Eastgate 540

Knightdale, NC

Prepared for
Sherrie Chaffin
Trinity Capital
440 S Church Street, Suite 800
Charlotte, NC 28202

Prepared by
VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606
919.829.0328 ▪ Fax 919.829.0329
www.vhb.com

March 22, 2021

Executive Summary

Project Background

Trinity Capital has plans to develop a parcel of land on the east side of Hodge Road, south of I-87, in Knightdale, NC (Figure 1). The project will effectively be an expansion of the existing Eastgate 540 development, which is partially constructed and occupied. The project currently calls for up to 204,000 square feet of industrial warehouse space. The project will have access to Spectrum Drive with an estimated opening at the end of 2021.

Based on a Memorandum of Understanding email on January 13, 2021 between the project team and Town of Knightdale staff, the following intersections were requested to be included in the study area and were analyzed for existing and future conditions, where applicable:

- Hodge Road (SR 2516) and I-87 SB Ramps/Old Faison Road (signalized)
- Hodge Road (SR 2516) and I-87 NB Ramps (signalized)
- Hodge Road (SR 2516) and Panther Rock Boulevard/Ellen Drive (unsignalized)
- Hodge Road (SR 2516) and Spectrum Drive/Future Harding Hill Lane (signalized)
- Hodge Road (SR 2516) and Poole Road (signalized)

The Town indicated that there are four developments in the area that have approved traffic impact studies and are in various stages of construction and occupation. As a result, the Town required these be included in the background analysis. In addition, the Town of Knightdale requires that Build analysis be conducted for one year beyond the build year and 10 years beyond that.

As a result, the following traffic scenarios were analyzed for weekday AM and PM peak hour level of service utilizing *Synchro* and *Highway Capacity Software*:

- Existing (2021) – includes peak hour volumes based on turning movement count data collected at the study area intersections as part of recent studies in the area with a three percent (3%) annual growth between the collected year (2017) and existing year (2021).
- Background (2022) – includes Existing (2021) scenario peak hour volumes with a three percent (3%) annual growth between the existing (2021) and future year

(2022), as well as projected traffic and improvements from four nearby developments in the area.

- Build (2022) – includes Background (2022) scenario peak hour volumes with projected site trips from the proposed development.
- Background (2032) – includes Background (2022) scenario peak hour volumes with a one percent (1%) annual growth between 2022 and 2032, as well as projected traffic and improvements from four nearby developments in the area.
- Build (2032) – includes Background (2032) scenario peak hour volumes and projected site trips from the proposed development.

Existing (2021) Conditions

Existing analyses were conducted based on current roadway geometrics and traffic data from previous studies at study area intersections. A traffic growth rate of three percent (3%) was applied to previous year traffic data.

As reported in the Summary Level of Service (LOS) table on page vi, all of the signalized intersections within the study area are operating at acceptable overall levels of service during the AM and PM peak hours, with the exception of the Hodge Road and Poole Road intersection, which is currently operating at LOS F during both peak hours. The stop-controlled, eastbound Panther Rock Boulevard approach along Hodge Road is also operating at LOS F during the AM and PM peak hours. The stop-controlled, westbound Ellen Drive approach along Hodge Road is also operating at LOS E during the AM and PM peak hours.

Background (2022) Conditions

For this analysis, the Town of Knightdale is requiring an annual growth rate of three percent (3%) be applied to the existing traffic to account for the normal growth between the base year (2021) and the build year (2022).

In addition to applying an annual growth rate to the existing volumes, traffic from four (4) nearby background developments was also individually included. The trips for these sites were obtained from the Traffic Impact Studies completed for each of the developments. In addition to the trips, the planned improvements associated with these developments were also included. As specified in the Timmons Summary TIA, the following improvements were included:

- Hodge Road and I-87 SB Ramps/Old Faison Road
    - Construct an exclusive westbound left-turn lane that provides 125 feet of storage
    - Construct an exclusive northbound right-turn lane that provides 200 feet of storage

- Hodge Road and I-87 NB Ramp
    - Construct an exclusive second eastbound right-turn lane that provides 150 feet of storage
    - Widen southbound Hodge Road to include a second through lane from I-87 NB Ramps to Spectrum Drive
- Hodge Road and Panther Rock Boulevard/Ellen Drive
    - Construct an exclusive southbound right-turn lane that provides 200 feet of storage
    - Construct a second northbound through lane along Hodge Road to north of Faison Ridge Lane
    - Construct a second southbound through lane along Hodge Road (included above)
    - Install a signal
- Hodge Road and Spectrum Drive
    - Construction of exclusive northbound left-turn lane that provides 100 feet of storage
    - Terminate southbound Hodge Road widening as right turn lane
    - Widen northbound Hodge Road to north of Faison Ridge Lane (included above)
- Hodge Road and Poole Road
    - Construct an exclusive westbound right-turn lane that provides 200 feet of storage

Based on the Background (2022) analysis, two signalized intersections are expected to operate unacceptably during one (1) peak hour. The intersection of Hodge Road and the I-87 NB Ramps is expected to operate at LOS F during the PM peak hour, and the intersection of Hodge Road and Poole Road is expected to operate at LOS E during the AM peak hour.

Trip Generation and Assignment

The development is planned to construct up to 204,000 square feet of industrial warehouse space. The trip generation calculations for the site was prepared using the *Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition* and NCDOT's Rate vs Equation guidance for a warehouse (Land Use Code 150). The 540 Eastgate site is expected to generate 368 daily trips with 50 trips (38 entering, 12 exiting) occurring during the AM peak hour and 52 trips (14 entering, 38 exiting) occurring during the PM peak hour. The site trips were distributed across the roadway network in accordance with existing traffic patterns observed within the turning movement counts.

Build (2022) Conditions

The Build (2022) conditions account for both the Background (2022) traffic and the site traffic generated by the proposed development.

As shown on the Summary LOS table on page vi, while there is a slight increase in delay due to the site trips at most intersections, none of the overall intersection levels of service are affected when comparing Background (2022) to Build (2022) conditions. The intersection of Hodge Road and the I-87 NB Ramps is expected to operate at LOS F during the PM peak hour, and the intersection of Hodge Road and Poole Road is expected to operate at LOS E during the AM peak hour.

Background (2032) Conditions

The Town of Knightdale requires a Build analysis to be conducted for the build year (2022) and a period 10 years beyond (2032). For this analysis, the Town of Knightdale is requiring an annual growth rate of one percent (1%) be applied to the existing traffic to account for the normal growth between the build year (2022) and the future analysis year (2032). In addition to applying an annual growth rate to the existing volumes, traffic from the four (4) previously mentioned approved developments was also individually included.

Based on the Background (2032) analysis, multiple signalized intersections are expected to operate at LOS E or worse during at least one peak hour. The intersection of Hodge Road and the I-87 NB Ramps will operate at LOS F during the PM peak hour, and the intersection of Hodge Road and Spectrum Drive will operate at LOS E during the PM peak hour. The intersection of Hodge Road and Poole Road will operate at LOS E during both peak hours.

Build (2032) Conditions

The Build (2032) conditions include the Background (2032) peak hour volumes with projected site trips from the proposed development.

As shown on the Summary LOS table on page vi, while there is a slight increase in delay due to the site trips at most intersections, none of the overall intersection levels of service are affected when comparing Background (2032) to Build (2032) conditions. The intersection of Hodge Road and the I-87 NB Ramps will operate at LOS F during the PM peak hour, and the intersection of Hodge Road and Spectrum Drive will operate at LOS E during the PM peak hour. The intersection of Hodge Road and Poole Road will operate at LOS E during both peak hours.

Roadway Improvement Recommendations

As indicated in the traffic operations analyses, the proposed development is projected to have a slight impact on the traffic operations of the surrounding roadway network and intersections. As shown in the trip generation calculations, the site is expected to generate well under the 150 minimum peak hour trips or 3,000 daily site trips that would require a TIA to be completed for the site. The site traffic represents less than two percent of the projected intersection volume and less than five percent of any approach volume at all of the off-site intersections. The projected delay increases by less than two or three seconds at most of the intersections. Therefore, after the build-out of the development is completed at the end of 2021, no offsite roadway improvements are recommended.

The Eastgate 540 project previously constructed dual southbound left-turn lanes and a northbound right-turn lane along Hodge Road along with frontage widening to accommodate dual northbound through lanes in the future. In addition, the driveway was constructed to include dual ingress and dual egress lanes. With these improvements constructed as part of the initial development phase, the intersection is projected to continue operating at an acceptable level of service with the addition of this additional site traffic.

Currently, Spectrum Drive operates with a protected left-turn phase and a permitted right-turn phase with an overlap phases operating along with the southbound left-turn phase. Once the construction of Harding Hill Lane is complete, the SilverStone-StoneRiver Development will remove the right-turn overlap phase by combining the through and right-turn movements along Spectrum Drive. This signal modification will worsen operations along Spectrum Drive while providing better lane alignment with future Harding Hill Lane. If maintaining the overlap phase along Spectrum Drive is desirable, the Town and NCDOT should coordinate with the SilverStone-StoneRiver development to accommodate this right-turn overlap phase with the project.

As mentioned previously, the construction of R-2829 (NC 540 – Eastern Wake Freeway) is scheduled to begin construction in 2026 and once open, will provide a freeway connection between I-540 and Poole Road, less than a mile east of Hodge Road. To be conservative, no reduction in traffic along Hodge Road was assumed for this scenario.

Per the Town's Arterial & Collector Street Plan, Hodge Road is identified as an existing arterial that needs improvements within the study area, while the Town's Functional Class Plan identifies Hodge Road as a boulevard with 100 feet of right-of-way. In addition, the City of Raleigh's 2030 Comprehensive Plan depicts Hodge Road as a four-lane, divided avenue within the study area. There are sections along Hodge Road where developments have provided frontage widening via striped out pavement, so that Hodge Road can be improved in the future with additional thru lanes. The Town and NCDOT should continue to pursue the ultimate widening of Hodge Road as planned.

Summary Level of Service Table

Intersection and Approach	Traffic Control	Existing (2021)		Background (2022)		Build (2022)		Background (2032)		Build (2032)	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Hodge Road (SR 2516) at I-87 SB Ramps/Old Faison Road (SR 2515)	Signalized	**C (31.2)**	**C (32.8)**	**D (37.1)**	**C (34.6)**	**D (38.0)**	**C (35.0)**	**D (53.0)**	**D (44.6)**	**D (54.1)**	**D (45.3)**
Eastbound		C-20.1	C-23.4	E-61.1	E-70.6	E-62.3	E-71.7	E-78.2	E-58.8	F-80.6	E-61.8
Westbound		E-71.6	F-116.7	C-34.8	D-43.2	C-35.0	D-43.4	D-46.1	E-58.6	D-46.4	E-58.9
Northbound		C-21.3	C-22.4	C-32.5	A-6.1	C-33.3	A-6.2	D-47.7	B-10.3	D-48.0	B-10.3
Southbound		B-16.9	C-27.5	C-25.9	D-40.2	C-27.2	D-41.1	D-46.4	F-105.5	D-48.5	F-105.7
Hodge Road (SR 2516) at I-87 NB Ramps	Signalized	**B (11.5)**	**C (33.7)**	**C (20.7)**	**F (85.6)**	**C (22.9)**	**F (88.5)**	**D (35.6)**	**F (122.6)**	**D (38.5)**	**F (125.3)**
Eastbound		C-32.3	C-34.4	D-37.7	F-81.1	D-36.7	F-81.1	E-55.0	F-120.7	D-54.0	F-120.7
Northbound		A-5.0	D-35.7	B-17.1	E-72.6	B-19.2	F-80.0	C-33.0	F-89.9	C-34.9	F-96.8
Southbound		B-16.9	C-30.9	C-21.8	F-102.9	C-25.3	F-106.1	C-33.3	F-153.8	D-39.9	F-157.0
Hodge Road (SR 2516) at Panther Rock Boulevard/Ellen Drive (SR 2577)	Unsignalized/ Signalized	**-**	**-**	**B (16.3)**	**B (14.8)**	**B (16.1)**	**B (14.3)**	**C (31.3)**	**B (19.9)**	**C (34.3)**	**B (20.0)**
Eastbound		F-776.7	F-577.3	E-58.9	E-66.0	E-59.1	E-65.6	E-70.3	E-74.0	E-70.3	E-74.0
Westbound		E-38.9	E-41.0	E-55.1	E-55.4	E-55.1	E-55.4	E-77.8	E-78.3	E-78.4	E-78.3
Northbound		-	-	A-7.7	A-7.9	A-7.8	A-7.9	C-22.9	A-6.8	C-28.7	A-6.6
Southbound		-	-	A-6.4	B-10.8	A-6.2	B-10.3	C-22.0	B-17.7	C-21.9	B-18.2
Hodge Road (SR 2516) at Spectrum Drive/ Harding Hill Lane	Signalized	**B (17.2)**	**B (13.3)**	**D (38.1)**	**D (38.9)**	**D (42.8)**	**D (43.3)**	**D (36.4)**	**E (59.9)**	**D (44.3)**	**E (66.9)**
Eastbound		-	-	E-58.1	D-53.0	E-58.5	D-54.3	F-86.0	F-167.8	F-88.9	F-167.8
Westbound		D-46.0	E-55.2	D-52.2	E-66.1	D-54.4	E-77.3	E-71.4	F-130.7	E-73.6	F-180.1
Northbound		C-21.1	A-7.1	D-44.7	B-11.6	D-51.8	B-11.9	C-32.2	B-10.3	C-33.5	B-10.3
Southbound		A-4.4	A-9.9	B-19.0	D-45.2	B-19.6	D-49.3	C-34.0	E-63.1	E-57.0	E-63.3
Hodge Road (SR 2516) at Poole Road (SR 1007)	Signalized	**F (135.1)**	**F (92.7)**	**E (57.4)**	**D (50.8)**	**E (58.1)**	**D (52.1)**	**E (72.9)**	**E (70.6)**	**E (74.1)**	**E (71.1)**
Eastbound		F-137.9	F-87.1	E-71.0	E-61.8	E-72.5	E-62.2	F-95.3	F-91.1	F-97.2	F-91.6
Westbound		F-146.4	F-108.1	E-60.5	D-44.5	E-60.7	D-45.2	E-76.2	E-62.2	E-77.3	E-62.2
Northbound		E-62.9	B-15.3	F-93.1	F-85.8	F-95.4	F-85.8	F-141.7	F-134.5	F-143.9	F-134.5
Southbound		F-110.1	F-94.1	C-24.5	D-46.0	C-24.2	D-48.2	C-20.1	E-61.0	C-20.1	E-61.8

LEGEND: **X** = Overall signalized intersection LOS;
(XX.X sec/veh) = Overall signalized intersection control delay in seconds; X = Approach LOS

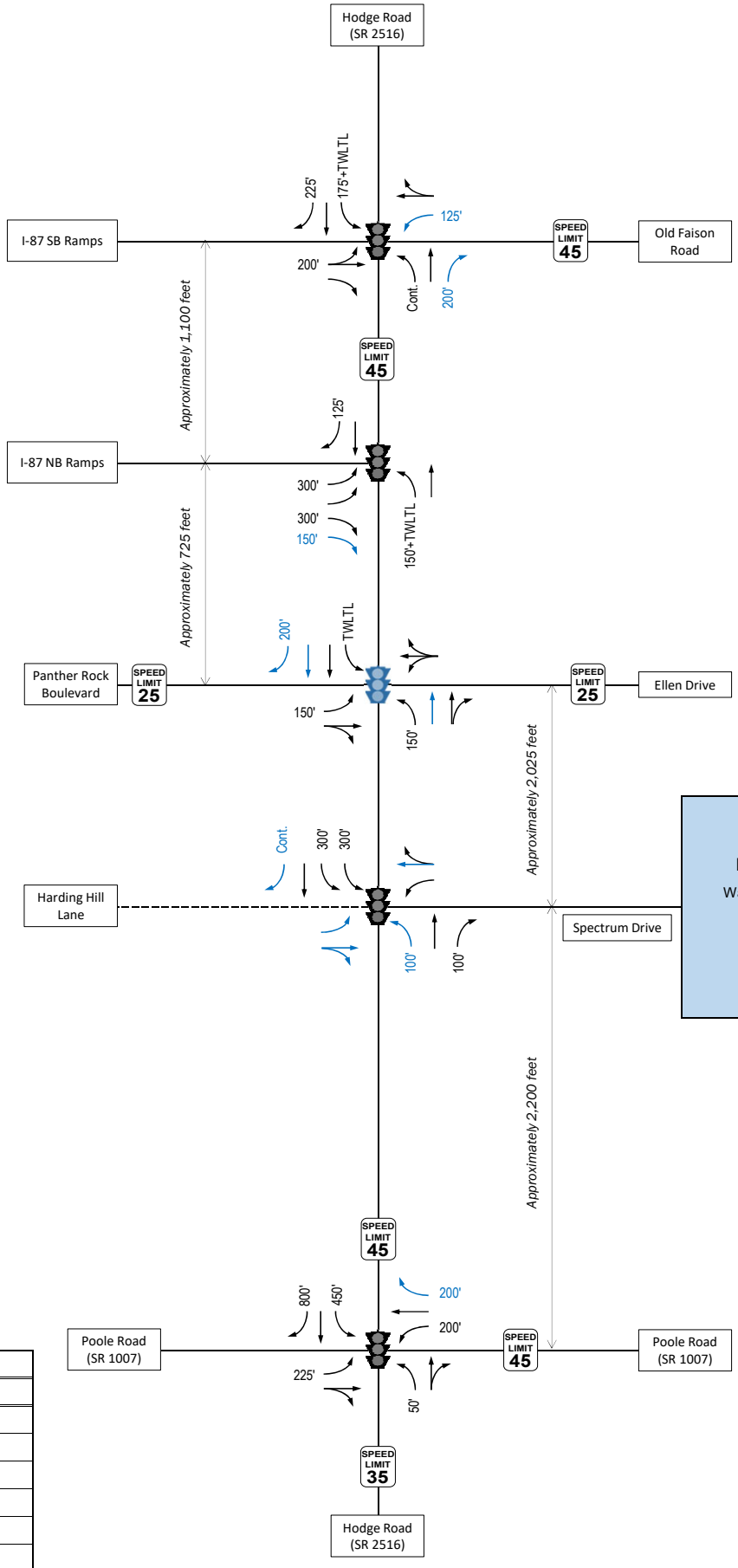

Figure ES
Future (2022) Lane Configuration and Traffic Control

Eastgate 540
Traffic Impact Analysis
Knightdale, NC

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Appendices

Tables

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Introduction

Trinity Capital has plans to develop a parcel of land on the east side of Hodge Road, south of I-87, in Knightdale, NC (Figure 1). The project, also known as Hodge Road Business Park, will effectively be an expansion of the existing Eastgate 540 development, which is partially constructed and occupied. The project currently calls for up to 204,000 square feet of industrial warehouse space. The project will have access to Spectrum Drive with an estimated opening at the end of 2021.

Based on a Memorandum of Understanding email on January 13, 2021 between the project team and Town of Knightdale staff, the following intersections were included in the study area and were analyzed for existing and future conditions, where applicable:

- Hodge Road (SR 2516) and I-87 SB Ramps/Old Faison Road (signalized)
- Hodge Road (SR 2516) and I-87 NB Ramps (signalized)
- Hodge Road (SR 2516) and Panther Rock Boulevard/Ellen Drive (unsignalized)
- Hodge Road (SR 2516) and Spectrum Drive/Future Harding Hill Lane (signalized)
- Hodge Road (SR 2516) and Poole Road (signalized)

Trinity Capital retained VHB Engineering NC, P.C. to analyze the potential traffic impacts of the proposed development and to identify any necessary roadway improvements. This Traffic Impact Analysis (TIA) summarizes trip generation, distribution, traffic assignment, and traffic analyses for the proposed development. Since the Memorandum of Understanding was submitted, the land use plan for the site has slightly changed, which resulted in removing one of the trip generation scenarios from the analysis. All of the other parameters and assumptions laid out in the Memorandum are still consistent with this study.

GENERAL NOTES

1. THE APPROVED 404 USACE INDIVIDUAL PERMIT (SAW–2014–02127) SHALL BE REVISED TO INCLUDE IMPACTS TO BUFFERS, STREAMS, AND WETLANDS FOR THIS PROJECT.
2. PROJECT SHALL BE COMPLIANT WITH SECTIONS 8.5–8.11 OF THE UDO.
3. OUTDOOR STORAGE IS NOT PERMITTED.
4. A TIA OR UPDATED TIA WILL BE REQUIRED.
5. THE UAA WILL NEED TO BE UPDATED.
6. PARKING LOT REQUIRED TO HAVE CURB AND GUTTER PER UDO 10.4B.

LEGEND

- Iron Pipe Found
- Calculated Point
- Railroad Spike
- Electric Power Pole
- Fire Hydrant
- Surface Flow Arrow
- Ex. Fence Line
- Ex. Property Line
- Property Line
- Proposed Storm Sewer
- Proposed Swale
- Ex. Wetlands
- Loading Dock Pavement Section
- Buffer Yard D Replanted Areas in this Phase
- Type A Buffer Yard (UDO 8.7.A.1)

TOWN OF KNIGHTDALE WATER ALLOCATION POLICY

PROPOSED BUILDING #7 WILL BE A PART OF THE EASTGATE 540 PROJECT. NOTWITHSTANDING THE TOWN'S WATER ALLOCATION POLICY (ORDINANCE # 15–10–05–001) REQUIREMENT OF 50 POINTS, DUE TO THE UNIQUE CONTRIBUTION TO THE TOWN'S TAX BASE, THE PROJECT SHALL ONLY BE REQUIRED TO ACHIEVE 47 TOTAL POINTS TO MERIT WATER ALLOCATION. CALCULATIONS ARE SHOWN BELOW:

PROPOSED WAREHOUSE/DISTRIBUTION CENTER – 1,204,000 SF

1,204,000 SF > 500,000 SF (REQUIRED)

POINTS EARNED: 41 POINTS

ABATEMENT OF ANY EXISTING NON–CONFORMING STRUCTURES

POINTS EARNED: 2 POINTS

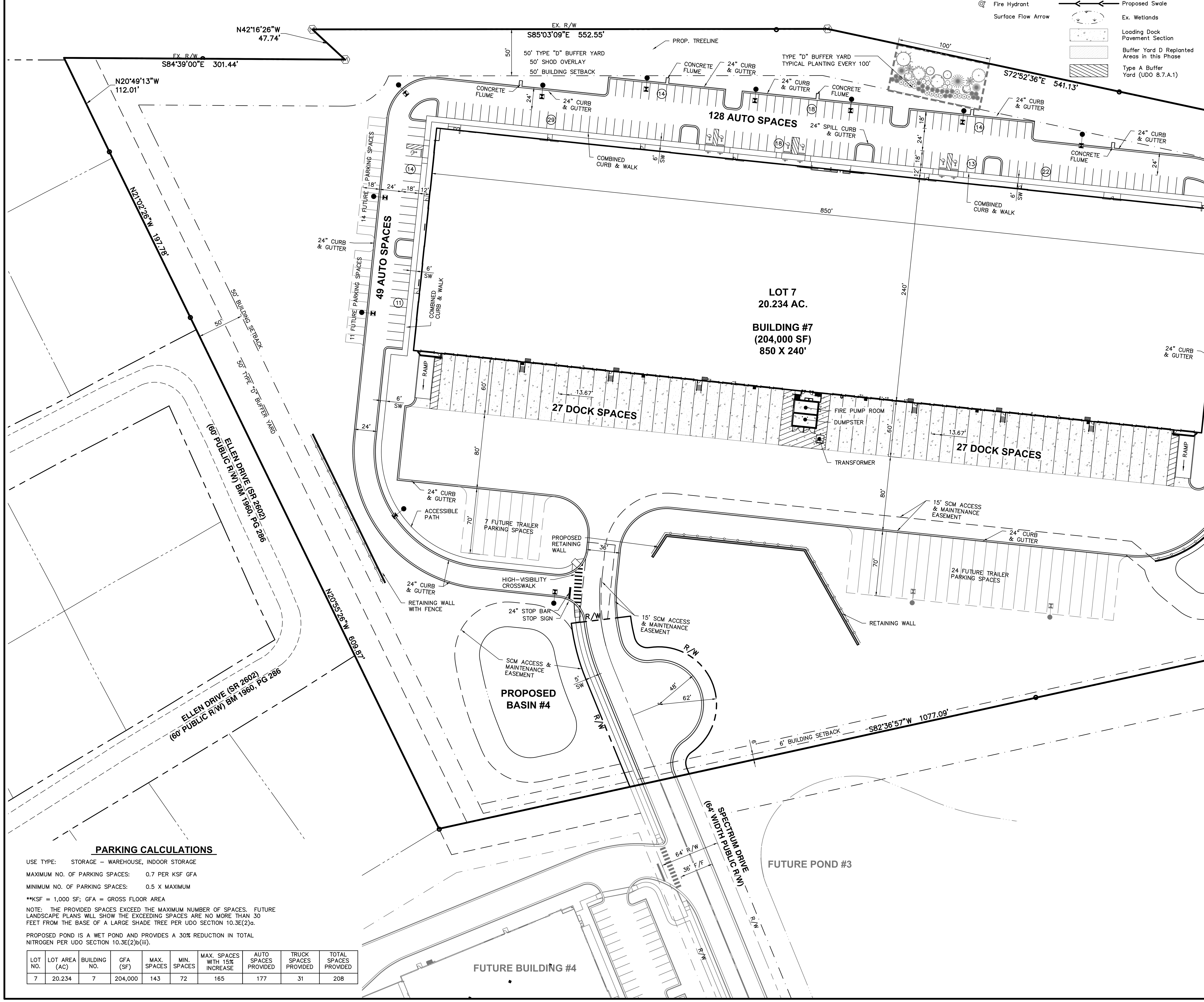
SIGNAGE OR STRIPING IMPROVEMENTS (KEMP DRIVE AT HODGE ROAD)

POINTS EARNED: 1 POINT

EXCLUSIVE USE OF XERISCAPING TECHNIQUES AND DROUGHT–TOLERANT SPECIES

POINTS EARNED: 3 POINTS

TOTAL POINTS: 41 + 2 + 1 + 3 = 47 POINTS



PARKING CALCULATIONS

USE TYPE: STORAGE – WAREHOUSE, INDOOR STORAGE

MAXIMUM NO. OF PARKING SPACES: 0.7 PER KSF GFA

MINIMUM NO. OF PARKING SPACES: 0.5 X MAXIMUM

**KSF = 1,000 SF; GFA = GROSS FLOOR AREA

NOTE: THE PROVIDED SPACES EXCEED THE MAXIMUM NUMBER OF SPACES. FUTURE LANDSCAPE PLANS WILL SHOW THE EXCEEDING SPACES ARE NO MORE THAN 30 FEET FROM THE BASE OF A LARGE SHADE TREE PER UDO SECTION 10.3E(2)a.

PROPOSED POND IS A WET POND AND PROVIDES A 30% REDUCTION IN TOTAL NITROGEN PER UDO SECTION 10.3E(2)b(iii).

LOT NO.	LOT AREA (AC)	BUILDING NO.	GFA (SF)	MAX. SPACES	MIN. SPACES	MAX. SPACES WITH 15% INCREASE	AUTO SPACES PROVIDED	TRUCK SPACES PROVIDED	TOTAL SPACES PROVIDED
7	20.234	7	204,000	143	72	165	177	31	208

SITE DATA TABLE

SITE ACREAGE:	± 20.234 ACRES (LOT 7)
EXISTING ZONING:	RT (RURAL TRANSITION)
PROPOSED ZONING:	MI (MANUFACTURING & INDUSTRIAL)
OVERLAY DISTRICT:	SHOD (SPECIAL HIGHWAY OVERLAY DISTRICT)
EXISTING LAND USE:	AGRICULTURE, FORESTRY
PROPOSED LAND USE:	MANUFACTURING/WAREHOUSE/STORAGE (UDO 2.3.C.6)
WATERSHED:	LOWER NEUSE RIVER
PROPOSED NO. BUILDINGS:	1
TOTAL BUILDING AREA:	204,000 SF
FRONT SETBACK (MIN.) **:	10 FT
SIDE SETBACK (MIN.) **:	6 FT
CORNER SIDE SETBACK (MIN.) **:	10 FT
REAR SETBACK (MIN.) **:	10 FT
MAXIMUM HEIGHT:	5 STORIES

** FRONT, REAR, AND SIDE SETBACKS FROM OSP, RR, GR, UR, RMX, NMX, TC, AND HB DISTRICTS SHALL BE A MINIMUM OF 50 FT.

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

PLAN PREPARED BY:

ADVANCED CIVIL DESIGN ENGINEERS SURVEYORS

51 Kilmayne Drive, Suite 105
Cary, North Carolina 27511
ph 919.481.6290
fax 919.336.5127

PLAN PREPARED FOR:

TRINITY CAPITAL

0 Ellen Drive, Knightdale, NC 27545 – Wake County

HODGE ROAD BUSINESS PARK

MASTER PLAN SUBMITTAL FOR TRINITY CAPITAL ADVISORS, LLC

SITE PLAN

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL CAMERON M. RICE
PRELIMINARY
03/19/2021

Issue Dates:
03/19/2021 – MASTER PLAN SUBMITTAL #1

Date: 03/19/2021
Scale: 1" = 50'

Drawn By:	Checked By:
JLB	CMR

Project Number: 19–0001–988

Drawing Number: C.3.1

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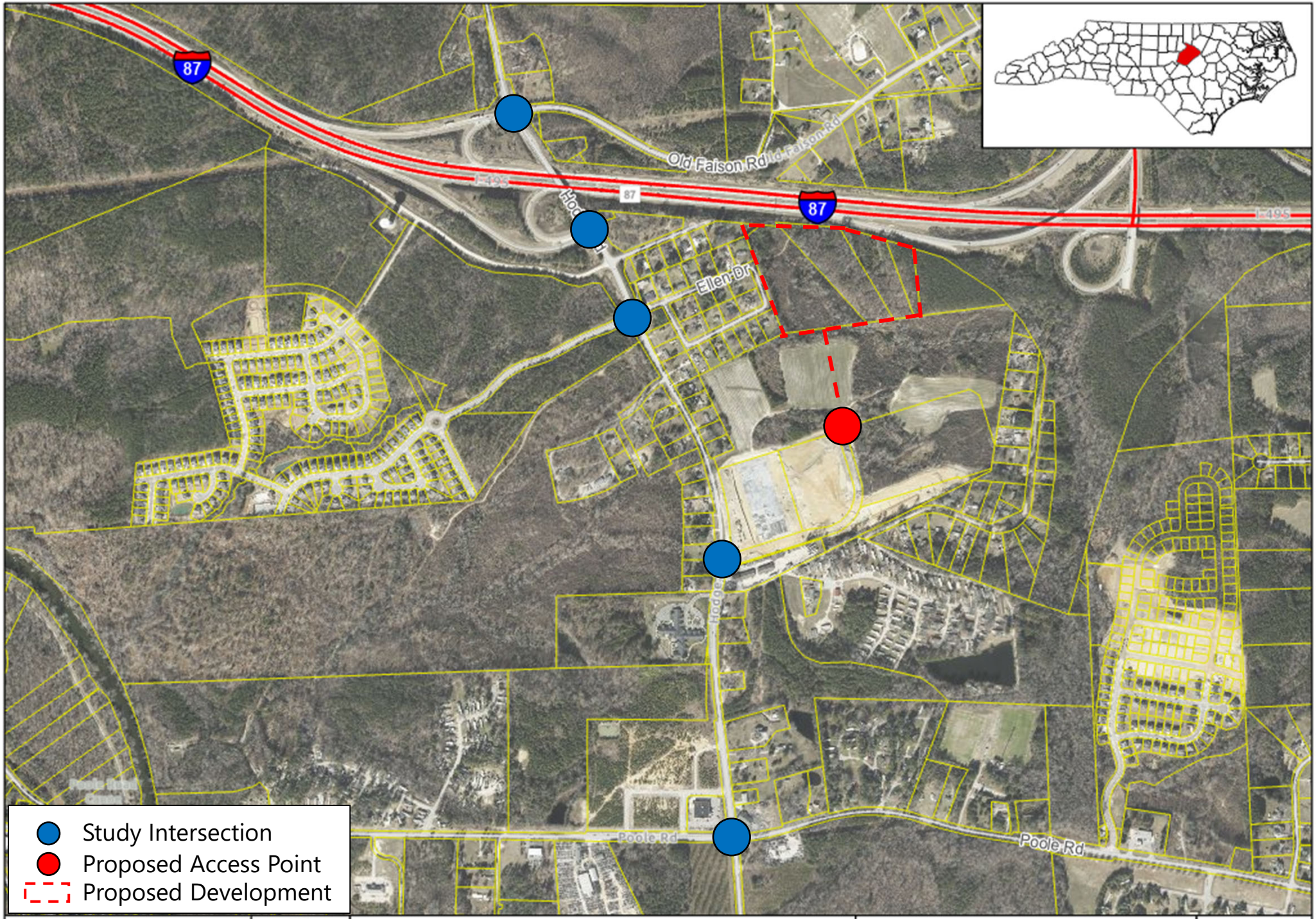

Figure 1:
Vicinity Map

Eastgate 540 TIA
Wake County
Knightdale, NC

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2

Existing (2021) Conditions

Existing Roadway Conditions

This section describes the existing roadways in the vicinity of the proposed development. Average Annual Daily Traffic (AADT) data for the surrounding network of roadway were obtained from the North Carolina Department of Transportation (NCDOT). The most recent AADT counts from the NCDOT are for 2019 on the study area roadways.

Hodge Road (SR 2516)

- The cross-section along Hodge Road varies from a three-lane cross-section north of Panther Rock Boulevard to a two-lane cross-section south of Panther Rock Boulevard. The posted speed limit along Hodge Road is 45 miles per hour (mph) north of Poole Road and 35 mph south of Poole Road.
- The land uses along Hodge Road are a mix of residential, industrial, open space, and commercial space.
- According to the NCDOT, the 2019 AADT on Hodge Road was 16,000 vehicles per day (vpd) south of I-87.

Looking south along Hodge Road at Spectrum Drive intersection

Looking north along Hodge Road at Spectrum Drive intersection

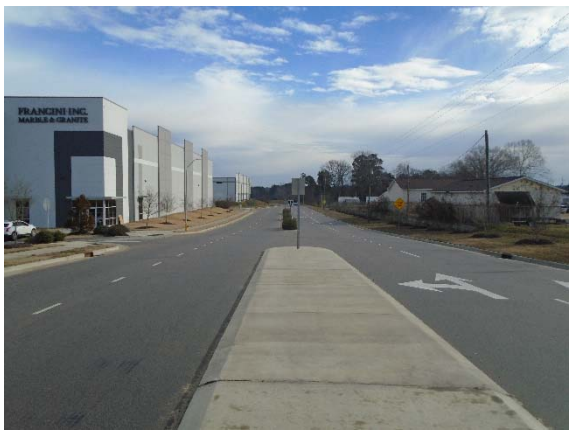
Poole Road (SR 1007)

- Poole Road is a two-lane roadway with a posted speed limit of 45 mph within the study area.
- The land uses along Poole Road are a mix of residential, commercial space, and open space within the study area.
- According to the NCDOT, the 2019 AADT on Poole Road was 11,000 vpd west of Hodge Road and 13,000 east of Hodge Road.

	
Looking east along Poole Road from the Hodge Road intersection	*Looking west along Poole Road at the Hodge Road intersection*

Spectrum Drive

- Spectrum Drive is a four-lane commercial driveway with a posted speed limit of 25 mph within the study area.
- The land use along Spectrum Drive is industrial within the study area.
- No AADT information is available from the NCDOT along Spectrum Drive within the study area.

	
Looking west along Spectrum Drive at Hodge Road intersection	*Looking east along Spectrum Drive from Hodge Road intersection*

Ellen Drive (SR 2557)

- Ellen Drive is a two-lane roadway with a posted speed limit of 25 mph.
- The land use along Ellen Drive is residential.
- No AADT information is available from the NCDOT along Ellen Drive within the study area.

Looking east along Ellen Drive from the Hodge Road intersection

Looking west along Ellen Drive at the Hodge Road intersection

Old Faison Road (SR 2515)

- Old Faison Road is a two-lane roadway with a posted speed limit of 45 mph.
- The land uses along Old Faison Road is primarily open space and residential within the study area.
- No AADT information is available from the NCDOT along Old Faison Road within the study area.

Looking east along Old Faison Road from the Hodge Road intersection

Looking west along Old Faison Road at the Hodge Road intersection

I-87

- I-87 is a six-lane divided freeway with a posted speed limit of 70 mph that serves traffic between Raleigh and Greenville/Rocky Mount.
- The intersection with Hodge Road is a grade-separated half-clover leaf.
- The Westbound Ramps form a signalized four-leg intersection with Hodge Road and Old Faison Road.
- The Eastbound Ramps form a signalized three-leg intersection with Hodge Road.
- According to the NCDOT, the 2019 AADT on I-87 was 88,500 vpd east of Hodge Road.

	
Looking west along the I-87 SB Ramp/Loop at Hodge Road intersection	*Looking east along the I-87 NB Ramp/Loop at the Hodge Road intersection*

Figure 3 provides a schematic diagram of the existing roadways within the study area including the intersection geometrics and traffic control.

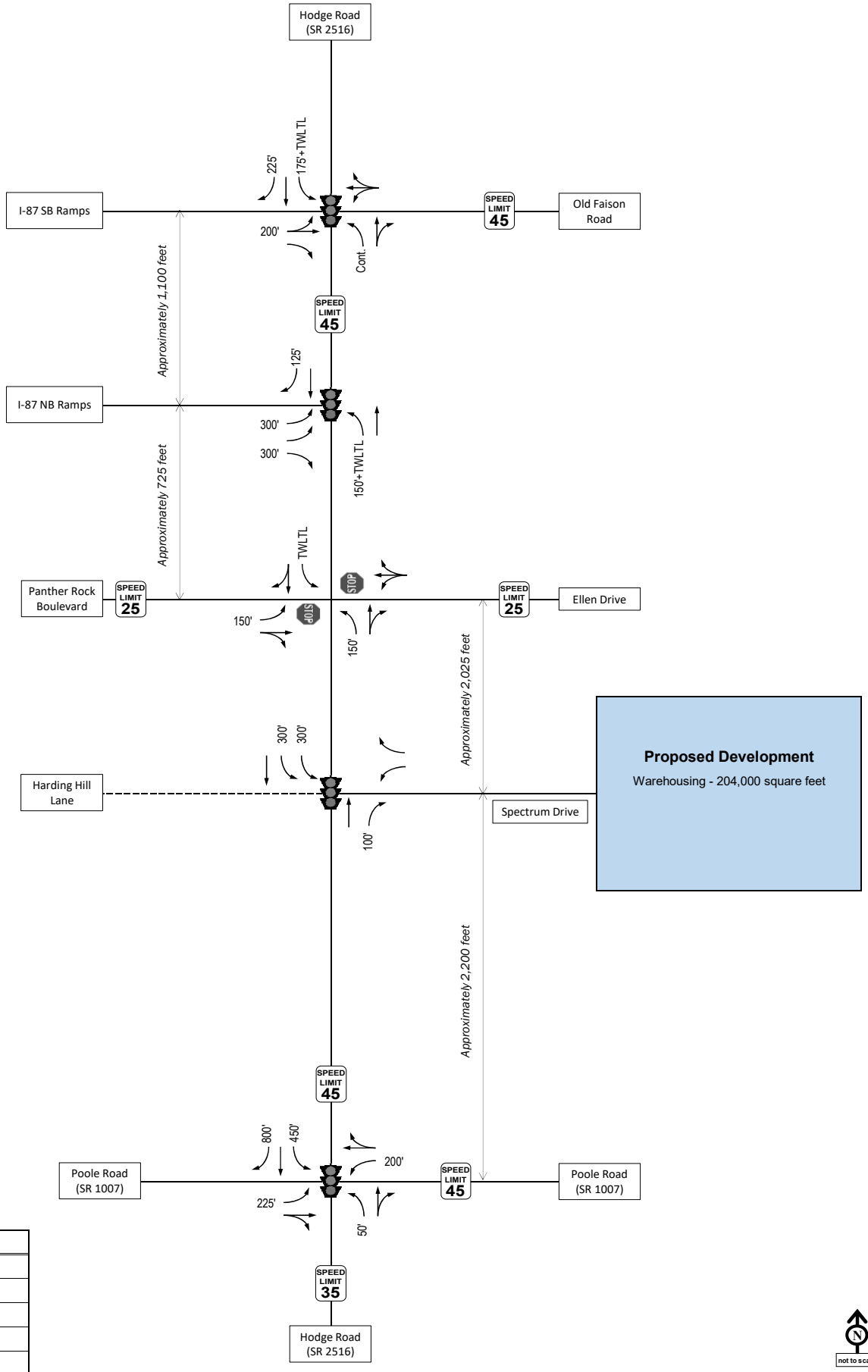


Figure 3
Existing (2021) Lane Configuration and Traffic Control

Eastgate 540
Traffic Impact Analysis
Knightdale, NC

Existing Turning Movement Data

Due to current COVID-19 conditions, the turning movement counts used in this TIA were obtained from historical counts within studies in the area that are currently in the TIA review process. For this analysis, the Town of Knightdale is requiring an annual growth rate of three percent (3%) be applied to the existing traffic to account for the normal growth between the data collection year (2017) and the existing year (2021). A summary of the 2017 traffic counts can be found in Appendix A.

Minor volume adjustments were made in order to ensure proper balancing along the corridor. The existing peak hour turning movement volumes are shown in Figure 4.

Level of Service Criteria

Peak hour level of service (LOS) measures the adequacy of the intersection geometrics and traffic controls of a particular intersection or approach for the given turning volumes. Levels of service range from A through F, based on the average control delay experienced by vehicles traveling through the intersection during the peak hour. Control delay represents the portion of total delay attributed to traffic control devices (e.g., signals or stop signs). The engineering professional generally accepts LOS D as an acceptable
operating condition for signalized intersections in urban areas and LOS C for rural areas.

As unsignalized intersections, LOS E is generally considered acceptable only if the side street encounters the delay. Nevertheless, side streets sometimes function at LOS F during peak traffic periods; however, the traffic volume often does not warrant a traffic signal to assist side street traffic. Table 1 provides a general description of various levels of service categories and delay ranges.

Table 1: Level of Service Description for Intersections

Level of Service	Description	Signalized Intersection	Unsignalized Intersection
A	Little or no delay	<= 10 sec.	<= 10 sec.
B	Short traffic delay	10-20 sec.	10-15 sec.
C	Average traffic delay	20-35 sec.	15-25 sec.
D	Long traffic delay	35-55 sec.	25-35 sec.
E	Very long traffic delay	55-80 sec.	35-50 sec.
F	Unacceptable delay	> 80 sec.	> 50 sec.

Intersection levels of service analyses were performed for the typical weekday AM and PM peak hours using *Synchro/SimTraffic Version 10*. The existing analysis utilized the existing signal plan and timings obtained from NCDOT which are included in Appendix B. A summary of the findings for the Existing (2021) scenario LOS analysis can be found in Table 2 and the full *Synchro/HCS* output can be found in Appendix C.

As reported in Table 2, all of the signalized intersections within the study area are operating at acceptable overall levels of service during the AM and PM peak hours, with the exception of the Hodge Road and Poole Road intersection, which is currently operating at LOS F during both peak hours. The stop-controlled, eastbound Panther Rock Boulevard approach along Hodge Road is also operating at LOS F during the AM and PM peak hours. The stop-controlled, westbound Ellen Drive approach along Hodge Road is also operating at LOS E during the AM and PM peak hours.

Table 2: Existing (2021) LOS Results

Intersection and Approach	Traffic Control	Existing (2021)	
		AM	PM
Hodge Road (SR 2516) at I-87 SB Ramps/Old Faison Road (SR 2515)	Signalized	**C (31.2)**	**C (32.8)**
Eastbound		C-20.1	C-23.4
Westbound		E-71.6	F-116.7
Northbound		C-21.3	C-22.4
Southbound		B-16.9	C-27.5
Hodge Road (SR 2516) at I-87 NB Ramps	Signalized	**B (11.5)**	**C (33.7)**
Eastbound		C-32.3	C-34.4
Northbound		A-5.0	D-35.7
Southbound		B-16.9	C-30.9
Hodge Road (SR 2516) at Panther Rock Boulevard/Ellen Drive (SR 2577)	Unsignalized	**-**	**-**
Eastbound		F-776.7	F-577.3
Westbound		E-38.9	E-41.0
Hodge Road (SR 2516) at Spectrum Drive/ Harding Hill Lane	Signalized	**B (17.2)**	**B (13.3)**
Westbound		D-46.0	E-55.2
Northbound		C-21.1	A-7.1
Southbound		A-4.4	A-9.9
Hodge Road (SR 2516) at Poole Road (SR 1007)	Signalized	**F (135.1)**	**F (92.7)**
Eastbound		F-137.9	F-87.1
Westbound		F-146.4	F-108.1
Northbound		E-62.9	B-15.3
Southbound		F-110.1	F-94.1

LEGEND: **X** = Overall signalized intersection LOS;
(XX.X sec/veh) = Overall signalized intersection control delay in seconds; X = Approach LOS

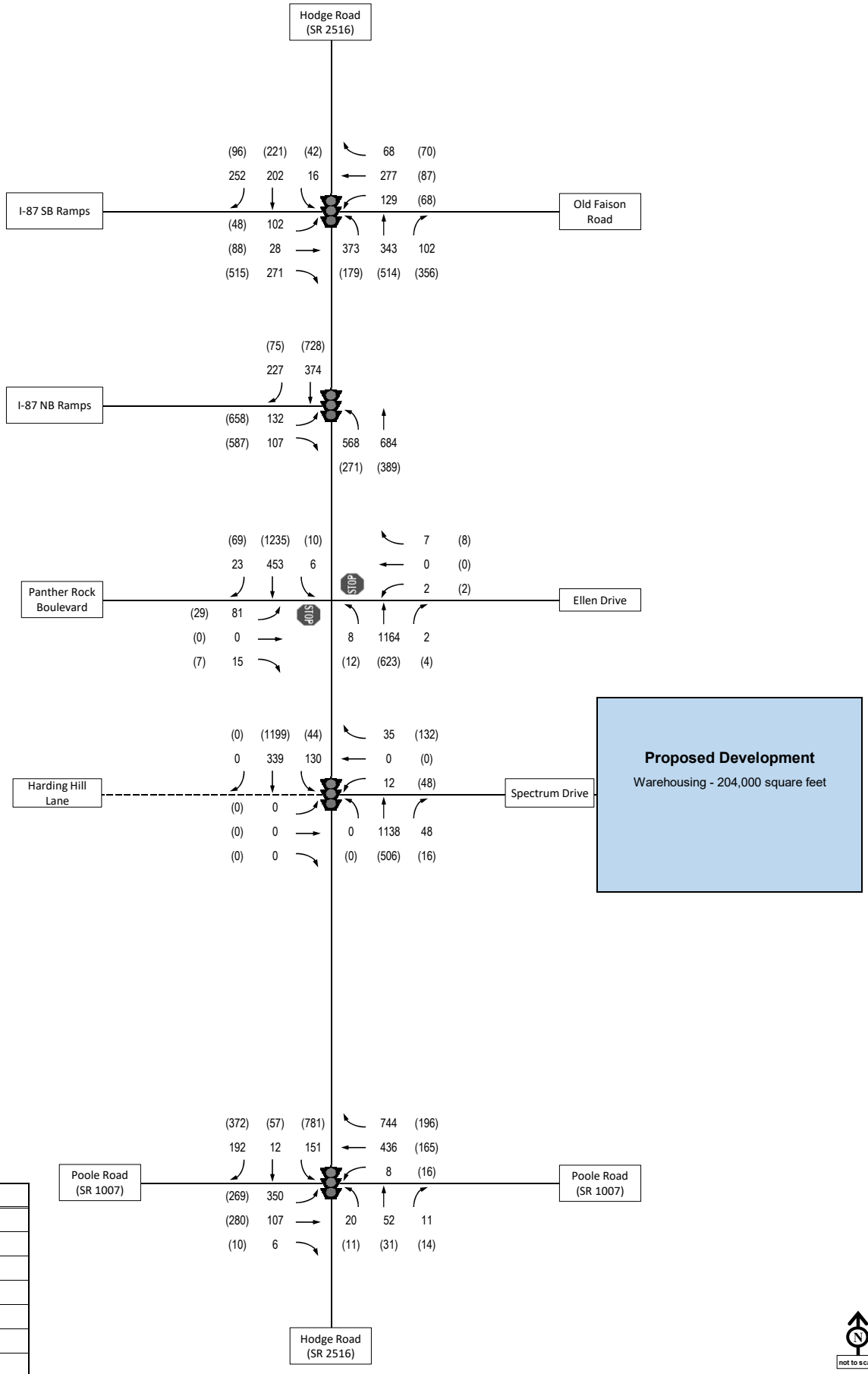


Figure 4
Existing (2021) AM and PM Peak Hour Turning Movement Volumes

Eastgate 540
Traffic Impact Analysis
Knightdale, NC

3

Background (2022) Conditions

Background Growth and Development

The Background (2022) scenario includes Existing (2021) scenario peak hour volumes with annual growth of three percent (3%) applied as well as projected traffic and improvements from four (4) nearby developments. These developments are currently in construction. Committed elements associated with the developments were included in the Background (2022) analysis.

Cheswick North

Located on the west side of Hodge Road, south of the I-87 interchange in Knightdale, NC, this residential development is proposed to consist of 228 apartments, 352 single-family homes and 120 townhomes, with an anticipated build-out year of 2020. A traffic analysis report was prepared by Ramey Kemp and submitted to the Town of Knightdale in February 2015. As detailed in the report, the development is projected to generate 5,600 daily trips, 431 AM peak hour trips (97 entering, 334 exiting), and 539 PM peak hour trips (345 entering, 194 exiting). These trips were distributed to the study area based on the assumed distribution patterns in the report. Field visits indicate that the development is partially constructed; therefore, only 100% of Phase II (100 single family homes the traffic associated with the development was included in the Background (2022) analysis.

SilverStone

Located on the west side of Hodge Road, south of the I-87 interchange in Knightdale, NC, this residential development is proposed to consist of 282 single-family homes and 108 townhomes with an anticipated build-out year of 2020. A traffic analysis report was prepared by Ramey Kemp and submitted to the Town of Knightdale in October 2016. As detailed in the report, the development is projected to generate 3,320 daily trips, 260 AM peak hour trips (61 entering, 199 exiting), and 338 PM peak hour trips (216 entering, 122 exiting). These trips were distributed to the study area based on the assumed distribution patterns in the report. Field visits indicate that the development is under construction; In 2017, Timmons provided an updated summery to the SilverStone and StoneRiver Developments and projected the SilverStone development to be 87% complete by 2022. Those trips were included in the Background (2022) analysis.

StoneRiver

Located on the west side of Hodge Road, south of the I-87 interchange in Knightdale, NC, this residential development is proposed to consist of 286 single-family homes and 98 townhomes with an anticipated build-out year of 2020. A traffic analysis report was prepared by Ramey Kemp and submitted to the Town of Knightdale in June 2016. As detailed in the report, the development is projected to generate 3,320 daily trips, 258 AM peak hour trips (61 entering, 197 exiting), and 337 PM peak hour trips (214 entering, 123 exiting). These trips were distributed to the study area based on the assumed distribution patterns in the report. Field visits indicate that the development is under construction; In 2017, Timmons provided an updated summery to the SilverStone and StoneRiver Developments and projected the StoneRiver development to be 91% complete by 2022. Those trips were included in the Background (2022) analysis.

Hodge Road Industrial

Located on the east side of Hodge Road at Spectrum Drive in Knightdale, NC, this industrial development, also known as Eastgate 540, is proposed to consist of 988,000 square feet of warehouse space with an anticipated build-out year of 2020. A traffic analysis report was prepared by VHB and submitted to the Town of Knightdale in September 2015. As detailed in the report, the development is projected to generate 707 daily trips, 291 AM peak hour trips (230 entering, 61 exiting), and 258 PM peak hour trips (65 entering, 193 exiting). These trips were distributed to the study area based on the assumed distribution patterns in the report. Field visits indicate that the development is partially constructed; therefore, 75% of the traffic associated with the development was included in the Background (2022) analysis.

Per the Timmons Summary TIA, the following improvements were included:

- Hodge Road and I-87 SB Ramps/Old Faison Road
    - Construct an exclusive westbound left-turn lane that provides 125 feet of storage.
    - Construct an exclusive northbound right-turn lane that provides 200 feet of storage.
- Hodge Road and I-87 NB Ramp
    - Construct an exclusive second eastbound right-turn lane that provides 150 feet of storage.
    - Widen southbound Hodge Road from I-87 NB Ramps to Spectrum Drive
- Hodge Road and Panther Rock Boulevard/Ellen Drive
    - Construct an exclusive southbound right-turn lane that provides 200 feet of storage.
    - Widen northbound Hodge Road to north of Faison Ridge Lane
    - Widen southbound Hodge Road (included above)
    - Install a signal.

- Hodge Road and Spectrum Drive
    - Construction of exclusive northbound left-turn lane that provides 100 feet of storage.
    - Terminate southbound Hodge Road widening as right turn lane
    - Widen northbound Hodge Road to north of Faison Ridge Lane (included above)
- Hodge Road and Poole Road
    - Construct an exclusive westbound right-turn lane that provides 200 feet of storage.

All supporting documentation for the approved development trips, including the total projected site trips from the approved developments, are included in Appendix D. The Background (2022) peak hour volumes are shown in Figure 5, and the assumed lane geometrics and traffic control analyzed in the Background (2022) scenario are shown in Figure 6.

Level of Service Analysis

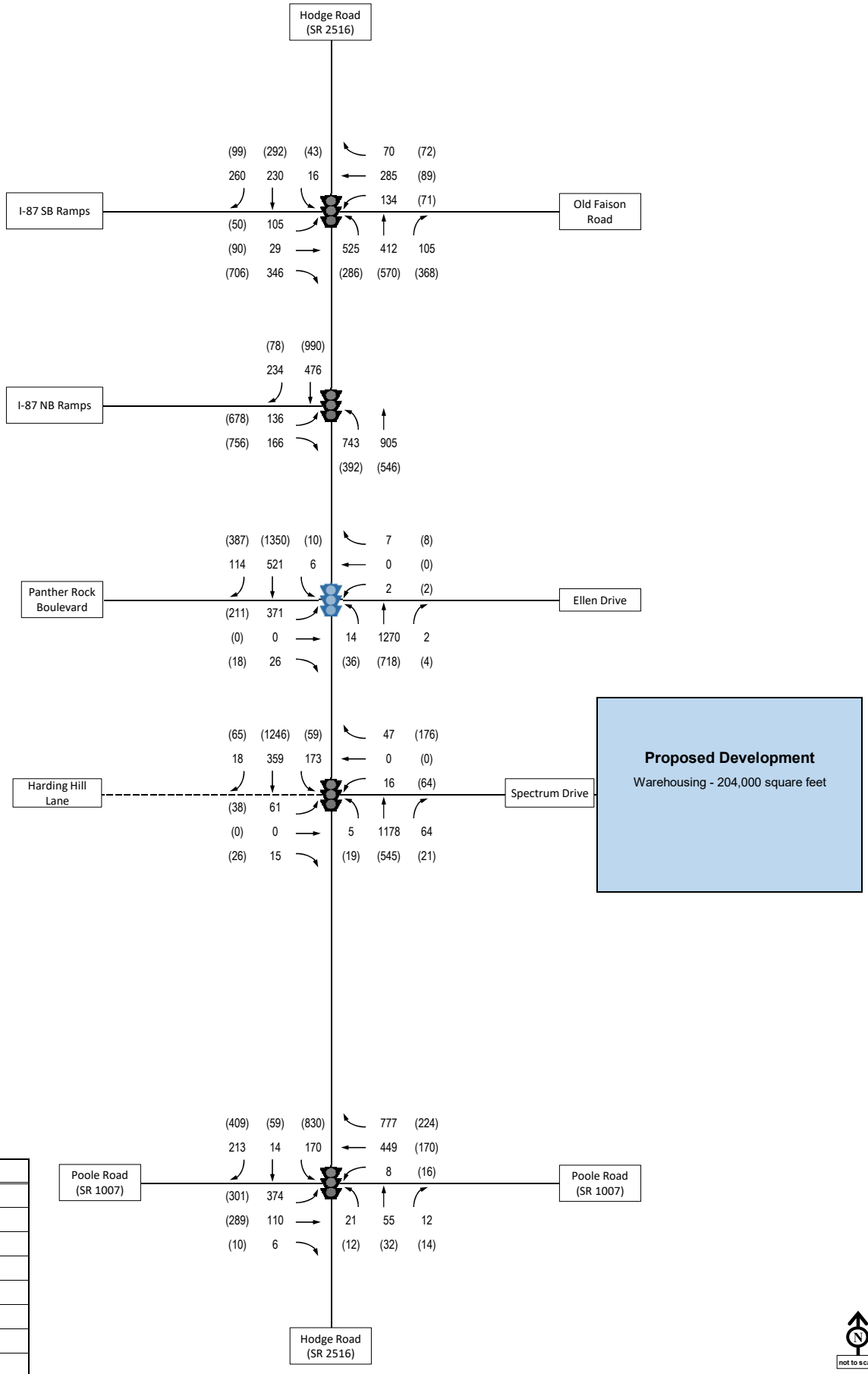
Intersection levels of service analyses were performed for the typical weekday AM and PM peak hours using *Synchro/SimTraffic Version 10*. The newly signalized intersections were optimized within *Synchro* as part of the future year analysis. A summary of the findings for the Background (2022) scenario LOS analysis can be found in Table 3 and the full *Synchro/HCS* output can be found in Appendix C.

As reported in Table 3, two signalized intersections are expected to operate unacceptably during one (1) peak hour. The intersection of Hodge Road and the I-87 NB Ramps is expected to operate at LOS F during the PM peak hour, and the intersection of Hodge Road and Poole Road is expected to operate at LOS E during the AM peak hour.

Table 3: Background (2022) LOS Results

Intersection and Approach	Traffic Control	Background (2022)	
		AM	PM
Hodge Road (SR 2516) at I-87 SB Ramps/Old Faison Road (SR 2515)	Signalized	**D (37.1)**	**C (34.6)**
Eastbound		E-61.1	E-70.6
Westbound		C-34.8	D-43.2
Northbound		C-32.5	A-6.1
Southbound		C-25.9	D-40.2
Hodge Road (SR 2516) at I-87 NB Ramps	Signalized	**C (20.7)**	**F (85.6)**
Eastbound		D-37.7	F-81.1
Northbound		B-17.1	E-72.6
Southbound		C-21.8	F-102.9
Hodge Road (SR 2516) at Panther Rock Boulevard/Ellen Drive (SR 2577)	Signalized	**B (16.3)**	**B (14.8)**
Eastbound		E-58.9	E-66.0
Westbound		E-55.1	E-55.4
Northbound		A-7.7	A-7.9
Southbound		A-6.4	B-10.8
Hodge Road (SR 2516) at Spectrum Drive/ Harding Hill Lane	Signalized	**D (38.1)**	**D (38.9)**
Eastbound		E-58.1	D-53.0
Westbound		D-52.2	E-66.1
Northbound		D-44.7	B-11.6
Southbound		B-19.0	D-45.2
Hodge Road (SR 2516) at Poole Road (SR 1007)	Signalized	**E (57.4)**	**D (50.8)**
Eastbound		E-71.0	E-61.8
Westbound		E-60.5	D-44.5
Northbound		F-93.1	F-85.8
Southbound		C-24.5	D-46.0

LEGEND: **X** = Overall signalized intersection LOS;
(XX.X sec/veh) = Overall signalized intersection control delay in seconds; X = Approach LOS



LEGEND	
→	Turning Movement
—	Existing Roadway
- -	Future Roadway
	Existing Signalized Intersection
	Background Signal Improvement
STOP	Existing Stop Controlled Approach
XX	AM Peak Hour Turning Movement Volume
(XX)	PM Peak Hour Turning Movement Volume

Figure 5
Background (2022) AM and PM Peak Hour Turning Movement Volumes

Eastgate 540
Traffic Impact Analysis
Knightdale, NC

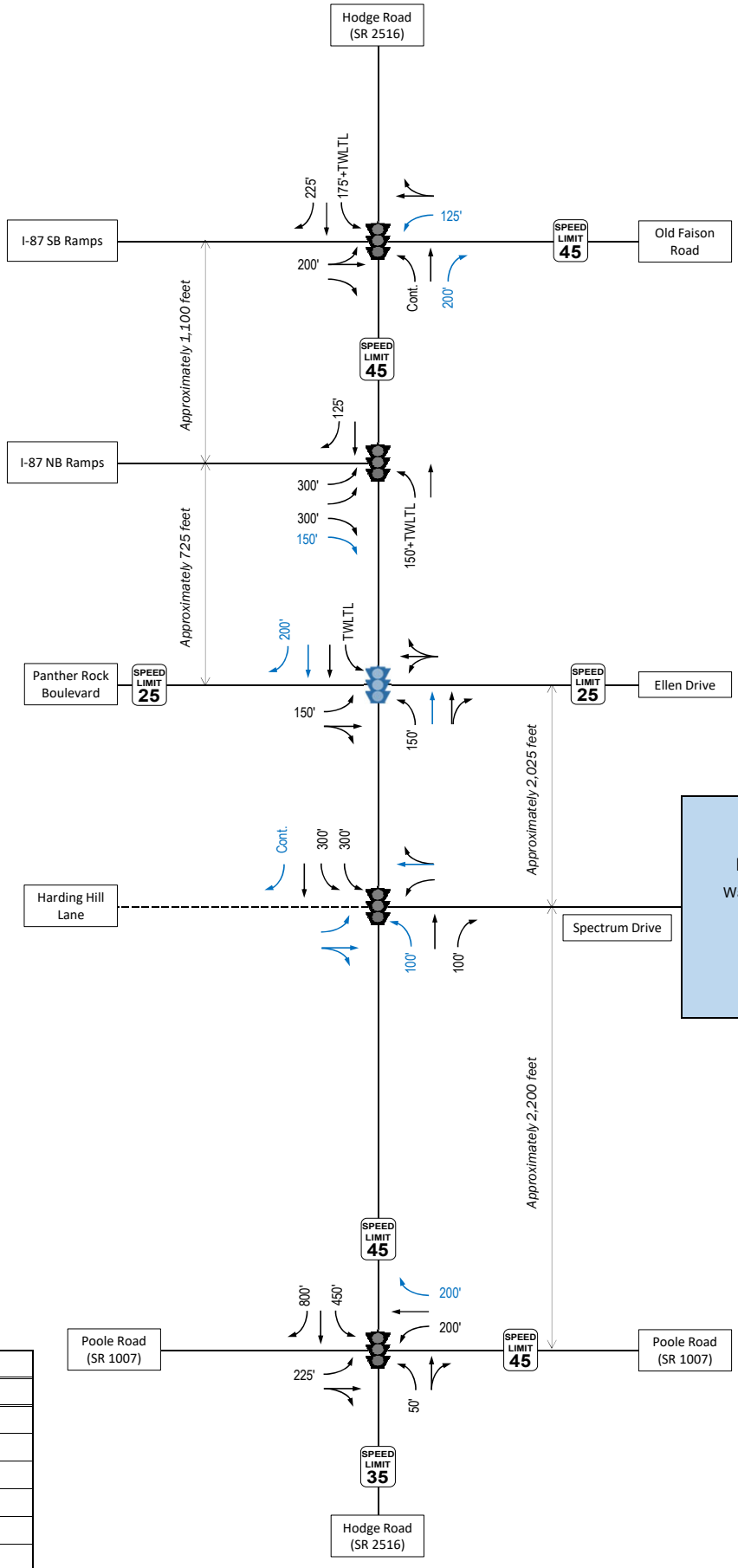


Figure 6
No-Build (2022) Lane Configuration and Traffic Control

Eastgate 540
Traffic Impact Analysis
Knightdale, NC

4

Build (2022) Conditions

Trinity Capital has plans to develop a parcel of land on the east side of Hodge Road, south of I-87, in Knightdale, NC (Figure 1). The project, also known as Hodge Road Business Park, will effectively be an expansion of the existing Eastgate 540 development, which is partially constructed and occupied. The project currently calls for up to 204,000 square feet of industrial warehouse space. The project will have access to Spectrum Drive with an estimated opening at the end of 2021.

