

A brief traffic impact study was prepared and submitted to the City of Worthington dated March 11, 2019 for a proposed residential development to be located on the northeast corner of the Hartford Street intersection with Stafford Avenue. Since that submittal a change to the site plan has occurred where the one proposed access drive on Stafford Avenue becomes the only daily use access drive for the development. On Hartford Street the south access drive is eliminated and the north access drive will be emergency access only. The building footprint has been revised on the west side - reduced in one location and expanded in another - however, the number of proposed residential units remains 85 as previously planned. An updated site plan is included in Appendix A. This brief report addresses the change in traffic volumes related to the change in access for the proposed development.

Traffic Volume Projections

The number of dwelling units is expected to remain the same (85 units) with the revised plan. Therefore, the trips generation for the site is expected to remain the same as previously analyzed.

All proposed trips were distributed at the Stafford Avenue access drive and are presented in the revised Figure B of this report. These volumes were added to the counted traffic volumes in Figure A from the original report to derive the revised total traffic volumes, presented in Figure C of this report.

Analyses

Turn lane warrants were performed at the one site access drives according to the guidelines ODOT's *State Highway Access Management Manual*. Left-turn and right-turn lane warrant charts for the one access drive are included in Appendix D of this report. According to the charts turn lane warrant thresholds are not met with the projected total traffic volumes with build out of the proposed senior living development.

McTrans HCS 2010 capacity analysis software was used to determine the Level of Service (LOS) capacity of the one proposed site driveway. The driveway was analyzed with stop control where traffic on Stafford Avenue does not stop. In HCS 2010 summary reports are included in Appendix E of this report. According to the analysis all three site access driveways are expected to operate with minimal delay at a LOS grade A with the projected traffic volumes.

