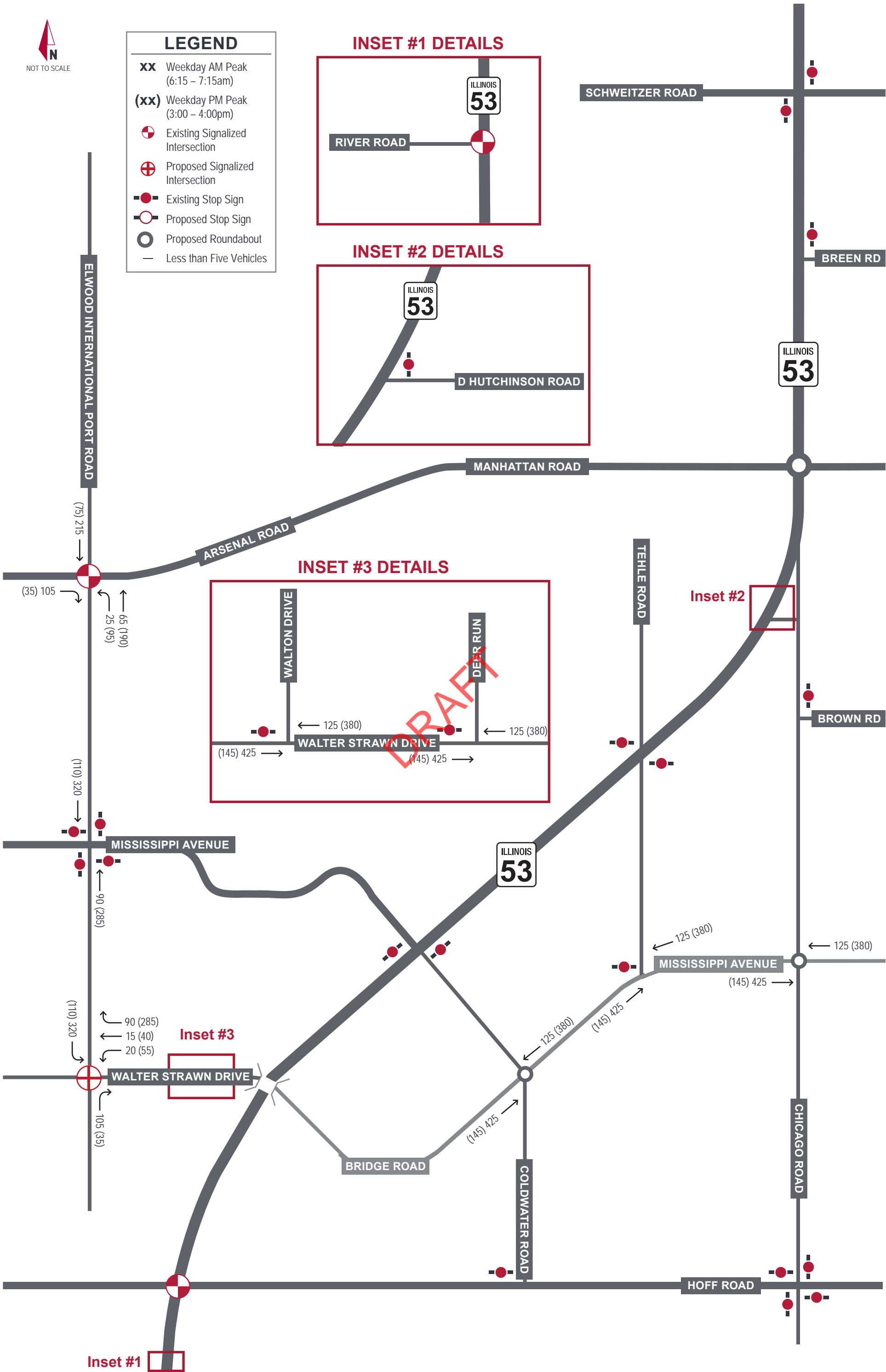
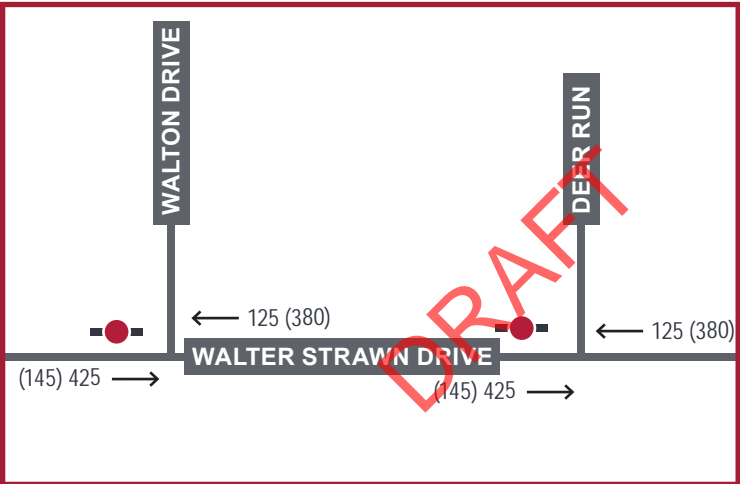
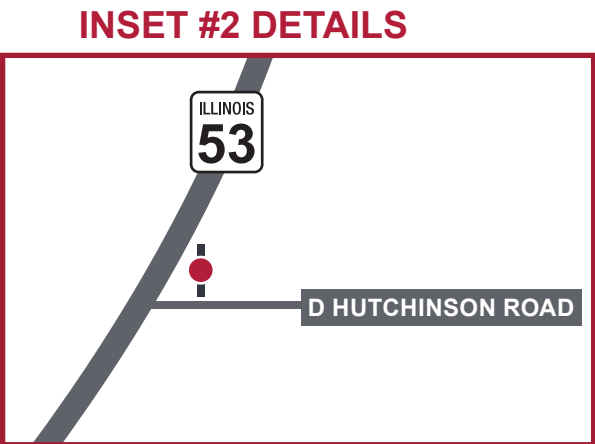
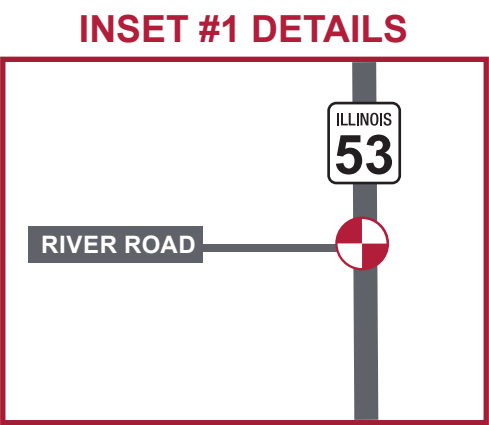
Proposed Signalized  
Intersection

Existing Stop Sign

Proposed Stop Sign

Proposed Roundabout

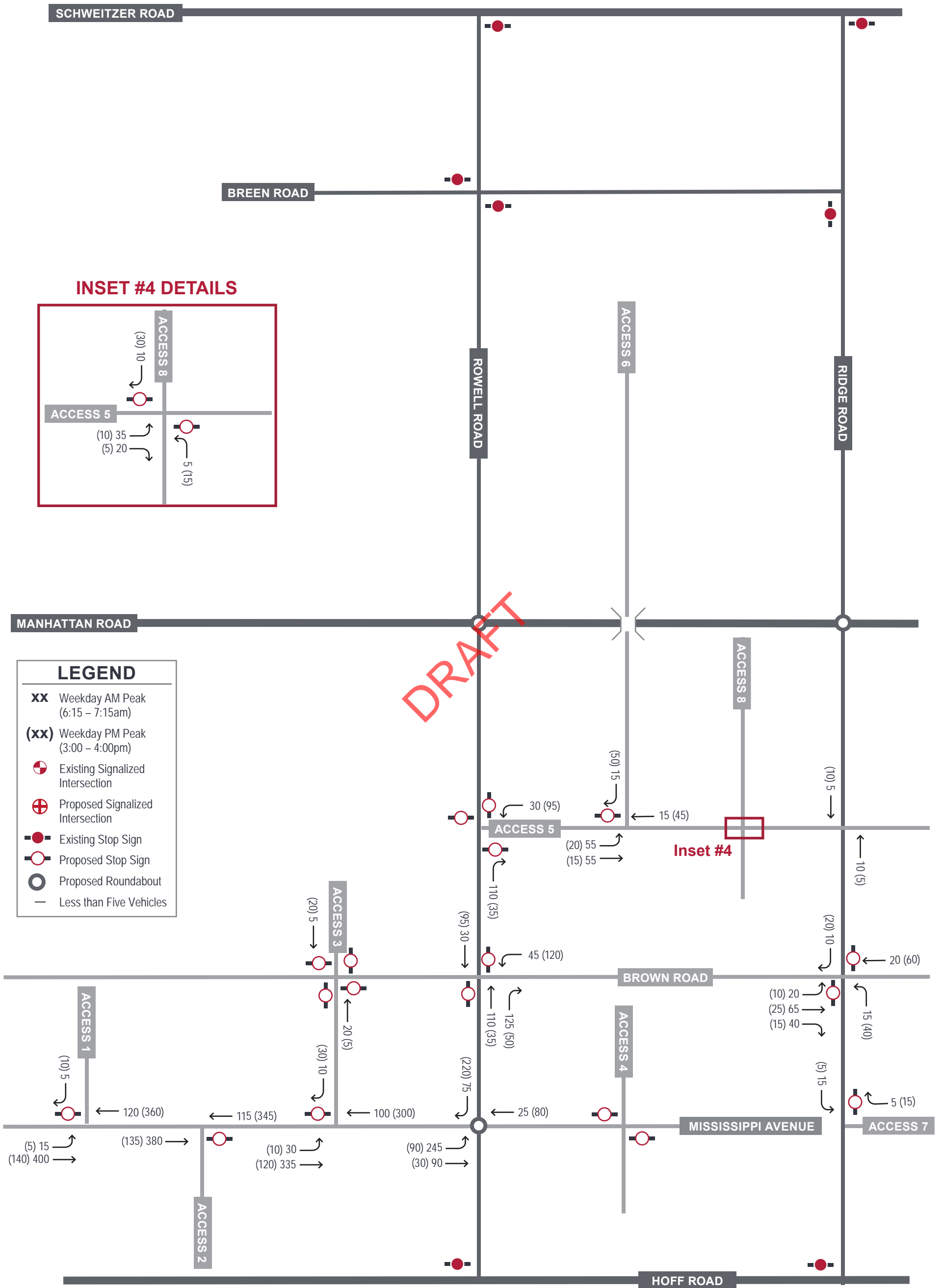
Less than Five Vehicles



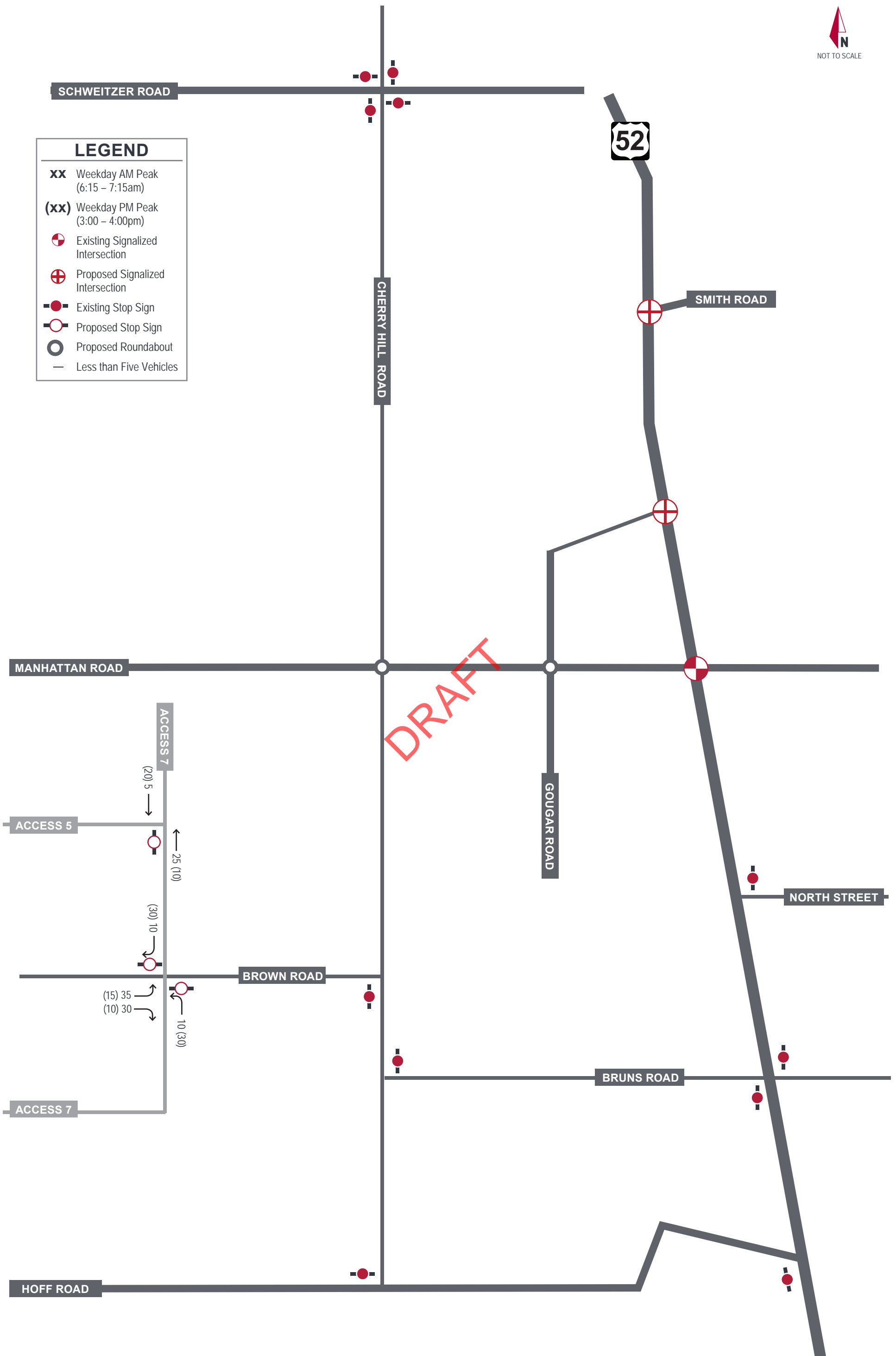
Inset #1

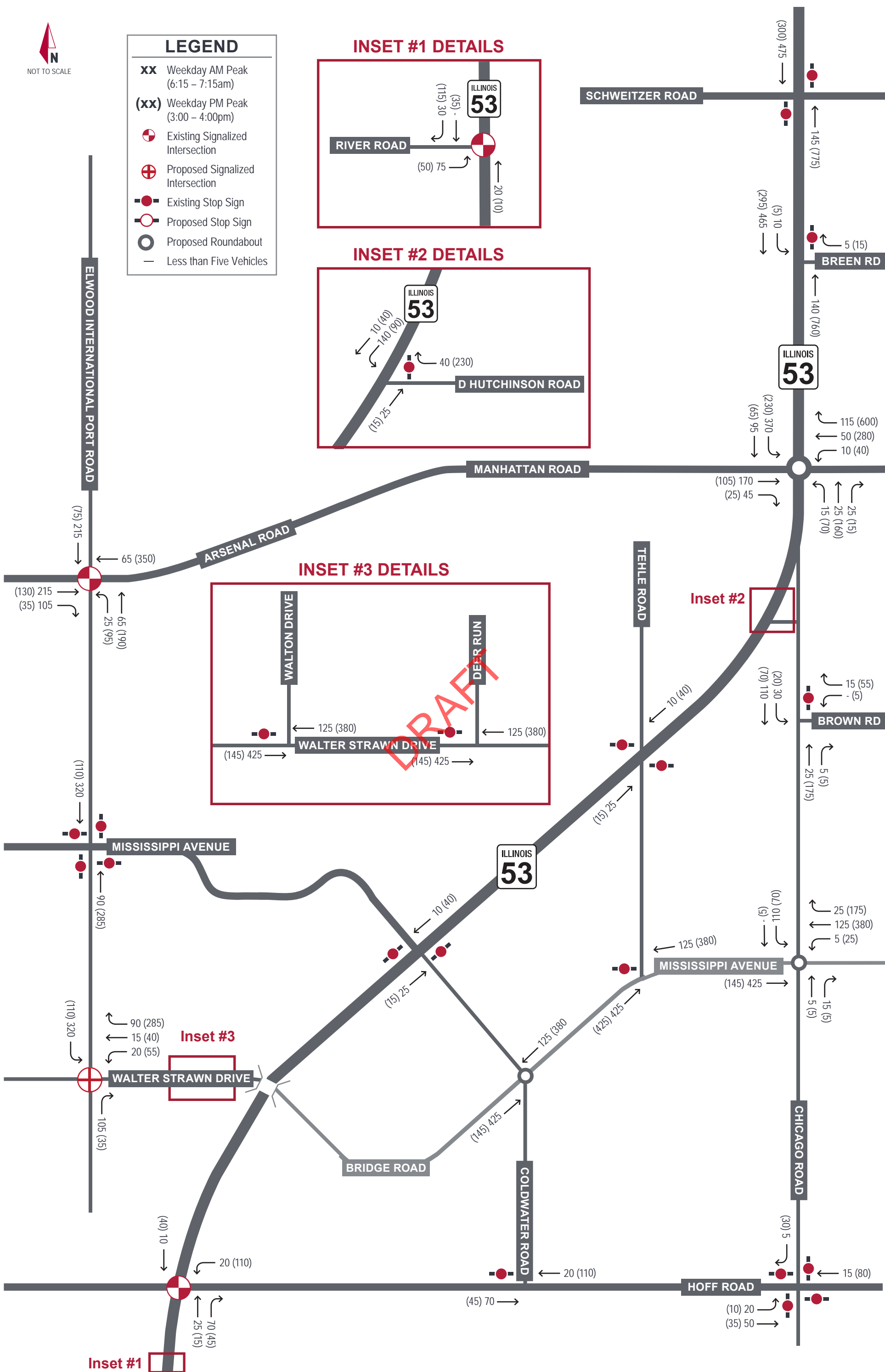
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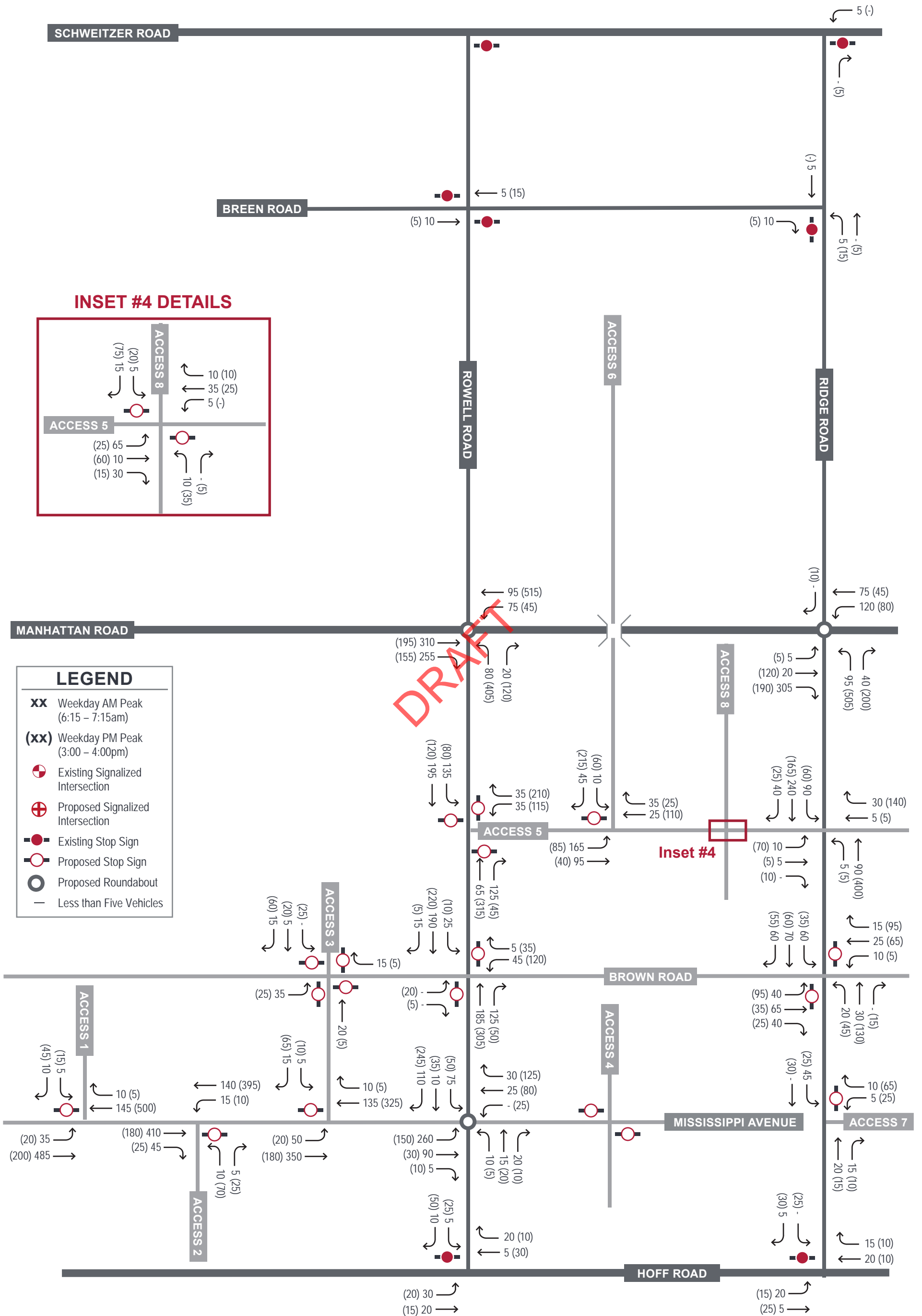
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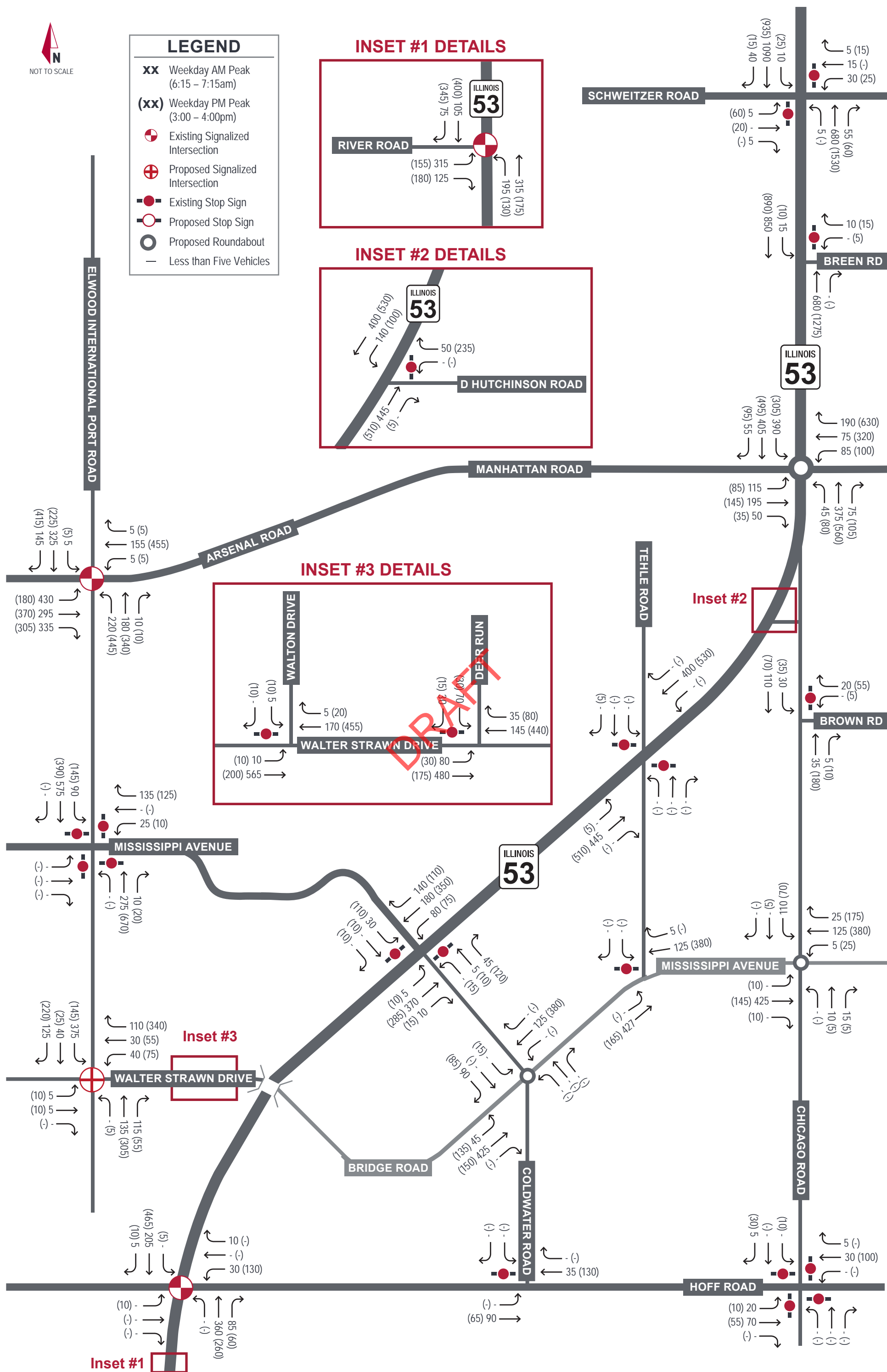
### 3.3. Future Capacity Analyses

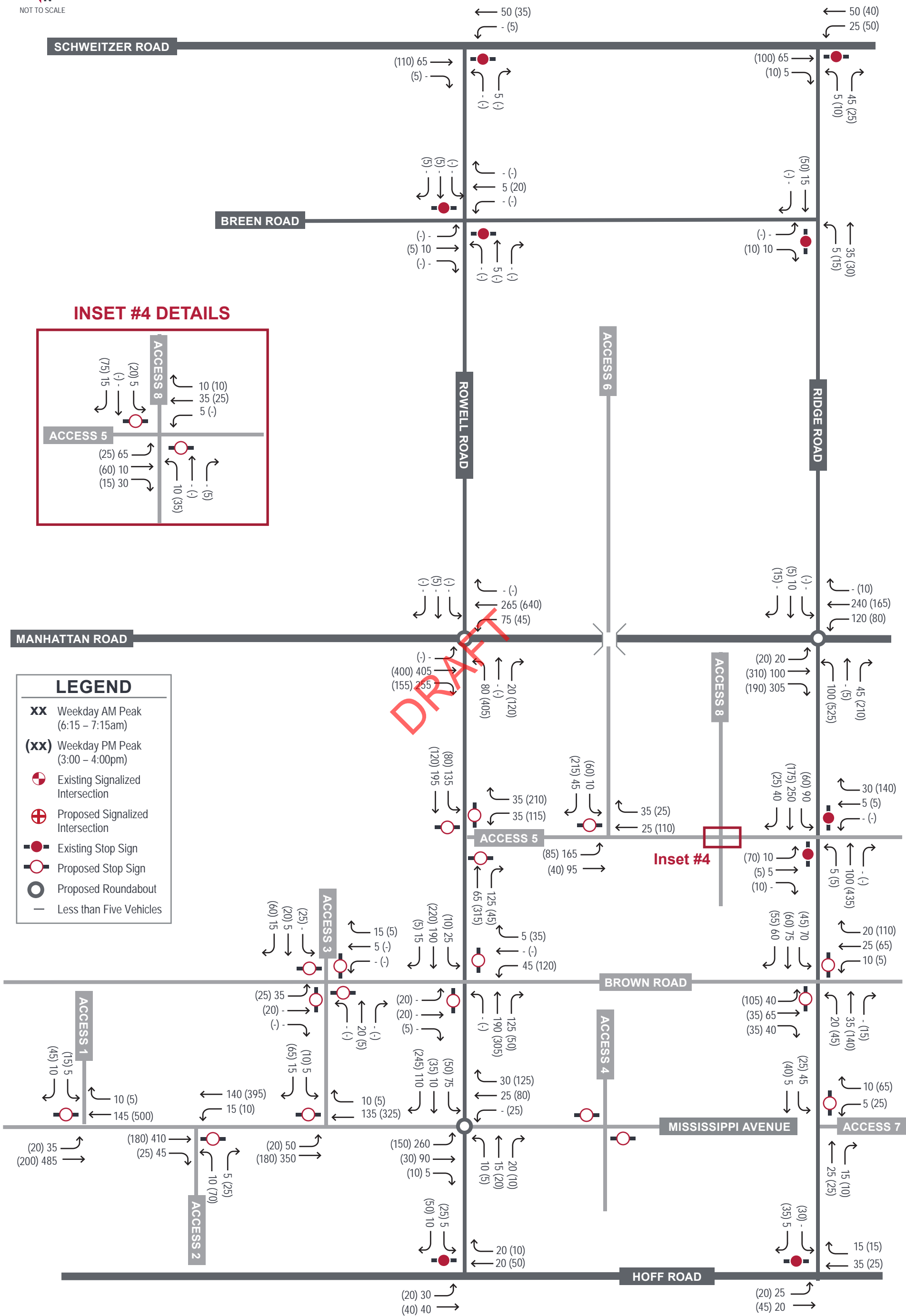
In order to isolate infrastructure improvements necessary to support site access and the addition of site-generated traffic to the roadway network, an analysis of Existing (2020) Full Buildout traffic conditions was completed.

#### Existing (2020) Full Buildout Levels of Service

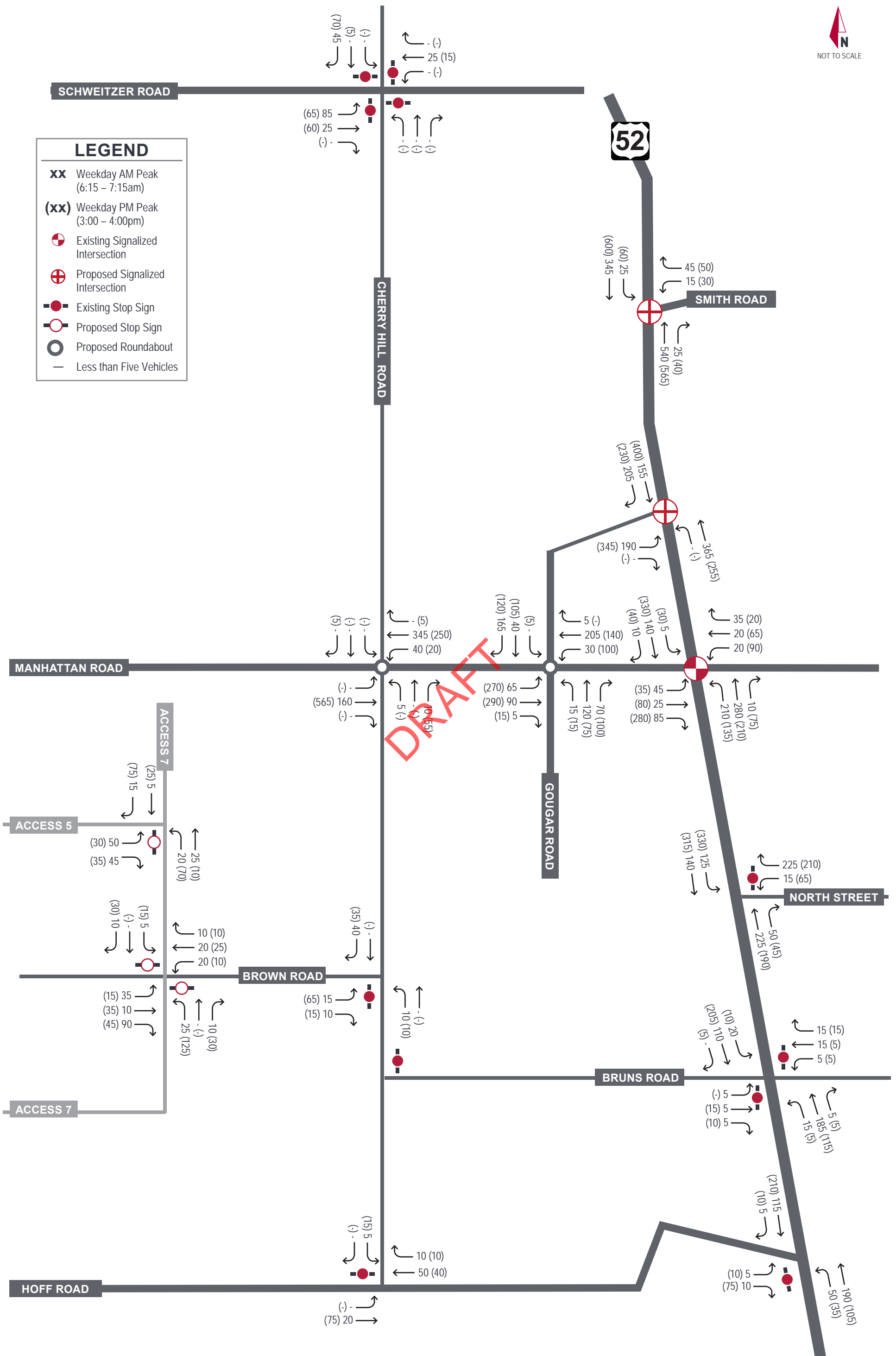
This analysis considers the addition of site-generated traffic at full buildout (Exhibit 5A through Exhibit 5C) to existing traffic volumes (Exhibit 2); background traffic growth was not included in this analysis in order to measure the impact of site-generated traffic only. Existing (2020) Full Buildout traffic volumes are illustrated in **Exhibit 6A** through **Exhibit 6C**. A summary of key assumptions applied to the Existing (2020) Full Buildout analysis is provided below.

- The signalized intersections currently are “free” running stand-alone traffic signals and are not currently on a coordinated signal system. The cycle length assumed for the existing conditions analysis (minimum 90 seconds) was applied to the Existing (2020) Full Buildout condition. In order to reflect the responsive nature of the signal cycles, the splits were optimized.
- A speed limit of 30 MPH was assumed for the internal spine roadway network. The internal roadway network was assumed to provide a three-lane cross-section with a single travel lane in each direction and a TWLTL in the center median. The TWLTL would facilitate both passenger vehicle and truck turning movements to and from the various buildings/parking lots.
- As part of the development a bridge would be constructed along Walter Strawn Drive over the Union Pacific Railway and IL 53. While the bridge would provide access to Compass Business Park, it is anticipated that a portion of existing traffic would be diverted to the bridge to access the CenterPoint Intermodal Center and BNSF Logistics Park Chicago. Based on an analysis of the anticipated travel time benefit associated with the proposed bridge, travel times to/from CenterPoint Intermodal Center are expected to be nearly 20 percent shorter during the morning peak hour. As such, the bridge is expected to be a viable alternate route to Mississippi Avenue. For purposes of this analysis, approximately 25 percent of traffic observed completing a southbound right-turn and eastbound left-turn at IL 53/Mississippi Avenue was assumed to use the bridge to Walter Strawn Drive. Utilization beyond the 25 percent is expected but was limited to provide a more conservative analysis of operations at IL 53/Mississippi Avenue. A summary of the diverted traffic volumes is depicted in the appendix.
- Existing traffic at the intersection of IL 53/Walter Strawn Drive/IRA Morgan Street was assumed to be redirected to IL 53/Mississippi Avenue. With the proposed development, the existing signalized intersection would be removed in order to accommodate the proposed bridge over IL 53 at Walter Strawn Drive. The redirected traffic volumes are depicted in the appendix.







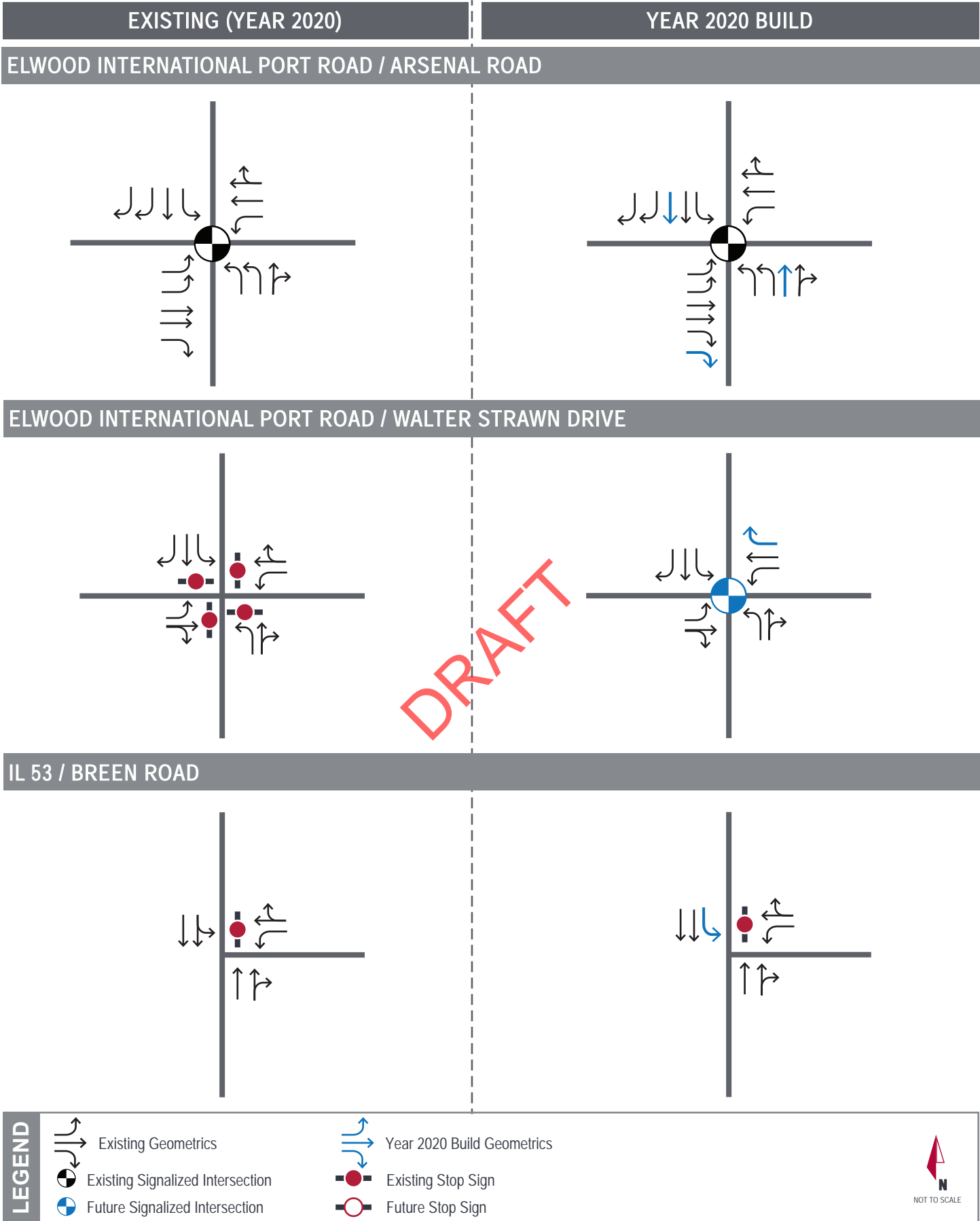


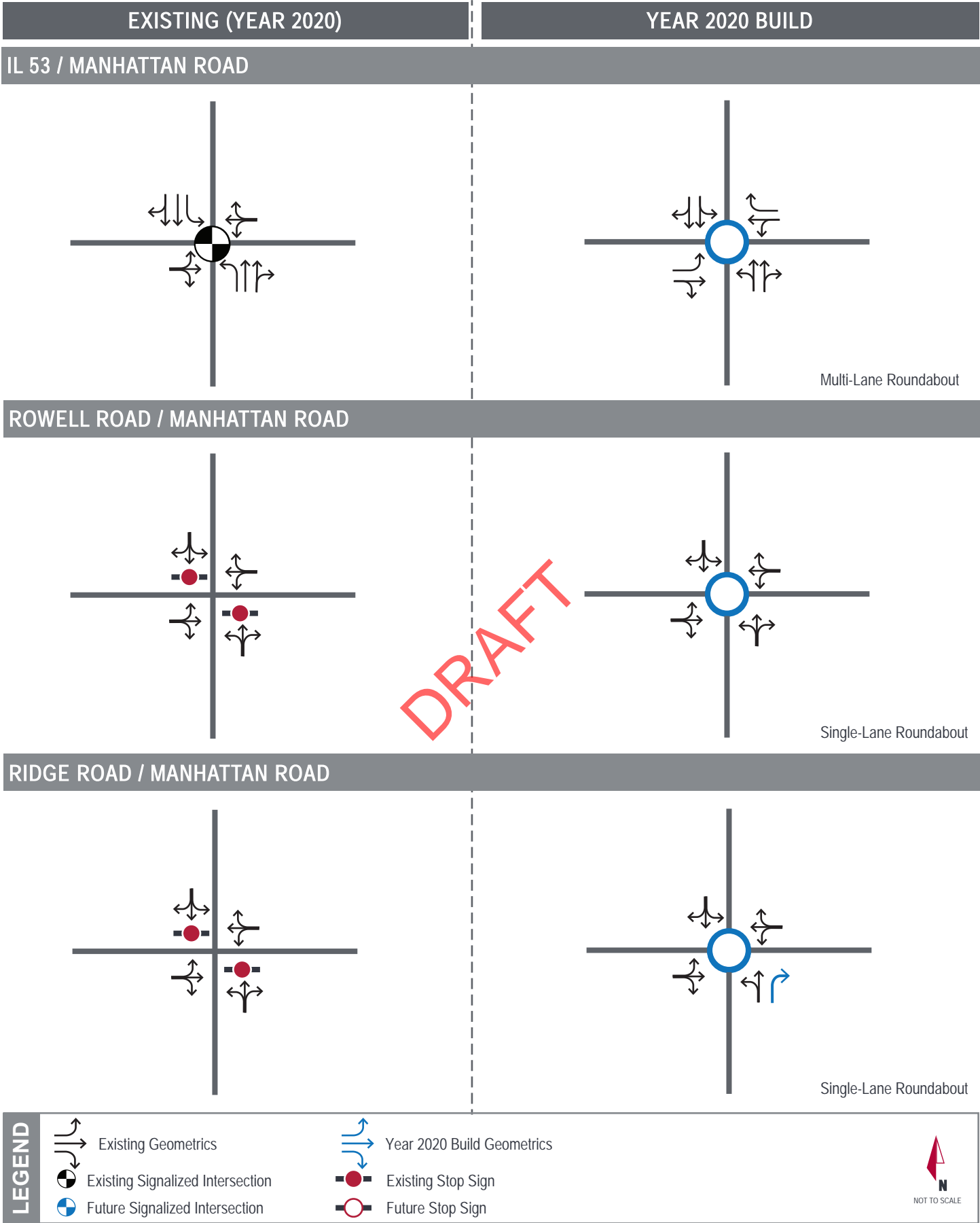
Based on the analysis of Existing (2020) Full Buildout traffic conditions, several improvements were identified to facilitate site access and mitigate traffic attributable to the proposed development. Traffic signal warrants were evaluated based on criteria in the *Manual on Uniform Traffic Control Devices (MUTCD)* (page 55). Turn lane warrants and dimensions were evaluated at the study intersections using volume criteria in the Will County Department of Highways *Permit Regulations and Access Control Regulations* and the IDOT *Bureau of Design and Environment (BDE) Manual*. A summary of the recommended improvements is provided on the pages that follow and depicted in **Exhibit 7A** through **Exhibit 7D**. The dimensions identified for the recommended turn lanes are based on design criteria provided in the IDOT *BDE Manual*.