Trip Generation

The development is planned to construct up to 204,000 square feet of industrial warehouse space. The trip generation calculations for the site was prepared using the *Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition* and NCDOT's Rate vs Equation guidance for a warehouse (Land Use Code 150). The 540 Eastgate site is expected to generate 368 daily trips with 50 trips (38 entering, 12 exiting) occurring during the AM peak hour and 52 trips (14 entering, 38 exiting) occurring during the PM peak hour. The trip generation results for the site are shown in Table 4 below.

Table 4: Trip Generation Rates

AM Peak Hour Total Trips						
ITE Land Use Code	Use	Units	ITE MANUAL RATES*			
			ADT	AM Enter	AM Exit	AM Total
150	Warehousing	204,000 sf	368	38	12	50

PM Peak Hour Total Trips						
ITE Land Use Code	Use	Units	ITE MANUAL RATES*			
			ADT	PM Enter	PM Exit	PM Total
150	Warehousing	204,000 sf	368	14	38	52

* ITE Trip Generation, 10th Edition

Traffic Distribution and Assignment

The Memorandum of Understanding listed a separate trip generation for employees and deliveries. Those percentages were combined using a weighted average to reflect a single distribution. The generated site trips were distributed in accordance with the existing traffic patterns and land uses in the vicinity of the study area as follows:

- Hodge Road to/from the north – 15%
- Hodge Road to/from the south – 2%
- I-87 to/from the west – 35%
- I-87 to/from the east – 26%
- Old Faison Road to/from the east – 5%
- Panther Rock Boulevard to/from the west – 1%
- Poole Road to/from the west – 7%
- Poole Road to/from the east – 8%
- Harding Hill Lane to/from the west – 1%

The site trip percentages are depicted in Figure 7, with the resulting site trips shown in Figure 8.

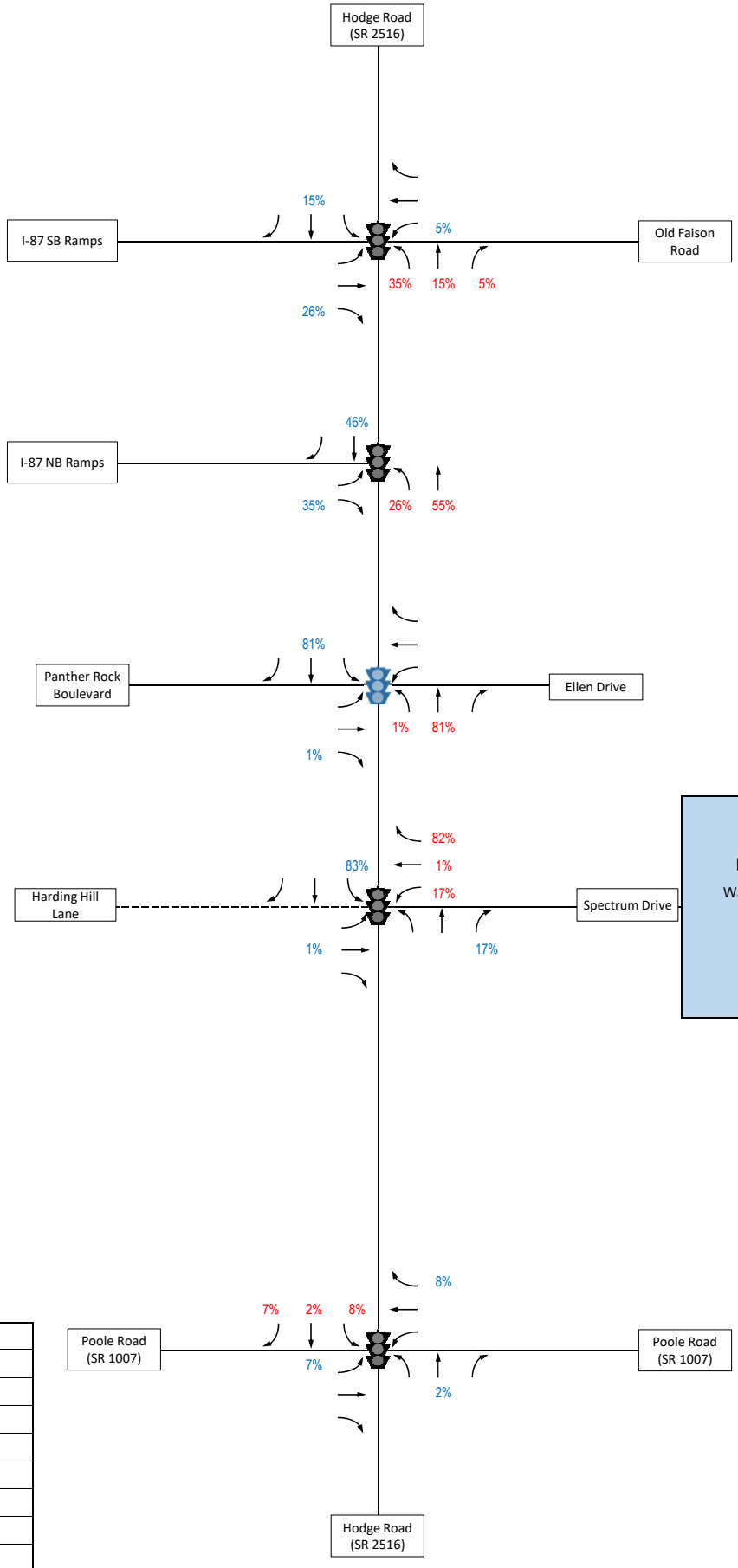
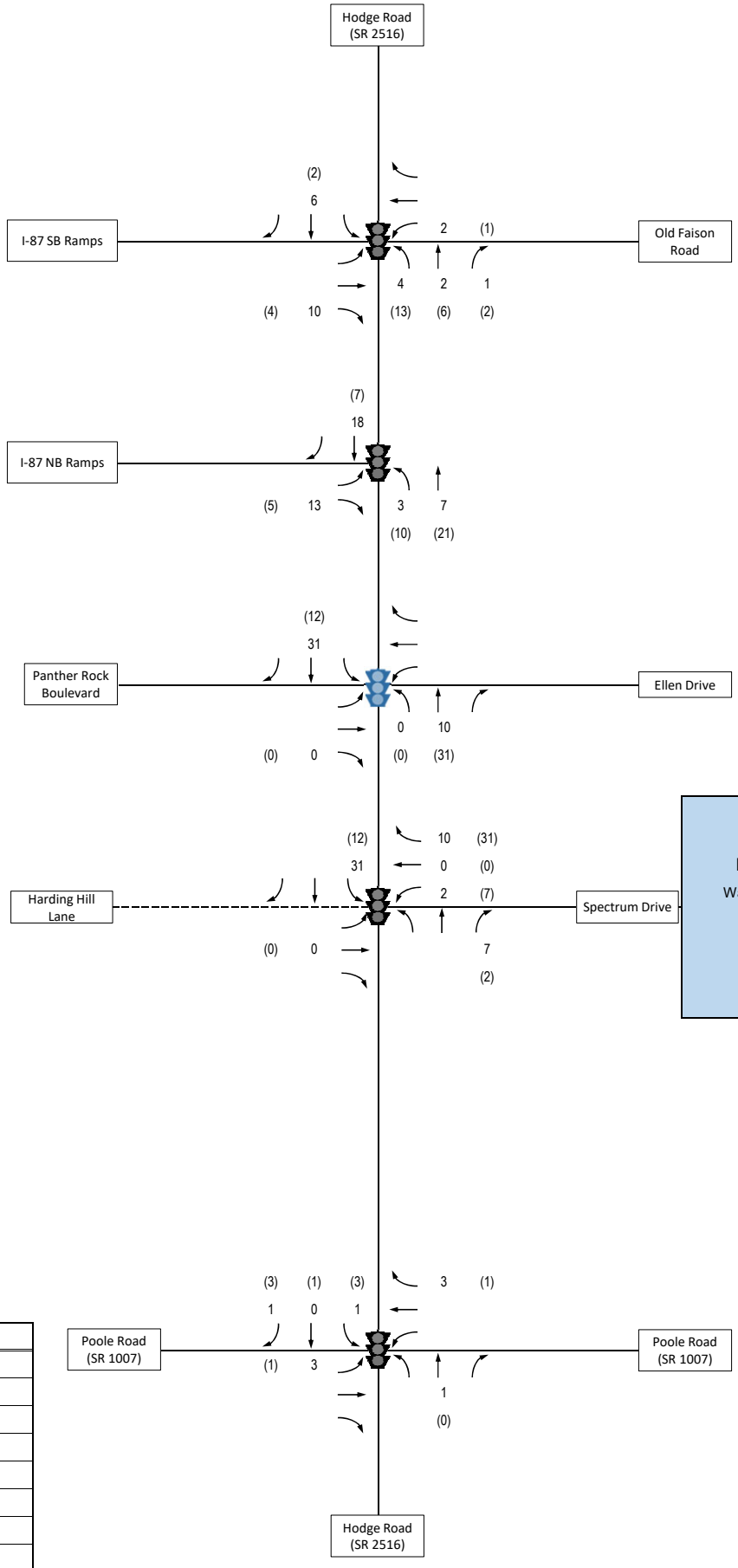


Figure 7
Directional Distribution Percentages

Eastgate 540
Traffic Impact Analysis
Knightdale, NC



LEGEND	
→	Turning Movement
—	Existing Roadway
- -	Future Roadway
	Existing Signalized Intersection
	Background Signal Improvement
STOP	Existing Stop Controlled Approach
XX	AM Peak Hour Turning Movement Volume
(XX)	PM Peak Hour Turning Movement Volume

Figure 8
AM and PM Peak Hour Site Trips

Eastgate 540
Traffic Impact Analysis
Knightdale, NC

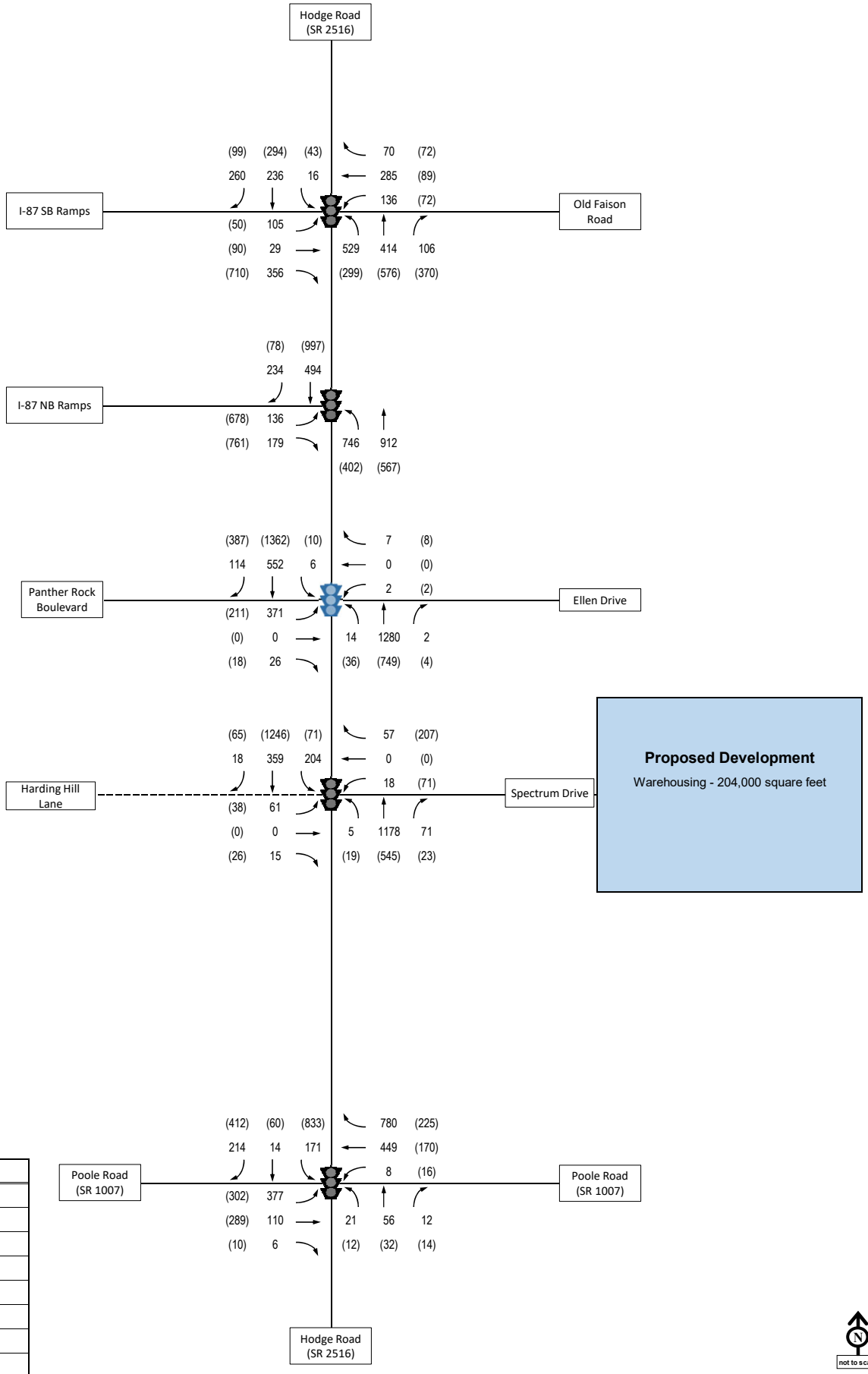
The Build (2022) analysis scenario includes the Background (2022) traffic as well as site generated trips from the proposed development, as described previously. Figure 9 depicts the turning movement volumes used in the Build (2022) scenarios. Intersection levels of service analyses were performed for the typical weekday AM and PM peak hours using *Synchro/SimTraffic Version 10* and *Highway Capacity Software*. The four northern intersections are coordinated, and the signal timings were locked to match the Background (2022) scenarios. The southern intersection is isolated and was optimized in all scenarios based on Synchro's standard optimization parameters. Table 5 summarizes the findings of the LOS analysis, and Appendix C contains the full *Synchro/HCS* reports of the analyses.

As reported in Table 5, while there is a slight increase in delay due to the site trips at most intersections, none of the overall intersection levels of service are affected when comparing Background (2022) to Build (2022) conditions. The intersection of Hodge Road and the I-87 NB Ramps is expected to operate at LOS F during the PM peak hour, and the intersection of Hodge Road and Poole Road is expected to operate at LOS E during the AM peak hour.

Table 5: Build (2022) LOS Results

Intersection and Approach	Traffic Control	Build (2022)	
		AM	PM
Hodge Road (SR 2516) at I-87 SB Ramps/Old Faison Road (SR 2515)	Signalized	**D (38.0)**	**C (35.0)**
Eastbound		E-62.3	E-71.7
Westbound		C-35.0	D-43.4
Northbound		C-33.3	A-6.2
Southbound		C-27.2	D-41.1
Hodge Road (SR 2516) at I-87 NB Ramps	Signalized	**C (22.9)**	**F (88.5)**
Eastbound		D-36.7	F-81.1
Northbound		B-19.2	F-80.0
Southbound		C-25.3	F-106.1
Hodge Road (SR 2516) at Panther Rock Boulevard/Ellen Drive (SR 2577)	Signalized	**B (16.1)**	**B (14.3)**
Eastbound		E-59.1	E-65.6
Westbound		E-55.1	E-55.4
Northbound		A-7.8	A-7.9
Southbound		A-6.2	B-10.3
Hodge Road (SR 2516) at Spectrum Drive/ Harding Hill Lane	Signalized	**D (42.8)**	**D (43.3)**
Eastbound		E-58.5	D-54.3
Westbound		D-54.4	E-77.3
Northbound		D-51.8	B-11.9
Southbound		B-19.6	D-49.3
Hodge Road (SR 2516) at Poole Road (SR 1007)	Signalized	**E (58.1)**	**D (52.1)**
Eastbound		E-72.5	E-62.2
Westbound		E-60.7	D-45.2
Northbound		F-95.4	F-85.8
Southbound		C-24.2	D-48.2

LEGEND: **X** = Overall signalized intersection LOS;
(XX.X sec/veh) = Overall signalized intersection control delay in seconds; X = Approach LOS



LEGEND	
→	Turning Movement
—	Existing Roadway
- -	Future Roadway
	Existing Signalized Intersection
	Future Signalized Intersection
STOP	Existing Stop Controlled Approach
XX	AM Peak Hour Turning Movement Volume
(XX)	PM Peak Hour Turning Movement Volume

Figure 9
Build (2022) AM and PM Peak Hour Turning Movement Volumes

Eastgate 540
Traffic Impact Analysis
Knightdale, NC

5

Background (2032) Conditions

Background Growth and Development

The Town of Knightdale requires a Build analysis to be conducted for the build year (2022) and a period 10 years beyond (2032). For this analysis, the Town of Knightdale is requiring an annual growth rate of three percent (3%) be applied to the existing traffic to account for the normal growth between the background year (2022) and the build year (2032).

The Background (2032) scenario includes Existing (2021) scenario peak hour volumes with a three percent (3%) annual growth applied as well as projected traffic and improvements from four (4) nearby developments in the area. These developments are currently in construction. Committed elements associated with the developments were included in the Background (2032) analysis.

Cheswick North
100% completed in 2022

SilverStone
In 2017, Timmons provided an updated summery to the SilverStone and StoneRiver Developments and projected the SilverStone development to be 87% complete by 2022. The remaining 13% of trips were included in the Background (2032) analysis.

StoneRiver
In 2017, Timmons provided an updated summery to the SilverStone and StoneRiver Developments and projected the StoneRiver development to be 91% complete by 2022. The remaining 9% trips were included in the Background (2032) analysis.

Hodge Road Industrial
Field visits indicate that the development is partially constructed; therefore, 75% of the traffic associated with the development was included in the Background (2022) analysis. The remaining trips were included in the Background (2032) analysis.

Per the Timmons Summary TIA, the following improvements were included:

All supporting documentation for the approved development trips, including the total projected site trips from the approved developments, are included in Appendix D. The Background (2032) peak hour volumes are shown in Figure 10.

Level of Service Analysis

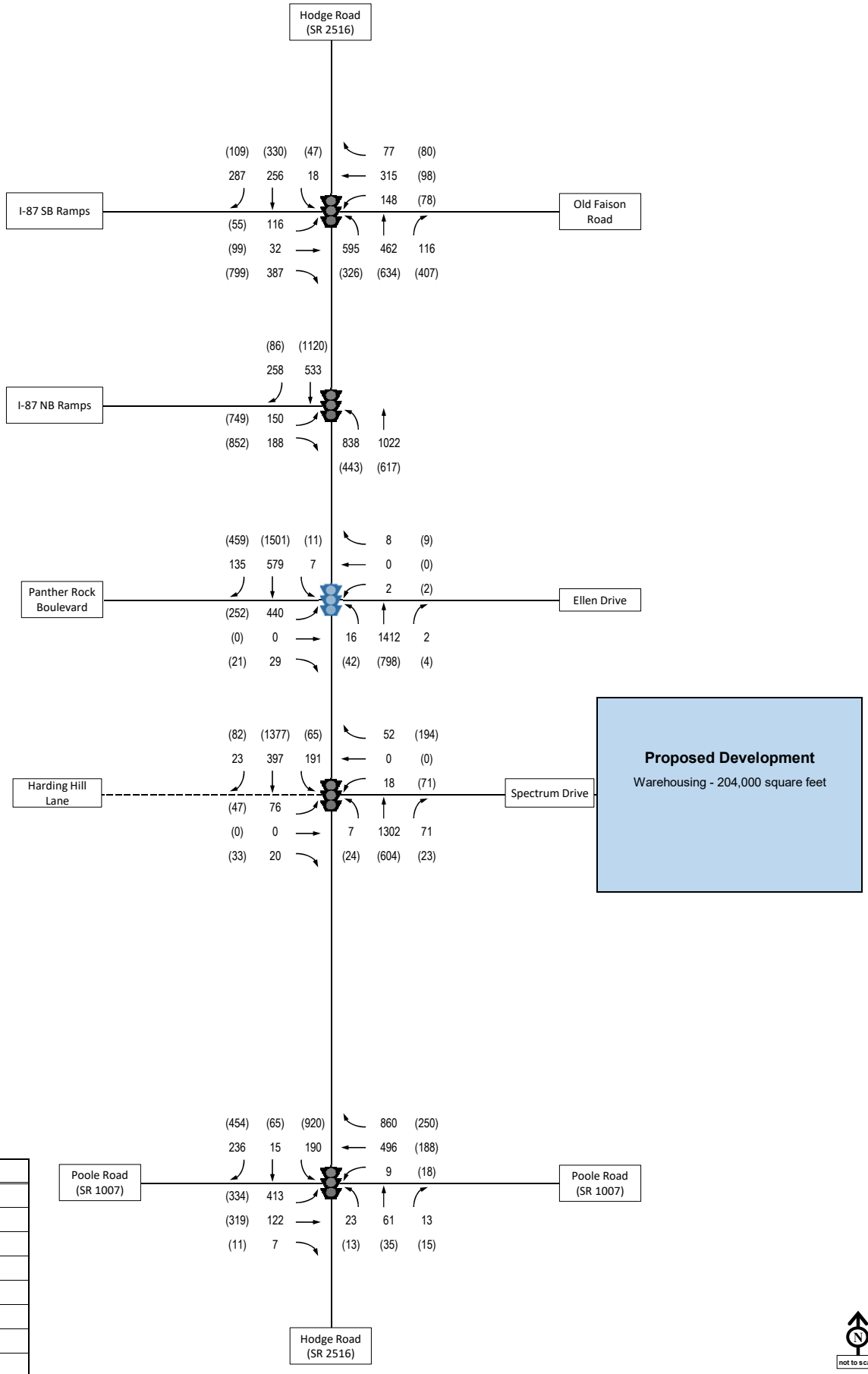
Intersection levels of service analyses were performed for the typical weekday AM and PM peak hours using *Synchro/SimTraffic Version 10*. The newly signalized intersections were optimized within *Synchro* as part of the future year analysis. A summary of the findings for the Background (2022) scenario LOS analysis can be found in Table 6 and the full *Synchro/HCS* output can be found in Appendix C.

As reported in Table 6, multiple signalized intersections are expected to operate at LOS E or worse during at least one peak hour. The intersection of Hodge Road and the I-87 NB Ramps will operate at LOS F during the PM peak hour, and the intersection of Hodge Road and Spectrum Drive will operate at LOS E during the PM peak hour. The intersection of Hodge Road and Poole Road will operate at LOS E during both peak hours.

Table 6: Background (2032) LOS Results

Intersection and Approach	Traffic Control	Background (2032)	
		AM	PM
Hodge Road (SR 2516) at I-87 SB Ramps/Old Faison Road (SR 2515)	Signalized	**D (53.0)**	**D (44.6)**
Eastbound		E-78.2	E-58.8
Westbound		D-46.1	E-58.6
Northbound		D-47.7	B-10.3
Southbound		D-46.4	F-105.5
Hodge Road (SR 2516) at I-87 NB Ramps	Signalized	**D (35.6)**	**F (122.6)**
Eastbound		E-55.0	F-120.7
Northbound		C-33.0	F-89.9
Southbound		C-33.3	F-153.8
Hodge Road (SR 2516) at Panther Rock Boulevard/Ellen Drive (SR 2577)	Signalized	**C (31.3)**	**B (19.9)**
Eastbound		E-70.3	E-74.0
Westbound		E-77.8	E-78.3
Northbound		C-22.9	A-6.8
Southbound		C-22.0	B-17.7
Hodge Road (SR 2516) at Spectrum Drive/ Harding Hill Lane	Signalized	**D (36.4)**	**E (59.9)**
Eastbound		F-86.0	F-167.8
Westbound		E-71.4	F-130.7
Northbound		C-32.2	B-10.3
Southbound		C-34.0	E-63.1
Hodge Road (SR 2516) at Poole Road (SR 1007)	Signalized	**E (72.9)**	**E (70.6)**
Eastbound		F-95.3	F-91.1
Westbound		E-76.2	E-62.2
Northbound		F-141.7	F-134.5
Southbound		C-20.1	E-61.0

LEGEND: **X** = Overall signalized intersection LOS;
(XX.X sec/veh) = Overall signalized intersection control delay in seconds; X = Approach LOS



LEGEND	
→	Turning Movement
—	Existing Roadway
- -	Future Roadway
	Existing Signalized Intersection
	Background Signal Improvement
STOP	Existing Stop Controlled Approach
XX	AM Peak Hour Turning Movement Volume
(XX)	PM Peak Hour Turning Movement Volume

Figure 10
No-Build (2032) AM and PM Peak Hour Turning Movement Volumes

Eastgate 540
Traffic Impact Analysis
Knightdale, NC

6

Build (2032) Conditions

Trinity Capital has plans to develop a parcel of land on the east side of Hodge Road, south of I-87, in Knightdale, NC (Figure 1). The project, also known as Hodge Road Business Park, will effectively be an expansion of the existing Eastgate 540 development, which is partially constructed and occupied. The project currently calls for up to 204,000 square feet of industrial warehouse space. The project will have access to Spectrum Drive with an estimated opening at the end of 2021.

Level of Service Analysis

The Build (2032) conditions include the Background (2032) peak hour volumes with a three percent (3%) annual growth rate applied for an additional 10 years beyond the build-out of the proposed development, as well as projected site trips from the proposed development. The site trips are based on the same calculations and distributions as described in Section 4. Figure 11 depicts the turning movement volumes used in the Build (2032) scenario. Intersection levels of service analyses were performed for the typical weekday AM and PM peak hours using *Synchro/SimTraffic Version 10* and *Highway Capacity Software*. The newly signalized intersections were optimized within *Synchro* as part of the future year analysis. Table 7 summarizes the findings of the LOS analysis, and Appendix C contains the full *Synchro/HCS* reports of the analyses.

As reported in Table 7, while there is a slight increase in delay due to the site trips at most intersections, none of the overall intersection levels of service are affected when comparing Background (2032) to Build (2032) conditions. The intersection of Hodge Road and the I-87 NB Ramps will operate at LOS F during the PM peak hour, and the intersection of Hodge Road and Spectrum Drive will operate at LOS E during the PM peak hour. The intersection of Hodge Road and Poole Road will operate at LOS E during both peak hours.

Table 7: Build (2032) LOS Results

Intersection and Approach	Traffic Control	Build (2032)	
		AM	PM
Hodge Road (SR 2516) at I-87 SB Ramps/Old Faison Road (SR 2515)	Signalized	**D (54.1)**	**D (45.3)**
Eastbound		F-80.6	E-61.8
Westbound		D-46.4	E-58.9
Northbound		D-48.0	B-10.3
Southbound		D-48.5	F-105.7
Hodge Road (SR 2516) at I-87 NB Ramps	Signalized	**D (38.5)**	**F (125.3)**
Eastbound		D-54.0	F-120.7
Northbound		C-34.9	F-96.8
Southbound		D-39.9	F-157.0
Hodge Road (SR 2516) at Panther Rock Boulevard/Ellen Drive (SR 2577)	Signalized	**C (34.3)**	**B (20.0)**
Eastbound		E-70.3	E-74.0
Westbound		E-78.4	E-78.3
Northbound		C-28.7	A-6.6
Southbound		C-21.9	B-18.2
Hodge Road (SR 2516) at Spectrum Drive/ Harding Hill Lane	Signalized	**D (44.3)**	**E (66.9)**
Eastbound		F-88.9	F-167.8
Westbound		E-73.6	F-180.1
Northbound		C-33.5	B-10.3
Southbound		E-57.0	E-63.3
Hodge Road (SR 2516) at Poole Road (SR 1007)	Signalized	**E (74.1)**	**E (71.1)**
Eastbound		F-97.2	F-91.6
Westbound		E-77.3	E-62.2
Northbound		F-143.9	F-134.5
Southbound		C-20.1	E-61.8

LEGEND: **X** = Overall signalized intersection LOS;
(XX.X sec/veh) = Overall signalized intersection control delay in seconds; X = Approach LOS

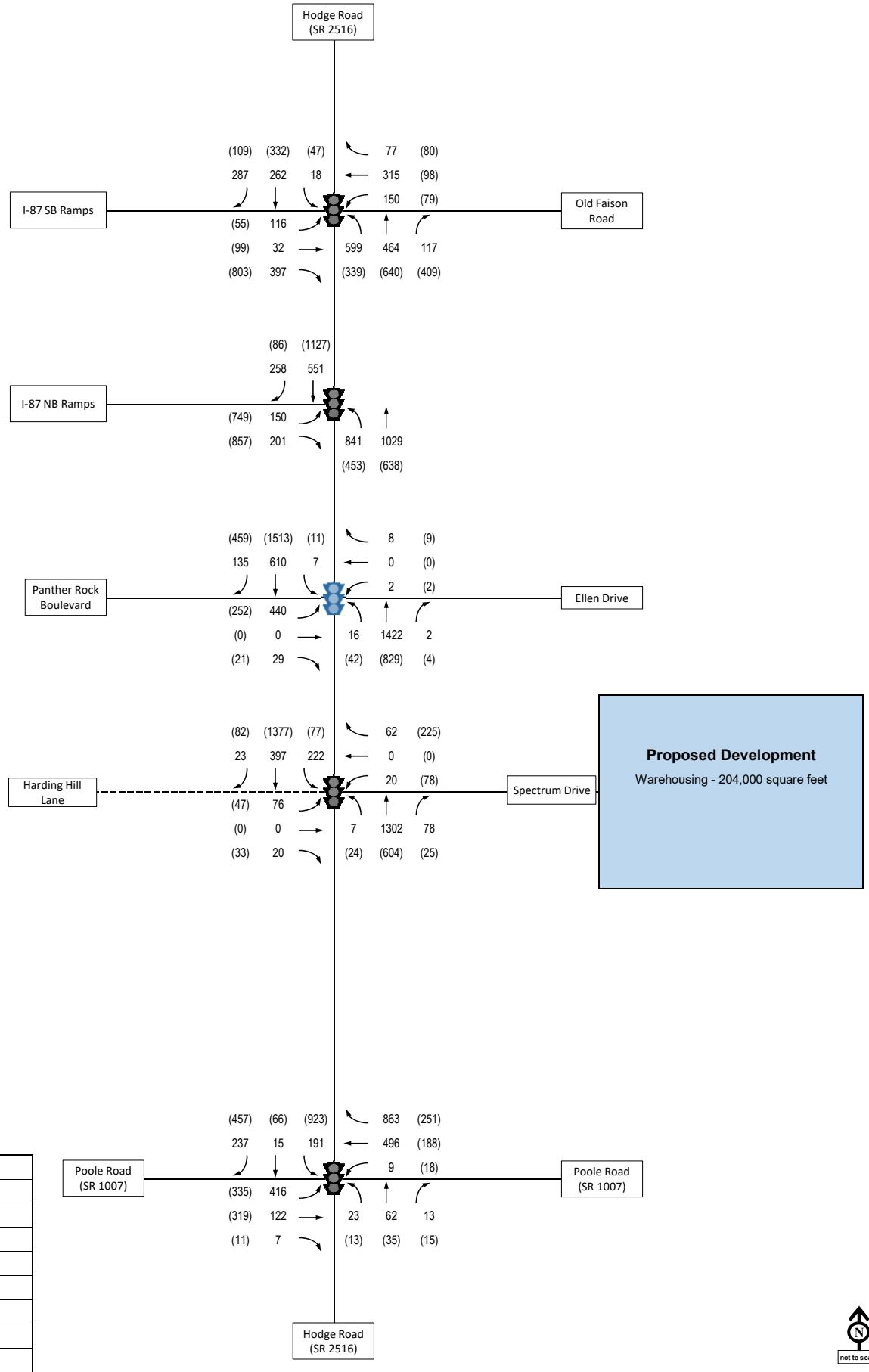


Figure 11
Build (2032) AM and PM Peak Hour Turning Movement Volumes

Eastgate 540
Traffic Impact Analysis
Knightdale, NC

7

Findings and Conclusions

As indicated in the traffic operations analyses, the proposed development is projected to have a slight impact on the traffic operations of the surrounding roadway network and intersections. As shown in the trip generation calculations, the site is expected to generate well under the 150 minimum peak hour trips or 3,000 daily site trips that would require a TIA to be completed for the site. The site traffic represents less than two percent of the projected intersection volume and less than five percent of any approach volume at all of the off-site intersections. The projected delay increases by less than two or three seconds at most of the intersections. Therefore, after the build-out of the development is completed at the end of 2021, no offsite roadway improvements are recommended.

The Eastgate 540 project previously constructed dual southbound left-turn lanes and a northbound right-turn lane along Hodge Road along with frontage widening to accommodate dual northbound through lanes in the future. In addition, the driveway was constructed to include dual ingress and dual egress lanes. With these improvements constructed as part of the initial development phase, the intersection is projected to continue operating at an acceptable level of service with the addition of this additional site traffic.

Currently, Spectrum Drive operates with a protected left-turn phase and a permitted right-turn phase with an overlap phases operating along with the southbound left-turn phase. Once the construction of Harding Hill Lane is complete, the SilverStone-StoneRiver Development will remove the right-turn overlap phase by combining the through and right-turn movements along Spectrum Drive. This signal modification will worsen operations along Spectrum Drive while providing better lane alignment with future Harding Hill Lane. If maintaining the overlap phase along Spectrum Drive is desirable, the Town and NCDOT should coordinate with the SilverStone-StoneRiver development to accommodate this right-turn overlap phase with the project.

As mentioned previously, the construction of R-2829 (NC 540 – Eastern Wake Freeway) is scheduled to begin construction in 2026 and once open, will provide a freeway connection between I-540 and Poole Road, less than a mile east of Hodge Road. To be conservative, no reduction in traffic along Hodge Road was assumed for this scenario.

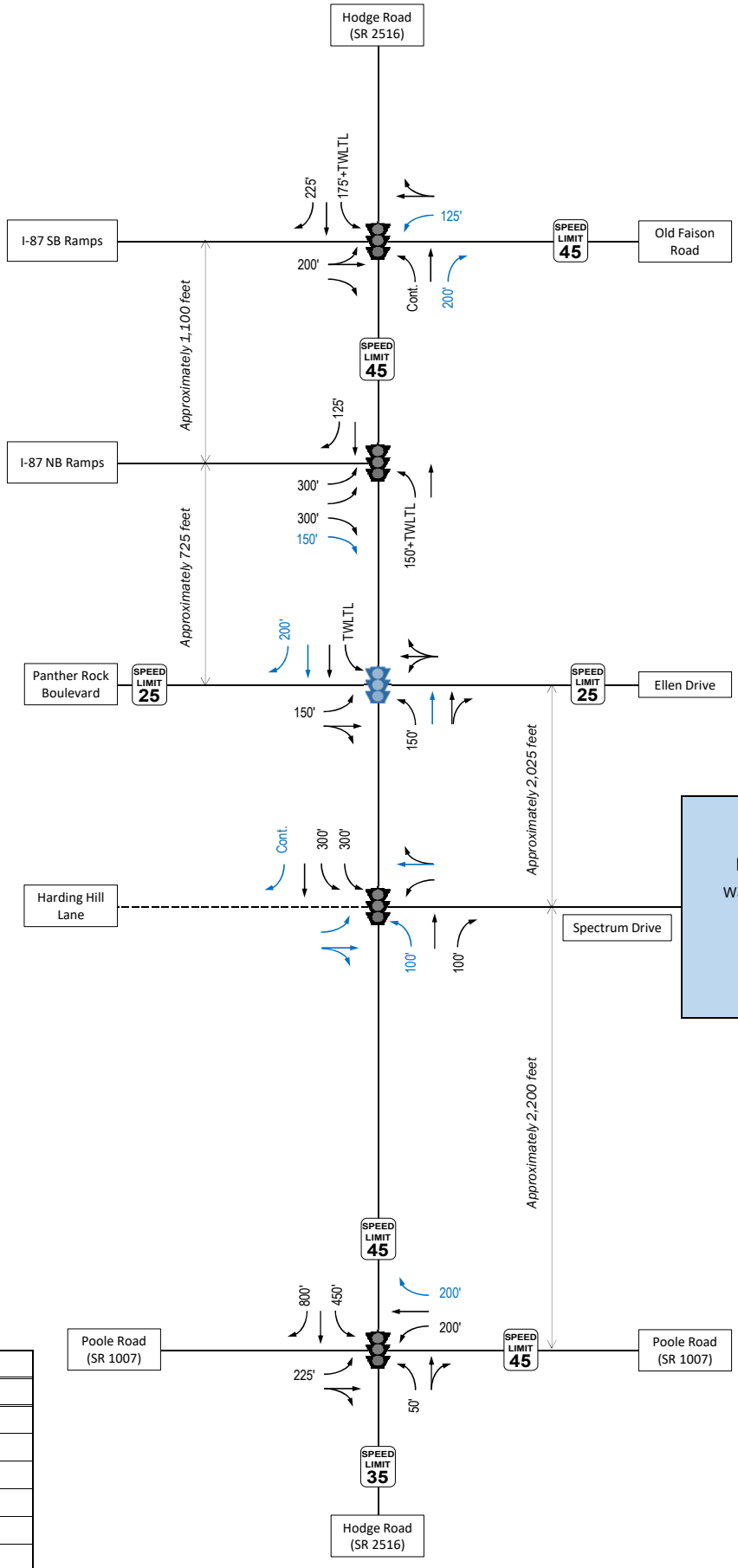
Per the Town's Arterial & Collector Street Plan, Hodge Road is identified as an existing arterial that needs improvements within the study area, while the Town's Functional

Class Plan identifies Hodge Road as a boulevard with 100 feet of right-of-way. In addition, the City of Raleigh's 2030 Comprehensive Plan depicts Hodge Road as a four-lane, divided avenue within the study area. There are sections along Hodge Road where developments have provided frontage widening via striped out pavement, so that Hodge Road can be improved in the future with additional thru lanes. The Town and NCDOT should continue to pursue the ultimate widening of Hodge Road as planned. A summary of LOS results across scenarios is shown in Table 8, and the resulting future (2022) lane configurations and traffic control are shown in Figure 12.

Table 8: Summary of LOS Results

Intersection and Approach	Traffic Control	Existing (2021)		Background (2022)		Build (2022)		Background (2032)		Build (2032)	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Hodge Road (SR 2516) at I-87 SB Ramps/Old Faison Road (SR 2515)	Signalized	**C (31.2)**	**C (32.8)**	**D (37.1)**	**C (34.6)**	**D (38.0)**	**C (35.0)**	**D (53.0)**	**D (44.6)**	**D (53.7)**	**D (45.2)**
Eastbound		C-20.1	C-23.4	E-61.1	E-70.6	E-62.3	E-71.7	E-78.2	E-58.8	E-78.9	E-61.5
Westbound		E-71.6	F-116.7	C-34.8	D-43.2	C-35.0	D-43.4	D-46.1	E-58.6	D-46.3	E-58.8
Northbound		C-21.3	C-22.4	C-32.5	A-6.1	C-33.3	A-6.2	D-47.7	B-10.3	D-48.2	B-10.2
Southbound		B-16.9	C-27.5	C-25.9	D-40.2	C-27.2	D-41.1	D-46.4	F-105.5	D-48.1	F-105.7
Hodge Road (SR 2516) at I-87 NB Ramps	Signalized	**B (11.5)**	**C (33.7)**	**C (20.7)**	**F (85.6)**	**C (22.9)**	**F (88.5)**	**D (35.6)**	**F (122.6)**	**D (37.1)**	**F (124.6)**
Eastbound		C-32.3	C-34.4	D-37.7	F-81.1	D-36.7	F-81.1	E-55.0	F-120.7	D-53.9	F-120.7
Northbound		A-5.0	D-35.7	B-17.1	E-72.6	B-19.2	F-80.0	C-33.0	F-89.9	C-34.1	F-94.3
Southbound		B-16.9	C-30.9	C-21.8	F-102.9	C-25.3	F-106.1	C-33.3	F-153.8	D-36.8	F-157.0
Hodge Road (SR 2516) at Panther Rock Boulevard/Ellen Drive (SR 2577)	Unsignalized/ Signalized	**-**	**-**	**B (16.3)**	**B (14.8)**	**B (16.1)**	**B (14.3)**	**C (31.3)**	**B (19.9)**	**C (32.1)**	**B (20.0)**
Eastbound		F-776.7	F-577.3	E-58.9	E-66.0	E-59.1	E-65.6	E-70.3	E-74.0	E-70.3	E-74.0
Westbound		E-38.9	E-41.0	E-55.1	E-55.4	E-55.1	E-55.4	E-77.8	E-78.3	E-78.4	E-78.3
Northbound		-	-	A-7.7	A-7.9	A-7.8	A-7.9	C-22.9	A-6.8	C-24.6	A-6.6
Southbound		-	-	A-6.4	B-10.8	A-6.2	B-10.3	C-22.0	B-17.7	C-22.0	B-18.2
Hodge Road (SR 2516) at Spectrum Drive/ Harding Hill Lane	Signalized	**B (17.2)**	**B (13.3)**	**D (38.1)**	**D (38.9)**	**D (42.8)**	**D (43.3)**	**D (36.4)**	**E (59.9)**	**D (42.3)**	**E (65.7)**
Eastbound		-	-	E-58.1	D-53.0	E-58.5	D-54.3	F-86.0	F-167.8	F-91.2	F-167.8
Westbound		D-46.0	E-55.2	D-52.2	E-66.1	D-54.4	E-77.3	E-71.4	F-130.7	E-73.8	F-170.9
Northbound		C-21.1	A-7.1	D-44.7	B-11.6	D-51.8	B-11.9	C-32.2	B-10.3	C-32.1	B-10.3
Southbound		A-4.4	A-9.9	B-19.0	D-45.2	B-19.6	D-49.3	C-34.0	E-63.1	D-53.0	E-63.3
Hodge Road (SR 2516) at Poole Road (SR 1007)	Signalized	**F (135.1)**	**F (92.7)**	**E (57.4)**	**D (50.8)**	**E (58.1)**	**D (52.1)**	**E (72.9)**	**E (70.6)**	**E (74.0)**	**E (71.1)**
Eastbound		F-137.9	F-87.1	E-71.0	E-61.8	E-72.5	E-62.2	F-95.3	F-91.1	F-97.2	F-91.6
Westbound		F-146.4	F-108.1	E-60.5	D-44.5	E-60.7	D-45.2	E-76.2	E-62.2	E-77.3	E-62.2
Northbound		E-62.9	B-15.3	F-93.1	F-85.8	F-95.4	F-85.8	F-141.7	F-134.5	F-141.4	F-134.5
Southbound		F-110.1	F-94.1	C-24.5	D-46.0	C-24.2	D-48.2	C-20.1	E-61.0	C-20.1	E-61.8

LEGEND: **X** = Overall signalized intersection LOS;
(XX.X sec/veh) = Overall signalized intersection control delay in seconds; X = Approach LOS



LEGEND	
→	Lane Configuration
→	Background Lane Improvement
—	Existing Roadway
- -	Future Roadway
	Existing Signalized Intersection
	Background Signal Improvement
STOP	Existing Stop Controlled Approach

Figure 12
Future (2022) Lane Configuration and Traffic Control

Eastgate 540
Traffic Impact Analysis
Knightdale, NC

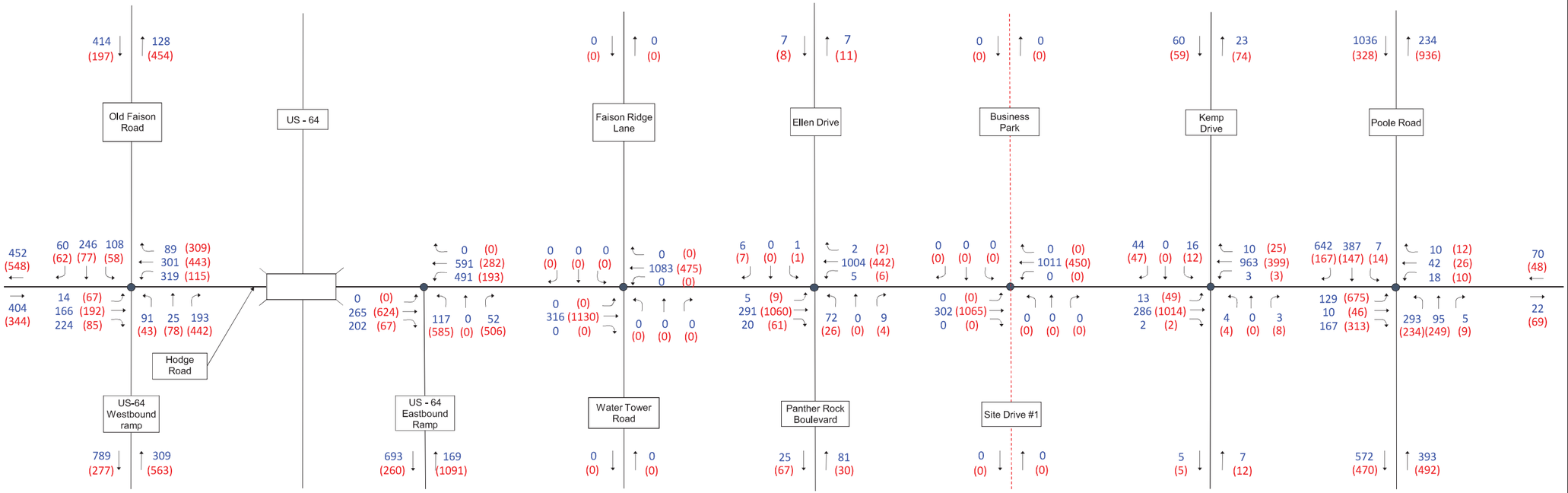
APPENDICES

APPENDIX A:

Turning Movement Counts

N

NOT TO SCALE



LEGEND:

- Existing Road
- Proposed Road
- XX AM Peak Hour Volume (vph)
- (XX) PM Peak Hour Volume (vph)

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Stoneriver - Silverstone Traffic Analysis

2017 Existing Traffic Volumes

Figure 5

APPENDIX B:

Traffic Signal Plans

PROJECT REFERENCE NO.	SHEET NO.
R-2547BB	SIG-2

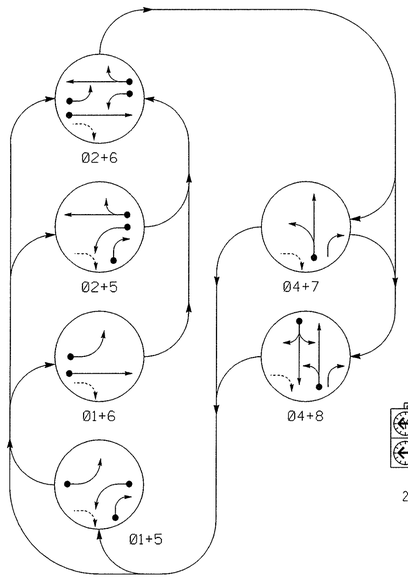
METRIC

5 0 10
1:500

RELEASE FOR CONSTRUCTION

DATE: 8-8-03

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

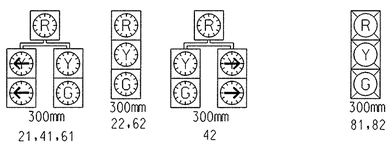
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 01+5	01+6	02+5	02+6	04+7	04+8	FLASH
21	R	R	G	G	R	R	Y
22	R	R	G	G	R	R	Y
41	R	R	R	R	G	G	R
42	R	R	R	R	G	G	R
61	R	G	R	G	R	R	Y
62	R	G	R	G	R	R	Y
81, 82	R	R	R	R	G	G	R

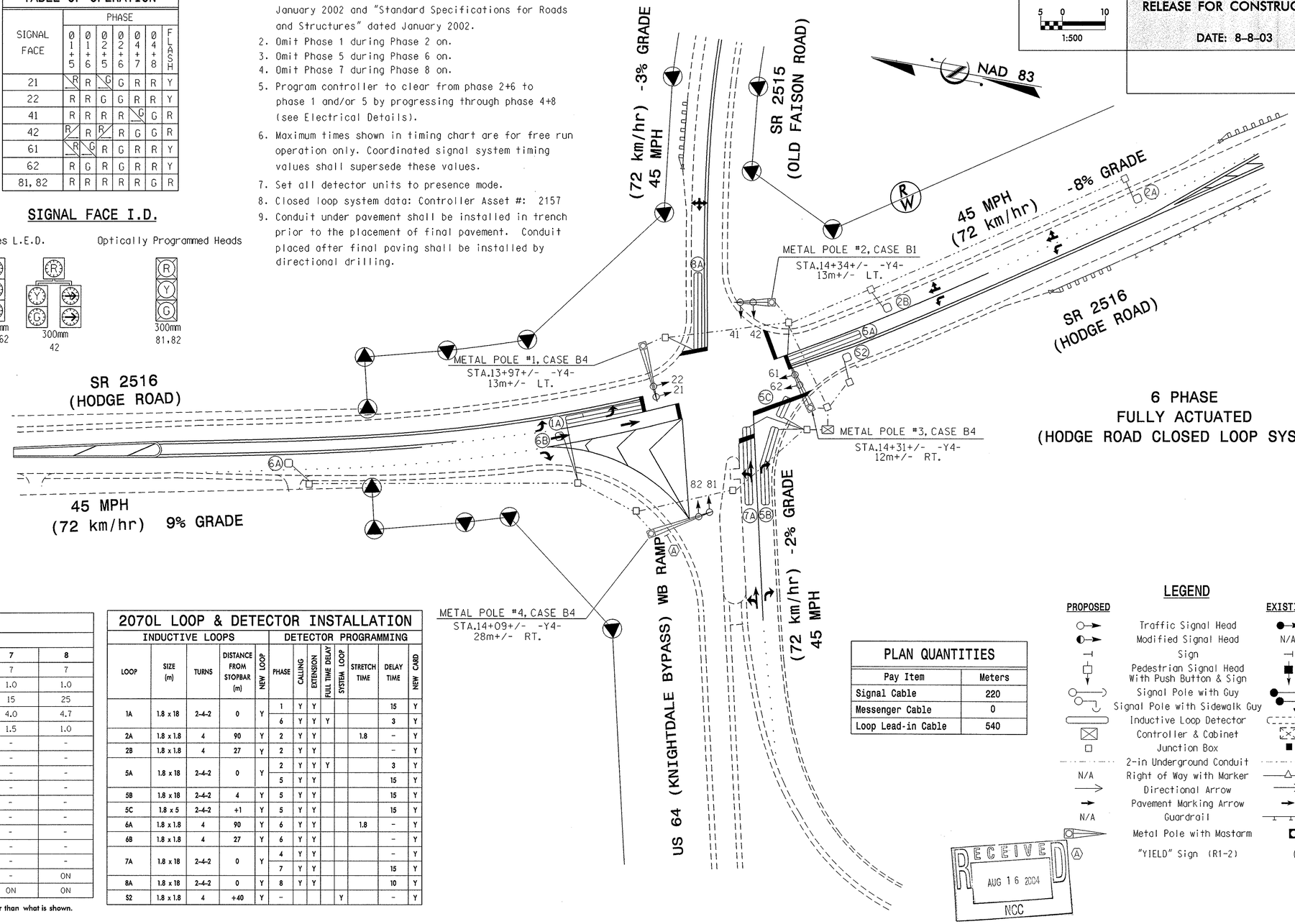
SIGNAL FACE I.D.

Denotes L.E.D. Optically Programmed Heads



NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2002 and "Standard Specifications for Roads and Structures" dated January 2002.
2. Omit Phase 1 during Phase 2 on.
3. Omit Phase 5 during Phase 6 on.
4. Omit Phase 7 during Phase 8 on.
5. Program controller to clear from phase 2+6 to phase 1 and/or 5 by progressing through phase 4+8 (see Electrical Details).
6. Maximum times shown in timing chart are for free run operation only. Coordinated signal system timing values shall supersede these values.
7. Set all detector units to presence mode.
8. Closed loop system data: Controller Asset #: 2157
9. Conduit under pavement shall be installed in trench prior to the placement of final pavement. Conduit placed after final paving shall be installed by directional drilling.



6 PHASE
FULLY ACTUATED
(HODGE ROAD CLOSED LOOP SYSTEM)

2070L TIMING CHART

FEATURE	PHASE 1	2	4	5	6	7	8
Min Green 1 *	7	12	7	7	12	7	7
Extension 1 *	1.0	2.0	1.0	1.0	2.0	1.0	1.0
Max Green 1 *	15	45	25	15	45	15	25
Yellow Clearance	4.0	5.5	4.7	4.0	5.5	4.0	4.7
Red Clearance	1.5	1.5	1.0	1.5	1.5	1.5	1.0
Walk 1 *	-	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-	-
Seconds Per Actuation *	-	-	-	-	-	-	-
Max Variable Initial *	-	-	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-	-	-
Time To Reduction *	-	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-	-
Recall Mode	-	MIN RECALL	-	-	MIN RECALL	-	-
Vehicle Call Memory	-	YELLOW	-	-	YELLOW	-	-
Dual Entry	-	-	ON	-	-	-	ON
Simultaneous Gap	ON	ON	ON	ON	ON	ON	ON

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS: LOOP	SIZE (m)	TURNS	DISTANCE FROM STOPBAR (m)	NEW LOOP	DETECTOR PROGRAMMING: PHASE	CALLING	EXTENSION	FULL TIME DELAY	LOOP SYSTEM	STRETCH TIME	DELAY TIME	NEW CARD
1A	1.8 x 18	2-4-2	0	Y	1	Y	Y				15	Y
					6	Y	Y	Y			3	Y
2A	1.8 x 1.8	4	90	Y	2	Y	Y			1.8	-	Y
2B	1.8 x 1.8	4	27	Y	2	Y	Y				-	Y
5A	1.8 x 18	2-4-2	0	Y	2	Y	Y	Y			3	Y
					5	Y	Y				15	Y
5B	1.8 x 18	2-4-2	4	Y	5	Y	Y				15	Y
5C	1.8 x 5	2-4-2	+1	Y	5	Y	Y				15	Y
6A	1.8 x 1.8	4	90	Y	6	Y	Y			1.8	-	Y
6B	1.8 x 1.8	4	27	Y	6	Y	Y				-	Y
7A	1.8 x 18	2-4-2	0	Y	4	Y	Y				-	Y
					7	Y	Y				15	Y
8A	1.8 x 18	2-4-2	0	Y	8	Y	Y				10	Y
S2	1.8 x 1.8	4	+40	Y	-				Y		-	Y

PLAN QUANTITIES

Pay Item	Meters
Signal Cable	220
Messenger Cable	0
Loop Lead-in Cable	540

LEGEND

PROPOSED		EXISTING
○→	Traffic Signal Head	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
	Pedestrian Signal Head With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way with Marker	
→	Directional Arrow	→
→	Pavement Marking Arrow	→
N/A	Guardrail	
	Metal Pole with Mastarm	
Ⓐ	"YIELD" Sign (R1-2)	Ⓐ

RECEIVED
AUG 16 2004
NCC

NEW INSTALLATION

SIG. INVENTORY NO. 05-2157

DRAWN BY: A. SPENCER DATE: 12/09/02
CHECKED BY: R. DUBNICKA, P.E. DATE:

Document Control Number :

Filename : Y:\Traffic\Knightdale\BBsigl.dgn

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SR 2516 (HODGE ROAD)
AT
US 64 (KNIGHTDALE BYPASS) WB RAMP
AND SR 2515 (OLD FAISON ROAD)

DIVISION 5 WAKE COUNTY EAST OF RALEIGH

REVISIONS			
6			
4			
3			
2	RJD	8/8/03	SHEET REVISED TO ADDRESS COMMENTS
1	RJD	6/11/03	SHEET REVISED
0	RJD	4/8/03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 027742 ROBERT J. DUBNICKA
8-7-03

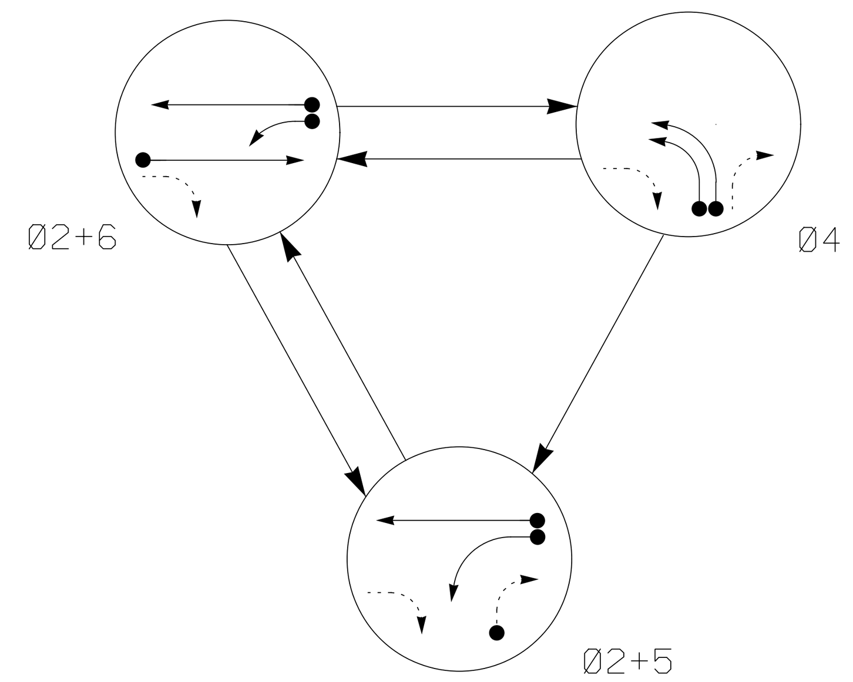
THE LPA GROUP TRANSPORTATION CONSULTANTS
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

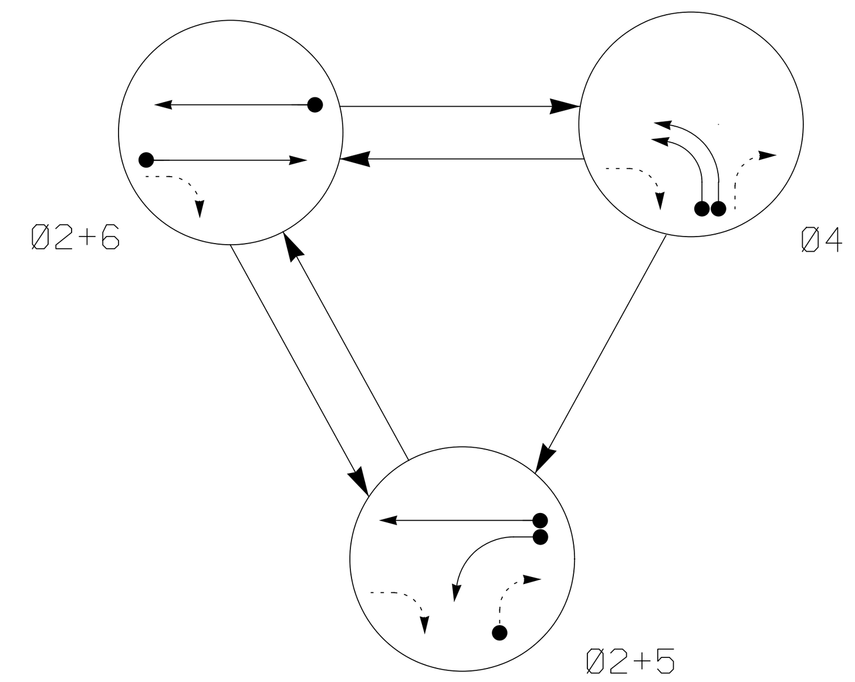
North Carolina Constructors

16-FEB-2004 11:29

DEFAULT PHASING DIAGRAM



ALTERNATE PHASING DIAGRAM

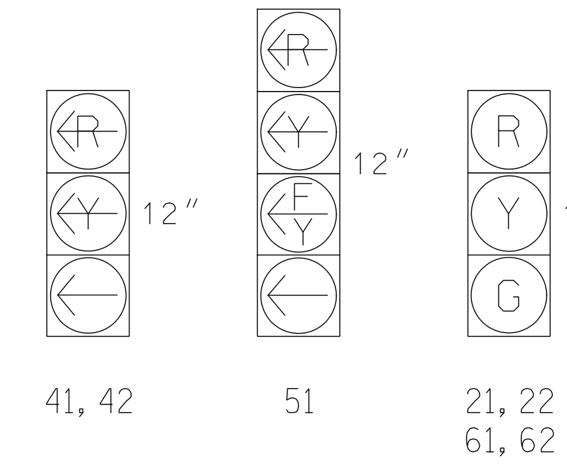


PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

SIGNAL FACE I.D.

All Heads L.E.D.