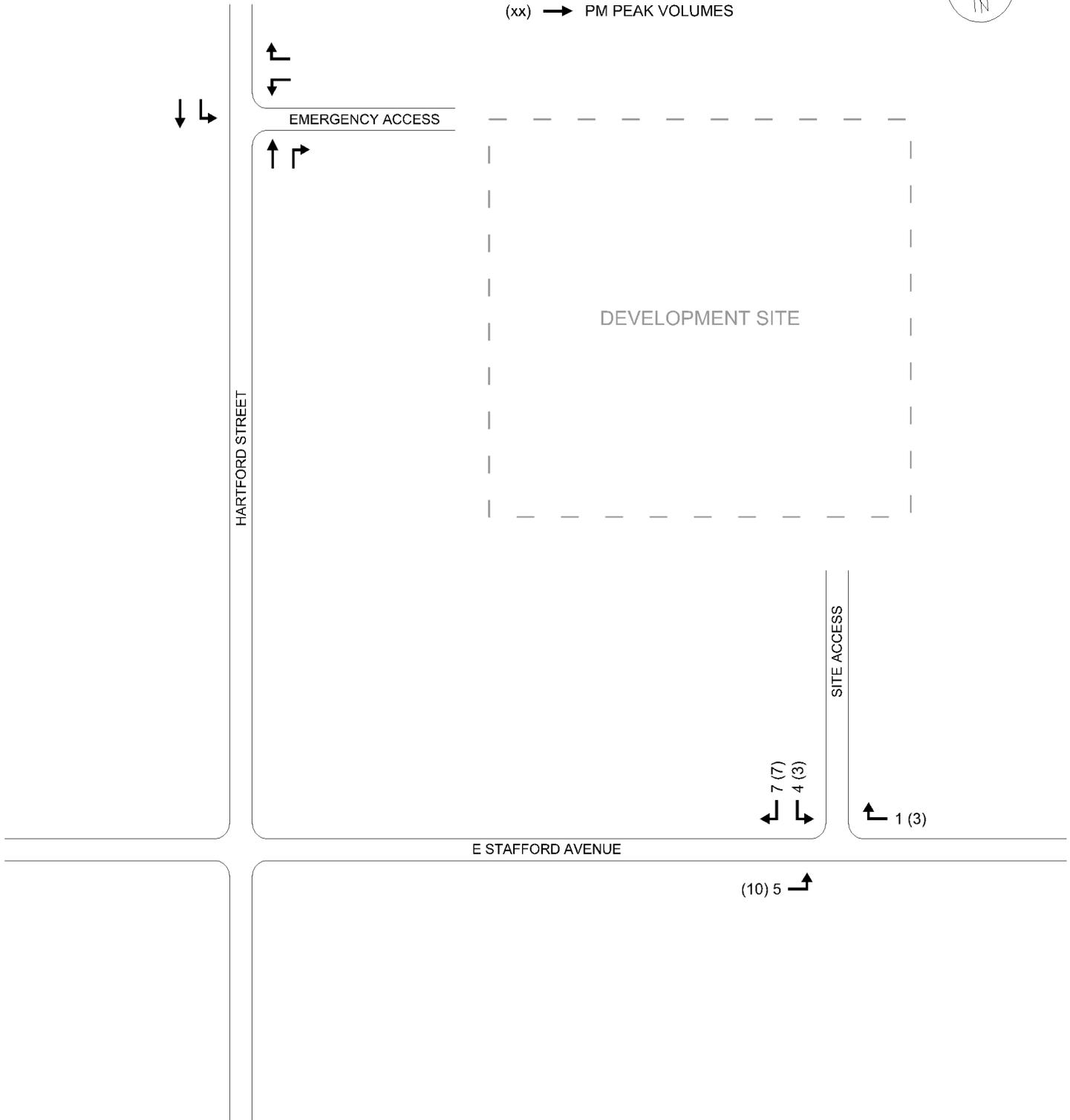
Recommendations

No changes to the analysis findings occurred as a result of the redistributed traffic volumes. The proposed development site access driveways should be approved as shown on the preliminary site plan.



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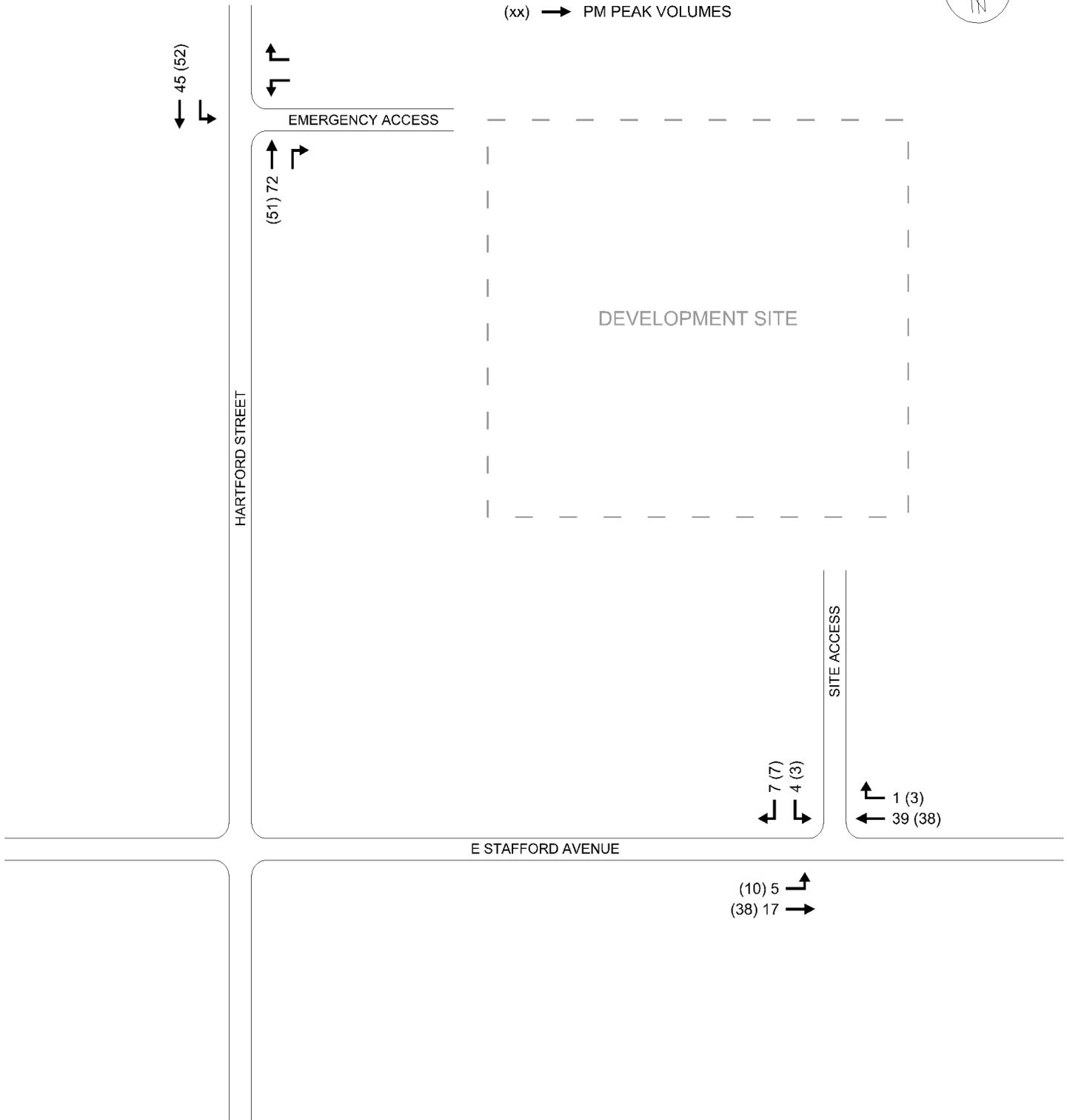
- xx → AM PEAK VOLUMES
- (xx) → PM PEAK VOLUMES