- **EIP Road / Arsenal Road**
  - Provide dual right-turn lanes on the west leg. The turn lanes should be channelized and controlled by the signal.
  - Construct an additional southbound through lane to provide adequate intersection capacity. The south leg of the intersection currently provides two receiving lanes; therefore, additional widening on the south leg is not required.
  - Add an additional northbound through lane to provide adequate intersection capacity. The north leg of the intersection currently provides two receiving lanes; therefore, additional widening is not needed.
- **EIP Road / Walter Strawn Drive**
  - Install a traffic signal per MUTCD Warrant 1, Conditions A, B (*Signal Warrant Analyses*) and IDOT design criteria. Based on proximity to the at-grade railroad crossing, coordination with BNSF is anticipated.
    - For purposes of this analysis, a minimum cycle length of 90 seconds was assumed, and splits were optimized.
  - Add a free-flow right-turn lane on the east leg. The turn lane should provide 215 feet of storage with a 220-foot taper.
  - Provide an additional northbound through lane on EIP Road from Walter Strawn Drive to Mississippi Avenue.
- **IL 53 / Breen Road**
  - Install an exclusive left-turn lane on the north leg of IL 53. The turn lane should provide 265 feet of storage with a 265-foot taper.
- **IL 53 / Manhattan Road**
  - Remove the existing traffic signal and install a multi-lane roundabout in order to enhance safety conditions and facilitate traffic movements at this intersection.
- **Rowell Road / Manhattan Road**
  - Install a single-lane roundabout in order to enhance safety conditions, facilitate access to Compass Business Park, and support through traffic along the Manhattan Road corridor.
- **Ridge Road / Manhattan Road**
  - Install a single-lane roundabout in order to enhance safety conditions, facilitate access to Compass Business Park, and support through traffic along the Manhattan Road corridor. A right-turn slip lane should be provided on the south leg in order to facilitate outbound traffic from Compass Business Park.

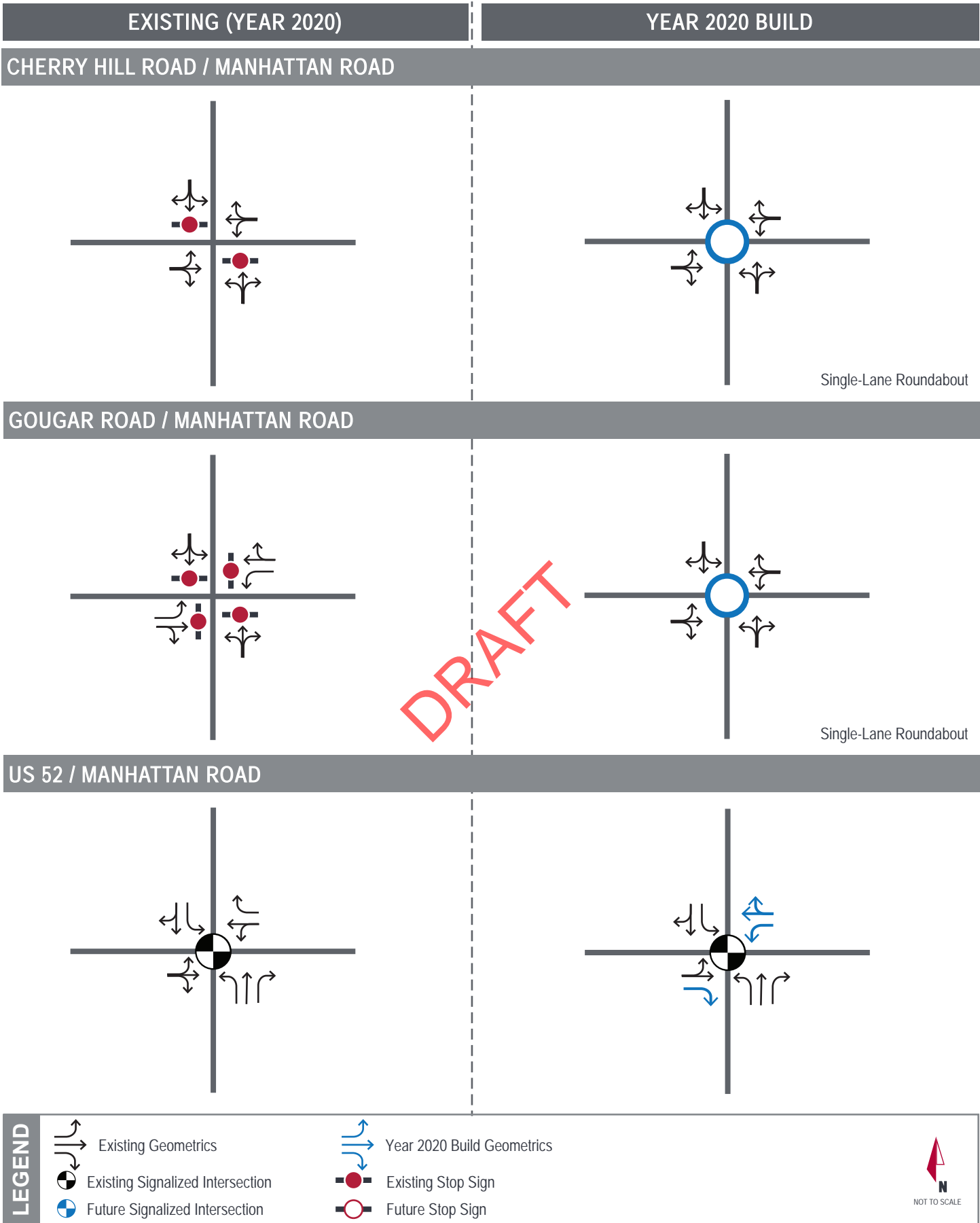
- **Cherry Hill Road / Manhattan Road**
  - Install a single-lane roundabout in order to enhance safety conditions, facilitate access to Compass Business Park, and support through traffic along the Manhattan Road corridor.
- **Gougar Road / Manhattan Road**
  - Install a single-lane roundabout in order to enhance safety conditions, facilitate access to Compass Business Park, facilitate turning movements to and from Gougar Road, and support through traffic along the Manhattan Road corridor.
- **US 52 / Manhattan Road / Foxford Drive**
  - Install a dedicated right-turn lane on the west leg. The turn lane should provide 145 feet of storage with a 175-foot taper.
  - Modify the striping on the east leg to provide a dedicated left-turn lane and a shared thru/right-turn lane. The dedicated left-turn lane should provide 115 feet of storage with a 135-foot taper.
- **US 52 / North Street**
  - Complete additional analysis of turning movements in order to verify the lane geometry at this intersection will accommodate truck traffic and evaluate restriping the existing shoulder on North Street to provide an exclusive right-turn lane. Based on the spacing distance from the at-grade rail crossing, the turn lane should provide 125 feet of storage with a 105-foot taper.
- **US 52 / Gougar Road**
  - Install a traffic signal per MUTCD Warrant 1, Condition A (*Signal Warrant Analyses*) and IDOT design criteria.
    - For purposes of this analysis, a minimum cycle length of 90 seconds was assumed, and splits were optimized. Further, the new signal was assumed to be coordinated with the existing signal at US 52/Manhattan Road/Foxford Drive.
- **Bridge Road / Mississippi Avenue / Coldwater Road**
  - Install a single-lane roundabout in order to facilitate both car and truck access to Compass Business Park. The roundabout should be designed to accommodate truck movements.
- **Chicago Road / Mississippi Avenue**
  - Install a single-lane roundabout in order to facilitate both car and truck access to Compass Business Park. The roundabout should be designed to accommodate truck movements.
- **Rowell Road / Mississippi Avenue**
  - Install a single-lane roundabout in order to facilitate both car and truck access to Compass Business Park. The roundabout should be designed to accommodate truck movements.

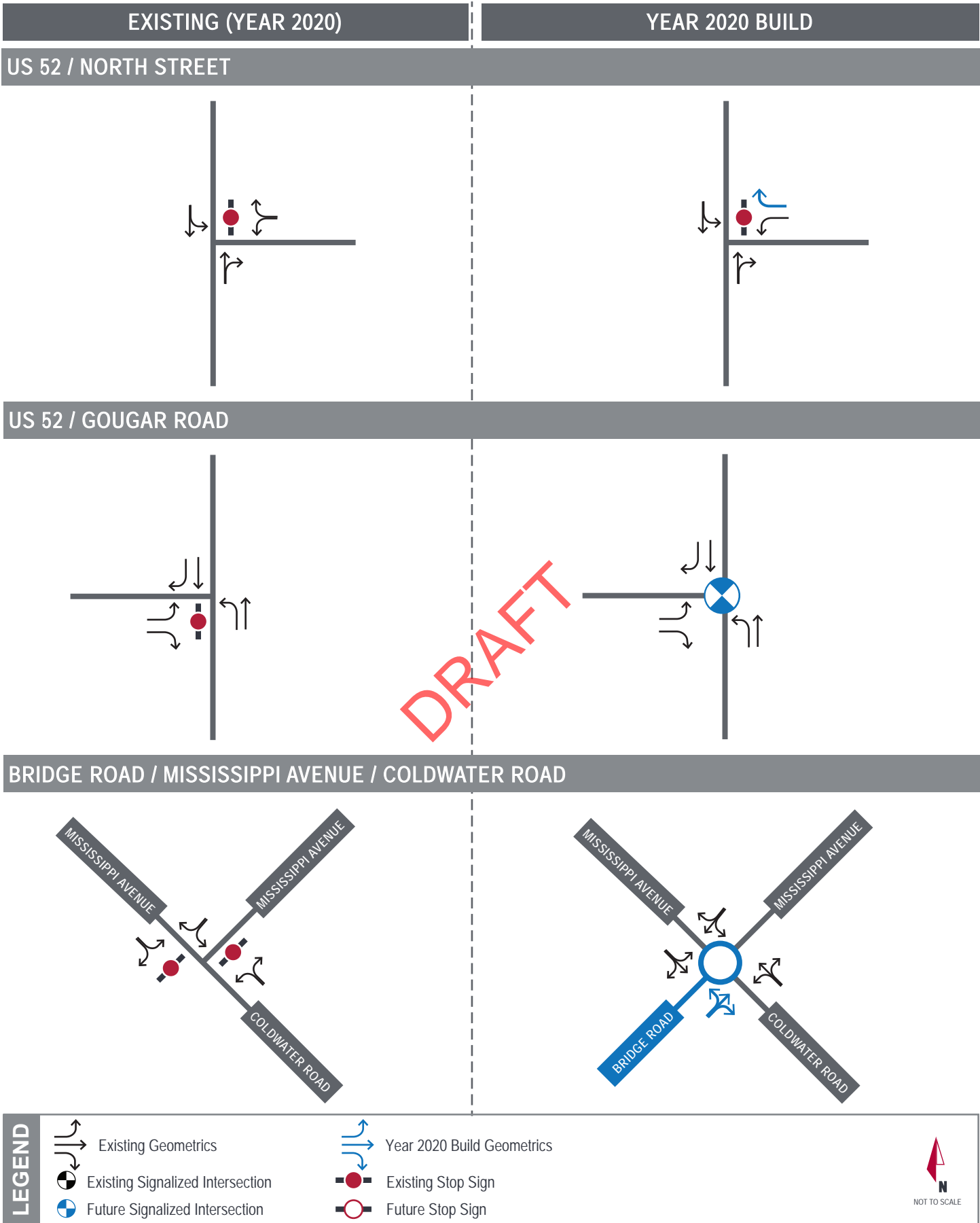
Minor-leg stop-control was assumed to be posted for outbound traffic at Access 1 through Access 8. The intersections of Brown Road/Access 3 and Rowell Road/Access 5 were assumed to operate under all-way stop-control. Minor-leg stop-control was assumed to be posted on Brown Road at its intersections with Rowell Road and Ridge Road.

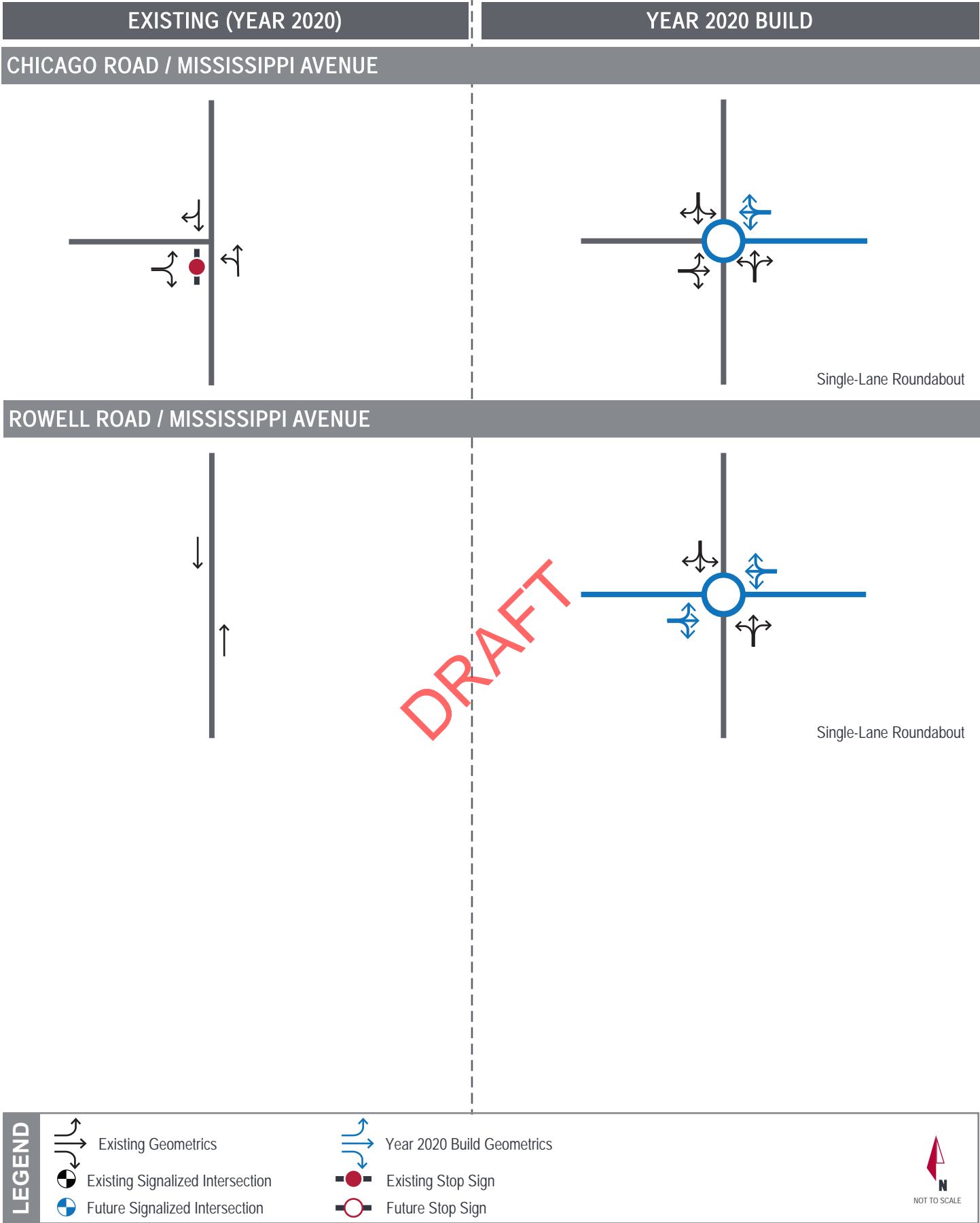












#### Signal Warrant Analyses – Existing and Existing (2020) Full Buildout

In addition to the turn lane warrants, signal warrant analyses were performed according to criteria set by the *Manual on Uniform Traffic Control Devices* (MUTCD) for existing traffic data and future traffic projections at the following intersections:

- EIP Road / Mississippi Avenue
- EIP Road / Walter Strawn Drive
- Manhattan Road / Rowell Road
- Manhattan Road / Ridge Road
- Manhattan Road / Gougar Road
- US 52 / North Street
- US 52 / Smith Street
- US 52 / Gougar Road

To perform these signal warrant analyses for existing conditions, the 12-hour turning movement counts described under *Section 2.3 Data Collection* were used. Site site-generated traffic volumes were added to the traffic counts to develop the Existing (2020) Full Buildout traffic projections. In order to estimate site-generated traffic beyond the peak hour projections depicted in Table 3.4 and Exhibit 5A through Exhibit 5C, typical IDOT practice allows a signal warrant to be evaluated by reducing evening peak hour trip generation volumes to 55 percent of their projected total to represent the minimum volume during a given eight-hour period. Minor-street right-turning volumes were also reduced at the study intersections in accordance with Pagone's Theorem, per IDOT requirements.

These reduced volumes were compared to the MUTCD criteria for Warrant 1 which is summarized in **Table 3.6**. In order to satisfy the warrant, traffic volumes must meet the MUTCD criteria for at least eight hours on an average day.

Table 3.6. MUTCD Traffic Signal Warrant Criteria

Warrant Criteria	Traffic Volume	
	Major Street	Higher-Volume Minor-Leg Approach
<b>Two-Lane Major Street, One-Lane Minor Street at 70%</b>		
Warrant 1A	420	105
Warrant 1B	630	53
Combination		
Warrant 1A	336	84
Warrant 1B	504	42
<b>One-Lane Major Street/One-Lane Minor Street at 70%</b>		
Warrant 1A	350	105
Warrant 1B	525	53
Combination		
Warrant 1A	280	84
Warrant 1B	420	42

**Table 3.7** reports the signal warrant analyses conducted for the Existing (2020) Full Buildout traffic conditions. The signal warrant analysis was also conducted for existing conditions as summarized below. The detailed signal warrant worksheets are provided in the appendix.

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**Table 3.7. Signal Warrant Analyses – Existing and Existing (2020) Full Buildout**

Intersection/Scenario	MUTCD Warrant Satisfied
<b>EIP Road / Mississippi Avenue</b>	
Existing (Year 2020)	---
Existing (2020) Full Buildout	---
<b>EIP Road / Walter Strawn Drive</b>	
Existing (Year 2020)	---
Existing (2020) Full Buildout	Warrant 1A, Warrant 1B, Combination Warrant 1A/1B
<b>Manhattan Road / Rowell Road</b>	
Existing (Year 2020)	---
Existing (2020) Full Buildout	Warrant 1A, Warrant 1B, Combination Warrant 1A/1B
<b>Manhattan Road / Ridge Road</b>	
Existing (Year 2020)	---
Existing (2020) Full Buildout	Warrant 1A
<b>Manhattan Road / Gougar Road</b>	
Existing (Year 2020)	---
Existing (2020) Full Buildout	---
<b>US 52 / North Street</b>	
Existing (Year 2020)	---
Existing (2020) Full Buildout	---
<b>US 52 / Smith Street</b>	
Existing (Year 2020)	---
Existing (2020) Full Buildout	---
<b>US 52 / Gougar Road</b>	
Existing (Year 2020)	---
Existing (2020) Full Buildout	Warrant 1A, Combination Warrant 1A/1B

As shown in Table 3.7, a traffic signal is warranted at EIP Road/Walter Strawn Drive and US 52/Gougar Road under the Existing (2020) Full Buildout scenario. These traffic signals were included in the build condition and were assumed to be “free” running stand-alone traffic signals and not part of a coordinated signal system. In order to evaluate traffic conditions and reflect the responsive nature of the signal cycles, the signals were optimized with an assumed minimum cycle length of 90 seconds. Per IDOT requirements, RTOR movements were not included in the analysis.

At the intersections of Manhattan Road/Rowell Road and Manhattan Road/Ridge Road, installation of single-lane roundabouts was assumed for the Existing (2020) Full Buildout scenario. The roundabouts would facilitate through traffic along Manhattan Road, enhance safety conditions, and provide passenger vehicle access to Compass Business Park. At Manhattan Road/Ridge Road, a right-turn slip lane is recommended on the south leg of the intersection to accommodate outbound traffic from Compass Business Park.

With these improvements in place, Existing (2020) Full Buildout traffic operation is projected as shown in **Table 3.8**. Consistent with existing conditions, the results are based on Synchro’s HCM 6<sup>th</sup> Edition reports with three exceptions. Consistent with existing conditions, the results presented for EIP Road/Mississippi Avenue are based on SimTraffic analysis. In order to quantify the benefits of the recommended free-flow right-turn lane on the east leg of Walter Strawn Drive at EIP Road, the results

presented for this intersection are based on the Synchro Lanes, Volumes, Timings report. For the intersection of IL 53/Manhattan Road, the results are based on SIDRA intersection software due to the recommended multi-lane roundabout. Copies of the capacity analysis reports are provided in the appendix.

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Table 3.8 Existing (2020) Full Buildout Levels of Service

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
IL 53 / Schweitzer Road <span>△</span>				
Eastbound	22	C	>120	F
Westbound	25-	C	>120	F
Northbound (Left)	11	B	10+	B
Southbound (Left)	9	A	19	C
IL 53 / Breen Road <span>△</span>				
Westbound	11	B	18	C
Southbound (Left)	9	A	12	B
IL 53 / Manhattan Road <span>O</span>				
Eastbound	3	A	8	A
Westbound	13	B	11	B
Northbound	8	A	15-	B
Southbound	11	B	13	B
<i>Intersection</i>	<i>9</i>	<i>A</i>	<i>11</i>	<i>B</i>
IL 53 / D Hutchinson Road <span>△</span>				
Westbound	10+	B	13	B
Southbound (Left)	9	A	9	A
IL 53 / Tehle Road <span>△</span>				
Eastbound	12	B	12	B
Westbound	13	B	14	B
Northbound (Left)	8	A	9	A
Southbound (Left)	8	A	9	A
IL 53 / Mississippi Road <span>△</span>				
Eastbound	14	B	19	C
Westbound	11	B	11	B
Northbound (Left)	9	A	9	A
Southbound (Left)	8	A	8	A
IL 53 / Hoff Road / Abraham Lincoln National Cemetery Access Driveway <span>*</span>				
Eastbound	43	D	29	C
Westbound	22	C	24	C
Northbound	11	B	13	B <sup>1</sup>
Southbound	10-	A <sup>1</sup>	14	B <sup>1</sup>
<i>Intersection</i>	<i>11</i>	<i>B</i>	<i>15</i>	<i>B</i>

\* – Signalized Intersection    ▲ – All-Way Stop-Controlled Intersection    △ – Minor-Leg Stop-Controlled Intersection    O – Roundabout

<sup>1</sup>Left-turn movement operates at LOS F.

<sup>2</sup>Left-turn movement operates at LOS E.

<sup>3</sup>Left-turn movement operates at LOS F and thru movement operates at LOS E.

Table 3.8 Existing (2020) Full Buildout Levels of Service (continued)

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
IL 53 / River Road *				
Eastbound	11	B	14	B
Northbound	7	A	5	A
Southbound	10-	A	9	A
Intersection	9	A	9	A
EIP Road / Arsenal Road *				
Eastbound	34	C	31	C <sup>1</sup>
Westbound	55	D <sup>1</sup>	56	E <sup>1</sup>
Northbound	35-	D	49	D <sup>3</sup>
Southbound	14	D <sup>3</sup>	45	D <sup>3</sup>
Intersection	39	D	44	D
EIP Road / Mississippi Avenue ▲				
Eastbound	<5	A	7	A
Westbound	<5	A	9	A
Northbound	<5	A	21	C
Southbound	15+	C	19	C
Intersection	16	C	19	C
EIP Road / Walter Strawn Drive *				
Eastbound	36	D	36	D
Westbound	15	B	14	B
Northbound	26	C	28	C
Southbound	9	A	10-	A
Intersection	15	B	17	B
Walter Strawn Drive / Walton Drive △				
Eastbound (Left)	9	A	10+	B
Southbound	16	C	16	C
Walter Strawn Drive / Deer Run △				
Eastbound (Left)	8	A	9	A
Southbound	17	C	14	B
Schweitzer Road / Rowell Road △				
Westbound (Left)	7	A	8	A
Northbound	9	A	9	A
Schweitzer Road / Ridge Road △				
Westbound (Left)	7	A	8	A
Northbound	9	A	9	A

\* – Signalized Intersection    ▲ – All-Way Stop-Controlled Intersection    △ – Minor-Leg Stop-Controlled Intersection    O – Roundabout

<sup>1</sup>Left-turn movement operates at LOS F.

<sup>2</sup>Left-turn movement operates at LOS E.

<sup>3</sup>Left-turn movement operates at LOS F and thru movement operates at LOS E.

Table 3.8 Existing (2020) Full Buildout Levels of Service (continued)

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Schweitzer Road / Cherry Hill Road $\Delta$				
Eastbound (Left)	7	A	7	A
Westbound (Left)	7	A	7	A
Northbound	10+	B	10+	B
Southbound	9	A	9	A
Breen Road / Rowell Road $\Delta$				
Eastbound (Left)	7	A	7	A
Westbound (Left)	7	A	7	A
Northbound	9	A	9	A
Southbound	9	A	9	A
Breen Road / Ridge Road $\Delta$				
Eastbound	9	A	9	A
Northbound (Left)	7	A	9	A
Manhattan Road / Rowell Road O				
Eastbound	9	A	7	A
Westbound	6	A	25	D
Northbound	5	A	14	B
Southbound	4	A	9	A
Intersection	8	A	16	C
Manhattan Road / Ridge Road O				
Eastbound (Left)	7	A	8	A
Westbound (Left)	6	A	10	A
Northbound	4	A	11	B
Southbound	5	A	7	A
Intersection	6	A	9	A
Manhattan Road / Cherry Hill Road O				
Eastbound	4	A	7	A
Westbound	5	A	5	A
Northbound	4	A	6	A
Southbound	4	A	4	A
Intersection	5	A	6	A
Manhattan Road / Gougar Road O				
Eastbound	4	A	11	B
Westbound	6	A	7	A
Northbound	5	A	9	A
Southbound	6	A	6	A
Intersection	5	A	9	A

★ – Signalized Intersection    ▲ – All-Way Stop-Controlled Intersection     $\Delta$  – Minor-Leg Stop-Controlled Intersection    O – Roundabout

<sup>1</sup>Left-turn movement operates at LOS F.

<sup>2</sup>Left-turn movement operates at LOS E.

<sup>3</sup>Left-turn movement operates at LOS F and thru movement operates at LOS E.

Table 3.8 Existing (2020) Full Buildout Levels of Service (continued)

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Sweedler Road / Cherry Hill Road $\triangle$				
Westbound	9	A	9	A
Southbound (Left)	7	A	7	A
Sweedler Road / Gougar Road $\blacktriangle$				
Eastbound	7	A	8	A
Westbound	7	A	8	A
Northbound	7	A	7	A
Southbound	7	A	8	A
<i>Intersection</i>	<i>7</i>	<i>A</i>	<i>8</i>	<i>A</i>
Brown Road / Chicago Road $\triangle$				
Westbound	9	A	10-	A
Southbound (Left)	7	A	8	A
Brown Road / Rowell Road $\triangle$				
Eastbound	12	B	14	B
Westbound	15+	C	23	C
Northbound (Left)	8	A	8	A
Southbound (Left)	8	A	8	A
Brown Road / Access 3 $\blacktriangle$				
Eastbound	8	A	8	A
Westbound	7	A	7	A
Northbound	9	A	9	A
Southbound	9	A	9	A
<i>Intersection</i>	<i>8</i>	<i>A</i>	<i>9</i>	<i>A</i>
Brown Road / Ridge Road $\triangle$				
Eastbound	14	B	19	C
Westbound	12	B	14	B
Northbound (Left)	8	A	9	A
Southbound (Left)	7	A	8	A
Brown Road / Access 7 $\triangle$				
Eastbound (Left)	8	A	8	A
Westbound (Left)	8	A	7	A
Northbound	10+	B	11	B
Southbound	10-	A	10-	A
Brown Road / Cherry Hill Road $\triangle$				
Eastbound	9	A	9	A
Northbound (Left)	7	A	7	A

★ – Signalized Intersection    ▲ – All-Way Stop-Controlled Intersection     $\triangle$  – Minor-Leg Stop-Controlled Intersection    O – Roundabout

<sup>1</sup>Left-turn movement operates at LOS F.

<sup>2</sup>Left-turn movement operates at LOS E.

<sup>3</sup>Left-turn movement operates at LOS F and thru movement operates at LOS E.



Table 3.8 Existing (2020) Full Buildout Levels of Service (continued)

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Bruns Road / Cherry Hill Road $\Delta$				
Westbound	9	A	9	A
Southbound (Left)	7	A	7	A
Bruns Road / Gougar Road $\Delta$				
Eastbound (Left)	7	A	7	A
Westbound (Left)	7	A	7	A
Northbound	9	A	9	A
Southbound	9	A	9	A
Hoff Road / Coldwater Road $\Delta$				
Eastbound (Left)	7	A	8	A
Southbound	9	A	9	A
Hoff Road / Chicago Road $\blacktriangle$				
Eastbound	8	A	8	A
Westbound	7	A	8	A
Northbound	7	A	7	A
Southbound	7	A	7	A
Intersection	7	A	8	A
Hoff Road / Rowell Road $\Delta$				
Eastbound (Left)	7	A	7	A
Southbound	9	A	9	A
Hoff Road / Ridge Road $\Delta$				
Eastbound (Left)	7	A	7	A
Southbound	9	A	9	A
Hoff Road / Cherry Hill Road $\Delta$				
Eastbound (Left)	7	A	7	A
Southbound	9	A	9	A
Hoff Road / Gougar Road $\Delta$				
Eastbound (Left)	7	A	7	A
Westbound (Left)	7	A	7	A
Northbound	9	A	10-	A
Southbound	9	A	9	A
US 52 / Smith Road $\Delta$				
Westbound	15+	C	26	D
Southbound (Left)	9	A	9	A

★ – Signalized Intersection     $\blacktriangle$  – All-Way Stop-Controlled Intersection     $\Delta$  – Minor-Leg Stop-Controlled Intersection    O – Roundabout

<sup>1</sup>Left-turn movement operates at LOS F.

<sup>2</sup>Left-turn movement operates at LOS E.

<sup>3</sup>Left-turn movement operates at LOS F and thru movement operates at LOS E.

Table 3.8 Existing (2020) Full Buildout Levels of Service (continued)

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
US 52 / Gougar Road *				
Eastbound	48	D	41	D
Northbound	4	A	7	A
Southbound	2	A	6	A
Intersection	13	B	16	B
US 52 / Manhattan Road / Foxford Drive *				
Eastbound	51	D <sup>1</sup>	39	D
Westbound	54	D <sup>1</sup>	41	D
Northbound	4	A	9	A
Southbound	<5	A	12	B
Intersection	16	B	22	C
US 52 / North Street Δ				
Westbound	12	B	23	C
Southbound (Left)	8	A	9	A
US 52 / Bruns Road Δ				
Eastbound	11	B	11	B
Westbound	11	B	10+	B
Northbound (Left)	8	A	8	A
Southbound (Left)	8	A	8	A
US 52 / Hoff Road Δ				
Eastbound	10-	A	10+	B
Northbound (Left)	8	A	8	A
Bridge Road / Mississippi Avenue / Coldwater Road O				
Eastbound	4	A	8	A
Westbound	7	A	4	A
Northbound	19	C	8	A
Southbound	8	A	21	C
Intersection	15	B	14	B
Chicago Road / Mississippi Avenue O				
Eastbound	24	C	9	A
Westbound	7	A	20	C
Northbound	8	A	4	A
Southbound	5	A	8	A
Intersection	17	C	17	C

\* – Signalized Intersection    ▲ – All-Way Stop-Controlled Intersection    Δ – Minor-Leg Stop-Controlled Intersection    O – Roundabout

<sup>1</sup>Left-turn movement operates at LOS F.

<sup>2</sup>Left-turn movement operates at LOS E.

<sup>3</sup>Left-turn movement operates at LOS F and thru movement operates at LOS E.

Table 3.8 Existing (2020) Full Buildout Levels of Service (continued)

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Mississippi Avenue / Access 1 $\Delta$				
Eastbound (Left)	8	A	9	A
Southbound	11	B	13	B
Mississippi Avenue / Access 2 $\Delta$				
Westbound (Left)	8	A	8	A
Northbound	12	B	12	B
Mississippi Avenue / Access 3 $\Delta$				
Eastbound (Left)	8	A	9	A
Northbound	11	B	12	B
Rowell Road / Mississippi Avenue O				
Eastbound	16	C	8	A
Westbound	8	A	9	A
Northbound	7	A	4	A
Southbound	6	A	14	B
Intersection	12	B	10	B
Rowell Road / Access 5 $\blacktriangle$				
Westbound	10-	A	12	B
Northbound	10-	A	15-	B
Southbound	10-	A	11	B
Intersection	10-	A	13	B
Ridge Road / Access 5 $\Delta$				
Eastbound	15-	B	31	D
Westbound	10-	A	13	B
Northbound (Left)	8	A	8	A
Southbound (Left)	8	A	9	A
Ridge Road / Access 7 $\Delta$				
Westbound	9	A	9	A
Southbound (Left)	8	A	8	A
Access 5 / Access 6 $\Delta$				
Eastbound (Left)	8	A	8	A
Southbound	10-	A	11	B

★ – Signalized Intersection     $\blacktriangle$  – All-Way Stop-Controlled Intersection     $\Delta$  – Minor-Leg Stop-Controlled Intersection    O – Roundabout

<sup>1</sup>Left-turn movement operates at LOS F.

<sup>2</sup>Left-turn movement operates at LOS E.

<sup>3</sup>Left-turn movement operates at LOS F and thru movement operates at LOS E.

Table 3.8 Existing (2020) Full Buildout Levels of Service (continued)

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Access 5 / Access 7 <span style="float: right;">△</span>				
Eastbound	9	A	9	A
Northbound (Left)	7	A	8	A
Access 5 / Access 8 <span style="float: right;">△</span>				
Eastbound (Left)	8	A	8	A
Westbound (Left)	7	A	7	A
Northbound	11	B	11	B
Southbound	10-	A	9	A

★ – Signalized Intersection    ▲ – All-Way Stop-Controlled Intersection    △ – Minor-Leg Stop-Controlled Intersection    O – Roundabout

<sup>1</sup>Left-turn movement operates at LOS F.

<sup>2</sup>Left-turn movement operates at LOS E.

<sup>3</sup>Left-turn movement operates at LOS F and thru movement operates at LOS E.

As shown, with the recommended improvements traffic operation is expected to be generally satisfactory under Existing (2020) Full Buildout condition. At the intersection of IL 53/Schweitzer Road, the eastbound and westbound approaches are projected to operate at LOS F during the evening peak hour. The projected delay is not unusual for a minor-leg stop-controlled roadway at its intersection with an arterial such as IL 53.

Similar to existing conditions, at the intersection of IL 53/Hoff Road/Abraham Lincoln National Cemetery Access Driveway, the southbound left-turn is expected to operate at LOS F during the morning peak hour. In the evening peak hour, the northbound and southbound approaches are projected to operate at LOS F. The estimated delay is attributable to limited traffic volumes and priority given to north-south traffic on IL 53. As a result, the protected left-turn movements receive shorter green times. Overall, the intersection of IL 53/Hoff Road/Abraham Lincoln National Cemetery Driveway is projected to operate at LOS B during both peak hours.

At the intersection of US 52/Manhattan Road, the eastbound and westbound left-turn movements are projected to operate at LOS F during the morning peak hour. The delay projected for these movements is largely attributable to the priority given to north-south traffic on US 52. As a result, limited green time is allocated to the minor leg approaches (i.e., Manhattan Road/Foxford Drive). The 95<sup>th</sup> percentile queues estimated for the eastbound and westbound left-turn movements is approximately 125 feet (4 vehicles) and 25 feet (1 vehicle), respectively.

With the recommended improvements, future traffic operation at the study intersections appears to be adequately managed under the Existing (2020) Full Buildout scenario.

## 4. FUTURE CONDITIONS – PHASE A & PHASE B

This section of the report evaluates future traffic conditions projected for the initial phases of development, referred to as Phase A and Phase B. With an anticipated absorption rate of approximately 1 million square feet per year, each phase of development is estimated to be a three-year period (total 3 million square feet per phase). Therefore, Phase A contemplates a Year 2024 scenario with approximately 3 million square feet of development. Phase B represents Year 2027 conditions with an estimated 6.2 million square feet of development. The purpose of this analysis is to identify the impacts of the initial development phases and identify near-term infrastructure needs to support the area roadway network and access to Compass Business Park.

### 4.1. Development Characteristics & Site Access

For purposes of this analysis, Buildings 2, 3, and 5A were assumed to be completed in the initial phase of development (Phase A) for a total of approximately 2,983,290 square feet of industrial warehouse/distribution use. The following site access improvements would be completed as part of Phase A:

- A bridge would be constructed at Walter Strawn Drive in order to provide grade-separated access over the Union Pacific Railway and IL 53. With the bridge, the existing signalized intersection of IL 53/Walter Strawn Drive would be removed. All site-generated truck traffic would be required to enter Compass Business Park via the bridge only.
- Under Phase A, a new roadway would extend southwest from the existing intersection of Mississippi Avenue/Coldwater Road (Bridge Road) and would provide connectivity to the new bridge over IL 53.
- Mississippi Road would be extended east of Coldwater Road to Rowell Road where installation of a single-lane roundabout is recommended.
- A portion of the internal spine roadway network would be completed to provide access to Buildings 2, 3, and 5A. For purposes of this analysis, the following roadway segments were assumed be in place with Phase A. These new roadway segments are highlighted in the conceptual site plan provided in the appendix.
  - **Access 1:** A new cul-de-sac on the north side of Mississippi Avenue, located immediately west of Building 5A.
  - **Access 2:** A new cul-de-sac which would extend south of Mississippi Avenue, situated along the east side of Building 3.

Under the Phase B scenario, the buildings identified under Phase A (Buildings 2, 3, and 5A) were assumed to be completed, as well as Buildings 4A, 4B, 5B, 6, and 9 for a total of approximately 6,214,050 square feet of industrial warehouse/distribution use. In order to facilitate access to Phase B, the site access improvements completed under Phase A would be in place. In addition, the following new roadway segment was assumed to be constructed under Phase B.

- **Access 3:** A new roadway which would extend north of Mississippi Avenue and terminate with a cul-de-sac north of Brown Road. From Mississippi Avenue to Brown Road, the roadway

would be located between Building 5B and Building 6; north of Brown Road, the roadway would be located immediately east of Building 9.

## 4.2. Trip Generation

In order to calculate trips generated by Phase A and Phase B, the trip generation rates previously presented in Table 3.3 were assumed. A summary of the projected site-generated traffic for Phase A and Phase B is presented in **Table 4.1**.

Table 4.1 Site-Generated Traffic Projections<sup>1</sup>

Size	Trip Type	Site-Generated Trips (Weekday)						
		Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
<b><i>Phase A</i></b>								
2,983,290 sq. ft.	Cars	1,700	100	35	135	65	165	230
	Trucks	1,020	40	15	55	15	40	55
<i>Phase A Total Trips</i>		<i>2,720</i>	<i>140</i>	<i>50</i>	<i>190</i>	<i>80</i>	<i>205</i>	<i>285</i>
<b><i>Phase B</i></b>								
6,214,050 sq. ft. <sup>2</sup>	Cars	3,530	215	65	280	135	345	480
	Trucks	2,120	85	25	110	30	75	105
<i>Phase B Total Trips</i>		<i>5,650</i>	<i>300</i>	<i>90</i>	<i>390</i>	<i>165</i>	<i>420</i>	<i>585</i>

<sup>1</sup>In/Out volumes are rounded to the nearest multiple of five. For rounding purposes, the total volumes are a sum of in and out trips.

<sup>2</sup>Includes buildings identified for Phase A.

For purposes of estimating the distribution characteristics of Phase A and Phase B, the directional distribution percentages shown in Table 3.5 were assumed. Based on the preceding assumptions and trip distribution percentages, site traffic estimated for the initial phases of development (Table 4.1) was assigned to the study intersections. Car trips for Phase A are shown in **Exhibit 8A** through **Exhibit 8C**; truck trips are depicted in **Exhibit 9A** through **Exhibit 9C**; and total site-generated trips for Phase A are shown in **Exhibit 10A** through **Exhibit 10C**. For Phase B, car trips are depicted in **Exhibit 11A** through **Exhibit 11C** and truck trips are shown in **Exhibit 12A** through **Exhibit 12C**. Total site-generated trips for Phase B are shown in **Exhibit 13A** through **Exhibit 13C**.

## 4.3. Future Capacity Analyses

In order to quantify the impact of site-generated traffic estimated for Phase A and Phase B, and to identify infrastructure needs to support site access and the addition of site-generated traffic to the local roadway network, Year 2024 Phase A and Year 2027 Phase B scenarios were developed.

### Background Traffic Growth

Background traffic was assumed to be comprised of two parts: overall background growth (applied in the form of an annual growth rate) and development-specific traffic projections for an approved industrial development in the Village of Elwood.





