



GREEN INTERNATIONAL AFFILIATES, INC.

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To: Ms. Karen Sherman, Town Planner
Town of Holliston
703 Washington Street
Holliston, MA 01746

From: Corinne Tobias, PE, PTOE
Project Manager
Transportation Planning Group
Green International Associates, Inc.
239 Littleton Road, Suite 3
Westford, MA 01886

Cc: Jeffrey S. Dirk., PE, PTOE, FITE
Partner
Vanasse & Associates, Inc

Date: September 16, 2020

Project Name: Geoffrey Park Residential Community

Project Number: Green No. 20082

Subject: Response to Transportation Peer Review Comments

This memorandum summarizes our revised responses to the Transportation Peer Review Comments prepared by Vanasse & Associates, Inc. (VAI), dated August 24, 2020, and comments received at the Public Hearing on September 02, 2020.

Comment: *"A letter should be provided by the Professional Engineer attesting to their oversight in preparing the document and providing their Massachusetts Professional Engineer Registration number and discipline."*

Response: The document was prepared with the oversight of a Professional Engineer, Corinne Tobias, Civil Engineering Discipline, License Number 53048. This letter is signed by the same engineer.

Traffic Volumes

Comment: *"The study area should be expanded to include the intersections of Cedar Street at Turner Road and Ashland Street at Turner Road as all Project-related traffic will travel through one of these intersections to access the project site. We note that traffic volumes are provided for both of these intersections on the figures in the July 2020 TIAs."*

Response: Cedar Street at Turner Road and Ashland Street at Road have been added to the crash data calculations.

Comment: *"The data collection effort and establishment of the seasonal adjustment were completed in accordance with standard Traffic Engineering and Transportation Planning practices; however, the traffic count data needs to be adjusted following the guidance issued by MassDOT for Transportation Impact Assessments (TIAs) conducted during the COVID-19 pandemic and the Governor's phased "Reopening Massachusetts" strategy.¹ We would suggest that the Applicant's engineer obtain historic traffic count data for a location proximate to the study area and compare July 2020 traffic count data to historic traffic counts for July in order to develop an appropriate adjustment factor."*

Response: Permanent count station data was gathered to determine the affect Covid-19 had on the traffic volumes in the area. Two permanent stations were used for comparison, AET08 located on I-90, east of

Cordaville to the north of the project, and 6125 located on 495 at the Franklin Town Line to the south of the project. The difference between the July 2019 and 2020 traffic volumes were compared and added to the July 1st, 2020 traffic counts from PDI. Count station AET08 had a difference of 31%, station 6125 had a difference of 21%. Thirty one percent (31%) was added to the existing volumes at James Road and Turner Road however for a conservative estimate. The volumes and calc sheets are included as an attachment.

Comment: "The traffic count data was performed during the July 4th week, with the turning movement counts (TMCs) performed on July 1st (not July 8th as referenced in the July 2020 TIAS). Traffic data is not usually collected during holiday periods as traffic volumes and trip patterns are not typical of conditions that exist during the majority of the year. Updated traffic volume and travel speed data should be collected or adjustments made to the data that was collected with back-up calculations provided to substantiate the adjustments."

Response: July 4th was on a Saturday this year and the Turning Movement Counts were collected on a Wednesday. As school was not in session at this time it is unlikely that the volumes would have been affected by the holiday. Seasonal adjustment data was evaluated.

Comment: "The traffic count data and speed measurements should be provided for all locations. The automatic traffic recorder (ATR) counts were not provided in the Appendix of the July 2020 TIAS."

Response: The ATR is attached.

Comment: "A 48-hour ATR should be performed on Turner Road in the vicinity of Indian Ridge Road on two consecutive weekdays that should include the collection of vehicle travel speed data to be used in evaluating sight distances at the Turner Road/Indian Ridge Road South intersection."

Response: The sight distance was updated for Turner Road and Indian Ridge Road speeds. As the ATR was not calculated at this intersection 10mph was added to the posted speed limit. With this change safe stopping distance is no longer satisfied from the east. The sight distance to the east is limited by foliage and the horizontal curve in the roadway. This foliage is located on private property.

Location	Sight Distance				
	Available	Speed Limit (25 mph)		Speed Limit Plus 10mph (35 mph)	
	Measured (ft)	Minimum Required (ft)	Desirable (ft)	Minimum Required (ft)	Desirable (ft)
Stopping Sight Distance					
James Road (South) approaching from West	350	155	-	250	-
James Road (South) approaching from East	200	155	-	250	-
Intersection Sight Distance					
James Road (South) approaching from West	360	155	280	250	390
James Road (South) approaching from East	205	155	280	250	390

Crash Analysis

Comment: *"The motor vehicle crash analysis should be updated to use reconciled crash data for the most recent 5-year period as available from MassDOT (2013 through 2017) and expanded to include the additional study area intersections."*

Response: The crash data was updated for 2013-2017, please see attachments for updated crash reports.

No-Build Condition / Background traffic

Comment: *"The Applicant's engineer should confirm that there are no roadway improvements by others that are planned to occur within or proximate to the study area that would impact traffic volumes or travel patterns within the study area."*

Response: It is listed in section 3.1.2 that the town of Holliston was contacted, and Green was notified that no new developments were being planned.

Trip Generation

Comment: *"The traffic operations analysis should be revised to address the comments provided as a part of this review concerning the COVID-19 traffic volume adjustment, expansion of the study area and refinement of the trip distribution pattern. In addition, the peak-hour factors that are used in the analysis should be based on the measured values and not the default value of 0.92. "*

Response: Please see attachments for updated Synchro reports that include the COVID -19 adjustments for the intersection of Turner Road at Indian Ridge Road. With this adjustment, the Level of Service for the intersection remains an "A" under build conditions.

Traffic Assignment

Comment: *"The trip-distribution pattern for the Project should be reviewed and revised. The existing traffic pattern indicates that approximately 60 percent of the trips associated with the Project will be oriented to/from Route 126, with 45 percent of these trips using Elliot Street to/from the east and the remaining 15 percent (of the 60 percent) using Ashland Street."*

Response: Trip distribution calculations were based off of existing traffic patterns and census data collected from CTPP(Census Transportation Planning Products). From the existing traffic patterns 72% are using Elliot Street, 20% Ashland Street and 9% are using Cedar Street. When looking at the census data for anticipated traffic patterns 29% are using Elliot Street, 59% Ashland Street and 13% are using Cedar Street. The difference in these values were balanced to determine the trip distribution values.