Site Generated Traffic Volumes

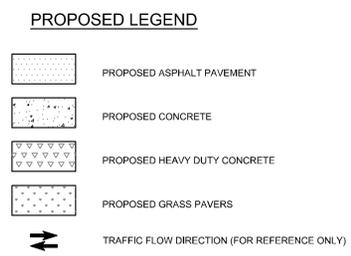
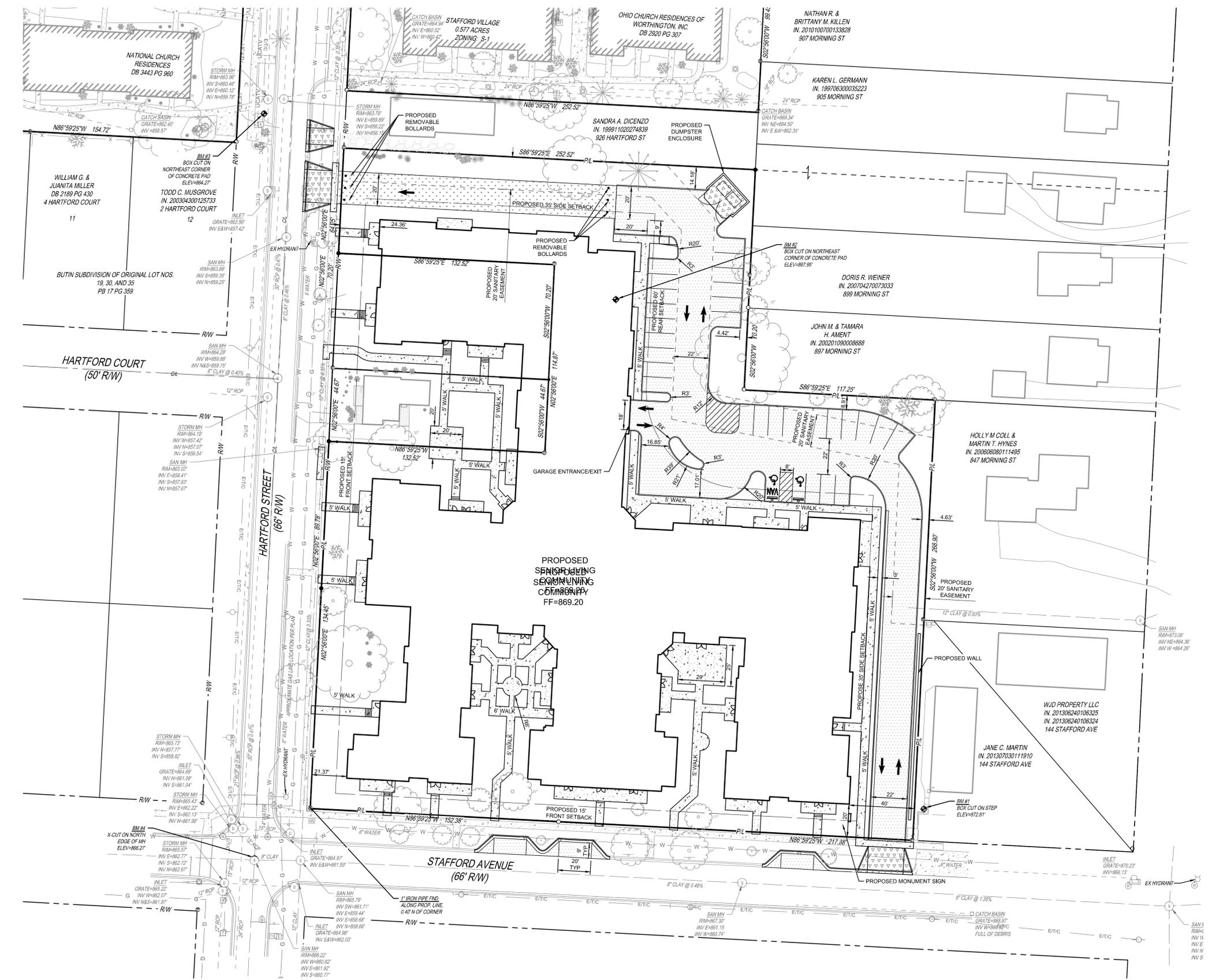