**LEGEND**

**xx**

Weekday AM Peak  
(6:15 – 7:15am)

**(xx)**

Weekday PM Peak  
(3:00 – 4:00pm)

Existing Signalized  
Intersection

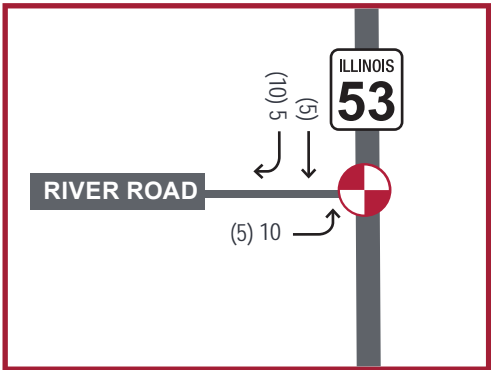
Existing Stop Sign

Proposed Stop Sign

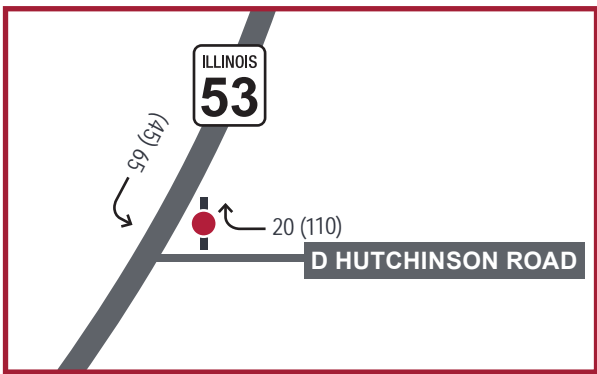
Proposed Roundabout

Less than Five Vehicles

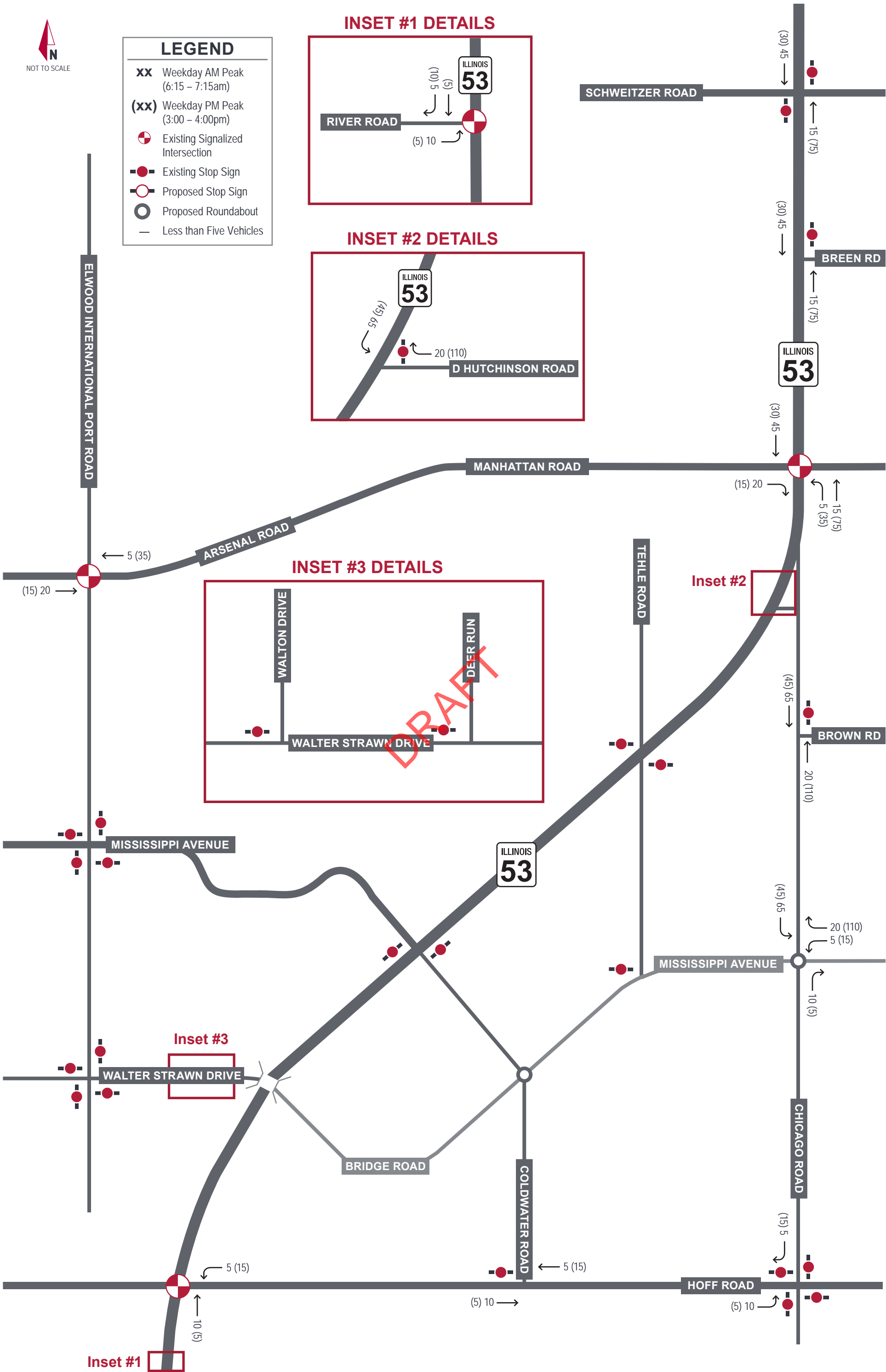
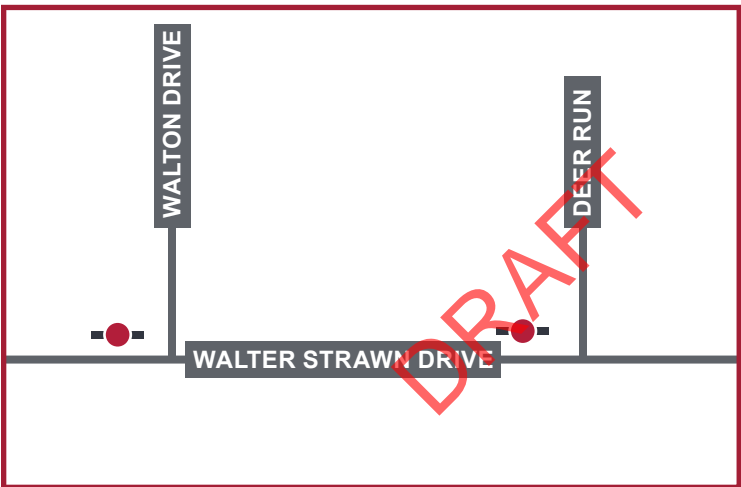
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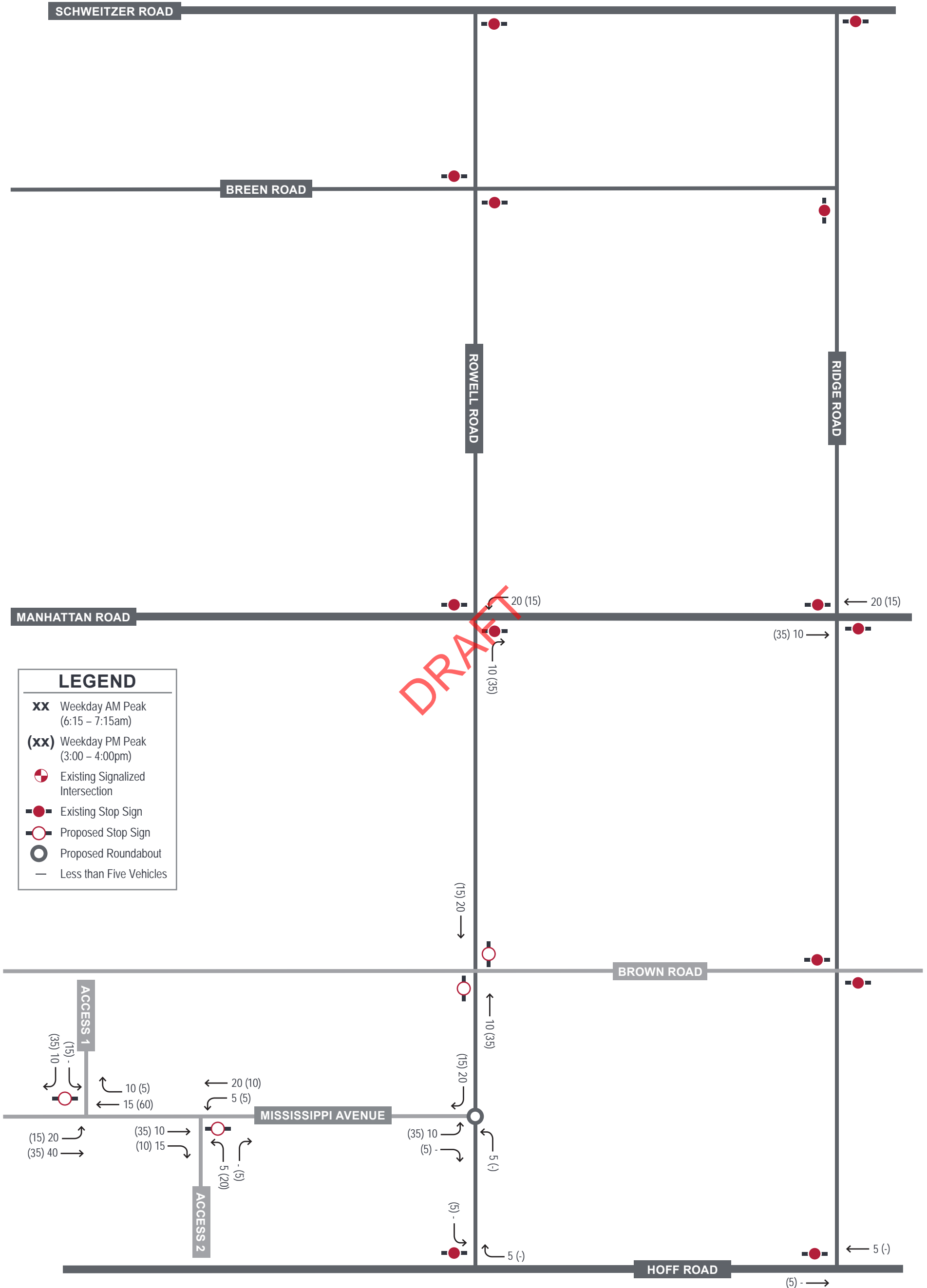


INSET #2 DETAILS



INSET #3 DETAILS





DRAFT



DRAFT



**LEGEND**

**xx**

Weekday AM Peak  
(6:15 – 7:15am)

**(xx)**

Weekday PM Peak  
(3:00 – 4:00pm)

Existing Signalized  
Intersection

Existing Stop Sign

Proposed Stop Sign

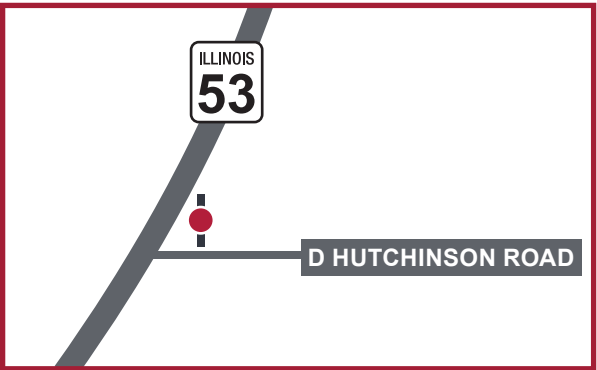
Proposed Roundabout

Less than Five Vehicles

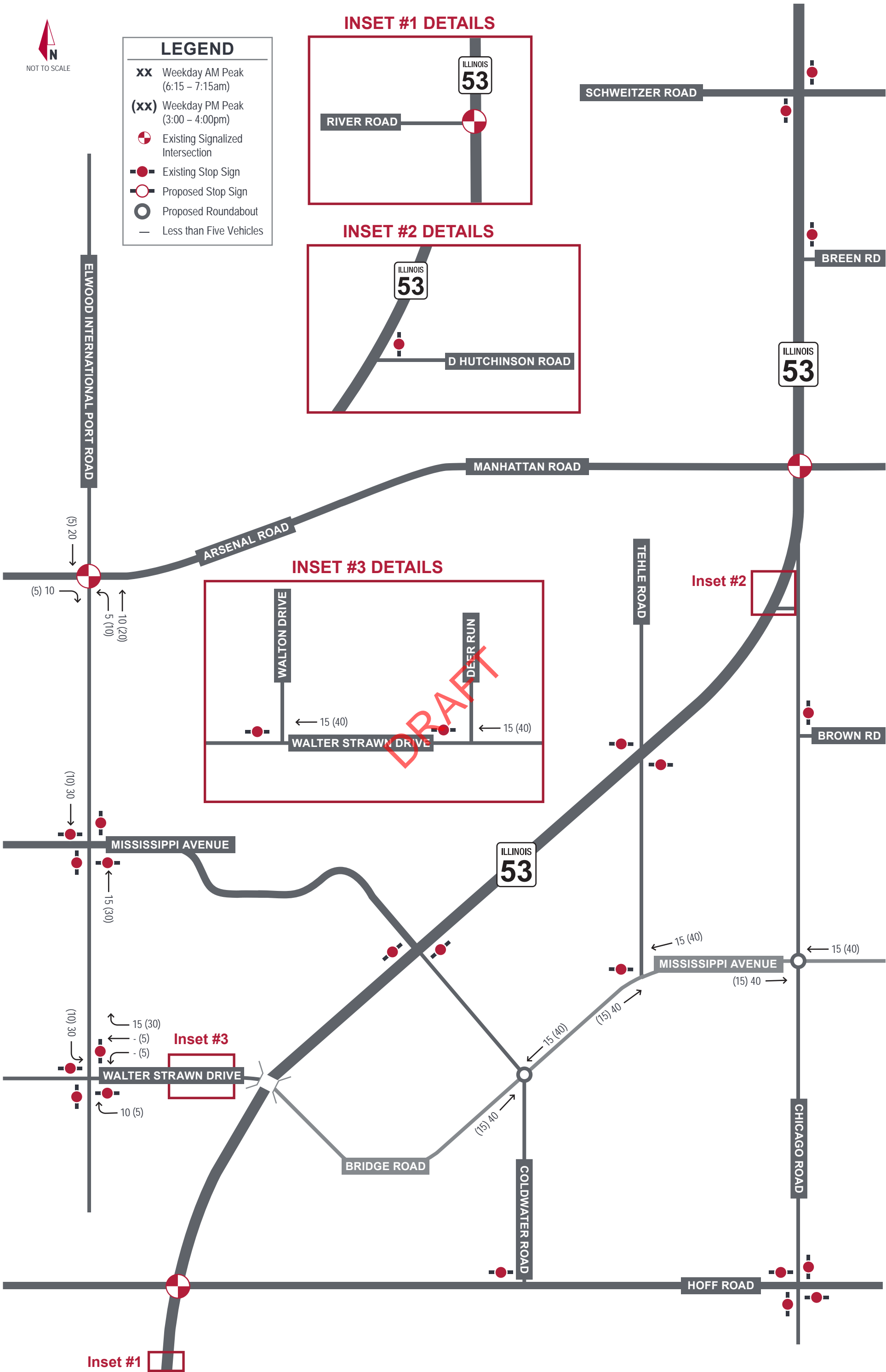
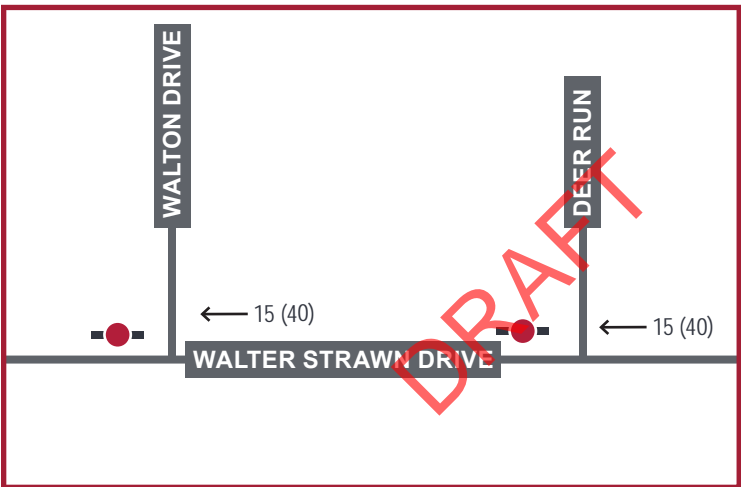
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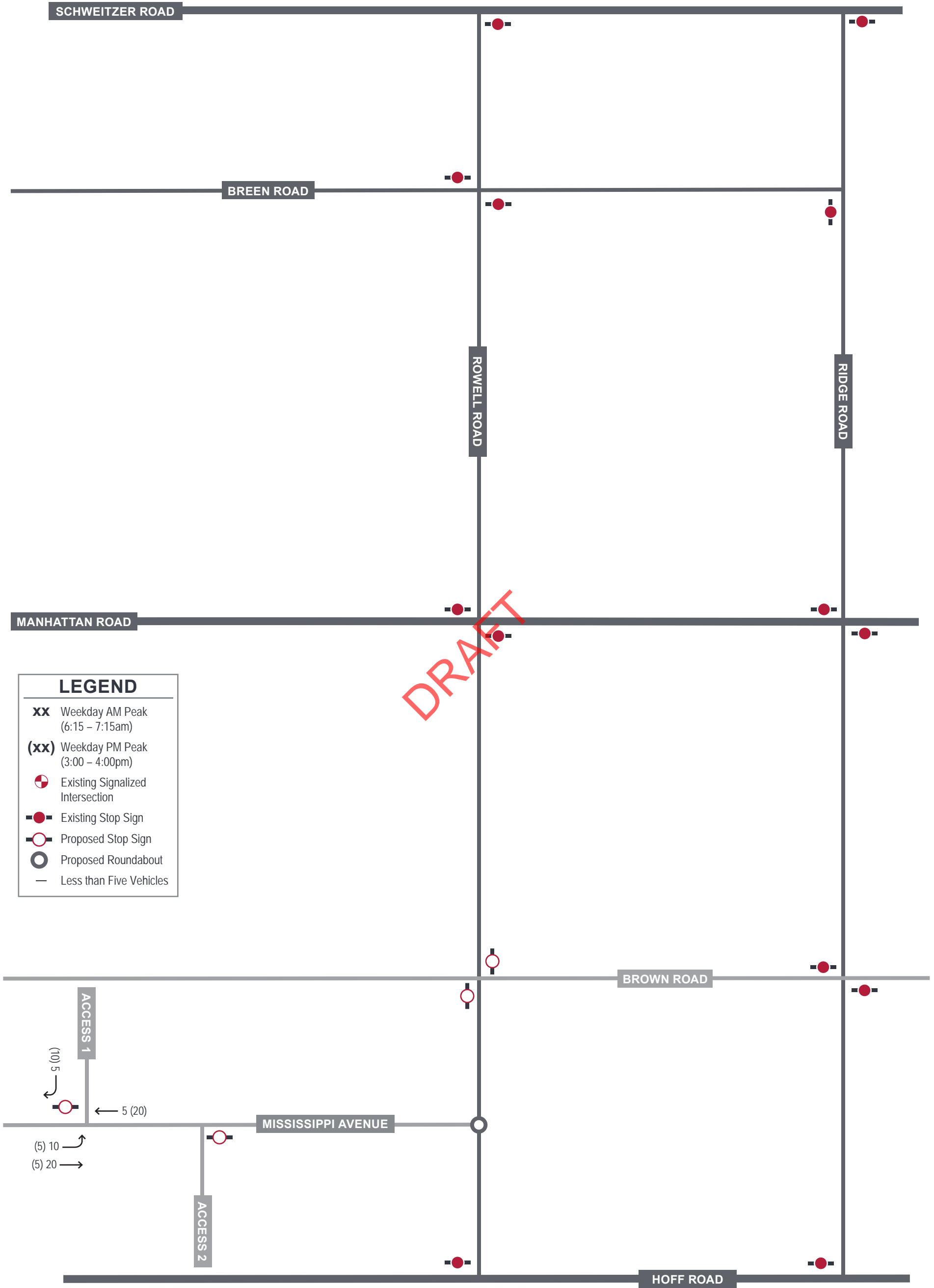


INSET #2 DETAILS



INSET #3 DETAILS






**LEGEND**

**xx**


Weekday AM Peak  
(6:15 – 7:15am)

**(xx)**


Weekday PM Peak  
(3:00 – 4:00pm)




Existing Signalized  
Intersection




Existing Stop Sign



Proposed Stop Sign



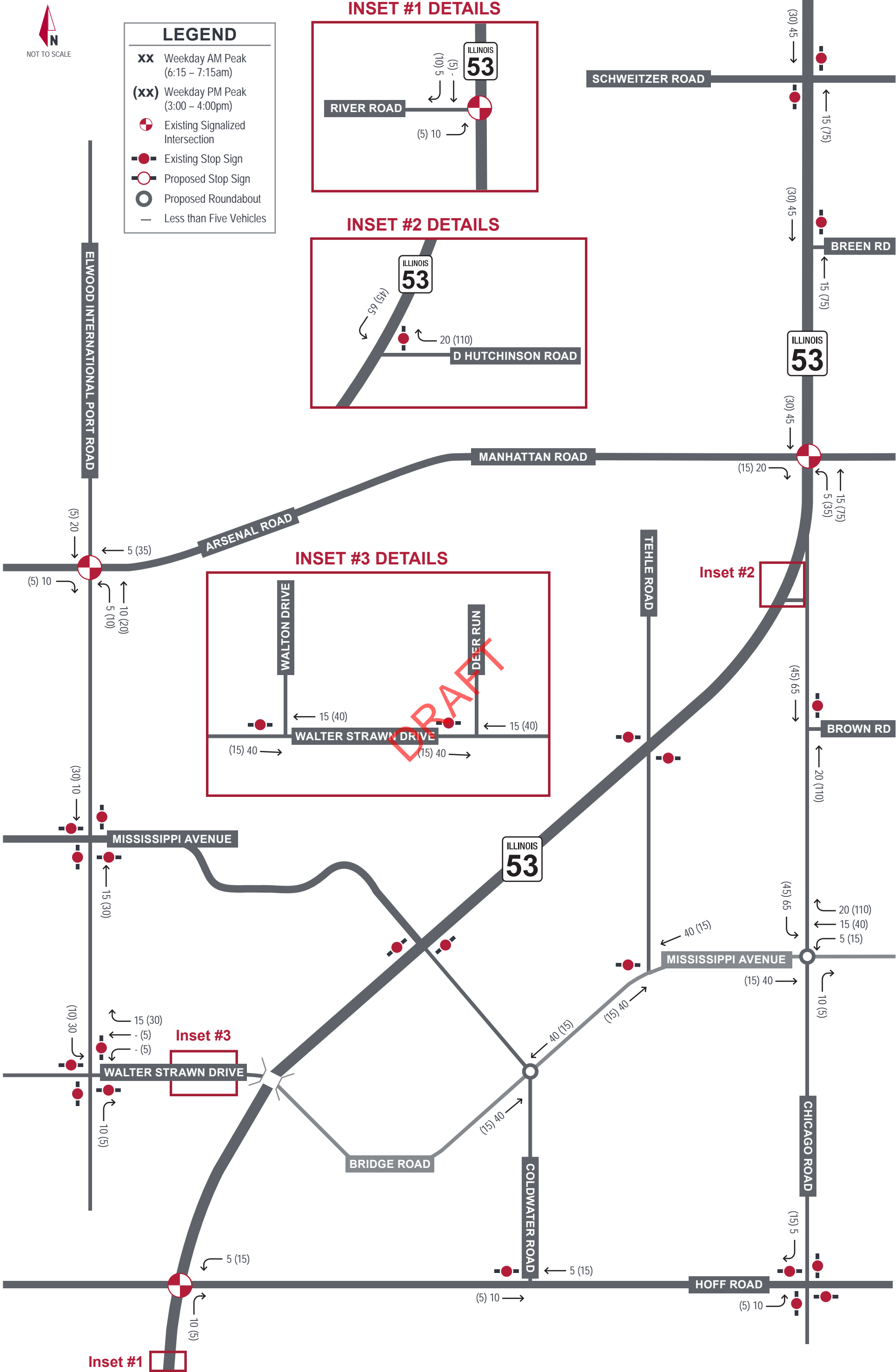
Proposed Roundabout

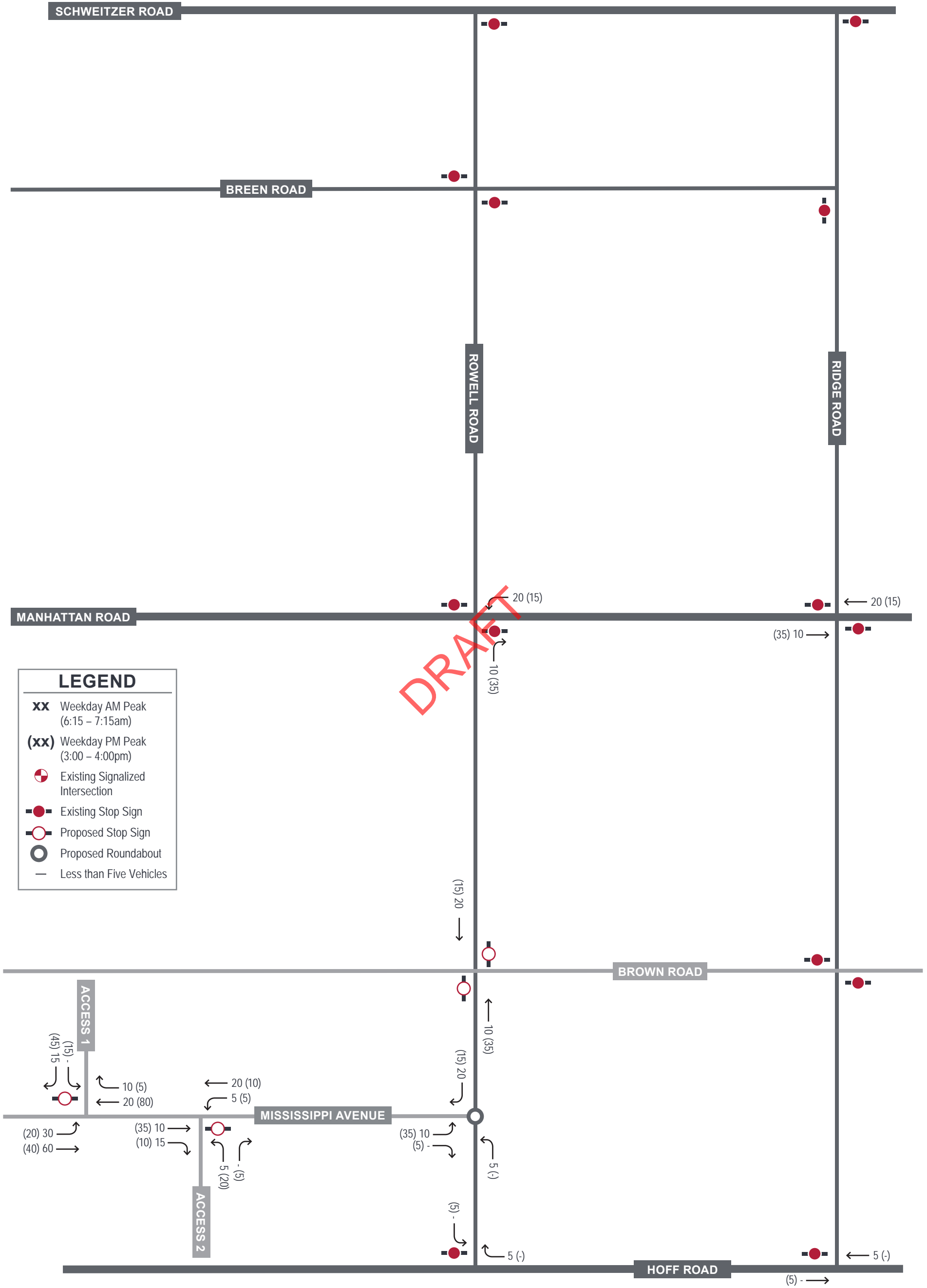


Less than Five Vehicles











LEGEND

xx

Weekday AM Peak  
(6:15 – 7:15am)

(xx)

Weekday PM Peak  
(3:00 – 4:00pm)

Existing Signalized  
Intersection

Existing Stop Sign

Proposed Stop Sign

Proposed Roundabout

Less than Five Vehicles





**LEGEND**

xx

Weekday AM Peak  
(6:15 – 7:15am)

(xx)

Weekday PM Peak  
(3:00 – 4:00pm)

Existing Signalized Intersection

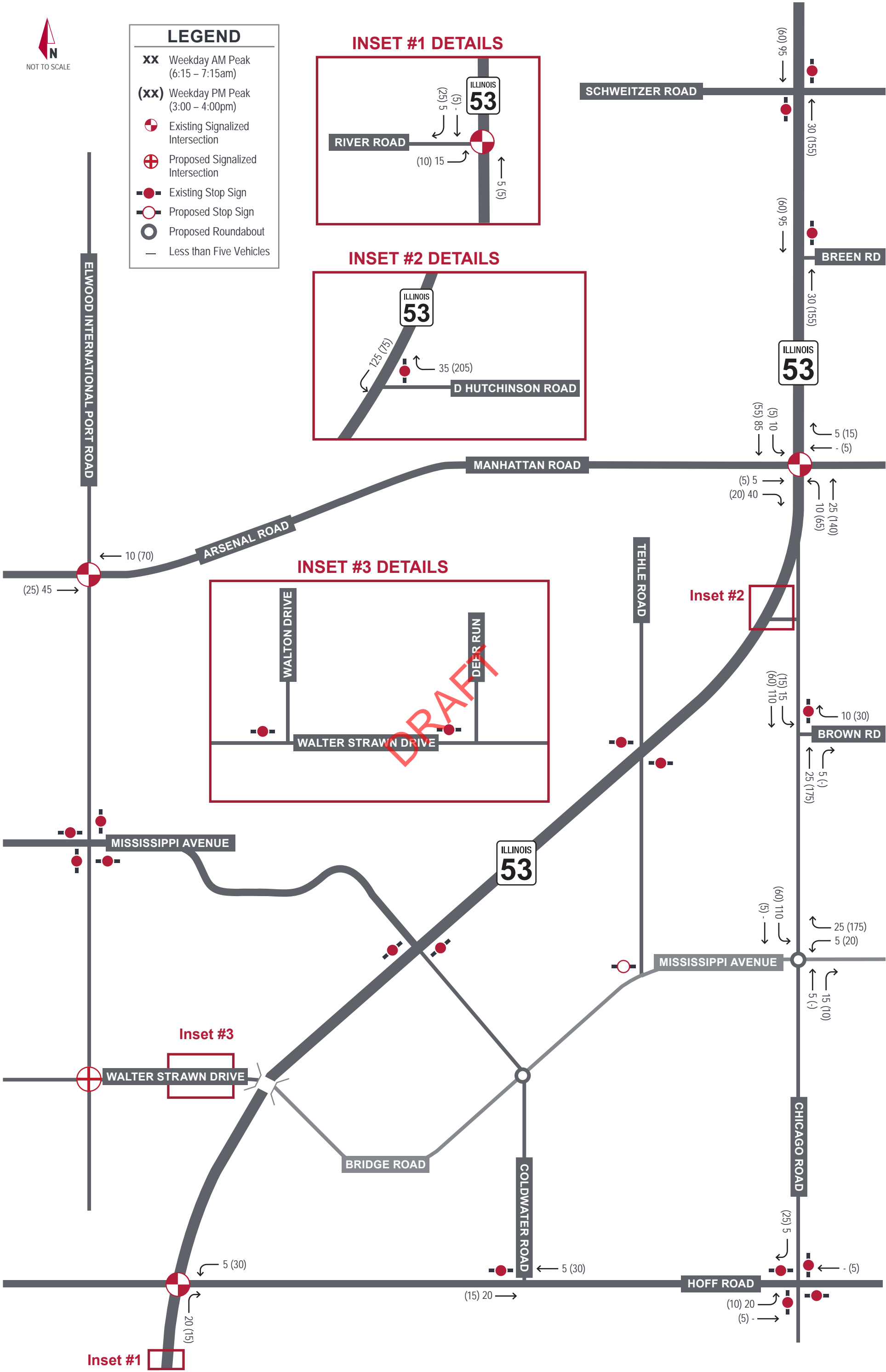
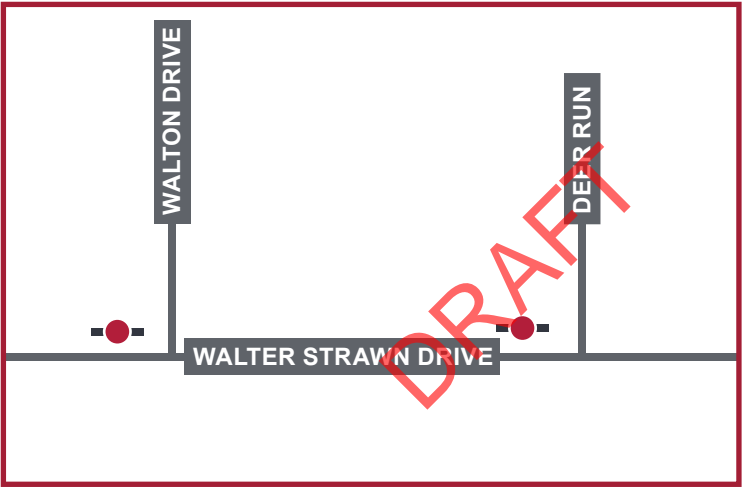
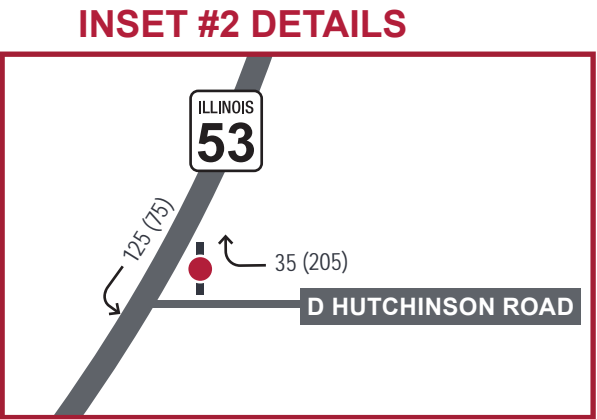
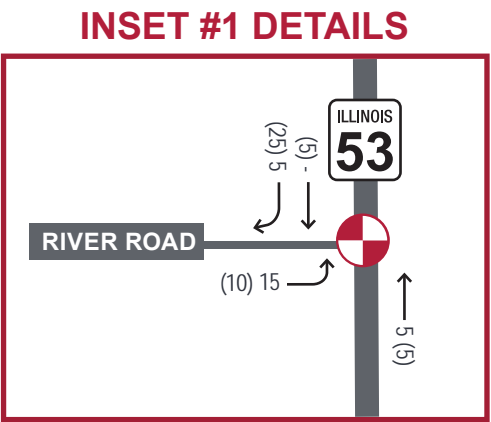
Proposed Signalized Intersection

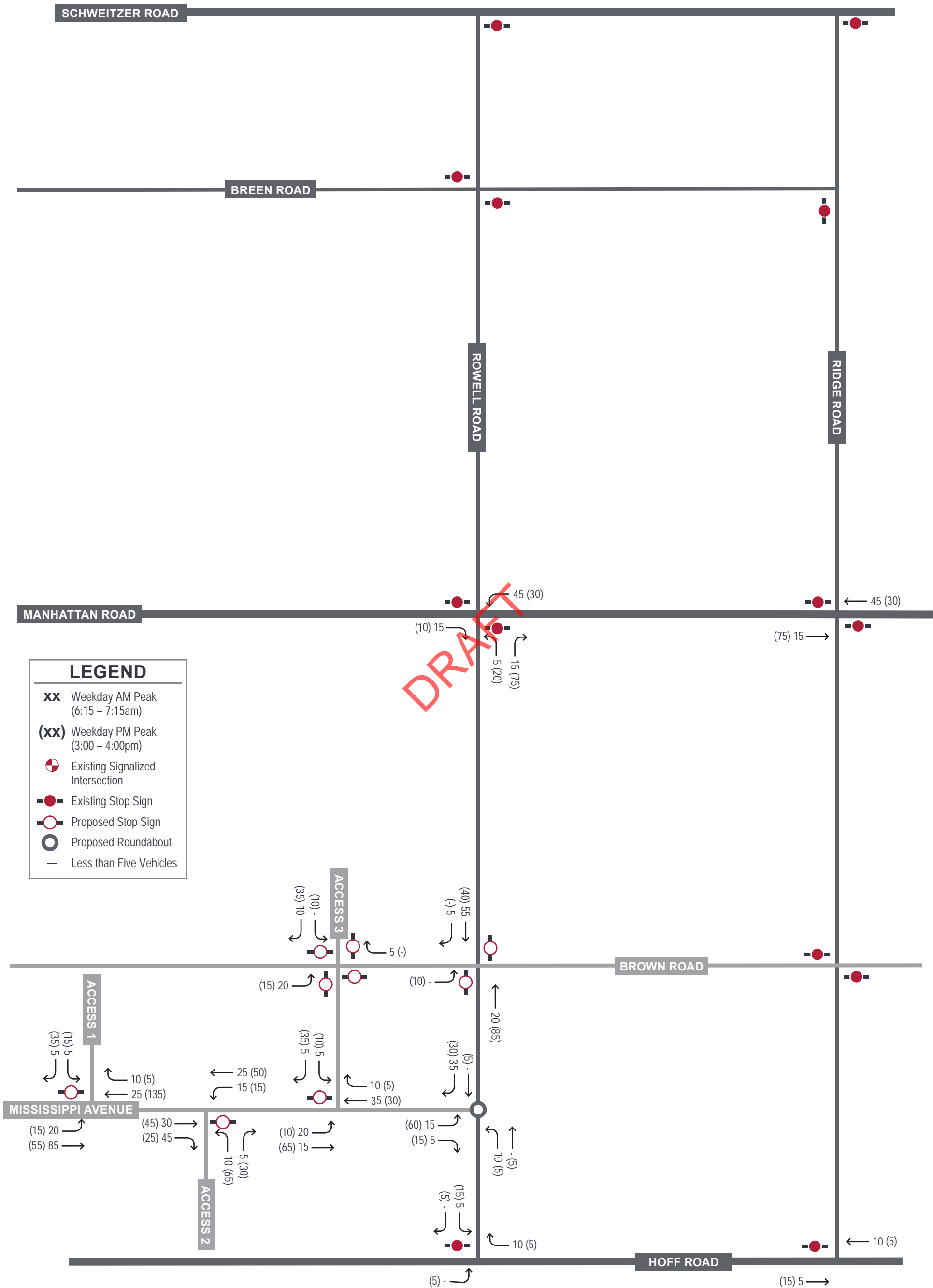
Existing Stop Sign

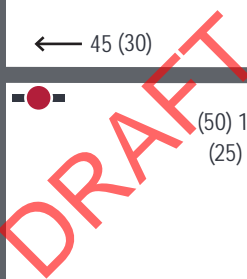
Proposed Stop Sign

Proposed Roundabout

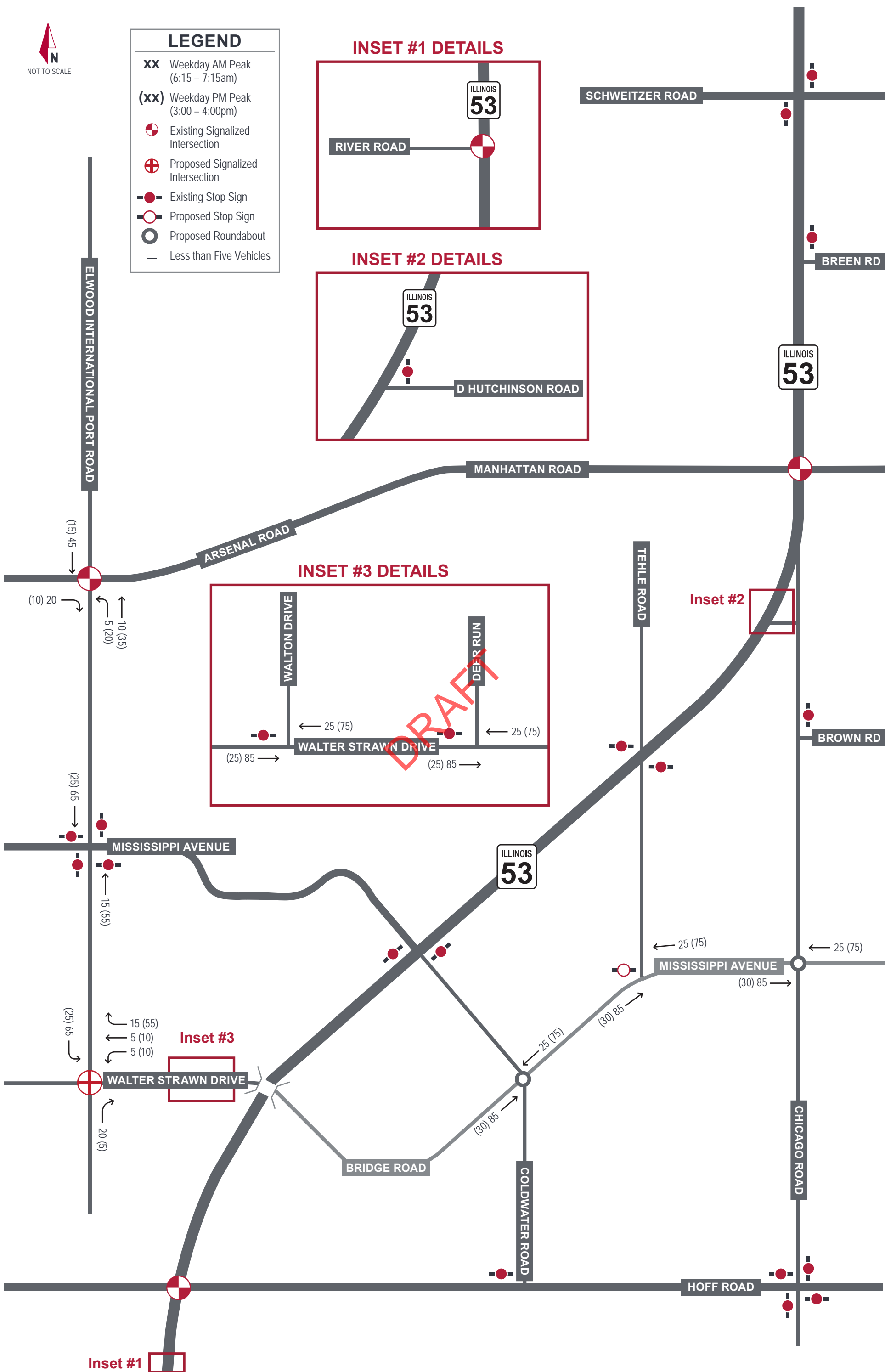
Less than Five Vehicles

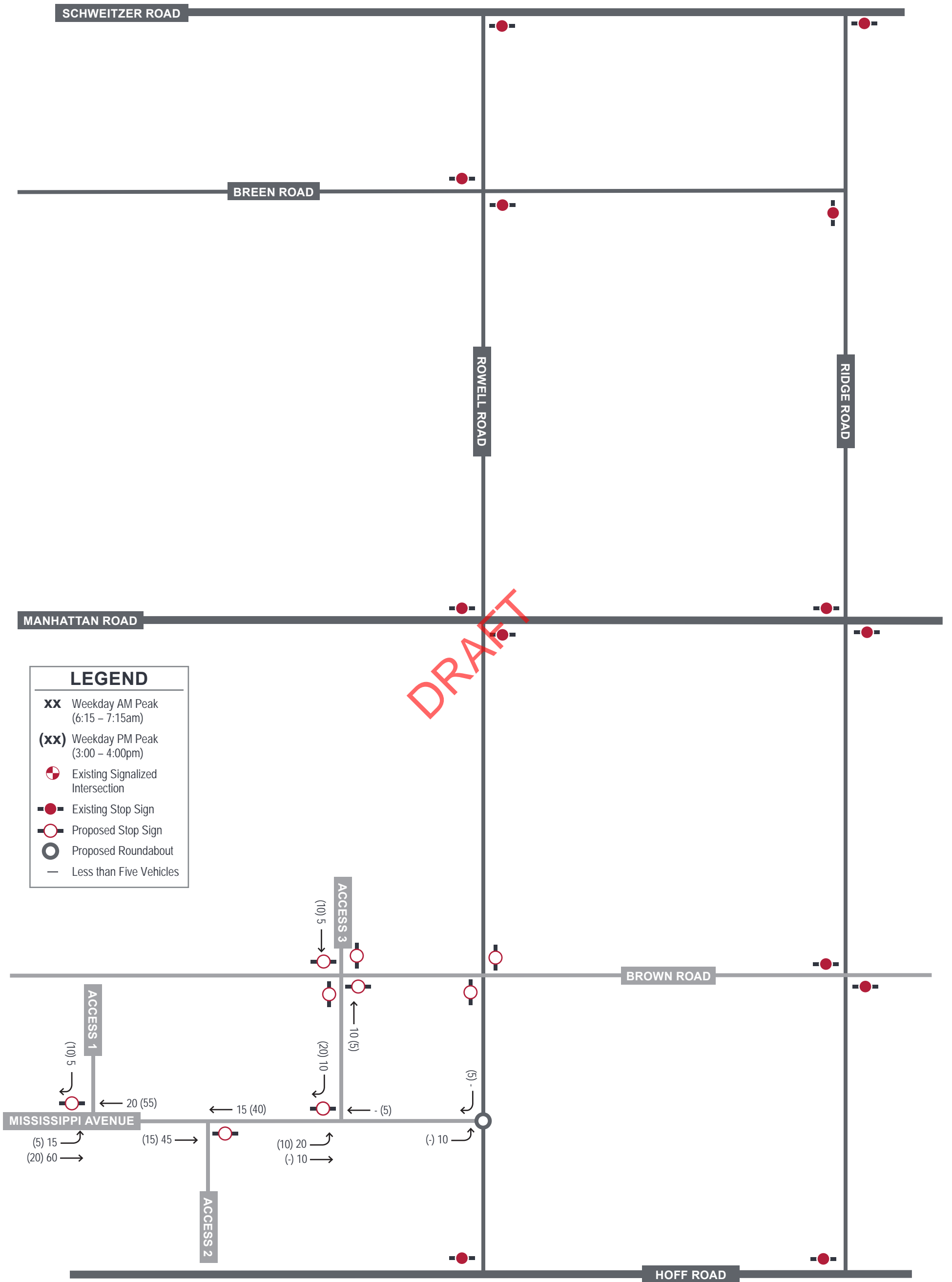

















**LEGEND**

- xx** Weekday AM Peak  
(6:15 – 7:15am)
- (xx)** Weekday PM Peak  
(3:00 – 4:00pm)
-  Existing Signalized Intersection
-  Existing Stop Sign
-  Proposed Stop Sign
-  Proposed Roundabout
-  Less than Five Vehicles