Site Distance

Comment: *The location of the sight distance measurements that are presented in Table 7 should be clarified as the access to the Project is proposed to be an extension of Indian Ridge Road South and will not create an "intersection" for the purpose of sight distance measurements. Also, the paragraph preceding the sight distance table mentions speed measurements and posted speed limits along Cedar Street. Sight distance*

measurements should be provided for the following intersections based on the measured 85th percentile vehicle travel speed on the major roadway or the posted speed limit, whichever is higher:

- *Turner Road/Indian Ridge Road South*
- *Cedar Street/Turner Road*
- *Ashland Street/Turner Road*

Response: Since access to the proposed project is an extension of Indian Ridge Road south table 7 shows the sight distance measurements at Indian Ridge Road South and Turner Road. Sight Distance calculations have been revised to show a higher speed for Turner Road based on comments received at the public hearing.

Traffic Management

Comment: *“The recommendations presented in the July 2020 TIAS should be reviewed, revised and expanded as necessary based on the additional analyses and refinements that have been suggested as a part of this review. The recommendations that were provided should reflect the Site Plans and the context of the Project as it relates to Indian Ridge Road South with regard to pedestrian safety and opportunities to implement traffic calming measures to reduce travel speeds.*

Response:

- W-2-2 advance warning signage on Turner Road should be provided in advance of the intersection with Indian Ridge Road South/James Road, prior to the horizontal curve that restricts sight distance, indicating the presence of an incoming intersection and need to watch for incoming vehicles.
- “No Parking” areas should be created between 85 Turner Road and 171 Turner Road on the west side of Turner Road, to match the existing “No Parking” area on the east side of Turner Road, improve sight distance, and to allow two-way traffic to travel through the narrow curves without impediment.
- The Speed Limit of Turner Road (25mph) should be posted in advance of the horizontal curves on Turner Road to encourage reduced speeds through the intersection.
- The proposed sidewalk on Indian Ridge Road South should be extended to the intersection of Turner Road and Indian Ridge Road South/James Road and terminated with an accessible crossing across James Road. This will allow safe pedestrian movement throughout the Indian Ridge Road South neighborhood and provide a continuous path for pedestrians utilizing the sidewalk. We do not recommend a crosswalk across Turner Road at this location due to the limited sight distance along Turner Road.
- A Stop bar should be striped for the James Road southbound approach for Turner Road, to reduce intersection creeping and provide a clear location for vehicles to stop.

We believe that the responses and updates to the report address all the pertinent comments as well as items discussed during the public hearing. If there is a need to discuss any of these responses further, please feel free to contact me at (978)-923-0400.

Sincerely,

Green International Affiliates, Inc.

A handwritten signature in black ink, appearing to read "Corinne Tobias".

Corinne Tobias, P.E.

