MINNESOTA PARK (ICRR TO RANGE ROAD) STAGE 0 FEASIBILITY IMPROVEMENTS STUDY

RPC Contract No. ST-1.17

State Project No: H972216.1

June 28, 2017

TANGIPAHOA PARISH

Louisiana

Prepared For:

Regional Planning Commission for Jefferson, Orleans, Plaquemines, St. Bernard, St. Tammany and Tangipahoa Parishes

MINNESOTA PARK ROAD
(ICRR TO RANGE ROAD IMRPOVEMENTS)
STAGE 0 FEASIBILITY
OPERATIONAL & SAFETY IMPROVEMENTS

Regional Planning Commission

RPC Contract No. ST-1.17

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RCLC Project No. 717-01

PREPARED FOR:

Regional Planning Commission
For Jefferson, Orleans, Plaquemines, St. Bernard, St. John, St. Charles, St. Tammany and Tangipahoa Parishes

And

Tangipahoa Parish
Louisiana

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June, 2017

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Executive Summary

The study corridor of Minnesota Park Road from the Illinois Central Railroad (ICRR) to Range Road was evaluated during a Project Committee Meeting for operation and safety improvements with Richard C. Lambert Consultants, LLC (RCLC) recommending the following proposed solutions:

- Remove the existing signal at Minnesota Park Road at Range Road and convert to roundabout (Alternate 1) or all-way stop.
- Widen existing roadway at intersection of Minnesota Park Road at Range Road to include dedicated turning lanes at existing intersection traffic signal (Alternate 2).
- Widen existing roadway to include a Two Way Left Turn Lane along Minnesota Park Road (Alternate 3a with 60' ROW and Alternate 3b with 80' ROW).
- Add sidewalks along Minnesota Park Road (Alternate 4a with sidewalks along both sides of the roadway and 4b with a sidewalk along the south side of the roadway).

The study resulted in the following conclusions, which are further detailed in Section 6 of the report:

- If the signal was to be removed and an "All-Way Stop" installed at the intersection, for the 2020 Build year, there would only be an improvement in the South Approach on Range Road. However, the Level of Service (LOS) for the intersection would worsen from a "B" to a "C". For the 2040 build year the delays would worsen especially on the west approach along Minnesota Park Road. If the signal is removed, and a roundabout installed (Alternate 1), the LOS would improve to an "A" and the delays would be reduced on all approaches for the 2020 and 2040 build years.

- Widening existing roadway to include dedicated turning lanes for the existing traffic signal at the Minnesota Park Road and Range Road intersection (Alternate 2) will facilitate traffic movement. Turn lanes for left and right turning movements on Minnesota Park Road should help minimize delays by separating these turning movements at the intersection. A left turning lane and dedicated through lane should also be constructed to reduce traffic delays along Range Road's south approach.

- Widening existing roadway to include a Two Way Left Turn Lane along Minnesota Park Road (Alternates 3a and 3b) would benefit the area along the Minnesota Park Road corridor; however, right-of-way acquisition would be very expensive and most probably cost prohibitive. In order to construct three 11 foot lanes, the right-of-way would typically be widened to 60 feet (Alternate 3a) if subsurface drainage were used or 80 feet (Alternate 3b) if side road ditches were to be utilized.

- Installation of sidewalks will allow pedestrians to safely proceed down the Minnesota Park Road corridor in order to visit various commercial establishments. Sidewalk installation along Minnesota Park Road can best be implemented by the construction of sub-surface drainage along the roadway due to limited right-of-way. Construction of a

5' wide sidewalk along one side of the roadway will be more cost effective than the construction of sidewalks along the north and south sides of Minnesota Park Road.

- As a result of the Project Committee Meeting, an Alternate 5 was added as a proposed corridor improvement. This alternative removes the signal at the intersection of Minnesota Park Road and Range Road converting it into a roundabout (Alternate 1) and installs a sidewalk along the south side of Minnesota Park Road (Alternate 4b).

The probable costs of construction for each Alternate are listed in the table below and are outlined in Sections 7 and 8 of the report with further details in Appendix F.

Alternates	Probable Construction Costs (without sidewalks)	Probable Construction Costs (with sidewalks north & south side)	Probable Construction Costs (sidewalk on south side)
Alternate 1 – Roundabout at Intersection	$2,107,449.71	$3,161,181.73	-
Alternate 2 – Turning Lanes at Intersection	$1,537,177.69	$2,252,207.01	-
Alternate 3a – Two Way Left Turn Lane with 60' ROW	$2,447,845.98	$2,779,439.72	-
Alternate 3b – Two Way Left Turn Lane with 80' ROW	$2,237,148.64	$2,441,139.17	-
Alternate 4a – Sidewalks on North and South sides of Minnesota Park Road	-	$1,287,434.81	-
Alternate 4b – Sidewalks on South side of Minnesota Park Road	-	-	$712,072.03
Alternate 5 – Roundabout at intersection with Sidewalk along south side of Minnesota Park Road	-	-	$2,638,746.51

The recommendation from the Project Management Committee is to combine Alternative 1 (Roundabout at Intersection) with Alternate 4b (Sidewalk on South side of roadway) as Alternate 5. The probable cost of construction for Alternate 5 is $2,638,746.51 which is detailed in the report.

1.0 Introduction

1.1 Project Overview

The Regional Planning Commission (RPC) has contracted with Richard C. Lambert Consultants, LLC (RCLC) in association with Vectura Consulting Services, LLC (Vectura) to perform a Stage 0 Feasibility Study for operation and safety improvements along Minnesota Park Road from Illinois Central Railroad (ICRR) to Range Road in Tangipahoa Parish, Louisiana. The 0.41 mile stretch of roadway exists as a two lane section with 11 foot lanes within an apparent 50 foot right-of-way having a speed limit of 35mph. Improvements to this route are intended to promote safety and increase operational function of the Minnesota Park Road/Range Road intersection and along the route where vehicular delays are considered excessive. These improvements should also enhance access to the Hammond Square Mall and neighboring commercial establishments.

As shown in Figure 1.1 below, the western limit of the study is the Illinois Central Railroad (ICRR). The eastern limit is Range Road which is 0.51 miles east of the US 51 Business (SW. Railroad Avenue). The City of Hammond is located in the south-central portion of Tangipahoa Parish, Louisiana as shown in Figure 1.2.

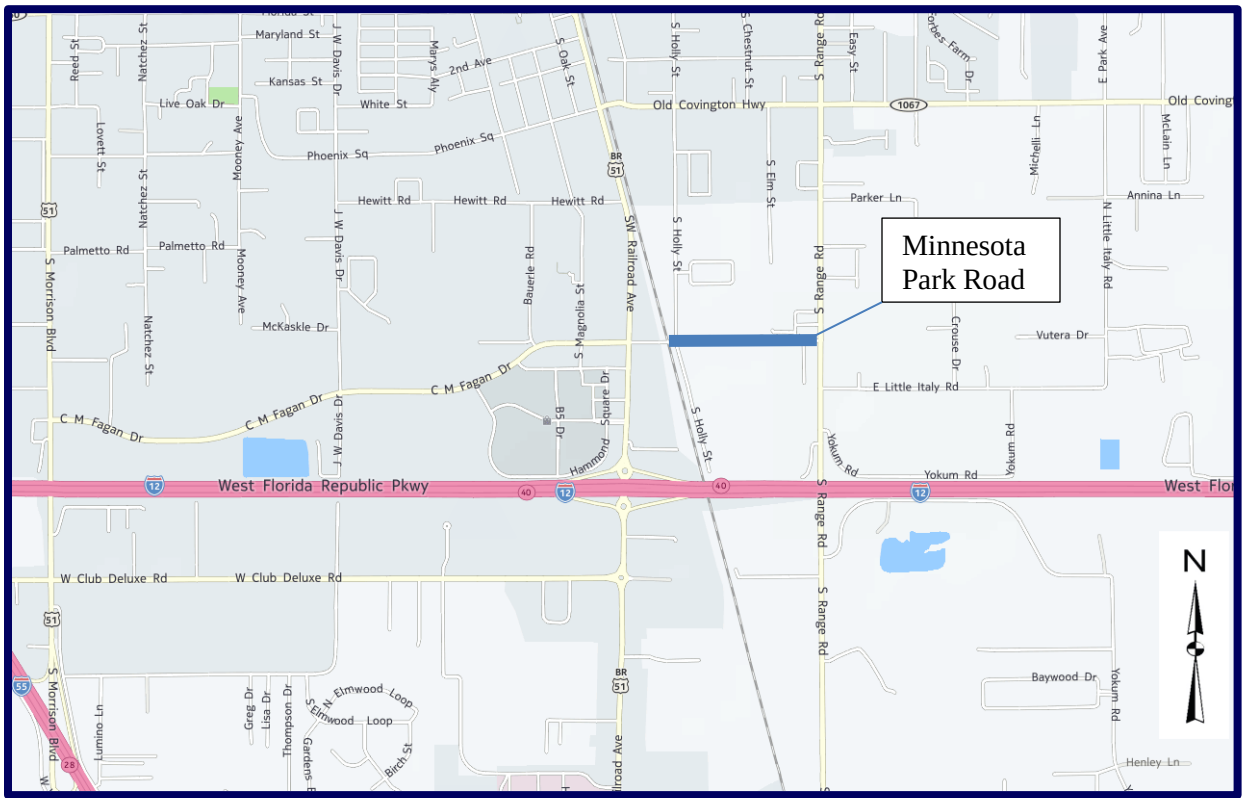

Figure 1.1
(Source: Yahoo Maps)

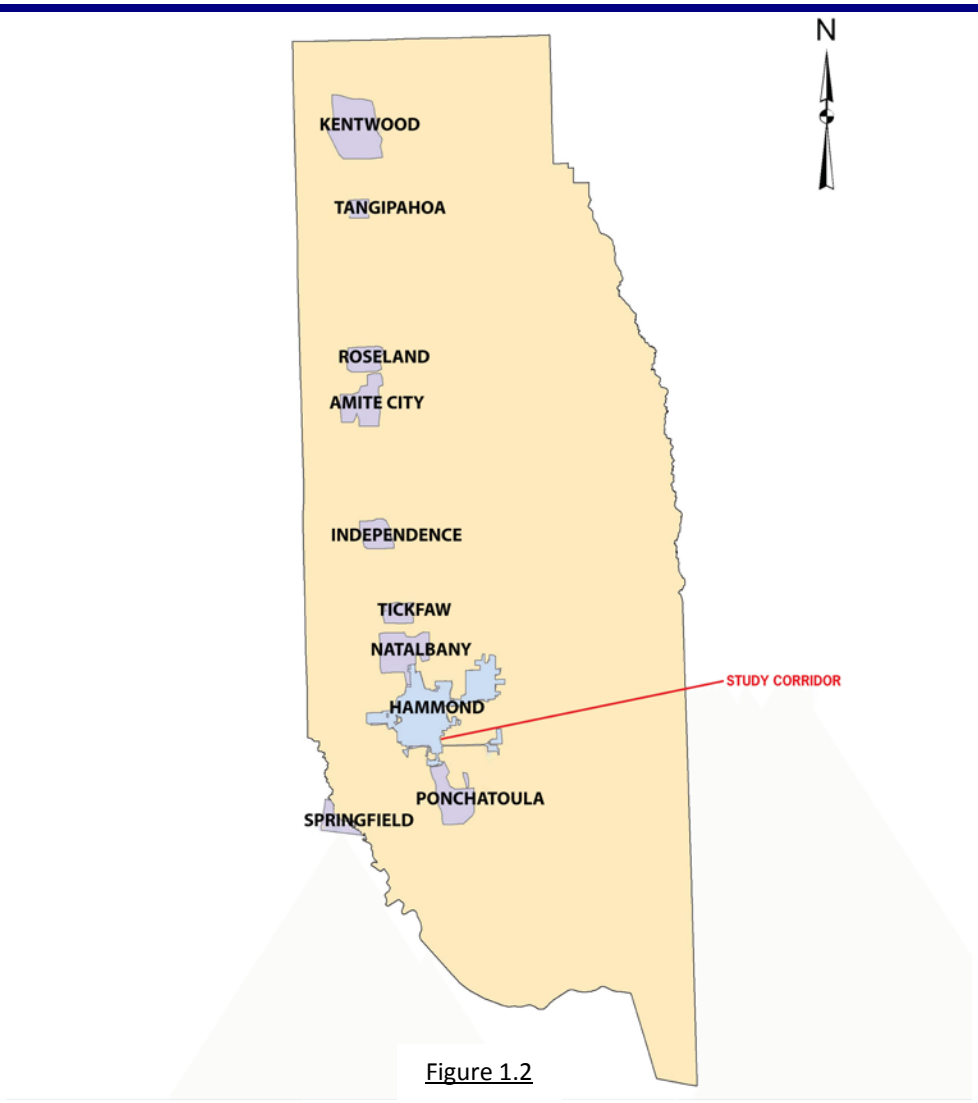

Figure 1.2

(Source: Louisiana Graphic Information Center)

The Minnesota Park Road corridor from ICRR to Range Road is a highly trafficked roadway with many new developments. This corridor was studied for implementation of operational and safety improvements. From west to east, the intersections and major commercial driveways are listed below and shown on Figure 1.3.

1. ICRR at Minnesota Park Road (intersection).
2. S. Holly Street at Minnesota Park Road (intersection).
3. Summerfield Retirement Community at Minnesota Park Road (commercial Driveway).
4. Ryan's Deli at Minnesota Park Road (commercial driveway).
5. Range Road at Minnesota Park Road (intersection).

Of these five locations, the Range Road at Minnesota Park Road interchange was analyzed as part of this Stage 0 Feasibility Study. Results from that study recommend constructing a roundabout at the Range Road and Minnesota Park Road intersection.

1.2 Project Description

In accordance with RPC's scope requirements, the Stage 0 Feasibility Study includes the following components:

- Site investigations and data collections of existing physical, engineering, and environmental features of the site
- A formal traffic study to obtain existing and projected future traffic variables
- Overall conceptual engineering designs and typical road sections for the study area
- Development of Environmental Inventory
- Preliminary quantities and unit cost estimates for each element of the conceptual design plans
- Solicitation of input on the project from public and private agencies and the community
- Final Report

Several design alternatives were analyzed for the study area. The preferred alternate, including intersection improvements, are shown as conceptual plans superimposed on aerial backgrounds. These layouts were developed in a collaborative effort with the Regional Planning Commission (RPC) and Tangipahoa Parish Government. These alternatives are discussed in further detail later within this report.

1.3 Project Objectives

On behalf of Tangipahoa Parish Government, the Regional Planning Commission is evaluating the possibility of incorporating solutions to promote operational and safety improvements along Minnesota Park Road. Proposed improvements incorporate suggestions from Parish constituents and public officials to enhance operation and safety along Minnesota Park Road. To facilitate this endeavor, a meeting was conducted to solicit questions and suggestions from the RPC, Tangipahoa Parish Government, and LADOTD personnel.

1.4 Purpose and Need

The Minnesota Park Road corridor from ICRR to Range Road and the intersection of Minnesota Park Road at Range Road currently experiences operational and safety deficiencies. The existing AM Peak Level of Service and Delay Analysis shows an average 12.4 second delay with a Level of Service B for all approaches. The Minnesota Park Road approach operates with a delay of 14.8 seconds, a Level of Service B, and a queue length of 173 feet. The south approach of Range Road experiences the longest queue length of 305 feet. The existing PM Peak Level of Service and Delay Analysis shows an average 12.4 second delay with a Level of Service B for all approaches. The Minnesota Park Road approach operates with a delay of 15.9 seconds, a Level of Service B, and a queue length of 203 feet. The north approach of Range Road experiences the longest queue length of 217 feet. By the 2040 design year, the current geometric configuration will operate with a 63.7 second delay with a Level of Service E in the AM Peak Hour and a 59.1 second delay with a Level of Service E in the PM Peak hour.

Over a three year period from January 1, 2013 and December 31, 2015, the corridor has documented 31 crashes. According to the definition of an abnormal location, from the Vectura

traffic study, both the Minnesota Park Road Segment and the intersection of Minnesota Park Road at Range Road had abnormal crash rates when compared to the years' statewide average. The majority of these crashes are rear-end collisions at the intersection of Minnesota Park Road at Range Road occurring from 3pm to 6pm during the after school traffic period and evening rush hour. Four of the 22 intersection crashes are reported as being left-turn correctable crashes. The locations of these crashes are listed in the Traffic Study presented in Appendix A.

Tangipahoa Parish Government officials stated that the traffic signal at the intersection of Minnesota Park Road and Range Road experiences intermittent outages. Since this is the only traffic signal within Tangipahoa Parish which is maintained by Tangipahoa Parish Government, parts are normally ordered on an as-needed basis. The shipping of these parts usually delays the repairs resulting in a long down-time for the traffic signal. This results in the intersection being an All Stop Controlled Intersection during these down times which adds to the existing delays. Therefore due to these deficiencies, roadway geometry and safety improvements should be implemented.

2.0 Data Collection

2.1 Overview of Data Collection Effort

Information related to the project area was available through a direct relationship with the New Orleans Regional Planning Commission (RPC), Louisiana Department of Transportation and Development (LADOTD), and the Tangipahoa Parish Government. Geographic Information Systems (GIS), inclusive of high resolution aerial images, Hammond City limits, street locations, and other data, was made available by the RPC and LADOTD.

A kickoff meeting was conducted between the RPC, Tangipahoa Parish representatives, and the design team (RCLC and Vectura). The kickoff meeting was to discuss the purpose and need for the desired improvements and the project scope. A project management committee meeting was also conducted between RPC, Tangipahoa Parish representatives, and RCLC to discuss the proposed alternatives and draft feasibility study. Meeting summaries are included in Appendix B.

Existing AM and PM peak hour traffic counts for vehicles were conducted at the Minnesota Park Road and Range Road intersection from February 12th – 18th, 2017. The data and results of the traffic operations analysis performed by Vectura Consulting Services, LLC are presented in Appendix A.

2.2 Existing Conditions

Shown below in Figure 2.1 is the aerial image of the existing intersection of ICRR at Minnesota Park Road and Range Road at Minnesota Park Road. The image is also presented in Appendix C. According to the Vectura traffic study, the Minnesota Park Road at Range Road intersection is currently functioning with an acceptable Level of Service (Level C or better).

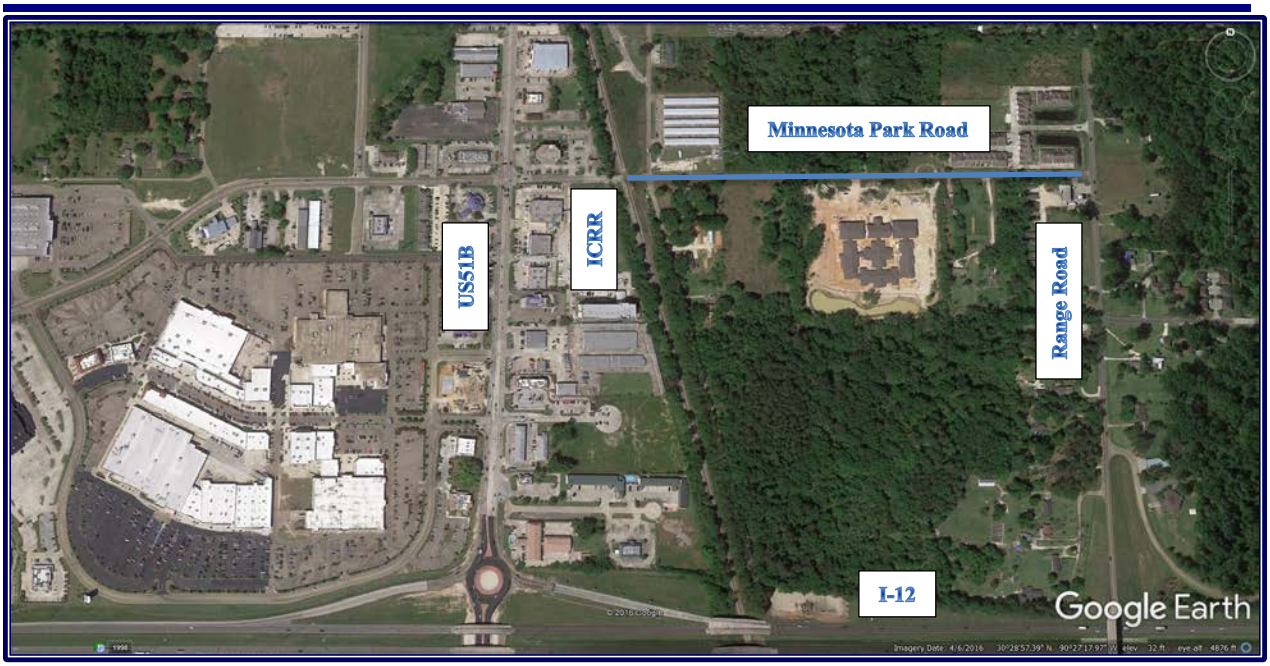

Figure 2.1 - Existing ICRR at Minnesota Park Road and Range Road at Minnesota Park Road
(Source: Google Earth)

The Range Road at Minnesota Park Road intersection does not have turn lanes along Minnesota Park Road or along Range Road, which has a speed limit of 35mph. Thus, turning movements onto these streets are producing delays, and result in rear-end collisions. Rear-end collisions are documented in the crash data presented in Appendix A.

Minnesota Park Road is a two lane asphalt roadway with a speed limit of 35mph, which travels in a west to east direction. The existing lanes are 11 feet wide. While this roadway functions as a Major Urban Collector classification, it lacks shoulders or curbing, and has an insufficient apparent right-of-way width of 50 feet. Typically two lane roads with side road ditches have a 60 feet right-of-way width. Although narrow lanes can decrease speed, they can also increase the incidence of vehicles veering off the edge of the road. The typical roadway section for the existing condition of Minnesota Road is shown below in Figure 2.2.

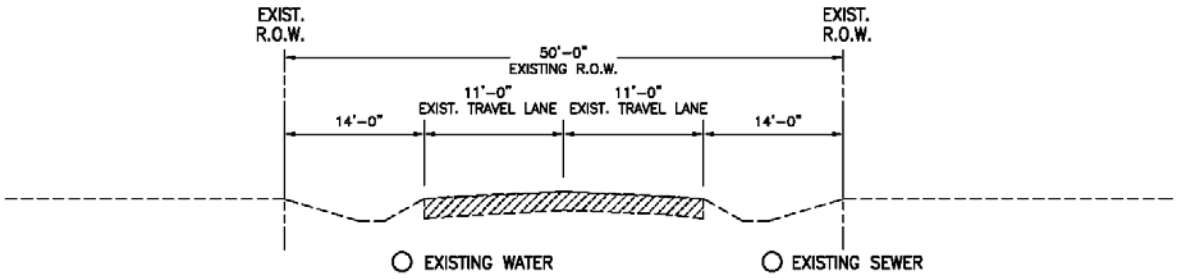

Figure 2.2 – Existing Typical Asphalt Roadway Section along Minnesota Park Road
(Source: RCLC)

The typical section above also shows the location of existing water and sewer lines. The existing waterline runs along the south edge of the pavement with water valves located in the pavement. The existing sewer line runs along the north side of the roadway within the existing ditch.

2.3 Project Meetings

The kickoff meeting was conducted to familiarize the Project Committee Members with the project goals and included representatives from the Regional Planning Commission, Tangipahoa Parish Government, Richard C. Lambert Consultants, LLC, and Vectura Consulting Services. A summary of that meeting is available in Appendix B. The purpose of the meeting was to discuss the project limits, existing roadway conditions, and develop practical improvements.

The general consensus of the meeting was that Minnesota Park Road is narrow, has experienced several crashes, has high traffic and pedestrian volumes, and experiences delays. Improvements to the corridor should be effective, minimize construction costs, and preferably performed within the current right-of-way.

Several alternatives for corridor improvements were discussed at the meeting. Suggested improvements to Minnesota Park Road resulting from this meeting were as follows:

- Remove the existing signal at Minnesota Park Road at Range Road and convert to roundabout (Alternate 1) or all-way stop.
- Widen existing roadway at intersection of Minnesota Park Road at Range Road to include dedicated turning lanes at existing intersection traffic signal (Alternate 2).
- Widen existing roadway to include a Two Way Left Turn Lane along Minnesota Park Road (Alternate 3a with 60’ ROW and Alternate 3b with 80’ ROW).
- Add sidewalks along Minnesota Park Road (Alternate 4a-both sides of roadway and Alternative 4b-south side of roadway only).

Some of the improvements suggested above were evaluated as part of the Traffic Analysis Report prepared by Vectura Consulting Services, LLC. The traffic study is included in Appendix A. Recommended improvements based on those suggested above were evaluated by Richard Lambert Consultants, LLC and Vectura Consulting Services, LLC and are discussed in more detail in Section 6 later in this report.

A telephone conversation took place between Richard C. Lambert Consultants, LLC and ICRR employee, John Denning, regarding the design and permit criteria needed for a sidewalk crossing over the ICRR. A telephone conversation took place between Richard C. Lambert Consultants, LLC and the Department of Transportation and Development (DOTD) employee, Gary Leblanc, to discuss the new specifications for a complete streets program for Minnesota Park Road. An email was sent to summarize this discussion. A summary of these conversations is available in Appendix B.

A Project Committee Meeting between Regional Planning Commission, Tangipahoa Parish Government, and Richard C. Lambert Consultants, LLC was conducted to discuss the draft

report and proposed alternatives including the complete streets program. The general consensus of the meeting was to focus on a hybrid of the various alternatives incorporated herein. This resulted in Alternate 5 which is discussed in more detail in Section 6 of this report. A summary of that meeting is available in Appendix B.

A final Project Committee Meeting between Regional Planning Commission, Tangipahoa Parish Government, DOTD and Richard C. Lambert Consultants, LLC was conducted to discuss the revised draft report, and feasibility of the alternates in order to finalize the report. A summary of that meeting is available in Appendix B.

3.0 Existing and Proposed Land Use

3.1 Existing Land Use

Existing land use along the Minnesota Park Road corridor from ICRR to Range Road is primarily residential and commercial. There are private residents, an assisted senior living complex (Summerfield of Hammond), a gas station and deli (Ryan's Deli), a mobile home park, an apartment complex, and a parcel containing a cell phone tower.

3.2 Proposed Land Use

Proposed land use for the corridor will be consistent with the existing land use. It is the intention of Tangipahoa Parish Government and the RPC that improvements will ease traffic congestion and ultimately allow residents (traffic and pedestrians) to easily reach neighboring developments such as Hammond Square Mall.

4.0 Surrounding Community Elements

4.1 Cemeteries, Churches, Schools, Public Facilities

The Minnesota Park Road corridor is categorized as a Major Urban Collector roadway. Its function is to connect local roads to larger arterials such as SW Railroad Avenue (US 51 Business) and ultimately to I-12. The connection of Minnesota Park Road to Range Road and SW Railroad Avenue promotes access to community amenities, businesses, and public facilities. Along the Minnesota Park Road route, or within a ½ mile radius, are such facilities and are listed as categorized below.

Schools:	Oaks Montessori School
Churches:	Oak Tree Church, Northshore Community Fellowship, Happy Woods Church of God, First True Love World Outreach, St. James African Methodist Episcopal Church
Cemeteries:	Holly Gardens Cemetery
Public Facilities:	National Guard Armory

4.2 Public Recreation Areas, Public Parks, Wildlife Refuges, Historic Sites

Just as Minnesota Park Road promotes access for businesses and community assets listed above, it also promotes access for public recreation activities and sites. While there are no facilities located along the route or within ½ mile, facilities located within a mile are listed below.

Public Parks: Zemurray Park, Clarke Park

Historical Site: McGehee House

5.0 Environmental Conditions

5.1 Endangered Species

In 1973, Congress passed the Endangered Species Act. This act recognizes species of fish, wildlife, and plants in the United States that have become extinct as a result of economic growth and development due to insufficient concern and conservation. Other species of fish, wildlife, and plants have depleted in numbers where they are in danger of, or threatened with, extinction. Since these species of fish, wildlife, and plants are of esthetic, ecological, educational, historical, recreational, and scientific value to the United States and its people, they have been listed and protected by the federal government. The intended purpose of the Act is to provide a means by which the ecosystems upon which endangered and threatened species depend may be conserved and to provide a program for the conservation of those species.

Since the Minnesota Park Road corridor between ICRR and Range Road is within a developed area and not directly connected to any body of water, the possibility of disturbing a threatened or endangered species is unlikely.

5.2 Louisiana Scenic Rivers Act

Louisiana currently has 52 streams, rivers, and bayous totaling up to more than 3,000 miles of the Louisiana Natural and Scenic Rivers in the system. To protect these natural and scenic rivers in Louisiana, the State Legislature adopted the Louisiana Natural and Scenic Rivers Act in 1970. The System was developed for the purpose of preserving, protecting, developing, reclaiming, and enhancing the wilderness qualities, scenic beauties, and ecological regimes of certain free-flowing Louisiana streams. In order to preserve these rivers and their natural resources, activities within, adjacent to, or nearby a scenic river will require a Scenic Rivers Permit through the Louisiana Department of Wildlife and Fisheries. However, the nearest river is Ponchatoula Creek which is over 0.7 miles to the southeast of Minnesota Park Road and is not designated as a Scenic River.

As the Minnesota Park Road corridor between ICRR and Range Road is not directly connected or adjacent to a stream or river, no Scenic Rivers Permit should be required for this project. Ponchatoula Creek, the only body of water near the project, is located ¾ mile away and should not be affected.

5.3 Significant Trees

Per LADOTD's EDSM I.1.1.21, a significant tree can be defined as:

> "A significant tree is a Live Oak, Red Oak, White Oak, Magnolia or Cypress that is considered aesthetically important, 18" or greater in diameter at breast height (4'-6" above the ground), and having a form that separates it from the surrounding vegetation or is considered historic. A historic tree is a tree that stands at a place where an event of historic significance occurred that had local, regional, or national importance. A tree may also be considered historic if it has taken on a legendary stature to the community; mentioned in literature or documents of historic value; considered unusual due to size, age or has landmark status. Significant trees must be in good health and not in a declining condition."

During field reconnaissance, several trees of the type designated as Oak trees were noted in the area. However, these trees currently have diameters less than 18" and are not considered significant trees.

5.4 Hazardous Materials

Existence of hazardous materials in the work area has not been documented. However, it is possible that hazardous materials detour from I-12 at any point.

5.4.1 Storage Tanks, CERCLIS, ERNS, Enforcement, and Compliance

Existence of storage tanks in the roadway right-of-way area is not documented. Fuel storage tanks at gas stations along Minnesota Park Road are not listed on Louisiana Department of Environmental Quality Leaking Underground Storage Tank program.

5.4.2 Manufacturing Facilities

Research has not shown a manufacturing facility located along Minnesota Park Road.

5.5 Surrounding Community

The surrounding community consists of churches, schools, a hospital, public recreation areas, single family dwellings, and commerce areas for shopping and dining.

6.0 Proposed Sidewalks and Roadway Improvements

6.1 Roadway Design Guidelines

Minnesota Park Road is currently classified under the Federal Highway System as a Major Urban Collector. Design improvements should conform to Federal and State guidelines set forth within this roadway classification. Any derivation from these guidelines will require a design exception from the LADOTD Chief Engineer in order to receive federal funds.

6.2 Louisiana's Complete Streets Policy

Recommendations should enable safe access for all users including motor vehicles, pedestrians, and bicyclists while also enhancing mobility for children, the elderly, and people with disabilities.

6.3 Proposed Corridor Improvements

Improvements along the Minnesota Park Road route from ICRR to Range Road should incorporate upgrades in accordance with the minimum guidelines for a Major Urban Collector Roadway classification. Per Section 2.3 of this report, several alternatives for improvements were suggested and are presented in detail as follows. These recommendations are based on the long term improvements for a build out year of 2040 as evaluated in the Vectura Consulting Services, LLC Traffic Study which is included in Appendix A.

- Remove the existing signal at Minnesota Park Road at Range Road and convert to roundabout (Alternate 1) or all-way stop.
- Widen existing roadway at intersection of Minnesota Park Road at Range Road to include dedicated turning lanes at existing intersection traffic signal (Alternate 2).
- Widen existing roadway to include a Two Way Left Turn Lane along Minnesota Park Road (Alternate 3a with 60' ROW and Alternate 3b with 80' ROW).
- Add sidewalks along Minnesota Park Road (Alternate 4a-both sides of roadway and Alternative 4b-south side of roadway only).

6.3.1 Remove the existing signal at Minnesota Park Road at Range Road and convert to all-way stop or roundabout.

Tables 1 and 2 below, from information in the traffic study by Vectura Consulting Services, LLC contained in Appendix A, show the AM and PM Peak Period Level of Service and Delay Analysis. If the signal was to be removed and an "All-Way Stop" installed at the intersection for the 2020 Build year, there would only be an improvement in the South Approach on Range Road. However, the Level of Service (LOS) for the intersection would worsen from a "B" to a "C". For the 2040 build year the delays would worsen especially on the west approach along Minnesota Park Road. If additional turning lanes for each approach were constructed for the "All-Way Stop" condition, the 2020 design year would have limited improvements only to the Minnesota Park Road Approach. The 2040 design year would see minimal improvements to the North Approach on Range Road and the Minnesota Park Road Approach. However, due to right-of-way restrictions, close proximity of existing buildings, and the associated costs for construction, not all of the turning lanes would be able to be constructed. This would remove the improvements to the delay times for the approaches.

If the signal is removed, and a single-lane roundabout installed (Alternate 1), the LOS would improve to an "A" and the delays would be reduced on all approaches. The installation of a roundabout provides increased safety due to the reduction in the severity of angle crashes, lower speeds, and reduced conflicts. Additionally, the potential for many hazardous conflicts, such as right angle, left turn, and head-on crashes are eliminated with the installation of a roundabout. The Vectura traffic study recommends a single-lane roundabout at the intersection of Minnesota Park Road and Range Road for the lowest stopped delay / queues and improved safety. The Right-of-way required for construction of the roundabout would be approximately 0.34 acres.

Table 1: AM Peak Period Level of Service and Delay Analysis in seconds (Vectura)

Approach	2017 Existing		2020 No Build		2020 Build All-Way STOP		2020 Build Roundabout		2040 No Build		2040 Build All-Way STOP		2040 Build Roundabout	
S	12.1	B	14.2	B	12.7	B	1.7	A	65.1	E	21.1	C	5.4	A
N	11.2	B	11.0	B	18.5	C	3.1	A	89.4	F	33.5	D	9.5	A
W	14.8	B	15.8	B	29.4	D	1.6	A	25.5	C	58.6	F	2.5	A
ALL	12.4	B	13.6	B	18.4	C	2.1	A	63.7	E	33.6	D	6.0	A

Table 2: PM Peak Period Level of Service and Delay Analysis in seconds (Vectura)

Approach	2017 Existing		2020 No Build		2020 Build All-Way STOP		2020 Build Roundabout		2040 No Build		2040 Build All-Way STOP		2040 Build Roundabout	
S	12.2	B	14.8	B	13.5	B	2.0	A	71.8	E	20.9	C	2.9	A
N	9.7	A	12.0	B	26.3	D	2.4	A	42.4	D	64.5	F	3.9	A
W	15.9	B	17.3	B	28.4	D	2.4	A	62.5	E	63.2	F	3.2	A
ALL	12.4	B	14.5	B	22.1	C	2.2	A	59.1	E	47.7	E	3.3	A

Figure 6.1 - Proposed Street View along Minnesota Park Road at Range Road Looking East All-Way Stop
(Source: RCLC)

Figure 6.2 - Proposed Street View along Range Road at Minnesota Park Road Looking North All-Way Stop
(Source: RCLC)

Figures 6.1 and 6.2 are renderings of the intersection showing proposed stop signs and stop bars instead of the current traffic signal. Based upon past experiences, constructability for the roundabout would be better with an offset design. See Appendix E for renderings of aerial view and proposed roundabout at Minnesota Park Road and Range Road.

6.3.2 Widen existing roadway at intersection to include dedicated turning lanes at intersection signal (Alternate 2).

The intersection of Minnesota Park Road and Range Road can experience significant delays during high traffic periods. Implementation of turn lanes will facilitate traffic movement, however, may not necessarily reduce the number of rear-end collisions at the intersection. Turn lanes for left and right turning movements on Minnesota Park Road should help minimize delays by separating these turning movements at the intersection. A left turning lane and dedicated through lane should also be constructed to reduce traffic delays along Range Road's south approach. Table 3 and 4 below, from information in the traffic study by Vectura Consulting Services, LLC contained in Appendix A, show the AM and PM Peak Period Level of Service and Delay Analysis for this scenario.

Table 3: AM Peak Period Level of Service and Delay Analysis in seconds (Vectura)

Approach	2017 Existing		2020 No Build		2020 Build Signal w/ NBL, EBR, EBL		2040 No Build		2040 Build Signal w/ NBL, EBR, EBL	
S	12.1	B	14.2	B	6.9	A	65.1	E	10.7	B
N	11.2	B	11.0	B	10.6	B	89.4	F	24.0	C
W	14.8	B	15.8	B	9.7	A	25.5	C	10.4	B
ALL	12.4	B	13.6	B	8.7	A	63.7	E	14.8	B

Table 4: PM Peak Period Level of Service and Delay Analysis in seconds (Vectura)

Approach	2017 Existing		2020 No Build		2020 Build Signal w/ NBL, EBR, EBL		2040 No Build		2040 Build Signal w/ NBL, EBR, EBL	
S	12.2	B	14.8	B	7.2	A	71.8	E	9.0	A
N	9.7	A	12.0	B	10.6	B	42.4	D	25.1	C
W	15.9	B	17.3	B	10.6	B	62.5	E	13.3	B
ALL	12.4	B	14.5	B	9.3	A	59.1	E	15.7	B

Improvements should include the addition of turn lanes, striping, relocating utilities and power poles if necessary, implementing drainage improvements along the pavement widening, and upgrading directional signage. As the signal currently exists with the correct signal head configuration, the only modifications would be the installation of additional signage and the possible inclusion of an additional timing phase facilitating Minnesota Park Road right turns simultaneously with Range Road left turns. Figure 6.3 presents a driver's perspective heading northbound along Range Road approaching Minnesota Park Road. Figure 6.4 presents a driver's perspective heading eastbound along Minnesota Park Road approaching Range Road. Figure 6.5 presents the typical section for the layout along Minnesota Park Road. The 4' shoulder shown in the typical section could be removed with an approved Design Exception form LADOTD. Currently there is no shoulder along Minnesota Park Road, to which the

inclusion of one would be considered a safety improvement. These lane renderings are shown in a larger format in Appendix D. An aerial view of these improvements is shown in Appendix E.

Figure 6.3 - Proposed Street View along Range Road At Minnesota Park Road Looking North
(Source: RCLC)

Figure 6.4 - Proposed Street View along Minnesota Park Road at Range Road Looking East
(Source: RCLC)

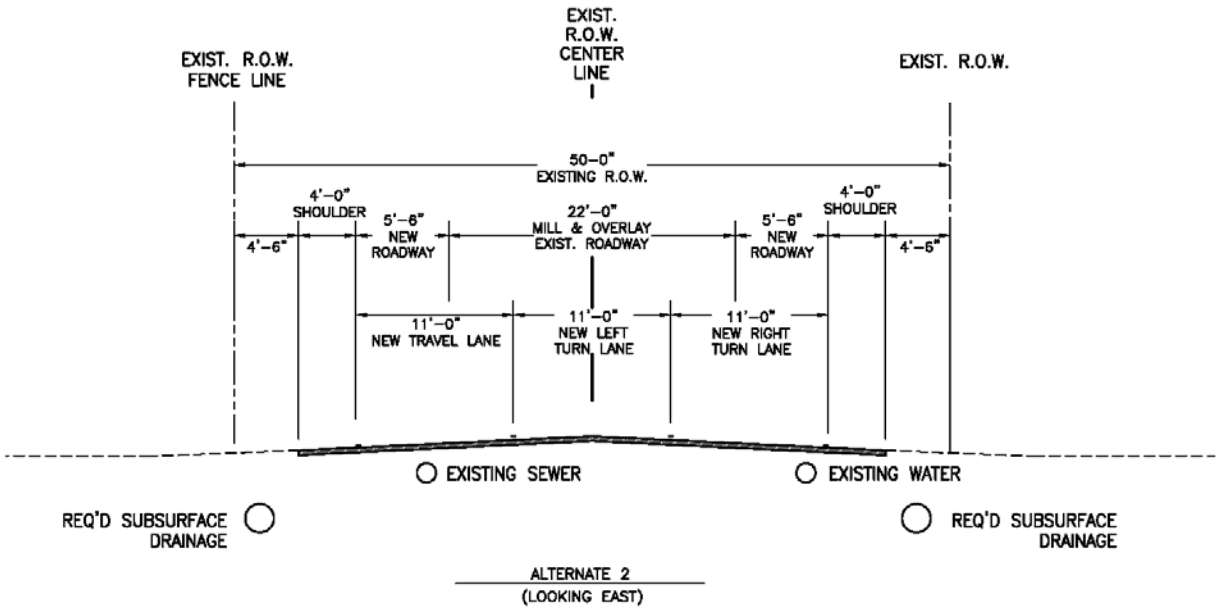

Figure 6.5 – Proposed Typical Roadway Section with Turning Lanes along Minnesota Park Road
(Source: RCLC)

6.3.3 Widen existing roadway to include a Two Way Left Turn Lane along Minnesota Park Road (Alternates 3a and 3b).

Although a 3-lane roadway section would benefit the area along the Minnesota Park Road corridor, right-of-way acquisition would be very expensive and most probably cost prohibitive. In order to construct three 11 foot lanes, the right-of-way would typically be widened to 60 feet (Alternate 3a) if subsurface drainage were used or 80 feet (Alternate 3b) if side road ditches were to be utilized. The cost for the additional right-of-way considering a $5.00 per square foot

cost for acquisition would total from $224,000 to provide a 60' right-of-way to $602,000 to provide an 80' right-of-way. This value does not include actual construction costs associated with the roadway widening or any necessary drainage improvements. These costs are provided in Section 8 of the report. Figure 6.7 shows the driver's view of a 3 lane roadway section which contrasts the existing two lane roadway section shown in Figure 6.6. Figure 6.8 and 6.9 show the typical sections for this proposed improvement with 60' of right-of-way (Alternate 3a) and 80' of right-of-way (Alternate 3b) respectively. A larger scale format of the 3-lane roadway is presented in Appendix D. Figure 6.7 also shows that right-of-way acquisition will also take up a substantial of residents backyards.

Figure 6.6 - Existing Street View along Minnesota Park Road Looking West
(Source: RCLC)

Figure 6.7 - Proposed Street View along Minnesota Park Road Looking West
(Source: RCLC)

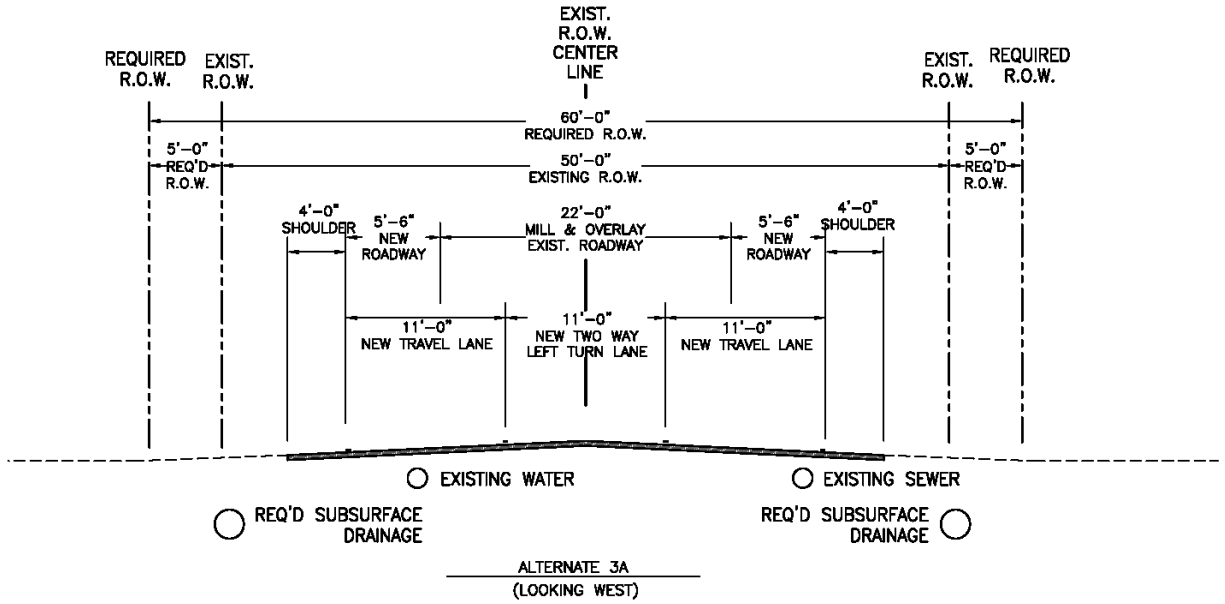

Figure 6.8 – Proposed Typical Roadway Section for Two Way Left Turn Lane at 60' ROW along Minnesota Park Road
(Source: RCLC)

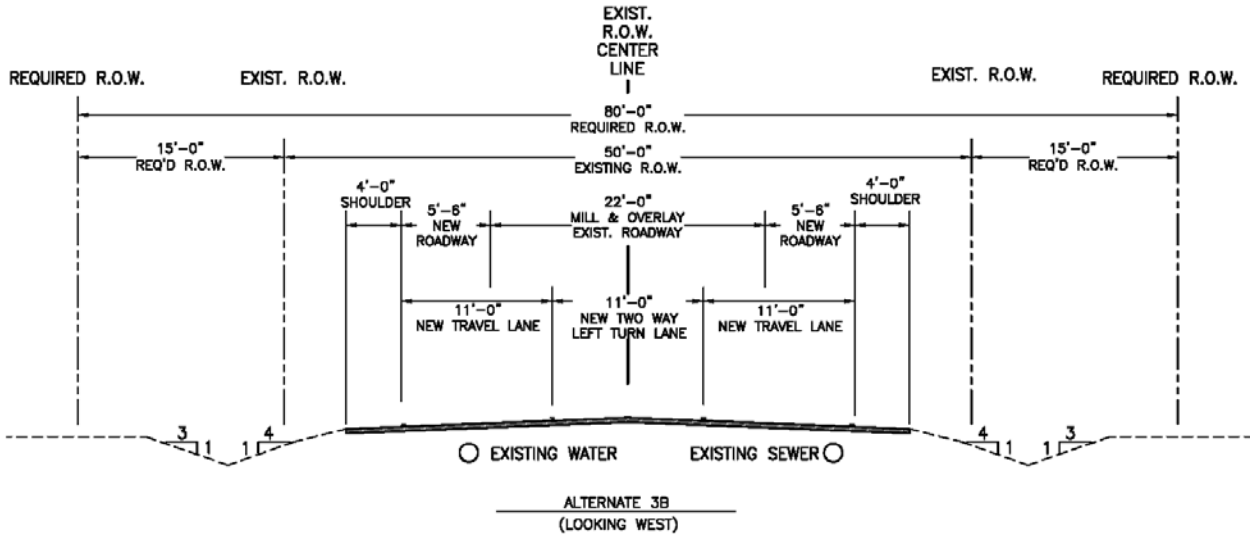

Figure 6.9 – Proposed Typical Roadway Section for Two Way Left Turn Lane at 80' ROW along Minnesota Park Road
(Source: RCLC)

Based on the perspective of Figures 6.7 and 2.2, existing right-of-way is very limited. Roadway widening improvements would undoubtedly affect the costs to maintain the water and sewer lines which will be located under the roadway. Widening of the roadway will also need to incorporate subsurface drainage. Due to these issues, further traffic analysis was not included in the scope of this study.

6.3.4 Add sidewalks along Minnesota Park Road (Alternates 4a and 4b).

The installation of sidewalks along Minnesota Park Road can best be implemented by the construction of sub-surface drainage along the roadway. The sidewalks will allow pedestrians to safely proceed down the Minnesota Park Road corridor in order to visits the various commercial establishments. Construction of sidewalk along both sides of Minnesota Park Road will result in utility relocations and encroachments into residents' yards. Figure 6.10 presents the typical section for the sidewalk installation.

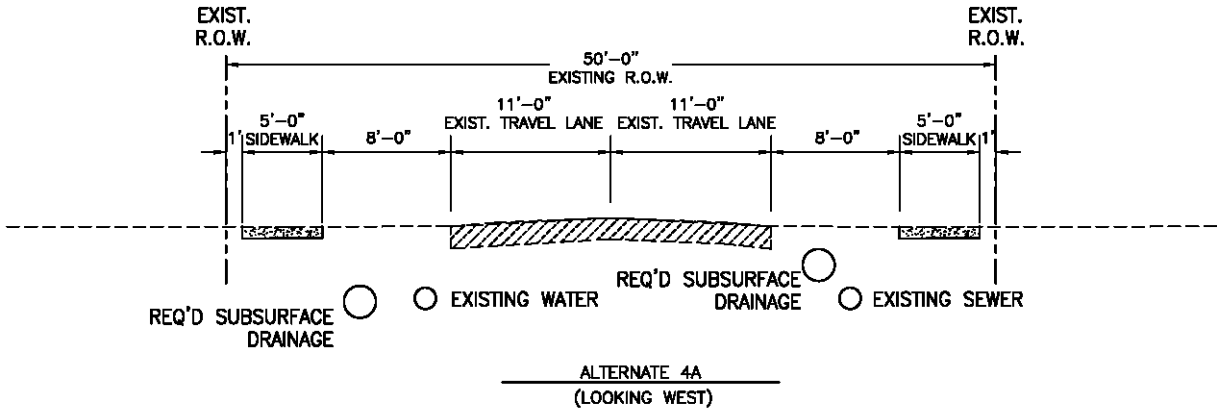

Figure 6.10 –Typical Roadway Section with Proposed Sidewalks along Minnesota Park Road
(Source: RCLC)

Construction of a 5' wide sidewalk along one side of the roadway may be more cost effective than the construction of sidewalks along the north and south side of Minnesota Park Road. Due to limited right-of-way width and several buildings in close proximity to the existing right-of-way line, it will be very difficult and costly to implement roadway widening improvements and sidewalk improvements. The south side of the roadway was chosen over the north side for the sidewalk installation due to the location of the existing sewer line on the north side of the roadway to avoid utility relocation. Figure 6.11 presents the typical section for the sidewalk installation on the south side of the roadway.

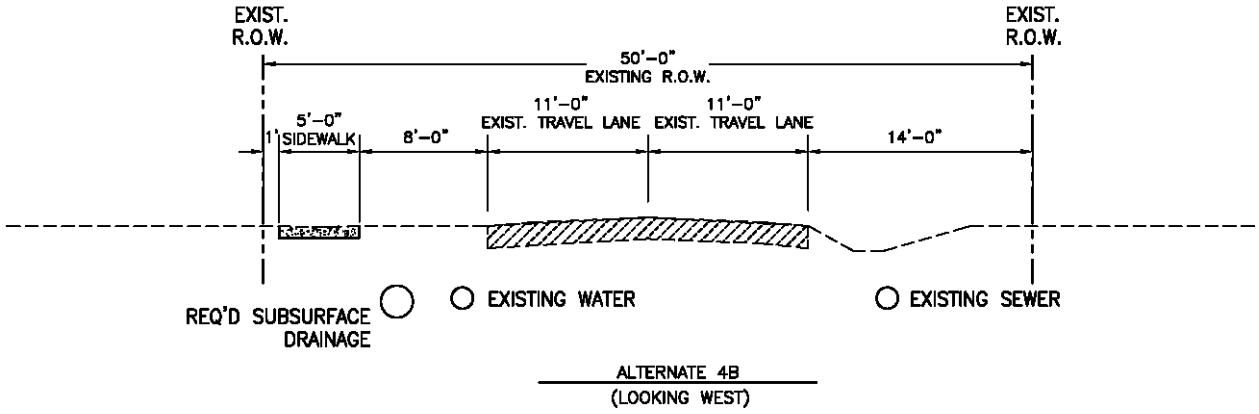

Figure 6.11 –Typical Roadway Section with Proposed Sidewalk along the south side of Minnesota Park Road
(Source: RCLC)

The options presented above are all reasonable improvements to enhance capacity and safety. However, due to the narrow right-of-way and high costs involved to purchase the land to expand the right-of-way for some of the suggested alternatives, most of these improvements are impractical in the short and long term due to budget constraints.

6.3.5 Convert intersection of Minnesota Park Road and Range Road to a Roundabout and incorporate a sidewalk along the south side of Minnesota Park Road (Alternate 5).

As discussed in the Project Committee Meeting, Alternate 5 was added as a proposed corridor improvement. This alternative removes the signal at the intersection of Minnesota Park Road at Range Road converting it into a single-lane roundabout (Alternate 1) and installs a sidewalk along the south side of Minnesota Park Road (Alternate 4b). Therefore, only minimal right of way at the intersection of Minnesota Park Road and Range Road would be required as discussed in Alternate 1.

7.0 Opinion of Probable Construction Cost

7.1 Estimated Cost Methodology

An estimated opinion of probable construction costs was developed for several alternatives to implement improvements at the intersection of Minnesota Park Road at Range Road and along the Minnesota Park Road corridor. These estimated construction costs were derived from

approximating roadway and related infrastructure quantities based on LADOTD standard pay items and associated LADOTD weighted average unit prices.

If roadway widening to allow for 11' travel lanes is within budget, for cost estimating purposes the suggested typical roadway section consisted of the following:

- 2" Superpave Asphaltic Wearing Course Overlay
- 4" Superpave Asphaltic Binder Course
- 12" Class 2 Base Course (Crushed Stone or Recycled Concrete)

This suggested asphalt pavement section is based on past projects in the area. Geotechnical Engineering investigations should be performed prior to implementing design of any alternatives presented in this report.

Breakdowns of the costs for each alternative are shown below in Section 8.3 and on the Stage 0 Preliminary Scope and Budget Checklist in Appendix F. Costs include a contingency for unforeseen conditions during construction, and costs for necessary topographical surveying, environmental services, geotechnical engineering, roadway design/engineering, and construction engineering and inspection (CE&I).

7.2 Project Implementation, Construction Phasing and Detours

Construction of the sidewalk should be able to be applied quickly with minimal delays. However, constructing the intersection improvements of turning lanes or a roundabout at Minnesota Park Road and Range Road will take many months and involve considerable traffic delays. These improvements will require sophisticated construction sequencing to phase construction and detour traffic as required to minimize delays, but to also allow for the quickest construction possible.

7.3 Probable Construction Costs

The probable costs of construction for each Alternate are listed in the table below.

Alternates	Probable Construction Costs (without sidewalks)	Probable Construction Costs (with sidewalks north & south side)	Probable Construction Costs (sidewalk on south side)
Alternate 1 – Roundabout at Intersection	$2,107,449.71	$3,161,181.73	-
Alternate 2 – Turning Lanes at Intersection	$1,537,177.69	$2,252,207.01	-
Alternate 3a – Two Way Left Turn Lane with 60' ROW	$2,447,845.98	$2,779,439.72	-
Alternate 3b – Two Way Left Turn Lane with 80' ROW	$2,237,148.64	$2,441,139.17	-

Alternates	Probable Construction Costs (without sidewalks)	Probable Construction Costs (with sidewalks north & south side)	Probable Construction Costs (sidewalk on south side)
Alternate 4a – Sidewalks on North and South sides of Minnesota Park Road	-	$1,287,434.81	-
Alternate 4b – Sidewalks on South side of Minnesota Park Road	-	-	$712,072.03
Alternate 5 – Roundabout at intersection with Sidewalk along south side of Minnesota Park Road	-	-	$2,638,746.51

8.0 Conclusion

8.1 Summary of Impacts

Implementation of any of the suggested improvements is intended to enhance capacity and safety of the Minnesota Park Road corridor. Listed below in Section 8.2 are the improvements believed to be the most advantageous when considering available funding.

8.2 Summary of Projected Improvements

As a result of data gathering, meeting processes and estimated probable construction cost projections, the overall consensus was to rank the improvements in the following order:

1. Remove the existing signal at Minnesota Park Road at Range Road and convert to roundabout and installation of a sidewalk along the south side of Minnesota Park Road (Alternate 5).
2. Remove the existing signal at Minnesota Park Road at Range Road and convert to roundabout (Alternate 1).
3. If not feasible for roundabout construction due to budgetary constraints and due to right-of-way acquisition, widen existing roadway at intersection to include dedicated turning lanes at intersection signal (Alternate 2).
4. Add sidewalks along Minnesota Park Road (Alternates 4a and 4b).
5. Widen existing roadway to include a Two Way Left Turn Lane along Minnesota Park Road (Alternates 3a and 3b).

8.3 Summary of Probable Construction Cost Estimates

Opinions of Probable Construction Costs for the improvements to the Minnesota Park Road corridor listed above are presented in the STAGE 0 Environmental Checklist and the STAGE 0 Preliminary Scope and Budget Checklist in Appendix F.

Values presented are based on historical cost data and quantities estimated from the preliminary layout, anticipated utility relocations, costs for design and construction oversight,

and reasonable contingencies. The Opinion of Probable Construction Cost to implement sidewalks (Alternate 4a and 4b) along the Minnesota Park Road corridor is estimated at $1,287,000 and $712,000 respectively. Adding turn lanes (Alternate 2) at intersection of Minnesota Park Road at Range Road would be approximately $1,537,000 without sidewalks and $2,252,000 with sidewalks on both sides of Minnesota Park Road. The construction of roundabout (Alternate 1) at the intersection of Minnesota Park Road and Range Road is estimated at $2,107,000 without sidewalks and $3,161,000 with sidewalks on both sides of Minnesota Park Road. Widening Minnesota Park Road to include a Two Way Left Turn Lane (Alternates 3a and 3b), with estimations of $2,448,000 and $2,237,000 without sidewalks or $2,779,000 and $2,441,000 with sidewalks on both sides of Minnesota Park Road.