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**LEGEND**

xx

Weekday AM Peak  
(6:15 – 7:15am)

(xx)

Weekday PM Peak  
(3:00 – 4:00pm)

Existing Signalized Intersection

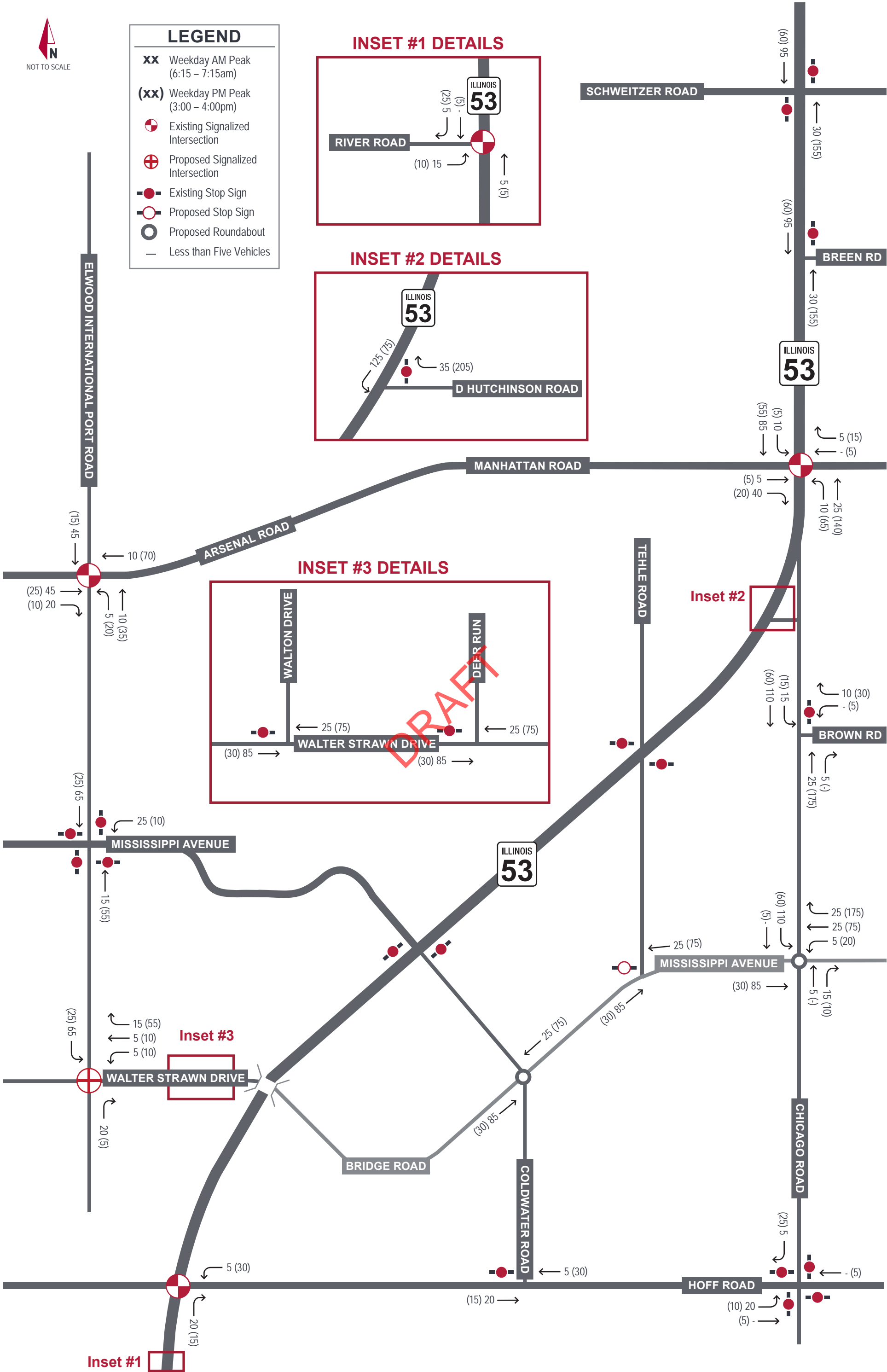
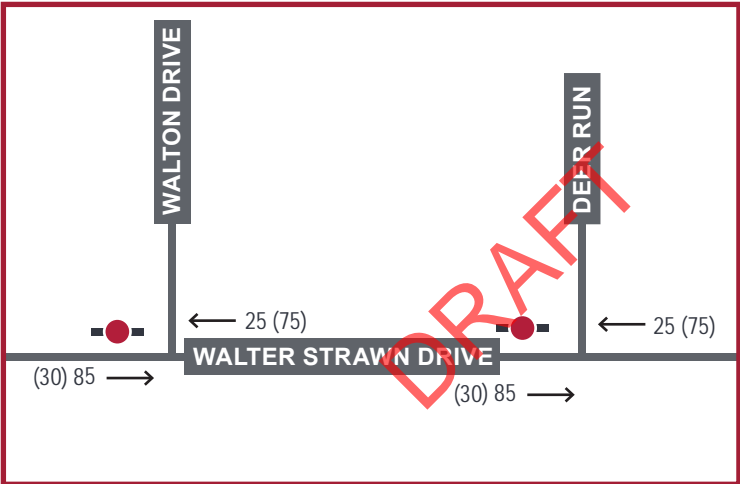
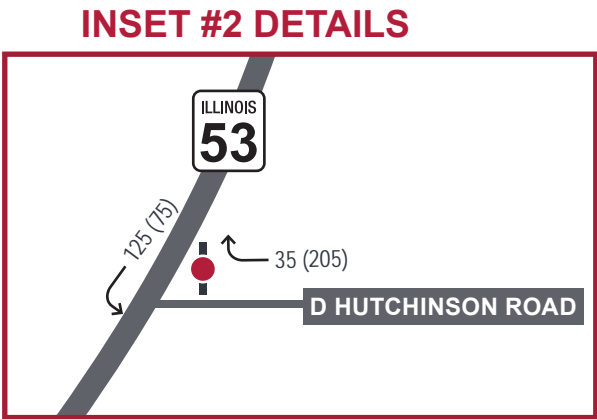
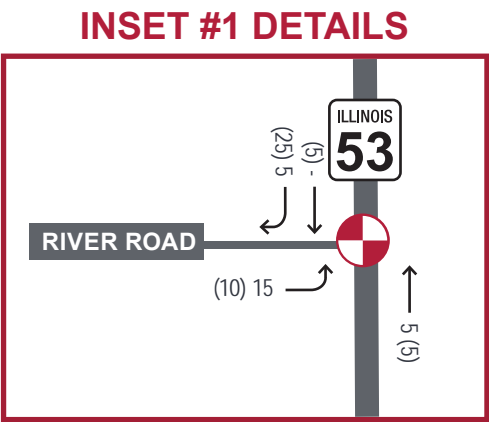
Proposed Signalized Intersection

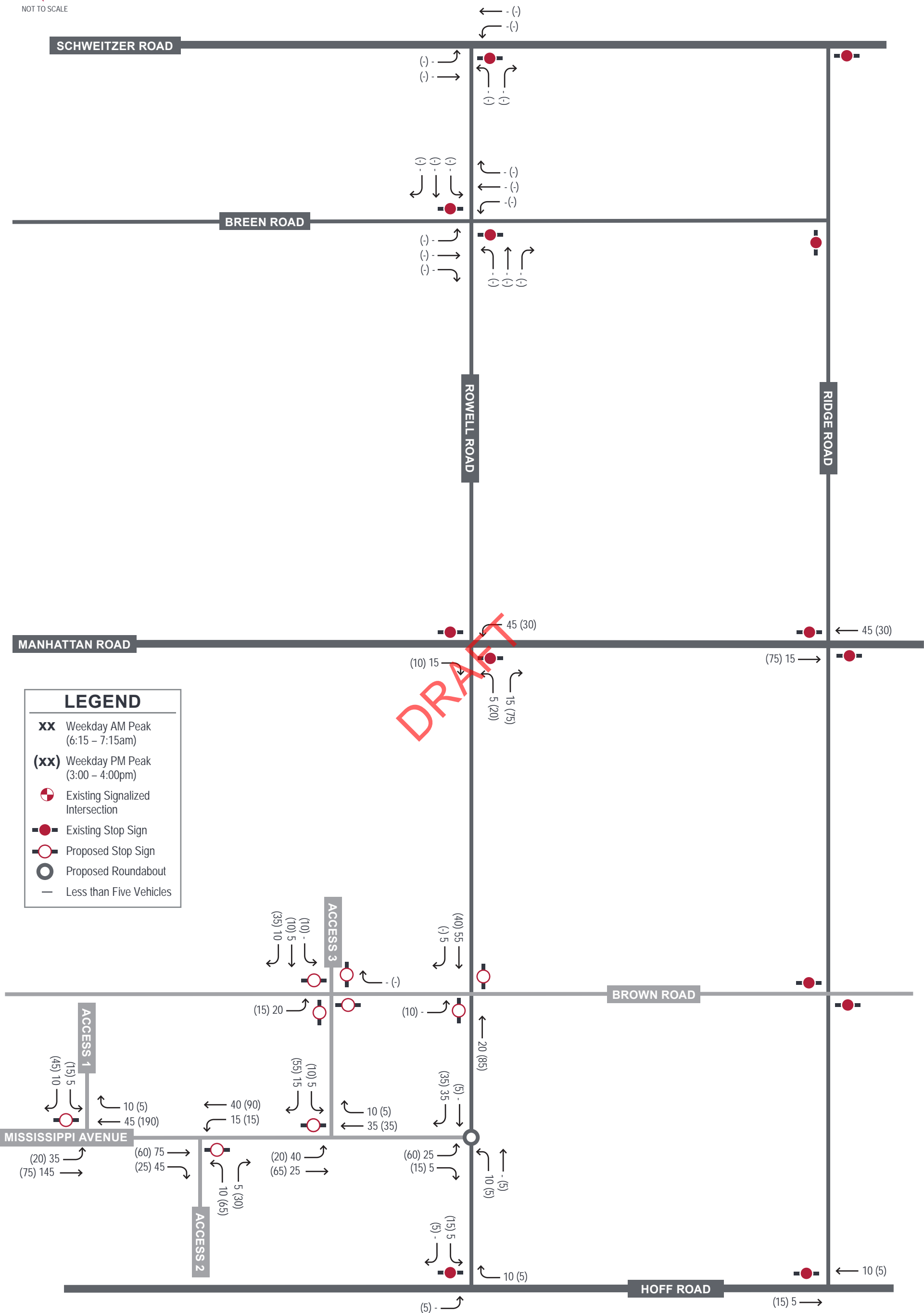
Existing Stop Sign

Proposed Stop Sign

Proposed Roundabout

Less than Five Vehicles







In order to estimate Year 2024 and Year 2027 background traffic volumes, growth rates were applied to existing (Year 2020) traffic volumes at the study intersections. The growth rates were derived from data obtained from the Chicago Metropolitan Agency for Planning (CMAP) and applied to existing traffic volumes (Exhibit 2A through Exhibit 2C) at the study intersections. Additional information regarding the growth rates is presented in *Section 5.1 Background Traffic Growth*. An official letter from CMAP documenting the projected Year 2050 traffic volume on the study roadways is included in the appendix.

In addition to regional traffic growth, traffic projected for development previously approved in the Village of Elwood was added to the roadway network. Located near the southeast quadrant of the intersection of IL 53/Mississippi Avenue, the approved development totals approximately 2,020,505 square feet of industrial warehouse/distribution use (Buildings B-F). This development is not part of the proposed Compass Business Park; and therefore, was included with background traffic. Site trips were estimated for the approved development using the trip generation rates presented in Table 3.3. These trips were assigned through the study area based on an estimated trip distribution and were added to the background traffic volumes. A summary of the trip generation and assignment assumed for the approved industrial development in Elwood is provided in the appendix.

The total future background traffic volumes for Year 2024 are presented in **Exhibit 14A** through **Exhibit 14C**. The total future background traffic volumes for Year 2027 are presented in **Exhibit 15A** through **Exhibit 15C**.

#### Year 2024 Phase A Levels of Service

In order to evaluate traffic conditions with development of Phase A, site-generated trips (Exhibit 10A through Exhibit 10C) were added to the background traffic growth estimated for Year 2024 (Exhibit 14A through Exhibit 14C). The projected traffic volumes for the Year 2024 Phase A scenario are illustrated in **Exhibit 16A** through **Exhibit 16C**.

Key assumptions about the area roadway network developed for the Existing (2020) Full Buildout analysis were also applied to the analysis of the Year 2024 Phase A scenario (*Section 3.3 Future Capacity Analyses*). Based on the analysis of Year 2024 Phase A traffic conditions several improvements were identified to facilitate site access and mitigate traffic attributable to the initial phase of development. For Year 2024 Phase A conditions, traffic signal warrants were evaluated based on criteria in the *MUTCD* (page 117). Additionally, turn lane warrants and dimensions were evaluated at the study intersections using volume criteria in the Will County Department of Highways *Permit Regulations and Access Control Regulations* and the IDOT *BDE Manual*. A summary of the recommended improvements is provided below.

- **Bridge Road / Mississippi Avenue / Coldwater Road**
  - Install a single-lane roundabout in order to facilitate access to the new roadway providing connectivity to the planned bridge over IL 53 at Walter Strawn Drive (Bridge Road) as well as access to Compass Business Park. The roundabout should be designed to accommodate truck movements.

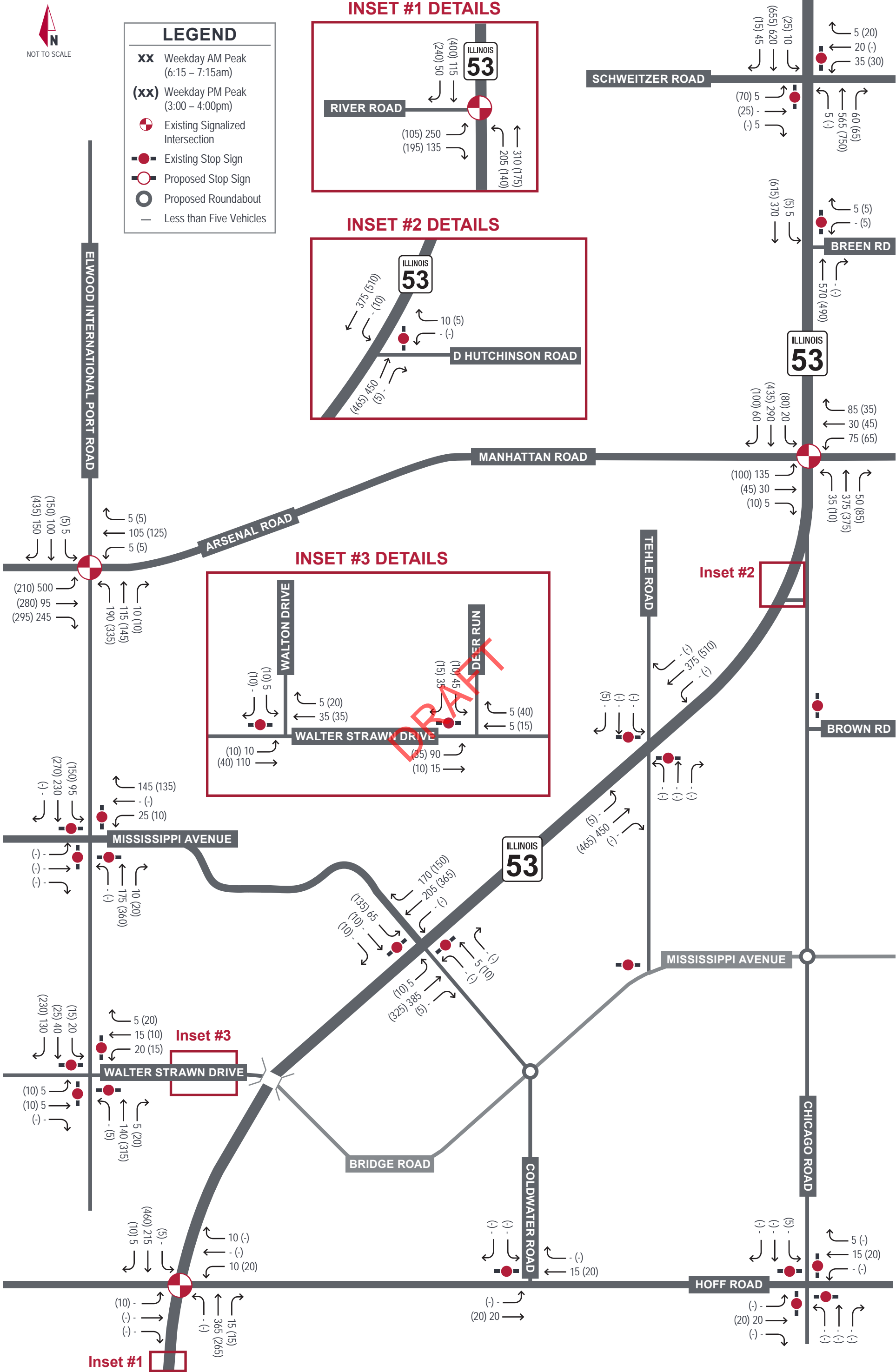


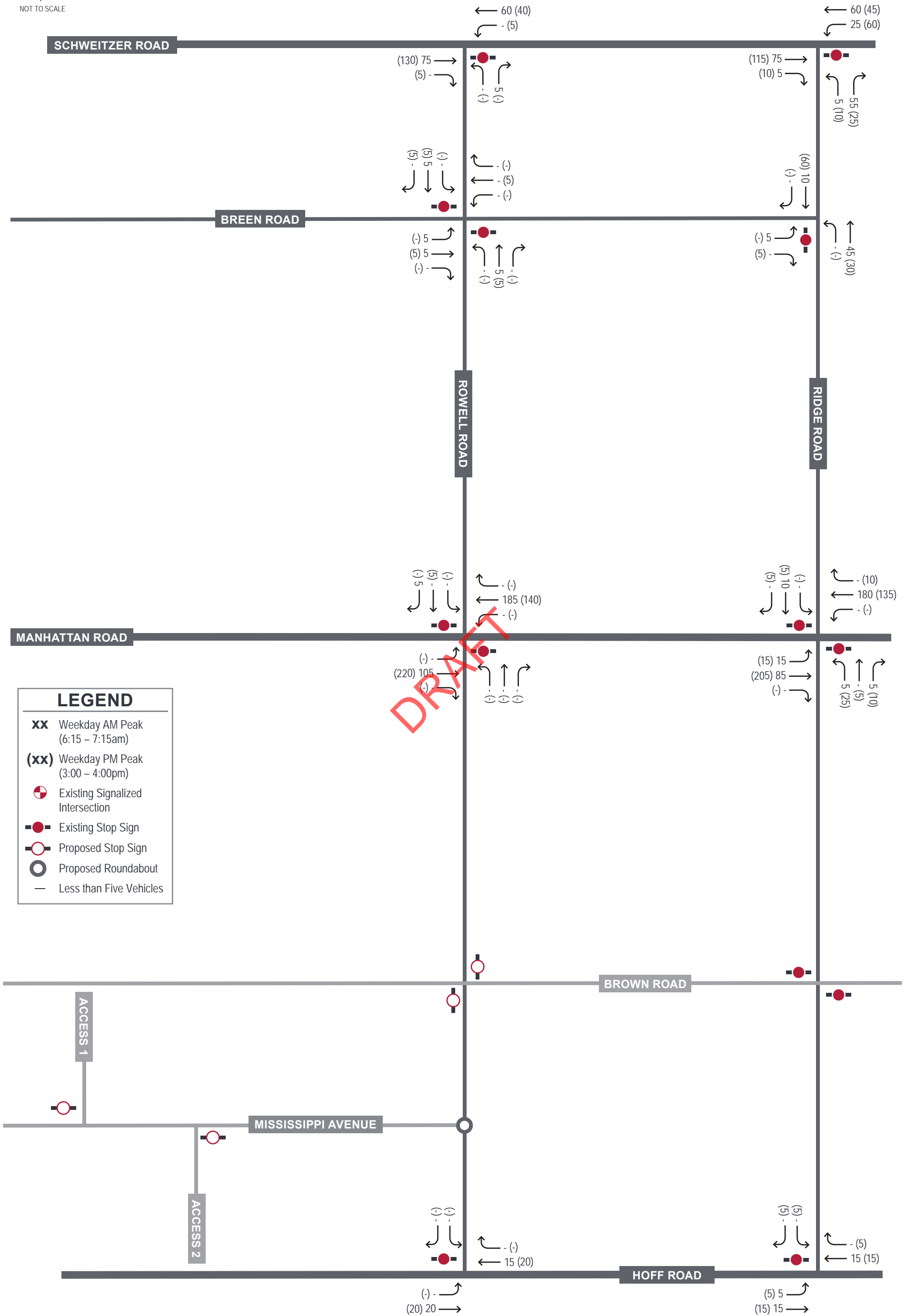
- **Chicago Road / Mississippi Avenue**
  - Install a single-lane roundabout in order to facilitate car and truck access to Compass Business Park. The roundabout should be designed to accommodate truck movements.
- **Rowell Road / Mississippi Avenue**
  - Install a single-lane roundabout in order to facilitate both car and truck access to Compass Business Park. The roundabout should be designed to accommodate truck movements.

Minor-leg stop-control was assumed to be posted for outbound traffic at Access 1 and Access 2. Minor-leg stop-control was assumed to be posted on Brown Road at its intersection with Rowell Road.

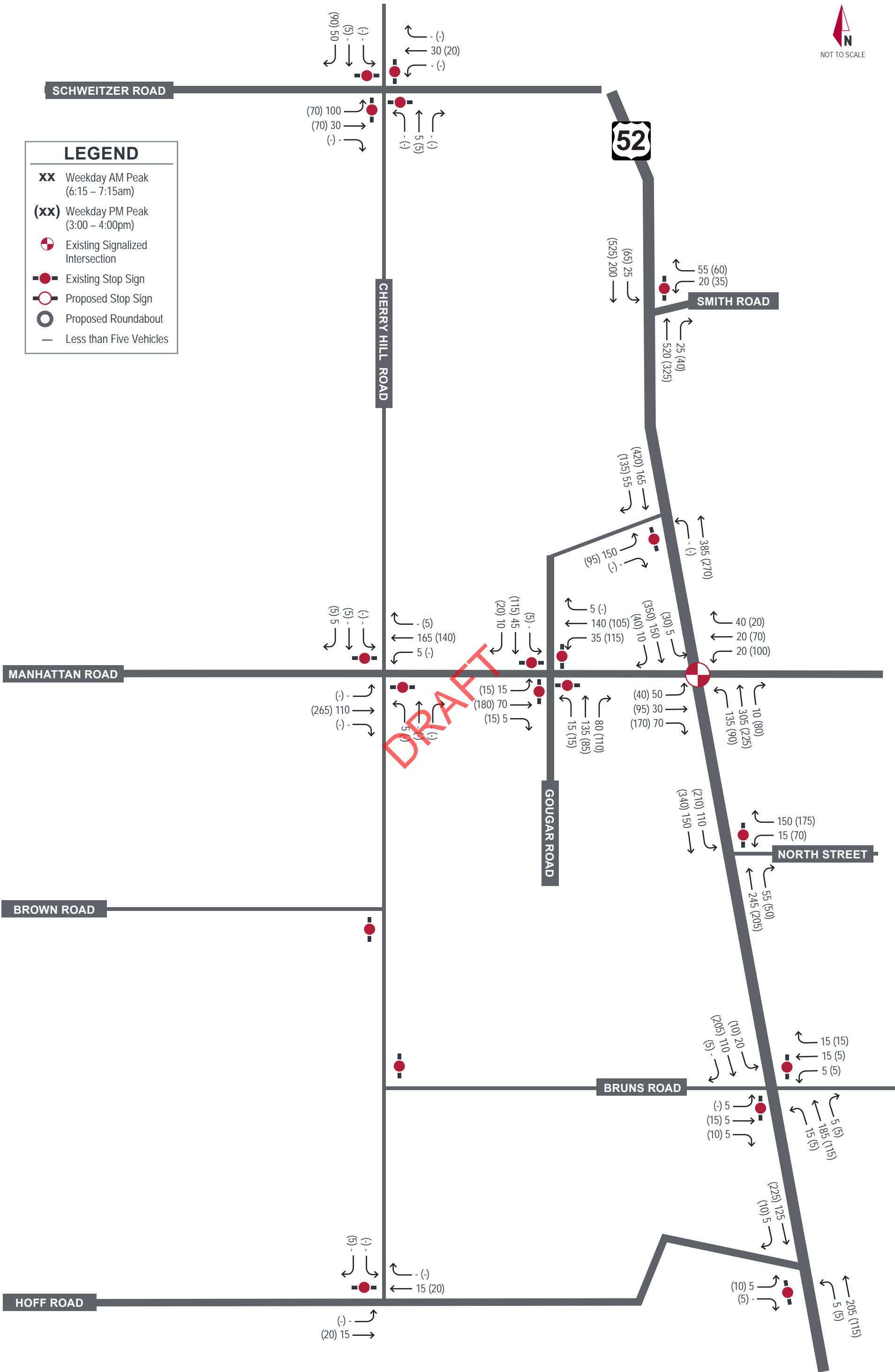
With these improvements in place, Year 2024 Phase A traffic operations are projected as shown in **Table 4.2**. The results of the capacity analysis are based on Synchro's HCM 6<sup>th</sup> Edition reports with one exception. Consistent with existing conditions, the results presented for EIP Road/Mississippi Avenue are based on SimTraffic analysis. Copies of the capacity analysis reports are provided in the appendix.

DRAFT





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**LEGEND**

xx

Weekday AM Peak  
(6:15 – 7:15am)

(xx)

Weekday PM Peak  
(3:00 – 4:00pm)

Existing Signalized Intersection

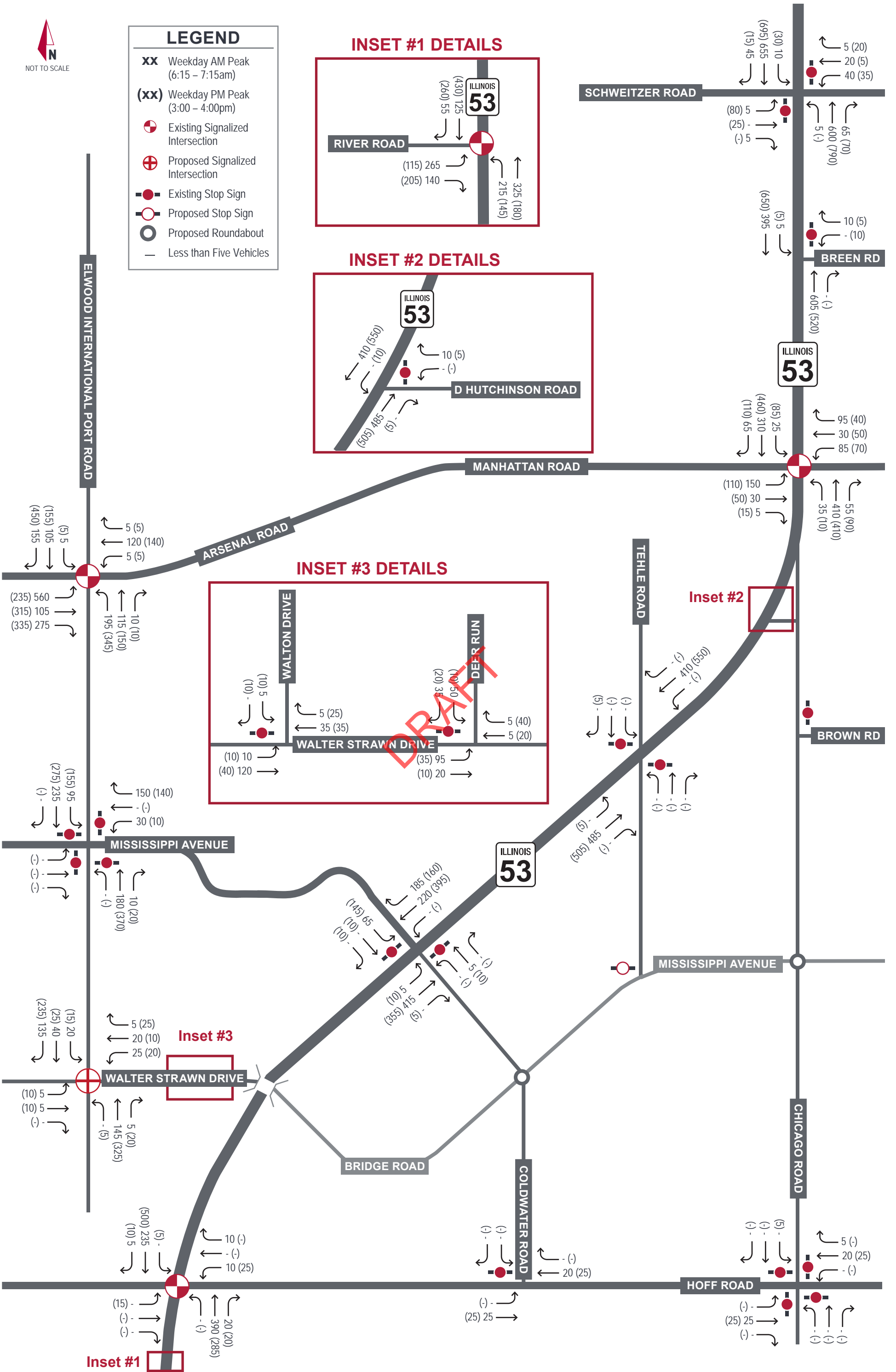
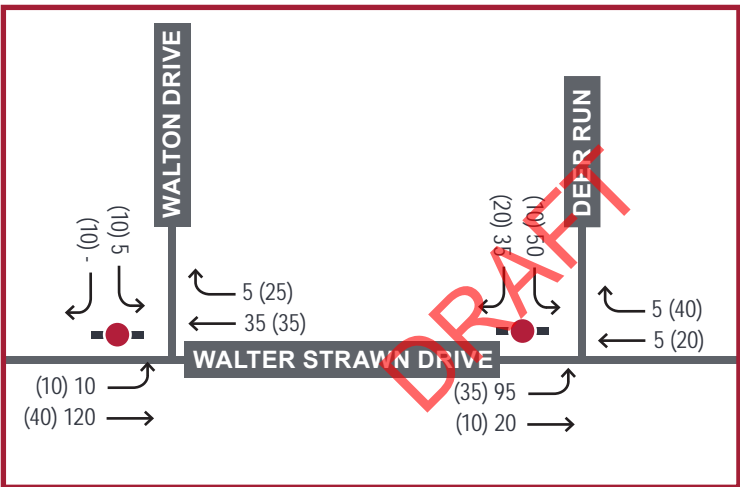
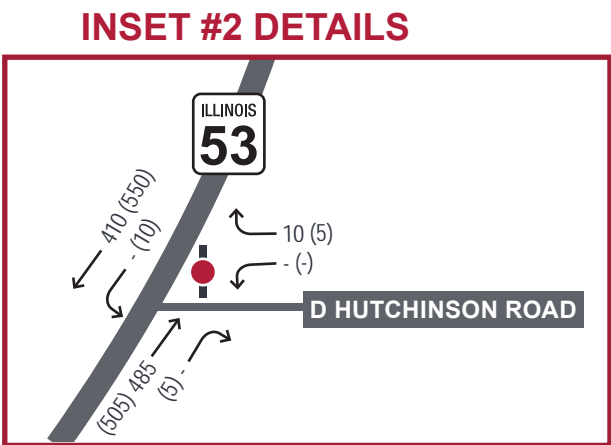
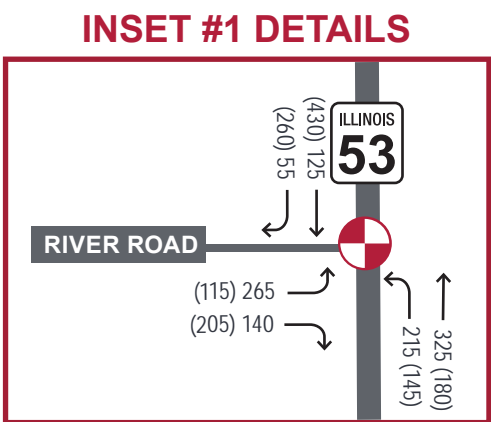
Proposed Signalized Intersection

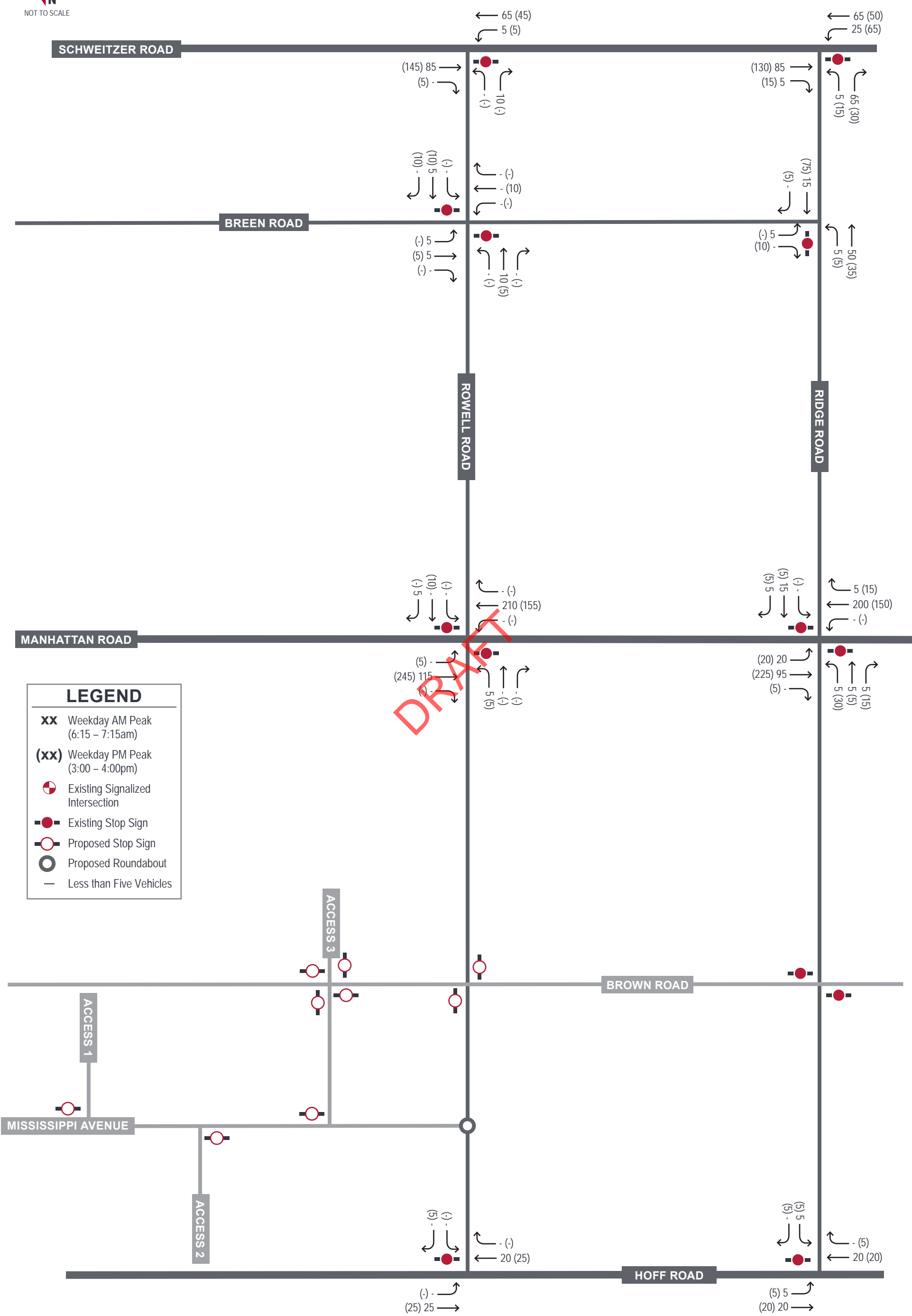
Existing Stop Sign

Proposed Stop Sign

Proposed Roundabout

Less than Five Vehicles







**LEGEND**

xx

Weekday AM Peak  
(6:15 – 7:15am)

(xx)

Weekday PM Peak  
(3:00 – 4:00pm)