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 xx → AM PEAK VOLUMES
 (xx) → PM PEAK VOLUMES



Total Traffic Volumes

Preliminary Site Plan

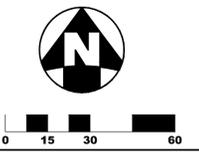


- ### NOTES:
1. ALL RADII ARE 5' UNLESS OTHERWISE NOTED
 2. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT OR FACE OF CURB UNLESS OTHERWISE NOTED
 3. ALL REGULAR PARKING SPACES ARE 9'X18'.
 4. ALL ADA ACCESSIBLE PARKING SPACES ARE 9'X18'.

SITE DATA TABLE

PID(S):	100-000096-00; 100-000284-00; 100-000040-00; 100-004125-00; 100-003051-00
EXISTING ZONING DISTRICT:	AR-4.5, S-1, R-10
PROPOSED ZONING DISTRICT:	PLANNED UNIT DEVELOPMENT (PUD)
ADJACENT ZONING DISTRICTS:	S-1 (SOUTH); R-10 (NORTH); AR-4.5 AND R-10 (EAST); R-10 (WEST)
EXISTING USE:	APARTMENT RESIDENCES
PROPOSED USE:	SENIOR LIVING COMMUNITY, 85 DWELLING UNITS
PROPOSED BUILDING HEIGHT:	39.5'
TOTAL PROPOSED SITE AREA:	3.06 AC (133,381 SF)
PROPOSED BUILDING AREA:	57,831 SF
DWELLING UNITS PER ACRE:	85 DWELLING UNITS / 3.06 AC = 28 DWELLING UNITS PER AC
PROPOSED FRONT BUILDING SETBACK:	20' (STAFFORD AVENUE); 21.37' (HARTFORD STREET)
PROPOSED SIDE SETBACK:	40.91' (NORTH); 40.00' (EAST)
TOTAL REQUIRED PARKING:	1 SPACE FOR EACH BEDROOM AND/OR STUDIO
TOTAL PROVIDED PARKING:	TOTAL REQUIRED PARKING SPACES = 85 UNITS x 1 SPACES = 85 SPACES 32 SURFACE SPACES (INCLUDING 2 ADA SPACES) 53 GARAGE SPACES (INCLUDING 2 ADA SPACES) 3 STREET PARALLEL PARKING SPACES
TOTAL REMOVED PARKING:	32 + 53 + 3 = 88 SPACES 1 STREET PARALLEL SPACE (HARTFORD STREET)
PROPOSED PARKING SETBACKS:	14.18' (NORTH); 4.63' (EAST);
EXISTING BUILDING COVERAGE:	24.2%
PROPOSED BUILDING COVERAGE:	43.4%
EXISTING LOT COVERAGE:	46.7%
PROPOSED LOT COVERAGE:	75.0%
CRITICAL YEAR STORM:	5
FLOOD DESIGNATION:	ZONE X (FIRM MAP 39049C0159K EFFECTIVE 06/17/2008)
WATERSHED ID:	OLENTANGY RIVER

