



Logan-Union-Champaign regional planning commission

Director: Bradley J. Bodenmiller

Zoning & Subdivision Committee

Thursday, February 14, 2019

12:30 pm

- Minutes from last meeting of January 10, 2019
- 1. Glacier Pointe Section 2 Preliminary Plat (Union County) – Staff Report by Brad Bodenmiller
- 2. Review of Darby Township Zoning Parcel Amendment (Union County) – Staff Report by Brad Bodenmiller
- 3. Review of Jerome Township Zoning Parcel Amendment (Union County) – Staff Report by Brad Bodenmiller

Members:

Tyler Bumbalough – City of Urbana Engineer
Scott Coleman – Logan County Engineer
Weston R. Dodds – City of Bellefontaine Code Enforcement
Chad Flowers – City of Marysville Planning
Charles Hall – Union County Commissioner
Steve McCall – Champaign County Engineer
Bill Narducci – Union County Engineer's Office
Vince Papsidero/Tammy Noble – City of Dublin Planning
Tom Scheiderer – Jefferson & Zane Township Zoning Inspector
Jeff Stauch – Union County Engineer
Robert A. Yoder – North Lewisburg Administrator
Brad Bodenmiller – LUC
Heather Martin – LUC

10820 St. Rt. 347, PO Box 219

East Liberty, Ohio 43319

• Phone: 937-666-3431 •

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Staff Report – Glacier Pointe Section 2

Applicant:	<p>Encore Living c/o Jay McIntire 68 North High Street, Building E, Suite 105 New Albany, OH 43054 jay@encore-living.com</p> <p>Terrain Evolution, Inc. c/o Justin Wollenberg PE 720 East Broad Street, Suite 203 Columbus, OH 43215 jwollenberg@terrainevolution.com</p>
Request:	Approval of the Glacier Pointe, Section 2 – Preliminary Plat.
Location:	Located north of the point where Mitchell-Dewitt Road crosses over US Hwy 33 in Jerome Township, Union County.

Staff Analysis:	<p>This Preliminary Plat involves 57.488 acres of land and 99 single-family residential lots.</p> <p>Acreages:</p> <ul style="list-style-type: none">○ 8.019 acres of right-of-way○ 22.537 acres of single-family residential lots○ 26.892 acres of open space <p>Proposed utilities:</p> <ul style="list-style-type: none">○ City of Marysville public water system○ City of Marysville public sanitary waste treatment <p>Prior Action:</p> <ul style="list-style-type: none">○ The Preliminary Plat of Glacier Pointe, Section 1 was approved September 2018. <p>• Union County Engineer's Office</p> <ul style="list-style-type: none">○ The Union County Engineer's Office submitted comments in a letter dated 02-06-19. The Engineer's Office recommended approval subject to conditions. Some of those comments are listed below and summarized for reference. (Please refer to letter for all comments.)1. The traffic impact study has not yet been approved. Construction Drawings will not be
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Staff Report – Glacier Pointe Section 2

	<p>approved until the TIS and subsequent Infrastructure Agreement have been approved.</p> <ol style="list-style-type: none">2. A variance to the minimum right-of-way width has been approved. This variance will permit a reduction of the required right-of-way from 60' to 50' for all local roadways. The collector entry road (Glacier Pointe Drive) will remain at 60' width.3. Provide the proposed location of all multi-use trails planned to be installed within this section within the final engineering construction documents.4. Submit a comprehensive stormwater management report for review by our office. <p>• Union County Soil & Water Conservation District</p> <ul style="list-style-type: none">○ No comments received as of 02-06-19. <p>• Union County Health Department</p> <ul style="list-style-type: none">○ No comments received as of 02-06-19. Standard comments from the Health Department are below:<ol style="list-style-type: none">1. "All efforts should be made to provide a point of connection (via easements and/or services lines) to both water and sewer to any adjacent home, business, or any other facility that is serviced by a private water system (PWS) and or sewage treatment system (STS)."2. "Any home, business, or other structure that is currently being serviced by a private STS and ends up being situated within 200' of a sanitary sewer easement, shall be brought to the attention of the Union County Health Department."3. "If at any time during development of the subdivision a PWS (well, cistern, etc.) or STS is found, our office shall be immediately contacted for inspection. Proper permitting must be obtained for sealing and or abandonment of a PWS and STS." <p>• City of Marysville</p> <ul style="list-style-type: none">○ The City of Marysville submitted comments in a letter dated 02-07-19. The City recommended approval subject to conditions. Some of those comments are listed below and summarized for reference. (Please refer to letter for all comments.)
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Staff Report – Glacier Pointe Section 2

1. A 20' utility easement shall be provided along the entirety of this development's frontage with both Mitchell-Dewitt Road and McKittrick Road.
2. Since this development has yet to commence, all items within Section 1 shall be labeled as "by others" or "future" instead of "existing".
3. Please confirm the entire Landscape Buffer and Roadway Reserve will provide the City with access for the maintenance of our utility infrastructure.
4. Detailed sanitary sewer sizing calculations shall be provided to ensure the provision of adequate wastewater service to the entire site.
5. All setbacks shall be shown and labeled to ensure adequate room for the City to perform maintenance on the wastewater system.

• **Jerome Township**

- No comments received as of 02-06-19.

• **ODOT District 6**

- No comments received as of 02-06-19.

• **Union Rural Electric**

- No comments received as of 02-06-19.

• **LUC Regional Planning Commission**

1. Sheet 1: Add date of survey (§313, 4.).
2. Sheet 3 & 6: Review/Add dimensioning around SAOS-D and at McKittrick Road (§313, 16.; §313, 12.).
3. Sheet 3 & 4: Update Glacier Pointe Drive label; it indicates the right-of-way is only 50' wide (§313, 12.).
4. Sheet 7: Is the land depicted at Mitchell-Dewitt Road included in this plat? If not, will it be included in a future section (§313 12.)?
5. There appears to be Pewamo soil type present. Section 416 reads, "LUC may approve the subdivision provided the subdivider agrees to perform such improvements as will render the area acceptable for the intended use" (pp. 23).
6. Label easements and widths. Easements for water and sewer must be a minimum for 20' and 10' for other utilities (§313, 12.; §414).
7. A letter from Jerome Township certifying that the Final Plat conforms with the Township's zoning is



Logan-Union-Champaign regional planning commission

Staff Report – Glacier Pointe Section 2

	<p>required before any approval of the Final Plat may be granted (§401; §412, 1.; §413, 2.).</p> <p>8. All bonds, surety, letters of credit, etc. shall be approved by the County Commissioners before any approval of the Final Plat may be granted (§326).</p>
Staff Recommendations:	<p>Staff recommends APPROVAL of Glacier Pointe, Section 2 – Preliminary Plat with the condition that all comments/modifications from LUC and reviewing agencies shall be incorporated into the Construction Drawings and Final Plat. The developer shall ensure that prior to Final Plat submittal, all requirements and items outlined in the Union County Subdivision Regulations are incorporated in the Final Plat prior to submittal.</p>
Z&S Committee Recommendations:	



Logan-Union-Champaign regional planning commission

Director: Dave Gulden, AICP

Application for Preliminary Plat Approval

Date: _____

Name of Subdivision: _____

Location: _____

Township: _____ Military Survey: _____

Complete Parcel(s) Identification Number (PIN): _____

Have **ALL** Sketch Plan review letters been obtained? _____ (Engineer, SWCD, Board of Health)

Name of Applicant: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____ Email: _____

Name of Owner of property to be subdivided: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____ Email: _____

Name of Applicant's Surveyor or Engineer: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____ Email: _____

Proposed Acreage to be Subdivided: _____

Current Zoning Classification: _____

Proposed Zoning Changes: _____

Proposed Land Use: _____

Development Characteristics

Number of proposed lots: _____ Typical lot width (feet): _____

Number of proposed units: _____ Typical lot area (sq. ft.): _____

Single Family Units: _____ Multi-Family Units: _____

Acreage to be devoted to recreation, parks or open space: _____

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Recreation facilities to be provided: _____

Do you propose deed restrictions? (If yes, attach a copy): Yes ____ No ____

1. Proposed method of Supplying Water Service: _____

2. Proposed method of Sanitary Waste Disposal: _____
(If on-site disposal systems are proposed, please attach letter certifying the County Board of Health approval)

3. Requests for Variances from Subdivision Regs: _____
(If yes, please explain variances and reason for variances)

List all proposed improvements and utilities and state your intention to install or provide a guarantee prior to final plat approval:

	Improvement	Installation	Guarantee
a.	_____	_____	_____
b.	_____	_____	_____
c.	_____	_____	_____
d.	_____	_____	_____
e.	_____	_____	_____

For Official Use

Date filed: _____ Filing Fee: _____

Date of Meeting of Planning Commission: _____

Action by Planning Commission: _____

If rejected, reason(s) for: _____



Preliminary Plat Review Checklist

#	Required Item Description	Have	Need
1	Drawn at a scale not less than 1:100 and shall be on one or more sheets 24" X 36"		
2	Proposed name of the subdivision, which shall not duplicate or closely approximate the name of any other subdivision in the county.		
3	Location by section, range, and township or Virginia Military Survey (VMS).		
4	Names, addresses and telephone numbers of the owner, subdivider, and professional surveyor or professional engineer who prepared the plat; and the name, address and telephone number of the professional surveyor who performed the boundary survey.		
5	Date of survey.		
6	Scale of the plat, north point, and date.		
7	Boundaries of the subdivision and its acreage.		
8	Names of adjacent subdivisions, owners of record of adjoining parcels of unsubdivided land, and the location of their boundary lines.		
9	Locations, widths, and names of existing streets, railroad rights-of-way, easements, parks, permanent buildings, and corporation and township lines; location of wooded areas and other significant natural features; soil types and soil type limits; limits of Flood Hazard zones.		
10	Zoning classification of the tract and adjoining properties.		
11	Existing contours (USGS datum) at an interval of not greater than two feet if the slope of the ground is fifteen percent or less; and not greater than five feet where the slope is more than fifteen percent.		
12	Existing sewers, water and gas mains, culverts and other underground structures, and electric and telephone poles and lines and other above ground structures within and adjacent to the tract.		
13	Layout, names and widths of proposed streets and easements.		
14	Building setback lines with dimensions.		
15	Layout and dimensions of all proposed water and sewer lines, showing their connections with the existing systems, and all proposed easements for utility, water and sewer lines.		
16	Layout, numbers and approximate dimensions of each lot. When lots are located on a curve or when side lot lines are not at ninety degree angles, the width at the building line shall be shown, if it is less than the frontage width. Location of access from lots to the proposed streets shall be shown.		
17	Parcels of land to be reserved for public use or to be reserved by covenant for residents of the subdivision.		



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18	The limits of all Flood Hazard Areas (zone A, AE, B, and X) as determined by the Federal Emergency Management Agency (show the FEMA map number and date). The Base Flood Elevation shall be determined and shown. Minimum first floor elevations shall be shown for all lots located within Flood Hazard Areas.		
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Supplementary Information			
19	Statement of proposed use of lots, giving the type and number of dwelling units; and type of business or industry if use is not residential.		
20	Description of proposed covenants and restrictions.		
21	Description of proposed zoning changes.		
22	Typical sections and tentative profiles of streets and other related improvements as required in Article 5. Calculations as required to justify horizontal and vertical curves, pipe sizes, etc. The County Engineer shall have approved the layout and design of the lots, streets and other improvements prior to the Preliminary Plat approval.		
23	A preliminary drainage plan which shall identify adequate drainage outlets and shall contain adequate measures for control of erosion and siltation and for surface water management in accordance with Article 5 and the Technical Design Standards. The County Soil and Water Conservation District shall have approved the preliminary drainage plan prior to Preliminary Plat approval.		
24	If the subdivider proposes individual household sewage systems, the County Board of Health or the OEPA shall have approved the use of individual household sewage systems prior to the Preliminary Plat approval. N/A		
25	If the subdivider proposes individual household wells, the subdivider shall supply evidence acceptable to the County Board of Health of the availability of satisfactory water. The County Board of Health or the OEPA shall have approved the use of individual household wells prior to the Preliminary Plat approval. N/A		
26	Letters from utility companies, as required, indicates approval of easement locations and widths prior to the Preliminary Plat approval.		
27	A vicinity map at scale of generally not more than six thousand feet to an inch shall be shown on, or shall accompany, the Preliminary Plat. This map shall show all existing subdivisions, roads, and tract lines, together with the names of the owners of land immediately adjoining the proposed subdivision and between it and the nearest existing thoroughfares. It shall also show the most advantageous connections between the roads in the proposed subdivision and those of the neighboring areas.		
28	Preliminary Plat Fees: Payment/Check made out to LUC Regional Planning Commission, based on the current fee schedule.		

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East Liberty, Ohio 43319

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ENCORE LIVING, LLC.
ATTN: JAY MCINTIRE
68 NORTH HIGH STREET
BUILDING E, SUITE 105
NEW ALBANY, OH 43054
P: 614-855-0500
F: 614-416-2004

ADVANCED CIVIL DESIGN
ATTN: ANDY KRANER
422 BEECHER ROAD
GAHANNA, OHIO 43230
P: 614-207-5384
F: 614-428-7755

STREET, STORM & WATER IMPROVEMENT PLANS FOR

GLACIER POINTE

SECTION 2

VIRGINIA MILITARY SURVEY (VMS) 6581

UNION COUNTY, OHIO

B.M. #1 CHISELED "X" IN TOP OF NORTHEAST CORNER OF BRIDGE OVERPASS FOR U.S. ROUTE 33. SHOWN ON BASE MAP AS "BM #1". ELEVATION=968.04.

B.M. #2 NORTHEAST TOP FLANGE BOLT ON FIRE HYDRANT LOCATED ON THE SOUTH SIDE OF MITCHELL-DEWITT ROAD, 670' NORTHWEST OF THE INTERSECTION OF MCKITRICK ROAD AND MITCHELL-DEWITT ROAD. SHOWN ON BASE AS "BM #2". ELEVATION=958.95.

B.M. #3 NORTH TOP FLANGE BOLT ON FIRE HYDRANT LOCATED ON THE EAST SIDE OF MCKITTRICK ROAD, 1630' NORTHEAST OF THE INTERSECTION OF MCKITTRICK ROAD AND MITCHELL-DEWITT ROAD, 150' NORTHEAST OF THE INTERSECTION WITH AVALON LANE. ELEVATION=973.72.

THE STORMWATER MANAGEMENT CALCULATIONS ARE BASED ON THE CRITICAL STORM METHOD. DEVELOPED AREAS SHALL BE REQUIRED TO RELEASE THE CRITICAL STORM AND ALL LESSER STORMS AT A RATE NO GREATER THAN THE PREDEVELOPED ONE YEAR STORM EVENT. ALL STORMS OF GREATER INTENSITY THAN THAT OF THE CRITICAL STORM SHALL RELEASE AT THEIR RESPECTIVE PREDEVELOPED RATES PER UNION COUNTY REGULATIONS.

THE EXISTING LAND USE CONSISTS OF VACANT LAND THAT HAS BEEN FARMED AS WELL AS LEFT FALLOW. THE TRIBUTARY AREAS FOR THIS PROJECT ACCUMULATE AND DISCHARGE TO U.S. ROUTE 33 DITCH.

RETENTION PONDS P-101 & P-102 CONSTRUCTED WITH PHASE 1 AND PROPOSED PONDS P-103 & P-104 WILL BE USED FOR STORMWATER MANAGEMENT PURPOSES. PONDS WILL BE WITHIN AN EASEMENT. POND AND OUTLET WILL BE ON DITCH MAINTENANCE.

WATER QUALITY VOLUMES WILL BE CONTAINED IN THE PROPOSED STORMWATER MANAGEMENT BASINS AND RELEASED IN ACCORDANCE WITH THE OHIO EPA NPDES GENERAL PERMIT NO. OHC000005.

THE GP-2 DEVELOPMENT SITE IS LOCATED IN ZONE X, OUTSIDE OF 500-YEAR FLOODPLAIN ON FLOOD INSURANCE RATE MAP, UNION COUNTY, OHIO, #39159C0390D, EFFECTIVE DATE DECEMBER 16 2008.

OPEN SPACE INCLUDING THE DEDICATED OPEN SPACE IN GP-2 IS TO BE OWNED AND MAINTAINED BY GLACIER POINTE HOME OWNERS ASSOCIATION. USE OF OPEN SPACE IS TO BE RESTRICTED TO NECESSARY STORMWATER MANAGEMENT FACILITIES, UTILITY EASEMENTS AND RECREATIONAL USE.

GLACIER POINTE, SECTION 2 WAS ZONED PUD (NOW PD), APPROVED DECEMBER 21, 2017.

PARKING TO BE LIMITED TO ONE SIDE OF THE STREET. NO PARKING ON THE HYDRANT SIDE OF THE STREET.

VARIANCE FROM THE UNION COUNTY SUBDIVISION REGULATIONS, SECTION 406, MINIMUM RIGHT-OF-WAY WIDTHS TO ALLOW A 50' RIGHT-OF-WAY WIDTH FOR ALL LOCAL STREET CLASSIFICATIONS WITHIN GLACIER POINTE. APPROVED 9-18-2018.

TOTAL AREA (ACRES)	57.448
OPEN SPACE	26.892
GPOS	25.978
SAOS	0.914
RIGHT-OF-WAY	8.019
EXISTING	0.044
PROPOSED	7.974
LOTS	22.537
NUMBER OF LOTS	99
55' LOTS	35
70' LOTS	5
75' LOTS	46
80' LOTS	11
90' LOTS	2

<u>DENSITY (UNITS/ACRE)</u>	
GROSS (# UNITS/TOTAL AREA)	1.723
NET (# UNITS/LOT AREA)	4.393

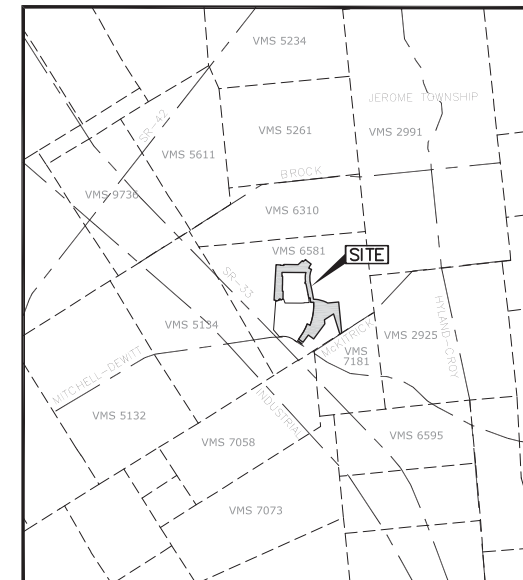
SETBACKS	55'	70'	75'	80'	90'
FRONT YARD	20'	25'	25'	25'	25'
REAR YARD	5'	30'	30'	30'	30'
SIDE YARD	5'	5'	5'	6'	8'

SAOS = SUB AREA OPEN SPACE

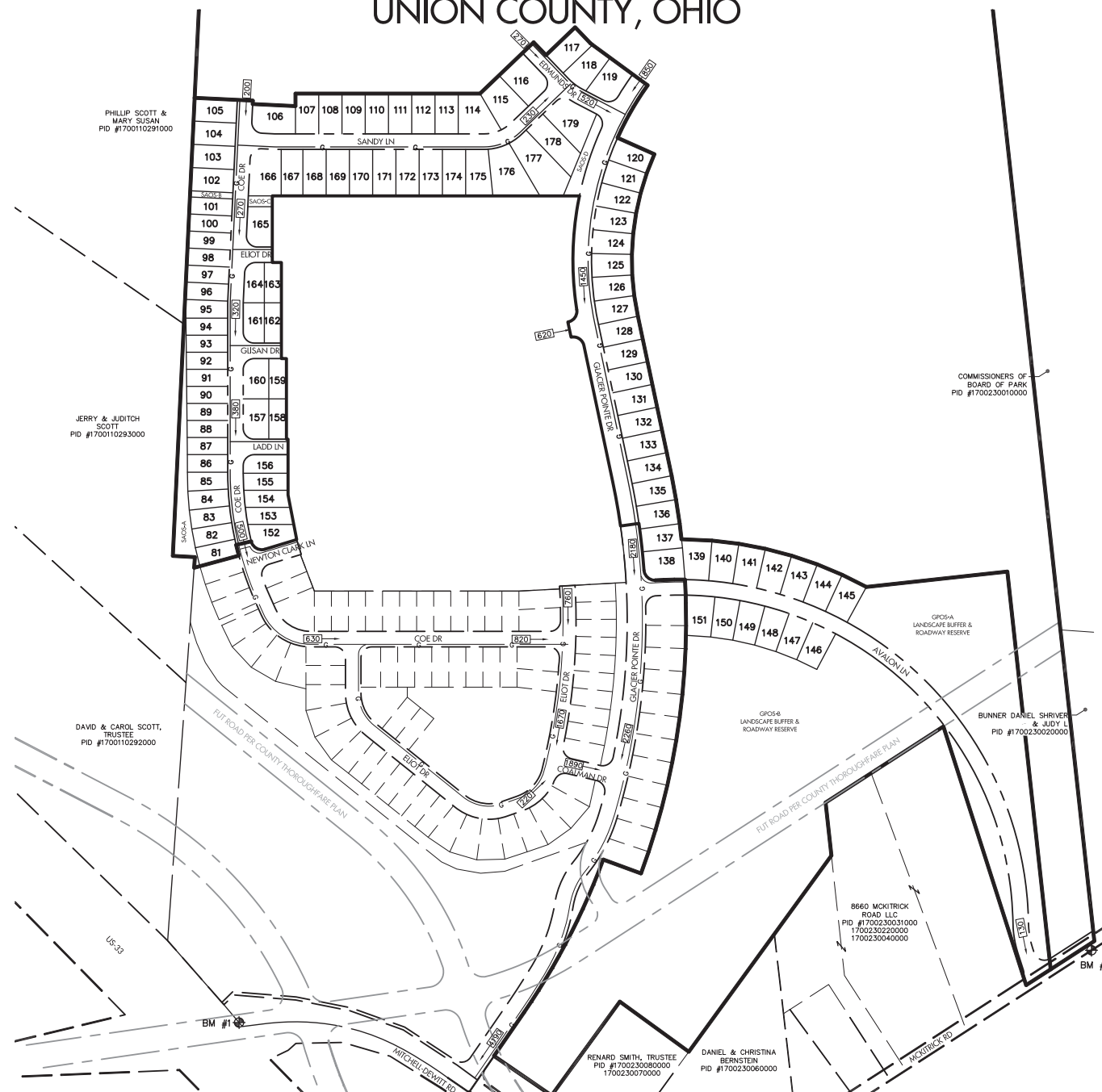
GPOS = GLACIER POINTE OPEN SPACE

1	COVER SHEET
2	TYPICAL SECTION & DETAILS
3-7	PRELIMINARY PLAT
8-10	COMPOSITE UTILITY PLAN
11-20	PRELIMINARY STREET PLAN & PROFILE
21	EXISTING CONDITIONS PLAN
22-27	PRELIMINARY GRADING & EROSION & SEDIMENT CONTROL PLAN
28	STORMWATER MANAGEMENT PLAN
29	SIGHT DISTANCE EXHIBIT

<u>UCEO</u>	<u>ODOT</u>	<u>COM</u>
DWG. NO.7	BP-3.1	WTR-03
	CB-1.1	WTR-04
	CB-1.2	WTR-06
<u>COC</u>	CB-1.3	WTR-09
2319	MH-1.2	WTR-18
		WTR-23
		WTR-25
		WTR-26
		WTR-27

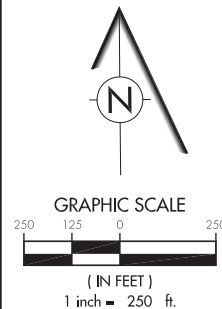


LOCATION MAP
SCALE: 1" = 4000'



INDEX MAP
SCALE: 1" = 250'

XXX = AVERAGE DAILY TRAFFIC

[illegible]

TerrainEvolution
Your bridge between Vision and Success

720 East Broad Street | Suite 203 | Columbus, OH 43215
P: 614.385.1090 | F: 614.385.1085 | E: info@terrainrevolution.com

SHIP, UNION COUNTY, OHIO
ACIER POINTE
SECTION 2
COVER SHEET

DRAWING SET STATUS:

☒ PRELIMINARY ENGINEERING SET

☐ AGENCY REVIEW SET

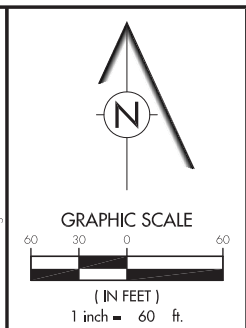
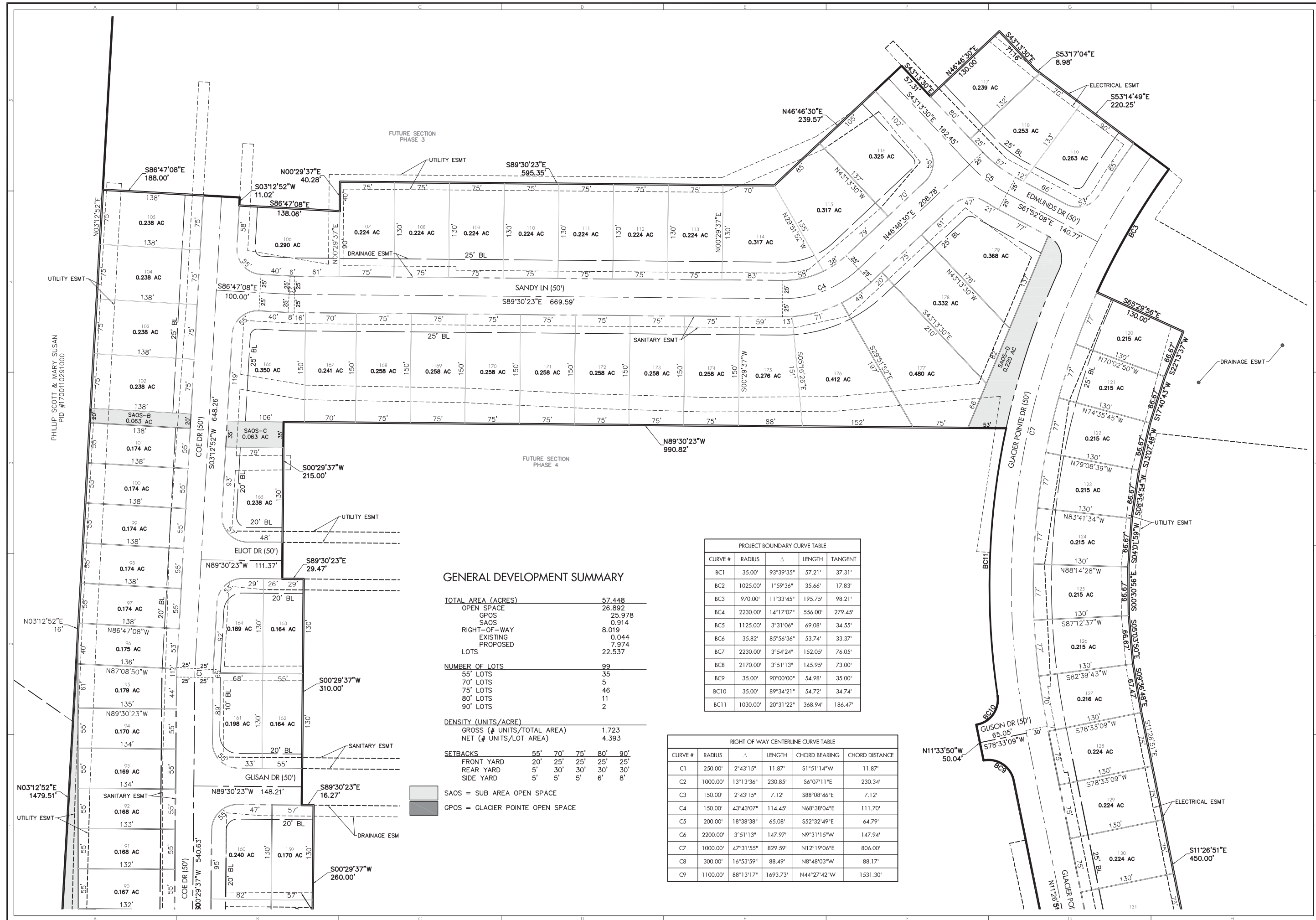
☐ CONSTRUCTION DOCUMENT SET

☐ AS-BUILT DOCUMENT SET

DESIGN	DRAFT	CHECK
DGR	DGR	JFW
PROJECT NO.: 18-039		
DATE: JANUARY, 2019		
SCALE:		
HORIZONTAL:		1" = 250'
VERTICAL:		N/A

SHEET NO.: 1 / 29

[illegible]

[illegible]


Your bridge between Vision and Success
720 East Broad Street | Suite 203 | Columbus, OH 43215
P: 614.385.1090 | F: 614.385.1085 | E: info@terrainevolution.com

JEROME TOWNSHIP, UNION COUNTY, OHIO

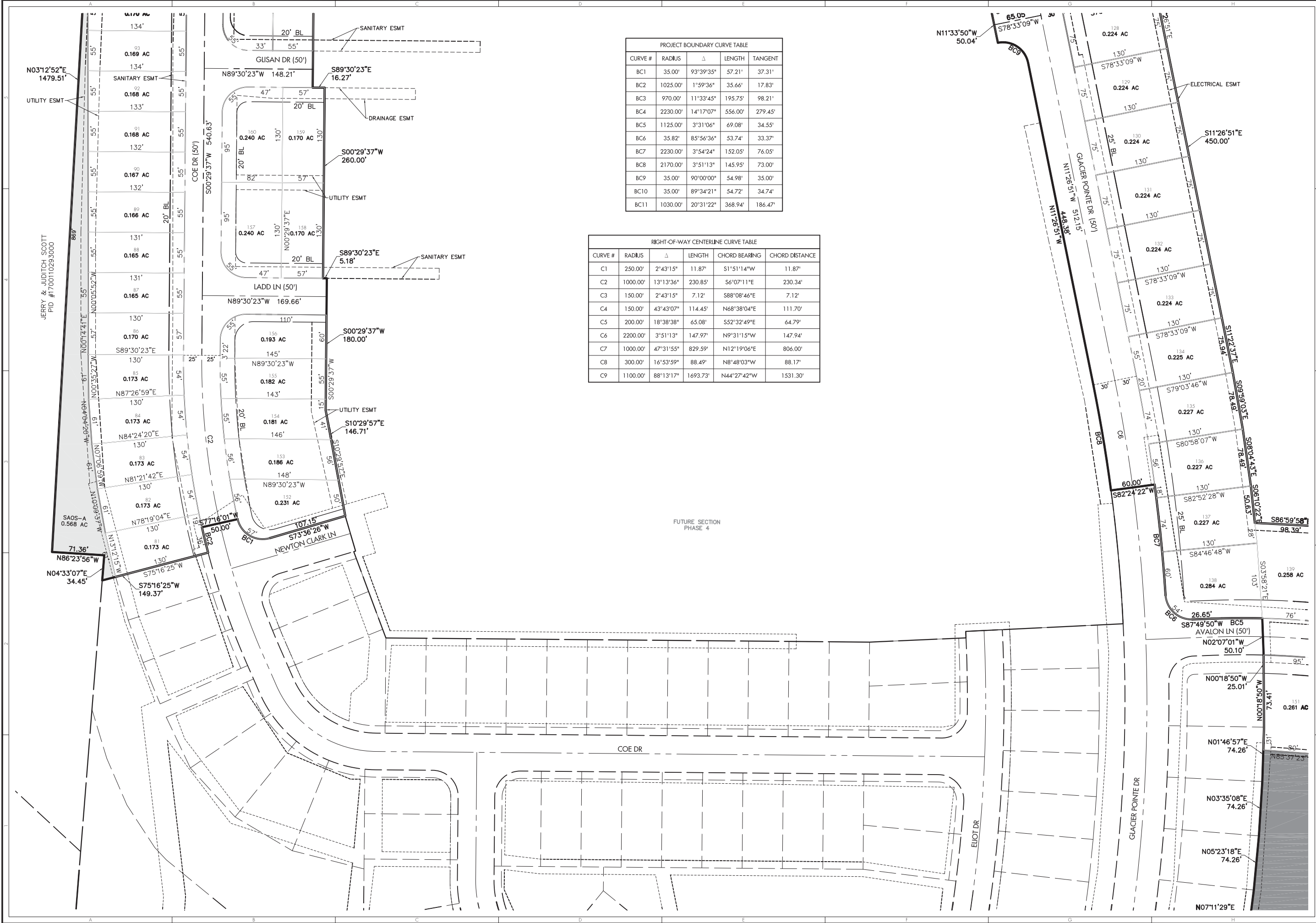
GLACIER POINTE

SECTION 2

PRELIMINARY PLAT

DRAWING SET STATUS:		
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DESIGN	DRAFT	CHECK
DGR	DGR	JPW
PROJECT NO.: 18-039		
DATE: JANUARY, 2019		
SCALE:		
HORIZONTAL:	1" = 60'	
VERTICAL:	N/A	
SHEET NO.: 3/29		

T:\18\18039\DWG\04-Engineering\Street Plans\18039-04EPLAT.dwg by:dline on 01/23/2019 @ 09:53:42 am ~ © Terrain Evolution, Inc.



PROJECT BOUNDARY CURVE TABLE				
CURVE #	RADIUS	Δ	LENGTH	TANGENT
BC1	35.00'	93°39'35"	57.21'	37.31'
BC2	1025.00'	1°59'36"	35.66'	17.83'
BC3	970.00'	11°33'45"	195.75'	98.21'
BC4	2230.00'	14°17'07"	556.00'	279.45'
BC5	1125.00'	3°31'06"	69.08'	34.55'
BC6	35.82'	85°56'36"	53.74'	33.37'
BC7	2230.00'	3°54'24"	152.05'	76.05'
BC8	2170.00'	3°51'13"	145.95'	73.00'
BC9	35.00'	90°00'00"	54.98'	35.00'
BC10	35.00'	89°34'21"	54.72'	34.74'
BC11	1030.00'	20°31'22"	368.94'	186.47'

RIGHT-OF-WAY CENTERLINE CURVE TABLE					
CURVE #	RADIUS	Δ	LENGTH	CHORD BEARING	CHORD DISTANCE
C1	250.00'	2°43'15"	11.87'	S1°51'14"W	11.87'
C2	1000.00'	13°13'36"	230.85'	S6°07'11"E	230.34'
C3	150.00'	2°43'15"	7.12'	S88°08'46"E	7.12'
C4	150.00'	43°43'07"	114.45'	N68°38'04"E	111.70'
C5	200.00'	18°38'38"	65.08'	S52°32'49"E	64.79'
C6	2200.00'	3°51'13"	147.97'	N9°31'15"W	147.94'
C7	1000.00'	47°31'55"	829.59'	N12°19'06"E	806.00'
C8	300.00'	16°53'59"	88.49'	N8°48'03"W	88.17'
C9	1100.00'	88°13'17"	1693.73'	N44°27'42"W	1531.30'

N

GRAPHIC SCALE

(IN FEET)

1 inch = 60 ft.

DATE

BY

#

CHANGE ORDER SCHEDULE

DESCRIPTION OF CHANGE

TerrainEvolution

Your bridge between Vision and Success

720 East Broad Street | Suite 203 | Columbus, OH 43215
P: 614.385.1090 | F: 614.385.1085 | E: info@terrainevolution.com

JEROME TOWNSHIP UNION COUNTY, OHIO

GLACIER POINTE

SECTION 2

PRELIMINARY PLAT

DRAWING SET STATUS:

☒ PRELIMINARY ENGINEERING SET

☐ AGENCY REVIEW SET

☐ CONSTRUCTION DOCUMENT SET

☐ AS-BUILT DOCUMENT SET

DESIGN

DGR

PROJECT NO.

184039

DATE

JANUARY, 2019

SCALE:

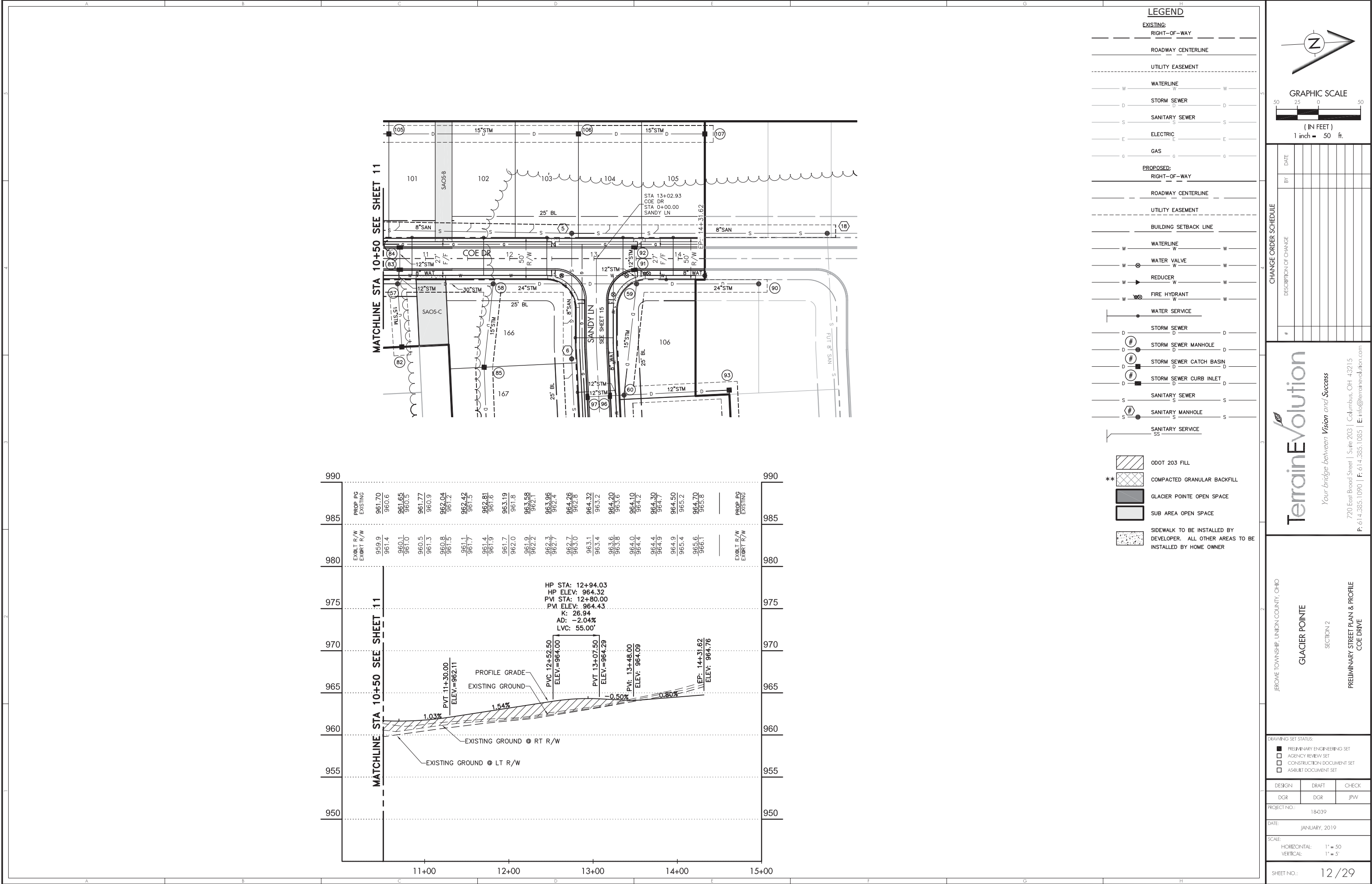
HORIZONTAL: 1" = 60'

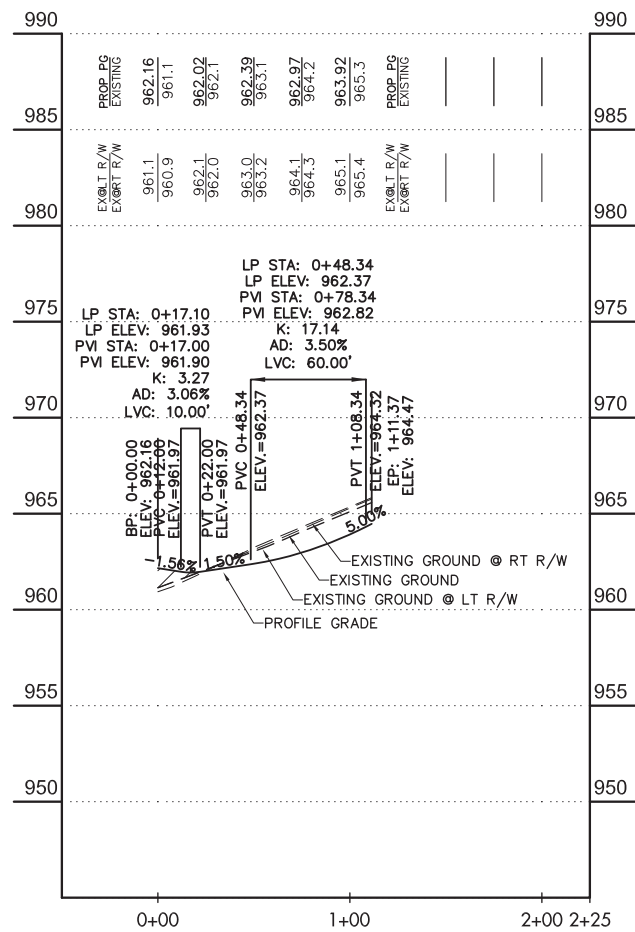
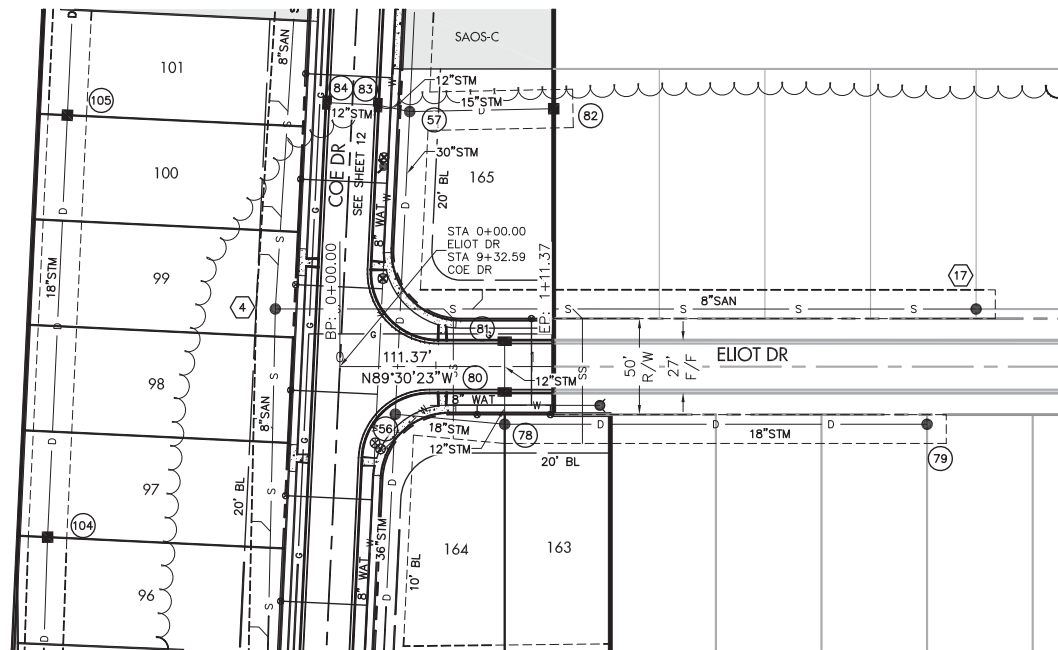
VERTICAL: N/A

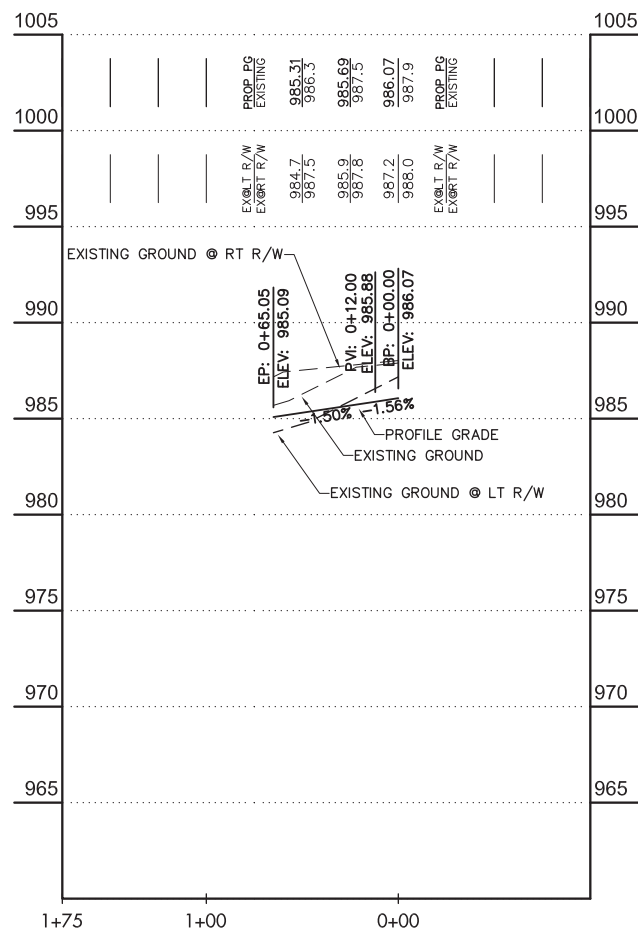
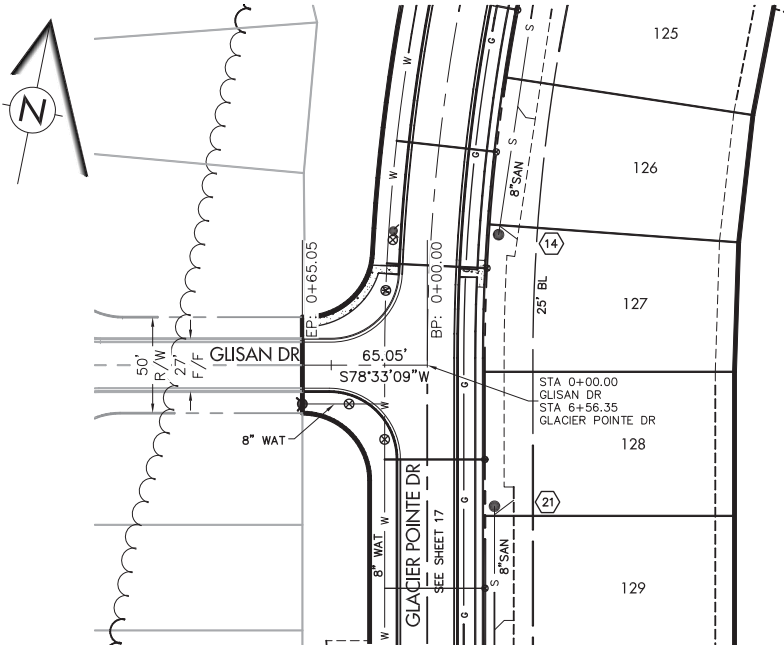
SHEET NO.:






4/29

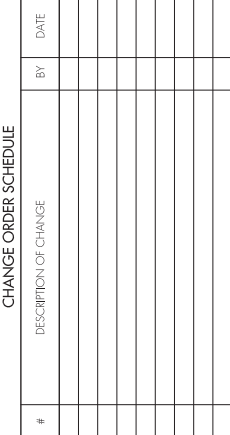




[illegible]



	ODOT 203 FILL
** 	COMPACTED GRANULAR BACKFILL
	GLACIER POINTE OPEN SPACE
	SUB AREA OPEN SPACE
	SIDEWALK TO BE INSTALLED BY DEVELOPER. ALL OTHER AREAS TO BE INSTALLED BY HOME OWNER



BROWN TOWNSHIP, UNION COUNTY, OHIO
 GLACIER POINTE
 SECTION 2
 PRELIMINARY STREET PLAN & PROFILE
 GUSAN DRIVE

DESIGN	DRAFT	CHECK
DGR	DGR	JPW

PROJECT NO.: 18-039

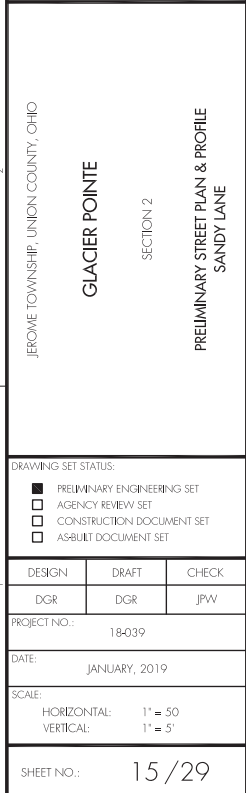
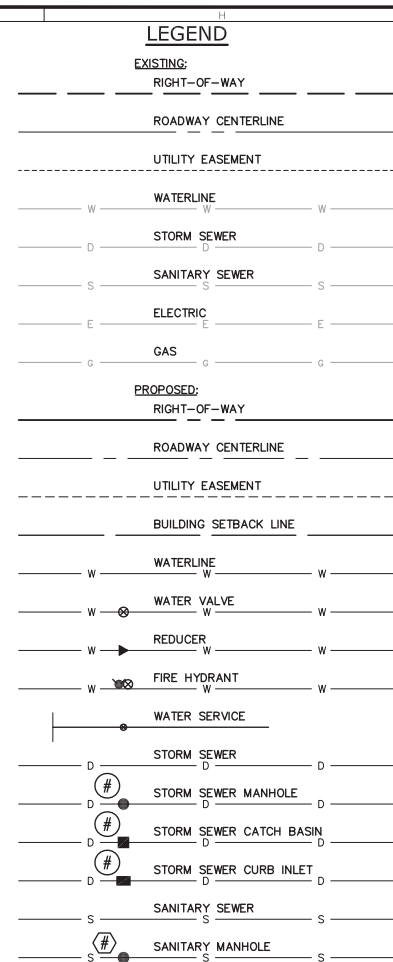
DATE: JANUARY, 2019

SCALE:

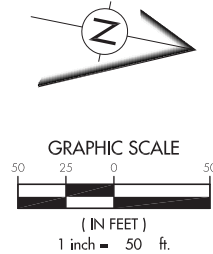
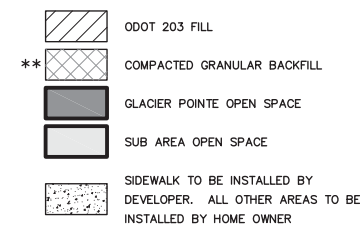
HORIZONTAL: 1" = 50'

VERTICAL: 1" = 5'

SHEET NO.: 14/29





[illegible]

Terrain Evolution

Your bridge between Vision and Success

720 East Broad Street | Suite 203 | Columbus, OH 43215
P: 614.385.1090 | F: 614.385.1065 | E: info@terrainrevolution.com

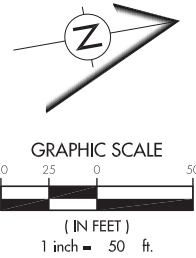
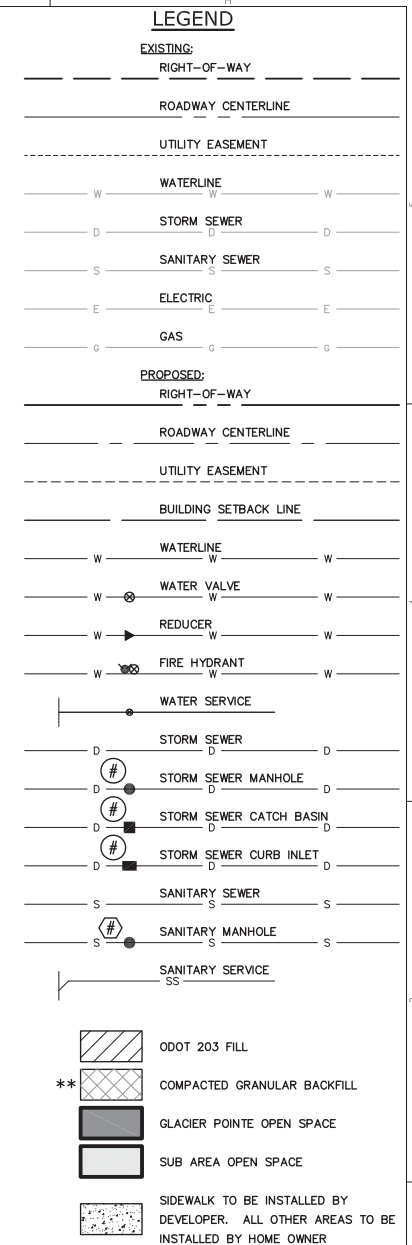
HEROME TOWNSHIP, UNION COUNTY, OHIO

GLACIER POINTE

SECTION 2

PRELIMINARY STREET PLAN & PROFILE
GLACIER POINTE DRIVE

DRAWING SET STATUS:		
<input checked="" type="checkbox"/> PRELIMINARY ENGINEERING SET		
<input type="checkbox"/> AGENCY REVIEW SET		
<input type="checkbox"/> CONSTRUCTION DOCUMENT SET		
<input type="checkbox"/> AS-BUILT DOCUMENT SET		
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DGR	DGR	JPW
PROJECT NO.: 184039		
DATE: JANUARY, 2019		
SCALE:		
HORIZONTAL:	1" = 50'	
VERTICAL:	1" = 5'	
SHEET NO.: 17/29		

[illegible]

TerrainEvolution

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P: 614.385.1090 | **F:** 614.385.1085 | **E:** info@terrainevolution.com

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P: 614.385.1090 | **F:** 614.385.1085 | **E:** info@terrainevolution.com

\\18\18-039\DWG\04-Engineering\Steel Plans\18039-99-GLACIER.dwg by:drhine on 01/23/2019 @ 09:57:28 am ~ © Terrain Evolution, Inc.

EROME TOWNSHIP, UNION COUNTY, OHIO

GLACIER POINTE

2. ANALYSIS

PRELIMINARY STREET PLAN & PROFILE
GLACIER POINTE DRIVEPRELIMINARY STREET PLAN & PROFILE
GLACIER POINTE DRIVE

DRAWING SET STATUS:

- ☒ PRELIMINARY ENGINEERING SET
- ☐ AGENCY REVIEW SET
- ☐ CONSTRUCTION DOCUMENT SET
- ☐ AS-BUILT DOCUMENT SET

DESIGN	DRAFT	CHECK
DGR	DGR	JPW

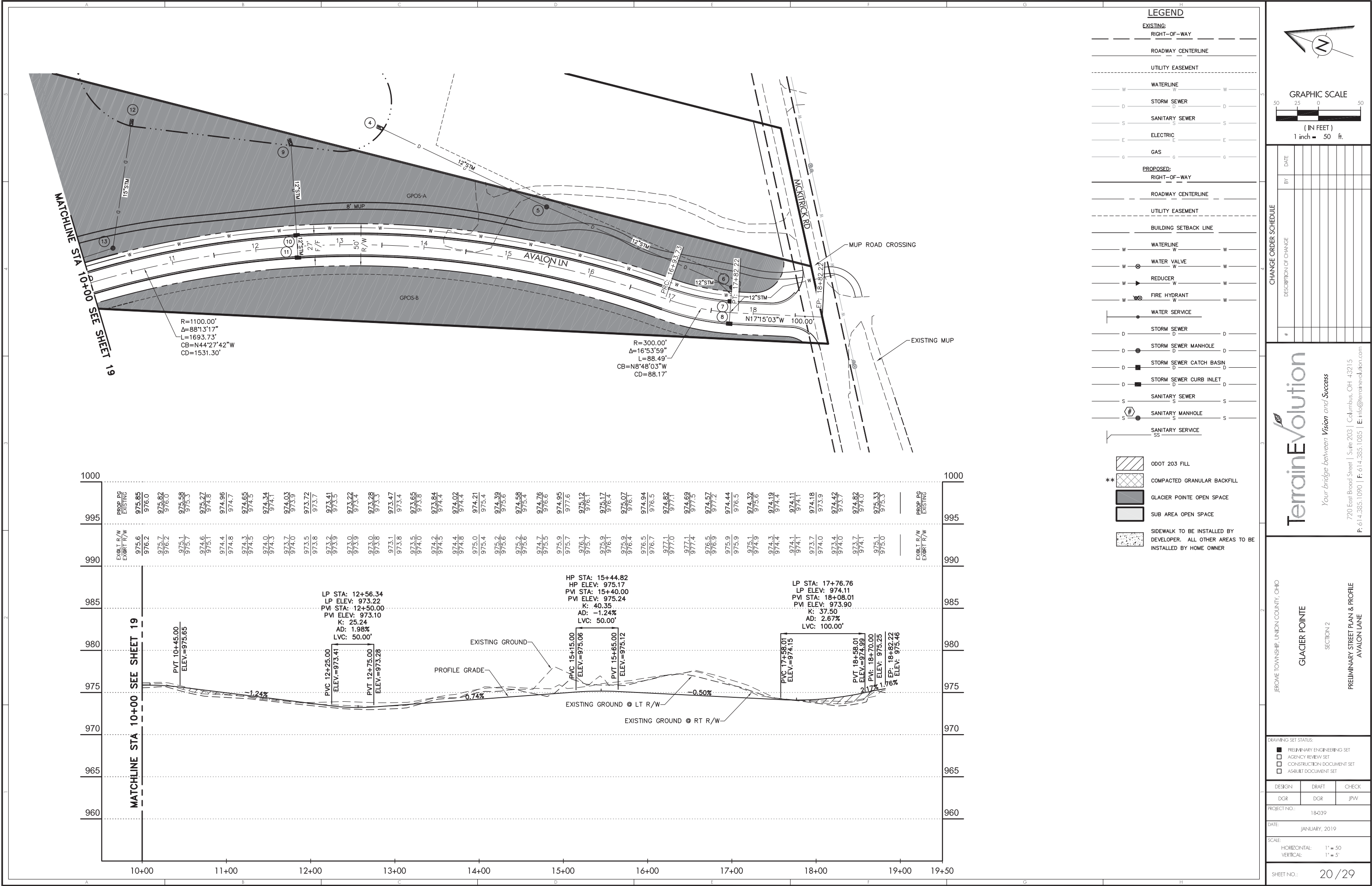
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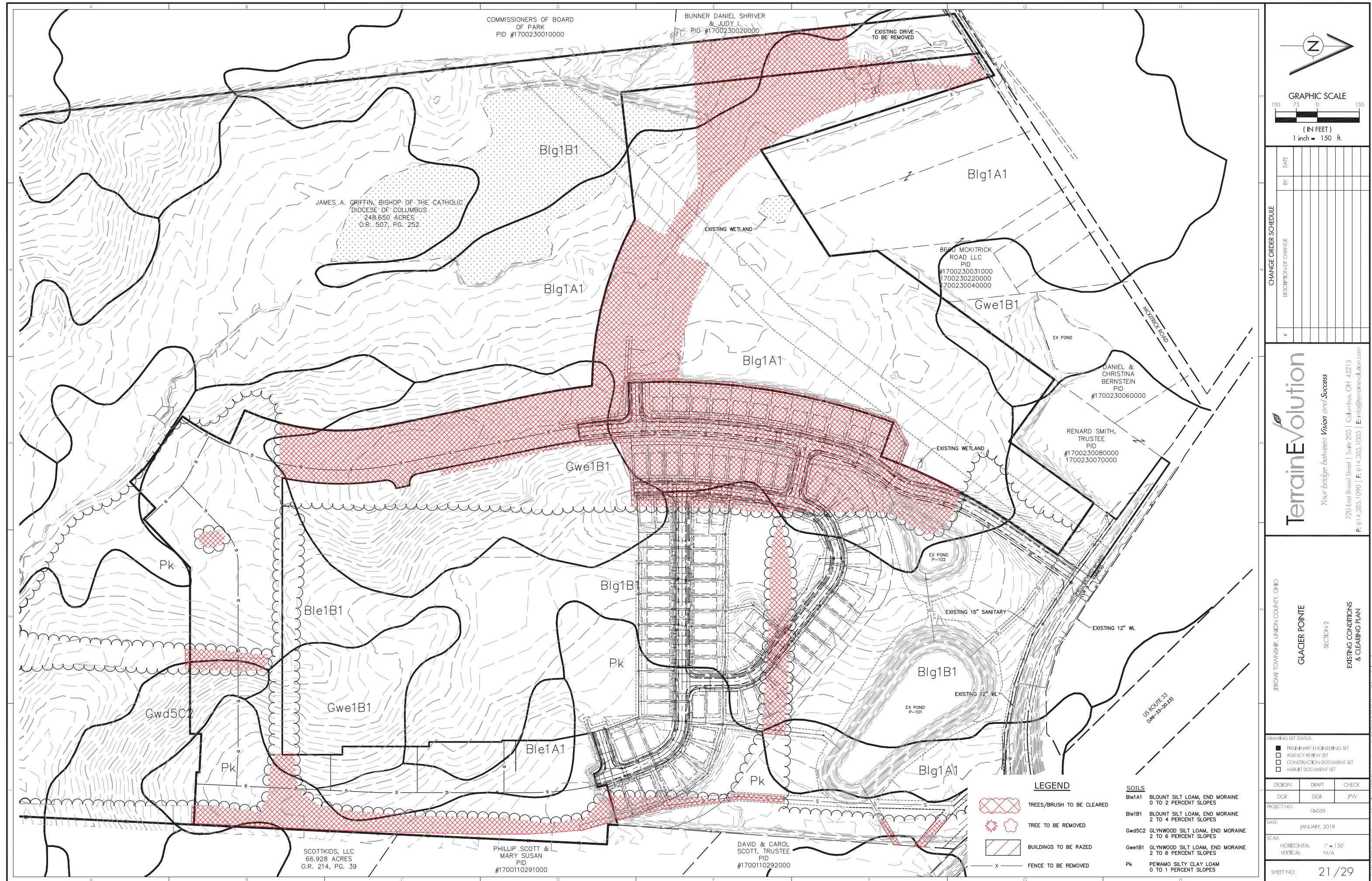
DATE: JANUARY, 2019

SCALE:

HORIZONTAL:	1" = 50'
VERTICAL:	1" = 5'

SHEET NO.: 18 / 29



[illegible]

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OWNSHIP, UNION COUNTY, OHIO

GLACIER POINTE

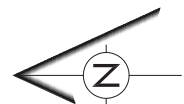
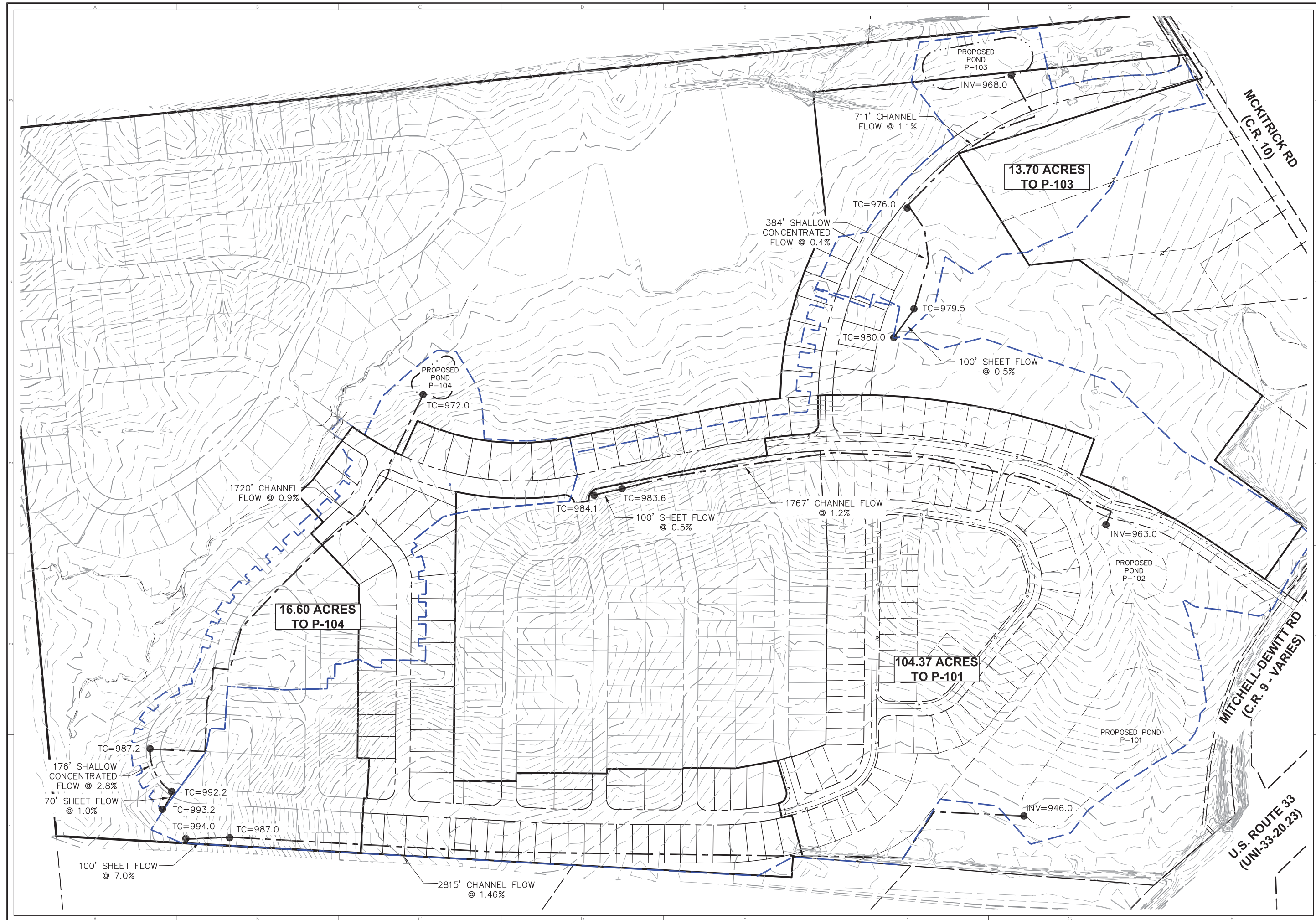
SECTION 2

**EXISTING CONDITIONS
& CLEARING PLAN**

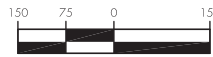
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- ☒ PRELIMINARY ENGINEERING SET
- ☐ AGENCY REVIEW SET
- ☐ CONSTRUCTION DOCUMENT SET
- ☐ AS-BUILT DOCUMENT SET

DESIGN:	DRAFT:	CHECK:
DGR	DGR	JPW
PROJECT NO.: 18-039		
DATE: JANUARY, 2019		
SCALE:		
HORIZONTAL: 1" = 150'		
VERTICAL: N/A		
SHEET NO.: 21/29		



GRAPHIC SCALE



(IN FEET)

1 inch = 150 ft.

[illegible]

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HEROME TOWNSHIP, UNION COUNTY, OHIO

GLACIER POINTE

SECTION 2

POST DEVELOPMENT TRIBUTARY MAP

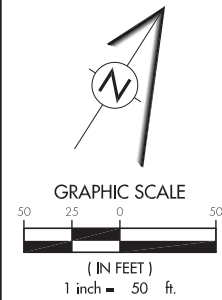
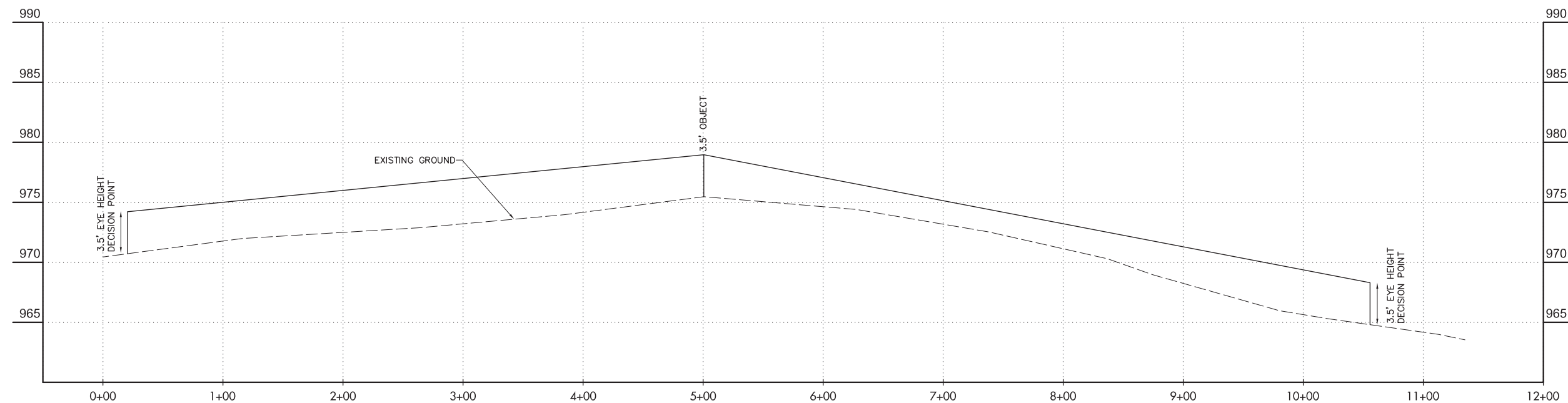
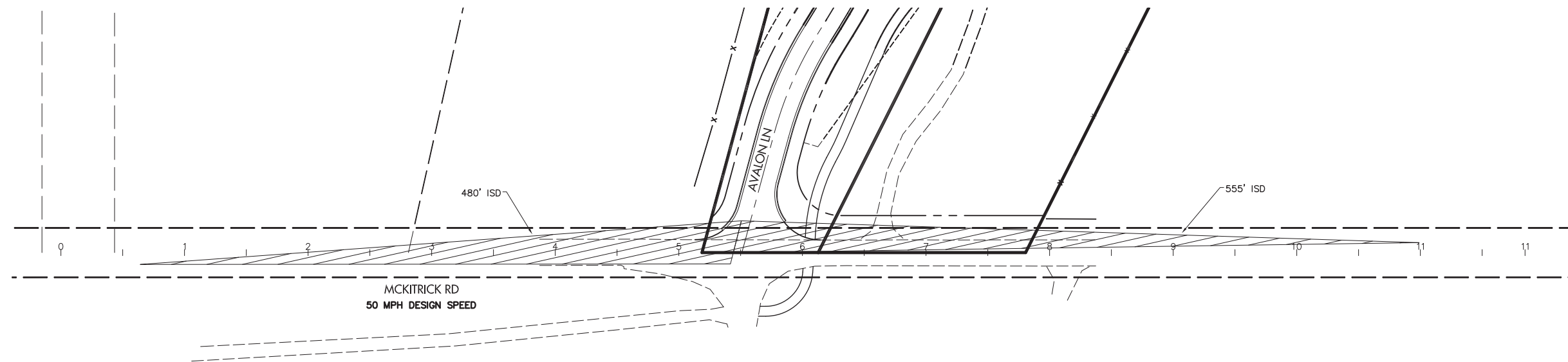
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DRAWING SET STATUS:


- ☒ PRELIMINARY ENGINEERING SET
- ☐ AGENCY REVIEW SET
- ☐ CONSTRUCTION DOCUMENT SET
- ☐ AS-BUILT DOCUMENT SET

DESIGN	DRAFT	CHIEF
DGR	DGR	JP
PROJECT NO.: 18-039		
DATE: JANUARY, 2019		
SCALE:		
HORIZONTAL:		1" = 150'
VERTICAL:		N/A

SHEET NO.: 28 / 29

[illegible]

3


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2
TOWNSHIP, UNION COUNTY, OHIO

GLACIER POINTE

SECTION 2

SIGHT DISTANCE EXHIBIT

DRAWING SET STATUS:

☒ PRELIMINARY ENGINEERING SET

☐ AGENCY REVIEW SET

☐ CONSTRUCTION DOCUMENT SET

☐ AS-BUILT DOCUMENT SET

DESIGN	DRAFT	CHECK
DGR	DGR	JPW
PROJECT NO.: 18-039		
DATE: JANUARY, 2019		
SCALE:		
HORIZONTAL:		1" = 50'
VERTICAL:		1" = 5'
SHEET NO.:		29 / 29



**County Engineer
Environmental Engineer
Building Department**

233 W. Sixth Street
Marysville, Ohio 43040
P 937. 645. 3018
F 937. 645. 3161
www.co.union.oh.us/engineer

Marysville Operations Facility

16400 County Home Road
Marysville, Ohio 43040
P 937. 645. 3017
F 937. 645. 3111

Richwood Outpost

190 Beatty Avenue
Richwood, Ohio 43344

Public Service with integrity

February 6, 2019

Bradley Bodenmiller
LUC Regional Planning Commission
Box 219
East Liberty, Ohio 43319

Re: Glacier Pointe, Section 2
Preliminary Plat Review

Brad,

We have completed our review for the above preliminary plat, received by our office on January 28, 2019. We recommend the preliminary plat be approved, subject to the conditions stated below.

1. The traffic impact study (TIS) has not yet been approved by our office. Construction drawings will not be approved until the TIS and subsequent Infrastructure Agreement has been approved.
2. A variance to the minimum right of way width per Section 406 has been approved. This variance will permit a reduction of the required right of way from 60' to 50' for all local roadways. The collector entry road (Glacier Pointe Drive) will remain at 60' right of way width.
3. Provide the proposed location of all multi-use trails planned to be installed within this section within the final engineering construction documents.
4. Street names will be reviewed and approved prior to final engineering approval.
5. Provide all environmental analysis/mitigation information to our office.
6. Provide plans to all utility providers for their review.
7. Submit a comprehensive stormwater management report for review by our office.
8. No open cut of existing roads will be permitted without Union County Engineer approval.
9. Sheet 28 – The minimum required clear distances within the profile appear to be reversed. Left turning traffic out of the subdivision will require a 555' intersection sight distance in the eastbound lane on McKittrick Road. Consequently, right turning traffic out of the subdivision will require a minimum of 480' in the westbound lane per ODOT L&D Volume 2, Figure 201-5.

In accordance with the Subdivision Regulations of Union County, additional information is required from the developer prior to final plat approvals. It is the responsibility of the developer to become familiar with the regulations and file requisite information within the time frames outlined in the regulations.

Should you have any questions or concerns, feel free to contact me at (937) 645-3165.

Bill Narducci

Bill Narducci, P.E.
Assistant County Engineer
Union County Engineer

Cc: Jeremy Burrey, Union Soil and Water Conservation District (via email)



Engineering, Planning and Zoning
City Hall, 209 South Main Street
Marysville, Ohio 43040-1641
(937) 645-7350
FAX (937) 645-7351
www.marysvilleohio.org

February 7, 2019

Bradley J. Bodenmiller
LUC Regional Planning Commission
10820 St. Rt. 347, PO Box 219
East Liberty OH 43319

**Subject: Glacier Pointe, Section 2
Preliminary Plat Comments**

The City of Marysville has reviewed the Preliminary Plat for the Glacier Pointe, Section 2 development and recommends approving the Preliminary Plat upon addressing the following comments as part of the final engineering process:

General:

1. The title block for this plan set should state "Preliminary Plat" instead of "Street, Storm & Water Improvement Plans".
2. A twenty (20) foot utility easement shall be provided along the entirety of this development's frontage with both Mitchell-Dewitt Road and McKittrick Road.
3. Since this development has yet to commence, all items within Section 1 shall be labeled as "by others" or "future" instead of "existing".
4. Please confirm that the entire Landscape Buffer and Roadway Reserve will provide the City with access for the maintenance of our utility infrastructure.

Wastewater:

1. Detailed sanitary sewer sizing calculations (including an upstream elevation analysis and confirmation that the downstream sewer has adequate capacity) shall be provided to ensure the provision of adequate wastewater service to the entire site.
2. The sanitary sewer shall be a maximum of five (5) feet outside the proposed right-of-way. Dimensions (or a station and offset) shall be provided at each manhole.
3. All setbacks shall be shown and labeled to ensure adequate room for the City to perform maintenance on the wastewater system.
4. Sanitary manholes will not be permitted within the concrete sidewalk or driveway approaches.

Water:

1. Water system appurtenances will not be permitted within the concrete sidewalk or driveway approaches.

Please contact us if you need additional clarification or wish to discuss these comments further.

Sincerely,

Jeremy Hoyt, P.E.
City Engineer / Deputy Public Service Director



Logan-Union-Champaign
regional planning commission
Staff Report – Darby Township Zoning Amendment

Jurisdiction:	Darby Township Zoning Commission c/o Jim Butler 15190 Middleburg-Plain City Road Plain City, OH 43064 (614) 570-5505
Applicant:	Roberto Flores c/o Laura MacGregor Comek 501 South High Street Columbus, OH 43215 (614) 560-1488
Request:	<p>The Zoning Commission received an application to rezone a single parcel (1.6192 acres) from Industrial District to Planned Overlay District (POD) Light Industrial District (LI) & Residential District (R).</p> <p>Parcel(s) involved:</p> <ul style="list-style-type: none">○ 4100160290000 (see application) <p>Acreage proposed to be rezoned:</p> <ul style="list-style-type: none">○ 1.6192 <p>Existing use:</p> <ul style="list-style-type: none">○ Industrial <p>Proposed use:</p> <ul style="list-style-type: none">○ Residential○ Industrial
Location:	The parcel is south of Unionville Center and fronts Unionville Road in Darby Township, Union County.
Staff Analysis:	<p>The application proposes a zoning overlay. One aspect of the overlay would be to allow use of the property for both industrial uses and a single-family residence.</p> <p>Adjacent lands are either within the corporation limits of Unionville Center or zoned Agricultural District (A-1), Rural Undeveloped District (U-1), or Light Industrial District (LI). Adjacent land uses are predominantly agricultural and residential; there is also adjacent railroad-owned property.</p>



Logan-Union-Champaign regional planning commission Staff Report – Darby Township Zoning Amendment



Zoning Map. Light gray at bottom of map depicts LI District.



Aerial. Subject property outlined in light blue.

The Township's Comprehensive Plan is dated 2003 and functions as a guide to officials, owners, and investors in their development decisions (Comp Plan, pp. 2). The Plan establishes long-range policies to guide growth and development in a coordinated manner; it is intended to serve in this manner for two decades. The Plan does not discuss creation of a zoning overlay or identify a need to mix residential and industrial uses; it emphasizes the need for separation between of residential and industrial uses (Comp Plan, pp. 27). Planning efforts in the Township have focused on preservation of agricultural land uses and there are a limited number of industrial uses in the Township.

The Township Zoning Resolution does not permit residential in the LI District or its Planned Industrial District. The Planned Industrial District allows a mix of commercial and industrial uses, but not residential uses. If the Township feels



Logan-Union-Champaign regional planning commission Staff Report – Darby Township Zoning Amendment

	<p>a mix of residential and industrial uses makes sense, the Township might consider amending the Zoning Resolution to permit residential in the Planned Industrial District.</p> <p>Creation of a new zoning district to accommodate a single property seems unusual when considering the Comprehensive Plan, planning endeavors of the Township, the uses outlined in the Zoning Resolution, and the Planned Unit Development districts in the Zoning Resolution.</p>
Staff Recommendations	<p>Staff recommends <i>DENIAL</i> of the proposed zoning amendment. Staff questions whether creation of a zoning overlay for a single parcel is comprehensive in nature. If the Township feels a mix of residential and industrial uses makes sense, it might consider amending the Zoning Resolution to allow residential in the Planned Industrial District.</p>
Z&S Committee Recommendations	



Logan-Union-Champaign regional planning commission

Zoning Parcel Amendment Checklist

Date: 02-04-2019

Township: Darby Twp

Amendment Title: Roberto Flores Rezoning

Notice: Incomplete Amendment requests **will not** be processed by our office. LUC Regional Planning Commission will return them to the requestor, stating the reason the amendment was not accepted.

Each Zoning Parcel Amendment change must be received in our office along with a cover letter, explaining the proposed zone change (s). All items listed below must be received **no later than 10 days** before the next scheduled LUC Regional Planning Commission Executive Board Meeting (which is the second Thursday of every month). It is recommended that a person who is able to provide further information on the amendment attend the Zoning and Subdivision Committee meeting to answer any additional questions that may arise.

Required Item:	Completed by Requestor:	Received by LUC:
Cover Letter & Checklist	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Date of Request (stated in cover letter)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Description of Zoning Parcel Amendment Change(s)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Date of Public Hearing (stated in cover letter)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Township point of contact and contact information for zoning amendment (stated in cover letter)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Parcel Number(s)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Copy of Completed Zoning Amendment Application	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Applicant's Name and contact information	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Current Zoning	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Proposed Zoning	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Current Land Use	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Proposed Land Use	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Acreage	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Copy of Zoning Text associated with proposed district(s)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Contiguous and adjoining Parcel Information, including Zoning District(s)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Any other supporting documentation submitted by applicant	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Non-LUC Member Fee, If applicable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Additionally, after final adoption regarding this zoning parcel amendment, please provide LUC with a letter stating the results of the Trustees vote, along with a copy of the adopted parcel change (s).

Please see reverse side for a timeline of the Township Zoning Amendment Process, per ORC 519.12

9676 E. Foundry St, PO Box 219
East Liberty, Ohio 43319

• Phone: 937-666-3431 • Fax: 937-666-6203
• Email: luc-rpc@lucplanning.com • Web: www.lucplanning.com

Date of Request.

February 4, 2019

Logan-Union-Champaign Regional Planning Commission
c/o Brad Bodenmiller
PO Box 219
East Liberty, OH 43319
bradbodenmiller@lucplanning.com

RE: Zoning Parcel Amendment Application, Darby Township, Union County

Dear LUC Regional Planning Commission Committee Members:

The Darby Township Zoning Commission received a Zoning Parcel Amendment Application. The Application proposes an alteration to the Zoning Map.

Description of Zoning Parcel Amendment.

The acreage involved is 1.6192. The properties involved are: 4100160290000.

The existing zoning is: LI

The existing land use is: Industrial

The proposed zoning is: POD LI & R

The proposed land use is: Industrial & Residential

Public Hearing.

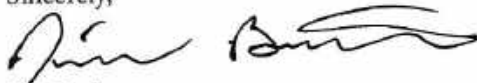
The Darby Township Zoning Commission of Union County, Ohio, will tentatively hold a public hearing concerning the proposed amendments at 7:00 PM on March 6, 2019, in the Darby Township Hall.

Point of Contact.

Please consider me Darby Township's point of contact for this matter. My contact information is below:

Jim Butler
15190 Middleburg-Plain City Road
Plain City, OH 43064
(614) 570-5505

Sincerely,


Jim Butler

*Zoning Inspector,
Darby Twp.*



Zoning Districts

- A-1
- U-1
- R-1
- B-2
- LI
- Unionville Center

Roads

- Township Road
- Township Highway
- County Highway
- State Highway

Darby Township Zoning Map

0 0.15 0.3 0.6 0.9 1.2
Miles

Official
Zoning map
Date:
Created on: September, 2004
Revised: May 4, 2006



9076 Foundry St.
PO Box 219
East Liberty, OH 43319
Phone (937) 695-2431
Fax (937) 696-8203
Email: luc-rpo@rrpsia.com

ARTICLE VIII: ESTABLISHMENT AND PURPOSE OF DISTRICTS

Section 800 – Intent

The following zoning districts are hereby established for Darby Township. For the interpretation of this Resolution, the zoning districts have been formulated to realize the general purposes as set forth in the preamble of this Resolution. In addition, the specific purpose of each zoning district shall be as stated.

Section 809 – Agricultural District (A-1)

It is recognized that the public health, safety and welfare of the citizens of Darby Township, Union County, the State of Ohio, and the United States are greatly dependent upon the sustenance and economic benefits provided by a viable agricultural industry. It is also recognized that uncontrolled residential development is fragmenting the landscape and creating conflicts between agricultural and residential development. Residential development is discouraged in the agricultural district.

This district is intended to ensure that land areas within Darby Township which are well suited for production of food and fiber are retained for such production, unimpeded by the establishment of incompatible uses which would hinder farm operations and irretrievably deplete agricultural lands. This district is intended to create areas where traffic conflicts with farm machinery are minimal and where non farm residential uses are separated from farming activities and the associated dust, noise, and smells that typically accompany farm activities.

The A-1 District acknowledges that agriculture is a specialized form of industry characterized by the production through biological and botanical processes of saleable farm products as a result of the combination of raw materials, manpower, and energy.

Other specific purposes for which this district is established include:

1. To preserve woodlands and wetlands associated with farms, which because of their natural physical features are useful as water retention and groundwater recharge areas, and as habitat for plant and animal life; and which have an important aesthetic and scenic value that contributes to the unique character of the agricultural district.
2. To provide the basis for land tax assessments that reflect the district's existing agricultural nature and owing to these regulations, its limited use for other purposes.
3. To prevent the conversion of agricultural land to scattered non-farm development which when unregulated, unnecessarily increases the cost of public services to all citizens and results in the premature disinvestments in agriculture.

Section 810 – Rural Undeveloped District (U-1)

The intention of the rural undeveloped district is to provide land which is suitable or used for agriculture, conservation, very low density residential and public and quasi-public purposes.

Section 811 – Low Density Residential District (R-1)

The purpose of the low density residential district is to provide land for single family housing units, public and quasi-public uses, and neighborhood commercial development. Group or central water and/or sewer facilities may be required depending on the density of development

Section 812 – Local Business District (B-2)

The purpose of the local business district is to provide land for small retail and personal service establishments offering convenience-type goods and services for the daily needs of the people in the immediate neighborhood or area.

Section 813 – Light Industrial District (LI)

The purpose of the light industrial district is to provide land for industrial development which will supplement the tax base and provide jobs for local residents. Light industrial development should not adversely affect the health, safety, and general welfare of the residents of the Township

ARTICLE IX: DISTRICT REGULATIONS

Section 900 – Compliance with Regulations

The regulations for each district set forth by this Resolution shall be minimum regulations and shall apply uniformly to each class or kind of structure or land, except as herein after provided; or as otherwise granted by the Board of Zoning Appeals.

1. No building, structure, or land shall be used or occupied and no building or structure or part thereof shall be erected, constructed, reconstructed, moved, or structurally altered except in conformity with all of the regulations herein specified for the district in which it is located.
2. No building or other structure shall be erected or altered:
 - a. to provide for greater height or bulk;
 - b. to accommodate or house a greater number of families;
 - c. to occupy a greater percentage of lot area;
 - d. to have narrower or smaller rear yards, front yards, side yards, or other open spaces than herein required or in any other manner be contrary to the provisions of this Resolution.
3. No yard or lot existing at the time of passage of this Resolution shall be reduced in dimension or area below the minimum requirements set forth herein. Yards or lots created after the effective date of this Resolution shall meet at least the minimum requirements set forth herein.

Section 910 - Agricultural District (A-1)

The following standards govern the A-1 district:

1. Permitted (allowed) Uses. Within the Agricultural (A-1) District, the following uses, developed in accordance with all other provisions of this Resolution shall be permitted:
 - a. Agricultural uses as defined by the Ohio Revised Code
 - b. Wholesale and retail nurseries
 - c. Stables
 - d. Farm market
 - e. Projects designed for conservation, watershed protection, or for flood control.
 - f. Single family dwelling units
 - g. Telecommunication towers
 - h. Public services facilities
 - i. Home occupations
 - j. Ponds subject to regulations set forth in Section 1041.
 - k. Accessory structures and uses incidental to the principal building or use. Accessory structures may not be constructed prior to construction of the primary structure.
 - l. Swimming Pools subject to regulations set forth in Section 1002.
 - m. Small Wind Projects Less than 5MW subject to regulations set forth in Section 1045.
2. Conditional Uses. The following uses of land and structures may be permitted upon issuance of a conditional use permit in accordance with the procedures and standards contained in Sections 560-565 provided that the proposed use is sited on a parcel in a manner which minimizes the amount of productive agricultural land that is converted to the proposed use and the proposed use is located in close proximity to existing facilities providing agricultural services whenever possible and appropriate.
 - a. Agribusiness
 - b. Cemetery
 - c. Public uses
 - d. Veterinary hospital or clinic
 - e. Non-commercial recreation
 - f. Supply yards
 - g. Bed and breakfasts

h. Quasi-public uses

3. Development Standards. The use of land and structures within the exclusive agricultural district shall seek to maximize agricultural productivity and conform to the following standards:
 - a. Gross residential density: 1 unit per 20 acres. Density will be calculated using parcel size as it exists at the date the code is adopted. The density requirement listed here (using the lot sizes in b and c below) means that for every 20 acres contained in a parcel, 1 (one) lot of 2 to 5 acres may be sold or designated for residential use.
 - b. Minimum residential lot size: 2 acres
 - c. Maximum residential lot size: 5 acres
 - d. Minimum lot width and frontage:
 - i. State highways: 495 feet; 150 feet if developed on a common access drive
 - ii. Major collector: 495 feet; 150 feet if developed on a common access drive
 - iii. Minor collector: 360 feet; 150 feet if developed on a common access drive
 - iv. Local road: 250 feet; 150 feet if developed on a common access drive
 - e. Minimum yard setbacks:
 - i. Front (depth): Seventy-five (75) feet as measured from the road right-of-way line
 - ii. Rear (depth): Sixty (60) feet for residence; twenty-five (25) feet for accessory buildings
 - iii. Side (width): Thirty-five (35) feet on each side
 - f. Maximum building height (non farm dwellings): Thirty-five (35) feet
 - g. Minimum floor space requirements: 1,400 square feet per each residential dwelling unit with an attached two car garage; 1600 square feet per each residential dwelling unit without an attached two car garage.
 - h. Maximum lot coverage: Twenty-five (25) percent
 - i. Maximum depth to width ratio: 3:1; does not apply to lots above 10 acres, on lots developed on common access drives, or in subdivisions.
 - j. Minimum depth to width ratio: 1:1

Section 920 – Rural Undeveloped District (U-1)

The following standards govern the U-1 district:

1. Permitted (allowed) Uses. Within the Rural Undeveloped (U-1) District, the following uses, developed in accordance with all other provisions of this Resolution shall be permitted:
 - a. Agricultural uses as defined by the Ohio Revised Code
 - b. Stables
 - c. Farm market
 - d. Projects designed for conservation, watershed protection, or for flood control.
 - e. Single family dwelling units
 - f. Public uses
 - g. Telecommunication towers
 - h. Public services facilities
 - i. Non-commercial recreation
 - j. Home occupations
 - k. Ponds subject to regulations set forth in Section 1041.
 - l. Accessory structures and uses incidental to the principal building or use. Accessory structures may not be constructed prior to construction of the primary structure.
 - m. Swimming Pools subject to regulations set forth in Section 1002.
 - n. Small Wind Projects Less than 5MW subject to regulations set forth in Section 1045.
2. Conditional Uses. The following uses of land and structures may be permitted upon issuance of a conditional use permit in accordance with the procedures and standards contained in Sections 560-565.
 - a. Agribusiness
 - b. Retail nursery

- c. Wholesale nursery
 - d. Commercial recreation
 - e. Supply yards
 - f. Bed and breakfast
 - g. Veterinary hospital or clinic
 - h. Quasi-public uses
 - i. Cemetery
3. Development Standards. The use of land and structures within the U-1 District shall conform to the following standards:
- a. Minimum residential lot size per dwelling unit: 2.0 acres
 - b. Minimum lot width and frontage:
 - i. State Highways: 250 feet
 - ii. Major Collector: 250 feet
 - iii. Minor Collector: 180 feet
 - iv. Local Road: 150 feet if not developed as a part of a subdivision; 100 feet if developed as part of a subdivision
 - c. Minimum yard setbacks:
 - i. Front (depth): Fifty (50) feet as measured from the road right-of-way line
 - ii. Rear (depth): Sixty (60) feet for residence; twenty-five (25) feet for accessory buildings
 - iii. Side (width): Thirty-five (35) feet on each side
 - d. Maximum building height (non farm dwellings): Thirty-five (35) feet
 - e. Minimum floor space requirements: 1,400 square feet per each residential dwelling unit with an attached two car garage; 1600 square feet per each residential dwelling unit without an attached two car garage.
 - f. Maximum lot coverage: Twenty-five (25) percent
 - g. Maximum depth to width ratio: 3:1; does not apply to lots above 10 acres, on lots developed on common access drives, or in subdivisions.
 - h. Minimum depth to width ratio: 1:1

Section 930 – Low Density Residential District (R-1)

The following standards govern the R-1 district:

1. Permitted (allowed) Uses. Within the Low Density Residential District (R-1), the following uses, developed in accordance with all other provisions of this Resolution shall be permitted:
 - a. Single family dwelling units
 - b. Public uses
 - c. Public service facilities
 - d. Ponds subject to regulations set forth in Section 1041.
 - e. Home occupations
 - f. Non-commercial recreation
 - g. Accessory structures and uses incidental to the principal building or use. Accessory structures may not be constructed prior to construction of the primary structure.
 - h. Swimming Pools subject to regulations set forth in Section 1002.
2. Conditional Uses. The following uses of land and structures may be permitted upon issuance of a conditional use permit in accordance with the procedures and standards contained in Sections 560-565.
 - a. Bed and breakfasts
 - b. Child care nursery
 - c. Nursing home
 - d. Commercial recreation
 - e. Clubs

- f. Quasi-public uses
 - g. Telecommunication towers subject to regulations set forth in Section 1038 & 1039.
3. Development Standards. The use of land and structures within the R-1 District shall conform to the following standards:
- Minimum residential lot size: 1 dwelling unit per two (2) acres
 - Minimum lot width and frontage:
 - State Highways: 250 feet; 150 feet if developed on a common access drive
 - Major Collector: 250 feet; 150 feet if developed on a common access drive
 - Minor Collector: 180 feet; 150 feet if developed on a common access drive
 - Local Road: 150 feet, if not developed as a part on a common access drive or as part of a subdivision; 100 feet if developed on a common access drive or as part of a subdivision
 - Minimum yard setbacks:
 - Front (depth): Fifty (50) feet as measured from the road right-of-way line
 - Rear (depth): Twenty (20) feet for residence; Ten (10) feet for accessory buildings
 - Side (width): Ten (10) feet on each side for residence; Five (5) feet for accessory buildings
 - Maximum building height (non farm dwellings): Thirty-five (35) feet
 - Minimum floor space requirements: 1,400 square feet per each residential dwelling unit with an attached two car garage; 1600 square feet per each residential dwelling unit without an attached two car garage.
 - Maximum lot coverage: Twenty-five (25) percent
 - Maximum depth to width ratio: 3:1; does not apply to lots above 10 acres, on lots developed on common access drives, or in subdivisions.
 - Minimum depth to width ratio: 1:1

Section 940 – Local Business District (B-2)

The following standards govern the B-2 district:

- 1. Permitted (allowed) Uses. Within the B-2 District the following uses, developed in accordance with other provisions of this Resolution, shall be permitted.
 - a. Child care nursery
 - b. Nursing home
 - c. Wholesale nursery
 - d. Automotive repair services
 - e. Gasoline service stations
 - f. Veterinary hospital or clinic
 - g. Offices
 - h. Kennels
 - i. Clubs
 - j. Public uses
 - k. Quasi-public uses
 - l. Public service facilities
 - m. Telecommunication towers
 - n. Agricultural sales and service
 - o. Agribusiness
 - p. Retail sales establishment
 - q. Retail service establishments
 - r. Commercial and non-commercial recreation
 - s. Swimming Pools subject to regulations set forth in Section 1002.
 - t. Small Wind Projects Less than 5MW subject to regulations set forth in Section 1045.
 - u. Other businesses, similar in nature or character as determined by the Zoning Commission.

2. Conditional Uses. The following uses of land and structures may be permitted upon issuance of a conditional use permit in accordance with the procedures and standards contained in Sections 560-565.
 - a. Supply yards
 - b. Drive-thru or drive-in facilities for financial institutions, restaurants or other businesses
 - c. Accessory structures and uses incidental to the principal building or use. Accessory structures may not be constructed prior to construction of the primary structure.
 - d. Outdoor storage as an accessory use to any permitted use in Section 940(1).
3. Development Standards. In addition to any other provisions of this Resolution, all lands and uses within the B-2 District shall be developed in strict compliance with the standards hereinafter established.
 - a. Building size - No structure in this district shall contain more than seventy-five hundred (7,500) square feet of floor space per floor devoted to any permitted or conditional use.
 - b. Minimum lot size - None; however, the lot size shall be adequate to provide the yard spaces and off street parking as herein required.
 - c. Minimum lot width - None; however, all tracts shall have access to approved streets and shall be of such width as to provide required yard spaces and off street parking.
 - d. Minimum building setbacks:
 - Front (depth): Fifty (50) feet as measured from the road right of way
 - Rear (depth): Thirty (30) feet to the rear line of any lot
 - Side (width): Twenty-five (25) feet from each side lot line
 - e. Maximum building height - No building shall exceed two (2) stories or thirty-five (35) feet in height.
 - f. Maximum lot coverage: The ground area occupied by all the buildings and structures shall not exceed in the aggregate forty-five percent (45%) of the total area of the lot or tract. The ground area occupied by all the buildings, structures, driveways, traffic circulation areas, parking areas and sidewalks shall not exceed in the aggregate seventy-five percent (75%) of the total area of the lot or tract.

Section 950 – Light Industrial District (LI)

The following standards govern the LI district:

1. Permitted (allowed) Uses. Within the LI District the following uses, developed in accordance with other provisions of this Resolution, shall be permitted.
 - a. Automotive repair service
 - b. Gasoline service station
 - c. Agricultural sales and service
 - d. Research activities
 - e. Offices
 - f. Public uses
 - g. Telecommunication towers
 - h. Public service facilities
 - i. Wholesale and warehousing
 - j. Transport terminals
 - k. Light manufacturing
 - l. Swimming Pools subject to regulations set forth in Section 1002.
 - m. Off premise signs (billboards). See Regulations Section 1212.
 - n. Small Wind Projects Less than 5MW subject to regulations set forth in Section 1045.
 - o. Other businesses, similar in nature or character as determined by the Zoning Commission.
2. Conditional Uses. The following uses of land and structures may be permitted upon issuance of a conditional use permit in accordance with the procedures and standards contained in Sections 560-565.
 - a. Mineral extraction, storage, and processing

- b. Supply yards
 - c. Accessory structures and uses incidental to the principal building or use. Accessory structures may not be constructed prior to construction of the primary structure
 - d. Outdoor storage as an accessory use to any permitted use in Section 950(1).
 - e. Heavy manufacturing
 - f. Adult entertainment facilities subject to regulations set forth in Section 1042.
3. Development Standards. In addition to any other provisions of this Resolution, all lands and uses within the Light Industrial District shall be developed in strict compliance with the standards hereinafter established:
- a. Minimum lot size - None; however, the lot size shall be adequate to provide the yard spaces and off street parking as herein required.
 - b. Minimum lot width - None; however, the industrial tract shall have access to approved streets and shall be of sufficient width to provide required yard spaces and off street parking.
 - c. Minimum building setbacks
 - i. Front (depth): One hundred (100) feet from the right-of-way line of the adjacent road.
 - ii. Rear (depth): Fifty (50) feet to the rear line of any lot. No outdoor storage area or required off street parking area may encroach in the prescribed rear yard except with permission of the Board of Zoning Appeals.
 - iii. Side (width): Thirty (30) feet on each side. No accessory building, outdoor storage area or required off street parking shall encroach in said side yard except with consent of the Board of Zoning Appeals. When abutting a U-1, R-1, or subdivision, additional setbacks shall be required consistent with the requirements of Section 1010(4).
 - d. Maximum building height - No building shall exceed two (2) stories or thirty-five (35) feet in height.
 - e. Maximum lot coverage: The ground area occupied by all the buildings and structures shall not exceed in the aggregate forty-five percent (45%) of the total area of the lot or tract. The ground area occupied by all the buildings, structures, driveways, traffic circulation areas, parking areas and sidewalks shall not exceed in the aggregate seventy-five percent (75%) of the total area of the lot or tract.

APPLICATION FOR ZONING AMENDMENT

DARBY TOWNSHIP UNION COUNTY, OHIO

The undersigned, owner(s) of the following legally described property hereby request the consideration of change in zoning district classification as specified below:

1. Name of Applicant(s) Roberto Flores c/o Laura M^{re} Gregor
2. Mailing Address 501 S. High St. Cornelius, Esq
Columbus, Ohio 43215 614-560-1488
3. Locational Description: Parcel # 4100160290000
4. Existing Use Industrial Proposed Use Industrial & residential
5. Present Zoning District LI Proposed Zoning District POD
LI & R
6. Supporting information: Attach the following items to the application.

(a) A vicinity map showing property lines, streets (roads) and existing and proposed zoning.

(b) A list of all property owners within, contiguous to and directly across the street (road) from the proposed rezoning area if ten or fewer parcels are proposed for rezoning.

2.1.19

Date

Applicant's Signature

Received

2-4-2019

FOR OFFICIAL USE ONLY - ZONING COMMISSION

Date Filed _____ Date of Public Hearing _____

Date of Notice in Newspaper _____ Fee Paid _____

Recommendation of Zoning Commission: Approval _____ Denial _____

If Denied, State Reason: _____

Date _____


DARBY TOWNSHIP ZONING COMMISSION

Chairman _____

Laura M. Cornek
Or Current Resident
501 South High Street
Columbus, Ohio 43215

Robert Flores
Or Current Resident
8744 Unionville Road
Plain City, OH 43064

Dawson and Sheryl Hooley
Or Current Resident
8744 Unionville Road
Plain City, OH 43064



Bonnie Nicholas
Or Current Resident
8744 Unionville Road
Plain City, OH 43064

Kamenar Railroad Salvage, Inc.
1558 Maple Street
Barberton, OH 44203

Beverly Grener, Trustee
Or Current Resident
8711 Unionville Road
Plain City, OH 43064

Bruce & Johanna Keiser
Or Current Resident
15449 Robinson Road
Plain City, OH 43064

EXHIBIT "A"**Legal Description ~ 1.6192 Acres****Map Number 142-00-00-002.000**

The following described 1.6192 acre tract is situated in the State of Ohio, Union County, Darby Township, VMS 8783, being all the remains of a 0.8 acre tract (Parcel 1) and all of a 0.74 acre tract (Parcel 2) and all of a 0.178 acre tract (Parcel 3) all three tracts (4100160290000-1.62 Ac) conveyed to Champaign Landmark, Inc. by Official Record 786 page 844, and being more particularly described as follows:

Beginning at a railroad spike found at the intersection of the centerline of Unionville Road (County Road 55) (50 feet right-of-way) with the south line of a 11.024 acre tract (formerly Conrail Railroad (100 feet wide) conveyed to Kamenar Railroad Salvage, Inc. by Deed Book 303 page 687;

Thence, with the south line of said railroad, South 65° 57' 02" East, passing a 3/4 inch diameter iron pipe and yellow plastic cap stamped "6034" found at 27.46 feet, also passing the northern corner common to said 0.8 and 0.74 acre tracts at 431.64 feet, a total distance of 798.60 feet to a 3/4 inch diameter iron pipe and yellow plastic cap stamped "6034" found corner to a 60.37 acre tract conveyed to Gladys Pauline Nichols by Deed Book 341 page 448;

Thence, with said 60.37 acre tract, the following 2 courses:

- 1) South 08° 41' 52" West a distance of 40.78 feet to a 3/4 inch diameter iron pipe and yellow plastic cap stamped "6034" found
- 2) North 82° 15' 30" West, passing a 2 1/2 inch diameter metal fence post found at the southern corner common to said 0.74 and 0.178 acre tracts at 339.60 feet, a total distance of 387.85 feet to a 5/8 inch diameter rebar found in a 24 inch diameter maple tree at the southeast corner of a 0.9532 acre tract conveyed to Dawson W and Sheryl G Hooley by Official Record 127 page 691, from said rebar a 7 inch diameter wood fence post bears North 05° 08' 16" West a distance of 1.74 feet;

Thence, with said 0.9532 acre tract, the following 4 courses:

- 1) North 07° 02' 08" East a distance of 70.96 feet to a 5/8 inch diameter rebar found
- 2) North 68° 13' 57" West a distance of 212.01 feet to a 5/8 inch diameter rebar found
- 3) North 7° 31' 09" East a distance of 22.51 feet to a 5/8 inch diameter rebar and yellow plastic cap stamped "Clapsaddle 6140" found
- 4) North 78° 09' 53" West, passing a 5/8 inch diameter rebar and yellow plastic cap stamped "Clapsaddle 6140" found at 130.10 feet, a total distance of 155.75 feet to a railroad spike found in the centerline of said Unionville Road;

Thence, with the centerline of said Unionville Road, North 00°34'31" West a distance of 110.21 feet returning to the point of beginning containing 1.6192 acres more or less, of which 0.7123 acres more or less is all the remains of said 0.8 acre tract, 0.7262 acres more or less is all of said 0.74 acre tract, and 0.1866 acres more or less is all of said 0.178 acre tract.