As Alternate 2 costs with sidewalks are similar to that of Alternate 1, the recommendation from the Project Management Committee is to combine Alternative 1 (Roundabout at Intersection) with Alternate 4b (Sidewalk on South side of roadway) which created Alternate 5. The probable cost of construction for Alternate 5 is estimated at $2,639,000.

The Opinion of Probable Construction Costs includes a contingency for the proposed improvements listed above. These projects and their associated costs can be spread out over several fiscal year budgets as each can be constructed as a standalone project.

Appendix

Appendix A
Traffic Analysis

JUNE 28, 2017

VECTURA

STAGE 0 FEASIBILITY STUDY

MINNESOTA PARK ROAD

TANGIPAHOA PARISH, LA

FOR RICHARD C. LAMBERT CONSULTANTS, LLC

BY VECTURA CONSULTING SERVICES, L.L.C.

PO BOX 14269, BATON ROUGE LA 70898

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Executive Summary

This report documents a capacity analysis and feasibility study for proposed improvements to the intersection of S. Range Road at Minnesota Park Road in the Hammond area which is located 0.5 miles to the east of US 51 (Business). A comparison between each alternative in terms of capacity and safety was analyzed and documented for the implementation year (2020) and design year (2040). The study intersection of Minnesota Park Road at S. Range Road was evaluated using existing and future traffic demands for the following concepts:

- Existing / No Build;
- Alternate 1: Traffic signal with an exclusive left-turn lane on the south and west approaches;
- Alternate 2: Two-Way Stop Control (TWSC) with an exclusive left-turn lane on the south approach;
- Alternate 3: TWSC with an exclusive left-turn lane on the south approach, exclusive right turn lane on the north approach, and exclusive right and left-turn lanes on the west approach;
- Alternate 4: All-Way Stop Control (AWSC);
- Alternate 5: AWSC with an exclusive left-turn lane on the south approach, exclusive right turn lane on the north approach, and right and left-turn lanes on the west approach;
- Alternate 6: Single-Lane Roundabout.

The study resulted in the following conclusions:

- 22 crashes were reported at the study intersection from January 1, 2013 to December 31, 2015.
- Four crashes as reported from 2013-2015 were correctable (four left-turn).
- The intersection of Minnesota Park Road at S. Range Road had abnormal crash rates when compared to the years 2012-2014 two lane rural road statewide average.
- 6 crashes were reported in three years on the segment of Minnesota Park Road between Holly Street and S. Range Road.
- 1 crash was reported in three years on the segment of S. Range Road between Jade Court and Minnesota Park Road.
- 2 crashes were reported in three years on the segment of S. Range Road between Minnesota Park Road and Little Italy Road.
- Traffic analyses indicated that the intersection of Minnesota Park Road at S. Range Road currently operates at a LOS B or better and will degrade to a LOS E in the AM and PM peak hours in the design year.
- Signal Warrant Analyses at the studied intersection using 2017 traffic volumes indicated that the intersection does not currently meet Warrant 1A or 1B. However, Warrant 1A is met in the year 2040.
- Alternate 1 (traffic signal with added left-turn lanes on the south and west approaches) resulted in a LOS C of better on all approaches in the design year of 2040.
- Alternate 2 (TWSC with an exclusive left-turn lane on the south approach) did not proved a LOS D or better on all approaches in the implementation or design years.
- Alternate 3 (TWSC with an exclusive left-turn lane on the south approach, exclusive right turn lane on the north approach and right and left-turn lanes on the west approach) provided a LOS D or

better on all approaches in the implementation year, but did not provide a LOS D or better for all approaches in the design year.

- Alternate 4 (AWSC with existing geometry) did provide a LOS D or better for all approaches in the implementation year, but did not provide LOS D or better in the design year for all approaches in the design year.
- Alternate 5 (AWSC with an exclusive left-turn lane on the south approach, exclusive right turn lane on the north approach, and right and left-turn lanes on the west approach) did provide a LOS D or better for all approaches in the implementation year, but did not provide LOS D or better in the design year for all approaches in the design year.
- Alternate 6 (single-lane roundabout) will operate at an overall LOS A or better with less overall delay compared to all alternatives analyzed during the implementation and design years.
- The Crash Modification Factor (CMF) of converting a signalized intersection to a roundabout is 0.52[1] for all crashes which means overall crashes should decrease by 48% after the installation of a roundabout. Four (4) of the 22 crashes as reported from 2013-2015 are correctable (left-turn).
- The intersection of Minnesota Park Road at S. Range Road had abnormal crash rates when compared to the years 2012-2014 two lane rural road statewide average.
- The highest number of correctable crashes in a twelve-month period was two left-turn crashes. According to LADOTD EDSM VI.1.1.5, a roundabout may be justified if five (5) or more correctable crashes are reported in a twelve-month period at the study intersection.

The study resulted in the following recommendations:

- For the design year, Alternate 1 & 6 will operate at a LOS C or better in the future. For the lowest stopped delay / queues and improved safety, a single-lane roundabout was recommended at the intersection of S. Range Road and Minnesota Park Road. The recommended lane configuration included the following approach lane configuration (as shown in **Figure 10**):
    - Eastbound: One shared left-turn / right-turn lane,
    - Northbound: One shared left-turn / through lane, and
    - Southbound: One through lane / right-turn lane.
- The AWSC does operate at a LOS D or better on all approaches in the implementation year. Since the AWSC does not provide a LOS D or better in the design year, either Alternate 1 or 6 should be constructed before the design year.
- The installation of a roundabout provides increased safety due to reduction in the severity of angle crashes due to slower speeds and reduced conflicts. Additionally, the potential for many hazardous conflicts, such as right angle, left turn and head-on crashes are eliminated with the installation of a roundabout.
- It is recommended that all required signage and pavement markings for the roundabout should be designed in accordance with the *LADOTD Road Design Manual - Policy for Roundabout Design* and the latest *Manual on Uniform Traffic Control Devices (MUTCD)*

[1] http://www.cmfclearinghouse.org/detail.cfm?facid=225

Introduction

This report documents a preliminary capacity analysis and feasibility study for proposed improvements to the intersection of S. Range Road at Minnesota Park Road in the Hammond area. The studied intersection is located 0.5 miles to the east of US 51 (Business). The studied intersection location is shown in **Figure 1**.

Purpose

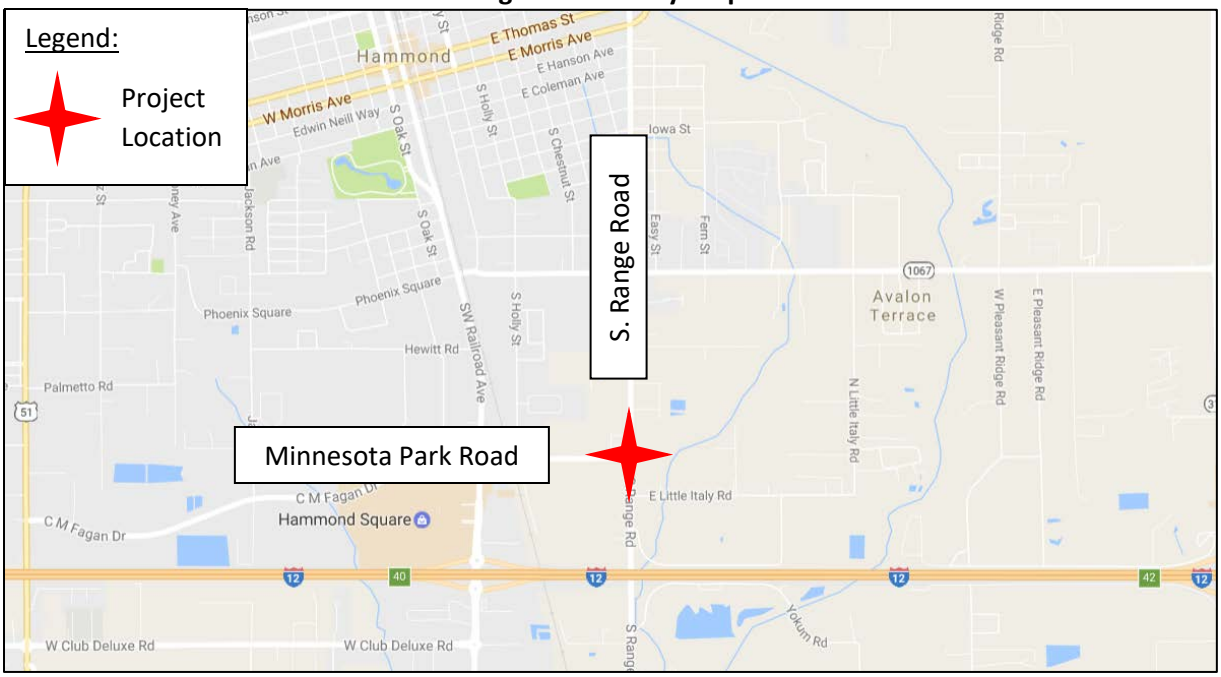
The purpose of this feasibility study is to assess and provide a comparative analysis of the operational performance of the existing traffic control of traffic controlled intersection with no turn lanes to an intersection that is traffic controlled with turn lanes on the south and west approaches as well as a modern roundabout. A comparison between each alternative in terms of capacity and safety was analyzed and documented for the implementation year of 2020 and the future design year of 2040.

Methodology

The analysis performed includes the following elements:

- Collected peak hour turning movement counts (AM and PM), 24-Hour machine counts and vehicular speeds,
- Determined volumes for future years of 2020 and 2040 using the growth rate obtained from the Regional Planning Commission (RPC),
- Determined the number of crashes per year at the intersection from the crash data provided by RPC,
- Performed signal warrant analysis for existing volumes at study intersection using the 2009 edition of the Manual on Uniform Traffic Control Devices (MUTCD),
- Determined the capacity and LOS of the proposed alternatives using *SIDRA Version 7.0,*
- Performed left- and right-turn lane warrants for the two-way stop-controlled alternate using criteria from National Cooperative Highway Research Program (NCHRP) Number 457, *"Evaluating Intersection Improvement"* and
- Developed conceptual roundabout layouts in accordance with *LADOTD EDSM: VI.1.1.5* & *LADOTD Road Design Manual - Policy for Roundabout Design.*

Figure 1: Vicinity Map



Existing Conditions

Minnesota Park Road is a two-lane roadway running east-west at the intersection with S. Range Road with a posted speed limit of 35 miles per hour (mph). S. Range Road is a two-lane roadway running north-south at the intersection with Minnesota Park Road. On S. Range Road, the posted speed limit is 35 mph on the south approach and 35 mph on the north approach.

The intersection of Minnesota Park Road and S. Range Road is a three-legged, traffic signal controlled intersection with the following lane configuration:

- Eastbound: One shared left- / right-turn lane,
- Northbound: One shared left-turn / through lane, and
- Southbound: One shared through / right-turn lane.

The traffic signal consisted of a protected / permitted phasing for the northbound left movement.

Traffic Volumes

Turning movement counts were performed at the intersection during the AM and PM peak periods on Wednesday, February 15, 2017 and are shown in **Figures 2 & 3**. In addition, 24-hour volumes were counted on the three approaches of the study intersection. 24-hour tube counts were performed for a seven day period starting on February 12, 2017. Raw counts including vehicle classifications are provided in the **Appendix A**. The average daily traffic (ADT) is calculated as an average of the 24-hour volumes on Tuesday, Wednesday and Thursday as shown in **Figure 4.** E. Little Italy Road was counted at the request of DOTD; however, no analyses was performed for this intersection.

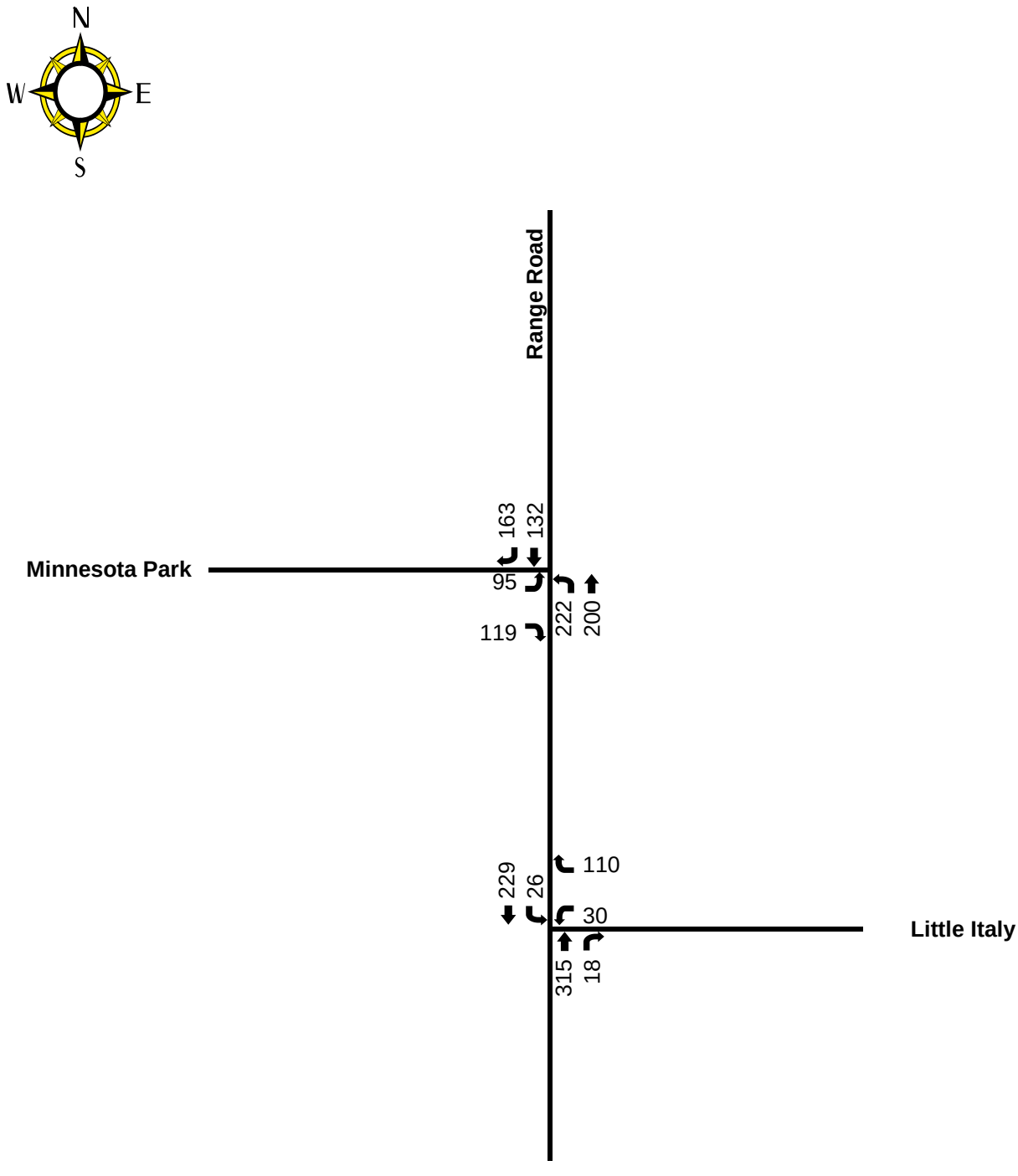


FIGURE 2: 2017 AM
EXISTING TRAFFIC VOLUMES

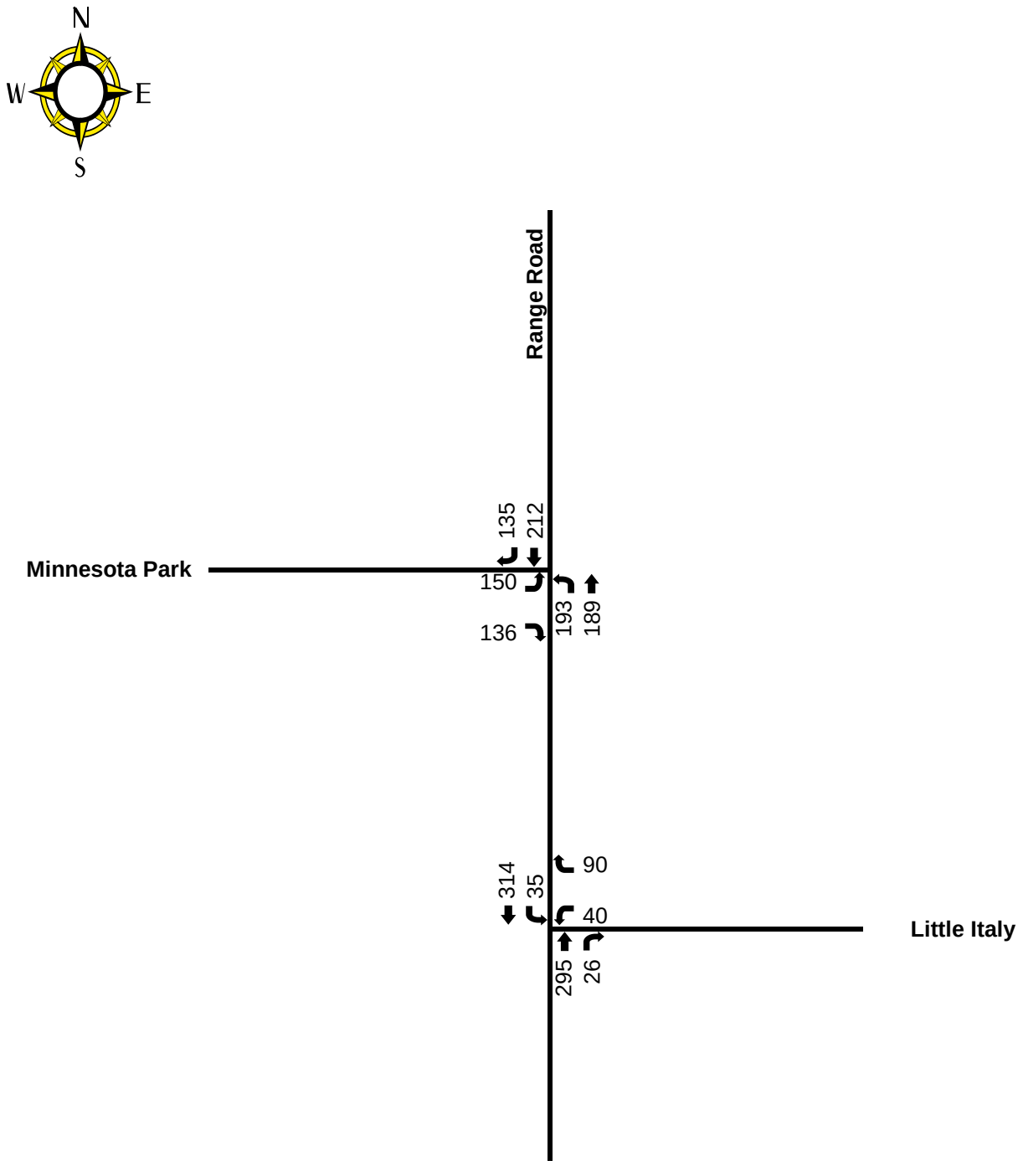
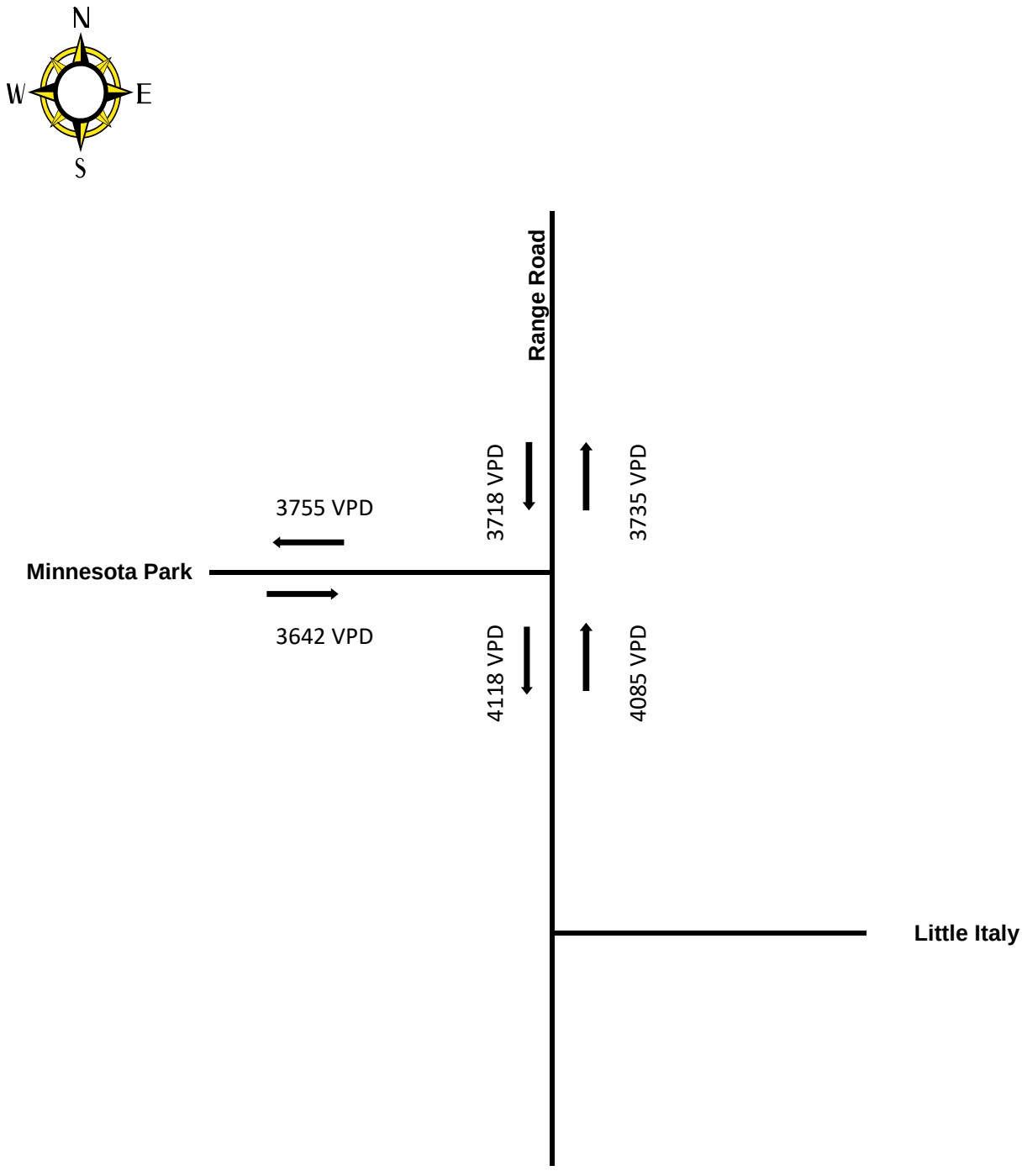


FIGURE 3: 2017 PM
EXISTING TRAFFIC VOLUMES



LEGEND
VPD VEHICLES PER DAY

FIGURE 4: 2017 AVERAGE DAILY TRAFFIC

Signal Warrant Analysis

The existing approach volumes collected at the study intersection were used to perform a traffic signal warrant analysis at the study intersection using procedures detailed in the 2009 Manual on Uniform Traffic Control Devices (MUTCD).

A signal warrant analysis using Warrant 1 of the MUTCD (using 100 percent warrant satisfying volumes) was performed for the 2017 existing and 2040 design life conditions are summarized in **Tables 1 & 2**. Range Road was considered the major street and Minnesota Park Avenue was considered the minor street. To meet Warrant 1, any eight hours out of a 24-hour period must exceed the minimum volumes as shown below. Per MUTCD Warrant 1 (Eight-Hour Vehicular Volume) the need for a traffic control signal shall be considered if an engineering study finds that one of the following conditions exist for each of any eight (8) hours of an average day:

A. The vehicles per hour on the major-street exceed 500, and the higher-volume minor-street approaches exceed 150; or
B. The vehicles per hour on the major-street exceed 750, and the higher-volume minor-street approaches exceed 75.

Table 1: 2017 Signal Warrant Analysis at Minnesota Park Road at Range Road

Time Period		Existing		Criteria 1A		Criteria 1B		Criteria Met?	
		Major St	Minor St	Major St	Minor St	Major St	Minor St	1A	1B
12:00 AM	1:00 AM	35	25	500	150	750	75	NO	NO
1:00 AM	2:00 AM	29	13	500	150	750	75	NO	NO
2:00 AM	3:00 AM	31	11	500	150	750	75	NO	NO
3:00 AM	4:00 AM	22	7	500	150	750	75	NO	NO
4:00 AM	5:00 AM	103	15	500	150	750	75	NO	NO
5:00 AM	6:00 AM	157	28	500	150	750	75	NO	NO
6:00 AM	7:00 AM	287	69	500	150	750	75	NO	NO
7:00 AM	8:00 AM	618	181	500	150	750	75	YES	NO
8:00 AM	9:00 AM	585	162	500	150	750	75	YES	NO
9:00 AM	10:00 AM	378	123	500	150	750	75	NO	NO
10:00 AM	11:00 AM	346	156	500	150	750	75	NO	NO
11:00 AM	12:00 PM	433	195	500	150	750	75	NO	NO
12:00 PM	1:00 PM	444	264	500	150	750	75	NO	NO
1:00 PM	2:00 PM	447	213	500	150	750	75	NO	NO
2:00 PM	3:00 PM	508	264	500	150	750	75	YES	NO
3:00 PM	4:00 PM	665	290	500	150	750	75	YES	NO
4:00 PM	5:00 PM	620	290	500	150	750	75	YES	NO
5:00 PM	6:00 PM	564	299	500	150	750	75	YES	NO
6:00 PM	7:00 PM	462	314	500	150	750	75	NO	NO
7:00 PM	8:00 PM	259	208	500	150	750	75	NO	NO
8:00 PM	9:00 PM	277	150	500	150	750	75	NO	NO
9:00 PM	10:00 PM	166	124	500	150	750	75	NO	NO
10:00 PM	11:00 PM	104	89	500	150	750	75	NO	NO
11:00 PM	12:00 AM	62	39	500	150	750	75	NO	NO

From the above table, it can be said that the study intersection does not warrant a signal for the implementation year of 2017 based on either Criteria 1A or Criteria 1B since neither criterion was met for eight (8) hours of the average day.

Table 2: 2040 Signal Warrant Analysis at Minnesota Park Road at Range Road

Time Period		Existing		Criteria 1A		Criteria 1B		Criteria Met?	
		Major St	Minor St	Major St	Minor St	Major St	Minor St	1A	1B
12:00 AM	1:00 AM	50	35	500	150	750	75	NO	NO
1:00 AM	2:00 AM	41	18	500	150	750	75	NO	NO
2:00 AM	3:00 AM	44	16	500	150	750	75	NO	NO
3:00 AM	4:00 AM	31	10	500	150	750	75	NO	NO
4:00 AM	5:00 AM	146	21	500	150	750	75	NO	NO
5:00 AM	6:00 AM	223	40	500	150	750	75	NO	NO
6:00 AM	7:00 AM	407	98	500	150	750	75	NO	NO
7:00 AM	8:00 AM	876	257	500	150	750	75	YES	YES
8:00 AM	9:00 AM	830	230	500	150	750	75	YES	YES
9:00 AM	10:00 AM	536	174	500	150	750	75	YES	NO
10:00 AM	11:00 AM	491	221	500	150	750	75	NO	NO
11:00 AM	12:00 PM	614	277	500	150	750	75	YES	NO
12:00 PM	1:00 PM	630	374	500	150	750	75	YES	NO
1:00 PM	2:00 PM	634	302	500	150	750	75	YES	NO
2:00 PM	3:00 PM	720	374	500	150	750	75	YES	NO
3:00 PM	4:00 PM	943	411	500	150	750	75	YES	YES
4:00 PM	5:00 PM	879	411	500	150	750	75	YES	YES
5:00 PM	6:00 PM	800	424	500	150	750	75	YES	YES
6:00 PM	7:00 PM	655	445	500	150	750	75	YES	NO
7:00 PM	8:00 PM	367	295	500	150	750	75	NO	NO
8:00 PM	9:00 PM	393	213	500	150	750	75	NO	NO
9:00 PM	10:00 PM	235	176	500	150	750	75	NO	NO
10:00 PM	11:00 PM	147	126	500	150	750	75	NO	NO
11:00 PM	12:00 AM	88	55	500	150	750	75	NO	NO

From the above table, it can be said that the study intersection does warrant a signal for the design year of 2040 based on Criteria 1A. Criteria 1A was met for 11 hours of the average day which exceeds the eight (8) hour minimum requirement.

Future Traffic Volumes

The future annual growth rate was obtained from the RPC to estimate forecast volumes at the study intersection. This growth rate of 1.53% was applied to the existing traffic volumes, and 2020 and 2040 turning movement volumes were developed for average weekday AM and PM peak hours. The design years of 2020 and 2040, AM and PM peak hour volumes are shown in **Figures 5-8**.

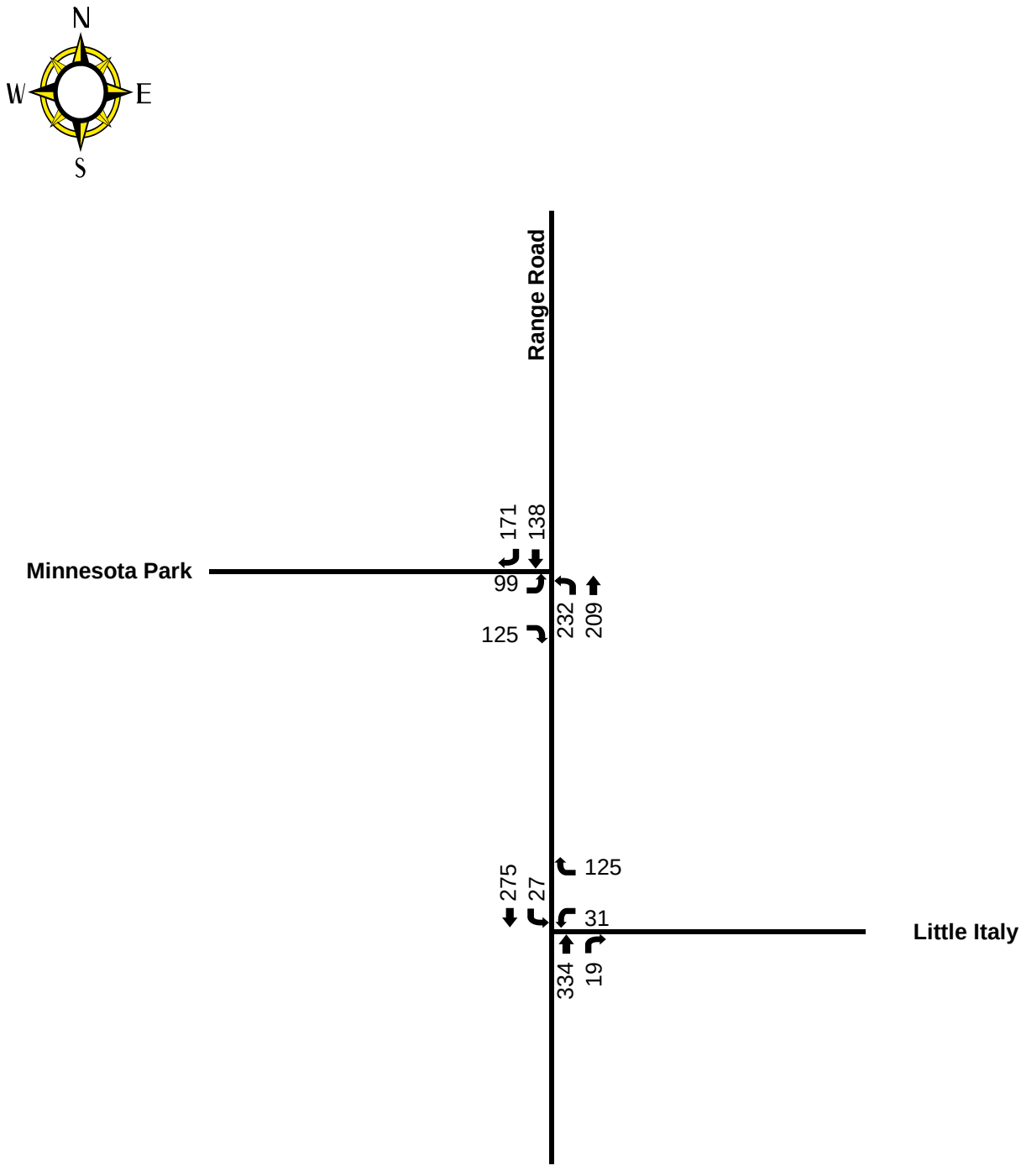


FIGURE 5: 2020 AM TRAFFIC VOLUMES

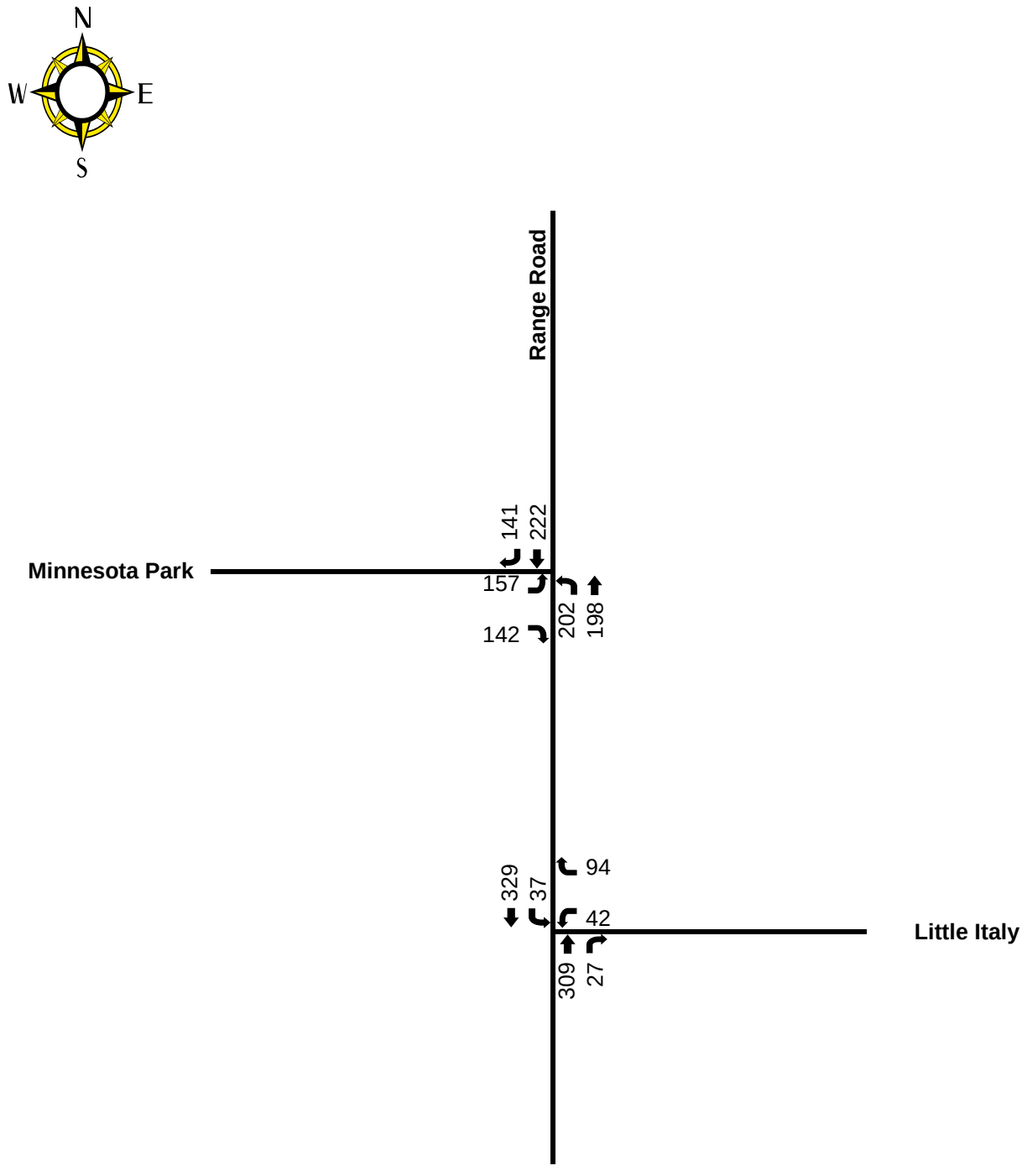


FIGURE 6: 2020 PM TRAFFIC VOLUMES

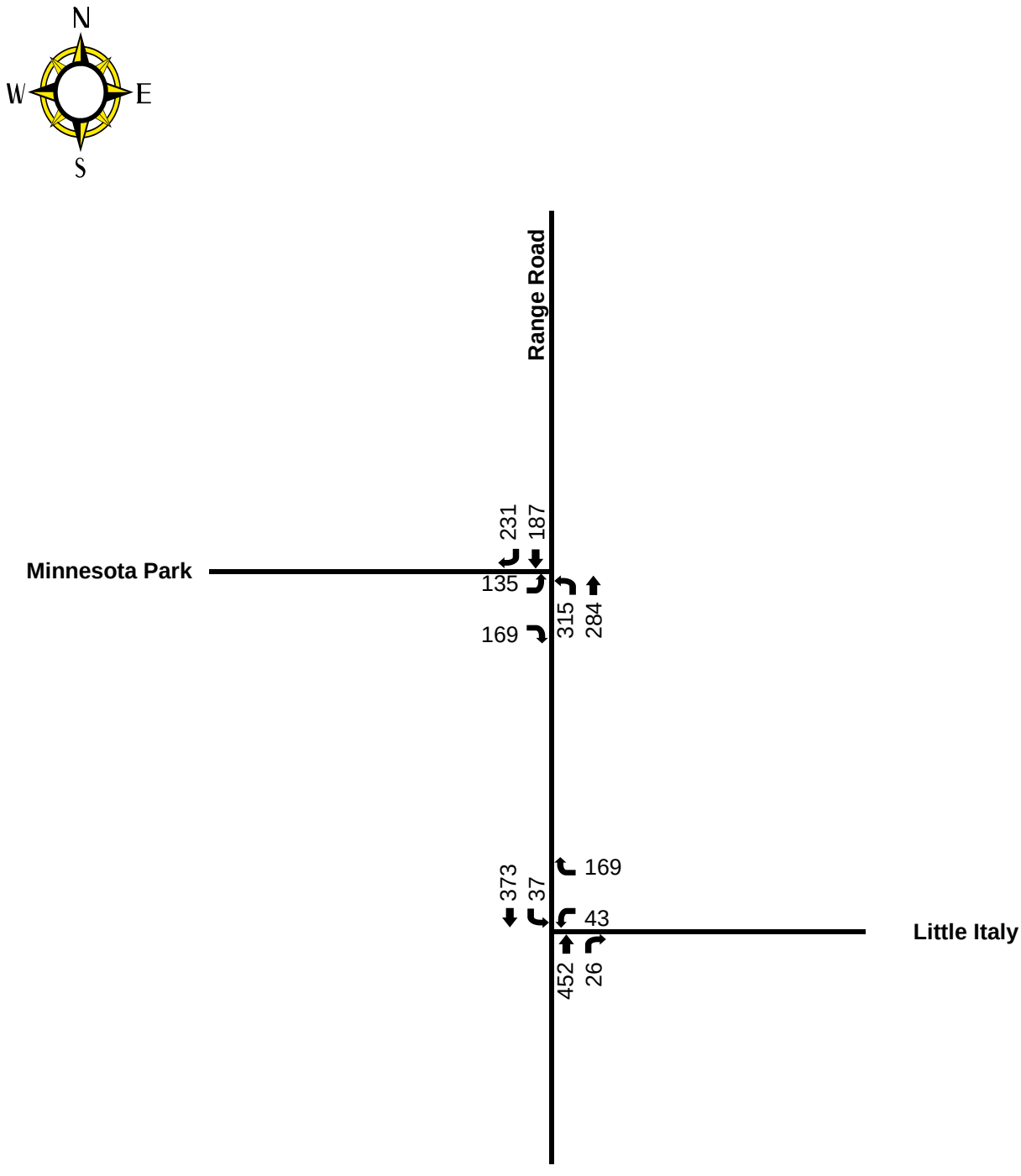


FIGURE 7: 2040 AM TRAFFIC VOLUMES

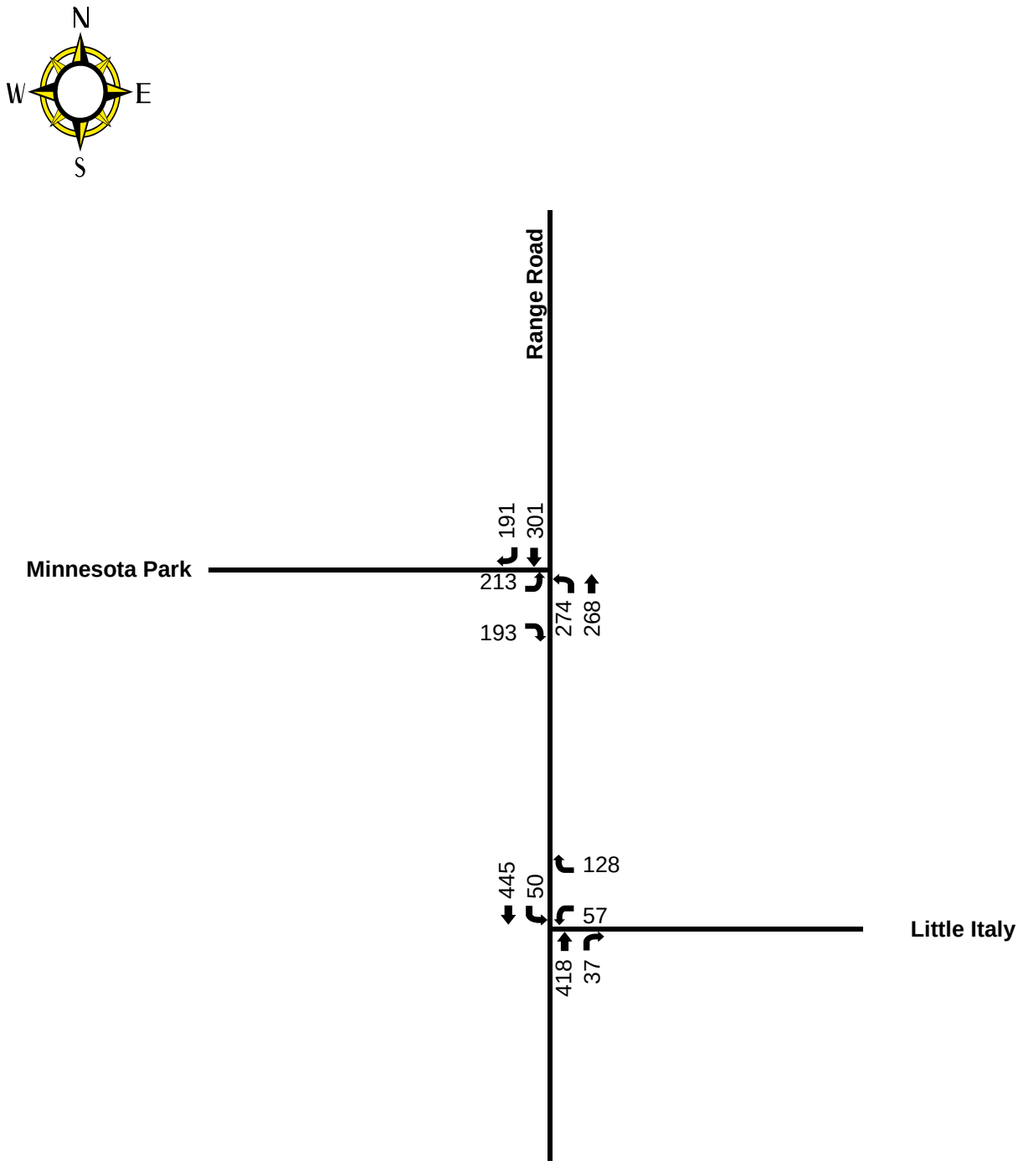


FIGURE 8: 2040 PM TRAFFIC VOLUMES

Intersection Operations

Using existing peak hour turning movement volumes, the intersection of Minnesota Park Road at S. Range Road was analyzed for the existing (2017), implementation (2020) and design years (2040) during the AM and PM peak periods for the following scenarios:

- Existing / No Build;
- Alternate 1: Traffic signal with an exclusive left-turn lane on the south approach and exclusive right and left-turn lanes on the west approach;
- Alternate 2: Two-Way Stop Control (TWSC) with an exclusive left-turn lane on the south approach;
- Alternate 3: TWSC with an exclusive left-turn lane on the south approach, exclusive right turn lane on the north approach, and right and left-turn lanes on the west approach;
- Alternate 4: All-Way Stop Control (AWSC);
- Alternate 5: AWSC with an exclusive left-turn lane on the south approach, exclusive right turn lane on the north approach, and right and left-turn lanes on the west approach;
- Alternate 6: Single-Lane Roundabout.

When developing alternates for comparison, the existing geometry was tested with different traffic control devices to ascertain if only the traffic control could be changed. If the existing geometry under the different traffic control devices could not provide a LOS D or better turn lanes were added under a separate alternate. To minimize cost and impacts to right-of-way, geometric improvements were truncated when a LOS D or better for each approach was reached in the design year of 2040. Based on the results below, a southbound right turn lane was not needed to achieve a LOS D or better for all approaches for Alternate 1. However, an exclusive left-turn lane was recommended for the south and west approaches. Traffic signal timings were developed in Vistro and then input Sidra. The northbound left movement for all scenarios consisted of a protected / permitted phasing. See **Appendix B** for phasing and cycle lengths.

When considering the minimum geometric requirements for the TWSC, left- and right-turn lane warrants were performed on S. Range Road using criteria from National Cooperative Highway Research Program (NCHRP) Number 457, *"Evaluating Intersection Improvement".* Based on this analysis, a left-turn lane located on the south approach was warranted with the 2017 volumes; however, a right-turn lane was not warranted in either the existing (2017) or design years (2040). The NCHRP turn lane warrant analyses can be found in **Appendix C**. Alternate 3 tested the maximum amount of turn lanes possible with a TWSC. Since Alternates 4 and 5 consist of AWSC traffic control, the turn lane warrants do not apply.

Capacity Analysis

An annual growth rate developed from the New Orleans Regional Planning Commission Travel Demand Model was applied to existing traffic movements to determine the design life of the study intersection using Sidra software (version 7). The Sidra capacity analysis results are shown in **Tables 3 - 7**. Detailed Sidra results for each scenario are shown in **Appendix D**.

Table 3: AM and PM Peak Period Level of Service and Delay Analysis for Existing Conditions (2017)

Approach	AM		PM	
	Delay	LOS	Delay	LOS
S	12.1	B	12.2	B
N	11.2	B	9.7	A
W	14.8	B	15.9	B
ALL	12.4	B	12.4	B

Table 4: AM Peak Period Level of Service and Delay Analysis for Implementation Year (2020)

2020	Approach	No Build Signal		Alt 1 Build Signal w/ NBL, EBR, EBL		Alt 2 Build TWSC w/ NBL		Alt 3 Build TWSC w/ NBL, EBR, EBL, SBR		Alt 4 Build AWSC Exist. Geom.		Alt 5 Build AWSC w/ NBL, EBR, EBL, SBR		Alt 6 Build Roundabout	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
	S	14.2	B	6.9	A	3.0	N/A	2.9	N/A	12.7	B	14.6	B	1.7	A
	N	11.0	B	10.6	B	0.0	N/A	0.0	N/A	18.5	C	19.6	C	3.1	A
	W	15.8	B	9.7	A	26.5	D	20.2	C	29.4	D	18.9	C	1.6	A
	ALL	13.6	B	8.7	A	7.5	N/A	6.0	N/A	18.4	C	17.2	C	2.1	A

Table 5: AM Peak Period Level of Service and Delay Analysis for Design Year (2040)

2040	Approach	No Build Signal		Alt 1 Build Signal w/ NBL, EBR, EBL		Alt 2 Build TWSC w/ NBL		Alt 3 Build TWSC w/ NBL, EBR, EBL, SBR		Alt 4 Build AWSC Exist. Geom.		Alt 5 Build AWSC w/ NBL, EBR, EBL, SBR		Alt 6 Build Roundabout	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
	S	65.1	E	10.7	B	4.5	N/A	4.2	N/A	21.1	C	23.3	C	5.4	A
	N	89.4	F	24.0	C	0.0	N/A	0.0	N/A	33.5	D	31.6	D	9.5	A
	W	25.5	C	10.4	B	216.2	F	100.0	F	58.6	F	27.0	D	2.5	A
	ALL	63.7	E	14.8	B	51.8	N/A	24.9	N/A	33.6	D	26.8	D	6.0	A

Table 6: PM Peak Period Level of Service and Delay Analysis for Implementation Year (2020)

2020	Approach	No Build Signal		Alt 1 Build Signal w/ NBL, EBR, EBL		Alt 2 Build TWSC w/ NBL		Alt 3 Build TWSC w/ NBL, EBR, EBL, SBR		Alt 4 Build AWSC Exist. Geom.		Alt 5 Build AWSC w/ NBL, EBR, EBL, SBR		Alt 6 Build Roundabout	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
	S	14.8	B	7.2	A	2.6	N/A	2.5	N/A	13.5	B	15.1	C	2.0	A
	N	12.0	B	10.6	B	0.0	N/A	0.0	N/A	26.3	D	27.7	D	2.4	A
	W	17.3	B	10.6	B	35.7	E	22.5	C	28.4	D	19.0	C	2.4	A
	ALL	14.5	B	9.3	A	11.0	N/A	7.3	N/A	22.1	C	20.5	C	2.2	A

Table 7: PM Peak Period Level of Service and Delay Analysis for Design Year (2040)

2040	Approach	No Build Signal		Alt 1 Build Signal w/ NBL, EBR, EBL		Alt 2 Build TWSC w/ NBL		Alt 3 Build TWSC w/ NBL, EBR, EBL, SBR		Alt 4 Build AWSC Exist. Geom.		Alt 5 Build AWSC w/ NBL, EBR, EBL, SBR		Alt 6 Build Roundabout	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
	S	71.8	E	9.0	A	3.7	N/A	3.5	N/A	20.9	C	22.8	C	2.9	A
	N	42.4	D	25.1	C	0.0	N/A	0.0	N/A	64.5	F	56.9	F	3.9	A
	W	62.5	E	13.3	B	318.0	F	129.0	F	63.2	F	28.6	D	3.2	A
	ALL	59.1	E	15.7	B	91.0	N/A	37.7	N/A	47.7	E	36.1	E	3.3	A

The traffic analyses indicated that the intersection of S. Range Avenue at Minnesota Park Road currently operates at a LOS B. As volumes grow over time, the current geometric configuration will operate at a LOS F and E in the AM and PM peak hours, respectively, in the design year of 2040. Based on the Sidra analyses, the following was determined:

- Alternate 1 (traffic signal with added left-turn lanes on the south and west approaches) resulted in a LOS C of better on all approaches in the design year of 2040.
- Alternate 2 (TWSC with an exclusive left-turn lane on the south approach) did not proved a LOS D or better on all approaches in the implementation or design years.
- Alternate 3 (TWSC with an exclusive left-turn lane on the south approach, exclusive right turn lane on the north approach, and right and left-turn lanes on the west approach) did provide a LOS D or better on all approaches in the implementation year, but did not provide a LOS D or better in the design year.
- Alternate 4 (AWSC with existing geometry) did provide a LOS D or better for all approaches in the implementation year, but did not provide LOS D or better in the design year for all approaches in the design year.
- Alternate 5 (AWSC with an exclusive left-turn lane on the south approach, exclusive right turn lane on the north approach, and right and left-turn lanes on the west approach) did provide a LOS D or better for all approaches in the implementation year, but did not provide LOS D or better in the design year for all approaches in the design year.
- Alternate 6 (single-lane roundabout) is forecasted to operate at an overall LOS A or better with less overall delay compared to all alternatives analyzed during the implementation year (2020) and design year (2040).

Queue and V/C Analysis

The 95th percentile queue lengths for each approach of the proposed alternates were determined using SIDRA. A summary of the 95th percentile queue lengths for each approach at the study intersection are shown in **Tables 8 - 11**.

Table 8: AM Peak Period V/C and Queue Analysis for Implementation Year (2020)

2020	Approach	No Build Signal		Alt 1 Build Signal w/ NBL, EBR, EBL		Alt 2 Build TWSC w/ NBL		Alt 3 Build TWSC w/ NBL, EBR, EBL, SBR		Alt 4 Build AWSC Exist. Geom.		Alt 5 Build AWSC w/ NBL, EBR, EBL, SBR		Alt 6 Build Roundabout	
		V/C	Queue	V/C	Queue	V/C	Queue	V/C	Queue	V/C	Queue	V/C	Queue	V/C	Queue
	S	0.78	305	0.48	119	0.26	29	0.25	29	0.59	80	0.54	69	0.55	125
	N	0.59	203	0.58	202	0.22	0	0.13	0	0.62	91	0.56	75	0.46	85
	W	0.60	173	0.29	82	0.63	135	0.48	62	0.68	110	0.48	58	0.29	51

Table 9: AM Peak Period V/C and Queue Analysis for Design Year (2040)

2040	Approach	No Build Signal		Alt 1 Build Signal w/ NBL, EBR, EBL		Alt 2 Build TWSC w/ NBL		Alt 3 Build TWSC w/ NBL, EBR, EBL, SBR		Alt 4 Build AWSC Exist. Geom.		Alt 5 Build AWSC w/ NBL, EBR, EBL, SBR		Alt 6 Build Roundabout	
		V/C	Queue	V/C	Queue	V/C	Queue	V/C	Queue	V/C	Queue	V/C	Queue	V/C	Queue
	S	1.07	842	0.73	198	0.41	61	0.36	59	0.80	181	0.73	132	0.78	310
	N	1.11	671	0.83	401	0.30	0	0.18	0	0.85	209	0.76	143	0.72	226
	W	0.81	283	0.40	116	1.35	1085	1.21	411	0.92	260	0.65	98	0.44	86

Table 10: PM Peak Period V/C and Queue Analysis for Implementation Year (2020)

2020	Approach	No Build Signal		Alt 1 Build Signal w/ NBL, EBR, EBL		Alt 2 Build TWSC w/ NBL		Alt 3 Build TWSC w/ NBL, EBR, EBL, SBR		Alt 4 Build AWSC Exist. Geom.		Alt 5 Build AWSC w/ NBL, EBR, EBL, SBR		Alt 6 Build Roundabout	
		V/C	Queue	V/C	Queue	V/C	Queue	V/C	Queue	V/C	Queue	V/C	Queue	V/C	Queue
	S	0.72	207	0.46	89	0.20	22	0.20	22	0.56	72	0.52	64	0.47	93
	N	0.57	217	0.55	206	0.22	0	0.13	0	0.74	134	0.72	123	0.45	84
	W	0.68	203	0.38	109	0.76	201	0.58	88	0.72	123	0.50	61	0.38	66

Table 11: PM Peak Period V/C and Queue Analysis for Design Year (2040)

2040	Approach	No Build Signal		Alt 1 Build Signal w/ NBL, EBR, EBL		Alt 2 Build TWSC w/ NBL		Alt 3 Build TWSC w/ NBL, EBR, EBL, SBR		Alt 4 Build AWSC Exist. Geom.		Alt 5 Build AWSC w/ NBL, EBR, EBL, SBR		Alt 6 Build Roundabout	
		V/C	Queue	V/C	Queue	V/C	Queue	V/C	Queue	V/C	Queue	V/C	Queue	V/C	Queue
	S	1.08	667	0.62	136	0.32	40	0.31	38	0.76	149	0.70	117	0.61	149
	N	0.94	545	0.83	445	0.30	0	0.17	0	1.00	389	0.98	296	0.59	143
	W	1.00	505	0.56	176	1.60	1588	1.33	652	0.97	322	0.68	107	0.51	102

The roundabout provided the best v/c ratio in the design year (2040). The results of the queue analysis were somewhat mixed. Alternates 1, 5 and 6 provided the lowest queue lengths. The analysis can be found in **Appendix D.**

Excess Capacity and Degree of Saturation

To provide a comparative analysis of the design life of each alternate, the Demand & Sensitivity setting in Sidra was set to Design Life analysis option with a Design Life Analysis Objective of v/c ratio = 1 per the DOTD *Roundabout Analysis: LA DOTD required settings and standards for Sidra Intersection 6.1*. It should be noted that the analyses identifies the year in which the entire intersection reaches a v/c ratio = 1, while certain movements may have a LOS F at an earlier time than the design life. The results of the design life can be found in **Table 12**.

Table 12: Design Life Analysis

Design Life*		
	AM	PM
No Build	15	15
Alt. 1	35	39
Alt. 2	15	11
Alt. 3	19	16
Alt. 4	28	23
Alt. 5	40	24
Alt. 6	35	40

* Measured from the year 2017

Crash Analysis

The historic crash data summary was obtained from RPC within a mile of the study area for all reported crashes between January 1, 2013 and December 31, 2015. The crash data were plotted based on latitude and longitude and categorized as a road segment or intersection location within the study area and are shown in **Figure 9**.

A total of 31 crashes were reported in the study area in the three year period. The three year crash data summaries for the three road segments and intersection are shown in **Tables 13** thru **16**, respectively. As shown in **Table 16**, the majority of crashes over the three year study period are rear-end collisions at the intersection of Minnesota Park Road at S. Range Road. According to the DOTD EDSM VI.1.1.5 Roundabout, correctable crashes are identified as head on, right angle and left turn. As such, four (4) of the 22 crashes as reported from 2013-2015 are correctable (four left-turn).