Project Manager



ATR DATA SUMMARY

Cedar Street

ATR Data Summary

											Weekday Average			Hourly Volumes			Directional Distribution		K-Factor						
											Wed, July 8, 2020			Thu, Jul 09, 2020			Weekday Average			NB	SB	Both	NB	SB	
											NB	SB	Both	NB	SB	Both	NB	SB							Both
12:00 AM to 12:15 AM	0	1	1	0	1	1	0.0	1.0	1.0																
12:15 AM to 12:30 AM	0	0	0	0	0	0	0.0	0.0	0.0																
12:30 AM to 12:45 AM	0	0	0	0	1	1	0.0	0.5	0.5																
12:45 AM to 01:00 AM	0	0	0	0	0	0	0.0	0.0	0.0	12:00 AM to 01:00 AM	0.0	1.5	1.5	0.000%	100.000%	0.003745									
01:00 AM to 01:15 AM	1	0	1	0	0	0	0.5	0.0	0.5	12:15 AM to 01:15 AM	0.5	0.5	1.0	50.000%	50.000%	0.002497									
01:15 AM to 01:30 AM	0	0	0	0	0	0	0.0	0.0	0.0	12:30 AM to 01:30 AM	0.5	0.5	1.0	50.000%	50.000%	0.002497									
01:30 AM to 01:45 AM	0	0	0	0	0	0	0.0	0.0	0.0	12:45 AM to 01:45 AM	0.5	0.0	0.5	100.000%	0.000%	0.001248									
01:45 AM to 02:00 AM	0	0	0	0	0	0	0.0	0.0	0.0	01:00 AM to 02:00 AM	0.5	0.0	0.5	100.000%	0.000%	0.001248									
02:00 AM to 02:15 AM	0	0	0	1	0	1	0.5	0.0	0.5	01:15 AM to 02:15 AM	0.5	0.0	0.5	100.000%	0.000%	0.001248									
02:15 AM to 02:30 AM	0	0	0	0	0	0	0.0	0.0	0.0	01:30 AM to 02:30 AM	0.5	0.0	0.5	100.000%	0.000%	0.001248									
02:30 AM to 02:45 AM	0	0	0	0	0	0	0.0	0.0	0.0	01:45 AM to 02:45 AM	0.5	0.0	0.5	100.000%	0.000%	0.001248									
02:45 AM to 03:00 AM	0	0	0	0	0	0	0.0	0.0	0.0	02:00 AM to 03:00 AM	0.5	0.0	0.5	100.000%	0.000%	0.001248									
03:00 AM to 03:15 AM	0	0	0	0	0	0	0.0	0.0	0.0	02:15 AM to 03:15 AM	0.0	0.0	0.0	#DIV/0!	#DIV/0!	0.000000									
03:15 AM to 03:30 AM	0	1	1	0	1	1	0.0	1.0	1.0	02:30 AM to 03:30 AM	0.0	1.0	1.0	0.000%	100.000%	0.002497									
03:30 AM to 03:45 AM	0	0	0	0	0	0	0.0	0.0	0.0	02:45 AM to 03:45 AM	0.0	1.0	1.0	0.000%	100.000%	0.002497									
03:45 AM to 04:00 AM	0	0	0	0	0	0	0.0	0.0	0.0	03:00 AM to 04:00 AM	0.0	1.0	1.0	0.000%	100.000%	0.002497									
04:00 AM to 04:15 AM	0	0	0	1	1	2	0.5	0.5	1.0	03:15 AM to 04:15 AM	0.5	1.5	2.0	25.000%	75.000%	0.004994									
04:15 AM to 04:30 AM	1	1	2	0	0	0	0.5	0.5	1.0	03:30 AM to 04:30 AM	1.0	1.0	2.0	50.000%	50.000%	0.004994									
04:30 AM to 04:45 AM	1	0	1	1	1	2	1.0	0.5	1.5	03:45 AM to 04:45 AM	2.0	1.5	3.5	57.143%	42.857%	0.008739									
04:45 AM to 05:00 AM	1	0	1	1	0	1	1.0	0.0	1.0	04:00 AM to 05:00 AM	3.0	1.5	4.5	66.667%	33.333%	0.011236									
05:00 AM to 05:15 AM	0	0	0	0	0	0	0.0	0.0	0.0	04:15 AM to 05:15 AM	2.5	1.0	3.5	71.429%	28.571%	0.008739									
05:15 AM to 05:30 AM	0	3	3	0	2	2	0.0	2.5	2.5	04:30 AM to 05:30 AM	2.0	3.0	5.0	40.000%	60.000%	0.012484									
05:30 AM to 05:45 AM	3	0	3	2	2	4	2.5	1.0	3.5	04:45 AM to 05:45 AM	3.5	3.5	7.0	50.000%	50.000%	0.017478									
05:45 AM to 06:00 AM	0	1	1	1	0	1	0.5	0.5	1.0	05:00 AM to 06:00 AM	3.0	4.0	7.0	42.857%	57.143%	0.017478									
06:00 AM to 06:15 AM	2	0	2	3	0	3	2.5	0.0	2.5	05:15 AM to 06:15 AM	5.5	4.0	9.5	57.895%	42.105%	0.023720									
06:15 AM to 06:30 AM	3	1	4	4	2	6	3.5	1.5	5.0	05:30 AM to 06:30 AM	9.0	3.0	12.0	75.000%	25.000%	0.029963									
06:30 AM to 06:45 AM	2	3	5	1	2	3	1.5	2.5	4.0	05:45 AM to 06:45 AM	8.0	4.5	12.5	64.000%	36.000%	0.031211									
06:45 AM to 07:00 AM	3	0	3	2	0	2	2.5	0.0	2.5	06:00 AM to 07:00 AM	10.0	4.0	14.0	71.429%	28.571%	0.034956									
07:00 AM to 07:15 AM	2	1	3	1	3	4	1.5	2.0	3.5	06:15 AM to 07:15 AM	9.0	6.0	15.0	60.000%	40.000%	0.037453									
07:15 AM to 07:30 AM	3	0	3	1	1	2	2.0	0.5	2.5	06:30 AM to 07:30 AM	7.5	5.0	12.5	60.000%	40.000%	0.031211									
07:30 AM to 07:45 AM	5	5	10	2	0	2	3.5	2.5	6.0	06:45 AM to 07:45 AM	9.5	5.0	14.5	65.517%	34.483%	0.036205									
07:45 AM to 08:00 AM	5	5	10	1	2	3	3.0	3.5	6.5	07:00 AM to 08:00 AM	10.0	8.5	18.5	54.054%	45.946%	0.046192									
08:00 AM to 08:15 AM	4	1	5	2	2	4	3.0	1.5	4.5	07:15 AM to 08:15 AM	11.5	8.0	19.5	58.974%	41.026%	0.048689									
08:15 AM to 08:30 AM	4	2	6	0	0	0	2.0	1.0	3.0	07:30 AM to 08:30 AM	11.5	8.5	20.0	57.500%	42.500%	0.049938									
08:30 AM to 08:45 AM	8	4	12	0	0	0	4.0	2.0	6.0	07:45 AM to 08:45 AM	12.0	8.0	20.0	60.000%	40.000%	0.049938									
08:45 AM to 09:00 AM	7	3	10	3	2	5	5.0	2.5	7.5	08:00 AM to 09:00 AM	14.0	7.0	21.0	66.667%	33.333%	0.052434									
09:00 AM to 09:15 AM	1	2	3	0	0	0	0.5	1.0	1.5	08:15 AM to 09:15 AM	11.5	6.5	18.0	63.889%	36.111%	0.044944									
09:15 AM to 09:30 AM	3	4	7	2	1	3	2.5	2.5	5.0	08:30 AM to 09:30 AM	12.0	8.0	20.0	60.000%	40.000%	0.049938									
09:30 AM to 09:45 AM	2	5	7	1	0	1	1.5	2.5	4.0	08:45 AM to 09:45 AM	9.5	8.5	18.0	52.778%	47.222%	0.044944									
09:45 AM to 10:00 AM	2	2	4	0	3	3	1.0	2.5	3.5	09:00 AM to 10:00 AM	5.5	8.5	14.0	39.286%	60.714%	0.034956									
10:00 AM to 10:15 AM	1	0	1	2	2	4	1.5	1.0	2.5	09:15 AM to 10:15 AM	6.5	8.5	15.0	43.333%	56.667%	0.037453									
10:15 AM to 10:30 AM	5	2	7	0	0	0	2.5	1.0	3.5	09:30 AM to 10:30 AM	6.5	7.0	13.5	48.148%	51.852%	0.033708									
10:30 AM to 10:45 AM	5	0	5	1	1	2	3.0	0.5	3.5	09:45 AM to 10:45 AM	8.0	5.0	13.0	61.538%	38.462%	0.032459									
10:45 AM to 11:00 AM	6	2	8	3	2	5	4.5	2.0	6.5	10:00 AM to 11:00 AM	11.5	4.5	16.0	71.875%	28.125%	0.039950									
11:00 AM to 11:15 AM	2	2	4	1	2	3	1.5	2.0	3.5	10:15 AM to 11:15 AM	11.5	5.5	17.0	67.647%	32.353%	0.042447									
11:15 AM to 11:30 AM	3	5	8	2	4	6	2.5	4.5	7.0	10:30 AM to 11:30 AM	11.5	9.0	20.5	56.098%	.	0.051186									
11:30 AM to 11:45 AM	2	1	3	2	2	4	2.0	1.5	3.5	10:45 AM to 11:45 AM	10.5	10.0	20.5	51.220%	48.780%	0.051186									
11:45 AM to 12:00 PM	2	2	4	4	2	6	3.0	2.0	5.0	11:00 AM to 12:00 PM	9.0	10.0	19.0	47.368%	52.632%	0.047441									
12:00 PM to 12:15 PM	0	3	3	3	1	4	1.5	2.0	3.5	11:15 AM to 12:15 PM	9.0	10.0	19.0	47.368%	52.632%	0.047441									
12:15 PM to 12:30 PM	1	1	2	2	1	3	1.5	1.0	2.5	11:30 AM to 12:30 PM	8.0	6.5	14.5	55.172%	44.828%	0.036205									
12:30 PM to 12:45 PM	1	4	5	2	2	4	1.5	3.0	4.5	11:45 AM to 12:45 PM	7.5	8.0	15.5	48.387%	51.613%	0.038702									
12:45 PM to 01:00 PM	5	2	7	2	1	3	3.5	1.5	5.0	12:00 PM to 01:00 PM	8.0	7.5	15.5	51.613%	48.387%	0.038702									
01:00 PM to 01:15 PM	6	3	9	4	2	6	5.0	2.5	7.5	12:15 PM to 01:15 PM	11.5	8.0	19.5	58.974%	41.026%	0.048689									
01:15 PM to 01:30 PM	4	2	6	1	3	4	2.5	2.5	5.0	12:30 PM to 01:30 PM	12.5	9.5	22.0	56.818%	43.182%	0.054931									
01:30 PM to 01:45 PM	2	1	3	2	5	7	2.0	3.0	5.0	12:45 PM to 01:45 PM	13.0	9.5	22.5	57.778%	42.222%	0.056180									
01:45 PM to 02:00 PM	2	2	4	5	2	7	3.5	2.0	5.5	01:00 PM to 02:00 PM	13.0	10.0	23.0	56.522%	43.478%	0.057428									
02:00 PM to 02:15 PM	1	6	7	2	0	2	1.5	3.0	4.5	01:15 PM to 02:15 PM	9.5	10.5	20.0	47.500%	52.500%	0.049938									
02:15 PM to 02:30 PM	1	4	5	4	6	10	2.5	5.0	7.5	01:30 PM to 02:30 PM	9.5	13.0	22.5	42.222%	57.778%	0.056180									
02:30 PM to 02:45 PM	1	3	4	5	1	6	3.0	2.0	5.0	01:45 PM to 02:45 PM	10.5	12.0	22.5	46.667%	53.333%	0.056180									
02:45 PM to 03:00 PM	4	3	7	5	4	9	4.5	3.5	8.0	02:00 PM to 03:00 PM	11.5	13.5	25.0	46.000%	54.000%	0.062422									