Bearings are based on a GPS observation on August 6, 2015, WGS 1984 Geodetic North.

This deed is subject to and with the benefit of all legal highways, restrictions, easements, limitations, and reservations, of record, if any and to zoning restrictions which have been imposed thereon, if any.

All iron pins set are 5/8 inch diameter rebar with yellow plastic caps stamped "Cottrill LLC. 6858."

This description is based on a field survey performed August 19, 2015 by James R. Cottrill registration #6858. (Job #S150712-1-6192AC)

Union County, Ohio

Tax Parcel Number:

41-0016029.0000

Street Address:

8744 Unionville Road, Unionville Center, Ohio 43077

Map Number:

142-00-00-002.000

Prior Instrument Reference:

Instrument #201509110007443, Recorder's Office, Union County, Ohio

EXISTING DESCRIPTION
ACCEPTABLE FOR TRANSFER

DATE 10/29/18 JS
JEFF STAUCH, UNION CO. ENG.

ARTICLE ____ - Planned Overlay District

Section _____.01- NATURE OF THE DISTRICT

A Planned Overlay District (POD) is created pursuant to Section 519.021(C) of the Ohio Revised Code to further the purpose of promoting the general public welfare, encouraging the efficient use of land and resources, promoting public and utility services, and / or for encouraging innovation in the planning and building of appropriate types of retail, office and residential development. The POD achieves this purpose by permitting flexibility of use and design to promote and accommodate the efficient use of the land, thereby allowing for:

- Reduces the amount of infrastructure, including paved surfaces and utility easements, necessary for development.
- Minimizing land disturbance.
- Provides an opportunity for an appropriate mix of land uses for the property.
- Promotes compatibility between proposed land uses within and around the POD through appropriate development controls.
- Encourages a development that exhibit creative planning and design in a way that cannot be achieved through a standard zoning district, and which is compatible with surrounding land uses.

Section _____.02 - OVERLAY DISTRICT AREA ESTABLISHED

The POD is created pursuant to Section 519.021(C) of the Ohio Revised Code and encompasses, includes, overlays and rezones the POD area shown on the POD Overlay Development Plan (Map), which map is attached hereto and incorporated herein as Attachment 1 and is hereby adopted as the official zoning district map for the POD as part of this amendment. The Property within the POD shall make Application in accordance with the provisions of this POD and Section ____ of the Darby Township Zoning Resolution ("DTZR") for Final Development Plan approval, in compliance with the provisions of this POD. The approval of an Application for Final Development Plan following the Darby Township Trustees' approval of this POD is a ministerial act and shall not be considered an amendment to the Darby Township Zoning Resolution.

Section _____.03 - PERMITTED USES

- A.) One single family dwelling unit
- B.) Home occupations
- C.) Accessory structures and uses incidental to the principal building or use.
Accessory structures may not be constructed prior to construction of the primary structure.
- D.) All industrial uses permitted in Darby Township Zoning Resolution LI, Limited Industrial District:

Automotive repair service

Gasoline service station
Agricultural sales and service
Research activities
Offices
Public uses
Telecommunication towers
Public service facilities
Wholesale and warehousing
Transport terminals
Light manufacturing
Swimming Pools subject to regulations set forth in the DTZR
Off premise signs (billboards).
Small Wind Projects Less than 5MW subject to regulations set forth in DTZR
Other businesses, similar in nature or character as determined by the Zoning Commission.

Conditional Uses. The following uses of land and structures may be permitted upon issuance of a conditional use permit in accordance with the procedures and standards contained in Sections 560- 565:

Mineral extraction, storage, and processing
Supply yards

E.) Temporary Structures. Temporary structures such as manufactured/mobile home offices and temporary buildings of a non-residential character may be used incidental to construction work on the premises during a period while the permanent structure is being constructed. A Zoning Permit shall be obtained for such temporary use, which permit shall be valid for twelve (12) months and renewable for up to 2 years total upon a showing of reasonable progress toward completion of the permanent structure or project. Renewal shall not be unreasonably denied. The fees for such permit and renewals thereof shall be established by the Board of Township Trustees.

F.) Existing Uses/Zoning To Remain. It is the intention of the POD to add the single family residential use to the existing LI, Limited Industrial use already established and legally existing on the premises. The Legal uses and development standards established prior to this POD shall be permitted to exist as legal non-conforming.

Section ____ .04 - ACCESSORY USES, BUILDINGS, AND STRUCTURES

Accessory Uses as defined and permitted by Darby Township Zoning Resolution within the residential or industrial use districts shall be permitted within the POD as Accessory Uses. Accessory structures and uses incidental to the principal building or use.
Outdoor storage as an accessory use to any permitted use in Section 950(1).
Heavy manufacturing.

Section _____.05 - PROHIBITED USES – Adult entertainment facilities shall be prohibited.

Section _____.06 - PROCESS FOR PLAN APPROVAL

Applications for Final Development Plan approval of area within the POD shall follow the procedures hereinafter set forth:

- A.) Pre-Application Meeting. The Applicant is encouraged to engage in informal consultations with staff from the Township and the Logan Union Champaign County Regional Planning Commission prior to formal submission of an Application for approval of a Final Development Plan for any tract or property within the POD. No statement or action by Township or County officials in the course of informal consultations shall be construed to be a waiver of any legal obligation of the Applicant or of any procedure or formal approval required by Township or County statutes or rules. Ohio's Open Meetings Law (Section 121.22 of the Ohio Revised Code) is required to be observed at pre-Application meetings involving a quorum of members of the Darby Township Zoning Commission.
- B.) Application and Final Development Plan. The Applicant shall prepare and submit ten (10) copies of an Application and Final Development Plan, along with an electronic copy and all applicable fees to the Darby Township Zoning Commission. The Application shall be signed by the Applicant and all owners of property, or their designee, included in the Application and Final Development Plan. The Application shall include a list of property owners, by mailing address appearing on the Union County Auditor's current tax list, within, contiguous to, directly across the street from, and within two hundred feet (200') of the perimeter boundaries of such area subject of the Application for Final Development Plan. The Darby Township Zoning Commission may request that any County agency and/or any committee of the Union County Regional Planning Commission submit comments for consideration at the meeting.

The Application shall be accompanied by a Final Development Plan and the following supporting information and documentation in text and map form:

- 1.) A survey plat and legal description signed by a registered Ohio surveyor showing the size and location of the proposed development.
- 2.) A grading plan drawn to scale, showing all information pertaining to surface drainage relative to the residential unit/use.
- 3.) A detailed Signage and Exterior Lighting Plan shall be submitted with the Final Development Plan and shall be subject to approval as part of the Final Development Plan, if signage or exterior lighting is proposed.

- C.) Final Development Plan Contents. The Final Development Plan shall include in text and map form the following:

- 1.) Names and addresses of applicant and owner(s). Also, the names and mailing addresses of all owners of property within and contiguous to and directly across the street from the area proposed for POD approval shall be provided.
- 2.) Date, north arrow and plan scale. Scale shall be one inch equals one hundred feet 1" = 100 feet or larger scale.
- 3.) Locations, widths and names of all existing public streets or other public or private roads/ways, railroad and utility rights of way or easements, permanent structures, and corporation lines within or adjacent to the tract.
- 4.) Existing sewers, water mains, culverts and other underground facilities within the tract, adjacent to the tract or that will be used or are proposed to be used in developing the tract, indicating pipe sizes, grades and locations.
- 5.) The adjoining lines of adjacent tracts, parcels or lots.
- 6.) Building setback lines with dimensions.
- 7.) The Final Development Plan (and the various accompanying plans) shall bear the seal of a registered engineer or surveyor and an architect or landscape architect, each of whom shall be licensed to practice in the State of Ohio.

The applicant may request a variance from the development standards set forth in this Article _____ or otherwise to the Darby Township Zoning Resolution. An applicant making such a request shall specifically and separately list each requested variance and the justification therefore on the Final Development Plan submittals, with a request that the proposed variance be approved as part of and as shown on the Final Development Plan. Unless specifically supplemented by the standards contained in the Final Development Plan, the development shall comply with the requirements contained in Article _____ and the General Development Standards most closely comparable to the use/zoning district(s), as contained in the Darby Township Zoning Resolution.

D.) Zoning Commission Action. After receipt of the completed Application materials and required fees, the Zoning Commission shall schedule a public hearing within forty-five (45) days after the filing of the complete Application. Notice shall be sent by regular, first class mail to the applicant and to all owners of property within, contiguous to, directly across the street from, and within two hundred feet (200') of the perimeter boundaries of such area subject of the Application for Final Development Plan. Mailing by the Zoning Commission shall be to the addresses of such owners appearing on the Union County Auditor's current tax list. The failure of delivery of that notice shall not invalidate any action the Zoning Commission may take on the Application. The Zoning Commission shall render a decision on the Application and Final Development Plan within thirty (30) days after the conclusion of the hearing.

E.) Basis of Approval. The Zoning Commission, shall consider and approve a Final Development Plan upon a finding of substantial compliance based upon the following:

- 1.) Whether the proposed Application and Final Development Plan are consistent with the uses, and standards of this POD Zoning Resolution as set forth and defined in Section(s) __.07 of this POD; and, If applicable, determine if variance(s) are reasonably related to or that facilitate the use(s), criteria and/or standards of this POD.
- F.) Effect of Approval.
- 1.) The Zoning Commission's determination shall not be considered an amendment to the Township Zoning Resolution for purposes of Section 519.12 of the Revised Code. A negative decision of the Zoning Commission may be appealed by the Applicant first to the Township Trustees within thirty (30) days of the date of the Zoning Commission Decision, and thereafter from the decision of the Township Trustees pursuant to Chapter 2506 of the Revised Code. The approval of an applicant's Application for Final Development Plan approval pursuant to this POD is a ministerial act and shall not be considered a rezoning amendment to the Township Zoning Resolution for the purposes of Section 519.12 of the Revised Code and may not be appealed pursuant to Chapter 2506 of the Revised Code.
 - 2.) The approval of a Final Development Plan shall be effective for a period of five (5) years (or for such other time period as may be approved as part of the Final Development Plan) in order to allow for the preparation and recording of a subdivision plat (if required under applicable law) and the commencement of construction following the issuance of a zoning permit(s). If no plat has been recorded within this approval period or, if platting is not required, if construction or other affirmative actions, efforts or planning has not commenced, and unless the Zoning Commission approves an extension of this time limit, a Development Plan shall expire. Extensions of an approved Final Development Plan shall not be unreasonably denied. Upon the expiration of the Final Development Plan, the subject parcel(s) shall remain zoned POD, but no use shall be established or changed and no building, structure or improvement shall be constructed until an Application for a new Final Development Plan, accompanied by a new Final Development Plan, has been filed with and approved by the Township using the procedures and process then established for the approval of an initial Development Plan.
 - 3.) An extension of the time limit for either recording the approved subdivision plat or the commencement of construction may be granted by the Zoning Commission upon Application of the owner(s), provided the Zoning Commission determines that such an extension is not in conflict with the public interest, that there is a legitimate purpose and necessity for such extension, and that the applicant shows evidence of a reasonable effort toward the accomplishment of the recordation of the plat or the completion of the development of the project. The length of time permitted for an extension shall

be determined based upon the Application submitted. A request for extension shall be filed prior to the expiration of the established approval period.

- 4.) Following the approval of a Final Development Plan, proposed variations from the approved Final Development Plan may also be considered by the Board of Zoning Appeals under its hearing process pursuant to Article 25 of the Zoning Resolution. All other modifications to the Final Development Plan shall be presented to the Zoning Commission for its consideration pursuant to Section _____.06(F)(5), hereof.
- 5.) Upon application, the Zoning Commission may, at a duly held hearing, modify an approved Final Development Plan pursuant to the same procedures as the original Application in Section _____.06(B). Such modification is administrative in nature and not in conflict with the intent and purpose of the POD Planned Overlay District.
- 6.) Fees. A fee as established by the Board of Trustees shall accompany an Application requesting approval of the Final Development Plan, as well as any request for extension or modification.

Section _____.07 - GENERAL DESIGN STANDARDS

The Final Development Plan shall comply with the following design standards. Conflicts between this POD and the Darby Township Zoning Resolution shall be resolved first in favour of this POD and all variances considered to accommodate or implement these POD standards, definitions and the general land uses as set forth herein. Items unaddressed or otherwise not listed within this Article _____ shall default to the Darby Township Zoning Resolution, and the most closely correlate use district.

A.) Development Standards POD Area(s): * all figures represent existing conditions

1. Maximum gross density (residential POD area): 1 dwelling unit.
2. Minimum lot size (residential POD area and remaining LI POD area): None.
3. Minimum lot width/frontage (residential POD): 82 feet
4. Minimum yard setbacks:
 - i. Front (depth): 5 feet from road right of way for residential POD; Thirty (30) feet for LI POD area
 - ii. Rear (depth) 0 feet for the residential POD area; ten (10) feet for structures in the LI POD area
 - iii. Side (width): 6 feet to the north and 8 to the south for all structures in the POD area.
5. Maximum building height: Thirty-five (35) feet for the entire POD area, with the exception of the grain silo which shall not exceed 50 feet (current).
6. Minimum floor space requirements (residential POD area): none.
7. Parking: two parking spaces shall be provide for the residential unit. They shall not be required to be paved. No additional parking or loading areas shall be required. No additional paving of driveways, drive aisles, parking, storage or other areas shall be required. No parking lot standards, landscaping or development shall be required.

8. General lighting standards applicable to residential district shall apply to the residential POD use area.
9. Parking lot lighting standards applicable in the LI zoning districts shall apply to the LI use POD area.
10. Signage shall comply with Article XII of the DTZR as applies to the LI use POD area.

CL UNIONVILLE ROAD (50' R/W)
N00d34°31'W@ 110.21'



Kamenar Railroad Salvage
PID 41000160320000
11.024 AC

S65d57°02'E@ 798.60'

N68d013°57'W@ 212.01'

Hookey, Dawson & Sheryl
PID 41001600300000
9.33 AC

N05d08°16'W@ 1.74'

N07d02°08'E@ 70.96'

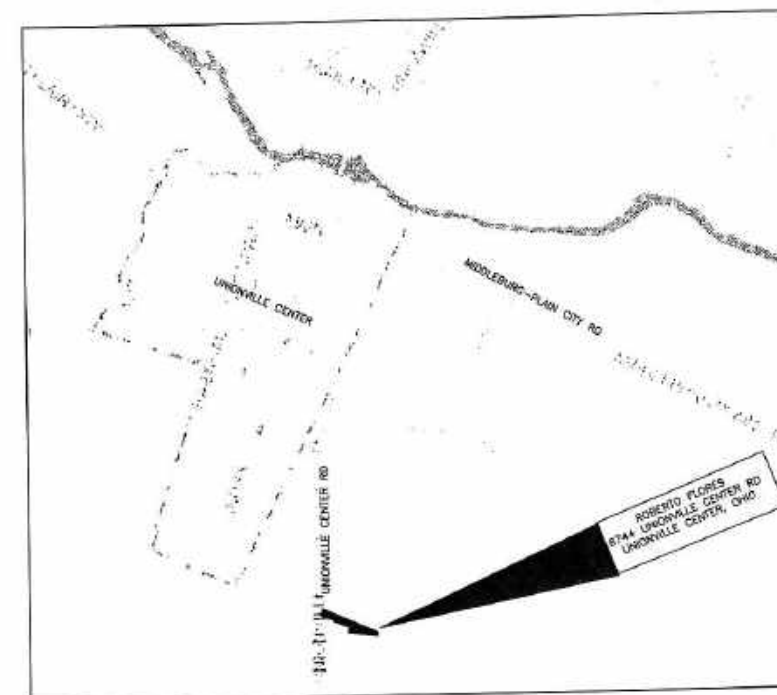
N82d15°30'W@ 387.85'

Nicholas, Bonnie
PID 41001600200000
60.37 AC

SYMBOLS:

EXISTING GRADES AND CONTOURS ARE
SHOWN AS

941



LOCATION MAP
SCALE: NOT TO SCALE

PLANING AND ZONING INFORMATION

ZONING: LIGHT LIMITED INDUSTRIAL
(EXISTING)

OWNER: ROBERTO FLORES

ADDRESS: 8744 UNIONVILLE ROAD
UNIONVILLE CENTER, OH
4077

PID 41-0016029.000

ACREAGE= 1.6192

PROPOSED RESIDENTIAL OVERLAY
.169 ACRES OR 7361 SQ. FT

PROPERTY IS SERVED BY PRIVATE
WELL AND SEPTIC



SITE PLAN
SCALE: 1" = 30'

William Pizzino
1-19-2019



ROBERTO FLORES
8744 UNIONVILLE CENTER ROAD
UNIONVILLE CENTER, OHIO 43077

Prepared by
PIZZINO ENGINEERING & CONSULTING, LLC.
WILLIAM J. PIZZINO, P.E.
9495 SR 161
PO BOX 1000, OHIO 43064

DEVELOPMENT PLAN			
SCALE: 1" = 30'	THIS SHEET: SITE PLAN		DRAWN: WJP
DATE: 1-19-2019			
		TIME MASTER	



Staff Report – Jerome Township Rezoning Application

Township:	Jerome Township c/o Anita Nicol 9777 Industrial Parkway Plain City, OH 43064 (614) 873-4480 jeromezclerk@aol.com
Applicant:	Paragon Building Groups, LTD. c/o Laura MacGregor Comek 501 South High Street Columbus, OH 43215 (614) 560-1488 laura@comeklaw.com
Request:	<p>Request is to rezone portions of eight existing parcels from Rural Residential District (RU) and Special Recreation District (SRE) to Planned Development (PD) District.</p> <p>Total acreage</p> <ul style="list-style-type: none">• 210.62 acres <p>Existing use</p> <ul style="list-style-type: none">• Agriculture• Residential• Open space (Rolling Meadows Golf Course) <p>Proposed use</p> <ul style="list-style-type: none">• Single-family detached dwellings and associated accessory structures• Limited home occupations• Community and public parks, playgrounds, play fields and sports fields and accessory uses typically associated with community open space and parks, including, but not limited to, shelters, gazebos, walking paths, ponds, gathering spaces, seating and landscaping.• Community facilities such as clubhouses, pools and pool houses• Sports and recreation instruction• Golf courses and country clubs• Golf driving ranges <p>The application proposes a maximum of 393 units and a gross density of 1.87 dwelling units per acre (393</p>



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	units/210.62 acres). The application proposes open space totaling 40% (84.25 acres) of the gross acreage of the property. The proposal incorporates the Rolling Meadows Golf Club.
Location:	<p>The site is located on the south side of Industrial Parkway, north of Taylor Road and the Reserve at New California subdivision. The site fronts both Industrial Parkway and Crottinger Road.</p> <p>Adjacent zoning districts include RU, SRE, and PD (residential).</p>
Staff Analysis:	<p>Adjacent Land Use</p> <p>This area of the Township is generally planned to develop as conservation development and function as an open space/recreation preserve. Adjacent uses include agriculture, very low density residential, woodlands, and streams. The reason for the open space/recreation preserve is Rolling Meadows Golf Club, a portion of which is included in this proposal and comprises a large portion of the properties involved; it is one of the Township's largest recreation areas (Jerome Comp Plan, pp. 5-4). Lands on the other side of Industrial Parkway are mostly agriculture but are planned for non-residential.</p> <p>Additional residential subdivisions are located south along Industrial Parkway toward/beyond US Hwy 42. Subdivisions to the south include Reserve at New California, New California Hills/Woods, Mitchell Highlands, Mitchell Crossing, and Woodbine Village.</p>



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Aerial. Nearby Residential.

Township Comprehensive Plan, Residential Conservation District, & Preservation (2008)

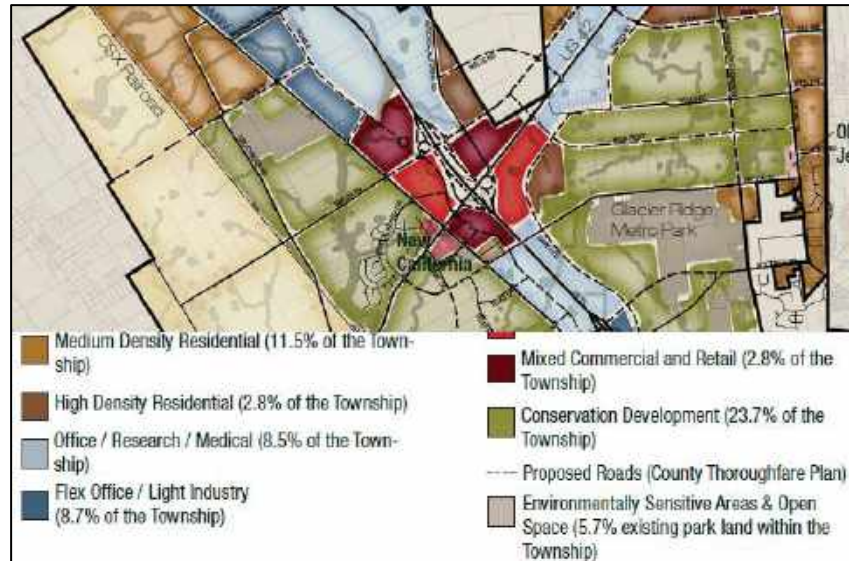
Jerome Township has a comprehensive plan. The Plan identifies four levels of development constraints and three of the four levels appear on this site—Preservation, Most Restrictive, and Moderately Restrictive (Jerome Comp Plan, pp. 5-2). The areas of this site included as Preservation and Most Restrictive include the golf course, woodlands, and floodplains.





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The Comprehensive Plan contemplates future land uses in Chapter 5 and 6 (pp. 5-2), recommending two future use categories for this parcel. The golf course parcels are mapped as Environmentally Sensitive Areas & Open Space and the remaining parcels are mapped Conservation Development (pp. 6-3).



The Plan does not characterize Environmentally Sensitive Areas & Open Space in depth, but the largest mapped areas of this category appear to be Glacier Ridge Metro Park (Environmentally Sensitive Areas) and Rolling Meadows Golf Club (Open Space). The Comprehensive Plan encourages preservation and development of new recreational outlets. This proposal permits continued operation of a golf course, but also permits residential development within the limits of the golf course property.

The Plan characterizes Conservation Development as appropriate for large parcels with significant natural features and environmental constraints. The intent is to allow clustered, low-density residential (1-2 units per acre) that preserves large areas of open space (40%) and natural features. There is a +/- 12 acre woodland on the south side of the property and a mapped floodplain on the east side of the property. Although the Illustrative Master Plan and Conceptual Development Plan are not binding documents, the documents depict housing where the trees are currently located and no housing where the floodplain is depicted. Staff feels the intent of the Comprehensive Plan is for a larger



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area of the woodlands to be preserved than depicted in the south of the property (Jerome Twp Zoning Resolution, 500.07 4. d) (ii)). The Zoning Resolution also encourages means for safe bicycle access and circulation, and staff recommends incorporation of bicycle accessibility and circulation (500.06 4. b)). For example, how does this PD plan to connect to the proposed off-road trail along Industrial Parkway?.

Union County Comprehensive Plan (2013)

Union County has a comprehensive plan and it speaks to the importance of the US 33 Corridor's role in the regional economy (Union County Comp Plan, pp. 65).

The Plan splits US Highway 33 Corridor into sub-areas, and the proposed development is in the Southeast Sub-Area. The Plan notes the west side of the highway is largely agricultural when outside of commercial, office, and institutional areas; and includes major corporations and small businesses that drive economic growth. It characterizes the east half as defined by residential subdivisions, large residential lots, and some farm fields, attributing the uniqueness to the conservation efforts of Glacier Ridge Metro Park (pp. 73).

The Plan acknowledges a mix of uses can be integrated throughout the Southeast Sub-Area in a clustered, context-sensitive manner (pp. 74). The Plan stresses the importance of infrastructure improvements, with special attention given to the Plan's Thoroughfare Plan and development of trails and greenways to ensure quality of life.

Zoning Text Comments

Staff analyzed the proposed Zoning/Regulation Text and recommends the Township require more rigid, specific standards. Clear requirements protect the Township, but also protect the developer's vision and character of the development. This Text is important because it constitutes the zoning regulations for the property (Jerome Twp Zoning Resolution, 500.04, 2.).

1. Staff recommends the format of the Zoning/Regulation Text follow the format on pp. 5-21 of the Zoning Resolution. Following the format is more user-friendly and consistent with other PDs.
2. Open space. Requirements for setbacks, heights, service areas, off-street parking areas, signage, etc. are needed for the open space area. This includes



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	<p>requirements for the open space/golf club area. <i>See 500.08 3. r) (i).</i></p> <ol style="list-style-type: none">3. Open Space. Staff recommends additional text that prohibits further subdivision of open space. <i>See §500.07, 4. d) (iii).</i>4. Parking. Setbacks, parking stall dimensions, aisles dimensions, loading space dimensions, and lighting standards are needed. This includes requirements for the open space/golf club area. <i>See 500.08 3. r) (i); 500.08 3. r) (iii).</i>5. Roadways/Sidewalks. Minimum pavement and sidewalk widths are needed. <i>See 500.08 3. r) (iv); 500.08 3. r) (v).</i>6. Landscaping. The landscaping requirements in the proposed Zoning/Regulation Text read as “preliminary”. This Text is not preliminary. If adopted, it will serve as the regulating text and the requirements will be minimum requirements. References to preliminary should be removed. Additional minimum standards should be considered in the event the golf club were to cease operation. <i>See 500.05 10. a); 500.08 3. r) (vi).</i>7. Signage. Although exhibits are provided, maximum heights, minimum setbacks, etc. need to be specified in the Text. This includes requirements for the open space/golf club area. <i>See 500.08 3. r) (vii).</i>8. Lighting. Although exhibits are provided, additional information is needed. This would include pole details, shielding, maximum light intensity, heights, etc. specified in the Text. This would include requirements for parking areas and the open space/golf club area. <i>See 500.08 3. r) (viii).</i>9. Uses. The Township specifies which uses are permitted in its zoning districts using the NAICS code. Staff recommends use of the NAICS code, rather than using the undefined terms referencing community facilities. Several examples are listed in the Special Recreation District. <i>See (500.08 3. r) (x); (500.08 3. r) (xiii).</i>10. Lot coverage. Staff recommends establishment of minimum lot coverage restrictions for the residential lots. <i>See (500.08 3. r) (xi).</i>
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Logan-Union-Champaign regional planning commission

Staff Report – Jerome Township Rezoning Application

Staff Recommendations:

Staff recommends **APPROVAL** with **modifications as recommended** in the staff report to rezone the parcel from RU and SRE to PD. This recommendation is based on the Jerome Township Comprehensive Plan, the Union County Comprehensive Plan, and the Chapter 5: Planned Development District of the Jerome Township Zoning Resolution.

Z&S Committee Recommendations:

Jerome Township Zoning Commission

Anita Nicol
Clerk

9777 Industrial Parkway
Plain City, Ohio 43064

January 28, 2019

Office: (614) 873-4480 x102
Fax: (614) 873-8664

Bradley Bodenmiller, Director
L.U.C. Regional Planning Commission
Box 219
East Liberty, Ohio 43319

Dear Brad:

This letter is to inform you of a Jerome Township Rezoning Amendment Application submitted to our office on January 28, 2019.

Application: PD-19-130

Name of Applicant: Laura MacGregor Comek, Attorney for Paragon Building Group,
LTD

Rezoning: Parcel #s 14-00050060000 & 14-00050070000 (Walbonns LLC by David Starkey) located at 10897 Industrial Parkway and 15-00040180000 located at 10680 Crottinger Rd by Paul C. Haueisen.

Present Zoning: RU, SRE

Proposed Zoning: PD - Commercial/Office

Public Hearing Date has been set for: February 25, 2019 at 7:00 p.m.

The Zoning Commission would like your comments regarding this rezoning before the public hearing date.

If you need further information, please feel free to contact our office.

Sincerely yours,



Anita Nicol
Zoning Clerk



Logan-Union-Champaign regional planning commission

Director: Dave Gulden

Zoning Parcel Amendment Checklist

Date: Jan. 28, 2019

Township: Jerome

Amendment Title: PD-19-130 - Paragon Building Group Represented by Laura

Notice: Incomplete Amendment requests **will not** be processed by our office. LUC Regional Planning Commission will return them to the requestor, stating the reason the amendment was not accepted.

*McGregor
Conlek*

Each Zoning Parcel Amendment change must be received in our office along with a cover letter, explaining the proposed zone change (s). All items listed below must be received **no later than 10 days** before the next scheduled LUC Regional Planning Commission Executive Board Meeting (which is the second Thursday of every month). It is recommended that a person who is able to provide further information on the amendment attend the Zoning and Subdivision Committee meeting to answer any additional questions that may arise.

Required Item:	Completed by Requestor:	Received by LUC:
Cover Letter & Checklist	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Date of Request (stated in cover letter)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Description of Zoning Parcel Amendment Change(s)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Date of Public Hearing (stated in cover letter)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Township point of contact and contact information for zoning amendment (stated in cover letter)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Parcel Number(s)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Copy of Completed Zoning Amendment Application	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Applicant's Name and contact information	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Current Zoning	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Proposed Zoning	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Current Land Use	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Proposed Land Use	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Acreage	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Copy of Zoning Text associated with proposed district(s)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Contiguous and adjoining Parcel Information, including Zoning District(s)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Any other supporting documentation submitted by applicant	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Non-LUC Member Fee, If applicable	<input type="checkbox"/>	<input type="checkbox"/>

Additionally, after final adoption regarding this zoning parcel amendment, please provide LUC with a letter stating the results of the Trustees vote, along with a copy of the adopted parcel change (s).

Please see reverse side for a timeline of the Township Zoning Amendment Process, per ORC 519.12

9676 E. Foundry St, PO Box 219

East Liberty, Ohio 43319

• Phone: 937-666-3431 • Fax: 937-666-6203

• Email: luc-rpc@lucplanning.com • Web: www.lucplanning.com

Jerome Township Zoning Map



Logan-Union-Champaign
Regional Planning Commission
9676 E. Foundry St.
East Liberty, OH 43319
(937) 666-3431

Map Created: July 2004
Revised By Trustees: 20 April 2015
UPDATED: 7 Jan 2019

Jerome Roads

- US/State Highway
- County Highway
- Township Road
- Railroad

Jerome Zoning

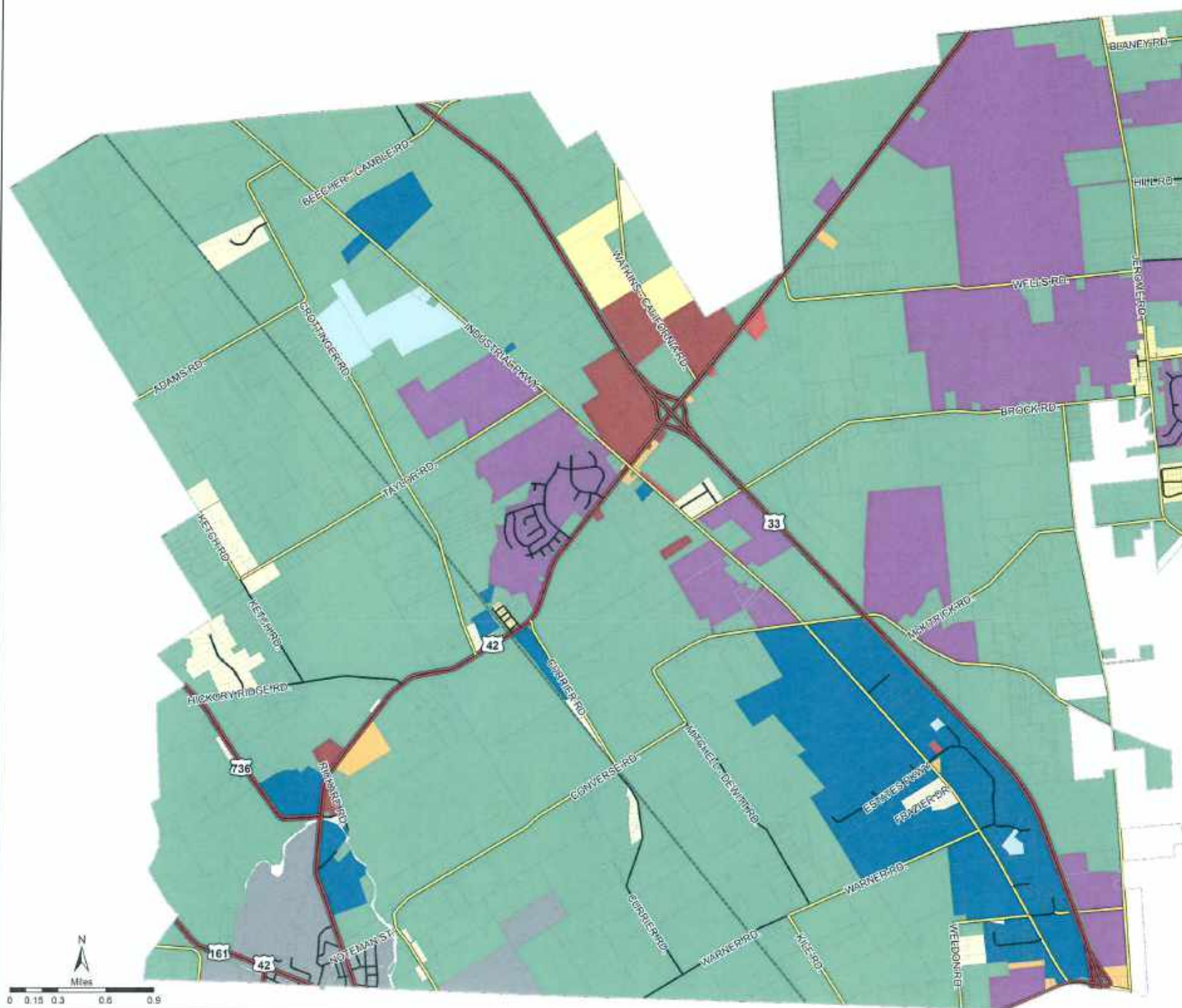
- RU
- LDR
- MDR
- ORM
- LR
- RR
- COM
- PD
- SRE
- Plain City

AMENDMENTS

THIS IS TO CERTIFY THAT THIS
OFFICIAL ZONING MAP
SUPERSEDES AND REPLACES
THE OFFICIAL ZONING MAP
ADOPTED: JANUARY 22, 2019

R.L. RHODES C.J. LOVEJOY

L.J. CRAFT DATE



500 Planned Development District (PD)

The Planned Development (PD) District is established under the provisions of Ohio Revised Code 519.021(B) to promote the general public welfare, encourage the efficient use of land and resources, promote greater efficiency in providing public and utility services, and encourage innovation in planning and building of all types of development in accordance with the Jerome Township Comprehensive Plan. The regulations set forth herein are based on the premise that the ultimate quality of a built environment or development proposal is determined not only by the general classification of land uses, but also by the specific way in which such land uses are executed. In many cases, the subdivision regulations and standard zoning district classifications do not adequately regulate the design of buildings, the mix of uses, and the general character of development that are desirable in the Township. In accordance with the comprehensive plan and the above statements it is the intent of the Planned Development (PD) district to promote development that:

1. Provides an opportunity for a mix of open space and other uses not otherwise permitted within the standard zoning district classifications; and
2. Allows the creation of development standards that respect the unique characteristics, natural quality and beauty of the site and the immediate vicinity and protects the community's natural resources by avoiding development on, and destruction of, sensitive environmental areas; and
3. Enables more extensive review of design characteristics to ensure that the development project is properly integrated into its surroundings and is compatible with adjacent development; and
4. Assures compatibility between proposed land uses within and around the PD through appropriate development controls; and
5. Enhances the economy of the Township by making available a variety of employment opportunities and providers of goods and services; and
6. Encourages unified development projects that exhibit creative planning and design in ways that cannot be achieved through a standard zoning district, yet are imaginative in architectural design and are consistent with applicable plans for the area and are compatible with adjacent and nearby land uses.

500.01 Residential Development Purpose and Intent

Along with the general purpose and intent of this District, the following additional purposes relative to residential development are applicable:

1. A clustered neighborhood design is encouraged with a gross density which is in keeping with the comprehensive plan and the physical development potential of the area.

Note: The text, images and diagrams in this highlighted area are for clarification and explanation purposes only. See Section 135

2. The utilization of Conservation Design principles and preservation of a substantial amount of permanent open space is encouraged, integrated into the development and providing for a pedestrian friendly environment.
3. In larger developments, a variety of different lot sizes are encouraged to create an integrated and imaginative residential environment.
4. In larger developments a variety in architectural elevations are required as follows:
 - a) Architectural Diversity –A single-family dwelling with the same or similar front elevation shall not be repeated within 4 houses on the same side of the street and within 2 houses in either direction of the house on the opposite side of the street. The builder is permitted to construct homes that use an identical elevation, but use a different main exterior material or main exterior color, provided that the homes shall be separated by at least 2 homes of a different elevation on the same side of the street and by at least 1 home in either direction of the house on the opposite side of the street.
5. The provision of supporting facilities is encouraged, such as schools, churches and parks to create well-designed and functional neighborhoods. These facilities should be supported with pedestrian connections to neighborhoods.
6. Master planning is encouraged that focuses on a much broader scale than a single development site, taking into account the larger physical context within which the proposed development is to occur.
7. In areas identified on the comprehensive plan as “Higher Density Residential” it may be appropriate to consider single family or multi-family development at densities higher than those appropriate in other areas of the township and where the Planned Development district will allow more creative site planning to accommodate these densities and provide appropriate transitions between adjoining higher intensity uses and lower intensity uses.

500.02 Commercial and Office Development Purpose and Intent

Along with the general purpose and intent of this District, the following additional purposes relative to commercial and office development are applicable:

1. Commercial and office development shall be properly managed and the development standards of the PD clearly specified so that Township officials completely understand the design and impact

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of a development proposal.

2. A flexible and creative approach to commercial development is encouraged. This flexibility is intended to minimize potential negative impacts and conflicts with rural agriculture and residential development.
3. A pedestrian friendly environment is encouraged, interconnecting with adjacent neighborhoods.
4. Master planning is encouraged that focuses on a much broader scale than a single development site, taking into account the larger physical context within which the proposed development is to occur

500.03 Industrial Development Purpose and Intent

Along with the general purpose and intent of this District, the following additional purposes relative to industrial development are applicable:

1. The clustering of industrial uses is encouraged, along with flexibility and creativity in site design, in order to ensure that development is sensitive to and compatible with the Township's rural environment.
2. Industrial development shall be properly managed and the development standards of the PD clearly specified so that Township officials completely understand the design and impact of a development proposal.
3. Master planning of an extended area is encouraged, which ensures a stable, unified industrial development having all necessary services and facilities.
4. A unified design is encouraged which allows for greater design flexibility and better integration into the Township's rural environment. This flexibility is intended to minimize potential negative impacts and conflicts with rural agriculture and residential development.

500.04 General Provisions

1. Zoning Plan and Development Plan

For purposes of this Section, plans including all supporting documentation adopted by the Township at the time of rezoning shall be referred to as the "Zoning Plan," and plans including all supporting documentation approved subsequent to such rezoning but prior to the initiation of any development activities are referred to as the "Development Plan."

2. Effect of PD Approval

Each PD is considered a separate and unique zoning district wherein a Zoning Plan, including associated text describing the

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allowable uses and specific development standards, is adopted simultaneously with the application requesting amendment of the zoning map to apply the PD designation. The Zoning Plan, as approved by the Township and as provided under Ohio Revised Code Section 519.021(B), shall constitute the zoning regulations for and shall apply only to the property included within that particular PD. Whenever there is a conflict or difference between the provisions of this Section and those of other provisions of this Zoning Resolution, the provisions of this Section shall prevail for the development of land within the PD. Subjects not expressly covered by this Section or the applicable Zoning Plan shall be governed by the respective provisions found elsewhere in this Zoning Resolution that are most similar to the proposed use.

3. Sub Areas

Depending upon the size and complexity of the proposed development different Sub Areas may be established within a PD. Each Sub Area may, if requested, be treated as a separate district with individual standards. However, only one PD Zoning Plan approval shall be issued for the entire development. For each Sub Area, the applicant shall indicate gross density, dwelling type, minimum development standards, and all other uses by type, size and location.

4. Type of Action

The action of the Township upon an application to approve a Zoning Plan pursuant to this Section and Section 230 of the Zoning Resolution shall be considered a legislative act, and subject to a referendum. After property has been rezoned to the PD, any action related to the subsequent use or development of such property, as being in compliance with the regulations authorized to be established by this Section including any action taken on a Development Plan, shall not be considered to be an amendment to the Township Zoning Resolution for the purpose of Section 519.12 of the Ohio Revised Code, but may be appealed pursuant to Chapter 2506 of the Ohio Revised Code.

5. Zoning Amendment

A change to an adopted Zoning Plan shall be considered to be a zoning amendment and shall be processed according to the procedures set forth in Section 519.12 of the Ohio Revised Code and Section 230 of this Zoning Resolution. For Zoning Plans which are divided up into separate Sub Areas, as noted above, the applicant may file for an amendment to a specific Sub Area provided the requested change has no effect on the remaining Sub Areas.

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6. Development Plan

A Development Plan shall be required to be submitted to the Township for approval prior to the initiation of construction and development in each phase of the PD. Such Development Plan shall be in substantial compliance with and consistent with the approved Zoning Plan for the Property with respect to land uses, densities, architectural and landscape commitments, and open space. Minor deviations from the approved Zoning Plans may be considered for approval during the Development Plan Process by the trustees without requiring an applicant file for an amendment to the Zoning Plan. Changes that may be considered minor, but do not limit the trustee's discretion in such matters, include:

- a) Adjustments to the layout or alignment of new roads or to the site layout that does not affect lot count, density, setbacks, or open space and does not increase curb cuts or connections to existing roadways unless required by the county engineer during final engineering.
- b) Increases in residential lot sizes or reductions in residential density provided such changes do not reduce the required setbacks, decrease the required open space, or change the required architectural or development standards.

500.05 Previously Approved Planned Developments

Section 500 of the Zoning Resolution was amended on and the amendment in effect from and after April 20, 2015. Planned Developments and all associated detailed development plans and supporting documentation adopted and in effect prior to April 20, 2015 shall continue in effect and be considered legally conforming under this Zoning Resolution. These previously approved Planned Developments shall continue to be governed, administered and modified pursuant to the substantive and procedural regulations then in effect for such Planned Developments as contained in the Zoning Resolution immediately prior to April 20, 2015.

500.06 General PD Standards

In order to achieve the purpose and intent of the Planned Development District (PD) and the Jerome Township Comprehensive Plan the following general standards are hereby established for all Planned Developments within Jerome Township.

1. Uses

Within the PD district a creative mix of uses is encouraged provided it will establish an efficient and sustainable use of the land and infrastructure, and result in a well-integrated, pedestrian friendly development. Single use PD's may also be established by the applicant to encourage development that is more responsive to the land and environment than may be permitted through a standard zoning district. The following

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standards are established for uses in the PD:

- a) **Permitted Uses** - Permitted uses within each PD shall be clearly identified in the zoning plan submitted with the application to establish a PD. Uses not specified in the approved zoning plan will be prohibited.

2. Densities

Densities within a PD should be in conformance with the recommendations of the comprehensive plan and shall promote the efficient use of land and infrastructure. Proposed densities shall be clearly identified in the zoning plan submitted with the application for PD.

3. Setbacks and Yard Areas

All Proposed setbacks and yard areas within the PD shall be identified in the zoning plan submitted with the application for PD. Setbacks and yard areas within PD developments shall be established to meet the following requirements:

- a) Setbacks within a PD zoning shall support the goals of the comprehensive plan for development that respects the rural character of the township while promoting efficient use of the land and its resources.
- b) Setbacks shall be configured to appropriately balance open space and provide safe separation between buildings and uses.
- c) When a proposed commercial or industrial PD is to be located contiguous to residential uses perimeter setbacks and/or appropriate screening from the contiguous property line should be established within the PD.
- d) To maintain the rural character of the township the setbacks from existing state, county and township roads should be larger than those established for new public roads established within the PD.
- e) To the greatest extent possible new residential subdivisions should be designed to minimize the number of homes where the back yards and the backs of homes face existing and proposed roads. Where such conditions are to exist along existing state, county, and township roads a minimum setback of 50' between the Right of Way of the public street and the rear lot lines, and a minimum of 80' between the Right of Way of the public street and the rear setback line of the lot. An increased landscape buffer shall be established for the entire length of road affected.

4. Public Improvements

The PD should be developed at a minimum with the following improvements meeting the design standards of the Union County Engineer:

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- a) Public roads shall be designed and constructed to the standards established by the Union County Engineer's Office.
- b) Means for safe pedestrian and bicycle access and circulation shall be provided. Pedestrian paths should be integrated into open space where applicable or allowed, with ownership and maintenance dedicated to the entity holding title to the open space.
- c) Storm water management facilities shall be provided as required by the County Engineer and State of Ohio.

5. Access

The zoning plan should require direct access, not through easement, to one or more dedicated and improved public roads. Provisions for future connections to other public roads or adjacent land shall be required if recommended by the township, county engineer or regional planning commission.

6. Buildings

To promote the purpose and intent of the Planned Development District and the goals of the comprehensive plan all applications for PD shall detail the proposed design and development standards for all residential and non-residential buildings within the PD. The following standards apply to all residential and non-residential buildings within the PD.

- a) The physical relationship of buildings and other site improvements to one another and the surrounding area, as created by building mass, size, height, shape, location on the site, and setback, shall result in a harmonious development both within the PD and in relation to its surroundings.
- b) The bulk and height of buildings within the proposed development shall be compatible with the surrounding area.
- c) Buildings, structures and parking areas shall be designed and located in such a way to conserve environmentally sensitive or unique natural, historic or cultural features.
- d) The zoning plan and application shall specify for all buildings and residences, at a minimum, the proposed exterior materials, size, height, roof shape and pitch.

7. Lighting

Any application for a PD shall include the type and description of all proposed street and parking lot lighting. Street lighting shall conform to the standards of the Union County Engineer and all lighting within the proposed PD shall conform to the following:

- a) The lighting plan submitted with the zoning plan and the application for PD shall specify the proposed pole and lantern design, maximum height, lighting source, wattage, shielding

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and any other information necessary to evaluate the lighting as proposed.

- b) The lighting plan submitted with the zoning plan and application for PD shall be designed to promote an overall cohesiveness in the development of the plan and to minimize the amount of light pollution affecting the neighboring properties and the rural character of the township.
- c) Parking lot lighting specified within the PD shall be limited in height to the minimum required to effectively illuminate the parking areas to all applicable standards and shall incorporate a "cut-off" type shielding to prevent light pollution on adjacent properties.

8. Signage

All applications for a PD shall include a signage plan and or standards to be approved by the zoning commission for all uses and areas within the PD. Signage design and standards shall ensure a constant and comprehensive character throughout the project and compatible with the character of the township and shall meet the following:

- a) All signs and graphics within the PD shall be compatible in size, location, material, height, shape, color, and illumination.
- b) A detailed sign plan and standards shall be submitted with the application for PD and shall include the design, layout and dimensions of all proposed ground, window and wall signs as well as the setbacks from the right-of-ways and the type and intensity of illumination.
- c) Signs shall contribute to an overall cohesive design, reflect simplicity, reduce visual clutter and compliment the rural character of the township.
- d) Wall signs shall be controlled and designed in a manner to compliment the architecture of the buildings and the PD. Ground signs shall be designed to relate to and share common elements with the proposed architecture.

9. Parking and Loading Areas

For all non-residential uses off street parking and loading shall be provided for in the design of the PD. Parking and access requirements and standards shall be as defined in the approved zoning plan and shall meet the requirements of the Union County Engineer, the township fire department and the following standards:

- a) Off street parking and loading shall be provided for all non-residential buildings with adequate provisions for ingress and egress.
- b) Parking areas shall be designed to discourage large single expanses of parking and shall encourage smaller defined

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parking areas within the total parking system. Such parking areas shall be delineated and accentuated by landscaped areas.

- c) The layout of parking areas, service areas and related entrances, exits, signs, lighting, noise sources or other potentially adverse influences shall be designed and located to protect the character of the area as well as those areas adjacent to the PD.
- d) To minimize the environmental impacts of large parking areas shared parking between uses shall be encouraged and supported within the PD. Where shared parking is desired the applicant shall submit a statement identifying how the parking is to be shared between the uses, and the percentage of parking and hours of parking allocated for each use.
- e) All service and delivery and loading areas for all uses shall be arranged and located to minimize the impacts and view of such uses throughout the development.

10. Landscaping

All zoning plans and application for PD shall include a detailed landscape plan and standards for all areas, sub areas, open spaces and uses with the proposed development. The following standards shall apply:

- a) All yards and open space not covered by structure, paving and the like shall be landscaped with lawn as a minimum.
- b) A detailed landscape plan and standards shall be submitted with the zoning plan and PD application for approval by the zoning commission. All landscaping shall be maintained and kept in accordance with the approved landscape plan.
- c) All vacant and undeveloped areas shall be kept seeded and maintained in such a manner as to prevent erosion of the property and excess drainage on adjoining land.
- d) Landscaping shall be designed to enhance architectural features, screen incompatible uses, emphasize pedestrian environments, provide shade for streets and parking lots and strengthen views and vistas.
- e) The landscape plan shall be designed to preserve and capitalize on the existing natural characteristics of the site and to promote overall unity in design.
- f) Landscape design and the specification and use of trees and plant materials shall discourage monoculture. For the purpose of this section monoculture is defined as the dominance or overabundance of any one species that may expose the development to a substantial loss of plant material should said plant material be affected by pest or disease (ex. Emerald Ash Borer)

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- g) Plant material specified in the PD shall be indigenous and hearty to the area and shall be harmonious to the design and consistent with adjacent land uses.
- h) Street tree species native to the area shall be provided by the developer for all existing and proposed public streets and placed outside the public right-of-way in a maintenance easement. Size, shape, type and location of street trees shall be specified in the Zoning Plan. Street trees shall not be placed over utility lines and shall not interfere with the function or maintenance of roadways and drainage areas.
- i) Landscape buffers between lots and the County or Township road serving the PD and buffers between lots and adjacent land should be placed in landscape easements on the plat and dedicated to the Homeowners Association or such other person or entity as may be approved in the Zoning Plan. Landscape buffer design shall be specified in the Zoning Plan.

11. Flood Plains and Environmentally Sensitive Areas

Floodplains within the PD shall be protected from building or pavement encroachment through the following standards:

- a) A riparian buffer, having a width of not less than 50' as measured from the centerline of the stream, shall be provided along the entire length and on both sides of a river or perennial stream channel.
- b) Buffer areas shall be restricted from development and managed to promote the growth of vegetation indigenous to the stream area capable of maintaining the structural integrity of the stream bank.
- c) A wetlands buffer should be provided for all wetlands required to be retained by the Army Corps of Engineers or the Ohio EPA. The buffer area should have a width of not less than 25' measured from the edge of the designated wetland. The buffer areas should not be disturbed other than necessary to establish and natural landscape and existing trees should be preserved and protected to the extent practicable.

12. Open Space

A PD should have an open space component which is compatible with the size, nature and design of the development. A recommended minimum of 20 percent of the gross land area of a PD containing a residential component, except as outlined in section 500.07 (4), should be set aside as open space for common use, preferably interconnected with other similar spaces within this or adjacent developments. (For a PD without a residential component, a minimum of 10 percent open space set aside is recommended.) Open space shall be prohibited from further subdivision or development by deed restriction, conservation easement or other agreement, in a form satisfactory to the

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Township. This restriction from further subdivision or development shall also be noted in the Zoning Plan and the recorded plat.

a) Design Standards - The following design standards for open space should be followed:

- (i) Open space shall be fully integrated into the overall design and should, absent unique and special circumstances, meet all standards and guidelines contained herein. The types of uses, buildings and structures proposed to be permitted in the open space shall be specified in the Zoning Plan.
- (ii) For the purposes of the PD, public uses may be proposed for natural areas and preserves, parks and other active recreational areas, and public facilities such as public schools, libraries and community centers may likewise be proposed. Access to all public uses shall be specified.
- (iii) In identifying the location of open space, the developer shall consider as priorities existing natural features such as natural woodlands, wetlands, identified species habitat, tree lines, stream and creek corridors, and FEMA designated 100-year floodplains.
- (iv) Retention ponds (wet basins) may be permitted in an open space reserve provided such ponds are designed and maintained as natural features that blend into the landscape. A landscape design for each retention pond shall be submitted with the Zoning Plan. Detention ponds (dry basins) should ordinarily not be permitted in the designated open space unless a part of a bioswale corridor.
- (v) Except for bike paths and pedestrians trails, open space should be unified and massed so that no open space is narrower in any direction than the development's average lot width. Open space should be platted as an open space reserve, including appropriate conservation easements.
- (vi) Open space should, when practicable, be interconnected with open space areas on abutting parcels.
- (vii) In order to encourage the creation of large areas of contiguous open space, areas that should not be considered as open space include:
 - Private road and public road rights-of-way;
 - Parking areas, access ways, and driveways;
 - Required setbacks between buildings, parking areas, and project boundaries;
 - Required setbacks between buildings and streets;

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- Easements for overhead power transmission lines unless containing bike paths as part of an overall coordinated trail network;
 - Minimum spacing between buildings, and between buildings and parking areas;
 - Private yards;
 - Areas of fee simple lots to be conveyed for residential dwelling uses;
 - Other small fragmented or isolated open space areas that have a dimension less than 75 feet in any direction. (Excessive gaps and non-usable spaces between buildings are discouraged, or pedestrian walkways should be established.)
- (viii) Any open space intended to be devoted to active recreational activities should be of usable size and shape for the intended purposes.
- (ix) Any area within the open space that is proposed to be disturbed during construction or otherwise not preserved in its natural state, other than required setback areas, should be noted on the Zoning Plan and the method and timing of any restoration shall be set forth in the Zoning Plan.
- (x) The open space, including any recreational structures and public facilities proposed to be constructed in such space, shall be clearly shown on the Zoning Plan.
- b) Open Space Ownership - Open space may be proposed to be owned by an association, the Township or other governmental entity, a land trust or other conservation organization recognized by the Township, or by a similar entity, or may remain in private ownership if appropriately restricted. The ownership of the open space shall be specified in the Zoning Plan and shall be subject to the approval of the Township. The methods of ownership, if approved as part of the Zoning Plan, may be as follows:
- (i) Offer of Dedication - The Township or other governmental entity may, but shall not be required to, accept conveyance in the form of fee simple ownership of the open space.
 - (ii) Associations - Open space may be held by the individual members of a Condominium Association as tenants-in-common or may be held in common ownership by a homeowners' association, community association, or other similar legal entity. Documents shall be submitted with the Zoning Plan which will ensure compliance with the following requirements:

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- Membership in the association shall be mandatory for all purchasers of lots in the development or units in the condominium.
 - The association shall be capable of and responsible for maintenance, control, and insurance of common areas, including the open space.
 - The association shall have the right and obligation to impose assessments upon its members, enforceable by liens, in order to ensure that it will have sufficient financial resources to provide for proper care and maintenance of the open space.
- (iii) **Transfer of Easements to a Private Conservation Organization** - With the approval of the Township, an owner may transfer conservation easements to a public or private non-profit organization, among whose purposes it is to conserve open space and/or natural resources, provided that::
- The organization is acceptable to the Township, and is a bona fide conservation organization with perpetual existence;
 - The conveyance contains appropriate provisions for the property reverter or retransfer in the event that organization becomes unwilling or unable to continue carrying out its function; and
 - A maintenance agreement approved by the Township is entered into by the developer and the organization.
- c) **Open Space Management and Maintenance** - The owner of the open space shall be responsible for raising all monies required for operations, maintenance, or physical improvements to the open space through annual dues, special assessments, and valid and enforceable collection methods. The owner shall be authorized, under appropriate restrictions and covenants, to place liens on the property of residents within the PD who fall delinquent in payment of such dues and assessments. In the event that the organization established to own, operate and maintain the open space shall at any time after the establishment of the PD fail to maintain the open space in reasonable order and condition in accordance with the Zoning Plan, such failure shall constitute a violation of both the Zoning Plan and this Zoning Resolution.
- d) **Transfer of Title of Open Space** - Title to any open space required by the PD zoning which is included within any recorded subdivision plat of any section of the land zoned PD shall be transferred to the entity approved for ownership of the open space prior to the sale of more than 75% of the lots or units within that subdivision section.

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500.07 Use-Specific Development Standards

In addition to the General PD Development Standards the following use specific development standards are hereby established to further fulfill the purpose and intent of the District through the application of flexible land development techniques in the arrangement, design and construction of structures and their intended uses and the integration of open space within the development. These standards, as well as applicable plans for the area, are intended as general standards as circumstances dictate. The development standards filed and approved as part of the Zoning Plan and PD application shall establish the final requirements. The development policies include the following:

1. Low and Medium Density Residential Land Use

Future development of clustered subdivisions is anticipated to occur in those areas with centralized public utilities and shall be managed to protect the area's unique quality of life and semi-rural character. The density of these developments will be based upon several factors, including, without limitation, the availability of centralized utilities, the recommendations of the comprehensive plan, and whether the proposed development will be compatible in use and appearance with surrounding or planned land uses. The following shall apply when calculating suburban residential density within a PD:

- a) Calculating Residential Density – While the densities of individual residential areas may vary within a large PD the calculation of density for the entire PD shall be based upon the total number of dwelling units proposed for the total area devoted exclusively to residential use, including open space. Where open space is included within the calculation for residential density, such open space shall permanently remain as open space within the PD unless a future rezoning of the open space is approved by the zoning commission.
- b) Additional Density Considerations - Additional density for residential developments to be serviced by centralized utilities may be permitted by the zoning commission in certain unique and special instances such as those where: the open space set-aside far exceeds the minimum recommended ; additional and substantial site amenities are provided; the development incorporates rural design characteristics into the overall design of the site and maintains compatibility with the surrounding or planned land uses; the design of the development preserves, protects and enhances the natural and historic resources located on the site; and storm water and other environmental impacts are minimized and mitigated and natural features are enhanced.

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- c) **Lower Density Considerations** – In addition to the consideration for additional density as mentioned above the zoning commission may require lower densities for a residential development in certain unique and special instances such as those where: a large portion of the site is undevelopable due to its physical features such as existing bodies of water, steep slopes and similar characteristics, and where proposed residential development is not compatible with adjacent residential development patterns.

2. Higher Density Residential Land Use

Future development of higher density land uses is expected to occur in areas so designated in the Jerome Township Comprehensive Plan as being suitable for such uses. These areas provide an opportunity to serve differing housing needs within the community and establish an effective transition between more intense commercial and office land uses, and lower density residential uses. The density of these developments will be based upon several factors, including, without limitation, the availability of centralized utilities, the recommendations of the comprehensive plan, and whether the proposed development will be compatible in use and appearance with surrounding or planned land uses. In addition increases in density should be supported for increased architectural and landscape standards and creative site planning that contributes to the desirability of the community.

3. Agriculture and Rural Residential Land Use

It is anticipated that portions of the Township will remain principally agricultural in nature, especially in those areas where centralized utilities are not anticipated to be provided. PD development standards within these areas should encourage a development pattern that minimizes impacts and intrusions to agriculture, such as clustering homes on new streets and not along existing road frontage and designating agricultural-exclusive areas.

4. Residential Conservation Development

Within the Jerome Township Comprehensive plan there exists recommendations for residential development that adheres to conservation development principles. These principles promote more compact development patterns in exchange for the preservation of important existing environmental and natural features and the set aside of significant amounts of open space. These types of developments reduce infrastructure costs for the developer, help to maintain a more open, rural feel for the township, promote a more efficient use of land, and provide a vehicle to preserve important natural features and incorporate them into a development strategy. Land developed under a

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Conservation Development PD (CDPD) shall adhere to the following standards:

- a) Uses - Conservation developments may be permitted to contain a mix of uses provided that all proposed uses are identified in the zoning plan and application as specified in section 500.08.
- b) Density - The overall residential density of the Conservation Development PD should conform to the recommendations and intent of the Comprehensive Plan and shall be identified in the zoning plan and application per section 500.08.
- c) Lot size - The intent of a Conservation Development PD is to allow smaller lot sizes and more compact development patterns in exchange for a higher percentage of dedicated open space and natural lands. To accomplish this goal lot sizes are flexible within the CDPD and shall be established by the approved zoning plan and PD application. All lots less than two acres in size shall be serviced by public sewer and water systems. Proposed lots of 2 acres or more shall be served by either public sewer and water services or on site treatment and well systems subject to the approval of the Union County Engineer and Union County Health Department.
- d) Dedicated Open Space - All CDPD developments shall comply with the following minimum requirements regarding open space.
 - (i) The minimum amount of open space to be provided with a CDPD is recommended to be 40% of the total acreage of the property being included in the PD. Development of smaller parcels may be considered for a reduction in the open space requirements provided that the recommendations of (ii), (iii), and (iv) below still apply.
 - (ii) All CDPD developments shall strive to utilize open space to preserve natural features including but not limited to floodplains, waterways, stream buffers, steep slopes, woodlands, wetlands and natural habitats or shall be designed to preserve significant amounts of agricultural lands.
 - (iii) Prohibition of further Subdivision of Open Space - Open space provided for the purposes of achieving the requirements of the CDPD shall be prohibited from further subdivision or development through deed restriction, conservation easement, or other such agreement acceptable to the townships legal advisor.
 - (iv) Open spaces within the CDPD shall meet all other requirements of section 500.06 herein.

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5. Commercial and Office Land Use

Commercial and office development should be clustered in areas serviced by centralized utilities and adequate roadway systems. The density of general commercial development should not exceed 10,000 square feet per acre, absent special circumstances. This density calculation will ordinarily be based upon the total square footage proposed for the entire area devoted exclusively to commercial and office development. However, a lower density may be mandated due to the nature of the project, the physical features of the site or the compatibility of the project with surrounding or planned land uses. In addition a higher density may be approved by the zoning commission to accommodate mixed use projects and other innovative and sustainable planning features. Design standards should be incorporated into the Zoning Plan which will improve the aesthetic quality of this type of development.

6. Industrial Land Use

Light industry, research and development, and related office uses should be clustered in areas serviced by centralized utilities and adequate highway accessibility. Absent special circumstances, density should not exceed 10,000 square feet per acre. This density calculation will ordinarily be based upon the total square footage proposed for the entire area devoted exclusively to industrial development. However, a lower density may be mandated due to the nature of the project, the physical features of the site or the compatibility of the project with surrounding or planned land uses. The industrial areas should only develop in conjunction with centralized utilities. These areas should be master planned and well-coordinated, and not developed in a piecemeal (lot by lot) way. Access should be shared. Design standards should be incorporated into the Zoning Plan which will improve the aesthetic quality of this development type. In addition all industrial uses developed under the PD shall conform to the following standards:

- a) Fire and Explosion Hazards - All activities, including storage, involving flammable or explosive materials shall include the provision of adequate safety devices against hazard of fire and explosion. All standards enforced by the Occupational Safety and Health Administration shall be adhered to. Burning of waste materials in open fire is prohibited, as enforced by the Ohio Environmental Protection Agency.
- b) Air Pollution - No emission of air pollutants shall be permitted which violate the Clean Air Act of 1977 or later amendments as enforced by the Ohio Environmental Protection Agency.
- c) Glare, Heat, and Exterior Light - Any operation producing intense light or heat, such as high temperature processing,

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combustion, welding, or other shall be performed within an enclosed building and not visible beyond any lot line bounding the property whereon the use is conducted.

- d) Dust and Erosion - Dust or silt shall be minimized through landscaping or paving in such a manner as to prevent their transfer by wind or water to points off the lot in objectionable quantities.
- e) Liquid or Solid Wastes - No discharge at any point into any public sewer, private sewage disposal system, or stream, or into the ground, of any materials of such nature or temperature as can contaminate any water supply or interfere with bacterial processes in sewage treatment, shall be permitted. The standards of the Ohio Environmental Protection Agency shall apply.
- f) Vibrations and Noise - No uses shall be located and no equipment shall be installed in such a way as to produce intense, earth shaking vibrations which are discernable without instruments at or beyond the property line of the subject premises. Noise standards of the Ohio Environmental Protection Agency shall be adhered to.
- g) Odors - No use shall be operated so as to produce the continuous, frequent or repetitive emission of odors or odor causing substances in such concentrations as to be readily perceptible at any point at or beyond the lot line of the property on which the use is located. The applicable standards of the Ohio Environmental Protection Agency shall be adhered to.

500.08 Procedure for Amending to the PD

In addition to the procedure set forth in Section 230 of this Resolution, all applications for amendments to the zoning map to rezone property to the PD shall follow the procedures hereinafter set forth in Section 500.08, hereof.

1. Pre-application Meeting

The applicant is encouraged to engage in informal consultations with staff from the Zoning Commission and the Union County subdivision authorities (e.g. Planning Commission, County Engineer, Board of Health, etc.) prior to formal submission of an application for an amendment of the Zoning Resolution. No statement or action by Township or County officials in the course of these informal consultations shall be construed to be a waiver of any legal obligation of the applicant or of any procedure or formal approval required by Township or County statutes or rules.

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2. Application

The owner(s) of land may request that the Zoning Resolution be amended to include such land in the PD by filing fifteen (15) copies of an application for such amendment with the Jerome Township Zoning Commission, which application shall contain:

- a) name, address and telephone number of the owner and applicant;
- b) name, address and telephone number of the urban planner, architect, landscape architect, surveyor and/or engineer assisting in the preparation of the Zoning Plan;
- c) legal description of the property and the address of the property;
- d) description of existing uses;
- e) present zoning district;
- f) a vicinity map at a scale approved by the Zoning Commission showing the relationship of the PD to the adjacent properties, existing streets and public service facilities in the area;
- g) a list of the names and addresses of all owners of property which are within, contiguous to and directly across the street from the subject property as such addresses appear on the County Auditor's current tax list; and
- h) Any other matter or information deemed necessary or relevant by the Zoning Commission for the proposed amendment.

3. Proposed Zoning Plan

In addition to the application required herein, fifteen (15) copies of the proposed Zoning Plan shall be submitted with the application. The proposed Zoning Plan shall be prepared and endorsed by a certified or licensed planner, architect, landscape architect, engineer and/or surveyor, with all mapping to be at a scale of at least 1" = 100', and shall include, in text and map form, the following:

- a) Proposed location and size of the proposed planned district. This includes a survey map of the boundaries of the site and a legal description.
- b) A list and description of the precise uses proposed for the development. Listed uses shall be defined by their customary name or identification, except where they are specifically defined or limited in the Zoning Plan or this Zoning Resolution. Any listed use may be limited to specific areas delineated in the proposed Zoning Plan.
- c) Concept site plan of the proposed planned district, and proposed layout of all subareas.
- d) Proposed densities, number of lots and dimension parameters, and building intensities.

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- e) Proposed parks, playgrounds, schools and other public facilities or open spaces including woodland preservation and natural topography preservation areas with their suggested ownership.
- f) Locations of stream channels, watercourses, wooded areas and buffer areas shall be designated. Existing topography and drainage patterns shall also be shown.
- g) Relation to existing and future land use in surrounding area.
- h) Proposed provision of water, sanitary sewers, surface drainage, and street lighting.
- i) Proposed traffic and pedestrian circulation pattern, indicating both public and private streets and highways, access points to public rights-of-ways, bike paths and trails, sidewalks and any off-site street improvements.
- j) An anticipated schedule for the development of units to be constructed in progression and a description of the design principles for buildings and streetscapes; tabulation of the number of acres in the proposed phase for various uses, the number of housing units proposed by type; building heights; open space; building intensity; parking areas; density and public improvements proposed.
- k) Engineering feasibility studies and schematic plans showing, as necessary, water, sewer and other utility installations, waste disposal facilities, surface drainage, and street improvements.
- l) Site plan, showing approximate nonresidential building locations(s), various functional use areas, circulation, and their relationship.
- m) General architectural design criteria for proposed buildings, structures, signs and exterior lighting with proposed control features.
- n) Deed restrictions, protective covenants, and other legal statements or devices to be used to control the use, development and maintenance of the land, the improvements thereon, including those areas which are to be commonly owned and maintained.
- o) Projected schedule of site development.
- p) Evidence that the applicant has sufficient control over the land to carry out the proposed development.
- q) Regulation Text for development in the proposed Planned Development District. That text shall set forth and define the uses to be permitted in the proposed Planned Development District and the development standards applicable to the proposed District. The Regulation Text is intended to guide all development of the property proposed to be designated as a PD.
- r) This Regulation Text shall only apply to the PD in question and all development within that PD. All appropriate regulatory

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areas should be addressed by the applicant in the Regulation Text including, without limitation, the following:

- (i) All required setbacks including, but not limited to, buildings, service areas, off-street parking lots and signage, including rear, front and side yard areas.
- (ii) All maximum height and size requirements of buildings, mechanical areas and other structures.
- (iii) All parking and loading space standards per building square footage or dwelling unit type, including dimensions of all parking stalls, aisles and loading spaces.
- (iv) All street and road right-of-way and pavement width dimensions, curb cut spacing and other related circulation standards.
- (v) All pedestrian and bicycle walkway, trail and sidewalk dimensional standards, including rights-of-way and pavement width, and pavement standards.
- (vi) All screening and landscaping standards, including buffer dimensions, height, landscape material, maintenance standards, and screening standards for off-street parking areas, loading docks, trash receptacles and dumpsters, ground- and roof-mounted mechanical units and adjoining areas.
- (vii) All proposed signage and graphic standards, including height, setback, square footage, colors, corporate logos and type.
- (viii) All exterior lighting standards, including light intensity, placement, height and materials for parking lots, walkways, sidewalks and accent lighting.
- (ix) All exterior architectural design standards, including material, color and styles.
- (x) A list and description of the precise uses proposed for the development. Listed uses shall be defined by their customary name or identification, except where they are specifically defined or limited elsewhere in the Zoning Plan or this Zoning Resolution. Any listed use may be limited to specific areas delineated in the proposed Zoning Plan;
- (xi) Frontage requirements, minimum lot area requirements, yard areas, lot coverage restrictions and perimeter setback requirements.
- (xii) Accessory structure standards and limitations.
- (xiii) Open space area, uses and structures, including proposed ownership and sample controlling instruments.
- (xiv) Any other regulatory area or matter deemed necessary

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or relevant by the Zoning Commission.

- (xv) The Regulation Text should contain the following provision: All development standards not specifically addressed by the Regulation Text shall be regulated by those general development standards set forth in the Zoning Resolution.

4. Basis of Approval

In determining whether or not to approve an application for a PD, the reviewing authorities shall consider all relevant factors and circumstances including, without limitation, the following:

- a) Whether the proposed development is consistent in all aspects with the purpose, policies, criteria, intent, and standards of this Zoning Resolution;
- b) Whether the proposed development is in conformity with the applicable plans for the area or such portion thereof as may apply, or whether the benefits, improved arrangement and design of the development justify any deviation there from;
- c) Whether the proposed development promotes the public health, safety and general welfare of the Township and the immediate vicinity;
- d) Whether the proposed plan meets the design features contained in this Resolution;
- e) Whether the proposed development is in keeping with the existing or planned land use character and physical development potential of the area;
- f) Whether the proposed development will be compatible in use and appearance with surrounding or planned land uses;
- g) Whether the development will have a beneficial or an adverse effect upon the Township and other governmental services.
- h) Whether the area surrounding the development can be planned, zoned and developed in coordination and substantial compatibility with the proposed development.
- i) Whether the existing and proposed utility and governmental services are adequate for the population densities and nonresidential uses proposed.
- j) Whether the development promotes greater efficiency in providing public and utility services and encouraging innovation in the planning and building of all types of development;
- k) Whether the development can be made accessible through existing or future Township roadways without creating unreasonable traffic congestion in the immediate vicinity of the proposed development or elsewhere in the Township;
- l) Whether the development is located and designed in such a

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way as to minimize any unreasonable adverse impact on existing residential or agricultural areas of the Township; and

- m) Whether the benefits, improved arrangement and design of the property to be developed justify rezoning the property to the PD.

5. Effect of Approval

- a) The Zoning Plan, as approved by the Township Trustees, shall constitute a rezoning of the subject tract to the PD permitting development and use of said land and any structures thereon in accordance with the development standards contained in the Zoning Plan. However, in a PD, no use shall be established and no structure shall be constructed or altered on any part of said tract, until there is submitted to the Township a Development Plan for said part of said tract, and until the Development Plan is approved by the Township Trustees.
- b) The approval of the Zoning Plan shall be for a period of five (5) years, or for such other period as set forth in the approved Zoning Plan, to allow for the preparation of a required Development Plan(s). Unless the Board of Trustees approves such an extension of this time limit, upon the expiration of such period, no use shall be established and no building, structure or improvement shall be constructed until an application accompanied by a new Zoning Plan has been filed with and approved by the Township, and such application for approval shall be subject to the same procedures and conditions as an original application for the Zoning Plan approval. This new application shall comply with the terms of the Zoning Resolution then in effect at the time of filing, including, without limitation, any zoning amendments enacted from and after the date of the initial request to include the property within the PD. In addition, the Township Board of Trustees or Zoning Commission may initiate a zoning amendment to rezone the property or any portion thereof to its former (or another similar) classification upon expiration of the Zoning Plan approval period.

6. Extension of Time for Zoning Plan

Upon application by the owner(s), the Board of Trustees may extend the time limit provided by Section 500.08 5(b), above. Such extension may be given after application by the applicant showing the purpose and necessity for same and upon evidence that the owner(s) has made reasonable efforts toward the accomplishment of the original approved Zoning Plan, and that such extension is not in conflict with the general health, safety and welfare of the public.

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500.09 Development Plan

1. Application

In the PD, no use shall be established and no structure shall be constructed or altered until a Development Plan for each such use and/or structure has been approved by the Township Trustees. An application, in a form approved by the Board of Trustees, shall be completed by the property owner and submitted with the Development Plan. A total of 15 copies of the application and supporting material shall be submitted. The application form shall be provided by the Zoning Inspector. All mapping shall be prepared using the County's graphic standards.

2. Development Plan

In addition to the application required herein, 15 copies of the Development Plan shall be submitted with the application. The Development Plan, which may be submitted for the entire development or an individual phase, shall contain, in text and map form, the following information at a minimum:

- a) Proposed name of the development and its location;
- b) Names and addresses of owners and developers;
- c) Date, north arrow and Plan scale. Scale shall be one-inch equals 100 feet or larger scale;
- d) Boundary lines of the proposed development and the total acreage encompassed therein;
- e) Locations, widths and names of all existing public streets or other public ways, railroad and utility rights of way or easements, parks and other public open spaces, permanent structures, and section and corporation lines within or adjacent to the tract;
- f) Existing sewers, water mains, culverts and other underground facilities within the tract, adjacent to the tract or that will be used in developing the tract, indicating pipe sizes, grades and locations;
- g) The adjoining lines of adjacent tracts, parcels or lots;
- h) Residential density, dwelling types, nonresidential building intensity and specific uses to be included within the proposed development, specified according to area or specific building location;
- i) Existing ground configuration, drainage channels, wooded areas, watercourses and other significant physical features;
- j) Layout of proposed streets, including their names and rights of way, easements, sewers, water lines, culverts, street lighting and other major improvements;
- k) Layout, numbering and dimensions of lots if more than one;

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- l) Anticipated building envelope and general architectural style and character of proposed structures;
- m) Parcels of land intended to be dedicated or temporarily reserved for public use or reserved by deed covenant with the condition proposed for such covenant and for the dedications;
- n) Building setback lines with dimensions;
- o) Tentative street grades and sewer size slope;
- p) Traffic circulation, parking areas, curb cuts and pedestrian walks;
- q) Landscaping plans, including site grading and landscape design;
- r) Engineering feasibility studies of any anticipated problems which may arise due to the proposed development as required by the Zoning Commission;
- s) For other than detached single-family structures, provide:
 - (i) Drawings for buildings to be constructed in the current phase, including floor plans, exterior elevations and sections;
 - (ii) Color rendering of building(s), complete with a listing of all colors, including Pantone 1999-2000 Reference Numbers or if Pantone is not available, the manufacturer's reference/serial number with sample, and materials, with samples to be used;
 - (iii) Building locations depicting the bulk, height and spatial relationships of building masses with adjacent development;
 - (iv) Intended measures to screen rooftop mechanical equipment from view;
- t) A detailed signage and exterior lighting plan;
- u) Accommodations and access for emergency and firefighting apparatus;
- v) The management plan or mechanism to provide for the perpetual maintenance of all open space, landscaping, buffers and shared parking areas by the ultimate owner and/or user and the controlling instruments;
- w) Location of open space area and designation of intended uses; and
- x) Any additional information as may be required by the Zoning Commission.

3. Process For Development Plan(s) Approval

The application and supporting materials for the Development Plan approval shall be submitted to the Zoning Commission for hearing and recommendation. The Zoning Commission shall

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establish a date for the hearing within a reasonable period of time following its receipt of the application and shall give the applicant written notice at least ten (10) days before the date of the hearing. The Zoning Commission shall make a recommendation for the approval, modification or denial of the application within a reasonable period of time after it is submitted. The recommendation shall be forwarded to the Board of Trustees. The Board of Trustees shall hold a hearing on the application within a reasonable period of time after its receipt of the recommendation and shall give the applicant written notice at least ten (10) days before the date of the hearing. The Board of Trustees shall render a decision on the application within a reasonable period of time after the recommendation and application have been submitted to the Board of Trustees for its action. In determination of its decision for approval or denial of the development plan the trustees shall consider whether or not the Development Plan is in substantial compliance with and consistent with the Zoning Plan for the property based upon the requirements in section 500.04.

4. Commencement of Development

Upon the approval of the Development Plan, the tract which is the subject of said Development Plan may be used and developed consistent with the approved Zoning Plan and the Development Plan. The approval of the Development Plan shall be for a period of three (3) years in order to allow for the preparation and recording of a subdivision plat (if required under applicable law) and the commencement of construction following the issuance of certificate of zoning compliance. If no plat has been filed within this approval period (or, if platting is not required, if construction has not commenced) and unless the Board of Trustees approves an extension of this time limit, the Development Plan shall expire. Upon the expiration of the Development Plan, no use shall be established or changed and no building, structure or improvement shall be constructed until an application accompanied by a new Development Plan has been filed with and approved by the Township using the same procedures and criteria as established for the approval of the initial Development Plan.

5. Extension of Time for Development Plan

Upon application by the owner(s), the Board of Trustees may extend the time limit provided by Section 500.09 (4), above. Such extension may be given upon a showing of the purpose and necessity for same and upon evidence that the owner(s) has made reasonable efforts toward the accomplishment of the original approved Zoning Plan, and that such extension is not in conflict with the general health, safety and welfare of the public or the development standards of the PD.

Note: The text, images and diagrams in this highlighted area are for clarification and explanation purposes only. See Section 135

6. Modification of Development Plan

An applicant seeking to modify an approved Development Plan shall file an application for Development Plan Modification utilizing the same procedures and criteria as established for the approval of the initial Development Plan. Modifications of a Development plan, not modifying the underlying zoning, shall be subject to the review and approval of the Zoning Commission only.

500.10 Fees

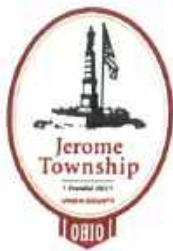
A fee as established by the Board of Trustees shall accompany an application requesting approval of the Zoning Plan or Development Plan. In addition, the applicant shall also be responsible for all reasonable and necessary expenses incurred by Jerome Township in using professional consulting services to review the Zoning Plan and/or Development Plan. These expenses may include, without limitation, costs for professional consultants such as architects, landscape architects, planners and engineers utilized by the Township in connection with reviewing the Zoning Plan or Development Plan and related application materials. As soon as reasonably practicable following the submission of an application for approval of a Zoning Plan or Development Plan, the Zoning Commission shall decide if it needs a professional consultant(s) to assist it in reviewing the application. If the Zoning Commission decides it needs professional consulting services, it shall designate the person(s) to be consulted and make an initial estimate of the expenses anticipated to be incurred in reviewing the application materials. The Zoning Commission shall provide the applicant with notice of its initial estimate of such expenses. This initial estimate will be reviewed, and may be revised, from time to time during the review process, and, if such review results in an increase in the estimated professional consulting fees and charges which will be incurred in the Township's review of the application materials, the Zoning Commission shall send the applicant written notice of the revised estimate of fees and charges. Within fourteen (14) days of the date of the notice of the initial estimate of fees and charges (and, if applicable, within fourteen (14) days of the date of the notice of any revised estimate), the applicant shall deposit in the office of the Township Fiscal Officer or the Fiscal Officer's designee, an amount equal to the estimated cost of the Township's expenses. In making the estimate of the professional consulting fees and charges anticipated to be incurred, the Zoning Commission shall consider the reasonable commercial rates of qualified professionals and reasonable estimates of time to complete the review. Any unused portion of the estimated amount received to cover the professional consulting fees and charges shall be returned to the applicant as soon as practicable following the final disposition of the application, along with a summary of the fees and charges expended for such services.

Note: The text, images and diagrams in this highlighted area are for clarification and explanation purposes only. See Section 135

500.11 Phases

A project which is the subject of the Zoning Plan may be approved for development in phases. Each phase shall require approval of a Development Plan for that phase pursuant to the procedures set forth herein. Unless otherwise specified in the Zoning Plan or absent an extension approved by the Board of Trustees, all phases shall be submitted for and receive Development Plan approval within the time frame set forth in Section 500.09 (4). An application for Development Plan approval for each phase of a project shall be annotated as to the as built conditions and shall be supplemented with an updated construction schedule. The phasing schedule shall be fully described in the Zoning Plan in a manner sufficient to give Township officials guidelines for the timing of future phases.

Note: The text, images and diagrams in this highlighted area are for clarification and explanation purposes only. See Section 135



Jerome Township
Union County, Ohio

9777 Industrial Parkway
Plain City, Ohio 43064
Office (614) 873-4480
Fax (614) 873-8664



Application Form

PUD Zoning

Office Use Only:
Application #: PD-19-130 Date: 1-28-2019
Fee: \$ 12,031.00 Check #: 28589

Agent / Applicant Information:

Laura MacGregor Comek, Attorney for
Agent / Applicant Name: Paragon Building Group, LTD. Date: January 28, 2018
Mailing Address: 501 South High St. Columbus, OH 43215
Email Address: laura@comeklaw.com Phone: 614-560-1488

Property Information:

Property Address: See Attachment 1 (8 Properties or Portions Thereof)
Property Owner: See Attachment 1 (8 Properties or Portions Thereof)
Parcel ID # (s) See Attachment 1 (8 Properties or Portions Thereof)
Acreage: +/-210.62 Ac. Current Zoning: RU, SRE Subdivision Name: Rolling Meadows

PUD Zoning Information:

<u>PUD Type Requested:</u>	<u>Adjacent Land Uses:</u>	<u>Proposed Utilities:</u>
<input checked="" type="checkbox"/> Residential	North: <u>Open Space</u>	<input checked="" type="checkbox"/> Public Sewer
<input type="checkbox"/> Commercial / Office	South: <u>Planned Unit Development</u>	<input type="checkbox"/> On-Site Sewer
<input type="checkbox"/> Industrial	East: <u>Rural Residential</u>	<input checked="" type="checkbox"/> Public Water
<input type="checkbox"/> Mixed-Use	West: <u>Rural Residential, Residential</u>	<input type="checkbox"/> Private Well
<input type="checkbox"/> Modification of Existing PUD		

The undersigned certifies that this application and the attachments thereto contain all the information required by the Zoning Resolution and that all information contained within this application is true and accurate to the best of his/her knowledge. Applicant hereby certifies that they have legal ownership or legal control over the property to be re-zoned and agrees to be bound by the provisions of the Jerome Township Zoning Resolution.

Agent / Applicant Signature: [Signature] Date: 1/28/19

Property Owner Signature (if different from the Applicant): See Attachments 2, 3, 4, and 5

The owner(s) of land, in requesting that the Zoning Resolution be amended to include such land in the PUD, shall file fifteen (15) paper copies, and one electronic copy, of the application, Zoning Plan, and Zoning Text for such amendment with the Jerome Township Zoning Commission. An application, to be accepted as complete, shall contain the following information:

1. Application form and supplementary information:

- ☐ name, address and telephone number of the owner and applicant;
- ☐ name, address and telephone number of the urban planner, architect, landscape architect, surveyor and/or engineer assisting in the preparation of the Zoning Plan;
- ☐ legal description of the property and the address of the property;
- ☐ description of existing uses;
- ☐ present zoning district;
- ☐ a vicinity map at a scale approved by the Zoning Commission showing the relationship of the PUD to the adjacent properties, existing streets and public service facilities in the area;
- ☐ a list of the names and addresses of all owners of property which are within, contiguous to and directly across the street from the subject property as such addresses appear on the County Auditor's current tax list;
- ☐ a traffic study completed to the requirements of the Union County Engineer, OR, a letter from the Union County Engineer that a traffic study is not required for the proposed development; and
- ☐ any other matter or information deemed necessary or relevant by the Zoning Commission for the proposed amendment.

2. Zoning Plan

In addition to the application required herein, fifteen (15) copies of the proposed Zoning Plan shall be submitted with the application. The proposed Zoning Plan shall be prepared and endorsed by a qualified urban planner, architect, landscape architect, engineer and/or surveyor, with all mapping to be at a scale of at least 1" = 100', and shall include, in text and map form, the following:

- ☐ Proposed location and size of the proposed planned district. This includes a survey map of the boundaries of the site and a legal description.
- ☐ A list and description of the precise uses proposed for the development. Listed uses shall be defined by their customary name or identification, except where they are specifically defined or limited in the Zoning Plan or this Zoning Resolution. Any listed use may be limited to specific areas delineated in the proposed Zoning Plan.
- ☐ Concept site plan of the proposed planned district, and proposed layout of all subareas.
- ☐ Proposed densities, number of lots and dimension parameters, and building intensities.
- ☐ Proposed parks, playgrounds, schools and other public facilities or open spaces including woodland preservation and natural topography preservation areas with their suggested ownership.
- ☐ Locations of stream channels, watercourses, wooded areas and buffer areas shall be designated. Existing topography and drainage patterns shall also be shown.
- ☐ Relation to existing and future land use in surrounding area.
- ☐ Proposed provision of water, sanitary sewers, surface drainage, and street lighting.
- ☐ Proposed traffic and pedestrian circulation pattern, indicating both public and private streets or highways, access points to public rights-of-ways, bike paths and trails, sidewalks and any off-site street improvements.
- ☐ An anticipated schedule for the development of units to be constructed in progression and a description of the design principles for buildings and streetscapes; tabulation of the number of acres in the proposed phase for various uses, the number of housing units proposed by type; building heights; open space; building intensity; parking areas; density and public improvements proposed.

- ☐ Engineering feasibility studies and schematic plans showing, as necessary, water, sewer and other utility installations, waste disposal facilities, surface drainage, and street improvements.
- ☐ Site plan, showing approximate nonresidential building locations(s), various functional use areas, circulation, and their relationship.
- ☐ General architectural design criteria for proposed buildings, structures, signs and exterior lighting with proposed control features.
- ☐ Deed restrictions, protective covenants, and other legal statements or devices to be used to control the use, development and maintenance of the land, the improvements thereon, including those areas which are to be commonly owned and maintained.
- ☐ Projected schedule of site development.
- ☐ Evidence that the applicant has sufficient control over the land to carry out the proposed development.
- ☐ Regulation Text for development in the proposed Planned Unit Development District. That text must set forth and define the uses to be permitted in the proposed Planned Unit Development District and the development standards applicable to the proposed District. The Regulation Text is intended to guide all development of the property proposed to be designated as a PUD.

3. Zoning Text

This Regulation Text shall only apply to the PUD in question and all development within that PUD. All appropriate regulatory areas should be addressed by the applicant in the Regulation Text including, without limitation, the following:

- ☐ A cover page including the name of the proposed development, name and contact information of the applicant, name and contact information of the applicants representative(s), the date of application and any revision dates thereafter, the townships application number, and signature lines for the township trustees.
- ☐ All required setbacks including, but not limited to, buildings, service areas, off-street parking lots and signage, including rear, front and side yard areas.
- ☐ All maximum height and size requirements of buildings, mechanical areas and other structures.
- ☐ All parking and loading space standards per building square footage or dwelling unit type, including dimensions of all parking stalls, aisles and loading spaces.
- ☐ All street and road right-of-way and pavement width dimensions, curb cut spacing and other related circulation standards.
- ☐ All pedestrian and bicycle walkway, trail and sidewalk dimensional standards, including rights-of-way and pavement width, and pavement standards.
- ☐ All screening and landscaping standards, including buffer dimensions, height, landscape material, maintenance standards, and screening standards for off-street parking areas, loading docks, trash receptacles and dumpsters, ground- and roof-mounted mechanical units and adjoining areas.
- ☐ All proposed signage and graphic standards, including height, setback, square footage, colors, corporate logos and type.
- ☐ All exterior lighting standards, including light intensity, placement, height and materials for parking lots, walkways, sidewalks and accent lighting.
- ☐ All exterior architectural design standards, including material, color and styles.
- ☐ A list and description of the precise uses proposed for the development. Listed uses shall be defined by their customary name or identification, except where they are specifically defined or limited elsewhere in the Zoning Plan or this Zoning Resolution. Any listed use may be limited to specific areas delineated in the proposed Zoning Plan;
- ☐ Frontage requirements, minimum lot area requirements, yard areas, lot coverage restrictions and perimeter setback requirements.
- ☐ Accessory structure standards and limitations.

- ☐ Open space area, uses and structures, including proposed ownership and sample controlling instruments.
- ☐ Any other regulatory area or matter deemed necessary or relevant by the Zoning Commission.
- ☐ The Regulation Text should contain the following provision: All development standards not specifically addressed by the Regulation Text shall be regulated by those general development standards set forth in the Zoning Resolution.

PARCEL 1

Property Owner:
Walboons LLC

Address:
10897 Industrial Parkway
Marysville, Ohio

Parcel ID Number:
1400050060000

PARCEL 2

Property Owner:
Walboons LLC

Address:
10897 Industrial Parkway
Marysville, Ohio

Parcel ID Number:
1400050070000

PARCEL 3

Property Owner:
Paul C. Haueisen

Address:
10680 Crottinger Road
Plain City, Ohio

Parcel ID Number:
1500040180000

PARCEL 4

Property Owner:
George C. and Bonnie H.
Stottlemeyer

Address:
10696 Crottinger Road
Plain City, Ohio

Parcel ID Number:
1500040184000

PARCEL 5

Property Owner:
George C. and Bonnie H.
Stottlemeyer

Address:
10696 Crottinger Road
Plain City, Ohio

Parcel ID Number:
1500040181000

PARCEL 6

Property Owner:
George C. and Bonnie H.
Stottlemeyer

Address:
10696 Crottinger Road
Plain City, Ohio

Parcel ID Number:
1500040183000

PARCEL 7

Property Owner:
Bryan R. Barney and Ann L.
Blateri

Address:
11233 Industrial Parkway
Marysville, Ohio

Parcel ID Number:
1400050030000

PARCEL 8

Property Owner:
Bryan R. Barney and Ann L.
Blateri

Address:
11233 Industrial Parkway
Marysville, Ohio

Parcel ID Number:
1500040044000

OWNER AUTHORIZATION

I, WALBONNS LLC by DAVID H STARKEY, MANAGER ("Owner"), the owner of real properties known as Union County Parcel Identification Numbers 14-0005006.0000 & 14-0005007.0000, located at 10897 Industrial Parkway in Marysville, Ohio (the "Property"), hereby authorize Paragon Building Group, LTD. (the "Agent") to act as the Owner's representative in all matters pertaining to the processing and approval of the rezoning and development plan approval, including modifications. The Owner agrees to be bound by all representatives and agreements made by the designated Agents, subject to the terms of the Option to Purchase.

By: David H StarkeyPrinted Name: DAVID STARKEY ITitle: MANAGER OF WALBONNS LLC

State of OHIO
County of FRANKLIN: SS

Before me, a Notary Public, personally came DAVID H. STARKEY, MANAGER OF WALBONNS LLC, who acknowledged the foregoing Affidavit as his her voluntary act and deed on behalf of the company.

In witness whereof, I have hereunto subscribed my name and affixed my seal on this 24 day of January, 2019 (Month, Year).

Michelle East

Notary Public



MICHELLE C. EAST
NOTARY PUBLIC, STATE OF OHIO
MY COMMISSION EXPIRES DECEMBER 5, 2019

OWNER AUTHORIZATION

I, PAUL C. Hauelsen, ("Owner"), the owner of real property known as Union County Parcel Identification Number 15-0004018.0000, which is located at 10680 Crottinger Road in Plain City, Ohio (the "Property"), hereby authorize Paragon Building Group, LTD. (the "Agent") to act as the Owner's representative in all matters pertaining to the processing and approval of the rezoning and development plan approval, including modifications. The Owner agrees to be bound by all representatives and agreements made by the designated Agents, subject to the terms of the Option to Purchase.

By: Paul C Hauelsen

Printed Name: PAUL C Hauelsen

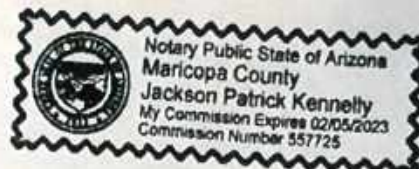
Title: Owner

State of Arizona
County of Maricopa: SS

Before me, a Notary Public, personally came Paul C Hauelsen, who acknowledged the foregoing Affidavit as his/her voluntary act and deed on behalf of the company.

In witness whereof, I have hereunto subscribed my name and affixed my seal on this 24 day of January, 2019 (Month, Year).

[Signature]
Notary Public



OWNER AUTHORIZATION

I, _____, ("Owner"), the owner of real properties known as Union County Parcel Identification Numbers 15-0004018.1000, 15-0004018.4000 and 15-0004018.3000, which is located at 10696 Crottinger Road in Plain City, Ohio (the "Property"), hereby authorize Paragon Building Group, LTD. (the "Agent") to act as the Owner's representative in all matters pertaining to the processing and approval of the rezoning and development plan approval, including modifications. The Owner agrees to be bound by all representatives and agreements made by the designated Agents, subject to the terms of the Option to Purchase.

By: _____

Printed Name: _____

Title: _____

State of _____
County of _____: SS

Before me, a Notary Public, personally came _____, who acknowledged the foregoing Affidavit as his/her voluntary act and deed on behalf of the company.

In witness whereof, I have hereunto subscribed my name and affixed my seal on this _____ day of _____, _____ (Month, Year).

Notary Public

OWNER AUTHORIZATION

I, _____, ("Owner"), the owner of real property known as Union County Parcel Identification Numbers 14-0005003.0000 and 15-0004004.4000, which are located at 11233 Industrial Parkway in Marysville, Ohio (the "Property").), hereby authorize Paragon Building Group, LTD. (the "Agent") to act as the Owner's representative in all matters pertaining to the processing and approval of the rezoning and development plan approval, including modifications. The Owner agrees to be bound by all representatives and agreements made by the designated Agents, subject to the terms of the Option to Purchase.

By: _____

Printed Name: _____

Title: _____

State of _____
County of _____: SS

Before me, a Notary Public, personally came _____, who acknowledged the foregoing Affidavit as his/her voluntary act and deed on behalf of the company.

In witness whereof, I have hereunto subscribed my name and affixed my seal on this _____ day of _____, _____ (Month, Year).

Notary Public

ROLLING MEADOWS

Adjacent Property Owners

BARNEY BRYAN R & ANN L
BLATERI
11233 INDUSTRIAL PKWY
MARYSVILLE, OH 43040

BARTHLOW THOMAS E
11160 CROTTER RD
PLAIN CITY, OH 43064 -
9755

BROFFORD STEVEN L
12891 ADAMS RD
PLAIN CITY, OH 43064

BROFFORD WALTER &
FRANCES
10707 CROTTER RD
PLAIN CITY, OH 43064

BURNS TRANSFER PLL
7182 WATKINS RD
OSTRANDER, OH 43061

CONLEY BRIANNE M
11085 CROTTER RD
PLAIN CITY, OH 43064 -
9781

FRANTZ NANCY M &
ROBERT L
116 BRYNFIELD WAY
HARRISBURG, PA 17112 -
8970

FRIEND DEWITT F & RETA A
PO BOX 5016
SANDUSKY, OH 44871 -4121

FRIEND JOHN F
10925 CROTTER RD
PLAIN CITY, OH 43064 -
8944

FRIEND JOHN F
10925 CROTTER RD
PLAIN CITY, OH 43064 -
8944

FRIEND MATTHEW E &
KAREN
10821 CROTTER RD
PLAIN CITY OH 43064 -8943

GUGEL SANDRA LEE
11190 INDUSTRIAL PKWY
MARYSVILLE, OH 43040-
9522

HESS DONALD J & WANDA
11065 CROTTER RD
PLAIN CITY, OH 43064 -
9781

HESS DONALD J & WANDA
11065 CROTTER RD
PLAIN CITY, OH 43064 -
9781

HUCEK EVAN H
11021 CROTTER RD
PLAIN CITY, OH 43064

HUTCHINSON FERGUS J &
CHRISTINA J
11166 INDUSTRIAL PKWY
MARYSVILLE, OH 43040 -
9522

KIRKENDALL LOUISE D
FARMS
8610 CAMILLE DR
POTOMAC, MD 20854

KIRKENDALL LOUISE D
FARMS
8610 CAMILLE DR
POTOMAC, MD 20854

KIRKENDALL LOUISE D
FARMS
8610 CAMILLE DR
POTOMAC, MD 20854

MCLAUGHLIN JOSEPH K JR
& FRANTZ NANCY
116 BRYNFIELD WAY
HARRISBURG, PA 17112

PROCHASKA DAVID M
11120 CROTTER RD
PLAIN CITY, OH 43064 -
9755

STOTTLEMYER RICHARD H
& LINDA B
10700 CROTTER RD
PLAIN CITY, OH 43064 -
9755

STOTTLEMYER RICHARD H
& LINDA B
10700 CROTTER RD
PLAIN CITY, OH 43064 -
9755

TILLYER KEVIN & KRISTIN
10695 CROTTER RD
PLAIN CITY, OH 43064 -
8942

WALBONNS LLC
435 METRO PLACE N
DUBLIN, OH 43017

WRIGHT TROY ANTHONY
11005 CROTTER RD
PLAIN CITY, OH 43064 -
8944

WRIGHT TROY A
10999 CROTTER RD
PLAIN CITY, OH 43064

ZONING DESCRIPTION

210.62+/- Acres

Situated in the State of Ohio, County of Union, Jerome Township, being in Virginia Military Survey 5166 and being all of the remainder of a 35.00 acre tract as conveyed to Paul C. Haueisen in Instrument Number 201412150009004, a 1.000 acre tract as conveyed to George C. Stottlemeyer and Bonnie H. Stottlemeyer in Official Record 339, Page 533, a 8.05 acre tract as conveyed to George C. Stottlemeyer and Bonnie H. Stottlemeyer in Official Record 122 Page, 242, the remainder of a 175.948 acre tract as conveyed to Bryan R. Barney and Ann L. Blateri in Official Record 841, Page 619, and all of a 6.54 tract as conveyed to George C. Stottlemeyer and Bonnie Stottlemeyer in Official Record 122, Page 242, all of the remainder of an 80.00 acre tract as conveyed to Walbonns LLC in Official Record 946, Page 246, Tract 3, all of a 33.15 acre tract as conveyed to Walbonns LLC in Official Record 946, Page 246, Tract 4 as further described as follows;

Beginning at the southwest corner of the remainder of said 35.00 acre tract, the northwest corner of a 5.2544 acre tract as conveyed to Scott A. Flading in Official Record 370, Page 236, being in the centerline of Crottinger Road (C.R. 29), and also being the **TRUE POINT OF BEGINNING** for the land herein described as follows;

Thence with the west line of the remainder of said 35.00 acre tract and the centerline of Crottinger Road (C.R. 29), **N 28° 58' 35" W, 1161.56+/- feet;**

Thence continuing with the west line of the remainder of said 35.00 acre tract and the centerline of Crottinger Road (C.R. 29), **N 36° 51' 45" W, 204.33 +/- feet** to the northwest line of the remainder of said 35.00 acre tract and the southwest corner of said 1.000 acre tract;

Thence along the north line of the remainder of said 35.00 acre tract and the south line of said 1.000 acre tract, **N 54° 23' 50" E, 951.72+/- feet;**

Thence across said 1.000 acre tract and said 8.05 acre tract, **N 44° 43' 01" W, 437.58+/- feet** to the north line of said 8.05 acre tract and the south line of said 6.54 acre tract;

Thence along the north line of said 8.05 acre tract and the south line of said 6.54 acre tract, **S 44° 03' 21" W, 578.32+/- feet** to the northeast corner of a 0.41 acre tract as conveyed to Richard H. Stottlemeyer and Linda B. Stottlemeyer in Official Record 330, Page 111, an angle point in the north line of said 8.05 acre tract, and being an angle point in the south line of said 6.54 acre tract;

Thence along the north line of said 0.41 acre tract and the south line of said 6.54 acre tract, **N 73° 58' 59" W, 193.46 +/- feet** to the northwest corner of said 0.41 acre tract, an angle point on the south line of said 6.54 acre tract, and being the northeast corner of a 1.46 acre tract as conveyed to Richard H. Stottlemeyer and Linda B. Stottlemeyer in Official Record 330, Page 111;

Thence along the south line of said 6.54 acre tract and the north line of said 1.46 acre tract, **S 57° 00' 35" W, 204.34 +/- feet** to the northwest corner of said 1.46 acre tract, the southwest corner of the remainder of said 6.54 acre tract and being in the centerline of Crottinger Road (C.R. 29);

Thence with the west line of the remainder of said 6.54 acre tract, the west line of the remainder of 175.948 acre tract and the centerline of Crottinger Road (C.R. 29), **N 36° 51' 45" W, 1843.49 +/- feet** to an angle point on the west line of the remainder of the said 175.948 acre tract;

Thence continuing with the west line of the remainder of the said 175.948 acre tract and the centerline of Crottinger Road (C.R. 29), **N 35° 56' 25" W, 259.36 +/- feet**;

Thence the following six (6) courses across the remainder of said 175.948 acre tract:

1. **N 54° 20' 27" E, 30.10 +/- feet**;
2. **N 55° 43' 03" E, 212.65 +/- feet**;
3. **S 34° 46' 50" E, 1724.01 +/- feet**;
4. **N 55° 13' 18" E, 293.22 +/- feet**;
5. **N 49° 30' 27" E, 82.88 +/- feet**;
6. **N 44° 46' 54" E, 161.80 +/- feet**;
7. **N 34° 34' 44" E, 1393.69 +/- feet**;
8. **S 71° 15' 13" E, 287.12 +/- feet**;
9. **S 70° 49' 30" E, 604.86 +/- feet**;
10. **N 52° 21' 31" E, 426.44 +/- feet**;
11. **N 27° 11' 34" E, 597.09 +/- feet** to the southwest corner of a 2.39 acre tract as conveyed to Sandra Lee Gugel in Official Record 339, Page 115 and being an angle point on the east line of the remainder of said 175.948 acre tract;

Thence along the south line of said 2.39 acre tract and the east line of the remainder of said 175.948 acre tract, **N 38° 41' 32" E, 336.06 +/- feet** to the southeast corner of said 2.39 acre tract, an angle point on the east line of the remainder of said 175.948 acre tract and being in the centerline of Industrial Parkway (C.R. 1);

Thence with the east line of the remainder of said 175.948 acre tract, the east line of the remainder of said 80.00 acre tract, the east line of said 33.15 acre tract and the centerline of Industrial Parkway (C.R. 1), **S 52° 28' 50" E, 2438.36 +/- feet** to the southeast corner of said 33.15 acre tract and the northeast corner of a 71.92 acre tract as conveyed to Joseph K. McLaughlin Jr. and Nancy A. Frantz in Deed Book 325 Pages 234;

Thence with the south line of said 33.15 acre tract, the north line of said 71.92 acre tract and the north line of a 96.7552 acre tract as conveyed to Nancy M. Frantz and Robert L. Frantz in Official Record 1029, Page 730, **S 52° 08' 52" W, 775.23 +/- feet** to an angle point in the south line of said 33.15 acre tract and the north line of said 96.7552 acre tract;

Thence with the south line of said 33.15 acre tract and the north line of said 96.7552 acre tract, **S 54° 34' 10" W, 1887.57 +/- feet** to the southwest corner of said 33.15 acre tract and an angle point on the north line of said 96.76 acre tract;

Thence along the west line of said 33.15 acre tract and the north line of said 96.7552 acre tract, **N 35° 25' 50" W, 583.45 +/- feet** to the northwest corner of said 33.15 acre tract, an angle point in the north line of said 96.7552 acre tract and being in the south line of the remainder of said 80.00 acre tract;

Thence with the south line of the remainder of said 80.00 acre tract and the north line of said 96.7552 acre tract, **S 54° 34' 10" W, 815.15 +/- feet** to southwest corner of the remainder of said 80.00 acre tract, the northwest corner of said 96.7552 acre tract and being in the east line of the remainder of said 35.00 acre tract;

Thence with the west line of said 96.7552 acre tract and the east line of the remainder of said 35.00 acre tract, **S 35° 36' 10" E, 595.66+/- feet** to the southeast corner of the remainder of said 35.00 acre tract and the northeast corner of said 5.2544 acre tract;

Thence with the south line of the remainder of said 35.00 acre tract and the north line of said 5.2544 acre tract, **S 54° 02' 40" W, 1170.42+/- feet** to the **TRUE POINT OF BEGINNING**, containing **210.62 acres**, more or less;

The above description was prepared by Advanced Civil Design, Inc. and based on existing Union County records. A drawing of the above description is attached hereto and made a part thereof.