Crash rates were calculated and compared to state averages. State rates were obtained from the *DOTD Guidelines for Conducting a Crash Data Analysis using the Number-Rate Method and Overrepresented Determination January 2016*. Crash rates were calculated to identify any abnormal locations and are shown in **Table 17**. An abnormal location is defined as a location having at least an average of five crashes per year and twice the statewide average crash rate for its functional classification. The intersection of Minnesota Park Road at S. Range Road had abnormal crash rates when compared to the years 2012-2014 two lane rural road statewide average. Detailed crash data can be found in **Appendix E**.

Figure 9: Crash Data Locations

Table 13: Segment 1 Crash Analysis Summary (Minnesota Park Rd from Holly Street to S. Range Rd)

Crash Types	2013	2014	2015	Total
Non-Collision w/ Motor Vehicle	0	0	0	0
Rear End	0	0	4	4
Head-On	0	0	0	0
Right Angle	0	0	0	0
Left Turn	0	0	0	0
Right Turn	0	0	0	0
Sideswipe Same Direction	0	1	0	1
Sideswipe Opposite Direction	0	0	0	0
Other	0	0	1	1
Total	**0**	**1**	**5**	**6**

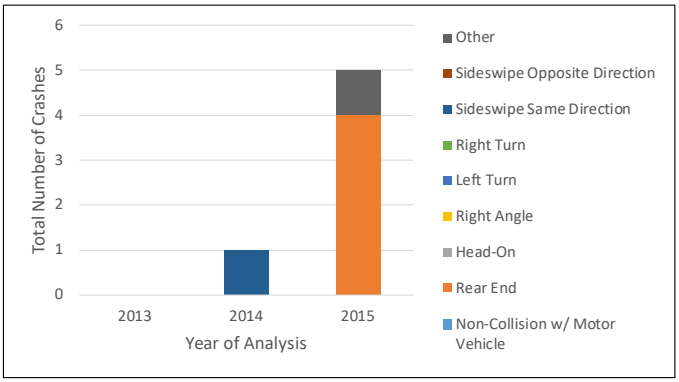


Table 14: Segment 2 Crash Analysis Summary (S. Range Road from Jade Court to Minnesota Park Rd)

Crash Types	2013	2014	2015	Total
Non-Collision w/ Motor Vehicle	1	0	0	1
Rear End	0	0	0	0
Head-On	0	0	0	0
Right Angle	0	0	0	0
Left Turn	0	0	0	0
Right Turn	0	0	0	0
Sideswipe Same Direction	0	0	0	0
Sideswipe Opposite Direction	0	0	0	0
Other	0	0	0	0
Total	**1**	**0**	**0**	**1**

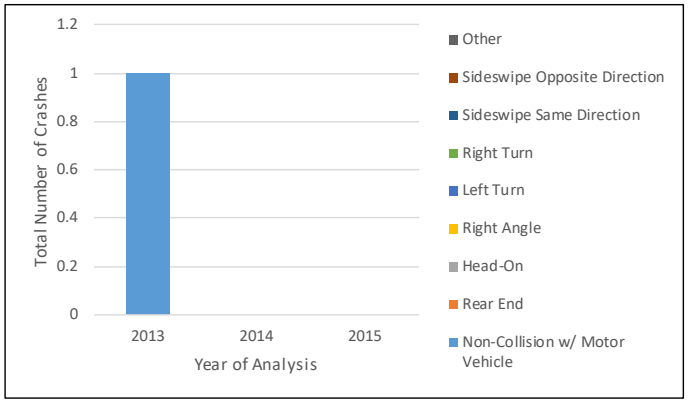


Table 15: Segment 3 Crash Analysis Summary (S. Range Road from Minnesota Park Rd to Little Italy Rd)

Crash Types	2013	2014	2015	Total
Non-Collision w/ Motor Vehicle	0	0	0	0
Rear End	1	0	0	1
Head-On	0	0	0	0
Right Angle	0	0	0	0
Left Turn	1	0	0	1
Right Turn	0	0	0	0
Sideswipe Same Direction	0	0	0	0
Sideswipe Opposite Direction	0	0	0	0
Other	0	0	0	0
Total	**2**	**0**	**0**	**2**

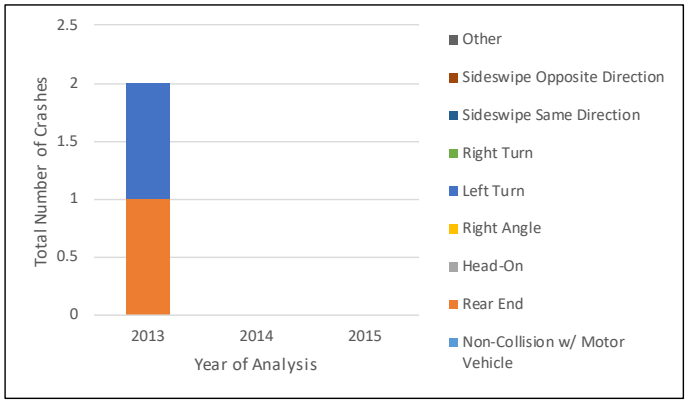


Table 16: Intersection Crash Analysis Summary (Minnesota Park Road at S. Range Road)

Crash Types	2013	2014	2015	Total
Non-Collision w/ Motor Vehicle	0	0	0	0
Rear End	2	8	7	17
Head-On	0	0	0	0
Right Angle	0	0	0	0
Left Turn	0	2	2	4
Right Turn	0	0	0	0
Sideswipe Same Direction	0	0	0	0
Sideswipe Opposite Direction	0	0	0	0
Other	0	1	0	1
Total	**2**	**11**	**9**	**22**

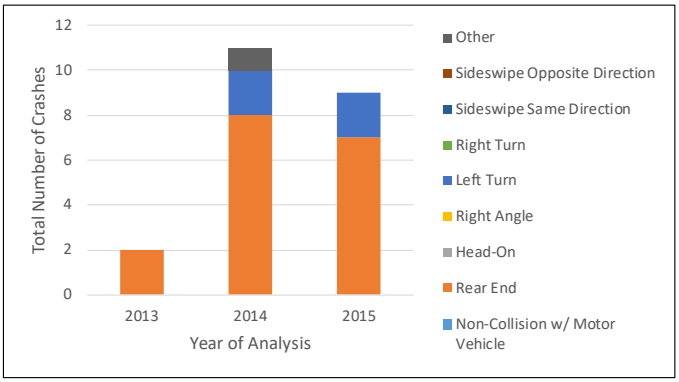


Table 17: Crash Rate Summary

Intersection	Years 2013 - 2015	ADT	Number of Crashes	Crash Frequency Crashes/Year		Crash Rate Crashes /MV			
				Existing	Statewide Average	Existing	2012-2014 Statewide Average for Rural 2 Lane	State Avg x 2	Abnormal
Minnesota Park Road at S. Range Road	3	11,445	22	7.33		1.76	0.76	1.52	Yes

Segment	Years 2013 - 2015	ADT	Number of Crashes	Crash Frequency Crashes / Mile/Year		Crash Rate Crashes /MVM			
				Existing	Statewide Average	Existing	2012-2014 Statewide Average for Rural 2 Lane	State Avg x 2	Abnormal
Segment 1: Minnesota Park Road (Holly Street to S. Range Road) Miles = 0.38	3	7,397	6	5.28	0.75	1.96	0.99	1.98	No
Segment 2: S. Range Road (Jade Court to Minnesota Park Road) Miles = 0.16	3	7,453	1	2.07	0.75	0.76	0.99	1.98	No
Segment 3: S. Range Road (Minnesota Park Road to Little Italy Road) Miles = 0.12	3	8,203	2	5.42	0.75	1.81	0.99	1.98	No

Note: Crash data for years 2013-2015 and Statewide averages for years 2012-2014

Spot Speed Study

A spot speed study was performed to determine the speed distribution of traffic stream at the study intersection. The data collected in the spot speed study was used to determine vehicle speed characteristics (such as average speed, mode, 85th percentile speed, and 10-mph pace) under current traffic and environmental conditions. The summary of the spot speed study is shown in **Table 18**. The raw data obtained can be found in **Appendix F**.

Table 18: Summary of Speed Study Data

Location	Direction	Mean	Mode	85%	10 Mile Pace	Posted Speed
Minnesota Park	EB	33	31	36	29-38	35
S. Range Road	NB	39	41	44	35-44	35
	SB	35	38	40	31-40	35

Conclusions and Recommendations

The intersection of Minnesota Park Road at S. Range Road was evaluated using existing and future traffic demands for the following proposed concepts:

- Existing / No Build;
- Alternate 1: Traffic signal with an exclusive left-turn lane on the south and west approaches;
- Alternate 2: Two-Way Stop Control (TWSC) with an exclusive left-turn lane on the south approach;
- Alternate 3: TWSC with an exclusive left-turn lane on the south approach, exclusive right turn lane on the north approach, and right and left-turn lanes on the west approach;
- Alternate 4: All-Way Stop Control (AWSC);
- Alternate 5: AWSC with an exclusive left-turn lane on the south approach, exclusive right turn lane on the north approach, and right and left-turn lanes on the west approach;
- Alternate 6: Single-Lane Roundabout.

This study resulted in the following conclusions:

- 22 crashes were reported at the study intersection from January 1, 2013 to December 31, 2015.
- Four crashes as reported from 2013-2015 were correctable (four left-turn).
- The intersection of Minnesota Park Road at S. Range Road had abnormal crash rates when compared to the years 2012-2014 two lane rural road statewide average.
- 6 crashes were reported in three years on the segment of Minnesota Park Road between Holly Street and S. Range Road.
- 1 crash was reported in three years on the segment of S. Range Road between Jade Court and Minnesota Park Road.
- 2 crashes were reported in three years on the segment of S. Range Road between Minnesota Park Road and Little Italy Road.
- Traffic analyses indicated that the intersection of Minnesota Park Road at S. Range Road currently operates at a LOS B or better and will degrade to a LOS E in the AM and PM peak hours, respectively, in the design year.
- Signal Warrant Analysis at the studied intersection using 2017 traffic volumes indicated that the intersection does not meet either Warrant 1A or Warrant 1B. However, Warrant 1A is met in the year 2040.
- Alternate 1 (traffic signal with added left-turn lanes on the south and west approaches) resulted in a LOS C of better on all approaches in the design year of 2040.
- Alternate 2 (TWSC with an exclusive left-turn lane on the south approach) did not proved a LOS D or better on all approaches in the implementation or design years.

- Alternate 3 (TWSC with an exclusive left-turn lane on the south approach, exclusive right turn lane on the north approach, and right and left-turn lanes on the west approach) did provide a LOS D or better on all approaches in the implementation year, but did not provide a LOS D or better in the design year.
- Alternate 4 (AWSC with existing geometry) did provide a LOS D or better for all approaches in the implementation year, but did not provide LOS D or better in the design year for all approaches in the design year.
- Alternate 5 (AWSC with an exclusive left-turn lane on the south approach, exclusive right turn lane on the north approach, and right and left-turn lanes on the west approach) did provide a LOS D or better for all approaches in the implementation year, but did not provide LOS D or better in the design year for all approaches in the design year.
- Alternate 6 (single-lane roundabout) is forecasted to operate at an overall LOS A or better with less overall delay compared to all alternatives analyzed during the implementation year (2020) and design year (2040).
- The Crash Modification Factor (CMF) of converting a signalized intersection to a roundabout is 0.52[2] for all crashes which means overall crashes should decrease by 48% after the installation of a roundabout. Four (4) of the 22 crashes as reported from 2013-2015 are correctable (left-turn).
- The intersection of Minnesota Park Road at S. Range Road had abnormal crash rates when compared to the years 2012-2014 two lane rural road statewide average.
- The highest number of correctable crashes in a twelve-month period was two left-turn crashes. According to LADOTD EDSM VI.1.1.5, a roundabout may be justified if five (5) or more correctable crashes are reported in a twelve-month period at the study intersection.

The study resulted in the following recommendations:

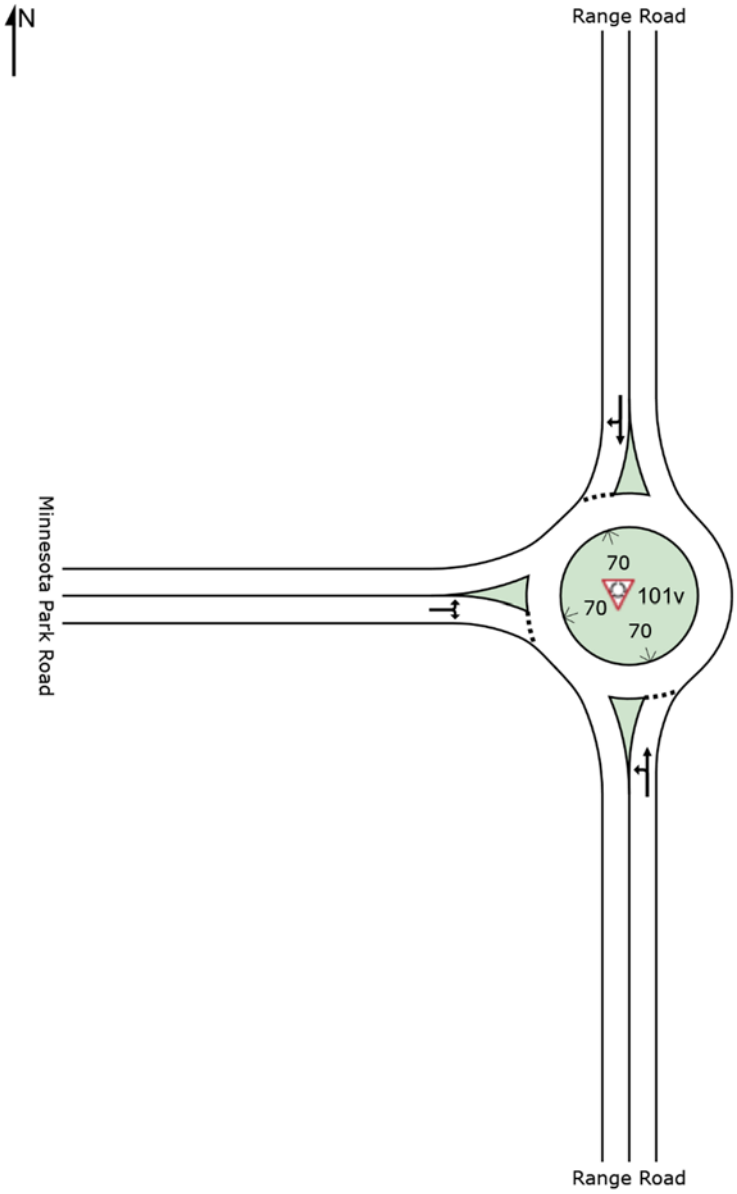
- For the design year, a roundabout or the traffic signal with left-turn lanes will operate at a LOS C or better in the future. For the lowest stopped delay / queues and improved safety, a single-lane roundabout was recommended at the intersection of S. Range Road and Minnesota Park Road. The recommended lane configuration included the following approach lane configuration (as shown in **Figure 10**):
    - Eastbound: One shared left-turn / right-turn lane,
    - Northbound: One shared left-turn / through lane, and
    - Southbound: One through lane / right-turn lane.
- The AWSC does operate at a LOS D or better on all approaches in the implementation year. Since the AWSC does not provide a LOS D or better in the design year, either Alternate 1 or 6 should be constructed before the design year.
- Neither of the TWSC control alternates provided a LOS D or better on all approaches in the implementation year and should not be considered as an interim solution.
- The installation of a roundabout provides increased safety due to reduction in the severity of angle crashes due to slower speeds and reduced conflicts. Additionally, the potential for many

[2] http://www.cmfclearinghouse.org/detail.cfm?facid=225

hazardous conflicts, such as right angle, left turn and head-on crashes are eliminated with the installation of a roundabout.

- It is recommended that all required signage and pavement markings for the roundabout should be designed in accordance with the *LADOTD Road Design Manual - Policy for Roundabout Design* and the latest *Manual on Uniform Traffic Control Devices (MUTCD)*.
- The recommended lane configuration, as shown in **Figure 10,** is based on the geometric parameters as prescribed in the *Roundabout Analysis: LA DOTD required settings and standards for Sidra Intersection 6.1*. As such, the recommended lane configuration is conceptual; therefore, turning templates should be checked in AutoTURN (or some other approved turning template software) for the design vehicle once the final alignment is confirmed.

Figure 10: Recommended Lane Configuration



Appendix

Appendix A: Raw Traffic Count Data

Daily Total Classes Report

Study Date: Sunday, 02/12/2017
Unit ID: 16010764
Location: Minnisota Park (west approach)

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 - 00:59	0	61	8	0	0	0	0	0	0	0	0	0	0	**69**
01:00 - 01:59	0	43	9	0	0	0	0	0	0	0	0	0	0	**52**
02:00 - 02:59	0	41	5	0	2	0	0	0	0	0	0	0	0	**48**
03:00 - 03:59	0	19	2	0	0	0	0	0	0	0	0	0	0	**21**
04:00 - 04:59	0	17	4	0	0	0	0	0	0	0	0	0	0	**21**
05:00 - 05:59	0	29	6	0	2	0	0	0	0	0	0	0	0	**37**
06:00 - 06:59	1	68	8	0	2	0	0	0	0	0	0	0	0	**79**
07:00 - 07:59	2	85	16	0	1	0	0	0	0	0	0	0	0	**104**
08:00 - 08:59	2	118	27	0	1	0	0	0	0	0	0	0	0	**148**
09:00 - 09:59	2	232	30	0	11	0	0	0	0	0	0	0	0	**275**
10:00 - 10:59	2	299	68	0	9	1	0	0	0	0	0	0	0	**379**
11:00 - 11:59	1	352	61	0	7	0	0	0	0	0	0	0	0	**421**
12:00 - 12:59	6	416	67	0	12	0	0	0	0	0	0	0	0	**501**
13:00 - 13:59	2	321	71	0	3	0	0	0	0	0	0	0	0	**397**
14:00 - 14:59	3	351	45	0	12	0	0	0	0	0	0	0	0	**411**
15:00 - 15:59	1	324	56	1	7	0	0	0	0	0	0	0	0	**389**
16:00 - 16:59	3	307	58	0	5	0	0	0	0	0	0	0	0	**373**
17:00 - 17:59	3	323	39	0	6	0	0	0	0	0	0	0	0	**371**
18:00 - 18:59	2	301	42	0	9	0	0	0	0	0	0	0	0	**354**
19:00 - 19:59	3	219	47	0	4	0	0	0	0	0	0	0	0	**273**
20:00 - 20:59	2	192	25	0	4	0	0	0	0	0	0	0	0	**223**
21:00 - 21:59	1	122	18	0	0	0	0	0	0	0	0	0	0	**141**
22:00 - 22:59	0	124	12	0	1	0	0	0	0	0	0	0	0	**137**
23:00 - 23:59	0	64	2	0	1	0	0	0	0	0	0	0	0	**67**
Totals	**36**	**4428**	**726**	**1**	**99**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5291**
Percent of Total	**0.7**	**83.7**	**13.7**	**0.0**	**1.9**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.6**	**82.5**	**14.8**	**0.0**	**2.1**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.7**	**84.2**	**13.3**	**0.0**	**1.8**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Truck Summary:

Total Trucks: 101 % Trucks: 1.9 AM % Trucks: 2.2 PM % Trucks: 1.8

Classification Scheme: FHWA (ID: 1)

#1 Motorcycles - 2 Axles
#2 Passenger Cars - 2 Axles
#3 Pickup Trucks, Vans - 2 Axles
#4 Buses
#5 Single Unit - 2 Axles, 6 Tires
#6 Single Unit Truck - 3 Axles
#7 Single Unit - 4 Axles
#8 Single Unit - 4 Axles or Less
#9 Double Unit - 5 Axles
#10 Double Unit - 6 Axles or More
#11 Multi-Unit - 5 Axles or Less
#12 Multi-Unit - 6 Axles
#13 Multi-Unit - 7 Axles or More

Daily Total Classes Report

Study Date: Monday, 02/13/2017
Unit ID: 16010764
Location: Minnisota Park (west approach)

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 - 00:59	0	30	1	0	0	0	0	0	0	0	0	0	0	**31**
01:00 - 01:59	0	23	2	0	0	0	0	0	0	0	0	0	0	**25**
02:00 - 02:59	0	16	2	0	0	0	0	0	0	0	0	0	0	**18**
03:00 - 03:59	0	24	6	0	1	0	0	0	0	0	0	0	0	**31**
04:00 - 04:59	0	42	18	0	2	2	0	0	0	0	0	0	0	**64**
05:00 - 05:59	1	83	26	0	5	2	0	0	0	0	0	0	0	**117**
06:00 - 06:59	0	169	33	0	12	1	0	0	0	0	0	0	0	**215**
07:00 - 07:59	1	416	65	1	14	0	0	2	1	0	0	1	0	**501**
08:00 - 08:59	1	454	57	0	18	0	0	1	0	0	0	0	0	**531**
09:00 - 09:59	0	301	53	1	13	1	0	1	0	0	0	0	0	**370**
10:00 - 10:59	1	302	65	0	7	1	0	0	2	0	0	0	0	**378**
11:00 - 11:59	6	337	65	0	12	3	0	1	0	0	0	0	0	**424**
12:00 - 12:59	4	403	91	0	18	3	0	0	4	0	0	0	0	**523**
13:00 - 13:59	5	391	83	0	7	2	0	0	4	0	0	0	0	**492**
14:00 - 14:59	1	410	74	0	13	2	0	1	3	0	0	0	0	**504**
15:00 - 15:59	5	511	83	6	24	6	1	0	3	0	0	0	1	**640**
16:00 - 16:59	10	479	70	3	14	3	0	1	5	0	0	1	2	**588**
17:00 - 17:59	14	392	51	2	8	8	4	2	2	0	0	2	4	**489**
18:00 - 18:59	5	397	60	1	18	1	0	0	0	0	0	0	0	**482**
19:00 - 19:59	2	323	41	1	6	1	0	0	0	0	0	0	0	**374**
20:00 - 20:59	1	227	28	0	2	0	0	0	0	0	0	0	0	**258**
21:00 - 21:59	0	164	25	0	4	0	0	0	1	0	0	0	0	**194**
22:00 - 22:59	0	127	6	0	2	0	0	0	0	0	0	0	0	**135**
23:00 - 23:59	0	58	9	0	0	0	0	0	0	0	0	0	0	**67**
Totals	**57**	**6079**	**1014**	**15**	**200**	**36**	**5**	**9**	**25**	**0**	**0**	**4**	**7**	**7451**
Percent of Total	**0.8**	**81.6**	**13.6**	**0.2**	**2.7**	**0.5**	**0.1**	**0.1**	**0.3**	**0.0**	**0.0**	**0.1**	**0.1**	**100**
Percent of AM	**0.4**	**81.2**	**14.5**	**0.1**	**3.1**	**0.4**	**0.0**	**0.2**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**1.0**	**81.8**	**13.1**	**0.3**	**2.4**	**0.5**	**0.1**	**0.1**	**0.5**	**0.0**	**0.0**	**0.1**	**0.1**	**100**

Truck Summary:

Total Trucks: 301 % Trucks: 4.0 AM % Trucks: 3.9 PM % Trucks: 4.1

Classification Scheme: FHWA (ID: 1)

#1 Motorcycles - 2 Axles
#2 Passenger Cars - 2 Axles
#3 Pickup Trucks, Vans - 2 Axles
#4 Buses
#5 Single Unit - 2 Axles, 6 Tires
#6 Single Unit Truck - 3 Axles
#7 Single Unit - 4 Axles
#8 Single Unit - 4 Axles or Less
#9 Double Unit - 5 Axles
#10 Double Unit - 6 Axles or More
#11 Multi-Unit - 5 Axles or Less
#12 Multi-Unit - 6 Axles
#13 Multi-Unit - 7 Axles or More

Daily Total Classes Report

Study Date: Tuesday, 02/14/2017
Unit ID: 16010764
Location: Minnisota Park (west approach)

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 - 00:59	0	27	3	0	0	0	0	0	0	0	0	0	0	**30**
01:00 - 01:59	0	25	2	0	0	0	0	0	0	0	0	0	0	**27**
02:00 - 02:59	0	13	3	0	0	0	0	0	0	0	0	0	0	**16**
03:00 - 03:59	0	19	5	0	0	0	0	0	0	0	0	0	0	**24**
04:00 - 04:59	0	49	21	0	3	0	0	0	0	0	0	0	0	**73**
05:00 - 05:59	0	91	26	0	5	0	0	0	1	0	0	0	0	**123**
06:00 - 06:59	2	194	40	0	7	0	0	0	0	0	0	0	0	**243**
07:00 - 07:59	2	485	64	1	12	1	0	2	1	0	0	0	0	**568**
08:00 - 08:59	0	441	65	1	18	3	0	0	4	1	0	0	0	**533**
09:00 - 09:59	1	334	50	3	17	0	0	0	4	0	0	0	0	**409**
10:00 - 10:59	2	317	57	0	9	2	0	1	6	0	0	0	0	**394**
11:00 - 11:59	4	370	46	0	16	0	0	0	5	0	0	0	0	**441**
12:00 - 12:59	4	430	64	0	6	0	0	0	3	0	0	0	0	**507**
13:00 - 13:59	2	412	75	0	12	0	0	0	4	0	0	0	0	**505**
14:00 - 14:59	0	468	81	1	12	3	0	1	3	0	0	0	0	**569**
15:00 - 15:59	10	493	76	2	14	1	0	1	2	0	1	1	0	**601**
16:00 - 16:59	5	493	79	3	13	4	0	0	2	0	0	0	2	**601**
17:00 - 17:59	8	398	64	1	11	13	3	2	1	0	0	1	1	**503**
18:00 - 18:59	1	381	65	0	8	2	0	0	0	0	0	0	0	**457**
19:00 - 19:59	0	321	44	0	8	0	0	0	0	0	0	0	0	**373**
20:00 - 20:59	0	202	34	0	4	0	0	0	0	0	0	0	0	**240**
21:00 - 21:59	0	147	26	0	1	0	0	0	0	0	0	0	0	**174**
22:00 - 22:59	1	124	9	0	1	0	0	0	0	0	0	0	0	**135**
23:00 - 23:59	0	82	9	0	1	0	0	0	0	0	0	0	0	**92**
Totals	**42**	**6316**	**1008**	**12**	**178**	**29**	**3**	**7**	**36**	**1**	**1**	**2**	**3**	**7638**
Percent of Total	**0.5**	**82.7**	**13.2**	**0.2**	**2.3**	**0.4**	**0.0**	**0.1**	**0.5**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.4**	**82.1**	**13.3**	**0.2**	**3.0**	**0.2**	**0.0**	**0.1**	**0.7**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.7**	**83.1**	**13.2**	**0.1**	**1.9**	**0.5**	**0.1**	**0.1**	**0.3**	**0.0**	**0.0**	**0.0**	**0.1**	**100**

Truck Summary:

Total Trucks: 272 % Trucks: 3.6 AM % Trucks: 4.3 PM % Trucks: 3.1

Classification Scheme: FHWA (ID: 1)

#1 Motorcycles - 2 Axles
#2 Passenger Cars - 2 Axles
#3 Pickup Trucks, Vans - 2 Axles
#4 Buses
#5 Single Unit - 2 Axles, 6 Tires
#6 Single Unit Truck - 3 Axles
#7 Single Unit - 4 Axles
#8 Single Unit - 4 Axles or Less
#9 Double Unit - 5 Axles
#10 Double Unit - 6 Axles or More
#11 Multi-Unit - 5 Axles or Less
#12 Multi-Unit - 6 Axles
#13 Multi-Unit - 7 Axles or More

Daily Total Classes Report

Study Date: Wednesday, 02/15/2017
Unit ID: 16010764
Location: Minnisota Park (west approach)

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 - 00:59	0	40	4	0	0	0	0	0	0	0	0	0	0	**44**
01:00 - 01:59	0	20	1	0	0	0	0	0	0	0	0	0	0	**21**
02:00 - 02:59	0	19	3	0	0	0	0	0	0	0	0	0	0	**22**
03:00 - 03:59	0	15	3	0	0	0	0	0	0	0	0	0	0	**18**
04:00 - 04:59	0	45	19	1	2	0	0	1	0	0	0	0	0	**68**
05:00 - 05:59	2	91	23	0	6	0	0	0	0	0	0	0	0	**122**
06:00 - 06:59	0	188	38	1	5	1	0	0	0	0	0	0	0	**233**
07:00 - 07:59	4	454	60	2	13	0	0	0	0	0	0	0	0	**533**
08:00 - 08:59	2	427	61	1	13	0	0	0	0	0	0	0	0	**504**
09:00 - 09:59	0	262	57	1	8	0	0	0	0	0	0	0	0	**328**
10:00 - 10:59	1	272	45	1	9	0	0	0	0	0	0	0	0	**328**
11:00 - 11:59	0	348	57	0	10	1	0	0	1	0	0	0	0	**417**
12:00 - 12:59	2	394	86	0	21	0	0	1	0	0	0	0	0	**504**
13:00 - 13:59	1	351	65	1	9	0	0	1	0	0	0	0	0	**428**
14:00 - 14:59	3	400	63	1	20	1	0	0	0	0	0	0	0	**488**
15:00 - 15:59	5	483	59	2	21	2	1	2	0	0	0	0	0	**575**
16:00 - 16:59	0	479	75	1	11	1	0	2	0	0	0	1	1	**571**
17:00 - 17:59	2	425	86	1	15	1	0	2	0	0	0	0	0	**532**
18:00 - 18:59	3	427	77	0	9	1	0	0	0	0	0	0	0	**517**
19:00 - 19:59	2	275	48	0	3	0	0	1	0	0	0	0	0	**329**
20:00 - 20:59	3	236	35	0	3	0	0	0	0	0	0	0	0	**277**
21:00 - 21:59	0	185	15	0	2	0	0	0	0	0	0	0	0	**202**
22:00 - 22:59	1	121	10	0	0	0	0	0	0	0	0	0	0	**132**
23:00 - 23:59	0	54	5	0	2	0	0	0	0	0	0	0	0	**61**
Totals	**31**	**6011**	**995**	**13**	**182**	**8**	**1**	**10**	**1**	**0**	**0**	**1**	**1**	**7254**
Percent of Total	**0.4**	**82.9**	**13.7**	**0.2**	**2.5**	**0.1**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.3**	**82.7**	**14.1**	**0.3**	**2.5**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.5**	**83.0**	**13.5**	**0.1**	**2.5**	**0.1**	**0.0**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Truck Summary:

Total Trucks: 217 % Trucks: 3.0 AM % Trucks: 2.9 PM % Trucks: 3.0

Classification Scheme: FHWA (ID: 1)

#1 Motorcycles - 2 Axles
#2 Passenger Cars - 2 Axles
#3 Pickup Trucks, Vans - 2 Axles
#4 Buses
#5 Single Unit - 2 Axles, 6 Tires
#6 Single Unit Truck - 3 Axles
#7 Single Unit - 4 Axles
#8 Single Unit - 4 Axles or Less
#9 Double Unit - 5 Axles
#10 Double Unit - 6 Axles or More
#11 Multi-Unit - 5 Axles or Less
#12 Multi-Unit - 6 Axles
#13 Multi-Unit - 7 Axles or More

Daily Total Classes Report

Study Date: Thursday, 02/16/2017
Unit ID: 16010764
Location: Minnisota Park (west approach)

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 - 00:59	0	24	5	0	0	0	0	0	0	0	0	0	0	**29**
01:00 - 01:59	0	22	2	0	0	0	0	0	0	0	0	0	0	**24**
02:00 - 02:59	0	23	1	0	0	0	0	0	0	0	0	0	0	**24**
03:00 - 03:59	0	12	4	0	0	0	0	0	0	0	0	0	0	**16**
04:00 - 04:59	1	40	14	0	1	0	0	0	0	0	0	0	0	**56**
05:00 - 05:59	0	82	20	0	6	2	0	0	0	0	0	0	0	**110**
06:00 - 06:59	2	187	29	1	10	1	0	0	0	0	0	0	0	**230**
07:00 - 07:59	2	451	68	1	5	2	0	0	1	0	0	0	0	**530**
08:00 - 08:59	2	450	86	2	11	0	1	0	0	0	0	0	0	**552**
09:00 - 09:59	2	296	54	0	2	1	0	1	0	0	0	0	0	**356**
10:00 - 10:59	3	295	56	0	9	1	0	0	0	0	0	0	0	**364**
11:00 - 11:59	2	343	64	0	7	1	0	0	0	0	0	0	0	**417**
12:00 - 12:59	2	370	81	0	7	0	1	0	0	0	0	0	0	**461**
13:00 - 13:59	1	345	61	1	11	0	1	0	0	0	0	0	0	**420**
14:00 - 14:59	0	436	76	0	12	1	0	0	0	0	0	0	0	**525**
15:00 - 15:59	3	504	71	3	16	1	1	0	0	0	0	0	0	**599**
16:00 - 16:59	2	451	71	2	14	4	1	2	2	0	0	0	0	**549**
17:00 - 17:59	6	463	87	0	13	5	0	0	1	0	0	0	0	**575**
18:00 - 18:59	3	376	59	0	7	0	0	0	0	0	0	0	0	**445**
19:00 - 19:59	3	295	44	0	2	0	0	1	0	0	0	0	0	**345**
20:00 - 20:59	1	213	30	0	1	0	0	0	0	0	0	0	0	**245**
21:00 - 21:59	0	168	29	0	1	0	0	0	0	0	0	0	0	**198**
22:00 - 22:59	0	115	15	0	1	0	0	0	0	0	0	0	0	**131**
23:00 - 23:59	0	81	12	0	5	0	0	0	0	0	0	0	0	**98**
Totals	**35**	**6042**	**1039**	**10**	**141**	**19**	**5**	**4**	**4**	**0**	**0**	**0**	**0**	**7299**
Percent of Total	**0.5**	**82.8**	**14.2**	**0.1**	**1.9**	**0.3**	**0.1**	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.5**	**82.2**	**14.9**	**0.1**	**1.9**	**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.5**	**83.1**	**13.9**	**0.1**	**2.0**	**0.2**	**0.1**	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Truck Summary:

Total Trucks: 183 % Trucks: 2.5 AM % Trucks: 2.4 PM % Trucks: 2.5

Classification Scheme: FHWA (ID: 1)

#1 Motorcycles - 2 Axles
#2 Passenger Cars - 2 Axles
#3 Pickup Trucks, Vans - 2 Axles
#4 Buses
#5 Single Unit - 2 Axles, 6 Tires
#6 Single Unit Truck - 3 Axles
#7 Single Unit - 4 Axles
#8 Single Unit - 4 Axles or Less
#9 Double Unit - 5 Axles
#10 Double Unit - 6 Axles or More
#11 Multi-Unit - 5 Axles or Less
#12 Multi-Unit - 6 Axles
#13 Multi-Unit - 7 Axles or More

Daily Total Classes Report

Study Date: Friday, 02/17/2017
Unit ID: 16010764
Location: Minnisota Park (west approach)

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 - 00:59	0	40	0	0	0	0	0	0	0	0	0	0	0	**40**
01:00 - 01:59	0	36	3	0	0	0	0	0	0	0	0	0	0	**39**
02:00 - 02:59	0	30	2	0	0	0	0	0	0	0	0	0	0	**32**
03:00 - 03:59	0	20	5	0	1	0	0	0	0	0	0	0	0	**26**
04:00 - 04:59	0	45	22	1	1	0	0	0	0	0	0	0	0	**69**
05:00 - 05:59	0	71	18	1	6	0	0	0	0	0	0	0	0	**96**
06:00 - 06:59	1	186	46	1	10	0	0	0	1	0	0	0	0	**245**
07:00 - 07:59	0	413	65	1	4	0	0	1	0	0	0	0	0	**484**
08:00 - 08:59	3	461	79	0	17	0	0	0	0	0	0	0	0	**560**
09:00 - 09:59	1	332	69	0	11	0	0	0	0	0	0	0	0	**413**
10:00 - 10:59	3	320	62	0	9	1	0	1	0	0	0	0	0	**396**
11:00 - 11:59	2	380	81	0	12	0	0	1	1	0	0	0	0	**477**
12:00 - 12:59	1	422	73	0	11	2	0	0	0	0	0	0	0	**509**
13:00 - 13:59	4	407	64	1	13	0	0	0	1	0	0	0	0	**490**
14:00 - 14:59	1	424	76	0	12	0	0	1	0	0	0	0	0	**514**
15:00 - 15:59	2	436	75	3	12	2	1	1	0	0	1	1	1	**535**
16:00 - 16:59	3	500	84	1	14	2	2	0	1	0	0	1	1	**609**
17:00 - 17:59	6	482	82	2	19	3	1	3	0	0	0	0	0	**598**
18:00 - 18:59	4	405	67	0	9	0	0	1	0	0	0	0	0	**486**
19:00 - 19:59	0	295	61	1	7	1	0	0	1	0	0	0	0	**366**
20:00 - 20:59	1	264	41	0	9	0	0	1	0	0	0	0	0	**316**
21:00 - 21:59	0	223	37	0	5	0	0	0	0	0	0	0	0	**265**
22:00 - 22:59	0	146	22	0	1	0	0	0	0	0	0	0	0	**169**
23:00 - 23:59	0	89	14	0	3	0	0	0	0	0	0	0	0	**106**
Totals	**32**	**6427**	**1148**	**12**	**186**	**11**	**4**	**10**	**5**	**0**	**1**	**2**	**2**	**7840**
Percent of Total	**0.4**	**82.0**	**14.6**	**0.2**	**2.4**	**0.1**	**0.1**	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.3**	**81.1**	**15.7**	**0.1**	**2.5**	**0.0**	**0.0**	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.4**	**82.5**	**14.0**	**0.2**	**2.3**	**0.2**	**0.1**	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Truck Summary:

Total Trucks: 233 % Trucks: 3.0 AM % Trucks: 2.8 PM % Trucks: 3.1

Classification Scheme: FHWA (ID: 1)

#1 Motorcycles - 2 Axles
#2 Passenger Cars - 2 Axles
#3 Pickup Trucks, Vans - 2 Axles
#4 Buses
#5 Single Unit - 2 Axles, 6 Tires
#6 Single Unit Truck - 3 Axles
#7 Single Unit - 4 Axles
#8 Single Unit - 4 Axles or Less
#9 Double Unit - 5 Axles
#10 Double Unit - 6 Axles or More
#11 Multi-Unit - 5 Axles or Less
#12 Multi-Unit - 6 Axles
#13 Multi-Unit - 7 Axles or More

Daily Total Classes Report

Study Date: Saturday, 02/18/2017
Unit ID: 16010764
Location: Minnisota Park (west approach)

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 - 00:59	0	55	7	0	3	0	0	0	0	0	0	0	0	**65**
01:00 - 01:59	0	31	11	0	0	0	0	0	0	0	0	0	0	**42**
02:00 - 02:59	0	33	1	0	1	0	0	0	0	0	0	0	0	**35**
03:00 - 03:59	0	26	2	0	0	0	0	0	0	0	0	0	0	**28**
04:00 - 04:59	0	30	8	0	1	0	0	0	0	0	0	0	0	**39**
05:00 - 05:59	0	43	10	0	0	0	0	0	0	0	0	0	0	**53**
06:00 - 06:59	0	78	12	0	2	0	0	0	0	0	0	0	0	**92**
07:00 - 07:59	1	122	32	0	2	0	0	0	0	0	0	0	0	**157**
08:00 - 08:59	0	205	39	1	5	0	0	0	0	0	0	0	0	**250**
09:00 - 09:59	2	262	60	0	6	1	0	0	0	0	0	0	0	**331**
10:00 - 10:59	0	343	58	0	9	0	0	0	0	0	0	0	0	**410**
11:00 - 11:59	4	365	75	0	7	1	1	0	0	0	0	0	0	**453**
12:00 - 12:59	3	399	78	0	7	0	0	0	0	0	0	0	0	**487**
13:00 - 13:59	4	391	68	0	14	0	0	1	0	0	0	0	0	**478**
14:00 - 14:59	5	352	66	0	5	0	0	0	0	0	0	0	0	**428**
15:00 - 15:59	2	350	68	0	6	0	0	0	0	0	0	0	0	**426**
16:00 - 16:59	2	363	72	0	7	1	0	0	0	0	0	0	0	**445**
17:00 - 17:59	1	374	58	0	14	0	0	0	0	0	0	0	0	**447**
18:00 - 18:59	3	345	58	0	7	0	0	0	0	0	0	0	0	**413**
19:00 - 19:59	1	275	31	0	4	0	0	0	0	0	0	0	0	**311**
20:00 - 20:59	2	227	32	0	2	0	0	0	0	0	0	0	0	**263**
21:00 - 21:59	0	192	33	0	0	0	0	0	0	0	0	0	0	**225**
22:00 - 22:59	0	152	19	0	0	0	0	0	0	0	0	0	0	**171**
23:00 - 23:59	0	111	4	0	1	0	0	0	0	0	0	0	0	**116**
Totals	**30**	**5124**	**902**	**1**	**103**	**3**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**6165**
Percent of Total	**0.5**	**83.1**	**14.6**	**0.0**	**1.7**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.4**	**81.5**	**16.1**	**0.1**	**1.8**	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.5**	**83.9**	**13.9**	**0.0**	**1.6**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Truck Summary:

Total Trucks: 109 % Trucks: 1.8 AM % Trucks: 2.0 PM % Trucks: 1.6

Classification Scheme: FHWA (ID: 1)

#1 Motorcycles - 2 Axles
#2 Passenger Cars - 2 Axles
#3 Pickup Trucks, Vans - 2 Axles
#4 Buses
#5 Single Unit - 2 Axles, 6 Tires
#6 Single Unit Truck - 3 Axles
#7 Single Unit - 4 Axles
#8 Single Unit - 4 Axles or Less
#9 Double Unit - 5 Axles
#10 Double Unit - 6 Axles or More
#11 Multi-Unit - 5 Axles or Less
#12 Multi-Unit - 6 Axles
#13 Multi-Unit - 7 Axles or More

Daily Total Classes Report

Study Date: Sunday, 02/12/2017
Unit ID: 16040568
Location: Range (north approach)

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 - 00:59	0	70	8	0	2	0	0	1	2	0	0	0	0	**83**
01:00 - 01:59	0	56	16	1	1	0	0	0	1	0	0	0	0	**75**
02:00 - 02:59	0	60	11	0	5	0	0	0	0	0	0	0	0	**76**
03:00 - 03:59	0	29	8	0	0	0	0	0	0	0	0	0	0	**37**
04:00 - 04:59	0	27	5	0	1	0	0	0	1	0	0	0	0	**34**
05:00 - 05:59	0	35	5	0	3	0	0	0	0	0	0	0	0	**43**
06:00 - 06:59	0	57	14	0	1	0	0	0	0	0	0	0	0	**72**
07:00 - 07:59	0	74	20	0	1	1	0	0	0	0	0	0	0	**96**
08:00 - 08:59	1	126	31	0	5	0	0	0	1	0	0	0	0	**164**
09:00 - 09:59	0	227	45	0	7	1	0	0	0	0	0	0	0	**280**
10:00 - 10:59	2	273	62	0	7	0	0	0	1	0	0	0	0	**345**
11:00 - 11:59	2	282	63	0	8	1	0	0	0	0	0	0	0	**356**
12:00 - 12:59	2	361	68	0	16	0	1	0	0	0	0	0	0	**448**
13:00 - 13:59	2	308	75	0	14	0	0	0	0	0	0	0	0	**399**
14:00 - 14:59	3	318	67	0	8	0	0	0	0	0	0	0	0	**396**
15:00 - 15:59	2	322	56	0	7	1	0	0	0	0	0	0	0	**388**
16:00 - 16:59	2	306	51	0	8	0	1	0	0	0	0	0	0	**368**
17:00 - 17:59	5	326	59	0	7	0	0	0	0	0	0	0	0	**397**
18:00 - 18:59	5	286	52	0	10	0	0	0	0	0	0	0	0	**353**
19:00 - 19:59	2	205	25	0	3	0	0	1	0	0	0	0	0	**236**
20:00 - 20:59	0	181	28	0	5	0	0	0	0	0	0	0	0	**214**
21:00 - 21:59	0	143	30	0	2	0	0	0	0	0	0	0	0	**175**
22:00 - 22:59	0	136	10	0	7	0	0	0	0	0	0	0	0	**153**
23:00 - 23:59	0	74	5	0	0	0	0	0	0	0	0	0	0	**79**
Totals	**28**	**4282**	**814**	**1**	**128**	**4**	**2**	**2**	**6**	**0**	**0**	**0**	**0**	**5267**
Percent of Total	**0.5**	**81.3**	**15.5**	**0.0**	**2.4**	**0.1**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.3**	**79.2**	**17.3**	**0.1**	**2.5**	**0.2**	**0.0**	**0.1**	**0.4**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.6**	**82.3**	**14.6**	**0.0**	**2.4**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Truck Summary:

Total Trucks: 143 % Trucks: 2.7 AM % Trucks: 3.1 PM % Trucks: 2.5

Classification Scheme: FHWA (ID: 1)

#1 Motorcycles - 2 Axles
#2 Passenger Cars - 2 Axles
#3 Pickup Trucks, Vans - 2 Axles
#4 Buses
#5 Single Unit - 2 Axles, 6 Tires
#6 Single Unit Truck - 3 Axles
#7 Single Unit - 4 Axles
#8 Single Unit - 4 Axles or Less
#9 Double Unit - 5 Axles
#10 Double Unit - 6 Axles or More
#11 Multi-Unit - 5 Axles or Less
#12 Multi-Unit - 6 Axles
#13 Multi-Unit - 7 Axles or More

Daily Total Classes Report

Study Date: Monday, 02/13/2017
Unit ID: 16040568
Location: Range (north approach)

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 - 00:59	0	37	4	0	0	1	0	0	0	0	0	0	0	**42**
01:00 - 01:59	0	31	7	0	0	1	0	0	0	0	0	0	0	**39**
02:00 - 02:59	0	30	1	0	0	0	0	0	0	0	0	0	0	**31**
03:00 - 03:59	0	24	7	0	2	1	0	0	0	0	0	0	0	**34**
04:00 - 04:59	0	36	27	0	0	1	0	0	0	0	0	0	0	**64**
05:00 - 05:59	1	83	34	1	4	0	0	0	0	1	0	0	0	**124**
06:00 - 06:59	0	190	44	5	12	0	0	0	0	0	0	0	0	**251**
07:00 - 07:59	1	398	80	3	16	0	0	0	2	0	0	0	0	**500**
08:00 - 08:59	1	389	68	1	20	5	0	0	0	0	0	0	1	**485**
09:00 - 09:59	2	291	68	1	15	0	0	0	1	0	0	0	0	**378**
10:00 - 10:59	3	285	71	1	11	3	0	1	4	0	0	0	0	**379**
11:00 - 11:59	0	327	66	0	23	2	0	1	0	0	0	0	0	**419**
12:00 - 12:59	1	366	80	0	27	1	0	1	4	0	0	0	0	**480**
13:00 - 13:59	4	355	100	1	23	3	0	1	1	0	0	0	0	**488**
14:00 - 14:59	2	421	92	7	26	2	0	2	2	0	0	0	0	**554**
15:00 - 15:59	5	506	86	3	31	2	2	2	0	0	0	0	0	**637**
16:00 - 16:59	3	473	93	4	21	3	0	0	0	0	0	0	0	**597**
17:00 - 17:59	1	487	96	1	19	1	0	1	1	0	0	0	0	**607**
18:00 - 18:59	2	355	76	1	17	0	0	0	0	0	0	0	0	**451**
19:00 - 19:59	0	286	45	0	6	2	0	0	0	0	0	0	0	**339**
20:00 - 20:59	0	193	27	0	4	0	0	0	0	0	0	0	0	**224**
21:00 - 21:59	0	143	25	0	4	0	0	0	1	0	0	0	0	**173**
22:00 - 22:59	0	131	16	0	2	0	0	0	0	0	0	0	0	**149**
23:00 - 23:59	0	50	11	0	2	1	0	0	0	0	0	0	0	**64**
Totals	**26**	**5887**	**1224**	**29**	**285**	**29**	**2**	**9**	**16**	**1**	**0**	**0**	**1**	**7509**
Percent of Total	**0.3**	**78.4**	**16.3**	**0.4**	**3.8**	**0.4**	**0.0**	**0.1**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.3**	**77.2**	**17.4**	**0.4**	**3.8**	**0.5**	**0.0**	**0.1**	**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.4**	**79.1**	**15.7**	**0.4**	**3.8**	**0.3**	**0.0**	**0.1**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Truck Summary:

Total Trucks: 372 % Trucks: 5.0 AM % Trucks: 5.1 PM % Trucks: 4.9

Classification Scheme: FHWA (ID: 1)

#1 Motorcycles - 2 Axles
#2 Passenger Cars - 2 Axles
#3 Pickup Trucks, Vans - 2 Axles
#4 Buses
#5 Single Unit - 2 Axles, 6 Tires
#6 Single Unit Truck - 3 Axles
#7 Single Unit - 4 Axles
#8 Single Unit - 4 Axles or Less
#9 Double Unit - 5 Axles
#10 Double Unit - 6 Axles or More
#11 Multi-Unit - 5 Axles or Less
#12 Multi-Unit - 6 Axles
#13 Multi-Unit - 7 Axles or More

Daily Total Classes Report

Study Date: Tuesday, 02/14/2017
Unit ID: 16040568
Location: Range (north approach)

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 - 00:59	0	35	5	0	0	0	0	0	0	0	0	0	0	**40**
01:00 - 01:59	0	26	3	0	1	0	0	0	0	0	0	0	0	**30**
02:00 - 02:59	0	25	4	0	0	0	0	1	0	0	0	0	0	**30**
03:00 - 03:59	0	25	11	0	0	0	0	0	1	0	0	0	0	**37**
04:00 - 04:59	0	64	23	0	2	0	0	0	1	0	0	0	0	**90**
05:00 - 05:59	0	85	33	1	7	1	0	1	0	0	0	0	0	**128**
06:00 - 06:59	0	194	41	6	9	0	0	0	3	0	0	0	0	**253**
07:00 - 07:59	6	418	93	5	23	1	1	2	3	0	0	0	0	**552**
08:00 - 08:59	2	414	65	0	19	2	0	1	2	1	0	0	0	**506**
09:00 - 09:59	0	293	79	1	14	0	0	1	3	0	0	0	0	**391**
10:00 - 10:59	3	297	78	0	18	3	0	0	2	0	0	0	0	**401**
11:00 - 11:59	4	320	69	0	26	1	0	1	2	0	0	0	0	**423**
12:00 - 12:59	2	363	104	0	16	2	0	1	1	0	0	1	1	**491**
13:00 - 13:59	4	372	105	1	17	5	0	2	3	0	0	0	0	**509**
14:00 - 14:59	3	475	102	3	20	2	0	1	3	0	0	0	0	**609**
15:00 - 15:59	5	513	99	11	26	3	1	3	2	0	0	0	0	**663**
16:00 - 16:59	0	510	125	3	26	3	0	3	1	0	0	0	0	**671**
17:00 - 17:59	2	488	129	1	14	3	0	1	0	0	0	0	0	**638**
18:00 - 18:59	0	348	73	1	17	0	0	1	0	0	0	0	0	**440**
19:00 - 19:59	0	308	54	1	6	0	0	0	0	0	0	0	0	**369**
20:00 - 20:59	0	182	32	0	5	0	0	0	1	0	0	0	0	**220**
21:00 - 21:59	1	131	33	0	3	1	0	0	0	0	0	0	0	**169**
22:00 - 22:59	0	115	13	0	1	0	0	0	0	0	0	0	0	**129**
23:00 - 23:59	0	63	8	0	0	0	0	0	0	0	0	0	0	**71**
Totals	**32**	**6064**	**1381**	**34**	**270**	**27**	**2**	**19**	**28**	**1**	**0**	**1**	**1**	**7860**
Percent of Total	**0.4**	**77.2**	**17.6**	**0.4**	**3.4**	**0.3**	**0.0**	**0.2**	**0.4**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.5**	**76.2**	**17.5**	**0.5**	**4.1**	**0.3**	**0.0**	**0.2**	**0.6**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.3**	**77.7**	**17.6**	**0.4**	**3.0**	**0.4**	**0.0**	**0.2**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Truck Summary:

Total Trucks: 383 % Trucks: 4.9 AM % Trucks: 5.8 PM % Trucks: 4.4

Classification Scheme: FHWA (ID: 1)

#1 Motorcycles - 2 Axles
#2 Passenger Cars - 2 Axles
#3 Pickup Trucks, Vans - 2 Axles
#4 Buses
#5 Single Unit - 2 Axles, 6 Tires
#6 Single Unit Truck - 3 Axles
#7 Single Unit - 4 Axles
#8 Single Unit - 4 Axles or Less
#9 Double Unit - 5 Axles
#10 Double Unit - 6 Axles or More
#11 Multi-Unit - 5 Axles or Less
#12 Multi-Unit - 6 Axles
#13 Multi-Unit - 7 Axles or More

Daily Total Classes Report

Study Date: Wednesday, 02/15/2017
Unit ID: 16040568
Location: Range (north approach)

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 - 00:59	0	38	6	0	0	0	0	0	0	0	0	0	0	**44**
01:00 - 01:59	0	32	3	0	0	0	0	0	0	0	0	0	0	**35**
02:00 - 02:59	0	26	5	0	1	0	0	0	1	0	0	0	0	**33**
03:00 - 03:59	0	18	5	0	0	0	0	0	0	0	0	0	0	**23**
04:00 - 04:59	0	55	21	0	4	0	0	0	1	0	0	0	0	**81**
05:00 - 05:59	0	82	27	2	5	0	0	1	0	0	0	0	0	**117**
06:00 - 06:59	1	180	46	4	7	0	1	0	0	0	0	0	0	**239**
07:00 - 07:59	4	392	71	5	19	3	0	1	3	0	0	0	0	**498**
08:00 - 08:59	3	375	74	2	15	1	1	1	2	0	0	0	0	**474**
09:00 - 09:59	1	250	65	1	8	3	0	0	0	0	0	0	0	**328**
10:00 - 10:59	3	241	58	0	11	4	0	2	2	0	0	0	0	**321**
11:00 - 11:59	0	337	65	1	20	3	0	1	1	0	0	0	0	**428**
12:00 - 12:59	1	320	89	1	34	2	0	2	0	0	0	0	0	**449**
13:00 - 13:59	2	332	77	2	14	4	0	1	0	0	0	0	0	**432**
14:00 - 14:59	2	401	87	5	18	1	0	2	1	0	0	0	0	**517**
15:00 - 15:59	1	500	94	6	21	1	1	0	0	0	1	0	0	**625**
16:00 - 16:59	2	493	99	0	14	1	0	1	0	0	0	0	0	**610**
17:00 - 17:59	3	438	91	1	19	1	0	1	1	0	0	0	0	**555**
18:00 - 18:59	2	368	83	3	21	0	0	0	0	0	0	0	0	**477**
19:00 - 19:59	2	223	46	0	12	0	0	0	0	0	0	0	0	**283**
20:00 - 20:59	0	207	45	0	8	0	0	0	0	0	0	0	0	**260**
21:00 - 21:59	0	171	19	2	2	0	0	0	0	0	0	0	0	**194**
22:00 - 22:59	0	116	11	0	2	0	0	0	0	0	0	0	0	**129**
23:00 - 23:59	0	53	8	0	1	0	0	0	0	0	0	0	0	**62**
Totals	**27**	**5648**	**1195**	**35**	**256**	**24**	**3**	**13**	**12**	**0**	**1**	**0**	**0**	**7214**
Percent of Total	**0.4**	**78.3**	**16.6**	**0.5**	**3.5**	**0.3**	**0.0**	**0.2**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.5**	**77.3**	**17.0**	**0.6**	**3.4**	**0.5**	**0.1**	**0.2**	**0.4**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.3**	**78.9**	**16.3**	**0.4**	**3.6**	**0.2**	**0.0**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Truck Summary:

Total Trucks: 344 % Trucks: 4.8 AM % Trucks: 5.2 PM % Trucks: 4.5

Classification Scheme: FHWA (ID: 1)

#1 Motorcycles - 2 Axles
#2 Passenger Cars - 2 Axles
#3 Pickup Trucks, Vans - 2 Axles
#4 Buses
#5 Single Unit - 2 Axles, 6 Tires
#6 Single Unit Truck - 3 Axles
#7 Single Unit - 4 Axles
#8 Single Unit - 4 Axles or Less
#9 Double Unit - 5 Axles
#10 Double Unit - 6 Axles or More
#11 Multi-Unit - 5 Axles or Less
#12 Multi-Unit - 6 Axles
#13 Multi-Unit - 7 Axles or More

Daily Total Classes Report

Study Date: Thursday, 02/16/2017
Unit ID: 16040568
Location: Range (north approach)