2 - SITE PLAN



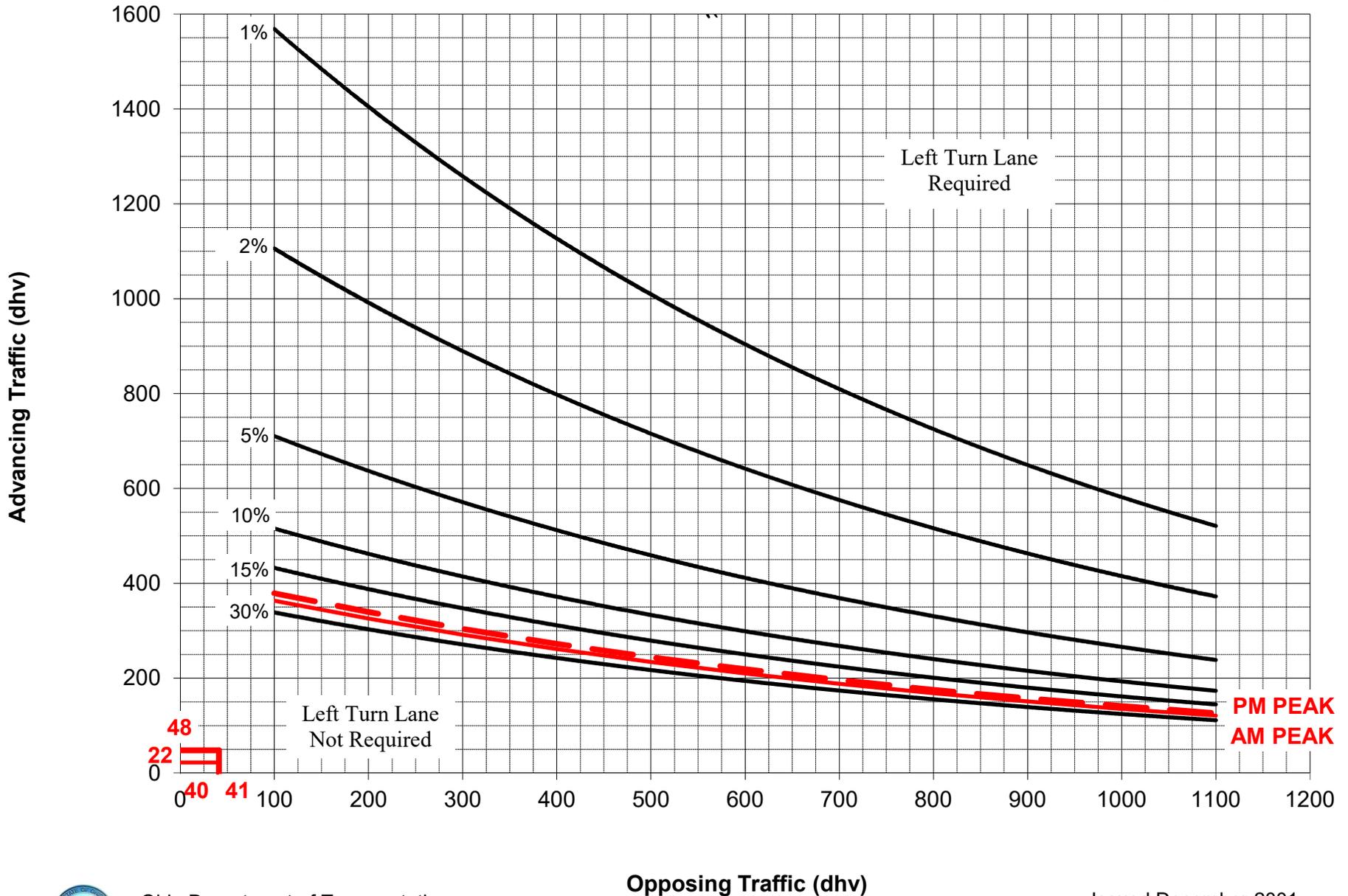
Turn Lane Warrant Charts

2-Lane Highway Left Turn Lane Warrant (<=40MPH)