Existing Signalized Intersection

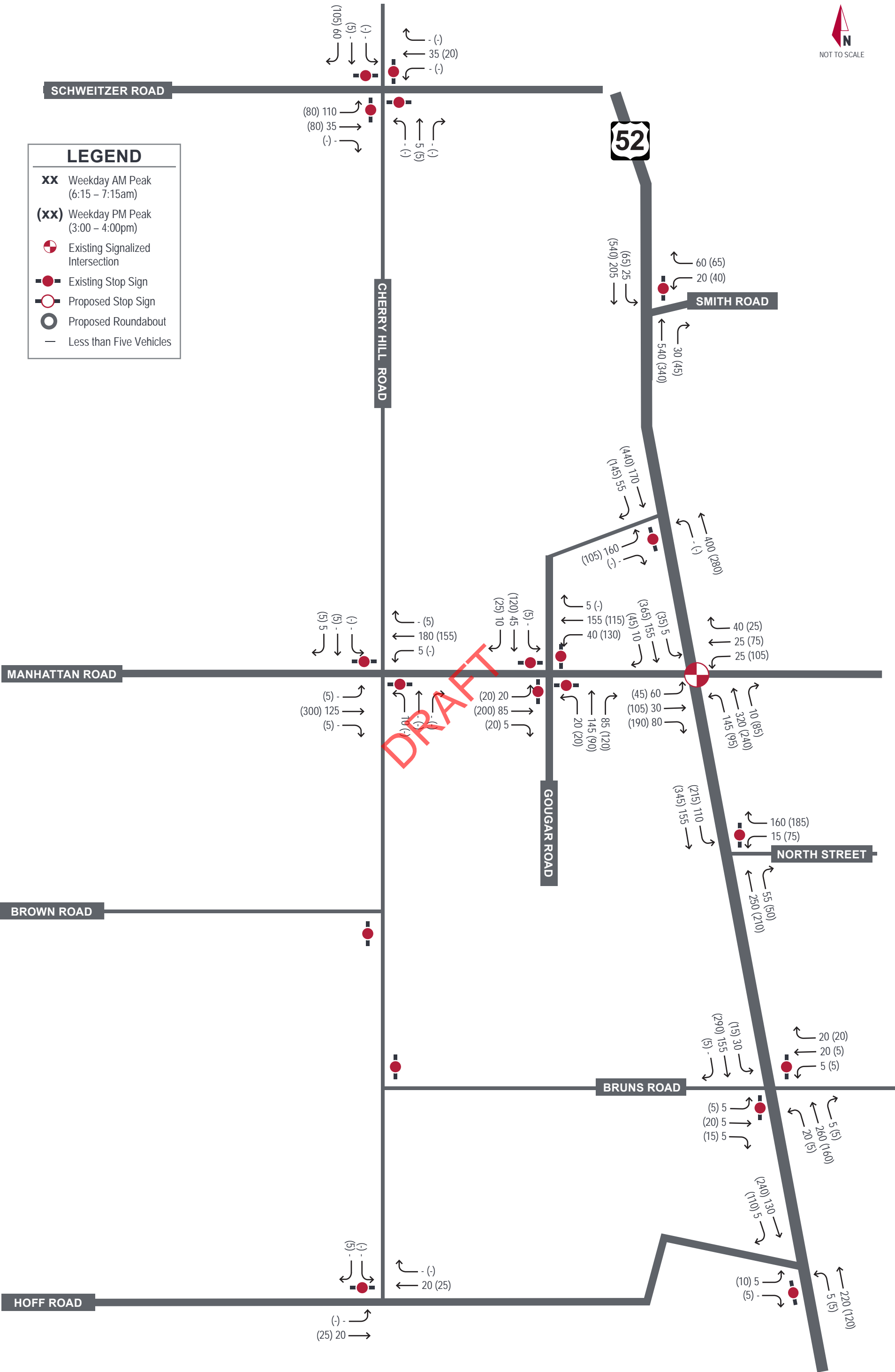
Existing Stop Sign

Proposed Stop Sign

Proposed Roundabout

—

Less than Five Vehicles





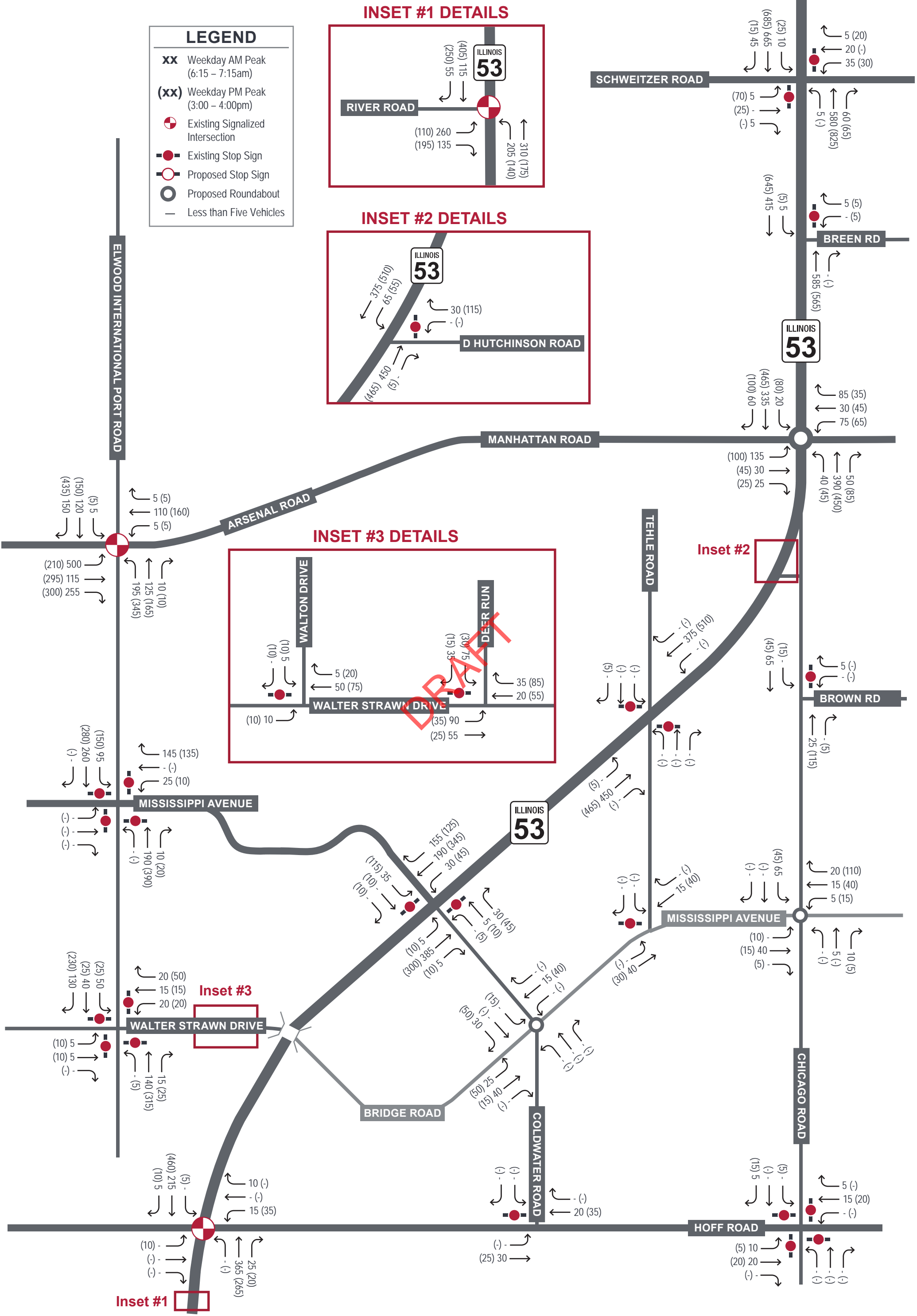


EXHIBIT 16A  
FUTURE (2024) PHASE A TRAFFIC PROJECTIONS

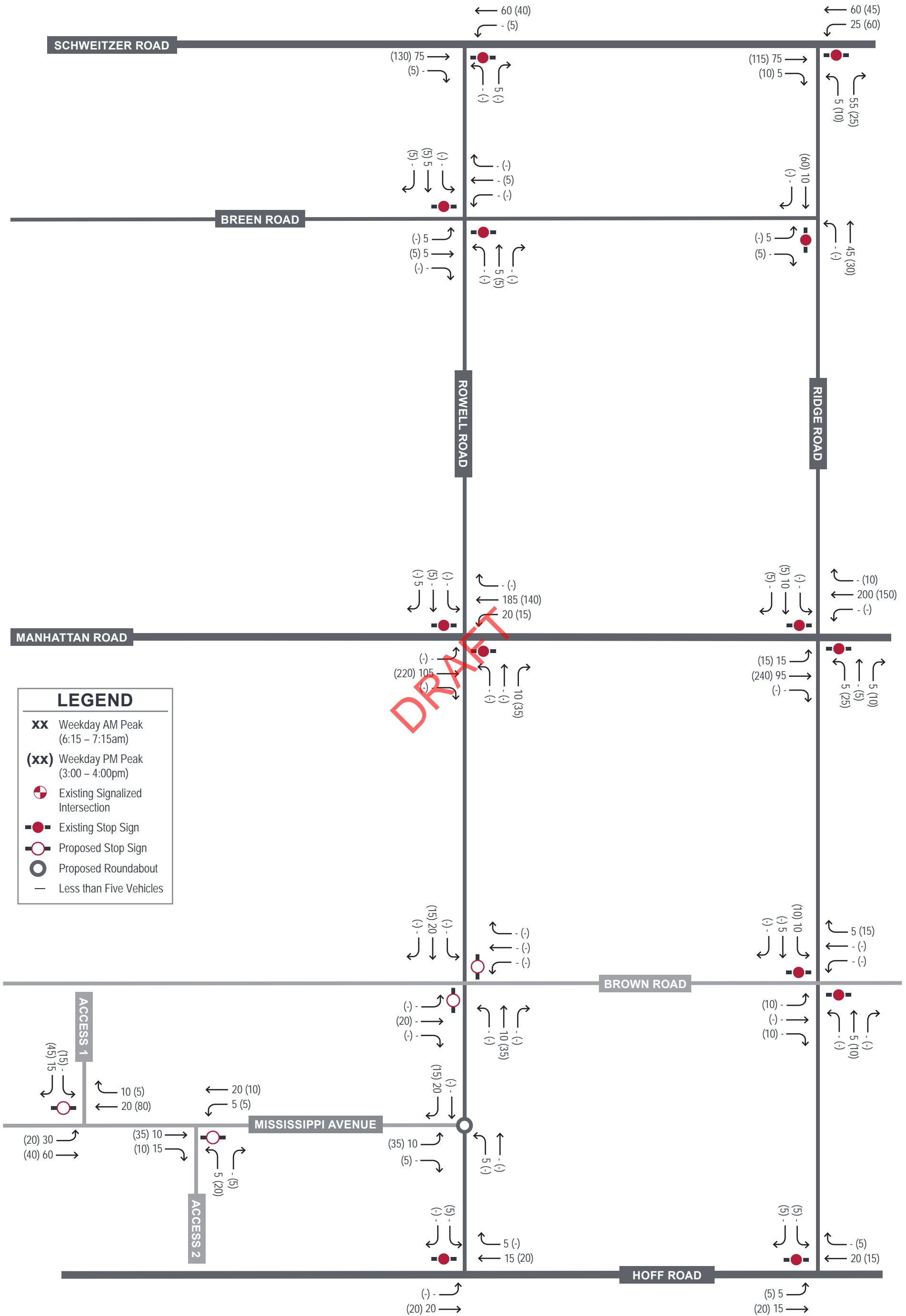


EXHIBIT 16B  
FUTURE (2024) PHASE A TRAFFIC PROJECTIONS

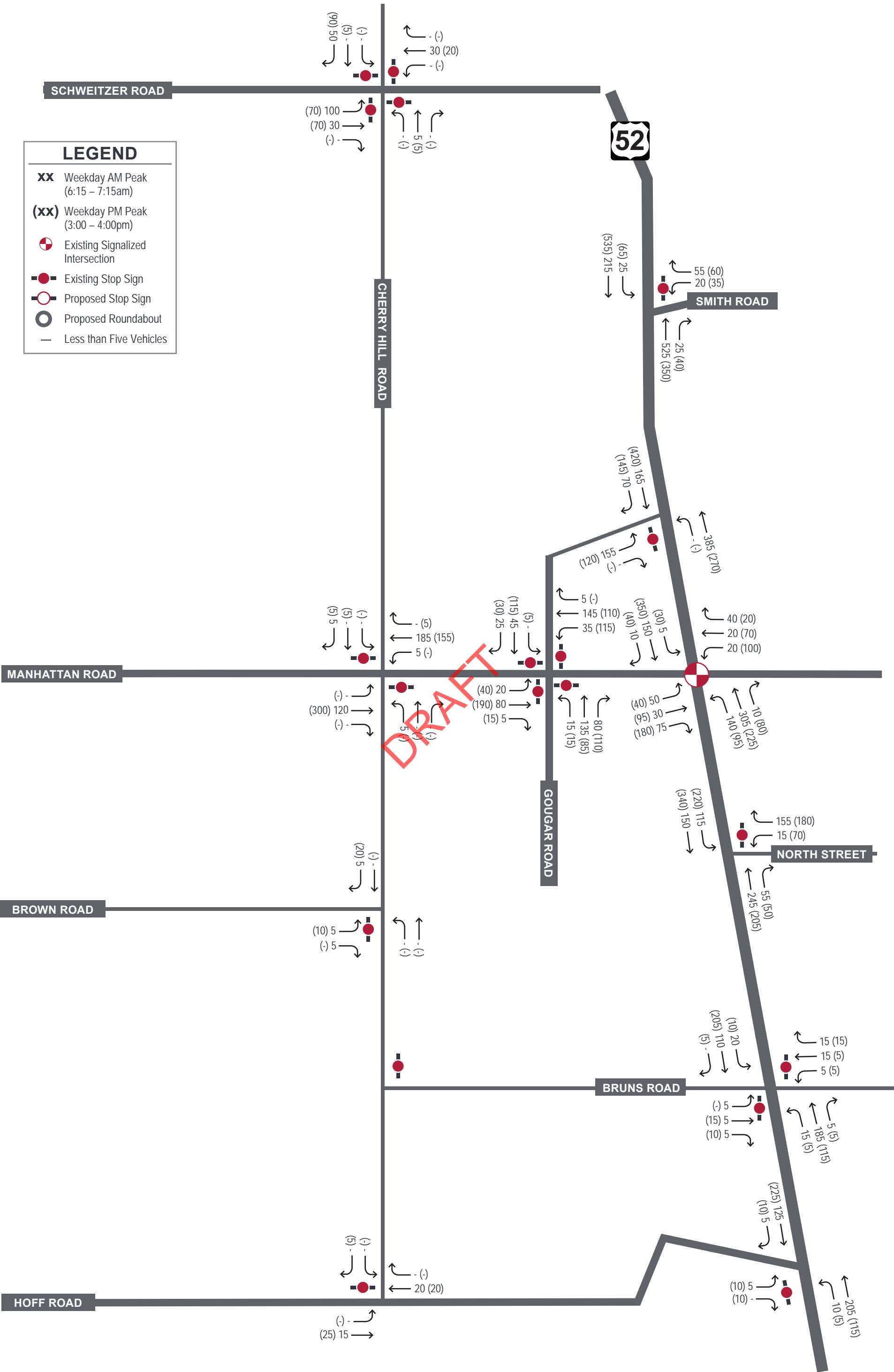


EXHIBIT 16C  
FUTURE (2024) PHASE A TRAFFIC PROJECTIONS

Table 4.2 Year 2024 Phase A Levels of Service

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
IL 53 / Schweitzer Road $\triangle$				
Eastbound	15+	C	26	C
Westbound	19	C	27	C
Northbound (Left)	9	A	9	A
Southbound (Left)	9	A	12	B
IL 53 / Breen Road $\triangle$				
Westbound	11	B	13	B
Southbound (Left)	9	B	9	A
IL 53 / Manhattan Road $\star$				
Eastbound	16	B	18	B
Westbound	16	B	17	B
Northbound	14	B	15	B
Southbound	13	B <sup>2</sup>	14	B
<i>Intersection</i>	<i>14</i>	<i>B</i>	<i>15</i>	<i>B</i>
IL 53 / D Hutchinson Road $\triangle$				
Westbound	10+	B	11	B
Southbound (Left)	9	A	9	A
IL 53 / Tehle Road $\triangle$				
Eastbound	12	B	11	B
Westbound	13	B	13	B
Northbound (Left)	8	A	9	A
Southbound (Left)	8	A	8	A
IL 53 / Mississippi Road $\triangle$				
Eastbound	13	B	16	C
Westbound	11	B	11	B
Northbound (Left)	9	A	9	A
Southbound (Left)	8	A	8	A
IL 53 / Hoff Road / Abraham Lincoln National Cemetery Access Driveway $\star$				
Eastbound	50	D	27	C
Westbound	14	B	23	C
Northbound	19	B <sup>2</sup>	10-	A
Southbound	16	B <sup>2</sup>	12	B <sup>1</sup>
<i>Intersection</i>	<i>18</i>	<i>B</i>	<i>12</i>	<i>B</i>

$\star$  – Signalized Intersection     $\blacktriangle$  – All-Way Stop-Controlled Intersection     $\triangle$  – Minor-Leg Stop-Controlled Intersection    O – Roundabout

<sup>1</sup>Left-turn movement operates at LOS F.

<sup>2</sup>Left-turn movement operates at LOS E.

<sup>3</sup>Left-turn movement operates at LOS F and thru movement operates at LOS E.

Table 4.2 Year 2024 Phase A Levels of Service (continued)

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
IL 53 / River Road ★				
Eastbound	17	B	19	B
Northbound	7	A	6	A
Southbound	10+	B	10+	B
Intersection	11	B	11	B
EIP Road / Arsenal Road ★				
Eastbound	25	C	40	D
Westbound	39	D <sup>1</sup>	41	D <sup>1</sup>
Northbound	29	C	38	D
Southbound	32	C <sup>1</sup>	32	C <sup>1</sup>
Intersection	28	C	37	D
EIP Road / Mississippi Avenue ▲				
Eastbound	4	A	6	A
Westbound	4	A	5	A
Northbound	9	A	11	B
Southbound	10-	A	10-	A
Intersection	8	A	10-	A
EIP Road / Walter Strawn Drive ▲				
Eastbound	9	A	11	B
Westbound	10-	A	12	B
Northbound	12	B	28	D
Southbound	10-	A	10-	A
Intersection	11	B	21	C
Walter Strawn Drive / Walton Drive △				
Eastbound (Left)	8	A	9	A
Southbound	10+	B	10+	B
Walter Strawn Drive / Deer Run △				
Eastbound (Left)	7	A	8	A
Southbound	10+	B	10-	A
Schweitzer Road / Rowell Road △				
Westbound (Left)	7	A	8	A
Northbound	9	A	9	A
Schweitzer Road / Ridge Road △				
Westbound (Left)	7	A	8	A
Northbound	9	A	10-	A

★ – Signalized Intersection    ▲ – All-Way Stop-Controlled Intersection    △ – Minor-Leg Stop-Controlled Intersection    O – Roundabout

<sup>1</sup>Left-turn movement operates at LOS F.

<sup>2</sup>Left-turn movement operates at LOS E.

<sup>3</sup>Left-turn movement operates at LOS F and thru movement operates at LOS E.

Table 4.2 Year 2024 Phase A Levels of Service (continued)

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Schweitzer Road / Cherry Hill Road $\Delta$				
Eastbound (Left)	8	A	7	A
Westbound (Left)	7	A	7	A
Northbound	11	B	11	B
Southbound	9	A	9	A
Breen Road / Rowell Road $\Delta$				
Eastbound (Left)	7	A	7	A
Westbound (Left)	7	A	7	A
Northbound	9	A	9	A
Southbound	9	A	9	A
Breen Road / Ridge Road $\Delta$				
Eastbound	9	A	9	A
Northbound (Left)	7	A	7	A
Manhattan Road / Rowell Road $\Delta$				
Eastbound	8	A	8	A
Westbound	8	A	8	A
Northbound	9	A	10-	A
Southbound	10+	B	12	B
Manhattan Road / Ridge Road $\Delta$				
Eastbound (Left)	8	A	8	A
Westbound (Left)	7	A	8	A
Northbound	10+	B	12	B
Southbound	11	B	11	B
Manhattan Road / Cherry Hill Road $\Delta$				
Eastbound	7	A	8	A
Westbound	8	A	8	A
Northbound	11	B	12	B
Southbound	10+	B	11	B
Manhattan Road / Gougar Road $\blacktriangle$				
Eastbound	9	A	12	B
Westbound	10-	A	11	B
Northbound	10-	A	11	B
Southbound	8	A	11	B
Intersection	10-	A	11	B
Sweedler Road / Cherry Hill Road $\Delta$				
Westbound	9	A	9	A
Southbound (Left)	7	A	7	A

★ – Signalized Intersection    ▲ – All-Way Stop-Controlled Intersection     $\Delta$  – Minor-Leg Stop-Controlled Intersection    O – Roundabout

<sup>1</sup>Left-turn movement operates at LOS F.

<sup>2</sup>Left-turn movement operates at LOS E.

<sup>3</sup>Left-turn movement operates at LOS F and thru movement operates at LOS E.

Table 4.2 Year 2024 Phase A Levels of Service (continued)

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Sweedler Road / Gougar Road ▲				
Eastbound	7	A	8	A
Westbound	7	A	8	A
Northbound	7	A	7	A
Southbound	7	A	8	A
Intersection	7	A	8	A
Bruns Road / Cherry Hill Road △				
Westbound	8	A	8	A
Southbound (Left)	8	A	8	A
Bruns Road / Gougar Road △				
Eastbound (Left)	8	A	7	A
Westbound (Left)	7	A	7	A
Northbound	9	A	9	A
Southbound	9	A	9	A
Chicago Road / Brown Road △				
Westbound	9	A	9	A
Southbound (Left)	7	A	8	A
Brown Road / Rowell Road △				
Eastbound	9	A	9	A
Westbound	9	A	9	A
Northbound (Left)	7	A	7	A
Southbound (Left)	7	A	7	A
Brown Road / Ridge Road △				
Eastbound (Left)	7	A	7	A
Westbound (Left)	7	A	7	A
Northbound	9	A	9	A
Southbound	9	A	9	A
Cherry Hill Road / Brown Road △				
Eastbound	9	A	9	A
Northbound (Left)	7	A	7	A
Hoff Road / Coldwater Road △				
Eastbound (Left)	7	A	7	A
Southbound	9	A	9	A

★ – Signalized Intersection    ▲ – All-Way Stop-Controlled Intersection    △ – Minor-Leg Stop-Controlled Intersection    O – Roundabout

<sup>1</sup>Left-turn movement operates at LOS F.

<sup>2</sup>Left-turn movement operates at LOS E.

<sup>3</sup>Left-turn movement operates at LOS F and thru movement operates at LOS E.



Table 4.2 Year 2024 Phase A Levels of Service (continued)

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Hoff Road / Chicago Road ▲				
Eastbound	7	A	7	A
Westbound	7	A	7	A
Northbound	7	A	7	A
Southbound	7	A	7	A
Intersection	7	A	7	A
Hoff Road / Rowell Road △				
Eastbound (Left)	7	A	7	A
Southbound	9	A	9	A
Hoff Road / Ridge Road △				
Eastbound (Left)	7	A	7	A
Southbound	9	A	9	A
Hoff Road / Cherry Hill Road △				
Eastbound (Left)	7	A	7	A
Southbound	9	A	9	A
Hoff Road / Gougar Road △				
Eastbound (Left)	7	A	7	A
Westbound (Left)	7	A	7	A
Northbound	9	A	9	A
Southbound	9	A	9	A
US 52 / Smith Road △				
Westbound	15-	B	18	C
Southbound (Left)	9	A	8	A
US 52 / Gougar Road △				
Eastbound	17	C	18	C
Northbound (Left)	8	A	8	A
US 52 / Manhattan Road / Foxford Drive ★				
Eastbound	30	C	48	D
Westbound	24	C	50	D
Northbound	15	B	20+	C
Southbound	19	B	35+	D
Intersection	19	B	36	D
US 52 / North Street △				
Westbound	12	B	18	C
Southbound (Left)	8	A	8	A

★ – Signalized Intersection    ▲ – All-Way Stop-Controlled Intersection    △ – Minor-Leg Stop-Controlled Intersection    O – Roundabout

<sup>1</sup>Left-turn movement operates at LOS F.

<sup>2</sup>Left-turn movement operates at LOS E.

<sup>3</sup>Left-turn movement operates at LOS F and thru movement operates at LOS E.

Table 4.2 Year 2024 Phase A Levels of Service (continued)

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
US 52 / Bruns Road $\Delta$				
Eastbound	11	B	12	B
Westbound	11	B	11	B
Northbound (Left)	8	A	8	A
Southbound (Left)	8	A	8	A
US 52 / Hoff Road $\Delta$				
Eastbound	11	B	11	B
Northbound (Left)	8	A	8	A
Bridge Road / Mississippi Avenue / Coldwater Road O				
Eastbound	3	A	4	A
Westbound	3	A	3	A
Northbound	6	A	4	A
Southbound	5	A	6	A
Intersection	4	A	4	A
Chicago Road / Mississippi Avenue O				
Eastbound	6	A	5	A
Westbound	4	A	5	A
Northbound	3	A	3	A
Southbound	3	A	3	A
Intersection	4	A	4	A
Mississippi Avenue / Access 1 $\Delta$				
Eastbound (Left)	8	A	8	A
Southbound	9	A	9	A
Mississippi Avenue / Access 2 $\Delta$				
Westbound (Left)	7	A	7	A
Northbound	9	A	9	A
Rowell Road / Mississippi Avenue O				
Eastbound	3	A	3	A
Northbound	3	A	3	A
Southbound	3	A	3	A
Intersection	3	A	3	A

★ – Signalized Intersection    ▲ – All-Way Stop-Controlled Intersection     $\Delta$  – Minor-Leg Stop-Controlled Intersection    O – Roundabout

<sup>1</sup>Left-turn movement operates at LOS F.

<sup>2</sup>Left-turn movement operates at LOS E.

<sup>3</sup>Left-turn movement operates at LOS F and thru movement operates at LOS E.

With development of Phase A and the recommended improvements, the study intersections are projected to operate at within acceptable limits. Generally, movements and approaches are expected to operate at LOS D or better. The roadway network internal to Compass Business Park is expected to operate with limited delay and queues.

As shown in the table, the intersection of EIP Road/Arsenal Road is projected to operate at an overall LOS D or better during the peak hours. During both the morning and evening peak hours, the westbound and southbound left-turn movements are projected to operate at LOS F, consistent with existing conditions. The 95<sup>th</sup> percentile queues are estimated to be 25 feet (1 vehicle) or less for both turn movements in the peak hours.

The intersection of IL 53/Manhattan Road is projected to operate at an overall LOS B during the peak hours. In the morning peak hour, the southbound left-turn movement is projected to operate at LOS E with a 95<sup>th</sup> percentile queue of approximately 50 feet (2 vehicles). The queue would be accommodated within the existing storage lane.

At IL 53/Hoff Road/Lincoln National Cemetery Access, the northbound and southbound left-turn movements are projected to operate at LOS E during the morning peak hour. In the evening peak hour, the southbound left-turn movement is projected to operate at LOS F. The projected delay is due to the relatively low volume of left-turn movements. During both peak hours, the estimated volume of northbound and southbound left-turn movements is approximately five vehicles or less; therefore, limited queues are expected to occur.

#### Year 2027 Phase B Levels of Service

In order to evaluate traffic conditions with the development of Phase B, site-generated trips (Exhibit 10A through Exhibit 10C) were added to the background traffic growth estimated for Year 2027 (Exhibit 15A through Exhibit 15C). The projected traffic volumes for the Year 2027 Phase B scenario are illustrated in **Exhibit 17A** through **Exhibit 17C**. Key assumptions about the area roadway network used for the Existing (2020) Full Buildout and Year 2024 Phase A scenarios were applied to the analysis of Year 2027 Phase B (*Section 3.3 Future Capacity Analyses*).

Based on the analysis of Year 2027 Phase B traffic conditions, several improvements were identified to facilitate site access and mitigate traffic attributable to this phase of development. In addition to the recommendations listed below, improvements identified for the Year 2024 Phase A scenario would also apply. Again, traffic signal warrants were evaluated based on criteria in the *MUTCD* (page 117). Turn lane warrants and dimensions were evaluated using volume criteria in the Will County Department of Highways *Permit Regulations and Access Control Regulations* and the IDOT *BDE Manual*. A summary of the recommended improvements is provided on the pages that follow.

- **EIP Road / Arsenal Road**
  - Provide dual right-turn lanes on the west leg.
- **EIP Road / Walter Strawn Drive**
  - Install a traffic signal per MUTCD Warrant 1, Condition B (*Signal Warrant Analyses*) and IDOT design criteria. Based on proximity to the at-grade railroad crossing, coordination with BNSF is anticipated.
    - For purposes of this analysis, the new signal was assumed to have a minimum cycle length of 90 seconds, and splits were optimized.
- **US 52 / Manhattan Road / Foxford Drive**
  - Install a dedicated right-turn lane on the west leg. The turn lane should provide 145 feet of storage with a 175-foot taper.

- Modify the striping on the east leg to provide a dedicated left-turn lane and a shared thru/right-turn lane. The dedicated left-turn lane should provide 115 feet of storage with a 135-foot taper.
- **US 52 / North Street**
  - Complete additional analysis of turning movements in order to verify the lane geometry at this intersection will accommodate truck traffic and evaluate restriping the existing shoulder on North Street to provide an exclusive right-turn lane. Based on the spacing distance from the at-grade rail crossing, the turn lane should provide 125 feet of storage with a 105-foot taper.

Minor-leg stop-control was assumed to be posted for outbound traffic at Access 1 through Access 3. The intersection of Brown Road/Access 3 was assumed to operate under all-way stop-control. Minor-leg stop-control was assumed to be posted on Brown Road at its intersection with Rowell Road.

A graphical representation of the recommended improvements for both Phase A and Phase B is provided in **Exhibit 18A** through **Exhibit 18C**. With these improvements in place, Year 2027 Phase B traffic operations are projected as shown in **Table 4.2**. Consistent with existing conditions and no-build conditions, the results of the capacity analysis are based on Synchro's HCM 6<sup>th</sup> Edition reports. Consistent with existing conditions, the results presented for the intersection of EIP Road/Mississippi Avenue are based on the results of SimTraffic analysis. The results presented for EIP Road/Walter Strawn Drive are based on the Synchro Lanes, Volumes, Timings report. Copies of the capacity analysis reports are provided in the appendix.

DRAFT



**LEGEND**

**xx**

Weekday AM Peak  
(6:15 – 7:15am)

**(xx)**

Weekday PM Peak  
(3:00 – 4:00pm)

Existing Signalized Intersection

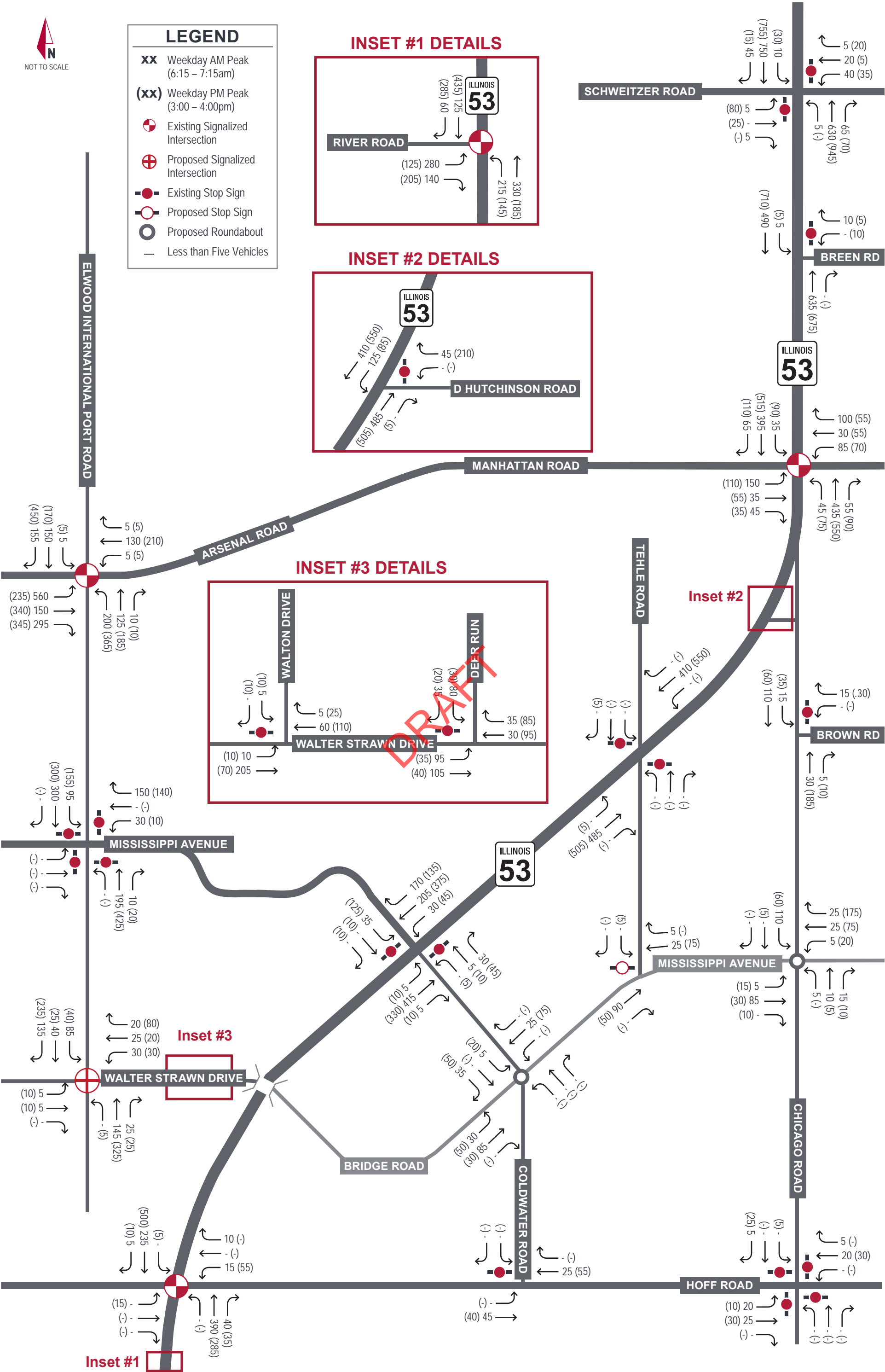
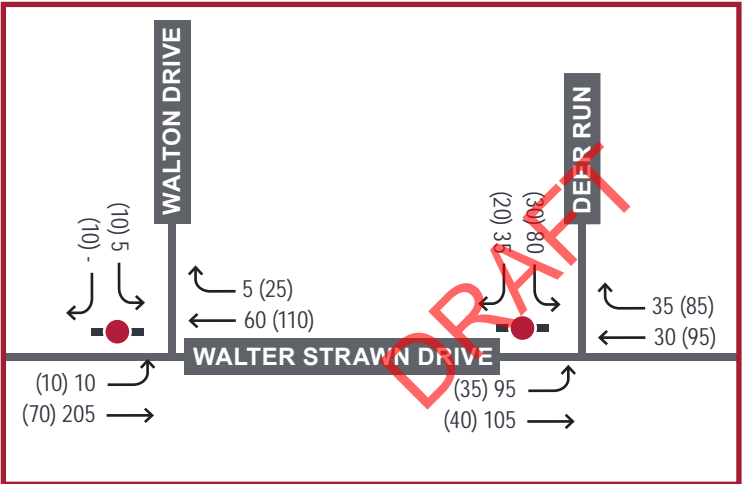
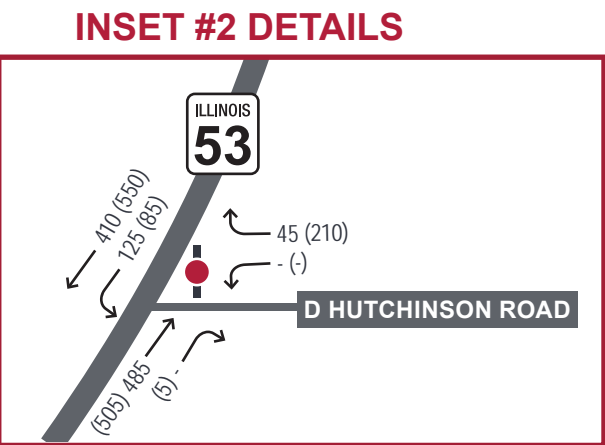
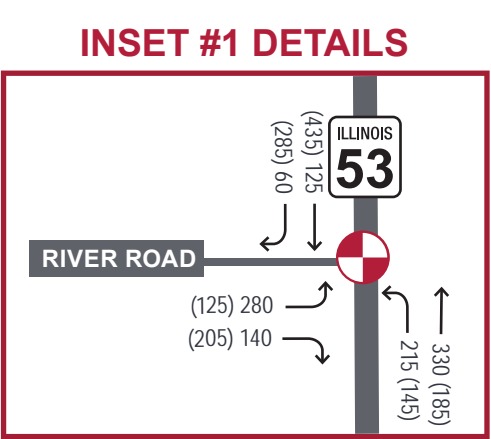
Proposed Signalized Intersection