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 - 00:59	0	25	4	0	1	0	0	0	0	0	0	0	0	**30**
01:00 - 01:59	0	20	6	0	0	0	0	0	0	0	0	0	0	**26**
02:00 - 02:59	0	27	1	0	0	0	0	1	0	0	0	0	0	**29**
03:00 - 03:59	0	18	6	0	0	0	0	0	0	0	0	0	0	**24**
04:00 - 04:59	0	47	19	1	3	0	0	1	0	0	0	0	0	**71**
05:00 - 05:59	0	80	22	1	8	0	0	0	0	0	0	0	0	**111**
06:00 - 06:59	0	167	35	4	11	0	0	0	0	0	0	0	0	**217**
07:00 - 07:59	2	431	77	7	13	2	1	2	1	0	0	0	0	**536**
08:00 - 08:59	2	404	89	2	18	0	0	0	1	0	0	0	0	**516**
09:00 - 09:59	1	236	75	1	17	0	0	0	0	0	0	0	0	**330**
10:00 - 10:59	4	249	65	0	15	2	1	2	0	0	0	0	0	**338**
11:00 - 11:59	0	319	74	1	24	1	0	1	1	0	0	0	0	**421**
12:00 - 12:59	0	351	91	2	13	0	0	1	1	0	0	0	0	**459**
13:00 - 13:59	1	301	79	0	13	2	0	4	3	0	0	0	0	**403**
14:00 - 14:59	1	404	79	3	30	3	0	1	1	1	0	0	0	**523**
15:00 - 15:59	4	493	98	4	23	2	2	0	0	0	0	0	0	**626**
16:00 - 16:59	3	488	106	1	18	3	0	1	0	0	0	0	0	**620**
17:00 - 17:59	4	482	98	1	23	2	0	0	1	0	0	0	0	**611**
18:00 - 18:59	0	357	98	0	9	0	0	0	1	0	0	0	0	**465**
19:00 - 19:59	0	257	51	0	4	0	0	0	0	0	0	0	0	**312**
20:00 - 20:59	1	216	31	0	5	0	0	0	0	0	0	0	0	**253**
21:00 - 21:59	0	151	27	0	1	0	0	1	0	0	0	0	0	**180**
22:00 - 22:59	1	133	15	0	1	0	0	0	0	0	0	0	0	**150**
23:00 - 23:59	0	70	13	0	2	0	0	1	0	0	0	0	0	**86**
Totals	**24**	**5726**	**1259**	**28**	**252**	**17**	**4**	**16**	**10**	**1**	**0**	**0**	**0**	**7337**
Percent of Total	**0.3**	**78.0**	**17.2**	**0.4**	**3.4**	**0.2**	**0.1**	**0.2**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.3**	**76.4**	**17.9**	**0.6**	**4.2**	**0.2**	**0.1**	**0.3**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.3**	**79.0**	**16.8**	**0.2**	**3.0**	**0.3**	**0.0**	**0.2**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Truck Summary:

Total Trucks: 328 % Trucks: 4.5 AM % Trucks: 5.4 PM % Trucks: 3.9

Classification Scheme: FHWA (ID: 1)

#1 Motorcycles - 2 Axles
#2 Passenger Cars - 2 Axles
#3 Pickup Trucks, Vans - 2 Axles
#4 Buses
#5 Single Unit - 2 Axles, 6 Tires
#6 Single Unit Truck - 3 Axles
#7 Single Unit - 4 Axles
#8 Single Unit - 4 Axles or Less
#9 Double Unit - 5 Axles
#10 Double Unit - 6 Axles or More
#11 Multi-Unit - 5 Axles or Less
#12 Multi-Unit - 6 Axles
#13 Multi-Unit - 7 Axles or More

Daily Total Classes Report

Study Date: Friday, 02/17/2017
Unit ID: 16040568
Location: Range (north approach)

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 - 00:59	0	42	6	0	1	0	0	0	0	0	0	0	0	**49**
01:00 - 01:59	0	43	6	0	1	0	0	1	0	0	0	0	0	**51**
02:00 - 02:59	0	36	7	0	0	0	0	0	0	0	0	0	0	**43**
03:00 - 03:59	0	18	5	0	1	0	0	0	0	0	0	0	0	**24**
04:00 - 04:59	0	40	7	0	4	0	0	1	0	0	0	0	0	**52**
05:00 - 05:59	0	75	23	2	3	0	0	0	0	0	0	0	0	**103**
06:00 - 06:59	0	163	47	5	11	0	0	0	0	0	0	0	0	**226**
07:00 - 07:59	0	371	76	4	13	2	0	2	2	0	0	0	0	**470**
08:00 - 08:59	0	380	96	1	12	2	0	0	1	0	0	0	0	**492**
09:00 - 09:59	1	292	90	2	21	0	0	0	0	0	0	0	0	**406**
10:00 - 10:59	0	281	70	2	16	1	0	1	0	0	0	0	0	**371**
11:00 - 11:59	1	349	78	1	16	1	0	1	1	0	0	0	0	**448**
12:00 - 12:59	4	346	92	4	15	5	0	0	1	0	0	0	0	**467**
13:00 - 13:59	3	394	81	4	14	1	0	3	1	0	0	0	0	**501**
14:00 - 14:59	0	428	87	5	21	0	0	2	0	0	0	0	0	**543**
15:00 - 15:59	5	505	106	4	33	0	0	2	1	0	0	0	0	**656**
16:00 - 16:59	3	525	102	1	20	3	0	1	0	0	0	1	0	**656**
17:00 - 17:59	2	468	111	1	19	0	0	1	0	0	0	0	0	**602**
18:00 - 18:59	0	382	91	2	7	2	0	1	0	0	0	0	0	**485**
19:00 - 19:59	0	300	74	1	8	0	0	1	0	0	0	0	0	**384**
20:00 - 20:59	0	241	48	1	9	1	0	0	0	0	0	0	0	**300**
21:00 - 21:59	1	191	38	0	6	0	0	0	0	0	0	0	0	**236**
22:00 - 22:59	0	145	21	0	3	0	0	0	0	0	0	0	0	**169**
23:00 - 23:59	0	109	17	0	3	0	0	0	0	0	0	0	0	**129**
Totals	**20**	**6124**	**1379**	**40**	**257**	**18**	**0**	**17**	**7**	**0**	**0**	**1**	**0**	**7863**
Percent of Total	**0.3**	**77.9**	**17.5**	**0.5**	**3.3**	**0.2**	**0.0**	**0.2**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.1**	**76.4**	**18.7**	**0.6**	**3.6**	**0.2**	**0.0**	**0.2**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.4**	**78.7**	**16.9**	**0.4**	**3.1**	**0.2**	**0.0**	**0.2**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Truck Summary:

Total Trucks: 340 % Trucks: 4.3 AM % Trucks: 4.8 PM % Trucks: 4.1

Classification Scheme: FHWA (ID: 1)

#1 Motorcycles - 2 Axles
#2 Passenger Cars - 2 Axles
#3 Pickup Trucks, Vans - 2 Axles
#4 Buses
#5 Single Unit - 2 Axles, 6 Tires
#6 Single Unit Truck - 3 Axles
#7 Single Unit - 4 Axles
#8 Single Unit - 4 Axles or Less
#9 Double Unit - 5 Axles
#10 Double Unit - 6 Axles or More
#11 Multi-Unit - 5 Axles or Less
#12 Multi-Unit - 6 Axles
#13 Multi-Unit - 7 Axles or More

Daily Total Classes Report

Study Date: Saturday, 02/18/2017
Unit ID: 16040568
Location: Range (north approach)

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 - 00:59	0	63	7	0	2	0	0	0	0	0	0	0	0	**72**
01:00 - 01:59	0	41	10	0	0	0	0	0	0	0	0	0	0	**51**
02:00 - 02:59	0	39	8	0	1	0	0	0	0	0	0	0	0	**48**
03:00 - 03:59	0	26	5	0	2	0	0	0	0	0	0	0	0	**33**
04:00 - 04:59	0	26	4	0	0	0	0	0	0	0	0	0	0	**30**
05:00 - 05:59	0	51	14	1	1	0	0	0	0	0	0	0	0	**67**
06:00 - 06:59	0	69	15	0	4	0	0	0	0	0	0	0	0	**88**
07:00 - 07:59	0	120	40	0	2	0	0	0	0	0	0	0	0	**162**
08:00 - 08:59	0	180	48	0	9	0	0	0	0	0	0	0	0	**237**
09:00 - 09:59	1	242	58	0	8	0	0	0	0	0	0	0	0	**309**
10:00 - 10:59	0	329	73	0	20	0	0	0	0	0	0	0	0	**422**
11:00 - 11:59	2	359	82	1	21	1	1	0	0	0	0	0	0	**467**
12:00 - 12:59	5	354	78	1	14	0	0	0	0	0	0	0	0	**452**
13:00 - 13:59	2	377	50	1	19	0	0	1	0	0	0	0	0	**450**
14:00 - 14:59	3	354	84	0	18	0	0	0	0	0	0	0	0	**459**
15:00 - 15:59	3	355	59	0	9	0	0	1	0	0	0	0	0	**427**
16:00 - 16:59	0	315	73	1	15	0	0	0	0	0	0	0	0	**404**
17:00 - 17:59	8	342	63	1	8	0	0	0	0	0	0	0	0	**422**
18:00 - 18:59	1	313	63	0	9	1	0	1	0	0	0	0	0	**388**
19:00 - 19:59	2	252	35	0	6	0	0	0	0	0	0	0	0	**295**
20:00 - 20:59	1	241	37	0	7	0	0	0	0	0	0	0	0	**286**
21:00 - 21:59	0	186	30	0	1	0	0	0	0	0	0	0	0	**217**
22:00 - 22:59	0	158	24	0	2	0	0	0	0	0	0	0	0	**184**
23:00 - 23:59	0	128	9	0	6	1	0	0	0	0	0	0	0	**144**
Totals	**28**	**4920**	**969**	**6**	**184**	**3**	**1**	**3**	**0**	**0**	**0**	**0**	**0**	**6114**
Percent of Total	**0.5**	**80.5**	**15.8**	**0.1**	**3.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.2**	**77.8**	**18.3**	**0.1**	**3.5**	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.6**	**81.8**	**14.7**	**0.1**	**2.8**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Truck Summary:

Total Trucks: 197 % Trucks: 3.2 AM % Trucks: 3.7 PM % Trucks: 3.0

Classification Scheme: FHWA (ID: 1)

#1 Motorcycles - 2 Axles
#2 Passenger Cars - 2 Axles
#3 Pickup Trucks, Vans - 2 Axles
#4 Buses
#5 Single Unit - 2 Axles, 6 Tires
#6 Single Unit Truck - 3 Axles
#7 Single Unit - 4 Axles
#8 Single Unit - 4 Axles or Less
#9 Double Unit - 5 Axles
#10 Double Unit - 6 Axles or More
#11 Multi-Unit - 5 Axles or Less
#12 Multi-Unit - 6 Axles
#13 Multi-Unit - 7 Axles or More

Daily Total Classes Report

Study Date: Sunday, 02/12/2017
Unit ID: 15121539
Location: Range (south location)

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 - 00:59	0	77	12	0	2	0	0	1	2	0	0	0	0	**94**
01:00 - 01:59	0	51	17	0	2	0	0	0	1	0	0	0	0	**71**
02:00 - 02:59	0	54	12	0	3	0	0	0	0	0	0	0	0	**69**
03:00 - 03:59	0	23	3	0	1	0	0	0	0	0	0	0	0	**27**
04:00 - 04:59	0	23	4	0	0	0	0	0	1	0	0	0	0	**28**
05:00 - 05:59	0	26	5	0	3	0	0	0	0	0	0	0	0	**34**
06:00 - 06:59	0	44	11	0	3	0	0	0	0	0	0	0	0	**58**
07:00 - 07:59	0	84	31	0	3	0	0	0	0	0	0	0	0	**118**
08:00 - 08:59	2	152	32	0	5	0	0	0	1	0	0	0	0	**192**
09:00 - 09:59	1	270	55	0	12	0	0	0	0	0	0	0	0	**338**
10:00 - 10:59	3	338	78	0	11	2	0	0	0	0	0	0	0	**432**
11:00 - 11:59	4	370	91	1	13	2	0	0	0	0	0	0	0	**481**
12:00 - 12:59	6	465	94	1	14	0	0	0	0	0	0	0	0	**580**
13:00 - 13:59	4	342	82	0	18	1	0	0	0	0	0	0	0	**447**
14:00 - 14:59	2	320	80	0	14	0	0	0	0	0	0	0	0	**416**
15:00 - 15:59	5	330	82	0	11	0	0	0	0	0	0	0	1	**429**
16:00 - 16:59	3	334	64	0	9	0	1	0	0	0	0	0	0	**411**
17:00 - 17:59	6	358	58	0	9	0	0	0	0	0	1	0	0	**432**
18:00 - 18:59	7	296	54	0	12	1	1	0	0	0	0	0	0	**371**
19:00 - 19:59	1	194	49	0	6	0	0	1	0	0	0	0	0	**251**
20:00 - 20:59	1	142	31	0	9	0	0	0	0	0	0	0	0	**183**
21:00 - 21:59	0	125	21	0	2	0	0	0	0	0	0	0	0	**148**
22:00 - 22:59	0	108	10	0	6	0	0	0	0	0	0	0	0	**124**
23:00 - 23:59	0	75	6	0	1	0	0	0	0	0	0	0	0	**82**
Totals	**45**	**4601**	**982**	**2**	**169**	**6**	**2**	**2**	**5**	**0**	**1**	**0**	**1**	**5816**
Percent of Total	**0.8**	**79.1**	**16.9**	**0.0**	**2.9**	**0.1**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.5**	**77.9**	**18.1**	**0.1**	**3.0**	**0.2**	**0.0**	**0.1**	**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.9**	**79.7**	**16.3**	**0.0**	**2.9**	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Truck Summary:

Total Trucks: 188 % Trucks: 3.2 AM % Trucks: 3.6 PM % Trucks: 3.1

Classification Scheme: FHWA (ID: 1)

#1 Motorcycles - 2 Axles
#2 Passenger Cars - 2 Axles
#3 Pickup Trucks, Vans - 2 Axles
#4 Buses
#5 Single Unit - 2 Axles, 6 Tires
#6 Single Unit Truck - 3 Axles
#7 Single Unit - 4 Axles
#8 Single Unit - 4 Axles or Less
#9 Double Unit - 5 Axles
#10 Double Unit - 6 Axles or More
#11 Multi-Unit - 5 Axles or Less
#12 Multi-Unit - 6 Axles
#13 Multi-Unit - 7 Axles or More

Daily Total Classes Report

Study Date: Monday, 02/13/2017
Unit ID: 15121539
Location: Range (south location)

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 - 00:59	0	37	2	0	0	1	0	0	0	0	0	0	0	**40**
01:00 - 01:59	0	29	4	0	1	0	0	0	0	0	0	0	0	**34**
02:00 - 02:59	0	24	3	0	0	0	0	0	0	0	0	0	0	**27**
03:00 - 03:59	0	19	7	0	1	1	0	0	0	0	0	0	0	**28**
04:00 - 04:59	0	56	22	0	1	2	0	0	0	0	0	0	0	**81**
05:00 - 05:59	1	91	28	1	6	0	0	0	0	1	0	0	0	**128**
06:00 - 06:59	0	186	52	5	12	2	1	0	0	0	0	0	0	**258**
07:00 - 07:59	12	440	94	6	17	2	0	1	1	0	1	1	0	**575**
08:00 - 08:59	1	448	85	0	26	4	0	1	0	0	0	0	0	**565**
09:00 - 09:59	1	302	80	1	20	1	0	1	1	0	0	0	0	**407**
10:00 - 10:59	2	288	81	1	12	2	0	1	2	0	0	0	0	**389**
11:00 - 11:59	2	329	78	0	21	4	0	1	0	0	0	0	0	**435**
12:00 - 12:59	0	355	105	0	25	1	0	1	1	0	0	0	0	**488**
13:00 - 13:59	5	387	96	1	28	2	0	0	6	0	0	0	1	**526**
14:00 - 14:59	3	423	105	5	32	2	0	0	7	0	0	0	0	**577**
15:00 - 15:59	9	546	103	5	38	5	1	2	3	1	1	0	1	**715**
16:00 - 16:59	1	501	118	4	27	5	0	0	1	0	0	0	0	**657**
17:00 - 17:59	2	584	111	2	13	1	0	0	4	0	0	0	0	**717**
18:00 - 18:59	2	375	87	2	15	0	0	0	0	0	0	0	0	**481**
19:00 - 19:59	1	287	44	1	11	0	0	0	0	0	0	0	0	**344**
20:00 - 20:59	0	209	33	0	5	0	0	0	0	0	0	0	0	**247**
21:00 - 21:59	0	127	26	0	3	0	0	0	2	0	0	0	0	**158**
22:00 - 22:59	0	105	16	0	1	0	0	0	0	0	0	0	0	**122**
23:00 - 23:59	0	49	11	0	1	0	0	0	0	0	0	0	0	**61**
Totals	**42**	**6197**	**1391**	**34**	**316**	**35**	**2**	**8**	**28**	**2**	**2**	**1**	**2**	**8060**
Percent of Total	**0.5**	**76.9**	**17.3**	**0.4**	**3.9**	**0.4**	**0.0**	**0.1**	**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.6**	**75.8**	**18.1**	**0.5**	**3.9**	**0.6**	**0.0**	**0.2**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.5**	**77.5**	**16.8**	**0.4**	**3.9**	**0.3**	**0.0**	**0.1**	**0.5**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Truck Summary:

Total Trucks: 430 % Trucks: 5.3 AM % Trucks: 5.5 PM % Trucks: 5.2

Classification Scheme: FHWA (ID: 1)

#1 Motorcycles - 2 Axles
#2 Passenger Cars - 2 Axles
#3 Pickup Trucks, Vans - 2 Axles
#4 Buses
#5 Single Unit - 2 Axles, 6 Tires
#6 Single Unit Truck - 3 Axles
#7 Single Unit - 4 Axles
#8 Single Unit - 4 Axles or Less
#9 Double Unit - 5 Axles
#10 Double Unit - 6 Axles or More
#11 Multi-Unit - 5 Axles or Less
#12 Multi-Unit - 6 Axles
#13 Multi-Unit - 7 Axles or More

Daily Total Classes Report

Study Date: Tuesday, 02/14/2017
Unit ID: 15121539
Location: Range (south location)

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 - 00:59	0	24	5	0	0	0	0	0	0	0	0	0	0	**29**
01:00 - 01:59	0	17	1	0	0	0	0	0	0	0	0	0	0	**18**
02:00 - 02:59	0	15	5	0	1	0	0	0	0	0	0	0	0	**21**
03:00 - 03:59	0	30	8	0	0	0	0	0	1	0	0	0	0	**39**
04:00 - 04:59	0	71	21	0	2	0	0	0	1	0	0	0	0	**95**
05:00 - 05:59	1	97	31	1	7	1	0	1	1	0	0	0	0	**140**
06:00 - 06:59	2	186	62	5	9	1	0	1	2	0	0	0	0	**268**
07:00 - 07:59	3	546	103	3	18	1	0	0	4	1	0	0	0	**679**
08:00 - 08:59	2	494	78	2	29	4	1	0	7	0	0	0	0	**617**
09:00 - 09:59	3	330	69	2	23	0	0	1	8	0	0	0	0	**436**
10:00 - 10:59	3	306	82	0	15	4	0	0	9	0	0	1	0	**420**
11:00 - 11:59	2	332	76	0	26	1	0	0	7	0	0	0	0	**444**
12:00 - 12:59	4	381	103	1	17	1	0	1	5	0	0	0	0	**513**
13:00 - 13:59	4	417	110	1	22	4	0	2	5	0	0	0	0	**565**
14:00 - 14:59	4	474	135	4	25	1	0	2	3	0	0	0	0	**648**
15:00 - 15:59	9	570	112	8	29	6	2	2	6	0	0	0	0	**744**
16:00 - 16:59	4	614	119	3	36	3	0	1	1	0	0	0	0	**781**
17:00 - 17:59	3	534	122	1	18	2	0	0	0	0	0	0	0	**680**
18:00 - 18:59	1	357	83	1	17	2	0	1	0	0	0	0	0	**462**
19:00 - 19:59	0	265	51	0	11	1	0	0	0	0	0	0	0	**328**
20:00 - 20:59	1	197	29	0	10	0	0	0	1	0	0	0	0	**238**
21:00 - 21:59	0	126	25	0	3	0	0	0	0	0	0	0	0	**154**
22:00 - 22:59	0	107	20	0	2	0	0	0	0	0	0	0	0	**129**
23:00 - 23:59	0	73	12	0	1	0	0	0	0	0	0	0	0	**86**
Totals	**46**	**6563**	**1462**	**32**	**321**	**32**	**3**	**12**	**61**	**1**	**0**	**1**	**0**	**8534**
Percent of Total	**0.5**	**76.9**	**17.1**	**0.4**	**3.8**	**0.4**	**0.0**	**0.1**	**0.7**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.5**	**76.4**	**16.9**	**0.4**	**4.1**	**0.4**	**0.0**	**0.1**	**1.2**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.6**	**77.2**	**17.3**	**0.4**	**3.6**	**0.4**	**0.0**	**0.2**	**0.4**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Truck Summary:

Total Trucks: 463 % Trucks: 5.4 AM % Trucks: 6.3 PM % Trucks: 4.9

Classification Scheme: FHWA (ID: 1)

#1 Motorcycles - 2 Axles
#2 Passenger Cars - 2 Axles
#3 Pickup Trucks, Vans - 2 Axles
#4 Buses
#5 Single Unit - 2 Axles, 6 Tires
#6 Single Unit Truck - 3 Axles
#7 Single Unit - 4 Axles
#8 Single Unit - 4 Axles or Less
#9 Double Unit - 5 Axles
#10 Double Unit - 6 Axles or More
#11 Multi-Unit - 5 Axles or Less
#12 Multi-Unit - 6 Axles
#13 Multi-Unit - 7 Axles or More

Daily Total Classes Report

Study Date: Wednesday, 02/15/2017
Unit ID: 15121539
Location: Range (south location)

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 - 00:59	0	25	3	0	0	0	0	0	0	0	0	0	0	**28**
01:00 - 01:59	0	23	5	0	0	0	0	0	0	0	0	0	0	**28**
02:00 - 02:59	0	19	6	0	1	0	0	0	1	0	0	0	0	**27**
03:00 - 03:59	0	13	7	0	0	0	0	0	0	0	0	0	0	**20**
04:00 - 04:59	0	64	19	1	2	0	0	2	0	0	0	0	0	**88**
05:00 - 05:59	0	90	31	1	7	2	0	1	0	0	0	0	0	**132**
06:00 - 06:59	0	180	45	6	5	1	1	0	0	0	0	0	0	**238**
07:00 - 07:59	4	452	92	8	19	4	1	1	2	0	0	1	1	**585**
08:00 - 08:59	1	434	88	2	20	1	1	0	1	0	0	0	0	**548**
09:00 - 09:59	1	248	81	1	18	1	0	0	0	0	0	0	0	**350**
10:00 - 10:59	0	265	74	0	17	5	0	2	1	0	0	0	0	**364**
11:00 - 11:59	1	291	84	2	19	2	0	2	2	0	0	0	0	**403**
12:00 - 12:59	0	339	91	1	33	2	0	2	0	0	0	0	0	**468**
13:00 - 13:59	2	352	79	4	18	6	0	1	1	0	0	0	0	**463**
14:00 - 14:59	2	411	96	6	27	2	0	2	0	0	0	0	0	**546**
15:00 - 15:59	2	576	112	4	25	1	0	0	0	0	0	0	0	**720**
16:00 - 16:59	1	526	117	2	19	1	0	1	0	0	0	0	0	**667**
17:00 - 17:59	0	533	114	2	36	1	0	1	1	0	0	0	0	**688**
18:00 - 18:59	0	427	116	2	24	1	0	0	0	0	0	0	0	**570**
19:00 - 19:59	2	245	62	0	8	0	0	0	0	0	0	0	0	**317**
20:00 - 20:59	2	243	65	0	4	1	0	0	0	0	0	0	0	**315**
21:00 - 21:59	0	155	21	2	2	0	0	0	0	0	0	0	0	**180**
22:00 - 22:59	0	112	12	0	2	0	0	0	0	0	0	0	0	**126**
23:00 - 23:59	0	67	7	0	2	0	0	0	0	0	0	0	0	**76**
Totals	**18**	**6090**	**1427**	**44**	**308**	**31**	**3**	**15**	**9**	**0**	**0**	**1**	**1**	**7947**
Percent of Total	**0.2**	**76.6**	**18.0**	**0.6**	**3.9**	**0.4**	**0.0**	**0.2**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.2**	**74.8**	**19.0**	**0.7**	**3.8**	**0.6**	**0.1**	**0.3**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.2**	**77.6**	**17.4**	**0.4**	**3.9**	**0.3**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Truck Summary:

Total Trucks: 412 % Trucks: 5.2 AM % Trucks: 5.9 PM % Trucks: 4.8

Classification Scheme: FHWA (ID: 1)

#1 Motorcycles - 2 Axles
#2 Passenger Cars - 2 Axles
#3 Pickup Trucks, Vans - 2 Axles
#4 Buses
#5 Single Unit - 2 Axles, 6 Tires
#6 Single Unit Truck - 3 Axles
#7 Single Unit - 4 Axles
#8 Single Unit - 4 Axles or Less
#9 Double Unit - 5 Axles
#10 Double Unit - 6 Axles or More
#11 Multi-Unit - 5 Axles or Less
#12 Multi-Unit - 6 Axles
#13 Multi-Unit - 7 Axles or More

Daily Total Classes Report

Study Date: Thursday, 02/16/2017
Unit ID: 15121539
Location: Range (south location)

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 - 00:59	0	23	3	0	1	0	0	0	0	0	0	0	0	**27**
01:00 - 01:59	0	13	5	0	0	0	0	0	0	0	0	0	0	**18**
02:00 - 02:59	0	18	4	0	0	0	0	1	0	0	0	0	0	**23**
03:00 - 03:59	0	14	8	0	0	0	0	0	0	0	0	0	0	**22**
04:00 - 04:59	0	53	18	1	2	0	0	1	0	0	0	0	0	**75**
05:00 - 05:59	1	90	32	2	8	0	0	0	0	0	0	0	0	**133**
06:00 - 06:59	1	186	43	4	7	1	0	1	0	0	0	0	0	**243**
07:00 - 07:59	6	490	110	9	23	4	0	3	2	0	0	0	0	**647**
08:00 - 08:59	0	474	104	2	23	0	0	1	0	0	0	0	0	**604**
09:00 - 09:59	1	270	95	1	13	1	0	2	0	0	0	0	0	**383**
10:00 - 10:59	0	284	67	0	18	1	0	2	1	0	0	0	0	**373**
11:00 - 11:59	0	333	98	0	15	3	0	1	1	0	0	0	0	**451**
12:00 - 12:59	2	348	95	2	18	1	0	1	1	0	0	0	0	**468**
13:00 - 13:59	2	322	94	0	23	2	0	3	2	0	0	0	0	**448**
14:00 - 14:59	4	435	97	2	26	3	0	1	1	1	0	0	0	**570**
15:00 - 15:59	4	559	113	3	31	4	1	1	0	0	0	0	0	**716**
16:00 - 16:59	2	533	118	3	30	2	0	1	0	0	0	0	0	**689**
17:00 - 17:59	6	587	141	1	24	1	0	1	1	0	0	1	0	**763**
18:00 - 18:59	2	399	99	0	12	0	0	0	1	0	0	0	0	**513**
19:00 - 19:59	0	283	48	0	6	0	0	2	0	0	0	0	0	**339**
20:00 - 20:59	0	213	38	0	4	0	0	0	0	0	0	0	0	**255**
21:00 - 21:59	0	147	40	0	2	0	0	0	0	0	0	0	0	**189**
22:00 - 22:59	0	109	19	0	2	0	0	0	0	0	0	0	0	**130**
23:00 - 23:59	0	72	20	0	5	0	0	1	0	0	0	0	0	**98**
Totals	**31**	**6255**	**1509**	**30**	**293**	**23**	**1**	**23**	**10**	**1**	**0**	**1**	**0**	**8177**
Percent of Total	**0.4**	**76.5**	**18.5**	**0.4**	**3.6**	**0.3**	**0.0**	**0.3**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.3**	**75.0**	**19.6**	**0.6**	**3.7**	**0.3**	**0.0**	**0.4**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.4**	**77.4**	**17.8**	**0.2**	**3.5**	**0.3**	**0.0**	**0.2**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Truck Summary:

Total Trucks: 382 % Trucks: 4.7 AM % Trucks: 5.2 PM % Trucks: 4.4

Classification Scheme: FHWA (ID: 1)

#1 Motorcycles - 2 Axles
#2 Passenger Cars - 2 Axles
#3 Pickup Trucks, Vans - 2 Axles
#4 Buses
#5 Single Unit - 2 Axles, 6 Tires
#6 Single Unit Truck - 3 Axles
#7 Single Unit - 4 Axles
#8 Single Unit - 4 Axles or Less
#9 Double Unit - 5 Axles
#10 Double Unit - 6 Axles or More
#11 Multi-Unit - 5 Axles or Less
#12 Multi-Unit - 6 Axles
#13 Multi-Unit - 7 Axles or More

Daily Total Classes Report

Study Date: Friday, 02/17/2017
Unit ID: 15121539
Location: Range (south location)

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 - 00:59	0	39	7	0	1	0	0	0	0	0	0	0	0	**47**
01:00 - 01:59	0	38	7	0	1	0	0	1	0	0	0	0	0	**47**
02:00 - 02:59	0	30	7	0	0	0	0	0	0	0	0	0	0	**37**
03:00 - 03:59	0	22	9	0	0	0	0	0	0	0	0	0	0	**31**
04:00 - 04:59	0	49	16	1	2	0	1	1	0	0	0	0	0	**70**
05:00 - 05:59	1	84	29	1	6	0	0	0	1	0	0	0	0	**122**
06:00 - 06:59	1	181	65	6	14	0	0	0	0	0	0	0	0	**267**
07:00 - 07:59	2	458	80	4	18	5	0	1	1	0	0	0	0	**569**
08:00 - 08:59	2	449	85	1	26	1	0	1	1	0	0	0	0	**566**
09:00 - 09:59	1	313	96	2	23	0	0	0	0	0	0	0	0	**435**
10:00 - 10:59	3	285	84	1	18	2	0	0	0	0	0	0	0	**393**
11:00 - 11:59	2	353	93	0	30	1	0	0	1	0	0	0	0	**480**
12:00 - 12:59	3	404	85	5	28	5	0	0	2	0	0	0	0	**532**
13:00 - 13:59	1	397	115	5	24	1	0	4	0	0	0	0	0	**547**
14:00 - 14:59	1	442	101	4	27	0	0	3	0	0	0	0	0	**578**
15:00 - 15:59	4	541	120	4	36	1	1	3	0	0	0	0	0	**710**
16:00 - 16:59	1	582	127	1	26	0	0	0	0	0	0	0	0	**737**
17:00 - 17:59	1	518	125	2	25	0	0	0	0	0	0	0	0	**671**
18:00 - 18:59	1	389	96	0	13	1	0	1	0	0	0	0	0	**501**
19:00 - 19:59	1	288	72	1	10	0	0	1	1	0	0	0	0	**374**
20:00 - 20:59	1	257	45	1	14	0	0	0	0	0	0	0	0	**318**
21:00 - 21:59	0	183	32	0	8	0	0	0	0	0	0	0	0	**223**
22:00 - 22:59	0	142	26	0	4	0	0	0	0	0	0	0	0	**172**
23:00 - 23:59	0	101	23	0	3	0	0	0	0	0	0	0	0	**127**
Totals	**26**	**6545**	**1545**	**39**	**357**	**17**	**2**	**16**	**7**	**0**	**0**	**0**	**0**	**8554**
Percent of Total	**0.3**	**76.5**	**18.1**	**0.5**	**4.2**	**0.2**	**0.0**	**0.2**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.4**	**75.1**	**18.9**	**0.5**	**4.5**	**0.3**	**0.0**	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.3**	**77.3**	**17.6**	**0.4**	**4.0**	**0.1**	**0.0**	**0.2**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Truck Summary:

Total Trucks: 438 % Trucks: 5.1 AM % Trucks: 5.6 PM % Trucks: 4.8

Classification Scheme: FHWA (ID: 1)

#1 Motorcycles - 2 Axles
#2 Passenger Cars - 2 Axles
#3 Pickup Trucks, Vans - 2 Axles
#4 Buses
#5 Single Unit - 2 Axles, 6 Tires
#6 Single Unit Truck - 3 Axles
#7 Single Unit - 4 Axles
#8 Single Unit - 4 Axles or Less
#9 Double Unit - 5 Axles
#10 Double Unit - 6 Axles or More
#11 Multi-Unit - 5 Axles or Less
#12 Multi-Unit - 6 Axles
#13 Multi-Unit - 7 Axles or More

Daily Total Classes Report

Study Date: Saturday, 02/18/2017
Unit ID: 15121539
Location: Range (south location)

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 - 00:59	0	66	11	0	3	0	0	0	0	0	0	0	0	**80**
01:00 - 01:59	1	47	13	0	0	0	0	0	0	0	0	0	0	**61**
02:00 - 02:59	0	29	11	0	2	0	0	0	0	0	0	0	0	**42**
03:00 - 03:59	0	25	7	0	2	0	0	0	0	0	0	0	0	**34**
04:00 - 04:59	0	21	3	0	1	0	0	0	0	0	0	0	0	**25**
05:00 - 05:59	0	46	15	1	2	0	0	0	0	0	0	0	0	**64**
06:00 - 06:59	0	55	16	0	4	0	0	0	0	0	0	0	0	**75**
07:00 - 07:59	2	127	50	0	4	0	0	0	0	0	0	0	0	**183**
08:00 - 08:59	0	209	60	0	12	0	0	0	0	0	0	0	0	**281**
09:00 - 09:59	0	280	74	0	11	0	0	1	0	0	0	0	0	**366**
10:00 - 10:59	0	343	92	0	19	0	0	0	0	0	0	0	0	**454**
11:00 - 11:59	0	363	94	2	27	0	0	0	0	0	0	0	0	**486**
12:00 - 12:59	4	404	100	1	17	0	0	0	0	0	0	0	0	**526**
13:00 - 13:59	3	416	94	0	15	0	0	2	0	0	0	0	0	**530**
14:00 - 14:59	5	373	88	0	17	1	1	0	0	0	0	0	0	**485**
15:00 - 15:59	0	383	79	0	16	0	0	0	0	0	0	1	0	**479**
16:00 - 16:59	4	370	88	1	29	2	0	0	0	0	0	0	0	**494**
17:00 - 17:59	6	367	61	1	14	0	0	0	0	0	0	0	0	**449**
18:00 - 18:59	1	330	81	0	14	0	0	1	0	0	0	0	0	**427**
19:00 - 19:59	1	233	45	0	8	0	0	1	0	0	0	0	0	**288**
20:00 - 20:59	1	218	44	0	10	0	0	0	0	0	0	0	0	**273**
21:00 - 21:59	0	177	42	0	5	0	0	0	0	0	0	0	0	**224**
22:00 - 22:59	0	146	27	0	3	0	0	0	0	0	0	0	0	**176**
23:00 - 23:59	1	109	10	0	3	0	0	0	0	0	0	0	0	**123**
Totals	**29**	**5137**	**1205**	**6**	**238**	**3**	**1**	**5**	**0**	**0**	**0**	**1**	**0**	**6625**
Percent of Total	**0.4**	**77.5**	**18.2**	**0.1**	**3.6**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.1**	**74.9**	**20.7**	**0.1**	**4.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.6**	**78.8**	**17.0**	**0.1**	**3.4**	**0.1**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Truck Summary:

Total Trucks: 254 % Trucks: 3.8 AM % Trucks: 4.2 PM % Trucks: 3.6

Classification Scheme: FHWA (ID: 1)

#1 Motorcycles - 2 Axles
#2 Passenger Cars - 2 Axles
#3 Pickup Trucks, Vans - 2 Axles
#4 Buses
#5 Single Unit - 2 Axles, 6 Tires
#6 Single Unit Truck - 3 Axles
#7 Single Unit - 4 Axles
#8 Single Unit - 4 Axles or Less
#9 Double Unit - 5 Axles
#10 Double Unit - 6 Axles or More
#11 Multi-Unit - 5 Axles or Less
#12 Multi-Unit - 6 Axles
#13 Multi-Unit - 7 Axles or More

DATE COUNTED: 02/15/17

Range at Minnesota Park

AM PEAK PERIOD

Start Time	Southbound						Northbound						Eastbound						15 Min	Peak Hour	HV
	Range Road						Range Road						Minnesota Park								
	Thru Dep	Thru Q	Thru Dem	Rt Dep	Rt Q	Rt Dem	Lt Dep	Lt Q	Lt Dem	Thru Dep	Thru Q	Thru Dem	Lt Dep	Lt Q	Lt Dem	Rt Dep	Rt Q	Rt Dem			
6:00		0	0		0	0		0	0		0	0		0	0		0	0	0		
6:15		0	0		0	0		0	0		0	0		0	0		0	0	0		
6:30	21	0	21	21	0	21	21	0	21	21	0	21	7	0	7	18	0	18	109		6
6:45	28	0	28	36	0	36	35	0	35	24	0	24	15	0	15	5	0	5	143	252	4
7:00	26	0	26	27	0	27	46	0	46	35	0	35	22	0	22	18	0	18	174	426	5
7:15	28	0	28	23	0	23	50	0	50	36	0	36	15	0	15	18	0	18	170	596	5
7:30	39	0	39	33	0	33	46	0	46	55	0	55	30	0	30	28	0	28	231	718	8
7:45	51	0	51	44	0	44	66	0	66	55	0	55	25	0	25	38	0	38	279	854	3
8:00	18	0	18	45	0	45	59	0	59	45	0	45	15	0	15	30	0	30	212	892	8
8:15	24	0	24	41	0	41	51	0	51	45	0	45	25	0	25	23	0	23	209	931	2
8:30		0	0		0	0		0	0		0	0		0	0		0	0	0	700	2
8:45		0	0		0	0		0	0		0	0		0	0		0	0	0	421	
AM Peak Hour			**132**			**163**			**222**			**200**			**95**			**119**		0.83	2.3%

PM PEAK PERIOD

Start Time	Southbound						Northbound						Eastbound						15 Min	Peak Hour	HV
	Range Road						Range Road						Minnesota Park								
	Thru Dep	Thru Q	Thru Dem	Rt Dep	Rt Q	Rt Dem	Lt Dep	Lt Q	Lt Dem	Thru Dep	Thru Q	Thru Dem	Lt Dep	Lt Q	Lt Dem	Rt Dep	Rt Q	Rt Dem			
15:00	39	0	39	28	0	28	35	0	35	42	0	42	25	0	25	47	0	47	216		2
15:15	50	0	50	32	0	32	20	0	20	38	0	38	38	0	38	39	0	39	217		8
15:30	64	0	64	39	0	39	53	0	53	37	0	37	42	0	42	40	0	40	275		4
15:45	52	0	52	39	0	39	60	0	60	55	0	55	31	0	31	33	0	33	270	978	3
16:00	47	0	47	27	0	27	43	0	43	45	0	45	34	0	34	24	0	24	220	982	0
16:15	49	0	49	30	0	30	37	0	37	52	0	52	43	0	43	39	0	39	250	1015	0
16:30	40	0	40	44	0	44	42	0	42	44	0	44	30	0	30	28	0	28	228	968	0
16:45	42	0	42	29	0	29	41	0	41	35	0	35	44	0	44	47	0	47	238	936	1
17:00	51	0	51	21	0	21	36	0	36	47	0	47	39	0	39	40	0	40	234	950	3
17:15	39	0	39	22	0	22	34	0	34	42	0	42	40	0	40	46	0	46	223	923	0
17:30	49	0	49	15	0	15	39	0	39	47	0	47	40	0	40	39	0	39	229	924	3
17:45	44	0	44	28	0	28	35	0	35	39	0	39	30	0	30	32	0	32	208	894	1
PM Peak Hour			**212**			**135**			**193**			**189**			**150**			**136**		0.92	0.7%

DATE COUNTED: 02/15/17

Range at Little Italy

AM PEAK PERIOD

Start Time	Southbound Range Road						Westbound Little Italy						Northbound Range Road						15 Min	Peak Hour	HV
	Lt Dep	Lt Q	Lt Dem	Thru Dep	Thru Q	Thru Dem	Lt Dep	Lt Q	Lt Dem	Rt Dep	Rt Q	Rt Dem	Thru Dep	Thru Q	Thru Dem	Rt Dep	Rt Q	Rt Dem			
6:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
6:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
6:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
6:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:30	5	0	5	59	0	59	5	0	5	9	0	9	85	0	85	12	0	12	175	175	9
7:45	6	0	6	60	0	60	9	0	9	37	0	37	79	0	79	3	0	3	194	369	3
8:00	7	0	7	60	0	60	9	0	9	34	0	34	83	0	83	2	0	2	195	564	7
8:15	8	0	8	50	0	50	7	0	7	30	0	30	68	0	68	1	0	1	164	728	3
8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
AM Peak Hour			**26**			**229**			**30**			**110**			**315**			**18**		0.93	3.0%

PM PEAK PERIOD

Start Time	Southbound Range Road						Westbound Little Italy						Northbound Range Road						15 Min	Peak Hour	HV
	Lt Dep	Lt Q	Lt Dem	Thru Dep	Thru Q	Thru Dem	Lt Dep	Lt Q	Lt Dem	Rt Dep	Rt Q	Rt Dem	Thru Dep	Thru Q	Thru Dem	Rt Dep	Rt Q	Rt Dem			
15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
15:30	7	0	7	92	0	92	15	0	15	35	0	35	56	0	56	7	0	7	212		2
15:45	6	0	6	85	0	85	12	0	12	30	0	30	84	0	84	8	0	8	225	437	7
16:00	10	0	10	61	0	61	8	0	8	12	0	12	85	0	85	2	0	2	178	615	1
16:15	12	0	12	76	0	76	5	0	5	13	0	13	70	0	70	9	0	9	185	800	1
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM Peak Hour			**35**			**314**			**40**			**90**			**295**			**26**		0.94	1.4%

Appendix B: Vistro Output

Intersection Level Of Service Report
#1: Minnesota Park Rd at S. Range Rd

Control Type:	Signalized	Delay (sec / veh):	20.2
Analysis Method:	HCM2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.555

Intersection Setup

Name	Mi Pa		Mi Pa		S. Range Rd.	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	no		no		no	

Volumes

Name	Mi Pa		Mi Pa		S. Range Rd.	
Base Volume Input [veh/h]	232	209	138	171	99	125
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.30	2.30	2.30	2.30	2.30	2.30

Intersection Settings

Located in CBD	no
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protected Permitted	Permi	Permi	Permi	Protec	Permi
Signal Group	1	6	2	0	4	1
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	5
Maximum Green [s]	10	40	25	0	15	10
Amber [s]	4.0	4.0	4.0	0.0	4.0	4.0
All red [s]	1.0	1.0	1.0	0.0	1.0	1.0

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	14.04	14.04	19.40	19.40	33.45	33.45
Movement LOS	B	B	B	B	C	C
d_A, Approach Delay [s/veh]	14.04		19.40		33.45	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	20.20					
Intersection LOS	C					
Intersection V/C	0.555					

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
#1: Minnesota Park Rd at S. Range Rd

Control Type:	Signalized	Delay (sec / veh):	13.1
Analysis Method:	HCM2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.316

Intersection Setup

Name	Mi Pa		Mi Pa		S. Range Rd.	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	1	0
Pocket Length [ft]	150.00	100.00	100.00	100.00	150.00	100.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	no		no		no	

Volumes

Name	Mi Pa		Mi Pa		S. Ra	
Base Volume Input [veh/h]	232	209	138	171	99	125
Base Volume Adjustment Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles Percentage [%]	2.30	2.30	2.30	2.30	2.30	2.30

Intersection Settings

Located in CBD	no
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protected Permitted	Permi	Permi	Permi	Protec	Overla
Signal Group	1	6	2	0	4	1
Auxiliary Signal Groups						1,4
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	5
Maximum Green [s]	10	40	25	0	15	10
Amber [s]	4.0	4.0	4.0	0.0	4.0	4.0
All red [s]	1.0	1.0	1.0	0.0	1.0	1.0

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	8.43	6.01	19.40	19.40	22.42	11.06
Movement LOS	A	A	B	B	C	B
d_A, Approach Delay [s/veh]	7.28		19.40		16.07	
Approach LOS	A		B		B	
d_I, Intersection Delay [s/veh]	13.14					
Intersection LOS	B					
Intersection V/C	0.316					

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
#1: Minnesota Park Rd at S. Range Rd

Control Type:	Signalized	Delay (sec / veh):	82.4
Analysis Method:	HCM2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.001

Intersection Setup

Name	Mi Pa		Mi Pa		S. Range Rd.	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	no		no		no	

Volumes

Name	Mi Pa		Mi Pa		S. Range Rd.	
Base Volume Input [veh/h]	315	284	187	231	135	169
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.30	2.30	2.30	2.30	2.30	2.30

Intersection Settings

Located in CBD	no
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

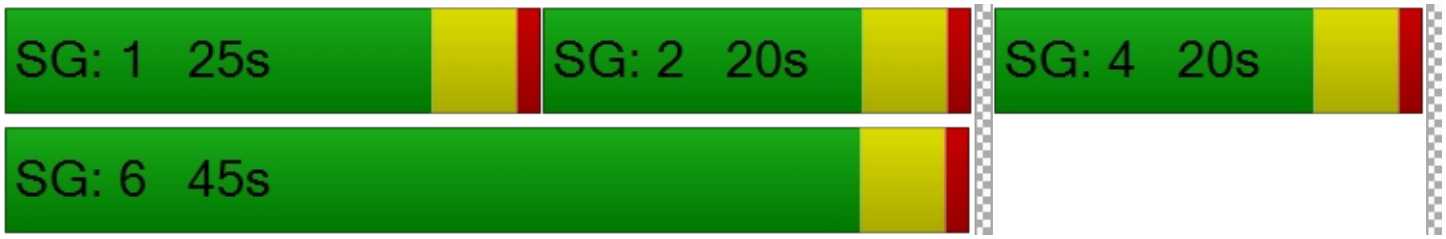
Control Type	Protected Permitted	Permi	Permi	Permi	Protec	Permi
Signal Group	1	6	2	0	4	1
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	5
Maximum Green [s]	20	40	25	0	15	20
Amber [s]	4.0	4.0	4.0	0.0	4.0	4.0
All red [s]	1.0	1.0	1.0	0.0	1.0	1.0

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.00	30.00	172.71	172.71	61.52	61.52
Movement LOS	C	C	F	F	E	E
d_A, Approach Delay [s/veh]	30.00		172.71		61.52	
Approach LOS	C		F		E	
d_I, Intersection Delay [s/veh]	82.36					
Intersection LOS	F					
Intersection V/C	1.001					

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
#1: Minnesota Park Rd at S. Range Rd

Control Type:	Signalized	Delay (sec / veh):	16.9
Analysis Method:	HCM2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.426

Intersection Setup

Name	Mi Pa		Mi Pa		S. Range Rd.	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	1	0
Pocket Length [ft]	150.00	100.00	100.00	100.00	150.00	100.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	no		no		no	

Volumes

Name	Mi Pa		Mi Pa		S. Ra	
Base Volume Input [veh/h]	315	284	187	231	135	169
Base Volume Adjustment Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles Percentage [%]	2.30	2.30	2.30	2.30	2.30	2.30

Intersection Settings

Located in CBD	no
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protected Permitted	Permi	Permi	Permi	Protec	Overla
Signal Group	1	6	2	0	4	1
Auxiliary Signal Groups						1,4
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	5
Maximum Green [s]	10	40	25	0	15	10
Amber [s]	4.0	4.0	4.0	0.0	4.0	4.0
All red [s]	1.0	1.0	1.0	0.0	1.0	1.0

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	13.59	6.56	26.19	26.19	24.08	11.78
Movement LOS	B	A	C	C	C	B
d_A, Approach Delay [s/veh]	10.26		26.19		17.24	
Approach LOS	B		C		B	
d_I, Intersection Delay [s/veh]	16.90					
Intersection LOS	B					
Intersection V/C	0.426					

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
#1: Minnesota Park Rd at S. Range Rd

Control Type:	Signalized	Delay (sec / veh):	22.4
Analysis Method:	HCM2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.553

Intersection Setup

Name	Mi Pa		Mi Pa		S. Range Rd.	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	no		no		no	

Volumes

Name	Mi Pa		Mi Pa		S. Range Rd.	
Base Volume Input [veh/h]	202	198	222	141	157	142
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.70	0.70	0.70	0.70	0.70	0.70

Intersection Settings

Located in CBD	no
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protected Permitted	Permi	Permi	Permi	Protec	Permi
Signal Group	1	6	2	0	4	1
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	5
Maximum Green [s]	10	40	25	0	15	10
Amber [s]	4.0	4.0	4.0	0.0	4.0	4.0
All red [s]	1.0	1.0	1.0	0.0	1.0	1.0

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	10.67	10.67	19.44	19.44	41.75	41.75
Movement LOS	B	B	B	B	D	D
d_A, Approach Delay [s/veh]	10.67		19.44		41.75	
Approach LOS	B		B		D	
d_I, Intersection Delay [s/veh]	22.42					
Intersection LOS	C					
Intersection V/C	0.553					

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
#1: Minnesota Park Rd at S. Range Rd

Control Type:	Signalized	Delay (sec / veh):	14.3
Analysis Method:	HCM2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.319

Intersection Setup

Name	Mi Pa		Mi Pa		S. Range Rd.	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	1	0
Pocket Length [ft]	150.00	100.00	100.00	100.00	150.00	100.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	no		no		no	

Volumes

Name	Mi Pa		Mi Pa		S. Ra	
Base Volume Input [veh/h]	202	198	222	141	157	142
Base Volume Adjustment Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles Percentage [%]	0.70	0.70	0.70	0.70	0.70	0.70

Intersection Settings

Located in CBD	no
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protected Permitted	Permi	Permi	Permi	Protec	Overla
Signal Group	1	6	2	0	4	1
Auxiliary Signal Groups						1,4
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	5
Maximum Green [s]	10	40	25	0	15	10
Amber [s]	4.0	4.0	4.0	0.0	4.0	4.0
All red [s]	1.0	1.0	1.0	0.0	1.0	1.0

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	7.73	5.78	19.44	19.44	24.27	11.06
Movement LOS	A	A	B	B	C	B
d_A, Approach Delay [s/veh]	6.77		19.44		18.01	
Approach LOS	A		B		B	
d_I, Intersection Delay [s/veh]	14.26					
Intersection LOS	B					
Intersection V/C	0.319					

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
#1: Minnesota Park Rd at S. Range Rd

Control Type:	Signalized	Delay (sec / veh):	61.5
Analysis Method:	HCM2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.947

Intersection Setup

Name	Mi Pa		Mi Pa		S. Range Rd.	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	no		no		no	

Volumes

Name	Mi Pa		Mi Pa		S. Range Rd.	
Base Volume Input [veh/h]	274	268	301	191	213	193
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.70	0.70	0.70	0.70	0.70	0.70

Intersection Settings

Located in CBD	no
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

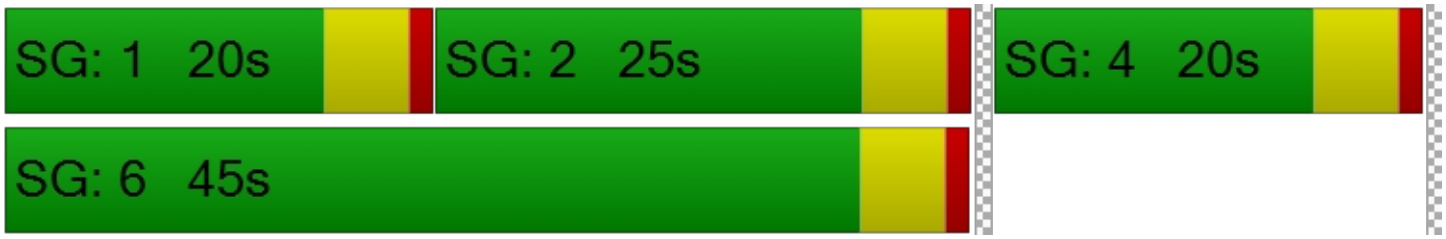
Control Type	Protected Permitted	Permi	Permi	Permi	Protec	Permi
Signal Group	1	6	2	0	4	1
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	5
Maximum Green [s]	15	40	20	0	15	15
Amber [s]	4.0	4.0	4.0	0.0	4.0	4.0
All red [s]	1.0	1.0	1.0	0.0	1.0	1.0

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	29.07	29.07	57.39	57.39	109.60	109.60
Movement LOS	C	C	E	E	F	F
d_A, Approach Delay [s/veh]	29.07		57.39		109.60	
Approach LOS	C		E		F	
d_I, Intersection Delay [s/veh]	61.48					
Intersection LOS	E					
Intersection V/C	0.947					

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
#1: Minnesota Park Rd at S. Range Rd

Control Type:	Signalized	Delay (sec / veh):	18.1
Analysis Method:	HCM2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.434

Intersection Setup

Name	Mi Pa		Mi Pa		S. Range Rd.	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	1	0
Pocket Length [ft]	150.00	100.00	100.00	100.00	150.00	100.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	no		no		no	

Volumes

Name	Mi Pa		Mi Pa		S. Ra	
Base Volume Input [veh/h]	274	268	301	191	213	193
Base Volume Adjustment Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles Percentage [%]	0.70	0.70	0.70	0.70	0.70	0.70

Intersection Settings

Located in CBD	no
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protected Permitted	Permi	Permi	Permi	Protec	Overla
Signal Group	1	6	2	0	4	1
Auxiliary Signal Groups						1,4
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	5
Maximum Green [s]	10	40	25	0	15	10
Amber [s]	4.0	4.0	4.0	0.0	4.0	4.0
All red [s]	1.0	1.0	1.0	0.0	1.0	1.0

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.56	6.20	26.65	26.65	27.45	11.80
Movement LOS	B	A	C	C	C	B
d_A, Approach Delay [s/veh]	8.91		26.65		20.02	
Approach LOS	A		C		C	
d_I, Intersection Delay [s/veh]	18.11					
Intersection LOS	B					
Intersection V/C	0.434					

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix C: Left and Right Turn Lane Warrants

2017 AM PEAK HOUR LEFT-TURN LANE WARRANT FOR S. RANGE ROAD

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

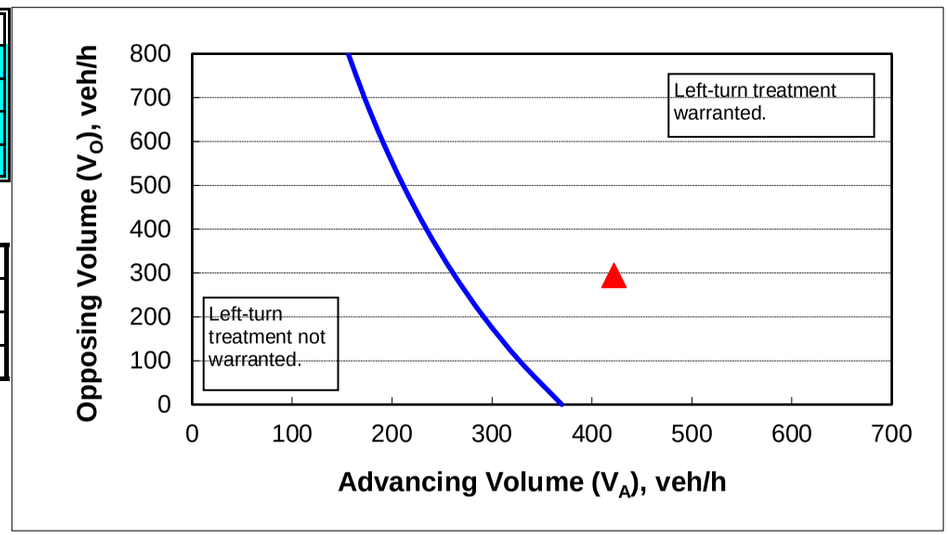
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	35
Percent of left-turns in advancing volume (V_A), %:	53%
Advancing volume (V_A), veh/h:	422
Opposing volume (V_O), veh/h:	295

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	262
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

2017 PM PEAK HOUR LEFT-TURN LANE WARRANT FOR S. RANGE ROAD

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

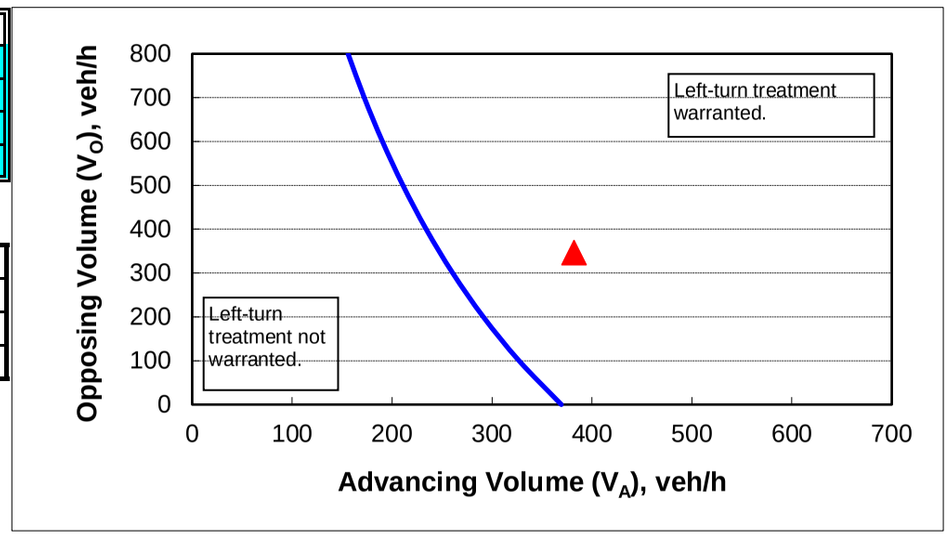
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	35
Percent of left-turns in advancing volume (V_A), %:	51%
Advancing volume (V_A), veh/h:	382
Opposing volume (V_O), veh/h:	347

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	248
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