Cedar Street

ATR Data Summary

											Weekday Average			Directional Distribution					
											Hourly Volumes								
											Wed, July 8, 2020			Thu, Jul 09, 2020			Weekday Average		
03:00 PM to 03:15 PM	6	12	18	2	4	6	4.0	8.0	12.0	02:15 PM to 03:15 PM	14.0	18.5	32.5	43.077%	56.923%	0.081149			
03:15 PM to 03:30 PM	3	3	6	1	4	5	2.0	3.5	5.5	02:30 PM to 03:30 PM	13.5	17.0	30.5	44.262%	55.738%	0.076155			
03:30 PM to 03:45 PM	6	7	13	3	5	8	4.5	6.0	10.5	02:45 PM to 03:45 PM	15.0	21.0	36.0	41.667%	58.333%	0.089888			
03:45 PM to 04:00 PM	4	8	12	3	6	9	3.5	7.0	10.5	03:00 PM to 04:00 PM	14.0	24.5	38.5	36.364%	63.636%	0.096130			
04:00 PM to 04:15 PM	1	5	6	5	7	12	3.0	6.0	9.0	03:15 PM to 04:15 PM	13.0	22.5	35.5	36.620%	63.380%	0.088639			
04:15 PM to 04:30 PM	3	9	12	2	4	6	2.5	6.5	9.0	03:30 PM to 04:30 PM	13.5	25.5	39.0	34.615%	65.385%	0.097378			
04:30 PM to 04:45 PM	1	12	13	1	6	7	1.0	9.0	10.0	03:45 PM to 04:45 PM	10.0	28.5	38.5	25.974%	74.026%	0.096130			
04:45 PM to 05:00 PM	3	4	7	4	8	12	3.5	6.0	9.5	04:00 PM to 05:00 PM	10.0	27.5	37.5	26.667%	73.333%	0.093633			
05:00 PM to 05:15 PM	3	9	12	3	6	9	3.0	7.5	10.5	04:15 PM to 05:15 PM	10.0	29.0	39.0	25.641%	74.359%	0.097378			
05:15 PM to 05:30 PM	4	10	14	3	6	9	3.5	8.0	11.5	04:30 PM to 05:30 PM	11.0	30.5	41.5	26.506%	73.494%	0.103620			
05:30 PM to 05:45 PM	4	3	7	8	3	11	6.0	3.0	9.0	04:45 PM to 05:45 PM	16.0	24.5	40.5	39.506%	60.494%	0.101124			
05:45 PM to 06:00 PM	4	2	6	3	6	9	3.5	4.0	7.5	05:00 PM to 06:00 PM	16.0	22.5	38.5	41.558%	58.442%	0.096130			
06:00 PM to 06:15 PM	5	4	9	3	0	3	4.0	2.0	6.0	05:15 PM to 06:15 PM	17.0	17.0	34.0	50.000%	50.000%	0.084894			
06:15 PM to 06:30 PM	6	4	10	5	3	8	5.5	3.5	9.0	05:30 PM to 06:30 PM	19.0	12.5	31.5	60.317%	39.683%	0.078652			
06:30 PM to 06:45 PM	6	6	12	3	5	8	4.5	5.5	10.0	05:45 PM to 06:45 PM	17.5	15.0	32.5	53.846%	46.154%	0.081149			
06:45 PM to 07:00 PM	4	2	6	2	4	6	3.0	3.0	6.0	06:00 PM to 07:00 PM	17.0	14.0	31.0	54.839%	45.161%	0.077403			
07:00 PM to 07:15 PM	2	4	6	2	7	9	2.0	5.5	7.5	06:15 PM to 07:15 PM	15.0	17.5	32.5	46.154%	53.846%	0.081149			
07:15 PM to 07:30 PM	0	4	4	3	2	5	1.5	3.0	4.5	06:30 PM to 07:30 PM	11.0	17.0	28.0	39.286%	60.714%	0.069913			
07:30 PM to 07:45 PM	1	8	9	3	4	7	2.0	6.0	8.0	06:45 PM to 07:45 PM	8.5	17.5	26.0	32.692%	67.308%	0.064919			
07:45 PM to 08:00 PM	3	1	4	4	2	6	3.5	1.5	5.0	07:00 PM to 08:00 PM	9.0	16.0	25.0	36.000%	64.000%	0.062422			
08:00 PM to 08:15 PM	2	4	6	1	6	7	1.5	5.0	6.5	07:15 PM to 08:15 PM	8.5	15.5	24.0	35.417%	64.583%	0.059925			
08:15 PM to 08:30 PM	0	3	3	2	5	7	1.0	4.0	5.0	07:30 PM to 08:30 PM	8.0	16.5	24.5	32.653%	67.347%	0.061174			
08:30 PM to 08:45 PM	1	5	6	0	5	5	0.5	5.0	5.5	07:45 PM to 08:45 PM	6.5	15.5	22.0	29.545%	70.455%	0.054931			
08:45 PM to 09:00 PM	1	4	5	2	6	8	1.5	5.0	6.5	08:00 PM to 09:00 PM	4.5	19.0	23.5	19.149%	80.851%	0.058677			
09:00 PM to 09:15 PM	1	6	7	2	4	6	1.5	5.0	6.5	08:15 PM to 09:15 PM	4.5	19.0	23.5	19.149%	80.851%	0.058677			
09:15 PM to 09:30 PM	1	1	2	3	5	8	2.0	3.0	5.0	08:30 PM to 09:30 PM	5.5	18.0	23.5	23.404%	76.596%	0.058677			
09:30 PM to 09:45 PM	2	1	3	3	1	4	2.5	1.0	3.5	08:45 PM to 09:45 PM	7.5	14.0	21.5	34.884%	65.116%	0.053683			
09:45 PM to 10:00 PM	0	2	2	0	4	4	0.0	3.0	3.0	09:00 PM to 10:00 PM	6.0	12.0	18.0	33.333%	66.667%	0.044944			
10:00 PM to 10:15 PM	1	0	1	0	2	2	0.5	1.0	1.5	09:15 PM to 10:15 PM	5.0	8.0	13.0	38.462%	61.538%	0.032459			
10:15 PM to 10:30 PM	2	2	4	2	2	4	2.0	2.0	4.0	09:30 PM to 10:30 PM	5.0	7.0	12.0	41.667%	58.333%	0.029963			
10:30 PM to 10:45 PM	0	0	0	0	0	0	0.0	0.0	0.0	09:45 PM to 10:45 PM	2.5	6.0	8.5	29.412%	70.588%	0.021223			
10:45 PM to 11:00 PM	1	2	3	0	0	0	0.5	1.0	1.5	10:00 PM to 11:00 PM	3.0	4.0	7.0	42.857%	57.143%	0.017478			
11:00 PM to 11:15 PM	0	0	0	0	0	0	0.0	0.0	0.0	10:15 PM to 11:15 PM	2.5	3.0	5.5	45.455%	54.545%	0.013733			
11:15 PM to 11:30 PM	0	0	0	0	0	0	0.0	0.0	0.0	10:30 PM to 11:30 PM	0.5	1.0	1.5	33.333%	66.667%	0.003745			
11:30 PM to 11:45 PM	0	0	0	0	0	0	0.0	0.0	0.0	10:45 PM to 11:45 PM	0.5	1.0	1.5	33.333%	66.667%	0.003745			
11:45 PM to 12:00 AM	0	1	1	0	0	0	0.0	0.5	0.5	11:00 PM to 12:00 AM	0.0	0.5	0.5	0.000%	100.000%	0.001248			
Daily Totals	198.0	241.0	439.0	160.0	202.0	362.0	179.0	221.5	400.5										