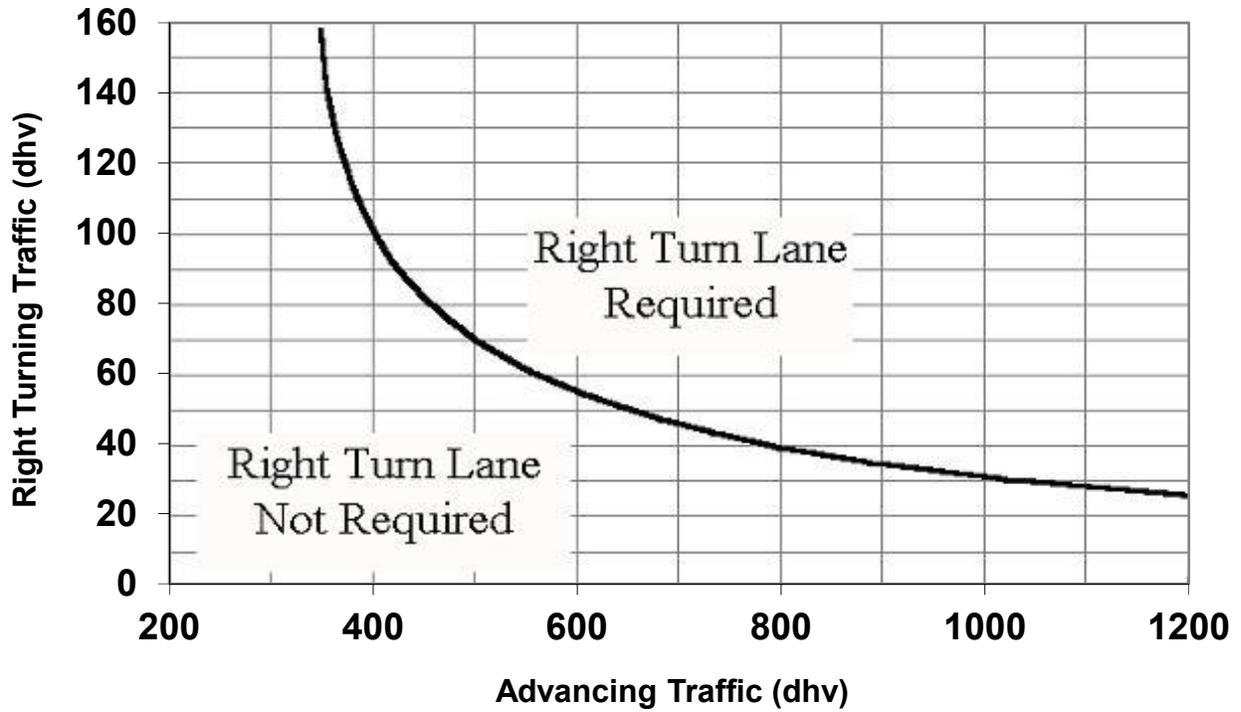
AM Peak: # Left Turns = 5
 % Left Turns = 23%
NOT WARRANTED

PM Peak: # Left Turns = 10
 % Left Turns = 21%
NOT WARRANTED

Volumes Analyzed: 2019 Build
 Stafford Ave. Analysis
 Stafford @Site Access



2-Lane Highway Right Turn Lane Warrant
 =< 40 mph or 70 kph Posted Speed



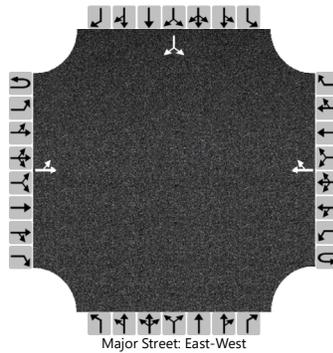
REQ	Intersection	Advancing Traffic Volume	Right Turning Traffic	Result
1				
2				
3				
4				
5	Westbound - Stafford @ Site Access, AM	40	1	NO
6	Westbound - Stafford @ Site Access, PM	41	3	NO
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

HCS 2010 Capacity Analyses Reports

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	Zihan Ma			Intersection	Stafford @ Site Access		
Agency/Co.	The Kleingers Group			Jurisdiction	City of Worthington		
Date Performed	3/6/2019			East/West Street	Stafford Ave.		
Analysis Year	2019			North/South Street	Site Access		
Time Analyzed	2019 AM Build			Peak Hour Factor	0.70		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	NCR Stafford Village						

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 (veh/h)		5	17				39	1						4		7
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.13												6.43		6.23
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.23												3.53		3.33

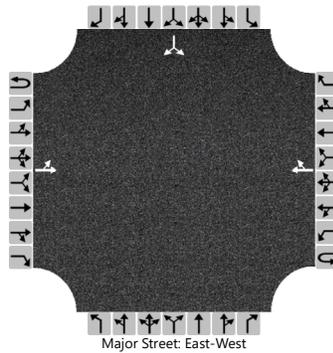
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		7													16		
Capacity, c (veh/h)		1539													964		
v/c Ratio		0.00													0.02		
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)		1.7												8.8			
Approach LOS		A												A			

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General Information				Site Information			
Analyst	Zihan Ma			Intersection	Stafford @ Site Access		
Agency/Co.	The Kleingers Group			Jurisdiction	City of Worthington		
Date Performed	3/6/2019			East/West Street	Stafford Ave.		
Analysis Year	2019			North/South Street	Site Access		
Time Analyzed	2019 PM Build			Peak Hour Factor	0.70		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	NCR Stafford Village						

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 (veh/h)		10	38				38	3						3		7
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.13												6.43		6.23
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.23												3.53		3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		14													14		
Capacity, c (veh/h)		1537													951		
v/c Ratio		0.01													0.02		
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)		1.6												8.8			
Approach LOS		A												A			