2017 AM PEAK HOUR RIGHT TURN LANE WARRANT FOR S. RANGE ROAD

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

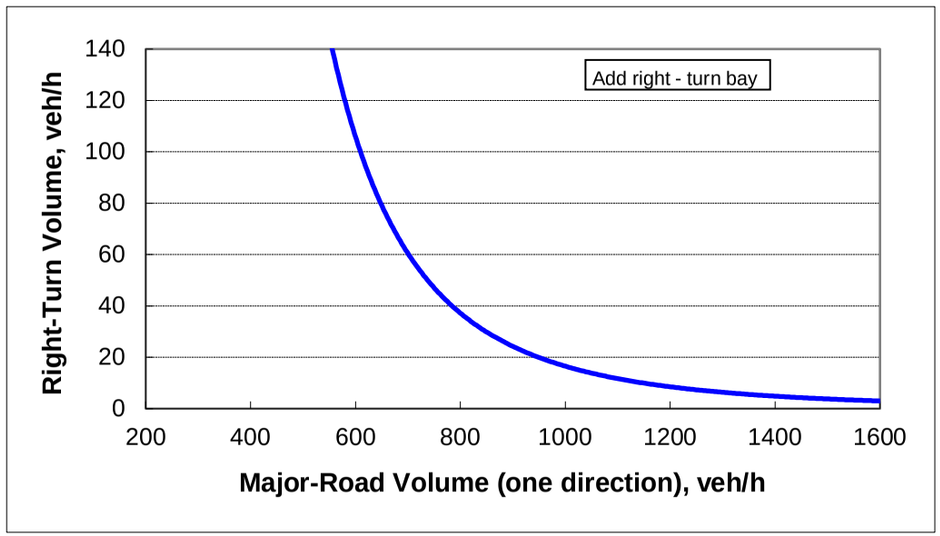
INPUT

Roadway geometry:	2-lane roadway

Variable	Value
Major-road speed, mph:	35
Major-road volume (one direction), veh/h:	295
Right-turn volume, veh/h:	163

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	1400
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



2017 PM PEAK HOUR RIGHT TURN LANE WARRANT FOR S. RANGE ROAD

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

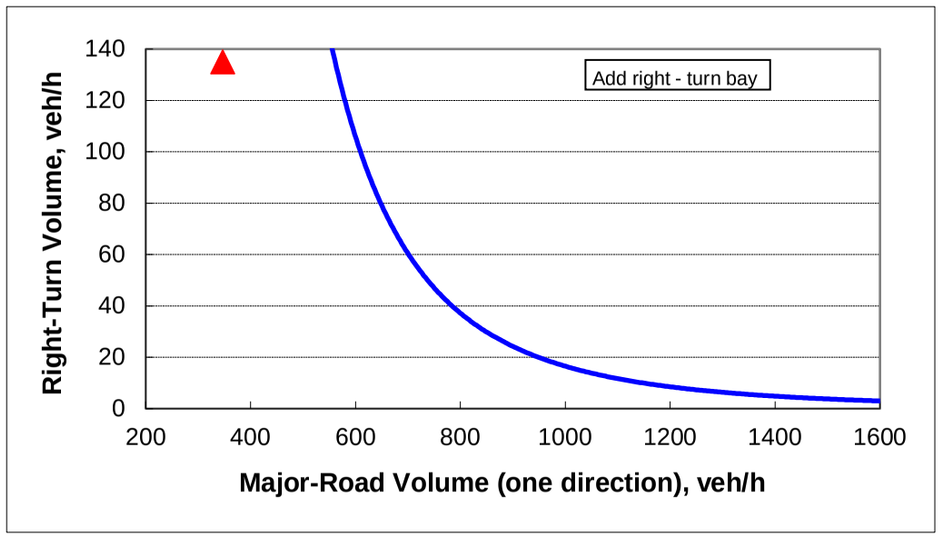
INPUT

Roadway geometry:	2-lane roadway

Variable	Value
Major-road speed, mph:	35
Major-road volume (one direction), veh/h:	347
Right-turn volume, veh/h:	135

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	776
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



2040 AM PEAK HOUR RIGHT TURN LANE WARRANT FOR S. RANGE ROAD

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

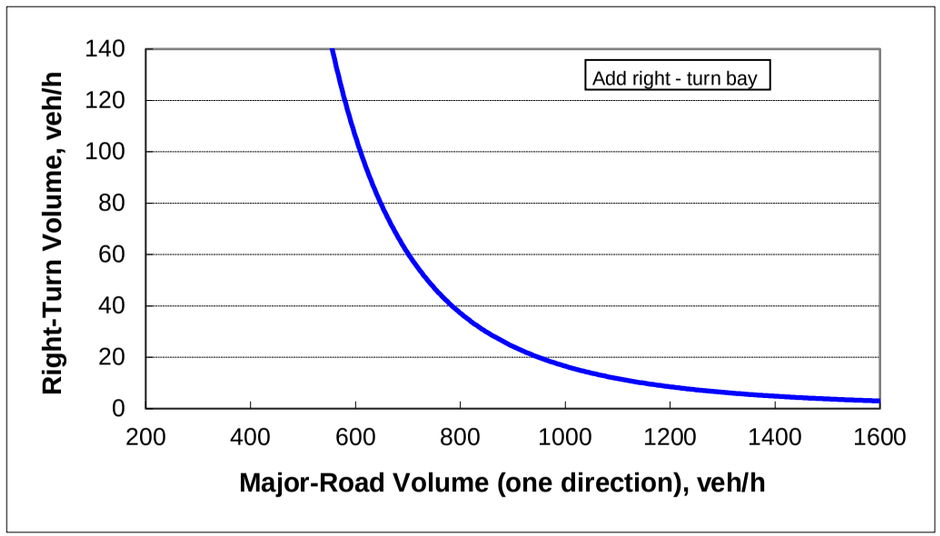
INPUT

Roadway geometry:	2-lane roadway

Variable	Value
Major-road speed, mph:	35
Major-road volume (one direction), veh/h:	418
Right-turn volume, veh/h:	231

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	394
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



2017 AM PEAK HOUR RIGHT TURN LANE WARRANT FOR S. RANGE ROAD

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

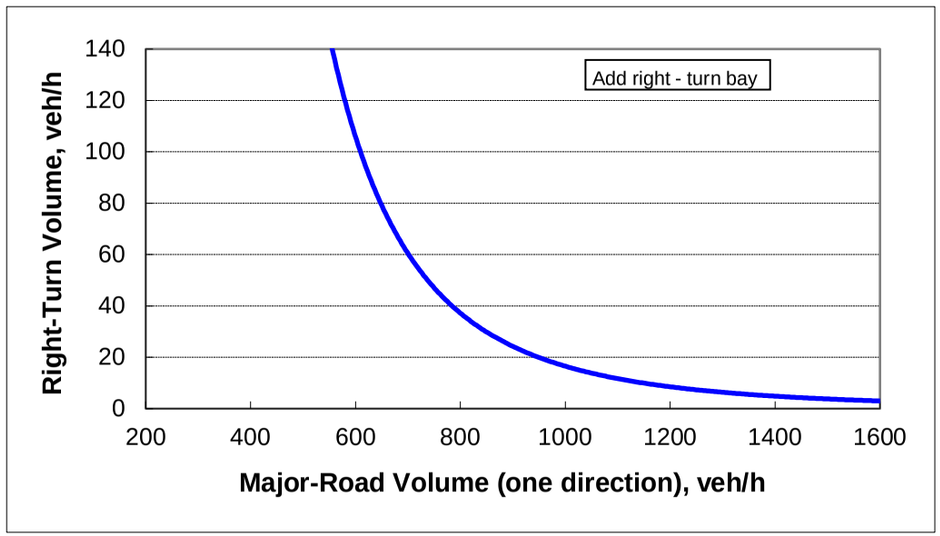
INPUT

Roadway geometry:	2-lane roadway

Variable	Value
Major-road speed, mph:	35
Major-road volume (one direction), veh/h:	492
Right-turn volume, veh/h:	191

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	218
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	

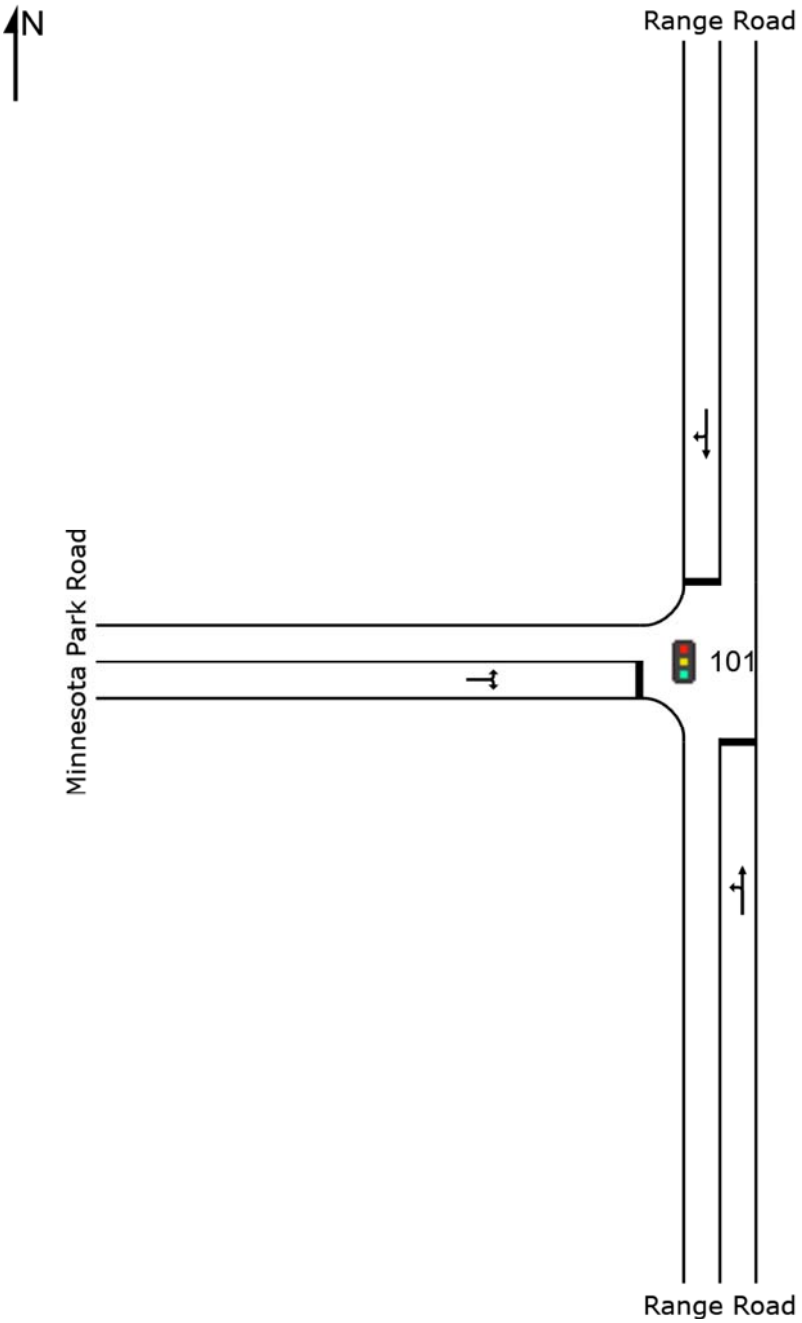


Appendix D: Sidra Outputs

SITE LAYOUT

Site: 101 [1 Exist 2017 AM Signal]

New Site
Signals - Pretimed Isolated



MOVEMENT SUMMARY

Site: 101 [1 Exist 2017 AM Signal]

New Site
Signals - Pretimed Isolated Cycle Time = 65 seconds (User-Given Phase Times)

Movement Performance - Vehicles

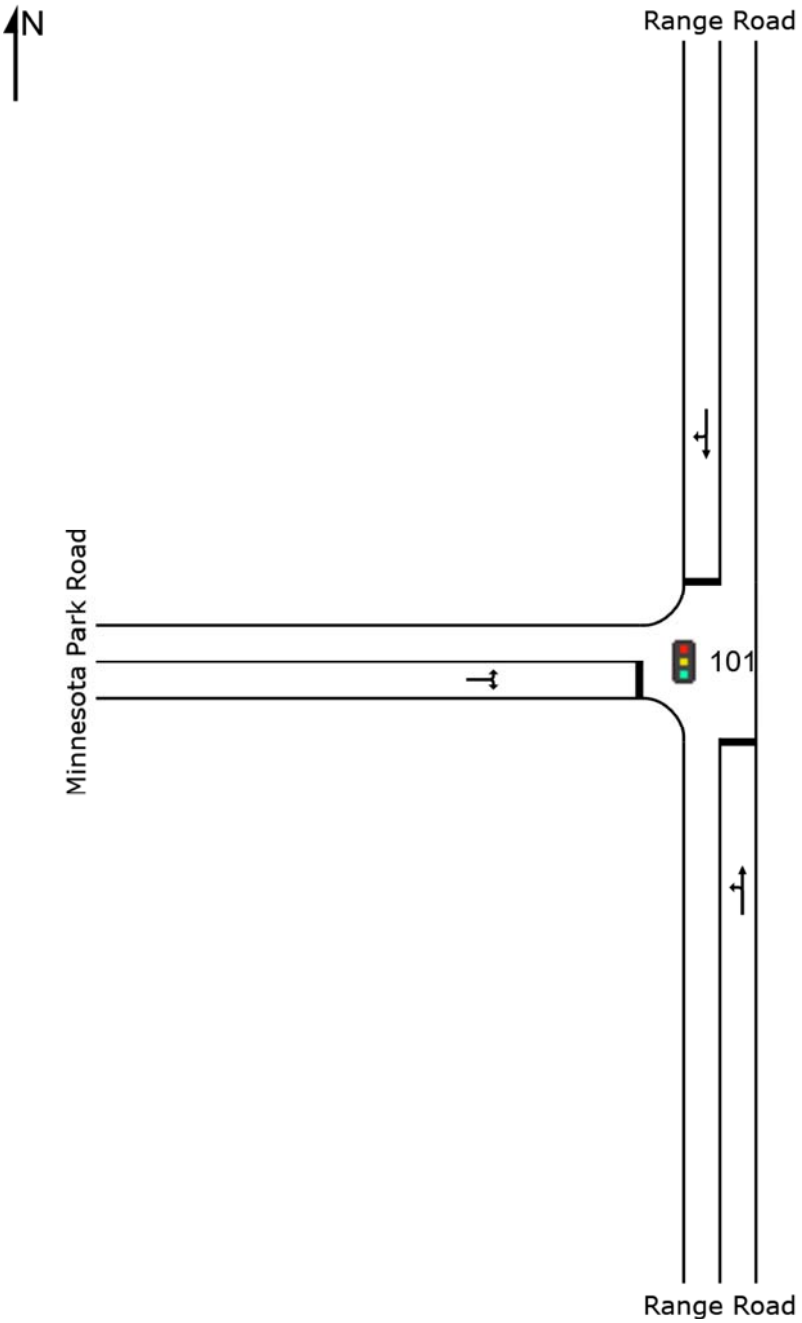
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Range Road											
3	L2	267	2.3	0.737	12.1	LOS B	11.0	279.6	0.85	0.77	30.2
8	T1	241	2.3	0.737	12.1	LOS B	11.0	279.6	0.85	0.77	31.4
Approach		508	2.3	0.737	12.1	LOS B	11.0	279.6	0.85	0.77	30.7
North: Range Road											
4	T1	196	2.3	0.503	11.2	LOS B	7.6	194.0	0.79	0.69	32.0
14	R2	159	2.3	0.503	11.2	LOS B	7.6	194.0	0.79	0.69	31.0
Approach		355	2.3	0.503	11.2	LOS B	7.6	194.0	0.79	0.69	31.5
West: Minnesota Park Road											
5	L2	114	2.3	0.571	14.8	LOS B	6.2	158.5	0.90	0.75	28.1
12	R2	143	2.3	0.571	14.8	LOS B	6.2	158.5	0.90	0.75	28.3
Approach		258	2.3	0.571	14.8	LOS B	6.2	158.5	0.90	0.75	28.2
All Vehicles		1122	2.3	0.737	12.4	LOS B	11.0	279.6	0.84	0.74	30.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

Site: 101 [2 No Build 2020 AM Signal]

New Site
Signals - Pretimed Isolated



MOVEMENT SUMMARY

Site: 101 [2 No Build 2020 AM Signal]

New Site
Signals - Pretimed Isolated Cycle Time = 65 seconds (User-Given Phase Times)
Design Life Analysis (Capacity): Results for 3 years

Movement Performance - Vehicles

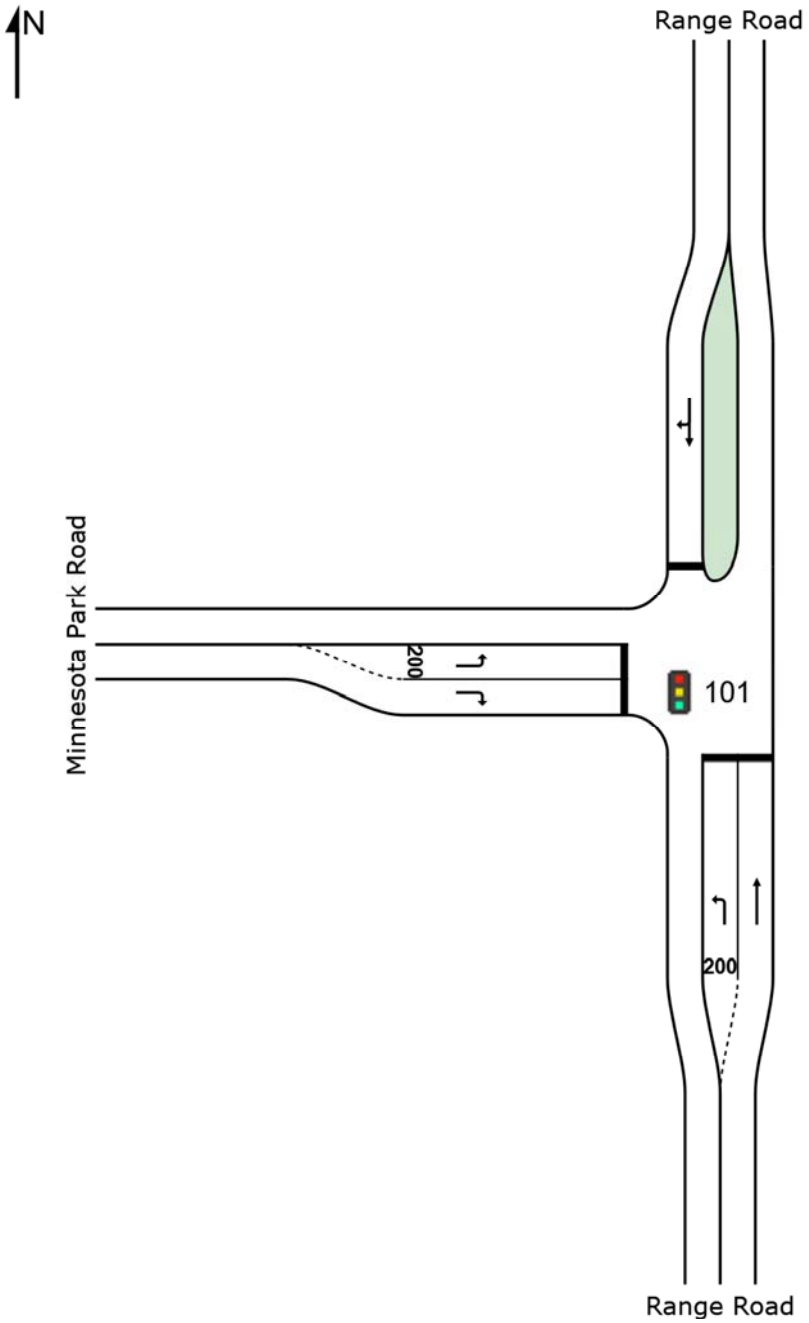
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Range Road											
3	L2	280	2.3	0.776	14.2	LOS B	12.0	305.2	0.89	0.84	29.3
8	T1	252	2.3	0.776	14.2	LOS B	12.0	305.2	0.89	0.84	30.5
Approach		532	2.3	0.776	14.2	LOS B	12.0	305.2	0.89	0.84	29.9
North: Range Road											
4	T1	166	2.3	0.588	11.0	LOS B	8.0	203.2	0.82	0.72	31.8
14	R2	206	2.3	0.588	11.0	LOS B	8.0	203.2	0.82	0.72	30.8
Approach		372	2.3	0.588	11.0	LOS B	8.0	203.2	0.82	0.72	31.2
West: Minnesota Park Road											
5	L2	120	2.3	0.598	15.8	LOS B	6.8	172.6	0.91	0.76	27.7
12	R2	150	2.3	0.598	15.8	LOS B	6.8	172.6	0.91	0.76	27.9
Approach		270	2.3	0.598	15.8	LOS B	6.8	172.6	0.91	0.76	27.8
All Vehicles		1174	2.3	0.776	13.6	LOS B	12.0	305.2	0.87	0.78	29.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

Site: 101 [3 Alt 1 2020 AM Signal - w Turn Lane]

New Site
Signals - Pretimed Isolated



MOVEMENT SUMMARY

Site: 101 [3 Alt 1 2020 AM Signal - w Turn Lane]

New Site
Signals - Pretimed Isolated Cycle Time = 65 seconds (User-Given Phase Times)
Design Life Analysis (Capacity): Results for 3 years

Movement Performance - Vehicles

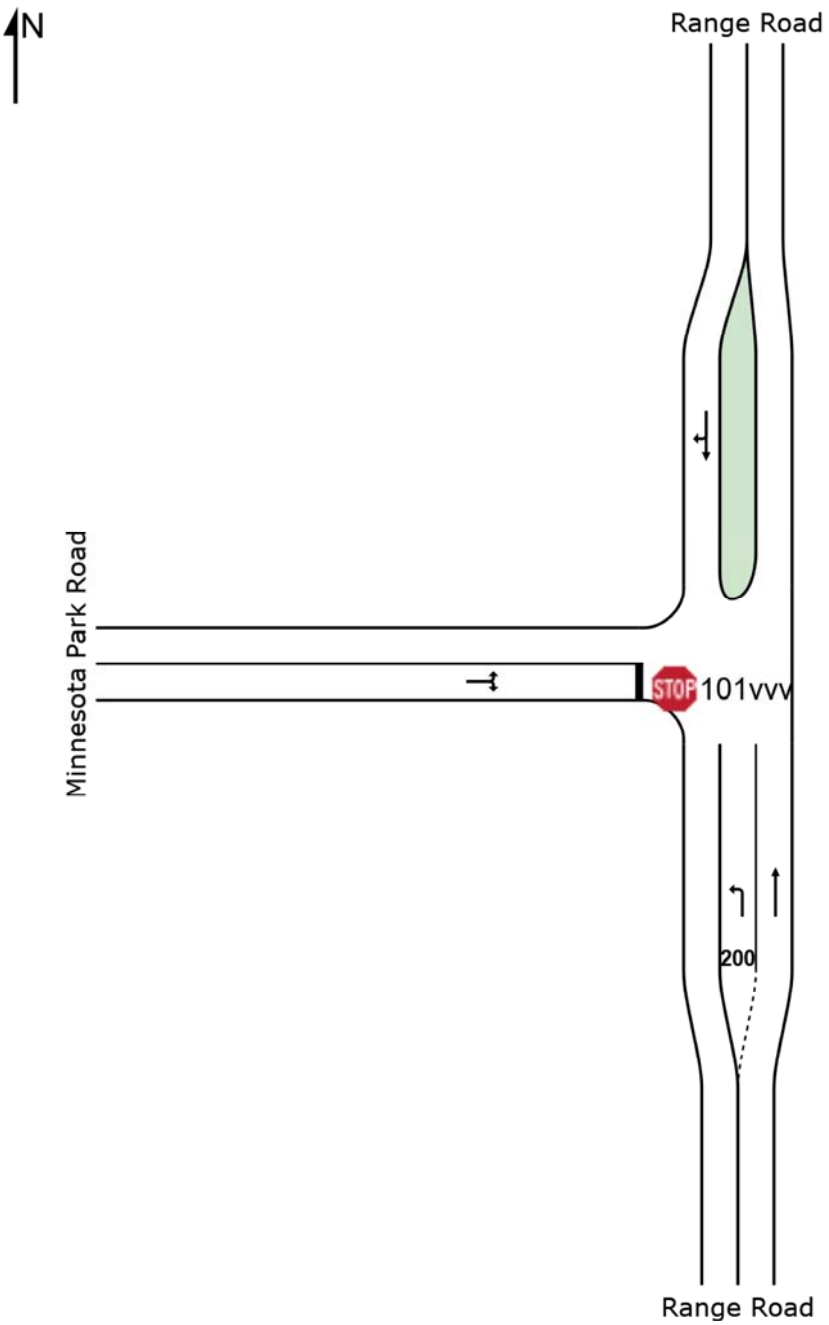
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Range Road											
3	L2	280	2.3	0.477	8.1	LOS A	4.7	119.3	0.78	0.65	30.9
8	T1	252	2.3	0.221	5.6	LOS A	3.8	95.9	0.47	0.40	36.3
Approach		532	2.3	0.477	6.9	LOS A	4.7	119.3	0.63	0.53	33.2
North: Range Road											
4	T1	166	2.3	0.580	10.6	LOS B	7.9	201.6	0.82	0.71	32.0
14	R2	206	2.3	0.580	10.6	LOS B	7.9	201.6	0.82	0.71	31.0
Approach		372	2.3	0.580	10.6	LOS B	7.9	201.6	0.82	0.71	31.4
West: Minnesota Park Road											
5	L2	120	2.3	0.293	20.9	LOS C	3.2	82.5	0.87	0.69	26.1
12	R2	150	2.3	0.141	0.8	LOS A	0.9	22.3	0.24	0.20	34.3
Approach		270	2.3	0.293	9.7	LOS A	3.2	82.5	0.52	0.42	30.1
All Vehicles		1174	2.3	0.580	8.7	LOS A	7.9	201.6	0.67	0.56	31.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

Site: 101vvv [4 Alt 2 2020 AM TWS]

New Site
Stop (Two-Way)



MOVEMENT SUMMARY

Site: 101vvv [4 Alt 2 2020 AM TWS]

New Site
Stop (Two-Way)
Design Life Analysis (Capacity): Results for 3 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Range Road											
3	L2	280	2.3	0.255	5.7	LOS A	1.2	29.3	0.49	0.40	31.8
8	T1	252	2.3	0.136	0.0	LOS A	0.0	0.0	0.00	0.00	40.0
Approach		532	2.3	0.255	3.0	NA	1.2	29.3	0.26	0.21	35.2
North: Range Road											
4	T1	166	2.3	0.220	0.0	LOS A	0.0	0.0	0.00	0.00	37.7
14	R2	206	2.3	0.220	0.0	LOS A	0.0	0.0	0.00	0.00	36.3
Approach		372	2.3	0.220	0.0	NA	0.0	0.0	0.00	0.00	36.9
West: Minnesota Park Road											
5	L2	120	2.3	0.628	39.9	LOS E[11]	5.3	135.3	0.61	0.72	24.2
12	R2	150	2.3	0.628	15.9	LOS C	5.3	135.3	0.61	0.72	24.3
Approach		270	2.3	0.628	26.5	LOS D	5.3	135.3	0.61	0.72	24.3
All Vehicles		1174	2.3	0.628	7.5	NA	5.3	135.3	0.26	0.26	32.3

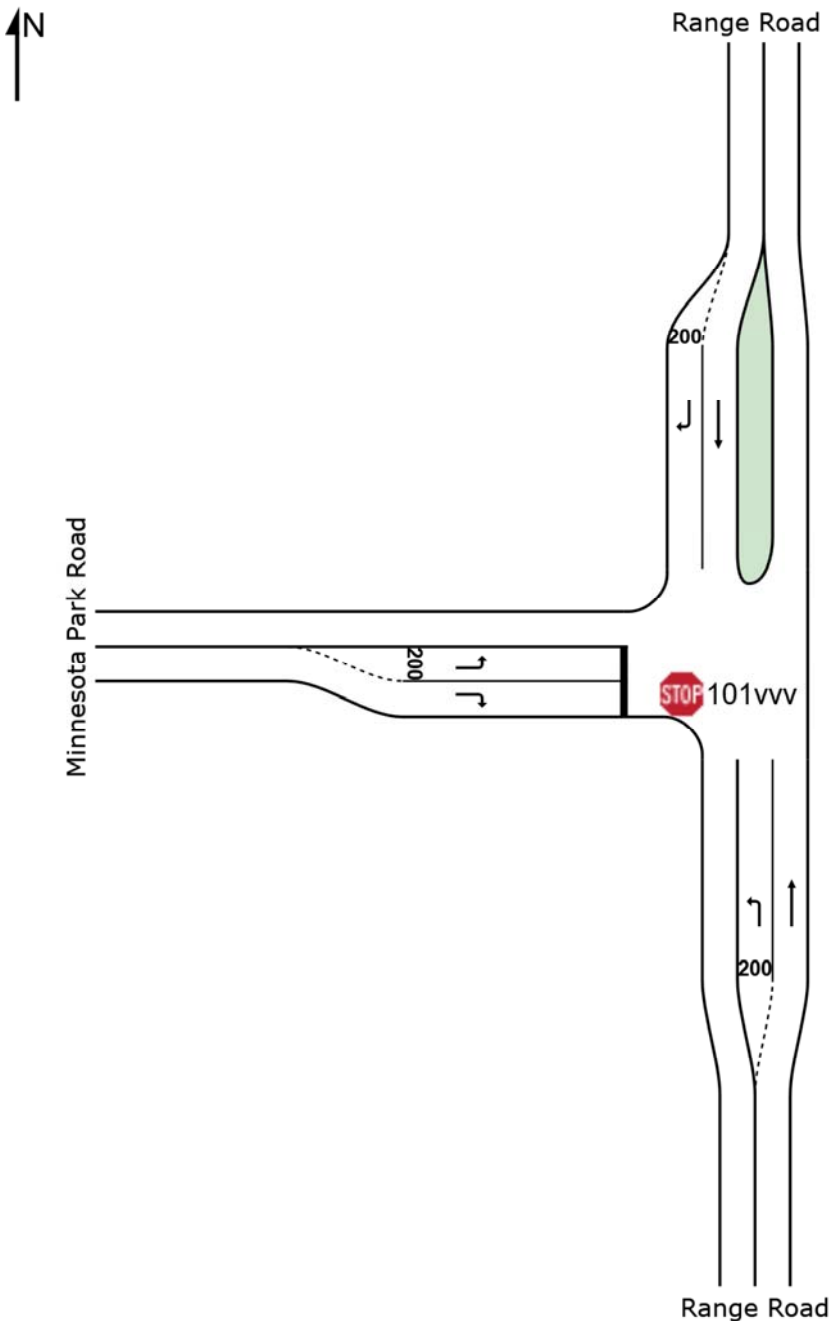
Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

SITE LAYOUT

Site: 101vvv [5 Alt 3 2020 AM TWS - w Turn Lanes]

New Site
Stop (Two-Way)



MOVEMENT SUMMARY

Site: 101vvv [5 Alt 3 2020 AM TWS - w Turn Lanes]

New Site
Stop (Two-Way)
Design Life Analysis (Capacity): Results for 3 years

Movement Performance - Vehicles

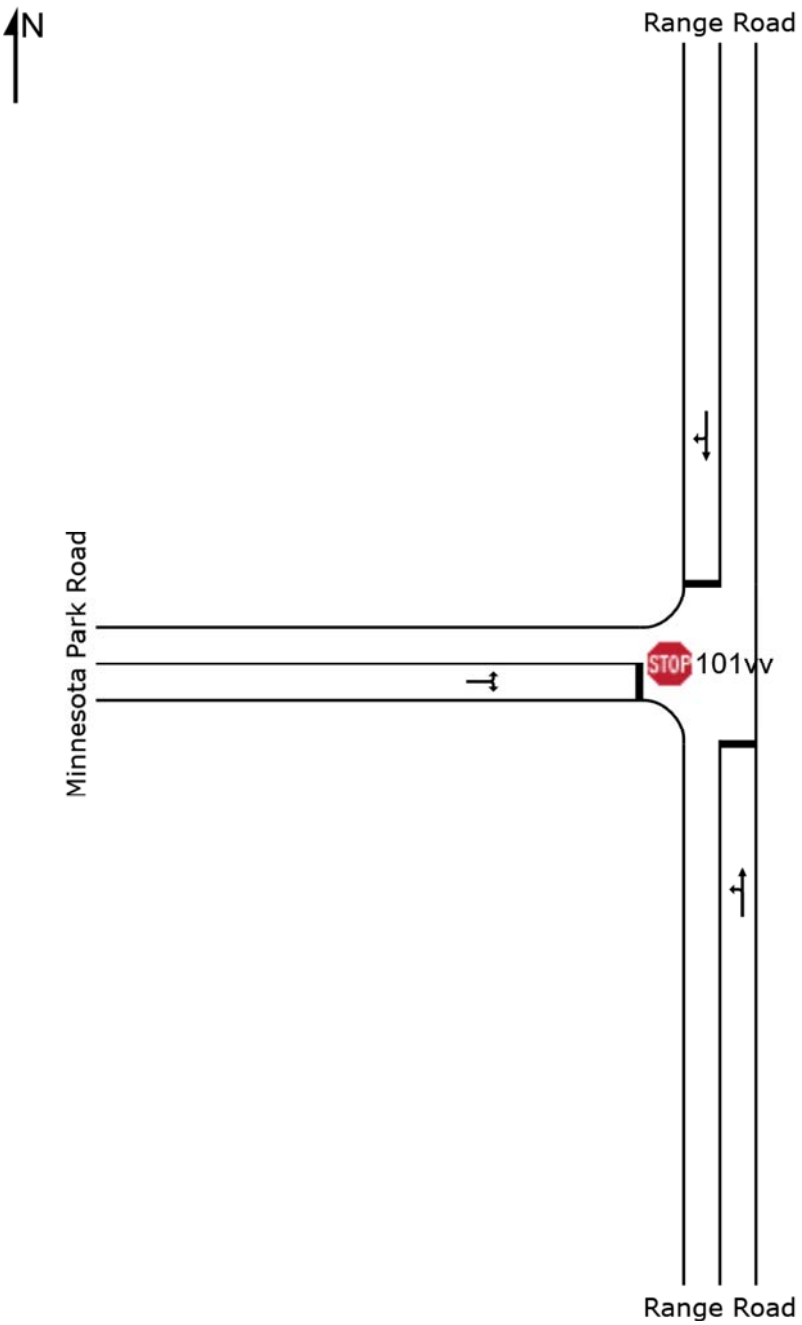
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Range Road											
3	L2	280	2.3	0.250	5.5	LOS A	1.2	29.4	0.48	0.38	32.0
8	T1	252	2.3	0.136	0.0	LOS A	0.0	0.0	0.00	0.00	40.0
Approach		532	2.3	0.250	2.9	NA	1.2	29.4	0.25	0.20	35.3
North: Range Road											
4	T1	166	2.3	0.090	0.0	LOS A	0.0	0.0	0.00	0.00	40.0
14	R2	206	2.3	0.131	0.0	LOS A	0.0	0.0	0.00	0.00	34.8
Approach		372	2.3	0.131	0.0	NA	0.0	0.0	0.00	0.00	37.0
West: Minnesota Park Road											
5	L2	120	2.3	0.483	32.4	LOS D	2.4	62.2	0.86	0.96	22.9
12	R2	150	2.3	0.185	10.4	LOS B	1.0	24.5	0.43	0.29	29.4
Approach		270	2.3	0.483	20.2	LOS C	2.4	62.2	0.62	0.59	26.1
All Vehicles		1174	2.3	0.483	6.0	NA	2.4	62.2	0.26	0.23	33.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

Site: 101vv [6 Alt 4 2020 AM AWS]

New Site
Stop (All-Way)



MOVEMENT SUMMARY

Site: 101vv [6 Alt 4 2020 AM AWS]

New Site
Stop (All-Way)
Design Life Analysis (Capacity): Results for 3 years

Movement Performance - Vehicles

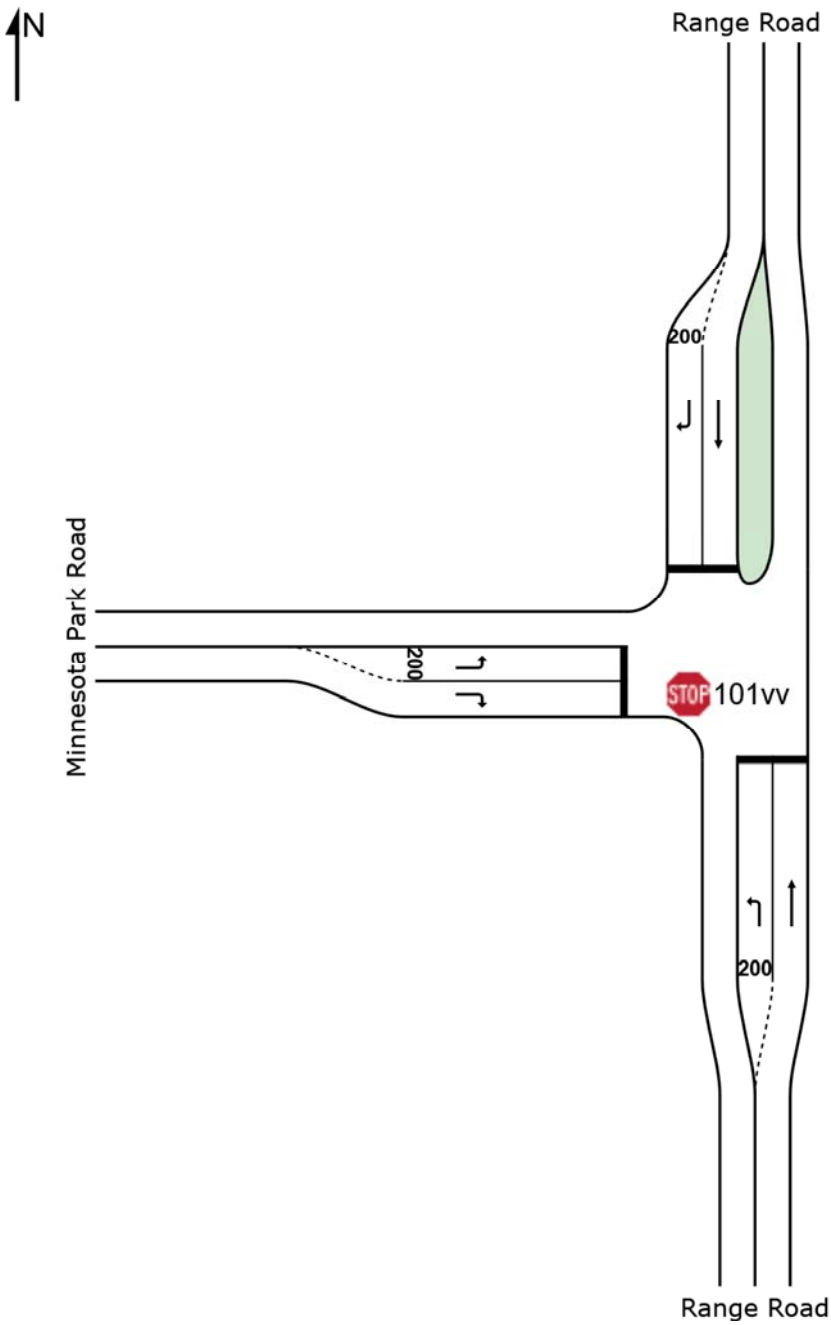
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Range Road											
3	L2	280	2.3	0.592	12.7	LOS B	3.1	79.7	0.78	1.32	28.7
8	T1	252	2.3	0.592	12.7	LOS B	3.1	79.7	0.78	1.32	28.8
Approach		532	2.3	0.592	12.7	LOS B	3.1	79.7	0.78	1.32	28.8
North: Range Road											
4	T1	166	2.3	0.624	18.5	LOS C	3.6	91.5	0.93	1.49	26.8
14	R2	206	2.3	0.624	18.5	LOS C	3.6	91.5	0.93	1.49	26.9
Approach		372	2.3	0.624	18.5	LOS C	3.6	91.5	0.93	1.49	26.9
West: Minnesota Park Road											
5	L2	120	2.3	0.681	29.4	LOS D	4.3	110.5	1.00	1.63	23.6
12	R2	150	2.3	0.681	29.4	LOS D	4.3	110.5	1.00	1.63	23.8
Approach		270	2.3	0.681	29.4	LOS D	4.3	110.5	1.00	1.63	23.7
All Vehicles		1174	2.3	0.681	18.4	LOS C	4.3	110.5	0.88	1.44	26.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

Site: 101vv [7 Alt 5 2020 AM AWS - w Turn Lanes]

New Site
Stop (All-Way)



MOVEMENT SUMMARY

Site: 101vv [7 Alt 5 2020 AM AWS - w Turn Lanes]

New Site
Stop (All-Way)
Design Life Analysis (Capacity): Results for 3 years

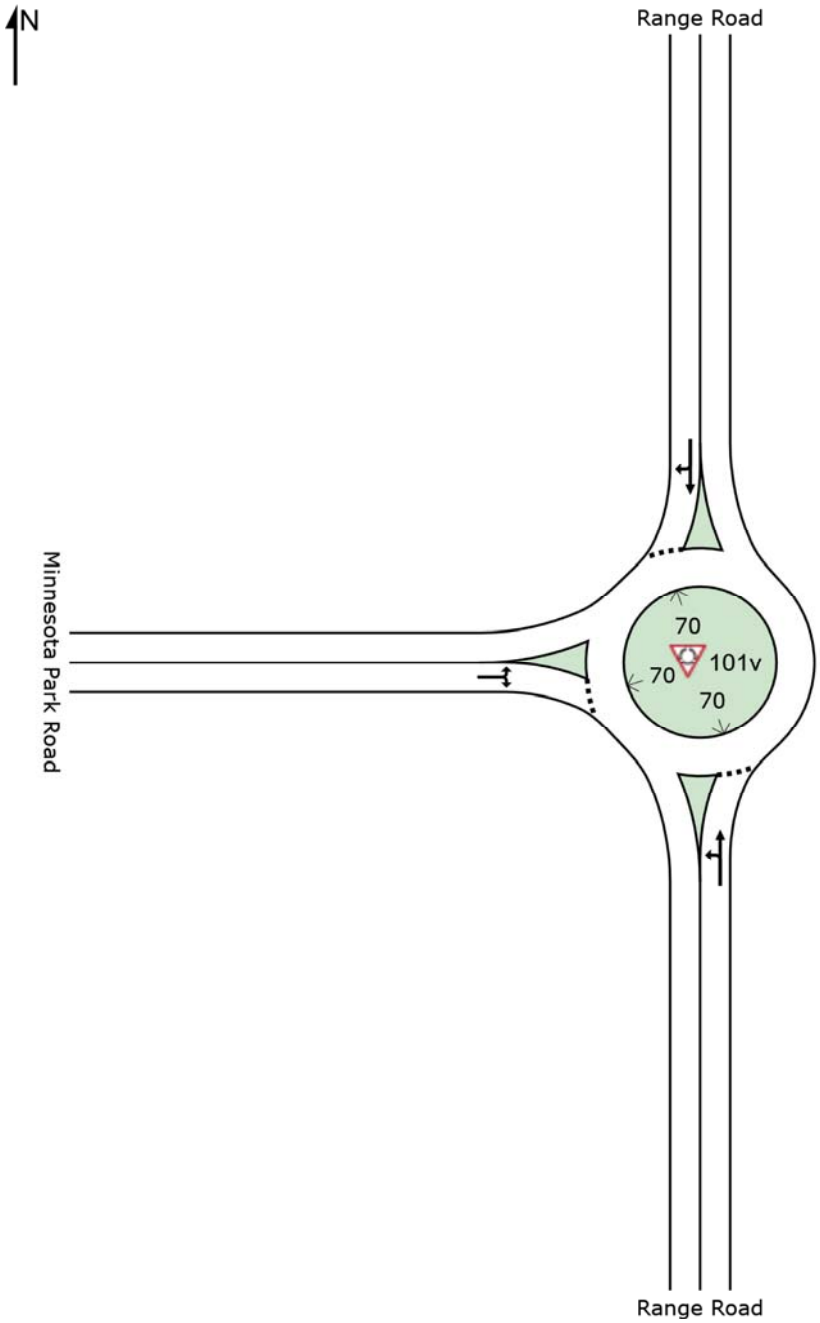
Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Range Road											
3	L2	280	2.3	0.539	14.4	LOS B	2.7	69.2	0.93	1.40	28.2
8	T1	252	2.3	0.529	14.8	LOS B	2.6	67.2	0.94	1.40	28.2
Approach		532	2.3	0.539	14.6	LOS B	2.7	69.2	0.93	1.40	28.2
North: Range Road											
4	T1	166	2.3	0.507	18.9	LOS C	2.5	63.2	0.99	1.43	26.8
14	R2	206	2.3	0.562	20.1	LOS C	3.0	75.2	0.99	1.47	26.4
Approach		372	2.3	0.562	19.6	LOS C	3.0	75.2	0.99	1.45	26.6
West: Minnesota Park Road											
5	L2	120	2.3	0.431	18.6	LOS C	1.9	49.5	1.00	1.38	26.9
12	R2	150	2.3	0.478	19.2	LOS C	2.3	57.5	0.99	1.40	26.7
Approach		270	2.3	0.478	18.9	LOS C	2.3	57.5	0.99	1.39	26.8
All Vehicles		1174	2.3	0.562	17.2	LOS C	3.0	75.2	0.97	1.41	27.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

Site: 101v [8 Alt 6 2020 AM RAB]

New Site
Roundabout



MOVEMENT SUMMARY

Site: 101v [8 Alt 6 2020 AM RAB]

New Site
Roundabout
Design Life Analysis (Capacity): Results for 3 years

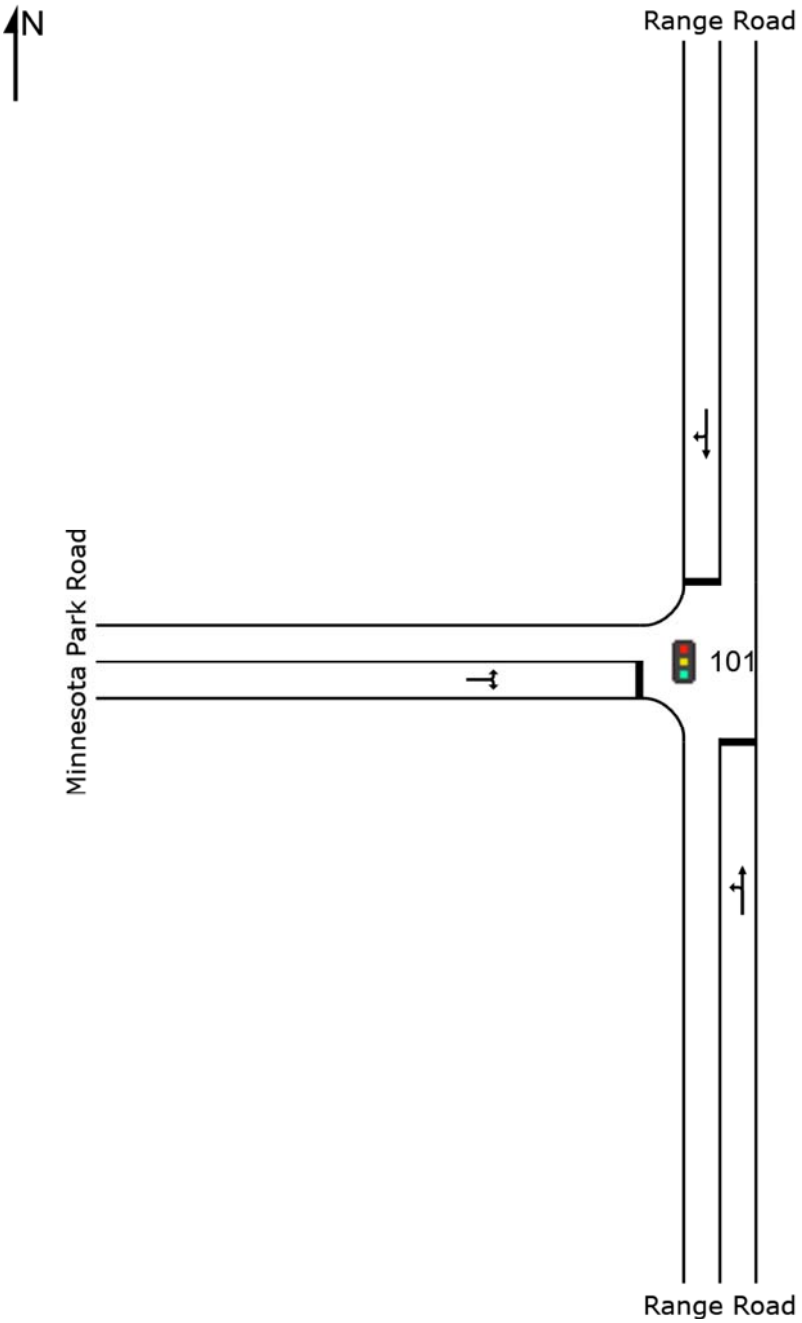
Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Range Road											
3	L2	280	2.3	0.545	1.7	LOS A	4.9	125.1	0.56	0.35	34.3
8	T1	252	2.3	0.545	1.7	LOS A	4.9	125.1	0.56	0.35	34.4
Approach		532	2.3	0.545	1.7	LOS A	4.9	125.1	0.56	0.35	34.4
North: Range Road											
4	T1	166	2.3	0.460	3.1	LOS A	3.3	85.2	0.68	0.55	35.2
14	R2	206	2.3	0.460	3.1	LOS A	3.3	85.2	0.68	0.55	34.3
Approach		372	2.3	0.460	3.1	LOS A	3.3	85.2	0.68	0.55	34.7
West: Minnesota Park Road											
5	L2	120	2.3	0.295	1.6	LOS A	2.0	50.5	0.50	0.33	34.8
12	R2	150	2.3	0.295	1.6	LOS A	2.0	50.5	0.50	0.33	34.1
Approach		270	2.3	0.295	1.6	LOS A	2.0	50.5	0.50	0.33	34.4
All Vehicles		1174	2.3	0.545	2.1	LOS A	4.9	125.1	0.58	0.41	34.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option is selected.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

Site: 101 [9 No Build 2040 AM Signal]

New Site
Signals - Pretimed Isolated



MOVEMENT SUMMARY

Site: 101 [9 No Build 2040 AM Signal]

New Site
Signals - Pretimed Isolated Cycle Time = 65 seconds (User-Given Phase Times)
Design Life Analysis (Final Year): Results for 23 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Range Road											
3	L2	379	2.3	1.068	65.1	LOS F[11]	33.1	841.6	1.00	1.34	16.3
8	T1	342	2.3	1.068	65.1	LOS F[11]	33.1	841.6	1.00	1.34	16.6
Approach		721	2.3	1.068	65.1	LOS E[11]	33.1	841.6	1.00	1.34	16.4
North: Range Road											
4	T1	226	2.3	1.111	89.4	LOS F[11]	26.3	670.8	1.00	1.38	14.0
14	R2	278	2.3	1.111	89.4	LOS F[11]	26.3	670.8	1.00	1.38	13.8
Approach		504	2.3	1.111	89.4	LOS F[11]	26.3	670.8	1.00	1.38	13.9
West: Minnesota Park Road											
5	L2	162	2.3	0.810	25.5	LOS C	11.1	282.6	0.99	0.93	24.7
12	R2	203	2.3	0.810	25.5	LOS C	11.1	282.6	0.99	0.93	24.9
Approach		366	2.3	0.810	25.5	LOS C	11.1	282.6	0.99	0.93	24.8
All Vehicles		1591	2.3	1.111	63.7	LOS E[11]	33.1	841.6	1.00	1.26	16.8

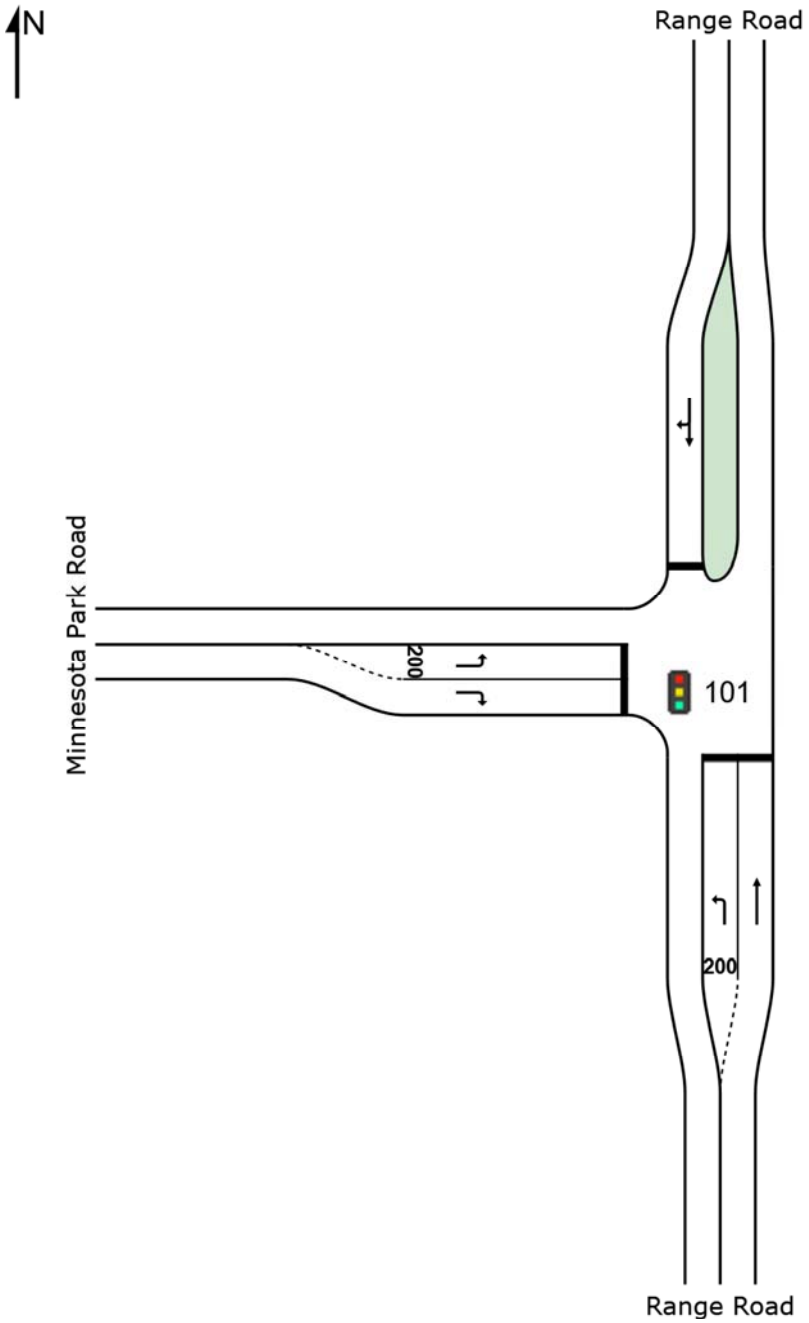
Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

SITE LAYOUT

Site: 101 [10 Alt 1 2040 AM Signal - w Turn Lane]

New Site
Signals - Pretimed Isolated



MOVEMENT SUMMARY

Site: 101 [10 Alt 1 2040 AM Signal - w Turn Lane]

New Site
Signals - Pretimed Isolated Cycle Time = 65 seconds (User-Given Phase Times)
Design Life Analysis (Capacity): Results for 23 years