CRASH RATE

INTERSECTION CRASH RATE WORKSHEET

TOWN : Holliston COUNT DATE : 2/26/2020

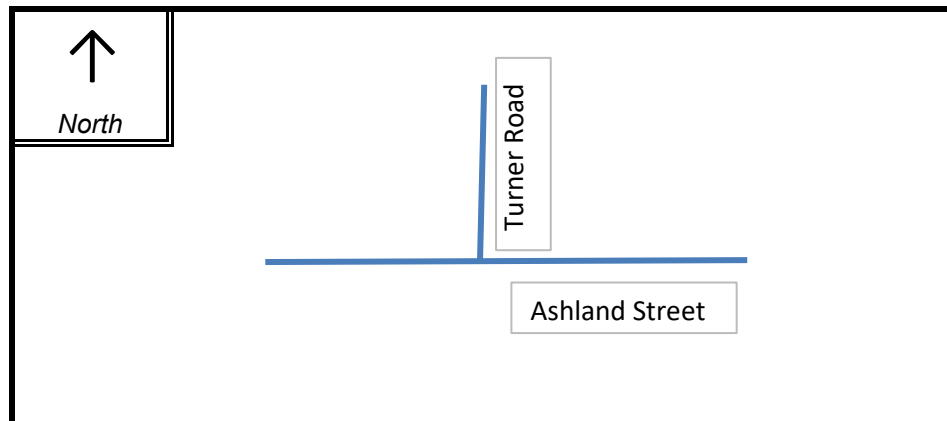
DISTRICT : 3 UNSIGNALIZED : ☒ SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Ashland Street

MINOR STREET(S) : Turner Road

INTERSECTION
DIAGRAM



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (PM) :	32	0	101	152		285

" K " FACTOR :

0.08

INTERSECTION ADT (V) = TOTAL DAILY
APPROACH VOLUME :

3,563

TOTAL # OF CRASHES :

0

OF
YEARS :

5

AVERAGE # OF
CRASHES PER YEAR (A) :

0.20

CRASH RATE CALCULATION :

0.00

RATE = $\frac{(A * 1,000,000)}{(V * 365)}$

Comments : The average crash rate for an unsignalized intersection in District is 0.57

Project Title & Date: Geoffery Park 20082

INTERSECTION CRASH RATE WORKSHEET

TOWN : Holliston COUNT DATE : 2/26/2020

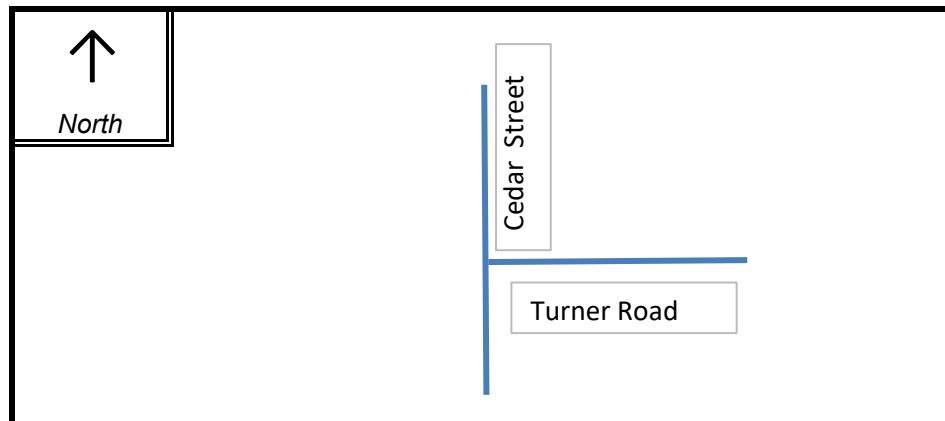
DISTRICT : 3 UNSIGNALIZED : ☒ SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Cedar Street

MINOR STREET(S) : Turner Road

INTERSECTION
DIAGRAM



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (PM) :	25	44	4	0		73

" K " FACTOR :

0.08

INTERSECTION ADT (V) = TOTAL DAILY
APPROACH VOLUME :

913

TOTAL # OF CRASHES :

0

OF
YEARS :

5

AVERAGE # OF
CRASHES PER YEAR (A) :

0.00

CRASH RATE CALCULATION :

0.00

RATE = $\frac{(A * 1,000,000)}{(V * 365)}$

Comments : The average crash rate for an unsignalized intersection in District is 0.57

Project Title & Date: Geoffery Park 20082

INTERSECTION CRASH RATE WORKSHEET

TOWN : Holliston COUNT DATE : 2/26/2020

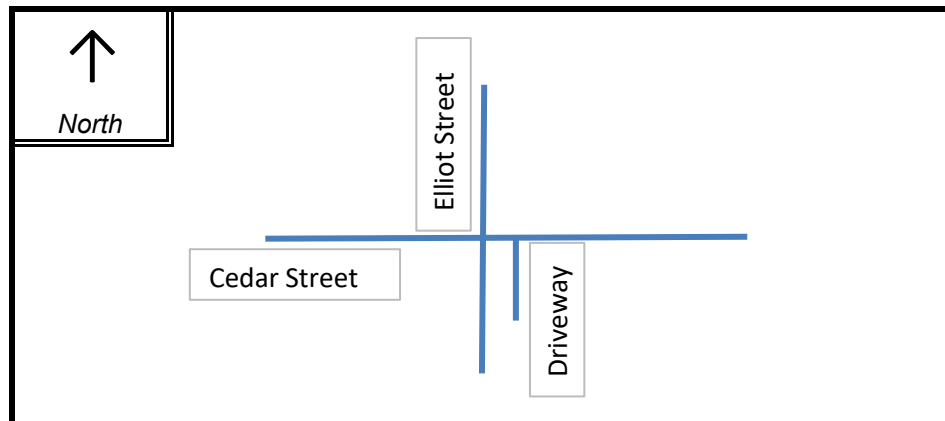
DISTRICT : 3 UNSIGNALIZED : ☒ SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Main Street

MINOR STREET(S) : Shrewsbury Street

INTERSECTION
DIAGRAM



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB	SWB	
PEAK HOURLY VOLUMES (PM) :	87	40	367	496	0	990

" K " FACTOR :

0.08

INTERSECTION ADT (V) = TOTAL DAILY
APPROACH VOLUME :

12,375

TOTAL # OF CRASHES :

10

OF
YEARS :

5

AVERAGE # OF
CRASHES PER YEAR (A) :

2.20

CRASH RATE CALCULATION :

0.44

$$\text{RATE} = \frac{(A * 1,000,000)}{(V * 365)}$$

Comments : The average crash rate for an unsignalized intersection in District 5 is 0.57

Project Title & Date: Geoffery Park 20082

INTERSECTION CRASH RATE WORKSHEET

TOWN : Holliston COUNT DATE : 6/24/2020

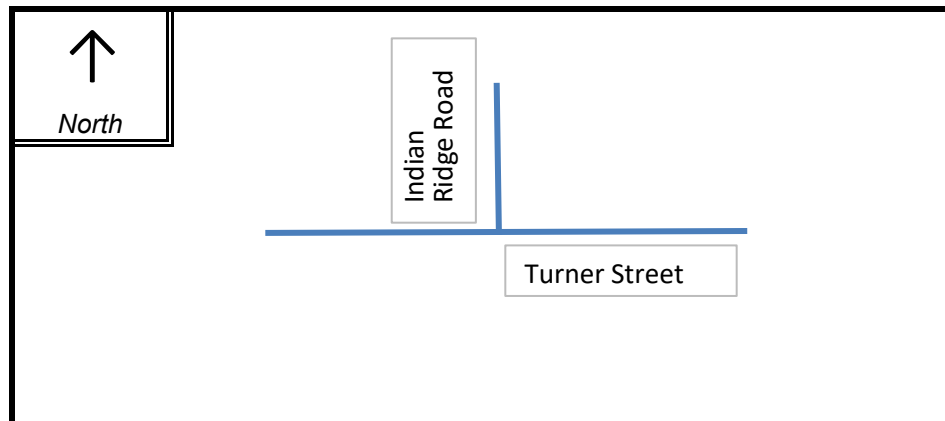
DISTRICT : 3 UNSIGNALIZED : ☒ SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Cedar Street

MINOR STREET(S) : Indian Ridge Road

INTERSECTION
DIAGRAM



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	WB	EB			
PEAK HOURLY VOLUMES (PM) :	7	19	7			33

" K " FACTOR :

0.08

INTERSECTION ADT (V) = TOTAL DAILY
APPROACH VOLUME :

413

TOTAL # OF CRASHES :

0

OF
YEARS :

5

AVERAGE # OF
CRASHES PER YEAR (A) :

0.00

CRASH RATE CALCULATION :

0.00

$$\text{RATE} = \frac{(A * 1,000,000)}{(V * 365)}$$

Comments : The average crash rate for an unsignalized intersection in District is 0.57

Project Title & Date: Geoffrey Park 20082

INTERSECTION CRASH RATE WORKSHEET

TOWN : Holliston COUNT DATE : 2/26/2020

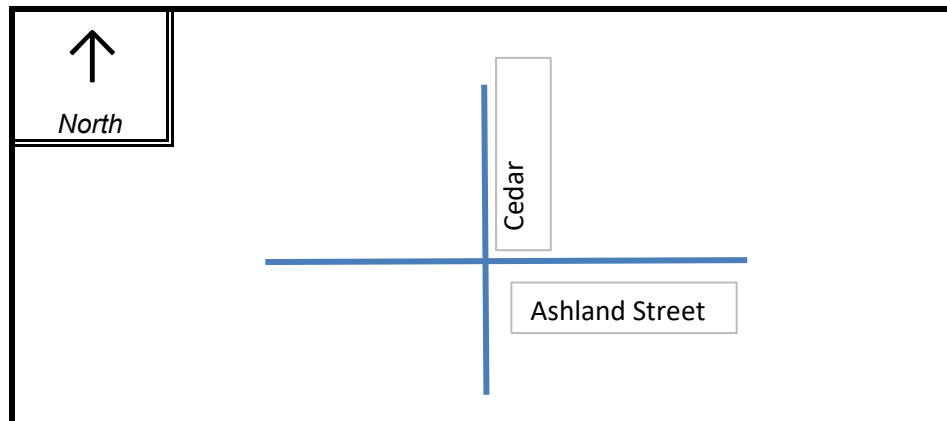
DISTRICT : 3 UNSIGNALIZED : ☒ SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Ashland Street

MINOR STREET(S) : Cedar Street

INTERSECTION
DIAGRAM



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (PM) :	14	17	101	130		262

" K " FACTOR : 0.08 INTERSECTION ADT (V) = TOTAL DAILY APPROACH VOLUME : 3,275

TOTAL # OF CRASHES : 2 # OF YEARS : 5 AVERAGE # OF CRASHES PER YEAR (A) : 0.60

CRASH RATE CALCULATION :

0.33

$$\text{RATE} = \frac{(A * 1,000,000)}{(V * 365)}$$

Comments : The average crash rate for an unsignalized intersection in District is 0.57

Project Title & Date: Geoffery Park 20082

CORONA VIRUS VOLUME COMPARISONS

2019 and 2020 Traffic counts from AET08 on Mass. Turnpike East of Cordaville

Date	2019 Volume	Date	2020 Volume	Difference
7/1/2019	105563	7/1/2020	73210	31%
7/2/2019	105017	7/2/2020	83300	21%
7/3/2019	106142	7/3/2020	67685	36%
7/4/2019	69418	7/4/2020	48483	30%
7/5/2019	90134	7/5/2020	64076	29%
7/6/2019	84654	7/6/2020	71464	16%
7/7/2019	97124	7/7/2020	71677	26%
7/8/2019	105386	7/8/2020	70383	33%
7/9/2019	104237	7/9/2020	74393	29%
7/10/2019	107614	7/10/2020	75562	30%
7/11/2019	113328	7/11/2020	63587	44%
7/12/2019	115899	7/12/2020	62530	46%
7/13/2019	101600	7/13/2020	69112	32%
7/14/2019	100543	7/14/2020	70405	30%
7/15/2019	108733	7/15/2020	73266	33%
7/16/2019	0	7/16/2020	76900	
7/17/2019	0	7/17/2020	81473	
7/18/2019	115489	7/18/2020	70039	39%
7/19/2019	117940	7/19/2020	63858	46%
7/20/2019	93672	7/20/2020	71497	24%
7/21/2019	97052	7/21/2020	72618	25%
7/22/2019	105869	7/22/2020	73063	31%
7/23/2019	102394	7/23/2020	75443	26%
7/24/2019	111605	7/24/2020	85461	23%
7/25/2019	117202	7/25/2020	73071	38%
7/26/2019	121135	7/26/2020	68144	44%
7/27/2019	100017	7/27/2020	72351	28%
7/28/2019	100373	7/28/2020	72181	28%
7/29/2019	108173	7/29/2020	76131	30%
7/30/2019	107333	7/30/2020	78934	26%
7/31/2019	0	7/31/2020	88944	

2019 and 2020 Traffic counts from 6125 Interstate 495 at Franklin Town Line

Date	2019 Volume	Date	2020 Volume	Difference
7/1/2019	97674	7/1/2020	76863	21%
7/2/2019	102610	7/2/2020	0	
7/3/2019	103349	7/3/2020	67142	35%
7/4/2019	56071	7/4/2020	50934	9%
7/5/2019	79197	7/5/2020	58765	26%
7/6/2019	68733	7/6/2020	74218	-8%
7/7/2019	74086	7/7/2020	74183	0%
7/8/2019	100091	7/8/2020	76306	24%
7/9/2019	106395	7/9/2020	79929	25%
7/10/2019	103771	7/10/2020	79738	23%
7/11/2019	108274	7/11/2020	66062	39%
7/12/2019	111604	7/12/2020	61913	45%
7/13/2019	94329	7/13/2020	72920	23%
7/14/2019	80753	7/14/2020	74613	8%
7/15/2019	103392	7/15/2020	79348	23%
7/16/2019	104269	7/16/2020	81909	21%
7/17/2019	98771	7/17/2020	85496	13%
7/18/2019	105531	7/18/2020	72912	31%
7/19/2019	0	7/19/2020	62758	
7/20/2019	83141	7/20/2020	77144	7%
7/21/2019	72727	7/21/2020	78292	-8%
7/22/2019	107603	7/22/2020	79452	26%
7/23/2019	94447	7/23/2020	80329	15%
7/24/2019	105919	7/24/2020	88496	16%
7/25/2019	106186	7/25/2020	74851	30%
7/26/2019	110650	7/26/2020	64631	42%
7/27/2019	90669	7/27/2020	77350	15%
7/28/2019	77538	7/28/2020	76899	1%
7/29/2019	101149	7/29/2020	81001	20%
7/30/2019	102960	7/30/2020	82783	20%
7/31/2019	103332	7/31/2020	90270	13%

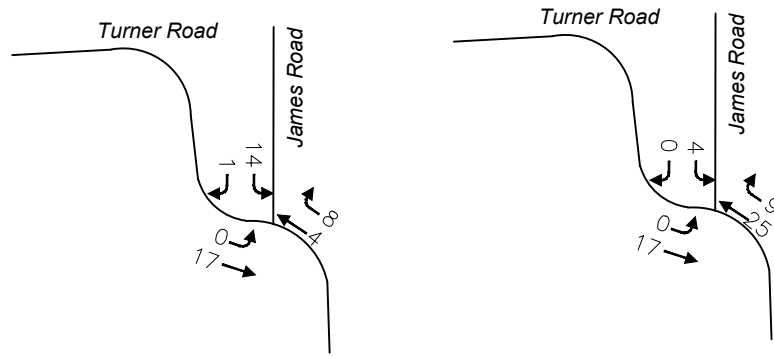
2020 20082 Traffic Counts at James Road and Turner Road

	2020 Count Data		2020 Volumes with difference from 2019		2020 Traffic Volumes with seasonal factor		Background Growth Rate		2020 with seasonal and/or Background	
James Road SB	1	0	1	0	1	0	0	0	1	0
James Road SB	11	3	14	4	11	3	0	0	11	3
Turner Road W	6	7	8	9	6	7	0	0	6	7
Turner Road W	3	19	4	25	3	19	0	0	3	19
Turner Road EB	13	4	17	5	13	4	0	0	13	4
Turner Road EB	0	0	0	0	0	0	0	0	0	0

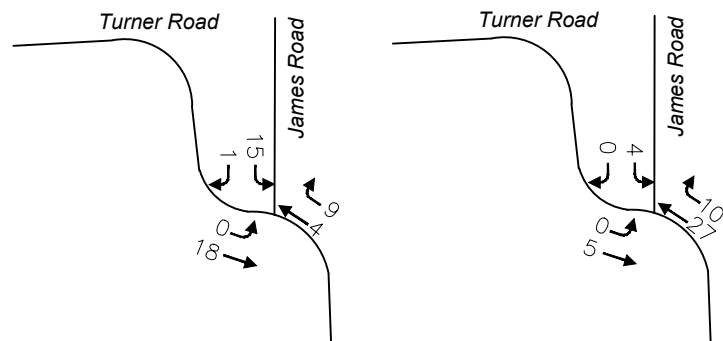
Seasonal Factor	0.00%
Annual Growth Rate	0.00%
Number of years	0

UPDATED FIGURES

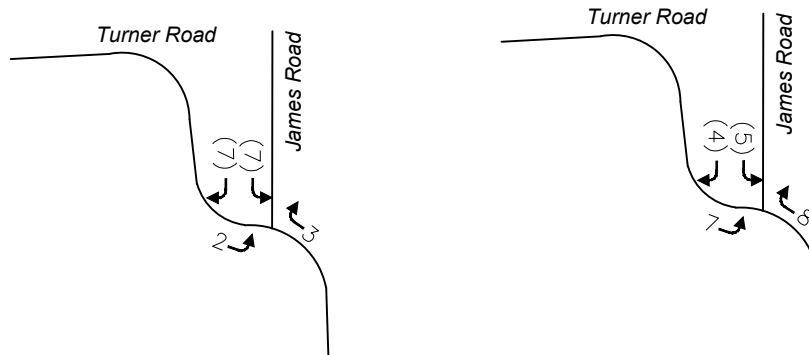
AM/PM EXISTING



2027 AM/PM NO BUILD



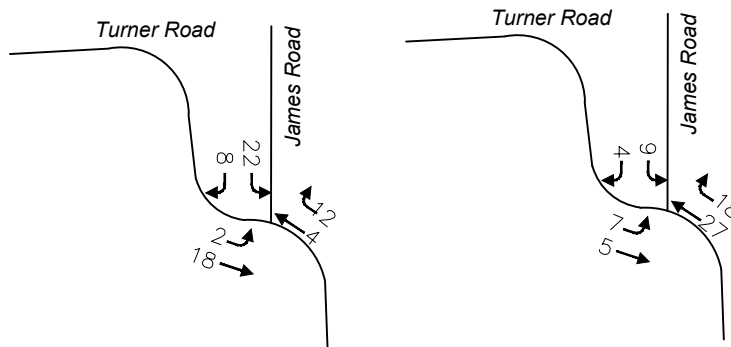
SITE GENERATED TRIPS



	ENTER	EXIT	TOTAL
SITE-GENERATED TRIPS	5	14	19

	ENTER	EXIT	TOTAL
SITE-GENERATED TRIPS	15	9	24

2027 AM/PM BUILD








UPDATED SYNCHRO ANALYSIS



HCM 6th TWSC
3: Turner Road & Indian Ridge Road (S)

AM Peak Existing
09/16/2020




Intersection						
Int Delay, s/veh	3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	17	4	8	14	1
Future Vol, veh/h	0	17	4	8	14	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	0	8	14	0	6	0
Mvmt Flow	0	22	5	10	18	1
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	15	0	-	0	32	10
Stage 1	-	-	-	-	10	-
Stage 2	-	-	-	-	22	-
Critical Hdwy	4.1	-	-	-	6.46	6.2
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	2.2	-	-	-	3.554	3.3
Pot Cap-1 Maneuver	1616	-	-	-	972	1077
Stage 1	-	-	-	-	1003	-
Stage 2	-	-	-	-	990	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1616	-	-	-	972	1077
Mov Cap-2 Maneuver	-	-	-	-	972	-
Stage 1	-	-	-	-	1003	-
Stage 2	-	-	-	-	990	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		8.8		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1616	-	-	-	978	
HCM Lane V/C Ratio	-	-	-	-	0.02	
HCM Control Delay (s)	0	-	-	-	8.8	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	

HCM 6th TWSC
3: Turner Road & Indian Ridge Road (S)

PM Peak Existing
09/16/2020

Intersection

Int Delay, s/veh 0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	5	25	9	4	0
Future Vol, veh/h	0	5	25	9	4	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	0	0	5	0	0	0
Mvmt Flow	0	6	30	11	5	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	41	0	0 42 36
Stage 1	-	-	- 36 -
Stage 2	-	-	- 6 -
Critical Hdwy	4.1	-	- 6.4 6.2
Critical Hdwy Stg 1	-	-	- 5.4 -
Critical Hdwy Stg 2	-	-	- 5.4 -
Follow-up Hdwy	2.2	-	- 3.5 3.3
Pot Cap-1 Maneuver	1581	-	- 974 1042
Stage 1	-	-	- 992 -
Stage 2	-	-	- 1022 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1581	-	- 974 1042
Mov Cap-2 Maneuver	-	-	- 974 -
Stage 1	-	-	- 992 -
Stage 2	-	-	- 1022 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.7
HCM LOS			A




Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1581	-	-	-	974
HCM Lane V/C Ratio	-	-	-	-	0.005
HCM Control Delay (s)	0	-	-	-	8.7
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

HCM 6th TWSC
3: Turner Road & Indian Ridge Road (S)

AM Peak No Build
09/16/2020

Intersection

Int Delay, s/veh 3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	18	4	9	15	1
Future Vol, veh/h	0	18	4	9	15	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	0	8	14	0	6	0
Mvmt Flow	0	23	5	12	19	1

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	17	0	34
Stage 1	-	-	11
Stage 2	-	-	23
Critical Hdwy	4.1	-	6.46
Critical Hdwy Stg 1	-	-	5.46
Critical Hdwy Stg 2	-	-	5.46
Follow-up Hdwy	2.2	-	3.554
Pot Cap-1 Maneuver	1613	-	969
Stage 1	-	-	1002
Stage 2	-	-	989
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1613	-	969
Mov Cap-2 Maneuver	-	-	969
Stage 1	-	-	1002
Stage 2	-	-	989

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.8
HCM LOS			A




Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1613	-	-	-	975
HCM Lane V/C Ratio	-	-	-	-	0.021
HCM Control Delay (s)	0	-	-	-	8.8
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

HCM 6th TWSC
3: Turner Road & Indian Ridge Road (S)

PM Peak No Build
09/16/2020

Intersection

Int Delay, s/veh 0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	5	27	10	4	0
Future Vol, veh/h	0	5	27	10	4	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	0	0	5	0	0	0
Mvmt Flow	0	6	33	12	5	0




Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	45	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1576	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1576	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1576	-	-	-	970
HCM Lane V/C Ratio	-	-	-	-	0.005
HCM Control Delay (s)	0	-	-	-	8.7
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0




HCM 6th TWSC
3: Turner Road & Indian Ridge Road (S)

AM Peak Build
09/16/2020

Intersection						
Int Delay, s/veh	4.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	18	4	12	22	8
Future Vol, veh/h	2	18	4	12	22	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	0	8	14	0	6	0
Mvmt Flow	3	23	5	15	28	10
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	20	0	-	0	42	13
Stage 1	-	-	-	-	13	-
Stage 2	-	-	-	-	29	-
Critical Hdwy	4.1	-	-	-	6.46	6.2
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	2.2	-	-	-	3.554	3.3
Pot Cap-1 Maneuver	1609	-	-	-	959	1073
Stage 1	-	-	-	-	1000	-
Stage 2	-	-	-	-	983	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1609	-	-	-	957	1073
Mov Cap-2 Maneuver	-	-	-	-	957	-
Stage 1	-	-	-	-	998	-
Stage 2	-	-	-	-	983	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.7	0		8.8		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1609	-	-	-	985	
HCM Lane V/C Ratio	0.002	-	-	-	0.039	
HCM Control Delay (s)	7.2	0	-	-	8.8	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	

Intersection

Int Delay, s/veh 2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	7	5	27	18	9	4
Future Vol, veh/h	7	5	27	18	9	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	0	0	5	0	0	0
Mvmt Flow	8	6	33	22	11	5

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	55	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1563	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1563	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	4.3	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1563	-	-	-	966
HCM Lane V/C Ratio	0.005	-	-	-	0.016
HCM Control Delay (s)	7.3	0	-	-	8.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0