

Traffic Impact Study

To: Ms. Lauren Grouws, P.E.
Life Time

From: Lynn M. Means, P.E., PTOE
Senior Transportation Engineer

Date: August 28, 2017
Updated February 19, 2018

Subject: Life Time Facility
US Route 12 (Rand Road) at North Old Rand Road
Lake Zurich, Illinois

625 Forest Edge Drive, Vernon Hills, IL 60061
TEL 847.478.9700 ■ FAX 847.478.9701

www.gha-engineers.com

Part I. Introduction and Project Context

Gewalt Hamilton Associates, Inc. (GHA) has conducted a Traffic Impact Study for the proposed Life Time development located on the northeast quadrant of US Route 12 (Rand Road) and North Old Rand Road in Lake Zurich, Illinois. The site formerly contained an approximately 11,000 square-foot, two-story restaurant, *Hackney's*. Access to the site is currently provided via two right-in/right-out (RIRO) driveways on Rand Road and one full access driveway on North Old Rand Road.

As proposed, the project consists of constructing a two-story, approximately 125,000 square-foot members only, health and fitness club. This facility will include amenities such as cardiovascular and resistance training areas, Pilates and yoga studios, gymnasiums, indoor/outdoor pools, spas, cafes, and childcare areas. Access to the development will be provided via one right-in/right-out access on Rand Road and one $\frac{3}{4}$ access (right-in/right-out/left-in) driveway on Old Rand Road – both located further away from the Rand Road and Old Rand Road intersection than the existing site driveways.

The following provides a summary of existing conditions, site traffic characteristics, future conditions and the analysis conducted, which includes an analysis of the development's impact on the surrounding roadway network. *Exhibits* and *Appendices* referenced are located at the end of this document.

Part II. Background Information

Site Location Map and Roadway Inventory

Exhibit 1 provides a location map of the site vicinity. *Exhibit 2* provides a photo inventory of current traffic operations. *Exhibit 3* depicts existing traffic operations on the roadways serving the site, including lane geometry and traffic control. The roadway's functional classification was obtained from IDOT's 5-Year Functional Classification Maps. Pertinent comments to the adjacent roadways include:

US Route 12 (Rand Road)

- 1 Rand Road is a north-south, divided principal arterial roadway, providing a four-lane cross-section (two-lanes in each direction) in the site vicinity.

- 1 Rand Road is designated as a Strategic Regional Arterial (SRA) route. SRA routes are designed to carry higher traffic volumes at higher travel speeds through access control and traffic signal installation / spacing. It is also a designated Class II Truck route.
- 1 At its unsignalized intersection with Golfview Road, Rand Road provides a left-turn lane, two through lanes and a right-turn lane in the northbound direction; in the southbound direction, Rand Road provides a left-turn lane, a through lane and a shared through/right-turn lane.
- 1 At its signalized intersection with North Old Rand Road / Ravinia Terrace, Rand Road provides a left-turn lane, two through lanes and a right-turn lane in both the northbound and southbound directions.
- 1 Rand Road is under the jurisdiction of the Illinois Department of Transportation (IDOT) and has a posted speed limit of 45 miles per hour (mph) within the study area. The speed limit is increased to 50 mph north of Golfview Road.
- 1 The average daily traffic (ADT) on Rand Road is 25,100 vehicles per day (vpd) with 4,600 trucks (18.3%) north of North Old Rand Road (year 2015) and 36,900 vpd with 2,300 trucks (6.2%) south of North Old Rand Road (year 2015).

Golfview Road

- 1 Golfview Road is generally, an east-west local roadway, extending easterly from Rand Road. It provides a two-lane cross-section (one-lane in each direction).
- 1 A gated access, serving a vacant parking lot, is aligned opposite Golfview Road.
- 1 At its unsignalized intersection with Rand Road, Golfview Road provides a single approach lane with shared turning movements, operating under STOP sign control.
- 1 Golfview Road is under the jurisdiction of the Village of Lake Zurich with a posted speed limit of 20 mph.

North Old Rand Road / Ravinia Terrace

- 1 North Old Rand Road is an east-west major collector roadway, extending easterly from Rand Road, providing a two-lane cross-section (one-lane in each direction). It is under Village of Lake Zurich jurisdiction with a posted speed limit of 25 mph.
- 1 To the west of Rand Road, North Old Rand Road becomes Ravinia Terrace, also a two-lane roadway functioning as local roadway. Ravinia Terrace is under the jurisdiction of the Village of Lake Zurich with a posted speed limit of 20 mph.
- 1 At its signalized intersection with Rand Road, a left-turn lane and shared through/right turn lane is provided in both the eastbound (Ravinia Terrace) and westbound (North Old Rand Road) directions.
- 1 At North Old Rand Road's unsignalized "T" intersections with the Bayshore Village Subdivision (townhomes) west access and Pine Tree Row, eastbound and westbound turns are shared with the through movements.
- 1 The ADT on North Old Rand Road is 3,850 vpd (year 2015).

Pine Tree Row

- 1 Pine Tree Row is a north-south local roadway, extending northerly from North Old Rand Road, providing a two-lane cross-section (one-lane in each direction), serving single family residential, as well as Bobbers bar and restaurant located at the northwest corner of the intersection.
- 1 At its unsignalized intersection with North Old Rand Road, a single approach lane with shared turning movements is provided, operating under stop sign control.
- 1 Pine Tree Row is under the jurisdiction of the Village of Lake Zurich with a posted speed limit of 20 mph.

Pedestrian / Bicycle Facilities

- 1 Sidewalks are provided within the study area as follows:
 - 1 Rand Road, west side: north of Ravinia Terrace.

- 1 Rand Road, east side: south of North Old Rand Road and north of Golfview Road.
- 1 North Old Rand Road, south side: between Rand Road and the Bayshore Village Subdivision west access.
- 1 North Old Rand Road, north side: easterly from the existing site access through the downtown (Main Street).
- 1 Golfview Road, north side: approximately 200 feet from Rand Road.
- 1 Golfview Road, south side: extending approximately 100 feet from the Pap Gus Gyros access to east of the adjacent office building.
- 1 A crosswalk is maintained on the west leg of the North Old Rand Road and Bayshore Village Subdivision west access unsignalized intersection.
- 1 There are no pedestrian traffic signals or crosswalks at the Rand Road and North Old Rand Road / Ravinia Terrace signalized intersection.

Existing Traffic

Exhibit 4A summarizes the existing weekday morning, weekday evening and Saturday midday peak hour traffic volumes. *Exhibit 4A* also provides the ADT 24-hour volume along Rand Road and Old Rand Road from 2015 as published by IDOT on their website www.gettingaroundillinois.com. *Exhibit 4B* illustrates the pedestrian and bicycle count data. Peak period traffic turning movement counts were conducted by GHA on Saturday, July 29, 2017 from 11:00 AM to 2:00 PM and on Thursday, August 3, 2017 from 6:00 to 9:00 AM and 3:00 to 6:00 PM.

The observed weekday morning, weekday evening and Saturday midday peak hours, in general, occurred from 6:45 to 7:45 AM, 4:15 to 5:15 PM and 12:15 to 1:15 PM, respectively; however, the peak hour for each individual intersection was used in the analysis to provide a conservative analysis scenario and intersection volumes were balanced, where appropriate.

No unusual activities (e.g. roadway construction, or inclement weather) were observed during our counts that would be expected to impact traffic volumes or travel patterns in the vicinity. Summaries of the existing traffic counts can be found in *Appendix A*.

2023 No-Build (Non-Site) Traffic

Exhibit 5 summarizes the 2023 No-Build weekday morning, weekday evening and Saturday midday peak hour traffic volumes. This identifies background, or ambient, projected growth in traffic conditions without the site traffic. In accordance with IDOT requirements, future traffic volume conditions were developed for the anticipated opening year of the development plus five years. For the purpose of this study and based on a review of historical traffic volumes, the Chicago Metropolitan Agency for Planning (CMAP) projections (see *Appendix B*), and recent studies performed in the area, traffic volumes along the roadways surrounding the site are assumed to experience an overall annual, compounded growth rate of approximately 0.5 percent per year. Accordingly, the 2023 No-Build peak hour traffic volumes were developed by applying a 0.5 percent compounded annual growth rate to the existing traffic (*Exhibit 4A*).

Planned Roadway Improvement Projects

The SRA Report dated March 1996 for US Route 12 (Rand Road) identified the widening of Rand Road adjacent to the site to provide three, twelve-foot-wide travel lanes in each direction, with a forty-foot-wide open median. However, these improvements are not included in the current Multi-Modal Transportation Plan (FY 2018-2023).

Thus, there is currently no construction completion date scheduled. Accordingly, for the purpose of this study, these improvements were not considered in the analyses. An excerpt from the SRA Report is provided in *Appendix C*.

Part III. Traffic Evaluation

Proposed Site Plan

Exhibit 6 presents the site plan prepared by Manhard Consulting, Ltd. dated February 19, 2018. As proposed, the development consists of the construction of a two-story, approximately 125,000 square-foot health, athletic and recreation center. It will include cardiovascular and resistance training areas, Pilates and yoga studios, gymnasiums, indoor/outdoor pools, spas, cafes, and childcare areas. The facility will have a capacity of 1,548 persons and is proposed to be open 24 hours, seven days a week. The outdoor recreation pool will be open from Memorial Day through Labor Day from 10:00 AM to 8:00 PM, while the outdoor lap pool's hours of operation will be from dawn to dusk. The development will be served by 516 parking spaces, including 12 accessible spaces.

Access to the development will be provided via one right-in/right-out access on Rand Road and one $\frac{3}{4}$ access (right-in/right-out/left-in) driveway on Old Rand Road – both located further away from the Rand Road and Old Rand Road intersection than the existing site driveways.

Deliveries are expected to occur through the front and or side doors located on the west and south sides of the building and the refuse containers are located in the area of the northwest side of the building. To the extent feasible, deliveries should be scheduled during off-peak periods and/or employees should be directed to park adjacent to / opposite these areas so as to not impede on-site circulation.

Trip Generation and Directional Distribution

Exhibit 7 – Part A tabulates the traffic generation calculations for the proposed development. Trip generation rates published by the Institute of Transportation Engineers (ITE) in the 9th Edition of the Manual *Trip Generation* were used to determine the anticipated traffic from the proposed fitness club use (see *Appendix D*). However, to provide a conservative analysis scenario, expected trip generation data collected by GHA at the existing Life Time facility located in Vernon Hills was used in the analysis. Traffic entering and exiting the Vernon Hills facility was collected over a ten-day period (December 27, 2017 through January 6, 2018), coinciding with peak facility operations. A summary of the local data collected is included as *Appendix E*.

Note: Not all vehicle trips expected to be generated by the proposed project represent new trips on the study area roadway system. Studies have shown that for health club / fitness developments, a portion of the site-generated vehicle trips are already present in the adjacent passing stream of traffic or are diverted from another route to the proposed site. Also based on data provided by the Client, the pass-by trip percentage for its existing Life Time facilities surveyed ranged between 14 and 48 percent during the peak hours. However, again to provide a conservative analysis scenario, no reduction for pass-by was applied.

Exhibit 7 – Part B provides the anticipated distribution of new site traffic. This was based on existing site travel patterns, proposed access driveways, competing opportunities and the operational characteristics of the adjacent street system.

Site and Total Traffic Assignments

Exhibit 8 illustrates the site traffic assignments during the weekday morning, weekday evening and Saturday midday peak hours. The trips were based on the traffic characteristics summarized in *Exhibit 7* (traffic generation and trip distribution) and assigned to the area roadways. Site traffic and 2023 No-Build (see *Exhibits 8* and *4*, respectively) were combined resulting in the 2023 Total Traffic, which is illustrated on *Exhibit 9*.

Auxiliary Lane Analysis

Based on the site plan, access to the site will be provided via one $\frac{3}{4}$ access (right-in/right-out/left-in) driveway on North Old Rand Road, aligned opposite the Bayshore Village Subdivision West Access (approximately 550 feet east of Rand Road) and one RIRO access on Rand Road (approximately 300 feet north of North Old Rand Road). This study examined whether a right-turn deceleration lane and/or a left-turn storage lane is required for the North Old Rand Road access driveway under future design year conditions (year 2023). *Note: recommendations include widening Rand Road at the site access to provide a third northbound through lane, with shared right-turns entering the site; however, per IDOT recommendation, the third through lane will be striped as a right-turn lane until a time in the future when the full IDOT SRA improvements (three-through lanes in each direction) are implemented.*

The IDOT *Bureau of Design and Environment Manual (BDE)* was used to determine the need for auxiliary lanes on North Old Rand Road. Section 36-3 Auxiliary Turn Lanes indicates that a right-turn lane is considered when the criterion is met on Figure 36-A for Two-Lane Highways (see *Appendix F*). Based on the posted speed limit of 25 mph and the project approach volume on North Old Rand Road, a right-turn lane is not warranted at the proposed site access driveway.

In addition, a left-turn is warranted at any unsignalized intersection that satisfies the guidelines on Figure 36-3G for Two-Lane Highways (see *Appendix F*). Based on the geometric design and lane usage of North Old Rand Road and the estimate volume of site-generated traffic, a left-turn lane is warranted on eastbound North Old Rand Road at the Site Access.

Capacity and Queue Analyses

Capacity analyses are a standard measurement in the industry that identifies how an intersection operates. *Exhibit 10 – Part A* lists the analysis parameters, as published in the Transportation Research Board's (TRB) *Highway Capacity Manual (HCM), Sixth Edition, 2016*. They are measured in terms of Level of Service (LOS). LOS A is the best rating, with LOS F being the worst. LOS C is often considered acceptable for design purposes and LOS D is usually considered as providing the lower threshold of acceptable operations. LOS E and F are usually considered unacceptable. However, IDOT uses a stricter interpretation of the Highway Capacity Manual. Along SRA routes, LOS C should be maintained on the through movements of the SRA route and LOS D on all other movements. On non-SRA routes, LOS C should be strived for on all intersection movements. Variations from these standards may be allowed and are considered on a case-by-case basis.

Capacity analyses were performed for three scenarios:

- 1 *Existing Traffic* – Existing 2017 traffic,
- 1 *No-Build Traffic* – Estimated (year 2023) traffic with background growth (assumed at 0.5 percent per year), and
- 1 *Total Traffic* – No-Build traffic volumes (year 2023) plus the addition of the site generated traffic.

Exhibit 10 - Part B summarizes the intersection capacity and queue analysis results. Capacity analysis summary printouts are provided in *Appendix G*. *Exhibit 11* schematically illustrates the recommendations to accommodate the Life Time facility traffic impacts.

Rand Road at Golfview Road

Under existing, year 2023 no-build (without site) and year 2023 total (with site) traffic conditions, southbound left-turns from Rand Road onto Golfview Road operate at acceptable levels of service during all three peak hours studied. The westbound turns from Golfview Road onto Rand Road northbound and southbound currently operate at LOS F during the weekday evening and Saturday midday peak hours. The delay experienced by these movements is typical for a minor street intersection with a major street with heavy through volumes. These movements will continue to operate at these levels under future conditions with the proposed development. This intersection experiences minimal increases in delay as a result of the proposed project. Accordingly, no modifications to this intersection are recommended in connection with the proposed development.

Rand Road at North Old Rand Road and Ravinia Terrace

The signalized intersection of Rand Road at North Old Rand Road and Ravinia Terrace operates at overall acceptable levels of service (LOS D or better) before and after the development during the weekday morning, weekday evening and Saturday midday peak hours. Several individual movements currently operate at LOS E/F during the three peak hours studied. These movements will continue to operate at these levels under future conditions with the proposed development. Future total traffic conditions assumed the following improvements would be implemented by the development at this intersection, noting the geometric requirements (storage and taper lengths) would be determined in the preparation of an Intersection Design Study (IDS) for the intersection:

- 1.1 Increase the northbound Rand Road right-turn storage length. *Note: the intersection design will accommodate the conversion of the right-turn lane to a shared through/right-turn lane in the future when the full IDOT SRA improvements (three-through lanes in each direction) are implemented.*
- 2.1 Increase the westbound North Old Rand Road left-turn storage length.
- 3.1 Increase the southbound Rand Road left-turn storage length.
- 4.1 Provide pedestrian accommodations (high visibility, continental style crosswalks, pedestrian signals with countdown timers, Americans with Disabilities Act (ADA) curb ramps) for the north and east legs of the intersection.
- 5.1 Traffic signal equipment and timing modifications to accommodate the above recommendations.

North Old Rand Road at Bayshore Village Subdivision West Access / Site Access

As shown, all movements at the unsignalized intersection of North Old Rand Road and the Bayshore Village Subdivision West Access / Site Access operate at acceptable levels of service before and after the development during all three peak hours studied. The 95th percentile queue length for eastbound left-turns entering the site, as well as for southbound right-turns exiting the site are not anticipated to exceed one vehicle, which will not impact operations on or off site. Future total traffic conditions assumed the following improvements would be implemented by the development at this intersection:

- 6.1 Provide an eastbound left-turn lane on North Old Rand Road, as a back-to-back left-turn with the westbound left-turn lane at Rand Road.
- 7.1 The Site Access southbound approach should provide a channelized right-turn lane, operating under stop sign control.
- 8.1 A continental style crosswalk, along with ADA curb ramps, should be provided on the north (site access) leg of the intersection.

- 9.1 Remove the crosswalk, and associated signing, on the west leg of this intersection. It is recommended that the pedestrian crossing of North Old Rand Road occur at the Rand Road signalized intersection, as noted in recommendation number 4 above. This also assumes the sidewalk will be extended along the north side of North Rand Road from its current terminus westerly to Rand Road.

Note: per Village recommendation, a pedestrian crossing of Old Rand Road at this location should be maintained. Accordingly, in order to minimize conflicts with left-turns entering the site, the crosswalk, along with associated signing and ADA curb ramps, will be relocated to the east leg of the intersection. A pedestrian refuge area will also be provided within the median. In addition, the sidewalk along the south side of Old Rand Road will be extended easterly to the crossing.

North Old Rand Road and Pine Tree Row

As shown, all movements at the unsignalized intersection of North Old Rand Road and Pine Tree Row operate at acceptable levels of service before and after the development during all three peak hours studied. This intersection experiences minimal increases in delay as a result of the proposed project. Accordingly, no modifications to this intersection are recommended in connection with the proposed development.

Rand Road and Site RIRO Access

The westbound right turns from the proposed site access onto Rand Road northbound are projected to operate at acceptable LOS D or better during the weekday morning and Saturday midday peak hours. During the weekday evening peak hour, this movement is anticipated to operate at LOS E. As previously noted, the delay experienced by this movement is typical for a driveway intersecting a major street with heavy through volumes. The multiple site access (via Rand Road and North Rand Road) maximizes site access flexibility and minimizes impact to North Old Rand Road. Future total traffic conditions assumed the following improvements would be implemented by the development at this intersection:

- 10.1 Provide a third shared through/right-turn lane on northbound Rand Road, extending from North Old Rand Road and terminating at the existing right-turn lane at Golfview Road. *As previously noted, this lane will be striped as a right-turn lane until a time in the future when the full IDOT SRA improvements (three-through lanes in each direction) are implemented.*
- 11.1 The Site Access westbound approach will operate under stop sign control.

Part IV. Conclusions

Analyses have been conducted under existing and future conditions of the intersections in the study area to determine the impact from the proposed Life Time Fitness development. The capacity analysis results indicate that the increase in project site-generated traffic can be accommodated with the implementation of the improvement recommendations contained herein.

Part V. Technical Addendum

The following Exhibits and Appendices were previously referenced. They provide technical support for our observations, findings and recommendations discussed in the text.

Exhibits

- 1.1 Aerial Location Map
- 2.1 Photo Inventory
- 3.1 Existing Traffic Operations
- 4.1 Existing Traffic
- 5.1 2023 No-Build Traffic
- 6.1 Site Plan
- 7.1 Traffic Characteristics
- 8.1 Site Traffic
- 9.1 2023 Total Traffic
- 10.1 Capacity and Queue Analyses
- 11.1 Traffic Operations Plan

Appendices

- A.1 Traffic Count Summaries
- B.1 CMAP Projections
- C.1 SRA Report Exhibit
- D.1 ITE Trip Generation Excerpts
- E.1 Life Time Fitness Trip Generation Study
- F.1 Turn Lane Warrant Analysis
- G.1 Capacity Analysis Worksheets

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Technical Addendum

Exhibits



Proposed LifeTime Fitness – Northeast Corner Rand Rd and Old Rand Rd; Lake Zurich, Illinois



Looking west along Old Rand Rd crosswalk



Looking northwest along Old Rand Rd crosswalk



Looking east along Old Rand Rd crosswalk



Looking south at townhouse west entrance at Old Rand Rd



Looking north from townhouse west entrance at Old Rand Rd



Looking west along Old Rand Rd at townhouse entrance



Looking west along Old Rand Rd at Pine Tree Row



Looking east along Old Rand Rd at Pine Tree Row



Looking north along Pine Tree Row at Old Rand Rd



Looking south along Pine Tree Row approach at Old Rand Rd



Looking west along Old Rand Rd approach at U.S. 12



Looking west along Old Rand Rd approach at U.S. 12



Looking north across Old Rand Rd from U.S. 12 right turn lane



Looking north along U.S. 12 NB approach at Old Rand Rd



Looking south along U.S. 12 NB approach at Old Rand Rd



Looking north along U.S. 12 SB approach at Ravinia Terrace



Looking south along U.S. 12 SB approach at Ravinia Terrace



Looking west along Golfview Rd approach at U.S. 12



Looking east along Golfview Rd at U.S. 12



Looking north along U.S. 12 at Golfview Rd



Looking east along Golfview Rd approach at U.S. 12



Looking south along U.S. 12 SB at Golfview Rd lot entrance



Looking west along Golfview Rd lot entrance at U.S. 12 SB



Looking east from Golfview Rd lot entrance at U.S. 12 SB

12



Not to Scale

Golfview Rd

Pine Tree Row




Site

Ravinia Terrace

North Old Rand Rd

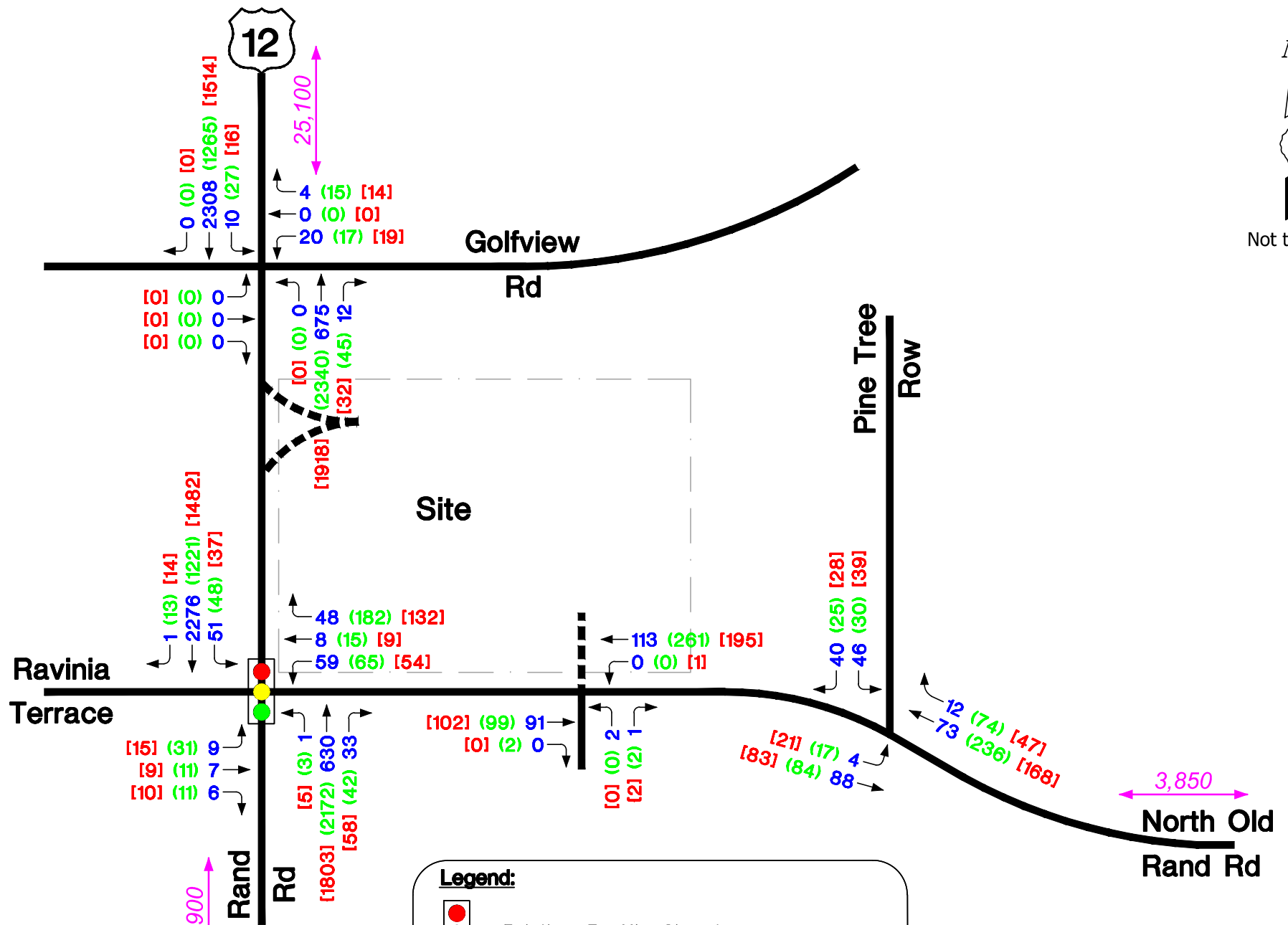
Rand Rd

Legend:

-  Existing Traffic Signal
-  Existing Travel Lane
-  Existing Stop Sign



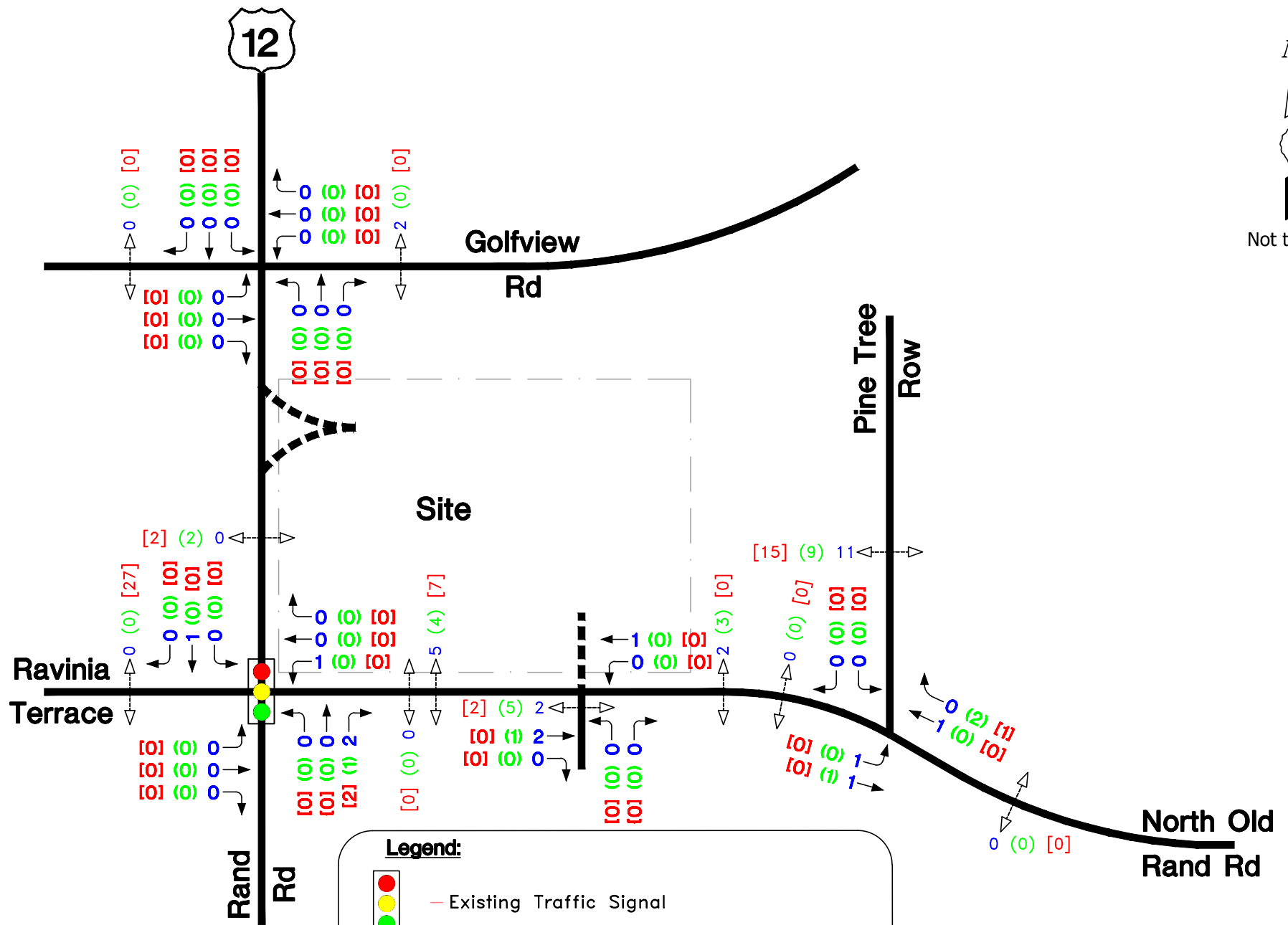
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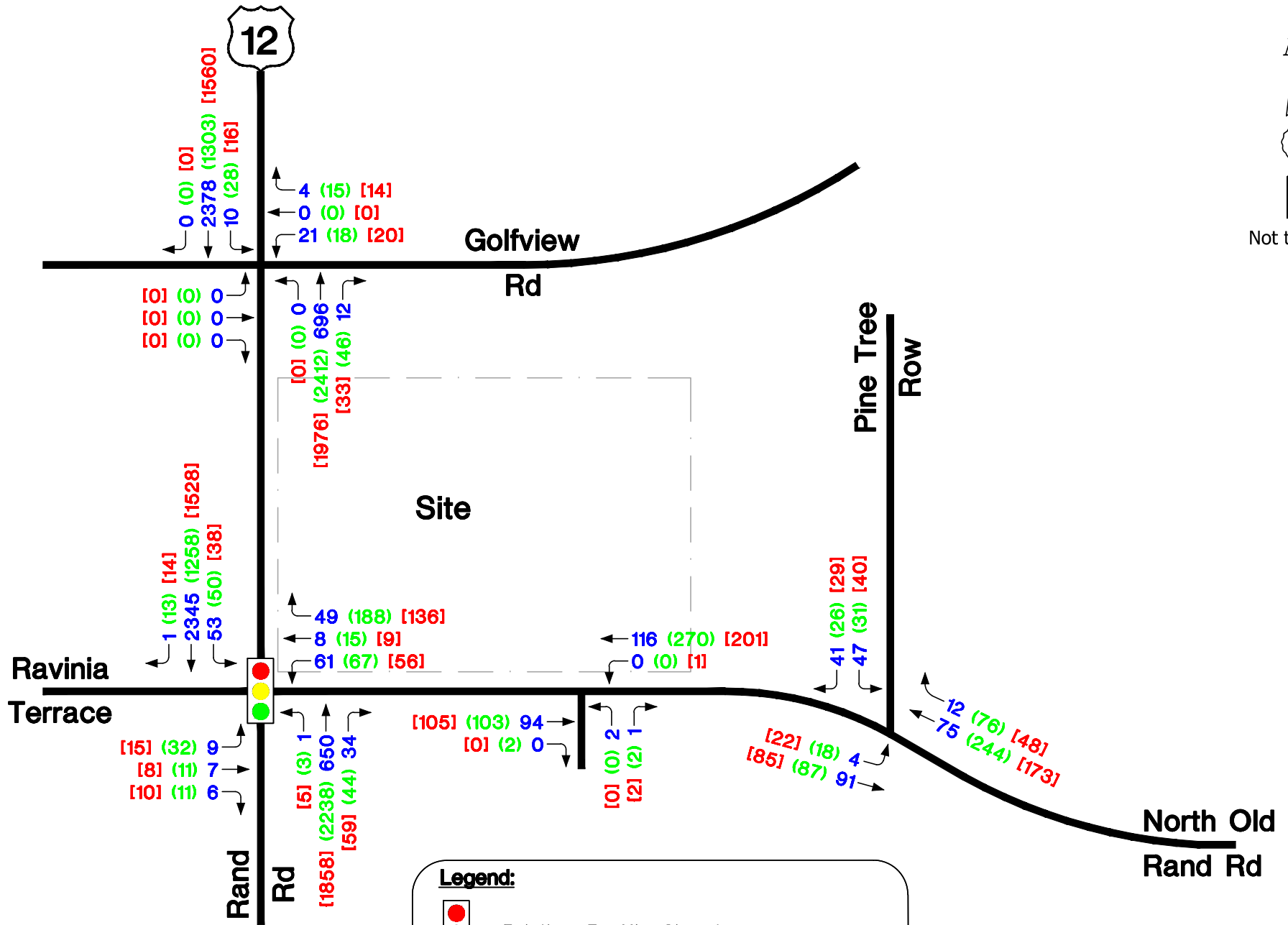


Legend:

- Existing Traffic Signal
- AM Peak Hour Bikes
- PM Peak Hour Bikes
- Saturday Midday Peak Hour Bikes
- AM Peak Hour PEDS
- PM Peak Hour PEDS
- Saturday Midday Peak Hour PEDS



Not to Scale



Legend:

- Existing Traffic Signal
- AM Peak Hour
- PM Peak Hour
- Saturday Midday Peak Hour

Exhibit 7
Project Traffic Characteristics

Proposed Life Time Fitness Development – Northeast Corner Old Rand Road and Rand Road, Lake Zurich, Illinois

Part A. Traffic Generation Calculations

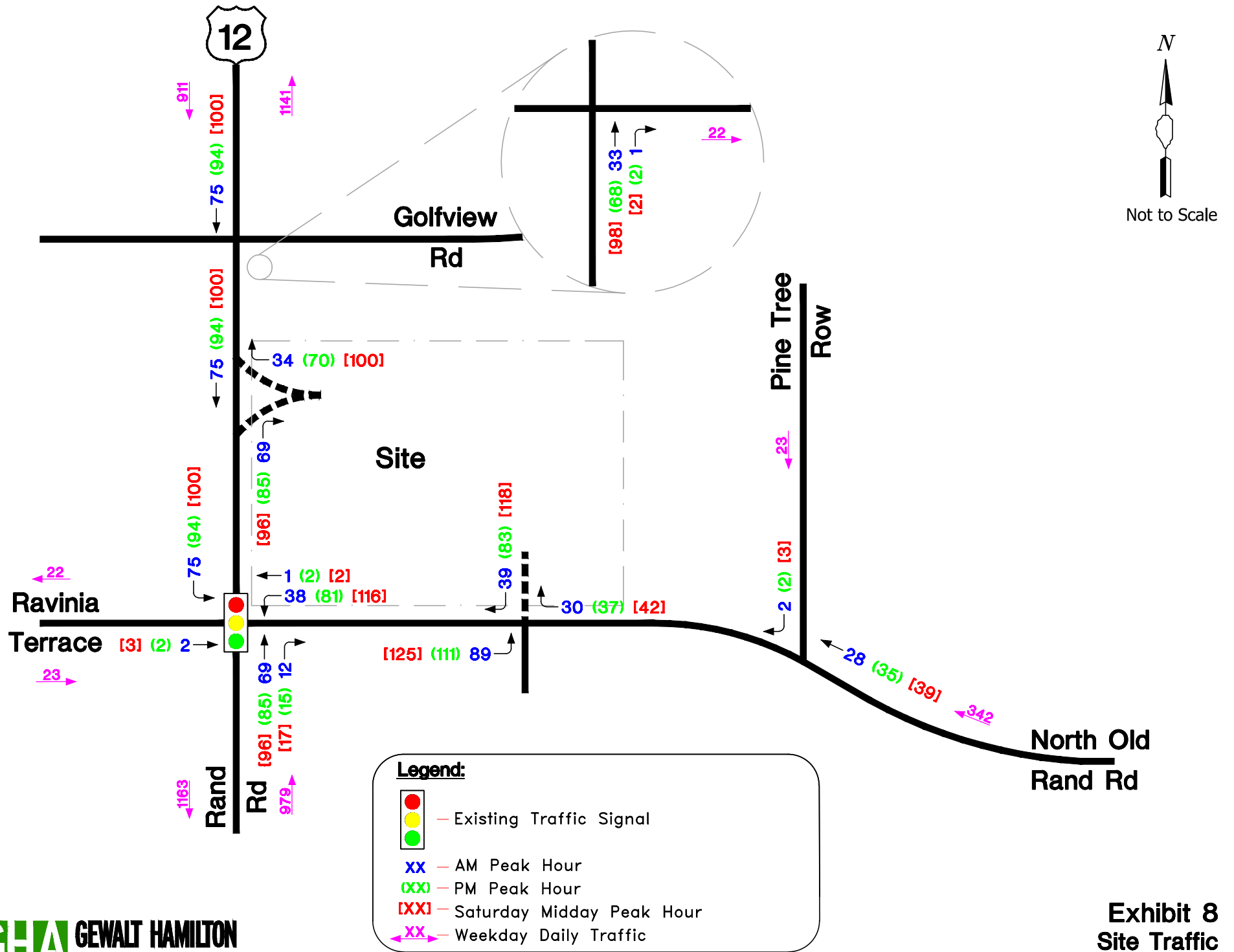
	ITE Code	Units	Morning Peak Hour			Evening Peak Hour			Saturday Midday			Weekday Daily		
			In	Out	Sum	In	Out	Sum	In	Out	Sum	In	Out	Sum
Proposed Development¹														
Health/Fitness Club	492	125 KSF	88	88	176	234	176	410	110	135	245	2058	2,058	4,116
	Local	125 KSF	188	73	261	233	153	386	263	218	481	2,278	2,195	4,473

Source: ITE Trip Generation Manual; 9th Edition.

Local Data Collected at Life Time Athletic in Vernon Hills from Thursday, December 28, 2017 through Saturday, January 6, 2018.

Part B. Trip Distribution

Route & Direction	Percent Use by Route	
	Approach Site From	Depart Site To
Rand Road		
- North of Golfview Road	40%	46%
- South of Old Rand Road	43%	53%
Old Rand Road		
- East of Pine Tree Row	15%	--
Ravinia Terrace		
- West of Rand Road	1%	1%
Pine Tree Row / Golfview Rod		
- North of Old Rand Road	1%	--
Totals =	100%	100%





Not to Scale

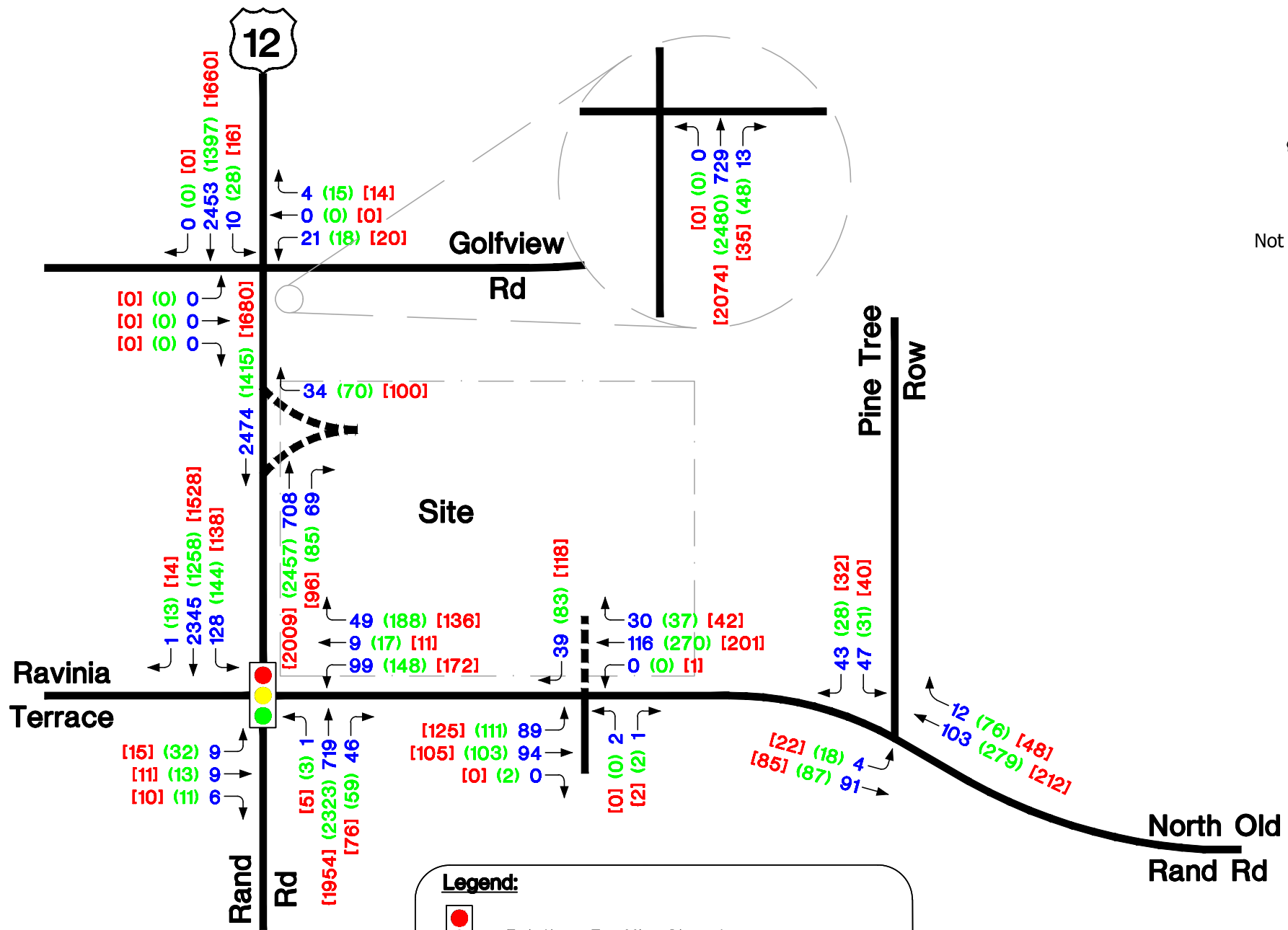


Exhibit 10
Intersection Capacity Analyses

Proposed LifeTime Fitness -Northeast Corner Rand Road and Old Rand Road, Lake Zurich, Illinois

Part A. Parameters - Type of Traffic Control (Source: Highway Capacity Manual, 6th Edition)

I. Traffic Signals

LOS	Delay (sec / veh)	Description
A	<10	All signal phases clear waiting vehicles without delay
B	>10 and < 20	Minimal delay experienced on select signal phases
C	>20 and < 35	Some delay experienced on several phases; often used as design criteria
D	>35 and < 55	Usually considered as the acceptable delay standard
E	>55 and < 80	Very long delays experienced during the peak hours
F	>80	Unacceptable delays experienced throughout the peak hours

II. Stop Sign

LOS	Delay (sec / veh)
A	< 10
B	>10 and < 15
C	>15 and < 25
D	>25 and < 35
E	>35 and < 50
F	>50

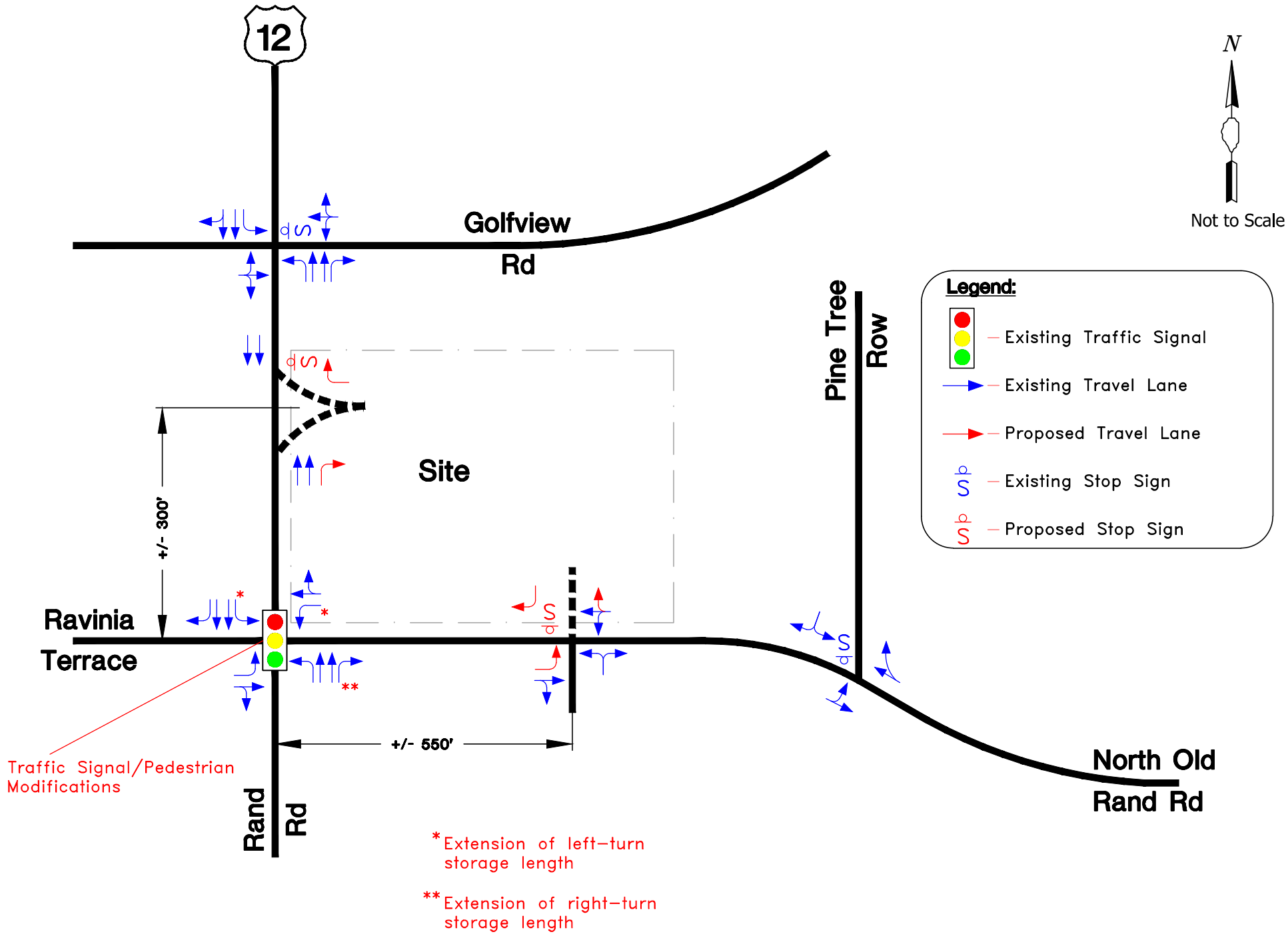
Part B. Results

	Roadway Conditions	LOS Per Movement Group By Approach												Intersection / Approach	
		> = Shared Lane						- = Non							
		Critical or not Allowed Movement TRT - Shared Through/Right lane (with an additional Through lane)												Delay (sec / veh)	LOS
		Eastbound			Westbound			Northbound			Southbound				
1. US 12 at Golfview Rd		TWSC - EB/WB Stops													
A. Weekday Morning Peak Hour															
Existing Traffic (See Exhibit 4)	• Current	-	-	-	>	D	<	-	-	-	A	-	<	27.3	D
	• 95th Queue Length (ft)	-	-	-	-	12	-	-	-	-	-	-	-	-	-
No-Build Traffic (See Exhibit 5)	• Current	-	-	-	>	D	<	-	-	-	A	-	<	28.5	D
	• 95th Queue Length (ft)	-	-	-	-	12	-	-	-	-	-	-	-	-	-
Total Traffic (See Exhibit 8)	• Current	-	-	-	>	D	<	-	-	-	A	-	<	30.3	D
	• 95th Queue Length (ft)	-	-	-	-	12	-	-	-	-	-	-	-	-	-
B. Weekday Evening Peak Hour															
Existing Traffic (See Exhibit 4)	• Current	-	-	-	>	F	<	-	-	-	D	-	<	109.6	F
	• 95th Queue Length (ft)	-	-	-	-	52.5	-	-	-	-	12	-	-	-	-
No-Build Traffic (See Exhibit 5)	• Current	-	-	-	>	F	<	-	-	-	D	-	<	133.1	F
	• 95th Queue Length (ft)	-	-	-	-	60	-	-	-	-	12	-	-	-	-
Total Traffic (See Exhibit 8)	• Current	-	-	-	>	F	<	-	-	-	D	-	<	154.8	F
	• 95th Queue Length (ft)	-	-	-	-	65	-	-	-	-	15	-	-	-	-
C. Saturday Midday Peak Hour															
Existing Traffic (See Exhibit 4)	• Current	-	-	-	>	F	<	-	-	-	C	-	<	58.6	F
	• 95th Queue Length (ft)	-	-	-	-	35	-	-	-	-	5	-	-	-	-
No-Build Traffic (See Exhibit 5)	• Current	-	-	-	>	F	<	-	-	-	C	-	<	66.3	F
	• 95th Queue Length (ft)	-	-	-	-	40	-	-	-	-	5	-	-	-	-
Total Traffic (See Exhibit 8)	• Current	-	-	-	>	F	<	-	-	-	C	-	<	78.9	F
	• 95th Queue Length (ft)	-	-	-	-	45	-	-	-	-	5	-	-	-	-
2. US 12 at Old Rand Rd/Ravina Terrace		Traffic Signal													
A. Weekday Morning Peak Hour															
Existing Traffic (See Exhibit 4)	• Current	E	E	<	E	E	<	F	A	A	F	B	A	16.0	B
	• 95th Queue Length (ft)	15	22	<	94	102	<	6	21	14	98	780	1	-	-
No-Build Traffic (See Exhibit 5)	• Current	E	E	<	E	E	<	F	A	A	F	B	A	17.4	B
	• 95th Queue Length (ft)	16	22	<	97	104	<	6	24	14	101	855	1	-	-
Total Traffic (See Exhibit 8)	• Current	E	E	<	E	E	<	F	A	A	E	C	A	21.8	C
	• 95th Queue Length (ft)	15	26	<	157	101	<	6	84	26	221	966	1	-	-
B. Weekday Evening Peak Hour															
Existing Traffic (See Exhibit 4)	• Current	E	E	<	D	F	<	F	B	A	F	B	A	19.6	B
	• 95th Queue Length (ft)	51	37	<	102	384	<	12	315	23	100	365	6	-	-
No-Build Traffic (See Exhibit 5)	• Current	E	E	<	D	F	<	F	B	A	F	B	A	22.7	C
	• 95th Queue Length (ft)	53	37	<	105	396	<	12	377	24	103	384	6	-	-
Total Traffic (See Exhibit 8)	• Current	E	E	<	E	F	<	F	F	B	F	B	A	45.5	D
	• 95th Queue Length (ft)	54	42	<	231	401	<	12	1002	38	375	387	6	-	-
C. Saturday Midday Peak Hour															
Existing Traffic (See Exhibit 4)	• Current	D	E	<	D	E	<	F	A	A	F	B	A	11.3	B
	• 95th Queue Length (ft)	24	30	<	76	234	<	15	130	23	70	360	5	-	-
No-Build Traffic (See Exhibit 5)	• Current	D	D	<	D	E	<	F	A	A	F	B	A	11.7	B
	• 95th Queue Length (ft)	24	28	<	78	240	<	15	145	24	71	382	5	-	-
Total Traffic (See Exhibit 8)	• Current	E	E	<	D	E	<	F	B	B	E	B	A	21.7	C
	• 95th Queue Length (ft)	25	36	<	237	223	<	15	268	303	253	434	6	-	-
3. Old Rand Rd at Site/Bayshore West		TWSC - NB/SB Stops													
A. Weekday Morning Peak Hour															
Existing Traffic (See Exhibit 4)	• Current	-	-	-	>	A	-	>	A	<	-	-	-	-	-
	• 95th Queue Length (ft)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
No-Build Traffic (See Exhibit 5)	• Current	-	-	-	>	A	-	>	A	<	-	-	-	-	-
	• 95th Queue Length (ft)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Traffic (See Exhibit 8)	• Current	A	-	-	>	A	<	>	A	<	-	-	A	9.2	A
	• 95th Queue Length (ft)	5	-	-	-	-	-	-	-	-	-	-	2	-	-
B. Weekday Evening Peak Hour															
Existing Traffic (See Exhibit 4)	• Current	-	-	-	>	A	-	>	A	<	-	-	-	-	-
	• 95th Queue Length (ft)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
No-Build Traffic (See Exhibit 5)	• Current	-	-	-	>	A	-	>	A	<	-	-	-	-	-
	• 95th Queue Length (ft)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Traffic (See Exhibit 8)	• Current	A	-	-	>	A	<	>	A	<	-	-	B	10.6	B
	• 95th Queue Length (ft)	8	-	-	-	-	-	-	-	-	-	-	10	-	-
C. Saturday Midday Peak Hour															
Existing Traffic (See Exhibit 4)	• Current	-	-	-	>	A	-	>	A	<	-	-	-	-	-
	• 95th Queue Length (ft)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
No-Build Traffic (See Exhibit 5)	• Current	-	-	-	>	A	-	>	A	<	-	-	-	-	-
	• 95th Queue Length (ft)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Traffic (See Exhibit 8)	• Current	A	-	-	>	A	<	>	A	<	-	-	B	10.4	B
	• 95th Queue Length (ft)	8	-	-	-	-	-	-	-	-	-	-	15	-	-
4. Old Rand Rd at Pine Tree Row		TWSC - SB Stops													
A. Weekday Morning Peak Hour															
Existing Traffic (See Exhibit 4)	• Current	>	A	-	-	-	-	-	-	-	>	A	<	9.8	A
	• 95th Queue Length (ft)	-	-	-	-	-	-	-	-	-	-	10	-	-	-
No-Build Traffic (See Exhibit 5)	• Current	>	A	-	-	-	-	-	-	-	>	A	<	9.9	A
	• 95th Queue Length (ft)	-	-	-	-	-	-	-	-	-	-	10	-	-	-
Total Traffic (See Exhibit 8)	• Current	>	A	-	-	-	-	-	-	-	>	B	<	10.1	B
	• 95th Queue Length (ft)	-	-	-	-	-	-	-	-	-	-	10	-	-	-
B. Weekday Evening Peak Hour															
Existing Traffic (See Exhibit 4)	• Current	>	A	-	-	-	-	-	-	-	>	B	<	11.2	B
	• 95th Queue Length (ft)	-	-	-	-	-	-	-	-	-	-	8	-	-	-
No-Build Traffic (See Exhibit 5)	• Current	>	A	-	-	-	-	-	-	-	>	B	<	11.3	B
	• 95th Queue Length (ft)	-	-	-	-	-	-	-	-	-	-	8	-	-	-
Total Traffic (See Exhibit 8)	• Current	>	A	-	-	-	-	-	-	-	>	B	<	11.6	B
	• 95th Queue Length (ft)	-	-	-	-	-	-	-	-	-	-	8	-	-	-
C. Saturday Midday Peak Hour															
Existing Traffic (See Exhibit 4)	• Current	>	A	-	-	-	-	-	-	-	>	B	<	10.8	B
	• 95th Queue Length (ft)	-	-	-	-	-	-	-	-	-	-	8	-	-	-
No-Build Traffic (See Exhibit 5)	• Current	>	A	-	-	-	-	-	-	-	>	B	<	10.9	B
	• 95th Queue Length (ft)	-	2	-	-	-	-	-	-	-	-	10	-	-	-
Total Traffic (See Exhibit 8)	• Current	>	A	-	-	-	-	-	-	-	>	B	<	11.3	B
	• 95th Queue Length (ft)	-	2	-	-	-	-	-	-	-	-	10	-	-	-
5. US 12 at Site RIRO		TWSC - WB Stops													
A. Weekday Morning Peak Hour															
Total Traffic (See Exhibit 8)	• Current	-	-	-	-	-	B	-	-	-	-	-	-	11.0	B
	• 95th Queue Length (ft)	-	-	-	-	-	5	-	-	-	-	-	-	-	-
B. Weekday Evening Peak Hour															
Total Traffic (See Exhibit 8)	• Current	-	-	-	-	-	E	-	-	-	-	-	-	47.2	E
	• 95th Queue Length (ft)	-	-	-	-	-	55	-	-	-	-	-	-	-	-
C. Saturday Midday Peak Hour															
Total Traffic (See Exhibit 8)	• Current	-	-	-	-	-	D	-	-	-	-	-	-	34.4	D
	• 95th Queue Length (ft)	-	-	-	-	-	58	-	-	-	-	-	-	-	-

95th percentile queue length in feet per lane .



Not to Scale



Appendices

Appendix A
Existing Traffic Count Summaries

Rand Rd at Golfview Rd - TMC

Tue Aug 1, 2017

Full Length (6AM-9AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Road)

All Movements

ID: 435802, Location: 42.205268, -88.111625



Provided by: Gewalt Hamilton Associates Inc.

625 Forest Edge Drive,
Vernon Hills, IL, 60061, US

Leg Direction	Access Eastbound						Golfview Rd Westbound						US-12 Northbound						US-12 Southbound						Int
	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	
2017-08-01																									
6:00AM	0	0	0	0	0	1	2	0	1	0	3	0	0	87	1	0	88	0	2	506	0	0	508	0	599
6:15AM	0	0	0	0	0	0	3	0	1	0	4	0	0	110	2	0	112	0	3	519	0	0	522	0	638
6:30AM	0	0	0	0	0	0	4	0	1	0	5	0	0	169	2	0	171	0	4	572	0	0	576	0	752
6:45AM	0	0	0	0	0	0	7	0	0	0	7	0	0	173	3	1	177	0	1	570	0	0	571	0	755
Hourly Total	0	0	0	0	0	1	16	0	3	0	19	0	0	539	8	1	548	0	10	2167	0	0	2177	0	2744
7:00AM	0	0	0	0	0	0	5	0	2	0	7	0	0	142	5	0	147	0	1	590	0	0	591	0	745
7:15AM	0	0	0	0	0	0	4	0	1	0	5	2	0	157	1	1	159	0	4	576	0	0	580	0	744
7:30AM	0	0	0	0	0	0	4	0	5	0	9	0	0	175	5	0	180	0	5	546	0	0	551	0	740
7:45AM	0	0	0	0	0	0	4	0	4	0	8	0	0	177	4	1	182	0	7	543	0	0	550	0	740
Hourly Total	0	0	0	0	0	0	17	0	12	0	29	2	0	651	15	2	668	0	17	2255	0	0	2272	0	2969
8:00AM	0	0	0	0	0	0	4	0	1	0	5	0	0	224	5	0	229	0	5	497	0	0	502	0	736
8:15AM	0	0	0	0	0	0	9	0	3	0	12	1	0	202	3	0	205	1	3	468	0	0	471	0	688
8:30AM	0	0	0	0	0	2	7	0	4	0	11	2	0	232	2	0	234	1	4	415	0	0	419	0	664
8:45AM	0	0	0	0	0	0	8	0	1	0	9	0	0	223	4	0	227	0	6	467	0	0	473	0	709
Hourly Total	0	0	0	0	0	2	28	0	9	0	37	3	0	881	14	0	895	2	18	1847	0	0	1865	0	2797
Total	0	0	0	0	0	3	61	0	24	0	85	5	0	2071	37	3	2111	2	45	6269	0	0	6314	0	8510
% Approach	0%	0%	0%	0%	0%	-	71.8%	0%	28.2%	0%	-	-	0%	98.1%	1.8%	0.1%	-	-	0.7%	99.3%	0%	0%	-	-	-
% Total	0%	0%	0%	0%	0%	0%	0.7%	0%	0.3%	0%	1.0%	-	0%	24.3%	0.4%	0%	24.8%	-	0.5%	73.7%	0%	0%	74.2%	-	-
Lights	0	0	0	0	0	-	60	0	23	0	83	-	0	1817	35	3	1855	-	42	5914	0	0	5956	-	7894
% Lights	0%	0%	0%	0%	0%	-	98.4%	0%	95.8%	0%	97.6%	-	0%	87.7%	94.6%	100%	87.9%	-	93.3%	94.3%	0%	0%	94.3%	-	92.8%
Articulated Trucks	0	0	0	0	0	-	0	0	0	0	0	-	0	103	0	0	103	-	0	154	0	0	154	-	257
% Articulated Trucks	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	5.0%	0%	0%	4.9%	-	0%	2.5%	0%	0%	2.4%	-	3.0%
Buses and Single-Unit Trucks	0	0	0	0	0	-	0	0	1	0	1	-	0	150	2	0	152	-	3	201	0	0	204	-	357
% Buses and Single-Unit Trucks	0%	0%	0%	0%	0%	-	0%	0%	4.2%	0%	1.2%	-	0%	7.2%	5.4%	0%	7.2%	-	6.7%	3.2%	0%	0%	3.2%	-	4.2%
Bicycles on Road	0	0	0	0	0	-	1	0	0	0	1	-	0	1	0	0	1	-	0	0	0	0	0	-	2
% Bicycles on Road	0%	0%	0%	0%	0%	-	1.6%	0%	0%	0%	1.2%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%
Pedestrians	-	-	-	-	-	3	-	-	-	-	5	-	-	-	-	-	2	-	-	-	-	-	-	-	0
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Rand Rd at Golfview Rd - TMC

Tue Aug 1, 2017

AM Peak (6:30AM - 7:30AM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Road)

All Movements

ID: 435802, Location: 42.205268, -88.111625



Provided by: Gewalt Hamilton Associates Inc.

625 Forest Edge Drive,
Vernon Hills, IL, 60061, US

Leg Direction	Access Eastbound						Golfview Rd Westbound						US-12 Northbound						US-12 Southbound						Int						
	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*							
2017-08-01																															
6:30AM	0	0	0	0	0	0	4	0	1	0	5	0	0	169	2	0	171	0	4	572	0	0	576	0							752
6:45AM	0	0	0	0	0	0	7	0	0	0	7	0	0	173	3	1	177	0	1	570	0	0	571	0							755
7:00AM	0	0	0	0	0	0	5	0	2	0	7	0	0	142	5	0	147	0	1	590	0	0	591	0							745
7:15AM	0	0	0	0	0	0	4	0	1	0	5	2	0	157	1	1	159	0	4	576	0	0	580	0							744
Total	0	0	0	0	0	0	20	0	4	0	24	2	0	641	11	2	654	0	10	2308	0	0	2318	0							2996
% Approach	0%	0%	0%	0%	0%	-	83.3%	0%	16.7%	0%	-	-	0%	98.0%	1.7%	0.3%	-	-	0.4%	99.6%	0%	0%	-	-							-
% Total	0%	0%	0%	0%	0%	0%	0.7%	0%	0.1%	0%	0.8%	-	0%	21.4%	0.4%	0.1%	21.8%	-	0.3%	77.0%	0%	0%	77.4%	-							-
PHF	-	-	-	-	-	-	0.714	-	0.500	-	0.857	-	-	0.926	0.550	0.500	0.924	-	0.625	0.978	-	-	0.981	-							0.992
Lights	0	0	0	0	0	-	20	0	3	0	23	-	0	568	10	2	580	-	9	2177	0	0	2186	-							2789
% Lights	0%	0%	0%	0%	0%	-	100%	0%	75.0%	0%	95.8%	-	0%	88.6%	90.9%	100%	88.7%	-	90.0%	94.3%	0%	0%	94.3%	-							93.1%
Articulated Trucks	0	0	0	0	0	-	0	0	0	0	0	-	0	37	0	0	37	-	0	52	0	0	52	-							89
% Articulated Trucks	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	5.8%	0%	0%	5.7%	-	0%	2.3%	0%	0%	2.2%	-							3.0%
Buses and Single-Unit Trucks	0	0	0	0	0	-	0	0	1	0	1	-	0	36	1	0	37	-	1	79	0	0	80	-							118
% Buses and Single-Unit Trucks	0%	0%	0%	0%	0%	-	0%	0%	25.0%	0%	4.2%	-	0%	5.6%	9.1%	0%	5.7%	-	10.0%	3.4%	0%	0%	3.5%	-							3.9%
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-							0
% Bicycles on Road	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-							0%
Pedestrians	-	-	-	-	-	0	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-							0
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	-	-							-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Rand Rd at Golfview Rd - TMC

Tue Aug 1, 2017

Full Length (3PM-6PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 435809, Location: 42.205237, -88.111573



Provided by: Gewalt Hamilton Associates Inc.

625 Forest Edge Drive,
Vernon Hills, IL, 60061, US

Leg Direction	Access Eastbound						Golfview Rd Westbound						US-12 Northbound						US-12 Southbound						Int
	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	
2017-08-01 3:00PM	0	0	0	0	0	0	4	0	5	0	9	0	0	461	5	0	466	0	9	311	0	0	320	0	795
3:15PM	0	0	0	0	0	1	6	0	6	0	12	0	0	567	5	0	572	0	8	287	0	1	296	0	880
3:30PM	0	0	0	0	0	1	7	0	3	0	10	0	0	510	12	0	522	0	2	308	0	1	311	0	843
3:45PM	0	0	0	0	0	1	3	0	4	0	7	0	0	502	10	2	514	0	3	323	0	0	326	0	847
Hourly Total	0	0	0	0	0	3	20	0	18	0	38	0	0	2040	32	2	2074	0	22	1229	0	2	1253	0	3365
4:00PM	0	0	0	0	0	0	2	0	8	0	10	0	0	522	6	0	528	0	0	294	0	1	295	0	833
4:15PM	0	0	0	0	0	0	2	0	5	0	7	0	0	577	10	0	587	0	5	322	0	1	328	0	922
4:30PM	0	0	0	0	0	0	4	0	1	0	5	0	0	593	14	0	607	0	9	307	0	2	318	0	930
4:45PM	0	0	0	0	0	0	7	0	2	0	9	0	0	561	12	0	573	0	6	293	0	3	302	0	884
Hourly Total	0	0	0	0	0	0	15	0	16	0	31	0	0	2253	42	0	2295	0	20	1216	0	7	1243	0	3569
5:00PM	0	0	0	1	1	0	4	0	7	0	11	0	0	594	9	0	603	0	7	323	0	3	333	0	948
5:15PM	0	0	0	0	0	0	5	0	3	0	8	0	0	580	9	0	589	0	3	289	0	0	292	0	889
5:30PM	0	0	0	0	0	0	4	0	2	0	6	0	0	563	12	0	575	0	6	279	0	0	285	0	866
5:45PM	0	0	0	0	0	0	3	0	5	0	8	0	0	557	10	0	567	0	3	283	0	1	287	0	862
Hourly Total	0	0	0	1	1	0	16	0	17	0	33	0	0	2294	40	0	2334	0	19	1174	0	4	1197	0	3565
Total	0	0	0	1	1	3	51	0	51	0	102	0	0	6587	114	2	6703	0	61	3619	0	13	3693	0	10499
% Approach	0%	0%	0%	100%	-	-	50.0%	0%	50.0%	0%	-	-	0%	98.3%	1.7%	0%	-	-	1.7%	98.0%	0%	0.4%	-	-	-
% Total	0%	0%	0%	0%	0%	-	0.5%	0%	0.5%	0%	1.0%	-	0%	62.7%	1.1%	0%	63.8%	-	0.6%	34.5%	0%	0.1%	35.2%	-	-
Lights	0	0	0	1	1	-	51	0	50	0	101	-	0	6374	114	2	6490	-	61	3440	0	13	3514	-	10106
% Lights	0%	0%	0%	100%	100%	-	100%	0%	98.0%	0%	99.0%	-	0%	96.8%	100%	100%	96.8%	-	100%	95.1%	0%	100%	95.2%	-	96.3%
Articulated Trucks	0	0	0	0	0	-	0	0	1	0	1	-	0	71	0	0	71	-	0	79	0	0	79	-	151
% Articulated Trucks	0%	0%	0%	0%	0%	-	0%	0%	2.0%	0%	1.0%	-	0%	1.1%	0%	0%	1.1%	-	0%	2.2%	0%	0%	2.1%	-	1.4%
Buses and Single-Unit Trucks	0	0	0	0	0	-	0	0	0	0	0	-	0	141	0	0	141	-	0	100	0	0	100	-	241
% Buses and Single-Unit Trucks	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	2.1%	0%	0%	2.1%	-	0%	2.8%	0%	0%	2.7%	-	2.3%
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	1	-	0	0	0	0	0	-	1
% Bicycles on Road	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	0
% Pedestrians	-	-	-	-	33.3%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	0
% Bicycles on Crosswalk	-	-	-	-	66.7%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Rand Rd at Golfview Rd - TMC

Tue Aug 1, 2017

PM Peak (4:15PM - 5:15PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 435809, Location: 42.205237, -88.111573



Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive,
Vernon Hills, IL, 60061, US

Leg Direction	Access Eastbound						Golfview Rd Westbound						US-12 Northbound						US-12 Southbound						Int
	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	
2017-08-01 4:15PM	0	0	0	0	0	0	2	0	5	0	7	0	0	577	10	0	587	0	5	322	0	1	328	0	922
4:30PM	0	0	0	0	0	0	4	0	1	0	5	0	0	593	14	0	607	0	9	307	0	2	318	0	930
4:45PM	0	0	0	0	0	0	7	0	2	0	9	0	0	561	12	0	573	0	6	293	0	3	302	0	884
5:00PM	0	0	0	1	1	0	4	0	7	0	11	0	0	594	9	0	603	0	7	323	0	3	333	0	948
Total	0	0	0	1	1	0	17	0	15	0	32	0	0	2325	45	0	2370	0	27	1245	0	9	1281	0	3684
% Approach	0%	0%	0%	100%	-	-	53.1%	0%	46.9%	0%	-	-	0%	98.1%	1.9%	0%	-	-	2.1%	97.2%	0%	0.7%	-	-	-
% Total	0%	0%	0%	0%	0%	-	0.5%	0%	0.4%	0%	0.9%	-	0%	63.1%	1.2%	0%	64.3%	-	0.7%	33.8%	0%	0.2%	34.8%	-	-
PHF	-	-	-	0.250	0.250	-	0.607	-	0.536	-	0.727	-	-	0.979	0.804	-	0.976	-	0.750	0.964	-	0.750	0.962	-	0.972
Lights	0	0	0	1	1	-	17	0	14	0	31	-	0	2261	45	0	2306	-	27	1194	0	9	1230	-	3568
% Lights	0%	0%	0%	100%	100%	-	100%	0%	93.3%	0%	96.9%	-	0%	97.2%	100%	0%	97.3%	-	100%	95.9%	0%	100%	96.0%	-	96.9%
Articulated Trucks	0	0	0	0	0	-	0	0	1	0	1	-	0	18	0	0	18	-	0	27	0	0	27	-	46
% Articulated Trucks	0%	0%	0%	0%	0%	-	0%	0%	6.7%	0%	3.1%	-	0%	0.8%	0%	0%	0.8%	-	0%	2.2%	0%	0%	2.1%	-	1.2%
Buses and Single-Unit Trucks	0	0	0	0	0	-	0	0	0	0	0	-	0	46	0	0	46	-	0	24	0	0	24	-	70
% Buses and Single-Unit Trucks	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	2.0%	0%	0%	1.9%	-	0%	1.9%	0%	0%	1.9%	-	1.9%
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0
% Bicycles on Road	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	-	-	0
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	-	-	0
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Rand Rd at Golfview Rd - TMC

Sat Jul 29, 2017

Full Length (11AM-2PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 435805, Location: 42.205276, -88.111559



Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Access Eastbound						Golfview Rd Westbound						US-12 Northbound						US-12 Southbound						Int
	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	
2017-07-29																									
11:00AM	0	0	0	0	0	0	9	0	0	0	9	0	0	424	12	0	436	0	5	362	0	0	367	0	812
11:15AM	0	0	0	0	0	0	7	0	4	0	11	0	0	376	10	0	386	0	3	378	0	0	381	0	778
11:30AM	0	0	0	0	0	0	5	0	4	0	9	0	0	426	10	2	438	0	5	405	0	1	411	0	858
11:45AM	0	0	0	0	0	0	5	0	3	0	8	0	0	406	11	1	418	0	5	365	0	1	371	0	797
Hourly Total	0	0	0	0	0	0	26	0	11	0	37	0	0	1632	43	3	1678	0	18	1510	0	2	1530	0	3245
12:00PM	0	0	0	0	0	0	8	0	6	0	14	0	0	439	13	1	453	0	3	364	0	1	368	0	835
12:15PM	0	0	0	0	0	0	5	0	1	0	6	0	0	448	6	0	454	0	1	405	0	1	407	0	867
12:30PM	0	0	0	0	0	0	5	0	3	0	8	0	0	470	7	1	478	0	6	366	0	0	372	0	858
12:45PM	0	0	0	0	0	0	4	0	4	0	8	0	0	443	4	0	447	0	4	380	0	0	384	0	839
Hourly Total	0	0	0	0	0	0	22	0	14	0	36	0	0	1800	30	2	1832	0	14	1515	0	2	1531	0	3399
1:00PM	0	0	0	0	0	0	5	0	6	0	11	0	0	557	15	0	572	0	5	363	0	3	371	0	954
1:15PM	0	0	0	0	0	0	3	1	3	0	7	0	0	446	10	0	456	0	5	375	0	0	380	0	843
1:30PM	0	0	0	0	0	0	6	0	5	0	11	0	0	437	4	0	441	0	7	345	0	0	352	0	804
1:45PM	0	0	0	0	0	0	4	0	5	0	9	0	0	425	16	2	443	0	6	367	0	0	373	0	825
Hourly Total	0	0	0	0	0	0	18	1	19	0	38	0	0	1865	45	2	1912	0	23	1450	0	3	1476	0	3426
Total	0	0	0	0	0	0	66	1	44	0	111	0	0	5297	118	7	5422	0	55	4475	0	7	4537	0	10070
% Approach	0%	0%	0%	0%	0%	-	59.5%	0.9%	39.6%	0%	-	0%	97.7%	2.2%	0.1%	-	1.2%	98.6%	0%	0.2%	-	-	-		
% Total	0%	0%	0%	0%	0%	-	0.7%	0%	0.4%	0%	1.1%	0%	52.6%	1.2%	0.1%	53.8%	0.5%	44.4%	0%	0.1%	45.1%	-	-		
% Lights	0	0	0	0	0	-	66	0	44	0	110	0	5202	117	7	5326	55	4407	0	7	4469	-	9905		
% Lights	0%	0%	0%	0%	0%	-	100%	0%	100%	0%	99.1%	0%	98.2%	99.2%	100%	98.2%	100%	98.5%	0%	100%	98.5%	-	98.4%		
Articulated Trucks	0	0	0	0	0	-	0	0	0	0	0	0	32	0	0	32	0	19	0	0	19	-	51		
% Articulated Trucks	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	0.6%	0%	0%	0.6%	0%	0.4%	0%	0%	0.4%	-	0.5%		
Buses and Single-Unit Trucks	0	0	0	0	0	-	0	1	0	0	1	0	63	1	0	64	0	49	0	0	49	-	114		
% Buses and Single-Unit Trucks	0%	0%	0%	0%	0%	-	0%	100%	0%	0%	0.9%	0%	1.2%	0.8%	0%	1.2%	0%	1.1%	0%	0%	1.1%	-	1.1%		

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Rand Rd at Golfview Rd - TMC

Sat Jul 29, 2017

Midday Peak (WKND) (12:15PM - 1:15PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 435805, Location: 42.205276, -88.111559



Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Access Eastbound						Golfview Rd Westbound						US-12 Northbound						US-12 Southbound						Int
	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	
2017-07-29 12:15PM	0	0	0	0	0	0	5	0	1	0	6	0	0	448	6	0	454	0	1	405	0	1	407	0	867
12:30PM	0	0	0	0	0	0	5	0	3	0	8	0	0	470	7	1	478	0	6	366	0	0	372	0	858
12:45PM	0	0	0	0	0	0	4	0	4	0	8	0	0	443	4	0	447	0	4	380	0	0	384	0	839
1:00PM	0	0	0	0	0	0	5	0	6	0	11	0	0	557	15	0	572	0	5	363	0	3	371	0	954
Total	0	0	0	0	0	0	19	0	14	0	33	0	0	1918	32	1	1951	0	16	1514	0	4	1534	0	3518
% Approach	0%	0%	0%	0%	-	-	57.6%	0%	42.4%	0%	-	-	0%	98.3%	1.6%	0.1%	-	-	1.0%	98.7%	0%	0.3%	-	-	-
% Total	0%	0%	0%	0%	0%	-	0.5%	0%	0.4%	0%	0.9%	-	0%	54.5%	0.9%	0%	55.5%	-	0.5%	43.0%	0%	0.1%	43.6%	-	-
PHF	-	-	-	-	-	-	0.950	-	0.583	-	0.750	-	-	0.861	0.533	0.250	0.853	-	0.667	0.935	-	0.333	0.942	-	0.922
Lights	0	0	0	0	0	-	19	0	14	0	33	-	0	1882	32	1	1915	-	16	1488	0	4	1508	-	3456
% Lights	0%	0%	0%	0%	-	-	100%	0%	100%	0%	100%	-	0%	98.1%	100%	100%	98.2%	-	100%	98.3%	0%	100%	98.3%	-	98.2%
Articulated Trucks	0	0	0	0	0	-	0	0	0	0	0	-	0	11	0	0	11	-	0	4	0	0	4	-	15
% Articulated Trucks	0%	0%	0%	0%	-	-	0%	0%	0%	0%	0%	-	0%	0.6%	0%	0%	0.6%	-	0%	0.3%	0%	0%	0.3%	-	0.4%
Buses and Single-Unit Trucks	0	0	0	0	0	-	0	0	0	0	0	-	0	25	0	0	25	-	0	22	0	0	22	-	47
% Buses and Single-Unit Trucks	0%	0%	0%	0%	-	-	0%	0%	0%	0%	0%	-	0%	1.3%	0%	0%	1.3%	-	0%	1.5%	0%	0%	1.4%	-	1.3%

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Rand Rd at Old Rand Rd / Ravinia Terrace - TMC

Tue Aug 1, 2017

Full Length (6AM-9AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 435801, Location: 42.203352, -88.111608



Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive,
Vernon Hills, IL, 60061, US

Leg Direction	Ravinia Ter Eastbound					Old Rand Rd Westbound					US-12 Northbound					US-12 Southbound					Int				
	L	T	R	U	App Ped*	L	T	R	U	App Ped*	L	T	R	U	App Ped*	L	T	R	U	App Ped*					
2017-08-01 6:00AM	2	0	3	0	5	0	5	0	0	0	5	0	87	5	0	92	0	5	505	1	0	511	0	613	
6:15AM	4	1	3	0	8	0	8	2	5	0	15	0	0	99	4	0	103	0	8	528	0	0	536	0	662
6:30AM	4	2	5	0	11	0	8	1	5	0	14	0	1	161	3	0	165	0	4	557	0	0	561	0	751
6:45AM	3	0	4	0	7	0	7	0	7	0	14	0	1	170	4	0	175	0	8	571	0	0	579	0	775
Hourly Total	13	3	15	0	31	0	28	3	17	0	48	0	2	517	16	0	535	0	25	2161	1	0	2187	0	2801
7:00AM	2	3	0	0	5	0	17	0	8	0	25	0	0	139	6	0	145	0	8	584	0	0	592	0	767
7:15AM	1	2	0	0	3	0	8	1	4	0	13	0	0	164	5	0	169	0	12	572	1	0	585	0	770
7:30AM	3	0	2	0	5	0	16	3	9	0	28	0	0	157	9	0	166	0	7	545	0	1	553	0	752
7:45AM	3	2	3	0	8	0	15	4	16	0	35	0	1	162	9	0	172	0	9	550	0	0	559	0	774
Hourly Total	9	7	5	0	21	0	56	8	37	0	101	0	1	622	29	0	652	0	36	2251	1	1	2289	0	3063
8:00AM	3	4	4	0	11	0	14	1	14	0	29	0	0	211	7	0	218	0	14	480	1	0	495	0	753
8:15AM	4	1	2	0	7	1	15	0	9	0	24	0	1	193	6	1	201	0	18	462	2	0	482	0	714
8:30AM	2	3	0	0	5	0	11	0	11	0	22	0	0	218	7	0	225	1	7	411	2	0	420	0	672
8:45AM	6	4	2	0	12	0	11	4	10	0	25	0	0	218	11	0	229	0	9	465	0	0	474	0	740
Hourly Total	15	12	8	0	35	1	51	5	44	0	100	0	1	840	31	1	873	1	48	1818	5	0	1871	0	2879
Total	37	22	28	0	87	1	135	16	98	0	249	0	4	1979	76	1	2060	1	109	6230	7	1	6347	0	8743
% Approach	42.5%	25.3%	32.2%	0%	-	-	54.2%	6.4%	39.4%	0%	-	-	0.2%	96.1%	3.7%	0%	-	-	1.7%	98.2%	0.1%	0%	-	-	-
% Total	0.4%	0.3%	0.3%	0%	1.0%	-	1.5%	0.2%	1.1%	0%	2.8%	-	0%	22.6%	0.9%	0%	23.6%	-	1.2%	71.3%	0.1%	0%	0%	72.6%	-
Lights	36	22	26	0	84	-	129	14	94	0	237	-	3	1735	71	0	1809	-	109	5877	7	1	5994	-	8124
% Lights	97.3%	100%	92.9%	0%	96.6%	-	95.6%	87.5%	95.9%	0%	95.2%	-	75.0%	87.7%	93.4%	0%	87.8%	-	100%	94.3%	100%	100%	94.4%	-	92.9%
Articulated Trucks	0	0	0	0	0	-	0	0	0	0	0	-	0	101	0	0	101	-	0	153	0	0	153	-	254
% Articulated Trucks	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	5.1%	0%	0%	4.9%	-	0%	2.5%	0%	0%	2.4%	-	2.9%
Buses and Single-Unit Trucks	1	0	1	0	2	-	6	2	4	0	12	-	1	143	3	1	148	-	0	199	0	0	199	-	361
% Buses and Single-Unit Trucks	2.7%	0%	3.6%	0%	2.3%	-	4.4%	12.5%	4.1%	0%	4.8%	-	25.0%	7.2%	3.9%	100%	7.2%	-	0%	3.2%	0%	0%	3.1%	-	4.1%
Bicycles on Road	0	0	1	0	1	-	0	0	0	0	0	-	0	0	2	0	2	-	0	1	0	0	1	-	4
% Bicycles on Road	0%	0%	3.6%	0%	1.1%	-	0%	0%	0%	0%	0%	-	0%	0%	2.6%	0%	0.1%	-	0%	0%	0%	0%	0%	-	0%
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	100%	-	-	-	-	-	0%	-	-	-	-	-	100%	-	-	-	-	-	-	0%	-

* Pedestrians and Bicycles on Crosswalk L: Left, R: Right, T: Thru, U: U-Turn

Rand Rd at Old Rand Rd / Ravinia Terrace - TMC

Tue Aug 1, 2017

AM Peak (6:45AM - 7:45AM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 435801, Location: 42.203352, -88.111608



Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive,
Vernon Hills, IL, 60061, US

Leg Direction	Ravinia Ter Eastbound						Old Rand Rd Westbound						US-12 Northbound						US-12 Southbound						Int
	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	
2017-08-01 6:45AM	3	0	4	0	7	0	7	0	7	0	14	0	1	170	4	0	175	0	8	571	0	0	579	0	775
7:00AM	2	3	0	0	5	0	17	0	8	0	25	0	0	139	6	0	145	0	8	584	0	0	592	0	767
7:15AM	1	2	0	0	3	0	8	1	4	0	13	0	0	164	5	0	169	0	12	572	1	0	585	0	770
7:30AM	3	0	2	0	5	0	16	3	9	0	28	0	0	157	9	0	166	0	7	545	0	1	553	0	752
Total	9	5	6	0	20	0	48	4	28	0	80	0	1	630	24	0	655	0	35	2272	1	1	2309	0	3064
% Approach	45.0%	25.0%	30.0%	0%	-	-	60.0%	5.0%	35.0%	0%	-	-	0.2%	96.2%	3.7%	0%	-	-	1.5%	98.4%	0%	0%	-	-	-
% Total	0.3%	0.2%	0.2%	0%	0.7%	-	1.6%	0.1%	0.9%	0%	2.6%	-	0%	20.6%	0.8%	0%	21.4%	-	1.1%	74.2%	0%	0%	75.4%	-	-
PHF	0.750	0.417	0.375	-	0.714	-	0.706	0.333	0.778	-	0.714	-	0.250	0.926	0.667	-	0.936	-	0.729	0.973	0.250	0.250	0.975	-	0.988
Lights	9	5	6	0	20	-	44	4	26	0	74	-	1	562	21	0	584	-	35	2136	1	1	2173	-	2851
% Lights	100%	100%	100%	0%	100%	-	91.7%	100%	92.9%	0%	92.5%	-	100%	89.2%	87.5%	0%	89.2%	-	100%	94.0%	100%	100%	94.1%	-	93.0%
Articulated Trucks	0	0	0	0	0	-	0	0	0	0	0	-	0	31	0	0	31	-	0	52	0	0	52	-	83
% Articulated Trucks	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	4.9%	0%	0%	4.7%	-	0%	2.3%	0%	0%	2.3%	-	2.7%
Buses and Single-Unit Trucks	0	0	0	0	0	-	4	0	2	0	6	-	0	37	3	0	40	-	0	83	0	0	83	-	129
% Buses and Single-Unit Trucks	0%	0%	0%	0%	0%	-	8.3%	0%	7.1%	0%	7.5%	-	0%	5.9%	12.5%	0%	6.1%	-	0%	3.7%	0%	0%	3.6%	-	4.2%
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	1	-	1
% Bicycles on Road	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	-	-	0
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Rand Rd at Old Rand Rd and Ravinia Terrace - TMC

Tue Aug 1, 2017

Full Length (11AM-2PM, 3PM-6PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Road)

All Movements

ID: 435806, Location: 42.203311, -88.111547



Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive,
Vernon Hills, IL, 60061, US

Leg Direction	Ravinia Ter Eastbound						Old Rand Rd Westbound						US-12 Northbound						US-12 Southbound						Int
	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	
2017-08-01																									
11:00AM	6	2	2	0	10	0	9	1	16	0	26	0	1	279	12	0	292	0	12	306	4	0	322	0	650
11:15AM	6	3	2	0	11	0	15	0	10	0	25	0	1	293	11	0	305	0	6	340	1	0	347	0	688
11:30AM	3	0	0	0	3	0	12	5	18	0	35	0	1	249	17	1	268	0	10	327	4	0	341	1	647
11:45AM	4	2	8	0	14	0	10	1	30	0	41	0	1	336	13	0	350	0	7	307	2	2	318	0	723
Hourly Total	19	7	12	0	38	0	46	7	74	0	127	0	4	1157	53	1	1215	0	35	1280	11	2	1328	1	2708
12:00PM	4	1	1	0	6	0	13	4	30	0	47	0	0	264	14	0	278	0	12	336	3	1	352	0	683
12:15PM	3	5	2	0	10	0	16	5	30	0	51	0	1	293	21	0	315	0	23	320	1	0	344	1	720
12:30PM	2	2	5	0	9	0	11	3	10	0	24	0	1	333	18	0	352	0	16	298	2	0	316	0	701
12:45PM	5	4	1	0	10	0	9	6	25	0	40	0	2	345	11	0	358	0	11	280	5	0	296	0	704
Hourly Total	14	12	9	0	35	0	49	18	95	0	162	0	4	1235	64	0	1303	0	62	1234	11	1	1308	1	2808
1:00PM	3	1	2	0	6	0	12	2	27	0	41	0	0	321	17	0	338	0	14	299	1	0	314	0	699
1:15PM	6	4	1	0	11	0	8	4	22	0	34	0	3	333	13	0	349	0	6	324	3	0	333	1	727
1:30PM	5	4	6	0	15	0	10	1	12	0	23	0	1	347	5	0	353	0	8	293	5	1	307	0	698
1:45PM	5	1	5	0	11	0	13	3	20	0	36	0	1	343	11	1	356	0	5	301	2	0	308	0	711
Hourly Total	19	10	14	0	43	0	43	10	81	0	134	0	5	1344	46	1	1396	0	33	1217	11	1	1262	1	2835
3:00PM	6	3	3	0	12	0	16	5	22	0	43	0	1	427	9	0	437	0	8	286	2	0	296	0	788
3:15PM	1	1	4	0	6	0	11	3	42	0	56	0	1	534	18	0	553	0	13	289	1	0	303	1	918
3:30PM	3	1	4	0	8	0	13	3	30	0	46	1	1	486	10	0	497	0	8	298	2	0	308	0	859
3:45PM	7	5	0	0	12	0	7	4	39	0	50	0	0	463	12	2	477	0	14	327	3	0	344	1	883
Hourly Total	17	10	11	0	38	0	47	15	133	0	195	1	3	1910	49	2	1964	0	43	1200	8	0	1251	2	3448
4:00PM	0	7	3	0	10	0	18	2	35	0	55	0	3	499	5	0	507	0	17	283	1	0	301	0	873
4:15PM	1	2	4	0	7	0	17	4	28	0	49	0	1	554	10	1	566	0	8	308	0	0	316	0	938
4:30PM	9	2	2	0	13	0	15	3	37	0	55	0	1	561	9	0	571	0	1	313	4	1	319	0	958
4:45PM	11	3	4	0	18	0	13	3	50	0	66	0	1	514	13	0	528	0	9	286	5	0	300	0	912
Hourly Total	21	14	13	0	48	0	63	12	150	0	225	0	6	2128	37	1	2172	0	35	1190	10	1	1236	0	3681
5:00PM	10	1	1	0	12	0	14	5	48	0	67	0	0	543	5	0	548	0	14	314	4	0	332	2	959
5:15PM	5	5	3	0	13	0	17	3	35	0	55	0	1	543	10	0	554	0	14	276	2	1	293	0	915
5:30PM	1	2	2	0	5	0	16	2	36	0	54	0	0	538	14	0	552	0	12	272	2	0	286	0	897
5:45PM	3	4	1	0	8	0	12	2	46	0	60	0	1	516	11	0	528	0	15	271	4	0	290	0	886
Hourly Total	19	12	7	0	38	0	59	12	165	0	236	0	2	2140	40	0	2182	0	55	1133	12	1	1201	2	3657
Total	109	65	66	0	240	0	307	74	698	0	1079	1	24	9914	289	5	10232	0	263	7254	63	6	7586	7	19137
% Approach	45.4%	27.1%	27.5%	0%	-	-	28.5%	6.9%	64.7%	0%	-	-	0.2%	96.9%	2.8%	0%	-	-	3.5%	95.6%	0.8%	0.1%	-	-	-
% Total	0.6%	0.3%	0.3%	0%	1.3%	-	1.6%	0.4%	3.6%	0%	5.6%	-	0.1%	51.8%	1.5%	0%	53.5%	-	1.4%	37.9%	0.3%	0%	39.6%	-	-
Lights	107	65	62	0	234	-	301	73	688	0	1062	-	24	9435	273	4	9736	-	261	6766	61	6	7094	-	18126
% Lights	98.2%	100%	93.9%	0%	97.5%	-	98.0%	98.6%	98.6%	0%	98.4%	-	100%	95.2%	94.5%	80.0%	95.2%	-	99.2%	93.3%	96.8%	100%	93.5%	-	94.7%
Articulated Trucks	0	0	1	0	1	-	1	0	0	0	1	-	0	217	0	0	217	-	2	249	0	0	251	-	470
% Articulated Trucks	0%	0%	1.5%	0%	0.4%	-	0.3%	0%	0%	0%	0.1%	-	0%	2.2%	0%	0%	2.1%	-	0.8%	3.4%	0%	0%	3.3%	-	2.5%
Buses and Single-Unit Trucks	2	0	3	0	5	-	5	0	10	0	15	-	0	262	15	1	278	-	0	238	2	0	240	-	538
% Buses and Single-Unit Trucks	1.8%	0%	4.5%	0%	2.1%	-	1.6%	0%	1.4%	0%	1.4%	-	0%	2.6%	5.2%	20.0%	2.7%	-	0%	3.3%	3.2%	0%	3.2%	-	2.8%
Bicycles on Road	0	0	0	0	0	-	0	1	0	0	1	-	0	0	1	0	1	-	0	1	0	0	1	-	3
% Bicycles on Road	0%	0%	0%	0%	0%	-	0%	1.4%	0%	0%	0.1%	-	0%	0%	0.3%	0%	0%	-	0%	0%	0%	0%	0%	-	0%
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	-	-	7
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	100%

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Rand Rd at Old Rand Rd and Ravinia Terrace - TMC

Tue Aug 1, 2017

PM Peak (4:15PM - 5:15PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Road)

All Movements

ID: 435806, Location: 42.203311, -88.111547



Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive,
Vernon Hills, IL, 60061, US

Leg Direction	Ravinia Ter Eastbound					Old Rand Rd Westbound					US-12 Northbound					US-12 Southbound									
Time	L	T	R	U	App Ped*	L	T	R	U	App Ped*	L	T	R	U	App Ped*	L	T	R	U	App Ped*	Int				
2017-08-01 4:15PM	1	2	4	0	7	0	17	4	28	0	49	0	1	554	10	1	566	0	8	308	0	0	316	0	938
4:30PM	9	2	2	0	13	0	15	3	37	0	55	0	1	561	9	0	571	0	1	313	4	1	319	0	958
4:45PM	11	3	4	0	18	0	13	3	50	0	66	0	1	514	13	0	528	0	9	286	5	0	300	0	912
5:00PM	10	1	1	0	12	0	14	5	48	0	67	0	0	543	5	0	548	0	14	314	4	0	332	2	959
Total	31	8	11	0	50	0	59	15	163	0	237	0	3	2172	37	1	2213	0	32	1221	13	1	1267	2	3767
% Approach	62.0%	16.0%	22.0%	0%	-	-	24.9%	6.3%	68.8%	0%	-	-	0.1%	98.1%	1.7%	0%	-	-	2.5%	96.4%	1.0%	0.1%	-	-	-
% Total	0.8%	0.2%	0.3%	0%	1.3%	-	1.6%	0.4%	4.3%	0%	6.3%	-	0.1%	57.7%	1.0%	0%	58.7%	-	0.8%	32.4%	0.3%	0%	33.6%	-	-
PHF	0.705	0.667	0.688	-	0.694	-	0.868	0.750	0.815	-	0.884	-	0.750	0.968	0.712	0.250	0.969	-	0.571	0.972	0.650	0.250	0.954	-	0.982
Lights	31	8	11	0	50	-	58	15	162	0	235	-	3	2114	36	1	2154	-	32	1168	13	1	1214	-	3653
% Lights	100%	100%	100%	0%	100%	-	98.3%	100%	99.4%	0%	99.2%	-	100%	97.3%	97.3%	100%	97.3%	-	100%	95.7%	100%	100%	95.8%	-	97.0%
Articulated Trucks	0	0	0	0	0	-	0	0	0	0	0	-	0	18	0	0	18	-	0	28	0	0	28	-	46
% Articulated Trucks	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0.8%	0%	0%	0.8%	-	0%	2.3%	0%	0%	2.2%	-	1.2%
Buses and Single-Unit Trucks	0	0	0	0	0	-	1	0	1	0	2	-	0	40	0	0	40	-	0	25	0	0	25	-	67
% Buses and Single-Unit Trucks	0%	0%	0%	0%	0%	-	1.7%	0%	0.6%	0%	0.8%	-	0%	1.8%	0%	0%	1.8%	-	0%	2.0%	0%	0%	2.0%	-	1.8%
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	1	-	0	0	0	0	0	-	1
% Bicycles on Road	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	2.7%	0%	0%	-	0%	0%	0%	0%	0%	-	0%
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	-	-	2
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100%

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Rand Rd at Old Rand Rd / Ravinia Terrace - TMC

Sat Jul 29, 2017

Full Length (11AM-1PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 435810, Location: 42.203294, -88.111591



Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive,
Vernon Hills, IL, 60061, US

Leg Direction	Ravinia Ter Eastbound					Old Rand Westbound					US-12 Northbound					US-12 Southbound					Int				
	L	T	R	U	App Ped*	L	T	R	U	App Ped*	L	T	R	U	App Ped*	L	T	R	U	App Ped*					
2017-07-29 11:00AM	3	0	5	0	8	0	13	2	19	0	34	1	1	419	11	1	432	0	7	367	1	0	375	0	849
11:15AM	0	2	0	0	2	0	13	2	20	0	35	0	0	370	8	0	378	0	13	372	2	0	387	1	802
11:30AM	5	1	1	0	7	0	13	3	24	0	40	0	0	407	13	0	420	0	12	395	0	0	407	0	874
11:45AM	6	2	2	0	10	0	12	0	19	0	31	0	2	396	19	0	417	0	19	352	4	0	375	0	833
Hourly Total	14	5	8	0	27	0	51	7	82	0	140	1	3	1592	51	1	1647	0	51	1486	7	0	1544	1	3358
12:00PM	3	1	3	0	7	0	15	5	23	0	43	0	1	410	10	2	423	0	11	360	2	0	373	0	846
12:15PM	7	1	1	0	9	0	13	5	24	0	42	0	3	420	11	0	434	0	8	387	6	0	401	0	886
12:30PM	3	3	2	0	8	0	13	1	38	0	52	0	0	441	15	0	456	0	10	363	4	0	377	0	893
12:45PM	3	3	2	0	8	0	18	3	32	0	53	0	1	410	11	2	424	0	9	363	1	0	373	0	858
Hourly Total	16	8	8	0	32	0	59	14	117	0	190	0	5	1681	47	4	1737	0	38	1473	13	0	1524	0	3483
Total	30	13	16	0	59	0	110	21	199	0	330	1	8	3273	98	5	3384	0	89	2959	20	0	3068	1	6841
% Approach	50.8%	22.0%	27.1%	0%	-	-	33.3%	6.4%	60.3%	0%	-	-	0.2%	96.7%	2.9%	0.1%	-	-	2.9%	96.4%	0.7%	0%	-	-	-
% Total	0.4%	0.2%	0.2%	0%	0.9%	-	1.6%	0.3%	2.9%	0%	4.8%	-	0.1%	47.8%	1.4%	0.1%	49.5%	-	1.3%	43.3%	0.3%	0%	44.8%	-	-
Lights	28	12	15	0	55	-	109	20	198	0	327	-	7	3215	98	5	3325	-	88	2913	18	0	3019	-	6726
% Lights	93.3%	92.3%	93.8%	0%	93.2%	-	99.1%	95.2%	99.5%	0%	99.1%	-	87.5%	98.2%	100%	100%	98.3%	-	98.9%	98.4%	90.0%	0%	98.4%	-	98.3%
Articulated Trucks	1	0	0	0	1	-	0	0	0	0	0	-	0	20	0	0	20	-	0	11	1	0	12	-	33
% Articulated Trucks	3.3%	0%	0%	0%	1.7%	-	0%	0%	0%	0%	0%	-	0%	0.6%	0%	0%	0.6%	-	0%	0.4%	5.0%	0%	0.4%	-	0.5%
Buses and Single-Unit Trucks	1	0	1	0	2	-	1	1	1	0	3	-	1	37	0	0	38	-	0	35	1	0	36	-	79
% Buses and Single-Unit Trucks	3.3%	0%	6.3%	0%	3.4%	-	0.9%	4.8%	0.5%	0%	0.9%	-	12.5%	1.1%	0%	0%	1.1%	-	0%	1.2%	5.0%	0%	1.2%	-	1.2%
Bicycles on Road	0	1	0	0	1	-	0	0	0	0	0	-	0	1	0	0	1	-	1	0	0	0	1	-	3
% Bicycles on Road	0%	7.7%	0%	0%	1.7%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	1.1%	0%	0%	0%	0%	-	0%
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	-	1	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Rand Rd at Old Rand Rd / Ravinia Terrace - TMC

Sat Jul 29, 2017

Midday Peak (WKND) (12PM - 1PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 435810, Location: 42.203294, -88.111591



Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive,
Vernon Hills, IL, 60061, US

Leg Direction	Ravinia Ter Eastbound						Old Rand Westbound						US-12 Northbound						US-12 Southbound						Int
	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	
2017-07-29 12:00PM	3	1	3	0	7	0	15	5	23	0	43	0	1	410	10	2	423	0	11	360	2	0	373	0	846
12:15PM	7	1	1	0	9	0	13	5	24	0	42	0	3	420	11	0	434	0	8	387	6	0	401	0	886
12:30PM	3	3	2	0	8	0	13	1	38	0	52	0	0	441	15	0	456	0	10	363	4	0	377	0	893
12:45PM	3	3	2	0	8	0	18	3	32	0	53	0	1	410	11	2	424	0	9	363	1	0	373	0	858
Total	16	8	8	0	32	0	59	14	117	0	190	0	5	1681	47	4	1737	0	38	1473	13	0	1524	0	3483
% Approach	50.0%	25.0%	25.0%	0%	-	-	31.1%	7.4%	61.6%	0%	-	-	0.3%	96.8%	2.7%	0.2%	-	-	2.5%	96.7%	0.9%	0%	-	-	-
% Total	0.5%	0.2%	0.2%	0%	0.9%	-	1.7%	0.4%	3.4%	0%	5.5%	-	0.1%	48.3%	1.3%	0.1%	49.9%	-	1.1%	42.3%	0.4%	0%	43.8%	-	-
PHF	0.571	0.667	0.667	-	0.889	-	0.819	0.700	0.770	-	0.896	-	0.417	0.953	0.783	0.500	0.952	-	0.864	0.952	0.542	-	0.950	-	0.975
Lights	14	8	7	0	29	-	59	13	116	0	188	-	4	1657	47	4	1712	-	38	1447	12	0	1497	-	3426
% Lights	87.5%	100%	87.5%	0%	90.6%	-	100%	92.9%	99.1%	0%	98.9%	-	80.0%	98.6%	100%	100%	98.6%	-	100%	98.2%	92.3%	0%	98.2%	-	98.4%
Articulated Trucks	1	0	0	0	1	-	0	0	0	0	0	-	0	7	0	0	7	-	0	5	0	0	5	-	13
% Articulated Trucks	6.3%	0%	0%	0%	3.1%	-	0%	0%	0%	0%	0%	-	0%	0.4%	0%	0%	0.4%	-	0%	0.3%	0%	0%	0.3%	-	0.4%
Buses and Single-Unit Trucks	1	0	1	0	2	-	0	1	1	0	2	-	1	16	0	0	17	-	0	21	1	0	22	-	43
% Buses and Single-Unit Trucks	6.3%	0%	12.5%	0%	6.3%	-	0%	7.1%	0.9%	0%	1.1%	-	20.0%	1.0%	0%	0%	1.0%	-	0%	1.4%	7.7%	0%	1.4%	-	1.2%
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	1	-	0	0	0	0	0	-	1
% Bicycles on Road	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0.1%	0%	0%	0.1%	-	0%	0%	0%	0%	0%	-	0%
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	-	-	0
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	-	-	0
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Gewalt Hamilton Associates Inc.
625 Forest Edge Drive
Vernon Hills, Illinois, United States 60061
(847) 478-9700 lbeckham@gha-engineers.com

Count Name: Rand Road at Old Rand Road /
Ravinia Terrace
Site Code:
Start Date: 07/29/2017
Page No: 1

5276.900 Lake Zurich
Rand Road at Old Rand Road / Ravinia Terrace
1-hr
GHA MIO

Turning Movement Data

Start Time	US-12 Southbound						Old Rand Rd Westbound						US-12 Northbound						Ravinia Terrace Eastbound						
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Int. Total
1:00 PM	2	8	361	3	2	374	0	9	0	37	0	46	1	1	523	17	0	542	0	2	1	5	2	8	970
1:15 PM	0	11	365	1	0	377	0	12	2	24	0	38	0	0	431	17	0	448	0	2	0	3	0	5	868
1:30 PM	0	7	332	0	0	339	0	11	2	18	0	31	0	0	418	8	0	426	0	4	5	6	0	15	811
1:45 PM	0	12	379	1	0	392	0	10	1	16	0	27	0	0	424	11	0	435	0	4	2	1	0	7	861
Grand Total	2	38	1437	5	2	1482	0	42	5	95	0	142	1	1	1796	53	0	1851	0	12	8	15	2	35	3510
Approach %	0.1	2.6	97.0	0.3	-	-	0.0	29.6	3.5	66.9	-	-	0.1	0.1	97.0	2.9	-	-	0.0	34.3	22.9	42.9	-	-	-
Total %	0.1	1.1	40.9	0.1	-	42.2	0.0	1.2	0.1	2.7	-	4.0	0.0	0.0	51.2	1.5	-	52.7	0.0	0.3	0.2	0.4	-	1.0	-
Lights	2	37	1417	5	-	1461	0	42	5	93	-	140	1	1	1759	52	-	1813	0	12	8	15	-	35	3449
% Lights	100.0	97.4	98.6	100.0	-	98.6	-	100.0	100.0	97.9	-	98.6	100.0	100.0	97.9	98.1	-	97.9	-	100.0	100.0	100.0	-	100.0	98.3
Mediums	0	1	13	0	-	14	0	0	0	2	-	2	0	0	29	1	-	30	0	0	0	0	0	0	46
% Mediums	0.0	2.6	0.9	0.0	-	0.9	-	0.0	0.0	2.1	-	1.4	0.0	0.0	1.6	1.9	-	1.6	-	0.0	0.0	0.0	-	0.0	1.3
Articulated Trucks	0	0	7	0	-	7	0	0	0	0	-	0	0	0	8	0	-	8	0	0	0	0	0	0	15
% Articulated Trucks	0.0	0.0	0.5	0.0	-	0.5	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.4	0.0	-	0.4	-	0.0	0.0	0.0	-	0.0	0.4
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-

Old Rand Rd at Bayshore Village Subdivision West Access (Ped X-ing) - TMC

Tue Aug 1, 2017

Full Length (6AM-9AM)

All Classes (Lights, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Road)

All Movements

ID: 435803, Location: 42.203298, -88.109535



Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive,
Vernon Hills, IL, 60061, US

Leg Direction	Old Rand Rd Eastbound					Old Rand Rd Westbound					Access Northbound					Int
	T	R	U	App	Ped*	L	T	U	App	Ped*	L	R	U	App	Ped*	
2017-08-01 6:00AM	10	0	0	10	0	0	5	0	5	0	0	0	0	0	1	15
6:15AM	12	0	0	12	4	0	14	0	14	0	0	0	0	0	0	26
6:30AM	10	0	0	10	1	0	15	0	15	0	0	0	0	0	0	25
6:45AM	11	0	0	11	0	0	16	0	16	2	0	0	0	0	2	27
Hourly Total	43	0	0	43	5	0	50	0	50	2	0	0	0	0	3	93
7:00AM	16	1	0	17	0	0	26	0	26	0	0	0	0	0	0	43
7:15AM	20	0	0	20	1	0	13	0	13	0	0	0	0	0	0	33
7:30AM	18	0	0	18	2	0	29	0	29	0	0	1	0	1	0	48
7:45AM	19	0	0	19	1	0	33	0	33	0	1	0	0	1	0	53
Hourly Total	73	1	0	74	4	0	101	0	101	0	1	1	0	2	0	177
8:00AM	25	0	0	25	1	0	30	0	30	1	0	0	0	0	1	55
8:15AM	25	0	0	25	1	0	22	0	22	1	1	0	0	1	1	48
8:30AM	17	0	0	17	2	0	22	0	22	0	0	1	0	1	2	40
8:45AM	24	0	0	24	4	0	25	0	25	0	0	0	0	0	2	49
Hourly Total	91	0	0	91	8	0	99	0	99	2	1	1	0	2	6	192
Total	207	1	0	208	17	0	250	0	250	4	2	2	0	4	9	462
% Approach	99.5%	0.5%	0%	-	-	0%	100%	0%	-	-	50.0%	50.0%	0%	-	-	-
% Total	44.8%	0.2%	0%	45.0%	-	0%	54.1%	0%	54.1%	-	0.4%	0.4%	0%	0.9%	-	-
Lights	200	1	0	201	-	0	235	0	235	-	2	2	0	4	-	440
% Lights	96.6%	100%	0%	96.6%	-	0%	94.0%	0%	94.0%	-	100%	100%	0%	100%	-	95.2%
Buses and Single-Unit Trucks	4	0	0	4	-	0	14	0	14	-	0	0	0	0	-	18
% Buses and Single-Unit Trucks	1.9%	0%	0%	1.9%	-	0%	5.6%	0%	5.6%	-	0%	0%	0%	0%	-	3.9%
Bicycles on Road	3	0	0	3	-	0	1	0	1	-	0	0	0	0	-	4
% Bicycles on Road	1.4%	0%	0%	1.4%	-	0%	0.4%	0%	0.4%	-	0%	0%	0%	0%	-	0.9%
Pedestrians	-	-	-	-	17	-	-	-	-	4	-	-	-	-	9	-
% Pedestrians	-	-	-	100%	-	-	-	-	100%	-	-	-	-	100%	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Old Rand Rd at Bayshore Village Subdivision West Access (Ped X-ing) - TMC

Tue Aug 1, 2017

AM Peak (7:30AM - 8:30AM) - Overall Peak Hour

All Classes (Lights, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Road)

All Movements

ID: 435803, Location: 42.203298, -88.109535



Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive,
Vernon Hills, IL, 60061, US

Leg Direction	Old Rand Rd Eastbound					Old Rand Rd Westbound					Access Northbound					Int
	T	R	U	App	Ped*	L	T	U	App	Ped*	L	R	U	App	Ped*	
2017-08-01 7:30AM	18	0	0	18	2	0	29	0	29	0	0	1	0	1	0	48
7:45AM	19	0	0	19	1	0	33	0	33	0	1	0	0	1	0	53
8:00AM	25	0	0	25	1	0	30	0	30	1	0	0	0	0	1	55
8:15AM	25	0	0	25	1	0	22	0	22	1	1	0	0	1	1	48
Total	87	0	0	87	5	0	114	0	114	2	2	1	0	3	2	204
% Approach	100%	0%	0%	-	-	0%	100%	0%	-	-	66.7%	33.3%	0%	-	-	-
% Total	42.6%	0%	0%	42.6%	-	0%	55.9%	0%	55.9%	-	1.0%	0.5%	0%	1.5%	-	-
PHF	0.870	-	-	0.870	-	-	0.864	-	0.864	-	0.500	0.250	-	0.750	-	0.927
Lights	84	0	0	84	-	0	109	0	109	-	2	1	0	3	-	196
% Lights	96.6%	0%	0%	96.6%	-	0%	95.6%	0%	95.6%	-	100%	100%	0%	100%	-	96.1%
Buses and Single-Unit Trucks	1	0	0	1	-	0	4	0	4	-	0	0	0	0	-	5
% Buses and Single-Unit Trucks	1.1%	0%	0%	1.1%	-	0%	3.5%	0%	3.5%	-	0%	0%	0%	0%	-	2.5%
Bicycles on Road	2	0	0	2	-	0	1	0	1	-	0	0	0	0	-	3
% Bicycles on Road	2.3%	0%	0%	2.3%	-	0%	0.9%	0%	0.9%	-	0%	0%	0%	0%	-	1.5%
Pedestrians	-	-	-	-	5	-	-	-	-	2	-	-	-	-	-	2
% Pedestrians	-	-	-	-	100%	-	-	-	-	100%	-	-	-	-	-	100%

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Old Rand Rd at Bayshore Village Subdivision West Access (Ped X-ing) - TMC

Tue Aug 1, 2017

Full Length (3PM-6PM)

All Classes (Lights, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 435812, Location: 42.203197, -88.109499



Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive,
Vernon Hills, IL, 60061, US

Leg Direction	Old Rand Rd Eastbound					Old Rand Rd Westbound					Access Northbound					Int
	T	R	U	App	Ped*	L	T	U	App	Ped*	L	R	U	App	Ped*	
2017-08-01 3:00PM	19	0	0	19	0	1	41	0	42	0	0	0	0	0	0	61
3:15PM	29	1	0	30	0	0	54	0	54	0	0	0	0	0	0	84
3:30PM	20	0	0	20	0	0	45	0	45	0	0	1	0	1	0	66
3:45PM	30	0	0	30	1	0	51	0	51	0	0	0	0	0	0	81
Hourly Total	98	1	0	99	1	1	191	0	192	0	0	1	0	1	0	292
4:00PM	29	0	0	29	1	0	57	0	57	0	0	0	0	0	1	86
4:15PM	19	0	0	19	2	0	46	0	46	0	0	2	0	2	1	67
4:30PM	13	0	0	13	0	0	57	0	57	0	0	0	0	0	0	70
4:45PM	22	1	0	23	3	0	65	0	65	0	0	1	0	1	0	89
Hourly Total	83	1	0	84	6	0	225	0	225	0	0	3	0	3	2	312
5:00PM	19	1	0	20	0	0	68	0	68	0	0	0	0	0	0	88
5:15PM	28	0	0	28	1	0	54	0	54	0	0	1	0	1	1	83
5:30PM	27	0	0	27	0	0	57	0	57	3	0	0	0	0	4	84
5:45PM	28	0	0	28	1	0	58	0	58	0	0	0	0	0	0	86
Hourly Total	102	1	0	103	2	0	237	0	237	3	0	1	0	1	5	341
Total	283	3	0	286	9	1	653	0	654	3	0	5	0	5	7	945
% Approach	99.0%	1.0%	0%	-	-	0.2%	99.8%	0%	-	-	0%	100%	0%	-	-	-
% Total	29.9%	0.3%	0%	30.3%	-	0.1%	69.1%	0%	69.2%	-	0%	0.5%	0%	0.5%	-	-
Lights	281	3	0	284	-	1	644	0	645	-	0	5	0	5	-	934
% Lights	99.3%	100%	0%	99.3%	-	100%	98.6%	0%	98.6%	-	0%	100%	0%	100%	-	98.8%
Buses and Single-Unit Trucks	2	0	0	2	-	0	9	0	9	-	0	0	0	0	-	11
% Buses and Single-Unit Trucks	0.7%	0%	0%	0.7%	-	0%	1.4%	0%	1.4%	-	0%	0%	0%	0%	-	1.2%
Pedestrians	-	-	-	5	-	-	-	-	3	-	-	-	-	-	-	7
% Pedestrians	-	-	-	55.6%	-	-	-	-	100%	-	-	-	-	-	-	100%
Bicycles on Crosswalk	-	-	-	4	-	-	-	-	0	-	-	-	-	-	-	0
% Bicycles on Crosswalk	-	-	-	44.4%	-	-	-	-	0%	-	-	-	-	-	-	0%

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Old Rand Rd at Bayshore Village Subdivision West Access (Ped X-ing) - TMC

Tue Aug 1, 2017

PM Peak (4:45PM - 5:45PM) - Overall Peak Hour

All Classes (Lights, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 435812, Location: 42.203197, -88.109499



Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive,
Vernon Hills, IL, 60061, US

Leg Direction	Old Rand Rd Eastbound					Old Rand Rd Westbound					Access Northbound					Int
	T	R	U	App	Ped*	L	T	U	App	Ped*	L	R	U	App	Ped*	
2017-08-01 4:45PM	22	1	0	23	3	0	65	0	65	0	0	1	0	1	0	89
5:00PM	19	1	0	20	0	0	68	0	68	0	0	0	0	0	0	88
5:15PM	28	0	0	28	1	0	54	0	54	0	0	1	0	1	1	83
5:30PM	27	0	0	27	0	0	57	0	57	3	0	0	0	0	4	84
Total	96	2	0	98	4	0	244	0	244	3	0	2	0	2	5	344
% Approach	98.0%	2.0%	0%	-	-	0%	100%	0%	-	-	0%	100%	0%	-	-	-
% Total	27.9%	0.6%	0%	28.5%	-	0%	70.9%	0%	70.9%	-	0%	0.6%	0%	0.6%	-	-
PHF	0.857	0.500	-	0.875	-	-	0.897	-	0.897	-	-	0.500	-	0.500	-	0.966
Lights	96	2	0	98	-	0	241	0	241	-	0	2	0	2	-	341
% Lights	100%	100%	0%	100%	-	0%	98.8%	0%	98.8%	-	0%	100%	0%	100%	-	99.1%
Buses and Single-Unit Trucks	0	0	0	0	-	0	3	0	3	-	0	0	0	0	-	3
% Buses and Single-Unit Trucks	0%	0%	0%	0%	-	0%	1.2%	0%	1.2%	-	0%	0%	0%	0%	-	0.9%
Pedestrians	-	-	-	-	1	-	-	-	-	3	-	-	-	-	-	5
% Pedestrians	-	-	-	25.0%	-	-	-	-	100%	-	-	-	-	100%	-	-
Bicycles on Crosswalk	-	-	-	-	3	-	-	-	-	0	-	-	-	-	-	0
% Bicycles on Crosswalk	-	-	-	75.0%	-	-	-	-	0%	-	-	-	-	-	-	0%

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Old Rand Rd at Bayshore Village Subdivision West Access (Ped X-ing)

- TMC

Sat Jul 29, 2017

Full Length (11AM-2PM)

All Classes (Lights, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Road,

Bicycles on Crosswalk)

All Movements

ID: 435807, Location: 42.203232, -88.109532



Provided by: Gewalt Hamilton Associates

Inc.

625 Forest Edge Drive,

Vernon Hills, IL, 60061, US

Leg Direction	Old Rand Rd Eastbound					Old Rand Rd Westbound					Access Northbound					Int
	T	R	U	App	Ped*	L	T	U	App	Ped*	L	R	U	App	Ped*	
2017-07-29 11:00AM	17	1	0	18	0	0	37	0	37	0	0	0	0	0	0	55
11:15AM	22	0	0	22	3	0	40	0	40	0	0	0	0	0	1	62
11:30AM	26	0	0	26	1	0	37	0	37	2	0	0	0	0	2	63
11:45AM	41	0	0	41	5	0	32	0	32	0	0	0	0	0	2	73
Hourly Total	106	1	0	107	9	0	146	0	146	2	0	0	0	0	5	253
12:00PM	21	0	0	21	1	0	41	0	41	1	0	0	0	0	3	62
12:15PM	21	0	0	21	2	0	45	0	45	0	0	1	0	1	0	67
12:30PM	27	0	0	27	2	0	47	0	47	0	0	0	0	0	0	74
12:45PM	22	0	0	22	2	0	52	0	52	0	0	0	0	0	0	74
Hourly Total	91	0	0	91	7	0	185	0	185	1	0	1	0	1	3	277
1:00PM	26	0	0	26	1	1	48	0	49	0	0	1	0	1	0	76
1:15PM	27	0	0	27	1	0	40	0	40	2	0	0	0	0	2	67
1:30PM	20	0	0	20	2	0	28	0	28	0	0	0	0	0	1	48
1:45PM	27	0	0	27	2	0	27	0	27	0	0	0	0	0	0	54
Hourly Total	100	0	0	100	6	1	143	0	144	2	0	1	0	1	3	245
Total	297	1	0	298	22	1	474	0	475	5	0	2	0	2	11	775
% Approach	99.7%	0.3%	0%	-	-	0.2%	99.8%	0%	-	-	0%	100%	0%	-	-	-
% Total	38.3%	0.1%	0%	38.5%	-	0.1%	61.2%	0%	61.3%	-	0%	0.3%	0%	0.3%	-	-
Lights	292	1	0	293	-	1	467	0	468	-	0	2	0	2	-	763
% Lights	98.3%	100%	0%	98.3%	-	100%	98.5%	0%	98.5%	-	0%	100%	0%	100%	-	98.5%
Buses and Single-Unit Trucks	2	0	0	2	-	0	6	0	6	-	0	0	0	0	-	8
% Buses and Single-Unit Trucks	0.7%	0%	0%	0.7%	-	0%	1.3%	0%	1.3%	-	0%	0%	0%	0%	-	1.0%
Bicycles on Road	3	0	0	3	-	0	1	0	1	-	0	0	0	0	-	4
% Bicycles on Road	1.0%	0%	0%	1.0%	-	0%	0.2%	0%	0.2%	-	0%	0%	0%	0%	-	0.5%
Pedestrians	-	-	-	-	21	-	-	-	-	5	-	-	-	-	-	8
% Pedestrians	-	-	-	95.5%	-	-	-	-	100%	-	-	-	-	-	72.7%	-
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	0	-	-	-	-	-	3
% Bicycles on Crosswalk	-	-	-	4.5%	-	-	-	-	0%	-	-	-	-	-	27.3%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Old Rand Rd at Bayshore Village Subdivision West Access (Ped X-ing)

- TMC

Sat Jul 29, 2017

Midday Peak (WKND) (12:15PM - 1:15PM) - Overall Peak Hour

All Classes (Lights, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Road,

Bicycles on Crosswalk)

All Movements

ID: 435807, Location: 42.203232, -88.109532



Provided by: Gewalt Hamilton Associates Inc.

625 Forest Edge Drive,
Vernon Hills, IL, 60061, US

Leg Direction	Old Rand Rd Eastbound					Old Rand Rd Westbound					Access Northbound					Int
	T	R	U	App	Ped*	L	T	U	App	Ped*	L	R	U	App	Ped*	
2017-07-29 12:15PM	21	0	0	21	2	0	45	0	45	0	0	1	0	1	0	67
12:30PM	27	0	0	27	2	0	47	0	47	0	0	0	0	0	0	74
12:45PM	22	0	0	22	2	0	52	0	52	0	0	0	0	0	0	74
1:00PM	26	0	0	26	1	1	48	0	49	0	0	1	0	1	0	76
Total	96	0	0	96	7	1	192	0	193	0	0	2	0	2	0	291
% Approach	100%	0%	0%	-	-	0.5%	99.5%	0%	-	-	0%	100%	0%	-	-	-
% Total	33.0%	0%	0%	33.0%	-	0.3%	66.0%	0%	66.3%	-	0%	0.7%	0%	0.7%	-	-
PHF	0.889	-	-	0.889	-	0.250	0.923	-	0.928	-	-	0.500	-	0.500	-	0.957
Lights	95	0	0	95	-	1	189	0	190	-	0	2	0	2	-	287
% Lights	99.0%	0%	0%	99.0%	-	100%	98.4%	0%	98.4%	-	0%	100%	0%	100%	-	98.6%
Buses and Single-Unit Trucks	1	0	0	1	-	0	3	0	3	-	0	0	0	0	-	4
% Buses and Single-Unit Trucks	1.0%	0%	0%	1.0%	-	0%	1.6%	0%	1.6%	-	0%	0%	0%	0%	-	1.4%
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0
% Bicycles on Road	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%
Pedestrians	-	-	-	-	7	-	-	-	-	0	-	-	-	-	-	0
% Pedestrians	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0
% Bicycles on Crosswalk	-	-	-	-	0%	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Old Rand Rd at Pine Tree Row - TMC

Tue Aug 1, 2017

Full Length (6AM-9AM)

All Classes (Lights, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 435804, Location: 42.203115, -88.106144



Provided by: Gewalt Hamilton Associates Inc.

625 Forest Edge Drive,
Vernon Hills, IL, 60061, US

Leg Direction	Old Rand Rd Eastbound					Old Rand Rd Westbound					Pine Tree Row Southbound					Int
	L	T	U	App	Ped*	T	R	U	App	Ped*	L	R	U	App	Ped*	
2017-08-01 6:00AM	0	10	0	10	0	1	1	0	2	0	6	3	0	9	1	21
6:15AM	0	11	0	11	0	12	3	0	15	0	9	2	0	11	3	37
6:30AM	0	10	0	10	0	9	2	0	11	0	9	6	0	15	4	36
6:45AM	0	10	0	10	0	11	6	0	17	0	8	4	0	12	3	39
Hourly Total	0	41	0	41	0	33	12	0	45	0	32	15	0	47	11	133
7:00AM	1	14	0	15	0	9	3	0	12	0	9	11	0	20	2	47
7:15AM	0	22	0	22	0	6	2	0	8	0	10	6	0	16	0	46
7:30AM	0	18	0	18	0	18	2	0	20	0	11	11	0	22	0	60
7:45AM	1	22	0	23	0	20	4	0	24	0	16	12	0	28	3	75
Hourly Total	2	76	0	78	0	53	11	0	64	0	46	40	0	86	5	228
8:00AM	3	23	0	26	0	21	3	0	24	0	13	9	0	22	3	72
8:15AM	1	26	0	27	0	14	3	0	17	0	6	8	0	14	5	58
8:30AM	0	19	0	19	0	16	4	0	20	0	9	5	0	14	3	53
8:45AM	0	19	0	19	0	16	2	0	18	0	11	8	0	19	7	56
Hourly Total	4	87	0	91	0	67	12	0	79	0	39	30	0	69	18	239
Total	6	204	0	210	0	153	35	0	188	0	117	85	0	202	34	600
% Approach	2.9%	97.1%	0%	-	-	81.4%	18.6%	0%	-	-	57.9%	42.1%	0%	-	-	-
% Total	1.0%	34.0%	0%	35.0%	-	25.5%	5.8%	0%	31.3%	-	19.5%	14.2%	0%	33.7%	-	-
Lights	5	202	0	207	-	140	33	0	173	-	116	83	0	199	-	579
% Lights	83.3%	99.0%	0%	98.6%	-	91.5%	94.3%	0%	92.0%	-	99.1%	97.6%	0%	98.5%	-	96.5%
Buses and Single-Unit Trucks	0	1	0	1	-	10	1	0	11	-	1	2	0	3	-	15
% Buses and Single-Unit Trucks	0%	0.5%	0%	0.5%	-	6.5%	2.9%	0%	5.9%	-	0.9%	2.4%	0%	1.5%	-	2.5%
Bicycles on Road	1	1	0	2	-	3	1	0	4	-	0	0	0	0	-	6
% Bicycles on Road	16.7%	0.5%	0%	1.0%	-	2.0%	2.9%	0%	2.1%	-	0%	0%	0%	0%	-	1.0%
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	33	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	97.1%	-	-
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	2.9%	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Old Rand Rd at Pine Tree Row - TMC

Tue Aug 1, 2017

AM Peak (7:30AM - 8:30AM) - Overall Peak Hour

All Classes (Lights, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 435804, Location: 42.203115, -88.106144



Provided by: Gewalt Hamilton Associates

Inc.

625 Forest Edge Drive,
Vernon Hills, IL, 60061, US

Leg Direction	Old Rand Rd Eastbound					Old Rand Rd Westbound					Pine Tree Row Southbound					Int
	L	T	U	App	Ped*	T	R	U	App	Ped*	L	R	U	App	Ped*	
2017-08-01 7:30AM	0	18	0	18	0	18	2	0	20	0	11	11	0	22	0	60
7:45AM	1	22	0	23	0	20	4	0	24	0	16	12	0	28	3	75
8:00AM	3	23	0	26	0	21	3	0	24	0	13	9	0	22	3	72
8:15AM	1	26	0	27	0	14	3	0	17	0	6	8	0	14	5	58
Total	5	89	0	94	0	73	12	0	85	0	46	40	0	86	11	265
% Approach	5.3%	94.7%	0%	-	-	85.9%	14.1%	0%	-	-	53.5%	46.5%	0%	-	-	-
% Total	1.9%	33.6%	0%	35.5%	-	27.5%	4.5%	0%	32.1%	-	17.4%	15.1%	0%	32.5%	-	-
PHF	0.417	0.856	-	0.870	-	0.869	0.750	-	0.885	-	0.719	0.833	-	0.768	-	0.883
Lights	4	87	0	91	-	69	12	0	81	-	46	39	0	85	-	257
% Lights	80.0%	97.8%	0%	96.8%	-	94.5%	100%	0%	95.3%	-	100%	97.5%	0%	98.8%	-	97.0%
Buses and Single-Unit Trucks	0	1	0	1	-	3	0	0	3	-	0	1	0	1	-	5
% Buses and Single-Unit Trucks	0%	1.1%	0%	1.1%	-	4.1%	0%	0%	3.5%	-	0%	2.5%	0%	1.2%	-	1.9%
Bicycles on Road	1	1	0	2	-	1	0	0	1	-	0	0	0	0	-	3
% Bicycles on Road	20.0%	1.1%	0%	2.1%	-	1.4%	0%	0%	1.2%	-	0%	0%	0%	0%	-	1.1%
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	-	-	11
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100%
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	-	-	0
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0%

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Old Rand Rd at Pine Tree Row - TMC

Tue Aug 1, 2017

Full Length (3PM-6PM)

All Classes (Lights, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Road)

All Movements

ID: 435813, Location: 42.203069, -88.106104



Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive,
Vernon Hills, IL, 60061, US

Leg Direction	Old Rand Rd Eastbound					Old Rand Rd Westbound					Pine Tree Row Southbound					Int
	L	T	U	App	Ped*	T	R	U	App	Ped*	L	R	U	App	Ped*	
2017-08-01 3:00PM	2	18	0	20	0	38	14	0	52	0	4	5	0	9	2	81
3:15PM	3	27	0	30	0	49	11	0	60	0	8	6	0	14	2	104
3:30PM	7	15	0	22	0	40	16	0	56	0	5	6	0	11	1	89
3:45PM	6	22	0	28	0	48	18	0	66	0	8	2	0	10	2	104
Hourly Total	18	82	0	100	0	175	59	0	234	0	25	19	0	44	7	378
4:00PM	2	28	0	30	0	52	13	0	65	0	7	8	0	15	1	110
4:15PM	3	21	0	24	0	45	18	0	63	0	7	6	0	13	2	100
4:30PM	4	8	0	12	0	49	12	0	61	0	13	5	0	18	1	91
4:45PM	5	21	0	26	0	66	19	0	85	0	3	6	0	9	3	120
Hourly Total	14	78	0	92	0	212	62	0	274	0	30	25	0	55	7	421
5:00PM	2	18	0	20	0	62	14	0	76	0	6	6	0	12	2	108
5:15PM	6	19	0	25	0	53	19	0	72	0	10	6	0	16	1	113
5:30PM	4	26	0	30	0	55	18	0	73	0	11	7	0	18	3	121
5:45PM	7	20	0	27	0	55	13	0	68	0	11	5	0	16	6	111
Hourly Total	19	83	0	102	0	225	64	0	289	0	38	24	0	62	12	453
Total	51	243	0	294	0	612	185	0	797	0	93	68	0	161	26	1252
% Approach	17.3%	82.7%	0%	-	-	76.8%	23.2%	0%	-	-	57.8%	42.2%	0%	-	-	-
% Total	4.1%	19.4%	0%	23.5%	-	48.9%	14.8%	0%	63.7%	-	7.4%	5.4%	0%	12.9%	-	-
Lights	50	242	0	292	-	604	182	0	786	-	93	67	0	160	-	1238
% Lights	98.0%	99.6%	0%	99.3%	-	98.7%	98.4%	0%	98.6%	-	100%	98.5%	0%	99.4%	-	98.9%
Buses and Single-Unit Trucks	1	1	0	2	-	8	0	0	8	-	0	1	0	1	-	11
% Buses and Single-Unit Trucks	2.0%	0.4%	0%	0.7%	-	1.3%	0%	0%	1.0%	-	0%	1.5%	0%	0.6%	-	0.9%
Bicycles on Road	0	0	0	0	-	0	3	0	3	-	0	0	0	0	-	3
% Bicycles on Road	0%	0%	0%	0%	-	0%	1.6%	0%	0.4%	-	0%	0%	0%	0%	-	0.2%
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	26	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100%	-	-

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Old Rand Rd at Pine Tree Row - TMC

Tue Aug 1, 2017

PM Peak (4:45PM - 5:45PM) - Overall Peak Hour

All Classes (Lights, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Road)

All Movements

ID: 435813, Location: 42.203069, -88.106104



Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive,
Vernon Hills, IL, 60061, US

Leg Direction	Old Rand Rd Eastbound					Old Rand Rd Westbound					Pine Tree Row Southbound					Int
	L	T	U	App	Ped*	T	R	U	App	Ped*	L	R	U	App	Ped*	
2017-08-01 4:45PM	5	21	0	26	0	66	19	0	85	0	3	6	0	9	3	120
5:00PM	2	18	0	20	0	62	14	0	76	0	6	6	0	12	2	108
5:15PM	6	19	0	25	0	53	19	0	72	0	10	6	0	16	1	113
5:30PM	4	26	0	30	0	55	18	0	73	0	11	7	0	18	3	121
Total	17	84	0	101	0	236	70	0	306	0	30	25	0	55	9	462
% Approach	16.8%	83.2%	0%	-	-	77.1%	22.9%	0%	-	-	54.5%	45.5%	0%	-	-	-
% Total	3.7%	18.2%	0%	21.9%	-	51.1%	15.2%	0%	66.2%	-	6.5%	5.4%	0%	11.9%	-	-
PHF	0.708	0.808	-	0.842	-	0.894	0.921	-	0.900	-	0.682	0.893	-	0.764	-	0.955
Lights	17	84	0	101	-	233	68	0	301	-	30	25	0	55	-	457
% Lights	100%	100%	0%	100%	-	98.7%	97.1%	0%	98.4%	-	100%	100%	0%	100%	-	98.9%
Buses and Single-Unit Trucks	0	0	0	0	-	3	0	0	3	-	0	0	0	0	-	3
% Buses and Single-Unit Trucks	0%	0%	0%	0%	-	1.3%	0%	0%	1.0%	-	0%	0%	0%	0%	-	0.6%
Bicycles on Road	0	0	0	0	-	0	2	0	2	-	0	0	0	0	-	2
% Bicycles on Road	0%	0%	0%	0%	-	0%	2.9%	0%	0.7%	-	0%	0%	0%	0%	-	0.4%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	9
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100%

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Old Rand Rd at Pine Tree Row - TMC

Sat Jul 29, 2017

Full Length (11AM-2PM)

All Classes (Lights, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 435808, Location: 42.203108, -88.106069



Provided by: Gewalt Hamilton Associates Inc.

625 Forest Edge Drive,
Vernon Hills, IL, 60061, US

Leg Direction	Old Rand Road Eastbound					Old Rand Road Westbound					Pine Tree Row Southbound					Int
	L	T	U	App	Ped*	T	R	U	App	Ped*	L	R	U	App	Ped*	
2017-07-29 11:00AM	1	16	0	17	0	33	10	0	43	0	9	3	0	12	1	72
11:15AM	2	22	0	24	0	35	8	0	43	0	9	9	0	18	5	85
11:30AM	2	20	0	22	0	33	11	0	44	0	10	5	0	15	4	81
11:45AM	3	41	0	44	0	29	15	0	44	0	9	5	0	14	5	102
Hourly Total	8	99	0	107	0	130	44	0	174	0	37	22	0	59	15	340
12:00PM	2	20	0	22	0	41	9	0	50	0	10	8	0	18	5	90
12:15PM	2	18	0	20	0	39	9	0	48	0	13	6	0	19	2	87
12:30PM	4	21	0	25	0	42	11	0	53	0	7	7	0	14	4	92
12:45PM	7	17	0	24	0	40	14	0	54	0	14	11	0	25	2	103
Hourly Total	15	76	0	91	0	162	43	0	205	0	44	32	0	76	13	372
1:00PM	5	20	0	25	0	43	13	0	56	0	7	4	0	11	5	92
1:15PM	5	25	0	30	0	37	10	0	47	0	11	5	0	16	4	93
1:30PM	4	22	0	26	0	29	10	0	39	0	11	3	0	14	6	79
1:45PM	3	20	0	23	0	28	12	0	40	0	12	3	0	15	7	78
Hourly Total	17	87	0	104	0	137	45	0	182	0	41	15	0	56	22	342
Total	40	262	0	302	0	429	132	0	561	0	122	69	0	191	50	1054
% Approach	13.2%	86.8%	0%	-	-	76.5%	23.5%	0%	-	-	63.9%	36.1%	0%	-	-	-
% Total	3.8%	24.9%	0%	28.7%	-	40.7%	12.5%	0%	53.2%	-	11.6%	6.5%	0%	18.1%	-	-
Lights	38	258	0	296	-	421	125	0	546	-	120	67	0	187	-	1029
% Lights	95.0%	98.5%	0%	98.0%	-	98.1%	94.7%	0%	97.3%	-	98.4%	97.1%	0%	97.9%	-	97.6%
Buses and Single-Unit Trucks	0	2	0	2	-	4	3	0	7	-	2	2	0	4	-	13
% Buses and Single-Unit Trucks	0%	0.8%	0%	0.7%	-	0.9%	2.3%	0%	1.2%	-	1.6%	2.9%	0%	2.1%	-	1.2%
Bicycles on Road	2	2	0	4	-	4	4	0	8	-	0	0	0	0	-	12
% Bicycles on Road	5.0%	0.8%	0%	1.3%	-	0.9%	3.0%	0%	1.4%	-	0%	0%	0%	0%	-	1.1%
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	47	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	94.0%	-	-
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	3	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	6.0%	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Old Rand Rd at Pine Tree Row - TMC

Sat Jul 29, 2017

Midday Peak (WKND) (12:30PM - 1:30PM) - Overall Peak Hour

All Classes (Lights, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 435808, Location: 42.203108, -88.106069



Provided by: Gewalt Hamilton Associates

Inc.

625 Forest Edge Drive,
Vernon Hills, IL, 60061, US

Leg Direction	Old Rand Road Eastbound					Old Rand Road Westbound					Pine Tree Row Southbound					Int
	L	T	U	App	Ped*	T	R	U	App	Ped*	L	R	U	App	Ped*	
2017-07-29 12:30PM	4	21	0	25	0	42	11	0	53	0	7	7	0	14	4	92
12:45PM	7	17	0	24	0	40	14	0	54	0	14	11	0	25	2	103
1:00PM	5	20	0	25	0	43	13	0	56	0	7	4	0	11	5	92
1:15PM	5	25	0	30	0	37	10	0	47	0	11	5	0	16	4	93
Total	21	83	0	104	0	162	48	0	210	0	39	27	0	66	15	380
% Approach	20.2%	79.8%	0%	-	-	77.1%	22.9%	0%	-	-	59.1%	40.9%	0%	-	-	-
% Total	5.5%	21.8%	0%	27.4%	-	42.6%	12.6%	0%	55.3%	-	10.3%	7.1%	0%	17.4%	-	-
PHF	0.750	0.830	-	0.867	-	0.942	0.857	-	0.938	-	0.696	0.614	-	0.660	-	0.922
Lights	21	82	0	103	-	158	44	0	202	-	37	27	0	64	-	369
% Lights	100%	98.8%	0%	99.0%	-	97.5%	91.7%	0%	96.2%	-	94.9%	100%	0%	97.0%	-	97.1%
Buses and Single-Unit Trucks	0	1	0	1	-	4	3	0	7	-	2	0	0	2	-	10
% Buses and Single-Unit Trucks	0%	1.2%	0%	1.0%	-	2.5%	6.3%	0%	3.3%	-	5.1%	0%	0%	3.0%	-	2.6%
Bicycles on Road	0	0	0	0	-	0	1	0	1	-	0	0	0	0	-	1
% Bicycles on Road	0%	0%	0%	0%	-	0%	2.1%	0%	0.5%	-	0%	0%	0%	0%	-	0.3%
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	-	-	13
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	86.7%
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	-	-	2
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13.3%

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Appendix B
CMAF Projections



Chicago Metropolitan Agency for Planning

233 South Wacker Drive Suite 800 Chicago, Illinois 60606 312 454 0400 www.cmap.illinois.gov

August 16, 2017

Lynn M. Means, P.E., PTOE Senior Transportation Engineer Gewalt Hamilton Associates 625 Forest Edge Drive Vernon Hills, IL 60061

Subject: Rand Road (US 12) @ Old Rand Road IDOT

Dear Ms. Means:

In response to a request made on your behalf on August 14, 2017, we have developed year 2040 average daily traffic (ADT) projections for the subject location.

Table with 3 columns: ROAD SEGMENT, Current ADT, Year 2040 ADT. Rows include Rand Rd (US 12) from Miller Rd to Honey Lake Rd, Rand Rd (US 12) from Honey Lake Rd to Main St (IL 22), and Old Rand Rd from Rand Rd (US 12) to Main St (IL 22).

Traffic projections are developed using existing ADT data provided in the request letter and the results from the March 2017 CMAP Travel Demand Analysis. The regional travel model uses CMAP 2040 socioeconomic projections and assumes the implementation of the GO TO 2040 Comprehensive Regional Plan for the Northeastern Illinois area.

If you have any questions, please call me at (312) 386-8806.

Sincerely,

Jose Rodriguez, PTP, AICP Senior Planner, Research and Analysis

cc: Quigley (IDOT) S:\AdminGroups\ResearchAnalysis\TrafficForecastsCY2017\LakeZurich\la-29-17\la-29-17.docx

Appendix C
SRA Report Exhibit

Appendix D
ITE Trip Generation Excerpts

Land Use: 492 Health/Fitness Club

Independent Variables with One Observation

The following trip generation data are for independent variables with only one observation. This information is shown in this table only; there are no related plots for these data.

Users are cautioned to use data with care because of the small sample size.

<u>Independent Variable</u>	<u>Trip Generation Rate</u>	<u>Size of Independent Variable</u>	<u>Number of Studies</u>	<u>Directional Distribution</u>
1,000 Square Feet Gross Floor Area				
Weekday	32.93	15	1	50% entering, 50% exiting
Saturday	20.87	15	1	50% entering, 50% exiting
Sunday	26.73	15	1	50% entering, 50% exiting
Sunday Peak Hour of Generator	2.47	15	1	Not available

Health/Fitness Club (492)

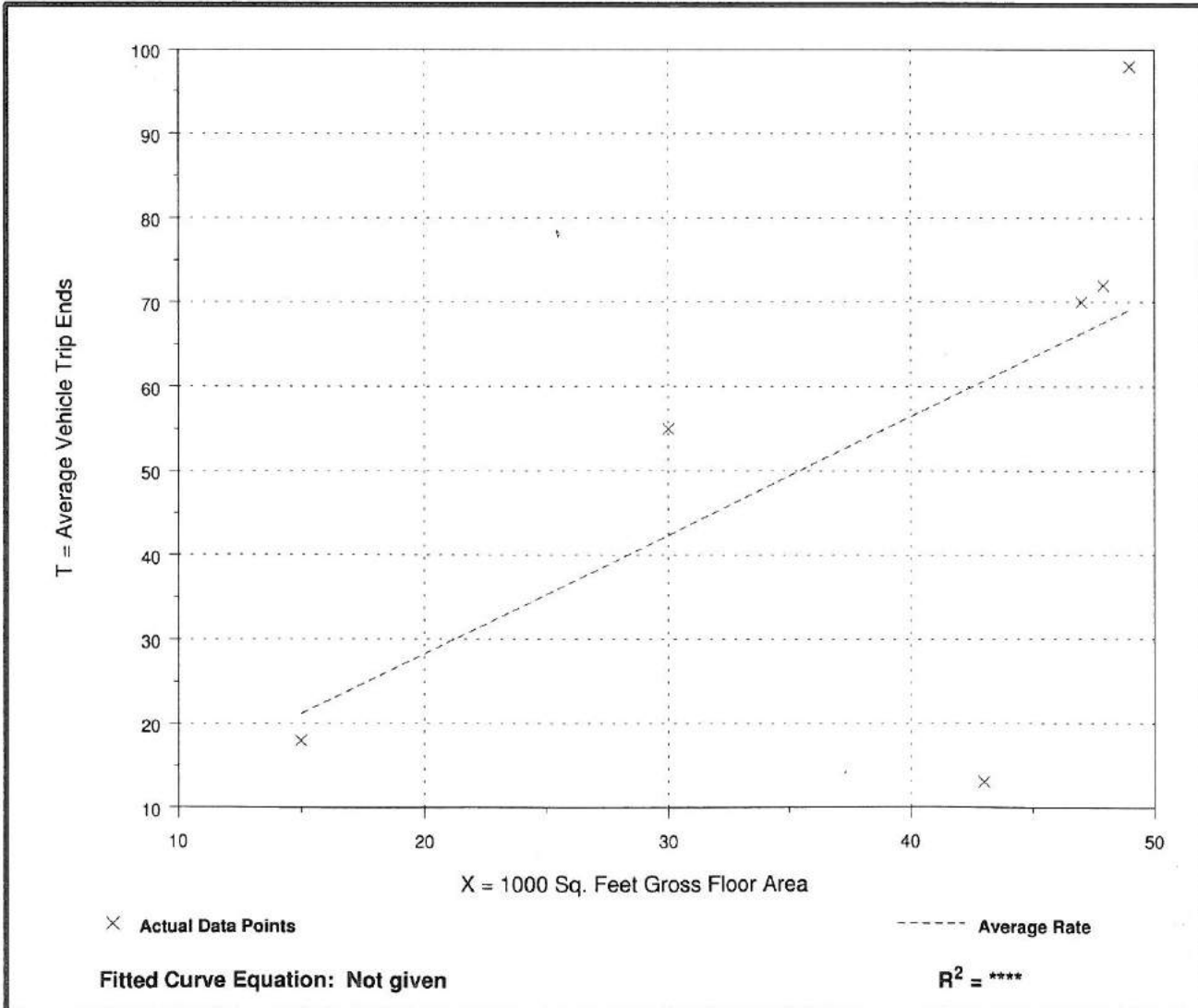
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 6
 Average 1000 Sq. Feet GFA: 39
 Directional Distribution: 50% entering, 50% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
1.41	0.30 - 2.00	1.31

Data Plot and Equation



Health/Fitness Club (492)

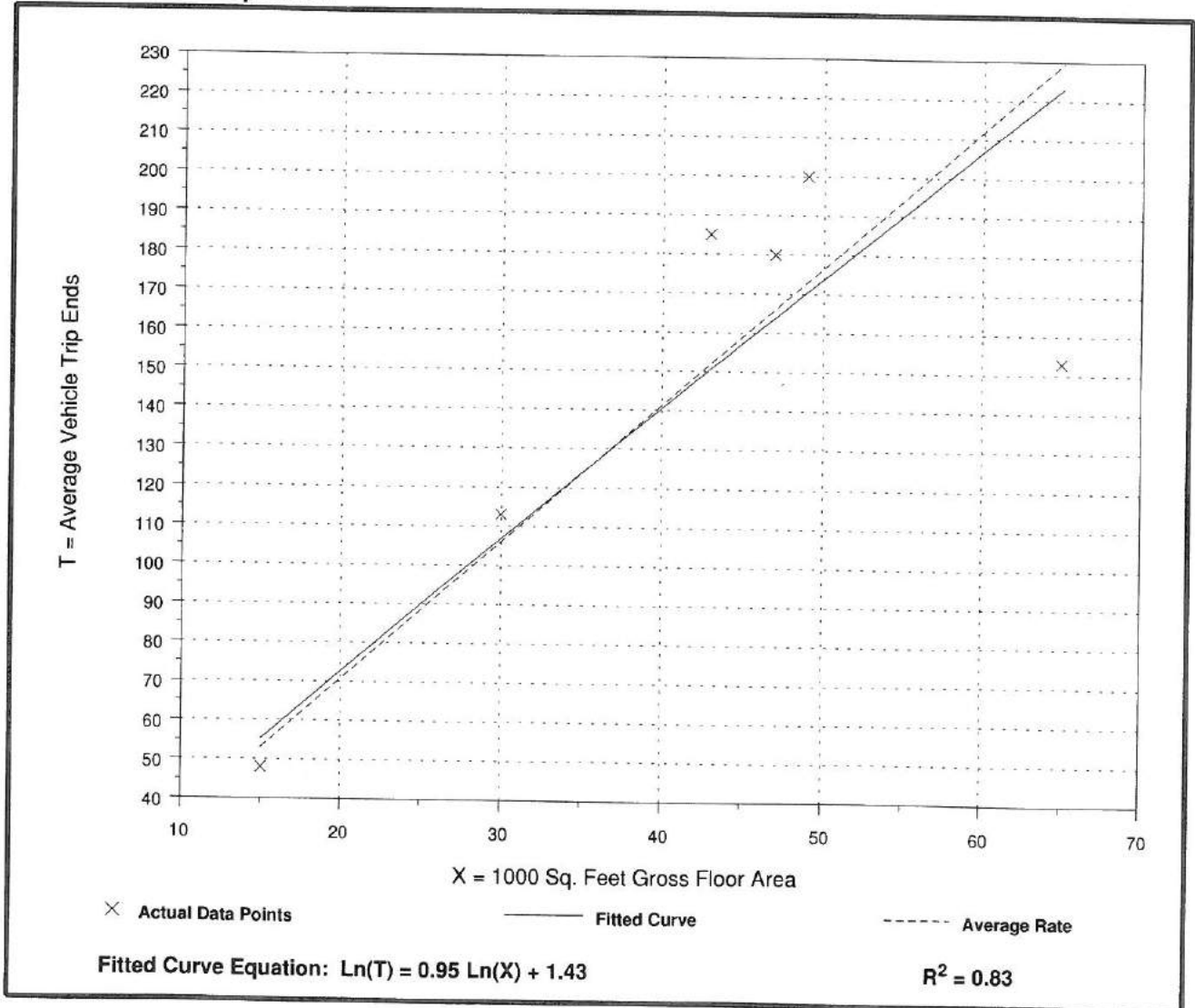
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 6
 Average 1000 Sq. Feet GFA: 42
 Directional Distribution: 57% entering, 43% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
3.53	2.35 - 4.30	2.00

Data Plot and Equation



Health/Fitness Club (492)

Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Saturday,
Peak Hour of Generator

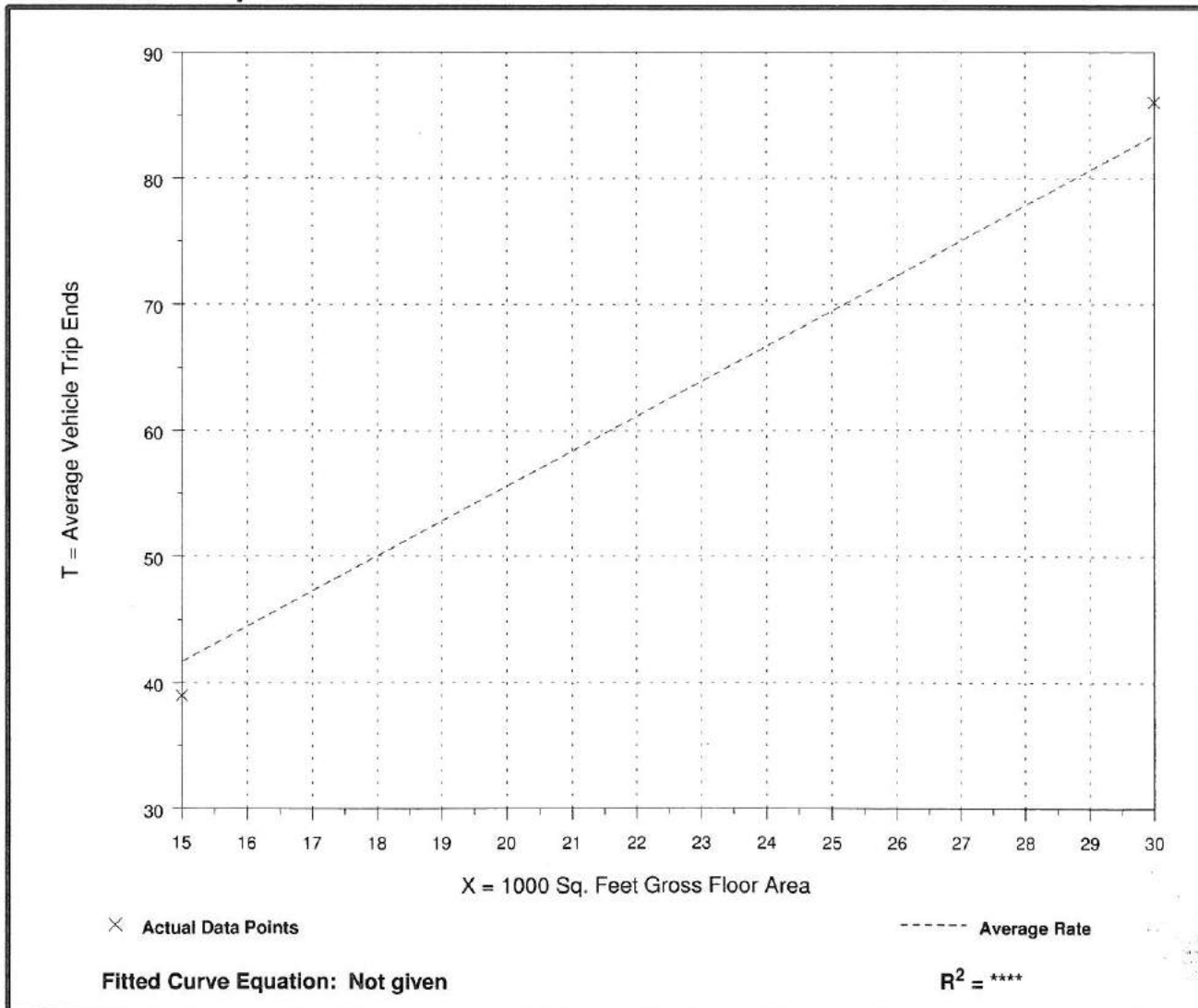
Number of Studies: 2
 Average 1000 Sq. Feet GFA: 23
 Directional Distribution: 45% entering, 55% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
2.78	2.60 - 2.87	*

Data Plot and Equation

Caution - Use Carefully - Small Sample Size



Appendix E
Life Time Fitness Trip Generation Study

Trip Rates for Sites Containing: Life Time Athletic

Average Vehicle Trips Ends vs. 1,000 square feet of GFA

ksf
125.000

Peak Hour/Direction	Thursday, 12/28/17	Friday, 12/29/17	Saturday, 12/30/17	Sunday, 12/31/17	Monday, 1/1/18	Tuesday, 1/2/18	Wednesday, 1/3/18	Thursday, 1/4/18	Friday, 1/5/18	Saturday, 1/6/18	Weighted Empirical Data Average	Highest Rate	Average Rates ITE LUC 492 ^b	Average Local	Proposed Site ITE LUC 492 (eq.)	Highest Local
Vernon Hills, IL ^a																
Weekday AM Street:																
Enter	0.99	1.29			0.51	0.92	0.93	1.19	1.50		1.05	1.50	1.00	131	88	188
Exit	0.48	0.54			0.13	0.59	0.65	0.63	0.58		0.51	0.58	0.31	64	88	73
Total	1.47	1.83			0.64	1.51	1.58	1.82	2.08		1.56	2.08	1.31	195	176	261
Weekday PM Street:																
Enter	1.19	0.80			0.83	1.86	1.70	1.78	1.59		1.39	1.86	2.00	174	234	233
Exit	0.98	1.02			0.82	1.22	1.00	1.16	1.02		1.03	1.22	1.45	129	176	153
Total	2.17	1.82			1.65	3.08	2.70	2.94	2.61		2.42	3.08	3.45	305	410	386
Weekday Daily:																
Enter	14.11	13.65			10.10	17.97	18.22	16.83	15.52		15.20	18.22		1900	2058	2278
Exit	14.06	13.62			9.97	16.86	17.56	17.03	15.42		14.93	17.56		1866	2058	2195
Total	28.17	27.27			20.07	34.83	35.78	33.86	30.94		30.13	35.78		3765	4116	4473
Saturday Midday:																
Enter			1.42							2.10	1.76	2.10	2.00	220	110	263
Exit			1.40							1.74	1.57	1.74	1.19	196	135	218
Total			2.82							3.84	3.33	3.84	3.19	415	245	481
Saturday Daily:																
Enter			13.41							16.73	15.07	16.73		1884		2091
Exit			13.45							16.73	15.09	16.73		1886		2091
Total			26.86							33.46	30.16	33.46		3770		4182
Sunday Midday:																
Enter				1.16							1.16	1.16		145		145
Exit				1.94							1.94	1.94		243		243
Total				3.10							3.10	3.10		385		388
Sunday Daily:																
Enter				12.10							12.10	12.10		1513		1513
Exit				12.21							12.21	12.21		1526		1526
Total				24.31							24.31	24.31		3040		3039

^aContains the Life Time Athletic with a gross floor area of 140,495 sf located at 680 Woodlands Parkway, Vernon Hills, IL.

^bITE, 9th Edition Land Use Code 492 (Health/Fitness Club).

Peak Hour/Direction	Thursday, 12/28/17 Vernon Hills, IL ^a	Friday, 12/29/17 Vernon Hills, IL ^a	Saturday, 12/30/17 Vernon Hills, IL ^a	Sunday, 12/31/17 Vernon Hills, IL ^a	Monday, 1/1/18 Vernon Hills, IL ^a	Tuesday, 1/2/18 Vernon Hills, IL ^a	Wednesday, 1/3/18 Vernon Hills, IL ^a	Thursday, 1/4/18 Vernon Hills, IL ^a	Friday, 1/5/18 Vernon Hills, IL ^a	Saturday, 1/6/18 Vernon Hills, IL ^a
Weekday AM Street:										
Enter	139	181			72	129	130	167	211	
Exit	<u>67</u>	<u>76</u>			<u>18</u>	<u>83</u>	<u>91</u>	<u>89</u>	<u>81</u>	
Total	206	257			90	212	221	256	292	
Weekday PM Street:										
Enter	167	113			117	261	239	250	224	
Exit	<u>138</u>	<u>143</u>			<u>115</u>	<u>171</u>	<u>141</u>	<u>163</u>	<u>144</u>	
Total	305	256			232	432	380	413	368	
Weekday Daily:										
Enter	1,983	1,918			1,419	2,525	2,560	2,364	2,181	
Exit	<u>1,976</u>	<u>1,913</u>			<u>1,401</u>	<u>2,369</u>	<u>2,467</u>	<u>2,392</u>	<u>2,166</u>	
Total	3,959	3,831			2,820	4,894	5,027	4,756	4,347	
Saturday Midday:										
Enter			199							295
Exit			<u>196</u>							<u>245</u>
Total			395							540
Saturday Daily:										
Enter			1,884							2,351
Exit			<u>1,889</u>							<u>2,351</u>
Total			3,773							4,702
Sunday Midday:										
Enter				163						
Exit				<u>272</u>						
Total				435						
Sunday Daily:										
Enter				1,700						
Exit				<u>1,716</u>						
Total				3,416						

Time Start	West Access		East Access		Total	Hourly Total	Percent Total
	Entering	Exiting	Entering	Exiting			
12:00 AM	0	1	1	4	6	18	0.5%
12:15 AM	0	2	0	1	3		
12:30 AM	0	1	1	3	5		
12:45 AM	0	2	1	1	4	8	0.2%
1:00 AM	0	1	0	2	3		
1:15 AM	0	0	0	0	0		
1:30 AM	0	2	0	3	5		
1:45 AM	0	0	0	0	0		
2:00 AM	0	0	1	0	1		
2:15 AM	0	0	0	0	0	4	0.1%
2:30 AM	0	0	1	0	1		
2:45 AM	0	1	1	0	2		
3:00 AM	0	0	0	0	0	4	0.1%
3:15 AM	0	0	0	0	0		
3:30 AM	1	0	2	0	3		
3:45 AM	1	0	0	0	1		
4:00 AM	2	0	0	1	3		
4:15 AM	0	0	2	0	2		
4:30 AM	1	1	4	1	7	28	0.7%
4:45 AM	7	0	9	0	16		
5:00 AM	5	1	7	2	15		
5:15 AM	5	0	10	1	16	68	1.7%
5:30 AM	1	1	10	4	16		
5:45 AM	10	0	9	2	21		
6:00 AM	4	2	9	2	17		
6:15 AM	4	1	6	3	14		
6:30 AM	4	3	11	5	23		
6:45 AM	3	2	11	6	22	76	1.9%
7:00 AM	5	4	8	15	32		
7:15 AM	6	0	11	12	29		
7:30 AM	8	4	19	14	45	145	3.7%
7:45 AM	9	2	18	10	39		
8:00 AM	12	2	17	14	45		
8:15 AM	13	5	19	15	52		
8:30 AM	14	6	17	8	45		
8:45 AM	17	5	30	12	64		
9:00 AM	16	9	28	15	68	296	7.5%
9:15 AM	25	3	30	10	68		
9:30 AM	13	10	36	24	83		
9:45 AM	14	9	32	22	77		
10:00 AM	13	8	33	13	67		
10:15 AM	11	8	42	11	72		
10:30 AM	17	10	23	22	72	292	7.4%
10:45 AM	16	14	20	31	81		
11:00 AM	5	12	26	25	68		
11:15 AM	8	32	30	41	111	341	8.6%
11:30 AM	8	19	24	30	81		
11:45 AM	11	14	27	29	81		
12:00 PM	12	20	20	36	88		
12:15 PM	6	16	27	35	84		
12:30 PM	6	12	24	26	68		
12:45 PM	10	12	15	27	64	304	7.7%
1:00 PM	13	9	19	23	64		
1:15 PM	10	8	26	31	75		
1:30 PM	6	5	14	22	47	245	6.2%
1:45 PM	8	9	18	24	59		
2:00 PM	9	8	24	19	60		
2:15 PM	8	12	17	16	53		
2:30 PM	7	7	15	20	49		
2:45 PM	9	9	25	26	69		
3:00 PM	6	9	29	23	67	231	5.8%
3:15 PM	8	9	23	17	57		
3:30 PM	9	9	16	17	51		
3:45 PM	12	9	24	22	67		
4:00 PM	6	9	18	12	45		
4:15 PM	13	9	24	26	72		
4:30 PM	12	6	32	17	67	280	7.1%
4:45 PM	25	17	30	24	96		
5:00 PM	11	19	20	20	70		
5:15 PM	5	6	28	18	57	269	6.8%
5:30 PM	5	14	21	26	66		
5:45 PM	15	10	30	21	76		
6:00 PM	13	15	39	20	87		
6:15 PM	6	15	24	16	61		
6:30 PM	7	9	16	16	48		
6:45 PM	4	11	10	30	55	251	6.3%
7:00 PM	4	10	21	23	58		
7:15 PM	2	12	14	40	68		
7:30 PM	5	14	9	18	46		
7:45 PM	2	13	20	22	57		
8:00 PM	4	19	18	21	62		
8:15 PM	4	7	14	13	38	172	4.3%
8:30 PM	3	12	12	19	46		
8:45 PM	0	5	9	12	26		
9:00 PM	4	6	5	14	29		
9:15 PM	2	5	8	15	30		
9:30 PM	0	6	9	9	24		
9:45 PM	5	5	7	16	33	116	2.9%
10:00 PM	1	11	7	18	37		
10:15 PM	1	5	3	8	17		
10:30 PM	3	2	4	6	15		
10:45 PM	1	3	0	2	6		
11:00 PM	1	2	5	4	12		
11:15 PM	1	2	0	8	11	59	1.5%
11:30 PM	0	3	7	8	18		
11:45 PM	1	3	3	11	18		
TOTAL	594	645	1,389	1,331	3,959	3959	

Friday, December 29, 2017
 Life Time Athletic - Vernon Hills, IL

1-hour

Time Start	West Access		East Access		Total	Hourly Total	Percent Total
	Entering	Exiting	Entering	Exiting			
12:00 AM	0	3	4	3	10	28	0.7%
12:15 AM	0	0	2	6	8		
12:30 AM	0	0	1	3	4		
12:45 AM	0	2	1	3	6		
1:00 AM	0	2	0	5	7	18	0.5%
1:15 AM	1	4	1	1	7		
1:30 AM	1	0	0	2	3		
1:45 AM	0	0	1	0	1		
2:00 AM	0	0	0	0	0	3	0.1%
2:15 AM	0	0	1	0	1		
2:30 AM	0	0	0	0	0		
2:45 AM	0	0	2	0	2		
3:00 AM	0	0	0	0	0	8	0.2%
3:15 AM	0	0	3	1	4		
3:30 AM	0	0	3	0	3		
3:45 AM	0	0	1	0	1		
4:00 AM	2	0	1	1	4	33	0.9%
4:15 AM	0	0	2	0	2		
4:30 AM	1	1	4	1	7		
4:45 AM	10	0	8	2	20		
5:00 AM	5	0	6	1	12	76	2.0%
5:15 AM	9	0	18	3	30		
5:30 AM	6	1	5	0	12		
5:45 AM	6	0	12	4	22		
6:00 AM	3	2	8	7	20	96	2.5%
6:15 AM	1	3	5	2	11		
6:30 AM	3	3	12	14	32		
6:45 AM	8	6	7	12	33		
7:00 AM	6	8	15	7	36	167	4.4%
7:15 AM	6	5	16	9	36		
7:30 AM	7	2	22	15	46		
7:45 AM	11	3	27	8	49		
8:00 AM	17	3	20	12	52	257	6.7%
8:15 AM	14	11	25	14	64		
8:30 AM	19	2	24	14	59		
8:45 AM	25	4	37	16	82		
9:00 AM	12	7	32	19	70	366	9.6%
9:15 AM	24	10	43	17	94		
9:30 AM	32	11	54	24	121		
9:45 AM	16	8	35	22	81		
10:00 AM	6	5	29	23	63	306	8.0%
10:15 AM	12	15	27	23	77		
10:30 AM	10	12	31	32	85		
10:45 AM	14	10	26	31	81		
11:00 AM	11	30	20	44	105	375	9.8%
11:15 AM	7	17	24	33	81		
11:30 AM	13	17	30	37	97		
11:45 AM	12	19	26	35	92		
12:00 PM	9	7	16	31	63	287	7.5%
12:15 PM	9	13	18	32	72		
12:30 PM	13	17	23	25	78		
12:45 PM	13	13	19	29	74		
1:00 PM	10	10	20	25	65	282	7.4%
1:15 PM	8	12	24	24	68		
1:30 PM	6	19	20	28	73		
1:45 PM	9	12	27	28	76		
2:00 PM	4	15	24	15	58	229	6.0%
2:15 PM	6	9	22	19	56		
2:30 PM	6	7	20	22	55		
2:45 PM	7	11	16	26	60		
3:00 PM	3	8	22	21	54	229	6.0%
3:15 PM	14	16	24	18	72		
3:30 PM	3	10	21	11	45		
3:45 PM	5	9	16	28	58		
4:00 PM	7	10	25	29	71	252	6.6%
4:15 PM	9	11	23	19	62		
4:30 PM	12	10	16	27	65		
4:45 PM	5	8	20	21	54		
5:00 PM	9	6	20	14	49	206	5.4%
5:15 PM	13	9	14	19	55		
5:30 PM	6	8	24	18	56		
5:45 PM	6	11	14	15	46		
6:00 PM	4	8	10	13	35	155	4.0%
6:15 PM	2	4	12	18	36		
6:30 PM	3	12	13	14	42		
6:45 PM	3	8	12	19	42		
7:00 PM	3	8	11	23	45	141	3.7%
7:15 PM	3	8	9	19	39		
7:30 PM	1	5	7	18	31		
7:45 PM	0	5	10	11	26		
8:00 PM	3	4	12	9	28	107	2.8%
8:15 PM	3	3	7	9	22		
8:30 PM	2	5	10	10	27		
8:45 PM	4	2	13	11	30		
9:00 PM	4	3	10	10	27	80	2.1%
9:15 PM	1	5	2	8	16		
9:30 PM	0	2	8	9	19		
9:45 PM	3	2	4	9	18		
10:00 PM	4	5	6	12	27	84	2.2%
10:15 PM	3	2	4	7	16		
10:30 PM	2	3	7	13	25		
10:45 PM	1	4	4	7	16		
11:00 PM	3	2	1	9	15	46	1.2%
11:15 PM	0	4	4	5	13		
11:30 PM	0	1	5	5	11		
11:45 PM	2	0	2	3	7		
TOTAL	576	592	1,342	1,321	3,831	3831	

Saturday, December 30, 2017
 Life Time Athletic - Vernon Hills, IL

1-hour

Time Start	West Access		East Access		Total	Hourly Total	Percent Total
	Entering	Exiting	Entering	Exiting			
12:00 AM	1	4	3	2	10	32	0.8%
12:15 AM	0	0	2	5	7		
12:30 AM	0	5	1	2	8		
12:45 AM	0	2	1	4	7	14	0.4%
1:00 AM	0	1	0	3	4		
1:15 AM	0	1	2	3	6		
1:30 AM	1	0	1	1	3	18	0.5%
1:45 AM	0	0	0	1	1		
2:00 AM	0	1	1	1	3		
2:15 AM	0	2	3	2	7	12	0.3%
2:30 AM	0	0	3	1	4		
2:45 AM	0	0	2	2	4		
3:00 AM	0	0	2	0	2	6	0.2%
3:15 AM	0	0	0	0	0		
3:30 AM	0	1	0	5	6		
3:45 AM	0	0	0	4	4	25	0.7%
4:00 AM	0	0	0	1	1		
4:15 AM	0	0	0	0	0		
4:30 AM	0	0	2	1	3	56	1.5%
4:45 AM	0	0	2	0	2		
5:00 AM	2	0	2	0	4		
5:15 AM	2	0	1	0	3	155	4.1%
5:30 AM	4	0	5	1	10		
5:45 AM	3	0	4	1	8		
6:00 AM	6	0	6	1	13	220	5.8%
6:15 AM	3	1	5	2	11		
6:30 AM	1	0	10	3	14		
6:45 AM	4	0	8	6	18	390	10.3%
7:00 AM	3	2	11	3	19		
7:15 AM	6	2	13	4	25		
7:30 AM	17	2	16	10	45	384	10.2%
7:45 AM	26	5	29	6	66		
8:00 AM	22	0	36	6	64		
8:15 AM	16	0	29	8	53	372	9.9%
8:30 AM	6	4	17	9	36		
8:45 AM	24	2	33	8	67		
9:00 AM	19	4	38	14	75	354	9.4%
9:15 AM	35	9	54	26	124		
9:30 AM	26	18	37	26	107		
9:45 AM	15	14	32	23	84	275	7.3%
10:00 AM	12	20	35	26	93		
10:15 AM	19	5	36	31	91		
10:30 AM	13	9	33	30	85	279	7.4%
10:45 AM	19	22	38	36	115		
11:00 AM	10	21	31	42	104		
11:15 AM	12	20	20	34	86	249	6.6%
11:30 AM	11	30	17	27	85		
11:45 AM	17	13	25	42	97		
12:00 PM	10	14	28	34	86	229	6.1%
12:15 PM	8	13	22	39	82		
12:30 PM	7	18	24	51	100		
12:45 PM	10	16	30	30	86	170	4.5%
1:00 PM	2	9	19	26	56		
1:15 PM	6	20	25	30	81		
1:30 PM	7	7	22	24	60	127	3.4%
1:45 PM	10	8	31	29	78		
2:00 PM	7	9	25	25	66		
2:15 PM	12	10	24	29	75	123	3.3%
2:30 PM	12	9	21	22	64		
2:45 PM	10	11	22	31	74		
3:00 PM	4	15	25	30	74	93	2.5%
3:15 PM	10	10	23	16	59		
3:30 PM	8	7	15	19	49		
3:45 PM	7	9	22	29	67	75	2.0%
4:00 PM	2	3	14	18	37		
4:15 PM	6	16	15	14	51		
4:30 PM	3	15	21	38	77	69	1.8%
4:45 PM	5	10	22	27	64		
5:00 PM	5	9	14	19	47		
5:15 PM	8	7	16	29	60	46	1.2%
5:30 PM	3	6	8	20	37		
5:45 PM	4	4	13	5	26		
6:00 PM	1	10	7	18	36	3773	
6:15 PM	2	8	9	9	28		
6:30 PM	1	2	7	17	27		
6:45 PM	2	3	15	16	36	93	2.5%
7:00 PM	5	4	16	13	38		
7:15 PM	1	3	7	11	22		
7:30 PM	6	6	11	13	36	75	2.0%
7:45 PM	2	1	6	18	27		
8:00 PM	3	1	12	14	30		
8:15 PM	4	1	5	7	17	69	1.8%
8:30 PM	3	5	9	6	23		
8:45 PM	2	4	10	7	23		
9:00 PM	2	1	5	3	11	46	1.2%
9:15 PM	5	3	5	3	16		
9:30 PM	2	6	4	9	21		
9:45 PM	2	6	8	11	27	69	1.8%
10:00 PM	2	4	6	15	27		
10:15 PM	2	1	2	6	11		
10:30 PM	1	1	6	7	15	46	1.2%
10:45 PM	1	2	4	9	16		
11:00 PM	1	2	3	6	12		
11:15 PM	3	1	3	8	15	46	1.2%
11:30 PM	0	1	0	6	7		
11:45 PM	2	3	1	6	12		
TOTAL	576	554	1,308	1,335	3,773		

Sunday, December 31, 2017
 Life Time Athletic - Vernon Hills, IL

1-hour

Time Start	West Access		East Access		Total	Hourly Total	Percent Total
	Entering	Exiting	Entering	Exiting			
12:00 AM	0	4	0	2	6	19	0.6%
12:15 AM	0	1	1	1	3		
12:30 AM	0	1	1	3	5		
12:45 AM	0	3	1	1	5	10	0.3%
1:00 AM	0	0	0	2	2		
1:15 AM	0	0	0	0	0		
1:30 AM	1	1	1	2	5		
1:45 AM	0	1	0	2	3		
2:00 AM	0	0	1	0	1		
2:15 AM	0	0	1	0	1	4	0.1%
2:30 AM	0	0	1	1	2		
2:45 AM	0	0	0	0	0		
3:00 AM	0	0	1	1	2		
3:15 AM	0	1	2	2	5		
3:30 AM	1	0	0	0	1		
3:45 AM	1	0	0	0	1	9	0.3%
4:00 AM	0	1	0	2	3		
4:15 AM	0	0	0	0	0		
4:30 AM	0	0	0	1	1		
4:45 AM	1	0	0	0	1		
5:00 AM	1	0	6	0	7		
5:15 AM	0	0	1	0	1	19	0.6%
5:30 AM	2	0	2	1	5		
5:45 AM	0	1	4	1	6		
6:00 AM	0	2	4	0	6		
6:15 AM	2	0	3	4	9		
6:30 AM	2	0	5	1	8		
6:45 AM	6	2	4	1	13	36	1.1%
7:00 AM	3	0	9	2	14		
7:15 AM	4	1	13	2	20		
7:30 AM	12	0	17	4	33		
7:45 AM	15	2	27	2	46		
8:00 AM	11	3	18	8	40		
8:15 AM	27	2	24	4	57	239	7.0%
8:30 AM	18	1	40	5	64		
8:45 AM	30	3	34	11	78		
9:00 AM	14	3	29	19	65		
9:15 AM	14	6	27	13	60	340	10.0%
9:30 AM	26	7	27	16	76		
9:45 AM	36	17	64	22	139		
10:00 AM	27	13	58	43	141		
10:15 AM	14	18	31	30	93		
10:30 AM	16	10	34	25	85		
10:45 AM	11	11	37	22	81	400	11.7%
11:00 AM	8	15	40	38	101		
11:15 AM	10	24	43	44	121		
11:30 AM	6	18	25	52	101		
11:45 AM	13	19	29	48	109		
12:00 PM	9	30	28	37	104		
12:15 PM	11	19	22	41	93	341	10.0%
12:30 PM	5	20	17	32	74		
12:45 PM	3	12	29	26	70		
1:00 PM	6	11	27	38	82		
1:15 PM	8	19	27	37	91		
1:30 PM	9	13	34	31	87		
1:45 PM	4	10	23	23	60	320	9.4%
2:00 PM	4	11	21	28	64		
2:15 PM	11	9	21	25	66		
2:30 PM	7	8	18	28	61		
2:45 PM	6	6	30	21	63		
3:00 PM	1	14	20	24	59		
3:15 PM	13	8	20	34	75	254	7.4%
3:30 PM	7	15	19	22	63		
3:45 PM	5	8	23	25	61		
4:00 PM	3	7	10	24	44		
4:15 PM	8	14	15	31	68		
4:30 PM	7	7	9	20	43		
4:45 PM	5	10	13	16	44	199	5.8%
5:00 PM	7	12	7	24	50		
5:15 PM	4	9	15	13	41		
5:30 PM	0	3	5	15	23		
5:45 PM	4	4	6	17	31		
6:00 PM	1	8	10	16	35		
6:15 PM	1	3	6	7	17	100	2.9%
6:30 PM	1	5	8	11	25		
6:45 PM	2	5	4	12	23		
7:00 PM	0	1	4	5	10		
7:15 PM	0	3	4	7	14		
7:30 PM	1	2	9	7	19		
7:45 PM	1	0	5	9	15	58	1.7%
8:00 PM	0	3	2	8	13		
8:15 PM	0	1	7	4	12		
8:30 PM	0	2	5	7	14		
8:45 PM	0	0	1	7	8		
9:00 PM	1	1	2	0	4		
9:15 PM	0	0	2	7	9	31	0.9%
9:30 PM	2	0	1	2	5		
9:45 PM	1	2	4	6	13		
10:00 PM	2	0	1	3	6		
10:15 PM	0	0	2	1	3		
10:30 PM	0	1	0	4	5		
10:45 PM	2	2	2	2	8	22	0.6%
11:00 PM	0	1	0	2	3		
11:15 PM	0	3	1	4	8		
11:30 PM	0	1	2	1	4		
11:45 PM	0	0	0	0	0		
11:55 PM	0	0	0	0	0		
TOTAL	494	514	1,206	1,202	3,416	3416	

Monday, January 1, 2018
 Life Time Athletic - Vernon Hills, IL

1-hour

Time Start	West Access		East Access		Total	Hourly Total	Percent Total
	Entering	Exiting	Entering	Exiting			
12:00 AM	0	0	0	2	2	8	0.3%
12:15 AM	1	0	0	0	1		
12:30 AM	2	2	0	1	5		
12:45 AM	0	0	0	0	0		
1:00 AM	0	0	0	0	0		
1:15 AM	0	0	0	0	0		
1:30 AM	0	1	0	2	3	5	0.2%
1:45 AM	0	1	0	1	2		
2:00 AM	0	0	0	0	0		
2:15 AM	0	0	0	0	0		
2:30 AM	0	0	0	0	0		
2:45 AM	0	0	0	0	0	0	0.0%
3:00 AM	0	1	0	0	1		
3:15 AM	0	0	0	0	0		
3:30 AM	0	0	0	0	0		
3:45 AM	0	0	1	0	1		
4:00 AM	0	0	0	0	0	2	0.1%
4:15 AM	0	0	0	0	0		
4:30 AM	0	0	1	0	1		
4:45 AM	3	0	1	0	4		
5:00 AM	0	0	3	0	3		
5:15 AM	1	0	2	0	3	6	0.2%
5:30 AM	0	0	0	0	0		
5:45 AM	2	0	1	0	3		
6:00 AM	1	1	0	0	2		
6:15 AM	1	0	2	2	5		
6:30 AM	0	0	1	1	2	19	0.7%
6:45 AM	6	1	1	2	10		
7:00 AM	0	0	1	4	5		
7:15 AM	4	1	6	1	12		
7:30 AM	2	0	6	1	9		
7:45 AM	2	1	7	1	11	37	1.3%
8:00 AM	2	2	14	4	22		
8:15 AM	5	0	12	5	22		
8:30 AM	9	0	12	3	24		
8:45 AM	9	1	9	3	22		
9:00 AM	5	4	21	6	36	90	3.2%
9:15 AM	11	0	19	5	35		
9:30 AM	21	1	25	6	53		
9:45 AM	25	4	49	11	89		
10:00 AM	29	8	56	14	107		
10:15 AM	8	5	17	16	46	244	8.7%
10:30 AM	3	7	22	15	47		
10:45 AM	5	5	21	13	44		
11:00 AM	5	4	15	8	32		
11:15 AM	10	9	16	21	56		
11:30 AM	6	25	12	22	65	233	8.3%
11:45 AM	7	14	13	46	80		
12:00 PM	5	11	14	35	65		
12:15 PM	7	14	17	29	67		
12:30 PM	5	18	19	28	70		
12:45 PM	5	11	22	18	56	258	9.1%
1:00 PM	4	7	12	14	37		
1:15 PM	4	7	20	21	52		
1:30 PM	5	1	17	13	36		
1:45 PM	9	3	24	18	54		
2:00 PM	11	7	17	14	49	179	6.3%
2:15 PM	9	7	25	27	68		
2:30 PM	6	8	24	17	55		
2:45 PM	8	5	22	23	58		
3:00 PM	8	8	18	16	50		
3:15 PM	3	5	19	24	51	209	7.4%
3:30 PM	8	8	9	21	46		
3:45 PM	11	6	24	21	62		
4:00 PM	6	13	22	19	60		
4:15 PM	9	9	17	18	53		
4:30 PM	7	9	21	20	57	224	7.9%
4:45 PM	9	6	20	19	54		
5:00 PM	7	6	15	22	50		
5:15 PM	6	10	21	28	65		
5:30 PM	1	3	17	20	41		
5:45 PM	8	7	17	19	51	207	7.3%
6:00 PM	6	11	14	19	50		
6:15 PM	2	14	11	24	51		
6:30 PM	2	8	15	21	46		
6:45 PM	5	7	16	18	46		
7:00 PM	2	9	18	12	41	193	6.8%
7:15 PM	2	2	12	11	27		
7:30 PM	1	0	9	10	20		
7:45 PM	3	5	18	11	37		
8:00 PM	4	6	8	17	35		
8:15 PM	3	4	12	13	32	122	4.3%
8:30 PM	5	3	6	12	26		
8:45 PM	7	4	8	10	29		
9:00 PM	2	4	6	12	24		
9:15 PM	3	5	6	12	26		
9:30 PM	2	2	3	8	15	80	2.8%
9:45 PM	3	2	3	7	15		
10:00 PM	0	3	8	8	19		
10:15 PM	3	1	10	11	25		
10:30 PM	2	6	2	12	22		
10:45 PM	4	2	0	10	16	82	2.9%
11:00 PM	1	8	2	7	18		
11:15 PM	0	2	1	5	8		
11:30 PM	1	5	2	6	14		
11:45 PM	0	4	1	0	5		
TOTAL	409	404	1,010	997	2,820	2820	

Time Start	West Access		East Access		Total	Hourly Total	Percent Total
	Entering	Exiting	Entering	Exiting			
12:00 AM	0	4	0	1	5	18	0.4%
12:15 AM	0	3	0	3	6		
12:30 AM	0	2	0	2	4		
12:45 AM	1	0	0	2	3	9	0.2%
1:00 AM	0	0	0	2	2		
1:15 AM	0	0	0	4	4		
1:30 AM	0	0	0	1	1	1	0.0%
1:45 AM	0	2	0	0	2		
2:00 AM	0	0	0	0	0		
2:15 AM	0	0	0	0	0	4	0.1%
2:30 AM	0	0	1	0	1		
2:45 AM	0	0	0	0	0		
3:00 AM	0	0	1	0	1	47	1.0%
3:15 AM	0	1	0	0	1		
3:30 AM	1	0	1	0	2		
3:45 AM	0	0	0	0	0	77	1.6%
4:00 AM	2	0	0	1	3		
4:15 AM	2	0	2	0	4		
4:30 AM	2	0	10	1	13	118	2.4%
4:45 AM	12	1	14	0	27		
5:00 AM	7	0	9	1	17		
5:15 AM	5	0	13	0	18	157	3.2%
5:30 AM	5	1	10	7	23		
5:45 AM	6	1	11	1	19		
6:00 AM	8	5	18	9	40	212	4.3%
6:15 AM	2	0	14	5	21		
6:30 AM	1	4	10	11	26		
6:45 AM	7	8	8	8	31	272	5.6%
7:00 AM	13	2	14	8	37		
7:15 AM	5	4	9	19	37		
7:30 AM	13	3	8	17	41	276	5.6%
7:45 AM	9	2	15	16	42		
8:00 AM	14	3	20	20	57		
8:15 AM	12	4	18	13	47	289	5.9%
8:30 AM	6	3	20	17	46		
8:45 AM	18	5	21	18	62		
9:00 AM	17	4	35	9	65	316	6.5%
9:15 AM	30	10	40	15	95		
9:30 AM	14	6	28	15	63		
9:45 AM	8	7	20	14	49	234	4.8%
10:00 AM	9	9	32	19	69		
10:15 AM	11	7	19	15	52		
10:30 AM	6	7	28	26	67	259	5.3%
10:45 AM	16	11	24	37	88		
11:00 AM	9	16	20	35	80		
11:15 AM	5	13	25	26	69	272	5.6%
11:30 AM	7	12	29	23	71		
11:45 AM	11	12	26	20	69		
12:00 PM	13	13	19	25	70	334	6.8%
12:15 PM	14	14	24	42	94		
12:30 PM	9	9	21	31	70		
12:45 PM	15	15	24	28	82	432	8.8%
1:00 PM	12	12	19	26	69		
1:15 PM	8	8	23	30	69		
1:30 PM	9	9	16	25	59	297	6.1%
1:45 PM	2	2	10	23	37		
2:00 PM	8	8	24	27	67		
2:15 PM	12	12	24	28	76	444	9.1%
2:30 PM	9	9	19	23	60		
2:45 PM	8	8	21	19	56		
3:00 PM	10	10	30	26	76	272	5.6%
3:15 PM	10	10	24	27	71		
3:30 PM	10	10	21	19	60		
3:45 PM	6	6	30	23	65	334	6.8%
4:00 PM	12	12	40	27	91		
4:15 PM	10	10	34	23	77		
4:30 PM	11	11	50	18	90	432	8.8%
4:45 PM	4	4	35	33	76		
5:00 PM	14	14	45	24	97		
5:15 PM	20	20	48	30	118	454	9.3%
5:30 PM	14	14	54	25	107		
5:45 PM	15	15	51	29	110		
6:00 PM	17	17	62	35	131	444	9.1%
6:15 PM	22	22	36	32	112		
6:30 PM	22	22	32	46	122		
6:45 PM	13	13	28	35	89	297	6.1%
7:00 PM	20	20	31	36	107		
7:15 PM	32	32	21	52	137		
7:30 PM	19	19	18	48	104	181	3.7%
7:45 PM	23	23	15	35	96		
8:00 PM	28	28	13	27	96		
8:15 PM	15	15	24	28	82	132	2.7%
8:30 PM	17	17	3	3	40		
8:45 PM	14	14	17	34	79		
9:00 PM	11	11	12	22	56	59	1.2%
9:15 PM	6	6	13	19	44		
9:30 PM	10	10	5	12	37		
9:45 PM	9	9	13	13	44	484	10.0%
10:00 PM	11	11	9	14	45		
10:15 PM	8	8	7	6	29		
10:30 PM	10	10	6	12	38	484	10.0%
10:45 PM	5	5	0	10	20		
11:00 PM	3	3	2	13	21		
11:15 PM	2	2	2	6	12	59	1.2%
11:30 PM	3	3	3	4	13		
11:45 PM	3	3	2	5	13		
TOTAL	872	750	1,653	1,619	4,894	4894	

Time Start	West Access		East Access		Total	Hourly Total	Percent Total
	Entering	Exiting	Entering	Exiting			
12:00 AM	1	1	0	4	6	25	0.5%
12:15 AM	0	0	0	7	7		
12:30 AM	0	0	0	3	3		
12:45 AM	4	4	0	1	9	18	0.4%
1:00 AM	1	1	1	2	5		
1:15 AM	3	3	0	2	8		
1:30 AM	1	1	0	3	5	11	0.2%
1:45 AM	0	0	0	0	0		
2:00 AM	0	0	1	1	2		
2:15 AM	0	0	0	1	1	10	0.2%
2:30 AM	2	2	1	1	6		
2:45 AM	1	1	0	0	2		
3:00 AM	1	1	1	1	4	24	0.5%
3:15 AM	0	0	2	1	3		
3:30 AM	0	0	1	0	1		
3:45 AM	1	1	0	0	2	99	2.0%
4:00 AM	0	0	1	0	1		
4:15 AM	0	0	1	3	4		
4:30 AM	1	1	5	1	8	120	2.4%
4:45 AM	0	0	11	0	11		
5:00 AM	1	1	13	0	15		
5:15 AM	1	1	22	1	25	176	3.5%
5:30 AM	0	0	25	4	29		
5:45 AM	0	0	27	3	30		
6:00 AM	3	3	13	7	26	221	4.4%
6:15 AM	2	2	10	6	20		
6:30 AM	5	5	14	12	36		
6:45 AM	3	3	14	18	38	261	5.2%
7:00 AM	12	12	14	26	64		
7:15 AM	2	2	12	24	40		
7:30 AM	4	4	11	18	37	263	5.2%
7:45 AM	1	1	17	16	35		
8:00 AM	5	5	33	17	60		
8:15 AM	3	3	24	22	52	270	5.4%
8:30 AM	7	7	22	13	49		
8:45 AM	4	4	32	20	60		
9:00 AM	4	4	28	17	53	275	5.5%
9:15 AM	9	9	35	8	61		
9:30 AM	15	15	36	22	87		
9:45 AM	9	9	21	21	60	227	4.5%
10:00 AM	10	10	12	14	46		
10:15 AM	10	10	21	17	58		
10:30 AM	15	15	23	16	69	270	5.4%
10:45 AM	14	14	27	35	90		
11:00 AM	11	11	25	35	82		
11:15 AM	8	8	20	19	55	330	6.6%
11:30 AM	10	10	21	22	63		
11:45 AM	9	9	32	20	70		
12:00 PM	10	10	20	29	69	275	5.5%
12:15 PM	14	14	25	27	80		
12:30 PM	10	10	17	22	59		
12:45 PM	13	13	18	23	67	227	4.5%
1:00 PM	12	12	14	23	61		
1:15 PM	7	7	23	26	63		
1:30 PM	10	10	14	26	60	270	5.4%
1:45 PM	5	5	14	19	43		
2:00 PM	16	16	20	25	77		
2:15 PM	16	16	17	22	71	217	4.3%
2:30 PM	4	4	24	21	53		
2:45 PM	13	13	25	18	69		
3:00 PM	6	6	27	28	67	330	6.6%
3:15 PM	7	7	14	12	40		
3:30 PM	7	7	22	18	54		
3:45 PM	11	11	16	18	56	468	9.3%
4:00 PM	8	8	38	24	78		
4:15 PM	12	12	33	28	85		
4:30 PM	8	8	45	19	80	380	7.6%
4:45 PM	8	8	52	19	87		
5:00 PM	9	9	70	17	105		
5:15 PM	9	9	42	24	84	540	10.7%
5:30 PM	11	11	43	23	88		
5:45 PM	14	14	41	34	103		
6:00 PM	18	18	50	31	117	468	9.3%
6:15 PM	31	31	46	60	168		
6:30 PM	23	23	45	53	144		
6:45 PM	19	19	38	35	111	394	7.8%
7:00 PM	18	18	29	33	98		
7:15 PM	23	23	28	44	118		
7:30 PM	26	26	30	42	124	215	4.3%
7:45 PM	29	29	25	45	128		
8:00 PM	23	23	30	41	117		
8:15 PM	26	26	25	31	108	145	2.9%
8:30 PM	19	19	22	29	89		
8:45 PM	13	13	21	33	80		
9:00 PM	9	9	11	25	54	68	1.4%
9:15 PM	10	10	14	18	52		
9:30 PM	11	11	18	17	57		
9:45 PM	8	8	13	23	52	5027	100%
10:00 PM	8	8	9	27	52		
10:15 PM	4	4	2	17	27		
10:30 PM	9	9	7	9	34	215	4.3%
10:45 PM	8	8	3	13	32		
11:00 PM	3	3	3	14	23		
11:15 PM	4	4	0	7	15	68	1.4%
11:30 PM	3	3	2	7	15		
11:45 PM	3	3	6	3	15		
TOTAL	781	781	1,779	1,686	5,027	5027	

Time Start	West Access		East Access		Total	Hourly Total	Percent Total
	Entering	Exiting	Entering	Exiting			
12:00 AM	1	3	0	8	12	42	0.9%
12:15 AM	0	3	2	3	8		
12:30 AM	0	8	1	5	14		
12:45 AM	0	0	2	6	8		
1:00 AM	0	2	1	2	5	10	0.2%
1:15 AM	0	0	0	2	2		
1:30 AM	0	1	0	1	2		
1:45 AM	0	0	0	1	1		
2:00 AM	0	0	1	1	2	11	0.2%
2:15 AM	0	2	0	0	2		
2:30 AM	1	2	1	0	4		
2:45 AM	1	0	2	0	3		
3:00 AM	0	0	1	1	2	7	0.1%
3:15 AM	1	0	0	1	2		
3:30 AM	0	0	1	0	1		
3:45 AM	1	0	1	0	2		
4:00 AM	2	1	1	2	6	43	0.9%
4:15 AM	0	0	4	0	4		
4:30 AM	7	1	9	1	18		
4:45 AM	6	1	8	0	15		
5:00 AM	2	1	22	1	26	118	2.5%
5:15 AM	15	0	16	0	31		
5:30 AM	7	2	12	5	26		
5:45 AM	9	1	17	8	35		
6:00 AM	4	7	13	4	28	128	2.7%
6:15 AM	5	1	12	9	27		
6:30 AM	5	2	14	16	37		
6:45 AM	8	1	14	13	36		
7:00 AM	9	6	12	13	40	164	3.4%
7:15 AM	5	4	6	20	35		
7:30 AM	7	2	11	22	42		
7:45 AM	8	2	20	17	47		
8:00 AM	19	7	21	17	64	256	5.4%
8:15 AM	16	6	22	19	63		
8:30 AM	15	6	23	16	60		
8:45 AM	19	2	32	16	69		
9:00 AM	17	7	31	14	69	299	6.3%
9:15 AM	14	6	45	19	84		
9:30 AM	18	9	32	28	87		
9:45 AM	11	8	23	17	59		
10:00 AM	10	8	19	19	56	254	5.3%
10:15 AM	9	7	27	20	63		
10:30 AM	15	8	22	18	63		
10:45 AM	8	13	20	31	72		
11:00 AM	10	13	25	42	90	293	6.2%
11:15 AM	11	14	19	18	62		
11:30 AM	4	9	21	27	61		
11:45 AM	13	19	23	25	80		
12:00 PM	14	10	21	31	76	272	5.7%
12:15 PM	6	7	22	28	63		
12:30 PM	6	9	19	20	54		
12:45 PM	8	11	25	35	79		
1:00 PM	6	13	23	28	70	237	5.0%
1:15 PM	8	11	17	26	62		
1:30 PM	7	7	19	22	55		
1:45 PM	6	11	17	16	50		
2:00 PM	8	8	23	13	52	241	5.1%
2:15 PM	12	13	21	19	65		
2:30 PM	9	6	15	19	49		
2:45 PM	12	16	26	21	75		
3:00 PM	8	11	19	34	72	264	5.6%
3:15 PM	5	9	20	19	53		
3:30 PM	9	9	30	21	69		
3:45 PM	13	12	25	20	70		
4:00 PM	20	14	30	20	84	354	7.4%
4:15 PM	21	9	30	18	78		
4:30 PM	22	8	44	21	95		
4:45 PM	22	9	46	20	97		
5:00 PM	17	11	43	29	100	413	8.7%
5:15 PM	9	14	32	24	79		
5:30 PM	23	13	42	22	100		
5:45 PM	21	22	63	28	134		
6:00 PM	15	16	34	24	89	377	7.9%
6:15 PM	8	15	38	37	98		
6:30 PM	7	24	33	44	108		
6:45 PM	11	19	25	27	82		
7:00 PM	13	21	26	32	92	377	7.9%
7:15 PM	7	39	26	47	119		
7:30 PM	7	24	20	36	87		
7:45 PM	3	19	17	40	79		
8:00 PM	6	13	17	44	80	269	5.7%
8:15 PM	4	10	22	27	63		
8:30 PM	9	17	14	32	72		
8:45 PM	4	13	16	21	54		
9:00 PM	5	10	20	19	54	170	3.6%
9:15 PM	5	12	11	20	48		
9:30 PM	2	6	15	19	42		
9:45 PM	2	4	5	15	26		
10:00 PM	1	8	5	18	32	106	2.2%
10:15 PM	4	7	4	15	30		
10:30 PM	1	9	3	10	23		
10:45 PM	0	5	2	14	21		
11:00 PM	0	4	4	7	15	51	1.1%
11:15 PM	1	2	4	9	16		
11:30 PM	1	5	0	7	13		
11:45 PM	0	0	1	6	7		
TOTAL	721	760	1,643	1,632	4,756	4756	

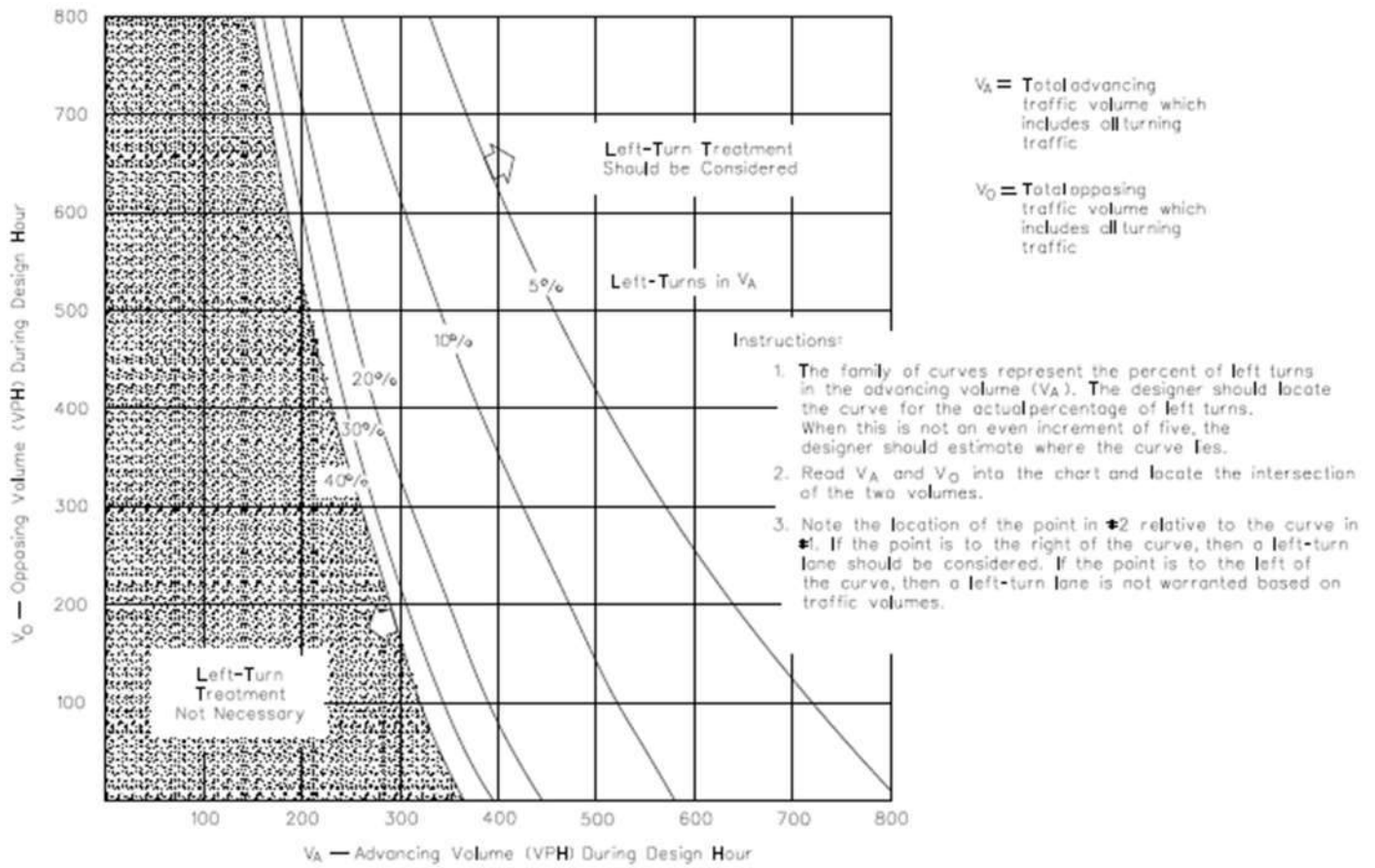
Friday, January 5, 2018
 Life Time Athletic - Vernon Hills, IL

1-hour

Time Start	West Access		East Access		Total	Hourly Total	Percent Total
	Entering	Exiting	Entering	Exiting			
12:00 AM	0	1	0	1	2	10	0.2%
12:15 AM	1	0	1	1	3		
12:30 AM	0	3	0	1	4		
12:45 AM	0	1	0	0	1		
1:00 AM	1	0	0	4	5	9	0.2%
1:15 AM	0	0	1	1	2		
1:30 AM	0	0	0	1	1		
1:45 AM	0	0	0	1	1		
2:00 AM	1	2	1	1	5	7	0.2%
2:15 AM	0	0	0	0	0		
2:30 AM	0	0	0	1	1		
2:45 AM	0	0	1	0	1		
3:00 AM	0	0	1	0	1	5	0.1%
3:15 AM	0	0	4	0	4		
3:30 AM	0	0	0	0	0		
3:45 AM	0	0	0	0	0		
4:00 AM	5	1	0	2	8	44	1.0%
4:15 AM	0	0	4	0	4		
4:30 AM	3	0	5	1	9		
4:45 AM	9	1	13	0	23		
5:00 AM	3	1	16	1	21	104	2.4%
5:15 AM	12	0	16	3	31		
5:30 AM	5	1	14	3	23		
5:45 AM	11	0	17	1	29		
6:00 AM	4	3	12	8	27	121	2.8%
6:15 AM			10	12	22		
6:30 AM	6	6	6	8	26		
6:45 AM	13	3	13	17	46		
7:00 AM	5	8	15	22	50	171	3.9%
7:15 AM	4	3	11	17	35		
7:30 AM	10	2	12	11	35		
7:45 AM	10	4	23	14	51		
8:00 AM	19	5	31	14	69	292	6.7%
8:15 AM	24	2	26	15	67		
8:30 AM	12	8	31	23	74		
8:45 AM	33	4	35	10	82		
9:00 AM	16	6	24	17	63	303	7.0%
9:15 AM	20	6	36	17	79		
9:30 AM	12	14	39	28	93		
9:45 AM	12	11	22	23	68		
10:00 AM	9	5	21	24	59	263	6.1%
10:15 AM	8	10	21	21	60		
10:30 AM	7	8	27	30	72		
10:45 AM	8	16	18	30	72		
11:00 AM	10	12	26	33	81	334	7.7%
11:15 AM	11	11	13	37	72		
11:30 AM	10	19	33	38	100		
11:45 AM	24	7	36	14	81		
12:00 PM	6	16	21	15	58	281	6.5%
12:15 PM	16	10	20	25	71		
12:30 PM	14	15	17	32	78		
12:45 PM	4	14	28	28	74		
1:00 PM	9	13	27	20	69	284	6.5%
1:15 PM	2	17	22	37	78		
1:30 PM	10	10	24	26	70		
1:45 PM	7	12	22	26	67		
2:00 PM	9	9	16	28	62	224	5.2%
2:15 PM	12	8	14	24	58		
2:30 PM	11	7	13	23	54		
2:45 PM	5	8	20	17	50		
3:00 PM	7	10	26	19	62	253	5.8%
3:15 PM	8	6	19	21	54		
3:30 PM	8	16	16	23	63		
3:45 PM	9	14	27	24	74		
4:00 PM	9	9	24	23	65	266	6.1%
4:15 PM	8	7	23	15	53		
4:30 PM	12	14	25	24	75		
4:45 PM	16	10	32	15	73		
5:00 PM	16	14	45	25	100	368	8.5%
5:15 PM	11	14	48	27	100		
5:30 PM	9	7	47	17	80		
5:45 PM	11	9	37	31	88		
6:00 PM	6	12	33	20	71	312	7.2%
6:15 PM	4	10	24	25	63		
6:30 PM	4	11	23	34	72		
6:45 PM	9	28	25	44	106		
7:00 PM	5	12	17	39	73	255	5.9%
7:15 PM	4	12	11	39	66		
7:30 PM	7	16	22	24	69		
7:45 PM	4	11	17	15	47		
8:00 PM	6	4	16	30	56	176	4.0%
8:15 PM	9	7	9	14	39		
8:30 PM	0	4	13	26	43		
8:45 PM	4	6	9	19	38		
9:00 PM	2	7	8	10	27	122	2.8%
9:15 PM	2	9	10	14	35		
9:30 PM	3	6	10	13	32		
9:45 PM	4	3	7	14	28		
10:00 PM	2	2	6	15	25	84	1.9%
10:15 PM	1	7	6	7	21		
10:30 PM	1	4	5	8	18		
10:45 PM	0	1	6	13	20		
11:00 PM	1	6	1	13	21	59	1.4%
11:15 PM	3	3	0	5	11		
11:30 PM	2	2	2	7	13		
11:45 PM	0	2	3	9	14		
TOTAL	650	638	1,531	1,528	4,347	4347	

Time Start	West Access		East Access		Total	Hourly Total	Percent Total
	Entering	Exiting	Entering	Exiting			
12:00 AM	1	2	3	5	11		
12:15 AM	1	0	1	6	8		
12:30 AM	0	3	1	3	7	30	0.6%
12:45 AM	0	1	0	3	4		
1:00 AM	0	0	0	1	1		
1:15 AM	0	1	0	1	2	9	0.2%
1:30 AM	0	0	0	1	1		
1:45 AM	0	3	1	1	5		
2:00 AM	0	2	1	1	4		
2:15 AM	0	1	0	0	1	6	0.1%
2:30 AM	0	0	0	0	0		
2:45 AM	0	1	0	0	1		
3:00 AM	0	0	1	0	1		
3:15 AM	0	0	0	0	0		
3:30 AM	0	0	1	0	1	2	0.0%
3:45 AM	0	0	0	0	0		
4:00 AM	0	0	1	0	1		
4:15 AM	0	0	4	1	5	15	0.3%
4:30 AM	1	0	2	1	4		
4:45 AM	1	0	2	2	5		
5:00 AM	1	0	4	0	5		
5:15 AM	1	2	5	1	9	26	0.6%
5:30 AM	0	0	3	1	4		
5:45 AM	1	0	6	1	8		
6:00 AM	2	0	5	2	9		
6:15 AM	6	1	5	5	17	80	1.7%
6:30 AM	5	2	17	3	27		
6:45 AM	8	2	12	5	27		
7:00 AM	2	1	7	5	15		
7:15 AM	6	1	13	5	25	166	3.5%
7:30 AM	17	4	25	4	50		
7:45 AM	36	3	34	3	76		
8:00 AM	26	0	50	6	82		
8:15 AM	25	1	31	10	67		
8:30 AM	20	3	31	13	67	310	6.6%
8:45 AM	27	6	47	14	94		
9:00 AM	25	4	53	22	104		
9:15 AM	47	17	49	26	139	475	10.1%
9:30 AM	19	21	44	36	120		
9:45 AM	12	19	42	39	112		
10:00 AM	19	14	29	37	99		
10:15 AM	22	13	53	24	112		
10:30 AM	22	13	63	43	141	522	11.1%
10:45 AM	28	25	63	54	170		
11:00 AM	15	25	29	48	117		
11:15 AM	12	24	37	33	106	446	9.5%
11:30 AM	12	23	25	52	112		
11:45 AM	12	20	36	43	111		
12:00 PM	6	34	24	47	111		
12:15 PM	11	21	34	60	126	435	9.3%
12:30 PM	12	25	25	47	109		
12:45 PM	11	14	29	35	89		
1:00 PM	10	13	24	36	83		
1:15 PM	11	12	36	39	98	355	7.5%
1:30 PM	11	20	23	33	87		
1:45 PM	14	12	26	35	87		
2:00 PM	11	10	25	29	75		
2:15 PM	6	13	26	23	68	320	6.8%
2:30 PM	6	16	37	32	91		
2:45 PM	10	16	32	28	86		
3:00 PM	10	12	35	32	89		
3:15 PM	6	15	32	22	75		
3:30 PM	10	11	27	32	80	307	6.5%
3:45 PM	9	16	17	21	63		
4:00 PM	5	11	15	27	58		
4:15 PM	11	12	28	26	77	303	6.4%
4:30 PM	7	17	29	40	93		
4:45 PM	5	7	31	32	75		
5:00 PM	11	18	19	38	86		
5:15 PM	6	13	24	28	71		
5:30 PM	4	13	9	28	54	266	5.7%
5:45 PM	1	12	17	25	55		
6:00 PM	4	10	17	21	52		
6:15 PM	4	8	8	21	41	182	3.9%
6:30 PM	1	10	18	15	44		
6:45 PM	3	5	16	21	45		
7:00 PM	0	4	14	11	29		
7:15 PM	5	4	16	12	37	144	3.1%
7:30 PM	1	9	11	21	42		
7:45 PM	3	2	11	20	36		
8:00 PM	1	6	12	14	33		
8:15 PM	3	2	6	8	19		
8:30 PM	3	4	12	13	32	111	2.4%
8:45 PM	2	5	6	14	27		
9:00 PM	2	2	6	5	15		
9:15 PM	1	1	5	7	14		
9:30 PM	2	7	9	10	28	84	1.8%
9:45 PM	3	2	9	13	27		
10:00 PM	1	0	3	7	11		
10:15 PM	2	2	6	7	17		
10:30 PM	4	4	5	9	22	69	1.5%
10:45 PM	1	2	8	8	19		
11:00 PM	3	3	2	7	15		
11:15 PM	0	1	2	5	8		
11:30 PM	0	1	1	5	7	39	0.8%
11:45 PM	1	1	2	5	9		
TOTAL	686	716	1,665	1,635	4,702	4702	

Appendix F
Turn Lane Warrant Analysis

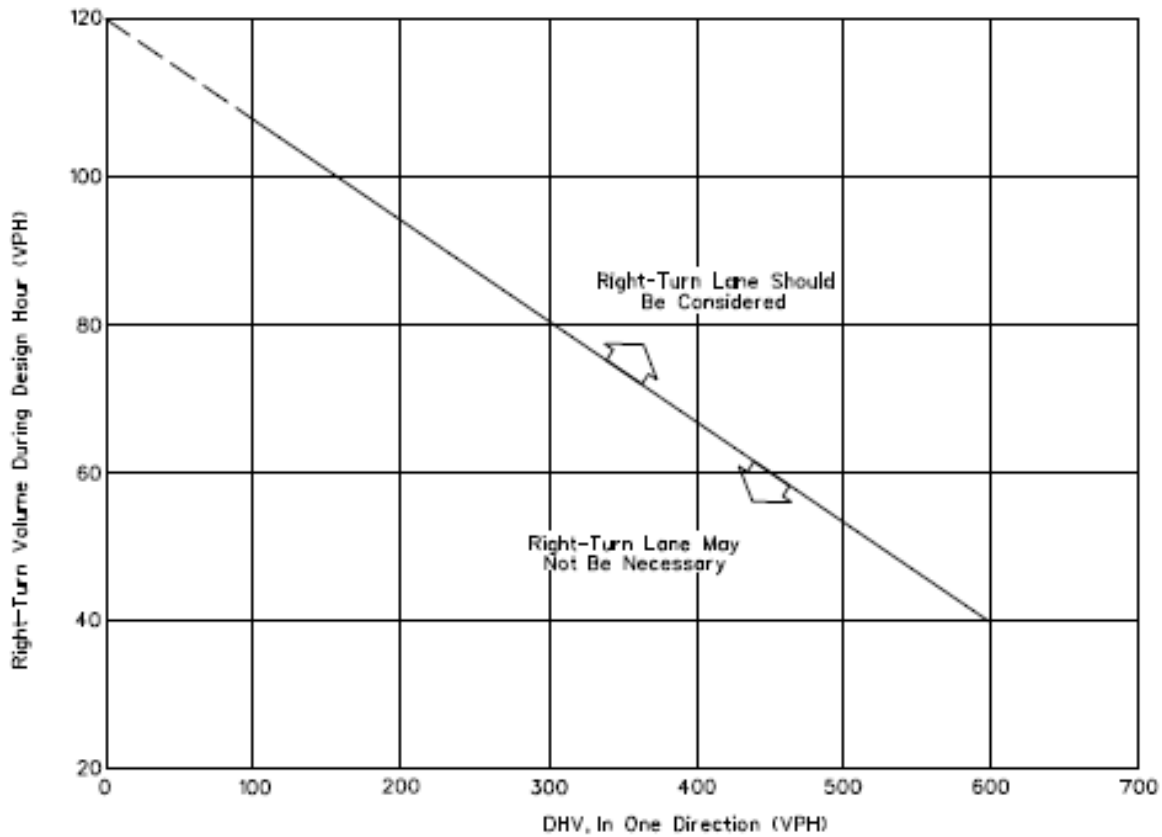


VOLUME GUIDELINES FOR LEFT-TURN LANES AT UNSIGNALIZED INTERSECTIONS ON TWO-LANE HIGHWAYS (40 mph Design Speed)

Figure 36-3.G

Intersection/Alternative	Advancing Vol.	Opposing Vol.	No. Left-Turns	% Left-Turns	Satisfied?
Old Rand Road at Site Access					
Total AM Peak	183	146	89	48.6%	No
Total PM Peak	214	307	111	51.9%	Yes
Total SAT Peak	230	244	125	54.3%	Yes

North Old Rand Road at Site Access



Note: For highways with a design speed below 50 mph (80 km/hr), with a DHV in one direction of less than 300, and where right turns are greater than 40, an adjustment should be used. To read the vertical axis of the chart, subtract 20 from the actual number of right turns.

GUIDELINES FOR RIGHT-TURN LANES AT UNSIGNALIZED INTERSECTIONS ON TWO-LANE HIGHWAYS

Figure 36-3.A

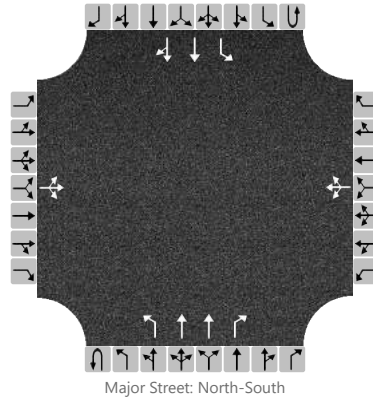
Intersection/Alternative	DHV	No. Right-Turns	Satisfied?
Old Rand Road at Site Access			
Total AM Peak	146	30	No
Total PM Peak	307	37	No
Total SAT Peak	244	42	No

Appendix G
Capacity Analysis Worksheets

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	GHA			Intersection	Rand Rd/Golfview Rd		
Agency/Co.	GHA			Jurisdiction	IDOT		
Date Performed	8/16/2017			East/West Street	Golfview Road		
Analysis Year	2017			North/South Street	Rand Road		
Time Analyzed	Existing AM			Peak Hour Factor	0.95		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	5276.900						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	1	2	1	0	1	2	0
Configuration			LTR				LTR			L	T	R		L	T	TR
Volume, V (veh/h)		0	0	0		20	0	4		0	675	12		10	2308	0
Percent Heavy Vehicles (%)		0	0	0		0	0	25		0				10		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Left + Thru								1						

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.50	6.50	6.90		6.80	6.50	7.40		4.10				4.30		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		3.50	4.00	3.55		2.20				2.30		

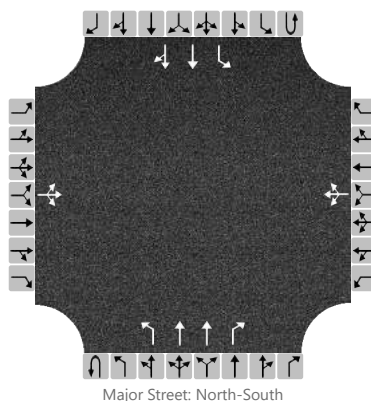
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			0				25				0				11	
Capacity, c (veh/h)			0				187				198				820	
v/c Ratio							0.13				0.00				0.01	
95% Queue Length, Q ₉₅ (veh)							0.5				0.0				0.0	
Control Delay (s/veh)			5.0				27.3				23.2				9.4	
Level of Service, LOS			A				D				C				A	
Approach Delay (s/veh)		5.0				27.3				0.0				0.0		
Approach LOS		A				D										

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	GHA	Intersection	Rand Rd/Golfview Rd
Agency/Co.	GHA	Jurisdiction	IDOT
Date Performed	8/16/2017	East/West Street	Golfview Road
Analysis Year	2017	North/South Street	Rand Road
Time Analyzed	Existing PM	Peak Hour Factor	0.95
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	5276.900		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	1	2	1	0	1	2	0
Configuration			LTR				LTR			L	T	R		L	T	TR
Volume, V (veh/h)		0	0	0		17	0	15		0	2340	45		27	1265	0
Percent Heavy Vehicles (%)		0	0	0		0	0	7		0				0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Left + Thru								1						

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

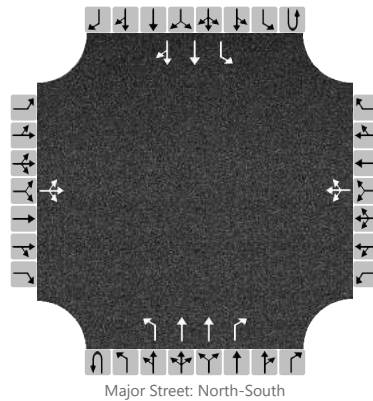
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			0				34				0				28	
Capacity, c (veh/h)			0				65				525				184	
v/c Ratio							0.52				0.00				0.15	
95% Queue Length, Q ₉₅ (veh)							2.1				0.0				0.5	
Control Delay (s/veh)			5.0				109.6				11.9				28.1	
Level of Service, LOS			A				F				B				D	
Approach Delay (s/veh)		5.0				109.6				0.0				0.6		
Approach LOS		A				F										

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	GHA			Intersection	Rand Rd/Golfview Rd		
Agency/Co.	GHA			Jurisdiction	IDOT		
Date Performed	8/16/2017			East/West Street	Golfview Road		
Analysis Year	2017			North/South Street	Rand Road		
Time Analyzed	Existing SAT MID			Peak Hour Factor	0.95		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	5276.900						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	1	2	1	0	1	2	0
Configuration			LTR				LTR			L	T	R		L	T	TR
Volume, V (veh/h)		0	0	0		19	0	14		0	1918	32		16	1514	0
Percent Heavy Vehicles (%)		0	0	0		0	0	0		0				0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Left + Thru								1						

Critical and Follow-up Headways

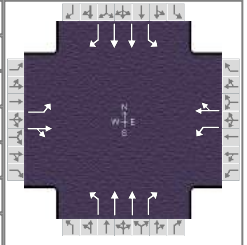
Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			0				35				0				17	
Capacity, c (veh/h)			0				101				417				277	
v/c Ratio							0.35				0.00				0.06	
95% Queue Length, Q ₉₅ (veh)							1.4				0.0				0.2	
Control Delay (s/veh)			5.0				58.6				13.6				18.8	
Level of Service, LOS			A				F				B				C	
Approach Delay (s/veh)		5.0				58.6				0.0				0.2		
Approach LOS		A				F										

HCS7 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	GHA			Duration, h	0.25		
Analyst	GHA	Analysis Date	Aug 16, 2017	Area Type	Other		
Jurisdiction	IDOT	Time Period	AM Peak	PHF	0.95		
Urban Street	US Route 12 (Rand Rd)		Analysis Year	Existing	Analysis Period	1 > 7:00	
Intersection	Rand Rd / Old Rand Rd		File Name	EX US12 Old Rand_AM.xus			
Project Description	5276.900						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	9	7	6	59	8	48	1	630	33	51	2276	1

Signal Information													
Cycle, s	140.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin										
Uncoordinated	No	Simult. Gap E/W	On	Green	0.1	0.8	101.0	2.9	0.5	7.7			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	4.5	3.0	3.0	4.5			
				Red	1.0	1.0	1.5	0.0	0.0	1.5			

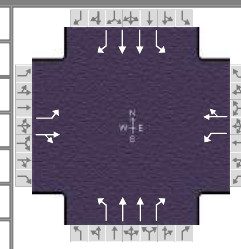
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	9	7	6	59	8	48	1	630	33	51	2276	1
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Parking (N _m), man/h	None			None			None			None		
Heavy Vehicles (P _{HV}), %	0	0		0	6		0	11	12	0	6	0
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	4	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
Turn Bay Length, ft	125	0		65	0		135	0	130	255	0	255
Grade (P _g), %		0			0			0			0	
Speed Limit, mi/h	20	20	20	25	25	25	45	45	45	45	45	45

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	14.0	24.0	14.0	24.0	15.0	82.0	20.0	87.0
Yellow Change Interval (Y), s	3.0	4.5	3.0	4.5	3.5	4.5	3.5	4.5
Red Clearance Interval (R _c), s	0.0	1.5	0.0	1.5	1.0	1.5	1.0	1.5
Minimum Green (G _{min}), s	3	8	3	8	3	15	3	15
Start-Up Lost Time (I _t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	3.0	4.0	3.0	4.0	3.0	7.0	3.0	7.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	Yes	Yes	Yes	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	GHA			Duration, h	0.25		
Analyst	GHA	Analysis Date	Aug 16, 2017		Area Type	Other	
Jurisdiction	IDOT	Time Period	AM Peak		PHF	0.95	
Urban Street	US Route 12 (Rand Rd)		Analysis Year	Existing		Analysis Period	1 > 7:00
Intersection	Rand Rd / Old Rand Rd		File Name	EX US12 Old Rand_AM.xus			
Project Description	5276.900						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	9	7	6	59	8	48	1	630	33	51	2276	1

Signal Information													
Cycle, s	140.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin										
Uncoordinated	No	Simult. Gap E/W	On	Green	0.1	0.8	101.0	2.9	0.5	7.7			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	4.5	3.0	3.0	4.5			
				Red	1.0	1.0	1.5	0.0	0.0	1.5			

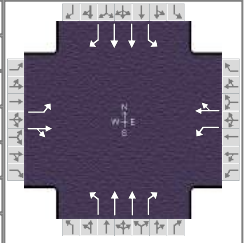
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	1.1	4.0	1.1	4.0	2.0	3.0	2.0	3.0
Phase Duration, s	5.9	13.7	9.4	17.2	4.6	107.0	10.0	112.3
Change Period, (Y+R _c), s	3.0	6.0	3.0	6.0	4.5	6.0	4.5	6.0
Max Allow Headway (MAH), s	4.2	5.4	4.2	5.4	4.0	0.0	4.0	0.0
Queue Clearance Time (g _s), s	2.7	3.0	6.4	7.0	2.1		6.1	
Green Extension Time (g _e), s	0.0	0.3	0.0	0.3	0.0	0.0	0.1	0.0
Phase Call Probability	0.96	0.96	0.99	0.99	0.04		0.88	
Max Out Probability	0.00	0.00	0.62	0.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	9	14		62	59		1	663	35	54	2396	1
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1754		1810	1569		1810	1741	1459	1810	1815	1610
Queue Service Time (g _s), s	0.7	1.0		4.4	5.0		0.1	1.4	1.0	4.1	65.4	0.0
Cycle Queue Clearance Time (g _c), s	0.7	1.0		4.4	5.0		0.1	1.4	1.0	4.1	65.4	0.0
Green Ratio (g/C)	0.08	0.05		0.11	0.08		0.00	0.72	0.72	0.04	0.76	0.76
Capacity (c), veh/h	129	96		202	125		2	2511	1053	71	2756	1223
Volume-to-Capacity Ratio (X)	0.073	0.142		0.308	0.470		0.673	0.264	0.033	0.761	0.869	0.001
Back of Queue (Q), ft/ln (95 th percentile)	14.7	22.4		93.9	102		5.8	21.1	13.6	97.8	779.6	0.3
Back of Queue (Q), veh/ln (95 th percentile)	0.6	0.9		3.8	3.9		0.2	0.8	0.5	3.9	29.8	0.0
Queue Storage Ratio (RQ) (95 th percentile)	0.12	0.00		1.44	0.00		0.04	0.00	0.10	0.38	0.00	0.00
Uniform Delay (d ₁), s/veh	60.2	63.0		56.8	61.6		69.9	0.8	5.6	66.6	11.9	4.1
Incremental Delay (d ₂), s/veh	0.2	1.0		0.9	3.9		210.7	0.3	0.1	15.4	4.1	0.0
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	60.4	64.0		57.7	65.4		280.6	1.0	5.6	82.0	16.0	4.1
Level of Service (LOS)	E	E		E	E		F	A	A	F	B	A
Approach Delay, s/veh / LOS	62.5		E	61.5		E	1.7		A	17.4		B
Intersection Delay, s/veh / LOS	16.0						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.0	C	3.0	C	2.2	B	2.2	B
Bicycle LOS Score / LOS	0.5	A	0.7	A	1.1	A	2.5	C

HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	GHA			Duration, h	0.25		
Analyst	GHA	Analysis Date	Aug 16, 2017	Area Type	Other		
Jurisdiction	IDOT	Time Period	AM Peak	PHF	0.95		
Urban Street	US Route 12 (Rand Rd)		Analysis Year	Existing	Analysis Period	1 > 7:00	
Intersection	Rand Rd / Old Rand Rd		File Name	EX US12 Old Rand_AM.xus			
Project Description	5276.900						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	9	7	6	59	8	48	1	630	33	51	2276	1

Signal Information													
Cycle, s	140.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin										
Uncoordinated	No	Simult. Gap E/W	On	Green	0.1	0.8	101.0	2.9	0.5	7.7			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	4.5	3.0	3.0	4.5			
				Red	1.0	1.0	1.5	0.0	0.0	1.5			

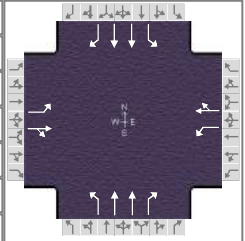
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	1.000	1.000	1.000	0.953	1.000	1.000	0.914	0.906	1.000	0.953	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000	1.000	0.952	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.923	0.923		0.866	0.866		0.000	0.847		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	1810	945	810	1810	224	1345	1810	3481	1459	1810	3630	1610
Proportion of Vehicles Arriving on Green (P)	0.02	0.05	0.05	0.05	0.08	0.08	0.00	0.96	0.72	0.04	0.76	0.76
Incremental Delay Factor (k)	0.11	0.15		0.11	0.15		0.11	0.50	0.50	0.11	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	3.0	6.0	3.0	6.0	4.5	6.0	4.5	6.0
Green Ratio (g/C)	0.08	0.05	0.11	0.08	0.00	0.72	0.04	0.76
Permitted Saturation Flow Rate (s_p), veh/h/ln	1365	0	1422	0	0	0	0	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	7.7	0.0	9.7	0.0	0.0	0.0	0.0	0.0
Permitted Service Time (g_u), s	4.2	0.0	6.6	0.0	0.0	0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s	0.0		0.1					
Time to First Blockage (g_t), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{ts}), s								
Protected Right Saturation Flow (s_R), veh/h/ln						0		0
Protected Right Effective Green Time (g_R), s						0.0		0.0

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	2.224	0.00	2.224	0.00	1.557	0.00	1.557	0.00	2.224	0.00	2.224	0.00
Pedestrian F_s / F_{delay}	0.000	0.166	0.000	0.164	0.000	0.068	0.000	0.068	0.000	0.056	0.000	0.056
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b	109.60	62.54	159.85	59.26	1442.35	5.44	1518.56	4.06	109.60	62.54	159.85	59.26
Bicycle F_w / F_v	-3.64	0.04	-3.64	0.20	-3.64	0.58	-3.64	2.02	-3.64	0.04	-3.64	0.20

HCS7 Signalized Intersection Results Graphical Summary

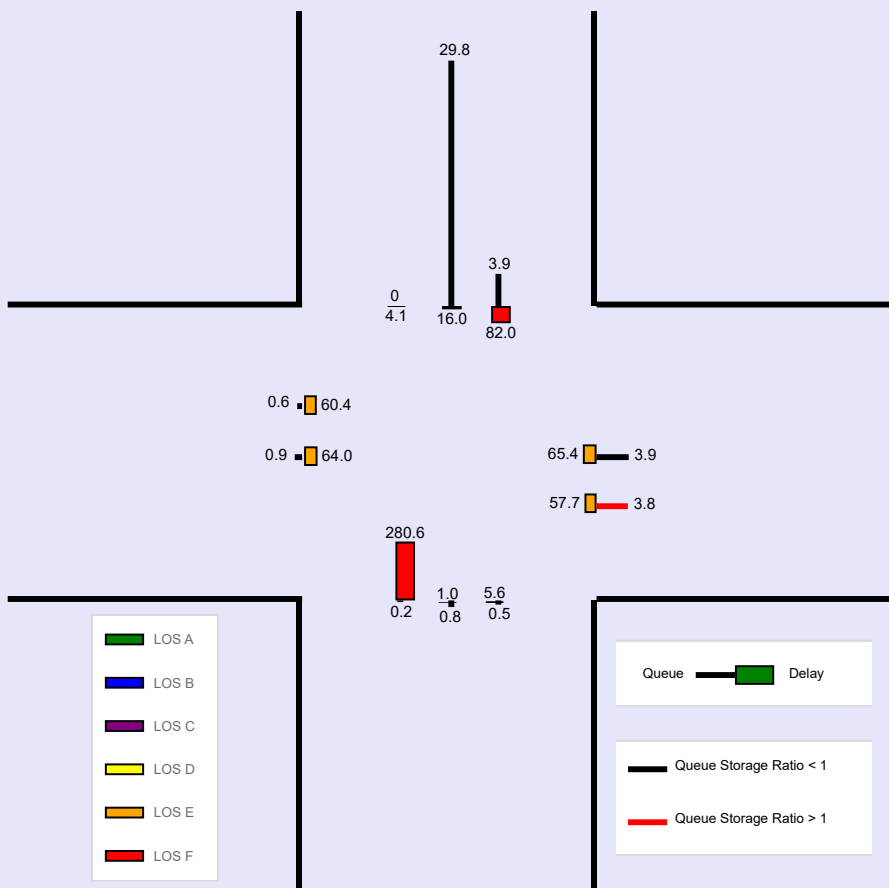
General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	GHA	Analysis Date	Aug 16, 2017	Area Type	Other
Jurisdiction	IDOT	Time Period	AM Peak	PHF	0.95
Urban Street	US Route 12 (Rand Rd)	Analysis Year	Existing	Analysis Period	1 > 7:00
Intersection	Rand Rd / Old Rand Rd	File Name	EX US12 Old Rand_AM.xus		
Project Description	5276.900				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	9	7	6	59	8	48	1	630	33	51	2276	1

Signal Information													
Cycle, s	140.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin										
Uncoordinated	No	Simult. Gap E/W	On	Green	0.1	0.8	101.0	2.9	0.5	7.7			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	4.5	3.0	3.0	4.5			
				Red	1.0	1.0	1.5	0.0	0.0	1.5			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Back of Queue (Q), ft/ln (95 th percentile)	14.7	22.4		93.9	102		5.8	21.1	13.6	97.8	779.6	0.3
Back of Queue (Q), veh/ln (95 th percentile)	0.6	0.9		3.8	3.9		0.2	0.8	0.5	3.9	29.8	0.0
Queue Storage Ratio (RQ) (95 th percentile)	0.12	0.00		1.44	0.00		0.04	0.00	0.10	0.38	0.00	0.00
Control Delay (d), s/veh	60.4	64.0		57.7	65.4		280.6	1.0	5.6	82.0	16.0	4.1
Level of Service (LOS)	E	E		E	E		F	A	A	F	B	A
Approach Delay, s/veh / LOS	62.5	E		61.5	E		1.7	A		17.4	B	
Intersection Delay, s/veh / LOS	16.0						B					



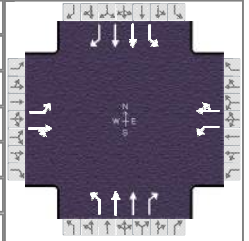
--- Message---

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

--- Comment---

HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	GHA	Analysis Date	Aug 16, 2017	Area Type	Other
Jurisdiction	IDOT	Time Period	PM Peak	PHF	0.95
Urban Street	US Route 12 (Rand Rd)	Analysis Year	Existing	Analysis Period	1 > 5:00
Intersection	Rand Rd / Old Rand Rd	File Name	EX US12 Old Rand_PM.xus		
Project Description	5276.900				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	31	11	11	65	15	182	3	2172	42	48	1221	13

Signal Information				Phase Diagrams								
Cycle, s	150.0	Reference Phase	2									
Offset, s	0	Reference Point	Begin									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
Green	0.4	0.6	99.6	4.3	2.5	18.6						
Yellow	3.5	3.5	4.5	3.0	0.0	4.5						
Red	1.0	1.0	1.5	0.0	0.0	1.5						

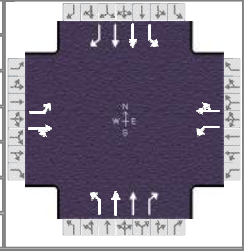
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	31	11	11	65	15	182	3	2172	42	48	1221	13
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Parking (N _m), man/h	None			None			None			None		
Heavy Vehicles (P _{HV}), %	0	0		0	1		0	3	3	0	4	0
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	1	0	2	0	0
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	4	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
Turn Bay Length, ft	125	0		65	0		135	0	130	255	0	255
Grade (P _g), %		0			0			0			0	
Speed Limit, mi/h	20	20	20	25	25	25	45	45	45	45	45	45

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	14.0	22.0	14.0	22.0	15.0	99.0	15.0	99.0
Yellow Change Interval (Y), s	3.0	4.5	3.0	4.5	3.5	4.5	3.5	4.5
Red Clearance Interval (R _c), s	0.0	1.5	0.0	1.5	1.0	1.5	1.0	1.5
Minimum Green (G _{min}), s	3	8	3	8	3	15	3	15
Start-Up Lost Time (lt), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	3.0	4.0	3.0	4.0	3.0	7.0	3.0	7.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	Yes	Yes	Yes	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	GHA			Duration, h	0.25		
Analyst	GHA	Analysis Date	Aug 16, 2017		Area Type	Other	
Jurisdiction	IDOT	Time Period	PM Peak		PHF	0.95	
Urban Street	US Route 12 (Rand Rd)		Analysis Year	Existing		Analysis Period	1 > 5:00
Intersection	Rand Rd / Old Rand Rd		File Name	EX US12 Old Rand_PM.xus			
Project Description	5276.900						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	31	11	11	65	15	182	3	2172	42	48	1221	13

Signal Information													
Cycle, s	150.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin										
Uncoordinated	No	Simult. Gap E/W	On	Green	0.4	0.6	99.6	4.3	2.5	18.6			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	4.5	3.0	0.0	4.5			
				Red	1.0	1.0	1.5	0.0	0.0	1.5			

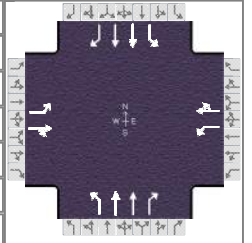
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	1.1	4.0	1.1	4.0	2.0	3.0	2.0	3.0
Phase Duration, s	7.3	24.6	9.9	27.2	4.9	105.6	9.9	110.6
Change Period, ($Y+R_c$), s	3.0	6.0	3.0	6.0	4.5	6.0	4.5	6.0
Max Allow Headway (MAH), s	4.2	5.4	4.2	5.4	4.0	0.0	4.0	0.0
Queue Clearance Time (g_s), s	4.3	3.8	6.8	21.0	2.3		6.2	
Green Extension Time (g_e), s	0.0	1.2	0.0	0.2	0.0	0.0	0.0	0.0
Phase Call Probability	0.99	1.00	1.00	1.00	0.12		0.88	
Max Out Probability	0.04	0.01	1.00	1.00	0.00		0.09	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	33	23		68	207		3	2286	44	51	1285	14
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1743		1810	1616		1810	1859	1540	1810	1845	1608
Queue Service Time (g_s), s	2.3	1.8		4.8	19.0		0.3	58.8	1.5	4.2	24.3	0.4
Cycle Queue Clearance Time (g_c), s	2.3	1.8		4.8	19.0		0.3	58.8	1.5	4.2	24.3	0.4
Green Ratio (g/C)	0.15	0.12		0.18	0.14		0.00	0.66	0.66	0.04	0.70	0.70
Capacity (c), veh/h	102	216		289	228		4	2468	1022	66	2573	1122
Volume-to-Capacity Ratio (X)	0.320	0.107		0.236	0.909		0.707	0.926	0.043	0.771	0.499	0.012
Back of Queue (Q), ft/ln (95 th percentile)	51.3	36.8		102.2	383.9		11.7	314.6	22.9	99.5	364.9	5.9
Back of Queue (Q), veh/ln (95 th percentile)	2.1	1.5		4.1	15.2		0.5	12.3	0.9	4.0	14.1	0.2
Queue Storage Ratio (RQ) (95 th percentile)	0.41	0.00		1.57	0.00		0.09	0.00	0.18	0.39	0.00	0.02
Uniform Delay (d_1), s/veh	55.9	58.3		52.4	63.5		74.8	6.3	8.7	71.7	10.5	6.9
Incremental Delay (d_2), s/veh	1.8	0.3		0.4	34.1		112.9	7.5	0.1	17.1	0.7	0.0
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	57.7	58.6		52.8	97.5		187.7	13.8	8.8	88.8	11.2	6.9
Level of Service (LOS)	E	E		D	F		F	B	A	F	B	A
Approach Delay, s/veh / LOS	58.1		E	86.4		F	13.9		B	14.1		B
Intersection Delay, s/veh / LOS	19.6						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.0	C	3.0	C	2.2	B	2.2	B
Bicycle LOS Score / LOS	0.6	A	0.9	A	2.4	B	1.6	B

HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information		
Agency	GHA			Duration, h	0.25	
Analyst	GHA	Analysis Date	Aug 16, 2017		Area Type	Other
Jurisdiction	IDOT	Time Period	PM Peak		PHF	0.95
Urban Street	US Route 12 (Rand Rd)		Analysis Year	Existing	Analysis Period	1 > 5:00
Intersection	Rand Rd / Old Rand Rd		File Name	EX US12 Old Rand_PM.xus		
Project Description	5276.900					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	31	11	11	65	15	182	3	2172	42	48	1221	13

Signal Information													
Cycle, s	150.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin										
Uncoordinated	No	Simult. Gap E/W	On	Green	0.4	0.6	99.6	4.3	2.5	18.6			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	4.5	3.0	0.0	4.5			
				Red	1.0	1.0	1.5	0.0	0.0	1.5			

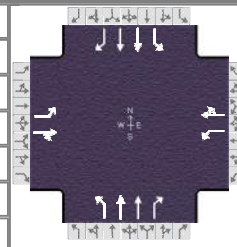
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	1.000	1.000	1.000	0.992	1.000	1.000	0.977	0.977	1.000	0.969	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000	1.000	0.952	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.917	0.917		0.857	0.857		0.000	0.847		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000			0.979			0.999
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	1810	872	872	1810	123	1493	1810	3719	1540	1810	3689	1608
Proportion of Vehicles Arriving on Green (P)	0.03	0.12	0.12	0.05	0.14	0.14	0.00	0.89	0.66	0.04	0.70	0.70
Incremental Delay Factor (k)	0.11	0.15		0.11	0.40		0.11	0.50	0.50	0.11	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	3.0	6.0	3.0	6.0	4.5	6.0	4.5	6.0
Green Ratio (g/C)	0.15	0.12	0.18	0.14	0.00	0.66	0.04	0.70
Permitted Saturation Flow Rate (s_p), veh/h/ln	1193	0	1410	0	0	0	0	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	18.6	0.0	20.2	0.0	0.0	0.0	0.0	0.0
Permitted Service Time (g_u), s	0.2	0.0	16.8	0.0	0.0	0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s	0.2		0.2					
Time to First Blockage (g_t), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{ts}), s								
Protected Right Saturation Flow (s_R), veh/h/ln						0		0
Protected Right Effective Green Time (g_R), s						0.0		0.0

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	2.224	0.00	2.224	0.00	1.557	0.00	1.557	0.00	1.557	0.00	1.557	0.00
Pedestrian F_s / F_{delay}	0.000	0.163	0.000	0.161	0.000	0.086	0.000	0.077	0.000	0.077	0.000	0.077
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b	248.27	57.54	282.25	55.33	1327.54	8.48	1395.06	6.86	1327.54	8.48	1395.06	6.86
Bicycle F_w / F_v	-3.64	0.09	-3.64	0.46	-3.64	1.93	-3.64	1.11	-3.64	1.93	-3.64	1.11

HCS7 Signalized Intersection Results Graphical Summary

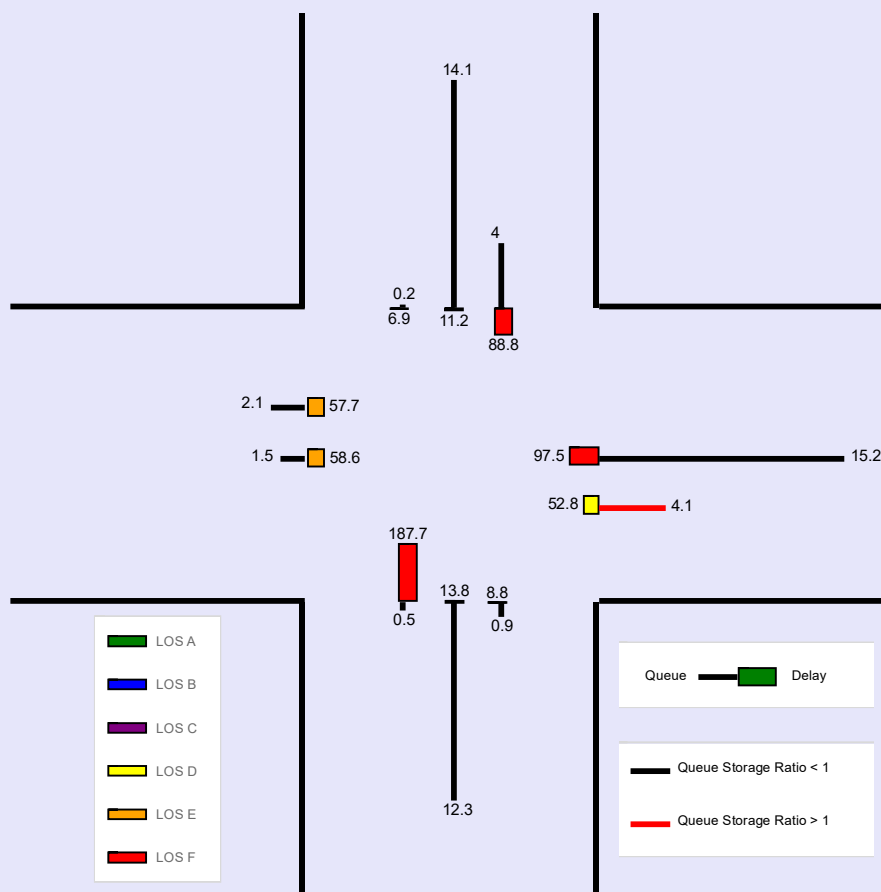
General Information				Intersection Information			
Agency	GHA			Duration, h	0.25		
Analyst	GHA	Analysis Date	Aug 16, 2017	Area Type	Other		
Jurisdiction	IDOT	Time Period	PM Peak	PHF	0.95		
Urban Street	US Route 12 (Rand Rd)		Analysis Year	Existing	Analysis Period	1 > 5:00	
Intersection	Rand Rd / Old Rand Rd		File Name	EX US12 Old Rand_PM.xus			
Project Description	5276.900						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	31	11	11	65	15	182	3	2172	42	48	1221	13

Signal Information				Signal Phases											
Cycle, s	150.0	Reference Phase	2												
Offset, s	0	Reference Point	Begin												
Uncoordinated	No	Simult. Gap E/W	On												
Force Mode	Fixed	Simult. Gap N/S	On												
		Green		0.4	0.6	99.6	4.3	2.5	18.6						
		Yellow		3.5	3.5	4.5	3.0	0.0	4.5						
		Red		1.0	1.0	1.5	0.0	0.0	1.5						

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Back of Queue (Q), ft/ln (95 th percentile)	51.3	36.8		102.2	383.9		11.7	314.6	22.9	99.5	364.9	5.9
Back of Queue (Q), veh/ln (95 th percentile)	2.1	1.5		4.1	15.2		0.5	12.3	0.9	4.0	14.1	0.2
Queue Storage Ratio (RQ) (95 th percentile)	0.41	0.00		1.57	0.00		0.09	0.00	0.18	0.39	0.00	0.02
Control Delay (d), s/veh	57.7	58.6		52.8	97.5		187.7	13.8	8.8	88.8	11.2	6.9
Level of Service (LOS)	E	E		D	F		F	B	A	F	B	A
Approach Delay, s/veh / LOS	58.1		E	86.4		F	13.9		B	14.1		B
Intersection Delay, s/veh / LOS	19.6						B					



--- Messages ---

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

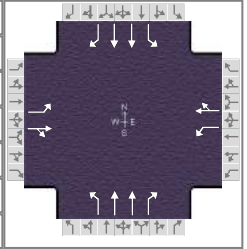
--- Comments ---

HCS7 Signalized Intersection Input Data

General Information						Intersection Information																		
Agency	GHA					Duration, h	0.25																	
Analyst	GHA		Analysis Date	Aug 16, 2017		Area Type	Other																	
Jurisdiction	IDOT		Time Period	SAT Peak		PHF	0.95																	
Urban Street	US Route 12 (Rand Rd)		Analysis Year	Existing		Analysis Period	1 > 1:00																	
Intersection	Rand Rd / Old Rand Rd		File Name	EX US12 Old Rand_SAT.xus																				
Project Description	5276.900																							
Demand Information				EB			WB			NB			SB											
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R									
Demand (v), veh/h				15	8	10	54	9	132	5	1803	57	37	1482	14									
Signal Information																								
Cycle, s	130.0	Reference Phase	2																					
Offset, s	0	Reference Point	Begin																					
Uncoordinated	No	Simult. Gap E/W	On																					
Force Mode	Fixed	Simult. Gap N/S	On	Green	0.5	3.1	89.4	3.0	2.6	11.8	Yellow	3.5	0.0	4.5	3.0	0.0	4.5	Red	1.0	0.0	1.5	0.0	0.0	1.5
Traffic Information				EB			WB			NB			SB											
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R									
Demand (v), veh/h				15	8	10	54	9	132	5	1803	57	37	1482	14									
Initial Queue (Q _b), veh/h				0	0	0	0	0	0	0	0	0	0	0	0									
Base Saturation Flow Rate (s ₀), veh/h				1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900									
Parking (N _m), man/h				None			None			None			None											
Heavy Vehicles (P _{HV}), %				12	6		0	1		0	0	0	0	0	0									
Ped / Bike / RTOR, /h				27	0	0	0	0	0	2	0	0	2	0	0									
Buses (N _b), buses/h				0	0	0	0	0	0	0	0	0	0	0	0									
Arrival Type (AT)				3	3	3	3	3	3	3	4	3	3	3	3									
Upstream Filtering (I)				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00									
Lane Width (W), ft				12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0									
Turn Bay Length, ft				125	0		65	0		135	0	130	255	0	255									
Grade (P _g), %					0			0			0			0										
Speed Limit, mi/h				20	20	20	25	25	25	45	45	45	45	45	45									
Phase Information				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT													
Maximum Green (G _{max}) or Phase Split, s				17.0	23.0	17.0	23.0	14.0	70.0	20.0	76.0													
Yellow Change Interval (Y), s				3.0	4.5	3.0	4.5	3.5	4.5	3.5	4.5													
Red Clearance Interval (R _c), s				0.0	1.5	0.0	1.5	1.0	1.5	1.0	1.5													
Minimum Green (G _{min}), s				3	8	3	8	3	15	3	15													
Start-Up Lost Time (I _t), s				2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0													
Extension of Effective Green (e), s				2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0													
Passage (PT), s				3.0	4.0	3.0	4.0	3.0	7.0	3.0	7.0													
Recall Mode				Off	Off	Off	Off	Off	Min	Off	Min													
Dual Entry				Yes	Yes	Yes	Yes	No	Yes	No	Yes													
Walk (Walk), s				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0													
Pedestrian Clearance Time (PC), s				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0													
Multimodal Information				EB			WB			NB			SB											
85th % Speed / Rest in Walk / Corner Radius				0	No	25	0	No	25	0	No	25	0	No	25									
Walkway / Crosswalk Width / Length, ft				9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0									
Street Width / Island / Curb				0	0	No	0	0	No	0	0	No	0	0	No									
Width Outside / Bike Lane / Shoulder, ft				12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0									
Pedestrian Signal / Occupied Parking				No	0.50	No	0.50	No	0.50	No	0.50	No	0.50											

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	GHA			Duration, h	0.25		
Analyst	GHA	Analysis Date	Aug 16, 2017	Area Type	Other		
Jurisdiction	IDOT	Time Period	SAT Peak	PHF	0.95		
Urban Street	US Route 12 (Rand Rd)		Analysis Year	Existing	Analysis Period	1 > 1:00	
Intersection	Rand Rd / Old Rand Rd		File Name	EX US12 Old Rand_SAT.xus			
Project Description	5276.900						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	15	8	10	54	9	132	5	1803	57	37	1482	14

Signal Information													
Cycle, s	130.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin										
Uncoordinated	No	Simult. Gap E/W	On	Green	0.5	3.1	89.4	3.0	2.6	11.8			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	4.5	3.0	0.0	4.5			
				Red	1.0	0.0	1.5	0.0	0.0	1.5			

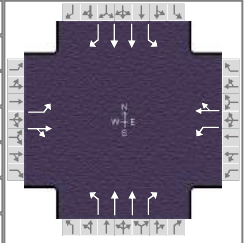
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	1.1	4.0	1.1	4.0	2.0	3.0	2.0	3.0
Phase Duration, s	6.0	17.8	8.7	20.4	5.0	95.4	8.2	98.5
Change Period, (Y+R _c), s	3.0	6.0	3.0	6.0	4.5	6.0	4.5	6.0
Max Allow Headway (MAH), s	4.2	5.4	4.2	5.4	4.0	0.0	4.0	0.0
Queue Clearance Time (g _s), s	3.1	3.5	5.6	13.7	2.4		4.8	
Green Extension Time (g _e), s	0.0	0.9	0.1	0.7	0.0	0.0	0.1	0.0
Phase Call Probability	0.96	1.00	1.00	1.00	0.17		0.75	
Max Out Probability	0.00	0.00	0.01	0.01	0.00		0.00	

Movement Group Results	EB			WB			NB			SB			
	L	T	R	L	T	R	L	T	R	L	T	R	
Approach Movement													
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16	
Adjusted Flow Rate (v), veh/h	16	19		57	148		5	1898	60	39	1560	15	
Adjusted Saturation Flow Rate (s), veh/h/ln	1640	1556		1810	1613		1810	1904	1608	1810	1904	1608	
Queue Service Time (g _s), s	1.1	1.5		3.6	11.7		0.4	16.1	1.6	2.8	26.0	0.3	
Cycle Queue Clearance Time (g _c), s	1.1	1.5		3.6	11.7		0.4	16.1	1.6	2.8	26.0	0.3	
Green Ratio (g/C)	0.11	0.09		0.15	0.11		0.00	0.69	0.69	0.03	0.71	0.71	
Capacity (c), veh/h	100	141		247	179		7	2618	1106	51	2710	1144	
Volume-to-Capacity Ratio (X)	0.158	0.134		0.230	0.829		0.727	0.725	0.054	0.764	0.576	0.013	
Back of Queue (Q), ft/ln (95 th percentile)	24.2	28.6		75.6	233.8		15.4	130.3	22.9	69.6	360.5	4.9	
Back of Queue (Q), veh/ln (95 th percentile)	0.9	1.1		3.0	9.3		0.6	5.2	0.9	2.8	14.4	0.2	
Queue Storage Ratio (RQ) (95 th percentile)	0.19	0.00		1.16	0.00		0.11	0.00	0.18	0.27	0.00	0.02	
Uniform Delay (d ₁), s/veh	52.0	54.4		48.9	56.6		64.7	2.4	6.6	62.7	9.1	5.5	
Incremental Delay (d ₂), s/veh	0.7	0.6		0.5	12.8		84.8	1.8	0.1	20.7	0.9	0.0	
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	52.7	55.0		49.4	69.4		149.5	4.1	6.7	83.4	10.0	5.5	
Level of Service (LOS)	D	E		D	E		F	A	A	F	B	A	
Approach Delay, s/veh / LOS	54.0		D	63.8		E	4.6		A	11.8		B	
Intersection Delay, s/veh / LOS				11.3							B		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.0	C	3.0	C	2.2	B	2.2	B
Bicycle LOS Score / LOS	0.5	A	0.8	A	2.1	B	1.8	B

HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	GHA			Duration, h	0.25		
Analyst	GHA	Analysis Date	Aug 16, 2017	Area Type	Other		
Jurisdiction	IDOT	Time Period	SAT Peak	PHF	0.95		
Urban Street	US Route 12 (Rand Rd)		Analysis Year	Existing	Analysis Period	1 > 1:00	
Intersection	Rand Rd / Old Rand Rd		File Name	EX US12 Old Rand_SAT.xus			
Project Description	5276.900						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	15	8	10	54	9	132	5	1803	57	37	1482	14

Signal Information													
Cycle, s	130.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin										
Uncoordinated	No	Simult. Gap E/W	On	Green	0.5	3.1	89.4	3.0	2.6	11.8			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	4.5	3.0	0.0	4.5			
				Red	1.0	0.0	1.5	0.0	0.0	1.5			

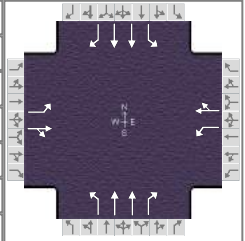
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.906	0.953	1.000	1.000	0.992	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000	1.000	0.952	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.859	0.859		0.856	0.856		0.000	0.847		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			0.932			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			0.911			1.000			0.999			0.999
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	1640	691	864	1810	103	1510	1810	3808	1608	1810	3808	1608
Proportion of Vehicles Arriving on Green (P)	0.02	0.09	0.09	0.04	0.11	0.11	0.00	0.92	0.69	0.03	0.71	0.71
Incremental Delay Factor (k)	0.11	0.15		0.11	0.15		0.11	0.50	0.50	0.11	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	3.0	6.0	3.0	6.0	4.5	6.0	4.5	6.0
Green Ratio (g/C)	0.11	0.09	0.15	0.11	0.00	0.69	0.03	0.71
Permitted Saturation Flow Rate (s_p), veh/h/ln	1141	0	1416	0	0	0	0	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	11.8	0.0	13.4	0.0	0.0	0.0	0.0	0.0
Permitted Service Time (g_u), s	0.7	0.0	10.3	0.0	0.0	0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s	0.2		0.1					
Time to First Blockage (g_t), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{ts}), s								
Protected Right Saturation Flow (s_R), veh/h/ln						0		0
Protected Right Effective Green Time (g_R), s						0.0		0.0

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	2.224	0.00	2.224	0.00	1.557	0.00	1.557	0.00				
Pedestrian F_s / F_{delay}	0.000	0.160	0.000	0.158	0.000	0.074	0.000	0.068				
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b	181.39	53.74	222.07	51.37	1375.19	6.34	1423.54	5.40				
Bicycle F_w / F_v	-3.64	0.06	-3.64	0.34	-3.64	1.62	-3.64	1.33				

HCS7 Signalized Intersection Results Graphical Summary

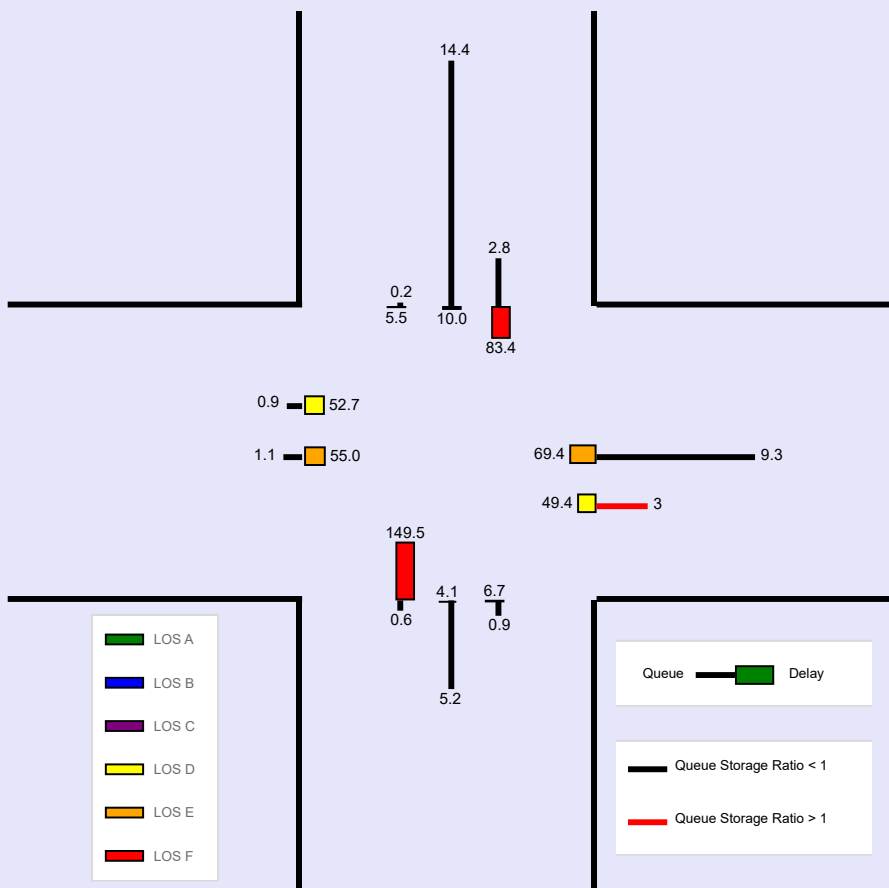
General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	GHA	Analysis Date	Aug 16, 2017	Area Type	Other
Jurisdiction	IDOT	Time Period	SAT Peak	PHF	0.95
Urban Street	US Route 12 (Rand Rd)	Analysis Year	Existing	Analysis Period	1 > 1:00
Intersection	Rand Rd / Old Rand Rd	File Name	EX US12 Old Rand_SAT.xus		
Project Description	5276.900				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	15	8	10	54	9	132	5	1803	57	37	1482	14

Signal Information													
Cycle, s	130.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin										
Uncoordinated	No	Simult. Gap E/W	On	Green	0.5	3.1	89.4	3.0	2.6	11.8			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	4.5	3.0	0.0	4.5			
				Red	1.0	0.0	1.5	0.0	0.0	1.5			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Back of Queue (Q), ft/ln (95 th percentile)	24.2	28.6		75.6	233.8		15.4	130.3	22.9	69.6	360.5	4.9
Back of Queue (Q), veh/ln (95 th percentile)	0.9	1.1		3.0	9.3		0.6	5.2	0.9	2.8	14.4	0.2
Queue Storage Ratio (RQ) (95 th percentile)	0.19	0.00		1.16	0.00		0.11	0.00	0.18	0.27	0.00	0.02
Control Delay (d), s/veh	52.7	55.0		49.4	69.4		149.5	4.1	6.7	83.4	10.0	5.5
Level of Service (LOS)	D	E		D	E		F	A	A	F	B	A
Approach Delay, s/veh / LOS	54.0		D	63.8		E	4.6		A	11.8		B
Intersection Delay, s/veh / LOS	11.3						B					



--- Message---

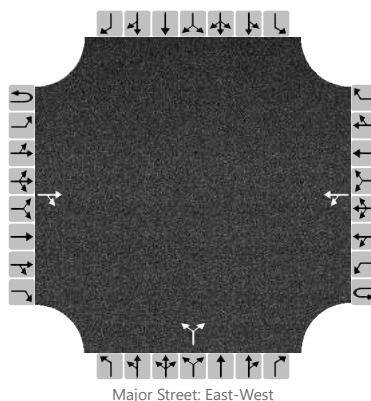
WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

--- Comment---

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	GHA	Intersection	Old Rand/Bayshore West
Agency/Co.	GHA	Jurisdiction	IDOT
Date Performed	8/16/2017	East/West Street	Old Rand Road
Analysis Year	2017	North/South Street	Bayshore Village West
Time Analyzed	Existing AM	Peak Hour Factor	0.93
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	5276.900		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume, V (veh/h)			91	0		0	113			2		1				
Percent Heavy Vehicles (%)						0				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No				No				No				No		
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.10				6.40		6.20				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.20				3.50		3.30				

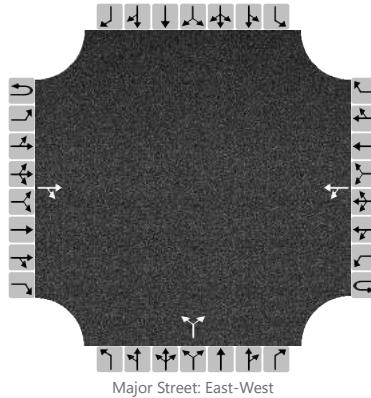
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)					0					3						
Capacity, c (veh/h)					1503					816						
v/c Ratio					0.00					0.00						
95% Queue Length, Q ₉₅ (veh)					0.0					0.0						
Control Delay (s/veh)					7.4					9.4						
Level of Service, LOS					A					A						
Approach Delay (s/veh)					0.0				9.4							
Approach LOS									A							

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	GHA			Intersection	Old Rand/Bayshore West		
Agency/Co.	GHA			Jurisdiction	IDOT		
Date Performed	8/16/2017			East/West Street	Old Rand Road		
Analysis Year	2017			North/South Street	Bayshore Village West		
Time Analyzed	Existing PM			Peak Hour Factor	0.95		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	5276.900						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume, V (veh/h)			99	2		0	261			0		2				
Percent Heavy Vehicles (%)						0				0		0				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1					7.1		6.2			
Critical Headway (sec)						4.10					6.40		6.20			
Base Follow-Up Headway (sec)						2.2					3.5		3.3			
Follow-Up Headway (sec)						2.20					3.50		3.30			

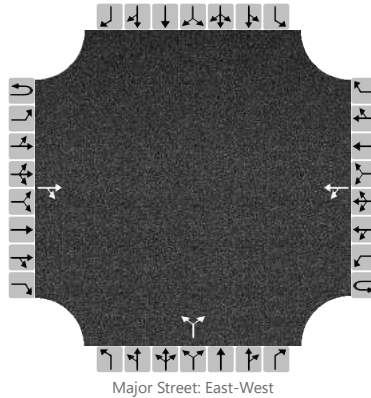
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						0					2					
Capacity, c (veh/h)						1485					938					
v/c Ratio						0.00					0.00					
95% Queue Length, Q ₉₅ (veh)						0.0					0.0					
Control Delay (s/veh)						7.4					8.8					
Level of Service, LOS						A					A					
Approach Delay (s/veh)					0.0				8.8							
Approach LOS									A							

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	GHA			Intersection	Old Rand/Bayshore West		
Agency/Co.	GHA			Jurisdiction	IDOT		
Date Performed	8/16/2017			East/West Street	Old Rand Road		
Analysis Year	2017			North/South Street	Bayshore Village West		
Time Analyzed	Existing SAT MID			Peak Hour Factor	0.95		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	5276.900						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume, V (veh/h)			102	0		1	195			0		2				
Percent Heavy Vehicles (%)						0				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1					7.1		6.2			
Critical Headway (sec)						4.10					6.40		6.20			
Base Follow-Up Headway (sec)						2.2					3.5		3.3			
Follow-Up Headway (sec)						2.20					3.50		3.30			

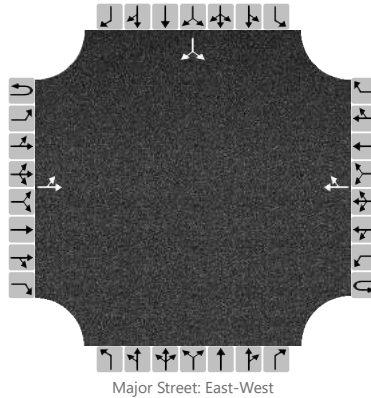
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						1					2					
Capacity, c (veh/h)						1491					948					
v/c Ratio						0.00					0.00					
95% Queue Length, Q ₉₅ (veh)						0.0					0.0					
Control Delay (s/veh)						7.4					8.8					
Level of Service, LOS						A					A					
Approach Delay (s/veh)					0.0				8.8							
Approach LOS									A							

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	GHA	Intersection	Old Rand / Pine Tree				
Agency/Co.	GHA	Jurisdiction	Village				
Date Performed	8/16/2017	East/West Street	Old Rand Road				
Analysis Year	2017	North/South Street	Pine Tree Row				
Time Analyzed	Existing AM	Peak Hour Factor	0.88				
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25				
Project Description	5276.900						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6								
Priority									7	8	9		10	11	12	
Number of Lanes	0	0	1	0	0	0	1	0	0	0	0		0	1	0	
Configuration		LT						TR							LR	
Volume, V (veh/h)		4	88				73	12						46		40
Percent Heavy Vehicles (%)		0												0		2
Proportion Time Blocked																
Percent Grade (%)																0
Right Turn Channelized		No				No				No				No		
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.10												6.40		6.22
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.20												3.50		3.32

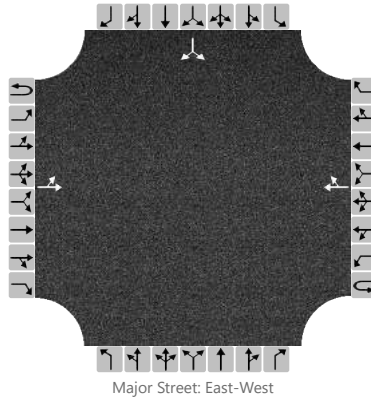
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		5														97	
Capacity, c (veh/h)		1480														843	
v/c Ratio		0.00														0.12	
95% Queue Length, Q ₉₅ (veh)		0.0														0.4	
Control Delay (s/veh)		7.4														9.8	
Level of Service, LOS		A														A	
Approach Delay (s/veh)		0.4												9.8			
Approach LOS														A			

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	GHA			Intersection	Old Rand / Pine Tree		
Agency/Co.	GHA			Jurisdiction	Village		
Date Performed	8/16/2017			East/West Street	Old Rand Road		
Analysis Year	2017			North/South Street	Pine Tree Row		
Time Analyzed	Existing PM			Peak Hour Factor	0.95		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	5276.900						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume, V (veh/h)		17	84				236	74						30		25
Percent Heavy Vehicles (%)		0												0		0
Proportion Time Blocked																
Percent Grade (%)																0
Right Turn Channelized		No			No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.10												6.40		6.20
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.20												3.50		3.30

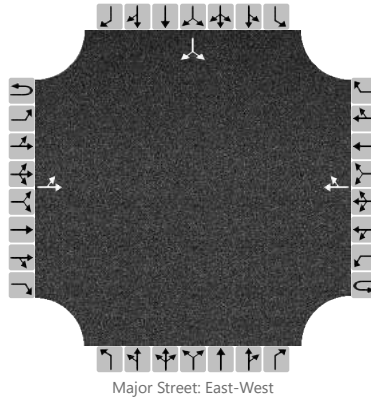
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		18														58	
Capacity, c (veh/h)		1225														643	
v/c Ratio		0.01														0.09	
95% Queue Length, Q ₉₅ (veh)		0.0														0.3	
Control Delay (s/veh)		8.0														11.2	
Level of Service, LOS		A														B	
Approach Delay (s/veh)		1.5												11.2			
Approach LOS														B			

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	GHA	Intersection	Old Rand / Pine Tree
Agency/Co.	GHA	Jurisdiction	Village
Date Performed	8/16/2017	East/West Street	Old Rand Road
Analysis Year	2017	North/South Street	Pine Tree Row
Time Analyzed	Existing SAT MID	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	5276.900		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume, V (veh/h)		21	83				168	47						39		28
Percent Heavy Vehicles (%)		0												0		0
Proportion Time Blocked																
Percent Grade (%)																0
Right Turn Channelized		No			No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.10												6.40		6.20
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.20												3.50		3.30

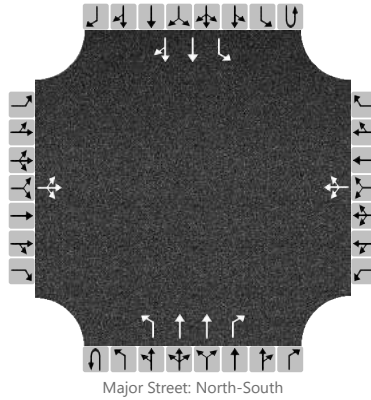
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		23														72	
Capacity, c (veh/h)		1310														689	
v/c Ratio		0.02														0.10	
95% Queue Length, Q ₉₅ (veh)		0.1														0.3	
Control Delay (s/veh)		7.8														10.8	
Level of Service, LOS		A														B	
Approach Delay (s/veh)		1.7												10.8			
Approach LOS														B			

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	GHA			Intersection	Rand Rd/Golfview Rd		
Agency/Co.	GHA			Jurisdiction	IDOT		
Date Performed	8/16/2017			East/West Street	Golfview Road		
Analysis Year	2023			North/South Street	Rand Road		
Time Analyzed	NoBuild AM			Peak Hour Factor	0.95		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	5276.900						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	1	2	1	0	1	2	0
Configuration			LTR				LTR			L	T	R		L	T	TR
Volume, V (veh/h)		0	0	0		20	0	4		0	696	12		10	2378	0
Percent Heavy Vehicles (%)		0	0	0		0	0	25		0				10		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Left + Thru								1						

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

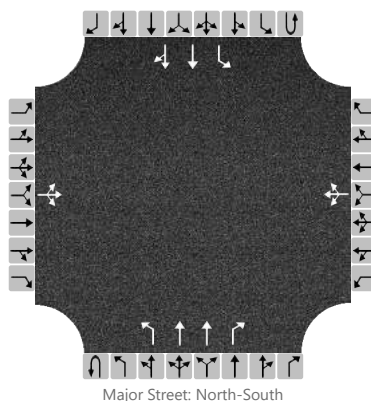
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			0				25				0				11	
Capacity, c (veh/h)			0				178				185				804	
v/c Ratio							0.14				0.00				0.01	
95% Queue Length, Q ₉₅ (veh)							0.5				0.0				0.0	
Control Delay (s/veh)			5.0				28.5				24.5				9.5	
Level of Service, LOS			A				D				C				A	
Approach Delay (s/veh)		5.0				28.5				0.0				0.0		
Approach LOS		A				D										

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	GHA			Intersection	Rand Rd/Golfview Rd		
Agency/Co.	GHA			Jurisdiction	IDOT		
Date Performed	8/16/2017			East/West Street	Golfview Road		
Analysis Year	2023			North/South Street	Rand Road		
Time Analyzed	NoBuild PM			Peak Hour Factor	0.95		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	5276.900						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	1	2	1	0	1	2	0
Configuration			LTR				LTR			L	T	R		L	T	TR
Volume, V (veh/h)		0	0	0		18	0	16		0	2484	48		29	1343	0
Percent Heavy Vehicles (%)		0	0	0		0	0	7		0				0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Left + Thru								1						

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.50	6.50	6.90		6.80	6.50	7.04		4.10				4.10		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		3.50	4.00	3.37		2.20				2.20		

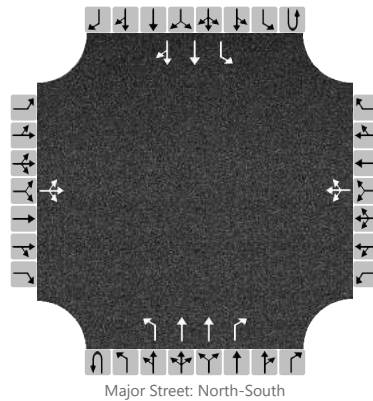
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			0				36				0				31	
Capacity, c (veh/h)			0				54				488				159	
v/c Ratio							0.66				0.00				0.19	
95% Queue Length, Q ₉₅ (veh)							2.7				0.0				0.7	
Control Delay (s/veh)			5.0				154.8				12.4				33.0	
Level of Service, LOS			A				F				B				D	
Approach Delay (s/veh)		5.0				154.8				0.0				0.7		
Approach LOS		A				F										

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	GHA	Intersection	Rand Rd/Golfview Rd				
Agency/Co.	GHA	Jurisdiction	IDOT				
Date Performed	8/16/2017	East/West Street	Golfview Road				
Analysis Year	2023	North/South Street	Rand Road				
Time Analyzed	NoBuild SAT MID	Peak Hour Factor	0.95				
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25				
Project Description	5276.900						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	1	2	1	0	1	2	0
Configuration			LTR				LTR			L	T	R		L	T	TR
Volume, V (veh/h)		0	0	0		20	0	14		0	1976	33		16	1560	0
Percent Heavy Vehicles (%)		0	0	0		0	0	0		0				0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Left + Thru								1						

Critical and Follow-up Headways

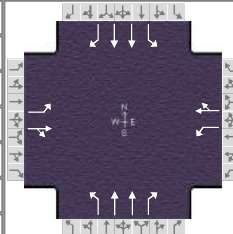
Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			0				36				0				17	
Capacity, c (veh/h)			0				93				400				262	
v/c Ratio							0.39				0.00				0.06	
95% Queue Length, Q ₉₅ (veh)							1.6				0.0				0.2	
Control Delay (s/veh)			5.0				66.3				14.0				19.7	
Level of Service, LOS			A				F				B				C	
Approach Delay (s/veh)		5.0				66.3				0.0				0.2		
Approach LOS		A				F										

HCS7 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	GHA			Duration, h	0.25		
Analyst	GHA		Analysis Date	Aug 16, 2017		Area Type	Other
Jurisdiction	IDOT		Time Period	AM Peak		PHF	0.95
Urban Street	US Route 12 (Rand Rd)		Analysis Year	2023 NoBuild		Analysis Period	1 > 7:00
Intersection	Rand Rd / Old Rand Rd		File Name	23NB US12 Old Rand_AM.xus			
Project Description	5276.900						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	9	7	6	61	8	49	1	650	34	53	2345	1

Signal Information													
Cycle, s	140.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin										
Uncoordinated	No	Simult. Gap E/W	On	Green	0.1	1.0	100.6	2.9	0.7	7.7			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	4.5	3.0	3.0	4.5			
				Red	1.0	1.0	1.5	0.0	0.0	1.5			

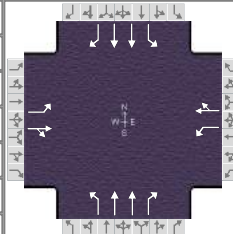
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	9	7	6	61	8	49	1	650	34	53	2345	1
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Parking (N _m), man/h	None			None			None			None		
Heavy Vehicles (P _{HV}), %	0	0		0	6		0	11	12	0	6	0
Ped / Bike / RTOR, /h	0	0	0	0	1	0	0	2	0	0	1	0
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	4	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
Turn Bay Length, ft	125	0		65	0		135	0	130	255	0	255
Grade (P _g), %		0			0			0			0	
Speed Limit, mi/h	20	20	20	25	25	25	45	45	45	45	45	45

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	14.0	24.0	14.0	24.0	15.0	82.0	20.0	87.0
Yellow Change Interval (Y), s	3.0	4.5	3.0	4.5	3.5	4.5	3.5	4.5
Red Clearance Interval (R _c), s	0.0	1.5	0.0	1.5	1.0	1.5	1.0	1.5
Minimum Green (G _{min}), s	3	8	3	8	3	15	3	15
Start-Up Lost Time (lt), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	3.0	4.0	3.0	4.0	3.0	7.0	3.0	7.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	Yes	Yes	Yes	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	GHA			Duration, h	0.25		
Analyst	GHA	Analysis Date	Aug 16, 2017		Area Type	Other	
Jurisdiction	IDOT	Time Period	AM Peak		PHF	0.95	
Urban Street	US Route 12 (Rand Rd)		Analysis Year	2023 NoBuild		Analysis Period	1 > 7:00
Intersection	Rand Rd / Old Rand Rd		File Name	23NB US12 Old Rand_AM.xus			
Project Description	5276.900						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	9	7	6	61	8	49	1	650	34	53	2345	1

Signal Information													
Cycle, s	140.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin										
Uncoordinated	No	Simult. Gap E/W	On	Green	0.1	1.0	100.6	2.9	0.7	7.7			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	4.5	3.0	3.0	4.5			
				Red	1.0	1.0	1.5	0.0	0.0	1.5			

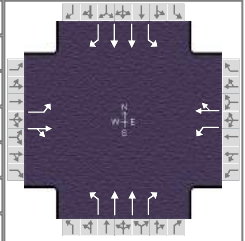
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	1.1	4.0	1.1	4.0	2.0	3.0	2.0	3.0
Phase Duration, s	5.9	13.7	9.6	17.3	4.6	106.6	10.2	112.1
Change Period, (Y+R _c), s	3.0	6.0	3.0	6.0	4.5	6.0	4.5	6.0
Max Allow Headway (MAH), s	4.2	5.4	4.2	5.4	4.0	0.0	4.0	0.0
Queue Clearance Time (g _s), s	2.7	3.0	6.6	7.2	2.1		6.3	
Green Extension Time (g _e), s	0.0	0.3	0.0	0.3	0.0	0.0	0.1	0.0
Phase Call Probability	0.97	0.96	0.99	1.00	0.04		0.89	
Max Out Probability	0.00	0.00	0.73	0.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	9	14		64	60		1	684	36	56	2468	1
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1754		1810	1548		1810	1741	1429	1810	1815	1577
Queue Service Time (g _s), s	0.7	1.0		4.6	5.2		0.1	1.6	1.0	4.3	72.0	0.0
Cycle Queue Clearance Time (g _c), s	0.7	1.0		4.6	5.2		0.1	1.6	1.0	4.3	72.0	0.0
Green Ratio (g/C)	0.08	0.05		0.12	0.08		0.00	0.72	0.72	0.04	0.76	0.76
Capacity (c), veh/h	129	96		204	125		2	2501	1027	73	2752	1196
Volume-to-Capacity Ratio (X)	0.073	0.142		0.315	0.478		0.673	0.274	0.035	0.762	0.897	0.001
Back of Queue (Q), ft/ln (95 th percentile)	14.7	22.4		97.1	103.9		5.8	23.6	14.2	101.1	855.2	0.3
Back of Queue (Q), veh/ln (95 th percentile)	0.6	0.9		3.9	4.0		0.2	0.9	0.5	4.0	32.6	0.0
Queue Storage Ratio (RQ) (95 th percentile)	0.12	0.00		1.49	0.00		0.04	0.00	0.11	0.40	0.00	0.00
Uniform Delay (d ₁), s/veh	60.2	63.0		56.7	61.5		69.9	0.9	5.7	66.5	12.8	4.1
Incremental Delay (d ₂), s/veh	0.2	1.0		0.9	4.0		210.7	0.3	0.1	15.0	5.1	0.0
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	60.4	64.0		57.6	65.5		280.6	1.1	5.8	81.5	17.9	4.1
Level of Service (LOS)	E	E		E	E		F	A	A	F	B	A
Approach Delay, s/veh / LOS	62.5		E	61.4		E	1.8		A	19.3		B
Intersection Delay, s/veh / LOS	17.4						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.0	C	3.0	C	2.2	B	2.2	B
Bicycle LOS Score / LOS	0.5	A	0.7	A	1.1	A	2.6	C

HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	GHA			Duration, h	0.25		
Analyst	GHA	Analysis Date	Aug 16, 2017	Area Type	Other		
Jurisdiction	IDOT	Time Period	AM Peak	PHF	0.95		
Urban Street	US Route 12 (Rand Rd)		Analysis Year	2023 NoBuild	Analysis Period	1 > 7:00	
Intersection	Rand Rd / Old Rand Rd		File Name	23NB US12 Old Rand_AM.xus			
Project Description	5276.900						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	9	7	6	61	8	49	1	650	34	53	2345	1

Signal Information													
Cycle, s	140.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin										
Uncoordinated	No	Simult. Gap E/W	On	Green	0.1	1.0	100.6	2.9	0.7	7.7			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	4.5	3.0	3.0	4.5			
				Red	1.0	1.0	1.5	0.0	0.0	1.5			

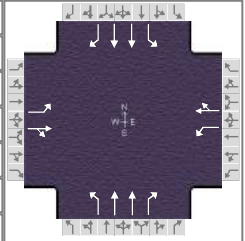
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	1.000	1.000	1.000	0.953	1.000	1.000	0.914	0.906	1.000	0.953	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000	1.000	0.952	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.923	0.923		0.855	0.855		0.000	0.847		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			0.985			0.979			0.980
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	1810	945	810	1810	217	1331	1810	3481	1429	1810	3630	1577
Proportion of Vehicles Arriving on Green (P)	0.02	0.05	0.05	0.05	0.08	0.08	0.00	0.96	0.72	0.04	0.76	0.76
Incremental Delay Factor (k)	0.11	0.15		0.11	0.15		0.11	0.50	0.50	0.11	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	3.0	6.0	3.0	6.0	4.5	6.0	4.5	6.0
Green Ratio (g/C)	0.08	0.05	0.12	0.08	0.00	0.72	0.04	0.76
Permitted Saturation Flow Rate (s_p), veh/h/ln	1364	0	1422	0	0	0	0	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	7.7	0.0	9.7	0.0	0.0	0.0	0.0	0.0
Permitted Service Time (g_u), s	4.2	0.0	6.6	0.0	0.0	0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s	0.0		0.1					
Time to First Blockage (g_t), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{ts}), s								
Protected Right Saturation Flow (s_R), veh/h/ln						0		0
Protected Right Effective Green Time (g_R), s						0.0		0.0

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	2.224	0.00	2.224	0.00	1.557	0.00	1.557	0.00	1.557	0.00	1.557	0.00
Pedestrian F_s / F_{delay}	0.000	0.166	0.000	0.164	0.000	0.069	0.000	0.069	0.000	0.057	0.000	0.057
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b	109.79	62.53	162.10	59.14	1437.01	5.55	1516.17	4.10				
Bicycle F_w / F_v	-3.64	0.04	-3.64	0.20	-3.64	0.59	-3.64	2.08				

HCS7 Signalized Intersection Results Graphical Summary

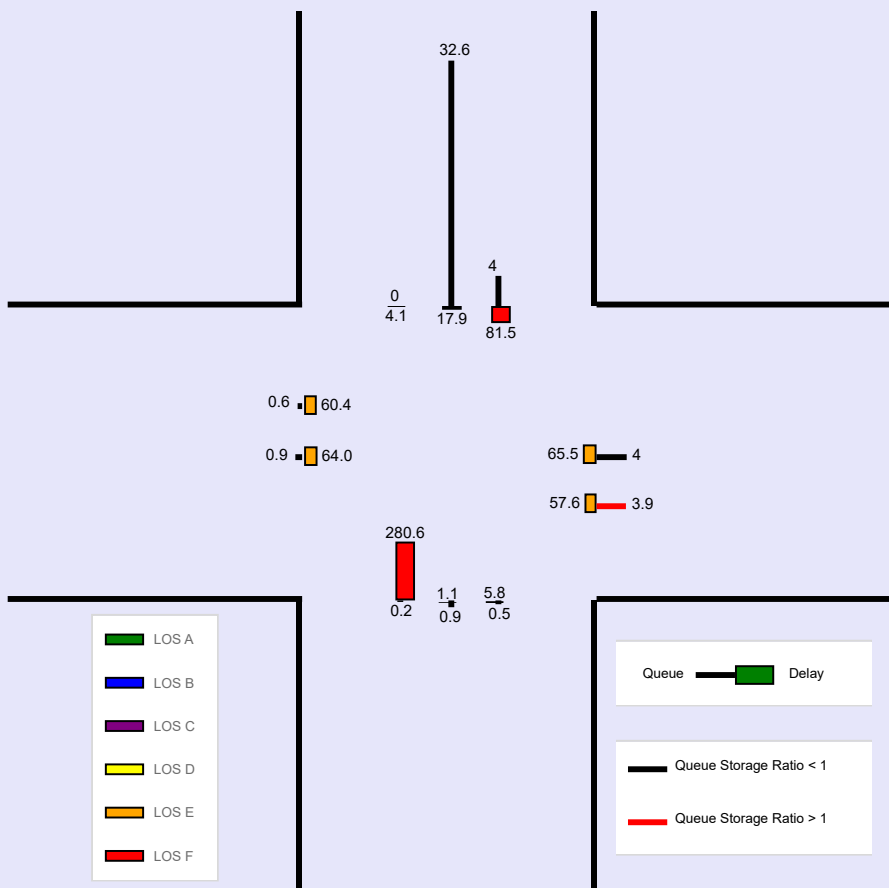
General Information				Intersection Information			
Agency	GHA			Duration, h	0.25		
Analyst	GHA		Analysis Date	Aug 16, 2017		Area Type	Other
Jurisdiction	IDOT		Time Period	AM Peak		PHF	0.95
Urban Street	US Route 12 (Rand Rd)		Analysis Year	2023 NoBuild		Analysis Period	1 > 7:00
Intersection	Rand Rd / Old Rand Rd		File Name	23NB US12 Old Rand_AM.xus			
Project Description	5276.900						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	9	7	6	61	8	49	1	650	34	53	2345	1

Signal Information													
Cycle, s	140.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin										
Uncoordinated	No	Simult. Gap E/W	On	Green	0.1	1.0	100.6	2.9	0.7	7.7			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	4.5	3.0	3.0	4.5			
				Red	1.0	1.0	1.5	0.0	0.0	1.5			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Back of Queue (Q), ft/ln (95 th percentile)	14.7	22.4		97.1	103.9		5.8	23.6	14.2	101.1	855.2	0.3
Back of Queue (Q), veh/ln (95 th percentile)	0.6	0.9		3.9	4.0		0.2	0.9	0.5	4.0	32.6	0.0
Queue Storage Ratio (RQ) (95 th percentile)	0.12	0.00		1.49	0.00		0.04	0.00	0.11	0.40	0.00	0.00
Control Delay (d), s/veh	60.4	64.0		57.6	65.5		280.6	1.1	5.8	81.5	17.9	4.1
Level of Service (LOS)	E	E		E	E		F	A	A	F	B	A
Approach Delay, s/veh / LOS	62.5	E		61.4	E		1.8	A		19.3	B	
Intersection Delay, s/veh / LOS	17.4						B					

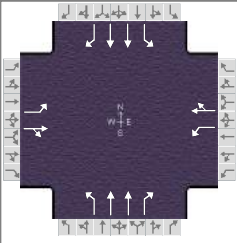
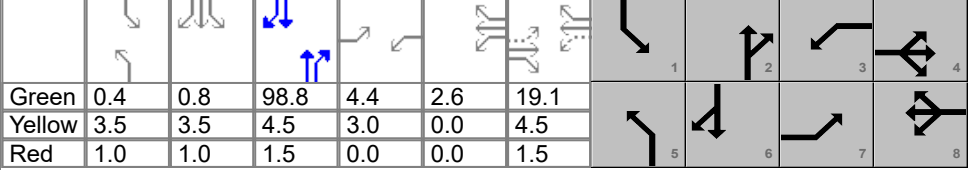


--- Message---

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

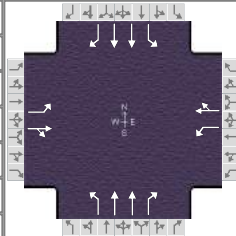
--- Comment---

HCS7 Signalized Intersection Input Data

General Information						Intersection Information																		
Agency	GHA					Duration, h	0.25																	
Analyst	GHA		Analysis Date	Aug 16, 2017		Area Type	Other																	
Jurisdiction	IDOT		Time Period	PM Peak		PHF	0.95																	
Urban Street	US Route 12 (Rand Rd)		Analysis Year	2023 NoBuild		Analysis Period	1 > 5:00																	
Intersection	Rand Rd / Old Rand Rd		File Name	23NB US12 Old Rand_PM.xus																				
Project Description	5276.900																							
Demand Information				EB			WB			NB			SB											
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R									
Demand (v), veh/h				32	11	11	67	15	188	3	2238	44	50	1258	13									
Signal Information																								
Cycle, s	150.0	Reference Phase	2																					
Offset, s	0	Reference Point	Begin																					
Uncoordinated	No	Simult. Gap E/W	On																					
Force Mode	Fixed	Simult. Gap N/S	On	Green	0.4	0.8	98.8	4.4	2.6	19.1	Yellow	3.5	3.5	4.5	3.0	0.0	4.5	Red	1.0	1.0	1.5	0.0	0.0	1.5
Traffic Information				EB			WB			NB			SB											
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R									
Demand (v), veh/h				32	11	11	67	15	188	3	2238	44	50	1258	13									
Initial Queue (Q _b), veh/h				0	0	0	0	0	0	0	0	0	0	0	0									
Base Saturation Flow Rate (s ₀), veh/h				1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900									
Parking (N _m), man/h				None			None			None			None											
Heavy Vehicles (P _{HV}), %				0	0	0	0	1	0	3	3	0	4	0										
Ped / Bike / RTOR, /h				0	0	0	0	0	0	0	1	0	2	0	0									
Buses (N _b), buses/h				0	0	0	0	0	0	0	0	0	0	0	0									
Arrival Type (AT)				3	3	3	3	3	3	3	4	3	3	3	3									
Upstream Filtering (I)				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00									
Lane Width (W), ft				12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0									
Turn Bay Length, ft				125	0		65	0		135	0	130	255	0	255									
Grade (P _g), %					0			0			0			0										
Speed Limit, mi/h				20	20	20	25	25	25	45	45	45	45	45	45									
Phase Information				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT													
Maximum Green (G _{max}) or Phase Split, s				14.0	22.0	14.0	22.0	15.0	99.0	15.0	99.0													
Yellow Change Interval (Y), s				3.0	4.5	3.0	4.5	3.5	4.5	3.5	4.5													
Red Clearance Interval (R _c), s				0.0	1.5	0.0	1.5	1.0	1.5	1.0	1.5													
Minimum Green (G _{min}), s				3	8	3	8	3	15	3	15													
Start-Up Lost Time (lt), s				2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0													
Extension of Effective Green (e), s				2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0													
Passage (PT), s				3.0	4.0	3.0	4.0	3.0	7.0	3.0	7.0													
Recall Mode				Off	Off	Off	Off	Off	Min	Off	Min													
Dual Entry				Yes	Yes	Yes	Yes	No	Yes	No	Yes													
Walk (Walk), s				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0													
Pedestrian Clearance Time (PC), s				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0													
Multimodal Information				EB			WB			NB			SB											
85th % Speed / Rest in Walk / Corner Radius				0	No	25	0	No	25	0	No	25	0	No	25									
Walkway / Crosswalk Width / Length, ft				9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0									
Street Width / Island / Curb				0	0	No	0	0	No	0	0	No	0	0	No									
Width Outside / Bike Lane / Shoulder, ft				12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0									
Pedestrian Signal / Occupied Parking				No	0.50	No	0.50	No	0.50	No	0.50	No	0.50											

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	GHA			Duration, h	0.25		
Analyst	GHA	Analysis Date	Aug 16, 2017	Area Type	Other		
Jurisdiction	IDOT	Time Period	PM Peak	PHF	0.95		
Urban Street	US Route 12 (Rand Rd)		Analysis Year	2023 NoBuild	Analysis Period	1 > 5:00	
Intersection	Rand Rd / Old Rand Rd		File Name	23NB US12 Old Rand_PM.xus			
Project Description	5276.900						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	32	11	11	67	15	188	3	2238	44	50	1258	13

Signal Information													
Cycle, s	150.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin										
Uncoordinated	No	Simult. Gap E/W	On	Green	0.4	0.8	98.8	4.4	2.6	19.1			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	4.5	3.0	0.0	4.5			
				Red	1.0	1.0	1.5	0.0	0.0	1.5			

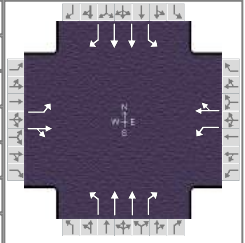
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	1.1	4.0	1.1	4.0	2.0	3.0	2.0	3.0
Phase Duration, s	7.4	25.1	10.0	27.7	4.9	104.8	10.1	110.0
Change Period, (Y+R _c), s	3.0	6.0	3.0	6.0	4.5	6.0	4.5	6.0
Max Allow Headway (MAH), s	4.2	5.4	4.2	5.4	4.0	0.0	4.0	0.0
Queue Clearance Time (g _s), s	4.4	3.8	7.0	21.6	2.3		6.3	
Green Extension Time (g _e), s	0.0	1.2	0.0	0.1	0.0	0.0	0.0	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	0.12		0.89	
Max Out Probability	0.04	0.01	1.00	1.00	0.00		0.24	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	34	23		71	214		3	2356	46	53	1324	14
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1743		1810	1616		1810	1859	1540	1810	1845	1608
Queue Service Time (g _s), s	2.4	1.8		5.0	19.6		0.3	74.7	1.6	4.3	25.7	0.4
Cycle Queue Clearance Time (g _c), s	2.4	1.8		5.0	19.6		0.3	74.7	1.6	4.3	25.7	0.4
Green Ratio (g/C)	0.16	0.13		0.18	0.14		0.00	0.66	0.66	0.04	0.69	0.69
Capacity (c), veh/h	102	222		295	234		4	2449	1014	68	2559	1115
Volume-to-Capacity Ratio (X)	0.330	0.104		0.239	0.915		0.707	0.962	0.046	0.772	0.518	0.012
Back of Queue (Q), ft/ln (95 th percentile)	52.8	36.6		104.8	396.5		11.7	376.8	24.5	103.3	384.5	6
Back of Queue (Q), veh/ln (95 th percentile)	2.1	1.5		4.2	15.7		0.5	14.7	1.0	4.1	14.9	0.2
Queue Storage Ratio (RQ) (95 th percentile)	0.42	0.00		1.61	0.00		0.09	0.00	0.19	0.41	0.00	0.02
Uniform Delay (d ₁), s/veh	55.6	57.9		51.9	63.2		74.8	7.7	9.0	71.5	11.0	7.1
Incremental Delay (d ₂), s/veh	1.9	0.3		0.4	35.6		112.9	11.3	0.1	16.7	0.8	0.0
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	57.4	58.2		52.3	98.8		187.7	18.9	9.1	88.2	11.7	7.1
Level of Service (LOS)	E	E		D	F		F	B	A	F	B	A
Approach Delay, s/veh / LOS	57.7		E	87.3		F	19.0		B	14.6		B
Intersection Delay, s/veh / LOS	22.7						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.0	C	3.0	C	2.2	B	2.2	B
Bicycle LOS Score / LOS	0.6	A	1.0	A	2.5	B	1.6	B

HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	GHA			Duration, h	0.25		
Analyst	GHA	Analysis Date	Aug 16, 2017	Area Type	Other		
Jurisdiction	IDOT	Time Period	PM Peak	PHF	0.95		
Urban Street	US Route 12 (Rand Rd)		Analysis Year	2023 NoBuild	Analysis Period	1 > 5:00	
Intersection	Rand Rd / Old Rand Rd		File Name	23NB US12 Old Rand_PM.xus			
Project Description	5276.900						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	32	11	11	67	15	188	3	2238	44	50	1258	13

Signal Information													
Cycle, s	150.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin										
Uncoordinated	No	Simult. Gap E/W	On	Green	0.4	0.8	98.8	4.4	2.6	19.1			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	4.5	3.0	0.0	4.5			
				Red	1.0	1.0	1.5	0.0	0.0	1.5			

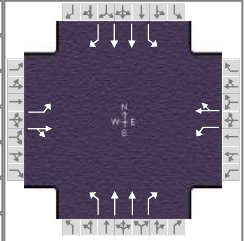
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	1.000	1.000	1.000	0.992	1.000	1.000	0.977	0.977	1.000	0.969	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000	1.000	0.952	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.917	0.917		0.857	0.857		0.000	0.847		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000			0.979			0.999
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	1810	872	872	1810	119	1496	1810	3719	1540	1810	3689	1608
Proportion of Vehicles Arriving on Green (P)	0.03	0.13	0.13	0.05	0.14	0.14	0.00	0.88	0.66	0.04	0.69	0.69
Incremental Delay Factor (k)	0.11	0.15		0.11	0.42		0.11	0.50	0.50	0.11	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	3.0	6.0	3.0	6.0	4.5	6.0	4.5	6.0
Green Ratio (g/C)	0.16	0.13	0.18	0.14	0.00	0.66	0.04	0.69
Permitted Saturation Flow Rate (s_p), veh/h/ln	1186	0	1410	0	0	0	0	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	19.1	0.0	20.7	0.0	0.0	0.0	0.0	0.0
Permitted Service Time (g_u), s	0.1	0.0	17.3	0.0	0.0	0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s	0.1		0.2					
Time to First Blockage (g_t), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{ts}), s								
Protected Right Saturation Flow (s_R), veh/h/ln						0		0
Protected Right Effective Green Time (g_R), s						0.0		0.0

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	2.224	0.00	2.224	0.00	2.224	0.00	1.557	0.00	1.557	0.00	1.557	0.00
Pedestrian F_s / F_{delay}	0.000	0.162	0.000	0.161	0.000	0.000	0.000	0.087	0.000	0.000	0.078	0.000
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b	254.43	57.13	289.20	54.88	1316.80	8.76	1387.18	7.04	-3.64	0.09	-3.64	1.15
Bicycle F_w / F_v	-3.64	0.09	-3.64	0.47	-3.64	1.98	-3.64	1.98	-3.64	1.15	-3.64	1.15

HCS7 Signalized Intersection Results Graphical Summary

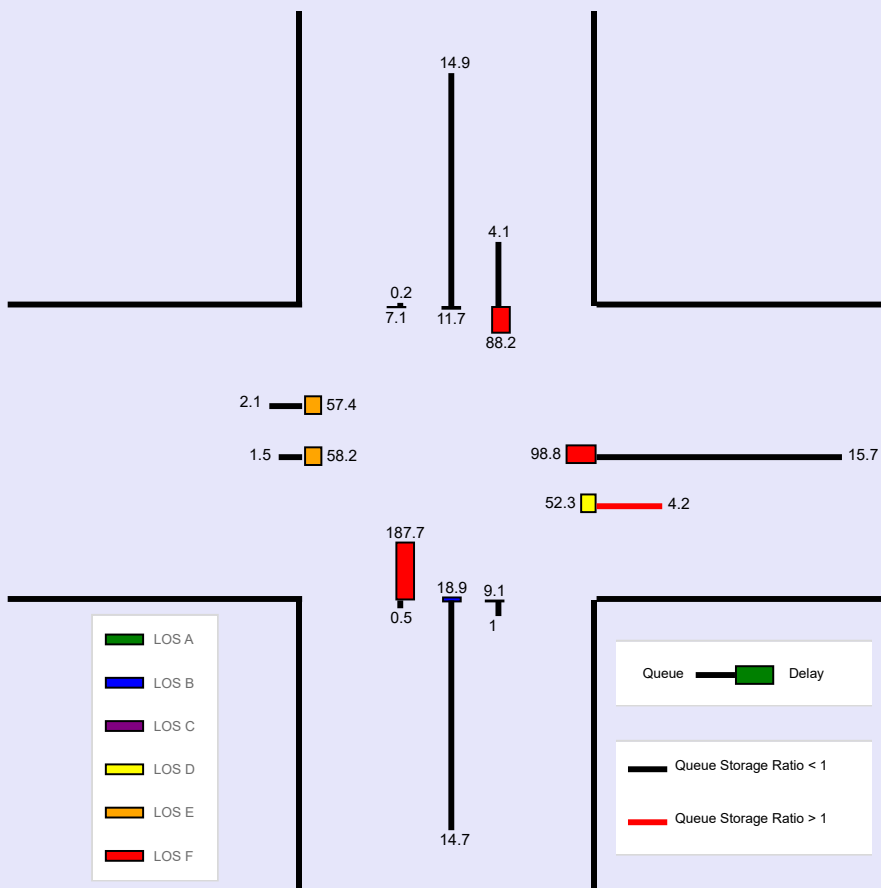
General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	GHA	Analysis Date	Aug 16, 2017	Area Type	Other
Jurisdiction	IDOT	Time Period	PM Peak	PHF	0.95
Urban Street	US Route 12 (Rand Rd)	Analysis Year	2023 NoBuild	Analysis Period	1 > 5:00
Intersection	Rand Rd / Old Rand Rd	File Name	23NB US12 Old Rand_PM.xus		
Project Description	5276.900				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	32	11	11	67	15	188	3	2238	44	50	1258	13

Signal Information													
Cycle, s	150.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin										
Uncoordinated	No	Simult. Gap E/W	On	Green	0.4	0.8	98.8	4.4	2.6	19.1			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	4.5	3.0	0.0	4.5			
				Red	1.0	1.0	1.5	0.0	0.0	1.5			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Back of Queue (Q), ft/ln (95 th percentile)	52.8	36.6		104.8	396.5		11.7	376.8	24.5	103.3	384.5	6
Back of Queue (Q), veh/ln (95 th percentile)	2.1	1.5		4.2	15.7		0.5	14.7	1.0	4.1	14.9	0.2
Queue Storage Ratio (RQ) (95 th percentile)	0.42	0.00		1.61	0.00		0.09	0.00	0.19	0.41	0.00	0.02
Control Delay (d), s/veh	57.4	58.2		52.3	98.8		187.7	18.9	9.1	88.2	11.7	7.1
Level of Service (LOS)	E	E		D	F		F	B	A	F	B	A
Approach Delay, s/veh / LOS	57.7		E	87.3		F	19.0		B	14.6		B
Intersection Delay, s/veh / LOS	22.7						C					



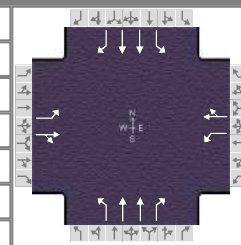
--- Message---

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

--- Comment---

HCS7 Signalized Intersection Input Data

General Information				Intersection Information		
Agency	GHA			Duration, h	0.25	
Analyst	GHA	Analysis Date	Aug 16, 2017		Area Type	Other
Jurisdiction	IDOT	Time Period	SAT Peak		PHF	0.95
Urban Street	US Route 12 (Rand Rd)		Analysis Year	2023 NoBuild		
Intersection	Rand Rd / Old Rand Rd		File Name	23NB US12 Old Rand_SAT.xus		
Project Description	5276.900					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	15	8	10	56	9	136	5	1858	59	38	1528	14

Signal Information													
Cycle, s	130.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin										
Uncoordinated	No	Simult. Gap E/W	On	Green	0.5	3.2	88.9	3.0	2.8	12.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	4.5	3.0	0.0	4.5			
				Red	1.0	0.0	1.5	0.0	0.0	1.5			

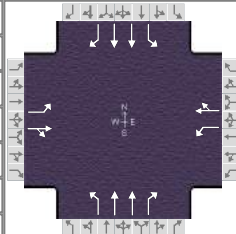
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	15	8	10	56	9	136	5	1858	59	38	1528	14
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Parking (N_m), man/h	None			None			None			None		
Heavy Vehicles (P_{HV}), %	12	6		0	1		0	0	0	0	0	0
Ped / Bike / RTOR, /h	27	0	0	0	0	0	2	0	0	2	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	4	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
Turn Bay Length, ft	125	0		65	0		135	0	130	255	0	255
Grade (P_g), %		0			0			0			0	
Speed Limit, mi/h	20	20	20	25	25	25	45	45	45	45	45	45

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	17.0	23.0	17.0	23.0	14.0	70.0	20.0	76.0
Yellow Change Interval (Y), s	3.0	4.5	3.0	4.5	3.5	4.5	3.5	4.5
Red Clearance Interval (R_c), s	0.0	1.5	0.0	1.5	1.0	1.5	1.0	1.5
Minimum Green (G_{min}), s	3	8	3	8	3	15	3	15
Start-Up Lost Time (l_t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	3.0	4.0	3.0	4.0	3.0	7.0	3.0	7.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	Yes	Yes	Yes	Yes	No	Yes	No	Yes
Walk ($Walk$), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	GHA			Duration, h	0.25		
Analyst	GHA	Analysis Date	Aug 16, 2017		Area Type	Other	
Jurisdiction	IDOT	Time Period	SAT Peak		PHF	0.95	
Urban Street	US Route 12 (Rand Rd)		Analysis Year	2023 NoBuild		Analysis Period	1 > 1:00
Intersection	Rand Rd / Old Rand Rd		File Name	23NB US12 Old Rand_SAT.xus			
Project Description	5276.900						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	15	8	10	56	9	136	5	1858	59	38	1528	14

Signal Information				Signal Timing (s)									Signal Phases												
Cycle, s	130.0	Reference Phase	2	Green	0.5	3.2	88.9	3.0	2.8	12.0	Yellow	3.5	0.0	4.5	3.0	0.0	4.5	Red	1.0	0.0	1.5	0.0	0.0	1.5	
Offset, s	0	Reference Point	Begin																						
Uncoordinated	No	Simult. Gap E/W	On																						
Force Mode	Fixed	Simult. Gap N/S	On																						

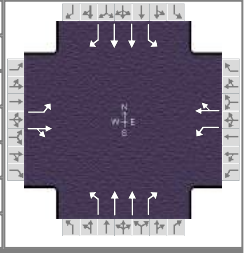
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	1.1	4.0	1.1	4.0	2.0	3.0	2.0	3.0
Phase Duration, s	6.0	18.0	8.8	20.8	5.0	94.9	8.3	98.2
Change Period, (Y+R _c), s	3.0	6.0	3.0	6.0	4.5	6.0	4.5	6.0
Max Allow Headway (MAH), s	4.2	5.4	4.2	5.4	4.0	0.0	4.0	0.0
Queue Clearance Time (g _s), s	3.1	3.5	5.7	14.0	2.4		4.9	
Green Extension Time (g _e), s	0.0	0.9	0.1	0.7	0.0	0.0	0.1	0.0
Phase Call Probability	0.97	1.00	1.00	1.00	0.17		0.76	
Max Out Probability	0.00	0.00	0.01	0.01	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	16	19		59	153		5	1956	62	40	1608	15
Adjusted Saturation Flow Rate (s), veh/h/ln	1640	1557		1810	1613		1810	1904	1608	1810	1904	1608
Queue Service Time (g _s), s	1.1	1.5		3.7	12.0		0.4	18.6	1.7	2.9	27.7	0.3
Cycle Queue Clearance Time (g _c), s	1.1	1.5		3.7	12.0		0.4	18.6	1.7	2.9	27.7	0.3
Green Ratio (g/C)	0.12	0.09		0.15	0.11		0.00	0.68	0.68	0.03	0.71	0.71
Capacity (c), veh/h	100	144		251	183		7	2605	1100	52	2700	1140
Volume-to-Capacity Ratio (X)	0.158	0.132		0.235	0.832		0.727	0.751	0.056	0.763	0.596	0.013
Back of Queue (Q), ft/ln (95 th percentile)	24.1	28.5		78.2	238.9		15.4	145.2	24.1	71.1	381.6	4.9
Back of Queue (Q), veh/ln (95 th percentile)	0.9	1.1		3.1	9.5		0.6	5.8	1.0	2.8	15.3	0.2
Queue Storage Ratio (RQ) (95 th percentile)	0.19	0.00		1.20	0.00		0.11	0.00	0.19	0.28	0.00	0.02
Uniform Delay (d ₁), s/veh	51.8	54.2		48.5	56.4		64.7	2.6	6.7	62.7	9.5	5.6
Incremental Delay (d ₂), s/veh	0.7	0.6		0.5	12.8		84.8	2.0	0.1	20.1	1.0	0.0
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	52.5	54.8		49.0	69.2		149.5	4.7	6.8	82.8	10.5	5.6
Level of Service (LOS)	D	D		D	E		F	A	A	F	B	A
Approach Delay, s/veh / LOS	53.8		D	63.6		E	5.1		A	12.2		B
Intersection Delay, s/veh / LOS	11.7						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.0	C	3.0	C	2.2	B	2.2	B
Bicycle LOS Score / LOS	0.5	A	0.8	A	2.2	B	1.9	B

HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	GHA			Duration, h	0.25		
Analyst	GHA	Analysis Date	Aug 16, 2017	Area Type	Other		
Jurisdiction	IDOT	Time Period	SAT Peak	PHF	0.95		
Urban Street	US Route 12 (Rand Rd)		Analysis Year	2023 NoBuild	Analysis Period	1 > 1:00	
Intersection	Rand Rd / Old Rand Rd		File Name	23NB US12 Old Rand_SAT.xus			
Project Description	5276.900						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	15	8	10	56	9	136	5	1858	59	38	1528	14

Signal Information													
Cycle, s	130.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin										
Uncoordinated	No	Simult. Gap E/W	On	Green	0.5	3.2	88.9	3.0	2.8	12.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	4.5	3.0	0.0	4.5			
				Red	1.0	0.0	1.5	0.0	0.0	1.5			

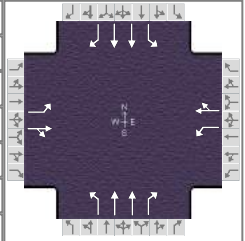
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.906	0.953	1.000	1.000	0.992	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000	1.000	0.952	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.860	0.860		0.856	0.856		0.000	0.847		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			0.934			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			0.912			1.000			0.999			0.999
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	1640	692	865	1810	100	1513	1810	3808	1608	1810	3808	1608
Proportion of Vehicles Arriving on Green (P)	0.02	0.09	0.09	0.04	0.11	0.11	0.00	0.91	0.68	0.03	0.71	0.71
Incremental Delay Factor (k)	0.11	0.15		0.11	0.15		0.11	0.50	0.50	0.11	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	3.0	6.0	3.0	6.0	4.5	6.0	4.5	6.0
Green Ratio (g/C)	0.12	0.09	0.15	0.11	0.00	0.68	0.03	0.71
Permitted Saturation Flow Rate (s_p), veh/h/ln	1137	0	1416	0	0	0	0	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	12.0	0.0	13.8	0.0	0.0	0.0	0.0	0.0
Permitted Service Time (g_u), s	0.7	0.0	10.6	0.0	0.0	0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s	0.2		0.1					
Time to First Blockage (g_t), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{ts}), s								
Protected Right Saturation Flow (s_R), veh/h/ln						0		0
Protected Right Effective Green Time (g_R), s						0.0		0.0

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	2.224	0.00	2.224	0.00	1.557	0.00	1.557	0.00	1.557	0.00	0.00	
Pedestrian F_s / F_{delay}	0.000	0.160	0.000	0.158	0.000	0.075	0.000	0.075	0.000	0.068	0.068	
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b	184.92	53.54	227.44	51.06	1368.15	6.49	1418.08	5.50	1368.15	6.49	5.50	
Bicycle F_w / F_v	-3.64	0.06	-3.64	0.35	-3.64	1.67	-3.64	1.67	-3.64	1.67	1.37	

HCS7 Signalized Intersection Results Graphical Summary

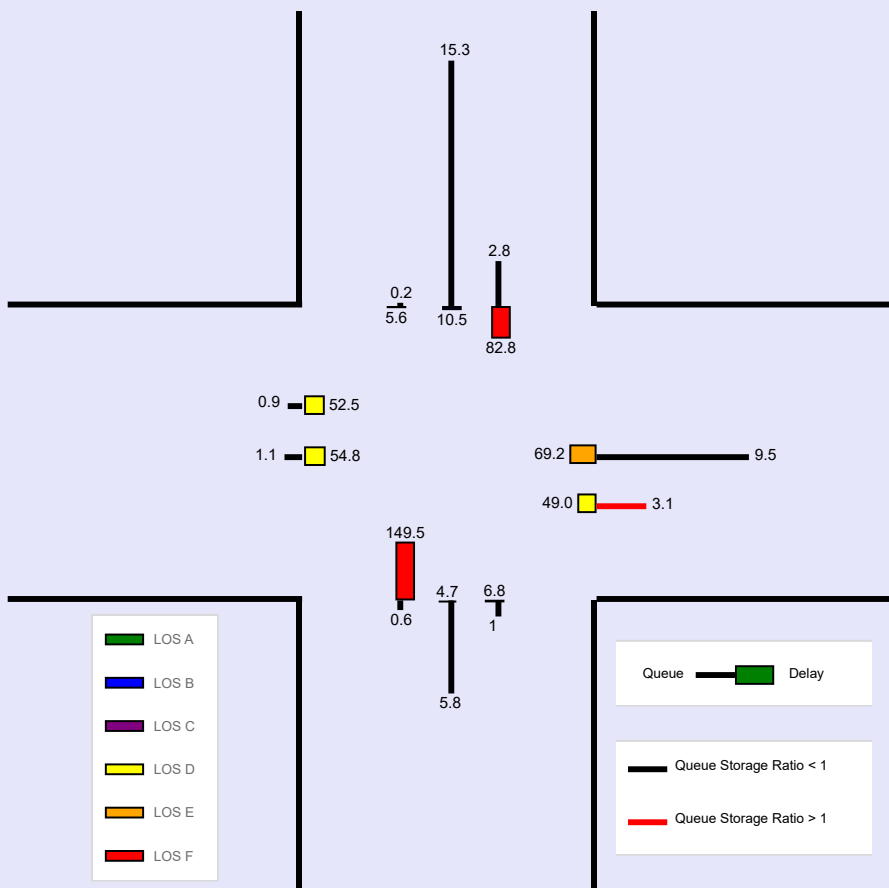
General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	GHA	Analysis Date	Aug 16, 2017	Area Type	Other
Jurisdiction	IDOT	Time Period	SAT Peak	PHF	0.95
Urban Street	US Route 12 (Rand Rd)	Analysis Year	2023 NoBuild	Analysis Period	1 > 1:00
Intersection	Rand Rd / Old Rand Rd	File Name	23NB US12 Old Rand_SAT.xus		
Project Description	5276.900				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	15	8	10	56	9	136	5	1858	59	38	1528	14

Signal Information													
Cycle, s	130.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin										
Uncoordinated	No	Simult. Gap E/W	On	Green	0.5	3.2	88.9	3.0	2.8	12.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	4.5	3.0	0.0	4.5			
				Red	1.0	0.0	1.5	0.0	0.0	1.5			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Back of Queue (Q), ft/ln (95 th percentile)	24.1	28.5		78.2	238.9		15.4	145.2	24.1	71.1	381.6	4.9
Back of Queue (Q), veh/ln (95 th percentile)	0.9	1.1		3.1	9.5		0.6	5.8	1.0	2.8	15.3	0.2
Queue Storage Ratio (RQ) (95 th percentile)	0.19	0.00		1.20	0.00		0.11	0.00	0.19	0.28	0.00	0.02
Control Delay (d), s/veh	52.5	54.8		49.0	69.2		149.5	4.7	6.8	82.8	10.5	5.6
Level of Service (LOS)	D	D		D	E		F	A	A	F	B	A
Approach Delay, s/veh / LOS	53.8		D	63.6		E	5.1		A	12.2		B
Intersection Delay, s/veh / LOS	11.7						B					



--- Message---

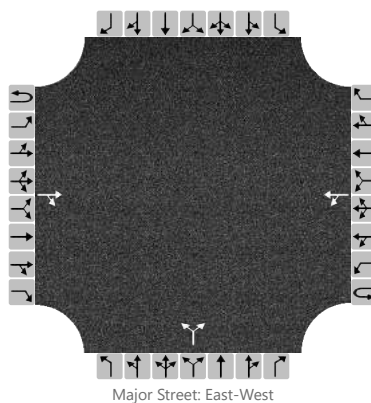
WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

--- Comment---

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	GHA	Intersection	Old Rand/Bayshore West
Agency/Co.	GHA	Jurisdiction	IDOT
Date Performed	8/16/2017	East/West Street	Old Rand Road
Analysis Year	2023	North/South Street	Bayshore Village West
Time Analyzed	NoBuild AM	Peak Hour Factor	0.93
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	5276.900		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume, V (veh/h)			94	0		0	116			2		1				
Percent Heavy Vehicles (%)						0				0		0				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

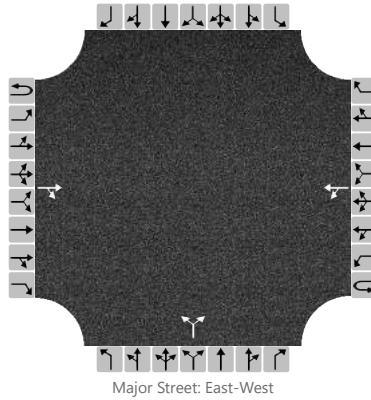
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						0					3					
Capacity, c (veh/h)						1499					811					
v/c Ratio						0.00					0.00					
95% Queue Length, Q ₉₅ (veh)						0.0					0.0					
Control Delay (s/veh)						7.4					9.5					
Level of Service, LOS						A					A					
Approach Delay (s/veh)					0.0				9.5							
Approach LOS									A							

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	GHA	Intersection	Old Rand/Bayshore West
Agency/Co.	GHA	Jurisdiction	IDOT
Date Performed	8/16/2017	East/West Street	Old Rand Road
Analysis Year	2023	North/South Street	Bayshore Village West
Time Analyzed	NoBuild PM	Peak Hour Factor	0.95
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	5276.900		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12	
Priority																	
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0	
Configuration				TR		LT					LR						
Volume, V (veh/h)			103	2		0	270			0		2					
Percent Heavy Vehicles (%)						0				0		0					
Proportion Time Blocked																	
Percent Grade (%)										0							
Right Turn Channelized		No				No				No				No			
Median Type/Storage		Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

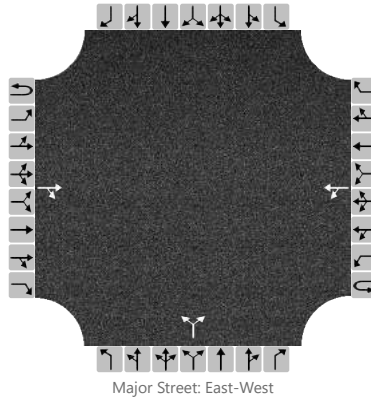
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						0					2					
Capacity, c (veh/h)						1480					933					
v/c Ratio						0.00					0.00					
95% Queue Length, Q ₉₅ (veh)						0.0					0.0					
Control Delay (s/veh)						7.4					8.9					
Level of Service, LOS						A					A					
Approach Delay (s/veh)						0.0					8.9					
Approach LOS											A					

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	GHA	Intersection	Old Rand/Bayshore West
Agency/Co.	GHA	Jurisdiction	IDOT
Date Performed	8/16/2017	East/West Street	Old Rand Road
Analysis Year	2023	North/South Street	Bayshore Village West
Time Analyzed	NoBuild SAT MID	Peak Hour Factor	0.95
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	5276.900		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12	
Priority																	
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0	
Configuration				TR		LT					LR						
Volume, V (veh/h)			105	0		1	201			0		2					
Percent Heavy Vehicles (%)						0				0		0					
Proportion Time Blocked																	
Percent Grade (%)										0							
Right Turn Channelized		No				No				No				No			
Median Type/Storage		Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

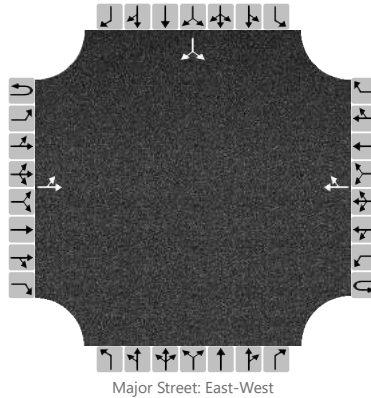
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						1					2					
Capacity, c (veh/h)						1486					944					
v/c Ratio						0.00					0.00					
95% Queue Length, Q ₉₅ (veh)						0.0					0.0					
Control Delay (s/veh)						7.4					8.8					
Level of Service, LOS						A					A					
Approach Delay (s/veh)						0.0				8.8						
Approach LOS										A						

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	GHA	Intersection	Old Rand / Pine Tree
Agency/Co.	GHA	Jurisdiction	Village
Date Performed	8/16/2017	East/West Street	Old Rand Road
Analysis Year	2023	North/South Street	Pine Tree Row
Time Analyzed	NoBuild AM	Peak Hour Factor	0.88
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	5276.900		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume, V (veh/h)		4	91				75	12						47		41
Percent Heavy Vehicles (%)		0												0		2
Proportion Time Blocked																
Percent Grade (%)																0
Right Turn Channelized		No			No				No			No				
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

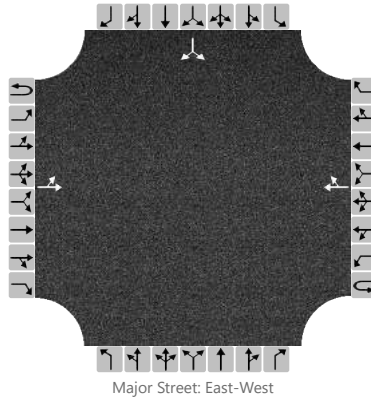
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		5														100
Capacity, c (veh/h)		1477														840
v/c Ratio		0.00														0.12
95% Queue Length, Q ₉₅ (veh)		0.0														0.4
Control Delay (s/veh)		7.4														9.9
Level of Service, LOS		A														A
Approach Delay (s/veh)		0.4												9.9		
Approach LOS														A		

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	GHA	Intersection	Old Rand / Pine Tree				
Agency/Co.	GHA	Jurisdiction	Village				
Date Performed	8/16/2017	East/West Street	Old Rand Road				
Analysis Year	2023	North/South Street	Pine Tree Row				
Time Analyzed	NoBuild PM	Peak Hour Factor	0.95				
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25				
Project Description	5276.900						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6								
Priority																
Number of Lanes	0	0	1	0	0	0	1	0								
Configuration		LT						TR							LR	
Volume, V (veh/h)		18	87				244	76							31	26
Percent Heavy Vehicles (%)		0													0	0
Proportion Time Blocked																
Percent Grade (%)															0	
Right Turn Channelized		No				No				No				No		
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

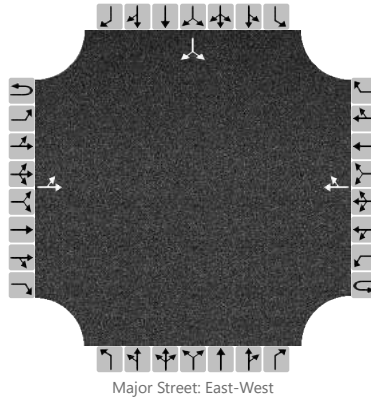
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		19													60	
Capacity, c (veh/h)		1214													631	
v/c Ratio		0.02													0.10	
95% Queue Length, Q ₉₅ (veh)		0.0													0.3	
Control Delay (s/veh)		8.0													11.3	
Level of Service, LOS		A													B	
Approach Delay (s/veh)		1.5													11.3	
Approach LOS															B	

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	GHA	Intersection	Old Rand / Pine Tree
Agency/Co.	GHA	Jurisdiction	Village
Date Performed	8/16/2017	East/West Street	Old Rand Road
Analysis Year	2023	North/South Street	Pine Tree Row
Time Analyzed	NoBuild SAT MID	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	5276.900		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume, V (veh/h)		22	85				173	48						40		29
Percent Heavy Vehicles (%)		0												0		0
Proportion Time Blocked																
Percent Grade (%)																0
Right Turn Channelized		No			No				No			No				
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

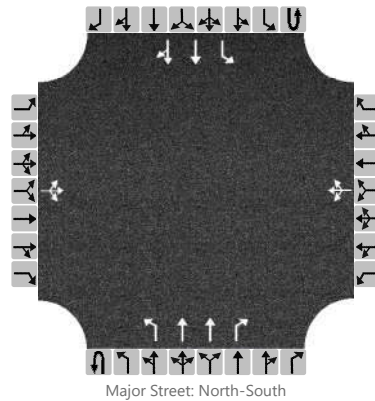
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		24														75
Capacity, c (veh/h)		1303														683
v/c Ratio		0.02														0.11
95% Queue Length, Q ₉₅ (veh)		0.1														0.4
Control Delay (s/veh)		7.8														10.9
Level of Service, LOS		A														B
Approach Delay (s/veh)		1.7												10.9		
Approach LOS														B		

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	GHA			Intersection	Rand Rd/Golfview Rd		
Agency/Co.	GHA			Jurisdiction	IDOT		
Date Performed	02/19/2018			East/West Street	Golfview Road		
Analysis Year	2023			North/South Street	Rand Road		
Time Analyzed	Total AM			Peak Hour Factor	0.95		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	5276.900						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	1	2	1	0	1	2	0
Configuration			LTR				LTR			L	T	R		L	T	TR
Volume, V (veh/h)		0	0	0		21	0	4		0	729	13		10	2453	0
Percent Heavy Vehicles (%)		0	0	0		0	0	25		0				10		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Left + Thru								1							

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

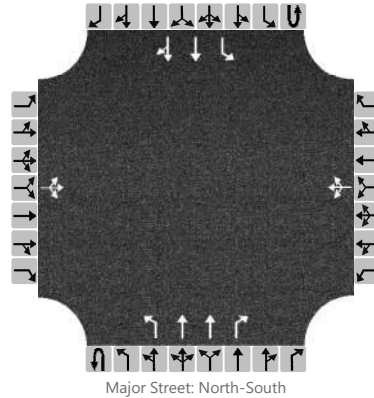
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			0				26				0				11	
Capacity, c (veh/h)			0				168				172				779	
v/c Ratio							0.15				0.00				0.01	
95% Queue Length, Q ₉₅ (veh)							0.5				0.0				0.0	
Control Delay (s/veh)			5.0				30.3				25.9				9.7	
Level of Service, LOS			A				D				D				A	
Approach Delay (s/veh)	5.0				30.3				0.0				0.0			
Approach LOS	A				D											

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	GHA			Intersection	Rand Rd/Golfview Rd		
Agency/Co.	GHA			Jurisdiction	IDOT		
Date Performed	02/19/2018			East/West Street	Golfview Road		
Analysis Year	2023			North/South Street	Rand Road		
Time Analyzed	Total PM			Peak Hour Factor	0.95		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	5276.900						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	1	2	1	0	1	2	0
Configuration			LTR				LTR			L	T	R		L	T	TR
Volume, V (veh/h)		0	0	0		18	0	15		0	2480	48		28	1397	0
Percent Heavy Vehicles (%)		0	0	0		0	0	7		0				0		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Left + Thru								1							

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

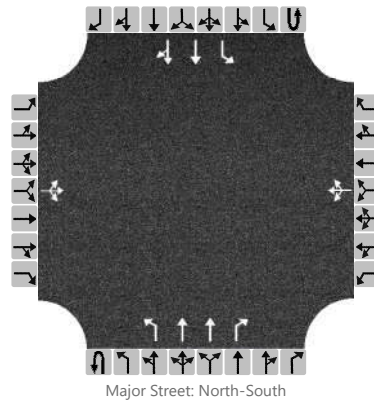
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			0				35				0				29	
Capacity, c (veh/h)			0				54				465				160	
v/c Ratio							0.65				0.00				0.18	
95% Queue Length, Q ₉₅ (veh)							2.6				0.0				0.6	
Control Delay (s/veh)			5.0				154.8				12.7				32.4	
Level of Service, LOS			A				F				B				D	
Approach Delay (s/veh)	5.0				154.8				0.0				0.6			
Approach LOS	A				F											

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	GHA			Intersection	Rand Rd/Golfview Rd		
Agency/Co.	GHA			Jurisdiction	IDOT		
Date Performed	02/19/2018			East/West Street	Golfview Road		
Analysis Year	2023			North/South Street	Rand Road		
Time Analyzed	Total SAT MID			Peak Hour Factor	0.95		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	5276.900						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	1	2	1	0	1	2	0
Configuration			LTR				LTR			L	T	R		L	T	TR
Volume, V (veh/h)		0	0	0		20	0	14		0	2074	35		16	1660	0
Percent Heavy Vehicles (%)		0	0	0		0	0	0		0				0		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Left + Thru								1							

Critical and Follow-up Headways

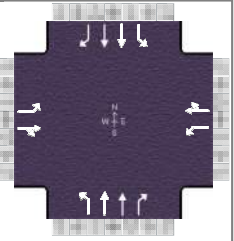
Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			0				36				0				17	
Capacity, c (veh/h)			0				82				364				239	
v/c Ratio							0.44				0.00				0.07	
95% Queue Length, Q ₉₅ (veh)							1.8				0.0				0.2	
Control Delay (s/veh)			5.0				78.9				14.9				21.2	
Level of Service, LOS			A				F				B				C	
Approach Delay (s/veh)	5.0				78.9				0.0				0.2			
Approach LOS	A				F											

HCS7 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	GHA			Duration, h	0.25		
Analyst	GHA	Analysis Date	Feb 19, 2018	Area Type	Other		
Jurisdiction	IDOT	Time Period	AM Peak	PHF	0.95		
Urban Street	US Route 12 (Rand Rd)		Analysis Year	2023 Total	Analysis Period	1 > 7:00	
Intersection	Rand Rd / Old Rand Rd		File Name	23B US12 Old Rand_AM.xus			
Project Description	5276.900						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	9	9	6	99	9	49	1	719	46	128	2345	1

Signal Information				Signal Timing (s)										
Cycle, s	140.0	Reference Phase	2	Green	0.1	7.9	90.9	3.0	3.4	7.7	1	2	3	4
Offset, s	0	Reference Point	Begin	Yellow	3.5	3.5	4.5	3.0	3.0	4.5	5	6	7	8
Uncoordinated	No	Simult. Gap E/W	On	Red	1.0	1.0	1.5	0.0	0.0	1.5				
Force Mode	Fixed	Simult. Gap N/S	On											

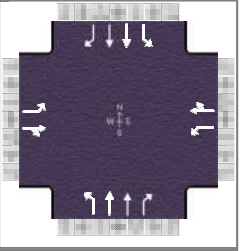
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	9	9	6	99	9	49	1	719	46	128	2345	1
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Parking (N _m), man/h	None			None			None			None		
Heavy Vehicles (P _{HV}), %	0	0		0	6		0	11	12	0	6	0
Ped / Bike / RTOR, /h	0	0	0	0	1	0	0	2	0	0	1	0
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	4	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
Turn Bay Length, ft	125	0		275	0		135	0	215	400	0	255
Grade (P _g), %		0			0			0			0	
Speed Limit, mi/h	20	20	20	25	25	25	45	45	45	45	45	45

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	14.0	24.0	14.0	24.0	15.0	82.0	20.0	87.0
Yellow Change Interval (Y), s	3.0	4.5	3.0	4.5	3.5	4.5	3.5	4.5
Red Clearance Interval (R _c), s	0.0	1.5	0.0	1.5	1.0	1.5	1.0	1.5
Minimum Green (G _{min}), s	3	8	3	8	3	15	3	15
Start-Up Lost Time (lt), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	3.0	4.0	3.0	4.0	3.0	7.0	3.0	7.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	Yes	Yes	Yes	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	GHA			Duration, h	0.25		
Analyst	GHA	Analysis Date	Feb 19, 2018	Area Type	Other		
Jurisdiction	IDOT	Time Period	AM Peak	PHF	0.95		
Urban Street	US Route 12 (Rand Rd)		Analysis Year	2023 Total	Analysis Period	1 > 7:00	
Intersection	Rand Rd / Old Rand Rd		File Name	23B US12 Old Rand_AM.xus			
Project Description	5276.900						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	9	9	6	99	9	49	1	719	46	128	2345	1

Signal Information				Signal Phases										
Cycle, s	140.0	Reference Phase	2											
Offset, s	0	Reference Point	Begin	Green	0.1	7.9	90.9	3.0	3.4	7.7				
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	3.5	4.5	3.0	3.0	4.5				
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	1.0	1.5	0.0	0.0	1.5				

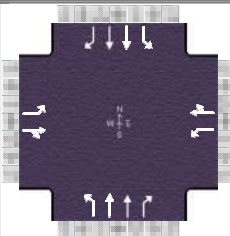
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	1.1	4.0	1.1	4.0	2.0	3.0	2.0	3.0
Phase Duration, s	6.0	13.7	12.4	20.2	4.6	96.9	17.0	109.2
Change Period, (Y+R _c), s	3.0	6.0	3.0	6.0	4.5	6.0	4.5	6.0
Max Allow Headway (MAH), s	4.2	5.4	4.2	5.4	4.0	0.0	4.0	0.0
Queue Clearance Time (g _s), s	2.7	3.2	9.4	7.2	2.1		12.3	
Green Extension Time (g _e), s	0.0	0.3	0.0	0.3	0.0	0.0	0.3	0.0
Phase Call Probability	0.99	0.97	1.00	1.00	0.04		0.99	
Max Out Probability	0.00	0.00	1.00	0.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	9	16		104	61		1	757	48	135	2468	1
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1772		1810	1553		1810	1741	1429	1810	1815	1577
Queue Service Time (g _s), s	0.7	1.2		7.4	5.2		0.1	5.8	1.7	10.3	78.1	0.0
Cycle Queue Clearance Time (g _c), s	0.7	1.2		7.4	5.2		0.1	5.8	1.7	10.3	78.1	0.0
Green Ratio (g/C)	0.08	0.06		0.14	0.10		0.00	0.65	0.65	0.09	0.74	0.74
Capacity (c), veh/h	158	98		239	157		2	2260	927	162	2677	1163
Volume-to-Capacity Ratio (X)	0.060	0.162		0.435	0.389		0.673	0.335	0.052	0.834	0.922	0.001
Back of Queue (Q), ft/ln (95 th percentile)	14.6	25.9		157.2	101.4		5.8	84.3	26.2	220.7	966	0.3
Back of Queue (Q), veh/ln (95 th percentile)	0.6	1.0		6.3	3.9		0.2	3.1	1.0	8.8	36.9	0.0
Queue Storage Ratio (RQ) (95 th percentile)	0.12	0.00		0.57	0.00		0.04	0.00	0.12	0.55	0.00	0.00
Uniform Delay (d ₁), s/veh	60.0	63.1		55.4	58.9		69.9	3.7	8.9	62.7	15.1	4.8
Incremental Delay (d ₂), s/veh	0.2	1.1		1.2	2.2		210.7	0.4	0.1	10.6	6.7	0.0
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	60.2	64.1		56.6	61.1		280.6	4.1	9.0	73.3	21.8	4.8
Level of Service (LOS)	E	E		E	E		F	A	A	E	C	A
Approach Delay, s/veh / LOS	62.7		E	58.3		E	4.8		A	24.4		C
Intersection Delay, s/veh / LOS	21.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.0	C	3.0	C	2.2	B	2.2	B
Bicycle LOS Score / LOS	0.5	A	0.8	A	1.2	A	2.6	C

HCS7 Signalized Intersection Intermediate Values

General Information					Intersection Information			
Agency	GHA				Duration, h	0.25		
Analyst	GHA	Analysis Date	Feb 19, 2018		Area Type	Other		
Jurisdiction	IDOT	Time Period	AM Peak		PHF	0.95		
Urban Street	US Route 12 (Rand Rd)		Analysis Year	2023 Total	Analysis Period	1 > 7:00		
Intersection	Rand Rd / Old Rand Rd		File Name	23B US12 Old Rand_AM.xus				
Project Description	5276.900							



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	9	9	6	99	9	49	1	719	46	128	2345	1

Signal Information																	
Cycle, s	140.0	Reference Phase	2														
Offset, s	0	Reference Point	Begin														
Uncoordinated	No	Simult. Gap E/W	On														
Force Mode	Fixed	Simult. Gap N/S	On														
		Green		0.1	7.9	90.9	3.0	3.4	7.7								
		Yellow		3.5	3.5	4.5	3.0	3.0	4.5								
		Red		1.0	1.0	1.5	0.0	0.0	1.5								

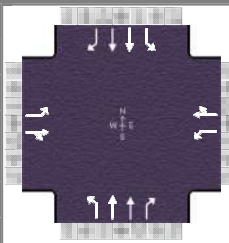
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	1.000	1.000	1.000	0.953	1.000	1.000	0.914	0.906	1.000	0.953	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000	1.000	0.952	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.933	0.933		0.857	0.857		0.000	0.847		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			0.986			0.979			0.979
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	1810	1063	709	1810	241	1312	1810	3481	1429	1810	3630	1577
Proportion of Vehicles Arriving on Green (P)	0.02	0.06	0.06	0.07	0.10	0.10	0.00	0.87	0.65	0.09	0.74	0.74
Incremental Delay Factor (k)	0.11	0.15		0.11	0.15		0.11	0.50	0.50	0.11	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	3.0	6.0	3.0	6.0	4.5	6.0	4.5	6.0
Green Ratio (g/C)	0.08	0.06	0.14	0.10	0.00	0.65	0.09	0.74
Permitted Saturation Flow Rate (s_p), veh/h/ln	1363	0	1420	0	0	0	0	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	7.7	0.0	9.7	0.0	0.0	0.0	0.0	0.0
Permitted Service Time (g_u), s	7.0	0.0	6.5	0.0	0.0	0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s	0.0		0.3					
Time to First Blockage (g_t), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{ts}), s								
Protected Right Saturation Flow (s_R), veh/h/ln						0		0
Protected Right Effective Green Time (g_R), s						0.0		0.0

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	2.224	0.00	2.224	0.00	1.557	0.00	1.557	0.00				
Pedestrian F_s / F_{delay}	0.000	0.166	0.000	0.162	0.000	0.086	0.000	0.063				
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b	110.31	62.49	202.21	56.59	1298.12	8.63	1474.91	4.83				
Bicycle F_w / F_v	-3.64	0.04	-3.64	0.27	-3.64	0.67	-3.64	2.15				

HCS7 Signalized Intersection Results Graphical Summary

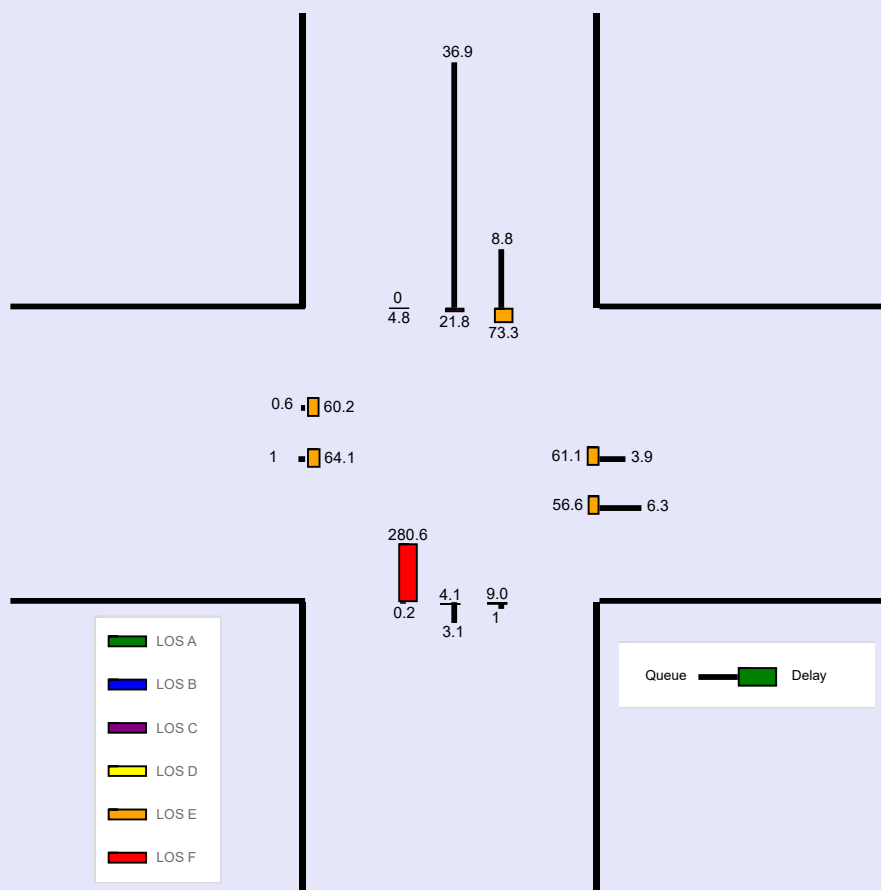
General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	GHA	Analysis Date	Feb 19, 2018	Area Type	Other
Jurisdiction	IDOT	Time Period	AM Peak	PHF	0.95
Urban Street	US Route 12 (Rand Rd)	Analysis Year	2023 Total	Analysis Period	1 > 7:00
Intersection	Rand Rd / Old Rand Rd	File Name	23B US12 Old Rand_AM.xus		
Project Description	5276.900				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	9	9	6	99	9	49	1	719	46	128	2345	1

Signal Information				Signal Phases									
Cycle, s	140.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin	Green	0.1	7.9	90.9	3.0	3.4	7.7			
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	3.5	4.5	3.0	3.0	4.5			
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	1.0	1.5	0.0	0.0	1.5			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Back of Queue (Q), ft/ln (95 th percentile)	14.6	25.9		157.2	101.4		5.8	84.3	26.2	220.7	966	0.3
Back of Queue (Q), veh/ln (95 th percentile)	0.6	1.0		6.3	3.9		0.2	3.1	1.0	8.8	36.9	0.0
Queue Storage Ratio (RQ) (95 th percentile)	0.12	0.00		0.57	0.00		0.04	0.00	0.12	0.55	0.00	0.00
Control Delay (d), s/veh	60.2	64.1		56.6	61.1		280.6	4.1	9.0	73.3	21.8	4.8
Level of Service (LOS)	E	E		E	E		F	A	A	E	C	A
Approach Delay, s/veh / LOS	62.7		E	58.3		E	4.8		A	24.4		C
Intersection Delay, s/veh / LOS	21.8						C					



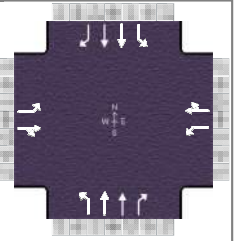
--- Messages ---

No errors or warnings exist.

--- Comments ---

HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	GHA	Analysis Date	Feb 19, 2018	Area Type	Other
Jurisdiction	IDOT	Time Period	PM Peak	PHF	0.95
Urban Street	US Route 12 (Rand Rd)	Analysis Year	2023 Total	Analysis Period	1 > 5:00
Intersection	Rand Rd / Old Rand Rd	File Name	23B US12 Old Rand_PM.xus		
Project Description	5276.900				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	32	13	11	148	17	188	3	2323	59	144	1258	13

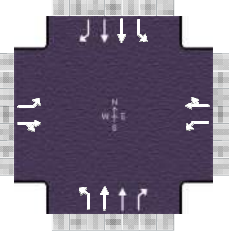
Signal Information				Signal Phases											
Cycle, s	150.0	Reference Phase	2												
Offset, s	0	Reference Point	Begin	Green	0.4	6.3	93.0	4.5	3.5	15.3					
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	3.5	4.5	3.0	3.0	4.5					
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	1.0	1.5	0.0	0.0	1.5					

Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	32	13	11	148	17	188	3	2323	59	144	1258	13
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Parking (N _m), man/h		None			None			None			None	
Heavy Vehicles (P _{HV}), %	0	0		0	1		0	3	3	0	4	0
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	1	0	2	0	0
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	4	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
Turn Bay Length, ft	125	0		275	0		135	0	215	400	0	255
Grade (P _g), %		0			0			0			0	
Speed Limit, mi/h	20	20	20	25	25	25	45	45	45	45	45	45

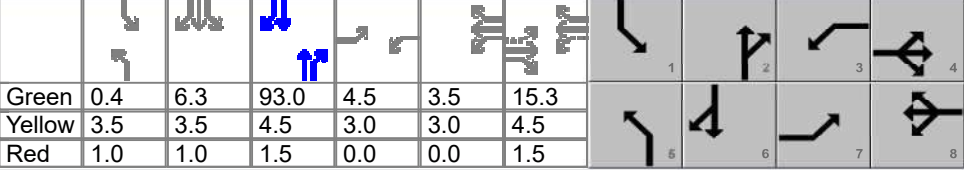
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	14.0	22.0	14.0	22.0	15.0	99.0	15.0	99.0
Yellow Change Interval (Y), s	3.0	4.5	3.0	4.5	3.5	4.5	3.5	4.5
Red Clearance Interval (R _c), s	0.0	1.5	0.0	1.5	1.0	1.5	1.0	1.5
Minimum Green (G _{min}), s	3	8	3	8	3	15	3	15
Start-Up Lost Time (l _t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	3.0	4.0	3.0	4.0	3.0	7.0	3.0	7.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	Yes	Yes	Yes	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	GHA			Duration, h	0.25	
Analyst	GHA	Analysis Date	Feb 19, 2018	Area Type	Other	
Jurisdiction	IDOT	Time Period	PM Peak	PHF	0.95	
Urban Street	US Route 12 (Rand Rd)	Analysis Year	2023 Total	Analysis Period	1 > 5:00	
Intersection	Rand Rd / Old Rand Rd	File Name	23B US12 Old Rand_PM.xus			
Project Description	5276.900					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	32	13	11	148	17	188	3	2323	59	144	1258	13

Signal Information																								
Cycle, s	150.0	Reference Phase	2	Green	0.4	6.3	93.0	4.5	3.5	15.3	Yellow	3.5	3.5	4.5	3.0	3.0	4.5	Red	1.0	1.0	1.5	0.0	0.0	1.5
Offset, s	0	Reference Point	Begin	Uncoordinated	No	Simult. Gap E/W	On	Force Mode	Fixed	Simult. Gap N/S	On													

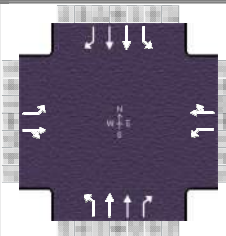
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	1.1	4.0	1.1	4.0	2.0	3.0	2.0	3.0
Phase Duration, s	7.5	21.3	14.0	27.8	4.9	99.0	15.7	109.8
Change Period, ($Y+R_c$), s	3.0	6.0	3.0	6.0	4.5	6.0	4.5	6.0
Max Allow Headway (MAH), s	4.2	5.4	4.2	5.4	4.0	0.0	4.0	0.0
Queue Clearance Time (g_s), s	4.5	4.0	13.0	21.7	2.3		13.2	
Green Extension Time (g_e), s	0.0	1.0	0.0	0.1	0.0	0.0	0.0	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	0.12		1.00	
Max Out Probability	0.05	0.06	1.00	1.00	0.00		1.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	34	25		156	216		3	2445	62	152	1324	14
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1755		1810	1618		1810	1859	1540	1810	1845	1608
Queue Service Time (g_s), s	2.5	2.0		11.0	19.7		0.3	93.0	2.4	11.2	25.9	0.4
Cycle Queue Clearance Time (g_c), s	2.5	2.0		11.0	19.7		0.3	93.0	2.4	11.2	25.9	0.4
Green Ratio (g/C)	0.13	0.10		0.19	0.15		0.00	0.62	0.62	0.07	0.69	0.69
Capacity (c), veh/h	103	179		306	235		4	2305	955	135	2553	1113
Volume-to-Capacity Ratio (X)	0.327	0.141		0.509	0.916		0.707	1.061	0.065	1.122	0.519	0.012
Back of Queue (Q), ft/ln (95 th percentile)	54.4	41.5		230.8	400.6		11.7	1002.3	38.2	375	386.9	6
Back of Queue (Q), veh/ln (95 th percentile)	2.2	1.7		9.2	15.9		0.5	39.2	1.5	15.0	15.0	0.2
Queue Storage Ratio (RQ) (95 th percentile)	0.44	0.00		0.84	0.00		0.09	0.00	0.18	0.94	0.00	0.02
Uniform Delay (d_1), s/veh	58.3	61.3		54.2	63.2		74.8	13.0	11.3	69.4	11.1	7.2
Incremental Delay (d_2), s/veh	1.8	0.5		1.4	36.2		112.9	37.3	0.1	114.1	0.8	0.0
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	60.2	61.9		55.6	99.3		187.7	50.3	11.4	183.5	11.9	7.2
Level of Service (LOS)	E	E		E	F		F	F	B	F	B	A
Approach Delay, s/veh / LOS	60.9	E		81.0	F		49.5	D		29.3	C	
Intersection Delay, s/veh / LOS	45.5						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.0	C	3.0	C	2.3	B	2.2	B
Bicycle LOS Score / LOS	0.6	A	1.1	A	2.6	C	1.7	B

HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	GHA			Duration, h	0.25		
Analyst	GHA	Analysis Date	Feb 19, 2018	Area Type	Other		
Jurisdiction	IDOT	Time Period	PM Peak	PHF	0.95		
Urban Street	US Route 12 (Rand Rd)		Analysis Year	2023 Total	Analysis Period	1 > 5:00	
Intersection	Rand Rd / Old Rand Rd		File Name	23B US12 Old Rand_PM.xus			
Project Description	5276.900						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	32	13	11	148	17	188	3	2323	59	144	1258	13

Signal Information													
Cycle, s	150.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin										
Uncoordinated	No	Simult. Gap E/W	On	Green	0.4	6.3	93.0	4.5	3.5	15.3			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	4.5	3.0	3.0	4.5			
				Red	1.0	1.0	1.5	0.0	0.0	1.5			

Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	1.000	1.000	1.000	0.992	1.000	1.000	0.977	0.977	1.000	0.969	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000	1.000	0.952	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.924	0.924		0.858	0.858		0.000	0.847		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000			0.979			0.999
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	1810	951	804	1810	134	1484	1810	3719	1540	1810	3689	1608
Proportion of Vehicles Arriving on Green (P)	0.03	0.10	0.10	0.07	0.15	0.15	0.00	0.83	0.62	0.07	0.69	0.69
Incremental Delay Factor (k)	0.11	0.15		0.12	0.42		0.11	0.50	0.50	0.50	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	3.0	6.0	3.0	6.0	4.5	6.0	4.5	6.0
Green Ratio (g/C)	0.13	0.10	0.19	0.15	0.00	0.62	0.07	0.69
Permitted Saturation Flow Rate (s_p), veh/h/ln	1184	0	1408	0	0	0	0	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	15.3	0.0	17.3	0.0	0.0	0.0	0.0	0.0
Permitted Service Time (g_u), s	0.1	0.0	13.3	0.0	0.0	0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s	0.1		1.1					
Time to First Blockage (g_t), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{ts}), s								
Protected Right Saturation Flow (s_R), veh/h/ln						0		0
Protected Right Effective Green Time (g_R), s						0.0		0.0

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	2.224	0.00	2.224	0.00	1.557	0.00	1.557	0.00	1.557	0.00	1.557	0.00
Pedestrian F_s / F_{delay}	0.000	0.164	0.000	0.161	0.000	0.096	0.000	0.096	0.000	0.079	0.000	0.079
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b	204.28	60.46	291.05	54.76	1239.89	10.84	1384.12	7.11				
Bicycle F_w / F_v	-3.64	0.10	-3.64	0.61	-3.64	2.07	-3.64	1.23				

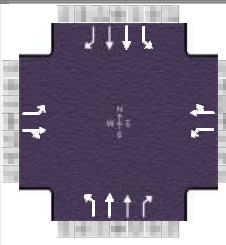
HCS7 Signalized Intersection Results Graphical Summary

General Information

Agency	GHA			Duration, h	0.25
Analyst	GHA	Analysis Date	Feb 19, 2018	Area Type	Other
Jurisdiction	IDOT	Time Period	PM Peak	PHF	0.95
Urban Street	US Route 12 (Rand Rd)	Analysis Year	2023 Total	Analysis Period	1 > 5:00
Intersection	Rand Rd / Old Rand Rd	File Name	23B US12 Old Rand_PM.xus		
Project Description	5276.900				

Intersection Information

Duration, h	0.25
Area Type	Other
PHF	0.95
Analysis Period	1 > 5:00



Demand Information

Approach Movement	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	32	13	11	148	17	188	3	2323	59	144	1258	13

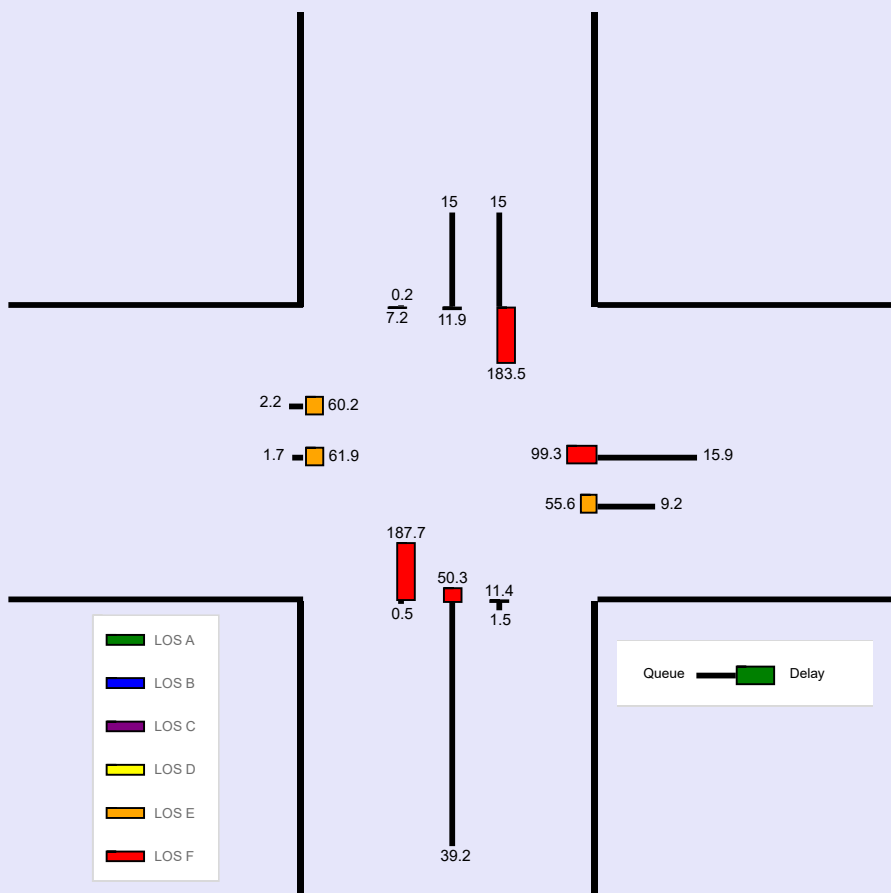
Signal Information

Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.4	6.3	93.0	4.5	3.5	15.3
Yellow	3.5	3.5	4.5	3.0	3.0	4.5
Red	1.0	1.0	1.5	0.0	0.0	1.5

Movement Group Results

Approach Movement	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (Q), ft/ln (95 th percentile)	54.4	41.5		230.8	400.6		11.7	1002.3	38.2	375	386.9	6
Back of Queue (Q), veh/ln (95 th percentile)	2.2	1.7		9.2	15.9		0.5	39.2	1.5	15.0	15.0	0.2
Queue Storage Ratio (RQ) (95 th percentile)	0.44	0.00		0.84	0.00		0.09	0.00	0.18	0.94	0.00	0.02
Control Delay (d), s/veh	60.2	61.9		55.6	99.3		187.7	50.3	11.4	183.5	11.9	7.2
Level of Service (LOS)	E	E		E	F		F	F	B	F	B	A
Approach Delay, s/veh / LOS	60.9	E		81.0	F		49.5	D		29.3	C	
Intersection Delay, s/veh / LOS	45.5						D					



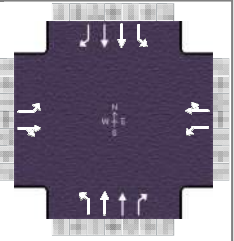
--- Messages ---

No errors or warnings exist.

--- Comments ---

HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	GHA	Analysis Date	Feb 19, 2018	Area Type	Other
Jurisdiction	IDOT	Time Period	SAT Peak	PHF	0.95
Urban Street	US Route 12 (Rand Rd)	Analysis Year	2023 Total	Analysis Period	1 > 1:00
Intersection	Rand Rd / Old Rand Rd	File Name	23B US12 Old Rand_SAT.xus		
Project Description	5276.900				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	15	11	10	172	11	136	5	1954	76	138	1528	14

Signal Information				Signal Timing (s)													
Cycle, s	130.0	Reference Phase	2	Green	0.5	7.5	76.2	3.2	7.7	8.0	Yellow	3.5	3.5	4.5	3.0	3.0	4.5
Offset, s	0	Reference Point	Begin	Red	1.0	1.0	1.5	0.0	0.0	1.5							
Uncoordinated	No	Simult. Gap E/W	On														
Force Mode	Fixed	Simult. Gap N/S	On														

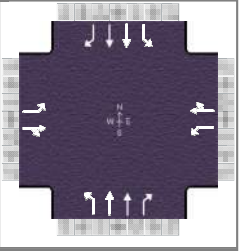
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	15	11	10	172	11	136	5	1954	76	138	1528	14
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Parking (N _m), man/h	None			None			None			None		
Heavy Vehicles (P _{HV}), %	12	6		0	1		0	0	0	0	0	0
Ped / Bike / RTOR, /h	27	0	0	0	0	0	2	0	0	2	0	0
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	4	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
Turn Bay Length, ft	125	0		275	0		135	0	215	400	0	255
Grade (P _g), %		0			0			0			0	
Speed Limit, mi/h	20	20	20	25	25	25	45	45	45	45	45	45

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	17.0	23.0	17.0	23.0	14.0	70.0	20.0	76.0
Yellow Change Interval (Y), s	3.0	4.5	3.0	4.5	3.5	4.5	3.5	4.5
Red Clearance Interval (R _c), s	0.0	1.5	0.0	1.5	1.0	1.5	1.0	1.5
Minimum Green (G _{min}), s	3	8	3	8	3	15	3	15
Start-Up Lost Time (l _t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	3.0	4.0	3.0	4.0	3.0	7.0	3.0	7.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	Yes	Yes	Yes	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	GHA			Duration, h	0.25		
Analyst	GHA	Analysis Date	Feb 19, 2018	Area Type	Other		
Jurisdiction	IDOT	Time Period	SAT Peak	PHF	0.95		
Urban Street	US Route 12 (Rand Rd)		Analysis Year	2023 Total	Analysis Period	1 > 1:00	
Intersection	Rand Rd / Old Rand Rd		File Name	23B US12 Old Rand_SAT.xus			
Project Description	5276.900						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	15	11	10	172	11	136	5	1954	76	138	1528	14

Signal Information				Signal Timing (s)										
Cycle, s	130.0	Reference Phase	2											
Offset, s	0	Reference Point	Begin	Green	0.5	7.5	76.2	3.2	7.7	8.0				
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	3.5	4.5	3.0	3.0	4.5				
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	1.0	1.5	0.0	0.0	1.5				

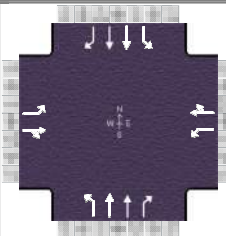
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	1.1	4.0	1.1	4.0	2.0	3.0	2.0	3.0
Phase Duration, s	6.2	14.0	16.8	24.6	5.0	82.2	17.0	94.2
Change Period, (Y+R _c), s	3.0	6.0	3.0	6.0	4.5	6.0	4.5	6.0
Max Allow Headway (MAH), s	4.2	5.4	4.2	5.4	4.0	0.0	4.0	0.0
Queue Clearance Time (g _s), s	3.2	3.8	13.8	13.8	2.4		12.3	
Green Extension Time (g _e), s	0.0	0.8	0.0	0.8	0.0	0.0	0.3	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	0.17		0.99	
Max Out Probability	0.00	0.02	1.00	0.01	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	16	22		181	155		5	2057	80	145	1608	15
Adjusted Saturation Flow Rate (s), veh/h/ln	1640	1547		1810	1616		1810	1904	1607	1810	1904	1608
Queue Service Time (g _s), s	1.2	1.8		11.8	11.8		0.4	54.8	2.8	10.3	30.6	0.4
Cycle Queue Clearance Time (g _c), s	1.2	1.8		11.8	11.8		0.4	54.8	2.8	10.3	30.6	0.4
Green Ratio (g/C)	0.09	0.06		0.18	0.14		0.00	0.59	0.59	0.10	0.68	0.68
Capacity (c), veh/h	138	95		315	232		7	2232	942	174	2583	1090
Volume-to-Capacity Ratio (X)	0.115	0.232		0.574	0.668		0.727	0.922	0.085	0.835	0.623	0.014
Back of Queue (Q), ft/ln (95 th percentile)	24.7	35.5		237.3	223.1		15.4	503	45.2	219.2	431.1	5.7
Back of Queue (Q), veh/ln (95 th percentile)	0.9	1.4		9.5	8.9		0.6	20.1	1.8	8.8	17.2	0.2
Queue Storage Ratio (RQ) (95 th percentile)	0.20	0.00		0.86	0.00		0.11	0.00	0.21	0.55	0.00	0.02
Uniform Delay (d ₁), s/veh	54.9	58.1		48.3	52.7		64.7	11.9	11.7	57.7	11.7	6.8
Incremental Delay (d ₂), s/veh	0.4	1.8		2.5	4.7		84.8	7.8	0.2	10.0	1.1	0.0
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	55.3	59.8		50.7	57.4		149.5	19.6	11.9	67.7	12.8	6.8
Level of Service (LOS)	E	E		D	E		F	B	B	E	B	A
Approach Delay, s/veh / LOS	57.9		E	53.8		D	19.7		B	17.3		B
Intersection Delay, s/veh / LOS	21.7						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.0	C	3.0	C	2.3	B	2.2	B
Bicycle LOS Score / LOS	0.6	A	1.0	A	2.3	B	1.9	B

HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	GHA			Duration, h	0.25		
Analyst	GHA	Analysis Date	Feb 19, 2018	Area Type	Other		
Jurisdiction	IDOT	Time Period	SAT Peak	PHF	0.95		
Urban Street	US Route 12 (Rand Rd)		Analysis Year	2023 Total	Analysis Period	1 > 1:00	
Intersection	Rand Rd / Old Rand Rd		File Name	23B US12 Old Rand_SAT.xus			
Project Description	5276.900						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	15	11	10	172	11	136	5	1954	76	138	1528	14

Signal Information													
Cycle, s	130.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin										
Uncoordinated	No	Simult. Gap E/W	On	Green	0.5	7.5	76.2	3.2	7.7	8.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	4.5	3.0	3.0	4.5			
				Red	1.0	1.0	1.5	0.0	0.0	1.5			

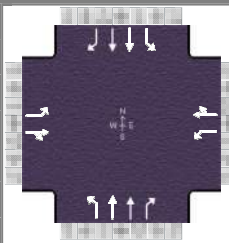
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.906	0.953	1.000	1.000	0.992	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000	1.000	0.952	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.854	0.854		0.857	0.857		0.000	0.847		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			0.917			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			0.868			1.000			0.998			0.999
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	1640	810	737	1810	121	1495	1810	3808	1607	1810	3808	1608
Proportion of Vehicles Arriving on Green (P)	0.02	0.06	0.06	0.11	0.14	0.14	0.00	0.78	0.59	0.10	0.68	0.68
Incremental Delay Factor (k)	0.11	0.15		0.16	0.15		0.11	0.50	0.50	0.11	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	3.0	6.0	3.0	6.0	4.5	6.0	4.5	6.0
Green Ratio (g/C)	0.09	0.06	0.18	0.14	0.00	0.59	0.10	0.68
Permitted Saturation Flow Rate (s_p), veh/h/ln	1135	0	1412	0	0	0	0	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	8.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0
Permitted Service Time (g_u), s	4.9	0.0	6.2	0.0	0.0	0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s	0.0		0.6					
Time to First Blockage (g_t), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{ts}), s								
Protected Right Saturation Flow (s_R), veh/h/ln						0		0
Protected Right Effective Green Time (g_R), s						0.0		0.0

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	2.224	0.00	2.224	0.00	1.557	0.00	1.557	0.00	1.557	0.00		
Pedestrian F_s / F_{delay}	0.000	0.162	0.000	0.155	0.000	0.097	0.000	0.076				
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b	122.96	57.25	286.85	47.69	1172.25	11.13	1356.47	6.73				
Bicycle F_w / F_v	-3.64	0.06	-3.64	0.55	-3.64	1.77	-3.64	1.46				

HCS7 Signalized Intersection Results Graphical Summary

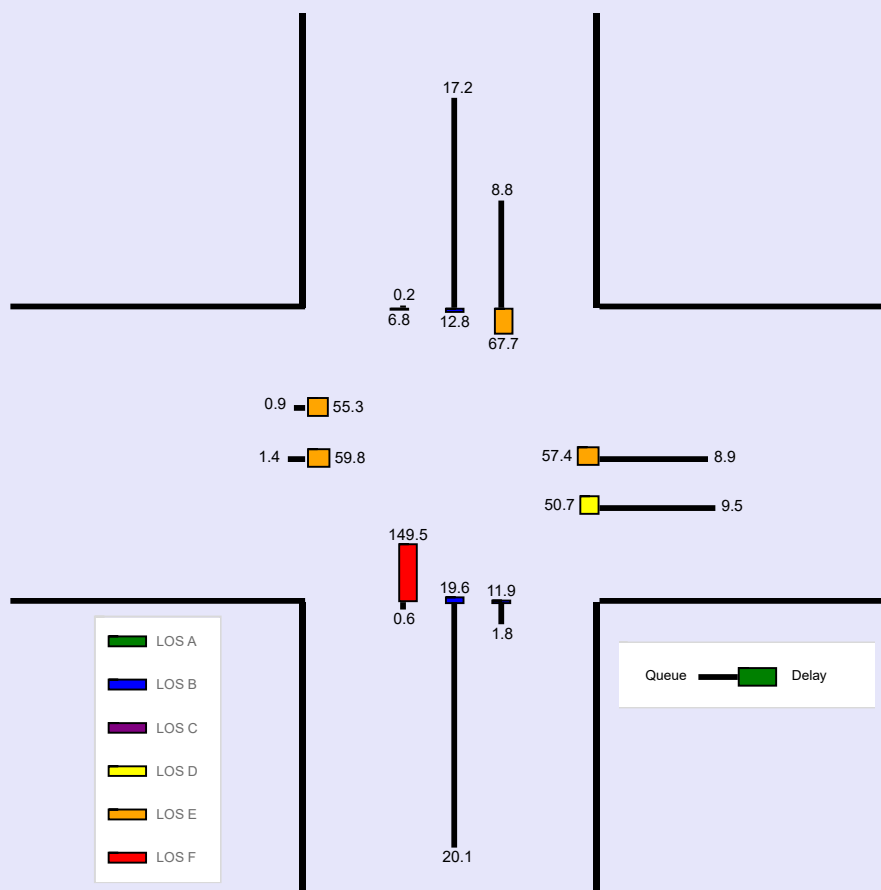
General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	GHA	Analysis Date	Feb 19, 2018	Area Type	Other
Jurisdiction	IDOT	Time Period	SAT Peak	PHF	0.95
Urban Street	US Route 12 (Rand Rd)	Analysis Year	2023 Total	Analysis Period	1 > 1:00
Intersection	Rand Rd / Old Rand Rd	File Name	23B US12 Old Rand_SAT.xus		
Project Description	5276.900				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	15	11	10	172	11	136	5	1954	76	138	1528	14

Signal Information				Signal Timing (s)										
Cycle, s	130.0	Reference Phase	2											
Offset, s	0	Reference Point	Begin	Green	0.5	7.5	76.2	3.2	7.7	8.0				
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	3.5	4.5	3.0	3.0	4.5				
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	1.0	1.5	0.0	0.0	1.5				

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Back of Queue (Q), ft/ln (95 th percentile)	24.7	35.5		237.3	223.1		15.4	503	45.2	219.2	431.1	5.7
Back of Queue (Q), veh/ln (95 th percentile)	0.9	1.4		9.5	8.9		0.6	20.1	1.8	8.8	17.2	0.2
Queue Storage Ratio (RQ) (95 th percentile)	0.20	0.00		0.86	0.00		0.11	0.00	0.21	0.55	0.00	0.02
Control Delay (d), s/veh	55.3	59.8		50.7	57.4		149.5	19.6	11.9	67.7	12.8	6.8
Level of Service (LOS)	E	E		D	E		F	B	B	E	B	A
Approach Delay, s/veh / LOS	57.9	E		53.8	D		19.7	B		17.3	B	
Intersection Delay, s/veh / LOS	21.7						C					



--- Messages ---

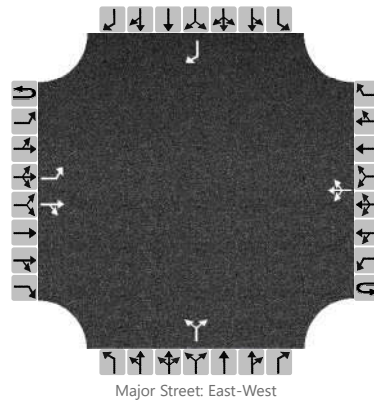
No errors or warnings exist.

--- Comments ---

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	GHA			Intersection	Old Rand/Bayshore West		
Agency/Co.	GHA			Jurisdiction	IDOT		
Date Performed	02/19/2018			East/West Street	Old Rand Road		
Analysis Year	2023			North/South Street	BayshoreVillageWest/Site		
Time Analyzed	Total AM			Peak Hour Factor	0.93		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	5276.900						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12	
Priority																
Number of Lanes	0	1	1	0	0	0	1	0	0	1	0		0	0	1	
Configuration		L		TR			LTR				LR					R
Volume, V (veh/h)		89	94	0		0	116	30		2		1				39
Percent Heavy Vehicles (%)		3				0				0		0				3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

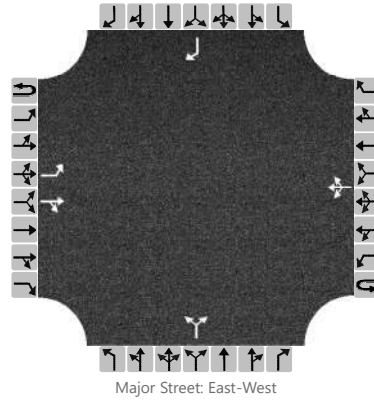
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		96				0					3						42
Capacity, c (veh/h)		1415				1499					558						894
v/c Ratio		0.07				0.00					0.01						0.05
95% Queue Length, Q ₉₅ (veh)		0.2				0.0					0.0						0.1
Control Delay (s/veh)		7.7				7.4					11.5						9.2
Level of Service, LOS		A				A					B						A
Approach Delay (s/veh)	3.8				0.0				11.5				9.2				
Approach LOS									B				A				

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	GHA			Intersection	Old Rand/Bayshore West		
Agency/Co.	GHA			Jurisdiction	IDOT		
Date Performed	02/19/2018			East/West Street	Old Rand Road		
Analysis Year	2023			North/South Street	BayshoreVillageWest/Site		
Time Analyzed	Total PM			Peak Hour Factor	0.95		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	5276.900						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	1	1	0	0	0	1	0		0	1	0		0	0	1
Configuration		L		TR			LTR				LR					R
Volume, V (veh/h)		111	103	2		0	270	37		0		2				83
Percent Heavy Vehicles (%)		3				0				0		0				3
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized		No			No					No			No			
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

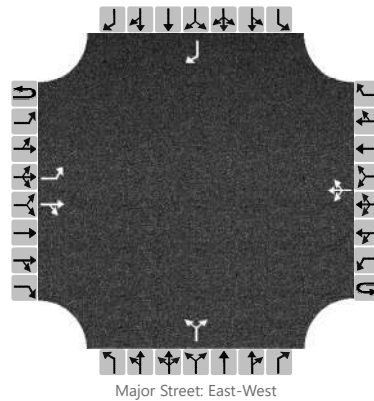
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		117			0					2						87
Capacity, c (veh/h)		1230			1480					933						726
v/c Ratio		0.10			0.00					0.00						0.12
95% Queue Length, Q ₉₅ (veh)		0.3			0.0					0.0						0.4
Control Delay (s/veh)		8.2			7.4					8.9						10.6
Level of Service, LOS		A			A					A						B
Approach Delay (s/veh)		4.2			0.0					8.9			10.6			
Approach LOS										A			B			

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	GHA			Intersection	Old Rand/Bayshore West		
Agency/Co.	GHA			Jurisdiction	IDOT		
Date Performed	2/19/2018			East/West Street	Old Rand Road		
Analysis Year	2023			North/South Street	BayshoreVillageWest/Site		
Time Analyzed	Total SAT MID			Peak Hour Factor	0.95		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	5276.900						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12	
Priority																
Number of Lanes	0	1	1	0	0	0	1	0	0	1	0		0	0	1	
Configuration		L		TR			LTR				LR					R
Volume, V (veh/h)		125	105	0		1	201	42		0		2				118
Percent Heavy Vehicles (%)		3				0				0		0				3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

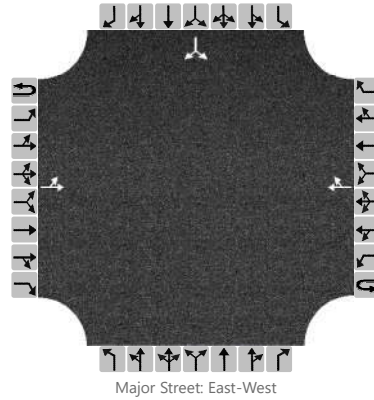
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		132				1					2					124
Capacity, c (veh/h)		1302				1486					944					790
v/c Ratio		0.10				0.00					0.00					0.16
95% Queue Length, Q ₉₅ (veh)		0.3				0.0					0.0					0.6
Control Delay (s/veh)		8.1				7.4					8.8					10.4
Level of Service, LOS		A				A					A					B
Approach Delay (s/veh)	4.4				0.0				8.8				10.4			
Approach LOS									A				B			

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	GHA			Intersection	Old Rand / Pine Tree		
Agency/Co.	GHA			Jurisdiction	Village		
Date Performed	02/19/2018			East/West Street	Old Rand Road		
Analysis Year	2023			North/South Street	Pine Tree Row		
Time Analyzed	Total AM			Peak Hour Factor	0.88		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	5276.900						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume, V (veh/h)		4	91				103	12						47		43
Percent Heavy Vehicles (%)		0												0		2
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

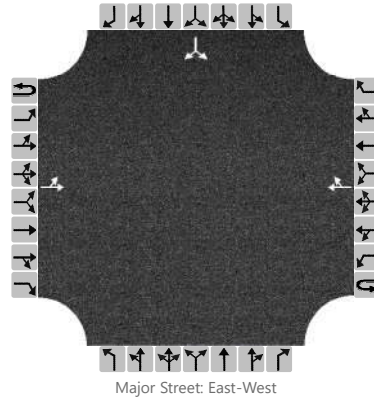
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		5														102
Capacity, c (veh/h)		1438														807
v/c Ratio		0.00														0.13
95% Queue Length, Q ₉₅ (veh)		0.0														0.4
Control Delay (s/veh)		7.5														10.1
Level of Service, LOS		A														B
Approach Delay (s/veh)		0.4													10.1	
Approach LOS														B		

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	GHA			Intersection	Old Rand / Pine Tree		
Agency/Co.	GHA			Jurisdiction	Village		
Date Performed	02/19/2018			East/West Street	Old Rand Road		
Analysis Year	2023			North/South Street	Pine Tree Row		
Time Analyzed	Total PM			Peak Hour Factor	0.95		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	5276.900						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12	
Priority																	
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0	
Configuration		LT						TR							LR		
Volume, V (veh/h)		18	87				279	76						31		28	
Percent Heavy Vehicles (%)		0												0		0	
Proportion Time Blocked																	
Percent Grade (%)																0	
Right Turn Channelized		No			No				No				No				
Median Type/Storage		Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

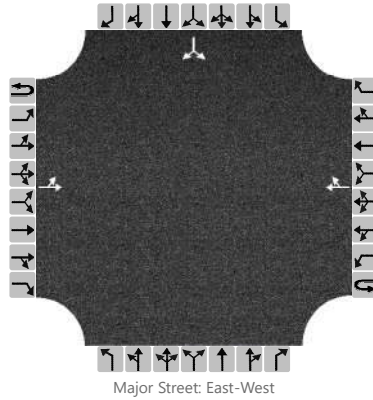
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		19														62	
Capacity, c (veh/h)		1177														604	
v/c Ratio		0.02														0.10	
95% Queue Length, Q ₉₅ (veh)		0.0														0.3	
Control Delay (s/veh)		8.1														11.6	
Level of Service, LOS		A														B	
Approach Delay (s/veh)		1.5												11.6			
Approach LOS														B			

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	GHA			Intersection	Old Rand / Pine Tree		
Agency/Co.	GHA			Jurisdiction	Village		
Date Performed	2/19/2018			East/West Street	Old Rand Road		
Analysis Year	2023			North/South Street	Pine Tree Row		
Time Analyzed	Total SAT MID			Peak Hour Factor	0.92		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	5276.900						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume, V (veh/h)		22	85				212	48						40		32
Percent Heavy Vehicles (%)		0												0		0
Proportion Time Blocked																
Percent Grade (%)																0
Right Turn Channelized		No			No				No			No				
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

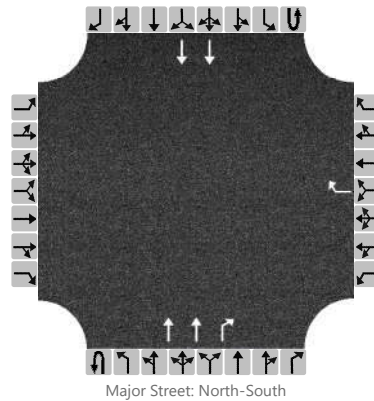
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		24														78
Capacity, c (veh/h)		1258														650
v/c Ratio		0.02														0.12
95% Queue Length, Q ₉₅ (veh)		0.1														0.4
Control Delay (s/veh)		7.9														11.3
Level of Service, LOS		A														B
Approach Delay (s/veh)		1.8												11.3		
Approach LOS														B		

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	GHA			Intersection	Rand Rd / Site RIRO		
Agency/Co.	GHA			Jurisdiction	IDOT		
Date Performed	02/19/2018			East/West Street	Site RIRO		
Analysis Year	2023			North/South Street	Rand Rd		
Time Analyzed	Total AM			Peak Hour Factor	0.95		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	5276.900						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	1		0	2	1		0	2	0
Configuration								R			T	R			T	
Volume, V (veh/h)								34			708	69				2474
Percent Heavy Vehicles (%)								0								
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

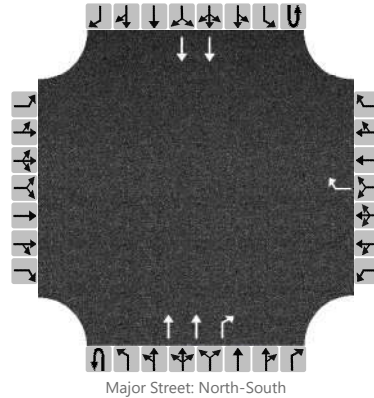
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)								36								
Capacity, c (veh/h)								631								
v/c Ratio								0.06								
95% Queue Length, Q ₉₅ (veh)								0.2								
Control Delay (s/veh)								11.0								
Level of Service, LOS								B								
Approach Delay (s/veh)					11.0											
Approach LOS					B											

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	GHA	Intersection	Rand Rd / Site RIRO
Agency/Co.	GHA	Jurisdiction	IDOT
Date Performed	02/19/2018	East/West Street	Site RIRO
Analysis Year	2023	North/South Street	Rand Rd
Time Analyzed	Total PM	Peak Hour Factor	0.95
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	5276.900		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound					
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R		
Movement																		
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6		
Number of Lanes		0	0	0		0	0	1		0	0	2	1		0	0	2	0
Configuration								R			T	R			T			
Volume, V (veh/h)								70			2457	85				1415		
Percent Heavy Vehicles (%)								0										
Proportion Time Blocked																		
Percent Grade (%)					0													
Right Turn Channelized	No				No				No				No					
Median Type/Storage	Undivided																	

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

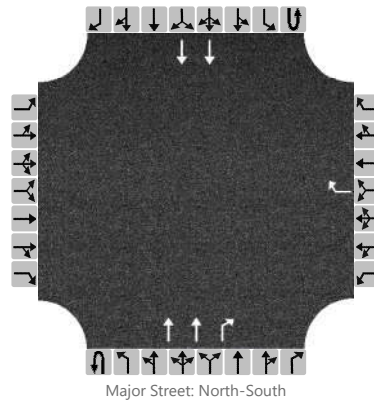
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)									74							
Capacity, c (veh/h)									156							
v/c Ratio									0.47							
95% Queue Length, Q ₉₅ (veh)									2.2							
Control Delay (s/veh)									47.2							
Level of Service, LOS									E							
Approach Delay (s/veh)					47.2											
Approach LOS					E											

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	GHA	Intersection	Rand Rd / Site RIRO
Agency/Co.	GHA	Jurisdiction	IDOT
Date Performed	02/19/2018	East/West Street	Site RIRO
Analysis Year	2023	North/South Street	Rand Rd
Time Analyzed	Total SAT	Peak Hour Factor	0.95
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	5276.900		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	1	0	0	2	1	0	0	2	0
Configuration								R			T	R			T	
Volume, V (veh/h)								100			2009	96				1680
Percent Heavy Vehicles (%)								0								
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)									7.1								
Critical Headway (sec)									7.10								
Base Follow-Up Headway (sec)									3.9								
Follow-Up Headway (sec)									3.90								

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)									105								
Capacity, c (veh/h)									224								
v/c Ratio									0.47								
95% Queue Length, Q ₉₅ (veh)									2.3								
Control Delay (s/veh)									34.4								
Level of Service, LOS									D								
Approach Delay (s/veh)					34.4												
Approach LOS					D												