Movement Performance - Vehicles

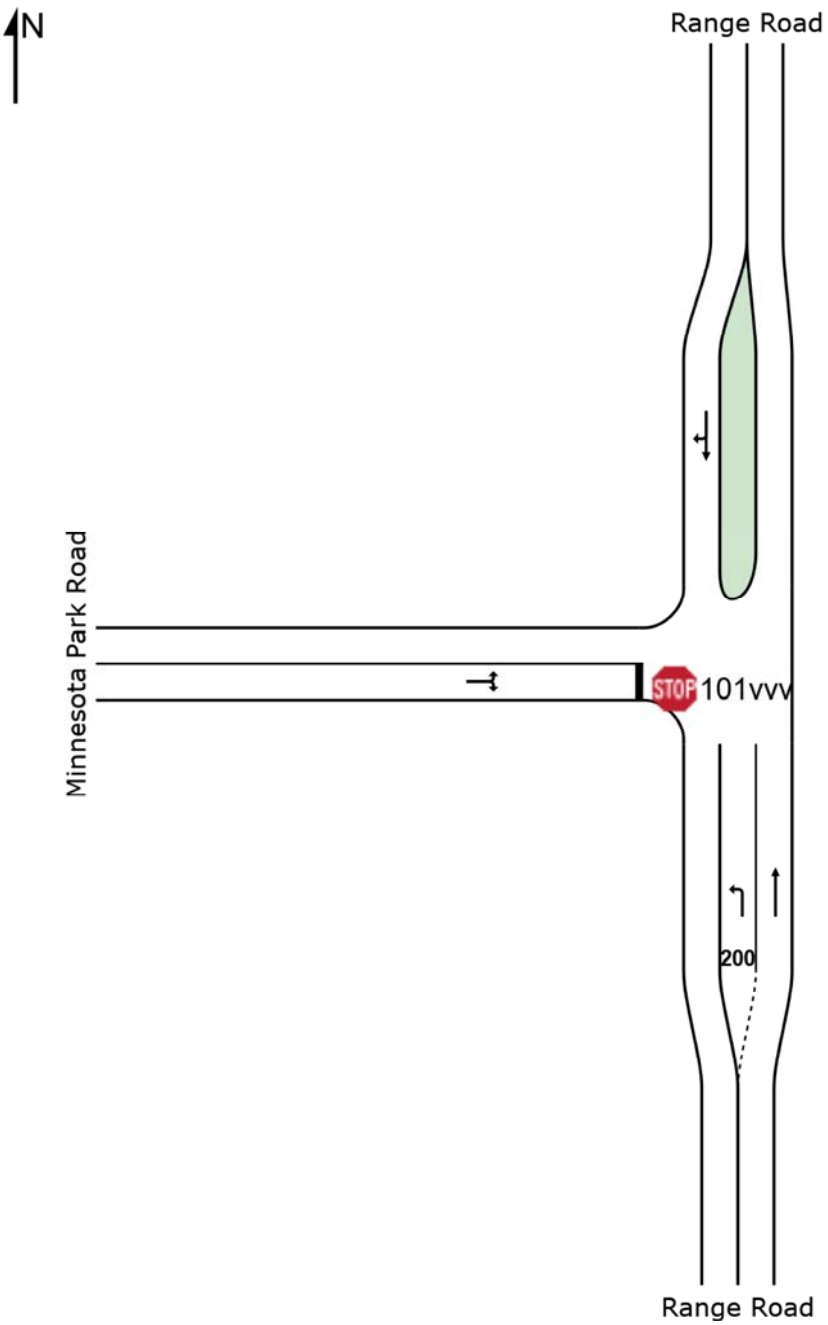
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Range Road											
3	L2	379	2.3	0.726	14.9	LOS B	7.8	198.1	0.94	0.83	28.2
8	T1	342	2.3	0.299	6.0	LOS A	5.4	138.4	0.50	0.43	36.1
Approach		721	2.3	0.726	10.7	LOS B	7.8	198.1	0.74	0.64	31.5
North: Range Road											
4	T1	226	2.3	0.829	24.0	LOS C	15.8	401.4	0.97	0.98	26.8
14	R2	278	2.3	0.829	24.0	LOS C	15.8	401.4	0.97	0.98	26.1
Approach		504	2.3	0.829	24.0	LOS C	15.8	401.4	0.97	0.98	26.4
West: Minnesota Park Road											
5	L2	162	2.3	0.398	21.6	LOS C	4.6	116.3	0.89	0.72	25.8
12	R2	203	2.3	0.199	1.4	LOS A	1.6	40.3	0.31	0.26	34.0
Approach		366	2.3	0.398	10.4	LOS B	4.6	116.3	0.57	0.47	29.8
All Vehicles		1591	2.3	0.829	14.8	LOS B	15.8	401.4	0.77	0.71	29.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

Site: 101vvv [11 Alt 2 2040 AM TWS]

New Site
Stop (Two-Way)



MOVEMENT SUMMARY

Site: 101vvv [11 Alt 2 2040 AM TWS]

New Site
Stop (Two-Way)
Design Life Analysis (Final Year): Results for 23 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Range Road											
3	L2	379	2.3	0.409	8.6	LOS A	2.4	61.3	0.61	0.66	30.5
8	T1	342	2.3	0.184	0.0	LOS A	0.0	0.0	0.00	0.00	40.0
Approach		721	2.3	0.409	4.5	NA	2.4	61.3	0.32	0.35	34.4
North: Range Road											
4	T1	226	2.3	0.298	0.0	LOS A	0.0	0.0	0.00	0.00	37.7
14	R2	278	2.3	0.298	0.0	LOS A	0.0	0.0	0.00	0.00	36.3
Approach		504	2.3	0.298	0.0	NA	0.0	0.0	0.00	0.00	36.9
West: Minnesota Park Road											
5	L2	162	2.3	1.349	235.5	LOS F[11]	42.6	1085.1	1.00	2.73	7.9
12	R2	203	2.3	1.349	200.8	LOS F[11]	42.6	1085.1	1.00	2.73	7.9
Approach		366	2.3	1.349	216.2	LOS F[11]	42.6	1085.1	1.00	2.73	7.9
All Vehicles		1591	2.3	1.349	51.8	NA	42.6	1085.1	0.38	0.78	19.6

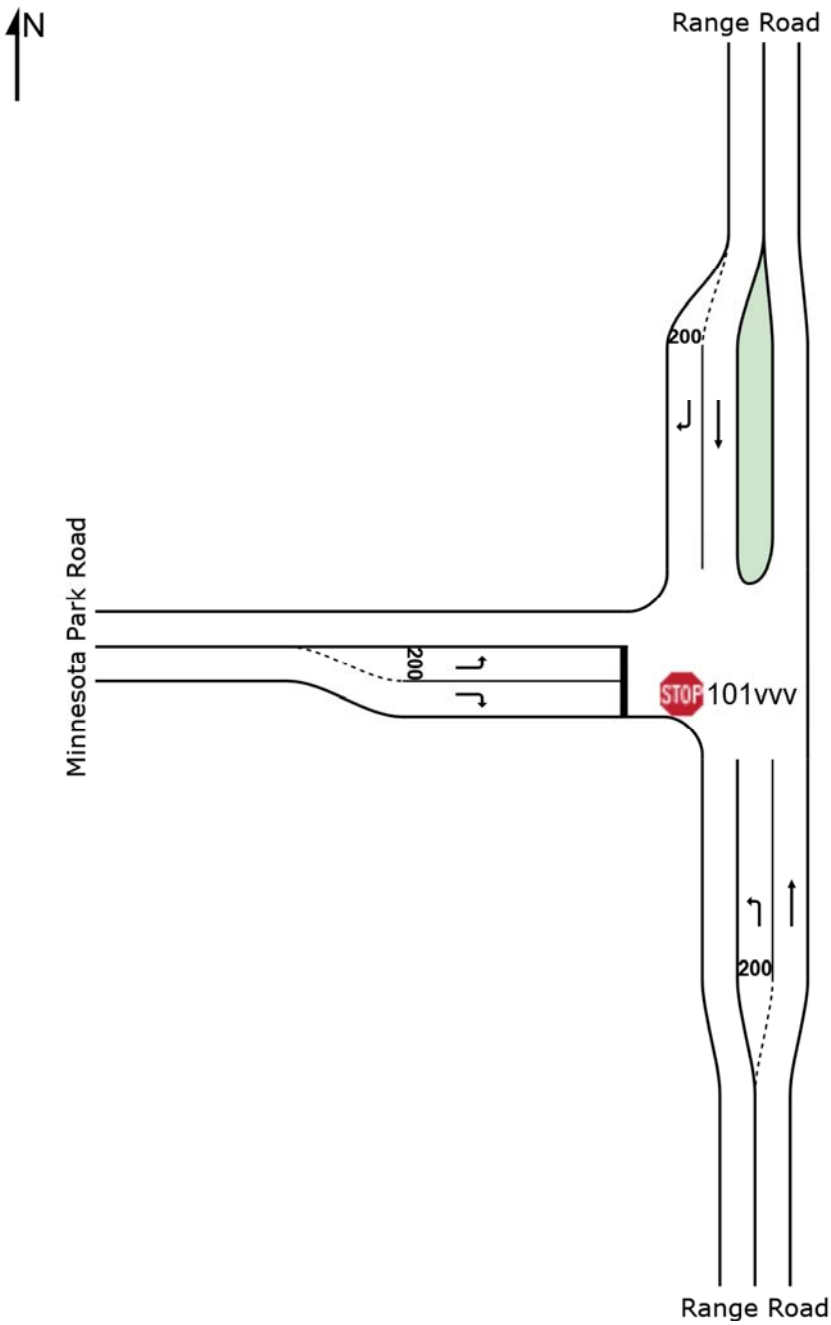
Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

SITE LAYOUT

Site: 101vvv [12 Alt 3 2040 AM TWS - w Turn Lanes]

New Site
Stop (Two-Way)



MOVEMENT SUMMARY

Site: 101vvv [12 Alt 3 2040 AM TWS - w Turn Lanes]

New Site
Stop (Two-Way)
Design Life Analysis (Final Year): Results for 23 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Range Road											
3	L2	379	2.3	0.392	8.1	LOS A	2.3	59.3	0.59	0.61	30.9
8	T1	342	2.3	0.184	0.0	LOS A	0.0	0.0	0.00	0.00	40.0
Approach		721	2.3	0.392	4.2	NA	2.3	59.3	0.31	0.32	34.6
North: Range Road											
4	T1	226	2.3	0.121	0.0	LOS A	0.0	0.0	0.00	0.00	40.0
14	R2	278	2.3	0.177	0.0	LOS A	0.0	0.0	0.00	0.00	34.8
Approach		504	2.3	0.177	0.0	NA	0.0	0.0	0.00	0.00	37.0
West: Minnesota Park Road											
5	L2	162	2.3	1.214	210.5	LOS F[11]	16.1	410.9	1.00	1.86	8.1
12	R2	203	2.3	0.279	11.8	LOS B	1.5	38.3	0.53	0.42	28.9
Approach		366	2.3	1.214	100.0	LOS F[11]	16.1	410.9	0.74	1.06	13.5
All Vehicles		1591	2.3	1.214	24.9	NA	16.1	410.9	0.31	0.39	25.8

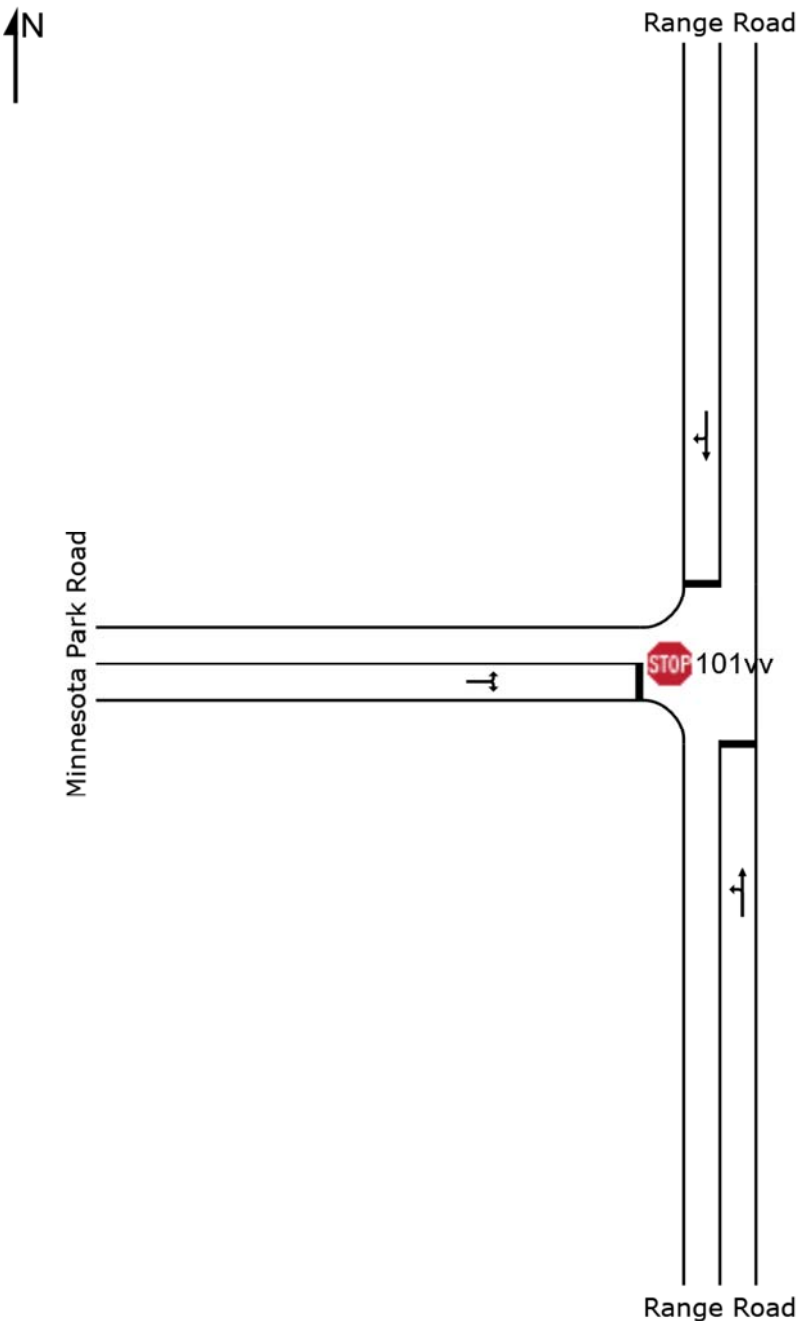
Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

SITE LAYOUT

Site: 101vv [13 Alt 4 2040 AM AWS]

New Site
Stop (All-Way)



MOVEMENT SUMMARY

Site: 101vv [13 Alt 4 2040 AM AWS]

New Site
Stop (All-Way)
Design Life Analysis (Capacity): Results for 23 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Range Road											
3	L2	379	2.3	0.802	21.1	LOS C	7.1	180.6	0.92	1.90	26.0
8	T1	342	2.3	0.802	21.1	LOS C	7.1	180.6	0.92	1.90	26.1
Approach		721	2.3	0.802	21.1	LOS C	7.1	180.6	0.92	1.90	26.0
North: Range Road											
4	T1	226	2.3	0.845	33.5	LOS D	8.2	208.9	1.00	2.08	22.8
14	R2	278	2.3	0.845	33.5	LOS D	8.2	208.9	1.00	2.08	22.8
Approach		504	2.3	0.845	33.5	LOS D	8.2	208.9	1.00	2.08	22.8
West: Minnesota Park Road											
5	L2	162	2.3	0.923	58.6	LOS F[11]	10.2	260.2	1.00	2.25	18.0
12	R2	203	2.3	0.923	58.6	LOS F[11]	10.2	260.2	1.00	2.25	18.1
Approach		366	2.3	0.923	58.6	LOS F[11]	10.2	260.2	1.00	2.25	18.1
All Vehicles		1591	2.3	0.923	33.6	LOS D	10.2	260.2	0.96	2.04	22.7

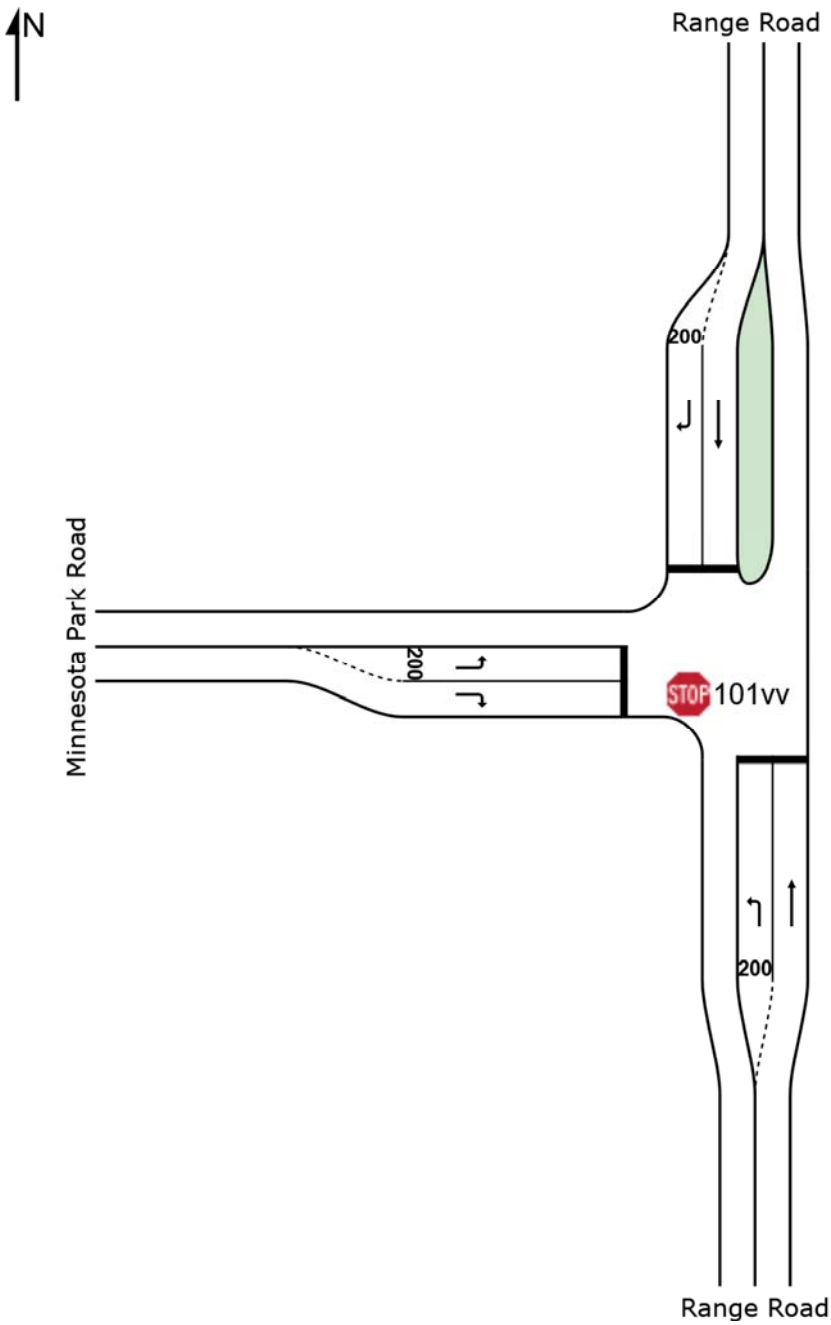
Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

SITE LAYOUT

Site: 101vv [14 Alt 5 2040 AM AWS - w Turn Lanes]

New Site
Stop (All-Way)



MOVEMENT SUMMARY

Site: 101vv [14 Alt 5 2040 AM AWS - w Turn Lanes]

New Site
Stop (All-Way)
Design Life Analysis (Capacity): Results for 23 years

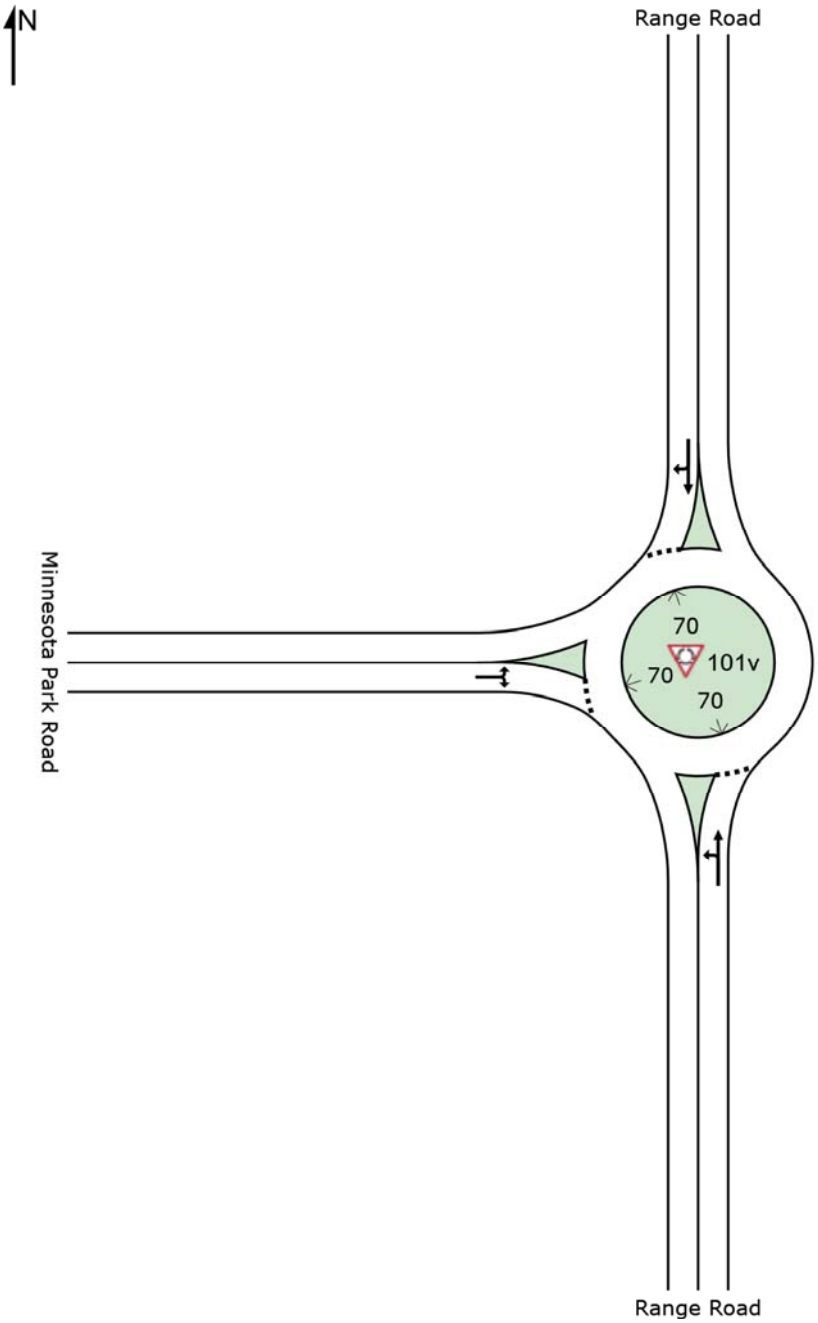
Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Range Road											
3	L2	379	2.3	0.730	23.1	LOS C	5.2	132.2	0.99	1.72	25.5
8	T1	342	2.3	0.717	23.5	LOS C	4.9	125.5	1.00	1.70	25.4
Approach		721	2.3	0.730	23.3	LOS C	5.2	132.2	0.99	1.71	25.4
North: Range Road											
4	T1	226	2.3	0.687	29.1	LOS D	4.4	111.4	1.00	1.62	23.9
14	R2	278	2.3	0.761	33.6	LOS D	5.6	143.5	1.00	1.76	22.8
Approach		504	2.3	0.761	31.6	LOS D	5.6	143.5	1.00	1.70	23.2
West: Minnesota Park Road											
5	L2	162	2.3	0.585	25.8	LOS D	3.2	80.4	1.00	1.50	24.7
12	R2	203	2.3	0.648	27.9	LOS D	3.9	98.2	1.00	1.57	24.2
Approach		366	2.3	0.648	27.0	LOS D	3.9	98.2	1.00	1.54	24.4
All Vehicles		1591	2.3	0.761	26.8	LOS D	5.6	143.5	1.00	1.67	24.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

Site: 101v [15 Alt 6 2040 AM RAB]

New Site
Roundabout



MOVEMENT SUMMARY

Site: 101v [15 Alt 6 2040 AM RAB]

New Site
Roundabout
Design Life Analysis (Capacity): Results for 23 years

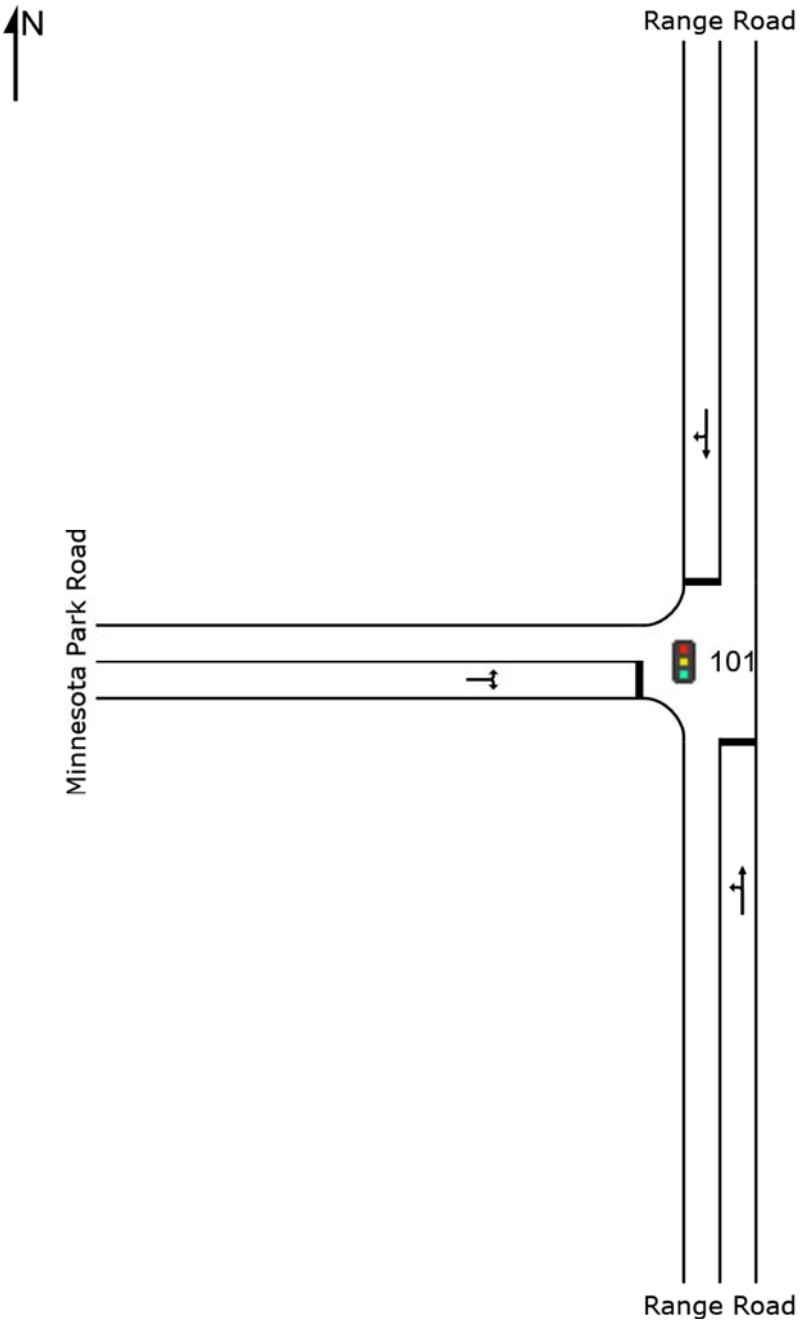
Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Range Road											
3	L2	379	2.3	0.783	5.4	LOS A	12.2	310.0	0.91	0.70	32.8
8	T1	342	2.3	0.783	5.4	LOS A	12.2	310.0	0.91	0.70	32.9
Approach		721	2.3	0.783	5.4	LOS A	12.2	310.0	0.91	0.70	32.9
North: Range Road											
4	T1	226	2.3	0.720	9.5	LOS A	8.9	225.8	0.95	1.00	32.2
14	R2	278	2.3	0.720	9.5	LOS A	8.9	225.8	0.95	1.00	31.4
Approach		504	2.3	0.720	9.5	LOS A	8.9	225.8	0.95	1.00	31.8
West: Minnesota Park Road											
5	L2	162	2.3	0.436	2.5	LOS A	3.4	85.6	0.66	0.49	34.5
12	R2	203	2.3	0.436	2.5	LOS A	3.4	85.6	0.66	0.49	33.7
Approach		366	2.3	0.436	2.5	LOS A	3.4	85.6	0.66	0.49	34.1
All Vehicles		1591	2.3	0.783	6.0	LOS A	12.2	310.0	0.86	0.75	32.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option is selected.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

Site: 101 [16 Exist 2017 PM Signal]

New Site
Signals - Pretimed Isolated



MOVEMENT SUMMARY

Site: 101 [16 Exist 2017 PM Signal]

New Site
Signals - Pretimed Isolated Cycle Time = 60 seconds (User-Given Phase Times)

Movement Performance - Vehicles

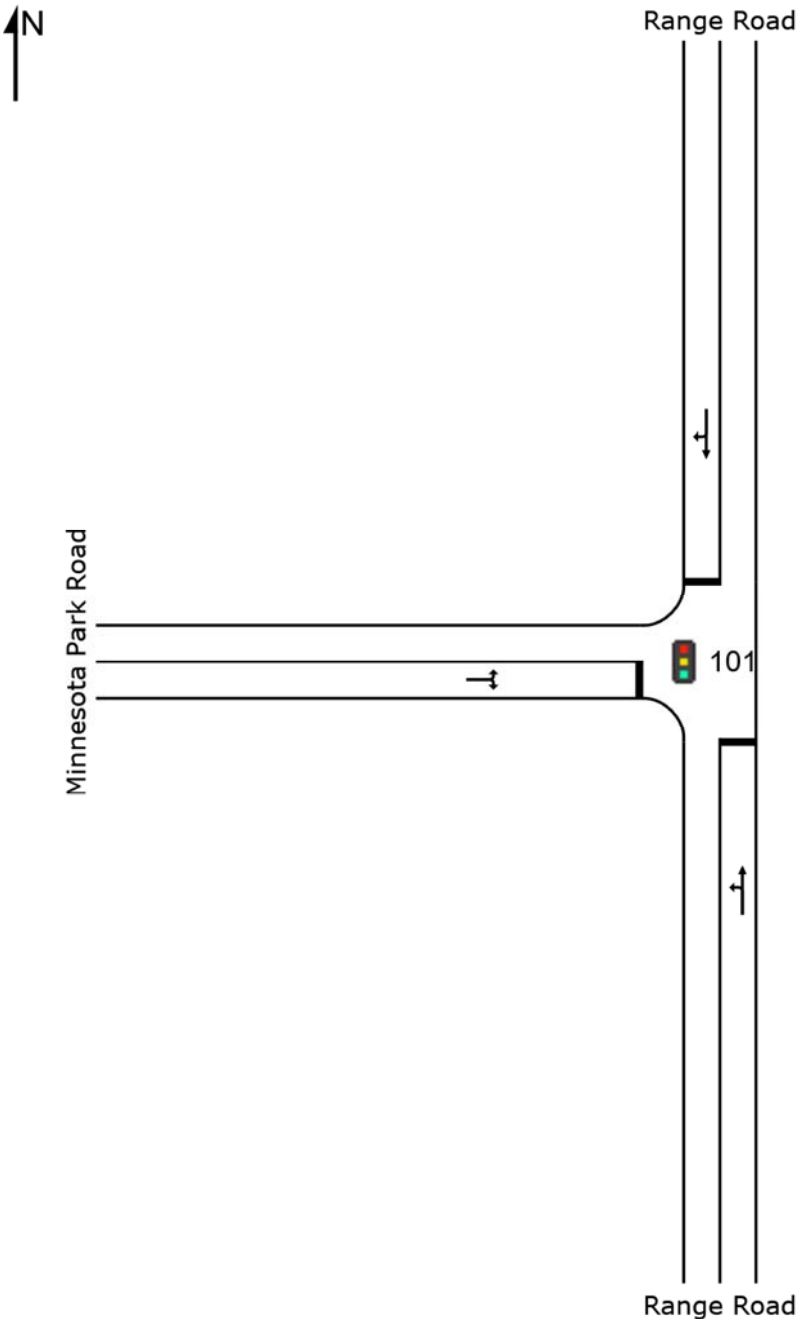
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Range Road											
3	L2	210	0.7	0.663	12.2	LOS B	7.6	189.9	0.84	0.77	30.2
8	T1	205	0.7	0.663	12.2	LOS B	7.6	189.9	0.84	0.77	31.4
Approach		415	0.7	0.663	12.2	LOS B	7.6	189.9	0.84	0.77	30.8
North: Range Road											
4	T1	230	0.7	0.488	9.7	LOS A	7.4	185.9	0.76	0.66	32.8
14	R2	147	0.7	0.488	9.7	LOS A	7.4	185.9	0.76	0.66	31.8
Approach		377	0.7	0.488	9.7	LOS A	7.4	185.9	0.76	0.66	32.4
West: Minnesota Park Road											
5	L2	163	0.7	0.650	15.9	LOS B	7.4	187.1	0.93	0.80	27.7
12	R2	148	0.7	0.650	15.9	LOS B	7.4	187.1	0.93	0.80	27.9
Approach		311	0.7	0.650	15.9	LOS B	7.4	187.1	0.93	0.80	27.8
All Vehicles		1103	0.7	0.663	12.4	LOS B	7.6	189.9	0.84	0.74	30.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

Site: 101 [17 No Build 2020 PM Signal]

New Site
Signals - Pretimed Isolated



MOVEMENT SUMMARY

Site: 101 [17 No Build 2020 PM Signal]

New Site
Signals - Pretimed Isolated Cycle Time = 60 seconds (User-Given Phase Times)
Design Life Analysis (Practical Capacity): Results for 3 years

Movement Performance - Vehicles

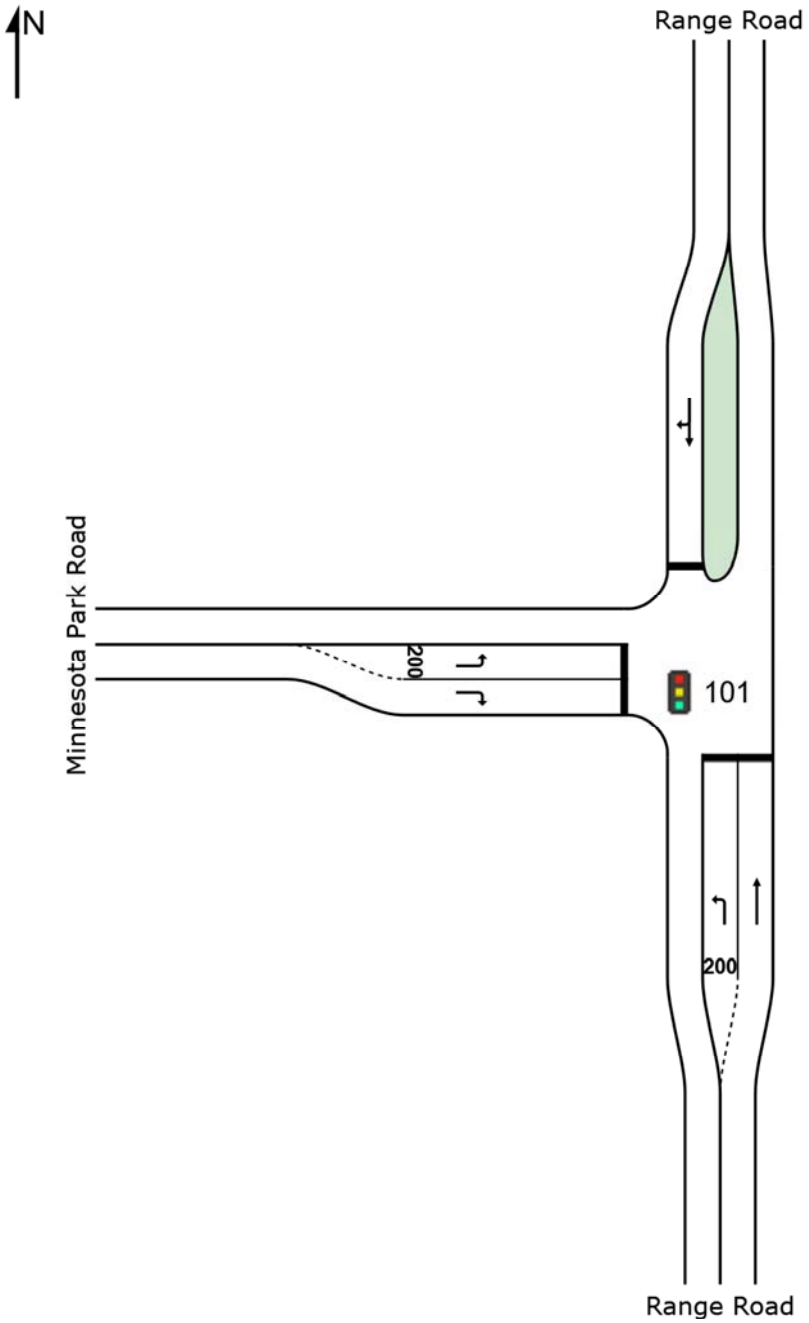
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Range Road											
3	L2	220	0.7	0.716	14.8	LOS B	8.3	207.4	0.89	0.85	29.2
8	T1	215	0.7	0.716	14.8	LOS B	8.3	207.4	0.89	0.85	30.3
Approach		435	0.7	0.716	14.8	LOS B	8.3	207.4	0.89	0.85	29.7
North: Range Road											
4	T1	241	0.7	0.568	12.0	LOS B	8.7	217.5	0.82	0.72	31.8
14	R2	154	0.7	0.568	12.0	LOS B	8.7	217.5	0.82	0.72	30.8
Approach		395	0.7	0.568	12.0	LOS B	8.7	217.5	0.82	0.72	31.4
West: Minnesota Park Road											
5	L2	171	0.7	0.680	17.3	LOS B	8.1	202.9	0.94	0.83	27.3
12	R2	155	0.7	0.680	17.3	LOS B	8.1	202.9	0.94	0.83	27.4
Approach		325	0.7	0.680	17.3	LOS B	8.1	202.9	0.94	0.83	27.3
All Vehicles		1155	0.7	0.716	14.5	LOS B	8.7	217.5	0.88	0.80	29.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

Site: 101 [18 Alt 1 2020 PM Signal w Turn Lane]

New Site
Signals - Pretimed Isolated



MOVEMENT SUMMARY

Site: 101 [18 Alt 1 2020 PM Signal w Turn Lane]

New Site
Signals - Pretimed Isolated Cycle Time = 60 seconds (User-Given Phase Times)
Design Life Analysis (Practical Capacity): Results for 3 years

Movement Performance - Vehicles

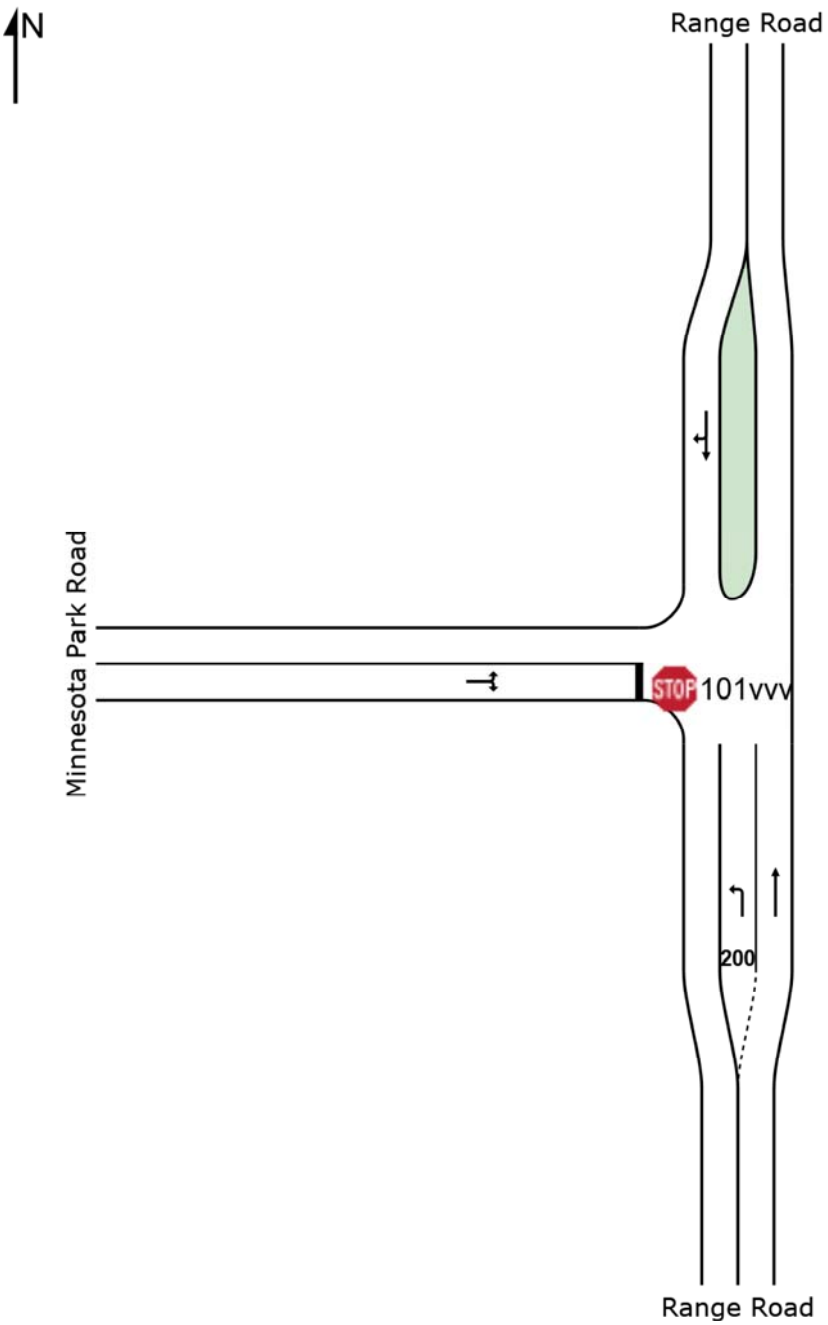
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Range Road											
3	L2	220	0.7	0.456	8.4	LOS A	3.5	88.7	0.80	0.65	30.8
8	T1	215	0.7	0.195	5.9	LOS A	3.1	78.3	0.50	0.42	36.1
Approach		435	0.7	0.456	7.2	LOS A	3.5	88.7	0.65	0.54	33.2
North: Range Road											
4	T1	241	0.7	0.546	10.6	LOS B	8.2	206.0	0.79	0.69	32.4
14	R2	154	0.7	0.546	10.6	LOS B	8.2	206.0	0.79	0.69	31.4
Approach		395	0.7	0.546	10.6	LOS B	8.2	206.0	0.79	0.69	32.0
West: Minnesota Park Road											
5	L2	171	0.7	0.380	19.0	LOS B	4.3	108.9	0.87	0.71	26.7
12	R2	155	0.7	0.152	1.2	LOS A	1.1	26.5	0.30	0.25	34.2
Approach		325	0.7	0.380	10.6	LOS B	4.3	108.9	0.60	0.49	29.8
All Vehicles		1155	0.7	0.546	9.3	LOS A	8.2	206.0	0.68	0.58	31.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

Site: 101vvv [19 Alt 2 2020 PM TWS]

New Site
Stop (Two-Way)



MOVEMENT SUMMARY

Site: 101vvv [19 Alt 2 2020 PM TWS]

New Site
Stop (Two-Way)
Design Life Analysis (Capacity): Results for 3 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Range Road											
3	L2	220	0.7	0.200	5.1	LOS A	0.9	21.7	0.47	0.39	32.1
8	T1	215	0.7	0.114	0.0	LOS A	0.0	0.0	0.00	0.00	40.0
Approach		435	0.7	0.200	2.6	NA	0.9	21.7	0.24	0.19	35.6
North: Range Road											
4	T1	241	0.7	0.224	0.0	LOS A	0.0	0.0	0.00	0.00	38.4
14	R2	154	0.7	0.224	0.0	LOS A	0.0	0.0	0.00	0.00	37.0
Approach		395	0.7	0.224	0.0	NA	0.0	0.0	0.00	0.00	37.8
West: Minnesota Park Road											
5	L2	171	0.7	0.761	44.3	LOS E[11]	8.0	200.7	0.75	1.05	22.1
12	R2	155	0.7	0.761	26.2	LOS D	8.0	200.7	0.75	1.05	22.2
Approach		325	0.7	0.761	35.7	LOS E[11]	8.0	200.7	0.75	1.05	22.1
All Vehicles		1155	0.7	0.761	11.0	NA	8.0	200.7	0.30	0.37	30.9

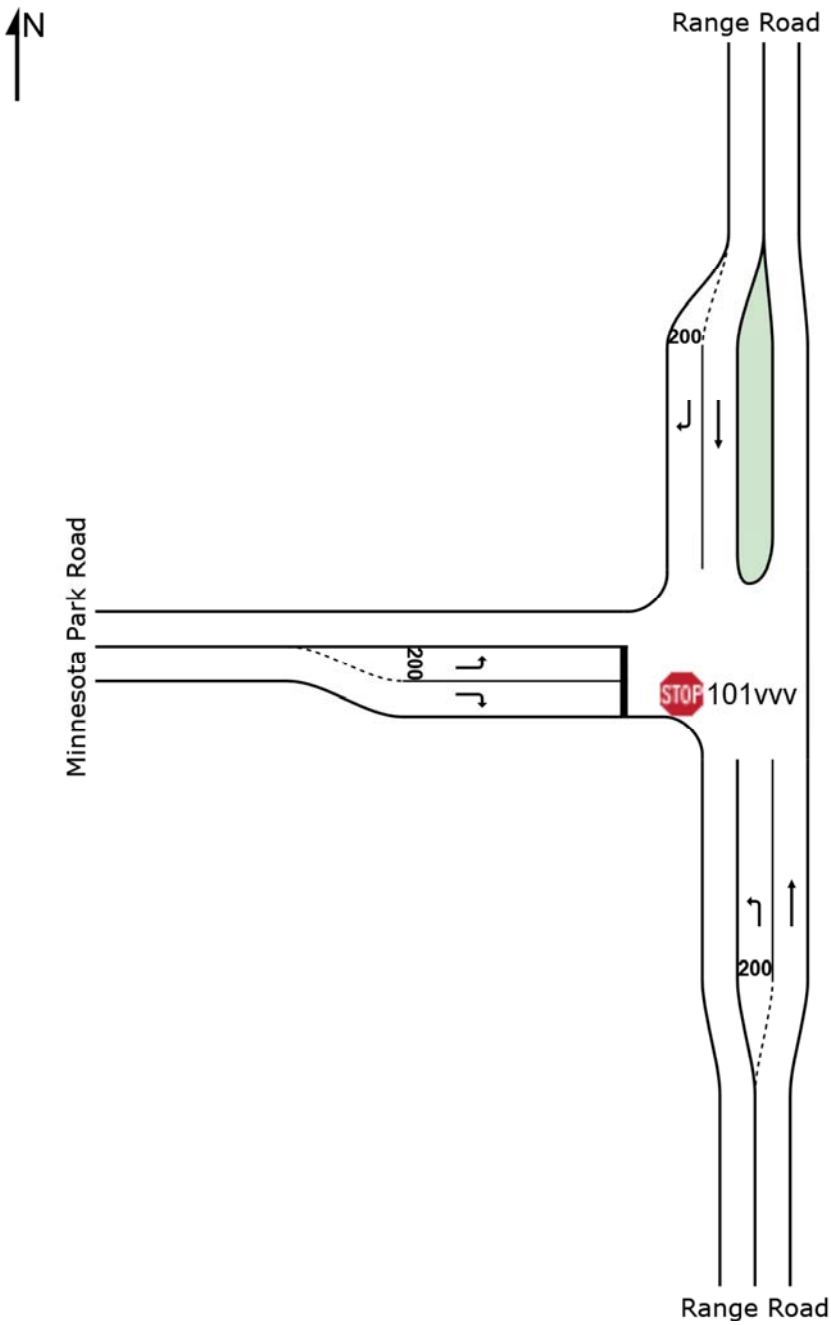
Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

SITE LAYOUT

Site: 101vvv [20 Alt 3 2020 PM TWS - w Turn Lane]

New Site
Stop (Two-Way)



MOVEMENT SUMMARY

Site: 101vvv [20 Alt 3 2020 PM TWS - w Turn Lane]

New Site
Stop (Two-Way)
Design Life Analysis (Capacity): Results for 3 years

Movement Performance - Vehicles

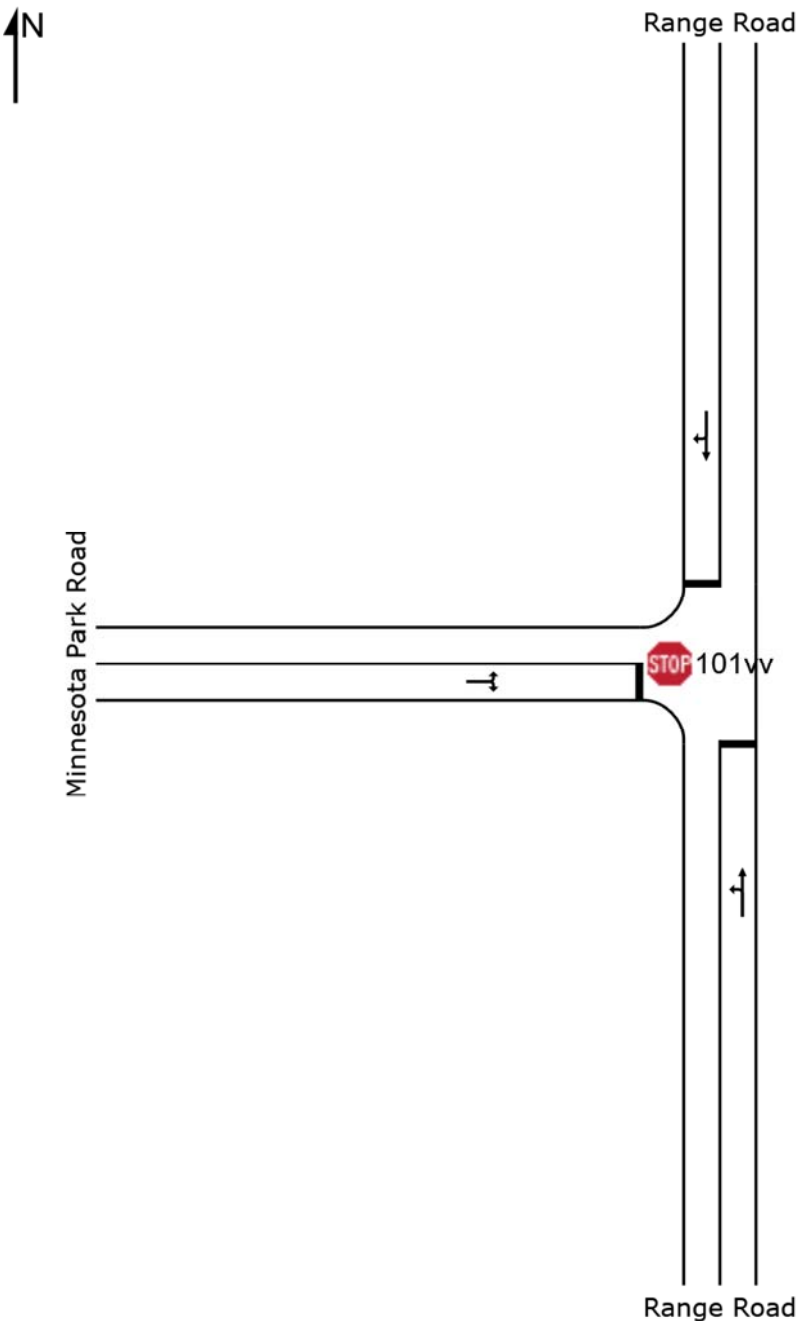
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Range Road											
3	L2	220	0.7	0.196	5.0	LOS A	0.9	21.7	0.47	0.37	32.3
8	T1	215	0.7	0.114	0.0	LOS A	0.0	0.0	0.00	0.00	40.0
Approach		435	0.7	0.196	2.5	NA	0.9	21.7	0.24	0.19	35.7
North: Range Road											
4	T1	241	0.7	0.128	0.0	LOS A	0.0	0.0	0.00	0.00	40.0
14	R2	154	0.7	0.096	0.0	LOS A	0.0	0.0	0.00	0.00	34.9
Approach		395	0.7	0.128	0.0	NA	0.0	0.0	0.00	0.00	37.8
West: Minnesota Park Road											
5	L2	171	0.7	0.578	32.6	LOS D	3.5	87.6	0.85	1.02	22.9
12	R2	155	0.7	0.212	11.3	LOS B	1.1	27.2	0.52	0.40	29.2
Approach		325	0.7	0.578	22.5	LOS C	3.5	87.6	0.69	0.72	25.5
All Vehicles		1155	0.7	0.578	7.3	NA	3.5	87.6	0.28	0.27	32.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

Site: 101vv [21 Alt 4 2020 PM AWS]

New Site
Stop (All-Way)



MOVEMENT SUMMARY

Site: 101vv [21 Alt 4 2020 PM AWS]

New Site
Stop (All-Way)
Design Life Analysis (Capacity): Results for 3 years

Movement Performance - Vehicles

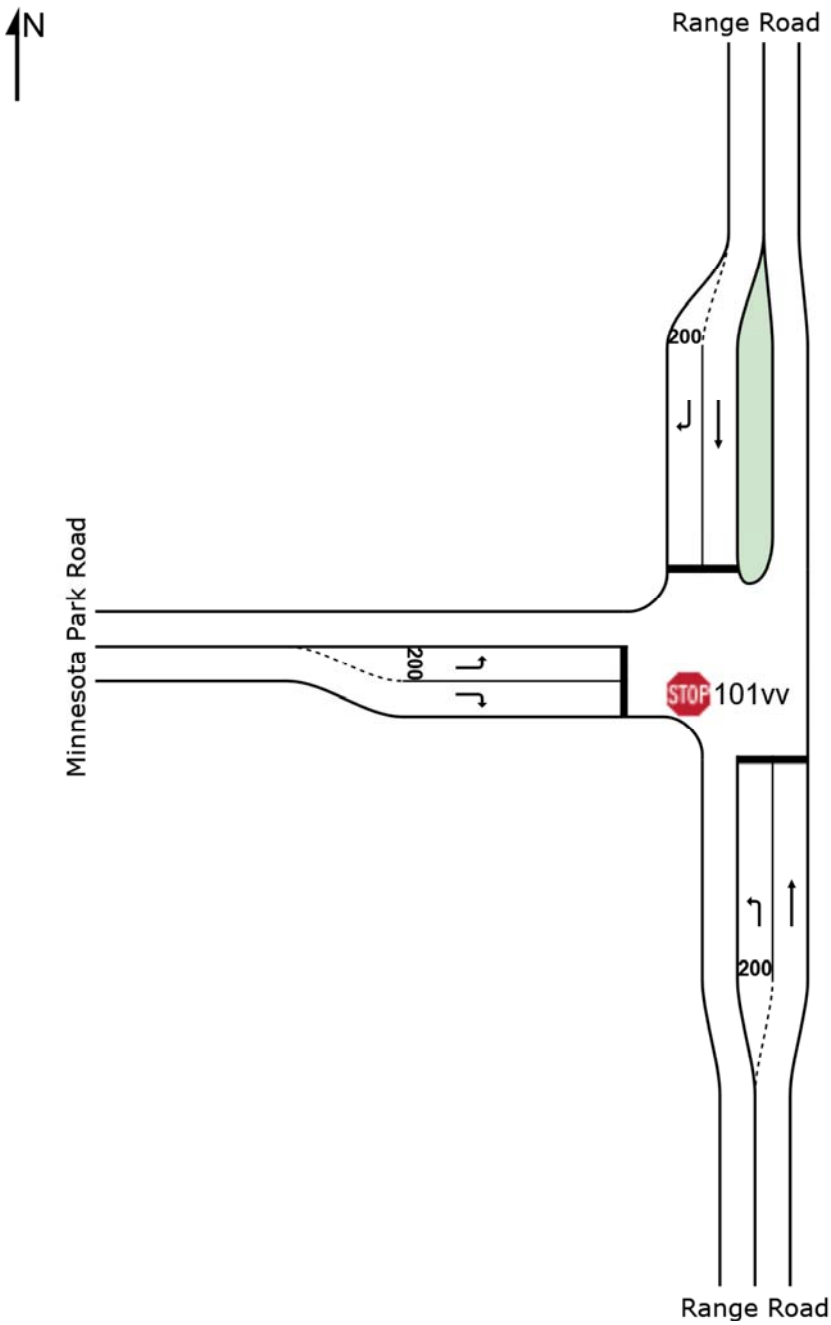
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Range Road											
3	L2	220	0.7	0.562	13.5	LOS B	2.9	71.9	0.83	1.32	28.5
8	T1	215	0.7	0.562	13.5	LOS B	2.9	71.9	0.83	1.32	28.6
Approach		435	0.7	0.562	13.5	LOS B	2.9	71.9	0.83	1.32	28.6
North: Range Road											
4	T1	241	0.7	0.737	26.3	LOS D	5.3	134.2	0.99	1.74	24.6
14	R2	154	0.7	0.737	26.3	LOS D	5.3	134.2	0.99	1.74	24.7
Approach		395	0.7	0.737	26.3	LOS D	5.3	134.2	0.99	1.74	24.6
West: Minnesota Park Road											
5	L2	171	0.7	0.716	28.4	LOS D	4.9	123.2	1.00	1.69	23.9
12	R2	155	0.7	0.716	28.4	LOS D	4.9	123.2	1.00	1.69	24.1
Approach		325	0.7	0.716	28.4	LOS D	4.9	123.2	1.00	1.69	24.0
All Vehicles		1155	0.7	0.737	22.1	LOS C	5.3	134.2	0.93	1.57	25.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

Site: 101vv [22 Alt 5 2020 PM AWS - w Turn Lane]

New Site
Stop (All-Way)



MOVEMENT SUMMARY

Site: 101vv [22 Alt 5 2020 PM AWS - w Turn Lane]