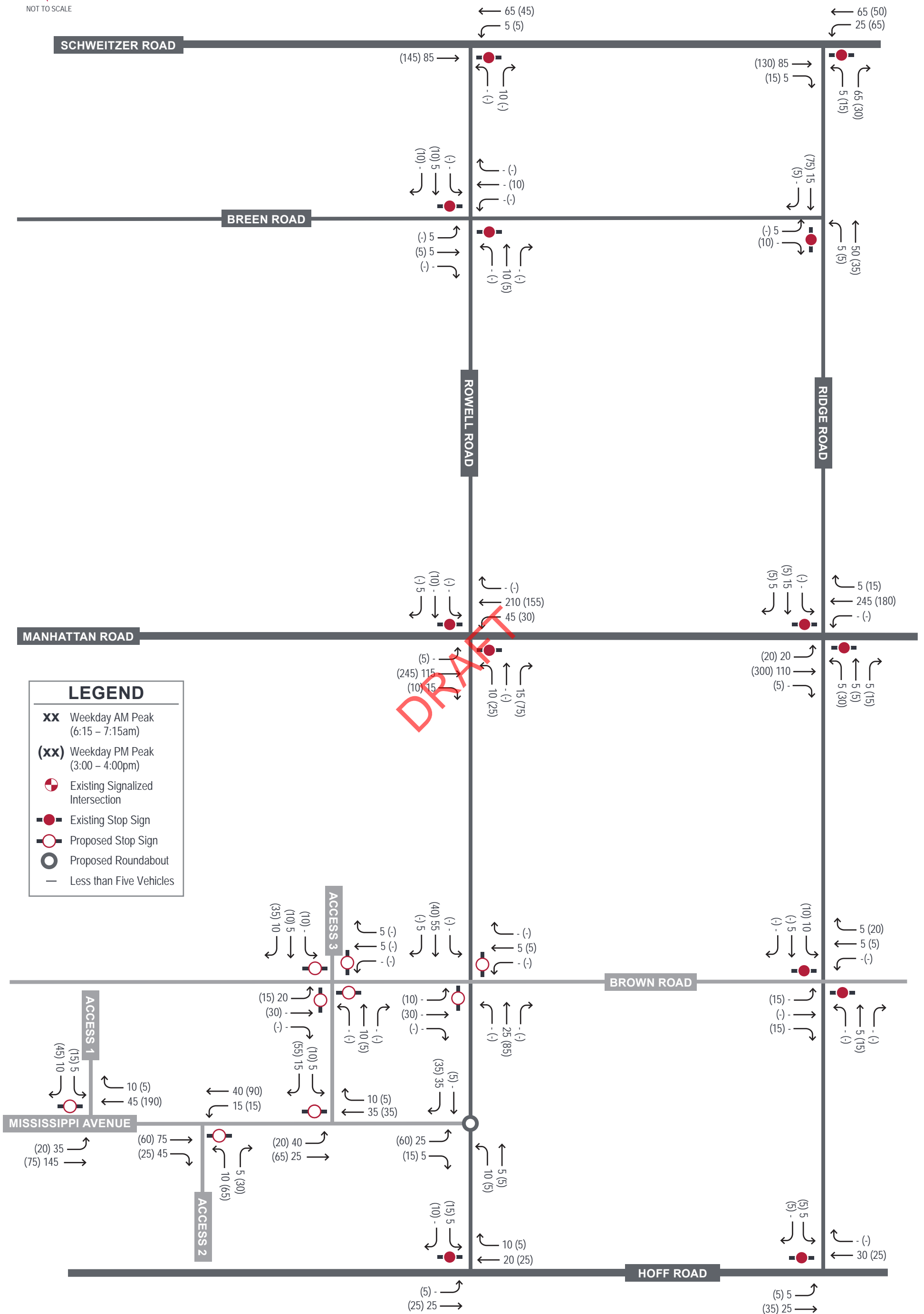
Existing Stop Sign

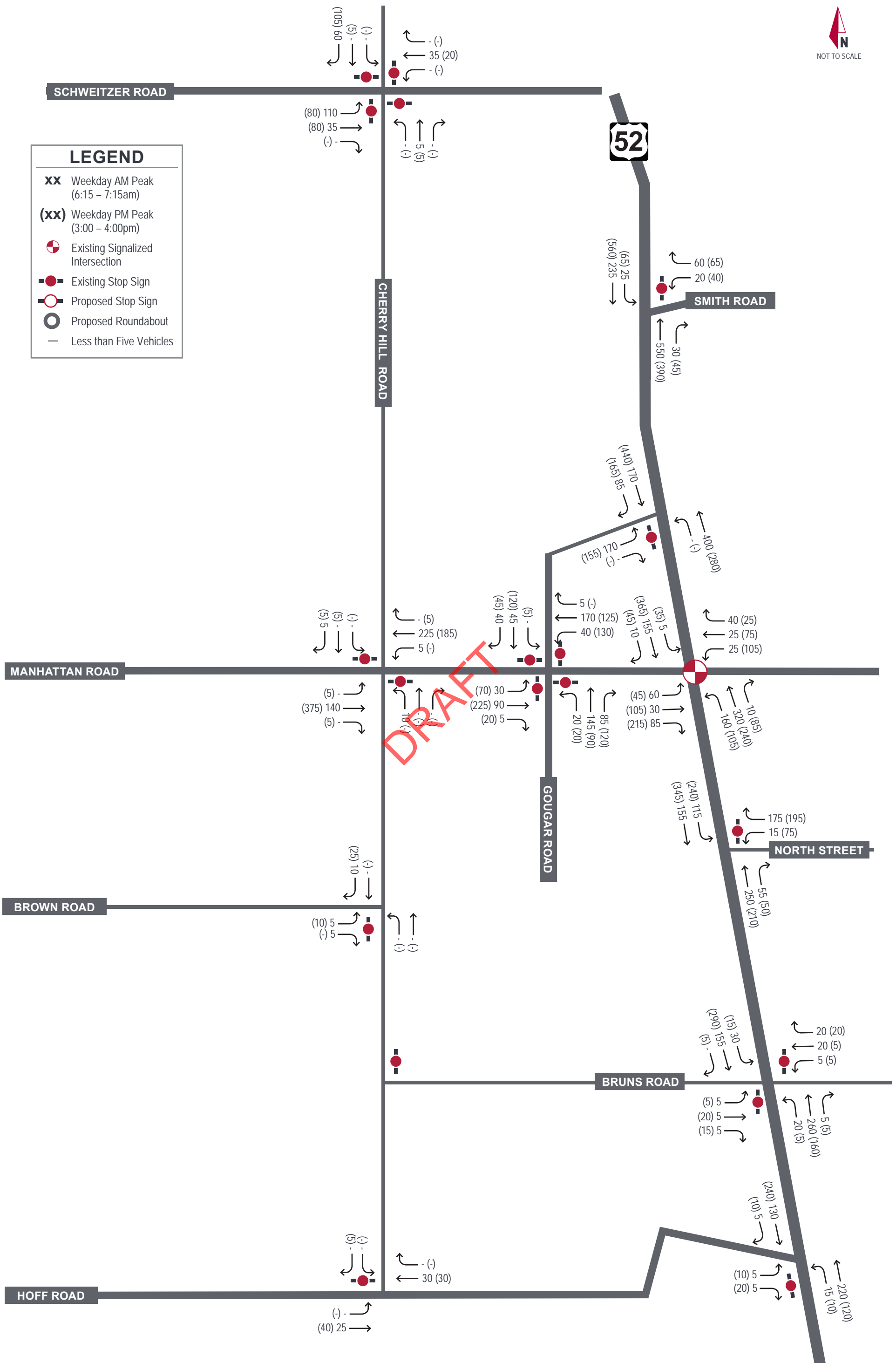
Proposed Stop Sign

Proposed Roundabout

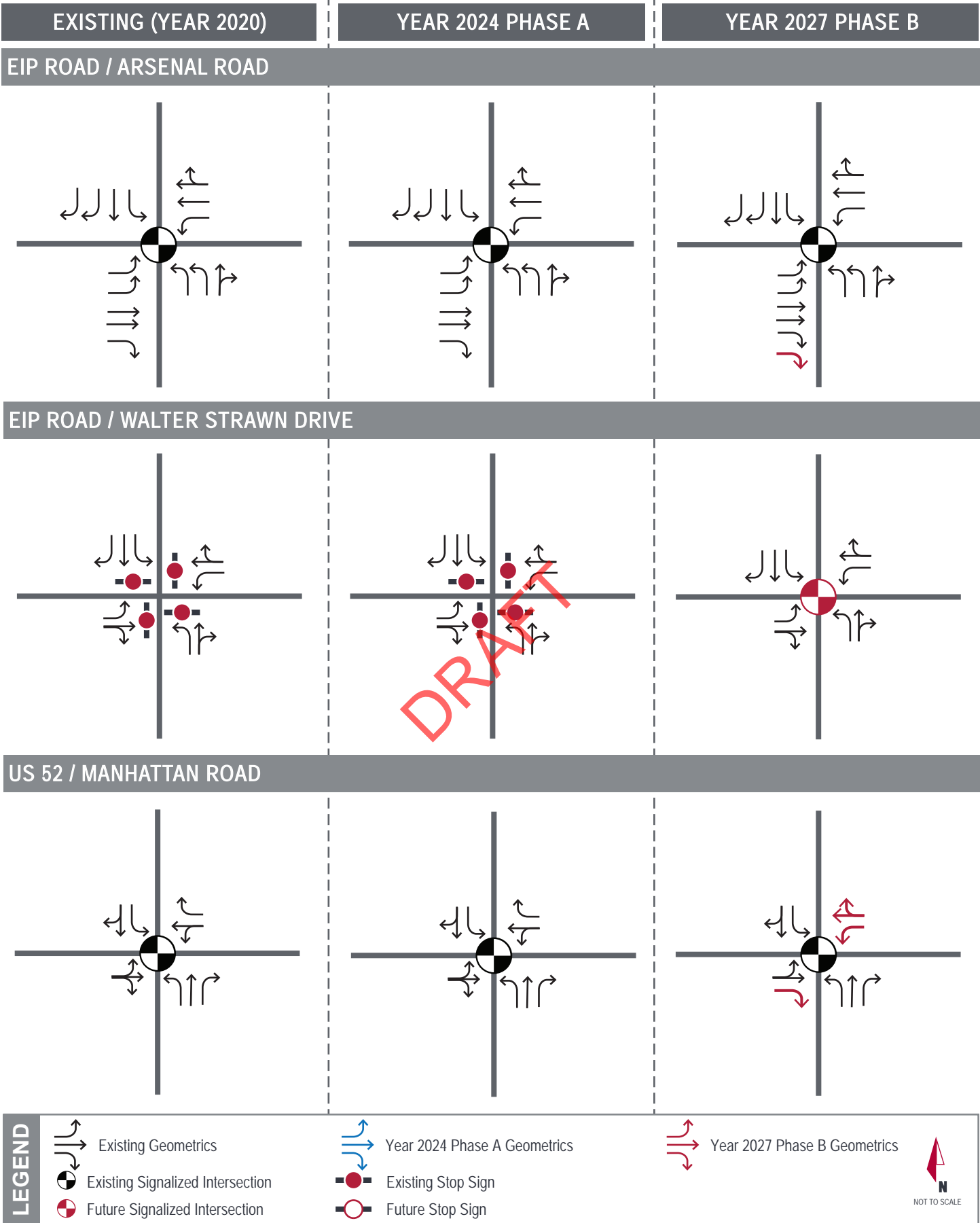
Less than Five Vehicles

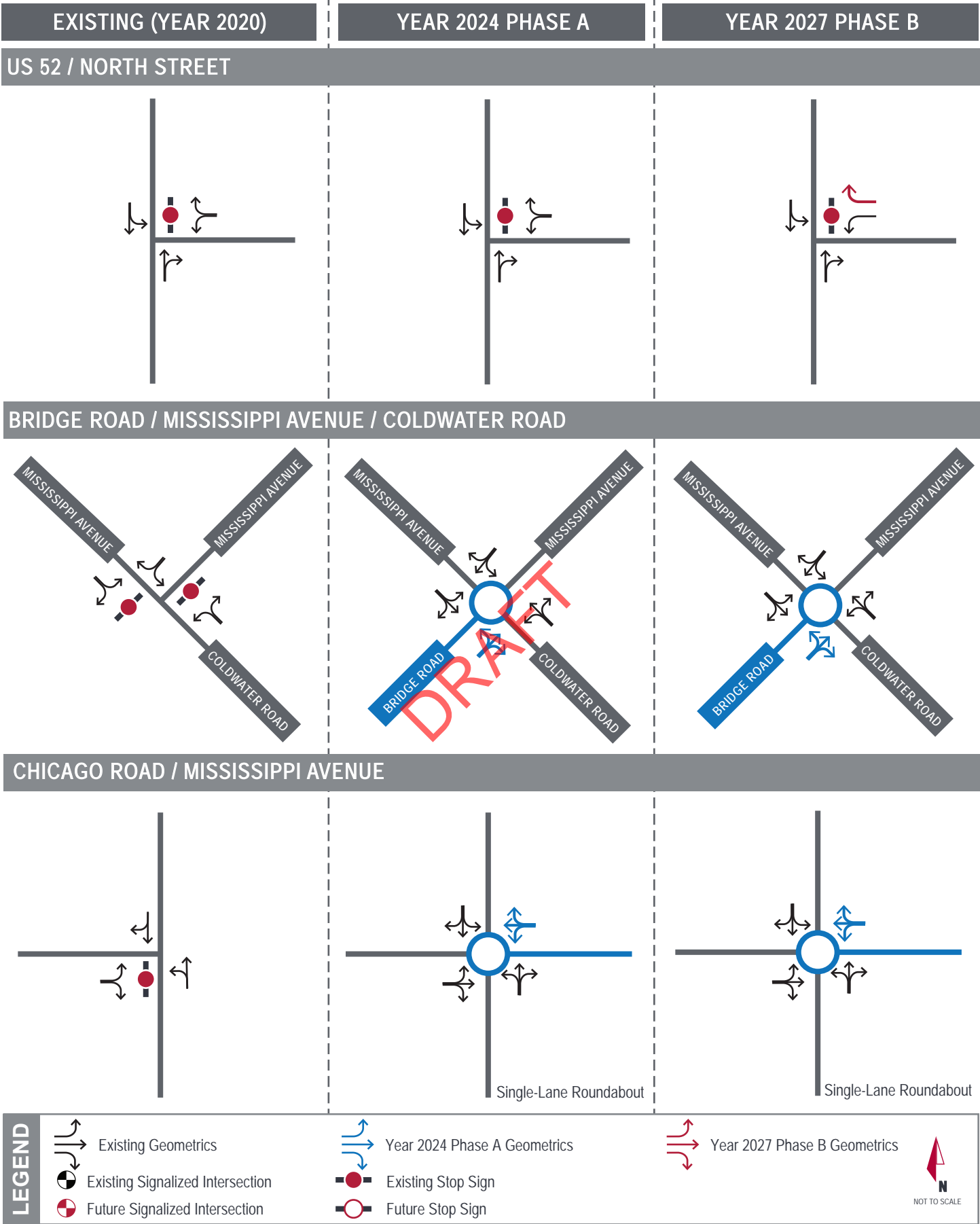












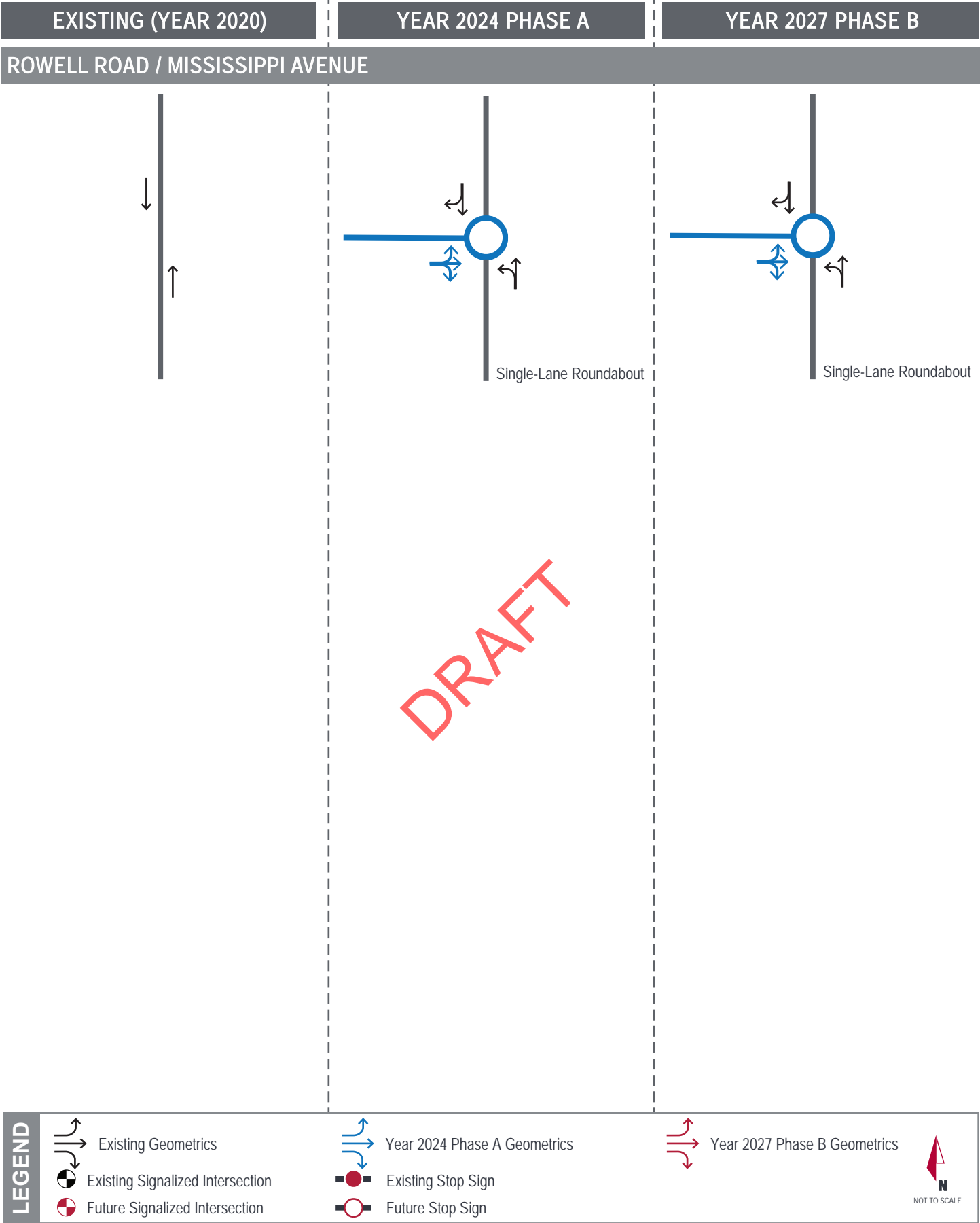


Table 4.2 Year 2027 Phase B Levels of Service

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
IL 53 / Schweitzer Road $\triangle$				
Eastbound	16	B	48	E
Westbound	21	B	25+	D
Northbound (Left)	10-	A	9	A
Southbound (Left)	9	A	12	B
IL 53 / Breen Road $\triangle$				
Westbound	11	B	15	B
Southbound (Left)	10-	A	9	A
IL 53 / Manhattan Road $\star$				
Eastbound	16	B	20+	C
Westbound	16	B	20+	C
Northbound	15	B	15	B
Southbound	16	B	15	B
<i>Intersection</i>	<i>16</i>	<i>B</i>	<i>16</i>	<i>B</i>
IL 53 / D Hutchinson Road $\triangle$				
Westbound	10+	B	12	B
Southbound (Left)	9	A	9	A
IL 53 / Tehle Road $\triangle$				
Eastbound	13	B	12	B
Westbound	13	B	14	B
Northbound (Left)	8	A	9	A
Southbound (Left)	8	A	9	A
IL 53 / Mississippi Road $\triangle$				
Eastbound	13	B	19	C
Westbound	11	B	12	B
Northbound (Left)	9	A	9	A
Southbound (Left)	8	A	8	A
IL 53 / Hoff Road / Abraham Lincoln National Cemetery Access Driveway $\star$				
Eastbound	42	D	27	C
Westbound	22	C	24	C
Northbound	10+	B	11	B <sup>2</sup>
Southbound	9	A	13	B <sup>1</sup>
<i>Intersection</i>	<i>10+</i>	<i>B</i>	<i>13</i>	<i>B</i>

$\star$  – Signalized Intersection     $\blacktriangle$  – All-Way Stop-Controlled Intersection     $\triangle$  – Minor-Leg Stop-Controlled Intersection    O – Roundabout

<sup>1</sup>Left-turn movement operates at LOS F.

<sup>2</sup>Left-turn movement operates at LOS E.

<sup>3</sup>Left-turn movement operates at LOS F and thru movement operates at LOS E.

Table 4.2 Year 2027 Phase B Levels of Service (continued)

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
IL 53 / River Road *				
Eastbound	18	B	20+	C
Northbound	8	A	7	A
Southbound	11	B	11	B
Intersection	12	B	12	B
EIP Road / Arsenal Road *				
Eastbound	28	C	32	C <sup>2</sup>
Westbound	47	D <sup>1</sup>	49	D <sup>1</sup>
Northbound	33	C	43	D
Southbound	40	D <sup>3</sup>	33	C <sup>3</sup>
Intersection	32	C	37	D
EIP Road / Mississippi Avenue ▲				
Eastbound	12	B	5	A
Westbound	5	A	6	A
Northbound	9	A	12	B
Southbound	10+	B	10-	A
Intersection	9	A	10+	A
EIP Road / Walter Strawn Drive *				
Eastbound	20-	B	26	C
Westbound	22	C	35+	D
Northbound	15	B	17	B
Southbound	7	A	11	B
Intersection	12	B	18	B
Walter Strawn Drive / Walton Drive △				
Eastbound (Left)	8	A	9	A
Southbound	11	B	11	B
Walter Strawn Drive / Deer Run △				
Eastbound (Left)	11	B	8	A
Southbound	8	A	10-	A
Schweitzer Road / Rowell Road △				
Westbound (Left)	7	A	8	A
Northbound	9	A	9	A
Schweitzer Road / Ridge Road △				
Westbound (Left)	7	A	8	A
Northbound	9	A	10-	A

\* – Signalized Intersection    ▲ – All-Way Stop-Controlled Intersection    △ – Minor-Leg Stop-Controlled Intersection    O – Roundabout

<sup>1</sup>Left-turn movement operates at LOS F.

<sup>2</sup>Left-turn movement operates at LOS E.

<sup>3</sup>Left-turn movement operates at LOS F and thru movement operates at LOS E.

Table 4.2 Year 2027 Phase B Levels of Service (continued)

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Schweitzer Road / Cherry Hill Road $\Delta$				
Eastbound (Left)	8	A	7	A
Westbound (Left)	7	A	7	A
Northbound	11	B	11	B
Southbound	9	A	9	A
Breen Road / Rowell Road $\Delta$				
Eastbound (Left)	7	A	7	A
Westbound (Left)	7	A	7	A
Northbound	9	A	9	A
Southbound	9	A	9	A
Breen Road / Ridge Road $\Delta$				
Eastbound	7	A	7	A
Northbound (Left)	11	B	11	B
Manhattan Road / Rowell Road $\Delta$				
Eastbound (Left)	8	A	8	A
Westbound (Left)	8	A	8	A
Northbound	11	B	12	B
Southbound	11	B	13	B
Manhattan Road / Ridge Road $\Delta$				
Eastbound (Left)	8	A	8	A
Westbound (Left)	7	A	8	A
Northbound	11	B	13	B
Southbound	12	B	12	B
Manhattan Road / Cherry Hill Road $\Delta$				
Eastbound	8	A	8	A
Westbound	12	B	13	B
Northbound	11	B	12	B
Southbound	8	A	8	A
Manhattan Road / Gougar Road $\blacktriangle$				
Eastbound	10-	A	13	B
Westbound	10+	B	12	B
Northbound	11	B	12	B
Southbound	9	A	12	B
Intersection	10+	B	12	B

★ – Signalized Intersection     $\blacktriangle$  – All-Way Stop-Controlled Intersection     $\Delta$  – Minor-Leg Stop-Controlled Intersection    O – Roundabout

<sup>1</sup>Left-turn movement operates at LOS F.

<sup>2</sup>Left-turn movement operates at LOS E.

<sup>3</sup>Left-turn movement operates at LOS F and thru movement operates at LOS E.

Table 4.2 Year 2027 Phase B Levels of Service (continued)

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Sweedler Road / Cherry Hill Road $\triangle$				
Westbound	9	A	9	A
Southbound (Left)	7	A	7	A
Sweedler Road / Gougar Road $\blacktriangle$				
Eastbound	7	A	8	A
Westbound	7	A	9	A
Northbound	7	A	8	A
Southbound	7	A	9	A
<i>Intersection</i>	7	A	9	A
Bruns Road / Cherry Hill Road $\triangle$				
Westbound	9	A	8	A
Southbound (Left)	8	A	8	A
Bruns Road / Gougar Road $\triangle$				
Eastbound (Left)	8	A	7	A
Westbound (Left)	7	A	7	A
Northbound	9	A	9	A
Southbound	9	A	9	A
Chicago Road / Brown Road $\triangle$				
Westbound	9	A	10-	A
Southbound (Left)	7	A	8	A
Brown Road / Rowell Road $\triangle$				
Eastbound	9	A	10-	A
Westbound	9	A	10-	A
Northbound (Left)	7	A	7	A
Southbound (Left)	7	A	7	A
Brown Road / Ridge Road $\triangle$				
Eastbound (Left)	7	A	7	A
Westbound (Left)	7	A	7	A
Northbound	9	A	9	A
Southbound	9	A	9	A
Brown Road / Access 3 $\blacktriangle$				
Eastbound	7	A	8	A
Westbound	7	A	7	A
Northbound	9	A	9	A
Southbound	9	A	9	A
<i>Intersection</i>	8	A	8	A

★ – Signalized Intersection     $\blacktriangle$  – All-Way Stop-Controlled Intersection     $\triangle$  – Minor-Leg Stop-Controlled Intersection    O – Roundabout

<sup>1</sup>Left-turn movement operates at LOS F.

<sup>2</sup>Left-turn movement operates at LOS E.

<sup>3</sup>Left-turn movement operates at LOS F and thru movement operates at LOS E.



Table 4.2 Year 2027 Phase B Levels of Service (continued)

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Cherry Hill Road / Brown Road $\triangle$				
Eastbound	9	A	9	A
Northbound (Left)	7	A	7	A
Hoff Road / Coldwater Road $\triangle$				
Eastbound (Left)	7	A	7	A
Southbound	9	A	9	A
Hoff Road / Chicago Road $\blacktriangle$				
Eastbound	7	A	7	A
Westbound	7	A	7	A
Northbound	7	A	7	A
Southbound	7	A	7	A
<i>Intersection</i>	7	A	7	A
Hoff Road / Rowell Road $\triangle$				
Eastbound (Left)	7	A	7	A
Southbound	9	A	9	A
Hoff Road / Ridge Road $\triangle$				
Eastbound (Left)	7	A	7	A
Southbound	9	A	9	A
Hoff Road / Cherry Hill Road $\triangle$				
Eastbound (Left)	7	A	7	A
Southbound	9	A	9	A
Hoff Road / Gougar Road $\triangle$				
Eastbound (Left)	7	A	7	A
Westbound (Left)	7	A	7	A
Northbound	9	A	9	A
Southbound	9	A	9	A
US 52 / Smith Road $\triangle$				
Westbound	16	C	21	C
Southbound (Left)	9	A	9	A
US 52 / Gougar Road $\triangle$				
Eastbound	18	C	22	C
Northbound (Left)	8	A	9	A

★ – Signalized Intersection    ▲ – All-Way Stop-Controlled Intersection     $\triangle$  – Minor-Leg Stop-Controlled Intersection    O – Roundabout

<sup>1</sup>Left-turn movement operates at LOS F.

<sup>2</sup>Left-turn movement operates at LOS E.

<sup>3</sup>Left-turn movement operates at LOS F and thru movement operates at LOS E.

Table 4.2 Year 2027 Phase B Levels of Service (continued)

Intersection		Weekday AM Peak		Weekday PM Peak	
		Delay (s/veh)	LOS	Delay (s/veh)	LOS
US 52 / Manhattan Road / Foxford Drive	★				
Eastbound		14	B	36	D
Westbound		16	B	42	D
Northbound		8	A	9	A
Southbound		11	B	13	B
Intersection		11	B	22	C
US 52 / North Street	△				
Westbound		12	B	20	C
Southbound (Left)		8	A	9	A
US 52 / Bruns Road	△				
Eastbound		13	B	13	B
Westbound		13	B	11	B
Northbound (Left)		8	A	8	A
Southbound (Left)		8	A	8	A
US 52 / Hoff Road	△				
Eastbound		10+	B	11	B
Northbound (Left)		8	A	8	A
Bridge Road / Mississippi Avenue / Coldwater Road	O				
Eastbound		3	A	4	A
Westbound		3	A	3	A
Northbound		6	A	4	A
Southbound		6	A	7	A
Intersection		3	A	4	A
Chicago Road / Mississippi Avenue	O				
Eastbound		8	A	5	A
Westbound		5	A	6	A
Northbound		4	A	3	A
Southbound		4	A	4	A
Intersection		8	A	5	A
Mississippi Avenue / Access 1	△				
Eastbound (Left)		8	A	8	A
Southbound		9	A	10-	A
Mississippi Avenue / Access 2	△				
Westbound (Left)		8	A	7	A
Northbound		9	A	10-	A

★ – Signalized Intersection    ▲ – All-Way Stop-Controlled Intersection    △ – Minor-Leg Stop-Controlled Intersection    O – Roundabout

<sup>1</sup>Left-turn movement operates at LOS F.

<sup>2</sup>Left-turn movement operates at LOS E.

<sup>3</sup>Left-turn movement operates at LOS F and thru movement operates at LOS E.

Table 4.2 Year 2027 Phase B Levels of Service (continued)

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Mississippi Avenue / Access 3 $\Delta$				
Eastbound (Left)	8	A	8	A
Northbound	9	A	9	A
Rowell Road / Mississippi Avenue O				
Eastbound	4	A	3	A
Westbound	3	A	3	A
Northbound	3	A	3	A
Southbound	4	A	3	A
Intersection	3	A	3	A

★ – Signalized Intersection    ▲ – All-Way Stop-Controlled Intersection     $\Delta$  – Minor-Leg Stop-Controlled Intersection    O – Roundabout

<sup>1</sup>Left-turn movement operates at LOS F.

<sup>2</sup>Left-turn movement operates at LOS E.

<sup>3</sup>Left-turn movement operates at LOS F and thru movement operates at LOS E.

DRAFT

With the addition of background traffic growth and site-generated traffic through Year 2027, the study intersections are expected to operate at LOS D or better with the recommended improvements. The roadway network internal to Compass Business Park is expected to operate with limited delay and queues.

The eastbound approach of Schweitzer Road at IL 53 is projected to operate at LOS E during the evening peak hour. As previously noted in the discussion of Existing (2020) Full Buildout conditions, the projected delay is not unusual for a minor-leg stop-controlled roadway at its intersection with an arterial such as IL 53.

As shown in the table, the intersection of EIP Road/Arsenal Road is projected to operate at an overall LOS D or better during the peak hours. During both the morning and evening peak hours, the westbound and southbound left-turn movements are projected to operate at LOS E or LOS F. In the evening peak hour, the eastbound left-turn movement is projected to operate at LOS E with a 95<sup>th</sup> percentile queue of approximately 150 feet (6 vehicles). The delay and queues estimated for this movement are attributable to background traffic growth; site-generated traffic is not expected to contribute to the eastbound left-turn movement.

As compared to Year 2024 Phase A conditions, decreased delay is projected for the eastbound and westbound left-turn movements at US 52/Manhattan Road/Foxford Drive. This is attributable to the additional green time allocated to the minor leg approaches in order to accommodate the higher traffic volumes estimated with background traffic growth.

#### Signal Warrant Analysis – Year 2024 Phase A and Year 2027 Phase B

In addition to the turn lane warrants, signal warrant analyses were performed according to the *MUTCD* criteria (Table 3.7). To perform the signal warrant analyses for the Year 2024 Phase A and Year 2027 Phase B scenarios, CMAP growth rates were applied to the existing 12-hour count data described under *Section 2.3 Data Collection*. Site-generated traffic volumes were then added using IDOT-approved methodology previously described under *Section 3.3 Future Capacity Analyses*. The resulting volumes were compared to the *MUTCD* criteria for Warrant 1 (Table 3.7). In order to satisfy the warrant, traffic volumes must meet the *MUTCD* criteria for at least eight hours on an average day.

**Table 4.3** reports the signal warrant analyses conducted for the Year 2024 Phase A and Year 2027 Phase B traffic conditions. The detailed signal warrant worksheets are provided in the appendix.

**Table 4.3. Signal Warrant Analyses – Year 2024 Phase A and Year 2027 Phase B**

Intersection/Scenario	Warrant Satisfied
<b>EIP Road / Mississippi Avenue</b>	
Year 2024 Phase A	---
Year 2027 Phase B	---
<b>EIP Road / Walter Strawn Drive</b>	
Year 2024 Phase A	---
Year 2027 Phase B	Warrant 1B
<b>Manhattan Road / Rowell Road</b>	
Year 2024 Phase A	---
Year 2027 Phase B	---
<b>Manhattan Road / Ridge Road</b>	
Year 2024 Phase A	---
Year 2027 Phase B	---
<b>Manhattan Road / Gougar Road</b>	
Year 2050 No-Build	---
Year 2050 Build	---
<b>US 52 / North Street</b>	
Year 2024 Phase A	---
Year 2027 Phase B	---
<b>US 52 / Smith Street</b>	
Year 2024 Phase A	---
Year 2027 Phase B	---
<b>US 52 / Gougar Road</b>	
Year 2024 Phase A	---
Year 2027 Phase B	---

As shown in Table 4.3, a traffic signal is warranted at EIP Road/Walter Strawn Drive under the Year 2027 Phase B scenario. For purposes of the analysis of Year 2027 Phase B conditions, the traffic signal was assumed to be a “free” running stand-alone traffic signal and not part of a coordinated signal system. In order to evaluate traffic conditions and reflect the responsive nature of the signal cycles, the signal was optimized with an assumed minimum cycle length of 90 seconds. Per IDOT requirements, RTOR movements were not included in the analysis.

## 5. FUTURE CONDITIONS – YEAR 2050

This section of the report evaluates the Year 2050 design horizon. As it is anticipated that full buildout of Compass Park may take as many as 30 years, the analysis of the Year 2050 design horizon is intended to provide a planning-level review of potential infrastructure impacts resulting from the proposed development as well as significant regional growth.

For purposes of this analysis, a Year 2050 No-Build scenario was developed to assess future traffic operation without the proposed development and isolate potential infrastructure improvements attributable to overall background growth. Based on the 30-year forecast, Year 2050 traffic volumes suggest significant growth rates for some area roadways. As phases of Compass Business Park are completed, actual background traffic volumes are realized, and traffic patterns evolve, additional analyses of future traffic conditions are anticipated. Consistent with the development phasing plan, a review of traffic conditions every three years or prior to the start of the next construction phase, is recommended.

### 5.1. Background Traffic Growth

Consistent with the analyses of Year 2024 Phase A and Year 2027 Phase B, Year 2050 No-Build traffic projections were assumed to be comprised of two parts: overall background growth (applied in the form of an annual growth rate) and development-specific traffic projections for approved development in the Village of Elwood.

Background traffic volumes were estimated using data from CMAP. Based on information received from CMAP, annual traffic growth on area roadways is projected to occur at the rates identified in **Table 5.1**. These growth rates reflect future construction of Houbolt bridge, which would provide an alternate route for trucks from I-80 over the Des Plaines River and into the CenterPoint Intermodal Center. An official letter from CMAP documenting the projected Year 2050 traffic volume on the study roadways is included in the appendix. It should be noted that portions of the data referenced by CMAP appear to be dated, with some existing volumes and future projections below existing observations. While standard methodology was applied to develop the annual growth rates shown below, when applied to observed traffic volumes, the resulting design hour traffic is may be unrealistically elevated in some cases.

Table 5.1. Future Growth Rates

Roadway Segment	Growth Rate
Arsenal Road west of EIP Road / Baseline Road	3.9%
Arsenal Road east of EIP Road / Baseline Road	4.5%
Manhattan Road west of IL 53	3.7%
Manhattan Road between IL 53 and US 52	3.8%
Breen Road between IL 53 and Ridge Road	7.4%
Schweitzer Road west of IL Route 53	4.4%
Schweitzer Road between IL Route 53 and Ridge Road	4.0%

Table 5.1. Future Growth Rates (continued)

Roadway Segment	Growth Rate
Schweitzer between Ridge Road and Cherry Hill Road	3.9%
Smith Road east of US 52	4.0%
Coldwater Road north of Hoff Road	4.5%
Rowell Road north of Manhattan Road	7.3%
Rowell Road south of Manhattan Road	5.6%
Ridge Road between Hoff Road and Schweitzer Road	5.6%
Gougar Road north of Manhattan Road	1.9%
Gougar Road between Hoff Road and Manhattan Road	2.7%
Mississippi Avenue east of EIP Road / Baseline Road	1.6%
Mississippi Avenue west of IL 53	1.4%
Hoff Road west of IL 53	4.7%
Hoff Road between IL 53 and US 52	3.0%
Walter Strawn Drive between EIP Road and Deer Run	2.6%
EIP Road north of Arsenal Road	1.2%
EIP Road south of Arsenal Road	0.9%
River Road west of IL 53	1.8%
IL 53 north of Manhattan Road	1.9%
IL 53 between Manhattan Road and Hoff Road	2.6%
IL 53 between Hoff Road and River Road	2.4%
IL 53 south of River Road	1.4%
US 52 north of Smith Road	1.1%
US 52 between Manhattan Road and Smith Road	1.4%
US 52 south of Manhattan Road	2.0%

In addition to regional traffic growth, traffic projected for development previously approved in the Village of Elwood was added to the roadway network. Located near the southeast quadrant of the intersection of IL 53/Mississippi Avenue, the approved development totals approximately 2,020,505 square feet of industrial warehouse/distribution use (Buildings B-F). This development is not part of the proposed Compass Business Park; and therefore, was included with background traffic. Site trips were estimated for the approved development using the trip generation rates presented in Table 3.3. These trips were assigned through the study area based on an estimated trip distribution and were added to the background traffic volumes. A summary of the trip generation and assignment assumed for the approved industrial development in Elwood is provided in the appendix. Year 2050 No-Build traffic projections, inclusive of background growth and area development traffic, are presented in **Exhibit 19A** through **Exhibit 19C**.





**LEGEND**

**xx**

Weekday AM Peak  
(6:15 – 7:15am)

**(xx)**

Weekday PM Peak  
(3:00 – 4:00pm)

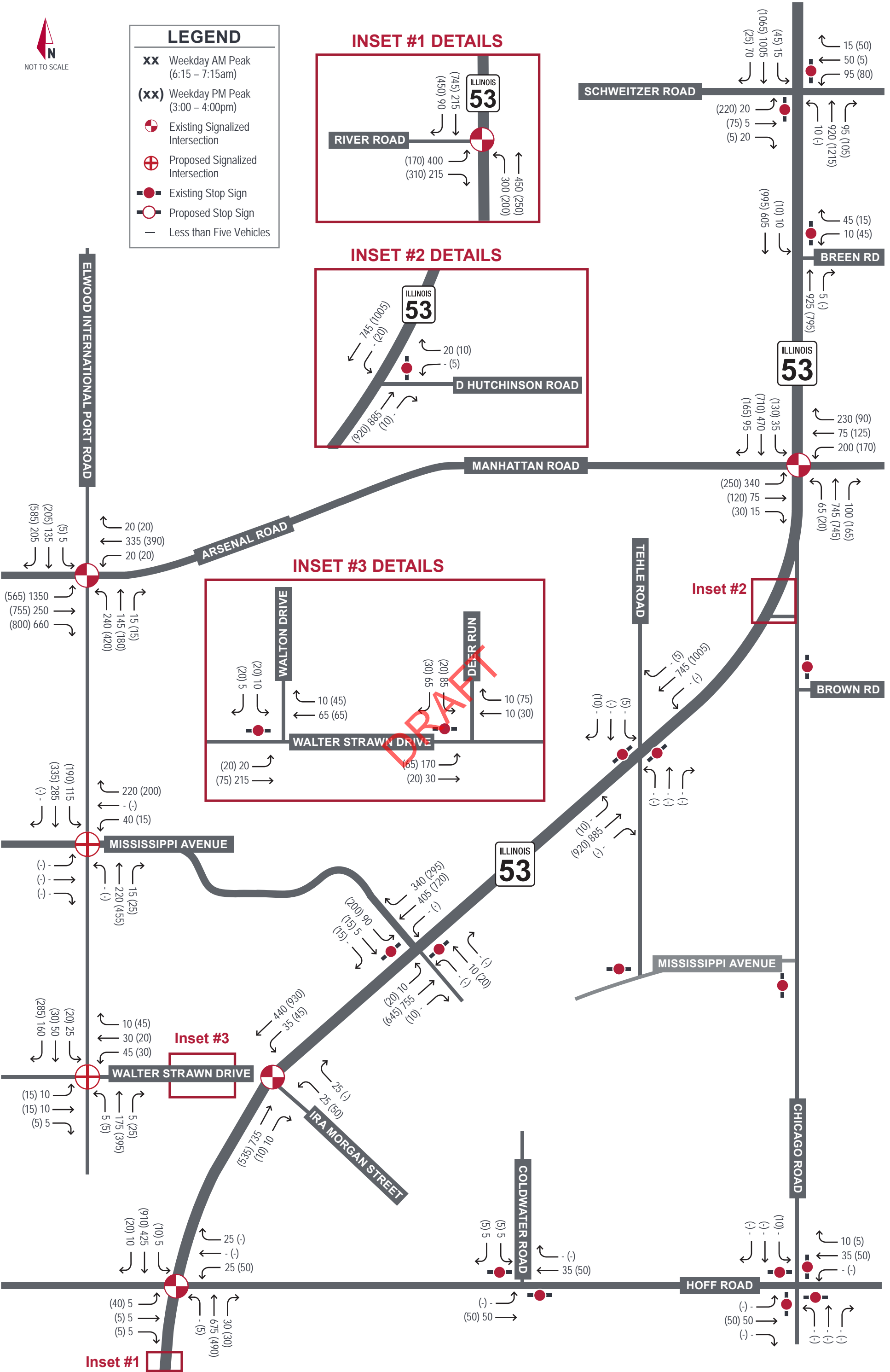
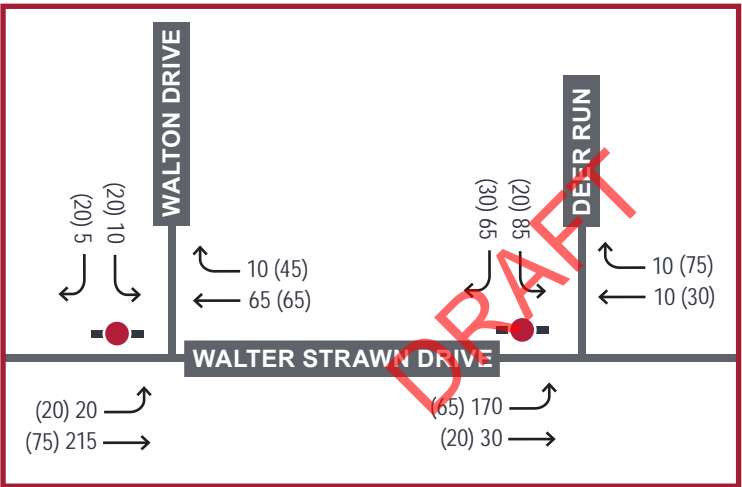
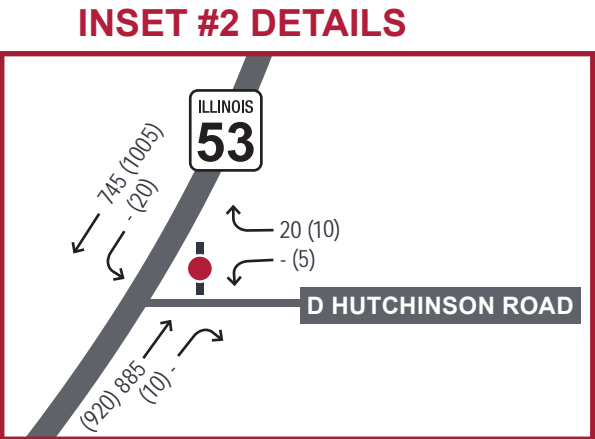
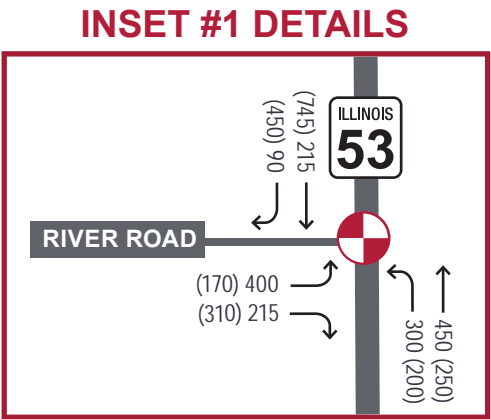
Existing Signalized Intersection

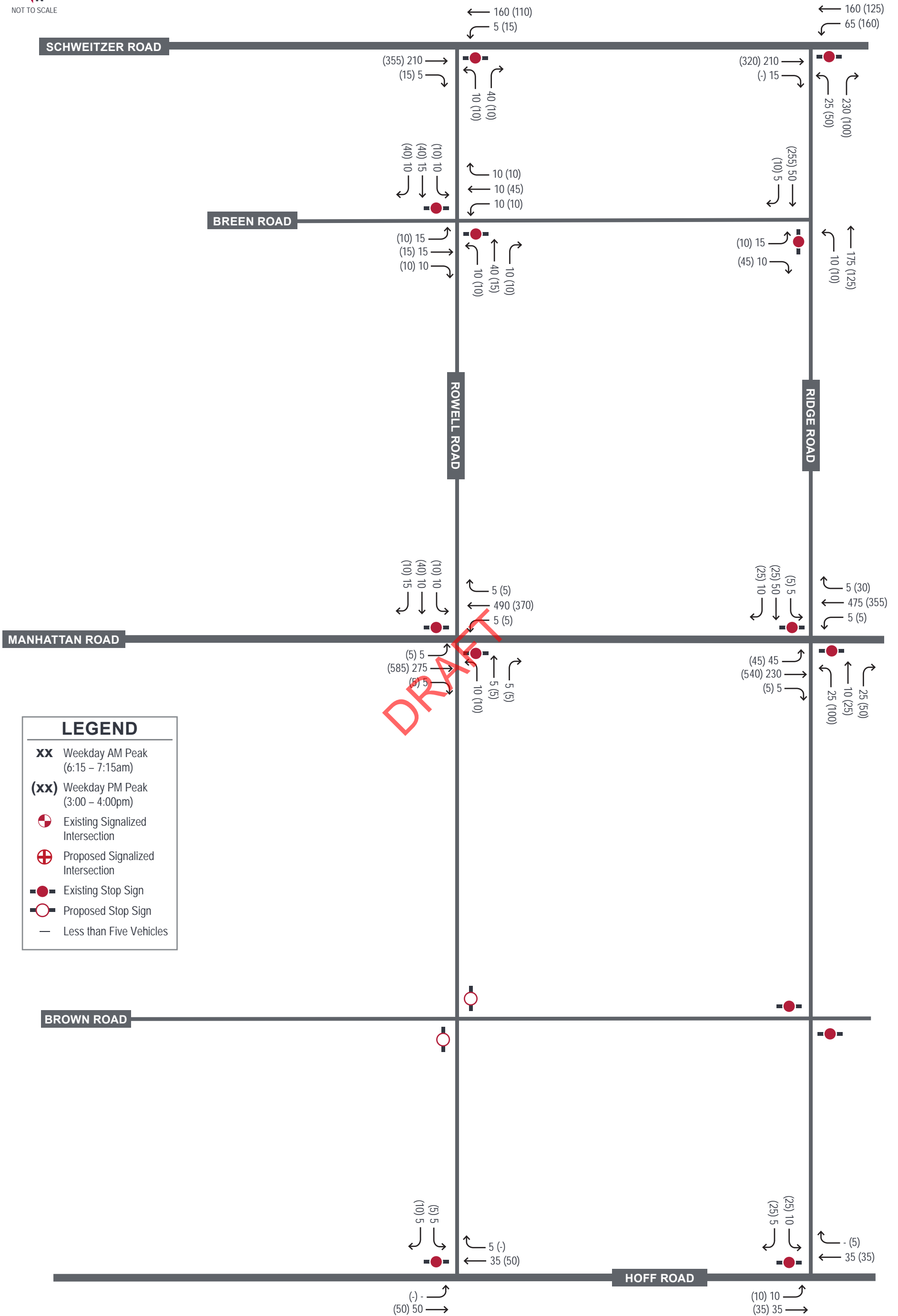
Proposed Signalized Intersection

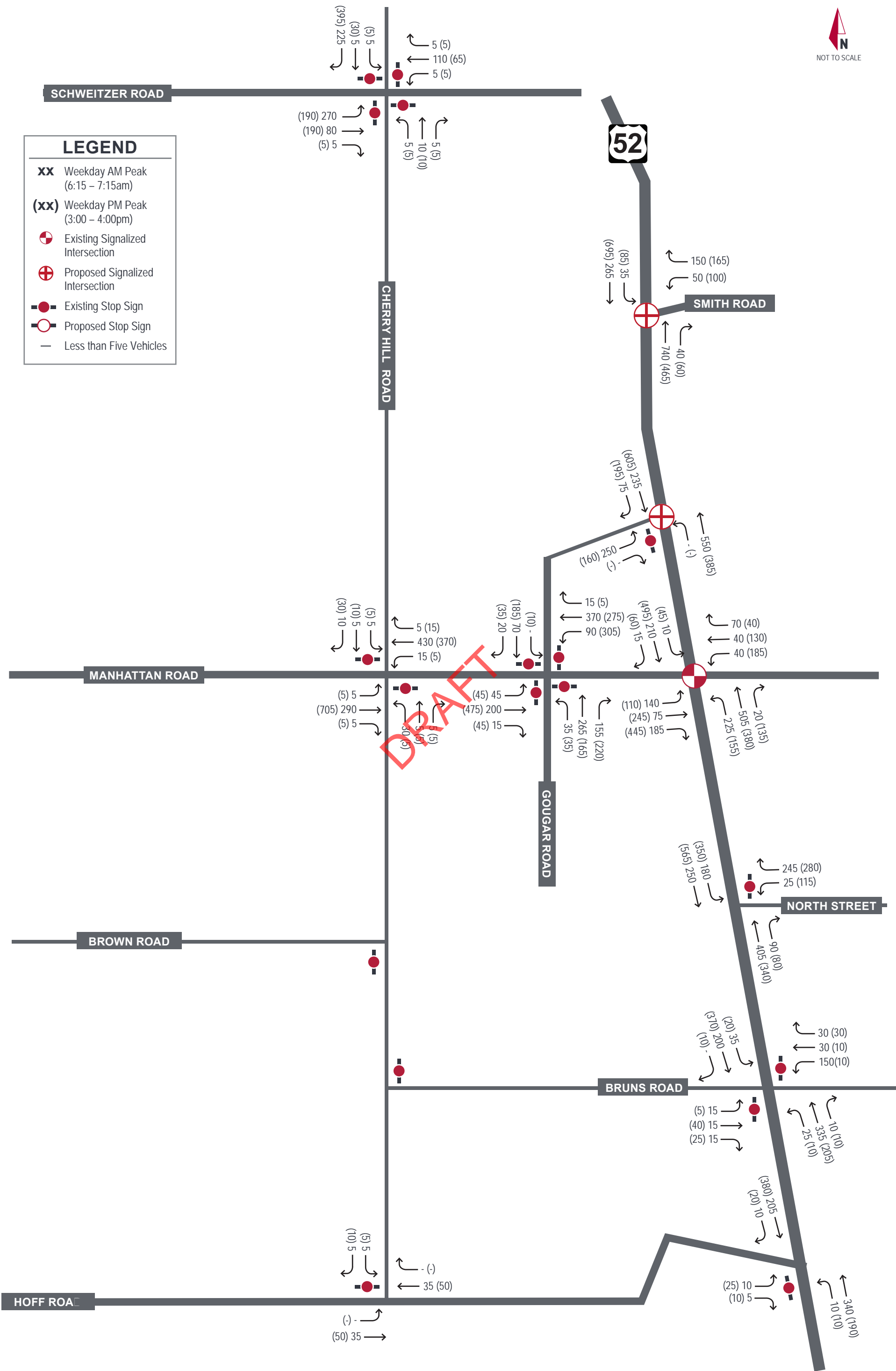
Existing Stop Sign

Proposed Stop Sign

Less than Five Vehicles







## 5.2. Future Capacity Analyses

In order to evaluate design horizon Year 2050 traffic conditions, a future no-build scenario was developed to assess future traffic operation without the proposed development and isolate potential infrastructure improvements attributable to overall background growth.

Based on the Year 2050 No-Build traffic projections, it is anticipated that infrastructure improvements may be necessary to support overall growth in the area. Signal warrants were evaluated based on *MUTCD* criteria (page 153). Turn lane warrants and dimensions were evaluated at the study intersections using volume criteria in the Will County Department of Highways *Permit Regulations and Access Control Regulations* and the IDOT *Bureau of Design and Environment (BDE) Manual*. These improvements were identified as warranted based on background traffic growth and were assumed to be in place by Year 2050. For purposes of this analysis, these improvements were assumed to be constructed by others. A summary of these improvements is provided below.

- **IL 53 / Schweitzer Road**
  - Install an exclusive right-turn lane on the north and south legs. The turn lanes should provide 265 feet of storage with a 265-foot taper.
- **IL 53 / River Road**
  - Install dual left-turn lanes on the west leg.
  - Provide dual right-turn lanes on the north leg.
- **EIP Road / Arsenal Road**
  - Provide dual right-turn lanes on the west leg. The turn lanes should be channelized and controlled by the signal.
  - Construct an additional southbound through lane to provide adequate intersection capacity. The south leg of the intersection currently provides two receiving lanes; therefore, additional widening on the south leg is not required.
  - Add an additional northbound through lane to provide adequate intersection capacity. The north leg of the intersection currently provides two receiving lanes; therefore, additional widening is not needed.
  - Based on the anticipated background traffic growth and the high volume of truck traffic at this intersection, alternate improvements such as a flyover may need to be considered.
- **EIP Road / Mississippi Avenue**
  - Install a traffic signal per MUTCD Warrant 1, Condition B (*Signal Warrant Analyses*) and IDOT design criteria.
    - For purposes of this analysis, the new signal was assumed to have a minimum cycle length of 90 seconds, and splits were optimized. Further, the signal was assumed to operate on a coordinated system with the signal recommended for the intersection of EIP Road/Walter Strawn Drive (see following page).
  - Restripe the existing pavement to provide an exclusive right-turn lane on the east leg. The turn lane should provide 215 feet of storage with a 220-foot taper.

- **EIP Road / Walter Strawn Drive**
  - Install a traffic signal per MUTCD Warrant 1, Condition B (*Signal Warrant Analyses*) and IDOT design criteria. Based on proximity to the at-grade railroad crossing, coordination with BNSF is anticipated.
    - For purposes of this analysis, the new signal was assumed to have a minimum cycle length of 90 seconds, and splits were optimized. Further, the signal was assumed to operate on a coordinated system with the signal recommended for the intersection of EIP Road/Mississippi Avenue (see previous page).
- **IL 53 / Manhattan Road**
  - Install dual left-turn lanes on the east and west legs of Manhattan Road. The turn lanes should provide 265 feet of storage with a 265-foot taper. Widening along Manhattan Road would be required in order to provide an additional receiving lane.
  - Provide an exclusive right-turn lane on the east leg of Manhattan Road. The turn lane should provide 265 feet of storage with a 265-foot taper.
  - Install dedicated right turn lanes on the north and south legs of IL 53. The turn lanes should provide 265 feet of storage with a 265-foot taper.
- **Gougar Road / Manhattan Road**
  - Install an exclusive right-turn lane on the south leg of Gougar Road. The turn lane should provide 265 feet of storage with a 265-foot taper.
- **US 52 / Smith Street**
  - Install a traffic signal per MUTCD Warrant 1, Condition 1B and Combination 1A/1B (*Signal Warrant Analyses*) and IDOT design criteria.
    - For purposes of this analysis, the new signal was assumed to have a minimum cycle length of 90 seconds, and splits were optimized.
  - Provide an exclusive right-turn lane on the east leg. The turn lane should provide 145 feet of storage with a 175-foot taper.
- **US 52 / Gougar Road**
  - Install a traffic signal per MUTCD Warrant 1, Condition 1B and Combination 1A/1B (*Signal Warrant Analyses*) and IDOT design criteria.
    - For purposes of this analysis, the new signal was assumed to have a minimum cycle length of 90 seconds, and splits were optimized.
- **US 52 / Manhattan Road / Foxford Drive**
  - Install a dedicated right-turn lane on the west leg. The turn lane should provide 145 feet of storage with a 175-foot taper.
  - Modify the striping on the east leg to provide a dedicated left-turn lane and a shared thru/right-turn lane. The dedicated left-turn lane should provide 115 feet of storage with a 135-foot taper.
- **US 52 / North Street**
  - Complete additional analysis of turning movements in order to verify the geometry will support truck traffic and explore restriping the existing shoulder on North Street to provide an exclusive right-turn lane. Based on the spacing distance from the at-grade rail crossing, the turn lane should provide 125 feet of storage with a 105-foot taper.

Given the warranted traffic signals at US 52/Smith Street and US 52/Gougar Road, and the projected north-south/northeast-southwest traffic volumes, signal timings across the US 52 corridor were assumed to operate on a coordinated system in Synchro for use in capacity analysis of future no-build and build conditions. With these background improvements assumed to be in place by 2050, Year 2050 No-Build traffic operation is projected as shown in **Table 5.2**. The capacity analysis results are based on Synchro's HCM 6<sup>th</sup> Edition reports with two exceptions. In order to quantify the benefits of the recommended improvements at EIP Road/Mississippi Avenue and EIP Road/Walter Strawn Drive, the results presented for these intersections are based on the Synchro Lanes, Volumes, Timings report.

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Table 5.2. Year 2050 No-Build Levels of Service

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
IL 53 / Schweitzer Road <span>△</span>				
Eastbound	22	C	>120	F
Westbound	44	E	>120	F
Northbound (Left)	11	B	11	B
Southbound (Left)	11	B	17	C
IL 53 / Breen Road <span>△</span>				
Westbound	15-	B	22	C
Southbound (Left)	11	B	10-	A
IL 53 / Manhattan Road <span>★</span>				
Eastbound	27	C	33	C
Westbound	41	D <sup>1</sup>	32	C
Northbound	15	B	15	B
Southbound	15	B	12	B
<i>Intersection</i>	<i>22</i>	<i>C</i>	<i>19</i>	<i>B</i>
IL 53 / D Hutchinson Road <span>△</span>				
Westbound	13	C	17	C
Southbound (Left)	10+	B	12	B
IL 53 / Tehle Road <span>△</span>				
Eastbound	19	C	20	C
Westbound	20	C	24	C
Northbound (Left)	10-	A	12	B
Southbound (Left)	10+	B	11	B
IL 53 / Mississippi Road <span>△</span>				
Eastbound	20	C	80	F
Westbound	22	C	32	D
Northbound (Left)	13	B	12	B
Southbound (Left)	10-	A	10-	A
IL 53 / IRA Morgan Street <span>★</span>				
Westbound	21	C	26	C
Northbound	6	A	8	A
Southbound	3	A	5	A
<i>Intersection</i>	<i>5</i>	<i>A</i>	<i>8</i>	<i>A</i>

★ – Signalized Intersection    ▲ – All-Way Stop-Controlled Intersection    △ – Minor-Leg Stop-Controlled Intersection

<sup>1</sup>Right-turn movement operates at LOS E.

<sup>2</sup>Left-turn movement operates at LOS F.

<sup>3</sup>Left-turn movement operates at LOS E.

<sup>4</sup>Left-turn and thru movements operates at LOS F.

<sup>5</sup>Left-turn operates at LOS F and thru movement operate at LOS E.



Table 5.2. Year 2050 No-Build Levels of Service (continued)

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
IL 53 / Hoff Road / Abraham Lincoln National Cemetery Access Driveway *				
Eastbound	33	C	38	D
Westbound	29	C	38	D
Northbound	11	B <sup>3</sup>	12	B <sup>2</sup>
Southbound	11	B <sup>2</sup>	13	B <sup>2</sup>
Intersection	12	B	14	B
IL 53 / River Road *				
Eastbound	29	C	27	C
Northbound	8	A	17	B
Southbound	10+	B	19	B
Intersection	16	B	21	C
EIP Road / Arsenal Road *				
Eastbound	44	D <sup>2</sup>	68	E <sup>2</sup>
Westbound	>120	F	94	F
Northbound	97	F	79	E <sup>2</sup>
Southbound	40	D <sup>4</sup>	42	D <sup>5</sup>
Intersection	62	E	68	E
EIP Road / Mississippi Avenue *				
Eastbound	33	C	35-	C
Westbound	38	D	41	D
Northbound	13	B	16	B
Southbound	14	B	15	B
Intersection	21	C	20+	C
EIP Road / Walter Strawn Drive *				
Eastbound	34	C	36	D
Westbound	40	D	48	D
Northbound	8	A	12	B
Southbound	6	A	8	A
Intersection	14	B	16	B
Walter Strawn Drive / Walton Drive △				
Eastbound (Left)	8	A	9	A
Southbound	11	B	10+	B

\* – Signalized Intersection    ▲ – All-Way Stop-Controlled Intersection    △ – Minor-Leg Stop-Controlled Intersection

<sup>1</sup>Right-turn movement operates at LOS E.

<sup>2</sup>Left-turn movement operates at LOS F.

<sup>3</sup>Left-turn movement operates at LOS E.

<sup>4</sup>Left-turn and thru movements operate at LOS F.

<sup>5</sup>Left-turn operates at LOS F and thru movement operates at LOS E.

Table 5.2. Year 2050 No-Build Levels of Service (continued)

Intersection		Weekday AM Peak		Weekday PM Peak	
		Delay (s/veh)	LOS	Delay (s/veh)	LOS
Walter Strawn Drive / Deer Run	△				
Eastbound (Left)		8	A	8	A
Southbound		11	B	9	A
Schweitzer Road / Cherry Hill Road	△				
Eastbound (Left)		8	A	8	A
Westbound (Left)		7	A	8	A
Northbound		20	C	20	C
Southbound		11	B	12	B
Breen Road / Rowell Road	△				
Eastbound (Left)		7	A	7	A
Westbound (Left)		7	A	7	A
Northbound		10-	A	10-	A
Southbound		9	A	10-	A
Breen Road / Ridge Road	△				
Eastbound		10-	A	10+	B
Northbound (Left)		7	A	8	A
Manhattan Road / Rowell Road	△				
Eastbound		9	A	8	A
Westbound		8	A	9	A
Northbound		17	C	24	C
Southbound		17	C	25-	C
Manhattan Road / Ridge Road	△				
Eastbound (Left)		9	A	8	A
Westbound (Left)		9	A	9	A
Northbound		18	C	48	E
Southbound		21	C	22	C
Manhattan Road / Cherry Hill Road	△				
Eastbound		8	A	8	A
Westbound		9	A	9	A
Northbound		21	C	24	C
Southbound		15+	C	17	C
Cherry Hill Road / Sweedler Road	△				
Westbound		9	A	9	A
Southbound (Left)		7	A	7	A

★ – Signalized Intersection    ▲ – All-Way Stop-Controlled Intersection    △ – Minor-Leg Stop-Controlled Intersection

<sup>1</sup>Right-turn movement operates at LOS E.

<sup>2</sup>Left-turn movement operates at LOS F.

<sup>3</sup>Left-turn movement operates at LOS E.

<sup>4</sup>Left-turn and thru movements operates at LOS F.

<sup>5</sup>Left-turn operates at LOS F and thru movement operate at LOS E.

Table 5.2. Year 2050 No-Build Levels of Service (continued)

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Cherry Hill Road / Bruns Road $\triangle$				
Westbound	8	A	8	A
Southbound (Left)	8	A	8	A
Schweitzer Road / Rowell Road $\triangle$				
Westbound (Left)	8	A	8	A
Northbound	10-	A	11	B
Schweitzer Road / Ridge Road $\triangle$				
Westbound (Left)	8	A	9	A
Northbound	12	B	14	B
Manhattan Road / Gougar Road $\blacktriangle$				
Eastbound	16	C	>120	F
Westbound	31	D	38	E
Northbound	19	C	22	C
Southbound	14	B	30	D
Intersection	23	C	83	F
Gougar Road / Sweedler Road $\blacktriangle$				
Eastbound	7	A	7	A
Westbound	7	A	7	A
Northbound	7	A	7	A
Southbound	7	A	7	A
Intersection	7	A	7	A
Gougar Road / Bruns Road $\triangle$				
Eastbound (Left)	8	A	8	A
Westbound (Left)	7	A	7	A
Northbound	9	A	9	A
Southbound	9	A	9	A
Brown Road / Ridge Road $\triangle$				
Eastbound	7	A	7	A
Westbound	7	A	7	A
Northbound	9	A	11	B
Southbound	9	A	10+	B

★ – Signalized Intersection     $\blacktriangle$  – All-Way Stop-Controlled Intersection     $\triangle$  – Minor-Leg Stop-Controlled Intersection

<sup>1</sup>Right-turn movement operates at LOS E.

<sup>2</sup>Left-turn movement operates at LOS F.

<sup>3</sup>Left-turn movement operates at LOS E.

<sup>4</sup>Left-turn and thru movements operates at LOS F.

<sup>5</sup>Left-turn operates at LOS F and thru movement operate at LOS E.

Table 5.2. Year 2050 No-Build Levels of Service (continued)

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Hoff Road / Coldwater Road $\triangle$				
Eastbound (Left)	7	A	7	A
Southbound	9	A	9	A
Hoff Road / Chicago Road $\blacktriangle$				
Eastbound	7	A	7	A
Westbound	7	A	7	A
Northbound	7	A	7	A
Southbound	7	A	9	A
<i>Intersection</i>	7	A	8	A
Hoff Road / Rowell Road $\triangle$				
Eastbound (Left)	7	A	7	A
Southbound	9	A	9	A
Hoff Road / Ridge Road $\triangle$				
Eastbound (Left)	7	A	7	A
Southbound	9	A	9	A
Hoff Road / Cherry Hill Road $\triangle$				
Eastbound (Left)	8	A	8	A
Southbound	9	A	9	A
Hoff Road / Gougar Road $\triangle$				
Eastbound (Left)	7	A	7	A
Westbound (Left)	7	A	7	A
Northbound	9	A	9	A
Southbound	9	A	9	A
US 52 / Smith Road $\star$				
Westbound	49	D	46	D
Northbound	7	A	1	A
Southbound	5	A	8	A
<i>Intersection</i>	13	B	12	B
US 52 / Gougar Road $\star$				
Eastbound	46	D	52	D
Northbound	7	A	<1	A
Southbound	<1	A	2	A
<i>Intersection</i>	14	B	7	A

$\star$  – Signalized Intersection     $\blacktriangle$  – All-Way Stop-Controlled Intersection     $\triangle$  – Minor-Leg Stop-Controlled Intersection

<sup>1</sup>Right-turn movement operates at LOS E.

<sup>2</sup>Left-turn movement operates at LOS F.

<sup>3</sup>Left-turn movement operates at LOS E.

<sup>4</sup>Left-turn and thru movements operates at LOS F.

<sup>5</sup>Left-turn operates at LOS F and thru movement operate at LOS E.

Table 5.2. Year 2050 No-Build Levels of Service (continued)

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
US 52 / Manhattan Road / Foxford Drive ★				
Eastbound	40	D	34	C
Westbound	25	C	46	D
Northbound	21	C	10+	B
Southbound	46	D	1	A
<i>Intersection</i>	<i>34</i>	<i>C</i>	<i>19</i>	<i>B</i>
US 52 / North Street △				
Westbound	18	C	>120	F
Southbound (Left)	9	A	10-	A
US 52 / Bruns Road △				
Eastbound	15+	C	15+	C
Westbound	15+	C	13	B
Northbound (Left)	8	A	8	A
Southbound (Left)	8	A	8	A
US 52 / Hoff Road △				
Eastbound	12	B	13	B
Northbound (Left)	8	A	8	A

★ – Signalized Intersection    ▲ – All-Way Stop-Controlled Intersection    △ – Minor-Leg Stop-Controlled Intersection

<sup>1</sup>Right-turn movement operates at LOS E.

<sup>2</sup>Left-turn movement operates at LOS F.

<sup>3</sup>Left-turn movement operates at LOS E.

<sup>4</sup>Left-turn and thru movements operates at LOS F.

<sup>5</sup>Left-turn operates at LOS F and thru movement operate at LOS E.

As shown, traffic operation is expected to be generally satisfactory under Year 2050 No-Build condition. Increased delay is projected for most study intersections; however, with the improvements identified to mitigate background traffic growth, the roadway network is projected to operate within acceptable limits with a few exceptions.

At the intersection of IL 53/Schweitzer Road, the westbound approach is projected to operate at LOS E during the morning peak hour, and both the eastbound and westbound approaches are projected to operate at LOS F during the evening peak hour. As previously noted, the projected delay is not unusual for a minor-leg stop-controlled roadway at its intersection with an arterial such as IL 53. Similar conditions are projected for the intersection of US 52/North Street, where the westbound approach is expected to operate at LOS F during the evening peak hour.

The intersection of IL 53/Manhattan Road is projected to operate at an overall LOS C or better during the peak hours. However, during the morning peak hour the westbound right-turn movement is projected to operate at LOS E. The results are based on a conservative analysis as RTOR movements are not included. Based on the capacity analysis, the projected 95<sup>th</sup> percentile queue is approximately 50 feet (2 vehicles) during the morning peak hour.

At the intersection of IL 53/Mississippi Road, the eastbound approach is projected to operate at LOS F during the evening peak hour. Again, the delay is not unusual for a minor-leg stop-controlled roadway at its intersection with an arterial such as IL 53. According to the capacity analysis, the projected 95<sup>th</sup> percentile queue for the eastbound left-turn movement is 200 feet (8 vehicles), which would exceed the existing storage lane. According to data supplied by CMAP, traffic volumes on the west leg of Mississippi Avenue at IL 53 are projected to increase by nearly 2 percent per year through Year 2050. This represents a significant increase in traffic. As background traffic growth is realized and development is considered in the vicinity of this intersection, additional analyses is recommended.

Generally consistent with the analysis of existing conditions and the previous build scenarios, the northbound and southbound left-turn movements at IL 53/Hoff Road/Abraham Lincoln National Cemetery Access Driveway are projected to operate at LOS F during both peak hours. The projected delay is a function of the relatively limited volume of traffic on these movements, and the priority given to north-south through traffic on IL 53. The 95<sup>th</sup> percentile queues projected for both the northbound and southbound left-turn movements are expected to be accommodated within the existing storage lanes; queue spillback to IL 53 is not anticipated.

As shown in the table, the intersection of EIP Road/Arsenal Road is projected to operate at an overall LOS E during the peak hours. With the addition of background traffic growth, significant increases in delay are anticipated for each approach. Due to the anticipated background traffic growth and the high volume of truck traffic at this intersection, alternate improvements such as a flyover may need to be considered.

Based on the background growth data received from CMAP, the intersections of Manhattan Road/Ridge Road and Manhattan Road/Gougar Road are expected to experience high delay on at least one approach in the evening peak hour. According to CMAP, traffic on Manhattan Road is projected to increase by approximately 4 percent per year through Year 2050 (or roughly 208 percent over 30 years). This represents a significant increase in traffic. As background traffic growth is realized along the Manhattan Road corridor, additional analyses is recommended.

#### Year 2050 Build Levels of Service

In order to evaluate Year 2050 Build traffic conditions, site-generated trips estimated at full buildout of Compass Business Park (Exhibit 5A through Exhibit 5C) were added to the Year 2050 No-Build traffic projections (Exhibit 18A through Exhibit 18C). The projected traffic volumes for the Year 2050 Build scenario are illustrated in **Exhibit 20A** through **Exhibit 20C**.

Based on the analysis of Year 2050 Build traffic conditions, several improvements were identified to facilitate site access and mitigate traffic attributable to the proposed development. These improvements were identified in addition to those assumed for the Year 2050 No-Build scenario. Turn lane warrants and dimensions were evaluated at the study intersections using volume criteria in the Will County Department of Highways *Permit Regulations and Access Control Regulations* and the IDOT *BDE Manual*. A summary of the recommended improvements is provided below. A summary of the improvements identified for both the Year 2050 No-Build and Year 2050 Build scenarios is presented in **Exhibit 21A** through **Exhibit 21F**.

- **EIP Road / Walter Strawn Drive**
  - Add a free-flow right-turn lane on the east leg. The turn lane should provide 215 feet of storage with a 220-foot taper.
  - Provide an additional northbound through lane on EIP Road from Walter Strawn Drive to Mississippi Avenue.
- **IL 53 / Breen Road**
  - Install an exclusive left-turn lane on the north leg of IL 53. The turn lane should provide 265 feet of storage with a 265-foot taper.
- **IL 53 / Manhattan Road**
  - Remove the existing traffic signal and install a multi-lane roundabout in order to enhance safety conditions and facilitate traffic movements at this intersection.
- **Rowell Road / Manhattan Road**
  - Install a multi-lane roundabout in order to enhance safety conditions, facilitate access to Compass Business Park, and support through traffic along the Manhattan Road corridor.
- **Ridge Road / Manhattan Road**
  - Install a multi-lane roundabout in order to enhance safety conditions, facilitate access to Compass Business Park, and support through traffic along the Manhattan Road corridor.
- **Cherry Hill Road / Manhattan Road**
  - Install a single-lane roundabout in order to enhance safety conditions, facilitate access to Compass Business Park, and support through traffic along the Manhattan Road corridor.
- **Gougar Road / Manhattan Road**
  - Install a multi-lane roundabout in order to enhance safety conditions, facilitate access to Compass Business Park, facilitate turning movements to and from Gougar Road, and support through traffic along the Manhattan Road corridor.
- **Bridge Road / Mississippi Avenue / Coldwater Road**
  - Install a single-lane roundabout in order to facilitate both car and truck access to Compass Business Park. The roundabout should be designed to accommodate truck movements.
- **Chicago Road / Mississippi Avenue**
  - Install a single-lane roundabout in order to facilitate both car and truck access to Compass Business Park. The roundabout should be designed to accommodate truck movements.
- **Rowell Road / Mississippi Avenue**
  - Install a single-lane roundabout in order to facilitate both car and truck access to Compass Business Park. The roundabout should be designed to accommodate truck movements.

Minor-leg stop-control was assumed to be posted for outbound traffic at Access 1 through Access 8. The intersections of Brown Road/Access 3 and Rowell Road/Access 5 were assumed to operate under all-way stop-control. Minor-leg stop-control was assumed to be posted on Brown Road at its intersections with Rowell Road and Ridge Road.



With these improvements in place, Year 2050 Build traffic operation is projected as shown in **Table 5.3**. Where a multilane roundabout is recommended, SIDRA intersection software was used to evaluate future traffic conditions; and therefore, the results are based on SIDRA reports. For all other intersections, the results of the capacity analysis are based on Synchro's HCM 6<sup>th</sup> Edition reports with two exceptions. In order to quantify the benefits of the right-turn lane on the east leg of Mississippi Avenue at EIP Road (identified under the Year 2050 No-Build scenario) and the free-flow right-turn lane on Walter Strawn Drive at EIP Road, the results presented for these intersections are based on the Synchro Lanes, Volumes, Timings report.

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**LEGEND**

**xx**

Weekday AM Peak  
(6:15 – 7:15am)

**(xx)**

Weekday PM Peak  
(3:00 – 4:00pm)

Existing Signalized Intersection

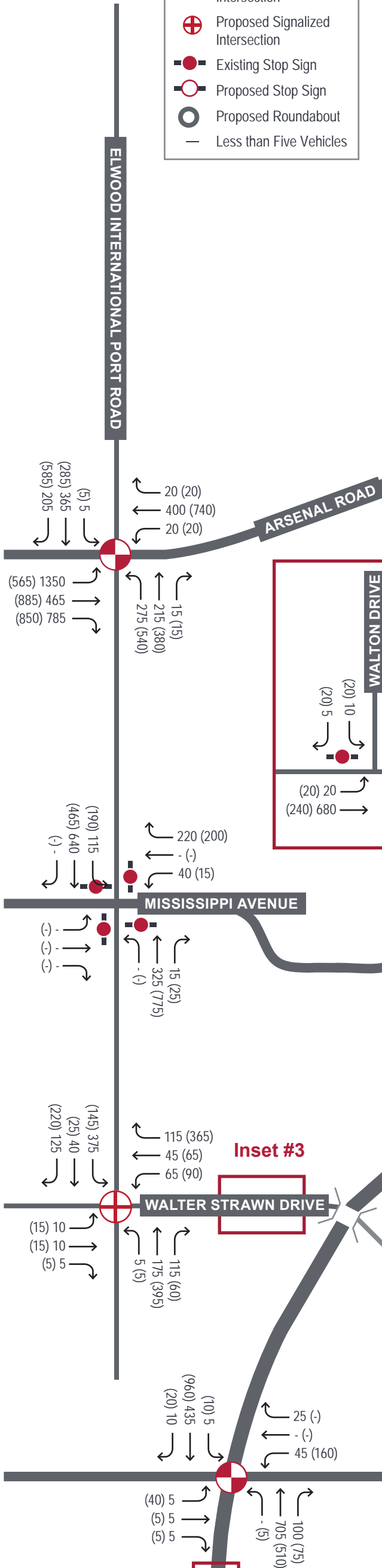
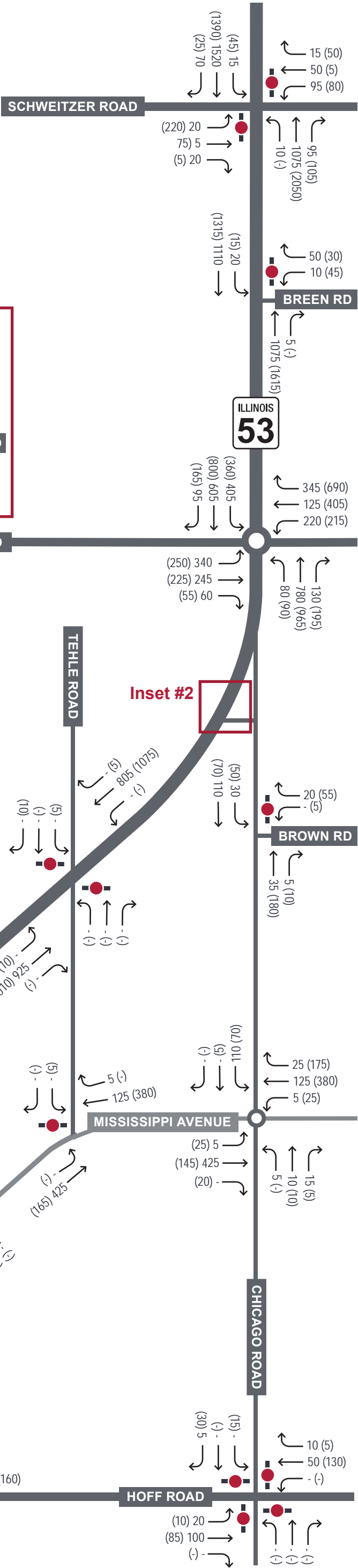
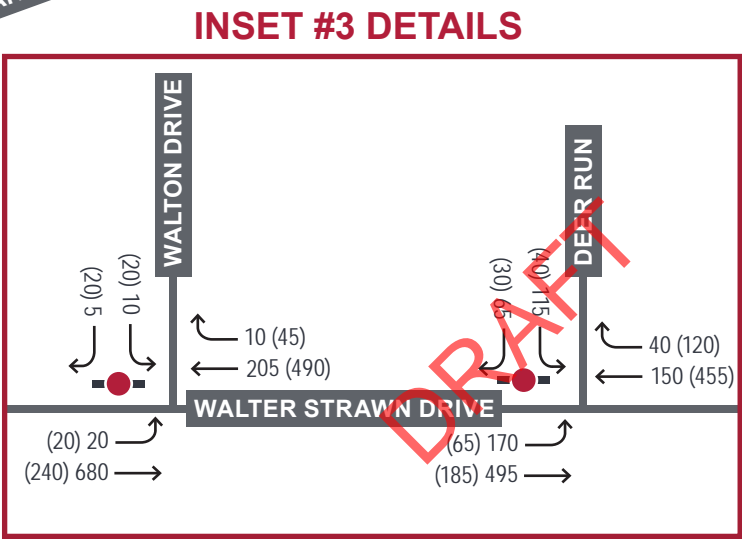
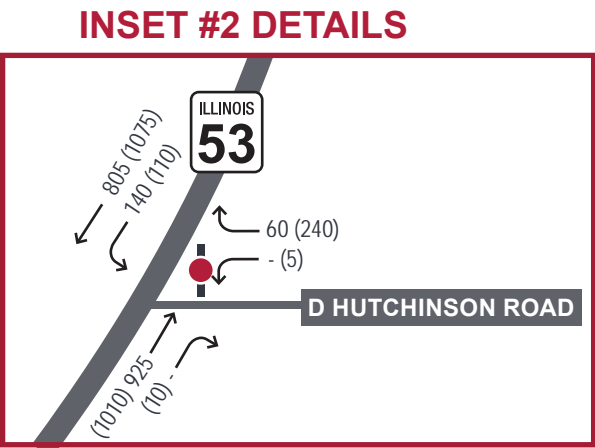
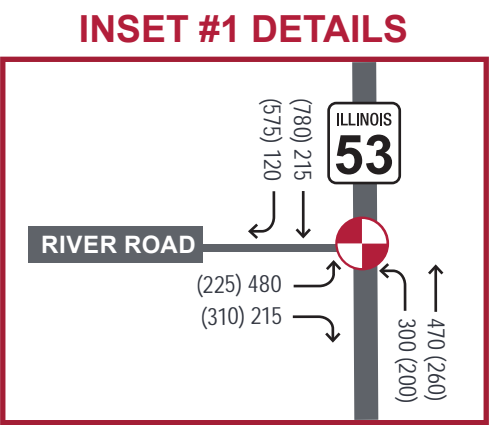
Proposed Signalized Intersection

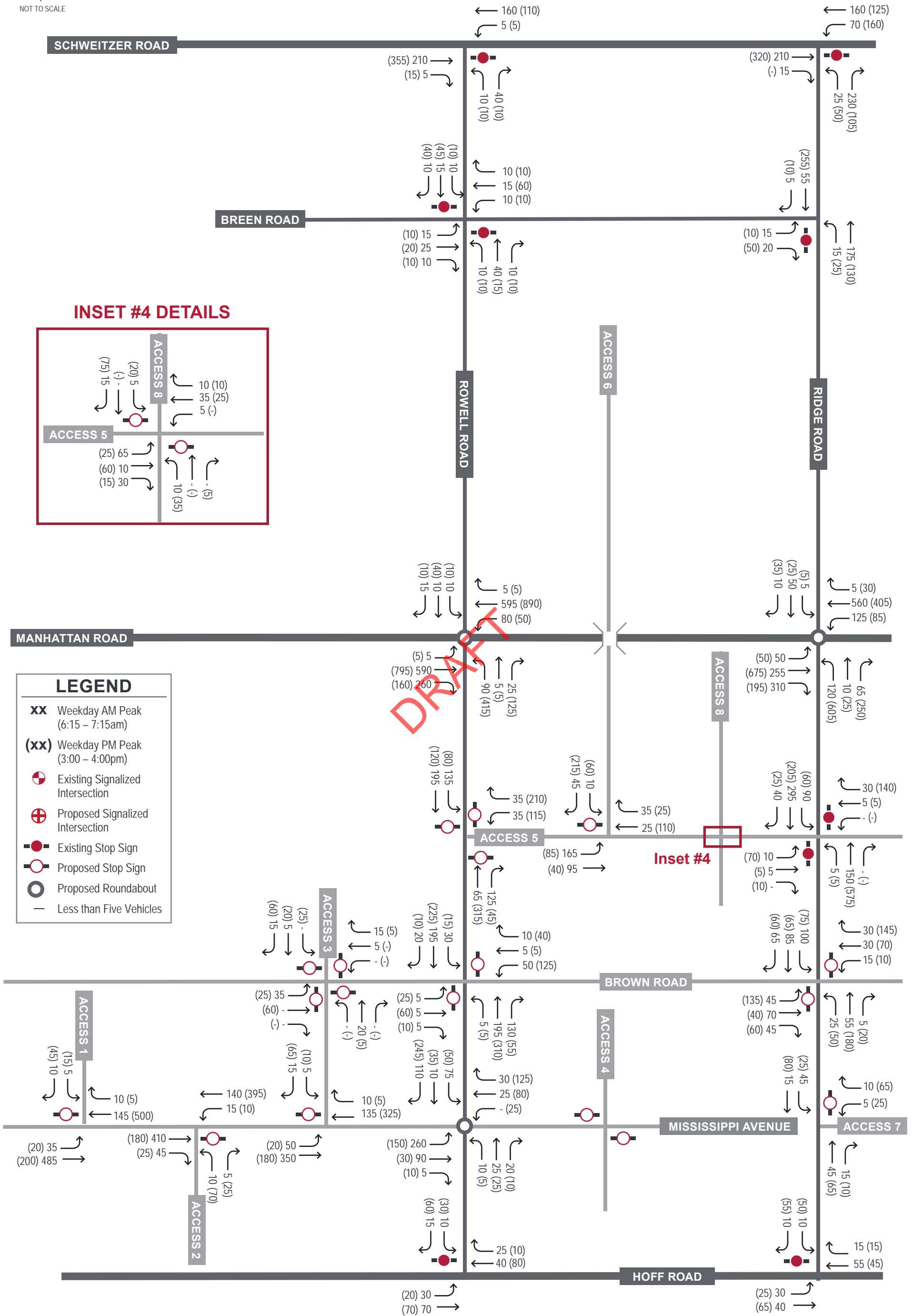
Existing Stop Sign

Proposed Stop Sign

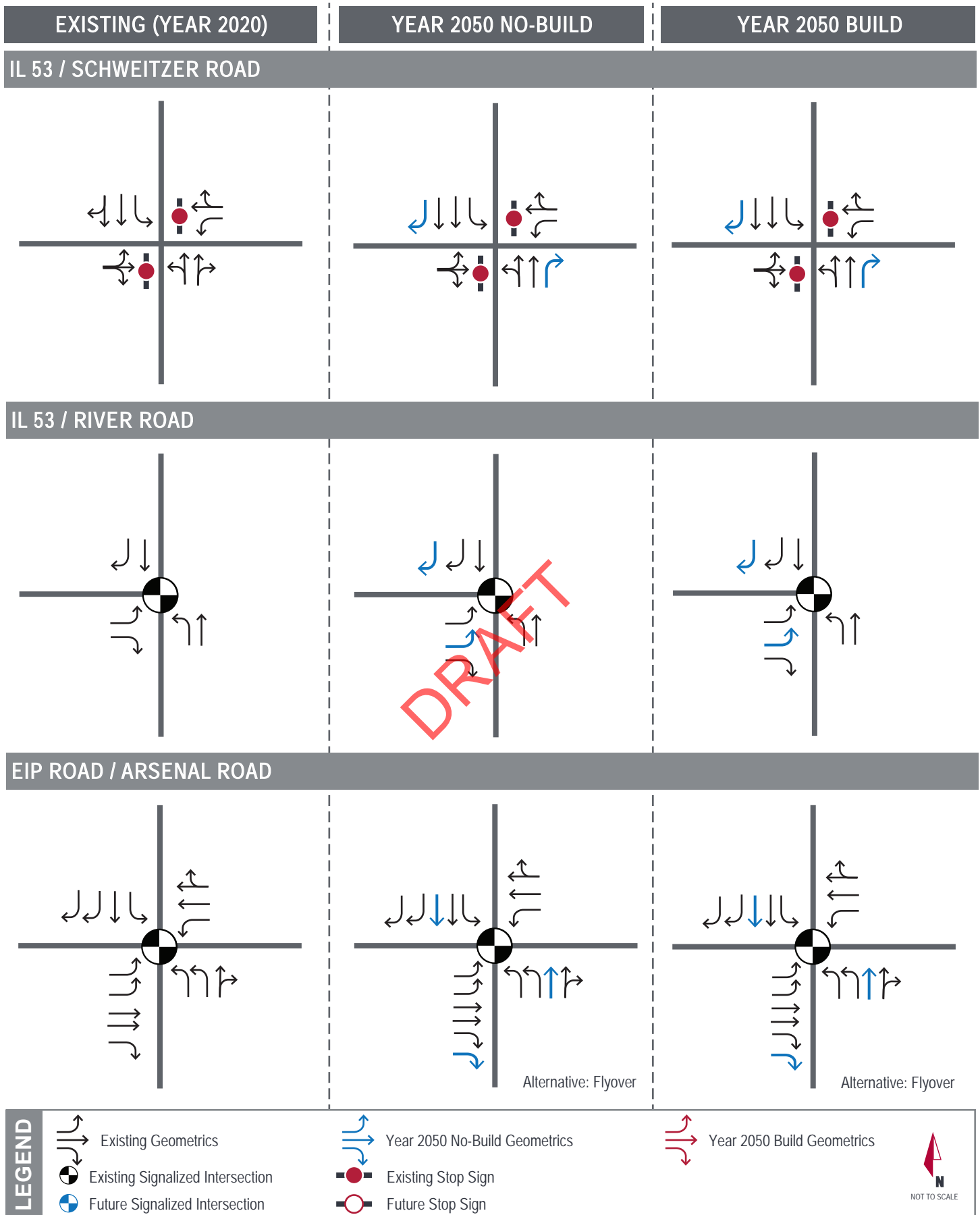
Proposed Roundabout

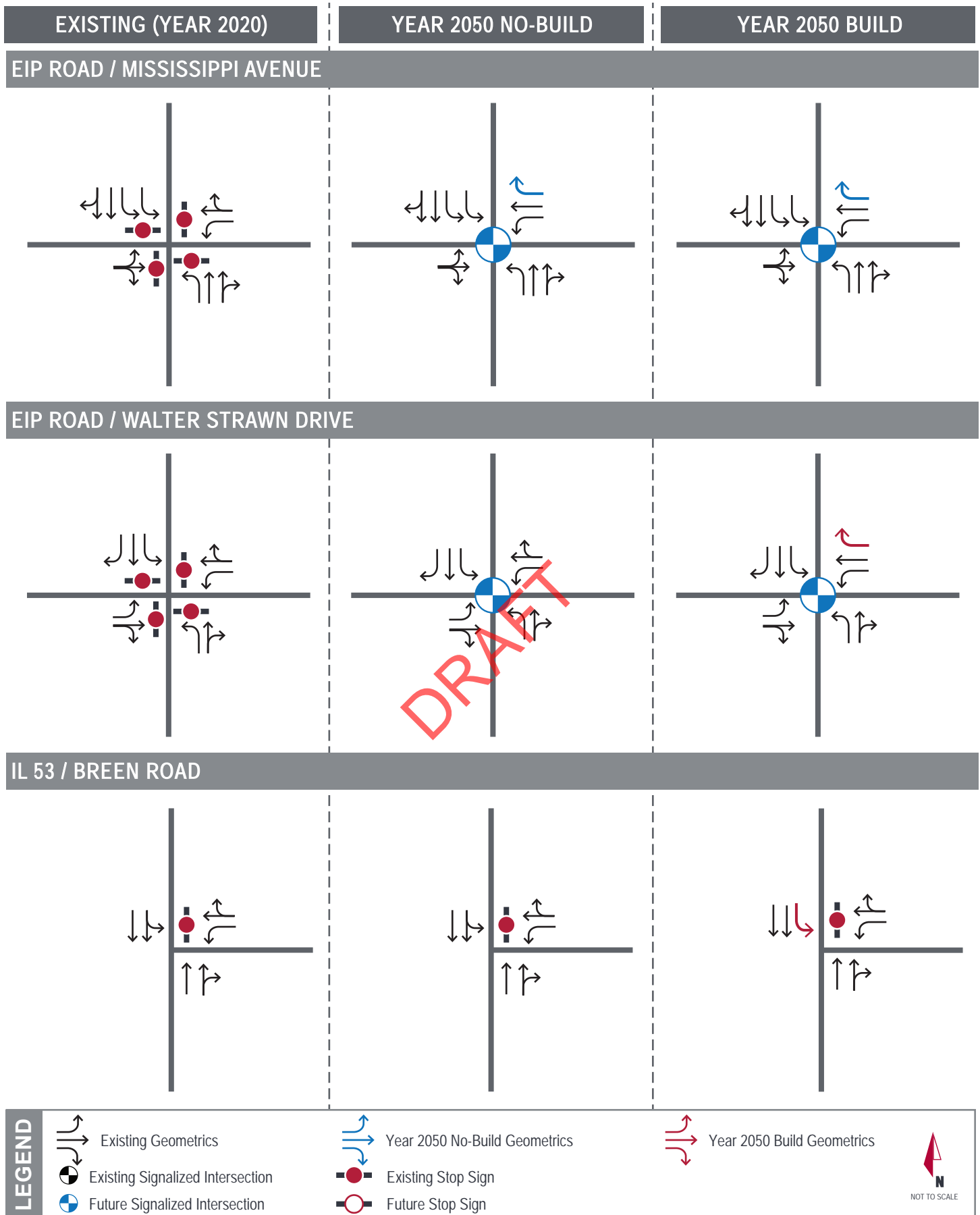
Less than Five Vehicles

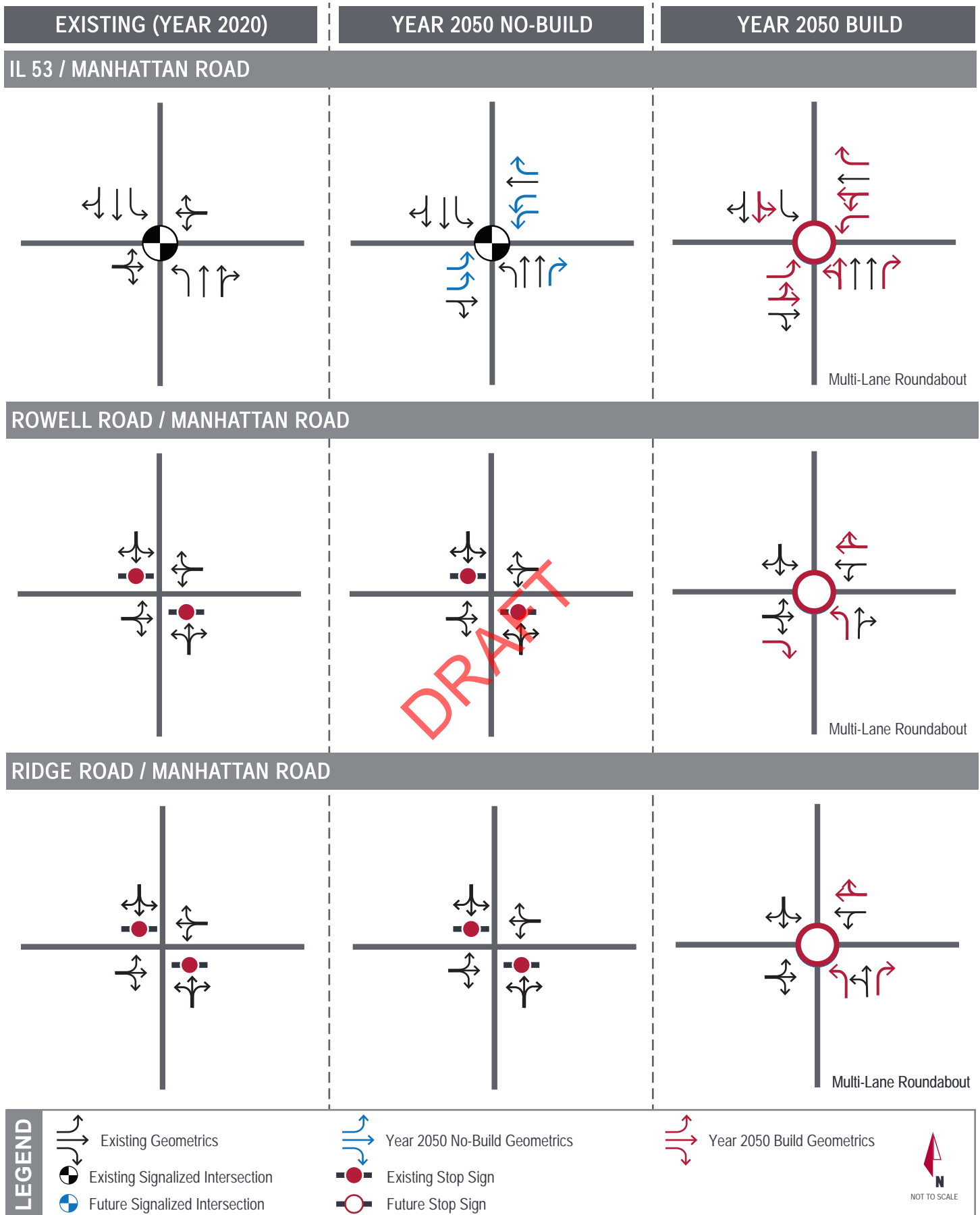


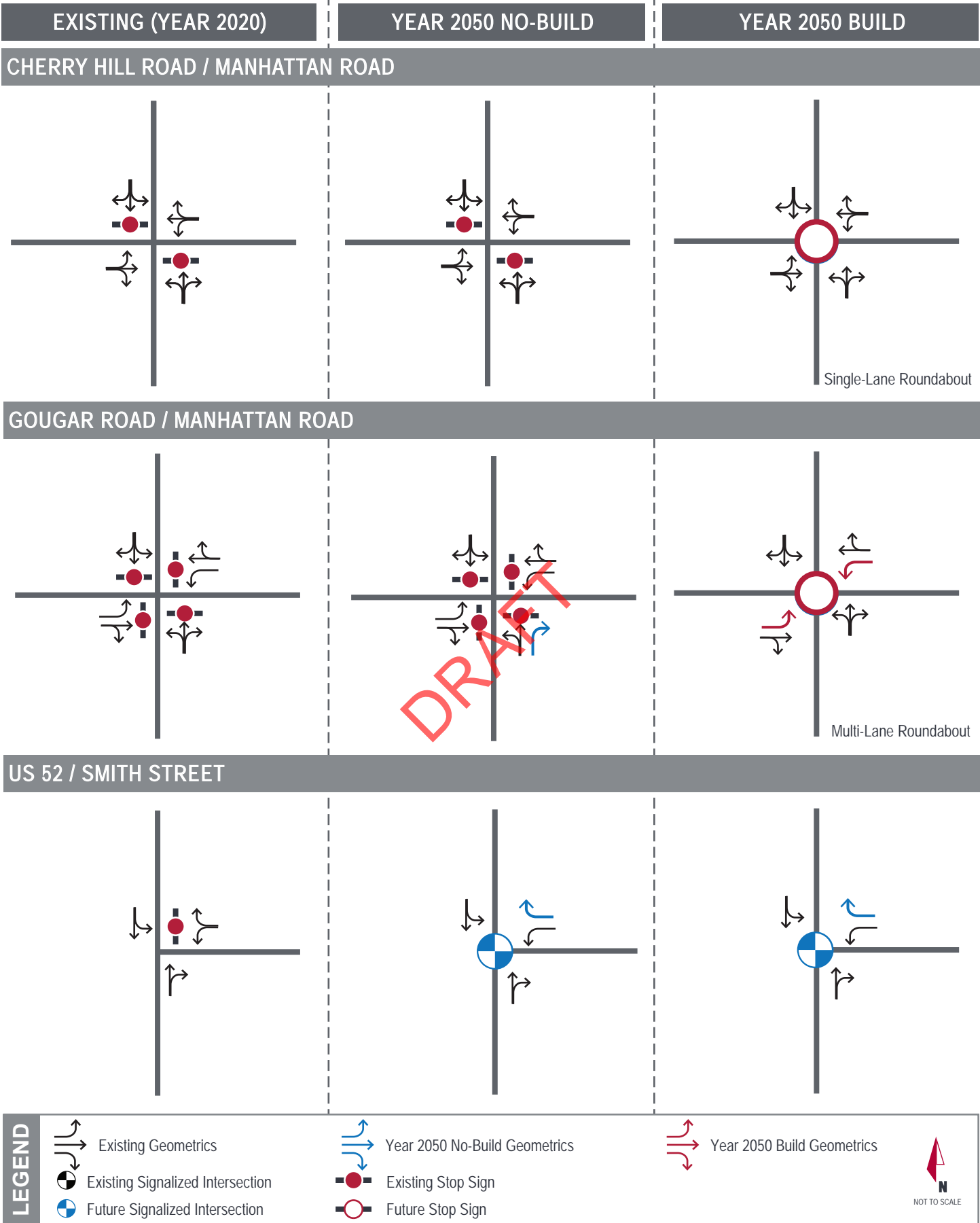




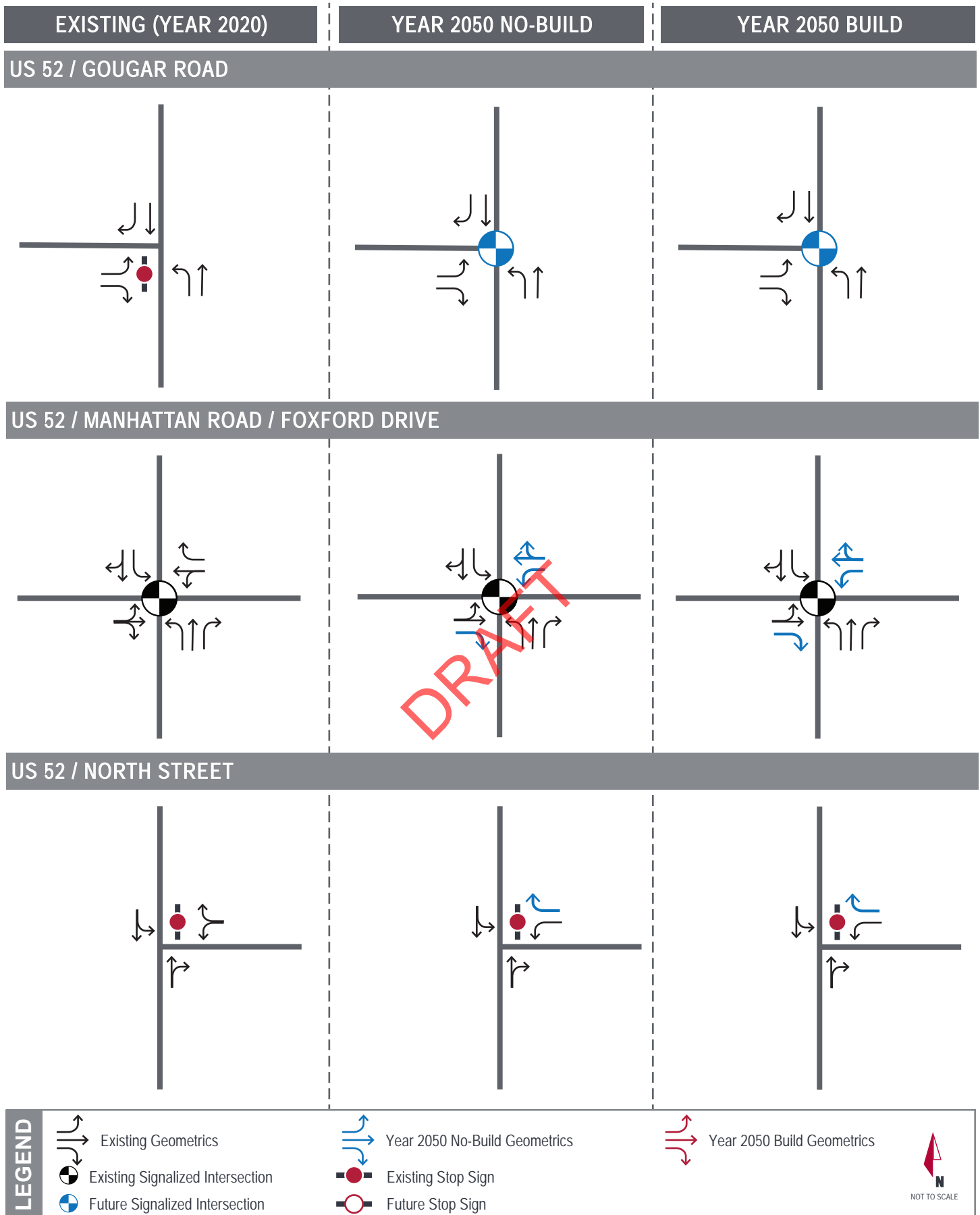












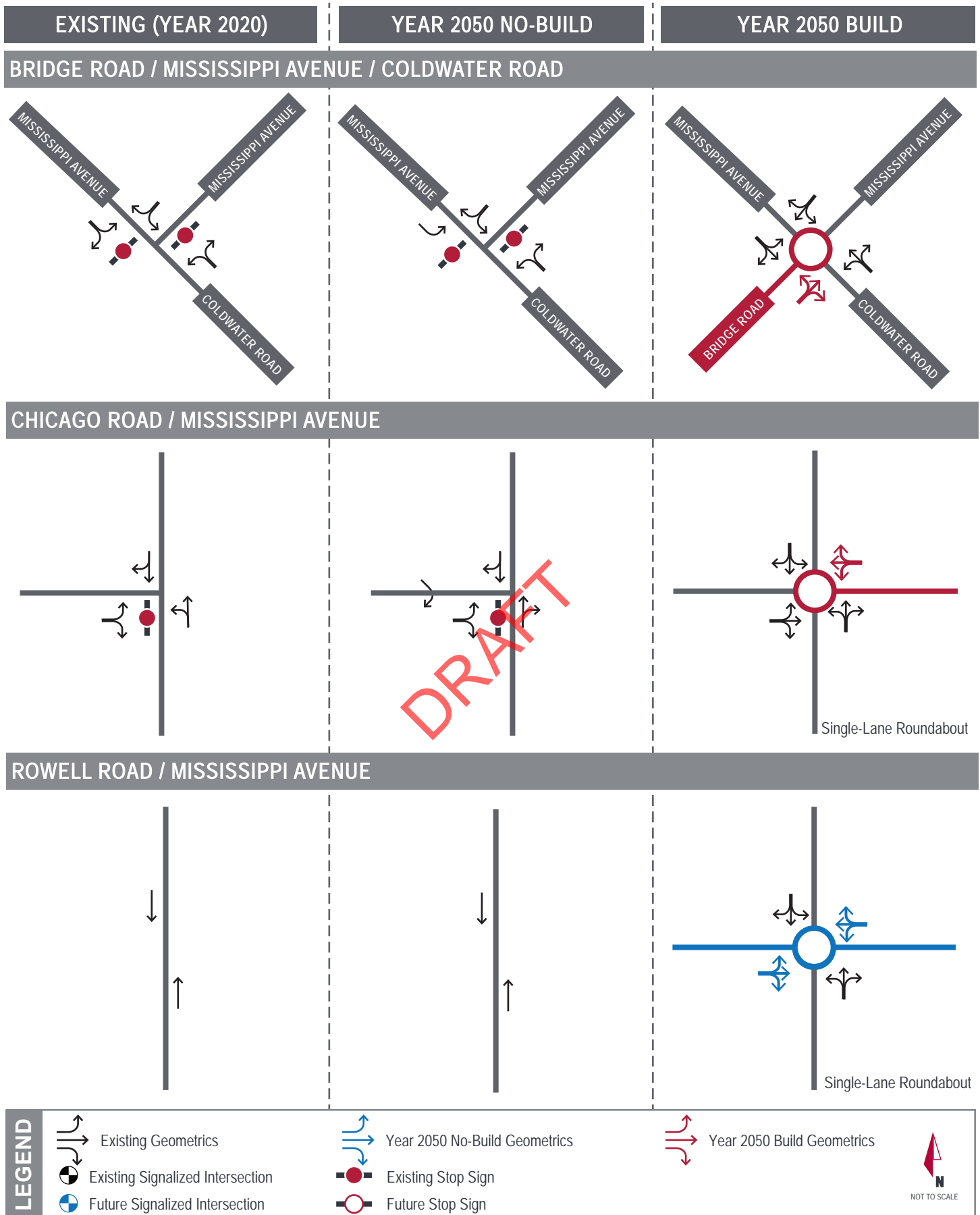


Table 5.3. Year 2050 Build Levels of Service

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
IL 53 / Schweitzer Road $\Delta$				
Eastbound	46	E	>120	F
Westbound	96	F	>120	F
Northbound (Left)	15-	B	13	B
Southbound (Left)	12	B	36	E
IL 53 / Breen Road $\Delta$				
Westbound	17	C	61	F
Southbound (Left)	12	B	15+	C
IL 53 / Manhattan Road O				
Eastbound	7	A	17	C
Westbound	29	D	32	D
Northbound	11	B	30	D
Southbound	21	C	23	C
Intersection	17	C	24	C
IL 53 / D Hutchinson Road $\Delta$				
Westbound	13	B	22	C
Southbound (Left)	12	B	12	B
IL 53 / Tehle Road $\Delta$				
Eastbound	19	C	20	C
Westbound	20	C	24	C
Northbound (Left)	10-	A	12	B
Southbound (Left)	10+	B	11	B
IL 53 / Mississippi Road $\Delta$				
Eastbound	23	C	>120	F
Westbound	16	C	19	C
Northbound (Left)	12	B	11	B
Southbound (Left)	10+	B	9	A
IL 53 / Hoff Road / Abraham Lincoln National Cemetery Access Driveway *				
Eastbound	36	D	39	D
Westbound	32	C	42	D
Northbound	11	B <sup>1</sup>	15	B <sup>1</sup>
Southbound	11	B <sup>1</sup>	16	B <sup>1</sup>
Intersection	13	B	18	B

\* – Signalized Intersection    ▲ – All-Way Stop-Controlled Intersection     $\Delta$  – Minor-Leg Stop-Controlled Intersection    O – Roundabout

<sup>1</sup>Left-turn movement operates at LOS F.

<sup>2</sup>Left-turn movement operates at LOS E.

<sup>3</sup>Left-turn movement operates at LOS F and thru movement operates at LOS E.

Table 5.3. Year 2050 Build Levels of Service (continued)

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
IL 53 / River Road *				
Eastbound	17	B	59	E
Northbound	8	A	11	B
Southbound	13	B	12	B
Intersection	12	B	22	C
EIP Road / Arsenal Road *				
Eastbound	82	F	107	F
Westbound	>120	F	>120	F
Northbound	>120	F	>120	F
Southbound	>120	F	105	F
Intersection	>120	F	>120	F
EIP Road / Mississippi Avenue *				
Eastbound	46	D	38	D
Westbound	54	D <sup>1</sup>	47	D
Northbound	10+	B	16	B
Southbound	13	B	13	B
Intersection	20+	C	19	B
EIP Road / Walter Strawn Drive *				
Eastbound	35	D	41	D
Westbound	25	C <sup>2</sup>	20+	C <sup>2</sup>
Northbound	26	C	22	C
Southbound	12	B	12	B
Intersection	19	B	19	B
Walter Strawn Drive / Walton Drive △				
Eastbound (Left)	9	A	11	B
Southbound	19	C	18	C
Walter Strawn Drive / Deer Run △				
Eastbound (Left)	8	A	9	A
Southbound	30	D	16	C
Schweitzer Road / Rowell Road △				
Westbound (Left)	8	A	8	A
Northbound	10-	A	11	B
Schweitzer Road / Ridge Road △				
Westbound (Left)	8	A	8	A
Northbound	12	B	14	B

\* – Signalized Intersection    ▲ – All-Way Stop-Controlled Intersection    △ – Minor-Leg Stop-Controlled Intersection    O – Roundabout

<sup>1</sup>Left-turn movement operates at LOS F.

<sup>2</sup>Left-turn movement operates at LOS E.

<sup>3</sup>Left-turn movement operates at LOS F and thru movement operates at LOS E.

Table 5.3. Year 2050 Build Levels of Service (continued)

Intersection		Weekday AM Peak		Weekday PM Peak	
		Delay (s/veh)	LOS	Delay (s/veh)	LOS
Schweitzer Road / Cherry Hill Road	△				
Eastbound (Left)		8	A	8	A
Westbound (Left)		7	A	8	A
Northbound		20	C	21	C
Southbound		11	B	12	B
Breen Road / Rowell Road	△				
Eastbound (Left)		7	A	7	A
Westbound (Left)		7	A	7	A
Northbound		10-	A	10-	A
Southbound		10-	A	10+	B
Breen Road / Ridge Road	△				
Eastbound		9	A	11	B
Northbound (Left)		7	A	8	A
Manhattan Road / Rowell Road	O				
Eastbound		6	A	12	B
Westbound		10	A	11	B
Northbound		6	A	12	B
Southbound		6	A	20	C
Intersection		8	A	14	B
Manhattan Road / Ridge Road	O				
Eastbound		6	A	11	B
Westbound		11	B	21	C
Northbound		7	A	11	B
Southbound		4	A	13	B
Intersection		8	A	15	C
Manhattan Road / Cherry Hill Road	O				
Eastbound		6	A	21	C
Westbound		10	A	7	A
Northbound		6	A	11	B
Southbound		8	A	6	A
Intersection		6	A	21	C
Manhattan Road / Gougar Road	O				
Eastbound		10	B	10	B
Westbound		5	A	24	C
Northbound		9	A	12	B
Southbound		7	A	20	C
Intersection		8	A	18	C

★ – Signalized Intersection    ▲ – All-Way Stop-Controlled Intersection    △ – Minor-Leg Stop-Controlled Intersection    O – Roundabout

<sup>1</sup>Left-turn movement operates at LOS F.

<sup>2</sup>Left-turn movement operates at LOS E.

<sup>3</sup>Left-turn movement operates at LOS F and thru movement operates at LOS E.

Table 5.3. Year 2050 Build Levels of Service (continued)

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Sweedler Road / Cherry Hill Road $\triangle$				
Westbound	9	A	10-	A
Southbound (Left)	7	A	8	A
Sweedler Road / Gougar Road $\blacktriangle$				
Eastbound	8	A	9	A
Westbound	7	A	10-	A
Northbound	7	A	8	A
Southbound	8	A	10+	B
<i>Intersection</i>	7	A	10-	A
Brown Road / Chicago Road $\triangle$				
Westbound	9	A	10-	A
Southbound (Left)	7	A	8	A
Brown Road / Rowell Road $\triangle$				
Eastbound	13	B	16	C
Westbound	16	C	31	D
Northbound (Left)	8	A	8	A
Southbound (Left)	8	A	8	A
Brown Road / Access 3 $\blacktriangle$				
Eastbound	8	A	8	A
Westbound	7	A	7	A
Northbound	9	A	9	A
Southbound	9	A	9	A
<i>Intersection</i>	8	A	9	A
Brown Road / Ridge Road $\triangle$				
Eastbound	16	C	33	D
Westbound	13	B	17	C
Northbound (Left)	8	A	9	A
Southbound (Left)	8	A	8	A
Brown Road / Access 7 $\triangle$				
Eastbound (Left)	8	A	8	A
Westbound (Left)	8	A	7	A
Northbound	11	B	12	B
Southbound	10-	A	10+	B

★ – Signalized Intersection     $\blacktriangle$  – All-Way Stop-Controlled Intersection     $\triangle$  – Minor-Leg Stop-Controlled Intersection    O – Roundabout

<sup>1</sup>Left-turn movement operates at LOS F.

<sup>2</sup>Left-turn movement operates at LOS E.

<sup>3</sup>Left-turn movement operates at LOS F and thru movement operates at LOS E.

Table 5.3. Year 2050 Build Levels of Service (continued)

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Brown Road / Cherry Hill Road $\Delta$				
Eastbound	9	A	11	B
Northbound (Left)	7	A	8	A
Bruns Road / Cherry Hill Road $\Delta$				
Westbound	9	A	9	A
Southbound (Left)	7	A	8	A
Bruns Road / Gougar Road $\Delta$				
Eastbound (Left)	8	A	7	A
Westbound (Left)	7	A	7	A
Northbound	9	A	9	A
Southbound	9	A	10-	A
Hoff Road / Coldwater Road $\Delta$				
Eastbound (Left)	7	A	8	A
Southbound	9	A	10-	A
Hoff Road / Chicago Road $\blacktriangle$				
Eastbound	8	A	8	A
Westbound	7	A	8	A
Northbound	7	A	7	A
Southbound	7	A	8	A
Intersection	8	A	8	A
Hoff Road / Rowell Road $\Delta$				
Eastbound (Left)	7	A	7	A
Southbound	9	A	10-	A
Hoff Road / Ridge Road $\Delta$				
Eastbound (Left)	7	A	7	A
Southbound	10-	A	10-	A
Hoff Road / Cherry Hill Road $\Delta$				
Eastbound (Left)	7	A	7	A
Southbound	9	A	9	A
Hoff Road / Gougar Road $\Delta$				
Eastbound (Left)	7	A	7	A
Westbound (Left)	7	A	7	A
Northbound	9	A	10+	B
Southbound	9	A	10-	A

★ – Signalized Intersection     $\blacktriangle$  – All-Way Stop-Controlled Intersection     $\Delta$  – Minor-Leg Stop-Controlled Intersection    O – Roundabout

<sup>1</sup>Left-turn movement operates at LOS F.

<sup>2</sup>Left-turn movement operates at LOS E.

<sup>3</sup>Left-turn movement operates at LOS F and thru movement operates at LOS E.

Table 5.3. Year 2050 Build Levels of Service (continued)

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
US 52 / Smith Road *				
Westbound	48	D	44	D
Northbound	8	A	6	A
Southbound	5	A	7	A
Intersection	12	B	12	B
US 52 / Gougar Road *				
Eastbound	44	D	39	D
Northbound	8	A	5	A
Southbound	4	A	5	A
Intersection	15-	B	13	B
US 52 / Manhattan Road / Foxford Drive *				
Eastbound	42	D	46	D
Westbound	64	E	44	D
Northbound	10-	A	18	B
Southbound	14	B	28	C
Intersection	24	C	34	C
US 52 / North Street △				
Westbound	21	C	>120	F
Southbound (Left)	9	A	11	B
US 52 / Bruns Road △				
Eastbound	15+	C	15+	C
Westbound	15+	C	13	B
Northbound (Left)	8	A	8	A
Southbound (Left)	8	A	8	A
US 52 / Hoff Road △				
Eastbound	12	B	13	B
Northbound (Left)	8	A	8	A
Bridge Road / Mississippi Avenue / Coldwater Road O				
Eastbound	4	A	9	A
Westbound	7	A	4	A
Northbound	19	C	8	A
Southbound	8	A	21	C
Intersection	15	B	14	B

\* – Signalized Intersection    ▲ – All-Way Stop-Controlled Intersection    △ – Minor-Leg Stop-Controlled Intersection    O – Roundabout

<sup>1</sup>Left-turn movement operates at LOS F.

<sup>2</sup>Left-turn movement operates at LOS E.

<sup>3</sup>Left-turn movement operates at LOS F and thru movement operates at LOS E.



Table 5.3. Year 2050 Build Levels of Service (continued)

Intersection		Weekday AM Peak		Weekday PM Peak	
		Delay (s/veh)	LOS	Delay (s/veh)	LOS
Chicago Road / Mississippi Avenue	O				
Eastbound		24	C	9	A
Westbound		7	A	22	C
Northbound		8	A	4	A
Southbound		5	A	8	A
Intersection		17	C	17	C
Mississippi Avenue / Access 1	△				
Eastbound (Left)		8	A	9	A
Southbound		11	B	13	B
Mississippi Avenue / Access 2	△				
Westbound (Left)		8	A	8	A
Northbound		12	B	12	B
Mississippi Avenue / Access 3	△				
Eastbound (Left)		8	A	9	A
Northbound		11	B	12	B
Rowell Road / Mississippi Avenue	O				
Eastbound		16	C	8	A
Westbound		8	A	9	A
Northbound		7	A	4	A
Southbound		6	A	14	B
Intersection		12	B	10+	B
Rowell Road / Access 5	▲				
Westbound		10-	A	12	B
Northbound		10-	A	15-	B
Southbound		10-	A	11	B
Intersection		10-	A	13	B
Ridge Road / Access 5	△				
Eastbound		15-	B	13	B
Westbound		10+	B	16	C
Northbound (Left)		8	A	8	A
Southbound (Left)		8	A	9	A
Ridge Road / Access 7	△				
Westbound		9	A	9	A
Southbound (Left)		8	A	8	A

★ – Signalized Intersection    ▲ – All-Way Stop-Controlled Intersection    △ – Minor-Leg Stop-Controlled Intersection    O – Roundabout

<sup>1</sup>Left-turn movement operates at LOS F.

<sup>2</sup>Left-turn movement operates at LOS E.

<sup>3</sup>Left-turn movement operates at LOS F and thru movement operates at LOS E.

Table 5.3. Year 2050 Build Levels of Service (continued)

Intersection	Weekday AM Peak		Weekday PM Peak	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Access 5 / Access 6 <sup>△</sup>				
Eastbound (Left)	8	A	8	A
Southbound	10-	A	11	B
Access 5 / Access 7 <sup>△</sup>				
Eastbound	9	A	9	A
Northbound (Left)	7	A	8	A
Access 5 / Access 8 <sup>△</sup>				
Eastbound (Left)	8	A	8	A
Westbound (Left)	7	A	7	A
Northbound	11	B	11	B
Southbound	10-	A	9	A

★ – Signalized Intersection    ▲ – All-Way Stop-Controlled Intersection    △ – Minor-Leg Stop-Controlled Intersection    O – Roundabout

<sup>1</sup>Left-turn movement operates at LOS F.

<sup>2</sup>Left-turn movement operates at LOS E.

<sup>3</sup>Left-turn movement operates at LOS F and thru movement operates at LOS E.

The operations of the study intersections in the 2050 Build scenario are projected to be similar to the operations in the 2050 No-Build scenario. At the intersection of IL 53/Schweitzer Road, the eastbound and westbound approaches are projected to experience high delay during the peak hours. As previously noted, the projected delay is not unusual for a minor-leg stop-controlled roadway at its intersection with an arterial such as IL 53. Consistent with the results presented for the Year 2050 No-Build analysis, similar conditions are projected for the intersection of US 52/North Street, where the westbound approach is expected to operate at LOS F during the evening peak hour.

At the intersection of IL 53/Mississippi Road, the eastbound approach is projected to operate at LOS F during the evening peak hour. According to the Year 2050 No-Build analysis, the increase in delay is attributable to background traffic growth. As background traffic growth is realized and development is considered in the vicinity of this intersection, additional analyses is recommended.

Generally consistent with the analysis of existing conditions and the previous build scenarios, the northbound and southbound left-turn movements at IL 53/Hoff Road/Abraham Lincoln National Cemetery Access Driveway are projected to operate at LOS F during both peak hours. The projected delay is a function of the relatively limited volume of traffic on these movements, and the priority given to north-south through traffic on IL 53. The 95<sup>th</sup> percentile queues projected for both the northbound and southbound left-turn movements are expected to be accommodated within the existing storage lanes; queue spillback to IL 53 is not anticipated.

As shown in the table, the intersection of EIP Road/Arsenal Road is projected to operate at an overall LOS F during the peak hours. Due to the anticipated background traffic growth and the high volume of truck traffic at this intersection, alternate improvements such as a flyover may need to be considered.

Traffic signals are recommended for the intersections of EIP Road/Arsenal Road and EIP Road/Walter Strawn Drive. With the traffic signals, these intersections are expected to operate at an overall LOS C or better during the peak hours. In the morning peak hour, the westbound left-turn movements are projected to operate at LOS E or LOS F. In the evening peak hour, this condition is projected to continue at the intersection of EIP Road/Walter Strawn Drive. The delay anticipated for the left-turn movements is attributable to the cycle length and priority given to north-south through traffic on EIP Road. The 95<sup>th</sup> percentile queues projected for both the southbound and westbound left-turn movements would be accommodated within the existing storage lanes.

All other approaches and movements are projected to operate at LOS D or better in both peak hours. As previously noted, roundabouts have been recommended at key intersections along the Manhattan Road corridor and within Compass Business Park. The roundabouts are expected to enhance safety, minimize delay, facilitate truck movements, maintain site access for passenger vehicles, and maintain through traffic along the respective corridors.

#### Signal Warrant Analysis – Year 2050 No-Build and Year 2050 Build

In addition to the turn lane warrants, signal warrant analyses were performed according to the *MUTCD* criteria (Table 3.7). To perform the signal warrant analyses for the Year 2050 No-Build scenario, CMAP growth rates were applied to the existing 12-hour count data described under *Section 2.3 Data Collection*. To develop the 12-hour traffic projections for the Year 2050 Build scenario, site-generated traffic volumes were then added using IDOT-approved methodology previously described under *Section 3.3 Future Capacity Analyses*. The resulting volumes were compared to the *MUTCD* criteria for Warrant 1 (Table 3.7). In order to satisfy the warrant, traffic volumes must meet the *MUTCD* criteria for at least eight hours on an average day.

**Table 5.4** reports the signal warrant analyses conducted for the Year 2024 Phase A and Year 2027 Phase B traffic conditions. The detailed signal warrant worksheets are provided in the appendix.

**Table 5.4. Signal Warrant Analyses – Year 2050 No-Build and Year 2050 Build**

Intersection/Scenario	Warrant Satisfied
<b>EIP Road / Mississippi Avenue</b>	
Year 2050 No-Build	Warrant 1B
Year 2050 Build	Warrant 1B
<b>EIP Road / Walter Strawn Drive</b>	
Year 2050 No-Build	Warrant 1B
Year 2050 Build	Warrant 1A, Warrant 1B, Combination Warrant 1A/1B
<b>Manhattan Road / Rowell Road</b>	
Year 2050 No-Build	---
Year 2050 Build	Warrant 1A, Warrant 1B, Combination Warrant 1A/1B
<b>Manhattan Road / Ridge Road</b>	
Year 2050 No-Build	---
Year 2050 Build	Warrant 1A, Warrant 1B, Combination Warrant 1A/1B
<b>Manhattan Road / Gougar Road</b>	
Year 2050 No-Build	---
Year 2050 Build	---
<b>US 52 / North Street</b>	
Year 2050 No-Build	---
Year 2050 Build	---
<b>US 52 / Smith Street</b>	
Year 2050 No-Build	Warrant 1B, Combination Warrant 1A/1B
Year 2050 Build	Warrant 1B, Combination Warrant 1A/1B
<b>US 52 / Gougar Road</b>	
Year 2050 No-Build	Warrant 1B, Combination Warrant 1A/1B
Year 2050 Build	Warrant 1A, Warrant 1B, Combination Warrant 1A/1B

Under the Year 2050 No-Build scenario, traffic signals are warranted at EIP Road/Mississippi Avenue, EIP Road/Walter Strawn Drive, US 52/Smith Street, and US 52 Gougar Road. For purposes of the analysis of the Year 2050 No-Build scenario, traffic signals were assumed to be installed at these intersections. The traffic signals along EIP were assumed to be part of a coordinated signal system. Similarly, the existing and future signals along the US 52 corridor were assumed to operate on a coordinated system. In order to evaluate traffic conditions, a minimum cycle length of 90 seconds was assumed, and splits were optimized. Per IDOT requirements, RTOR movements were not included in the analysis.

As shown above, with the addition of site-generated traffic signals are warranted at the intersections of Manhattan Road/Rowell Road and Manhattan Road/Ridge Road. Based on projected traffic volumes and the proposed access configuration for Compass Business Park, roundabouts are recommended for these intersections. The analysis presented in Table 5.3 reflects multi-lane roundabouts along Manhattan Road at Rowell Road, Ridge Road, and Gougar Road. A single-lane roundabout is recommended at Manhattan Road/Cherry Hill Road.

## RECOMMENDATIONS & CONCLUSIONS

Based on an evaluation of existing and future traffic conditions, the following recommendations were identified to manage projected traffic demand within the study area under the Existing (2020) Full Buildout, Year 2024 Phase A, and Year 2027 Phase B scenarios. The improvements identified for these scenarios are summarized below and depicted in Exhibit 7A through Exhibit 7C (Existing (2020) Full Buildout) and Exhibit 18A through Exhibit 18D (Year 2024 Phase A and Year 2027 Phase B). The highly conceptual improvements contemplated for the Year 2050 No-Build and Year 2050 Build scenarios are shown in Exhibit 21A through Exhibit 21D.

Table 6.1. Summary of Recommended Improvements

Intersection	Recommended Improvements		
	Existing (2020) Full Buildout	Year 2024 Phase A	Year 2027 Phase B
EIP Road / Arsenal Road	<p>Provide dual right-turn lanes on the west leg. The right-turn lanes should be channelized and controlled by the signal.</p> <p>Construct an additional southbound through lane.</p> <p>Add an additional northbound through lane.</p>	N/A	<p>Provide dual right-turn lanes on the west leg. The right-turn lanes should be channelized and controlled by the signal.</p>
EIP Road / Walter Strawn Drive	<p>Install a traffic signal per MUTCD Warrant 1, Conditions A, B (<i>Signal Warrant Analyses</i>) and IDOT design criteria. Based on proximity to the at-grade railroad crossing, coordination with BNSF is anticipated.</p> <p>Add a free-flow right-turn lane on the east leg. The turn lane should provide 215 feet of storage with a 220-foot taper.</p> <p>Provide an additional northbound through lane on EIP Road from Walter Strawn Drive to Mississippi Avenue.</p>	N/A	<p>Install a traffic signal per MUTCD Warrant 1, Conditions A, B (<i>Signal Warrant Analyses</i>) and IDOT design criteria. Based on proximity to the at-grade railroad crossing, coordination with BNSF is anticipated.</p>

**Table 6.1. Summary of Recommended Improvements (continued)**

Intersection	Recommended Improvements		
	Existing (2020) Full Buildout	Year 2024 Phase A	Year 2027 Phase B
IL 53 / Breen Road	Install a left-turn lane on the north leg. The turn lane should provide 265 feet of storage with a 265-foot taper.	N/A	N/A
IL 53 / Manhattan Road	Remove the existing traffic signal and install a multi-lane roundabout.	N/A	N/A
Rowell Road / Manhattan Road	Install a single-lane roundabout.	N/A	N/A
Ridge Road / Manhattan Road	Install a single-lane roundabout. A right-turn slip lane should be provided on the south leg in order to facilitate outbound traffic from Compass Business Park.	N/A	N/A
Cherry Hill Road / Manhattan Road	Install a single-lane roundabout.	N/A	N/A
Gougar Road / Manhattan Road	Install a single-lane roundabout.	N/A	N/A
US 52 / Manhattan Road	Install a dedicated right-turn lane on the west leg. The turn lane should provide 145 feet of storage with a 175-foot taper.  Modify the striping on the east leg to provide a dedicated left-turn lane and a shared thru/right-turn lane. The dedicated left-turn lane should provide 115 feet of storage with a 135-foot taper.	N/A	Install a dedicated right-turn lane on the west leg. The turn lane should provide 145 feet of storage with a 175-foot taper.  Modify the striping on the east leg to provide a dedicated left-turn lane and a shared thru/right-turn lane. The dedicated left-turn lane should provide 115 feet of storage with a 135-foot taper.
US 52 / North Street	Complete additional analysis of turning movements in order to verify the geometry will support truck traffic and explore restriping the existing shoulder on North Street to provide an exclusive right-turn lane. Based on the spacing distance from the at-grade rail crossing, the turn lane should provide 125 feet of storage with a 105-foot taper.	N/A	Complete additional analysis of turning movements in order to verify the geometry will support truck traffic and explore restriping the existing shoulder on North Street to provide an exclusive right-turn lane. Based on the spacing distance from the at-grade rail crossing, the turn lane should provide 125 feet of storage with a 105-foot taper.

Table 6.1. Summary of Recommended Improvements (continued)

Intersection	Recommended Improvements		
	Existing (2020) Full Buildout	Year 2024 Phase A	Year 2027 Phase B
US 52 / Gougar Road	Install a traffic signal per MUTCD Warrant 1, Condition A ( <i>Signal Warrant Analyses</i> ) and IDOT design criteria.	N/A	N/A
Bridge Road / Mississippi Avenue	Install a single-lane roundabout. The roundabout should be designed to accommodate truck movements.	Install a single-lane roundabout. The roundabout should be designed to accommodate truck movements.	Install a single-lane roundabout. The roundabout should be designed to accommodate truck movements.
Chicago Road / Mississippi Avenue	Install a single-lane roundabout. The roundabout should be designed to accommodate truck movements.	Install a single-lane roundabout. The roundabout should be designed to accommodate truck movements.	Install a single-lane roundabout. The roundabout should be designed to accommodate truck movements.
Rowell Road / Mississippi Avenue	Install a single-lane roundabout. The roundabout should be designed to accommodate truck movements.	Install a single-lane roundabout. The roundabout should be designed to accommodate truck movements.	Install a single-lane roundabout. The roundabout should be designed to accommodate truck movements.

Regardless of the final configuration of the intersection geometrics, several additional items should be taken into consideration when preparing roadway improvement plans for the subject development. As the design of the study area improvements and the site progresses, care should be taken with landscaping, signage, and monumentation at the site access locations to ensure that adequate horizontal and vertical sight distance is provided from the new stop bars. If alterations to the site plan or land use should occur, changes to the analysis provided within this traffic impact study may be needed.

## APPENDIX

Conceptual Site Plan

Traffic Count Data

ITE Trip Generation, Tenth Edition (LUC 154)

Elwood International Port Trip Generation Study

2014 U.S. Census Origin-Destination Employment Statistics (prepared by Ruettiger, Tonelli & Associates, Inc.)

Summary of Diverted Traffic Volumes

Signal Warrant Worksheets

CMAP Growth Projections

Trip Generation & Assignment for Approved Industrial Development in Elwood

Existing (Year 2020) Synchro Capacity Reports

Existing (2020) Full Buildout Synchro Capacity Reports

Existing (2020) Full Buildout Build SIDRA Capacity Reports

Year 2024 Phase A Synchro Capacity Reports

Year 2027 Phase B Synchro Capacity Reports

Year 2050 No-Build Synchro Capacity Reports

Year 2050 No-Build SIDRA Capacity Reports

Year 2050 Build Synchro Capacity Reports

Year 2050 Build SIDRA Capacity Reports



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## CONCEPTUAL SITE PLAN



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## TRAFFIC COUNT DATA

ITE TRIP GENERATION, TENTH EDITION (LUC 154)

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# ELWOOD INTERNATIONAL PORT TRIP GENERATION STUDY

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**2014 U.S. CENSUS ORIGIN-DESTINATION EMPLOYMENT STATISTICS  
(PREPARED BY RUETTIGER, TONELLI & ASSOCIATES, INC.)**

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## SUMMARY OF DIVERTED TRAFFIC VOLUMES

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SIGNAL WARRANT WORKSHEETS

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## CMAP GROWTH PROJECTIONS

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TRIP GENERATION & ASSIGNMENT  
APPROVED INDUSTRIAL DEVELOPMENT IN ELWOOD

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## EXISTING (YEAR 2020) SYNCHRO CAPACITY REPORTS

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Weekday Morning Peak Hour

Weekday Evening Peak Hour

## EXISTING (2020) FULL BUILDOUT SYNCHRO CAPACITY REPORTS

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Weekday Morning Peak Hour

Weekday Evening Peak Hour

## EXISTING (2020) FULL BUILDOUT SIDRA CAPACITY REPORTS

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Weekday Morning Peak Hour

Weekday Evening Peak Hour

## YEAR 2024 PHASE A SYNCHRO CAPACITY REPORTS

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Weekday Morning Peak Hour

Weekday Evening Peak Hour

## YEAR 2027 PHASE B SYNCHRO CAPACITY REPORTS

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Weekday Morning Peak Hour

Weekday Evening Peak Hour

## YEAR 2050 NO-BUILD SYNCHRO CAPACITY REPORTS

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Weekday Morning Peak Hour

Weekday Evening Peak Hour



## YEAR 2050 NO-BUILD SIDRA CAPACITY REPORTS

DRAFT

Weekday Morning Peak Hour

Weekday Evening Peak Hour

## YEAR 2050 BUILD SYNCHRO CAPACITY REPORTS

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Weekday Morning Peak Hour

Weekday Evening Peak Hour

## YEAR 2050 BUILD SIDRA CAPACITY REPORTS

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Weekday Morning Peak Hour

Weekday Evening Peak Hour



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