All references used in this description can be found at the Recorder's Office Union County, Ohio.

This description is not to be used for the transfer of real property.

ADVANCED CIVIL DESIGN INC.

A. Introduction

Paragon Building Group, LTD., an Ohio limited liability company ("Applicant"), has filed a PUD Zoning Application dated January 28, 2019 ("Application") with Jerome Township, Union County, Ohio ("Township").

The area subject to the Application is a +/-210.62-acre tract located approximately 2,100' north-west of the intersection of Taylor Road and Industrial Parkway having a current address of 10897 Industrial Parkway, Marysville, Ohio 43040 ("Property"). The Property is made up of 8 total parcels, 4 parcels in their entirety and portions of 4 other parcels. The Property under consideration is owned by Walbonns LLC, Paul C. Haueisen, George C. and Bonnie H. Stottlemeyer and Bryan R. Barney and Ann L. Blateri. The Property is currently zoned Rural Residential District (RU) and Special Recreation District (SRE) while the existing uses are residential, agriculture and open space (Rolling Meadows Golf Course). The Application requests a rezoning of the Property to Planned Development District (PD) pursuant to Chapter 5 of the Jerome Township Zoning Resolution as in effect on January 28, 2019 ("Zoning Resolution"). All references herein to a "Section" refer to a specific Section of the Zoning Resolution.

This Regulation Text is a part of the Application and constitutes the Regulation Text required by Section 500.08.3(q). This Regulation Text sets forth in textual form certain information required or permitted by the Zoning Resolution, provides certain supplemental information, and provides for certain development standards and conditions that will apply to the Property. To the extent any matter is not addressed herein but is contained in the other materials presented in connection with the Application, the same shall be deemed incorporated herein.

The Application and all materials approved in connection therewith by the Township shall constitute the "Zoning Plan" for the Property, as provided in Section 500.04, and the Property, as so developed in accordance with the Zoning Plan shall sometimes be referred to herein as the "Development". Notwithstanding the foregoing, the Zoning Plan shall not include the Illustrative Master Plan and Conceptual Development Plan (Exhibits F and G) which are being provided for illustrative purposes only.

The proposed Development is a residential community consisting of single-family homes and open space areas and will be known as "Rolling Meadows".

The Development has been designed as a residential community consisting of single-family dwellings lots of varying sizes organized around significant open space areas including the Rolling Meadows Golf Course. The Development has been creatively designed to encourage the efficient and sustainable use of land and infrastructure and will result in a well-integrated, pedestrian friendly development.

B. Uses

Permitted Uses: Within the PD District the following shall be permitted:

1. One single-family detached dwelling per lot.
2. Accessory buildings or structures normally associated with single-family residential use including detached garages, tool or garden sheds, playhouses and swimming pools subject to the requirements of Section 645.
3. Limited home occupations subject to the requirements of Section 635.
4. Community and public parks, playgrounds, play fields and sports fields and accessory uses typically associated with community open space and parks, including, but not limited to, shelters, gazebos, walking paths, ponds, gathering spaces, seating and landscaping.
5. Community facilities such as clubhouses, pools and pool houses.
6. Sports and recreation instruction.
7. Golf courses and country clubs.
8. Golf driving ranges.

C. Density

Density: The maximum number of dwelling units shall not exceed 393 units over 210.62 acres. The gross density of the Development is 1.87 du/acre (393 units/210.62 acres).

The Township's current Comprehensive Plan adopted September 2008 includes a Jerome Township Comprehensive Land Use Plan, 2008 (See page 6-3 of the Comprehensive Plan) that places the Property in an area designated as "Conservation Development", except for a portion that includes Rolling Meadows Golf Course which is designated as "Environmentally Sensitive Areas and Open Space". The Comprehensive Plan at page 6-8 sets forth the following policy considerations for lands such as the Property designated for "Residential Conservation Development":

- i. Clustered residential uses to preserve large areas of open space and/or significant natural features and smaller lots as an incentive to preserve open space and natural features that help define the character of the community;
- ii. Planned unit developments with varying densities and lot sizes to take advantage of flexibility to provide varying densities and lot sizes in exchange for preserving open space for community use;
- iii. Open space of not less than 40% of gross acreage of the Property; and
- iv. Densities between 1-2 units per gross acre with 2 being the maximum density recommended.

The proposed Zoning Plan meets or exceeds all standards set forth in the Comprehensive Plan with Density of 1.87 du/acre and open space area totaling 40% of the gross acreage of the Property.

D. Lot Standards

1. Front Yard: The minimum front yard setback for all lots shall be as follows:

- a. Subarea A: Twenty (20) feet,
- b. Subarea B: Twenty-five (25) feet,
- c. Subarea C: Twenty-five (25) feet,
- d. Subarea D: Thirty (30) feet.

2. Rear Yards: The minimum rear yard setback for all lots shall be as follows:

- a. Subarea A: Twenty (20) feet,
- b. Subarea B: Twenty-five (25) feet,
- c. Subarea C: Twenty-five (25) feet,
- d. Subarea D: Twenty-five (25) feet.

Notwithstanding the foregoing, rear setbacks for single family homes shall not apply to decks, patios, screened porches and unconditioned rooms so long as same are located not less than 10' from rear property line and do not encroach upon utility and/or drainage easements.

3. Side Yards: The minimum side yard setback for all lots shall be as follows:

- a. Subarea A: Five (5) feet,
- b. Subarea B: Six (6) feet,
- c. Subarea C: Six (6) feet,
- d. Subarea D: Fifteen (15) feet.

4. Lot Width: The minimum lot width for all lots, measured at the building line, shall be as follows:

- a. Subarea A: Fifty-two (52) feet,
- b. Subarea B: Seventy (70) feet,
- c. Subarea C: Eighty-five (85) feet,
- d. Subarea D: One hundred twenty (120) feet.

5. Lot Area: The minimum lot area for all lots shall be as follows:

- a. Subarea A: Six thousand two hundred forty (6,240) square feet,
- b. Subarea B: Eight thousand seven hundred fifty (8,750) square feet,
- c. Subarea C: Eleven thousand four hundred seventy-five (11,475) square feet,
- d. Subarea D: Sixteen thousand two hundred (16,200) square feet.

6. Roadways: There shall be a minimum setback from existing roads as follows:

- a. Industrial Parkway: Twenty-five (25) feet,
- b. Crottinger Road: Fifty (50) feet.

E. Public Improvements

Public Improvements: All public improvements will comply with Section 500.06.4 including:

- Public roads shall be designed and constructed to the standards established by the Union County Engineer;
- Safe pedestrian and bicycle access and circulation shall be provided as depicted on the Open Space/Circulation Plan (See Exhibit H). Pedestrian/bicycle paths will be integrated into open space.
- Ownership of open space is discussed elsewhere herein (See "Open Space" herein)
- Storm water management facilities shall be provided as required by the Union County Engineer and the State of Ohio.

F. Access

Access: Access is provided to the Development from two existing public roads, Industrial Parkway and Crottinger Road. A single full-service access point is proposed along Industrial Parkway and two full-service access points are proposed along Crottinger Road. Roads within the Development are proposed to be public roads.

G. Buildings

1. Buildings: All buildings constructed within the Development will comply with the requirements of Section 500.06.6(a), (b) and (c). The following building standards shall apply:
 - All single-family dwellings shall provide a minimum floor area as follows:
Single Story: One thousand four hundred (1,400) square feet,
Multi-Story: One thousand eight hundred (1,800) square feet;
 - Building height shall not exceed thirty-five (35) feet in height, measured per code;
 - The exterior cladding of all structures shall be finished using brick, thin brick, stone, manufactured stone, stucco, wood, engineered wood, fiber-cement, composite, cellular PVC, vinyl or any combination thereof, excluding for all purposes hereof foundations, windows, doors, downspouts, soffits, garage doors, trim molding and accent features;
 - The color of exterior cladding materials shall be muted tones, natural earth tones, neutrals and whites. High chroma colors are not permitted.
 - The roof of all structures shall be finished using dimensional asphalt shingles (25-year warranty), wood, slate, concrete, tile, prefinished metal, copper or any combination

thereof;

- The color of roofing materials shall be natural earth tones, neutrals, and/or black. High chroma colors are not permitted.
- All roof structures shall have a roof pitch of not less than 6/12, except for accent roofs and porch roofs that may be a lesser roof pitch in keeping with sound architectural and design perspectives;
- Flat roofs are permitted and must integrate strong cornice lines.

2. Architectural Diversity: Architectural diversity standards shall apply to all dwellings in each subarea as follows:

- Subarea A – Dwellings may present a similar, coordinated or themed appearance. Dwellings shall not present the same exterior color (including front door color) and shall not present the exact same front elevation within one (1) lot adjacent to or any lot directly across the street from the subject lot. Front elevations shall vary by fenestration, rooflines or other architectural elements.
- Subareas B, C and D – Dwellings shall not present the same or similar front elevation within two (2) lots adjacent to or any lot directly across the street from the subject lot. Front elevations shall vary by materials, fenestration, rooflines or other architectural elements,

H. Lighting

Lighting: Applicant shall specify a standard front yard post lamp for each dwelling unit. Other than such front yard post lamp, lighting for entrance features to the Development and lighting for Model Homes (See "Model Homes" herein), no other exterior lighting is planned or permitted for the Development.

I. Signage

Signage: Signage for the Development shall consist of entry signage as depicted on the Landscape Enlargements. No other signage other than typical for sale signs and Model Home signs (See "Model Homes" herein) shall be permitted in the Development.

J. Parking

Parking: All single-family dwellings shall include not less than a two-car garage and a driveway that permits parking of not less than two (2) automobiles. Parking for community

facilities, such as clubhouses, shall be provided at a minimum rate of three (3) spaces per one thousand (1,000) square feet. Required parking shall be permitted between the right of way and the setback. On street parking shall be permitted with agreement of the Union County Engineer and Township Fire Department.

K. Landscaping

A Preliminary Landscape Plan for the entrances to the Development is included in the Application (See Exhibit I). All single-family dwellings built within the Development shall include a landscape package. All public streets within the Development shall be landscaped with one street tree per every 50' in the tree lawn. Street trees shall be spaced so not to interfere with driveway visibility, utilities, and/or traffic signs. Street trees shall be installed within 1 year of construction completion of each home so mass planting of street trees may occur. Open spaces shall be developed, landscaped and maintained as discussed herein under "Open Space". All single-family dwellings backing to Industrial Parkway and Crottinger Road shall be buffered as depicted in the Preliminary Landscape Plan in order to obscure views of such homes from county roads in keeping with Township policy. Particular attention has been given to the rear yards of lots abutting Crottinger Road, wherein the Township's more significant "Type D" landscaping is proposed.

L. Floodplains and Environmentally Sensitive Areas

Flood Plains: There is a 100-year flood plain along the Sugar Run at the eastern edge of the Development site. Development has been located outside of the 100-year floodplain area. Portions of this floodplain are located on the Rolling Meadows Golf Course. The golf course will continue to operate in these areas.

M. Open Space

Open Space: A minimum of eighty-four and one-quarter (84.25) acres of the Development (40% of the gross development area) shall be preserved in perpetuity as open space in accordance with the express desires of the Township and its residents in the Comprehensive Plan adopted in 2008.

Proposed Open space areas include:

"Golf Course Open Space"	+/-47.51 acres	Reserves H and I
"Sugar Run Open Space"	+/-15.26 acres	Reserves A and B
"Crottinger Road Open Space"	+/-7.75 acres	Reserves F, G, K and L
"Neighborhood Parks"	+/-13.74 acres	Reserves C, D, E and J

The design, landscaping, use and ownership of each of these open space areas shall be as follows:

1. Golf Course Open Space — This portion of the Development open space shall be privately owned and maintained. The golf course routing may be modified to accommodate street access between subareas B and C and the addition of single-family dwellings. Landscaping of this area shall be consistent with the preferred aesthetic of the owner/operator.
2. Sugar Run Open Space — This portion of the Development open space shall be owned and maintained by a Master Homeowners Association. This area shall be designed and landscaped to preserve/enhance the natural character along Sugar Run with more formal/manicured areas around entry features and public roads. A landscape buffer will be provided to screen the rear of homes from Industrial Parkway. Community park elements may be located in this area including the potential reuse of portions of the existing farm buildings.
3. Crottinger Road Open Space — This portion of the Development open space shall be owned and maintained by a Master Homeowners Association. This area shall be designed and landscaped to preserve/enhance the natural character along Crottinger Road with more formal/manicured areas around entry features and public roads. A landscape buffer will be provided to screen the rear of homes from Crottinger Road.
4. Neighborhood Parks — This portion of the Development open space shall be owned and maintained by a Master Homeowners Association. The neighborhood parks shall be designed and landscaped to provide active and passive recreational activities. The Neighborhood Parks designs may include elements such as, but not limited to, ponds, lawns, pathways, shelters, seating areas, playgrounds, community gardens, landscaping, etc.

N. Phasing

Phasing: The Phasing Plan included as a part of the Application depicts how the Development may be phased. Phasing of the Development is subject to final engineering requirements and market conditions. Given the size of the Development, it is anticipated that full development of Rolling Meadows will take approximately 10 years. Consequently, Applicant requests an extension of the Zoning Plan for up to ten (10) years from the date of approval as permitted by Section 500.8.5(b) and 6.

O. Subareas

Zoning Plan; Subareas: Due to the size and nature of the Development and the fact that final engineering may result in changes to the layout to accommodate various engineering issues, in lieu of including in the Zoning Plan a preliminary development plan depicting the general configuration of all lots, the Zoning Plan includes only the Zoning/Subarea Plan (See Exhibit E). Lot sizes, density and open space requirements for each Subarea shall be as set forth in the Zoning/Subarea Plan. The Conceptual Development Plan (Exhibit G) and Illustrative

Master Plan (Exhibit F) included in the Application are not official zoning documents or a part of the Zoning Plan but are for informational purposes only. As permitted by Section 500.04.3, each Subarea depicted on the Zoning/Subarea Plan (See Exhibit E) shall be considered a separate Subarea and treated as a separate district with individual standards as stated for each such Subarea on the Zoning/Subarea Plan. Amendments to the Zoning Plan or Final Development Plan applications shall be permitted for individual Subareas without the need to amend the Zoning Plan for the entire Development.

P. Model Homes

Model Homes: Model Homes, consisting of residential type structures which are representative of other dwellings offered for sale or to be built within the Development or specified Subareas thereof and used as sales offices by builders and developers and to display products and features offered by builders and developers are, subject to the issuance of a zoning permit by the Township ("Zoning Permit"), permitted as a temporary use within the Development, and such Model Homes may be staffed and operated by marketing and sales personnel and agents of such builders and developers, without regard to any home occupation or other commercial or business use provisions of the Zoning Resolution.

Model homes shall be subject to the following restrictions:

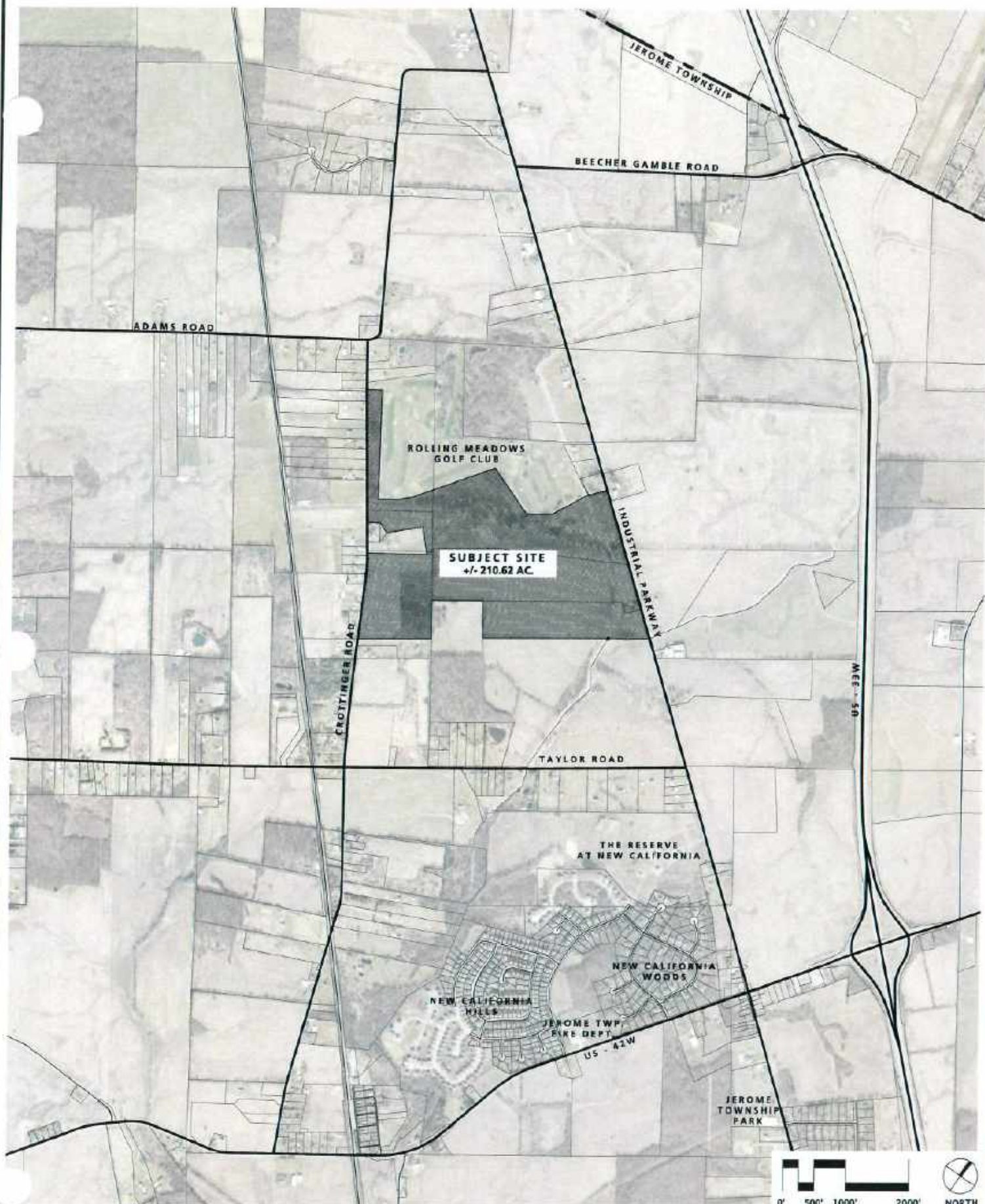
- **Location and Use** – A Model Home may be used by a builder or developer for the marketing and sale of lots and/or dwelling units located within the Development. A Model Home may not be used as a dwelling. Resales of existing dwelling units (other than spec homes) within the Development shall not be conducted from the Model Home. The Model Home shall not be used to conduct sales of lots and/or dwelling units outside of the Development, except as an incidental occasional use for the benefit and convenience of a builder's or developer's customers.
- **Hours of Operation** – Model Homes shall close by 8:00 P.M. No Model Home shall be open on Sunday to the general public before 12:00 Noon.
- **Lighting** -All exterior lighting must be "down lighting", so that no light shall be cast onto adjoining residential properties. All exterior lighting shall be extinguished at the closing time of the Model Home, except that which is in character with exterior lighting found on surrounding homes.
- **Parking** -Model Homes shall not be required to have off-street parking.
- **Signage** – Signage for each Model Home shall be permitted containing the logo and name of the builder or developer operating such Model Home, identifying the Model Home style, and setting forth hours of operation and pertinent contact information. There is no requirement that Model Home signage include all the foregoing. Such signage shall be placed, from the front property line, a distance of at least one-half

(50%) of the distance of the required front yard setback and shall not be located in any required side yard. Such signage shall be a monument type sign not to exceed twelve (12) square feet of sign area per side and shall contain no more than two (2) back to back sides with appropriate landscape treatments at its base. Lighting of Model Home signage shall be permitted. Plans for signage shall be submitted to the Township Zoning Officer at the time of application for a Zoning Permit for approval and must include: sign structure, graphics, location, lighting and landscape treatments.

- Screening and Trash Removal – A landscape plan shall be submitted to the Township Zoning Officer at the time of application for a Zoning Permit for approval and shall provide adequate landscaping and screening from adjoining residential lots. The owner of each Model Home shall arrange for trash to be picked up regularly in and around such Model Home and its lot.
- Limitation on Use -Each Model Home shall be used as a Model Home only for the time period set forth in the Zoning Permit issued for such Model Home by the Township Zoning Officer, subject to such extensions as may be granted by the Township Zoning Officer. At such time as the Model Home ceases or is no longer permitted to be used as a Model Home, all signage shall be promptly removed.
- Each Model Home shall be required to obtain and maintain a Zoning Permit issued by the Township Zoning Officer. At the time of application for a Zoning Permit, the applicant must demonstrate compliance with the requirements and restrictions set forth above and throughout the term of the Zoning Permit, the applicant must comply with such requirements and restrictions. The Township Zoning Officer shall be charged with the responsibility of determining compliance of each Zoning Permit issued for a Model Home.
- Termination of Use -The use of a Model Home within the Development shall be initially permitted for a period of up to thirty-six (36) months after the completion and opening as a Model Home. Extensions of this time period, not to exceed one (1) year per extension, may be approved by the Township Zoning Officer upon application and payment of any applicable fee, provided that such an extension is not in conflict with the public interest and the primary use of the Model Home continues to be for the marketing and sale of lots and/or dwelling units located within the Development.

Q. General Application of Zoning Resolution Development Standards

General Application of Zoning Resolution Development Standards: As required by Section 500.08.3(r)(xv), all development standards not specifically addressed in this Regulation Text or otherwise contained in this Zoning Plan shall be regulated by those general development standards set forth in the Zoning Resolution, unless otherwise provided in a Final Development Plan for variance or a plan amendment.



Date
January 28, 2019
Job No.
16131

EDGE
PLANNING + LANDSCAPE ARCHITECTURE + URBAN DESIGN
330 WEST SPRING STREET, SUITE 350
COLUMBUS, OHIO 43215
614-896-3343

JEROME TOWNSHIP, OHIO
PRELIMINARY DEVELOPMENT PLAN
FOR
VIRGINIA HOMES

**REGIONAL CONTEXT
MAP**

SHEET
**EXHIBIT
A**

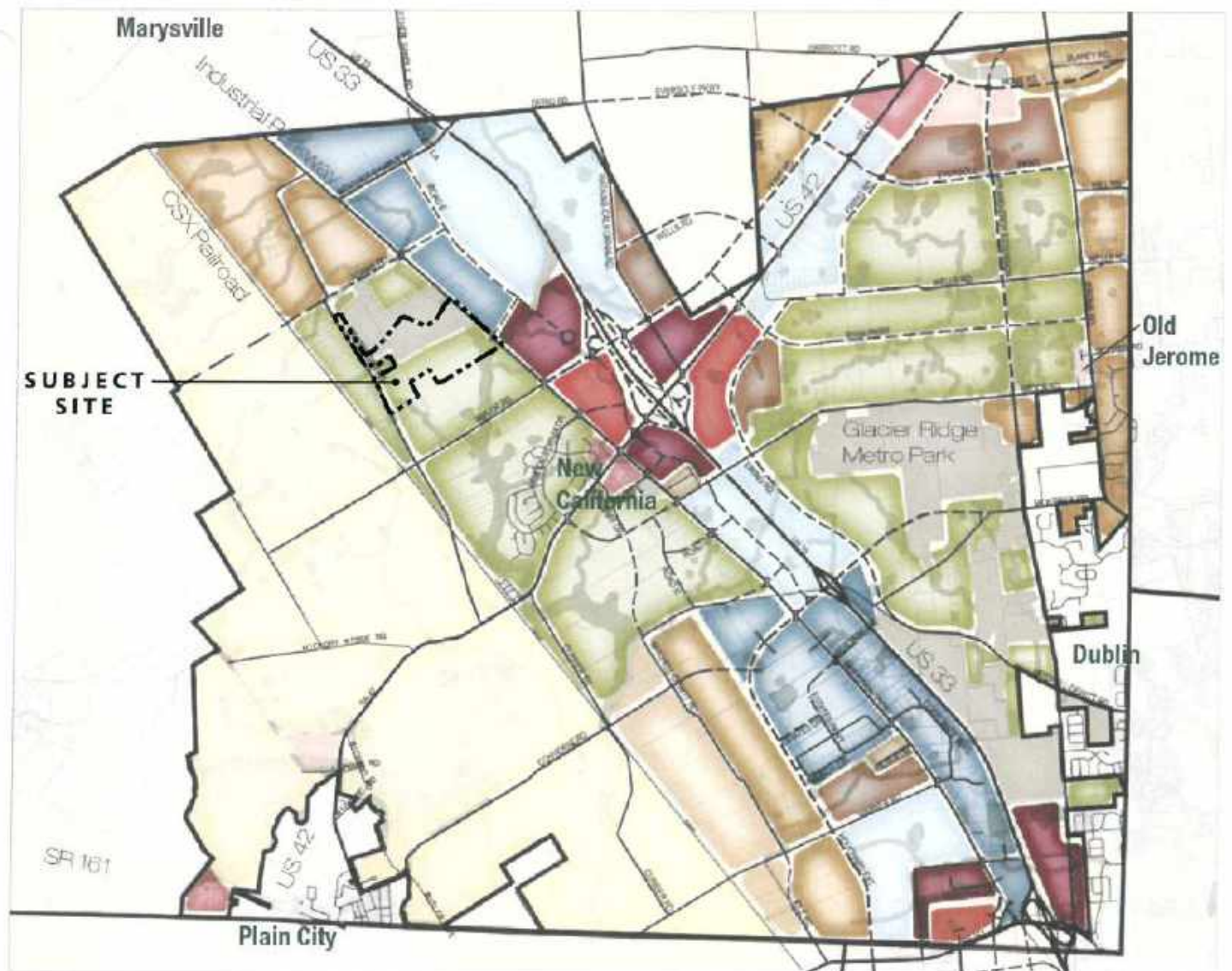


Figure 6-2: Land Use Plan; Source: BHC

- Agriculture / Rural Residential (28.7% of the Township)
- Low Density Residential (2.7% of the Township)
- Medium Density Residential (11.5% of the Township)
- High Density Residential (2.8% of the Township)
- Office / Research / Medical (8.5% of the Township)
- Flex Office / Light Industry (8.7% of the Township)

- Neighborhood Center (1.1% of the Township)
- Local Retail (1.3% of the Township)
- Regional Retail (2.5% of the Township)
- Mixed Commercial and Retail (2.8% of the Township)
- Conservation Development (23.7% of the Township)
- Proposed Roads (County Thoroughfare Plan)
- Environmentally Sensitive Areas & Open Space (5.7% existing park land within the Township)

Date
January 28, 2019

Job No.
16131

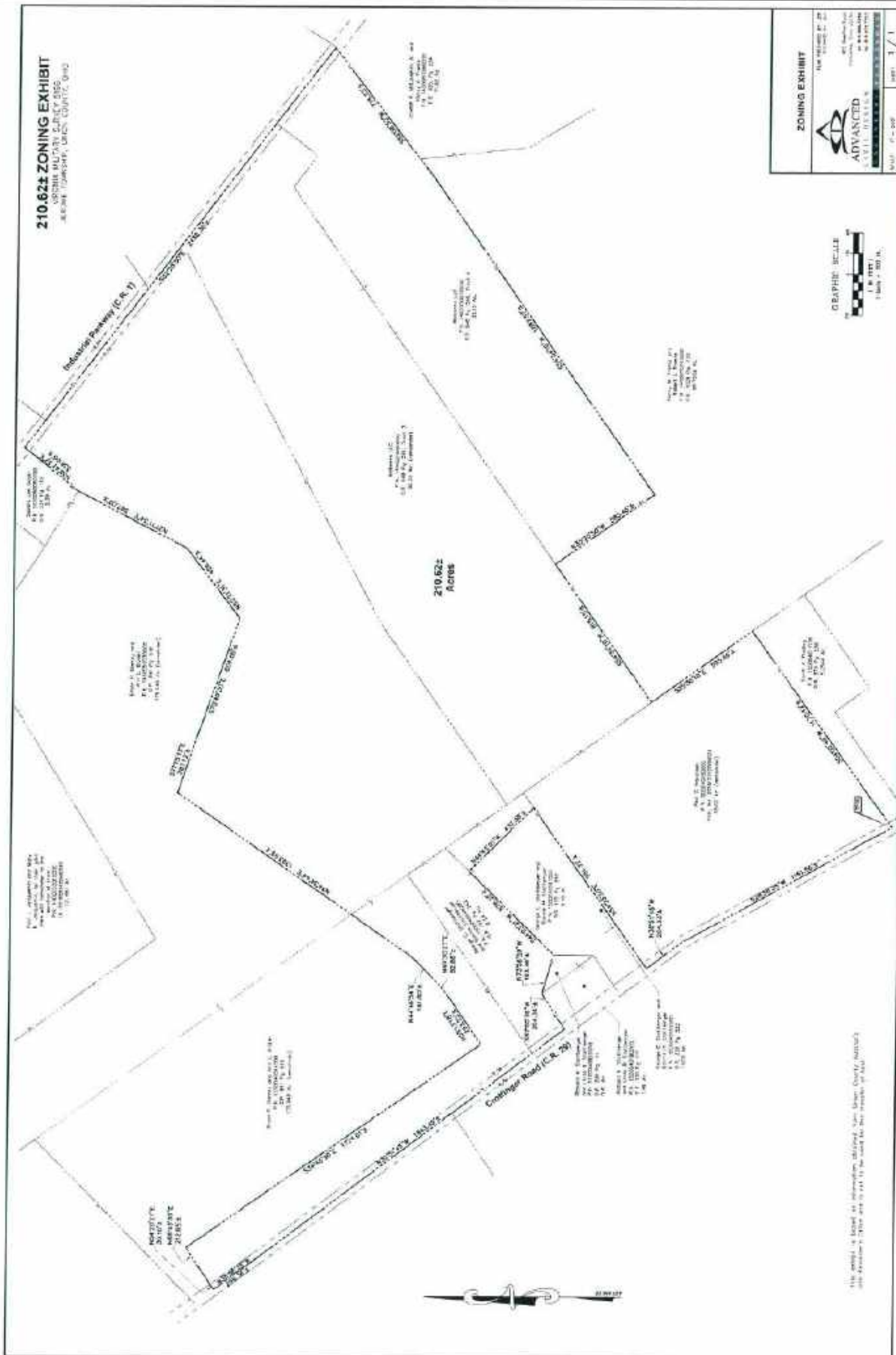
EDGE
PLANNING • LANDSCAPE ARCHITECTURE • URBAN DESIGN
330 WEST SPRING STREET, SUITE 350
COLUMBUS, OHIO 43215
614-486-3543

JEROME TOWNSHIP, OHIO
PRELIMINARY DEVELOPMENT PLAN
FOR
VIRGINIA HOMES

**COMPREHENSIVE PLAN
OVERLAY**

**EXHIBIT
B**

210.621 ZONING EXHIBIT
 2025B MURPHY LANE, 210.621
 JEROME TOWNSHIP, OHIO 43021



ZONING EXHIBIT



ADVANCED CIVIL DESIGN
 401 North Main Street
 Columbus, Ohio 43215
 Phone: 614-447-1777
 Fax: 614-447-1778



This map is based on information obtained from the Ohio State Survey System and is not to be used for any other purpose.

Date
 January 28, 2019

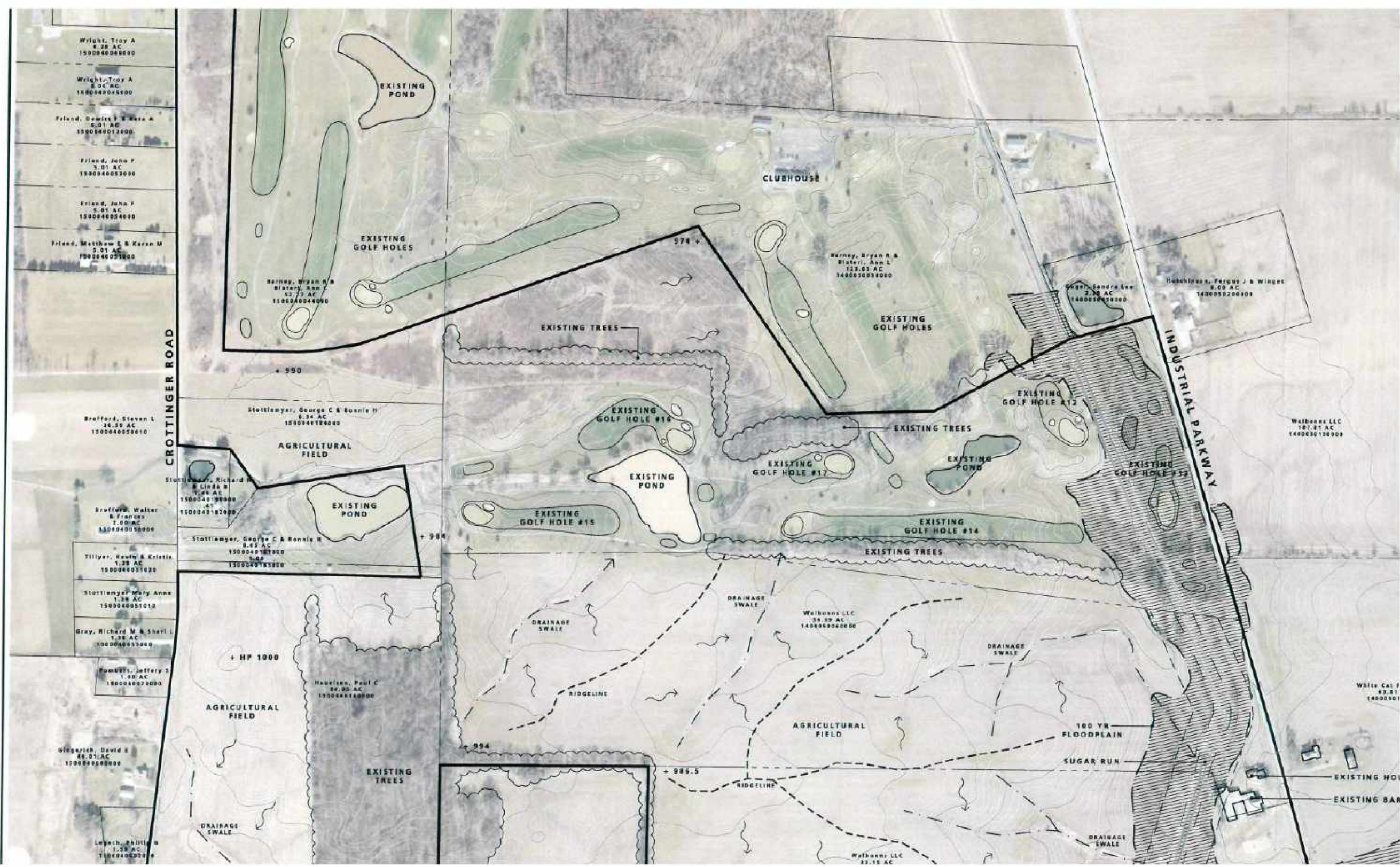
Job No.
 18131

EDGE
 PLANNING + LANDSCAPE ARCHITECTURE + URBAN DESIGN
 330 WEST SPRING STREET, SUITE 350
 COLUMBUS, OHIO 43215
 614-486-3343

JEROME TOWNSHIP, OHIO
 PRELIMINARY DEVELOPMENT PLAN
 FOR
VIRGINIA HOMES

**BOUNDARY
 SURVEY**

**EXHIBIT
 C**



CROTTER ROAD

INDUSTRIAL PARKWAY

SUBAREA D
+/- 8.43 AC
Permitted Uses
Residential
12 Dwelling Units

SUBAREA C
+/- 21.29 AC
Permitted Uses
Residential
Open Space
52 Dwelling Units

SUBAREA E
+/- 81.22 AC
Permitted Uses
Open Space

SUBAREA B
+/- 69.01 AC
Permitted Uses
Residential
Open Space
200 Dwelling Units

SUBAREA A
+/- 30.05 AC
Permitted Uses
Residential

OPEN SPACE		
Open Space Required	+/- 84.25	AC (40%)
Open Space Provided	+/- 84.25	AC (40%)
SUBAREA A		
Residential Dwelling Units - 129	+/- 30.20	AC
SUBAREA B		
Residential Dwelling Units - 200	+/- 69.17	AC
SUBAREA C:		
Residential Dwelling Units - 52	+/- 21.45	AC
SUBAREA D:		
Residential Dwelling Units - 12	+/- 8.58	AC
SUBAREA E:		
	+/- 81.22	AC

- Single Family Detached Dwelling
- Accessory Buildings or Structures
- Limited Home Occupations per Section 635
- Community and Public Parks, Playgrounds, Playfields and Sports Fields and Accessory Uses
- Community Facilities such as Clubhouses, Pools and Pool Houses
- Sports and Recreation Instruction
- Golf Courses and Country Clubs
- Golf Driving Ranges

P =

CROTTER ROAD

INDUSTRIAL PARKWAY



Gross Density
Open Space
Open Space

Gross Dens

Open Space
Open Space

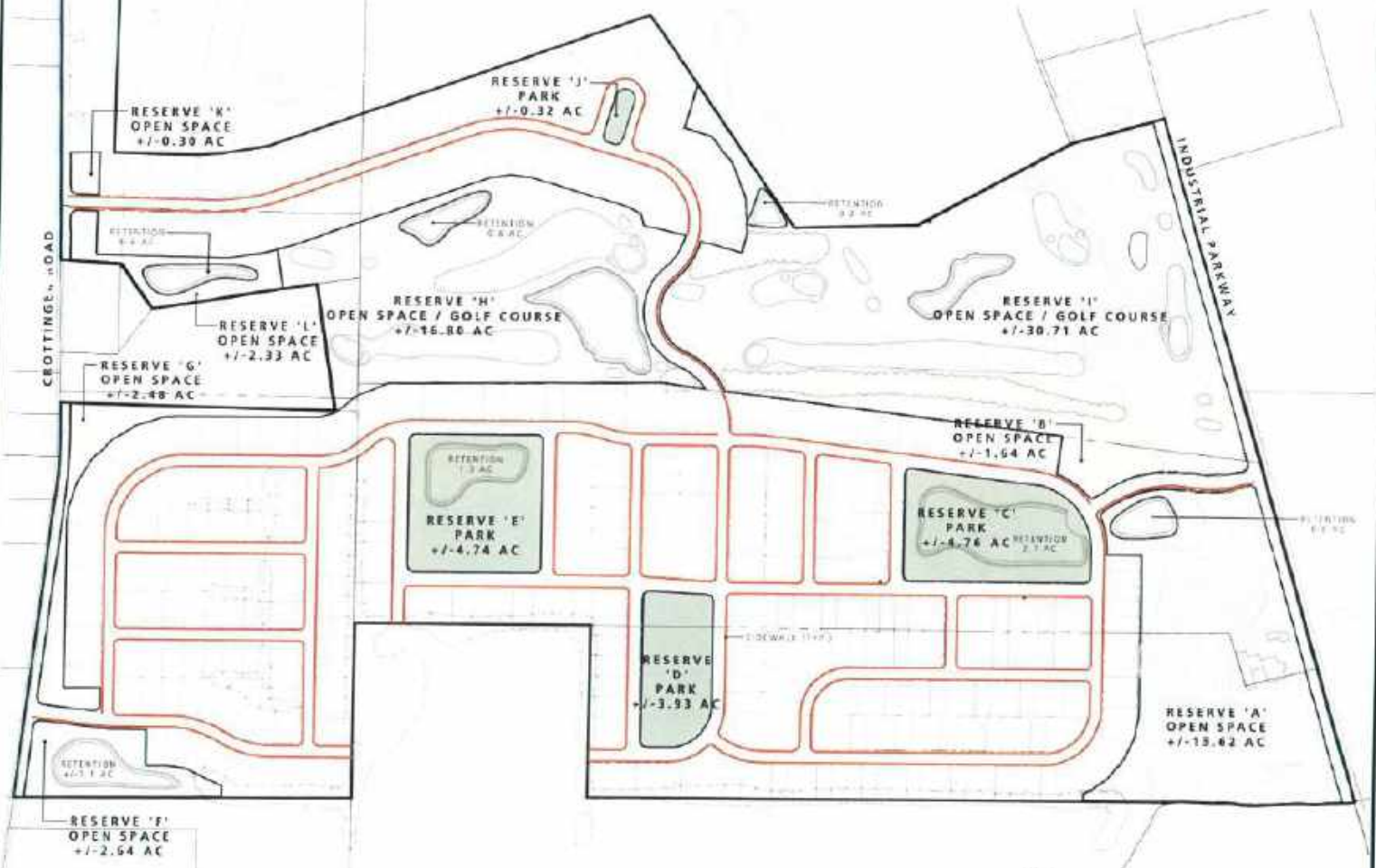
LO



OPEN SPACE DATA

GROSS SITE AREA: +/- 210.62 AC
 Open Space Required +/- 84.25 AC (40%)
 Open Space Provided +/- 84.25 AC (40%)

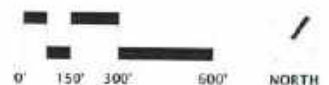
RESERVE	SIZE	OWNERSHIP	MAINTENANCE
A	13.62 AC	HOA	HOA
B	1.64 AC	HOA	HOA
C	4.76 AC	HOA	HOA
D	3.93 AC	HOA	HOA
E	4.73 AC	HOA	HOA
F	2.64 AC	HOA	HOA
G	2.48 AC	HOA	HOA
H	16.80 AC	PRIVATE	PRIVATE
I	30.71 AC	PRIVATE	PRIVATE
J	.32 AC	HOA	HOA
K	.30 AC	HOA	HOA
L	2.33 AC	HOA	HOA



OPEN SPACE KEY

- Proposed Sidewalk
- Open Space Reserve
- Neighborhood Park

NOTE:
 THIS OPEN SPACE PLAN IS BEING PROVIDED FOR
 ILLUSTRATIVE PURPOSES ONLY. FINAL LAYOUT SHALL
 BE IN COMPLIANCE WITH THE ZONING / SUBAREA
 PLAN (EXHIBIT E) AND ALL REQUIREMENTS SPECIFIED
 HEREIN.



Date:
 January 28, 2019

Job No:
 18131

EDGE

PLANNING & DESIGN SERVICES, LLC

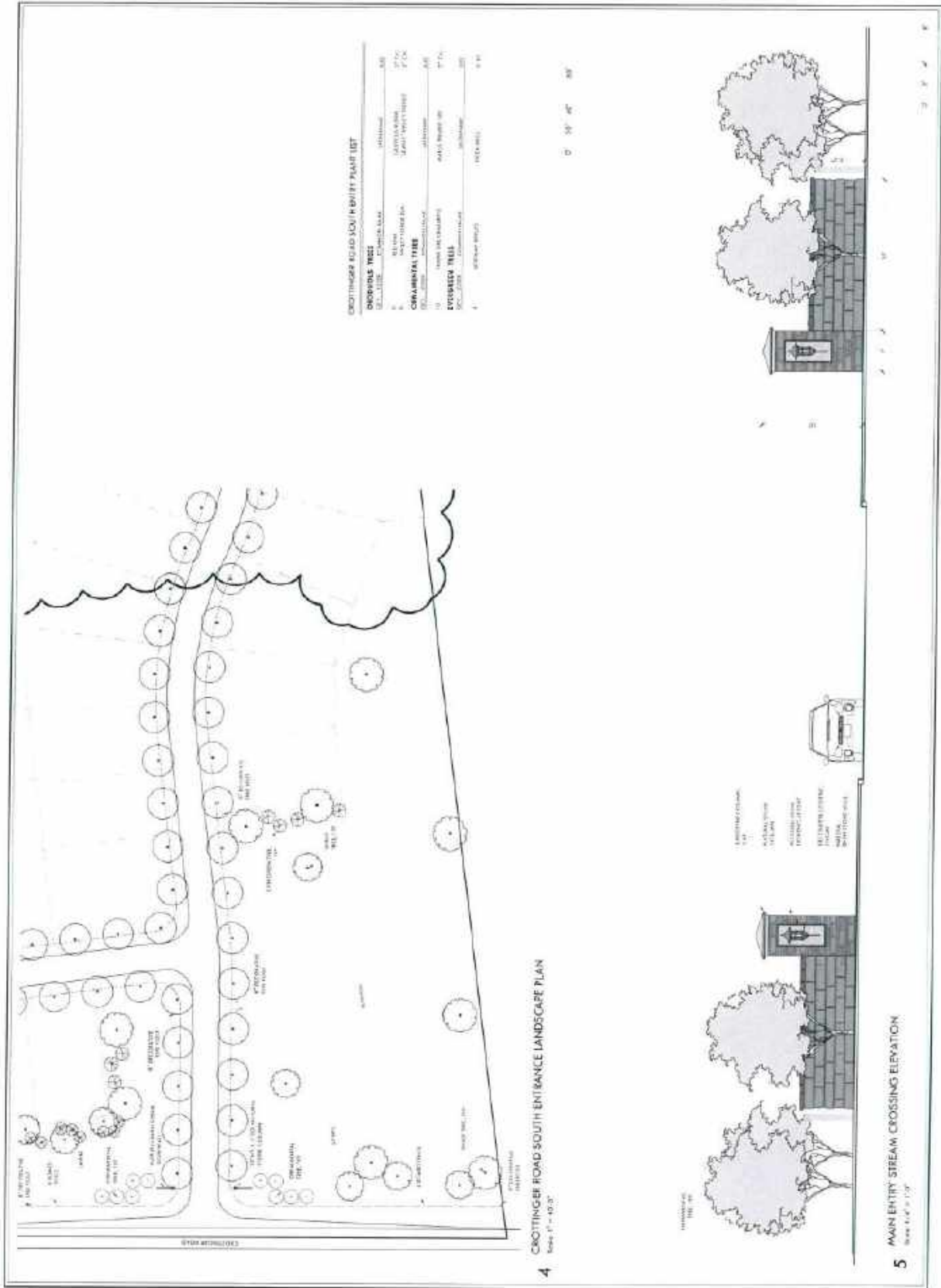
1815 WEST SPRING STREET, SUITE 350
 COLUMBUS, OHIO 43219
 614-886-3242

JEROME TOWNSHIP, OHIO
 PRELIMINARY DEVELOPMENT PLAN
 FOR

VIRGINIA HOMES

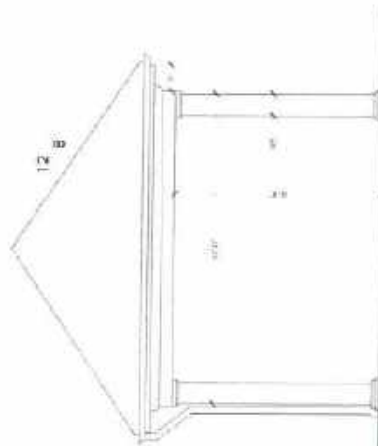
**OPEN SPACE /
 CIRCULATION PLAN**

SHEET
**EXHIBIT
 H**

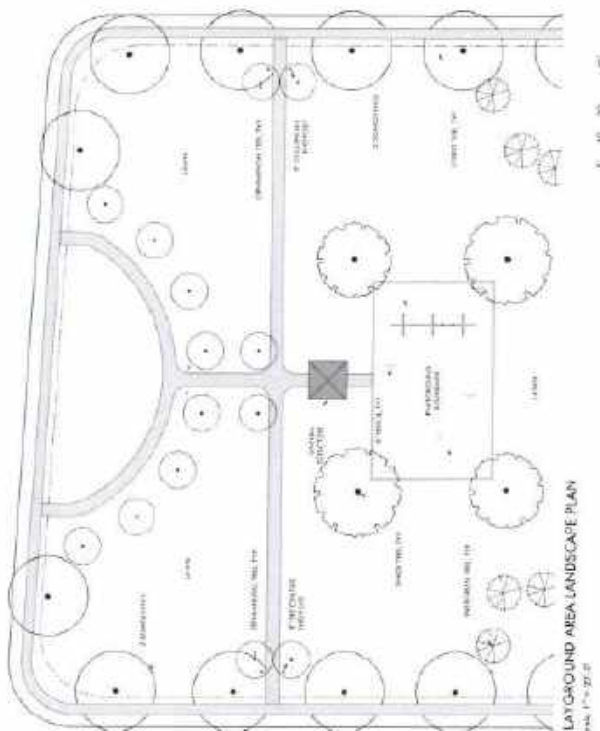




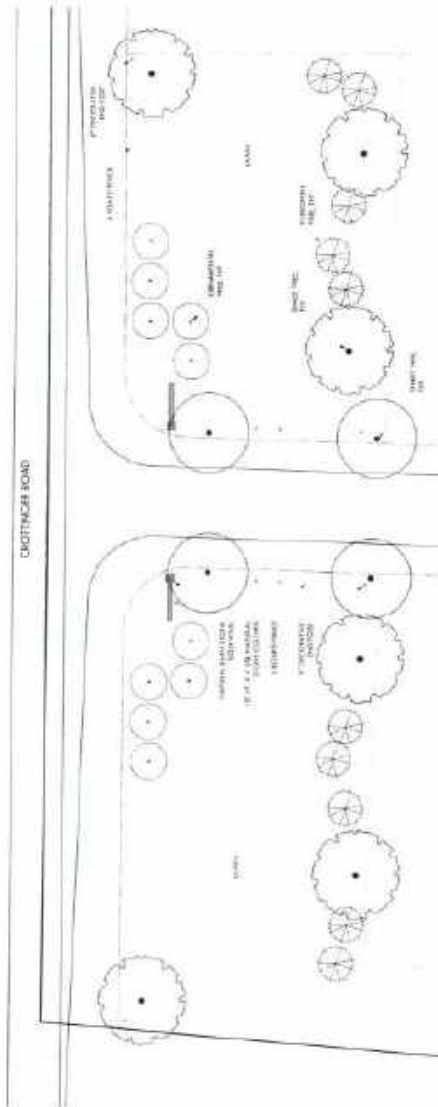
GATEIO STRUCTURE: PRECEDENT IMAGE



GAZEND STRUCTURE ELEVATION



PLAYGROUND AREA LANDSCAPE PLAN



7 CROTCHER ROAD NORTH ENTRY LANDSCAPE PLAN

FLAT-TO-ROUND AREA PLATE 0.31			
GEOMETRIC TESTS			
1	AREA	COMPARISON	NOTE
1	AREA (IN ²)	AREA (IN ²)	AREA (IN ²)
ORIMONOL TESTS			
2	ORIMONOL TEST	ORIMONOL TEST	ORIMONOL TEST
FLAT-TO-ROUND TESTS			
3	FLAT-TO-ROUND TEST	FLAT-TO-ROUND TEST	FLAT-TO-ROUND TEST
FLAT-TO-ROUND TESTS			
4	FLAT-TO-ROUND TEST	FLAT-TO-ROUND TEST	FLAT-TO-ROUND TEST

CENTRO-SUD ROAD BICYCLISTS' PLANT (17)	
DIS-COMPOSE PLANT	
1	2000-2001
2	2002-2003
3	2004-2005
4	2006-2007
5	2008-2009
6	2010-2011
7	2012-2013
8	2014-2015
9	2016-2017
10	2018-2019
11	2020-2021
12	2022-2023
13	2024-2025
14	2026-2027
15	2028-2029
16	2030-2031
17	2032-2033
18	2034-2035
19	2036-2037
20	2038-2039
21	2040-2041
22	2042-2043
23	2044-2045
24	2046-2047
25	2048-2049
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479	2956-

PLANT LIST

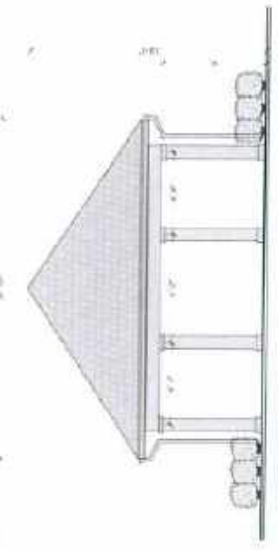
SYMBOL	PLANT NAME	QUANTITY	NOTES
1	DOGWOOD	10	10' DBH
2	DOGWOOD	10	8' DBH
3	DOGWOOD	10	6' DBH
4	DOGWOOD	10	4' DBH
5	DOGWOOD	10	2' DBH
6	DOGWOOD	10	1' DBH
7	DOGWOOD	10	0.5' DBH
8	DOGWOOD	10	0.25' DBH
9	DOGWOOD	10	0.125' DBH
10	DOGWOOD	10	0.0625' DBH
11	DOGWOOD	10	0.03125' DBH
12	DOGWOOD	10	0.015625' DBH
13	DOGWOOD	10	0.0078125' DBH
14	DOGWOOD	10	0.00390625' DBH
15	DOGWOOD	10	0.001953125' DBH
16	DOGWOOD	10	0.0009765625' DBH
17	DOGWOOD	10	0.00048828125' DBH
18	DOGWOOD	10	0.000244140625' DBH
19	DOGWOOD	10	0.0001220703125' DBH
20	DOGWOOD	10	0.00006103515625' DBH
21	DOGWOOD	10	0.000030517578125' DBH
22	DOGWOOD	10	0.0000152587890625' DBH
23	DOGWOOD	10	0.00000762939453125' DBH
24	DOGWOOD	10	0.000003814697265625' DBH
25	DOGWOOD	10	0.0000019073486328125' DBH
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28	DOGWOOD	10	0.0000002384185791015625' DBH
29	DOGWOOD	10	0.00000011920928955078125' DBH
30	DOGWOOD	10	0.000000059604644775390625' DBH
31	DOGWOOD	10	0.0000000298023223876953125' DBH
32	DOGWOOD	10	0.00000001490116119384765625' DBH
33	DOGWOOD	10	0.000000007450580596923828125' DBH
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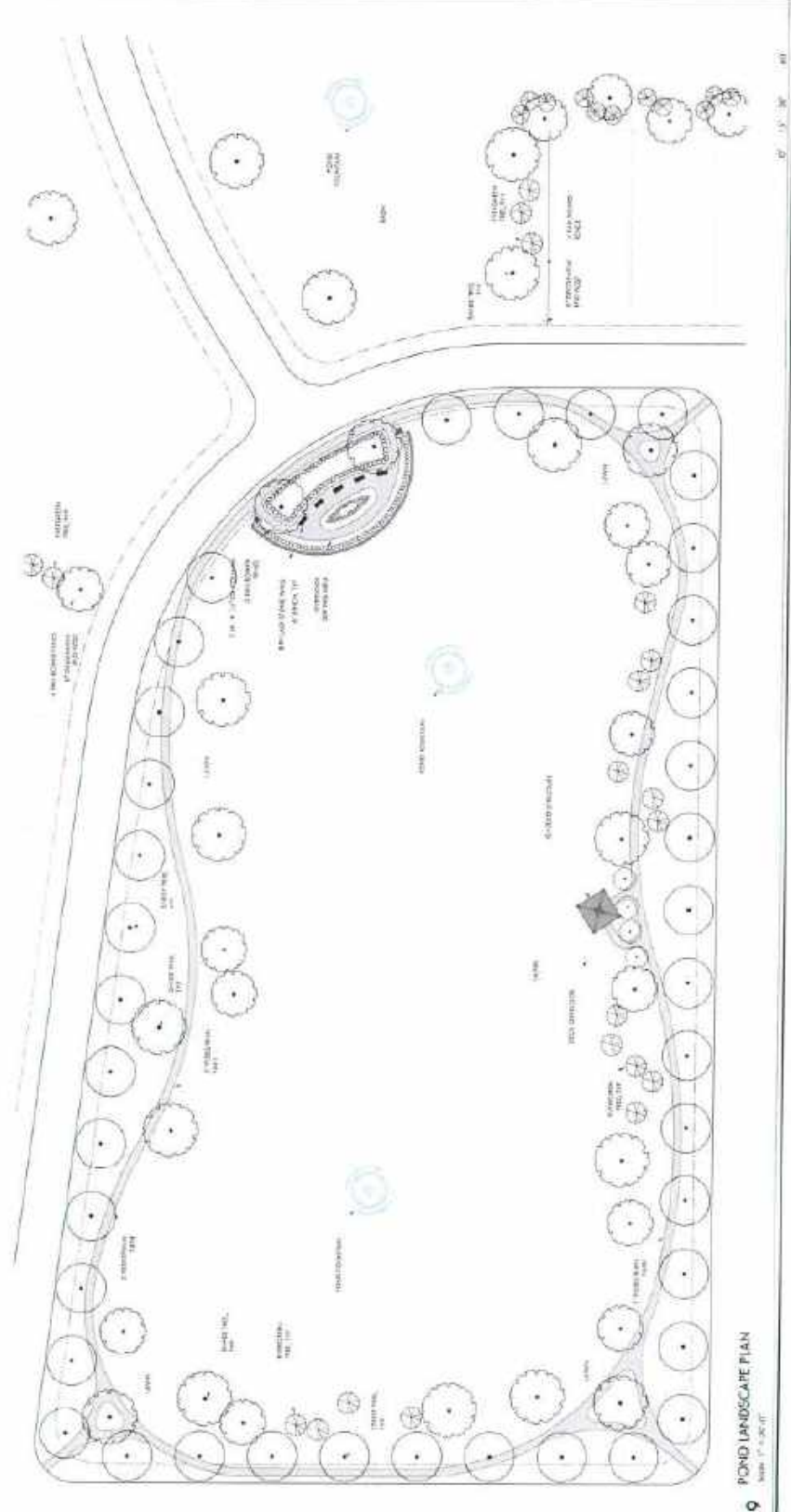
BARN-STONE PRECEDENT IMAGE



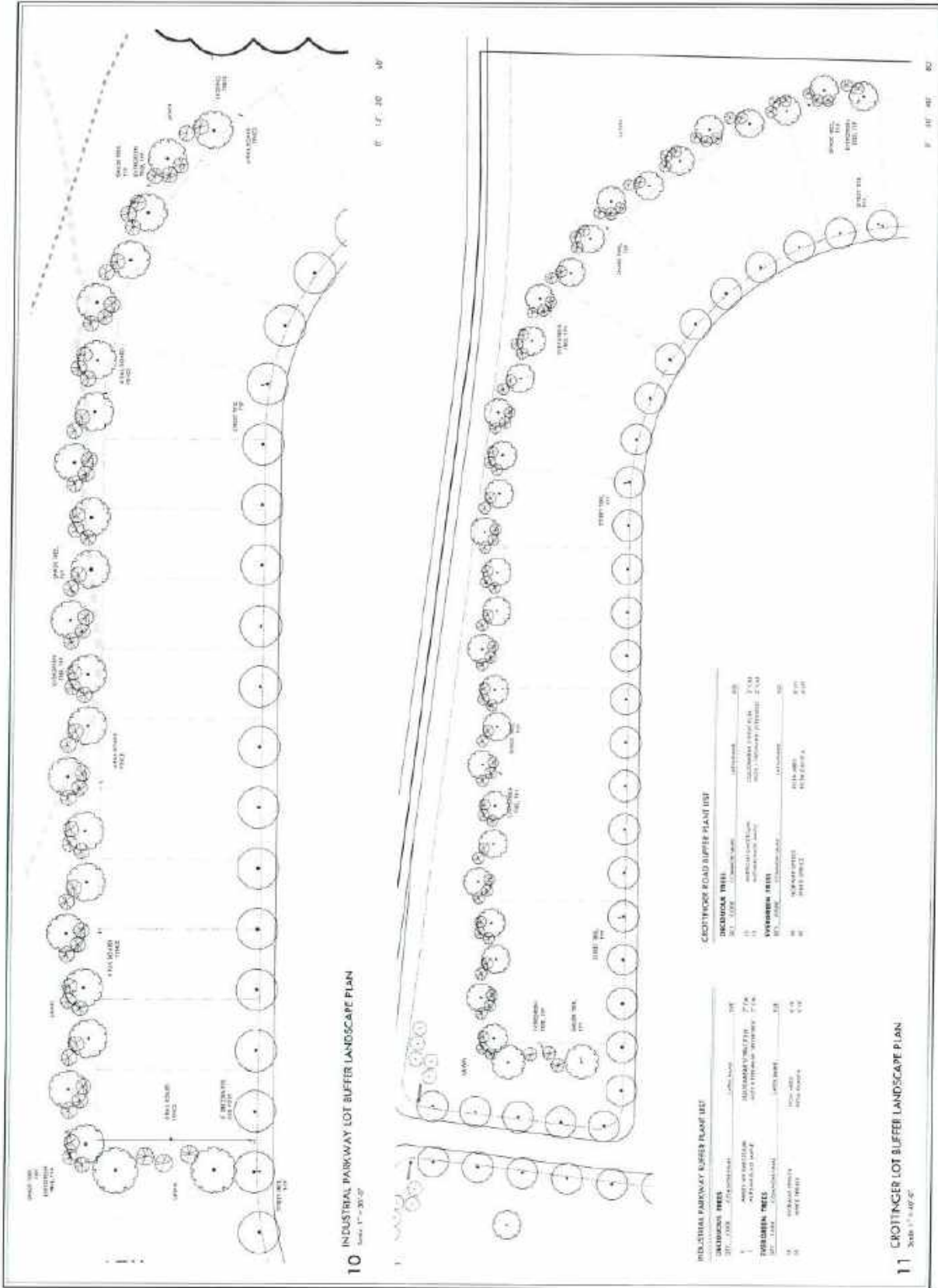
GAZEBO STRUCTURE PRECEDENT IMAGE

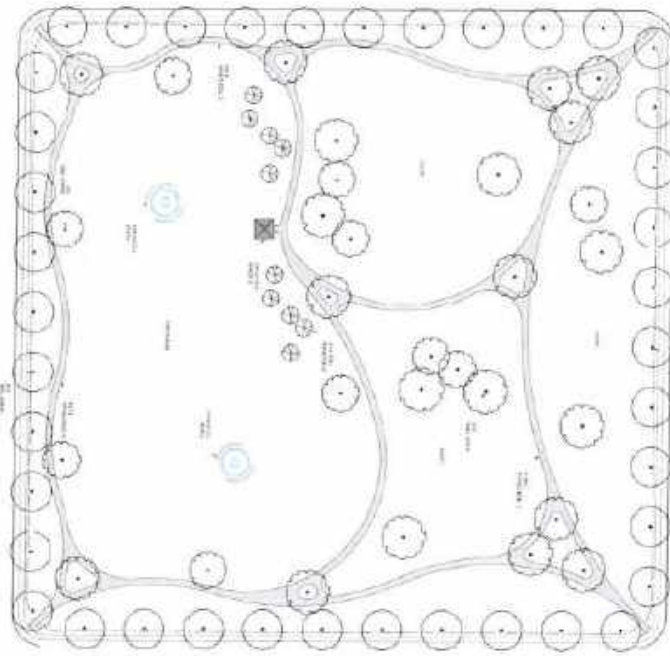


GAZEBO STRUCTURE ELEVATION

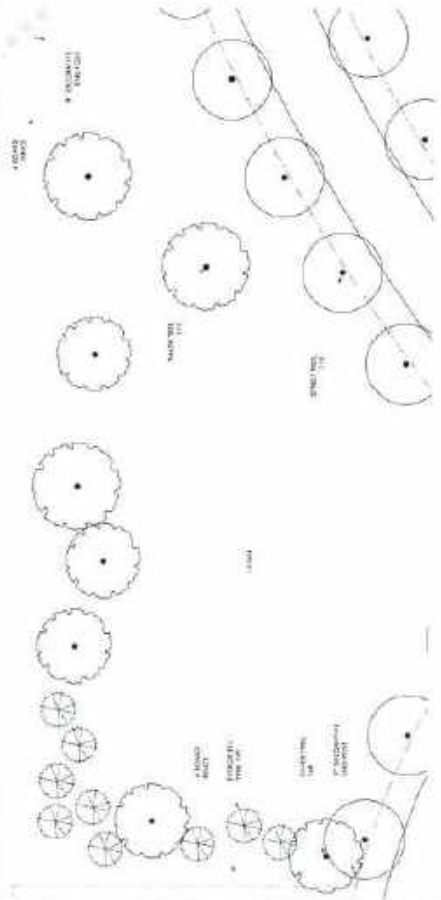


9 POND LANDSCAPE PLAN





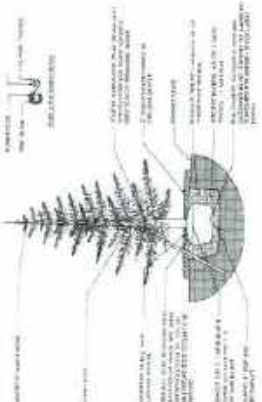
13 OPEN SPACE LANDSCAPE PLAN



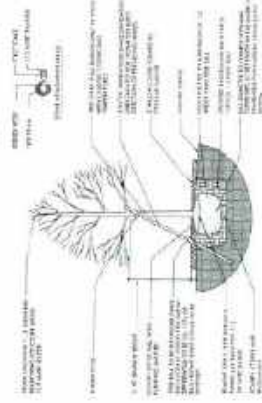
12 LOT BUFFER NORTH SIDE LANDSCAPE PLAN
Scale: 1" = 30'-0"

[illegible]

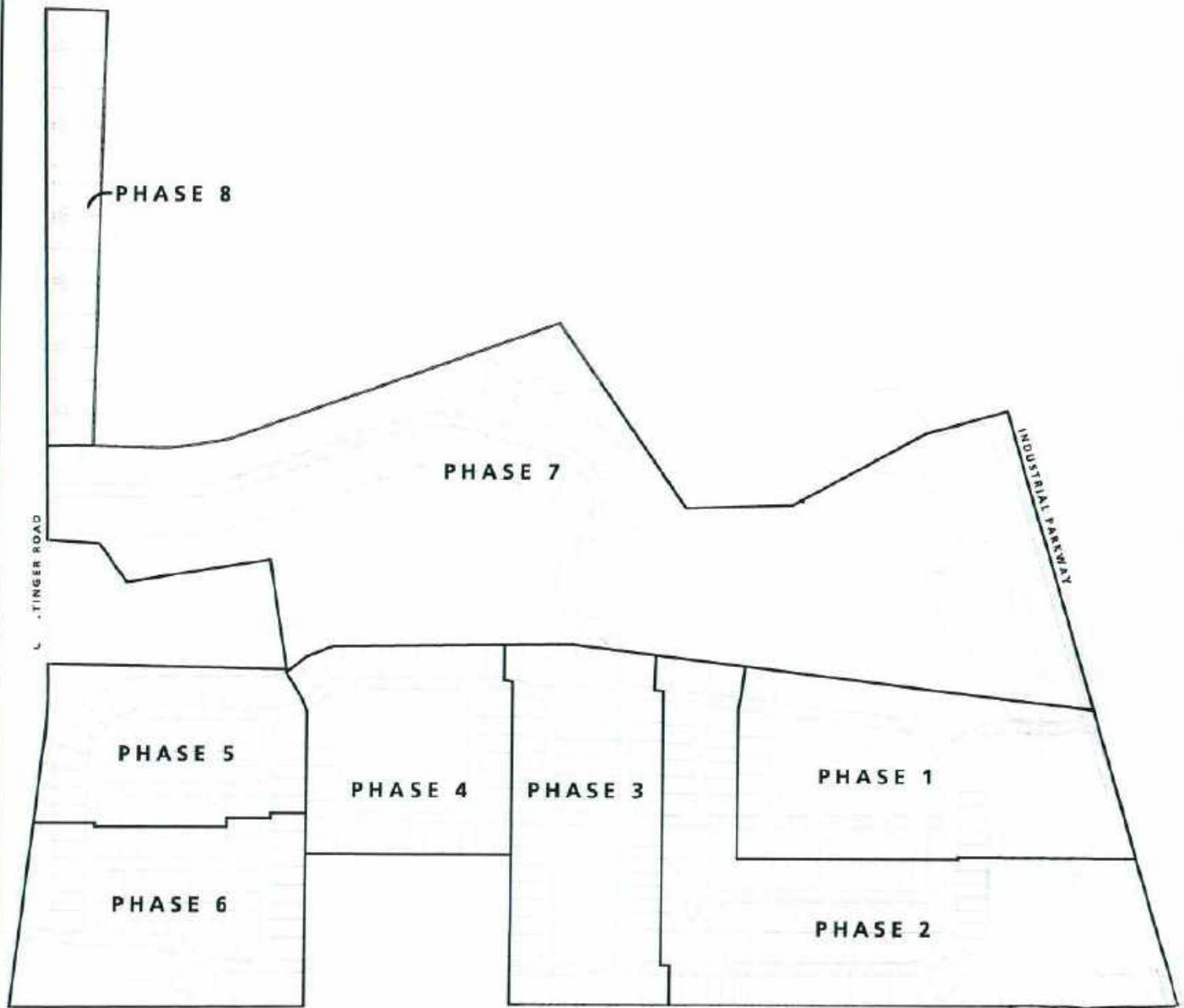
DEFAULT: 5-rib fiber placed; STAR 400



DETAILS: EVERGREEN TREE PLANTING / STAIRING



DETAILS: DECIDUOUS TREE PLANTING: ITAIPIC



NOTE:
THIS PROJECT IS INTENDED TO BE PHASED. THIS
PHASING PLAN REPRESENTS PRELIMINARY PHASING
AT THIS TIME. ALL PHASING WILL BE BASED ON
MARKET DEMAND.



Date
January 28, 2019
Job No.
18131

EDGE
PLANNING LANDSCAPE ARCHITECTURE/ENGINEERING DESIGN
380 WEST SPRING STREET, SUITE 350
COLUMBUS, OHIO 43215
614-486-3343

JEROME TOWNSHIP, OHIO
PRELIMINARY DEVELOPMENT PLAN
FOR
VIRGINIA HOMES

PHASING PLAN

SHEET
EXHIBIT
J



SUBAREA A

<p>Date January 28, 2019</p> <p>Job No. 15131</p>	<p>EDGE</p> <p>PLANNING • LANDSCAPE ARCHITECTURE • URBAN DESIGN</p> <p>230 WEST SPRING STREET, SUITE 250 COLUMBUS, OHIO 43215 614-486-3343</p>	<p>JEROME TOWNSHIP, OHIO PRELIMINARY DEVELOPMENT PLAN FOR</p> <p>VIRGINIA HOMES</p>	<p>PRODUCT SAMPLES</p>	<p>SHEET EXHIBIT K1</p>
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SUBAREA A

<p>Date January 28, 2019</p> <p>Job No. 18131</p>	<p>EDGE PLANNING • LANDSCAPE ARCHITECTURE • INTERIOR DESIGN</p> <p>230 WEST SPRING STREET, SUITE 350 COLUMBUS, OHIO 43215 614-885-9313</p>	<p>JEROME TOWNSHIP, OHIO PRELIMINARY DEVELOPMENT PLAN FOR VIRGINIA HOMES</p>	<p>PRODUCT SAMPLES</p>	<p>SHEET EXHIBIT K2</p>
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SUBAREA B & C

Date
January 28, 2019
Job No.
16131

EDGE

PLANNING • LANDSCAPE AND PRELIMINARY DESIGN
230 WEST SPRING STREET, SUITE 350
COLUMBUS, OHIO 43215
614-496-3343

JEROME TOWNSHIP, OHIO
PRELIMINARY DEVELOPMENT PLAN
FOR
VIRGINIA HOMES

PRODUCT SAMPLES

SHEET
**EXHIBIT
K3**



SUBAREA B & C

<p>Date January 28, 2019</p> <p>Job No. 18131</p>	<p>EDGE PLANNING • LANDSCAPE ARCHITECTURE • URBAN DESIGN</p> <p>330 WEST SPRING STREET, SUITE 350 COLUMBUS, OHIO 43215 614-486-9313</p>	<p>JEROME TOWNSHIP, OHIO PRELIMINARY DEVELOPMENT PLAN FOR VIRGINIA HOMES</p>	<p>PRODUCT SAMPLES</p>	<p>SHEET EXHIBIT K4</p>
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Rolling Meadows Residential Development Jerome Township, Union County, Ohio Engineering Feasibility Study

Advanced Civil Design has provided a utility investigation for approximately 210± acres of property located along the southwest side of Industrial Parkway and the northeast side of Crottinger Road approximately 2,100 feet northwest of Taylor Road in Jerome Township, Union County, Ohio. Analysis was performed to determine the feasibility of the development and construction of a new single family residential development that will include 393 lots. The following is a brief summary of the availability, location, and impact of the utility systems for this property.

Sanitary Sewer

A sanitary lift station serving a 12" force main operated by the City of Marysville exists along the southwest side of Industrial Parkway near the southeast corner of subject property. A master sanitary sewer study of this area is currently be completed by others for the City of Marysville, which includes the subject development. The existing lift station may be upgraded or replaced to accommodate future development in the area. The developer will be responsible for providing new sanitary sewer to service this development. Sizing will be dependent on any additional area determined by the City of Marysville to be tributary through the development.

Water Service

The City of Marysville owns and maintains an existing 16" water main located along the northwest side of Industrial Parkway which will service the development. The developer will be responsible for providing new water mains to service the development as well as new water main along Crottinger Road along the frontage of the proposed lots.

Storm Sewer

The subject development drains to Sugar Run and is split into 3 areas. The eastern portion of the site drains to the northeast directly into Sugar Run. The northwestern portion of the site drains to an existing ditch and ponds located in the Rolling Meadows Golf Club and Stottlemeyer properties. The southwestern portion of the site drains into a swale flowing southeast through neighboring properties with an ultimate outlet into Sugar Run southeast of Taylor Road. Approximately 20 +/- acres of the site are located within the 100 year floodplain of Sugar Run.

The development will adhere to both the Union County Engineer's storm water requirements and the Ohio EPA NPDES permit for storm water runoff quantity and quality control. The critical storm method will be used to determine the storm water runoff quantity required for the development. Storm water quantity and quality will be provided with storm water basins located throughout the development.

Electric Service

Union Rural Electric and Dayton Power & Light are the local electric providers in the vicinity of the development.

Gas Service

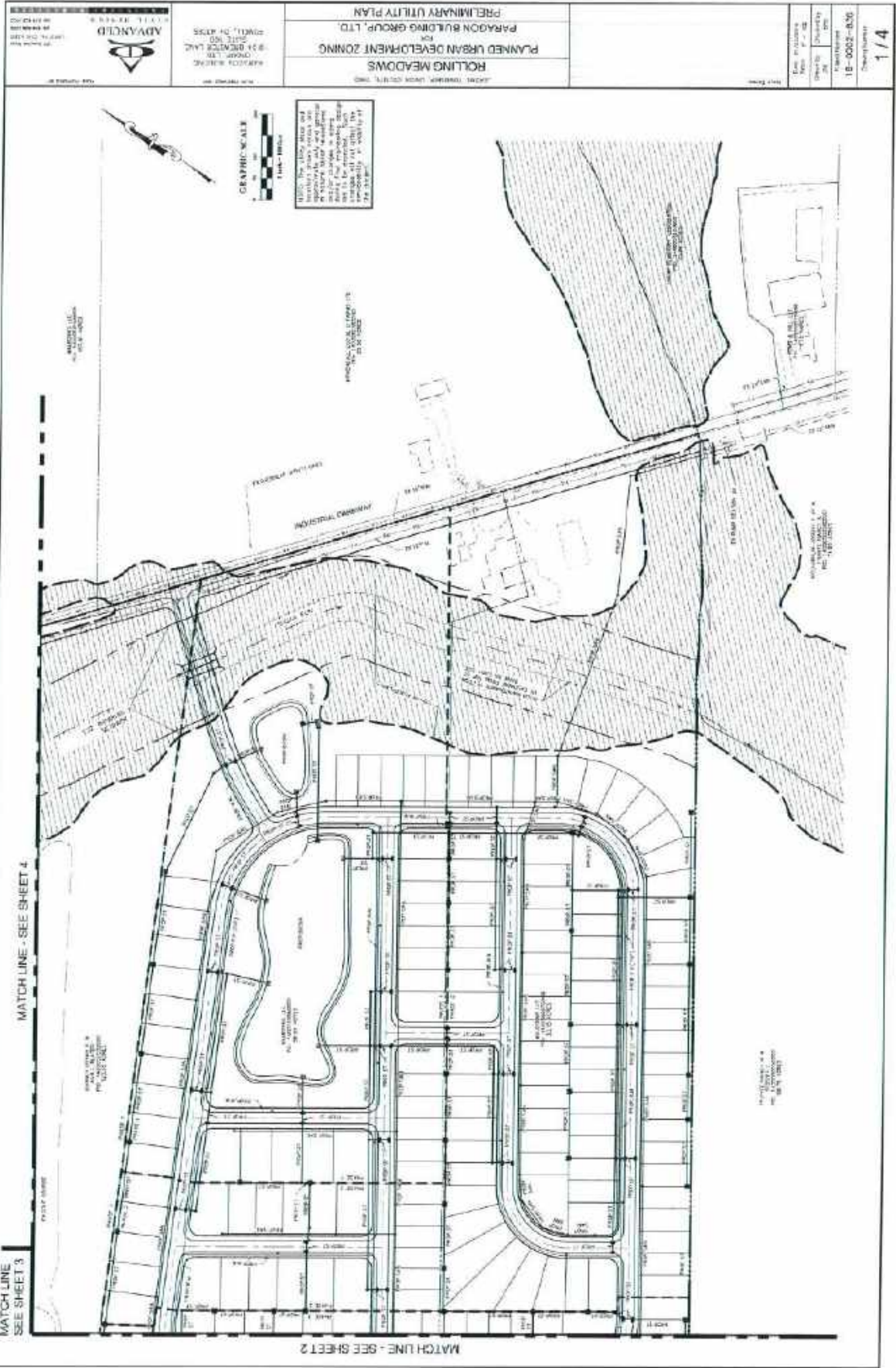
Columbia Gas is the local gas provider in the vicinity of the development.

Telephone Service

Frontier Communications is the local telephone provider in the vicinity of the development.

Cable Service

Spectrum is the local cable provider in the vicinity of the development.



ADVANCE CIVIL ENGINEERS 1000 N. 10th St. Columbus, OH 43215 614-486-3242	ADVANCE CIVIL ENGINEERS 1000 N. 10th St. Columbus, OH 43215 614-486-3242	ROLLING MEADOWS PLANNED URBAN DEVELOPMENT ZONING PRELIMINARY UTILITY PLAN PARAGON BUILDING GROUP, LTD. 1000 N. 10th St. Columbus, OH 43215 614-486-3242	Date: 1/28/2015 Drawn: J. Smith Check: J. Smith Scale: 1" = 100' Sheet: 1 of 1 Project: 18-0002-R30 Client: Paragon Building Group, Ltd.
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1/4

Date
January 28, 2015
Job No.
18131

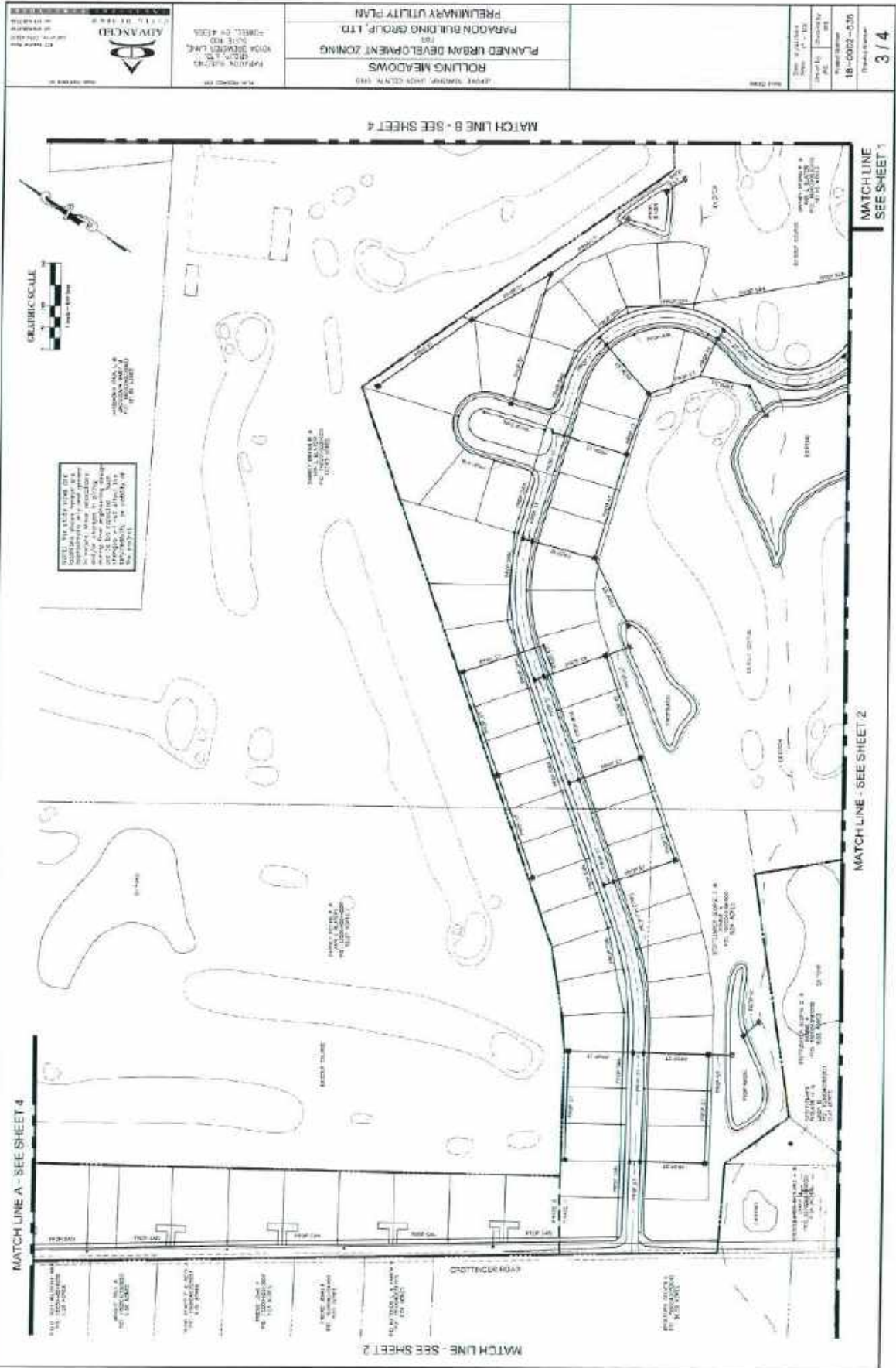
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 COLUMBUS, OH 43215
 614-486-3242

JEROME TOWNSHIP, OHIO
 PRELIMINARY DEVELOPMENT PLAN
 FOR
VIRGINIA HOMES

**PRELIMINARY
 ENGINEERING**

SHEET
**EXHIBIT
 L3**





Date
January 28, 2019

Job No.
18131

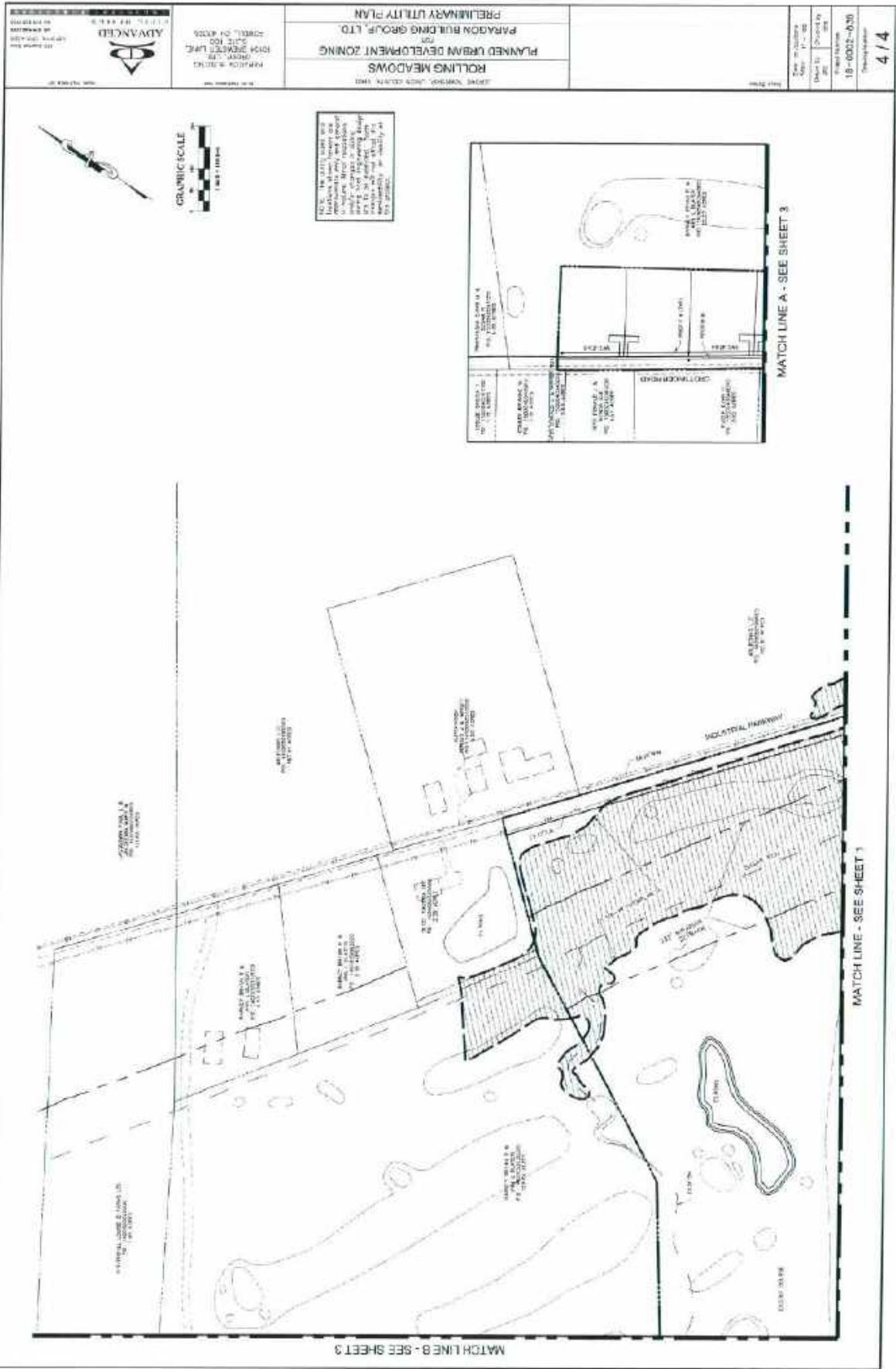
EDGE

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 330 WEST SPRING STREET, SUITE 350
 COLUMBUS, OHIO 43215
 614-486-3343

JEROME TOWNSHIP, OHIO
 PRELIMINARY DEVELOPMENT PLAN
 FOR
VIRGINIA HOMES

**PRELIMINARY
 ENGINEERING**

SHEET
**EXHIBIT
 L5**



Date
January 28, 2019

Job No.
18131

EDGE
 PLANNING & LANDSCAPE ARCHITECTURE/ENGINEERING
 330 WEST SPRING STREET, SUITE 300
 COLUMBUS, OHIO 43215
 614-486-3343


JEROME TOWNSHIP, OHIO
 PRELIMINARY DEVELOPMENT PLAN
 FOR
VIRGINIA HOMES

**PRELIMINARY
 ENGINEERING**

SHEET
**EXHIBIT
 L6**



15461 US Route 36 • PO Box 393 • Marysville, OH 43040-0393
(937) 642-1826 • (800) 642-1826 • Fax (937) 644-4239
www.ure.com

Your Touchstone Energy Cooperative 

December 5th, 2018

Mr. Charles Ruma
Virginia Homes
10104 Brewster Lane Suite 100
Powell, OH 43065

Dear Charles,

We understand that you are proposing a new residential development along Industrial Parkway, Jerome Township adjacent to Rolling Meadows golf course. According to your preliminary print this would consist of 393 lots of which all but six lots are URE certified electric territory.

Union Rural Electric has the availability and capacity to serve electric to all lots in our territory. It would be our intention to serve all of the lots which fall into our territory upon a formal request from Virginia Homes and signed URE Developers Agreement.

Please let me know if you require any additional information.

Best Regards,



Kevin

Kevin Gregory
Key Accounts Executive
Union Rural Electric Cooperative

Date
January 28, 2019

Job No.
18131

EDGE

PLANNING • LANDSCAPE ARCHITECTURE • URBAN DESIGN
330 WEST SPRING STREET, SUITE 350
COLUMBUS, OHIO 43215
614-485-9303

JEROME TOWNSHIP, OHIO
PRELIMINARY DEVELOPMENT PLAN
FOR

VIRGINIA HOMES

SERVICEABILITY LETTERS

SHEET
**EXHIBIT
M1**



Engineering, Planning and Zoning
City Hall, 209 South Main Street
Marysville, Ohio 43040-1641
(937) 645-7350
FAX (937) 645-7351
www.marysvilleohio.org

December 4, 2018

Charles Ruma | President
Virginia Homes
10104 Brewster Lane, Suite 100
Powell, Ohio 43065

Subject: City of Marysville Utilities
Parcels 1400050030000, 1400050060000, 1400050070000, 1500040044000 and 1500040180000

Dear Mr. Ruma,

Based on the attached exhibits, there is a downstream wastewater pump station which should be located at an appropriate elevation for the proposed development (Parcels 1400050030000, 1400050060000, 1400050070000, 1500040044000 and 1500040180000). Adequate water service can be obtained from the existing sixteen (16) inch waterline along Industrial Parkway.

Our water and wastewater treatment facilities also have adequate capacity to provide utility service to this development.

Due to the ongoing development within this sewershed area, additional upgrades / capacity fee surcharges will be needed for the City's downstream wastewater pump station (Pump Station #4, located on Industrial Parkway near the southwestern portion of this property) and water system (fire flow) upgrades.

Any required utility extensions or upgrades will be the sole responsibility of the Developer. Also, all utility design standards and fees (including monthly user and one-time capacity charges) for the City's Utility System can be found on our website (www.marysvilleohio.org).

Please contact us if you need additional clarification or wish to discuss this letter in further detail.

Sincerely,

Jeremy V. Hoyt, P.E.
City Engineer / Deputy Public Service Director

S:\Engineering\Projects\County Projects\Rolling Meadows\CORRESPONDENCE\LETTERS\Rolling Meadows - Utility Availability (REV).doc

Date January 26, 2019	EDGE PLANNING/LANDSCAPE ARCHITECTURE/ENGINEERING 330 WEST SPRING STREET, SUITE 350 COLUMBUS, OHIO 43215 614-486-7313	JEROME TOWNSHIP, OHIO PRELIMINARY DEVELOPMENT PLAN FOR: VIRGINIA HOMES	SERVICEABILITY LETTERS	SHEET EXHIBIT M2
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December 20, 2018

Attention: Charles Ruma

Re: Rolling Meadows – 393 Single Family Homes, Plain City, Ohio

Thank you for your interest in clean, efficient natural gas. This letter is to confirm Columbia Gas of Ohio, Inc. currently has facilities in the vicinity of the proposed Rolling Meadows Development, located approximately 4,000' north of the intersection of Industrial Py. and New California Dr.; however, a main line extension will be necessary to reach the development and serve the proposed project. As of today's date, 24 MCFH capacity is available from our system.

This is a preliminary study only and is not a legally binding project (capital) cost commitment on behalf of Columbia. Any changes from the information submitted may change the study for the Facilities necessary to provide the service. Other factors beyond Columbia's control include, but are not limited to, upstream load requirements and available capacity at the time an agreement is reached. Columbia makes no assurances that the 24 MCFH capacity currently available to serve Rolling Meadows will be available in the future for any phases of the project. Columbia encourages you to make a prompt decision to ensure capacity is available for the project. Columbia will check the capacity each time a new phase is being developed.

Once the site utility drawings are available, please forward them to my attention so that we may complete our feasibility study as well as determine any costs that may be required. Please note that availability is contingent upon a cost benefit analysis. A deposit (monetary contribution) may be required if the project is not deemed economically feasible for Columbia Gas.

If you have any questions regarding availability, please feel free to contact me at 614.460.5400 x3028. I look forward to partnering with you on this and future projects.

Sincerely,

Donyel Gibson

Donyel Gibson
New Business Development Manager | Columbia Gas of Ohio, Inc.
290 W Nationwide Blvd. | Columbus, Ohio 43215
donyelgibson@nisource.com | 614-460-5400 x3028

Date January 28, 2019	EDGE <small>PLANNING • LANDSCAPE ARCHITECTURE • URBAN DESIGN</small> 810 WEST SPRING STREET, SUITE 250 COLUMBUS, OH 43215 614-485-3361	JEROME TOWNSHIP, OHIO PRELIMINARY DEVELOPMENT PLAN FOR VIRGINIA HOMES	SERVICEABILITY LETTERS	SHEET EXHIBIT M3
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Rolling Meadows Deed Restrictions

ROLLING MEADOWS DEED RESTRICTIONS

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**DECLARATION OF COVENANTS, EASEMENTS, RESTRICTIONS
AND ASSESSMENTS FOR ROLLING MEADOWS**

This is a declaration of covenants, easements, and restrictions, "the Declaration", made on or as of this 1st day of MONTH 20XX by The Paragon Building Group, Ltd, an Ohio limited liability company, its Sole Member, "Declarant"

BACKGROUND

- a) Declarant is the owner in fee simple of the following real estate:

Situated in the County of Union, and State of Ohio, and being Lot Numbers X through X, inclusive, of Rolling Meadows, as the same are described and delineated upon the recorded plat thereof, recorded in Plat Book X, page X, inclusive, of record in the Union County, Ohio Recorder's Office;

Being a subdivision of single-family lots and being all the lots in Rolling Meadows, hereinafter called "the Subdivision".

- b) Each of the lots in the Subdivision is referred to herein as "a Lot", and collectively "the Lots". A "Lot owner" is each owner of a fee simple interest in a Lot.
- c) Declarant desires to provide for the preservation of the values of and amenities in the Subdivision, for the benefit of the present and future owners and occupants of property in the Subdivision. To these ends, Declarant is hereby creating a plan of covenants, easements, restrictions and assessments for the Subdivision, to provide for control of the construction of improvements on and the environmental control of the Subdivision, the use of property in the Subdivision, the security of Lot owners and occupants, and the maintaining of the Subdivision as an integrated high-quality residential community.
- d) Declarant deems it desirable for the accomplishment of these objectives to create an agency to which is delegated and assigned the non-exclusive right and obligation to administer and enforce the provisions hereof and to collect and disburse the funds necessary to accomplish these objectives. Accordingly, Declarant has caused to be incorporated ROLLING MEADOWS OWNERS ASSOCIATION, "the Association", as a nonprofit corporation, under and pursuant to the laws of Ohio, whose members are and will be all the owners of a Lot or Lots.

COVENANTS, EASEMENTS, RESTRICTIONS AND ASSESSMENT LIENS

Now therefore, Declarant, its successors and assigns hereby declares that all of the Lots in the Subdivision shall be held, sold, conveyed and occupied subject to the following covenants, easements, and restrictions, which are for the purpose of protecting the values and desirability of, and which shall run with the title to, each Lot in the Subdivision, and each part thereof, and be binding on all parties having any right, title or interest therein, and each part thereof, and their respective heirs, successors and assigns, and shall inure to the benefit of and be enforceable by Declarant, each Lot owner, the respective personal representatives, heirs, successors and assigns of each Lot owner, and the Association and its successors and assigns.

ARTICLE I - THE PROPERTY

Section 1 - Property Subject

The property which is and shall be held, transferred, sold, conveyed and occupied subject to the terms of this Declaration is each Lot in the Subdivision, and any and all rights appurtenant thereto.

Section 2 - Property Not Subject

Property in the Subdivision not subject to the provisions hereof is property dedicated or to be dedicated to public use, including, without limiting the generality of the foregoing, Reserve A and public streets; provided, nothing contained herein shall limit or restrict the right of the Association to take any lawful action described herein with respect to any property in the Subdivision or appurtenant thereto even though not expressly made subject to the terms hereof. Reserve A is owned and maintained by the Rolling Meadows Homeowner Association.

ARTICLE II - THE ASSOCIATION

Section 1 – Powers, Authority, Duties

The Association shall have all the rights, powers, and duties established, invested, or imposed pursuant hereto, its Articles of Incorporation, Code of Regulations, its duly adopted rules and regulations, and the laws of the State of Ohio applicable with respect to Ohio corporations not-for-profit. Among other things, the Association, through its trustees, shall have the power to enforce and administer the restrictions set forth herein, enforce the Design standards, provide security for the Subdivision, pledge assets and receivables, levy and collect assessments, maintain reserves, enter into contracts, and take such other actions as the trustees deem appropriate in fulfilling the Association's purposes.

Section 2 – Membership

Each record owner of a fee interest in a Lot, at the time he, she or it acquires such fee interest, shall automatically become a member of the Association. The membership of the owner of a Lot shall automatically terminate at such time as that Lot owner ceases to own a fee interest in a Lot.

Section 3 - Voting Rights

Voting rights of members shall be as provided in the Association's Code of Regulations, which provides, among other things, that the record owner of a Lot shall have one vote for each Lot owned by such owner.

ARTICLE III - ENVIRONMENTAL AND BUILDING CONTROL

Section 1 - Environmental Control

a) Establishment of Environment Committee

The trustees shall establish and maintain on behalf of the Association an environmental control committee, "The Environment Committee," to consist of such persons (who need not be members and who may or may not be trustees), in such number, to have such terms, and to be subject to such restrictions and limitations, as the trustees may from time to time determine.

b) Purposes

The purposes of the Environment Committee shall be to:

- (i) Review, approve and disapprove proposed building plans;

- (ii) Establish, maintain and preserve architectural and environment guidelines and standards, to carry out the intent of the plan established by this Declaration; and
- (iii) Advise and recommend to the trustee's measures and actions to enforce the Design Standards and the covenants and restrictions set forth herein, and to cause such measures and actions to be taken when directed by the trustees.

c) Responsibilities - Effect of Actions

The Environment Committee shall exercise its best judgment to see that all improvements in the Subdivision conform to the Guidelines as to external design, quality and types of construction, materials, colors, setting, height, grade, finished ground elevation, landscape, and tree removal. The decisions of the Environment Committee as to conformity with the Guidelines shall be conclusive and binding on all parties other than Declarant. The Environment Committee shall also periodically view all property in the Subdivision and actions taken with respect thereto and advise the trustees of all violations of the covenants and restrictions imposed hereby, for further action by the trustees on behalf of the Association.

Section 2 - Plan Approval: Duty to Build

a) Requirements of Plan Approval

No improvement, change, construction, addition, excavation, landscaping, tree removal, or other work or action which in any way alters the exterior appearance of the Subdivision from its theretofore natural or improved state (and no change, alteration or other modification of any of the foregoing previously approved hereunder), and no addition to or modification of any improvement or landscaping (whether or not theretofore approved hereunder), nor the installation of any item hereinafter described, or similar item, shall be commenced or continued until the same shall have first been approved in writing by the Environment Committee in accordance with the Design Standards, or by the Declarant. Approval shall be requested by submission to the Environment Committee of plans and specifications, in triplicate, showing the following:

- (i) Existing and proposed land contours and grades;
- (ii) All buildings, and other improvements, access drives, and other improved areas, and the locations thereof on the site;
- (iii) All landscaping, including existing and proposed tree locations and planting areas (and species thereof);
- (iv) Plans for all floors, cross sections and elevations, including projections and wing-walls;
- (v) Exterior lighting plans;
- (vi) Mailboxes, address markers, and exterior ornamentation;
- (vii) Walls, fencing, and screening;
- (viii) Patios, decks, gazebos, pools, and porches;
- (ix) Signs and parking areas;
- (x) Swing sets, play areas, basketball boards, and similar improvements;
- (xi) Samples of materials to be used to the extent requested by the Environment Committee;
- (xii) The Environment Committee may reasonably request such other information, data, and drawings.

Specifications shall describe types of construction and exterior materials to be used, including, without limitation, the colors and manufacturers thereof, and shall otherwise be prepared according to the Guidelines.

b) Basis of Approval: Commitment to Build

Approval shall be based, among other things, upon conformity and harmony of the proposed plans; with other structures in the Subdivision; the effect of the erection and use of improvements on neighboring property; and conformity of the plans and specifications to the purpose and intent of the provisions hereof. Approval of plans and specifications shall constitute the commitment of the owner to build according to the approved plans and specifications.

c) Failure to Approve or Disapprove

If the Environment Committee fails either to approve or disapprove such plans and specifications within thirty (30) days after the same have been delivered to the Environment Committee, either personally, by certified mail, or email it shall be presumed that the Environment Committee has approved said plans and specifications.

d) Liability Relating to Approvals

Neither Declarant, the Association, the Trustees, the Environment Committee nor any member thereof nor any of their respective heirs, personal representatives, successors or assigns, shall be liable to anyone submitting plans and specifications for approval by reason of mistakes in judgment, negligence, on nonfeasance arising out of or in connection with the approval or disapproval or failure to approve the same. Every person and entity who submits plans and specifications to the Environment Committee agrees, by submission thereof, that he, she or it will not bring any action or suit against any of the foregoing to act or to recover any damages.

e) Requirement of Completion - Notice of Completion

An owner of any portion of the Subdivision shall cause any improvement thereon to be diligently pursued to completion within twelve (12) months after the date construction was commenced. Upon the completion of any improvement, the person or entity who completed the same may file with the Environment Committee a notice of completion and compliance which shall give rise to a rebuttable presumption in favor of such person or entity and any owner of the building site on which the improvement is located and any encumbrances acting in good faith and for value that said improvement is completed and in compliance with all provisions hereof, unless within thirty (30) days of said filing the Environment Committee gives actual notice of noncompliance or noncompletion. Notice of noncompliance or noncompletion will be considered to be delivered when it is posted on or about the improvement in question. In the event any improvement is presumed to be completed and in compliance with all provisions hereof, such person or entity and any such owner and any such encumbrances may at any time request in writing that the Environment Committee issue a certificate certifying that said improvement is completed and in compliance with all provisions hereof, which certificate shall be issued by the Environment Committee within fifteen (15) days of its receipt of written request therefore, and which certificate shall be conclusive evidence that said improvement is completed and in compliance with all provisions hereof. The Environment Committee may make a reasonable charge for the issuance of such certificates, which must be paid at the time that the request for such certificate is made.

f) Non-completion or Non-compliance

In the event construction of any improvement is not completed within the aforesaid time limits, or as extended by the trustees, in their sole discretion (but only for good cause shown), the owner shall pay the Association as liquidated and agreed damages, since the ascertainment of actual damages would be difficult if not impossible to accurately ascertain, the sum of \$100.00 per day that the construction remains incomplete after the date required herein for completion. This payment shall be in addition to any other remedies at law or equity and shall not be exclusive thereof.

g) Duty to Build

Any purchaser of a Lot (or that purchaser's successor in ownership) shall within eighteen (18) months of the first closing of the purchase of the Lot, or such longer time as the Declarant may agree in writing, commence the construction of a residential dwelling or dwellings thereon. If the purchaser or purchaser's successor fails to do so, Declarant reserves the right and option, for a period extending from the end of that eighteen (18) month period to five (5) years from the date of the purchase, to repurchase the property for the purchase price paid by the purchaser, without payment of interest or other charges.

h) Declarant Approval

Notwithstanding the foregoing, or any other provision of this declaration, so long as Declarant owns any Lot in the Subdivision, no improvements may be constructed on any Lot in the Subdivision unless and until the plans and specifications therefore have been submitted to Declarant and approved by it as being in conformity with the Guidelines. In addition, Declarant reserves the exclusive right, for so long as it owns any Lot, to approve any improvements to be constructed on a Lot or Lots owned by it.

ARTICLE IV - PROTECTIVE COVENANTS AND RESTRICTIONS

Section 1 – Uses

a) Residential Uses

Except as otherwise specifically provided in this Declaration, no Lot shall be used for any purpose other than that of a residence for individuals living together as a single housekeeping unit, and uses customarily incidental thereto, provided, however, that no residence may be used as a group home, commercial foster home, fraternity or sorority house, or any similar type of lodging, care or treatment facility. Notwithstanding the foregoing: (i) an occupant maintaining a personal or professional library, keeping personal business or professional records or accounts, conducting personal business (provided that such use does not involve customers, employees, licensees or invitees coming to the residence), making professional telephone calls or corresponding, in or from a residence, is engaging in a use expressly declared customarily incidental to residential use and is not in violation of these restrictions; and (ii) during the construction and sales period Lots may be used for construction and sales purposes. Each Lot must have a residential structure constructed on it prior to the construction of any pool, gazebo, or other such improvement authorized pursuant to the provisions of Article III hereof.

b) Transient Uses

No residence on a Lot shall be rented or used for transient or hotel purposes, which is defined as: (i) rental for a period less than thirty (30) days, or (ii) rental under which occupants are provided customary hotel services, such as room service for food and beverages, maid service, the furnishing of laundry and linen, busboy service, and similar

services, or (iii) rental to roomers or boarders, that is, rental to one or more persons of only a portion of a residence on a Lot.

c) Temporary Structure Use

No incomplete structure or structure of a temporary character, trailer, basement, tent, shack, garage, barn or other outbuilding shall be used at any time as a residence, either temporarily or permanently.

d) Hobbies

Hobbies or activities that tend to detract from the aesthetic character of the Subdivision, and improvements used in connection with such hobbies or activities, shall not be permitted unless carried out or conducted as directed by the trustees. This limitation has reference to, but is not limited to, such activities as automobile and boat repair.

e) Offensive Activities

No activity noxious or offensive in the reasonable judgment of the trustees of the Association, shall be carried on or permitted upon any part of the Subdivision, nor shall anything be done thereon which may be or may become an annoyance or nuisance to the neighborhood. Without limiting the generality of the foregoing:

- (i) No rubbish or debris of any kind shall be placed or permitted to accumulate upon any portion of the Subdivision;
- (ii) No odors shall be permitted to arise or to be emitted therefrom to render any portion of the Subdivision unsanitary, unsightly, offensive, or detrimental to any of the remainder of the Subdivision or to the occupants thereof;
- (iii) No exterior lights, the principal beam of which shines upon portions of the Subdivision other than the Lot upon which they are located, or which otherwise cause unreasonable interference with the use and enjoyment of any Lot by the occupants thereof, shall be permitted on any Lot; and
- (iv) No speakers, horns, whistles, bells or other sound devices, shall be located, used or placed on any Lot, except security devices used exclusively for security purposes which are activated only in emergency situations or for testing thereof. Music, either live or by recording device, that is so loud as to disturb one's neighbors, is prohibited.

f) Service Screening, Storage Areas

Garbage and refuse shall be placed in containers, which shall be concealed and contained within buildings. No materials, supplies or equipment shall be stored in the Subdivision except inside closed buildings. This section does not pertain to homes under construction or homes that have not received a final occupancy permit.

g) Mineral Exploration

No part of the Subdivision shall be used in any manner to explore for, use, or exploit commercially any water, oil, or other hydrocarbons, minerals of any kind, gravel, earth, soil, or any other substance located on or under the ground.

h) Machinery and Equipment

No commercial machinery or equipment of any kind shall be placed, operated or maintained in the Subdivision except such machinery or equipment reasonably necessary for use in connection with maintenance or construction of improvements approved by the Association.

i) Vehicles, Trailers, Boats, Commercial Vehicles and Motor Homes

No automobile may be left upon any Lot for a period longer than forty-eight (48) hours in a condition such that it is incapable of being operated upon the public highways, after which time the vehicle shall be considered as a nuisance and detrimental to the welfare of the neighborhood and must be removed from the Lot. Any towed vehicle, boat, motor home or mobile home regularly stored upon any portion of the Subdivision, or temporarily kept thereon for periods longer than twenty-four (24) hours, shall be considered a nuisance and must be removed from the Subdivision. The foregoing, however, does not apply to such boats or other vehicles, whether motor-driven or towed, as are stored wholly within private garages. No commercial vehicles may be parked, stored or temporarily kept on any Lot, except when there temporarily to service existing improvements or to be used in connection with the construction of improvements in the Subdivision. Only cars and authorized trucks may be parked on the driveway; all other vehicles, including but not limited to, recreational vehicles, scooters, mopeds, tractors, mowers, and non-authorized trucks, and all boats, trailers and campers, must be stored in garages. An authorized truck is a truck manufactured primarily for the purpose of carrying passengers, is fully enclosed at the time of manufacture, is of one-ton capacity or less, and exhibits no external evidence of commercial use. Notwithstanding the foregoing, the Declarant, its successors and assigns shall have the right, in its sole discretion, to determine whether a vehicle is authorized.

j) Animals

Except as hereinafter provided, no animals, livestock, birds, poultry or other fowl, snakes, reptiles, or species of insects, shall be raised, bred, kept, or maintained on any Lot, or any portion thereof. Notwithstanding the foregoing, household domestic pets, not bred or maintained for commercial purposes, may be maintained in a residence on a Lot provided that: (i) the maintaining of animals shall be subject to such rules and regulations as the trustees may from time to time promulgate, including, without limitation, the right to place limitations on the size, number and type of such pets, and the right to levy enforcement charges against persons who do not clean up after their pets; (ii) the right to maintain an animal shall be subject to termination if the trustees, in their full and complete discretion, determine that maintenance of the animal constitutes a nuisance or creates a detrimental effect on other owners or occupants, or the Subdivision as a whole; and (iii) All domestic pets shall be properly restrained and shall not be permitted to roam free or loose on the property, other than on the Lot of the owner of such pets. Outdoor dog houses, animal cages, dog runs and other similar objects, whether affixed to the ground, are prohibited without the express prior review and approval of the Environment Committee.

k) Hunting, Fishing, Trapping

Hunting, fishing, and trapping are prohibited.

l) Firearms and Fireworks

The discharge of firearms and use of fireworks are prohibited.

m) **Open Fires**

Open fires are prohibited, except for domestic use of commercially made barbecue grills, outdoor fireplaces, etc.

Section 2 - Building and Improvement Limitations

a) **Dwelling Size**

All buildings constructed on a lot for use as single family dwellings shall have the following minimum floor areas, exclusive of basements, attics, garage spaces, porches, decks, and unheated areas:

(i) One-Story	-	1400 Square Feet
(ii) Two Story	-	1800 Square Feet
(iii) All other	-	1600 Square Feet

b) **Dwelling Height**

No building constructed in the Subdivision for use as a single-family dwelling shall have a height greater than the applicable zoning code, measured from the finish grade of the Lot at the main entrance of the building to the ridge of the roof or to any other element of the building (excluding chimneys, flues, and vents), or such other height as may be contained in any restriction that Declarant may impose on any lot or lots.

c) **Temporary Improvements**

No temporary building or structure shall be permitted; provided, however, trailers, temporary buildings, barricades and the like shall be permitted for construction purposes during the construction period of a permanent building and for sales purposes during the sale of a lot or lots, provided, in addition, the Environment Committee or Declarant, its successors and assigns shall have theretofore approved in writing the design, appearance, and location of the same. Any temporary structure shall be removed not later than fourteen (14) days after the date of completion of the buildings for which the temporary structure was intended, and temporary structures shall be permitted for no longer than a period of one (1) year, unless a variance is granted by the Environment Committee or Declarant, its successors and assigns. Notwithstanding the foregoing, one or more Lots may be used for model and sales purposes until Declarant or its assignee has sold all Lots.

d) **Antennas / Satellite dishes**

Only antennas and satellite dishes, no larger than one meter, may be erected per federal legislation. All antennas and satellite dishes must have plan approval by the Environment committee or Declarant, its successors or assigns as to location and screening and must abide by all federal and local zoning codes.

e) **Utility Service**

No lines, wires or other devices for communications purposes, including telephone, television, data, and radio signals, or for transmission of electric current or energy, shall be constructed, placed or maintained anywhere in the Subdivision unless the same shall be in or by conduits or cables constructed, placed and maintained underground or concealed in, under or on buildings, or other approved improvements; provided, above ground electrical transformers and other equipment may be permitted. In addition, all gas, water, sewer, oil and other pipes for gas or liquid transmission shall also be placed underground or within or under buildings. Nothing herein shall be deemed to forbid the erection and use

of temporary power or telephone services incident to the construction of approved improvements.

f) Site Placement

All buildings and other improvements shall be placed so that the existing topography and landscape shall be disturbed as little as possible, and so that the maximum number of desirable trees and other natural features will be preserved, unless the Environment Committee or Declarant approves in writing some other placement. Buildings and improvements must be situated between the front and rear setback lines as shown in the record plat.

g) Parking, Loading and Unloading Areas

Each single-family residential dwelling must have at least a two-car attached garage, plus space for the parking of two cars in the on-site driveway. As used herein, "car" shall mean a full-sized automobile, as opposed to a compact or subcompact automobile.

h) Streets and Drives

Streets and drives shall be constructed or altered only in accordance with plans and specifications submitted to and approved in writing by the Environment Committee and Declarant, its successors and assigns, so long as it owns any Lot.

i) Storage Tanks

No storage tanks, including, but not limited to, those used for storage of water, gasoline, oil, other liquid or any gas, shall be permitted in the Subdivision outside a building, except as approved by the Environment Committee or Declarant, its successors and assigns.

j) Improvement Exteriors

All windows, porches, balconies and the exteriors of buildings and other improvements shall always be maintained in a neat and orderly manner. No clotheslines or other outside drying or airing facilities shall be permitted.

k) Exterior Materials and Colors

Finish building materials shall be applied to all sides of the exteriors of buildings. Colors shall be harmonious and compatible with colors of the natural surrounding and other adjacent buildings. The Environment Committee and Declarant, its successors or assigns, so long as it owns any Lot, shall have the right to approve or disapprove exterior materials and colors.

l) Signs

No sign or billboard whatsoever (including, but not limited to, commercial and similar type signs) shall be erected or maintained on any Lot except:

- (i) Signs as may be required by law;
- (ii) Signs as may be approved by the Environment Committee or Declarant, its successor and assigns, meeting the sign requirements contained in the design Standards; and
- (iii) Signs, if any, must be acceptable to Jerome Township zoning standards, such as by owners offering homes for initial sale.

m) Landscaping

The Subdivision and each Lot shall be landscaped according to plans approved by Jerome Township, the Environment Committee or Declarant. Landscaping must be installed and maintained in accordance with Jerome Township Codified Ordinances. All shrubs, trees, grass and plantings of every kind shall be kept well maintained, properly cultivated and free of trash and other unsightly material. Landscaping as approved by Jerome Township, the Environment Committee or Declarant shall be installed no later than sixty (60) days following occupancy of or completion of any building, whichever occurs first, unless occupancy occurs during winter months.

n) Maintenance

No Lot, building, or other improvement shall be permitted to become overgrown, unsightly or to fall into disrepair and all buildings and improvements shall always be kept in good condition and repair and adequately painted or otherwise finished in accordance with specifications established by the Environment Committee and Declarant, its successors and assigns. Each owner, for himself and his, her or its respective personal representatives, heirs, successors and assigns, hereby grants to the Association the right to make any necessary alterations, repairs or maintenance approved by the Environment Committee or Declarant, its successors and assigns to carry out the intent of this provision and further agrees to reimburse the Association for any expenses incurred in carrying out the foregoing. The Association may assess and collect such reimbursement as a special individual Lot assessment, as provided in Article VII hereof.

o) Drainage and Grading

No drainage ditches, cuts, swales, streams, impoundments, ponds, or lakes; no mounds, knobs, dams, or hills; and no other physical improvements or elements of the landscape or terrain which control or determine the location or flow of surface water and drainage patterns may be destroyed, altered or modified by or at the direction or with the consent of any owner without the prior written consent of the Environment Committee or Declarant, its successors and assigns, so long as it owns any Lot and Jerome Township. No improvements shall be made in any manner whatsoever that are inconsistent with the master grading plans established by Declarant or its successors or assigns for the Subdivision, as they now exist or may hereafter be modified from time to time, without the prior written consent of the Environment Committee or Declarant, so long as it owns any Lot and Jerome Township. Declarant, its successors and assigns and the Association and their respective representatives shall have joint and several rights to enter upon any Lot and any portion of the Subdivision and remedy or repair any such destruction, alteration, modification, or improvement without being guilty of trespass and without liability to any owner with respect to the same or the consequences thereof. Whenever, because of construction of improvements or for some other reason, silt would run onto any adjacent property, the owner of such violating property shall be obligated to provide a means of siltation control to prevent silt from running off of such property onto adjacent property

p) Fences

No fence, wall, or barrier of any kind (including shrubbery and hedges) may be erected, except as required by law or with prior approval of the Environment Committee or Declarant, so long as it owns any Lot. A developer approved aluminum fence will be allowed on any lot, providing it does not extend beyond the rear corners of the home and that the portion visible to the street is landscaped with shrubbery and hedges. "Electronic dog fences," which operate on the principal of a buried wire sending signal to dog collar

equipped with a receiver are permitted. In addition, all fences where permitted in the Rolling Meadows Subdivision are subject to the requirements of the approved zoning development text and the Jerome Township zoning code.

q) Swimming Pools

Above ground swimming pools and portable swimming pools are prohibited. Swimming pools permitted shall be visually screened and fenced per code.

r) Storage Sheds

Storage sheds, prefabricated outbuildings, or similar detached buildings are prohibited, unless approved by the Environment Committee or Declarant, its successors and assigns.

ARTICLE V - REPAIR AND MAINTENANCE RESPONSIBILITIES

Section 1 - The Association

The Association, through its authorized representatives, shall:

- a) Have the right and obligation to repair and maintain, in a first-class condition, any Subdivision entryway monument and Subdivision entryway features at the entryway into the Subdivision along Brennan Court. The precise location and composition of the Subdivision entryway monument and Subdivision entryway features has not been determined. The Association shall be able to repair and maintain any entryway or entryway feature, wherever located if an easement has been provided;
- b) To the extent, but only to the extent, not maintained by Jerome Township, maintain storm water retention area (Reserve Areas) designated on the plat of the Subdivision, in a neat and clean condition; and
- c) To the extent, but only to the extent, not maintained by the owner or owners of a Lot, the landscaping and all improvements on a Lot, in a clean, neat condition, and in such state of appearance that the Lot and its improvements will not detract from the Subdivision constituting a high-quality residential community. The Association shall maintain any required hedge installed along the front property line at the sidewalk.

Section 2. Lot Owners

Each Lot owner shall have responsibility to maintain the landscaping and all improvements on the Lot in a clean, neat condition, and in such a state of appearance that the Lot and its improvements will not detract from the Subdivision constituting a high-quality residential community.

ARTICLE VI – EASEMENTS

Section 1 - Entry Easement to Association

The Association, through its authorized representatives, shall have the right of entry and access to, over, upon and through all the Lots, to enable the Association to perform its obligations, exercise its rights, and fulfill its duties pursuant hereto, and such representatives shall not be deemed to have committed a trespass as a result thereof; provided, however, except in an emergency an occupied building may not be entered unless written notice of such proposed entry shall have been given or sent to the owner thereof at least twenty-four (24) hours prior to such entry.

Section 2 - Easements to Declarant

Declarant reserves to itself and its successors and assigns a perpetual easement in, through, under and/or over those portions of each Lot, as shown on the plat of the Subdivision, designated as easements, or where such rights-of-way are necessary, for the construction, operation and maintenance of electrical, telephone and cable lines and conduits and water, gas and sewer lines and conduits, or other public utility facilities, and no structure shall be erected or maintained upon any part of any Lot over or upon which easements for the installation and maintenance of such public utilities and sewer lines have been granted.

Section 3 - Power of Attorney

Each owner of a Lot, by acceptance of a deed to a Lot, appoints the President of the Association his, her or its attorney-in-fact, to execute, deliver, acknowledge and record, for and in the name of such owner, deeds of easement, licenses, permits, and other instruments as may be necessary or desirable, in the sole discretion of the trustees or their authorized representative, to further establish or effectuate the foregoing easements and rights. This power is for the benefit of every owner of a Lot, the Association, and the Subdivision, runs with the land, is coupled with an interest, and is irrevocable.

Section 4 - General

The easements and grants provided herein shall in no way affect any other recorded grant or easement. Failure to refer specifically to any or all the easements and/or rights described in this Declaration in any deed of conveyance or in any mortgage or other evidence of obligation shall not defeat or fail to reserve said rights or easements, but the same shall be deemed conveyed or encumbered along with the Lot.

ARTICLE VII - ASSESSMENTS AND ASSESSMENT LIENS

Section 1 - Types of Assessments

Subject to the provisions of this Article, each Lot shall be subject to the following assessments, the owner or owners of which Lot by acceptance of a deed to a Lot (whether or not it shall be so expressed in such deed), covenant and agree to pay to the Association: (a) an initial reserve contribution, (b) annual operating assessments, and (c) special individual Lot assessments, all of which are to be established and collected as hereinafter provided.

Section 2 - Initial Reserve Contribution

Each initial purchaser of a Lot (whether from Declarant or a successor or assignee of Declarant, and whether of a Lot now subject hereto or a Lot hereafter subjected to this plan), shall, at the time of the closing of the purchase of the Lot, contribute to the Association the sum of \$500.00 to create an operating reserve fund, so that funds will be available to the Association to pay its obligations (described in Section 3, below) when and as they become due. This contribution shall be nonrefundable and shall not be in lieu of or a credit against any other assessments hereinafter provided.

Section 3 - Annual Operating Assessments

For the purposes of providing funds: (a) to defray the administrative costs and expenses incurred by the Association in the exercise of its powers, authority and duties described herein, (b) to provide for the protection of the health, safety, enjoyment and welfare of the owners and occupants of the Subdivision, (c) to enhance the values and amenities of the Subdivision, by means of the repair and maintenance of the Subdivision entryway monuments, open spaces/reserve areas and associated improvements, and such other Subdivision improvements as the trustees determine, and (d) to maintain reasonable reserve funds for these purposes, each Lot and the owners thereof shall be subject to annual operating assessments to be determined, assessed and collected as hereinafter provided.

a) Establishment of Operating Assessments

Except as hereinafter provided, immediately prior to the beginning of each calendar year the trustees shall establish a budget for that calendar year, apportion the amount so determined in equal shares among all the Lots, and assess each Lot and its owners for the apportioned amount. Notwithstanding the foregoing, Declarant, or its successors and assigns, shall pay all operating expenses of the Association otherwise recoverable by operating assessments until it determines, in its sole discretion, that the charging of assessments is warranted. Further, and notwithstanding the foregoing, the annual operating assessment for the calendar year 20XX shall not exceed \$500.00 per Lot, or a proportionate part thereof for a partial calendar year. Any annual operating assessment for any calendar year thereafter may not be increased by more than twenty percent (20%) of the assessment for the prior calendar year, except by the affirmative vote of members of the Association holding a majority of the voting power of members voting on the matter. In addition, and notwithstanding the foregoing, no Lot owned by Declarant, its successors and assigns, unless and until a residence is constructed on it, shall be subject to assessment.

b) Insufficient Funds

If, at any time, the amounts collected as operating assessments, and reserves, if any, are insufficient to meet all obligations of the Association, the trustees may levy additional operating assessments to meet such deficiency, prorated on the same basis as hereinbefore provided.

Section 4 - Special Individual Lot Assessments

The trustees shall levy assessments against an individual Lot or Lots, to reimburse the Association for those costs incurred with respect to that Lot or those Lots properly chargeable by the terms hereof to a particular Lot or Lots (such as, but not limited to, the cost of making repairs the responsibility of a Lot owner or owners). Any such assessment shall become due and payable on such date as the trustees determine.

Section 5 - Effective Date of Assessment

Any assessment created pursuant hereto shall be effective, provided it is created as provided herein, if written notice of the amount thereof is sent by the trustees to the Lot owner subject thereto at least ten (10) days prior to the due date thereof. Written notice mailed or delivered to a Lot owner's Lot shall constitute notice to that Lot owner, unless the Lot owner has delivered written notice to the trustees of a different address for such notices, in which event the mailing of the same to that last designated address shall constitute notice to that Lot owner.

Section 6 - Effect of Nonpayment of Assessment: Remedies of the Association

- a)** If any assessment is not paid within ten (10) days after the same has become due, the trustees, at their option, without demand or notice, may (i) charge interest on the entire unpaid balance at the highest rate of interest then permitted by law, or at such lower rate as the trustees may from time to time determine, and (ii) charge a reasonable, uniform, late fee, as determined from time to time by the trustees.
- b)** Annual operating and special assessments, together with interest, late fees, and costs, including reasonable attorney fees, shall be a charge and a continuing lien in favor of the Association upon the Lot against which each such assessment is made.

- c) At any time after an assessment levied pursuant hereto remains unpaid for ten (10) or more days after the same has become due and payable, a certificate of lien for all or any part of the unpaid balance of that assessment, interest, late fees, and costs, including attorney fees, may be filed with the Franklin County Recorder, pursuant to authorization given by the trustees. The certificate shall contain a description of the Lot against which the lien exists, the name or names of the record owner or owners thereof, and the amount of the unpaid portion of the assessments and charges and shall be signed by such officer of the Association as the trustees shall designate.
- d) The lien provided for herein shall remain valid for a period of five (5) years from the date a certificate of lien or renewal certificate was duly filed therefor, unless sooner released or satisfied in the same manner provided by law in the State of Ohio for the release and satisfaction of mortgages on real property, or discharged by the final judgment or order of a court in an action brought to discharge the lien.
- e) Any Lot owner who believes that an assessment chargeable to his, her or its Lot (for which a certificate of lien has been filed by the Association) has been improperly charged against that Lot, may bring an action in the Court of Common Pleas of Franklin County for the discharge of that lien. In any such action, if it is finally determined that all or a portion of the assessment has been improperly charged to that Lot, the court shall make such order as is just, which may provide for a discharge of record of all or a portion of that lien. Each such assessment together with interest, late fees and costs, including reasonable attorney fees, shall also be the joint and several personal obligations of the Lot owners who owned the Lot at the time when the assessment fell due. The obligation for delinquent assessments, interest, late charges and costs shall not be the personal obligation of that owner or owners' successors in title unless expressly assumed by the successors, or required by applicable law, provided, however, that the right of the Association to a lien against that Lot, or to foreclose any lien thereon for these delinquent assessments, interest, late charges and costs, shall not be impaired or abridged by reason of the transfer, but shall continue unaffected thereby.
- f) The Association, as authorized by the trustees, may file a lien or liens to secure payment of delinquent assessments, interest, late fees, and costs, including attorney fees, bring an action at law against the owner or owners personally obligated to pay the same, and an action to foreclose a lien, or any one or more of these. In any foreclosure action, the owner or owners affected shall be required to pay a reasonable rental for that Lot during the pendency of such action, and the Association as plaintiff in any such foreclosure action shall be entitled to become a purchaser at the foreclosure sale. In any such foreclosure action, interest and costs of such action (including attorneys' fees) shall be added to the amount of any such assessment, to the extent permitted by Ohio law.

Section 7 - Certificate Regarding Assessments

The trustees shall, upon demand, for a reasonable charge, furnish a certificate signed by a designated representative of the Association, setting forth whether the assessments on a specified Lot have been paid. This certificate shall be conclusive evidence of payment of any assessment therein stated to have been paid.

Section 8 - Subordination of the Lien to First Mortgages

The lien of the assessments and charges provided for herein shall be subject and subordinate to the lien of any duly executed first mortgage on a Lot recorded prior to the date on which such lien of the Association

arises, and any holder of such first mortgage which comes into possession of a Lot pursuant to the remedies provided in the mortgage, foreclosure of the mortgage, or deed or assignment in lieu of foreclosure, and any purchaser at a foreclosure sale, shall take the property free of any claims for unpaid installments of assessments and charges against the mortgaged Lot which became due and payable prior, in the case of foreclosure, to the date of the sale, and, in all other cases, to the date legal title vested in the successor owner.

ARTICLE VIII - USE OF FUNDS

Section 1 - Application of Assessments

The Association shall apply all funds received by it pursuant hereto, and all other funds and property received by it from any source, to the fulfillment of the purposes of the Association as hereinbefore provided.

Section 2 - Authority to Borrow Funds

To secure the repayment of all sums borrowed by it, loaned to it, or owed by it, from time to time, the Association is hereby granted the right and power to mortgage and pledge all revenue received and to be received and/or to assign and pledge all revenues received or to be received by it under any provisions of these covenants, including, but not limited to, the proceeds of the assessments payable hereunder. The amounts, terms and rates of all borrowing and the provisions of all agreements with holders or owners of any such debt obligation shall be subject solely to the decision of the trustees acting in their absolute discretion.

Section 3 - Authority to Maintain Surplus

The Association shall not be obligated to spend in any particular time period all the sums collected or received by it in such time period or in any other time period and may carry forward, as surplus, any balances remaining; nor shall the Association be obligated to apply any such surpluses to the reduction of the amount of the assessment in any year, but may carry forward from year to year and time to time such surplus as the trustees in their absolute discretion may determine to be desirable for the greater financial security of the Association and the effectuation of its purposes.

Section 4 - Authority to Enter Into Contracts

The Association shall have the power and authority to contract with any person, corporation, firm or other entity, including, but not limited to, Declarant, its successors and assigns, for the exercise of any one or more of the various powers and authority granted to and duties to be performed by the Association hereunder, and to delegate such powers and authority to any agent or employee of the Association, and the exercise of those powers and authority by such person, corporation, firm, entity, agent or employee shall be deemed the exercise of those powers and authority by the Association, except that no independent contractor shall be deemed by virtue of these provisions to be the agent of the Association. There shall be no requirement of any bond or surety for the Association, its agents, employees, or others assuring the exercise of the powers and authority granted hereunder, except as the trustees shall in their sole discretion deem necessary or desirable for the safeguarding of any funds received by the Association.

ARTICLE IX - INSURANCE

The Association shall obtain and maintain a comprehensive policy of public liability insurance insuring the Association, the trustees, and the Lot owners and occupants, with such limits as the trustees may

determine, covering claims for personal injury and/or property damage arising due to acts by or on behalf of the Association. This insurance shall include protection against such risks as are customarily covered with respect to developments similar in construction, location and use, as determined by the trustees. This insurance shall contain a "severability of interest" endorsement which shall preclude the insurer from denying the claim of a Lot owner or occupant because of negligent acts of the Association, the trustees, or other Lot owners or occupants, and shall provide for at least ten (10) days written notice to the Association before the insurer may cancel or modify it. The trustees, in their sole discretion, may maintain such other insurance on behalf of the Association as they may from time to time determine.

ARTICLE X - CONSTRUCTIVE NOTICE AND ACCEPTANCE

Every person who now or hereafter owns or acquires any rights, title or estate in any Lot is and shall be conclusively deemed to have consented and agreed to every covenant, condition and restriction contained herein, whether a reference to these is contained in the instrument by which that person acquired an interest in said property.

ARTICLE XI - RIGHTS OF MORTGAGEES

Section 1 – Notices

A holder or insurer of a first mortgage upon a Lot, upon written request to the Association (which request shall state the name and address of such holder or insurer and a description of the Lot) shall be entitled to timely written notice of:

- a) Any proposed amendment of these restrictions;
- b) Any proposed termination of the Association;
- c) Any decision to construct new capital improvements not replacing existing improvements;
- d) Any default under these restrictions which gives rise to a cause of action by the Association against the owner of the Lot subject to the mortgage of such holder or insurer, where the default has not been cured in sixty (60) days; and
- e) Times and places of meetings of members of the Association.

Section 2 - Inspection of Association Books and Records

Each holder and insurer of a first mortgage on any Lot shall be entitled, upon request, to:

- a) Inspect the books and records of the Association during normal business hours; and
- b) Require the preparation of and receive an annual financial statement of the Association for the immediately preceding calendar year, certified by an officer of the Association, except that such statement need not be furnished earlier than one hundred twenty (120) day following the end of such calendar year.

The Lot owners shall also have reasonable access to inspect the books, records and financial statements of the Association.

ARTICLE XII - ENFORCEMENT

Section 1 - Interpretation

In case of uncertainty as to the meaning of any article, paragraph, sentence, clause, phrase or word contained herein, the interpretation by the trustees, provided it is reasonable, shall be final and conclusive upon all interested parties. Builder and/or owner are to comply with the development plan requirements and the deed restrictions.

Section 2 - Abatement and Suit

Violation or breach of any restriction contained herein shall give to the Association the right to enter the Lot involved and correct the violation at the expense of the owner or owners of the Lot involved, the cost of which may be assessed and collected as a special individual Lot assessment, as provided in Article VII hereof.

Section 3 - Failure to Enforce

Failure of the Association or any owner to enforce any provision hereof shall in no way be deemed a waiver of the right to do so thereafter for the same or any other violation, or to enforce any other provision hereof.

Section 4 - Duty to Enforce

Notwithstanding any other provision hereof, neither Declarant, its successors and assigns nor the Association shall owe a duty to any Lot owner, or any party claiming through an owner, to enforce any covenant, restriction, condition, term, or provision of this Declaration. By purchasing a Lot, the owners thereof and their respective personal representatives, heirs, successors and assigns hereby waive any claim against Declarant and the Association, and their respective successors and assigns, and release Declarant and the Association, including their respective successors and assigns, from any liability arising from the failure to enforce the provisions hereof.

ARTICLE XIII - EFFECTIVE PERIOD: AMENDMENT

Section 1 - Effective Period

The covenants and restrictions of this Declaration shall run with and bind the Subdivision for a term of thirty-five (35) years from the date this Declaration is recorded, after which time they shall be automatically extended for successive periods of ten (10) years each, unless by agreement of owners of Lots exercising not less than two-thirds of the voting power of owner of Lots, these covenants and restrictions are sooner terminated.

Section 2 - Amendments

This Declaration may be modified or amended by the Declarant until the Turnover date (or, if no Association is formed, until Developer no longer continues to own any Lots at the Property), Developer may, in its sole and absolute discretion, unilaterally amend this Declaration at any time and from time to time, without the consent of any other Owners. Any such amendment may modify the provisions hereof, and/or impose covenants, conditions, restrictions and easements upon the Property in addition to those set forth herein including, without limitation, restrictions on use and covenants to pay additional charges with respect to the maintenance and improvement of the Property. After the Turnover Date, Developer may unilaterally amend this Declaration, without the consent of any other Owners, if such amendment is; (a) necessary to bring any provision hereof into compliance with any applicable governmental statute, rule, regulation or judicial order, (b) necessary to enable any reputable title insurance company to issue title insurance coverage on

the Lots, (c) necessary to conform to the requirements of United States Federal Housing Administration, or (d) necessary to correct errors; provided, however, any such amendment shall not materially adversely affect the title to any Lot unless the Owner thereof has consented to such amendment in writing. No Amendment may remove, revoke, or modify any right or privilege of Developer without the written consent of Developer or the assignee of such right or privilege. Developer shall have the right and power, but neither the duty nor the obligation, in its sole and absolute discretion and by its sole act, to subject additional property to this Declaration at any time and from time to time by executing and recording in the appropriate governmental office an amendment to this Declaration specifying that such additional property is part of the Property. An amendment to this Declaration shall not require the joinder or consent of the Association, other Owners, mortgagees or any other person. In addition, such amendments to the Declaration may contain such supplementary, additional, different, new, varied, revised, or amended provisions and memberships as may be necessary or appropriate, as determined by Developer to reflect and address the different character or intended development of any such additional property.

Section 3 - Method to Amend

An amendment to this Declaration, adopted with the consents aforesaid, shall be executed with the same formalities as to execution as this Declaration by the president and secretary of the Association and shall contain their certifications that the amendment was duly adopted in accordance with the foregoing provisions. Any amendment so adopted and executed shall be effective upon the filing of the same with the Recorder of Franklin County, Ohio.

ARTICLE XIV - GENERAL PROVISIONS

Section 1 - Joint and Several Obligations

Every obligation of a Lot owner hereunder shall be the joint and several obligations of each owner of a fee simple interest in that Lot, and any demand, notice or other communication or action given or taken hereunder or pursuant hereto or by one of such joint owners, shall be deemed given, taken or received by all such joint owners.

Section 2 – Severability

Invalidation of any one of these covenants or restrictions by judgment or court order shall in no wise affect any other provisions, which shall remain in full force and effect.

Section 3 - Constructive Notice and Appearance

Every person who now or hereafter owns or acquires any rights, title or estate in any portion of the Subdivision is and shall be conclusively deemed to have consented and agreed to every covenant, condition and restriction contained herein whether a reference is contained in the instrument by which such person acquired an interest in the Subdivision.

Section 4 – Mutuality

All restrictions, conditions and covenants contained herein are made for the direct, mutual, and reciprocal benefit of Declarant, its successors and assigns, the Association, and the present and future owners of the Subdivision, and each part thereof, and their respective personal representatives, heirs, successors, and assigns; the provisions hereof shall create mutual equitable servitudes upon the Subdivision and each part thereof in favor of each other part thereof; and any Lot referred to herein as benefited hereby; the provisions hereof shall create reciprocal rights and obligations between the respective owners of all such Lots and privity of contract and estate between all owners thereof; and the provisions hereof shall, as to the owner

of any such Lot, his, her or its respective heirs, personal representatives, successors and assigns, operate as covenants running with the land for the benefit of all such Lots and the owners thereof.

Section 5 – Captions

The captions or headings of the parts hereof are intended for convenience only and are not intended to be a part of the context hereof, and do not in any way define, limit, or describe the scope or intent of any provision hereof.

IN WITNESS WHEREOF, this Declaration has been duly signed, acknowledged and delivered by The Paragon Building Group, Ltd., its Sole Member on this _____ day of, _____, 201X.

Signed and acknowledged
in the presence of:

The Paragon Building Group, Ltd.
an Ohio limited liability company,

(Print Name) _____

By: _____
Charles E. Ruma, President

(Print Name) _____

STATE OF OHIO
COUNTY OF UNION, SS:

Charles E. Ruma acknowledged the foregoing instrument before me on the _____ day of _____, 2018, the President of The Paragon Building Group, Ltd., an Ohio limited liability company, who acknowledged the signing of the same to be his voluntary act and deed.

Notary Public

EXHIBIT O-
Sample Homeowners Association Guidelines

**ROLLING MEADOWS OWNERS ASSOCIATION
RULES GUIDELINES
MONTH 20XX**

The following rules and guidelines for Rolling Meadows have been set forth to expand upon and clarify the information found in the Declaration and Bylaws under which the Rolling Meadows Owners Association operates. All residents are asked to support these Guidelines in order that the community will remain an attractive and harmonious place to live.

GENERAL RULES

These restrictions and covenants concerning the use and occupancy of the Rolling Meadows shall run with the land and be binding upon every home owner, as well as their family members, guests, and invitees.

- A. Use of Lots. Each home shall be occupied and used exclusively for residential purposes only. No Improvements may be constructed by an Owner on any Lot until the plans have been approved by the Design Review Board of the Rolling Meadows Owners Association.
- B. Use of Common Property. All uses of the Common Property shall benefit or promote the health, safety, welfare, convenience, comfort, recreation, and enjoyment of the Owners and occupants of the home and shall comply with the provisions of this Declaration, the laws of the State, and the Rules for Rolling Meadows.
- C. Hazardous Materials. Nothing shall be done or kept in or on any Lot or on any portion of the Common Element that is unlawful or hazardous and that might reasonably be expected to increase the cost of casualty or public liability insurance covering the Common Property or that will unreasonably disturb the quiet occupancy of any person residing on any other lot.
- D. Signs. No signs of any character shall be erected, posted or displayed upon lot or common property, except for one temporary real estate sign not to exceed six square feet in area advertising that such Lot/Home is for sale and one security notification signage in the front and rear of the home not to exceed 24" in diameter. No other signs are permitted, unless permitted by the City of Dublin.
- E. Pets. No person may keep, breed, board or raise any animal, livestock, reptile, or poultry of any kind for breeding or other commercial purpose on any residential home or upon any part of the Common Element. No pets shall be kept which constitute a nuisance or which unreasonably interfere with any owner's right to the quiet enjoyment of his/her property. Any complaints will be reported to the County and City offices. Pets must be kept in a contained area or on a leash, chain or rope at all times when outside. All pet waste must be cleaned up within a reasonable time period. Owners must pick up after pets in the common elements or be subject to fines. One doghouse per lot is permitted but must meet the following criteria: (1.) the color of the doghouse must match

the color of the home; (2.) the doghouse must be placed immediately at the rear of the home and is not permitted to be located in a side yard.

- F. Service Screening, Storage Areas. All garbage, trash and other waste shall be placed in containers that shall be concealed and contained inside garage or home, or shall be concealed by means of a screening wall of material similar in color and compatible with that of the building on the lot. No open storage or buildings of any kind are permitted anywhere in the community.
- G. Rental Leases. No home or condominium may be used for hotel or transient uses, including uses in which the occupant is provided customary hotel services. All residential leases shall be in writing and are subject to the rules and Declarations.
- H. Vehicles. The Rolling Meadows Owners Association shall be authorized to levy assessments/fines as penalties for the violation of any rule. And, may cause the removal of any vehicle violating any rule. No trucks with business advertisement, commercial vehicles, boats, trailers, recreational vehicles, campers or mobile homes or buses of any kind shall be parked or stored on any street, on any home and/or condominium unit or on any portion of any common element (except in an enclosed structure shielded from view) for any time period longer than forty-eight (48) hours in any thirty (30) day period.

The word "trailer" shall include trailer coach, house trailer, mobile home, automobile trailer, camp car, camper or any other vehicle, whether or not self-propelled, constructed or existing in such a manner as would permit use and occupancy thereof, or for storage or the conveyance of machinery, tools or equipment, whether resting on wheels, jacks, tires or other foundation. The word "truck" shall include and mean every type of motor vehicle other than passenger cars, motorcycles, passenger vans and any vehicle other than a pickup truck, which is used as a personal automotive vehicle by the owner of the home or condominium. Pickup trucks with commercial tags/plates will be deemed commercial vehicles.

- I. Pools and Recreational Structures. No above ground swimming pool shall be permitted upon any lot. Permitted in-ground pools require approved fencing and shall meet the Design Review Board standards. The Rolling Meadows Owners Association may permit play structures, provided they are all wood structures with Redwood stain and are pre-approved by the Design Review Board. Please refer to Addendum B for basketball hoops, Addendum C for play set specifications, Addendum D for fence specifications and Addendum E for trampoline specifications.
- J. Fencing. The Design Review Board has established standards according to which fencing and walls may be permitted at the Property. Failure to use the approved fence and follow all design specs contained in the Addendum will result in fines and required removal of unapproved structures. Specific fence requirements are set for perimeter yard fencing and specific pool enclosure

fencing. The Design Review Board must approve, in writing, prior to the installation of any fence plans. Please refer to Addendum D for fence specifications.

- K. Mailboxes. The homeowner shall purchase the required mailboxes for replacement and the color shall be maintained on all mailboxes in the Subdivision. Owners may purchase mailboxes and approved mailbox numbers through Cedar Craft Products, Inc. at (614)759-1600.
- L. Other Structures. No outdoor clotheslines shall be permitted anywhere in Rolling Meadows for any reason. No canvas style patio cover may be erected on any lot or common area longer than 3 calendar days for any reason. No approval will be rendered for permanent installation for any reason.
- M. Street Trees. Homeowners are responsible for the ongoing maintenance and replacement, if necessary, of street trees along the street in front of each lot. Any dead tree must be replaced within 60 days, weather permitting, and adhere to the following: Trees must be a minimum 3" caliper, balled and burlaped at the time of planting when replacing and must be placed in the same location with same tree variety as originally installed.
- N. Pond. No owner or any other person shall have permission to or right to use the pond for boating or swimming. Failure to observe this rule will result in fines.
- O. Lawn Maintenance. All lawn maintenance must be started no later than April 1st, weather permitting, and continued on a weekly basis throughout the mowing season. All mulch beds must be maintained free of weeds with new mulch installed no later than May 31st of each year. Landscape Beds must keep a clean line between lawn and mulch beds. For any homeowner that fails to maintain a proper landscape, a friendly reminder will first be sent to the property. Should the homeowner fail to remedy the issue, the Association reserves the right to contract with a lawn maintenance professional to perform the required task and assess the lot for all costs incurred.

This authority is given to the Rolling Meadows Owners Association by the Declaration of Covenants, Easements, Conditions and Restrictions for the Rolling Meadows Owners Association.

The Rolling Meadows Owners Association requires that all homes be adequately landscaped to include, but not limited to, shrubs, trees, sod and mulch. The degree of landscaping is set by the Design Review Board and all landscape improvements, including but not limited to the installation of new trees and shrubs, paver walkways, patios, decks and landscape bed retaining walls must be approved by the Design Review Board. The Rolling Meadows Owners Association may require the removal of any attempted improvement that was not approved by the Design Review Board.

- P. Fines. The following fines are effective when any owner disregards any written notification to a violation and remains non-compliant for the term stated in said letter: 1st offense, \$50.00, 2nd offense, \$100.00, 3rd offense and each offense thereafter will be fined \$150.00 until violation is remedied. The Rolling Meadows Owners Association may determine at any time the owner fails to remedy a problem and/or remain delinquent for any reason, place a lien on the property for the collection of said fines along with remedy of said violation. Owner will be responsible for any and all legal costs paid by the Rolling Meadows Owners Association as it relates to any violation, failure to remedy, delinquent and non-payment of fees and fines, etc.
- Q. Exterior Decorative Objects-Lawn Ornaments/Furniture. Portable lawn furniture must be arranged in an orderly fashion and, unless located on a deck or patio behind the dwelling unit, stored from view when not in use. Any lawn furniture that will remain indefinitely in the front yard must be approved by the Design Review Board. Application for approval must show a picture of the proposed lawn furniture and where it will be placed in the front yard. All seasonal displays must be removed within thirty (30) days after the holiday. Holiday lights may remain in trees and on the house until April 1st, provided that they are not in operation. The Design Review Board encourages removal of holiday lights as soon as possible; weather permitting, after a holiday. All exterior decorative objects must be maintained in an aesthetic appearance.

APPLICATION FOR ALTERATION/MODIFICATION

Your Alteration/Modification application must be submitted and **APPROVED** before you begin your project

No application will be approved without adequate information.

Please email, mail or deliver the following information **with plans, drawings, and/or literature** to:

Rolling Meadows Owners Association
C/O Virginia Homes
10104 Brewster Lane, Suite 100
Powell, Ohio 43065

NAME _____ PHONE _____

ADDRESS _____ LOT # _____

TYPE OF ALTERATION/MODIFICATION (S) REQUESTED (Circle Below):

Fence

Play Set/Trampoline

Basketball Hoop

Landscaping

Deck/Remodel

Pool

Other Specifications: _____

Estimated completion date for project(s): _____

Please check your Declaration of Covenants, Easements, Conditions and Restrictions for specifics pertaining to your community and note that all alterations/modification must be approved.

Your application for Alteration/Modification [has] [has not] been approved.

Signature of Association, Agent, or DRB Officer

Date: _____

Note: _____

Applications that deviate from pre-approved policy will have to be inspected by the agent for the Association, which could take up to 30 days to complete the application review. Please include a \$15.00 review fee with your application made payable to The Rolling Meadows Owners Association. After you have received approval from the Association, contact Jerome Township to receive your permit (if necessary). **Also, be sure to read your Declaration of Covenants, Easements, Conditions and Restrictions before you proceed.** Liberty Township may require an approval letter from the Association and a site plan depicting your lot/home.

Architectural Review Fee of \$15.00 Received _____

Rolling Meadows Owners Association

The Architectural Design Review Board (DRB) reviews site plans, architecture, landscape architecture and site engineering and approvals for all new structures and/or modifications of existing structures. No construction of installation shall commence without prior written approval of the DRB and all required government approval. This includes and is not limited to new construction, additions, alterations, decks, patios, terraces, and landscaping.

The following is a schedule of information required at each review. Only complete submittals will be considered.

- Complete copy of the Alteration/Modification Application.
- One (1) set of complete **building drawings and site plan** with specifications for the building and other permitted structures.

Site Plans - Accompanying the application form; you will need a copy of your property's site plan (survey map). If your project includes an addition or modification to your existing home (i.e. deck, fence, additional room, etc.), the dimensions should be indicated to scale on the survey map. This will assist the DRB in comparing the project to your lot, property boundaries, setback restrictions, and any adjacent Association Common Property. Site plans are not required for applications for a change of exterior color, roofing, doors and windows.

Drawings - All the work to be performed because of this application shall be drawn to a scale of 1/4" = 1' and this scale must be noted on the drawings. Drawings are to be of professional quality, equal to or better than the drawings shown in the appendices. Drawings must be neat, showing at least 2 views or elevations, (front view, and top view (plan view)). An additional elevation may be required to show all important features.

Submitted elevations must be drawn on the appropriate and related elevation of the existing house or building in the background or at the side. This is to indicate how the new work will fit with the existing. Rooflines of all new work must show all existing rooflines and be drawn to the same scale.

Examples of work that require drawings include, but are not limited to, decks, building additions, in-ground pools, roof line changes, fencing, spas, play equipment, and physical landscaping changes. Examples of work not requiring drawings are color changes, modifications to roofing shingles, door and window replacement, and driveway repairs unless the dimensions or locations are altered. For these types of work, photographs must be included in an application.

In Addition, the Architectural Plans shall include:

- Floor plans for all floors.
- All exterior elevations at minimum showing height dimensions, roof pitches, materials and colors to be used.
- Selection of all exterior materials and finishes.

All Landscape Plans shall include:

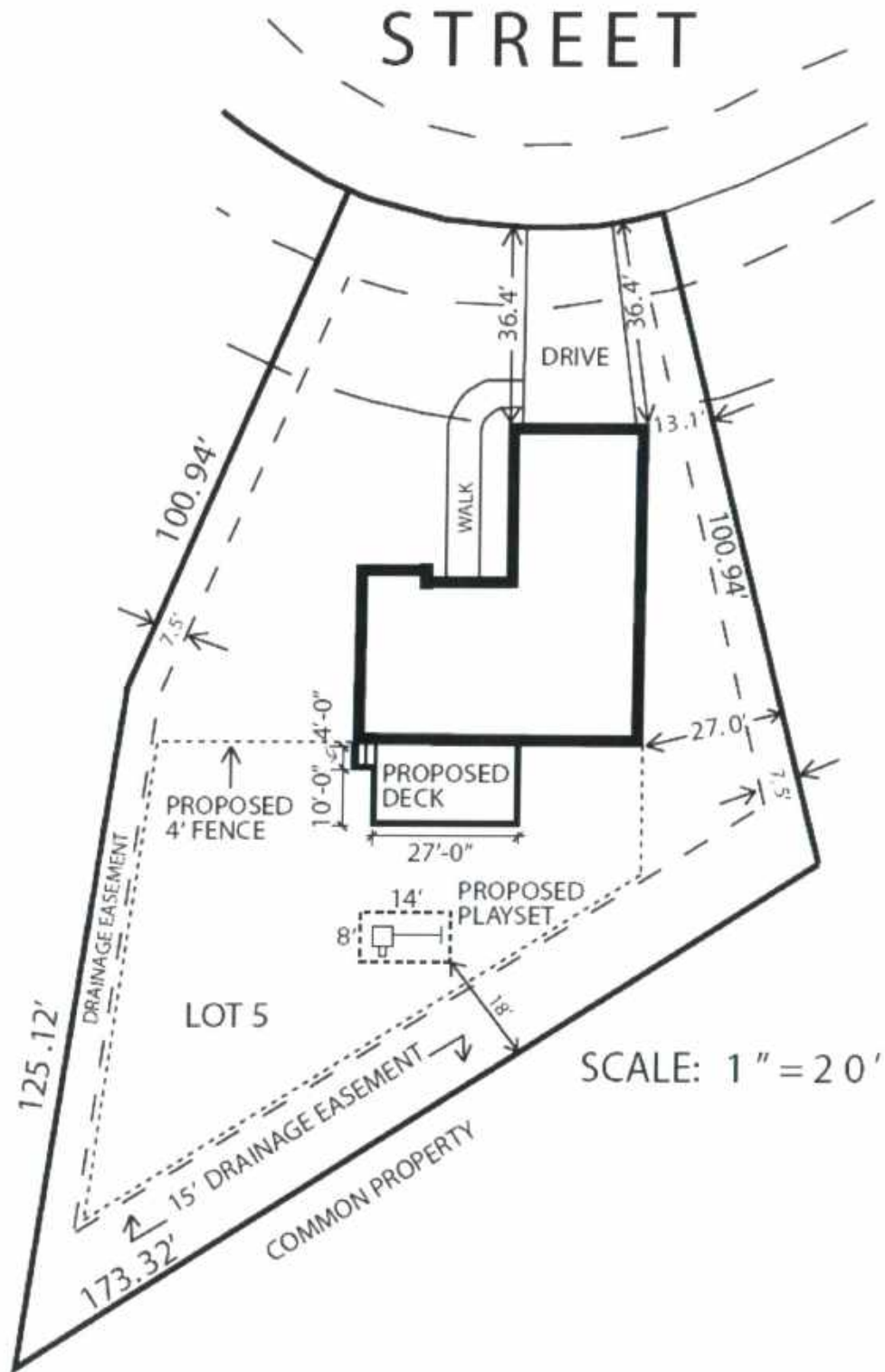
- One (1) complete set of Landscape drawings and specifications.

Landscape Plan should show:

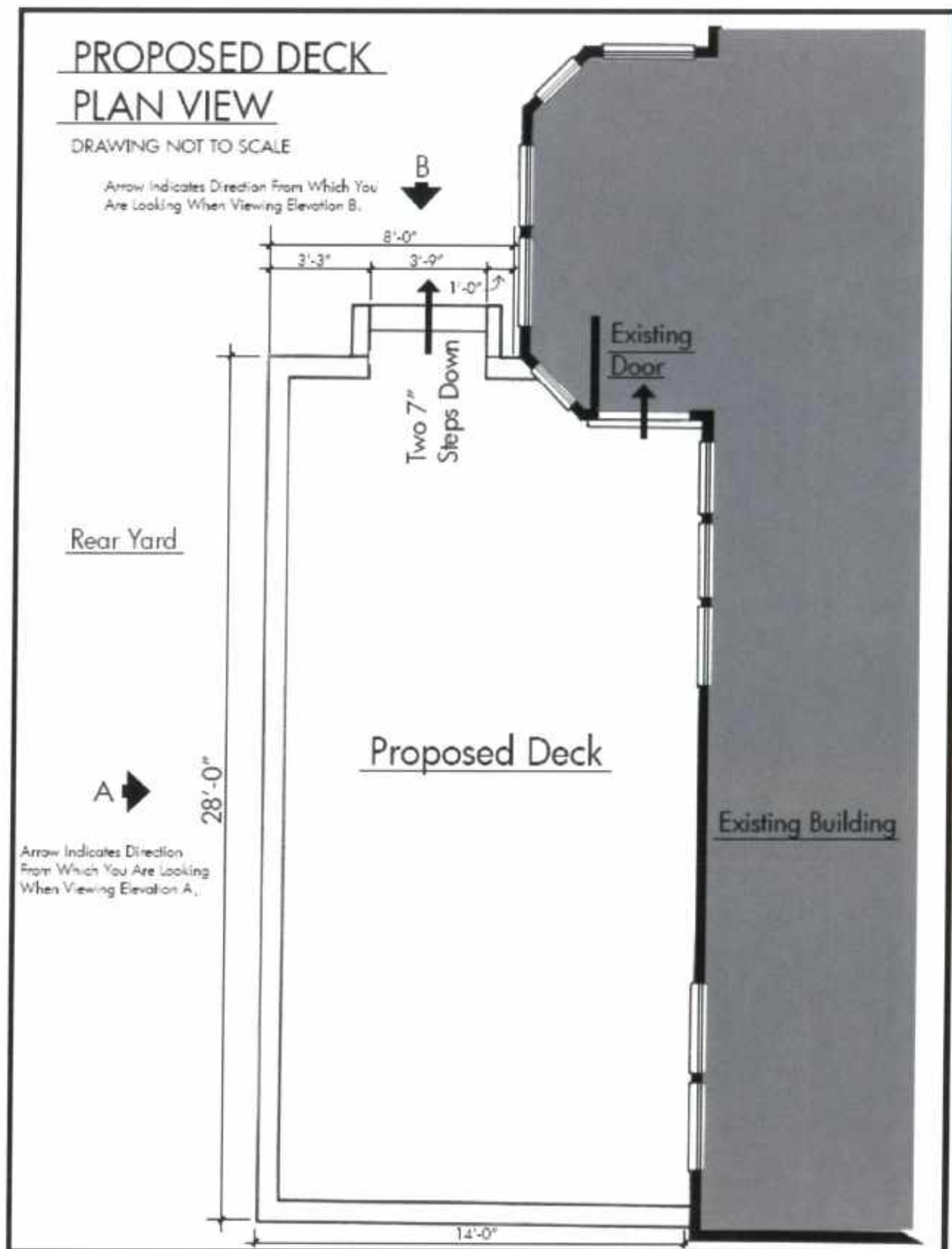
1. Existing and proposed trees.
2. Proposed tree/vegetation removal.
3. Patios, terraces, retaining walls and screen walls with dimensions and height where appropriate.
4. Pool/screen enclosures.
5. Pool, air conditioning, and irrigations equipment and method of screening.
6. Basketball pole location.
7. Utility meters, air conditioning condensers and method of screening.
8. Low voltage landscape lighting with fixtures and transformer types and locations.
9. Location and construction methods, materials, and colors for all paved areas and decks that are not indicated on Site Plan.
10. Playground equipment.
11. Plant materials list

Site Plan Example

5.

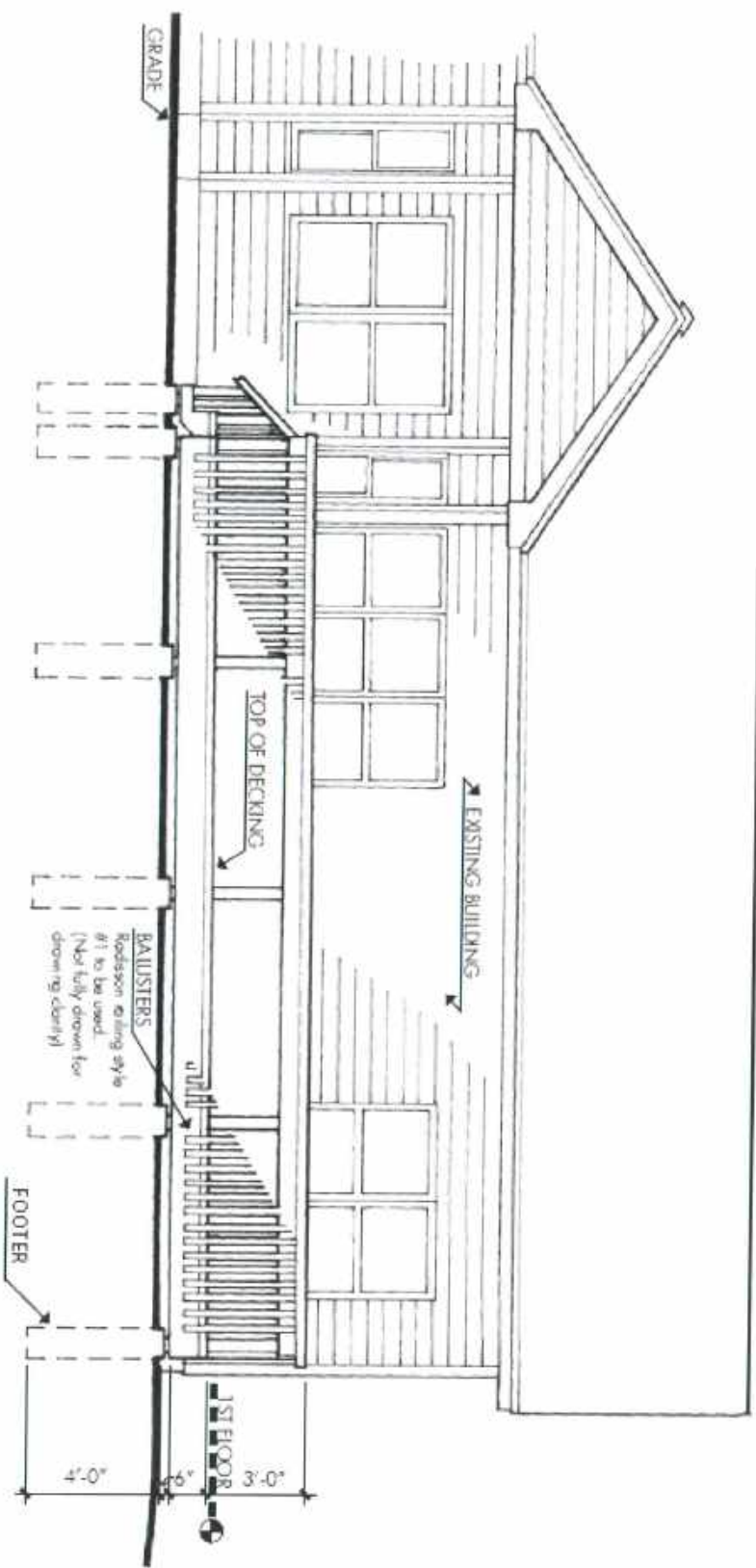


Plan Drawing of Deck Example



Rear Elevation Drawing of Deck Example

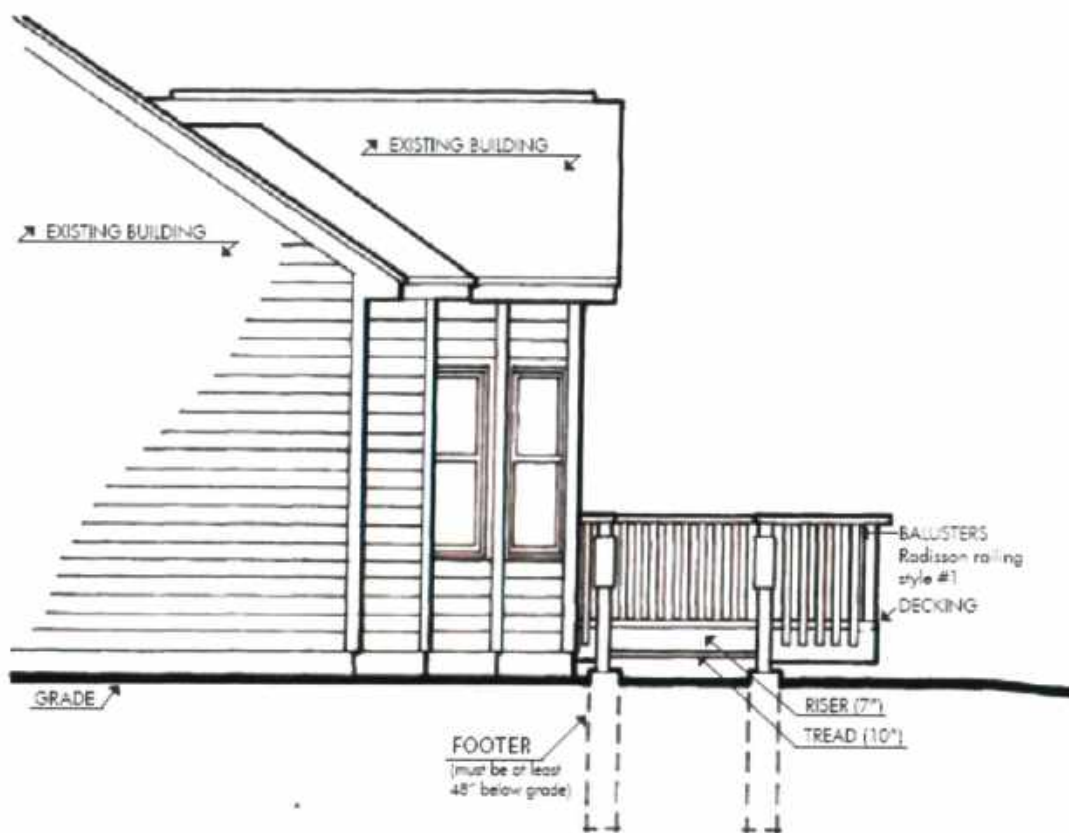
PROPOSED DECK
ELEVATION VIEW



ELEVATION A
DRAWING NOT TO SCALE

Side Elevation of Deck Example

PROPOSED DECK SIDE ELEVATION



ELEVATION B
DRAWING NOT TO SCALE

Addendum B

Basketball Hoops

Rolling Meadows Owners Association

The Rolling Meadows Owners Association will allow permanent basketball hoops on all lots located within the development if they meet the requirements that have been established herein:

- 1) Must be an approved basketball hoop as determined by the Rolling Meadows Owners Association and should look similar to the pictures on the below listed websites:
 - a) Recreations Outlet (614) 792-3700 or www.recreationsoutlet.com
 - b) Buckeye Backyards (614) 205-0033 or www.buckeyebackyards.com
 - c) Goalsetter Systems 800-362-GOAL or www.goalsettersystems.com
- 2) All basketball hoops are to be pole mounted
- 3) All hoop locations are to be approved by the Design Review Board.
- 4) **Portable** basketball hoops are not permitted.

Addendum C

Play Structures

Rolling Meadows Owners Association

The Rolling Meadows Owners Association will allow play sets to be installed on single-family lots if they meet the requirements that have been established herein:

- 1) Must be an approved play set as determined by the Rolling Meadows Owners' Association.
- 2) Play sets are to be models from **Rainbow Play Systems, Inc. or Backyard Backyards.**
- 3) All canopies for all lots are to be dark green or wood and replaced as necessary due to weathering.

The nearest dealer of Rainbow Play Systems, Inc. is located at Recreation Outlet, 484 W. Olentangy Street (Powell Rd.), Powell, OH 43065 and may be reached at (614) 792-3700.

Backyard Backyards is located at 10134 Sawmill Road, Powell, OH 43065 and may be reached at (614)205-0033.

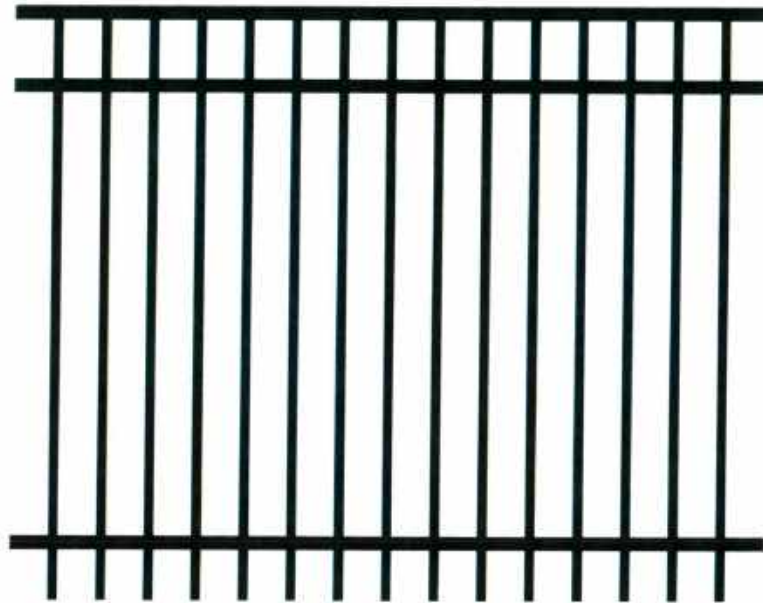
Addendum D

Fence Specifications

Rolling Meadows Owners Association

The Rolling Meadows Owners Association will allow fencing to be installed on single-family lots if they meet the requirements that have been established herein:

- 1) The following 48" (height) black aluminum fence design is an approved style;



- 2) The final selection and location must be approved by the Rolling Meadows Owners Association DRB, as styles may vary from vendor to vendor.
- 3) The approved fencing also applies to any required pool fencing. The height of pool fencing must meet local code requirements.

Addendum E

Trampolines

Rolling Meadows Owners Association

- Must be the Springfree or similar model
- Trampoline must be set back at a minimum of 20' from rear lot line
- Trampolines will only be approved for lots with level back yards. At no time will an owner be allowed to prop up trampoline supports with wood, bricks, or other materials.

Springfree Example



MEMO

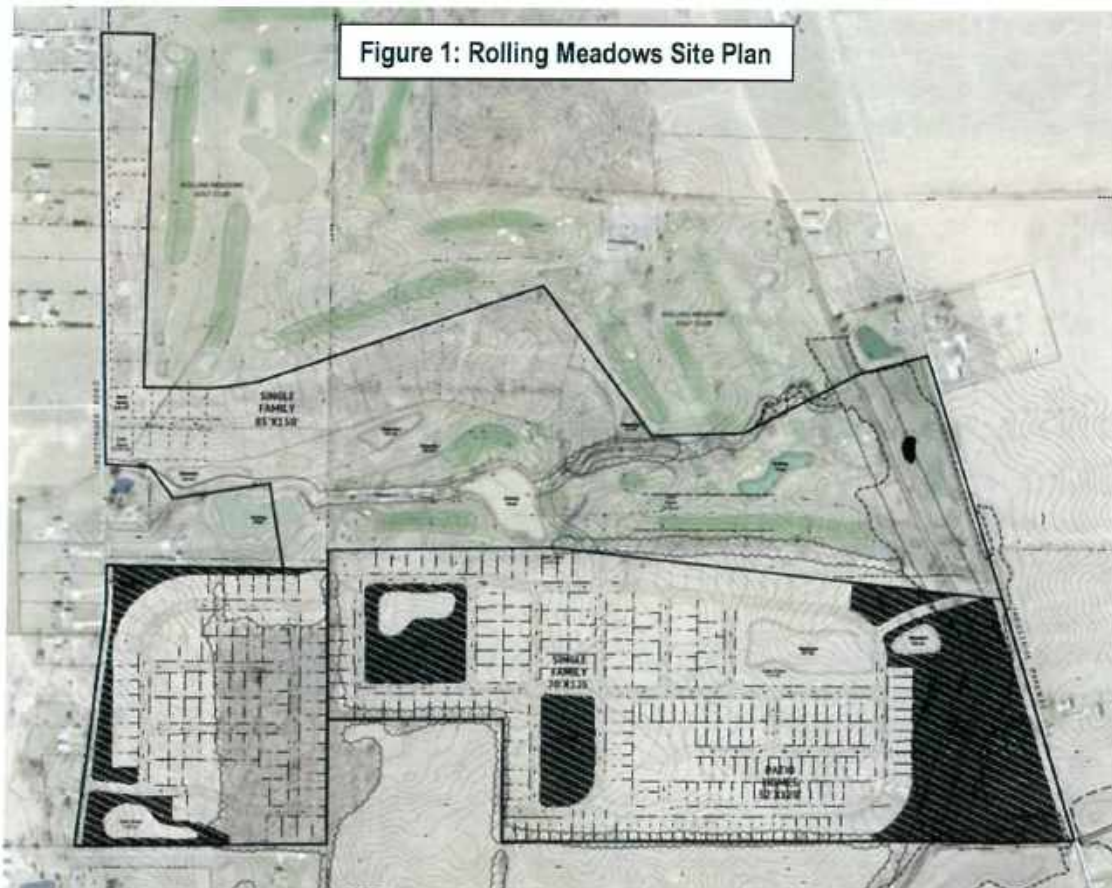
To: Bill Narducci, Union County Engineers Office
From: Douglas Bender, P.E., PTOE
CC: Drew Hurst, ODOT District Six
Charles Ruma (Virginia Homes)
Date: January 28, 2019

Project #: V1790001

Re: **Traffic Impact Study for Rolling Meadows Site in Union County, Ohio**

Introduction

This traffic impact study (TIS) has been prepared to evaluate expected trip generation and future operations for Rolling Meadows development. The site is a planned residential development between Industrial Parkway and Crottinger Road north of US 42 in Union County, Ohio. The planned site will include a full movement driveway on Industrial Parkway and two full drives on Crottinger Road to provide access to serve the planned site. The site includes 393 single-family homes on approximately 211 acres adjacent to and within the existing Rolling Meadows golf course. The proposed site plan is shown in Figure 1 below.



Study Area

The study area includes four intersections located in Union County, Ohio north of US 42. Detailed information regarding each of the study area intersections is provided below.

- **Industrial Parkway & Crottinger Road** – A 3 leg, unsignalized intersection with a stop-controlled eastbound (Crottinger Road) approach and free-flow on Industrial Parkway. Each of the three legs are two lane, two way roadways.
- **Crottinger Road & Taylor Road** – This intersection is a four leg, unsignalized intersection with two way stop control for the northbound and southbound (Crottinger Road) approaches. The four legs are two lane, two way roadways.
- **Industrial Parkway & Taylor Road** – A three leg, unsignalized intersection with stop control for the eastbound (Taylor Road) approach. Each of the three legs are two lane, two way roadways.
- **US 42 & Industrial Parkway** – This 4 leg, signalized intersection includes approaches that are two lane, two-way roadways under the existing conditions. Horizon Year analyses at this intersection include planned improvements by ODOT that should be in place in the next few years, before the 2029 Horizon Year. The future ODOT-planned improvements include widening the eastbound and westbound (US 42) approaches to provide a left turn lane, a through-only lane and a shared through/right lane. The improvements will also include modifying the northbound approach to have designated left, through and right turn only lanes, and the southbound approach to have an added left turn only lane as well as the existing shared through/right lane. These ODOT improvements were not included in the Opening Year analysis but are already needed due to current and near term expected conditions

Traffic Counts

Peak hour turning movement traffic counts (TMCs) were performed at the following intersections:

- Industrial Parkway & Taylor Road
- Industrial Parkway & Crottinger Road
- Taylor Road & Crottinger Road

A previous traffic count at the Industrial Parkway & US 42 intersection completed in the fall of 2016 was utilized for the background traffic at that intersection. During our field review, it appeared there have not been many new homes added north of US 42 but a few added south of US 42 in proximity to that traffic count. All counts were performed during average weekday peak hours in the AM (7-9 am) and PM peaks (4-6 pm). Traffic count data at these three intersections, as well as the previous TMC at the Industrial Parkway & US 42 intersection are attached for reference.

Background Traffic Conditions

To project traffic volumes for analysis of future conditions on roadways near the project site, it was necessary to develop a growth rate for background traffic within the study area. The background traffic growth rate was obtained from the data previously supplied by MORPC for the trucking site south of US 42 on Industrial Parkway. A growth rate of 1% per year was applied to Taylor Road and Crottinger Road while a growth rate of 6.3% per year was applied to Industrial Parkway. Traffic volumes at the intersection of US 42 & Industrial Parkway were taken from the previous truck site study and used for the No Build condition of this project. In the 2029 No Build condition, site traffic from the previous truck distribution facility was combined with projected future growth, so no additional volumes were included beyond that at the US 42 & Industrial Parkway intersection.

Proposed Site

The Rolling Meadows site is a 211-acre planned residential development with 393 single-family homes. Three access points are planned that include a full movement driveway on Industrial Parkway and two full movement driveways on Crottinger Road.

Trip Generation Estimates

To establish site generated traffic volumes, the ITE Trip Generation Manual, 10th Edition was used for this site. Up to a total of 393 single-family homes are anticipated and the trip generation was calculated using data from Land Use Code #210 (Single Family Home). For the proposed Rolling Meadows development, the site traffic is estimated to be approximately 291 AM trip ends in the AM Peak and 389 trip ends in the PM Peak. A summary of expected trip generation is included in Table 1 below.

Table 1: Expected Trip Generation						
Land Use ITE Code / Size	AM Peak Hour			PM Peak Hour		
	Inbound	Outbound	Total	Inbound	Outbound	Total
Single Family Housing 210 / 393 Homes	73	218	291	245	144	389

The site's expected trip distribution was estimated based on existing traffic patterns observed in the study area as well as engineering judgment based on planned site access combined with the available arterial network, nearby freeway interchange access and local school and community locations. Table 2 below illustrates the overall trip distribution percentages by direction for the Rolling Meadows development. Site traffic was combined with 2019 and 2029 No Build traffic at each intersection to develop peak hour Build volumes. The following intersections were evaluated for potential No Build and Build conditions to identify any background improvements needed, as well as potential site traffic impacts.

Table 2: Trip Distribution						
Location	Direction	Distribution %	Vehicle Distribution			
			AM Peak Hour		PM Peak Hour	
			Entering From	Exiting To	Entering From	Exiting To
US 42	East	38%	28	84	93	56
	West	8%	6	15	20	10
Industrial Pkwy	North	26%	19	56	63	37
	South	20%	14	45	49	29
Taylor Rd	West	4%	3	9	10	6
Adams Rd	West	4%	3	9	10	6
Total		100%	73	218	245	144

No Build scenarios for projected 2029 conditions included anticipated traffic volumes from the proposed trucking site on Industrial Parkway south of US 42. At the Industrial Pkwy/US 42 intersection, ODOT developed geometric improvements that are assumed to be in place by the 2029 Horizon Year. Per the County's Level of Service (LOS) requirements, impacts from the proposed development on adjacent arterial or collector streets should be mitigated to LOS C as necessary. Mitigation has been recommended for any movements experiencing unacceptable LOS (D or worse) whether they are attributable to the proposed development (Build) or are expected in background conditions without the project (No Build).

Turn Lane Warrant Analyses

Turn lane warrant evaluation follows procedures outlined in the ODOT Location & Design Manual and were performed at the three planned site driveway intersections for 2029 Build conditions only. Based on the results of the analysis, the intersection of Industrial Parkway & Driveway C meets the warrant criteria for the installation of a northbound left turn lane to accommodate the added site traffic. Turn lane warrant graphs for each of the site driveway intersections is attached for reference.

Site Traffic Contribution

At US 42 & Industrial Parkway, the percent of site traffic in the intersection was calculated for the 2029 Build condition used in this study. Other adjacent developments, including Glacier Pointe and the mixed-use plan at the interchange will like add much more background traffic not currently included in these calculations. Based on combined AM and PM Peak 2029 Build volumes for all entering traffic, Rolling Meadows site traffic is expected to comprise 6.78% of the 2029 total traffic entering the intersection. This amounts to 449 vehicles out of the total 6,537 vehicles. Site traffic comprises 46.2% of the southbound left turn movement in 2029. Calculations for site traffic contribution are attached for reference.

Capacity Analysis

For this traffic study, peak hour traffic operations were evaluated at the following intersections:

1. Industrial Parkway & Crottinger Road
2. Crottinger Road & Taylor Road
3. Industrial Parkway & Taylor Road
4. US 42 & Industrial Parkway
5. Crottinger Road & Site Driveway A
6. Crottinger Road & Site Driveway B
7. Industrial Parkway & Site Driveway C

Analysis included an evaluation of 2019 and 2090 No Build conditions as well as projected 2019 and 2029 Build conditions. The No build conditions included the anticipated growth in traffic along with traffic generated by the nearby trucking site. The Build conditions included the No Build traffic with added site traffic. ODOT planned improvements were included in 2029 analyses.

Existing signal phasing operations were observed at the US 42 & Industrial Parkway intersection, which included a simple four-phase operation due to the current intersection pavement markings that include a single shared left/thru/right turn lane. Although lane modifications are expected for all four approaches at the intersection under future conditions, the signal phasing is expected to remain the same. Results of the capacity analyses are summarized in Table 3 below

Table 3: Intersection Capacity Analyses									
Approach	Lane Group/Movement	Opening Year (2019) No Build Conditions		Design Year (2029) No Build Conditions		Opening Year (2019) Build Conditions		Design Year (2029) Build Conditions	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Industrial Pkwy & Crottinger Rd (Unsignalized)									
Eastbound	Approach	B (10.6)	B (11.4)	B (12.6)	B (14.4)	B (11.6)	B (12.8)	B (14.1)	C (17.0)
Northbound	Approach	A (7.7)	A (7.8)	A (8.0)	A (8.1)	A (7.8)	A (8.0)	A (8.1)	A (8.3)
Southbound	Approach	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
Intersection Overall		A (1.0)	A (0.7)	A (1.1)	A (0.8)	A (1.4)	A (1.1)	A (1.5)	A (1.2)
Crottinger Rd & Taylor Rd (Unsignalized)									
Eastbound	Approach	A (0.0)	A (7.4)	A (0.0)	A (7.4)	A (7.3)	A (7.5)	A (7.3)	A (7.5)
Westbound	Approach	A (7.4)	A (7.3)	A (7.4)	A (7.3)	A (7.4)	A (7.3)	A (7.4)	A (7.3)
Northbound	Approach	A (9.3)	A (9.7)	A (9.4)	A (9.7)	A (9.5)	B (10.2)	A (9.5)	B (10.3)
Southbound	Approach	A (9.6)	A (9.8)	A (9.6)	A (9.9)	A (9.7)	B (10.8)	A (9.8)	B (10.9)
Intersection Overall		A (4.1)	A (3.9)	A (4.0)	A (3.8)	A (5.7)	A (4.8)	A (5.7)	A (4.8)
Industrial Pkwy & Taylor Rd (Unsignalized)									
Eastbound	Approach	A (9.9)	B (10.6)	B (11.3)	B (12.0)	B (11.3)	B (12.0)	B (13.4)	B (14.0)
Northbound	Approach	A (7.6)	A (7.9)	A (7.9)	A (8.3)	A (8.0)	A (8.3)	A (8.3)	A (8.8)
Southbound	Approach	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
Intersection Overall		A (1.9)	A (2.1)	A (2.0)	A (1.9)	A (2.0)	A (2.1)	A (2.3)	A (2.1)
US 42 & Industrial Pkwy (Signalized)									
Eastbound	Left	-	-	A (9.9)	C (22.9)	-	-	B (10.3)	C (27.7)
	Thru	-	-	A (10.0)	B (15.5)	-	-	A (10.0)	B (15.5)
	Thru/Right	-	-	B (10.0)	B (15.5)	-	-	B (10.0)	B (15.5)
	Approach	B (10.9)	B (17.2)	A (10.0)	B (16.0)	B (11.0)	B (18.7)	A (10.0)	B (16.7)
Westbound	Left	-	-	F (131.7)	F (119.2)	-	-	F (131.7)	F (119.2)
	Thru	-	-	A (8.5)	B (16.8)	-	-	A (8.6)	B (18.1)
	Thru/Right	-	-	A (8.5)	B (16.8)	-	-	A (8.6)	B (18.1)
	Approach	B (15.7)	C (34.4)	E (67.8)	D (48.6)	B (16.6)	E (59.4)	E (66.0)	D (47.2)
Northbound	Left	-	-	D (45.9)	E (56.6)	-	-	E (59.0)	E (73.7)
	Thru	-	-	C (28.5)	C (23.3)	-	-	C (29.0)	C (24.9)
	Right	-	-	D (53.4)	D (42.2)	-	-	D (53.4)	D (42.2)
	Approach	D (36.4)	D (51.5)	D (45.1)	D (39.5)	D (39.5)	F (113.4)	D (47.0)	D (43.0)
Southbound	Left	-	-	D (35.1)	C (29.7)	-	-	D (46.8)	D (38.1)
	Thru/Right	-	-	C (33.4)	C (23.9)	-	-	D (38.7)	C (25.4)
	Approach	C (31.5)	C (22.3)	C (33.8)	C (24.9)	F (116.0)	D (35.3)	D (41.4)	C (28.6)
	Intersection Overall	C (20.9)	C (34.1)	D (41.0)	D (36.0)	D (41.4)	E (62.7)	D (42.1)	D (37.2)
Crottinger Rd & Driveway A (Unsignalized)									
Westbound	Approach	-	-	-	-	A (8.5)	A (8.5)	A (8.5)	A (8.5)
Northbound	Approach	-	-	-	-	A (0.0)	A (0.0)	A (0.0)	A (0.0)
Southbound	Approach	-	-	-	-	A (7.3)	A (7.3)	A (7.3)	A (7.3)
Intersection Overall		-	-	-	-	A (2.1)	A (2.0)	A (2.0)	A (1.9)
Crottinger Rd & Driveway B (Unsignalized)									
Westbound	Approach	-	-	-	-	A (8.9)	A (9.1)	A (8.9)	A (9.1)
Northbound	Approach	-	-	-	-	A (0.0)	A (0.0)	A (0.0)	A (0.0)
Southbound	Approach	-	-	-	-	A (7.3)	A (7.4)	A (7.3)	A (7.4)
Intersection Overall		-	-	-	-	A (4.4)	A (3.0)	A (4.4)	A (2.9)
Industrial Pkwy & Driveway C (Unsignalized)									
Eastbound	Approach	-	-	-	-	B (11.0)	B (12.3)	B (12.6)	C (15.0)
Northbound	Approach	-	-	-	-	A (7.7)	A (8.2)	A (7.9)	A (8.6)
Southbound	Approach	-	-	-	-	A (0.0)	A (0.0)	A (0.0)	A (0.0)
Intersection Overall		-	-	-	-	A (3.9)	A (3.6)	A (3.3)	A (3.1)

*At unsignalized intersections, delay and Level of Service illustrated is for worst movement on approach; two-way stop analyses only provide delay for the stop approach(es).

Results indicate that all but one of the intersections in the study area is expected to operate at acceptable levels under the No Build and Build conditions through the 2029 Horizon Year. The unsignalized intersections, including planned site driveways, are predicted to operate at LOS C or better under Build conditions. In 2019, the signalized US 42 & Industrial Parkway intersection is expected to experience some impacts because of background traffic growth and added site traffic, including the southbound left turn movement. Added site traffic is predicted to increase delay for some movements to either poor or failed level of service in the 2019 conditions due to the lacking capacity that currently exists. In the AM peak the southbound approach is expected to degrade to a failing level of service while in the PM peak, the westbound and northbound approaches are expected to degrade to failing levels of service. It should be noted that ODOT planned improvements at this intersection are currently planned and should be constructed in the next 2-3 years, long before the full buildout of this site could occur. The 2019 Build analysis assumes a full buildout of the site in 2019 that is unrealistic.

The 2029 peak conditions were analyzed with planned ODOT intersection improvements, which indicates added site traffic is expected to have a minimal effect on the intersection with only a minor increase in delay for some movements. Only one movement is expected to degrade to a poor level of service in the 2029 Horizon Year. The southbound thru/right movement is expected to degrade from LOS D in the No build condition to LOS E under Build conditions. However, the overall intersection is predicted to continue operating at an acceptable overall level during peak periods under 2029 Build conditions. These results also indicate that the surrounding unsignalized intersections are predicted to operate in a similar manner with only a minor increase in average delay. Where poor level of service is projected at the intersection of US 42 & Industrial Parkway, Opening Year (2019) mitigations of No Build and Build conditions could be provided to account for existing and projected build conditions at this intersection. However, 2019 mitigation seems unnecessary given the near term planned ODOT improvements to address existing deficiencies as well as the long buildout expected for this site.

Mitigations

To mitigate impacts at the US 42 & Industrial Parkway intersection resulting from projected traffic growth and the addition of site traffic, improvements were included for the Opening Year No Build and Build analyses. The provision of a northbound right turn lane to address LOS D conditions in the No Build, as well as north- and southbound left turn lanes are expected to restore 2019 Build conditions to similar and/or acceptable levels. Combined with a lead westbound left turn phase (protected-permissive) that would require a five-section signal head, added improvements at US 42 & Industrial Parkway are predicted to result in acceptable LOS until future ODOT improvements are able to be provided for the 2029 condition. These results are shown in **Table 4** below.

Table 4: Intersection Capacity Analyses with Mitigation									
Approach	Lane Group/Movement	Opening Year (2019) No Build Conditions with Mitigation		Design Year (2029) No Build Conditions with Mitigation		Opening Year (2019) Build Conditions with Mitigation		Design Year (2029) Build Conditions with Mitigation	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
US 42 & Industrial Pkwy (Signalized)									
Eastbound	Left	-	-	B (17.4)	C (21.2)	-	-	C (23.8)	C (31.2)
	Thru	-	-	D (47.4)	D (49.2)	-	-	D (49.7)	D (54.3)
	Thru/Right	-	-	D (48.1)	D (49.6)	-	-	D (50.2)	D (54.6)
	Approach	B (10.9)	B (17.2)	D (46.5)	D (47.4)	C (29.8)	C (28.9)	D (48.7)	D (52.3)
Westbound	Left	-	-	D (48.8)	D (40.8)	-	-	D (54.5)	D (52.4)
	Thru	-	-	C (21.2)	D (36.6)	-	-	C (23.3)	D (43.2)
	Thru/Right	-	-	C (21.2)	D (36.4)	-	-	C (23.4)	D (43.3)
	Approach	B (15.7)	C (34.4)	C (34.4)	D (37.8)	D (35.3)	D (49.6)	D (37.9)	D (45.9)
Northbound	Left	-	-	C (31.5)	D (46.5)	C (24.6)	D (40.5)	D (41.2)	D (49.6)
	Thru	C (27.9)	C (26.3)	D (37.7)	D (39.2)	D (37.3)	D (51.6)	D (41.4)	D (40.0)
	Right	C (28.6)	C (22.0)	C (23.6)	C (27.4)	A (4.4)	A (4.7)	C (24.5)	C (25.6)
	Approach	C (28.3)	C (24.5)	C (28.9)	D (35.3)	C (20.3)	C (31.7)	C (32.2)	D (35.6)
Southbound	Left	-	-	C (27.6)	C (25.2)	C (28.8)	C (34.7)	D (42.7)	C (34.0)
	Thru/Right	-	-	D (54.4)	D (55.0)	D (51.8)	D (48.2)	E (57.4)	D (50.2)
	Approach	C (30.3)	C (25.8)	D (47.8)	D (49.8)	D (43.2)	D (44.3)	D (52.4)	D (46.1)
Intersection Overall		B (19.1)	C (25.8)	D (38.5)	D (40.5)	C (32.6)	D (39.3)	D (42.1)	D (44.0)

With potential opening day No Build and Build mitigation, background and site traffic impacts are expected to be mitigated. In 2029 with planned ODOT improvements in place, one movement is still shown as just into LOS E in the Build condition. However, the threshold for LOS E begins at 55.1 seconds and the Build result pushes the southbound thru/right movement from 54.4 seconds to 57.4 seconds, just across the threshold. The predicted results for the 2029 Build condition should be acceptable for planning purposes in identifying long-term capacity needs. With planned ODOT mitigation at the intersection, the overall intersection LOS is expected to improve to LOS D or better for both the No Build and Build scenarios.

Recommendations

No Build improvements identified in this study should be provided via ODOT, Union County and/or other available funding sources and include the following:

1. At Industrial Parkway & US 42, install a 338-foot northbound right turn only lane and a 275-foot northbound left turn lane. The dedicated northbound approach turn lanes on Industrial Parkway address lacking capacity for projected background traffic growth in movements not increased by site traffic
2. Modify and optimize the signal operation at Industrial Parkway & US 42 to provide a lead, westbound left turn/through phase to best serve traffic demand in the afternoon peak hour.
3. As planned, near term ODOT improvements at this intersection should be provided to address existing deficiencies and expected longer term impacts by surrounding developments at US 42.

Build (Site-related) improvements were identified for the Opening Year that could be provided to assist in addressing site impacts. However, the larger planned improvements by ODOT seem to negate the need to construct any of these. If provided, any improvements should be viewed in context with the larger planned improvements and could proportionally include developer funding. These improvements include the following:

1. At Industrial Parkway & Driveway C, install a 285-foot northbound left turn lane on Industrial Parkway to accommodate added site traffic at the main site entrance.
2. At Industrial Parkway & US 42, contribute up to 50% of the cost to install a 358-foot southbound left turn lane as a Build improvement to address added site traffic in this movement. Site traffic comprises 46.2% of this turn movement volume.
3. At Industrial Parkway & US 42, install a five-section signal head to permit the lead westbound left turn head described above in the No Build improvement section.

In lieu of constructing items #2 and 3 of the Build identified improvements, the County and ODOT may prefer a developer contribution towards the construction cost. This could go towards the ODOT planned project to help address the larger improvements at this intersection. An illustration of concept improvements at US 42 & Industrial Parkway are attached for reference. Note that all turn lane lengths described above include the 50-foot drop taper in the length.

No other off-site improvements are warranted or recommended because of added site traffic. If you have questions or comments during your review of this traffic study, please contact me directly at 614 441-4222 (Ext. 1230) at your convenience.

Sincerely,



Douglas A. Bender, PE, PTOE



EDGE FLUORIDE
CLAY/BLACK PIGMENT
ANTISTATIC



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Environmental Engineer
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Richwood Outpost
190 Beatty Avenue
Richwood, Ohio 43344

January 16, 2019

Public Service with integrity

Douglas Bender, PE, PTOE
The Mannik & Smith Group, Inc.
1160 Dublin Road, Suite 100
Columbus, Ohio 43215

Re: Memorandum of Understanding (MOU) for Rolling Meadows TIS
Review Comments

Doug,

Thank you for submitting the above referenced MOU for our review. We have had the opportunity to review the above, and have the following comments:

1. Please provide confirmation of ODOT's participation in the review of this TIS, as the US 42/Industrial Parkway Intersection and US 33/US 42 Interchange is in close proximity to this project, and the US 42/Industrial Parkway intersection will be analyzed as part of this TIS.
2. Clarify the MOU to illustrate that the TIS will provide a scaled concept sketch indicating the improvements/modifications that properly mitigate the traffic impacts of the proposed development, and which improvements are triggered by the development traffic versus the background traffic (Build vs. No Build).
3. Clarify in the third bullet point that intersection capacity will be performed at the following intersections:
 - a. Industrial Parkway site access
 - b. Both Crottinger Road site access points
 - c. US 42 and Industrial Parkway intersection
 - d. Taylor Road and Industrial Parkway intersection
 - e. Crottinger Road and Industrial Parkway intersection
 - f. Taylor Road and Crottinger Road
4. Add clarification within the MOU to illustrate that the developer will be responsible for any roadway network mitigation triggered by the development. The construction timing and contribution level of these improvements will be outlined in an Infrastructure Agreement between the developer and Union County. In certain circumstances, a developer contribution may be required for off-site intersection improvements based upon the percentage of site traffic using said off-site intersection in the horizon year of the study. As such, the percentage of site traffic versus total horizon year traffic should be calculated at each study intersection.

To complete the traffic impact study, we will perform the following tasks:

- Site traffic will be assigned to the adjacent street network using engineering judgment based on existing traffic patterns and available arterial and freeway interchange access. It is expected that a majority of site traffic (approximately 75%) will head south via US 33 or Industrial Parkway.
- The background traffic growth rate will be obtained from MORPC and is mostly provided from the data supplied by them for the trucking site south of US 42 on Industrial Parkway
- The TIS will evaluate intersection capacity using Synchro for the Opening Day (2019) Build and No Build, and Design Year (2029) Build and No Build scenarios at the following intersections:
 1. Industrial Parkway site access
 2. Crottinger Road at both site access points
 3. US 42 & Industrial Parkway
 4. Taylor Road & Industrial Parkway
 5. Crottinger Road & Industrial Parkway
 6. Taylor Road & Crottinger Road
- No Build scenarios for projected 2029 conditions will include the anticipated volumes from the proposed trucking site on Industrial Parkway south of US 42. At the Industrial Pkwy/US 42 intersection, ODOT developed geometric improvements are assumed to be in place for No Build conditions.
- Per the County's Level of Service (LOS) requirements, impacts from the proposed development on adjacent arterial or collector streets will be mitigated to LOS C as necessary. Mitigation will be recommended for any movements experiencing unacceptable LOS (D or worse) whether they are attributable to the proposed development (Build) or are expected in background conditions without the project (No Build)
- Turn lane warrant analyses will follow procedures outlined in the ODOT Location & Design Manual and will be performed at both planned site driveway intersections for 2029 Build conditions only
- A scaled sketch illustrating anticipated off-site improvements (No Build or site-related) will be provided with the TIS

ODOT Safety Improvement at US42/Industrial Parkway should only be assumed in the 2029 scenario. The Opening Day scenario shall assume existing configuration.

Once analyses of projected 2019 & 2029 No Build and Build conditions and turn lane warrant analyses (2029) are completed, a TIS report will be prepared to summarize data, methodology, conclusions, and recommendations. Off site impacts triggered by the addition of site traffic will be mitigated by developer-funded improvements. The final TIS will be submitted to the Union County Engineers office for review. Concurrent ODOT review is expected and a sign off has been included in this MOU for signature since the study includes the US 42/Industrial Parkway intersection.

If you have questions or comments on this MOU during your review, please contact me directly at 614 441-4222 (Ext. 1230) at your convenience.

Sincerely,



Douglas A. Bender, PE

In certain circumstances, a developer contribution may be required for off-site intersection improvements based upon the percentage of site traffic using said off-site intersection in the horizon year of the study. This will be determined by Union County during review of the final TIS.

Approved w/ noted comments

Bill Narducci, PE

Signed: _____
Union County Engineers Office representative

Signed: _____
ODOT District Six representative

Please revise the MOU per the above for review and approval. Should you have any questions or concerns, feel free to contact me at (937) 645-3165.

Bill Narducci

Bill Narducci, P.E.
Assistant County Engineer
Union County Engineer

Doug Bender

From: Andrew.Hurst@dot.ohio.gov
Sent: Friday, January 25, 2019 3:09 PM
To: bnarducci@co.union.oh.us; Doug Bender
Cc: Charles Ruma; Laura Comek
Subject: RE: Rolling Meadows TIS --- Memo of Understanding

We have no further comments, and approve the MOU.

From: Bill Narducci <bnarducci@co.union.oh.us>
Sent: Tuesday, January 22, 2019 8:31 AM
To: Doug Bender <DBender@manniksmithgroup.com>; Hurst, Andrew <Andrew.Hurst@dot.ohio.gov>
Cc: Charles Ruma <Charles@virginia-homes.com>; Laura Comek <laura@comeklaw.com>
Subject: RE: Rolling Meadows TIS --- Memo of Understanding

Apologies, MOU with comments attached!

Bill Narducci, P.E.
Assistant County Engineer

Union County Engineer
233 West 6th St.
Marysville, Ohio 43040
Direct: 937.645.3165
Office: 937.645.3018
Fax: 937.645.3161
<http://www.co.union.oh.us/engineer>

From: Bill Narducci
Sent: Tuesday, January 22, 2019 8:28 AM
To: 'Doug Bender' <DBender@manniksmithgroup.com>; Andrew.Hurst@dot.ohio.gov
Cc: Charles Ruma <Charles@virginia-homes.com>; Laura Comek <laura@comeklaw.com>
Subject: RE: Rolling Meadows TIS --- Memo of Understanding

Doug,

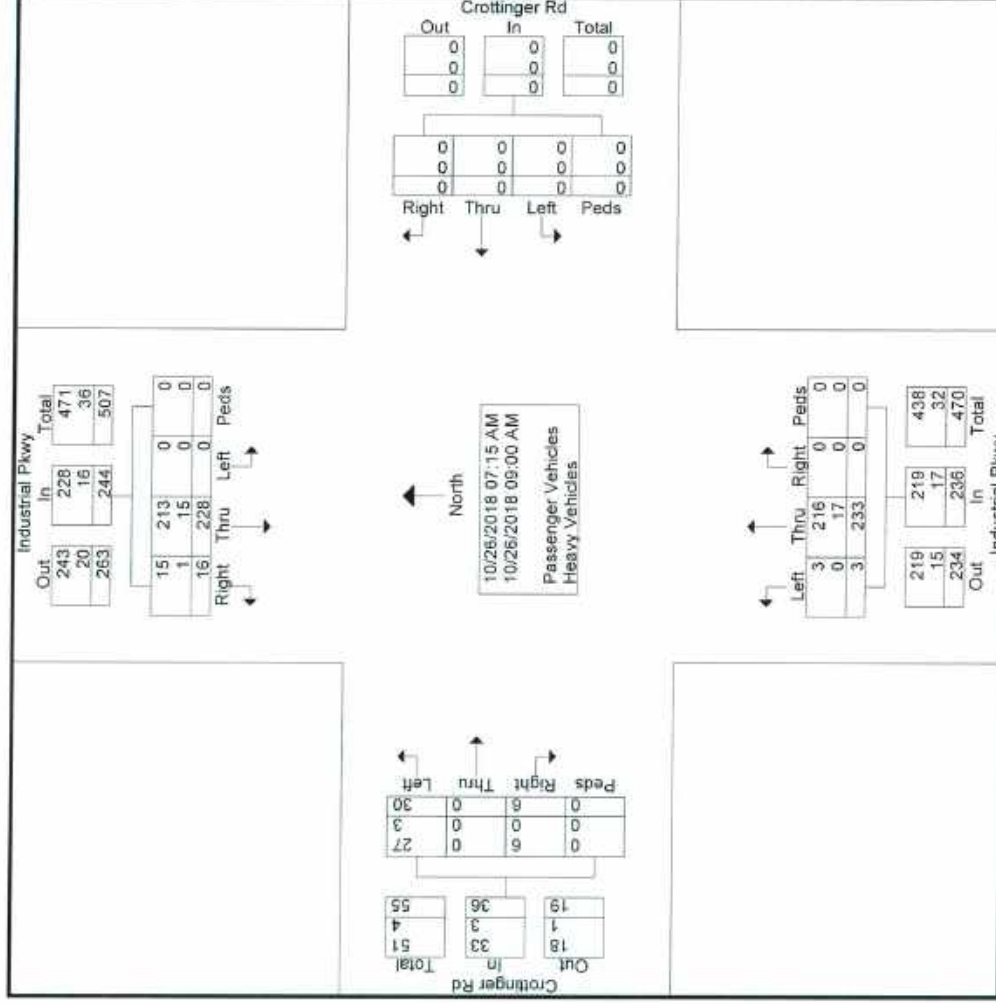
Please see Union County approved MOU with a few notes/clarifications. Drew, please indicate your approval with conditions you wish to add and provide a final copy for record. Thanks

Bill Narducci, P.E.
Assistant County Engineer

Union County Engineer
233 West 6th St.
Marysville, Ohio 43040
Direct: 937.645.3165
Office: 937.645.3018
Fax: 937.645.3161
<http://www.co.union.oh.us/engineer>

File Name : IND PKY_CROT_AM
Site Code : 00000000
Start Date : 10/26/2018
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles																												
Industrial Pkwy From North												Crottinger Rd From East						Industrial Pkwy From South						Crottinger Rd From West				
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total							
07:15 AM	2	33	0	0	35	0	0	0	0	0	0	23	0	0	23	2	0	4	0	6	64							
07:30 AM	1	31	0	0	32	0	0	0	0	0	0	31	1	0	32	1	0	5	0	6	70							
07:45 AM	6	38	0	0	44	0	0	0	0	0	0	35	0	0	35	1	0	4	0	5	84							
Total	9	102	0	0	111	0	0	0	0	0	0	89	1	0	90	4	0	13	0	17	218							
08:00 AM	3	46	0	0	49	0	0	0	0	0	0	32	0	0	32	0	0	4	0	4	85							
08:15 AM	1	23	0	0	24	0	0	0	0	0	0	28	1	0	29	1	0	6	0	7	60							
08:30 AM	0	21	0	0	21	0	0	0	0	0	0	26	0	0	26	1	0	3	0	4	51							
08:45 AM	3	22	0	0	25	0	0	0	0	0	0	25	0	0	25	0	0	1	0	1	51							
Total	7	112	0	0	119	0	0	0	0	0	0	111	1	0	112	2	0	14	0	16	247							
09:00 AM	0	14	0	0	14	0	0	0	0	0	0	33	1	0	34	0	0	3	0	3	51							
Grand Total	16	228	0	0	244	0	0	0	0	0	0	233	3	0	236	6	0	30	0	36	516							
Apprch %	6.6	93.4	0	0		0	0	0	0	0	0	98.7	1.3	0		16.7	0	83.3	0									
Total %	3.1	44.2	0	0	47.3	0	0	0	0	0	0	45.2	0.6	0	45.7	1.2	0	5.8	0	7								
Passenger Vehicles	15	213	0	0	228	0	0	0	0	0	0	216	3	0	219	6	0	27	0	33	480							
% Passenger Vehicles	93.8	93.4	0	0	93.4	0	0	0	0	0	0	92.7	100	0	92.8	100	0	90	0	91.7	93							
Heavy Vehicles	1	15	0	0	16	0	0	0	0	0	0	17	0	0	17	0	0	3	0	3	36							
% Heavy Vehicles	6.2	6.6	0	0	6.6	0	0	0	0	0	0	7.3	0	0	7.2	0	0	10	0	8.3	7							

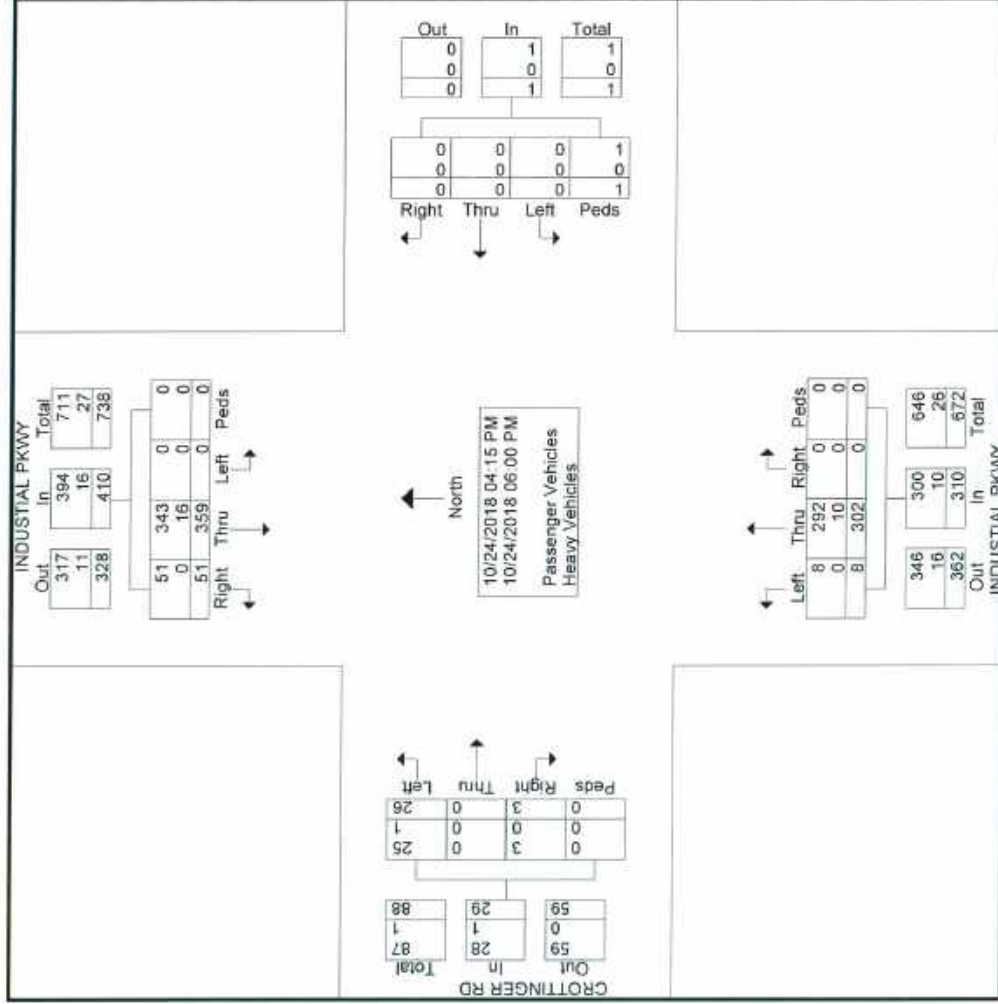


File Name : IND PKY_CROT_AM
Site Code : 00000000
Start Date : 10/26/2018
Page No : 3

Start Time	Industrial Pkwy From North					Crottinger Rd From East					Industrial Pkwy From South					Crottinger Rd From West					
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 09:00 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	2	33	0	0	35	0	0	0	0	0	0	23	0	0	23	2	0	4	0	6	64
07:30 AM	1	31	0	0	32	0	0	0	0	0	0	31	1	0	32	1	0	5	0	6	70
07:45 AM	6	38	0	0	44	0	0	0	0	0	0	35	0	0	35	1	0	4	0	5	84
08:00 AM	3	46	0	0	49	0	0	0	0	0	0	32	0	0	32	0	0	4	0	4	85
Total Volume	12	148	0	0	160	0	0	0	0	0	0	121	1	0	122	4	0	17	0	21	303
% App. Total	7.5	92.5	0	0		0	0	0	0		0	99.2	0.8	0		19	0	81	0		
PHF	.500	.804	.000	.000	.816	.000	.000	.000	.000	.000	.000	.864	.250	.000	.871	.500	.000	.850	.000	.875	.891
Passenger Vehicles	11	139	0	0	150	0	0	0	0	0	0	117	1	0	118	4	0	16	0	20	288
% Passenger Vehicles	91.7	93.9	0	0	93.8	0	0	0	0	0	0	96.7	100	0	96.7	100	0	94.1	0	95.2	95.0
Heavy Vehicles	1	9	0	0	10	0	0	0	0	0	0	4	0	0	4	0	0	1	0	1	15
% Heavy Vehicles	8.3	6.1	0	0	6.3	0	0	0	0	0	0	3.3	0	0	3.3	0	0	5.9	0	4.8	5.0

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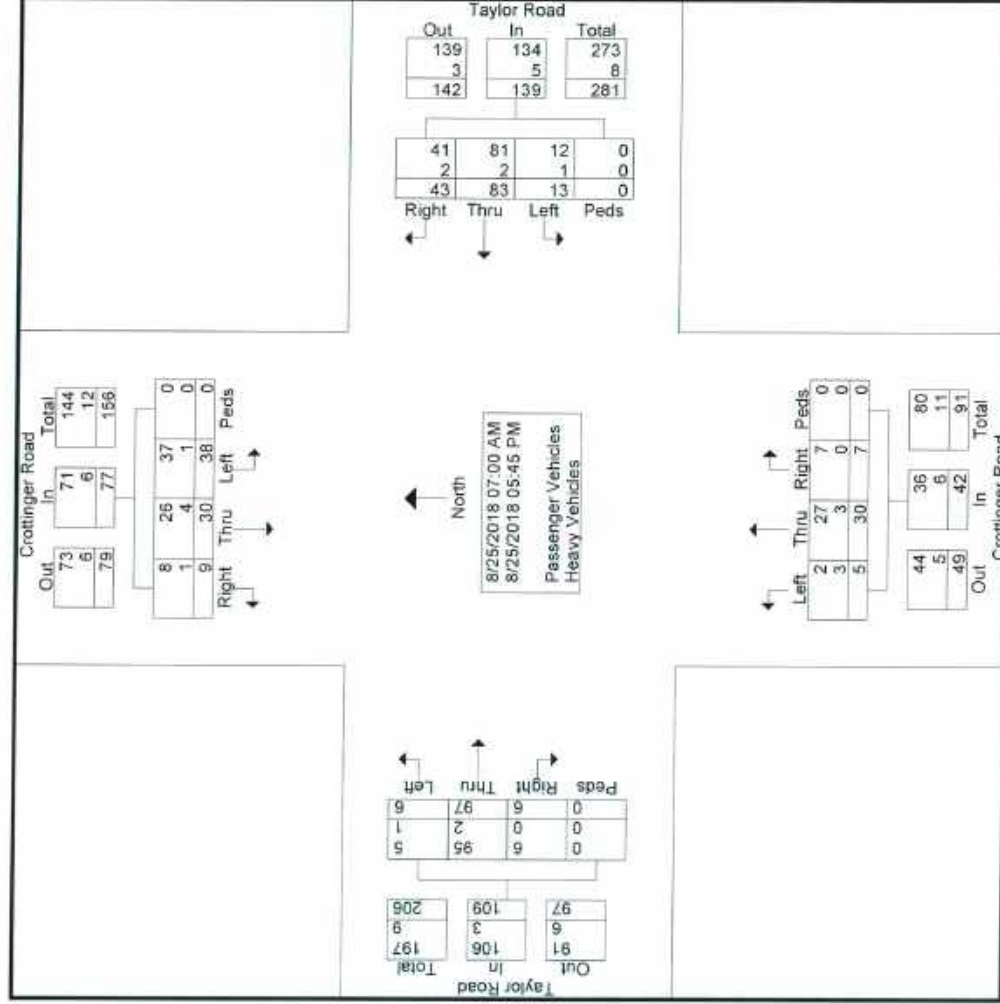
Groups Printed- Passenger Vehicles - Heavy Vehicles																
INDUSTIAL PKWY										INDUSTIAL PKWY						
From North										From South						
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right
04:15 PM	10	44	0	0	54	0	0	0	0	0	0	33	1	0	34	1
04:30 PM	5	41	0	0	46	0	0	0	0	0	0	43	2	0	45	0
04:45 PM	9	34	0	0	43	0	0	0	0	0	0	35	0	0	35	0
Total	24	119	0	0	143	0	0	0	0	0	0	111	3	0	114	1
05:00 PM	5	45	0	0	50	0	0	0	0	0	0	42	1	0	43	1
05:15 PM	6	55	0	0	61	0	0	0	0	0	0	43	1	0	44	1
05:30 PM	6	49	0	0	55	0	0	0	0	0	0	29	2	0	31	0
05:45 PM	4	52	0	0	56	0	0	0	0	0	0	48	0	0	48	0
Total	21	201	0	0	222	0	0	0	0	0	0	162	4	0	166	2
06:00 PM	6	39	0	0	45	0	0	0	1	1	0	29	1	0	30	0
Grand Total	51	359	0	0	410	0	0	0	1	1	0	302	8	0	310	3
Approch %	12.4	87.6	0	0		0	0	0	100		0	97.4	2.6	0		10.3
Total %	6.8	47.9	0	0	54.7	0	0	0	0.1	0.1	0	40.3	1.1	0	41.3	0.4
Passenger Vehicles	51	343	0	0	394	0	0	0	1	1	0	292	8	0	300	3
% Passenger Vehicles	100	95.5	0	0	96.1	0	0	0	100	100	0	95.7	100	0	96.8	100
Heavy Vehicles	0	16	0	0	16	0	0	0	0	0	0	10	0	0	10	0
% Heavy Vehicles	0	4.5	0	0	3.9	0	0	0	0	0	0	3.3	0	0	3.2	0
CROTTER RD																
From West																
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:15 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	5
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Total	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	15
05:00 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	5
05:15 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	4
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	11
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Grand Total	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	29
Approch %	10.3	0	0	0		0	0	0	0		0	89.7	0	0		750
Total %	0.4	0	0	0	41.3	0	0	0	0	0	0	3.5	0	0	3.9	
Passenger Vehicles	3	0	0	0	300	0	0	0	0	0	0	25	0	0	28	723
% Passenger Vehicles	100	96.8	0	0	96.8	0	0	0	0	0	0	96.2	0	0	96.6	96.4
Heavy Vehicles	0	10	0	0	10	0	0	0	0	0	0	1	0	0	1	27
% Heavy Vehicles	0	3.2	0	0	3.2	0	0	0	0	0	0	3.8	0	0	3.4	3.6



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INDUSTIAL PKWY From North						From East						INDUSTIAL PKWY From South						CROTTER RD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total		
Peak Hour Analysis From 04:15 PM to 06:00 PM - Peak 1 of 1																							
Peak Hour for Entire Intersection Begins at 05:00 PM																							
05:00 PM	5	45	0	0	50	0	0	0	0	0	0	42	1	0	43	1	0	4	0	5	98		
05:15 PM	6	55	0	0	61	0	0	0	0	0	0	43	1	0	44	1	0	3	0	4	109		
05:30 PM	6	49	0	0	55	0	0	0	0	0	0	29	2	0	31	0	0	1	0	1	87		
05:45 PM	4	52	0	0	56	0	0	0	0	0	0	48	0	0	48	0	0	1	0	1	105		
Total Volume	21	201	0	0	222	0	0	0	0	0	0	162	4	0	166	2	0	9	0	11	399		
% App. Total	9.5	90.5	0	0		0	0	0	0	0	0	97.6	2.4	0		18.2	0	81.8	0				
PHF	.875	.914	.000	.000	.910	.000	.000	.000	.000	.000	.000	.844	.500	.000	.865	.500	.000	.563	.000	.550	.915		
Passenger Vehicles	21	190	0	0	211	0	0	0	0	0	0	158	4	0	162	2	0	9	0	11	384		
% Passenger Vehicles	100	94.5	0	0	95.0	0	0	0	0	0	0	97.5	100	0	97.6	100	0	100	0	100	96.2		
Heavy Vehicles	0	11	0	0	11	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	15		
% Heavy Vehicles	0	5.5	0	0	5.0	0	0	0	0	0	0	2.5	0	0	2.4	0	0	0	0	0	3.8		

Groups Printed- Passenger Vehicles - Heavy Vehicles																					
Crotinger Road From North						Taylor Road From East						Crotinger Road From South						Taylor Road From West			
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	3	3	0	6	0	1	1	0	2	0	0	0	0	0	1	7	0	0	8	16
07:15 AM	0	1	5	0	6	2	1	1	0	4	0	1	0	0	1	0	3	0	0	3	14
07:30 AM	0	1	1	0	2	3	0	0	0	3	1	4	0	0	5	0	14	0	0	14	24
07:45 AM	0	3	3	0	6	2	2	0	0	4	2	3	0	0	5	1	7	0	0	8	23
Total	0	8	12	0	20	7	4	2	0	13	3	8	0	0	11	2	31	0	0	33	77
08:00 AM	0	1	4	0	5	1	2	0	0	3	1	0	0	0	1	0	3	0	0	3	12
08:15 AM	0	2	2	0	4	2	1	2	0	5	0	3	0	0	3	0	5	0	0	5	17
08:30 AM	1	2	3	0	6	1	1	0	0	2	0	3	1	0	4	0	6	0	0	6	18
08:45 AM	0	1	0	0	1	2	1	0	0	3	0	0	0	0	0	1	7	0	0	8	12
Total	1	6	9	0	16	6	5	2	0	13	1	6	1	0	8	1	21	0	0	22	59
09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	7	0	0	8	8
*** BREAK ***																					
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	7	0	0	8	8
*** BREAK ***																					
04:00 PM	0	3	1	0	4	1	5	1	0	7	1	5	1	0	7	1	7	0	0	8	26
04:15 PM	0	0	4	0	4	5	15	3	0	23	1	5	2	0	8	0	3	0	0	3	38
04:30 PM	0	3	1	0	4	9	9	0	0	18	0	0	0	0	0	0	2	2	0	4	26
04:45 PM	2	2	1	0	5	3	6	0	0	9	0	0	1	0	1	0	4	0	0	4	19
Total	2	8	7	0	17	18	35	4	0	57	2	10	4	0	16	1	16	2	0	19	109
05:00 PM	3	2	2	0	7	2	7	1	0	10	0	3	0	0	3	0	5	0	0	5	25
05:15 PM	1	2	6	0	9	2	14	1	0	17	1	0	0	0	1	0	3	1	0	4	31
05:30 PM	1	2	0	0	3	3	10	1	0	14	0	1	0	0	1	1	10	3	0	14	32
05:45 PM	1	2	2	0	5	5	8	2	0	15	0	2	0	0	2	0	4	0	0	4	26
Total	6	8	10	0	24	12	39	5	0	56	1	6	0	0	7	1	22	4	0	27	114
Grand Total	9	30	38	0	77	43	83	13	0	139	7	30	5	0	42	6	97	6	0	109	367
Approch %	11.7	39	49.4	0		30.9	59.7	9.4	0		16.7	71.4	11.9	0		5.5	89	5.5	0		
Total %	2.5	8.2	10.4	0	21	11.7	22.6	3.5	0	37.9	1.9	8.2	1.4	0	11.4	1.6	26.4	1.6	0	29.7	
Passenger Vehicles	8	26	37	0	71	41	81	12	0	134	7	27	2	0	36	6	95	5	0	106	347
% Passenger Vehicles	88.9	86.7	97.4	0	92.2	95.3	97.6	92.3	0	96.4	100	90	40	0	85.7	100	97.9	83.3	0	97.2	94.6
Heavy Vehicles	1	4	1	0	6	2	2	1	0	5	0	3	0	0	6	0	2	1	0	3	20
% Heavy Vehicles	11.1	13.3	2.6	0	7.8	4.7	2.4	7.7	0	3.6	0	10	60	0	14.3	0	2.1	16.7	0	2.8	5.4



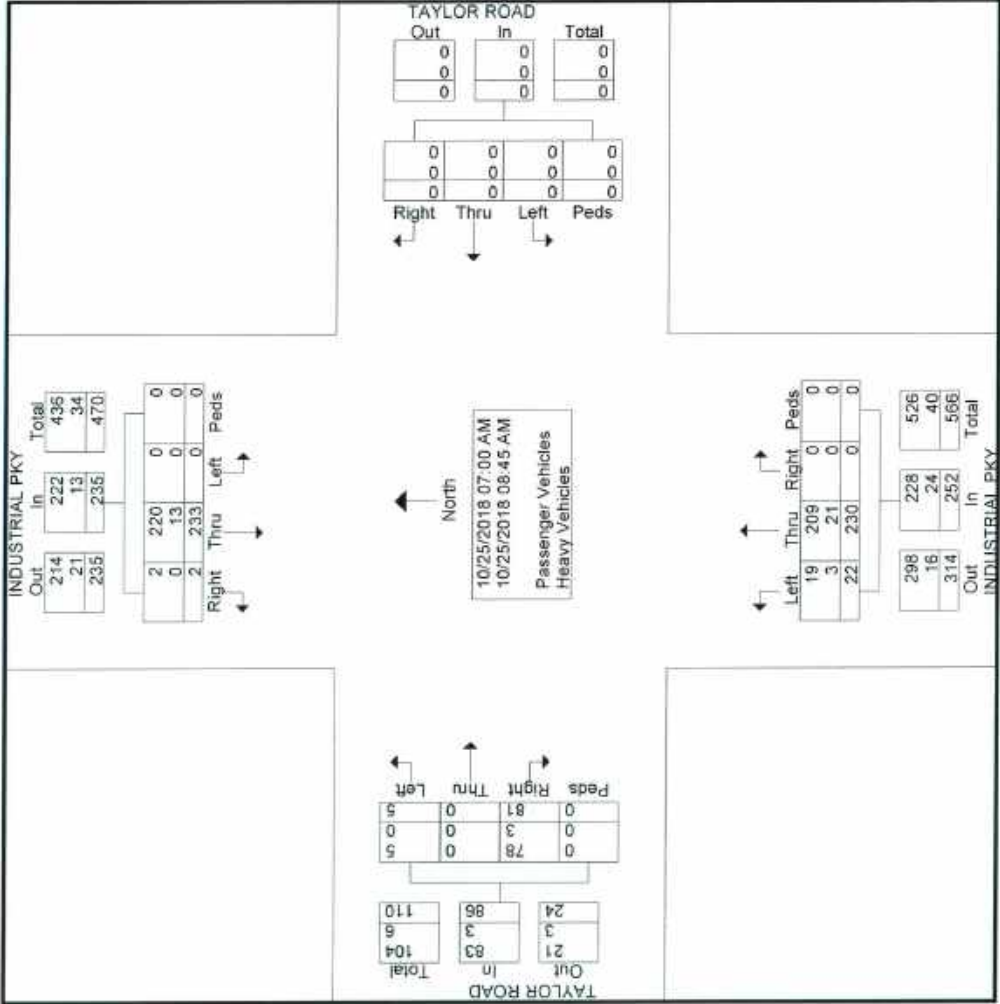
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Crottinger Road From North					Taylor Road From East					Crottinger Road From South					Taylor Road From West						
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	3	3	0	6	0	1	1	0	2	0	0	0	0	0	1	7	0	0	8	16
07:15 AM	0	1	5	0	6	2	1	1	0	4	0	1	0	0	1	0	3	0	0	3	14
07:30 AM	0	1	1	0	2	3	0	0	0	3	1	4	0	0	5	0	14	0	0	14	24
07:45 AM	0	3	3	0	6	2	2	0	0	4	2	3	0	0	5	1	7	0	0	8	23
Total Volume	0	8	12	0	20	7	4	2	0	13	3	8	0	0	11	2	31	0	0	33	77
% App. Total	0	40	60	0	0	53.8	30.8	15.4	0	0	27.3	72.7	0	0	0	6.1	93.9	0	0	0	0
PHF	.000	.667	.600	.000	.833	.583	.500	.500	.000	.813	.375	.500	.000	.000	.550	.500	.554	.000	.000	.589	.802
Passenger Vehicles	0	8	12	0	20	6	2	2	0	10	3	7	0	0	10	2	31	0	0	33	73
% Passenger Vehicles	0	100	100	0	100	85.7	50.0	100	0	76.9	100	87.5	0	0	90.9	100	100	0	0	100	94.8
Heavy Vehicles	0	0	0	0	0	1	2	0	0	3	0	1	0	0	1	0	0	0	0	0	4
% Heavy Vehicles	0	0	0	0	0	14.3	50.0	0	0	23.1	0	12.5	0	0	9.1	0	0	0	0	0	5.2

Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	3	2	2	0	7	2	7	1	0	10	0	3	0	0	3	0	5	0	0	5	25
05:15 PM	1	2	6	0	9	2	14	1	0	17	1	0	0	0	1	0	3	1	0	4	31
05:30 PM	1	2	0	0	3	3	10	1	0	14	0	1	0	0	1	1	10	3	0	14	32
05:45 PM	1	2	2	0	5	5	8	2	0	15	0	2	0	0	2	0	4	0	0	4	26
Total Volume	6	8	10	0	24	12	39	5	0	56	1	6	0	0	7	1	22	4	0	27	114
% App. Total	25	33.3	41.7	0	0	21.4	69.6	8.9	0	0	14.3	85.7	0	0	0	3.7	81.5	14.8	0	0	0
PHF	.500	1.00	.417	.000	.667	.600	.696	.625	.000	.824	.250	.500	.000	.000	.583	.250	.550	.333	.000	.482	.891
Passenger Vehicles	5	7	10	0	22	12	39	5	0	56	1	6	0	0	7	1	22	3	0	26	111
% Passenger Vehicles	83.3	87.5	100	0	91.7	100	100	100	0	100	100	100	0	0	100	100	100	75.0	0	96.3	97.4
Heavy Vehicles	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
% Heavy Vehicles	16.7	12.5	0	0	8.3	0	0	0	0	0	0	0	0	0	0	0	0	25.0	0	3.7	2.6

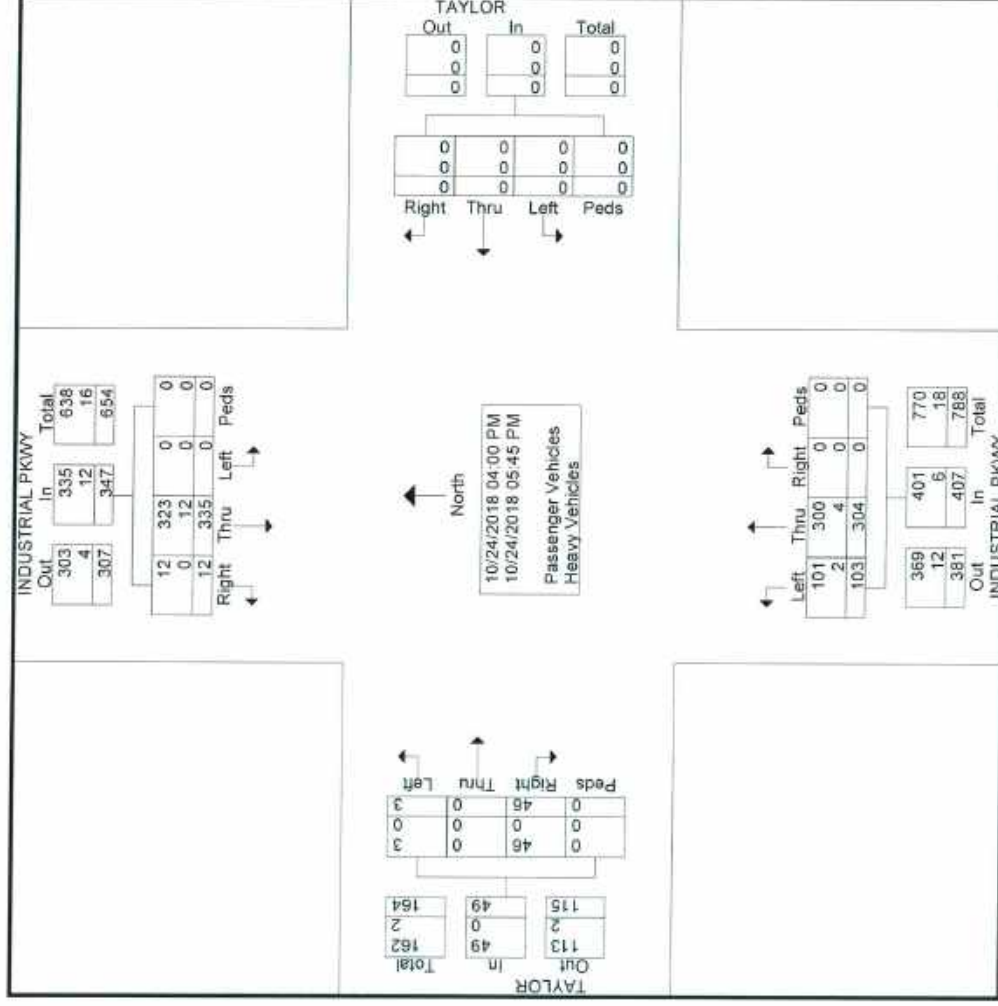
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Groups Printed- Passenger Vehicles - Heavy Vehicles																														
INDUSTRIAL PKY From North													TAYLOR ROAD From East						INDUSTRIAL PKY From South						TAYLOR ROAD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total				
07:00 AM	0	29	0	0	29	0	0	0	0	0	0	20	1	0	21	12	0	0	0	12	0	0	0	0	0	12	62			
07:15 AM	0	36	0	0	36	0	0	0	0	0	0	29	2	0	31	10	0	1	0	11	0	0	1	0	11	78				
07:30 AM	0	38	0	0	38	0	0	0	0	0	0	34	3	0	37	14	0	0	0	14	0	0	0	0	14	89				
07:45 AM	0	43	0	0	43	0	0	0	0	0	0	42	4	0	46	14	0	0	0	14	0	0	0	0	14	103				
Total	0	146	0	0	146	0	0	0	0	0	0	125	10	0	135	50	0	1	0	51	0	0	0	0	51	332				
08:00 AM	0	33	0	0	33	0	0	0	0	0	0	30	5	0	35	5	0	2	0	7	0	0	2	0	7	75				
08:15 AM	1	18	0	0	19	0	0	0	0	0	0	21	2	0	23	8	0	1	0	9	0	0	1	0	9	51				
08:30 AM	0	18	0	0	18	0	0	0	0	0	0	27	2	0	29	10	0	1	0	11	0	0	1	0	11	58				
08:45 AM	1	18	0	0	19	0	0	0	0	0	0	27	3	0	30	8	0	0	0	8	0	0	0	0	8	57				
Total	2	87	0	0	89	0	0	0	0	0	0	105	12	0	117	31	0	4	0	35	0	0	4	0	35	241				
Grand Total	2	233	0	0	235	0	0	0	0	0	0	230	22	0	252	81	0	5	0	86	0	0	5	0	86	573				
Apprch %	0.9	99.1	0	0		0	0	0	0	0	0	91.3	8.7	0		94.2	0	5.8	0		0	0	5.8	0						
Total %	0.3	40.7	0	0	41		0	0	0	0	0	40.1	3.8	0	44	14.1	0	0.9	0	15	0	0	0.9	0	15					
Passenger Vehicles	2	220	0	0	222	0	0	0	0	0	0	209	19	0	228	78	0	5	0	83	0	0	5	0	83	533				
% Passenger Vehicles	100	94.4	0	0	94.5	0	0	0	0	0	0	90.9	86.4	0	90.5	96.3	0	100	0	96.5	0	0	100	0	96.5	93				
Heavy Vehicles	0	13	0	0	13	0	0	0	0	0	0	21	3	0	24	3	0	0	0	3	0	0	0	0	3	40				
% Heavy Vehicles	0	5.6	0	0	5.5		0	0	0	0	0	9.1	13.6	0	9.5	3.7	0	0	0	3.5	0	0	0	0	3.5	7				



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	INDUSTRIAL PKY From North					TAYLOR ROAD From East					INDUSTRIAL PKY From South					TAYLOR ROAD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	0	36	0	0	36	0	0	0	0	0	0	29	2	0	31	10	0	1	0	11	78
07:30 AM	0	38	0	0	38	0	0	0	0	0	0	34	3	0	37	14	0	0	0	14	89
07:45 AM	0	43	0	0	43	0	0	0	0	0	0	42	4	0	46	14	0	0	0	14	103
08:00 AM	0	33	0	0	33	0	0	0	0	0	0	30	5	0	35	5	0	2	0	7	75
Total Volume	0	150	0	0	150	0	0	0	0	0	0	135	14	0	149	43	0	3	0	46	345
% App. Total	0	100	0	0	100	0	0	0	0	0	0	90.6	9.4	0	93.5	0	6.5	0	0	0	0
PHF	.000	.872	.000	.000	.872	.000	.000	.000	.000	.000	.000	.804	.700	.000	.810	.768	.000	.375	.000	.821	.837
Passenger Vehicles	0	140	0	0	140	0	0	0	0	0	0	129	12	0	141	43	0	3	0	46	327
% Passenger Vehicles	0	93.3	0	0	93.3	0	0	0	0	0	0	95.6	85.7	0	94.6	100	0	100	0	100	94.8
Heavy Vehicles	0	10	0	0	10	0	0	0	0	0	0	6	2	0	8	0	0	0	0	0	18
% Heavy Vehicles	0	6.7	0	0	6.7	0	0	0	0	0	0	4.4	14.3	0	5.4	0	0	0	0	0	5.2



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INDUSTRIAL PKWY From North					TAYLOR From East					INDUSTRIAL PKWY From South					TAYLOR From West						
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	2	40	0	0	42	0	0	0	0	0	0	36	6	0	42	8	0	0	0	8	92
05:00 PM	1	54	0	0	55	0	0	0	0	0	0	39	23	0	62	8	0	0	0	8	125
05:15 PM	0	50	0	0	50	0	0	0	0	0	0	39	17	0	56	5	0	0	0	5	111
05:30 PM	3	45	0	0	48	0	0	0	0	0	0	44	12	0	56	5	0	1	0	6	110
Total Volume	6	189	0	0	195	0	0	0	0	0	0	158	58	0	216	26	0	1	0	27	438
% App. Total	3.1	96.9	0	0		0	0	0	0	0	0	73.1	26.9	0		96.3	0	3.7	0		
PHF	.500	.875	.000	.000	.886	.000	.000	.000	.000	.000	.000	.898	.630	.000	.871	.813	.000	.250	.000	.844	.876
Passenger Vehicles	6	180	0	0	186	0	0	0	0	0	0	156	58	0	214	26	0	1	0	27	427
% Passenger Vehicles	100	95.2	0	0	95.4	0	0	0	0	0	0	98.7	100	0	99.1	100	0	100	0	100	97.5
Heavy Vehicles	0	9	0	0	9	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	11
% Heavy Vehicles	0	4.8	0	0	4.6	0	0	0	0	0	0	1.3	0	0	0.9	0	0	0	0	0	2.5

EMH&I

5500 New Albany Road

Columbus, OH 43054

emht.com

File Name : US 42 - Industrial Pkw

Site Code : 00000000

Start Date : 9/29/2016

Page No : 1

Groups Printed- Cars - Trucks

INDUSTRIAL PKWY						US42					INDUSTRIAL PKWY					US42					In. Total
Southbound						Westbound					Northbound					Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	4	27	12	0	43	3	47	41	0	91	19	16	6	0	41	16	89	5	0	110	285
07:15 AM	2	33	9	0	44	3	51	37	0	91	30	20	9	0	59	23	80	3	0	106	300
07:30 AM	1	43	15	0	59	4	42	34	0	80	37	27	11	0	75	20	59	6	0	85	299
07:45 AM	4	43	18	0	65	12	49	29	0	90	34	32	15	0	81	23	87	6	0	116	352
Total	11	146	54	0	211	22	189	141	0	352	120	95	41	0	256	82	315	20	0	417	1236
08:00 AM	1	20	6	0	27	5	79	66	0	150	26	16	8	0	50	22	65	2	0	89	316
08:15 AM	7	14	11	0	32	2	55	28	0	85	28	14	7	0	49	24	69	4	0	97	263
08:30 AM	4	8	8	0	20	4	64	29	0	97	19	11	16	0	46	20	70	5	0	95	258
08:45 AM	3	14	5	0	22	2	68	27	0	97	26	17	6	0	49	24	65	7	0	96	264
Total	15	56	30	0	101	13	266	150	0	429	99	58	37	0	194	90	269	18	0	377	1101
*** BREAK ***																					
04:00 PM	6	18	8	0	32	10	92	25	0	127	50	21	23	0	94	19	64	5	0	88	341
04:15 PM	9	25	9	0	43	13	89	18	0	120	40	36	25	0	101	12	97	3	0	112	376
04:30 PM	10	27	7	0	44	9	101	33	0	143	53	38	23	0	114	12	61	4	0	77	378
04:45 PM	12	33	8	0	53	9	101	29	0	139	39	45	38	0	122	9	68	10	0	87	401
Total	37	103	32	0	172	41	383	105	0	529	182	140	109	0	431	52	290	22	0	364	1496
05:00 PM	6	23	11	0	40	11	90	29	0	130	47	46	30	0	123	14	91	4	0	109	402
05:15 PM	17	44	10	0	71	5	91	32	0	128	55	43	21	0	119	12	63	7	0	82	400
05:30 PM	9	25	7	0	41	10	115	27	0	152	46	16	21	0	83	13	72	5	0	90	366
05:45 PM	3	28	4	0	35	20	106	22	0	148	21	29	23	0	73	9	60	2	0	71	327
Total	35	120	32	0	187	46	402	110	0	558	169	134	95	0	398	48	286	18	0	352	1495
Grand Total	98	425	148	0	671	122	1240	506	0	1868	570	427	282	0	1279	272	1160	78	0	1510	5328
Approch %	14.6	63.3	22.1	0		6.5	60.4	27.1	0		44.6	33.4	22	0		18	76.8	5.2	0		
Total %	1.8	8	2.8	0	12.6	2.3	23.3	9.5	0	35.1	10.7	8	5.3	0	24	5.1	21.8	1.5	0	28.3	
Cars	93	417	138	0	648	115	1009	487	0	1671	535	424	267	0	1226	263	1016	72	0	1351	4896
% Cars	94.9	98.1	93.2	0	96.6	94.3	86.2	96.2	0	89.5	93.9	99.3	94.7	0	95.9	96.7	87.6	92.3	0	89.5	91.9
Trucks	5	8	10	0	23	7	171	19	0	197	35	3	15	0	53	9	144	6	0	159	432
% Trucks	5.1	1.9	6.8	0	3.4	5.7	13.8	3.8	0	10.5	6.1	0.7	5.3	0	4.1	3.3	12.4	7.7	0	10.5	8.1

your Company Name Here

This is your address
Your City, State ZipCode
Your Tagline Here

File Name : US 42 - Industrial Pkw
Site Code : 00000000
Start Date : 9/29/2016
Page No : 1

Groups Printed- Trucks

Start Time	INDUSTRIAL PKWY					US42					INDUSTRIAL PKWY					US42					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:30 PM	0	0	0	0	0	0	11	1	0	12	3	0	0	0	3	0	11	0	0	11	26
04:45 PM	0	0	0	0	0	0	14	1	0	15	4	0	2	0	6	0	11	0	0	11	32
Total	0	0	0	0	0	0	25	2	0	27	7	0	2	0	9	0	22	0	0	22	58
05:00 PM	2	0	1	0	3	0	10	0	0	10	1	0	0	0	1	0	9	0	0	9	23
05:15 PM	1	0	0	0	1	0	10	0	0	10	1	0	0	0	1	0	3	1	0	4	16
Grand Total	3	0	1	0	4	0	45	2	0	47	9	0	2	0	11	0	34	1	0	35	97
Apprch %	75	0	25	0		0	95.7	4.3	0		81.8	0	18.2	0		0	97.1	2.9	0		
Total %	3.1	0	1	0	4.1	0	46.4	2.1	0	48.5	9.3	0	2.1	0	11.3	0	35.1	1	0	36.1	

your Company Name Here

This is your address
Your City, State ZipCode
Your Tagline Here

File Name : US 42 - Industrial Pkw
Site Code : 00000000
Start Date : 9/29/2016
Page No : 1

Groups Printed- Trucks

Start Time	INDUSTRIAL PKWY From North						US42 From East						INDUSTRIAL PKWY From South						US42 From West					
	Right	Thru	Left	Peds	App Total		Right	Thru	Left	Peds	App Total		Right	Thru	Left	Peds	App Total		Right	Thru	Left	Peds	App Total	Int Total
07:15 AM	0	3	1	0	4		0	8	1	0	9		0	2	0	0	2		1	5	1	0	7	22
07:30 AM	0	1	1	0	2		2	3	0	0	5		4	0	1	0	5		0	5	0	0	5	17
07:45 AM	0	1	2	0			1	10	2	0	13		4	1	1	0	6		2	14	0	0	16	38
Total	0	5	4	0			3	21	3	0	27		8	1	4	0	13		3	24	1	0	28	77
08:00 AM	0	0	0	0	0		1	10	4	0	15		2	0	2	0	4		2	10	0	0	12	31
Grand Total	0	5	4	0	9		4	31	7	0	42		10	1	6	0	17		5	34	1	0	40	108
Apprch %	0	55.6	44.4	0			9.5	73.8	16.7	0			58.8	5.9	35.3	0			12.5	85	2.5	0		
Total %	0	4.6	3.7	0	8.3		3.7	28.7	6.5	0	38.9		9.3	0.9	5.6	0	15.7		4.6	31.5	0.9	0		37

Wu, Charles

From: Nathan Shay <nshay@morpc.org>
Sent: Monday, July 18, 2016 4:51 PM
To: Wu, Charles
Cc: Nick Gill; Zhuojun Jiang
Subject: RE: Request traffic growth rate for Thomas property site

Charles,

We have completed processing your growth rate request for the intersection of Industrial Parkway and Estates Parkway. Please see the table below for the appropriate linear annual growth rate for each leg of the intersection. Let me know if you have any questions.

Location	Linear Annual Growth Rate
Estates Pkwy E/o Industrial Pkwy	1.0%
Industrial Pkwy N/o Estates Pkwy	6.3%
Estates Pkwy W/o Industrial Pkwy	3.0%
Industrial Pkwy S/o Industrial Pkwy	6.7%

Note: This is planning level analysis based on MORPC regional travel demand model.

Thank you,

Nathan Shay
Associate Engineer/Planner/Modeler | Mid-Ohio Regional Planning Commission
T: 614.233.4152 | nshay@morpc.org
111 Liberty Street, Suite 100 | Columbus, OH 43215



From: Zhuojun Jiang
Sent: Friday, July 15, 2016 8:54 AM
To: Nathan Shay <nshay@morpc.org>; Nick Gill <NGILL@morpc.org>
Subject: FW: Request traffic growth rate for Thomas property site

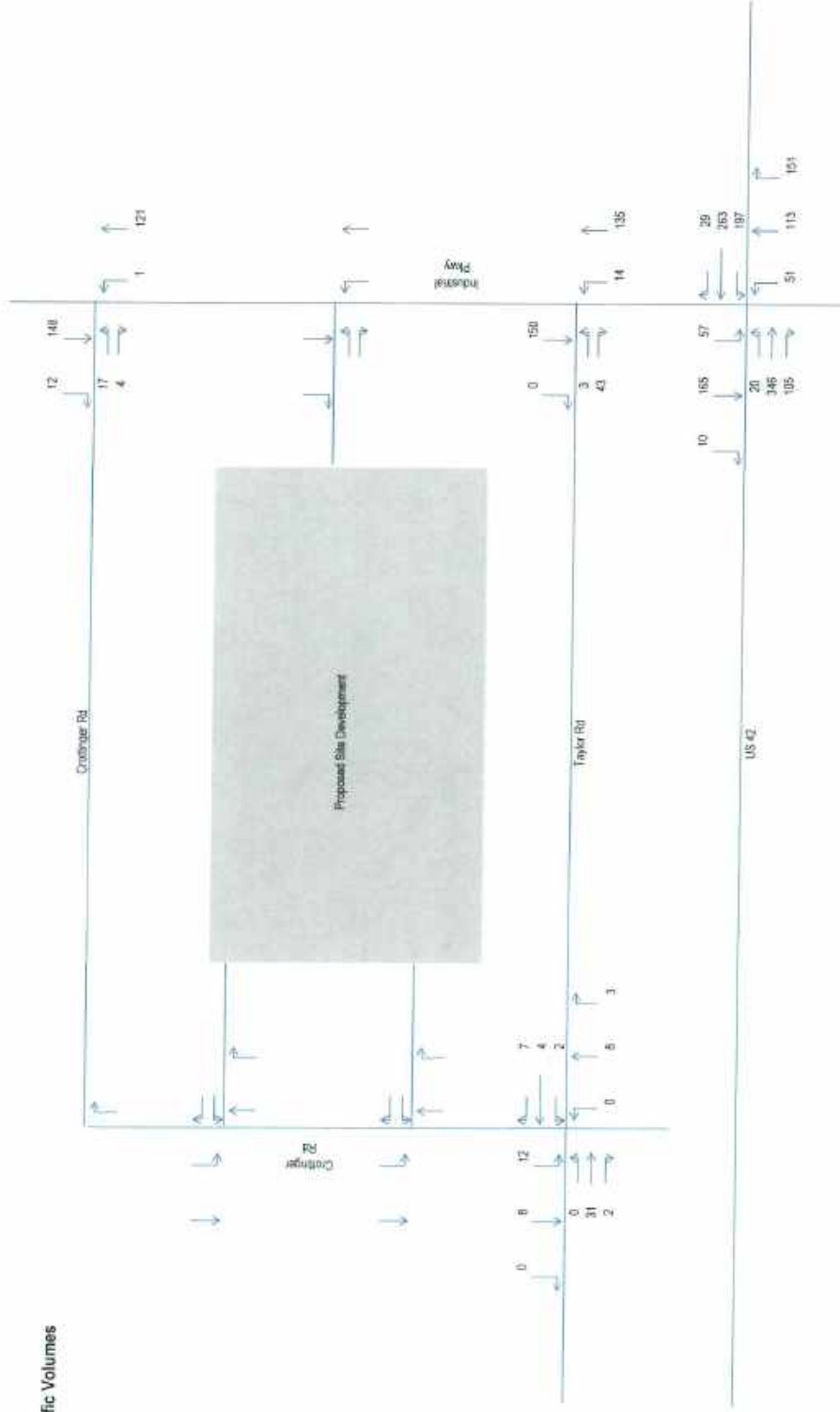
From: Wu, Charles [<mailto:cwu@emht.com>]
Sent: Thursday, July 14, 2016 5:04 PM
To: Zhuojun Jiang
Cc: Creed, Larry; Bender, Douglas; Wu, Charles
Subject: Request traffic growth rate for Thomas property site

Dear Zhoujun,

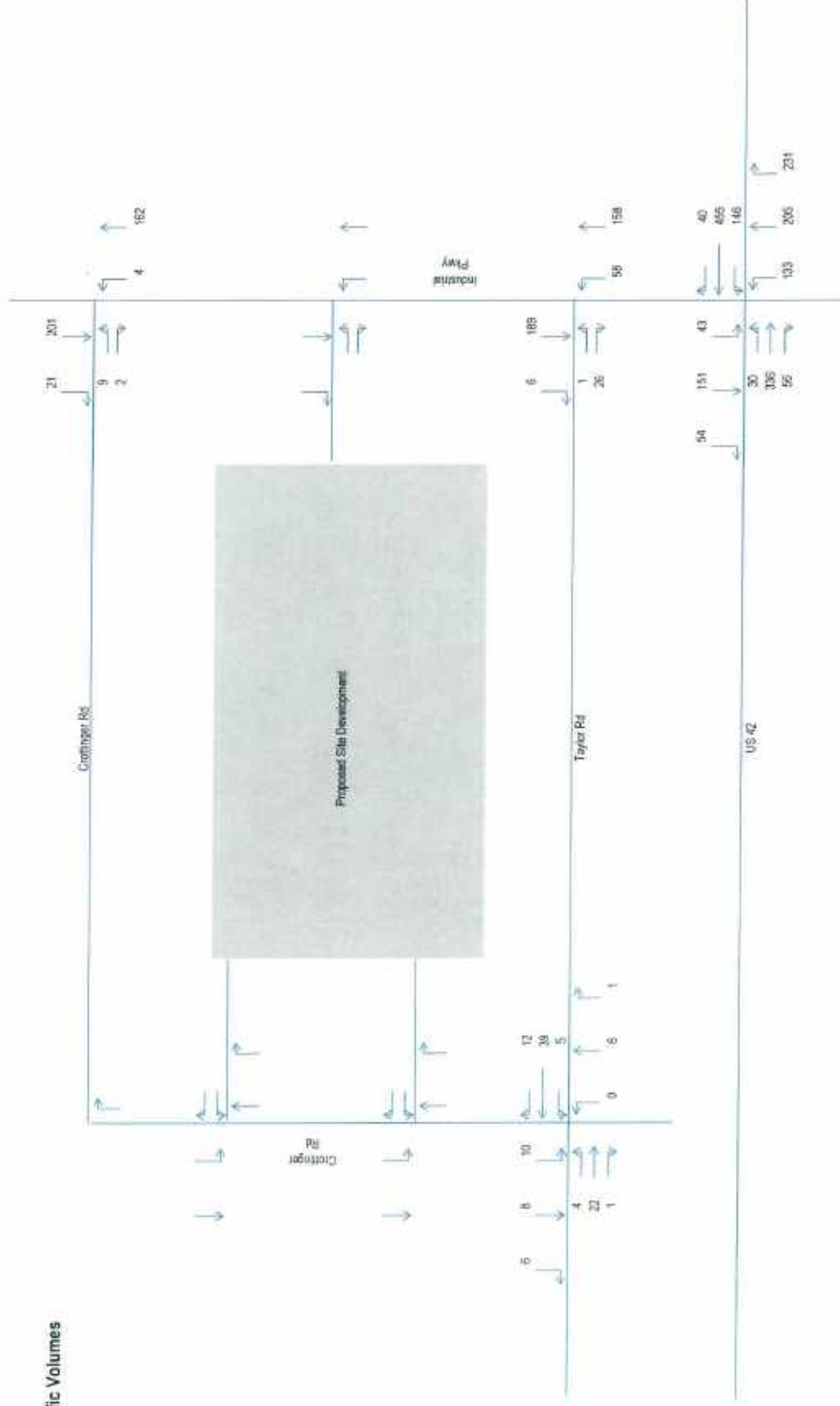
We are working on a traffic study for the Thomas property site and would like to request for growth rate for this project. The information that related to this project is as below.

1. We will apply for the growth rates based on the traffic count data attached.

AM Existing Traffic Volumes

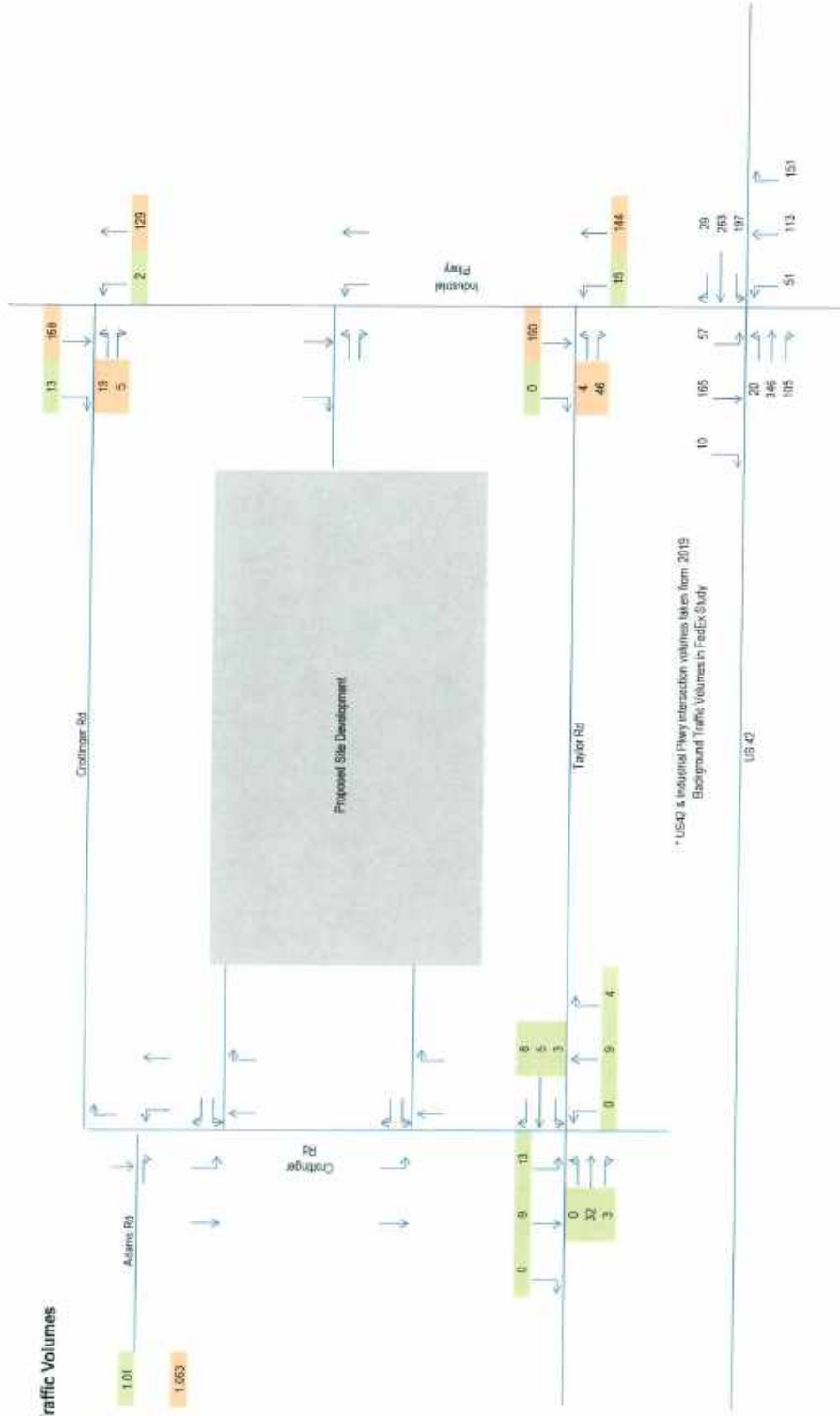


PM Existing Traffic Volumes



AM 2019 No Build Traffic Volumes

Growth Rate 2019	1.00%
Growth Rate*	5.30%
2019	0.063
* used only for Industrial Play	



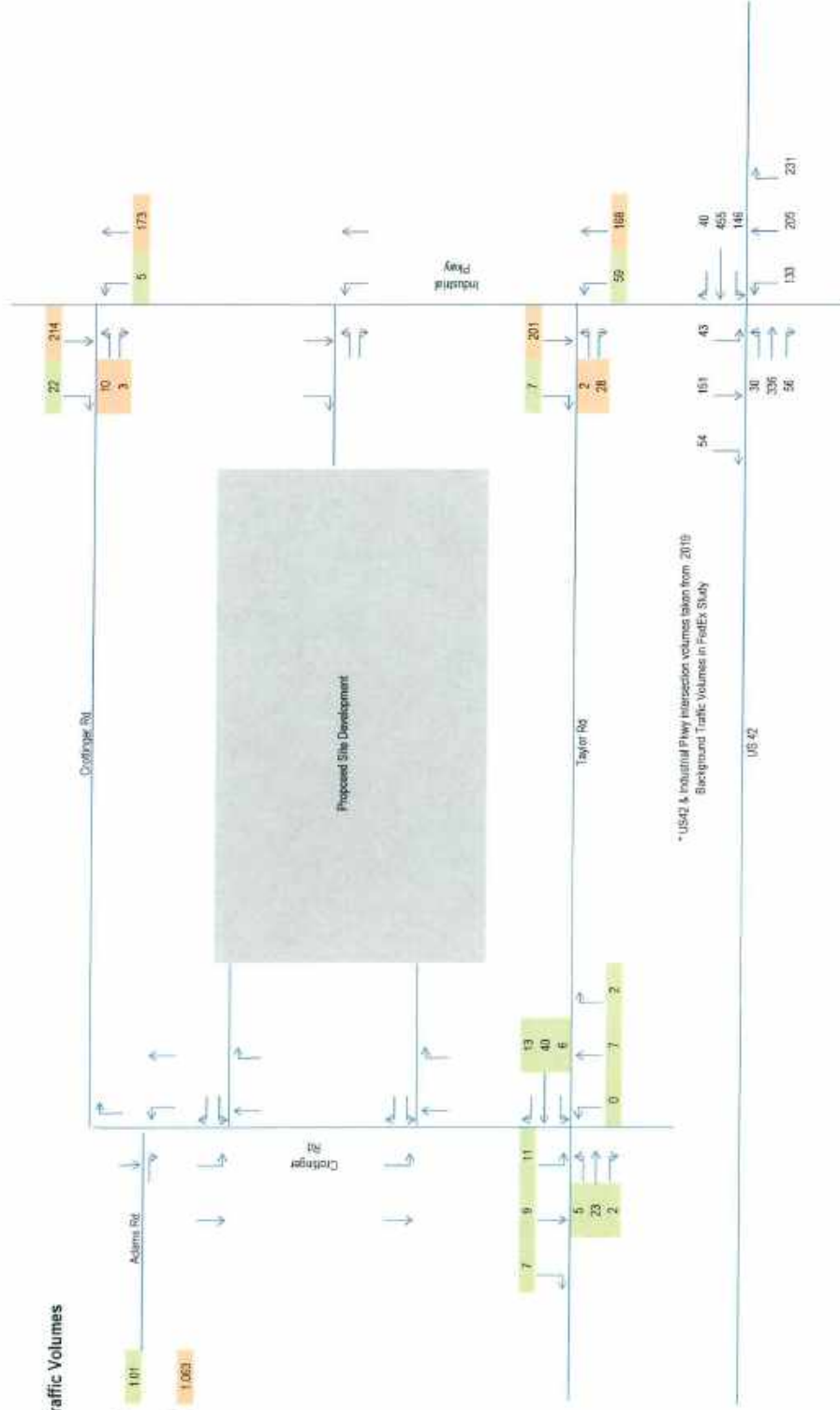
* US42 & Industrial Play interaction volumes taken from 2019 Background Traffic Volumes in FedEx Study

PM 2019 No Build Traffic Volumes

Growth Rate: 1.00%
2019 0.01

Growth Rate* 6.30%
2019 0.053

* used only for Industrial Play



* US42 & Industrial Play Intersection volumes taken from 2019 Background Traffic Volumes in FedEx Study

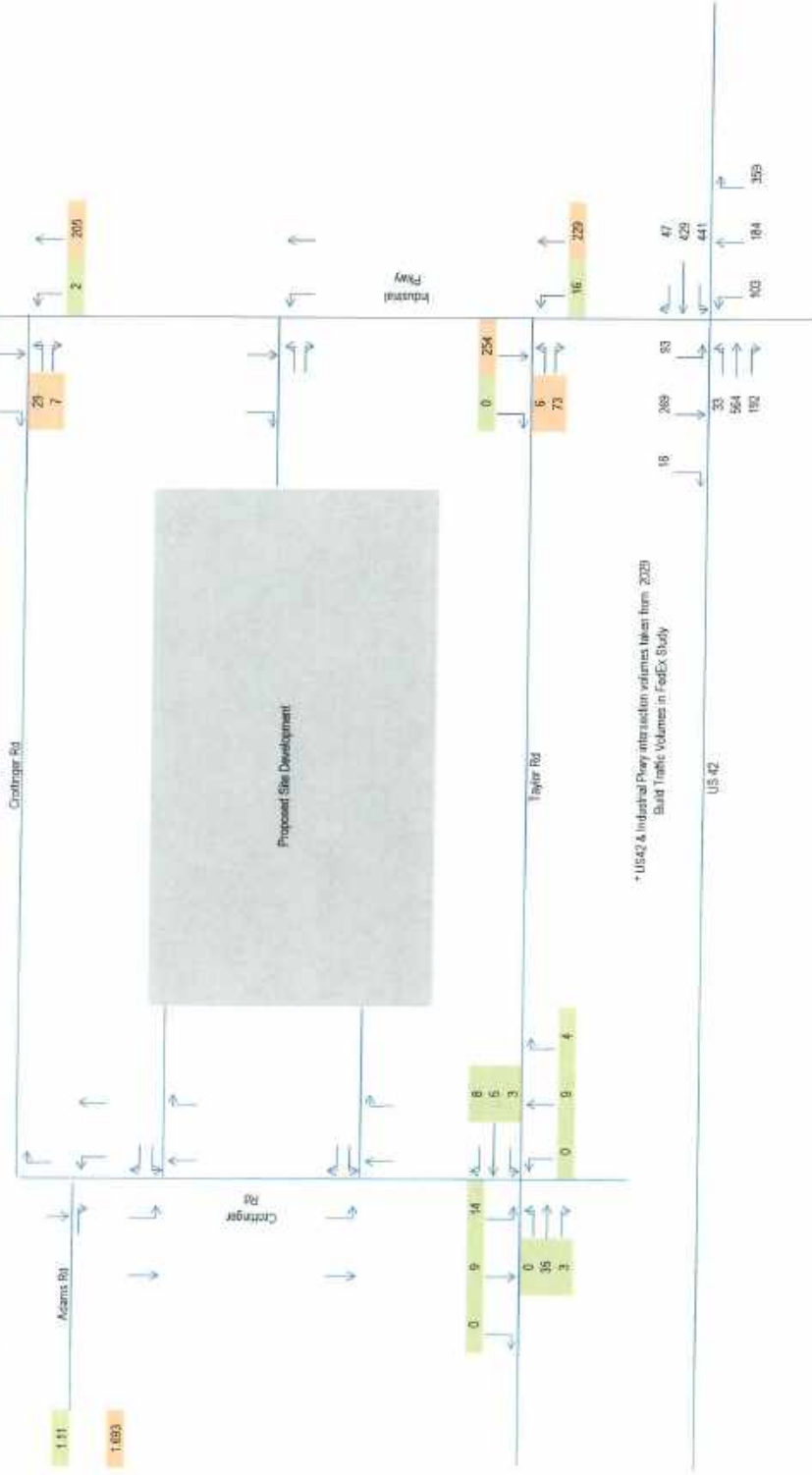
AM 2029 No Build Traffic Volumes

Growth Rate
2029 1.00%

Growth Rate*
2029 6.30%

Growth Rate*
2029 0.00%

* used only for Industrial Pkwy



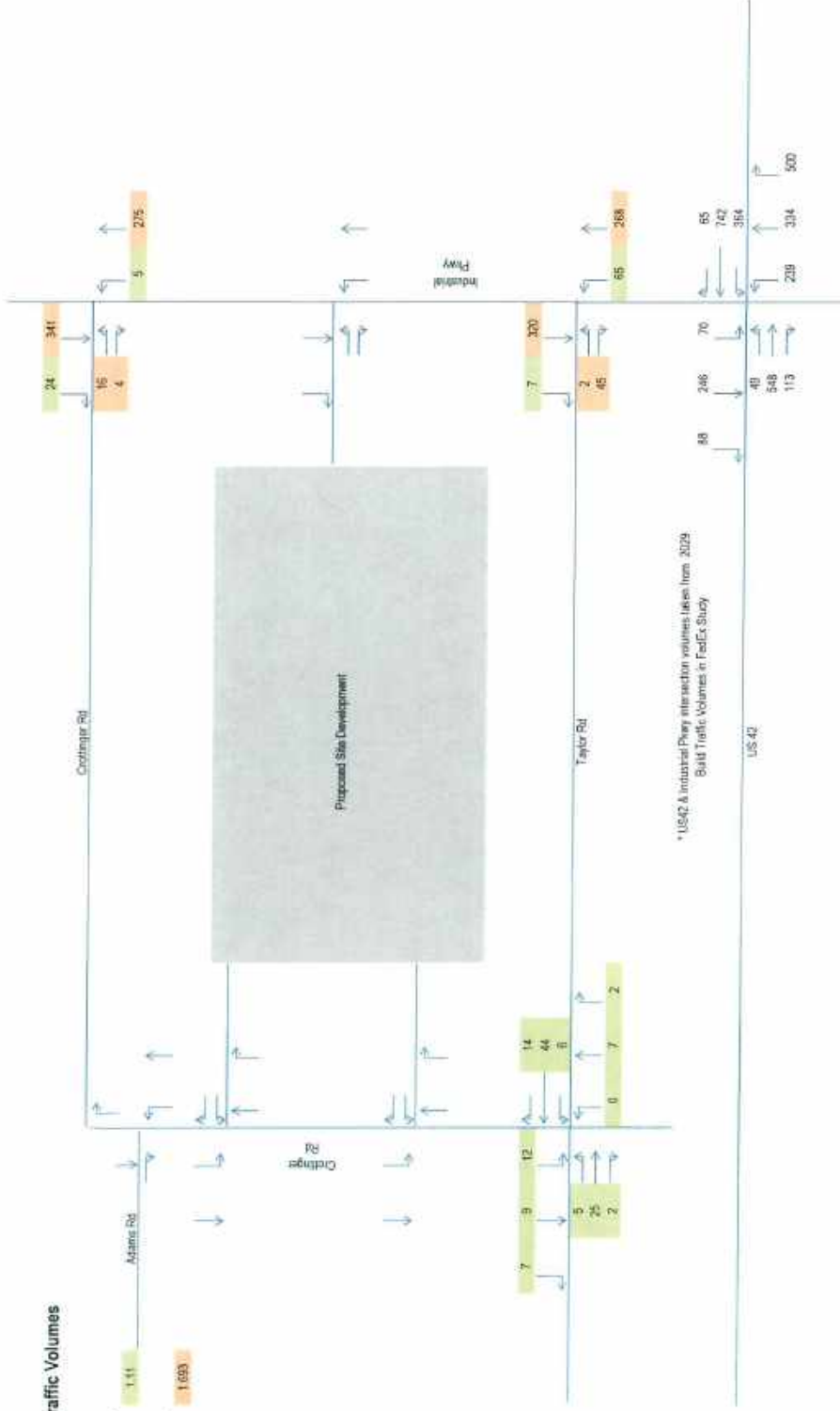
* US42 & Industrial Pkwy intersection volumes taken from 2029 Build Traffic Volumes in FedEx Study

PM 2029 No Build Traffic Volumes

Growth Rate
2029
1.00%
0.11

Growth Rate*
2029
6.30%
0.693

* used only for Industrial Pkwy

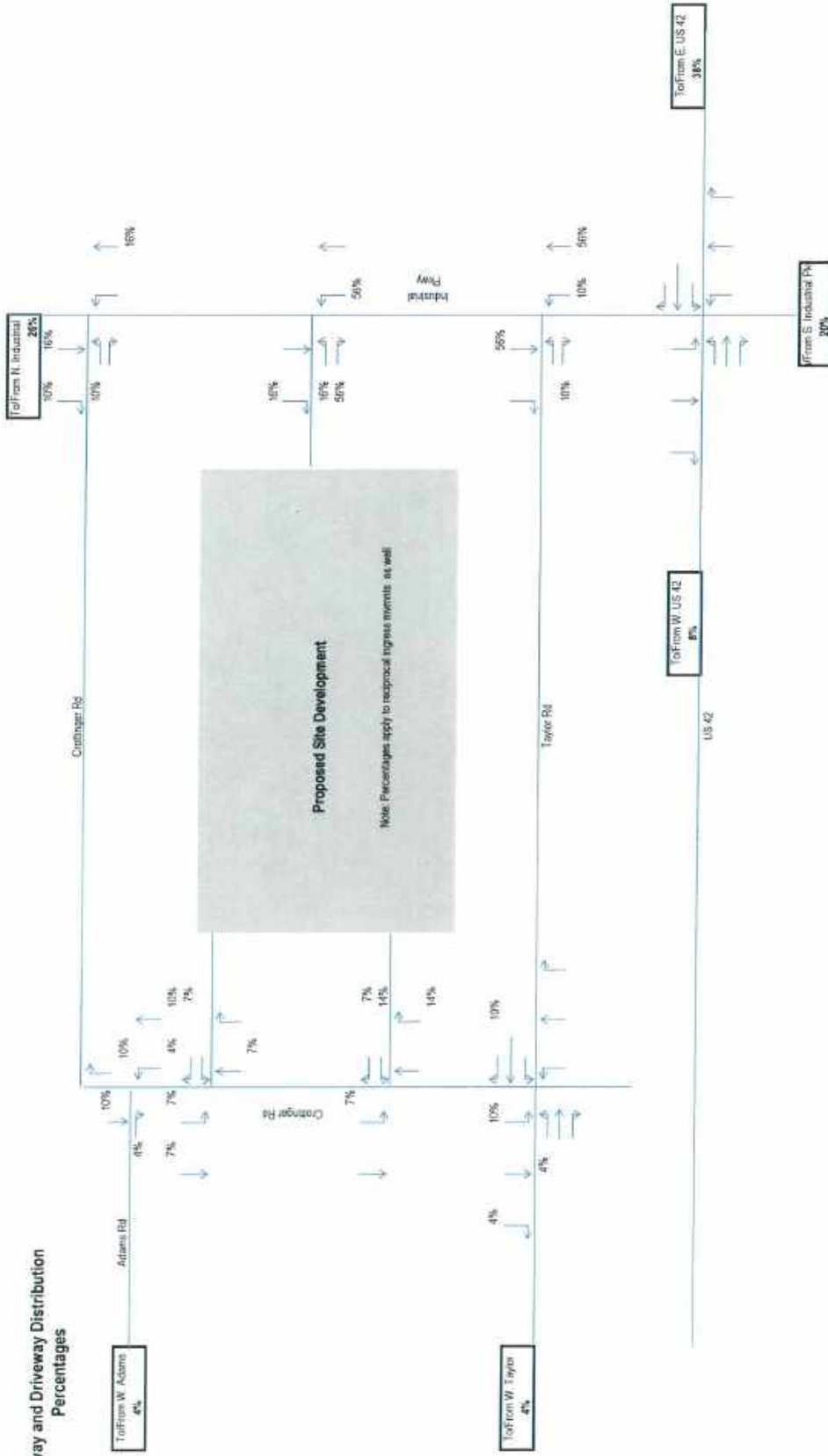


* US42 & Industrial Pkwy site section volumes taken from 2029 Build Traffic Volumes in PedEx Study

Trip Generation for Proposed Development

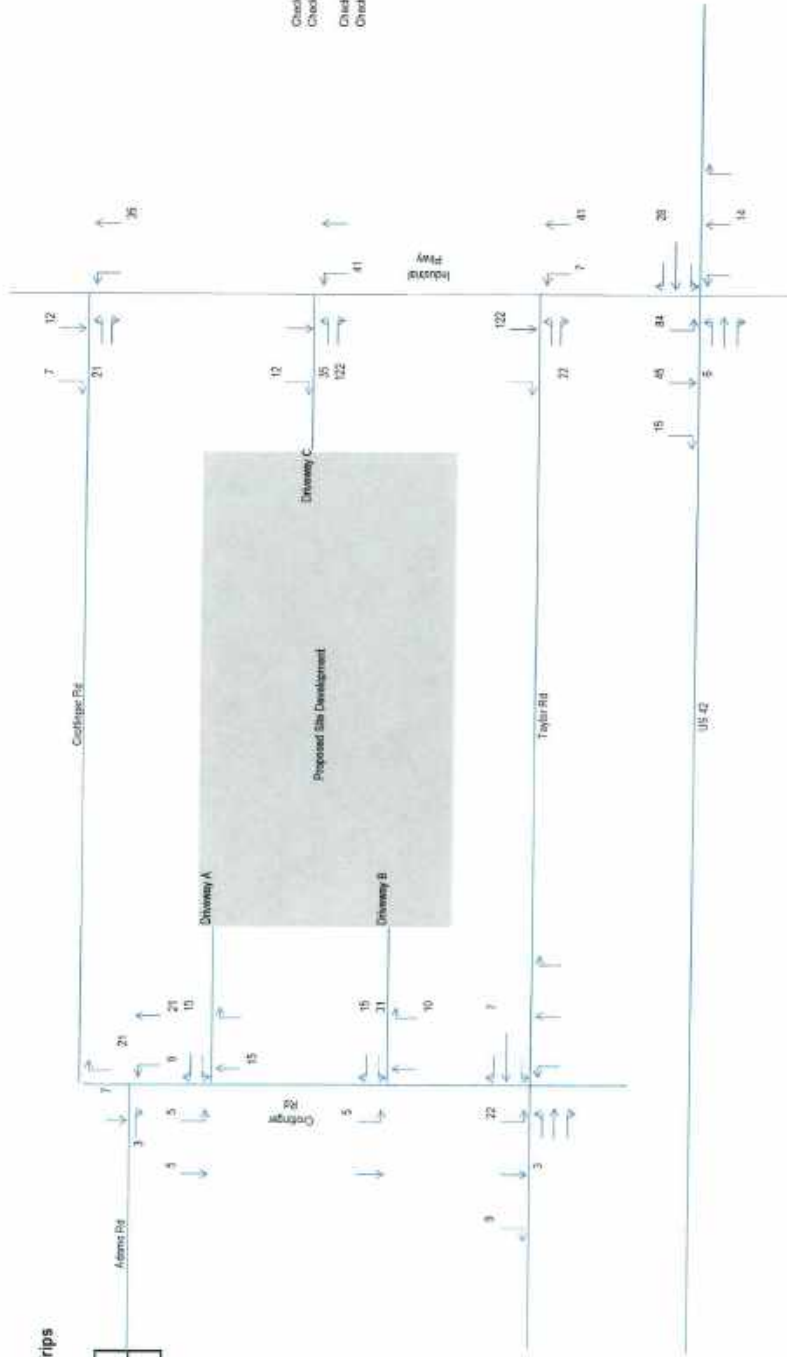
Land Use ITE Code / Size	Peak Hour	Inbound	Total Outbound	Total
Single Family Housing 210 / 393 Homes	AM PM	73 245	218 144	291 389

Gateway and Driveway Distribution Percentages



AM New Trips

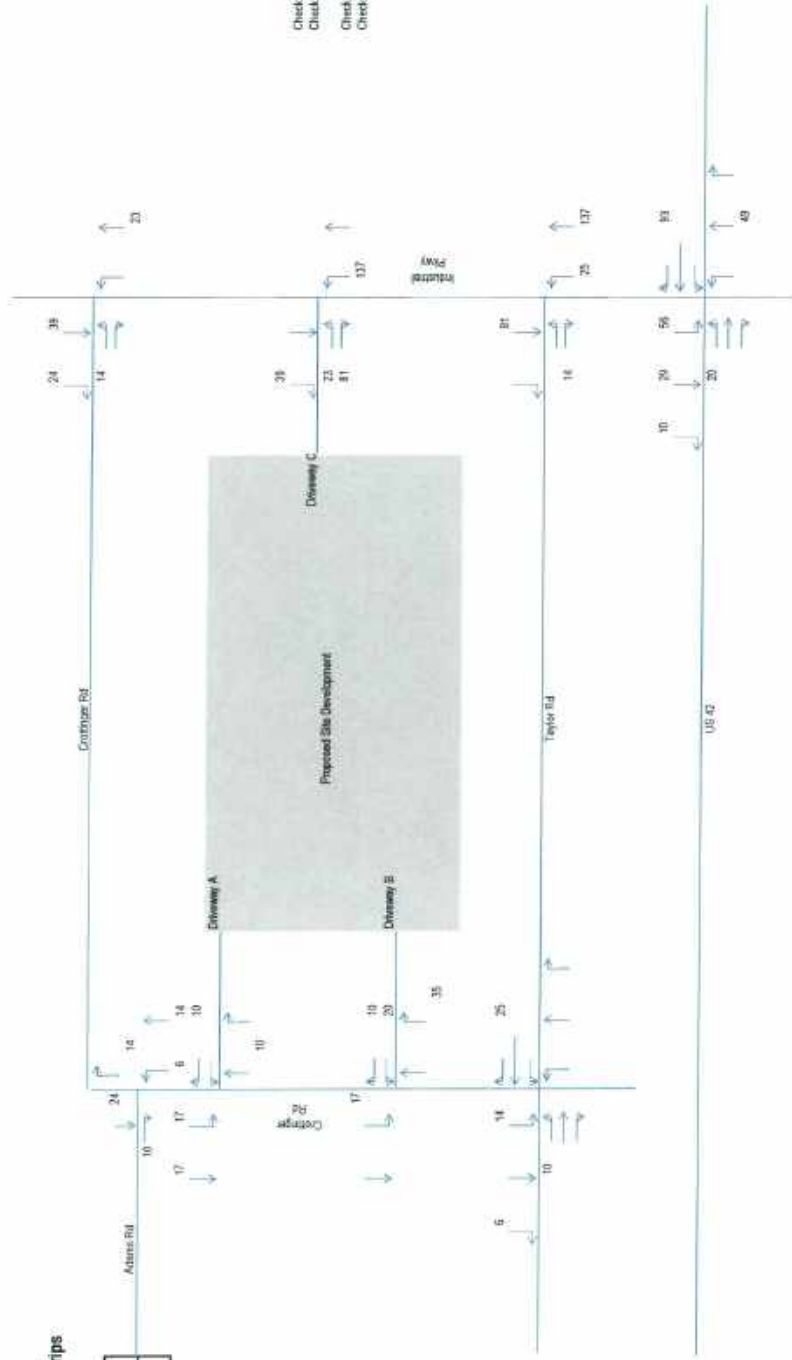
Peak Hour	Generated	Outbound	Total
AM	73	218	291
PM	245	144	389



73
 218
 291
 245
 144
 389

PM New Trips

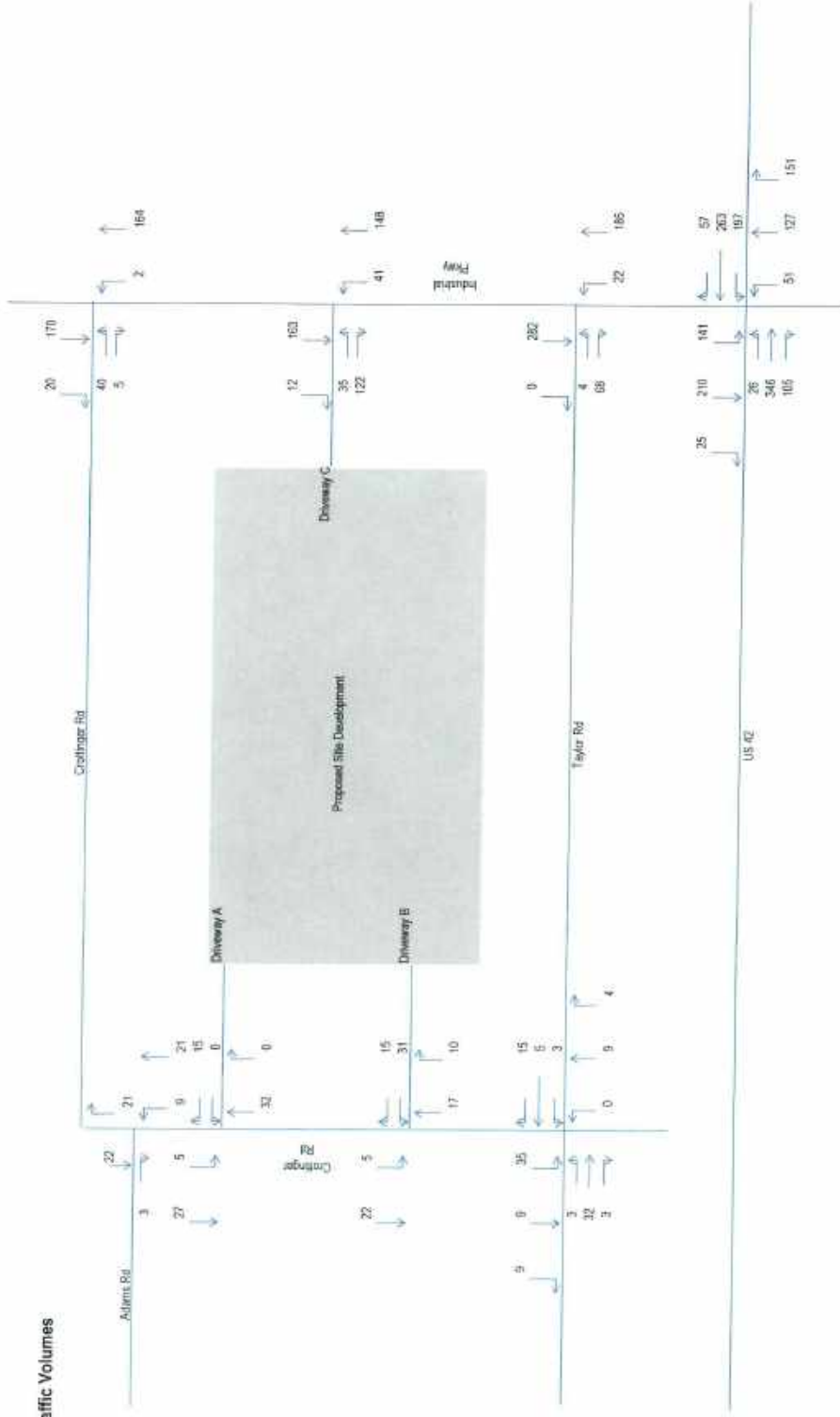
Peak Hour	Total	Induced	Outbound	Yield
AM	75	218	291	
PM	145	144	289	



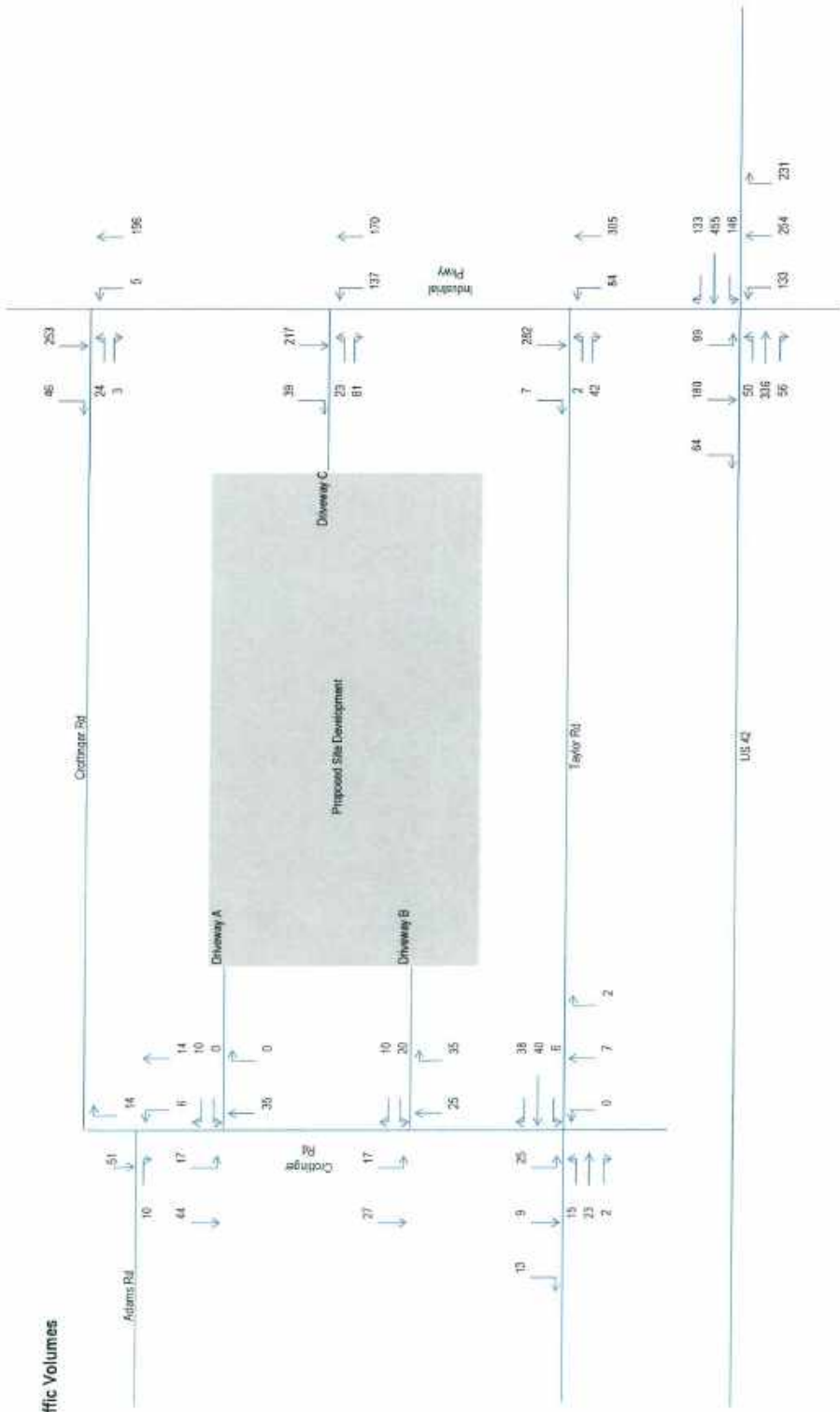
Check Network Trips In
 Check Network Trips Out
 Check Driveway Trips In
 Check Driveway Trips Out

545
 144
 245
 144

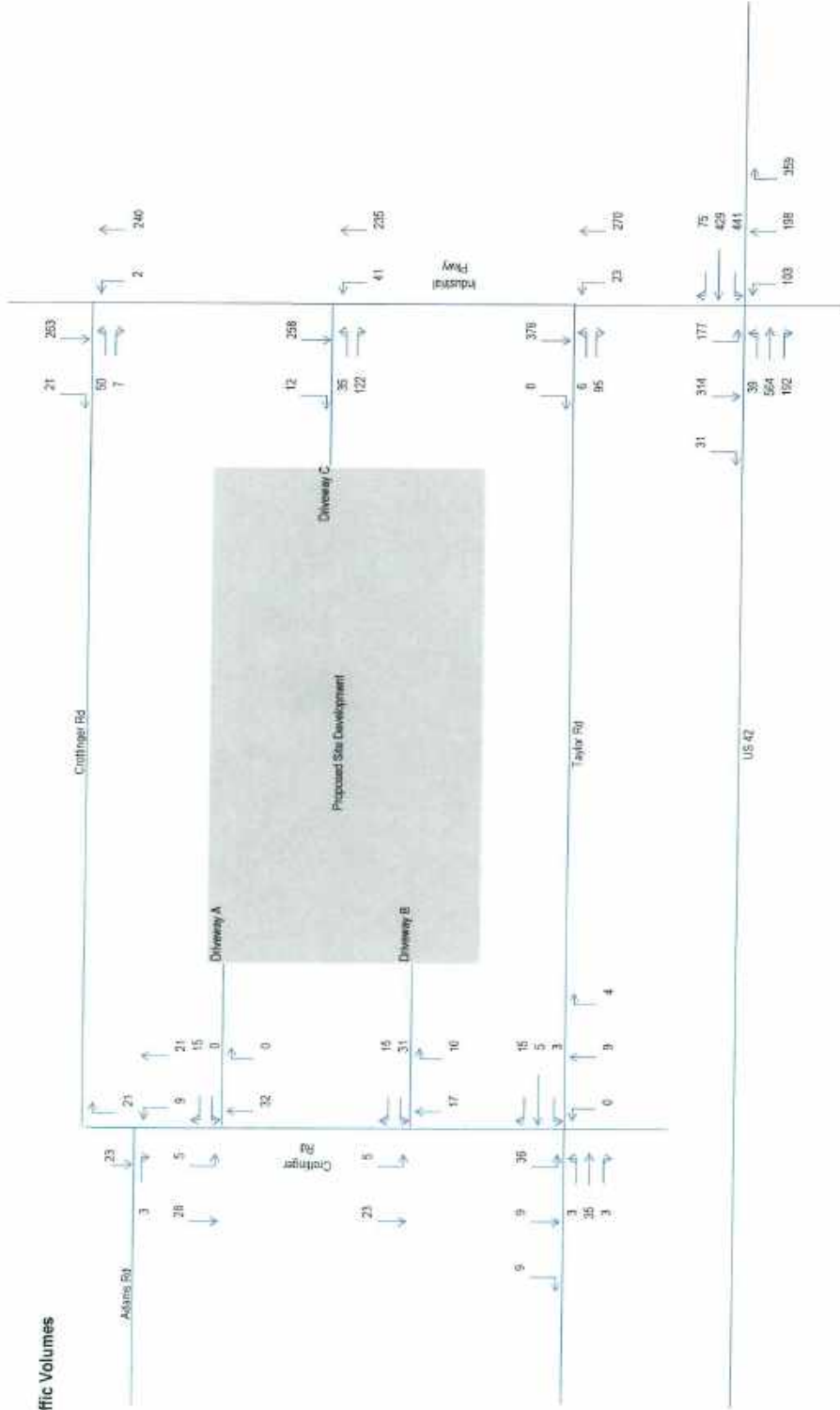
AM 2019 Build Traffic Volumes



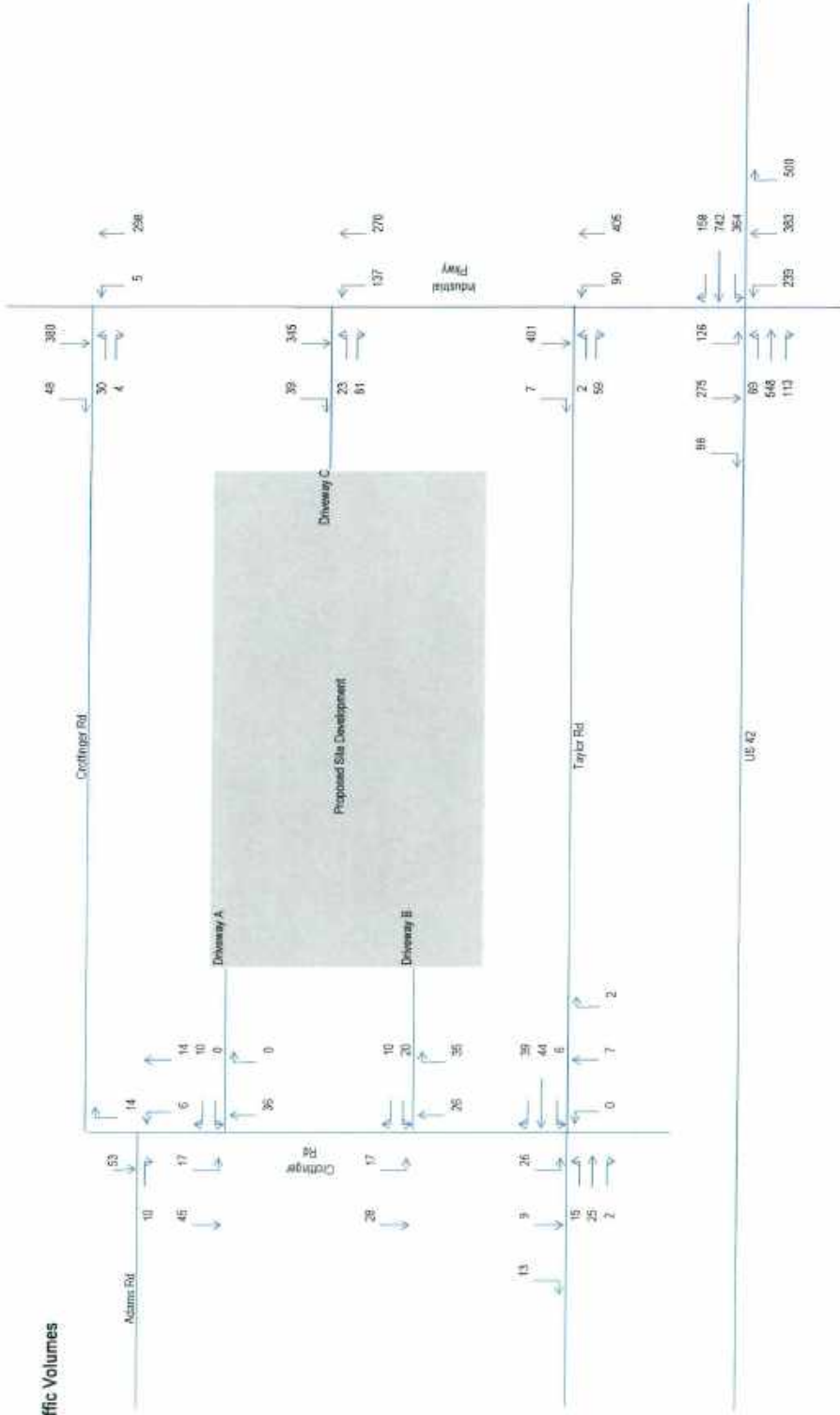
PM 2019 Build Traffic Volumes



AM 2029 Build Traffic Volumes



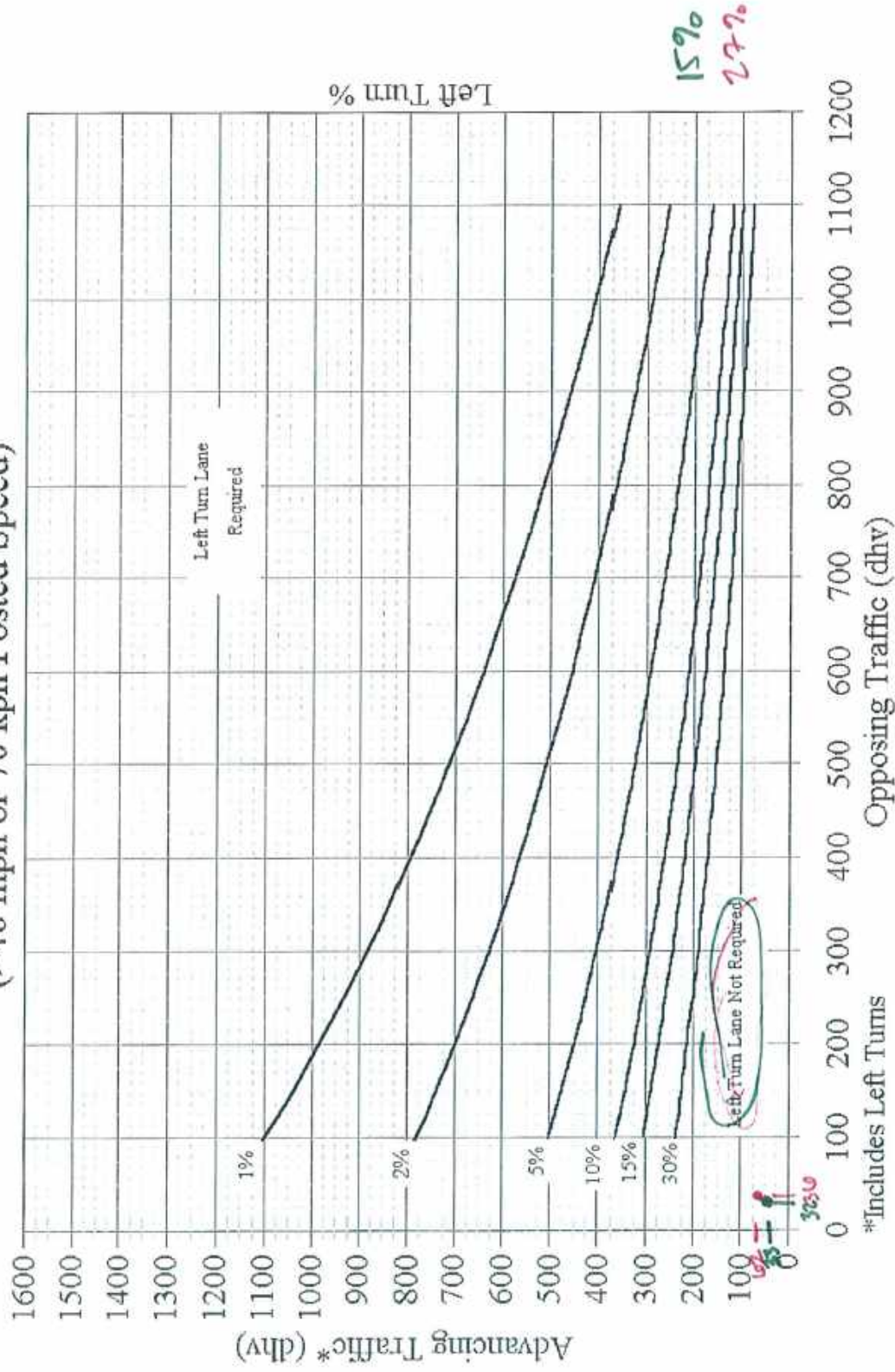
PM 2029 Build Traffic Volumes



Croftingergl Driveway A

AM
PM

2-Lane Highway Left Turn Lane Warrant (>40 mph or 70 kph Posted Speed)

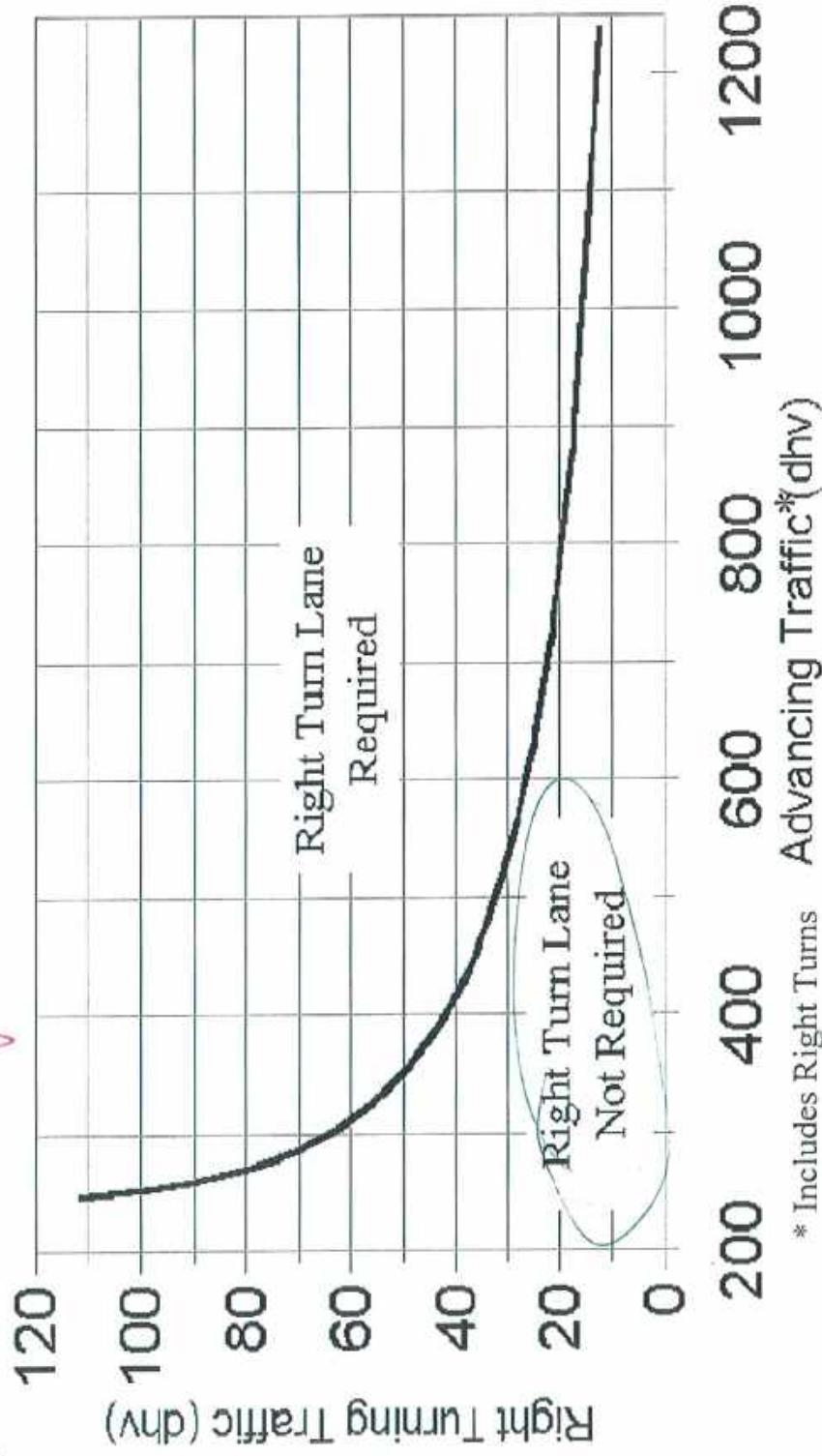


Crottinger Rd at Driveway A

2-Lane Highway Right Turn Lane Warrant

> 40 mph or 70 kph Posted Speed

~~X~~ zero right turn volume

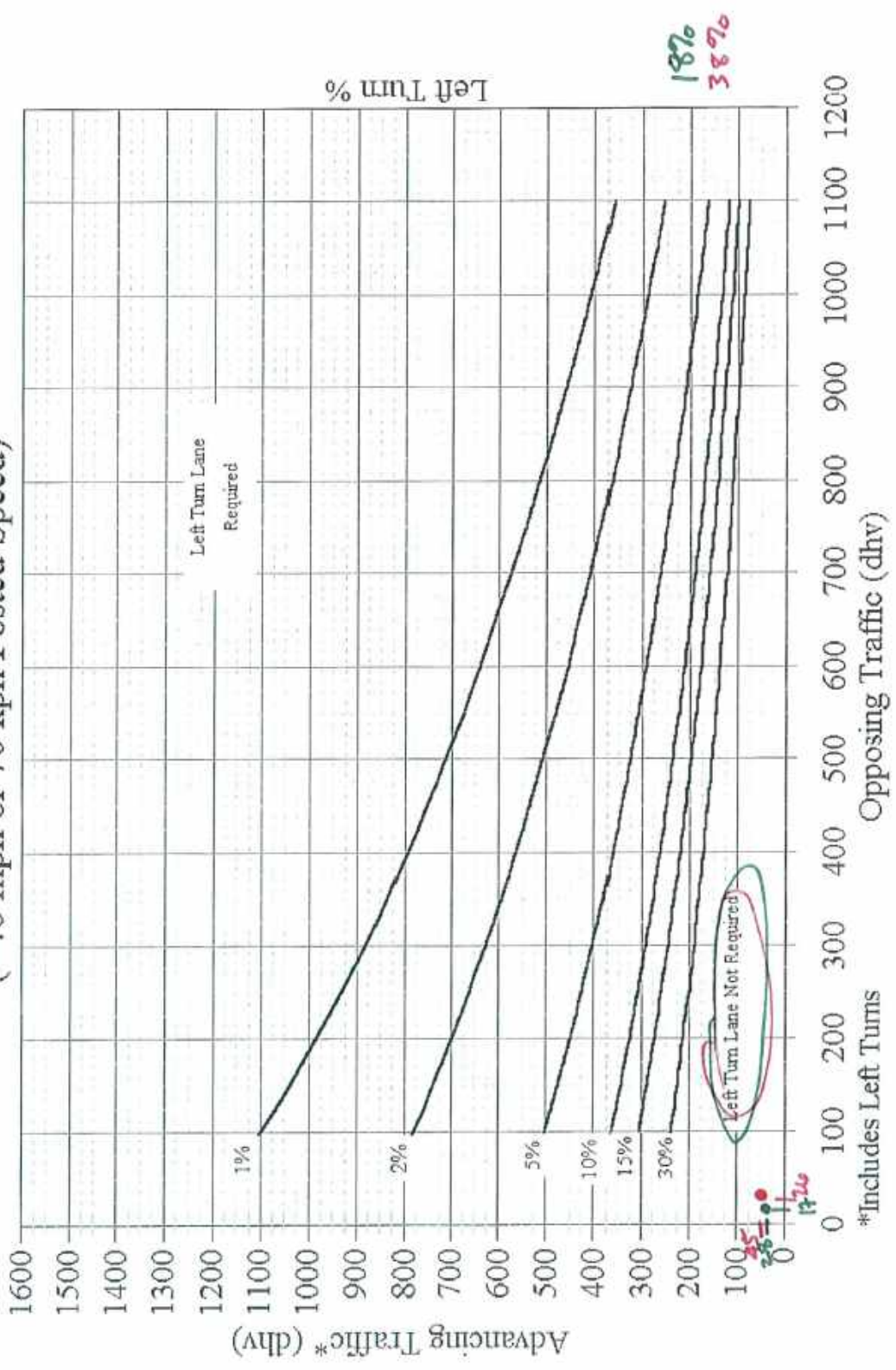


* Includes Right Turns

Croftingon Rd & Driveway B

AM
PM

2-Lane Highway Left Turn Lane Warrant (>40 mph or 70 kph Posted Speed)



*Includes Left Turns



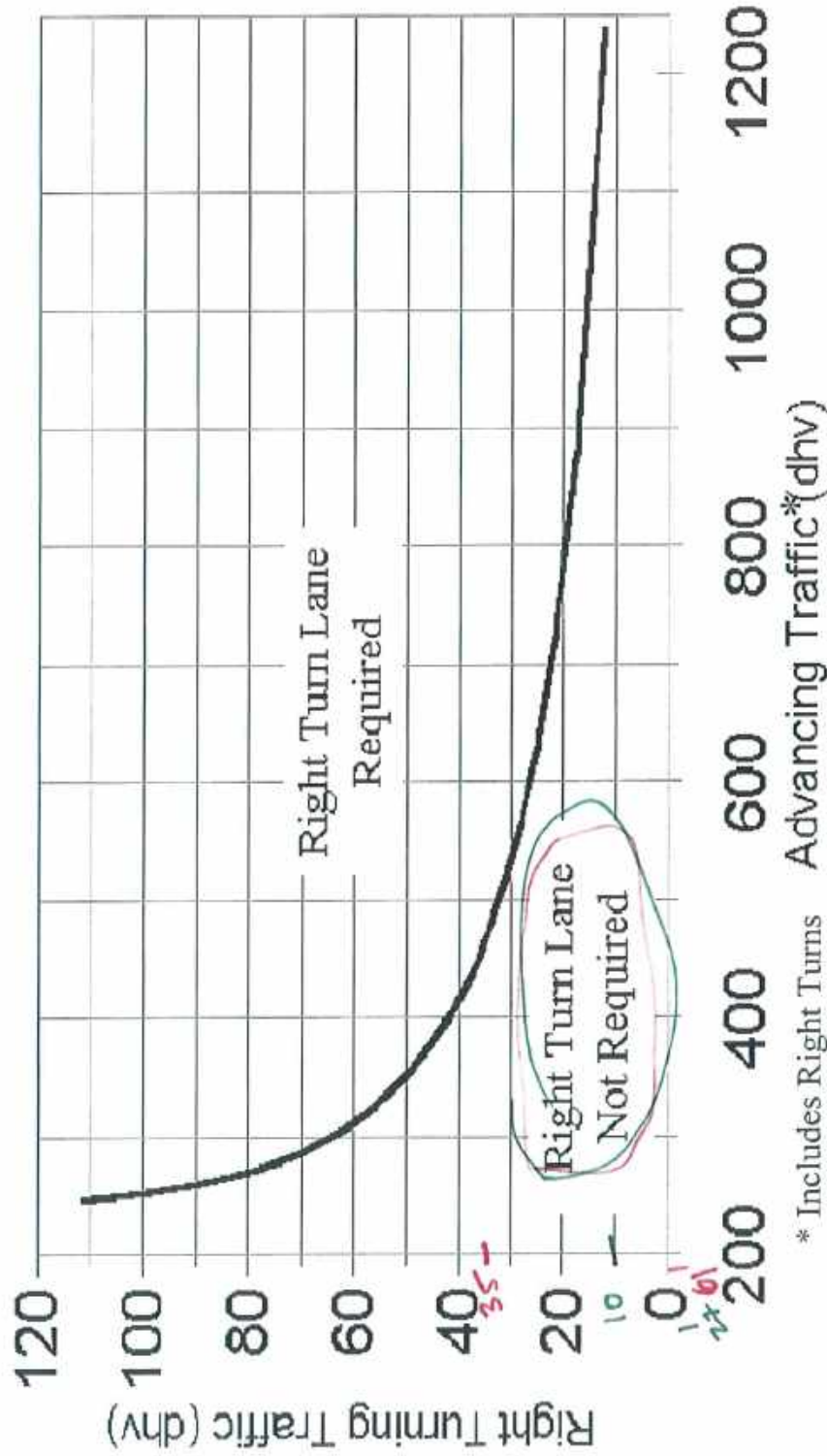
Crottinger Rd & Driveway B

AM

PM

2-Lane Highway Right Turn Lane Warrant

> 40 mph or 70 kph Posted Speed



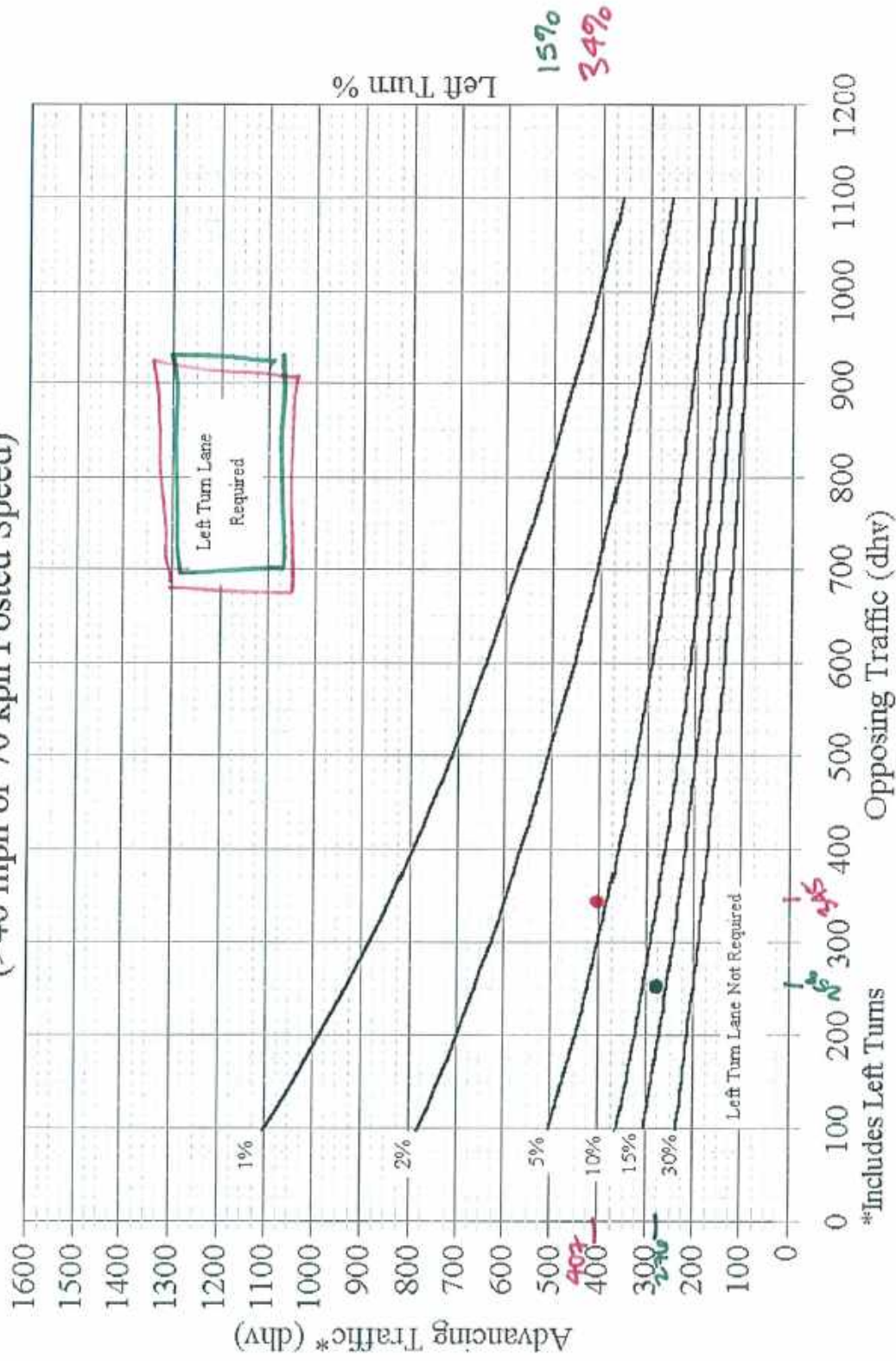
Industrial Parkway Driveway C

AM

PM

2-Lane Highway Left Turn Lane Warrant

(>40 mph or 70 kph Posted Speed)

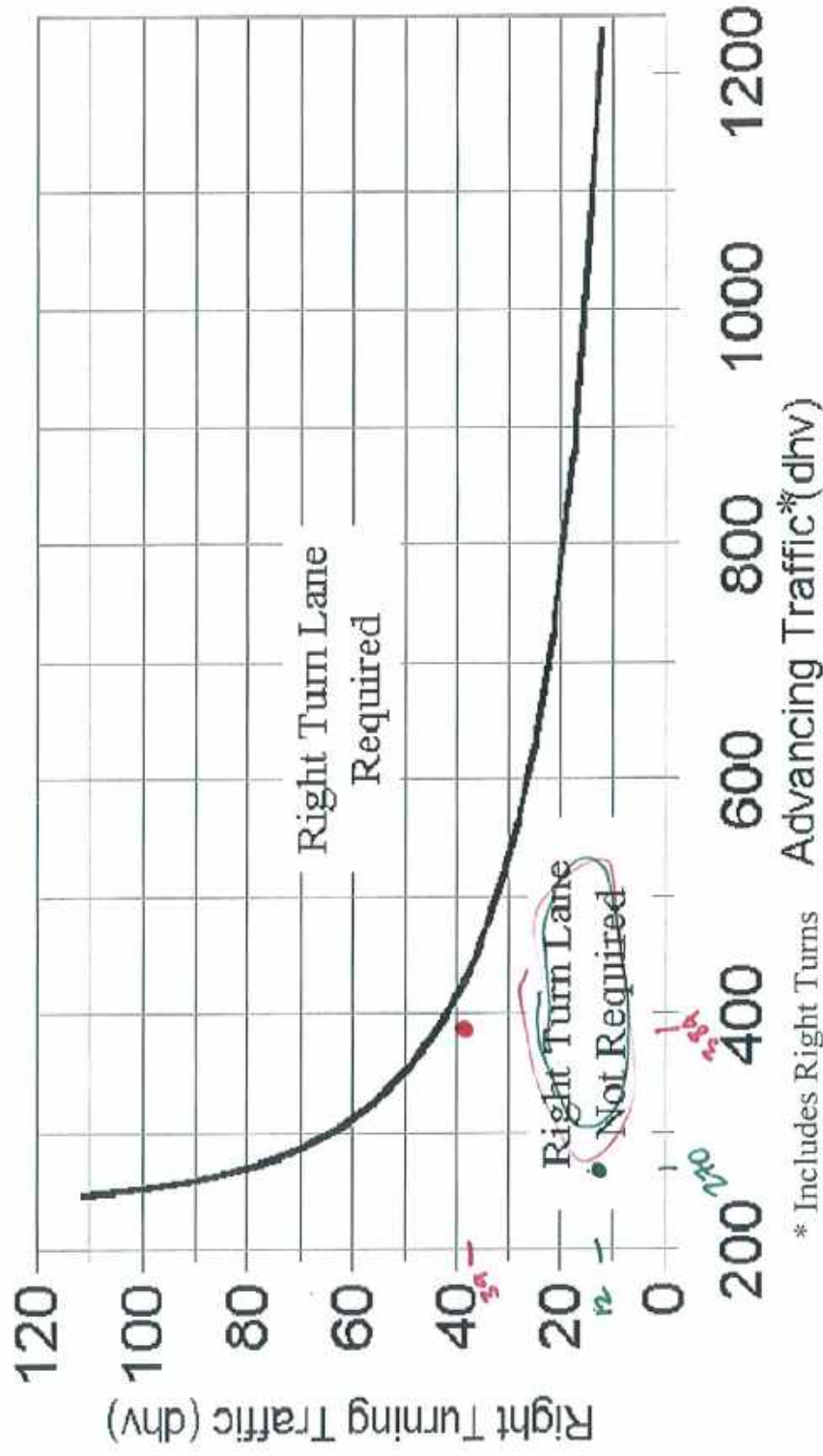


Industrial Pkwy & Driveway C

AM
PM

2-Lane Highway Right Turn Lane Warrant

> 40 mph or 70 kph Posted Speed






* Includes Right Turns



Intersection

Int Delay, s/veh 1

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	19	5	158	13	2	129
Future Vol, veh/h	19	5	158	13	2	129
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	50	80	50	25	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	10	198	26	8	150

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	377	211	0
Stage 1	211	-	-
Stage 2	166	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	625	829	-
Stage 1	824	-	-
Stage 2	863	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	621	829	-
Mov Cap-2 Maneuver	621	-	-
Stage 1	819	-	-
Stage 2	863	-	-

Approach	EB	SE	NW
HCM Control Delay, s	10.6	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	SET	SER
Capacity (veh/h)	1345	-	673	-	-
HCM Lane V/C Ratio	0.006	-	0.048	-	-
HCM Control Delay (s)	7.7	0	10.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection

Int Delay, s/veh 4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	32	3	3	5	8	0	9	4	13	9	0
Future Vol, veh/h	0	32	3	3	5	8	0	9	4	13	9	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	55	50	50	50	58	25	50	38	60	67	25
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	58	6	6	10	14	0	18	11	22	13	0




Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	24	0	0	64	0	0	97	97	61	105	93	17
Stage 1	-	-	-	-	-	-	61	61	-	29	29	-
Stage 2	-	-	-	-	-	-	36	36	-	76	64	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1591	-	-	1538	-	-	885	793	1004	875	797	1062
Stage 1	-	-	-	-	-	-	950	844	-	988	871	-
Stage 2	-	-	-	-	-	-	980	865	-	933	842	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1591	-	-	1538	-	-	871	790	1004	848	794	1062
Mov Cap-2 Maneuver	-	-	-	-	-	-	871	790	-	848	794	-
Stage 1	-	-	-	-	-	-	950	844	-	988	868	-
Stage 2	-	-	-	-	-	-	961	862	-	904	842	-

Approach	EB		WB		NB		SB
HCM Control Delay, s	0		1.5		9.3		9.6
HCM LOS					A		A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	857	1591	-	-	1538	-	-	826
HCM Lane V/C Ratio	0.033	-	-	-	0.004	-	-	0.042
HCM Control Delay (s)	9.3	0	-	-	7.4	0	-	9.6
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection

Int Delay, s/veh 1.9

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	4	46	160	0	15	144
Future Vol, veh/h	4	46	160	0	15	144
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	38	77	87	25	70	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	60	184	0	21	180

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	406	184	0
Stage 1	184	-	-
Stage 2	222	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	601	858	-
Stage 1	848	-	-
Stage 2	815	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	591	858	-
Mov Cap-2 Maneuver	591	-	-
Stage 1	834	-	-
Stage 2	815	-	-

















Approach	EB	SE	NW
HCM Control Delay, s	9.9	0	0.8
HCM LOS	A		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	SET	SER
Capacity (veh/h)	1391	-	804	-	-
HCM Lane V/C Ratio	0.015	-	0.087	-	-
HCM Control Delay (s)	7.6	0	9.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

HCM 2010 Signalized Intersection Summary




4: US 42 & Industrial Pkwy

01/17/2019

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	57	165	10	51	113	151	20	346	105	197	263	29
Future Volume (veh/h)	57	165	10	51	113	151	20	346	105	197	263	29
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	62	179	11	55	123	164	22	376	114	214	286	32
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	126	336	19	100	186	221	64	817	240	346	438	47
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.61	0.61	0.61	0.61	0.61	0.61
Sat Flow, veh/h	273	1210	68	192	670	794	36	1337	393	474	717	76
Grp Volume(v), veh/h	252	0	0	342	0	0	512	0	0	532	0	0
Grp Sat Flow(s),veh/h/ln	1551	0	0	1656	0	0	1766	0	0	1267	0	0
Q Serve(g_s), s	0.0	0.0	0.0	4.3	0.0	0.0	0.0	0.0	0.0	12.4	0.0	0.0
Cycle Q Clear(g_c), s	12.1	0.0	0.0	16.5	0.0	0.0	14.0	0.0	0.0	26.4	0.0	0.0
Prop In Lane	0.25		0.04	0.16		0.48	0.04		0.22	0.40		0.06
Lane Grp Cap(c), veh/h	481	0	0	506	0	0	1121	0	0	830	0	0
V/C Ratio(X)	0.52	0.00	0.00	0.68	0.00	0.00	0.46	0.00	0.00	0.64	0.00	0.00
Avail Cap(c_a), veh/h	481	0	0	506	0	0	1121	0	0	830	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	27.5	0.0	0.0	29.3	0.0	0.0	9.5	0.0	0.0	11.9	0.0	0.0
Incr Delay (d2), s/veh	4.1	0.0	0.0	7.1	0.0	0.0	1.3	0.0	0.0	3.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	0.0	0.0	8.7	0.0	0.0	7.2	0.0	0.0	9.7	0.0	0.0
LnGrp Delay(d),s/veh	31.5	0.0	0.0	36.4	0.0	0.0	10.9	0.0	0.0	15.7	0.0	0.0
LnGrp LOS	C			D			B			B		
Approach Vol, veh/h	252				342		512				532	
Approach Delay, s/veh	31.5				36.4		10.9				15.7	
Approach LOS	C				D		B				B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	30.0		60.0		30.0		60.0					
Change Period (Y+Rc), s	5.0		5.0		5.0		5.0					
Max Green Setting (Gmax), s	25.0		55.0		25.0		55.0					
Max Q Clear Time (g_c+I1), s	18.5		16.0		14.1		28.4					
Green Ext Time (p_c), s	1.0		3.1		0.9		3.8					
Intersection Summary												
HCM 2010 Ctrl Delay			20.9									
HCM 2010 LOS			C									

Intersection

Int Delay, s/veh 0.7

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	10	3	214	22	5	173
Future Vol, veh/h	10	3	214	22	5	173
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	56	50	91	88	50	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	6	235	25	10	206

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	474	248	0
Stage 1	248	-	-
Stage 2	226	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	549	791	-
Stage 1	793	-	-
Stage 2	812	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	544	791	-
Mov Cap-2 Maneuver	544	-	-
Stage 1	786	-	-
Stage 2	812	-	-

Approach	EB	SE	NW
HCM Control Delay, s	11.4	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NWL	NWTEBLn1	SET	SER
Capacity (veh/h)	1304	-	590	-
HCM Lane V/C Ratio	0.008	-	0.04	-
HCM Control Delay (s)	7.8	0	11.4	-
HCM Lane LOS	A	A	B	-
HCM 95th %tile Q(veh)	0	-	0.1	-

Intersection

Int Delay, s/veh 3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	23	2	6	40	13	0	7	2	11	9	7
Future Vol, veh/h	5	23	2	6	40	13	0	7	2	11	9	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	33	55	25	62	70	60	25	50	25	42	100	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	42	8	10	57	22	0	14	8	26	9	14

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	79	0	0	50	0	0	176	175	46	175	168	68
Stage 1	-	-	-	-	-	-	76	76	-	88	88	-
Stage 2	-	-	-	-	-	-	100	99	-	87	80	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1519	-	-	1557	-	-	786	718	1023	788	725	995
Stage 1	-	-	-	-	-	-	933	832	-	920	822	-
Stage 2	-	-	-	-	-	-	906	813	-	921	828	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1519	-	-	1557	-	-	758	706	1023	760	713	995
Mov Cap-2 Maneuver	-	-	-	-	-	-	758	706	-	760	713	-
Stage 1	-	-	-	-	-	-	924	824	-	911	816	-
Stage 2	-	-	-	-	-	-	877	807	-	889	820	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	1.7		0.8		9.7		9.8	
HCM LOS					A		A	

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	796	1519	-	-	1557	-	-	804
HCM Lane V/C Ratio	0.028	0.01	-	-	0.006	-	-	0.061
HCM Control Delay (s)	9.7	7.4	0	-	7.3	0	-	9.8
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2

Intersection

Int Delay, s/veh 2.1

Movement EBL EBR SET SER NWL NWT

Lane Configurations	W					
Traffic Vol, veh/h	2	28	201	7	59	168
Future Vol, veh/h	2	28	201	7	59	168
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	25	81	88	50	63	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	35	228	14	94	187

Major/Minor Minor1 Major1 Major2

Conflicting Flow All	610	235	0	0	242	0
Stage 1	235	-	-	-	-	-
Stage 2	375	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	458	804	-	-	1324	-
Stage 1	804	-	-	-	-	-
Stage 2	695	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	422	804	-	-	1324	-
Mov Cap-2 Maneuver	422	-	-	-	-	-
Stage 1	740	-	-	-	-	-
Stage 2	695	-	-	-	-	-

Approach EB SE NW

HCM Control Delay, s	10.6	0	2.6
HCM LOS	B		

















Minor Lane/Major Mvmt NWL NWT EBLn1 SET SER

Capacity (veh/h)	1324	-	687	-	-
HCM Lane V/C Ratio	0.071	-	0.062	-	-
HCM Control Delay (s)	7.9	0	10.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-

HCM 2010 Signalized Intersection Summary




4: US 42 & Industrial Pkwy

01/17/2019

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	43	151	54	133	205	231	30	336	56	146	455	40
Future Volume (veh/h)	43	151	54	133	205	231	30	336	56	146	455	40
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	47	164	59	145	223	251	33	365	61	159	495	43
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	111	365	120	178	232	246	76	703	113	201	547	46
Arrive On Green	0.39	0.39	0.39	0.39	0.39	0.39	0.50	0.50	0.50	0.50	0.50	0.50
Sat Flow, veh/h	164	939	308	329	597	632	67	1405	226	304	1093	92
Grp Volume(v), veh/h	270	0	0	619	0	0	459	0	0	697	0	0
Grp Sat Flow(s),veh/h/ln	1411	0	0	1559	0	0	1697	0	0	1490	0	0
Q Serve(g_s), s	0.0	0.0	0.0	24.9	0.0	0.0	0.0	0.0	0.0	24.6	0.0	0.0
Cycle Q Clear(g_c), s	10.1	0.0	0.0	35.0	0.0	0.0	15.2	0.0	0.0	39.8	0.0	0.0
Prop In Lane	0.17		0.22	0.23		0.41	0.07		0.13	0.23		0.06
Lane Grp Cap(c), veh/h	596	0	0	656	0	0	892	0	0	794	0	0
V/C Ratio(X)	0.45	0.00	0.00	0.94	0.00	0.00	0.51	0.00	0.00	0.88	0.00	0.00
Avail Cap(c_a), veh/h	596	0	0	656	0	0	892	0	0	794	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	19.8	0.0	0.0	27.6	0.0	0.0	15.0	0.0	0.0	21.3	0.0	0.0
Incr Delay (d2), s/veh	2.5	0.0	0.0	23.8	0.0	0.0	2.1	0.0	0.0	13.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	0.0	0.0	19.6	0.0	0.0	8.0	0.0	0.0	19.0	0.0	0.0
LnGrp Delay(d),s/veh	22.3	0.0	0.0	51.5	0.0	0.0	17.2	0.0	0.0	34.4	0.0	0.0
LnGrp LOS	C			D			B			C		
Approach Vol, veh/h	270		619				459				697	
Approach Delay, s/veh	22.3		51.5				17.2				34.4	
Approach LOS	C		D				B				C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4				6		8			
Phs Duration (G+Y+Rc), s	40.0		50.0				40.0		50.0			
Change Period (Y+Rc), s	5.0		5.0				5.0		5.0			
Max Green Setting (Gmax), s	35.0		45.0				35.0		45.0			
Max Q Clear Time (g_c+I1), s	37.0		17.2				12.1		41.8			
Green Ext Time (p_c), s	0.0		2.7				1.4		1.4			
Intersection Summary												
HCM 2010 Ctrl Delay			34.1									
HCM 2010 LOS			C									

Intersection

Int Delay, s/veh 1.1

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	29	7	251	14	2	205
Future Vol, veh/h	29	7	251	14	2	205
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	50	80	50	25	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	34	14	314	28	8	238

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	582	328	0	0	342
Stage 1	328	-	-	-	-
Stage 2	254	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	475	713	-	-	1217
Stage 1	730	-	-	-	-
Stage 2	788	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	471	713	-	-	1217
Mov Cap-2 Maneuver	471	-	-	-	-
Stage 1	724	-	-	-	-
Stage 2	788	-	-	-	-

Approach	EB	SE	NW
HCM Control Delay, s	12.6	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	SET	SER
Capacity (veh/h)	1217	-	523	-	-
HCM Lane V/C Ratio	0.007	-	0.092	-	-
HCM Control Delay (s)	8	0	12.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection

Int Delay, s/veh 4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	35	3	3	5	8	0	9	4	14	9	0
Future Vol, veh/h	0	35	3	3	5	8	0	9	4	14	9	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	55	50	50	50	58	25	50	38	60	67	25
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	64	6	6	10	14	0	18	11	23	13	0




Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	24	0	0	70	0	0	103	103	67	111	99	17
Stage 1	-	-	-	-	-	-	67	67	-	29	29	-
Stage 2	-	-	-	-	-	-	36	36	-	82	70	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1591	-	-	1531	-	-	877	787	997	867	791	1062
Stage 1	-	-	-	-	-	-	943	839	-	988	871	-
Stage 2	-	-	-	-	-	-	980	865	-	926	837	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1591	-	-	1531	-	-	863	784	997	840	788	1062
Mov Cap-2 Maneuver	-	-	-	-	-	-	863	784	-	840	788	-
Stage 1	-	-	-	-	-	-	943	839	-	988	868	-
Stage 2	-	-	-	-	-	-	961	862	-	897	837	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.5	9.4	9.6
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	851	1591	-	-	1531	-	-	820
HCM Lane V/C Ratio	0.034	-	-	-	0.004	-	-	0.045
HCM Control Delay (s)	9.4	0	-	-	7.4	0	-	9.6
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection

Int Delay, s/veh 2

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	6	73	254	0	16	229
Future Vol, veh/h	6	73	254	0	16	229
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	38	77	87	25	70	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	95	292	0	23	286

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	624	292	0	0	292
Stage 1	292	-	-	-	-
Stage 2	332	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	449	747	-	-	1270
Stage 1	758	-	-	-	-
Stage 2	727	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	439	747	-	-	1270
Mov Cap-2 Maneuver	439	-	-	-	-
Stage 1	741	-	-	-	-
Stage 2	727	-	-	-	-






















Approach	EB	SE	NW
HCM Control Delay, s	11.3	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	SET	SER
Capacity (veh/h)	1270	-	679	-	-
HCM Lane V/C Ratio	0.018	-	0.163	-	-
HCM Control Delay (s)	7.9	0	11.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.6	-	-

HCM 2010 Signalized Intersection Summary

4: US 42 & Industrial Pkwy

01/22/2019

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	93	269	16	103	184	359	33	564	192	441	429	47
Future Volume (veh/h)	93	269	16	103	184	359	33	564	192	441	429	47
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	101	292	17	112	200	390	36	613	209	479	466	51
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	305	484	28	221	517	440	560	1585	540	405	1967	214
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.61	0.61	0.61	0.61	0.61	0.61
Sat Flow, veh/h	1178	1743	101	1066	1863	1583	881	2593	883	663	3219	351
Grp Volume(v), veh/h	101	0	309	112	200	390	36	418	404	479	255	262
Grp Sat Flow(s), veh/h/ln	1178	0	1845	1066	1863	1583	881	1770	1707	663	1770	1801
Q Serve(g_s), s	6.8	0.0	13.1	9.2	7.8	21.2	1.7	10.8	10.9	44.1	5.9	6.0
Cycle Q Clear(g_c), s	14.6	0.0	13.1	22.2	7.8	21.2	7.7	10.8	10.9	55.0	5.9	6.0
Prop In Lane	1.00		0.06	1.00		1.00	1.00		0.52	1.00		0.19
Lane Grp Cap(c), veh/h	305	0	512	221	517	440	560	1081	1043	405	1081	1100
V/C Ratio(X)	0.33	0.00	0.60	0.51	0.39	0.89	0.06	0.39	0.39	1.18	0.24	0.24
Avail Cap(c_a), veh/h	305	0	512	221	517	440	560	1081	1043	405	1081	1100
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.2	0.0	28.2	37.8	26.3	31.1	9.7	8.9	8.9	27.3	8.0	8.0
Incr Delay (d2), s/veh	2.9	0.0	5.2	8.1	2.2	22.3	0.2	1.0	1.1	104.5	0.5	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	2.5	0.0	7.3	3.2	4.3	11.9	0.5	5.5	5.4	21.8	3.0	3.1
LnGrp Delay(d), s/veh	35.1	0.0	33.4	45.9	28.5	53.4	9.9	10.0	10.0	131.7	8.5	8.5
LnGrp LOS	D		C	D	C	D	A	A	B	F	A	A
Approach Vol, veh/h		410			702			858			996	
Approach Delay, s/veh		33.8			45.1			10.0			67.8	
Approach LOS		C			D			A			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		30.0		60.0		30.0		60.0				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		25.0		55.0		25.0		55.0				
Max Q Clear Time (g_c+I1), s		24.2		12.9		16.6		57.0				
Green Ext Time (p_c), s		0.3		5.3		1.2		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			41.0									
HCM 2010 LOS			D									

Intersection

Int Delay, s/veh 0.8

Movement EBL EBR SET SER NWL NWT

Lane Configurations	W		W		W	
Traffic Vol, veh/h	16	4	341	24	5	275
Future Vol, veh/h	16	4	341	24	5	275
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	56	50	91	88	50	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	8	375	27	10	327

Major/Minor Minor1 Major1 Major2

Conflicting Flow All	736	389	0	0	402	0
Stage 1	389	-	-	-	-	-
Stage 2	347	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	386	659	-	-	1157	-
Stage 1	685	-	-	-	-	-
Stage 2	716	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	382	659	-	-	1157	-
Mov Cap-2 Maneuver	382	-	-	-	-	-
Stage 1	677	-	-	-	-	-
Stage 2	716	-	-	-	-	-

Approach EB SE NW

HCM Control Delay, s	14.4	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt NWL NWT EBLn1 SET SER

Capacity (veh/h)	1157	-	421	-	-
HCM Lane V/C Ratio	0.009	-	0.087	-	-
HCM Control Delay (s)	8.1	0	14.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection

Int Delay, s/veh 3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	25	2	6	44	14	0	7	2	12	9	7
Future Vol, veh/h	5	25	2	6	44	14	0	7	2	12	9	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	33	55	25	62	70	60	25	50	25	42	100	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	45	8	10	63	23	0	14	8	29	9	14




Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	86	0	0	53	0	0	185	185	49	185	178	75
Stage 1	-	-	-	-	-	-	79	79	-	95	95	-
Stage 2	-	-	-	-	-	-	106	106	-	90	83	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1510	-	-	1553	-	-	776	709	1020	776	716	986
Stage 1	-	-	-	-	-	-	930	829	-	912	816	-
Stage 2	-	-	-	-	-	-	900	807	-	917	826	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1510	-	-	1553	-	-	748	697	1020	748	704	986
Mov Cap-2 Maneuver	-	-	-	-	-	-	748	697	-	748	704	-
Stage 1	-	-	-	-	-	-	921	821	-	903	810	-
Stage 2	-	-	-	-	-	-	871	801	-	885	818	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	1.6		0.7		9.7		9.9	
HCM LOS					A		A	

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	788	1510	-	-	1553	-	-	791
HCM Lane V/C Ratio	0.028	0.01	-	-	0.006	-	-	0.065
HCM Control Delay (s)	9.7	7.4	0	-	7.3	0	-	9.9
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2

Intersection

Int Delay, s/veh 1.9

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	2	45	320	7	65	268
Future Vol, veh/h	2	45	320	7	65	268
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	25	81	88	50	63	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	56	364	14	103	298

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	875	371	0	0	378
Stage 1	371	-	-	-	-
Stage 2	504	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	320	675	-	-	1180
Stage 1	698	-	-	-	-
Stage 2	607	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	286	675	-	-	1180
Mov Cap-2 Maneuver	286	-	-	-	-
Stage 1	625	-	-	-	-
Stage 2	607	-	-	-	-






















Approach	EB	SE	NW
HCM Control Delay, s	12	0	2.1
HCM LOS	B		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	SET	SER
Capacity (veh/h)	1180	-	576	-	-
HCM Lane V/C Ratio	0.087	-	0.11	-	-
HCM Control Delay (s)	8.3	0	12	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.3	-	0.4	-	-

HCM 2010 Signalized Intersection Summary




4: US 42 & Industrial Pkwy

01/22/2019

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	70	246	88	239	334	500	49	548	113	364	742	65
Future Volume (veh/h)	70	246	88	239	334	500	49	548	113	364	742	65
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	76	267	96	260	363	543	53	596	123	396	807	71
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	324	509	183	316	724	616	292	1462	301	351	1646	145
Arrive On Green	0.39	0.39	0.39	0.39	0.39	0.39	0.50	0.50	0.50	0.50	0.50	0.50
Sat Flow, veh/h	1015	1309	471	1015	1863	1583	629	2924	602	730	3292	290
Grp Volume(v), veh/h	76	0	363	260	363	543	53	360	359	396	434	444
Grp Sat Flow(s),veh/h/ln	1015	0	1780	1015	1863	1583	629	1770	1757	730	1770	1812
Q Serve(g_s), s	5.5	0.0	14.1	20.9	13.3	28.7	5.5	11.5	11.6	33.4	14.6	14.6
Cycle Q Clear(g_c), s	18.8	0.0	14.1	35.0	13.3	28.7	20.1	11.5	11.6	45.0	14.6	14.6
Prop In Lane	1.00		0.26	1.00		1.00	1.00		0.34	1.00		0.16
Lane Grp Cap(c), veh/h	324	0	692	316	724	616	292	885	878	351	885	906
V/C Ratio(X)	0.23	0.00	0.52	0.82	0.50	0.88	0.18	0.41	0.41	1.13	0.49	0.49
Avail Cap(c_a), veh/h	324	0	692	316	724	616	292	885	878	351	885	906
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.0	0.0	21.1	35.5	20.9	25.6	21.6	14.1	14.1	32.1	14.9	14.9
Incr Delay (d2), s/veh	1.7	0.0	2.8	21.0	2.5	16.6	1.4	1.4	1.4	87.1	1.9	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	7.4	8.3	7.4	15.4	1.1	5.9	5.9	17.2	7.6	7.8
LnGrp Delay(d),s/veh	29.7	0.0	23.9	56.6	23.3	42.2	22.9	15.5	15.5	119.2	16.8	16.8
LnGrp LOS	C		C	E	C	D	C	B	B	F	B	B
Approach Vol, veh/h		439			1166			772			1274	
Approach Delay, s/veh		24.9			39.5			16.0			48.6	
Approach LOS		C			D			B			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		40.0		50.0		40.0		50.0				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		35.0		45.0		35.0		45.0				
Max Q Clear Time (g_c+I1), s		37.0		22.1		20.8		47.0				
Green Ext Time (p_c), s		0.0		4.3		1.9		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			36.0									
HCM 2010 LOS			D									

Intersection

Int Delay, s/veh 1.4

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	40	5	170	20	2	164
Future Vol, veh/h	40	5	170	20	2	164
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	50	80	50	25	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	47	10	213	40	8	191

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	440	233	0	0	253
Stage 1	233	-	-	-	-
Stage 2	207	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	574	806	-	-	1312
Stage 1	806	-	-	-	-
Stage 2	828	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	570	806	-	-	1312
Mov Cap-2 Maneuver	570	-	-	-	-
Stage 1	800	-	-	-	-
Stage 2	828	-	-	-	-

Approach	EB	SE	NW
HCM Control Delay, s	11.6	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	SET	SER
Capacity (veh/h)	1312	-	601	-	-
HCM Lane V/C Ratio	0.006	-	0.095	-	-
HCM Control Delay (s)	7.8	0	11.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection

Int Delay, s/veh 5.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	32	3	3	5	15	0	9	4	35	9	9
Future Vol, veh/h	3	32	3	3	5	15	0	9	4	35	9	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	55	50	50	50	58	25	50	38	60	67	25
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	58	6	6	10	26	0	18	11	58	13	36




Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	36	0	0	64	0	0	145	133	61	135	123	23
Stage 1	-	-	-	-	-	-	85	85	-	35	35	-
Stage 2	-	-	-	-	-	-	60	48	-	100	88	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1575	-	-	1538	-	-	824	758	1004	836	767	1054
Stage 1	-	-	-	-	-	-	923	824	-	981	866	-
Stage 2	-	-	-	-	-	-	951	855	-	906	822	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1575	-	-	1538	-	-	778	749	1004	805	758	1054
Mov Cap-2 Maneuver	-	-	-	-	-	-	778	749	-	805	758	-
Stage 1	-	-	-	-	-	-	916	817	-	973	863	-
Stage 2	-	-	-	-	-	-	901	852	-	870	815	-

Approach	EB		WB		NB		SB
HCM Control Delay, s	1.2		1.1		9.5		9.7
HCM LOS					A		A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	826	1575	-	-	1538	-	-	867
HCM Lane V/C Ratio	0.035	0.008	-	-	0.004	-	-	0.124
HCM Control Delay (s)	9.5	7.3	0	-	7.4	0	-	9.7
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.4

Intersection

Int Delay, s/veh 2

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	4	68	282	0	22	185
Future Vol, veh/h	4	68	282	0	22	185
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	38	77	87	25	70	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	88	324	0	31	231

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	617	324	0	0	324
Stage 1	324	-	-	-	-
Stage 2	293	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	453	717	-	-	1236
Stage 1	733	-	-	-	-
Stage 2	757	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	440	717	-	-	1236
Mov Cap-2 Maneuver	440	-	-	-	-
Stage 1	712	-	-	-	-
Stage 2	757	-	-	-	-

















Approach	EB	SE	NW
HCM Control Delay, s	11.3	0	1
HCM LOS	B		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	SET	SER
Capacity (veh/h)	1236	-	672	-	-
HCM Lane V/C Ratio	0.025	-	0.147	-	-
HCM Control Delay (s)	8	0	11.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.5	-	-

HCM 2010 Signalized Intersection Summary




4: US 42 & Industrial Pkwy

01/17/2019

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	141	210	25	51	127	151	26	346	105	197	263	57
Future Volume (veh/h)	141	210	25	51	127	151	26	346	105	197	263	57
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	153	228	27	55	138	164	28	376	114	214	286	62
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	161	185	21	94	190	202	73	809	237	332	418	86
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.61	0.61	0.61	0.61	0.61	0.61
Sat Flow, veh/h	382	665	74	172	683	726	50	1324	388	453	684	141
Grp Volume(v), veh/h	408	0	0	357	0	0	518	0	0	562	0	0
Grp Sat Flow(s), veh/h/ln	1122	0	0	1581	0	0	1761	0	0	1279	0	0
Q Serve(g_s), s	6.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.3	0.0	0.0
Cycle Q Clear(g_c), s	25.0	0.0	0.0	18.7	0.0	0.0	14.2	0.0	0.0	28.5	0.0	0.0
Prop In Lane	0.37		0.07	0.15		0.46	0.05		0.22	0.38		0.11
Lane Grp Cap(c), veh/h	367	0	0	485	0	0	1119	0	0	837	0	0
V/C Ratio(X)	1.11	0.00	0.00	0.74	0.00	0.00	0.46	0.00	0.00	0.67	0.00	0.00
Avail Cap(c_a), veh/h	367	0	0	485	0	0	1119	0	0	837	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	34.8	0.0	0.0	30.0	0.0	0.0	9.6	0.0	0.0	12.3	0.0	0.0
Incr Delay (d2), s/veh	81.2	0.0	0.0	9.6	0.0	0.0	1.4	0.0	0.0	4.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.3	0.0	0.0	9.5	0.0	0.0	7.3	0.0	0.0	10.7	0.0	0.0
LnGrp Delay(d),s/veh	116.0	0.0	0.0	39.5	0.0	0.0	11.0	0.0	0.0	16.6	0.0	0.0
LnGrp LOS	F			D			B			B		
Approach Vol, veh/h	408			357			518			562		
Approach Delay, s/veh	116.0			39.5			11.0			16.6		
Approach LOS	F			D			B			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		30.0		60.0		30.0		60.0				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		25.0		55.0		25.0		55.0				
Max Q Clear Time (g_c+I1), s		20.7		16.2		27.0		30.5				
Green Ext Time (p_c), s		0.8		3.2		0.0		4.0				
Intersection Summary												
HCM 2010 Ctrl Delay				41.4								
HCM 2010 LOS				D								

Intersection

Int Delay, s/veh 2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	15	32	0	5	27
Future Vol, veh/h	0	15	32	0	5	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	16	35	0	5	29




Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	74	35	0	0	35
Stage 1	35	-	-	-	-
Stage 2	39	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	930	1038	-	-	1576
Stage 1	987	-	-	-	-
Stage 2	983	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	927	1038	-	-	1576
Mov Cap-2 Maneuver	927	-	-	-	-
Stage 1	984	-	-	-	-
Stage 2	983	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.5	0	1.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 1038	1576	-
HCM Lane V/C Ratio	-	- 0.016	0.003	-
HCM Control Delay (s)	-	- 8.5	7.3	0
HCM Lane LOS	-	- A	A	A
HCM 95th %tile Q(veh)	-	- 0	0	-

Intersection

Int Delay, s/veh 4.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	31	15	17	10	5	22
Future Vol, veh/h	31	15	17	10	5	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	34	16	18	11	5	24






Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	58	24	0
Stage 1	24	-	-
Stage 2	34	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	949	1052	-
Stage 1	999	-	-
Stage 2	988	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	946	1052	-
Mov Cap-2 Maneuver	946	-	-
Stage 1	996	-	-
Stage 2	988	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	1.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	978	1584
HCM Lane V/C Ratio	-	-	0.051	0.003
HCM Control Delay (s)	-	-	8.9	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0

Intersection

Int Delay, s/veh 3.9

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Traffic Vol, veh/h	163	12	41	148	35	122
Future Vol, veh/h	163	12	41	148	35	122
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	177	13	45	161	38	133




Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	190
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1384
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1384
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SE	NW	NE
HCM Control Delay, s	0	1.7	11
HCM LOS			B

Minor Lane/Major Mvmt	NELn1	NWL	NWT	SET	SER
Capacity (veh/h)	767	1384	-	-	-
HCM Lane V/C Ratio	0.222	0.032	-	-	-
HCM Control Delay (s)	11	7.7	-	-	-
HCM Lane LOS	B	A	-	-	-
HCM 95th %tile Q(veh)	0.8	0.1	-	-	-

Intersection

Int Delay, s/veh 1.1

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	24	3	253	46	5	196
Future Vol, veh/h	24	3	253	46	5	196
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	56	50	91	88	50	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	43	6	278	52	10	233

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	557	304	0
Stage 1	304	-	-
Stage 2	253	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	491	736	-
Stage 1	748	-	-
Stage 2	789	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	487	736	-
Mov Cap-2 Maneuver	487	-	-
Stage 1	741	-	-
Stage 2	789	-	-

Approach	EB	SE	NW
HCM Control Delay, s	12.8	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	SET	SER
Capacity (veh/h)	1229	-	508	-	-
HCM Lane V/C Ratio	0.008	-	0.096	-	-
HCM Control Delay (s)	8	0	12.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection

Int Delay, s/veh 4.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	15	23	2	6	40	38	0	7	2	25	9	13
Future Vol, veh/h	15	23	2	6	40	38	0	7	2	25	9	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	33	55	25	62	70	60	25	50	25	42	100	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	45	42	8	10	57	63	0	14	8	60	9	26




Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	120	0	0	50	0	0	262	276	46	256	249	89
Stage 1	-	-	-	-	-	-	136	136	-	109	109	-
Stage 2	-	-	-	-	-	-	126	140	-	147	140	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1468	-	-	1557	-	-	691	632	1023	697	654	969
Stage 1	-	-	-	-	-	-	867	784	-	896	805	-
Stage 2	-	-	-	-	-	-	878	781	-	856	781	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1468	-	-	1557	-	-	645	607	1023	659	628	969
Mov Cap-2 Maneuver	-	-	-	-	-	-	645	607	-	659	628	-
Stage 1	-	-	-	-	-	-	839	759	-	867	799	-
Stage 2	-	-	-	-	-	-	839	776	-	807	756	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.6	0.5	10.2	10.8
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	712	1468	-	-	1557	-	-	719
HCM Lane V/C Ratio	0.031	0.031	-	-	0.006	-	-	0.131
HCM Control Delay (s)	10.2	7.5	0	-	7.3	0	-	10.8
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.5

Intersection

Int Delay, s/veh 2.1

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	2	42	282	7	84	305
Future Vol, veh/h	2	42	282	7	84	305
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	25	81	88	50	63	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	52	320	14	133	339

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	932	327	0
Stage 1	327	-	-
Stage 2	605	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	296	714	-
Stage 1	731	-	-
Stage 2	545	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	256	714	-
Mov Cap-2 Maneuver	256	-	-
Stage 1	633	-	-
Stage 2	545	-	-

















Approach	EB	SE	NW
HCM Control Delay, s	12	0	2.3
HCM LOS	B		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	SET	SER
Capacity (veh/h)	1225	-	576	-	-
HCM Lane V/C Ratio	0.109	-	0.104	-	-
HCM Control Delay (s)	8.3	0	12	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.4	-	0.3	-	-

HCM 2010 Signalized Intersection Summary




4: US 42 & Industrial Pkwy

01/17/2019

													
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR	
Lane Configurations													
Traffic Volume (veh/h)	99	180	64	133	254	231	50	336	56	146	455	133	
Future Volume (veh/h)	99	180	64	133	254	231	50	336	56	146	455	133	
Number	1	6	16	5	2	12	7	4	14	3	8	18	
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900	
Adj Flow Rate, veh/h	108	196	70	145	276	251	54	365	61	159	495	145	
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2	
Cap, veh/h	148	254	81	152	234	201	97	603	96	180	474	134	
Arrive On Green	0.39	0.39	0.39	0.39	0.39	0.39	0.50	0.50	0.50	0.50	0.50	0.50	
Sat Flow, veh/h	247	654	207	265	601	517	106	1206	191	264	948	269	
Grp Volume(v), veh/h	374	0	0	672	0	0	480	0	0	799	0	0	
Grp Sat Flow(s),veh/h/ln	1108	0	0	1383	0	0	1503	0	0	1481	0	0	
Q Serve(g_s), s	0.0	0.0	0.0	8.2	0.0	0.0	0.0	0.0	0.0	27.8	0.0	0.0	
Cycle Q Clear(g_c), s	26.8	0.0	0.0	35.0	0.0	0.0	17.2	0.0	0.0	45.0	0.0	0.0	
Prop In Lane	0.29		0.19	0.22		0.37	0.11		0.13	0.20		0.18	
Lane Grp Cap(c), veh/h	482	0	0	586	0	0	796	0	0	789	0	0	
V/C Ratio(X)	0.78	0.00	0.00	1.15	0.00	0.00	0.60	0.00	0.00	1.01	0.00	0.00	
Avail Cap(c_a), veh/h	482	0	0	586	0	0	796	0	0	789	0	0	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	
Uniform Delay (d), s/veh	23.7	0.0	0.0	29.0	0.0	0.0	15.3	0.0	0.0	24.1	0.0	0.0	
Incr Delay (d2), s/veh	11.6	0.0	0.0	84.4	0.0	0.0	3.4	0.0	0.0	35.3	0.0	0.0	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	10.0	0.0	0.0	28.2	0.0	0.0	8.9	0.0	0.0	27.2	0.0	0.0	
LnGrp Delay(d),s/veh	35.3	0.0	0.0	113.4	0.0	0.0	18.7	0.0	0.0	59.4	0.0	0.0	
LnGrp LOS	D			F			B			F			
Approach Vol, veh/h	374				672				480				799
Approach Delay, s/veh	35.3				113.4				18.7				59.4
Approach LOS	D				F				B				E
Timer	1	2	3	4	5	6	7	8					
Assigned Phs	2		4		6		8						
Phs Duration (G+Y+Rc), s	40.0		50.0		40.0		50.0						
Change Period (Y+Rc), s	5.0		5.0		5.0		5.0						
Max Green Setting (Gmax), s	35.0		45.0		35.0		45.0						
Max Q Clear Time (g_c+I1), s	37.0		19.2		28.8		47.0						
Green Ext Time (p_c), s	0.0		2.9		1.2		0.0						
Intersection Summary													
HCM 2010 Ctrl Delay	62.7												
HCM 2010 LOS	E												

Intersection

Int Delay, s/veh 2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	10	35	0	17	44
Future Vol, veh/h	0	10	35	0	17	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	11	38	0	18	48




Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	122	38	0
Stage 1	38	-	-
Stage 2	84	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	873	1034	-
Stage 1	984	-	-
Stage 2	939	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	863	1034	-
Mov Cap-2 Maneuver	863	-	-
Stage 1	972	-	-
Stage 2	939	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.5	0	2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1034	1572
HCM Lane V/C Ratio	-	-	0.011	0.012
HCM Control Delay (s)	-	-	8.5	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

Intersection

Int Delay, s/veh 3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	10	25	35	17	27
Future Vol, veh/h	20	10	25	35	17	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	11	27	38	18	29

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	111	46	0	0	65
Stage 1	46	-	-	-	-
Stage 2	65	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	886	1023	-	-	1537
Stage 1	976	-	-	-	-
Stage 2	958	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	875	1023	-	-	1537
Mov Cap-2 Maneuver	875	-	-	-	-
Stage 1	964	-	-	-	-
Stage 2	958	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	2.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	919	1537
HCM Lane V/C Ratio	-	-	0.035	0.012
HCM Control Delay (s)	-	-	9.1	7.4
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

Intersection

Int Delay, s/veh 3.6

Movement SET SER NWL NWT NEL NER

Lane Configurations	↶		↷	↶	↷	
Traffic Vol, veh/h	217	39	137	170	23	81
Future Vol, veh/h	217	39	137	170	23	81
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	236	42	149	185	25	88

Major/Minor Major1 Major2 Minor1

Conflicting Flow All	0	0	278	0	740	257
Stage 1	-	-	-	-	257	-
Stage 2	-	-	-	-	483	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1285	-	384	782
Stage 1	-	-	-	-	786	-
Stage 2	-	-	-	-	620	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1285	-	339	782
Mov Cap-2 Maneuver	-	-	-	-	339	-
Stage 1	-	-	-	-	695	-
Stage 2	-	-	-	-	620	-



Approach SE NW NE

HCM Control Delay, s	0	3.6	12.3
HCM LOS			B

Minor Lane/Major Mvmt NELn1 NWL NWT SET SER

Capacity (veh/h)	607	1285	-	-	-
HCM Lane V/C Ratio	0.186	0.116	-	-	-
HCM Control Delay (s)	12.3	8.2	-	-	-
HCM Lane LOS	B	A	-	-	-
HCM 95th %tile Q(veh)	0.7	0.4	-	-	-

Intersection

Int Delay, s/veh	1.5					
Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	50	7	263	21	2	240
Future Vol, veh/h	50	7	263	21	2	240
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	50	80	50	25	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	59	14	329	42	8	279

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	645	350	0	0	371
Stage 1	350	-	-	-	-
Stage 2	295	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	437	693	-	-	1188
Stage 1	713	-	-	-	-
Stage 2	755	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	434	693	-	-	1188
Mov Cap-2 Maneuver	434	-	-	-	-
Stage 1	707	-	-	-	-
Stage 2	755	-	-	-	-

Approach	EB	SE	NW
HCM Control Delay, s	14.1	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	SET	SER
Capacity (veh/h)	1188	-	468	-	-
HCM Lane V/C Ratio	0.007	-	0.156	-	-
HCM Control Delay (s)	8.1	0	14.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.5	-	-

Intersection

Int Delay, s/veh 5.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	35	3	3	5	15	0	9	4	36	9	9
Future Vol, veh/h	3	35	3	3	5	15	0	9	4	36	9	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	55	50	50	50	58	25	50	38	60	67	25
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	64	6	6	10	26	0	18	11	60	13	36


Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	36	0	0	70	0	0	151	139	67	141	129	23
Stage 1	-	-	-	-	-	-	91	91	-	35	35	-
Stage 2	-	-	-	-	-	-	60	48	-	106	94	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1575	-	-	1531	-	-	816	752	997	829	762	1054
Stage 1	-	-	-	-	-	-	916	820	-	981	866	-
Stage 2	-	-	-	-	-	-	951	855	-	900	817	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1575	-	-	1531	-	-	770	743	997	797	753	1054
Mov Cap-2 Maneuver	-	-	-	-	-	-	770	743	-	797	753	-
Stage 1	-	-	-	-	-	-	909	813	-	973	863	-
Stage 2	-	-	-	-	-	-	901	852	-	864	810	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	1.1	9.5	9.8
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	820	1575	-	-	1531	-	-	860
HCM Lane V/C Ratio	0.035	0.008	-	-	0.004	-	-	0.127
HCM Control Delay (s)	9.5	7.3	0	-	7.4	0	-	9.8
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.4

Intersection

Int Delay, s/veh 2.3

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	6	95	376	0	23	270
Future Vol, veh/h	6	95	376	0	23	270
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	38	77	87	25	70	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	123	432	0	33	338

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	836	432	0
Stage 1	432	-	-
Stage 2	404	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	337	624	-
Stage 1	655	-	-
Stage 2	674	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	325	624	-
Mov Cap-2 Maneuver	325	-	-
Stage 1	631	-	-
Stage 2	674	-	-























Approach	EB	SE	NW
HCM Control Delay, s	13.4	0	0.7
HCM LOS	B		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	SET	SER
Capacity (veh/h)	1128	-	565	-	-
HCM Lane V/C Ratio	0.029	-	0.246	-	-
HCM Control Delay (s)	8.3	0	13.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	1	-	-

HCM 2010 Signalized Intersection Summary




4: US 42 & Industrial Pkwy

01/22/2019

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	177	314	31	103	198	359	39	564	192	441	429	75
Future Volume (veh/h)	177	314	31	103	198	359	39	564	192	441	429	75
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	192	341	34	112	215	390	42	613	209	479	466	82
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	293	463	46	172	517	440	542	1585	540	405	1841	322
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.61	0.61	0.61	0.61	0.61	0.61
Sat Flow, veh/h	1162	1667	166	1003	1863	1583	856	2593	883	663	3012	527
Grp Volume(v), veh/h	192	0	375	112	215	390	42	418	404	479	273	275
Grp Sat Flow(s), veh/h/ln	1162	0	1833	1003	1863	1583	856	1770	1707	663	1770	1770
Q Serve(g_s), s	14.6	0.0	16.7	8.3	8.5	21.2	2.1	10.8	10.9	44.1	6.4	6.4
Cycle Q Clear(g_c), s	23.0	0.0	16.7	25.0	8.5	21.2	8.6	10.8	10.9	55.0	6.4	6.4
Prop In Lane	1.00		0.09	1.00		1.00	1.00		0.52	1.00		0.30
Lane Grp Cap(c), veh/h	293	0	509	172	517	440	542	1081	1043	405	1081	1082
V/C Ratio(X)	0.65	0.00	0.74	0.65	0.42	0.89	0.08	0.39	0.39	1.18	0.25	0.25
Avail Cap(c_a), veh/h	293	0	509	172	517	440	542	1081	1043	405	1081	1082
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.9	0.0	29.5	41.6	26.5	31.1	10.0	8.9	8.9	27.3	8.0	8.1
Incr Delay (d2), s/veh	10.9	0.0	9.2	17.4	2.5	22.3	0.3	1.0	1.1	104.5	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	0.0	9.7	3.6	4.7	11.9	0.5	5.5	5.4	21.8	3.3	3.3
LnGrp Delay(d),s/veh	46.8	0.0	38.7	59.0	29.0	53.4	10.3	10.0	10.0	131.7	8.6	8.6
LnGrp LOS	D		D	E	C	D	B	A	B	F	A	A
Approach Vol, veh/h		567			717			864			1027	
Approach Delay, s/veh		41.4			47.0			10.0			66.0	
Approach LOS		D			D			A			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		30.0		60.0		30.0		60.0				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		25.0		55.0		25.0		55.0				
Max Q Clear Time (g_c+I1), s		27.0		12.9		25.0		57.0				
Green Ext Time (p_c), s		0.0		5.3		0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			42.1									
HCM 2010 LOS			D									

Intersection

Int Delay, s/veh 2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	15	32	0	5	28
Future Vol, veh/h	0	15	32	0	5	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	16	35	0	5	30




Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	75	35	0
Stage 1	35	-	-
Stage 2	40	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	928	1038	-
Stage 1	987	-	-
Stage 2	982	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	925	1038	-
Mov Cap-2 Maneuver	925	-	-
Stage 1	984	-	-
Stage 2	982	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.5	0	1.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1038	1576
HCM Lane V/C Ratio	-	-	0.016	0.003
HCM Control Delay (s)	-	-	8.5	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

Intersection

Int Delay, s/veh 4.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	31	15	17	10	5	23
Future Vol, veh/h	31	15	17	10	5	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	34	16	18	11	5	25





Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	59	24	0	0	29
Stage 1	24	-	-	-	-
Stage 2	35	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	948	1052	-	-	1584
Stage 1	999	-	-	-	-
Stage 2	987	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	945	1052	-	-	1584
Mov Cap-2 Maneuver	945	-	-	-	-
Stage 1	996	-	-	-	-
Stage 2	987	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	1.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	977	1584
HCM Lane V/C Ratio	-	-	0.051	0.003
HCM Control Delay (s)	-	-	8.9	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0

Intersection

Int Delay, s/veh 3.3

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Traffic Vol, veh/h	258	12	41	235	35	122
Future Vol, veh/h	258	12	41	235	35	122
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	280	13	45	255	38	133




Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	293
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1269
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1269
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SE	NW	NE
HCM Control Delay, s	0	1.2	12.6
HCM LOS			B

Minor Lane/Major Mvmt	NELn1	NWL	NWT	SET	SER
Capacity (veh/h)	643	1269	-	-	-
HCM Lane V/C Ratio	0.265	0.035	-	-	-
HCM Control Delay (s)	12.6	7.9	-	-	-
HCM Lane LOS	B	A	-	-	-
HCM 95th %tile Q(veh)	1.1	0.1	-	-	-

Intersection

Int Delay, s/veh 1.2

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	30	4	380	48	5	298
Future Vol, veh/h	30	4	380	48	5	298
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	56	50	91	88	50	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	54	8	418	55	10	355

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	821	446	0	0	473
Stage 1	446	-	-	-	-
Stage 2	375	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	344	612	-	-	1089
Stage 1	645	-	-	-	-
Stage 2	695	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	340	612	-	-	1089
Mov Cap-2 Maneuver	340	-	-	-	-
Stage 1	638	-	-	-	-
Stage 2	695	-	-	-	-

Approach	EB	SE	NW
HCM Control Delay, s	17	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	SET	SER
Capacity (veh/h)	1089	-	361	-	-
HCM Lane V/C Ratio	0.009	-	0.171	-	-
HCM Control Delay (s)	8.3	0	17	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.6	-	-

Intersection												
Int Delay, s/veh	4.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	15	25	2	6	44	39	0	7	2	26	9	13
Future Vol, veh/h	15	25	2	6	44	39	0	7	2	26	9	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	33	55	25	62	70	60	25	50	25	42	100	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	45	45	8	10	63	65	0	14	8	62	9	26




Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	128	0	0	53	0	0	272	287	49	266	259	96
Stage 1	-	-	-	-	-	-	139	139	-	116	116	-
Stage 2	-	-	-	-	-	-	133	148	-	150	143	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1458	-	-	1553	-	-	680	623	1020	687	645	960
Stage 1	-	-	-	-	-	-	864	782	-	889	800	-
Stage 2	-	-	-	-	-	-	870	775	-	853	779	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1458	-	-	1553	-	-	635	599	1020	650	620	960
Mov Cap-2 Maneuver	-	-	-	-	-	-	635	599	-	650	620	-
Stage 1	-	-	-	-	-	-	836	757	-	861	794	-
Stage 2	-	-	-	-	-	-	831	770	-	804	754	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.5	0.5	10.3	10.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	705	1458	-	-	1553	-	-	708
HCM Lane V/C Ratio	0.031	0.031	-	-	0.006	-	-	0.137
HCM Control Delay (s)	10.3	7.5	0	-	7.3	0	-	10.9
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.5

Intersection

Int Delay, s/veh 2.1

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	2	59	401	7	90	405
Future Vol, veh/h	2	59	401	7	90	405
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	25	81	88	50	63	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	73	456	14	143	450

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1199	463	0
Stage 1	463	-	-
Stage 2	736	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	205	599	-
Stage 1	634	-	-
Stage 2	474	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	169	599	-
Mov Cap-2 Maneuver	169	-	-
Stage 1	523	-	-
Stage 2	474	-	-























Approach	EB	SE	NW
HCM Control Delay, s	14	0	2.1
HCM LOS	B		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	SET	SER
Capacity (veh/h)	1092	-	479	-	-
HCM Lane V/C Ratio	0.131	-	0.169	-	-
HCM Control Delay (s)	8.8	0	14	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.5	-	0.6	-	-

HCM 2010 Signalized Intersection Summary




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01/22/2019

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	126	275	98	239	383	500	69	548	113	364	742	158
Future Volume (veh/h)	126	275	98	239	383	500	69	548	113	364	742	158
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	137	299	107	260	416	543	75	596	123	396	807	172
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	286	510	182	283	724	616	256	1462	301	351	1452	309
Arrive On Green	0.39	0.39	0.39	0.39	0.39	0.39	0.50	0.50	0.50	0.50	0.50	0.50
Sat Flow, veh/h	966	1311	469	975	1863	1583	572	2924	602	730	2904	619
Grp Volume(v), veh/h	137	0	406	260	416	543	75	360	359	396	492	487
Grp Sat Flow(s), veh/h/ln	966	0	1780	975	1863	1583	572	1770	1757	730	1770	1754
Q Serve(g_s), s	11.7	0.0	16.3	18.7	15.8	28.7	9.4	11.5	11.6	33.4	17.3	17.3
Cycle Q Clear(g_c), s	27.5	0.0	16.3	35.0	15.8	28.7	26.7	11.5	11.6	45.0	17.3	17.3
Prop In Lane	1.00		0.26	1.00		1.00	1.00		0.34	1.00		0.35
Lane Grp Cap(c), veh/h	286	0	692	283	724	616	256	885	878	351	885	877
V/C Ratio(X)	0.48	0.00	0.59	0.92	0.57	0.88	0.29	0.41	0.41	1.13	0.56	0.56
Avail Cap(c_a), veh/h	286	0	692	283	724	616	256	885	878	351	885	877
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.5	0.0	21.8	37.7	21.6	25.6	24.8	14.1	14.1	32.1	15.6	15.6
Incr Delay (d2), s/veh	5.7	0.0	3.6	36.0	3.3	16.6	2.9	1.4	1.4	87.1	2.5	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.0	8.6	9.3	8.8	15.4	1.7	5.9	5.9	17.2	8.9	8.9
LnGrp Delay(d),s/veh	38.1	0.0	25.4	73.7	24.9	42.2	27.7	15.5	15.5	119.2	18.1	18.1
LnGrp LOS	D		C	E	C	D	C	B	B	F	B	B
Approach Vol, veh/h		543			1219			794			1375	
Approach Delay, s/veh		28.6			43.0			16.7			47.2	
Approach LOS		C			D			B			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		40.0		50.0		40.0		50.0				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		35.0		45.0		35.0		45.0				
Max Q Clear Time (g_c+I1), s		37.0		28.7		29.5		47.0				
Green Ext Time (p_c), s		0.0		4.2		1.4		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			37.2									
HCM 2010 LOS			D									

Intersection

Int Delay, s/veh 1.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	10	36	0	17	45
Future Vol, veh/h	0	10	36	0	17	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	11	39	0	18	49




Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	124	39	0
Stage 1	39	-	-
Stage 2	85	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	871	1033	-
Stage 1	983	-	-
Stage 2	938	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	861	1033	-
Mov Cap-2 Maneuver	861	-	-
Stage 1	971	-	-
Stage 2	938	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.5	0	2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1033	1571
HCM Lane V/C Ratio	-	-	0.011	0.012
HCM Control Delay (s)	-	-	8.5	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

Intersection

Int Delay, s/veh 2.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	10	26	35	17	28
Future Vol, veh/h	20	10	26	35	17	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	11	28	38	18	30

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	113	47	0
Stage 1	47	-	-
Stage 2	66	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	884	1022	-
Stage 1	975	-	-
Stage 2	957	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	873	1022	-
Mov Cap-2 Maneuver	873	-	-
Stage 1	963	-	-
Stage 2	957	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	2.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	918	1536
HCM Lane V/C Ratio	-	-	0.036	0.012
HCM Control Delay (s)	-	-	9.1	7.4
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

Intersection

Int Delay, s/veh 3.1

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations	↗		↖	↗	↖	↗
Traffic Vol, veh/h	345	39	137	270	23	81
Future Vol, veh/h	345	39	137	270	23	81
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	375	42	149	293	25	88

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	417
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1142
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1142
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-


















Approach	SE	NW	NE
HCM Control Delay, s	0	2.9	15
HCM LOS			C

Minor Lane/Major Mvmt	NELn1	NWL	NWT	SET	SER
Capacity (veh/h)	471	1142	-	-	-
HCM Lane V/C Ratio	0.24	0.13	-	-	-
HCM Control Delay (s)	15	8.6	-	-	-
HCM Lane LOS	C	A	-	-	-
HCM 95th %tile Q(veh)	0.9	0.4	-	-	-

HCM 2010 Signalized Intersection Summary

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Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	57	165	10	51	113	151	20	346	105	197	263	29
Future Volume (veh/h)	57	165	10	51	113	151	20	346	105	197	263	29
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1863	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	62	179	11	55	123	164	22	376	114	214	286	32
Adj No. of Lanes	0	1	0	0	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	137	368	21	164	342	440	64	817	240	346	438	47
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.61	0.61	0.61	0.61	0.61	0.61
Sat Flow, veh/h	313	1325	75	403	1231	1583	36	1337	393	474	717	76
Grp Volume(v), veh/h	252	0	0	178	0	164	512	0	0	532	0	0
Grp Sat Flow(s), veh/h/ln	1712	0	0	1634	0	1583	1766	0	0	1267	0	0
Q Serve(g_s), s	3.3	0.0	0.0	0.0	0.0	7.5	0.0	0.0	0.0	12.4	0.0	0.0
Cycle Q Clear(g_c), s	10.7	0.0	0.0	7.4	0.0	7.5	14.0	0.0	0.0	26.4	0.0	0.0
Prop In Lane	0.25		0.04	0.31		1.00	0.04		0.22	0.40		0.06
Lane Grp Cap(c), veh/h	526	0	0	506	0	440	1121	0	0	830	0	0
V/C Ratio(X)	0.48	0.00	0.00	0.35	0.00	0.37	0.46	0.00	0.00	0.64	0.00	0.00
Avail Cap(c_a), veh/h	526	0	0	506	0	440	1121	0	0	830	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	27.2	0.0	0.0	26.0	0.0	26.2	9.5	0.0	0.0	11.9	0.0	0.0
Incr Delay (d2), s/veh	3.1	0.0	0.0	1.9	0.0	2.4	1.3	0.0	0.0	3.8	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	5.7	0.0	0.0	3.8	0.0	3.6	7.2	0.0	0.0	9.7	0.0	0.0
LnGrp Delay(d), s/veh	30.3	0.0	0.0	27.9	0.0	28.6	10.9	0.0	0.0	15.7	0.0	0.0
LnGrp LOS	C			C		C	B			B		
Approach Vol, veh/h		252			342			512			532	
Approach Delay, s/veh		30.3			28.3			10.9			15.7	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		30.0		60.0		30.0		60.0				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		25.0		55.0		25.0		55.0				
Max Q Clear Time (g_c+I1), s		9.5		16.0		12.7		28.4				
Green Ext Time (p_c), s		1.2		3.1		0.9		3.8				
Intersection Summary												
HCM 2010 Ctrl Delay			19.1									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary

4: US 42 & Industrial Pkwy























01/22/2019

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	43	151	54	133	205	231	30	336	56	146	455	40
Future Volume (veh/h)	43	151	54	133	205	231	30	336	56	146	455	40
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1863	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	47	164	59	145	223	251	33	365	61	159	495	43
Adj No. of Lanes	0	1	0	0	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	128	426	142	268	364	616	76	703	113	201	547	46
Arrive On Green	0.39	0.39	0.39	0.39	0.39	0.39	0.50	0.50	0.50	0.50	0.50	0.50
Sat Flow, veh/h	209	1096	365	546	935	1583	67	1405	226	304	1093	92
Grp Volume(v), veh/h	270	0	0	368	0	251	459	0	0	697	0	0
Grp Sat Flow(s), veh/h/ln	1669	0	0	1481	0	1583	1697	0	0	1490	0	0
Q Serve(g_s), s	0.0	0.0	0.0	8.6	0.0	10.4	0.0	0.0	0.0	24.6	0.0	0.0
Cycle Q Clear(g_c), s	9.8	0.0	0.0	18.5	0.0	10.4	15.2	0.0	0.0	39.8	0.0	0.0
Prop In Lane	0.17		0.22	0.39		1.00	0.07		0.13	0.23		0.06
Lane Grp Cap(c), veh/h	696	0	0	632	0	616	892	0	0	794	0	0
V/C Ratio(X)	0.39	0.00	0.00	0.58	0.00	0.41	0.51	0.00	0.00	0.88	0.00	0.00
Avail Cap(c_a), veh/h	696	0	0	632	0	616	892	0	0	794	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	19.8	0.0	0.0	22.4	0.0	20.0	15.0	0.0	0.0	21.3	0.0	0.0
Incr Delay (d2), s/veh	1.6	0.0	0.0	3.9	0.0	2.0	2.1	0.0	0.0	13.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	5.1	0.0	0.0	8.1	0.0	4.9	8.0	0.0	0.0	19.0	0.0	0.0
LnGrp Delay(d),s/veh	21.4	0.0	0.0	26.3	0.0	22.0	17.2	0.0	0.0	34.4	0.0	0.0
LnGrp LOS	C			C		C	B			C		
Approach Vol, veh/h		270			619			459			697	
Approach Delay, s/veh		21.4			24.5			17.2			34.4	
Approach LOS		C			C			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		40.0		50.0		40.0		50.0				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		35.0		45.0		35.0		45.0				
Max Q Clear Time (g_c+I1), s		20.5		17.2		11.8		41.8				
Green Ext Time (p_c), s		2.5		2.7		1.3		1.4				
Intersection Summary												
HCM 2010 Ctrl Delay			25.8									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary

4: US 42 & Industrial Pkwy























01/23/2019

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	93	269	16	103	184	359	33	564	192	441	429	47
Future Volume (veh/h)	93	269	16	103	184	359	33	564	192	441	429	47
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	101	292	17	112	200	390	36	613	209	479	466	51
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	340	349	20	260	373	669	522	720	245	510	1252	136
Arrive On Green	0.08	0.20	0.20	0.08	0.20	0.20	0.11	0.28	0.28	0.22	0.39	0.39
Sat Flow, veh/h	1774	1743	101	1774	1863	1583	1774	2593	883	1774	3219	351
Grp Volume(v), veh/h	101	0	309	112	200	390	36	418	404	479	255	262
Grp Sat Flow(s), veh/h/ln	1774	0	1845	1774	1863	1583	1774	1770	1707	1774	1770	1801
Q Serve(g_s), s	3.9	0.0	14.5	4.4	8.7	17.0	1.1	20.1	20.2	17.9	9.3	9.4
Cycle Q Clear(g_c), s	3.9	0.0	14.5	4.4	8.7	17.0	1.1	20.1	20.2	17.9	9.3	9.4
Prop In Lane	1.00		0.06	1.00		1.00	1.00		0.52	1.00		0.19
Lane Grp Cap(c), veh/h	340	0	369	260	373	669	522	492	474	510	688	700
V/C Ratio(X)	0.30	0.00	0.84	0.43	0.54	0.58	0.07	0.85	0.85	0.94	0.37	0.37
Avail Cap(c_a), veh/h	340	0	369	260	373	669	522	492	474	510	688	700
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.3	0.0	34.6	26.4	32.3	19.9	17.2	30.7	30.8	21.4	19.6	19.7
Incr Delay (d2), s/veh	2.2	0.0	19.8	5.2	5.5	3.7	0.3	16.7	17.3	27.3	1.5	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	2.1	0.0	9.4	2.5	5.0	8.1	0.6	12.0	11.7	15.4	4.8	4.9
LnGrp Delay(d),s/veh	27.6	0.0	54.4	31.5	37.7	23.6	17.4	47.4	48.1	48.8	21.2	21.2
LnGrp LOS	C		D	C	D	C	B	D	D	D	C	C
Approach Vol, veh/h		410			702			858			996	
Approach Delay, s/veh		47.8			28.9			46.5			34.4	
Approach LOS		D			C			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.0	23.0	25.0	30.0	12.0	23.0	15.0	40.0				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	7.0	18.0	20.0	25.0	7.0	18.0	10.0	35.0				
Max Q Clear Time (g_c+I1), s	5.9	19.0	19.9	22.2	6.4	16.5	3.1	11.4				
Green Ext Time (p_c), s	0.0	0.0	0.0	1.3	0.0	0.2	0.0	2.6				
Intersection Summary												
HCM 2010 Ctrl Delay			38.5									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary

4: US 42 & Industrial Pkwy

















01/23/2019

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	70	246	88	239	334	500	49	548	113	364	742	65
Future Volume (veh/h)	70	246	88	239	334	500	49	548	113	364	742	65
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	76	267	96	260	363	543	53	596	123	396	807	71
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	308	305	110	315	497	721	341	715	147	452	1061	93
Arrive On Green	0.08	0.23	0.23	0.11	0.27	0.27	0.11	0.24	0.24	0.19	0.32	0.32
Sat Flow, veh/h	1774	1309	471	1774	1863	1583	1774	2924	602	1774	3292	290
Grp Volume(v), veh/h	76	0	363	260	363	543	53	360	359	396	434	444
Grp Sat Flow(s), veh/h/ln	1774	0	1780	1774	1863	1583	1774	1770	1757	1774	1770	1812
Q Serve(g_s), s	2.8	0.0	17.7	10.0	16.0	24.0	1.8	17.4	17.5	14.1	19.8	19.8
Cycle Q Clear(g_c), s	2.8	0.0	17.7	10.0	16.0	24.0	1.8	17.4	17.5	14.1	19.8	19.8
Prop In Lane	1.00		0.26	1.00		1.00	1.00		0.34	1.00		0.16
Lane Grp Cap(c), veh/h	308	0	415	315	497	721	341	433	429	452	570	584
V/C Ratio(X)	0.25	0.00	0.87	0.83	0.73	0.75	0.16	0.83	0.84	0.88	0.76	0.76
Avail Cap(c_a), veh/h	308	0	415	315	497	721	341	433	429	452	570	584
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.3	0.0	33.2	25.0	30.1	20.3	20.3	32.3	32.3	20.2	27.4	27.4
Incr Delay (d2), s/veh	1.9	0.0	21.8	21.4	9.1	7.1	1.0	16.9	17.3	20.6	9.2	9.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	1.5	0.0	11.2	6.7	9.4	12.6	0.9	10.5	10.5	9.3	11.1	11.3
LnGrp Delay(d),s/veh	25.2	0.0	55.0	46.5	39.2	27.4	21.2	49.2	49.6	40.8	36.6	36.4
LnGrp LOS	C		D	D	D	C	C	D	D	D	D	D
Approach Vol, veh/h		439			1166			772			1274	
Approach Delay, s/veh		49.8			35.3			47.4			37.8	
Approach LOS		D			D			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.0	29.0	22.0	27.0	15.0	26.0	15.0	34.0				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	7.0	24.0	17.0	22.0	10.0	21.0	10.0	29.0				
Max Q Clear Time (g_c+I1), s	4.8	26.0	16.1	19.5	12.0	19.7	3.8	21.8				
Green Ext Time (p_c), s	0.0	0.0	0.1	1.0	0.0	0.3	0.0	2.8				
Intersection Summary												
HCM 2010 Ctrl Delay			40.5									
HCM 2010 LOS			D									

Timings

4: US 42 & Industrial Pkwy

01/22/2019

									
Lane Group	SEL	SET	NWL	NWT	NWR	NEL	NET	SWL	SWT
Lane Configurations									
Traffic Volume (vph)	141	210	51	127	151	26	346	197	263
Future Volume (vph)	141	210	51	127	151	26	346	197	263
Turn Type	pm+pt	NA	pm+pt	NA	pm+ov	Perm	NA	pm+pt	NA
Protected Phases	1	6	5	2	3		4	3	8
Permitted Phases	6		2		2	4		8	
Detector Phase	1	6	5	2	3	4	4	3	8
Switch Phase									
Minimum Initial (s)	7.0	10.0	7.0	10.0	10.0	20.0	20.0	10.0	20.0
Minimum Split (s)	12.0	15.0	12.0	15.0	15.0	25.0	25.0	15.0	25.0
Total Split (s)	12.0	21.0	12.0	21.0	16.0	41.0	41.0	16.0	57.0
Total Split (%)	13.3%	23.3%	13.3%	23.3%	17.8%	45.6%	45.6%	17.8%	63.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0		5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effect Green (s)	23.0	16.0	23.0	16.0	32.0		36.0		52.0
Actuated g/C Ratio	0.26	0.18	0.26	0.18	0.36		0.40		0.58
v/c Ratio	0.45	0.77	0.22	0.42	0.25		0.74		0.91
Control Delay	28.8	51.8	24.6	37.3	4.4		29.8		35.3
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	28.8	51.8	24.6	37.3	4.4		29.8		35.3
LOS	C	D	C	D	A		C		D
Approach Delay		43.2		20.3			29.8		35.3
Approach LOS		D		C			C		D

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 4:NETL and 8:SWTL, Start of Green

Natural Cycle: 90

Control Type: Pretimed

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 32.6

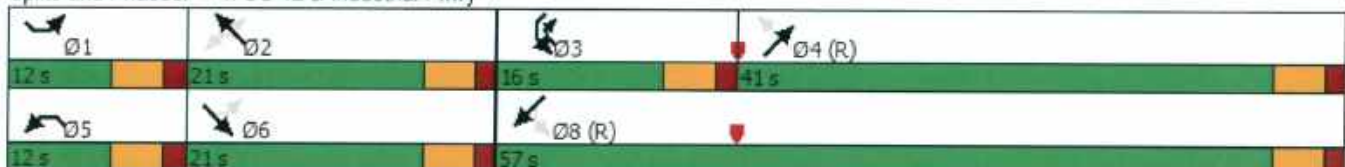
Intersection LOS: C

Intersection Capacity Utilization 89.3%

ICU Level of Service E

Analysis Period (min) 15

















Splits and Phases: 4: US 42 & Industrial Pkwy



Timings

4: US 42 & Industrial Pkwy

01/22/2019

									
Lane Group	SEL	SET	NWL	NWT	NWR	NEL	NET	SWL	SWT
Lane Configurations									
Traffic Volume (vph)	99	180	133	254	231	50	336	146	455
Future Volume (vph)	99	180	133	254	231	50	336	146	455
Turn Type	pm+pt	NA	pm+pt	NA	pm+ov	Perm	NA	pm+pt	NA
Protected Phases	1	6	5	2	3		4	3	8
Permitted Phases	6		2		2	4		8	
Detector Phase	1	6	5	2	3	4	4	3	8
Switch Phase									
Minimum Initial (s)	7.0	10.0	7.0	10.0	10.0	20.0	20.0	10.0	20.0
Minimum Split (s)	12.0	15.0	12.0	15.0	15.0	25.0	25.0	15.0	25.0
Total Split (s)	12.0	28.0	12.0	28.0	15.0	55.0	55.0	15.0	70.0
Total Split (%)	10.9%	25.5%	10.9%	25.5%	13.6%	50.0%	50.0%	13.6%	63.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0		5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	30.0	23.0	30.0	23.0	38.0		50.0		65.0
Actuated g/C Ratio	0.27	0.21	0.27	0.21	0.35		0.45		0.59
v/c Ratio	0.46	0.69	0.60	0.71	0.35		0.67		0.99
Control Delay	34.7	48.2	40.5	51.6	4.7		28.9		49.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	34.7	48.2	40.5	51.6	4.7		28.9		49.6
LOS	C	D	D	D	A		C		D
Approach Delay		44.3		31.7			28.9		49.6
Approach LOS		D		C			C		D

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 0 (0%), Referenced to phase 4:NETL and 8:SWTL, Start of Green

Natural Cycle: 90

Control Type: Pretimed

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 39.3

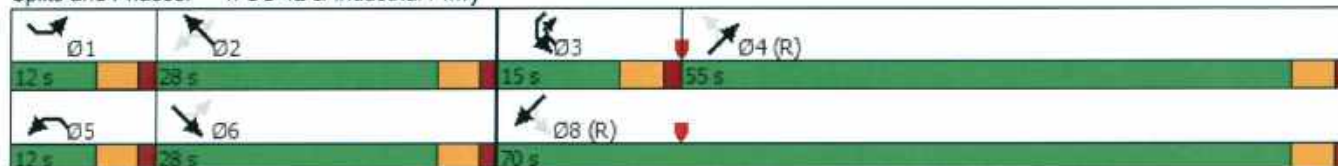
Intersection LOS: D

Intersection Capacity Utilization 99.1%

ICU Level of Service F

Analysis Period (min) 15























Splits and Phases: 4: US 42 & Industrial Pkwy



HCM 2010 Signalized Intersection Summary






















4: US 42 & Industrial Pkwy

01/23/2019


												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	177	314	31	103	198	359	39	564	192	441	429	75
Future Volume (veh/h)	177	314	31	103	198	359	39	564	192	441	429	75
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	192	341	34	112	215	390	42	613	209	479	466	82
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	340	417	42	221	466	752	465	778	265	514	1330	233
Arrive On Green	0.06	0.25	0.25	0.06	0.25	0.25	0.08	0.30	0.30	0.22	0.44	0.44
Sat Flow, veh/h	1774	1667	166	1774	1863	1583	1774	2593	883	1774	3012	527
Grp Volume(v), veh/h	192	0	375	112	215	390	42	418	404	479	273	275
Grp Sat Flow(s), veh/h/ln	1774	0	1833	1774	1863	1583	1774	1770	1707	1774	1770	1770
Q Serve(g_s), s	7.0	0.0	23.1	5.6	11.7	20.6	1.8	26.0	26.0	23.7	12.2	12.3
Cycle Q Clear(g_c), s	7.0	0.0	23.1	5.6	11.7	20.6	1.8	26.0	26.0	23.7	12.2	12.3
Prop In Lane	1.00		0.09	1.00		1.00	1.00		0.52	1.00		0.30
Lane Grp Cap(c), veh/h	340	0	458	221	466	752	465	531	512	514	782	782
V/C Ratio(X)	0.56	0.00	0.82	0.51	0.46	0.52	0.09	0.79	0.79	0.93	0.35	0.35
Avail Cap(c_a), veh/h	340	0	458	221	466	752	465	531	512	514	782	782
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.0	0.0	42.4	33.2	38.2	21.9	23.4	38.5	38.5	28.6	22.1	22.2
Incr Delay (d2), s/veh	6.6	0.0	14.9	8.1	3.3	2.5	0.4	11.2	11.7	25.9	1.2	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	2.9	0.0	13.6	3.2	6.5	9.5	0.9	14.3	13.9	19.1	6.3	6.3
LnGrp Delay(d),s/veh	42.7	0.0	57.4	41.2	41.4	24.5	23.8	49.7	50.2	54.5	23.3	23.4
LnGrp LOS	D		E	D	D	C	C	D	D	D	C	C
Approach Vol, veh/h		567			717			864			1027	
Approach Delay, s/veh		52.4			32.2			48.7			37.9	
Approach LOS		D			C			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.0	35.0	32.0	41.0	12.0	35.0	15.0	58.0				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	7.0	30.0	27.0	36.0	7.0	30.0	10.0	53.0				
Max Q Clear Time (g_c+I1), s	9.0	22.6	25.7	28.0	7.6	25.1	3.8	14.3				
Green Ext Time (p_c), s	0.0	1.5	0.2	2.8	0.0	0.8	0.0	3.0				
Intersection Summary												
HCM 2010 Ctrl Delay			42.1									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary 4: US 42 & Industrial Pkwy

01/22/2019

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	126	275	98	239	383	500	69	548	113	364	742	158
Future Volume (veh/h)	126	275	98	239	383	500	69	548	113	364	742	158
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	137	299	107	260	416	543	75	596	123	396	807	172
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	300	382	137	318	621	818	272	755	156	435	1041	222
Arrive On Green	0.06	0.29	0.29	0.10	0.33	0.33	0.08	0.26	0.26	0.18	0.36	0.36
Sat Flow, veh/h	1774	1311	469	1774	1863	1583	1774	2924	602	1774	2904	619
Grp Volume(v), veh/h	137	0	406	260	416	543	75	360	359	396	492	487
Grp Sat Flow(s),veh/h/ln	1774	0	1780	1774	1863	1583	1774	1770	1757	1774	1770	1754
Q Serve(g_s), s	6.5	0.0	25.1	12.0	23.0	30.3	3.5	22.7	22.9	18.7	29.6	29.6
Cycle Q Clear(g_c), s	6.5	0.0	25.1	12.0	23.0	30.3	3.5	22.7	22.9	18.7	29.6	29.6
Prop In Lane	1.00		0.26	1.00		1.00	1.00		0.34	1.00		0.35
Lane Grp Cap(c), veh/h	300	0	519	318	621	818	272	457	454	435	634	628
V/C Ratio(X)	0.46	0.00	0.78	0.82	0.67	0.66	0.28	0.79	0.79	0.91	0.78	0.78
Avail Cap(c_a), veh/h	300	0	519	318	621	818	272	457	454	435	634	628
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.0	0.0	39.0	29.1	34.3	21.3	28.6	41.4	41.5	26.7	34.2	34.2
Incr Delay (d2), s/veh	4.9	0.0	11.2	20.4	5.7	4.2	2.5	12.9	13.2	25.7	9.0	9.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.0	13.9	4.6	12.8	14.1	1.9	12.7	12.7	12.1	16.1	15.9
LnGrp Delay(d),s/veh	34.0	0.0	50.2	49.6	40.0	25.6	31.2	54.3	54.6	52.4	43.2	43.3
LnGrp LOS	C		D	D	D	C	C	D	D	D	D	D
Approach Vol, veh/h		543			1219			794			1375	
Approach Delay, s/veh		46.1			35.6			52.3			45.9	
Approach LOS		D			D			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.0	45.0	27.0	36.0	17.0	40.0	15.0	48.0				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	7.0	40.0	22.0	31.0	12.0	35.0	10.0	43.0				
Max Q Clear Time (g_c+I1), s	8.5	32.3	20.7	24.9	14.0	27.1	5.5	31.6				
Green Ext Time (p_c), s	0.0	2.7	0.2	2.0	0.0	1.3	0.0	4.2				
Intersection Summary												
HCM 2010 Ctrl Delay			44.0									
HCM 2010 LOS			D									



 Mannik Smith GROUP TRANSPORTATION & INFRASTRUCTURE	<p>CONCEPT IMPROVEMENTS - 1A (ABBREV.) US 42 & INDUSTRIAL PARKWAY (CR 1)</p>	<p>2019 POTENTIAL TURN LANE WIDENING</p>
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MEMO

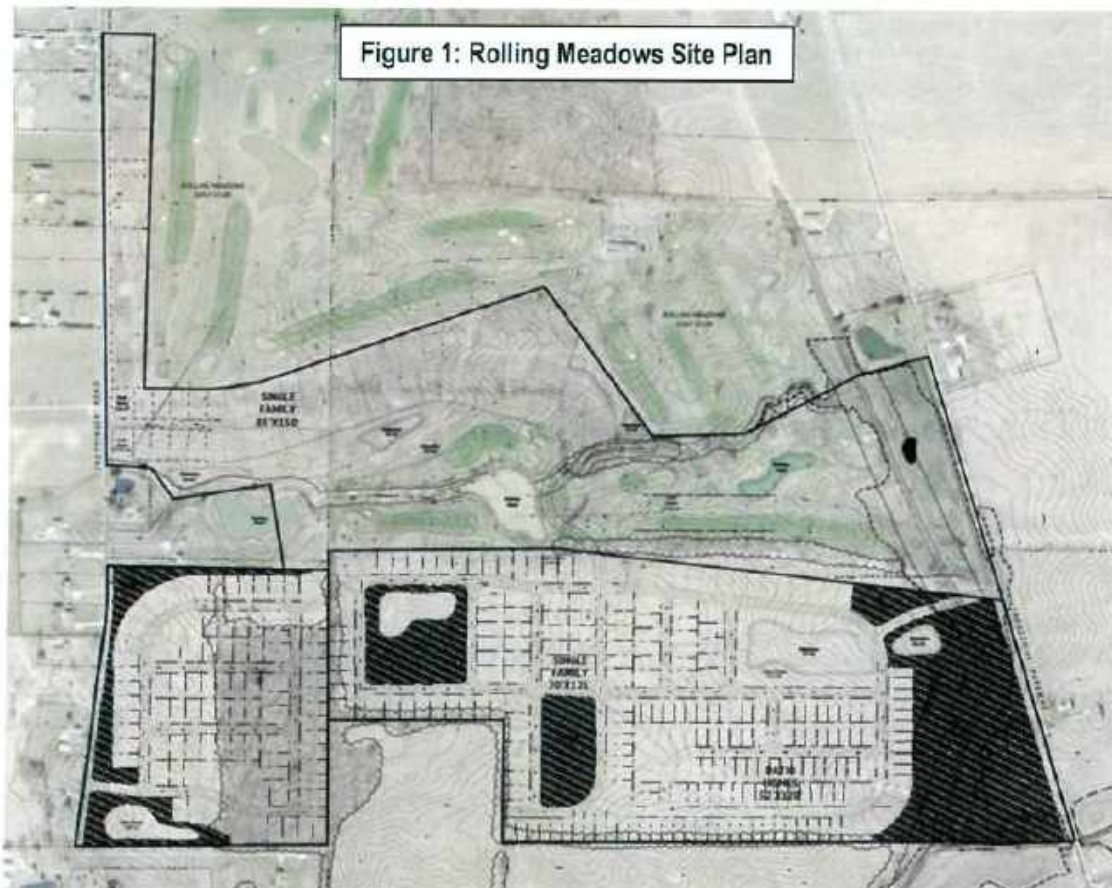
To: Bill Narducci, Union County Engineers Office
From: Douglas Bender, P.E., PTOE
CC: Drew Hurst, ODOT District Six
Charles Ruma (Virginia Homes)
Date: January 28, 2019

Project #: V1790001

Re: **Traffic Impact Study for Rolling Meadows Site in Union County, Ohio**

Introduction

This traffic impact study (TIS) has been prepared to evaluate expected trip generation and future operations for Rolling Meadows development. The site is a planned residential development between Industrial Parkway and Crottinger Road north of US 42 in Union County, Ohio. The planned site will include a full movement driveway on Industrial Parkway and two full drives on Crottinger Road to provide access to serve the planned site. The site includes 393 single-family homes on approximately 211 acres adjacent to and within the existing Rolling Meadows golf course. The proposed site plan is shown in Figure 1 below.



Study Area

The study area includes four intersections located in Union County, Ohio north of US 42. Detailed information regarding each of the study area intersections is provided below.

- **Industrial Parkway & Crottinger Road** – A 3 leg, unsignalized intersection with a stop-controlled eastbound (Crottinger Road) approach and free-flow on Industrial Parkway. Each of the three legs are two lane, two way roadways.
- **Crottinger Road & Taylor Road** – This intersection is a four leg, unsignalized intersection with two way stop control for the northbound and southbound (Crottinger Road) approaches. The four legs are two lane, two way roadways.
- **Industrial Parkway & Taylor Road** – A three leg, unsignalized intersection with stop control for the eastbound (Taylor Road) approach. Each of the three legs are two lane, two way roadways.
- **US 42 & Industrial Parkway** – This 4 leg, signalized intersection includes approaches that are two lane, two-way roadways under the existing conditions. Horizon Year analyses at this intersection include planned improvements by ODOT that should be in place in the next few years, before the 2029 Horizon Year. The future ODOT-planned improvements include widening the eastbound and westbound (US 42) approaches to provide a left turn lane, a through-only lane and a shared through/right lane. The improvements will also include modifying the northbound approach to have designated left, through and right turn only lanes, and the southbound approach to have an added left turn only lane as well as the existing shared through/right lane. These ODOT improvements were not included in the Opening Year analysis but are already needed due to current and near term expected conditions

Traffic Counts

Peak hour turning movement traffic counts (TMCs) were performed at the following intersections:

- Industrial Parkway & Taylor Road
- Industrial Parkway & Crottinger Road
- Taylor Road & Crottinger Road

A previous traffic count at the Industrial Parkway & US 42 intersection completed in the fall of 2016 was utilized for the background traffic at that intersection. During our field review, it appeared there have not been many new homes added north of US 42 but a few added south of US 42 in proximity to that traffic count. All counts were performed during average weekday peak hours in the AM (7-9 am) and PM peaks (4-6 pm). Traffic count data at these three intersections, as well as the previous TMC at the Industrial Parkway & US 42 intersection are attached for reference.

Background Traffic Conditions

To project traffic volumes for analysis of future conditions on roadways near the project site, it was necessary to develop a growth rate for background traffic within the study area. The background traffic growth rate was obtained from the data previously supplied by MORPC for the trucking site south of US 42 on Industrial Parkway. A growth rate of 1% per year was applied to Taylor Road and Crottinger Road while a growth rate of 6.3% per year was applied to Industrial Parkway. Traffic volumes at the intersection of US 42 & Industrial Parkway were taken from the previous truck site study and used for the No Build condition of this project. In the 2029 No Build condition, site traffic from the previous truck distribution facility was combined with projected future growth, so no additional volumes were included beyond that at the US 42 & Industrial Parkway intersection.

Proposed Site

The Rolling Meadows site is a 211-acre planned residential development with 393 single-family homes. Three access points are planned that include a full movement driveway on Industrial Parkway and two full movement driveways on Crottinger Road.

Trip Generation Estimates

To establish site generated traffic volumes, the ITE Trip Generation Manual, 10th Edition was used for this site. Up to a total of 393 single-family homes are anticipated and the trip generation was calculated using data from Land Use Code #210 (Single Family Home). For the proposed Rolling Meadows development, the site traffic is estimated to be approximately 291 AM trip ends in the AM Peak and 389 trip ends in the PM Peak. A summary of expected trip generation is included in Table 1 below.

Table 1: Expected Trip Generation						
Land Use ITE Code / Size	AM Peak Hour			PM Peak Hour		
	Inbound	Outbound	Total	Inbound	Outbound	Total
Single Family Housing 210 / 393 Homes	73	218	291	245	144	389

The site's expected trip distribution was estimated based on existing traffic patterns observed in the study area as well as engineering judgment based on planned site access combined with the available arterial network, nearby freeway interchange access and local school and community locations. Table 2 below illustrates the overall trip distribution percentages by direction for the Rolling Meadows development. Site traffic was combined with 2019 and 2029 No Build traffic at each intersection to develop peak hour Build volumes. The following intersections were evaluated for potential No Build and Build conditions to identify any background improvements needed, as well as potential site traffic impacts.

Table 2: Trip Distribution						
Location	Direction	Distribution %	Vehicle Distribution			
			AM Peak Hour		PM Peak Hour	
			Entering From	Exiting To	Entering From	Exiting To
US 42	East	38%	28	84	93	56
	West	8%	6	15	20	10
Industrial Pkwy	North	26%	19	56	63	37
	South	20%	14	45	49	29
Taylor Rd	West	4%	3	9	10	6
Adams Rd	West	4%	3	9	10	6
Total		100%	73	218	245	144

No Build scenarios for projected 2029 conditions included anticipated traffic volumes from the proposed trucking site on Industrial Parkway south of US 42. At the Industrial Pkwy/US 42 intersection, ODOT developed geometric improvements that are assumed to be in place by the 2029 Horizon Year. Per the County's Level of Service (LOS) requirements, impacts from the proposed development on adjacent arterial or collector streets should be mitigated to LOS C as necessary. Mitigation has been recommended for any movements experiencing unacceptable LOS (D or worse) whether they are attributable to the proposed development (Build) or are expected in background conditions without the project (No Build).

Turn Lane Warrant Analyses

Turn lane warrant evaluation follows procedures outlined in the ODOT Location & Design Manual and were performed at the three planned site driveway intersections for 2029 Build conditions only. Based on the results of the analysis, the intersection of Industrial Parkway & Driveway C meets the warrant criteria for the installation of a northbound left turn lane to accommodate the added site traffic. Turn lane warrant graphs for each of the site driveway intersections is attached for reference.

Site Traffic Contribution

At US 42 & Industrial Parkway, the percent of site traffic in the intersection was calculated for the 2029 Build condition used in this study. Other adjacent developments, including Glacier Pointe and the mixed-use plan at the interchange will like add much more background traffic not currently included in these calculations. Based on combined AM and PM Peak 2029 Build volumes for all entering traffic, Rolling Meadows site traffic is expected to comprise 6.78% of the 2029 total traffic entering the intersection. This amounts to 449 vehicles out of the total 6,537 vehicles. Site traffic comprises 46.2% of the southbound left turn movement in 2029. Calculations for site traffic contribution are attached for reference.

Capacity Analysis

For this traffic study, peak hour traffic operations were evaluated at the following intersections:

1. Industrial Parkway & Crottinger Road
2. Crottinger Road & Taylor Road
3. Industrial Parkway & Taylor Road
4. US 42 & Industrial Parkway
5. Crottinger Road & Site Driveway A
6. Crottinger Road & Site Driveway B
7. Industrial Parkway & Site Driveway C

Analysis included an evaluation of 2019 and 2090 No Build conditions as well as projected 2019 and 2029 Build conditions. The No build conditions included the anticipated growth in traffic along with traffic generated by the nearby trucking site. The Build conditions included the No Build traffic with added site traffic. ODOT planned improvements were included in 2029 analyses.

Existing signal phasing operations were observed at the US 42 & Industrial Parkway intersection, which included a simple four-phase operation due to the current intersection pavement markings that include a single shared left/thru/right turn lane. Although lane modifications are expected for all four approaches at the intersection under future conditions, the signal phasing is expected to remain the same. Results of the capacity analyses are summarized in Table 3 below

Table 3: Intersection Capacity Analyses									
Approach	Lane Group/Movement	Opening Year (2019) No Build Conditions		Design Year (2029) No Build Conditions		Opening Year (2019) Build Conditions		Design Year (2029) Build Conditions	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Industrial Pkwy & Crottinger Rd (Unsignalized)									
Eastbound	Approach	B (10.6)	B (11.4)	B (12.6)	B (14.4)	B (11.6)	B (12.8)	B (14.1)	C (17.0)
Northbound	Approach	A (7.7)	A (7.8)	A (8.0)	A (8.1)	A (7.8)	A (8.0)	A (8.1)	A (8.3)
Southbound	Approach	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
Intersection Overall		A (1.0)	A (0.7)	A (1.1)	A (0.8)	A (1.4)	A (1.1)	A (1.5)	A (1.2)
Crottinger Rd & Taylor Rd (Unsignalized)									
Eastbound	Approach	A (0.0)	A (7.4)	A (0.0)	A (7.4)	A (7.3)	A (7.5)	A (7.3)	A (7.5)
Westbound	Approach	A (7.4)	A (7.3)	A (7.4)	A (7.3)	A (7.4)	A (7.3)	A (7.4)	A (7.3)
Northbound	Approach	A (9.3)	A (9.7)	A (9.4)	A (9.7)	A (9.5)	B (10.2)	A (9.5)	B (10.3)
Southbound	Approach	A (9.6)	A (9.8)	A (9.6)	A (9.9)	A (9.7)	B (10.8)	A (9.8)	B (10.9)
Intersection Overall		A (4.1)	A (3.9)	A (4.0)	A (3.8)	A (5.7)	A (4.8)	A (5.7)	A (4.8)
Industrial Pkwy & Taylor Rd (Unsignalized)									
Eastbound	Approach	A (9.9)	B (10.6)	B (11.3)	B (12.0)	B (11.3)	B (12.0)	B (13.4)	B (14.0)
Northbound	Approach	A (7.6)	A (7.9)	A (7.9)	A (8.3)	A (8.0)	A (8.3)	A (8.3)	A (8.8)
Southbound	Approach	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
Intersection Overall		A (1.9)	A (2.1)	A (2.0)	A (1.9)	A (2.0)	A (2.1)	A (2.3)	A (2.1)
US 42 & Industrial Pkwy (Signalized)									
Eastbound	Left	-	-	A (9.9)	C (22.9)	-	-	B (10.3)	C (27.7)
	Thru	-	-	A (10.0)	B (15.5)	-	-	A (10.0)	B (15.5)
	Thru/Right	-	-	B (10.0)	B (15.5)	-	-	B (10.0)	B (15.5)
	Approach	B (10.9)	B (17.2)	A (10.0)	B (16.0)	B (11.0)	B (18.7)	A (10.0)	B (16.7)
Westbound	Left	-	-	F (131.7)	F (119.2)	-	-	F (131.7)	F (119.2)
	Thru	-	-	A (8.5)	B (16.8)	-	-	A (8.6)	B (18.1)
	Thru/Right	-	-	A (8.5)	B (16.8)	-	-	A (8.6)	B (18.1)
	Approach	B (15.7)	C (34.4)	E (67.8)	D (48.6)	B (16.6)	E (59.4)	E (66.0)	D (47.2)
Northbound	Left	-	-	D (45.9)	E (56.6)	-	-	E (59.0)	E (73.7)
	Thru	-	-	C (28.5)	C (23.3)	-	-	C (29.0)	C (24.9)
	Right	-	-	D (53.4)	D (42.2)	-	-	D (53.4)	D (42.2)
	Approach	D (36.4)	D (51.5)	D (45.1)	D (39.5)	D (39.5)	F (113.4)	D (47.0)	D (43.0)
Southbound	Left	-	-	D (35.1)	C (29.7)	-	-	D (46.8)	D (38.1)
	Thru/Right	-	-	C (33.4)	C (23.9)	-	-	D (38.7)	C (25.4)
	Approach	C (31.5)	C (22.3)	C (33.8)	C (24.9)	F (116.0)	D (35.3)	D (41.4)	C (28.6)
Intersection Overall		C (20.9)	C (34.1)	D (41.0)	D (36.0)	D (41.4)	E (62.7)	D (42.1)	D (37.2)
Crottinger Rd & Driveway A (Unsignalized)									
Westbound	Approach	-	-	-	-	A (8.5)	A (8.5)	A (8.5)	A (8.5)
Northbound	Approach	-	-	-	-	A (0.0)	A (0.0)	A (0.0)	A (0.0)
Southbound	Approach	-	-	-	-	A (7.3)	A (7.3)	A (7.3)	A (7.3)
Intersection Overall		-	-	-	-	A (2.1)	A (2.0)	A (2.0)	A (1.9)
Crottinger Rd & Driveway B (Unsignalized)									
Westbound	Approach	-	-	-	-	A (8.9)	A (9.1)	A (8.9)	A (9.1)
Northbound	Approach	-	-	-	-	A (0.0)	A (0.0)	A (0.0)	A (0.0)
Southbound	Approach	-	-	-	-	A (7.3)	A (7.4)	A (7.3)	A (7.4)
Intersection Overall		-	-	-	-	A (4.4)	A (3.0)	A (4.4)	A (2.9)
Industrial Pkwy & Driveway C (Unsignalized)									
Eastbound	Approach	-	-	-	-	B (11.0)	B (12.3)	B (12.6)	C (15.0)
Northbound	Approach	-	-	-	-	A (7.7)	A (8.2)	A (7.9)	A (8.6)
Southbound	Approach	-	-	-	-	A (0.0)	A (0.0)	A (0.0)	A (0.0)
Intersection Overall		-	-	-	-	A (3.9)	A (3.6)	A (3.3)	A (3.1)

*At unsignalized intersections, delay and Level of Service illustrated is for worst movement on approach; two-way stop analyses only provide delay for the stop approach(es).

Results indicate that all but one of the intersections in the study area is expected to operate at acceptable levels under the No Build and Build conditions through the 2029 Horizon Year. The unsignalized intersections, including planned site driveways, are predicted to operate at LOS C or better under Build conditions. In 2019, the signalized US 42 & Industrial Parkway intersection is expected to experience some impacts because of background traffic growth and added site traffic, including the southbound left turn movement. Added site traffic is predicted to increase delay for some movements to either poor or failed level of service in the 2019 conditions due to the lacking capacity that currently exists. In the AM peak the southbound approach is expected to degrade to a failing level of service while in the PM peak, the westbound and northbound approaches are expected to degrade to failing levels of service. It should be noted that ODOT planned improvements at this intersection are currently planned and should be constructed in the next 2-3 years, long before the full buildout of this site could occur. The 2019 Build analysis assumes a full buildout of the site in 2019 that is unrealistic.

The 2029 peak conditions were analyzed with planned ODOT intersection improvements, which indicates added site traffic is expected to have a minimal effect on the intersection with only a minor increase in delay for some movements. Only one movement is expected to degrade to a poor level of service in the 2029 Horizon Year. The southbound thru/right movement is expected to degrade from LOS D in the No build condition to LOS E under Build conditions. However, the overall intersection is predicted to continue operating at an acceptable overall level during peak periods under 2029 Build conditions. These results also indicate that the surrounding unsignalized intersections are predicted to operate in a similar manner with only a minor increase in average delay. Where poor level of service is projected at the intersection of US 42 & Industrial Parkway, Opening Year (2019) mitigations of No Build and Build conditions could be provided to account for existing and projected build conditions at this intersection. However, 2019 mitigation seems unnecessary given the near term planned ODOT improvements to address existing deficiencies as well as the long buildout expected for this site.

Mitigations

To mitigate impacts at the US 42 & Industrial Parkway intersection resulting from projected traffic growth and the addition of site traffic, improvements were included for the Opening Year No Build and Build analyses. The provision of a northbound right turn lane to address LOS D conditions in the No Build, as well as north- and southbound left turn lanes are expected to restore 2019 Build conditions to similar and/or acceptable levels. Combined with a lead westbound left turn phase (protected-permissive) that would require a five-section signal head, added improvements at US 42 & Industrial Parkway are predicted to result in acceptable LOS until future ODOT improvements are able to be provided for the 2029 condition. These results are shown in **Table 4** below.

Table 4: Intersection Capacity Analyses with Mitigation									
Approach	Lane Group/Movement	Opening Year (2019) No Build Conditions with Mitigation		Design Year (2029) No Build Conditions with Mitigation		Opening Year (2019) Build Conditions with Mitigation		Design Year (2029) Build Conditions with Mitigation	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
US 42 & Industrial Pkwy (Signalized)									
Eastbound	Left	-	-	B (17.4)	C (21.2)	-	-	C (23.8)	C (31.2)
	Thru	-	-	D (47.4)	D (49.2)	-	-	D (49.7)	D (54.3)
	Thru/Right	-	-	D (48.1)	D (49.6)	-	-	D (50.2)	D (54.6)
	Approach	B (10.9)	B (17.2)	D (46.5)	D (47.4)	C (29.8)	C (28.9)	D (48.7)	D (52.3)
Westbound	Left	-	-	D (48.8)	D (40.8)	-	-	D (54.5)	D (52.4)
	Thru	-	-	C (21.2)	D (36.6)	-	-	C (23.3)	D (43.2)
	Thru/Right	-	-	C (21.2)	D (36.4)	-	-	C (23.4)	D (43.3)
	Approach	B (15.7)	C (34.4)	C (34.4)	D (37.8)	D (35.3)	D (49.6)	D (37.9)	D (45.9)
Northbound	Left	-	-	C (31.5)	D (46.5)	C (24.6)	D (40.5)	D (41.2)	D (49.6)
	Thru	C (27.9)	C (26.3)	D (37.7)	D (39.2)	D (37.3)	D (51.6)	D (41.4)	D (40.0)
	Right	C (28.6)	C (22.0)	C (23.6)	C (27.4)	A (4.4)	A (4.7)	C (24.5)	C (25.6)
	Approach	C (28.3)	C (24.5)	C (28.9)	D (35.3)	C (20.3)	C (31.7)	C (32.2)	D (35.6)
Southbound	Left	-	-	C (27.6)	C (25.2)	C (28.8)	C (34.7)	D (42.7)	C (34.0)
	Thru/Right	-	-	D (54.4)	D (55.0)	D (51.8)	D (48.2)	E (57.4)	D (50.2)
	Approach	C (30.3)	C (25.8)	D (47.8)	D (49.8)	D (43.2)	D (44.3)	D (52.4)	D (46.1)
Intersection Overall		B (19.1)	C (25.8)	D (38.5)	D (40.5)	C (32.6)	D (39.3)	D (42.1)	D (44.0)

With potential opening day No Build and Build mitigation, background and site traffic impacts are expected to be mitigated. In 2029 with planned ODOT improvements in place, one movement is still shown as just into LOS E in the Build condition. However, the threshold for LOS E begins at 55.1 seconds and the Build result pushes the southbound thru/right movement from 54.4 seconds to 57.4 seconds, just across the threshold. The predicted results for the 2029 Build condition should be acceptable for planning purposes in identifying long-term capacity needs. With planned ODOT mitigation at the intersection, the overall intersection LOS is expected to improve to LOS D or better for both the No Build and Build scenarios.

Recommendations

No Build improvements identified in this study should be provided via ODOT, Union County and/or other available funding sources and include the following:

1. At Industrial Parkway & US 42, install a 338-foot northbound right turn only lane and a 275-foot northbound left turn lane. The dedicated northbound approach turn lanes on Industrial Parkway address lacking capacity for projected background traffic growth in movements not increased by site traffic
2. Modify and optimize the signal operation at Industrial Parkway & US 42 to provide a lead, westbound left turn/through phase to best serve traffic demand in the afternoon peak hour.
3. As planned, near term ODOT improvements at this intersection should be provided to address existing deficiencies and expected longer term impacts by surrounding developments at US 42.

Build (Site-related) improvements were identified for the Opening Year that could be provided to assist in addressing site impacts. However, the larger planned improvements by ODOT seem to negate the need to construct any of these. If provided, any improvements should be viewed in context with the larger planned improvements and could proportionally include developer funding. These improvements include the following:

1. At Industrial Parkway & Driveway C, install a 285-foot northbound left turn lane on Industrial Parkway to accommodate added site traffic at the main site entrance.
2. At Industrial Parkway & US 42, contribute up to 50% of the cost to install a 358-foot southbound left turn lane as a Build improvement to address added site traffic in this movement. Site traffic comprises 46.2% of this turn movement volume.
3. At Industrial Parkway & US 42, install a five-section signal head to permit the lead westbound left turn head described above in the No Build improvement section.

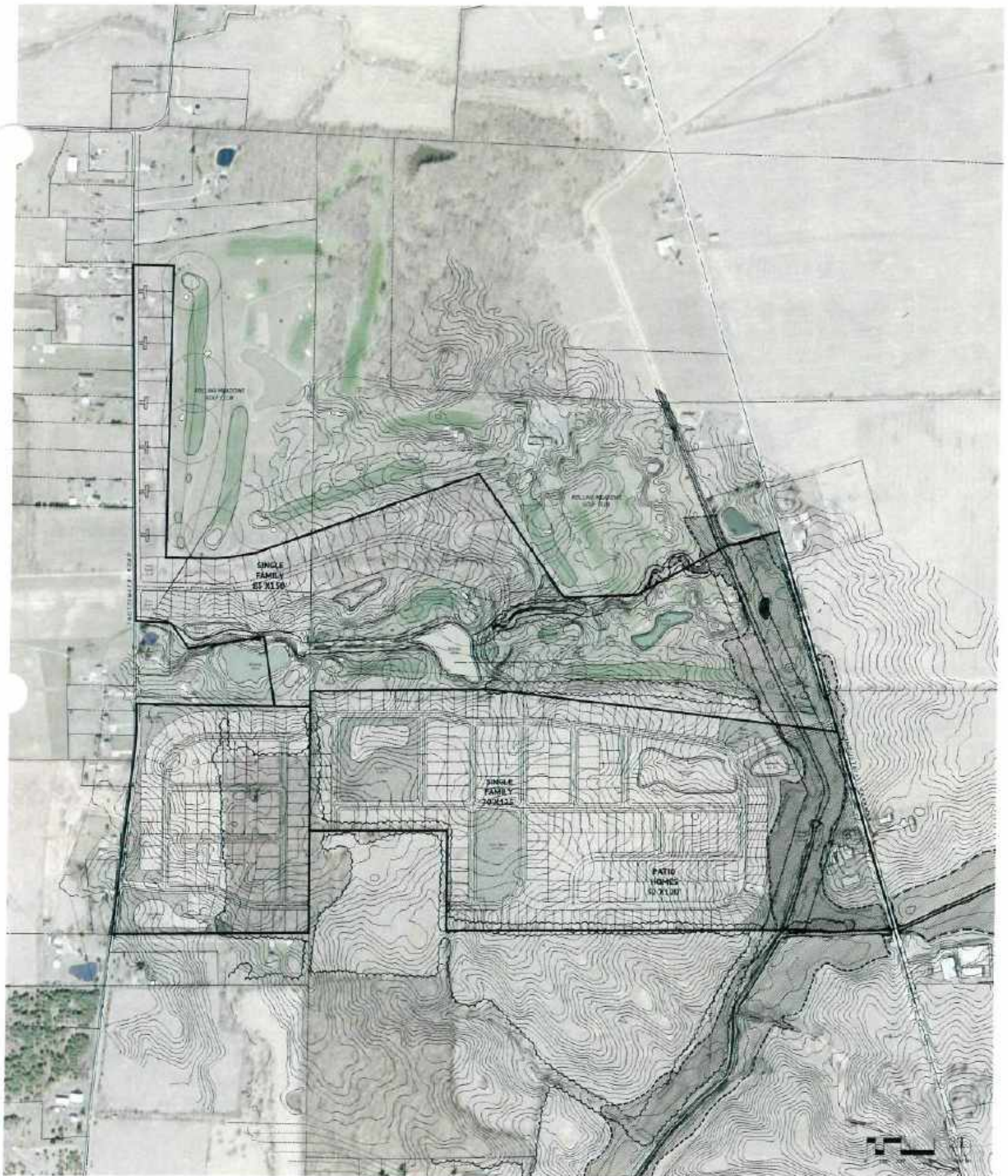
In lieu of constructing items #2 and 3 of the Build identified improvements, the County and ODOT may prefer a developer contribution towards the construction cost. This could go towards the ODOT planned project to help address the larger improvements at this intersection. An illustration of concept improvements at US 42 & Industrial Parkway are attached for reference. Note that all turn lane lengths described above include the 50-foot drop taper in the length.

No other off-site improvements are warranted or recommended because of added site traffic. If you have questions or comments during your review of this traffic study, please contact me directly at 614 441-4222 (Ext. 1230) at your convenience.

Sincerely,



Douglas A. Bender, PE, PTOE



PLANNING DATA

Planning District: 10000 Township Comprehensive Plan, 2010
 10000 Township Zoning Ordinance, 2010

Planning Agency: 10000 Township Board of Trustees

Local Entity: 10000 Township Board of Trustees

Investment and Use: 10000 Township Board of Trustees

EXISTING SITE DATA - SUMMARY

Site Area: 100.00 Acres
 Wetlands: 10.00 Acres
 Wetlands: 10.00 Acres
 Wetlands: 10.00 Acres

Site Area: 100.00 Acres
 Wetlands: 10.00 Acres
 Wetlands: 10.00 Acres
 Wetlands: 10.00 Acres

Site Area: 100.00 Acres
 Wetlands: 10.00 Acres
 Wetlands: 10.00 Acres
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Site Area: 100.00 Acres
 Wetlands: 10.00 Acres
 Wetlands: 10.00 Acres
 Wetlands: 10.00 Acres

Conceptual Development Master Plan

VIRGINIA HOMES - ROLLING MEADOWS RESIDENTIAL DEVELOPMENT
 Jerome Township, Union County, OH

EDGE



County Engineer
Environmental Engineer
Building Department
233 W. Sixth Street
Marysville, Ohio 43040
P 937. 645. 3018
F 937. 645. 3161
www.co.union.oh.us/engineer

Marysville Operations Facility
16400 County Home Road
Marysville, Ohio 43040
P 937. 645. 3017
F 937. 645. 3111

Richwood Outpost
190 Beatty Avenue
Richwood, Ohio 43344

January 16, 2019

Public Service with integrity

Douglas Bender, PE, PTOE
The Mannik & Smith Group, Inc.
1160 Dublin Road, Suite 100
Columbus, Ohio 43215

Re: Memorandum of Understanding (MOU) for Rolling Meadows TIS
Review Comments

Doug,

Thank you for submitting the above referenced MOU for our review. We have had the opportunity to review the above, and have the following comments:

1. Please provide confirmation of ODOT's participation in the review of this TIS, as the US 42/Industrial Parkway Intersection and US 33/US 42 Interchange is in close proximity to this project, and the US 42/Industrial Parkway intersection will be analyzed as part of this TIS.
2. Clarify the MOU to illustrate that the TIS will provide a scaled concept sketch indicating the improvements/modifications that properly mitigate the traffic impacts of the proposed development, and which improvements are triggered by the development traffic versus the background traffic (Build vs. No Build).
3. Clarify in the third bullet point that intersection capacity will be performed at the following intersections:
 - a. Industrial Parkway site access
 - b. Both Crottinger Road site access points
 - c. US 42 and Industrial Parkway intersection
 - d. Taylor Road and Industrial Parkway intersection
 - e. Crottinger Road and Industrial Parkway intersection
 - f. Taylor Road and Crottinger Road
4. Add clarification within the MOU to illustrate that the developer will be responsible for any roadway network mitigation triggered by the development. The construction timing and contribution level of these improvements will be outlined in an Infrastructure Agreement between the developer and Union County. In certain circumstances, a developer contribution may be required for off-site intersection improvements based upon the percentage of site traffic using said off-site intersection in the horizon year of the study. As such, the percentage of site traffic versus total horizon year traffic should be calculated at each study intersection.

To complete the traffic impact study, we will perform the following tasks:

- Site traffic will be assigned to the adjacent street network using engineering judgment based on existing traffic patterns and available arterial and freeway interchange access. It is expected that a majority of site traffic (approximately 75%) will head south via US 33 or Industrial Parkway.
- The background traffic growth rate will be obtained from MORPC and is mostly provided from the data supplied by them for the trucking site south of US 42 on Industrial Parkway
- The TIS will evaluate intersection capacity using Synchro for the Opening Day (2019) Build and No Build, and Design Year (2029) Build and No Build scenarios at the following intersections:
 1. Industrial Parkway site access
 2. Crottinger Road at both site access points
 3. US 42 & Industrial Parkway
 4. Taylor Road & Industrial Parkway
 5. Crottinger Road & Industrial Parkway
 6. Taylor Road & Crottinger Road
- No Build scenarios for projected 2029 conditions will include the anticipated volumes from the proposed trucking site on Industrial Parkway south of US 42. At the Industrial Pkwy/US 42 intersection, ODOT developed geometric improvements are assumed to be in place for No Build conditions.
- Per the County's Level of Service (LOS) requirements, impacts from the proposed development on adjacent arterial or collector streets will be mitigated to LOS C as necessary. Mitigation will be recommended for any movements experiencing unacceptable LOS (D or worse) whether they are attributable to the proposed development (Build) or are expected in background conditions without the project (No Build)
- Turn lane warrant analyses will follow procedures outlined in the ODOT Location & Design Manual and will be performed at both planned site driveway intersections for 2029 Build conditions only
- A scaled sketch illustrating anticipated off-site improvements (No Build or site-related) will be provided with the TIS

ODOT Safety Improvement at US42/Industrial Parkway should only be assumed in the 2029 scenario. The Opening Day scenario shall assume existing configuration.

Once analyses of projected 2019 & 2029 No Build and Build conditions and turn lane warrant analyses (2029) are completed, a TIS report will be prepared to summarize data, methodology, conclusions, and recommendations. Off site impacts triggered by the addition of site traffic will be mitigated by developer-funded improvements. The final TIS will be submitted to the Union County Engineers office for review. Concurrent ODOT review is expected and a sign off has been included in this MOU for signature since the study includes the US 42/Industrial Parkway intersection.

If you have questions or comments on this MOU during your review, please contact me directly at 614 441-4222 (Ext. 1230) at your convenience.

Sincerely,



Douglas A. Bender, PE

In certain circumstances, a developer contribution may be required for off-site intersection improvements based upon the percentage of site traffic using said off-site intersection in the horizon year of the study. This will be determined by Union County during review of the final TIS.

Approved w/ noted comments

Signed: Bill Narducci, PE
Union County Engineers Office representative

Signed: _____
ODOT District Six representative

Please revise the MOU per the above for review and approval. Should you have any questions or concerns, feel free to contact me at (937) 645-3165.

Bill Narducci

Bill Narducci, P.E.
Assistant County Engineer
Union County Engineer

Doug Bender

From: Andrew.Hurst@dot.ohio.gov
Sent: Friday, January 25, 2019 3:09 PM
To: bnarducci@co.union.oh.us; Doug Bender
Cc: Charles Ruma; Laura Comek
Subject: RE: Rolling Meadows TIS --- Memo of Understanding

We have no further comments, and approve the MOU.

From: Bill Narducci <bnarducci@co.union.oh.us>
Sent: Tuesday, January 22, 2019 8:31 AM
To: Doug Bender <DBender@manniksmithgroup.com>; Hurst, Andrew <Andrew.Hurst@dot.ohio.gov>
Cc: Charles Ruma <Charles@virginia-homes.com>; Laura Comek <laura@comeklaw.com>
Subject: RE: Rolling Meadows TIS --- Memo of Understanding

Apologies, MOU with comments attached!

Bill Narducci, P.E.
Assistant County Engineer

Union County Engineer
233 West 6th St.
Marysville, Ohio 43040
Direct: 937.645.3165
Office: 937.645.3018
Fax: 937.645.3161
<http://www.co.union.oh.us/engineer>

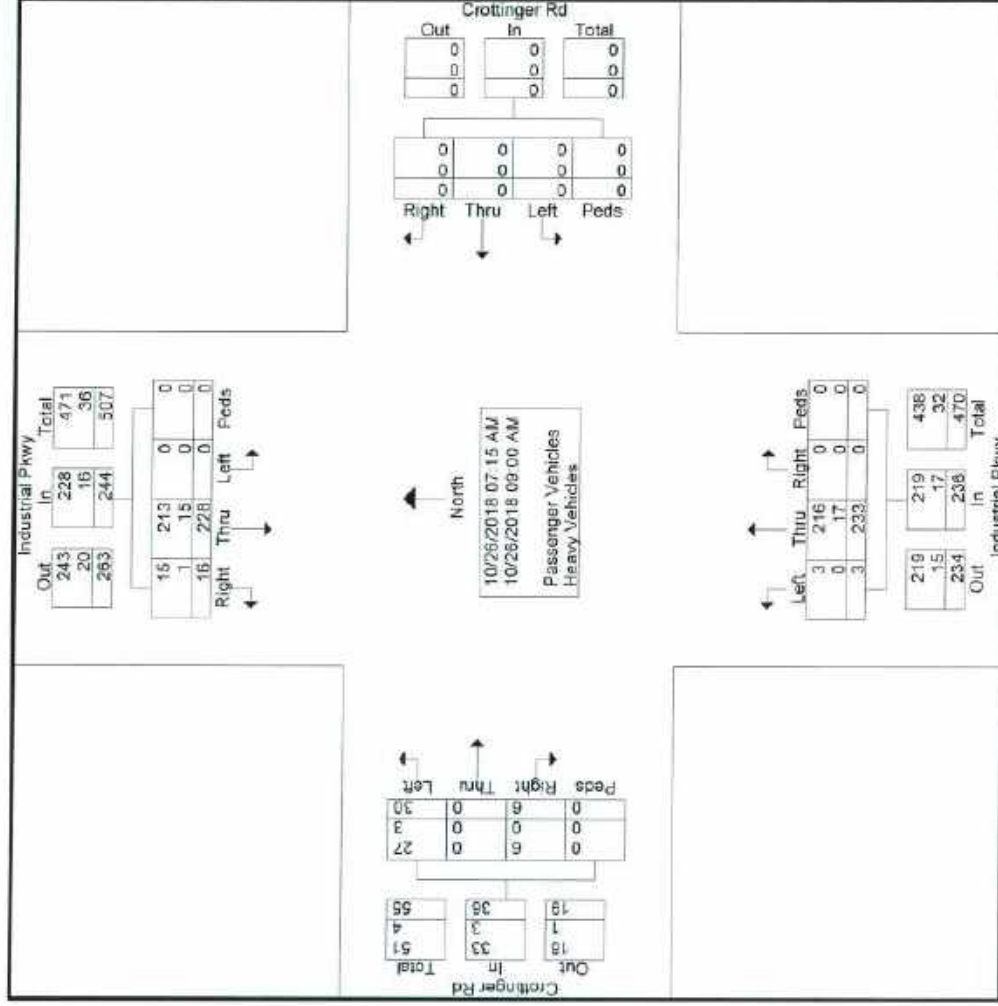
From: Bill Narducci
Sent: Tuesday, January 22, 2019 8:28 AM
To: 'Doug Bender' <DBender@manniksmithgroup.com>; Andrew.Hurst@dot.ohio.gov
Cc: Charles Ruma <Charles@virginia-homes.com>; Laura Comek <laura@comeklaw.com>
Subject: RE: Rolling Meadows TIS --- Memo of Understanding

Doug,

Please see Union County approved MOU with a few notes/clarifications. Drew, please indicate your approval with conditions you wish to add and provide a final copy for record. Thanks

Bill Narducci, P.E.
Assistant County Engineer

Union County Engineer
233 West 6th St.
Marysville, Ohio 43040
Direct: 937.645.3165
Office: 937.645.3018
Fax: 937.645.3161
<http://www.co.union.oh.us/engineer>



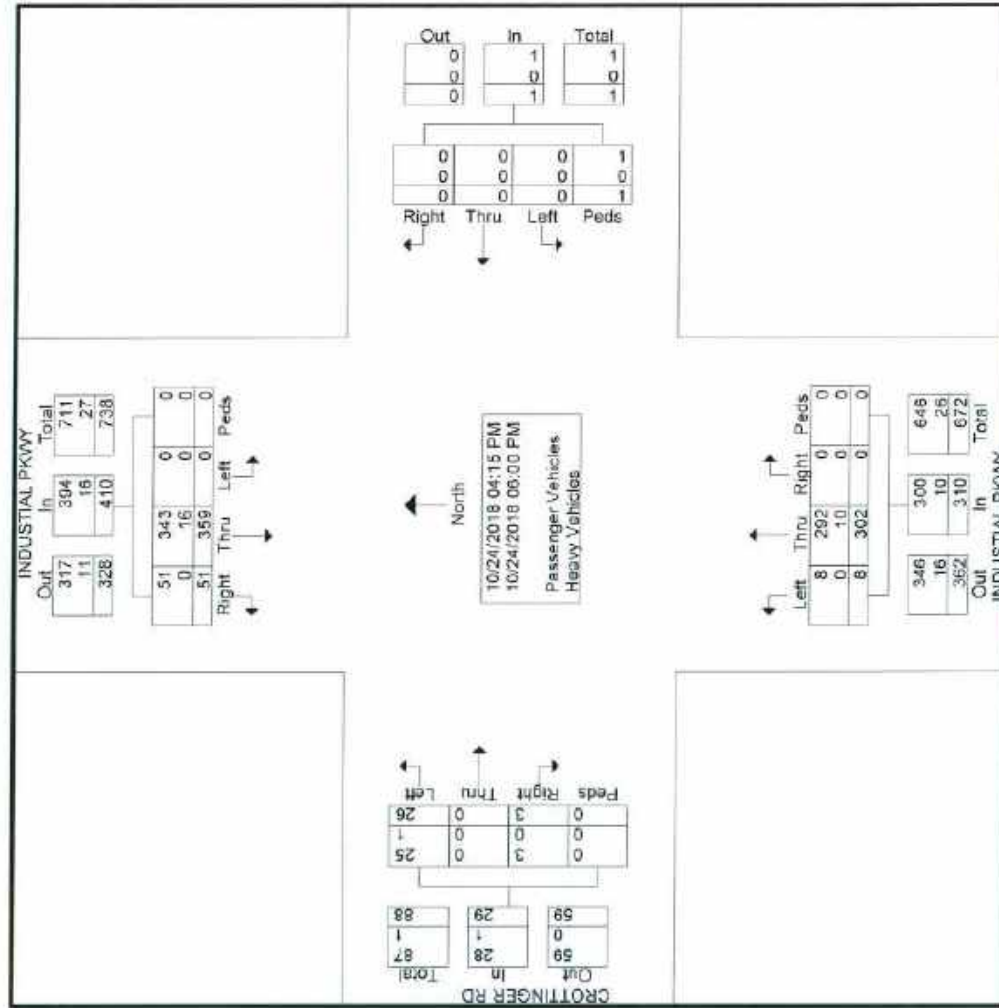
File Name : IND PKY_CROT_AM
Site Code : 00000000
Start Date : 10/26/2018
Page No : 3

Industrial Pkwy From North					Crotinger Rd From East					Industrial Pkwy From South					Crotinger Rd From West						
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 09:00 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	2	33	0	0	35	0	0	0	0	0	0	23	0	0	23	2	0	4	0	6	64
07:30 AM	1	31	0	0	32	0	0	0	0	0	0	31	1	0	32	1	0	5	0	6	70
07:45 AM	6	38	0	0	44	0	0	0	0	0	0	35	0	0	35	1	0	4	0	5	84
08:00 AM	3	46	0	0	49	0	0	0	0	0	0	32	0	0	32	0	0	4	0	4	85
Total Volume	12	148	0	0	160	0	0	0	0	0	0	121	1	0	122	4	0	17	0	21	303
% App. Total	7.5	92.5	0	0	0	0	0	0	0	0	0	99.2	0.8	0	0	19	0	81	0	0	0
PHF	500	804	000	000	816	000	000	000	000	000	000	864	250	000	871	500	000	850	000	875	891
Passenger Vehicles	11	139	0	0	150	0	0	0	0	0	0	117	1	0	118	4	0	16	0	20	288
% Passenger Vehicles	91.7	93.9	0	0	93.8	0	0	0	0	0	0	96.7	100	0	96.7	100	0	94.1	0	95.2	95.0
Heavy Vehicles	1	9	0	0	10	0	0	0	0	0	0	4	0	0	4	0	0	1	0	1	15
% Heavy Vehicles	8.3	6.1	0	0	6.3	0	0	0	0	0	0	3.3	0	0	3.3	0	0	5.9	0	4.8	5.0

File Name : IND PKY_CROT_PM
Site Code : 00000000
Start Date : 10/24/2018
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

Start Time	INDUSTIAL PKWY							INDUSTIAL PKWY							CROTTER RD						
	From North							From South							From West						
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:15 PM	10	44	0	0	54	0	0	0	0	0	0	33	1	0	34	1	0	4	0	5	93
04:30 PM	5	41	0	0	46	0	0	0	0	0	0	43	2	0	45	0	0	4	0	4	95
04:45 PM	9	34	0	0	43	0	0	0	0	0	0	35	0	0	35	0	0	6	0	6	84
Total	24	119	0	0	143	0	0	0	0	0	0	111	3	0	114	1	0	14	0	15	272
05:00 PM	5	45	0	0	50	0	0	0	0	0	0	42	1	0	43	1	0	4	0	5	98
05:15 PM	6	55	0	0	61	0	0	0	0	0	0	43	1	0	44	1	0	3	0	4	109
05:30 PM	6	49	0	0	55	0	0	0	0	0	0	29	2	0	31	0	0	1	0	1	87
05:45 PM	4	52	0	0	56	0	0	0	0	0	0	48	0	0	48	0	0	1	0	1	105
Total	21	201	0	0	222	0	0	0	0	0	0	152	4	0	166	2	0	9	0	11	399
06:00 PM	6	39	0	0	45	0	0	0	1	1	0	29	1	0	30	0	0	3	0	3	79
Grand Total	51	359	0	0	410	0	0	0	1	1	0	302	8	0	310	3	0	26	0	29	750
Approch %	12.4	87.6	0	0		0	0	0	100		0	97.4	2.6	0		10.3	0	89.7	0		
Total %	6.8	47.9	0	0	54.7	0	0	0	0.1	0.1	0	40.3	1.1	0	41.3	0.4	0	3.5	0	3.9	
Passenger Vehicles	51	343	0	0	394	0	0	0	1	1	0	292	8	0	300	3	0	25	0	28	723
% Passenger Vehicles	100	95.5	0	0	96.1	0	0	0	100	100	0	96.7	100	0	96.8	100	0	96.2	0	96.6	96.4
Heavy Vehicles	0	16	0	0	16	0	0	0	0	0	0	10	0	0	10	0	0	1	0	1	27
% Heavy Vehicles	0	4.5	0	0	3.9	0	0	0	0	0	0	3.3	0	0	3.2	0	0	3.8	0	3.4	3.6

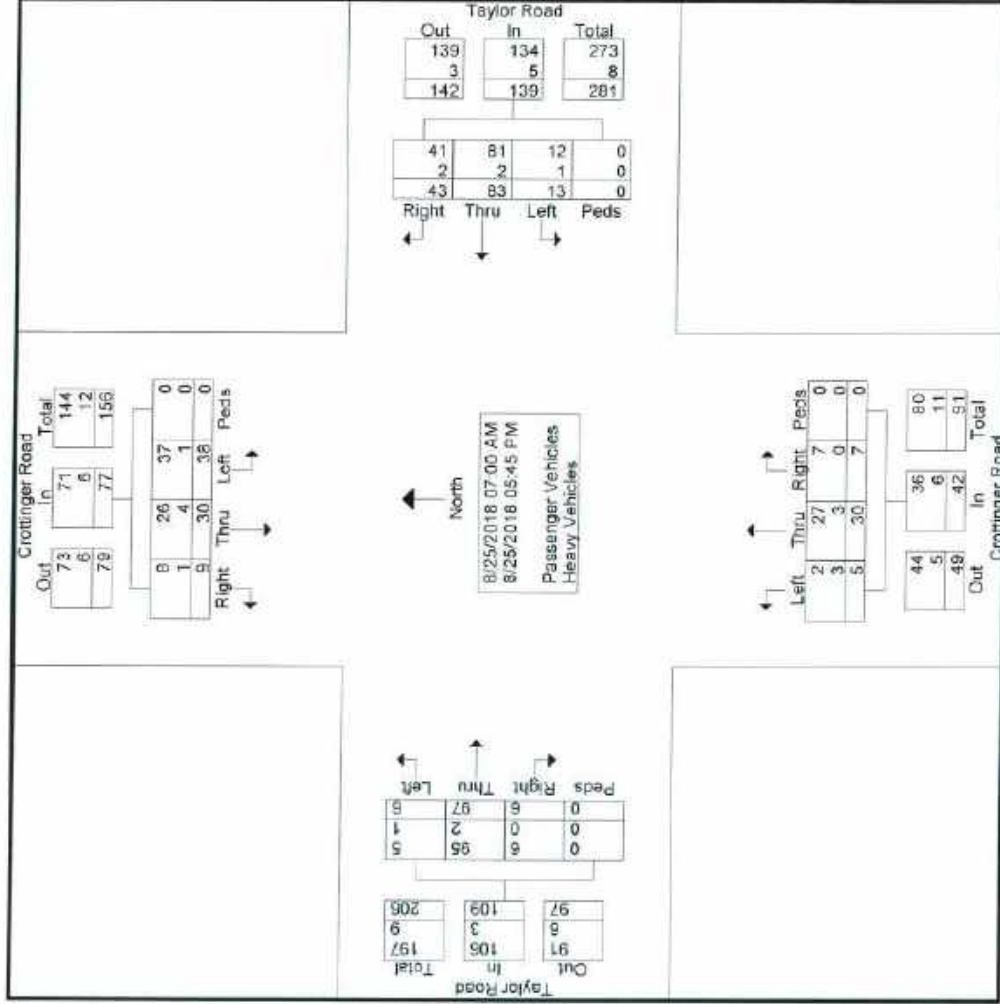


File Name : IND PKY_CROT_PM
Site Code : 00000000
Start Date : 10/24/2018
Page No : 3

	INDUSTIAL PKWY From North						From East						INDUSTIAL PKWY From South						CROTTINGER RD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total			
Peak Hour Analysis From 04:15 PM to 06:00 PM - Peak 1 of 1																								
Peak Hour for Entire Intersection Begins at 05:00 PM																								
05:00 PM	5	45	0	0	50	0	0	0	0	0	0	42	1	0	43	1	0	4	0	5	98			
05:15 PM	6	55	0	0	61	0	0	0	0	0	0	43	1	0	44	1	0	3	0	4	109			
05:30 PM	6	49	0	0	55	0	0	0	0	0	0	29	2	0	31	0	0	1	0	1	87			
05:45 PM	4	52	0	0	56	0	0	0	0	0	0	48	0	0	48	0	0	1	0	1	105			
Total Volume	21	201	0	0	222	0	0	0	0	0	0	162	4	0	166	2	0	9	0	11	399			
% App. Total	9.5	90.5	0	0		0	0	0	0	0	0	97.6	2.4	0		18.2	0	81.8	0					
PHF	87.5	914	.000	.000	.910	.000	.000	.000	.000	.000	.000	.844	.500	.000	.865	.500	.000	.563	.000	.550	.915			
Passenger Vehicles	21	190	0	0	211	0	0	0	0	0	0	158	4	0	162	2	0	9	0	11	384			
% Passenger Vehicles	100	94.5	0	0	95.0	0	0	0	0	0	0	97.5	100	0	97.6	100	0	100	0	100	96.2			
Heavy Vehicles	0	11	0	0	11	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	15			
% Heavy Vehicles	0	5.5	0	0	5.0	0	0	0	0	0	0	2.5	0	0	2.4	0	0	0	0	0	3.8			

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Groups Printed- Passenger Vehicles - Heavy Vehicles																																			
Crottinger Road From North												Taylor Road From East												Crottinger Road From South						Taylor Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total									
07:00 AM	0	3	3	0	6	0	1	1	0	2	0	0	0	0	0	0	1	7	0	0	8	15													
07:15 AM	0	1	5	0	6	2	1	1	0	4	0	1	0	0	1	0	3	0	0	3	14														
07:30 AM	0	1	1	0	2	3	0	0	0	3	1	4	0	0	5	0	14	0	0	14	24														
07:45 AM	0	3	3	0	6	2	2	0	0	4	2	3	0	0	5	1	7	0	0	8	23														
Total	0	8	12	0	20	7	4	2	0	13	3	8	0	0	11	2	31	0	0	33	77														
08:00 AM	0	1	4	0	5	1	2	0	0	3	1	0	0	0	1	0	3	0	0	3	12														
08:15 AM	0	2	2	0	4	2	1	2	0	5	0	3	0	0	3	0	5	0	0	5	17														
08:30 AM	1	2	3	0	6	1	1	0	0	2	0	3	1	0	4	0	6	0	0	6	18														
08:45 AM	0	1	0	0	1	2	1	0	0	3	0	0	0	0	0	1	7	0	0	8	12														
Total	1	6	9	0	16	6	5	2	0	13	1	6	1	0	8	1	21	0	0	22	59														
09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	7	0	0	8	8														
*** BREAK ***																																			
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	7	0	0	8	8														
*** BREAK ***																																			
04:00 PM	0	3	1	0	4	1	5	1	0	7	1	5	1	0	7	1	7	0	0	8	25														
04:15 PM	0	0	4	0	4	5	15	3	0	23	1	5	2	0	8	0	3	0	0	3	38														
04:30 PM	0	3	1	0	4	9	9	0	0	18	0	0	0	0	0	0	2	2	0	4	26														
04:45 PM	2	2	1	0	5	3	6	0	0	9	0	0	1	0	1	0	4	0	0	4	19														
Total	2	8	7	0	17	18	35	4	0	57	2	10	4	0	16	1	16	2	0	19	109														
05:00 PM	3	2	2	0	7	2	7	1	0	10	0	3	0	0	3	0	5	0	0	5	25														
05:15 PM	1	2	6	0	9	2	14	1	0	17	1	0	0	0	1	0	3	1	0	4	31														
05:30 PM	1	2	0	0	3	3	10	1	0	14	0	1	0	0	1	1	10	3	0	14	32														
05:45 PM	1	2	2	0	5	5	8	2	0	15	0	2	0	0	2	0	4	0	0	4	29														
Total	6	8	10	0	24	12	39	5	0	56	1	6	0	0	7	1	22	4	0	27	114														
Grand Total	9	30	38	0	77	43	83	13	0	139	7	30	5	0	42	6	97	6	0	109	367														
Approach %	11.7	39	49.4	0		30.9	59.7	9.4	0		16.7	71.4	11.9	0		5.5	89	5.5	0																
Total %	2.5	8.2	10.4	0	21	11.7	22.6	3.5	0	37.9	1.9	8.2	1.4	0	11.4	1.6	26.4	1.6	0	29.7															
Passenger Vehicles	8	26	37	0	71	41	81	12	0	134	7	27	2	0	36	6	95	5	0	106	347														
% Passenger Vehicles	88.9	86.7	97.4	0	92.2	95.3	97.6	92.3	0	96.4	100	90	40	0	85.7	100	97.9	83.3	0	97.2	94.5														
Heavy Vehicles	1	4	1	0	6	2	2	1	0	5	0	3	3	0	6	0	2	1	0	3	20														
% Heavy Vehicles	11.1	13.3	2.6	0	7.8	4.7	2.4	7.7	0	3.6	0	10	60	0	14.3	0	2.1	16.7	0	2.8	5.4														



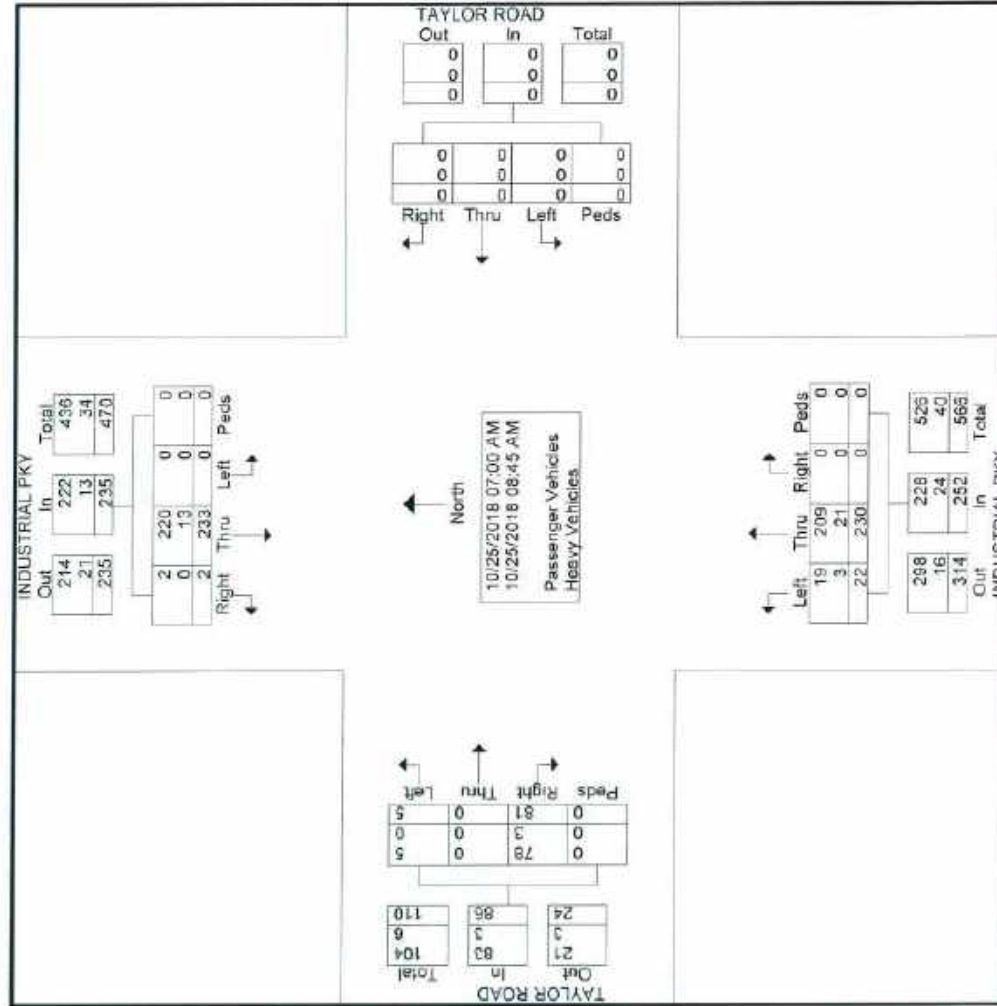
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Crottinger Road From North						Taylor Road From East						Crottinger Road From South						Taylor Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total		
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																							
Peak Hour for Entire Intersection Begins at 07:00 AM																							
07:00 AM	0	3	3	0	6	0	1	1	0	2	0	0	0	0	0	1	7	0	0	8	15		
07:15 AM	0	1	5	0	6	2	1	1	0	4	0	1	0	0	1	0	3	0	0	3	14		
07:30 AM	0	1	1	0	2	3	0	0	0	3	1	4	0	0	5	0	14	0	0	14	24		
07:45 AM	0	3	3	0	6	2	2	0	0	4	2	3	0	0	5	1	7	0	0	8	23		
Total Volume	0	8	12	0	20	7	4	2	0	13	3	8	0	0	11	2	31	0	0	33	77		
% App. Total	0	40	60	0		53.8	30.8	15.4	0		27.3	72.7	0	0		6.1	93.9	0	0				
PHF	.000	.667	.600	.000	.833	.583	.500	.500	.000	.813	.375	.500	.000	.000	.550	.500	.554	.000	.000	.589	.802		
Passenger Vehicles	0	8	12	0	20	6	2	2	0	10	3	7	0	0	10	2	31	0	0	33	73		
% Passenger Vehicles	0	100	100	0	100	85.7	50.0	100	0	76.9	100	87.5	0	0	90.9	100	100	0	0	100	94.8		
Heavy Vehicles	0	0	0	0	0	1	2	0	0	3	0	1	0	0	1	0	0	0	0	0	4		
% Heavy Vehicles	0	0	0	0	0	14.3	50.0	0	0	23.1	0	12.5	0	0	9.1	0	0	0	0	0	5.2		

Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																								
Peak Hour for Entire Intersection Begins at 05:00 PM																								
05:00 PM	3	2	2	0	7		2	7	1	0	10		0	3	0	0	3	0	5	0	0	5	25	
05:15 PM	1	2	6	0	9		2	14	1	0	17		1	0	0	0	1	0	3	1	0	4	31	
05:30 PM	1	2	0	0	3		3	10	1	0	14		0	1	0	0	1	1	10	3	0	14	32	
05:45 PM	1	2	2	0	5		5	8	2	0	15		0	2	0	0	2	0	4	0	0	4	25	
Total Volume	6	8	10	0	24		12	39	5	0	56		1	6	0	0	7	1	22	4	0	27	114	
% App. Total	25	33.3	41.7	0			21.4	69.6	8.9	0			14.3	85.7	0	0		3.7	81.5	14.8	0			
PHF	.500	1.00	.417	.000	.667		.600	.696	.625	.000	.824		.250	.500	.000	.000	.583	.250	.550	.333	.000	.482	.891	
Passenger Vehicles	5	7	10	0	22		12	39	5	0	56		1	6	0	0	7	1	22	3	0	26	111	
% Passenger Vehicles	83.3	87.5	100	0	91.7		100	100	100	0	100		100	100	0	0	100	100	100	75.0	0	96.3	97.4	
Heavy Vehicles	1	1	0	0	2		0	0	0	0	0		0	0	0	0	0	0	0	1	0	1	3	
% Heavy Vehicles	16.7	12.5	0	0	8.3		0	0	0	0	0		0	0	0	0	0	0	0	25.0	0	3.7	2.6	

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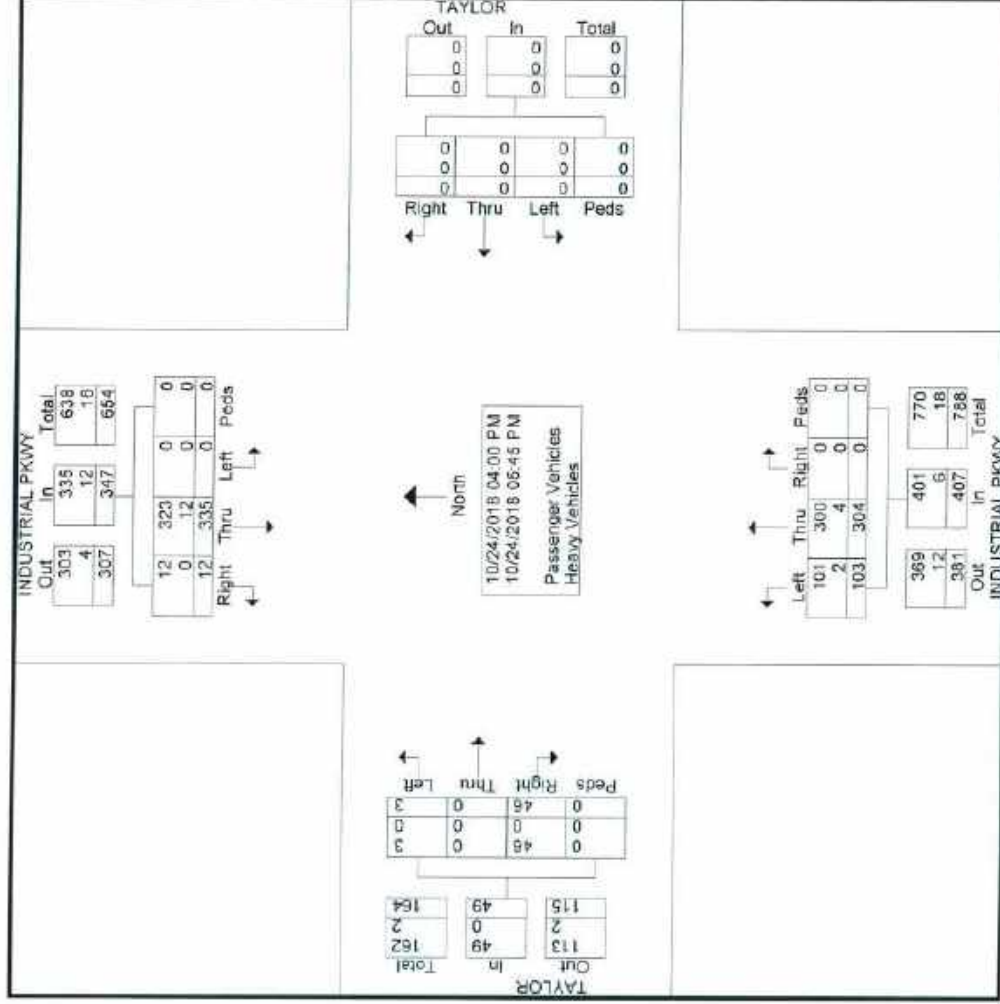
Groups Printed- Passenger Vehicles - Heavy Vehicles																												
INDUSTRIAL PKY From North												TAYLOR ROAD From East						INDUSTRIAL PKY From South						TAYLOR ROAD From West				
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total							
07:00 AM	0	29	0	0	29	0	0	0	0	0	0	20	1	0	21	12	0	0	0	12	62							
07:15 AM	0	36	0	0	36	0	0	0	0	0	0	29	2	0	31	10	0	1	0	11	78							
07:30 AM	0	38	0	0	38	0	0	0	0	0	0	34	3	0	37	14	0	0	0	14	89							
07:45 AM	0	43	0	0	43	0	0	0	0	0	0	42	4	0	46	14	0	0	0	14	103							
Total	0	146	0	0	146	0	0	0	0	0	0	125	10	0	135	50	0	1	0	51	332							
08:00 AM	0	33	0	0	33	0	0	0	0	0	0	30	5	0	35	5	0	2	0	7	75							
08:15 AM	1	18	0	0	19	0	0	0	0	0	0	21	2	0	23	8	0	1	0	9	51							
08:30 AM	0	18	0	0	18	0	0	0	0	0	0	27	2	0	29	10	0	1	0	11	58							
08:45 AM	1	18	0	0	19	0	0	0	0	0	0	27	3	0	30	8	0	0	0	8	57							
Total	2	87	0	0	89	0	0	0	0	0	0	105	12	0	117	31	0	4	0	35	241							
Grand Total	2	233	0	0	235	0	0	0	0	0	0	230	22	0	252	81	0	5	0	86	573							
Approch %	0.9	89.1	0	0		0	0	0	0		0	91.3	8.7	0		94.2	0	5.8	0									
Total %	0.3	40.7	0	0	41	0	0	0	0	0	0	40.1	3.8	0	44	14.1	0	0.9	0	15								
Passenger Vehicles	2	220	0	0	222	0	0	0	0	0	0	209	19	0	228	78	0	5	0	83	533							
% Passenger Vehicles	100	94.4	0	0	94.5	0	0	0	0	0	0	90.9	86.4	0	90.5	96.3	0	100	0	96.5	93							
Heavy Vehicles	0	13	0	0	13	0	0	0	0	0	0	21	3	0	24	3	0	0	0	3	40							
% Heavy Vehicles	0	5.6	0	0	5.5	0	0	0	0	0	0	9.1	13.6	0	9.5	3.7	0	0	0	3.5	7							



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Start Time	INDUSTRIAL PKY From North					TAYLOR ROAD From East					INDUSTRIAL PKY From South					TAYLOR ROAD From West					
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
	Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																				
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	0	36	0	0	36	0	0	0	0	0	0	0	29	0	31	10	0	1	0	11	78
07:30 AM	0	38	0	0	38	0	0	0	0	0	0	0	34	0	37	14	0	0	0	14	89
07:45 AM	0	43	0	0	43	0	0	0	0	0	0	0	42	0	46	14	0	0	0	14	103
08:00 AM	0	33	0	0	33	0	0	0	0	0	0	0	30	0	35	5	0	2	0	7	75
Total Volume	0	150	0	0	150	0	0	0	0	0	0	0	135	0	149	43	0	3	0	46	345
% App. Total	0	100	0	0	100	0	0	0	0	0	0	0	90.6	0	94	93.5	0	6.5	0	0	0
PHF	.000	.872	.000	.000	.872	.000	.000	.000	.000	.000	.000	.000	.804	.000	.810	.768	.000	.375	.000	.821	.837
Passenger Vehicles	0	140	0	0	140	0	0	0	0	0	0	0	129	0	141	43	0	3	0	46	327
% Passenger Vehicles	0	93.3	0	0	93.3	0	0	0	0	0	0	0	95.6	0	94.6	100	0	100	0	100	94.8
Heavy Vehicles	0	10	0	0	10	0	0	0	0	0	0	0	6	0	8	0	0	0	0	0	18
% Heavy Vehicles	0	5.7	0	0	5.7	0	0	0	0	0	0	0	4.4	0	5.4	0	0	0	0	0	5.2

Start Time		INDUSTRIAL PKWY										TAYLOR										Groups Printed- Passenger Vehicles - Heavy Vehicles									
		From North					From East					From South					From West														
		Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total									
04:00 PM		2	44	0	0	45	0	0	0	0	0	32	13	0	45	6	0	1	0	0	7	98									
04:15 PM		2	27	0	0	29	0	0	0	0	0	43	10	0	53	3	0	1	0	0	4	86									
04:30 PM		1	39	0	0	40	0	0	0	0	0	38	12	0	50	5	0	0	0	0	5	95									
04:45 PM		2	40	0	0	42	0	0	0	0	0	36	6	0	42	8	0	0	0	0	8	92									
Total		7	150	0	0	157	0	0	0	0	0	149	41	0	190	22	0	2	0	0	24	371									
05:00 PM		1	54	0	0	55	0	0	0	0	0	39	23	0	62	8	0	0	0	0	8	125									
05:15 PM		0	50	0	0	50	0	0	0	0	0	39	17	0	56	5	0	0	0	0	5	111									
05:30 PM		3	45	0	0	48	0	0	0	0	0	44	12	0	56	5	0	1	0	0	6	110									
05:45 PM		1	36	0	0	37	0	0	0	0	0	33	10	0	43	6	0	0	0	0	6	86									
Total		5	185	0	0	190	0	0	0	0	0	155	62	0	217	24	0	1	0	0	25	432									
Grand Total		12	335	0	0	347	0	0	0	0	0	304	103	0	407	46	0	3	0	0	49	803									
Approch %		3.5	96.5	0	0		0	0	0	0	0	74.7	25.3	0		93.9	0	6.1	0	0											
Total %		1.5	41.7	0	0	43.2	0	0	0	0	0	37.9	12.8	0	50.7	5.7	0	0.4	0	0	6.1										
Passenger Vehicles		12	323	0	0	335	0	0	0	0	0	300	101	0	401	46	0	3	0	0	49	785									
% Passenger Vehicles		100	96.4	0	0	96.5	0	0	0	0	0	98.7	98.1	0	98.5	100	0	100	0	0	100	97.8									
Heavy Vehicles		0	12	0	0	12	0	0	0	0	0	4	2	0	6	0	0	0	0	0	0	18									
% Heavy Vehicles		0	3.6	0	0	3.5	0	0	0	0	0	1.3	1.9	0	1.5	0	0	0	0	0	0	2.2									



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Start Time	INDUSTRIAL PKWY						TAYLOR						INDUSTRIAL PKWY						TAYLOR					
	From North						From East						From South						From West					
	Right	Thru	Left	Peds	App. Total		Right	Thru	Left	Peds	App. Total		Right	Thru	Left	Peds	App. Total		Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																								
Peak Hour for Entire Intersection Begins at 04:45 PM																								
04:45 PM	2	40	0	0	42		0	0	0	0	0		0	36	5	0	42		8	0	0	0	0	8
05:00 PM	1	54	0	0	55		0	0	0	0	0		0	39	23	0	62		8	0	0	0	0	8
05:15 PM	0	50	0	0	50		0	0	0	0	0		0	39	17	0	56		5	0	0	0	0	5
05:30 PM	3	45	0	0	48		0	0	0	0	0		0	44	12	0	56		5	0	1	0	0	6
Total Volume	6	189	0	0	195		0	0	0	0	0		0	158	58	0	216		26	0	1	0	0	27
% App. Total	3.1	96.9	0	0			0	0	0	0	0		0	73.1	26.9	0			96.3	0	3.7	0	0	
PHF	.500	.875	.000	.000	.886		.000	.000	.000	.000	.000		.000	.898	.530	.000	.871		.813	.000	.250	.000	.000	.944
Passenger Vehicles	6	180	0	0	186		0	0	0	0	0		0	156	58	0	214		26	0	1	0	0	27
% Passenger Vehicles	100	95.2	0	0	95.4		0	0	0	0	0		0	98.7	100	0	99.1		100	0	100	0	100	97.5
Heavy Vehicles	0	9	0	0	9		0	0	0	0	0		0	2	0	0	2		0	0	0	0	0	11
% Heavy Vehicles	0	4.8	0	0	4.6		0	0	0	0	0		0	1.3	0	0	0.9		0	0	0	0	0	2.5

Groups Printed- Cars - Trucks

Start Time	INDUSTRIAL PKWY Southbound					US42 Westbound					INDUSTRIAL PKWY Northbound					US42 Eastbound					Acc Total
	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	
07:00 AM	4	27	12	0	43	3	47	41	0	91	19	16	6	0	41	16	89	5	0	110	285
07:15 AM	2	33	9	0	44	3	51	37	0	91	30	20	9	0	59	23	80	3	0	106	300
07:30 AM	1	43	15	0	59	4	42	34	0	80	37	27	11	0	75	20	59	6	0	85	299
07:45 AM	4	43	18	0	65	12	49	29	0	90	34	32	15	0	81	23	87	6	0	116	352
Total	11	146	54	0	211	22	189	141	0	352	120	95	41	0	256	82	315	20	0	417	1236
08:00 AM	1	20	6	0	27	5	79	66	0	150	26	16	8	0	50	22	63	2	0	89	316
08:15 AM	7	14	11	0	32	2	55	28	0	85	28	14	7	0	49	24	69	4	0	97	263
08:30 AM	4	8	8	0	20	4	64	29	0	97	19	11	16	0	46	20	70	5	0	95	258
08:45 AM	3	14	5	0	22	2	68	27	0	97	26	17	6	0	49	24	65	7	0	96	264
Total	15	56	30	0	101	13	266	150	0	429	99	58	37	0	194	90	209	18	0	377	1101
*** BREAK ***																					
04:00 PM	6	18	8	0	32	10	92	25	0	127	50	21	23	0	94	19	64	5	0	88	341
04:15 PM	9	25	9	0	43	13	89	18	0	120	40	36	25	0	101	12	97	3	0	112	376
04:30 PM	10	27	7	0	44	9	101	33	0	143	53	38	23	0	114	12	61	4	0	77	378
04:45 PM	12	33	8	0	53	9	101	29	0	139	39	45	38	0	122	9	68	10	0	87	401
Total	37	103	32	0	172	41	383	105	0	529	182	140	109	0	431	52	290	22	0	364	1496
05:00 PM	6	23	11	0	40	11	90	29	0	130	47	46	30	0	123	14	91	4	0	109	402
05:15 PM	17	44	10	0	71	5	91	32	0	128	54	43	21	0	119	12	63	7	0	82	400
05:30 PM	9	25	7	0	41	10	115	27	0	152	46	16	21	0	83	13	72	5	0	90	366
05:45 PM	3	28	4	0	35	20	106	22	0	148	21	29	23	0	71	9	60	2	0	71	327
Total	35	120	32	0	187	46	402	110	0	558	169	134	95	0	398	48	286	18	0	352	1495
Grand Total	98	425	148	0	671	122	1240	506	0	1868	570	427	282	0	1279	272	1160	78	0	1510	5328
Approch %	14.6	63.3	22.1	0		6.5	66.4	27.1	0		44.6	53.4	22	0		18	76.8	5.2	0		
Total %	1.8	8	2.8	0	12.6	2.3	23.3	9.5	0	35.1	10.7	8	5.3	0	24	5.1	21.8	1.5	0	28.3	
Cars	93	417	138	0	648	115	1069	487	0	1671	535	424	267	0	1226	263	1016	72	0	1351	4896
% Cars	94.9	98.1	93.7	0	96.6	94.3	86.2	96.2	0	89.5	93.9	99.3	94.7	0	95.9	96.7	87.6	92.3	0	89.5	91.9
Trucks	5	8	10	0	23	7	171	19	0	197	35	3	15	0	53	9	144	6	0	159	432
% Trucks	5.1	1.9	6.8	0	3.4	5.7	13.8	3.8	0	10.5	6.1	0.7	5.3	0	4.1	3.3	12.4	7.7	0	10.5	8.1

your Company Name Here

This is your address
Your City, State ZipCode
Your Tagline Here

File Name : US 42 - Industrial Pkw
Site Code : 00000000
Start Date : 9/29/2016
Page No : 1

Groups Printed- Trucks

INDUSTRIAL PKWY						US42					INDUSTRIAL PKWY					US42								
	From North						From East						From South						From West					
Start Time	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Int Total			
04:30 PM	0	0	0	0	0	0	11	1	0	12	3	0	0	0	3	0	11	0	0	11	26			
04:45 PM	0	0	0	0	0	0	14	1	0	15	4	0	2	0	6	0	11	0	0	11	32			
Total	0	0	0	0	0	0	25	2	0	27	7	0	2	0	9	0	22	0	0	22	58			
05:00 PM	2	0	1	0	3	0	10	0	0	10	1	0	0	0	1	0	9	0	0	9	23			
05:15 PM	1	0	0	0	1	0	10	0	0	10	1	0	0	0	1	0	3	1	0	4	16			
Grand Total	3	0	1	0	4	0	45	2	0	47	9	0	2	0	11	0	34	1	0	35	97			
Approch %	75	0	25	0		0	95.7	4.3	0		81.8	0	18.2	0		0	97.1	2.9	0					
Total %	3.1	0	1	0	4.1	0	46.4	2.1	0	48.5	9.3	0	2.1	0	11.3	0	35.1	1	0	36.1				

your Company Name Here

This is your address
Your City, State ZipCode
Your Tagline Here

File Name : US 42 - Industrial Pkw
Site Code : 00000000
Start Date : 9/29/2016
Page No : 1

Groups Printed- Trucks

Start Time	INDUSTRIAL PKWY From North						US42 From East						INDUSTRIAL PKWY From South						US42 From West					
	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Int Total			
07:15 AM	0	3	1	0	4	0	8	1	0	9	0	0	2	0	2	1	5	1	0	7	22			
07:30 AM	0	1	1	0	2	2	3	0	0	5	4	0	1	0	5	0	5	0	0	5	17			
07:45 AM	0	1	2	0		1	10	2	0	13	4	1	1	0	6	2	14	0	0	16	38			
Total	0	5	4	0	33	3	21	3	0	27	8	1	4	0	13	3	24	1	0	28	77			
08:00 AM	0	0	0	0	0	1	10	4	0	15	2	0	2	0	4	2	10	0	0	12	31			
Grand Total	0	5	4	0	9	4	31	7	0	42	10	1	6	0	17	5	34	1	0	40	108			
Approch %	0	55.6	44.4	0		9.5	73.8	16.7	0		58.8	5.9	35.3	0		12.5	85	2.5	0					
Total %	0	4.6	3.7	0	8.3	3.7	28.7	6.5	0	38.9	9.3	0.9	5.6	0	15.7	4.6	31.5	0.9	0	37				

Wu, Charles

From: Nathan Shay <nshay@morpc.org>
Sent: Monday, July 18, 2016 4:51 PM
To: Wu, Charles
Cc: Nick Gill; Zhuojun Jiang
Subject: RE: Request traffic growth rate for Thomas property site

Charles,

We have completed processing your growth rate request for the intersection of Industrial Parkway and Estates Parkway. Please see the table below for the appropriate linear annual growth rate for each leg of the intersection. Let me know if you have any questions.

Location	Linear Annual Growth Rate
Estates Pkwy E/o Industrial Pkwy	1.0%
Industrial Pkwy N/o Estates Pkwy	6.3%
Estates Pkwy W/o Industrial Pkwy	3.0%
Industrial Pkwy S/o Industrial Pkwy	6.7%

Note: This is planning level analysis based on MORPC regional travel demand model.

Thank you,

Nathan Shay
Associate Engineer/Planner/Modeler | Mid-Ohio Regional Planning Commission
T: 614.233.4152 | nshay@morpc.org
111 Liberty Street, Suite 100 | Columbus, OH 43215



From: Zhuojun Jiang
Sent: Friday, July 15, 2016 8:54 AM
To: Nathan Shay <nshay@morpc.org>; Nick Gill <NGILL@morpc.org>
Subject: FW: Request traffic growth rate for Thomas property site

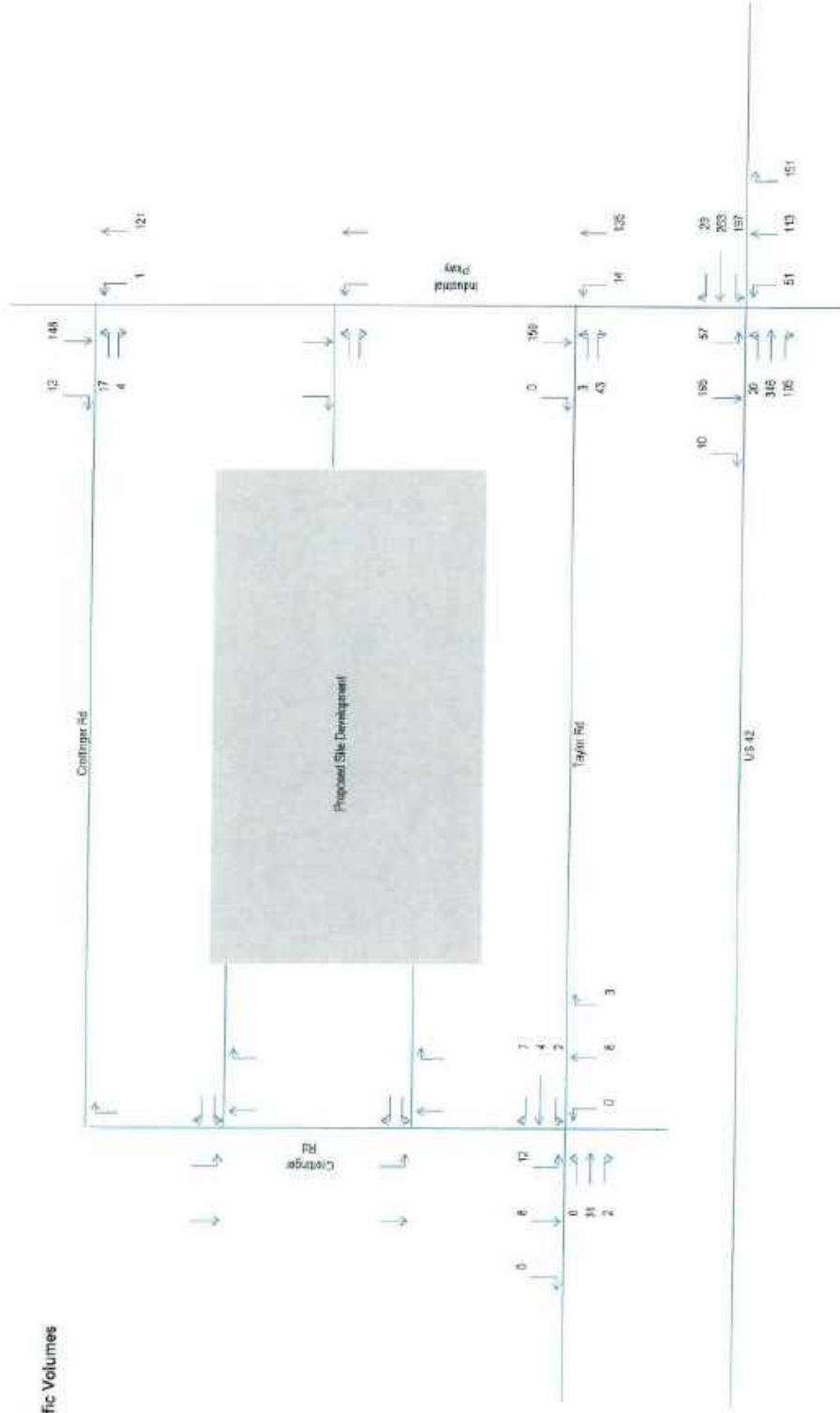
From: Wu, Charles [<mailto:cwu@emht.com>]
Sent: Thursday, July 14, 2016 5:04 PM
To: Zhuojun Jiang
Cc: Creed, Larry; Bender, Douglas; Wu, Charles
Subject: Request traffic growth rate for Thomas property site

Dear Zhoujun,

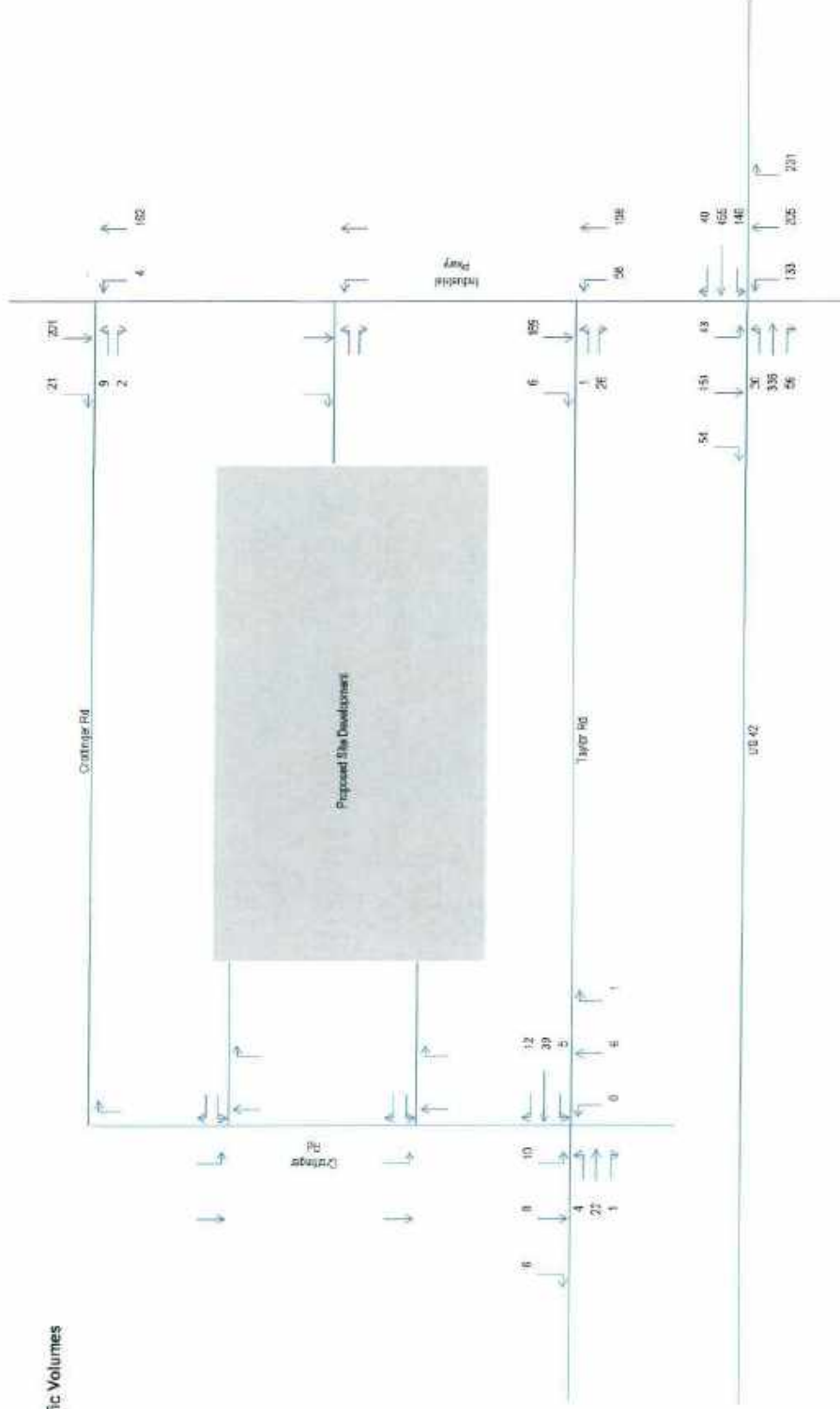
We are working on a traffic study for the Thomas property site and would like to request for growth rate for this project. The information that related to this project is as below.

1. We will apply for the growth rates based on the traffic count data attached.

AM Existing Traffic Volumes

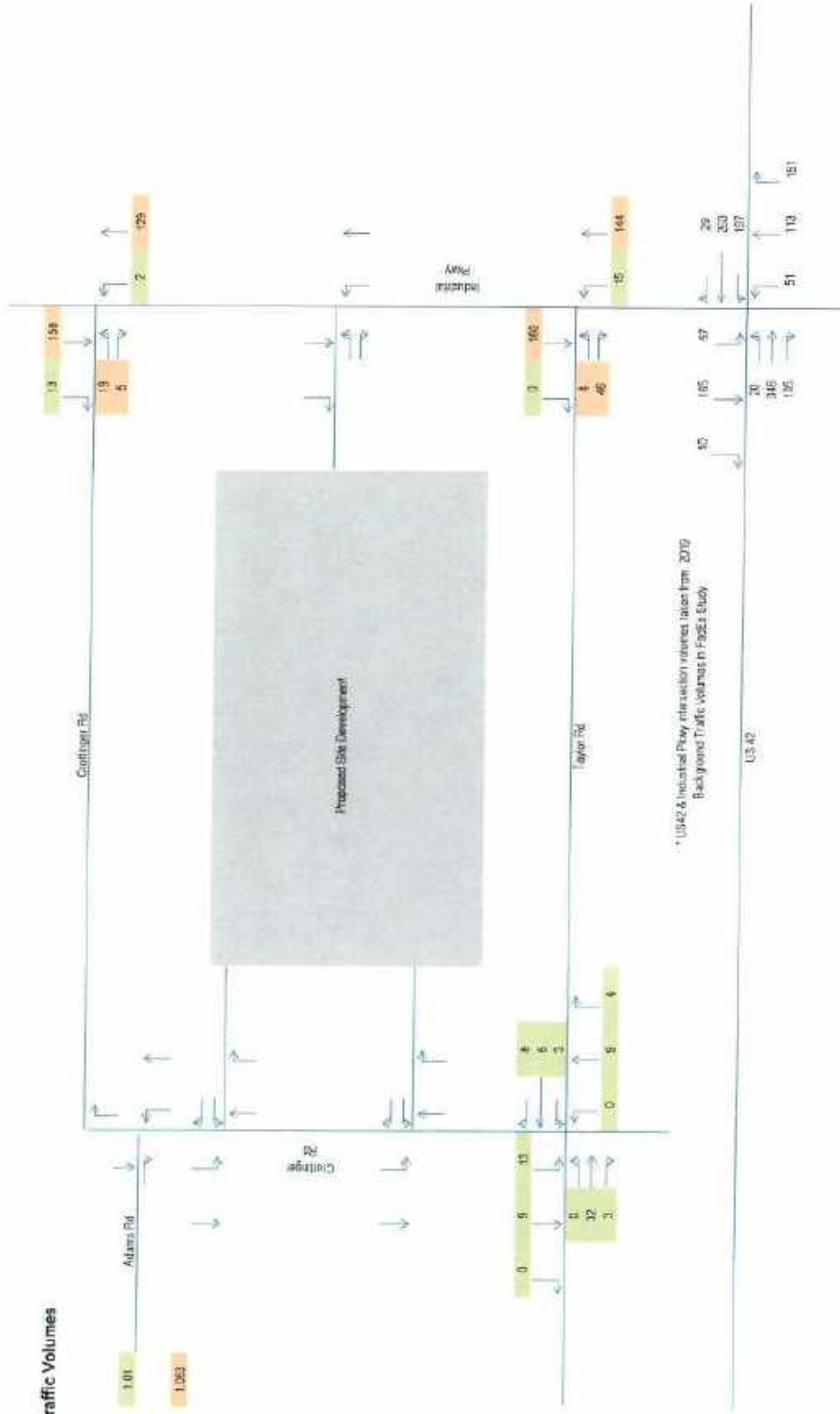


PIM Existing Traffic Volumes



AM 2019 No Build Traffic Volumes

Demand Rate 1.00%
 2019 0.01
 Growth Rate* 8.00%
 2019 3.063
 * used only for Industrial Pkwy



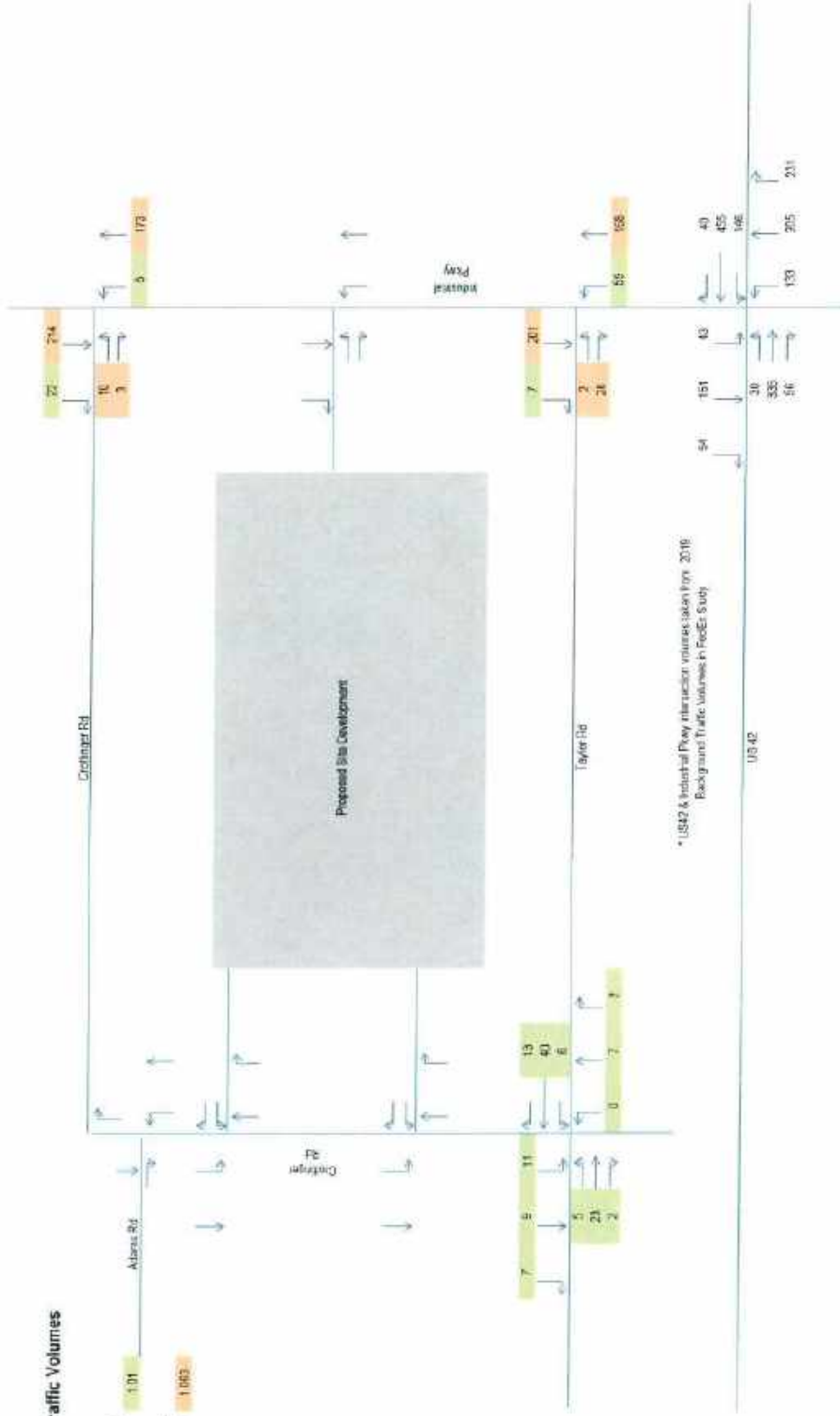
* US42 & Industrial Pkwy intersection volumes taken from 2019
 Background Traffic Volumes in Page 1 Study

PM 2019 No Build Traffic Volumes

Growth Rate
2015
1.00%
0.01

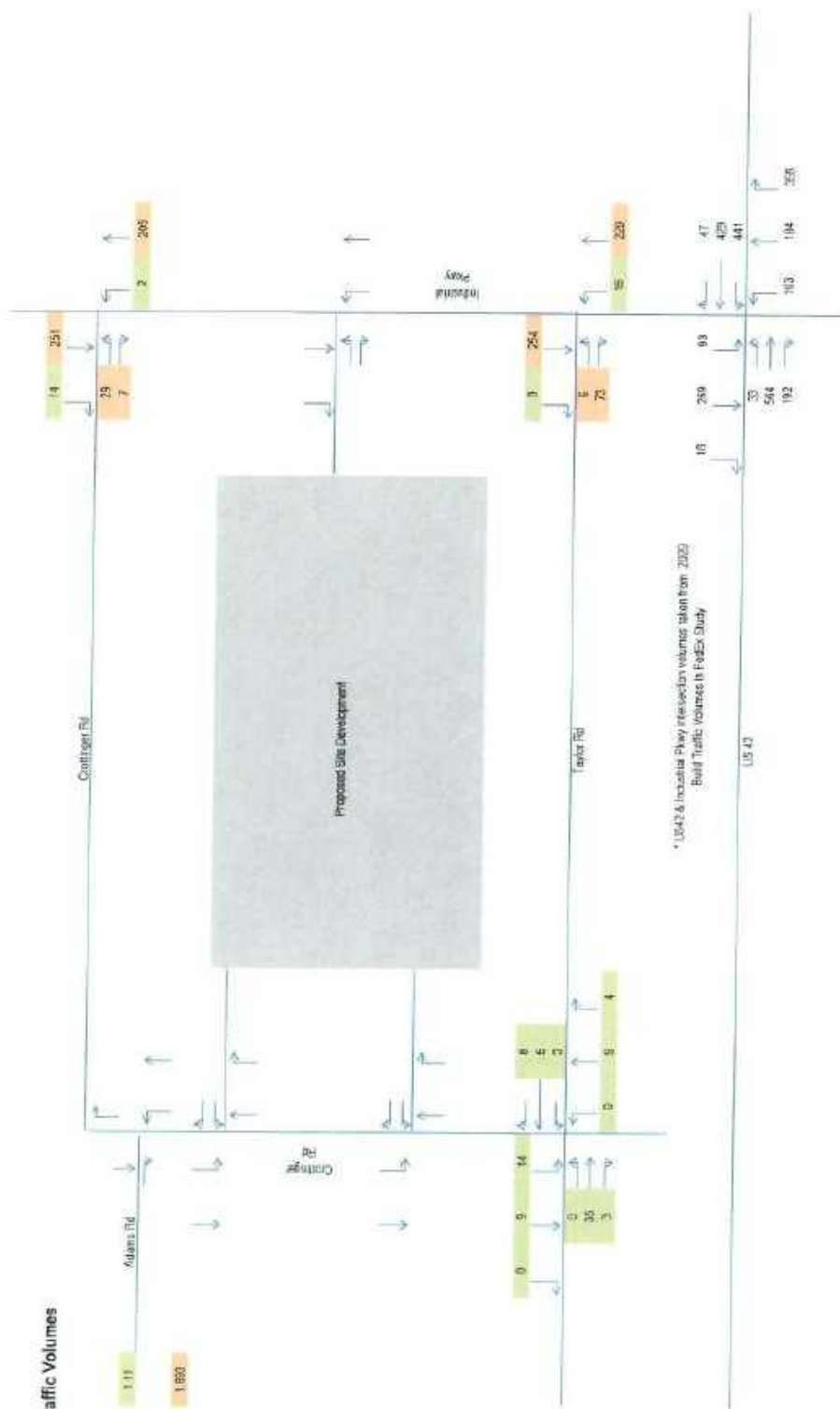
Growth Rate
2015
6.33%
0.023

* used only for industrial flow



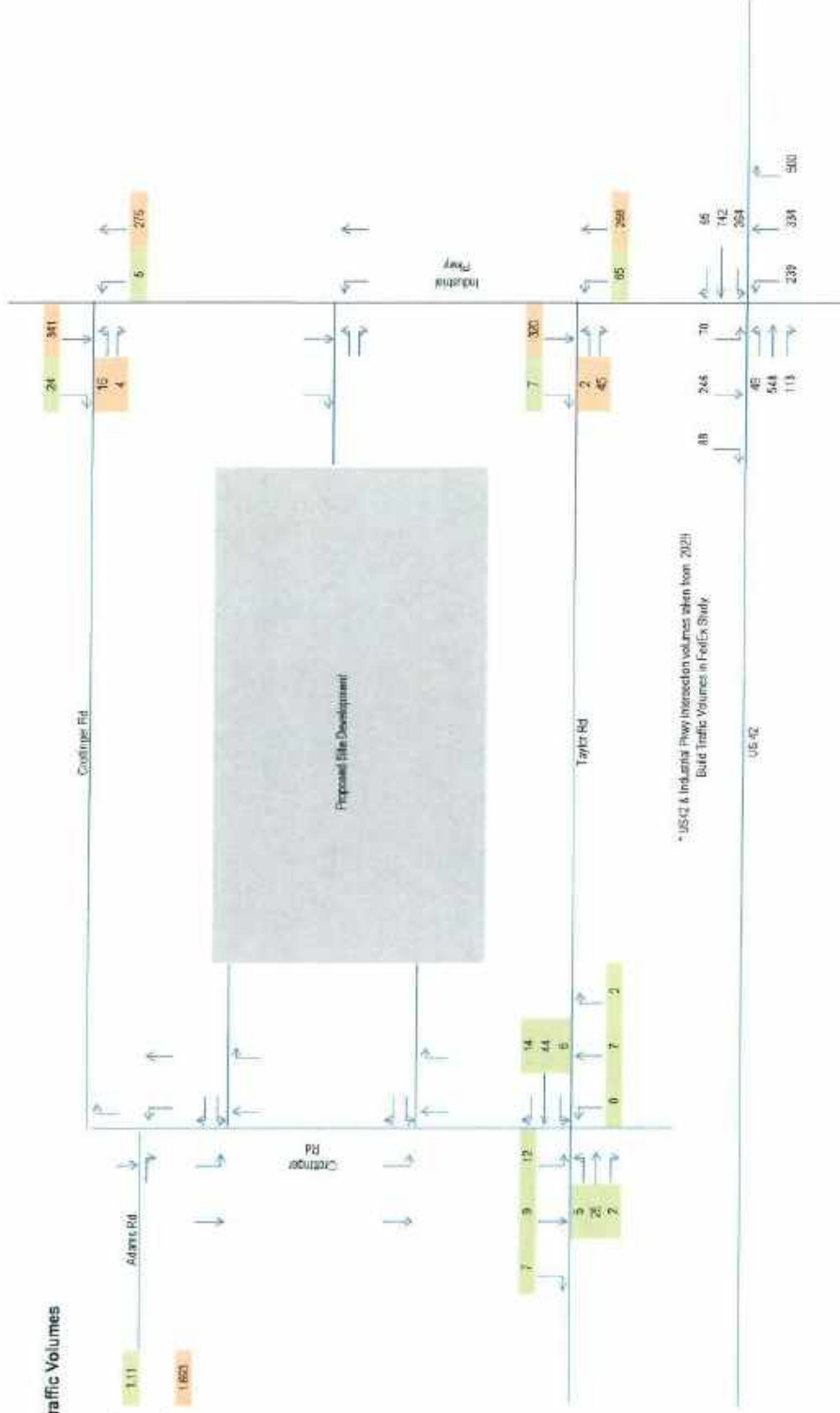
Growth Rate 2023	1.00%
	0.11
Growth Rate* 2023	6.30%
	0.693

* used only for Industrial Policy



PM 2029 No Build Traffic Volumes

Growth Rate 1.00%
2025 0.11
Shift Rate* 6.20%
2025 0.033
*used only for Industrial Pkwy

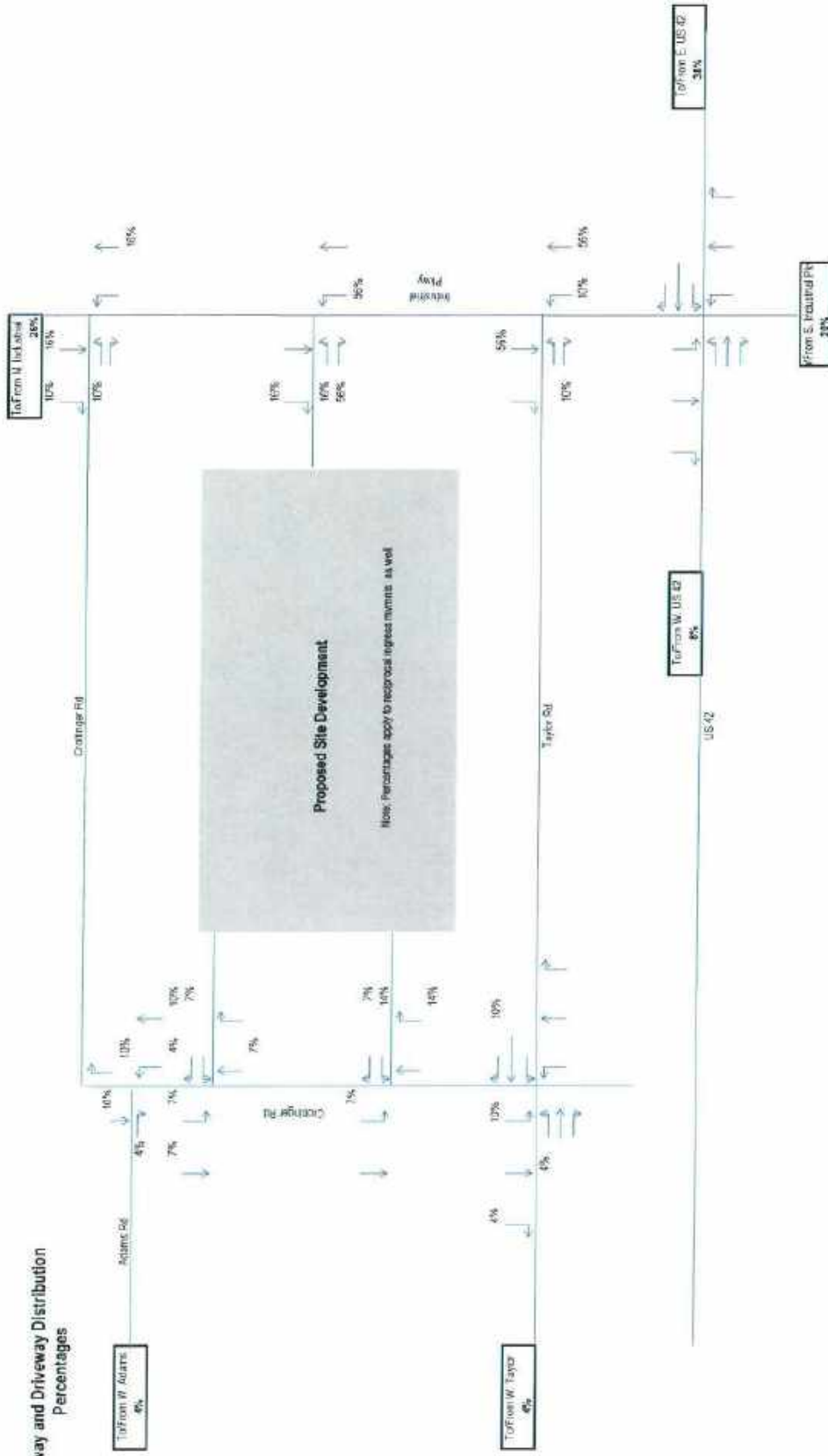


* US42 & Industrial Pkwy Intersection volumes taken from 2025
Build Traffic Volumes in Policy Study

Trip Generation for Proposed Development

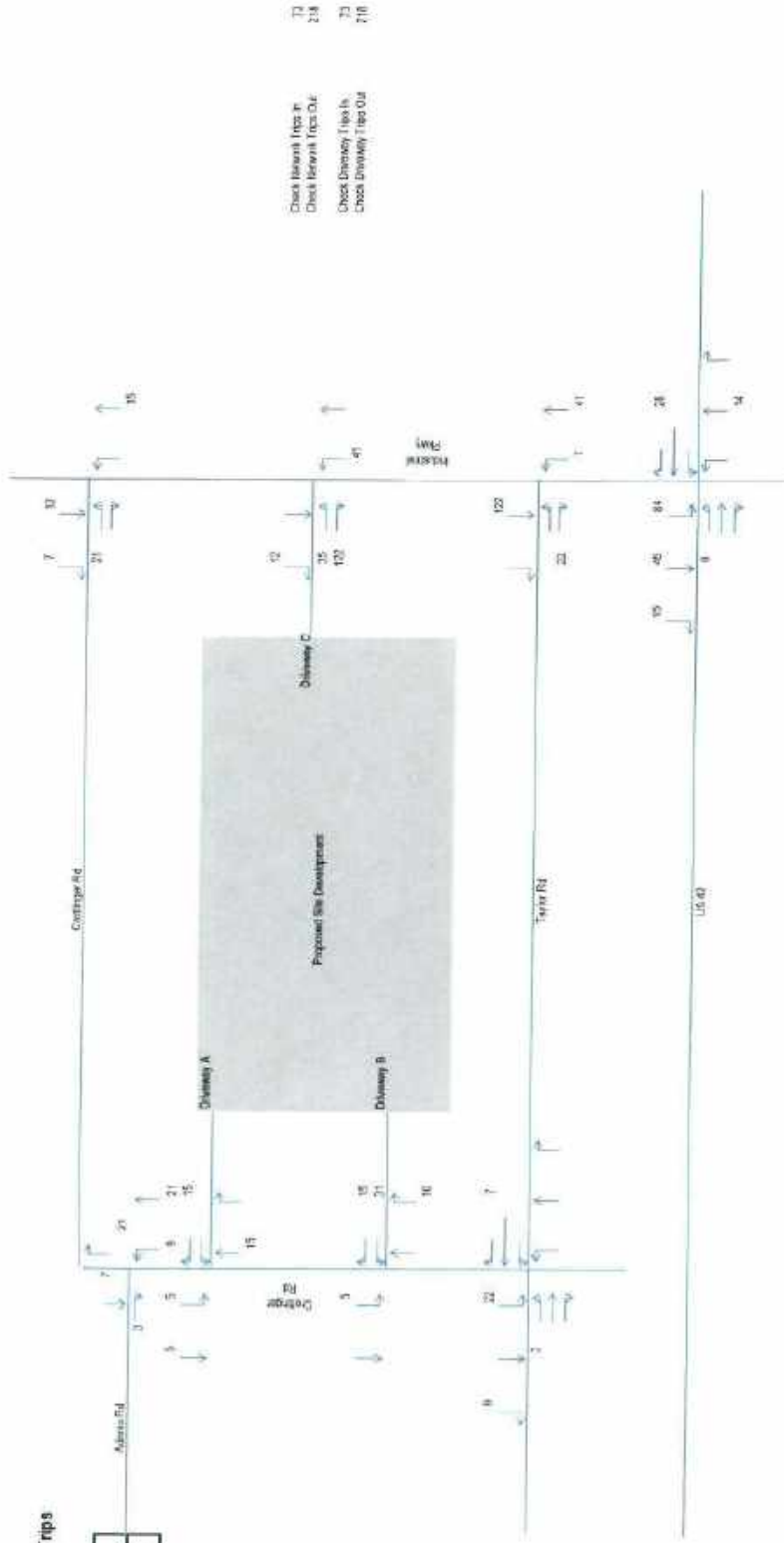
Land Use ITE Code / Size	Peak Hour	Inbound	Outbound	Total
Single Family Housing	AM	73	218	291
210 / 393 Homes	PM	245	144	389

Gateway and Driveway Distribution Percentages



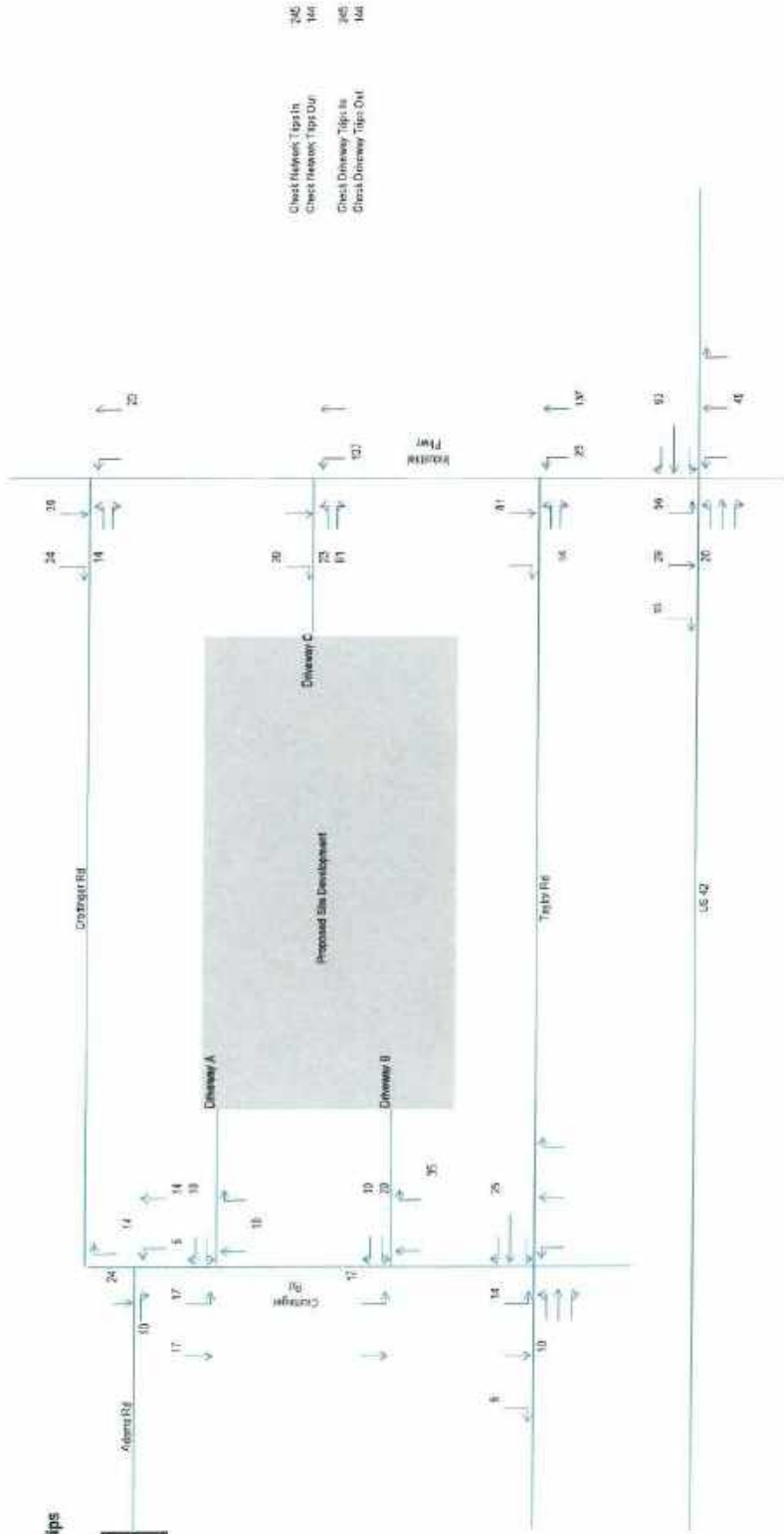
AM New Trips

Peak Hour	Import	Export	Total
AM	73	218	291
PM	243	166	389

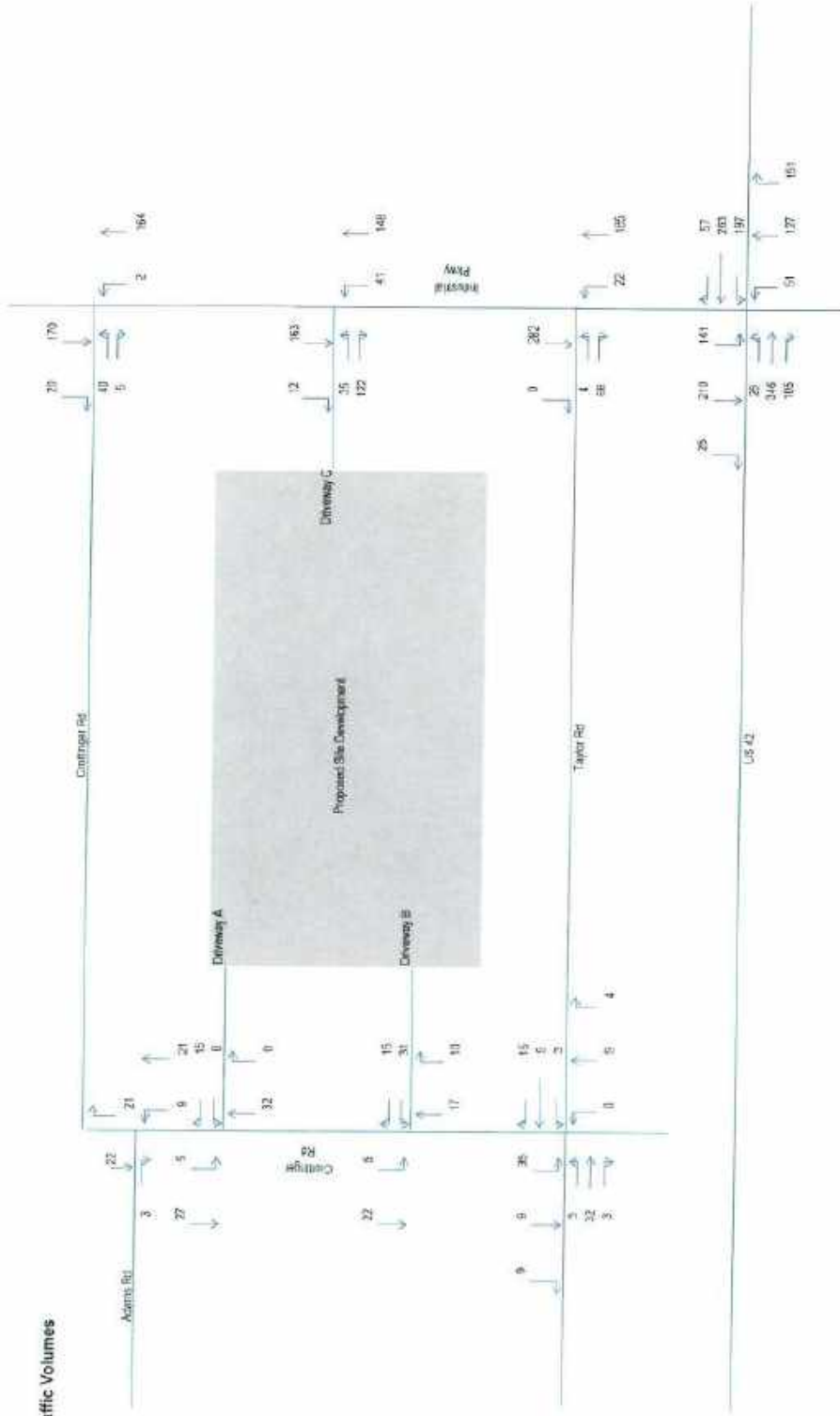


PM New Trips

Peak Hour	Proposed	Outbound	Total
AM	73	218	291
PM	245	144	389



AM 2019 Build Traffic Volumes



[illegible]

Traffic Volumes

The diagram illustrates the traffic flow and volumes at the intersection of Adams Rd, Cottage Rd, and Taylor Rd. A proposed site development area is shown, with three driveway locations (A, B, and C) indicated. Traffic volumes are provided for each direction of travel.

Adams Rd

- Northbound: 23
- Southbound: 21

Cottage Rd

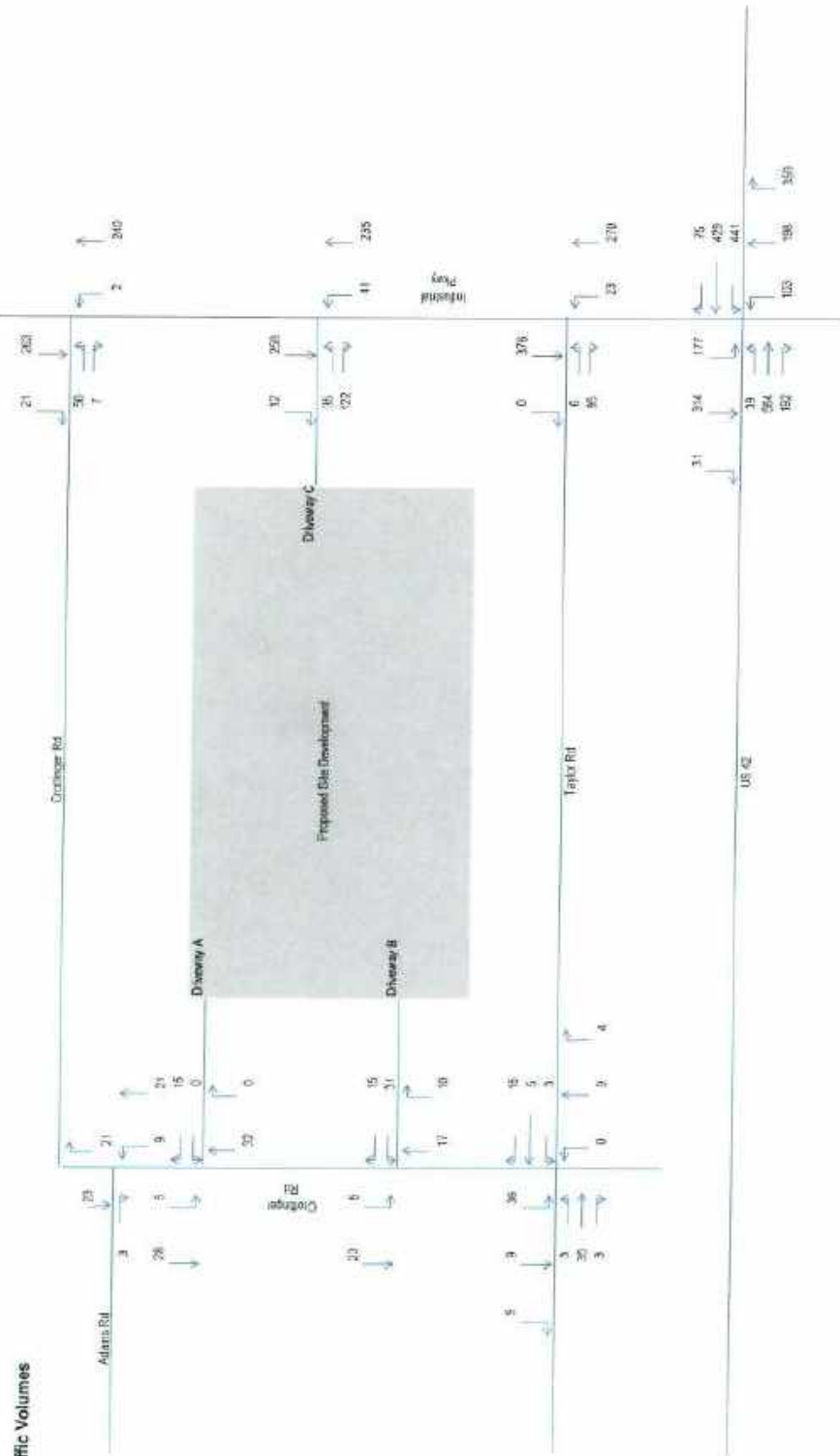
- Eastbound: 21, 263
- Westbound: 21, 263

Taylor Rd

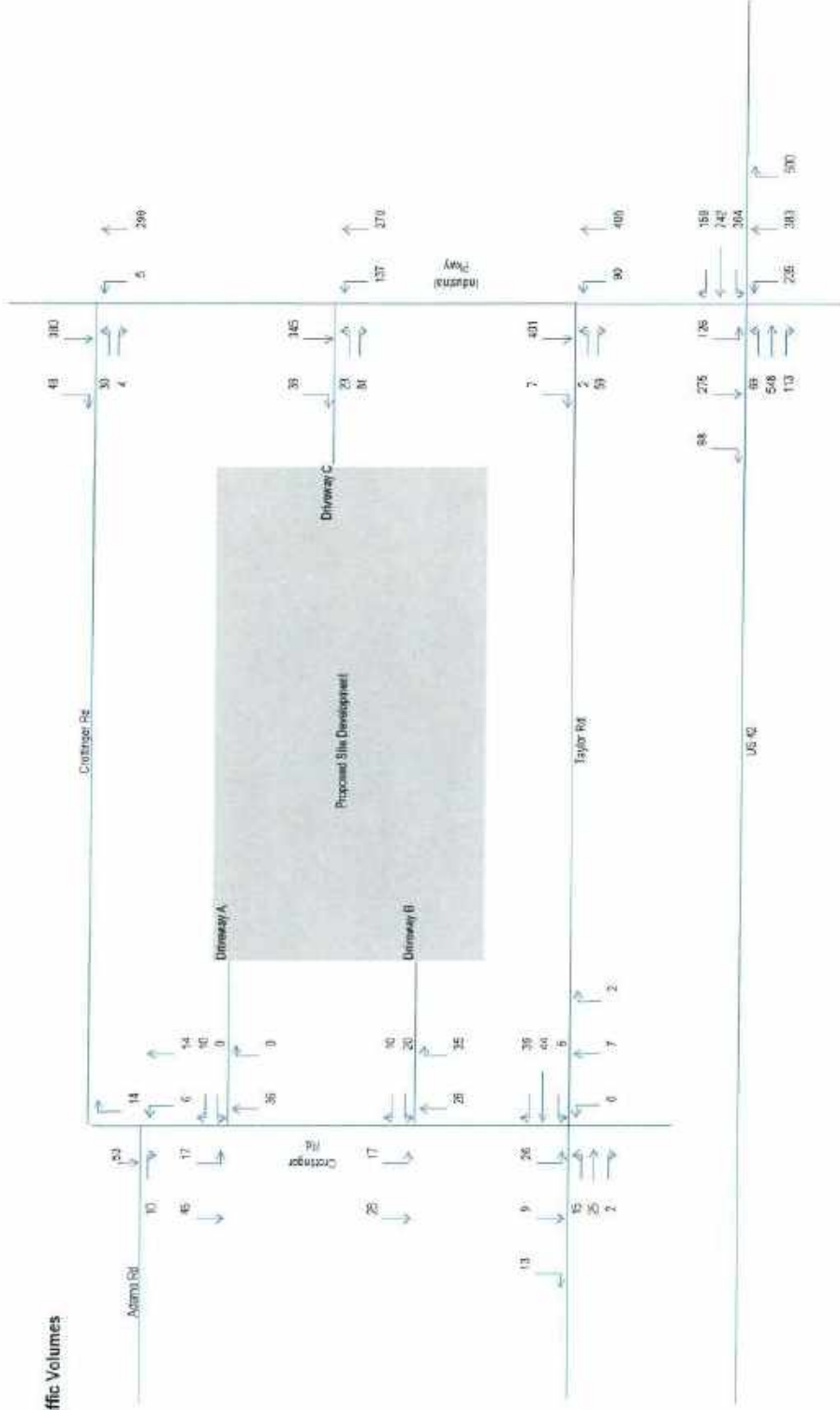
- Northbound: 23, 270
- Southbound: 23, 270

Proposed Site Development

- Driveway A:**
 - Northbound: 21, 263
 - Southbound: 21, 263
- Driveway B:**
 - Northbound: 21, 263
 - Southbound: 21, 263
- Driveway C:**
 - Northbound: 21, 263
 - Southbound: 21, 263



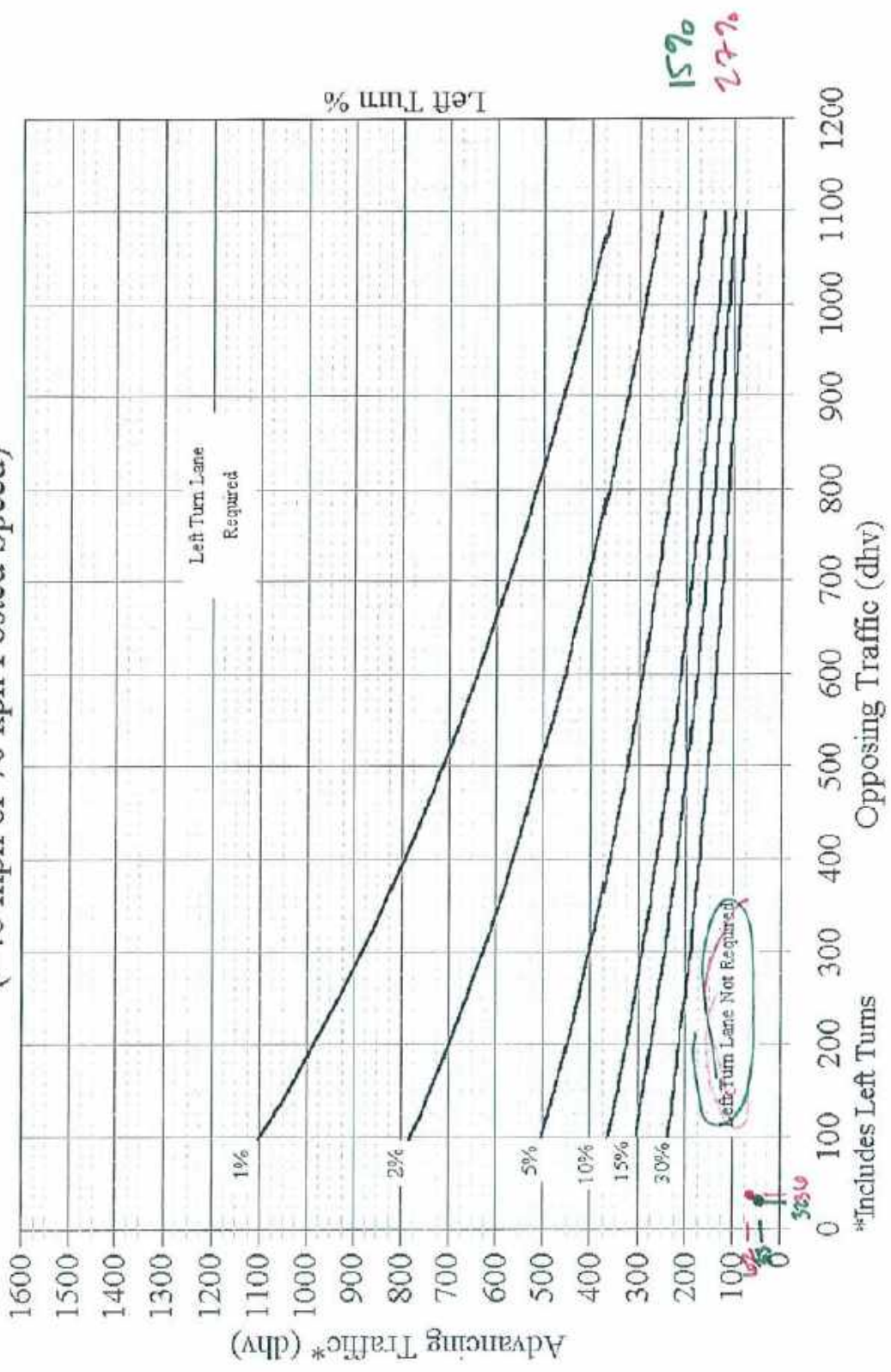
PM 2023 Build Traffic Volumes



Crofting Rd Driveway A

AM
PM

2-Lane Highway Left Turn Lane Warrant (>40 mph or 70 kph Posted Speed)

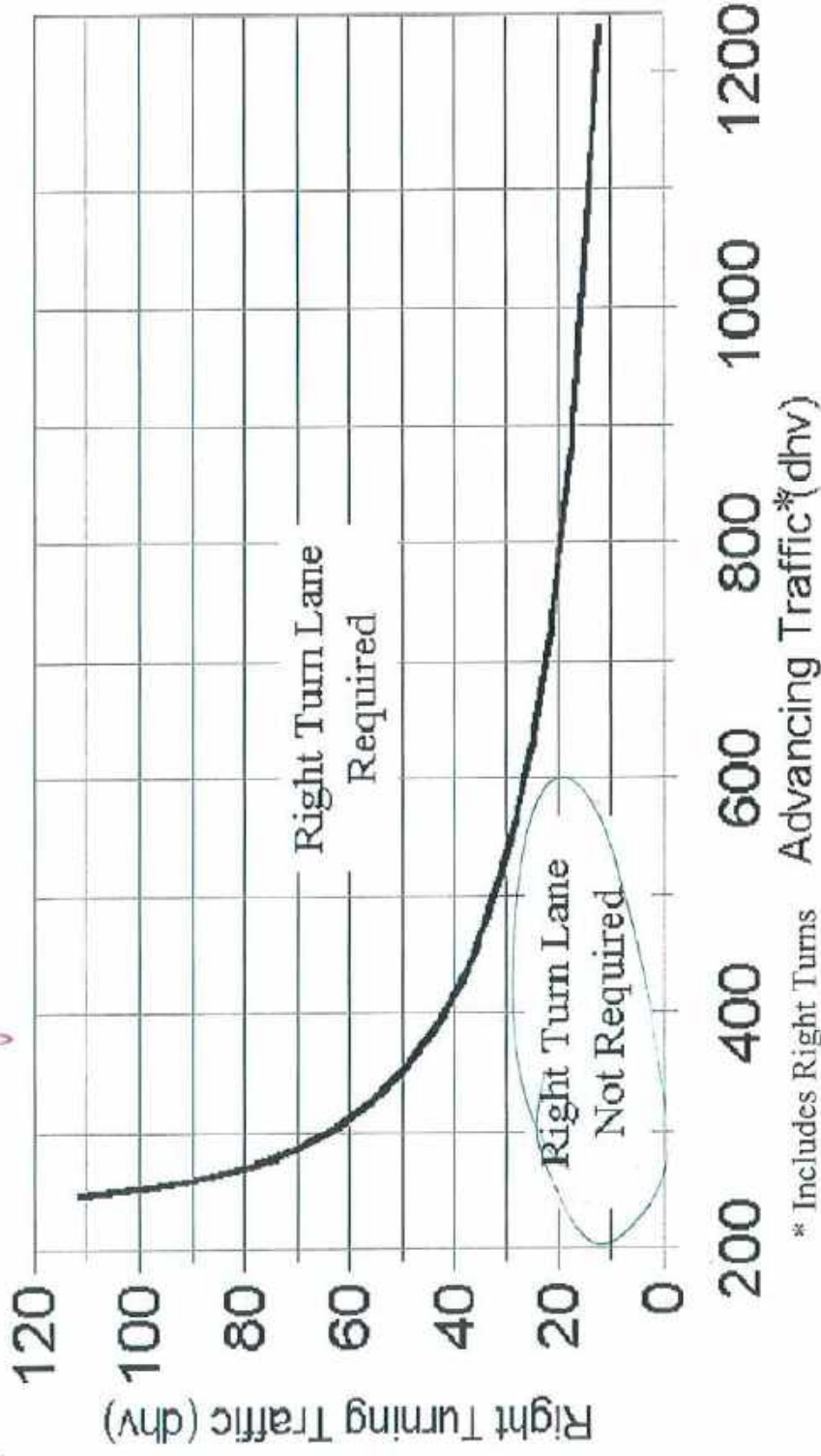


Crottinger Rd at Driveway A

2-Lane Highway Right Turn Lane Warrant

> 40 mph or 70 kph Posted Speed

~~X~~ zero right turn volume

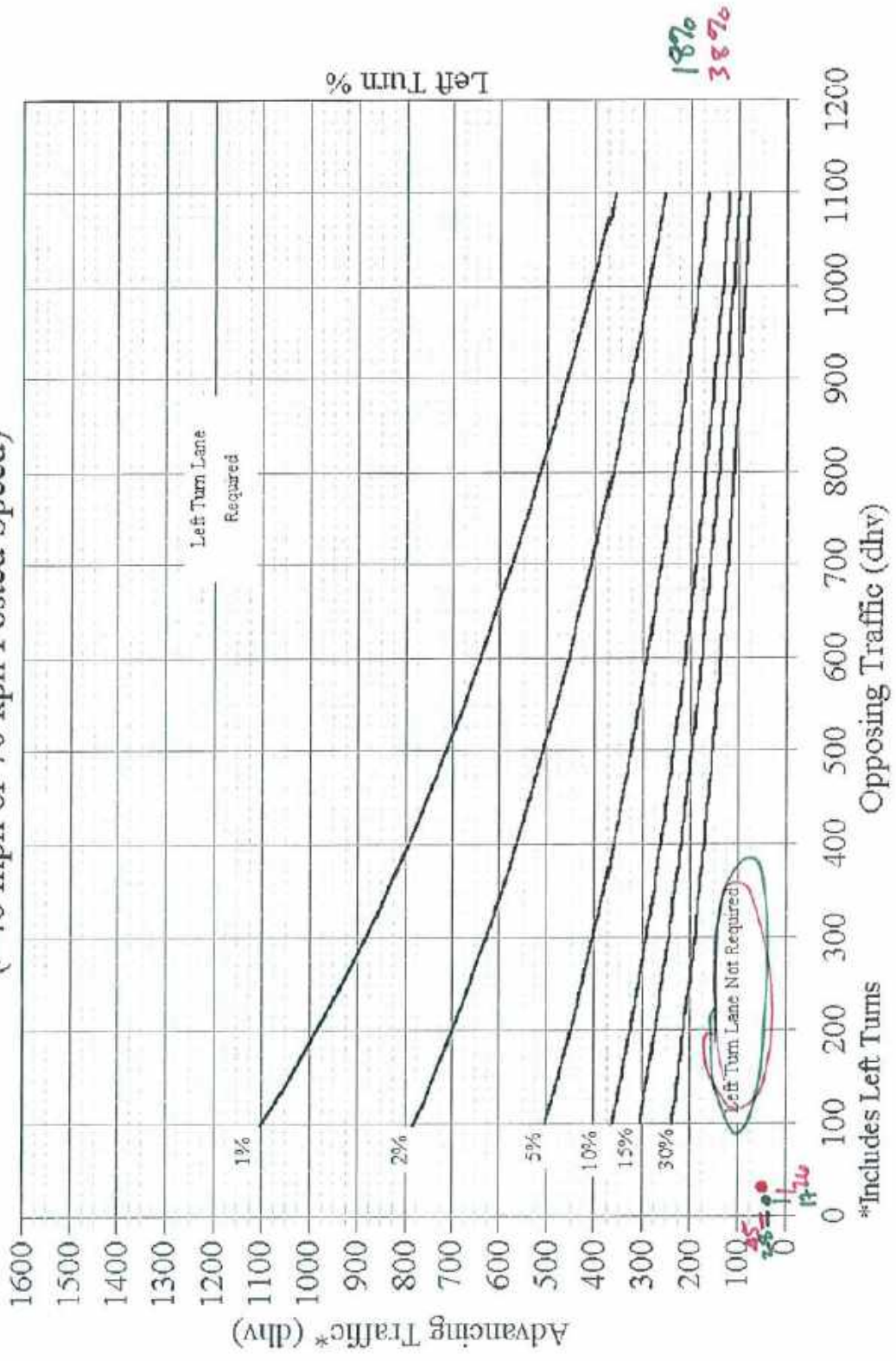


* Includes Right Turns

Croftingon Rd & Driveway B

AM
PM

2-Lane Highway Left Turn Lane Warrant (>40 mph or 70 kph Posted Speed)



*Includes Left Turns



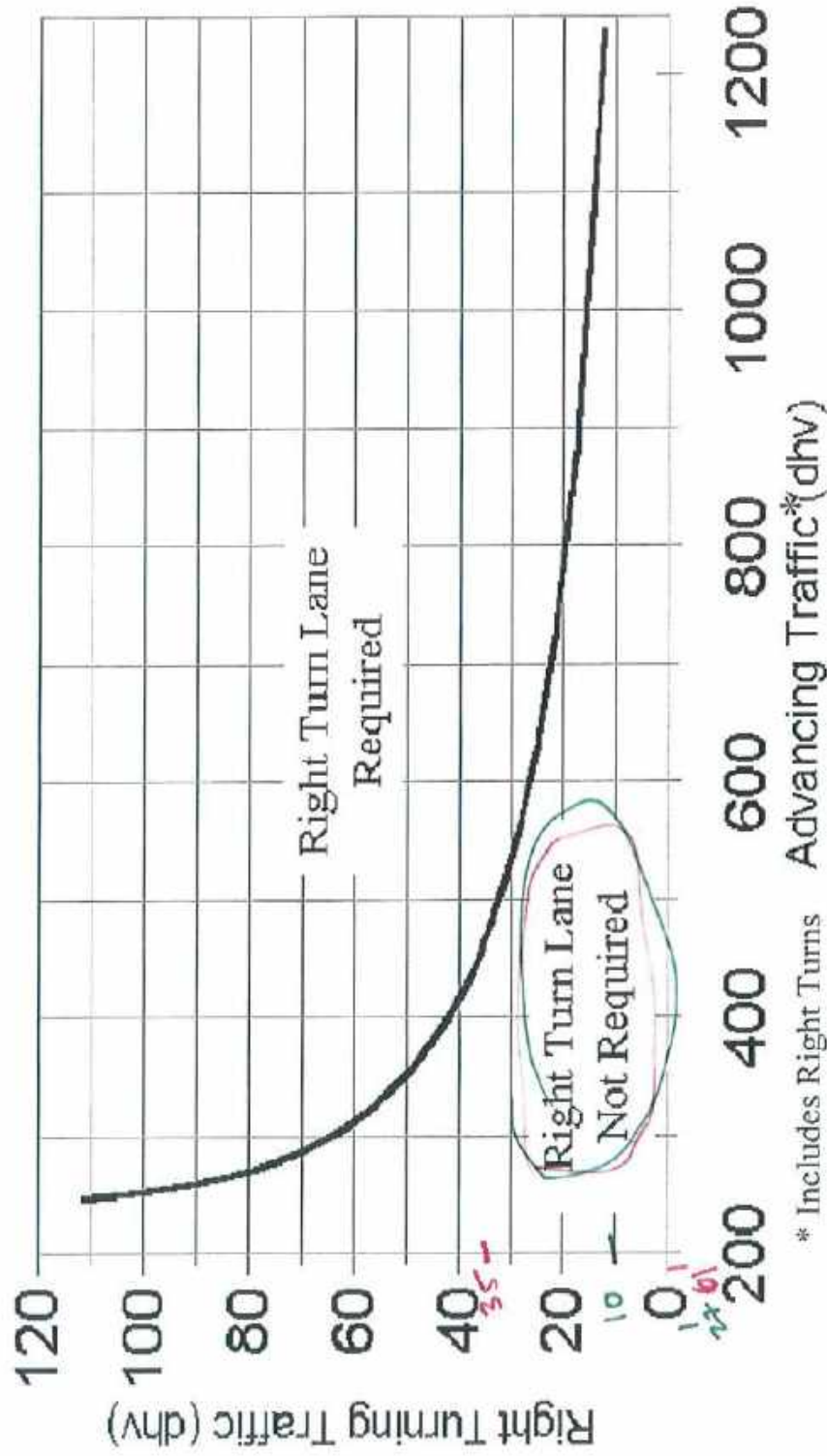
Crottinger Rd & Driveway B

AM

PM

2-Lane Highway Right Turn Lane Warrant

> 40 mph or 70 kph Posted Speed



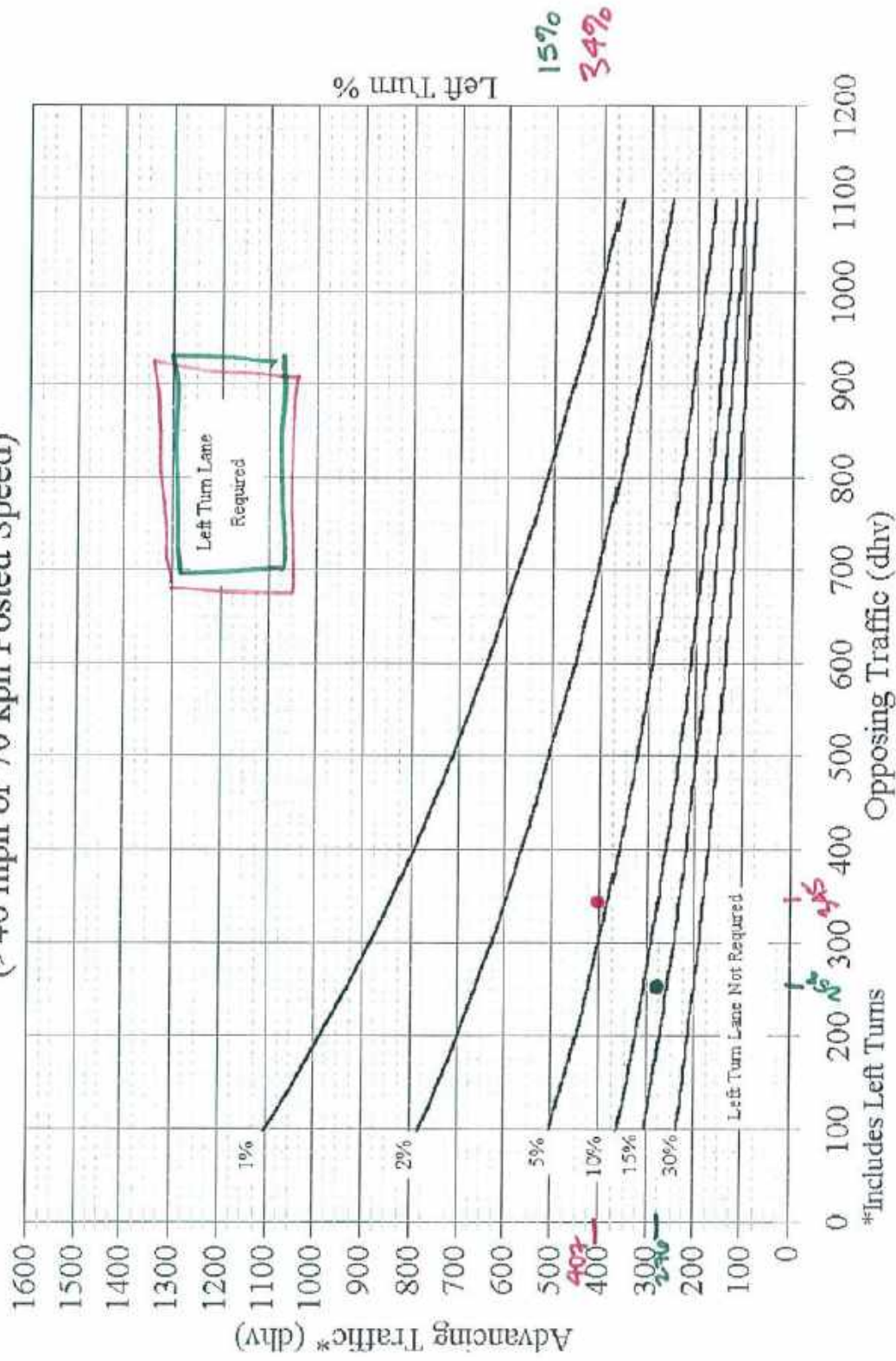
Industrial Parkway Driveway C

AM

PM

2-Lane Highway Left Turn Lane Warrant

(>40 mph or 70 kph Posted Speed)

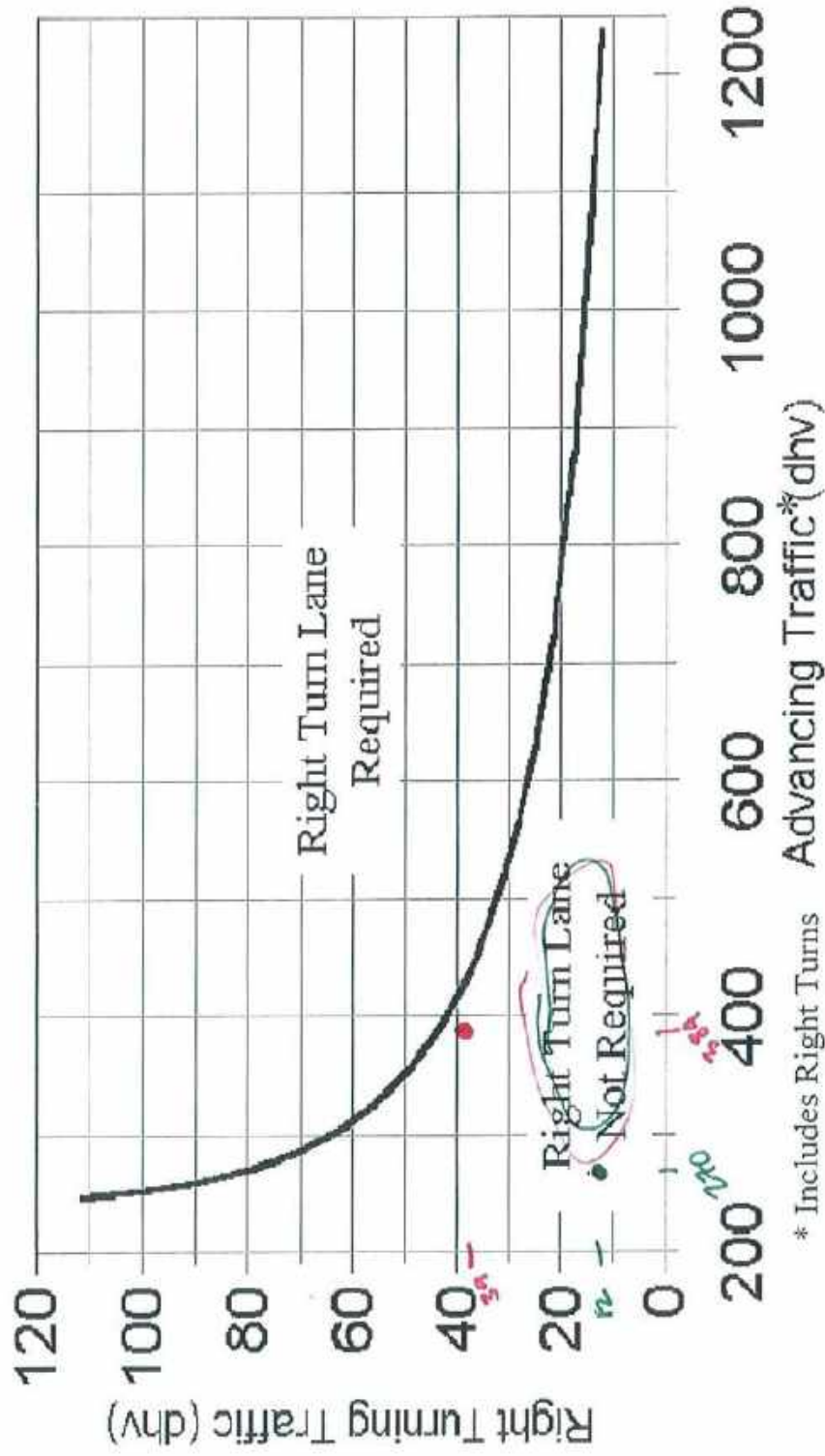


Industrial Pkwy & Driveway C

AM
PM

2-Lane Highway Right Turn Lane Warrant




> 40 mph or 70 kph Posted Speed



* Includes Right Turns

Intersection

Int Delay, s/veh 1

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	19	5	158	13	2	129
Future Vol, veh/h	19	5	158	13	2	129
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	50	80	50	25	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	10	198	26	8	150

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	377	211	0	0	224
Stage 1	211	-	-	-	-
Stage 2	166	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	625	829	-	-	1345
Stage 1	824	-	-	-	-
Stage 2	863	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	621	829	-	-	1345
Mov Cap-2 Maneuver	621	-	-	-	-
Stage 1	819	-	-	-	-
Stage 2	863	-	-	-	-

Approach	EB	SE	NW
HCM Control Delay, s	10.6	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	SET	SER
Capacity (veh/h)	1345	-	673	-	-
HCM Lane V/C Ratio	0.006	-	0.048	-	-
HCM Control Delay (s)	7.7	0	10.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection

Int Delay, s/veh 4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	32	3	3	5	8	0	9	4	13	9	0
Future Vol, veh/h	0	32	3	3	5	8	0	9	4	13	9	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	55	50	50	50	58	25	50	38	60	67	25
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	58	6	6	10	14	0	18	11	22	13	0

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	24	0	0	64	0	0	97	97	61	105	93	17
Stage 1	-	-	-	-	-	-	61	61	-	29	29	-
Stage 2	-	-	-	-	-	-	36	36	-	76	64	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1591	-	-	1538	-	-	885	793	1004	875	797	1062
Stage 1	-	-	-	-	-	-	950	844	-	988	871	-
Stage 2	-	-	-	-	-	-	980	865	-	933	842	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1591	-	-	1538	-	-	871	790	1004	848	794	1062
Mov Cap-2 Maneuver	-	-	-	-	-	-	871	790	-	848	794	-
Stage 1	-	-	-	-	-	-	950	844	-	988	868	-
Stage 2	-	-	-	-	-	-	961	862	-	904	842	-

Approach	EB		WB		NB		SB
HCM Control Delay, s	0		1.5		9.3		9.6
HCM LOS					A		A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	857	1591	-	-	1538	-	-	826
HCM Lane V/C Ratio	0.033	-	-	-	0.004	-	-	0.042
HCM Control Delay (s)	9.3	0	-	-	7.4	0	-	9.6
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection

Int Delay, s/veh 1.9

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations	W		P			P
Traffic Vol, veh/h	4	46	160	0	15	144
Future Vol, veh/h	4	46	160	0	15	144
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	38	77	87	25	70	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	60	184	0	21	180

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	406	184	0
Stage 1	184	-	-
Stage 2	222	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	601	858	-
Stage 1	848	-	-
Stage 2	815	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	591	858	-
Mov Cap-2 Maneuver	591	-	-
Stage 1	834	-	-
Stage 2	815	-	-

















Approach	EB	SE	NW
HCM Control Delay, s	9.9	0	0.8
HCM LOS	A		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	SET	SER
Capacity (veh/h)	1391	-	804	-	-
HCM Lane V/C Ratio	0.015	-	0.087	-	-
HCM Control Delay (s)	7.6	0	9.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

HCM 2010 Signalized Intersection Summary




4: US 42 & Industrial Pkwy

01/17/2019

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	57	165	10	51	113	151	20	346	105	197	263	29
Future Volume (veh/h)	57	165	10	51	113	151	20	346	105	197	263	29
Number	1	6	18	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	62	179	11	55	123	164	22	376	114	214	286	32
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	126	336	19	100	186	221	64	817	240	346	438	47
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.61	0.61	0.61	0.61	0.61	0.61
Sat Flow, veh/h	273	1210	68	192	670	794	36	1337	393	474	717	76
Grp Volume(v), veh/h	252	0	0	342	0	0	512	0	0	532	0	0
Grp Sat Flow(s),veh/h/ln	1551	0	0	1656	0	0	1766	0	0	1267	0	0
Q Serve(g_s), s	0.0	0.0	0.0	4.3	0.0	0.0	0.0	0.0	0.0	12.4	0.0	0.0
Cycle Q Clear(g_c), s	12.1	0.0	0.0	16.5	0.0	0.0	14.0	0.0	0.0	26.4	0.0	0.0
Prop In Lane	0.25		0.04	0.16		0.48	0.04		0.22	0.40		0.06
Lane Grp Cap(c), veh/h	481	0	0	506	0	0	1121	0	0	830	0	0
V/C Ratio(X)	0.52	0.00	0.00	0.88	0.00	0.00	0.46	0.00	0.00	0.64	0.00	0.00
Avail Cap(c_a), veh/h	481	0	0	506	0	0	1121	0	0	830	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	27.5	0.0	0.0	29.3	0.0	0.0	9.5	0.0	0.0	11.9	0.0	0.0
Incr Delay (d2), s/veh	4.1	0.0	0.0	7.1	0.0	0.0	1.3	0.0	0.0	3.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	0.0	0.0	8.7	0.0	0.0	7.2	0.0	0.0	9.7	0.0	0.0
LnGrp Delay(d),s/veh	31.5	0.0	0.0	36.4	0.0	0.0	10.9	0.0	0.0	15.7	0.0	0.0
LnGrp LOS	C			D			B			B		
Approach Vol, veh/h	252				342				512			
Approach Delay, s/veh	31.5				36.4				10.9			
Approach LOS	C				D				B			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	30.0		60.0		30.0		60.0					
Change Period (Y+Rc), s	5.0		5.0		5.0		5.0					
Max Green Setting (Gmax), s	25.0		55.0		25.0		55.0					
Max Q Clear Time (g_c+I1), s	18.5		16.0		14.1		28.4					
Green Ext Time (p_c), s	1.0		3.1		0.9		3.8					
Intersection Summary												
HCM 2010 Ctrl Delay			20.9									
HCM 2010 LOS			C									

Intersection

Int Delay, s/veh 0.7

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	10	3	214	22	5	173
Future Vol, veh/h	10	3	214	22	5	173
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	56	50	91	88	50	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	6	235	25	10	206

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	474	248	0
Stage 1	248	-	-
Stage 2	226	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	549	791	-
Stage 1	793	-	-
Stage 2	812	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	544	791	-
Mov Cap-2 Maneuver	544	-	-
Stage 1	786	-	-
Stage 2	812	-	-

Approach	EB	SE	NW
HCM Control Delay, s	11.4	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	SET	SER
Capacity (veh/h)	1304	-	590	-	-
HCM Lane V/C Ratio	0.008	-	0.04	-	-
HCM Control Delay (s)	7.8	0	11.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection

Int Delay, s/veh 3.9


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	23	2	6	40	13	0	7	2	11	9	7
Future Vol, veh/h	5	23	2	6	40	13	0	7	2	11	9	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	33	55	25	62	70	60	25	50	25	42	100	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	42	8	10	57	22	0	14	8	26	9	14

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	79	0	0	50	0	0	176	175	46	175	168	68
Stage 1	-	-	-	-	-	-	76	76	-	88	88	-
Stage 2	-	-	-	-	-	-	100	99	-	87	80	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1519	-	-	1557	-	-	786	718	1023	788	725	995
Stage 1	-	-	-	-	-	-	933	832	-	920	822	-
Stage 2	-	-	-	-	-	-	906	813	-	921	828	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1519	-	-	1557	-	-	758	706	1023	760	713	995
Mov Cap-2 Maneuver	-	-	-	-	-	-	758	706	-	760	713	-
Stage 1	-	-	-	-	-	-	924	824	-	911	816	-
Stage 2	-	-	-	-	-	-	877	807	-	889	820	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.7	0.8	9.7	9.8
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	796	1519	-	-	1557	-	-	804
HCM Lane V/C Ratio	0.028	0.01	-	-	0.006	-	-	0.061
HCM Control Delay (s)	9.7	7.4	0	-	7.3	0	-	9.8
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2

Intersection

Int Delay, s/veh	2.1					
Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	2	28	201	7	59	168
Future Vol, veh/h	2	28	201	7	59	168
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	25	81	88	50	63	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	35	228	14	94	187

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	610	235	0	0	242
Stage 1	235	-	-	-	-
Stage 2	375	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	458	804	-	-	1324
Stage 1	804	-	-	-	-
Stage 2	695	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	422	804	-	-	1324
Mov Cap-2 Maneuver	422	-	-	-	-
Stage 1	740	-	-	-	-
Stage 2	695	-	-	-	-
















Approach	EB	SE	NW
HCM Control Delay, s	10.6	0	2.6
HCM LOS	B		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	SET	SER
Capacity (veh/h)	1324	-	687	-	-
HCM Lane V/C Ratio	0.071	-	0.062	-	-
HCM Control Delay (s)	7.9	0	10.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-

HCM 2010 Signalized Intersection Summary




4: US 42 & Industrial Pkwy

01/17/2019

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	43	151	54	133	205	231	30	336	56	146	455	40
Future Volume (veh/h)	43	151	54	133	205	231	30	336	56	146	455	40
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	47	164	59	145	223	251	33	365	61	159	495	43
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	111	365	120	178	232	246	76	703	113	201	547	46
Arrive On Green	0.39	0.39	0.39	0.39	0.39	0.39	0.50	0.50	0.50	0.50	0.50	0.50
Sat Flow, veh/h	164	939	308	329	597	632	67	1405	226	304	1093	92
Grp Volume(v), veh/h	270	0	0	619	0	0	459	0	0	697	0	0
Grp Sat Flow(s),veh/h/ln	1411	0	0	1559	0	0	1697	0	0	1490	0	0
Q Serve(g_s), s	0.0	0.0	0.0	24.9	0.0	0.0	0.0	0.0	0.0	24.6	0.0	0.0
Cycle Q Clear(g_c), s	10.1	0.0	0.0	35.0	0.0	0.0	15.2	0.0	0.0	39.8	0.0	0.0
Prop In Lane	0.17		0.22	0.23		0.41	0.07		0.13	0.23		0.06
Lane Grp Cap(c), veh/h	596	0	0	656	0	0	892	0	0	794	0	0
V/C Ratio(X)	0.45	0.00	0.00	0.94	0.00	0.00	0.51	0.00	0.00	0.88	0.00	0.00
Avail Cap(c_a), veh/h	596	0	0	656	0	0	892	0	0	794	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	19.8	0.0	0.0	27.6	0.0	0.0	15.0	0.0	0.0	21.3	0.0	0.0
Incr Delay (d2), s/veh	2.5	0.0	0.0	23.8	0.0	0.0	2.1	0.0	0.0	13.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	0.0	0.0	19.6	0.0	0.0	8.0	0.0	0.0	19.0	0.0	0.0
LnGrp Delay(d),s/veh	22.3	0.0	0.0	51.5	0.0	0.0	17.2	0.0	0.0	34.4	0.0	0.0
LnGrp LOS	C			D			B			C		
Approach Vol, veh/h	270		619				459				697	
Approach Delay, s/veh	22.3		51.5				17.2				34.4	
Approach LOS	C		D				B				C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4				6		8			
Phs Duration (G+Y+Rc), s	40.0		50.0				40.0		50.0			
Change Period (Y+Rc), s	5.0		5.0				5.0		5.0			
Max Green Setting (Gmax), s	35.0		45.0				35.0		45.0			
Max Q Clear Time (g_c+I1), s	37.0		17.2				12.1		41.8			
Green Ext Time (p_c), s	0.0		2.7				1.4		1.4			
Intersection Summary												
HCM 2010 Ctrl Delay			34.1									
HCM 2010 LOS			C									

Intersection

Int Delay, s/veh 1.1

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	29	7	251	14	2	205
Future Vol, veh/h	29	7	251	14	2	205
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	50	80	50	25	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	34	14	314	28	8	238

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	582	328	0	0	342
Stage 1	328	-	-	-	-
Stage 2	254	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	475	713	-	-	1217
Stage 1	730	-	-	-	-
Stage 2	788	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	471	713	-	-	1217
Mov Cap-2 Maneuver	471	-	-	-	-
Stage 1	724	-	-	-	-
Stage 2	788	-	-	-	-

Approach	EB	SE	NW
HCM Control Delay, s	12.6	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	SET	SER
Capacity (veh/h)	1217	-	523	-	-
HCM Lane V/C Ratio	0.007	-	0.092	-	-
HCM Control Delay (s)	8	0	12.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection

Int Delay, s/veh 4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	35	3	3	5	8	0	9	4	14	9	0
Future Vol, veh/h	0	35	3	3	5	8	0	9	4	14	9	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	55	50	50	50	58	25	50	38	60	67	25
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	64	6	6	10	14	0	18	11	23	13	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	24	0	0	70	0	0	103	103	67	111	99	17
Stage 1	-	-	-	-	-	-	67	67	-	29	29	-
Stage 2	-	-	-	-	-	-	36	36	-	82	70	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1591	-	-	1531	-	-	877	787	997	867	791	1062
Stage 1	-	-	-	-	-	-	943	839	-	988	871	-
Stage 2	-	-	-	-	-	-	980	865	-	926	837	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1591	-	-	1531	-	-	863	784	997	840	788	1062
Mov Cap-2 Maneuver	-	-	-	-	-	-	863	784	-	840	788	-
Stage 1	-	-	-	-	-	-	943	839	-	988	868	-
Stage 2	-	-	-	-	-	-	961	862	-	897	837	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.5	9.4	9.6
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	851	1591	-	-	1531	-	-	820
HCM Lane V/C Ratio	0.034	-	-	-	0.004	-	-	0.045
HCM Control Delay (s)	9.4	0	-	-	7.4	0	-	9.6
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection

Int Delay, s/veh 2

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations	W		P			4
Traffic Vol, veh/h	6	73	254	0	16	229
Future Vol, veh/h	6	73	254	0	16	229
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	38	77	87	25	70	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	95	292	0	23	286

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	624	292	0	0	292
Stage 1	292	-	-	-	-
Stage 2	332	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	449	747	-	-	1270
Stage 1	758	-	-	-	-
Stage 2	727	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	439	747	-	-	1270
Mov Cap-2 Maneuver	439	-	-	-	-
Stage 1	741	-	-	-	-
Stage 2	727	-	-	-	-















Approach	EB	SE	NW
HCM Control Delay, s	11.3	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	SET	SER
Capacity (veh/h)	1270	-	679	-	-
HCM Lane V/C Ratio	0.018	-	0.163	-	-
HCM Control Delay (s)	7.9	0	11.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.6	-	-

HCM 2010 Signalized Intersection Summary




4: US 42 & Industrial Pkwy

01/22/2019

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	93	269	16	103	184	359	33	564	192	441	429	47
Future Volume (veh/h)	93	269	16	103	184	359	33	564	192	441	429	47
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	101	292	17	112	200	390	36	613	209	479	466	51
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	305	484	28	221	517	440	560	1585	540	405	1967	214
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.61	0.61	0.61	0.61	0.61	0.61
Sat Flow, veh/h	1178	1743	101	1066	1863	1583	881	2593	883	663	3219	351
Grp Volume(v), veh/h	101	0	309	112	200	390	36	418	404	479	255	262
Grp Sat Flow(s), veh/h/ln	1178	0	1845	1066	1863	1583	881	1770	1707	663	1770	1801
Q Serve(g_s), s	6.8	0.0	13.1	9.2	7.8	21.2	1.7	10.8	10.9	44.1	5.9	6.0
Cycle Q Clear(g_c), s	14.6	0.0	13.1	22.2	7.8	21.2	7.7	10.8	10.9	55.0	5.9	6.0
Prop In Lane	1.00		0.06	1.00		1.00	1.00		0.52	1.00		0.19
Lane Grp Cap(c), veh/h	305	0	512	221	517	440	560	1081	1043	405	1081	1100
V/C Ratio(X)	0.33	0.00	0.60	0.51	0.39	0.89	0.06	0.39	0.39	1.18	0.24	0.24
Avail Cap(c_a), veh/h	305	0	512	221	517	440	560	1081	1043	405	1081	1100
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.2	0.0	28.2	37.8	26.3	31.1	9.7	8.9	8.9	27.3	8.0	8.0
Incr Delay (d2), s/veh	2.9	0.0	5.2	8.1	2.2	22.3	0.2	1.0	1.1	104.5	0.5	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	2.5	0.0	7.3	3.2	4.3	11.9	0.5	5.5	5.4	21.8	3.0	3.1
LnGrp Delay(d), s/veh	35.1	0.0	33.4	45.9	28.5	53.4	9.9	10.0	10.0	131.7	8.5	8.5
LnGrp LOS	D		C	D	C	D	A	A	B	F	A	A
Approach Vol, veh/h		410			702			858			996	
Approach Delay, s/veh		33.8			45.1			10.0			67.8	
Approach LOS		C			D			A			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		30.0		60.0		30.0		60.0				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		25.0		55.0		25.0		55.0				
Max Q Clear Time (g_c+I1), s		24.2		12.9		16.6		57.0				
Green Ext Time (p_c), s		0.3		5.3		1.2		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			41.0									
HCM 2010 LOS			D									

Intersection

Int Delay, s/veh 0.8

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	16	4	341	24	5	275
Future Vol, veh/h	16	4	341	24	5	275
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	56	50	91	88	50	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	8	375	27	10	327

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	736	389	0
Stage 1	389	-	-
Stage 2	347	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	386	659	-
Stage 1	685	-	-
Stage 2	716	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	382	659	-
Mov Cap-2 Maneuver	382	-	-
Stage 1	677	-	-
Stage 2	716	-	-

Approach	EB	SE	NW
HCM Control Delay, s	14.4	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	SET	SER
Capacity (veh/h)	1157	-	421	-	-
HCM Lane V/C Ratio	0.009	-	0.087	-	-
HCM Control Delay (s)	8.1	0	14.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection

Int Delay, s/veh 3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	25	2	6	44	14	0	7	2	12	9	7
Future Vol, veh/h	5	25	2	6	44	14	0	7	2	12	9	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	33	55	25	62	70	60	25	50	25	42	100	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	45	8	10	63	23	0	14	8	29	9	14




Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	86	0	0	53	0	0	185	185	49	185	178	75
Stage 1	-	-	-	-	-	-	79	79	-	95	95	-
Stage 2	-	-	-	-	-	-	106	106	-	90	83	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1510	-	-	1553	-	-	776	709	1020	776	716	986
Stage 1	-	-	-	-	-	-	930	829	-	912	816	-
Stage 2	-	-	-	-	-	-	900	807	-	917	826	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1510	-	-	1553	-	-	748	697	1020	748	704	986
Mov Cap-2 Maneuver	-	-	-	-	-	-	748	697	-	748	704	-
Stage 1	-	-	-	-	-	-	921	821	-	903	810	-
Stage 2	-	-	-	-	-	-	871	801	-	885	818	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.6	0.7	9.7	9.9
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	788	1510	-	-	1553	-	-	791
HCM Lane V/C Ratio	0.028	0.01	-	-	0.006	-	-	0.065
HCM Control Delay (s)	9.7	7.4	0	-	7.3	0	-	9.9
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2

Intersection

Int Delay, s/veh 1.9

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	2	45	320	7	65	268
Future Vol, veh/h	2	45	320	7	65	268
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	25	81	88	50	63	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	56	364	14	103	298

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	875	371	0
Stage 1	371	-	-
Stage 2	504	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	320	675	-
Stage 1	698	-	-
Stage 2	607	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	286	675	-
Mov Cap-2 Maneuver	286	-	-
Stage 1	625	-	-
Stage 2	607	-	-























Approach	EB	SE	NW
HCM Control Delay, s	12	0	2.1
HCM LOS	B		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	SET	SER
Capacity (veh/h)	1180	-	576	-	-
HCM Lane V/C Ratio	0.087	-	0.11	-	-
HCM Control Delay (s)	8.3	0	12	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.3	-	0.4	-	-

HCM 2010 Signalized Intersection Summary




4: US 42 & Industrial Pkwy

01/22/2019

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	70	246	88	239	334	500	49	548	113	364	742	65
Future Volume (veh/h)	70	246	88	239	334	500	49	548	113	364	742	65
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	76	267	96	260	363	543	53	596	123	396	807	71
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	324	509	183	316	724	616	292	1462	301	351	1646	145
Arrive On Green	0.39	0.39	0.39	0.39	0.39	0.39	0.50	0.50	0.50	0.50	0.50	0.50
Sat Flow, veh/h	1015	1309	471	1015	1863	1583	629	2924	602	730	3292	290
Grp Volume(v), veh/h	76	0	363	260	363	543	53	360	359	396	434	444
Grp Sat Flow(s), veh/h/ln	1015	0	1780	1015	1863	1583	629	1770	1757	730	1770	1812
Q Serve(g_s), s	5.5	0.0	14.1	20.9	13.3	28.7	5.5	11.5	11.6	33.4	14.6	14.6
Cycle Q Clear(g_c), s	18.8	0.0	14.1	35.0	13.3	28.7	20.1	11.5	11.6	45.0	14.6	14.6
Prop In Lane	1.00		0.26	1.00		1.00	1.00		0.34	1.00		0.16
Lane Grp Cap(c), veh/h	324	0	692	316	724	616	292	885	878	351	885	906
V/C Ratio(X)	0.23	0.00	0.52	0.82	0.50	0.88	0.18	0.41	0.41	1.13	0.49	0.49
Avail Cap(c_a), veh/h	324	0	692	316	724	616	292	885	878	351	885	906
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.0	0.0	21.1	35.5	20.9	25.6	21.6	14.1	14.1	32.1	14.9	14.9
Incr Delay (d2), s/veh	1.7	0.0	2.8	21.0	2.5	16.6	1.4	1.4	1.4	87.1	1.9	1.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	1.7	0.0	7.4	8.3	7.4	15.4	1.1	5.9	5.9	17.2	7.6	7.8
LnGrp Delay(d), s/veh	29.7	0.0	23.9	56.6	23.3	42.2	22.9	15.5	15.5	119.2	16.8	16.8
LnGrp LOS	C		C	E	C	D	C	B	B	F	B	B
Approach Vol, veh/h		439			1166			772			1274	
Approach Delay, s/veh		24.9			39.5			16.0			48.6	
Approach LOS		C			D			B			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		40.0		50.0		40.0		50.0				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		35.0		45.0		35.0		45.0				
Max Q Clear Time (g_c+I1), s		37.0		22.1		20.8		47.0				
Green Ext Time (p_c), s		0.0		4.3		1.9		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			36.0									
HCM 2010 LOS			D									

Intersection

Int Delay, s/veh 1.4

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	40	5	170	20	2	164
Future Vol, veh/h	40	5	170	20	2	164
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	50	80	50	25	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	47	10	213	40	8	191

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	440	233	0	0	253
Stage 1	233	-	-	-	-
Stage 2	207	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	574	806	-	-	1312
Stage 1	806	-	-	-	-
Stage 2	828	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	570	806	-	-	1312
Mov Cap-2 Maneuver	570	-	-	-	-
Stage 1	800	-	-	-	-
Stage 2	828	-	-	-	-

Approach	EB	SE	NW
HCM Control Delay, s	11.6	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	SET	SER
Capacity (veh/h)	1312	-	601	-	-
HCM Lane V/C Ratio	0.006	-	0.095	-	-
HCM Control Delay (s)	7.8	0	11.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection

Int Delay, s/veh 5.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	32	3	3	5	15	0	9	4	35	9	9
Future Vol, veh/h	3	32	3	3	5	15	0	9	4	35	9	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	55	50	50	50	58	25	50	38	60	67	25
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	58	6	6	10	26	0	18	11	58	13	36




Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	36	0	0	64	0	0	145	133	61	135	123	23
Stage 1	-	-	-	-	-	-	85	85	-	35	35	-
Stage 2	-	-	-	-	-	-	60	48	-	100	88	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1575	-	-	1538	-	-	824	758	1004	836	767	1054
Stage 1	-	-	-	-	-	-	923	824	-	981	866	-
Stage 2	-	-	-	-	-	-	951	855	-	906	822	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1575	-	-	1538	-	-	778	749	1004	805	758	1054
Mov Cap-2 Maneuver	-	-	-	-	-	-	778	749	-	805	758	-
Stage 1	-	-	-	-	-	-	916	817	-	973	863	-
Stage 2	-	-	-	-	-	-	901	852	-	870	815	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	1.2		1.1		9.5		9.7	
HCM LOS					A		A	

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	826	1575	-	-	1538	-	-	867
HCM Lane V/C Ratio	0.035	0.008	-	-	0.004	-	-	0.124
HCM Control Delay (s)	9.5	7.3	0	-	7.4	0	-	9.7
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.4

Intersection

Int Delay, s/veh 2

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	4	68	282	0	22	185
Future Vol, veh/h	4	68	282	0	22	185
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	38	77	87	25	70	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	88	324	0	31	231

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	617	324	0	0	324
Stage 1	324	-	-	-	-
Stage 2	293	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	453	717	-	-	1236
Stage 1	733	-	-	-	-
Stage 2	757	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	440	717	-	-	1236
Mov Cap-2 Maneuver	440	-	-	-	-
Stage 1	712	-	-	-	-
Stage 2	757	-	-	-	-

















Approach	EB	SE	NW
HCM Control Delay, s	11.3	0	1
HCM LOS	B		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	SET	SER
Capacity (veh/h)	1236	-	672	-	-
HCM Lane V/C Ratio	0.025	-	0.147	-	-
HCM Control Delay (s)	8	0	11.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.5	-	-

HCM 2010 Signalized Intersection Summary




4: US 42 & Industrial Pkwy

01/17/2019

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	141	210	25	51	127	151	26	346	105	197	263	57
Future Volume (veh/h)	141	210	25	51	127	151	26	346	105	197	263	57
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	153	228	27	55	138	164	28	376	114	214	286	62
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	161	185	21	94	190	202	73	809	237	332	418	86
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.61	0.61	0.61	0.61	0.61	0.61
Sat Flow, veh/h	382	665	74	172	683	726	50	1324	388	453	684	141
Grp Volume(v), veh/h	408	0	0	357	0	0	518	0	0	562	0	0
Grp Sat Flow(s), veh/h/ln	1122	0	0	1581	0	0	1761	0	0	1279	0	0
Q Serve(g_s), s	6.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.3	0.0	0.0
Cycle Q Clear(g_c), s	25.0	0.0	0.0	18.7	0.0	0.0	14.2	0.0	0.0	28.5	0.0	0.0
Prop In Lane	0.37		0.07	0.15		0.46	0.05		0.22	0.38		0.11
Lane Grp Cap(c), veh/h	367	0	0	485	0	0	1119	0	0	837	0	0
V/C Ratio(X)	1.11	0.00	0.00	0.74	0.00	0.00	0.46	0.00	0.00	0.67	0.00	0.00
Avail Cap(c_a), veh/h	367	0	0	485	0	0	1119	0	0	837	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	34.8	0.0	0.0	30.0	0.0	0.0	9.6	0.0	0.0	12.3	0.0	0.0
Incr Delay (d2), s/veh	81.2	0.0	0.0	9.6	0.0	0.0	1.4	0.0	0.0	4.3	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	17.3	0.0	0.0	9.5	0.0	0.0	7.3	0.0	0.0	10.7	0.0	0.0
LnGrp Delay(d), s/veh	116.0	0.0	0.0	39.5	0.0	0.0	11.0	0.0	0.0	16.6	0.0	0.0
LnGrp LOS	F			D			B			B		
Approach Vol, veh/h	408			357			518			562		
Approach Delay, s/veh	116.0			39.5			11.0			16.6		
Approach LOS	F			D			B			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		30.0		60.0		30.0		60.0				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		25.0		55.0		25.0		55.0				
Max Q Clear Time (g_c+I1), s		20.7		16.2		27.0		30.5				
Green Ext Time (p_c), s		0.8		3.2		0.0		4.0				
Intersection Summary												
HCM 2010 Ctrl Delay	41.4											
HCM 2010 LOS	D											

Intersection

Int Delay, s/veh 2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	15	32	0	5	27
Future Vol, veh/h	0	15	32	0	5	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	16	35	0	5	29




Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	74	35	0	0	35
Stage 1	35	-	-	-	-
Stage 2	39	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	930	1038	-	-	1576
Stage 1	987	-	-	-	-
Stage 2	983	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	927	1038	-	-	1576
Mov Cap-2 Maneuver	927	-	-	-	-
Stage 1	984	-	-	-	-
Stage 2	983	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.5	0	1.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 1038	1576	-
HCM Lane V/C Ratio	-	- 0.018	0.003	-
HCM Control Delay (s)	-	- 8.5	7.3	0
HCM Lane LOS	-	- A	A	A
HCM 95th %tile Q(veh)	-	- 0	0	-

Intersection

Int Delay, s/veh 4.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	31	15	17	10	5	22
Future Vol, veh/h	31	15	17	10	5	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	34	16	18	11	5	24

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	58	24	0
Stage 1	24	-	-
Stage 2	34	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	949	1052	-
Stage 1	999	-	-
Stage 2	988	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	946	1052	-
Mov Cap-2 Maneuver	946	-	-
Stage 1	996	-	-
Stage 2	988	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	1.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	978	1584
HCM Lane V/C Ratio	-	-	0.051	0.003
HCM Control Delay (s)	-	-	8.9	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0

Intersection

Int Delay, s/veh 3.9

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations	↖		↗	↖	↗	
Traffic Vol, veh/h	163	12	41	148	35	122
Future Vol, veh/h	163	12	41	148	35	122
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	177	13	45	161	38	133




Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	190
Stage 1	-	-	184
Stage 2	-	-	251
Critical Hdwy	-	4.12	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	-	2.218	3.518
Pot Cap-1 Maneuver	-	1384	578
Stage 1	-	-	848
Stage 2	-	-	791
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1384	559
Mov Cap-2 Maneuver	-	-	559
Stage 1	-	-	820
Stage 2	-	-	791

Approach	SE	NW	NE
HCM Control Delay, s	0	1.7	11
HCM LOS			B

Minor Lane/Major Mvmt	NELn1	NWL	NWT	SET	SER
Capacity (veh/h)	767	1384	-	-	-
HCM Lane V/C Ratio	0.222	0.032	-	-	-
HCM Control Delay (s)	11	7.7	-	-	-
HCM Lane LOS	B	A	-	-	-
HCM 95th %tile Q(veh)	0.8	0.1	-	-	-

Intersection

Int Delay, s/veh 1.1

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	24	3	253	46	5	196
Future Vol, veh/h	24	3	253	46	5	196
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	56	50	91	88	50	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	43	6	278	52	10	233

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	557	304	0
Stage 1	304	-	-
Stage 2	253	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	491	736	-
Stage 1	748	-	-
Stage 2	789	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	487	736	-
Mov Cap-2 Maneuver	487	-	-
Stage 1	741	-	-
Stage 2	789	-	-

Approach	EB	SE	NW
HCM Control Delay, s	12.8	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	SET	SER
Capacity (veh/h)	1229	-	508	-	-
HCM Lane V/C Ratio	0.008	-	0.096	-	-
HCM Control Delay (s)	8	0	12.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection

Int Delay, s/veh 4.8

Movement	EBL	EST	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	15	23	2	6	40	38	0	7	2	25	9	13
Future Vol, veh/h	15	23	2	6	40	38	0	7	2	25	9	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	33	55	25	62	70	60	25	50	25	42	100	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	45	42	8	10	57	63	0	14	8	60	9	26


Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	120	0	0	50	0	0	262	276	46	256	249	89
Stage 1	-	-	-	-	-	-	136	136	-	109	109	-
Stage 2	-	-	-	-	-	-	126	140	-	147	140	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1468	-	-	1557	-	-	691	632	1023	697	654	969
Stage 1	-	-	-	-	-	-	867	784	-	896	806	-
Stage 2	-	-	-	-	-	-	878	781	-	856	781	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1468	-	-	1557	-	-	645	607	1023	659	628	969
Mov Cap-2 Maneuver	-	-	-	-	-	-	645	607	-	659	628	-
Stage 1	-	-	-	-	-	-	839	759	-	867	799	-
Stage 2	-	-	-	-	-	-	839	776	-	807	756	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.6	0.5	10.2	10.8
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	712	1468	-	-	1557	-	-	719
HCM Lane V/C Ratio	0.031	0.031	-	-	0.006	-	-	0.131
HCM Control Delay (s)	10.2	7.5	0	-	7.3	0	-	10.8
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.5

Intersection

Int Delay, s/veh 2.1

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	2	42	282	7	84	305
Future Vol, veh/h	2	42	282	7	84	305
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	25	81	88	50	63	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	52	320	14	133	339

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	932	327	0
Stage 1	327	-	-
Stage 2	605	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	296	714	-
Stage 1	731	-	-
Stage 2	545	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	256	714	-
Mov Cap-2 Maneuver	256	-	-
Stage 1	633	-	-
Stage 2	545	-	-

















Approach	EB	SE	NW
HCM Control Delay, s	12	0	2.3
HCM LOS	B		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	SET	SER
Capacity (veh/h)	1225	-	576	-	-
HCM Lane V/C Ratio	0.109	-	0.104	-	-
HCM Control Delay (s)	8.3	0	12	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.4	-	0.3	-	-

HCM 2010 Signalized Intersection Summary




4: US 42 & Industrial Pkwy

01/17/2019

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	99	180	64	133	254	231	50	336	56	146	455	133
Future Volume (veh/h)	99	180	64	133	254	231	50	336	56	146	455	133
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	108	196	70	145	276	251	54	365	61	159	495	145
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	148	254	81	152	234	201	97	603	96	180	474	134
Arrive On Green	0.39	0.39	0.39	0.39	0.39	0.39	0.50	0.50	0.50	0.50	0.50	0.50
Sat Flow, veh/h	247	654	207	265	601	517	106	1206	191	264	948	269
Grp Volume(v), veh/h	374	0	0	672	0	0	480	0	0	799	0	0
Grp Sat Flow(s), veh/h/ln	1108	0	0	1383	0	0	1503	0	0	1481	0	0
Q Serve(g_s), s	0.0	0.0	0.0	8.2	0.0	0.0	0.0	0.0	0.0	27.8	0.0	0.0
Cycle Q Clear(g_c), s	26.8	0.0	0.0	35.0	0.0	0.0	17.2	0.0	0.0	45.0	0.0	0.0
Prop In Lane	0.29		0.19	0.22		0.37	0.11		0.13	0.20		0.18
Lane Grp Cap(c), veh/h	482	0	0	586	0	0	796	0	0	789	0	0
V/C Ratio(X)	0.78	0.00	0.00	1.15	0.00	0.00	0.60	0.00	0.00	1.01	0.00	0.00
Avail Cap(c_a), veh/h	482	0	0	586	0	0	796	0	0	789	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	23.7	0.0	0.0	29.0	0.0	0.0	15.3	0.0	0.0	24.1	0.0	0.0
Incr Delay (d2), s/veh	11.6	0.0	0.0	84.4	0.0	0.0	3.4	0.0	0.0	35.3	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	10.0	0.0	0.0	28.2	0.0	0.0	8.9	0.0	0.0	27.2	0.0	0.0
LnGrp Delay(d), s/veh	35.3	0.0	0.0	113.4	0.0	0.0	18.7	0.0	0.0	59.4	0.0	0.0
LnGrp LOS	D			F			B			F		
Approach Vol, veh/h		374			672			480			799	
Approach Delay, s/veh		35.3			113.4			18.7			59.4	
Approach LOS		D			F			B			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		40.0		50.0		40.0		50.0				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		35.0		45.0		35.0		45.0				
Max Q Clear Time (g_c+I1), s		37.0		19.2		28.8		47.0				
Green Ext Time (p_c), s		0.0		2.9		1.2		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			62.7									
HCM 2010 LOS			E									

Intersection

Int Delay, s/veh 2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	10	35	0	17	44
Future Vol, veh/h	0	10	35	0	17	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	11	38	0	18	48




Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	122	38	0
Stage 1	38	-	-
Stage 2	84	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	873	1034	-
Stage 1	984	-	-
Stage 2	939	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	863	1034	-
Mov Cap-2 Maneuver	863	-	-
Stage 1	972	-	-
Stage 2	939	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.5	0	2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1034	1572
HCM Lane V/C Ratio	-	-	0.011	0.012
HCM Control Delay (s)	-	-	8.5	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

Intersection

Int Delay, s/veh 3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	10	25	35	17	27
Future Vol, veh/h	20	10	25	35	17	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	11	27	38	18	29

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	111	46	0	0	65
Stage 1	46	-	-	-	-
Stage 2	65	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	886	1023	-	-	1537
Stage 1	976	-	-	-	-
Stage 2	958	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	875	1023	-	-	1537
Mov Cap-2 Maneuver	875	-	-	-	-
Stage 1	964	-	-	-	-
Stage 2	958	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	2.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	919	1537
HCM Lane V/C Ratio	-	-	0.035	0.012
HCM Control Delay (s)	-	-	9.1	7.4
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

Intersection

Int Delay, s/veh 3.6

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations	↰		↱	↱	↱	
Traffic Vol, veh/h	217	39	137	170	23	81
Future Vol, veh/h	217	39	137	170	23	81
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	236	42	149	185	25	88

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	278
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1285
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1285
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-




Approach	SE	NW	NE
HCM Control Delay, s	0	3.6	12.3
HCM LOS			B

Minor Lane/Major Mvmt	NELn1	NWL	NWT	SET	SER
Capacity (veh/h)	607	1285	-	-	-
HCM Lane V/C Ratio	0.186	0.116	-	-	-
HCM Control Delay (s)	12.3	8.2	-	-	-
HCM Lane LOS	B	A	-	-	-
HCM 95th %tile Q(veh)	0.7	0.4	-	-	-

HCM 2010 TWSC
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Intersection

Int Delay, s/veh	1.5					
Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	50	7	263	21	2	240
Future Vol, veh/h	50	7	263	21	2	240
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	50	80	50	25	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	59	14	329	42	8	279

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	645	350	0	0	371	0
Stage 1	350	-	-	-	-	-
Stage 2	295	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	437	693	-	-	1188	-
Stage 1	713	-	-	-	-	-
Stage 2	755	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	434	693	-	-	1188	-
Mov Cap-2 Maneuver	434	-	-	-	-	-
Stage 1	707	-	-	-	-	-
Stage 2	755	-	-	-	-	-

Approach	EB	SE	NW
HCM Control Delay, s	14.1	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	SET	SER
Capacity (veh/h)	1188	-	468	-	-
HCM Lane V/C Ratio	0.007	-	0.156	-	-
HCM Control Delay (s)	8.1	0	14.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.5	-	-

Intersection

Int Delay, s/veh 5.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	35	3	3	5	15	0	9	4	36	9	9
Future Vol, veh/h	3	35	3	3	5	15	0	9	4	36	9	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	55	50	50	50	58	25	50	38	60	67	25
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	64	6	6	10	26	0	18	11	60	13	36




Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	36	0	0	70	0	0	151	139	67	141	129	23
Stage 1	-	-	-	-	-	-	91	91	-	35	35	-
Stage 2	-	-	-	-	-	-	60	48	-	106	94	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1575	-	-	1531	-	-	816	752	997	829	762	1054
Stage 1	-	-	-	-	-	-	916	820	-	981	866	-
Stage 2	-	-	-	-	-	-	951	855	-	900	817	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1575	-	-	1531	-	-	770	743	997	797	753	1054
Mov Cap-2 Maneuver	-	-	-	-	-	-	770	743	-	797	753	-
Stage 1	-	-	-	-	-	-	909	813	-	973	863	-
Stage 2	-	-	-	-	-	-	901	852	-	864	810	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	1.1	9.5	9.8
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	820	1575	-	-	1531	-	-	860
HCM Lane V/C Ratio	0.035	0.008	-	-	0.004	-	-	0.127
HCM Control Delay (s)	9.5	7.3	0	-	7.4	0	-	9.8
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.4

Intersection

Int Delay, s/veh 2.3

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	6	95	376	0	23	270
Future Vol, veh/h	6	95	376	0	23	270
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	38	77	87	25	70	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	123	432	0	33	338

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	836	432	0
Stage 1	432	-	-
Stage 2	404	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	337	624	-
Stage 1	655	-	-
Stage 2	674	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	325	624	-
Mov Cap-2 Maneuver	325	-	-
Stage 1	631	-	-
Stage 2	674	-	-






















Approach	EB	SE	NW
HCM Control Delay, s	13.4	0	0.7
HCM LOS	B		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	SET	SER
Capacity (veh/h)	1128	-	565	-	-
HCM Lane V/C Ratio	0.029	-	0.246	-	-
HCM Control Delay (s)	8.3	0	13.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	1	-	-

HCM 2010 Signalized Intersection Summary




4: US 42 & Industrial Pkwy

01/22/2019

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	177	314	31	103	198	359	39	564	192	441	429	75
Future Volume (veh/h)	177	314	31	103	198	359	39	564	192	441	429	75
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	192	341	34	112	215	390	42	613	209	479	466	82
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	293	463	46	172	517	440	542	1585	540	405	1841	322
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.61	0.61	0.61	0.61	0.61	0.61
Sat Flow, veh/h	1162	1667	166	1003	1863	1583	856	2593	883	663	3012	527
Grp Volume(v), veh/h	192	0	375	112	215	390	42	418	404	479	273	275
Grp Sat Flow(s), veh/h/ln	1162	0	1833	1003	1863	1583	856	1770	1707	663	1770	1770
Q Serve(g_s), s	14.6	0.0	16.7	8.3	8.5	21.2	2.1	10.8	10.9	44.1	6.4	6.4
Cycle Q Clear(g_c), s	23.0	0.0	16.7	25.0	8.5	21.2	8.6	10.8	10.9	55.0	6.4	6.4
Prop In Lane	1.00		0.09	1.00		1.00	1.00		0.52	1.00		0.30
Lane Grp Cap(c), veh/h	293	0	509	172	517	440	542	1081	1043	405	1081	1082
V/C Ratio(X)	0.65	0.00	0.74	0.65	0.42	0.89	0.08	0.39	0.39	1.18	0.25	0.25
Avail Cap(c_a), veh/h	293	0	509	172	517	440	542	1081	1043	405	1081	1082
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.9	0.0	29.5	41.6	26.5	31.1	10.0	8.9	8.9	27.3	8.0	8.1
Incr Delay (d2), s/veh	10.9	0.0	9.2	17.4	2.5	22.3	0.3	1.0	1.1	104.5	0.6	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	5.5	0.0	9.7	3.6	4.7	11.9	0.5	5.5	5.4	21.8	3.3	3.3
LnGrp Delay(d), s/veh	46.8	0.0	38.7	59.0	29.0	53.4	10.3	10.0	10.0	131.7	8.6	8.6
LnGrp LOS	D		D	E	C	D	B	A	B	F	A	A
Approach Vol, veh/h		567			717			864			1027	
Approach Delay, s/veh		41.4			47.0			10.0			66.0	
Approach LOS		D			D			A			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		30.0		60.0		30.0		60.0				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		25.0		55.0		25.0		55.0				
Max Q Clear Time (g_c+I1), s		27.0		12.9		25.0		57.0				
Green Ext Time (p_c), s		0.0		5.3		0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			42.1									
HCM 2010 LOS			D									

Intersection

Int Delay, s/veh 2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	15	32	0	5	28
Future Vol, veh/h	0	15	32	0	5	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	16	35	0	5	30




Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	75	35	0
Stage 1	35	-	-
Stage 2	40	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	928	1038	-
Stage 1	987	-	-
Stage 2	982	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	925	1038	-
Mov Cap-2 Maneuver	925	-	-
Stage 1	984	-	-
Stage 2	982	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.5	0	1.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 1038	1576	-
HCM Lane V/C Ratio	-	- 0.016	0.003	-
HCM Control Delay (s)	-	- 8.5	7.3	0
HCM Lane LOS	-	- A	A	A
HCM 95th %tile Q(veh)	-	- 0	0	-

Intersection

Int Delay, s/veh 4.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	31	15	17	10	5	23
Future Vol, veh/h	31	15	17	10	5	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	34	16	18	11	5	25





Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	59	24	0
Stage 1	24	-	-
Stage 2	35	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	948	1052	-
Stage 1	999	-	-
Stage 2	987	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	945	1052	-
Mov Cap-2 Maneuver	945	-	-
Stage 1	996	-	-
Stage 2	987	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	1.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	977	1584
HCM Lane V/C Ratio	-	-	0.051	0.003
HCM Control Delay (s)	-	-	8.9	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0

Intersection




Int Delay, s/veh 3.3

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Traffic Vol, veh/h	258	12	41	235	35	122
Future Vol, veh/h	258	12	41	235	35	122
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	280	13	45	255	38	133

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	293
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1269
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1269
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SE	NW	NE
HCM Control Delay, s	0	1.2	12.6
HCM LOS			B

Minor Lane/Major Mvmt	NELn1	NWL	NWT	SET	SER
Capacity (veh/h)	643	1269	-	-	-
HCM Lane V/C Ratio	0.265	0.035	-	-	-
HCM Control Delay (s)	12.6	7.9	-	-	-
HCM Lane LOS	B	A	-	-	-
HCM 95th %tile Q(veh)	1.1	0.1	-	-	-

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	30	4	380	48	5	298
Future Vol, veh/h	30	4	380	48	5	298
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	56	50	91	88	50	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	54	8	418	55	10	355
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	821	446	0	0	473	0
Stage 1	446	-	-	-	-	-
Stage 2	375	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	344	612	-	-	1089	-
Stage 1	645	-	-	-	-	-
Stage 2	695	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	340	612	-	-	1089	-
Mov Cap-2 Maneuver	340	-	-	-	-	-
Stage 1	638	-	-	-	-	-
Stage 2	695	-	-	-	-	-
Approach	EB	SE	NW			
HCM Control Delay, s	17	0	0.2			
HCM LOS	C					
Minor Lane/Major Mvmt	NWL	NWT	EBLn1	SET	SER	
Capacity (veh/h)	1089	-	361	-	-	
HCM Lane V/C Ratio	0.009	-	0.171	-	-	
HCM Control Delay (s)	8.3	0	17	-	-	
HCM Lane LOS	A	A	C	-	-	
HCM 95th %tile Q(veh)	0	-	0.6	-	-	

Intersection												
Int Delay, s/veh	4.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	15	25	2	6	44	39	0	7	2	26	9	13
Future Vol, veh/h	15	25	2	6	44	39	0	7	2	26	9	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	33	55	25	62	70	60	25	50	25	42	100	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	45	45	8	10	63	65	0	14	8	62	9	26




Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	128	0	0	53	0	0	272	287	49	266	259	96
Stage 1	-	-	-	-	-	-	139	139	-	116	116	-
Stage 2	-	-	-	-	-	-	133	148	-	150	143	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1458	-	-	1553	-	-	680	623	1020	687	645	960
Stage 1	-	-	-	-	-	-	864	782	-	889	800	-
Stage 2	-	-	-	-	-	-	870	775	-	853	779	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1458	-	-	1553	-	-	635	599	1020	650	620	960
Mov Cap-2 Maneuver	-	-	-	-	-	-	635	599	-	650	620	-
Stage 1	-	-	-	-	-	-	836	757	-	861	794	-
Stage 2	-	-	-	-	-	-	831	770	-	804	754	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.5	0.5	10.3	10.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	705	1458	-	-	1553	-	-	708
HCM Lane V/C Ratio	0.031	0.031	-	-	0.006	-	-	0.137
HCM Control Delay (s)	10.3	7.5	0	-	7.3	0	-	10.9
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.5

Intersection

Int Delay, s/veh 2.1

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	2	59	401	7	90	405
Future Vol, veh/h	2	59	401	7	90	405
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	25	81	88	50	63	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	73	456	14	143	450

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1199	463	0	0	470
Stage 1	463	-	-	-	-
Stage 2	736	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	205	599	-	-	1092
Stage 1	634	-	-	-	-
Stage 2	474	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	169	599	-	-	1092
Mov Cap-2 Maneuver	169	-	-	-	-
Stage 1	523	-	-	-	-
Stage 2	474	-	-	-	-























Approach	EB	SE	NW
HCM Control Delay, s	14	0	2.1
HCM LOS	B		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	SET	SER
Capacity (veh/h)	1092	-	479	-	-
HCM Lane V/C Ratio	0.131	-	0.169	-	-
HCM Control Delay (s)	8.8	0	14	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.5	-	0.6	-	-

HCM 2010 Signalized Intersection Summary




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Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	126	275	98	239	383	500	69	548	113	364	742	158
Future Volume (veh/h)	126	275	98	239	383	500	69	548	113	364	742	158
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	137	299	107	260	416	543	75	596	123	396	807	172
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	286	510	182	283	724	616	256	1462	301	351	1452	309
Arrive On Green	0.39	0.39	0.39	0.39	0.39	0.39	0.50	0.50	0.50	0.50	0.50	0.50
Sat Flow, veh/h	966	1311	469	975	1863	1583	572	2924	602	730	2904	619
Grp Volume(v), veh/h	137	0	406	260	416	543	75	360	359	396	492	487
Grp Sat Flow(s), veh/h/ln	966	0	1780	975	1863	1583	572	1770	1757	730	1770	1754
Q Serve(g_s), s	11.7	0.0	16.3	18.7	15.8	28.7	9.4	11.5	11.6	33.4	17.3	17.3
Cycle Q Clear(g_c), s	27.5	0.0	16.3	35.0	15.8	28.7	26.7	11.5	11.6	45.0	17.3	17.3
Prop In Lane	1.00		0.26	1.00		1.00	1.00		0.34	1.00		0.35
Lane Grp Cap(c), veh/h	286	0	692	283	724	616	256	885	878	351	885	877
V/C Ratio(X)	0.48	0.00	0.59	0.92	0.57	0.88	0.29	0.41	0.41	1.13	0.56	0.56
Avail Cap(c_a), veh/h	286	0	692	283	724	616	256	885	878	351	885	877
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.5	0.0	21.8	37.7	21.6	25.6	24.8	14.1	14.1	32.1	15.6	15.6
Incr Delay (d2), s/veh	5.7	0.0	3.6	36.0	3.3	16.6	2.9	1.4	1.4	87.1	2.5	2.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	3.6	0.0	8.6	9.3	8.8	15.4	1.7	5.9	5.9	17.2	8.9	8.9
LnGrp Delay(d), s/veh	38.1	0.0	25.4	73.7	24.9	42.2	27.7	15.5	15.5	119.2	18.1	18.1
LnGrp LOS	D		C	E	C	D	C	B	B	F	B	B
Approach Vol, veh/h		543			1219			794			1375	
Approach Delay, s/veh		28.6			43.0			16.7			47.2	
Approach LOS		C			D			B			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		40.0		50.0		40.0		50.0				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		35.0		45.0		35.0		45.0				
Max Q Clear Time (g_c+I1), s		37.0		28.7		29.5		47.0				
Green Ext Time (p_c), s		0.0		4.2		1.4		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			37.2									
HCM 2010 LOS			D									

Intersection

Int Delay, s/veh 1.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	10	36	0	17	45
Future Vol, veh/h	0	10	36	0	17	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	11	39	0	18	49




Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	124	39	0
Stage 1	39	-	-
Stage 2	85	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	871	1033	-
Stage 1	983	-	-
Stage 2	938	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	861	1033	-
Mov Cap-2 Maneuver	861	-	-
Stage 1	971	-	-
Stage 2	938	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.5	0	2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1033	1571
HCM Lane V/C Ratio	-	-	0.011	0.012
HCM Control Delay (s)	-	-	8.5	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

Intersection

Int Delay, s/veh 2.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	10	26	35	17	28
Future Vol, veh/h	20	10	26	35	17	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	11	28	38	18	30





Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	113	47	0
Stage 1	47	-	-
Stage 2	66	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	884	1022	-
Stage 1	975	-	-
Stage 2	957	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	873	1022	-
Mov Cap-2 Maneuver	873	-	-
Stage 1	963	-	-
Stage 2	957	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	2.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	918	1536
HCM Lane V/C Ratio	-	-	0.036	0.012
HCM Control Delay (s)	-	-	9.1	7.4
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

Intersection

Int Delay, s/veh 3.1

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Traffic Vol, veh/h	345	39	137	270	23	81
Future Vol, veh/h	345	39	137	270	23	81
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	375	42	149	293	25	88

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	417
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1142
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1142
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-


















Approach	SE	NW	NE
HCM Control Delay, s	0	2.9	15
HCM LOS			C

Minor Lane/Major Mvmt	NELn1	NWL	NWT	SET	SER
Capacity (veh/h)	471	1142	-	-	-
HCM Lane V/C Ratio	0.24	0.13	-	-	-
HCM Control Delay (s)	15	8.6	-	-	-
HCM Lane LOS	C	A	-	-	-
HCM 95th %tile Q(veh)	0.9	0.4	-	-	-

HCM 2010 Signalized Intersection Summary

















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Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	57	165	10	51	113	151	20	346	105	197	263	29
Future Volume (veh/h)	57	165	10	51	113	151	20	346	105	197	263	29
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1863	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	62	179	11	55	123	164	22	376	114	214	286	32
Adj No. of Lanes	0	1	0	0	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	137	368	21	164	342	440	64	817	240	346	438	47
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.61	0.61	0.61	0.61	0.61	0.61
Sat Flow, veh/h	313	1325	75	403	1231	1583	36	1337	393	474	717	76
Grp Volume(v), veh/h	252	0	0	178	0	164	512	0	0	532	0	0
Grp Sat Flow(s),veh/h/ln	1712	0	0	1634	0	1583	1766	0	0	1267	0	0
Q Serve(g_s), s	3.3	0.0	0.0	0.0	0.0	7.5	0.0	0.0	0.0	12.4	0.0	0.0
Cycle Q Clear(g_c), s	10.7	0.0	0.0	7.4	0.0	7.5	14.0	0.0	0.0	26.4	0.0	0.0
Prop In Lane	0.25		0.04	0.31		1.00	0.04		0.22	0.40		0.06
Lane Grp Cap(c), veh/h	526	0	0	506	0	440	1121	0	0	830	0	0
V/C Ratio(X)	0.48	0.00	0.00	0.35	0.00	0.37	0.46	0.00	0.00	0.64	0.00	0.00
Avail Cap(c_a), veh/h	526	0	0	506	0	440	1121	0	0	830	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	27.2	0.0	0.0	26.0	0.0	26.2	9.5	0.0	0.0	11.9	0.0	0.0
Incr Delay (d2), s/veh	3.1	0.0	0.0	1.9	0.0	2.4	1.3	0.0	0.0	3.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	5.7	0.0	0.0	3.8	0.0	3.6	7.2	0.0	0.0	9.7	0.0	0.0
LnGrp Delay(d),s/veh	30.3	0.0	0.0	27.9	0.0	28.6	10.9	0.0	0.0	15.7	0.0	0.0
LnGrp LOS	C			C		C	B			B		
Approach Vol, veh/h	252				342		512				532	
Approach Delay, s/veh	30.3				28.3		10.9				15.7	
Approach LOS	C				C		B				B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	30.0		60.0		30.0		60.0					
Change Period (Y+Rc), s	5.0		5.0		5.0		5.0					
Max Green Setting (Gmax), s	25.0		55.0		25.0		55.0					
Max Q Clear Time (g_c+I1), s	9.5		16.0		12.7		28.4					
Green Ext Time (p_c), s	1.2		3.1		0.9		3.8					
Intersection Summary												
HCM 2010 Ctrl Delay	19.1											
HCM 2010 LOS	B											

HCM 2010 Signalized Intersection Summary 4: US 42 & Industrial Pkwy























01/22/2019

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	43	151	54	133	205	231	30	336	56	146	455	40
Future Volume (veh/h)	43	151	54	133	205	231	30	336	56	146	455	40
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1863	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	47	164	59	145	223	251	33	365	61	159	495	43
Adj No. of Lanes	0	1	0	0	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	128	426	142	268	364	616	76	703	113	201	547	46
Arrive On Green	0.39	0.39	0.39	0.39	0.39	0.39	0.50	0.50	0.50	0.50	0.50	0.50
Sat Flow, veh/h	209	1096	365	546	935	1583	67	1405	226	304	1093	92
Grp Volume(v), veh/h	270	0	0	368	0	251	459	0	0	697	0	0
Grp Sat Flow(s),veh/h/ln	1669	0	0	1481	0	1583	1697	0	0	1490	0	0
Q Serve(g_s), s	0.0	0.0	0.0	8.6	0.0	10.4	0.0	0.0	0.0	24.6	0.0	0.0
Cycle Q Clear(g_c), s	9.8	0.0	0.0	18.5	0.0	10.4	15.2	0.0	0.0	39.8	0.0	0.0
Prop In Lane	0.17		0.22	0.39		1.00	0.07		0.13	0.23		0.06
Lane Grp Cap(c), veh/h	696	0	0	632	0	616	892	0	0	794	0	0
V/C Ratio(X)	0.39	0.00	0.00	0.58	0.00	0.41	0.51	0.00	0.00	0.88	0.00	0.00
Avail Cap(c_a), veh/h	696	0	0	632	0	616	892	0	0	794	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	19.8	0.0	0.0	22.4	0.0	20.0	15.0	0.0	0.0	21.3	0.0	0.0
Incr Delay (d2), s/veh	1.6	0.0	0.0	3.9	0.0	2.0	2.1	0.0	0.0	13.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	0.0	0.0	8.1	0.0	4.9	8.0	0.0	0.0	19.0	0.0	0.0
LnGrp Delay(d),s/veh	21.4	0.0	0.0	26.3	0.0	22.0	17.2	0.0	0.0	34.4	0.0	0.0
LnGrp LOS	C			C		C	B			C		
Approach Vol, veh/h	270		619				459				697	
Approach Delay, s/veh	21.4		24.5				17.2				34.4	
Approach LOS	C		C				B				C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4				6		8			
Phs Duration (G+Y+Rc), s	40.0		50.0				40.0		50.0			
Change Period (Y+Rc), s	5.0		5.0				5.0		5.0			
Max Green Setting (Gmax), s	35.0		45.0				35.0		45.0			
Max Q Clear Time (g_c+I1), s	20.5		17.2				11.8		41.8			
Green Ext Time (p_c), s	2.5		2.7				1.3		1.4			
Intersection Summary												
HCM 2010 Ctrl Delay			25.8									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary























4: US 42 & Industrial Pkwy

01/23/2019

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	93	269	16	103	184	359	33	564	192	441	429	47
Future Volume (veh/h)	93	269	16	103	184	359	33	564	192	441	429	47
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	101	292	17	112	200	390	36	613	209	479	466	51
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	340	349	20	260	373	669	522	720	245	510	1252	136
Arrive On Green	0.08	0.20	0.20	0.08	0.20	0.20	0.11	0.28	0.28	0.22	0.39	0.39
Sat Flow, veh/h	1774	1743	101	1774	1863	1583	1774	2593	883	1774	3219	351
Grp Volume(v), veh/h	101	0	309	112	200	390	36	418	404	479	255	262
Grp Sat Flow(s), veh/h/ln	1774	0	1845	1774	1863	1583	1774	1770	1707	1774	1770	1801
Q Serve(g_s), s	3.9	0.0	14.5	4.4	8.7	17.0	1.1	20.1	20.2	17.9	9.3	9.4
Cycle Q Clear(g_c), s	3.9	0.0	14.5	4.4	8.7	17.0	1.1	20.1	20.2	17.9	9.3	9.4
Prop In Lane	1.00		0.06	1.00		1.00	1.00		0.52	1.00		0.19
Lane Grp Cap(c), veh/h	340	0	369	260	373	669	522	492	474	510	688	700
V/C Ratio(X)	0.30	0.00	0.84	0.43	0.54	0.58	0.07	0.85	0.85	0.94	0.37	0.37
Avail Cap(c_a), veh/h	340	0	369	260	373	669	522	492	474	510	688	700
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.3	0.0	34.6	26.4	32.3	19.9	17.2	30.7	30.8	21.4	19.6	19.7
Incr Delay (d2), s/veh	2.2	0.0	19.8	5.2	5.5	3.7	0.3	16.7	17.3	27.3	1.5	1.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	2.1	0.0	9.4	2.5	5.0	8.1	0.6	12.0	11.7	15.4	4.8	4.9
LnGrp Delay(d), s/veh	27.6	0.0	54.4	31.5	37.7	23.6	17.4	47.4	48.1	48.8	21.2	21.2
LnGrp LOS	C		D	C	D	C	B	D	D	D	C	C
Approach Vol, veh/h		410			702			858			996	
Approach Delay, s/veh		47.8			28.9			46.5			34.4	
Approach LOS		D			C			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.0	23.0	25.0	30.0	12.0	23.0	15.0	40.0				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	7.0	18.0	20.0	25.0	7.0	18.0	10.0	35.0				
Max Q Clear Time (g_c+I1), s	5.9	19.0	19.9	22.2	6.4	16.5	3.1	11.4				
Green Ext Time (p_c), s	0.0	0.0	0.0	1.3	0.0	0.2	0.0	2.6				
Intersection Summary												
HCM 2010 Ctrl Delay			38.5									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary 4: US 42 & Industrial Pkwy

01/23/2019

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	70	246	88	239	334	500	49	548	113	364	742	65
Future Volume (veh/h)	70	246	88	239	334	500	49	548	113	364	742	65
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	76	267	96	260	363	543	53	596	123	396	807	71
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	308	305	110	315	497	721	341	715	147	452	1061	93
Arrive On Green	0.08	0.23	0.23	0.11	0.27	0.27	0.11	0.24	0.24	0.19	0.32	0.32
Sat Flow, veh/h	1774	1309	471	1774	1863	1583	1774	2924	602	1774	3292	290
Grp Volume(v), veh/h	76	0	363	260	363	543	53	360	359	396	434	444
Grp Sat Flow(s),veh/h/ln	1774	0	1780	1774	1863	1583	1774	1770	1757	1774	1770	1812
Q Serve(g_s), s	2.8	0.0	17.7	10.0	16.0	24.0	1.8	17.4	17.5	14.1	19.8	19.8
Cycle Q Clear(g_c), s	2.8	0.0	17.7	10.0	16.0	24.0	1.8	17.4	17.5	14.1	19.8	19.8
Prop In Lane	1.00		0.26	1.00		1.00	1.00		0.34	1.00		0.16
Lane Grp Cap(c), veh/h	308	0	415	315	497	721	341	433	429	452	570	584
V/C Ratio(X)	0.25	0.00	0.87	0.83	0.73	0.75	0.16	0.83	0.84	0.88	0.76	0.76
Avail Cap(c_a), veh/h	308	0	415	315	497	721	341	433	429	452	570	584
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.3	0.0	33.2	25.0	30.1	20.3	20.3	32.3	32.3	20.2	27.4	27.4
Incr Delay (d2), s/veh	1.9	0.0	21.8	21.4	9.1	7.1	1.0	16.9	17.3	20.6	9.2	9.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	11.2	6.7	9.4	12.6	0.9	10.5	10.5	9.3	11.1	11.3
LnGrp Delay(d),s/veh	25.2	0.0	55.0	46.5	39.2	27.4	21.2	49.2	49.6	40.8	36.6	36.4
LnGrp LOS	C		D	D	D	C	C	D	D	D	D	D
Approach Vol, veh/h		439			1166			772			1274	
Approach Delay, s/veh		49.8			35.3			47.4			37.8	
Approach LOS		D			D			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.0	29.0	22.0	27.0	15.0	26.0	15.0	34.0				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	7.0	24.0	17.0	22.0	10.0	21.0	10.0	29.0				
Max Q Clear Time (g_c+I1), s	4.8	26.0	16.1	19.5	12.0	19.7	3.8	21.8				
Green Ext Time (p_c), s	0.0	0.0	0.1	1.0	0.0	0.3	0.0	2.8				
Intersection Summary												
HCM 2010 Ctrl Delay			40.5									
HCM 2010 LOS			D									

Timings

4: US 42 & Industrial Pkwy

01/22/2019

Lane Group	SEL	SET	NWL	NWT	NWR	NEL	NET	SWL	SWT
Lane Configurations									
Traffic Volume (vph)	141	210	51	127	151	26	346	197	263
Future Volume (vph)	141	210	51	127	151	26	346	197	263
Turn Type	pm+pt	NA	pm+pt	NA	pm+ov	Perm	NA	pm+pt	NA
Protected Phases	1	6	5	2	3		4	3	8
Permitted Phases	6		2		2	4		8	
Detector Phase	1	6	5	2	3	4	4	3	8
Switch Phase									
Minimum Initial (s)	7.0	10.0	7.0	10.0	10.0	20.0	20.0	10.0	20.0
Minimum Split (s)	12.0	15.0	12.0	15.0	15.0	25.0	25.0	15.0	25.0
Total Split (s)	12.0	21.0	12.0	21.0	16.0	41.0	41.0	16.0	57.0
Total Split (%)	13.3%	23.3%	13.3%	23.3%	17.8%	45.6%	45.6%	17.8%	63.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0		5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effect Green (s)	23.0	16.0	23.0	16.0	32.0		36.0		52.0
Actuated g/C Ratio	0.26	0.18	0.26	0.18	0.36		0.40		0.58
v/c Ratio	0.45	0.77	0.22	0.42	0.25		0.74		0.91
Control Delay	28.8	51.8	24.6	37.3	4.4		29.8		35.3
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	28.8	51.8	24.6	37.3	4.4		29.8		35.3
LOS	C	D	C	D	A		C		D
Approach Delay		43.2		20.3			29.8		35.3
Approach LOS		D		C			C		D

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 4:NETL and 8:SWTL, Start of Green

Natural Cycle: 90

Control Type: Pretimed

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 32.6

Intersection LOS: C

Intersection Capacity Utilization 89.3%

ICU Level of Service E

Analysis Period (min) 15

















Splits and Phases: 4: US 42 & Industrial Pkwy

Ø1	Ø2	Ø3	Ø4 (R)
12 s	21 s	16 s	41 s
Ø5	Ø6	Ø8 (R)	
12 s	21 s	57 s	

Timings

4: US 42 & Industrial Pkwy

01/22/2019

									
Lane Group	SEL	SET	NWL	NWT	NWR	NEL	NET	SWL	SWT
Lane Configurations									
Traffic Volume (vph)	99	180	133	254	231	50	336	146	455
Future Volume (vph)	99	180	133	254	231	50	336	146	455
Turn Type	pm+pt	NA	pm+pt	NA	pm+ov	Perm	NA	pm+pt	NA
Protected Phases	1	6	5	2	3		4	3	8
Permitted Phases	6		2		2	4		8	
Detector Phase	1	6	5	2	3	4	4	3	8
Switch Phase									
Minimum Initial (s)	7.0	10.0	7.0	10.0	10.0	20.0	20.0	10.0	20.0
Minimum Split (s)	12.0	15.0	12.0	15.0	15.0	25.0	25.0	15.0	25.0
Total Split (s)	12.0	28.0	12.0	28.0	15.0	55.0	55.0	15.0	70.0
Total Split (%)	10.9%	25.5%	10.9%	25.5%	13.6%	50.0%	50.0%	13.6%	63.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0		5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	30.0	23.0	30.0	23.0	38.0		50.0		65.0
Actuated g/C Ratio	0.27	0.21	0.27	0.21	0.35		0.45		0.59
v/c Ratio	0.46	0.69	0.60	0.71	0.35		0.67		0.99
Control Delay	34.7	48.2	40.5	51.6	4.7		28.9		49.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	34.7	48.2	40.5	51.6	4.7		28.9		49.6
LOS	C	D	D	D	A		C		D
Approach Delay		44.3		31.7			28.9		49.6
Approach LOS		D		C			C		D

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 0 (0%), Referenced to phase 4:NETL and 8:SWTL, Start of Green

Natural Cycle: 90

Control Type: Pretimed

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 39.3









Intersection LOS: D

Intersection Capacity Utilization 99.1%

ICU Level of Service F

Analysis Period (min) 15























Splits and Phases: 4: US 42 & Industrial Pkwy

			
Ø1	Ø2	Ø3	Ø4 (R)
12 s	28 s	15 s	55 s
			
Ø5	Ø6	Ø8 (R)	
12 s	28 s	70 s	

HCM 2010 Signalized Intersection Summary

4: US 42 & Industrial Pkwy























01/23/2019

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	177	314	31	103	198	359	39	564	192	441	429	75
Future Volume (veh/h)	177	314	31	103	198	359	39	564	192	441	429	75
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	192	341	34	112	215	390	42	613	209	479	466	82
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	340	417	42	221	466	752	465	778	265	514	1330	233
Arrive On Green	0.06	0.25	0.25	0.06	0.25	0.25	0.08	0.30	0.30	0.22	0.44	0.44
Sat Flow, veh/h	1774	1667	166	1774	1863	1583	1774	2593	883	1774	3012	527
Grp Volume(v), veh/h	192	0	375	112	215	390	42	418	404	479	273	275
Grp Sat Flow(s), veh/h/ln	1774	0	1833	1774	1863	1583	1774	1770	1707	1774	1770	1770
Q Serve(g_s), s	7.0	0.0	23.1	5.6	11.7	20.6	1.8	26.0	26.0	23.7	12.2	12.3
Cycle Q Clear(g_c), s	7.0	0.0	23.1	5.6	11.7	20.6	1.8	26.0	26.0	23.7	12.2	12.3
Prop In Lane	1.00		0.09	1.00		1.00	1.00		0.52	1.00		0.30
Lane Grp Cap(c), veh/h	340	0	458	221	466	752	465	531	512	514	782	782
V/C Ratio(X)	0.56	0.00	0.82	0.51	0.46	0.52	0.09	0.79	0.79	0.93	0.35	0.35
Avail Cap(c_a), veh/h	340	0	458	221	466	752	465	531	512	514	782	782
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.0	0.0	42.4	33.2	38.2	21.9	23.4	38.5	38.5	28.6	22.1	22.2
Incr Delay (d2), s/veh	6.6	0.0	14.9	8.1	3.3	2.5	0.4	11.2	11.7	25.9	1.2	1.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	2.9	0.0	13.6	3.2	6.5	9.5	0.9	14.3	13.9	19.1	6.3	6.3
LnGrp Delay(d), s/veh	42.7	0.0	57.4	41.2	41.4	24.5	23.8	49.7	50.2	54.5	23.3	23.4
LnGrp LOS	D		E	D	D	C	C	D	D	D	C	C
Approach Vol, veh/h		567			717			864			1027	
Approach Delay, s/veh		52.4			32.2			48.7			37.9	
Approach LOS		D			C			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.0	35.0	32.0	41.0	12.0	35.0	15.0	58.0				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	7.0	30.0	27.0	36.0	7.0	30.0	10.0	53.0				
Max Q Clear Time (g_c+I1), s	9.0	22.6	25.7	28.0	7.6	25.1	3.8	14.3				
Green Ext Time (p_c), s	0.0	1.5	0.2	2.8	0.0	0.8	0.0	3.0				
Intersection Summary												
HCM 2010 Ctrl Delay			42.1									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary

4: US 42 & Industrial Pkwy

01/22/2019

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	126	275	98	239	383	500	69	548	113	364	742	158
Future Volume (veh/h)	126	275	98	239	383	500	69	548	113	364	742	158
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	137	299	107	260	416	543	75	596	123	396	807	172
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	300	382	137	318	621	818	272	755	156	435	1041	222
Arrive On Green	0.06	0.29	0.29	0.10	0.33	0.33	0.08	0.26	0.26	0.18	0.36	0.36
Sat Flow, veh/h	1774	1311	469	1774	1863	1583	1774	2924	602	1774	2904	619
Grp Volume(v), veh/h	137	0	406	260	416	543	75	360	359	396	492	487
Grp Sat Flow(s), veh/h/ln	1774	0	1780	1774	1863	1583	1774	1770	1757	1774	1770	1754
Q Serve(g_s), s	6.5	0.0	25.1	12.0	23.0	30.3	3.5	22.7	22.9	18.7	29.6	29.6
Cycle Q Clear(g_c), s	6.5	0.0	25.1	12.0	23.0	30.3	3.5	22.7	22.9	18.7	29.6	29.6
Prop In Lane	1.00		0.26	1.00		1.00	1.00		0.34	1.00		0.35
Lane Grp Cap(c), veh/h	300	0	519	318	621	818	272	457	454	435	634	628
V/C Ratio(X)	0.46	0.00	0.78	0.82	0.67	0.66	0.28	0.79	0.79	0.91	0.78	0.78
Avail Cap(c_a), veh/h	300	0	519	318	621	818	272	457	454	435	634	628
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.0	0.0	39.0	29.1	34.3	21.3	28.6	41.4	41.5	26.7	34.2	34.2
Incr Delay (d2), s/veh	4.9	0.0	11.2	20.4	5.7	4.2	2.5	12.9	13.2	25.7	9.0	9.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	3.6	0.0	13.9	4.6	12.8	14.1	1.9	12.7	12.7	12.1	16.1	15.9
LnGrp Delay(d), s/veh	34.0	0.0	50.2	49.6	40.0	25.6	31.2	54.3	54.6	52.4	43.2	43.3
LnGrp LOS	C		D	D	D	C	C	D	D	D	D	D
Approach Vol, veh/h		543			1219			794			1375	
Approach Delay, s/veh		46.1			35.6			52.3			45.9	
Approach LOS		D			D			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.0	45.0	27.0	36.0	17.0	40.0	15.0	48.0				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	7.0	40.0	22.0	31.0	12.0	35.0	10.0	43.0				
Max Q Clear Time (g_c+I1), s	8.5	32.3	20.7	24.9	14.0	27.1	5.5	31.6				
Green Ext Time (p_c), s	0.0	2.7	0.2	2.0	0.0	1.3	0.0	4.2				
Intersection Summary												
HCM 2010 Ctrl Delay			44.0									
HCM 2010 LOS			D									



2019
POTENTIAL TURN
LANE WIDENING

CONCEPT IMPROVEMENTS - 1A (ABBREV.)
US 42 & INDUSTRIAL PARKWAY (CR 1)





2019
POTENTIAL TURN
LANE WIDENING

CONCEPT IMPROVEMENTS - 1B (FULL)
US 42 & INDUSTRIAL PARKWAY (CR 1)





Zoning & Subdivision Committee

Thursday, February 14, 2019

The Zoning and Subdivision Committee met in regular session on Thursday, February 14, 2019 at 12:30 pm at the LUC East Liberty Office.

Zoning & Subdivision Committee Members were in attendance as follows: Brad Bodenmiller, Tyler Bumbalough, Scott Coleman, Wes Dodds, Chad Flowers, Charles Hall, Mark Mowery for Steve McCall, Heather Martin, Bill Narducci, Tammy Noble for Vince Papsidero, Jeff Stauch and Andy Yoder. Absent member was Tom Scheiderer.

Guests included: Mark Spagnuolo, Jerome Township; Justin Wollenberg, Terrain Evolution; Jim Butler, Darby Township; Dennis Blumenschein, Darby Township; Adam Moore, City of Urbana; Laura MacGregor, Comek Law LLC; Tim Notestine, City of Bellefontaine; Dave Faulkner, Champaign County Commissioners; Tom Carmody, LSC; Jay McIntire, Encore Living; John Bayliss, Logan County Commissioners.

Scott Coleman chaired the Zoning & Subdivision Committee Meeting.

Andy Yoder moved a motion to approve the minutes from the January 10, 2019 meeting as written and Wes Dodds seconded. All in favor.

1. Glacier Pointe Section 2 Preliminary Plat (Union County) – Staff Report by Brad Bodenmiller
 - Scott Coleman asked about the interior of the plat and if that was included in the open space?
 - Justin Wollenberg responded it was not.
 - Charles Hall – On the interim section, is there only one entrance?
 - Justin Wollenberg – No, there's one on each section so when developed there are multiple entrances.
 - Tammy Noble – Have we typically reduced right of way?
 - Bill Narducci – We've done it in Jerome Village and issued a blanket variance. The right-of-way variance is only for the local roads.
 - Tyler Bumbalough – The future roadways that are shown, are those already right-of-way for the county? Or just land reserved for the roads?
 - Bill Narducci – They will be future dedicated; we didn't want to lock ourselves into that alignment; it's yet to be determined but the developer is committed to dedicating something in that area.
 - Charles Hall moved a motion to recommend approval of the Glacier Pointe Section 2 Preliminary Plat in accordance with the staff report with all the conditions contained in the report and Bill Narducci seconded. All in favor.



2. Review of Darby Township Zoning Parcel Amendment (Union County) – Staff

Report by Brad Bodenmiller

- When asked if the township had any comments, Jim Butler responded they were here just to observe.
- Laura MacGregor – I don't know how much what I say is going to matter but I feel like it will give you the opportunity to do good. I appreciate how this happens. There's a macro application to plans and areas. I want to relay some context. The staff report does not relay the proper context of what we want to do. The comp plan doesn't talk about overlays. There's a principal that industrial and residential should be separated. What we want to do is try to put one single family residence, for the gentleman who owns the property. He has his business on the property. It's just one house. From the rural perspective, you hear all kinds of things about theft on the farms. He has an issue there. He has a large farm. He has a very active business. He's a repairman. He's doing a permitted industrial use there. The structure is existing, we want to make it a single-family residence. I'm not sure the presented information presents enough information to decide that. This report is just saying I've never seen this so it should be denied. It's not even common place to do a PUD. I can make this such a narrowly tailored request, so I get what this gentleman needs. I think to deny it because of the format is wrong. There's nothing wrong with the staff report. It sounds horrible but it's just that house; a lot of these people live and work the land around here. I also have letters of supports from all of these folks.
- Charles Hall asked if that property is any part of Kavanaugh. Looking at the overhead view
 - Jim Butler – Cabinet rails leases those properties and it's zoned industrial. There were two truck drivers that were parking trailers there. The other property with the other residence on it, back in the 1890 and 1910's, was the owner of the mill before zoning was in place. After it was Mr. Latham sold the property, the land was split, it retained a grandfather clause of the AI to go with the other property; the proposed house sets five feet outside the right of way, and it doesn't meet the square footage of our zoning.
 - Charles asked about the proposed house.
 - Jim Butler – I haven't entered in the building. It's an old building. There are no permits, so I don't know the status.
 - Tammy Noble – So it's under square footage?
 - Jim Butler – Yes. He gave an explanation of the layout of the building.
 - Tammy Noble - does the township have home occupation?
 - Jim Butler – Yes, within the boundaries of the home.
 - Scott Coleman – I'm not familiar with the planned overlay district, is anyone else?



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Director: Bradley J. Bodenmiller

- Brad provided an explanation of overlay districts and the difference between PUDs and overlays.
 - Charles Hall – What is that piece of property zoned?
 - Jim Butler – It's zoned light industry; gas stations, warehousing, light manufacturing, automotive repair; that activity is permitted in that zoning. The overlay would be a section of the property for boundaries for the residence.
 - Charles Hall – Is that in place?
 - Jim Butler – No.
 - Scott Coleman – Is there any other possible existing way to request the change?
 - Tyler Bumbalough – Conditional use.
 - Laura MacGregor – It's not actually in their zoning resolution to have residential as a conditional use. I want to keep it exactly as it is with just having residential. He wants to live there. Some industrial codes have something called a man guard shack where one residence was allowed for safety. It's not unusual to have one. The overlay allows me to ask for exactly what I want. It's pretty interesting. The benefit is I can do it right now and get the preliminary approvals. It allowed me to be responsive to the township and tailor what we want.
 - Tyler Bumbalough - I can see a problem with the house just south of there, if that house burnt down, I don't think they could just rebuild the house. I don't think they could rebuild it without conditional use permitting them to do that. Why couldn't they allow a conditional use?
 - Laura MacGregor - Because they're a township and they can't do that because of their current code.
 - Tammy Noble – He's proposing the township rewrite the code to allow this.
 - Laura MacGregor – I just don't know how much time I have to go through the process.
 - Charles Hall – I think it's in the township's best interest to do what they want; if we deny it, it still falls back on the township to do what they think is the best to do.
 - Wes Dodds – Does the township code allow the use of an overlay?
 - Laura MacGregor – Ohio allows it.
 - Charles Hall moved a motion to recommend denial of the Darby Township Zoning Parcel Amendment in accordance with the staff report and comments from committee members who felt it's an issue best addressed by the township and Tammy Noble seconded. All in favor with Tammy Noble voting No.
3. Review of Jerome Township Zoning Parcel Amendment (Union County) – Staff Report by Brad Bodenmiller
- Tammy Noble – Is the golf course providing open space?

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Director: Bradley J. Bodenmiller

- Brad Bodenmiller – It is unusual; the township comprehensive plan doesn't define open space, but it already depicts the golf course and the Metro Park as open space. Brad further explained what the plan says.
- Tammy Noble – It's open space that's not part of their development?
 - Brad Bodenmiller – Correct, but it will be.
 - Laura MacGregor – That's not accurate. The area, the land that we're preserving will remain open space; we decided to keep the golf course. It's part of our development and we're committed to keeping it as that. It could go away but we're keeping it. There's more than 20% open space that's internal. Jerome Township requires 20% open space and we've provided 40%.
- Scott Coleman – Is the developer going to have an easement?
 - Laura MacGregor – Yes; it's a joint venture with the golf course.
- Tammy Noble – Are they part of this application?
 - Laura MacGregor – Correct.
- Chad Flowers – Is this an 18-hole golf course?
 - Laura MacGregor – Yes.
- Charles Hall – Who's maintaining control of the golf course?
 - Laura MacGregor – It's a joint venture between the owner and the golf course. We're going to think through those recommendations by the staff report.
- Charles Hall – I heard the golf course is in trouble and it's proven right by this development.
 - Laura MacGregor – I don't have any facts.
- Bill Narducci – I understand why it's being done but the 10 or 12 access drives along Crottinger, we are not in favor of that. From an access management standpoint, we look at common access drives as a last resort. We have an example of this with a newer development. We might look to do it differently. I understand why but from the Engineer's office, it's not something we want to promote.
- Charles Hall – Access in two points on Crottinger Road and one on Industrial Parkway.
- Wes Dodds moved a motion to recommend approval with modifications of the Jerome Township Zoning Parcel Amendment in accordance with the staff report and comments from committee members and Charles Hall seconded. All in favor.

The Zoning and Subdivision Committee adjourned at 1:17 pm with Andy Yoder moving a motion to adjourn and Wes Dodds seconding. All in favor.

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