New Site
Stop (All-Way)
Design Life Analysis (Capacity): Results for 3 years

Movement Performance - Vehicles

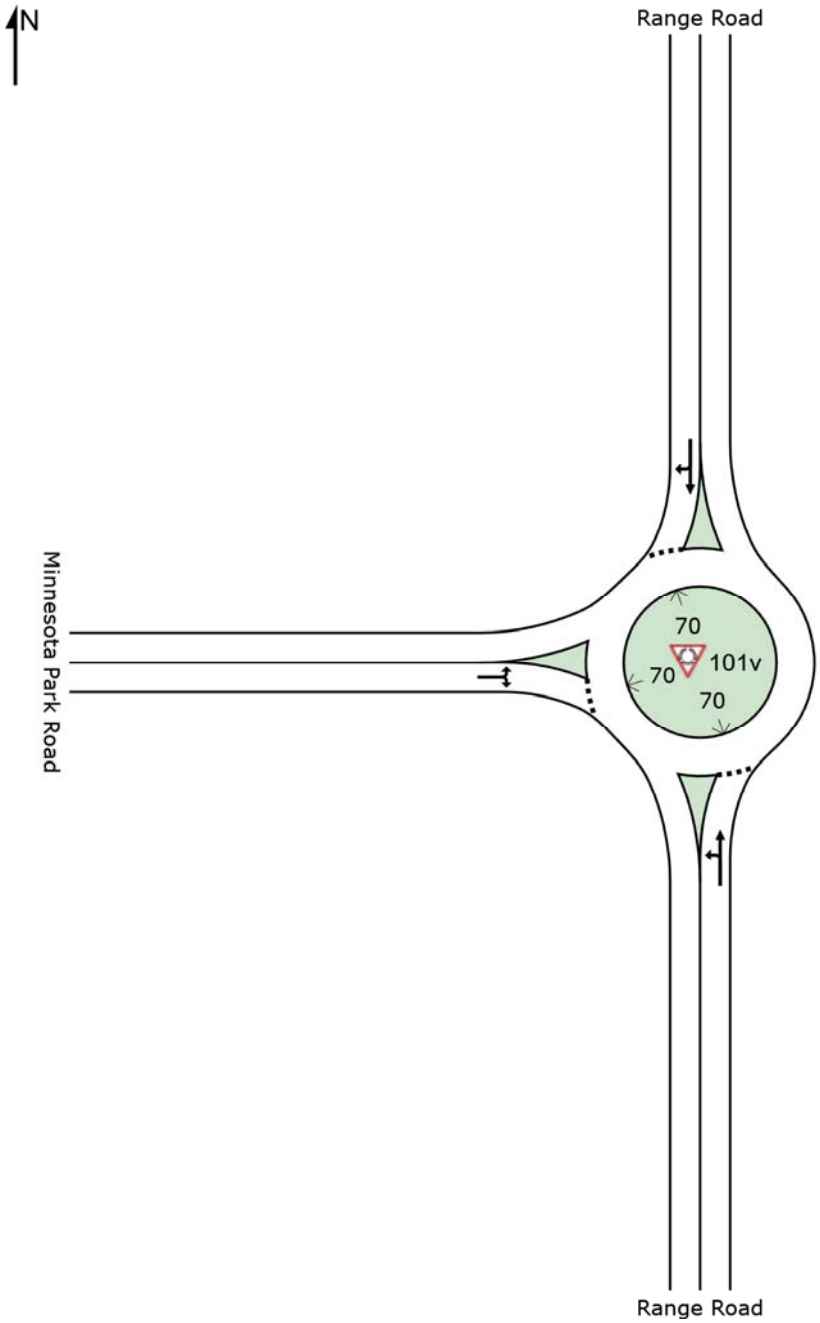
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Range Road											
3	L2	220	0.7	0.480	14.2	LOS B	2.2	56.5	0.93	1.35	28.4
8	T1	215	0.7	0.518	16.1	LOS C	2.6	64.4	0.96	1.41	27.8
Approach		435	0.7	0.518	15.1	LOS C	2.6	64.4	0.95	1.38	28.1
North: Range Road											
4	T1	241	0.7	0.723	32.3	LOS D	4.9	123.5	1.00	1.68	23.1
14	R2	154	0.7	0.511	20.5	LOS C	2.5	63.1	1.00	1.43	26.3
Approach		395	0.7	0.723	27.7	LOS D	4.9	123.5	1.00	1.58	24.3
West: Minnesota Park Road											
5	L2	171	0.7	0.494	18.3	LOS C	2.4	59.8	0.98	1.41	27.0
12	R2	155	0.7	0.502	19.7	LOS C	2.4	61.4	1.00	1.42	26.6
Approach		325	0.7	0.502	19.0	LOS C	2.4	61.4	0.99	1.41	26.8
All Vehicles		1155	0.7	0.723	20.5	LOS C	4.9	123.5	0.98	1.46	26.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

Site: 101v [23 Alt 6 2020 PM RAB]

New Site
Roundabout



MOVEMENT SUMMARY

Site: 101v [23 Alt 6 2020 PM RAB]

New Site
Roundabout
Design Life Analysis (Capacity): Results for 3 years

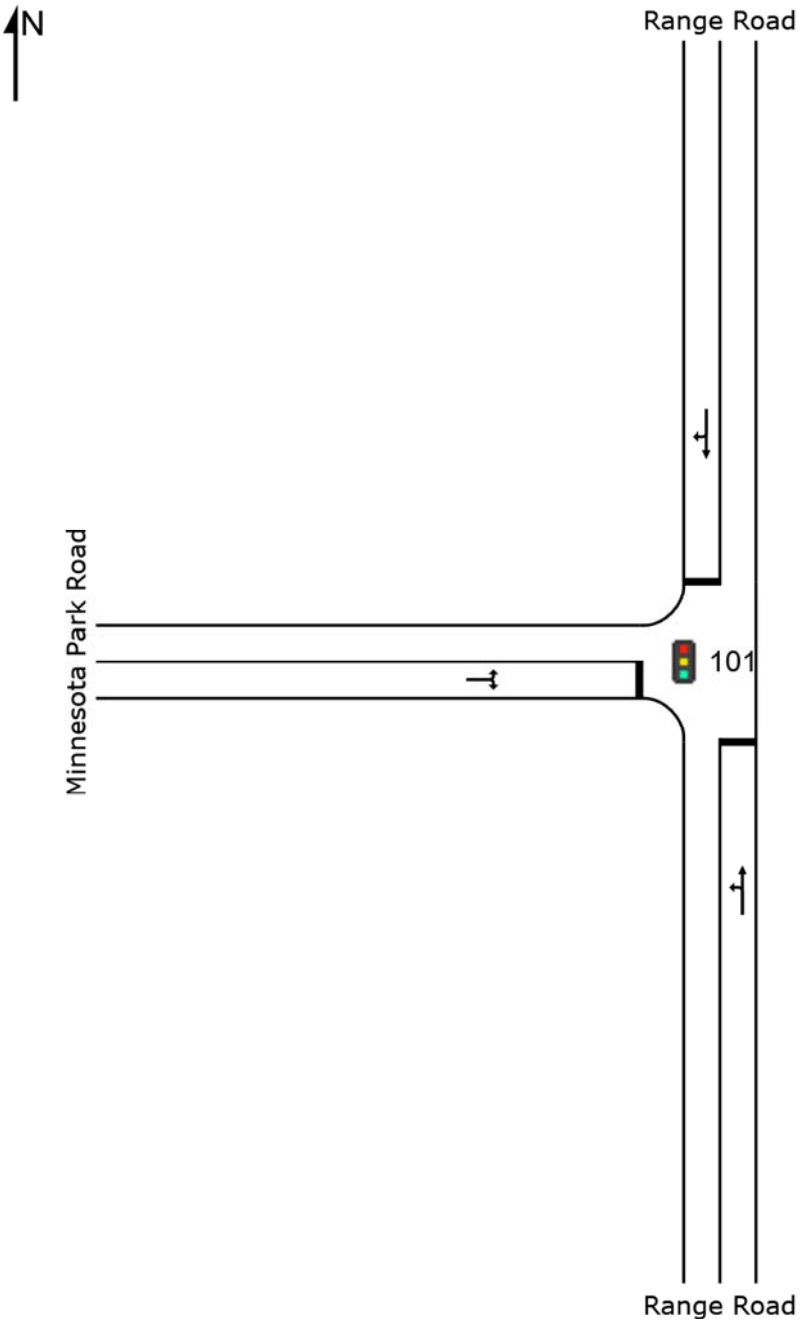
Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Range Road											
3	L2	220	0.7	0.465	2.0	LOS A	3.7	92.7	0.58	0.40	34.3
8	T1	215	0.7	0.465	2.0	LOS A	3.7	92.7	0.58	0.40	34.4
Approach		435	0.7	0.465	2.0	LOS A	3.7	92.7	0.58	0.40	34.4
North: Range Road											
4	T1	241	0.7	0.446	2.4	LOS A	3.3	84.0	0.62	0.46	35.4
14	R2	154	0.7	0.446	2.4	LOS A	3.3	84.0	0.62	0.46	34.6
Approach		395	0.7	0.446	2.4	LOS A	3.3	84.0	0.62	0.46	35.1
West: Minnesota Park Road											
5	L2	171	0.7	0.378	2.4	LOS A	2.6	66.3	0.60	0.45	34.4
12	R2	155	0.7	0.378	2.4	LOS A	2.6	66.3	0.60	0.45	33.7
Approach		325	0.7	0.378	2.4	LOS A	2.6	66.3	0.60	0.45	34.1
All Vehicles		1155	0.7	0.465	2.2	LOS A	3.7	92.7	0.60	0.43	34.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option is selected.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

Site: 101 [24 No Build 2040 PM Signal]

New Site
Signals - Pretimed Isolated



MOVEMENT SUMMARY

Site: 101 [24 No Build 2040 PM Signal]

New Site
Signals - Pretimed Isolated Cycle Time = 65 seconds (User-Given Phase Times)
Design Life Analysis (Final Year): Results for 23 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Range Road											
3	L2	297	0.7	1.076	71.8	LOS F[11]	26.5	667.3	1.00	1.32	15.3
8	T1	291	0.7	1.076	71.8	LOS F[11]	26.5	667.3	1.00	1.32	15.6
Approach		589	0.7	1.076	71.8	LOS E[11]	26.5	667.3	1.00	1.32	15.4
North: Range Road											
4	T1	327	0.7	0.938	42.4	LOS D	21.7	545.3	1.00	1.17	22.1
14	R2	208	0.7	0.938	42.4	LOS D	21.7	545.3	1.00	1.17	21.7
Approach		535	0.7	0.938	42.4	LOS D	21.7	545.3	1.00	1.17	21.9
West: Minnesota Park Road											
5	L2	231	0.7	0.998	62.5	LOS E[11]	20.1	504.7	1.00	1.15	17.5
12	R2	210	0.7	0.998	62.5	LOS E[11]	20.1	504.7	1.00	1.15	17.6
Approach		441	0.7	0.998	62.5	LOS E[11]	20.1	504.7	1.00	1.15	17.5
All Vehicles		1564	0.7	1.076	59.1	LOS E[11]	26.5	667.3	1.00	1.22	17.8

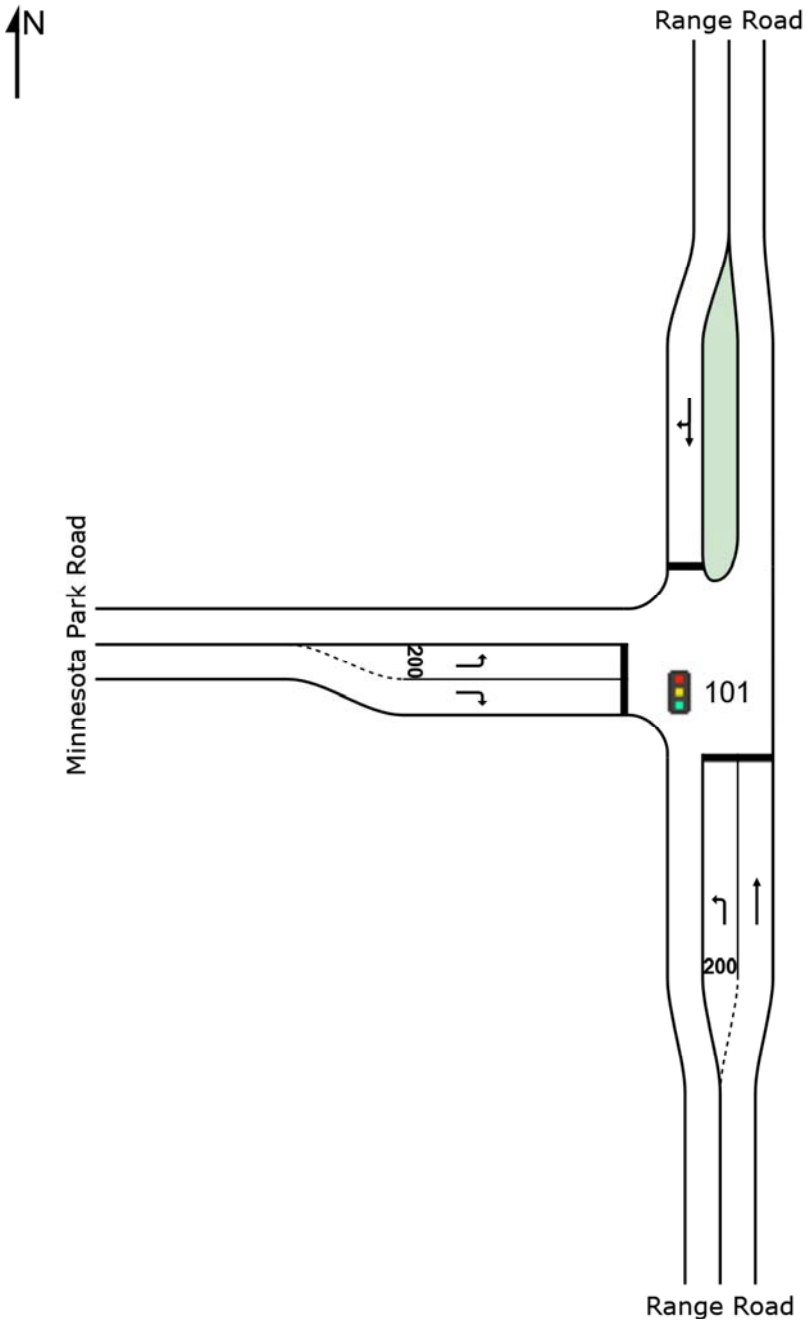
Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

SITE LAYOUT

Site: 101 [25 Alt 1 2040 PM Signal w Turn Lane]

New Site
Signals - Pretimed Isolated



MOVEMENT SUMMARY

Site: 101 [25 Alt 1 2040 PM Signal w Turn Lane]

New Site
Signals - Pretimed Isolated Cycle Time = 65 seconds (User-Given Phase Times)
Design Life Analysis (Practical Capacity): Results for 23 years

Movement Performance - Vehicles

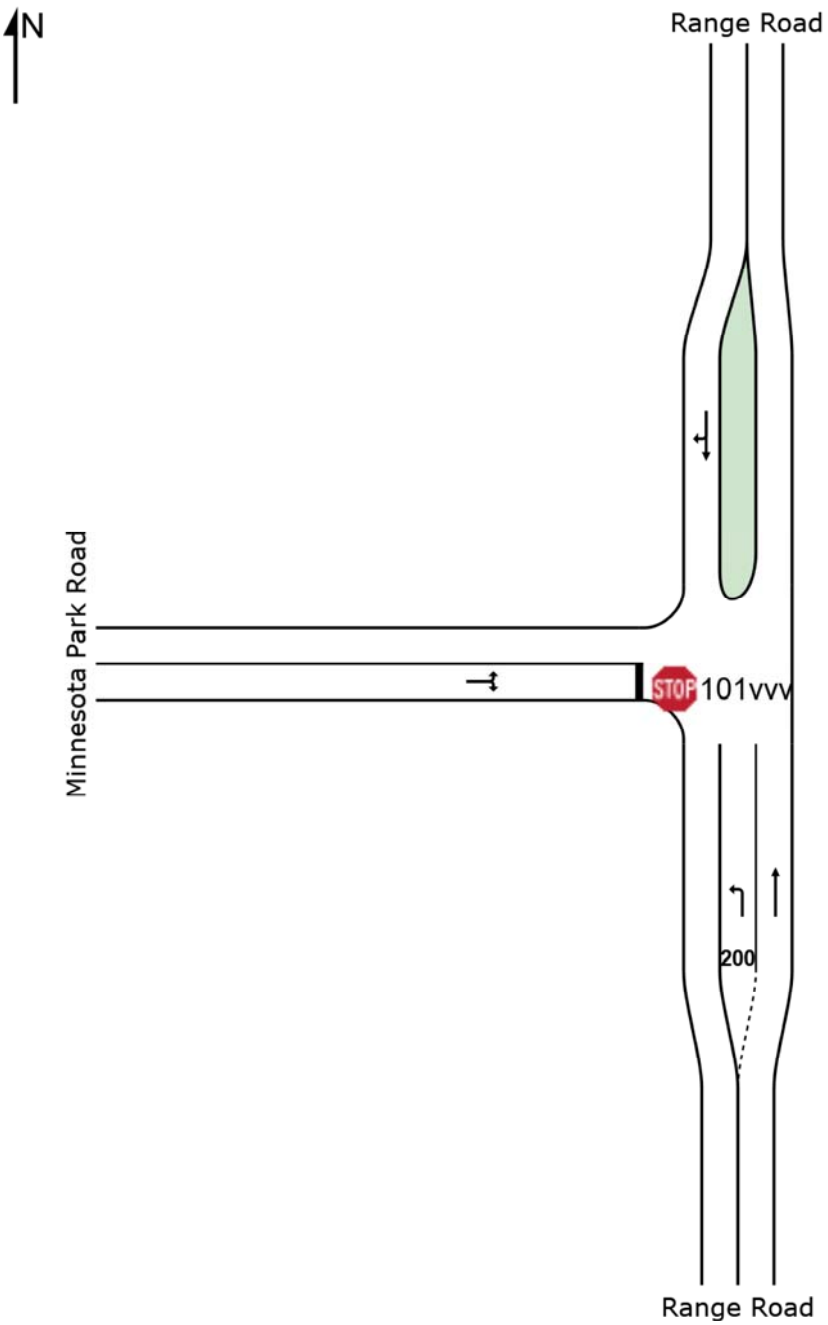
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Range Road											
3	L2	297	0.7	0.618	12.1	LOS B	5.4	136.4	0.92	0.77	29.3
8	T1	291	0.7	0.251	5.8	LOS A	4.5	112.0	0.48	0.41	36.2
Approach		589	0.7	0.618	9.0	LOS A	5.4	136.4	0.70	0.59	32.3
North: Range Road											
4	T1	327	0.7	0.830	25.1	LOS C	17.7	444.9	0.97	0.99	26.8
14	R2	208	0.7	0.830	25.1	LOS C	17.7	444.9	0.97	0.99	26.1
Approach		535	0.7	0.830	25.1	LOS C	17.7	444.9	0.97	0.99	26.5
West: Minnesota Park Road											
5	L2	231	0.7	0.558	23.5	LOS C	7.0	175.9	0.93	0.77	25.3
12	R2	210	0.7	0.219	2.1	LOS A	2.0	50.4	0.37	0.31	33.7
Approach		441	0.7	0.558	13.3	LOS B	7.0	175.9	0.66	0.55	28.7
All Vehicles		1564	0.7	0.830	15.7	LOS B	17.7	444.9	0.78	0.72	29.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

Site: 101vvv [26 Alt 2 2040 PM TWS]

New Site
Stop (Two-Way)



MOVEMENT SUMMARY

Site: 101vvv [26 Alt 2 2040 PM TWS]

New Site
Stop (Two-Way)
Design Life Analysis (Final Year): Results for 23 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Range Road											
3	L2	297	0.7	0.322	7.4	LOS A	1.6	40.1	0.58	0.59	31.1
8	T1	291	0.7	0.154	0.0	LOS A	0.0	0.0	0.00	0.00	40.0
Approach		589	0.7	0.322	3.7	NA	1.6	40.1	0.30	0.30	34.9
North: Range Road											
4	T1	327	0.7	0.303	0.0	LOS A	0.0	0.0	0.00	0.00	38.3
14	R2	208	0.7	0.303	0.0	LOS A	0.0	0.0	0.00	0.00	37.0
Approach		535	0.7	0.303	0.0	NA	0.0	0.0	0.00	0.00	37.8
West: Minnesota Park Road											
5	L2	231	0.7	1.597	330.4	LOS F[11]	63.2	1587.6	1.00	3.52	5.8
12	R2	210	0.7	1.597	304.3	LOS F[11]	63.2	1587.6	1.00	3.52	5.8
Approach		441	0.7	1.597	318.0	LOS F[11]	63.2	1587.6	1.00	3.52	5.8
All Vehicles		1564	0.7	1.597	91.0	NA	63.2	1587.6	0.39	1.10	14.6

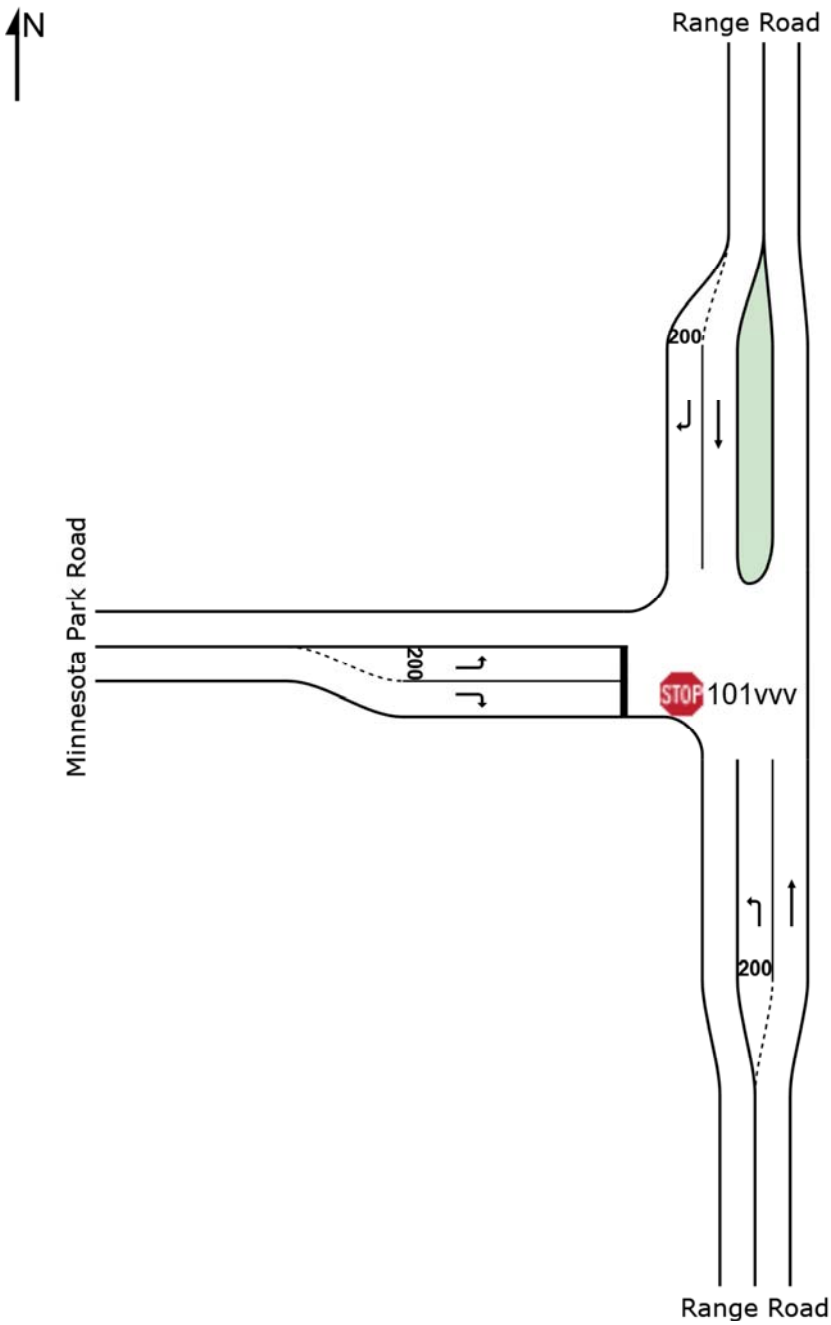
Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

SITE LAYOUT

Site: 101vvv [27 Alt 3 2040 PM TWS - w Turn Lane]

New Site
Stop (Two-Way)



MOVEMENT SUMMARY

Site: 101vvv [27 Alt 3 2040 PM TWS - w Turn Lane]

New Site
Stop (Two-Way)
Design Life Analysis (Final Year): Results for 23 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Range Road											
3	L2	297	0.7	0.309	7.0	LOS A	1.5	38.5	0.57	0.55	31.4
8	T1	291	0.7	0.154	0.0	LOS A	0.0	0.0	0.00	0.00	40.0
Approach		589	0.7	0.309	3.5	NA	1.5	38.5	0.29	0.28	35.1
North: Range Road											
4	T1	327	0.7	0.173	0.0	LOS A	0.0	0.0	0.00	0.00	40.0
14	R2	208	0.7	0.130	0.0	LOS A	0.0	0.0	0.00	0.00	34.9
Approach		535	0.7	0.173	0.0	NA	0.0	0.0	0.00	0.00	37.8
West: Minnesota Park Road											
5	L2	231	0.7	1.329	233.6	LOS F[11]	26.0	652.4	1.00	2.26	7.4
12	R2	210	0.7	0.339	13.8	LOS B	2.0	50.7	0.63	0.61	28.3
Approach		441	0.7	1.329	129.0	LOS F[11]	26.0	652.4	0.83	1.48	11.5
All Vehicles		1564	0.7	1.329	37.7	NA	26.0	652.4	0.34	0.52	22.6

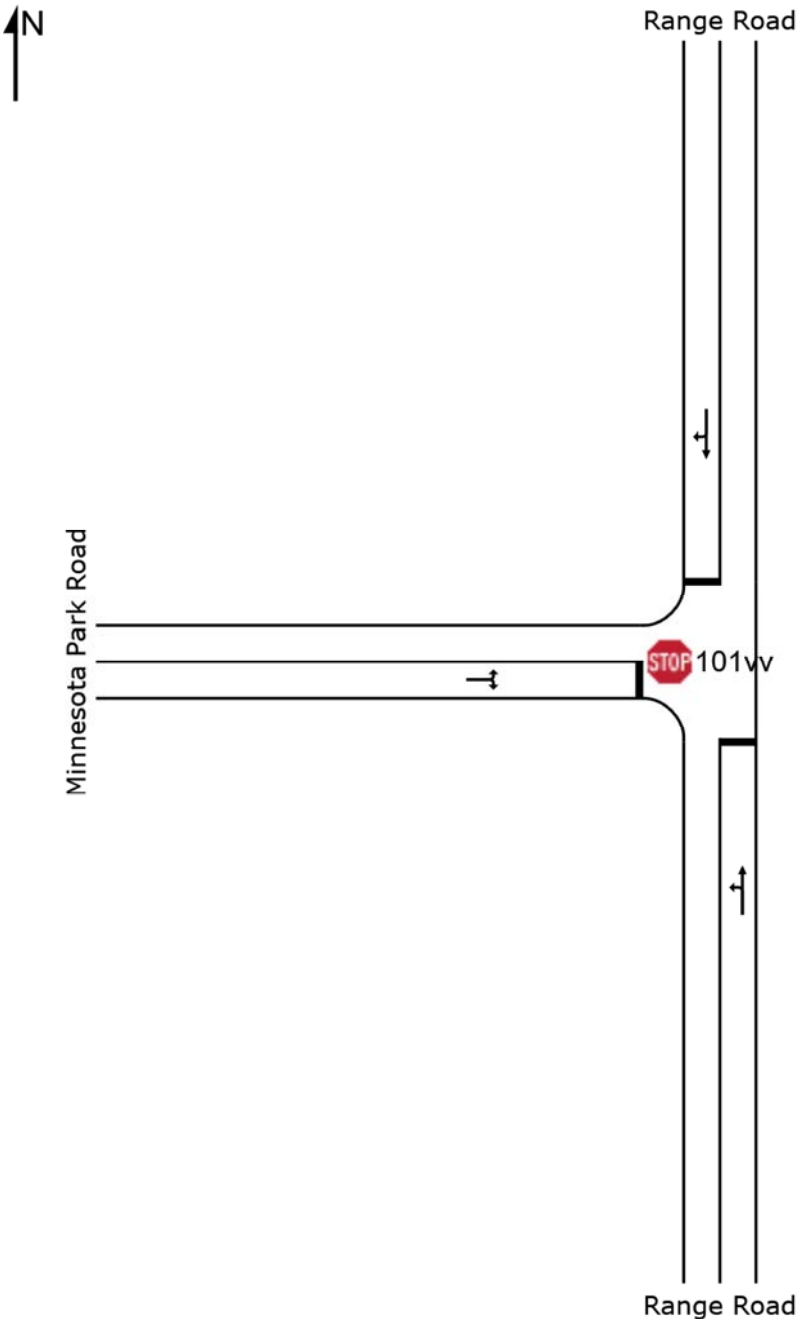
Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

SITE LAYOUT

Site: 101vv [28 Alt 4 2040 PM AWS]

New Site
Stop (All-Way)



MOVEMENT SUMMARY

Site: 101vv [28 Alt 4 2040 PM AWS]

New Site
Stop (All-Way)
Design Life Analysis (Capacity): Results for 23 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Range Road											
3	L2	297	0.7	0.761	20.9	LOS C	5.9	149.2	0.93	1.77	26.1
8	T1	291	0.7	0.761	20.9	LOS C	5.9	149.2	0.93	1.77	26.2
Approach		589	0.7	0.761	20.9	LOS C	5.9	149.2	0.93	1.77	26.1
North: Range Road											
4	T1	327	0.7	0.999	64.5	LOS F[11]	15.5	388.6	1.00	2.82	17.3
14	R2	208	0.7	0.999	64.5	LOS F[11]	15.5	388.6	1.00	2.82	17.3
Approach		535	0.7	0.999	64.5	LOS F[11]	15.5	388.6	1.00	2.82	17.3
West: Minnesota Park Road											
5	L2	231	0.7	0.969	63.2	LOS F[11]	12.8	322.0	1.00	2.52	17.4
12	R2	210	0.7	0.969	63.2	LOS F[11]	12.8	322.0	1.00	2.52	17.5
Approach		441	0.7	0.969	63.2	LOS F[11]	12.8	322.0	1.00	2.52	17.4
All Vehicles		1564	0.7	0.999	47.7	LOS E[11]	15.5	388.6	0.97	2.34	19.9

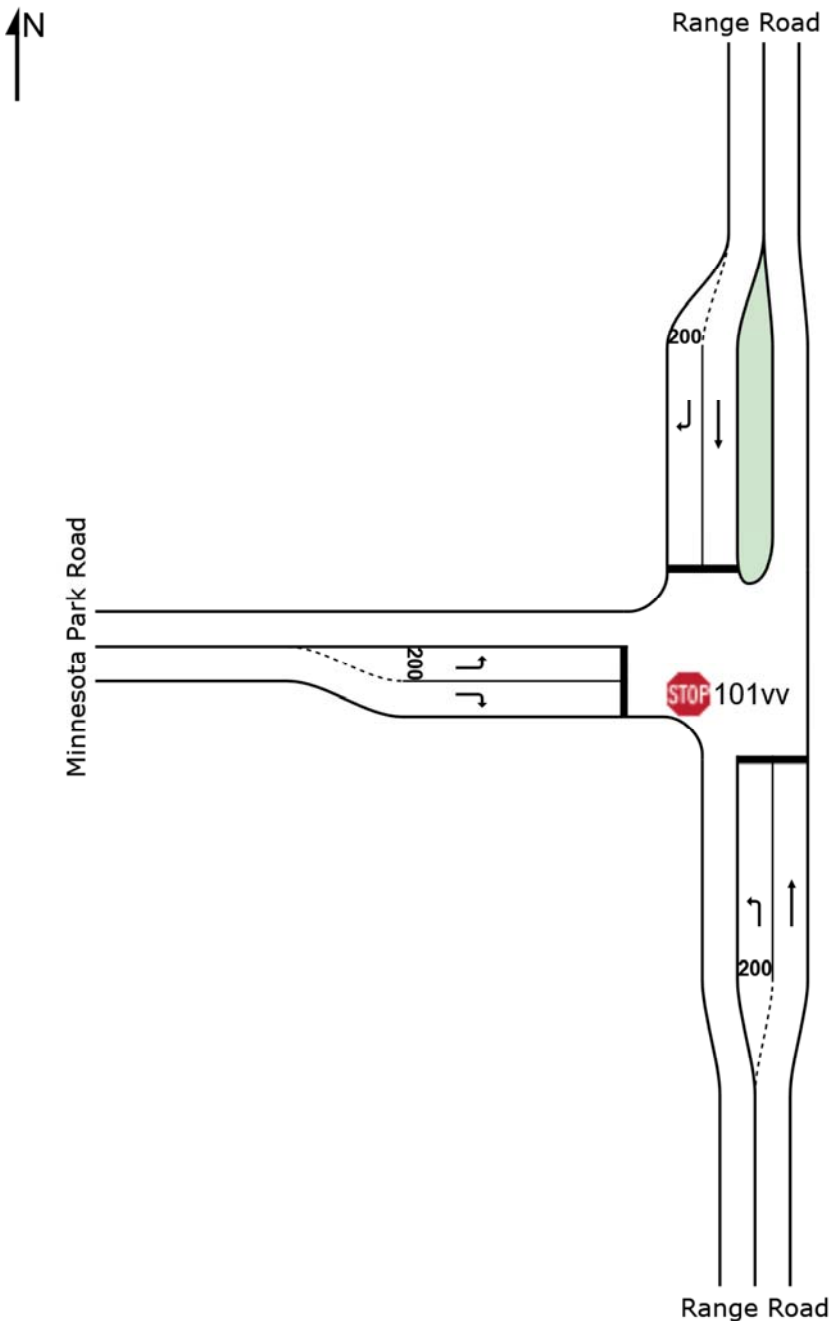
Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

SITE LAYOUT

Site: 101vv [29 Alt 5 2040 PM AWS - w Turn Lane]

New Site
Stop (All-Way)



MOVEMENT SUMMARY

Site: 101vv [29 Alt 5 2040 PM AWS - w Turn Lane]

New Site
Stop (All-Way)
Design Life Analysis (Capacity): Results for 23 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Range Road											
3	L2	297	0.7	0.650	20.6	LOS C	3.9	98.7	0.98	1.57	26.3
8	T1	291	0.7	0.702	25.1	LOS D	4.7	117.1	1.00	1.66	25.0
Approach		589	0.7	0.702	22.8	LOS C	4.7	117.1	0.99	1.62	25.6
North: Range Road											
4	T1	327	0.7	0.979	73.0	LOS F[11]	11.8	295.8	1.00	2.36	16.2
14	R2	208	0.7	0.692	31.7	LOS D	4.4	111.0	1.00	1.62	23.2
Approach		535	0.7	0.979	56.9	LOS F[11]	11.8	295.8	1.00	2.07	18.4
West: Minnesota Park Road											
5	L2	231	0.7	0.670	27.3	LOS D	4.2	104.4	1.00	1.60	24.3
12	R2	210	0.7	0.680	30.1	LOS D	4.3	107.3	1.00	1.61	23.6
Approach		441	0.7	0.680	28.6	LOS D	4.3	107.3	1.00	1.60	24.0
All Vehicles		1564	0.7	0.979	36.1	LOS E[11]	11.8	295.8	1.00	1.77	22.2

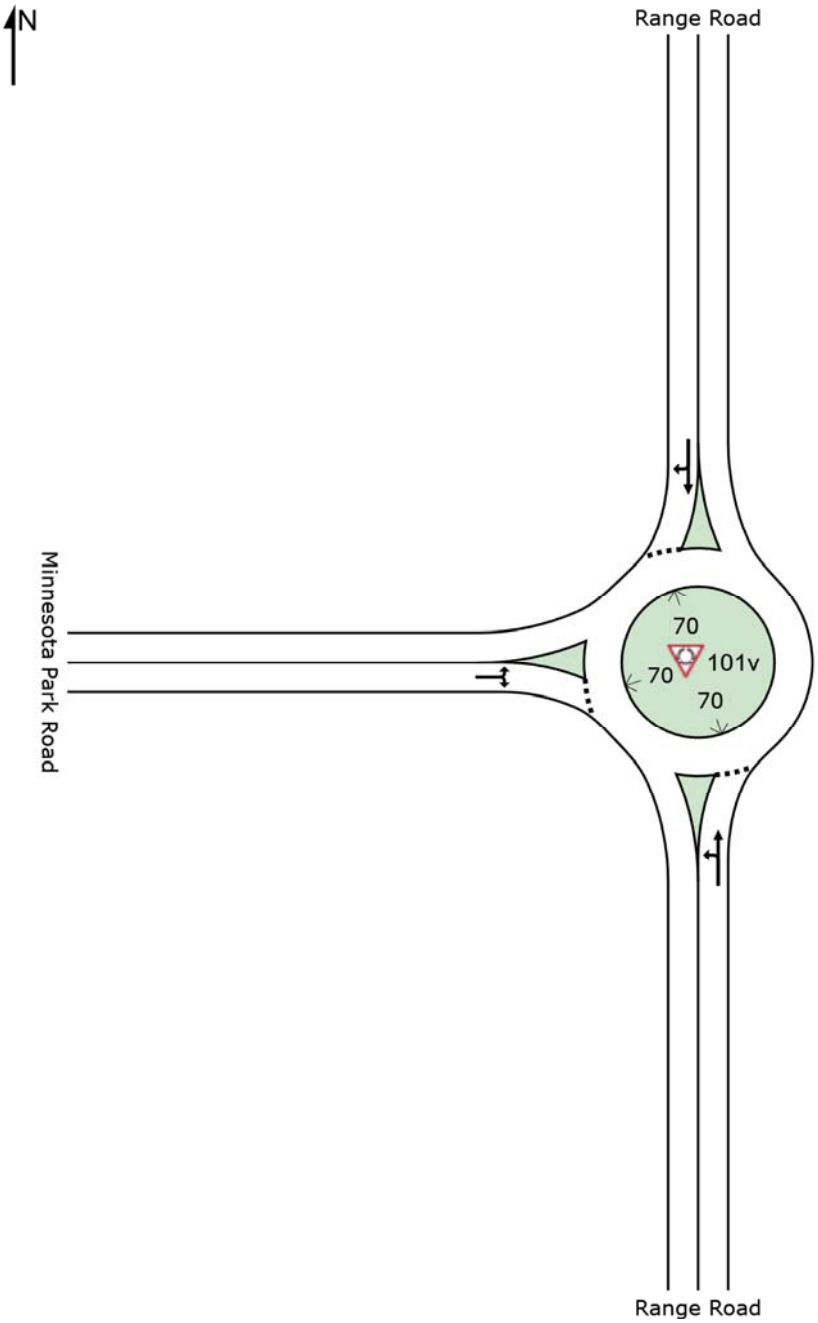
Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

SITE LAYOUT

Site: 101v [30 Alt 6 2040 PM RAB]

New Site
Roundabout



MOVEMENT SUMMARY

Site: 101v [30 Alt 6 2040 PM RAB]

New Site
Roundabout
Design Life Analysis (Capacity): Results for 23 years

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Range Road											
3	L2	297	0.7	0.609	2.9	LOS A	5.9	149.0	0.75	0.57	33.8
8	T1	291	0.7	0.609	2.9	LOS A	5.9	149.0	0.75	0.57	33.9
Approach		589	0.7	0.609	2.9	LOS A	5.9	149.0	0.75	0.57	33.9
North: Range Road											
4	T1	327	0.7	0.593	3.9	LOS A	5.7	143.3	0.78	0.66	34.8
14	R2	208	0.7	0.593	3.9	LOS A	5.7	143.3	0.78	0.66	34.0
Approach		535	0.7	0.593	3.9	LOS A	5.7	143.3	0.78	0.66	34.5
West: Minnesota Park Road											
5	L2	231	0.7	0.505	3.2	LOS A	4.1	102.2	0.75	0.61	34.0
12	R2	210	0.7	0.505	3.2	LOS A	4.1	102.2	0.75	0.61	33.3
Approach		441	0.7	0.505	3.2	LOS A	4.1	102.2	0.75	0.61	33.7
All Vehicles		1564	0.7	0.609	3.3	LOS A	5.9	149.0	0.76	0.61	34.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option is selected.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Appendix E: Crash Data

YEAR 2013

Crash Data for Minnesota Park Road Improvements Stage 0 Traffic Study

Hammond, Louisiana

ID	Location	Latitude	Longitude	Property Damage	Fatality	Injury	Number of Fatality	Number of Injury	Crash Date	Manner of Collision	Weather	Hour	Alcohol
1	Intersection	30.484684	-90.448315	1	0	0	0	0	12/20/13	rear end	dry	12	No
2	Intersection	30.484684	-90.448316	1	0	0	0	0	12/31/13	rear end	wet	22	No
1	Segment 2	30.485305	-90.448306	1	0	0	0	0	06/27/13	non collision with motor vehicle	dry	20	No
1	Segment 3	30.483534	-90.44831	1	0	0	0	0	04/13/13	rear end	dry	20	No
2	Segment 3	30.484134	-90.448313	1	0	0	0	0	08/23/13	left turn opposite dir	dry	13	No

Source: Regional Planning Commission

This document is prepared solely for the purpose of identifying, evaluating and planning safety improvements on public roads and is therefore exempt from discovery or admission into evidence pursuant to 23 U.S.C. 409.

YEAR 2014

Crash Data for Minnesota Park Road Improvements Stage 0 Traffic Study

Hammond, Louisiana

ID	Location	Latitude	Longitude	Property Damage	Fatality	Injury	Number of Fatality	Number of Injury	Crash Date	Manner of Collision	Weather	Hour	Alcohol
1	Intersection	30.484657	-90.448315	1	0	0	0	0	01/23/14	rear end	dry	24	No
2	Intersection	30.484657	-90.448315	1	0	0	0	0	02/10/14	rear end	dry	16	No
3	Intersection	30.484684	-90.448346	1	0	0	0	0	03/28/14	left turn same dir	dry	16	No
4	Intersection	30.484683	-90.448505	1	0	0	0	0	04/30/14	rear end	dry	13	No
5	Intersection	30.484684	-90.448346	1	0	0	0	0	05/28/14	rear end	wet	12	No
6	Intersection	30.484684	-90.448442	1	0	0	0	0	08/09/14	rear end	dry	13	No
7	Intersection	30.484629	-90.448314	1	0	0	0	0	10/02/14	left turn opposite dir	dry	8	No
8	Intersection	30.484684	-90.448346	1	0	0	0	0	10/10/14	rear end	dry	21	No
9	Intersection	30.484684	-90.448378	1	0	0	0	0	11/14/14	rear end	dry	19	No
10	Intersection	30.484684	-90.44841	1	0	0	0	0	11/22/14	other	dry	11	No
11	Intersection	30.484683	-90.448518	1	0	0	0	0	12/12/14	rear end	dry	18	No
1	Segment 1	30.48481	-90.454764	1	0	0	0	0	11/14/14	Sideswipe Same Direction	dry	20	No

Source: Regional Planning Commission

YEAR 2015

Crash Data for Minnesota Park Road Improvements Stage 0 Traffic Study

Hammond, Louisiana

ID	Location	Latitude	Longitude	Property Damage	Fatality	Injury	Number of Fatality	Number of Injury	Crash Date	Manner of Collision	Weather	Hour	Alcohol
1	Intersection	30.484657	-90.448315	1	0	0	0	0	01/07/15	rear end	dry	17	No
2	Intersection	30.484272	-90.448313	1	0	0	0	0	01/26/15	rear end	dry	19	No
3	Intersection	30.484725	-90.448314	1	0	0	0	0	01/29/15	rear end	dry	7	No
4	Intersection	30.484657	-90.448315	1	0	0	0	0	02/25/15	rear end	wet	16	No
5	Intersection	30.484657	-90.448315	1	0	0	0	0	03/16/15	rear end	dry	15	No
6	Intersection	30.484657	-90.448315	1	0	0	0	0	03/31/15	left turn angle	dry	15	No
7	Intersection	30.484657	-90.448315	1	0	0	0	0	08/09/15	rear end	wet	18	No
8	Intersection	30.484684	-90.448318	1	0	0	0	0	10/23/15	left turn opp dir	dry	21	No
9	Intersection	30.484683	-90.448476	1	0	0	0	0	10/27/15	rear end	dry	16	No
1	Segment 1	30.484691	-90.451816	1	0	0	0	0	03/02/15	rear end	dry	15	No
2	Segment 1	30.484676	-90.450799	1	0	0	0	0	05/08/15	rear end	dry	18	No
3	Segment 1	30.484677	-90.449990	1	0	0	0	0	08/03/15	rear end	dry	18	No
4	Segment 1	30.484677	-90.449990	1	0	0	0	0	10/03/15	other	dry	22	No
5	Segment 1	30.484673	-90.454760	1	0	0	0	0	10/26/15	rear end	wet	9	No

Source: Regional Planning Commission

LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

Guidelines for Conducting a Crash Data Analysis using the Number-Rate Method and Overrepresented Determination

January 2016

DESTINATION ZERO DEATHS

Statewide Average Crash Rates, Segments (2012-2014)

Highway Class	Number of Sections	Number Crashes Per Year	Total Miles	Total Mvm Per Year	Crashes Per Mile Per Year	Crashes per Mvm	Number Of Fatalities Per Year	Number Of Injuries Per Year
Rural 2-Lane	4423	8925.0	11829.74	9026.45	0.75	0.99	189.0	5420.0
Rural 4-Lane	154	190.3	135.03	312.84	1.41	0.61	5.0	104.0
Rural 4-Lane Divided	281	1188.7	562.27	2159.56	2.11	0.55	21.7	713.7
Rural 4-Lane Interstate	167	2597.7	502.42	5299.00	5.17	0.49	37.3	1405.7
Urban 2-Lane	1825	12657.3	1983.15	5263.31	6.38	2.40	96.0	6384.7
Urban 4-Lane	429	5382.3	234.34	1267.11	22.97	4.25	13.0	2413.0
Urban 4-Lane Divided	568	9477.0	521.11	4043.01	18.19	2.34	25.0	4256.7
Urban 4-Lane Interstate	201	4957.0	272.38	4954.41	18.20	1.00	36.3	2288.0
Rural 2-Lane Cont Turn	15	14.7	10.55	18.08	1.39	0.81	0.0	9.3
Urban 2-Lane Cont Turn	49	378.3	30.52	115.58	12.40	3.27	0.7	174.7
Rural 4-Lane Cont Turn	64	141.7	61.58	249.53	2.30	0.57	2.3	77.0
Urban 4-Lane Cont Turn	265	5903.0	207.14	1523.97	28.50	3.87	13.0	2645.3
Rural 6-Lane	6	4.0	1.14	2.35	3.51	1.70	0.0	1.3
Urban 6-Lane	132	3015.3	73.23	904.82	41.18	3.33	5.7	1224.3
Rural 6-Lane Interstate	9	268.7	30.41	545.74	8.83	0.49	6.0	159.3
Urban 6-Lane Interstate	92	4951.0	89.58	2909.53	55.27	1.70	16.7	2503.7
Urban Other Freeways	36	2249.3	49.40	848.31	45.53	2.65	3.0	969.7
Total	8716	62301.3	16593.99	39443.60	3.75	1.58	470.7	30750.4

(Source: LADOTD Highway Safety Section)

Statewide Average Crash Rates, Signalized Intersections (2012-2014)

Highway Class	Number Of Locations	Number Of Crashes	Million Vehicles	Crashes Per Location	Crashes per MV	Number Of Fatalities	Number Of Injuries
Rural 2-Lane	34	124.3	164.44	3.66	0.76	0	63
Rural 4-Lane	9	26	36.72	2.89	0.71	0	15.7
Rural 4-Lane Divided	20	123	168.75	6.15	0.73	0.7	79.7
Urban 2-Lane	323	1712	2692.2	5.3	0.64	1	859
Urban 4-Lane	441	2974.3	4393.93	6.74	0.68	3	1608.7
Urban 4-Lane Divided	412	3942.7	5682.26	9.57	0.69	5.7	2047.7

Rural 2-Lane Cont Turn	2	6.3	5.31	3.17	1.19	0	2.3
Urban 2-Lane Cont Turn	35	294.3	272.75	8.41	1.08	0.7	162
Rural 4-Lane Cont Turn	6	18.7	48.51	3.11	0.38	0	12.7
Urban 4-Lane Cont Turn	273	2575.7	3629.19	9.43	0.71	2.7	1114.7
Urban 6-Lane	194	1775	3315.57	9.15	0.54	2	931.3
Urban Other Freeways	48	632.7	2138.75	13.18	0.3	0.3	276
Rural Interstate Exit	1	8.7	7.26	8.67	1.19	0	10.3
Urban Interstate Exit	182	3505.7	2220.28	19.26	1.58	4.7	1511.3
Total	1980	17719.4	24775.92	8.95	0.72	20.8	8694.4

(Source: LADOTD Highway Safety Section)

Statewide Average Crash Rates, Non-Signalized Intersections (2012-2014)

Highway Class	Number Of Locations	Number Of Crashes	Million Vehicles	Crashes Per Location	Crashes per MV	Number Of Fatalities	Number Of Injuries
Rural 2-Lane	126	353.3	442.82	2.8	0.8	3.3	285
Rural 4-Lane	12	38.7	65.19	3.22	0.59	0.7	37.7
Rural 4-Lane Divided	32	128.7	216.45	4.02	0.59	1.7	111.3
Urban 2-Lane	482	1746.3	3061.01	3.62	0.57	5	897.7
Urban 4-Lane	343	1161	3375.89	3.38	0.34	2.3	711
Urban 4-Lane Divided	376	1610.7	4722.9	4.28	0.34	9	959.3
Rural 2-Lane Cont Turn	1	2	1.2	2	1.67	0	1
Urban 2-Lane Cont Turn	20	79.3	129.38	3.97	0.61	0.3	42.7
Rural 4-Lane Cont Turn	8	28	44.24	3.5	0.63	0	23.3
Urban 4-Lane Cont Turn	227	836.7	3074.17	3.69	0.27	2.3	418.3
Urban 6-Lane	203	872	3792.84	4.3	0.23	3.7	496.3
Urban Other Freeways	44	193	1388.78	4.39	0.14	0	109.7
Rural Interstate Exit	17	79.3	94.05	4.67	0.84	0	48
Urban Interstate Exit	221	1626	2567.11	7.36	0.63	4.3	763
Total	2112	8755	22976.03	4.15	0.38	32.6	4904.3

(Source: LADOTD Highway Safety Section)

Statewide Average Crash Rates, Spots (2012-2014)

Highway Class	Number Of Locations	Number Of Crashes	Million Vehicles	Crashes Per Location	Crashes per MV	Number Of Fatalities	Number Of Injuries
Rural 2-Lane	135	361.3	396.02	2.68	0.91	3.3	187.3
Rural 4-Lane	6	12.7	26.1	2.11	0.49	0	4.7
Rural 4-Lane Divided	70	195.7	520.86	2.8	0.38	2	105
Rural 4-Lane Interstate	224	571	3820.56	2.55	0.15	5.3	313.7
Urban 2-Lane	1612	6071.3	8490.72	3.77	0.72	16	2638
Urban 4-Lane	919	4363.7	6615.95	4.75	0.66	7.7	1894
Urban 4-Lane Divided	1488	7418.3	16681.34	4.99	0.44	12.7	3188.7
Urban 4-Lane Interstate	794	3518.3	18726.36	4.43	0.19	19.3	1571.7
Rural 2-Lane Cont Turn	56	245.3	289.12	4.38	0.85	0.3	106
Urban 2-Lane Cont Turn	10	25.7	77.38	2.57	0.33	0	7.7
Rural 4-Lane Cont Turn	819	5148	8019.78	6.29	0.64	8	2235.3
Urban 4-Lane Cont Turn	432	2756.7	5753.2	6.38	0.48	4.7	1107.7
Rural 6-Lane	40	105.7	761.94	2.64	0.14	4.3	53
Urban 6-Lane	593	4699.7	21395.13	7.93	0.22	14	2383.3
Rural 6-Lane Interstate	170	2054	4920.89	12.08	0.42	2	875.3
Urban 6-Lane Interstate	30	100.3	179.51	3.34	0.56	0.3	47.7
Urban Other Freeways	31	118.7	162.28	3.83	0.73	0	48.7
Total	7429	37766.4	96837.14	5.08	0.39	99.9	16767.8

(Source: LADOTD Highway Safety Section)

Appendix F: Spot Speed Study

Spot Speed Study

Location:	Minnesota Park		
Report #:	0031	Time of Study:	1:30 PM
Date:	3/23/2017	Weather:	Fair
Direction of Travel:	Eastbound	Road Conditions:	Dry
Route:		Parish:	Tangipahoa
Control Section:		Posted Speed Limit	35

Mean (Average):	33	50th Percentile:	33
Mode:	31	85th Percentile:	36
Median:	33	95th Percentile:	39
Bottom of 10 MPH Pace Speed	29	No. of Observations:	100
Top of 10 MPH Pace Speed:	38	% of Vehicles in Pace Range:	87%

Speed	Freq.	Percent	Cumulative
15	0	0.00%	0.00%
16	0	0.00%	0.00%
17	0	0.00%	0.00%
18	0	0.00%	0.00%
19	0	0.00%	0.00%
20	0	0.00%	0.00%
21	0	0.00%	0.00%
22	0	0.00%	0.00%
23	0	0.00%	0.00%
24	0	0.00%	0.00%
25	0	0.00%	0.00%
26	1	1.00%	1.00%
27	3	3.00%	4.00%
28	2	2.00%	6.00%
29	4	4.00%	10.00%
30	11	11.00%	21.00%
31	13	13.00%	34.00%
32	13	13.00%	47.00%
33	13	13.00%	60.00%
34	11	11.00%	71.00%
35	7	7.00%	78.00%
36	7	7.00%	85.00%
37	4	4.00%	89.00%
38	4	4.00%	93.00%
39	3	3.00%	96.00%
40	2	2.00%	98.00%
41	2	2.00%	100.00%
42	0	0.00%	100.00%
43	0	0.00%	100.00%
44	0	0.00%	100.00%

Speed	Freq.	Percent	Cumulative
45	0	0.00%	100.00%
46	0	0.00%	100.00%
47	0	0.00%	100.00%
48	0	0.00%	100.00%
49	0	0.00%	100.00%
50	0	0.00%	100.00%
51	0	0.00%	100.00%
52	0	0.00%	100.00%
53	0	0.00%	100.00%
54	0	0.00%	100.00%
55	0	0.00%	100.00%
56	0	0.00%	100.00%
57	0	0.00%	100.00%
58	0	0.00%	100.00%
59	0	0.00%	100.00%
60	0	0.00%	100.00%
61	0	0.00%	100.00%
62	0	0.00%	100.00%
63	0	0.00%	100.00%
64	0	0.00%	100.00%
65	0	0.00%	100.00%
66	0	0.00%	100.00%
67	0	0.00%	100.00%
68	0	0.00%	100.00%
69	0	0.00%	100.00%
70	0	0.00%	100.00%
71	0	0.00%	100.00%
72	0	0.00%	100.00%
73	0	0.00%	100.00%
74	0	0.00%	100.00%

Spot Speed Study

Location:	S Range Road		
Report #:	0031	Time of Study:	1:45 PM
Date:	3/23/2017	Weather:	Fair
Direction of Travel:	Northbound	Road Conditions:	Dry
Route:		Parish:	Tangipahoa
Control Section:		Posted Speed Limit	35

Mean (Average):	39	50th Percentile:	39
Mode:	41	85th Percentile:	44
Median:	39	95th Percentile:	47
Bottom of 10 MPH Pace Speed	35	No. of Observations:	100
Top of 10 MPH Pace Speed:	44	% of Vehicles in Pace Range:	70%

Speed	Freq.	Percent	Cumulative
15	0	0.00%	0.00%
16	0	0.00%	0.00%
17	0	0.00%	0.00%
18	0	0.00%	0.00%
19	0	0.00%	0.00%
20	0	0.00%	0.00%
21	0	0.00%	0.00%
22	0	0.00%	0.00%
23	0	0.00%	0.00%
24	0	0.00%	0.00%
25	0	0.00%	0.00%
26	1	1.00%	1.00%
27	1	1.00%	2.00%
28	2	2.00%	4.00%
29	1	1.00%	5.00%
30	2	2.00%	7.00%
31	4	4.00%	11.00%
32	0	0.00%	11.00%
33	4	4.00%	15.00%
34	3	3.00%	18.00%
35	6	6.00%	24.00%
36	5	5.00%	29.00%
37	7	7.00%	36.00%
38	11	11.00%	47.00%
39	7	7.00%	54.00%
40	5	5.00%	59.00%
41	11	11.00%	70.00%
42	5	5.00%	75.00%
43	4	4.00%	79.00%
44	9	9.00%	88.00%

Speed	Freq.	Percent	Cumulative
45	2	2.00%	90.00%
46	3	3.00%	93.00%
47	2	2.00%	95.00%
48	1	1.00%	96.00%
49	4	4.00%	100.00%
50	0	0.00%	100.00%
51	0	0.00%	100.00%
52	0	0.00%	100.00%
53	0	0.00%	100.00%
54	0	0.00%	100.00%
55	0	0.00%	100.00%
56	0	0.00%	100.00%
57	0	0.00%	100.00%
58	0	0.00%	100.00%
59	0	0.00%	100.00%
60	0	0.00%	100.00%
61	0	0.00%	100.00%
62	0	0.00%	100.00%
63	0	0.00%	100.00%
64	0	0.00%	100.00%
65	0	0.00%	100.00%
66	0	0.00%	100.00%
67	0	0.00%	100.00%
68	0	0.00%	100.00%
69	0	0.00%	100.00%
70	0	0.00%	100.00%
71	0	0.00%	100.00%
72	0	0.00%	100.00%
73	0	0.00%	100.00%
74	0	0.00%	100.00%

Spot Speed Study

Location:	S Range Road		
Report #:	0031	Time of Study:	2:00 PM
Date:	3/23/2017	Weather:	Fair
Direction of Travel:	Southbound	Road Conditions:	Dry
Route:		Parish:	Tangipahoa
Control Section:		Posted Speed Limit	35

Mean (Average):	35	50th Percentile:	35
Mode:	38	85th Percentile:	40
Median:	35	95th Percentile:	44
Bottom of 10 MPH Pace Speed	31	No. of Observations:	100
Top of 10 MPH Pace Speed:	40	% of Vehicles in Pace Range:	68%

Speed	Freq.	Percent	Cumulative
15	0	0.00%	0.00%
16	0	0.00%	0.00%
17	0	0.00%	0.00%
18	0	0.00%	0.00%
19	0	0.00%	0.00%
20	0	0.00%	0.00%
21	0	0.00%	0.00%
22	0	0.00%	0.00%
23	1	1.00%	1.00%
24	0	0.00%	1.00%
25	0	0.00%	1.00%
26	3	3.00%	4.00%
27	0	0.00%	4.00%
28	3	3.00%	7.00%
29	3	3.00%	10.00%
30	7	7.00%	17.00%
31	8	8.00%	25.00%
32	6	6.00%	31.00%
33	7	7.00%	38.00%
34	6	6.00%	44.00%
35	11	11.00%	55.00%
36	6	6.00%	61.00%
37	5	5.00%	66.00%
38	11	11.00%	77.00%
39	2	2.00%	79.00%
40	6	6.00%	85.00%
41	1	1.00%	86.00%
42	5	5.00%	91.00%
43	1	1.00%	92.00%
44	4	4.00%	96.00%

Speed	Freq.	Percent	Cumulative
45	0	0.00%	96.00%
46	3	3.00%	99.00%
47	0	0.00%	99.00%
48	0	0.00%	99.00%
49	1	1.00%	100.00%
50	0	0.00%	100.00%
51	0	0.00%	100.00%
52	0	0.00%	100.00%
53	0	0.00%	100.00%
54	0	0.00%	100.00%
55	0	0.00%	100.00%
56	0	0.00%	100.00%
57	0	0.00%	100.00%
58	0	0.00%	100.00%
59	0	0.00%	100.00%
60	0	0.00%	100.00%
61	0	0.00%	100.00%
62	0	0.00%	100.00%
63	0	0.00%	100.00%
64	0	0.00%	100.00%
65	0	0.00%	100.00%
66	0	0.00%	100.00%
67	0	0.00%	100.00%
68	0	0.00%	100.00%
69	0	0.00%	100.00%
70	0	0.00%	100.00%
71	0	0.00%	100.00%
72	0	0.00%	100.00%
73	0	0.00%	100.00%
74	0	0.00%	100.00%

Appendix B
Meeting Summaries

MEETING SUMMARY

STAGE 0 FEASIBILITY STUDY
MINNESOTA PARK ROAD, ICRR TO RANGE ROAD
SAFETY AND CAPACITY STUDY
TANGIPAHOA PARISH
RPC Task ST-1.17
RCLC No. 717-01

Meeting Date: January 19, 2017

ATTENDEES: Jeff Roesel, RPC; Nik Richard, RPC; Maurice Jordan, TPC; David Vial, TPC; Andy Currier, Tangipahoa Parish Government; Frank Zemmer, RCLC; Angela KG Eymard, RCLC; Arthur Ledet, RCLC; Robby Miller, Tangipahoa Parish Government; & Brin Ferlito, Vectura Consulting Services.