DEFAULT PHASING TABLE OF OPERATION				
SIGNAL FACE	PHASE			
	Ø2+5	Ø2+6	Ø4	FLASH
21, 22	G	G	R	Y
41, 42	←R	←R	←	←R
51	←	←FY	←R	←Y
61, 62	R	G	R	Y

ALTERNATE PHASING TABLE OF OPERATION				
SIGNAL FACE	PHASE			
	Ø2+5	Ø2+6	Ø4	FLASH
21, 22	G	G	R	Y
41, 42	←R	←R	←	←R
51	←	←R	←R	←Y
61, 62	R	G	R	Y

OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

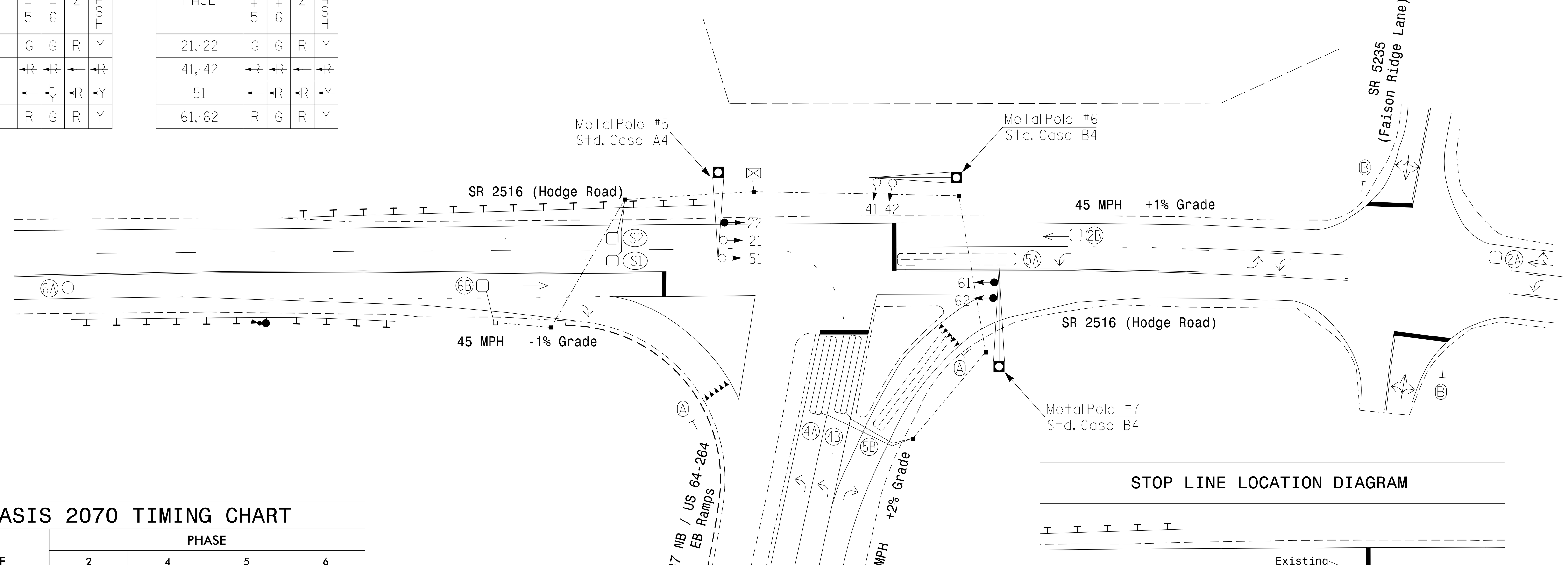
INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	300	EXIST	-	2	Y	Y	-	1.6	-	-	-
2B	6X6	90	EXIST	-	2	Y	Y	-	-	-	-	-
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	-	-	-
4B	6X40	0	2-4-2	Y	4	Y	Y	-	-	-	-	Y
5A	6X60	0	2-4-2	-	5	Y	Y	-	-	15*	-	-
					2#	Y	Y	Y	-	-	-	-
5B	6X60	0	2-4-2	-	5	Y	Y	-	-	20	-	-
6A ✳	6X6	300	✳	-	6	Y	Y	-	1.6	-	-	-
6B	6X6	90	3	Y	6	Y	Y	-	-	-	-	-
S1	6X6	+145	3	Y	-	-	-	-	-	-	Y	-
S2	6X6	+145	3	Y	-	-	-	-	-	-	Y	Y

* Reduce delay to 0 seconds during Alternate Phasing.
# Disable phase call(s) for loop(s) during Alternate Phasing.
✳ Microwave Detection

3 Phase
Fully Actuated
(Hodge Road Closed Loop System)
Signal System #: 10512

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018, "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 5 may be lagged.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
6. Install new cabinet on existing cabinet foundation.
7. The Division Traffic Engineer will determine the hours of use for each phasing plan.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal sytem timing values supersede these values.
9. Closed loop system data:
   Master Asset #:10512,
   Controller Asset #: 2158.



LEGEND

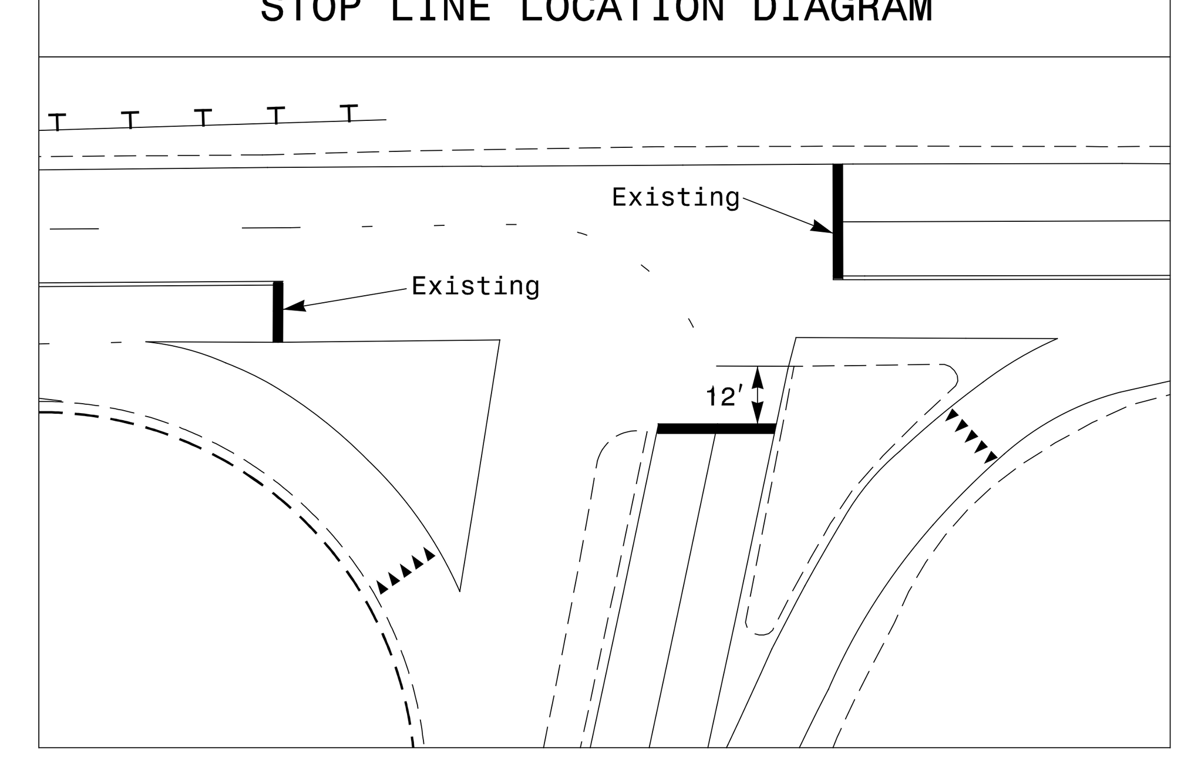
PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
	Out of Pavement Detection Zone	
	Out of Pavement Detector	
	Metal Pole with Mastarm	
	Master Controller & Cabinet	
N/A	Guardrail	
Ⓐ	"YIELD" Sign (R1-2)	Ⓐ
Ⓑ	"STOP" Sign (R1-1)	Ⓑ

OASIS 2070 TIMING CHART

FEATURE	PHASE			
	2	4	5	6
Min Green 1 *	12	7	7	12
Extension 1 *	2.0	2.0	1.0	2.0
Max Green 1 *	45	20	15	45
Yellow Clearance	4.4	3.0	3.0	4.6
Red Clearance	1.2	2.6	1.9	1.7
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	-	-	-	-
Max Variable Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Recall Mode	MIN RECALL	-	-	MIN RECALL
Vehicle Call Memory	YELLOW	-	-	YELLOW
Dual Entry	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

STOP LINE LOCATION DIAGRAM



NC Dept of Transportation
Division of Highways
Final Drawing Date: 1/28/2020
ITS & Signals Unit

VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606
919.829.0328

Signal Upgrade

Prepared for the Offices of: Transportation Mobility and Safety Division, Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

SCALE 0 40 1"=40'

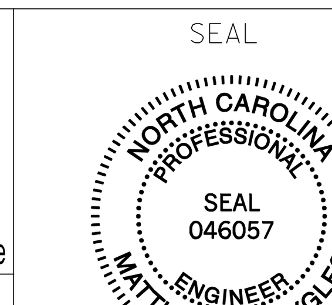
SR 2516 (Hodge Road)
at
I 87 NB / US 64-264 EB Ramps

Division 5	Wake County	Knightdale
PLAN DATE: January 2020	REVIEWED BY: J.L. Lewis	
PREPARED BY: M.L. Stygles	REVIEWED BY: J. Ma	

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL



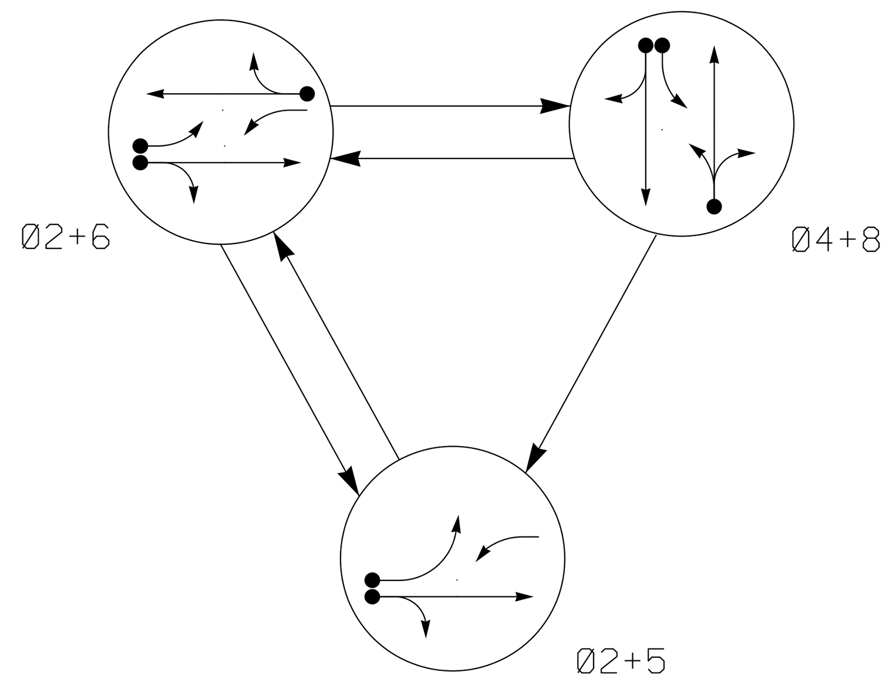
SIGNATURE 1/16/2020 DATE

SIG. INVENTORY NO. 05-2158

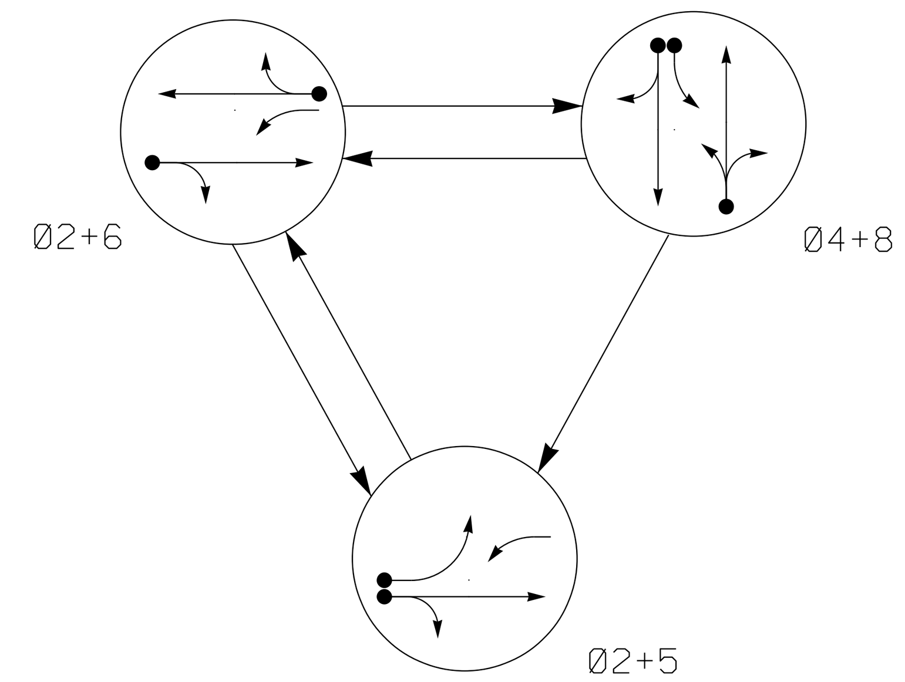
1/16/2020
052158_201910_g.dgn
mstygles

PROJECT REFERENCE NO.	SHEET NO.
WBS: 36249.4124	Sig. 2.0

DEFAULT PHASING DIAGRAM



ALTERNATE PHASING DIAGRAM



DEFAULT PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+5	Ø2+6	Ø4+8	FLASH
21,22	G	G	R	Y
41	←R	←R	←F/Y	←R
42,43	R	R	G	R
51	←	←F/Y	←R	←Y
61	←F/Y	←F/Y	←R	←Y
62,63	R	G	R	Y
81,82	R	R	G	R

ALTERNATE PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+5	Ø2+6	Ø4+8	FLASH
21,22	G	G	R	Y
41	←R	←R	←F/Y	←R
42,43	R	R	G	R
51	←	←R	←R	←Y
61	←F/Y	←F/Y	←R	←Y
62,63	R	G	R	Y
81,82	R	R	G	R

OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	300	✳	✳	2	Y	Y	-	-	-	-	Y
2B	6X40	0	✳	✳	2	Y	Y	Y	2.0	5	-	Y
4A	6X40	0	✳	✳	4	Y	Y	-	-	3	-	Y
4B	6X40	0	✳	✳	4	Y	Y	-	-	10	-	Y
5A	6X40	0	✳	✳	5	Y	Y	-	-	15★	-	Y
					2#	Y	Y	Y	-	3	-	Y
6A	6X6	300	✳	✳	6	Y	Y	-	-	-	-	Y
6B	6X40	0	✳	✳	6	Y	Y	Y	2.0	5	-	Y
8A	6X40	0	✳	✳	8	Y	Y	-	-	5	-	Y

✳ Video Detection Area
★ Reduce delay to 3 seconds during Alternate Phasing.
Disable phase call(s) for loop(s) during Alternate Phasing.

3 Phase
Fully Actuated
(Hodge Road Closed Loop System)
Signal System #: 10512

NOTES

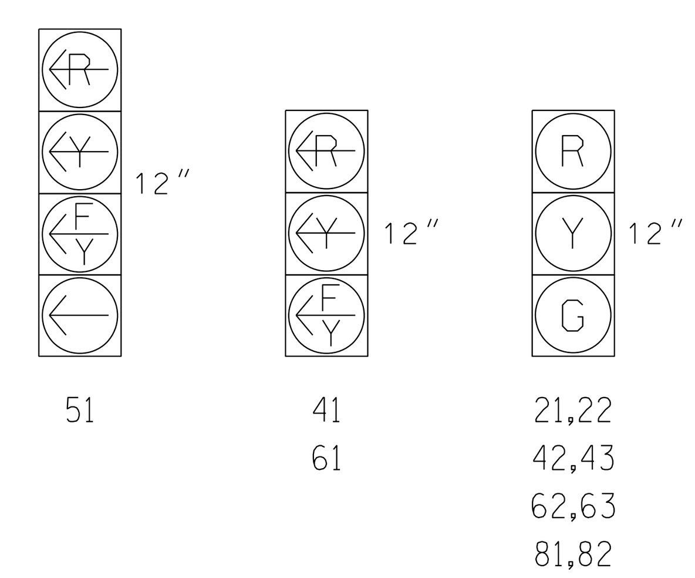
1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018, and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 5 may be lagged.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. The Division Traffic Engineer will determine the hours of use for each phasing plan.
7. This intersection utilizes a video detection system. Camera locations should be confirmed in the field by the contractor in order to provide detection of the areas indicated.
8. Maximum times showin in timing chart are for free-run operation only. Coordinated signal system timing values supercede these values.
9. Closed loop system data:
   Master Asset #: 10512.
   Controller Asset #: 2005.

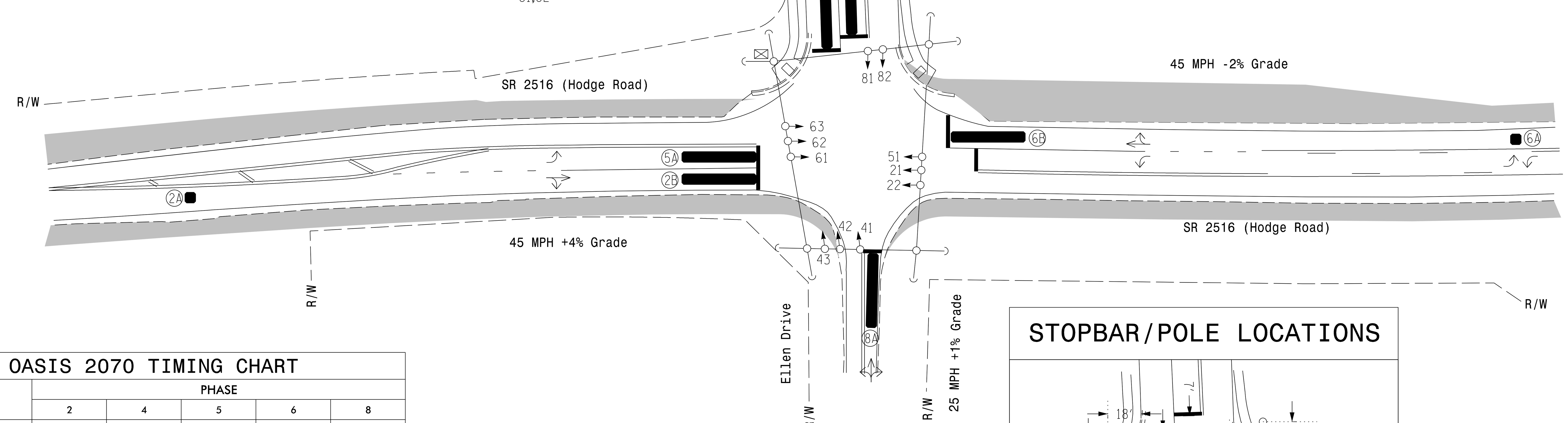
PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

SIGNAL FACE I.D.

All Heads L.E.D.

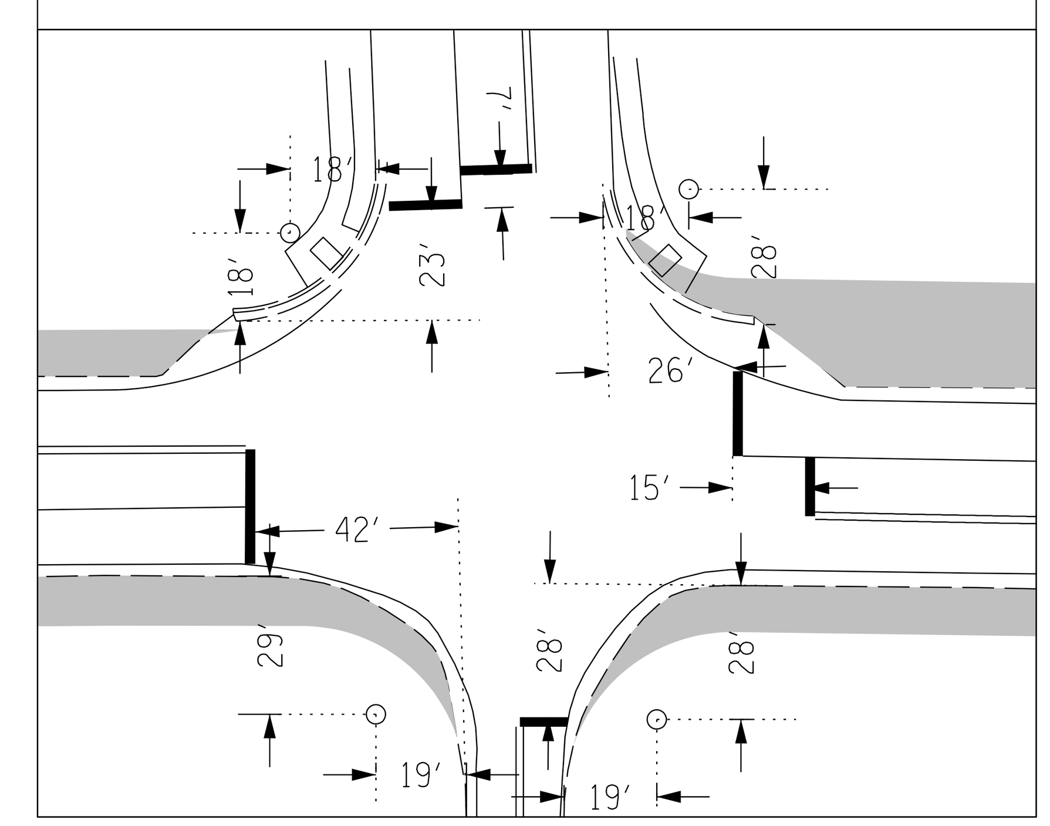




LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Video Detection Area	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
N/A	Gaurdrail	
	Construction Zone	

STOPBAR/POLE LOCATIONS



OASIS 2070 TIMING CHART

FEATURE	PHASE 2	4	5	6	8
Min Green 1 *	12	7	7	12	7
Extension 1 *	6.0	2.0	2.0	6.0	2.0
Max Green 1 *	90	45	15	90	45
Yellow Clearance	4.7	3.1	3.0	4.7	3.1
Red Clearance	1.1	2.6	2.3	1.1	2.6
Red Revert	2.0	2.0	2.0	2.0	2.0
Walk 1 *	-	-	-	-	-
Don't Walk 1	-	-	-	-	-
Seconds Per Actuation *	-	-	-	-	-
Max Variable Initial *	-	-	-	-	-
Time Before Reduction *	15	-	-	15	-
Time To Reduce *	30	-	-	30	-
Minimum Gap	3.0	-	-	3.0	-
Recall Mode	MIN RECALL	-	-	MIN RECALL	-
Vehicle Call Memory	YELLOW	-	-	YELLOW	-
Dual Entry	-	ON	-	-	ON
Simultaneous Gap	ON	ON	ON	ON	ON

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

NC Dept of Transportation
Division of Highways
Final Drawing Date: 9/17/2020
Robert J. Ziemba
ITS & Signals Unit

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.
5410 Trinity Road
Suite 102
Raleigh, NC 27607
Tel:919.866.4951
Fax:919.859.5663
License: C-1652

New Installation - Temporary Design 1

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

SR 2516 (Hodge Road)
at
Ellen Drive/
Panther Rock Boulevard

Divison 5	Wake County		Knightdale
PLAN DATE:	July 2020	REVIEWED BY:	J Hochanadel
PREPARED BY:	N Harmon	REVIEWED BY:	C Lawson

SCALE 0 40
1"=40'

REVISIONS | INIT. | DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

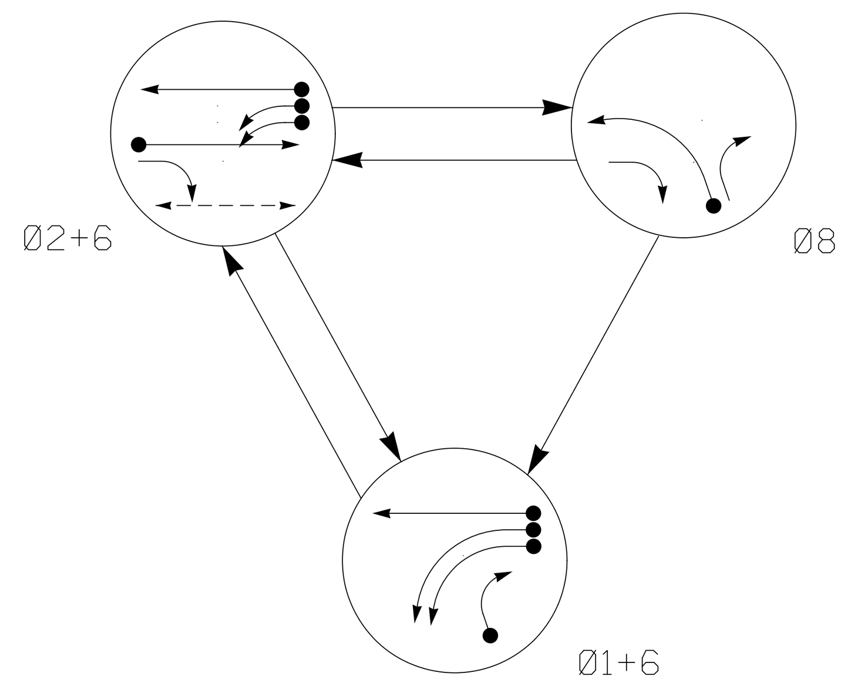
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 043203 ENGINEER CLIFTON E. LAWSON
Cliff Lawson 9/4/2020
SIGNATURE DATE

SIG. INVENTORY NO. 05-2005T1

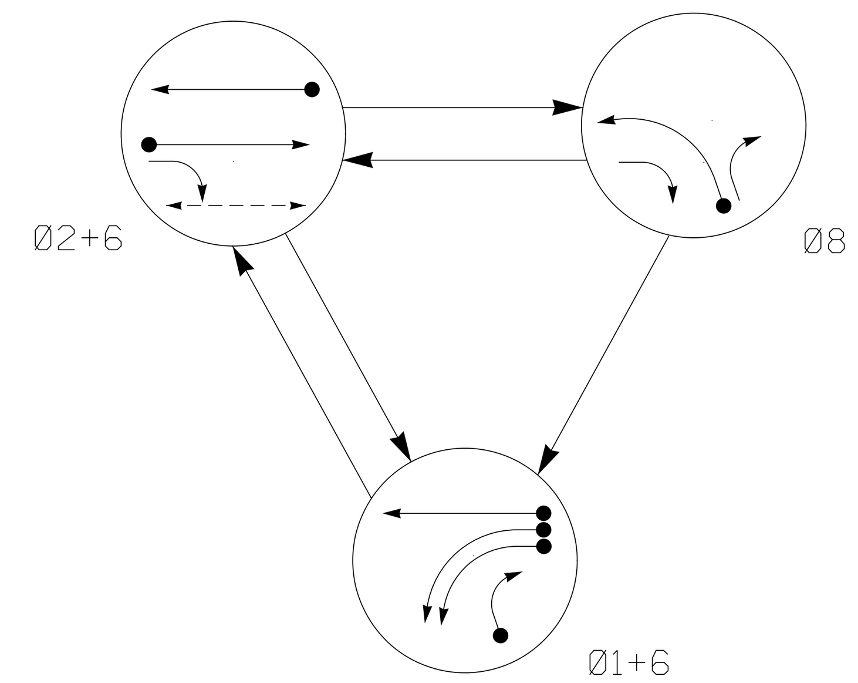
9/4/2020
L:\208\207\44872-Silverstone_Stoneriver_Signals\DWG\Hodge at Ellen\Hodge-Ellen_t1.dgn
CliffL

PROJECT REFERENCE NO.	SHEET NO.
36249.4065	Sig.1.0

DEFAULT PHASING DIAGRAM



ALTERNATE PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

DEFAULT PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+6	PHASE Ø2+6	PHASE Ø8	PHASE FLASH
11, 12	←	←F/Y	←R	←Y
21	R	G	R	Y
22	R	G	R/→	Y
61, 62	G	G	R	Y
81	R	R	G	R
82	R/→	R	G	R
P21, P22	DW	W	DW	DRK

ALTERNATE PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+6	PHASE Ø2+6	PHASE Ø8	PHASE FLASH
11, 12	←	←R	←R	←Y
21	R	G	R	Y
22	R	G	R/→	Y
61, 62	G	G	R	Y
81	R	R	G	R
82	R/→	R	G	R
P21, P22	DW	W	DW	DRK

OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

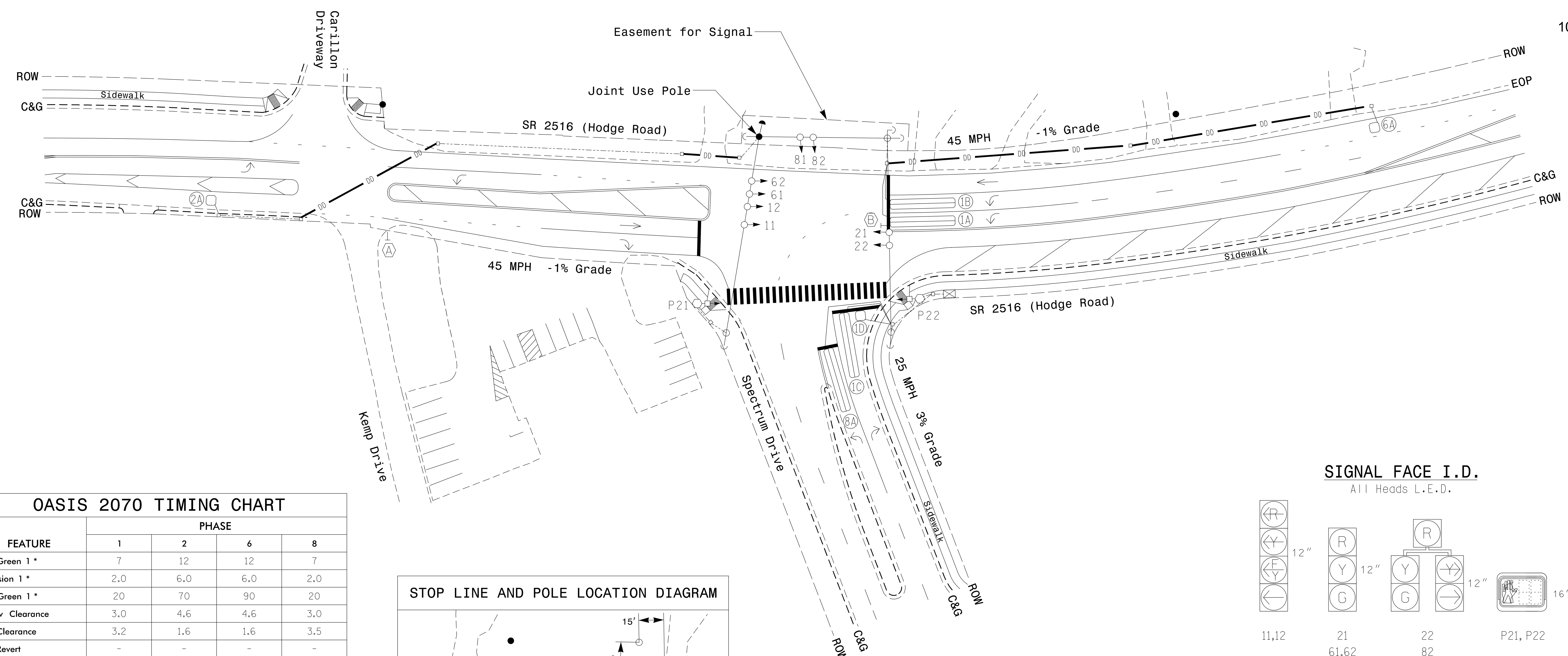
INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X40	0	2-4-2	Y	1	Y	Y	-	-	15*	-	Y
					6#	Y	Y	Y	-	3	-	Y
1B	6X40	0	2-4-2	Y	1	Y	Y	-	-	15*	-	Y
					6#	Y	Y	Y	-	3	-	Y
1C	6X40	0	2-4-2	Y	1	Y	Y	-	-	15	-	Y
1D	6X6	0	3	Y	1	Y	Y	-	-	15	-	Y
2A	6X6	300	6	Y	2	Y	Y	-	-	-	-	Y
6A	6X6	300	6	Y	6	Y	Y	-	-	-	-	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	-	-	Y

* Reduce delay to 0 seconds during Alternate Phasing.
# Disable phase call(s) for loop(s) during Alternate Phasing.

3 Phase
Fully Actuated
(Hodge Road Closed Loop System)
Signal System #: 10512

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018, "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 may be lagged.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
7. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
8. The Division Traffic Engineer will determine the hours of use for each phasing plan.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal sytem timing values supersede these values.
10. Closed loop system data:
    Master Asset #:10512,
    Controller Asset #: 2011.



SIGNAL FACE I.D.

All Heads L.E.D.

12" 12" 12" 16"

11,12 | 21, 61,62, 81 | 22, 82 | P21, P22

LEGEND

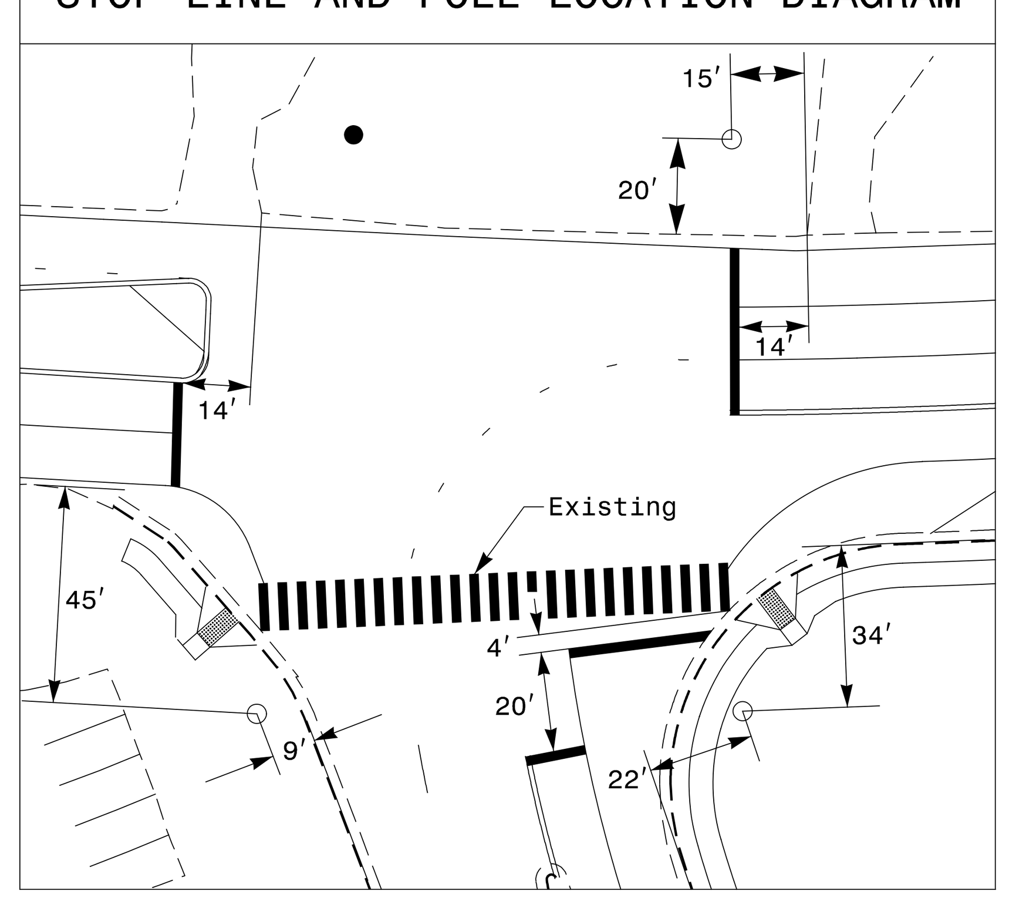
PROPOSED		EXISTING
	Traffic Signal Head	
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Type I Pushbutton Post	
	Type II Signal Pedestal	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
N/A	Curb Ramp	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
	Directional Drilled Conduit	N/A
	Directional Arrow	
N/A	Right of Way	
Ⓐ	Stop Sign (R1-1)	Ⓐ
Ⓑ	No U-Turn Sign (R3-4)	Ⓑ

OASIS 2070 TIMING CHART

FEATURE	PHASE 1	PHASE 2	PHASE 6	PHASE 8
Min Green 1 *	7	12	12	7
Extension 1 *	2.0	6.0	6.0	2.0
Max Green 1 *	20	70	90	20
Yellow Clearance	3.0	4.6	4.6	3.0
Red Clearance	3.2	1.6	1.6	3.5
Red Revert	-	-	-	-
Walk 1 *	-	7	-	-
Don't Walk 1	-	27	-	-
Seconds Per Actuation *	-	2.5	2.5	-
Max Variable Initial *	-	34	34	-
Time Before Reduction *	-	15	15	-
Time To Reduce *	-	45	45	-
Minimum Gap	-	3.0	3.0	-
Recall Mode	-	MIN RECALL	MIN RECALL	-
Vehicle Call Memory	-	YELLOW	YELLOW	-
Dual Entry	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

STOP LINE AND POLE LOCATION DIAGRAM



New Installation

NC Dept of Transportation
Division of Highways
Final Drawing Date: 1/28/2020
ITS & Signals Unit

VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606
919.829.0328

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

SCALE 0 40
1"=40'

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SR 2516 (Hodge Road) at Spectrum Drive

Division 5 | Wake County | Knightdale

PLAN DATE:	January 2020	REVIEWED BY:	J.L. Lewis
PREPARED BY:	M.L. Stygles	REVIEWED BY:	J. Ma

REVISIONS	INIT.	DATE

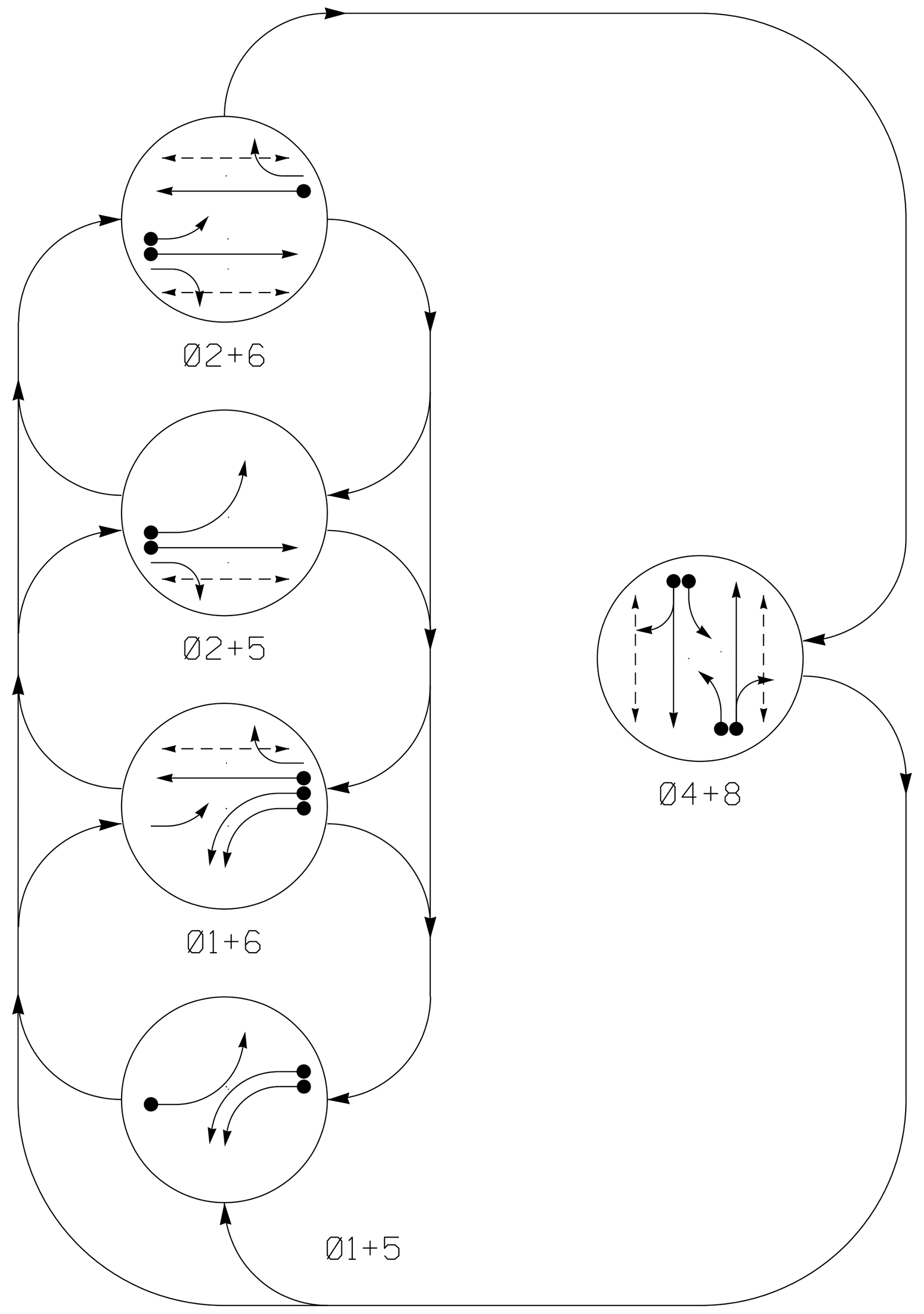
SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 046057 MATTHEW L. STYGLES
DocuSigned by: 394B61E9449746C...
SIGNATURE 1/16/2020 DATE
SIG. INVENTORY NO. 05-2011

1/16/2020
052011_201910_g.dgn
mstygles

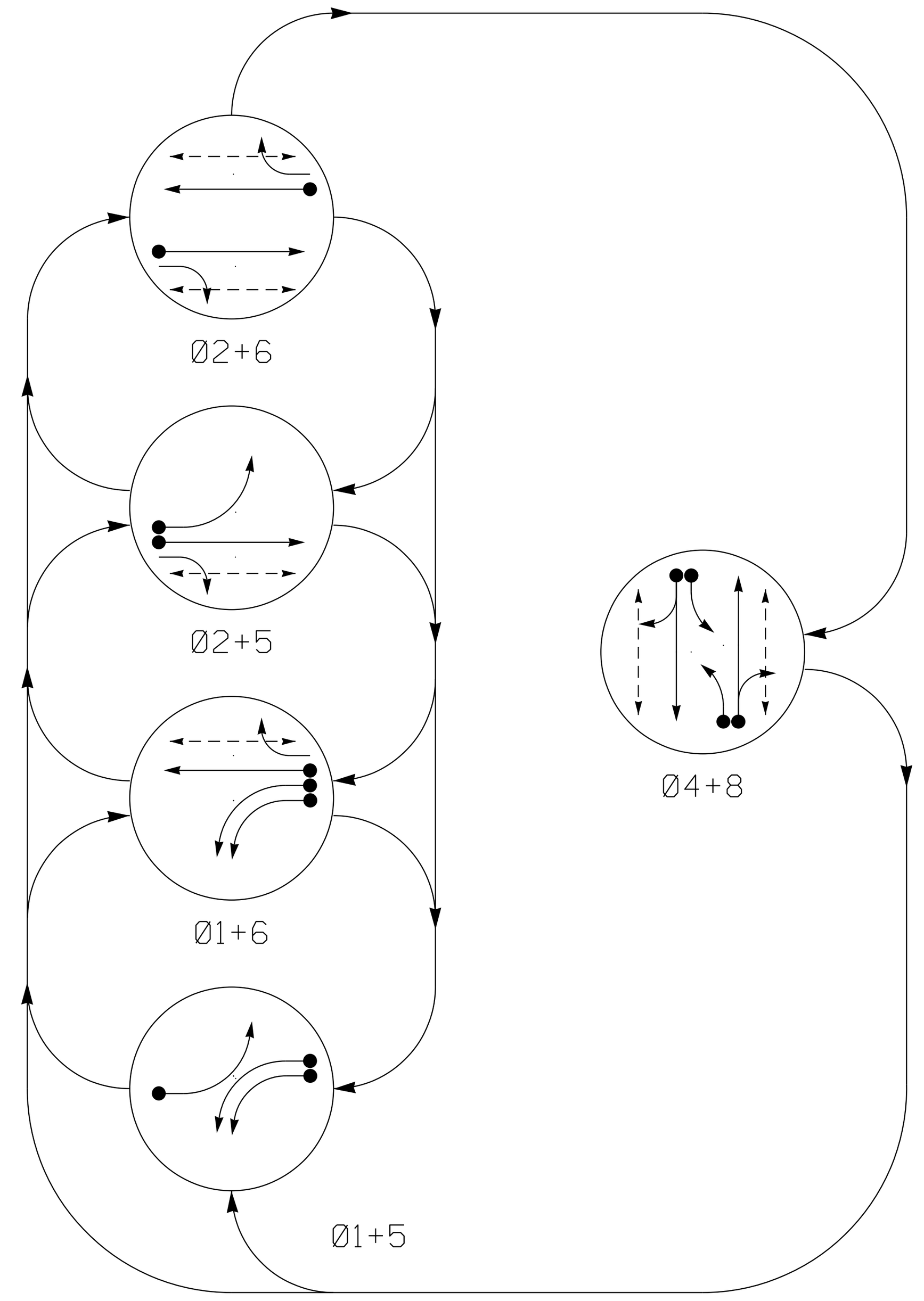
PROJECT REFERENCE NO.	SHEET NO.
WBS: 36249.4124	Sig. 1.0

5 Phase
Fully Actuated
(Hodge Road Closed Loop System)
Signal System #: 10512

DEFAULT PHASING DIAGRAM



ALTERNATE PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

ALTERNATE PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø4+8	FLASH
11,12	←	←	←R	←R	←R	←R
21,22	R	R	G	G	R	Y
41	←R	←R	←R	←R	←F/Y	←R
42,43	R	R	R	R	G	R
51	←	←F/Y	←	←F/Y	←R	←Y
61,62	R	G	R	G	R	Y
81	←R	←R	←R	←R	←F/Y	←R
82,83	R	R	R	R	G	R
P21,P22	DW	DW	W	W	DW	DRK
P41,P42	DW	DW	DW	DW	W	DRK
P61,P62	DW	W	DW	W	DW	DRK
P81,P82	DW	DW	DW	DW	W	DRK

ALTERNATE PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø4+8	FLASH
11,12	←	←	←R	←R	←R	←R
21,22	R	R	G	G	R	Y
41	←R	←R	←R	←R	←F/Y	←R
42,43	R	R	R	R	G	R
51	←	←R	←	←R	←R	←Y
61,62	R	G	R	G	R	Y
81	←R	←R	←R	←R	←F/Y	←R
82,83	R	R	R	R	G	R
P21,P22	DW	DW	W	W	DW	DRK
P41,P42	DW	DW	DW	DW	W	DRK
P61,P62	DW	W	DW	W	DW	DRK
P81,P82	DW	DW	DW	DW	W	DRK

OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

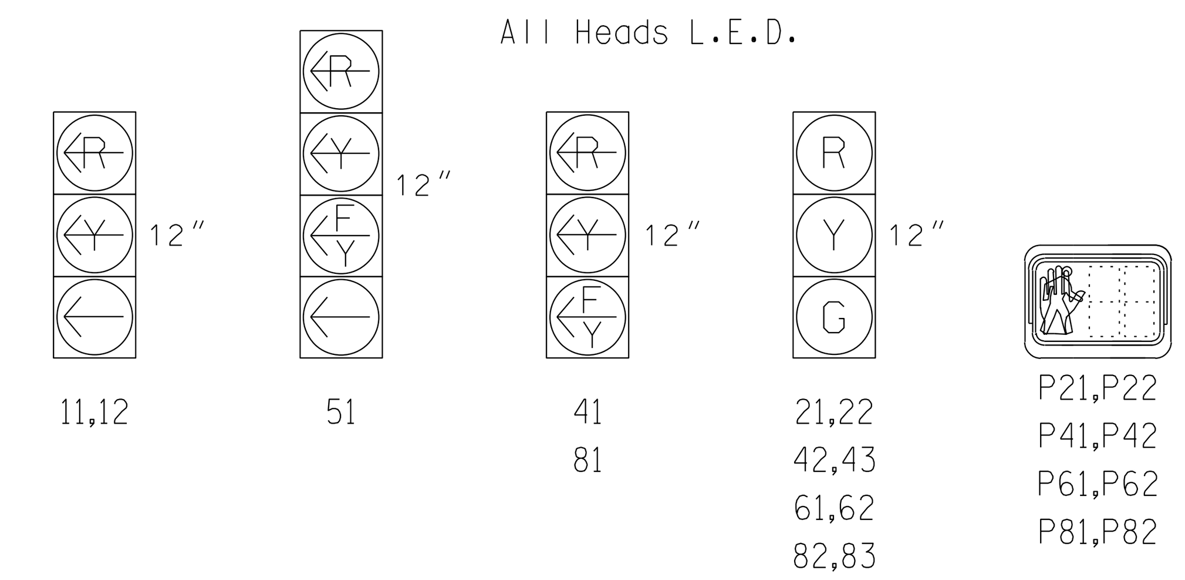
INDUCTIVE LOOPS: LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING: PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X40	0	2-4-2	Y	1	Y	Y	-	-	3	-	-
1B	6X40	0	2-4-2	Y	1	Y	Y	-	-	-	-	-
2A	6X6	300	4	Y	2	Y	Y	-	-	-	-	-
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	3	-	Y
4B	6X40	0	2-4-2	Y	4	Y	Y	-	-	10	-	Y
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	15*	-	Y
					2#	Y	Y	Y	-	3	-	Y
6A	6X6	300	4	Y	6	Y	Y	-	-	-	-	-
8A	6X40	0	2-4-2	-	8	Y	Y	-	-	3	-	-
8B	6X40	0	2-4-2	-	8	Y	Y	-	-	10	-	Y
8C	6X6	0	4	-	8	Y	Y	-	-	15	-	Y

* Reduce delay to 3 seconds during Alternate Phasing.

Disable phase call(s) for loop(s) during Alternate Phasing.

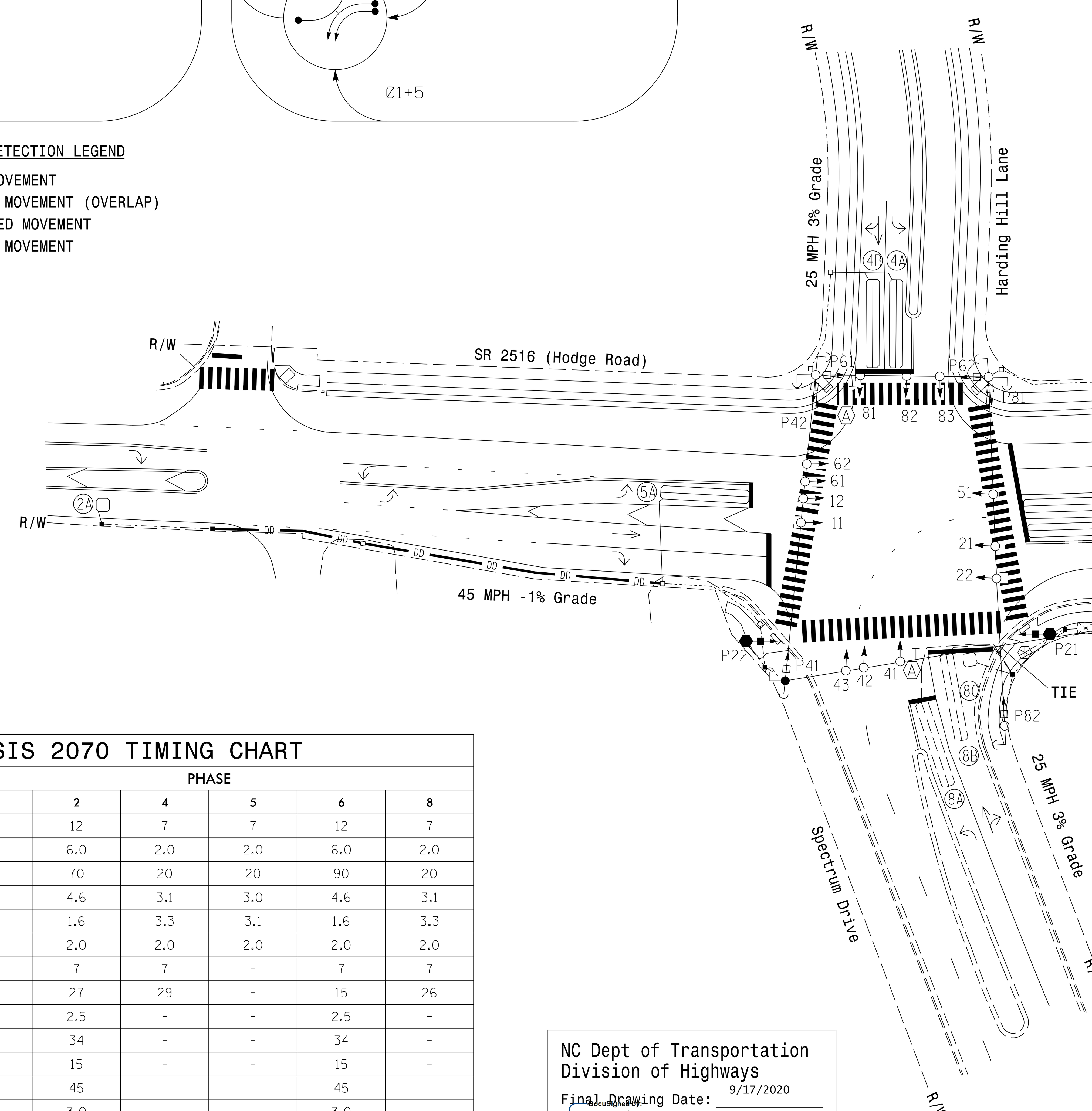
SIGNAL FACE I.D.

All Heads L.E.D.



NOTES

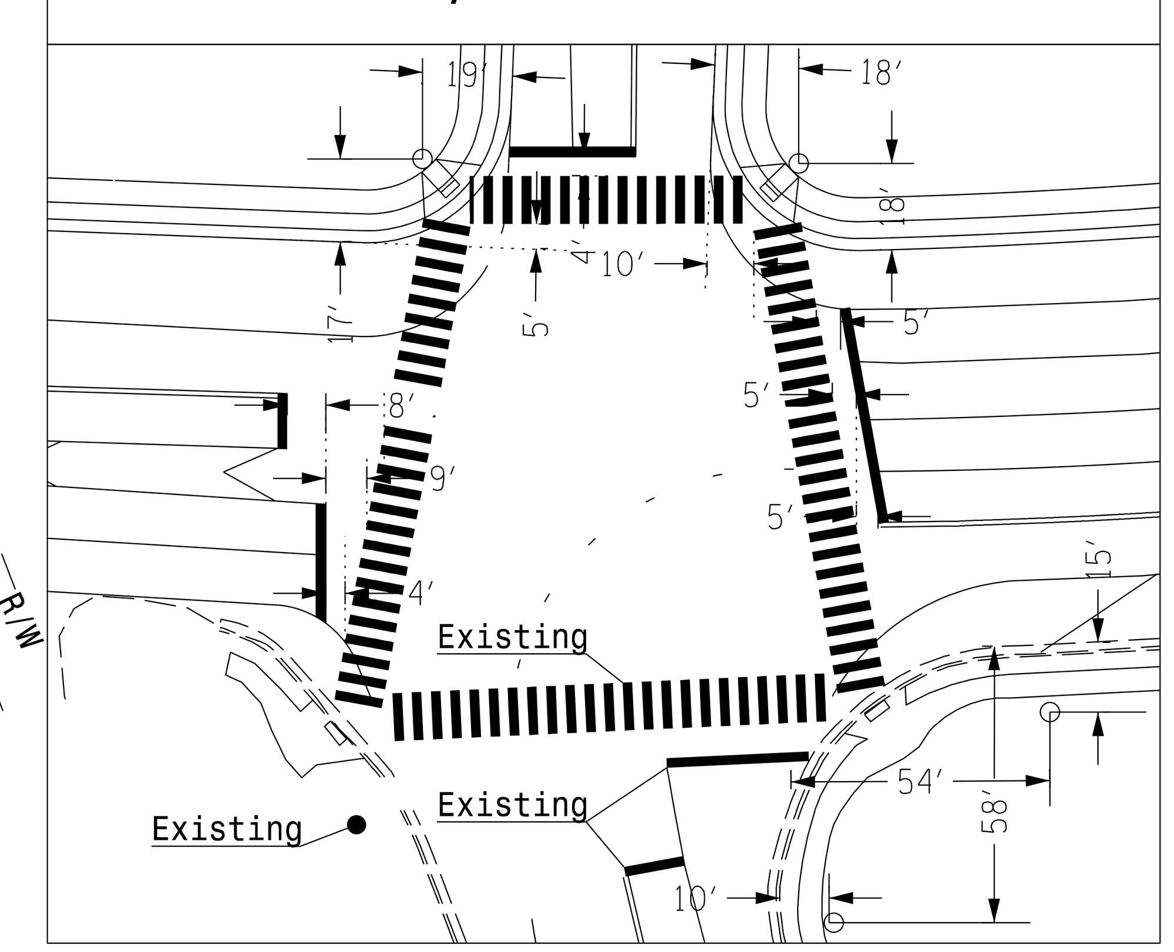
1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018, and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Set all detector units to presence mode.
5. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
6. Program pedestrians heads to countdown the flashing "Don't Walk" time only.
7. The Division Traffic Engineer will determine the hours of use for each phasing plan.
8. Maximum times showin in timing chart are for free-run operation only. Coordinated signal system timing values supercede these values.
9. Closed loop system data:
   Master Asset #: 10512,
   Controller Asset #: 2011.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
	Directional Drill	N/A
	Type I Pushbutton Post	
	Type II Signal Pedestal	
	Left Arrow "ONLY" Sign (R3-5L)	

STOPBAR/POLE LOCATIONS



OASIS 2070 TIMING CHART

FEATURE	PHASE 1	2	4	5	6	8
Min Green 1 *	7	12	7	7	12	7
Extension 1 *	2.0	6.0	2.0	2.0	6.0	2.0
Max Green 1 *	20	70	20	20	90	20
Yellow Clearance	3.0	4.6	3.1	3.0	4.6	3.1
Red Clearance	3.2	1.6	3.3	3.1	1.6	3.3
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1 *	-	7	7	-	7	7
Don't Walk 1	-	27	29	-	15	26
Seconds Per Actuation *	-	2.5	-	-	2.5	-
Max Variable Initial *	-	34	-	-	34	-
Time Before Reduction *	-	15	-	-	15	-
Time To Reduce *	-	45	-	-	45	-
Minimum Gap	-	3.0	-	-	3.0	-
Recall Mode	-	MIN RECALL	-	-	MIN RECALL	-
Vehicle Call Memory	-	YELLOW	-	-	YELLOW	-
Dual Entry	-	-	ON	-	-	ON
Simultaneous Gap	ON	ON	ON	ON	ON	ON

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

NC Dept of Transportation
Division of Highways
Final Drawing Date: 9/17/2020
Robert J. Ziemba
ITS & Signals Unit

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

5410 Trinity Road
Suite 102
Raleigh, NC 27607
Tel:919.866.4951
Fax:919.859.5663
License: C-1652

Signal Upgrade

Prepared for the Offices of: Transportation Mobility and Safety Division, Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

SCALE 0 40 1"=40'

SR 2516 (Hodge Road) at Harding Hill Lane/ Spectrum Drive

Divison 5	Wake County		Knightdale
PLAN DATE: July 2020		REVIEWED BY: J Hochanadel	
PREPARED BY: N Harmon		REVIEWED BY: C Lawson	

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 043203 ENGINEER CLIFTON E. LAWSON
Cliff Lawson 9/4/2020
SIGNATURE DATE

SIG. INVENTORY NO. 05-2011

9/2/2020 L:\208\207\44872-Silverstone,Stoneriver_Signals\DWG\Hodge at Business Park\Hodge-Business Park.dgn Cliffl

PROJECT REFERENCE NO.	SHEET NO.
05-0977	Sig. 1

PHASING DIAGRAM

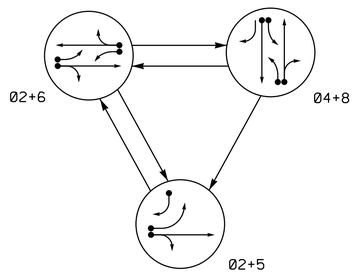


TABLE OF OPERATION				
SIGNAL FACE	PHASE Ø2+5	Ø2+6	Ø4+8	FLASH
21	G/Y	G	R	Y
22	G	G	R	Y
41	R	R	G	R
42	R/Y	R	G	R
61, 62	R	G	R	Y
81, 82	R	R	G	R

OASIS 2070 LOOP & DETECTOR INSTALLATION CHART													
INDUCTIVE LOOPS					DETECTOR PROGRAMMING								
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	300	EXISTING	-	2	Y	Y	-	-	-	-	-
4A	6x40	0	2-4-2	-	4	Y	Y	-	-	3	-	-
4B	6x40	0	2-4-2	-	4	Y	Y	-	-	-	-	-
5A	6x40	0	2-4-2	-	5	Y	Y	-	-	15	-	-
					2	Y	Y	Y	-	3	-	-
5B	6x40	0	2-4-2	-	5	Y	Y	-	-	15	-	-
6A	6X6	300	EXISTING	-	6	Y	Y	-	-	-	-	-
6B	6x40	0	2-4-2	-	6	Y	Y	Y	-	3	-	-
8A	6x40	0	2-4-2	-	8	Y	Y	-	-	3	-	-
8B	6x40	0	2-4-2	-	8	Y	Y	-	-	10	-	-

3 Phase
Fully Actuated
(Isolated)

NOTES

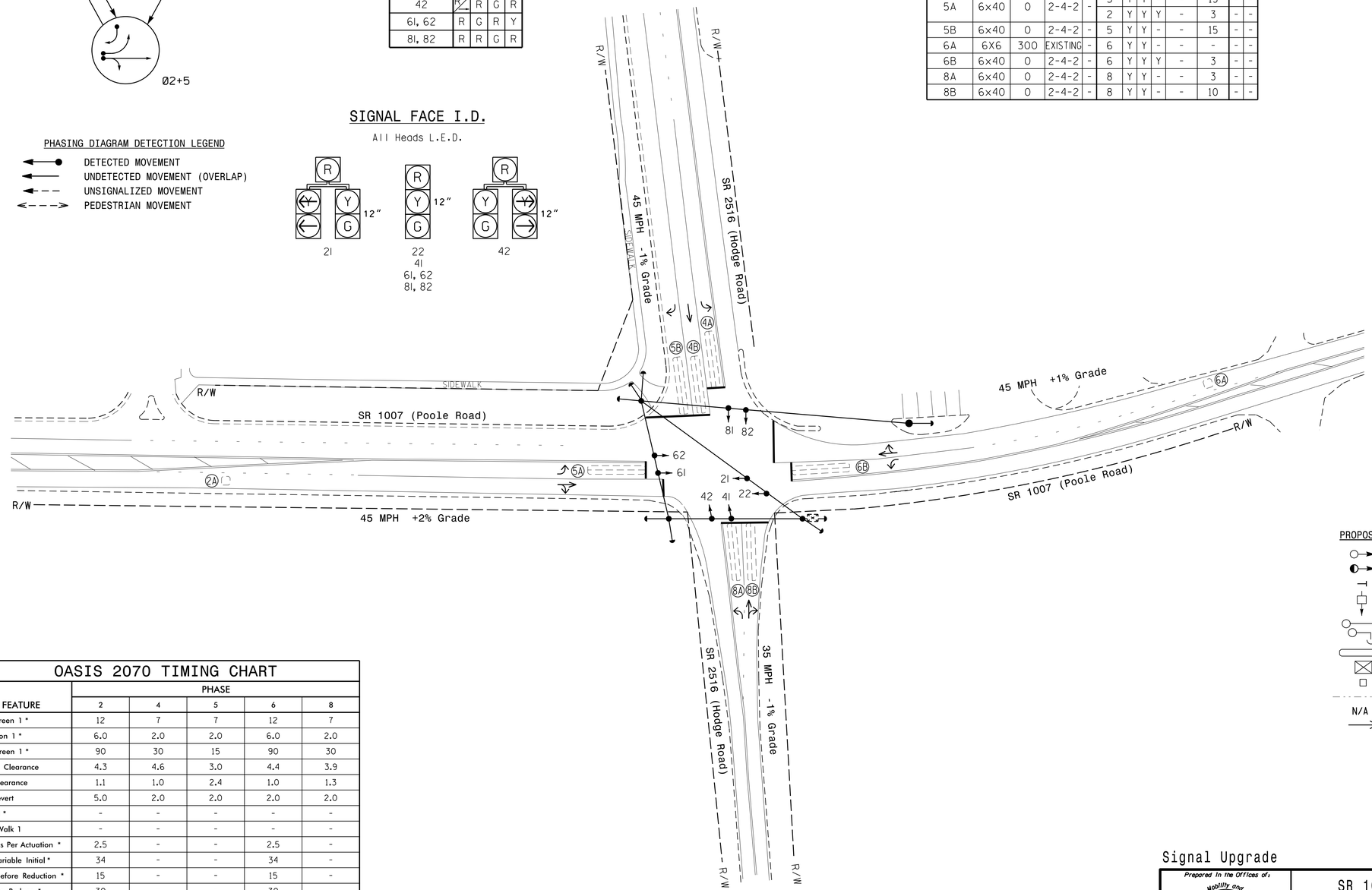
1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Enable Backup Protect for phase 2 to allow the controller to clear from phase 2+6 to phase 2+5 by progressing through an all red display.
4. Set all detector units to presence mode.
5. Pavement markings are existing.

PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

SIGNAL FACE I.D.

All Heads L.E.D.



OASIS 2070 TIMING CHART

FEATURE	PHASE 2	4	5	6	8
Min Green 1 *	12	7	7	12	7
Extension 1 *	6.0	2.0	2.0	6.0	2.0
Max Green 1 *	90	30	15	90	30
Yellow Clearance	4.3	4.6	3.0	4.4	3.9
Red Clearance	1.1	1.0	2.4	1.0	1.3
Red Revert	5.0	2.0	2.0	2.0	2.0
Walk 1 *	-	-	-	-	-
Don't Walk 1	-	-	-	-	-
Seconds Per Actuation *	2.5	-	-	2.5	-
Max Variable Initial *	34	-	-	34	-
Time Before Reduction *	15	-	-	15	-
Time To Reduce *	30	-	-	30	-
Minimum Gap	3.0	-	-	3.0	-
Recall Mode	MIN RECALL	-	-	MIN RECALL	-
Vehicle Call Memory	YELLOW	-	-	YELLOW	-
Dual Entry	-	ON	-	-	ON
Simultaneous Gap	ON	ON	ON	ON	ON

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	

Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared In the Offices of:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

SR 1007 (Poole Road)
at
SR 2516 (Hodge Road)

Division 5 Wake County Knightdale

PLAN DATE: October 2020 REVIEWED BY:

PREPARED BY: C.E. Carter REVIEWED BY:

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 026486 ENGINEER ROBERT J. ZIEMBA

DocuSigned by: 11/18/2020
SIGNATURE DATE

SIG. INVENTORY NO. 05-0977

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rziemba

APPENDIX C:

Intersection Capacity Analysis

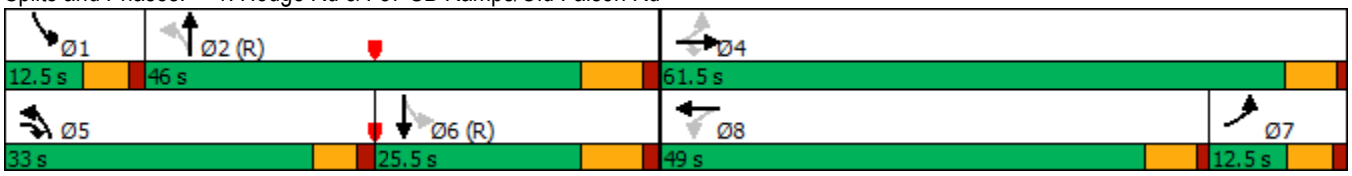
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	28	271	129	277	68	373	343	102	16	202	252
Future Volume (vph)	102	28	271	129	277	68	373	343	102	16	202	252
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-2%			-3%			9%			-8%	
Storage Length (ft)	0		0	0		0	0		0	175		225
Storage Lanes	0		1	0		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.981			0.966				0.850
Flt Protected		0.962			0.987		0.950			0.950		
Satd. Flow (prot)	0	1810	1568	0	1821	0	1642	1669	0	1840	1900	1647
Flt Permitted		0.415			0.825		0.440			0.483		
Satd. Flow (perm)	0	781	1568	0	1522	0	760	1669	0	936	1900	1647
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		241			1043			1091			1061	
Travel Time (s)		3.7			15.8			16.5			16.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	4%	4%	2%	2%	5%	5%	5%	2%	4%	2%
Adj. Flow (vph)	113	31	301	143	308	76	414	381	113	18	224	280
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	144	301	0	527	0	414	494	0	18	224	280
Turn Type	pm+pt	NA	pm+ov	Perm	NA		pm+pt	NA		pm+pt	NA	Free
Protected Phases	7	4	5		8		5	2		1	6	
Permitted Phases	4		4	8			2			6		Free
Detector Phase	7	4	5	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	12.0		7.0	12.0	
Minimum Split (s)	12.5	12.7	12.5	12.7	12.7		12.5	19.0		12.5	19.0	
Total Split (s)	12.5	61.5	33.0	49.0	49.0		33.0	46.0		12.5	25.5	
Total Split (%)	10.4%	51.3%	27.5%	40.8%	40.8%		27.5%	38.3%		10.4%	21.3%	
Maximum Green (s)	7.0	55.8	27.5	43.3	43.3		27.5	39.0		7.0	18.5	
Yellow Time (s)	4.0	4.7	4.0	4.7	4.7		4.0	5.5		4.0	5.5	
All-Red Time (s)	1.5	1.0	1.5	1.0	1.0		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)		-0.7	-0.5		-0.7		-0.5	-2.0		-0.5	-2.0	
Total Lost Time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lag		Lead	Lead	Lead		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0		1.0	2.0		1.0	2.0	
Recall Mode	None	None	None	None	None		None	C-Min		None	C-Min	
Act Effct Green (s)		42.6	72.8		42.6		67.4	62.4		44.7	37.2	120.0
Actuated g/C Ratio		0.36	0.61		0.36		0.56	0.52		0.37	0.31	1.00
v/c Ratio		0.52	0.32		0.98		0.68	0.57		0.04	0.38	0.17
Control Delay		37.9	11.5		71.6		20.4	22.1		16.3	37.7	0.2
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay		37.9	11.5		71.6		20.4	22.1		16.3	37.7	0.2
LOS		D	B		E		C	C		B	D	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		20.1			71.6			21.3			16.9	
Approach LOS		C			E			C			B	
Queue Length 50th (ft)		83	97		380		154	189		6	142	0
Queue Length 95th (ft)		156	116		#616		241	405		17	238	0
Internal Link Dist (ft)		161			963			1011			981	
Turn Bay Length (ft)										175		225
Base Capacity (vph)		367	1009		563		644	867		405	589	1647
Starvation Cap Reductn		0	0		0		0	0		0	0	0
Spillback Cap Reductn		0	0		0		0	0		0	0	0
Storage Cap Reductn		0	0		0		0	0		0	0	0
Reduced v/c Ratio		0.39	0.30		0.94		0.64	0.57		0.04	0.38	0.17

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 14 (12%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 31.2 Intersection LOS: C
Intersection Capacity Utilization 76.3% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Hodge Rd & I-87 SB Ramps/Old Faison Rd



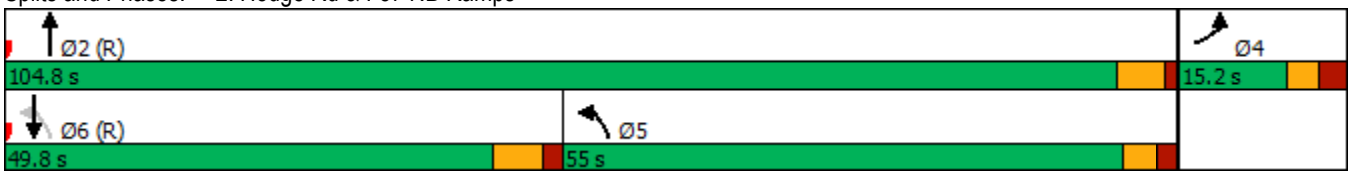
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	132	107	568	684	374	227
Future Volume (vph)	132	107	568	684	374	227
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	2%			1%	-1%	
Storage Length (ft)	0	0	150			125
Storage Lanes	2	1	1			1
Taper Length (ft)	100		100			
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	3399	1567	1710	1800	1854	1591
Flt Permitted	0.950		0.341			
Satd. Flow (perm)	3399	1567	614	1800	1854	1591
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			45	45	
Link Distance (ft)	277			745	1091	
Travel Time (s)	4.2			11.3	16.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	5%	5%	3%	2%
Adj. Flow (vph)	147	119	631	760	416	252
Shared Lane Traffic (%)						
Lane Group Flow (vph)	147	119	631	760	416	252
Turn Type	Prot	Free	D.P+P	NA	NA	Free
Protected Phases	4		5	2	6	
Permitted Phases		Free	6			Free
Detector Phase	4		5	2	6	
Switch Phase						
Minimum Initial (s)	7.0		7.0	12.0	12.0	
Minimum Split (s)	12.6		11.9	17.6	18.3	
Total Split (s)	15.2		55.0	104.8	49.8	
Total Split (%)	12.7%		45.8%	87.3%	41.5%	
Maximum Green (s)	9.6		50.1	99.2	43.5	
Yellow Time (s)	3.0		3.0	4.4	4.6	
All-Red Time (s)	2.6		1.9	1.2	1.7	
Lost Time Adjust (s)	-0.6		0.1	-0.6	-1.3	
Total Lost Time (s)	5.0		5.0	5.0	5.0	
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	2.0		1.0	2.0	2.0	
Recall Mode	None		None	C-Min	C-Min	
Act Effct Green (s)	10.2	120.0	94.8	99.8	49.1	120.0
Actuated g/C Ratio	0.08	1.00	0.79	0.83	0.41	1.00
v/c Ratio	0.51	0.08	0.70	0.51	0.55	0.16
Control Delay	58.3	0.1	8.1	2.5	27.0	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.3	0.1	8.1	2.5	27.0	0.2
LOS	E	A	A	A	C	A

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	32.3			5.0	16.9	
Approach LOS	C			A	B	
Queue Length 50th (ft)	57	0	87	112	227	0
Queue Length 95th (ft)	89	0	m127	m28	m378	m0
Internal Link Dist (ft)	197			665	1011	
Turn Bay Length (ft)			150			125
Base Capacity (vph)	311	1567	976	1509	784	1591
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.08	0.65	0.50	0.53	0.16

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 47 (39%), Referenced to phase 2:NBT and 6:NBSB, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.70
Intersection Signal Delay: 11.5 Intersection LOS: B
Intersection Capacity Utilization 69.5% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Hodge Rd & I-87 NB Ramps



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	0	15	2	0	7	8	1164	2	6	453	23
Future Volume (vph)	81	0	15	2	0	7	8	1164	2	6	453	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		4%			1%			4%			-2%	
Storage Length (ft)	150		0	0		0	150		0	100		0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.892						0.993	
Flt Protected	0.950				0.990		0.950			0.950		
Satd. Flow (prot)	1734	1507	0	0	1637	0	1685	1773	0	1787	1868	0
Flt Permitted	0.950				0.990		0.950			0.950		
Satd. Flow (perm)	1734	1507	0	0	1637	0	1685	1773	0	1787	1868	0
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		617			577			896			745	
Travel Time (s)		16.8			15.7			13.6			11.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	5%	2%	2%	2%	5%	5%	2%	2%	2%	2%
Adj. Flow (vph)	90	0	17	2	0	8	9	1293	2	7	503	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	90	17	0	0	10	0	9	1295	0	7	529	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 79.2% ICU Level of Service D
Analysis Period (min) 15

Intersection												
Int Delay, s/veh	42.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	81	0	15	2	0	7	8	1164	2	6	453	23
Future Vol, veh/h	81	0	15	2	0	7	8	1164	2	6	453	23
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	150	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	4	-	-	1	-	-	4	-	-	-2	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	5	2	2	2	5	5	2	2	2	2
Mvmt Flow	90	0	17	2	0	8	9	1293	2	7	503	26

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1846	1843	516	1851	1855	1294	529	0	0	1295	0	0
Stage 1	530	530	-	1312	1312	-	-	-	-	-	-	-
Stage 2	1316	1313	-	539	543	-	-	-	-	-	-	-
Critical Hdwy	7.92	7.32	6.65	7.32	6.72	6.32	4.15	-	-	4.12	-	-
Critical Hdwy Stg 1	6.92	6.32	-	6.32	5.72	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.92	6.32	-	6.32	5.72	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.345	3.518	4.018	3.318	2.245	-	-	2.218	-	-
Pot Cap-1 Maneuver	~ 38	50	522	51	67	192	1023	-	-	535	-	-
Stage 1	473	468	-	181	212	-	-	-	-	-	-	-
Stage 2	145	170	-	511	504	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 36	49	522	49	66	192	1023	-	-	535	-	-
Mov Cap-2 Maneuver	~ 36	49	-	49	66	-	-	-	-	-	-	-
Stage 1	469	462	-	179	210	-	-	-	-	-	-	-
Stage 2	138	168	-	488	497	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 776.7	38.9	0.1	0.1
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1023	-	-	36	522	116	535	-	-
HCM Lane V/C Ratio	0.009	-	-	2.5	0.032	0.086	0.012	-	-
HCM Control Delay (s)	8.6	-	-	-$ 918.3	12.1	38.9	11.8	-	-
HCM Lane LOS	A	-	-	F	B	E	B	-	-
HCM 95th %tile Q(veh)	0	-	-	10.1	0.1	0.3	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	12	35	1138	48	130	339
Future Volume (vph)	12	35	1138	48	130	339
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	3%		-1%			0%
Storage Length (ft)	0	0		100	300	
Storage Lanes	1	1		1	2	
Taper Length (ft)	100				100	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.97	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1743	1560	1872	1591	3433	1863
Flt Permitted	0.950				0.061	
Satd. Flow (perm)	1743	1560	1872	1591	220	1863
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	25		45			45
Link Distance (ft)	682		1238			1171
Travel Time (s)	18.6		18.8			17.7
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	13	39	1264	53	144	377
Shared Lane Traffic (%)						
Lane Group Flow (vph)	13	39	1264	53	144	377
Turn Type	Prot	pm+ov	NA	pm+ov	D.P+P	NA
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2	2	
Detector Phase	8	1	2	8	1	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	12.0	7.0	7.0	12.0
Minimum Split (s)	13.5	13.2	40.2	13.5	13.2	18.2
Total Split (s)	13.5	13.2	93.3	13.5	13.2	106.5
Total Split (%)	11.3%	11.0%	77.8%	11.3%	11.0%	88.8%
Maximum Green (s)	7.0	7.0	87.1	7.0	7.0	100.3
Yellow Time (s)	3.0	3.0	4.6	3.0	3.0	4.6
All-Red Time (s)	3.5	3.2	1.6	3.5	3.2	1.6
Lost Time Adjust (s)	-1.5	-1.2	-1.2	-1.5	-1.2	-1.2
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lag	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	2.0	6.0	2.0	2.0	6.0
Recall Mode	None	None	C-Min	None	None	C-Min
Walk Time (s)			7.0			
Flash Dont Walk (s)			27.0			
Pedestrian Calls (#/hr)			0			
Act Effct Green (s)	8.5	19.0	91.0	101.8	99.2	105.2
Actuated g/C Ratio	0.07	0.16	0.76	0.85	0.83	0.88
v/c Ratio	0.11	0.16	0.89	0.04	0.36	0.23
Control Delay	54.3	43.3	22.0	1.5	11.1	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Delay	54.3	43.3	22.0	1.5	11.1	1.9
LOS	D	D	C	A	B	A
Approach Delay	46.0		21.1			4.4
Approach LOS	D		C			A
Queue Length 50th (ft)	10	26	697	5	13	9
Queue Length 95th (ft)	31	58	#1188	10	25	114
Internal Link Dist (ft)	602		1158			1091
Turn Bay Length (ft)				100	300	
Base Capacity (vph)	123	247	1419	1349	401	1633
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.16	0.89	0.04	0.36	0.23

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 12 (10%), Referenced to phase 2:NBSB and 6:SBT, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 17.2 Intersection LOS: B
Intersection Capacity Utilization 74.1% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Hodge Rd & Spectrum Dr

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	350	107	6	8	436	744	20	52	11	151	12	192
Future Volume (vph)	350	107	6	8	436	744	20	52	11	151	12	192
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			1%			-1%			-1%	
Storage Length (ft)	225		0	200		0	50		0	450		0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.905			0.974				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1702	1829	0	1761	1647	0	1778	1794	0	1728	1819	1546
Flt Permitted	0.043			0.676			0.749			0.709		
Satd. Flow (perm)	77	1829	0	1253	1647	0	1402	1794	0	1289	1819	1546
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			45	
Link Distance (ft)		826			796			938			914	
Travel Time (s)		12.5			12.1			18.3			13.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	2%	2%	2%	2%	5%	2%	4%	2%	5%	5%	5%
Adj. Flow (vph)	389	119	7	9	484	827	22	58	12	168	13	213
Shared Lane Traffic (%)												
Lane Group Flow (vph)	389	126	0	9	1311	0	22	70	0	168	13	213
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2			6			8			4	5
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		6	6		8	8		4	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0		12.0	12.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	12.4	17.4		17.4	17.4		12.2	12.2		12.6	12.6	12.4
Total Split (s)	26.0	120.0		94.0	94.0		20.0	20.0		20.0	20.0	26.0
Total Split (%)	18.6%	85.7%		67.1%	67.1%		14.3%	14.3%		14.3%	14.3%	18.6%
Maximum Green (s)	20.6	114.6		88.6	88.6		14.8	14.8		14.4	14.4	20.6
Yellow Time (s)	3.0	4.3		4.4	4.4		3.9	3.9		4.6	4.6	3.0
All-Red Time (s)	2.4	1.1		1.0	1.0		1.3	1.3		1.0	1.0	2.4
Lost Time Adjust (s)	-0.4	-0.4		-0.4	-0.4		-0.2	-0.2		-0.6	-0.6	-0.4
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag							Lead
Lead-Lag Optimize?	Yes			Yes	Yes							Yes
Vehicle Extension (s)	2.0	6.0		6.0	6.0		2.0	2.0		2.0	2.0	2.0
Recall Mode	None	Min		Min	Min		None	None		None	None	None
Act Effct Green (s)	115.0	115.0		89.0	89.0		15.0	15.0		15.0	15.0	41.0
Actuated g/C Ratio	0.82	0.82		0.64	0.64		0.11	0.11		0.11	0.11	0.29
v/c Ratio	1.27	0.08		0.01	1.25		0.15	0.36		1.22	0.07	0.47
Control Delay	181.7	2.5		9.5	147.3		59.4	64.0		197.1	57.3	44.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	181.7	2.5		9.5	147.3		59.4	64.0		197.1	57.3	44.8
LOS	F	A		A	F		E	E		F	E	D

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		137.9			146.4			62.9			110.1	
Approach LOS		F			F			E			F	
Queue Length 50th (ft)	~397	18		3	~1488		18	60		~187	11	160
Queue Length 95th (ft)	#608	29		10	#1754		47	112		#338	33	243
Internal Link Dist (ft)		746			716			858			834	
Turn Bay Length (ft)	225			200			50			450		
Base Capacity (vph)	307	1502		796	1047		150	192		138	194	452
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	1.27	0.08		0.01	1.25		0.15	0.36		1.22	0.07	0.47

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Natural Cycle: 140
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.27
Intersection Signal Delay: 135.1 Intersection LOS: F
Intersection Capacity Utilization 115.5% ICU Level of Service H
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

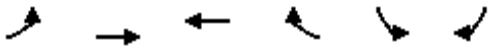
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Hodge Rd & Poole Rd

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	902	0	401
Future Volume (vph)	0	0	0	902	0	401
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	0	0	1863	0	1611
Flt Permitted						
Satd. Flow (perm)	0	0	0	1863	0	1611
Link Speed (mph)	45			45	45	
Link Distance (ft)	757			241	434	
Travel Time (s)	11.5			3.7	6.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	1002	0	446
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1002	0	446
Sign Control	Free			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 50.8% ICU Level of Service A
Analysis Period (min) 15



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	239	0	795	0	0
Future Volume (vph)	0	239	0	795	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.865		
Flt Protected						
Satd. Flow (prot)	0	1863	0	1611	0	0
Flt Permitted						
Satd. Flow (perm)	0	1863	0	1611	0	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		876	277		541	
Travel Time (s)		13.3	4.2		8.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	266	0	883	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	266	0	883	0	0
Sign Control		Free	Free		Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 52.6% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	88	515	68	87	70	179	514	356	42	221	96
Future Volume (vph)	48	88	515	68	87	70	179	514	356	42	221	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-2%			-3%			9%			-8%	
Storage Length (ft)	0		0	0		0	0		0	175		225
Storage Lanes	0		1	0		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.958			0.939				0.850
Flt Protected		0.983			0.985		0.950			0.950		
Satd. Flow (prot)	0	1849	1553	0	1774	0	1674	1623	0	1840	1882	1647
Flt Permitted		0.683			0.701		0.449			0.138		
Satd. Flow (perm)	0	1285	1553	0	1262	0	791	1623	0	267	1882	1647
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		241			1043			1091			1061	
Travel Time (s)		3.7			15.8			16.5			16.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	5%	4%	2%	2%	3%	5%	5%	2%	5%	2%
Adj. Flow (vph)	53	98	572	76	97	78	199	571	396	47	246	107
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	151	572	0	251	0	199	967	0	47	246	107
Turn Type	pm+pt	NA	pm+ov	Perm	NA		pm+pt	NA		pm+pt	NA	Free
Protected Phases	7	4	5		8		5	2		1	6	
Permitted Phases	4		4	8			2			6		Free
Detector Phase	7	4	5	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	12.0		7.0	12.0	
Minimum Split (s)	12.5	12.7	12.5	12.7	12.7		12.5	19.0		12.5	19.0	
Total Split (s)	12.5	36.5	38.5	24.0	24.0		38.5	71.0		12.5	45.0	
Total Split (%)	10.4%	30.4%	32.1%	20.0%	20.0%		32.1%	59.2%		10.4%	37.5%	
Maximum Green (s)	7.0	30.8	33.0	18.3	18.3		33.0	64.0		7.0	38.0	
Yellow Time (s)	4.0	4.7	4.0	4.7	4.7		4.0	5.5		4.0	5.5	
All-Red Time (s)	1.5	1.0	1.5	1.0	1.0		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)		-0.7	-0.5		-0.7		-0.5	-2.0		-0.5	-2.0	
Total Lost Time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lag		Lag	Lead	Lead		Lag	Lead		Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0		1.0	2.0		1.0	2.0	
Recall Mode	None	None	None	None	None		None	C-Min		None	C-Min	
Act Effct Green (s)		23.0	78.5		23.0		87.0	77.0		39.0	31.5	120.0
Actuated g/C Ratio		0.19	0.65		0.19		0.72	0.64		0.32	0.26	1.00
v/c Ratio		0.61	0.56		1.04		0.21	0.93		0.25	0.50	0.06
Control Delay		57.0	14.5		116.7		2.5	26.5		19.0	41.0	0.1
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay		57.0	14.5		116.7		2.5	26.5		19.0	41.0	0.1
LOS		E	B		F		A	C		B	D	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		23.4			116.7			22.4			27.5	
Approach LOS		C			F			C			C	
Queue Length 50th (ft)		113	232		~244		11	329		15	159	0
Queue Length 95th (ft)		179	341		#359		m17	m#982		27	238	0
Internal Link Dist (ft)		161			963			1011			981	
Turn Bay Length (ft)										175		225
Base Capacity (vph)		337	1015		241		944	1041		185	627	1647
Starvation Cap Reductn		0	0		0		0	0		0	0	0
Spillback Cap Reductn		0	0		0		0	0		0	0	0
Storage Cap Reductn		0	0		0		0	0		0	0	0
Reduced v/c Ratio		0.45	0.56		1.04		0.21	0.93		0.25	0.39	0.06

Intersection Summary

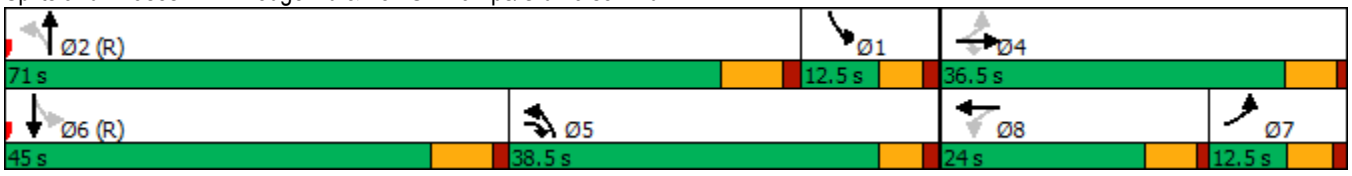
Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 108 (90%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 170
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.04
Intersection Signal Delay: 32.8 Intersection LOS: C
Intersection Capacity Utilization 86.4% ICU Level of Service E
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Hodge Rd & I-87 SB Ramps/Old Faison Rd



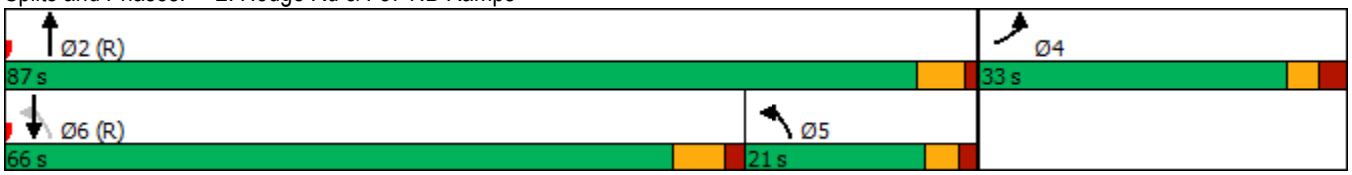
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	658	587	271	389	728	75
Future Volume (vph)	658	587	271	389	728	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	2%			1%	-1%	
Storage Length (ft)	0	0	150			125
Storage Lanes	2	1	1			1
Taper Length (ft)	100		100			
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	3399	1523	1727	1835	1819	1591
Flt Permitted	0.950		0.096			
Satd. Flow (perm)	3399	1523	175	1835	1819	1591
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			45	45	
Link Distance (ft)	277			745	1091	
Travel Time (s)	4.2			11.3	16.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	5%	4%	3%	5%	2%
Adj. Flow (vph)	731	652	301	432	809	83
Shared Lane Traffic (%)						
Lane Group Flow (vph)	731	652	301	432	809	83
Turn Type	Prot	Free	D.P+P	NA	NA	Free
Protected Phases	4		5	2	6	
Permitted Phases		Free	6			Free
Detector Phase	4		5	2	6	
Switch Phase						
Minimum Initial (s)	7.0		7.0	12.0	12.0	
Minimum Split (s)	12.6		11.9	17.6	18.3	
Total Split (s)	33.0		21.0	87.0	66.0	
Total Split (%)	27.5%		17.5%	72.5%	55.0%	
Maximum Green (s)	27.4		16.1	81.4	59.7	
Yellow Time (s)	3.0		3.0	4.4	4.6	
All-Red Time (s)	2.6		1.9	1.2	1.7	
Lost Time Adjust (s)	-0.6		0.1	-0.6	-1.3	
Total Lost Time (s)	5.0		5.0	5.0	5.0	
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	2.0		1.0	2.0	2.0	
Recall Mode	None		None	C-Min	C-Min	
Act Effct Green (s)	27.8	120.0	77.2	82.2	60.6	120.0
Actuated g/C Ratio	0.23	1.00	0.64	0.68	0.50	1.00
v/c Ratio	0.93	0.43	0.92	0.34	0.88	0.05
Control Delay	64.3	0.9	71.5	10.7	34.1	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.3	0.9	71.5	10.7	34.1	0.1
LOS	E	A	E	B	C	A

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	34.4			35.7	30.9	
Approach LOS	C			D	C	
Queue Length 50th (ft)	287	0	110	95	484	0
Queue Length 95th (ft)	#400	0	#342	245	m#710	m0
Internal Link Dist (ft)	197			665	1011	
Turn Bay Length (ft)			150			125
Base Capacity (vph)	800	1523	327	1260	932	1591
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.43	0.92	0.34	0.87	0.05

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 8 (7%), Referenced to phase 2:NBT and 6:NBSB, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 33.7 Intersection LOS: C
Intersection Capacity Utilization 84.6% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Hodge Rd & I-87 NB Ramps



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	0	7	2	0	8	12	623	4	10	1235	69
Future Volume (vph)	29	0	7	2	0	8	12	623	4	10	1235	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		4%			1%			4%			-2%	
Storage Length (ft)	150		0	0		0	150		0	100		0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.890			0.999			0.992	
Flt Protected	0.950				0.991		0.950			0.950		
Satd. Flow (prot)	1734	1507	0	0	1635	0	1685	1806	0	1787	1816	0
Flt Permitted	0.950				0.991		0.950			0.950		
Satd. Flow (perm)	1734	1507	0	0	1635	0	1685	1806	0	1787	1816	0
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		617			577			896			745	
Travel Time (s)		16.8			15.7			13.6			11.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	5%	2%	2%	2%	5%	3%	2%	2%	5%	2%
Adj. Flow (vph)	32	0	8	2	0	9	13	692	4	11	1372	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	32	8	0	0	11	0	13	696	0	11	1449	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 81.9% ICU Level of Service D
Analysis Period (min) 15

Intersection												
Int Delay, s/veh	10.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	0	7	2	0	8	12	623	4	10	1235	69
Future Vol, veh/h	29	0	7	2	0	8	12	623	4	10	1235	69
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	150	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	4	-	-	1	-	-	4	-	-	-2	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	5	2	2	2	5	3	2	2	5	2
Mvmt Flow	32	0	8	2	0	9	13	692	4	11	1372	77

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2158	2155	1411	2157	2191	694	1449	0	0	696	0	0
Stage 1	1433	1433	-	720	720	-	-	-	-	-	-	-
Stage 2	725	722	-	1437	1471	-	-	-	-	-	-	-
Critical Hdwy	7.92	7.32	6.65	7.32	6.72	6.32	4.15	-	-	4.12	-	-
Critical Hdwy Stg 1	6.92	6.32	-	6.32	5.72	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.92	6.32	-	6.32	5.72	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.345	3.518	4.018	3.318	2.245	-	-	2.218	-	-
Pot Cap-1 Maneuver	~ 21	30	143	31	40	434	458	-	-	900	-	-
Stage 1	121	145	-	403	415	-	-	-	-	-	-	-
Stage 2	354	367	-	153	176	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 20	29	143	28	38	434	458	-	-	900	-	-
Mov Cap-2 Maneuver	~ 20	29	-	28	38	-	-	-	-	-	-	-
Stage 1	118	143	-	392	403	-	-	-	-	-	-	-
Stage 2	337	357	-	143	174	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 577.3	41	0.2	0.1
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	458	-	-	20	143	111	900	-	-
HCM Lane V/C Ratio	0.029	-	-	1.611	0.054	0.1	0.012	-	-
HCM Control Delay (s)	13.1	-	-	$ 709	31.6	41	9.1	-	-
HCM Lane LOS	B	-	-	F	D	E	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	4.3	0.2	0.3	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	48	132	506	16	44	1199
Future Volume (vph)	48	132	506	16	44	1199
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	3%		-1%			0%
Storage Length (ft)	0	0		100	300	
Storage Lanes	1	1		1	2	
Taper Length (ft)	100				100	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.97	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1743	1560	1872	1591	3433	1863
Flt Permitted	0.950				0.404	
Satd. Flow (perm)	1743	1560	1872	1591	1460	1863
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	25		45			45
Link Distance (ft)	682		1238			1171
Travel Time (s)	18.6		18.8			17.7
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	53	147	562	18	49	1332
Shared Lane Traffic (%)						
Lane Group Flow (vph)	53	147	562	18	49	1332
Turn Type	Prot	pm+ov	NA	pm+ov	D.P+P	NA
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2	2	
Detector Phase	8	1	2	8	1	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	12.0	7.0	7.0	12.0
Minimum Split (s)	13.5	13.2	40.2	13.5	13.2	18.2
Total Split (s)	13.5	16.4	90.1	13.5	16.4	106.5
Total Split (%)	11.3%	13.7%	75.1%	11.3%	13.7%	88.8%
Maximum Green (s)	7.0	10.2	83.9	7.0	10.2	100.3
Yellow Time (s)	3.0	3.0	4.6	3.0	3.0	4.6
All-Red Time (s)	3.5	3.2	1.6	3.5	3.2	1.6
Lost Time Adjust (s)	-1.5	-1.2	-1.2	-1.5	-1.2	-1.2
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	2.0	6.0	2.0	2.0	6.0
Recall Mode	None	None	C-Min	None	None	C-Min
Walk Time (s)			7.0			
Flash Dont Walk (s)			27.0			
Pedestrian Calls (#/hr)			0			
Act Effct Green (s)	8.7	20.8	89.2	102.9	99.0	105.0
Actuated g/C Ratio	0.07	0.17	0.74	0.86	0.82	0.88
v/c Ratio	0.42	0.54	0.40	0.01	0.04	0.82
Control Delay	64.0	52.0	7.3	1.8	0.8	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Delay	64.0	52.0	7.3	1.8	0.8	10.2
LOS	E	D	A	A	A	B
Approach Delay	55.2		7.1			9.9
Approach LOS	E		A			A
Queue Length 50th (ft)	40	103	149	2	1	209
Queue Length 95th (ft)	84	167	224	6	m1	241
Internal Link Dist (ft)	602		1158			1091
Turn Bay Length (ft)				100	300	
Base Capacity (vph)	126	291	1391	1363	1411	1633
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.51	0.40	0.01	0.03	0.82

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 44 (37%), Referenced to phase 2:NBSB and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.82
Intersection Signal Delay: 13.3 Intersection LOS: B
Intersection Capacity Utilization 77.3% ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Hodge Rd & Spectrum Dr

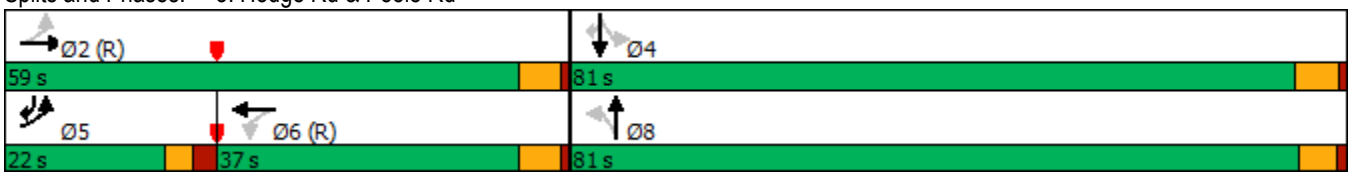
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	269	280	10	16	165	196	11	31	14	781	57	372
Future Volume (vph)	269	280	10	16	165	196	11	31	14	781	57	372
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			1%			-1%			-1%	
Storage Length (ft)	225		0	200		0	50		0	450		0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.918			0.952				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1702	1835	0	1761	1675	0	1778	1747	0	1728	1836	1546
Flt Permitted	0.108			0.566			0.716			0.724		
Satd. Flow (perm)	193	1835	0	1049	1675	0	1340	1747	0	1317	1836	1546
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			45	
Link Distance (ft)		826			796			938			914	
Travel Time (s)		12.5			12.1			18.3			13.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	2%	2%	2%	2%	5%	2%	5%	2%	5%	4%	5%
Adj. Flow (vph)	299	311	11	18	183	218	12	34	16	868	63	413
Shared Lane Traffic (%)												
Lane Group Flow (vph)	299	322	0	18	401	0	12	50	0	868	63	413
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2			6			8			4	5
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		6	6		8	8		4	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0		12.0	12.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	12.4	17.4		17.4	17.4		12.2	12.2		12.6	12.6	12.4
Total Split (s)	22.0	59.0		37.0	37.0		81.0	81.0		81.0	81.0	22.0
Total Split (%)	15.7%	42.1%		26.4%	26.4%		57.9%	57.9%		57.9%	57.9%	15.7%
Maximum Green (s)	16.6	53.6		31.6	31.6		75.8	75.8		75.4	75.4	16.6
Yellow Time (s)	3.0	4.3		4.4	4.4		3.9	3.9		4.6	4.6	3.0
All-Red Time (s)	2.4	1.1		1.0	1.0		1.3	1.3		1.0	1.0	2.4
Lost Time Adjust (s)	-0.4	-0.4		-0.4	-0.4		-0.2	-0.2		-0.6	-0.6	-0.4
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag							Lead
Lead-Lag Optimize?	Yes			Yes	Yes							Yes
Vehicle Extension (s)	2.0	6.0		6.0	6.0		2.0	2.0		2.0	2.0	2.0
Recall Mode	None	C-Min		C-Min	C-Min		None	None		None	None	None
Act Effct Green (s)	54.0	54.0		32.0	32.0		76.0	76.0		76.0	76.0	98.0
Actuated g/C Ratio	0.39	0.39		0.23	0.23		0.54	0.54		0.54	0.54	0.70
v/c Ratio	1.16	0.46		0.08	1.05		0.02	0.05		1.22	0.06	0.38
Control Delay	143.5	34.6		43.6	111.0		15.0	15.3		140.0	15.4	9.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	143.5	34.6		43.6	111.0		15.0	15.3		140.0	15.4	9.8
LOS	F	C		D	F		B	B		F	B	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		87.1			108.1			15.3			94.1	
Approach LOS		F			F			B			F	
Queue Length 50th (ft)	~273	217		13	~396		5	21		~965	26	141
Queue Length 95th (ft)	#465	307		36	#604		15	42		#1220	50	199
Internal Link Dist (ft)		746			716			858			834	
Turn Bay Length (ft)	225			200			50			450		
Base Capacity (vph)	257	707		239	382		727	948		714	996	1082
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	1.16	0.46		0.08	1.05		0.02	0.05		1.22	0.06	0.38

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.22
Intersection Signal Delay: 92.7 Intersection LOS: F
Intersection Capacity Utilization 98.0% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

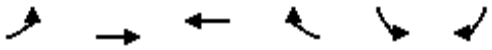
Splits and Phases: 5: Hodge Rd & Poole Rd



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	362	0	651
Future Volume (vph)	0	0	0	362	0	651
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	0	0	1863	0	1611
Flt Permitted						
Satd. Flow (perm)	0	0	0	1863	0	1611
Link Speed (mph)	45			45	45	
Link Distance (ft)	757			241	434	
Travel Time (s)	11.5			3.7	6.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	402	0	723
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	402	0	723
Sign Control	Free			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 43.6% ICU Level of Service A
Analysis Period (min) 15



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1245	0	346	0	0
Future Volume (vph)	0	1245	0	346	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.865		
Flt Protected						
Satd. Flow (prot)	0	1863	0	1611	0	0
Flt Permitted						
Satd. Flow (perm)	0	1863	0	1611	0	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		876	277		541	
Travel Time (s)		13.3	4.2		8.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1383	0	384	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1383	0	384	0	0
Sign Control		Free	Free		Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 68.9% ICU Level of Service C
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	29	346	134	285	70	525	412	105	16	230	260
Future Volume (vph)	105	29	346	134	285	70	525	412	105	16	230	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-2%			-3%			9%			-8%	
Storage Length (ft)	0		0	125		0	0		200	175		225
Storage Lanes	0		1	1		0	1		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.970				0.850			0.850
Flt Protected		0.962		0.950			0.950			0.950		
Satd. Flow (prot)	0	1810	1568	1762	1834	0	1642	1728	1469	1840	1900	1647
Flt Permitted		0.252		0.608			0.253			0.499		
Satd. Flow (perm)	0	474	1568	1127	1834	0	437	1728	1469	967	1900	1647
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		241			1043			1091			1061	
Travel Time (s)		3.7			15.8			16.5			16.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	4%	4%	2%	2%	5%	5%	5%	2%	4%	2%
Adj. Flow (vph)	117	32	384	149	317	78	583	458	117	18	256	289
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	149	384	149	395	0	583	458	117	18	256	289
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Free
Protected Phases	7	4	5	3	8		5	2	3	1	6	
Permitted Phases	4		4	8			2		2	6		Free
Detector Phase	7	4	5	3	8		5	2	3	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	5.0	7.0		7.0	12.0	5.0	7.0	12.0	
Minimum Split (s)	12.5	12.7	12.5	12.0	12.7		12.5	19.0	12.0	12.5	19.0	
Total Split (s)	12.5	35.5	46.0	12.0	35.0		46.0	60.0	12.0	12.5	26.5	
Total Split (%)	10.4%	29.6%	38.3%	10.0%	29.2%		38.3%	50.0%	10.0%	10.4%	22.1%	
Maximum Green (s)	7.0	29.8	40.5	5.0	29.3		40.5	53.0	5.0	7.0	19.5	
Yellow Time (s)	4.0	4.7	4.0	5.0	4.7		4.0	5.5	5.0	4.0	5.5	
All-Red Time (s)	1.5	1.0	1.5	2.0	1.0		1.5	1.5	2.0	1.5	1.5	
Lost Time Adjust (s)		-0.7	-0.5	-2.0	-0.7		-0.5	-2.0	-2.0	-0.5	-2.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lag	Lead	Lead	Lag	Lead		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	1.0	1.0	1.0	3.0	1.0		1.0	2.0	3.0	1.0	2.0	
Recall Mode	None	None	None	None	None		None	C-Min	None	None	C-Min	
Act Effct Green (s)		30.9	68.6	43.2	43.2		66.8	61.8	72.1	31.5	24.0	120.0
Actuated g/C Ratio		0.26	0.57	0.36	0.36		0.56	0.52	0.60	0.26	0.20	1.00
v/c Ratio		1.23	0.43	0.34	0.60		0.94	0.51	0.13	0.06	0.67	0.18
Control Delay		194.2	9.4	31.4	36.1		45.4	22.2	8.9	18.5	55.4	0.2
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		194.2	9.4	31.4	36.1		45.4	22.2	8.9	18.5	55.4	0.2
LOS		F	A	C	D		D	C	A	B	E	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		61.1			34.8			32.5			25.9	
Approach LOS		E			C			C			C	
Queue Length 50th (ft)		~143	90	81	250		343	208	33	6	190	0
Queue Length 95th (ft)		#278	132	133	358		#550	305	m49	17	#306	0
Internal Link Dist (ft)		161			963			1011			981	
Turn Bay Length (ft)				125					200	175		225
Base Capacity (vph)		122	939	444	660		654	890	882	308	380	1647
Starvation Cap Reductn		0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio		1.22	0.41	0.34	0.60		0.89	0.51	0.13	0.06	0.67	0.18

Intersection Summary

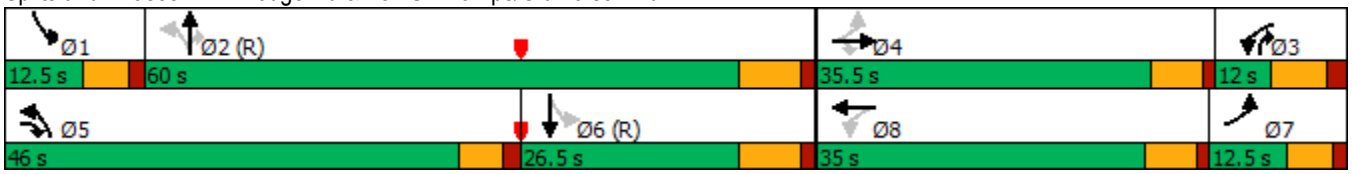
Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 89 (74%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.23
Intersection Signal Delay: 37.1 Intersection LOS: D
Intersection Capacity Utilization 84.5% ICU Level of Service E
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Hodge Rd & I-87 SB Ramps/Old Faison Rd



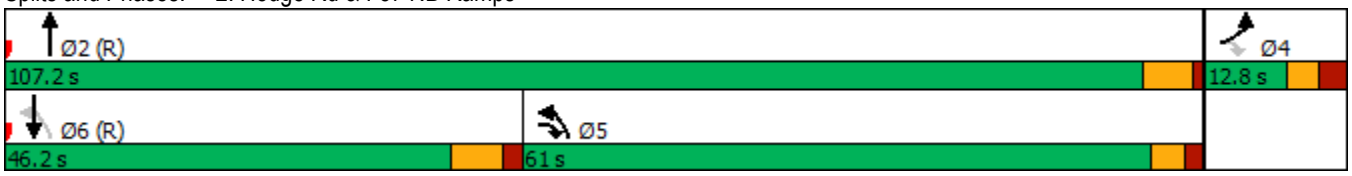
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	136	166	743	905	476	234
Future Volume (vph)	136	166	743	905	476	234
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	2%			1%	-1%	
Storage Length (ft)	0	150	150			125
Storage Lanes	2	1	1			1
Taper Length (ft)	100		100			
Lane Util. Factor	0.97	0.88	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	3399	2759	1710	1800	1854	1591
Flt Permitted	0.950		0.147			
Satd. Flow (perm)	3399	2759	265	1800	1854	1591
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			45	45	
Link Distance (ft)	277			301	1091	
Travel Time (s)	4.2			4.6	16.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	5%	5%	3%	2%
Adj. Flow (vph)	151	184	826	1006	529	260
Shared Lane Traffic (%)						
Lane Group Flow (vph)	151	184	826	1006	529	260
Turn Type	Prot	pm+ov	D.P+P	NA	NA	Free
Protected Phases	4	5	5	2	6	
Permitted Phases		4	6			Free
Detector Phase	4	5	5	2	6	
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	
Minimum Split (s)	12.6	11.9	11.9	17.6	18.3	
Total Split (s)	12.8	61.0	61.0	107.2	46.2	
Total Split (%)	10.7%	50.8%	50.8%	89.3%	38.5%	
Maximum Green (s)	7.2	56.1	56.1	101.6	39.9	
Yellow Time (s)	3.0	3.0	3.0	4.4	4.6	
All-Red Time (s)	2.6	1.9	1.9	1.2	1.7	
Lost Time Adjust (s)	-0.6	-0.6	0.1	-0.6	-1.3	
Total Lost Time (s)	5.0	4.3	5.0	5.0	5.0	
Lead/Lag		Lag	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	1.0	1.0	2.0	2.0	
Recall Mode	None	None	None	C-Min	C-Min	
Act Effct Green (s)	8.0	69.0	97.0	102.0	41.7	120.0
Actuated g/C Ratio	0.07	0.58	0.81	0.85	0.35	1.00
v/c Ratio	0.67	0.12	0.94	0.66	0.82	0.16
Control Delay	69.5	11.7	34.0	3.3	32.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.5	11.7	34.0	3.3	32.4	0.2
LOS	E	B	C	A	C	A

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	37.7			17.1	21.8	
Approach LOS	D			B	C	
Queue Length 50th (ft)	60	34	478	68	276	0
Queue Length 95th (ft)	#104	53	#784	51	#558	0
Internal Link Dist (ft)	197			221	1011	
Turn Bay Length (ft)		150	150			125
Base Capacity (vph)	228	1587	893	1534	651	1591
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.12	0.92	0.66	0.81	0.16

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 114 (95%), Referenced to phase 2:NBT and 6:NBSB, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.94
Intersection Signal Delay: 20.7 Intersection LOS: C
Intersection Capacity Utilization 84.5% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Hodge Rd & I-87 NB Ramps



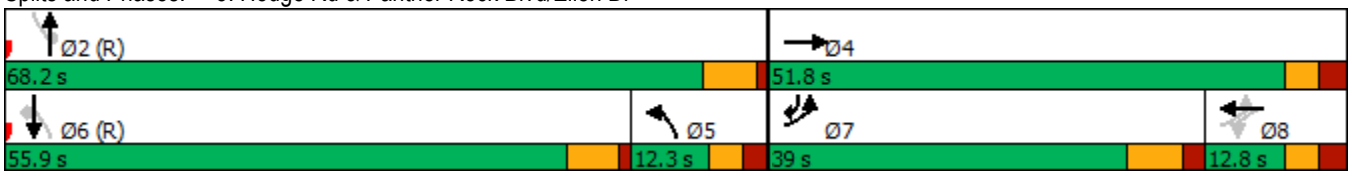
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	371	0	29	2	0	7	14	1270	2	6	530	92
Future Volume (vph)	371	0	29	2	0	7	14	1270	2	6	530	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		4%			1%			4%			-2%	
Storage Length (ft)	150		0	0		0	150		0	100		200
Storage Lanes	1		0	0		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.850			0.892							0.850
Flt Protected	0.950				0.990		0.950			0.950		
Satd. Flow (prot)	1734	1507	0	0	1637	0	1685	3369	0	1787	3472	1599
Flt Permitted							0.367			0.109		
Satd. Flow (perm)	1825	1507	0	0	1653	0	651	3369	0	205	3472	1599
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		617			577			896			445	
Travel Time (s)		16.8			15.7			13.6			6.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	5%	2%	2%	2%	5%	5%	2%	2%	5%	2%
Adj. Flow (vph)	412	0	32	2	0	8	16	1411	2	7	589	102
Shared Lane Traffic (%)												
Lane Group Flow (vph)	412	32	0	0	10	0	16	1413	0	7	589	102
Turn Type	D.P+P	NA		Perm	NA		D.P+P	NA		D.Pm	NA	pm+ov
Protected Phases	7	4			8		5	2			6	7
Permitted Phases	8			8			6			2		6
Detector Phase	7	4		8	8		5	2		2	6	7
Switch Phase												
Minimum Initial (s)	5.0	7.0		7.0	7.0		7.0	12.0		12.0	12.0	5.0
Minimum Split (s)	12.0	12.7		12.7	12.7		12.3	17.8		17.8	17.8	12.0
Total Split (s)	39.0	51.8		12.8	12.8		12.3	68.2		68.2	55.9	39.0
Total Split (%)	32.5%	43.2%		10.7%	10.7%		10.3%	56.8%		56.8%	46.6%	32.5%
Maximum Green (s)	32.0	46.1		7.1	7.1		7.0	62.4		62.4	50.1	32.0
Yellow Time (s)	5.0	3.1		3.1	3.1		3.0	4.7		4.7	4.7	5.0
All-Red Time (s)	2.0	2.6		2.6	2.6		2.3	1.1		1.1	1.1	2.0
Lost Time Adjust (s)	-0.7	-0.7			-0.7		-0.3	-0.8		-0.8	-0.8	-2.0
Total Lost Time (s)	6.3	5.0			5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag		Lag				Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes				Yes	Yes
Vehicle Extension (s)	3.0	2.0		2.0	2.0		2.0	6.0		6.0	6.0	3.0
Recall Mode	None	None		None	None		None	C-Min		C-Min	C-Min	None
Act Effct Green (s)	32.3	34.8			7.7		73.2	75.2		75.2	64.3	103.6
Actuated g/C Ratio	0.27	0.29			0.06		0.61	0.63		0.63	0.54	0.86
v/c Ratio	0.88	0.07			0.09		0.03	0.67		0.05	0.32	0.07
Control Delay	61.2	28.5			55.1		4.9	7.6		6.0	7.2	2.0
Queue Delay	0.0	0.0			0.0		0.0	0.1		0.0	0.0	0.0
Total Delay	61.2	28.5			55.1		4.9	7.7		6.0	7.2	2.0
LOS	E	C			E		A	A		A	A	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		58.9			55.1			7.7			6.4	
Approach LOS		E			E			A			A	
Queue Length 50th (ft)	305	18			7		1	128		1	33	0
Queue Length 95th (ft)	362	37			26		m3	m314		m4	m205	m30
Internal Link Dist (ft)		537			497			816			365	
Turn Bay Length (ft)	150						150			100		200
Base Capacity (vph)	491	587			107		511	2110		128	1957	1370
Starvation Cap Reductn	0	0			0		0	0		0	0	0
Spillback Cap Reductn	0	0			0		0	98		0	0	0
Storage Cap Reductn	0	0			0		0	0		0	0	0
Reduced v/c Ratio	0.84	0.05			0.09		0.03	0.70		0.05	0.30	0.07

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 24 (20%), Referenced to phase 2:NBSB and 6:NBSB, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 16.3 Intersection LOS: B
Intersection Capacity Utilization 70.7% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Hodge Rd & Panther Rock Blvd/Ellen Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	0	17	16	0	47	5	1178	64	173	371	18
Future Volume (vph)	61	0	17	16	0	47	5	1178	64	173	371	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			3%			-1%			0%	
Storage Length (ft)	0		0	0		0	100		100	300		0
Storage Lanes	1		0	1		0	1		1	2		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt		0.850			0.850				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1743	1560	0	1743	1560	0	1778	1872	1591	3433	1863	1583
Flt Permitted	0.723			0.745			0.489			0.950		
Satd. Flow (perm)	1327	1560	0	1367	1560	0	915	1872	1591	3433	1863	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		705			682			1238			1171	
Travel Time (s)		19.2			18.6			18.8			17.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	68	0	19	18	0	52	6	1309	71	192	412	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	68	19	0	18	52	0	6	1309	71	192	412	20
Turn Type	D.Pm	NA		D.Pm	NA		D.P+P	NA	Perm	Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	8			4			6		2			6
Detector Phase	8	4		4	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	5.0		5.0	7.0		5.0	12.0	12.0	7.0	12.0	12.0
Minimum Split (s)	13.5	25.0		25.0	13.5		12.0	40.2	40.2	13.2	18.2	18.2
Total Split (s)	25.0	25.0		25.0	25.0		12.0	81.8	81.8	13.2	83.0	83.0
Total Split (%)	20.8%	20.8%		20.8%	20.8%		10.0%	68.2%	68.2%	11.0%	69.2%	69.2%
Maximum Green (s)	18.5	18.0		18.0	18.5		5.0	75.6	75.6	7.0	76.8	76.8
Yellow Time (s)	3.0	5.0		5.0	3.0		5.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	3.5	2.0		2.0	3.5		2.0	1.6	1.6	3.2	1.6	1.6
Lost Time Adjust (s)	-2.0	-2.0		-1.5	-2.0		-2.0	-1.2	-1.5	-1.2	-1.2	-2.0
Total Lost Time (s)	4.5	5.0		5.5	4.5		5.0	5.0	4.7	5.0	5.0	4.2
Lead/Lag							Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	3.0		3.0	2.0		3.0	6.0	6.0	2.0	6.0	6.0
Recall Mode	None	None		None	None		None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0		7.0				7.0	7.0			
Flash Dont Walk (s)		11.0		11.0				27.0	27.0			
Pedestrian Calls (#/hr)		0		0				0	0			
Act Effct Green (s)	12.9	12.2		11.7	12.9		100.3	83.6	83.9	11.8	93.4	94.0
Actuated g/C Ratio	0.11	0.10		0.10	0.11		0.84	0.70	0.70	0.10	0.78	0.78
v/c Ratio	0.48	0.12		0.14	0.31		0.01	1.00	0.06	0.57	0.28	0.02
Control Delay	60.8	48.6		49.7	53.1		2.8	46.9	7.5	33.1	13.0	9.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	60.8	48.6		49.7	53.1		2.8	46.9	7.5	33.1	13.0	9.2
LOS	E	D		D	D		A	D	A	C	B	A
Approach Delay		58.1			52.2			44.7			19.0	
Approach LOS		E			D			D			B	
Queue Length 50th (ft)	51	14		13	38		1	~1103	17	72	120	5
Queue Length 95th (ft)	95	36		35	75		4	#1407	37	110	431	37
Internal Link Dist (ft)		625			602			1158			1091	
Turn Bay Length (ft)							100		100	300		
Base Capacity (vph)	226	260		222	266		858	1303	1111	336	1527	1306
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.07		0.08	0.20		0.01	1.00	0.06	0.57	0.27	0.02

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 97 (81%), Referenced to phase 2:NBT and 6:NBSB, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.00
Intersection Signal Delay: 38.1 Intersection LOS: D
Intersection Capacity Utilization 90.4% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Hodge Rd & Harding Hill Ln/Spectrum Dr

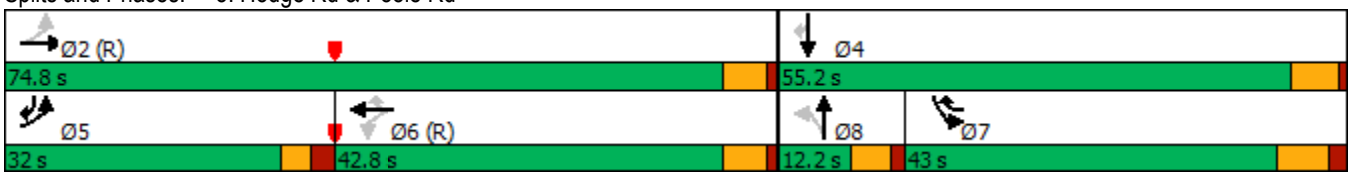
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	374	110	6	8	449	779	21	55	12	178	14	220
Future Volume (vph)	374	110	6	8	449	779	21	55	12	178	14	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			1%			-1%			-1%	
Storage Length (ft)	225		0	200		200	50		0	450		0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992				0.850		0.974				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1702	1829	0	1761	1853	1530	1778	1794	0	1728	1819	1546
Flt Permitted	0.094			0.674			0.747			0.950		
Satd. Flow (perm)	168	1829	0	1249	1853	1530	1398	1794	0	1728	1819	1546
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			45	
Link Distance (ft)		826			796			938			914	
Travel Time (s)		12.5			12.1			18.3			13.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	2%	2%	2%	2%	5%	2%	4%	2%	5%	5%	5%
Adj. Flow (vph)	416	122	7	9	499	866	23	61	13	198	16	244
Shared Lane Traffic (%)												
Lane Group Flow (vph)	416	129	0	9	499	866	23	74	0	198	16	244
Turn Type	pm+pt	NA		Perm	NA	pm+ov	Perm	NA		Prot	NA	pm+ov
Protected Phases	5	2			6	7		8		7	4	5
Permitted Phases	2			6		6	8					4
Detector Phase	5	2		6	6	7	8	8		7	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0		12.0	12.0	5.0	7.0	7.0		5.0	7.0	7.0
Minimum Split (s)	12.4	17.4		17.4	17.4	12.0	12.2	12.2		12.0	12.6	12.4
Total Split (s)	32.0	74.8		42.8	42.8	43.0	12.2	12.2		43.0	55.2	32.0
Total Split (%)	24.6%	57.5%		32.9%	32.9%	33.1%	9.4%	9.4%		33.1%	42.5%	24.6%
Maximum Green (s)	26.6	69.4		37.4	37.4	36.0	7.0	7.0		36.0	49.6	26.6
Yellow Time (s)	3.0	4.3		4.4	4.4	5.0	3.9	3.9		5.0	4.6	3.0
All-Red Time (s)	2.4	1.1		1.0	1.0	2.0	1.3	1.3		2.0	1.0	2.4
Lost Time Adjust (s)	-0.4	-0.4		-0.4	-0.4	-0.4	-0.2	-0.2		-0.6	-0.6	-0.4
Total Lost Time (s)	5.0	5.0		5.0	5.0	6.6	5.0	5.0		6.4	5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lead		Lag		Lead
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes		Yes
Vehicle Extension (s)	2.0	6.0		6.0	6.0	3.0	2.0	2.0		3.0	2.0	2.0
Recall Mode	None	C-Min		C-Min	C-Min	None	None	None		None	None	None
Act Effct Green (s)	69.5	69.5		37.5	37.5	72.6	7.2	7.2		36.9	50.5	82.5
Actuated g/C Ratio	0.53	0.53		0.29	0.29	0.56	0.06	0.06		0.28	0.39	0.63
v/c Ratio	1.02	0.13		0.03	0.93	1.01	0.30	0.75		0.40	0.02	0.25
Control Delay	88.2	15.5		33.4	71.0	54.7	69.3	100.5		40.8	25.0	11.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	88.2	15.5		33.4	71.0	54.7	69.3	100.5		40.8	25.0	11.2
LOS	F	B		C	E	D	E	F		D	C	B

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		71.0			60.5			93.1			24.5	
Approach LOS		E			E			F			C	
Queue Length 50th (ft)	~321	52		5	409	~473	19	63		136	8	84
Queue Length 95th (ft)	#531	87		20	#619	#1019	50	#146		210	24	127
Internal Link Dist (ft)		746			716			858			834	
Turn Bay Length (ft)	225			200		200	50			450		
Base Capacity (vph)	408	982		363	538	854	77	99		490	706	980
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	1.02	0.13		0.02	0.93	1.01	0.30	0.75		0.40	0.02	0.25

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.02
Intersection Signal Delay: 57.4 Intersection LOS: E
Intersection Capacity Utilization 88.6% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Hodge Rd & Poole Rd



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1070	0	480
Future Volume (vph)	0	0	0	1070	0	480
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	0	0	1863	0	1611
Flt Permitted						
Satd. Flow (perm)	0	0	0	1863	0	1611
Link Speed (mph)	45			45	45	
Link Distance (ft)	757			241	434	
Travel Time (s)	11.5			3.7	6.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	1189	0	533
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1189	0	533
Sign Control	Free			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 59.6% ICU Level of Service B
Analysis Period (min) 15

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	302	0	977	0	0
Future Volume (vph)	0	302	0	977	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.865		
Flt Protected						
Satd. Flow (prot)	0	1863	0	1611	0	0
Flt Permitted						
Satd. Flow (perm)	0	1863	0	1611	0	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		876	277		541	
Travel Time (s)		13.3	4.2		8.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	336	0	1086	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	336	0	1086	0	0
Sign Control		Free	Free		Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 63.8% ICU Level of Service B
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	90	706	71	89	72	286	570	368	43	292	99
Future Volume (vph)	50	90	706	71	89	72	286	570	368	43	292	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-2%			-3%			9%			-8%	
Storage Length (ft)	0		0	125		0	0		200	175		225
Storage Lanes	0		1	1		0	1		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.933				0.850			0.850
Flt Protected		0.982		0.950			0.950			0.950		
Satd. Flow (prot)	0	1848	1553	1762	1764	0	1674	1728	1469	1840	1882	1647
Flt Permitted		0.533		0.456			0.187			0.425		
Satd. Flow (perm)	0	1003	1553	846	1764	0	329	1728	1469	823	1882	1647
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		241			1043			1091			1061	
Travel Time (s)		3.7			15.8			16.5			16.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	5%	4%	2%	2%	3%	5%	5%	2%	5%	2%
Adj. Flow (vph)	56	100	784	79	99	80	318	633	409	48	324	110
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	156	784	79	179	0	318	633	409	48	324	110
Turn Type	pm+pt	NA	pm+ov	D.P+P	NA		pm+pt	NA	pm+ov	pm+pt	NA	Free
Protected Phases	7	4	5	3	8		5	2	3	1	6	
Permitted Phases	4		4	4			2		2	6		Free
Detector Phase	7	4	5	3	8		5	2	3	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	5.0	7.0		7.0	12.0	5.0	7.0	12.0	
Minimum Split (s)	12.5	12.7	12.5	12.0	12.7		12.5	19.0	12.0	12.5	19.0	
Total Split (s)	12.5	19.5	57.0	13.0	20.0		57.0	75.0	13.0	12.5	30.5	
Total Split (%)	10.4%	16.3%	47.5%	10.8%	16.7%		47.5%	62.5%	10.8%	10.4%	25.4%	
Maximum Green (s)	7.0	13.8	51.5	6.0	14.3		51.5	68.0	6.0	7.0	23.5	
Yellow Time (s)	4.0	4.7	4.0	5.0	4.7		4.0	5.5	5.0	4.0	5.5	
All-Red Time (s)	1.5	1.0	1.5	2.0	1.0		1.5	1.5	2.0	1.5	1.5	
Lost Time Adjust (s)		-0.7	-0.5	-2.0	-0.7		-0.5	-2.0	-2.0	-0.5	-2.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lag	Lead	Lead	Lag	Lead		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	1.0	1.0	1.0	3.0	1.0		1.0	2.0	3.0	1.0	2.0	
Recall Mode	None	None	None	None	None		None	C-Min	None	None	C-Min	
Act Effct Green (s)		14.9	64.0	23.8	28.8		81.2	71.2	81.1	34.5	27.0	120.0
Actuated g/C Ratio		0.12	0.53	0.20	0.24		0.68	0.59	0.68	0.29	0.22	1.00
v/c Ratio		1.26	0.95	0.34	0.42		0.41	0.62	0.41	0.16	0.77	0.07
Control Delay		209.6	43.0	44.4	42.7		3.9	9.5	2.6	18.2	57.1	0.1
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		209.6	43.0	44.4	42.7		3.9	9.5	2.6	18.2	57.1	0.1
LOS		F	D	D	D		A	A	A	B	E	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		70.6			43.2			6.1			40.2	
Approach LOS		E			D			A			D	
Queue Length 50th (ft)		~154	325	50	120		37	108	38	15	241	0
Queue Length 95th (ft)		#292	#641	94	192		m41	m128	m33	32	#382	0
Internal Link Dist (ft)		161			963			1011			981	
Turn Bay Length (ft)				125					200	175		225
Base Capacity (vph)		126	865	235	423		805	1033	993	300	423	1647
Starvation Cap Reductn		0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio		1.24	0.91	0.34	0.42		0.40	0.61	0.41	0.16	0.77	0.07

Intersection Summary

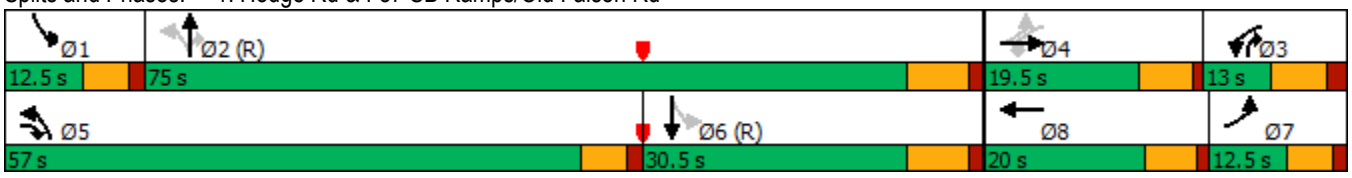
Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 72 (60%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.26
Intersection Signal Delay: 34.6 Intersection LOS: C
Intersection Capacity Utilization 80.7% ICU Level of Service D
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Hodge Rd & I-87 SB Ramps/Old Faison Rd



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	678	756	392	546	990	78
Future Volume (vph)	678	756	392	546	990	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	2%			1%	-1%	
Storage Length (ft)	0	150	150			125
Storage Lanes	2	1	1			1
Taper Length (ft)	100		100			
Lane Util. Factor	0.97	0.88	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	3399	2680	1727	1835	1819	1591
Flt Permitted	0.950		0.066			
Satd. Flow (perm)	3399	2680	120	1835	1819	1591
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			45	45	
Link Distance (ft)	277			301	1091	
Travel Time (s)	4.2			4.6	16.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	5%	4%	3%	5%	2%
Adj. Flow (vph)	753	840	436	607	1100	87
Shared Lane Traffic (%)						
Lane Group Flow (vph)	753	840	436	607	1100	87
Turn Type	Prot	pm+ov	D.P+P	NA	NA	Free
Protected Phases	4	5	5	2	6	
Permitted Phases		4	6			Free
Detector Phase	4	5	5	2	6	
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	
Minimum Split (s)	12.6	11.9	11.9	17.6	18.3	
Total Split (s)	28.0	25.0	25.0	92.0	67.0	
Total Split (%)	23.3%	20.8%	20.8%	76.7%	55.8%	
Maximum Green (s)	22.4	20.1	20.1	86.4	60.7	
Yellow Time (s)	3.0	3.0	3.0	4.4	4.6	
All-Red Time (s)	2.6	1.9	1.9	1.2	1.7	
Lost Time Adjust (s)	-0.6	-0.6	0.1	-0.6	-1.3	
Total Lost Time (s)	5.0	4.3	5.0	5.0	5.0	
Lead/Lag		Lag	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	1.0	1.0	2.0	2.0	
Recall Mode	None	None	None	C-Min	C-Min	
Act Effct Green (s)	23.0	48.7	82.0	87.0	62.0	120.0
Actuated g/C Ratio	0.19	0.41	0.68	0.72	0.52	1.00
v/c Ratio	1.16	0.77	1.25	0.46	1.17	0.05
Control Delay	130.3	36.8	165.8	5.4	111.1	0.0
Queue Delay	0.0	0.2	0.0	0.2	0.0	0.0
Total Delay	130.3	37.0	165.8	5.6	111.1	0.0
LOS	F	D	F	A	F	A

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	81.1			72.6	102.9	
Approach LOS	F			E	F	
Queue Length 50th (ft)	~355	315	~362	51	~1004	0
Queue Length 95th (ft)	#477	405	#580	128	m#1227	m0
Internal Link Dist (ft)	197			221	1011	
Turn Bay Length (ft)		150	150			125
Base Capacity (vph)	651	1087	349	1330	939	1591
Starvation Cap Reductn	0	0	0	174	0	0
Spillback Cap Reductn	0	23	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.16	0.79	1.25	0.53	1.17	0.05

Intersection Summary

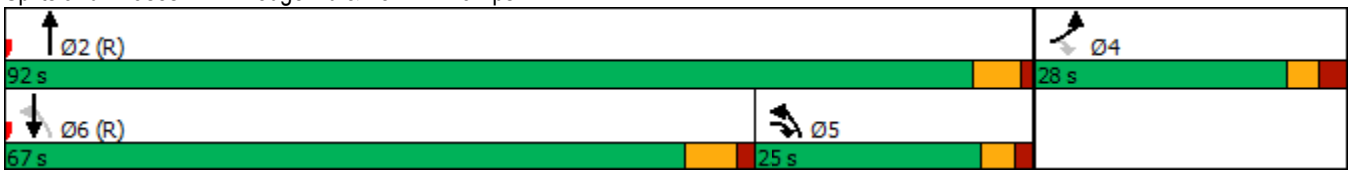
Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 46 (38%), Referenced to phase 2:NBT and 6:NBSB, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.25
Intersection Signal Delay: 85.6 Intersection LOS: F
Intersection Capacity Utilization 105.7% ICU Level of Service G
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Hodge Rd & I-87 NB Ramps



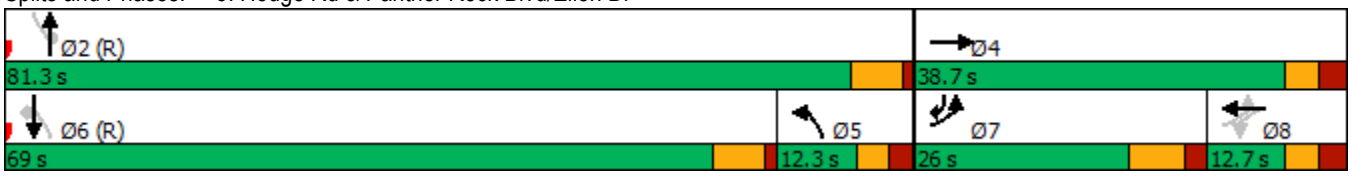
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	211	0	14	2	0	8	36	717	4	10	1355	308
Future Volume (vph)	211	0	14	2	0	8	36	717	4	10	1355	308
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		4%			1%			4%			-2%	
Storage Length (ft)	150		0	0		0	150		0	100		200
Storage Lanes	1		0	0		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.850			0.890			0.999				0.850
Flt Protected	0.950				0.991		0.950			0.950		
Satd. Flow (prot)	1734	1507	0	0	1635	0	1685	3431	0	1787	3472	1599
Flt Permitted							0.094			0.322		
Satd. Flow (perm)	1825	1507	0	0	1650	0	167	3431	0	606	3472	1599
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		617			577			896			445	
Travel Time (s)		16.8			15.7			13.6			6.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	5%	2%	2%	2%	5%	3%	2%	2%	5%	2%
Adj. Flow (vph)	234	0	16	2	0	9	40	797	4	11	1506	342
Shared Lane Traffic (%)												
Lane Group Flow (vph)	234	16	0	0	11	0	40	801	0	11	1506	342
Turn Type	D.P+P	NA		Perm	NA		D.P+P	NA		D.Pm	NA	pm+ov
Protected Phases	7	4			8		5	2			6	7
Permitted Phases	8			8			6			2		6
Detector Phase	7	4		8	8		5	2		2	6	7
Switch Phase												
Minimum Initial (s)	5.0	7.0		7.0	7.0		7.0	12.0		12.0	12.0	5.0
Minimum Split (s)	12.0	12.7		12.7	12.7		12.3	17.8		17.8	17.8	12.0
Total Split (s)	26.0	38.7		12.7	12.7		12.3	81.3		81.3	69.0	26.0
Total Split (%)	21.7%	32.3%		10.6%	10.6%		10.3%	67.8%		67.8%	57.5%	21.7%
Maximum Green (s)	19.0	33.0		7.0	7.0		7.0	75.5		75.5	63.2	19.0
Yellow Time (s)	5.0	3.1		3.1	3.1		3.0	4.7		4.7	4.7	5.0
All-Red Time (s)	2.0	2.6		2.6	2.6		2.3	1.1		1.1	1.1	2.0
Lost Time Adjust (s)	-0.7	-0.7			-0.7		-0.3	-0.8		-0.8	-0.8	-2.0
Total Lost Time (s)	6.3	5.0			5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag		Lag				Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes				Yes	Yes
Vehicle Extension (s)	3.0	2.0		2.0	2.0		2.0	6.0		6.0	6.0	3.0
Recall Mode	None	None		None	None		None	C-Min		C-Min	C-Min	None
Act Effct Green (s)	19.9	22.5			7.7		85.0	87.5		87.5	77.7	102.6
Actuated g/C Ratio	0.17	0.19			0.06		0.71	0.73		0.73	0.65	0.86
v/c Ratio	0.81	0.06			0.10		0.19	0.32		0.02	0.67	0.25
Control Delay	67.9	37.3			55.4		13.0	7.7		5.2	12.6	1.7
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.3	0.0
Total Delay	67.9	37.3			55.4		13.0	7.7		5.2	12.9	1.7
LOS	E	D			E		B	A		A	B	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		66.0			55.4			7.9			10.8	
Approach LOS		E			E			A			B	
Queue Length 50th (ft)	177	10			8		7	87		2	270	15
Queue Length 95th (ft)	233	27			28		m23	182		m3	m450	m42
Internal Link Dist (ft)		537			497			816			365	
Turn Bay Length (ft)	150						150			100		200
Base Capacity (vph)	303	423			105		210	2502		441	2247	1354
Starvation Cap Reductn	0	0			0		0	0		0	218	0
Spillback Cap Reductn	0	0			0		0	0		0	0	0
Storage Cap Reductn	0	0			0		0	0		0	0	0
Reduced v/c Ratio	0.77	0.04			0.10		0.19	0.32		0.02	0.74	0.25

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 92 (77%), Referenced to phase 2:NBSB and 6:NBSB, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 14.8 Intersection LOS: B
Intersection Capacity Utilization 64.1% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Hodge Rd & Panther Rock Blvd/Ellen Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	0	10	64	0	176	19	545	21	59	1248	65
Future Volume (vph)	37	0	10	64	0	176	19	545	21	59	1248	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			3%			-1%			0%	
Storage Length (ft)	0		0	0		0	100		100	300		0
Storage Lanes	1		0	1		0	1		1	2		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt		0.850			0.850				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1743	1560	0	1743	1560	0	1778	1872	1591	3433	1863	1583
Flt Permitted	0.371			0.750			0.048			0.950		
Satd. Flow (perm)	681	1560	0	1376	1560	0	90	1872	1591	3433	1863	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		705			682			1238			1171	
Travel Time (s)		19.2			18.6			18.8			17.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	41	0	11	71	0	196	21	606	23	66	1387	72
Shared Lane Traffic (%)												
Lane Group Flow (vph)	41	11	0	71	196	0	21	606	23	66	1387	72
Turn Type	D.Pm	NA		D.Pm	NA		D.P+P	NA	Perm	Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	8			4			6		2			6
Detector Phase	8	4		4	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	5.0		5.0	7.0		5.0	12.0	12.0	7.0	12.0	12.0
Minimum Split (s)	13.5	25.0		25.0	13.5		12.0	40.2	40.2	13.2	18.2	18.2
Total Split (s)	25.0	25.0		25.0	25.0		12.0	81.8	81.8	13.2	83.0	83.0
Total Split (%)	20.8%	20.8%		20.8%	20.8%		10.0%	68.2%	68.2%	11.0%	69.2%	69.2%
Maximum Green (s)	18.5	18.0		18.0	18.5		5.0	75.6	75.6	7.0	76.8	76.8
Yellow Time (s)	3.0	5.0		5.0	3.0		5.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	3.5	2.0		2.0	3.5		2.0	1.6	1.6	3.2	1.6	1.6
Lost Time Adjust (s)	-2.0	-2.0		-1.5	-2.0		-2.0	-1.2	-1.5	-1.2	-1.2	-2.0
Total Lost Time (s)	4.5	5.0		5.5	4.5		5.0	5.0	4.7	5.0	5.0	4.2
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	3.0		3.0	2.0		3.0	6.0	6.0	2.0	6.0	6.0
Recall Mode	None	None		None	None		None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0		7.0				7.0	7.0			
Flash Dont Walk (s)		11.0		11.0				27.0	27.0			
Pedestrian Calls (#/hr)		0		0				0	0			
Act Effct Green (s)	18.9	18.4		17.9	18.9		89.6	81.0	81.3	8.2	86.8	87.6
Actuated g/C Ratio	0.16	0.15		0.15	0.16		0.75	0.68	0.68	0.07	0.72	0.73
v/c Ratio	0.38	0.05		0.35	0.80		0.12	0.48	0.02	0.28	1.03	0.06
Control Delay	55.7	42.7		50.1	71.8		5.5	12.0	7.9	76.1	46.1	0.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	55.7	42.7		50.1	71.8		5.5	12.0	7.9	76.1	46.1	0.7
LOS	E	D		D	E		A	B	A	E	D	A
Approach Delay		53.0			66.1			11.6			45.2	
Approach LOS		D			E			B			D	
Queue Length 50th (ft)	28	7		49	146		4	231	6	25	798	1
Queue Length 95th (ft)	67	25		96	#253		10	320	16	m41	#1577	m1
Internal Link Dist (ft)		625			602			1158			1091	
Turn Bay Length (ft)							100		100	300		
Base Capacity (vph)	116	260		223	266		168	1263	1078	234	1346	1155
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.04		0.32	0.74		0.13	0.48	0.02	0.28	1.03	0.06

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 1 (1%), Referenced to phase 2:NBT and 6:NBSB, Start of Green
Natural Cycle: 170
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.03
Intersection Signal Delay: 38.9 Intersection LOS: D
Intersection Capacity Utilization 92.8% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Hodge Rd & Harding Hill Ln/Spectrum Dr

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	301	289	10	16	170	225	12	32	14	823	60	400
Future Volume (vph)	301	289	10	16	170	225	12	32	14	823	60	400
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			1%			-1%			-1%	
Storage Length (ft)	225		0	200		200	50		0	450		0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995				0.850		0.954				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1702	1835	0	1761	1853	1530	1778	1750	0	1728	1836	1546
Flt Permitted	0.199			0.560			0.713			0.950		
Satd. Flow (perm)	356	1835	0	1038	1853	1530	1335	1750	0	1728	1836	1546
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			45	
Link Distance (ft)		826			796			938			914	
Travel Time (s)		12.5			12.1			18.3			13.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	2%	2%	2%	2%	5%	2%	5%	2%	5%	4%	5%
Adj. Flow (vph)	334	321	11	18	189	250	13	36	16	914	67	444
Shared Lane Traffic (%)												
Lane Group Flow (vph)	334	332	0	18	189	250	13	52	0	914	67	444
Turn Type	pm+pt	NA		Perm	NA	pm+ov	Perm	NA		Prot	NA	pm+ov
Protected Phases	5	2			6	7		8		7	4	5
Permitted Phases	2			6		6	8					4
Detector Phase	5	2		6	6	7	8	8		7	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0		12.0	12.0	5.0	7.0	7.0		5.0	7.0	7.0
Minimum Split (s)	12.4	17.4		17.4	17.4	12.0	12.2	12.2		12.0	12.6	12.4
Total Split (s)	27.6	48.8		21.2	21.2	79.0	12.2	12.2		79.0	91.2	27.6
Total Split (%)	19.7%	34.9%		15.1%	15.1%	56.4%	8.7%	8.7%		56.4%	65.1%	19.7%
Maximum Green (s)	22.2	43.4		15.8	15.8	72.0	7.0	7.0		72.0	85.6	22.2
Yellow Time (s)	3.0	4.3		4.4	4.4	5.0	3.9	3.9		5.0	4.6	3.0
All-Red Time (s)	2.4	1.1		1.0	1.0	2.0	1.3	1.3		2.0	1.0	2.4
Lost Time Adjust (s)	-0.4	-0.4		-0.4	-0.4	-0.4	-0.2	-0.2		-0.6	-0.6	-0.4
Total Lost Time (s)	5.0	5.0		5.0	5.0	6.6	5.0	5.0		6.4	5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lead	Lag	Lag		Lead		Lead
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes		Yes
Vehicle Extension (s)	2.0	6.0		6.0	6.0	3.0	2.0	2.0		3.0	2.0	2.0
Recall Mode	None	C-Min		C-Min	C-Min	None	None	None		None	None	None
Act Effct Green (s)	46.2	46.2		17.1	17.1	94.5	7.2	7.2		72.6	83.8	112.9
Actuated g/C Ratio	0.33	0.33		0.12	0.12	0.68	0.05	0.05		0.52	0.60	0.81
v/c Ratio	0.96	0.55		0.14	0.84	0.24	0.19	0.58		1.02	0.06	0.36
Control Delay	80.0	43.4		58.9	89.2	9.7	70.4	89.6		68.8	11.2	4.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	80.0	43.4		58.9	89.2	9.7	70.4	89.6		68.8	11.2	4.5
LOS	F	D		E	F	A	E	F		E	B	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		61.8			44.5			85.8			46.0	
Approach LOS		E			D			F			D	
Queue Length 50th (ft)	~268	254		15	172	84	12	47		~880	23	87
Queue Length 95th (ft)	#466	358		41	#315	125	35	#106		#1136	43	123
Internal Link Dist (ft)		746			716			858			834	
Turn Bay Length (ft)	225			200		200	50			450		
Base Capacity (vph)	349	606		127	226	1032	68	90		896	1130	1246
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.96	0.55		0.14	0.84	0.24	0.19	0.58		1.02	0.06	0.36

Intersection Summary

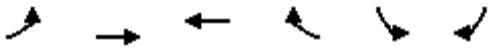
Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.02
Intersection Signal Delay: 50.8 Intersection LOS: D
Intersection Capacity Utilization 91.4% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Hodge Rd & Poole Rd

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	474	0	846
Future Volume (vph)	0	0	0	474	0	846
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	0	0	1863	0	1611
Flt Permitted						
Satd. Flow (perm)	0	0	0	1863	0	1611
Link Speed (mph)	45			45	45	
Link Distance (ft)	757			241	434	
Travel Time (s)	11.5			3.7	6.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	527	0	940
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	527	0	940
Sign Control	Free			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 55.7% ICU Level of Service B
Analysis Period (min) 15



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1434	0	470	0	0
Future Volume (vph)	0	1434	0	470	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.865		
Flt Protected						
Satd. Flow (prot)	0	1863	0	1611	0	0
Flt Permitted						
Satd. Flow (perm)	0	1863	0	1611	0	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		876	277		541	
Travel Time (s)		13.3	4.2		8.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1593	0	522	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1593	0	522	0	0
Sign Control		Free	Free		Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 78.8% ICU Level of Service D
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	29	356	136	285	70	529	414	106	16	236	260
Future Volume (vph)	105	29	356	136	285	70	529	414	106	16	236	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-2%			-3%			9%			-8%	
Storage Length (ft)	0		0	125		0	0		200	175		225
Storage Lanes	0		1	1		0	1		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.970				0.850			0.850
Flt Protected		0.962		0.950			0.950			0.950		
Satd. Flow (prot)	0	1810	1553	1745	1834	0	1642	1728	1469	1840	1882	1647
Flt Permitted		0.249		0.607			0.235			0.498		
Satd. Flow (perm)	0	468	1553	1115	1834	0	406	1728	1469	965	1882	1647
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		241			1043			1091			1061	
Travel Time (s)		3.7			15.8			16.5			16.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	5%	5%	2%	2%	5%	5%	5%	2%	5%	2%
Adj. Flow (vph)	117	32	396	151	317	78	588	460	118	18	262	289
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	149	396	151	395	0	588	460	118	18	262	289
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Free
Protected Phases	7	4	5	3	8		5	2	3	1	6	
Permitted Phases	4		4	8			2		2	6		Free
Detector Phase	7	4	5	3	8		5	2	3	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	5.0	7.0		7.0	12.0	5.0	7.0	12.0	
Minimum Split (s)	12.5	12.7	12.5	12.0	12.7		12.5	19.0	12.0	12.5	19.0	
Total Split (s)	12.5	35.5	46.0	12.0	35.0		46.0	60.0	12.0	12.5	26.5	
Total Split (%)	10.4%	29.6%	38.3%	10.0%	29.2%		38.3%	50.0%	10.0%	10.4%	22.1%	
Maximum Green (s)	7.0	29.8	40.5	5.0	29.3		40.5	53.0	5.0	7.0	19.5	
Yellow Time (s)	4.0	4.7	4.0	5.0	4.7		4.0	5.5	5.0	4.0	5.5	
All-Red Time (s)	1.5	1.0	1.5	2.0	1.0		1.5	1.5	2.0	1.5	1.5	
Lost Time Adjust (s)		-0.7	-0.5	-2.0	-0.7		-0.5	-2.0	-2.0	-0.5	-2.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lag	Lead	Lead	Lag	Lead		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	1.0	1.0	1.0	3.0	1.0		1.0	2.0	3.0	1.0	2.0	
Recall Mode	None	None	None	None	None		None	C-Min	None	None	C-Min	
Act Effct Green (s)		30.7	69.1	43.0	43.0		67.0	62.0	72.3	31.1	23.6	120.0
Actuated g/C Ratio		0.26	0.58	0.36	0.36		0.56	0.52	0.60	0.26	0.20	1.00
v/c Ratio		1.25	0.44	0.34	0.60		0.95	0.52	0.13	0.06	0.71	0.18
Control Delay		202.8	9.5	31.7	36.3		47.5	21.4	8.5	18.5	57.6	0.2
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		202.8	9.5	31.7	36.3		47.5	21.4	8.5	18.5	57.6	0.2
LOS		F	A	C	D		D	C	A	B	E	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		62.3			35.0			33.3			27.2	
Approach LOS		E			C			C			C	
Queue Length 50th (ft)		~144	94	82	250		354	209	33	6	196	0
Queue Length 95th (ft)		#280	138	136	358		#567	307	m50	17	#320	0
Internal Link Dist (ft)		161			963			1011			981	
Turn Bay Length (ft)				125					200	175		225
Base Capacity (vph)		119	928	438	657		648	892	884	304	369	1647
Starvation Cap Reductn		0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio		1.25	0.43	0.34	0.60		0.91	0.52	0.13	0.06	0.71	0.18

Intersection Summary

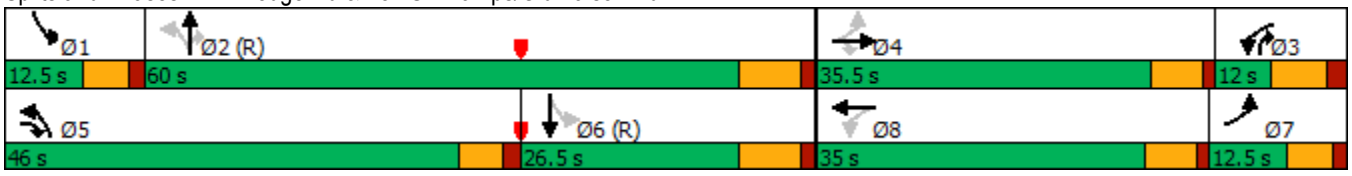
Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 89 (74%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.25
Intersection Signal Delay: 38.0 Intersection LOS: D
Intersection Capacity Utilization 85.0% ICU Level of Service E
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Hodge Rd & I-87 SB Ramps/Old Faison Rd



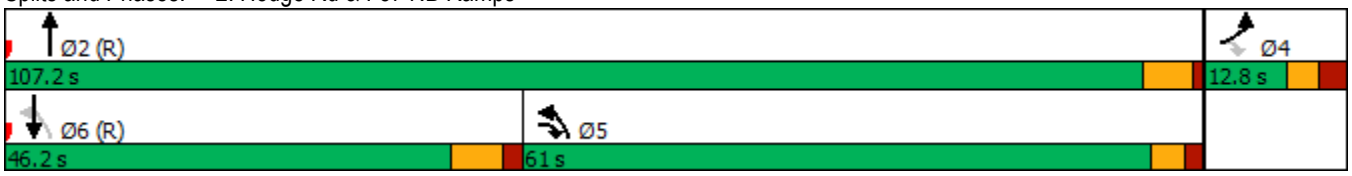
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	136	179	746	912	494	234
Future Volume (vph)	136	179	746	912	494	234
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	2%			1%	-1%	
Storage Length (ft)	0	150	150			125
Storage Lanes	2	1	1			1
Taper Length (ft)	100		100			
Lane Util. Factor	0.97	0.88	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	3399	2680	1710	1800	1819	1591
Flt Permitted	0.950		0.123			
Satd. Flow (perm)	3399	2680	221	1800	1819	1591
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			45	45	
Link Distance (ft)	277			301	1091	
Travel Time (s)	4.2			4.6	16.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	5%	5%	5%	5%	2%
Adj. Flow (vph)	151	199	829	1013	549	260
Shared Lane Traffic (%)						
Lane Group Flow (vph)	151	199	829	1013	549	260
Turn Type	Prot	pm+ov	D.P+P	NA	NA	Free
Protected Phases	4	5	5	2	6	
Permitted Phases		4	6			Free
Detector Phase	4	5	5	2	6	
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	
Minimum Split (s)	12.6	11.9	11.9	17.6	18.3	
Total Split (s)	12.8	61.0	61.0	107.2	46.2	
Total Split (%)	10.7%	50.8%	50.8%	89.3%	38.5%	
Maximum Green (s)	7.2	56.1	56.1	101.6	39.9	
Yellow Time (s)	3.0	3.0	3.0	4.4	4.6	
All-Red Time (s)	2.6	1.9	1.9	1.2	1.7	
Lost Time Adjust (s)	-0.6	-0.6	0.1	-0.6	-1.3	
Total Lost Time (s)	5.0	4.3	5.0	5.0	5.0	
Lead/Lag		Lag	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	1.0	1.0	2.0	2.0	
Recall Mode	None	None	None	C-Min	C-Min	
Act Effct Green (s)	8.0	69.1	97.0	102.0	41.6	120.0
Actuated g/C Ratio	0.07	0.58	0.81	0.85	0.35	1.00
v/c Ratio	0.67	0.13	0.96	0.66	0.87	0.16
Control Delay	69.5	11.8	38.4	3.4	37.1	0.2
Queue Delay	0.0	0.0	0.1	0.0	0.0	0.0
Total Delay	69.5	11.8	38.5	3.4	37.1	0.2
LOS	E	B	D	A	D	A

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	36.7			19.2	25.3	
Approach LOS	D			B	C	
Queue Length 50th (ft)	60	37	507	68	284	0
Queue Length 95th (ft)	#104	57	#806	51	#605	0
Internal Link Dist (ft)	197			221	1011	
Turn Bay Length (ft)		150	150			125
Base Capacity (vph)	228	1540	875	1534	635	1591
Starvation Cap Reductn	0	0	1	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.13	0.95	0.66	0.86	0.16

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 114 (95%), Referenced to phase 2:NBT and 6:NBSB, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 22.9 Intersection LOS: C
Intersection Capacity Utilization 85.7% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Hodge Rd & I-87 NB Ramps



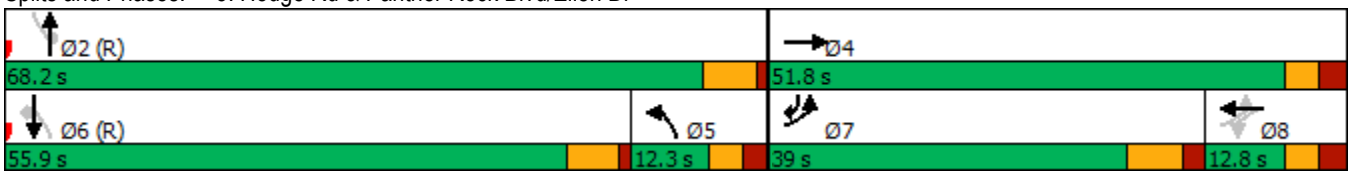
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	371	0	26	2	0	7	14	1280	2	6	552	114
Future Volume (vph)	371	0	26	2	0	7	14	1280	2	6	552	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		4%			1%			4%			-2%	
Storage Length (ft)	150		0	0		0	150		0	100		200
Storage Lanes	1		0	0		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.850			0.892							0.850
Flt Protected	0.950				0.990		0.950			0.950		
Satd. Flow (prot)	1734	1507	0	0	1637	0	1685	3369	0	1787	3472	1599
Flt Permitted							0.354			0.107		
Satd. Flow (perm)	1825	1507	0	0	1653	0	628	3369	0	201	3472	1599
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		617			577			896			445	
Travel Time (s)		16.8			15.7			13.6			6.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	5%	2%	2%	2%	5%	5%	2%	2%	5%	2%
Adj. Flow (vph)	412	0	29	2	0	8	16	1422	2	7	613	127
Shared Lane Traffic (%)												
Lane Group Flow (vph)	412	29	0	0	10	0	16	1424	0	7	613	127
Turn Type	D.P+P	NA		Perm	NA		D.P+P	NA		D.Pm	NA	pm+ov
Protected Phases	7	4			8		5	2			6	7
Permitted Phases	8			8			6			2		6
Detector Phase	7	4		8	8		5	2		2	6	7
Switch Phase												
Minimum Initial (s)	5.0	7.0		7.0	7.0		7.0	12.0		12.0	12.0	5.0
Minimum Split (s)	12.0	12.7		12.7	12.7		12.3	17.8		17.8	17.8	12.0
Total Split (s)	39.0	51.8		12.8	12.8		12.3	68.2		68.2	55.9	39.0
Total Split (%)	32.5%	43.2%		10.7%	10.7%		10.3%	56.8%		56.8%	46.6%	32.5%
Maximum Green (s)	32.0	46.1		7.1	7.1		7.0	62.4		62.4	50.1	32.0
Yellow Time (s)	5.0	3.1		3.1	3.1		3.0	4.7		4.7	4.7	5.0
All-Red Time (s)	2.0	2.6		2.6	2.6		2.3	1.1		1.1	1.1	2.0
Lost Time Adjust (s)	-0.7	-0.7			-0.7		-0.3	-0.8		-0.8	-0.8	-2.0
Total Lost Time (s)	6.3	5.0			5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag		Lag				Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes				Yes	Yes
Vehicle Extension (s)	3.0	2.0		2.0	2.0		2.0	6.0		6.0	6.0	3.0
Recall Mode	None	None		None	None		None	C-Min		C-Min	C-Min	None
Act Effct Green (s)	32.3	34.8			7.7		73.2	75.2		75.2	64.6	103.9
Actuated g/C Ratio	0.27	0.29			0.06		0.61	0.63		0.63	0.54	0.87
v/c Ratio	0.88	0.07			0.09		0.03	0.67		0.06	0.33	0.09
Control Delay	61.2	28.4			55.1		5.0	7.7		6.0	7.1	2.0
Queue Delay	0.0	0.0			0.0		0.0	0.1		0.0	0.0	0.0
Total Delay	61.2	28.4			55.1		5.0	7.8		6.0	7.1	2.0
LOS	E	C			E		A	A		A	A	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		59.1			55.1			7.8			6.2	
Approach LOS		E			E			A			A	
Queue Length 50th (ft)	305	16			7		1	98		1	35	0
Queue Length 95th (ft)	362	34			26		m3	m309		m4	m200	m37
Internal Link Dist (ft)		537			497			816			365	
Turn Bay Length (ft)	150						150			100		200
Base Capacity (vph)	491	587			107		497	2110		126	1957	1374
Starvation Cap Reductn	0	0			0		0	0		0	0	0
Spillback Cap Reductn	0	0			0		0	102		0	0	0
Storage Cap Reductn	0	0			0		0	0		0	0	0
Reduced v/c Ratio	0.84	0.05			0.09		0.03	0.71		0.06	0.31	0.09

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 24 (20%), Referenced to phase 2:NBSB and 6:NBSB, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 16.1 Intersection LOS: B
Intersection Capacity Utilization 71.0% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Hodge Rd & Panther Rock Blvd/Ellen Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	0	15	18	0	57	5	1178	71	204	359	18
Future Volume (vph)	61	0	15	18	0	57	5	1178	71	204	359	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			3%			-1%			0%	
Storage Length (ft)	0		0	0		0	100		100	300		0
Storage Lanes	1		0	1		0	1		1	2		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt		0.850			0.850				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1743	1560	0	1693	1515	0	1778	1872	1546	3335	1863	1583
Flt Permitted	0.716			0.746			0.497			0.950		
Satd. Flow (perm)	1314	1560	0	1330	1515	0	930	1872	1546	3335	1863	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		705			682			1238			1171	
Travel Time (s)		19.2			18.6			18.8			17.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	5%	2%	5%	2%	2%	5%	5%	2%	2%
Adj. Flow (vph)	68	0	17	20	0	63	6	1309	79	227	399	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	68	17	0	20	63	0	6	1309	79	227	399	20
Turn Type	D.Pm	NA		D.Pm	NA		D.P+P	NA	Perm	Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	8			4			6		2			6
Detector Phase	8	4		4	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	5.0		5.0	7.0		5.0	12.0	12.0	7.0	12.0	12.0
Minimum Split (s)	13.5	25.0		25.0	13.5		12.0	40.2	40.2	13.2	18.2	18.2
Total Split (s)	25.0	25.0		25.0	25.0		12.0	81.8	81.8	13.2	83.0	83.0
Total Split (%)	20.8%	20.8%		20.8%	20.8%		10.0%	68.2%	68.2%	11.0%	69.2%	69.2%
Maximum Green (s)	18.5	18.0		18.0	18.5		5.0	75.6	75.6	7.0	76.8	76.8
Yellow Time (s)	3.0	5.0		5.0	3.0		5.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	3.5	2.0		2.0	3.5		2.0	1.6	1.6	3.2	1.6	1.6
Lost Time Adjust (s)	-2.0	-2.0		-1.5	-2.0		-2.0	-1.2	-1.5	-1.2	-1.2	-2.0
Total Lost Time (s)	4.5	5.0		5.5	4.5		5.0	5.0	4.7	5.0	5.0	4.2
Lead/Lag							Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	3.0		3.0	2.0		3.0	6.0	6.0	2.0	6.0	6.0
Recall Mode	None	None		None	None		None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0		7.0				7.0	7.0			
Flash Dont Walk (s)		11.0		11.0				27.0	27.0			
Pedestrian Calls (#/hr)		0		0				0	0			
Act Effct Green (s)	12.9	12.2		11.7	12.9		100.3	81.5	81.8	13.8	93.1	93.7
Actuated g/C Ratio	0.11	0.10		0.10	0.11		0.84	0.68	0.68	0.12	0.78	0.78
v/c Ratio	0.49	0.11		0.16	0.39		0.01	1.03	0.07	0.59	0.28	0.02
Control Delay	61.1	48.3		50.3	55.8		2.8	54.7	7.9	33.0	12.6	8.9

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.1	48.3		50.3	55.8		2.8	54.7	7.9	33.0	12.6	8.9
LOS	E	D		D	E		A	D	A	C	B	A
Approach Delay		58.5			54.4			51.8			19.6	
Approach LOS		E			D			D			B	
Queue Length 50th (ft)	51	12		14	46		1	~1136	21	85	122	5
Queue Length 95th (ft)	95	34		38	89		4	#1407	40	#147	420	36
Internal Link Dist (ft)		625			602			1158			1091	
Turn Bay Length (ft)							100		100	300		
Base Capacity (vph)	224	260		216	258		870	1272	1054	382	1527	1306
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.07		0.09	0.24		0.01	1.03	0.07	0.59	0.26	0.02

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 97 (81%), Referenced to phase 2:NBT and 6:NBSB, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.03
Intersection Signal Delay: 42.8 Intersection LOS: D
Intersection Capacity Utilization 90.4% ICU Level of Service E
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Hodge Rd & Harding Hill Ln/Spectrum Dr

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	377	110	6	8	449	780	21	56	12	171	14	214
Future Volume (vph)	377	110	6	8	449	780	21	56	12	171	14	214
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			1%			-1%			-1%	
Storage Length (ft)	225		0	200		200	50		0	450		0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992				0.850		0.974				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1702	1829	0	1761	1853	1530	1778	1780	0	1728	1819	1546
Flt Permitted	0.094			0.674			0.747			0.950		
Satd. Flow (perm)	168	1829	0	1249	1853	1530	1398	1780	0	1728	1819	1546
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			45	
Link Distance (ft)		826			796			938			914	
Travel Time (s)		12.5			12.1			18.3			13.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	2%	2%	2%	2%	5%	2%	5%	2%	5%	5%	5%
Adj. Flow (vph)	419	122	7	9	499	867	23	62	13	190	16	238
Shared Lane Traffic (%)												
Lane Group Flow (vph)	419	129	0	9	499	867	23	75	0	190	16	238
Turn Type	pm+pt	NA		Perm	NA	pm+ov	Perm	NA		Prot	NA	pm+ov
Protected Phases	5	2			6	7		8		7	4	5
Permitted Phases	2			6		6	8					4
Detector Phase	5	2		6	6	7	8	8		7	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0		12.0	12.0	5.0	7.0	7.0		5.0	7.0	7.0
Minimum Split (s)	12.4	17.4		17.4	17.4	12.0	12.2	12.2		12.0	12.6	12.4
Total Split (s)	32.0	74.8		42.8	42.8	43.0	12.2	12.2		43.0	55.2	32.0
Total Split (%)	24.6%	57.5%		32.9%	32.9%	33.1%	9.4%	9.4%		33.1%	42.5%	24.6%
Maximum Green (s)	26.6	69.4		37.4	37.4	36.0	7.0	7.0		36.0	49.6	26.6
Yellow Time (s)	3.0	4.3		4.4	4.4	5.0	3.9	3.9		5.0	4.6	3.0
All-Red Time (s)	2.4	1.1		1.0	1.0	2.0	1.3	1.3		2.0	1.0	2.4
Lost Time Adjust (s)	-0.4	-0.4		-0.4	-0.4	-0.4	-0.2	-0.2		-0.6	-0.6	-0.4
Total Lost Time (s)	5.0	5.0		5.0	5.0	6.6	5.0	5.0		6.4	5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lead		Lag		Lead
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes		Yes
Vehicle Extension (s)	2.0	6.0		6.0	6.0	3.0	2.0	2.0		3.0	2.0	2.0
Recall Mode	None	C-Min		C-Min	C-Min	None	None	None		None	None	None
Act Effct Green (s)	69.5	69.5		37.5	37.5	72.6	7.2	7.2		36.9	50.5	82.5
Actuated g/C Ratio	0.53	0.53		0.29	0.29	0.56	0.06	0.06		0.28	0.39	0.63
v/c Ratio	1.03	0.13		0.03	0.93	1.02	0.30	0.77		0.39	0.02	0.24
Control Delay	90.1	15.5		33.4	71.0	55.0	69.3	103.4		40.5	25.0	11.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	90.1	15.5		33.4	71.0	55.0	69.3	103.4		40.5	25.0	11.1
LOS	F	B		C	E	D	E	F		D	C	B

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		72.5			60.7			95.4			24.2	
Approach LOS		E			E			F			C	
Queue Length 50th (ft)	~326	52		5	409	~476	19	64		130	8	82
Queue Length 95th (ft)	#534	87		20	#619	#1020	50	#150		201	24	124
Internal Link Dist (ft)		746			716			858			834	
Turn Bay Length (ft)	225			200		200	50			450		
Base Capacity (vph)	408	982		363	538	854	77	98		490	706	980
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	1.03	0.13		0.02	0.93	1.02	0.30	0.77		0.39	0.02	0.24

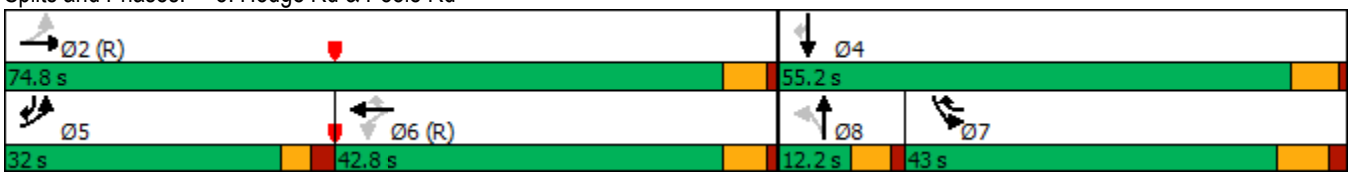
Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.03
Intersection Signal Delay: 58.1 Intersection LOS: E
Intersection Capacity Utilization 88.9% ICU Level of Service E
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Hodge Rd & Poole Rd



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1074	0	490
Future Volume (vph)	0	0	0	1074	0	490
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	0	0	1863	0	1611
Flt Permitted						
Satd. Flow (perm)	0	0	0	1863	0	1611
Link Speed (mph)	45			45	45	
Link Distance (ft)	757			241	434	
Travel Time (s)	11.5			3.7	6.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	1193	0	544
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1193	0	544
Sign Control	Free			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 59.9% ICU Level of Service B
Analysis Period (min) 15

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	315	0	980	0	0
Future Volume (vph)	0	315	0	980	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.865		
Flt Protected						
Satd. Flow (prot)	0	1863	0	1611	0	0
Flt Permitted						
Satd. Flow (perm)	0	1863	0	1611	0	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		876	277		541	
Travel Time (s)		13.3	4.2		8.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	350	0	1089	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	350	0	1089	0	0
Sign Control		Free	Free		Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 64.0% ICU Level of Service C
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	90	710	72	89	72	299	576	370	43	294	99
Future Volume (vph)	50	90	710	72	89	72	299	576	370	43	294	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-2%			-3%			9%			-8%	
Storage Length (ft)	0		0	125		0	0		200	175		225
Storage Lanes	0		1	1		0	1		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.933				0.850			0.850
Flt Protected		0.982		0.950			0.950			0.950		
Satd. Flow (prot)	0	1848	1553	1745	1764	0	1642	1728	1469	1840	1882	1647
Flt Permitted		0.531		0.454			0.179			0.422		
Satd. Flow (perm)	0	999	1553	834	1764	0	309	1728	1469	818	1882	1647
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		241			1043			1091			1061	
Travel Time (s)		3.7			15.8			16.5			16.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	5%	5%	2%	2%	5%	5%	5%	2%	5%	2%
Adj. Flow (vph)	56	100	789	80	99	80	332	640	411	48	327	110
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	156	789	80	179	0	332	640	411	48	327	110
Turn Type	pm+pt	NA	pm+ov	D.P+P	NA		pm+pt	NA	pm+ov	pm+pt	NA	Free
Protected Phases	7	4	5	3	8		5	2	3	1	6	
Permitted Phases	4		4	4			2		2	6		Free
Detector Phase	7	4	5	3	8		5	2	3	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	5.0	7.0		7.0	12.0	5.0	7.0	12.0	
Minimum Split (s)	12.5	12.7	12.5	12.0	12.7		12.5	19.0	12.0	12.5	19.0	
Total Split (s)	12.5	19.5	57.0	13.0	20.0		57.0	75.0	13.0	12.5	30.5	
Total Split (%)	10.4%	16.3%	47.5%	10.8%	16.7%		47.5%	62.5%	10.8%	10.4%	25.4%	
Maximum Green (s)	7.0	13.8	51.5	6.0	14.3		51.5	68.0	6.0	7.0	23.5	
Yellow Time (s)	4.0	4.7	4.0	5.0	4.7		4.0	5.5	5.0	4.0	5.5	
All-Red Time (s)	1.5	1.0	1.5	2.0	1.0		1.5	1.5	2.0	1.5	1.5	
Lost Time Adjust (s)		-0.7	-0.5	-2.0	-0.7		-0.5	-2.0	-2.0	-0.5	-2.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lag	Lead	Lead	Lag	Lead		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	1.0	1.0	1.0	3.0	1.0		1.0	2.0	3.0	1.0	2.0	
Recall Mode	None	None	None	None	None		None	C-Min	None	None	C-Min	
Act Effct Green (s)		14.8	64.2	23.7	28.7		81.3	71.3	81.2	34.3	26.8	120.0
Actuated g/C Ratio		0.12	0.54	0.20	0.24		0.68	0.59	0.68	0.29	0.22	1.00
v/c Ratio		1.28	0.95	0.34	0.42		0.44	0.62	0.41	0.16	0.78	0.07
Control Delay		215.1	43.4	44.8	42.8		4.3	9.5	2.5	18.3	58.2	0.1
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		215.1	43.4	44.8	42.8		4.3	9.5	2.5	18.3	58.2	0.1
LOS		F	D	D	D		A	A	A	B	E	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		71.7			43.4			6.2			41.1	
Approach LOS		E			D			A			D	
Queue Length 50th (ft)		~154	329	50	120		38	107	38	15	243	0
Queue Length 95th (ft)		#293	#651	95	192		m42	m130	m35	32	#389	0
Internal Link Dist (ft)		161			963			1011			981	
Turn Bay Length (ft)				125					200	175		225
Base Capacity (vph)		124	864	232	422		787	1033	994	297	420	1647
Starvation Cap Reductn		0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio		1.26	0.91	0.34	0.42		0.42	0.62	0.41	0.16	0.78	0.07

Intersection Summary

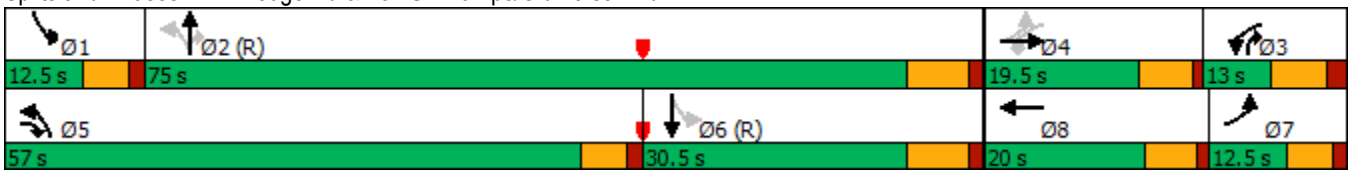
Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 72 (60%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.28
Intersection Signal Delay: 35.0 Intersection LOS: C
Intersection Capacity Utilization 81.0% ICU Level of Service D
Analysis Period (min) 15

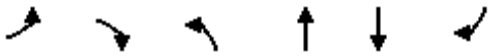
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Hodge Rd & I-87 SB Ramps/Old Faison Rd





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	678	761	402	567	997	78
Future Volume (vph)	678	761	402	567	997	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	2%			1%	-1%	
Storage Length (ft)	0	150	150			125
Storage Lanes	2	1	1			1
Taper Length (ft)	100		100			
Lane Util. Factor	0.97	0.88	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	3399	2680	1710	1800	1819	1591
Flt Permitted	0.950		0.066			
Satd. Flow (perm)	3399	2680	119	1800	1819	1591
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			45	45	
Link Distance (ft)	277			301	1091	
Travel Time (s)	4.2			4.6	16.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	5%	5%	5%	5%	2%
Adj. Flow (vph)	753	846	447	630	1108	87
Shared Lane Traffic (%)						
Lane Group Flow (vph)	753	846	447	630	1108	87
Turn Type	Prot	pm+ov	D.P+P	NA	NA	Free
Protected Phases	4	5	5	2	6	
Permitted Phases		4	6			Free
Detector Phase	4	5	5	2	6	
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	
Minimum Split (s)	12.6	11.9	11.9	17.6	18.3	
Total Split (s)	28.0	25.0	25.0	92.0	67.0	
Total Split (%)	23.3%	20.8%	20.8%	76.7%	55.8%	
Maximum Green (s)	22.4	20.1	20.1	86.4	60.7	
Yellow Time (s)	3.0	3.0	3.0	4.4	4.6	
All-Red Time (s)	2.6	1.9	1.9	1.2	1.7	
Lost Time Adjust (s)	-0.6	-0.6	0.1	-0.6	-1.3	
Total Lost Time (s)	5.0	4.3	5.0	5.0	5.0	
Lead/Lag		Lag	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	1.0	1.0	2.0	2.0	
Recall Mode	None	None	None	C-Min	C-Min	
Act Effct Green (s)	23.0	48.7	82.0	87.0	62.0	120.0
Actuated g/C Ratio	0.19	0.41	0.68	0.72	0.52	1.00
v/c Ratio	1.16	0.78	1.29	0.48	1.18	0.05
Control Delay	130.3	37.0	183.5	6.4	114.4	0.0
Queue Delay	0.0	0.3	0.0	0.2	0.0	0.0
Total Delay	130.3	37.3	183.5	6.6	114.4	0.0
LOS	F	D	F	A	F	A

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	81.1			80.0	106.1	
Approach LOS	F			F	F	
Queue Length 50th (ft)	~355	318	~383	96	~1018	0
Queue Length 95th (ft)	#477	409	#604	164	m#1230	m0
Internal Link Dist (ft)	197			221	1011	
Turn Bay Length (ft)		150	150			125
Base Capacity (vph)	651	1087	346	1305	939	1591
Starvation Cap Reductn	0	0	0	138	0	0
Spillback Cap Reductn	0	27	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.16	0.80	1.29	0.54	1.18	0.05

Intersection Summary

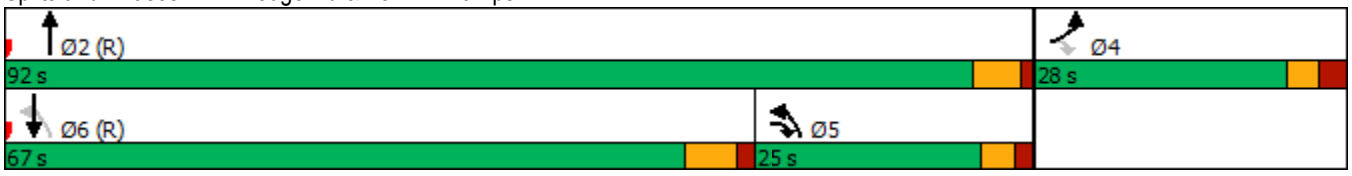
Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 46 (38%), Referenced to phase 2:NBT and 6:NBSB, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.29
Intersection Signal Delay: 88.5 Intersection LOS: F
Intersection Capacity Utilization 106.6% ICU Level of Service G
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Hodge Rd & I-87 NB Ramps



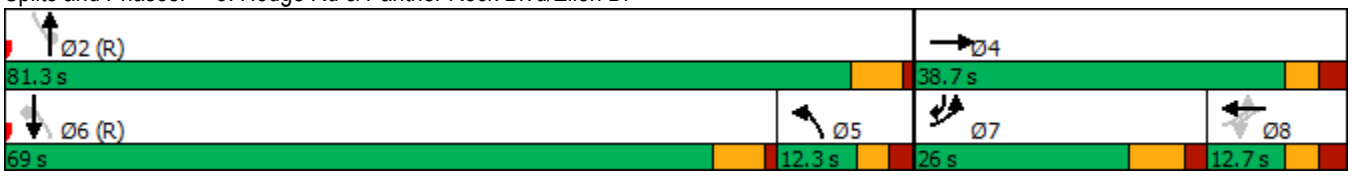
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	211	0	18	2	0	8	36	749	4	10	1362	387
Future Volume (vph)	211	0	18	2	0	8	36	749	4	10	1362	387
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		4%			1%			4%			-2%	
Storage Length (ft)	150		0	0		0	150		0	100		200
Storage Lanes	1		0	0		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.850			0.890			0.999				0.850
Flt Protected	0.950				0.991		0.950			0.950		
Satd. Flow (prot)	1734	1507	0	0	1635	0	1685	3366	0	1787	3472	1599
Flt Permitted							0.092			0.309		
Satd. Flow (perm)	1825	1507	0	0	1650	0	163	3366	0	581	3472	1599
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		617			577			896			445	
Travel Time (s)		16.8			15.7			13.6			6.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	5%	2%	2%	2%	5%	5%	2%	2%	5%	2%
Adj. Flow (vph)	234	0	20	2	0	9	40	832	4	11	1513	430
Shared Lane Traffic (%)												
Lane Group Flow (vph)	234	20	0	0	11	0	40	836	0	11	1513	430
Turn Type	D.P+P	NA		Perm	NA		D.P+P	NA		D.Pm	NA	pm+ov
Protected Phases	7	4			8		5	2			6	7
Permitted Phases	8			8			6			2		6
Detector Phase	7	4		8	8		5	2		2	6	7
Switch Phase												
Minimum Initial (s)	5.0	7.0		7.0	7.0		7.0	12.0		12.0	12.0	5.0
Minimum Split (s)	12.0	12.7		12.7	12.7		12.3	17.8		17.8	17.8	12.0
Total Split (s)	26.0	38.7		12.7	12.7		12.3	81.3		81.3	69.0	26.0
Total Split (%)	21.7%	32.3%		10.6%	10.6%		10.3%	67.8%		67.8%	57.5%	21.7%
Maximum Green (s)	19.0	33.0		7.0	7.0		7.0	75.5		75.5	63.2	19.0
Yellow Time (s)	5.0	3.1		3.1	3.1		3.0	4.7		4.7	4.7	5.0
All-Red Time (s)	2.0	2.6		2.6	2.6		2.3	1.1		1.1	1.1	2.0
Lost Time Adjust (s)	-0.7	-0.7			-0.7		-0.3	-0.8		-0.8	-0.8	-2.0
Total Lost Time (s)	6.3	5.0			5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag		Lag				Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes				Yes	Yes
Vehicle Extension (s)	3.0	2.0		2.0	2.0		2.0	6.0		6.0	6.0	3.0
Recall Mode	None	None		None	None		None	C-Min		C-Min	C-Min	None
Act Effct Green (s)	19.9	22.5			7.7		85.0	87.5		87.5	77.7	102.6
Actuated g/C Ratio	0.17	0.19			0.06		0.71	0.73		0.73	0.65	0.86
v/c Ratio	0.81	0.07			0.10		0.19	0.34		0.03	0.67	0.31
Control Delay	67.9	37.7			55.4		12.7	7.7		5.2	12.5	1.7
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.3	0.0
Total Delay	67.9	37.7			55.4		12.7	7.7		5.2	12.8	1.7
LOS	E	D			E		B	A		A	B	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		65.6			55.4			7.9			10.3	
Approach LOS		E			E			A			B	
Queue Length 50th (ft)	177	13			8		7	88		2	275	20
Queue Length 95th (ft)	233	31			28		m21	m179		m3	m451	m58
Internal Link Dist (ft)		537			497			816			365	
Turn Bay Length (ft)	150						150			100		200
Base Capacity (vph)	303	423			105		207	2455		423	2247	1354
Starvation Cap Reductn	0	0			0		0	0		0	218	0
Spillback Cap Reductn	0	0			0		0	0		0	0	0
Storage Cap Reductn	0	0			0		0	0		0	0	0
Reduced v/c Ratio	0.77	0.05			0.10		0.19	0.34		0.03	0.75	0.32

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 92 (77%), Referenced to phase 2:NBSB and 6:NBSB, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 14.3 Intersection LOS: B
Intersection Capacity Utilization 64.3% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Hodge Rd & Panther Rock Blvd/Ellen Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	0	26	71	0	207	19	545	23	71	1246	65
Future Volume (vph)	38	0	26	71	0	207	19	545	23	71	1246	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			3%			-1%			0%	
Storage Length (ft)	0		0	0		0	100		100	300		0
Storage Lanes	1		0	1		0	1		1	2		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt		0.850			0.850				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1743	1560	0	1693	1515	0	1778	1872	1546	3335	1863	1583
Flt Permitted	0.305			0.738			0.049			0.950		
Satd. Flow (perm)	560	1560	0	1315	1515	0	92	1872	1546	3335	1863	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		705			682			1238			1171	
Travel Time (s)		19.2			18.6			18.8			17.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	5%	2%	5%	2%	2%	5%	5%	2%	2%
Adj. Flow (vph)	42	0	29	79	0	230	21	606	26	79	1384	72
Shared Lane Traffic (%)												
Lane Group Flow (vph)	42	29	0	79	230	0	21	606	26	79	1384	72
Turn Type	D.Pm	NA		D.Pm	NA		D.P+P	NA	Perm	Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	8			4			6		2			6
Detector Phase	8	4		4	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	5.0		5.0	7.0		5.0	12.0	12.0	7.0	12.0	12.0
Minimum Split (s)	13.5	25.0		25.0	13.5		12.0	40.2	40.2	13.2	18.2	18.2
Total Split (s)	25.0	25.0		25.0	25.0		12.0	81.8	81.8	13.2	83.0	83.0
Total Split (%)	20.8%	20.8%		20.8%	20.8%		10.0%	68.2%	68.2%	11.0%	69.2%	69.2%
Maximum Green (s)	18.5	18.0		18.0	18.5		5.0	75.6	75.6	7.0	76.8	76.8
Yellow Time (s)	3.0	5.0		5.0	3.0		5.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	3.5	2.0		2.0	3.5		2.0	1.6	1.6	3.2	1.6	1.6
Lost Time Adjust (s)	-2.0	-2.0		-1.5	-2.0		-2.0	-1.2	-1.5	-1.2	-1.2	-2.0
Total Lost Time (s)	4.5	5.0		5.5	4.5		5.0	5.0	4.7	5.0	5.0	4.2
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	3.0		3.0	2.0		3.0	6.0	6.0	2.0	6.0	6.0
Recall Mode	None	None		None	None		None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0		7.0				7.0	7.0			
Flash Dont Walk (s)		11.0		11.0				27.0	27.0			
Pedestrian Calls (#/hr)		0		0				0	0			
Act Effct Green (s)	20.1	19.6		19.1	20.1		88.4	79.8	80.1	8.2	85.6	86.4
Actuated g/C Ratio	0.17	0.16		0.16	0.17		0.74	0.66	0.67	0.07	0.71	0.72
v/c Ratio	0.45	0.11		0.38	0.91		0.13	0.49	0.03	0.35	1.04	0.06
Control Delay	61.5	43.9		50.8	86.4		5.5	12.3	7.9	76.5	50.2	0.8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.5	43.9		50.8	86.4		5.5	12.3	7.9	76.5	50.2	0.8
LOS	E	D		D	F		A	B	A	E	D	A
Approach Delay		54.3			77.3			11.9			49.3	
Approach LOS		D			E			B			D	
Queue Length 50th (ft)	29	19		55	176		4	231	7	30	787	1
Queue Length 95th (ft)	70	48		105	#323		10	320	17	m50	#1571	m1
Internal Link Dist (ft)		625			602			1158			1091	
Turn Bay Length (ft)							100		100	300		
Base Capacity (vph)	95	260		213	258		167	1245	1032	227	1328	1139
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.11		0.37	0.89		0.13	0.49	0.03	0.35	1.04	0.06

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 1 (1%), Referenced to phase 2:NBT and 6:NBSB, Start of Green
Natural Cycle: 200
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.04
Intersection Signal Delay: 43.3 Intersection LOS: D
Intersection Capacity Utilization 94.6% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Hodge Rd & Harding Hill Ln/Spectrum Dr

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	302	289	10	16	170	225	12	32	14	833	60	412
Future Volume (vph)	302	289	10	16	170	225	12	32	14	833	60	412
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			1%			-1%			-1%	
Storage Length (ft)	225		0	200		200	50		0	450		0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995				0.850		0.954				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1702	1835	0	1761	1853	1530	1778	1750	0	1728	1819	1546
Flt Permitted	0.194			0.560			0.713			0.950		
Satd. Flow (perm)	348	1835	0	1038	1853	1530	1335	1750	0	1728	1819	1546
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			45	
Link Distance (ft)		826			796			938			914	
Travel Time (s)		12.5			12.1			18.3			13.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	2%	2%	2%	2%	5%	2%	5%	2%	5%	5%	5%
Adj. Flow (vph)	336	321	11	18	189	250	13	36	16	926	67	458
Shared Lane Traffic (%)												
Lane Group Flow (vph)	336	332	0	18	189	250	13	52	0	926	67	458
Turn Type	pm+pt	NA		Perm	NA	pm+ov	Perm	NA		Prot	NA	pm+ov
Protected Phases	5	2			6	7		8		7	4	5
Permitted Phases	2			6		6	8					4
Detector Phase	5	2		6	6	7	8	8		7	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0		12.0	12.0	5.0	7.0	7.0		5.0	7.0	7.0
Minimum Split (s)	12.4	17.4		17.4	17.4	12.0	12.2	12.2		12.0	12.6	12.4
Total Split (s)	27.6	48.8		21.2	21.2	79.0	12.2	12.2		79.0	91.2	27.6
Total Split (%)	19.7%	34.9%		15.1%	15.1%	56.4%	8.7%	8.7%		56.4%	65.1%	19.7%
Maximum Green (s)	22.2	43.4		15.8	15.8	72.0	7.0	7.0		72.0	85.6	22.2
Yellow Time (s)	3.0	4.3		4.4	4.4	5.0	3.9	3.9		5.0	4.6	3.0
All-Red Time (s)	2.4	1.1		1.0	1.0	2.0	1.3	1.3		2.0	1.0	2.4
Lost Time Adjust (s)	-0.4	-0.4		-0.4	-0.4	-0.4	-0.2	-0.2		-0.6	-0.6	-0.4
Total Lost Time (s)	5.0	5.0		5.0	5.0	6.6	5.0	5.0		6.4	5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lead	Lag	Lag		Lead		Lead
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes		Yes
Vehicle Extension (s)	2.0	6.0		6.0	6.0	3.0	2.0	2.0		3.0	2.0	2.0
Recall Mode	None	C-Min		C-Min	C-Min	None	None	None		None	None	None
Act Effct Green (s)	46.2	46.2		17.0	17.0	94.4	7.2	7.2		72.6	83.8	113.0
Actuated g/C Ratio	0.33	0.33		0.12	0.12	0.67	0.05	0.05		0.52	0.60	0.81
v/c Ratio	0.96	0.55		0.14	0.84	0.24	0.19	0.58		1.03	0.06	0.37
Control Delay	80.8	43.4		58.9	90.7	9.8	70.4	89.6		72.4	11.2	4.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	80.8	43.4		58.9	90.7	9.8	70.4	89.6		72.4	11.2	4.5
LOS	F	D		E	F	A	E	F		E	B	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		62.2			45.2			85.8			48.2	
Approach LOS		E			D			F			D	
Queue Length 50th (ft)	~274	254		15	172	84	12	47		~903	23	92
Queue Length 95th (ft)	#474	358		41	#315	125	35	#106		#1160	43	128
Internal Link Dist (ft)		746			716			858			834	
Turn Bay Length (ft)	225			200		200	50			450		
Base Capacity (vph)	349	606		126	224	1030	68	90		896	1119	1248
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.96	0.55		0.14	0.84	0.24	0.19	0.58		1.03	0.06	0.37

Intersection Summary

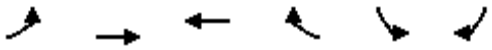
Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.03
Intersection Signal Delay: 52.1 Intersection LOS: D
Intersection Capacity Utilization 92.0% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Hodge Rd & Poole Rd

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	487	0	850
Future Volume (vph)	0	0	0	487	0	850
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	0	0	1863	0	1611
Flt Permitted						
Satd. Flow (perm)	0	0	0	1863	0	1611
Link Speed (mph)	45			45	45	
Link Distance (ft)	757			241	434	
Travel Time (s)	11.5			3.7	6.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	541	0	944
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	541	0	944
Sign Control	Free			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 56.0% ICU Level of Service B
Analysis Period (min) 15



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1439	0	480	0	0
Future Volume (vph)	0	1439	0	480	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.865		
Flt Protected						
Satd. Flow (prot)	0	1863	0	1611	0	0
Flt Permitted						
Satd. Flow (perm)	0	1863	0	1611	0	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		876	277		541	
Travel Time (s)		13.3	4.2		8.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1599	0	533	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1599	0	533	0	0
Sign Control		Free	Free		Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 79.1% ICU Level of Service D
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	32	387	148	315	77	595	462	116	18	256	287
Future Volume (vph)	116	32	387	148	315	77	595	462	116	18	256	287
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-2%			-3%			9%			-8%	
Storage Length (ft)	0		0	125		0	0		200	175		225
Storage Lanes	0		1	1		0	1		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.970				0.850			0.850
Flt Protected		0.962		0.950			0.950			0.950		
Satd. Flow (prot)	0	1810	1568	1762	1834	0	1642	1728	1469	1840	1900	1647
Flt Permitted		0.217		0.573			0.241			0.474		
Satd. Flow (perm)	0	408	1568	1063	1834	0	416	1728	1469	918	1900	1647
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		241			1043			1091			1061	
Travel Time (s)		3.7			15.8			16.5			16.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	4%	4%	2%	2%	5%	5%	5%	2%	4%	2%
Adj. Flow (vph)	129	36	430	164	350	86	661	513	129	20	284	319
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	165	430	164	436	0	661	513	129	20	284	319
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Free
Protected Phases	7	4	5	3	8		5	2	3	1	6	
Permitted Phases	4		4	8			2		2	6		Free
Detector Phase	7	4	5	3	8		5	2	3	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	5.0	7.0		7.0	12.0	5.0	7.0	12.0	
Minimum Split (s)	12.5	12.7	12.5	12.0	12.7		12.5	19.0	12.0	12.5	19.0	
Total Split (s)	12.5	51.0	65.0	12.0	50.5		65.0	84.5	12.0	12.5	32.0	
Total Split (%)	7.8%	31.9%	40.6%	7.5%	31.6%		40.6%	52.8%	7.5%	7.8%	20.0%	
Maximum Green (s)	7.0	45.3	59.5	5.0	44.8		59.5	77.5	5.0	7.0	25.0	
Yellow Time (s)	4.0	4.7	4.0	5.0	4.7		4.0	5.5	5.0	4.0	5.5	
All-Red Time (s)	1.5	1.0	1.5	2.0	1.0		1.5	1.5	2.0	1.5	1.5	
Lost Time Adjust (s)		-0.7	-0.5	-2.0	-0.7		-0.5	-2.0	-2.0	-0.5	-2.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lag	Lead	Lead	Lag	Lead		Lead	Lead	Lag	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	1.0	1.0	1.0	3.0	1.0		1.0	2.0	3.0	1.0	2.0	
Recall Mode	None	None	None	None	None		None	C-Min	None	None	C-Min	
Act Effct Green (s)		46.7	106.7	58.7	58.7		81.4	81.4	93.4	29.7	26.3	160.0
Actuated g/C Ratio		0.29	0.67	0.37	0.37		0.51	0.51	0.58	0.19	0.16	1.00
v/c Ratio		1.39	0.41	0.39	0.65		0.99	0.58	0.15	0.08	0.91	0.19
Control Delay		260.4	8.4	41.8	47.8		65.7	31.7	19.0	56.0	97.5	0.3
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		260.4	8.4	41.8	47.8		65.7	31.7	19.0	56.0	97.5	0.3
LOS		F	A	D	D		E	C	B	E	F	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		78.2			46.1			47.7			46.4	
Approach LOS		E			D			D			D	
Queue Length 50th (ft)		~230	128	121	381		573	238	41	18	295	0
Queue Length 95th (ft)		#391	174	184	509		#954	m521	m102	45	#463	0
Internal Link Dist (ft)		161			963			1011			981	
Turn Bay Length (ft)				125					200	175		225
Base Capacity (vph)		119	1045	420	672		671	932	857	242	320	1647
Starvation Cap Reductn		0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio		1.39	0.41	0.39	0.65		0.99	0.55	0.15	0.08	0.89	0.19

Intersection Summary

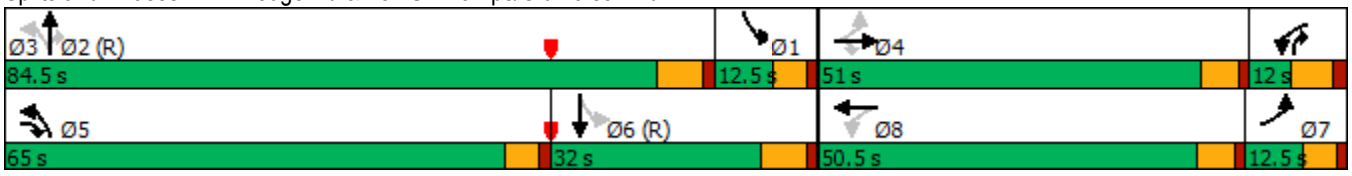
Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 107 (67%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.39
Intersection Signal Delay: 53.0 Intersection LOS: D
Intersection Capacity Utilization 92.5% ICU Level of Service F
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Hodge Rd & I-87 SB Ramps/Old Faison Rd



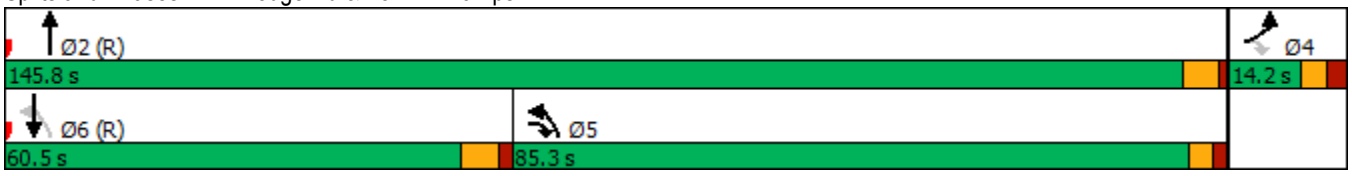
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	150	188	838	1022	533	258
Future Volume (vph)	150	188	838	1022	533	258
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	2%			1%	-1%	
Storage Length (ft)	0	150	150			125
Storage Lanes	2	1	1			1
Taper Length (ft)	100		100			
Lane Util. Factor	0.97	0.88	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	3399	2759	1710	1800	1854	1591
Flt Permitted	0.950		0.075			
Satd. Flow (perm)	3399	2759	135	1800	1854	1591
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			45	45	
Link Distance (ft)	277			301	1091	
Travel Time (s)	4.2			4.6	16.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	5%	5%	3%	2%
Adj. Flow (vph)	167	209	931	1136	592	287
Shared Lane Traffic (%)						
Lane Group Flow (vph)	167	209	931	1136	592	287
Turn Type	Prot	pm+ov	D.P+P	NA	NA	Free
Protected Phases	4	5	5	2	6	
Permitted Phases		4	6			Free
Detector Phase	4	5	5	2	6	
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	
Minimum Split (s)	12.6	11.9	11.9	17.6	18.3	
Total Split (s)	14.2	85.3	85.3	145.8	60.5	
Total Split (%)	8.9%	53.3%	53.3%	91.1%	37.8%	
Maximum Green (s)	8.6	80.4	80.4	140.2	54.2	
Yellow Time (s)	3.0	3.0	3.0	4.4	4.6	
All-Red Time (s)	2.6	1.9	1.9	1.2	1.7	
Lost Time Adjust (s)	-0.6	-0.6	0.1	-0.6	-1.3	
Total Lost Time (s)	5.0	4.3	5.0	5.0	5.0	
Lead/Lag		Lag	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	1.0	1.0	2.0	2.0	
Recall Mode	None	None	None	C-Min	C-Min	
Act Effct Green (s)	9.4	95.8	135.6	140.6	54.9	160.0
Actuated g/C Ratio	0.06	0.60	0.85	0.88	0.34	1.00
v/c Ratio	0.84	0.13	1.02	0.72	0.93	0.18
Control Delay	106.0	14.3	57.5	5.5	49.4	0.2
Queue Delay	0.0	0.0	8.6	0.4	0.0	0.0
Total Delay	106.0	14.3	66.1	5.8	49.4	0.2
LOS	F	B	E	A	D	A

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	55.0			33.0	33.3	
Approach LOS	E			C	C	
Queue Length 50th (ft)	91	52	~988	132	439	0
Queue Length 95th (ft)	#160	75	#1242	263	m#800	m0
Internal Link Dist (ft)	197			221	1011	
Turn Bay Length (ft)		150	150			125
Base Capacity (vph)	199	1651	909	1584	643	1591
Starvation Cap Reductn	0	0	22	111	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.13	1.05	0.77	0.92	0.18

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 124 (78%), Referenced to phase 2:NBT and 6:NBSB, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.02
Intersection Signal Delay: 35.6 Intersection LOS: D
Intersection Capacity Utilization 92.8% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Hodge Rd & I-87 NB Ramps



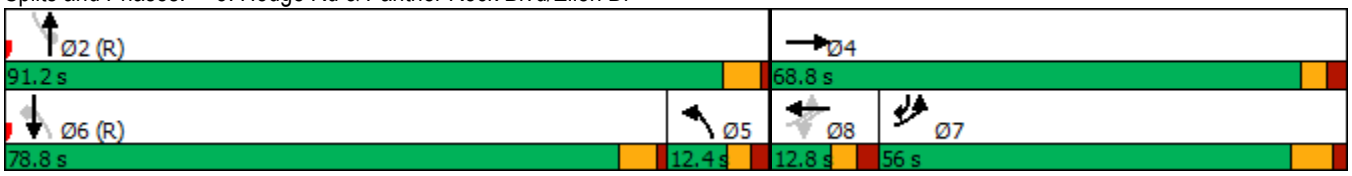
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	440	0	29	2	0	8	16	1412	2	7	579	135
Future Volume (vph)	440	0	29	2	0	8	16	1412	2	7	579	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		4%			1%			4%			-2%	
Storage Length (ft)	150		0	0		0	150		0	100		200
Storage Lanes	1		0	0		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.850			0.890							0.850
Flt Protected	0.950				0.991		0.950			0.950		
Satd. Flow (prot)	1734	1507	0	0	1635	0	1685	3435	0	1787	3540	1599
Flt Permitted					0.929		0.326			0.071		
Satd. Flow (perm)	1825	1507	0	0	1532	0	578	3435	0	134	3540	1599
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		617			577			896			445	
Travel Time (s)		16.8			15.7			13.6			6.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	5%	2%	2%	2%	5%	3%	2%	2%	3%	2%
Adj. Flow (vph)	489	0	32	2	0	9	18	1569	2	8	643	150
Shared Lane Traffic (%)												
Lane Group Flow (vph)	489	32	0	0	11	0	18	1571	0	8	643	150
Turn Type	D.P+P	NA		Perm	NA		D.P+P	NA		D.Pm	NA	pm+ov
Protected Phases	7	4			8		5	2			6	7
Permitted Phases	8			8			6			2		6
Detector Phase	7	4		8	8		5	2		2	6	7
Switch Phase												
Minimum Initial (s)	5.0	7.0		7.0	7.0		7.0	12.0		12.0	12.0	5.0
Minimum Split (s)	12.0	12.7		12.7	12.7		12.3	17.8		17.8	17.8	12.0
Total Split (s)	56.0	68.8		12.8	12.8		12.4	91.2		91.2	78.8	56.0
Total Split (%)	35.0%	43.0%		8.0%	8.0%		7.8%	57.0%		57.0%	49.3%	35.0%
Maximum Green (s)	49.0	63.1		7.1	7.1		7.1	85.4		85.4	73.0	49.0
Yellow Time (s)	5.0	3.1		3.1	3.1		3.0	4.7		4.7	4.7	5.0
All-Red Time (s)	2.0	2.6		2.6	2.6		2.3	1.1		1.1	1.1	2.0
Lost Time Adjust (s)	-0.7	-0.7			-0.7		-0.3	-0.8		-0.8	-0.8	-2.0
Total Lost Time (s)	6.3	5.0			5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lag			Lead	Lead		Lag				Lead	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes				Yes	Yes
Vehicle Extension (s)	3.0	2.0		2.0	2.0		2.0	6.0		6.0	6.0	3.0
Recall Mode	None	None		None	None		None	C-Min		C-Min	C-Min	None
Act Effct Green (s)	49.9	53.7			7.7		94.3	96.3		96.3	81.1	137.7
Actuated g/C Ratio	0.31	0.34			0.05		0.59	0.60		0.60	0.51	0.86
v/c Ratio	0.90	0.06			0.15		0.04	0.76		0.10	0.36	0.11
Control Delay	72.7	32.8			77.8		7.9	15.4		27.7	26.7	1.5
Queue Delay	0.0	0.0			0.0		0.0	7.6		0.0	0.0	0.0
Total Delay	72.7	32.8			77.8		7.9	23.0		27.7	26.7	1.5
LOS	E	C			E		A	C		C	C	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		70.3			77.8			22.9			22.0	
Approach LOS		E			E			C			C	
Queue Length 50th (ft)	488	23			11		4	445		5	289	0
Queue Length 95th (ft)	562	45			34		m6	m575		m11	m400	m16
Internal Link Dist (ft)		537			497			816			365	
Turn Bay Length (ft)	150						150			100		200
Base Capacity (vph)	570	600			74		462	2067		80	2020	1373
Starvation Cap Reductn	0	0			0		0	0		0	0	0
Spillback Cap Reductn	0	0			0		0	463		0	0	0
Storage Cap Reductn	0	0			0		0	0		0	0	0
Reduced v/c Ratio	0.86	0.05			0.15		0.04	0.98		0.10	0.32	0.11

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 26 (16%), Referenced to phase 2:NBSB and 6:NBSB, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 31.3 Intersection LOS: C
Intersection Capacity Utilization 78.5% ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Hodge Rd & Panther Rock Blvd/Ellen Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	0	20	18	0	52	7	1302	71	191	397	23
Future Volume (vph)	76	0	20	18	0	52	7	1302	71	191	397	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			3%			-1%			0%	
Storage Length (ft)	0		0	0		0	100		100	300		0
Storage Lanes	1		0	1		0	1		1	2		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt		0.850			0.850				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1743	1560	0	1743	1560	0	1778	1872	1591	3433	1863	1583
Flt Permitted	0.706			0.743			0.484			0.950		
Satd. Flow (perm)	1295	1560	0	1363	1560	0	906	1872	1591	3433	1863	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		705			682			1238			1171	
Travel Time (s)		19.2			18.6			18.8			17.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	84	0	22	20	0	58	8	1447	79	212	441	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	84	22	0	20	58	0	8	1447	79	212	441	26
Turn Type	D.Pm	NA		D.Pm	NA		D.P+P	NA	Perm	Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	8			4			6		2			6
Detector Phase	8	4		4	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	5.0		5.0	7.0		5.0	12.0	12.0	7.0	12.0	12.0
Minimum Split (s)	13.5	25.0		25.0	13.5		12.0	40.2	40.2	13.2	18.2	18.2
Total Split (s)	25.0	25.0		25.0	25.0		12.0	120.0	120.0	15.0	123.0	123.0
Total Split (%)	15.6%	15.6%		15.6%	15.6%		7.5%	75.0%	75.0%	9.4%	76.9%	76.9%
Maximum Green (s)	18.5	18.0		18.0	18.5		5.0	113.8	113.8	8.8	116.8	116.8
Yellow Time (s)	3.0	5.0		5.0	3.0		5.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	3.5	2.0		2.0	3.5		2.0	1.6	1.6	3.2	1.6	1.6
Lost Time Adjust (s)	-2.0	-2.0		-1.5	-2.0		-2.0	-1.2	-1.5	-1.2	-1.2	-2.0
Total Lost Time (s)	4.5	5.0		5.5	4.5		5.0	5.0	4.7	5.0	5.0	4.2
Lead/Lag							Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	3.0		3.0	2.0		3.0	6.0	6.0	2.0	6.0	6.0
Recall Mode	None	None		None	None		None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0		7.0				7.0	7.0			
Flash Dont Walk (s)		11.0		11.0				27.0	27.0			
Pedestrian Calls (#/hr)		0		0				0	0			
Act Effct Green (s)	16.0	15.5		15.0	16.0		133.5	119.5	119.8	10.0	132.1	132.9
Actuated g/C Ratio	0.10	0.10		0.09	0.10		0.83	0.75	0.75	0.06	0.83	0.83
v/c Ratio	0.65	0.15		0.16	0.37		0.01	1.04	0.07	0.99	0.29	0.02
Control Delay	91.2	66.2		67.3	72.8		2.3	34.0	3.6	96.5	5.9	0.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	91.2	66.2		67.3	72.8		2.3	34.0	3.6	96.5	5.9	0.5
LOS	F	E		E	E		A	C	A	F	A	A
Approach Delay		86.0			71.4			32.2			34.0	
Approach LOS		F			E			C			C	
Queue Length 50th (ft)	86	21		20	58		1	~1627	15	120	72	1
Queue Length 95th (ft)	146	51		49	104		m1	m#1283	m16	#207	108	1
Internal Link Dist (ft)		625			602			1158			1091	
Turn Bay Length (ft)							100		100	300		
Base Capacity (vph)	165	195		166	199		796	1397	1191	214	1537	1314
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.11		0.12	0.29		0.01	1.04	0.07	0.99	0.29	0.02

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 137 (86%), Referenced to phase 2:NBT and 6:NBSB, Start of Green
Natural Cycle: 220
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.04
Intersection Signal Delay: 36.4 Intersection LOS: D
Intersection Capacity Utilization 97.7% ICU Level of Service F
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Hodge Rd & Harding Hill Ln/Spectrum Dr

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	413	122	7	9	496	860	23	61	13	190	15	236
Future Volume (vph)	413	122	7	9	496	860	23	61	13	190	15	236
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			1%			-1%			-1%	
Storage Length (ft)	225		0	200		200	50		0	450		0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992				0.850		0.974				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1702	1829	0	1761	1853	1530	1778	1794	0	1728	1819	1546
Flt Permitted	0.074			0.665			0.746			0.950		
Satd. Flow (perm)	133	1829	0	1233	1853	1530	1397	1794	0	1728	1819	1546
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			45	
Link Distance (ft)		826			796			938			914	
Travel Time (s)		12.5			12.1			18.3			13.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	2%	2%	2%	2%	5%	2%	4%	2%	5%	5%	5%
Adj. Flow (vph)	459	136	8	10	551	956	26	68	14	211	17	262
Shared Lane Traffic (%)												
Lane Group Flow (vph)	459	144	0	10	551	956	26	82	0	211	17	262
Turn Type	pm+pt	NA		Perm	NA	pm+ov	Perm	NA		Prot	NA	pm+ov
Protected Phases	5	2			6	7		8		7	4	5
Permitted Phases	2			6		6	8					4
Detector Phase	5	2		6	6	7	8	8		7	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0		12.0	12.0	5.0	7.0	7.0		5.0	7.0	7.0
Minimum Split (s)	12.4	17.4		17.4	17.4	12.0	12.2	12.2		12.0	12.6	12.4
Total Split (s)	40.0	94.3		54.3	54.3	53.0	12.7	12.7		53.0	65.7	40.0
Total Split (%)	25.0%	58.9%		33.9%	33.9%	33.1%	7.9%	7.9%		33.1%	41.1%	25.0%
Maximum Green (s)	34.6	88.9		48.9	48.9	46.0	7.5	7.5		46.0	60.1	34.6
Yellow Time (s)	3.0	4.3		4.4	4.4	5.0	3.9	3.9		5.0	4.6	3.0
All-Red Time (s)	2.4	1.1		1.0	1.0	2.0	1.3	1.3		2.0	1.0	2.4
Lost Time Adjust (s)	-0.4	-0.4		-0.4	-0.4	-0.4	-0.2	-0.2		-0.6	-0.6	-0.4
Total Lost Time (s)	5.0	5.0		5.0	5.0	6.6	5.0	5.0		6.4	5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lead		Lag		Lead
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes		Yes
Vehicle Extension (s)	2.0	6.0		6.0	6.0	3.0	2.0	2.0		3.0	2.0	2.0
Recall Mode	None	C-Min		C-Min	C-Min	None	None	None		None	None	None
Act Effct Green (s)	89.3	89.3		49.3	49.3	94.1	7.7	7.7		46.6	60.7	100.7
Actuated g/C Ratio	0.56	0.56		0.31	0.31	0.59	0.05	0.05		0.29	0.38	0.63
v/c Ratio	1.10	0.14		0.03	0.97	1.06	0.39	0.95		0.42	0.02	0.27
Control Delay	119.8	17.4		39.1	84.2	71.9	90.8	157.9		37.0	31.9	5.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	119.8	17.4		39.1	84.2	71.9	90.8	157.9		37.0	31.9	5.7
LOS	F	B		D	F	E	F	F		D	C	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		95.3			76.2			141.7			20.1	
Approach LOS		F			E			F			C	
Queue Length 50th (ft)	~493	70		7	570	~605	27	87		54	4	24
Queue Length 95th (ft)	#722	109		24	#814	#863	63	#206		181	26	78
Internal Link Dist (ft)		746			716			858			834	
Turn Bay Length (ft)	225			200		200	50			450		
Base Capacity (vph)	417	1020		379	570	899	67	86		503	690	973
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	1.10	0.14		0.03	0.97	1.06	0.39	0.95		0.42	0.02	0.27

Intersection Summary

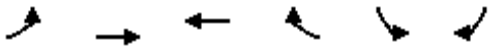
Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 160
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.10
Intersection Signal Delay: 72.9 Intersection LOS: E
Intersection Capacity Utilization 95.8% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Hodge Rd & Poole Rd

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1197	0	535
Future Volume (vph)	0	0	0	1197	0	535
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	0	0	1863	0	1611
Flt Permitted						
Satd. Flow (perm)	0	0	0	1863	0	1611
Link Speed (mph)	45			45	45	
Link Distance (ft)	757			241	434	
Travel Time (s)	11.5			3.7	6.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	1330	0	594
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1330	0	594
Sign Control	Free			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 66.3% ICU Level of Service C
Analysis Period (min) 15



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	338	0	1096	0	0
Future Volume (vph)	0	338	0	1096	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.865		
Flt Protected						
Satd. Flow (prot)	0	1863	0	1611	0	0
Flt Permitted						
Satd. Flow (perm)	0	1863	0	1611	0	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		876	277		541	
Travel Time (s)		13.3	4.2		8.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	376	0	1218	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	376	0	1218	0	0
Sign Control		Free	Free		Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 71.2% ICU Level of Service C
Analysis Period (min) 15

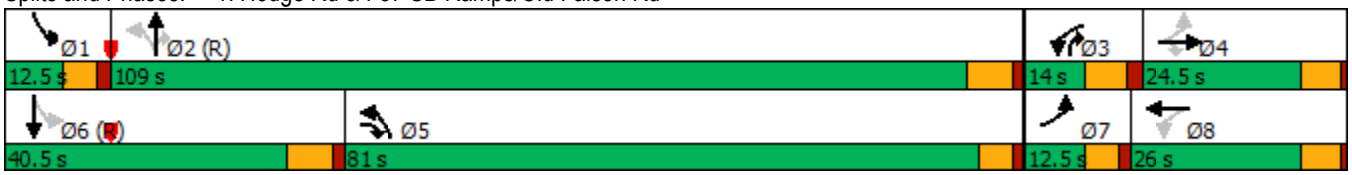
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	99	799	78	98	80	326	634	407	47	330	109
Future Volume (vph)	55	99	799	78	98	80	326	634	407	47	330	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-2%			-3%			9%			-8%	
Storage Length (ft)	0		0	125		0	0		200	175		225
Storage Lanes	0		1	1		0	1		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.933				0.850			0.850
Flt Protected		0.982		0.950			0.950			0.950		
Satd. Flow (prot)	0	1848	1553	1762	1764	0	1674	1728	1469	1840	1882	1647
Flt Permitted		0.801		0.346			0.235			0.149		
Satd. Flow (perm)	0	1507	1553	642	1764	0	414	1728	1469	289	1882	1647
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		241			1043			1091			1061	
Travel Time (s)		3.7			15.8			16.5			16.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	5%	4%	2%	2%	3%	5%	5%	2%	5%	2%
Adj. Flow (vph)	61	110	888	87	109	89	362	704	452	52	367	121
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	171	888	87	198	0	362	704	452	52	367	121
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Free
Protected Phases	7	4	5	3	8		5	2	3	1	6	
Permitted Phases	4		4	8			2		2	6		Free
Detector Phase	7	4	5	3	8		5	2	3	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	5.0	7.0		7.0	12.0	5.0	7.0	12.0	
Minimum Split (s)	12.5	12.7	12.5	12.0	12.7		12.5	19.0	12.0	12.5	19.0	
Total Split (s)	12.5	24.5	81.0	14.0	26.0		81.0	109.0	14.0	12.5	40.5	
Total Split (%)	7.8%	15.3%	50.6%	8.8%	16.3%		50.6%	68.1%	8.8%	7.8%	25.3%	
Maximum Green (s)	7.0	18.8	75.5	7.0	20.3		75.5	102.0	7.0	7.0	33.5	
Yellow Time (s)	4.0	4.7	4.0	5.0	4.7		4.0	5.5	5.0	4.0	5.5	
All-Red Time (s)	1.5	1.0	1.5	2.0	1.0		1.5	1.5	2.0	1.5	1.5	
Lost Time Adjust (s)		-0.7	-0.5	-2.0	-0.7		-0.5	-2.0	-2.0	-0.5	-2.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lag	Lag	Lead	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	1.0	1.0	1.0	3.0	1.0		1.0	2.0	3.0	1.0	2.0	
Recall Mode	None	None	None	None	None		None	C-Min	None	None	C-Min	
Act Effct Green (s)		24.2	95.4	38.3	38.3		101.7	101.7	115.8	35.5	35.5	160.0
Actuated g/C Ratio		0.15	0.60	0.24	0.24		0.64	0.64	0.72	0.22	0.22	1.00
v/c Ratio		0.75	0.96	0.40	0.47		0.44	0.64	0.43	0.38	0.88	0.07
Control Delay		86.4	42.7	57.6	58.7		12.3	13.0	4.6	58.3	82.5	0.1
Queue Delay		0.0	10.8	1.0	0.0		0.0	0.0	0.0	0.0	64.4	0.0
Total Delay		86.4	53.5	58.6	58.7		12.3	13.0	4.6	58.3	146.9	0.1
LOS		F	D	E	E		B	B	A	E	F	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		58.8			58.6			10.3			105.5	
Approach LOS		E			E			B			F	
Queue Length 50th (ft)		180	624	77	187		63	127	57	44	375	0
Queue Length 95th (ft)		#334	#969	131	275		m66	m123	m50	84	#553	0
Internal Link Dist (ft)		161			963			1011			981	
Turn Bay Length (ft)				125					200	175		225
Base Capacity (vph)		227	962	217	421		874	1123	1063	136	418	1647
Starvation Cap Reductn		0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn		0	74	35	0		0	0	0	0	284	0
Storage Cap Reductn		0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio		0.75	1.00	0.48	0.47		0.41	0.63	0.43	0.38	2.74	0.07

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 139 (87%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 44.6 Intersection LOS: D
Intersection Capacity Utilization 89.4% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Hodge Rd & I-87 SB Ramps/Old Faison Rd



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	749	852	443	617	1120	86
Future Volume (vph)	749	852	443	617	1120	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	2%			1%	-1%	
Storage Length (ft)	0	150	150			125
Storage Lanes	2	1	1			1
Taper Length (ft)	100		100			
Lane Util. Factor	0.97	0.88	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	3399	2680	1727	1835	1819	1591
Flt Permitted	0.950		0.048			
Satd. Flow (perm)	3399	2680	87	1835	1819	1591
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			45	45	
Link Distance (ft)	277			301	1091	
Travel Time (s)	4.2			4.6	16.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	5%	4%	3%	5%	2%
Adj. Flow (vph)	832	947	492	686	1244	96
Shared Lane Traffic (%)						
Lane Group Flow (vph)	832	947	492	686	1244	96
Turn Type	Prot	pm+ov	D.P+P	NA	NA	Free
Protected Phases	4	5	5	2	6	
Permitted Phases		4	6			Free
Detector Phase	4	5	5	2	6	
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	
Minimum Split (s)	12.6	11.9	11.9	17.6	18.3	
Total Split (s)	35.0	35.0	35.0	125.0	90.0	
Total Split (%)	21.9%	21.9%	21.9%	78.1%	56.3%	
Maximum Green (s)	29.4	30.1	30.1	119.4	83.7	
Yellow Time (s)	3.0	3.0	3.0	4.4	4.6	
All-Red Time (s)	2.6	1.9	1.9	1.2	1.7	
Lost Time Adjust (s)	-0.6	-0.6	0.1	-0.6	-1.3	
Total Lost Time (s)	5.0	4.3	5.0	5.0	5.0	
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	1.0	1.0	2.0	2.0	
Recall Mode	None	None	None	C-Min	C-Min	
Act Effct Green (s)	30.0	65.7	115.0	120.0	85.0	160.0
Actuated g/C Ratio	0.19	0.41	0.72	0.75	0.53	1.00
v/c Ratio	1.31	0.86	1.33	0.50	1.29	0.06
Control Delay	197.8	52.3	206.8	5.7	165.3	0.0
Queue Delay	0.0	0.6	0.0	0.5	0.3	0.0
Total Delay	197.8	52.9	206.8	6.1	165.6	0.0
LOS	F	D	F	A	F	A

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	120.7			89.9	153.8	
Approach LOS	F			F	F	
Queue Length 50th (ft)	~573	510	~626	199	~1646	0
Queue Length 95th (ft)	#706	618	#862	243	m#1896	m0
Internal Link Dist (ft)	197			221	1011	
Turn Bay Length (ft)		150	150			125
Base Capacity (vph)	637	1100	370	1376	966	1591
Starvation Cap Reductn	0	0	0	288	4	0
Spillback Cap Reductn	0	25	0	0	61	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.31	0.88	1.33	0.63	1.37	0.06

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 88 (55%), Referenced to phase 2:NBT and 6:NBSB, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.33
Intersection Signal Delay: 122.6 Intersection LOS: F
Intersection Capacity Utilization 117.4% ICU Level of Service H
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Hodge Rd & I-87 NB Ramps

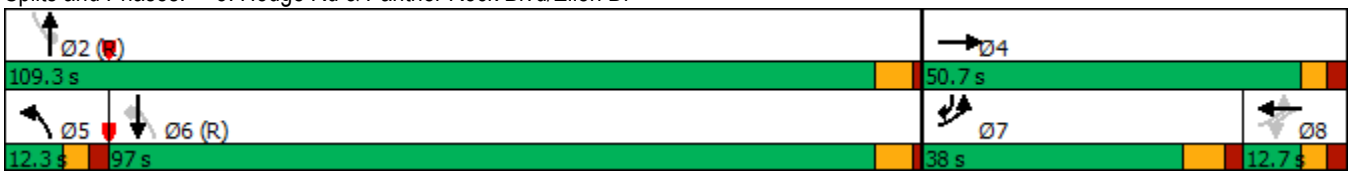
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	252	0	21	2	0	9	42	798	4	11	1501	459
Future Volume (vph)	252	0	21	2	0	9	42	798	4	11	1501	459
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		4%			1%			4%			-2%	
Storage Length (ft)	150		0	0		0	150		0	100		200
Storage Lanes	1		0	0		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.850			0.887			0.999				0.850
Flt Protected	0.950				0.992		0.950			0.950		
Satd. Flow (prot)	1734	1507	0	0	1631	0	1685	3431	0	1787	3472	1599
Flt Permitted					0.936		0.070			0.284		
Satd. Flow (perm)	1825	1507	0	0	1539	0	124	3431	0	534	3472	1599
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		617			577			896			445	
Travel Time (s)		16.8			15.7			13.6			6.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	5%	2%	2%	2%	5%	3%	2%	2%	5%	2%
Adj. Flow (vph)	280	0	23	2	0	10	47	887	4	12	1668	510
Shared Lane Traffic (%)												
Lane Group Flow (vph)	280	23	0	0	12	0	47	891	0	12	1668	510
Turn Type	D.P+P	NA		Perm	NA		D.P+P	NA		D.Pm	NA	pm+ov
Protected Phases	7	4			8		5	2			6	7
Permitted Phases	8			8			6			2		6
Detector Phase	7	4		8	8		5	2		2	6	7
Switch Phase												
Minimum Initial (s)	5.0	7.0		7.0	7.0		7.0	12.0		12.0	12.0	5.0
Minimum Split (s)	12.0	12.7		12.7	12.7		12.3	17.8		17.8	17.8	12.0
Total Split (s)	38.0	50.7		12.7	12.7		12.3	109.3		109.3	97.0	38.0
Total Split (%)	23.8%	31.7%		7.9%	7.9%		7.7%	68.3%		68.3%	60.6%	23.8%
Maximum Green (s)	31.0	45.0		7.0	7.0		7.0	103.5		103.5	91.2	31.0
Yellow Time (s)	5.0	3.1		3.1	3.1		3.0	4.7		4.7	4.7	5.0
All-Red Time (s)	2.0	2.6		2.6	2.6		2.3	1.1		1.1	1.1	2.0
Lost Time Adjust (s)	-0.7	-0.7			-0.7		-0.3	-0.8		-0.8	-0.8	-2.0
Total Lost Time (s)	6.3	5.0			5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag		Lead				Lag	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes				Yes	Yes
Vehicle Extension (s)	3.0	2.0		2.0	2.0		2.0	6.0		6.0	6.0	3.0
Recall Mode	None	None		None	None		None	C-Min		C-Min	C-Min	None
Act Effct Green (s)	31.7	35.6			7.7		110.4	114.4		114.4	104.6	141.1
Actuated g/C Ratio	0.20	0.22			0.05		0.69	0.72		0.72	0.65	0.88
v/c Ratio	0.81	0.07			0.16		0.30	0.36		0.03	0.74	0.36
Control Delay	76.4	45.2			78.3		11.0	6.6		8.8	19.2	3.0
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	2.9	0.6
Total Delay	76.4	45.2			78.3		11.0	6.6		8.8	22.1	3.6
LOS	E	D			E		B	A		A	C	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		74.0			78.3			6.8			17.7	
Approach LOS		E			E			A			B	
Queue Length 50th (ft)	284	20			12		9	105		2	506	65
Queue Length 95th (ft)	353	42			36		m19	m155		m4	m631	m127
Internal Link Dist (ft)		537			497			816			365	
Turn Bay Length (ft)	150						150			100		200
Base Capacity (vph)	372	430			74		156	2453		382	2269	1417
Starvation Cap Reductn	0	0			0		0	0		0	474	521
Spillback Cap Reductn	0	0			0		0	0		0	0	0
Storage Cap Reductn	0	0			0		0	0		0	0	0
Reduced v/c Ratio	0.75	0.05			0.16		0.30	0.36		0.03	0.93	0.57

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 140 (88%), Referenced to phase 2:NBSB and 6:NBSB, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 19.9 Intersection LOS: B
Intersection Capacity Utilization 70.5% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Hodge Rd & Panther Rock Blvd/Ellen Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	0	33	71	0	194	24	604	23	65	1377	82
Future Volume (vph)	47	0	33	71	0	194	24	604	23	65	1377	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			3%			-1%			0%	
Storage Length (ft)	0		0	0		0	100		100	300		0
Storage Lanes	1		0	1		0	1		1	2		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt		0.850			0.850				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1743	1560	0	1743	1560	0	1778	1872	1591	3433	1863	1583
Flt Permitted	0.195			0.733			0.033			0.950		
Satd. Flow (perm)	358	1560	0	1345	1560	0	62	1872	1591	3433	1863	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		705			682			1238			1171	
Travel Time (s)		19.2			18.6			18.8			17.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	52	0	37	79	0	216	27	671	26	72	1530	91
Shared Lane Traffic (%)												
Lane Group Flow (vph)	52	37	0	79	216	0	27	671	26	72	1530	91
Turn Type	D.Pm	NA		D.Pm	NA		D.P+P	NA	Perm	Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	8			4			6		2			6
Detector Phase	8	4		4	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	5.0		5.0	7.0		5.0	12.0	12.0	7.0	12.0	12.0
Minimum Split (s)	13.5	25.0		25.0	13.5		12.0	40.2	40.2	13.2	18.2	18.2
Total Split (s)	25.0	25.0		25.0	25.0		12.0	121.8	121.8	13.2	123.0	123.0
Total Split (%)	15.6%	15.6%		15.6%	15.6%		7.5%	76.1%	76.1%	8.3%	76.9%	76.9%
Maximum Green (s)	18.5	18.0		18.0	18.5		5.0	115.6	115.6	7.0	116.8	116.8
Yellow Time (s)	3.0	5.0		5.0	3.0		5.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	3.5	2.0		2.0	3.5		2.0	1.6	1.6	3.2	1.6	1.6
Lost Time Adjust (s)	-2.0	-2.0		-1.5	-2.0		-2.0	-1.2	-1.5	-1.2	-1.2	-2.0
Total Lost Time (s)	4.5	5.0		5.5	4.5		5.0	5.0	4.7	5.0	5.0	4.2
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	3.0		3.0	2.0		3.0	6.0	6.0	2.0	6.0	6.0
Recall Mode	None	None		None	None		None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0		7.0				7.0	7.0			
Flash Dont Walk (s)		11.0		11.0				27.0	27.0			
Pedestrian Calls (#/hr)		0		0				0	0			
Act Effct Green (s)	20.5	20.0		19.5	20.5		127.0	116.8	117.1	8.2	122.8	123.6
Actuated g/C Ratio	0.13	0.12		0.12	0.13		0.79	0.73	0.73	0.05	0.77	0.77
v/c Ratio	1.16	0.19		0.48	1.09		0.22	0.49	0.02	0.41	1.07	0.07
Control Delay	240.5	65.6		76.4	150.6		7.7	10.6	5.9	91.3	65.5	0.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	240.5	65.6		76.4	150.6		7.7	10.6	5.9	91.3	65.5	0.9
LOS	F	E		E	F		A	B	A	F	E	A
Approach Delay		167.8			130.7			10.3			63.1	
Approach LOS		F			F			B			E	
Queue Length 50th (ft)	~63	35		78	~252		5	271	7	41	~1857	1
Queue Length 95th (ft)	#161	74		138	#429		12	350	16	m56	#2128	m2
Internal Link Dist (ft)		625			602			1158			1091	
Turn Bay Length (ft)							100		100	300		
Base Capacity (vph)	45	195		163	199		124	1366	1164	175	1429	1223
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	1.16	0.19		0.48	1.09		0.22	0.49	0.02	0.41	1.07	0.07

Intersection Summary

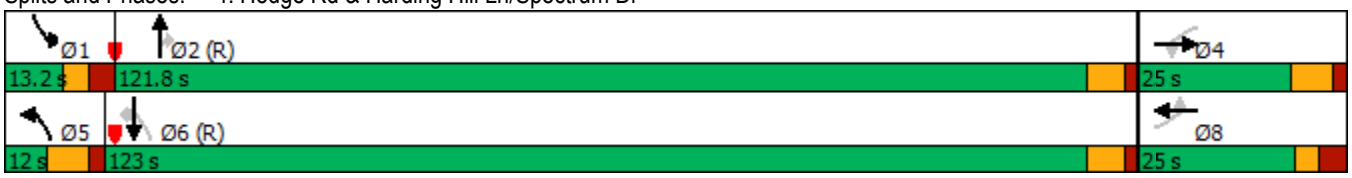
Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 149 (93%), Referenced to phase 2:NBT and 6:NBSB, Start of Green
Natural Cycle: 220
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.16
Intersection Signal Delay: 59.9 Intersection LOS: E
Intersection Capacity Utilization 100.7% ICU Level of Service G
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Hodge Rd & Harding Hill Ln/Spectrum Dr



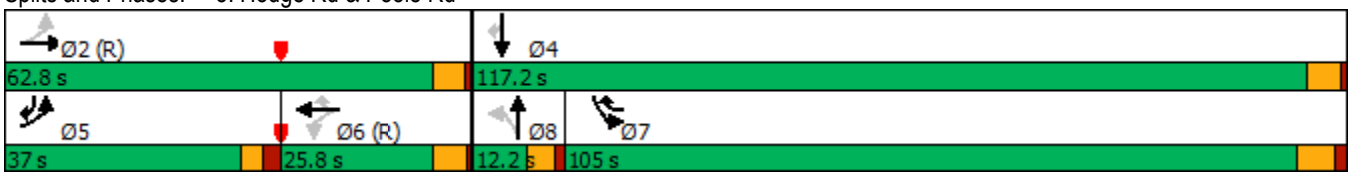
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	334	319	11	18	188	250	13	35	15	920	65	454
Future Volume (vph)	334	319	11	18	188	250	13	35	15	920	65	454
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			1%			-1%			-1%	
Storage Length (ft)	225		0	200		200	50		0	450		0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995				0.850		0.954				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1702	1835	0	1761	1853	1530	1778	1750	0	1728	1836	1546
Flt Permitted	0.155			0.543			0.710			0.950		
Satd. Flow (perm)	278	1835	0	1006	1853	1530	1329	1750	0	1728	1836	1546
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			45	
Link Distance (ft)		826			796			938			914	
Travel Time (s)		12.5			12.1			18.3			13.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	2%	2%	2%	2%	5%	2%	5%	2%	5%	4%	5%
Adj. Flow (vph)	371	354	12	20	209	278	14	39	17	1022	72	504
Shared Lane Traffic (%)												
Lane Group Flow (vph)	371	366	0	20	209	278	14	56	0	1022	72	504
Turn Type	pm+pt	NA		Perm	NA	pm+ov	Perm	NA		Prot	NA	pm+ov
Protected Phases	5	2			6	7		8		7	4	5
Permitted Phases	2			6		6	8					4
Detector Phase	5	2		6	6	7	8	8		7	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0		12.0	12.0	5.0	7.0	7.0		5.0	7.0	7.0
Minimum Split (s)	12.4	17.4		17.4	17.4	12.0	12.2	12.2		12.0	12.6	12.4
Total Split (s)	37.0	62.8		25.8	25.8	105.0	12.2	12.2		105.0	117.2	37.0
Total Split (%)	20.6%	34.9%		14.3%	14.3%	58.3%	6.8%	6.8%		58.3%	65.1%	20.6%
Maximum Green (s)	31.6	57.4		20.4	20.4	98.0	7.0	7.0		98.0	111.6	31.6
Yellow Time (s)	3.0	4.3		4.4	4.4	5.0	3.9	3.9		5.0	4.6	3.0
All-Red Time (s)	2.4	1.1		1.0	1.0	2.0	1.3	1.3		2.0	1.0	2.4
Lost Time Adjust (s)	-0.4	-0.4		-0.4	-0.4	-0.4	-0.2	-0.2		-0.6	-0.6	-0.4
Total Lost Time (s)	5.0	5.0		5.0	5.0	6.6	5.0	5.0		6.4	5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lead		Lag		Lead
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes		Yes
Vehicle Extension (s)	2.0	6.0		6.0	6.0	3.0	2.0	2.0		3.0	2.0	2.0
Recall Mode	None	C-Min		C-Min	C-Min	None	None	None		None	None	None
Act Effct Green (s)	57.8	57.8		20.8	20.8	117.6	7.2	7.2		98.6	112.2	149.2
Actuated g/C Ratio	0.32	0.32		0.12	0.12	0.65	0.04	0.04		0.55	0.62	0.83
v/c Ratio	1.08	0.62		0.17	0.98	0.28	0.26	0.80		1.08	0.06	0.39
Control Delay	124.4	57.4		76.0	132.5	8.5	96.3	144.0		92.1	13.5	4.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	124.4	57.4		76.0	132.5	8.5	96.3	144.0		92.1	13.5	4.9
LOS	F	E		E	F	A	F	F		F	B	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		91.1			62.2			134.5			61.0	
Approach LOS		F			E			F			E	
Queue Length 50th (ft)	~440	369		22	251	89	16	67		~1342	32	129
Queue Length 95th (ft)	#665	490		54	#433	124	45	#159		#1608	56	170
Internal Link Dist (ft)		746			716			858			834	
Turn Bay Length (ft)	225			200		200	50			450		
Base Capacity (vph)	342	589		116	214	999	53	70		946	1144	1281
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	1.08	0.62		0.17	0.98	0.28	0.26	0.80		1.08	0.06	0.39

Intersection Summary

Area Type: Other
Cycle Length: 180
Actuated Cycle Length: 180
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 180
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.08
Intersection Signal Delay: 70.6 Intersection LOS: E
Intersection Capacity Utilization 98.6% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

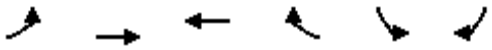
Splits and Phases: 5: Hodge Rd & Poole Rd



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	533	0	953
Future Volume (vph)	0	0	0	533	0	953
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	0	0	1863	0	1611
Flt Permitted						
Satd. Flow (perm)	0	0	0	1863	0	1611
Link Speed (mph)	45			45	45	
Link Distance (ft)	757			241	434	
Travel Time (s)	11.5			3.7	6.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	592	0	1059
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	592	0	1059
Sign Control	Free			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 62.3% ICU Level of Service B
Analysis Period (min) 15



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1601	0	529	0	0
Future Volume (vph)	0	1601	0	529	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.865		
Flt Protected						
Satd. Flow (prot)	0	1863	0	1611	0	0
Flt Permitted						
Satd. Flow (perm)	0	1863	0	1611	0	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		876	277		541	
Travel Time (s)		13.3	4.2		8.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1779	0	588	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1779	0	588	0	0
Sign Control		Free	Free		Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 87.6% ICU Level of Service E
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	32	397	150	315	77	599	464	117	18	262	287
Future Volume (vph)	116	32	397	150	315	77	599	464	117	18	262	287
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-2%			-3%			9%			-8%	
Storage Length (ft)	0		0	125		0	0		200	175		225
Storage Lanes	0		1	1		0	1		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.970				0.850			0.850
Flt Protected		0.962		0.950			0.950			0.950		
Satd. Flow (prot)	0	1810	1553	1745	1834	0	1642	1728	1469	1840	1882	1647
Flt Permitted		0.214		0.573			0.235			0.473		
Satd. Flow (perm)	0	403	1553	1052	1834	0	406	1728	1469	916	1882	1647
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		241			1043			1091			1061	
Travel Time (s)		3.7			15.8			16.5			16.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	5%	5%	2%	2%	5%	5%	5%	2%	5%	2%
Adj. Flow (vph)	129	36	441	167	350	86	666	516	130	20	291	319
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	165	441	167	436	0	666	516	130	20	291	319
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Free
Protected Phases	7	4	5	3	8		5	2	3	1	6	
Permitted Phases	4		4	8			2		2	6		Free
Detector Phase	7	4	5	3	8		5	2	3	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	5.0	7.0		7.0	12.0	5.0	7.0	12.0	
Minimum Split (s)	12.5	12.7	12.5	12.0	12.7		12.5	19.0	12.0	12.5	19.0	
Total Split (s)	12.5	51.0	65.0	12.0	50.5		65.0	84.5	12.0	12.5	32.0	
Total Split (%)	7.8%	31.9%	40.6%	7.5%	31.6%		40.6%	52.8%	7.5%	7.8%	20.0%	
Maximum Green (s)	7.0	45.3	59.5	5.0	44.8		59.5	77.5	5.0	7.0	25.0	
Yellow Time (s)	4.0	4.7	4.0	5.0	4.7		4.0	5.5	5.0	4.0	5.5	
All-Red Time (s)	1.5	1.0	1.5	2.0	1.0		1.5	1.5	2.0	1.5	1.5	
Lost Time Adjust (s)		-0.7	-0.5	-2.0	-0.7		-0.5	-2.0	-2.0	-0.5	-2.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lag	Lead	Lead	Lag	Lead		Lead	Lead	Lag	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	1.0	1.0	1.0	3.0	1.0		1.0	2.0	3.0	1.0	2.0	
Recall Mode	None	None	None	None	None		None	C-Min	None	None	C-Min	
Act Effct Green (s)		46.4	106.4	58.4	58.4		81.8	81.8	93.8	30.0	26.6	160.0
Actuated g/C Ratio		0.29	0.66	0.36	0.36		0.51	0.51	0.59	0.19	0.17	1.00
v/c Ratio		1.42	0.43	0.40	0.65		0.99	0.58	0.15	0.08	0.93	0.19
Control Delay		273.0	8.6	42.3	48.0		67.1	30.9	18.6	56.1	100.9	0.3
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		273.0	8.6	42.3	48.0		67.1	30.9	18.6	56.1	100.9	0.3
LOS		F	A	D	D		E	C	B	E	F	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		80.6			46.4			48.0			48.5	
Approach LOS		F			D			D			D	
Queue Length 50th (ft)		~232	133	123	381		584	240	42	18	304	0
Queue Length 95th (ft)		#392	181	187	509		#962	m524	m102	45	#484	0
Internal Link Dist (ft)		161			963			1011			981	
Turn Bay Length (ft)				125					200	175		225
Base Capacity (vph)		116	1032	414	668		671	935	861	242	317	1647
Starvation Cap Reductn		0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio		1.42	0.43	0.40	0.65		0.99	0.55	0.15	0.08	0.92	0.19

Intersection Summary

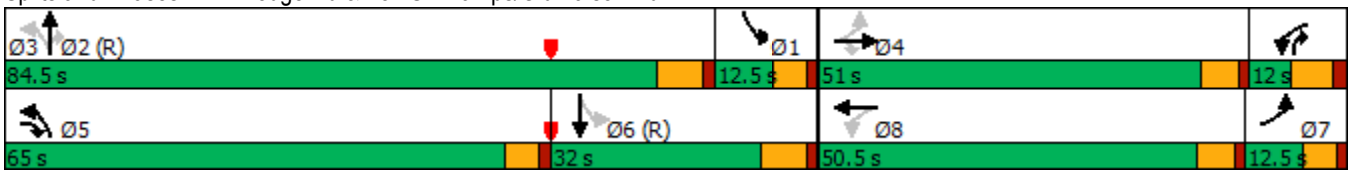
Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 107 (67%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.42
Intersection Signal Delay: 54.1 Intersection LOS: D
Intersection Capacity Utilization 93.0% ICU Level of Service F
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Hodge Rd & I-87 SB Ramps/Old Faison Rd



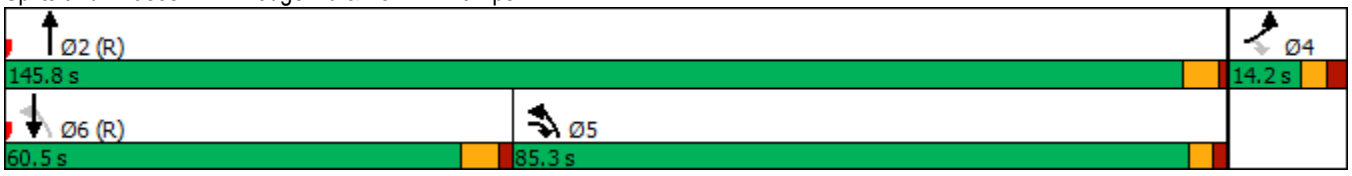
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	150	201	841	1029	551	258
Future Volume (vph)	150	201	841	1029	551	258
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	2%			1%	-1%	
Storage Length (ft)	0	150	150			125
Storage Lanes	2	1	1			1
Taper Length (ft)	100		100			
Lane Util. Factor	0.97	0.88	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	3399	2680	1710	1800	1819	1591
Flt Permitted	0.950		0.074			
Satd. Flow (perm)	3399	2680	133	1800	1819	1591
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			45	45	
Link Distance (ft)	277			301	1091	
Travel Time (s)	4.2			4.6	16.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	5%	5%	5%	5%	2%
Adj. Flow (vph)	167	223	934	1143	612	287
Shared Lane Traffic (%)						
Lane Group Flow (vph)	167	223	934	1143	612	287
Turn Type	Prot	pm+ov	D.P+P	NA	NA	Free
Protected Phases	4	5	5	2	6	
Permitted Phases		4	6			Free
Detector Phase	4	5	5	2	6	
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	
Minimum Split (s)	12.6	11.9	11.9	17.6	18.3	
Total Split (s)	14.2	85.3	85.3	145.8	60.5	
Total Split (%)	8.9%	53.3%	53.3%	91.1%	37.8%	
Maximum Green (s)	8.6	80.4	80.4	140.2	54.2	
Yellow Time (s)	3.0	3.0	3.0	4.4	4.6	
All-Red Time (s)	2.6	1.9	1.9	1.2	1.7	
Lost Time Adjust (s)	-0.6	-0.6	0.1	-0.6	-1.3	
Total Lost Time (s)	5.0	4.3	5.0	5.0	5.0	
Lead/Lag		Lag	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	1.0	1.0	2.0	2.0	
Recall Mode	None	None	None	C-Min	C-Min	
Act Effct Green (s)	9.4	95.6	135.6	140.6	55.1	160.0
Actuated g/C Ratio	0.06	0.60	0.85	0.88	0.34	1.00
v/c Ratio	0.84	0.14	1.03	0.72	0.98	0.18
Control Delay	106.6	14.5	59.5	5.3	58.5	0.2
Queue Delay	0.0	0.0	11.3	0.4	0.0	0.0
Total Delay	106.6	14.5	70.8	5.6	58.5	0.2
LOS	F	B	E	A	E	A

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	54.0			34.9	39.9	
Approach LOS	D			C	D	
Queue Length 50th (ft)	91	56	~996	134	454	0
Queue Length 95th (ft)	#160	80	#1249	273	m#842	m0
Internal Link Dist (ft)	197			221	1011	
Turn Bay Length (ft)		150	150			125
Base Capacity (vph)	198	1600	906	1584	630	1591
Starvation Cap Reductn	0	0	27	111	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.14	1.06	0.78	0.97	0.18

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 124 (78%), Referenced to phase 2:NBT and 6:NBSB, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.03
Intersection Signal Delay: 38.5 Intersection LOS: D
Intersection Capacity Utilization 93.9% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Hodge Rd & I-87 NB Ramps



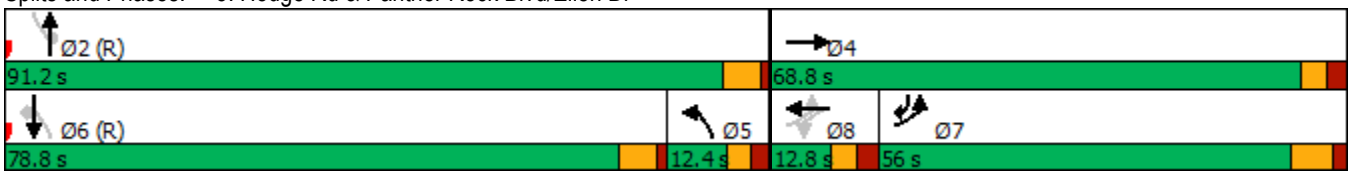
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	440	0	29	2	0	9	16	1422	2	7	610	135
Future Volume (vph)	440	0	29	2	0	9	16	1422	2	7	610	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		4%			1%			4%			-2%	
Storage Length (ft)	150		0	0		0	150		0	100		200
Storage Lanes	1		0	0		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.850			0.887							0.850
Flt Protected	0.950				0.992		0.950			0.950		
Satd. Flow (prot)	1734	1507	0	0	1631	0	1685	3369	0	1787	3472	1599
Flt Permitted					0.934		0.311			0.069		
Satd. Flow (perm)	1825	1507	0	0	1535	0	552	3369	0	130	3472	1599
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		617			577			896			445	
Travel Time (s)		16.8			15.7			13.6			6.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	5%	2%	2%	2%	5%	5%	2%	2%	5%	2%
Adj. Flow (vph)	489	0	32	2	0	10	18	1580	2	8	678	150
Shared Lane Traffic (%)												
Lane Group Flow (vph)	489	32	0	0	12	0	18	1582	0	8	678	150
Turn Type	D.P+P	NA		Perm	NA		D.P+P	NA		D.Pm	NA	pm+ov
Protected Phases	7	4			8		5	2			6	7
Permitted Phases	8			8			6			2		6
Detector Phase	7	4		8	8		5	2		2	6	7
Switch Phase												
Minimum Initial (s)	5.0	7.0		7.0	7.0		7.0	12.0		12.0	12.0	5.0
Minimum Split (s)	12.0	12.7		12.7	12.7		12.3	17.8		17.8	17.8	12.0
Total Split (s)	56.0	68.8		12.8	12.8		12.4	91.2		91.2	78.8	56.0
Total Split (%)	35.0%	43.0%		8.0%	8.0%		7.8%	57.0%		57.0%	49.3%	35.0%
Maximum Green (s)	49.0	63.1		7.1	7.1		7.1	85.4		85.4	73.0	49.0
Yellow Time (s)	5.0	3.1		3.1	3.1		3.0	4.7		4.7	4.7	5.0
All-Red Time (s)	2.0	2.6		2.6	2.6		2.3	1.1		1.1	1.1	2.0
Lost Time Adjust (s)	-0.7	-0.7			-0.7		-0.3	-0.8		-0.8	-0.8	-2.0
Total Lost Time (s)	6.3	5.0			5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lag			Lead	Lead		Lag				Lead	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes				Yes	Yes
Vehicle Extension (s)	3.0	2.0		2.0	2.0		2.0	6.0		6.0	6.0	3.0
Recall Mode	None	None		None	None		None	C-Min		C-Min	C-Min	None
Act Effct Green (s)	49.9	53.7			7.7		94.3	96.3		96.3	82.2	138.8
Actuated g/C Ratio	0.31	0.34			0.05		0.59	0.60		0.60	0.51	0.87
v/c Ratio	0.90	0.06			0.16		0.04	0.78		0.10	0.38	0.11
Control Delay	72.7	32.8			78.4		8.1	16.2		27.7	26.4	1.4
Queue Delay	0.0	0.0			0.0		0.0	12.7		0.0	0.0	0.0
Total Delay	72.7	32.8			78.4		8.1	28.9		27.7	26.4	1.4
LOS	E	C			E		A	C		C	C	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		70.3			78.4			28.7			21.9	
Approach LOS		E			E			C			C	
Queue Length 50th (ft)	488	23			12		4	466		5	303	0
Queue Length 95th (ft)	562	45			36		m6	m597		m11	m403	m15
Internal Link Dist (ft)		537			497			816			365	
Turn Bay Length (ft)	150						150			100		200
Base Capacity (vph)	570	600			74		441	2027		78	1981	1384
Starvation Cap Reductn	0	0			0		0	0		0	0	0
Spillback Cap Reductn	0	0			0		0	453		0	0	0
Storage Cap Reductn	0	0			0		0	0		0	0	0
Reduced v/c Ratio	0.86	0.05			0.16		0.04	1.01		0.10	0.34	0.11

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 26 (16%), Referenced to phase 2:NBSB and 6:NBSB, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 34.3 Intersection LOS: C
Intersection Capacity Utilization 78.7% ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Hodge Rd & Panther Rock Blvd/Ellen Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	0	20	20	0	62	7	1302	78	222	397	23
Future Volume (vph)	76	0	20	20	0	62	7	1302	78	222	397	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			3%			-1%			0%	
Storage Length (ft)	0		0	0		0	100		100	300		0
Storage Lanes	1		0	1		0	1		1	2		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt		0.850			0.850				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1743	1560	0	1693	1515	0	1778	1872	1546	3335	1863	1583
Flt Permitted	0.659			0.743			0.483			0.950		
Satd. Flow (perm)	1209	1560	0	1324	1515	0	904	1872	1546	3335	1863	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		705			682			1238			1171	
Travel Time (s)		19.2			18.6			18.8			17.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	5%	2%	5%	2%	2%	5%	5%	2%	2%
Adj. Flow (vph)	84	0	22	22	0	69	8	1447	87	247	441	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	84	22	0	22	69	0	8	1447	87	247	441	26
Turn Type	D.Pm	NA		D.Pm	NA		D.P+P	NA	Perm	Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	8			4			6		2			6
Detector Phase	8	4		4	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	5.0		5.0	7.0		5.0	12.0	12.0	7.0	12.0	12.0
Minimum Split (s)	13.5	25.0		25.0	13.5		12.0	40.2	40.2	13.2	18.2	18.2
Total Split (s)	25.0	25.0		25.0	25.0		12.0	120.0	120.0	15.0	123.0	123.0
Total Split (%)	15.6%	15.6%		15.6%	15.6%		7.5%	75.0%	75.0%	9.4%	76.9%	76.9%
Maximum Green (s)	18.5	18.0		18.0	18.5		5.0	113.8	113.8	8.8	116.8	116.8
Yellow Time (s)	3.0	5.0		5.0	3.0		5.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	3.5	2.0		2.0	3.5		2.0	1.6	1.6	3.2	1.6	1.6
Lost Time Adjust (s)	-2.0	-2.0		-1.5	-2.0		-2.0	-1.2	-1.5	-1.2	-1.2	-2.0
Total Lost Time (s)	4.5	5.0		5.5	4.5		5.0	5.0	4.7	5.0	5.0	4.2
Lead/Lag							Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	3.0		3.0	2.0		3.0	6.0	6.0	2.0	6.0	6.0
Recall Mode	None	None		None	None		None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0		7.0				7.0	7.0			
Flash Dont Walk (s)		11.0		11.0				27.0	27.0			
Pedestrian Calls (#/hr)		0		0				0	0			
Act Effct Green (s)	16.4	15.9		15.4	16.4		133.1	119.1	119.4	10.0	131.7	132.5
Actuated g/C Ratio	0.10	0.10		0.10	0.10		0.83	0.74	0.75	0.06	0.82	0.83
v/c Ratio	0.68	0.14		0.17	0.45		0.01	1.04	0.08	1.19	0.29	0.02
Control Delay	94.9	65.8		67.5	75.5		2.3	35.5	3.8	155.5	5.2	0.7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	94.9	65.8		67.5	75.5		2.3	35.5	3.8	155.5	5.2	0.7
LOS	F	E		E	E		A	D	A	F	A	A
Approach Delay		88.9			73.6			33.5			57.0	
Approach LOS		F			E			C			E	
Queue Length 50th (ft)	86	21		21	69		1	~1635	17	~162	51	1
Queue Length 95th (ft)	147	51		52	122		m1	m#1220	m18	#245	90	2
Internal Link Dist (ft)		625			602			1158			1091	
Turn Bay Length (ft)							100		100	300		
Base Capacity (vph)	154	195		161	194		792	1393	1153	208	1533	1310
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.11		0.14	0.36		0.01	1.04	0.08	1.19	0.29	0.02

Intersection Summary

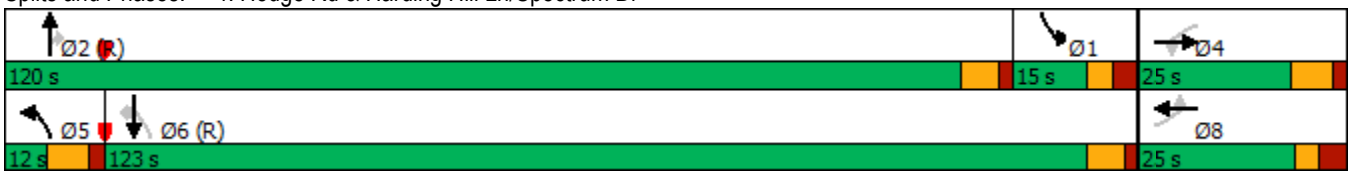
Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 137 (86%), Referenced to phase 2:NBT and 6:NBSB, Start of Green
Natural Cycle: 240
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.19
Intersection Signal Delay: 44.3 Intersection LOS: D
Intersection Capacity Utilization 98.2% ICU Level of Service F
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Hodge Rd & Harding Hill Ln/Spectrum Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	416	122	7	9	496	863	23	62	13	191	15	237
Future Volume (vph)	416	122	7	9	496	863	23	62	13	191	15	237
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			1%			-1%			-1%	
Storage Length (ft)	225		0	200		200	50		0	450		0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992				0.850		0.975				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1702	1829	0	1761	1853	1530	1778	1782	0	1728	1819	1546
Flt Permitted	0.074			0.665			0.746			0.950		
Satd. Flow (perm)	133	1829	0	1233	1853	1530	1397	1782	0	1728	1819	1546
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			45	
Link Distance (ft)		826			796			938			914	
Travel Time (s)		12.5			12.1			18.3			13.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	2%	2%	2%	2%	5%	2%	5%	2%	5%	5%	5%
Adj. Flow (vph)	462	136	8	10	551	959	26	69	14	212	17	263
Shared Lane Traffic (%)												
Lane Group Flow (vph)	462	144	0	10	551	959	26	83	0	212	17	263
Turn Type	pm+pt	NA		Perm	NA	pm+ov	Perm	NA		Prot	NA	pm+ov
Protected Phases	5	2			6	7		8		7	4	5
Permitted Phases	2			6		6	8					4
Detector Phase	5	2		6	6	7	8	8		7	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0		12.0	12.0	5.0	7.0	7.0		5.0	7.0	7.0
Minimum Split (s)	12.4	17.4		17.4	17.4	12.0	12.2	12.2		12.0	12.6	12.4
Total Split (s)	40.0	94.2		54.2	54.2	53.0	12.8	12.8		53.0	65.8	40.0
Total Split (%)	25.0%	58.9%		33.9%	33.9%	33.1%	8.0%	8.0%		33.1%	41.1%	25.0%
Maximum Green (s)	34.6	88.8		48.8	48.8	46.0	7.6	7.6		46.0	60.2	34.6
Yellow Time (s)	3.0	4.3		4.4	4.4	5.0	3.9	3.9		5.0	4.6	3.0
All-Red Time (s)	2.4	1.1		1.0	1.0	2.0	1.3	1.3		2.0	1.0	2.4
Lost Time Adjust (s)	-0.4	-0.4		-0.4	-0.4	-0.4	-0.2	-0.2		-0.6	-0.6	-0.4
Total Lost Time (s)	5.0	5.0		5.0	5.0	6.6	5.0	5.0		6.4	5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lead		Lag		Lead
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes		Yes
Vehicle Extension (s)	2.0	6.0		6.0	6.0	3.0	2.0	2.0		3.0	2.0	2.0
Recall Mode	None	C-Min		C-Min	C-Min	None	None	None		None	None	None
Act Effct Green (s)	89.2	89.2		49.2	49.2	94.0	7.8	7.8		46.6	60.8	100.8
Actuated g/C Ratio	0.56	0.56		0.31	0.31	0.59	0.05	0.05		0.29	0.38	0.63
v/c Ratio	1.11	0.14		0.03	0.97	1.07	0.38	0.97		0.42	0.02	0.27
Control Delay	122.1	17.5		39.2	84.7	73.5	90.1	160.7		37.1	31.7	5.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	122.1	17.5		39.2	84.7	73.5	90.1	160.7		37.1	31.7	5.7
LOS	F	B		D	F	E	F	F		D	C	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		97.2			77.3			143.9			20.1	
Approach LOS		F			E			F			C	
Queue Length 50th (ft)	~500	70		7	571	~613	27	88		55	4	28
Queue Length 95th (ft)	#731	109		24	#815	#872	63	#207		182	26	79
Internal Link Dist (ft)		746			716			858			834	
Turn Bay Length (ft)	225			200		200	50			450		
Base Capacity (vph)	417	1019		379	569	898	68	86		503	691	973
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	1.11	0.14		0.03	0.97	1.07	0.38	0.97		0.42	0.02	0.27

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 160
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.11
Intersection Signal Delay: 74.1 Intersection LOS: E
Intersection Capacity Utilization 96.2% ICU Level of Service F
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

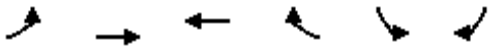
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Hodge Rd & Poole Rd

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1201	0	545
Future Volume (vph)	0	0	0	1201	0	545
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	0	0	1863	0	1611
Flt Permitted						
Satd. Flow (perm)	0	0	0	1863	0	1611
Link Speed (mph)	45			45	45	
Link Distance (ft)	757			241	434	
Travel Time (s)	11.5			3.7	6.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	1334	0	606
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1334	0	606
Sign Control	Free			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 66.5% ICU Level of Service C
Analysis Period (min) 15



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	351	0	1099	0	0
Future Volume (vph)	0	351	0	1099	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.865		
Flt Protected						
Satd. Flow (prot)	0	1863	0	1611	0	0
Flt Permitted						
Satd. Flow (perm)	0	1863	0	1611	0	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		876	277		541	
Travel Time (s)		13.3	4.2		8.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	390	0	1221	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	390	0	1221	0	0
Sign Control		Free	Free		Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 71.4% ICU Level of Service C
Analysis Period (min) 15

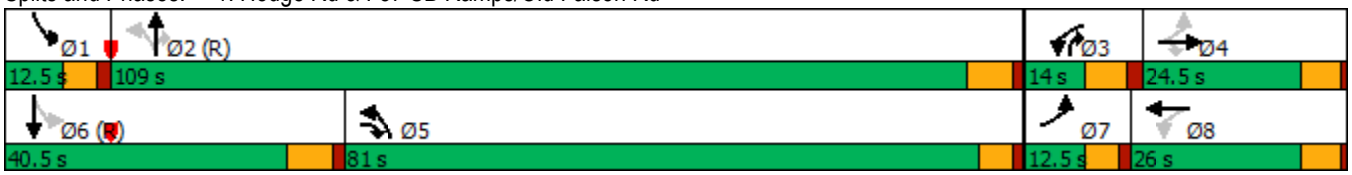
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	99	803	79	98	80	339	640	409	47	332	109
Future Volume (vph)	55	99	803	79	98	80	339	640	409	47	332	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-2%			-3%			9%			-8%	
Storage Length (ft)	0		0	125		0	0		200	175		225
Storage Lanes	0		1	1		0	1		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.933				0.850			0.850
Flt Protected		0.982		0.950			0.950			0.950		
Satd. Flow (prot)	0	1848	1553	1745	1764	0	1642	1728	1469	1840	1882	1647
Flt Permitted		0.801		0.346			0.232			0.149		
Satd. Flow (perm)	0	1507	1553	635	1764	0	401	1728	1469	289	1882	1647
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		241			1043			1091			1061	
Travel Time (s)		3.7			15.8			16.5			16.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	5%	5%	2%	2%	5%	5%	5%	2%	5%	2%
Adj. Flow (vph)	61	110	892	88	109	89	377	711	454	52	369	121
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	171	892	88	198	0	377	711	454	52	369	121
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Free
Protected Phases	7	4	5	3	8		5	2	3	1	6	
Permitted Phases	4		4	8			2		2	6		Free
Detector Phase	7	4	5	3	8		5	2	3	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	5.0	7.0		7.0	12.0	5.0	7.0	12.0	
Minimum Split (s)	12.5	12.7	12.5	12.0	12.7		12.5	19.0	12.0	12.5	19.0	
Total Split (s)	12.5	24.5	81.0	14.0	26.0		81.0	109.0	14.0	12.5	40.5	
Total Split (%)	7.8%	15.3%	50.6%	8.8%	16.3%		50.6%	68.1%	8.8%	7.8%	25.3%	
Maximum Green (s)	7.0	18.8	75.5	7.0	20.3		75.5	102.0	7.0	7.0	33.5	
Yellow Time (s)	4.0	4.7	4.0	5.0	4.7		4.0	5.5	5.0	4.0	5.5	
All-Red Time (s)	1.5	1.0	1.5	2.0	1.0		1.5	1.5	2.0	1.5	1.5	
Lost Time Adjust (s)		-0.7	-0.5	-2.0	-0.7		-0.5	-2.0	-2.0	-0.5	-2.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lag	Lag	Lead	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	1.0	1.0	1.0	3.0	1.0		1.0	2.0	3.0	1.0	2.0	
Recall Mode	None	None	None	None	None		None	C-Min	None	None	C-Min	
Act Effct Green (s)		24.2	95.4	38.2	38.2		101.8	101.8	115.8	35.6	35.6	160.0
Actuated g/C Ratio		0.15	0.60	0.24	0.24		0.64	0.64	0.72	0.22	0.22	1.00
v/c Ratio		0.75	0.96	0.41	0.47		0.47	0.65	0.43	0.38	0.88	0.07
Control Delay		86.4	43.7	57.9	58.7		12.6	12.8	4.5	58.3	82.9	0.1
Queue Delay		0.0	13.4	1.3	0.0		0.0	0.0	0.0	0.0	64.1	0.0
Total Delay		86.4	57.1	59.2	58.7		12.6	12.8	4.5	58.3	147.0	0.1
LOS		F	E	E	E		B	B	A	E	F	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		61.8			58.9			10.3			105.7	
Approach LOS		E			E			B			F	
Queue Length 50th (ft)		180	633	78	187		66	132	56	44	378	0
Queue Length 95th (ft)		#334	#978	132	275		m70	m127	m50	84	#560	0
Internal Link Dist (ft)		161			963			1011			981	
Turn Bay Length (ft)				125					200	175		225
Base Capacity (vph)		227	962	214	421		856	1123	1063	136	418	1647
Starvation Cap Reductn		0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn		0	80	39	0		0	0	0	0	284	0
Storage Cap Reductn		0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio		0.75	1.01	0.50	0.47		0.44	0.63	0.43	0.38	2.75	0.07

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 139 (87%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 45.3 Intersection LOS: D
Intersection Capacity Utilization 89.7% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Hodge Rd & I-87 SB Ramps/Old Faison Rd



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	749	857	453	638	1127	86
Future Volume (vph)	749	857	453	638	1127	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	2%			1%	-1%	
Storage Length (ft)	0	150	150			125
Storage Lanes	2	1	1			1
Taper Length (ft)	100		100			
Lane Util. Factor	0.97	0.88	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	3399	2680	1710	1800	1819	1591
Flt Permitted	0.950		0.048			
Satd. Flow (perm)	3399	2680	86	1800	1819	1591
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			45	45	
Link Distance (ft)	277			301	1091	
Travel Time (s)	4.2			4.6	16.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	5%	5%	5%	5%	2%
Adj. Flow (vph)	832	952	503	709	1252	96
Shared Lane Traffic (%)						
Lane Group Flow (vph)	832	952	503	709	1252	96
Turn Type	Prot	pm+ov	D.P+P	NA	NA	Free
Protected Phases	4	5	5	2	6	
Permitted Phases		4	6			Free
Detector Phase	4	5	5	2	6	
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	
Minimum Split (s)	12.6	11.9	11.9	17.6	18.3	
Total Split (s)	35.0	35.0	35.0	125.0	90.0	
Total Split (%)	21.9%	21.9%	21.9%	78.1%	56.3%	
Maximum Green (s)	29.4	30.1	30.1	119.4	83.7	
Yellow Time (s)	3.0	3.0	3.0	4.4	4.6	
All-Red Time (s)	2.6	1.9	1.9	1.2	1.7	
Lost Time Adjust (s)	-0.6	-0.6	0.1	-0.6	-1.3	
Total Lost Time (s)	5.0	4.3	5.0	5.0	5.0	
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	1.0	1.0	2.0	2.0	
Recall Mode	None	None	None	C-Min	C-Min	
Act Effct Green (s)	30.0	65.7	115.0	120.0	85.0	160.0
Actuated g/C Ratio	0.19	0.41	0.72	0.75	0.53	1.00
v/c Ratio	1.31	0.87	1.37	0.53	1.30	0.06
Control Delay	197.8	52.7	224.3	6.0	168.7	0.0
Queue Delay	0.0	0.6	0.0	0.4	0.3	0.0
Total Delay	197.8	53.3	224.3	6.4	169.1	0.0
LOS	F	D	F	A	F	A

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	120.7			96.8	157.0	
Approach LOS	F			F	F	
Queue Length 50th (ft)	~573	514	~655	203	~1665	0
Queue Length 95th (ft)	#706	624	#893	248	m#1904	m0
Internal Link Dist (ft)	197			221	1011	
Turn Bay Length (ft)		150	150			125
Base Capacity (vph)	637	1100	366	1350	966	1591
Starvation Cap Reductn	0	0	0	251	4	0
Spillback Cap Reductn	0	25	0	0	64	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.31	0.89	1.37	0.65	1.39	0.06

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 88 (55%), Referenced to phase 2:NBT and 6:NBSB, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.37
Intersection Signal Delay: 125.3 Intersection LOS: F
Intersection Capacity Utilization 118.3% ICU Level of Service H
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Hodge Rd & I-87 NB Ramps

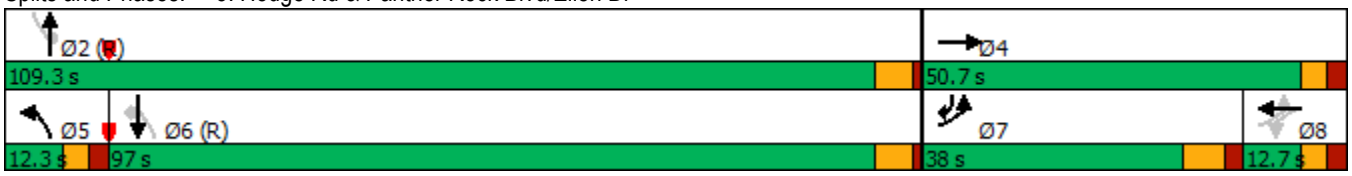
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	252	0	21	2	0	9	42	829	4	11	1513	459
Future Volume (vph)	252	0	21	2	0	9	42	829	4	11	1513	459
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		4%			1%			4%			-2%	
Storage Length (ft)	150		0	0		0	150		0	100		200
Storage Lanes	1		0	0		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.850			0.887			0.999				0.850
Flt Protected	0.950				0.992		0.950			0.950		
Satd. Flow (prot)	1734	1507	0	0	1631	0	1685	3366	0	1787	3472	1599
Flt Permitted					0.936		0.068			0.272		
Satd. Flow (perm)	1825	1507	0	0	1539	0	121	3366	0	512	3472	1599
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		617			577			896			445	
Travel Time (s)		16.8			15.7			13.6			6.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	5%	2%	2%	2%	5%	5%	2%	2%	5%	2%
Adj. Flow (vph)	280	0	23	2	0	10	47	921	4	12	1681	510
Shared Lane Traffic (%)												
Lane Group Flow (vph)	280	23	0	0	12	0	47	925	0	12	1681	510
Turn Type	D.P+P	NA		Perm	NA		D.P+P	NA		D.Pm	NA	pm+ov
Protected Phases	7	4			8		5	2			6	7
Permitted Phases	8			8			6			2		6
Detector Phase	7	4		8	8		5	2		2	6	7
Switch Phase												
Minimum Initial (s)	5.0	7.0		7.0	7.0		7.0	12.0		12.0	12.0	5.0
Minimum Split (s)	12.0	12.7		12.7	12.7		12.3	17.8		17.8	17.8	12.0
Total Split (s)	38.0	50.7		12.7	12.7		12.3	109.3		109.3	97.0	38.0
Total Split (%)	23.8%	31.7%		7.9%	7.9%		7.7%	68.3%		68.3%	60.6%	23.8%
Maximum Green (s)	31.0	45.0		7.0	7.0		7.0	103.5		103.5	91.2	31.0
Yellow Time (s)	5.0	3.1		3.1	3.1		3.0	4.7		4.7	4.7	5.0
All-Red Time (s)	2.0	2.6		2.6	2.6		2.3	1.1		1.1	1.1	2.0
Lost Time Adjust (s)	-0.7	-0.7			-0.7		-0.3	-0.8		-0.8	-0.8	-2.0
Total Lost Time (s)	6.3	5.0			5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag		Lead				Lag	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes				Yes	Yes
Vehicle Extension (s)	3.0	2.0		2.0	2.0		2.0	6.0		6.0	6.0	3.0
Recall Mode	None	None		None	None		None	C-Min		C-Min	C-Min	None
Act Effct Green (s)	31.7	35.6			7.7		110.4	114.4		114.4	104.6	141.1
Actuated g/C Ratio	0.20	0.22			0.05		0.69	0.72		0.72	0.65	0.88
v/c Ratio	0.81	0.07			0.16		0.31	0.38		0.03	0.74	0.36
Control Delay	76.4	45.2			78.3		10.9	6.4		8.9	19.4	3.0
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	3.2	0.6
Total Delay	76.4	45.2			78.3		10.9	6.4		8.9	22.6	3.6
LOS	E	D			E		B	A		A	C	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		74.0			78.3			6.6			18.2	
Approach LOS		E			E			A			B	
Queue Length 50th (ft)	284	20			12		8	106		2	518	65
Queue Length 95th (ft)	353	42			36		m18	m147		m4	m637	m125
Internal Link Dist (ft)		537			497			816			365	
Turn Bay Length (ft)	150						150			100		200
Base Capacity (vph)	372	430			74		154	2407		366	2269	1417
Starvation Cap Reductn	0	0			0		0	0		0	473	523
Spillback Cap Reductn	0	0			0		0	0		0	0	0
Storage Cap Reductn	0	0			0		0	0		0	0	0
Reduced v/c Ratio	0.75	0.05			0.16		0.31	0.38		0.03	0.94	0.57

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 140 (88%), Referenced to phase 2:NBSB and 6:NBSB, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 20.0 Intersection LOS: B
Intersection Capacity Utilization 70.8% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Hodge Rd & Panther Rock Blvd/Ellen Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	0	33	78	0	225	24	604	25	77	1377	82
Future Volume (vph)	47	0	33	78	0	225	24	604	25	77	1377	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			3%			-1%			0%	
Storage Length (ft)	0		0	0		0	100		100	300		0
Storage Lanes	1		0	1		0	1		1	2		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt		0.850			0.850				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1743	1560	0	1693	1515	0	1778	1872	1546	3335	1863	1583
Flt Permitted	0.195			0.733			0.033			0.950		
Satd. Flow (perm)	358	1560	0	1306	1515	0	62	1872	1546	3335	1863	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		705			682			1238			1171	
Travel Time (s)		19.2			18.6			18.8			17.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	5%	2%	5%	2%	2%	5%	5%	2%	2%
Adj. Flow (vph)	52	0	37	87	0	250	27	671	28	86	1530	91
Shared Lane Traffic (%)												
Lane Group Flow (vph)	52	37	0	87	250	0	27	671	28	86	1530	91
Turn Type	D.Pm	NA		D.Pm	NA		D.P+P	NA	Perm	Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	8			4			6		2			6
Detector Phase	8	4		4	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	5.0		5.0	7.0		5.0	12.0	12.0	7.0	12.0	12.0
Minimum Split (s)	13.5	25.0		25.0	13.5		12.0	40.2	40.2	13.2	18.2	18.2
Total Split (s)	25.0	25.0		25.0	25.0		12.0	121.8	121.8	13.2	123.0	123.0
Total Split (%)	15.6%	15.6%		15.6%	15.6%		7.5%	76.1%	76.1%	8.3%	76.9%	76.9%
Maximum Green (s)	18.5	18.0		18.0	18.5		5.0	115.6	115.6	7.0	116.8	116.8
Yellow Time (s)	3.0	5.0		5.0	3.0		5.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	3.5	2.0		2.0	3.5		2.0	1.6	1.6	3.2	1.6	1.6
Lost Time Adjust (s)	-2.0	-2.0		-1.5	-2.0		-2.0	-1.2	-1.5	-1.2	-1.2	-2.0
Total Lost Time (s)	4.5	5.0		5.5	4.5		5.0	5.0	4.7	5.0	5.0	4.2
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	3.0		3.0	2.0		3.0	6.0	6.0	2.0	6.0	6.0
Recall Mode	None	None		None	None		None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0		7.0				7.0	7.0			
Flash Dont Walk (s)		11.0		11.0				27.0	27.0			
Pedestrian Calls (#/hr)		0		0				0	0			
Act Effct Green (s)	20.5	20.0		19.5	20.5		127.0	116.8	117.1	8.2	122.8	123.6
Actuated g/C Ratio	0.13	0.12		0.12	0.13		0.79	0.73	0.73	0.05	0.77	0.77
v/c Ratio	1.16	0.19		0.55	1.29		0.22	0.49	0.02	0.51	1.07	0.07
Control Delay	240.5	65.6		80.0	214.9		7.7	10.6	6.0	93.9	65.3	0.9

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	240.5	65.6		80.0	214.9		7.7	10.6	6.0	93.9	65.3	0.9
LOS	F	E		E	F		A	B	A	F	E	A
Approach Delay		167.8			180.1			10.3			63.3	
Approach LOS		F			F			B			E	
Queue Length 50th (ft)	~63	35		87	~332		5	271	7	48	~1857	1
Queue Length 95th (ft)	#161	74		151	#518		12	350	17	m65	#2129	m2
Internal Link Dist (ft)		625			602			1158			1091	
Turn Bay Length (ft)							100		100	300		
Base Capacity (vph)	45	195		159	194		124	1366	1131	170	1429	1223
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	1.16	0.19		0.55	1.29		0.22	0.49	0.02	0.51	1.07	0.07

Intersection Summary

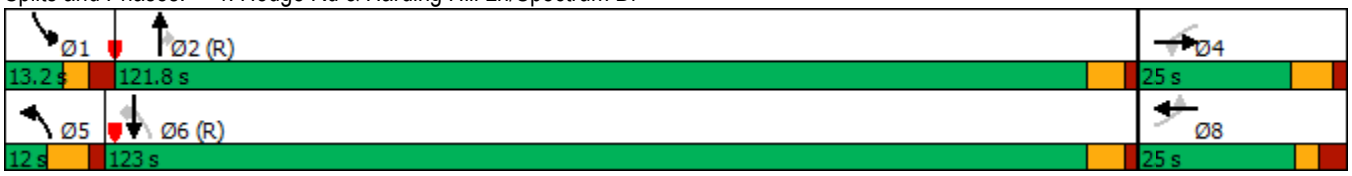
Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 149 (93%), Referenced to phase 2:NBT and 6:NBSB, Start of Green
Natural Cycle: 220
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.29
Intersection Signal Delay: 66.9 Intersection LOS: E
Intersection Capacity Utilization 102.7% ICU Level of Service G
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Hodge Rd & Harding Hill Ln/Spectrum Dr



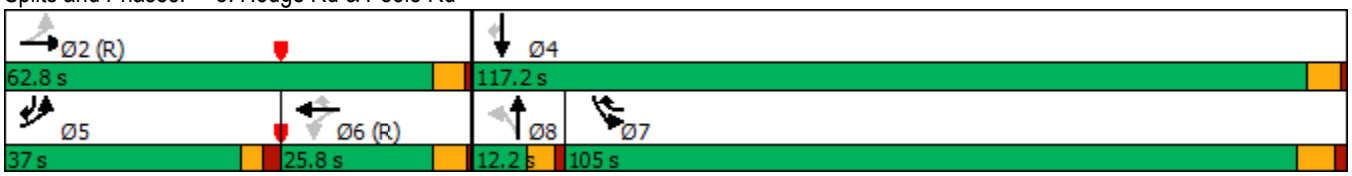
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	335	319	11	18	188	251	13	35	15	923	66	457
Future Volume (vph)	335	319	11	18	188	251	13	35	15	923	66	457
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			1%			-1%			-1%	
Storage Length (ft)	225		0	200		200	50		0	450		0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995				0.850		0.954				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1702	1835	0	1761	1853	1530	1778	1750	0	1728	1819	1546
Flt Permitted	0.155			0.543			0.709			0.950		
Satd. Flow (perm)	278	1835	0	1006	1853	1530	1327	1750	0	1728	1819	1546
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			45	
Link Distance (ft)		826			796			938			914	
Travel Time (s)		12.5			12.1			18.3			13.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	2%	2%	2%	2%	5%	2%	5%	2%	5%	5%	5%
Adj. Flow (vph)	372	354	12	20	209	279	14	39	17	1026	73	508
Shared Lane Traffic (%)												
Lane Group Flow (vph)	372	366	0	20	209	279	14	56	0	1026	73	508
Turn Type	pm+pt	NA		Perm	NA	pm+ov	Perm	NA		Prot	NA	pm+ov
Protected Phases	5	2			6	7		8		7	4	5
Permitted Phases	2			6		6	8					4
Detector Phase	5	2		6	6	7	8	8		7	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0		12.0	12.0	5.0	7.0	7.0		5.0	7.0	7.0
Minimum Split (s)	12.4	17.4		17.4	17.4	12.0	12.2	12.2		12.0	12.6	12.4
Total Split (s)	37.0	62.8		25.8	25.8	105.0	12.2	12.2		105.0	117.2	37.0
Total Split (%)	20.6%	34.9%		14.3%	14.3%	58.3%	6.8%	6.8%		58.3%	65.1%	20.6%
Maximum Green (s)	31.6	57.4		20.4	20.4	98.0	7.0	7.0		98.0	111.6	31.6
Yellow Time (s)	3.0	4.3		4.4	4.4	5.0	3.9	3.9		5.0	4.6	3.0
All-Red Time (s)	2.4	1.1		1.0	1.0	2.0	1.3	1.3		2.0	1.0	2.4
Lost Time Adjust (s)	-0.4	-0.4		-0.4	-0.4	-0.4	-0.2	-0.2		-0.6	-0.6	-0.4
Total Lost Time (s)	5.0	5.0		5.0	5.0	6.6	5.0	5.0		6.4	5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lead		Lag		Lead
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes		Yes
Vehicle Extension (s)	2.0	6.0		6.0	6.0	3.0	2.0	2.0		3.0	2.0	2.0
Recall Mode	None	C-Min		C-Min	C-Min	None	None	None		None	None	None
Act Effct Green (s)	57.8	57.8		20.8	20.8	117.6	7.2	7.2		98.6	112.2	149.2
Actuated g/C Ratio	0.32	0.32		0.12	0.12	0.65	0.04	0.04		0.55	0.62	0.83
v/c Ratio	1.09	0.62		0.17	0.98	0.28	0.26	0.80		1.08	0.06	0.40
Control Delay	125.3	57.4		76.0	132.5	8.5	96.3	144.0		93.5	13.5	4.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	125.3	57.4		76.0	132.5	8.5	96.3	144.0		93.5	13.5	4.9
LOS	F	E		E	F	A	F	F		F	B	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		91.6			62.2			134.5			61.8	
Approach LOS		F			E			F			E	
Queue Length 50th (ft)	~442	369		22	251	89	16	67		~1352	33	130
Queue Length 95th (ft)	#667	490		54	#433	124	45	#159		#1620	56	173
Internal Link Dist (ft)		746			716			858			834	
Turn Bay Length (ft)	225			200		200	50			450		
Base Capacity (vph)	342	589		116	214	999	53	70		946	1133	1281
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	1.09	0.62		0.17	0.98	0.28	0.26	0.80		1.08	0.06	0.40

Intersection Summary

Area Type: Other
Cycle Length: 180
Actuated Cycle Length: 180
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 180
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.09
Intersection Signal Delay: 71.1 Intersection LOS: E
Intersection Capacity Utilization 98.9% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

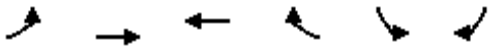
Splits and Phases: 5: Hodge Rd & Poole Rd



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	546	0	957
Future Volume (vph)	0	0	0	546	0	957
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	0	0	1863	0	1611
Flt Permitted						
Satd. Flow (perm)	0	0	0	1863	0	1611
Link Speed (mph)	45			45	45	
Link Distance (ft)	757			241	434	
Travel Time (s)	11.5			3.7	6.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	607	0	1063
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	607	0	1063
Sign Control	Free			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 62.6% ICU Level of Service B
Analysis Period (min) 15



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1606	0	539	0	0
Future Volume (vph)	0	1606	0	539	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.865		
Flt Protected						
Satd. Flow (prot)	0	1863	0	1611	0	0
Flt Permitted						
Satd. Flow (perm)	0	1863	0	1611	0	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		876	277		541	
Travel Time (s)		13.3	4.2		8.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1784	0	599	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1784	0	599	0	0
Sign Control		Free	Free		Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 87.9% ICU Level of Service E
Analysis Period (min) 15

Intersection: 1: Hodge Rd & I-87 SB Ramps/Old Faison Rd

Movement	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	T	R
Maximum Queue (ft)	171	172	933	292	314	101	619	320
Average Queue (ft)	81	89	585	144	160	15	271	169
95th Queue (ft)	147	159	1038	252	277	61	693	390
Link Distance (ft)	170	170	996	1007	1007		1025	
Upstream Blk Time (%)	2	1	11				3	
Queuing Penalty (veh)	4	2	0				0	
Storage Bay Dist (ft)						175		225
Storage Blk Time (%)							4	27
Queuing Penalty (veh)							11	59

Intersection: 2: Hodge Rd & I-87 NB Ramps

Movement	EB	EB	EB	NB	NB	SB	SB
Directions Served	L	L	R	L	T	T	R
Maximum Queue (ft)	89	90	11	246	357	186	142
Average Queue (ft)	35	37	0	151	103	93	14
95th Queue (ft)	73	74	10	242	247	164	92
Link Distance (ft)	198	198	198		689	1007	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				150			125
Storage Blk Time (%)				11	0	2	1
Queuing Penalty (veh)				74	3	6	4

Intersection: 3: Hodge Rd & Panther Rock Blvd/Ellen Dr

Movement	EB	EB	WB	NB	SB	SB
Directions Served	L	TR	LTR	L	L	TR
Maximum Queue (ft)	122	73	40	24	31	9
Average Queue (ft)	54	15	9	2	3	0
95th Queue (ft)	105	48	33	13	18	9
Link Distance (ft)		578	541			689
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	150			150	100	
Storage Blk Time (%)	0	0				0
Queuing Penalty (veh)	0	0				0

Intersection: 4: Hodge Rd & Spectrum Dr

Movement	WB	WB	NB	NB	SB	SB	SB	B21
Directions Served	L	R	T	R	L	L	T	T
Maximum Queue (ft)	53	98	518	166	76	307	730	51
Average Queue (ft)	12	32	159	11	23	81	128	2
95th Queue (ft)	39	75	367	69	59	256	579	34
Link Distance (ft)	624	624	1178				1090	829
Upstream Blk Time (%)							1	
Queuing Penalty (veh)							6	
Storage Bay Dist (ft)				100	300	300		
Storage Blk Time (%)			9				13	
Queuing Penalty (veh)			4				16	

Intersection: 5: Hodge Rd & Poole Rd

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB	B20
Directions Served	L	TR	L	TR	L	TR	L	T	R	T
Maximum Queue (ft)	325	756	271	816	57	136	550	918	589	1165
Average Queue (ft)	296	430	14	783	19	57	507	661	161	466
95th Queue (ft)	378	954	110	805	50	118	659	1257	442	1303
Link Distance (ft)		774		760		901		834	834	1178
Upstream Blk Time (%)		21		55				57		14
Queuing Penalty (veh)		0		0				101		47
Storage Bay Dist (ft)	225		200		50		450			
Storage Blk Time (%)	59	0		44	5	28	80	1		
Queuing Penalty (veh)	67	0		4	3	6	10	1		

Intersection: 101: I-87 SB Off Ramp & I-87 SB On Ramp/I-87 SB Ramps

Movement	NB
Directions Served	R
Maximum Queue (ft)	118
Average Queue (ft)	10
95th Queue (ft)	79
Link Distance (ft)	418
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 201: I-87 NB Off Ramp/I-87 NB Ramps & I-87 NB On Ramp

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 427

Intersection: 1: Hodge Rd & I-87 SB Ramps/Old Faison Rd

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	T
Maximum Queue (ft)	171	188	580	259	709	119	266
Average Queue (ft)	90	151	310	79	373	37	127
95th Queue (ft)	159	205	583	191	705	91	228
Link Distance (ft)	170	170	996	1007	1007		1025
Upstream Blk Time (%)	1	5					
Queuing Penalty (veh)	3	17					
Storage Bay Dist (ft)						175	
Storage Blk Time (%)							4
Queuing Penalty (veh)							6

Intersection: 2: Hodge Rd & I-87 NB Ramps

Movement	EB	EB	EB	NB	NB	SB	SB
Directions Served	L	L	R	L	T	T	R
Maximum Queue (ft)	205	221	224	250	462	628	225
Average Queue (ft)	144	183	196	182	178	336	51
95th Queue (ft)	217	234	264	271	382	568	205
Link Distance (ft)	198	198	198		689	1007	
Upstream Blk Time (%)	2	15	25				
Queuing Penalty (veh)	7	64	104				
Storage Bay Dist (ft)				150			125
Storage Blk Time (%)				24	3	30	
Queuing Penalty (veh)				92	9	23	

Intersection: 3: Hodge Rd & Panther Rock Blvd/Ellen Dr

Movement	EB	EB	WB	NB	SB	SB
Directions Served	L	TR	LTR	L	L	TR
Maximum Queue (ft)	93	46	37	39	33	14
Average Queue (ft)	32	7	10	9	4	0
95th Queue (ft)	83	32	33	31	22	7
Link Distance (ft)		578	541			689
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	150			150	100	
Storage Blk Time (%)	1	0				
Queuing Penalty (veh)	0	0				

Intersection: 4: Hodge Rd & Spectrum Dr

Movement	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	R	T	R	L	L	T
Maximum Queue (ft)	94	225	267	62	27	54	200
Average Queue (ft)	36	103	75	3	1	17	71
95th Queue (ft)	81	188	200	32	13	44	176
Link Distance (ft)	624	624	1178				1090
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				100	300	300	
Storage Blk Time (%)			4				
Queuing Penalty (veh)			1				

Intersection: 5: Hodge Rd & Poole Rd

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB	B20
Directions Served	L	TR	L	TR	L	TR	L	T	R	T
Maximum Queue (ft)	312	457	276	745	35	96	550	820	261	218
Average Queue (ft)	195	191	48	481	6	23	481	313	113	26
95th Queue (ft)	314	408	205	816	25	65	623	889	217	214
Link Distance (ft)		774		760		901		834	834	1178
Upstream Blk Time (%)		0		10				3		
Queuing Penalty (veh)		0		0				19		
Storage Bay Dist (ft)	225		200		50		450			
Storage Blk Time (%)	12	2		60	0	5	25	0		
Queuing Penalty (veh)	34	5		10	0	1	14	1		

Intersection: 101: I-87 SB Off Ramp & I-87 SB On Ramp/I-87 SB Ramps

Movement	NB
Directions Served	R
Maximum Queue (ft)	288
Average Queue (ft)	41
95th Queue (ft)	167
Link Distance (ft)	418
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 201: I-87 NB Off Ramp/I-87 NB Ramps & I-87 NB On Ramp

Movement	EB
Directions Served	T
Maximum Queue (ft)	914
Average Queue (ft)	871
95th Queue (ft)	980
Link Distance (ft)	860
Upstream Blk Time (%)	55
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 411

Intersection: 1: Hodge Rd & I-87 SB Ramps/Old Faison Rd

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	184	186	224	378	390	272	89	44	703	316
Average Queue (ft)	169	92	88	198	193	110	27	11	276	169
95th Queue (ft)	208	209	193	335	331	215	67	35	684	393
Link Distance (ft)	170	170		981	996	996			1025	
Upstream Blk Time (%)	62	4							3	
Queuing Penalty (veh)	149	10							0	
Storage Bay Dist (ft)			125				200	175		225
Storage Blk Time (%)			2	22		2			10	28
Queuing Penalty (veh)			6	30		2			26	70

Intersection: 2: Hodge Rd & I-87 NB Ramps

Movement	EB	EB	EB	EB	NB	NB	B18	SB	SB
Directions Served	L	L	R	R	L	T	T	T	R
Maximum Queue (ft)	120	134	144	117	226	332	448	350	224
Average Queue (ft)	53	57	75	45	202	257	231	134	40
95th Queue (ft)	101	106	127	96	261	398	522	272	171
Link Distance (ft)	194	194	194			227	389	996	
Upstream Blk Time (%)					6	14	3		
Queuing Penalty (veh)					0	233	28		
Storage Bay Dist (ft)				150	150				125
Storage Blk Time (%)			0	0	35	3		10	1
Queuing Penalty (veh)			0	0	319	24		24	7

Intersection: 3: Hodge Rd & Panther Rock Blvd/Ellen Dr

Movement	EB	EB	WB	NB	NB	NB	B21	SB	SB	SB	SB
Directions Served	L	TR	LTR	L	T	TR	T	L	T	T	R
Maximum Queue (ft)	250	572	54	249	934	853	1100	50	249	188	48
Average Queue (ft)	223	279	11	30	867	788	764	6	120	64	7
95th Queue (ft)	294	652	38	154	1045	999	1439	32	212	147	30
Link Distance (ft)		561	530		828	828	1089		389	389	
Upstream Blk Time (%)		11			34	22	3				
Queuing Penalty (veh)		0			216	140	42				
Storage Bay Dist (ft)	150			150				100			200
Storage Blk Time (%)	54	0			56				11	0	
Queuing Penalty (veh)	16	0			8				1	0	

Intersection: 4: Hodge Rd & Harding Hill Ln/Spectrum Dr

Movement	EB	EB	WB	WB	NB	NB	NB	B20	SB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	T	L	L	T	R
Maximum Queue (ft)	149	46	57	120	91	1285	200	851	118	137	218	18
Average Queue (ft)	58	11	11	41	3	951	62	432	47	71	75	2
95th Queue (ft)	121	34	38	93	42	1605	206	1093	99	124	167	11
Link Distance (ft)	652	652	624	624		1174		834			1089	1089
Upstream Blk Time (%)						36		6				
Queuing Penalty (veh)						434		69				
Storage Bay Dist (ft)					100		100		300	300		
Storage Blk Time (%)						44	0				0	
Queuing Penalty (veh)						30	0				0	

Intersection: 5: Hodge Rd & Poole Rd

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	T	R
Maximum Queue (ft)	325	778	91	816	300	78	159	226	50	207
Average Queue (ft)	270	329	8	733	296	20	75	100	9	63
95th Queue (ft)	382	855	59	970	331	56	142	186	33	143
Link Distance (ft)		774		760			901		834	834
Upstream Blk Time (%)		18		45						
Queuing Penalty (veh)		0		0						
Storage Bay Dist (ft)	225		200		200	50		450		
Storage Blk Time (%)	43	0		31	45	6	48			
Queuing Penalty (veh)	49	0		245	204	4	10			

Intersection: 101: I-87 SB Off Ramp & I-87 SB On Ramp/I-87 SB Ramps

Movement	NB
Directions Served	R
Maximum Queue (ft)	461
Average Queue (ft)	342
95th Queue (ft)	611
Link Distance (ft)	418
Upstream Blk Time (%)	54
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 201: I-87 NB Off Ramp/I-87 NB Ramps & I-87 NB On Ramp

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 2394

Intersection: 1: Hodge Rd & I-87 SB Ramps/Old Faison Rd

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	184	191	126	193	188	292	166	274	946	325
Average Queue (ft)	153	160	55	85	67	67	55	92	401	104
95th Queue (ft)	216	242	106	162	141	201	131	273	912	353
Link Distance (ft)	170	170		981	996	996			1025	
Upstream Blk Time (%)	37	25				0			8	
Queuing Penalty (veh)	155	104				0			0	
Storage Bay Dist (ft)			125				200	175		225
Storage Blk Time (%)			1	5		0	0		48	
Queuing Penalty (veh)			1	4		2	0		68	

Intersection: 2: Hodge Rd & I-87 NB Ramps

Movement	EB	EB	EB	EB	NB	NB	B18	B18	SB	SB
Directions Served	L	L	R	R	L	T	T		T	R
Maximum Queue (ft)	202	216	232	194	226	328	460	122	1017	225
Average Queue (ft)	148	198	186	173	221	299	368	12	790	53
95th Queue (ft)	215	221	240	215	241	331	551	120	1210	210
Link Distance (ft)	194	194	194			227	389	389	996	
Upstream Blk Time (%)	2	30	12	5	21	47	25	0	3	
Queuing Penalty (veh)	10	144	57	0	0	436	118	1	27	
Storage Bay Dist (ft)				150	150					125
Storage Blk Time (%)			22	23	57	16			45	
Queuing Penalty (veh)			83	86	312	63			35	

Intersection: 3: Hodge Rd & Panther Rock Blvd/Ellen Dr

Movement	EB	EB	WB	NB	NB	NB	B21	SB	SB	SB	SB	B18
Directions Served	L	TR	LTR	L	T	TR	T	L	T	T	R	T
Maximum Queue (ft)	250	510	50	250	857	766	804	104	381	348	207	4
Average Queue (ft)	194	178	11	97	575	486	314	8	159	99	31	0
95th Queue (ft)	290	535	37	275	1115	1050	1050	49	292	239	119	3
Link Distance (ft)		561	530		828	828	1089		389	389		227
Upstream Blk Time (%)		6			24	13	3		0	0		
Queuing Penalty (veh)		0			91	48	22		2	1		
Storage Bay Dist (ft)	150			150				100			200	
Storage Blk Time (%)	50	0		0	60				15	1		
Queuing Penalty (veh)	7	0		0	21				2	4		

Intersection: 3: Hodge Rd & Panther Rock Blvd/Ellen Dr

Movement	B18
Directions Served	T
Maximum Queue (ft)	2
Average Queue (ft)	0
95th Queue (ft)	2
Link Distance (ft)	227
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Hodge Rd & Harding Hill Ln/Spectrum Dr

Movement	EB	EB	WB	WB	NB	NB	NB	B20	SB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	T	L	L	T	R
Maximum Queue (ft)	148	37	126	400	155	583	164	8	47	106	460	30
Average Queue (ft)	49	8	44	165	23	212	17	0	7	29	104	2
95th Queue (ft)	125	26	94	331	97	505	97	8	30	78	318	14
Link Distance (ft)	652	652	624	624		1174		834			1089	1089
Upstream Blk Time (%)						0						
Queuing Penalty (veh)						1						
Storage Bay Dist (ft)					100		100		300	300		
Storage Blk Time (%)						19					1	
Queuing Penalty (veh)						8					1	

Intersection: 5: Hodge Rd & Poole Rd

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	T	R
Maximum Queue (ft)	304	356	84	321	238	73	119	550	708	234
Average Queue (ft)	188	175	15	142	77	14	51	418	132	80
95th Queue (ft)	296	304	54	273	178	45	100	603	540	180
Link Distance (ft)		774		760			901		834	834
Upstream Blk Time (%)									0	
Queuing Penalty (veh)									0	
Storage Bay Dist (ft)	225		200		200	50		450		
Storage Blk Time (%)	6	2		6	0	2	28	10		
Queuing Penalty (veh)	17	7		14	0	1	3	6		

Intersection: 101: I-87 SB Off Ramp & I-87 SB On Ramp/I-87 SB Ramps

Movement	NB
Directions Served	R
Maximum Queue (ft)	466
Average Queue (ft)	424
95th Queue (ft)	517
Link Distance (ft)	418
Upstream Blk Time (%)	67
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 201: I-87 NB Off Ramp/I-87 NB Ramps & I-87 NB On Ramp

Movement	EB
Directions Served	T
Maximum Queue (ft)	909
Average Queue (ft)	880
95th Queue (ft)	900
Link Distance (ft)	860
Upstream Blk Time (%)	57
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 1963

Intersection: 1: Hodge Rd & I-87 SB Ramps/Old Faison Rd

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	184	185	224	402	395	270	134	133	737	325
Average Queue (ft)	167	86	102	205	204	103	31	17	285	167
95th Queue (ft)	211	191	211	352	347	209	87	82	674	394
Link Distance (ft)	170	170		981	996	996			1025	
Upstream Blk Time (%)	55	3							2	
Queuing Penalty (veh)	136	6							0	
Storage Bay Dist (ft)			125				200	175		225
Storage Blk Time (%)			4	23		2			12	29
Queuing Penalty (veh)			15	31		2			34	72

Intersection: 2: Hodge Rd & I-87 NB Ramps

Movement	EB	EB	EB	EB	NB	NB	B18	SB	SB
Directions Served	L	L	R	R	L	T	T	T	R
Maximum Queue (ft)	132	128	150	124	226	328	436	362	225
Average Queue (ft)	53	54	84	54	205	257	220	147	43
95th Queue (ft)	102	103	136	108	253	389	505	288	180
Link Distance (ft)	194	194	194			227	389	996	
Upstream Blk Time (%)	0				7	13	3		
Queuing Penalty (veh)	0				0	217	25		
Storage Bay Dist (ft)				150	150				125
Storage Blk Time (%)			0	0	36	3		11	2
Queuing Penalty (veh)			0	0	327	21		25	9

Intersection: 3: Hodge Rd & Panther Rock Blvd/Ellen Dr

Movement	EB	EB	WB	NB	NB	NB	B21	SB	SB	SB	SB
Directions Served	L	TR	LTR	L	T	TR	T	L	T	T	R
Maximum Queue (ft)	250	563	54	227	935	849	1101	73	257	184	54
Average Queue (ft)	221	255	10	38	858	780	759	9	123	62	9
95th Queue (ft)	294	610	36	177	1071	1009	1424	50	221	147	35
Link Distance (ft)		561	530		828	828	1089		389	389	
Upstream Blk Time (%)		8			32	21	3				
Queuing Penalty (veh)		0			207	133	33				
Storage Bay Dist (ft)	150			150				100			200
Storage Blk Time (%)	51	0			54				11	0	
Queuing Penalty (veh)	13	0			8				1	0	

Intersection: 4: Hodge Rd & Harding Hill Ln/Spectrum Dr

Movement	EB	EB	WB	WB	NB	NB	NB	B20	SB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	T	L	L	T	R
Maximum Queue (ft)	147	46	62	131	148	1285	200	850	143	168	177	14
Average Queue (ft)	57	11	16	51	10	1019	72	431	60	87	74	1
95th Queue (ft)	123	35	46	106	74	1559	220	1084	121	147	153	8
Link Distance (ft)	652	652	624	624		1174		834			1089	1089
Upstream Blk Time (%)						35		5				
Queuing Penalty (veh)						420		61				
Storage Bay Dist (ft)					100		100		300	300		
Storage Blk Time (%)						44	0					
Queuing Penalty (veh)						34	0					

Intersection: 5: Hodge Rd & Poole Rd

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	T	R
Maximum Queue (ft)	325	742	167	813	300	88	165	224	46	180
Average Queue (ft)	270	312	10	771	298	20	74	94	7	63
95th Queue (ft)	375	819	74	897	328	59	139	181	29	143
Link Distance (ft)		774		760			901		834	834
Upstream Blk Time (%)		13		49						
Queuing Penalty (veh)		0		0						
Storage Bay Dist (ft)	225		200		200	50		450		
Storage Blk Time (%)	42	0		35	41	6	46			
Queuing Penalty (veh)	48	0		278	186	4	10			

Intersection: 101: I-87 SB Off Ramp & I-87 SB On Ramp/I-87 SB Ramps

Movement	NB
Directions Served	R
Maximum Queue (ft)	450
Average Queue (ft)	298
95th Queue (ft)	587
Link Distance (ft)	418
Upstream Blk Time (%)	41
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 201: I-87 NB Off Ramp/I-87 NB Ramps & I-87 NB On Ramp

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 2357

Intersection: 1: Hodge Rd & I-87 SB Ramps/Old Faison Rd

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	183	193	139	212	168	183	148	254	837	325
Average Queue (ft)	155	164	59	82	70	56	55	88	397	118
95th Queue (ft)	216	236	130	174	137	143	125	263	845	376
Link Distance (ft)	170	170		981	996	996			1025	
Upstream Blk Time (%)	38	24							4	
Queuing Penalty (veh)	161	103							0	
Storage Bay Dist (ft)			125				200	175		225
Storage Blk Time (%)			4	5		0	0		51	0
Queuing Penalty (veh)			6	3		1	0		73	0

Intersection: 2: Hodge Rd & I-87 NB Ramps

Movement	EB	EB	EB	EB	NB	NB	B18	B18	SB	SB
Directions Served	L	L	R	R	L	T	T		T	R
Maximum Queue (ft)	206	227	237	194	226	331	459	78	1019	225
Average Queue (ft)	157	199	187	171	222	304	397	9	851	61
95th Queue (ft)	221	222	242	216	235	323	478	106	1204	225
Link Distance (ft)	194	194	194			227	389	389	996	
Upstream Blk Time (%)	3	30	12	4	26	49	28	0	3	
Queuing Penalty (veh)	14	142	57	0	0	477	134	1	30	
Storage Bay Dist (ft)				150	150					125
Storage Blk Time (%)			19	21	60	17			46	
Queuing Penalty (veh)			74	78	340	67			36	

Intersection: 3: Hodge Rd & Panther Rock Blvd/Ellen Dr

Movement	EB	EB	WB	NB	NB	NB	B21	SB	SB	SB	SB	B18
Directions Served	L	TR	LTR	L	T	TR	T	L	T	T	R	T
Maximum Queue (ft)	249	487	52	250	926	847	1012	71	360	332	236	19
Average Queue (ft)	196	193	11	99	694	613	410	7	152	95	37	1
95th Queue (ft)	292	553	37	284	1155	1103	1174	41	286	228	126	13
Link Distance (ft)		561	530		828	828	1089		389	389		227
Upstream Blk Time (%)		9			31	16	4		1	0		
Queuing Penalty (veh)		0			124	61	32		4	2		
Storage Bay Dist (ft)	150			150				100			200	
Storage Blk Time (%)	51	0			70				14	1	0	
Queuing Penalty (veh)	9	0			25				1	6	1	

Intersection: 3: Hodge Rd & Panther Rock Blvd/Ellen Dr

Movement	B18
Directions Served	T
Maximum Queue (ft)	14
Average Queue (ft)	0
95th Queue (ft)	10
Link Distance (ft)	227
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Hodge Rd & Harding Hill Ln/Spectrum Dr

Movement	EB	EB	WB	WB	NB	NB	NB	B20	SB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	T	L	L	T	R
Maximum Queue (ft)	185	58	188	420	183	664	172	85	59	148	405	28
Average Queue (ft)	65	17	54	213	28	286	30	19	12	35	94	1
95th Queue (ft)	172	48	162	422	114	756	133	197	41	106	283	14
Link Distance (ft)	652	652	624	624		1174		834			1089	1089
Upstream Blk Time (%)			0	2		3		0				
Queuing Penalty (veh)			0	0		17		0				
Storage Bay Dist (ft)					100		100		300	300		
Storage Blk Time (%)						25					1	
Queuing Penalty (veh)						10					1	

Intersection: 5: Hodge Rd & Poole Rd

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	T	R
Maximum Queue (ft)	324	501	136	349	222	73	124	550	746	227
Average Queue (ft)	204	194	22	157	80	13	50	429	148	76
95th Queue (ft)	325	384	90	307	190	46	103	612	582	180
Link Distance (ft)		774		760			901		834	834
Upstream Blk Time (%)		0							0	
Queuing Penalty (veh)		0							1	
Storage Bay Dist (ft)	225		200		200	50		450		
Storage Blk Time (%)	9	3		9	0	3	26	11		
Queuing Penalty (veh)	27	8		21	0	1	3	7		

Intersection: 101: I-87 SB Off Ramp & I-87 SB On Ramp/I-87 SB Ramps

Movement	NB
Directions Served	R
Maximum Queue (ft)	470
Average Queue (ft)	417
95th Queue (ft)	542
Link Distance (ft)	418
Upstream Blk Time (%)	64
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 201: I-87 NB Off Ramp/I-87 NB Ramps & I-87 NB On Ramp

Movement	EB
Directions Served	T
Maximum Queue (ft)	912
Average Queue (ft)	880
95th Queue (ft)	901
Link Distance (ft)	860
Upstream Blk Time (%)	57
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 2160

Intersection: 1: Hodge Rd & I-87 SB Ramps/Old Faison Rd

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	184	187	225	603	541	478	296	187	729	325
Average Queue (ft)	173	99	110	259	275	198	69	25	305	162
95th Queue (ft)	203	218	230	496	479	387	211	107	661	382
Link Distance (ft)	170	170		981	996	996			1025	
Upstream Blk Time (%)	65	4		0					2	
Queuing Penalty (veh)	175	10		0					0	
Storage Bay Dist (ft)			125				200	175		225
Storage Blk Time (%)			4	32		12			25	15
Queuing Penalty (veh)			17	48		14			77	40

Intersection: 2: Hodge Rd & I-87 NB Ramps

Movement	EB	EB	EB	EB	NB	NB	B18	B18	SB	SB
Directions Served	L	L	R	R	L	T	T		T	R
Maximum Queue (ft)	155	152	181	158	226	329	458	118	481	225
Average Queue (ft)	74	70	94	66	210	259	254	5	169	48
95th Queue (ft)	137	130	160	133	251	391	552	79	362	192
Link Distance (ft)	194	194	194			227	389	389	996	
Upstream Blk Time (%)		0	0	0	9	17	6	0		
Queuing Penalty (veh)		0	0	0	0	316	58	1		
Storage Bay Dist (ft)				150	150					125
Storage Blk Time (%)			1	0	42	6			13	3
Queuing Penalty (veh)			1	0	429	50			33	15

Intersection: 3: Hodge Rd & Panther Rock Blvd/Ellen Dr

Movement	EB	EB	WB	NB	NB	NB	B21	SB	SB	SB	SB
Directions Served	L	TR	LTR	L	T	TR	T	L	T	T	R
Maximum Queue (ft)	250	596	56	250	932	846	1104	85	283	230	47
Average Queue (ft)	243	406	13	37	897	820	985	10	143	86	7
95th Queue (ft)	270	705	41	177	965	910	1437	48	265	197	32
Link Distance (ft)		561	530		828	828	1089		389	389	
Upstream Blk Time (%)		17			43	21	11				
Queuing Penalty (veh)		0			311	152	155				
Storage Bay Dist (ft)	150			150				100			200
Storage Blk Time (%)	60	0			62				19	0	
Queuing Penalty (veh)	17	0			10				1	0	

Intersection: 4: Hodge Rd & Harding Hill Ln/Spectrum Dr

Movement	EB	EB	WB	WB	NB	NB	NB	B20	SB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	T	L	L	T	R
Maximum Queue (ft)	217	60	58	133	131	1287	200	856	186	202	208	15
Average Queue (ft)	88	16	14	54	7	1102	60	652	89	112	71	1
95th Queue (ft)	177	46	42	108	59	1662	208	1216	179	197	167	8
Link Distance (ft)	652	652	624	624		1174		834			1089	1089
Upstream Blk Time (%)						54		18				
Queuing Penalty (veh)						722		243				
Storage Bay Dist (ft)					100		100		300	300		
Storage Blk Time (%)						56			0	0	0	
Queuing Penalty (veh)						44			0	0	0	

Intersection: 5: Hodge Rd & Poole Rd

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	T	R
Maximum Queue (ft)	325	822	165	808	300	106	198	259	40	203
Average Queue (ft)	318	686	11	782	299	28	92	130	8	79
95th Queue (ft)	355	1028	81	799	315	81	179	241	30	172
Link Distance (ft)		774		760			901		834	834
Upstream Blk Time (%)		61		59						
Queuing Penalty (veh)		0		0						
Storage Bay Dist (ft)	225		200		200	50		450		
Storage Blk Time (%)	80	0		35	48	9	55			
Queuing Penalty (veh)	103	0		300	244	7	13			

Intersection: 101: I-87 SB Off Ramp & I-87 SB On Ramp/I-87 SB Ramps

Movement	NB
Directions Served	R
Maximum Queue (ft)	474
Average Queue (ft)	380
95th Queue (ft)	594
Link Distance (ft)	418
Upstream Blk Time (%)	63
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 201: I-87 NB Off Ramp/I-87 NB Ramps & I-87 NB On Ramp

Movement	EB
Directions Served	T
Maximum Queue (ft)	26
Average Queue (ft)	1
95th Queue (ft)	21
Link Distance (ft)	860
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 3608

Intersection: 1: Hodge Rd & I-87 SB Ramps/Old Faison Rd

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	183	197	225	870	255	455	287	275	987	325
Average Queue (ft)	137	178	153	418	100	157	85	110	663	164
95th Queue (ft)	213	208	273	1009	203	331	205	300	1223	432
Link Distance (ft)	170	170		981	996	996			1025	
Upstream Blk Time (%)	15	41		17					24	
Queuing Penalty (veh)	71	193		0					0	
Storage Bay Dist (ft)			125				200	175		225
Storage Blk Time (%)			55	18		5	0	0	69	
Queuing Penalty (veh)			98	14		21	1	0	108	

Intersection: 2: Hodge Rd & I-87 NB Ramps

Movement	EB	EB	EB	EB	NB	NB	B18	B18	SB	SB
Directions Served	L	L	R	R	L	T	T		T	R
Maximum Queue (ft)	211	216	214	193	226	325	468	233	1023	224
Average Queue (ft)	133	198	107	104	218	301	415	14	966	50
95th Queue (ft)	223	215	207	202	238	314	471	134	1151	203
Link Distance (ft)	194	194	194			227	389	389	996	
Upstream Blk Time (%)	6	50	4	2	21	50	36	1	12	
Queuing Penalty (veh)	31	267	21	0	0	532	189	4	146	
Storage Bay Dist (ft)				150	150					125
Storage Blk Time (%)			9	11	68	4			45	
Queuing Penalty (veh)			37	45	417	19			38	

Intersection: 3: Hodge Rd & Panther Rock Blvd/Ellen Dr

Movement	EB	EB	WB	NB	NB	NB	B21	SB	SB	SB	SB
Directions Served	L	TR	LTR	L	T	TR	T	L	T	T	R
Maximum Queue (ft)	250	512	52	250	932	844	1106	71	348	263	89
Average Queue (ft)	205	187	12	92	836	761	796	9	169	97	24
95th Queue (ft)	288	513	40	276	1114	1050	1541	43	299	215	65
Link Distance (ft)		561	530		828	828	1089		389	389	
Upstream Blk Time (%)		2			52	22	21		0		
Queuing Penalty (veh)		0			219	92	178		0		
Storage Bay Dist (ft)	150			150				100			200
Storage Blk Time (%)	43	0		0	76				14	0	
Queuing Penalty (veh)	9	0		0	32				2	2	

Intersection: 4: Hodge Rd & Harding Hill Ln/Spectrum Dr

Movement	EB	EB	WB	WB	NB	NB	NB	B20	SB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	T	L	L	T	R
Maximum Queue (ft)	583	194	641	652	200	1114	200	343	44	172	490	21
Average Queue (ft)	235	35	224	435	61	594	61	115	11	35	71	2
95th Queue (ft)	561	150	654	791	196	1298	209	553	35	104	273	12
Link Distance (ft)	652	652	624	624		1174		834			1089	1089
Upstream Blk Time (%)	3	0	16	46		17		2				
Queuing Penalty (veh)	0	0	0	0		104		11				
Storage Bay Dist (ft)					100		100		300	300		
Storage Blk Time (%)					0	61					1	
Queuing Penalty (veh)					1	29					1	

Intersection: 5: Hodge Rd & Poole Rd

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB	B20
Directions Served	L	TR	L	T	R	L	TR	L	T	R	T
Maximum Queue (ft)	325	666	62	338	256	62	134	550	816	344	89
Average Queue (ft)	238	291	17	159	76	14	59	451	246	101	3
95th Queue (ft)	379	596	50	278	179	46	116	642	767	259	46
Link Distance (ft)		774		760			901		834	834	1174
Upstream Blk Time (%)		3							1		
Queuing Penalty (veh)		0							6		
Storage Bay Dist (ft)	225		200		200	50		450			
Storage Blk Time (%)	20	8		8	1	4	38	17	0		
Queuing Penalty (veh)	66	28		22	1	2	5	11	3		

Intersection: 101: I-87 SB Off Ramp & I-87 SB On Ramp/I-87 SB Ramps

Movement	NB
Directions Served	R
Maximum Queue (ft)	462
Average Queue (ft)	437
95th Queue (ft)	451
Link Distance (ft)	418
Upstream Blk Time (%)	66
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 201: I-87 NB Off Ramp/I-87 NB Ramps & I-87 NB On Ramp

Movement	EB
Directions Served	T
Maximum Queue (ft)	912
Average Queue (ft)	880
95th Queue (ft)	898
Link Distance (ft)	860
Upstream Blk Time (%)	62
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 3078

Intersection: 1: Hodge Rd & I-87 SB Ramps/Old Faison Rd

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	185	187	224	668	580	426	275	230	757	325
Average Queue (ft)	174	93	122	269	273	193	61	28	406	189
95th Queue (ft)	194	213	240	528	484	377	193	128	909	416
Link Distance (ft)	170	170		981	996	996			1025	
Upstream Blk Time (%)	68	3		0					11	
Queuing Penalty (veh)	185	9		0					0	
Storage Bay Dist (ft)			125				200	175		225
Storage Blk Time (%)			7	32		11			28	24
Queuing Penalty (veh)			28	48		13			85	68

Intersection: 2: Hodge Rd & I-87 NB Ramps

Movement	EB	EB	EB	EB	NB	NB	B18	B18	SB	SB
Directions Served	L	L	R	R	L	T	T		T	R
Maximum Queue (ft)	130	151	187	174	226	336	463	126	459	225
Average Queue (ft)	64	71	96	69	205	256	250	8	166	51
95th Queue (ft)	117	129	167	147	260	396	558	103	359	197
Link Distance (ft)	194	194	194			227	389	389	996	
Upstream Blk Time (%)		0	0	0	9	17	7	0		
Queuing Penalty (veh)		0	1	0	0	322	67	2		
Storage Bay Dist (ft)				150	150					125
Storage Blk Time (%)			2	0	41	4			12	2
Queuing Penalty (veh)			2	0	418	32			31	11

Intersection: 3: Hodge Rd & Panther Rock Blvd/Ellen Dr

Movement	EB	EB	WB	NB	NB	NB	B21	SB	SB	SB	SB
Directions Served	L	TR	LTR	L	T	TR	T	L	T	T	R
Maximum Queue (ft)	250	597	52	249	939	854	1103	119	320	265	66
Average Queue (ft)	242	398	12	35	899	824	985	10	155	90	9
95th Queue (ft)	273	692	41	172	955	888	1445	55	279	205	39
Link Distance (ft)		561	530		828	828	1089		389	389	
Upstream Blk Time (%)		15			44	23	12		0	0	
Queuing Penalty (veh)		0			320	168	166		0	0	
Storage Bay Dist (ft)	150			150				100			200
Storage Blk Time (%)	59	0			61				20	0	
Queuing Penalty (veh)	17	0			10				1	1	

Intersection: 4: Hodge Rd & Harding Hill Ln/Spectrum Dr

Movement	EB	EB	WB	WB	NB	NB	NB	B20	SB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	T	L	L	T	R
Maximum Queue (ft)	283	69	70	165	125	1288	200	857	272	292	301	16
Average Queue (ft)	126	16	20	67	8	1100	74	630	140	162	80	1
95th Queue (ft)	257	47	53	136	67	1649	230	1213	267	284	261	8
Link Distance (ft)	652	652	624	624		1174		834			1089	1089
Upstream Blk Time (%)						54		18				
Queuing Penalty (veh)						729		245				
Storage Bay Dist (ft)					100		100		300	300		
Storage Blk Time (%)						58			1	3		
Queuing Penalty (veh)						50			6	10		

Intersection: 5: Hodge Rd & Poole Rd

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	T	R
Maximum Queue (ft)	325	820	89	816	300	142	254	288	54	190
Average Queue (ft)	314	644	9	781	299	33	106	132	9	75
95th Queue (ft)	363	1049	67	809	318	105	217	240	36	158
Link Distance (ft)		774		760			901		834	834
Upstream Blk Time (%)		58		57						
Queuing Penalty (veh)		0		0						
Storage Bay Dist (ft)	225		200		200	50		450		
Storage Blk Time (%)	75	0		35	45	9	57	0		
Queuing Penalty (veh)	97	0		309	227	7	13	0		

Intersection: 101: I-87 SB Off Ramp & I-87 SB On Ramp/I-87 SB Ramps

Movement	NB
Directions Served	R
Maximum Queue (ft)	456
Average Queue (ft)	394
95th Queue (ft)	575
Link Distance (ft)	418
Upstream Blk Time (%)	66
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 201: I-87 NB Off Ramp/I-87 NB Ramps & I-87 NB On Ramp

Movement	EB
Directions Served	T
Maximum Queue (ft)	44
Average Queue (ft)	1
95th Queue (ft)	23
Link Distance (ft)	860
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 3700

Intersection: 1: Hodge Rd & I-87 SB Ramps/Old Faison Rd

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	184	192	224	770	257	472	285	275	1068	325
Average Queue (ft)	140	180	155	354	104	166	90	125	726	198
95th Queue (ft)	213	199	270	896	209	351	202	320	1240	459
Link Distance (ft)	170	170		981	996	996			1025	
Upstream Blk Time (%)	16	41		11					25	
Queuing Penalty (veh)	76	196		0					0	
Storage Bay Dist (ft)			125				200	175		225
Storage Blk Time (%)			53	18		5	0		76	
Queuing Penalty (veh)			94	14		22	2		118	

Intersection: 2: Hodge Rd & I-87 NB Ramps

Movement	EB	EB	EB	EB	NB	NB	B18	B18	SB	SB
Directions Served	L	L	R	R	L	T	T		T	R
Maximum Queue (ft)	204	219	209	193	226	335	473	364	1023	225
Average Queue (ft)	134	200	103	100	220	303	411	34	970	42
95th Queue (ft)	223	217	199	194	237	319	483	215	1156	187
Link Distance (ft)	194	194	194			227	389	389	996	
Upstream Blk Time (%)	7	52	3	1	24	51	36	1	13	
Queuing Penalty (veh)	36	279	14	0	0	555	198	8	157	
Storage Bay Dist (ft)				150	150					125
Storage Blk Time (%)			9	8	68	5			45	
Queuing Penalty (veh)			38	36	432	22			38	

Intersection: 3: Hodge Rd & Panther Rock Blvd/Ellen Dr

Movement	EB	EB	WB	NB	NB	NB	B21	SB	SB	SB	SB	B18
Directions Served	L	TR	LTR	L	T	TR	T	L	T	T	R	T
Maximum Queue (ft)	250	475	56	250	926	849	1108	109	353	282	142	4
Average Queue (ft)	206	153	11	97	846	773	846	11	167	98	25	0
95th Queue (ft)	283	461	39	285	1112	1045	1543	54	289	221	82	4
Link Distance (ft)		561	530		828	828	1089		389	389		227
Upstream Blk Time (%)		3			56	22	24		0	0		
Queuing Penalty (veh)		0			244	98	208		1	1		
Storage Bay Dist (ft)	150			150				100			200	
Storage Blk Time (%)	37	0			77				14	1		
Queuing Penalty (veh)	8	0			32				2	3		

Intersection: 3: Hodge Rd & Panther Rock Blvd/Ellen Dr

Movement	B18
Directions Served	T
Maximum Queue (ft)	4
Average Queue (ft)	0
95th Queue (ft)	4
Link Distance (ft)	227
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Hodge Rd & Harding Hill Ln/Spectrum Dr

Movement	EB	EB	WB	WB	NB	NB	NB	B20	SB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	T	L	L	T	R
Maximum Queue (ft)	602	149	644	652	200	1226	200	451	72	171	640	28
Average Queue (ft)	255	28	230	474	64	689	43	135	15	40	82	2
95th Queue (ft)	579	101	666	799	204	1448	174	602	49	112	386	16
Link Distance (ft)	652	652	624	624		1174		834			1089	1089
Upstream Blk Time (%)	5	0	19	53		22		3			0	
Queuing Penalty (veh)	0	0	0	0		137		20			0	
Storage Bay Dist (ft)					100		100		300	300		
Storage Blk Time (%)					0	65					2	
Queuing Penalty (veh)					0	32					1	

Intersection: 5: Hodge Rd & Poole Rd

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB	B20
Directions Served	L	TR	L	T	R	L	TR	L	T	R	T
Maximum Queue (ft)	325	656	94	377	285	73	147	550	838	387	150
Average Queue (ft)	231	282	16	172	86	16	65	447	271	97	9
95th Queue (ft)	368	608	58	306	203	52	133	655	803	259	110
Link Distance (ft)		774		760			901		834	834	1174
Upstream Blk Time (%)		3							1		
Queuing Penalty (veh)		0							9		
Storage Bay Dist (ft)	225		200		200	50		450			
Storage Blk Time (%)	20	8		9	1	4	41	18	0		
Queuing Penalty (veh)	65	28		25	2	2	5	12	3		

Intersection: 101: I-87 SB Off Ramp & I-87 SB On Ramp/I-87 SB Ramps

Movement	NB
Directions Served	R
Maximum Queue (ft)	470
Average Queue (ft)	437
95th Queue (ft)	453
Link Distance (ft)	418
Upstream Blk Time (%)	67
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 201: I-87 NB Off Ramp/I-87 NB Ramps & I-87 NB On Ramp

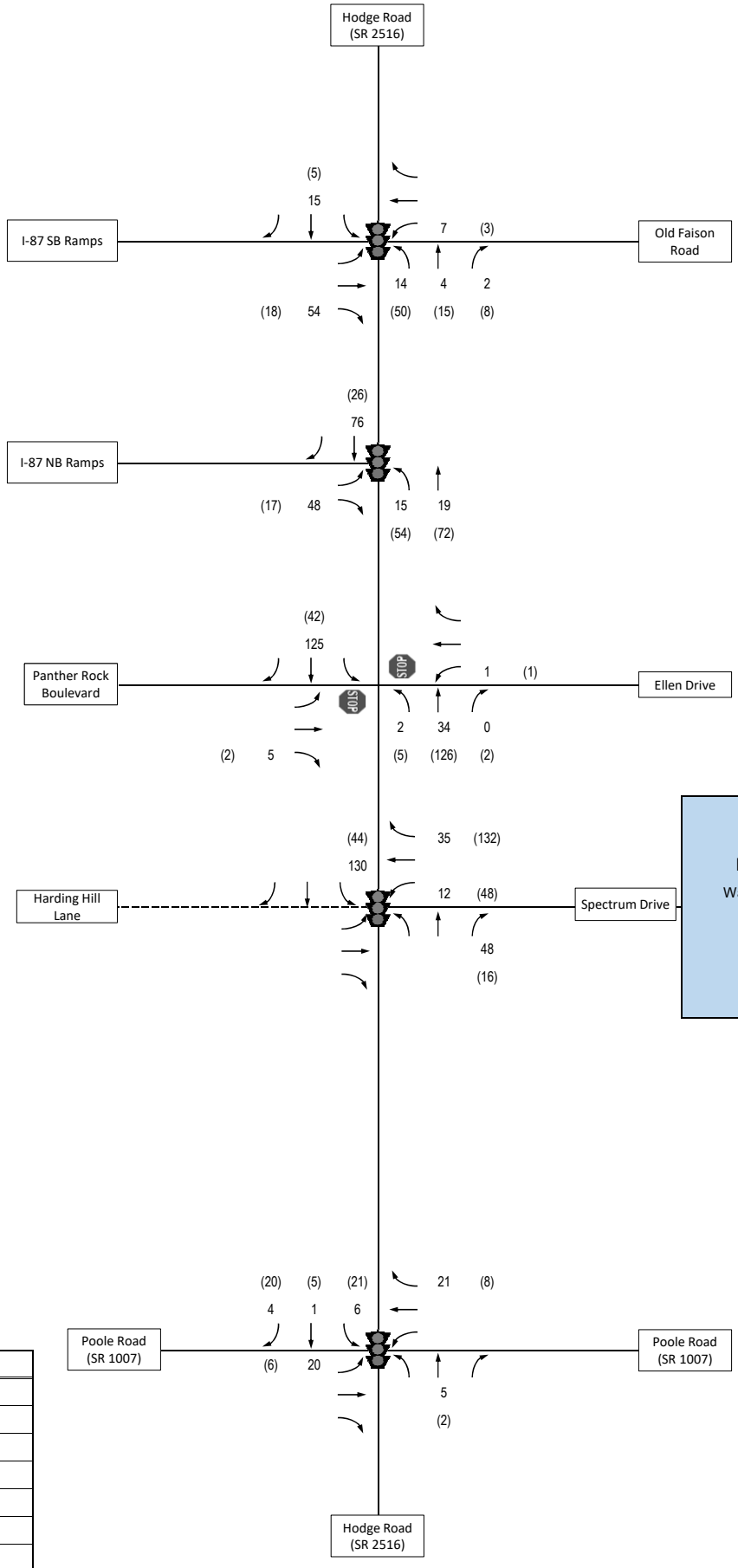
Movement	EB
Directions Served	T
Maximum Queue (ft)	906
Average Queue (ft)	878
95th Queue (ft)	892
Link Distance (ft)	860
Upstream Blk Time (%)	63
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 3275

APPENDIX D:

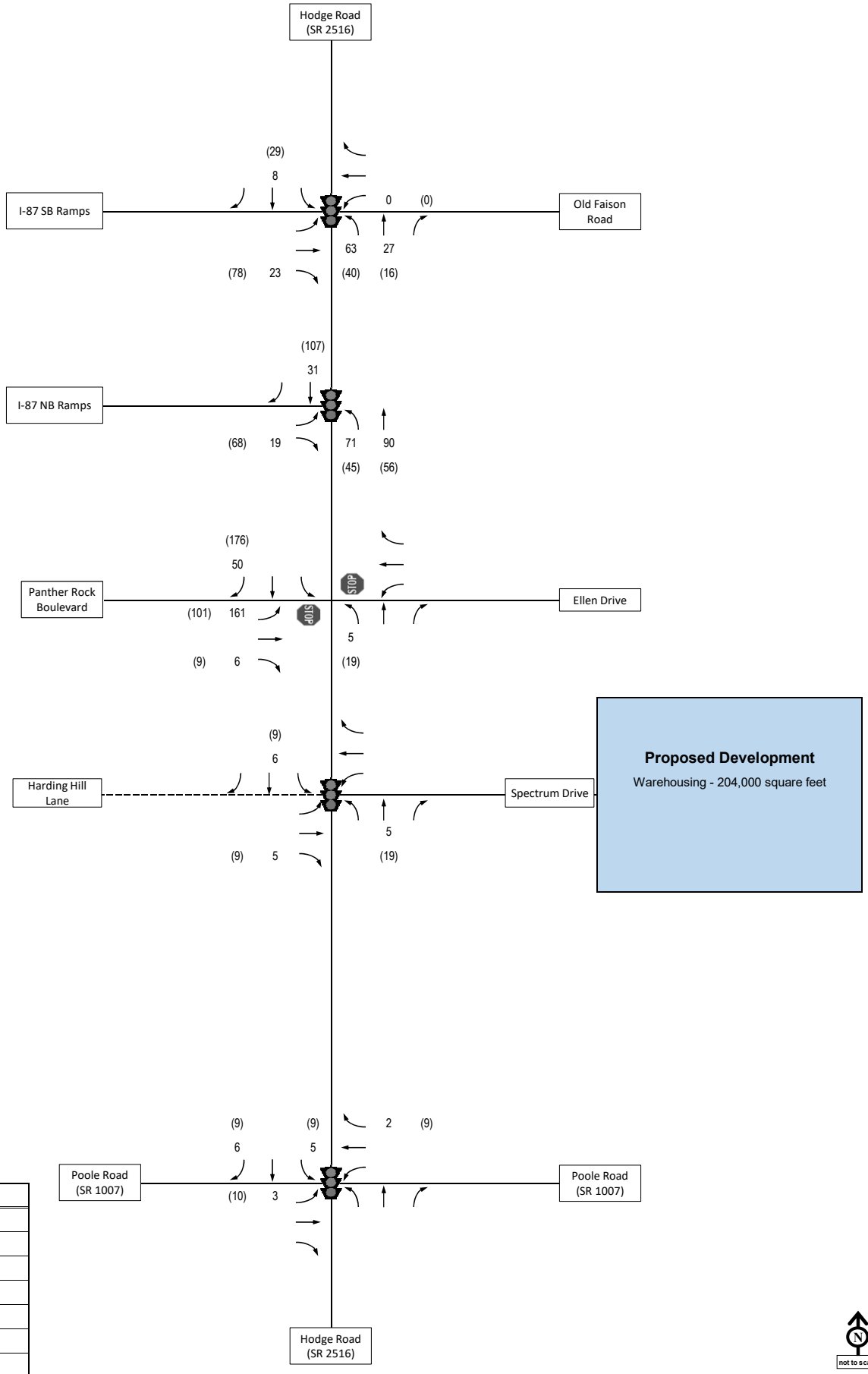
Background Projects



LEGEND	
→	Turning Movement
—	Existing Roadway
- -	Future Roadway
	Existing Signalized Intersection
STOP	Existing Stop Controlled Approach
XX	AM Peak Hour Turning Movement Volume
(XX)	PM Peak Hour Turning Movement Volume

Figure D-1
Site Trips from Hodge Industrial
2021 (75%)

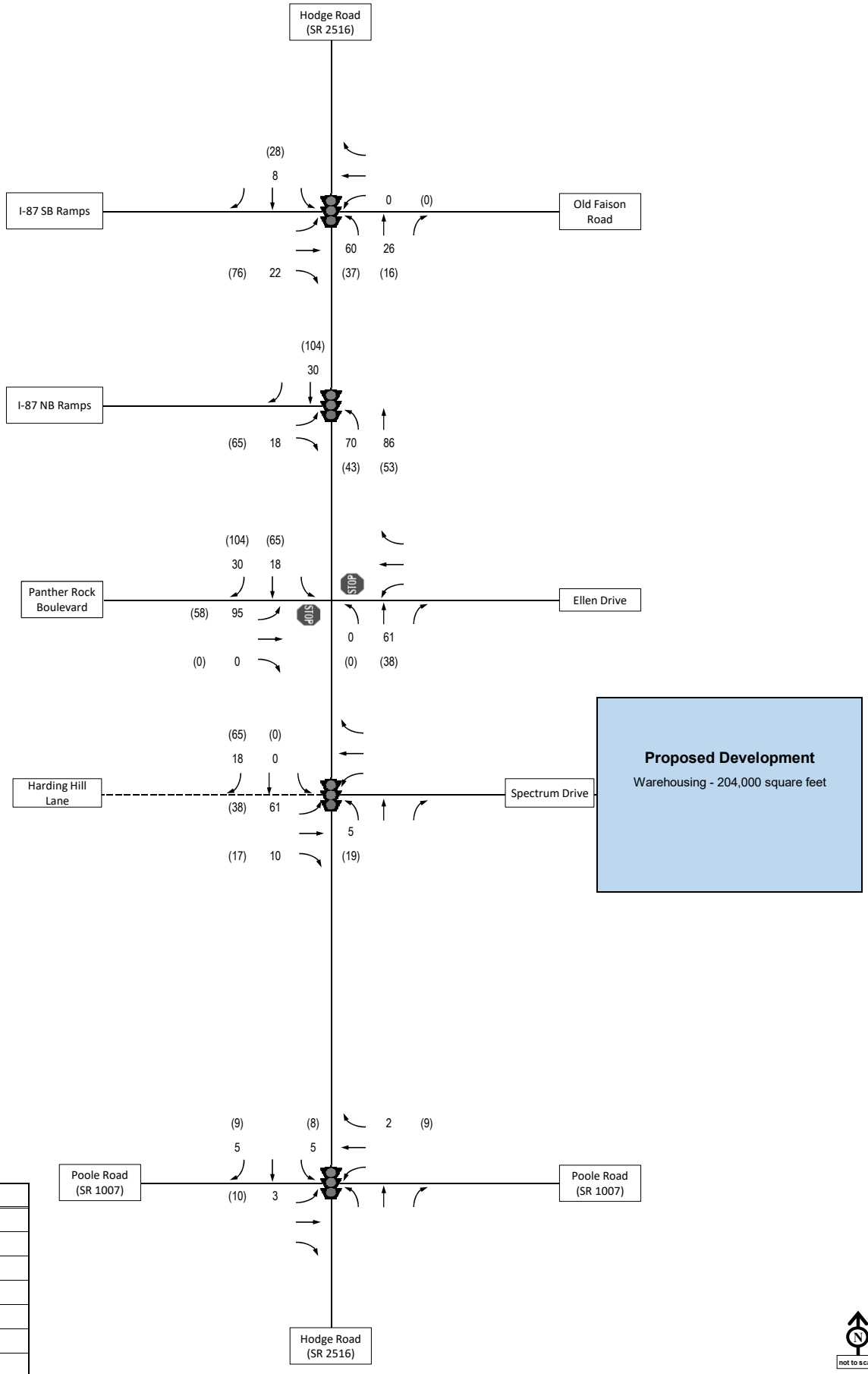
Eastgate 540
Traffic Impact Analysis
Knightdale, NC



LEGEND	
→	Turning Movement
—	Existing Roadway
- -	Future Roadway
	Existing Signalized Intersection
STOP	Existing Stop Controlled Approach
XX	AM Peak Hour Turning Movement Volume
(XX)	PM Peak Hour Turning Movement Volume

Figure D-2
Site Trips from Stoneriver
2022 (91%)

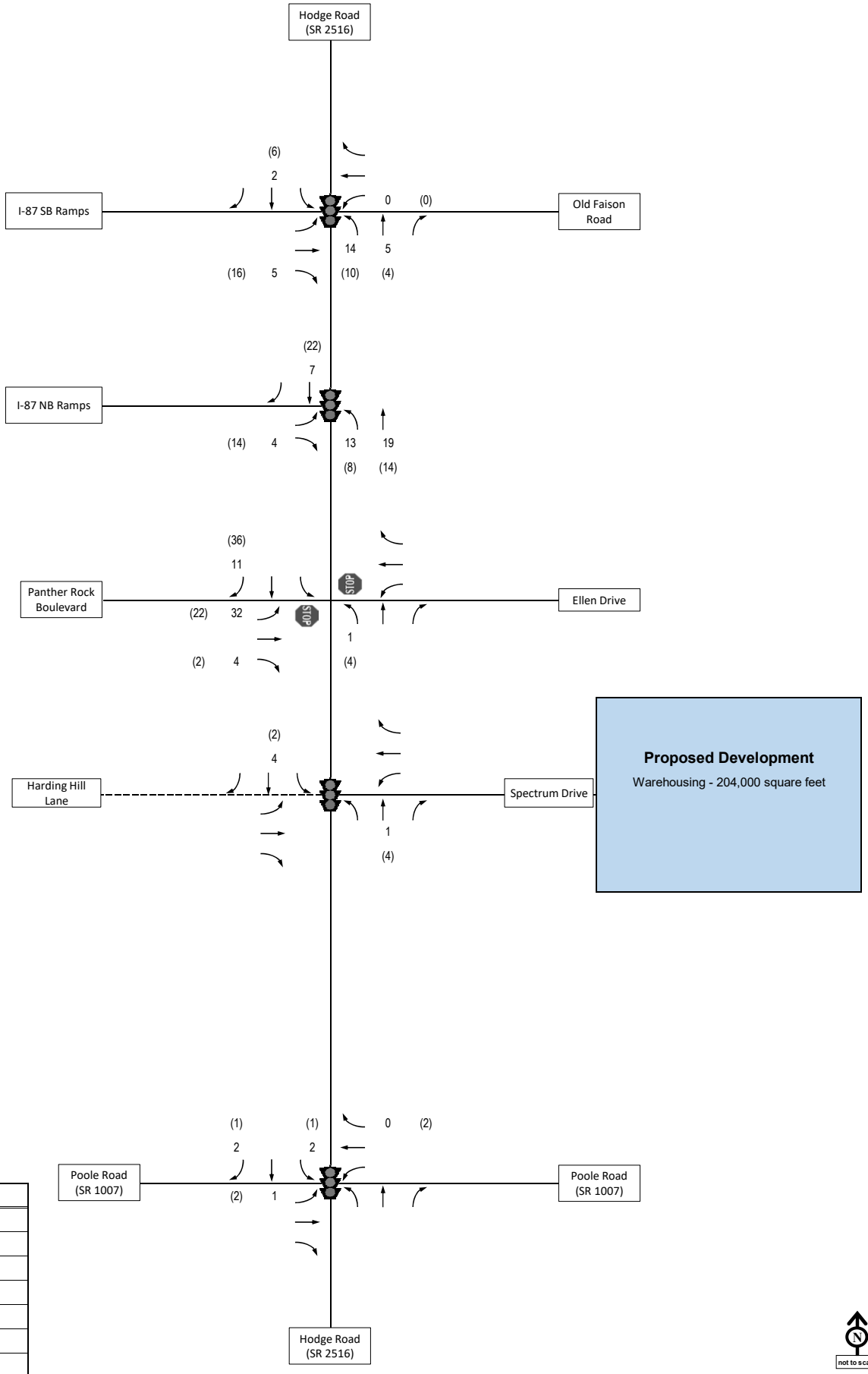
Eastgate 540
Traffic Impact Analysis
Knightdale, NC



LEGEND	
→	Turning Movement
—	Existing Roadway
- -	Future Roadway
	Existing Signalized Intersection
STOP	Existing Stop Controlled Approach
XX	AM Peak Hour Turning Movement Volume
(XX)	PM Peak Hour Turning Movement Volume

Figure D-3
Site Trips from Silverstone
2022 (87%)

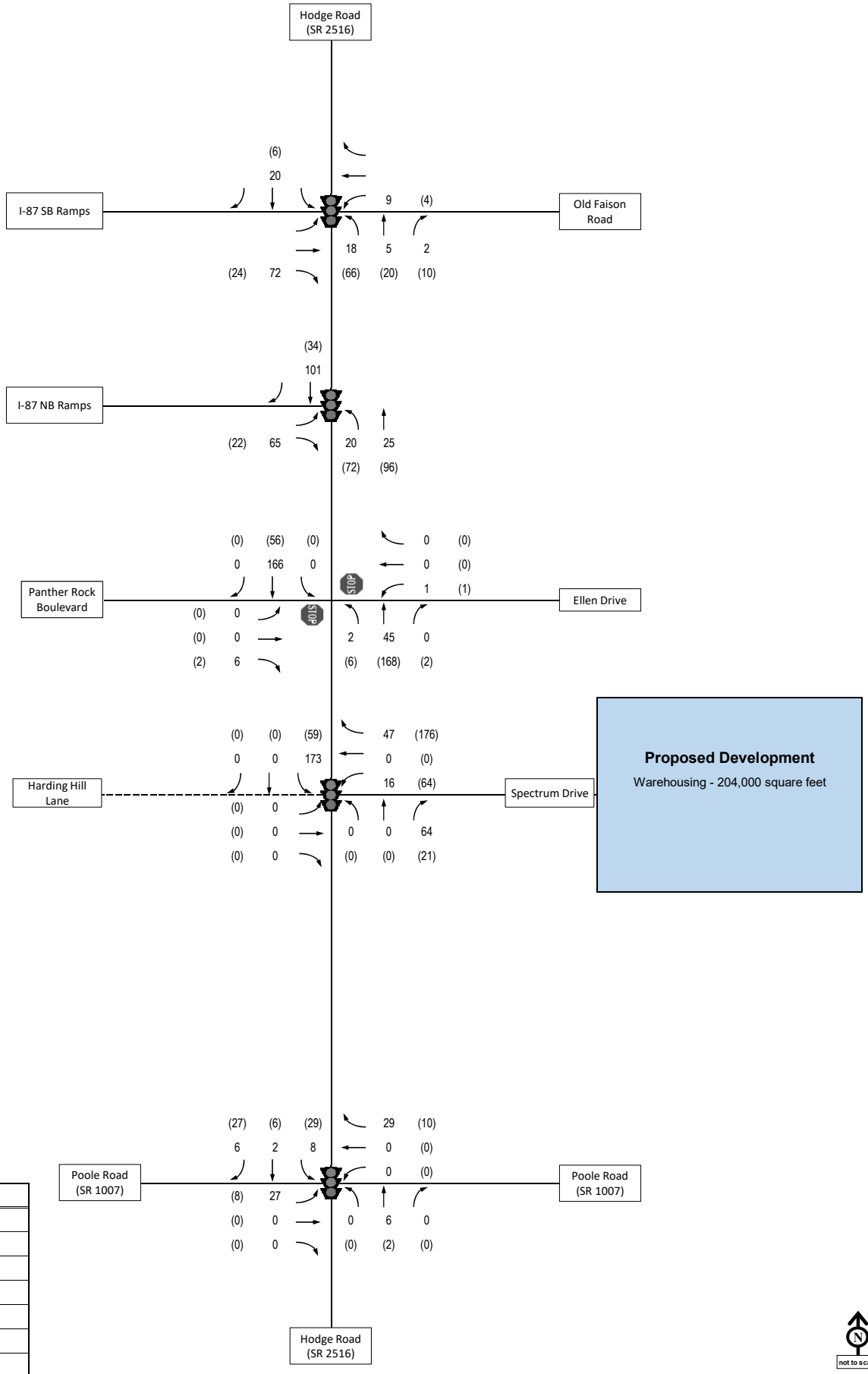
Eastgate 540
Traffic Impact Analysis
Knightdale, NC



LEGEND	
→	Turning Movement
—	Existing Roadway
- -	Future Roadway
	Existing Signalized Intersection
STOP	Existing Stop Controlled Approach
XX	AM Peak Hour Turning Movement Volume
(XX)	PM Peak Hour Turning Movement Volume

Figure D-4
Site Trips from Cheswick North
2022 (100%)

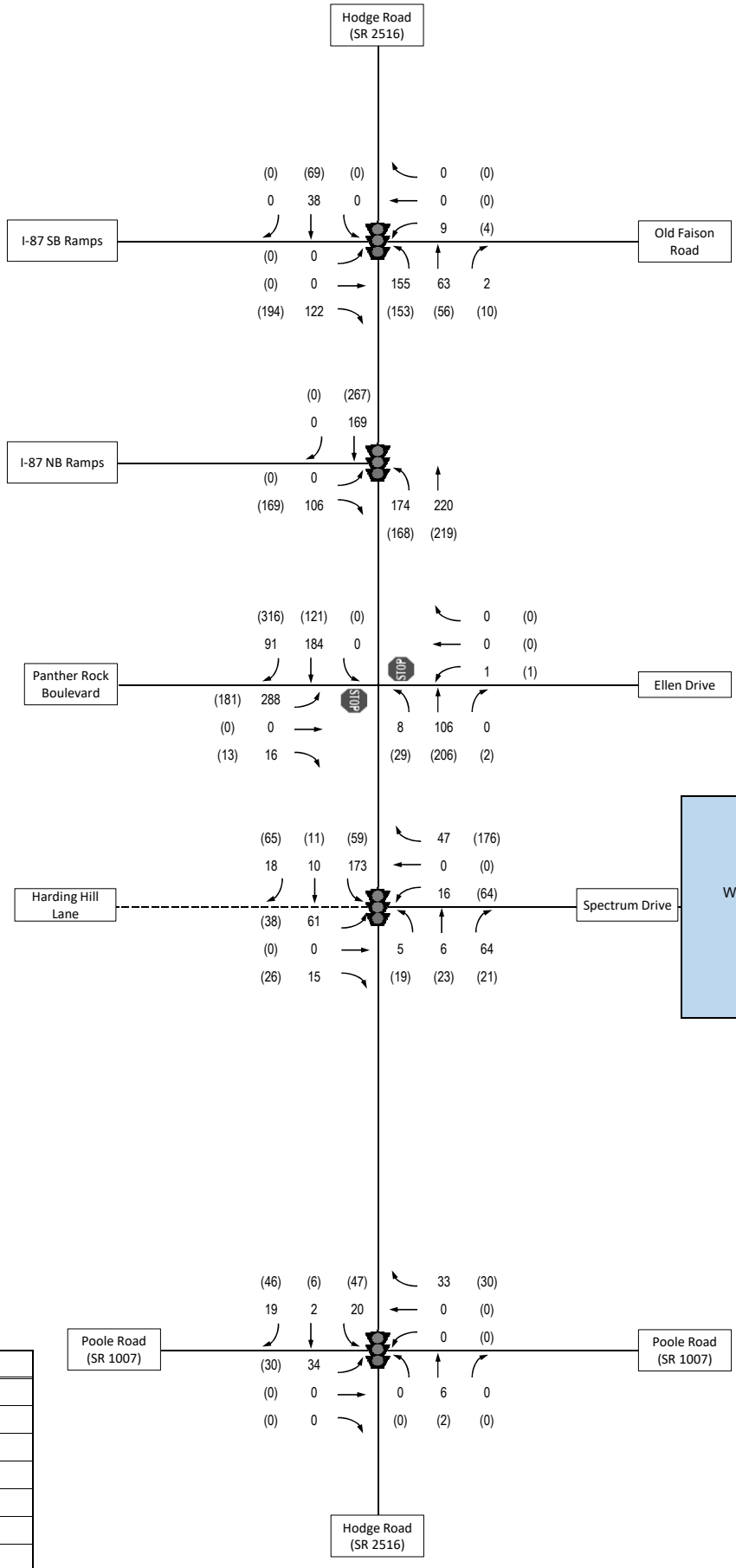
Eastgate 540
Traffic Impact Analysis
Knightdale, NC



LEGEND	
→	Turning Movement
—	Existing Roadway
- -	Future Roadway
	Existing Signalized Intersection
STOP	Existing Stop Controlled Approach
XX	AM Peak Hour Turning Movement Volume
(XX)	PM Peak Hour Turning Movement Volume

Figure D-5
Site Trips from Hodge Industrial
2022 (100%)

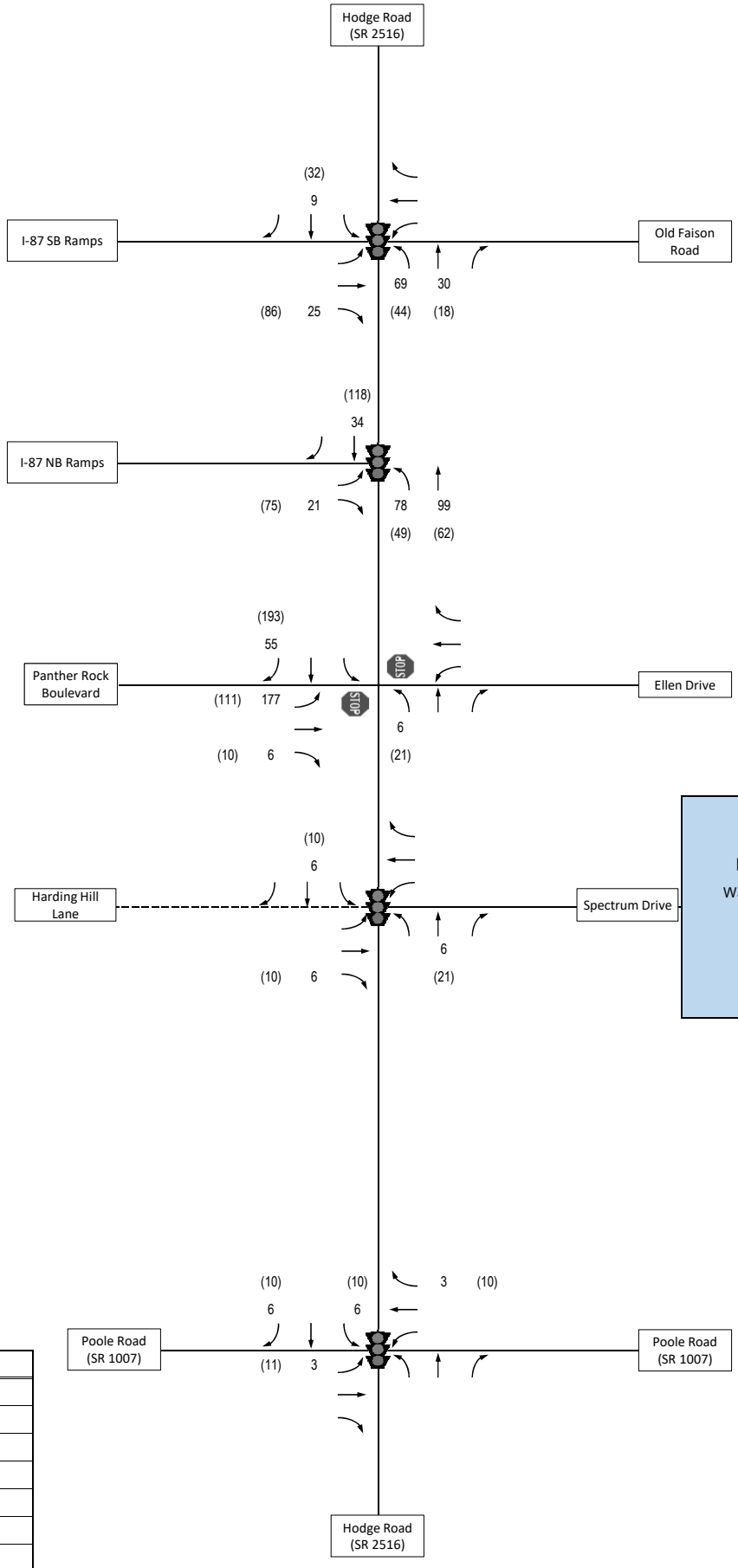
Eastgate 540
Traffic Impact Analysis
Knightdale, NC



LEGEND	
→	Turning Movement
—	Existing Roadway
- -	Future Roadway
	Existing Signalized Intersection
STOP	Existing Stop Controlled Approach
XX	AM Peak Hour Turning Movement Volume
(XX)	PM Peak Hour Turning Movement Volume

Figure D-6
Total (2022) Site Trips from Approved Developments

Eastgate 540
Traffic Impact Analysis
Knightdale, NC



LEGEND	
→	Turning Movement
—	Existing Roadway
- -	Future Roadway
	Existing Signalized Intersection
STOP	Existing Stop Controlled Approach
XX	AM Peak Hour Turning Movement Volume
(XX)	PM Peak Hour Turning Movement Volume

Figure D-7
Site Trips from Stoneriver
2032 (100%)

Eastgate 540
Traffic Impact Analysis
Knightdale, NC

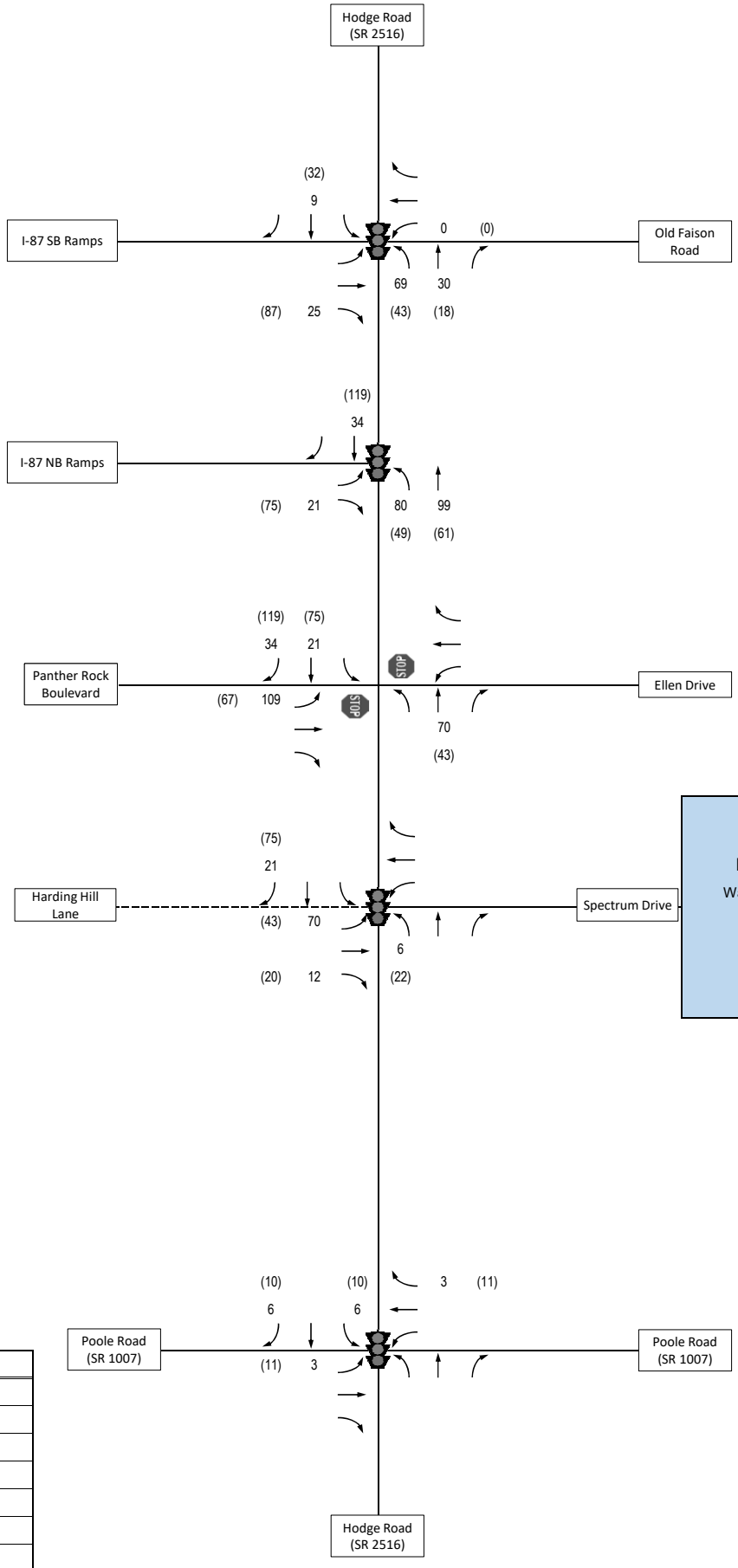
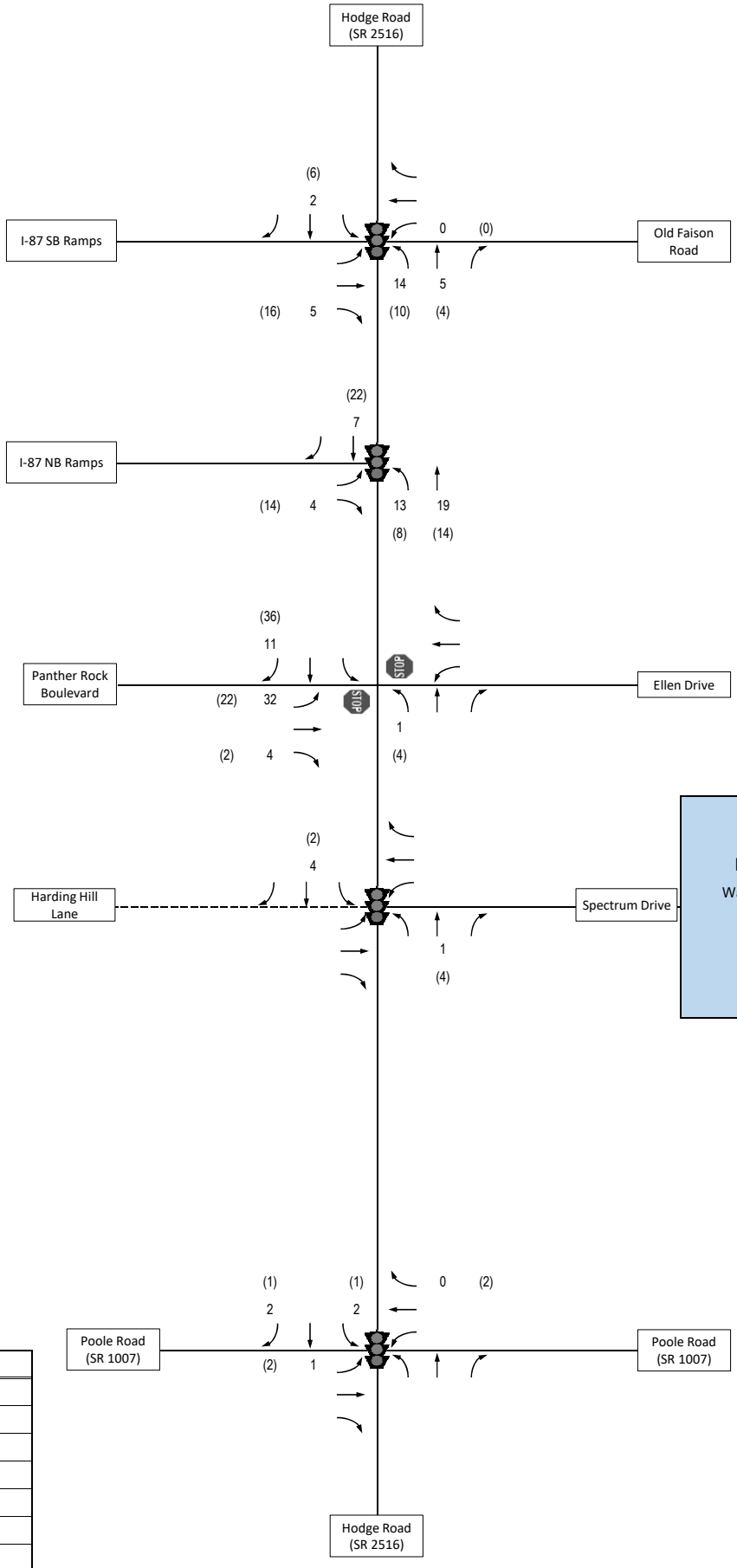


Figure D-8
Site Trips from Silverstone
2032 (100%)

Eastgate 540
Traffic Impact Analysis
Knightdale, NC



LEGEND	
→	Turning Movement
—	Existing Roadway
- -	Future Roadway
	Existing Signalized Intersection
STOP	Existing Stop Controlled Approach
XX	AM Peak Hour Turning Movement Volume
(XX)	PM Peak Hour Turning Movement Volume

Figure D-9
Site Trips from Cheswick North
2022 (100%)

Eastgate 540
Traffic Impact Analysis
Knightdale, NC

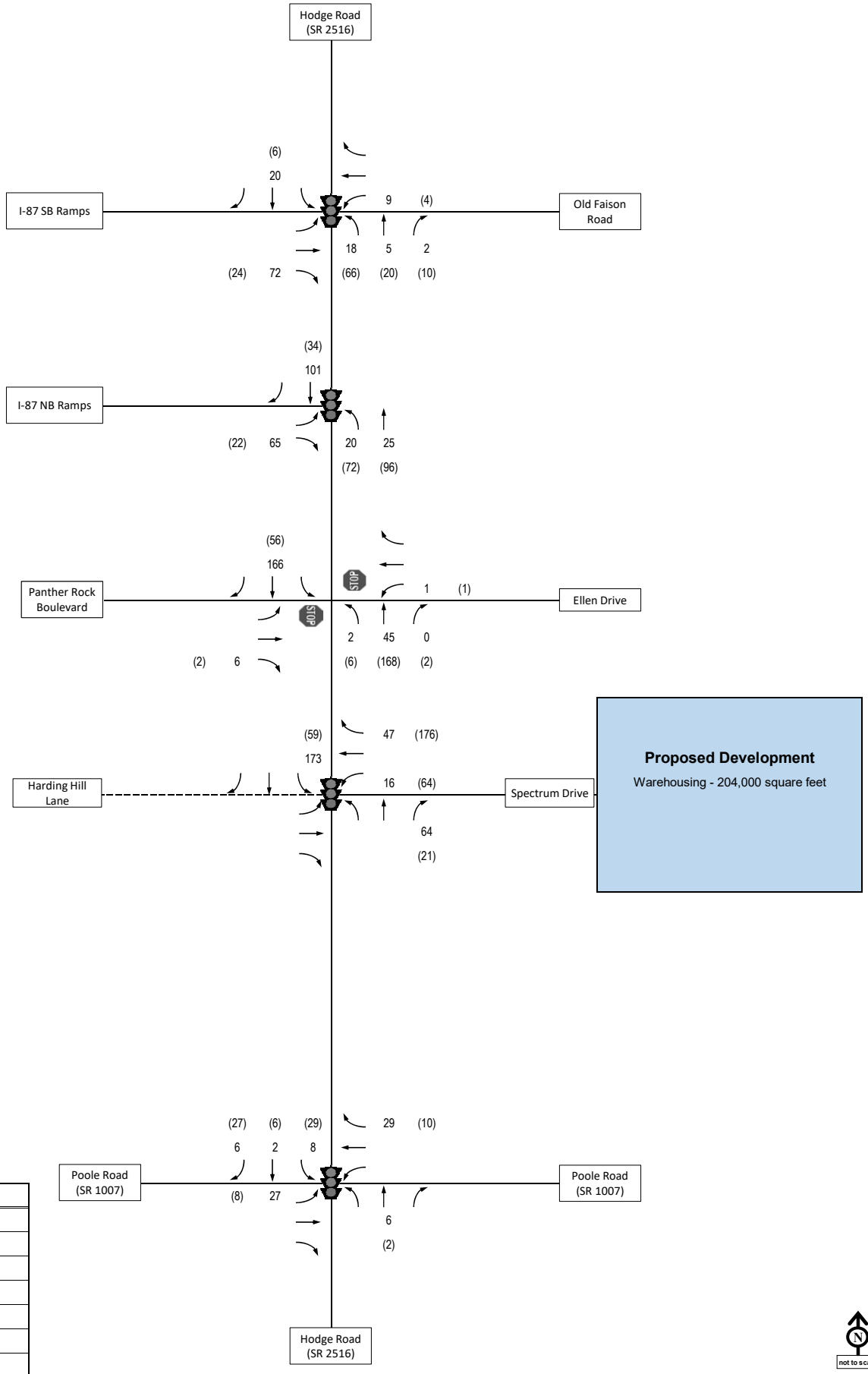


Figure D-10
Site Trips from Hodge Industrial
2032 (100%)

Eastgate 540
Traffic Impact Analysis
Knightdale, NC

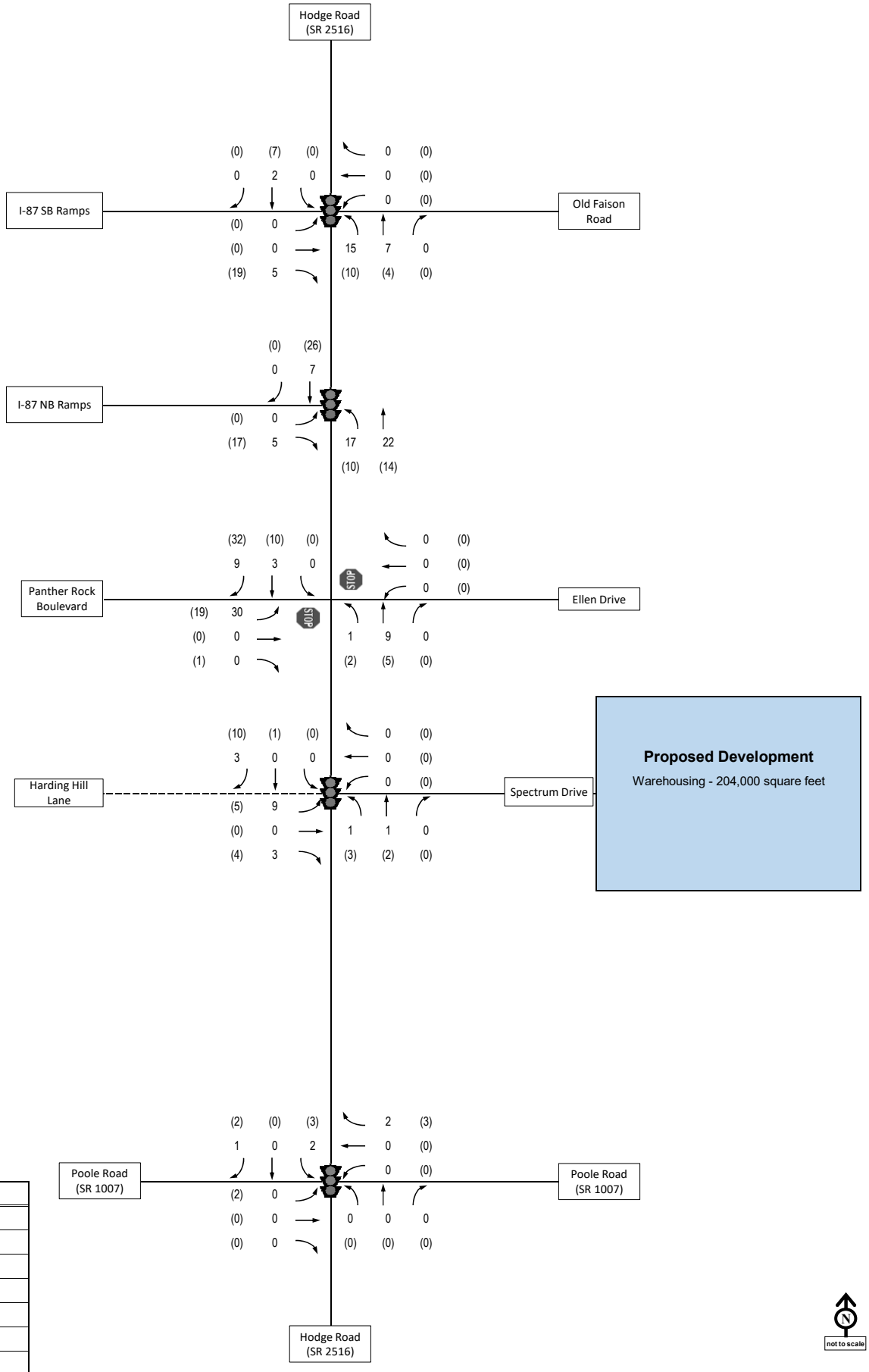


Figure D-11
Total (2032) Additional Site Trips from Approved Developments

Eastgate 540
Traffic Impact Analysis
Knightdale, NC

APPENDIX E:

Memorandum of Understanding

Memorandum

To: Kevin Lewis
Senior Planner, Town of Knightdale
950 Steeple Square Ct.
Knightdale, NC 27545
919-217-2200

Date: January 13, 2021

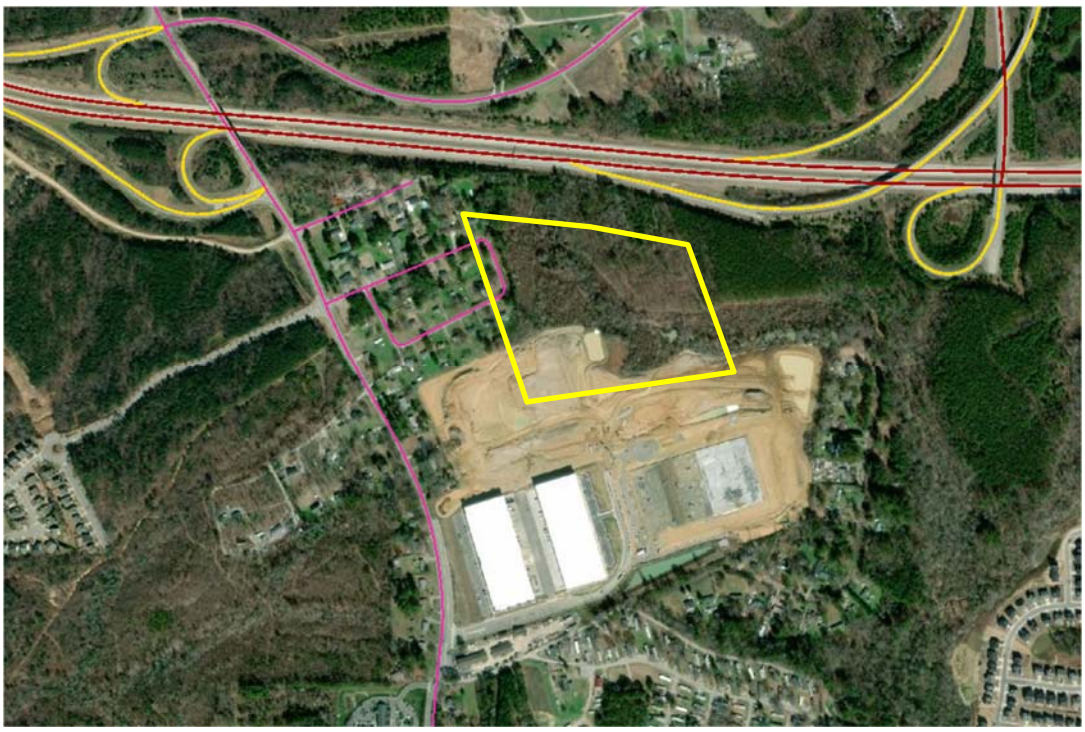
Project #: 38963.01

From: Andrew Topp, PE, PTOE
Senior Project Manager

Re: Traffic Analysis Study Assumptions – Eastgate 540
Knightdale, North Carolina

This memorandum summarizes the traffic analysis assumptions for a proposed industrial development to be located on the Spectrum Drive, south of I-87/US 64/US 264, in Knightdale, NC (Figure 1, yellow outline). The expected trip generation for the proposed development is below the Town of Knightdale's Unified Development Ordinance (UDO) 150 new peak hour trip threshold and NCDOT's 3,000 daily trip threshold. However, a traffic analysis will be beneficial in understanding the projected operations at the driveway and immediate vicinity of the site. The project currently has two options for development. Option 1 is 204,000 square feet of industrial warehouse and Option 2 is a 160,000 square foot warehouse with an expeditated delivery service that could generate additional trips. Both options will have access to Spectrum Drive with an estimated opening by the end of 2021. Town of Knightdale guidelines suggest analysis of both one year and ten years after the development is completed, resulting in traffic analysis horizon years of both 2022 and 2032.

Figure 1: Vicinity Map



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Proposed Access

The developer is proposing to have one full access to Hodge Road via an extension of Spectrum Road.

Study Area

Based on a preliminary calculation of the site's impact relative to the background volumes, the following intersections will be included in the analysis and analyzed for the typical weekday AM and PM periods:

- Hodge Road and Panther Rock Boulevard/Ellen Drive (unsignalized/future signalized)
- Hodge Road and Spectrum Drive (unsignalized/future signalized)

The site's trips are expected to represent 5% or less of the background approach volume at any of the other upstream or downstream intersections along Hodge Road, falling well below the Town's 10% guidance.

Data Collection

Due to the travel effects related to the COVID-19 pandemic, new traffic counts will not be collected at the study area intersections. Recent turning movement counts at study area intersections will be utilized from recently completed TIAs already provided by the Town of Knightdale.

Analysis Scenarios

Based on information gathered from the Town, there are three adjacent developments in various stages of planning and construction, as follows:

- Hodge Road Business Park/Eastgate 540 (located along Spectrum Drive, warehouse)
- Stone River Development (located along Panther Rock Boulevard, residential)
- Silverstone Development (located west of Hodge Road, across from Spectrum Drive, residential)

Trips associated with any unoccupied portions of these background developments will be incorporated into the future scenarios in addition to identified road improvements from these developments.

Based on Town of Knightdale and NCDOT TIA guidelines, the following traffic scenarios will be analyzed for weekday AM and PM peak hour level of service utilizing Synchro software:

- Existing (2021) – includes peak hour volumes based on turning movement count data collected at the study area intersections as part of recent studies in the area with a three percent (3%) annual growth between the collected year (2016) and existing year (2021).
- Background (2022) – includes Existing (2021) scenario peak hour volumes with a three percent (3%) annual growth between the existing (2021) and future year (2022), as well as projected traffic and improvements from three nearby developments in the area.
- Build (2022) – includes Background (2022) scenario peak hour volumes with projected site trips from the proposed development.

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- Background (2032) – includes Background (2022) scenario peak hour volumes with a one percent (1%) annual growth between 2022 and 2032, as well as projected traffic and improvements from three nearby developments in the area.
- Build (2032) – includes Background (2032) scenario peak hour volumes and projected site trips from the proposed development.

Trip Generation

Trip generation for Option 1 was prepared using the *Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition* and NCDOT's Rate vs Equation guidance for a warehouse (Land Use Code 150). The trip generation for the site for various time periods is found below in Table 1.

Table 1: Option 1 Traffic Generation

AM Peak Hour Total Trips						
ITE Land Use Code	Use	Units	ITE MANUAL RATES*			
			ADT	AM Enter	AM Exit	AM Total
150	Warehousing	204,000 sf	368	38	12	50

PM Peak Hour Total Trips						
ITE Land Use Code	Use	Units	ITE MANUAL RATES*			
			ADT	PM Enter	PM Exit	PM Total
150	Warehousing	204,000 sf	368	14	38	52

* ITE Trip Generation, 10th Edition

Trip Generation Option 2

Trip generation for Option 2 was prepared based on the smaller building square footage, however added in some expected deliveries. There are expected to be approximately 50 drivers making delivers every 2 hours starting towards the end of the adjacent street AM peak hour and running through the PM peak hour. In addition, approximately 7 large tractor-trailer truck deliveries are expected at the warehouse over the course of each day. The primary warehouse employee shift is expected to occur prior to the AM adjacent street peak hour and they will leave prior to the PM adjacent peak hour. The trip generation for the site for various time periods is found below in Table 2.

Table 2: Option 2 Traffic Generation

AM Peak Hour Total Trips						
ITE Land Use Code	Use	Units	ITE MANUAL RATES			
			ADT	AM Enter	AM Exit	AM Total
150*	Warehousing	160,000 sf	298	34	11	45
Local	Local Deliveries	25 deliveries/hour	250	25	25	50
Local	TTST Deliveries	7 TTSTs/day	14	1	1	2
		Total	562	60	37	97

PM Peak Hour Total Trips						
ITE Land Use Code	Use	Units	ITE MANUAL RATES			
			ADT	PM Enter	PM Exit	PM Total
150*	Warehousing	160,000 sf	298	13	34	47
Local	Local Deliveries	25 deliveries/hour	250	25	25	50
Local	TTST Deliveries	7 TTSTs/day	14	1	1	2
		Total	562	39	60	99

* ITE Trip Generation, 10th Edition

Option 2 provides the more conservative analysis since it results in more site generated trips than Option 1. As shown in Table 2, the site is expected to generate 562 trips per day with 97 trips (60 entering/37 exiting) occurring in the AM peak hour and 99 trips (39 entering/60 exiting) occurring in the PM peak hour.

Trip Distribution and Assignment

Projected site trips were distributed throughout the study area network based on existing traffic patterns, current and proposed land uses, previous studies, and the user's likely destinations, as follows:

Employees

- Hodge Road to/from the north – 63%
- Hodge Road to/from the south – 33%
- Panther Rock Boulevard to/from the west – 3%
- Ellen Drive to/from the north – 1%

Deliveries

- Hodge Road to/from the north – 98%
- Hodge Road to/from the south – 2%

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