The purpose of this meeting was to discuss current conditions and proposed improvements along the Minnesota Park Road corridor from ICRR to Range Road with RPC, Tangipahoa Parish and other interested stakeholders.

1. Minnesota Park Road is a Federal Aid Network Road.

2. RPC to make crash data and aerial photo imagery available.

3. Tangipahoa Parish Government concerns: 1) do not like signal, since it is the only signal that TPG maintains. There are lengthy delays when maintenance is needed due to lead time in part ordering. Parish would like all-way stop or roundabout instead of signal, possible turning lanes at intersection, Two-way left turning lane for corridor, and sidewalks are important.

4. There is no recorded right-of-way. Tacit ROW is assumed 18” behind ditch for 50’ ROW.

5. The lot along Range Road at the intersection is for sale. The Naquin tract is possible for development.

6. Wish to improve capacity along Minnesota Park Road.

7. Development is area included apartment complex in construction and newly opened Summerfield Retirement Community..

8. For roundabout LADOTD EDSM may have to be followed.

9. Maurice Jordan is the point of contact for Tangipahoa Parish.

This document represents the RCLC's understanding of the issues discussed at the above dated meeting. If any party disagrees with the documentation contained herein, please make a written request to the Architect/Engineer so the meeting summary may be revised accordingly. Failure to notify RCLC within 7 days of receipt of this document shall indicate acceptance of the content herein.

I:\File Cabinet\71701 Minnesota Park Rd Stage 0\Meeting Summaries\Minnesota Park Road Meeting Summary 01192017.doc

RICHARD C. LAMBERT CONSULTANTS, L.L.C.

MEETING SUMMARY

STAGE 0 FEASIBILITY STUDY
MINNESOTA PARK ROAD, ICRR TO RANGE ROAD
SAFETY AND CAPACITY STUDY
TANGIPAHOA PARISH
RPC Task ST-1.17
RCLC No. 717-01

Meeting Date: May 24, 2017

ATTENDEES: Walter Brooks, RPC; Jeff Roesel, RPC; Nik Richard, RPC; Maurice Jordan, TPG; Wesley Danna, TPG; Robby Miller, Tangipahoa Parish Government; Frank Zemmer, RCLC; Angela KG Eymard, RCLC; Arthur Ledet, RCLC.

The purpose of the Project Management Committee meeting was to discuss the draft report.

1. Recap of kick-off meeting.

2. Discussion over draft report and alternatives including description of complete streets.

3. Tangipahoa Parish Government wishes for us to do round-about with sidewalk on south side of Minnesota Park Road and to place property limes on maps.

4. RPC states that TPG would have to get ROW per federal standards. 4th leg of RAB could be used for access purposes.

5. RPC wishes for RCLC to go into more detail in the purpose and needs section of report including addressing Range Road backup. RCLC needs to state information about crashes and the problems with the roadway. RLCL needs to go into details about alternative 2 costing as much as alternative1, needing additional ROW with sidewalk installation, and not necessarily reducing crashes. RCLC needs to describe what RAB will do to improve intersection. RCLC needs to place page numbers on appendix, use new TPG logo, have federal claim statement on inside cover page, list state project #, and discuss recommendation of alternative 1 with south side sidewalk.

6. Next step is to set up meeting with LADOTD.

7. RPC wishes for RLCC to cost out alternative 1 with sidewalks along south side including exact costs for design of geotechnical, surveying, and engineering.

8. Range Road has a 60’ ROW per TPG.

9. ICRR contact is John Denning at 601-914-2658 or John.Denning@cn.ca.

10. Next meeting tentative with DOTD for 6/15/17.

This document represents the RCLC’s understanding of the issues discussed at the above dated meeting. If any party disagrees with the documentation contained herein, please make a written request to the Architect/Engineer so the meeting summary may be revised accordingly. Failure to notify RCLC within 7 days of receipt of this document shall indicate acceptance of the content herein.

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RICHARD C. LAMBERT CONSULTANTS, L.L.C.

TELEPHONE CONVERSATION SUMMARY

STAGE 0 FEASIBILITY STUDY
MINNESOTA PARK ROAD, ICRR TO RANGE ROAD
SAFETY AND CAPACITY STUDY
TANGIPAHOA PARISH
RPC Task ST-1.17
RCLC No. 717-01

Meeting Date: June 14, 2017

Call between Angela Eymard, RCLC and John Denning, Canadian National Railroad (601-914-2658).

The purpose of the telephone conversation was to discuss the proposed sidewalk along Minnesota Park Road that the Railroad crossing for design criteria.

1. A standard crossing agreement will be put in place between the Railroad and Tangipahoa Parish for any sidewalk crossing over the railroad similar to what the City of Hammond has in place now.

2. Plans must be submitted by the Engineer to Mr. Denning for review and approval.

3. Design criteria: the edge of the sidewalk must be 8' from the center of the railroad gate post.

4. The railroad advices against gates across the sidewalk. If a pedestrian gate is wanted by the Parish, an escape route for handicapped citizens must be created to escape the area blocked by the gates prior to the train approaching. The Amtrak train can reach speeds of up to 79mph along this line. The escape route can end up costing as much as $500,000 as other examples along this particular line have been constructed. Mr. Denning recommends signage instead of pedestrian gate.

This document represents the RCLC's understanding of the issues discussed at the above dated meeting. If any party disagrees with the documentation contained herein, please make a written request to the Architect/Engineer so the meeting summary may be revised accordingly. Failure to notify RCLC within 7 days of receipt of this document shall indicate acceptance of the content herein.

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MEETING SUMMARY

STAGE 0 FEASIBILITY STUDY
MINNESOTA PARK ROAD, ICRR TO RANGE ROAD
SAFETY AND CAPACITY STUDY
TANGIPAHOA PARISH
RPC Task ST-1.17
RCLC No. 717-01

Meeting Date: June 15, 2017

ATTENDEES: Walter Brooks, RPC; Jeff Roesel, RPC; Maurice Jordan, TPG; Robby Miller, Tangipahoa Parish Government; Frank Zemmer, RCLC; Angela KG Eymard, RCLC; Arthur Ledet, RCLC; Cristine Gowland, DOTD; Jennifer Branton, DOTD.

The purpose of the Project Management Committee meeting was to discuss the draft report with members of DOTD for their input.

1. Re-cap of history of project and prior meetings stressing the want to remove the signal at the Minnesota Park Road @ Range Road intersection.

2. Discussion of complete streets criteria, how 5' wide sidewalk on south side of roadway would be okay with Tangipahoa Parish Government, and what funding options could be used for construction.

3. Possible to remove traffic signal during roundabout construction if all way stop signs have appropriate level of service at intersection.

4. Incorporate any DOTD comments, modify cost estimates as costs seem too low, and add meeting notes and telephone conversation notes to final report which is due Friday, June 30th.

This document represents the RCLC's understanding of the issues discussed at the above dated meeting. If any party disagrees with the documentation contained herein, please make a written request to the Architect/Engineer so the meeting summary may be revised accordingly. Failure to notify RCLC within 7 days of receipt of this document shall indicate acceptance of the content herein.

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EMAIL SUMMARY

STAGE 0 FEASIBILITY STUDY
MINNESOTA PARK ROAD, ICRR TO RANGE ROAD
SAFETY AND CAPACITY STUDY
TANGIPAHOA PARISH
RPC Task ST-1.17
RCLC No. 717-01

Meeting Date: June 22, 2017

Email between Arthur Ledet, RCLC and Gary Leblanc, DOTD follow up to telephone conversation.

The purpose of the email was to follow up from a telephone conversation which discussed the complete streets design criteria.

1. See attached email.

This document represents the RCLC's understanding of the issues discussed at the above dated meeting. If any party disagrees with the documentation contained herein, please make a written request to the Architect/Engineer so the meeting summary may be revised accordingly. Failure to notify RCLC within 7 days of receipt of this document shall indicate acceptance of the content herein.

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From: Arthur Ledet
To: Gary Leblanc
Cc: Frank Zemmer; aeymard@rclconsultants.com
Subject: Minnesota Park Complete Street
Date: Thursday, June 22, 2017 2:47:34 PM

Gary,

We spoke a few weeks ago regarding the complete street policy and how it would apply to the Minnesota Park Road Stage 0 Feasibility Study we are currently working on for the New Orleans Regional Planning Commission. Minnesota Park Road is currently a two lane undivided roadway that connects US 51 to Range Rd in Tangipahoa Parish. The Parish and the RPC are working on improving the Minnesota Park Corridor and the intersection of Minnesota Park at Range Rd.

In an effort to meet LADOTD guidelines, RCLC in conjunction with Tangipahoa Parish and The RPC are currently proposing a sidewalk along this corridor. In order to accommodate a sidewalk on one side of Minnesota Park, subsurface drainage would have to be installed, however this improvement alone does not accommodate all the complete street requirements.

Additional alternatives were considered including a shared use path but later deemed not feasible due to the additional right-of-way needed from multiple land owners. Another option was to construct sidewalks on both sides of Minnesota Park Rd since it could fit within the right-of-way but required subsurface drainage on both sides due to the limited right-of-way. Due to the cost of these options and the additional required right-of-way from multiple land owners, it was determined that the sidewalk on one side of the roadway with subsurface drainage was the most feasible option and would be an improvement to this corridor but would not completely meet the LADOTD Complete Streets Policy.

As discussed, even though installing a sidewalk does no accommodate all the complete street requirements, it would be an would be an improvement to this corridor and a viable option to bring the street closer to the complete street concept.

Thanks again for your time and input.

Arthur Ledet, E.I.
Richard C. Lambert Consultants, LLC
900 West Causeway Approach
Mandeville, LA 70471
Phone: 985.727.4440 Fax: 985.727.4447
Email: aledet@rclconsultants.com
ShareFile Upload Link

Appendix C
Existing Roadway and Intersection Aerial Geometry

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RCL
CONSULTANTS, L.L.C.
Planning
•
Architecture
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Engineering
•
Construction Management

0 50' 100'

MINNESOTA PARK RD - EXISTING INTERSECTION

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RCL
CONSULTANTS, L.L.C.
Planning
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Architecture
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Engineering
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Construction Management

0 125' 250'

MINNESOTA PARK RD - EXISTING ROADWAY

Appendix D
Roadway Renderings Presented from Driver's Perspective

MINNESOTA PARK ROAD AT RANGE ROAD
LOOKING EAST ALL-WAY STOP SCENARIO

FOR CONCEPTUAL USE ONLY

RICHARD C. LAMBERT CONSULTANTS, LLC

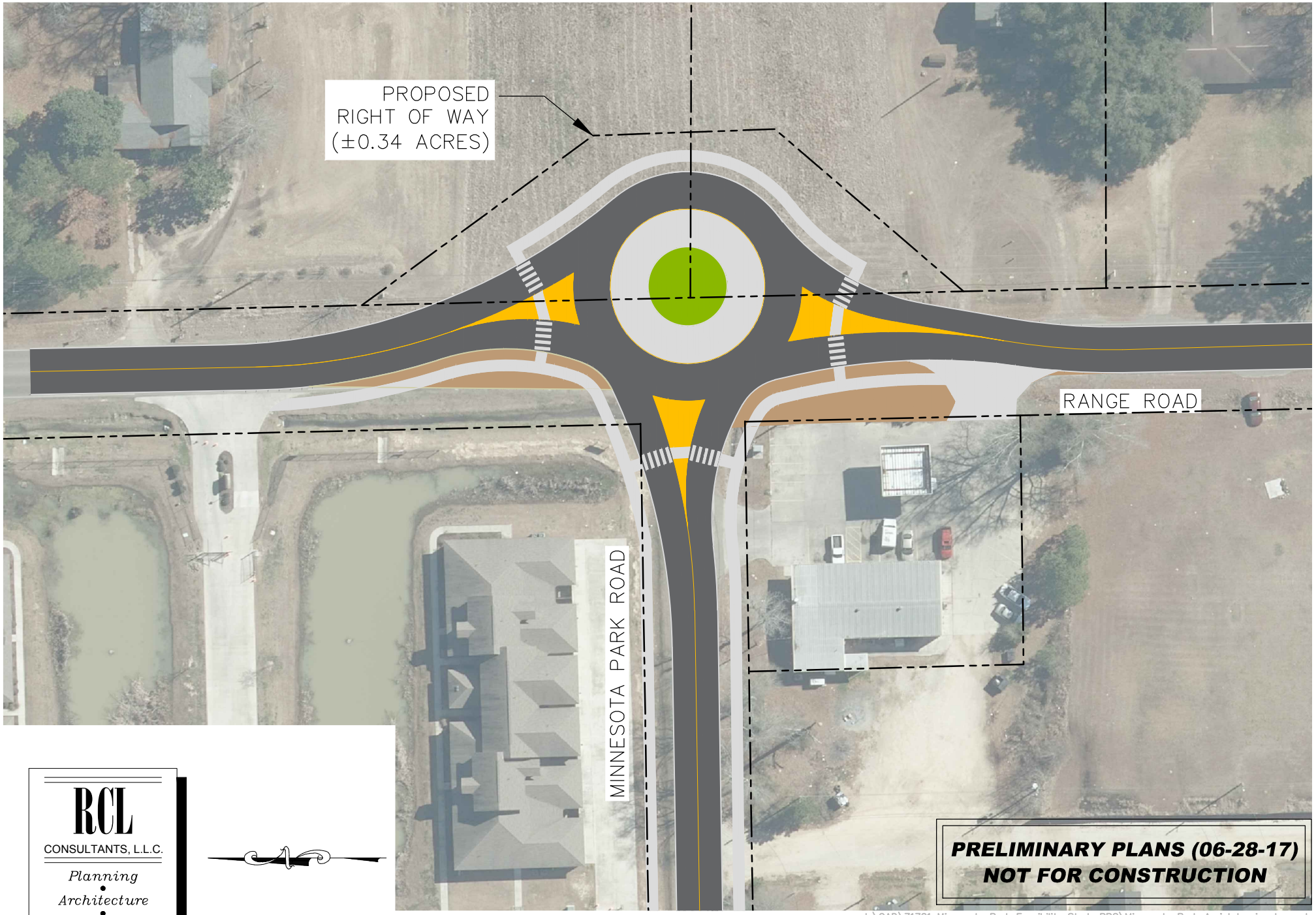
RANGE ROAD AT MINNESOTA PARK ROAD
LOOKING NORTH ALL-WAY STOP SCENARIO
FOR CONCEPTUAL USE ONLY
RICHARD C. LAMBERT CONSULTANTS, LLC

MINNESOTA PARK ROAD AT RANGE ROAD
LOOKING EAST (ALTERNATE 2)
FOR CONCEPTUAL USE ONLY
RICHARD C. LAMBERT CONSULTANTS, LLC

RANGE ROAD AT MINNESOTA PARK ROAD
LOOKING NORTH (ALTERNATE 2)
FOR CONCEPTUAL USE ONLY
RICHARD C. LAMBERT CONSULTANTS, LLC

MINNESOTA PARK ROAD
LOOKING WEST (ALTERNATES 3A AND 3B)
FOR CONCEPTUAL USE ONLY
RICHARD C. LAMBERT CONSULTANTS, LLC

Appendix E
Proposed Roadway and Intersection Aerial Geometry



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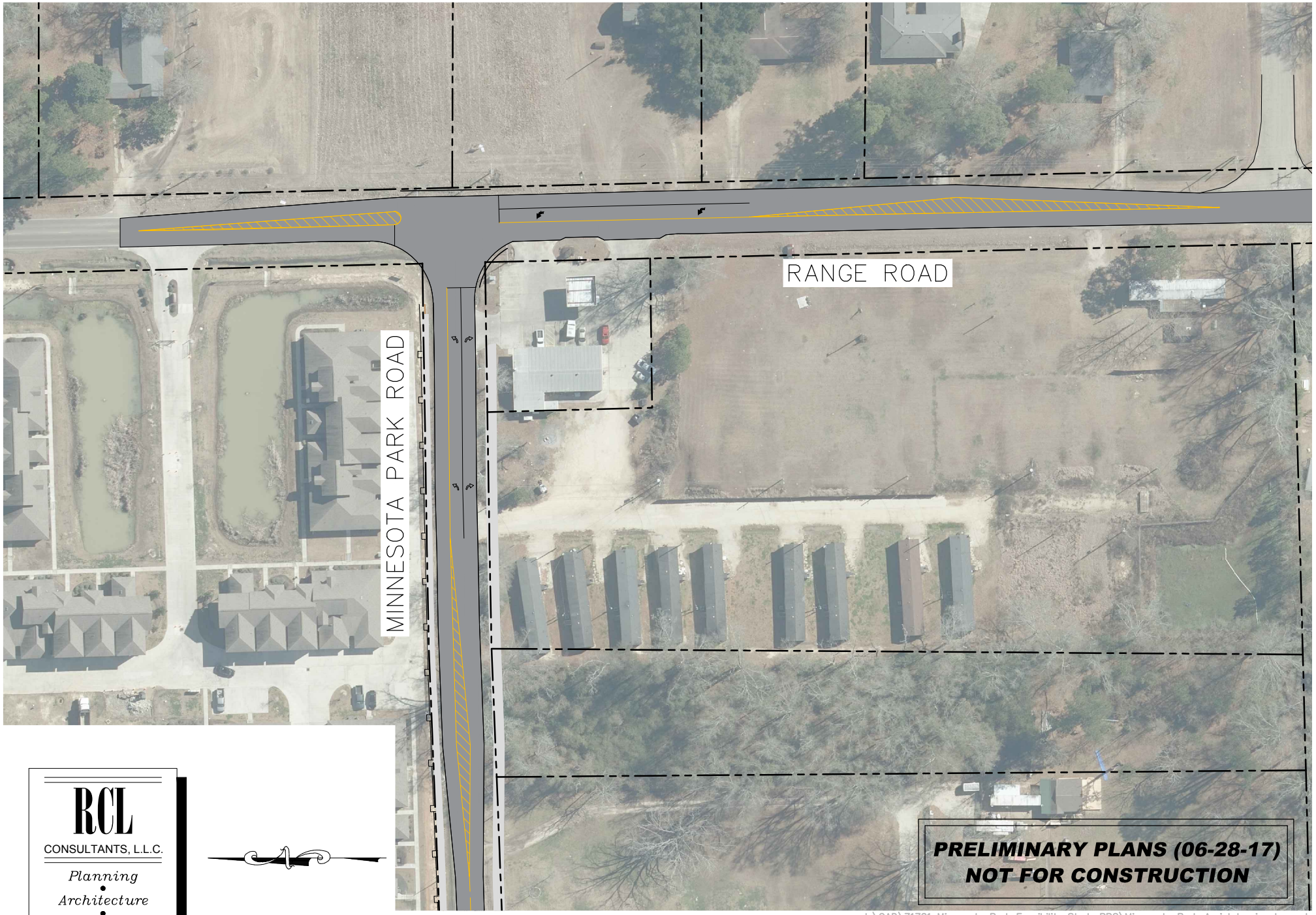
RCL
CONSULTANTS, L.L.C.
Planning
Architecture
Engineering
Construction Management

0 30' 60'

MINNESOTA PARK RD - ALTERNATIVE 1



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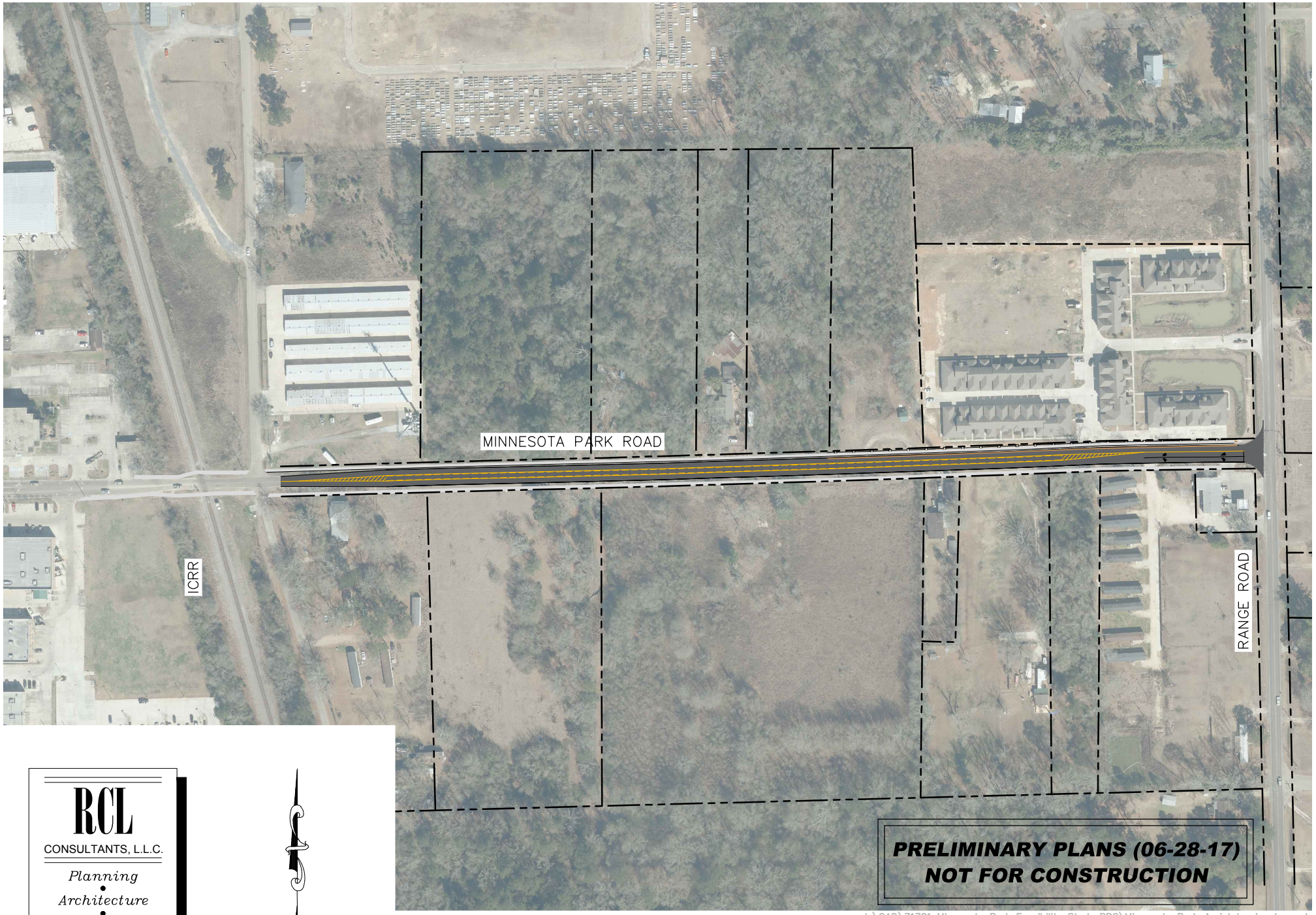
RCL
CONSULTANTS, L.L.C.
Planning
Architecture
Engineering
Construction Management

0 50' 100'

MINNESOTA PARK RD - ALTERNATIVE 2



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Architecture
Engineering
Construction Management

MINNESOTA PARK RD - ALTERNATIVE 3A

RCL
CONSULTANTS, L.L.C.
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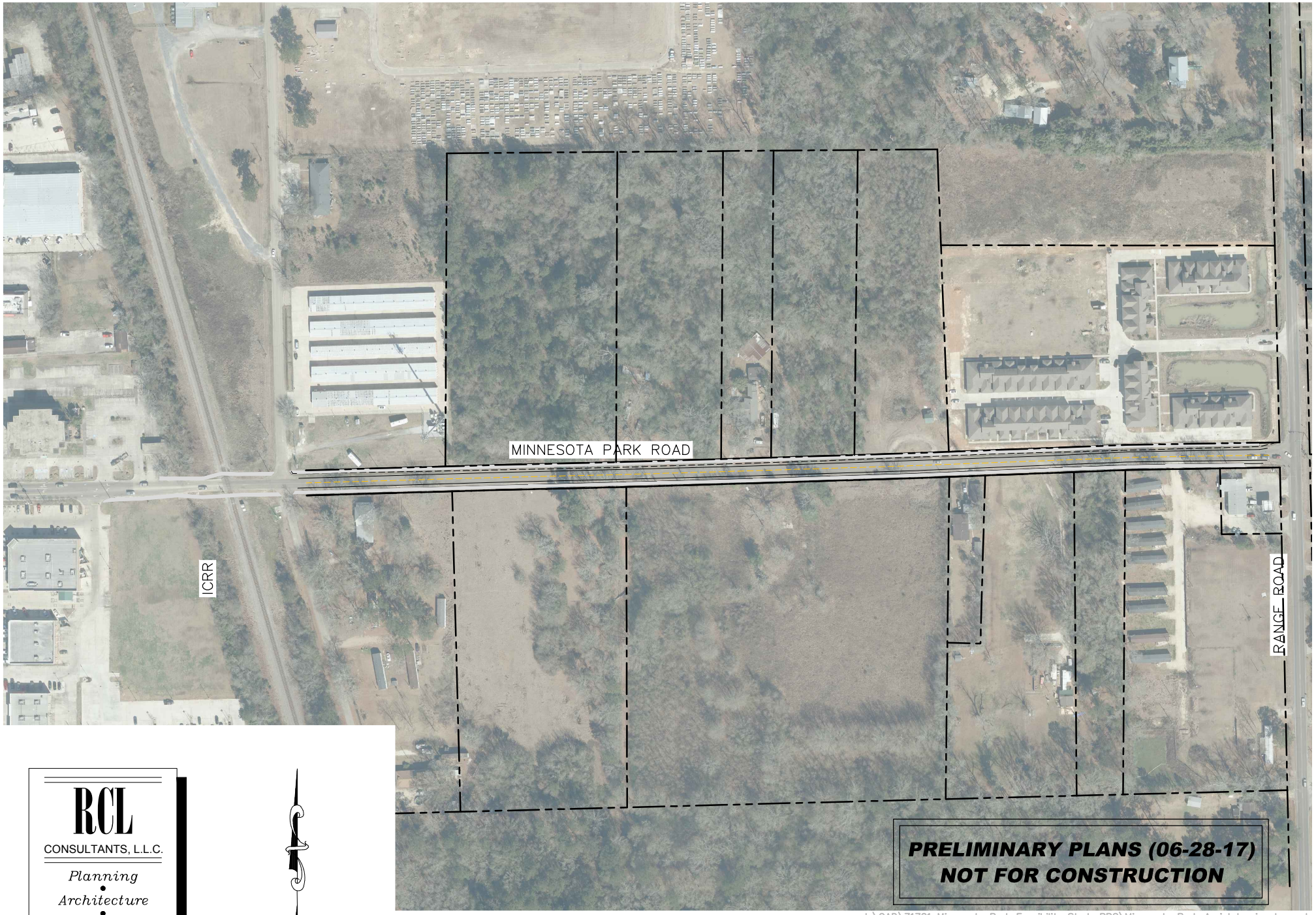
Construction Management

MINNESOTA PARK RD - ALTERNATIVE 3B



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CONSULTANTS, L.L.C.
Planning
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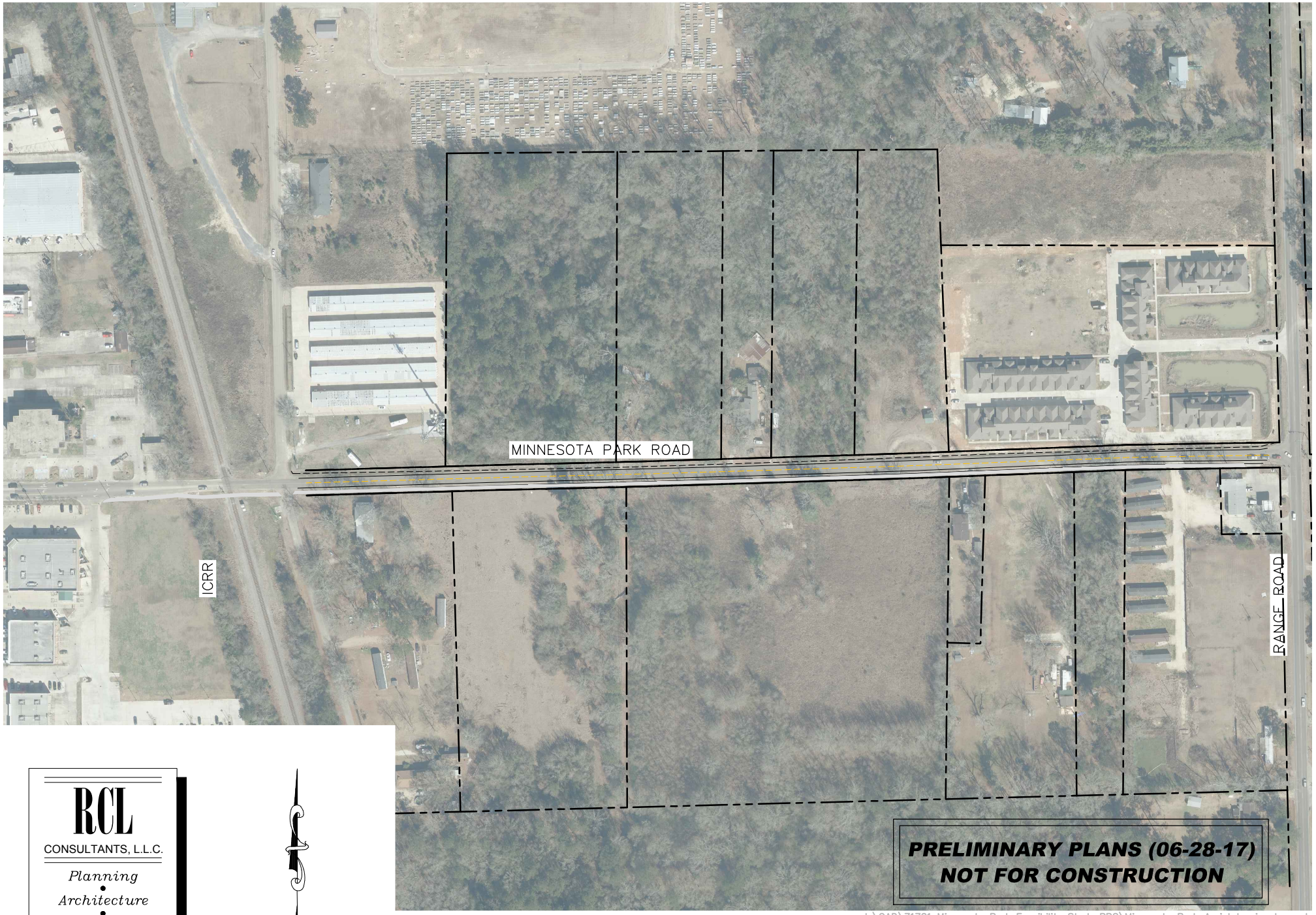
Construction Management

0 125' 250'

MINNESOTA PARK RD - ALTERNATIVE 4A



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RCL
CONSULTANTS, L.L.C.
Planning
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Architecture
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Engineering
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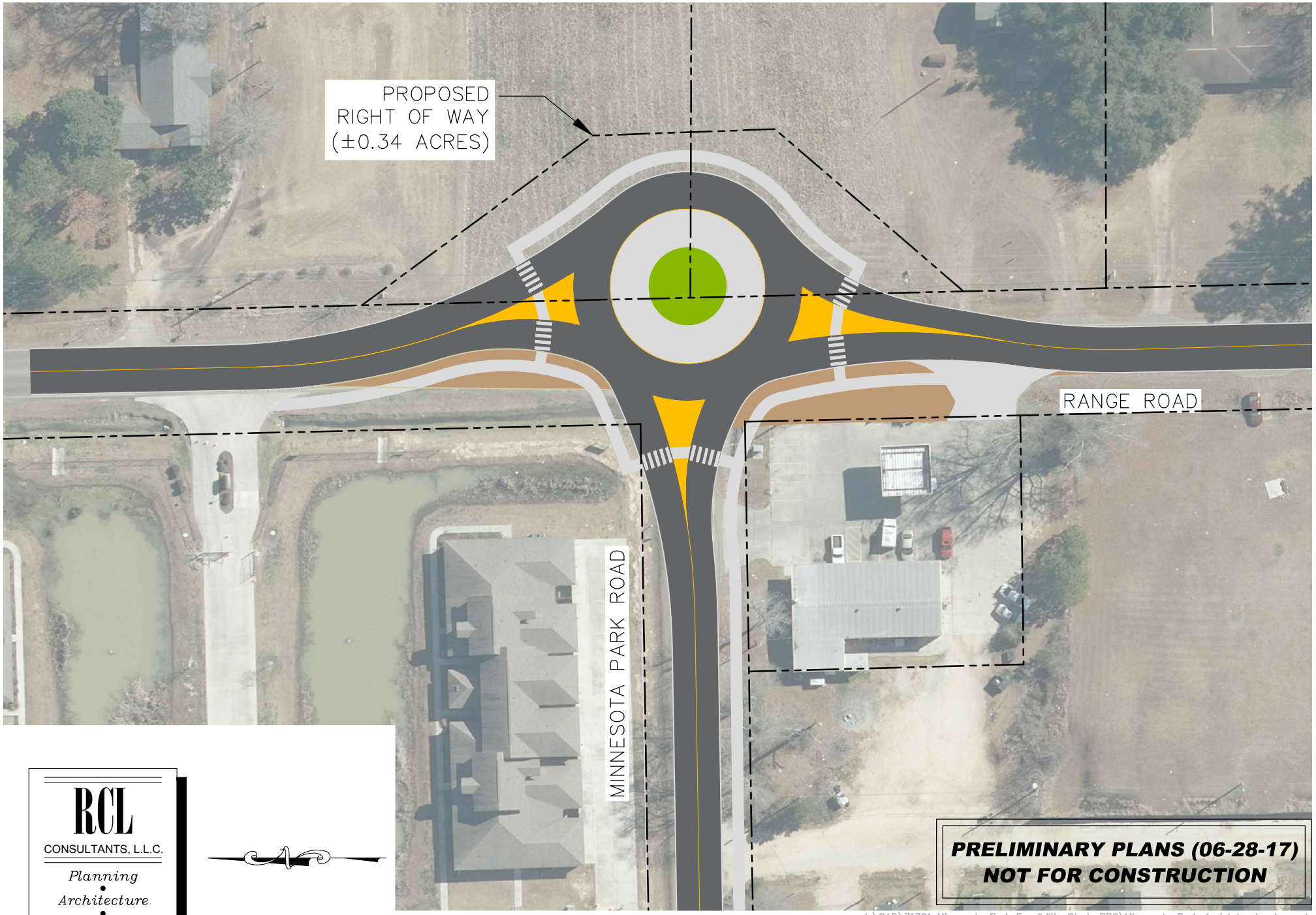
Construction Management

0 125' 250'

MINNESOTA PARK RD - ALTERNATIVE 4B



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RCL
CONSULTANTS, L.L.C.
Planning
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Architecture
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Engineering
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Construction Management

0 30' 60'

MINNESOTA PARK RD - ALTERNATIVE 5

Appendix F
Preliminary Scope and Budget Checklist, Environmental Checklist and Opinion of Construction Cost

STAGE 0
Preliminary Scope and Budget Checklist

A. Project Background

District 62 Parish Tangipahoa

Route Minnesota Park Road Control Section none

Begin Log Mile _____ End Log Mile _____

Project Category (Safety, Capacity, etc.): Safety

Date Study Completed: May 5, 2017

Describe the existing facility:

Functional classification: Major Urban Collector Number and width of lanes: 2 – 11' wide

Shoulder width and type: None Mode: _____

Access control: _____ ADT: _____ Posted Speed: 35 MPH

Describe any existing pedestrian facilities (ADA compliance should be considered for all improvements that include pedestrian facilities): None

Describe the adjacent land use: Residential and commercial

Who is the sponsor of the study? Tangipahoa Parish Government

List study team members: Richard C. Lambert Consultants, LLC, Vectura Consulting Services, LLC, Tangipahoa Parish Government, Regional Planning Commission

Will this project be adding miles to the state highway system (new alignment, new facility)? If yes, has a transfer of ownership been initiated with the appropriate entity? No

Are there recent, current or near future planning studies or projects in the vicinity? No

If yes, please describe the relationship of this project to those studies/projects. N/A

Provide a brief chronology of these planning study activities: N/A

B. Purpose and Need

State the Purpose (reason for proposing the project) and Need (problem or issue)/Corridor Vision and a brief scope of the project. Also, identify any additional goals and objectives for the project.

Corridor and intersection improvements to enhance capacity, increase safety, and minimize delay along existing two lane roadway. Determine feasibility of various suggested improvements.

C. Agency Coordination

Provide a brief synopsis of coordination with federal, tribal, state and local environmental, regulatory and resource agencies.

Meetings with input from various officials from Tangipahoa Parish and the RPC to gather information on the project.

What transportation agencies were included in the agency coordination effort?

Regional Planning Commission

Describe the level of participation of other agencies and how the coordination effort was implemented.

Regional Planning Commission will review study and traffic considerations. Tangipahoa Parish will review study to determine feasibility of various suggested alternates.

C. Agency Coordination (Continued)

What steps will need to be taken with each agency during NEPA scoping?
As these improvements are required to provide increased safety on an existing route without any foreseen significant environmental, cultural, or historical impacts, it is anticipated that a D list Categorical Exclusion will be granted.

D. Public Coordination

Provide a synopsis of the coordination effort with the public and stakeholders; include specific timelines, meeting details, agendas, sign-in sheets, etc. (if applicable).
Recommendations and concerns from the public and other stakeholders will be documented. It is not anticipated that a public meeting will be necessary.

E. Range of Alternatives – Evaluation and Screening

Give a description of the project concept for each alternative studied.

What are the major design features of the proposed facility (attach aerial photo with concept layout, if applicable).
Roadway improvements implementing either a roundabout at the intersection of Minnesota Park Road and Range Road or adding additional turning lanes at the intersection. Possible alternatives also include pavement widening for the inclusion of a two way left turn lane and sidewalks for pedestrian traffic.

Will design exceptions be required? None are anticipated at this time.

What impact would this project have on freight movements? None are anticipated as the design for the roundabout would accommodate WB-67 vehicle movements.

Does this project cross or is it near a railroad crossing? The project ends at the ICRR right-of-way.

DOTD's "Complete Streets" policy should be taken into consideration. Per the policy, any exception for not accommodating bicyclists, pedestrians and transit users will require the approval of the DOTD chief engineer. For exceptions on Federal-aid highway projects, concurrence from FHWA must also be obtained. In addition any exception in an urbanized area, concurrence from the MPO must also be obtained.

- Describe how the project will implement the policy or include a brief explanation of why implementing the policy would not be feasible. Due to the limited right-of-way, LADOTD"s complete streets policy implementation may be impractical.

How are Context Sensitive Solutions being incorporated into the project? Context Sensitive Solutions will be considered throughout the design processes.

Was the DOTD's "Access Management" policy taken into consideration? If so, describe how. A 3-lane section with a two way left turn lane was considered, but due to limited right-of-way, access management may be impractical.

Were any safety analyses performed? If so describe results. None at this time.

Are there any abnormal crash locations or overrepresented crashes within the project limits? Yes

E. Range of Alternatives – Evaluation and Screening (Continued)

What future traffic analyses are anticipated? SIDRA Analysis has been conducted.

Will fiber optics be required? If so, are there existing lines to tie into? No

Are there any future ITS/traffic considerations? No

What is the required Transportation Management Plan (TMP) level as defined by EDSM No. VI.1.1.8? Level 2
Please attach documentation required for Stage 0 for this level TMP.

Was Construction Transportation Management/Property Access taken into consideration? Yes

Were alternative construction methods considered to mitigate work zone impacts? Yes

Describe screening criteria used to compare alternatives and from what agency the criteria were defined.
N/A

Give an explanation for any alternative that was eliminated based on the screening criteria.
N/A

Which alternatives should be brought forward into NEPA and why? Each alternative can be reviewed during the NEPA process.

Did the public, stakeholders and agencies have an opportunity to comment during the alternative screening process? Yes

Describe any unresolved issues with the public, stakeholders and/or agencies.
None are known at this time.

F. Planning Assumptions and Analytical Methods

What is the forecast year used in the study? 2040

What method was used for forecasting traffic volumes? Volumes for future years were calculated using a growth rate of 1.53% obtained from the Regional Planning Commission from an email dated March 2, 2017.

Are the planning assumptions and the corridor vision/purpose and need statement consistent with the long range transportation plan? Yes

What future year policy and/or data assumptions were used in the transportation planning process as they are related to land use, economic development, transportation costs and network expansion?

G. Potential Environmental Impacts

See the attached Stage 0 Environmental Checklist

H. Cost Estimates

Provide a cost estimate for each feasible alternative without sidewalks:

Remove existing signal at Minnesota Park Road and Range Road intersection and convert to roundabout (Alternative 1).

• Engineering Design:	$ 284,630.87
• Additional Traffic Analyses:	$ 10,000.00
• Environmental Processing:	
• Mitigation:	
• R/W Acquisition: (C of A if applicable)	$ 74,052.00
• Utility Relocations:	$ 91,945.05
• Construction (including const. traffic management):	$ 1,568,401.70
• Construction Observation and Inspection:	$ 78,420.09
TOTAL PROJECT COST	**$ 2,107,449.71**

Widen existing roadway at intersection of Minnesota Park Road and Range Road to include dedicated turning lanes at intersection signal (Alternative 2).

• Engineering Design:	$ 209,757.00
• Additional Traffic Analyses:	
• Environmental Processing:	
• Mitigation:	
• R/W Acquisition: (C of A if applicable)	$ 50,000.00
• Utility Relocations:	$ 146,819.26
• Construction (including const. traffic management):	$1,076,763.26
• Construction Observation and Inspection:	$ 53,838.16
TOTAL PROJECT COST	**$1,537,177.69**

Widen existing roadway to include a shared turning lane along Minnesota Park Road (Alternative 3A).

• Engineering Design:	$ 312,745.96
• Additional Traffic Analyses:	
• Environmental Processing:	
• Mitigation:	
• R/W Acquisition: (C of A if applicable)	$ 223,900.00
• Utility Relocations:	$ 287,379.26
• Construction (including const. traffic management):	$1,536,972.15
• Construction Observation and Inspection:	$ 76,848.61
TOTAL PROJECT COST	**$2,447,845.98**

Widen existing roadway to include a shared turning lane along Minnesota Park Road (Alternative 3B).

- Engineering Design: $ 231,553.35
- Additional Traffic Analyses:
- Environmental Processing:
- Mitigation:
- R/W Acquisition: $ 601,700.00
  (C of A if applicable)
- Utility Relocations: $ 287,379.26
- Construction (including const. traffic management): $1,063,348.60
- Construction Observation and Inspection: $ 53,167.43

TOTAL PROJECT COST **$2,237,148.64**

Provide a cost estimate for each feasible alternative with sidewalks along Minnesota Park Road:

Remove existing signal at Minnesota Park Road and Range Road intersection and convert to roundabout (Alternative 1).

- Engineering Design: $ 432,523.09
- Additional Traffic Analyses: $ 10,000.00
- Environmental Processing:
- Mitigation:
- R/W Acquisition: $ 74,052.00
  (C of A if applicable)
- Utility Relocations: $ 91,945.05
- Construction (including const. traffic management): $ 2,431,106.28
- Construction Observation and Inspection: $ 121,555.31

TOTAL PROJECT COST **$ 3,161,181.73**

Widen existing roadway at intersection of Minnesota Park Road and Range Road to include dedicated turning lanes at intersection signal (Alternative 2).

- Engineering Design: $ 310,112.00
- Additional Traffic Analyses:
- Environmental Processing:
- Mitigation:
- R/W Acquisition: $ 50,000.00
  (C of A if applicable)
- Utility Relocations: $ 146,819.26
- Construction (including const. traffic management): $1,662,167.38
- Construction Observation and Inspection: $ 83,108.37

TOTAL PROJECT COST **$2,252,207.01**

Widen existing roadway to include a shared turning lane along Minnesota Park Road (Alternative 3A).

- Engineering Design: $ 359,285.43
- Additional Traffic Analyses:
- Environmental Processing:
- Mitigation:
- R/W Acquisition: $ 233,900.00
  (C of A if applicable)
- Utility Relocations: $ 287,379.26
- Construction (including const. traffic management): $1,808,452.41
- Construction Observation and Inspection: $ 90,422.62

TOTAL PROJECT COST **$2,779,439.72**

Widen existing roadway to include a shared turning lane along Minnesota Park Road (Alternative 3B).

- Engineering Design: $ 260,183.60
- Additional Traffic Analyses:
- Environmental Processing:
- Mitigation:
- R/W Acquisition: $ 601,700.00
  (C of A if applicable)
- Utility Relocations: $ 287,379.26
- Construction (including const. traffic management): $1,230,358.39
- Construction Observation and Inspection: $ 61,517.92

TOTAL PROJECT COST **$2,441,139.17**

Adding sidewalks along both sides of Minnesota Park Road (Alternative 4A).

- Engineering Design: $ 180,710.85
- Additional Traffic Analyses:
- Environmental Processing:
- Mitigation:
- R/W Acquisition:
  (C of A if applicable)
- Utility Relocations:
- Construction (including const. traffic management): $1,051,146.63
- Construction Observation and Inspection: $ 52,557.33

TOTAL PROJECT COST **$1,287,434.81**

Adding sidewalks along the south side of Minnesota Park Road (Alternative 4B).

• Engineering Design:	$ 99,939.93
• Additional Traffic Analyses:	
• Environmental Processing:	
• Mitigation:	
• R/W Acquisition: (C of A if applicable)	
• Utility Relocations:	
• Construction (including const. traffic management):	$582,982.95
• Construction Observation and Inspection:	$ 29,146.15
TOTAL PROJECT COST	**$712,072.03**

Remove existing signal at Minnesota Park Road and Range Road intersection and convert to roundabout and install sidewalks along south side of Minnesota Park Road (Alternative 5).

• Engineering Design:	$ 359,198.84
• Additional Traffic Analyses:	$ 10,000.00
• Environmental Processing:	
• Mitigation:	
• R/W Acquisition: (C of A if applicable)	$ 74,052.00
• Utility Relocations:	$ 91,945.05
• Construction (including const. traffic management):	$2,003,381.54
• Construction Observation and Inspection:	$ 100,169.08
TOTAL PROJECT COST	**$2,638,746.51**

I. Expected Funding Source(s) (Highway Priority Program, CMAQ, Urban Systems, Fed/State earmarks, etc.) _____

ATTACH ANY ADDITIONAL DOCUMENTATION

Disposition (circle one): (1) Advance to Stage 1 (2) Hold for Reconsideration (3) Shelve

STAGE 0
Environmental Checklist

Route Minnesota Park Road Parish: Tangipahoa

C.S. none Begin Log mile _____ End Log mile _____

ADJACENT LAND USE: Residential & Commercial

Any property owned by a Native American Tribe?
(Y or N or Unknown) If so, which Tribe? No

Any property enrolled into the Wetland Reserve Program?
(Y or N or Unknown) If so, give the location No

Are there any other known wetlands in the area?
(Y or N) If so, give the location No

Community Elements: Is the project impacting or adjacent to any (if the answer is yes, list names and locations):
(Y or N) Cemeteries No
(Y or N) Churches No
(Y or N) Schools No
(Y or N) Public Facilities (i.e., fire station, library, etc.) No
(Y or N) Community water well/supply No

Section 4(f) issue: Is the project impacting or adjacent to any (if the answer is yes, list names and locations):
(Y or N) Public recreation areas No
(Y or N) Public parks No
(Y or N) Wildlife Refuges No
(Y or N) Historic Sites No

Is the project impacting, or adjacent to, a property listed on the National Register of Historic Places? (Y or N) **Is the project within a historic district or a national landmark district?** (Y or N) If the answer is yes to either question, list names and locations below:
No

Do <u>you know</u> of any threatened or endangered species in the area? (Y or N)
If so, list species and location. No

Does the project impact or adjacent to a stream protected by the Louisiana Scenic Rivers Act? (Y or N) If yes, name the stream. No

Are there any Significant Trees as defined by EDSM I.1.1.21 within proposed ROW? (Y or N) If so, where? _____

What year was the existing bridge built? N/A

Are any waterways impacted by the project considered navigable? (Y or N) If unknown, state so, list the waterways: No

Hazardous Material: Have you checked the following DEQ and EPA databases for potential problems? (If the answer is yes, list names and locations.)
(Y or N) Leaking Underground Storage Tanks No
(Y or N) CERCLIS No
(Y or N) ERNS No
(Y or N) Enforcement and Compliance History No

STAGE 0
Environmental Checklist

Underground Storage Tanks (UST): Are there any Gasoline Stations or other facilities that may have UST on or adjacent to the project? (Y or N) Yes
If so, give the name and location: Ryan's Deli – 43195 S. Range Road, Hammond, LA

Any chemical plants, refineries or landfills adjacent to the project? (Y or N) **Any large manufacturing facilities adjacent to the project?** (Y or N) **Dry Cleaners?** (Y or N) If yes to any, give names and locations: No, No, No

Oil/Gas wells: Have you checked DNR database for registered oil and gas wells? (Y or N) List the type and location of wells being impacted by the project. Yes – There are none.

Are there any possible residential or commercial relocations/displacements? (Y or N)
How many? No

Do you know of any sensitive community or cultural issues related to the project? (Y or N)
If so, explain No

Is the project area population minority or low income? (Y or N) No

What type of detour/closures could be used on the job? When necessary, partial street closure.

Did you notice anything of environmental concern during your site/windshield survey of the area? If so, explain below.
No

Point of Contact

Phone Number

Date

STAGE 0
Environmental Checklist

General Explanation:

To adequately consider projects in Stage 0, some consideration must be given to the human and natural environment which will be impacted by the project. The Environmental Checklist was designed knowing that some environmental issues may surface later in the process. This checklist was designed to obtain basic information, which is readily accessible by reviewing public databases and by visiting the site. It is recognized that some information may be more accessible than other information. Some items on the checklist may be more important than others depending on the type of project. It is recommended that the individual completing the checklist do their best to answer the questions accurately. Feel free to comment or write any explanatory comments at the end of the checklist.

The Databases:

To assist in gathering public information, the previous sheet includes web addresses for some of the databases that need to be consulted to complete the checklist. As of February 2011, these addresses were accurate.

Note that you will not have access to the location of any threatened or endangered (T&E) species. The web address lists only the threatened or endangered species in Louisiana by Parish. It will generally describe their habitat and other information. If you know of any species in the project area, please state so, but you will not be able to confirm it yourself. If you feel this may be an issue, please contact the Environmental Section. We have biologist on staff who can confirm the presence of a species.

Why is this information important?

Land Use? Indicator of biological issues such as T&E species or wetlands.

Tribal Land Ownership? Tells us whether coordination with tribal nations will be required.

WRP properties? Farmland that is converted back into wetlands. The Federal government has a permanent easement which cannot be expropriated by the State. Program is operated through the Natural Resources Conservation Service (formerly the Soil Conservation Service).

Community Elements? DOTD would like to limit adverse impacts to communities. Also, public facilities may be costly to relocate.

Section 4(f) issues? USDOT agencies are required by law to avoid certain properties, unless a prudent or feasible alternative is not available.

Historic Properties? Tells us if we have a Section 106 issue on the project. (Section 106 of the National Historic Preservation Act) See http://www.achp.gov/work106.html for more details.

Scenic Streams? Scenic streams require a permit and may require restricted construction activities.

Significant Trees? Need coordination and can be important to community.

Age of Bridge? Section 106 may apply. Bridges over 50 years old are evaluated to determine if they are eligible for the National Register of Historic Places.

Navigability? If navigable, will require an assessment of present and future navigation needs and US Coast Guard permit.

Hazardous Material? Don't want to purchase property if contaminated. Also, a safety issue for construction workers if right-of-way is contaminated.

Oil and Gas Wells? Expensive if project hits a well.

Relocations? Important to community. Real Estate costs can be substantial depending on location of project. Can result in organized opposition to a project.

Sensitive Issues? Identification of sensitive issues early greatly assists project team in designing public involvement plan.

Minority/Low Income Populations? Executive Order requires Federal Agencies to identify and address disproportionately high and adverse human health and environmental effects on minority or low income populations. (Often referred to as Environmental Justice)

Detours? The detour route may have as many or more impacts. Should be looked at with project. May be unacceptable to the public.

Louisiana Governor's Office of Indian Affairs:
http://www.indianaffairs.com/tribes.htm

Louisiana Wetlands Reserve Program:
http://www.nrcs.usda.gov/programs/wrp/states/la.html

Community Water Well/Supply
http://sonris.com/default.htm

Louisiana Department of Wildlife and Fisheries – Wildlife Refuges
http://www.wlf.louisiana.gov/refuges
http://www.fws.gov/refuges/profiles/ByState.cfm?state=LA
http://www.fws.gov/refuges/refugelocatormaps/Louisiana.html

U.S. Fish & Wildlife Service – National Wetlands Inventory:
http://www.fws.gov/wetlands/

Louisiana State Historic Sites:
http://www.crt.state.la.us/parks/ihistoricsiteslisting.aspx

National Register of Historic Places (Louisiana):
http://nrhp.focus.nps.gov/natreghome.do?searchtype=natreghome
http://www.nationalregisterofhistoricplaces.com/la/state.html

National Historic Landmarks Program:
http://www.nps.gov/history/nhl/

Threatened and Endangered Species Databases:
http://www.wlf.louisiana.gov/wildlife/louisiana-natural-heritage-program

Louisiana Scenic Rivers:
http://www.wlf.louisiana.gov/wildlife/scenic-rivers
http://media.wlf.state.la.us/experience/scenicrivers/louisiananaturalandscenicriversdescriptions/
http://www.legis.state.la.us/lss/lss.asp?doc=104995

Significant Tree Policy (EDSM I.1.1.21)
http://notes1/ppmemos.nsf
(Live Oak, Red Oak, White Oak, Magnolia or Cypress, aesthetically important, 18" or greater in diameter at breast height and has form that separates it from surrounding or that which may be considered historic.)

CERCLIS (Superfund Sites):
http://www.epa.gov/superfund/sites/cursites/
http://www.epa.gov/enviro/html/cerclis/cerclis_query.html

ERNS - Emergency Response Notification System - Database of oil and hazardous substances spill reports: http://www.epa.gov/region4/r4data/erns/index.htm

Enforcement & Compliance History (ECHO)
http://www.epa-echo.gov/echo/

DEQ – Underground Storage Tank Program Information:
http://www.deq.louisiana.gov/portal/tabid/2674/Default.aspx
Leaking Underground Storage Tanks:
http://www.deq.state.la.us/portal/tabid/79/Default.aspx

SONRIS – Oil and Gas Well Information & Water Well Information
http://sonris.com/default.htm

Environmental Justice (minority & low income)
http://www.fhwa.dot.gov/environment/ej2000.htm

Demographics
http://www.census.gov/

FHWA's Environmental Website
http://www.fhwa.dot.gov/environment/index.htm

Additional Databases Checked

Other Comments: