CITY OF Salem AT YOUR SERVICE

LAND USE APPLICATION

Application Type: Subdivision/Adjustment

APPLICANT INFORMATION

(Check one box below for designated contact person regarding this application)

☐ Applicant Name: Julie A. Singer — Daytime Phone: 503-581-7930
Mailing Address: 5450 Zena Rd NW — Fax Number:
City/State: Salem, OR — Zip: 97304 — Email: Jasluxstockus@yahoo.com

■ Agent: Brandie Dalton, Land-Use Planner — Daytime Phone: 503-363-9227
Mailing Address: 1155 13th Street SE — Fax Number:
City/State: Salem/OR — Zip: 97302 — Email:

PROPERTY INFORMATION

Reed Road		083W11D/TL100, 200, 400, 601 083128/TL1600
(Street Address or Location of Subject Property)	(Total Size of Subject Property)	(Assessor Tax Lot Numbers)
Vacant	RA	'Developing Res'
(Existing Use, Structures, and/or Other Improvements On Site)	(Zoning)	(Comp Plan Designation)

PROPOSED PROJECT INFORMATION

Subdivision
(Describe the Proposed Use or Development of Subject Property)

NEIGHBORHOOD ASSOCIATION: **CONTACTED?** ☐ Yes ■ No

The City of Salem recognizes, values, and supports the involvement of residents in land use decisions affecting neighborhoods across the city and strongly encourages anyone requesting approval for any land use proposal to contact the affected neighborhood association(s) as early in the process as possible.

(Describe Contact with the Affected Neighborhood Association) — Date Contacted

SALEM – KEIZER TRANSIT CONTACTED? ☐ Yes ■ No

(Describe Contact with Salem – Keizer Transit) — Date Contacted

AUTHORIZATION BY PROPERTY OWNER(s) / APPLICANT

**If the applicant and/or property owner is a Limited Liability Company (LLC), please also provide a list of all members of the LLC with your land use application.*

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Julie A. Singer — Julie A. Singer — 7/9/18
(Signature) (Print Name) (Date)

5450 Zena Rd NW Salem, OR 97304
(Address - Include Zip)

(Signature) (Print Name) (Date)

(Address - Include Zip)

STAFF USE ONLY • DO NOT WRITE BELOW • STAFF USE ONLY

Received By: sally long — Date: 5-17-19 — Receipt No. 19-111656-LD & 19-111658-ZO

LAND USE APPLICATION

Application Type: Subdivision/Adjustment

APPLICANT INFORMATION

(Check one box below for designated contact person regarding this application)

☐ Applicant Name: Boulder Hill LLC / Robert Nunn — Daytime Phone: 503.704-7584

Mailing Address: 0841 Gaines St #606 — Fax Number:

City/State: Portland — Zip: 97239 — Email: robert@robertnunn.com

■ Agent: Brandie Dalton, Land-Use Planner — Daytime Phone: 503-363-9227

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City/State: Salem/OR — Zip: 97302 — Email:

PROPERTY INFORMATION

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Vacant	RA	'Developing Res'
(Existing Use, Structures, and/or Other Improvements On Site)	(Zoning)	(Comp Plan Designation)

PROPOSED PROJECT INFORMATION

Subdivision

(Describe the Proposed Use or Development of Subject Property)

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Boulder Hill LLC by Robert Nunn, MANAGER — ROBERT NUNN — 9 July 2018

(Signature) (Print Name) (Date)

0841 SW GAINES ST. #606 PORTLAND OR 97239

(Address - Include Zip)

_____ _____ _____

(Signature) (Print Name) (Date)

_____

(Address - Include Zip)

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PROPERTY INFORMATION

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(Street Address or Location of Subject Property)	(Total Size of Subject Property)	(Assessor Tax Lot Numbers)
Vacant	RA	'Developing Res'
(Existing Use, Structures, and/or Other Improvements On Site)	(Zoning)	(Comp Plan Designation)

PROPOSED PROJECT INFORMATION

Subdivision

(Describe the Proposed Use or Development of Subject Property)

NEIGHBORHOOD ASSOCIATION: _____ **CONTACTED?** ☐ Yes ■ No

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PROPOSED PROJECT INFORMATION

Subdivision

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(Address - Include Zip)

STAFF USE ONLY - DO NOT WRITE BELOW - STAFF USE ONLY

Received By: Date: Receipt No.

Fidelity National Title Company
500 Liberty St. Ste #200, Salem, OR 97301
Phone: 503-585-7219 Fax: 503-585-0326
E-mail Customer Service at: customerservicesalem@fnf.com

MARION COUNTY PROPERTY PROFILE INFORMATION

Parcel #:	R32158
Ref Parcel #:	083W11D 00601
Owner:	**Boulder Hill LLC**
CoOwner:	
Owner Phone:	
Site:	
	Salem OR 97000
Mail:	1000 Broadway SW #1400 Portland OR 97205
Plat:	
Twn/Rng/Sec:	T: 08S R: 03W S: 11 Q: SE QQ:
Legal:	ACRES 1.45
School Dist:	24J SALEM-KEIZER
Zoning:	RA Residential Agriculture
Land Use:	540 - Specially assessed farm land, land only, not EFU, SA, FT, UTF zoning
Std Land Use:	VAGR - VACANT AGRICULTURE/RURAL

ASSESSMENT & TAX INFORMATION

Market Total:	**$1,060**
Market Land:	**$1,060**
Market Impr:	**$0**
Exemption:	**$0**
2017 Taxes:	**$19.58**
Levy Code:	92401000
Millage Rate:	18.4669
Assd Total:	$1,060

SALE & LOAN INFORMATION

Sale Date:	5/29/2002
Sale Amount:	$0
Document #:	1950-0327
Deed Type:	Grant Deed
Loan Amount:	$0
Lender:	
Loan Type:	
Interest Type:	
Title Co:	

PROPERTY CHARACTERISTICS

Year Built:	0
Bedrooms:	0
Bathrooms:	0.00
Fin Area:	0 SF
Unfin Area:	0 SF
Main Floor:	0 SF
Second Floor:	0 SF
Attic:	0 SF
Bsmt Unfin:	0 SF
Bsmt Fin:	0 SF
Lot Size:	1.45 acres (63,162 SF)
Garage:	Attached
Census:	3072 001000
Lot/Block:	/
Neighborhood:	
Watershed:	Chehalem Creek-Willamette River

Fidelity National Title Company
500 Liberty St. Ste #200, Salem, OR 97301
Phone: 503-585-7219 Fax: 503-585-0326
E-mail Customer Service at: customerservicesalem@fnf.com

MARION COUNTY PROPERTY PROFILE INFORMATION

Parcel #:	R32163
Ref Parcel #:	083W11D 00200
Owner:	**Boulder Hill LLC**
CoOwner:	
Owner Phone:	
Site:	
	Salem OR 97000
Mail:	1000 Broadway SW #1400 Portland OR 97205
Plat:	
Twn/Rng/Sec:	T: 08S R: 03W S: 11 Q: SE QQ:
Legal:	ACRES 9.65
School Dist:	24J SALEM-KEIZER
Zoning:	RA Residential Agriculture
Land Use:	540 - Specially assessed farm land, land only, not EFU, SA, FT, UTF zoning
Std Land Use:	VAGR - VACANT AGRICULTURE/RURAL

ASSESSMENT & TAX INFORMATION

Market Total:	**$9,250**
Market Land:	**$9,250**
Market Impr:	**$0**
Exemption:	**$0**
2017 Taxes:	**$170.81**
Levy Code:	92401000
Millage Rate:	18.4669
Assd Total:	$9,250

SALE & LOAN INFORMATION

Sale Date:	5/29/2002
Sale Amount:	$0
Document #:	1950-0327
Deed Type:	Grant Deed
Loan Amount:	$0
Lender:	
Loan Type:	
Interest Type:	
Title Co:	

PROPERTY CHARACTERISTICS

Year Built:	0
Bedrooms:	0
Bathrooms:	0.00
Fin Area:	0 SF
Unfin Area:	0 SF
Main Floor:	0 SF
Second Floor:	0 SF
Attic:	0 SF
Bsmt Unfin:	0 SF
Bsmt Fin:	0 SF
Lot Size:	9.65 acres (420,354 SF)
Garage:	Attached
Census:	3072 001000
Lot/Block:	/
Neighborhood:	
Watershed:	Chehalem Creek-Willamette River

Fidelity National Title Company
500 Liberty St. Ste #200, Salem, OR 97301
Phone: 503-585-7219 Fax: 503-585-0326
E-mail Customer Service at: customerservicesalem@fnf.com

MARION COUNTY PROPERTY PROFILE INFORMATION

Parcel #:	R32164
Ref Parcel #:	083W11D 00100
Owner:	**Boulder Hill LLC**
CoOwner:	
Owner Phone:	
Site:	
	Salem OR 97000
Mail:	1000 Broadway SW #1400 Portland OR 97205
Plat:	
Twn/Rng/Sec:	T: 08S R: 03W S: 11 Q: SE QQ:
Legal:	ACRES 19.68
School Dist:	24J SALEM-KEIZER
Zoning:	RA Residential Agriculture
Land Use:	540 - Specially assessed farm land, land only, not EFU, SA, FT, UTF zoning
Std Land Use:	VAGR - VACANT AGRICULTURE/RURAL

ASSESSMENT & TAX INFORMATION

Market Total:	**$13,350**
Market Land:	**$13,350**
Market Impr:	**$0**
Exemption:	**$0**
2017 Taxes:	**$246.51**
Levy Code:	92401000
Millage Rate:	18.4669
Assd Total:	$13,350

SALE & LOAN INFORMATION

Sale Date:	5/29/2002
Sale Amount:	$0
Document #:	1950-0327
Deed Type:	Grant Deed
Loan Amount:	$0
Lender:	
Loan Type:	
Interest Type:	
Title Co:	

PROPERTY CHARACTERISTICS

Year Built:	0
Bedrooms:	0
Bathrooms:	0.00
Fin Area:	0 SF
Unfin Area:	0 SF
Main Floor:	0 SF
Second Floor:	0 SF
Attic:	0 SF
Bsmt Unfin:	0 SF
Bsmt Fin:	0 SF
Lot Size:	19.68 acres (857,261 SF)
Garage:	Attached
Census:	3072 001000
Lot/Block:	/
Neighborhood:	
Watershed:	Chehalem Creek-Willamette River

UNTIL FURTHER NOTICE, SEND ALL TAX STATEMENTS TO:
Boulder Hill LLC
Robert W. Nunn, Manager
1000 SW Broadway, Suite 1400
Portland, OR 97205-3089

REEL 1950 PAGE 327

AFTER COMPLETING RECORDING, RETURN THIS DOCUMENT TO:
Evans, Freeby & Jennings, LLP
Attorneys at Law
280 Court St. NE
Salem, OR 97301

BARGAIN AND SALE DEED

ROBERT W. NUNN, Trustee under the EVELYN M. COBURN LIVING TRUST, dated March 15, 1995, GRANTOR

Conveys to

BOULDER HILL LLC, an Oregon Manager-Managed Limited Liability Company GRANTEE

All the following real property situated in Marion County, State of Oregon, specifically described on Exhibit "A" hereto and by this reference incorporated herein, generally described as: Tax Lot 100, Tax Account No. R32164; Tax Lot 200, Tax Account No. R32163, and Tax Lot 601, Tax Account No. R32158.

The true and actual consideration for this transfer is other than money.

THIS INSTRUMENT WILL NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY APPROVED USES AND TO DETERMINE ANY LIMITS ON LAWSUITS AGAINST FARMING OR FOREST PRACTICES AS DEFINED IN ORS 30.930.

Dated this 23rd day of May, 2002.

GRANTOR
Evelyn M. Coburn Living Trust, dated March 15, 1995

By: Robert W. Nunn, Trustee

STATE OF OREGON, County of Marion) ss.

Personally appeared before me this 23rd day of May, 2002, Robert W. Nunn, as Trustee and acknowledged the foregoing instrument to be his voluntary act.

OFFICIAL SEAL
JAIME LYNNE TREMBLY
NOTARY PUBLIC - OREGON
COMMISSION NO. A322597
MY COMMISSION EXPIRES APR 18, 2003

Jaime Lynne Trembly
Notary Public for Oregon
My Commission Expires: 4/18/03

MAY 29 2002

EXHIBIT A

LEGAL DESCRIPTION
Map 8S-3W-11D; Tax Lots 100, 200, and 601:

Tax Lot 100
Account No. R32164

Beginning at the Northeast corner of the Southeast Quarter of Section 11, Township 8 South, Range 3 West of the Willamette Meridian in Marion County, Oregon; thence South 0° 30' West along the East line of said Section, a distance of 929.74 feet, more or less, to the North line of that tract of land described in Document No. 116205 Circuit Court Journal for Marion County; thence westerly along the North line of said tract, a distance of 125.00 feet; thence South 0° 30' West parallel with the East line of said Section 11, a distance of 303.27 feet to a point on the northerly line of that tract of land conveyed to Kathryn L. Young, Linda S. Schaeffers and Robert W. Nunn by deed recorded in Reel 1021, Page 231, Deed Records for Marion County, Oregon; thence South 67° 30' West along said northerly line a distance of 398.72 feet to the Northwest corner thereof; thence South 14° 34' 00" East 370.20 feet to the Southwest corner of said tract; thence North 89° 47' 36" West 51.83 feet to the Southeast corner of that tract of land conveyed to Dale E. Christison and Darlene A. Christison by deed recorded in Reel 76, Page 282, Deed Records for Marion County, Oregon; thence North 14° 34' 00" West along the easterly line of said Christison tract, a distance of 350.00 feet to the Northeast corner thereof; thence South 67° 30; 00" West along the northerly line of said Christison tract, a distance of 131.77 feet to a point which is 660.00 feet West of the East line of said Section 11, thence North 0° 30' East parallel with the East line of said Section 11, a distance of 1454.12 feet to a point on the North line of the Southeast Quarter of said Section 11; thence easterly along said North line, a distance of 660.00 feet to the point of beginning.

Contains 19.57 acres of land, more or less.

****

Tax Lot 200
Tax Account No. R32163

Beginning 10 chains West of the Northeast corner of the Southeast quarter of Section 11 in Township 8 South, Range 3 West of the Willamette Meridian in Marion County, State of Oregon, and running thence South 26.62 chains; thence North 23°45' West 9.68 chains; thence North 50°45' West 4.80 chains; thence North 15° East 16.60 chains; thence East 3.35 chains to the place of beginning in Section 11, Township 8 South, Range 3 West of the Willamette Meridian in Marion County, Oregon.

SAVE AND EXCEPT: Beginning in the center of a County Road at a point which is North 89°49' West 315.48 feet and North 22°30' West 876.91 feet from the Southeast corner of Section 11 in Township 8 South, Range 3 West of the Willamette Meridian in Marion County, Oregon; thence North 67°30' East 232.90 feet; thence North 14°34' West 350.00 feet; thence South 67°30' West 281.20 feet to the center of said County Road; thence South 22°30' East along the center of said County Road 346.50 feet to the place of beginning.

SAVE AND EXCEPT: Beginning at the point of intersection of the Northerly line of County Road No. 839 (commonly known as Battle Creek Rd.) and the Easterly line of Market Road No. 25 (commonly known as Reed Road) and being in the Southeast quarter of Section 11, Township 8 South, Range 3 West, of the Willamette Meridian, Marion County, Oregon; thence South 88°11'34" East 30.00 feet along the Northerly line of said County Road No. 839 to a point; thence North 13°09'17" West 51.01 feet to a point on the Easterly line of said Market Road No. 25; thence South 14°53'45" West 27.00 feet along said Easterly line to the point of beginning.

SAVE AND EXCEPT that portion of the premises herein described lying within the limits of roads, streets and highways

Tax Lot 601
Tax Account No. R32158

Beginning at the Southeast corner of that tract of land conveyed to Kathryn L. Young, Linda S. Schaeffers and Robert W. Nunn by deed recorded in Reel 1021, Page 231, Deed Records for Marion County, Oregon which point is recorded as being North 0° 30' East 1064.65 feet from the Southeast corner of Section 11 in Township 8 South, Range 3 West of the Willamette Meridian in Marion County, Oregon; thence South 0° 30' West along the East line of said Section 11, a distance of 208.73 feet, more or less, to a point on the northerly right-of-way line of Kuebler Boulevard; thence South 69° 58' 53" West along the northerly right-of-way line, a distance of 24.48 feet, more or less, to an angle point in said right-of-way line; thence South 63° 02' 05" West along said right-of-way line a distance of 102.74 feet to an angle point in said right-of-way line; thence South 54° 40' 44" West along said right-of-way line a distance of 167.14 feet to the Southeast corner of that tract of land conveyed to Bernard F. Bednarz and Miriam L. Bednarz, husband and wife, by deed recorded in Volume 681, Page 328, Deed Records for Marion County, Oregon; thence North 14° 34' West along the East line of said Bednarz tract, a distance of 222.00 feet to the Northeast corner thereof; thence North 67° 30' East along the southerly line of said tract described in Reel 1021, Page 231, Deed Records, a distance of 345.77 feet to the point of beginning.

Contains 1.44 acres of land, more or less.

REEL:1950 **PAGE: 327**

May 29, 2002, 02:46 pm.

CONTROL #: 59651

State of Oregon
County of Marion

I hereby certify that the attached instrument was received and duly recorded by me in Marion County records:

FEE: $ 36.00

ALAN H DAVIDSON
COUNTY CLERK

THIS IS NOT AN INVOICE.

Fidelity National Title Company
500 Liberty St. Ste #200, Salem, OR 97301
Phone: 503-585-7219 Fax: 503-585-0326
E-mail Customer Service at: customerservicesalem@fnf.com

MARION COUNTY PROPERTY PROFILE INFORMATION

Parcel #:	R32162
Ref Parcel #:	083W11D 00400
Owner:	**Pringle Creek LLC**
CoOwner:	**Sheep Trail LLC**
Owner Phone:	
Site:	
	Salem OR 97000
Mail:	0841 SW Gaines St #606 Portland OR 97239
Plat:	
Twn/Rng/Sec:	T: 08S R: 03W S: 11 Q: SE QQ:
Legal:	ACRES 4.09
School Dist:	24J SALEM-KEIZER
Zoning:	RA Residential Agriculture
Land Use:	540 - Specially assessed farm land, land only, not EFU, SA, FT, UTF zoning
Std Land Use:	VAGR - VACANT AGRICULTURE/RURAL

ASSESSMENT & TAX INFORMATION

Market Total:	**$2,770**
Market Land:	**$2,770**
Market Impr:	**$0**
Exemption:	**$0**
2017 Taxes:	**$51.17**
Levy Code:	92401000
Millage Rate:	18.4669
Assd Total:	$2,770

SALE & LOAN INFORMATION

Sale Date:	5/7/2014
Sale Amount:	$0
Document #:	3602-0267
Deed Type:	Warranty Deed
Loan Amount:	$0
Lender:	
Loan Type:	
Interest Type:	
Title Co:	FIRST AMERICAN TITLE

PROPERTY CHARACTERISTICS

Year Built:	0
Bedrooms:	0
Bathrooms:	0.00
Fin Area:	0 SF
Unfin Area:	0 SF
Main Floor:	0 SF
Second Floor:	0 SF
Attic:	0 SF
Bsmt Unfin:	0 SF
Bsmt Fin:	0 SF
Lot Size:	4.09 acres (178,160 SF)
Garage:	Attached
Census:	3072 001000
Lot/Block:	/
Neighborhood:	
Watershed:	Chehalem Creek-Willamette River

REEL 3602 PAGE 267
MARION COUNTY
BILL BURGESS, COUNTY CLERK
05-07-2014 11:26 am.
Control Number 360612 $ 56.00
Instrument 2014 00014761

After recording return to:

Robert W. Nunn
Sussman Shank LLP
Suite 1400
1000 SW Broadway
Portland, OR 97205-3089

Send all tax statements to:

Robert W. Nunn
0841 SW Gaines Street, Unit 606
Portland, OR 97239

FATCO 5-2014

WARRANTY DEED

Linda S. Schaefers, Grantor, conveys and warrants to Margalou LLC, an Oregon limited liability company, Grantee, all of Grantor's tenant in common interest in the real property described on Exhibit A.

The liability and obligations of Grantor to Grantee and Grantee's heirs and assigns under the warranties and covenants contained herein or provided by law are limited to the amount, nature, and terms of any right or indemnification available to Grantor under any title insurance policy. Grantor has no liability or obligation except to the extent that reimbursement for such liability or obligation is available to Grantor under a title insurance policy.

The property is free of encumbrances except (a) as specifically set forth herein, (b) encumbrances ascertainable from viewing the property, and (c) encumbrances, covenants, conditions, restrictions, and easements of record.

The true and actual consideration for this transfer is $-0- and consists of or includes other property or other value given or promised.

BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON TRANSFERRING FEE TITLE SHOULD INQUIRE ABOUT THE PERSON'S RIGHTS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010. THIS INSTRUMENT DOES NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY THAT THE UNIT OF LAND BEING TRANSFERRED IS A LAWFULLY ESTABLISHED LOT OR PARCEL, AS DEFINED IN ORS 92.010 OR

215.010, TO VERIFY THE APPROVED USES OF THE LOT OR PARCEL, TO DETERMINE ANY LIMITS ON LAWSUITS AGAINST FARMING OR FOREST PRACTICES, AS DEFINED IN ORS 30.930, AND TO INQUIRE ABOUT THE RIGHTS OF NEIGHBORING PROPERTY OWNERS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010.

DATED this 27th day of November, 2013.

GRANTOR:

Linda S. Schaefers

Linda S. Schaefers

STATE OF OREGON)
) ss.
County of Linn)

This instrument was acknowledged before me on November 27th, 2013 by Linda S. Schaefers.

Electra L. Wisegarver

NOTARY PUBLIC FOR OREGON
My Commission Expires: October 28 2015

15923-002\MARGALOU LLC WARRANTY DEED (01722700);1

OFFICIAL SEAL
Electra L. Wisegarver
NOTARY PUBLIC - OREGON
Commission No. 462691
MY COMMISSION EXPIRES October 28, 2015

Exhibit A

Beginning at a point which is 315.48 feet N. 89° 49' W. and 1223.41 feet N. 22° 30' W. and 301.80 feet N. 67° 30' E. from the Southeast corner of Section 11 in Township 8 South, Range 3 West of the Willamette Meridian In Marion County, Oregon; thence S. 14° 34' E. 370.20 feet; thence N. 67° 30' E. 429.93 feet to a point on the East line of said Section, which point is 1064.65 feet N. 0° 30' E. from the Southeast corner of said Section; thence N. 0° 30' E. along said East line 397.79 feet; thence S. 67° 30' W. 534.60 feet to the place of beginning and containing 4.07 acres of land.

Together with an easement for road and right-of-way purposes over the following described parcel, beginning at a point which is located North 89° 49' West 315.48 feet and North 22° 30' West 1,223.41 feet and North 67° 30' East 30.00 feet from the Southeast comer of Section 11, Township 8 South, Range 3 West of the Willamette Meridian, Marion County. Oregon;

Thence from said point of beginning continuing North 67° 30' East 351.80 feet to a point on the northerly line of a tract of land described in Deed Book 469, page 411 of Marion County Deed Records;

Thence North 22° 30' West 50.00 feet to a point;

Thence South 67°30' West 351.80 feet to a point on the easterly right-of-way line of Battle Creek Road (Market Road No. 25);

Thence South 22° 30' East along said easterly right-of-way line 50.00 feet to the point of beginning.

REEL: 3602 **PAGE: 267**

May 07, 2014, 11:26 am.

CONTROL #: 360612

State of Oregon
County of Marion

I hereby certify that the attached instrument was received and duly recorded by me in Marion County records:

FEE: $ 56.00

BILL BURGESS
COUNTY CLERK

THIS IS NOT AN INVOICE.

Fidelity National Title Company
500 Liberty St. Ste #200, Salem, OR 97301
Phone: 503-585-7219 Fax: 503-585-0326
E-mail Customer Service at: customerservicesalem@fnf.com

MARION COUNTY PROPERTY PROFILE INFORMATION

Parcel #:	R32212
Ref Parcel #:	083W12B 01600
Owner:	**Battle Creek LLC**
CoOwner:	**C/O Julie A Singer**
Owner Phone:	
Site:	
	Salem OR 97000
Mail:	5450 Zena Rd NW Salem OR 97304
Plat:	
Twn/Rng/Sec:	T: 08S R: 03W S: 12 Q: NW QQ:
Legal:	ACRES 17.69
School Dist:	24J SALEM-KEIZER
Zoning:	RA Residential Agriculture
Land Use:	540 - Specially assessed farm land, land only, not EFU, SA, FT, UTF zoning
Std Land Use:	VAGR - VACANT AGRICULTURE/RURAL

ASSESSMENT & TAX INFORMATION

Market Total:	**$12,710**
Market Land:	**$12,710**
Market Impr:	**$0**
Exemption:	**$0**
2017 Taxes:	**$234.71**
Levy Code:	92401000
Millage Rate:	18.4669
Assd Total:	$12,710

SALE & LOAN INFORMATION

Sale Date:	2/4/2011
Sale Amount:	$0
Document #:	3257-0221
Deed Type:	Grant Deed
Loan Amount:	$0
Lender:	
Loan Type:	
Interest Type:	
Title Co:	FIRST AMERICAN TITLE

PROPERTY CHARACTERISTICS

Year Built:	0
Bedrooms:	0
Bathrooms:	0.00
Fin Area:	0 SF
Unfin Area:	0 SF
Main Floor:	0 SF
Second Floor:	0 SF
Attic:	0 SF
Bsmt Unfin:	0 SF
Bsmt Fin:	0 SF
Lot Size:	17.69 acres (770,576 SF)
Garage:	Attached
Census:	3072 001000
Lot/Block:	/
Neighborhood:	
Watershed:	Chehalem Creek-Willamette River

FATCO 1584124

Space above this line for Recorder's use.

After recording, return to:
Battle Creek, LLC
Attn Julie Singer
5450 Zena Road NW
Salem, Oregon 97304

Send tax statements to:
(same)

STATUTORY BARGAIN AND SALE DEED

The State of Oregon, acting by and through the Oregon Youth Authority, Grantor, conveys to Battle Creek, LLC, Grantee, the property described in the attached Exhibit A ("the Property") subject to the terms, conditions and reservations set forth below,

Reservation of Mineral Estate

Grantor excepts and reserves to itself, its successors and assigns all "minerals" as defined in ORS 273.775(1), including soil, clay, stone, sand and gravel, and all geothermal resources, as defined in ORS 273.775(2), together with the right to make such use of the surface as may be reasonably necessary for prospecting for, exploring for, mining, extracting, reinjecting, storing, drilling for, and removing, such minerals, materials and geothermal resources. In the event use of the Property by a surface rights owner would be damaged by one or more of the activities described above, then such owner shall be entitled to compensation from the state's lessee to the extent of the diminution in value of the real property, based on the actual use by the surface owner at the time the state's lessee conducts any of the above activities.

The true and actual consideration for the conveyance is the exchange of an equivalent parcel of land to be deeded to Grantor.

BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON TRANSFERRING FEE TITLE SHOULD INQUIRE ABOUT THE PERSON'S RIGHTS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, AND SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009. THIS INSTRUMENT DOES NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR

COUNTY PLANNING DEPARTMENT TO VERIFY THAT THE UNIT OF LAND BEING TRANSFERRED IS A LAWFULLY ESTABLISHED LOT OR PARCEL, AS DEFINED IN ORS 92.010 OR 215.010, TO VERIFY THE APPROVED USES OF THE LOT OR PARCEL, TO DETERMINE ANY LIMITS ON LAWSUITS AGAINST FARMING OR FOREST PRACTICES, AS DEFINED IN ORS 30.930, AND TO INQUIRE ABOUT THE RIGHTS OF NEIGHBORING PROPERTY OWNERS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, AND SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009.

Dated this 1 day of February 2011.

STATE OF OREGON, acting by and through its Oregon Youth Authority

By: _____
Colette S. Peters, Director

STATE OF OREGON)
) ss.
County of Marion)

On this 1st day of February, 2011, before me personally appeared Colette S. Peters, Director, who being duly sworn stated that she has the authority to sign the document as the Director of the Oregon Youth Authority, and acknowledged the foregoing instrument to be the voluntary act of the Oregon Youth Authority, and that he executed the foregoing instrument on behalf of said state agency, acting on behalf of the State of Oregon.

_____
NOTARY PUBLIC FOR OREGON
My commission Expires: 4/6/13

OFFICIAL SEAL
JEAN MARIE BERGEN
NOTARY PUBLIC - OREGON
COMMISSION NO. 437253
MY COMMISSION EXPIRES APR. 6, 2013

*Jean Marie Bergen

Exhibit A

Beginning at the ¼ Corner of section 11 and 12, township 8 South, Range 3 West, in the Willamette Meridian, City of Salem, Marion County, Oregon; thence North 00°25'53" East 395.00 feet; thence South 89°35'40" West 299.22 feet; thence South 00°25'53" East 395.00 feet; thence North 89°35'40" East 299.22 feet to the point of beginning. Containing 2.71 acres of land more or less.

REEL: 3257 **PAGE: 222**

February 04, 2011, 10:57 am.

CONTROL #: 288079

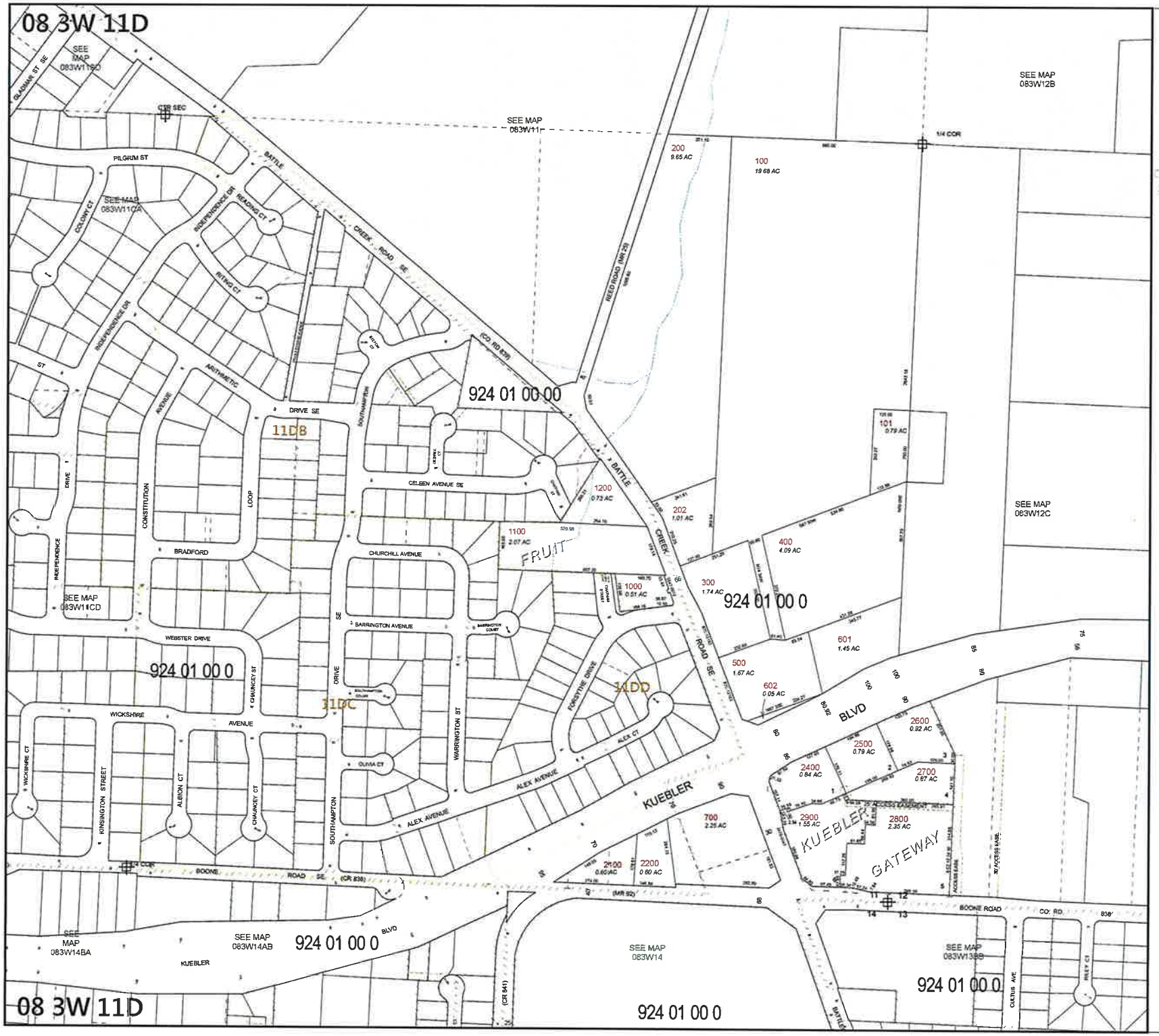
State of Oregon
County of Marion

I hereby certify that the attached instrument was received and duly recorded by me in Marion County records:

FEE: $ 51.00

BILL BURGESS
COUNTY CLERK

THIS IS NOT AN INVOICE.



08 3W 11D
SALEM

MARION COUNTY, OREGON
SE1/4 SEC11 T8S R3W W.M.
SCALE 1" = 200'

LEGEND

LINE TYPES

Taxlot Boundary	Historical Boundary
Road Right-of-Way	Easement
Railroad Right-of-Way	Railroad Centerline
Private Road ROW	Taxcode Line
Subdivision/Plat Bndry	Map Boundary
Waterline - Taxlot Bndry	Waterline - Non Bndry

CORNER TYPES

+ 1/16TH Section Cor.
1/4 Section Cor.
DLC Corner
16 15 Section Corner 21 22

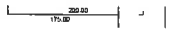
NUMBERS

Tax Code Number
000 00 00 0

Acreage 0.25 AC — All acres listed are Net Acres, excluding any portions of the taxlot within public ROWs

NOTES

Tick Marks: A tick mark in the road indicates that the labeled dimension extends into the public ROW



CANCELLED NUMBERS

201	1400	2302
301	1500	2303
501	1600	
502	1601	
600	1700	
603	1800	
700A1	1801	
701	1900	
702	1901	
703	2000	
800	2001	
801	2002	
900	2101	
901	2102	
902	2201	
1001	2300	
1300	2301	

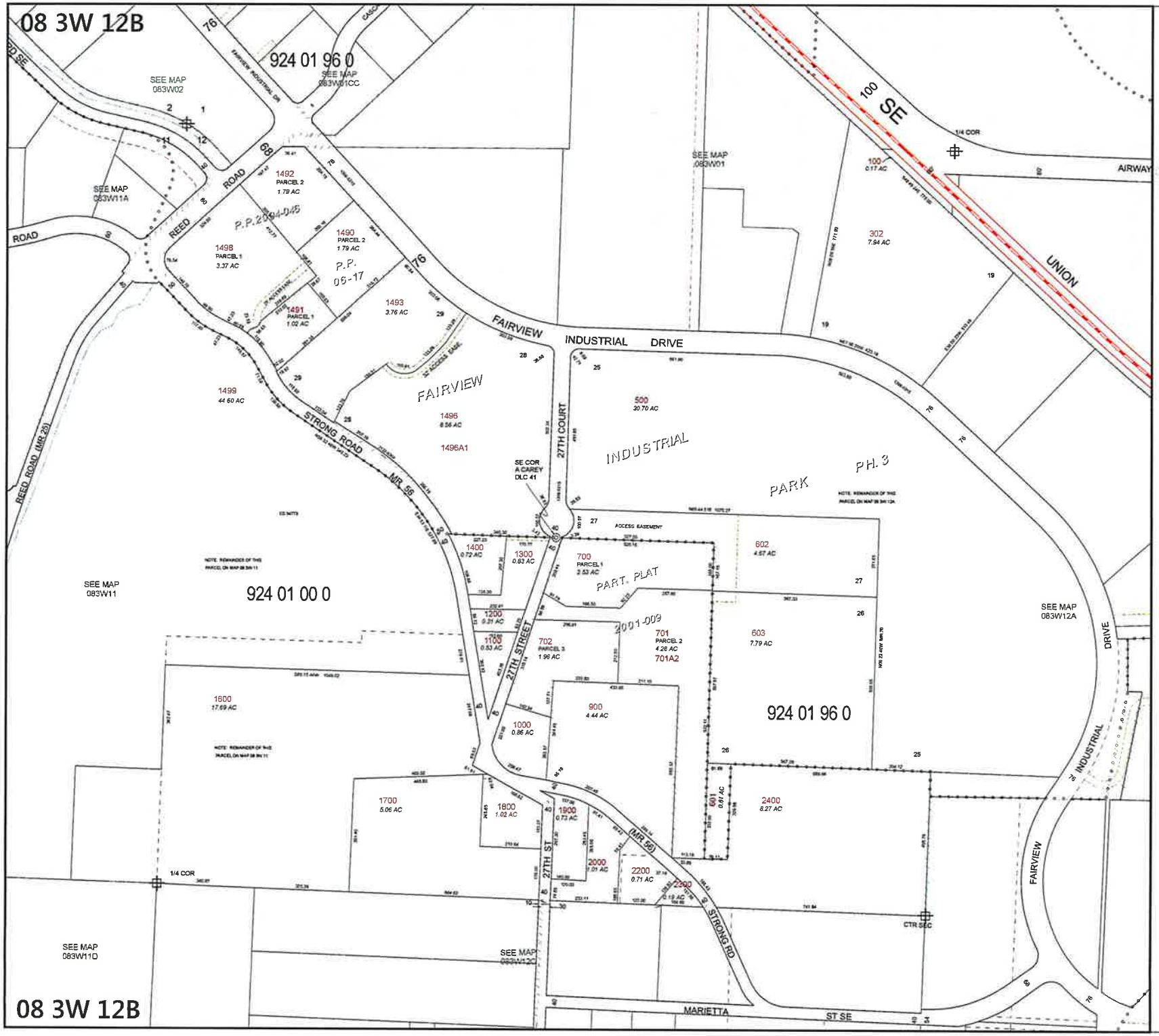
DISCLAIMER: THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSES ONLY

Assessors Office Cartography Dept

FOR ADDITIONAL MAPS VISIT OUR WEBSITE AT www.co.marion.or.us

PLOT DATE: 1/24/2018

SALEM
08 3W 11D



08 3W 12B
SALEM

MARION COUNTY, OREGON
NW1/4 SEC12 T8S R3W W.M.
SCALE 1" = 200'

LEGEND

LINE TYPES

Taxlot Boundary	Historical Boundary
Road Right-of-Way	Easement
Railroad Right-of-Way	Railroad Centerline
Private Road ROW	Taxcode Line
Subdivision/Plat Bndry	Map Boundary
Waterline - Taxlot Bndry	Waterline - Non Bndry

CORNER TYPES

+ 1/16TH Section Cor.
1/4 Section Cor.
DLC Corner
16 15 Section Corner 21 22

NUMBERS

Tax Code Number
000 00 00 0

Acreage
0.25 AC
All acres listed are Net Acres, excluding any portions of the taxlot within public ROWs

NOTES

Tick Marks: A tick mark in the road indicates that the labeled dimension extends into the public ROW

CANCELLED NUMBERS

200	1498A1
201	1498A2
202	1498A3
300	1500
301	1601
400	2100
401	
402	
501	
502	
503	
600	
700A1	
701A1	
800	
1494	
1497	

DISCLAIMER: THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSES ONLY

Assessors Office Cartography Dept

FOR ADDITIONAL MAPS VISIT OUR WEBSITE AT www.co.marion.or.us

PLOT DATE: 1/24/2018

SALEM
08 3W 12B

FATCO 1584124

Space above this line for Recorder's use.

After recording, return to:
Battle Creek, LLC
Attn Julie Singer
5450 Zena Road NW
Salem, Oregon 97304

Send tax statements to:
(same)

STATUTORY BARGAIN AND SALE DEED

The State of Oregon, acting by and through the Oregon Youth Authority, Grantor, conveys to Battle Creek, LLC, Grantee, the property described in the attached Exhibit A ("the Property") subject to the terms, conditions and reservations set forth below,

Reservation of Mineral Estate

Grantor excepts and reserves to itself, its successors and assigns all "minerals" as defined in ORS 273.775(1), including soil, clay, stone, sand and gravel, and all geothermal resources, as defined in ORS 273.775(2), together with the right to make such use of the surface as may be reasonably necessary for prospecting for, exploring for, mining, extracting, reinjecting, storing, drilling for, and removing, such minerals, materials and geothermal resources. In the event use of the Property by a surface rights owner would be damaged by one or more of the activities described above, then such owner shall be entitled to compensation from the state's lessee to the extent of the diminution in value of the real property, based on the actual use by the surface owner at the time the state's lessee conducts any of the above activities.

The true and actual consideration for the conveyance is the exchange of an equivalent parcel of land to be deeded to Grantor.

BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON TRANSFERRING FEE TITLE SHOULD INQUIRE ABOUT THE PERSON'S RIGHTS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, AND SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009. THIS INSTRUMENT DOES NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR

COUNTY PLANNING DEPARTMENT TO VERIFY THAT THE UNIT OF LAND BEING TRANSFERRED IS A LAWFULLY ESTABLISHED LOT OR PARCEL, AS DEFINED IN ORS 92.010 OR 215.010, TO VERIFY THE APPROVED USES OF THE LOT OR PARCEL, TO DETERMINE ANY LIMITS ON LAWSUITS AGAINST FARMING OR FOREST PRACTICES, AS DEFINED IN ORS 30.930, AND TO INQUIRE ABOUT THE RIGHTS OF NEIGHBORING PROPERTY OWNERS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, AND SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009.

Dated this 1 day of February 2011.

STATE OF OREGON, acting by and through its Oregon Youth Authority

By: _____
Colette S. Peters, Director

STATE OF OREGON)
) ss.
County of Marion)

On this 1st day of February, 2011, before me personally appeared Colette S. Peters, Director, who being duly sworn stated that she has the authority to sign the document as the Director of the Oregon Youth Authority, and acknowledged the foregoing instrument to be the voluntary act of the Oregon Youth Authority, and that he executed the foregoing instrument on behalf of said state agency, acting on behalf of the State of Oregon.

_____
NOTARY PUBLIC FOR OREGON
My commission Expires: 4/6/13

OFFICIAL SEAL
JEAN MARIE BERGEN
NOTARY PUBLIC - OREGON
COMMISSION NO. 437253
MY COMMISSION EXPIRES APR. 6, 2013

*Jean Marie Bergen

Exhibit A

Beginning at the ¼ Corner of section 11 and 12, township 8 South, Range 3 West, in the Willamette Meridian, City of Salem, Marion County, Oregon; thence North 00°25'53" East 395.00 feet; thence South 89°35'40" West 299.22 feet; thence South 00°25'53" East 395.00 feet; thence North 89°35'40" East 299.22 feet to the point of beginning. Containing 2.71 acres of land more or less.

REEL: 3257 **PAGE: 222**

February 04, 2011, 10:57 am.

CONTROL #: 288079

State of Oregon
County of Marion

I hereby certify that the attached instrument was received and duly recorded by me in Marion County records:

FEE: $ 51.00

BILL BURGESS
COUNTY CLERK

THIS IS NOT AN INVOICE.

REEL 3602 PAGE 265
MARION COUNTY
BILL BURGESS, COUNTY CLERK
05-07-2014 11:26 am.
Control Number 360612 $ 56.00
Instrument 2014 00014759

After recording return to:

Robert W. Nunn
Sussman Shank LLP
Suite 1400
1000 SW Broadway
Portland, OR 97205-3089

Send all tax statements to:

Robert W. Nunn
0841 SW Gaines Street, Unit 606
Portland, OR 97239

FATCO 5-2014

WARRANTY DEED

Robert W. Nunn, Grantor, conveys and warrants to Pringle Creek LLC, an Oregon limited liability company, Grantee, all of Grantor's tenant in common interest in the real property described on Exhibit A.

The liability and obligations of Grantor to Grantee and Grantee's heirs and assigns under the warranties and covenants contained herein or provided by law are limited to the amount, nature, and terms of any right or indemnification available to Grantor under any title insurance policy. Grantor has no liability or obligation except to the extent that reimbursement for such liability or obligation is available to Grantor under a title insurance policy.

The property is free of encumbrances except (a) as specifically set forth herein, (b) encumbrances ascertainable from viewing the property, and (c) encumbrances, covenants, conditions, restrictions, and easements of record.

The true and actual consideration for this transfer is $-0- and consists of or includes other property or other value given or promised.

BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON TRANSFERRING FEE TITLE SHOULD INQUIRE ABOUT THE PERSON'S RIGHTS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010. THIS INSTRUMENT DOES NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY THAT THE UNIT OF LAND BEING TRANSFERRED IS A LAWFULLY ESTABLISHED LOT OR PARCEL, AS DEFINED IN ORS 92.010 OR

215.010, TO VERIFY THE APPROVED USES OF THE LOT OR PARCEL, TO DETERMINE ANY LIMITS ON LAWSUITS AGAINST FARMING OR FOREST PRACTICES, AS DEFINED IN ORS 30.930, AND TO INQUIRE ABOUT THE RIGHTS OF NEIGHBORING PROPERTY OWNERS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010.

DATED this 15 day of November, 2013.

GRANTOR:

Robert W. Nunn

STATE OF OREGON)
) ss.
County of Multnomah)

This instrument was acknowledged before me on November 15, 2013 by Robert W. Nunn.

OFFICIAL SEAL
SUSAN E BUCHANAN
NOTARY PUBLIC-OREGON
COMMISSION NO. 466455
MY COMMISSION EXPIRES APRIL 05, 2016

NOTARY PUBLIC FOR OREGON
My Commission Expires: 4/5/16

16923-002\PRINGLE CREEK WARRANTY DEED (01722624);1

Exhibit A

Beginning at a point which is 315.48 feet N. 89° 49' W. and 1223.41 feet N. 22° 30' W. and 301.80 feet N. 67° 30' E. from the Southeast corner of Section 11 in Township 8 South, Range 3 West of the Willamette Meridian In Marion County, Oregon; thence S. 14° 34' E. 370.20 feet; thence N. 67° 30' E. 429.93 feet to a point on the East line of said Section, which point is 1064.65 feet N. 0° 30' E. from the Southeast corner of said Section; thence N. 0° 30' E. along said East line 397.79 feet; thence S. 67° 30' W. 534.60 feet to the place of beginning and containing 4.07 acres of land.

Together with an easement for road and right-of-way purposes over the following described parcel, beginning at a point which is located North 89° 49' West 315.48 feet and North 22° 30' West 1,223.41 feet and North 67° 30' East 30.00 feet from the Southeast comer of Section 11, Township 8 South, Range 3 West of the Willamette Meridian, Marion County. Oregon;

Thence from said point of beginning continuing North 67° 30' East 351.80 feet to a point on the northerly line of a tract of land described in Deed Book 469, page 411 of Marion County Deed Records;

Thence North 22° 30' West 50.00 feet to a point;

Thence South 67°30' West 351.80 feet to a point on the easterly right-of-way line of Battle Creek Road (Market Road No. 25);

Thence South 22° 30' East along said easterly right-of-way line 50.00 feet to the point of beginning.

REEL: 3602 **PAGE: 265**

May 07, 2014, 11:26 am.

CONTROL #: 360612

State of Oregon
County of Marion

I hereby certify that the attached instrument was received and duly recorded by me in Marion County records:

FEE: $ 56.00

BILL BURGESS
COUNTY CLERK

THIS IS NOT AN INVOICE.

UNTIL FURTHER NOTICE, SEND ALL TAX STATEMENTS TO:
Boulder Hill LLC
Robert W. Nunn, Manager
1000 SW Broadway, Suite 1400
Portland, OR 97205-3089

REEL 1959 PAGE 327

AFTER COMPLETING RECORDING, RETURN THIS DOCUMENT TO:
Evans, Freeby & Jennings, LLP
Attorneys at Law
280 Court St. NE
Salem, OR 97301

BARGAIN AND SALE DEED

ROBERT W. NUNN, Trustee under the EVELYN M. COBURN LIVING TRUST, dated March 15, 1995, GRANTOR

Conveys to

BOULDER HILL LLC, an Oregon Manager-Managed Limited Liability Company GRANTEE

All the following real property situated in Marion County, State of Oregon, specifically described on Exhibit "A" hereto and by this reference incorporated herein, generally described as: Tax Lot 100, Tax Account No. R32164; Tax Lot 200, Tax Account No. R32163, and Tax Lot 601, Tax Account No. R32158.

The true and actual consideration for this transfer is other than money.

THIS INSTRUMENT WILL NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY APPROVED USES AND TO DETERMINE ANY LIMITS ON LAWSUITS AGAINST FARMING OR FOREST PRACTICES AS DEFINED IN ORS 30.930.

Dated this 23rd day of May, 2002.

GRANTOR
Evelyn M. Coburn Living Trust, dated March 15, 1995

By: Robert W. Nunn, Trustee

STATE OF OREGON, County of Marion) ss.

Personally appeared before me this 23rd day of May, 2002, Robert W. Nunn, as Trustee and acknowledged the foregoing instrument to be his voluntary act.

OFFICIAL SEAL
JAIME LYNNE TREMBLY
NOTARY PUBLIC - OREGON
COMMISSION NO. A322507
MY COMMISSION EXPIRES APR 18, 2003

Jaime Lynne Trembly

Notary Public for Oregon
My Commission Expires: 4 18 03

MAY 29 2002

EXHIBIT A

LEGAL DESCRIPTION
Map 8S-3W-11D; Tax Lots 100, 200, and 601:

Tax Lot 100
Account No. R32164

Beginning at the Northeast corner of the Southeast Quarter of Section 11, Township 8 South, Range 3 West of the Willamette Meridian in Marion County, Oregon; thence South 0° 30' West along the East line of said Section, a distance of 929.74 feet, more or less, to the North line of that tract of land described in Document No. 116205 Circuit Court Journal for Marion County; thence westerly along the North line of said tract, a distance of 125.00 feet; thence South 0° 30' West parallel with the East line of said Section 11, a distance of 303.27 feet to a point on the northerly line of that tract of land conveyed to Kathryn L. Young, Linda S. Schaeffers and Robert W. Nunn by deed recorded in Reel 1021, Page 231, Deed Records for Marion County, Oregon; thence South 67° 30' West along said northerly line a distance of 398.72 feet to the Northwest corner thereof; thence South 14° 34' 00" East 370.20 feet to the Southwest corner of said tract; thence North 89° 47' 36" West 51.83 feet to the Southeast corner of that tract of land conveyed to Dale E. Christison and Darlene A. Christison by deed recorded in Reel 76, Page 282, Deed Records for Marion County, Oregon; thence North 14° 34' 00" West along the easterly line of said Christison tract, a distance of 350.00 feet to the Northeast corner thereof; thence South 67° 30; 00" West along the northerly line of said Christison tract, a distance of 131.77 feet to a point which is 660.00 feet West of the East line of said Section 11, thence North 0° 30' East parallel with the East line of said Section 11, a distance of 1454.12 feet to a point on the North line of the Southeast Quarter of said Section 11; thence easterly along said North line, a distance of 660.00 feet to the point of beginning.

Contains 19.57 acres of land, more or less.

****

Tax Lot 200
Tax Account No. R32163

Beginning 10 chains West of the Northeast corner of the Southeast quarter of Section 11 in Township 8 South, Range 3 West of the Willamette Meridian in Marion County, State of Oregon, and running thence South 26.62 chains; thence North 23°45' West 9.68 chains; thence North 50°45' West 4.80 chains; thence North 15° East 16.60 chains; thence East 3.35 chains to the place of beginning in Section 11, Township 8 South, Range 3 West of the Willamette Meridian in Marion County, Oregon.

SAVE AND EXCEPT: Beginning in the center of a County Road at a point which is North 89°49' West 315.48 feet and North 22°30' West 876.91 feet from the Southeast corner of Section 11 in Township 8 South, Range 3 West of the Willamette Meridian in Marion County, Oregon; thence North 67°30' East 232.90 feet; thence North 14°34' West 350.00 feet; thence South 67°30' West 281.20 feet to the center of said County Road; thence South 22°30' East along the center of said County Road 346.50 feet to the place of beginning.

SAVE AND EXCEPT: Beginning at the point of intersection of the Northerly line of County Road No. 839 (commonly known as Battle Creek Rd.) and the Easterly line of Market Road No. 25 (commonly known as Reed Road) and being in the Southeast quarter of Section 11, Township 8 South, Range 3 West, of the Willamette Meridian, Marion County, Oregon; thence South 58°11'46" East 30.00 feet along the Northerly line of said County Road No. 839 to a point; thence North 13°09'17" West 51.01 feet to a point on the Easterly line of said Market Road No. 25; thence South 14°51'43" West 47.00 feet along said Easterly line to the point of beginning.

SAVE AND EXCEPT that portion of the premises herein described lying within the limits of roads, streets and highways.

Tax Lot 601
Tax Account No. R32158

Beginning at the Southeast corner of that tract of land conveyed to Kathryn L. Young, Linda S. Schaeffers and Robert W. Nunn by deed recorded in Reel 1021, Page 231, Deed Records for Marion County, Oregon which point is recorded as being North 0° 30' East 1064.65 feet from the Southeast corner of Section 11 in Township 8 South, Range 3 West of the Willamette Meridian in Marion County, Oregon; thence South 0° 30' West along the East line of said Section 11, a distance of 208.73 feet, more or less, to a point on the northerly right-of-way line of Kuebler Boulevard; thence South 69° 58' 53" West along the northerly right-of-way line, a distance of 24.48 feet, more or less, to an angle point in said right-of-way line; thence South 63° 02' 05" West along said right-of-way line a distance of 102.74 feet to an angle point in said right-of-way line; thence South 54° 40' 44" West along said right-of-way line a distance of 167.14 feet to the Southeast corner of that tract of land conveyed to Bernard F. Bednarz and Miriam L. Bednarz, husband and wife, by deed recorded in Volume 681, Page 328, Deed Records for Marion County, Oregon; thence North 14° 34' West along the East line of said Bednarz tract, a distance of 222.00 feet to the Northeast corner thereof; thence North 67° 30' East along the southerly line of said tract described in Reel 1021, Page 231, Deed Records, a distance of 345.77 feet to the point of beginning.

Contains 1.44 acres of land, more or less.

REEL:1950 **PAGE: 327**

May 29, 2002, 02:46 pm.

CONTROL #: 59651

State of Oregon
County of Marion

I hereby certify that the attached instrument was received and duly recorded by me in Marion County records:

FEE: $ 36.00

ALAN H DAVIDSON
COUNTY CLERK

THIS IS NOT AN INVOICE.

MAY 29 2002

ASSIGNMENT OF MEMBER'S INTEREST IN LIMITED LIABILITY COMPANY

Robert W. Nunn, successor trustee, of the Evelyn M. Coburn Living Trust, dated March 15, 1995, as amended (the "Trust"), hereby assigns to ROBERTA ANN STRAUSBAUGH, all of the Trust's interest as a member in that certain limited liability company known as BATTLE CREEK LLC, an Oregon Manager-Managed Limited Liability Company.

DATED: August 23, 2005

Robert W. Nunn, Successor Trustee

CONSENT AND RESIGNATION OF MANAGER

The undersigned, being the Manager of BATTLE CREEK LLC, an Oregon Manager-Managed Limited Liability Company, hereby consents to this assignment, with the understanding that all of the terms and provisions of the operating agreement shall continue to apply, and hereby resigns as manager.

By: Robert W. Nunn, Manager

ACCEPTANCE OF ASSIGNMENT AND ELECTION OF MANAGER

The undersigned accepts the assignment of the membership interest, subject to the terms and conditions of the operating agreement, and hereby elects JULIE A. SINGER as manager.

Julie A. Singer power of attorney for Roberta Anne Strausbaug
Roberta Ann Strausbaugh

8.12.05 18:02
C:\WINDOWS\TEMPORARY INTERNET FILES\OLK2053\ASSN-BATTLECREEK.DOC

ENTERED 8/5/05

Phone: (503) 986-2200
Fax: (503) 378-4381

Change of Registered Agent/Address—Corporations/LLC

Secretary of State
Corporation Division
255 Capitol St. NE, Suite 151
Salem, OR 97310-1327
FilingInOregon.com

Check the appropriate box below:

☑ CHANGE OF AGENT AND ADDRESS
(Complete only 1, 2, 3, 4, 5, 6, 11)

☐ CHANGE OF ADDRESS ONLY
(Complete only 1, 7, 8, 9, 10, 11)

REGISTRY NUMBER: 063951-98

NOTE: Use this form for Cooperatives or Business Trusts.

In accordance with Oregon Revised Statute 192.410-192.490, the information on this application is public record. We must release this information to all parties upon request and it will be posted on our website.

For office use only

Please Type or Print Legibly in **Black** Ink. Attach Additional Sheet if Necessary.

1) **ENTITY NAME** BATTLE CREEK LLC

CHANGE OF REGISTERED AGENT AND OFFICE

2) **THE REGISTERED AGENT HAS BEEN CHANGED TO:**
Julie Singer

3) **THE NEW REGISTERED AGENT HAS CONSENTED TO THIS APPOINTMENT.**

4) **ADDRESS OF THE NEW REGISTERED OFFICE** (Must be an **OREGON** Street Address which is identical to the registered agent's business office.)
5450 Zena Road NW
Salem, OR 97304

5) **THE STREET ADDRESS OF THE NEW REGISTERED OFFICE AND THE BUSINESS ADDRESS OF THE REGISTERED AGENT ARE IDENTICAL.**

6) **EXECUTION**
(Must be signed by one corporate officer or director for a corporation or a member/manager for a limited liability company.)

Signature: Julie A Singer
Printed Name: Julie Singer
Title: Manager

CHANGE OF REGISTERED AGENT'S BUSINESS OFFICE ONLY

7) **NEW ADDRESS OF REGISTERED AGENT** (The business address of the registered agent has changed to the following **OREGON** Street Address.)

8) **THE STREET ADDRESS OF THE NEW REGISTERED OFFICE AND THE BUSINESS ADDRESS OF THE REGISTERED AGENT ARE IDENTICAL.**

9) **NOTIFICATION**
☐ The corporation has been notified in writing of this change.

10) **EXECUTION**
(Must be signed by the registered agent or a corporate officer or director for a corporation or a member/manager for a limited liability company.)

Signature:
Printed Name:
Title:

11) **CONTACT NAME** (To resolve questions with this filing.) Julie Singer

DAYTIME PHONE NUMBER (Include area code.) (503) 581-7930

FEES
No Processing Fee

131 (Rev. 1/04)

ENTERED 2/15/11

Phone: (503) 986-2200
Fax: (503) 378-4381

Amendment to Annual Report—Limited Liability Company

Secretary of State
Corporation Division
255 Capitol St. NE, Suite 151
Salem, OR 97310-1327
FilingInOregon.com

REGISTRY NUMBER: 063951-98

ENTITY TYPE ☑ DOMESTIC ☐ FOREIGN

In accordance with Oregon Revised Statute 192.410-192.490, the information on this application is public record. We must release this information to all parties upon request and it will be posted on our website.

For office use only

Please Type or Print Legibly in **Black** Ink.

To change the Registered Agent, use Change of Registered Agent/Address, Form 131

1) **NAME OF ENTITY** BATTLE CREEK LLC

2) **PRINCIPAL PLACE OF BUSINESS** (Street Address)
5450 Zena Road NW
Salem, OR 97304

3) **ADDRESS FOR MAILING NOTICES**
5450 Zena Road NW
Salem, OR 97304

LIST MEMBERS AND/OR MANAGERS NAMES AND ADDRESSES

4) **MEMBERS** (Name and street address)
Roberta Ann Strausbaugh
2482 Kuebler Road South
Salem, OR 97302

5) **MANAGERS** (Name and street address)
Julie Singer
5450 Zena Road NW
Salem, OR 97304

6) **EXECUTION**
Signature: Julie A Singer
Printed Name: Julie Singer
Title: Manager
Date:

7) **CONTACT NAME** (To resolve questions with this filing.)
Julie Singer

DAYTIME PHONE NUMBER (Include area code.)
(503) 581-7930

FEES
No Processing Fee

154 (Rev. 7/04)

ENTERED 2/5/11

New folder for each LLC

THE OPERATING AGREEMENT

OF

BATTLE CREEK LLC

Manager Managed

by

Kathleen A. Evans

Evans, Freeby & Jennings, LLP
Attorneys at Law
280 Court St. NE
Salem, Oregon 97301

Telephone: (503) 588-5670
Fax: (503) 588-5673

Table of Contents

BATTLE CREEK LLC

Exhibits

Securities Law Disclosure

The percentages of ownership (membership interests) of BATTLE CREEK LLC have not been registered under the Securities Act of 1933, as amended (the "Securities Act"), or the securities laws of any state. The membership interests are offered and sold in reliance on exemptions from the registration requirement of the Securities Act and such laws, and particularly regulations enacted by the Securities and Exchange Commission effective April 15, 1982 pertaining to certain offers and sales of securities without registration under the Securities Act of 1933.

The Company will not be subject to the reporting requirements of the Securities Exchange Act of 1934, as amended, and will not file reports, proxy statements and other information with the Securities and Exchange Commission, or any state securities commission.

The membership interests of BATTLE CREEK LLC have not been, nor will be, registered or qualified under federal or state securities laws. The membership interests of BATTLE CREEK LLC may not be offered for sale, sold, pledged, or otherwise transferred unless so registered or qualified, or unless an exemption from registration or qualification exists. The availability of any exemption from registration or qualification must be established by an opinion of counsel for the owner thereof, which opinion of counsel must be reasonably satisfactory to BATTLE CREEK LLC.

Article One

Organization of Company

Section 1. The Limited Liability Company

This Operating Agreement is entered into and shall be effective as of the Effective Date, by and among the Company, the persons identified on Exhibit A of this Agreement as Initial Members and Kathleen A. Evans, "*Organizer*."

Section 2. Organization

By executing and filing the Articles, Organizer has created or will create the Company in accordance with and pursuant to the Act. Consistent with the Act and the Articles, the Initial Members hereby provide for the regulation and management of the affairs of the Company.

Section 3. Nature of Business

The Company is organized to accomplish the following purposes:

A. To provide consolidated management of the assets held by the Company;

B. To manage and/or develop real estate owned or acquired by the Company;

C. To provide an orderly buy-sell arrangement between the members of the Evelyn M. Coburn family to keep Company assets in the family;

D. To promote family harmony by insuring that any disputes will be resolved privately by arbitration rather than publicly through the courts;

E. To assist in preventing family assets from going through probate upon the death of any family member; or alternatively to simplify any probate proceeding which may be required;

F. To establish and maintain an order of succession and control of family assets;

G. To consolidate fractional interests in family-held assets;

H. To increase family wealth;

I. To establish a method by which annual gifts can be made without fractionalizing family assets;

J. To restrict the right of non-family members to acquire interests in family assets;

K. To prevent the transfer of a family member's interest in the Company as a result of a failed marriage;

L. To provide protection to family assets from claims of future creditors of members;

M. To provide flexibility in business planning not available through trusts, corporations, or other business entities; and

N. To promote knowledge of and communication about the family assets and business among family members.

In order to accomplish its purposes, the Company may conduct any lawful business and investment activity permitted under the laws of the State of Oregon and in any other jurisdiction in which it may have a business or investment interest. The Company may own, acquire, manage, develop, operate, sell, exchange, finance, refinance and otherwise deal with real estate, personal property and any type of business as the Members may from time to time deem to be in the best interest of the Company. The Company may engage in any other activities which are related or incidental to the foregoing purposes. The Company may engage in any lawful business permitted by the Act or the laws of any jurisdiction in which the Company may do business. The Company shall have the authority to do all things necessary or convenient to accomplish its purpose and operate its business.

Section 4. Defects as to Formalities

A failure to observe any formalities or requirements of this Agreement, the Articles or the Act shall not be grounds for imposing personal liability on the Members for liabilities of the Company.

Section 5. No Company Intended for Nontax Purposes

The Members have formed the Company under the Act, and expressly do not intend hereby to form a partnership under either the Oregon Revised Partnership Act or the Oregon Uniform Limited Partnership Act or a corporation under the Oregon Business Corporation Act. The Members do not intend to be partners one to another, or partners as to any third party. To the extent any Member, by word or action, represents to another person that any other Member is a partner or that the Company is a partnership, the Member making such wrongful representation shall be liable to any other Member who incurs personal liability by reason of such wrongful representation.

Section 6. Rights of Creditors and Third Parties

This Agreement is entered into among the Company and the Initial Members for the exclusive benefit of the Company, its Members, and their successors and assigns. The Agreement is expressly not intended for the benefit of any creditor of the Company or any other Person. Except and only to the extent provided by applicable statute, no such creditor or third party shall have any rights under the Agreement or any agreement between the Company and any Member with respect to any Contribution or otherwise.

Section 7. Title to Property

All Company Property shall be owned by the Company as an entity and no Member shall have any ownership interest in such Property in the Member's individual name or right, and each Member's interest in the Company shall be personal property for all purposes. Except as otherwise provided in this Agreement, the Company shall hold all Company Property in the name of the Company and not in the name or names of any Member or Members.

Section 8. Payments of Individual Obligations

The Company's credit and assets shall be used solely for the benefit of the Company, and no asset of the Company shall be Transferred or encumbered for or in payment of any individual obligation of any Member unless otherwise provided for herein.

Notwithstanding the foregoing, the Manager may help facilitate the satisfaction of any death or estate tax obligations owed by a member or by a member's estate. For example, the Manager may elect to make any distributions authorized under this Agreement either directly to the appropriate persons or institutions or to the trustee of any deceased member's trust or to the personal representative of the deceased member's probate estate. The Manager may rely upon the written statements of the deceased member's fiduciary (be that a trustee or a personal representative) as to all material facts relating to these payments; the Manager shall not have any duty to see to the application of such payments. Further, the Manager is authorized to purchase and retain in the form received, as an asset of the Company, any property which is a part of the deceased member's trust or probate estate. In addition, the Manager may make loans, with or without security, to the deceased member's trust or probate estate. The Manager shall not be liable for any loss suffered by the Company as a result of the exercise of the powers granted in this Section.

Article Two

Members

Section 1.Authority to Act

No Member shall have the power or authority to bind the Company unless the Member is a Manager or the Member has been authorized by the Managers to act as an agent of the Company in accordance with this Agreement.

Section 2. Two Classes of Members

There shall be two classes of members.

A. Members of Class A shall have both Economic Rights and Management Rights and shall have the ability to vote on all matters and to elect the Managers of the Company. Whenever this Agreement requires a certain percentage vote to act, that percentage shall always refer to Class A membership interests; Class B membership interests shall be referred to only for those matters specifically listed in paragraph C below. All Class A Members shall be entitled to vote on or consent to any matter submitted to a vote or consent of the Members. In addition to any other actions which, by virtue of the Act, the Articles or this Agreement require a certain consent of the Members, the following actions require the consent of a Majority of the Class A Members:

1. Fixing the number of Managers;

2. Electing the Managers;

3. Setting or adjusting the compensation or benefits of Managers;

4. Removing any Manager without cause;

5. Removing any Manager for cause;

6. Filling any vacancy created by the resignation, removal or death of a Manager;

7. Filling any vacancy created by the increase in the number of Managers;

8. Approving any transaction involving an actual or potential conflict of interest between a Member or a Manager and the Company;

9. Determining the amount, if any, and timing of any guaranteed payments to Members;

10. Approving any transaction involving an actual or potential conflict of interest between a Member and the Company;

11. Changing the nature of the business of the Company;

12. Incurring a Company debt other than in the ordinary course of business; or

13. Taking or approving any action or transaction which is reserved to the Members by the Act, the Articles or this Agreement without any express statement of the extent of Member action required.

B. In addition to any other actions which, by virtue of the Act, the Articles or this Agreement, require the unanimous consent of the Members, the following actions require the consent of 80% of the Class A Members:

1. Compromising any Contribution obligation;

2. Amending or restating the Articles;

3. Amending or restating this Agreement;

4. Approving any action to sell, lease, exchange, mortgage, pledge or other transfer or disposition of all or substantially all of the Company Property, other than in the ordinary course of business;

5. Merging the Company with another Entity;

6. Dissolving the Company; or

7. Admitting an Additional Member.

C. Members of Class B shall have only Economic Rights and the ability to vote on those specific items listed below. They shall have no other Management Rights; they do not have the power to vote to elect the Managers; and they have no power to bind the Company. In addition to consent of 80% of the Class A Members, the following actions also require the consent of 80% of the Class B Members:

1. Amending or restating the Articles;

2. Amending or restating this Agreement;

3. Approving any action to sell, lease, exchange, mortgage, pledge or other transfer or disposition of all or substantially all of the Company Property, other than in the ordinary course of business;

4. Merging the Company with another Entity;

5. Dissolving the Company; or

6. Admitting an Additional Member.

Section 3. Limitation of Liability.

Each Member's liability shall be limited as set forth in this Agreement, the Act and other applicable law. A Member will not be personally liable, merely as a Member, for any debts or losses of the Company beyond the Member's respective Contributions and any obligation of the Member under Article Five to make Contributions, except as otherwise provided by law.

Section 4. Indemnification

The Company shall indemnify the Members, for all costs, losses, liabilities, and damages paid or accrued by such Member, and advance expenses incurred by the Member, in connection with the business of the Company, to the fullest extent provided or allowed by the laws of Oregon except that this provision shall not provide indemnification for:

A. Any breach of a Member's duty of loyalty to the Company or its Members as described in this Agreement;

B. Acts or omissions not in good faith which involve intentional misconduct or a knowing violation of law;

C. Any unlawful distribution under the Act; or

D. Any transaction from which the Member derives an improper personal benefit.

Section 5. Actions of Members

A. **Special Meetings.** Special meetings of the Members, for any purpose or purposes, unless otherwise prescribed by statute, may be called by any Class A Member or Members holding at least 10% of the Class A Capital Interests.

B. **Place of Meetings.** The Class A Members may designate any place, either within or outside of Oregon, as the location for any meeting of the Members. If no designation is made, or if a special meeting be otherwise called, the place of meeting shall be the principal executive office of the Company in Oregon.

C. **Notice of Meetings.** Except as provided below, written notice stating the place, day and hour of the meeting and the purpose or purposes for which the meeting is called shall be delivered not less than 10 nor more than 50 days before the date of the meeting, either personally or by mail, by or at the direction of the person calling the meeting, to each Member entitled to vote at the meeting to be called. If mailed, such notice shall be deemed to be delivered two calendar days after being deposited in the United States mail, addressed to the Member at the Member's address, as it appears on the books of the Company, postage prepaid.

D. **Meeting of All Members.** If all of the Members entitled to vote shall meet at any time and place, either within or outside of Oregon, and consent to the holding of a meeting at such time and place, such meeting shall be valid without call or notice, and at such meeting lawful action may be taken.

E. **Record Date.** For the purpose of determining the Members for any purpose, the date on which any required notice is mailed shall be the record date for such determination of the Members.

F. **Quorum.** Members entitled to vote, represented in person or by proxy, with aggregate Sharing Ratios in excess of 50% shall constitute a quorum at any meeting of the Members. In the absence of a quorum at any such meeting, the Members so represented may adjourn the meeting from time to time for a period not to exceed 60 days without further notice. However, if the adjournment is for more than 60 days, or if after the adjournment a new record date is fixed for the adjourned meeting, a notice of the adjourned meeting shall be given to each Member of record. At such adjourned meeting at which a quorum shall be present or represented, any business may be transacted which might have been transacted at the meeting as originally noticed. The Members entitled to vote present at a duly organized meeting may continue to transact business until adjournment, notwithstanding the departure during such meeting of Members whose absence would cause less than a quorum to remain. In the event an action requires the consent of the remaining Members or some portion thereof, the foregoing quorum rules of this Section shall be applied by substituting "remaining Members" for "Members" therein.

G. **Manner of Acting.** If a quorum is present, a Majority of those Members entitled to vote shall act for the Members, unless the vote of a different proportion or number or both classes is otherwise required by the Act, the Articles, or this Agreement. Unless otherwise expressly provided herein or required under applicable law, Members who have an interest in the outcome of any particular matter upon which the Members vote or consent may vote or consent upon any such matter and their Capital Interest, Sharing Ratios, vote or consent, as the case may be, shall be counted in the determination of whether the requisite

matter was approved by the Members. In the event an action requires the consent of the remaining Members or some portion thereof, the foregoing rules of this Section shall be applied by substituting "remaining Members" for "Members" therein.

H. **Proxies.** At all meetings of the Members, a Member may vote in person or by a proxy executed in writing by the Member or by a duly authorized attorney-in-fact. Such proxy shall be filed with the Company before or at the time of the meeting and may be of any duration except that a Member who shall appear in person at a meeting shall void any outstanding proxy for so long as such Member is in attendance.

I. **Action by Members Without a Meeting.** Action required or permitted to be taken at a meeting of Members may be taken without a meeting if the action is evidenced by one or more written consents describing the action taken, signed by Members sufficient to have approved the actions or resolutions at issue had a duly called meeting been held at which all Members were in attendance and delivered to the Company for inclusion in the minutes or for filing with the Company records. Action taken under this Section is effective when the necessary Members have signed the consent, unless the consent specifies a different effective date. The record date for determining Members entitled to take action without a meeting shall be the date the first Member signs a written consent.

J. **Waiver of Notice.** When any notice is required to be given to any Member, a waiver thereof in writing signed by the person entitled to such notice, whether before, at, or after the time stated therein, shall be equivalent to the giving of such notice.

K. **Telephonic Meetings.** With respect to a particular meeting or generally with respect to future meetings, the Members may permit any or all Members to participate in the meeting by, or may permit the conduct of the meeting through, use of any means of communication by which all Members participating may simultaneously hear each other; provided the notice of such a meeting shall state that the Members may participate in such a fashion and describe how any Member may notify the Company of the Member's desire to be included in the meeting. A Member participating in such a meeting is deemed to be present in person at such meeting.

Section 6. Books, Records, Reports and Information

Each Member shall have the right to receive the reports and information required to be provided by this Agreement. Upon reasonable request, each Member, and the Member's agent and attorney shall have the right, during ordinary business hours, to inspect and copy, at the requesting Member's expense, the books and records which the Company is required, by the Act and this Agreement, to keep.

Article Three
Managers

Section 1. General

A. **Initial Managers.** Robert W. Nunn shall serve as the Initial Manager.

B. **Term.** Each Manager shall hold office until the Manager resigns, dies, dissolves (if an entity other than an individual), or is removed or replaced.

C. **Election.** Except as otherwise provided herein, Managers shall be elected by the Class A Members.

D. **Resignation.** Any Manager may resign at any time by giving written notice to the Members. The resignation of any Manager shall take effect upon receipt of notice thereof or at such later time as shall be specified in such notice; and, unless otherwise specified therein, the acceptance of such resignation shall not be necessary to make it effective. The resignation of a Manager who is also a Member shall not affect the Manager's rights as a Member and shall not constitute a withdrawal as a Member.

Section 2. Action by Managers

The rights and powers of the Managers hereunder shall be exercised by them in such manner as they may agree. In the absence of an agreement among the Managers, the following shall apply:

A. **Place of Meetings.** The Managers may designate any place, either within or outside of Oregon, as the location for any meeting of the Managers. If no designation is made, or if a special meeting be otherwise called, the place of meeting shall be the principal executive office of the Company in Oregon.

B. **Notice of Meetings.** Except as provided below, written notice stating the place, day and hour of the meeting and the purpose or purposes for which the meeting is called shall be delivered not less than 10 hours nor more than 50 days before the date of the meeting, either personally or by mail, by or at the direction of the Managers or person calling the meeting, to each Manager. If mailed, such notice shall be deemed to be delivered two calendar days after being deposited in the United States mail, addressed to the Manager at the Manager's address as it appears on the books of the Company, with postage thereon prepaid.

C. **Meeting of All Managers.** If all of the Managers shall meet at any time and place, either within or outside of Oregon, and consent to the holding of a meeting at such time and place, such meeting shall be valid without call or notice, and at such meeting lawful action may be taken.

D. **Quorum.** More than half of the Managers, represented in person or by proxy, shall constitute a quorum at any meeting of Managers. In the absence of a quorum at any such meeting, the Managers so represented may adjourn the meeting from time to time for a period not to exceed 60 days without further notice. However, if the adjournment is for more than 60 days, a notice of the adjourned meeting shall be given to each Manager. At such adjourned meeting at which a quorum shall be present or represented, any business may be transacted which might have been transacted at the meeting as originally noticed. The Managers present at a duly organized meeting may continue to transact business until adjournment, notwithstanding the withdrawal during such meeting of that number of Managers whose absence would cause less than a quorum.

E. **Manner of Acting.** If a quorum is present, the act of a Majority of the Managers who are present, in person or by proxy, shall be the act of the Managers, unless the vote of a different proportion or number is otherwise required by the Act, the Articles, or this Agreement. Unless otherwise expressly provided herein or required under applicable law, Managers who have an interest in the outcome of any particular matter upon which the Managers vote or consent may not vote or consent upon any such matter and their vote or consent, as the case may be, shall not be counted in the determination of whether the requisite matter was approved by the Managers.

F. **Proxies.** At all meetings of the Managers, a Manager may vote in person or by a proxy executed in writing by the Manager or by a duly authorized attorney-in-fact. Such proxy shall be filed with the Managers before or at the time of the meeting and may be of any duration except that a Manager who shall appear in person at a meeting shall void any outstanding proxy for so long as such Manager is in attendance.

G. **Action by Managers Without a Meeting.** Action required or permitted to be taken at a meeting of the Managers may be taken without a meeting if the action is evidenced by one or more written consents describing the action taken, signed by Managers sufficient to have approved the actions or resolutions at issue had a duly called meeting been held at which all Managers were in attendance and delivered to the Company for inclusion in the minutes or for filing with the Company records. Action taken under this Section is effective when the necessary Managers have signed the consent, unless the consent specifies a different effective date.

H. **Waiver of Notice.** When any notice is required to be given to any Manager, a waiver thereof in writing signed by the person entitled to such notice, whether before, at, or after the time stated therein, shall be equivalent to the giving of such notice.

I. **Telephonic Meetings.** With respect to a particular meeting or generally with respect to future meetings, the Managers may permit any or all Managers to participate in the meeting by, or may permit the conduct of the meeting through, use of any means of communication by which all Managers participating may simultaneously hear each other. A Manager participating in such a meeting is deemed to be present in person at such meeting.

Section 3. Authority of the Managers

Subject to the limitations and restrictions set forth in the Act, the Articles and this Agreement (including, without limitation, those set forth in this Article), the Managers shall have the sole and exclusive right to manage the business of the Company and shall have all of the rights and powers which may be possessed by Managers under the Act and the Articles including, without limitation, the right and power, on behalf and in the name of the Company, to:

A. Institute, prosecute, and complain and defend in all courts in the Company's name;

B. Purchase, take, receive, lease or otherwise acquire, own, hold, improve, use and otherwise deal in or with real or personal property or any interest in real or personal property, wherever situated;

C. Sell, convey, mortgage, pledge, create a security interest in, lease, exchange, transfer and otherwise dispose of a part of the Company Property in the ordinary course, subject, however, to the restrictions set forth in Article Two, Section 2, regarding a disposition of all or substantially all of the Property, which must be approved by the Members as set forth therein;

D. Purchase, take, receive, subscribe for or otherwise acquire, own, hold, vote, use, employ, sell, mortgage, lend, pledge, otherwise dispose of and otherwise use or deal in or with other interests in or obligations of any other Entity;

E. Make contracts or guarantees, incur liabilities, borrow money, issue Company notes or other obligations that may be convertible into other securities of the Company, or include the option to purchase other securities of the Company, or secure any of the Company's obligations by mortgage or pledge of any of the Company Property, franchises or income;

F. Lend money, invest or reinvest Company funds or receive and hold real or personal property as security for repayment of funds so loaned, invested or reinvested, including, without limitation, the loans to Managers, Members, employees and agents;

G. Be a promoter, incorporator, general partner, limited partner, member, associate or manager of any partnership, joint venture, trust or other Entity;

H. Conduct the Company's business, locate its offices and exercise the powers granted by the Act and the Articles within or without Oregon;

I. Elect or appoint Managers, employees or agents of the Company, define their duties, fix their compensation and lend them money and credit;

J. Make and alter this Agreement not inconsistent with the Articles or the laws of Oregon for managing the Company's business and regulating its affairs;

K. Pay pensions and establish pension plans, profit sharing plans and other benefit or incentive plans for any and all of its current or former Managers, Members, employees and agents;

L. Make donations for the public welfare or for charitable, scientific or educational purposes;

M. Transact any lawful business that will aid governmental policy;

N. Indemnify a Member or Manager or any other person as and to the extent not inconsistent with the provisions of the Act or the Articles;

O. Cease the Company's activities and dissolve.

Section 4. Restrictions on Authority of Managers

In addition to any other consent requirements contained in the Act, the Articles, or this Agreement, each Manager shall not have the authority to, and covenants and agrees that it shall not, do any of the following acts without the consent of a Majority of the Managers in addition to any required consent of the Members:

A. Determining the amount and kind of property available for and the timing of distributions;

B. Admitting an Additional Member;

C. Accepting a Substitute Member; or

D. Expelling a Member.

Section 5. Duties and Obligations of Managers

In addition to such other duties and obligations as Managers may have, Managers shall be responsible for the following:

A. The Managers shall cause the Company to conduct its business and operations separate and apart from that of any Manager, including, without limitation:

1. Segregating Company Property and not allowing Company Property to be commingled with the funds or other assets of, held by, or registered in the name of, any Manager,

2. Maintaining books and financial records of the Company separate from the books and financial records of any Manager, and observing all Company procedures and formalities, including, without limitation, maintaining minutes of Company meetings and acting on behalf of the Company only pursuant to due authorization of the Members,

3. Causing the Company to pay its liabilities from Company Property, and

4. Causing the Company to conduct its dealings with third parties in its own name and as a separate and independent entity.

B. The Managers shall take all actions which may be necessary or appropriate

1. For the continuation of the Company's valid existence as a limited liability company under the laws of Oregon and of each other jurisdiction in which such existence is necessary to protect the limited liability of the Members or to enable the Company to conduct the business in which it is engaged and

2. For the accomplishment of the Company's purposes, including the acquisition, development, maintenance, preservation, and operation of Company Property in accordance with the provisions of this Agreement and applicable laws and regulations.

C. The Managers shall be under a fiduciary duty to perform the duties of Managers in good faith, in a manner they reasonably believe to be in the best interests of the Company and its Members, and with such care as an ordinarily prudent person in a like position would use under similar circumstances. In discharging these duties, a Manager shall be fully protected in relying in good faith upon the records required to be maintained under this Agreement and upon such information, opinions, reports or statements by any other Manager, Member, or agent, or by any other person, as to matters the Manager reasonably believes are within such other person's professional or expert competence and who has been selected with reasonable care by or on behalf of the Company, including information, opinions, reports or statements as to the value and amount of the assets, liabilities, profits

and losses of the Company or any other facts pertinent to the existence and amount of assets from which distributions to the Members might properly be paid.

Section 6. Right to Rely on Managers.

Any Person dealing with the Company may rely (without duty of further inquiry) upon a certificate signed by any Manager as to:

A. The identity of any Manager or any Member;

B. The existence or nonexistence of any fact or facts which constitute a condition precedent to acts by a Manager or which are in any other manner germane to the affairs of the Company;

C. The Persons who are authorized to execute and deliver any instrument or document of the Company; or

D. Any act or failure to act by the Company or any other matter whatsoever involving the Company or any Member.

E. The signature of any Manager shall be necessary and sufficient to convey title to any Company Property or to execute any promissory notes, trust deeds, mortgages, or other instruments of hypothecation, and all of the Members agree that a copy of this Agreement may be shown to the appropriate parties in order to confirm the same, and further agree that the signature of any Manager shall be sufficient to execute any "statement of company" or other documents necessary to effectuate this or any other provision of this Agreement. All of the Members do hereby appoint the Managers as their attorney(s)-in-fact for the execution of any or all of the documents described in this Section.

Section 7. Liability and Indemnity of the Managers

A Manager is not personally liable for any debt, obligation or liability of the Company merely by reason of being a Manager and is not liable to the Company or its Members for monetary damages for conduct as a Manager. A Manager who performs the duties as Manager in accordance with this Agreement shall not have any liability by reason of being or having been a Manager. The Company shall indemnify the Managers and make advances for expenses to the maximum extent permitted under the Act. However, this provision shall not eliminate or limit a Manager's liability for:

A. Any breach of a Manager's duty of loyalty to the Company or its Members as described in this Agreement;

B. Acts or omissions not in good faith which involve intentional misconduct or a knowing violation of law;

C. Any unlawful distribution under the Act; or

D. Any transaction from which the Manager derives an improper personal benefit.

Article Four

Conflicts of Interest and Confidential Information

Section 1. Duty of Loyalty

Each Member and Manager shall be entitled to enter into transactions that may be considered to be competitive with, or a business opportunity that may be beneficial to, the Company, it being expressly understood that some of the Members and Managers may enter into transactions that are similar to the transactions into which the Company may enter and the Company and each Member and Manager waive the right or claim to participate therein. Notwithstanding the foregoing, Members and Managers shall account to the Company and hold, as trustee for it, any property, profit, or benefit derived by the Member or Manager, without the consent of the Members or Managers, in the formation, conduct and winding up of the Company business or from a use or appropriation by the Member or Manager of Company Property, including information developed exclusively for the Company and opportunities expressly offered to the Company.

Section 2. Other Self Interest

A Member or Manager does not violate a duty or obligation to the Company merely because the conduct furthers the interest of the Member or Manager. A Member or Manager may lend money to and transact other business with the Company. The rights and obligations of a Member or a Manager who lends money to or transacts business with the Company are the same as those of a person who is not a Member or a Manager, subject to other applicable law. No transaction with the Company shall be voidable solely because a Member or a Manager has a direct or indirect interest in the transaction if the transaction is approved or ratified as provided for herein.

Section 3. Confidential Information

The Members and Managers recognize and acknowledge that as Members or as Managers they will have access to, be provided with and, in some cases, will prepare and create Confidential Information. Neither a Member nor a Manager shall, either while a Member or a Manager or subsequent to Cessation, use or disclose any Confidential Information, either personally or for the use of others, other than in connection with the Member's or Manager's activities on behalf of the Company. Nor shall a Member or a Manager disclose any Confidential Information to any Person who is not a Member or Manager, not employed by the Company or not authorized by the Company to receive such Confidential Information, without the prior written consent of the Company. Each Member and each Manager shall use reasonable and prudent care to safeguard and protect and

prevent the unauthorized use and disclosure of Confidential Information. The obligations contained in this Section shall survive for as long as the Company, in its sole judgment of a majority of the Class A members, considers subject information to be Confidential Information.

Section 4. Conflicts of Interest

The Members hereby acknowledge that: (a) Evans, Freeby & Jennings, LLP, an Oregon limited liability partnership, ("*EF &J*") has represented the Evelyn M. Coburn in connection with the formation of the Company and the drafting of this Operating Agreement; (b) that each of the other parties has been advised to seek independent counsel in connection with such matters; and (c) that EF & J does not represent any Member either directly or indirectly through the Company. Payment of EF & J's attorney fees by the Company shall not alter or amend any of the relationships contemplated in this paragraph.

Article Five
Capital Contributions

Section 1. Initial Contributions

Each Member shall contribute the consideration described for that Member on Exhibit A or in the Member's Admission Agreement at the time and on the terms specified on Exhibit A or in the Member's Admission Agreement. If no time for Contribution is specified, the Contributions shall be made upon the Member's signing an Admission Agreement. The value of the Contributions, other than cash, shall be as set forth on Exhibit A or in the Member's Admission Agreement. No interest shall accrue on any Contribution and no Member shall have the right to withdraw or be repaid any Contribution except as provided in this Agreement. Each Additional Member shall make the Contribution described in the Member's Admission Agreement. The value of the Additional Member's Contribution and the time for making such contribution shall be set forth in the Admission Agreement.

Section 2. Additional Contributions

In addition to the Initial Contributions, the Managers may determine from time to time that Additional Contributions are needed to enable the Company to conduct its business. Upon making such a determination, the Managers shall give written notice to all Members at least ten Business Days prior to the date on which such Contribution is due. Such notice shall set forth the amount of Additional Contribution needed, the purpose for which the Contribution is needed, and the date by which the Members should contribute. Each Member shall be entitled to contribute a proportionate share of such Additional Contribution. No Member shall be obligated to make any Additional Contributions except as otherwise required by law. In the event any one or more Members do not make their Additional Contribution, the other Members shall be given the opportunity to make the Contributions not otherwise made.

Section 3. Enforcement of Commitments

In the event a Member fails to make a Contribution when due, the following may occur.

A. **Collection.** The Managers shall give any Delinquent Member a notice of the failure to make a required Contribution. If the Delinquent Member fails to make the Contribution (together with any costs associated with the failure and interest on such entire obligation at the Default Interest Rate) within ten Business Days of the giving of notice, the

Managers may take such action as is deemed appropriate, including but not limited to enforcing the Contribution obligation in the court of appropriate jurisdiction in Oregon or the state of the Delinquent Member's address as reflected in the Agreement or in the Member's Admission Agreement. Each Member expressly agrees to the jurisdiction of such courts but only for the collection of contributions.

B. **Compromises.** The Managers may compromise any Contribution obligation of a Delinquent Member.

C. **Advance of Delinquent Contribution.** The Managers may elect to allow the other Members to contribute the amount of the delinquent contribution in proportion to such Members' Sharing Ratios, with those Members who contribute ("*Contributing Members*") to contribute additional amounts equal to any amount of the delinquent contribution. The Contributing Members shall be entitled to treat the amounts contributed pursuant to this section as a loan from the Contributing Members bearing interest at the Default Interest Rate secured by the Delinquent Member's interest in the Company. Until they are fully repaid the Contributing Members shall be entitled to all distributions to which the Delinquent Member would have been entitled. Notwithstanding the foregoing, no obligation to make an contribution may be enforced by a creditor of the Company unless the Member expressly consents to such enforcement.

Section 4. Maintenance of Capital Accounts

The Company will maintain a Capital Account for each Member on a cumulative basis in accordance with federal income tax accounting principles as set forth in Treasury Regulation §1.704-1(b)(2)(iv). Each Member's Capital Account will be equal to:

A. The amount of cash and the fair market value of the property contributed to the capital of the Company by the Member (net of any liabilities secured by such contributed property assumed by the Company or to which such contributed property is subject), but excluding any loans to the Company; plus

B. The Member's allocable share under Article Six of any income and gain, or items thereof, of the Company (including any income and gain exempt from federal income tax and including any items of gain, as computed for book purposes, under Treasury Regulation §1.704-1(b)(2)(iv)(g), with respect to property properly reflected on the books of the Company at a value that differs from the adjusted tax basis of such property, but excluding items of income or gain, as computed for tax purposes, as described in Treasury Regulation §1.704-1(b)(4)(i)); less

C. The Member's allocable share under Article Six of any loss or deduction, or any items thereof of the Company (including any items of depreciation, depletion, amortization, and loss, as computed for book purposes under Treasury Regulation §1.704-1(b)(2)(iv)(g),

with respect to property properly reflected on the books of the Company at a value that differs from the adjusted tax basis of the property, but excluding items of depreciation, depletion, amortization, and loss, as computed for tax purposes as described in Treasury Regulation §1.704-1(b)(4)(i)); less

D. The amount of cash and the fair market value of property distributed to the Member (net of any liabilities secured by the distributed property assumed by the Member or to which such distributed property is subject); less

E. The Member's allocable share under Article Six of any Company expenditures described in Internal Revenue Code §705(a)(2)(B), including items treated as §705(a)(2)(B) expenditures by Treasury Regulation §1.704-1(b)(2)(i); and

F. Otherwise adjusted as required pursuant to Treasury Regulation §1.704-1(b)(2)(iv).

Article Six
Allocations

Section 1. Pro Rata Allocation

A. **Determination of Income and Loss.** The Company's profits or losses for each fiscal year will be determined as of the end of that fiscal year by the Company's accountants in accordance with federal income tax accounting principles, consistently applied, utilizing that method of accounting employed in the federal income tax informational return filed by the Company for that fiscal year.

B. **Allocation of Profits and Losses.** Subject to the special allocations and limitations set forth below, the profits and losses of the Company for each fiscal year will be allocated among the Members pro rata in proportion to their respective ownership percentage, as set forth on Exhibit "B."

C. **Special Allocations and Limitations.** The Members intend that all allocations will be pro rata; however, in order to comply with federal income tax regulations regarding the substantial economic effect of Company allocations, in the special circumstances described in such provisions, all allocations of Company income, gain, loss, and deductions are subject to the special allocations and limitations described below.

D. **No Right to Demand Return of Capital.** No Member will have any right to any distribution except as expressly provided in this Agreement. No Member will have any drawing account in the Company.

E. **Optional Revaluation of Company Property.** Upon the occurrence of (i) a subsequent contribution of money or property to the Company by a Member as an additional capital contribution, (ii) the admission of a new Member, or (iii) a distribution of money or property by the Company to a retiring or continuing Member in exchange for his or her capital interest, or otherwise as provided in this Agreement, the Manager may elect to increase or decrease the respective Capital Accounts of all Members to reflect a revaluation of all Company property on the books of the Company, but:

1. Such adjustments must be based on the fair market value of the property on the date of adjustment;

2. The adjustments must reflect the manner in which the unrealized income, gain, loss, or deduction inherent in such property (that has not been reflected in the Capital Accounts of the Members previously) would be allocated among the Members under

this Article if there were a taxable disposition of the property for the fair market value on the adjustment date;

3. Thereafter, the Capital Accounts of the Members must be adjusted in accordance with Treasury Regulation §1.704-1(b)(2)(iv)(g) for allocations to them of depreciation, depletion, amortization, and gain or loss, as computed for book purposes, with respect to the property; and

4. Thereafter, the Members' distributive shares of depreciation, depletion, amortization, and gain or loss, as computed for tax purposes, with respect to the property will be determined so as to take account of the variation between the adjusted tax basis and the book value of the property in the same manner as under Internal Revenue Code §704(c) and Treasury Regulation §1.704-1(b)(4)(i).

F. **Transfer of Membership Interest by Member During Fiscal Year.** If, after compliance with the requirements relating to transfer herein, any Member transfers any of his or her Membership Interest during any fiscal year of the Company by sale, exchange, transfer, assignment, gift, death, operation of law, or in any other manner, the income, gain, loss or expense of the Company allocable to the transferred membership interest will be prorated between the transferor and the transferee in accordance with the number of days during the fiscal year each party owned the ownership interest in question; but the gain or loss realized by the Company from an insurance recovery or a condemnation award will be allocated to the owner of the ownership interest on the date of the transaction.

Section 2. Special Allocations and Limitations

A. **Limitations on Allocations of Loss.** In no event will any Company loss or deduction, or item thereof, be allocated to any Member to the extent that the Member has, or would have as a result of the allocation, an Adjusted Capital Account Deficit in the Member's Capital Account as of the end of the Company taxable year to which the allocation relates. Any loss or deduction, the allocation of which to a Member is disallowed by the foregoing restriction, will be reallocated to those Members who do not have an Adjusted Capital Account Deficit as of the end of such taxable year.

B. **Company Minimum Gain Chargeback.** If there is a net decrease in Company Minimum Gain during any Company taxable year, each Member will be specially allocated, before any other allocation of Company income, gain, loss, or deduction for the taxable year, items of Company income and gain for the taxable year (and, if necessary, subsequent years) in proportion to and to the extent of an amount equal to each Member's share of the net decrease in Company Minimum Gain determined in accordance with Treasury Regulation §1.704-2(g)(2). This paragraph is intended to comply with, and will be interpreted consistently with, the "minimum gain chargeback" provisions of Treasury Regulation §1.704-2(f).

C. **Member Nonrecourse Debt Minimum Gain Chargeback.** Notwithstanding any other provision herein, except the foregoing paragraph, if there is a net decrease in Member Nonrecourse Debt Minimum Gain attributable to a Member Nonrecourse Debt during any taxable year of the Company, each Member who has a share of the Member Nonrecourse Debt Minimum Gain attributable to such Member Nonrecourse Debt, determined in accordance with Treasury Regulation §1.704-2(i)(5), will be specially allocated items of Company income and gain for such year (and, if necessary, subsequent years) in an amount equal to such Member's share of the net decrease in Member Nonrecourse Debt, determined in accordance with Treasury Regulation §1.704-2(i)(4). Allocations pursuant to this paragraph will be made in proportion to the respective amounts required to be allocated to each Member pursuant thereto. The items to be so allocated will be determined in accordance with Treasury Regulation §1.704-2(i)(4). This paragraph is intended to comply with, and will be interpreted consistently with, the partner nonrecourse debt minimum gain chargeback provisions of Treasury Regulation §1.704-2(i)(4).

D. **Qualified Income Offset.** Notwithstanding any other provision of the Agreement the foregoing two paragraphs, in the event any Member for any reason receives an Adjustment Item for any fiscal year that results in an Adjusted Capital Account Deficit for that Member, the Member will be specially allocated items of Company income and gain (consisting of a pro rata portion of each item of Company income, including gross income, and gain for the year) in an amount and manner sufficient to eliminate the Adjusted Capital Account Deficit, if any, created by such Adjustment Item as quickly as possible. This paragraph is intended to comply with the "qualified income offset" requirements of Treasury Regulation §1.704-1(b)(2)(ii)(d) and will be interpreted and applied consistently therewith.

E. **Offsetting Allocations.** Any special allocation of items of income, gain, loss, or deduction pursuant to this Section will be taken into account in computing subsequent allocations of Company income, gain, loss, or deduction pursuant to this Article so that the net amount of any items so allocated and all other income, gain, loss, deductions, and items thereof allocated to each Member will, to the extent possible, be equal to the net amount that would have been allocated to each Member if the special allocation had not occurred.

F. **Allocations with Respect to Contributed or Revalued Property.** Notwithstanding any other provision of this Article, in the event Internal Revenue Code ("IRC") §704(c) or IRC §704(c) principles applicable under Treasury Regulation §1.704-1(b)(2)(iv) require allocations of Company income, gain, loss, or deductions for income tax purposes in a manner different than otherwise provided in this Article, the provisions of IRC §704(c) and the regulations thereunder will control such allocations among the Members for income tax purposes. Any item of income, gain, loss, and deduction with respect to any property (other than cash) that has been contributed to the Company by a Member or that has been revalued for Capital Account purposes under this Section pursuant to Treasury Regulation §1.704-1(b)(2)(iv) and which is required or permitted to be allocated to such Member for income tax purposes under IRC §704(c) so as to take into account the variation between the tax basis of such contributed or revalued property and its fair market

value at the time of its contribution or revaluation will be allocated solely for income tax purposes in the manner so required or permitted under IRC §704(c) using the method described in Treasury Regulation §1.704-3 (or any successor regulation) selected by the Manager.

Article Seven
Distributions

Section 1. General

Notwithstanding anything contained in this Agreement or the Articles to the contrary, no distribution shall be made in violation of ORS 63.229. If any such wrongful distribution is made, the provisions of ORS 63.235 shall determine each Person's liability and the remedy, if any, therefor.

Section 2. Distributions

Except as otherwise provided in this Agreement, the amount, if any, to be distributed shall be determined by the Managers. Unless expressly required otherwise, all distributions to the Members or to Transferees shall be in proportion to their percentage of ownership interest, as set forth on Exhibit "B" hereto.

Section 3. Liquidating Distributions

In the event the Company is dissolved and the business and affairs are wound up, distributions shall be made pursuant to Article Eleven.

Section 4. Amounts Withheld

All amounts withheld, pursuant to the Code or any provision of any state or local tax law with respect to any payment, distribution or allocation to the Members, shall be treated as amounts distributed to the Members pursuant to this for all purposes under this Agreement. The Managers are authorized to withhold from distributions, or with respect to allocations, and to pay over to any federal, state or local government any amounts required to be so withheld pursuant to the Code or any provisions of any other federal, state or local law and shall allocate any such amounts to the Members with respect to which such amounts were withheld.

Article Eight
Additional Members

Section 1. Admission

Persons may be added as Additional Members upon terms and conditions approved by the Members and Managers. Notwithstanding the foregoing, a Person shall not become an Additional Member unless and until such Person:

A. Becomes a party to this Agreement as a Member by signing an Admission Agreement and executes such documents and instruments as the Managers may reasonably request as may be necessary or appropriate to confirm such Person as a Member in the Company and such Person's agreement to be bound by the terms and conditions hereof;

B. Provides the Company with evidence satisfactory to counsel for the Company that such Person has made each of the representations and undertaken each of the warranties contained in the Additional Member's Admission Agreement; and

C. If the Person is not an individual of legal majority, the Person provides the Company with evidence satisfactory to counsel for the Company of the authority of the Person to become a Member and to be bound by the terms and conditions of this Agreement.

Section 2. Accounting

No Additional Member shall be entitled to any retroactive allocation of losses, income or expense deductions incurred by the Company. The Managers may at the time an Additional Member is admitted, close the Company books (as though the Company's Fiscal Year had ended), make pro rata allocations of loss, income and expense deductions to an Additional Member for that portion of the Company's Fiscal Year in which such Member was admitted, and equitably adjust capital accounts and book values of assets in accordance with the provisions of Code Section 706(d) and the Regulations promulgated thereunder. ORS 63.185(4) shall not apply in the event of the admission of an Additional Member.

Article Nine
Transfers of Interests

Section 1. Restriction on Transfers

Except as otherwise permitted by this Agreement, no Member or Transferee shall Transfer all or any portion of such Person's interests in the Company. In the event that any Member or Transferee pledges or otherwise encumbers any of such Person's interests in the Company as security for the payment of a debt, any such pledge or hypothecation shall not constitute a Transfer but shall only be made:

A. Pursuant to a pledge or hypothecation agreement that requires the pledgee or secured party to be bound by all of the terms and conditions of this Article; and

B. Upon the consent of the Members.

A Transfer of an ownership interest in a Member or Transferee that is an Entity shall not constitute a Transfer of such Entity's interests in the Company.

Section 2. Permitted Transfers

Subject to the conditions and restrictions set forth in this Article, a Member or Transferee may at any time Transfer all or any portion of such Person's interests in the Company to:

A. Any other Member;

B. Any member of the transferor's Family;

C. Any revocable living trust created by a Member, where the Member retains the power to revoke that trust;

D. The transferor's executor, administrator, trustee, or personal representative to whom such interests are Transferred at death or involuntarily by operation of law;

E. Any Purchaser in accordance with this Article.

Section 3. Conditions to Permitted Transfers

A Transfer shall not be treated as a Permitted Transfer unless and until the following conditions are satisfied:

A. Except in the case of a Transfer of a Person's interests in the Company at death or involuntarily by operation of law, the transferor and Transferee shall execute and deliver to the Company such documents and instruments of conveyance as may be necessary or appropriate in the opinion of counsel to the Company to effect such Transfer and to confirm the agreement of the Transferee to be bound by the provisions of this Article. In the case of a Transfer of a Person's interests in the Company at death or involuntarily by operation of law, the Transfer shall be confirmed by presentation to the Company of legal evidence of such Transfer, in form and substance satisfactory to counsel to the Company. In all cases, the Company shall be reimbursed by the transferor and/or Transferee for all costs and expenses that it reasonably incurs in connection with such Transfer.

B. Except in the case of a Transfer at death or involuntarily by operation of law, the transferor shall furnish to the Company an opinion of counsel, which counsel and opinion shall be satisfactory to the Company, that the Transfer will not cause the Company to terminate for federal income tax purposes or under the Act and that such Transfer will not cause the application of the rules of Code Sections 174(g)(1)(B) and 174(h) (generally referred to as the "tax exempt entity leasing rules") or similar rules to apply to the Company, Company Property, the Managers, or the Members.

C. The transferor and Transferee shall furnish the Company with the Transferee's taxpayer identification number, sufficient information to determine the Transferee's initial tax basis in the Person's interests in the Company Transferred, and any other information reasonably necessary to permit the Company to file all required federal and state tax returns and other legally required information statements or returns. Without limiting the generality of the foregoing, the Company shall not be required to make any distribution otherwise provided for in this Agreement with respect to any Transfer until it has received such information.

D. Except in the case of a Transfer of a Person's interests in the Company at death or involuntarily by operation of law, either:

1. Such a Person's interests in the Company shall be registered under the Securities Act of 1933, as amended, and any applicable state securities laws, or

2. The transferor shall provide an opinion of counsel, which opinion and counsel shall be satisfactory to the Company, to the effect that such Transfer is exempt from all applicable registration requirements and that such Transfer will not violate any applicable laws regulating the Transfer of securities.

E. Except in the case of a Transfer of a Person's interests in the Company at death or involuntarily by operation of law, the transferor shall provide an opinion of counsel, which opinion and counsel shall be reasonably satisfactory to the other Members, to the effect that such Transfer will not cause the Company to be deemed to be an "investment company" under the Investment Company Act of 1940.

Section 4. Right of First Refusal

A. **Limitation on Transfers.** No Transfer may be made hereunder unless the Seller has received a bona fide written offer (the "*Purchase Offer*") from a Person (the "*Purchaser*") to purchase the Offered Interest for a purchase price (the "*Offer Price*"), in writing signed by the Purchaser.

B. **Notice.** Notice of that Purchase Offer, together with a copy thereof, must be given by the Seller to the Company and each Member. First the Company, and then if the Company declines, then the other Members, shall have the right to purchase the Offered Interest at either: (i) the same terms designated in the Purchase Offer (but without the necessity of making any earnest money deposit); or (ii) upon the terms and at the price set forth in Section 5, Paragraphs A and B, below; whichever the purchaser (whether that be the Company or any or all of the other Members) shall choose.

C. **Consideration Period.** The Company shall have 120 days after receipt of Notice and a copy of the Purchase Offer to exercise its right of purchase. If the Company chooses not to exercise that right, then the other Members shall have a period of 120 days after the expiration of the Company's Period within which to exercise their rights of purchase, on a pro rata basis; if any of the Members choose not to exercise their rights of purchase, then the other Members may opt to exercise those rights in their stead, for their own benefit.

D. **Acceptance.** Written notice of the exercise of rights to purchase shall be sent to the Seller. Thereafter, the purchaser shall have a period of 90 days within which to close the purchase at such time and at such location as the purchaser may determine.

E. **Sale Pursuant to Purchase Offer.** If neither the Company nor any Members opt to exercise their rights to purchase, then the Seller may sell the Offered Interest to the Purchaser at any time within 15 days after the expiration of the Consideration Period, provided that such sale shall be made on terms no more favorable to the Purchaser than the terms contained in the Purchase Offer and provided further that such sale complies with other terms, conditions, and restrictions of this Agreement that are applicable to sales of a Person's interest in the Company and are not expressly made inapplicable to sales occurring hereunder. In the event that the Offered Interest is not sold and the transaction not closed in accordance with the terms of the preceding sentence, the Offered Interest shall again become subject to all of the conditions and restrictions of this Agreement.

Section 5. Option to Purchase at Death

Upon the death of a Member, the Company shall have the option to purchase the membership interest of the deceased Member, upon the terms and conditions set forth in this paragraph. The option will expire 120 days after the Company has received written notification of the death of the deceased Member and the appointment of the deceased Member's appropriate fiduciary (whether that be a court-appointed personal representative, or whether it be a successor trustee under a trust which owns the Membership Interest ("*Fiduciary*"). In the event that the Company does not choose to exercise this option to purchase, then the other remaining Members shall have the option to purchase the membership interest of the deceased Member, upon the terms and conditions set forth in this paragraph. Their option commences upon the expiration of the Company's option and continues for a period of 120 days thereafter. The option may be exercised only in writing and by delivery to the appropriate fiduciary for the deceased Member.

A. **Valuation of Member's Interest.** Upon an election by the Company or the remaining Members ("*Purchaser*") to purchase the interest of a deceased Member, the value of the deceased Member's interest shall be determined by agreement of the parties, or, if they cannot agree, by a third party appraiser acceptable to both the Purchaser and the duly authorized fiduciary of the deceased Member (whether that be a duly appointed personal representative or a successor trustee) ("*Seller*"). If agreement cannot be reached as to an appropriate appraiser, then either party may petition the Presiding Judge of Marion County Circuit Court to appoint an appraiser, and the costs of that petition process shall be divided equally between the parties. Prior to selecting the third-party appraiser, each party shall provide to the other the amount each will accept as the value of the deceased Member's interest. In the event that the value established by the third-party appraiser is equal to or less than the value proposed by the Purchaser, the cost of the appraisal shall be paid solely by the Seller; in the event that the value established by the third-party appraiser is equal to or greater than the Seller's proposed value, then the cost of the appraisal shall be paid solely by the Purchaser. In the event that the value established by the third-party appraiser is between the values established by both parties, the cost of the appraisal shall be divided equally.

B. **Payment for Member's Interest.** The purchase price for the deceased Member's interest shall be paid in 30 substantially equal, consecutive annual payments, including principal and interest. Interest shall accrue at the prime rate in effect on the date of the event giving rise to the election to purchase as quoted by the Wall Street Journal or, if that publication becomes unavailable, another reputable source chosen by vote of the Members. The first payment shall be made not later than one year following such date. The Purchaser may prepay the remaining amount of the purchase price at any time.

Section 6. Prohibited Transfers

Any purported Transfer of a Person's interests in the Company that is not a Permitted Transfer shall be null and void and of no force or effect whatever; provided that, if the Company is required to recognize a Transfer that is not a Permitted Transfer (or if the Company, in its sole discretion, elects to recognize a Transfer that is not a Permitted Transfer), the interest Transferred shall be strictly limited to the transferor's Economic Rights with respect to the Transferred interests, with amounts otherwise available for distributions first applied (without limiting any other legal or equitable rights of the Company) to satisfy any debts, obligations, or liabilities for damages that the transferor or Transferee may have to the Company. In the case of a Transfer or attempted Transfer of a Person's interests in the Company that is not a Permitted Transfer, the parties engaging or attempting to engage in such Transfer shall be liable to indemnify and hold harmless the Company and the other Members from all costs, liability, and damage that any of such indemnified Persons may incur (including, without limitation, incremental tax liability and lawyers' fees and expenses) as a result of such Transfer or attempted Transfer and efforts to enforce the indemnity granted hereby.

Section 7. Rights and Obligations Arising out of Transfers

A. A Transfer (including a Permitted Transfer) of a Person's interest in the Company to a Person who is not a Member does not itself dissolve the Company or entitle the Transferee to become a Member or exercise any Management Rights. A Person who is not a Member who acquires a Person's interests in the Company but who is not admitted as a Substitute Member shall be entitled only to the Economic Rights with respect to such interests, and shall have no right to any information or accounting of the affairs of the Company, and shall not be entitled to inspect the books or records of the Company.

B. An assignment of an interest in the Company by a Member (the "*Assigning Member*") to any other Member (the "*Acquiring Member*") shall cause the Acquiring Member's Membership Interest to increase to the extent of such assigned interest (including both Economic Rights and Management Rights) and the Assigning Member's Membership Interest to decrease to the extent of the such assigned interest. If a Member acquires an interest in the Company from a Transferee, the Member shall acquire both the Economic Rights with respect to such interest and the Management Rights with respect to such interest, and the Management Rights of the Member from whom the Transferee's interest was obtained shall decrease accordingly. The Assigning Member shall not be released from liabilities to the Company, including without limitation Contribution obligations, but notwithstanding this the Acquiring Member shall be liable for any obligation to make Contributions with respect to the interest in the Company that the Acquiring Member so acquires. ORS 63.185(4) shall not apply to an Acquiring Member's acquisition of an interest in the Company as set forth above.

C. In the event a court of competent jurisdiction charges a Membership Interest with the payment of an unsatisfied amount of a judgment with interest, to the extent so charged the judgment creditor shall be treated as an Transferee.

D. Unless and until admitted as a Substitute Member, a Transferee shall only enjoy the rights of an assignee, as defined in ORS 63.249.

Section 8. Acceptance of Transferee as Substitute Member

A. Subject to the other provisions of this Article, a Transferee may be admitted to the Company as a Substitute Member, with all of the Management Rights of a Member, to the extent Transferred, only upon satisfaction of all of the conditions set forth below.

1. All Managers, and Remaining Members with aggregate Sharing Ratios in excess of 80% of the remaining Membership Interests, consent to the admission.

2. The Transferee shall become a party to this Agreement as a Member by executing such documents and instruments as the Managers may reasonably request as may be necessary or appropriate to confirm such Transferee as a Member in the Company and such Transferee's agreement to be bound by the terms and conditions hereof.

3. The Transferee shall pay or reimburse the Company for all reasonable legal, filing, and publication costs that the Company incurs in connection with the admission of the Transferee as a Member with respect to the Transferred interests.

4. The Transferee shall provide the Company with evidence satisfactory to counsel for the Company that such Transferee has made each of the representations and undertaken each of the warranties contained in the documents and instruments referred to above.

5. If the Transferee is not an individual of legal majority, the Transferee shall provide the Company with evidence satisfactory to counsel for the Company of the authority of the Transferee to become a Member and to be bound by the terms and conditions of this Agreement.

6. A Transferee who becomes a Substitute Member has, to the extent of the interests assigned, the rights and powers and is subject to the restrictions and liabilities of a Member under the Act, the Articles and this Agreement, and, to the extent of the interests assigned, is also liable for any obligations of the transferor to make Contributions, but is not obligated for liabilities reasonably unknown to the Transferee at the time the Transferee becomes a Member.

7. Neither the Member and any subsequent transferor is released from any liability to the Company by virtue of such Transfer or admission, even if the Transferee becomes a Substitute Member and even if the Member whose Membership Interest is being transferred ceases to be a Member by virtue of such act, but the Member ceases to be a Member when one or more Transferees become Substitute Members with respect to the Member's entire Membership Interest.

B. ORS 63.185(4) shall not apply in the event of the admission of a Substitute Member.

Section 9. Distributions and Allocations re: Transfers

If any Person's interest in the Company is Transferred during any Fiscal Year in compliance with the provisions of this Article, profits, losses, each item thereof, and all other items attributable to such interest for such Fiscal Year shall be divided and allocated between the transferor and the Transferee by taking into account their varying interests during such Fiscal Year in accordance with Code Section 706(d), using any conventions permitted by law and selected by the Managers. All distributions on or before the date of such Transfer shall be made to the transferor, and all distributions thereafter shall be made to the Transferee. Solely for purposes of making such allocations and distributions, the Company shall recognize such Transfer not later than the end of the calendar month during which it is given notice of such Transfer, provided that, if the Company is given notice of a Transfer at least ten Business Days prior to the Transfer the Company shall recognize such Transfer as the date of such Transfer, and provided further that, if the Company does not receive a notice stating the date such interest was Transferred and such other information as the Managers may reasonably require within 30 days after the end of the Fiscal Year during which the Transfer occurs, then all such items shall be allocated, and all distributions shall be made, to the Person who, according to the books and records of the Company, was the owner of the interest on the last day of the Fiscal Year during which the Transfer occurs. Neither the Company nor the Managers shall incur any liability for making allocations and distributions in accordance with the provisions of this Section, whether or not the Company or the Managers have knowledge of any Transfer of ownership of any interest.

Article Ten
Cessation of a Member

Section 1. Cessation

A Person shall cease to be a Member upon the happening of any of the following events:

A. The withdrawal of a Member;

B. The expulsion of a Member;

C. The Bankruptcy of a Member;

D. The transfer of a Member's entire membership interest;

E. In the case of a Member who is a natural person, the death of the Member or the entry of an order by a court of competent jurisdiction adjudicating the Member incompetent to manage the Member's person or estate;

F. In the case of a Member who is acting as a Member by virtue of being trustee of a trust, the termination of the trust (but not merely the substitution of a new trustee);

G. In the case of a Member that is a separate Entity other than a corporation, the dissolution and commencement of winding up of the separate Entity;

H. In the case of a Member that is a corporation, the filing of articles of dissolution or its equivalent, for the corporation or the revocation of its charter; or

I. In the case of an estate, the distribution by the fiduciary of the estate's entire interest in the Company.

Section 2. Withdrawal

A Member may voluntarily withdraw from the Company upon six months' written notice. Upon withdrawal, the Member shall enjoy only Economic Rights and no Management Rights, in accordance with ORS 63.249.

Section 3. Expulsion

A Member may be expelled from the Company upon a determination by the Managers that the Member has been guilty of wrongful conduct that adversely and materially affects the business or affairs of the Company, or has willfully and persistently committed a material breach of the Articles or this Agreement, or otherwise breached a duty owed to the Company or the other Members, to the extent that it is not reasonably practicable to carry on the business or affairs of the Company with the Member. An expelled Member shall be treated as having withdrawn voluntarily from the Company on the date of the expulsion determination and withdrawn in breach of this Agreement.

Section 4. Rights upon Cessation

In the event that any Person ceases to be a Member, the Person shall be treated as an assignee, enjoying only Economic Rights and no Management Rights, pursuant to ORS 63.265 and 63.249, from the date of Cessation until such time as the Person has received all distributions to which the Person is or may be due under this Agreement.

Article Eleven
Dissolution and Winding Up

Section 1. Covenant Not to Cause Dissolution

Except as otherwise permitted by this Agreement, each Member hereby covenants and agrees not to take any voluntary action that would cause the Company to dissolve and notwithstanding any provision of the Act, the Company shall not dissolve prior to the occurrence of a Dissolution Event.

Section 2. Dissolution Events

The Company shall dissolve and commence winding up and liquidating upon the first to occur of any of the following Dissolution Events:

A. The vote of the Members to dissolve, wind up, and liquidate the Company;
B. The happening of any other event that makes it unlawful, impossible, or impractical to carry on the business of the Company; or
C. The occurrence of an event which results in the Company having no Members.

Notwithstanding anything in ORS 63.621 to the contrary and except for the events which may cause judicial and administrative dissolution under ORS 63.621(5) and (6), the foregoing events are the exclusive events which may cause the Company to dissolve.

Section 3. Continuation

Upon the occurrence of any Dissolution Event set forth above, the Company shall not be dissolved or required to be wound up if, within 120 days after such event, 80% of the remaining Class A Members agree to continue the business of the Company. Upon any such election to continue the business, all Members shall be bound thereby and shall be deemed to have consented thereto. Unless such an election is made within the 120 day period, the Company shall wind up its affairs. If such an election is made within the 120 day period, the Company shall continue until the occurrence of another Dissolution Event; provided that the right to continue the business of the Company shall not exist and may not be exercised unless the Company has received an opinion of counsel, in a form and content satisfactory to the Company, that the Company would not cease to be treated as a partnership for federal income tax purposes upon the exercise of such right to continue.

Section 4. Winding Up

Upon the occurrence of a Dissolution Event and unless the election to continue the business of the Company is made, the Company shall continue solely for the purposes of winding up its affairs in an orderly manner, liquidating its assets, and satisfying the claims of its creditors and Members, and no Member shall take any action that is inconsistent with, or not necessary to or appropriate for, the winding up of the Company's business and affairs. To the extent not inconsistent with the foregoing, all obligations in this Agreement shall continue in full force and effect until such time as the Company Property has been distributed. The Manager shall be responsible for overseeing the winding up and dissolution of the Company, shall take full account of the Company's liabilities and Property, shall cause the Company Property to be liquidated as promptly as is consistent with obtaining the fair value thereof, and shall cause the proceeds therefrom, to the extent sufficient therefor, to be applied and distributed in the following order:

A. *First*, to the payment and discharge of all of the Company's debts and liabilities to creditors other than Members;

B. *Second*, to the payment and discharge of all of the Company's debts and liabilities to Members;

C. *Third*, the balance, if any, to the Members in accordance with their share of the profits, after giving effect to all distributions and allocations for all periods.

Section 5. Rights of Members

Except as otherwise provided in this Agreement,

A. Each Member shall look solely to the assets of the Company for the return of Contributions and shall have no right or power to demand or receive property other than cash from the Company, and

B. No Member shall have priority over any other Member as to the return of Contributions, distributions, or allocations.

Section 6. Notice of Dissolution

In the event a Dissolution Event occurs or an event occurs that would, but for provisions of Section 3 above, result in a dissolution of the Company, the Managers having knowledge of such event shall, within 30 days thereafter, provide written notice thereof to each of the Members and to all other parties with whom the Company regularly conducts business (as determined in the discretion of the

Members) and shall publish notice thereof in a newspaper of general circulation in each place in which the Company regularly conducts business (as determined in the discretion of the Members).

Article Twelve

Taxes

Section 1. Elections

The Managers may make any tax elections for the Company allowed under the Code or the tax laws of any state or other jurisdiction having taxing jurisdiction over the Company, including but without limitation, elections:

A. To adjust the basis of Company Property pursuant to Code Sections 754, 734(b), and 743(b), or comparable provisions of state or local law, in connection with transfers of interests in the Company and Company distributions;

B. With the consent of the Members, to extend the statute of limitations for assessment of tax deficiencies against Members with respect to adjustments to the Company's federal, state, or local tax returns; and

C. To the extent provided in Code Sections 6221 through 6231, to represent the Company, the Managers, and the Members before taxing authorities or courts of competent jurisdiction in tax matters affecting the Company, the Managers, and the Members in their capacities as Managers or as Members, and to file any tax returns and to execute any agreements or other documents relating to or affecting such tax matters, including agreements or other documents that bind the Members with respect to such tax matters or otherwise affect the rights of the Company, the Managers, and Members.

Section 2. Taxes of Taxing Jurisdictions

To the extent that the laws of any taxing jurisdiction require, each Member requested to do so by the Managers will submit an agreement indicating that the Member will make timely income tax payments to the taxing jurisdiction and that the Member accepts personal jurisdiction of the taxing jurisdiction with regard to the collection of income taxes attributable to the Member's income, and interest and penalties assessed on such income. If the Member fails to provide such agreement, the Company may withhold and pay over to such taxing jurisdiction the amount of tax, penalty and interest determined under the laws of the taxing jurisdiction with respect to such income. Any such payments with respect to the income of a Member shall be treated as a distribution for purposes of Article Seven. The Managers may, where permitted by the rules of any taxing jurisdiction, file a composite, combined or aggregate tax return reflecting the income of the Company and pay the tax, interest and penalties of some or all of the Members on such income to the taxing jurisdiction, in

which case the Company shall inform the Members of the amount of such tax interest and penalties so paid.

Section 3. Tax Matters Partner

The Managers shall designate one of their number or, if there are no Managers eligible to act as tax matters partner, any Member as the tax matters partner of the Company pursuant to Code Section 6231(a)(7). Any Member designated as tax matters partner shall take such action as may be necessary to cause each other Member to become a notice partner within the meaning of Section 6223 to the Code. Any Member who is designated tax matters partner may not take any action contemplated by Code Sections 6222 through 6232 without the consent of the Managers.

Article Thirteen

Banking, Books, Records, and Accountings

Section 1. Banking

All funds of the Company will be deposited in a separate bank account or in an account or accounts as will be determined by the Manager. Such funds may be withdrawn from such account or accounts upon the signature of such person or persons as are designated by the Manager.

Section 2. Books, Records, and Accountings

At the expense of the Company, the Managers shall maintain records and accounts of all operations and expenditures of the Company. At a minimum the Company shall keep at its principal place of business the following records:

A. A current list of the full name and last known business, residence, or mailing address of each Member and Manager, both past and present;

B. A copy of the Articles and all amendments thereto, together with executed copies of any powers of attorney pursuant to which any amendment has been executed;

C. Copies of the Company's federal, state, and local income tax returns and reports, if any, for the three most recent years;

D. Copies of the Company's currently effective written operating agreement and all amendments thereto, copies of any writings permitted or required under the Act and copies of any financial statements of the Company for the three most recent years;

E. Minutes of every meeting of the Members and the Managers and any written consents obtained from Members or Managers for actions taken without a meeting; and

F. A statement prepared and certified as accurate by the Managers which describes the amount of cash and a description and statement of the agreed value of other Property or consideration contributed by each Member and which each Member has agreed to contribute in the future, the times at which or events on the occurrence of which any additional Contributions agreed to be made by each Member are to be made, and if agreed upon, the time at which or the events on the occurrence of which the Company is dissolved and its affairs wound up.

G. The Managers shall provide reports at least annually to the Members at such time and in such manner as the Managers may determine reasonable. In addition, if the Company indemnifies or advances expenses to a Manager in connection with a proceeding by or in the right of the Company, the Company shall report the indemnification or advance in writing to the Members.

Article Fourteen

Amendment

This Agreement may be amended, restated or modified from time to time only by a written instrument adopted by the Members and Managers, as set forth in Articles Two and Three. No Member or Manager shall have any vested rights in this Agreement which may not be modified through an amendment to this Agreement.

Article Fifteen

Definitions

The following terms used in this Agreement shall have the following meanings (unless otherwise expressly provided herein);

A. **"Act"** shall mean the Oregon Limited Liability Company Act.

B. **"Additional Contribution"** shall mean any Contribution made pursuant to Article Five, Section B.

C. **"Additional Member"** shall mean a Member, other than an Initial Member, who has acquired a Membership Interest from the Company.

D. **"Adjusted Capital Account Deficit"** shall mean a deficit balance in any Member's Capital Account at the end of any fiscal year, after adjustment to reflect any Adjustment Items, to the extent that the deficit exceeds the amount of a Member's shares of Company Minimum Gain and Member Nonrecourse Debt Minimum Gain (if any) that the Member is deemed to be obligated to restore pursuant to Treasury Regulation §§1.704-2(g)(1) and 1.704-2(i)(5).

E. **"Adjustment Items"** shall mean adjustments, allocations, and distributions described in Treasury Regulation §§1.704-1(b)(2)(ii)(d)(4), (5), and (6).

F. **"Admission Agreement"** shall mean the agreement between a Member and the Company described in Section YZ below; Article Five, Sections A and C; and Article Eight, Section A.

G. **"Agreement"** shall mean this Operating Agreement as originally executed and as amended or restated from time to time.

H. **"Articles"** shall mean the Articles of Organization of the Company as filed with the Secretary of State of Oregon as the same may be amended or restated from time to time.

I. **"Bankruptcy"** shall mean, with respect to any Person, bankruptcy as defined in ORS 63.001(3).

J. **"Business Day"** shall mean any day other than Saturday, Sunday or any legal holiday observed in Oregon.

K. **"Capital Account"** shall mean the account maintained with respect to a Member determined in accordance with Article Five, Section 4.

L. **"Capital Interest"** shall mean a Person's positive Capital Account as it may be adjusted from time to time.

M. **"Cessation"** shall mean any action which causes a Person to cease to be Member as described in Article Ten hereof.

N. **"Code"** shall mean the Internal Revenue Code of 1986 or corresponding provisions of subsequent superseding federal revenue laws.

O. **"Company"** shall refer to BATTLE CREEK LLC.

P. **"Company Minimum Gain"** shall mean, as of any date, the amount of gain, if any, that would be recognized by the Company for federal income tax purposes, as if it disposed of property in a taxable transaction on that date in full satisfaction of any nonrecourse liability secured by the property, computed in accordance with Treasury Regulation §1.704-2(d)(1).

Q. **"Company Property"** shall mean any Property owned by the Company.

R. **"Confidential Information"** means information or material proprietary to the Company or proprietary to others and entrusted to the Company, whether written or oral, tangible or intangible, which a Member obtains knowledge of through or as a result of the Member's activities on behalf of the Company. Confidential Information may include, without limitation, data, know-how, trade secrets, designs, plans, drawings, specifications, reports, customer and supplier lists, pricing information, marketing techniques and materials, and manufacturing techniques and processes, whether related to the Company's past, present or future business activities, research or development, or products.

S. **"Contributing Members"** shall mean those Members making Contributions as a result of the failure of a Delinquent Member to make Contributions as described in Article Five.

T. **"Contribution"** shall mean, with respect to any Member, the amount of money and the initial value of any Property (other than money) or the fair market value of services contributed or to be contributed to the Company with respect to the interest in the Company held by such Person.

U. **"Default Interest Rate"** shall mean the lesser of any maximum legal rate or the then-current prime rate quoted by United States National Bank of Oregon, N.A. plus 3 percent.

V. **"Delinquent Member"** shall mean a Member or Transferee who has failed to fulfill a Contribution obligation.

W. **"Dissolution Event"** shall mean the events identified in Article Eleven, Section B.

X. **"Economic Rights"** shall mean, with respect to any Membership Interest, a Person's share of the profits, losses, capital and distributions of Company Property pursuant to the Act, the Articles and this Agreement but shall not include any Management Rights.

Y. **"Effective Date"** shall mean the date the Articles are filed.

Z. **"Entity"** shall mean any general partnership, limited partnership, limited liability company, corporation, joint venture, trust, business trust, cooperative or association or any foreign trust or foreign business organization.

AA. **"Family"** shall mean a Member's spouse, natural or adoptive lineal ancestors or descendants, and trusts for which any of them are more than insignificant beneficiaries.

BB. **"Fiscal Year"** shall mean the Company's fiscal year, which shall be determined pursuant to Code Section 706.

CC. **"Initial Contribution"** shall mean the initial Contribution made pursuant to Exhibit "A".

DD. **"Initial Members"** shall mean those Persons identified on Exhibit A attached hereto and made a part hereof by this reference who have executed the Agreement and an Admission Agreement.

EE. **"Majority"** shall mean, with respect to the Members or the remaining Members, greater than 50%, in terms of Sharing Ratios, of all the Members or all the remaining Members required to vote on a given topic; provided however, in the case of a meeting of the Members at which a quorum is present, "Majority" shall mean greater than 50%, in terms of Sharing Ratios, of the Members or remaining Members who are present, in person or by proxy at such meeting.

FF. **"Management Right"** shall mean the right of a Member to participate in the management of the Company, including the rights to information and to consent or approve actions of the Members.

GG. **"Manager"** shall mean a Person designated or selected to manage the affairs of the Company under this Agreement.

HH. **"Member"** shall mean each of the parties who executes a counterpart of this Agreement as an Initial Member and each of the parties who may hereafter become Additional or Substitute Members.

II. **"Membership Interest"** shall mean a Member's entire interest in the Company including such Member's Economic Rights and Management Rights.

JJ. **"Member Nonrecourse Debt"** has the same meaning as "partner nonrecourse debt" set forth in Treasury Regulation §1.704-2(b)(4).

KK. **"Member Nonrecourse Debt Minimum Gain"** means an amount, with respect to each Member Nonrecourse Debt, equal to the Company Minimum Gain that would result if such Member Nonrecourse Debt were treated as a Nonrecourse Liability, determined pursuant to Treasury Regulation §1.704-2(i)(2) and (3).

LL. **"Member Nonrecourse Deductions"** has the same meaning as "partner nonrecourse deductions" set forth in Treasury Regulation §1.704-2(i)(2). The amount of Member Nonrecourse Deductions with respect to a Member Nonrecourse Debt for a Company fiscal year equals the excess, if any, of: (A) the net increase, if any, in the amount of the Company Minimum Gain attributable to such Member Nonrecourse Debt during the fiscal year over (B) the aggregate amount of any distribution during the fiscal year to the Member that bears the economic risk of loss for such Member Nonrecourse Debt to the extent the distributions are from proceeds of the Member Nonrecourse Debt and are allocable to an increase in Member Nonrecourse Debt Minimum Gain attributable to the Member Nonrecourse Debt, determined pursuant to Treasury Regulation §1.704-2(i).

MM. **"Net Cash Flow"** shall mean, for any given fiscal period of the Company, the amount by which (1) the gross cash receipts received by the Company during that fiscal period exceed (2) the sum, without duplication, of (a) all cash operating expenses of the Company during that fiscal period, (b) debt service payments made during that fiscal period on all indebtedness of the Company, (c) payments made during that fiscal period on account of the maintenance, leasing, repair, replacement, or improvement of property of the Company, and (d) all amounts allocated during that fiscal period, in the reasonable judgment of the Manager, to reserves established to meet the reasonable needs of the business, including working capital and capital improvement requirements and for reserves for unknown or unfixed liabilities or contingencies of the Company.

NN. **"Nonrecourse Deductions"** has the meaning set forth in Treasury Regulation §1.704-2(c). The amount of Nonrecourse Deduction for a Company fiscal year equals excess, if any, of the net increase, if any, in the amount of Company Minimum Gain during that fiscal year over the aggregate amount of any distributions during that fiscal year of proceeds of a Nonrecourse Liability that are allocable to an increase in Company Minimum Gain, determined pursuant to Treasury Regulation §1.704-2(c).

OO. **"Nonrecourse Liability"** has the meaning set forth in Treasury Regulation §1.704-2(b)(3).

PP. **"Permitted Transfer"** shall mean a Transfer of a Person's interest in the Company in accordance with Article Nine, Section 2.

QQ. **"Person"** shall mean any individual or Entity, and the heirs, executors, administrators, legal representatives, successors, and assigns of such "Person" where the context so permits.

RR. **"Property"** shall mean any property, real or personal, tangible or intangible, including money and any legal or equitable interest in such property, but excluding services and promises to perform services in the future.

SS. **"Regulations"** shall mean proposed, temporary and final regulations promulgated under the Code in effect as of the date of filing the Articles and the corresponding sections of any regulations subsequently issued that amend or supersede such regulations.

TT. **"Sharing Ratio"** shall mean the proportion that a Person's share of profits bears to that of all Person's entitled to share in profits.

UU. **"Substitute Member"** shall mean a Person who would otherwise be a Transferee but who has been admitted to all of the rights of membership (including Management Rights) as to the portion of a Member's Membership Interest being Transferred; provided however, it shall not include an existing Member who increases the Member's interest by acquiring an interest in the Company from another Person.

VV. **"Transferee"** shall mean the owner of Economic Rights who is not a Member and as such has no Management Rights.

WW. **"Transfer"** shall mean, as a noun, any voluntary or involuntary transfer, sale, or other disposition and, as a verb, voluntarily or involuntarily to transfer, sell, or otherwise dispose of; and shall include, without limitation, any sale, assignment, exchange, gift, devise, bequest, descent, pledge, hypothecation, lien, encumbrance, attachment, levy, foreclosure, sale by legal process, or other change in ownership, whether voluntary, involuntary, or by operation of law. The term transfer as used in this Agreement shall also include any filing by or against a member under any bankruptcy, reorganization, receivership, or other laws providing relief for debtors (collectively, Debtor Relief Laws). The term transfer shall not, however, include any gift, assignment, or sale to the Company, nor shall it include any such transfer in trust for the benefit of the spouse, children, or descendants of a member, or any transfer by a member to his or her spouse of an undivided interest in any membership interest, provided that in either such case, the transferring member shall retain all voting rights with respect to the membership interest so transferred.

Article Sixteen

Miscellaneous

Section 1. Application of Oregon Law

This Agreement, and the application of interpretation hereof, shall be governed exclusively by its terms and by the laws of Oregon, and specifically the Act.

Section 2. Construction

Whenever the singular number is used in this Agreement and when required by the context, the same shall include the plural and vice versa, and the masculine gender shall include the feminine and neuter genders and vice versa.

Section 3. Counterparts

This Agreement may be executed in counterparts, each of which shall be deemed an original but all of which shall constitute one and the same instrument.

Section 4. Execution of Additional Instruments

Each Member hereby agrees to execute such other and further statements of interest and holdings, designations, powers of attorney and other instruments necessary to comply with any laws, rules or regulations.

Section 5. Headings

The headings in this Agreement are inserted for convenience only and are in no way intended to describe, interpret, define, or limit the scope, extent or intent of this Agreement or any provision hereof.

Section 6. Heirs, Successors and Assigns

Each and all of the covenants, terms, provisions and agreements herein contained shall be binding upon and inure to the benefit of the parties hereto and, to the extent permitted by this Agreement, their respective heirs, legal representatives, successors and assigns.

Section 7. Notices

Any notice, demand, or communication required or permitted to be given by any provision of this Agreement shall be deemed to have been sufficiently given or served for all purposes if delivered personally to the party or to an executive officer of the party to whom the same is directed or, if sent by registered or certified mail, postage and charges prepaid, addressed to the Member's and/or Company's address, as appropriate, which is set forth in this Agreement. Except as otherwise provided herein, any such notice shall be deemed to be given three business days after the date on which the same was deposited in a regularly maintained receptacle for the deposit of United States mail, addressed and sent as aforesaid.

Section 8. Rights and Remedies Cumulative

The rights and remedies provided by this Agreement are cumulative and the use of any one right or remedy by any party shall not preclude or waive the right to use any or all other remedies. Said rights and remedies are given in addition to any other rights the parties may have by law, statute, ordinance or otherwise.

Section 9. Severability

If any provision of this Agreement or the application thereof to any person or circumstance shall be invalid, illegal or unenforceable to any extent, the remainder of this Agreement and the application thereof shall not be affected and shall be enforceable to the fullest extent permitted by law.

Section 10. Waivers

The failure of any party to seek redress for violation of or to insist upon the strict performance of any covenant or condition of this Agreement shall not prevent a subsequent act, which would have originally constituted a violation, from having the effect of an original violation.

Section 11. Arbitration

If any controversy or claim arising out of this Agreement or the parties' relationship cannot be settled, the controversy or claim shall be settled by arbitration in accordance with the rules of the American Arbitration Association or Arbitration Services of Portland, Inc., whichever organization is selected by the party which first initiates arbitration by filing a claim in accordance with the rules of the organization, as then in effect, and judgment on the award may be entered in any court having jurisdiction. Nothing herein, however, shall prevent a Member or the Company from resort to a

court of competent jurisdiction in those instances where injunctive relief may be appropriate or for purposes of expelling a Member.

Section 12. Attorney Fees

In the event arbitration is instituted to enforce or determine the parties' rights in connection with the Company or duties arising out of the terms of this Agreement or the parties' relationship or a suit or action permitted herein is brought, the prevailing party shall recover from the losing party reasonable attorney fees incurred in such proceeding. The determination of who is the prevailing party and the amount of reasonable attorney fees to be paid to the prevailing party shall be decided by the arbitrator(s) (with respect to attorney fees incurred prior to and during arbitration proceedings) and by the court or courts, including any appellate court, in which such matter is tried, heard, or decided, including the court which hears any exceptions made to an arbitration award submitted to it for confirmation as a judgment (with respect to attorney fees incurred in such confirmation proceedings).

Section 13. Entire Agreement

This Agreement and any other document to be furnished pursuant to the provisions hereof embody the entire agreement and understanding of the parties hereto as to the subject matter contained herein. There are no restrictions, promises, representations, warranties, covenants, or undertakings other than those expressly set forth or referred to in such documents. This Agreement and such documents supersede all prior agreements and understandings among the parties with respect to the subject matter hereof.

BATTLE CREEK LLC

By: Robert W. Nunn, Manager

MEMBERS
Evelyn M. Coburn Living Trust, dated March 15, 1995

By: Robert W. Nunn, Trustee

EXHIBIT A

ORGANIZER: Kathleen A. Evans

* * * * * *

INITIAL
MEMBER CONTRIBUTIONS:

CLASS A MEMBERS,
HOLDING A TOTAL OF ONE PERCENT (1%)
OF ALL MEMBERSHIP INTERESTS:

NAME AND ADDRESS	CONTRIBUTION	VALUE	%
Evelyn M. Coburn Living Trust, dated March 15, 1995, c/o Robert W. Nunn, Trustee 1000 SW Broadway, Suite 1400 Portland, OR 97205	1% of the real property described on the deeds attached to the Admission Agreement		100%

CLASS B MEMBERS,
HOLDING A TOTAL OF NINETY-NINE PERCENT (99%)
OF ALL MEMBERSHIP INTERESTS:

NAME AND ADDRESS	CONTRIBUTION	VALUE	%
Evelyn M. Coburn Living Trust, dated March 15, 1995, c/o Robert W. Nunn, Trustee 1000 SW Broadway, Suite 1400 Portland, OR 97205	99% of the real property described on the deeds attached to the Admission Agreement		100%

EXHIBIT B

LEDGER OF OWNERSHIP

BATTLE CREEK LLC

MEMBER'S NAME	PERCENT OF OWNERSHIP	TRANSFEREE	PERCENT TRANSFERRED
Evelyn M. Coburn Living Trust dated March 15, 1995	100%		

063953-96

FILED
FEB -7 2002
OREGON
SECRETARY OF STATE

ARTICLES OF ORGANIZATION

Limited Liability Company

of

BOULDER HILL LLC

Article 1: The name of the company shall be BOULDER HILL LLC.

Article 2: The duration of the company shall be perpetual.

Article 3: The name of the initial registered agent is Robert W. Nunn, and the street address of the initial registered office is:

1000 SW Broadway, Suite 1400
Portland, OR 97205

Article 4: The address where the Division may mail notices is:

Robert W. Nunn
1000 SW Broadway, Suite 1400
Portland, OR 97205

Article 5: The name and address of each organizer is:

Kathleen A. Evans
280 Court St. NE
Salem, OR 97301

Article 6: This company will be managed by a manager(s).

Kathleen A. Evans	Organizer
Signature	Printed Name	Title

Person to contact about this filing: Kathleen A. Evans, (503) 588-5670.

2.6.2 11:08 Coburn JH\Articles

Evans, Freeby & Jennings, LLP
Attorneys at Law
280 Court Street N.E., Suite One
Salem, Oregon 97301
(503) 588-5670

2-7-02

I certify that this is a true copy of the original and of the whole thereof.

Article Two

Members

Section 1.Authority to Act

No Member shall have the power or authority to bind the Company unless the Member is a Manager or the Member has been authorized by the Managers to act as an agent of the Company in accordance with this Agreement.

Section 2. Two Classes of Members

There shall be two classes of members.

A. Members of Class A shall have both Economic Rights and Management Rights and shall have the ability to vote on all matters and to elect the Managers of the Company. Whenever this Agreement requires a certain percentage vote to act, that percentage shall always refer to Class A membership interests; Class B membership interests shall be referred to only for those matters specifically listed in paragraph C below. All Class A Members shall be entitled to vote on or consent to any matter submitted to a vote or consent of the Members. In addition to any other actions which, by virtue of the Act, the Articles or this Agreement require a certain consent of the Members, the following actions require the consent of a Majority of the Class A Members:

1. Fixing the number of Managers;
2. Electing the Managers;
3. Setting or adjusting the compensation or benefits of Managers;
4. Removing any Manager without cause;
5. Removing any Manager for cause;
6. Filling any vacancy created by the resignation, removal or death of a Manager;
7. Filling any vacancy created by the increase in the number of Managers;
8. Approving any transaction involving an actual or potential conflict of interest between a Member or a Manager and the Company;

Article Three

Managers

Section 1. General

A. **Initial Managers.** Robert W. Nunn shall serve as the Initial Manager.

B. **Term.** Each Manager shall hold office until the Manager resigns, dies, dissolves (if an entity other than an individual), or is removed or replaced.

C. **Election.** Except as otherwise provided herein, Managers shall be elected by the Class A Members.

D. **Resignation.** Any Manager may resign at any time by giving written notice to the Members. The resignation of any Manager shall take effect upon receipt of notice thereof or at such later time as shall be specified in such notice; and, unless otherwise specified therein, the acceptance of such resignation shall not be necessary to make it effective. The resignation of a Manager who is also a Member shall not affect the Manager's rights as a Member and shall not constitute a withdrawal as a Member.

Section 2. Action by Managers

The rights and powers of the Managers hereunder shall be exercised by them in such manner as they may agree. In the absence of an agreement among the Managers, the following shall apply:

A. **Place of Meetings.** The Managers may designate any place, either within or outside of Oregon, as the location for any meeting of the Managers. If no designation is made, or if a special meeting be otherwise called, the place of meeting shall be the principal executive office of the Company in Oregon.

B. **Notice of Meetings.** Except as provided below, written notice stating the place, day and hour of the meeting and the purpose or purposes for which the meeting is called shall be delivered not less than 10 hours nor more than 50 days before the date of the meeting, either personally or by mail, by or at the direction of the Managers or person calling the meeting, to each Manager. If mailed, such notice shall be deemed to be delivered two calendar days after being deposited in the United States mail, addressed to the Manager at the Manager's address as it appears on the books of the Company, with postage thereon prepaid.

I. **Telephonic Meetings.** With respect to a particular meeting or generally with respect to future meetings, the Managers may permit any or all Managers to participate in the meeting by, or may permit the conduct of the meeting through, use of any means of communication by which all Managers participating may simultaneously hear each other. A Manager participating in such a meeting is deemed to be present in person at such meeting.

Section 3. Authority of the Managers

Subject to the limitations and restrictions set forth in the Act, the Articles and this Agreement (including, without limitation, those set forth in this Article), the Managers shall have the sole and exclusive right to manage the business of the Company and shall have all of the rights and powers which may be possessed by Managers under the Act and the Articles including, without limitation, the right and power, on behalf and in the name of the Company, to:

A. Institute, prosecute, and complain and defend in all courts in the Company's name;

B. Purchase, take, receive, lease or otherwise acquire, own, hold, improve, use and otherwise deal in or with real or personal property or any interest in real or personal property, wherever situated;

C. Sell, convey, mortgage, pledge, create a security interest in, lease, exchange, transfer and otherwise dispose of a part of the Company Property in the ordinary course, subject, however, to the restrictions set forth in Article Two, Section 2, regarding a disposition of all or substantially all of the Property, which must be approved by the Members as set forth therein;

D. Purchase, take, receive, subscribe for or otherwise acquire, own, hold, vote, use, employ, sell, mortgage, lend, pledge, otherwise dispose of and otherwise use or deal in or with other interests in or obligations of any other Entity;

E. Make contracts or guarantees, incur liabilities, borrow money, issue Company notes or other obligations that may be convertible into other securities of the Company, or include the option to purchase other securities of the Company, or secure any of the Company's obligations by mortgage or pledge of any of the Company Property, franchises or income;

F. Lend money, invest or reinvest Company funds or receive and hold real or personal property as security for repayment of funds so loaned, invested or reinvested, including, without limitation, the loans to Managers, Members, employees and agents;

G. Be a promoter, incorporator, general partner, limited partner, member, associate or manager of any partnership, joint venture, trust or other Entity;

H. Conduct the Company's business, locate its offices and exercise the powers granted by the Act and the Articles within or without Oregon;

I. Elect or appoint Managers, employees or agents of the Company, define their duties, fix their compensation and lend them money and credit;

J. Make and alter this Agreement not inconsistent with the Articles or the laws of Oregon for managing the Company's business and regulating its affairs;

K. Pay pensions and establish pension plans, profit sharing plans and other benefit or incentive plans for any and all of its current or former Managers, Members, employees and agents;

L. Make donations for the public welfare or for charitable, scientific or educational purposes;

M. Transact any lawful business that will aid governmental policy;

N. Indemnify a Member or Manager or any other person as and to the extent not inconsistent with the provisions of the Act or the Articles;

O. Cease the Company's activities and dissolve.

Section 4. Restrictions on Authority of Managers

In addition to any other consent requirements contained in the Act, the Articles, or this Agreement, each Manager shall not have the authority to, and covenants and agrees that it shall not, do any of the following acts without the consent of a Majority of the Managers in addition to any required consent of the Members:

A. Determining the amount and kind of property available for and the timing of distributions;

B. Admitting an Additional Member;

C. Accepting a Substitute Member;

D. Expelling a Member; or

E. Taking or approving any action or transaction which is reserved to the Managers by the Act, the Articles or this Agreement without any express statement of the extent of Manager action required.

and losses of the Company or any other facts pertinent to the existence and amount of assets from which distributions to the Members might properly be paid.

Section 6. Right to Rely on Managers.

Any Person dealing with the Company may rely (without duty of further inquiry) upon a certificate signed by any Manager as to:

A. The identity of any Manager or any Member;

B. The existence or nonexistence of any fact or facts which constitute a condition precedent to acts by a Manager or which are in any other manner germane to the affairs of the Company;

C. The Persons who are authorized to execute and deliver any instrument or document of the Company; or

D. Any act or failure to act by the Company or any other matter whatsoever involving the Company or any Member.

E. The signature of any Manager shall be necessary and sufficient to convey title to any Company Property or to execute any promissory notes, trust deeds, mortgages, or other instruments of hypothecation, and all of the Members agree that a copy of this Agreement may be shown to the appropriate parties in order to confirm the same, and further agree that the signature of any Manager shall be sufficient to execute any "statement of company" or other documents necessary to effectuate this or any other provision of this Agreement. All of the Members do hereby appoint the Managers as their attorney(s)-in-fact for the execution of any or all of the documents described in this Section.

Section 7. Liability and Indemnity of the Managers

A Manager is not personally liable for any debt, obligation or liability of the Company merely by reason of being a Manager and is not liable to the Company or its Members for monetary damages for conduct as a Manager. A Manager who performs the duties as Manager in accordance with this Agreement shall not have any liability by reason of being or having been a Manager. The Company shall indemnify the Managers and make advances for expenses to the maximum extent permitted under the Act. However, this provision shall not eliminate or limit a Manager's liability for:

A. Any breach of a Manager's duty of loyalty to the Company or its Members as described in this Agreement;

Signature Certificate

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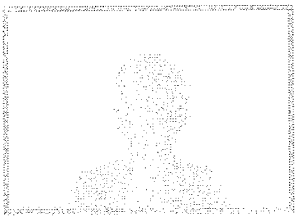
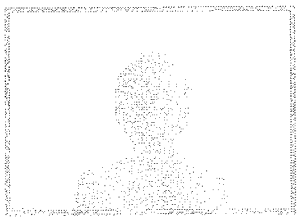


Nunn Winship
Party ID: KVTH7TJ4ZKDHD4SP2C2YN3
IP Address: 72.168.160.145
VERIFIED EMAIL: nunn.winship@gmail.com

Electronic Signature

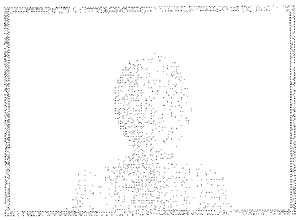
Multi-Factor Digital Fingerprint Checksum: ab9879e467c7f34859c384b0a739900ee8b86dd7



Murray Nunn
Party ID: 3GUDINITB4HJU75MFLYAW9
IP Address: 73.11.30.65
VERIFIED EMAIL: wallenda1@comcast.net

Electronic Signature

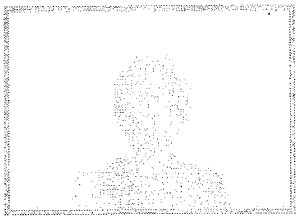
Multi-Factor Digital Fingerprint Checksum: c975c0fbcaacb0335e34cf6666e9bb0aaf3c0244



Carol Gross
Party ID: LCNY83IFALMPXHEG8VYTGG
IP Address: 50.137.32.77
VERIFIED EMAIL: g.cgross@comcast.net

Electronic Signature

Multi-Factor Digital Fingerprint Checksum: f61d1b4e12c9fde7a4b69323ae5e6df388bec795



Linda Schaefers
Party ID: XBF9X5JMAKS35NHSN9REGP
IP Address: 98.155.243.141
VERIFIED EMAIL: lschaefers1@q.com

Electronic Signature

Multi-Factor Digital Fingerprint Checksum: 24dcb0194abae6699858cb889499cf69ebaa02ba

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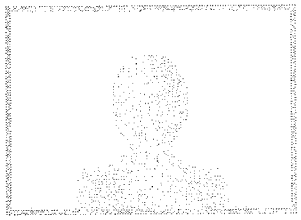
Kathy Young
Party ID: 9LUJ77ILTJ2M5YSGJNUZM3
IP Address: 73.97.130.255
VERIFIED EMAIL: kathyy@seanet.com

Electronic Signature:
Kathryn L. Young

Multi-Factor Digital Fingerprint Checksum: 454fd84929b31836648fcb94274051e83ada682b



Robert Nunn
Party ID: XSS27XJUGKCEJPESSY2S5A
IP Address: 70.97.160.105
VERIFIED EMAIL: robert@robertnunn.com

Electronic Signature:
Robert Nunn

Multi-Factor Digital Fingerprint Checksum: a7b30f4fc1abef98bd7a3a7e086c8737240fc613

Timestamp	Audit
2017-04-21 17:17:35 -0700	All parties have signed document. Signed copies sent to: Nunn Winship, Murray Nunn, Carol Gross, Linda Schaefers, Kathy Young, Robert Nunn, and Robert Nunn.
2017-04-21 17:17:35 -0700	Document signed by Carol Gross (g.cgross@comcast.net) with drawn signature. - 50.137.32.77
2017-04-21 17:14:34 -0700	Document viewed by Carol Gross (g.cgross@comcast.net). - 50.137.32.77
2017-04-17 10:03:20 -0700	Document signed by Linda Schaefers (lschaefers1@q.com) with drawn signature. - 98.155.243.141
2017-04-17 01:09:33 -0700	Document viewed by Linda Schaefers (lschaefers1@q.com). - 98.155.243.141
2017-04-16 19:35:24 -0700	Document signed by Nunn Winship (nunn.winship@gmail.com) with drawn signature. - 72.168.160.145
2017-04-16 19:33:17 -0700	Document viewed by Nunn Winship (nunn.winship@gmail.com). - 72.168.160.145
2017-04-16 15:35:06 -0700	Document signed by Kathy Young (kathyy@seanet.com) with drawn signature. - 73.97.130.255
2017-04-16 15:33:53 -0700	Document viewed by Kathy Young (kathyy@seanet.com). - 73.97.130.255
2017-04-16 15:14:10 -0700	Document signed by Murray Nunn (wallenda1@comcast.net) with drawn signature. - 73.11.30.65
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2017-04-16 15:10:43 -0700	Document viewed by Robert Nunn (robert@robertnunn.com). - 70.97.160.105

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Signature Certificate

Document Reference: KADUFLIZAILAE95HCSLB4M

RightSignature
Easy Online Document Signing

2017-04-16 15:10:43 -0700 Document created by Robert Nunn (robert@robertnunn.com). - 70.97.160.105

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UNANIMOUS CONSENT ACTION OF THE MEMBERS OF BOULDER HILL LLC

We consent to the sale of all real estate owned by Boulder Hill LLC substantially on the terms contained in the counter offer to Westwood Homes LLC dated April 14, 2017. Robert Nunn, manager of Bolder Hill LLC, is authorized to make modifications to the sale as he deems appropriate, and he is authorized to take all actions and deliver such documents as may be necessary or convenient in connection with the sale.

F. Carol Gross — Dated: April 21 2017

F. Carol Gross

Murray C. Nunn — Dated: April 04/16/2017 2017

Murray C. Nunn

Robert Nunn — Dated: April 04/16/2017 2017

Robert W. Nunn

Linda Schaefer — Dated: April 4/17/2017 2017

Linda S. Schaefers

Nunn Winship — Dated: April 04/16/2017 2017

Nunn Winship

Kathryn L. Young — Dated: April 04/16/2017 2017

Kathryn L. Young

d.

Business Name Search

New Search | Printer Friendly

Business Entity Data

07-18-2018
16:17

Registry Nbr	Entity Type	Entity Status	Jurisdiction	Registry Date	Next Renewal Date	Renewal Due?
063953-96	DLLC	ACT	OREGON	02-07-2002	02-07-2019	
Entity Name	BOULDER HILL LLC					
Foreign Name						

New Search | Printer Friendly

Associated Names

Type	PPB	PRINCIPAL PLACE OF BUSINESS				
Addr 1	0841 SW GAINES ST					
Addr 2	UNIT 606					
CSZ	PORTLAND	OR	97239		Country	UNITED STATES OF AMERICA

Please click here for general information about registered agents and service of process.

Type	AGT	REGISTERED AGENT		Start Date	02-07-2002	Resign Date	
Name	ROBERT	W	NUNN			
Addr 1	0841 SW GAINES ST					
Addr 2	UNIT 606					
CSZ	PORTLAND	OR	97239		Country	UNITED STATES OF AMERICA

Type	MAL	MAILING ADDRESS				
Addr 1	0841 SW GAINES ST					
Addr 2	UNIT 606					
CSZ	PORTLAND	OR	97239		Country	UNITED STATES OF AMERICA

Type	MGR	MANAGER			Resign Date	
Name	ROBERT	W	NUNN			
Addr 1	0841 SW GAINES ST					
Addr 2	UNIT 606					

CSZ	PORTLAND	OR	97239		Country	UNITED STATES OF AMERICA

New Search Printer Friendly

Name History

Business Entity Name	Name Type	Name Status	Start Date	End Date
BOULDER HILL LLC	EN	CUR	02-07-2002	

Please read before ordering Copies.

New Search Printer Friendly

Summary History

Image Available	Action	Transaction Date	Effective Date	Status	Name/Agent Change	Dissolved By
	ANNUAL REPORT PAYMENT	01-26-2018		SYS		
	ANNUAL REPORT PAYMENT	01-11-2017		SYS		
	ANNUAL REPORT	03-16-2016		FI		
	AMENDED ANNUAL REPORT	01-20-2015		FI		
	ANNUAL REPORT PAYMENT	12-26-2013		SYS		
	ANNUAL REPORT PAYMENT	03-08-2013		SYS		
	ANNUAL REPORT PAYMENT	02-29-2012		SYS		
	ANNUAL REPORT PAYMENT	03-15-2011		SYS		
	ANNUAL REPORT PAYMENT	02-23-2010	02-22-2010	SYS		
	ANNUAL REPORT PAYMENT	01-06-2009		SYS		
	ANNUAL REPORT PAYMENT	01-11-2008		SYS		
	ANNUAL REPORT PAYMENT	01-30-2007		SYS		
	ANNUAL REPORT PAYMENT	01-06-2006		SYS		
	ANNUAL REPORT PAYMENT	12-30-2004		SYS		
	ANNUAL REPORT PAYMENT	01-02-2004		SYS		
	AMENDED ANNUAL REPORT	03-04-2003		FI		
		02-07-2002		FI	Agent	

ARTICLES OF ORGANIZATION

AMENDED ANNUAL REPORT

Corporation Division
www.filinginoregon.com

E-FILED
Jan 20, 2015
OREGON SECRETARY OF STATE

REGISTRY NUMBER

6395396

REGISTRATION DATE

02/07/2002

BUSINESS NAME

BOULDER HILL LLC

BUSINESS ACTIVITY

REAL ESTATE - LEASED FOR FARM USE

MAILING ADDRESS

0841 SW GAINES ST
UNIT 606
PORTLAND OR 97239 USA

TYPE

DOMESTIC LIMITED LIABILITY COMPANY

PRIMARY PLACE OF BUSINESS

0841 SW GAINES ST
UNIT 606
PORTLAND OR 97239 USA

JURISDICTION

OREGON

REGISTERED AGENT

ROBERT W NUNN

0841 SW GAINES ST
UNIT 606
PORTLAND OR 97239 USA

If the Registered Agent has changed, the new agent has consented to the appointment.

MANAGER

ROBERT W NUNN

0841 SW GAINES ST
UNIT 606
PORTLAND OR 97239 USA

By my signature, I declare as an authorized authority, that this filing has been examined by me and is, to the best of my knowledge and belief, true, correct, and complete. Making false statements in this document is against the law and may be penalized by fines, imprisonment, or both.

By typing my name in the electronic signature field, I am agreeing to conduct business electronically with the State of Oregon. I understand that transactions and/or signatures in records may not be denied legal effect solely because they are conducted, executed, or prepared in electronic form and that if a law requires a record or signature to be in writing, an electronic record or signature satisfies that requirement.

ELECTRONIC SIGNATURE

NAME

ROBERT W NUNN

TITLE

MANAGER

DATE SIGNED

01-20-2015

Business Name Search

New Search | Printer Friendly

Business Entity Data

07-18-2018
16:18

Registry Nbr	Entity Type	Entity Status	Jurisdiction	Registry Date	Next Renewal Date	Renewal Due?
262667-91	DLLC	ACT	OREGON	01-13-2005	01-13-2019	
Entity Name	PRINGLE CREEK LLC					
Foreign Name						

New Search | Printer Friendly

Associated Names

Type	PPB	PRINCIPAL PLACE OF BUSINESS				
Addr 1	0841 SW GAINES ST					
Addr 2	#606					
CSZ	PORTLAND	OR	97239		Country	UNITED STATES OF AMERICA

Please click here for general information about registered agents and service of process.

Type	AGT	REGISTERED AGENT			Start Date	12-05-2016	Resign Date	
Name	ROBERT		W	NUNN				
Addr 1	0841 SW GAINES ST							
Addr 2	UNIT 606							
CSZ	PORTLAND	OR	97239		Country	UNITED STATES OF AMERICA		

Type	MAL	MAILING ADDRESS				
Addr 1	0841 SW GAINES ST					
Addr 2	#606					
CSZ	PORTLAND	OR	97239		Country	UNITED STATES OF AMERICA

Type	MEM	MEMBER			Resign Date	
Name	ROBERT		W	NUNN		
Addr 1	0841 SW GAINES STREET					
Addr 2	UNIT 606					

CSZ	PORTLAND	OR	97239		Country	UNITED STATES OF AMERICA

New Search Printer Friendly

Name History

Business Entity Name	Name Type	Name Status	Start Date	End Date
PRINGLE CREEK LLC	EN	CUR	01-13-2005	

Please read before ordering Copies.

New Search Printer Friendly

Summary History

Image Available	Action	Transaction Date	Effective Date	Status	Name/Agent Change	Dissolved By
	AMNDMT TO ANNUAL RPT/INFO STATEMENT	01-26-2018		FI		
	AMENDED ANNUAL REPORT	12-01-2017		FI		
	AMENDED ANNUAL REPORT	12-05-2016		FI	Agent	
	ANNUAL REPORT PAYMENT	01-07-2016		SYS		
	AMENDED ANNUAL REPORT	02-22-2015		FI		
	ANNUAL REPORT PAYMENT	12-12-2013		SYS		
	AMENDED ANNUAL REPORT	01-29-2013		FI	Agent	
	AMENDED ANNUAL REPORT	12-28-2011		FI		
	ANNUAL REPORT PAYMENT	02-04-2011	02-03-2011	SYS		
	ANNUAL REPORT PAYMENT	01-21-2010	01-20-2010	SYS		
	ANNUAL REPORT PAYMENT	01-07-2009	01-06-2009	SYS		
	ANNUAL REPORT PAYMENT	02-04-2008	02-02-2008	SYS		
	ANNUAL REPORT PAYMENT	01-26-2007	01-25-2007	SYS		
	AMENDED ANNUAL REPORT	03-06-2006		FI		
	ARTICLES OF ORGANIZATION	01-13-2005		FI	Agent	

For comments or suggestions regarding the operation of this site, please contact : corporation.division@state.or.us

Corporation/Limited Liability Company - Information Change

Secretary of State - Corporation Division - 255 Capitol St. NE, Suite 151 - Salem, OR 97310-1327 - sos.oregon.gov/business - Phone: (503) 986-2200
Please Type or Print Legibly in **Black** Ink. Attach Additional Sheet If Necessary. Fax: (503) 378-4381

Print Form

Reset Form

REGISTRY NUMBER: 262667-91

JAN 26 2018

OREGON SECRETARY OF STATE

ENTITY TYPE: (●) DOMESTIC ( ) FOREIGN

In accordance with Oregon Revised Statute 192.410-192.490, the information on this application is public record. We must release this information to all parties upon request and it will be posted on our website.

For office use only

1. NAME OF CORPORATION OR LIMITED LIABILITY COMPANY:

Pringle Creek LLC

Complete only the sections that you are updating.

2. BUSINESS ACTIVITY

3. PRINCIPAL PLACE OF BUSINESS: (Street Address)

0841 SW Gaines St., #606

Portland, OR 97239

4. THE REGISTERED AGENT HAS BEEN CHANGED TO:

5. REGISTERED AGENT'S PUBLICLY AVAILABLE ADDRESS:
Must be an Oregon Street Address, which is identical to the registered agent's office.

6. ADDRESS WHERE THE DIVISION MAY MAIL NOTICES:

0841 SW Gaines St., #606

Portland, OR 97239

7. THE NEW REGISTERED AGENT HAS CONSENTED TO THIS APPOINTMENT.

8. THE STREET ADDRESS OF THE NEW REGISTERED OFFICE AND THE BUSINESS ADDRESS OF THE REGISTERED AGENT ARE IDENTICAL.

The entity has been notified in writing of this change.

9. INDIVIDUAL WITH DIRECT KNOWLEDGE (Names and Addresses)
List the name and address of at least one individual who is a director, or controlling shareholder of the corporation (member or manager of the LLC) or an authorized representative with direct knowledge of the operations and business activities of the corporation or LLC.

10. NAME(S) AND ADDRESS(ES)OF CORPORATE OFFICERS OR LLC MEMBERS/MANAGERS
Corporations list the name and address of one President and one Secretary (ORS 60.787, ORS 65.787, ORS 62.455, ORS 554.315).
Limited Liability Companies list the name and addresses of the managers for a manager-managed limited liability company or the name and address of at least one member for a member-managed limited liability company (ORS 63.787). Please attach a separate sheet of paper if needed.
If making changes to this section, list all current names and addresses. This replaces what is currently on the record.

PRESIDENT OR OWNER(S) (MEMBERS): (Names and Addresses)

SECRETARY OR MANAGER(S): (Names and Addresses)

11. EXECUTION: I declare as an authorized signer, under penalty of perjury, that this document does not fraudulently conceal, obscure, alter, or otherwise misrepresent the identity of any person including officers, directors, employees, members, managers or agents. This filing has been examined by me and is, to the best of my knowledge and belief, true, correct and complete. Making false statements in this document is against the law and may be penalized by fines, imprisonment, or both.

SIGNATURE:	PRINTED NAME:	TITLE:
Robert W Nunn	Robert Nunn	Sole Member

CONTACT NAME: (To resolve questions with this filing)
Robert Nunn

PHONE NUMBER: (Include area code)
503-452-9307

FEES
No
Fee

PRINGLE CREEK LLC

26266791-18723013 AAR

Information Change 12/17

Business Name Search

New Search | Printer Friendly

Business Entity Data

07-18-2018
16:19

Registry Nbr	Entity Type	Entity Status	Jurisdiction	Registry Date	Next Renewal Date	Renewal Due?
063951-98	DLLC	ACT	OREGON	02-07-2002	02-07-2019	
Entity Name	BATTLE CREEK LLC					
Foreign Name						

New Search | Printer Friendly

Associated Names

Type	PPB	PRINCIPAL PLACE OF BUSINESS				
Addr 1	5450 ZENA ROAD NW					
Addr 2						
CSZ	SALEM	OR	97304		Country	UNITED STATES OF AMERICA

Please click here for general information about registered agents and service of process.

Type	AGT	REGISTERED AGENT		Start Date	08-31-2005	Resign Date
Name	JULIE		SINGER			
Addr 1	5450 ZENA ROAD NW					
Addr 2						
CSZ	SALEM	OR	97304		Country	UNITED STATES OF AMERICA

Type	MAL	MAILING ADDRESS				
Addr 1	5450 ZENA ROAD NW					
Addr 2						
CSZ	SALEM	OR	97304		Country	UNITED STATES OF AMERICA

Type	MEM	MEMBER				Resign Date
Name	ROBERTA	ANN	STRAUSBAUGH			
Addr 1	2482 KUEBLER ROAD SOUTH					
Addr 2						

CSZ	SALEM	OR	97302		Country	UNITED STATES OF AMERICA

Type	MGR	MANAGER			Resign Date	
Name	JULIE		SINGER			
Addr 1	5450 ZENA ROAD NW					
Addr 2						
CSZ	SALEM	OR	97304	Country	UNITED STATES OF AMERICA	

New Search Printer Friendly

Name History

Business Entity Name	Name Type	Name Status	Start Date	End Date
BATTLE CREEK LLC	EN	CUR	02-07-2002	

Please read before ordering Copies.

New Search Printer Friendly

Summary History

Image Available	Action	Transaction Date	Effective Date	Status	Name/Agent Change	Dissolved By
	AMENDED ANNUAL REPORT	02-05-2018		FI		
	ANNUAL REPORT PAYMENT	02-07-2017		SYS		
	AMENDED ANNUAL REPORT	01-12-2016		FI		
	AMENDED ANNUAL REPORT	02-06-2015		FI		
	ANNUAL REPORT PAYMENT	01-10-2014		SYS		
	ANNUAL REPORT PAYMENT	01-25-2013		SYS		
	ANNUAL REPORT PAYMENT	01-11-2012		SYS		
	ANNUAL REPORT PAYMENT	02-08-2011		SYS		
	ANNUAL REPORT PAYMENT	02-01-2010		SYS		
	ANNUAL REPORT PAYMENT	01-21-2009		SYS		
	ANNUAL REPORT PAYMENT	01-18-2008		SYS		
	ANNUAL REPORT PAYMENT	01-22-2007		SYS		
		01-26-2006		SYS		

	ANNUAL REPORT PAYMENT					
	CHANGE OF REGISTERED AGENT/ADDRESS	08-31-2005		FI	Agent	
	AMNDMT TO ANNUAL RPT/INFO STATEMENT	08-31-2005		FI		
	ANNUAL REPORT PAYMENT	12-30-2004		SYS		
	ANNUAL REPORT PAYMENT	12-31-2003		SYS		
	AMENDED ANNUAL REPORT	03-04-2003		FI		
	ARTICLES OF ORGANIZATION	02-07-2002		FI	Agent	

AMENDED ANNUAL REPORT

Corporation Division
www.filinginoregon.com

E-FILED
Feb 05, 2018
OREGON SECRETARY OF STATE

REGISTRY NUMBER

6395198

REGISTRATION DATE

02/07/2002

BUSINESS NAME

BATTLE CREEK LLC

BUSINESS ACTIVITY

PASTURE RENTAL

MAILING ADDRESS

5450 ZENA ROAD NW
SALEM OR 97304 USA

TYPE

DOMESTIC LIMITED LIABILITY COMPANY

PRIMARY PLACE OF BUSINESS

5450 ZENA ROAD NW
SALEM OR 97304 USA

JURISDICTION

OREGON

REGISTERED AGENT

JULIE SINGER

5450 ZENA ROAD NW
SALEM OR 97304 USA

If the Registered Agent has changed, the new agent has consented to the appointment.

MEMBER

ROBERTA ANN STRAUSBAUGH

2482 KUEBLER ROAD SOUTH
SALEM OR 97302 USA

MANAGER

JULIE SINGER

5450 ZENA ROAD NW
SALEM OR 97304 USA

I declare, under penalty of perjury, that this document does not fraudulently conceal, fraudulently obscure, fraudulently alter or otherwise misrepresent the identity of the person or any officers, managers, members or agents of the limited liability company on behalf of which the person signs. This filing has been examined by me and is, to the best of my knowledge and belief, true, correct, and complete. Making false statements in this document is against the law and may be penalized by fines, imprisonment, or both.

By typing my name in the electronic signature field, I am agreeing to conduct business electronically with the State of Oregon. I understand that transactions and/or signatures in records may not be denied legal effect solely because they are conducted, executed, or prepared in electronic form and that if a law requires a record or signature to be in writing, an electronic record or signature satisfies that requirement.

ELECTRONIC SIGNATURE

NAME

JULIE SINGER

TITLE

MANAGER

DATE SIGNED

02-05-2018

Phone: (503) 986-2200
Fax: (503) 378-4381

Secretary of State
Corporation Division
255 Capitol St. NE, Suite 151
Salem, OR 97310-1327
FilingInOregon.com

Articles of Organization--Limited Liability Company

FILED
MAR 14 2006
OREGON SECRETARY OF STATE

REGISTRY NUMBER: 346830-94
For office use only

In accordance with Oregon Revised Statute 192.410-192.490, the information on this application is public record. We must release this information to all parties upon request and it will be posted on our website

For office use only

Please Type or Print Legibly in Black Ink. Attach Additional Sheet if Necessary.

1) NAME (Must contain the words "Limited Liability Company" or the abbreviations "LLC" or "L.L.C.")

Margalou LLC

2) DURATION (Please check one)

☐ Latest date upon which the Limited Liability Company is to dissolve is _____

☑ Duration shall be perpetual

3) NAME OF THE INITIAL REGISTERED AGENT

Linda Sue Nunn Schaefers

4) REGISTERED AGENT'S PUBLICLY AVAILABLE ADDRESS (Must be an Oregon Street Address, which is identical to the registered agent's business office)

49251 McKenzie Highway
Vida, OR 97488

5) ADDRESS WHERE THE DIVISION MAY MAIL NOTICES

49251 McKenzie Highway
Vida, OR 97488

6) NAME AND ADDRESS OF EACH ORGANIZER

Linda Sue Nunn Schaefers
49251 McKenzie Highway
Vida, OR 97488

7) IF THIS LIMITED LIABILITY COMPANY IS NOT MEMBER MANAGED, CHECK ONE BOX BELOW.

☐ This limited liability company is managed by a single manager.

☐ This limited liability company is managed by multiple manager(s)

8) IF RENDERING A PROFESSIONAL SERVICE OR SERVICES, DESCRIBE THE SERVICE(S) BEING RENDERED.

9) OPTIONAL PROVISIONS (Attach a separate sheet if necessary)

10) EXECUTION (The title for each signer must be "Organizer")

Signature	Printed Name	Title
Linda Sue Nunn Schaefers	Linda Sue Nunn Schaefers	Organizer
		Organizer
		Organizer

11) CONTACT NAME (To resolve questions with this filing)

Linda Sue Nunn Schaefers

DAYTIME PHONE NUMBER (Include area code)

541-822-3947

FEES

Required Processing Fee $50
Confirmation Copy (Optional) $5

Processing Fees are nonrefundable

Please make check payable to "Corporation Division"

NOTE:
Fees may be paid with VISA or MasterCard. The card number and expiration date should be submitted on a separate sheet for your convenience.

151 (Rev. 01/06)

3-14
MB

OPERATING AGREEMENT
OF
MARGALOU LLC
an Oregon Limited Liability Company

This OPERATING AGREEMENT (this "Agreement") is effective March 16, 2018, by and between Margalou LLC (the "Company"), an Oregon limited liability company, and Linda S. Schaefers (the "Member").

1. THE LIMITED LIABILITY COMPANY

1.1. **Formation.** Effective March 14, 2006, the Member formed an Oregon limited liability company under the name Margalou LLC by filing articles of organization with the Oregon Secretary of State. The rights and obligations of the Member are as provided in the Oregon Limited Liability Company Act (the "LLC Act") except as otherwise provided in this Agreement.

1.2. **Name.** The business of the Company will be conducted under the name Margalou LLC.

1.3. **Purpose.** The purpose of the Company is to own and operate real estate, to engage in all activities incidental to that purpose, and for any other lawful purpose.

1.4. **Offices.** The Company maintains its principal business office in Oregon at 49251 McKenzie Highway, Vida, OR 97488.

1.5. **Registered Agent.** Linda S. Schaefers is the Company's initial registered agent in Oregon and the registered office will be at 49251 McKenzie Highway, Vida, OR 97488.

1.6. **Term.** The term of the Company commenced on March 14, 2006 and will continue until terminated as provided in this Agreement.

1.7. **Name and Address of Member.** The Member's name and address are Linda S. Schaefers, 49251 McKenzie Highway, Vida, OR 97488.

1.8. **Admission of Additional Members.** No additional members may be admitted to the Company without the prior approval of the Member.

2. CAPITAL CONTRIBUTIONS

2.1. **Initial Capital Contribution.** The Member has contributed to the Company the assets (subject to the liabilities) described in Appendix A to this Agreement.

2.2. **Additional Capital Contributions.** Additional Capital Contributions may be made occasionally in such amounts as the Member deems necessary.

3. ALLOCATION OF PROFITS AND LOSSES; DISTRIBUTIONS

3.1. **Allocations of Income and Loss.** All items of income, gain, loss, deduction, and credit will be allocated 100% to the Member. For federal and state income tax purposes, all items of Company income, gain, loss, and deduction will be reported on the Member's individual tax returns.

3.2. **Distributions.** No distribution may be made to the Member if, after giving effect to the distribution, in the judgment of the Member, either (a) the Company could not pay its debts as they become due in the ordinary course of business or (b) the fair value of the total assets of the Company would not at least equal its total liabilities. Subject to the foregoing limitation, the Company will distribute to

the Member in such amounts and at such times as the Member determines.

4. POWERS AND DUTIES OF MEMBER

4.1. **Management of Company.** The Company is a member-managed limited liability company. The management and control of the Company and its business and affairs will be vested in the Member. The Member will have all the rights and powers that may be possessed by a member in a member-managed limited liability company under the LLC Act and the rights and powers otherwise conferred by law or are necessary, advisable, or convenient to the discharge of the Member's duties under this Agreement and to the management of the business and affairs of the Company. Without limiting the generality of the foregoing, the Member will have the following rights and powers (which the Member may exercise at the cost, expense, and risk of the Company):

4.1.1. To expend the funds of the Company to further the Company's business;

4.1.2. To perform all acts necessary to manage and operate the business of the Company, including engaging such persons as the Member deems advisable to manage the Company;

4.1.3. To execute, deliver, and perform on behalf of and in the name of the Company any agreements and documents deemed necessary or desirable by the Member to carry out the business of the Company, including any lease, deed, easement, bill of sale, mortgage, trust deed, security agreement, contract of sale, or other document conveying, leasing, or granting a security interest in the interest of the Company in any of its assets, or any part thereof, whether held in the Company's name, the name of the Member, or otherwise, and no other signature or signatures will be required; and

4.1.4. To borrow or raise money on behalf of the Company in the Company's name or in the name of the Member to benefit the Company and, occasionally, to draw, make, accept, endorse, execute, and issue promissory notes, drafts, checks, and other negotiable or nonnegotiable instruments and evidences of indebtedness, and to secure the payment of that indebtedness by mortgage, security agreement, pledge, or conveyance or assignment in trust of the whole or any part of the assets of the Company, including contract rights.

4.2. **Limitation on Liability of Member.** To the maximum extent permitted under the LLC Act, the Member will have no liability to the Company for any loss suffered by the Company that arises out of any action or inaction of the Member if the Member, in good faith, determined that the conduct was in the best interests of the Company.

4.3. **Indemnification of Member.** To the maximum extent permitted under the LLC Act, the Member must be indemnified by the Company against any losses, judgments, liabilities, expenses, and amounts paid in settlement of any claims sustained against the Company or against the Member in connection with the Company. The satisfaction of any indemnification and any saving harmless will be from, and limited to, Company assets, and the Member will have no personal liability because of that indemnification.

4.4. **Dealing with the Company.** The Member, and any affiliates of the Member, may deal with the Company by providing or receiving property and services to or from the Company, and may receive from others or from the Company normal profits, compensation, commissions, or other income incident to such dealings.

4.5. **Loans.** The Member may, but is not obligated to, make loans to the Company to cover the Company's cash requirements, and those loans will bear interest at a rate determined by the Member.

5. COMPENSATION AND REIMBURSEMENT OF EXPENSES

5.1. **Organization Expenses.** The Company will pay all expenses in connection with organization of the Company.

5.2. **Other Company Expenses.** The Member will charge the Company for the Member's actual out-of-pocket expenses in connection with the Company's business.

5.3. **Compensation.** The Member will be paid such compensation by the Company as is specifically authorized by the Member.

6. BOOKS OF ACCOUNT AND BANKING

6.1. **Books of Account.** The Company's books and records and this Agreement will be maintained at the principal office of the Company. The Member will keep and maintain books and records of the operations of the Company that are appropriate and adequate for the Company's business and for carrying out this Agreement.

6.2. **Banking.** All funds of the Company are to be deposited in a separate bank account or in an account or accounts of a savings and loan association as determined by the Member. Those funds may be withdrawn from such account or accounts on the signature of the person or persons designated by the Member.

7. DISSOLUTION AND WINDING UP OF THE COMPANY

7.1. **Dissolution.** The Company will be dissolved on the occurrence of any of the following events:

7.1.1. The express determination of the Member to dissolve the Company; or

7.1.2. By operation of law.

7.2. **Winding Up.** On the dissolution of the Company, the Member will take full account of the Company's assets and liabilities; the assets will be liquidated as promptly as is consistent with obtaining their fair value; and the proceeds, to the extent sufficient to pay the Company's obligations regarding such liquidation, will be applied and distributed in this order:

7.2.1. To payment and discharge of the expenses of liquidation and of all the Company's debts and liabilities, including debts and liabilities owed to the Member; and

7.2.2. To the Member.

8. GENERAL PROVISIONS

8.1. **Amendments.** Any proposed amendment will be adopted and become effective as an amendment only on the written approval of the Member.

8.2. **Governing Law.** This Agreement and the rights of the parties under it will be governed by and interpreted under the laws of Oregon (without regard to principles of conflicts of law).

The parties sign this Agreement as of the date first written above.

Margalou LLC

/s/ Linda S. Schaefers
Linda S. Schaefers, sole member

By: /s/ Linda S. Schaefers
Linda S. Schaefers, sole member

APPENDIX A

SCHEDULE OF ASSETS AND LIABILITIES

All the member's interest in the following real estate:

Exhibit A

Beginning at a point which is 315.48 feet N. 89° 49' W. and 1223.41 feet N. 22° 30' W. and 301.80 feet N. 67° 30' E. from the Southeast corner of Section 11 in Township 8 South, Range 3 West of the Willamette Meridian In Marion County, Oregon; thence S. 14° 34' E. 370.20 feet; thence N. 67° 30' E. 429.93 feet to a point on the East line of said Section, which point is 1064.65 feet N. 0° 30' E. from the Southeast corner of said Section; thence N. 0° 30' E. along said East line 397.79 feet; thence S. 67° 30' W. 534.60 feet to the place of beginning and containing 4.07 acres of land.

Together with an easement for road and right-of-way purposes over the following described parcel, beginning at a point which is located North 89° 49' West 315.48 feet and North 22° 30' West 1,223.41 feet and North 67° 30' East 30.00 feet from the Southeast corner of Section 11, Township 8 South, Range 3 West of the Willamette Meridian, Marion County. Oregon;

Thence from said point of beginning continuing North 67° 30' East 351.80 feet to a point on the northerly line of a tract of land described in Deed Book 469, page 411 of Marion County Deed Records;

Thence North 22° 30' West 50.00 feet to a point;

Thence South 67°30' West 351.80 feet to a point on the easterly right-of-way line of Battle Creek Road (Market Road No. 25);

Thence South 22° 30' East along said easterly right-of-way line 50.00 feet to the point of beginning.

DURABLE GENERAL POWER OF ATTORNEY

I, **ROBERTA A. STRAUSBAUGH**, dohereby make, constitute and appoint my daughter **JULIE A. SINGER**, of Salem, Oregon my agent and attorney in fact (hereinafter called "agent"), with power and authority:

1. **SUPPORT**. To make expenditures for my care, maintenance, support and general welfare, and to distribute such sums as are necessary for the care, maintenance, education and support of members of my immediate family who are or become dependent upon me for support.

2. **MANAGEMENT**. To take possession of, manage, administer, operate, maintain, improve and control all my property, real and personal; to insure and keep the same insured; and to pay any and all taxes, charges and assessments that may be levied or imposed upon any thereof.

3. **COLLECTIONS**. To collect and receive any money, property, debts or claims whatsoever, now or hereafter due, owing and payable or belonging to me; and to forgive debts; and to give receipts, acquittances or other sufficient discharges for any of the same.

4. **FINANCIAL INSTITUTIONS**. Enter into any transaction with and contract for any services rendered by a financial institution, including continuing, modifying, or terminating existing accounts; opening new accounts; drawing, endorsing, or depositing checks, drafts, and other negotiable instruments including those drawn on the Treasury of the United States, the State of Oregon or any other state or governmental entity, and to accept drafts; acquiring and transferring certificates of deposit; withdrawing funds deposited in my name alone or in my name and the name of any other person or persons; and providing or receiving financial statements. "Financial institutions" means banks, trust companies, savings banks, commercial banks, savings and loan associations, credit unions, loan companies, thrift institutions, mutual fund companies, investment advisors, brokerage firms, and other similar institutions.

5. **INVESTMENTS**. To retain any property in the hands of the agent in the form in which it was received; and to make investments and changes of investments in such securities, including common and preferred stocks of corporations or other property, real or personal, as my agent may deem prudent.

6. **DEBTS**. To pay my debts and other obligations.

7. **LITIGATION**. To sue upon, defend, compromise, submit to arbitration or adjust any controversies in which I may be interested; and to act in my name in any complaints, proceedings or suits with all the powers I would possess if personally present and under no legal disability.

8. **ACQUISITION**. To bargain for, buy and deal in property and goods of every description.

9. **DISPOSITION**. To sell, convey, grant, exchange, transfer, option, convert, mortgage, pledge, consign, lease and otherwise dispose of any of my property, whether real or personal.

ENTERED
2/5/15

10. **BORROWING**. To advance or loan the agent's own funds on my behalf; and to borrow any sums of money on such terms and at such rate of interest as my agent may deem proper and to give security for the repayment of the same.

11. **INSURANCE AND ANNUITY CONTRACTS**. To purchase, maintain, modify, renew, convert, exchange, borrow against, surrender, cancel, make claim to and collect or select payment options, and deal with all types of insurance or annuity contracts, public and private, including Medicare, Medicaid, Social Security, Workers' Compensation, long-term care, Medicare supplement, and life insurance.

12. **AGREEMENTS**. To make and deliver any deeds, conveyances, contracts, covenants and other instruments, undertakings or agreements, either orally or in writing, which my agent may deem proper.

13. **VOTING**. To appear and vote for me in person or by proxy at any corporate or other meeting.

14. **SAFE DEPOSIT BOX**. To have access to any safe deposit box which has been rented in my name or in the name of myself and any other person or persons.

15. **WITHDRAWAL OF FUNDS**. To withdraw any monies deposited with any bank, mutual savings bank, credit union, savings and loan association, mutual fund, money market account, investment advisor or broker in my name, or in the name of myself and any other person or persons and generally to do any business with any such financial institution or agency on my behalf.

16. **TAXES AND ASSESSMENTS**. Pay any tax or assessment; appear for and represent me, in person or by attorney, in all tax matters; execute any power of attorney forms required by the Internal Revenue Service, the Oregon Department of Revenue, or any other taxing authority; receive confidential information from any taxing authority; prepare, sign, and file federal, state and local tax returns and reports for all tax matters, including income, gift, estate, inheritance, generation-skipping, sales, business, FICA, payroll, and property tax matters; execute waivers, including waivers of restrictions on assessment or collection of tax deficiencies and waivers of notice of disallowance of a claim for credit or refund; execute consents, closing agreements, and other documents related to my tax liability; make any elections available under federal or state tax law; and delegate authority or substitute another representative with respect to all matters described in this paragraph.

17. **GOVERNMENT BENEFITS**. To do and perform any act necessary or desirable in order for me or my spouse to qualify for and receive all types of government benefits, including Medicare, Medicaid, Social Security, veterans', and workers' compensation benefits. The power granted under this paragraph shall include the power to dispose of any property or interest in property by any means (including making gifts or establishing and funding trusts) and the power to name or change beneficiaries under insurance policies, pay-on-death arrangements, retirement plans and accounts, and any other assets, provided that any disposition or designation shall be consistent with the purposes expressed under this paragraph.

18. **TREASURY BONDS**. To purchase U.S. Treasury Bonds or other instruments

redeemable at par in payment of federal estate taxes.

19. **ADDITIONS TO TRUST**. To add any or all of my assets to a trust created by me alone or in conjunction with one or more other persons and already in existence at the time of the creation of this power if the trust provides that the income and principal shall be paid to me or applied for my benefit during my lifetime.

20. **BUSINESS INTERESTS**. To continue as a going concern any business interest owned by me, either individually or as a co-partner.

21. **RETIREMENT ACCOUNTS**. To act on my behalf in dealing with my pension and retirement plans, including the power to make IRA contributions, IRA roll overs, voluntary contributions, borrow from any retirement plan, elect or select pay out options, and take any other steps which I might take on my own behalf with regard to my retirement and/or IRA/pension plans.

22. **MAIL**. To redirect my mail.

23. **CUSTODY OF PAPERS**. To take custody of my Will, deeds, life insurance policies, contracts, securities, or other important papers.

24. **GIFTS**. To make gifts outright or in trust to or for the benefit of the natural objects of my bounty and charitable organizations, in such amounts, at such times, and upon such terms as my attorney deems appropriate, provided that my attorney may make only such gifts as are consistent with my income and wealth and as I might have been expected to make.

25. **DISCLAIMER**. To renounce and disclaim any property or interest in property or powers to which I may become entitled, and to file any such disclaimer with appropriate courts or persons, and to consider my estate planning and the reduction of estate taxes in exercising such powers.

26. **ALTERNATE**. In the event that my daughter **JULIE** is unable or unwilling to act for me, I name my granddaughter **TAMMY LEE HARDT**, of Springfield, Oregon as successor agent and attorney-in-fact, with the power and authority provided in this instrument.

27. **SUBSTITUTION AND DELEGATION**. To appoint and substitute for my said agent any agents, nominees or attorneys to exercise any or all of the powers herein and to revoke their authority at pleasure.

28. **APPOINTMENT OF GUARDIAN OR CONSERVATOR**. In the event it becomes necessary to appoint a guardian, limited guardian or conservator of my person or estate, I request that my attorney-in-fact herein named be appointed.

GENERAL AUTHORITY. I authorize my agent for me in my name generally to do and perform all and every act and thing necessary or desirable to conduct, manage and control all my business and my property, wheresoever situate, and whether now owned or hereafter acquired, as my agent may deem for my best interests and to execute and acknowledge any and all instruments necessary or proper to carry out the foregoing powers, hereby releasing all third persons from

responsibility for my agent's acts and omissions and I empower my agent to indemnify all such persons against loss, expense and liability.

THIRD PARTY RELIANCE. Third persons may conclusively rely upon the continued validity of this Power of Attorney until receiving actual knowledge of its revocation. Third persons may conclusively rely on a copy of this instrument in its entirety or to any portion thereof certified as such by my agent.

DURABILITY. These powers of attorney shall be exercisable by my agent on my behalf notwithstanding that I may become legally disabled or incompetent.

GOVERNING LAW. All questions pertaining to validity, interpretation and administration of this power shall be determined in accordance with the laws of Oregon.

IN WITNESS WHEREOF, I have hereunto set my hand this 28th day of July, 2005.

Roberta A. Strausbaugh

STATE OF OREGON)
) ss.:
County of Marion)

On this 28th day of July, 2005, personally appeared **ROBERTA A. STRAUSBAUGH** and acknowledged the foregoing instrument to be her voluntary act and deed.

OFFICIAL SEAL
KIMBERLEY WEATHERFORD
NOTARY PUBLIC - OREGON
COMMISSION NO. 382508
MY COMMISSION EXPIRES JUL. 8, 2008

Kimberley Weatherford
Notary Public for Oregon
My Commission Expires: July 8, 2008

DURABLE GENERAL POWER OF ATTORNEY

I, **ROBERTA A. STRAUSBAUGH**, dohereby make, constitute and appoint my daughter **JULIE A. SINGER**, of Salem, Oregon my agent and attorney in fact (hereinafter called "agent"), with power and authority:

1. **SUPPORT**. To make expenditures for my care, maintenance, support and general welfare, and to distribute such sums as are necessary for the care, maintenance, education and support of members of my immediate family who are or become dependent upon me for support.

2. **MANAGEMENT**. To take possession of, manage, administer, operate, maintain, improve and control all my property, real and personal; to insure and keep the same insured; and to pay any and all taxes, charges and assessments that may be levied or imposed upon any thereof.

3. **COLLECTIONS**. To collect and receive any money, property, debts or claims whatsoever, now or hereafter due, owing and payable or belonging to me; and to forgive debts; and to give receipts, acquittances or other sufficient discharges for any of the same.

4. **FINANCIAL INSTITUTIONS**. Enter into any transaction with and contract for any services rendered by a financial institution, including continuing, modifying, or terminating existing accounts; opening new accounts; drawing, endorsing, or depositing checks, drafts, and other negotiable instruments including those drawn on the Treasury of the United States, the State of Oregon or any other state or governmental entity, and to accept drafts; acquiring and transferring certificates of deposit; withdrawing funds deposited in my name alone or in my name and the name of any other person or persons; and providing or receiving financial statements. "Financial institutions" means banks, trust companies, savings banks, commercial banks, savings and loan associations, credit unions, loan companies, thrift institutions, mutual fund companies, investment advisors, brokerage firms, and other similar institutions.

5. **INVESTMENTS**. To retain any property in the hands of the agent in the form in which it was received; and to make investments and changes of investments in such securities, including common and preferred stocks of corporations or other property, real or personal, as my agent may deem prudent.

6. **DEBTS**. To pay my debts and other obligations.

7. **LITIGATION**. To sue upon, defend, compromise, submit to arbitration or adjust any controversies in which I may be interested; and to act in my name in any complaints, proceedings or suits with all the powers I would possess if personally present and under no legal disability.

8. **ACQUISITION**. To bargain for, buy and deal in property and goods of every description.

9. **DISPOSITION**. To sell, convey, grant, exchange, transfer, option, convert, mortgage, pledge, consign, lease and otherwise dispose of any of my property, whether real or personal.

10. **BORROWING**. To advance or loan the agent's own funds on my behalf; and to borrow any sums of money on such terms and at such rate of interest as my agent may deem proper and to give security for the repayment of the same.

11. **INSURANCE AND ANNUITY CONTRACTS**. To purchase, maintain, modify, renew, convert, exchange, borrow against, surrender, cancel, make claim to and collect or select payment options, and deal with all types of insurance or annuity contracts, public and private, including Medicare, Medicaid, Social Security, Workers' Compensation, long-term care, Medicare supplement, and life insurance.

12. **AGREEMENTS**. To make and deliver any deeds, conveyances, contracts, covenants and other instruments, undertakings or agreements, either orally or in writing, which my agent may deem proper.

13. **VOTING**. To appear and vote for me in person or by proxy at any corporate or other meeting.

14. **SAFE DEPOSIT BOX**. To have access to any safe deposit box which has been rented in my name or in the name of myself and any other person or persons.

15. **WITHDRAWAL OF FUNDS**. To withdraw any monies deposited with any bank, mutual savings bank, credit union, savings and loan association, mutual fund, money market account, investment advisor or broker in my name, or in the name of myself and any other person or persons and generally to do any business with any such financial institution or agency on my behalf.

16. **TAXES AND ASSESSMENTS**. Pay any tax or assessment; appear for and represent me, in person or by attorney, in all tax matters; execute any power of attorney forms required by the Internal Revenue Service, the Oregon Department of Revenue, or any other taxing authority; receive confidential information from any taxing authority; prepare, sign, and file federal, state and local tax returns and reports for all tax matters, including income, gift, estate, inheritance, generation-skipping, sales, business, FICA, payroll, and property tax matters; execute waivers, including waivers of restrictions on assessment or collection of tax deficiencies and waivers of notice of disallowance of a claim for credit or refund; execute consents, closing agreements, and other documents related to my tax liability; make any elections available under federal or state tax law; and delegate authority or substitute another representative with respect to all matters described in this paragraph.

17. **GOVERNMENT BENEFITS**. To do and perform any act necessary or desirable in order for me or my spouse to qualify for and receive all types of government benefits, including Medicare, Medicaid, Social Security, veterans', and workers' compensation benefits. The power granted under this paragraph shall include the power to dispose of any property or interest in property by any means (including making gifts or establishing and funding trusts) and the power to name or change beneficiaries under insurance policies, pay-on-death arrangements, retirement plans and accounts, and any other assets, provided that any disposition or designation shall be consistent with the purposes expressed under this paragraph.

18. **TREASURY BONDS**. To purchase U.S. Treasury Bonds or other instruments

redeemable at par in payment of federal estate taxes.

19. **ADDITIONS TO TRUST**. To add any or all of my assets to a trust created by me alone or in conjunction with one or more other persons and already in existence at the time of the creation of this power if the trust provides that the income and principal shall be paid to me or applied for my benefit during my lifetime.

20. **BUSINESS INTERESTS**. To continue as a going concern any business interest owned by me, either individually or as a co-partner.

21. **RETIREMENT ACCOUNTS**. To act on my behalf in dealing with my pension and retirement plans, including the power to make IRA contributions, IRA roll overs, voluntary contributions, borrow from any retirement plan, elect or select pay out options, and take any other steps which I might take on my own behalf with regard to my retirement and/or IRA/pension plans.

22. **MAIL**. To redirect my mail.

23. **CUSTODY OF PAPERS**. To take custody of my Will, deeds, life insurance policies, contracts, securities, or other important papers.

24. **GIFTS**. To make gifts outright or in trust to or for the benefit of the natural objects of my bounty and charitable organizations, in such amounts, at such times, and upon such terms as my attorney deems appropriate, provided that my attorney may make only such gifts as are consistent with my income and wealth and as I might have been expected to make.

25. **DISCLAIMER**. To renounce and disclaim any property or interest in property or powers to which I may become entitled, and to file any such disclaimer with appropriate courts or persons, and to consider my estate planning and the reduction of estate taxes in exercising such powers.

26. **ALTERNATE**. In the event that my daughter **JULIE** is unable or unwilling to act for me, I name my granddaughter **TAMMY LEE HARDT**, of Springfield, Oregon as successor agent and attorney-in-fact, with the power and authority provided in this instrument.

27. **SUBSTITUTION AND DELEGATION**. To appoint and substitute for my said agent any agents, nominees or attorneys to exercise any or all of the powers herein and to revoke their authority at pleasure.

28. **APPOINTMENT OF GUARDIAN OR CONSERVATOR**. In the event it becomes necessary to appoint a guardian, limited guardian or conservator of my person or estate, I request that my attorney-in-fact herein named be appointed.

GENERAL AUTHORITY. I authorize my agent for me in my name generally to do and perform all and every act and thing necessary or desirable to conduct, manage and control all my business and my property, wheresoever situate, and whether now owned or hereafter acquired, as my agent may deem for my best interests and to execute and acknowledge any and all instruments necessary or proper to carry out the foregoing powers, hereby releasing all third persons from

responsibility for my agent's acts and omissions and I empower my agent to indemnify all such persons against loss, expense and liability.

THIRD PARTY RELIANCE. Third persons may conclusively rely upon the continued validity of this Power of Attorney until receiving actual knowledge of its revocation. Third persons may conclusively rely on a copy of this instrument in its entirety or to any portion thereof certified as such by my agent.

DURABILITY. These powers of attorney shall be exercisable by my agent on my behalf notwithstanding that I may become legally disabled or incompetent.

GOVERNING LAW. All questions pertaining to validity, interpretation and administration of this power shall be determined in accordance with the laws of Oregon.

IN WITNESS WHEREOF, I have hereunto set my hand this 28th day of July, 2005.

Roberta A. Strausbaugh

STATE OF OREGON)
) ss.:
County of Marion)

On this 28th day of July, 2005, personally appeared **ROBERTA A. STRAUSBAUGH** and acknowledged the foregoing instrument to be her voluntary act and deed.

OFFICIAL SEAL
KIMBERLEY WEATHERFORD
NOTARY PUBLIC - OREGON
COMMISSION NO. 382508
MY COMMISSION EXPIRES JUL. 8, 2008

Kimberley Weatherford
Notary Public for Oregon
My Commission Expires: July 8, 2008

ASSIGNMENT OF MEMBER'S INTEREST IN LIMITED LIABILITY COMPANY

Robert W. Nunn, successor trustee, of the Evelyn M. Coburn Living Trust, dated March 15, 1995, as amended (the "Trust"), hereby assigns to ROBERTA ANN STRAUSBAUGH, all of the Trust's interest as a member in that certain limited liability company known as BATTLE CREEK LLC, an Oregon Manager-Managed Limited Liability Company.

DATED: August 23, 2005

Robert W. Nunn, Successor Trustee

CONSENT AND RESIGNATION OF MANAGER

The undersigned, being the Manager of BATTLE CREEK LLC, an Oregon Manager-Managed Limited Liability Company, hereby consents to this assignment, with the understanding that all of the terms and provisions of the operating agreement shall continue to apply, and hereby resigns as manager.

By: Robert W. Nunn, Manager

ACCEPTANCE OF ASSIGNMENT AND ELECTION OF MANAGER

The undersigned accepts the assignment of the membership interest, subject to the terms and conditions of the operating agreement, and hereby elects JULIE A. SINGER as manager.

Julie A. Singer power of attorney for Roberta Anne Strausbaug
Roberta Ann Strausbaugh

8.12.05 18:02
C:\WINDOWS\TEMPORARY INTERNET FILES\OLK2053\ASSN-BATTLECREEK.DOC

ENTERED
8/5/05

Phone: (503) 986-2200
Fax: (503) 378-4381

Change of Registered Agent/Address—Corporations/LLC

Secretary of State
Corporation Division
255 Capitol St. NE, Suite 151
Salem, OR 97310-1327
FilingInOregon.com

Check the appropriate box below:

☑ CHANGE OF AGENT AND ADDRESS
(Complete only 1, 2, 3, 4, 5, 6, 11)

☐ CHANGE OF ADDRESS ONLY
(Complete only 1, 7, 8, 9, 10, 11)

REGISTRY NUMBER: 063951-98

NOTE: Use this form for Cooperatives or Business Trusts.

In accordance with Oregon Revised Statute 192.410-192.490, the information on this application is public record. We must release this information to all parties upon request and it will be posted on our website.

For office use only

Please Type or Print Legibly in **Black** Ink. Attach Additional Sheet if Necessary.

1) **ENTITY NAME** BATTLE CREEK LLC

CHANGE OF REGISTERED AGENT AND OFFICE

2) **THE REGISTERED AGENT HAS BEEN CHANGED TO:**
Julie Singer

3) **THE NEW REGISTERED AGENT HAS CONSENTED TO THIS APPOINTMENT.**

4) **ADDRESS OF THE NEW REGISTERED OFFICE** (Must be an **OREGON** Street Address which is identical to the registered agent's business office.)
5450 Zena Road NW
Salem, OR 97304

5) **THE STREET ADDRESS OF THE NEW REGISTERED OFFICE AND THE BUSINESS ADDRESS OF THE REGISTERED AGENT ARE IDENTICAL.**

6) **EXECUTION**
(Must be signed by one corporate officer or director for a corporation or a member/manager for a limited liability company.)

Signature: Julie A Singer
Printed Name: Julie Singer
Title: Manager

CHANGE OF REGISTERED AGENT'S BUSINESS OFFICE ONLY

7) **NEW ADDRESS OF REGISTERED AGENT** (The business address of the registered agent has changed to the following **OREGON** Street Address.)

8) **THE STREET ADDRESS OF THE NEW REGISTERED OFFICE AND THE BUSINESS ADDRESS OF THE REGISTERED AGENT ARE IDENTICAL.**

9) **NOTIFICATION**
☐ The corporation has been notified in writing of this change.

10) **EXECUTION**
(Must be signed by the registered agent or a corporate officer or director for a corporation or a member/manager for a limited liability company.)

Signature:
Printed Name:
Title:

11) **CONTACT NAME** (To resolve questions with this filing.) Julie Singer

DAYTIME PHONE NUMBER (Include area code.) (503) 581-7930

FEES
No Processing Fee

131 (Rev. 1/04)

ENTERED 2/15/11

Phone: (503) 986-2200
Fax: (503) 378-4381

Amendment to Annual Report—Limited Liability Company

Secretary of State
Corporation Division
255 Capitol St. NE, Suite 151
Salem, OR 97310-1327
FilingInOregon.com

REGISTRY NUMBER: 063951-98

ENTITY TYPE ☑ DOMESTIC ☐ FOREIGN

In accordance with Oregon Revised Statute 192.410-192.490, the information on this application is public record. We must release this information to all parties upon request and it will be posted on our website.

For office use only

Please Type or Print Legibly in **Black** Ink.

To change the Registered Agent, use Change of Registered Agent/Address, Form 131

1) **NAME OF ENTITY** BATTLE CREEK LLC

2) **PRINCIPAL PLACE OF BUSINESS** (Street Address)
5450 Zena Road NW
Salem, OR 97304

3) **ADDRESS FOR MAILING NOTICES**
5450 Zena Road NW
Salem, OR 97304

LIST MEMBERS AND/OR MANAGERS NAMES AND ADDRESSES

4) **MEMBERS** (Name and street address)
Roberta Ann Strausbaugh
2482 Kuebler Road South
Salem, OR 97302

5) **MANAGERS** (Name and street address)
Julie Singer
5450 Zena Road NW
Salem, OR 97304

6) **EXECUTION**
Signature: Julie A Singer
Printed Name: Julie Singer
Title: Manager
Date:

7) **CONTACT NAME** (To resolve questions with this filing.)
Julie Singer

DAYTIME PHONE NUMBER (Include area code.)
(503) 581-7930

FEES
No Processing Fee

154 (Rev. 7/04)

ENTERED 2/5/16

Power of Attorney to Sell Real Estate

Margalou LLC and Sheep Trail LLC, each an Oregon limited liability company, jointly and severally make, constitute, and appoint Robert W. Nunn as their true and lawful agent, giving and granting Robert W. Nunn full power and authority to grant, bargain, sell, and do all acts necessary or convenient to complete the sale of this described real estate in Salem, Marion County, Oregon:

83W 11D, Lot 400

Robert W. Nunn has full power and authority to make, execute and deliver agreements of sale, deeds, conveyances and land use applications, and to sign and execute all documents and other papers involved in the sale of the above described real estate. Robert W. Nunn has full power and authority to do and perform in and about the premises every act and thing requisite for the sale, as fully for all intent and purposes as the principals could do if present. Margalou LLC and Sheep Trail LLC ratify and confirm all that Robert W. Nunn has or will lawfully do or cause to be done by this Power of Attorney.

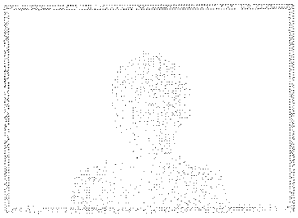
Margalou LLC	Sheep Trail LLC
Linda Schaefers By: Linda S. Schaefers, sole member	Kathryn L. Young By: Kathryn L. Young, sole member
Date: April 4/13/2017, 2017	Date: April 04/13/2017, 2017

YSN a_poa_sell

Signature Certificate

Document Reference: 49HZHPJIELIJ4TNHUHJTGT

RightSignature
Easy Online Document Signing



Linda Schaefers
Party ID: FRALILJVF4KEXAWKLAE9S7
IP Address: 107.77.205.53
VERIFIED EMAIL: lschaefers1@q.com

Electronic Signature:

Linda Schaefers

Multi-Factor
Digital Fingerprint Checksum

10621721401d7d76d0894ecbe379eddf208a4ecc

Kathy Young
Party ID: DI8XUPILZ2R6HMHRPL483G
IP Address: 73.97.130.255
VERIFIED EMAIL: kathyy@seanet.com

Electronic Signature:

Kathryn L. Young

Multi-Factor
Digital Fingerprint Checksum

454fd84929b31836648fcb94274051e83ada682b

Timestamp	Audit
2017-04-13 16:22:59 -0700	All parties have signed document. Signed copies sent to: Linda Schaefers, Kathy Young, and Robert Nunn.
2017-04-13 16:22:59 -0700	Document signed by Linda Schaefers (lschaefers1@q.com) with drawn signature. - 107.77.205.53
2017-04-13 15:55:12 -0700	Document viewed by Linda Schaefers (lschaefers1@q.com). - 107.77.205.53
2017-04-13 14:00:48 -0700	Document signed by Kathy Young (kathyy@seanet.com) with drawn signature. - 73.97.130.255
2017-04-13 13:54:15 -0700	Document viewed by Kathy Young (kathyy@seanet.com). - 73.97.130.255
2017-04-13 13:18:19 -0700	Document created by Robert Nunn (robert@robertnunn.com). - 97.115.106.42

This signature page provides a record of the online activity executing this contract.

Phone: (503) 986-2200
Fax: (503) 378-4381

Articles of Organization—Limited Liability Company

Secretary of State
Corporation Division
255 Capitol St. NE, Suite 151
Salem, OR 97310-1327
FilingInOregon.com

FILED
JAN 13 2005
OREGON
SECRETARY OF STATE

REGISTRY NUMBER: 262667-91

In accordance with Oregon Revised Statute 192.410-192.490, the information on this application is public record. We must release this information to all parties upon request and it will be posted on our website.

For office use only

Please Type or Print Legibly in **Black** Ink. Attach Additional Sheet if Necessary.

1) **NAME** (Must contain the words "Limited Liability Company" or the abbreviations "LLC" or "L.L.C.")

Pringle Creek LLC

2) **DURATION** (Please check one.)

☐ Latest date upon which the Limited Liability Company is to dissolve is _____

☐ Duration shall be perpetual.

3) **NAME OF THE INITIAL REGISTERED AGENT**

Robert W. Nunn

4) **ADDRESS OF THE INITIAL REGISTERED AGENT**
(Must be an **OREGON** Street Address, which is identical to the registered agent's business office.)

1000 SW Broadway, Suite 1400
Portland, OR 97205

5) **ADDRESS WHERE THE DIVISION MAY MAIL NOTICES**

1000 SW Broadway, Suite 1400
Portland, OR 97205

6) **NAME AND ADDRESS OF EACH ORGANIZER**

Robert W. Nunn
1000 SW Broadway, Suite 1400
Portland, OR 97205

7) **IF THIS LIMITED LIABILITY COMPANY IS NOT MEMBER MANAGED, CHECK ONE BOX BELOW.**

☐ This limited liability company is managed by a single manager.

☐ This limited liability company is managed by multiple manager(s).

8) **IF RENDERING A PROFESSIONAL SERVICE OR SERVICES, DESCRIBE THE SERVICE(S) BEING RENDERED.**

9) **OPTIONAL PROVISIONS** (Attach a separate sheet if necessary.)

10) **EXECUTION** (The title for each signer must be "Organizer.")

Signature	Printed Name	Title
Robert W. Nunn	Robert W. Nunn	Organizer
		Organizer
		Organizer

11) **CONTACT NAME** (To resolve questions with this filing.)

Robert W. Nunn

DAYTIME PHONE NUMBER (Include area code.)

503-243-1655

FEES

Required Processing Fee $50 - Confirmation Copy (Optional) $5
Processing Fees are nonrefundable.

Please make check payable to

NOTE:
Fees may be paid with VISA or MasterCard. The card number and expiration date should be submitted on a separate sheet for your protection.

OPERATING AGREEMENT OF

PRINGLE CREEK LLC

an Oregon Limited Liability Company

The undersigned member, having formed a limited liability company under the Oregon Limited Liability Company Act, hereby agrees as follows:

ARTICLE 1
FORMATION

1.1 Name. The name of the limited liability company is Pringle Creek LLC ("LLC or "Company")

1.2 Articles of Organization. Articles of organization were filed with the Oregon Secretary of State on January 13, 2005.

1.3 Duration. The LLC's term is perpetual, unless earlier dissolved as provided in this Operating Agreement.

1.4 Principal Place of Business. The principal office of the LLC is 1000 SW Broadway, Suite 1400, Portland, OR 97205. The member may relocate the principal office or establish additional offices from time to time.

1.5 Registered Office and Registered Agent. The LLC's initial registered office is at 1000 SW Broadway, Suite 1400, Portland, Oregon 97205 and the name of its initial registered agent at such address is Robert W. Nunn.

ARTICLE 2
MEMBER, CONTRIBUTION, AND INTEREST

2.1 Names and Addresses. The LLC has one member, whose percentage ownership interest is:

Name and address	Percentage
Robert W. Nunn	100%

2.2 Capital Contributions. Robert W. Nunn has contributed to the LLC $100 cash (filing fees and renewal fees).

2.3 Other Business of Members. The member may engage independently or with others in other business and investment ventures of every nature and description, and shall have no obligation to account to the LLC for such business or investments or for business or investment opportunities.

2.4 No Interest on Capital Contributions. No interest will be paid on capital contributions.

ARTICLE 3
MANAGEMENT

3.1 Management. The member has the sole right to undertake management and conduct the business of the LLC business. The member is an agent of the LLC with authority to bind the LLC in the ordinary course of its business. The LLC will be deemed a sole proprietorship for tax purposes.

3.2 Distributions. The member has sole right to determine whether a distribution shall be made.

ARTICLE 4
MEMBER MEETINGS

4.1 Meetings. The member has the right to take all actions that could be taken at a meeting, either with or without a meeting. Anyone in receipt of a written authorization or action of the LLC member is entitled to rely thereon without further inquiry.

ARTICLE 5
ACCOUNTING AND RECORDS

5.1 Accounts. All LLC funds will be deposited in the LLC's name and will be subject to withdrawal on the signature of the member, in the member's LLC capacity.

5.2 Books of Account. The LLC's books and records, a register showing the name, address, and ownership interest of the member, and this Operating Agreement will be maintained at the office of the LLC. The member will keep books and records of the operation of the LLC which are appropriate and adequate for the LLC's business and for the carrying out of this Operating Agreement.

5.3 Fiscal Year. The fiscal year of the LLC will be the calendar year.

5.4 Tax Returns. The profits and losses of the LLC will be reported on the member's individual tax return, as allowed by federal and state law.

ARTICLE 6
ALLOCATIONS AND DISTRIBUTIONS

6.1 Allocations of Income and Loss for Tax Purposes. Except as provided in this Operating Agreement with respect to loan repayments, all items of income, gain, loss, deduction, and credit will be allocated to the member.

ARTICLE 7
LOANS TO LLC

The member, may lend money to the LLC in addition to his contribution to its capital, The loan will be the debt of the LLC to the member and will bear interest at the rate set forth in the promissory note or other evidence of indebtedness. The terms of all such loans will be in writing. The liability will not be regarded as an increase of the lending member's capital.

ARTICLE 8
TRANSFER; DISSOLUTION

8.1 Transfer. The member will not transfer his interest in the LLC without amending the Operating Agreement to allow such transfer to one or more persons and provide for terms in this Operating Agreement consistent with the new number of members.

8.2 Liquidation Upon Dissolution and Winding Up. Upon the dissolution of the LLC, the member will wind up the affairs of the LLC. A full account of the assets and liabilities of the LLC will be taken. The assets will be promptly liquidated and the proceeds thereof applied as follows: (a) setting up necessary reserves determined by the member for payment of LLC creditors; (b) repaying any loans to the member and (c) paying to the member the balance of all funds after payment of all reasonable expenses, following allocation to the members of all profits, losses and gains and losses on the sale. The LLC may, in the process of winding up the LLC, elect to distribute property in kind.

ARTICLE 9
AMENDMENT

9.1 By Member. The member may amend or repeal the provisions of this Operating Agreement by setting forth in writing such amendment.

ARTICLE 10
MISCELLANEOUS

10.1 Governing Law. This Operating Agreement is governed by Oregon law.

11.5 Third-Party Beneficiaries. The provisions of this Operating Agreement are intended solely for the benefit of the member and shall create no rights or obligations enforceable by any third party, including creditors of the LLC, except as otherwise provided by applicable law.

ADOPTED as of 6th day of March, 2006, by the sole member.

Robert W. Nunn, Member

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10-22-13 31 7 100 00

Articles of Organization - Limited Liability Company

Secretary of State - Corporation Division - 255 Capitol St. NE, Suite 151 - Salem, OR 97310-1327 - http://www.FilingInOregon.com - Phone: (503) 986-2200

FILED

NOV 14 2013

OREGON SECRETARY OF STATE
For office use only

REGISTRY NUMBER: 972692-95

In accordance with Oregon Revised Statute 192.410-192.490, all information on this form is publicly available, including addresses. We must release this information to all parties upon request and it will be posted on our website.

Please Type or Print Legibly in **Black** Ink. Attach Additional Sheet if Necessary.

1) **NAME OF LIMITED LIABILITY COMPANY:** (Must contain the words "Limited Liability Company" or the abbreviations "LLC" or "L.L.C.")

Sheep Trail LLC

2) **DURATION:** (Please check one.)

☐ Latest date upon which the Limited Liability Company is to dissolve is _____

☒ Duration shall be perpetual.

3) **REGISTERED AGENT:** (Individual or entity that will accept legal service for this business)

Robert W. Nunn

4) **REGISTERED AGENT'S PUBLICLY AVAILABLE ADDRESS:** (Must be an **Oregon Street Address**, which is identical to the registered agent's business office.)

0814 SW Gaines St. #606
Portland, OR 97239

5) **ADDRESS WHERE THE DIVISION MAY MAIL NOTICES:**

3817B 12th Ave W
Seattle, WA 98119

6) **NAME AND ADDRESS OF EACH PERSON WHO IS FORMING THIS BUSINESS: (ORGANIZER)**

Kathryn L. Young
3817B 12th Ave W
Seattle, WA 98119

7) **HOW WILL THIS LIMITED LIABILITY COMPANY BE MANAGED?**

☒ This LLC will be member-managed by one or more members.

☐ This LLC will be manager-managed by one or more managers.

8) **IF RENDERING A LICENSED PROFESSIONAL SERVICE OR SERVICES, DESCRIBE THE SERVICE(S) BEING RENDERED:**

none

9) **OPTIONAL PROVISIONS:** (Attach a separate sheet if necessary.) ☐

INDEMNIFICATION: ☐ The company elects to indemnify its members, managers, employees, agents for liability and related expenses under ORS 63.160.

(OPTIONAL) LIST MEMBERS AND/OR MANAGERS NAMES AND ADDRESSES

10) **OWNERS: (MEMBERS)** (Names and Street address)

11) **MANAGERS: (MANAGERS)** (Names and Street address)

12) **EXECUTION/SIGNATURE OF EACH PERSON WHO IS FORMING THIS BUSINESS: (Organizer)** (The title for each signer must be "Organizer.")
By my signature, I declare as an authorized authority, that this filing has been examined by me and is, to the best of my knowledge and belief, true, correct, and complete. Making false statements in this document is against the law and may be penalized by fines, imprisonment or both.

Signature:	Printed Name:	Title:
Kathryn L. Young	Kathryn L. Young	Organizer
		Organizer
		Organizer

CONTACT NAME: (To resolve questions with this filing.)

SHEEP TRAIL LLC

97269295-14696768 NEWORG

FEES

Required Processing Fee $100

Processing Fees are nonrefundable. Please make check payable to "Corporation Division."

Free copies are available at FilingInOregon.com using the Business Name Search program.

OPERATING AGREEMENT
OF
SHEEP TRAIL LLC
an Oregon Limited Liability Company

This OPERATING AGREEMENT (this "Agreement") is effective March 16, 2018, by and between Sheep Trail LLC (the "Company"), an Oregon limited liability company, and Kathryn L. Young (the "Member").

1. THE LIMITED LIABILITY COMPANY

1.1. **Formation.** Effective November 14, 2013, the Member formed an Oregon limited liability company under the name Sheep Trail LLC by filing articles of organization with the Oregon Secretary of State. The rights and obligations of the Member are as provided in the Oregon Limited Liability Company Act (the "LLC Act") except as otherwise provided in this Agreement.

1.2. **Name.** The business of the Company will be conducted under the name Sheep Trail LLC.

1.3. **Purpose.** The purpose of the Company is to own and operate real estate, to engage in all activities incidental to that purpose, and for any other lawful purpose.

1.4. **Offices.** The Company maintains its principal business office in Oregon at 0841 SW Gaines St., Unit 606, Portland, Oregon, 97239.

1.5. **Registered Agent.** Robert W. Nunn will be the Company's initial registered agent in Oregon and the registered office will be at 0841 SW Gaines St., Unit 606, Portland, Oregon, 97239.

1.6. **Term.** The term of the Company commenced on November 14, 2013, and will continue until terminated as provided in this Agreement.

1.7. **Name and Address of Member.** The Member's name and address are Kathryn L. Young, 3817B 12th Avenue W, Seattle, WA 98119.

1.8. **Admission of Additional Members.** No additional members may be admitted to the Company without the prior approval of the Member.

2. CAPITAL CONTRIBUTIONS

2.1. **Initial Capital Contribution.** The Member has contributed to the Company the assets (subject to the liabilities) described in Appendix A to this Agreement.

2.2. **Additional Capital Contributions.** Additional Capital Contributions may be made occasionally in such amounts as the Member deems necessary.

3. ALLOCATION OF PROFITS AND LOSSES; DISTRIBUTIONS

3.1. **Allocations of Income and Loss.** All items of income, gain, loss, deduction, and credit will be allocated 100% to the Member. For federal and state income tax purposes, all items of Company income, gain, loss, and deduction will be reported on the Member's individual tax returns.

3.2. **Distributions.** No distribution may be made to the Member if, after giving effect to the distribution, in the judgment of the Member, either (a) the Company could not pay its debts as they become due in the ordinary course of business or (b) the fair value of the total assets of the Company would not at least equal its total liabilities. Subject to the foregoing limitation, the Company will distribute to the Member in such amounts and at such times as the Member determines.

4. POWERS AND DUTIES OF MEMBER

4.1. **Management of Company.** The Company is a member-managed limited liability company. The management and control of the Company and its business and affairs will be vested in the Member. The Member will have all the rights and powers that may be possessed by a member in a member-managed limited liability company under the LLC Act and the rights and powers otherwise conferred by law or are necessary, advisable, or convenient to the discharge of the Member's duties under this Agreement and to the management of the business and affairs of the Company. Without limiting the generality of the foregoing, the Member will have the following rights and powers (which the Member may exercise at the cost, expense, and risk of the Company):

4.1.1. To expend the funds of the Company to further the Company's business;

4.1.2. To perform all acts necessary to manage and operate the business of the Company, including engaging such persons as the Member deems advisable to manage the Company;

4.1.3. To execute, deliver, and perform on behalf of and in the name of the Company any agreements and documents deemed necessary or desirable by the Member to carry out the business of the Company, including any lease, deed, easement, bill of sale, mortgage, trust deed, security agreement, contract of sale, or other document conveying, leasing, or granting a security interest in the interest of the Company in any of its assets, or any part thereof, whether held in the Company's name, the name of the Member, or otherwise, and no other signature or signatures will be required; and

4.1.4. To borrow or raise money on behalf of the Company in the Company's name or in the name of the Member to benefit the Company and,

occasionally, to draw, make, accept, endorse, execute, and issue promissory notes, drafts, checks, and other negotiable or nonnegotiable instruments and evidences of indebtedness, and to secure the payment of that indebtedness by mortgage, security agreement, pledge, or conveyance or assignment in trust of the whole or any part of the assets of the Company, including contract rights.

4.2. **Limitation on Liability of Member.** To the maximum extent permitted under the LLC Act, the Member will have no liability to the Company for any loss suffered by the Company that arises out of any action or inaction of the Member if the Member, in good faith, determined that the conduct was in the best interests of the Company.

4.3. **Indemnification of Member.** To the maximum extent permitted under the LLC Act, the Member must be indemnified by the Company against any losses, judgments, liabilities, expenses, and amounts paid in settlement of any claims sustained against the Company or against the Member in connection with the Company. The satisfaction of any indemnification and any saving harmless will be from, and limited to, Company assets, and the Member will have no personal liability because of that indemnification.

4.4. **Dealing with the Company.** The Member, and any affiliates of the Member, may deal with the Company by providing or receiving property and services to or from the Company, and may receive from others or from the Company normal profits, compensation, commissions, or other income incident to such dealings.

4.5. **Loans.** The Member may, but is not obligated to, make loans to the Company to cover the Company's cash requirements, and those loans will bear interest at a rate determined by the Member.

5. COMPENSATION AND REIMBURSEMENT OF EXPENSES

5.1. **Organization Expenses.** The Company will pay all expenses in connection with organization of the Company.

5.2. **Other Company Expenses.** The Member will charge the Company for the Member's actual out-of-pocket expenses in connection with the Company's business.

5.3. **Compensation.** The Member will be paid such compensation by the Company as is specifically authorized by the Member.

6. BOOKS OF ACCOUNT AND BANKING

6.1. **Books of Account.** The Company's books and records and this Agreement will be maintained at the principal office of the Company. The Member will keep and maintain books and records of the operations of the Company that are

appropriate and adequate for the Company's business and for carrying out this Agreement.

6.2. **Banking.** All funds of the Company are to be deposited in a separate bank account or in an account or accounts of a savings and loan association as determined by the Member. Those funds may be withdrawn from such account or accounts on the signature of the person or persons designated by the Member.

7. DISSOLUTION AND WINDING UP OF THE COMPANY

7.1. **Dissolution.** The Company will be dissolved on the occurrence of any of the following events:

7.1.1. The express determination of the Member to dissolve the Company; or

7.1.2. By operation of law.

7.2. **Winding Up.** On the dissolution of the Company, the Member will take full account of the Company's assets and liabilities; the assets will be liquidated as promptly as is consistent with obtaining their fair value; and the proceeds, to the extent sufficient to pay the Company's obligations regarding such liquidation, will be applied and distributed in this order:

7.2.1. To payment and discharge of the expenses of liquidation and of all the Company's debts and liabilities, including debts and liabilities owed to the Member; and

7.2.2. To the Member.

8. GENERAL PROVISIONS

8.1. **Amendments.** Any proposed amendment will be adopted and become effective as an amendment only on the written approval of the Member.

8.2. **Governing Law.** This Agreement and the rights of the parties under it will be governed by and interpreted under the laws of Oregon (without regard to principles of conflicts of law).

The parties sign this Agreement as of the date first written above.

Sheep Trail LLC

/s/ Kathryn L. Young By: /s/ Kathryn L. Young

Kathryn L. Young, sole member Kathryn L. Young, sole member

APPENDIX A

SCHEDULE OF ASSETS AND LIABILITIES

All the member's interest in the following real estate:

Exhibit A

Beginning at a point which is 315.48 feet N. 89° 49' W. and 1223.41 feet N. 22° 30' W. and 301.80 feet N. 67° 30' E. from the Southeast corner of Section 11 in Township 8 South, Range 3 West of the Willamette Meridian In Marion County, Oregon; thence S. 14° 34' E. 370.20 feet; thence N. 67° 30' E. 429.93 feet to a point on the East line of said Section, which point is 1064.65 feet N. 0° 30' E. from the Southeast corner of said Section; thence N. 0° 30' E. along said East line 397.79 feet; thence S. 67° 30' W. 534.60 feet to the place of beginning and containing 4.07 acres of land.

Together with an easement for road and right-of-way purposes over the following described parcel, beginning at a point which is located North 89° 49' West 315.48 feet and North 22° 30' West 1,223.41 feet and North 67° 30' East 30.00 feet from the Southeast corner of Section 11, Township 8 South, Range 3 West of the Willamette Meridian, Marion County. Oregon;

Thence from said point of beginning continuing North 67° 30' East 351.80 feet to a point on the northerly line of a tract of land described in Deed Book 469, page 411 of Marion County Deed Records;

Thence North 22° 30' West 50.00 feet to a point;

Thence South 67°30' West 351.80 feet to a point on the easterly right-of-way line of Battle Creek Road (Market Road No. 25);

Thence South 22° 30' East along said easterly right-of-way line 50.00 feet to the point of beginning.

Subdivision Application

May 16, 2019

PROPOSAL:

The subject property is about 52.80 acres in size and zoned RA (Residential Single Agriculture). The applicant is proposing to divide the subject property into 222 single family residential lots (within 11 Phases/Sections).

Section A: 26 lots
Section B: 17 lots
Section C: 17 lots
Section D: 25 lots
Section E: 19 lots
Section F: 15 lots
Section G: 23 lots
Section H: 25 lots
Section I: 23 lots
Section J: 17 lots
Section K: 15 lots

Due to topography and the location of the S1 Water Service, the applicant requests that the City of Salem condition the subdivision approval to allow Phases/Sections to be developed out of sequence. Below is the anticipated order of development for the proposed Phases/Sections. However, we would like the flexibility to develop in any logical order.

Section I: 23 lots
Section J: 17 lots
Section E: 19 lots
Section G: 23 lots
Section F: 15 lots
Section H: 25 lots
Section K: 15 lots
Section A: 26 lots
Section D: 25 lots
Section B: 17 lots
Section C: 17 lots

The applicant is also requesting alternative street standards as outlined in the narrative and on the site plans. Along with an adjustment to street grade and an adjustment to lot depth requirements. Both adjustments have been addressed in the narrative below.

SITE VICINITY and CHARACTERISTICS:

The subject property is located on the northeast intersection of Kuebler Boulevard SE and Battle Creek Road. The subject property is identified as 083W11D/Tax Lots 100, 200, 400, and 601; 083W12B/Tax Lot 1600. The subject property is located within the City limits and the Urban Growth Boundary. UGA 17-03 was issued on August 31, 2017 for the subject property.

The surrounding properties are zoned and used as follows:

North: PH (Public Health); vacant land and existing single-family dwellings
East: RA (Residential Agriculture); vacant land and existing single-family dwellings
South: RA (Residential Agriculture); vacant land and existing single-family dwellings
West: Across Reed Road, FMU (Fairview Mixed-Use); vacant land and existing single-family dwellings

COMPLIANCE WITH THE SALEM AREA COMPREHENSIVE PLAN (SACP):

Citizen involvement is provided via the City of Salem notification process necessary for the subdivision application which allows public comment. The City's Plan is acknowledged to be in compliance with State Land Use Goals. The public notification process is implemented by the Planning Administrator with written notification to property owners. The published notice will identify the applicable criteria. Through the notification process all interested parties are afforded the opportunity to review the application, comment on the proposal and participate in the decision.

In addition, the SACP and its implementing ordinances are adopted by the City through the public hearing process of the City Council ordinance procedure. The subject property is within the city limits and is within the urbanized area. The proposal does not affect the size or location of the city limits or urban growth boundary.

The Statewide Planning Goals are implemented by the adopted goals and policies of the SACP and its implementing ordinances and facility plans. The proposal accommodates the Statewide Goals by being located within an adopted Urban Growth Boundary.

The SACP Residential Development Goal requires the promotion of …. "*. . . a variety of housing opportunities for all income levels and the adequate supply of developable land to support such housing."* The SACP is implemented by the zone and subdivision codes under the provisions of SRC Chapter 510 and 205. The proposal is for a single family development.

The proposal meets SACP General Development Polices 7, 10, 12 and 13 which encourage structures and their sitting in all residential developments to optimize the use of land. The proposed subdivision optimizes the land by providing 222 single family lots on 52.80 acres. The proposed subdivision is in compliance with the code.

The development is sited and designed to minimize the adverse alteration of the natural terrain, the potential for erosion and adverse effects upon the existing topography and soil conditions. The proposal encourages natural open living spaces by providing larger than average lots. The proposed lots range in size from 4,397 square feet to 92,734 square feet in size, with and average lot size of 6,561 square feet.

The property is within the Urban Growth Boundary and the Urban Services Area; however, UGA17-03 was issued on August 31, 2017. Thus, meeting the SACP Growth Management Goal.

All internal streets are shown on the site plan. The proposed internal streets will all be built to public street standards to be consistent with the existing surrounding street system. Therefore, meeting SACP Transportation Policy 19.

CRITERIA AND APPLICANT'S REASONS ADDRESSING UDC 205.010(d)(1):

The intent of the subdivision code is providing for orderly development through the application of appropriate rules and regulations. Pursuant to the application of the current enabling statutes, these regulations are those cited in UDC 205.010(d) and UDC 205.015(d). The decision criteria for subdivisions without a concurrent variance under UDC 205.010(d) and UDC 205.015(d) must be found to exist before an affirmative decision may be made for a subdivision application.

(1) The tentative subdivision plan complies with the standards of this Chapter and with all applicable provisions of the UDC, including, but not limited to, the following:

The Salem Revised Code (SRC), which includes the Salem Zoning Code, implements the Salem Area Comprehensive Plan land use goals, and governs development of property within the city limits. The subdivision process reviews development for compliance with city standards and requirements contained in the Subdivision Code, Zoning Code, Salem TSP and the Water, Sewer and Storm Drain System Master Plans, and adopted design documents applicable to residential development. The proposed meets all applicable provisions of the Salem Revised Code.

(A) Lot standards, including, but not limited to, standards for lot area, lot width and depth, lot frontage and designation of front and rear lot lines.

The proposal does not require any variances to lot development standards specified in the Code.

Proposed Lots 137 and 166 are located within the PH zone. These two lots will be developed in compliance with the requirements and permitted uses allowed within the PH zone.

Minimum Lot Area and Dimensions: As shown on the site plan, all 222 lots meet lot size (4,000 square feet) and lot dimension (40’ by 70’) standards as required under UDC Chapters 510 and 511. The proposed lots range in size from 4,397 square feet to 92,734 square feet in size, with and average lot size of 6,561 square feet.

Lot 211 on the revised site plans is odd in shape, however, it can be built with adequate setbacks and an adequate building envelope of about 1,700 square feet. This will allow the development of a smaller home, while maintaining adequate setbacks.

Lot 112 does not meet the lot depth requirements. Therefore, an adjustment to this standard has been required.

Additional reviews occur at the time of building permits to assure compliance with the zoning code. Compliance with conditions of approval to satisfy the subdivision ordinance is also checked prior to city staff signing the final subdivision plat.

The proposal can conform to applicable conditions imposed as necessary to ensure that development conforms to the standards of the subdivision code and with existing development and public facilities. Expect for those lots mentioned above, the proposed subdivision is in compliance with lot standard requirements and required access. Therefore, this criteria has been met.

(B) City infrastructure standards.

Water, sewer, storm drainage plans will be submitted to the Public Works Department for final plat and construction plan approval at the final plat stage. The tentative site plan illustrates the location of the public utility lines. The proposal meets applicable Salem Area Comprehensive Plan Residential Policies for properties within the Urban Growth Boundary. The proposal encourages the efficient use of developable residential land. Public facilities and services are or will be available to serve the site, including services such as water, sanitary and storm sewer and fire/life/safety services. Therefore, this criteria has been met.

(C) Any special development standards, including, but not limited to, floodplain development, special setbacks, geological or geotechnical analysis, and vision clearance.

There are no wetlands or floodplains located on the subject property.

A geological assessment dated July 20, 2018, has been provided as part of this application packet. The assessment outlines the nature, distribution of underlying geology, and the physical and chemical properties of existing soils; an opinion as to stability of the site, and conclusions regarding the effect of geologic conditions on the proposed development as required. See attached geological assessment.

This criteria has been met.

(2) The tentative subdivision plan does not impede the future use or development of the property or adjacent land.

The proposal is for the entire subject property and will be developed into 222 lots. As shown on the site plan. Therefore, a shadow plan is not required.

Property located north of Lots 145 and 207 is not part of this subdivision proposal, nor is it under the same ownership. Therefore, property to the north will not be affected by this proposal.

All surrounding properties have direct access onto the existing street system. All 222 lots will have direct access onto the existing street system as well. The subdivision does not impede the future use of the property or adjacent land. Therefore, access to adjacent properties is not necessary.

(3) Development within the tentative subdivision plan can be adequately served by City infrastructure.

Water, sewer, storm drainage plans will be submitted to the Public Works Department for final plat and construction plan approval at the final plat stage. The tentative site plan illustrates the location of the public utility lines. The proposal meets applicable Salem Area Comprehensive Plan Residential Policies for properties within the Urban Growth Boundary. The proposal encourages the efficient use of developable residential land. Public facilities and services are or will be available to serve the site, including services such as water, sanitary and storm sewer and fire/life/safety services.

Water, sewer, storm drainage plans will be submitted to the Public Works Department for final plat and construction plan approval at the final plat stage. The tentative site plan illustrates the location of the public utility lines. Sewer/storm/water has been provided to all lots as required by UGA17-03.

In conclusion, the location and design of the proposed subdivision allows for public sanitary sewer, water service, and storm drainage to be conveniently provided. Therefore, this criterion has been satisfied.

Proposed StormWater Management System:

Stormwater quality and quantity are required for this development. An LID (low impact development) Stormwater technique will be used to mitigate the increase in pollutants contributed from development. This system may also be used to provide storage and water quantity control. The exact system will be determined at the time of design. Any proposed technique will meet City of Salem Stormwater Management standards in means and methods to provide all aspects of Stormwater management. A Preliminary

A Stormwater Drainage report is currently being worked on and will be submitted to staff when complete.

(4) The street system in and adjacent to the tentative subdivision plan conforms to the Salem Transportation System Plan.

The major street system is in place due to prior development. Reed Road located to the west and Battle Creek Road located to the south of the site will provide access into the development. Both Reed Road and Battle Creek Road are designated as a 'minor arterial' on the Salem Transportation System Plan.

The existing and proposed street systems conform to the City's Transportation Plan. All street design and improvements will be determined through the subdivision review process, and regulated through the Conditions of Approval. The proposed internal streets will be designed to street standards.

The major street network in the area has been established and is consistent with the Transportation System Plan which implements the Comprehensive Plan. Public Works Department will address any applicable requirements for right-of-way conveyance that might be required because of this subdivision.

A Traffic Impact Analysis (TIA) dated June 20, 2018 and a Traffic Memo dated July 27, 2018, have been provided as part of this application package.

The applicant is requesting alternative street standards for the proposed internal streets, to 50-feet in width where 60-feet is required. The site topography and shape create a physical constraint that makes it very difficult to comply with the standard right of way width of 60 feet.

The existing street system and proposed street improvements will be in compliance with the STSP. All lots are in compliance with the UDC/SRC.

The layout of the lots and internal streets take into account the topography and vegetation of the site, such that the least disruption of the site, topography, and vegetation will result from the reasonable development of the site.

The subdivision code requires City approval of lots be suitable for the general purpose for which they are likely to be developed. No lots can be of such a size or configuration that is detrimental to public health, safety, or welfare or sanitary needs of users of the parcel or lot.

The subdivision plan takes into consideration the topography and vegetation of the site. The alternative street standards allows lots of sufficient size and dimensions for future development. The lot dimensions are illustrated on the tentative site plan and are in

conformance to the minimum standards in UDC 510 and 511.

Transportation Planning Rule Review:

The City of Salem's TPR encourages a reduction in automobile trips by capitalizing on transit opportunities and by creating an environment that encourages people to walk. The proposed subdivision is a "limited land use decision" pursuant to Oregon Revised Statute (ORS) 197.015, and has therefore been reviewed for consistency with the State's TPR multi-modal connectivity requirements.

In conclusion, the development will provide bicycle and pedestrian facilities on-site to encourage people to walk and reduce vehicle trips. The development on the property will allow residents to reduce vehicle usage, by the convenience of bicycle and pedestrian paths to and from the uses and existing sidewalk system. Therefore, the proposed subdivision is in compliance with the intent of the TPR to reduce vehicle usage and encourage other modes of transportation to and from the site.

(5) The street system in and adjacent to the tentative subdivision plan is designed so as to provide for the safe, orderly, and efficient circulation of traffic into, through, and out of the subdivision.

The subject property is located in a developed and developing area where improved streets and sidewalks exist and continue with new development. The local street system serving the development provides the necessary connections and access to the local streets and circulation system serving this residential neighborhood.

Block Length: Blocks shall be a maximum of 600 feet between street centerlines. The length of the blocks was taken into consideration at the time of design layout. There are more than enough street connections within the proposed development, therefore, block lengths are in compliance with the code.

The proposed subdivision provides a connection throughout the development. By providing these connections, the intent of providing a maximum block length and connectivity have been met. Adding additional streets to break of block length would only create unsafe circulation. As shown on the site plan, the proposed subdivision provides a safe an efficient circulation pattern throughout the development for vehicles and pedestrians. Therefore, additional streets are not necessary.

Access to, within, and from the development must be consistent with applicable requirements of the Transportation Planning Rule Requirements (TPR) that requires that development provide connectivity between land uses and transportation. Under the Rule, developments are responsible for providing for the safe and efficient circulation of vehicles, bicycles, and pedestrians into, through, and out of a development. The proposal develops the subject property within an established residential area where

local and arterial streets and mass transit facilities exist. These facilities connect the transportation system to the surrounding residential neighborhoods.

The Public Works Department will address the level of street improvements that are roughly proportional to assure conformance to the development to subdivision code and applicable transportation system plan requirements. Completion of conditions of approval prior to the signing of the final plat will satisfy this criterion for the subdivision application.

Street Grade: There are several local streets proposed within the subdivision that exceed the 12% maximum street grade. See attached Sheet 1 of 1 (Slope Exception Areas). The applicant is requesting an adjustment to allow these internal local streets to be developed with a street grade over 12%, up to 15%.

In conclusion, the proposed street plan provides the best economic, safe, and efficient circulation of traffic possible under the circumstances. The proposed subdivision demonstrates this review criterion can be met. Therefore, this criterion has been satisfied.

(6) The tentative subdivision plan provides safe and convenient bicycle and pedestrian access from within the subdivision to adjacent residential areas and transit stops, and to neighborhood activity centers within one-half mile of the development. For purposes of this criterion, neighborhood activity centers include, but are not limited to, existing or planned schools, parks, shopping areas, transit stops, or employment centers.

The subdivision is served with adequate transportation infrastructure and the street system adjacent the property conforms to the Transportation System Plan and provides for safe, orderly, and efficient circulation of traffic into, through, and out of the subject property on to the public street system.

Therefore, via paved streets and sidewalks, safe and convenient bicycle and pedestrian access will be provided to the site and to adjacent neighborhoods. Therefore, this criteria has been met.

(7) The tentative subdivision plan mitigates impacts to the transportation system consistent with the approved Traffic Impact Analysis, where applicable.

The proposal is for a 222-lot subdivision. A Traffic Impact Analysis (TIA) dated June 20, 2018 and a Traffic Memo dated July 27, 2018, have been provided as part of this application package. The proposed subdivision plan mitigates impacts to transportation system by providing adequate access and circulation for all 222 lots. Therefore, this criterion has been met.

(8) The tentative subdivision plan takes into account the topography and vegetation of the site so the need for variances is minimized to the greatest extent practicable.

All lots are in compliance with the UDC/SRC. Therefore, no variances have been requested.

(9) The tentative subdivision plan takes into account the topography and vegetation of the site, such that the least disruption of the site, topography, and vegetation will result from the reasonable development of the lots.

The subdivision code requires City approval of lots be suitable for the general purpose for which they are likely to be developed. No lots can be of such a size or configuration that is detrimental to public health, safety, or welfare or sanitary needs of users of the parcel or lot.

The subdivision plan takes into consideration the topography and vegetation of the site. The proposed lots are of sufficient size and dimensions to permit future development. The lot dimensions are illustrated on the tentative site plan and are in conformance to the minimum standards in UDC 510 and 511. Final conformance to minimum lot size and buildable lot area will be confirmed when the final plat is submitted to the City for review and approval.

There are 174 trees located within the boundary of the site. One-hundred and twenty-two (122) trees are designated for removal. The applicant is preserving 30% of the tree on the site. Trees designated for removal are within the right-of-way, the building envelop or within an area close to the building envelope, which have the potential of being damaged during grading and construction. Therefore, the removal of these 131 trees is necessary for development of the site.

There are eleven (11) Oregon White Oaks 24” in diameter or greater located throughout the site. The applicant is removing five (5) of these significant trees.

J Avenue-Oak 24” Remove
Lot 200-Oak 30” Remove
Lot 222-Oak 40”
Near H Street-Oak 36”
Near H Street Oak 36”
Near H Street Oak 28”
Near H Street Oak 44”
Lot 183-Oak 32”
A Avenue-Oak 60” Remove
A Avenue-Oak 24” Remove
A Avenue-Oak 28” Remove

All Oregon White Oaks designated for removal are within the right-of-way, the building envelop or within an area close to the building envelope, which have the potential of being damaged during grading and construction.

The layout of the lots takes into consideration the topography and vegetation of the site. All lots are in compliance with the UDC. Therefore, no variances have been requested. Therefore, this criteria has been met.

10) When the tentative subdivision plan requires an Urban Growth Preliminary Declaration under SRC Chapter 200, the tentative subdivision plan is designed in a manner that ensures that the conditions requiring the construction of on-site infrastructure in the Urban Growth Preliminary Declaration will occur, and, if off-site improvements are required in the Urban Growth Preliminary Declaration, construction of any off-site improvements is assured.

The property and development is located inside the Urban Service Area (USA). However, an Urban Growth Preliminary Declaration (UGA17-03) was issued on August 31, 2017. All conditions of UGA17-03 have been or will be met with the approval of this subdivision proposal. Condition 4(a) of UGA17-03 requires dedication of land for the future Coburn Reservoir. Proposed Lot 90 will be dedicated to the City of future land for the Coburn Reservoir. Therefore, this criterion has been met.

TREE CONSERVATION/REMOVAL PLAN

There are 174 trees located within the boundary of the site. One-hundred and twenty-two (122) trees are designated for removal. The applicant is preserving 30% of the tree on the site. Trees designated for removal are within the right-of-way, the building envelop or within an area close to the building envelope, which have the potential of being damaged during grading and construction. Therefore, the removal of these 131 trees is necessary for development of the site.

There are eleven (11) Oregon White Oaks 24” in diameter or greater located throughout the site. The applicant is removing five (5) of these significant trees.

J Avenue-Oak 24” Remove
Lot 200-Oak 30” Remove
Lot 222-Oak 40”
Near H Street-Oak 36”
Near H Street Oak 36”
Near H Street Oak 28”
Near H Street Oak 44”
Lot 183-Oak 32”
A Avenue-Oak 60” Remove
A Avenue-Oak 24” Remove
A Avenue-Oak 28” Remove

PHASED SUBDIVSION 205-015(D)

Criteria. A tentative phased subdivision plan shall be approved if all of the following criteria are met:

(1) The tentative phased subdivision plan meets all of the criteria for tentative subdivision plan approval set forth in SRC 205.010(d).

Applicant Findings: The subject property is about 52.80 acres in size and zoned RA (Residential Single Agriculture). The applicant is proposing to divide the subject property into 222 single family residential lots (within 11 Phases/Sections).

Section A: 26 lots
Section B: 17 lots
Section C: 17 lots
Section D: 25 lots
Section E: 19 lots
Section F: 15 lots
Section G: 23 lots
Section H: 25 lots
Section I: 23 lots
Section J: 17 lots
Section K: 15 lots

Due to topography and the location of the S1 Water Service, the applicant requests that the City of Salem condition the subdivision approval to allow Phases/Sections to be developed out of sequence.

Section I: 23 lots
Section J: 17 lots
Section E: 19 lots
Section G: 23 lots
Section F: 15 lots
Section H: 25 lots
Section K: 15 lots
Section A: 26 lots
Section D: 25 lots
Section B: 17 lots
Section C: 17 lots

The proposed phased subdivision meets all the criteria for a tentative subdivision as outlined above under SRC 205.010(d).

(2) Connectivity for streets and City utilities between each phase ensures the orderly and efficient construction of required public improvements among all phases.

Applicant Findings: The major street system is in place due to prior and new development. Reed Road located to the west and Battle Creek Road located to the south of the site will provide access into the development. Both Reed Road and Battle Creek Road are designated as a 'minor arterial' on the Salem Transportation System Plan.

The existing and proposed street systems conform to the City's Transportation Plan. All street design and improvements will be determined through the subdivision review process, and regulated through the Conditions of Approval. The proposed internal streets will be designed to street standards.

The major street network in the area has been established and is consistent with the Transportation System Plan which implements the Comprehensive Plan. Public Works Department will address any applicable requirements for right-of-way conveyance that might be required because of this subdivision.

The proposed phased subdivision will not impede the future development of other phases as shown on the site plan. All phases will have access to the internal street system and the existing street system.

Each phase will ensure the orderly and efficient construction of the required improvements as required by Conditions of Approval and Code compliance.

Therefore, this criteria has been met.

(3) Each phase is substantially and functionally self-contained and self-sustaining with regard to required public improvements.

Applicant Findings: Each phase is required to provide the needed improvements to accommodate that phase. Due to the required conditions of approval and City standards all eleven (11) Phases/Sections will be functionally self-contained and self-sustaining as shown on the site plans.

The subject property is about 52.80 acres in size and zoned RA (Residential Single Agriculture). The applicant is proposing to divide the subject property into 222 single family residential lots (within 11 Phases/Sections). Due to topography and the location of the S1 Water Service, the applicant requests that the City of Salem condition the subdivision approval to allow Phases to be developed out of sequence.

(4) Each phase is designed in such a manner that all phases support the infrastructure requirements for the phased subdivision as a whole.

Applicant Findings: The applicant will be required to comply with conditions of approval that will be designed to ensure that the phases are developed to support the infrastructure requirements for each phase and the subdivision as a whole. See attached site plans.

CLASS-2 ADJUSTMENT

The applicant is requesting an adjustment to SRC 803.035(c):

> ***(c) Alignment and Grade. All streets shall be designed with a vertical alignment that conforms to the Public Works Design Standards. No grade of parkway, major arterial, or minor arterial shall exceed 6 percent. No grade of a collector street shall exceed 8 percent. No grade of a local street shall exceed 12 percent.***

There are several local streets proposed within the subdivision that exceed the 12% maximum street grade. See attached Sheet 1 of 1 (Slope Exception Areas). The applicant is requesting an adjustment to allow these internal local streets to be developed with a street grade over 12%, up to 15%.

Adjustment Criteria-SRC 250.005(d)(2) Criteria

(A) The purpose underlying the specific development standard proposed for adjustment is:

(i) Clearly inapplicable to the proposed development; or
(ii) Equally or better met by the proposed development.

(B) If located within a residential zone, the proposed development will not detract from the livability or appearance of the residential area.

(C) If more than one adjustment has been requested, the cumulative effect of all the adjustments result in a project which is still consistent with the overall purpose of the zone.

Applicant Findings:

(A) The applicant is requesting an adjustment to street grades. As shown on Sheet 1 of 1, Slope Exception Areas Plan, sections of A Avenue, C Avenue, I Avenue, H Street, M Street, J Avenue, N Street, O Street, and P Avenue within the subdivision will have sections of the roadway with up to a 15% street grade. Due to the topography of the site and the proposed street

alignment with existing streets, several streets will exceed the 12% street grade allowed. The areas proposed for slopes in excess of 12% are denoted on the plans and will not exceed a single run length of 200 feet.

The intent of the maximum street grade is to allow vehicles to climb and descend the street safely in all conditions. The internal streets proposed will provide safe and efficient circulation throughout the project. The intent is to construct the streets to provide safe and efficient conditions.

The maximum length of any one section of the 15% grade is 200 feet or less, with sections of flatter slopes between the steep sections. This limits distances, limits the ability of any vehicle to have a speed "run-up" occur while traveling down the roadway.

The increased street grade facilitates access to the lots and property along its route such that quicker exits from the street into driveways can be achieved with reduced cuts and fills into the lots and driveways.

We believe that the intent of the standard is being met; therefore, the proposal equally meets the intent of the maximum street grade standard.

(B) Due to topography and existing streets in this area, the proposed streets are typical to that in any other development in configuration. The use of a steeper roadway will reduce the need for excessive cut or fill slope. This has a positive impact to the surrounding areas. The street will be designed to Public Works standards and will provide efficient access to the lots and property adjacent to its route, therefore, the greater street grade will not distract from the livability or appearance of the residential area.

(C) The applicant is requesting more than one adjustment. The cumulative effect of all the adjustments result in a project which is still consistent with the overall purpose of the zone. Therefore, this criteria is not applicable.

CLASS-1 ADJUSTMENT

The applicant is requesting a Class-1 Adjustment to Section 511.010 (Development Standards) Table 511-2, Lot Standards.

The adjustment is to allow Lot 112 to have a lot depth of about 59 feet where 70 feet is required.

Adjustment Criteria-SRC 250.005(d)(1) Criteria

(1) An application for a Class 1 adjustment shall be granted if all of the following criteria are met:

(A) The purpose underlying the specific development standard proposed for adjustment is:

(i) Clearly inapplicable to the proposed development; or
(ii) Clearly satisfied by the proposed development.

(B) The proposed adjustment will not unreasonably impact surrounding existing or potential uses or development.

Applicant Findings:

(A) The purpose of lot depth is to provide adequate room for a single-family dwelling and required setbacks. This helps provide a buffer between buildings. The applicant is requesting a 16% adjustment to the lot depth requirement for Lot 112. As shown on the site plan, Lot 112 has a lot depth of 59' where 70' is required. Lot 112 has a greater then 70-foot lot depth, however, the lot is odd in shape, therefore, the average lot depth is about 59', has shown on the site plans.

Lot 112 is 9,367 square feet in size. There is an adequate building envelope for this lot. All setbacks will meet or exceed the requirements, providing buffering from adjacent structures.

Therefore, the intent of the lot depth is equally meet by the proposed reduced lot depth.

(B) Adequate setbacks can be provided on Lot 112. The additional length of the odd shaped lot will provide additional landscaped area for Lot 112. Therefore, the decrease in lot depth will have no effect on the surrounding uses.

CITY OF Salem AT YOUR SERVICE

Pre-Application Report

Community Development Department
Planning Division

555 Liberty Street SE/Room 305
Phone: 503-588-6173
www.cityofsalem.net/planning
@Salem_Planning

Case Number / AMANDA No.	PRE-AP16-57 / 16-111662-PA
Conference Date and Time	July 7, 2016, 1:15 pm
Applicants	Battle Creek LLC Boulder Hill LLC Drager LLC Craig S. Hobbs Morning Star Church Pringle Creek LLC
Representative	Brandie Dalton Multi-Tech Engineering Services
Case Manager	Christopher Green, AICP, Planner II CJG

Pre-Application Conference Required: __X__ **Yes** _____ **No**

Project Description & Property Information	
Project Description	Comprehensive Plan and Zone Change for 15 taxlots encompassing approximately 99 acres along the north side of Kuebler Boulevard SE between Battle Creek Road SE and 27th Avenue SE. The applicant proposes a mix of CR (Retail Commercial), RM-2 (Multiple Family Residential), and RS (Single Family Residential) zoning for the area.
Property Address	2300-2700 of Kuebler Boulevard SE
Assessor's Map and Tax Lot Number	083W12C00600 083W12C00700 083W12C00800 083W12C01700 083W12C01701 083W11D00100 083W11D00200 083W11D00202 083W11D00300 083W11D00400 083W11D00500 083W11D00601 083W11D00602 083W12B01600 083W12B01700
Existing Use	Predominantly vacant with scattered rural residential
Neighborhood Association	Morningside Neighborhood Association
Adjacent Neighborhood Association	South Gateway Neighborhood Association
Comprehensive Plan Map Designation	Developing Residential; small portion of Community Service – Hospital adjacent to Hillcrest campus
Zoning	RA (Residential Agriculture); small portion of PH (Public Health) adjacent to Hillcrest campus

Overlay Zone	N/A
Urban Service Area	The subject property is located outside the City's Urban Service Area. ***Note:*** *Because the property is located outside the Urban Service Area, an Urban Growth Preliminary Declaration may be required for development of the subject property. See comments from Public Works Department.*
Urban Renewal Area	N/A
Past Land Use Actions	On Tax Lots 100 and 200: LLA98-27 (1998) adjusted the common boundary between the properties. On Tax Lot 1701: VAR96-05 (1996) and CU00-11 (2000) related to increase the maximum parking spaces and temporary gravel parking for a portion of the parking spaces for Morning Star Community Church.

Planning Division Comments

Proposal

Comprehensive Plan and Zone Change for 15 taxlots encompassing approximately 99 acres along the north side of Kuebler Boulevard SE between Battle Creek Road SE and 27th Avenue SE. The applicant proposes a mix of CR (Retail Commercial), RM-2 (Multiple Family Residential), and RS (Single Family Residential) zoning for the area.

Applicant Questions

1. *Process and costs? (Comprehensive Plan/Zone Change; PUD; Master Plan; UGA Preliminary Declaration) Which process would the City recommend?*

   Because of the scale and indefinite nature of the proposal presented at the pre-application conference, staff cannot recommend a specific process for the land use changes and development involved. Most likely, implementing the proposal would require a sequence of applications, or consolidated applications. As noted at the pre-application conference, the City does not have a review process in place to allow master planning and refinement of large undeveloped sites such as this one.

   Based on the materials submitted and conversation at the pre-application conference, staff believes the potential changes on the properties could be summarized as follows:

   - Land use changes (Comprehensive Plan Map and zone changes) for portions of the site intended for commercial or multifamily residential development.
   - Land division and/or reconfiguration of property lines consistent with the proposed land use changes. This assumes that areas proposed for commercial and multifamily residential development do not conform exactly to existing property boundaries within the overall site.
   - Land division(s) to create lots for single family residential development. Note that the current RA (Residential Agriculture) zoning that covers almost all of the site allows for single family residential development, so no land use changes would be needed on these portions of the site.
   - Development review (Site Plan Review, Multifamily Design Review, etc.) prior to construction of commercial and multifamily residential portions of the development.

   A Planned Unit Development process could take the place of most or all of these processes, but requires a relatively detailed level of design at an early stage. Some commercial development could be included within a PUD as a retail service area or convenience service area, but amount of commercial development shown on the concept map would most likely have to be developed separately, with a comprehensive plan map and zone change to "Commercial." Higher density multifamily development may also be somewhat limited within a PUD, which calculates residential unit density based on an average across the property under the existing zoning.

2. *What kind of improvements will be required when this site is subdivided?*

   Because the site is outside of the Urban Service Area, required master-planned facilities associated with developing the site will be determined through an Urban Growth Area Preliminary Declaration. Otherwise, it is difficult to determine specific required improvements, without knowing the size and arrangement of proposed land uses or development intensity. The size of the site and scale of the development being proposed may also require facilities provided by other agencies, such as schools or transit facilities. The applicant is encouraged to coordinate with all service providers during program development for the site.

3. *Is the City aware of any issues on this site that the applicant should be aware of?*

   In addition to issues described in this memo and comments from the Public Works Department, staff recommends that the applicant be aware of the issues described below. Please note that these issues are based on a concept level of detail in the proposal, and other issues may arise later on as a project of this scale is refined:

   The site is within the boundaries of the Airport Overlay Zone, primarily within the Horizontal Area described in SRC 602.010(f) and shown in SRC Chapter 602, Figure 602-1. Within the Horizontal Area, an Airport Overlay Zone Variance must be obtained for any building, structure, object, or vegetative growth more than 150 feet above the airport elevation. The ground level of much of the site is more than 150 feet above the airport elevation, and coordination with Salem Municipal Airport staff is highly recommended.

   At the moment, very little east-west vehicular or pedestrian connectivity is planned or exists across the site. Depending on the intensity of development eventually proposed, and the results of Transportation Planning Rule and traffic impact analyses, additional east-west transportation facilities may be needed.

   The site includes significant borders with a mixed-use, master-planned site already in development (Fairview) and a state correctional facility (Hillcrest) which may be redeveloped in the future. Coordination will be needed to ensure orderly development where the site shares these borders.

   The Morningside Neighborhood Plan, adopted in 2014, includes goals and policies serving as guidance for future development. The "Opportunity Areas Map" included in the plan shows the subject property as the site of a future park, with commercial office or mixed use development at the corner of Battle Creek Road SE and Kuebler Boulevard. As described in the memo, the applicant is encouraged to meet with Neighborhood Association representatives to share information about the project and identify potential issues.

   In addition to restricted access on the Kuebler Boulevard frontage, the western edge of the area shown on the concept plan for CR zoning is very close to single family residential and other less intensive development across Battle Creek Road. Intensive retail development tends to be most suitable on the western edge of the site, near the intersection with 27th Avenue SE and adjacent to existing CR-zoned properties. Lower-impact commercial development, such as the office and mixed-use development suggested in the Morningside Neighborhood Plan, might be more suitable at the east end of the proposed commercial corridor on the site's Kuebler frontage.

Agency Comments

- Public Works Department will submit comments in a separate memo, including responses to the following applicant questions not addressed above:

  4) *Any foreseen traffic issues?*

  5) *Will a TIA or TPR be required?*

- Building & Safety Division submitted comments indicating no issues at this time.

Required Land Use Applications

The land use applications checked in the table below have been preliminary identified as being required for development of the subject property based upon the information provided by the applicant at the time of the pre-application conference. Additional land use applications may be required depending on the specific proposal at the time of future development.

The application n submittal packets for these applications, which include a summary of the review procedure, submittal requirements, and approval criteria, can be found on the Planning Division's website at the following location:

http://www.cityofsalem.net/Departments/CommunityDevelopment/Planning/Pages/LandUseApplicationInformation.aspx

The applicable land use application fees for these applications can be found on the Planning Division's website at the following location:

http://www.cityofsalem.net/Departments/CommunityDevelopment/Planning/Documents/Planning_Fees.pdf

Required Land Use Applications					
Zoning		**Site Plan Review**			
	Conditional Use		Class 1 Site Plan Review		
X	Comprehensive Plan Change		Class 2 Site Plan Review		
X	Zone Change		Class 3 Site Plan Review		
	Temporary use Permit – Class 1	**Design Review**			
	Temporary Use Permit – Class 2		Class 1 Design Review		
	Non-Conforming Use Extension, Alteration, Expansion, or Substitution		Class 2 Design Review		
	Manufactured Dwelling Park Permit		Class 3 Design Review		
Land Divisions		**Historic Design Review**			
?	Property Line Adjustment		Major		Minor Commercial
	Property Boundary Verification		Major		Minor Public
?	Replat		Major		Minor Residential
	Partition	**Wireless Communication Facilities**			
X	Subdivision		Class 1 Permit		
?	Phased Subdivision		Class 2 Permit		
?	Planned Unit Development Tentative		Class 3 Permit		

Required Land Use Applications			
	Plan		
	Manufactured Dwelling Park Subdivision		Temporary
Relief			Adjustment
	Adjustment – Class 1	**Other**	
	Adjustment – Class 2	X	Airport Overlay Zone Height Variance
	Variance		Annexation (voter approval)
Natural Resources			Sign Adjustment
X	Tree Conservation Plan		Sign Adjustment
	Tree Conservation Plan Adjustment		Sign Conditional Use
	Tree Removal Permit		Sign Variance
	Tree Variance		SWMU Zone Development Phasing Plan
	Willamette Greenway Permit – Class 1	X	Urban Growth Preliminary Declaration
	Willamette Greenway Permit – Class 2		Validation of Unit of Land

Consolidated Land Use Application Procedures

When multiple land use applications are required or proposed for a development, the City's land use procedures ordinance (SRC Chapter 300) provides alternatives methods for how such applications may be processed.

The applications may be processed individually in sequence, concurrently, or consolidated into a single application. Where multiple applications proposed to be consolidated include an application subject to review by the Historic Landmarks Commission, the application subject to Historic Landmarks Commission review shall be processed individually in sequence or concurrently.

Multiple land use applications consolidated into a single application shall be accompanied by the information and supporting documentation required for each individual land use action. Review of the application shall be according to the highest numbered procedure type and the highest Review Authority required for any of the land use applications proposed to be consolidated.

Multiple applications processed concurrently require the filing of separate applications for each land use action. Each application shall be reviewed separately according to the applicable procedure type and Review Authority, and processed simultaneously.

Comprehensive Plan Map Amendment (SRC Chapter 64)

Developing Residential; small portion of Community Service – Hospital adjacent to Hillcrest campus

The majority of the subject property is currently designated "Developing Residential" on the Salem Area Comprehensive Plan map, with a small portion adjacent to the Hillcrest Youth Authority campus designated "Community Service - Hospital." The RM-2 zone proposed for portions of the site implements the "Multi-Family Residential" comprehensive plan designation, and the CR zone proposed for other portions of the site implements the "Commercial" comprehensive plan designation. Therefore, a comprehensive plan map amendment to change the comprehensive plan designation for a portion of the site to "Multi-Family Residential" and/or

"Commercial" will be required with the proposed zone change application to change the zoning of portions of the site to RM-2 and CR.

In order to change portions of the site's comprehensive plan map designation from Residential Agriculture and/or Community Service Hospital to Multifamily Residential and Commercial, an application for a Minor Comprehensive Plan Map Amendment is required. Single family residential development is allowed within the "Developing Residential" designation and RA (Residential Agriculture) zoning that covers most of the properties, so no comprehensive plan or zone change is required prior to single family residential development in these areas. Pursuant to SRC 265.015(a)(2), land zoned RA would be automatically converted by operation of law upon the recording of a final subdivision plat.

Minor Plan Map Amendment Approval Criteria. In order for a minor plan map amendment to be approved, it must be demonstrated that the approval criteria identified below are met. The burden is on the applicant to submit sufficient information to demonstrate conformance with the approval criteria. Staff will review the application when it is submitted and make a recommendation to the Planning Commission based on the merits of the request. The Planning Commission will in turn make a recommendation to the City Council.

Minor Comprehensive Plan Map Amendment (SRC 64.025(e)(2): A Minor Plan Map Amendment may be made if it complies with the following:

(A) The Minor Plan Map Amendment is justified based on the existence of one of the following:

(i) Alteration in Circumstances. Social, economic, or demographic patterns of the nearby vicinity have so altered that the current designations are no longer appropriate.

(ii) Equally or Better Suited Designation. A demonstration that the proposed designation is equally or better suited for the property than the existing designation.

(iii) Conflict Between Comprehensive Plan Map Designation and Zone Designation. A Minor Plan Map Amendment may be granted where there is a conflict between the Comprehensive Plan Map designation and the zoning of the property, and the zoning designation is a more appropriate designation for the property than the Comprehensive Plan Map designation. In determining whether the zoning designation is the more appropriate designation, the following factors shall be considered:

(aa) Whether there was a mistake in the application of a land use designation to the property;

(bb) Whether the physical characteristics of the property are better suited to the uses in zone as opposed to the uses permitted by the Comprehensive Plan Map designation;

(cc) Whether the property has been developed for uses that are incompatible with the Comprehensive Plan Map designation; and

(dd) Whether the Comprehensive Plan Map designation is compatible with the surrounding Comprehensive Plan Map designations.

(B) The property is currently served, or is capable of being served, with public facilities and services necessary to support the uses allowed by the proposed plan map designation;

(C) The proposed plan map designation provides for the logical urbanization of land;

(D) The proposed land use designation is consistent with the Salem Area Comprehensive Plan and applicable Statewide planning goals and administrative rules adopted by the Department of Land Conservation and Development; and

(E) The amendment is in the public interest and would be of general benefit.

Zone Change (SRC Chapter 265)

Because of normal and anticipated growth of the City, changing development patterns, governmental policy decisions affecting land use, community needs and other unanticipated factors, the zoning pattern established by the Salem Revised Codes cannot remain fixed in perpetuity. The purpose of the Zone Changes chapter (SRC Chapter 265) is to establish procedures and criteria to, when appropriate, change zoning designations.

The subject property is currently zoned RA (Residential Agriculture), with a small portion adjacent to the Hillcrest Youth Correctional Facility . In order to change the zoning of the subject property from RA to a combination of RS, RM-2, and CR, an application for a zone change will be required. Because the proposed zone change will be consolidated with a minor comprehensive plan map amendment, both the zone change and the minor comprehensive plan map amendment will be reviewed through a public hearing with the Salem Planning Commission.

Zone Change Approval Criteria. In order for a zone change to be approved, it must be demonstrated that the approval criteria identified below are met. The burden is on the applicant to submit sufficient information to demonstrate conformance with the approval criteria.

Quasi-Judicial Zone Changes (SRC 265.005(e)):

(1) A quasi-judicial zone change shall be granted if the following criteria are met:

(A) The zone change is justified based on the existence of one or more of the following:

(i) A mistake in the application of a land use designation to the property.

(ii) A demonstration that there has been a change in the economic, demographic, or physical character of the vicinity such that the zone would be compatible with the vicinity's development pattern.

(iii) A demonstration that the proposed zone change is equally or better suited for the property than the existing zone. A proposed zone is equally or better suited than an existing zone if the physical characteristics of the property are appropriate for the proposed zone and the uses allowed by the proposed zone are logical with the surrounding land uses.

(B) If the zone change is City-initiated, and the change is for other than City-owned property, the zone change is in the public interest and would be of general benefit.

(C) The zone change conforms with the applicable provisions of the Salem Area Comprehensive Plan.

(D) The zone change complies with applicable Statewide Planning Goals and applicable administrative rules adopted by the Department of Land Conservation and Development.

(E) If the zone change requires a comprehensive plan change from an industrial use designation to a non-industrial use designation, or from a commercial or employment designation to any other use designation, a

demonstration that the proposed rezone is consistent with its most recent economic opportunities analysis and the parts of the Comprehensive Plan which address the provision of land for economic development and employment growth; or be accompanied by an amendment to the Comprehensive Plan to address the proposed rezone; or include both the demonstration and an amendment to the Comprehensive Plan.

(F) The zone change does not significantly affect a transportation facility, or, if the zone change would significantly affect a transportation facility, the significant effects can be adequately addressed through the measures associated with, or conditions imposed on, the zone change.

(G) The property is currently served, or is capable of being served, with public facilities and services necessary to support the uses allowed by the proposed zone.

(2) The greater the impact of the proposed zone change on the area, the greater the burden on the applicant to demonstrate that the criteria are satisfied.

Development Standards

Future development of the property will primarily be subject to the provisions of the following chapters of the SRC, depending on the type of overall development proposal and sequencing selected by the applicant:

Land Use Application & Development Review Chapters

- SRC Chapter 64 – Comprehensive Planning
- SRC Chapter 200 – Urban Growth Management
- SRC Chapter 210 – Planned Unit Development
- SRC Chapter 220 – Site Plan Review
- SRC Chapter 225 – Design Review
- SRC Chapter 265 – Zone Changes

Zoning & Development Standards Chapters

- SRC Chapter 511 – Single Family Residential zone
- SRC Chapter 514 – Multiple Family Residential zone
- SRC Chapter 522 – Retail Commercial zone
- SRC Chapter 602 – Airport Overlay zone
- SRC Chapter 702 – Multiple Family Design Review Guidelines and Standards
- SRC Chapter 800 - General Development Standards
- SRC Chapter 802 - Public Improvements
- SRC Chapter 803 - Streets and Right-of-Way Improvements
- SRC Chapter 804 - Driveway Approaches
- SRC Chapter 805 - Vision Clearance
- SRC Chapter 806 - Off-Street Parking, Loading, and Driveways
- SRC Chapter 807 – Landscaping and Screening
- SRC Chapter 808 - Preservation of Trees and Vegetation
- SRC Chapter 809 - Wetlands
- SRC Chapter 810 – Landslide Hazards
- All other applicable provisions of the Salem Revised Code

Planned Unit Development Review Process

The review procedure, submittal requirements, and approval criteria for planned unit developments can be found under SRC Chapter 210. The submittal requirements for a planned unit development application are included under SRC 210.025(c).

Planned Unit Development Approval Criteria. In order for a PUD to be approved it must be demonstrated that the proposed PUD tentative plan meets the approval criteria identified below. The burden is on the applicant to submit sufficient information to demonstrate conformance with the approval criteria.

Planned Unit Development Tentative Plan (SRC 210.025(d)): A Planned Unit Development tentative plan shall be approved if all of the following criteria are met:

(1) The PUD tentative plan conforms to the development standards of this Chapter.

(2) The PUD tentative plan provides one or more of the following:

(A) Common open space that will be improved as a recreational amenity and that is appropriate to the scale and character of the PUD considering its size, density, and the number and types of dwellings proposed. Examples of recreational amenities include, but are not limited to, swimming pools, golf courses, ball courts, children's play areas, picnic and barbecue facilities, and community gardens;

(B) Common open space, which may be landscaped and/or left with natural tree cover, that is permanently set aside for the passive and/or recreational use of the residents of the PUD and that is appropriate to the scale and character of the PUD considering its size, density, and the number and types of dwellings proposed. Examples of passive and/or recreational uses include, but are not limited to, community gardens, commons, and private parks;

(C) Common open space that will preserve significant natural or cultural features; or

(D) Unique or innovative design concepts that further specific indentified goals and policies in the Salem Area Comprehensive Plan.

(E) Any special development standards, including, but not limited to, floodplain development, special setbacks, geological or geotechnical analysis, and vision clearance.

(3) If a retail service area or convenience area is proposed, the area is designed to:

(A) Adequately provide for privacy and minimize excessive noise on adjacent uses;

(B) Provide for adequate and safe ingress and egress; and

(C) Minimize the impact of vehicular traffic on adjacent residential uses.

PUD Development Standards

PUD Location Requirements: SRC 210.005 establishes requirements for where Planned Unit Developments are allowed. Pursuant to SRC 210.005(a)(4), Planned Unit Developments are allowed within the RM-2 zone.

Uses: The allowed uses within a PUD are identified under SRC 210.010. Within a PUD, uses that are allowed within the zone are allowed within a PUD; provided, however, certain uses may be restricted in location to convenience service areas or retain service areas as set forth in SRC 210.065.

Planned Unit Development with Land Division: If individual lots or parcels are proposed to be created within a PUD, a subdivision or partition is required with the PUD tentative plan.

The PUD tentative plan and the subdivision or partition shall be processed as a consolidated application under SRC 300.120(c).

Pursuant to SRC 210.015(b), the applicable approval criteria and development standards for a PUD tentative plan with a subdivision or partition are the approval criteria and development standards set forth in SRC Chapter 210.

Number of Allowed Dwelling Units with Entire Development: Requirements for the number of dwelling units allowed within a PUD are established under SRC 210.045(a), Table 210-2. For PUDs within an RM-2 zone, the number of dwelling units allowed is based on the number of dwelling units allowed in underlying zone for the property (between 12 and 28 dwelling units per acre).

Maximum Number of Units Allowed in Individual Building: SRC 210.045(a), Table 210-2, establishes requirements for the number of dwelling units allowed within individual buildings. Within a PUD there is no maximum limit on the number of dwelling units allowed within a building provided that the overall number of dwelling units included within the development does not exceed the maximum number of dwelling units allowed within the PUD.

Lot Standards: Because PUDs are intended to provide for greater flexibility in site development standards, there are no minimum lot area or dimension standards established for PUDs.

Setbacks: Setbacks for buildings and accessory structures within PUDs are established under SRC 210.045(b), Table 210-3. Required setbacks within PUDs are established for the perimeter of the PUD and the interior of the PUD.

A summary of the required setbacks within PUDs are included in the table below.

PUD Setbacks		
PUD Perimeter Setback *(Abutting Street)*		
Buildings & Accessory Structures	Min. 12 ft.	Applicable on local streets
	Min. 20 ft.	Applicable on collector or arterial streets
PUD Perimeter Setback *(Interior Side)*		
Buildings & Accessory Structures	Min. 5 ft.	
PUD Perimeter Setbacks *(Interior Rear)*		
Buildings	Min. 14 ft.	Applicable to any portion of a building not more than one-story in height, when the interior rear yard abuts the interior rear yard of an RA or RS zoned lot located outside the PUD.
	Min. 20 ft.	Applicable to any portion of a building greater than one-story in height, when the interior rear yard abuts the interior rear yard of an RA or RS zoned lot located outside the PUD.
	Min. 5 ft.	Applicable when the interior rear yard does not abut the interior rear yard of an RA or

		RS zoned lot located outside the PUD.
Accessory Structures	None	Applicable to accessory structures not more than 9 ft. in height.
	Min. one-foot for each one-foot of height over 9 ft.	Applicable to accessory structures greater than 9 ft. in height.
	Min. 1 ft.	Applicable to accessory structures adjacent to an alley, unless a greater setback is required based on the height of the accessory structure.
PUD Interior Setbacks *(Abutting Street)*		
Buildings & Accessory Structures	Min. 12 ft.	Applicable along local streets.
	Min. 20 ft.	Applicable along collector or arterial streets.
	None	Applicable along private streets. *(When a driveway approach is present, buildings shall be setback to maintain adequate vision clearance as required under SRC Chapter 805)*
PUD Interior Setbacks *(Interior Side)*		
Buildings & Accessory Structures	None	
PUD Interior Setbacks *(Interior Rear)*		
Buildings & Accessory Structures	None	

Building Height: Maximum height for buildings and accessory structures within a PUD are established under SRC 210.045(c), Table 210-4. The maximum height for buildings within an RM-2-zoned PUD one is 35 feet. The maximum height for accessory structures is 15 feet.

Off-Street Parking, Loading, & Driveways: Off-street parking within a PUD must conform to the requirements of SRC 210.045(d) and the requirements of SRC Chapter 806.

Required Parking Spaces: SRC 210.045(d)(1), Table 210-5, establishes parking requirements for residential uses within the PUD. For PUDs within an RM-2 zone, the following parking requirements apply:

Minimum Parking		
RM-2 zone	2.5 per dwelling unit	Applicable to the first 10 dwelling units.
	2 per dwelling unit	Applicable to each additional dwelling unit over 10 dwelling units.

Parking Development Standards: SRC 210.045(d)(2) establishes the following development standards for parking areas within a PUD:

- **Location:** Required parking spaces shall be located within the PUD, and may be either on-street, off-street, or a combination thereof.

- **Garage or Carport Vehicle Entrance Abutting Street:** The vehicle entrance of a garage or carport facing a street or flag lot accessway shall be set back a minimum of 20 feet.

- **On-Street Parking Dimensions:** On-street parallel parking spaces shall be a minimum of 7 feet in width and 22 feet in length.

- **Landscaping & Screening:** All off-street parking areas, other than those within a garage or carport, or on a driveway leading to a garage or carport, shall be effectively landscaped, designed to minimize the effect of a large number of cars in one area, and screened with ornamental evergreens or architectural features such as fences and walls.

Location of Side Lot Lines: SRC 210.045(e) requires, as far as practicable, side lot lines within a PUD to run at right angles to the street upon which the lot faces, except that on curved streets they shall be radial to the curve.

Limits on Common Open Space: SRC 210.045(f) limits the types of site improvements that can be counted as common open space within a PUD. Streets, parking areas, traffic circles, and other similar transportation related improvements shall not be considered, or considered to be a part of, common open space.

Utilities: SRC 210.045(g) establishes requirements for provision of utilities within a PUD. Within a PUD, all utility services are required to be underground except for stormwater management facilities.

Home Owners Association: SRC 210.055 requires that the perpetual maintenance and operation of common open space within a PUD be provided by a home owners association. The articles of the home owners association shall meet the requirements of SRC 210.045(b) and shall be recorded with the Planned Unit Development.

Site Plan Review Process (SRC Chapter 220)

Site Plan Review provides a consistent and efficient means to review proposed development that requires a building permit, other than single-family, duplex residential, and installation of signs, to ensure that the development meets all applicable requirements of the SRC. Examples of issues reviewed as part of site plan review include: property zoning, parking lot layout and landscaping, pedestrian connectivity, landscaped buffer yards, and transportation and utility infrastructure.

Certain decisions made by City staff while reviewing site plans are discretionary in nature, thereby meeting the definition of a limited land use decision under ORS 197.015(12). These types of discretionary decisions require an opportunity for public comment and appeal under state law. The Class 3 site plan review process satisfies these requirements, thereby eliminating the threat of further appeals after building permit issuance.

Natural Resources

- ***Trees (SRC Chapter 808):*** The City's tree preservation ordinance (SRC Chapter 808) protects Heritage Trees, Significant Trees *(including Oregon White Oaks with diameter-at-breast-height of 24 inches or greater)*, trees and native vegetation in riparian corridors, and

trees on lots and parcels greater than 20,000 square feet. The tree preservation ordinance defines "tree" as, "any living woody plant that grows to 15 feet or more in height, typically with one main stem called a trunk, which is 10 inches or more dbh, and possesses an upright arrangement of branches and leaves."

Because there are trees present on the subject property, a tree conservation plan will be required in conjunction with proposed partitions or subdivisions that creates lots or parcels for Single Family or Two Family residential uses. Under the City's tree preservation ordinance, tree conservation plans are required to preserve all heritage trees, significant trees, trees and native vegetation within riparian corridors, and a minimum of 25 percent of the remaining trees on the property.

If less than 25 percent of the existing trees on the property are proposed for preservation, the applicant must show that only those trees reasonably necessary to accommodate the development are designated for removal.

- ***Wetlands (SRC Chapter 809):*** According to the Salem-Keizer Local Wetland Inventory (LWI) there are no mapped wetlands present on the subject property. The West Middle Fork of Pringle Creek runs through the western portion of Tax Lot 200, roughly parallel to Reed Lane SE. Portions of the subject property contain wetland soils, and may require the applicant to notify Oregon Department of State Lands (DSL).
- ***Landslide Hazard Susceptibility (SRC Chapter 810):*** According to the City's adopted landslide hazard susceptibility maps the subject property is mapped with several areas of 2-3 landslide hazard susceptibility points. Some of the development activities proposed for the site have certain point values assigned; for instance, there are 3 activity points associated with subdivisions. Pursuant to the City's landslide hazard ordinance (SRC Chapter 810), a cumulative total of 5 points or greater indicates a moderate landslide hazard risk. In that situation a geologic assessment and potentially a geotechnical report will be required in conjunction with the proposed development.

Neighborhood Association Contact Information

Staff recommends that applicants/property owners contact the neighborhood association regarding their proposals as soon as possible. This allows for the neighborhood association to be involved early in the process and helps to identify any potential issues that might arise.

Neighborhood Association:	Morningside Neighborhood Association
Meeting Date, Time, & Location:	2nd Wednesday of each month, 6:30 p.m. Pringle Creek Community Painters Hall 3911 Village Center Drive
Neighborhood Association Chair	Pamela Schmidling 503-585-6641 sidrakdragon@live.com

The subject property is also located across Kuebler Boulevard from the South Gateway Neighborhood Association (SGNA).

Neighborhood Association:	South Gateway Neighborhood Association
Meeting Date, Time, & Location:	2nd Thursday of each month, 6:30 p.m. Our Savior's Lutheran Church 1770 Baxter Road SE

Neighborhood Association Chair T.J. Sullivan
503-881-9911
tj@huggins.com

Specific contact information for neighborhood representatives may also be obtained by contacting the City's Neighborhood Enhancement Division at 503-588-6207 or by visiting the City's website:

Morningside Neighborhood Association:

http://www.cityofsalem.net/Departments/CommunityDevelopment/NeighborhoodEnhancementDivision/neighbor/associations/pages/morningside.aspx

South Gateway Neighborhood Association:

http://www.cityofsalem.net/Departments/CommunityDevelopment/NeighborhoodEnhancementDivision/neighbor/associations/pages/sgateway.aspx

Salem Revised Code Available On-Line

For specific reference to the requirements of the Salem Revised Code (SRC) discussed in this report, the code can be accessed on-line through the City's website at:

http://www.cityofsalem.net/Departments/Legal/Pages/SalemRevisedCodes.aspx

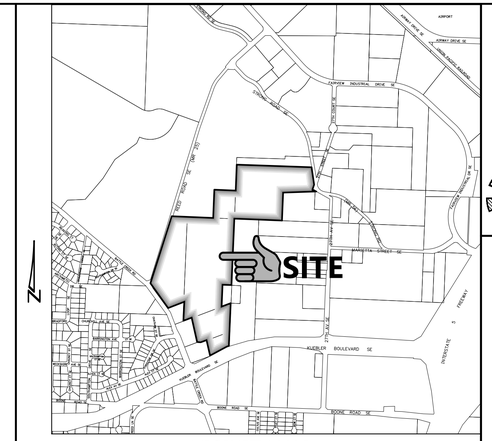
For up to date information on the Planning Division, commission agendas and decisions, follow the Planning Division on **twitter at: @Salem_Planning**

COBURN GRAND VIEW ESTATES

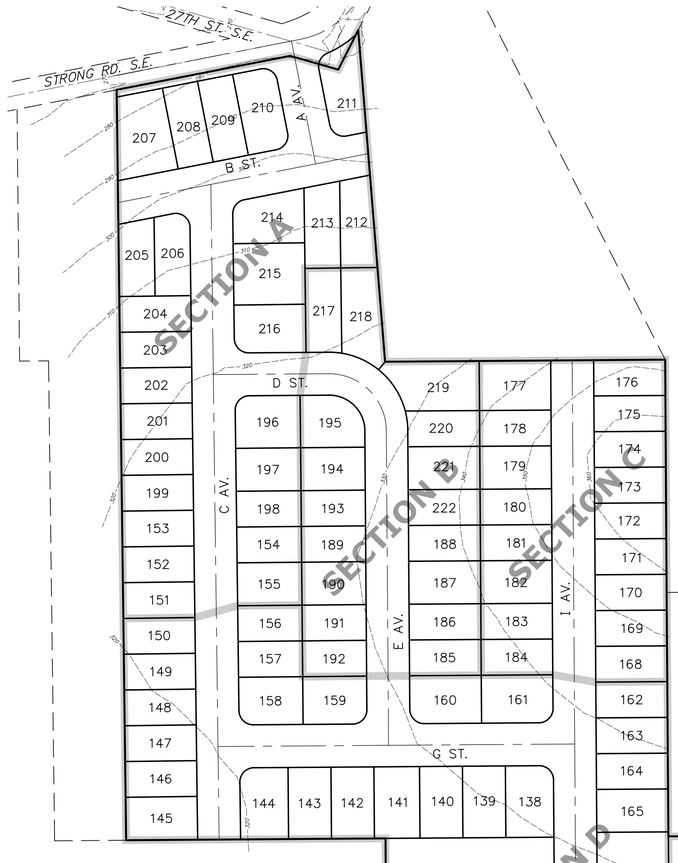
T. 8 S., R. 3 W., W.M.
SEC. 11D Tax Lots 100, 200, 400 & 601
SEC. 12b Tax Lot 1600
CITY OF SALEM,
MARION COUNTY, OREGON

Owner / Developer:

WESTWOOD HOMES LLC
12700 NW CORNELL RD.
PORTLAND, OREGON 97229



VICINITY MAP



N
W E
S
0' 1INCH 100'
SCALE: 1" = 100'

PARCEL SIZE:

DEVELOPABLE AREA	52.796 Ac.
NUMBER OF UNITS	222
DENSITY	4.20 UNITS/Ac.
LARGEST	92,734 S.F.
SMALLEST	4,397 S.F.
AVERAGE	6,561 S.F.
EXISTING ZONE	RA

UTILITIES:

CABLE	COMCAST
POWER	P.G.E.
PHONE	CENTURY LINK
GAS	N.W. NATURAL
STORM DRAIN, SANITARY SEWER, WATER	CITY OF SALEM

LOT COUNT BY SECTION

SECTION	A	B	C	D	E	F	G	H	I	J	K
PARCELS	26	17	17	25	19	15	23	25	23	17	15

PRELIMINARY SHEET INDEX

2. ADDED PRESSURE REDUCING STATION. P.H.S. 04/05/2019
1. REVISED PER CITY OF SALEM REVIEW. P.H.S. 03/25/2019

NO CHANGES, MODIFICATIONS OR CONSTRUCTION TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.

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COVER SHEET

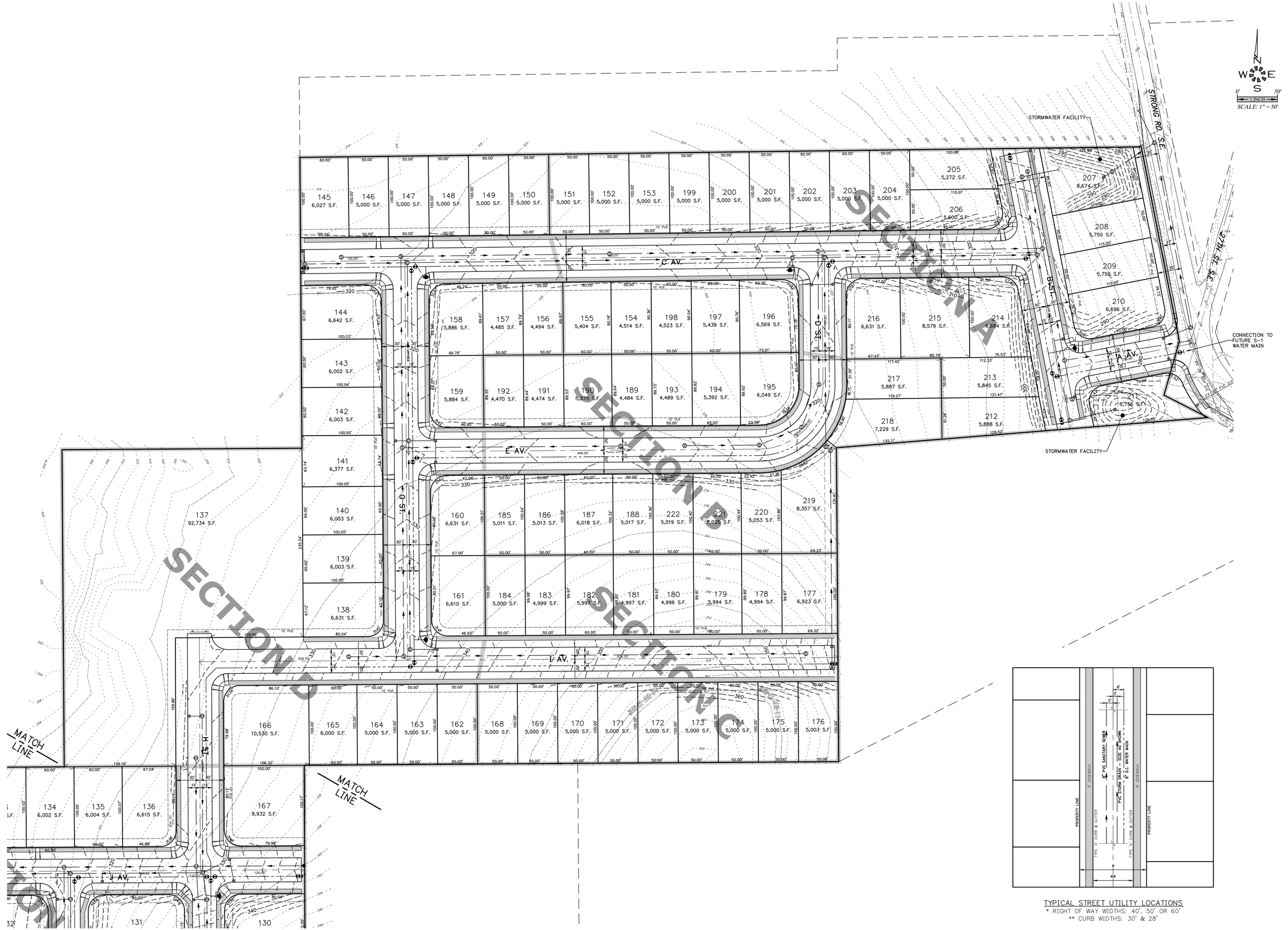
COBURN GRAND VIEW ESTATES

6234e P101CO
Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2018
Scale: AS SHOWN

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ
EXPIRES: 06-30-2019

JOB # 6234

P101



TYPICAL STREET UTILITY LOCATIONS
* RIGHT OF WAY WIDTHS: 40', 50' OR 60'
** CURB WIDTHS: 30' & 28'

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SITE PLAN / UTILITY PLAN - NORTH

COBURN GRAND VIEW ESTATES

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6234p P201SPUT

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OREGON
JULY 14, 1978
MARK D. GRENZ
EXPIRES: 06-30-2019

JOB # 6234

P201

1. REVISED PER CITY OF SALEM REVIEW.

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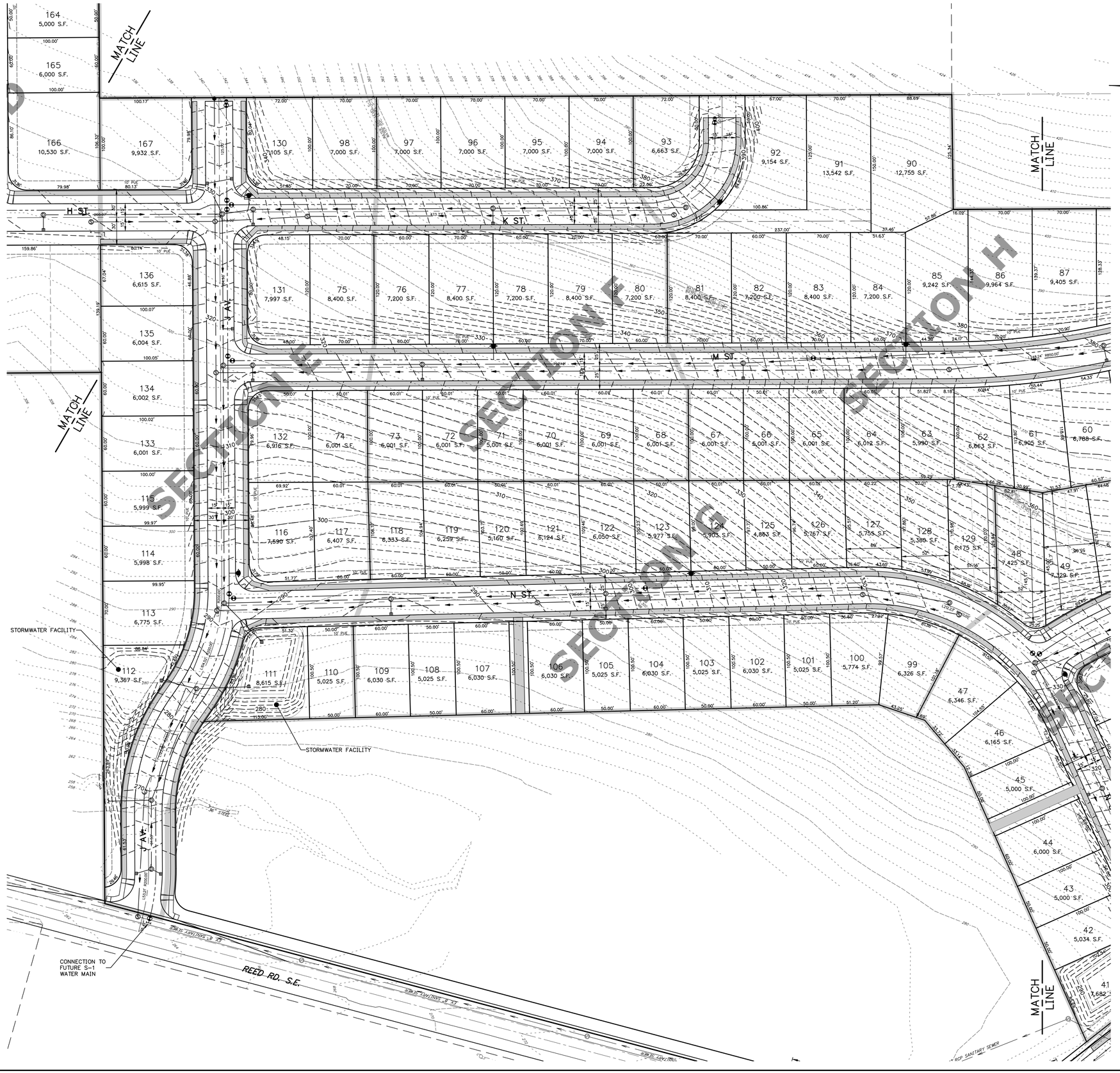

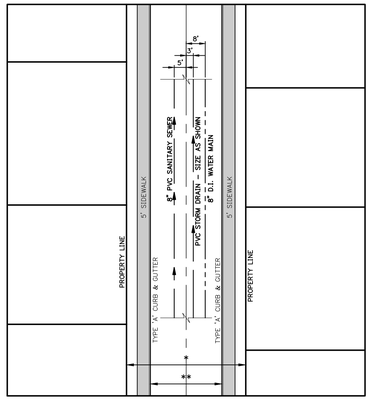

TYPICAL STREET UTILITY LOCATIONS
* RIGHT OF WAY WIDTHS: 40', 50' OR 60'
** CURB WIDTHS: 30' & 28'

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SITE PLAN / UTILITY PLAN - CENTRAL

COBURN GRAND VIEW ESTATES

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OREGON
JULY 14, 1978
MARK D. GRENZ
EXPIRES: 06-30-2019

JOB # 6234

P202

1. REVISED PER CITY OF SALEM REVIEW.

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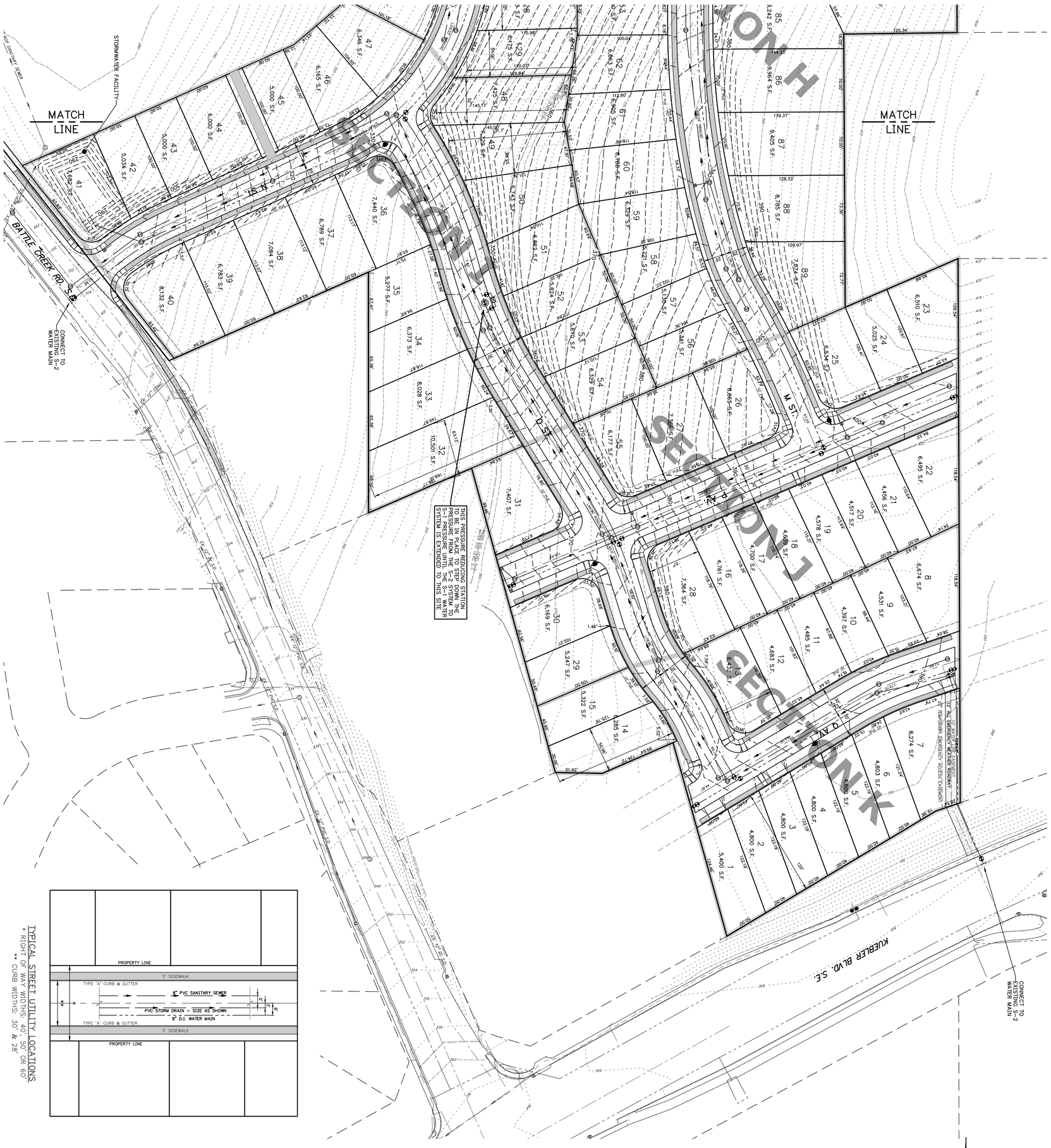

TYPICAL STREET UTILITY LOCATIONS
* RIGHT OF WAY WIDTHS: 40', 50' OR 60'
** CURB WIDTHS: 30' & 28'

2.	ADDED PRESSURE REDUCING STATION.	P.H.S. 04/05/2019
1.	REVISED PER CITY OF SALEM REVIEW.	P.H.S. 03/25/2019

6234p P203SPUT

P203

JOB # 6234

EXPIRES: 06-30-2019

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COBURN GRAND VIEW ESTATES

SITE PLAN / UTILITY PLAN - SOUTH

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P102

JOB # 6234

EXPIRES: 06-30-2019

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1995
MARK D. GRENZ

6234p P102XC

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COBURN GRAND VIEW ESTATES

EXISTING CONDITIONS PLAN

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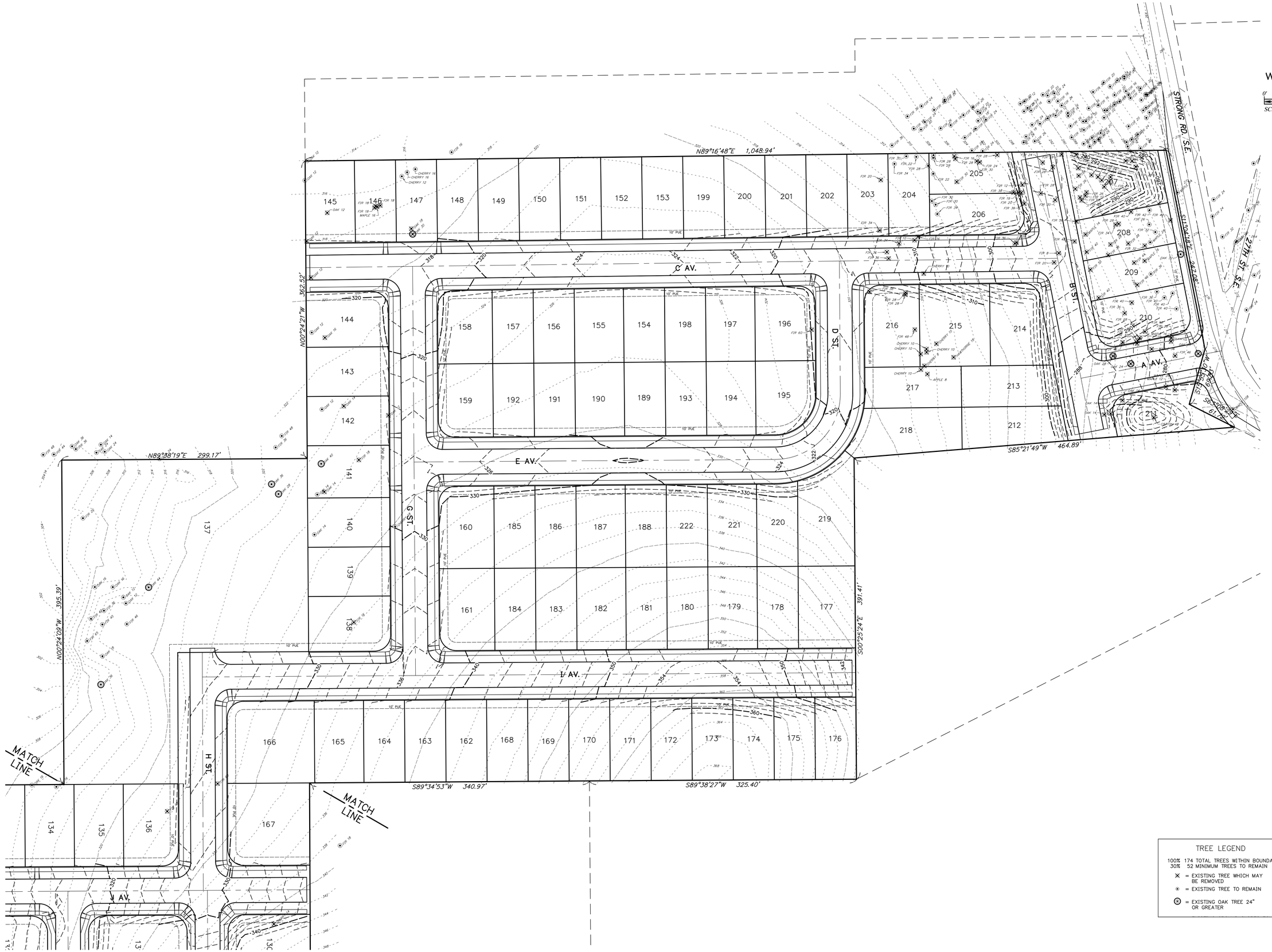

TREE LEGEND

100% 174 TOTAL TREES WITHIN BOUNDARY
30% 52 MINIMUM TREES TO REMAIN

⊗ = EXISTING TREE WHICH MAY BE REMOVED

⊙ = EXISTING TREE TO REMAIN

◎ = EXISTING OAK TREE 24" OR GREATER

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TREE CONSERVATION PLAN - NORTH

COBURN GRAND VIEW ESTATES

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6234e P301TR

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Date: JUNE 2018
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As-Built: ----

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OREGON
JULY 11, 1978
MARK D. GRENZ
EXPIRES: 06-30-2019

JOB # 6234

P301

1. REVISED PER CITY OF SALEM REVIEW. 03/25/2019

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P302

JOB # 6234

EXPIRES: 06-30-2019

6234p P302TR

Design: M.D.G.
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COBURN GRAND VIEW ESTATES

TREE CONSERVATION PLAN - CENTRAL

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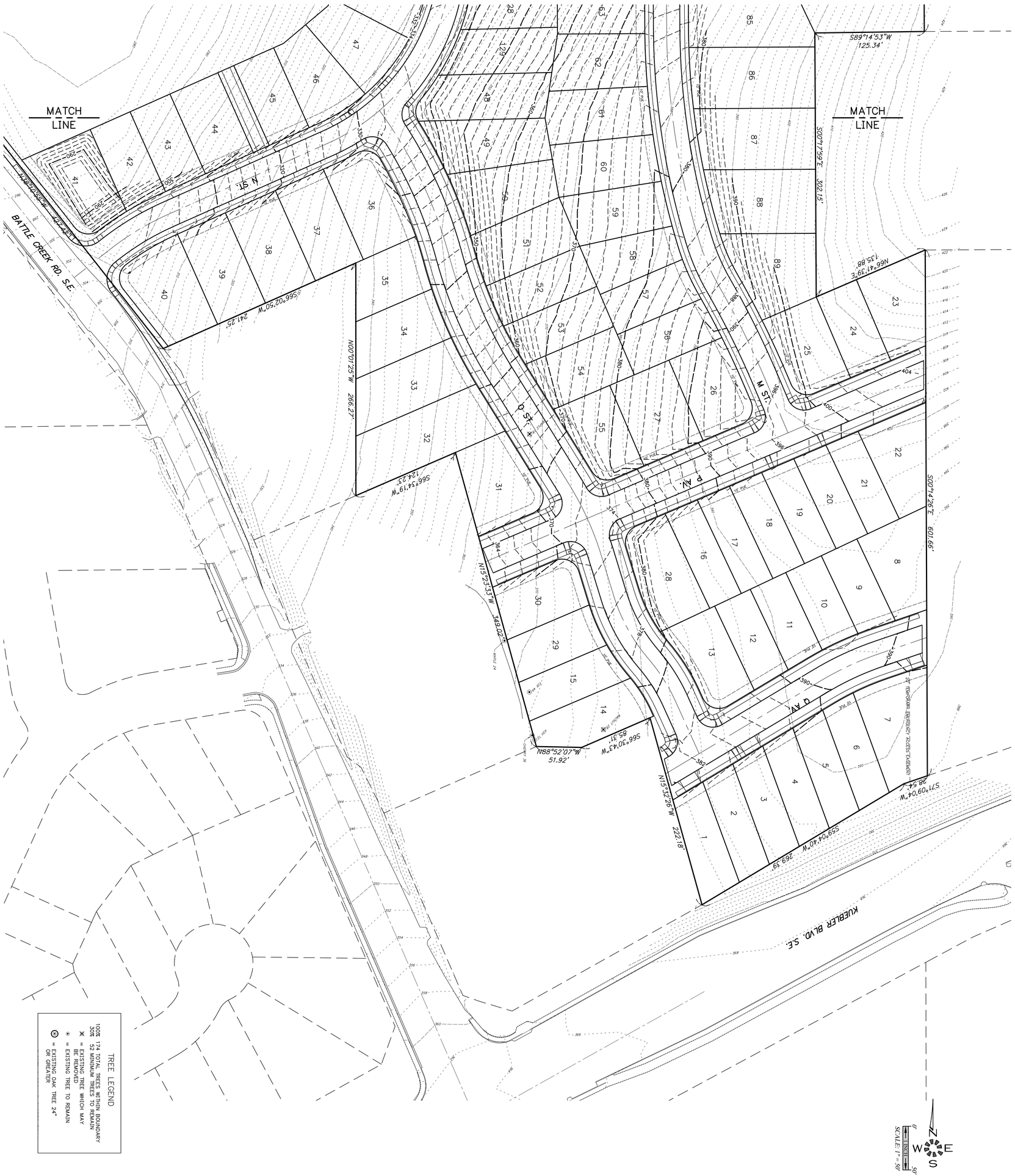

TREE LEGEND

100% 174 TOTAL TREES WITHIN BOUNDARY
30% 52 MINIMUM TREES TO REMAIN

X = EXISTING TREE WHICH MAY BE REMOVED

* = EXISTING TREE TO REMAIN

⊙ = EXISTING OAK TREE 24" OR GREATER

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P303

JOB # 6234

EXPIRES: 06-30-2019

6234p P303TR

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Date: JUNE 2018
Scale: AS SHOWN
As-Built: ----

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COBURN GRAND VIEW ESTATES

TREE CONSERVATION PLAN - SOUTH

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SLOPE EXCEPTION AREAS

COBURN GRAND VIEW ESTATES

P.H.S. 03/25/2019
6234p P2SHSL

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Scale: AS SHOWN

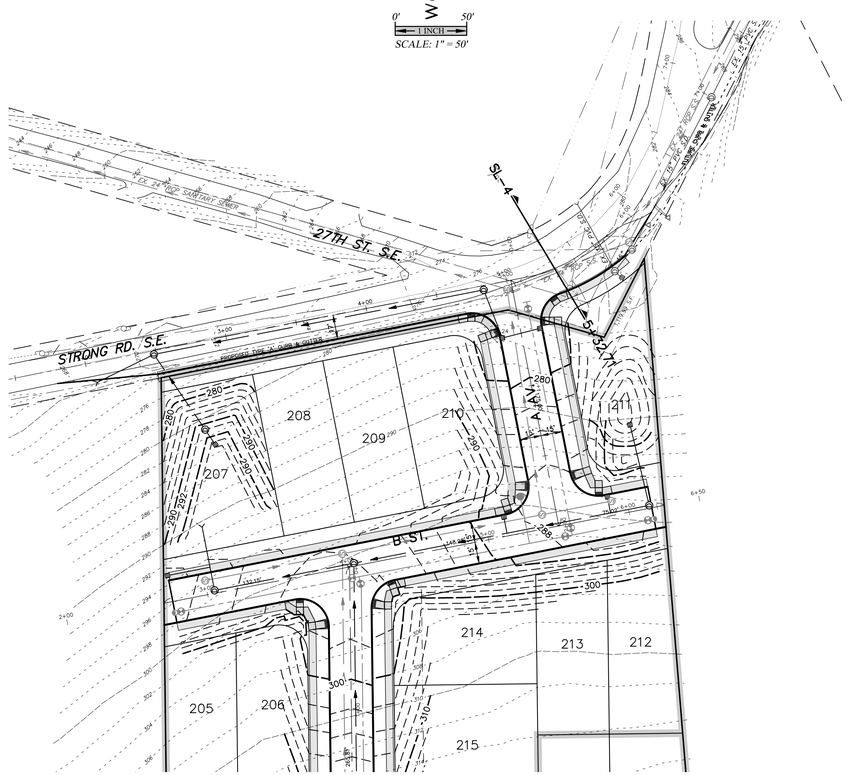
REGISTERED PROFESSIONAL ENGINEER
OREGON
JANUARY 14, 1977
MARTIN D. GRENZ

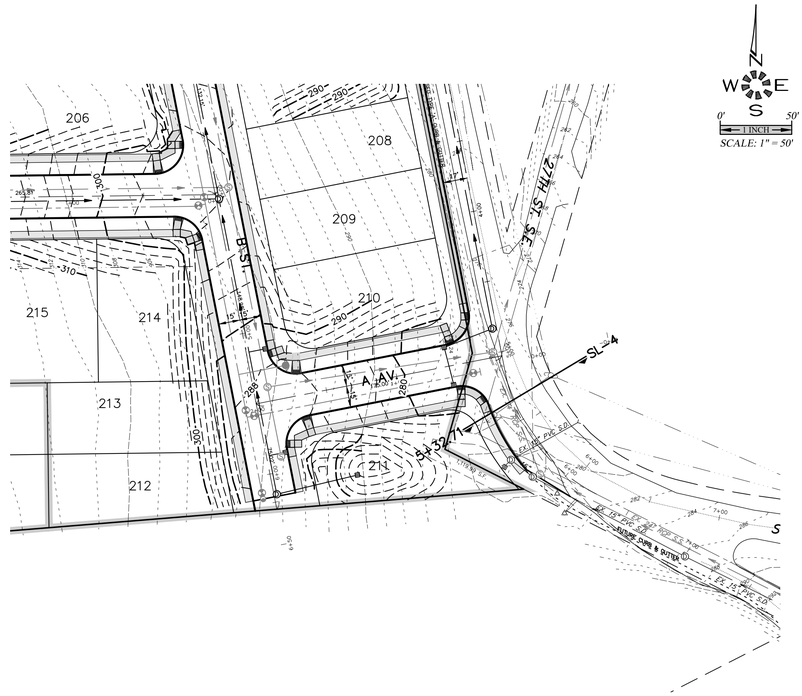
EXPIRES: 06-30-2019

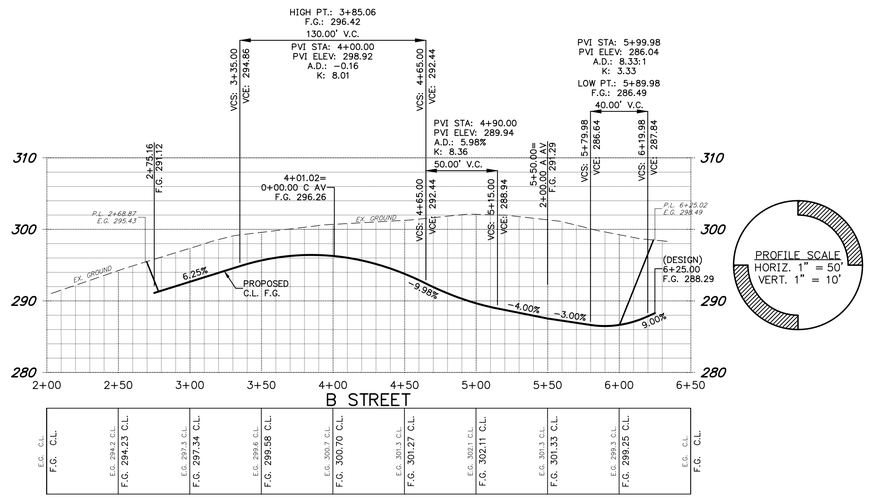
JOB # 6234

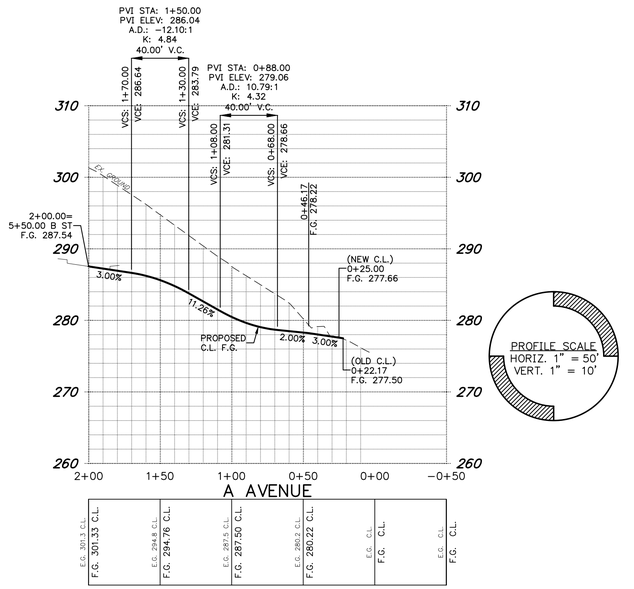
204

1. REVISED PER CITY OF SALEM REVIEW.









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www.mtengineering.net office@mtengineering.net

STREET IMPROVEMENTS

COBURN GRAND VIEW ESTATES

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6234b P401ST

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Date: JUNE 2018
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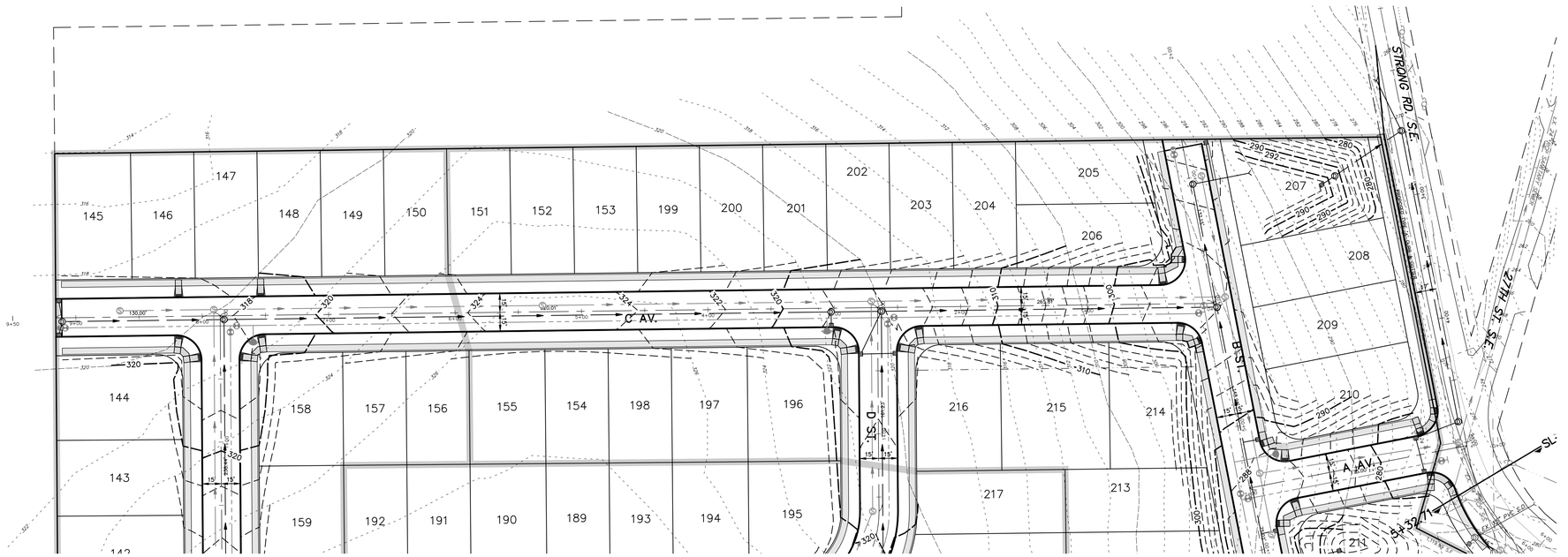
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 17, 1976
MARK D. GRENZ
EXPIRES: 06-30-2019

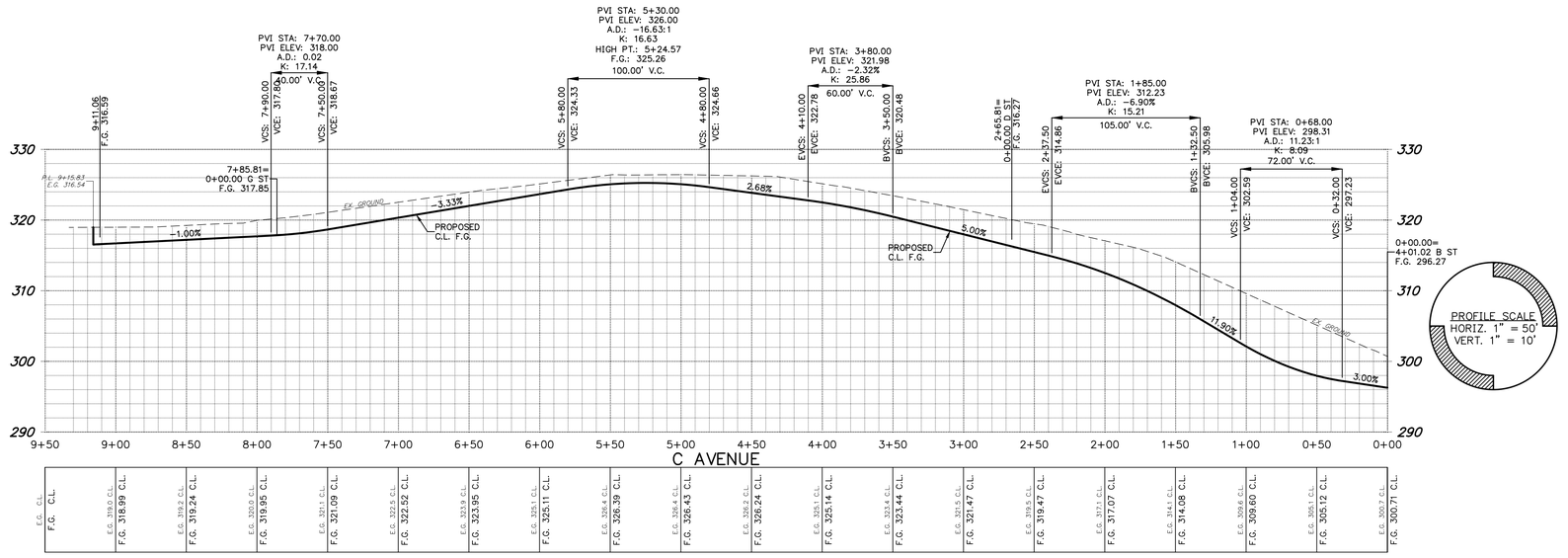
JOB # 6234

P401

1. REVISED PER CITY OF SALEM REVIEW.

J:\6200-6299\6234-ReedRoad\Dwg v18\6234c.dwg, P401ST, 4/5/2019 1:38:27 PM, PSounders





PROFILE SCALE
HORIZ. 1" = 50'
VERT. 1" = 10'

MULTI/TECH

ENGINEERING SERVICES, INC.
1155 13th ST. S.E. SALEM, OR. 97302
PH. (503) 363 - 9227 FAX (503) 364-1260
www.mtengineering.net office@mtengineering.net

STREET IMPROVEMENTS

COBURN GRAND VIEW ESTATES

MULTI/TECH ENGINEERING EXEMPT FROM LIABILITY IF NOT STAMPED APPROVED

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DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

P.H.S. 03/25/2019
6234p P402S1

Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2018
Scale: AS SHOWN
As-Built: ----

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ

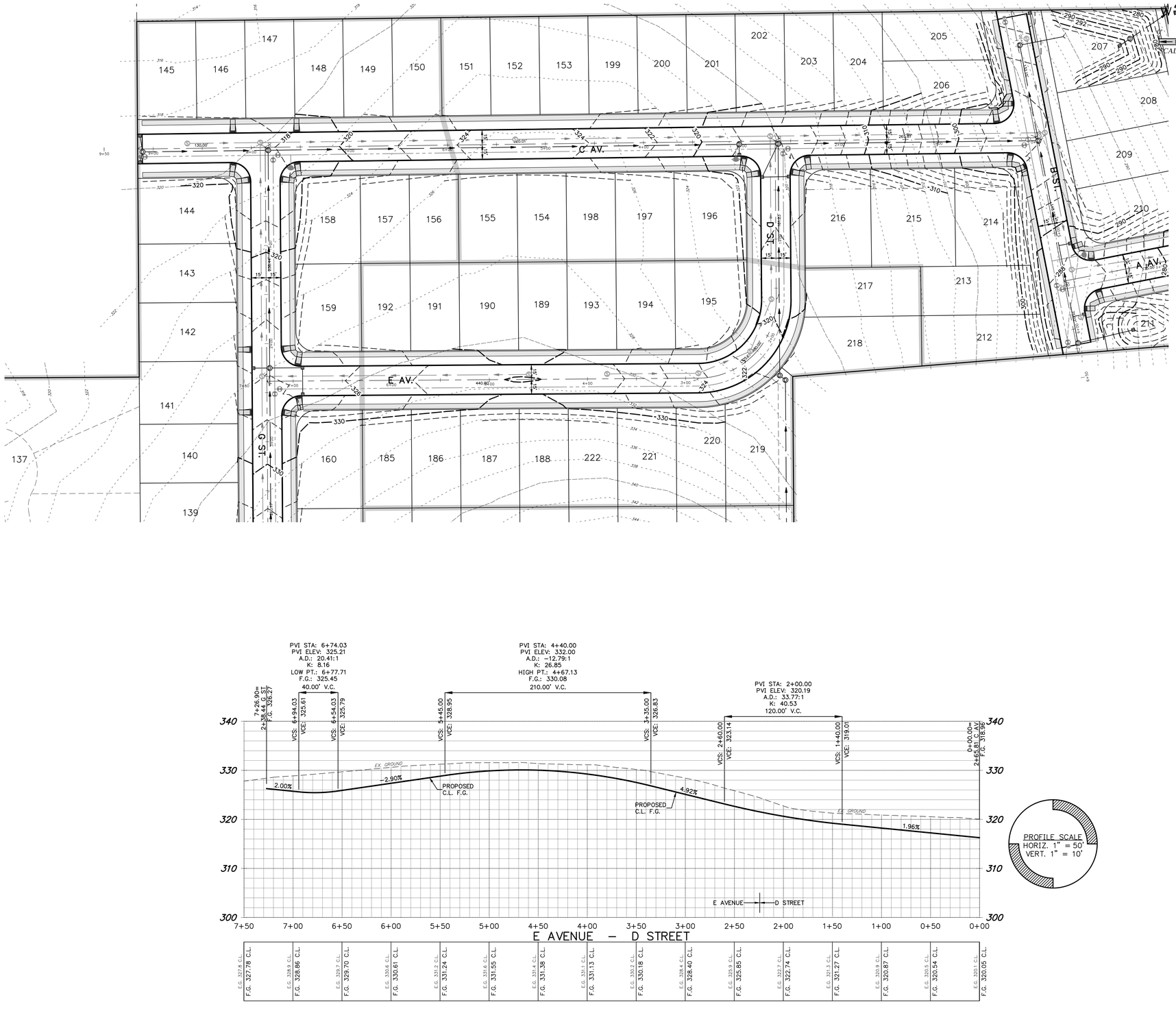
EXPIRES: 06-30-2019

JOB # 6234

P402

1. REVISED PER CITY OF SALEM REVIEW.

J:\6200-6299\6234-RoadNet\Dwg v18\6234p.dwg, P402S1, 4/5/2019 11:58:43 PM, PSaunders



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STREET IMPROVEMENTS

COBURN GRAND VIEW ESTATES

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DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

P.H.S. 03/25/2019
6234p P403ST

Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2018
Scale: AS SHOWN
As-Built: ----

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ
EXPIRES: 06-30-2019

JOB # 6234

P403

1. REVISED PER CITY OF SALEM REVIEW.

J:\6200-6299\6234-ReadBoat\Dwg v18\6234p.dwg, P403ST, 4/5/2019 11:58:48 PM, PSaunders

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STREET IMPROVEMENTS

COBURN GRAND VIEW ESTATES

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DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

P.H.S. 03/25/2019

6234p P404ST

Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2018
Scale: AS SHOWN
As-Built: ----

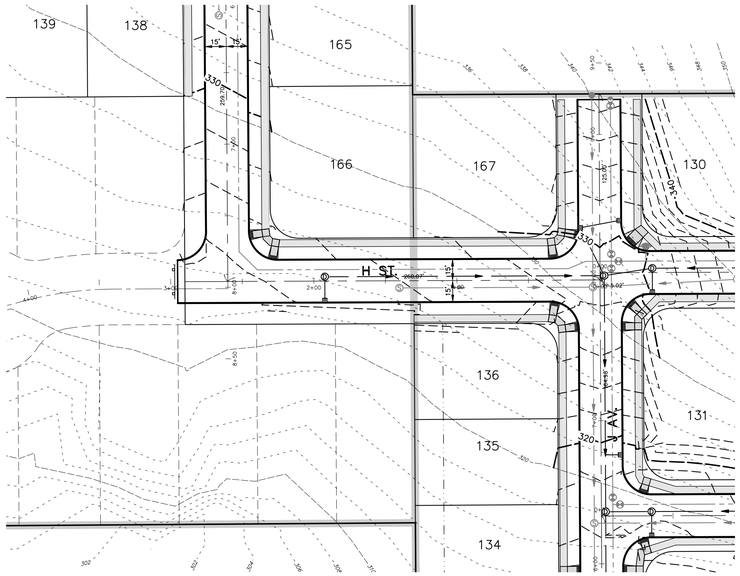
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ
EXPIRES: 06-30-2019

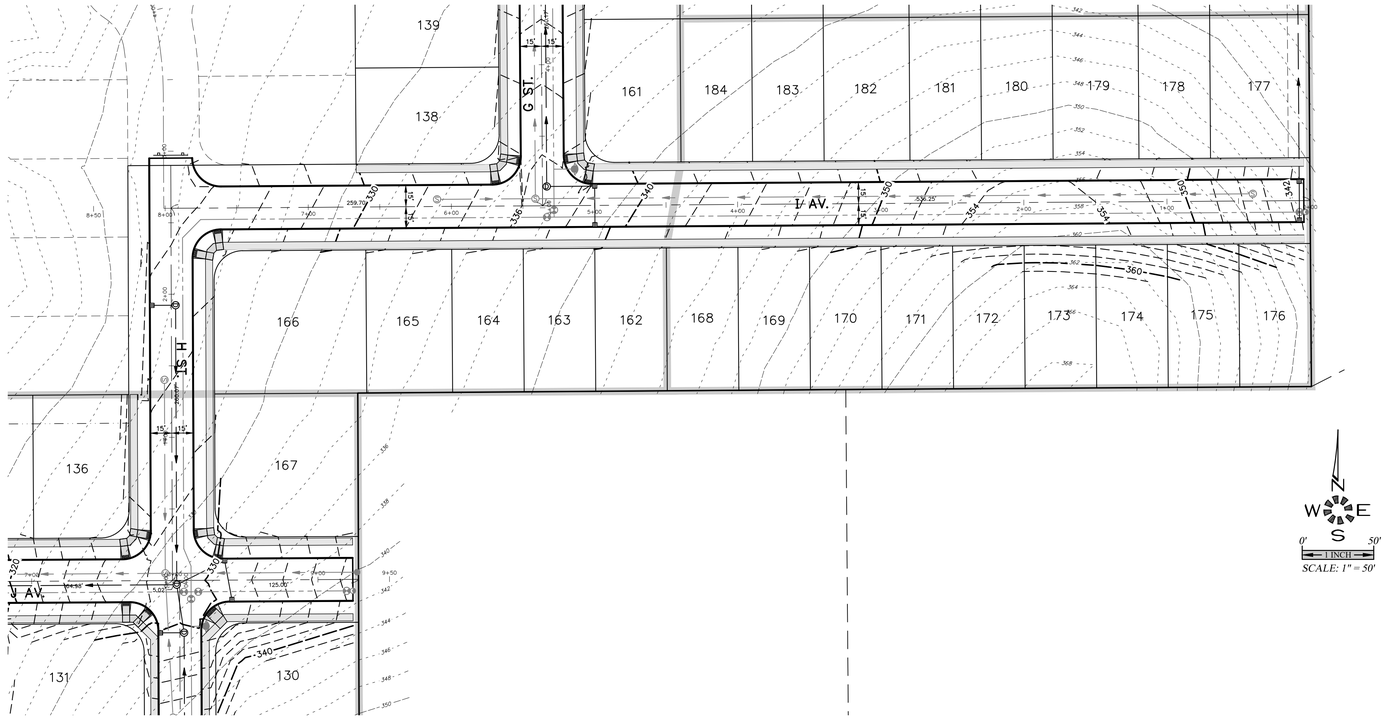
JOB # 6234

P404

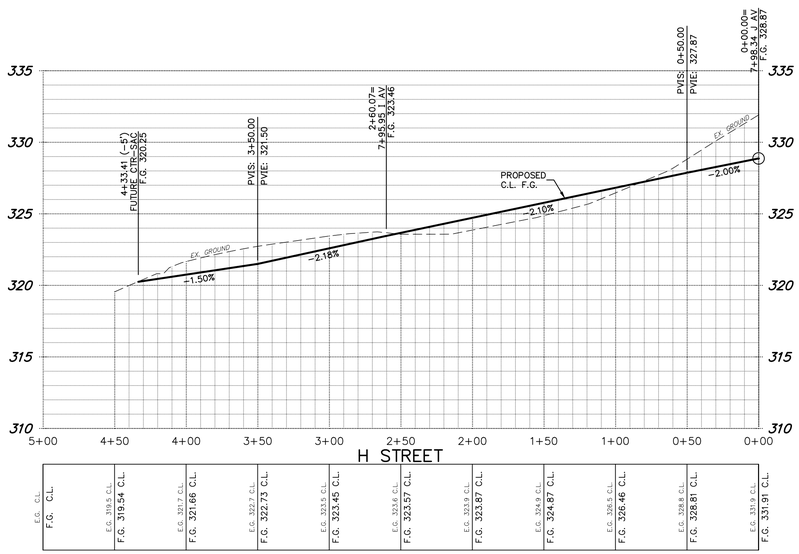
1. REVISED PER CITY OF SALEM REVIEW.

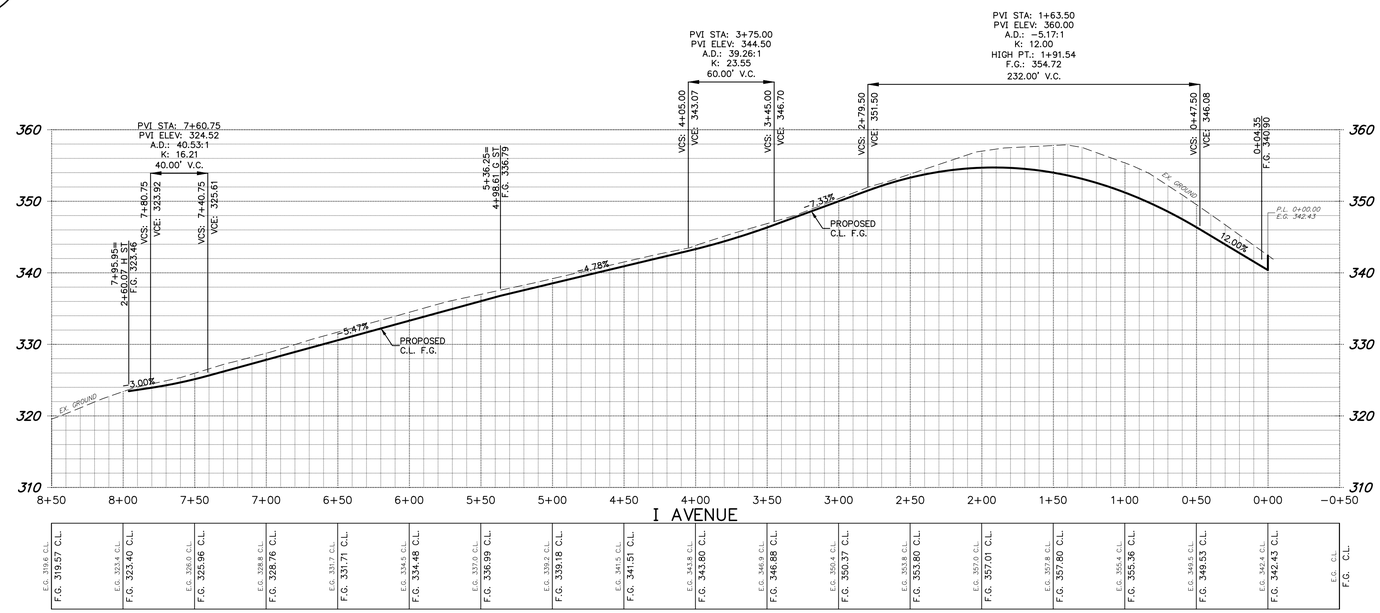
J:\6200-6299\6234-ReadRost\Dwg v18\6234p.dwg, P404ST, 4/5/2019 1:58:53 PM, PSaunders





PROFILE SCALE
HORIZ. 1" = 50'
VERT. 1" = 10'





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P.H.S. 03/25/2019
6234p P405ST

Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2018
Scale: AS SHOWN
As-Built: ----

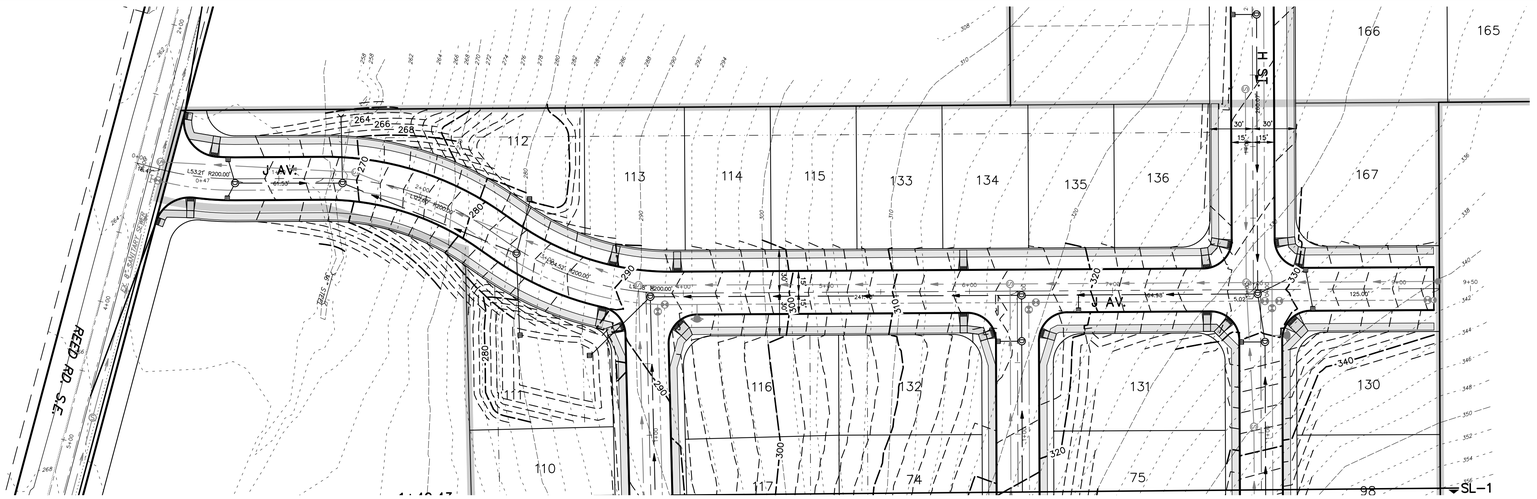
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ
EXPIRES: 06-30-2019

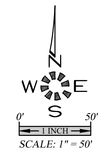
JOB # 6234

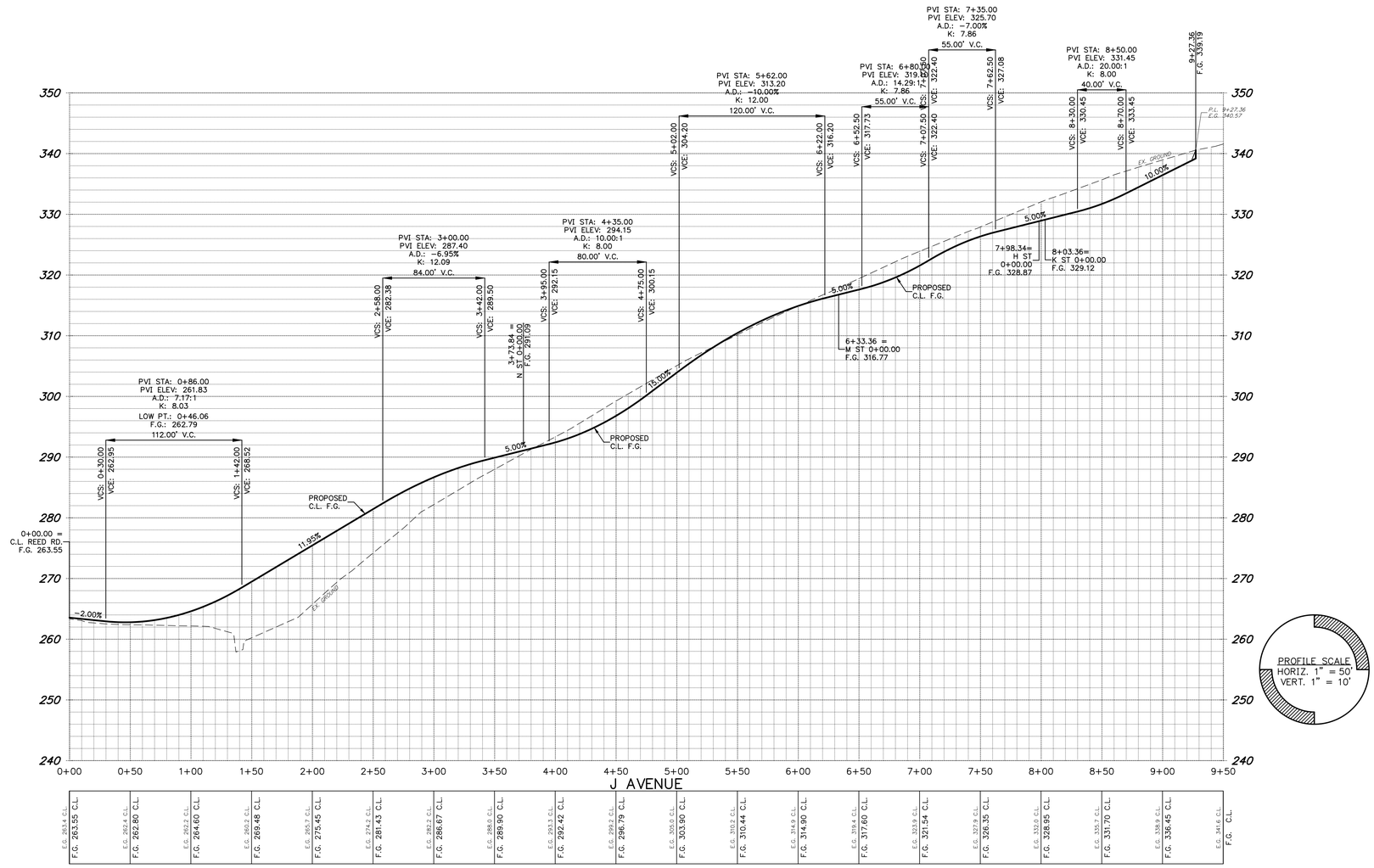
P405

1. REVISED PER CITY OF SALEM REVIEW.

J:\6200-6299\6234-RoadBook\Dwg v18\6234e-RoadBook.dwg, P405ST, 4/5/2019 1:59:00 PM, PSaunders







PROFILE SCALE
HORIZ. 1" = 50'
VERT. 1" = 10'

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STREET IMPROVEMENTS

COBURN GRAND VIEW ESTATES

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DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

P.H.S. 03/25/2019
6234p P406ST

Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2018
Scale: AS SHOWN
As-Built: ---- ----

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ

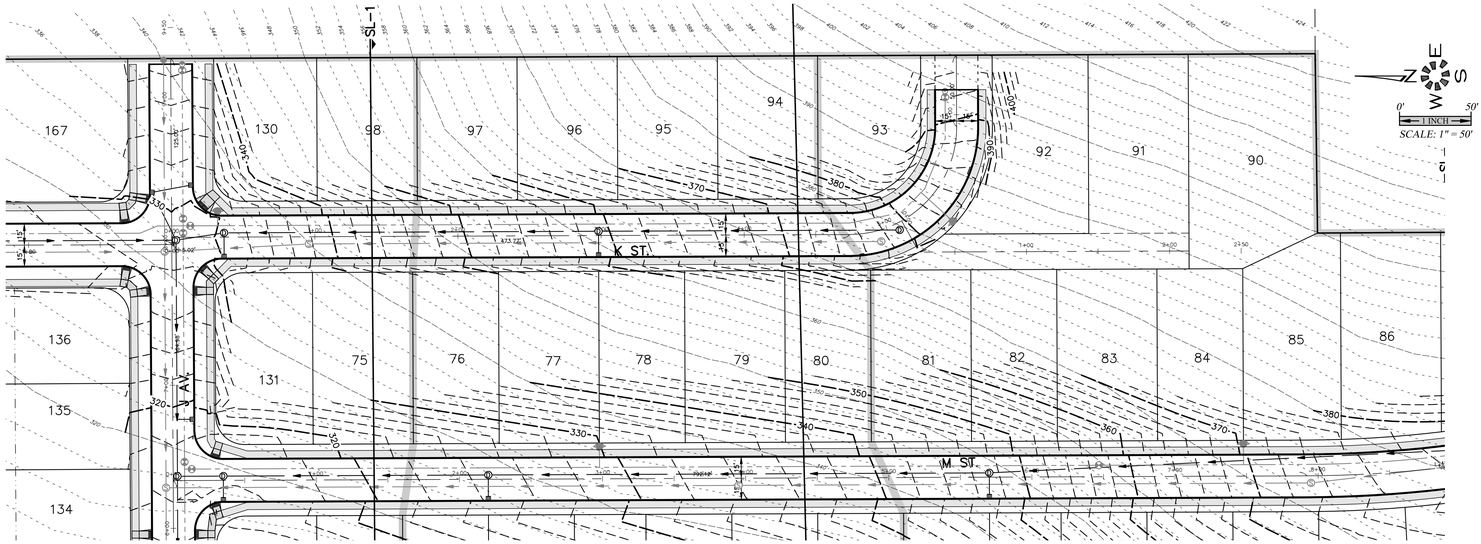
EXPIRES: 06-30-2019

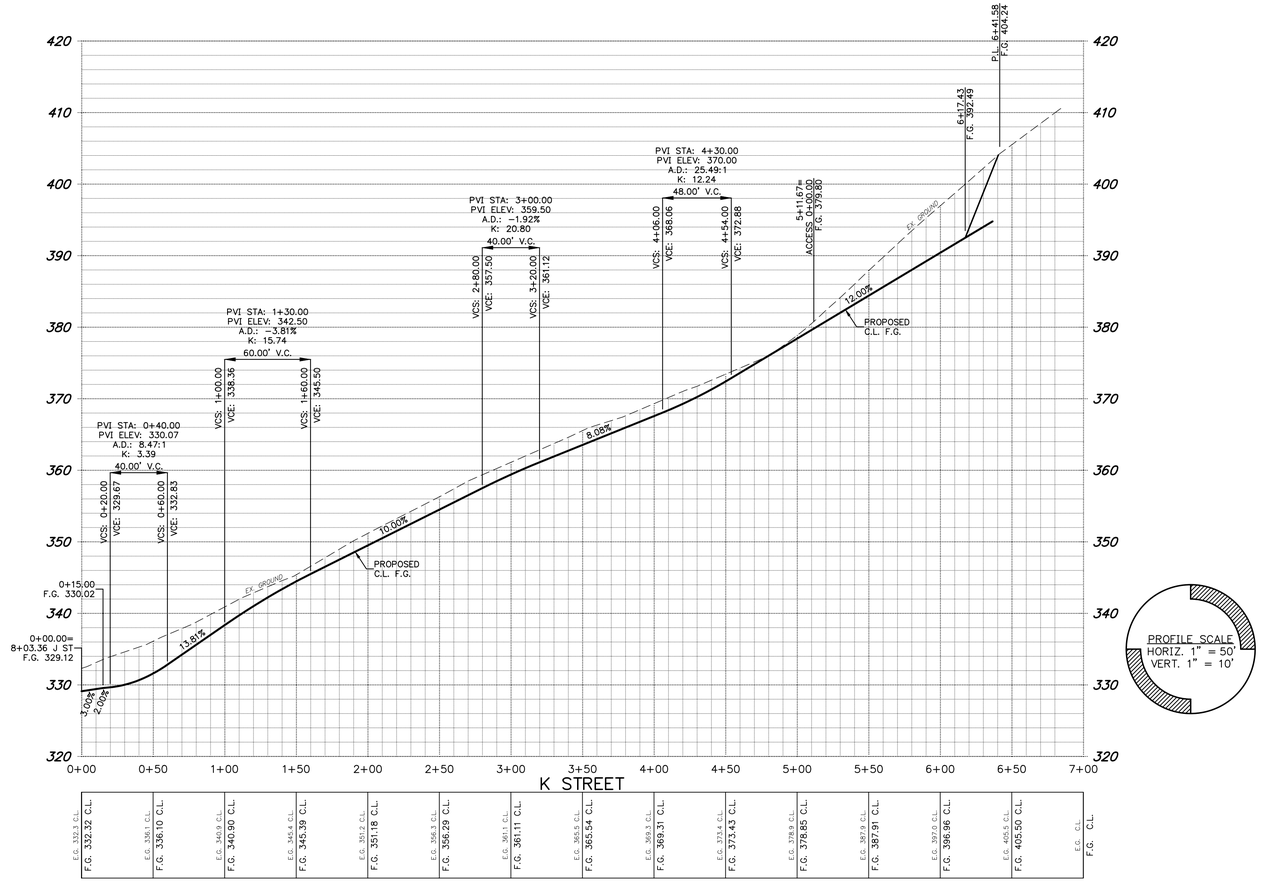
JOB # 6234

P406

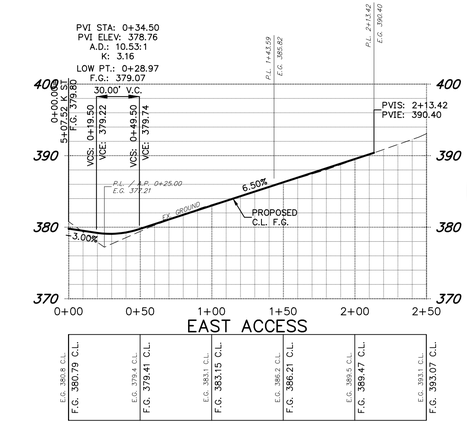
1. REVISED PER CITY OF SALEM REVIEW.

J:\6200-6299\6234-ReedRoad\Dwg v18\6234dwg, P406ST, 3/5/2019 1:59:06 PM, PSaunders





PROFILE SCALE
HORIZ. 1" = 50'
VERT. 1" = 10'



PROFILE SCALE
HORIZ. 1" = 50'
VERT. 1" = 10'

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COBURN GRANDVIEW ESTATES

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DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

P.H.S. 03/25/2019
6234c P407ST

Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2018
Scale: AS SHOWN
As-Built: ----

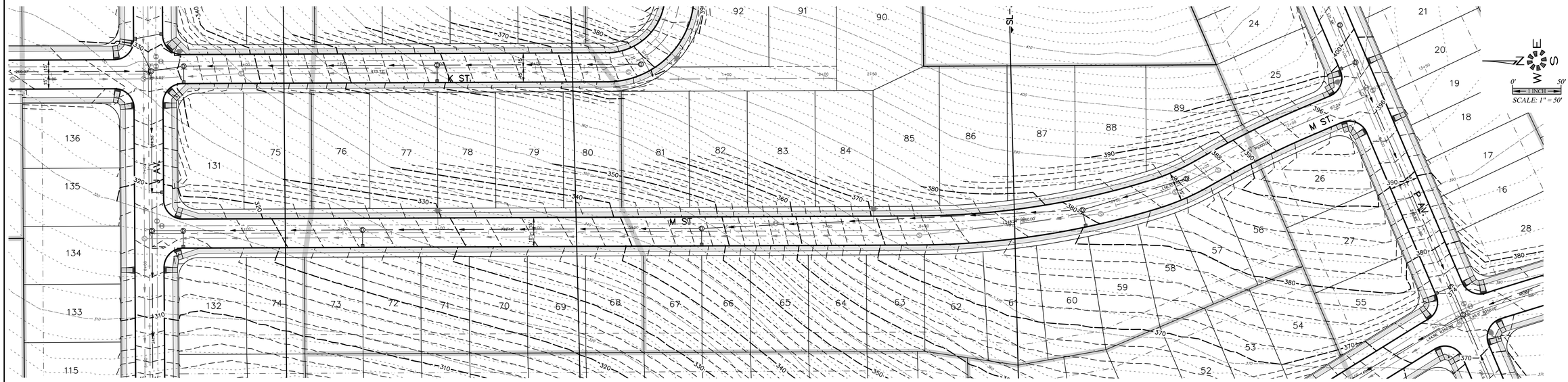
REGISTERED PROFESSIONAL ENGINEER
OREGON
JUNE 14, 1974
MARK D. GRENZ
EXPIRES: 06-30-2019

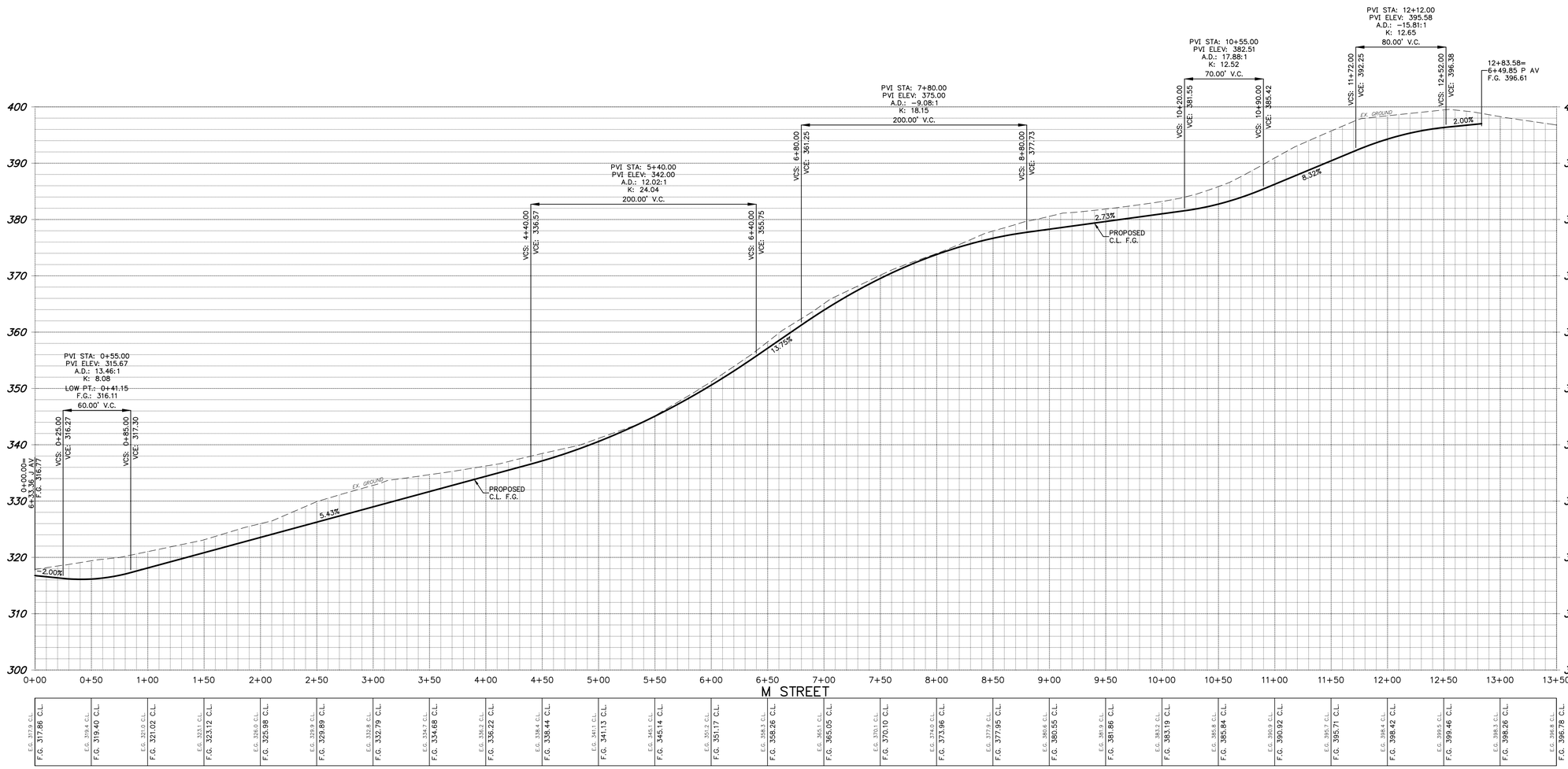
JOB # 6234

P407

1. REVISED PER CITY OF SALEM REVIEW.

J:\6200-6299\6234-HeadBoat\Dwg v18\6234c.dwg, P407ST, 4/5/2019 1:39:13 PM, PSounders





PROFILE SCALE
HORIZ. 1" = 50'
VERT. 1" = 10'

COBURN GRAND VIEW ESTATES

STREET IMPROVEMENTS

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ENGINEERING SERVICES, INC.
1155 13th ST. S.E. SALEM, OR. 97302
PH.(503) 363-9227 FAX (503) 364-1260
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DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

P.H.S. 03/25/2019
6234p P408ST

Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2018
Scale: AS SHOWN
As-Built: ----

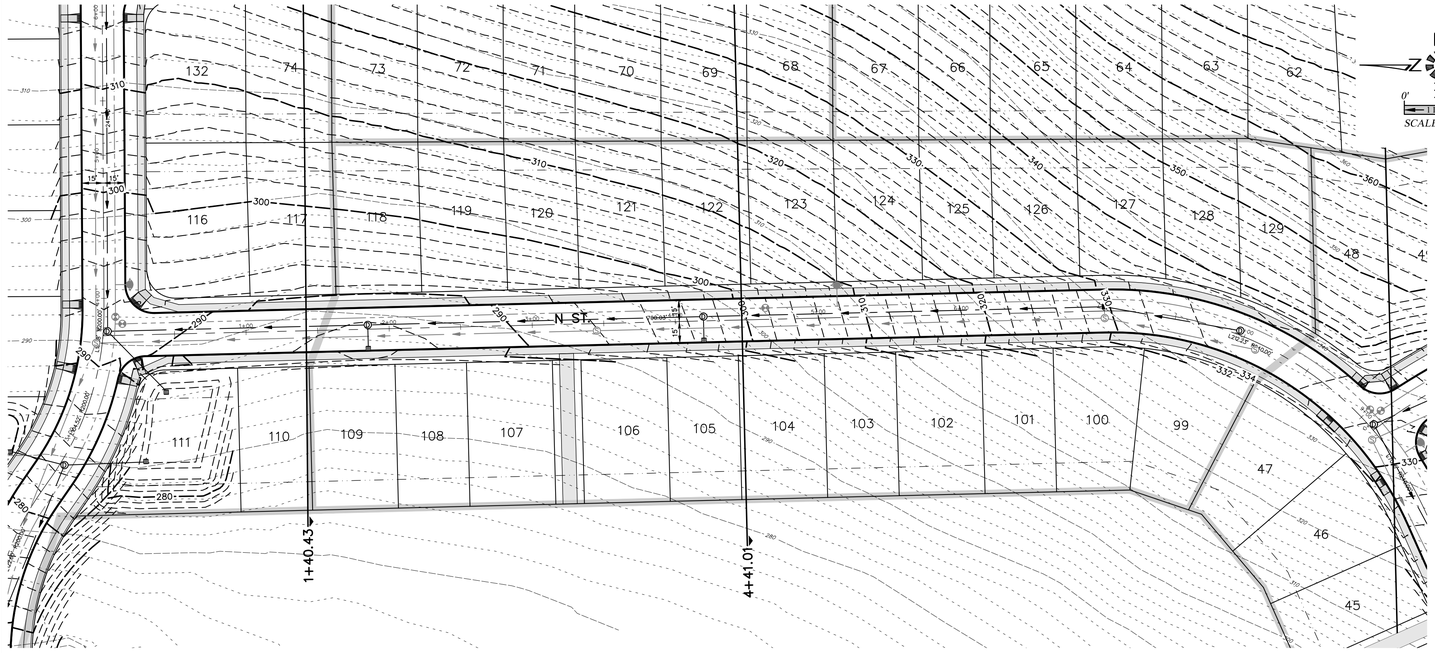
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARCUS GRENZ
EXPIRES: 06-30-2019

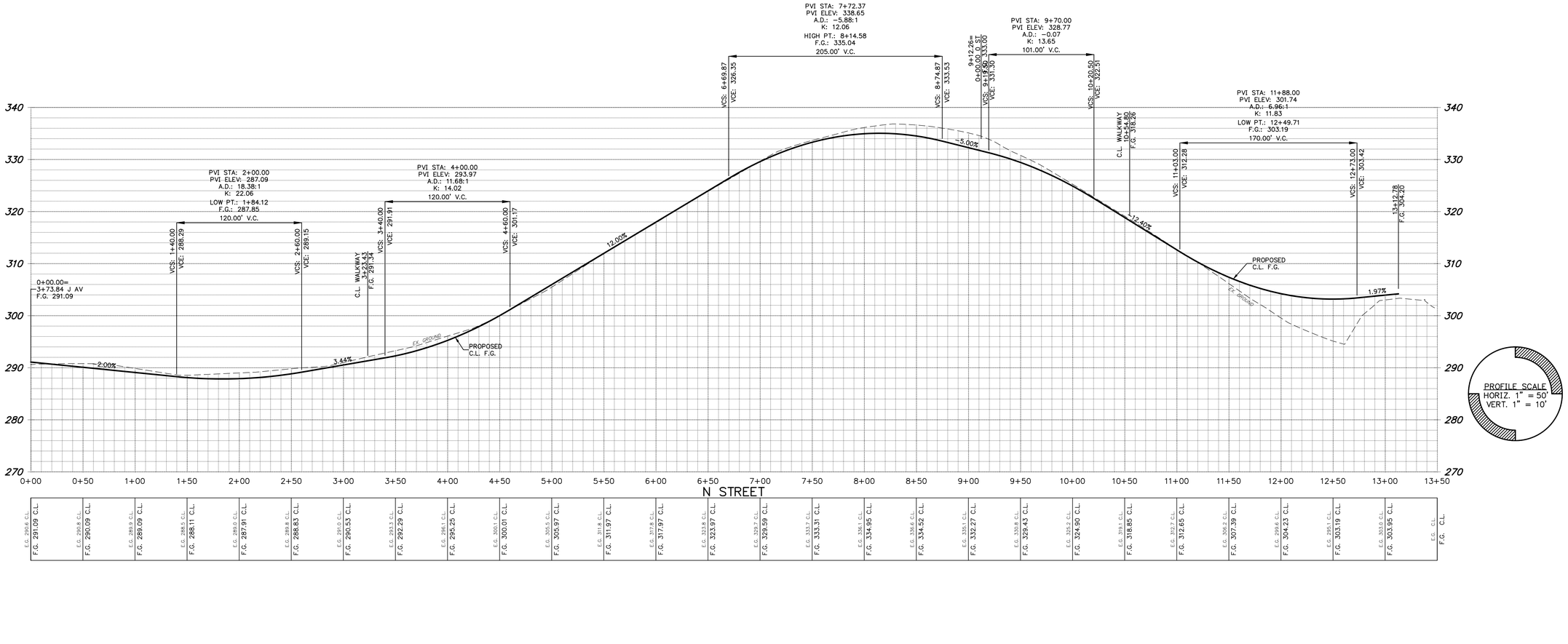
JOB # 6234

P408

1. REVISED PER CITY OF SALEM REVIEW.

J:\6200-6299\6234\Revit\Dwg 18\6234p.dwg, P408ST, 4/5/2019 1:59:18 PM, PSounders





MULTI/TECH
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PH. (503) 363-9227 FAX (503) 364-1260
www.mtengineering.net office@mtengineering.net

STREET IMPROVEMENTS

COBURN GRAND VIEW ESTATES

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DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

P.H.S. 03/25/2019
6234e P409ST

Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2018
Scale: AS SHOWN
As-Built: ----

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 17, 1976
MARK D. GRENZ
EXPIRES: 06-30-2019

JOB # 6234

P409

1. REVISED PER CITY OF SALEM REVIEW.

J:\6200-6299\6234-RoadResult\Dwg #18\6234e.dwg, P409ST, 4/5/2019 1:59:25 PM, PSaunders

E.G. 334.5 C.L.	E.G. 341.1 C.L.	E.G. 346.5 C.L.	E.G. 349.6 C.L.	E.G. 351.4 C.L.	E.G. 353.5 C.L.	E.G. 358.1 C.L.	E.G. 363.9 C.L.	E.G. 368.1 C.L.	E.G. 371.8 C.L.	E.G. 374.7 C.L.	E.G. 377.0 C.L.	E.G. 378.1 C.L.	E.G. 378.8 C.L.	E.G. 380.5 C.L.	E.G. 382.1 C.L.	E.G. 383.9 C.L.	E.G. 384.1 C.L.
F.G. 334.48	F.G. 341.14	F.G. 346.53	F.G. 349.60	F.G. 351.38	F.G. 353.46	F.G. 358.15	F.G. 363.94	F.G. 368.13	F.G. 371.80	F.G. 374.65	F.G. 376.96	F.G. 378.13	F.G. 378.79	F.G. 380.49	F.G. 382.13	F.G. 383.23	F.G. 384.13

MULTI/TECH
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STREET IMPROVEMENTS

COBURN GRAND VIEW ESTATES

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DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

P.H.S. 03/25/2019
6234e P410ST

Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2018
Scale: AS SHOWN
As-Built: ----

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ

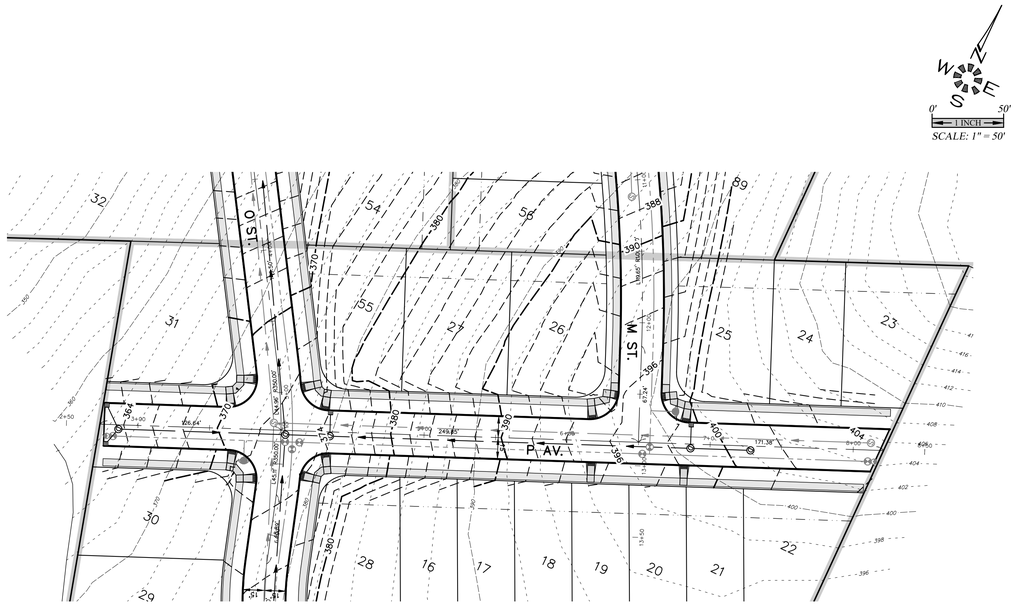
EXPIRES: 06-30-2019

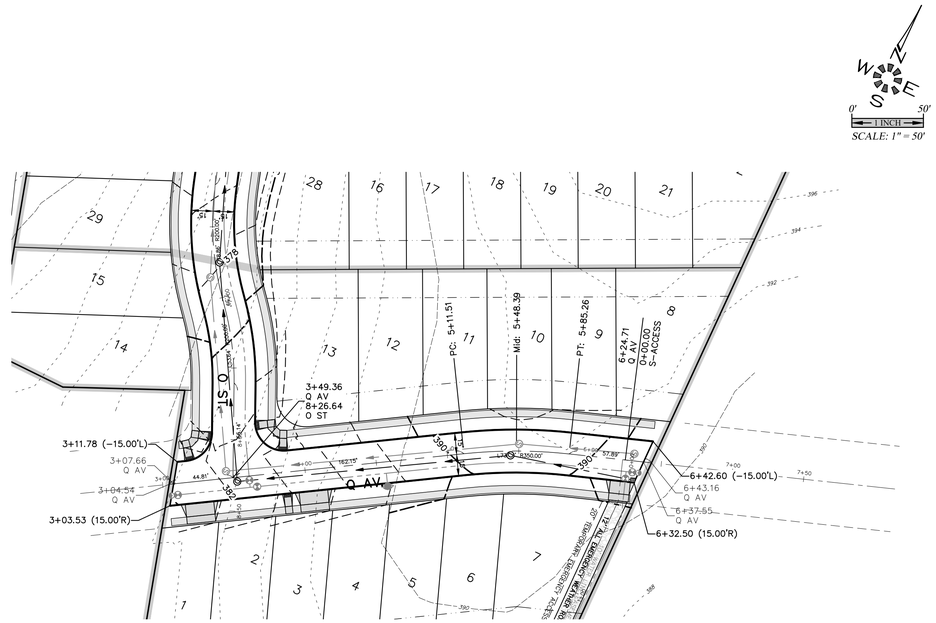
JOB # 6234

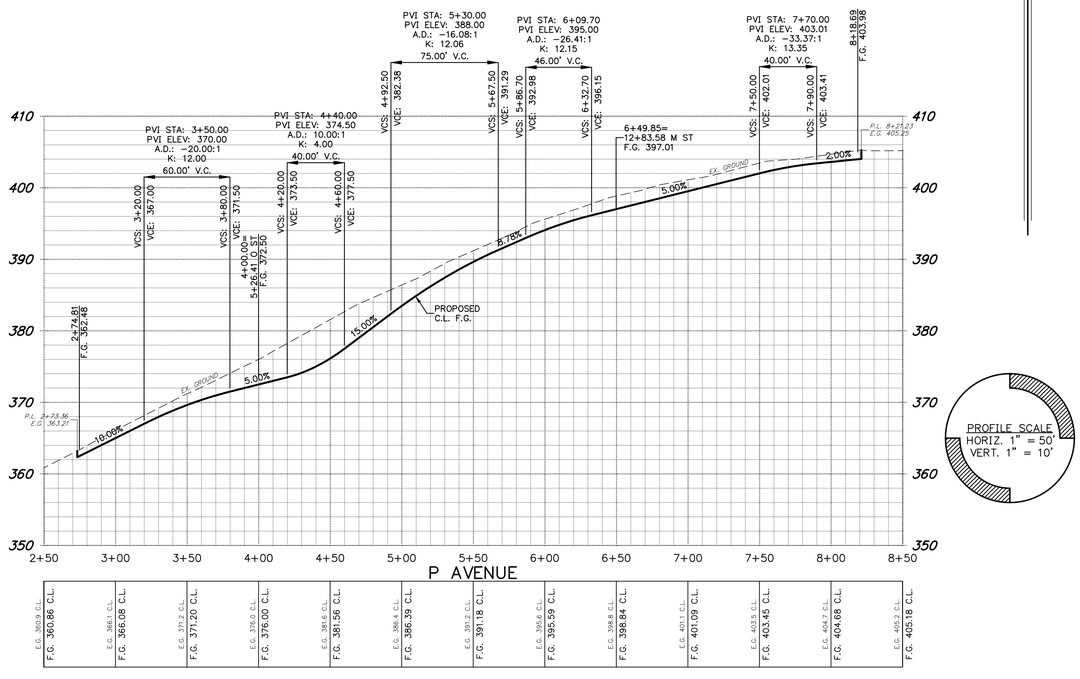
P410

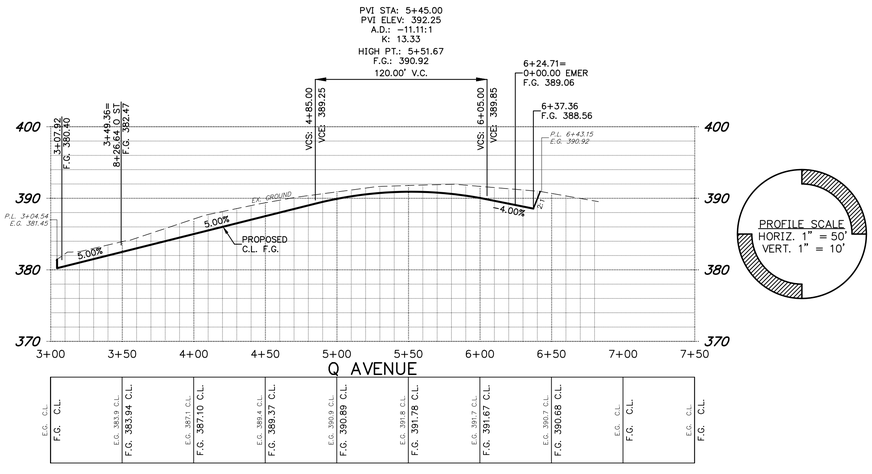
1. REVISED PER CITY OF SALEM REVIEW.

J:\6200-6299\6234-RoadResult\Dwg v18\6234e.dwg, P410ST, 4/5/2019 1:59:31 PM, PSaunders









MULTI/TECH
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1155 13th ST. S.E. SALEM, OR. 97302
PH. (503) 363-9227 FAX (503) 364-1260
www.mtengineering.net office@mtengineering.net

STREET IMPROVEMENTS

COBURN GRAND VIEW ESTATES

MULTI/TECH ENGINEERING EXEMPT FROM LIABILITY IF NOT STAMPED APPROVED

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P.H.S. 03/25/2019
6234p P411ST

Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2018
Scale: AS SHOWN
As-Built: ----

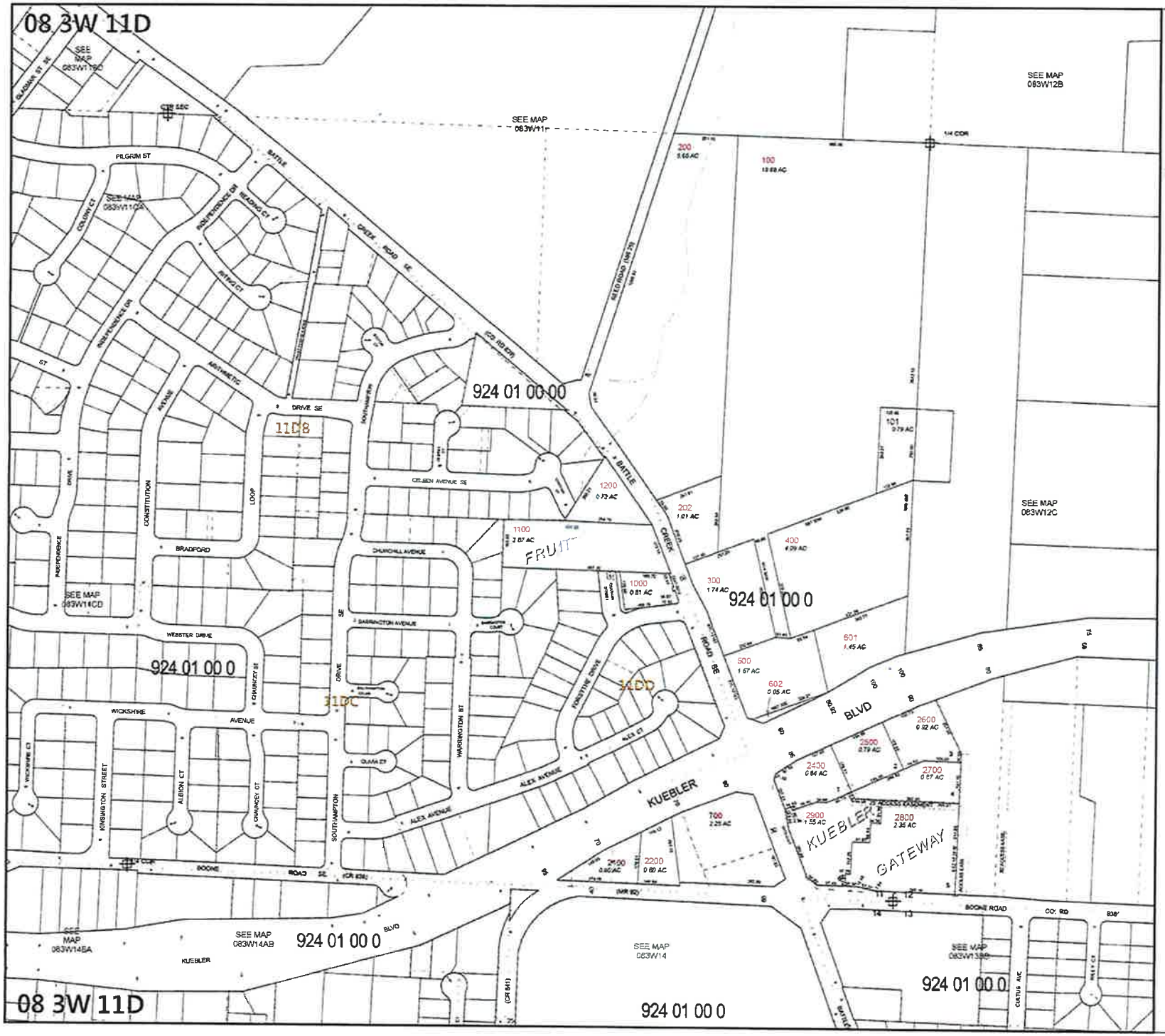
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ
EXPIRES: 06-30-2019

JOB # 6234

P411

1. REVISED PER CITY OF SALEM REVIEW.

J:\6200-6299\6234\Road\Dwg v18\6234p.dwg, P411ST, 4/5/2019 1:59:39 PM, PSounders



08 3W 11D
SALEM

MARION COUNTY, OREGON

SE1/4 SEC11 T8S R3W W.M.
SCALE 1" = 200'

LEGEND

LINE TYPES

Taxlot Boundary	Historical Boundary
Road Right-of-Way	Easement
Railroad Right-of-Way	Railroad Centerline
Private Road ROW	Taxcode Line
Subdivision/Plat Bndry	Map Boundary
Waterline - Taxlot Bndry	Waterline - Non Bndry

CORNER TYPES

+ 1/16TH Section Cor	1/4 Section Cor
DLC Corner	16 15 / 21 22 Section Corner

NUMBERS

Tax Code Number
000 00 00 0

Acreage
0.25 AC

All acres listed are Net Acres, **excluding any** portions of the taxlot within **public ROWs**

NOTES

Tick Marks: A tick mark in the road indicates that the labeled dimension extends into the public ROW

CANCELLED NUMBERS

201	1400	2302
301	1500	2303
501	1600	
502	1601	
600	1700	
603	1800	
700A1	1801	
701	1900	
702	1901	
703	2000	
800	2001	
801	2002	
900	2101	
901	2102	
902	2201	
1001	2300	
1300	2301	

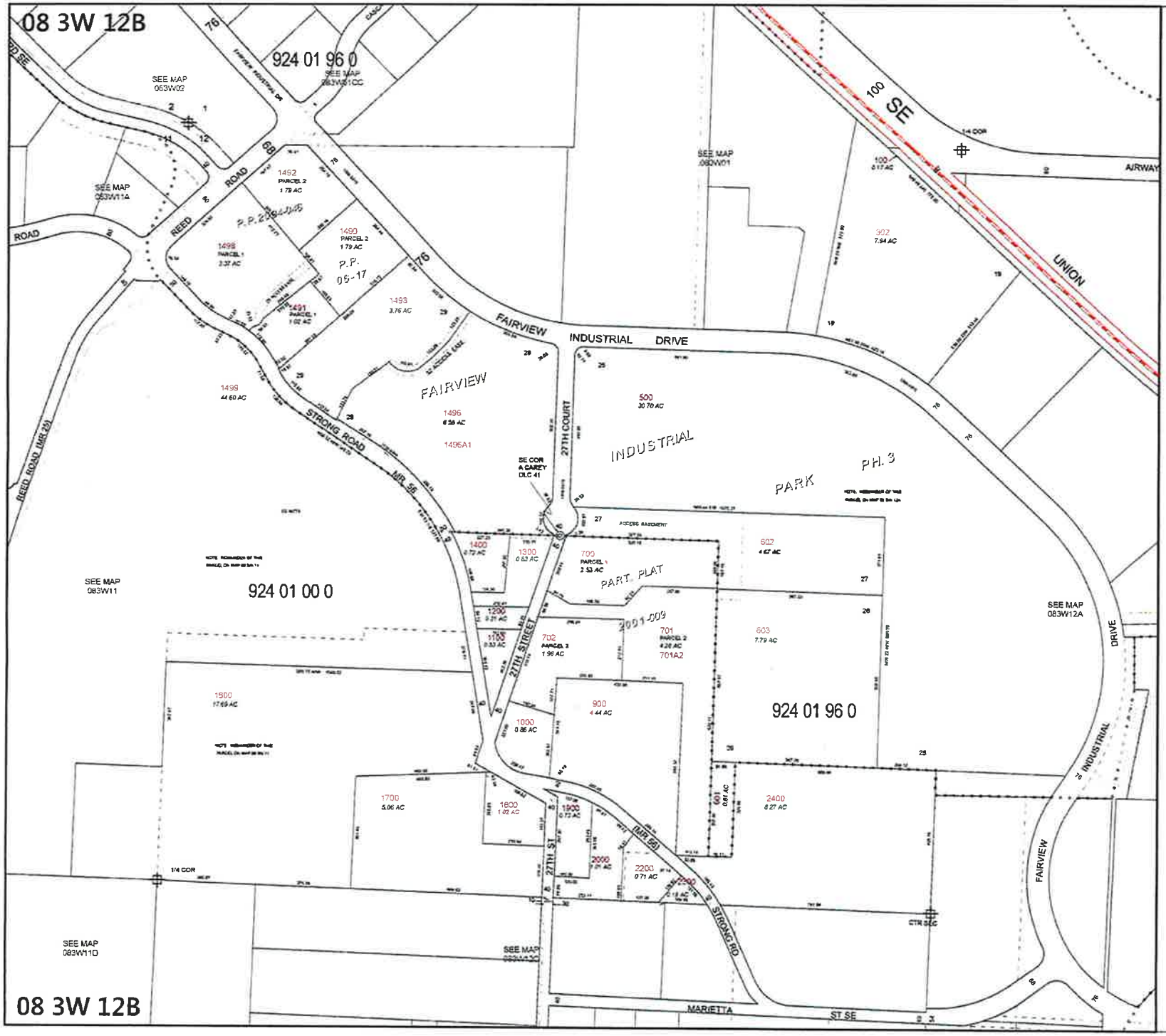
DISCLAIMER: THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSES ONLY

Assessors Office Cartography Dept

FOR ADDITIONAL MAPS VISIT OUR WEBSITE AT
www.co.marion.or.us

PLOT DATE: 1/24/2018

SALEM
08 3W 11D



08 3W 12B
SALEM

MARION COUNTY, OREGON
NW1/4 SEC12 T8S R3W W.M.
SCALE 1" = 200'

LEGEND

LINE TYPES

Taxlot Boundary	Historical Boundary
Road Right-of-Way	Easement
Railroad Right-of-Way	Railroad Centerline
Private Road ROW	Taxcode Line
Subdivision/Plat Bndry	Map Boundary
Waterline - Taxlot Bndry	Waterline - Non Bndry

CORNER TYPES

- 1/16TH Section Cor.
- 1/4 Section Cor
- DLC Corner
- Section Corner (16, 15, 21, 22)

NUMBERS

Tax Code Number
000 00 00 0

Acreage 0.25 AC

All acres listed are Net Acres, excluding any portions of the taxlot within public ROWs

NOTES

Tick Marks: A tick mark in the road indicates that the labeled dimension extends into the public ROW

CANCELLED NUMBERS

200	1498A1
201	1498A2
202	1498A3
300	1500
301	1501
400	2100
401	
402	
501	
502	
503	
600	
700A1	
701A1	
800	
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DISCLAIMER: THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSES ONLY

Assessors Office Cartography Dept

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PLOT DATE: 1/24/2018

SALEM
08 3W 12B

Traffic Impact Analysis
Strong Rd at 27th St Subdivision

Salem, Oregon

June 20, 2018

completed with
MultiTech Engineering Services, Inc
Salem, Oregon

Prepared by:
Associated Transportation Engineering & Planning, Inc.
Salem, Oregon
June 19, 2018
ATEP 17-392

ASSOCIATED
TRANSPORTATION
ENGINEERING &
PLANNING INC.

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Introduction:

The developer intends to build 225 single family home lots in 3 phases on tax lots 100 and 202 of tax map 08S03W Sec11D and tax lot 1600 of tax map 08S03W Sec12B in Salem, Oregon. The 38 acre site is east of Battle Creek Rd and west of Strong Rd in Salem. The site will be developed with access to both Battle Creek Rd and 27th St.

Figure 1 - Vicinity Map

Residents of the Strong Rd at 27th St Subdivision will use the transportation system and add traffic to the roadways in Salem. This analysis will consider the traffic impacts at the intersections of 1) Battle Creek Rd at Kuebler Blvd, 2) Battle Creek Rd at Reed Rd, 3) Reed Rd at Strong Rd, 4) Reed Rd at Fairview Industrial Dr. 5) Fairview Industrial Dr at Marietta St, 6) 27th St at Strong Rd, 7) 27th at Marietta St, 8) 27th at Keubler Blvd and the site accesses at Battle Creek Rd, Reed Rd and 2th St.

Summary of Findings:

When complete the 225 single family homes in the Strong Rd at 27th St Subdivision will generate an estimated 2124 trips each day. 167 of those trips will be in the AM Peak hour and 223 trips will be in the PM Peak hour. Each of the 3 phases of the project are modeled with 75 homes. The performance metrics at the studied intersections when all 3 phases are occupied are shown in the following table.

Intersection	AM Peak hour		PM Peak hour	
	LOS	v/c	LOS	v/c
Battle Creek at Reed	C	0.145	**F**	0.691
Battle Creek at Site Access	D	0.271	D	0.200
Reed at Strong	C	0.015	C	0.025
Reed at Fairview Industrial	**F**	**1.158**	**F**	0.594
Fairview at Marietta	C	0.456	C	0.040
Site Access at Strong	B	0.009	B	0.006
27th at Marietta	B	NA	B	0.112
27th at Kuebler	C	**0.863**	**E**	**0.875**
Battle Creek at Kuebler	D	**0.911**	**F**	**0.968**
Reed at Site Access	B	0.006	B	0.002

Figure 2 - Performance Metrics when Strong Rd at 27th St Subdivision is developed & occupied

Crash data from ODOT Crash Data Unit shows there were 69 crashes at the 7 intersections for which crash data was reviewed for the past 5 years. None were fatal crashes, 36 were injury crashes and 33 were property damage only crashes. The estimated crash rate per MEV is shown in Figure 3. Battle Creek at Reed has a crash rate (0.335) above the 90%ile for Oregon (0.293) for 3 legged stop controlled intersections. The mean crash rate in Oregon for 4 legged signal controlled intersections is 0.477 and the 90th %ile rate is 0.860. Battle Creek at Kuebler is at the 56th %ile.

Intersection	Fatal Crashes	Injury Crashes	Property Damage Crashes	Crashes/MEV	OR 90%ile
Battle Creek at Reed	**0**	**3**	**4**	**0.335**	**0.293**
Reed at Strong	0	0	1	0.101	0.293
Reed at Fairview Ind.	0	2	0	0.097	0.408
Fairview at Marietta	0	1	1	0.151	0.293
27th at Strong	0	0	0	0.000	0.293
27th at Kuebler	0	9	8	0.244	0.860
Battle Creek at Kuebler	0	21	19	0.496	0.860
Total	0	36	33		

Figure 3 - Crashes per MEV at selected intersections from 2011 through 2015

History and Existing Conditions:

Traffic from the planned homes will travel from the site to access the transportation system. The site is generally open rolling hills in southeast Salem. Battle Creek Rd and Kuebler Blvd are important commuter routes in Salem and carry large volumes of traffic. Battle Creek Rd at Reed Rd is a 3 legged stop controlled intersection with a crash rate above the 90%ile rate in Oregon. Even though traffic signal warrants are met at this intersection, the recommended mitigation is to add a left turn lane on the Reed Rd approach at the intersection Kuebler Blvd at Battle Creek Rd is a major signalized intersection and monitoring its performance in the PM Peak hour traffic period should continue

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Battle Creek Rd at Reed Rd	Two-way stop	HCM 6th Edition	SB Left	0.105	19.5	C
11	Reed Rd at Strong Rd	Two-way stop	HCM 6th Edition	WB Left	0.009	13.6	B
16	Reed Rd at Fairview Industrial Dr	Two-way stop	HCM 6th Edition	NB Left	0.833	116.4	F
21	Fairview Industrial Dr at Marietta St	Two-way stop	HCM 6th Edition	EB Left	0.353	17.8	C
31	27th Ave at Marietta St	Two-way stop	HCM 6th Edition	WB Left	0.014	10.8	B
36	27th at Kuebler Blvd	Signalized	HCM 6th Edition	SB Left	0.729	19.6	B
41	Keubler Blvd at Battle Creek Rd	Signalized	HCM 6th Edition	NB Right	0.807	39.0	D

Existing AM Peak Hour Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Battle Creek Rd at Reed Rd	Two-way stop	HCM 6th Edition	SB Left	0.661	35.4	E
11	Reed Rd at Strong Rd	Two-way stop	HCM 6th Edition	WB Left	0.018	14.3	B
16	Reed Rd at Fairview Industrial Dr	Two-way stop	HCM 6th Edition	NB Left	0.366	34.3	D
21	Fairview Industrial Dr at Marietta St	Two-way stop	HCM 6th Edition	EB Left	0.031	14.0	B
31	27th Ave at Marietta St	Two-way stop	HCM 6th Edition	WB Left	0.079	9.9	A
36	27th at Kuebler Blvd	Signalized	HCM 6th Edition	WB Left	0.756	36.3	D
41	Keubler Blvd at Battle Creek Rd	Signalized	HCM 6th Edition	SB Thru	0.829	42.5	D

Existing PM Peak Hour Summary

Figure 4 - Existing Traffic Conditions

Traffic Conditions when Strong Rd at 27th St Subdivision are Complete:

Strong Rd at 27th St Subdivision will add 167 trips to the AM Peak hour traffic and 223 trips to the PM Peak hour traffic. This study will assume the subdivision will be built in 3 phases with 75 single family home lots in each phase. This study will assume 10% of the traffic from the site will travel south of the Keubler Blvd at Battle Creek intersection, 30% will travel west and 35% will travel east of the intersection. 7% will travel north on Battle Creek Rd, 6% will travel east on Marietta St and 2% will travel south of the 27th at Kuebler Blvd intersection. The intersection of Reed Rd at Battle Creek should be monitored for capacity and safety issues. Adding a separate left turn lane on the Reed Rd approach will address the capacity issues and help solve the safety issues. The intersection of Battle Creek at Kuebler Blvd is nearing capacity and should be monitored. The intersection of Reed Rd at Fairview Industrial Dr needs to be studied and reconfigured. changing it to AWSC will improve the performance and accommodate the volume of NBLT traffic in the AM Peak hour period.

The study assumed that traffic will continue to grow at 1.6% per year over the next 10 years consistent with growth projects used for Salem east of the Willamette River.

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Battle Creek Rd at Reed Rd	Two-way stop	HCM 6th Edition	SB Left	0.117	20.4	C
6	Battle Creek Rd at Site Access	Two-way stop	HCM 6th Edition	WB Left	0.076	19.9	C
11	Reed Rd at Strong Rd	Two-way stop	HCM 6th Edition	WB Left	0.010	14.0	B
16	Reed Rd at Fairview Industrial Dr	Two-way stop	HCM 6th Edition	NB Left	0.909	149.8	F
21	Fairview Industrial Dr at Marietta St	Two-way stop	HCM 6th Edition	EB Left	0.379	18.7	C
26	East Access at Strong Rd	Two-way stop	HCM 6th Edition	EB Left	0.003	10.1	B
31	27th Ave at Marietta St	Two-way stop	HCM 6th Edition	WB Left	0.015	11.2	B
41	Keubler Blvd at Battle Creek Rd	Signalized	HCM 6th Edition	NB Right	0.831	41.1	D
42	Reed at Site Access	Two-way stop	HCM 6th Edition	WB Left	0.002	11.4	B

2020 AM Peak Hour Summary with Phase 1 Complete

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Battle Creek Rd at Reed Rd	Two-way stop	HCM 6th Edition	SB Left	0.711	40.7	E
6	Battle Creek Rd at Site Access	Two-way stop	HCM 6th Edition	WB Left	0.053	21.7	C
11	Reed Rd at Strong Rd	Two-way stop	HCM 6th Edition	WB Left	0.019	14.9	B
16	Reed Rd at Fairview Industrial Dr	Two-way stop	HCM 6th Edition	NB Left	0.418	38.6	E
21	Fairview Industrial Dr at Marietta St	Two-way stop	HCM 6th Edition	EB Left	0.033	14.5	B
26	East Access at Strong Rd	Two-way stop	HCM 6th Edition	EB Thru	0.029	10.4	B
31	27th Ave at Marietta St	Two-way stop	HCM 6th Edition	WB Left	0.087	10.3	B
36	27th at Kuebler Blvd	Signalized	HCM 6th Edition	SB Left	0.784	40.6	D
41	Keubler Blvd at Battle Creek Rd	Signalized	HCM 6th Edition	WB Left	0.865	81.5	F
42	Reed at Site Access	Two-way stop	HCM 6th Edition	WB Left	0.000	10.8	B

2020 PM Peak Hour Summary with Phase 1 Complete

Figure 5 – 2020 Traffic Conditions with Phase 1 (75 lots) Complete

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Battle Creek Rd at Reed Rd	Two-way stop	HCM 6th Edition	SB Left	0.131	22.0	C
6	Battle Creek Rd at Site Access	Two-way stop	HCM 6th Edition	WB Left	0.170	24.5	C
11	Reed Rd at Strong Rd	Two-way stop	HCM 6th Edition	WB Left	0.010	14.7	B
16	Reed Rd at Fairview Industrial Dr	Two-way stop	HCM 6th Edition	NB Left	1.025	205.7	F
21	Fairview Industrial Dr at Marietta St	Two-way stop	HCM 6th Edition	EB Left	0.413	20.2	C
26	East Access at Strong Rd	Two-way stop	HCM 6th Edition	EB Left	0.004	10.4	B
31	27th Ave at Marietta St	Two-way stop	HCM 6th Edition	WB Left	0.017	11.7	B
36	27th at Kuebler Blvd	Signalized	HCM 6th Edition	SB Left	0.813	24.1	C
41	Keubler Blvd at Battle Creek Rd	Signalized	HCM 6th Edition	NB Right	0.871	46.3	D
42	Reed at Site Access	Two-way stop	HCM 6th Edition	WB Left	0.002	11.7	B

2023 AM Peak Hour Summary with Phase 2 Complete

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Battle Creek Rd at Reed Rd	Two-way stop	HCM 6th Edition	SB Left	0.800	53.0	F
6	Battle Creek Rd at Site Access	Two-way stop	HCM 6th Edition	WB Left	0.123	25.9	D
11	Reed Rd at Strong Rd	Two-way stop	HCM 6th Edition	WB Left	0.020	15.6	C
16	Reed Rd at Fairview Industrial Dr	Two-way stop	HCM 6th Edition	NB Left	0.502	47.8	E
21	Fairview Industrial Dr at Marietta St	Two-way stop	HCM 6th Edition	EB Left	0.038	15.1	C
26	East Access at Strong Rd	Two-way stop	HCM 6th Edition	EB Left	0.006	10.7	B
31	27th Ave at Marietta St	Two-way stop	HCM 6th Edition	WB Left	0.098	10.8	B
36	27th at Kuebler Blvd	Signalized	HCM 6th Edition	SB Left	0.829	50.1	D
41	Keubler Blvd at Battle Creek Rd	Signalized	HCM 6th Edition	WB Left	0.916	99.7	F
42	Reed at Site Access	Two-way stop	HCM 6th Edition	WB Left	0.002	11.0	B

2023 PM Peak Hour Summary with Phase 2 Complete

Figure 6 – 2023 Traffic Conditions with Phase 2 (150 lots) Complete

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Battle Creek Rd at Reed Rd	Two-way stop	HCM 6th Edition	SB Left	0.145	23.5	C
6	Battle Creek Rd at Site Access	Two-way stop	HCM 6th Edition	WB Left	0.271	29.0	D
11	Reed Rd at Strong Rd	Two-way stop	HCM 6th Edition	WB Left	0.015	15.5	C
16	Reed Rd at Fairview Industrial Dr	Two-way stop	HCM 6th Edition	NB Left	1.158	275.6	F
21	Fairview Industrial Dr at Marietta St	Two-way stop	HCM 6th Edition	EB Left	0.456	22.3	C
26	East Access at Strong Rd	Two-way stop	HCM 6th Edition	EB Left	0.009	10.7	B
31	27th Ave at Marietta St	Two-way stop	HCM 6th Edition	WB Left	0.022	12.4	B
36	27th at Kuebler Blvd	Signalized	HCM 6th Edition	SB Left	0.863	33.1	C
41	Keubler Blvd at Battle Creek Rd	Signalized	HCM 6th Edition	NB Right	0.911	57.6	E
42	Reed at Site Access	Two-way stop	HCM 6th Edition	WB Left	0.006	11.9	B

2026 AM Peak Hour Summary with Phase 3 Complete

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Battle Creek Rd at Reed Rd	Two-way stop	HCM 6th Edition	SB Left	0.891	70.7	F
6	Battle Creek Rd at Site Access	Two-way stop	HCM 6th Edition	WB Left	0.200	30.5	D
11	Reed Rd at Strong Rd	Two-way stop	HCM 6th Edition	WB Left	0.025	16.5	C
16	Reed Rd at Fairview Industrial Dr	All-way stop	HCM 6th Edition	WB Thru	0.612	14.1	B
21	Fairview Industrial Dr at Marietta St	Two-way stop	HCM 6th Edition	EB Left	0.040	15.8	C
26	East Access at Strong Rd	Two-way stop	HCM 6th Edition	EB Left	0.006	11.3	B
31	27th Ave at Marietta St	Two-way stop	HCM 6th Edition	WB Left	0.112	11.4	B
36	27th at Kuebler Blvd	Signalized	HCM 6th Edition	SB Left	0.875	64.5	E
41	Keubler Blvd at Battle Creek Rd	Signalized	HCM 6th Edition	WB Left	0.968	118.6	F
42	Reed at Site Access	Two-way stop	HCM 6th Edition	WB Left	0.002	11.2	B

2026 PM Peak Hour Summary with Phase 3 Complete

Figure 7 – 2026 Traffic Conditions with Phase 3 (225 lots) Complete

All the studied intersections perform within accepted parameters with expected traffic from the apartments.

Summary:

The development of 75 single family home lots in each of 3 phases (225 total home lots) in the planned Strong Rd at 27th St Subdivision will add traffic to the transportation system. Crash data indicates safety problems at the Reed Rd at Battle Creek Rd. The intersection will also be nearing capactiy with the homes in the Strong Rd at 27th St subdivision. Performance can be mitigated by adding a left turn lane to Reed Rd at the intersection. Safety issues should be monitored on an ongoing basis. The intersection of Battle Creek Rd at Keubler Blvd is a major intersection conveying a large volume of traffic during peak hour traffic periods. The v/c will exceed 0.900 with the second phase of the project and planning for improvements or alternative routes should be started. xxxxxxxx

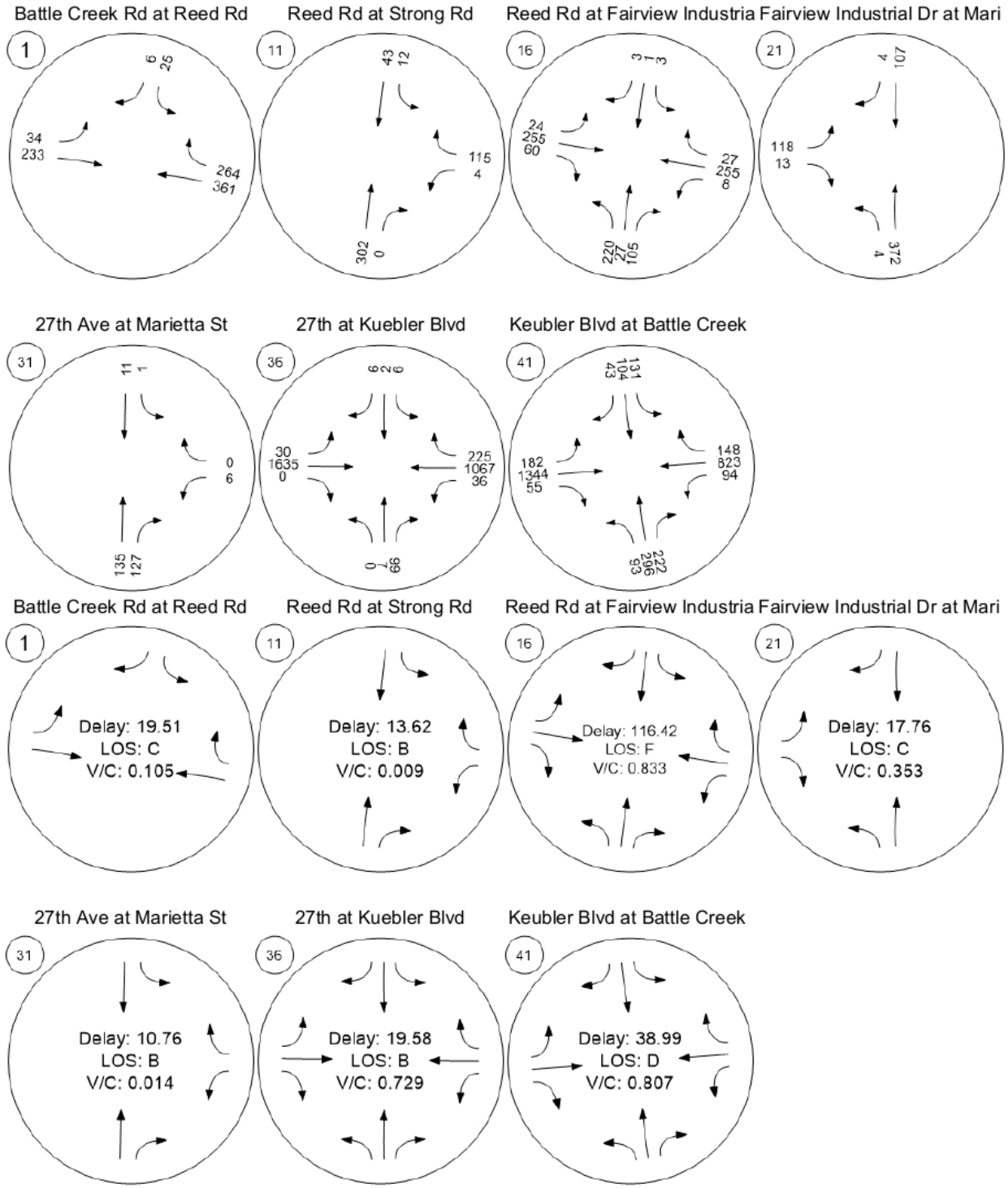


Figure 8 - Existing AM Peak hour Counts & Performance Metrics

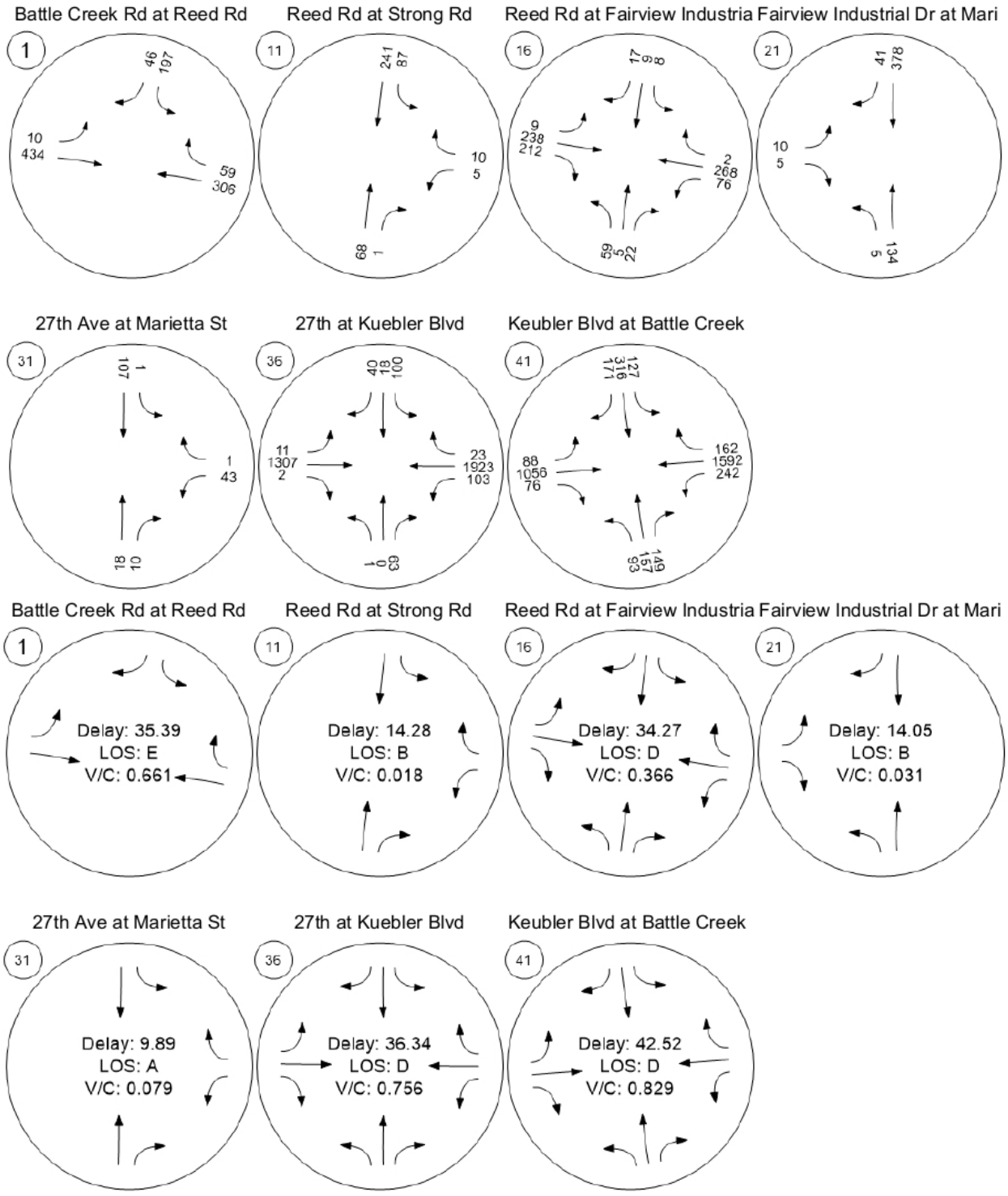
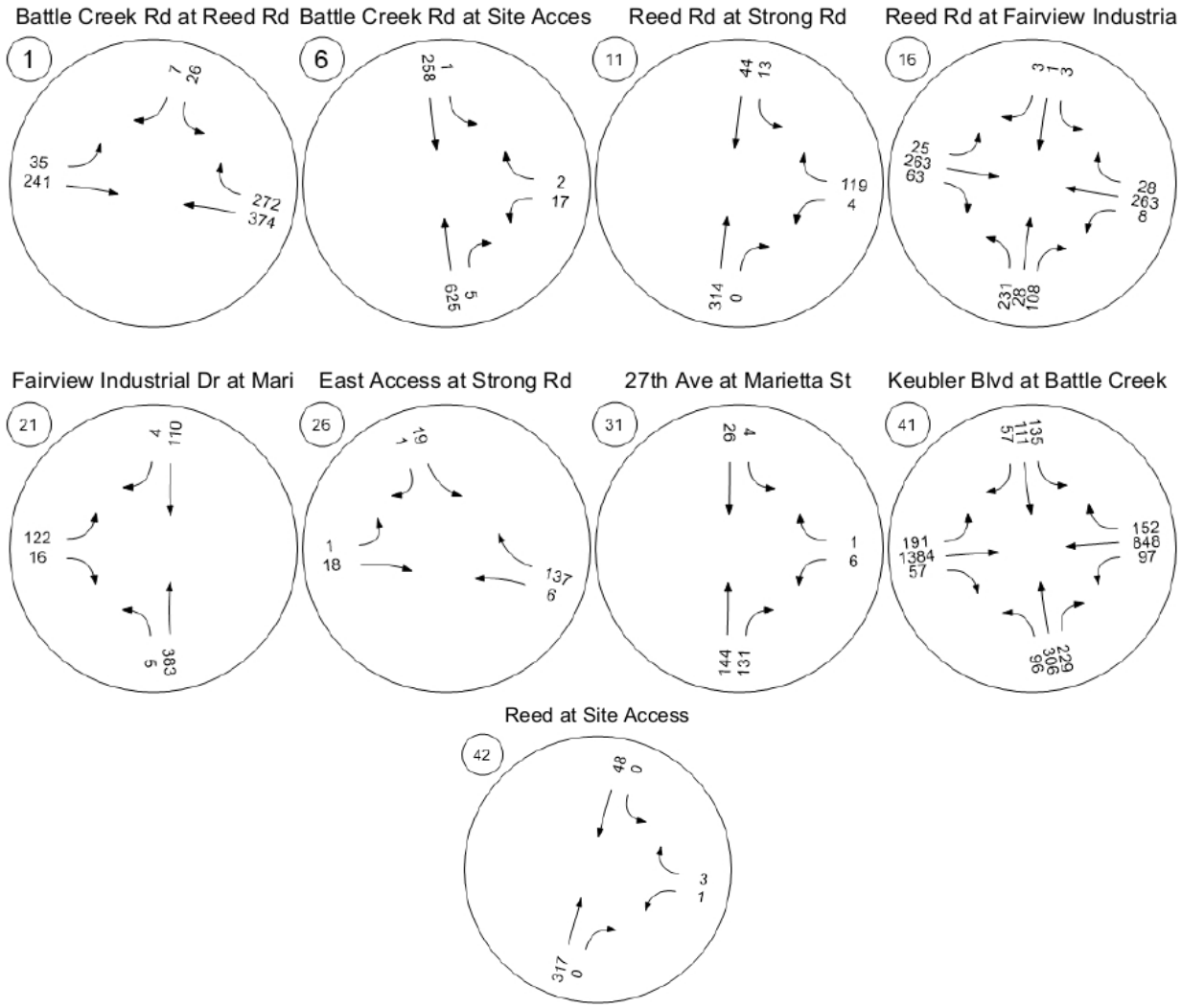


Figure 9 - Existing PM Peak hour Counts & Performance Metrics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Reed Rd at Fairview Industria
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East Access at Strong Rd
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Keubler Blvd at Battle Creek
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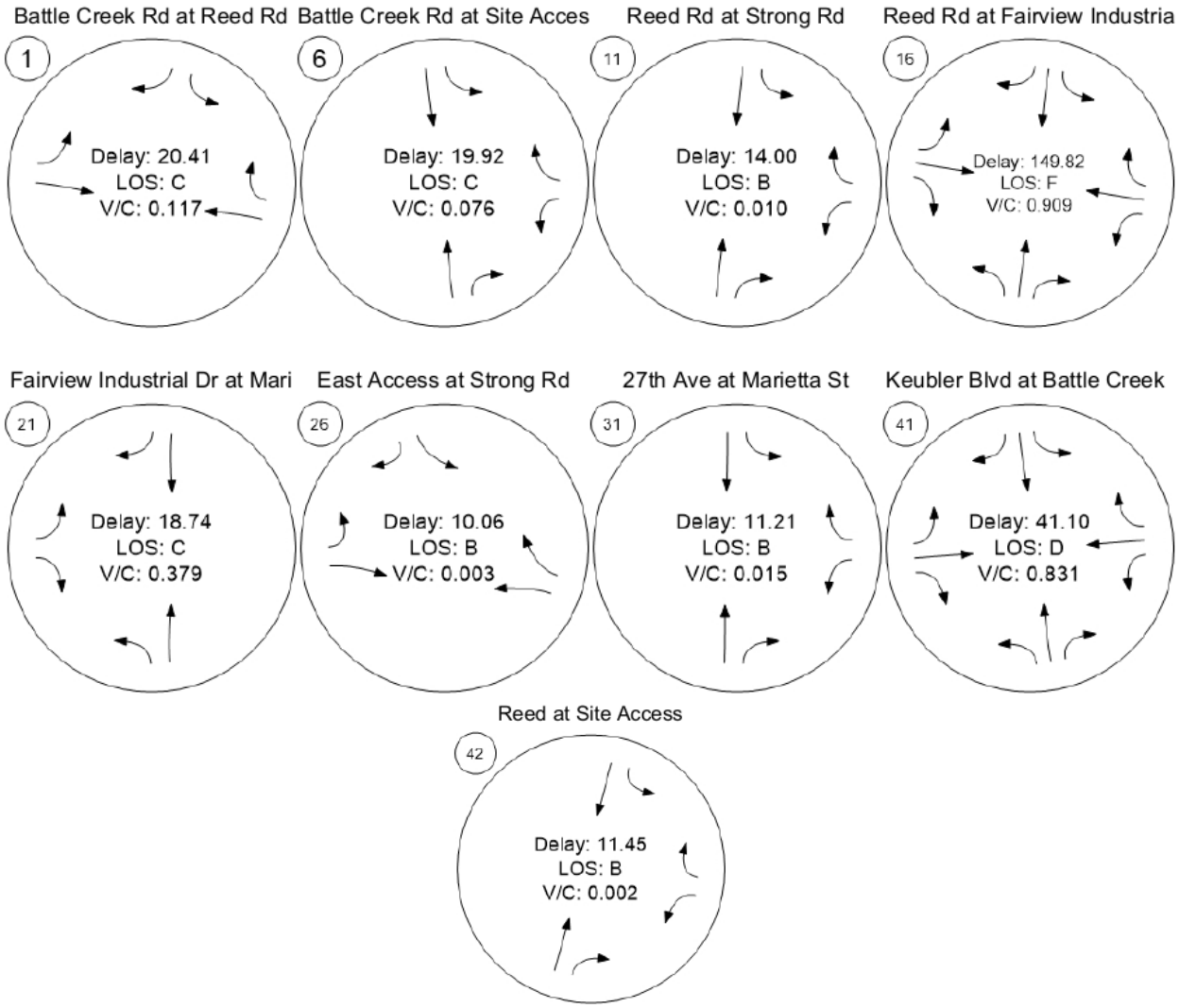
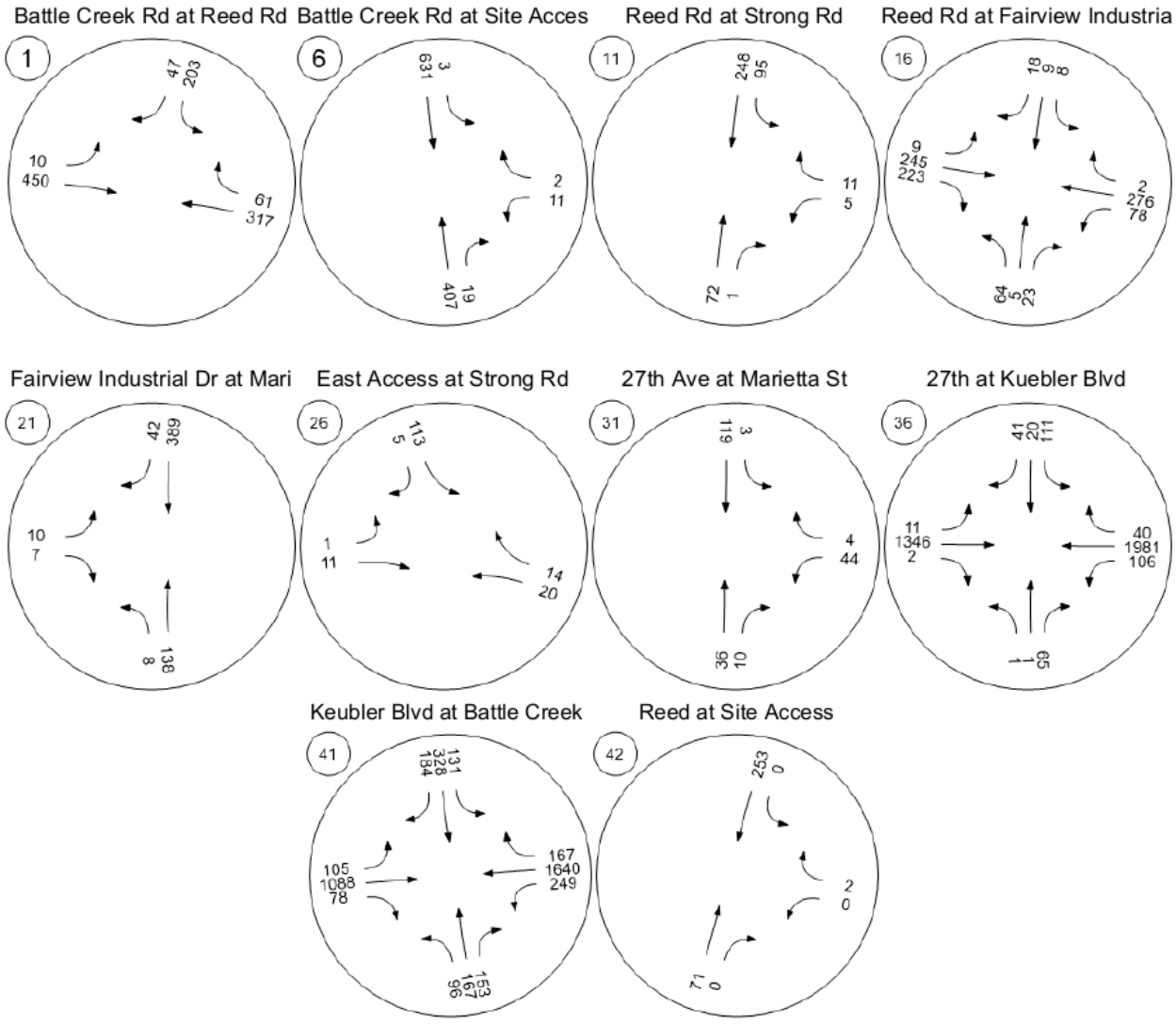


Figure 10 - 2020 AM Peak hour Counts & Performance Metrics with Phase 1 Complete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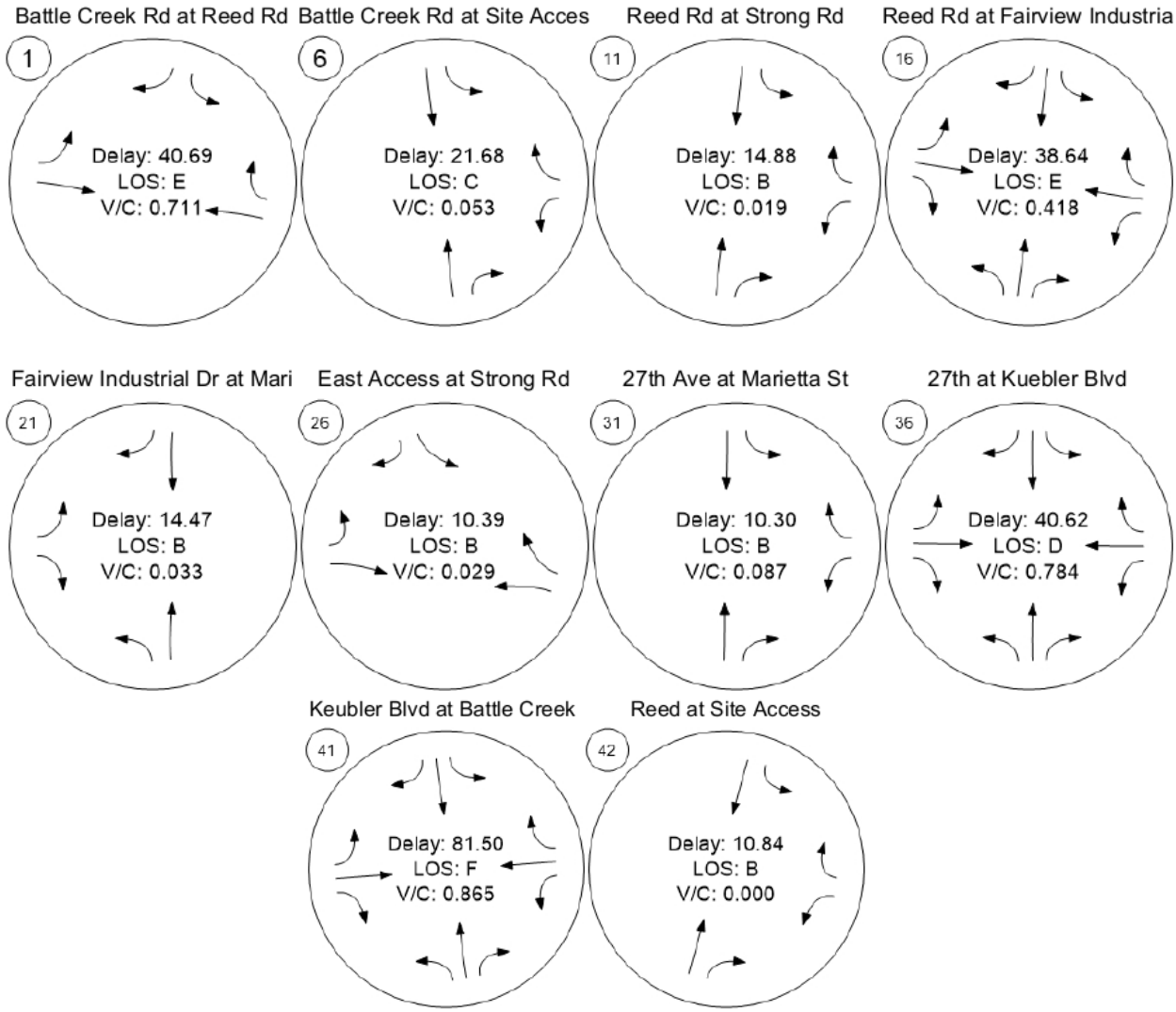
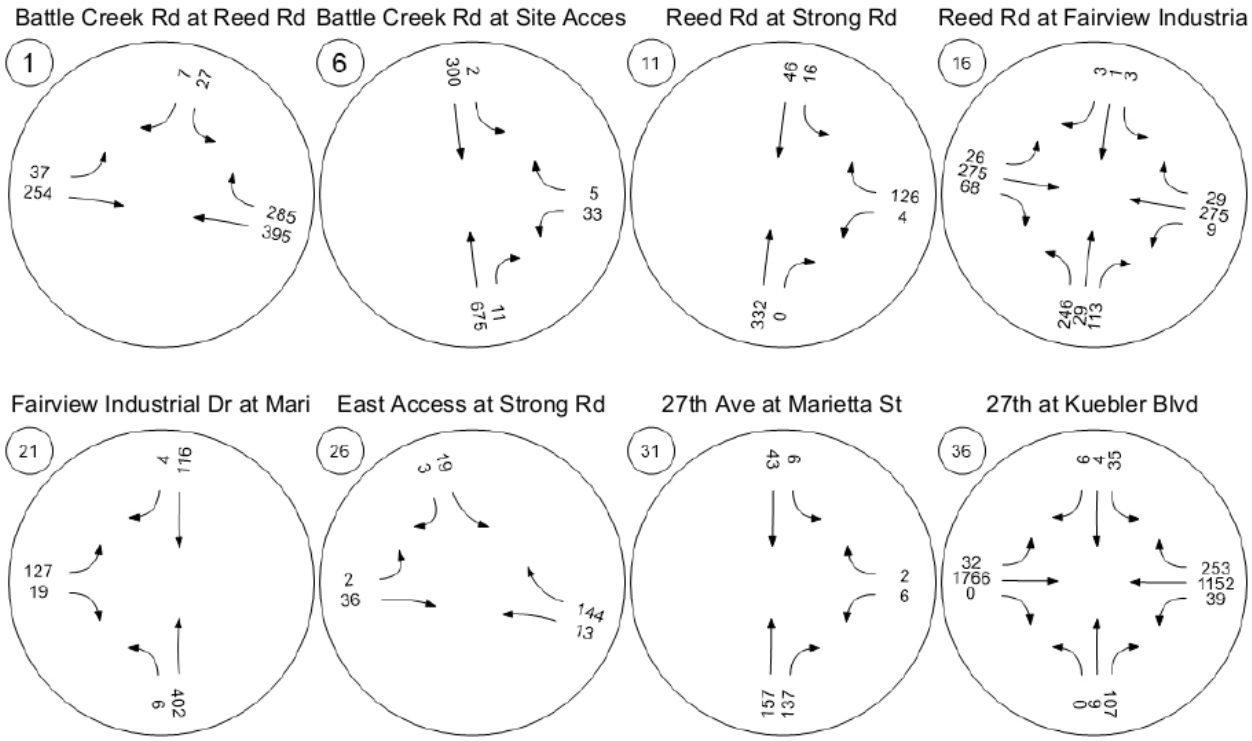


Figure 11 - 2020 PM Peak hour Counts & Performance Metrics with Phase 1 Complete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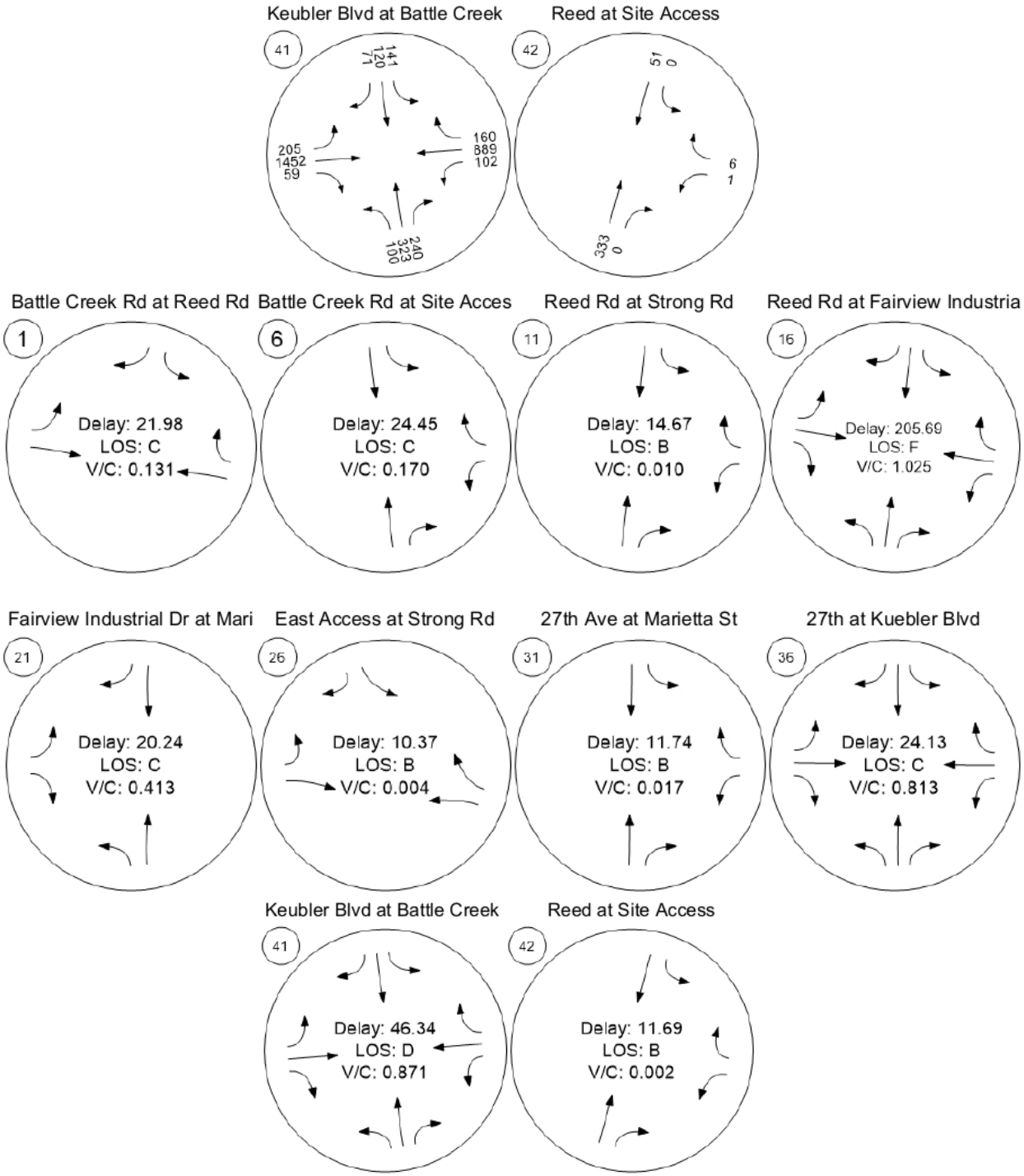
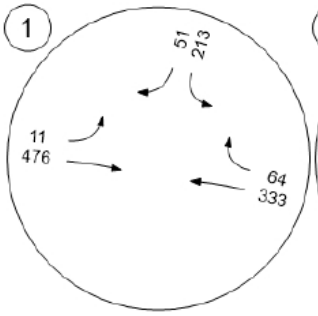
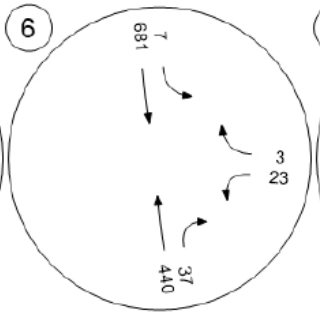


Figure 12 - 2023 AM Peak hour Counts & Performance Metrics with Phase 2 Complete

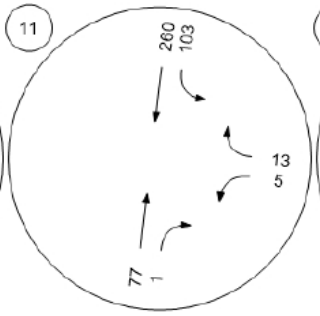
Battle Creek Rd at Reed Rd



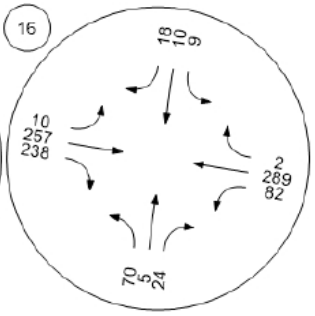
Battle Creek Rd at Site Acces



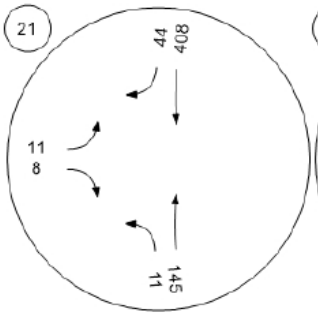
Reed Rd at Strong Rd



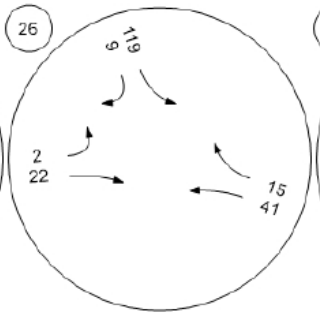
Reed Rd at Fairview Industria



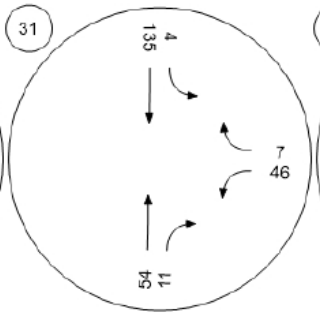
Fairview Industrial Dr at Mari



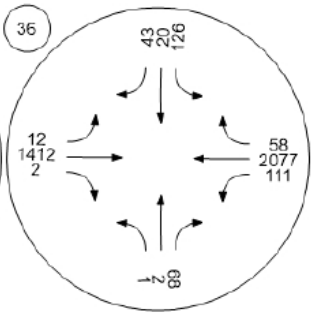
East Access at Strong Rd



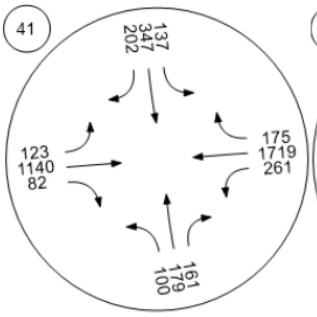
27th Ave at Marietta St



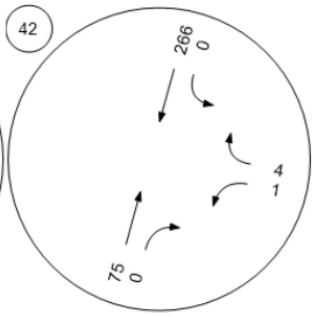
27th at Kuebler Blvd



Keubler Blvd at Battle Creek



Reed at Site Access



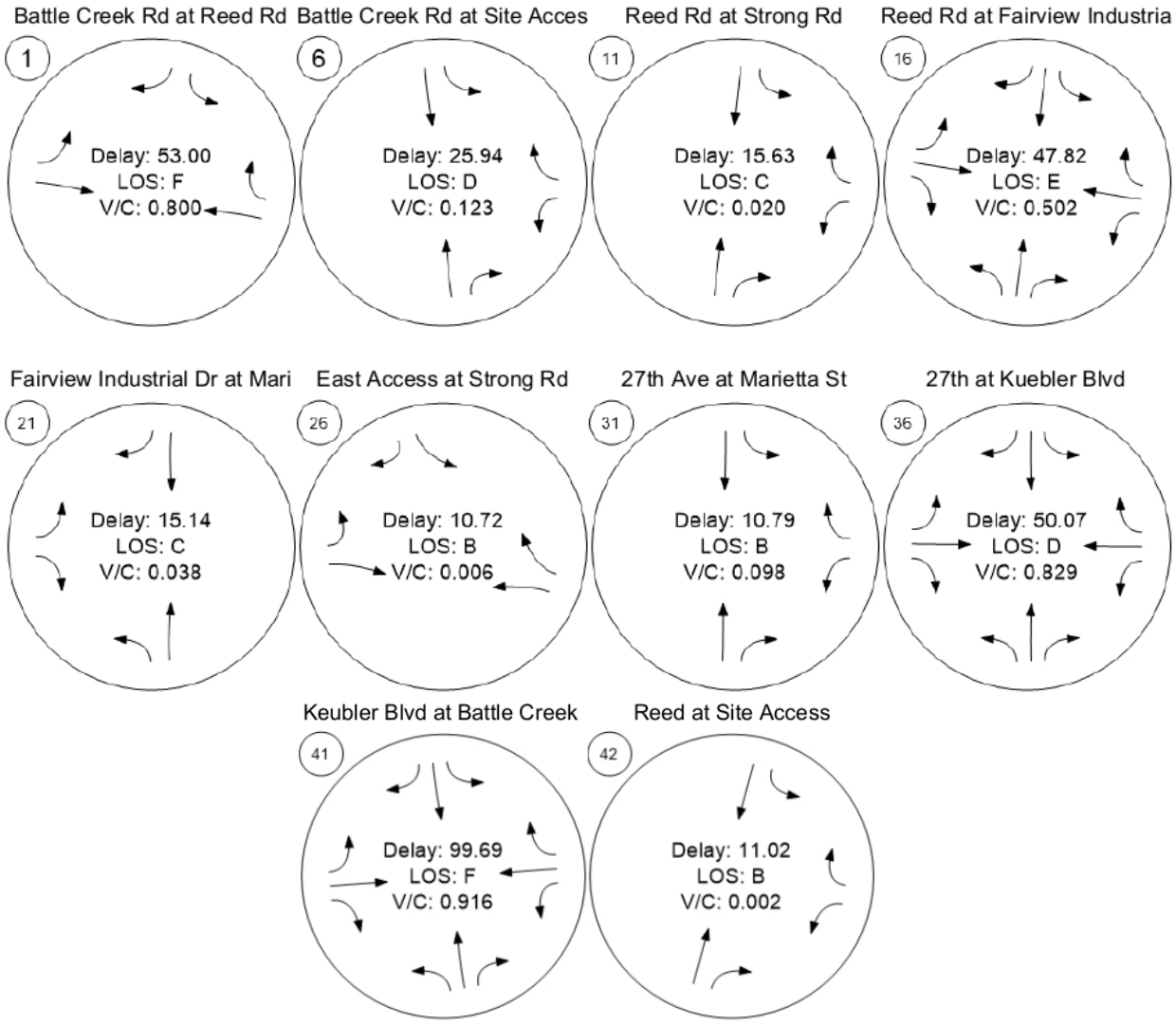
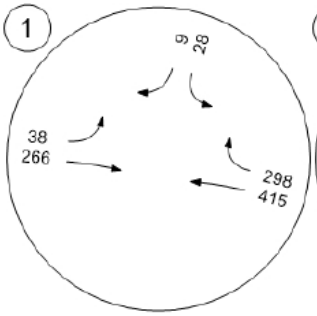
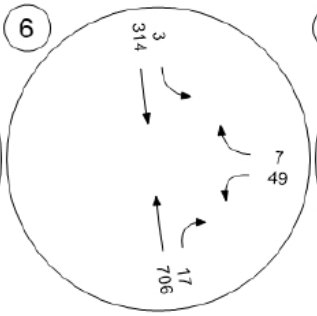


Figure 13 - 2023 PM Peak hour Counts & Performance Metrics with Phase 2 Complete

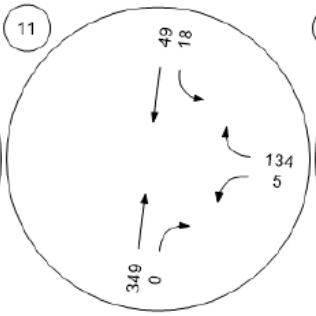
Battle Creek Rd at Reed Rd



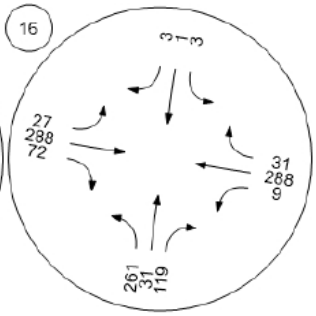
Battle Creek Rd at Site Acces



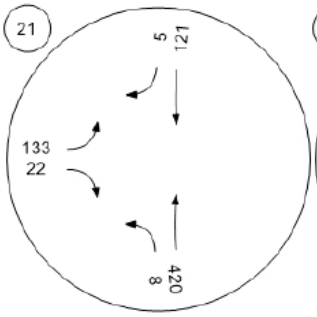
Reed Rd at Strong Rd



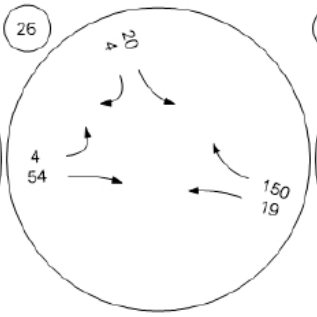
Reed Rd at Fairview Industria



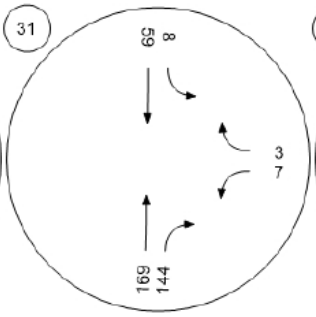
Fairview Industrial Dr at Mari



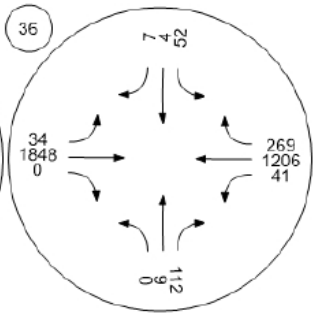
East Access at Strong Rd



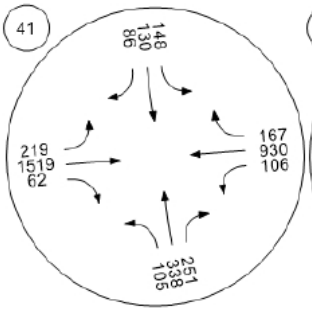
27th Ave at Marietta St



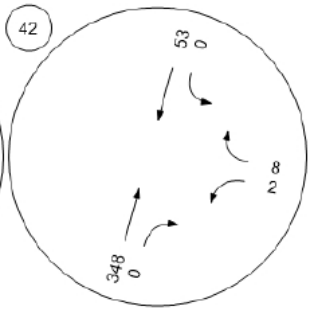
27th at Kuebler Blvd



Keubler Blvd at Battle Creek



Reed at Site Access



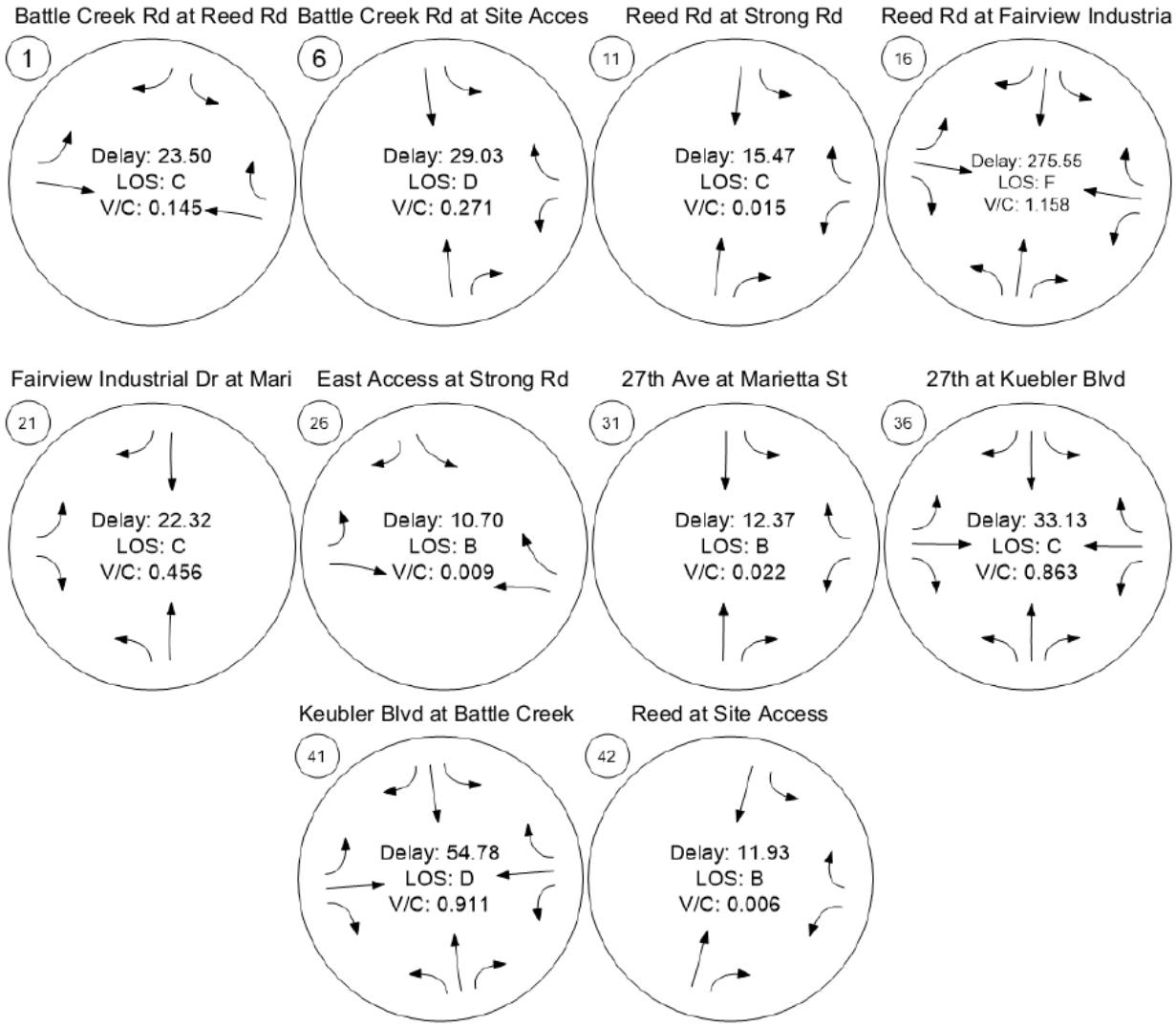
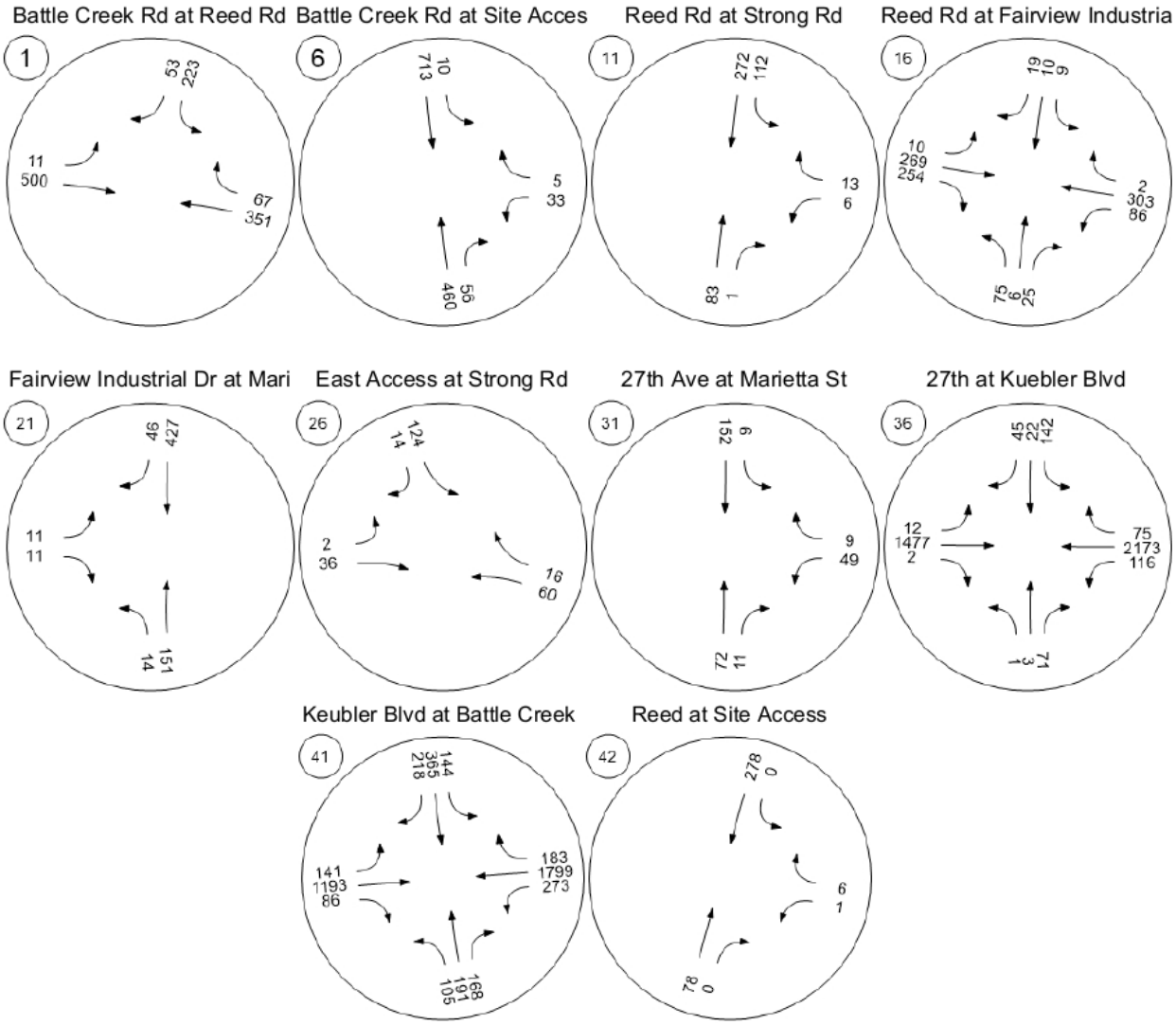


Figure 14 - 2026 AM Peak hour Counts & Performance Metrics with Phase 3 Complete


Battle Creek Rd at Reed Rd
1
53
223
11
500
67
351
Battle Creek Rd at Site Acces
6
10
713
5
33
56
460
Reed Rd at Strong Rd
11
272
112
13
6
83
1
Reed Rd at Fairview Industria
16
19
10
9
10
269
254
2
303
86
75
6
25
Fairview Industrial Dr at Mari
21
46
427
11
11
151
14
East Access at Strong Rd
26
124
14
2
36
16
60
27th Ave at Marietta St
31
152
6
9
49
72
11
27th at Kuebler Blvd
36
45
22
142
12
1477
2
75
2173
116
71
3
1
Keubler Blvd at Battle Creek
41
144
365
218
183
1799
273
141
1193
86
168
191
105
Reed at Site Access
42
278
0
6
1
78
0

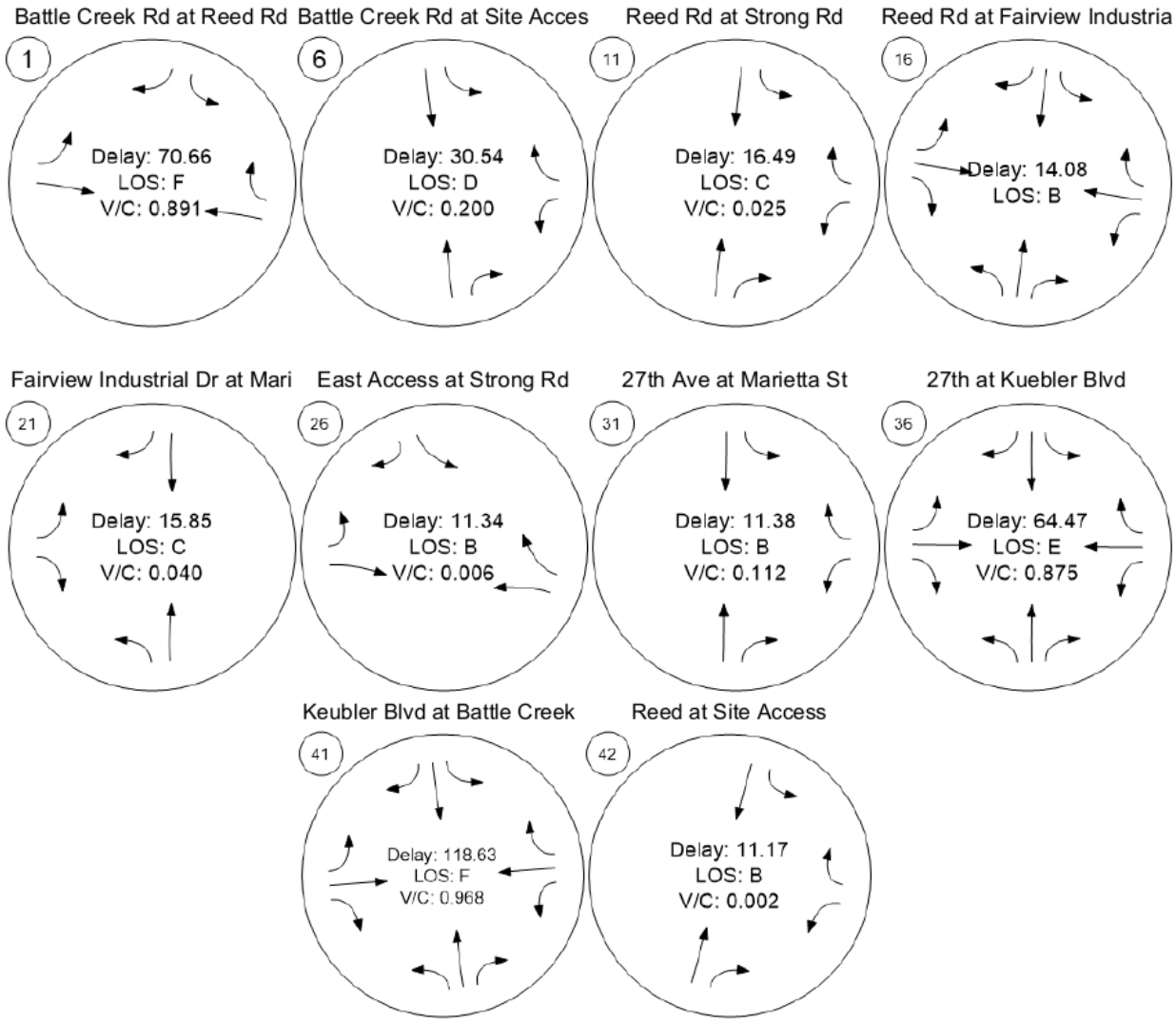


Figure 15 - 2026 PM Peak hour Counts & Performance Metrics with Phase 3 Complete

Type of peak hour being reported: Intersection Peak

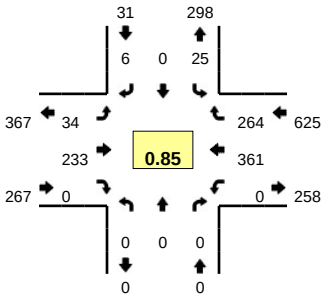
Method for determining peak hour: Total Entering Volume

LOCATION: Reed Rd SE -- Battle Creek Rd SE

CITY/STATE: Salem, OR

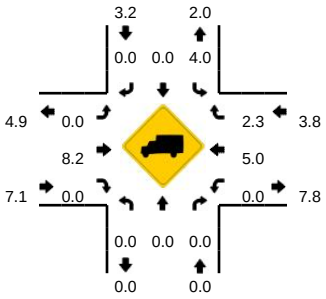
QC JOB #: 14711001

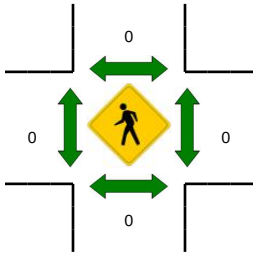
DATE: Wed, May 16 2018

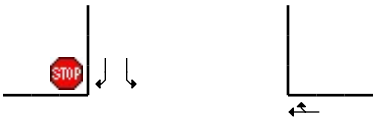


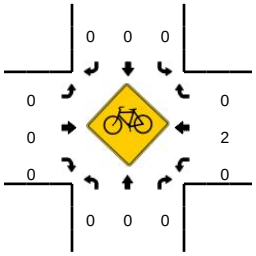
Peak-Hour: 7:10 AM -- 8:10 AM

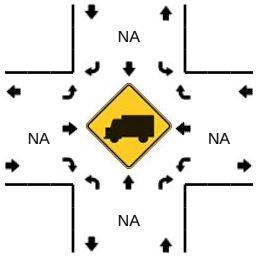
Peak 15-Min: 7:45 AM -- 8:00 AM

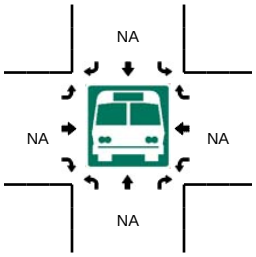












5-Min Count Period Beginning At	Reed Rd SE (Northbound)				Reed Rd SE (Southbound)				Battle Creek Rd SE (Eastbound)				Battle Creek Rd SE (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	2	0	1	0	1	11	0	0	0	26	12	0	53	
7:05 AM	0	0	0	0	0	0	1	0	1	20	0	0	0	24	5	0	51	
7:10 AM	0	0	0	0	1	0	1	0	1	15	0	0	0	35	18	0	71	
7:15 AM	0	0	0	0	4	0	0	0	1	24	0	0	0	40	17	0	86	
7:20 AM	0	0	0	0	2	0	0	0	3	17	0	0	0	22	14	0	58	
7:25 AM	0	0	0	0	0	0	0	0	2	14	0	0	0	26	22	0	64	
7:30 AM	0	0	0	0	0	0	0	0	2	18	0	0	0	24	14	0	58	
7:35 AM	0	0	0	0	1	0	1	0	2	24	0	0	0	36	22	0	86	
7:40 AM	0	0	0	0	3	0	0	0	2	17	0	0	0	28	29	0	79	
7:45 AM	0	0	0	0	2	0	0	0	2	19	0	0	0	45	20	0	88	
7:50 AM	0	0	0	0	3	0	0	0	4	21	0	0	0	30	32	0	90	
7:55 AM	0	0	0	0	3	0	1	0	4	30	0	0	0	26	30	0	94	878
8:00 AM	0	0	0	0	3	0	2	0	5	12	0	0	0	20	30	0	72	897
8:05 AM	0	0	0	0	3	0	1	0	6	22	0	0	0	29	16	0	77	923
8:10 AM	0	0	0	0	8	0	0	0	4	13	0	0	0	16	14	0	55	907
8:15 AM	0	0	0	0	0	0	4	0	2	12	0	0	0	13	20	0	51	872
8:20 AM	0	0	0	0	5	0	2	0	0	10	0	0	0	20	23	0	60	874
8:25 AM	0	0	0	0	2	0	3	0	3	9	0	0	0	23	13	0	53	863
8:30 AM	0	0	0	0	4	0	2	0	3	15	0	0	0	19	8	0	51	856
8:35 AM	0	0	0	0	2	0	1	0	2	22	0	0	0	22	9	0	58	828
8:40 AM	0	0	0	0	5	0	2	0	1	19	0	0	0	33	17	0	77	826
8:45 AM	0	0	0	0	4	0	1	0	3	21	0	0	0	23	13	0	65	803
8:50 AM	0	0	0	0	3	0	1	0	0	14	0	0	0	25	18	0	61	774
8:55 AM	0	0	0	0	2	0	1	0	4	21	0	0	0	26	18	0	72	752

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	32	0	4	0	40	280	0	0	0	404	328	0	1088
Heavy Trucks	0	0	0		0	0	0		0	16	0		0	28	4		48
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/29/2018 3:44 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Reed Rd SE -- Strong Rd SE

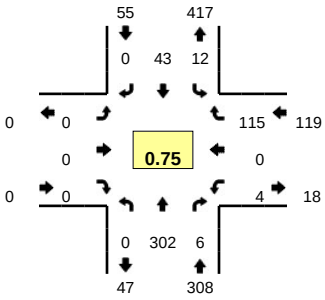
QC JOB #: 14711003

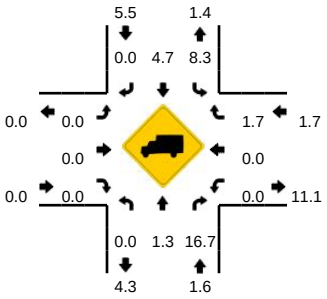
CITY/STATE: Salem, OR

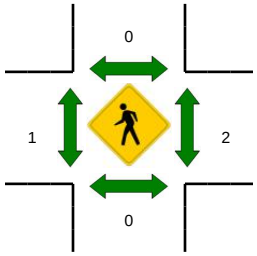
DATE: Wed, May 16 2018

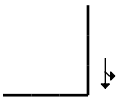
Peak-Hour: 7:25 AM -- 8:25 AM

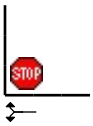
Peak 15-Min: 7:50 AM -- 8:05 AM

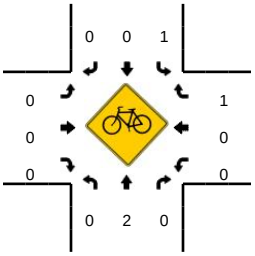


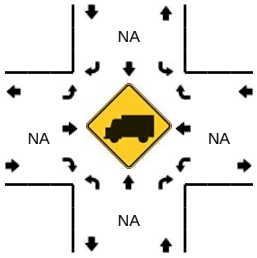


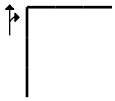


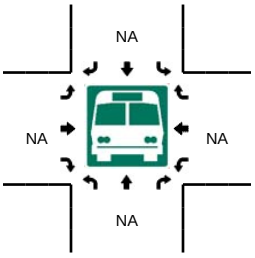












5-Min Count Period Beginning At	Reed Rd SE (Northbound)				Reed Rd SE (Southbound)				Strong Rd SE (Eastbound)				Strong Rd SE (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	11	0	0	1	3	0	1	0	0	0	0	0	0	3	0	19	
7:05 AM	0	9	0	0	0	1	0	0	0	0	0	0	0	0	7	0	17	
7:10 AM	0	14	0	0	0	2	0	0	0	0	0	0	0	0	7	0	23	
7:15 AM	0	17	0	0	1	3	0	0	0	0	0	0	0	0	6	0	27	
7:20 AM	0	18	0	0	0	2	0	0	0	0	0	0	0	0	5	0	25	
7:25 AM	0	25	0	0	0	1	0	0	0	0	0	0	0	0	10	0	36	
7:30 AM	0	17	0	0	1	0	0	0	0	0	0	0	0	0	9	0	27	
7:35 AM	0	20	0	0	0	2	0	0	0	0	0	0	0	0	9	0	31	
7:40 AM	0	31	1	0	1	4	0	0	0	0	0	0	0	0	6	0	43	
7:45 AM	0	24	0	0	1	2	0	0	0	0	0	0	0	0	14	0	41	
7:50 AM	0	23	1	0	3	2	0	0	0	0	0	0	0	0	15	0	44	
7:55 AM	0	42	0	0	0	5	0	0	0	0	0	0	0	0	16	0	63	396
8:00 AM	0	35	0	0	1	5	0	0	0	0	0	0	0	0	12	0	53	430
8:05 AM	0	21	1	0	1	5	0	0	0	0	0	0	1	0	7	0	36	449
8:10 AM	0	18	1	0	1	6	0	0	0	0	0	0	2	0	5	0	33	459
8:15 AM	0	22	1	0	2	7	0	0	0	0	0	0	0	0	5	0	37	469
8:20 AM	0	24	1	0	1	4	0	0	0	0	0	0	1	0	7	0	38	482
8:25 AM	0	15	0	0	0	4	0	0	0	0	0	0	1	0	7	0	27	473
8:30 AM	0	14	0	0	0	5	0	0	0	0	0	0	0	0	6	0	25	471
8:35 AM	0	8	1	0	1	5	0	0	0	0	0	0	0	0	6	0	21	461
8:40 AM	0	20	0	0	3	3	0	0	0	0	0	0	1	0	4	0	31	449
8:45 AM	0	15	2	0	0	3	0	0	0	0	0	0	0	0	4	0	24	432
8:50 AM	0	17	0	0	0	2	0	0	0	0	0	0	1	0	5	0	25	413
8:55 AM	0	15	1	0	1	5	0	0	0	0	0	0	0	0	7	0	29	379

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	400	4	0	16	48	0	0	0	0	0	0	0	0	172	0	640
Heavy Trucks	0	8	0		0	0	0		0	0	0		0	0	0		8
Pedestrians		0				0				4				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/29/2018 3:44 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Reed Rd SE -- Fairview Industrial Dr SE

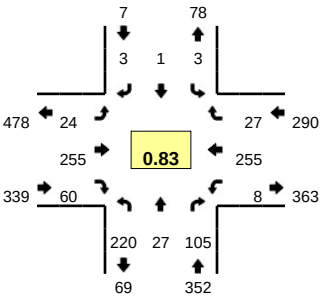
QC JOB #: 14711013

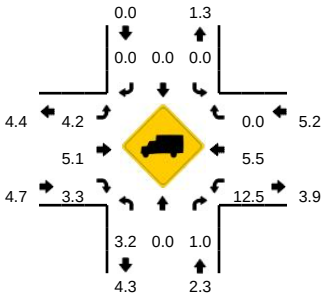
CITY/STATE: Marion, OR

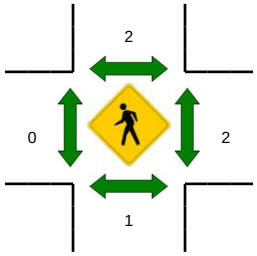
DATE: Wed, May 16 2018

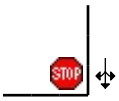
Peak-Hour: 7:25 AM -- 8:25 AM

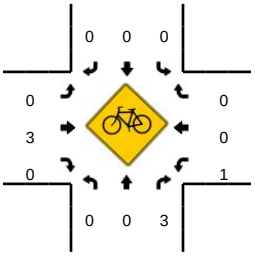
Peak 15-Min: 7:45 AM -- 8:00 AM

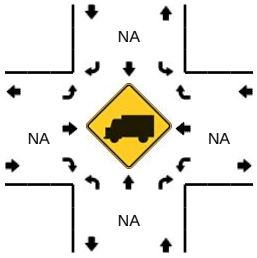


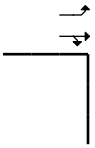


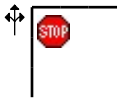


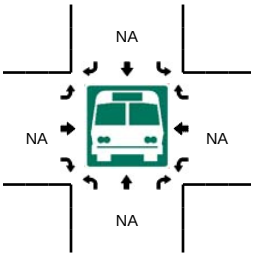












5-Min Count Period Beginning At	Reed Rd SE (Northbound)				Reed Rd SE (Southbound)				Fairview Industrial Dr SE (Eastbound)				Fairview Industrial Dr SE (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	8	0	2	0	0	0	0	0	0	8	1	0	0	8	0	0	27	
7:05 AM	10	2	1	0	0	0	0	0	1	14	2	0	1	21	0	0	52	
7:10 AM	9	1	5	0	0	0	0	0	0	17	2	0	0	20	0	0	54	
7:15 AM	12	1	6	0	0	0	0	0	0	15	5	0	1	16	1	0	57	
7:20 AM	13	0	11	0	0	0	0	0	0	25	2	0	0	13	2	0	66	
7:25 AM	23	3	7	0	0	0	0	0	0	24	3	0	0	19	0	0	79	
7:30 AM	13	0	10	0	0	0	1	0	1	21	1	0	0	23	3	0	73	
7:35 AM	21	2	5	0	1	0	0	0	0	14	3	0	1	25	1	0	73	
7:40 AM	20	1	6	0	0	0	0	0	4	20	4	0	2	23	2	0	82	
7:45 AM	20	2	13	0	0	0	0	0	7	21	4	0	0	24	4	0	95	
7:50 AM	17	6	10	0	0	0	0	0	4	21	5	0	2	23	5	0	93	
7:55 AM	20	3	18	0	0	0	0	0	1	29	8	0	0	30	2	0	111	862
8:00 AM	22	3	11	0	0	0	1	0	4	18	5	0	1	17	0	0	82	917
8:05 AM	18	4	8	0	0	0	0	0	3	19	5	0	2	16	4	0	79	944
8:10 AM	12	0	5	0	1	1	0	0	0	19	5	0	0	18	3	0	64	954
8:15 AM	10	1	2	0	1	0	1	0	0	27	10	0	0	20	1	0	73	970
8:20 AM	24	2	10	0	0	0	0	0	0	22	7	0	0	17	2	0	84	988
8:25 AM	12	1	5	0	0	1	0	0	0	17	2	0	2	18	0	0	58	967
8:30 AM	10	3	5	0	0	0	2	0	1	14	4	0	2	14	0	0	55	949
8:35 AM	6	1	3	0	0	1	2	0	0	14	6	0	1	18	1	0	53	929
8:40 AM	11	0	9	0	0	1	0	0	1	18	4	0	2	17	1	0	64	911
8:45 AM	5	1	10	0	0	0	1	0	2	18	5	0	0	12	0	0	54	870
8:50 AM	12	3	5	0	1	0	3	0	4	23	2	0	2	13	0	0	68	845
8:55 AM	17	1	9	0	0	0	3	0	0	25	5	0	1	19	0	0	80	814

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	228	44	164	0	0	0	0	0	48	284	68	0	8	308	44	0	1196
Heavy Trucks	4	0	0		0	0	0		0	8	0		0	24	0		36
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	2	0		0	0	0		2
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/29/2018 3:44 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

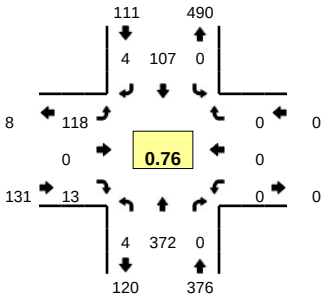
LOCATION: Fairview Industrial Dr SE -- Marietta St SE

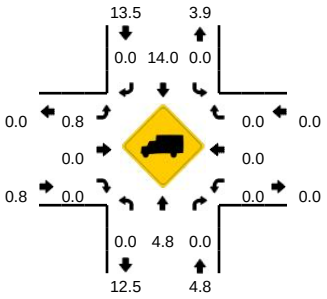
QC JOB #: 14711015

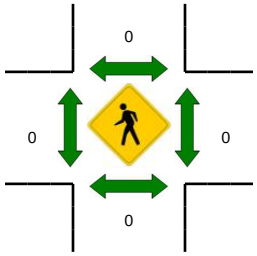
CITY/STATE: Salem, OR

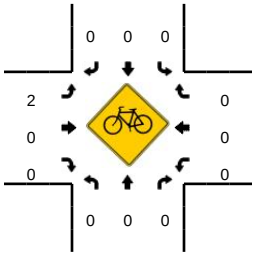
DATE: Wed, May 16 2018

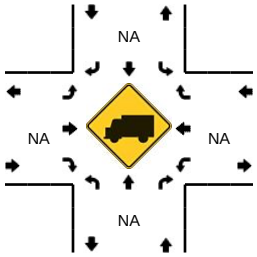
Peak-Hour: 7:20 AM -- 8:20 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

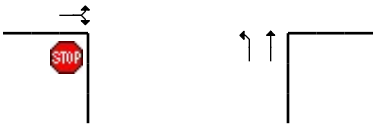


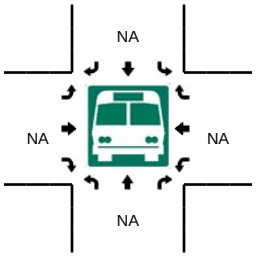












5-Min Count Period Beginning At	Fairview Industrial Dr SE (Northbound)				Fairview Industrial Dr SE (Southbound)				Marietta St SE (Eastbound)				Marietta St SE (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	20	0	0	0	3	0	0	4	0	0	0	0	0	0	0	27	
7:05 AM	0	24	0	0	0	7	0	0	0	0	0	0	0	0	0	0	31	
7:10 AM	1	20	0	0	0	5	0	0	6	0	0	0	0	0	0	0	32	
7:15 AM	0	24	0	0	0	6	1	0	5	0	0	0	0	0	0	0	36	
7:20 AM	1	24	0	0	0	14	0	0	10	0	1	0	0	0	0	0	50	
7:25 AM	0	23	0	0	0	6	0	0	13	0	1	0	0	0	0	0	43	
7:30 AM	0	29	0	0	0	12	0	0	6	0	0	0	0	0	0	0	47	
7:35 AM	1	34	0	0	0	9	0	0	3	0	2	0	0	0	0	0	49	
7:40 AM	1	34	0	0	0	10	0	0	12	0	3	0	0	0	0	0	60	
7:45 AM	0	40	0	0	0	10	0	0	14	0	0	0	0	0	0	0	64	
7:50 AM	0	45	0	0	0	6	1	0	17	0	2	0	0	0	0	0	71	
7:55 AM	0	38	0	0	0	14	0	0	13	0	2	0	0	0	0	0	67	577
8:00 AM	0	24	0	0	0	5	2	0	9	0	1	0	0	0	0	0	41	591
8:05 AM	0	24	0	0	0	7	1	0	9	0	0	0	0	0	0	0	41	601
8:10 AM	0	25	0	0	0	6	0	0	3	0	1	0	0	0	0	0	35	604
8:15 AM	1	32	0	0	0	8	0	0	9	0	0	0	0	0	0	0	50	618
8:20 AM	1	25	0	0	0	5	1	0	10	0	0	0	0	0	0	0	42	610
8:25 AM	0	22	0	0	0	9	0	0	4	0	0	0	0	0	0	0	35	602
8:30 AM	0	20	0	0	0	5	0	0	5	0	0	0	0	0	0	0	30	585
8:35 AM	0	24	0	0	0	8	1	0	5	0	0	0	0	0	0	0	38	574
8:40 AM	1	17	0	0	0	4	0	0	6	0	0	0	0	0	0	0	28	542
8:45 AM	0	16	0	0	0	12	1	0	5	0	0	0	0	0	0	0	34	512
8:50 AM	1	24	0	0	0	5	0	0	4	0	0	0	0	0	0	0	34	475
8:55 AM	0	19	0	0	0	7	1	0	5	0	0	0	0	0	0	0	32	440

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	492	0	0	0	120	4	0	176	0	16	0	0	0	0	0	808
Heavy Trucks	0	20	0		0	8	0		0	0	0		0	0	0		28
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/29/2018 3:44 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

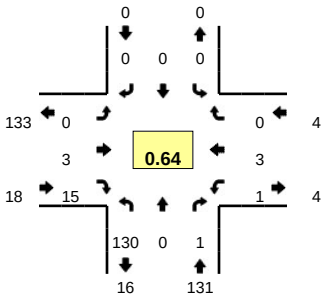
LOCATION: 27th Ave SE -- Strong Rd SE

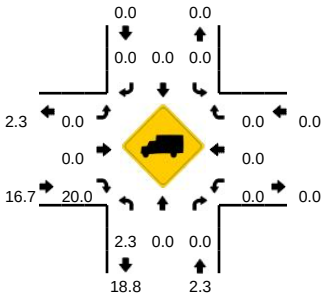
QC JOB #: 14711005

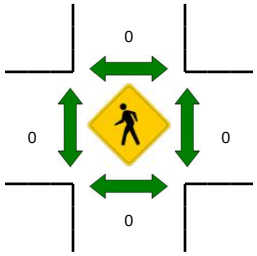
CITY/STATE: Salem, OR

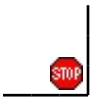
DATE: Wed, May 16 2018

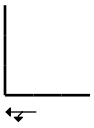
Peak-Hour: 7:45 AM -- 8:45 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

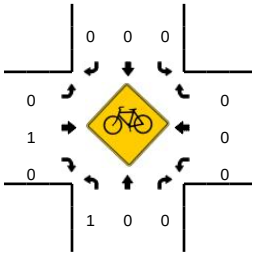


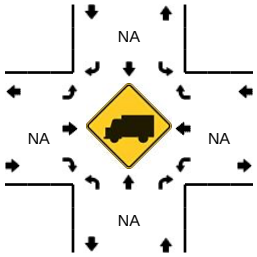


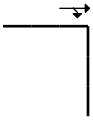


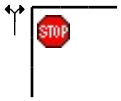


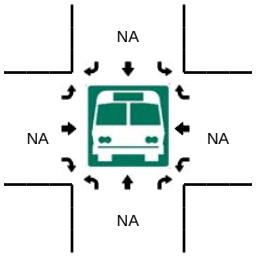












5-Min Count Period Beginning At	27th Ave SE (Northbound)				27th Ave SE (Southbound)				Strong Rd SE (Eastbound)				Strong Rd SE (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	4	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	5	
7:05 AM	7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	8	
7:10 AM	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	
7:15 AM	8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	9	
7:20 AM	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	
7:25 AM	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	
7:30 AM	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	
7:35 AM	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	
7:40 AM	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	5	
7:45 AM	16	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	18	
7:50 AM	20	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	22	
7:55 AM	17	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	20	129
8:00 AM	14	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	15	139
8:05 AM	9	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	11	142
8:10 AM	5	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	7	143
8:15 AM	10	0	0	0	0	0	0	0	0	0	3	0	1	0	0	0	14	148
8:20 AM	8	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	9	151
8:25 AM	7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	8	149
8:30 AM	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	151
8:35 AM	9	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	10	149
8:40 AM	5	0	0	0	0	0	0	0	0	1	3	0	0	0	0	0	9	153
8:45 AM	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	138
8:50 AM	7	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	9	125
8:55 AM	7	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	8	113

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	212	0	4	0	0	0	0	0	0	4	20	0	0	0	0	0	240
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/29/2018 3:44 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: 27th Ave SE -- Marietta St SE

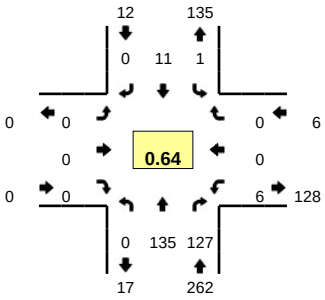
QC JOB #: 14711007

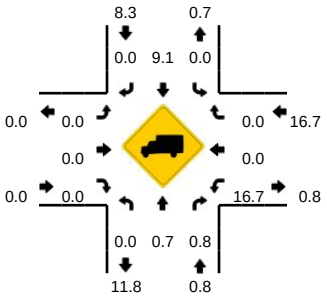
CITY/STATE: Salem, OR

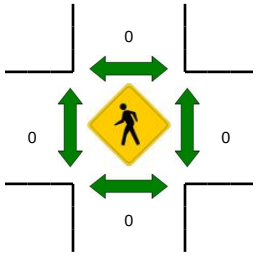
DATE: Wed, May 16 2018

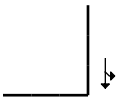
Peak-Hour: 7:20 AM -- 8:20 AM

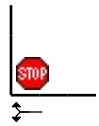
Peak 15-Min: 7:45 AM -- 8:00 AM

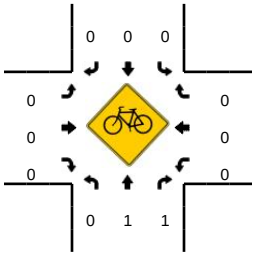


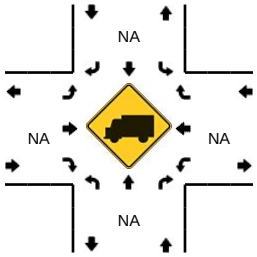


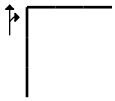


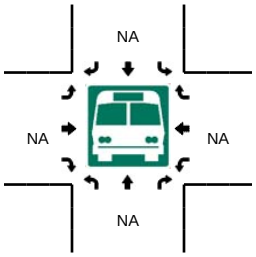












5-Min Count Period Beginning At	27th Ave SE (Northbound)				27th Ave SE (Southbound)				Marietta St SE (Eastbound)				Marietta St SE (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	4	2	0	0	1	0	0	0	0	0	0	0	0	0	0	7	
7:05 AM	0	7	3	0	0	0	0	0	0	0	0	0	0	0	0	0	10	
7:10 AM	0	6	5	0	0	0	0	0	0	0	0	0	0	0	0	0	11	
7:15 AM	0	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	16	
7:20 AM	0	7	13	0	0	0	0	0	0	0	0	0	1	0	0	0	21	
7:25 AM	0	11	9	0	0	0	0	0	0	0	0	0	0	0	0	0	20	
7:30 AM	0	8	7	0	0	0	0	0	0	0	0	0	0	0	0	0	15	
7:35 AM	0	12	6	0	0	0	0	0	0	0	0	0	1	0	0	0	19	
7:40 AM	0	6	13	0	1	0	0	0	0	0	0	0	1	0	0	0	21	
7:45 AM	0	18	15	0	0	1	0	0	0	0	0	0	1	0	0	0	35	
7:50 AM	0	23	18	0	0	1	0	0	0	0	0	0	1	0	0	0	43	
7:55 AM	0	14	15	0	0	3	0	0	0	0	0	0	0	0	0	0	32	250
8:00 AM	0	12	9	0	0	0	0	0	0	0	0	0	0	0	0	0	21	264
8:05 AM	0	9	7	0	0	2	0	0	0	0	0	0	1	0	0	0	19	273
8:10 AM	0	5	6	0	0	0	0	0	0	0	0	0	0	0	0	0	11	273
8:15 AM	0	10	9	0	0	4	0	0	0	0	0	0	0	0	0	0	23	280
8:20 AM	0	8	9	0	0	2	0	0	0	0	0	0	1	0	0	0	20	279
8:25 AM	0	7	4	0	0	0	0	0	0	0	0	0	0	0	0	0	11	270
8:30 AM	0	9	5	0	0	0	0	0	0	0	0	0	0	0	0	0	14	269
8:35 AM	0	10	6	0	0	1	0	0	0	0	0	0	1	0	0	0	18	268
8:40 AM	0	3	6	0	0	3	0	0	0	0	0	0	0	0	0	0	12	259
8:45 AM	0	3	2	0	0	0	0	0	0	0	0	0	2	0	0	0	7	231
8:50 AM	0	8	3	0	0	1	0	0	0	0	0	0	1	0	0	0	13	201
8:55 AM	0	7	7	0	0	1	0	0	0	0	0	0	0	0	0	0	15	184

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	220	192	0	0	20	0	0	0	0	0	0	8	0	0	0	440
Heavy Trucks	0	0	0		0	0	0		0	0	0		4	0	0		4
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/29/2018 3:44 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

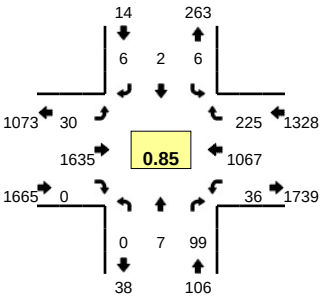
LOCATION: 27th Ave SE -- Kuebler Blvd

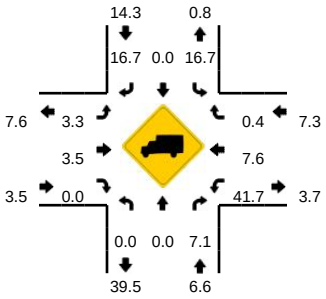
CITY/STATE: Salem, OR

QC JOB #: 14711009

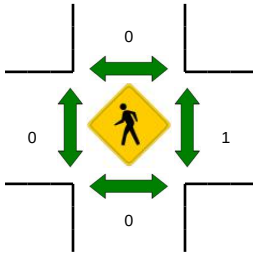
DATE: Wed, May 16 2018

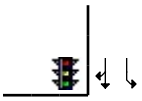
Peak-Hour: 7:10 AM -- 8:10 AM
Peak 15-Min: 7:40 AM -- 7:55 AM

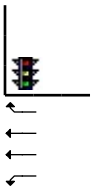


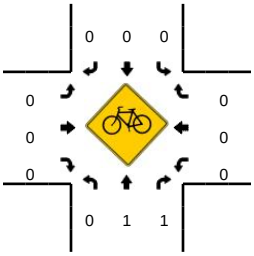


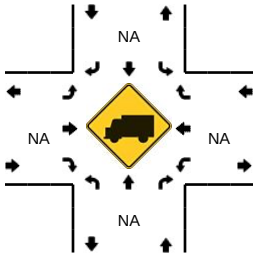
Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

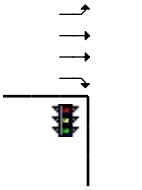


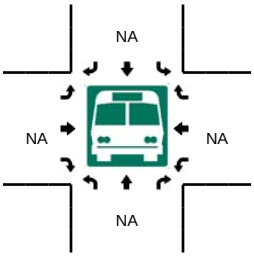












5-Min Count Period Beginning At	27th Ave SE (Northbound)				27th Ave SE (Southbound)				Kuebler Blvd (Eastbound)				Kuebler Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	6	0	1	0	0	0	1	83	0	0	2	66	4	0	163	
7:05 AM	0	0	7	0	0	0	0	0	1	121	0	0	3	63	7	0	202	
7:10 AM	0	0	6	0	0	0	0	0	2	154	0	0	2	68	9	0	241	
7:15 AM	0	0	6	0	0	0	0	0	0	136	0	0	5	96	16	0	259	
7:20 AM	0	1	5	0	0	0	0	0	4	120	0	0	0	71	14	0	215	
7:25 AM	0	0	5	0	0	0	0	0	1	126	0	0	2	80	19	0	233	
7:30 AM	0	0	10	0	0	0	0	0	1	126	0	0	4	80	17	0	238	
7:35 AM	0	0	11	0	0	0	1	0	3	146	0	0	3	70	14	0	248	
7:40 AM	0	1	13	0	0	0	0	1	2	154	0	0	2	101	21	0	295	
7:45 AM	0	0	10	0	0	1	1	0	4	165	0	0	6	110	25	0	322	
7:50 AM	0	2	15	0	1	0	1	0	5	141	0	0	2	97	30	0	294	
7:55 AM	0	1	6	0	2	1	1	0	3	141	0	0	4	102	29	0	290	3000
8:00 AM	0	1	6	0	0	0	1	0	3	122	0	0	1	97	16	0	247	3084
8:05 AM	0	1	6	0	2	0	1	0	2	104	0	0	5	95	15	0	231	3113
8:10 AM	0	0	4	0	0	0	3	0	2	126	1	0	1	91	11	0	239	3111
8:15 AM	0	0	4	0	1	0	0	0	2	117	0	0	3	89	15	0	231	3083
8:20 AM	1	0	8	0	5	0	1	0	1	94	0	0	3	96	15	0	224	3092
8:25 AM	0	0	4	0	0	0	0	0	1	90	0	0	3	73	11	0	182	3041
8:30 AM	0	0	4	0	1	0	0	0	2	84	0	0	3	82	13	0	189	2992
8:35 AM	0	0	5	0	0	0	1	0	1	95	0	0	4	103	15	0	224	2968
8:40 AM	0	0	3	0	2	0	1	0	2	76	0	0	5	93	7	0	189	2862
8:45 AM	0	0	2	0	1	0	1	0	0	110	0	0	1	83	8	0	206	2746
8:50 AM	0	0	7	0	1	1	2	0	2	100	0	0	7	95	9	0	224	2676
8:55 AM	0	0	4	0	0	0	0	0	3	91	1	0	4	90	11	0	204	2590

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	12	152	0	4	4	8	4	44	1840	0	0	40	1232	304	0	3644
Heavy Trucks	0	0	8		0	0	4		0	52	0		12	100	0		176
Pedestrians		0				0				0				4			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/29/2018 3:44 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

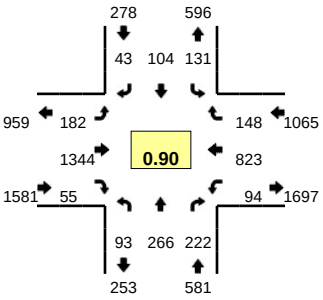
LOCATION: Battle Creek Rd SE -- Kuebler Blvd

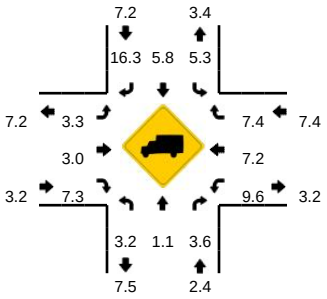
QC JOB #: 14711011

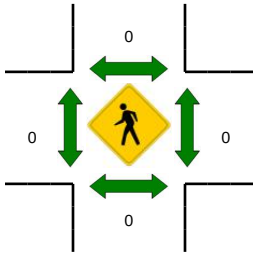
CITY/STATE: Salem, OR

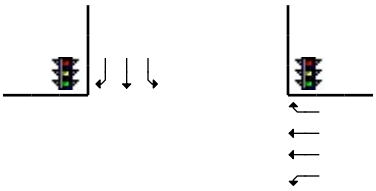
DATE: Wed, May 16 2018

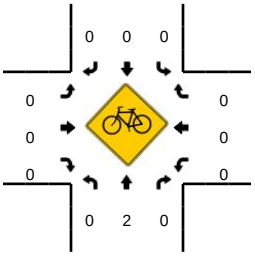
Peak-Hour: 7:10 AM -- 8:10 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

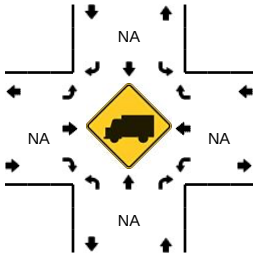


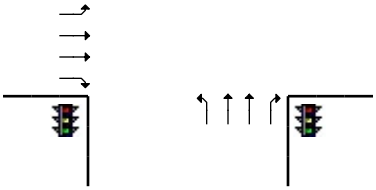


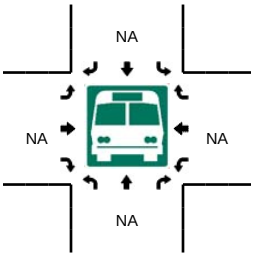












5-Min Count Period Beginning At	Battle Creek Rd SE (Northbound)				Battle Creek Rd SE (Southbound)				Kuebler Blvd (Eastbound)				Kuebler Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	6	14	13	0	7	1	2	0	10	67	2	0	5	50	5	0	182	
7:05 AM	9	17	13	0	12	6	0	0	6	111	8	0	4	49	4	0	239	
7:10 AM	8	34	20	0	14	6	1	0	19	111	4	0	4	61	6	0	288	
7:15 AM	2	26	24	0	12	8	5	0	10	99	3	0	9	68	14	0	280	
7:20 AM	6	22	15	0	11	10	2	0	8	112	5	0	4	66	8	0	269	
7:25 AM	5	16	19	0	13	8	2	0	19	113	4	0	5	52	9	0	265	
7:30 AM	10	24	23	0	6	3	1	0	16	95	5	0	13	56	8	0	260	
7:35 AM	7	23	13	0	12	12	6	0	12	141	4	0	5	66	9	0	310	
7:40 AM	12	27	19	0	13	3	3	0	15	125	5	0	6	68	13	0	309	
7:45 AM	9	24	25	0	6	14	4	0	17	128	3	0	9	73	27	0	339	
7:50 AM	9	16	16	0	13	10	5	0	18	128	2	0	7	80	14	0	318	
7:55 AM	7	19	9	0	9	11	6	0	16	123	7	0	9	87	18	0	321	3380
8:00 AM	13	18	25	0	12	13	4	0	19	80	9	0	11	69	12	0	285	3483
8:05 AM	5	17	14	0	10	6	4	0	13	89	4	0	12	77	10	0	261	3505
8:10 AM	6	12	8	0	10	9	5	0	8	110	4	0	11	85	9	0	277	3494
8:15 AM	6	17	14	0	10	6	3	0	16	76	4	0	7	69	7	0	235	3449
8:20 AM	6	20	22	0	2	5	6	0	16	75	6	0	8	64	7	0	237	3417
8:25 AM	4	15	10	0	7	5	2	0	4	72	5	0	12	72	11	0	219	3371
8:30 AM	2	12	10	0	9	8	4	0	6	59	6	0	13	51	9	0	189	3300
8:35 AM	9	13	15	0	6	11	7	0	6	75	3	0	13	68	12	0	238	3228
8:40 AM	9	18	13	0	8	9	6	0	8	54	3	0	10	81	14	0	233	3152
8:45 AM	9	15	6	0	17	16	6	0	11	82	4	0	11	67	4	0	248	3061
8:50 AM	8	30	18	0	8	13	4	0	9	62	13	0	9	62	12	0	248	2991
8:55 AM	10	15	19	0	11	13	6	0	11	73	5	0	8	87	8	0	266	2936

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	100	236	200	0	112	140	60	0	204	1516	48	0	100	960	236	0	3912
Heavy Trucks	0	8	4		4	8	4		4	44	0		4	60	20		160
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad Stopped Buses																	

Comments:

Report generated on 5/29/2018 3:44 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Reed Rd SE -- Battle Creek Rd SE

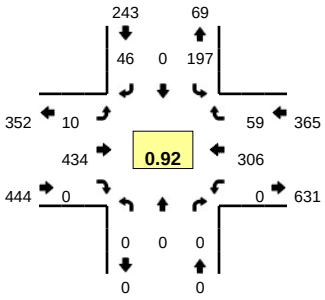
CITY/STATE: Salem, OR

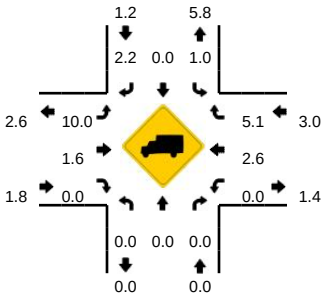
QC JOB #: 14711002

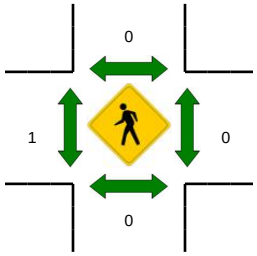
DATE: Wed, May 16 2018

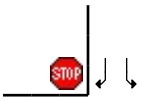
Peak-Hour: 4:30 PM -- 5:30 PM

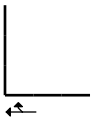
Peak 15-Min: 5:05 PM -- 5:20 PM

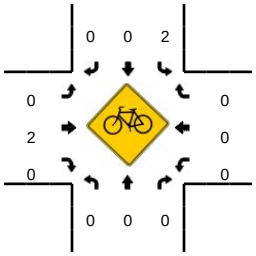


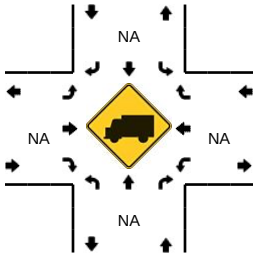


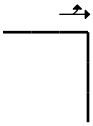


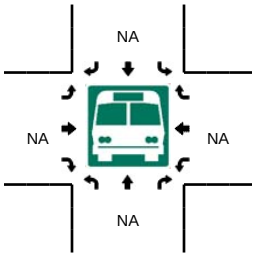












5-Min Count Period Beginning At	Reed Rd SE (Northbound)				Reed Rd SE (Southbound)				Battle Creek Rd SE (Eastbound)				Battle Creek Rd SE (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	15	0	2	0	0	26	0	0	0	21	3	0	67	
4:05 PM	0	0	0	0	22	0	2	0	1	35	0	0	0	30	2	0	92	
4:10 PM	0	0	0	0	18	0	1	0	0	23	0	0	0	20	6	0	68	
4:15 PM	0	0	0	0	17	0	4	0	0	33	0	0	0	27	8	0	89	
4:20 PM	0	0	0	0	8	0	1	0	0	37	0	0	0	29	5	0	80	
4:25 PM	0	0	0	0	16	0	5	0	0	25	0	0	0	25	5	0	76	
4:30 PM	0	0	0	0	15	0	3	0	2	36	0	0	0	27	2	0	85	
4:35 PM	0	0	0	0	26	0	6	0	2	29	0	0	0	22	7	0	92	
4:40 PM	0	0	0	0	21	0	4	0	0	35	0	0	0	20	6	0	86	
4:45 PM	0	0	0	0	8	0	2	0	0	38	0	0	0	21	5	0	74	
4:50 PM	0	0	0	0	13	0	3	0	2	27	0	0	0	23	8	0	76	
4:55 PM	0	0	0	0	13	0	5	0	0	39	0	0	0	24	6	0	87	972
5:00 PM	0	0	0	0	18	0	6	0	0	43	0	0	0	26	2	0	95	1000
5:05 PM	0	0	0	0	25	0	4	0	1	33	0	0	0	26	4	0	93	1001
5:10 PM	0	0	0	0	18	0	5	0	1	35	0	0	0	25	3	0	87	1020
5:15 PM	0	0	0	0	12	0	3	0	1	53	0	0	0	34	3	0	106	1037
5:20 PM	0	0	0	0	15	0	1	0	1	43	0	0	0	23	7	0	90	1047
5:25 PM	0	0	0	0	13	0	4	0	0	23	0	0	0	35	6	0	81	1052
5:30 PM	0	0	0	0	8	0	6	0	3	26	0	0	0	27	9	0	79	1046
5:35 PM	0	0	0	0	16	0	6	0	1	20	0	0	0	28	7	0	78	1032
5:40 PM	0	0	0	0	12	0	3	0	0	35	0	0	0	28	2	0	80	1026
5:45 PM	0	0	0	0	9	0	1	0	1	35	0	0	0	35	3	0	84	1036
5:50 PM	0	0	0	0	8	0	2	0	4	29	0	0	0	23	3	0	69	1029
5:55 PM	0	0	0	0	9	0	2	0	2	20	0	1	0	17	2	0	53	995

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	220	0	48	0	12	484	0	0	0	340	40	0	1144
Heavy Trucks	0	0	0		0	0	0		0	4	0		0	4	8		16
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/29/2018 3:44 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

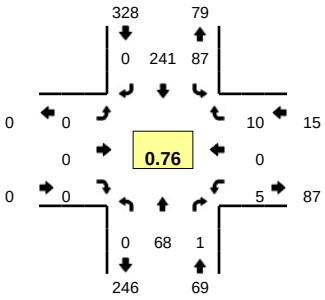
LOCATION: Reed Rd SE -- Strong Rd SE

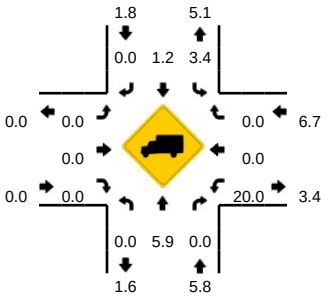
QC JOB #: 14711004

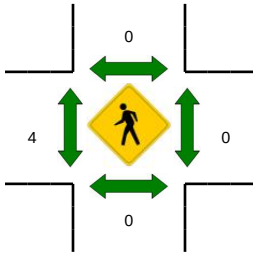
CITY/STATE: Salem, OR

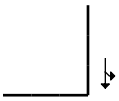
DATE: Wed, May 16 2018

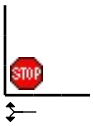
Peak-Hour: 4:25 PM -- 5:25 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

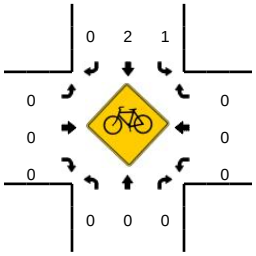


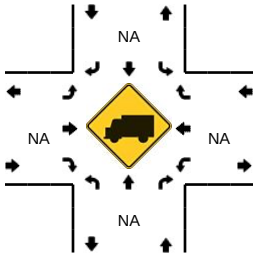


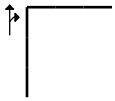


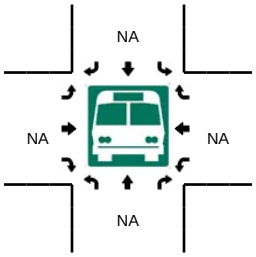












5-Min Count Period Beginning At	Reed Rd SE (Northbound)				Reed Rd SE (Southbound)				Strong Rd SE (Eastbound)				Strong Rd SE (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	3	0	0	11	21	0	0	0	0	0	0	0	0	0	0	35	
4:05 PM	0	2	0	0	3	24	0	0	0	0	0	0	1	0	2	0	32	
4:10 PM	0	6	0	0	7	15	0	0	0	0	0	0	0	0	3	0	31	
4:15 PM	0	8	0	0	5	19	0	0	0	0	0	0	0	0	2	0	34	
4:20 PM	0	4	0	0	2	12	0	0	0	0	0	0	1	0	4	0	23	
4:25 PM	0	5	0	0	5	16	0	0	0	0	0	0	1	0	0	0	27	
4:30 PM	0	4	0	0	7	29	0	0	0	0	0	0	0	0	2	0	42	
4:35 PM	0	9	0	0	1	25	0	0	0	0	0	0	1	0	0	0	36	
4:40 PM	0	4	0	0	3	21	0	0	0	0	0	0	0	0	1	0	29	
4:45 PM	0	6	0	0	3	12	0	1	0	0	0	0	0	0	2	0	24	
4:50 PM	0	11	1	0	6	20	0	0	0	0	0	0	0	0	2	0	40	
4:55 PM	0	3	0	0	0	15	0	0	0	0	0	0	0	0	2	0	20	373
5:00 PM	0	5	0	0	17	24	0	0	0	0	0	0	1	0	0	0	47	385
5:05 PM	0	4	0	0	16	28	0	0	0	0	0	0	2	0	0	0	50	403
5:10 PM	0	4	0	0	14	20	0	0	0	0	0	0	0	0	1	0	39	411
5:15 PM	0	4	0	0	6	12	0	0	0	0	0	0	0	0	0	0	22	399
5:20 PM	0	9	0	0	8	19	0	0	0	0	0	0	0	0	0	0	36	412
5:25 PM	0	4	1	0	5	12	0	0	0	0	0	0	2	0	1	0	25	410
5:30 PM	0	8	0	0	6	16	0	0	0	0	0	0	2	0	0	0	32	400
5:35 PM	0	12	1	0	4	21	0	0	0	0	0	0	0	0	0	0	38	402
5:40 PM	0	2	0	0	6	13	0	0	0	0	0	0	1	0	2	0	24	397
5:45 PM	0	1	0	0	2	9	0	0	0	0	0	0	1	0	3	0	16	389
5:50 PM	0	8	0	0	2	8	0	0	0	0	0	0	0	0	1	0	19	368
5:55 PM	0	4	2	0	3	11	0	0	0	0	0	0	0	0	1	0	21	369

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	52	0	0	188	288	0	0	0	0	0	0	12	0	4	0	544
Heavy Trucks	0	8	0		0	0	0		0	0	0		4	0	0		12
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	1	0		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/29/2018 3:44 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Reed Rd SE -- Fairview Industrial Dr SE

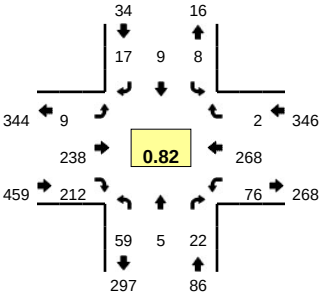
QC JOB #: 14711014

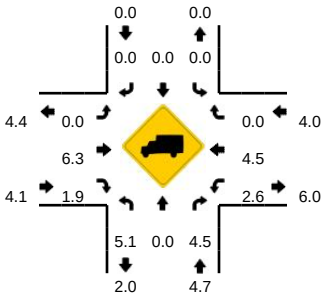
CITY/STATE: Marion, OR

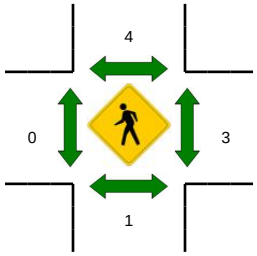
DATE: Wed, May 16 2018

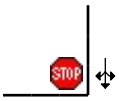
Peak-Hour: 4:15 PM -- 5:15 PM

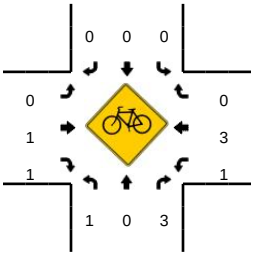
Peak 15-Min: 5:00 PM -- 5:15 PM

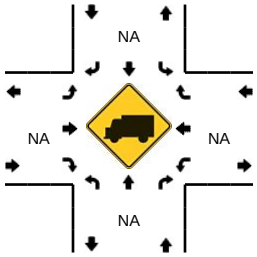


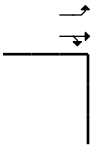


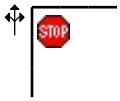


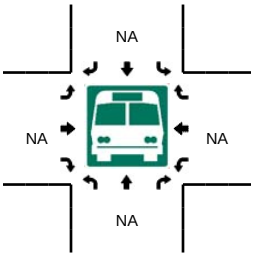












5-Min Count Period Beginning At	Reed Rd SE (Northbound)				Reed Rd SE (Southbound)				Fairview Industrial Dr SE (Eastbound)				Fairview Industrial Dr SE (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	3	0	0	0	1	0	2	0	1	15	23	0	5	25	0	0	75	
4:05 PM	3	0	2	0	0	1	2	0	0	34	13	0	11	24	0	0	90	
4:10 PM	5	0	1	0	1	1	2	0	0	21	11	0	7	16	1	0	66	
4:15 PM	5	0	4	0	0	0	1	0	0	19	23	0	2	17	1	0	72	
4:20 PM	7	1	3	0	0	0	0	0	1	20	7	0	4	14	0	0	57	
4:25 PM	2	0	1	0	0	1	1	0	1	18	18	0	5	13	0	0	60	
4:30 PM	6	0	2	0	1	2	2	0	0	19	26	0	10	31	0	0	99	
4:35 PM	8	0	2	0	1	1	1	0	2	18	15	0	5	28	1	0	82	
4:40 PM	4	0	0	0	1	0	0	0	0	16	17	0	4	21	0	0	63	
4:45 PM	6	0	3	0	0	0	3	0	2	17	7	0	9	21	0	0	68	
4:50 PM	7	3	2	0	1	1	2	0	0	21	15	0	7	24	0	0	83	
4:55 PM	4	0	2	0	0	1	2	0	1	16	10	0	5	18	0	0	59	874
5:00 PM	3	1	1	0	1	1	1	0	1	30	24	0	12	28	0	0	103	902
5:05 PM	2	0	0	0	2	2	4	0	0	28	26	0	7	34	0	0	105	917
5:10 PM	5	0	2	0	1	0	0	0	1	16	24	0	6	19	0	0	74	925
5:15 PM	3	0	0	0	1	1	2	0	1	11	12	0	2	16	0	0	49	902
5:20 PM	6	0	2	0	1	0	3	0	2	18	18	0	5	10	0	0	65	910
5:25 PM	4	1	2	0	1	0	0	0	0	15	10	0	3	13	0	0	49	899
5:30 PM	4	0	0	0	1	1	1	0	0	8	18	0	4	30	0	0	67	867
5:35 PM	8	0	4	0	1	1	0	0	0	16	12	0	10	20	0	0	72	857
5:40 PM	3	1	0	0	0	1	0	0	0	5	8	0	6	14	0	0	38	832
5:45 PM	1	1	1	0	0	0	1	0	0	10	9	0	0	9	0	0	32	796
5:50 PM	5	0	0	0	0	0	0	0	1	3	7	0	3	9	0	0	28	741
5:55 PM	4	0	0	0	0	0	0	0	1	11	10	0	2	6	0	0	34	716

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	40	4	12	0	16	12	20	0	8	296	296	0	100	324	0	0	1128
Heavy Trucks	4	0	0		0	0	0		0	20	0		0	16	0		40
Pedestrians		0				0				0				0			0
Bicycles	1	0	3		0	0	0		0	0	0		0	1	0		5
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/29/2018 3:44 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Fairview Industrial Dr SE -- Marietta St SE

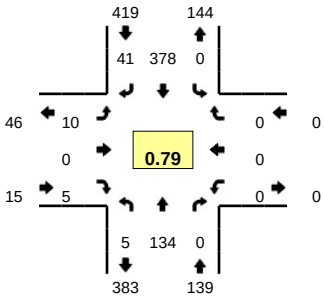
QC JOB #: 14711016

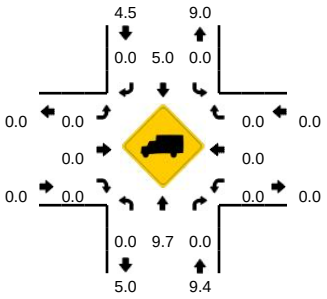
CITY/STATE: Salem, OR

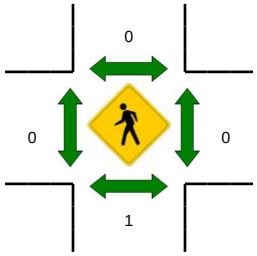
DATE: Wed, May 16 2018

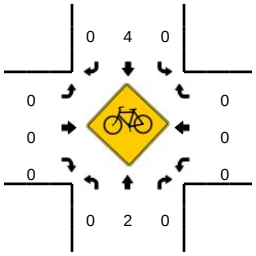
Peak-Hour: 4:10 PM -- 5:10 PM

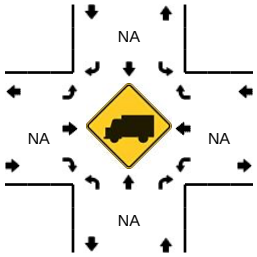
Peak 15-Min: 4:55 PM -- 5:10 PM

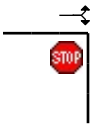


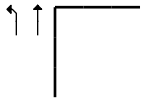


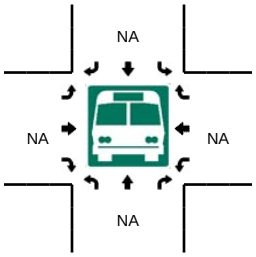












5-Min Count Period Beginning At	Fairview Industrial Dr SE (Northbound)				Fairview Industrial Dr SE (Southbound)				Marietta St SE (Eastbound)				Marietta St SE (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	7	0	0	0	18	2	0	0	0	0	0	0	0	0	0	28	
4:05 PM	2	9	0	0	0	41	1	0	1	0	2	0	0	0	0	0	56	
4:10 PM	0	8	0	0	0	35	3	0	2	0	0	0	0	0	0	0	48	
4:15 PM	0	9	0	0	0	35	1	0	0	0	0	0	0	0	0	0	45	
4:20 PM	0	5	0	0	0	26	3	0	2	0	0	0	0	0	0	0	36	
4:25 PM	1	9	0	0	0	23	0	0	1	0	0	0	0	0	0	0	34	
4:30 PM	0	12	0	0	0	34	7	0	0	0	1	0	0	0	0	0	54	
4:35 PM	1	9	0	0	0	30	1	0	0	0	2	0	0	0	0	0	43	
4:40 PM	1	13	0	0	0	30	2	0	0	0	0	0	0	0	0	0	46	
4:45 PM	1	17	0	0	0	23	1	0	1	0	1	0	0	0	0	0	44	
4:50 PM	0	11	0	0	0	27	3	0	1	0	0	0	0	0	0	0	42	
4:55 PM	0	14	0	0	0	23	2	0	1	0	1	0	0	0	0	0	41	517
5:00 PM	0	16	0	0	0	50	10	0	0	0	0	0	0	0	0	0	76	565
5:05 PM	1	11	0	0	0	42	8	0	2	0	0	0	0	0	0	0	64	573
5:10 PM	0	7	0	0	0	27	4	0	1	0	1	0	0	0	0	0	40	565
5:15 PM	0	10	0	0	0	25	5	0	0	0	0	0	0	0	0	0	40	560
5:20 PM	0	7	0	0	0	21	3	0	1	0	0	0	0	0	0	0	32	556
5:25 PM	0	2	0	0	0	25	3	0	1	0	0	0	0	0	0	0	31	553
5:30 PM	0	13	0	0	0	19	1	0	0	0	0	0	0	0	0	0	33	532
5:35 PM	0	7	0	0	0	30	0	0	0	0	1	0	0	0	0	0	38	527
5:40 PM	0	6	0	0	0	12	3	0	1	0	0	0	0	0	0	0	22	503
5:45 PM	1	8	0	0	0	13	2	0	0	0	0	0	0	0	0	0	24	483
5:50 PM	0	5	0	0	0	11	1	0	0	0	0	0	0	0	0	0	17	458
5:55 PM	0	5	0	0	0	15	0	0	2	0	0	0	0	0	0	0	22	439

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	164	0	0	0	460	80	0	12	0	4	0	0	0	0	0	724
Heavy Trucks	0	8	0		0	24	0		0	0	0		0	0	0		32
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	3	0		0	0	0		0	0	0		3
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/29/2018 3:44 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

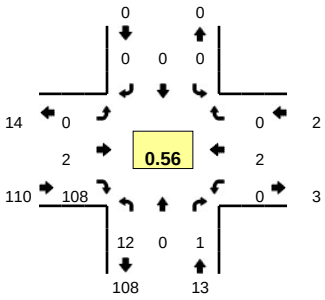
LOCATION: 27th Ave SE -- Strong Rd SE

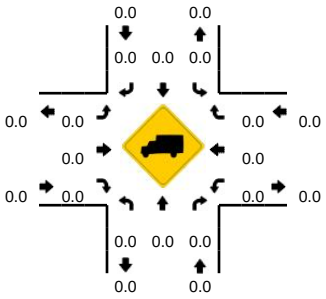
QC JOB #: 14711006

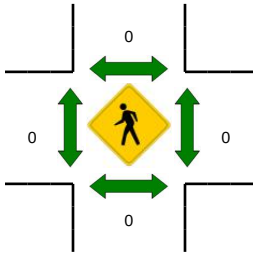
CITY/STATE: Salem, OR

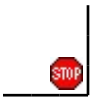
DATE: Wed, May 16 2018

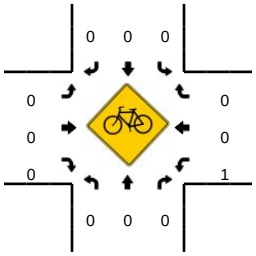
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

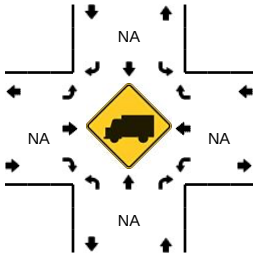


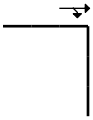


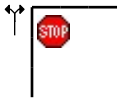


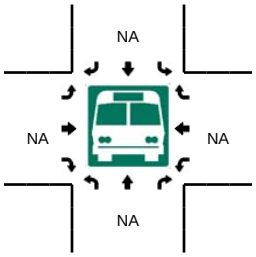












5-Min Count Period Beginning At	27th Ave SE (Northbound)				27th Ave SE (Southbound)				Strong Rd SE (Eastbound)				Strong Rd SE (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	7	
4:05 PM	4	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	12	
4:10 PM	2	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	10	
4:15 PM	4	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	9	
4:20 PM	3	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	5	
4:25 PM	1	0	0	0	0	0	0	0	0	0	3	0	0	1	0	0	5	
4:30 PM	2	0	0	0	0	0	0	0	0	1	8	0	0	0	0	0	11	
4:35 PM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	4	
4:40 PM	2	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	5	
4:45 PM	3	0	0	0	0	0	0	0	0	0	5	0	0	1	0	0	9	
4:50 PM	1	0	0	0	0	0	0	0	0	1	4	0	0	0	0	0	6	
4:55 PM	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	3	86
5:00 PM	0	0	1	0	0	0	0	0	0	0	15	0	0	0	0	0	16	95
5:05 PM	0	0	0	0	0	0	0	0	0	0	24	0	0	1	0	0	25	108
5:10 PM	1	0	0	0	0	0	0	0	0	0	14	0	0	0	0	0	15	113
5:15 PM	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	7	111
5:20 PM	0	0	0	0	0	0	0	0	0	1	8	0	0	0	0	0	9	115
5:25 PM	2	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	8	118
5:30 PM	1	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	9	116
5:35 PM	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	8	120
5:40 PM	3	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	10	125
5:45 PM	3	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	5	121
5:50 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	116
5:55 PM	0	0	0	0	0	0	0	0	0	1	7	0	0	0	0	0	8	121

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	0	4	0	0	0	0	0	0	0	212	0	0	4	0	0	224
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/29/2018 3:44 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

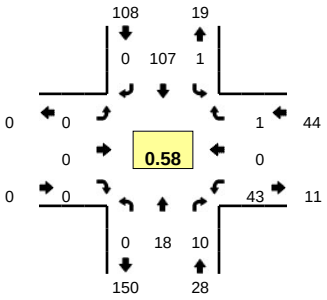
LOCATION: 27th Ave SE -- Marietta St SE

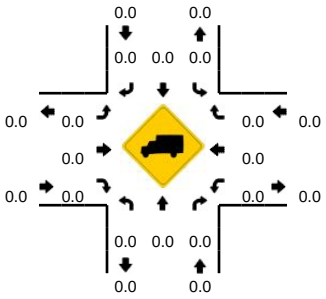
QC JOB #: 14711008

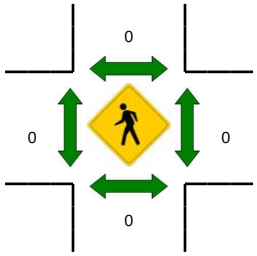
CITY/STATE: Salem, OR

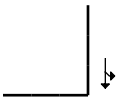
DATE: Wed, May 16 2018

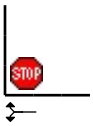
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

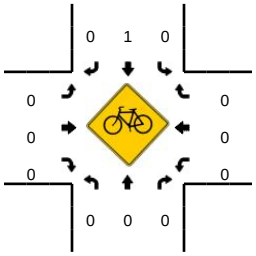


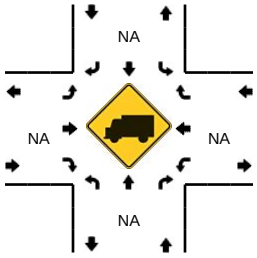


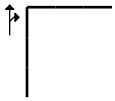


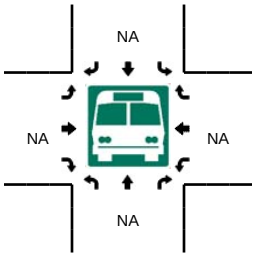












5-Min Count Period Beginning At	27th Ave SE (Northbound)				27th Ave SE (Southbound)				Marietta St SE (Eastbound)				Marietta St SE (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	0	7	0	0	0	0	0	0	3	0	0	0	10	
4:05 PM	0	4	4	0	0	5	0	0	0	0	0	0	4	0	0	0	17	
4:10 PM	0	2	0	0	0	9	0	0	0	0	0	0	2	0	0	0	13	
4:15 PM	0	3	0	0	0	6	0	0	0	0	0	0	2	0	0	0	11	
4:20 PM	0	3	3	0	0	2	0	0	0	0	0	0	2	0	0	0	10	
4:25 PM	0	1	2	0	0	2	0	0	0	0	0	0	0	0	0	0	5	
4:30 PM	0	2	0	0	0	7	0	0	0	0	0	0	5	0	0	0	14	
4:35 PM	0	0	2	0	0	5	0	0	0	0	0	0	4	0	0	0	11	
4:40 PM	0	2	0	0	0	2	0	0	0	0	0	0	3	0	0	0	7	
4:45 PM	0	4	1	0	0	6	0	0	0	0	0	0	0	0	0	0	11	
4:50 PM	0	1	1	0	0	4	0	0	0	0	0	0	4	0	0	0	10	
4:55 PM	0	3	1	0	0	2	0	0	0	0	0	0	2	0	0	0	8	127
5:00 PM	0	2	1	0	0	12	0	0	0	0	0	0	4	0	0	0	19	136
5:05 PM	0	1	1	0	0	26	0	0	0	0	0	0	12	0	0	0	40	159
5:10 PM	0	1	0	0	0	12	0	0	0	0	0	0	4	0	1	0	18	164
5:15 PM	0	0	0	0	0	10	0	0	0	0	0	0	5	0	0	0	15	168
5:20 PM	0	0	0	0	0	8	0	0	0	0	0	0	2	0	0	0	10	168
5:25 PM	0	2	2	0	0	5	0	0	0	0	0	0	6	0	0	0	15	178
5:30 PM	0	1	0	0	0	9	0	0	0	0	0	0	1	0	0	0	11	175
5:35 PM	0	0	3	0	1	7	0	0	0	0	0	0	0	0	0	0	11	175
5:40 PM	0	3	0	0	0	6	0	0	0	0	0	0	3	0	0	0	12	180
5:45 PM	0	3	0	0	0	1	0	0	0	0	0	0	2	0	0	0	6	175
5:50 PM	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0	0	3	168
5:55 PM	0	0	1	0	0	7	0	0	0	0	0	0	2	0	0	0	10	170

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	16	8	0	0	200	0	0	0	0	0	0	80	0	4	0	308
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/29/2018 3:44 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

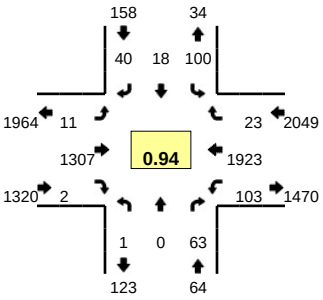
LOCATION: 27th Ave SE -- Kuebler Blvd

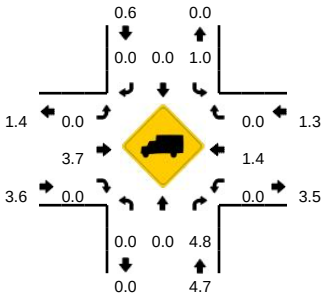
QC JOB #: 14711010

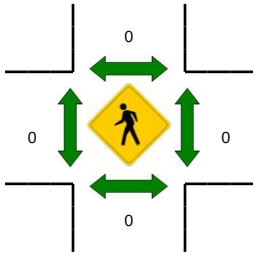
CITY/STATE: Salem, OR

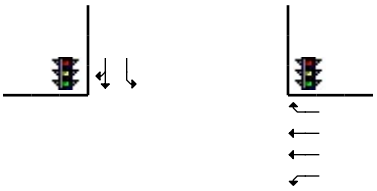
DATE: Wed, May 16 2018

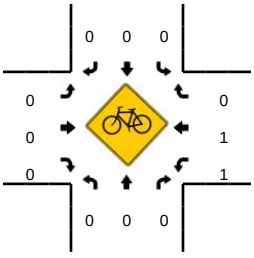
Peak-Hour: 4:40 PM -- 5:40 PM
Peak 15-Min: 5:10 PM -- 5:25 PM

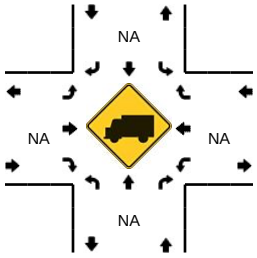


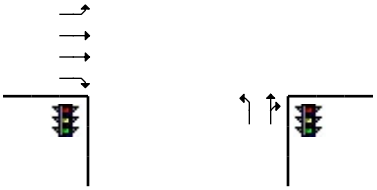


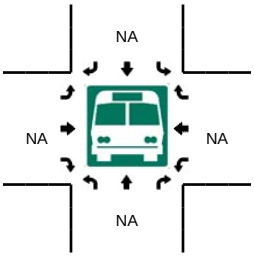












5-Min Count Period Beginning At	27th Ave SE (Northbound)				27th Ave SE (Southbound)				Kuebler Blvd (Eastbound)				Kuebler Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	3	0	5	0	2	0	0	106	0	0	10	128	1	0	255	
4:05 PM	0	0	5	0	5	0	4	0	1	96	0	0	4	157	5	0	277	
4:10 PM	0	0	9	0	8	0	1	0	0	106	1	0	6	155	2	0	288	
4:15 PM	0	0	2	0	10	1	0	0	1	113	0	0	4	138	3	0	272	
4:20 PM	0	0	3	0	2	0	3	0	4	117	0	0	7	166	5	0	307	
4:25 PM	0	0	3	0	2	1	0	0	1	85	0	0	9	151	2	0	254	
4:30 PM	0	0	8	0	8	1	4	0	4	114	1	0	9	120	1	0	270	
4:35 PM	0	1	6	0	10	1	0	0	1	110	0	0	4	155	0	0	288	
4:40 PM	0	0	10	0	1	0	1	0	2	94	0	0	12	158	1	0	279	
4:45 PM	0	0	9	0	5	0	1	0	2	131	0	0	6	152	4	0	310	
4:50 PM	0	0	4	0	6	1	4	0	0	118	0	0	4	145	4	0	286	
4:55 PM	0	0	4	0	3	1	1	0	1	104	0	0	9	168	0	0	291	3377
5:00 PM	0	0	4	0	4	1	3	0	0	115	0	0	9	154	3	0	293	3415
5:05 PM	0	0	8	0	34	3	11	0	1	98	1	0	9	127	3	0	295	3433
5:10 PM	0	0	4	0	11	3	2	0	1	109	0	0	8	187	0	0	325	3470
5:15 PM	0	0	9	0	12	0	3	0	0	105	0	0	14	183	0	0	326	3524
5:20 PM	1	0	3	0	7	4	4	0	0	110	0	0	5	169	1	0	304	3521
5:25 PM	0	0	3	0	3	1	5	0	1	112	0	0	11	158	2	0	296	3563
5:30 PM	0	0	3	0	6	2	3	0	1	94	1	0	8	168	1	0	287	3580
5:35 PM	0	0	2	0	8	2	2	0	2	117	0	0	8	154	4	0	299	3591
5:40 PM	0	1	6	0	4	0	1	0	3	99	0	0	13	136	1	0	264	3576
5:45 PM	0	0	3	0	4	0	2	0	2	87	0	0	3	159	2	0	262	3528
5:50 PM	0	1	3	0	1	0	1	0	1	94	0	0	6	172	0	0	279	3521
5:55 PM	0	0	4	0	4	1	2	0	0	98	0	0	5	130	1	0	245	3475

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	0	64	0	120	28	36	0	4	1296	0	0	108	2156	4	0	3820
Heavy Trucks	0	0	4		0	0	0		0	40	0		0	32	0		76
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/29/2018 3:44 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

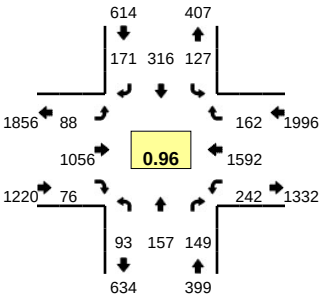
LOCATION: Battle Creek Rd SE -- Kuebler Blvd

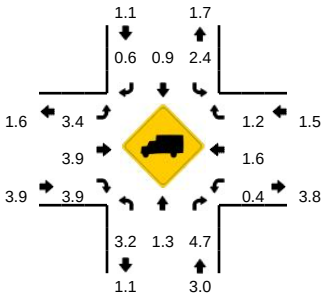
QC JOB #: 14711012

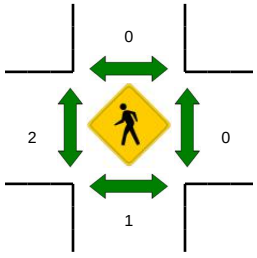
CITY/STATE: Salem, OR

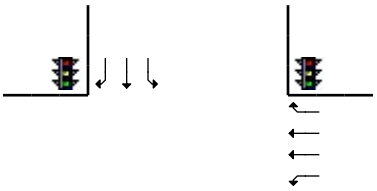
DATE: Wed, May 16 2018

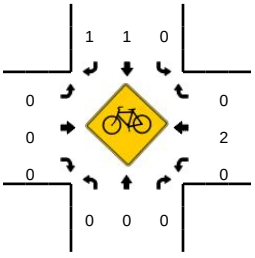
Peak-Hour: 4:40 PM -- 5:40 PM
Peak 15-Min: 5:10 PM -- 5:25 PM

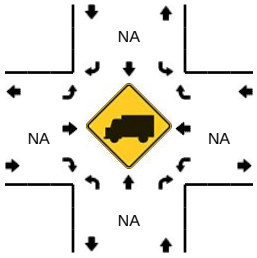


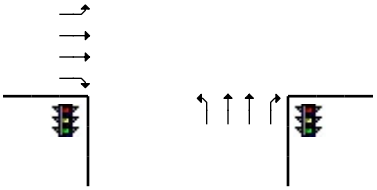


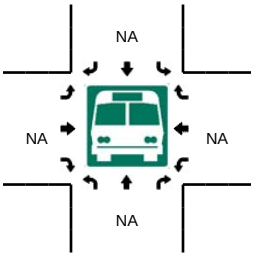












5-Min Count Period Beginning At	Battle Creek Rd SE (Northbound)				Battle Creek Rd SE (Southbound)				Kuebler Blvd (Eastbound)				Kuebler Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	12	19	7	0	12	19	9	0	1	71	7	0	19	103	7	0	286	
4:05 PM	8	9	13	0	4	29	26	0	8	74	4	0	19	107	16	0	317	
4:10 PM	7	8	11	0	13	17	11	0	4	101	6	0	11	157	16	0	362	
4:15 PM	9	12	12	0	11	22	16	0	7	87	3	0	21	103	13	0	316	
4:20 PM	7	13	11	0	10	34	7	0	5	84	7	0	18	125	17	0	338	
4:25 PM	6	6	5	0	6	25	12	0	6	97	4	0	12	127	20	0	326	
4:30 PM	6	8	14	0	14	18	14	0	5	81	7	0	22	95	21	0	305	
4:35 PM	6	9	17	0	9	35	22	0	10	77	5	0	9	105	11	0	315	
4:40 PM	11	10	9	0	9	18	16	0	11	92	7	0	25	128	11	0	347	
4:45 PM	9	10	11	0	14	24	10	0	7	107	4	0	15	144	13	0	368	
4:50 PM	17	15	14	0	20	30	14	0	7	79	5	0	17	111	12	0	341	
4:55 PM	8	6	12	0	9	27	16	0	11	80	11	0	19	133	11	0	343	3964
5:00 PM	2	13	10	0	13	27	9	0	6	100	6	0	14	134	14	0	348	4026
5:05 PM	10	12	14	0	15	35	18	0	4	80	6	0	19	116	18	0	347	4056
5:10 PM	3	14	13	0	9	34	20	0	7	64	4	0	34	118	10	0	330	4024
5:15 PM	7	15	11	0	10	25	19	0	8	105	8	0	22	159	14	0	403	4111
5:20 PM	6	14	13	0	13	28	14	0	6	90	9	0	17	151	11	0	372	4145
5:25 PM	9	20	15	0	3	32	16	0	9	68	4	0	18	99	15	0	308	4127
5:30 PM	1	12	13	0	8	15	8	0	5	94	7	0	21	168	20	0	372	4194
5:35 PM	10	16	14	0	4	21	11	0	7	97	5	0	21	131	13	0	350	4229
5:40 PM	7	17	15	0	9	36	16	0	5	76	5	0	19	93	16	0	314	4196
5:45 PM	6	14	11	0	7	24	12	0	8	68	5	0	22	144	12	0	333	4161
5:50 PM	9	10	11	0	5	17	6	0	2	86	3	0	22	136	18	0	325	4145
5:55 PM	7	10	9	0	11	24	10	0	5	65	8	0	19	98	10	0	276	4078

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	64	172	148	0	128	348	212	0	84	1036	84	0	292	1712	140	0	4420
Heavy Trucks	0	4	4		0	4	0		4	48	4		0	40	0		108
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/29/2018 3:44 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

SE Battle Creek Rd & SE Reed Rd
January 1, 2012 through December 31, 2016

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2016														
REAR-END	0	0	2	2	0	0	0	1	1	2	0	2	0	0
TURNING MOVEMENTS	0	1	0	1	0	1	0	1	0	0	1	1	0	0
2016 TOTAL	0	1	2	3	0	1	0	2	1	2	1	3	0	0
YEAR: 2015														
REAR-END	0	1	0	1	0	2	0	1	0	1	0	1	0	0
2015 TOTAL	0	1	0	1	0	2	0	1	0	1	0	1	0	0
YEAR: 2014														
FIXED / OTHER OBJECT	0	1	0	1	0	1	0	0	1	0	1	1	0	1
2014 TOTAL	0	1	0	1	0	1	0	0	1	0	1	1	0	1
YEAR: 2012														
FIXED / OTHER OBJECT	0	0	1	1	0	0	0	0	0	0	1	1	0	1
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2012 TOTAL	0	0	2	2	0	0	0	1	0	1	1	2	0	1
FINAL TOTAL	0	3	4	7	0	4	0	4	2	4	3	7	0	2

Disclaimer: A higher number of crashes may be reported as of 2011 compared to prior years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

SE Strong Rd & SE Reed Rd
January 1, 2012 through December 31, 2016

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2016														
FIXED / OTHER OBJECT	0	0	1	1	0	0	0	0	1	0	1	1	0	1
2016 TOTAL	0	0	1	1	0	0	0	0	1	0	1	1	0	1
FINAL TOTAL	0	0	1	1	0	0	0	0	1	0	1	1	0	1

Disclaimer: A higher number of crashes may be reported as of 2011 compared to prior years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CRASH SUMMARIES BY YEAR BY COLLISION TYPE

SE Fairview Industrial Rd & SE Reed Rd

January 1, 2012 through December 31, 2016

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2016														
ANGLE	0	1	0	1	0	1	0	1	0	1	0	1	0	0
2016 TOTAL	0	1	0	1	0	1	0	1	0	1	0	1	0	0
YEAR: 2014														
ANGLE	0	1	0	1	0	1	0	0	1	1	0	1	0	0
2014 TOTAL	0	1	0	1	0	1	0	0	1	1	0	1	0	0
FINAL TOTAL	0	2	0	2	0	2	0	1	1	2	0	2	0	0

Disclaimer: A higher number of crashes may be reported as of 2011 compared to prior years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CRASH SUMMARIES BY YEAR BY COLLISION TYPE

SE Fairview Industrial Rd & SE Marietta St

January 1, 2012 through December 31, 2016

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2015														
TURNING MOVEMENTS	0	1	0	1	0	1	0	1	0	1	0	1	0	0
2015 TOTAL	0	1	0	1	0	1	0	1	0	1	0	1	0	0
YEAR: 2012														
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2012 TOTAL	0	0	1	1	0	0	0	1	0	1	0	1	0	0
FINAL TOTAL	0	1	1	2	0	1	0	2	0	2	0	2	0	0

Disclaimer: A higher number of crashes may be reported as of 2011 compared to prior years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

SE Strong Rd & SE 27th Ave
January 1, 2012 through December 31, 2016

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR:														
TOTAL														
FINAL TOTAL														

Disclaimer: A higher number of crashes may be reported as of 2011 compared to prior years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CRASH SUMMARIES BY YEAR BY COLLISION TYPE

SE Kuebler Blvd & SE 27th Ave

January 1, 2012 through December 31, 2016

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2016														
TURNING MOVEMENTS	0	0	1	1	0	0	0	0	1	1	0	1	0	0
2016 TOTAL	0	0	1	1	0	0	0	0	1	1	0	1	0	0
YEAR: 2015														
REAR-END	0	2	1	3	0	3	0	1	2	3	0	3	0	0
TURNING MOVEMENTS	0	1	0	1	0	1	0	1	0	1	0	1	0	0
2015 TOTAL	0	3	1	4	0	4	0	2	2	4	0	4	0	0
YEAR: 2014														
REAR-END	0	2	3	5	0	2	0	3	2	5	0	5	0	0
2014 TOTAL	0	2	3	5	0	2	0	3	2	5	0	5	0	0
YEAR: 2013														
REAR-END	0	2	2	4	0	4	1	3	1	3	1	4	0	0
2013 TOTAL	0	2	2	4	0	4	1	3	1	3	1	4	0	0
YEAR: 2012														
REAR-END	0	1	1	2	0	1	0	2	0	1	1	2	0	0
TURNING MOVEMENTS	0	1	0	1	0	2	0	1	0	1	0	1	0	0
2012 TOTAL	0	2	1	3	0	3	0	3	0	2	1	3	0	0
FINAL TOTAL	0	9	8	17	0	13	1	11	6	15	2	17	0	0

Disclaimer: A higher number of crashes may be reported as of 2011 compared to prior years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CRASH SUMMARIES BY YEAR BY COLLISION TYPE

SE Kuebler Blvd & SE Battle Creek Rd

January 1, 2012 through December 31, 2016

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2016														
ANGLE	0	2	0	2	0	2	0	2	0	1	1	2	0	0
REAR-END	0	2	2	4	0	2	1	3	1	4	0	4	0	0
SIDESWIPE - OVERTAKING	0	0	1	1	0	0	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	0	2	2	0	0	0	2	0	2	0	2	0	0
2016 TOTAL	0	4	5	9	0	4	1	8	1	8	1	9	0	0
YEAR: 2015														
HEAD-ON	0	1	0	1	0	1	0	1	0	0	1	1	0	0
REAR-END	0	3	5	8	0	5	0	5	1	7	1	8	0	0
TURNING MOVEMENTS	0	1	0	1	0	1	0	0	1	0	1	1	0	0
2015 TOTAL	0	5	5	10	0	7	0	6	2	7	3	10	0	0
YEAR: 2014														
REAR-END	0	2	2	4	0	2	0	4	0	4	0	4	0	0
TURNING MOVEMENTS	0	1	2	3	0	1	0	3	0	3	0	3	0	0
2014 TOTAL	0	3	4	7	0	3	0	7	0	7	0	7	0	0
YEAR: 2013														
REAR-END	0	4	2	6	0	5	0	3	3	6	0	6	0	0
TURNING MOVEMENTS	0	1	1	2	0	1	0	0	2	1	1	2	0	0
2013 TOTAL	0	5	3	8	0	6	0	3	5	7	1	8	0	0
YEAR: 2012														
REAR-END	0	3	2	5	0	10	0	4	1	5	0	5	0	0
TURNING MOVEMENTS	0	1	0	1	0	2	0	1	0	0	1	1	0	0
2012 TOTAL	0	4	2	6	0	12	0	5	1	5	1	6	0	0
FINAL TOTAL	0	21	19	40	0	32	1	29	9	34	6	40	0	0

Disclaimer: A higher number of crashes may be reported as of 2011 compared to prior years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

18-392 Strong at 27th Subdivision TIA

Vistro File: J:\...\18-392 Reed Rd Subdivision - TIA.vistro
Report File: J:\...\18-392 AM Existing.pdf

Scenario 1 AM Existing
6/19/2018

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Battle Creek Rd at Reed Rd	Two-way stop	HCM 6th Edition	SB Left	0.105	19.5	C
11	Reed Rd at Strong Rd	Two-way stop	HCM 6th Edition	WB Left	0.009	13.6	B
16	Reed Rd at Fairview Industrial Dr	Two-way stop	HCM 6th Edition	NB Left	0.833	116.4	F
21	Fairview Industrial Dr at Marietta St	Two-way stop	HCM 6th Edition	EB Left	0.353	17.8	C
31	27th Ave at Marietta St	Two-way stop	HCM 6th Edition	WB Left	0.014	10.8	B
36	27th at Kuebler Blvd	Signalized	HCM 6th Edition	SB Left	0.729	19.6	B
41	Keubler Blvd at Battle Creek Rd	Signalized	HCM 6th Edition	NB Right	0.807	39.0	D

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Battle Creek Rd at Reed Rd

Control Type:	Two-way stop	Delay (sec / veh):	19.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.105

Intersection Setup

Name	Reed Rd		Battle Creek Rd		Battle Creek Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Reed Rd		Battle Creek Rd		Battle Creek Rd	
Base Volume Input [veh/h]	25	6	34	233	361	264
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.20	3.20	7.10	7.10	3.80	3.80
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	25	6	34	233	361	264
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	2	10	69	106	78
Total Analysis Volume [veh/h]	29	7	40	274	425	311
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.10	0.01	0.05	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	19.51	12.13	9.46	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.35	0.04	1.72	1.72	0.00	0.00
95th-Percentile Queue Length [ft]	8.67	1.04	43.09	43.09	0.00	0.00
d_A, Approach Delay [s/veh]	18.08		1.21		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.95					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 11: Reed Rd at Strong Rd

Control Type:	Two-way stop	Delay (sec / veh):	13.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.009

Intersection Setup

Name	Reed Rd		Reed Rd		Strong Rd	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Reed Rd		Reed Rd		Strong Rd	
Base Volume Input [veh/h]	302	0	12	43	4	115
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.60	1.60	5.50	5.50	1.70	1.70
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	302	0	12	43	4	115
Peak Hour Factor	0.7500	0.7500	0.7500	0.7500	0.7500	0.7500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	101	0	4	14	1	38
Total Analysis Volume [veh/h]	403	0	16	57	5	153
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.01	0.24
d_M, Delay for Movement [s/veh]	0.00	0.00	8.21	0.00	13.62	12.37
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh]	0.00	0.00	0.21	0.21	0.96	0.96
95th-Percentile Queue Length [ft]	0.00	0.00	5.14	5.14	24.03	24.03
d_A, Approach Delay [s/veh]	0.00		1.80		12.41	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	3.30					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 16: Reed Rd at Fairview Industrial Dr

Control Type:	Two-way stop	Delay (sec / veh):	116.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.833

Intersection Setup

Name	Reed Rd			Reed Rd			Fairview Industrial Dr			Fairview Industrial Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Reed Rd			Reed Rd			Fairview Industrial Dr			Fairview Industrial Dr		
Base Volume Input [veh/h]	220	27	105	3	1	3	24	255	60	8	255	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.30	2.30	2.30	0.00	0.00	0.00	4.70	4.70	4.70	5.20	5.20	5.20
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	220	27	105	3	1	3	24	255	60	8	255	27
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	66	8	32	1	0	1	7	77	18	2	77	8
Total Analysis Volume [veh/h]	265	33	127	4	1	4	29	307	72	10	307	33
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.83	0.10	0.18	0.02	0.00	0.01	0.02	0.00	0.00	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	116.42	116.22	110.25	21.93	16.62	10.29	8.06	0.00	0.00	8.12	0.00	0.00
Movement LOS	F	F	F	C	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	15.71	15.71	15.71	0.08	0.08	0.08	0.07	0.00	0.00	0.03	0.00	0.00
95th-Percentile Queue Length [ft]	392.67	392.67	392.67	2.09	2.09	2.09	1.85	0.00	0.00	0.65	0.00	0.00
d_A, Approach Delay [s/veh]	114.56			16.17			0.57			0.23		
Approach LOS	F			C			A			A		
d_I, Intersection Delay [s/veh]	41.23											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 21: Fairview Industrial Dr at Marietta St

Control Type:	Two-way stop	Delay (sec / veh):	17.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.353

Intersection Setup

Name	Fairview Industrial Dr		Fairview Industrial Dr		Marietta St	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Fairview Industrial Dr		Fairview Industrial Dr		Marietta St	
Base Volume Input [veh/h]	4	372	107	4	118	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.80	4.80	13.50	13.50	0.80	0.80
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	372	107	4	118	13
Peak Hour Factor	0.7600	0.7600	0.7600	0.7600	0.7600	0.7600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	122	35	1	39	4
Total Analysis Volume [veh/h]	5	489	141	5	155	17
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.35	0.02
d_M, Delay for Movement [s/veh]	7.55	0.00	0.00	0.00	17.76	13.51
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh]	0.01	0.00	0.00	0.00	1.70	1.70
95th-Percentile Queue Length [ft]	0.27	0.00	0.00	0.00	42.48	42.48
d_A, Approach Delay [s/veh]	0.08		0.00		17.34	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	3.72					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 31: 27th Ave at Marietta St

Control Type:	Two-way stop	Delay (sec / veh):	10.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.014

Intersection Setup

Name	27th Ave		Strong Rd		Marietta St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	27th Ave		Strong Rd		Marietta St	
Base Volume Input [veh/h]	135	127	1	11	6	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.80	0.80	8.30	8.30	16.70	16.70
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	135	127	1	11	6	0
Peak Hour Factor	0.6400	0.6400	0.6400	0.6400	0.6400	0.6400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	53	50	0	4	2	0
Total Analysis Volume [veh/h]	211	198	2	17	9	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	8.23	0.00	10.76	10.25
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh]	0.00	0.00	0.05	0.05	0.04	0.04
95th-Percentile Queue Length [ft]	0.00	0.00	1.30	1.30	1.08	1.08
d_A, Approach Delay [s/veh]	0.00		0.87		10.76	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.26					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 36: 27th at Kuebler Blvd

Control Type:	Signalized	Delay (sec / veh):	19.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.729

Intersection Setup

Name	27th Ave			27th Ave			Kuebler Blvd			Kuebler Blvd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	125.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	200.00	350.00	100.00	175.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	27th Ave			27th Ave			Kuebler Blvd			Kuebler Blvd		
Base Volume Input [veh/h]	0	7	99	6	2	6	30	1635	0	36	1067	225
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	6.60	6.60	6.60	14.30	14.30	14.30	3.50	3.50	3.50	7.30	7.30	7.30
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	7	99	6	2	6	30	1635	0	36	1067	225
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	2	29	2	1	2	9	481	0	11	314	66
Total Analysis Volume [veh/h]	0	8	116	7	2	7	35	1924	0	42	1255	265
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	19	0	9	19	0	34	83	0	9	58	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	21	1	22	3	78	78	4	79	79
g / C, Green / Cycle	0.00	0.17	0.01	0.18	0.03	0.65	0.65	0.03	0.66	0.66
(v / s)_i Volume / Saturation Flow Rate	0.00	0.09	0.00	0.01	0.02	0.61	0.00	0.03	0.41	0.19
s, saturation flow rate [veh/h]	1544	1391	1445	1334	1584	3166	1413	1535	3068	1370
c, Capacity [veh/h]	0	239	13	241	46	2067	923	51	2016	900
d1, Uniform Delay [s]	0.00	45.20	59.23	40.59	57.87	18.44	0.00	57.66	11.94	8.75
k, delay calibration	0.11	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	7.85	31.22	0.29	22.68	2.36	0.00	26.53	0.32	0.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.52	0.54	0.04	0.76	0.93	0.00	0.82	0.62	0.29
d, Delay for Lane Group [s/veh]	0.00	53.05	90.45	40.88	80.54	20.80	0.00	84.19	12.25	8.93
Lane Group LOS	A	D	F	D	F	C	A	F	B	A
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.00	3.89	0.32	0.24	1.34	21.95	0.00	1.64	9.15	2.85
50th-Percentile Queue Length [ft]	0.00	97.20	8.10	6.02	33.60	548.84	0.00	41.09	228.67	71.20
95th-Percentile Queue Length [veh]	0.00	7.00	0.58	0.43	2.42	29.64	0.00	2.96	14.11	5.13
95th-Percentile Queue Length [ft]	0.00	174.97	14.57	10.84	60.48	740.94	0.00	73.96	352.68	128.16

Movement, Approach, & Intersection Results

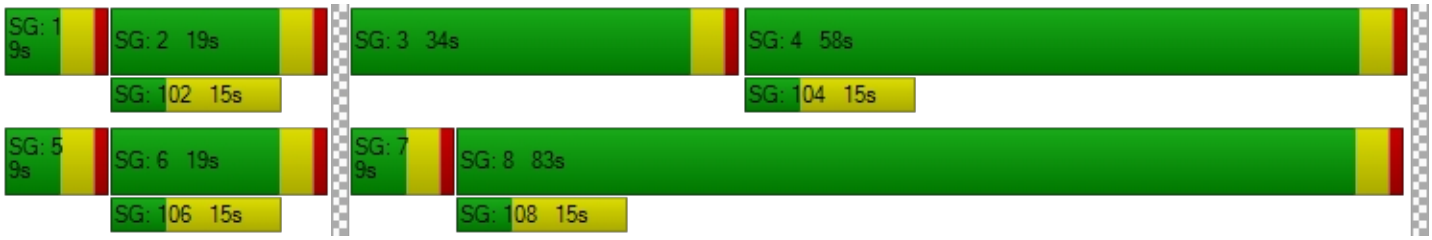
d_M, Delay for Movement [s/veh]	0.00	53.05	53.05	90.45	40.88	40.88	80.54	20.80	0.00	84.19	12.25	8.93
Movement LOS	A	D	D	F	D	D	F	C	A	F	B	A
d_A, Approach Delay [s/veh]	53.05			62.56			21.87			13.62		
Approach LOS	D			E			C			B		
d_I, Intersection Delay [s/veh]	19.58											
Intersection LOS	B											
Intersection V/C	0.729											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.010	2.061	2.992	3.055
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250	1317	900
d_b, Bicycle Delay [s]	45.94	45.94	7.00	18.15
l_b,int, Bicycle LOS Score for Intersection	1.764	1.586	3.176	2.848
Bicycle LOS	A	A	C	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 41: Keubler Blvd at Battle Creek Rd

Control Type:	Signalized	Delay (sec / veh):	39.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.807

Intersection Setup

Name	Battle Creek Rd			Battle Creek Rd			Kuebler Blvd			Kuebler Blvd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	150.00	275.00	100.00	275.00	350.00	100.00	350.00	250.00	100.00	250.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Battle Creek Rd			Battle Creek Rd			Kuebler Blvd			Kuebler Blvd		
Base Volume Input [veh/h]	93	296	222	131	104	43	182	1344	55	94	823	148
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.40	2.40	2.40	7.20	7.20	7.20	3.20	3.20	3.20	7.40	7.40	7.40
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	93	296	222	131	104	43	182	1344	55	94	823	148
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	82	62	36	29	12	51	373	15	26	229	41
Total Analysis Volume [veh/h]	103	329	247	146	116	48	202	1493	61	104	914	164
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	23	0	15	26	0	35	60	0	12	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	21	21	11	24	24	16	54	54	8	46	46
g / C, Green / Cycle	0.07	0.19	0.19	0.10	0.21	0.21	0.15	0.49	0.49	0.07	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.06	0.10	0.17	0.10	0.07	0.04	0.13	0.47	0.04	0.07	0.30	0.12
s, saturation flow rate [veh/h]	1598	3194	1426	1536	1613	1371	1587	3174	1417	1533	3066	1369
c, Capacity [veh/h]	117	600	268	154	347	295	232	1566	699	112	1289	575
d1, Uniform Delay [s]	50.53	40.47	43.91	49.22	36.54	35.14	45.96	26.66	14.75	50.72	26.34	21.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	18.48	3.58	38.22	23.11	2.59	1.18	9.65	4.22	0.05	25.18	0.73	0.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.55	0.92	0.95	0.33	0.16	0.87	0.95	0.09	0.93	0.71	0.29
d, Delay for Lane Group [s/veh]	69.02	44.06	82.13	72.33	39.13	36.33	55.61	30.88	14.81	75.89	27.07	21.27
Lane Group LOS	E	D	F	E	D	D	E	C	B	E	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	3.40	4.32	9.40	4.96	2.89	1.15	6.00	18.65	0.81	3.62	9.78	2.80
50th-Percentile Queue Length [ft]	85.04	108.11	235.00	124.01	72.23	28.69	149.89	466.16	20.30	90.58	244.38	70.07
95th-Percentile Queue Length [veh]	6.12	7.73	14.43	8.61	5.20	2.07	10.01	25.73	1.46	6.52	14.90	5.04
95th-Percentile Queue Length [ft]	153.07	193.37	360.71	215.33	130.01	51.64	250.28	643.21	36.54	163.04	372.57	126.12

Movement, Approach, & Intersection Results

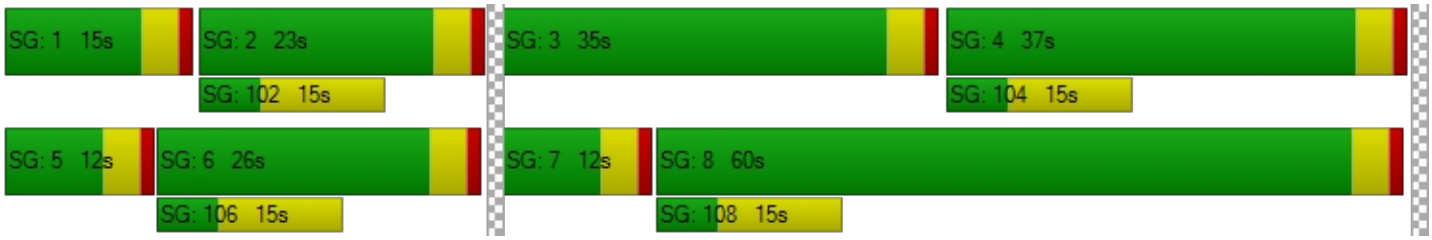
d_M, Delay for Movement [s/veh]	69.02	44.06	82.13	72.33	39.13	36.33	55.61	30.88	14.81	75.89	27.07	21.27
Movement LOS	E	D	F	E	D	D	E	C	B	E	C	C
d_A, Approach Delay [s/veh]	61.69			54.33			33.17			30.56		
Approach LOS	E			D			C			C		
d_I, Intersection Delay [s/veh]	38.99											
Intersection LOS	D											
Intersection V/C	0.807											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	46.37	46.37	46.37	46.37
l_p,int, Pedestrian LOS Score for Intersection	2.498	2.507	2.922	2.963
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	345	400	1018	600
d_b, Bicycle Delay [s]	37.64	35.20	13.25	26.95
l_b,int, Bicycle LOS Score for Intersection	2.120	2.071	3.008	2.535
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



18-392 Strong at 27th Subdivision TIA

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Report File: J:\...\18-392 AM Existing.pdf

Scenario 1 AM Existing
6/19/2018

Turning Movement Volume: Summary

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
1	Battle Creek Rd at Reed Rd	25	6	34	233	361	264	923

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
11	Reed Rd at Strong Rd	302	0	12	43	4	115	476

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Reed Rd at Fairview Industrial Dr	220	27	105	3	1	3	24	255	60	8	255	27	988

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
21	Fairview Industrial Dr at Marietta St	4	372	107	4	118	13	618

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
31	27th Ave at Marietta St	135	127	1	11	6	0	280

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
36	27th at Kuebler Blvd	0	7	99	6	2	6	30	1635	0	36	1067	225	3113

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
41	Keubler Blvd at Battle Creek Rd	93	296	222	131	104	43	182	1344	55	94	823	148	3535

18-392 Strong at 27th Subdivision TIA

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Scenario 1 AM Existing
6/19/2018

Turning Movement Volume: Detail

ID	Intersection Name	Volume Type	Southbound		Eastbound		Westbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
1	Battle Creek Rd at Reed Rd	Final Base	25	6	34	233	361	264	923
		Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		Future Total	**25**	**6**	**34**	**233**	**361**	**264**	**923**

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
11	Reed Rd at Strong Rd	Final Base	302	0	12	43	4	115	476
		Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		Future Total	**302**	**0**	**12**	**43**	**4**	**115**	**476**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Reed Rd at Fairview Industrial Dr	Final Base	220	27	105	3	1	3	24	255	60	8	255	27	988
		Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**220**	**27**	**105**	**3**	**1**	**3**	**24**	**255**	**60**	**8**	**255**	**27**	**988**

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
21	Fairview Industrial Dr at Marietta St	Final Base	4	372	107	4	118	13	618
		Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		Future Total	**4**	**372**	**107**	**4**	**118**	**13**	**618**

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
31	27th Ave at Marietta St	Final Base	135	127	1	11	6	0	280
		Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		Future Total	**135**	**127**	**1**	**11**	**6**	**0**	**280**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
36	27th at Kuebler Blvd	Final Base	0	7	99	6	2	6	30	1635	0	36	1067	225	3113
		Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**0**	**7**	**99**	**6**	**2**	**6**	**30**	**1635**	**0**	**36**	**1067**	**225**	**3113**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
41	Keubler Blvd at Battle Creek Rd	Final Base	93	296	222	131	104	43	182	1344	55	94	823	148	3535
		Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**93**	**296**	**222**	**131**	**104**	**43**	**182**	**1344**	**55**	**94**	**823**	**148**	**3535**

Signal Warrants Report For Intersection 1: Battle Creek Rd at Reed Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	N
1	625	267	31
2	600	256	30
3	588	251	29
4	500	214	25
5	475	203	24
6	425	182	21
7	394	168	20
8	375	160	19
9	300	128	15
10	281	120	14
11	281	120	14
12	269	115	13
13	244	104	12
14	225	96	11
15	225	96	11
16	219	93	11
17	125	53	6
18	69	29	3
19	63	27	3
20	25	11	1
21	19	8	1
22	19	8	1
23	13	5	1
24	13	5	1

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	892	2	31	No	No	No	No	No	No	No	No	No	No
2	2	856	2	30	No	No	No	No	No	No	No	No	No	No
3	2	839	2	29	No	No	No	No	No	No	No	No	No	No
4	2	714	2	25	No	No	No	No	No	No	No	No	No	No
5	2	678	2	24	No	No	No	No	No	No	No	No	No	No
6	2	607	2	21	No	No	No	No	No	No	No	No	No	No
7	2	562	2	20	No	No	No	No	No	No	No	No	No	No
8	2	535	2	19	No	No	No	No	No	No	No	No	No	No
9	2	428	2	15	No	No	No	No	No	No	No	No	No	No
10	2	401	2	14	No	No	No	No	No	No	No	No	No	No
11	2	401	2	14	No	No	No	No	No	No	No	No	No	No
12	2	384	2	13	No	No	No	No	No	No	No	No	No	No
13	2	348	2	12	No	No	No	No	No	No	No	No	No	No
14	2	321	2	11	No	No	No	No	No	No	No	No	No	No
15	2	321	2	11	No	No	No	No	No	No	No	No	No	No
16	2	312	2	11	No	No	No	No	No	No	No	No	No	No
17	2	178	2	6	No	No	No	No	No	No	No	No	No	No
18	2	98	2	3	No	No	No	No	No	No	No	No	No	No
19	2	90	2	3	No	No	No	No	No	No	No	No	No	No
20	2	36	2	1	No	No	No	No	No	No	No	No	No	No
21	2	27	2	1	No	No	No	No	No	No	No	No	No	No
22	2	27	2	1	No	No	No	No	No	No	No	No	No	No
23	2	18	2	1	No	No	No	No	No	No	No	No	No	No
24	2	18	2	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	18.1
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:09
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	31
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	923
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 11: Reed Rd at Strong Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	55	302	119
2	53	290	114
3	52	284	112
4	44	242	95
5	42	230	90
6	37	205	81
7	35	190	75
8	33	181	71
9	26	145	57
10	25	136	54
11	25	136	54
12	24	130	51
13	21	118	46
14	20	109	43
15	20	109	43
16	19	106	42
17	11	60	24
18	6	33	13
19	6	30	12
20	2	12	5
21	2	9	4
22	2	9	4
23	1	6	2
24	1	6	2

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	357	1	119	No	No	No	Yes	No	No	No	No	No	No
2	2	343	1	114	No	No	No	Yes	No	No	No	No	No	No
3	2	336	1	112	No	No	No	Yes	No	No	No	No	No	No
4	2	286	1	95	No	No	No	No	No	No	No	No	No	No
5	2	272	1	90	No	No	No	No	No	No	No	No	No	No
6	2	242	1	81	No	No	No	No	No	No	No	No	No	No
7	2	225	1	75	No	No	No	No	No	No	No	No	No	No
8	2	214	1	71	No	No	No	No	No	No	No	No	No	No
9	2	171	1	57	No	No	No	No	No	No	No	No	No	No
10	2	161	1	54	No	No	No	No	No	No	No	No	No	No
11	2	161	1	54	No	No	No	No	No	No	No	No	No	No
12	2	154	1	51	No	No	No	No	No	No	No	No	No	No
13	2	139	1	46	No	No	No	No	No	No	No	No	No	No
14	2	129	1	43	No	No	No	No	No	No	No	No	No	No
15	2	129	1	43	No	No	No	No	No	No	No	No	No	No
16	2	125	1	42	No	No	No	No	No	No	No	No	No	No
17	2	71	1	24	No	No	No	No	No	No	No	No	No	No
18	2	39	1	13	No	No	No	No	No	No	No	No	No	No
19	2	36	1	12	No	No	No	No	No	No	No	No	No	No
20	2	14	1	5	No	No	No	No	No	No	No	No	No	No
21	2	11	1	4	No	No	No	No	No	No	No	No	No	No
22	2	11	1	4	No	No	No	No	No	No	No	No	No	No
23	2	7	1	2	No	No	No	No	No	No	No	No	No	No
24	2	7	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	3	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	12.4
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:24
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	119
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	476
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 16: Reed Rd at Fairview Industrial Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N, S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	N	S
1	290	339	7	352
2	278	325	7	338
3	273	319	7	331
4	232	271	6	282
5	220	258	5	268
6	197	231	5	239
7	183	214	4	222
8	174	203	4	211
9	139	163	3	169
10	131	153	3	158
11	131	153	3	158
12	125	146	3	151
13	113	132	3	137
14	104	122	3	127
15	104	122	3	127
16	102	119	2	123
17	58	68	1	70
18	32	37	1	39
19	29	34	1	35
20	12	14	0	14
21	9	10	0	11
22	9	10	0	11
23	6	7	0	7
24	6	7	0	7

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	4	629	2	359	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	No
2	4	603	2	345	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	No
3	4	592	2	338	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
4	4	503	2	288	No	Yes	Yes	Yes	No	No	No	No	No	No
5	4	478	2	273	No	No	Yes	Yes	No	No	No	No	No	No
6	4	428	2	244	No	No	Yes	Yes	No	No	No	No	No	No
7	4	397	2	226	No	No	No	Yes	No	No	No	No	No	No
8	4	377	2	215	No	No	No	Yes	No	No	No	No	No	No
9	4	302	2	172	No	No	No	No	No	No	No	No	No	No
10	4	284	2	161	No	No	No	No	No	No	No	No	No	No
11	4	284	2	161	No	No	No	No	No	No	No	No	No	No
12	4	271	2	154	No	No	No	No	No	No	No	No	No	No
13	4	245	2	140	No	No	No	No	No	No	No	No	No	No
14	4	226	2	130	No	No	No	No	No	No	No	No	No	No
15	4	226	2	130	No	No	No	No	No	No	No	No	No	No
16	4	221	2	125	No	No	No	No	No	No	No	No	No	No
17	4	126	2	71	No	No	No	No	No	No	No	No	No	No
18	4	69	2	40	No	No	No	No	No	No	No	No	No	No
19	4	63	2	36	No	No	No	No	No	No	No	No	No	No
20	4	26	2	14	No	No	No	No	No	No	No	No	No	No
21	4	19	2	11	No	No	No	No	No	No	No	No	No	No
22	4	19	2	11	No	No	No	No	No	No	No	No	No	No
23	4	13	2	7	No	No	No	No	No	No	No	No	No	No
24	4	13	2	7	No	No	No	No	No	No	No	No	No	No
Hours Met					2	4	6	8	0	0	0	3	3	0

Warrant 3 Condition A

Orientation	N	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	16.2	114.6
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:01	11:12
Delay Condition Met	No	Yes
Volume on Minor Street Approach During Same Hour	7	352
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	988	988
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	Yes
Warrant Met for Intersection	**Yes**	

Signal Warrants Report For Intersection 21: Fairview Industrial Dr at Marietta St

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	376	111	131
2	361	107	126
3	353	104	123
4	301	89	105
5	286	84	100
6	256	75	89
7	237	70	83
8	226	67	79
9	180	53	63
10	169	50	59
11	169	50	59
12	162	48	56
13	147	43	51
14	135	40	47
15	135	40	47
16	132	39	46
17	75	22	26
18	41	12	14
19	38	11	13
20	15	4	5
21	11	3	4
22	11	3	4
23	8	2	3
24	8	2	3

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	3	487	1	131	No	Yes	Yes	Yes	No	No	No	No	No	No
2	3	468	1	126	No	No	Yes	Yes	No	No	No	No	No	No
3	3	457	1	123	No	No	Yes	Yes	No	No	No	No	No	No
4	3	390	1	105	No	No	No	Yes	No	No	No	No	No	No
5	3	370	1	100	No	No	No	Yes	No	No	No	No	No	No
6	3	331	1	89	No	No	No	No	No	No	No	No	No	No
7	3	307	1	83	No	No	No	No	No	No	No	No	No	No
8	3	293	1	79	No	No	No	No	No	No	No	No	No	No
9	3	233	1	63	No	No	No	No	No	No	No	No	No	No
10	3	219	1	59	No	No	No	No	No	No	No	No	No	No
11	3	219	1	59	No	No	No	No	No	No	No	No	No	No
12	3	210	1	56	No	No	No	No	No	No	No	No	No	No
13	3	190	1	51	No	No	No	No	No	No	No	No	No	No
14	3	175	1	47	No	No	No	No	No	No	No	No	No	No
15	3	175	1	47	No	No	No	No	No	No	No	No	No	No
16	3	171	1	46	No	No	No	No	No	No	No	No	No	No
17	3	97	1	26	No	No	No	No	No	No	No	No	No	No
18	3	53	1	14	No	No	No	No	No	No	No	No	No	No
19	3	49	1	13	No	No	No	No	No	No	No	No	No	No
20	3	19	1	5	No	No	No	No	No	No	No	No	No	No
21	3	14	1	4	No	No	No	No	No	No	No	No	No	No
22	3	14	1	4	No	No	No	No	No	No	No	No	No	No
23	3	10	1	3	No	No	No	No	No	No	No	No	No	No
24	3	10	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					0	1	3	5	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	17.3
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:37
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	131
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	618
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 31: 27th Ave at Marietta St

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	12	262	6
2	12	252	6
3	11	246	6
4	10	210	5
5	9	199	5
6	8	178	4
7	8	165	4
8	7	157	4
9	6	126	3
10	5	118	3
11	5	118	3
12	5	113	3
13	5	102	2
14	4	94	2
15	4	94	2
16	4	92	2
17	2	52	1
18	1	29	1
19	1	26	1
20	0	10	0
21	0	8	0
22	0	8	0
23	0	5	0
24	0	5	0

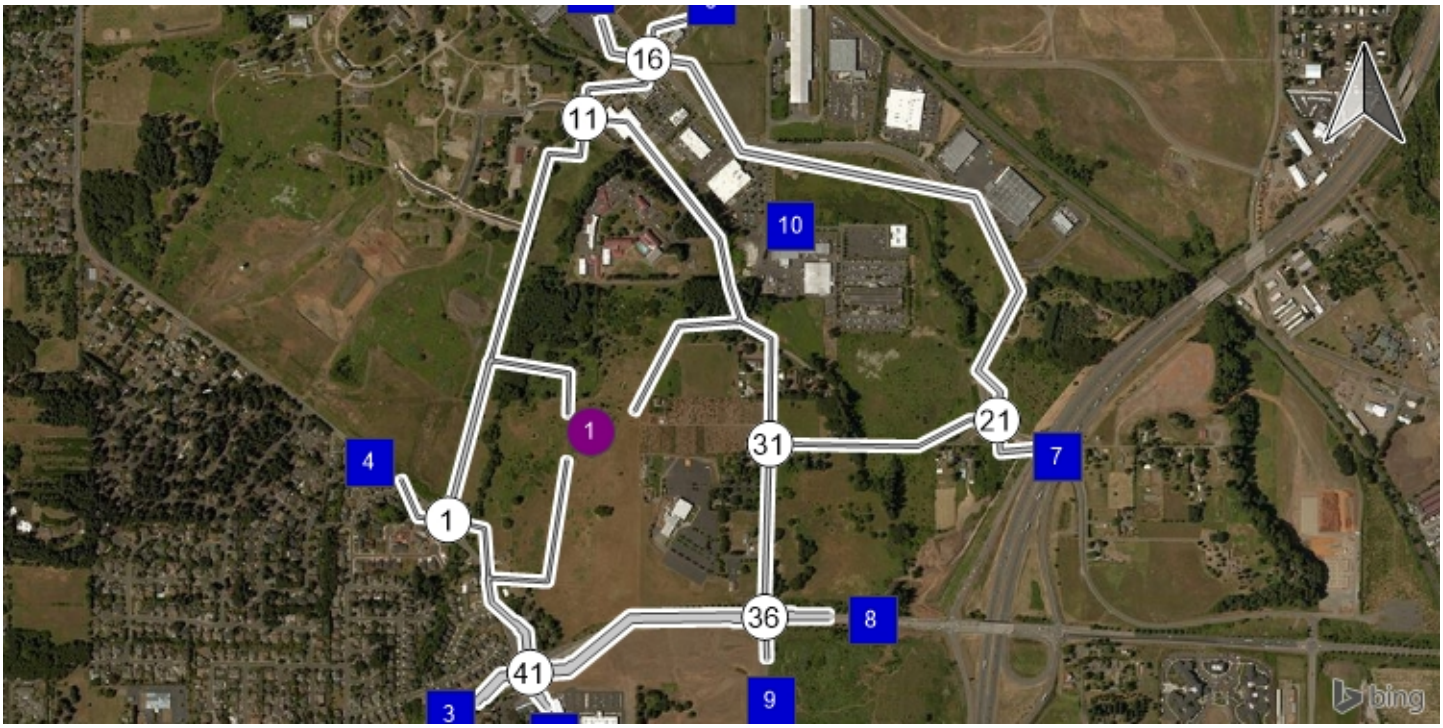
Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	274	1	6	No	No	No	No	No	No	No	No	No	No
2	2	264	1	6	No	No	No	No	No	No	No	No	No	No
3	2	257	1	6	No	No	No	No	No	No	No	No	No	No
4	2	220	1	5	No	No	No	No	No	No	No	No	No	No
5	2	208	1	5	No	No	No	No	No	No	No	No	No	No
6	2	186	1	4	No	No	No	No	No	No	No	No	No	No
7	2	173	1	4	No	No	No	No	No	No	No	No	No	No
8	2	164	1	4	No	No	No	No	No	No	No	No	No	No
9	2	132	1	3	No	No	No	No	No	No	No	No	No	No
10	2	123	1	3	No	No	No	No	No	No	No	No	No	No
11	2	123	1	3	No	No	No	No	No	No	No	No	No	No
12	2	118	1	3	No	No	No	No	No	No	No	No	No	No
13	2	107	1	2	No	No	No	No	No	No	No	No	No	No
14	2	98	1	2	No	No	No	No	No	No	No	No	No	No
15	2	98	1	2	No	No	No	No	No	No	No	No	No	No
16	2	96	1	2	No	No	No	No	No	No	No	No	No	No
17	2	54	1	1	No	No	No	No	No	No	No	No	No	No
18	2	30	1	1	No	No	No	No	No	No	No	No	No	No
19	2	27	1	1	No	No	No	No	No	No	No	No	No	No
20	2	10	1	0	No	No	No	No	No	No	No	No	No	No
21	2	8	1	0	No	No	No	No	No	No	No	No	No	No
22	2	8	1	0	No	No	No	No	No	No	No	No	No	No
23	2	5	1	0	No	No	No	No	No	No	No	No	No	No
24	2	5	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

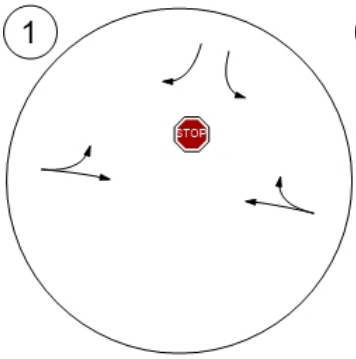
Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:01
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	6
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	280
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

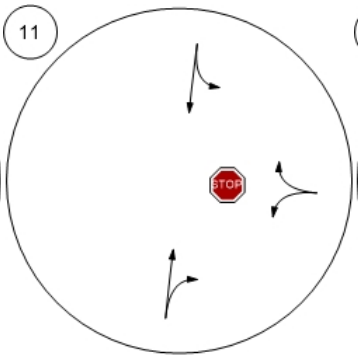
Report Figure 1: Lane Configuration and Traffic Control



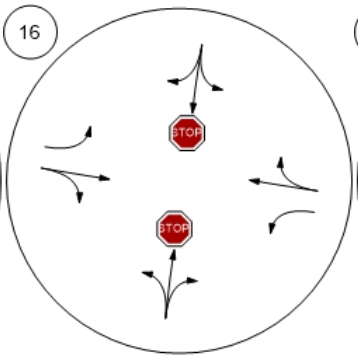
Battle Creek Rd at Reed Rd



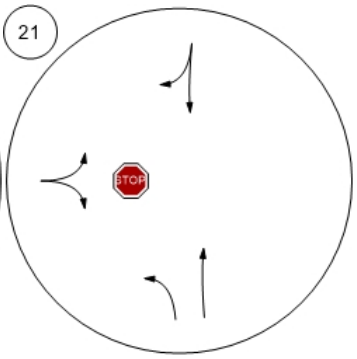
Reed Rd at Strong Rd



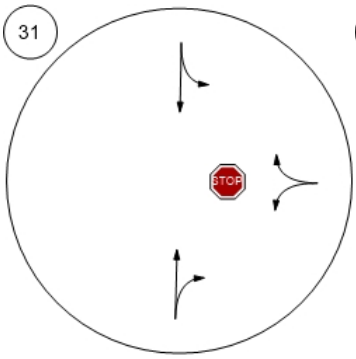
Reed Rd at Fairview Industria



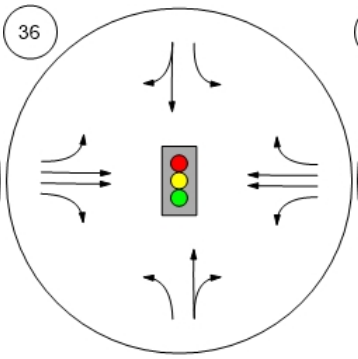
Fairview Industrial Dr at Mari



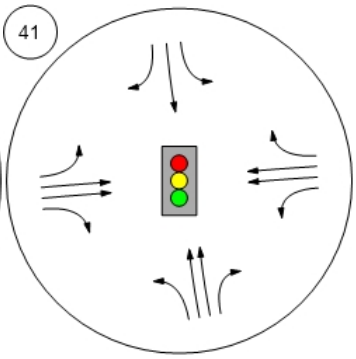
27th Ave at Marietta St



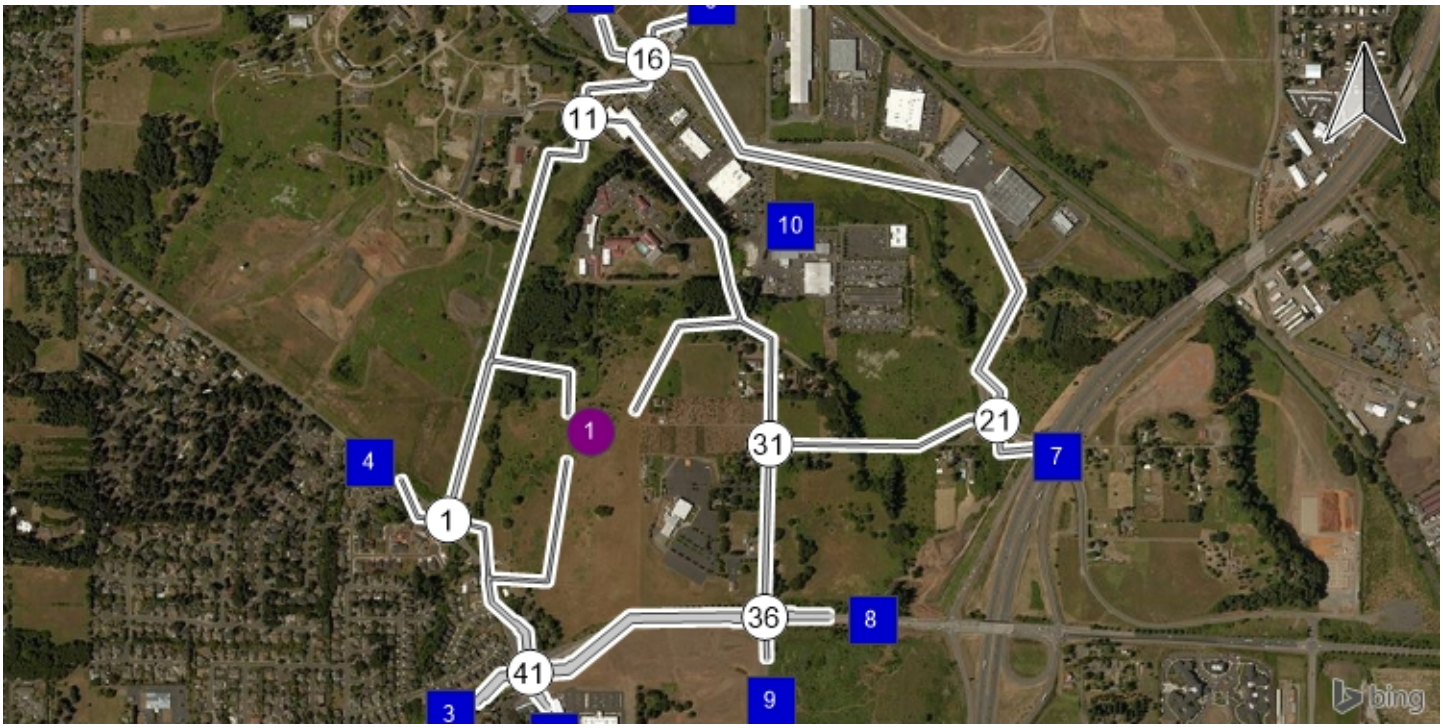
27th at Kuebler Blvd



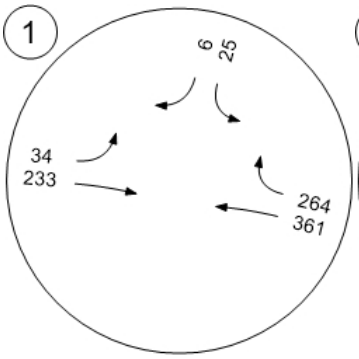
Keubler Blvd at Battle Creek



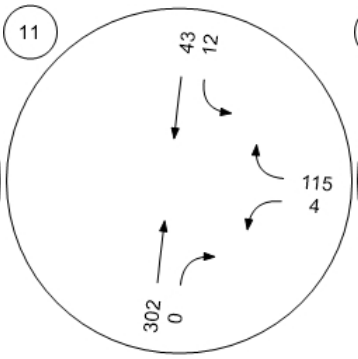
Report Figure 2a: Traffic Volume - Base Volume



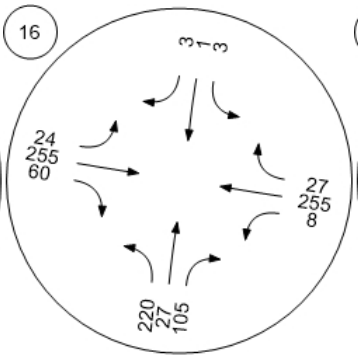
Battle Creek Rd at Reed Rd



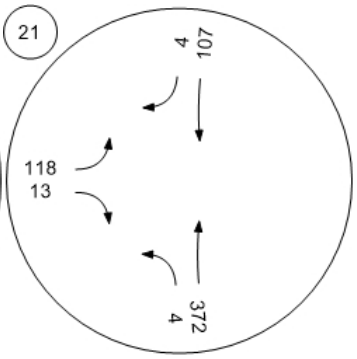
Reed Rd at Strong Rd



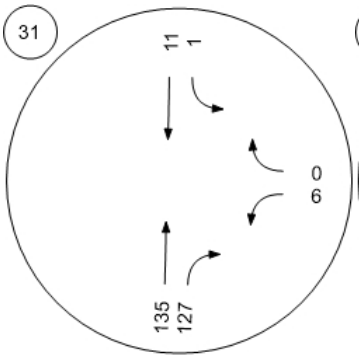
Reed Rd at Fairview Industria



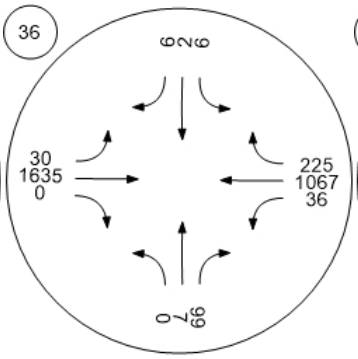
Fairview Industrial Dr at Mari



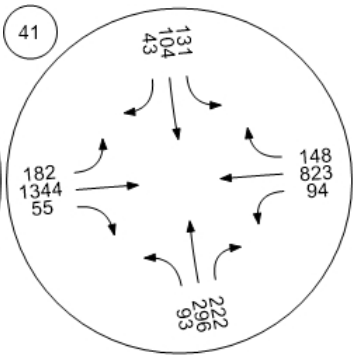
27th Ave at Marietta St



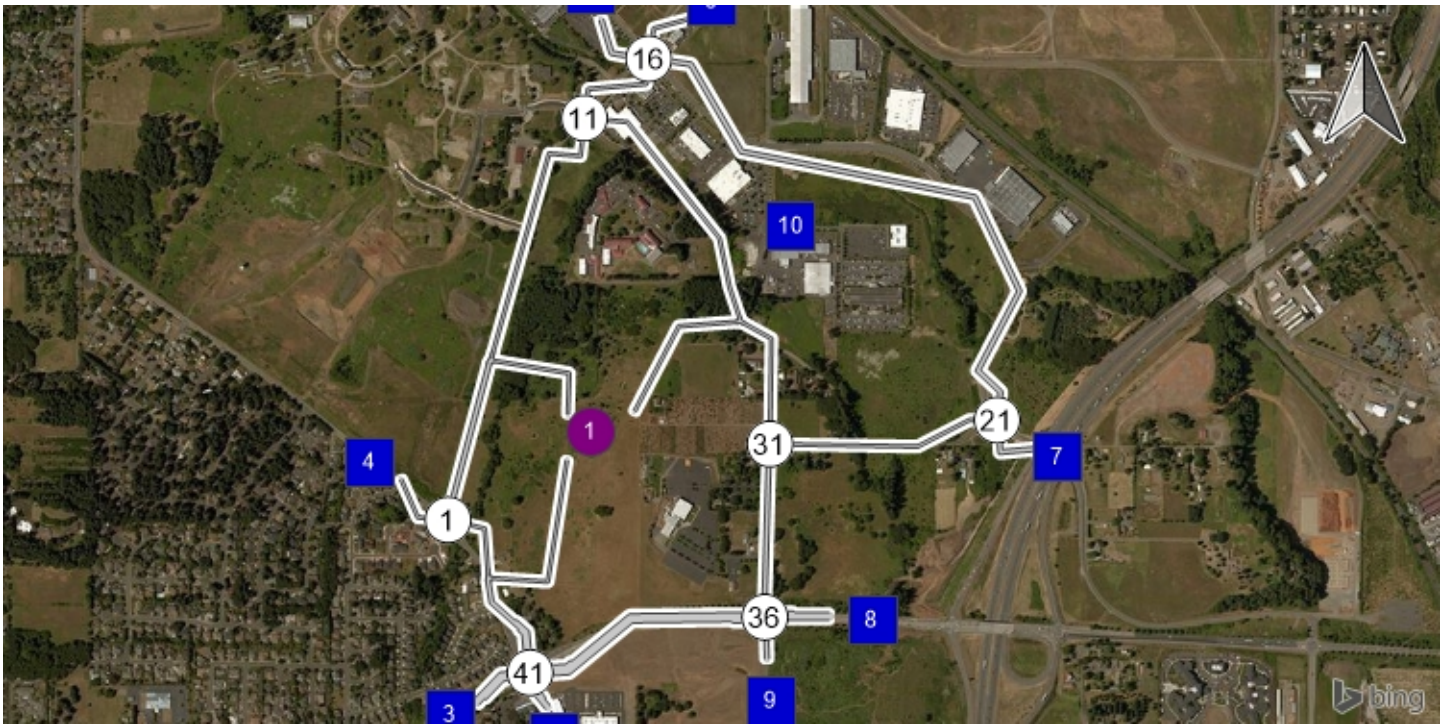
27th at Kuebler Blvd



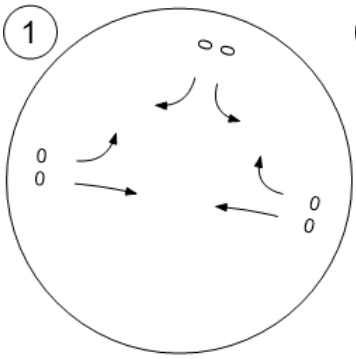
Keubler Blvd at Battle Creek



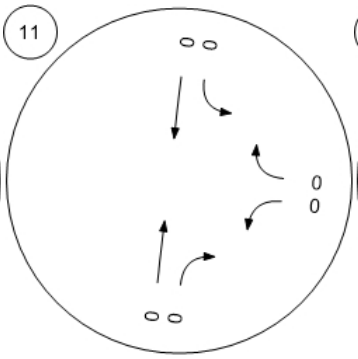
Report Figure 2d: Traffic Volume - Net New Site Trips



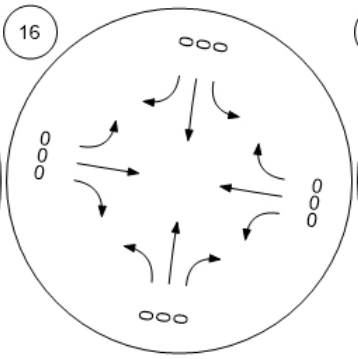
Battle Creek Rd at Reed Rd



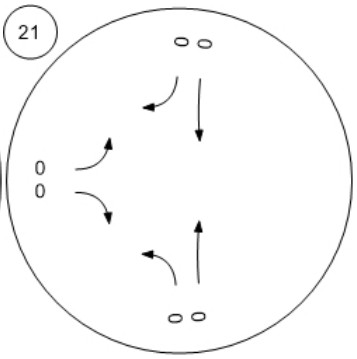
Reed Rd at Strong Rd



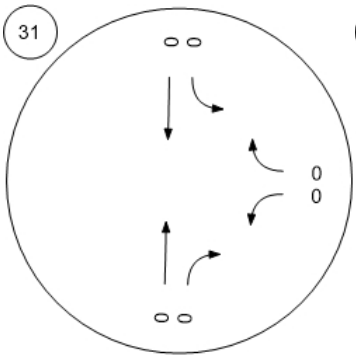
Reed Rd at Fairview Industria



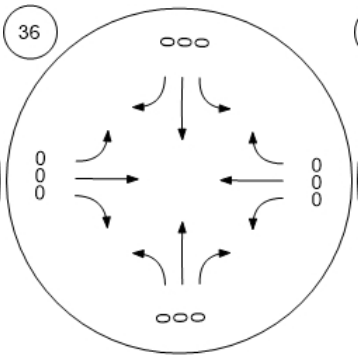
Fairview Industrial Dr at Mari



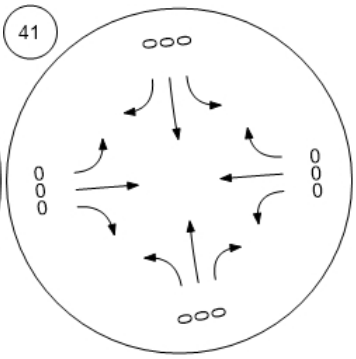
27th Ave at Marietta St



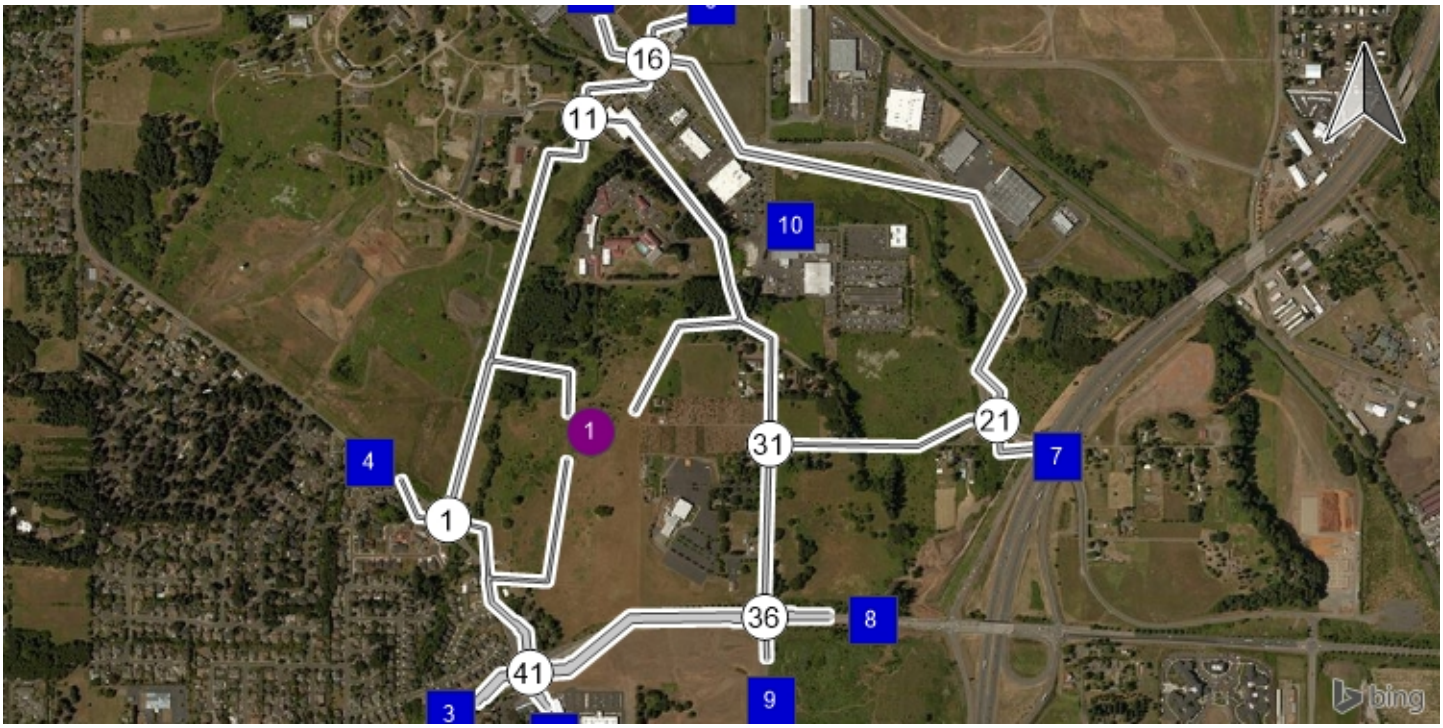
27th at Kuebler Blvd



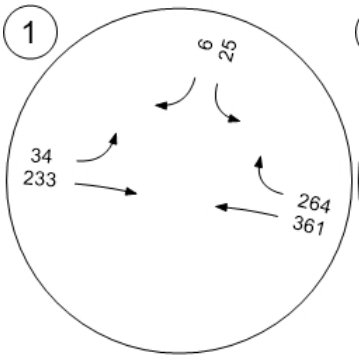
Keubler Blvd at Battle Creek



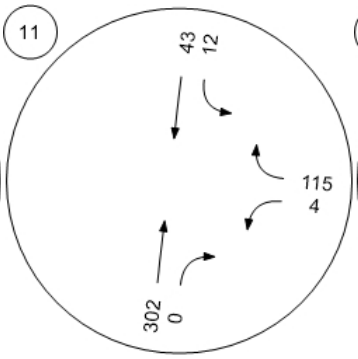
Report Figure 2f: Traffic Volume - Future Total Volume



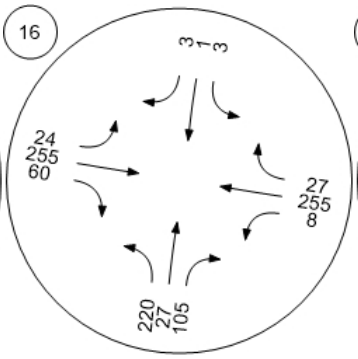
Battle Creek Rd at Reed Rd



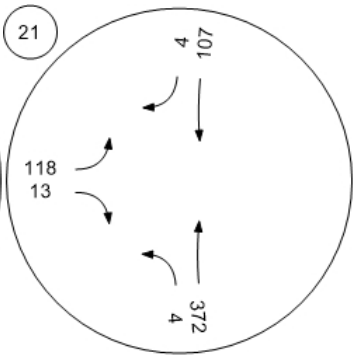
Reed Rd at Strong Rd



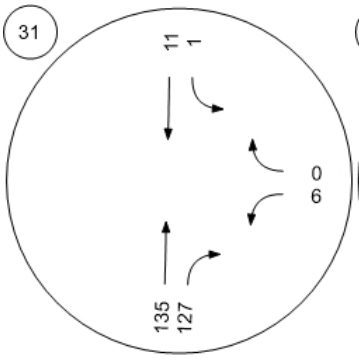
Reed Rd at Fairview Industria



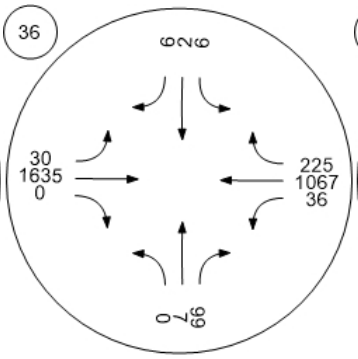
Fairview Industrial Dr at Mari



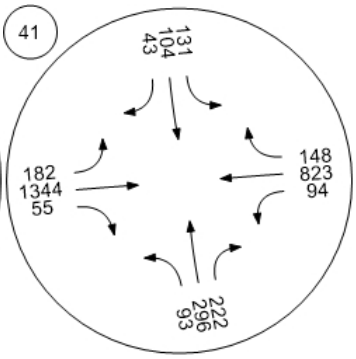
27th Ave at Marietta St



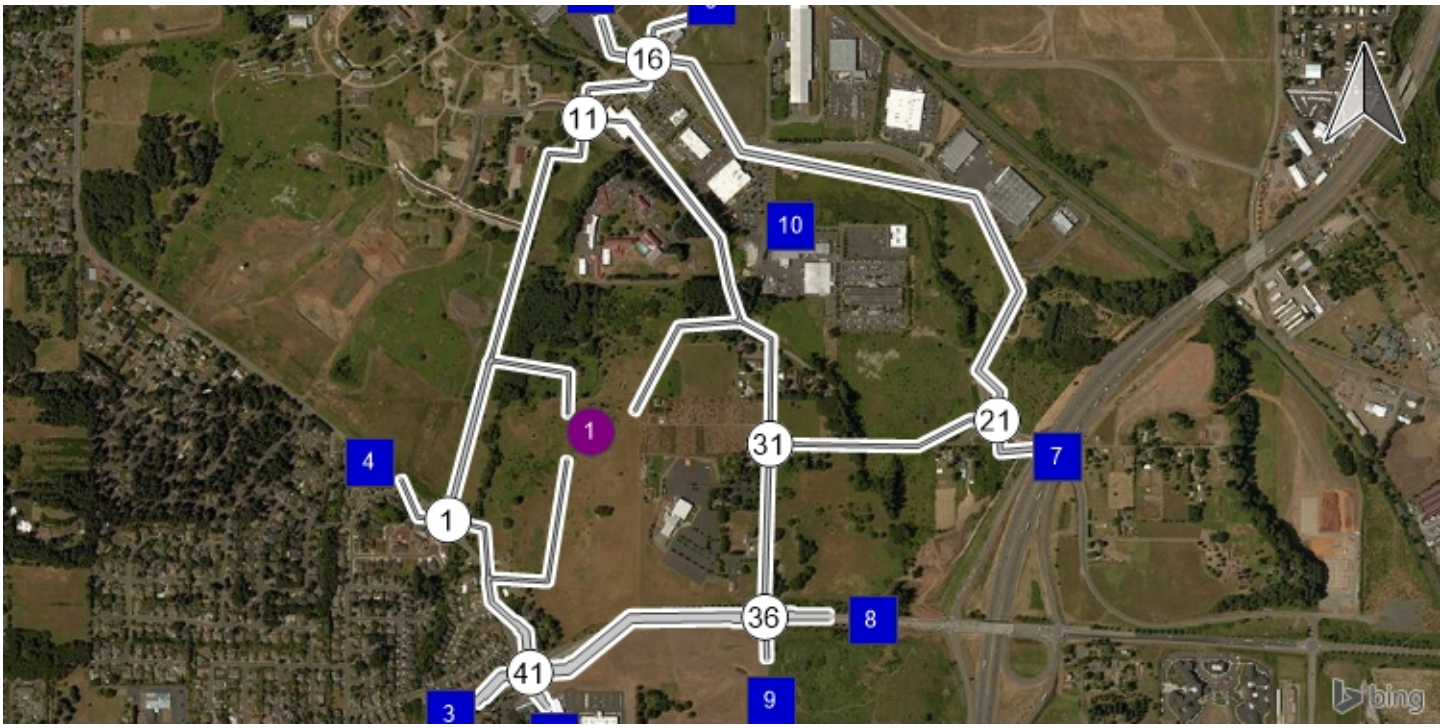
27th at Kuebler Blvd

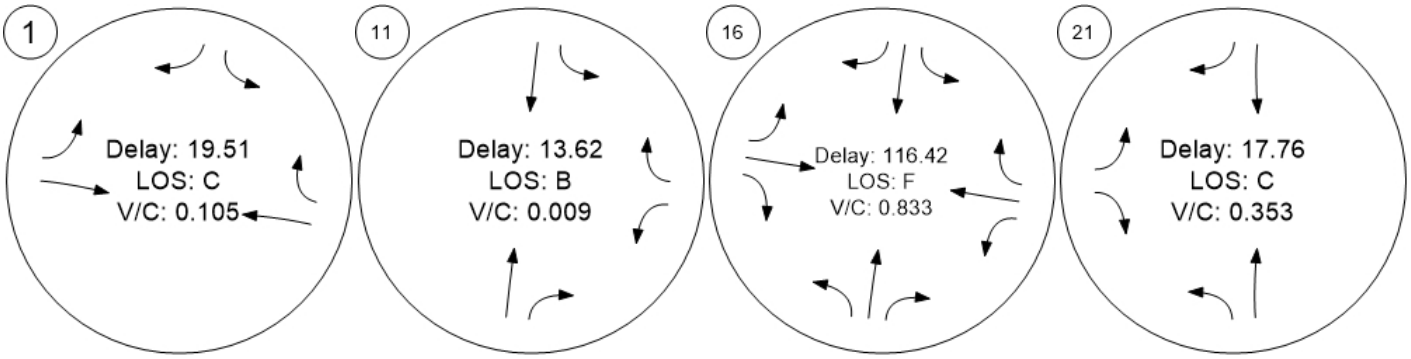


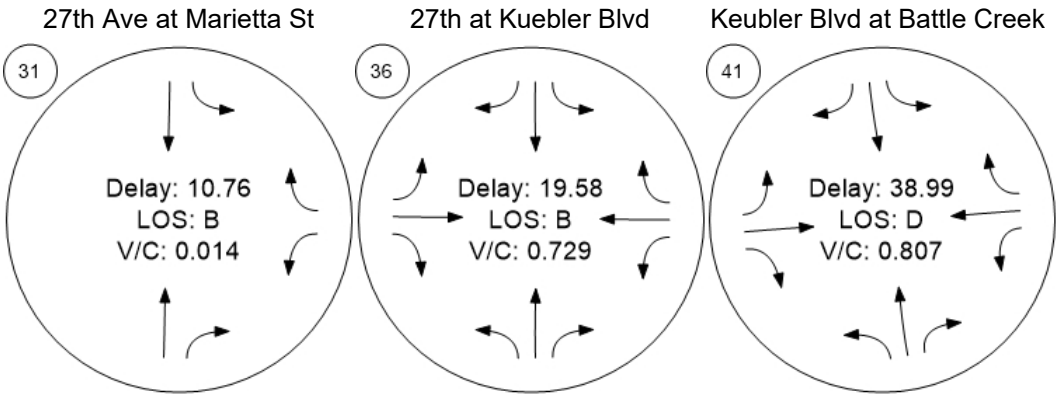
Keubler Blvd at Battle Creek



Report Figure 3: Traffic Conditions







18-392 Strong at 27th Subdivision TIA

Vistro File: J:\...\18-392 Reed Rd Subdivision - TIA.vistro
Scenario 3 AM Dev 2020 Ph 1
Report File: J:\...\18-392 AM Dev Ph 1.pdf
6/19/2018

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Battle Creek Rd at Reed Rd	Two-way stop	HCM 6th Edition	SB Left	0.117	20.4	C
6	Battle Creek Rd at Site Access	Two-way stop	HCM 6th Edition	WB Left	0.076	19.9	C
11	Reed Rd at Strong Rd	Two-way stop	HCM 6th Edition	WB Left	0.010	14.0	B
16	Reed Rd at Fairview Industrial Dr	Two-way stop	HCM 6th Edition	NB Left	0.909	149.8	F
21	Fairview Industrial Dr at Marietta St	Two-way stop	HCM 6th Edition	EB Left	0.379	18.7	C
26	East Access at Strong Rd	Two-way stop	HCM 6th Edition	EB Left	0.003	10.1	B
31	27th Ave at Marietta St	Two-way stop	HCM 6th Edition	WB Left	0.015	11.2	B
41	Keubler Blvd at Battle Creek Rd	Signalized	HCM 6th Edition	NB Right	0.831	41.1	D
42	Reed at Site Access	Two-way stop	HCM 6th Edition	WB Left	0.002	11.4	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Battle Creek Rd at Reed Rd

Control Type:	Two-way stop	Delay (sec / veh):	20.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.117

Intersection Setup

Name	Reed Rd		Battle Creek Rd		Battle Creek Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Reed Rd		Battle Creek Rd		Battle Creek Rd	
Base Volume Input [veh/h]	25	6	34	233	361	264
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.20	3.20	7.10	7.10	3.80	3.80
Growth Rate	1.03	1.03	1.03	1.03	1.03	1.03
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	0	1	2	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	26	7	35	241	374	272
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	2	10	71	110	80
Total Analysis Volume [veh/h]	31	8	41	284	440	320
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.02	0.05	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	20.41	12.34	9.57	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.39	0.05	1.88	1.88	0.00	0.00
95th-Percentile Queue Length [ft]	9.83	1.22	46.94	46.94	0.00	0.00
d_A, Approach Delay [s/veh]	18.76		1.21		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	1.00					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 6: Battle Creek Rd at Site Access

Control Type:	Two-way stop	Delay (sec / veh):	19.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.076

Intersection Setup

Name	Battle Creek Rd		Battle Creek Rd		Site Access	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Battle Creek Rd		Battle Creek Rd		Site Access	
Base Volume Input [veh/h]	625	0	0	258	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	5	1	0	17	2
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	625	5	1	258	17	2
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	180	1	0	74	5	1
Total Analysis Volume [veh/h]	718	6	1	297	20	2
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.08	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	9.10	0.00	19.92	14.59
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh]	0.00	0.00	1.51	1.51	0.26	0.26
95th-Percentile Queue Length [ft]	0.00	0.00	37.71	37.71	6.56	6.56
d_A, Approach Delay [s/veh]	0.00		0.03		19.43	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.42					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 11: Reed Rd at Strong Rd

Control Type:	Two-way stop	Delay (sec / veh):	14.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.010

Intersection Setup

Name	Reed Rd		Reed Rd		Strong Rd	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Reed Rd		Reed Rd		Strong Rd	
Base Volume Input [veh/h]	302	0	12	43	4	115
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.60	1.60	5.50	5.50	1.70	1.70
Growth Rate	1.03	1.03	1.03	1.03	1.03	1.03
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	0	1	0	0	1
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	314	0	13	44	4	119
Peak Hour Factor	0.7500	0.7500	0.7500	0.7500	0.7500	0.7500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	105	0	4	15	1	40
Total Analysis Volume [veh/h]	419	0	17	59	5	159
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.02	0.00	0.01	0.25
d_M, Delay for Movement [s/veh]	0.00	0.00	8.26	0.00	14.00	12.67
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh]	0.00	0.00	0.22	0.22	1.04	1.04
95th-Percentile Queue Length [ft]	0.00	0.00	5.44	5.44	25.92	25.92
d_A, Approach Delay [s/veh]	0.00		1.85		12.71	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	3.38					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 16: Reed Rd at Fairview Industrial Dr

Control Type:	Two-way stop	Delay (sec / veh):	149.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.909

Intersection Setup

Name	Reed Rd			Reed Rd			Fairview Industrial Dr			Fairview Industrial Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Reed Rd			Reed Rd			Fairview Industrial Dr			Fairview Industrial Dr		
Base Volume Input [veh/h]	220	27	105	3	1	3	24	255	60	8	255	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.30	2.30	2.30	0.00	0.00	0.00	4.70	4.70	4.70	5.20	5.20	5.20
Growth Rate	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	0	0	0	0	0	0	0	1	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	231	28	108	3	1	3	25	263	63	8	263	28
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	70	8	33	1	0	1	8	79	19	2	79	8
Total Analysis Volume [veh/h]	278	34	130	4	1	4	30	317	76	10	317	34
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.91	0.11	0.19	0.02	0.00	0.01	0.03	0.00	0.00	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	149.82	149.55	143.27	22.93	17.07	10.39	8.10	0.00	0.00	8.16	0.00	0.00
Movement LOS	F	F	F	C	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	18.44	18.44	18.44	0.09	0.09	0.09	0.08	0.00	0.00	0.03	0.00	0.00
95th-Percentile Queue Length [ft]	461.11	461.11	461.11	2.19	2.19	2.19	1.93	0.00	0.00	0.66	0.00	0.00
d_A, Approach Delay [s/veh]	147.87			16.70			0.57			0.23		
Approach LOS	F			C			A			A		
d_I, Intersection Delay [s/veh]	53.31											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 21: Fairview Industrial Dr at Marietta St

Control Type:	Two-way stop	Delay (sec / veh):	18.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.379

Intersection Setup

Name	Fairview Industrial Dr		Fairview Industrial Dr		Marietta St	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Fairview Industrial Dr		Fairview Industrial Dr		Marietta St	
Base Volume Input [veh/h]	4	372	107	4	118	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.80	4.80	13.50	13.50	0.80	0.80
Growth Rate	1.03	1.03	1.03	1.03	1.03	1.03
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	0	0	0	0	3
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	383	110	4	122	16
Peak Hour Factor	0.7600	0.7600	0.7600	0.7600	0.7600	0.7600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	126	36	1	40	5
Total Analysis Volume [veh/h]	7	504	145	5	161	21
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.38	0.02
d_M, Delay for Movement [s/veh]	7.56	0.00	0.00	0.00	18.74	14.25
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh]	0.01	0.00	0.00	0.00	1.91	1.91
95th-Percentile Queue Length [ft]	0.37	0.00	0.00	0.00	47.81	47.81
d_A, Approach Delay [s/veh]	0.10		0.00		18.22	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	4.00					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 26: East Access at Strong Rd

Control Type:	Two-way stop	Delay (sec / veh):	10.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.003

Intersection Setup

Name	Strong Rd		East Access		Strong Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Strong Rd		East Access		Strong Rd	
Base Volume Input [veh/h]	18	0	0	0	0	133
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.03	1.03	1.03	1.03	1.03	1.03
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	1	18	6	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	19	1	1	18	6	137
Peak Hour Factor	0.6400	0.6400	0.6400	0.6400	0.6400	0.6400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	0	0	7	2	54
Total Analysis Volume [veh/h]	30	2	2	28	9	214
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Stop	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance		No	
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.03	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	10.06	9.33	7.29	0.00
Movement LOS	A	A	B	A	A	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.11	0.11	0.49	0.49
95th-Percentile Queue Length [ft]	0.00	0.00	2.73	2.73	12.28	12.28
d_A, Approach Delay [s/veh]	0.00		9.38		0.29	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.22					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 31: 27th Ave at Marietta St

Control Type:	Two-way stop	Delay (sec / veh):	11.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.015

Intersection Setup

Name	27th Ave		Strong Rd		Marietta St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	27th Ave		Strong Rd		Marietta St	
Base Volume Input [veh/h]	135	127	1	11	6	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.80	0.80	8.30	8.30	16.70	16.70
Growth Rate	1.03	1.03	1.03	1.03	1.03	1.03
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	5	0	3	15	0	1
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	144	131	4	26	6	1
Peak Hour Factor	0.6400	0.6400	0.6400	0.6400	0.6400	0.6400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	51	2	10	2	0
Total Analysis Volume [veh/h]	225	205	6	41	9	2
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	8.30	0.00	11.21	10.39
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh]	0.00	0.00	0.13	0.13	0.06	0.06
95th-Percentile Queue Length [ft]	0.00	0.00	3.35	3.35	1.39	1.39
d_A, Approach Delay [s/veh]	0.00		1.06		11.06	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.35					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 41: Keubler Blvd at Battle Creek Rd

Control Type:	Signalized	Delay (sec / veh):	41.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.831

Intersection Setup

Name	Battle Creek Rd			Battle Creek Rd			Kuebler Blvd			Kuebler Blvd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	150.00	275.00	100.00	275.00	350.00	100.00	350.00	250.00	100.00	250.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Battle Creek Rd			Battle Creek Rd			Kuebler Blvd			Kuebler Blvd		
Base Volume Input [veh/h]	93	296	222	131	104	43	182	1344	55	94	823	148
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.40	2.40	2.40	7.20	7.20	7.20	3.20	3.20	3.20	7.40	7.40	7.40
Growth Rate	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	0	0	4	13	4	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	96	306	229	135	111	57	191	1384	57	97	848	152
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	85	64	38	31	16	53	384	16	27	236	42
Total Analysis Volume [veh/h]	107	340	254	150	123	63	212	1538	63	108	942	169
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	23	0	15	26	0	35	60	0	12	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	20	20	11	23	23	17	55	55	8	47	47
g / C, Green / Cycle	0.07	0.18	0.18	0.10	0.21	0.21	0.15	0.50	0.50	0.07	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.07	0.11	0.18	0.10	0.08	0.05	0.13	0.48	0.04	0.07	0.31	0.12
s, saturation flow rate [veh/h]	1598	3194	1426	1536	1613	1371	1587	3174	1417	1533	3066	1369
c, Capacity [veh/h]	116	574	256	154	334	284	242	1593	711	112	1295	578
d1, Uniform Delay [s]	50.68	41.44	45.05	49.37	37.47	36.28	45.61	26.48	14.28	50.87	26.49	20.94
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	23.11	4.46	54.21	28.19	3.12	1.80	9.70	5.14	0.05	32.00	0.80	0.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.59	0.99	0.98	0.37	0.22	0.88	0.97	0.09	0.97	0.73	0.29
d, Delay for Lane Group [s/veh]	73.78	45.90	99.26	77.56	40.58	38.08	55.31	31.62	14.34	82.87	27.29	21.21
Lane Group LOS	E	D	F	E	D	D	E	C	B	F	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	3.67	4.58	10.72	5.30	3.13	1.55	6.28	19.52	0.82	3.95	10.17	2.89
50th-Percentile Queue Length [ft]	91.65	114.46	267.91	132.42	78.34	38.82	157.11	488.01	20.57	98.76	254.31	72.21
95th-Percentile Queue Length [veh]	6.60	8.09	16.08	9.07	5.64	2.80	10.40	26.77	1.48	7.11	15.40	5.20
95th-Percentile Queue Length [ft]	164.98	202.19	402.12	226.78	141.02	69.88	259.89	669.16	37.03	177.77	385.08	129.99

Movement, Approach, & Intersection Results

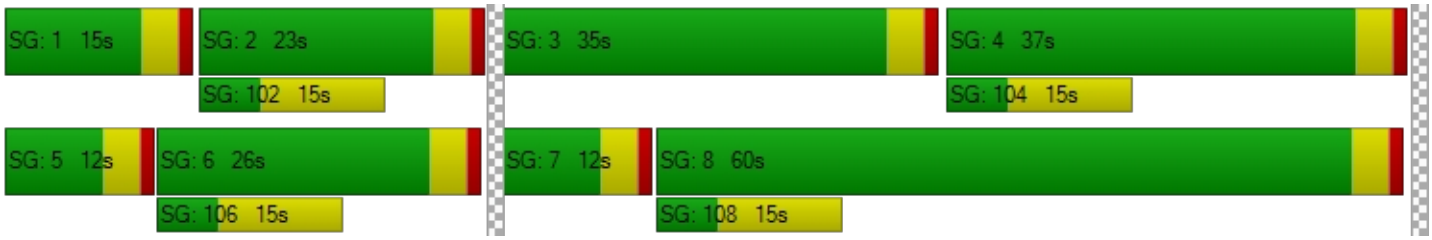
d_M, Delay for Movement [s/veh]	73.78	45.90	99.26	77.56	40.58	38.08	55.31	31.62	14.34	82.87	27.29	21.21
Movement LOS	E	D	F	E	D	D	E	C	B	F	C	C
d_A, Approach Delay [s/veh]	69.49			56.62			33.79			31.37		
Approach LOS	E			E			C			C		
d_I, Intersection Delay [s/veh]	41.10											
Intersection LOS	D											
Intersection V/C	0.831											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	46.37	46.37	46.37	46.37
l_p,int, Pedestrian LOS Score for Intersection	2.505	2.517	2.939	2.978
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	345	400	1018	600
d_b, Bicycle Delay [s]	37.64	35.20	13.25	26.95
l_b,int, Bicycle LOS Score for Intersection	2.138	2.114	3.055	2.565
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 42: Reed at Site Access

Control Type:	Two-way stop	Delay (sec / veh):	11.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.002

Intersection Setup

Name	Reed Rd		Reed Rd		Site Access	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Reed Rd		Reed Rd		Site Access	
Base Volume Input [veh/h]	308	0	0	47	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.03	1.03	1.03	1.03	1.03	1.03
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	1	3
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	317	0	0	48	1	3
Peak Hour Factor	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	99	0	0	15	0	1
Total Analysis Volume [veh/h]	396	0	0	60	1	4
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	8.10	0.00	11.45	10.56
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.00	0.02	0.02
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	0.00	0.60	0.60
d_A, Approach Delay [s/veh]	0.00		0.00		10.73	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.12					
Intersection LOS	B					

18-392 Strong at 27th Subdivision TIA

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Scenario 3 AM Dev 2020 Ph 1
6/19/2018

Turning Movement Volume: Summary

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
1	Battle Creek Rd at Reed Rd	26	7	35	241	374	272	955

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
6	Battle Creek Rd at Site Access	625	5	1	258	17	2	908

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
11	Reed Rd at Strong Rd	314	0	13	44	4	119	494

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Reed Rd at Fairview Industrial Dr	231	28	108	3	1	3	25	263	63	8	263	28	1024

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
21	Fairview Industrial Dr at Marietta St	5	383	110	4	122	16	640

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
26	East Access at Strong Rd	19	1	1	18	6	137	182

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
31	27th Ave at Marietta St	144	131	4	26	6	1	312

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
41	Keubler Blvd at Battle Creek Rd	96	306	229	135	111	57	191	1384	57	97	848	152	3663

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
42	Reed at Site Access	317	0	0	48	1	3	369

18-392 Strong at 27th Subdivision TIA

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Report File: J:\...\18-392 AM Dev Ph 1.pdf

Scenario 3 AM Dev 2020 Ph 1
6/19/2018

Turning Movement Volume: Detail

ID	Intersection Name	Volume Type	Southbound		Eastbound		Westbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
1	Battle Creek Rd at Reed Rd	Final Base	25	6	34	233	361	264	923
		Growth Rate	1.03	1.03	1.03	1.03	1.03	1.03	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	1	0	1	2	0	4
		Other	0	0	0	0	0	0	0
		Future Total	**26**	**7**	**35**	**241**	**374**	**272**	**955**

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
6	Battle Creek Rd at Site Access	Final Base	625	0	0	258	0	0	883
		Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	5	1	0	17	2	25
		Other	0	0	0	0	0	0	0
		Future Total	**625**	**5**	**1**	**258**	**17**	**2**	**908**

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
11	Reed Rd at Strong Rd	Final Base	302	0	12	43	4	115	476
		Growth Rate	1.03	1.03	1.03	1.03	1.03	1.03	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	3	0	1	0	0	1	5
		Other	0	0	0	0	0	0	0
		Future Total	**314**	**0**	**13**	**44**	**4**	**119**	**494**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Reed Rd at Fairview Industrial Dr	Final Base	220	27	105	3	1	3	24	255	60	8	255	27	988
		Growth Rate	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	4	0	0	0	0	0	0	0	1	0	0	0	5
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**231**	**28**	**108**	**3**	**1**	**3**	**25**	**263**	**63**	**8**	**263**	**28**	**1024**

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
21	Fairview Industrial Dr at Marietta St	Final Base	4	372	107	4	118	13	618
		Growth Rate	1.03	1.03	1.03	1.03	1.03	1.03	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	1	0	0	0	0	3	4
		Other	0	0	0	0	0	0	0
		Future Total	**5**	**383**	**110**	**4**	**122**	**16**	**640**

ID	Intersection Name	Volume Type	Southbound		Eastbound		Westbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
26	East Access at Strong Rd	Final Base	18	0	0	0	0	133	151
		Growth Rate	1.03	1.03	1.03	1.03	1.03	1.03	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	1	1	18	6	0	26
		Other	0	0	0	0	0	0	0
		Future Total	**19**	**1**	**1**	**18**	**6**	**137**	**182**

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
31	27th Ave at Marietta St	Final Base	135	127	1	11	6	0	280
		Growth Rate	1.03	1.03	1.03	1.03	1.03	1.03	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	5	0	3	15	0	1	24
		Other	0	0	0	0	0	0	0
		Future Total	**144**	**131**	**4**	**26**	**6**	**1**	**312**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
41	Keubler Blvd at Battle Creek Rd	Final Base	93	296	222	131	104	43	182	1344	55	94	823	148	3535
		Growth Rate	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	1	0	0	4	13	4	0	0	0	0	0	22
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**96**	**306**	**229**	**135**	**111**	**57**	**191**	**1384**	**57**	**97**	**848**	**152**	**3663**

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
42	Reed at Site Access	Final Base	308	0	0	47	0	0	355
		Growth Rate	1.03	1.03	1.03	1.03	1.03	1.03	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	1	3	4
		Other	0	0	0	0	0	0	0
		Future Total	**317**	**0**	**0**	**48**	**1**	**3**	**369**

Signal Warrants Report For Intersection 1: Battle Creek Rd at Reed Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	N
1	646	276	33
2	620	265	32
3	607	259	31
4	517	221	26
5	491	210	25
6	439	188	22
7	407	174	21
8	388	166	20
9	310	132	16
10	291	124	15
11	291	124	15
12	278	119	14
13	252	108	13
14	233	99	12
15	233	99	12
16	226	97	12
17	129	55	7
18	71	30	4
19	65	28	3
20	26	11	1
21	19	8	1
22	19	8	1
23	13	6	1
24	13	6	1

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	922	2	33	No	No	No	No	No	No	No	No	No	No
2	2	885	2	32	No	No	No	No	No	No	No	No	No	No
3	2	866	2	31	No	No	No	No	No	No	No	No	No	No
4	2	738	2	26	No	No	No	No	No	No	No	No	No	No
5	2	701	2	25	No	No	No	No	No	No	No	No	No	No
6	2	627	2	22	No	No	No	No	No	No	No	No	No	No
7	2	581	2	21	No	No	No	No	No	No	No	No	No	No
8	2	554	2	20	No	No	No	No	No	No	No	No	No	No
9	2	442	2	16	No	No	No	No	No	No	No	No	No	No
10	2	415	2	15	No	No	No	No	No	No	No	No	No	No
11	2	415	2	15	No	No	No	No	No	No	No	No	No	No
12	2	397	2	14	No	No	No	No	No	No	No	No	No	No
13	2	360	2	13	No	No	No	No	No	No	No	No	No	No
14	2	332	2	12	No	No	No	No	No	No	No	No	No	No
15	2	332	2	12	No	No	No	No	No	No	No	No	No	No
16	2	323	2	12	No	No	No	No	No	No	No	No	No	No
17	2	184	2	7	No	No	No	No	No	No	No	No	No	No
18	2	101	2	4	No	No	No	No	No	No	No	No	No	No
19	2	93	2	3	No	No	No	No	No	No	No	No	No	No
20	2	37	2	1	No	No	No	No	No	No	No	No	No	No
21	2	27	2	1	No	No	No	No	No	No	No	No	No	No
22	2	27	2	1	No	No	No	No	No	No	No	No	No	No
23	2	19	2	1	No	No	No	No	No	No	No	No	No	No
24	2	19	2	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	18.8
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:10
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	33
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	955
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 6: Battle Creek Rd at Site Access

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	E
1	630	259	19
2	605	249	18
3	592	243	18
4	504	207	15
5	479	197	14
6	428	176	13
7	397	163	12
8	378	155	11
9	302	124	9
10	284	117	9
11	284	117	9
12	271	111	8
13	246	101	7
14	227	93	7
15	227	93	7
16	221	91	7
17	126	52	4
18	69	28	2
19	63	26	2
20	25	10	1
21	19	8	1
22	19	8	1
23	13	5	0
24	13	5	0

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	889	1	19	No	No	No	No	No	No	No	No	No	No
2	2	854	1	18	No	No	No	No	No	No	No	No	No	No
3	2	835	1	18	No	No	No	No	No	No	No	No	No	No
4	2	711	1	15	No	No	No	No	No	No	No	No	No	No
5	2	676	1	14	No	No	No	No	No	No	No	No	No	No
6	2	604	1	13	No	No	No	No	No	No	No	No	No	No
7	2	560	1	12	No	No	No	No	No	No	No	No	No	No
8	2	533	1	11	No	No	No	No	No	No	No	No	No	No
9	2	426	1	9	No	No	No	No	No	No	No	No	No	No
10	2	401	1	9	No	No	No	No	No	No	No	No	No	No
11	2	401	1	9	No	No	No	No	No	No	No	No	No	No
12	2	382	1	8	No	No	No	No	No	No	No	No	No	No
13	2	347	1	7	No	No	No	No	No	No	No	No	No	No
14	2	320	1	7	No	No	No	No	No	No	No	No	No	No
15	2	320	1	7	No	No	No	No	No	No	No	No	No	No
16	2	312	1	7	No	No	No	No	No	No	No	No	No	No
17	2	178	1	4	No	No	No	No	No	No	No	No	No	No
18	2	97	1	2	No	No	No	No	No	No	No	No	No	No
19	2	89	1	2	No	No	No	No	No	No	No	No	No	No
20	2	35	1	1	No	No	No	No	No	No	No	No	No	No
21	2	27	1	1	No	No	No	No	No	No	No	No	No	No
22	2	27	1	1	No	No	No	No	No	No	No	No	No	No
23	2	18	1	0	No	No	No	No	No	No	No	No	No	No
24	2	18	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	19.4
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:06
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	19
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	908
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 11: Reed Rd at Strong Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	57	314	123
2	55	301	118
3	54	295	116
4	46	251	98
5	43	239	93
6	39	214	84
7	36	198	77
8	34	188	74
9	27	151	59
10	26	141	55
11	26	141	55
12	25	135	53
13	22	122	48
14	21	113	44
15	21	113	44
16	20	110	43
17	11	63	25
18	6	35	14
19	6	31	12
20	2	13	5
21	2	9	4
22	2	9	4
23	1	6	2
24	1	6	2

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	371	1	123	No	No	No	Yes	No	No	No	No	No	No
2	2	356	1	118	No	No	No	Yes	No	No	No	No	No	No
3	2	349	1	116	No	No	No	Yes	No	No	No	No	No	No
4	2	297	1	98	No	No	No	No	No	No	No	No	No	No
5	2	282	1	93	No	No	No	No	No	No	No	No	No	No
6	2	253	1	84	No	No	No	No	No	No	No	No	No	No
7	2	234	1	77	No	No	No	No	No	No	No	No	No	No
8	2	222	1	74	No	No	No	No	No	No	No	No	No	No
9	2	178	1	59	No	No	No	No	No	No	No	No	No	No
10	2	167	1	55	No	No	No	No	No	No	No	No	No	No
11	2	167	1	55	No	No	No	No	No	No	No	No	No	No
12	2	160	1	53	No	No	No	No	No	No	No	No	No	No
13	2	144	1	48	No	No	No	No	No	No	No	No	No	No
14	2	134	1	44	No	No	No	No	No	No	No	No	No	No
15	2	134	1	44	No	No	No	No	No	No	No	No	No	No
16	2	130	1	43	No	No	No	No	No	No	No	No	No	No
17	2	74	1	25	No	No	No	No	No	No	No	No	No	No
18	2	41	1	14	No	No	No	No	No	No	No	No	No	No
19	2	37	1	12	No	No	No	No	No	No	No	No	No	No
20	2	15	1	5	No	No	No	No	No	No	No	No	No	No
21	2	11	1	4	No	No	No	No	No	No	No	No	No	No
22	2	11	1	4	No	No	No	No	No	No	No	No	No	No
23	2	7	1	2	No	No	No	No	No	No	No	No	No	No
24	2	7	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	3	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	12.7
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:26
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	123
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	494
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 16: Reed Rd at Fairview Industrial Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N, S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	N	S
1	299	351	7	367
2	287	337	7	352
3	281	330	7	345
4	239	281	6	294
5	227	267	5	279
6	203	239	5	250
7	188	221	4	231
8	179	211	4	220
9	144	168	3	176
10	135	158	3	165
11	135	158	3	165
12	129	151	3	158
13	117	137	3	143
14	108	126	3	132
15	108	126	3	132
16	105	123	2	128
17	60	70	1	73
18	33	39	1	40
19	30	35	1	37
20	12	14	0	15
21	9	11	0	11
22	9	11	0	11
23	6	7	0	7
24	6	7	0	7

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	4	650	2	374	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
2	4	624	2	359	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	No
3	4	611	2	352	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	No
4	4	520	2	300	No	Yes	Yes	Yes	No	No	No	Yes	No	No
5	4	494	2	284	No	Yes	Yes	Yes	No	No	No	No	No	No
6	4	442	2	255	No	No	Yes	Yes	No	No	No	No	No	No
7	4	409	2	235	No	No	No	Yes	No	No	No	No	No	No
8	4	390	2	224	No	No	No	Yes	No	No	No	No	No	No
9	4	312	2	179	No	No	No	No	No	No	No	No	No	No
10	4	293	2	168	No	No	No	No	No	No	No	No	No	No
11	4	293	2	168	No	No	No	No	No	No	No	No	No	No
12	4	280	2	161	No	No	No	No	No	No	No	No	No	No
13	4	254	2	146	No	No	No	No	No	No	No	No	No	No
14	4	234	2	135	No	No	No	No	No	No	No	No	No	No
15	4	234	2	135	No	No	No	No	No	No	No	No	No	No
16	4	228	2	130	No	No	No	No	No	No	No	No	No	No
17	4	130	2	74	No	No	No	No	No	No	No	No	No	No
18	4	72	2	41	No	No	No	No	No	No	No	No	No	No
19	4	65	2	38	No	No	No	No	No	No	No	No	No	No
20	4	26	2	15	No	No	No	No	No	No	No	No	No	No
21	4	20	2	11	No	No	No	No	No	No	No	No	No	No
22	4	20	2	11	No	No	No	No	No	No	No	No	No	No
23	4	13	2	7	No	No	No	No	No	No	No	No	No	No
24	4	13	2	7	No	No	No	No	No	No	No	No	No	No
Hours Met					3	5	6	8	0	0	1	4	3	0

Warrant 3 Condition A

Orientation	N	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	16.7	147.9
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:01	15:04
Delay Condition Met	No	Yes
Volume on Minor Street Approach During Same Hour	7	367
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	1024	1024
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	Yes
Warrant Met for Intersection	**Yes**	

Signal Warrants Report For Intersection 21: Fairview Industrial Dr at Marietta St

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	388	114	138
2	372	109	132
3	365	107	130
4	310	91	110
5	295	87	105
6	264	78	94
7	244	72	87
8	233	68	83
9	186	55	66
10	175	51	62
11	175	51	62
12	167	49	59
13	151	44	54
14	140	41	50
15	140	41	50
16	136	40	48
17	78	23	28
18	43	13	15
19	39	11	14
20	16	5	6
21	12	3	4
22	12	3	4
23	8	2	3
24	8	2	3

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	3	502	1	138	No	Yes	Yes	Yes	No	No	No	No	No	No
2	3	481	1	132	No	Yes	Yes	Yes	No	No	No	No	No	No
3	3	472	1	130	No	No	Yes	Yes	No	No	No	No	No	No
4	3	401	1	110	No	No	No	Yes	No	No	No	No	No	No
5	3	382	1	105	No	No	No	Yes	No	No	No	No	No	No
6	3	342	1	94	No	No	No	Yes	No	No	No	No	No	No
7	3	316	1	87	No	No	No	No	No	No	No	No	No	No
8	3	301	1	83	No	No	No	No	No	No	No	No	No	No
9	3	241	1	66	No	No	No	No	No	No	No	No	No	No
10	3	226	1	62	No	No	No	No	No	No	No	No	No	No
11	3	226	1	62	No	No	No	No	No	No	No	No	No	No
12	3	216	1	59	No	No	No	No	No	No	No	No	No	No
13	3	195	1	54	No	No	No	No	No	No	No	No	No	No
14	3	181	1	50	No	No	No	No	No	No	No	No	No	No
15	3	181	1	50	No	No	No	No	No	No	No	No	No	No
16	3	176	1	48	No	No	No	No	No	No	No	No	No	No
17	3	101	1	28	No	No	No	No	No	No	No	No	No	No
18	3	56	1	15	No	No	No	No	No	No	No	No	No	No
19	3	50	1	14	No	No	No	No	No	No	No	No	No	No
20	3	21	1	6	No	No	No	No	No	No	No	No	No	No
21	3	15	1	4	No	No	No	No	No	No	No	No	No	No
22	3	15	1	4	No	No	No	No	No	No	No	No	No	No
23	3	10	1	3	No	No	No	No	No	No	No	No	No	No
24	3	10	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					0	2	3	6	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	18.2
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:41
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	138
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	640
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 26: East Access at Strong Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	N	W
1	143	20	19
2	137	19	18
3	134	19	18
4	114	16	15
5	109	15	14
6	97	14	13
7	90	13	12
8	86	12	11
9	69	10	9
10	64	9	9
11	64	9	9
12	61	9	8
13	56	8	7
14	51	7	7
15	51	7	7
16	50	7	7
17	29	4	4
18	16	2	2
19	14	2	2
20	6	1	1
21	4	1	1
22	4	1	1
23	3	0	0
24	3	0	0

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	163	1	19	No	No	No	No	No	No	No	No	No	No
2	2	156	1	18	No	No	No	No	No	No	No	No	No	No
3	2	153	1	18	No	No	No	No	No	No	No	No	No	No
4	2	130	1	15	No	No	No	No	No	No	No	No	No	No
5	2	124	1	14	No	No	No	No	No	No	No	No	No	No
6	2	111	1	13	No	No	No	No	No	No	No	No	No	No
7	2	103	1	12	No	No	No	No	No	No	No	No	No	No
8	2	98	1	11	No	No	No	No	No	No	No	No	No	No
9	2	79	1	9	No	No	No	No	No	No	No	No	No	No
10	2	73	1	9	No	No	No	No	No	No	No	No	No	No
11	2	73	1	9	No	No	No	No	No	No	No	No	No	No
12	2	70	1	8	No	No	No	No	No	No	No	No	No	No
13	2	64	1	7	No	No	No	No	No	No	No	No	No	No
14	2	58	1	7	No	No	No	No	No	No	No	No	No	No
15	2	58	1	7	No	No	No	No	No	No	No	No	No	No
16	2	57	1	7	No	No	No	No	No	No	No	No	No	No
17	2	33	1	4	No	No	No	No	No	No	No	No	No	No
18	2	18	1	2	No	No	No	No	No	No	No	No	No	No
19	2	16	1	2	No	No	No	No	No	No	No	No	No	No
20	2	7	1	1	No	No	No	No	No	No	No	No	No	No
21	2	5	1	1	No	No	No	No	No	No	No	No	No	No
22	2	5	1	1	No	No	No	No	No	No	No	No	No	No
23	2	3	1	0	No	No	No	No	No	No	No	No	No	No
24	2	3	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.4
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:02
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	19
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	182
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 31: 27th Ave at Marietta St

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	30	275	7
2	29	264	7
3	28	259	7
4	24	220	6
5	23	209	5
6	20	187	5
7	19	173	4
8	18	165	4
9	14	132	3
10	14	124	3
11	14	124	3
12	13	118	3
13	12	107	3
14	11	99	3
15	11	99	3
16	11	96	2
17	6	55	1
18	3	30	1
19	3	28	1
20	1	11	0
21	1	8	0
22	1	8	0
23	1	6	0
24	1	6	0

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	305	1	7	No	No	No	No	No	No	No	No	No	No
2	2	293	1	7	No	No	No	No	No	No	No	No	No	No
3	2	287	1	7	No	No	No	No	No	No	No	No	No	No
4	2	244	1	6	No	No	No	No	No	No	No	No	No	No
5	2	232	1	5	No	No	No	No	No	No	No	No	No	No
6	2	207	1	5	No	No	No	No	No	No	No	No	No	No
7	2	192	1	4	No	No	No	No	No	No	No	No	No	No
8	2	183	1	4	No	No	No	No	No	No	No	No	No	No
9	2	146	1	3	No	No	No	No	No	No	No	No	No	No
10	2	138	1	3	No	No	No	No	No	No	No	No	No	No
11	2	138	1	3	No	No	No	No	No	No	No	No	No	No
12	2	131	1	3	No	No	No	No	No	No	No	No	No	No
13	2	119	1	3	No	No	No	No	No	No	No	No	No	No
14	2	110	1	3	No	No	No	No	No	No	No	No	No	No
15	2	110	1	3	No	No	No	No	No	No	No	No	No	No
16	2	107	1	2	No	No	No	No	No	No	No	No	No	No
17	2	61	1	1	No	No	No	No	No	No	No	No	No	No
18	2	33	1	1	No	No	No	No	No	No	No	No	No	No
19	2	31	1	1	No	No	No	No	No	No	No	No	No	No
20	2	12	1	0	No	No	No	No	No	No	No	No	No	No
21	2	9	1	0	No	No	No	No	No	No	No	No	No	No
22	2	9	1	0	No	No	No	No	No	No	No	No	No	No
23	2	7	1	0	No	No	No	No	No	No	No	No	No	No
24	2	7	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.1
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:01
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	7
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	312
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 42: Reed at Site Access

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	48	317	4
2	46	304	4
3	45	298	4
4	38	254	3
5	36	241	3
6	33	216	3
7	30	200	3
8	29	190	2
9	23	152	2
10	22	143	2
11	22	143	2
12	21	136	2
13	19	124	2
14	17	114	1
15	17	114	1
16	17	111	1
17	10	63	1
18	5	35	0
19	5	32	0
20	2	13	0
21	1	10	0
22	1	10	0
23	1	6	0
24	1	6	0

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	365	1	4	No	No	No	No	No	No	No	No	No	No
2	2	350	1	4	No	No	No	No	No	No	No	No	No	No
3	2	343	1	4	No	No	No	No	No	No	No	No	No	No
4	2	292	1	3	No	No	No	No	No	No	No	No	No	No
5	2	277	1	3	No	No	No	No	No	No	No	No	No	No
6	2	249	1	3	No	No	No	No	No	No	No	No	No	No
7	2	230	1	3	No	No	No	No	No	No	No	No	No	No
8	2	219	1	2	No	No	No	No	No	No	No	No	No	No
9	2	175	1	2	No	No	No	No	No	No	No	No	No	No
10	2	165	1	2	No	No	No	No	No	No	No	No	No	No
11	2	165	1	2	No	No	No	No	No	No	No	No	No	No
12	2	157	1	2	No	No	No	No	No	No	No	No	No	No
13	2	143	1	2	No	No	No	No	No	No	No	No	No	No
14	2	131	1	1	No	No	No	No	No	No	No	No	No	No
15	2	131	1	1	No	No	No	No	No	No	No	No	No	No
16	2	128	1	1	No	No	No	No	No	No	No	No	No	No
17	2	73	1	1	No	No	No	No	No	No	No	No	No	No
18	2	40	1	0	No	No	No	No	No	No	No	No	No	No
19	2	37	1	0	No	No	No	No	No	No	No	No	No	No
20	2	15	1	0	No	No	No	No	No	No	No	No	No	No
21	2	11	1	0	No	No	No	No	No	No	No	No	No	No
22	2	11	1	0	No	No	No	No	No	No	No	No	No	No
23	2	7	1	0	No	No	No	No	No	No	No	No	No	No
24	2	7	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.7
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	4
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	369
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

18-392 Strong at 27th Subdivision TIA

Vistro File: J:\...\18-392 Reed Rd Subdivision - TIA.vistro
Report File: J:\...\18-392 AM Dev Ph 1.pdf

Scenario 3 AM Dev 2020 Ph 1
6/19/2018

Trip Generation summary

Added Trips

Zone ID: Name	Land Use variables	Code	Ind. Var.	Rate	Quantity	% In	% Out	Trips In	Trips Out	Total Trips	% of Total Trips
1: 18-392 Reed Rd Sub	Homes	ITE 210	Home	0.740	75.000	25.00	75.00	14	42	56	100.00
					Added Trips Total			**14**	**42**	**56**	**100.00**

18-392 Strong at 27th Subdivision TIA

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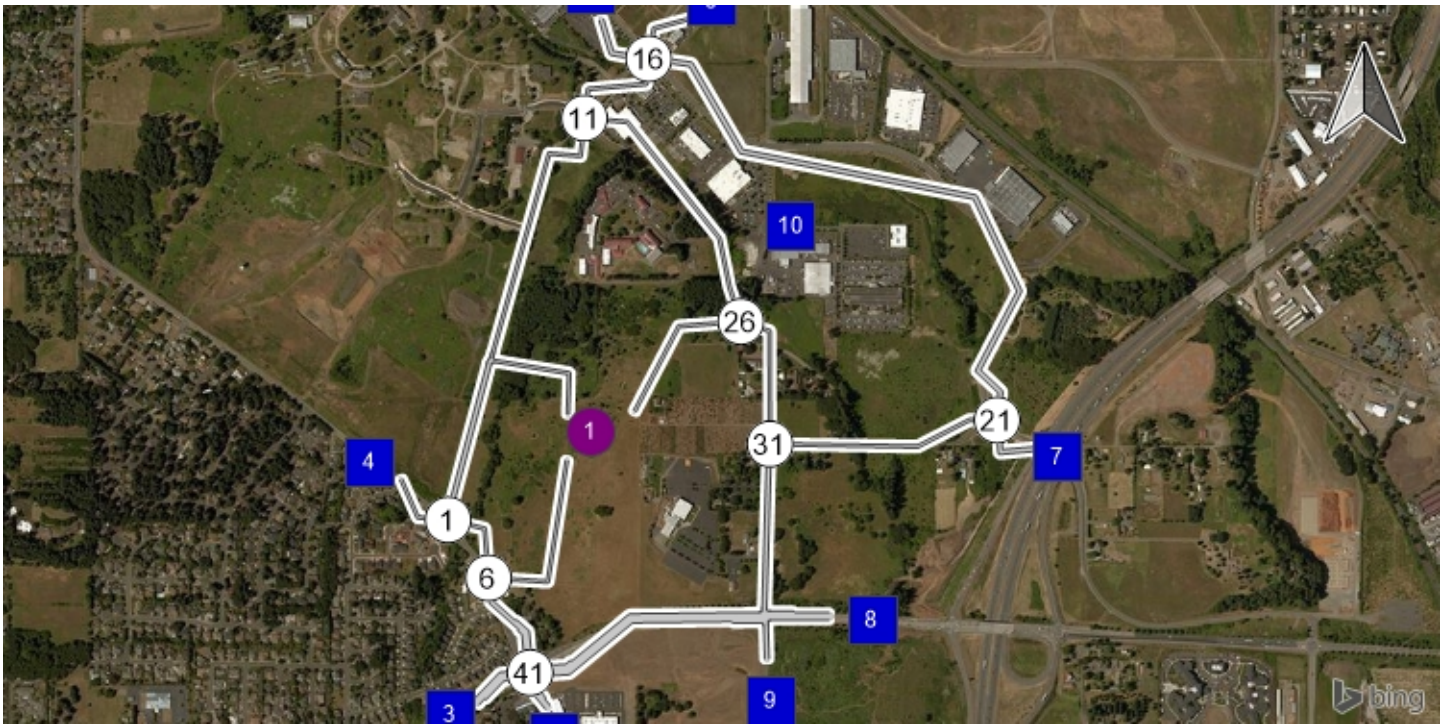
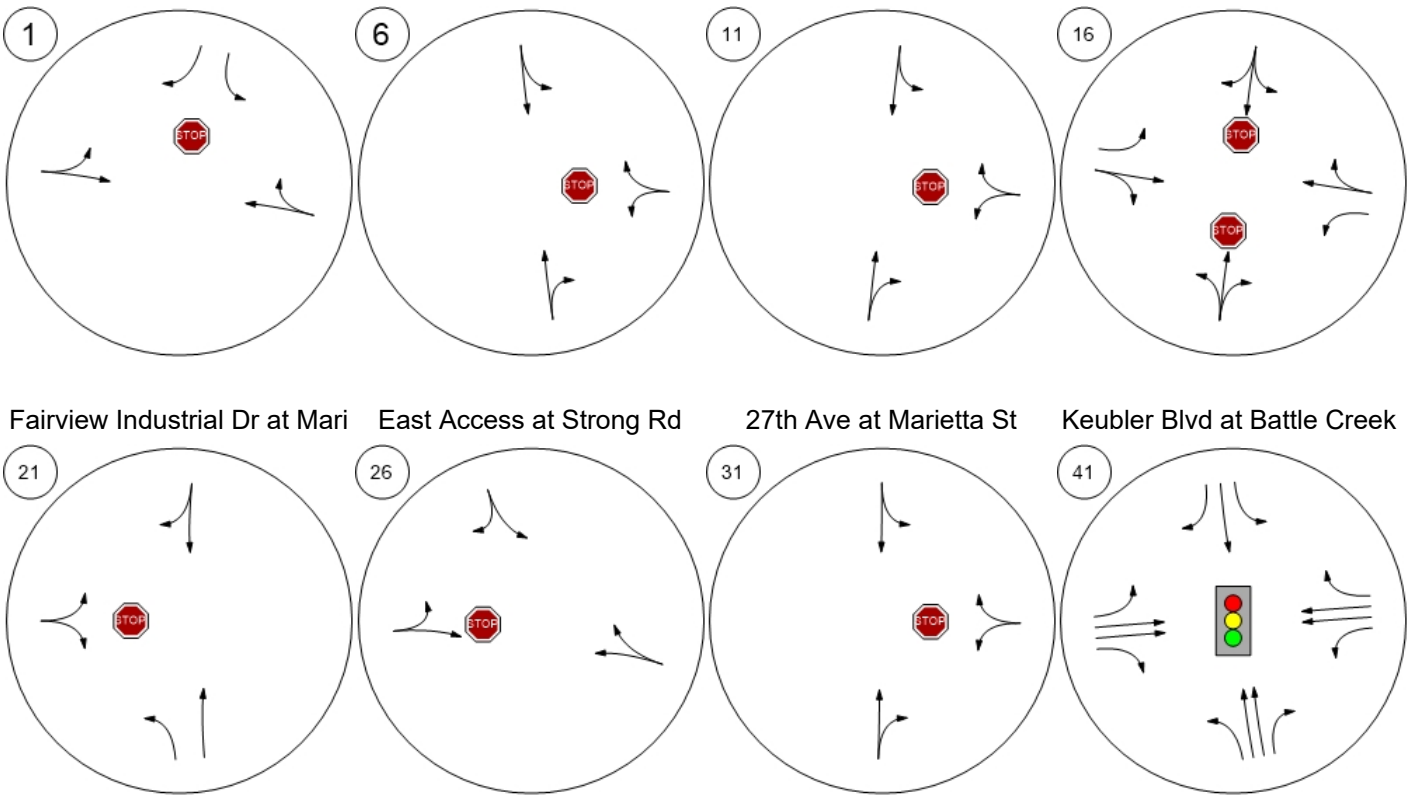
Scenario 3 AM Dev 2020 Ph 1
Report File: J:\...\18-392 AM Dev Ph 1.pdf
6/19/2018

Trip Distribution summary

Zone / Gate	Zone 1: 18-392 Reed Rd Sub			
	To 18-392 Reed Rd Sub:		From 18-392 Reed Rd Sub:	
	Share %	Trips	Share %	Trips
2: Gate	10.00	1	10.00	4
3: Gate	30.00	4	30.00	13
4: Gate	7.00	1	7.00	3
5: Gate	10.00	1	10.00	4
6: Gate	0.00	0	0.00	0
7: Gate	6.00	1	6.00	3
8: Gate	35.00	5	35.00	14
9: Gate	2.00	0	2.00	1
10: Gate	0.00	0	0.00	0
Total	**100.00**	**13**	**100.00**	**42**

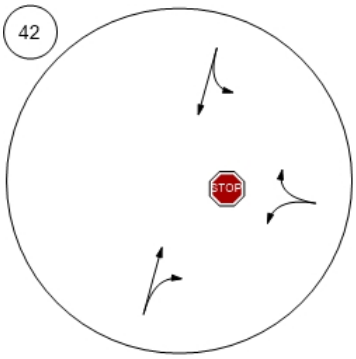
Report Figure 1: Lane Configuration and Traffic Control



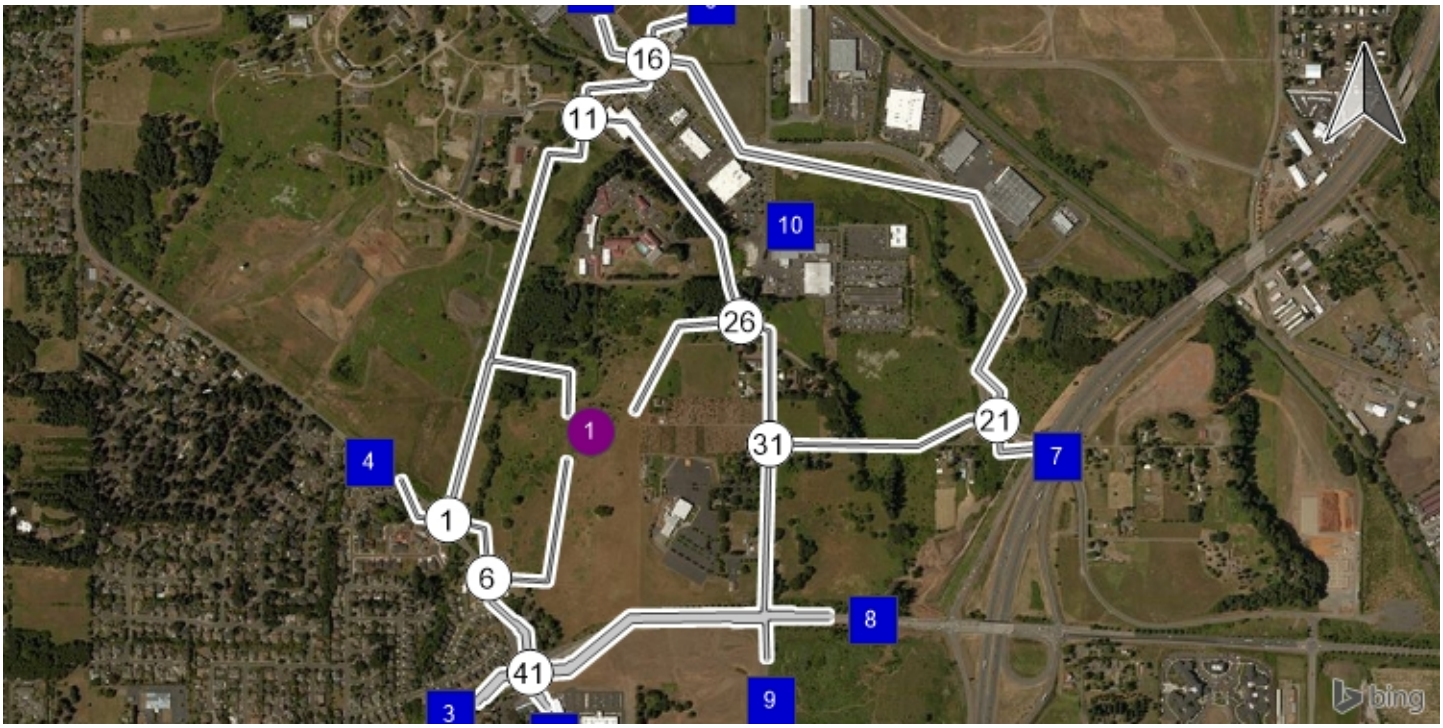


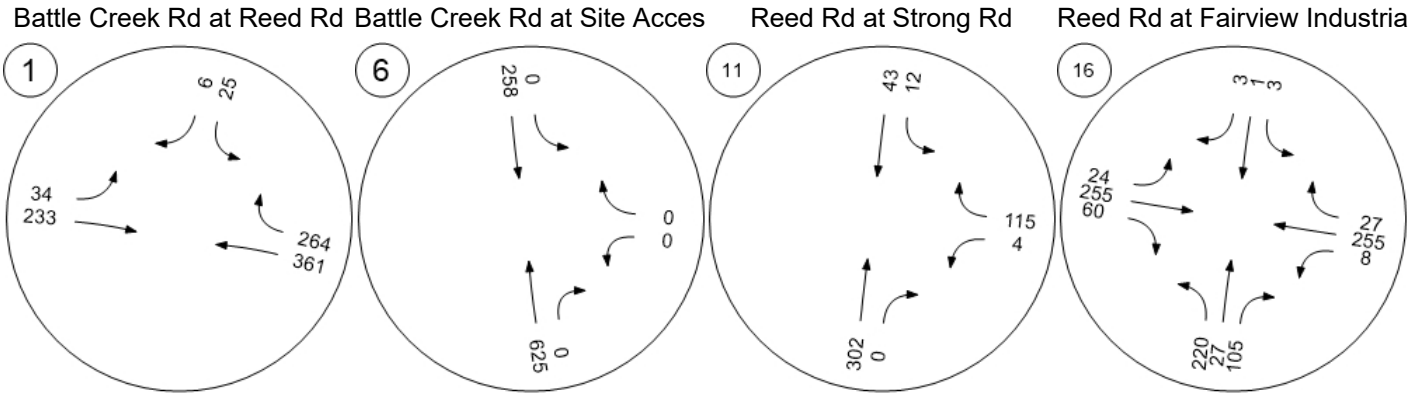
Report Figure 1: Lane Configuration and Traffic Control

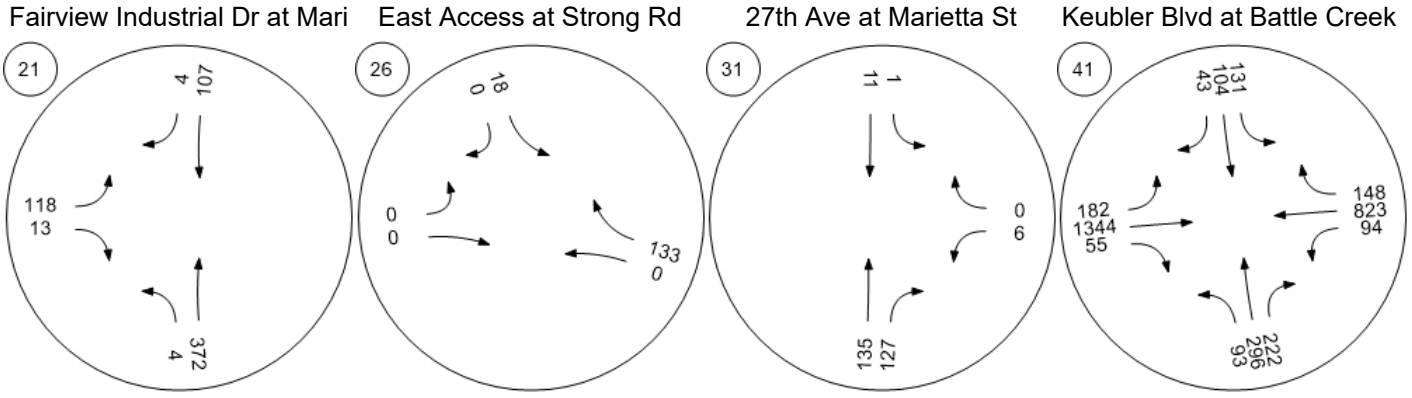
Reed at Site Access



Report Figure 2a: Traffic Volume - Base Volume

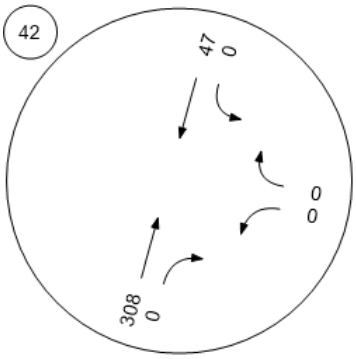




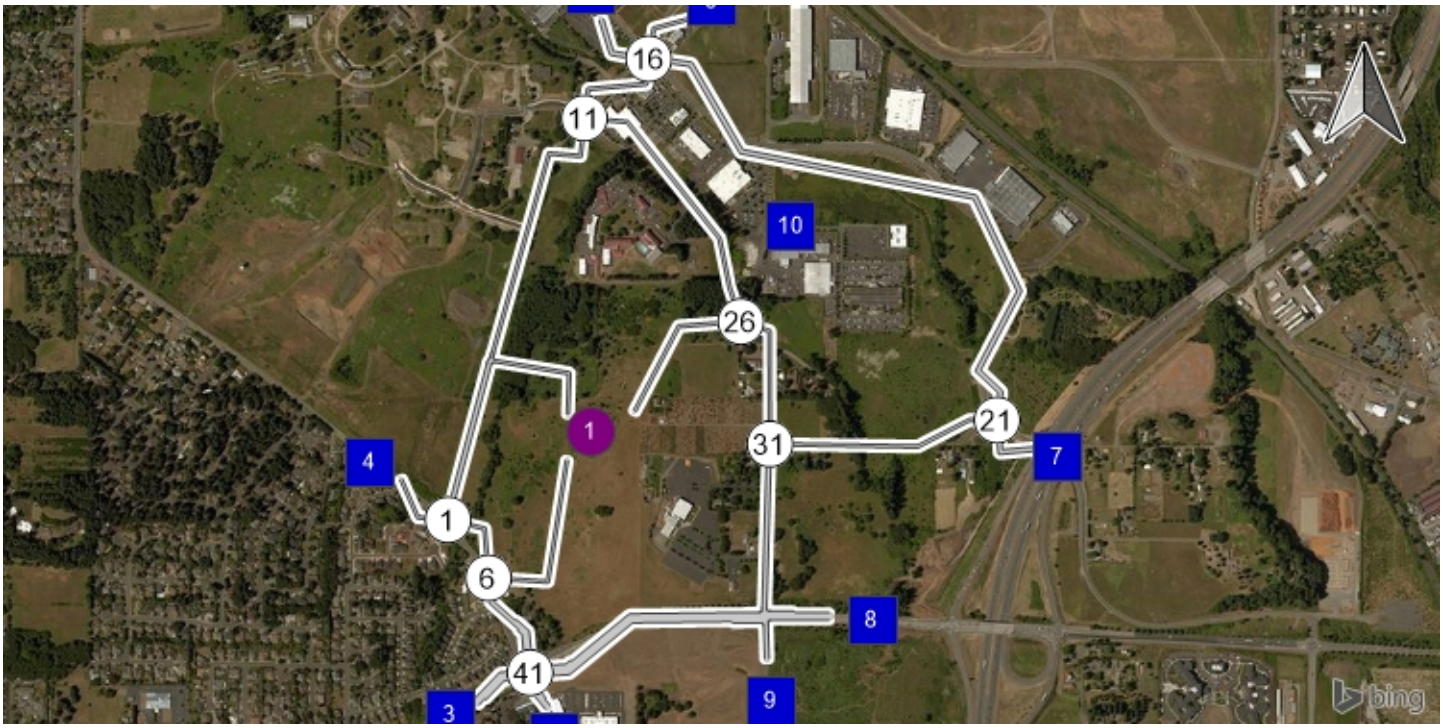


Report Figure 2a: Traffic Volume - Base Volume

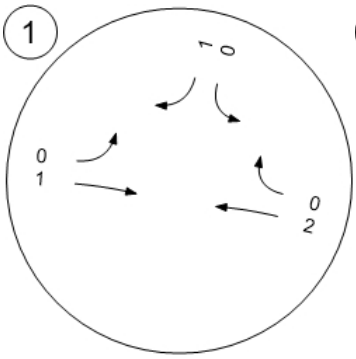
Reed at Site Access



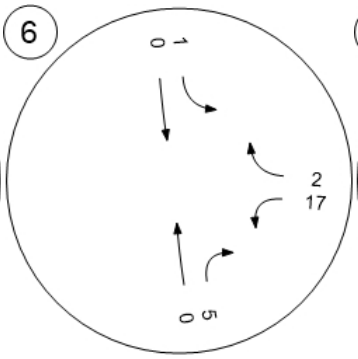
Report Figure 2d: Traffic Volume - Net New Site Trips



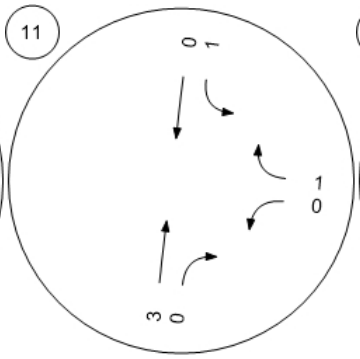
Battle Creek Rd at Reed Rd



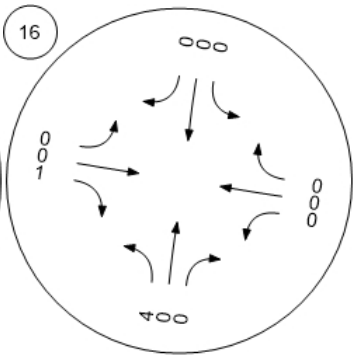
Battle Creek Rd at Site Acces



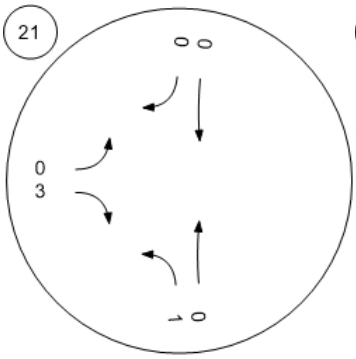
Reed Rd at Strong Rd



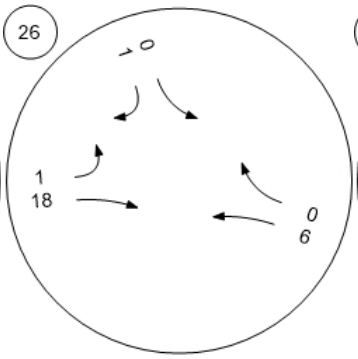
Reed Rd at Fairview Industria



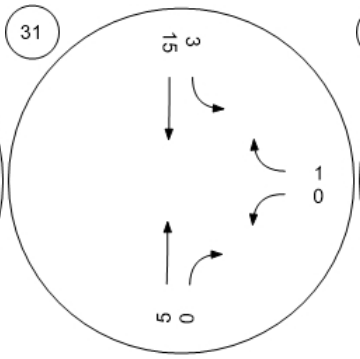
Fairview Industrial Dr at Mari



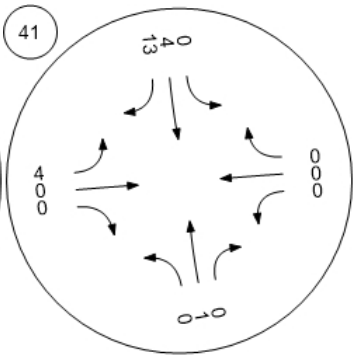
East Access at Strong Rd



27th Ave at Marietta St

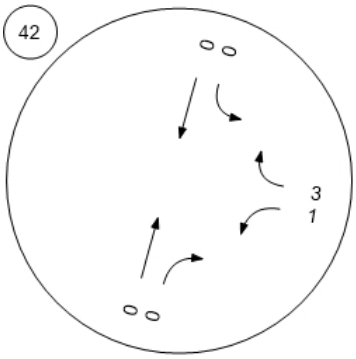


Keubler Blvd at Battle Creek

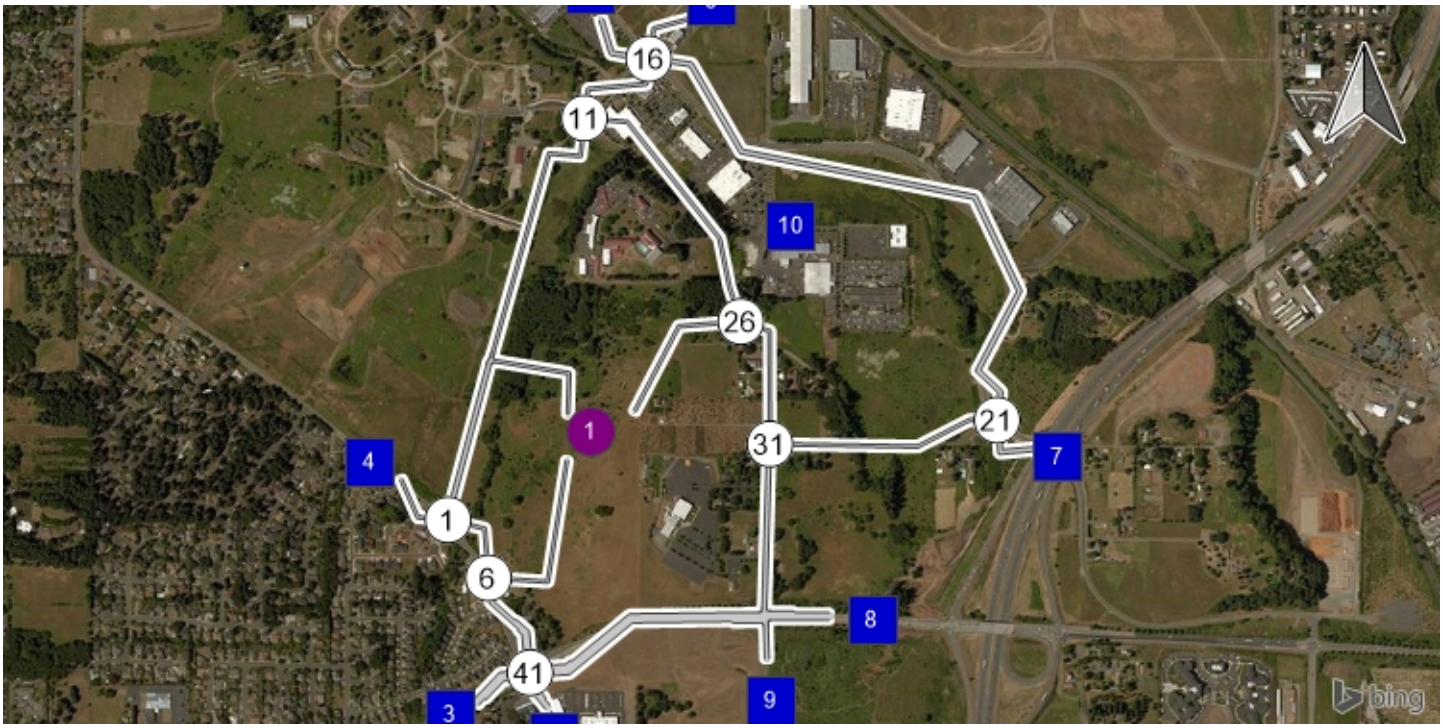


Report Figure 2d: Traffic Volume - Net New Site Trips

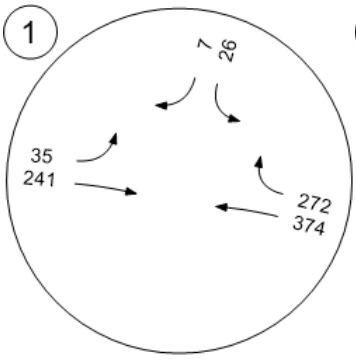
Reed at Site Access



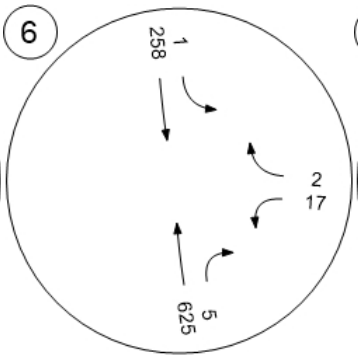
Report Figure 2f: Traffic Volume - Future Total Volume



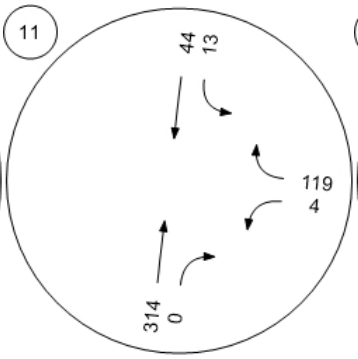
Battle Creek Rd at Reed Rd



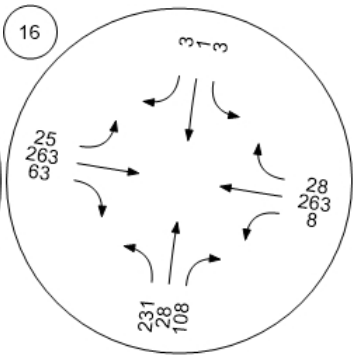
Battle Creek Rd at Site Acces



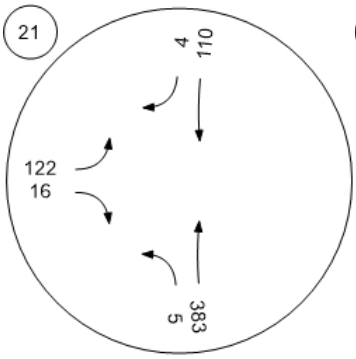
Reed Rd at Strong Rd



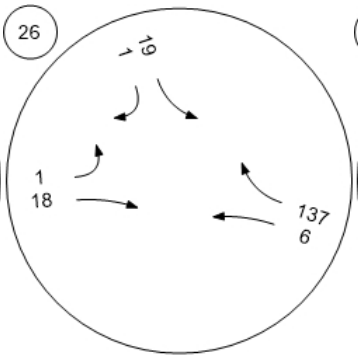
Reed Rd at Fairview Industria



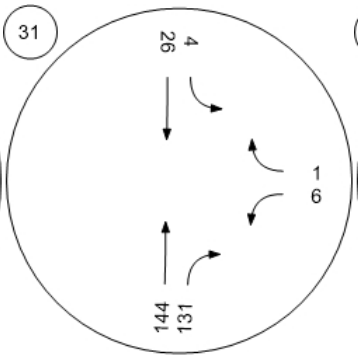
Fairview Industrial Dr at Mari



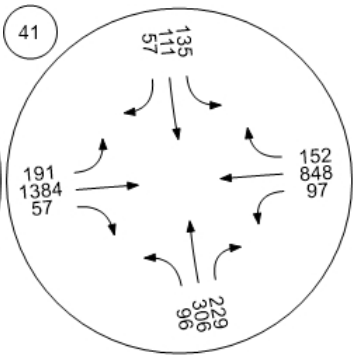
East Access at Strong Rd



27th Ave at Marietta St

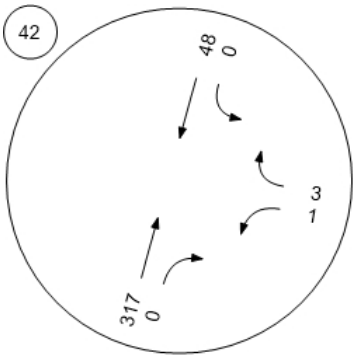


Keubler Blvd at Battle Creek

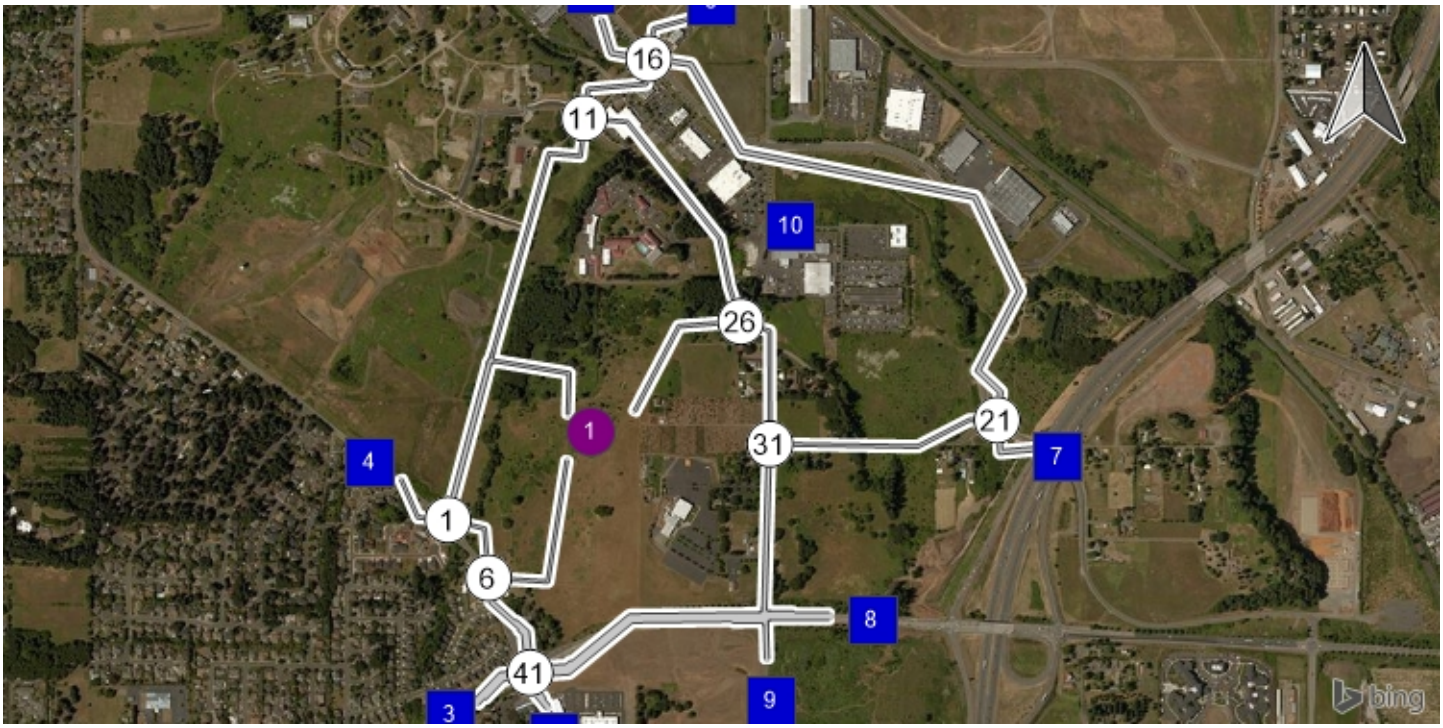


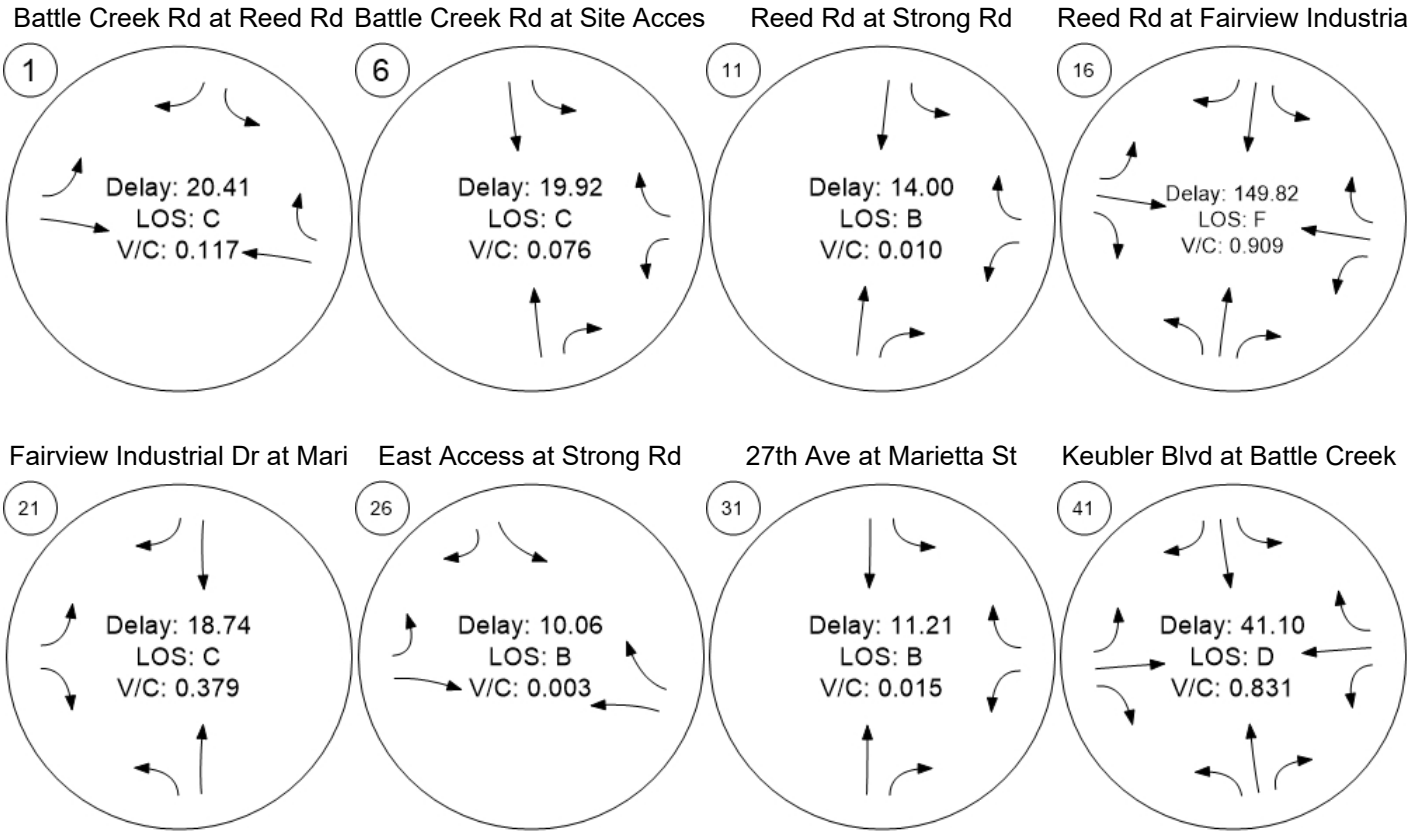
Report Figure 2f: Traffic Volume - Future Total Volume

Reed at Site Access



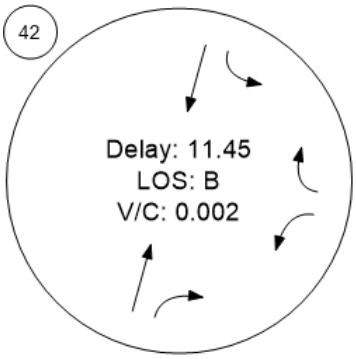
Report Figure 3: Traffic Conditions





Report Figure 3: Traffic Conditions

Reed at Site Access



18-392 Strong at 27th Subdivision TIA

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Report File: J:\...\18-392 AM Dev Ph 2.pdf

Scenario 5 AM Dev 2023 Ph 2
6/19/2018

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Battle Creek Rd at Reed Rd	Two-way stop	HCM 6th Edition	SB Left	0.131	22.0	C
6	Battle Creek Rd at Site Access	Two-way stop	HCM 6th Edition	WB Left	0.170	24.5	C
11	Reed Rd at Strong Rd	Two-way stop	HCM 6th Edition	WB Left	0.010	14.7	B
16	Reed Rd at Fairview Industrial Dr	Two-way stop	HCM 6th Edition	NB Left	1.025	205.7	F
21	Fairview Industrial Dr at Marietta St	Two-way stop	HCM 6th Edition	EB Left	0.413	20.2	C
26	East Access at Strong Rd	Two-way stop	HCM 6th Edition	EB Left	0.004	10.4	B
31	27th Ave at Marietta St	Two-way stop	HCM 6th Edition	WB Left	0.017	11.7	B
36	27th at Kuebler Blvd	Signalized	HCM 6th Edition	SB Left	0.813	24.1	C
41	Keubler Blvd at Battle Creek Rd	Signalized	HCM 6th Edition	NB Right	0.871	46.3	D
42	Reed at Site Access	Two-way stop	HCM 6th Edition	WB Left	0.002	11.7	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Battle Creek Rd at Reed Rd

Control Type:	Two-way stop	Delay (sec / veh):	22.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.131

Intersection Setup

Name	Reed Rd		Battle Creek Rd		Battle Creek Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Reed Rd		Battle Creek Rd		Battle Creek Rd	
Base Volume Input [veh/h]	25	6	34	233	361	264
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.20	3.20	7.10	7.10	3.80	3.80
Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	0	2	5	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	27	7	37	254	395	285
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	2	11	75	116	84
Total Analysis Volume [veh/h]	32	8	44	299	465	335
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.13	0.02	0.05	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	21.98	12.66	9.76	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.45	0.05	2.17	2.17	0.00	0.00
95th-Percentile Queue Length [ft]	11.14	1.28	54.13	54.13	0.00	0.00
d_A, Approach Delay [s/veh]	20.12		1.25		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	1.04					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 6: Battle Creek Rd at Site Access

Control Type:	Two-way stop	Delay (sec / veh):	24.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.170

Intersection Setup

Name	Battle Creek Rd		Battle Creek Rd		Site Access	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Battle Creek Rd		Battle Creek Rd		Site Access	
Base Volume Input [veh/h]	625	0	0	278	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	11	2	0	33	5
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	675	11	2	300	33	5
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	194	3	1	86	9	1
Total Analysis Volume [veh/h]	776	13	2	345	38	6
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.17	0.02
d_M, Delay for Movement [s/veh]	0.00	0.00	9.34	0.00	24.45	17.53
Movement LOS	A	A	A	A	C	C
95th-Percentile Queue Length [veh]	0.00	0.00	2.08	2.08	0.66	0.66
95th-Percentile Queue Length [ft]	0.00	0.00	52.01	52.01	16.54	16.54
d_A, Approach Delay [s/veh]	0.00		0.05		23.51	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.89					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 11: Reed Rd at Strong Rd

Control Type:	Two-way stop	Delay (sec / veh):	14.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.010

Intersection Setup

Name	Reed Rd		Reed Rd		Strong Rd	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Reed Rd		Reed Rd		Strong Rd	
Base Volume Input [veh/h]	302	0	12	43	4	115
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.60	1.60	5.50	5.50	1.70	1.70
Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	6	0	3	0	0	2
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	332	0	16	46	4	126
Peak Hour Factor	0.7500	0.7500	0.7500	0.7500	0.7500	0.7500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	111	0	5	15	1	42
Total Analysis Volume [veh/h]	443	0	21	61	5	168
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.02	0.00	0.01	0.27
d_M, Delay for Movement [s/veh]	0.00	0.00	8.34	0.00	14.67	13.16
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh]	0.00	0.00	0.24	0.24	1.16	1.16
95th-Percentile Queue Length [ft]	0.00	0.00	6.04	6.04	29.02	29.02
d_A, Approach Delay [s/veh]	0.00		2.14		13.21	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	3.52					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 16: Reed Rd at Fairview Industrial Dr

Control Type:	Two-way stop	Delay (sec / veh):	205.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.025

Intersection Setup

Name	Reed Rd			Reed Rd			Fairview Industrial Dr			Fairview Industrial Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Reed Rd			Reed Rd			Fairview Industrial Dr			Fairview Industrial Dr		
Base Volume Input [veh/h]	220	27	105	3	1	3	24	255	60	8	255	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.30	2.30	2.30	0.00	0.00	0.00	4.70	4.70	4.70	5.20	5.20	5.20
Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	8	0	0	0	0	0	0	0	3	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	246	29	113	3	1	3	26	275	68	9	275	29
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	74	9	34	1	0	1	8	83	20	3	83	9
Total Analysis Volume [veh/h]	296	35	136	4	1	4	31	331	82	11	331	35
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.02	0.12	0.20	0.02	0.00	0.01	0.03	0.00	0.00	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	205.69	205.33	198.58	24.56	17.76	10.53	8.14	0.00	0.00	8.22	0.00	0.00
Movement LOS	F	F	F	C	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	22.67	22.67	22.67	0.09	0.09	0.09	0.08	0.00	0.00	0.03	0.00	0.00
95th-Percentile Queue Length [ft]	566.85	566.85	566.85	2.35	2.35	2.35	2.03	0.00	0.00	0.74	0.00	0.00
d_A, Approach Delay [s/veh]	203.59			17.57			0.57			0.24		
Approach LOS	F			C			A			A		
d_I, Intersection Delay [s/veh]	73.69											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 21: Fairview Industrial Dr at Marietta St

Control Type:	Two-way stop	Delay (sec / veh):	20.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.413

Intersection Setup

Name	Fairview Industrial Dr		Fairview Industrial Dr		Marietta St	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Fairview Industrial Dr		Fairview Industrial Dr		Marietta St	
Base Volume Input [veh/h]	4	372	107	4	118	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.80	4.80	13.50	13.50	0.80	0.80
Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	0	0	0	0	5
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	402	116	4	127	19
Peak Hour Factor	0.7600	0.7600	0.7600	0.7600	0.7600	0.7600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	132	38	1	42	6
Total Analysis Volume [veh/h]	8	529	153	5	167	25
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.00	0.00	0.41	0.03
d_M, Delay for Movement [s/veh]	7.58	0.00	0.00	0.00	20.24	15.38
Movement LOS	A	A	A	A	C	C
95th-Percentile Queue Length [veh]	0.02	0.00	0.00	0.00	2.20	2.20
95th-Percentile Queue Length [ft]	0.43	0.00	0.00	0.00	55.09	55.09
d_A, Approach Delay [s/veh]	0.11		0.00		19.61	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	4.31					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 26: East Access at Strong Rd

Control Type:	Two-way stop	Delay (sec / veh):	10.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.004

Intersection Setup

Name	Strong Rd		East Access		Strong Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Strong Rd		East Access		Strong Rd	
Base Volume Input [veh/h]	18	0	0	0	0	133
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	3	2	36	13	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	19	3	2	36	13	144
Peak Hour Factor	0.6400	0.6400	0.6400	0.6400	0.6400	0.6400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	1	1	14	5	56
Total Analysis Volume [veh/h]	30	5	3	56	20	225
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Stop	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance		No	
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.07	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	10.37	9.50	7.31	0.00
Movement LOS	A	A	B	A	A	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.22	0.22	0.55	0.55
95th-Percentile Queue Length [ft]	0.00	0.00	5.57	5.57	13.72	13.72
d_A, Approach Delay [s/veh]	0.00		9.54		0.60	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.09					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 31: 27th Ave at Marietta St

Control Type:	Two-way stop	Delay (sec / veh):	11.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.017

Intersection Setup

Name	27th Ave		Strong Rd		Marietta St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	27th Ave		Strong Rd		Marietta St	
Base Volume Input [veh/h]	135	127	1	11	6	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.80	0.80	8.30	8.30	16.70	16.70
Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	11	0	5	31	0	2
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	157	137	6	43	6	2
Peak Hour Factor	0.6400	0.6400	0.6400	0.6400	0.6400	0.6400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	61	54	2	17	2	1
Total Analysis Volume [veh/h]	245	214	9	67	9	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	8.39	0.00	11.74	10.59
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh]	0.00	0.00	0.23	0.23	0.06	0.06
95th-Percentile Queue Length [ft]	0.00	0.00	5.73	5.73	1.61	1.61
d_A, Approach Delay [s/veh]	0.00		0.99		11.45	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.39					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 36: 27th at Kuebler Blvd

Control Type:	Signalized	Delay (sec / veh):	24.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.813

Intersection Setup

Name	27th Ave			27th Ave			Kuebler Blvd			Kuebler Blvd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	125.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	200.00	350.00	100.00	175.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	27th Ave			27th Ave			Kuebler Blvd			Kuebler Blvd		
Base Volume Input [veh/h]	0	7	99	6	2	6	30	1635	0	36	1067	225
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	6.60	6.60	6.60	14.30	14.30	14.30	3.50	3.50	3.50	7.30	7.30	7.30
Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	0	29	2	0	0	0	0	0	0	10
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	9	107	35	4	6	32	1766	0	39	1152	253
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	3	31	10	1	2	9	519	0	11	339	74
Total Analysis Volume [veh/h]	0	11	126	41	5	7	38	2078	0	46	1355	298
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	19	0	9	19	0	34	83	0	9	58	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	16	4	20	4	80	80	4	80	80
g / C, Green / Cycle	0.00	0.13	0.03	0.17	0.03	0.66	0.66	0.04	0.67	0.67
(v / s)_i Volume / Saturation Flow Rate	0.00	0.10	0.03	0.01	0.02	0.66	0.00	0.03	0.44	0.22
s, saturation flow rate [veh/h]	1544	1395	1445	1375	1584	3166	1413	1535	3068	1370
c, Capacity [veh/h]	0	187	48	231	48	2096	936	56	2051	916
d1, Uniform Delay [s]	0.00	49.85	57.68	41.91	57.84	19.93	0.00	57.42	11.80	8.42
k, delay calibration	0.11	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	22.05	30.55	0.43	25.36	7.34	0.00	24.39	0.37	0.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.73	0.85	0.05	0.80	0.99	0.00	0.82	0.66	0.33
d, Delay for Lane Group [s/veh]	0.00	71.90	88.23	42.34	83.20	27.28	0.00	81.82	12.17	8.63
Lane Group LOS	A	E	F	D	F	C	A	F	B	A
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.00	5.10	1.65	0.33	1.48	27.40	0.00	1.77	9.98	3.15
50th-Percentile Queue Length [ft]	0.00	127.41	41.23	8.21	37.04	685.10	0.00	44.15	249.53	78.80
95th-Percentile Queue Length [veh]	0.00	8.80	2.97	0.59	2.67	35.99	0.00	3.18	15.16	5.67
95th-Percentile Queue Length [ft]	0.00	219.97	74.21	14.78	66.68	899.73	0.00	79.47	379.06	141.85

Movement, Approach, & Intersection Results

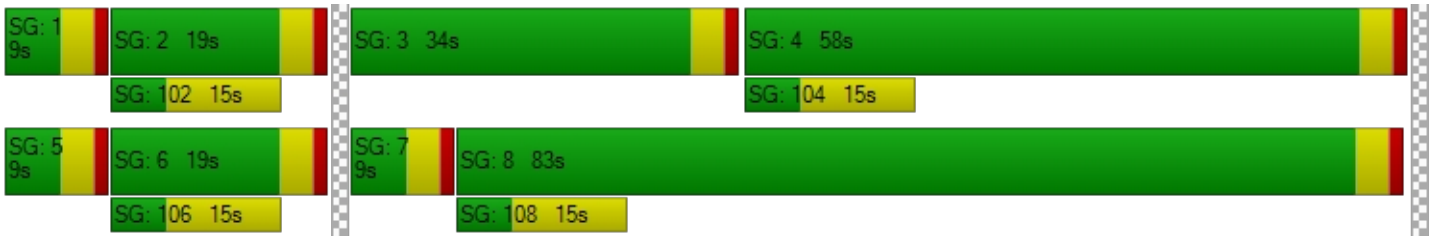
d_M, Delay for Movement [s/veh]	0.00	71.90	71.90	88.23	42.34	42.34	83.20	27.28	0.00	81.82	12.17	8.63
Movement LOS	A	E	E	F	D	D	F	C	A	F	B	A
d_A, Approach Delay [s/veh]	71.90			77.84			28.28			13.43		
Approach LOS	E			E			C			B		
d_I, Intersection Delay [s/veh]	24.13											
Intersection LOS	C											
Intersection V/C	0.813											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
I_p,int, Pedestrian LOS Score for Intersection	2.017	2.085	3.033	3.109
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250	1317	900
d_b, Bicycle Delay [s]	45.94	45.94	7.00	18.15
I_b,int, Bicycle LOS Score for Intersection	1.786	1.647	3.305	2.961
Bicycle LOS	A	A	C	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 41: Keubler Blvd at Battle Creek Rd

Control Type:	Signalized	Delay (sec / veh):	46.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.871

Intersection Setup

Name	Battle Creek Rd			Battle Creek Rd			Kuebler Blvd			Kuebler Blvd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	150.00	275.00	100.00	275.00	350.00	100.00	350.00	250.00	100.00	250.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Battle Creek Rd			Battle Creek Rd			Kuebler Blvd			Kuebler Blvd		
Base Volume Input [veh/h]	93	296	222	131	104	43	182	1344	55	94	823	148
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.40	2.40	2.40	7.20	7.20	7.20	3.20	3.20	3.20	7.40	7.40	7.40
Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	3	0	0	8	25	8	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	100	323	240	141	120	71	205	1452	59	102	889	160
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	90	67	39	33	20	57	403	16	28	247	44
Total Analysis Volume [veh/h]	111	359	267	157	133	79	228	1613	66	113	988	178
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	23	0	15	26	0	35	60	0	12	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	19	19	11	22	22	18	56	56	8	46	46
g / C, Green / Cycle	0.07	0.17	0.17	0.10	0.20	0.20	0.16	0.51	0.51	0.07	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.07	0.11	0.19	0.10	0.08	0.06	0.14	0.51	0.05	0.07	0.32	0.13
s, saturation flow rate [veh/h]	1598	3194	1426	1536	1613	1371	1587	3174	1417	1533	3066	1369
c, Capacity [veh/h]	116	556	248	154	325	276	258	1611	719	112	1281	572
d1, Uniform Delay [s]	50.82	42.28	45.43	49.50	38.24	37.24	45.06	27.08	13.99	51.00	27.49	21.42
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	28.94	5.70	78.73	39.26	3.79	2.60	9.71	10.72	0.05	42.63	1.01	0.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.95	0.65	1.08	1.02	0.41	0.29	0.88	1.00	0.09	1.01	0.77	0.31
d, Delay for Lane Group [s/veh]	79.76	47.98	124.16	88.77	42.04	39.83	54.76	37.80	14.04	93.63	28.51	21.72
Lane Group LOS	E	D	F	F	D	D	D	F	B	F	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	3.97	4.96	12.15	5.88	3.46	2.00	6.74	22.26	0.85	4.39	11.03	3.09
50th-Percentile Queue Length [ft]	99.28	124.11	303.75	147.02	86.61	50.12	168.54	556.47	21.28	109.67	275.66	77.33
95th-Percentile Queue Length [veh]	7.15	8.62	18.51	9.94	6.24	3.61	11.00	30.03	1.53	7.85	16.47	5.57
95th-Percentile Queue Length [ft]	178.70	215.47	462.86	248.40	155.90	90.21	275.00	750.66	38.31	196.29	411.80	139.20

Movement, Approach, & Intersection Results

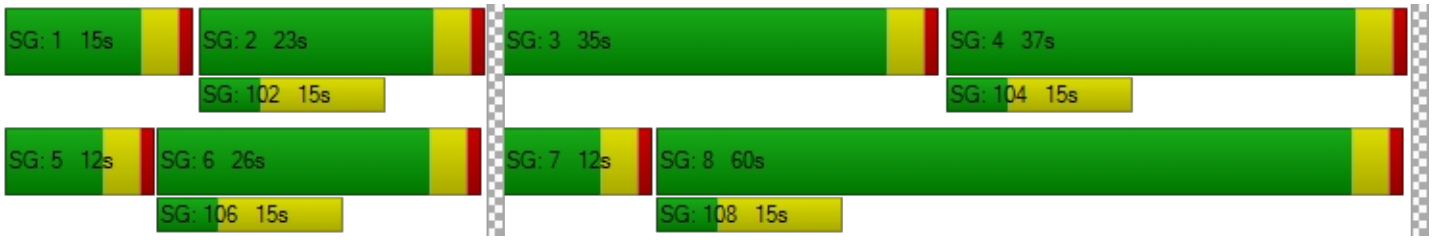
d_M, Delay for Movement [s/veh]	79.76	47.98	124.16	88.77	42.04	39.83	54.76	37.80	14.04	93.63	28.51	21.72
Movement LOS	E	D	F	F	D	D	D	F	B	F	C	C
d_A, Approach Delay [s/veh]	80.36			61.45			39.01			33.32		
Approach LOS	F			E			D			C		
d_I, Intersection Delay [s/veh]	46.34											
Intersection LOS	D											
Intersection V/C	0.871											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	46.37	46.37	46.37	46.37
l_p,int, Pedestrian LOS Score for Intersection	2.516	2.532	2.965	3.003
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	345	400	1018	600
d_b, Bicycle Delay [s]	37.64	35.20	13.25	26.95
l_b,int, Bicycle LOS Score for Intersection	2.168	2.168	3.133	2.615
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 42: Reed at Site Access

Control Type:	Two-way stop	Delay (sec / veh):	11.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.002

Intersection Setup

Name	Reed Rd		Reed Rd		Site Access	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Reed Rd		Reed Rd		Site Access	
Base Volume Input [veh/h]	308	0	0	47	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	1	6
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	333	0	0	51	1	6
Peak Hour Factor	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	104	0	0	16	0	2
Total Analysis Volume [veh/h]	416	0	0	64	1	8
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	8.15	0.00	11.69	10.74
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.00	0.04	0.04
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	0.00	1.10	1.10
d_A, Approach Delay [s/veh]	0.00		0.00		10.85	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.20					
Intersection LOS	B					

18-392 Strong at 27th Subdivision TIA

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Report File: J:\...\18-392 AM Dev Ph 2.pdf

Scenario 5 AM Dev 2023 Ph 2
6/19/2018

Turning Movement Volume: Summary

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
1	Battle Creek Rd at Reed Rd	27	7	37	254	395	285	1005

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
6	Battle Creek Rd at Site Access	675	11	2	300	33	5	1026

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
11	Reed Rd at Strong Rd	332	0	16	46	4	126	524

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Reed Rd at Fairview Industrial Dr	246	29	113	3	1	3	26	275	68	9	275	29	1077

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
21	Fairview Industrial Dr at Marietta St	6	402	116	4	127	19	674

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
26	East Access at Strong Rd	19	3	2	36	13	144	217

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
31	27th Ave at Marietta St	157	137	6	43	6	2	351

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
36	27th at Kuebler Blvd	0	9	107	35	4	6	32	1766	0	39	1152	253	3403

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
41	Keubler Blvd at Battle Creek Rd	100	323	240	141	120	71	205	1452	59	102	889	160	3862

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
42	Reed at Site Access	333	0	0	51	1	6	391

18-392 Strong at 27th Subdivision TIA

Vistro File: J:\...\18-392 Reed Rd Subdivision - TIA.vistro
Report File: J:\...\18-392 AM Dev Ph 2.pdf

Scenario 5 AM Dev 2023 Ph 2
6/19/2018

Turning Movement Volume: Detail

ID	Intersection Name	Volume Type	Southbound		Eastbound		Westbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
1	Battle Creek Rd at Reed Rd	Final Base	25	6	34	233	361	264	923
		Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	1	0	2	5	0	8
		Other	0	0	0	0	0	0	0
		Future Total	**27**	**7**	**37**	**254**	**395**	**285**	**1005**

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
6	Battle Creek Rd at Site Access	Final Base	625	0	0	278	0	0	903
		Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	11	2	0	33	5	51
		Other	0	0	0	0	0	0	0
		Future Total	**675**	**11**	**2**	**300**	**33**	**5**	**1026**

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
11	Reed Rd at Strong Rd	Final Base	302	0	12	43	4	115	476
		Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	6	0	3	0	0	2	11
		Other	0	0	0	0	0	0	0
		Future Total	**332**	**0**	**16**	**46**	**4**	**126**	**524**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Reed Rd at Fairview Industrial Dr	Final Base	220	27	105	3	1	3	24	255	60	8	255	27	988
		Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	8	0	0	0	0	0	0	0	3	0	0	0	11
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**246**	**29**	**113**	**3**	**1**	**3**	**26**	**275**	**68**	**9**	**275**	**29**	**1077**

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
21	Fairview Industrial Dr at Marietta St	Final Base	4	372	107	4	118	13	618
		Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	2	0	0	0	0	5	7
		Other	0	0	0	0	0	0	0
		Future Total	**6**	**402**	**116**	**4**	**127**	**19**	**674**

ID	Intersection Name	Volume Type	Southbound		Eastbound		Westbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
26	East Access at Strong Rd	Final Base	18	0	0	0	0	133	151
		Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	3	2	36	13	0	54
		Other	0	0	0	0	0	0	0
		Future Total	**19**	**3**	**2**	**36**	**13**	**144**	**217**

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
31	27th Ave at Marietta St	Final Base	135	127	1	11	6	0	280
		Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	11	0	5	31	0	2	49
		Other	0	0	0	0	0	0	0
		Future Total	**157**	**137**	**6**	**43**	**6**	**2**	**351**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
36	27th at Kuebler Blvd	Final Base	0	7	99	6	2	6	30	1635	0	36	1067	225	3113
		Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	1	0	29	2	0	0	0	0	0	0	10	42
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**0**	**9**	**107**	**35**	**4**	**6**	**32**	**1766**	**0**	**39**	**1152**	**253**	**3403**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
41	Keubler Blvd at Battle Creek Rd	Final Base	93	296	222	131	104	43	182	1344	55	94	823	148	3535
		Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	3	0	0	8	25	8	0	0	0	0	0	44
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**100**	**323**	**240**	**141**	**120**	**71**	**205**	**1452**	**59**	**102**	**889**	**160**	**3862**

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
42	Reed at Site Access	Final Base	308	0	0	47	0	0	355
		Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	1	6	7
		Other	0	0	0	0	0	0	0
		Future Total	**333**	**0**	**0**	**51**	**1**	**6**	**391**

Signal Warrants Report For Intersection 1: Battle Creek Rd at Reed Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	N
1	680	291	34
2	653	279	33
3	639	274	32
4	544	233	27
5	517	221	26
6	462	198	23
7	428	183	21
8	408	175	20
9	326	140	16
10	306	131	15
11	306	131	15
12	292	125	15
13	265	113	13
14	245	105	12
15	245	105	12
16	238	102	12
17	136	58	7
18	75	32	4
19	68	29	3
20	27	12	1
21	20	9	1
22	20	9	1
23	14	6	1
24	14	6	1

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	971	2	34	No	No	No	No	No	No	No	No	No	No
2	2	932	2	33	No	No	No	No	No	No	No	No	No	No
3	2	913	2	32	No	No	No	No	No	No	No	No	No	No
4	2	777	2	27	No	No	No	No	No	No	No	No	No	No
5	2	738	2	26	No	No	No	No	No	No	No	No	No	No
6	2	660	2	23	No	No	No	No	No	No	No	No	No	No
7	2	611	2	21	No	No	No	No	No	No	No	No	No	No
8	2	583	2	20	No	No	No	No	No	No	No	No	No	No
9	2	466	2	16	No	No	No	No	No	No	No	No	No	No
10	2	437	2	15	No	No	No	No	No	No	No	No	No	No
11	2	437	2	15	No	No	No	No	No	No	No	No	No	No
12	2	417	2	15	No	No	No	No	No	No	No	No	No	No
13	2	378	2	13	No	No	No	No	No	No	No	No	No	No
14	2	350	2	12	No	No	No	No	No	No	No	No	No	No
15	2	350	2	12	No	No	No	No	No	No	No	No	No	No
16	2	340	2	12	No	No	No	No	No	No	No	No	No	No
17	2	194	2	7	No	No	No	No	No	No	No	No	No	No
18	2	107	2	4	No	No	No	No	No	No	No	No	No	No
19	2	97	2	3	No	No	No	No	No	No	No	No	No	No
20	2	39	2	1	No	No	No	No	No	No	No	No	No	No
21	2	29	2	1	No	No	No	No	No	No	No	No	No	No
22	2	29	2	1	No	No	No	No	No	No	No	No	No	No
23	2	20	2	1	No	No	No	No	No	No	No	No	No	No
24	2	20	2	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	20.1
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:11
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	34
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	1005
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 6: Battle Creek Rd at Site Access

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	E
1	686	302	38
2	659	290	36
3	645	284	36
4	549	242	30
5	521	230	29
6	466	205	26
7	432	190	24
8	412	181	23
9	329	145	18
10	309	136	17
11	309	136	17
12	295	130	16
13	268	118	15
14	247	109	14
15	247	109	14
16	240	106	13
17	137	60	8
18	75	33	4
19	69	30	4
20	27	12	2
21	21	9	1
22	21	9	1
23	14	6	1
24	14	6	1

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	988	1	38	No	No	No	No	No	No	No	No	No	No
2	2	949	1	36	No	No	No	No	No	No	No	No	No	No
3	2	929	1	36	No	No	No	No	No	No	No	No	No	No
4	2	791	1	30	No	No	No	No	No	No	No	No	No	No
5	2	751	1	29	No	No	No	No	No	No	No	No	No	No
6	2	671	1	26	No	No	No	No	No	No	No	No	No	No
7	2	622	1	24	No	No	No	No	No	No	No	No	No	No
8	2	593	1	23	No	No	No	No	No	No	No	No	No	No
9	2	474	1	18	No	No	No	No	No	No	No	No	No	No
10	2	445	1	17	No	No	No	No	No	No	No	No	No	No
11	2	445	1	17	No	No	No	No	No	No	No	No	No	No
12	2	425	1	16	No	No	No	No	No	No	No	No	No	No
13	2	386	1	15	No	No	No	No	No	No	No	No	No	No
14	2	356	1	14	No	No	No	No	No	No	No	No	No	No
15	2	356	1	14	No	No	No	No	No	No	No	No	No	No
16	2	346	1	13	No	No	No	No	No	No	No	No	No	No
17	2	197	1	8	No	No	No	No	No	No	No	No	No	No
18	2	108	1	4	No	No	No	No	No	No	No	No	No	No
19	2	99	1	4	No	No	No	No	No	No	No	No	No	No
20	2	39	1	2	No	No	No	No	No	No	No	No	No	No
21	2	30	1	1	No	No	No	No	No	No	No	No	No	No
22	2	30	1	1	No	No	No	No	No	No	No	No	No	No
23	2	20	1	1	No	No	No	No	No	No	No	No	No	No
24	2	20	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	23.5
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:14
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	38
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	1026
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 11: Reed Rd at Strong Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	62	332	130
2	60	319	125
3	58	312	122
4	50	266	104
5	47	252	99
6	42	226	88
7	39	209	82
8	37	199	78
9	30	159	62
10	28	149	59
11	28	149	59
12	27	143	56
13	24	129	51
14	22	120	47
15	22	120	47
16	22	116	46
17	12	66	26
18	7	37	14
19	6	33	13
20	2	13	5
21	2	10	4
22	2	10	4
23	1	7	3
24	1	7	3

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	394	1	130	No	No	No	Yes	No	No	No	No	No	No
2	2	379	1	125	No	No	No	Yes	No	No	No	No	No	No
3	2	370	1	122	No	No	No	Yes	No	No	No	No	No	No
4	2	316	1	104	No	No	No	No	No	No	No	No	No	No
5	2	299	1	99	No	No	No	No	No	No	No	No	No	No
6	2	268	1	88	No	No	No	No	No	No	No	No	No	No
7	2	248	1	82	No	No	No	No	No	No	No	No	No	No
8	2	236	1	78	No	No	No	No	No	No	No	No	No	No
9	2	189	1	62	No	No	No	No	No	No	No	No	No	No
10	2	177	1	59	No	No	No	No	No	No	No	No	No	No
11	2	177	1	59	No	No	No	No	No	No	No	No	No	No
12	2	170	1	56	No	No	No	No	No	No	No	No	No	No
13	2	153	1	51	No	No	No	No	No	No	No	No	No	No
14	2	142	1	47	No	No	No	No	No	No	No	No	No	No
15	2	142	1	47	No	No	No	No	No	No	No	No	No	No
16	2	138	1	46	No	No	No	No	No	No	No	No	No	No
17	2	78	1	26	No	No	No	No	No	No	No	No	No	No
18	2	44	1	14	No	No	No	No	No	No	No	No	No	No
19	2	39	1	13	No	No	No	No	No	No	No	No	No	No
20	2	15	1	5	No	No	No	No	No	No	No	No	No	No
21	2	12	1	4	No	No	No	No	No	No	No	No	No	No
22	2	12	1	4	No	No	No	No	No	No	No	No	No	No
23	2	8	1	3	No	No	No	No	No	No	No	No	No	No
24	2	8	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	3	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.2
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:28
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	130
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	524
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 16: Reed Rd at Fairview Industrial Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N, S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	N	S
1	313	369	7	388
2	300	354	7	372
3	294	347	7	365
4	250	295	6	310
5	238	280	5	295
6	213	251	5	264
7	197	232	4	244
8	188	221	4	233
9	150	177	3	186
10	141	166	3	175
11	141	166	3	175
12	135	159	3	167
13	122	144	3	151
14	113	133	3	140
15	113	133	3	140
16	110	129	2	136
17	63	74	1	78
18	34	41	1	43
19	31	37	1	39
20	13	15	0	16
21	9	11	0	12
22	9	11	0	12
23	6	7	0	8
24	6	7	0	8

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	4	682	2	395	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
2	4	654	2	379	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
3	4	641	2	372	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
4	4	545	2	316	No	Yes	Yes	Yes	No	No	No	Yes	No	No
5	4	518	2	300	No	Yes	Yes	Yes	No	No	No	Yes	No	No
6	4	464	2	269	No	No	Yes	Yes	No	No	No	No	No	No
7	4	429	2	248	No	No	Yes	Yes	No	No	No	No	No	No
8	4	409	2	237	No	No	No	Yes	No	No	No	No	No	No
9	4	327	2	189	No	No	No	No	No	No	No	No	No	No
10	4	307	2	178	No	No	No	No	No	No	No	No	No	No
11	4	307	2	178	No	No	No	No	No	No	No	No	No	No
12	4	294	2	170	No	No	No	No	No	No	No	No	No	No
13	4	266	2	154	No	No	No	No	No	No	No	No	No	No
14	4	246	2	143	No	No	No	No	No	No	No	No	No	No
15	4	246	2	143	No	No	No	No	No	No	No	No	No	No
16	4	239	2	138	No	No	No	No	No	No	No	No	No	No
17	4	137	2	79	No	No	No	No	No	No	No	No	No	No
18	4	75	2	44	No	No	No	No	No	No	No	No	No	No
19	4	68	2	40	No	No	No	No	No	No	No	No	No	No
20	4	28	2	16	No	No	No	No	No	No	No	No	No	No
21	4	20	2	12	No	No	No	No	No	No	No	No	No	No
22	4	20	2	12	No	No	No	No	No	No	No	No	No	No
23	4	13	2	8	No	No	No	No	No	No	No	No	No	No
24	4	13	2	8	No	No	No	No	No	No	No	No	No	No
Hours Met					3	5	7	8	0	0	3	5	3	0

Warrant 3 Condition A

Orientation	N	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	17.6	203.6
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:02	21:56
Delay Condition Met	No	Yes
Volume on Minor Street Approach During Same Hour	7	388
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	1077	1077
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	Yes
Warrant Met for Intersection	**Yes**	

Signal Warrants Report For Intersection 21: Fairview Industrial Dr at Marietta St

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	408	120	146
2	392	115	140
3	384	113	137
4	326	96	117
5	310	91	111
6	277	82	99
7	257	76	92
8	245	72	88
9	196	58	70
10	184	54	66
11	184	54	66
12	175	52	63
13	159	47	57
14	147	43	53
15	147	43	53
16	143	42	51
17	82	24	29
18	45	13	16
19	41	12	15
20	16	5	6
21	12	4	4
22	12	4	4
23	8	2	3
24	8	2	3

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	3	528	1	146	No	Yes	Yes	Yes	No	No	No	Yes	No	No
2	3	507	1	140	No	Yes	Yes	Yes	No	No	No	Yes	No	No
3	3	497	1	137	No	Yes	Yes	Yes	No	No	No	No	No	No
4	3	422	1	117	No	No	Yes	Yes	No	No	No	No	No	No
5	3	401	1	111	No	No	No	Yes	No	No	No	No	No	No
6	3	359	1	99	No	No	No	Yes	No	No	No	No	No	No
7	3	333	1	92	No	No	No	No	No	No	No	No	No	No
8	3	317	1	88	No	No	No	No	No	No	No	No	No	No
9	3	254	1	70	No	No	No	No	No	No	No	No	No	No
10	3	238	1	66	No	No	No	No	No	No	No	No	No	No
11	3	238	1	66	No	No	No	No	No	No	No	No	No	No
12	3	227	1	63	No	No	No	No	No	No	No	No	No	No
13	3	206	1	57	No	No	No	No	No	No	No	No	No	No
14	3	190	1	53	No	No	No	No	No	No	No	No	No	No
15	3	190	1	53	No	No	No	No	No	No	No	No	No	No
16	3	185	1	51	No	No	No	No	No	No	No	No	No	No
17	3	106	1	29	No	No	No	No	No	No	No	No	No	No
18	3	58	1	16	No	No	No	No	No	No	No	No	No	No
19	3	53	1	15	No	No	No	No	No	No	No	No	No	No
20	3	21	1	6	No	No	No	No	No	No	No	No	No	No
21	3	16	1	4	No	No	No	No	No	No	No	No	No	No
22	3	16	1	4	No	No	No	No	No	No	No	No	No	No
23	3	10	1	3	No	No	No	No	No	No	No	No	No	No
24	3	10	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					0	3	4	6	0	0	0	2	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	19.6
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:47
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	146
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	674
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 26: East Access at Strong Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	N	W
1	157	22	38
2	151	21	36
3	148	21	36
4	126	18	30
5	119	17	29
6	107	15	26
7	99	14	24
8	94	13	23
9	75	11	18
10	71	10	17
11	71	10	17
12	68	9	16
13	61	9	15
14	57	8	14
15	57	8	14
16	55	8	13
17	31	4	8
18	17	2	4
19	16	2	4
20	6	1	2
21	5	1	1
22	5	1	1
23	3	0	1
24	3	0	1

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	179	1	38	No	No	No	No	No	No	No	No	No	No
2	2	172	1	36	No	No	No	No	No	No	No	No	No	No
3	2	169	1	36	No	No	No	No	No	No	No	No	No	No
4	2	144	1	30	No	No	No	No	No	No	No	No	No	No
5	2	136	1	29	No	No	No	No	No	No	No	No	No	No
6	2	122	1	26	No	No	No	No	No	No	No	No	No	No
7	2	113	1	24	No	No	No	No	No	No	No	No	No	No
8	2	107	1	23	No	No	No	No	No	No	No	No	No	No
9	2	86	1	18	No	No	No	No	No	No	No	No	No	No
10	2	81	1	17	No	No	No	No	No	No	No	No	No	No
11	2	81	1	17	No	No	No	No	No	No	No	No	No	No
12	2	77	1	16	No	No	No	No	No	No	No	No	No	No
13	2	70	1	15	No	No	No	No	No	No	No	No	No	No
14	2	65	1	14	No	No	No	No	No	No	No	No	No	No
15	2	65	1	14	No	No	No	No	No	No	No	No	No	No
16	2	63	1	13	No	No	No	No	No	No	No	No	No	No
17	2	35	1	8	No	No	No	No	No	No	No	No	No	No
18	2	19	1	4	No	No	No	No	No	No	No	No	No	No
19	2	18	1	4	No	No	No	No	No	No	No	No	No	No
20	2	7	1	2	No	No	No	No	No	No	No	No	No	No
21	2	6	1	1	No	No	No	No	No	No	No	No	No	No
22	2	6	1	1	No	No	No	No	No	No	No	No	No	No
23	2	3	1	1	No	No	No	No	No	No	No	No	No	No
24	2	3	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.5
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:06
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	38
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	217
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 31: 27th Ave at Marietta St

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	49	294	8
2	47	282	8
3	46	276	8
4	39	235	6
5	37	223	6
6	33	200	5
7	31	185	5
8	29	176	5
9	24	141	4
10	22	132	4
11	22	132	4
12	21	126	3
13	19	115	3
14	18	106	3
15	18	106	3
16	17	103	3
17	10	59	2
18	5	32	1
19	5	29	1
20	2	12	0
21	1	9	0
22	1	9	0
23	1	6	0
24	1	6	0

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	343	1	8	No	No	No	No	No	No	No	No	No	No
2	2	329	1	8	No	No	No	No	No	No	No	No	No	No
3	2	322	1	8	No	No	No	No	No	No	No	No	No	No
4	2	274	1	6	No	No	No	No	No	No	No	No	No	No
5	2	260	1	6	No	No	No	No	No	No	No	No	No	No
6	2	233	1	5	No	No	No	No	No	No	No	No	No	No
7	2	216	1	5	No	No	No	No	No	No	No	No	No	No
8	2	205	1	5	No	No	No	No	No	No	No	No	No	No
9	2	165	1	4	No	No	No	No	No	No	No	No	No	No
10	2	154	1	4	No	No	No	No	No	No	No	No	No	No
11	2	154	1	4	No	No	No	No	No	No	No	No	No	No
12	2	147	1	3	No	No	No	No	No	No	No	No	No	No
13	2	134	1	3	No	No	No	No	No	No	No	No	No	No
14	2	124	1	3	No	No	No	No	No	No	No	No	No	No
15	2	124	1	3	No	No	No	No	No	No	No	No	No	No
16	2	120	1	3	No	No	No	No	No	No	No	No	No	No
17	2	69	1	2	No	No	No	No	No	No	No	No	No	No
18	2	37	1	1	No	No	No	No	No	No	No	No	No	No
19	2	34	1	1	No	No	No	No	No	No	No	No	No	No
20	2	14	1	0	No	No	No	No	No	No	No	No	No	No
21	2	10	1	0	No	No	No	No	No	No	No	No	No	No
22	2	10	1	0	No	No	No	No	No	No	No	No	No	No
23	2	7	1	0	No	No	No	No	No	No	No	No	No	No
24	2	7	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.5
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:01
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	8
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	351
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 42: Reed at Site Access

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	51	333	7
2	49	320	7
3	48	313	7
4	41	266	6
5	39	253	5
6	35	226	5
7	32	210	4
8	31	200	4
9	24	160	3
10	23	150	3
11	23	150	3
12	22	143	3
13	20	130	3
14	18	120	3
15	18	120	3
16	18	117	2
17	10	67	1
18	6	37	1
19	5	33	1
20	2	13	0
21	2	10	0
22	2	10	0
23	1	7	0
24	1	7	0

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	384	1	7	No	No	No	No	No	No	No	No	No	No
2	2	369	1	7	No	No	No	No	No	No	No	No	No	No
3	2	361	1	7	No	No	No	No	No	No	No	No	No	No
4	2	307	1	6	No	No	No	No	No	No	No	No	No	No
5	2	292	1	5	No	No	No	No	No	No	No	No	No	No
6	2	261	1	5	No	No	No	No	No	No	No	No	No	No
7	2	242	1	4	No	No	No	No	No	No	No	No	No	No
8	2	231	1	4	No	No	No	No	No	No	No	No	No	No
9	2	184	1	3	No	No	No	No	No	No	No	No	No	No
10	2	173	1	3	No	No	No	No	No	No	No	No	No	No
11	2	173	1	3	No	No	No	No	No	No	No	No	No	No
12	2	165	1	3	No	No	No	No	No	No	No	No	No	No
13	2	150	1	3	No	No	No	No	No	No	No	No	No	No
14	2	138	1	3	No	No	No	No	No	No	No	No	No	No
15	2	138	1	3	No	No	No	No	No	No	No	No	No	No
16	2	135	1	2	No	No	No	No	No	No	No	No	No	No
17	2	77	1	1	No	No	No	No	No	No	No	No	No	No
18	2	43	1	1	No	No	No	No	No	No	No	No	No	No
19	2	38	1	1	No	No	No	No	No	No	No	No	No	No
20	2	15	1	0	No	No	No	No	No	No	No	No	No	No
21	2	12	1	0	No	No	No	No	No	No	No	No	No	No
22	2	12	1	0	No	No	No	No	No	No	No	No	No	No
23	2	8	1	0	No	No	No	No	No	No	No	No	No	No
24	2	8	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:01
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	7
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	391
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

18-392 Strong at 27th Subdivision TIA

Vistro File: J:\...\18-392 Reed Rd Subdivision - TIA.vistro
Report File: J:\...\18-392 AM Dev Ph 2.pdf

Scenario 5 AM Dev 2023 Ph 2
6/19/2018

Trip Generation summary

Added Trips

Zone ID: Name	Land Use variables	Code	Ind. Var.	Rate	Quantity	% In	% Out	Trips In	Trips Out	Total Trips	% of Total Trips
1: 18-392 Reed Rd Sub	Homes	ITE 210	Home	0.740	150.000	25.00	75.00	28	83	111	100.00
					Added Trips Total			**28**	**83**	**111**	**100.00**

18-392 Strong at 27th Subdivision TIA

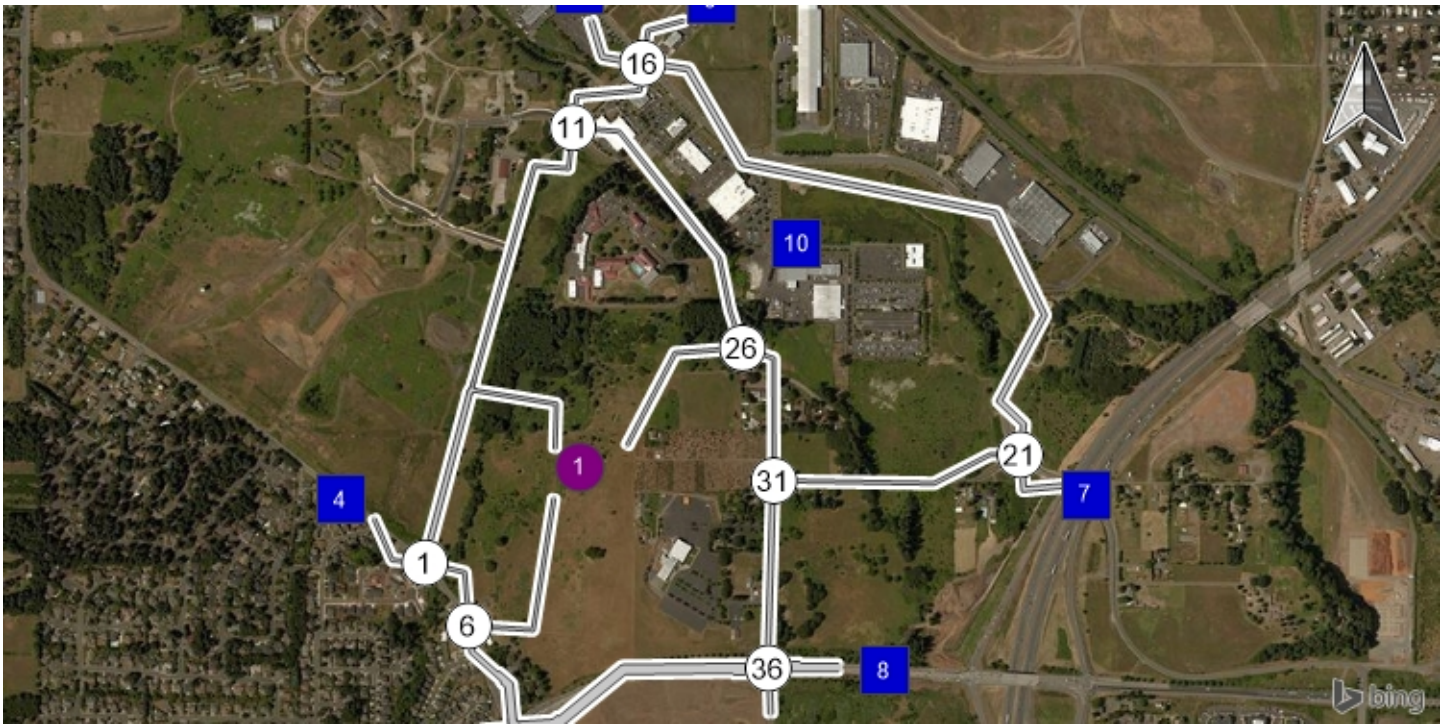
Vistro File: J:\...\18-392 Reed Rd Subdivision - TIA.vistro
Report File: J:\...\18-392 AM Dev Ph 2.pdf

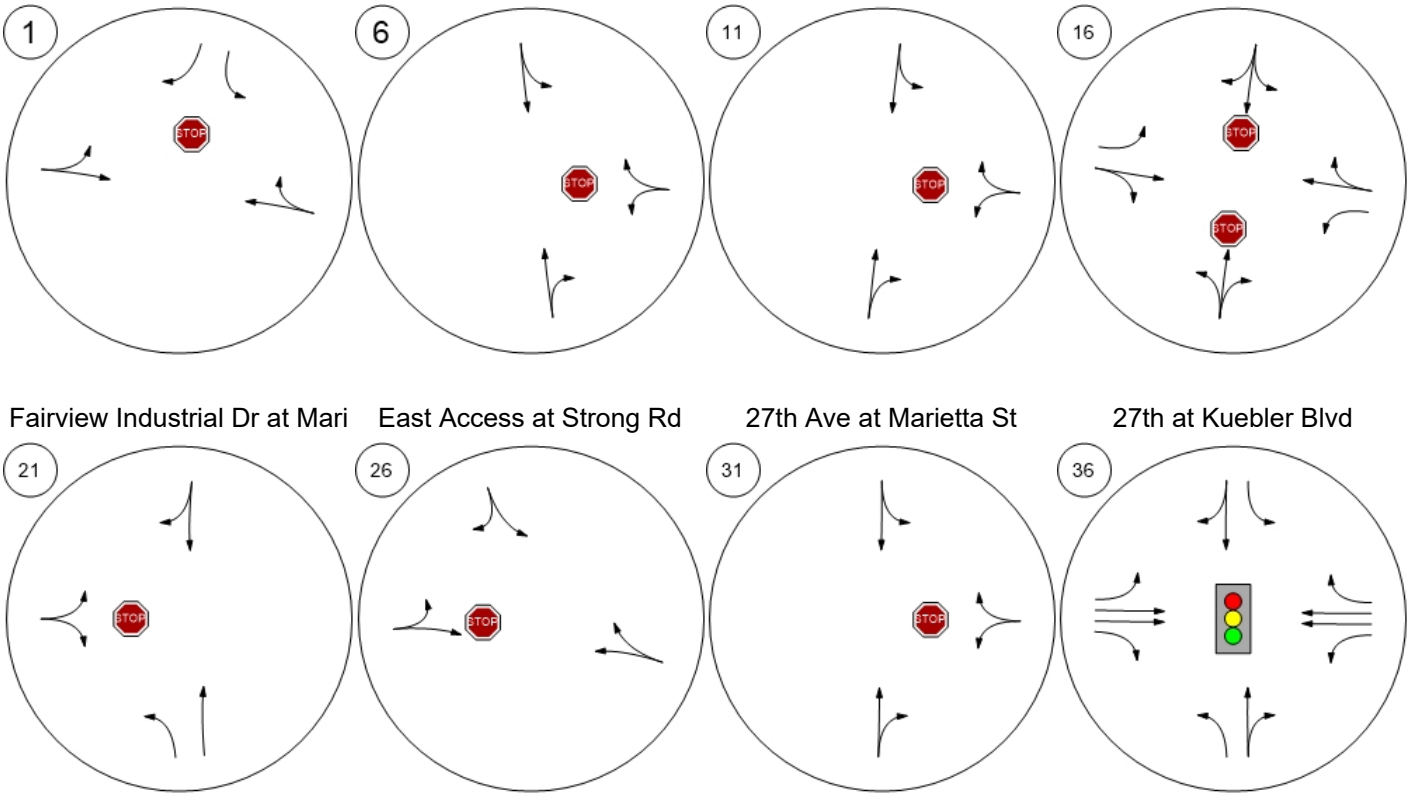
Scenario 5 AM Dev 2023 Ph 2
6/19/2018

Trip Distribution summary

Zone / Gate	Zone 1: 18-392 Reed Rd Sub			
	To 18-392 Reed Rd Sub:		From 18-392 Reed Rd Sub:	
	Share %	Trips	Share %	Trips
2: Gate	10.00	3	10.00	8
3: Gate	30.00	8	30.00	25
4: Gate	7.00	2	7.00	6
5: Gate	10.00	3	10.00	8
6: Gate	0.00	0	0.00	0
7: Gate	6.00	2	6.00	5
8: Gate	35.00	10	35.00	29
9: Gate	2.00	1	2.00	2
10: Gate	0.00	0	0.00	0
Total	**100.00**	**29**	**100.00**	**83**

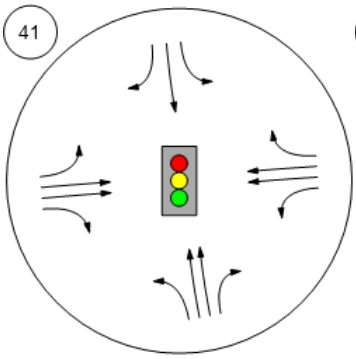
Report Figure 1: Lane Configuration and Traffic Control



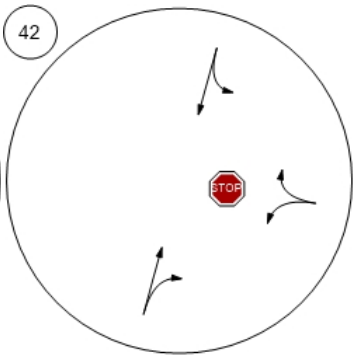


Report Figure 1: Lane Configuration and Traffic Control

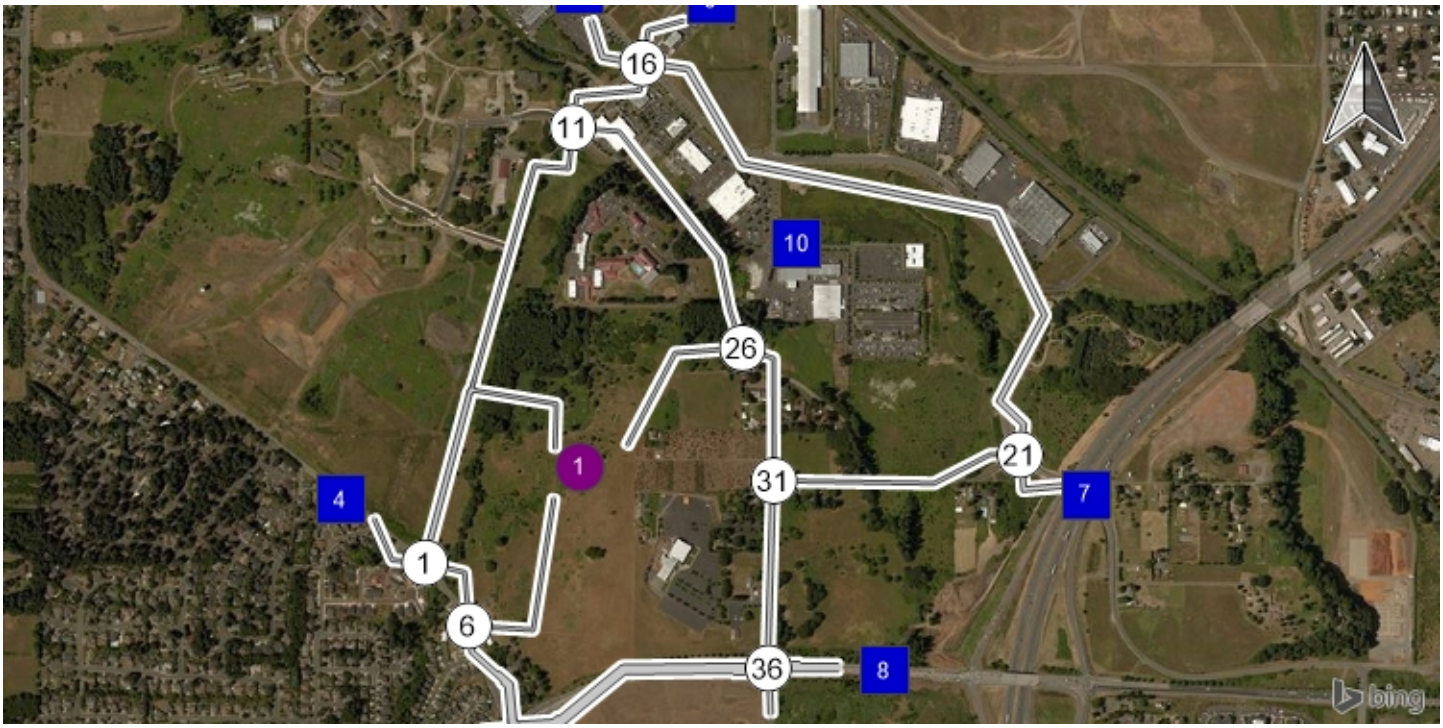
Keubler Blvd at Battle Creek



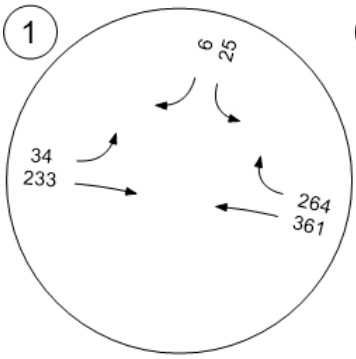
Reed at Site Access



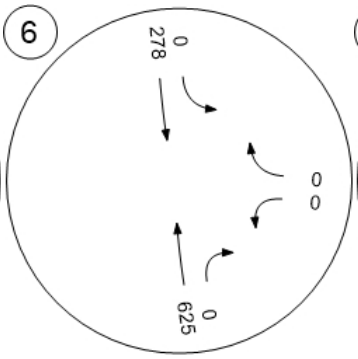
Report Figure 2a: Traffic Volume - Base Volume



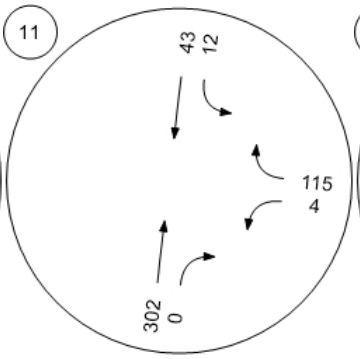
Battle Creek Rd at Reed Rd



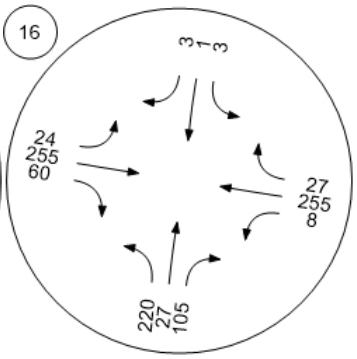
Battle Creek Rd at Site Acces



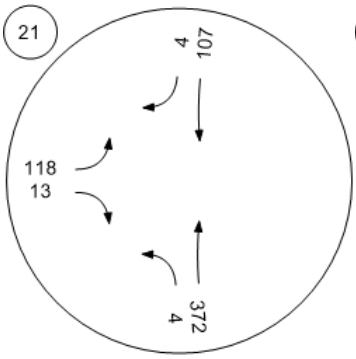
Reed Rd at Strong Rd



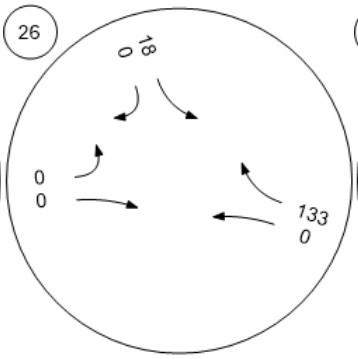
Reed Rd at Fairview Industria



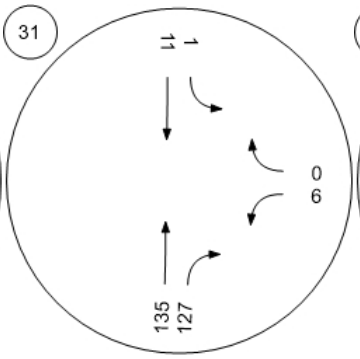
Fairview Industrial Dr at Mari



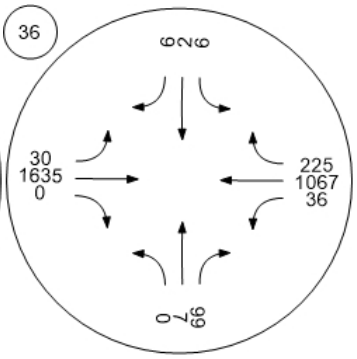
East Access at Strong Rd



27th Ave at Marietta St

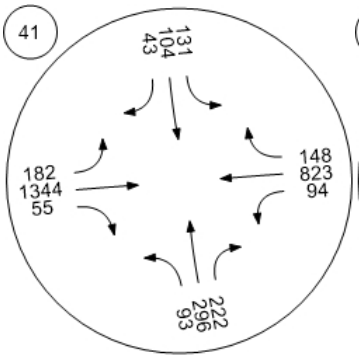


27th at Kuebler Blvd

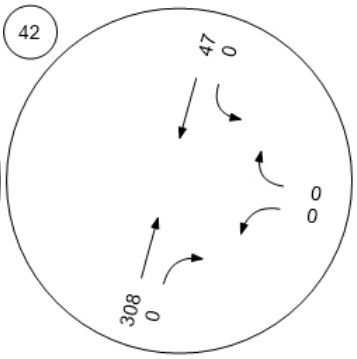


Report Figure 2a: Traffic Volume - Base Volume

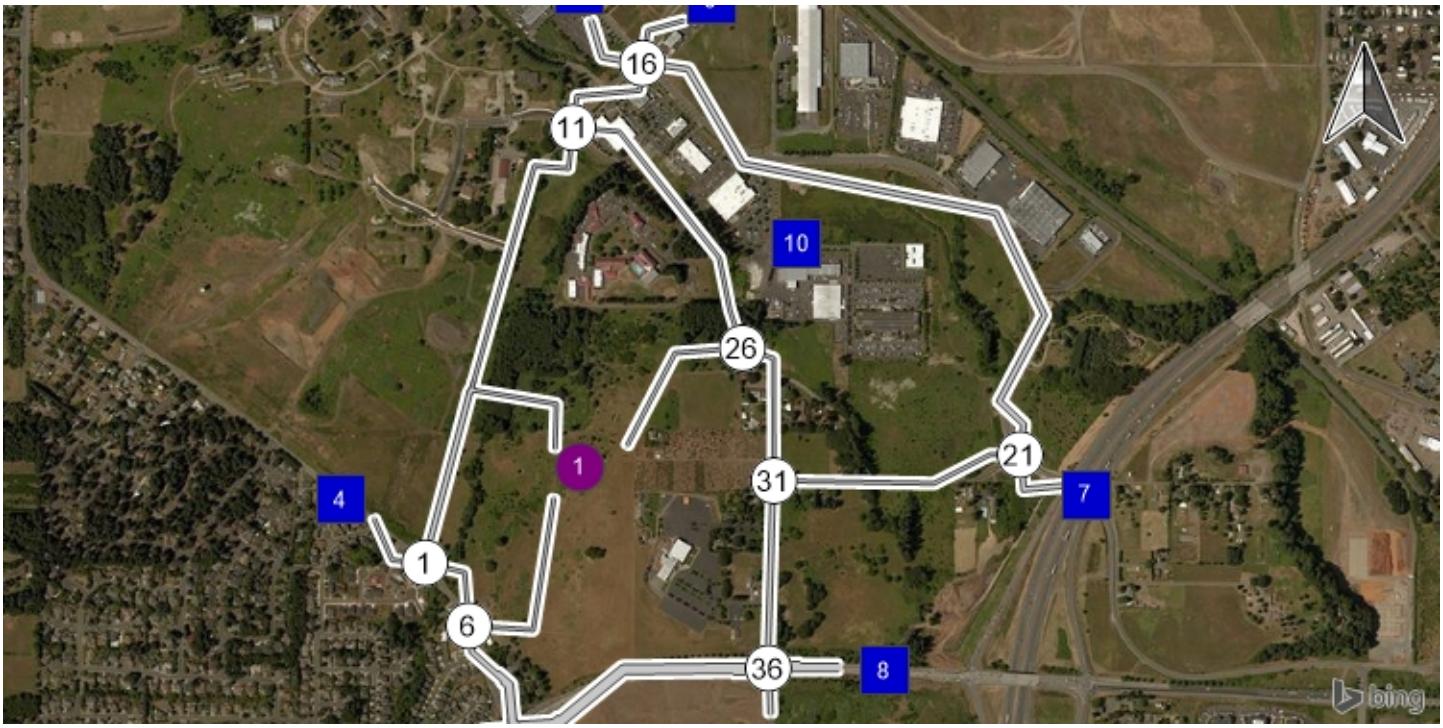
Keubler Blvd at Battle Creek

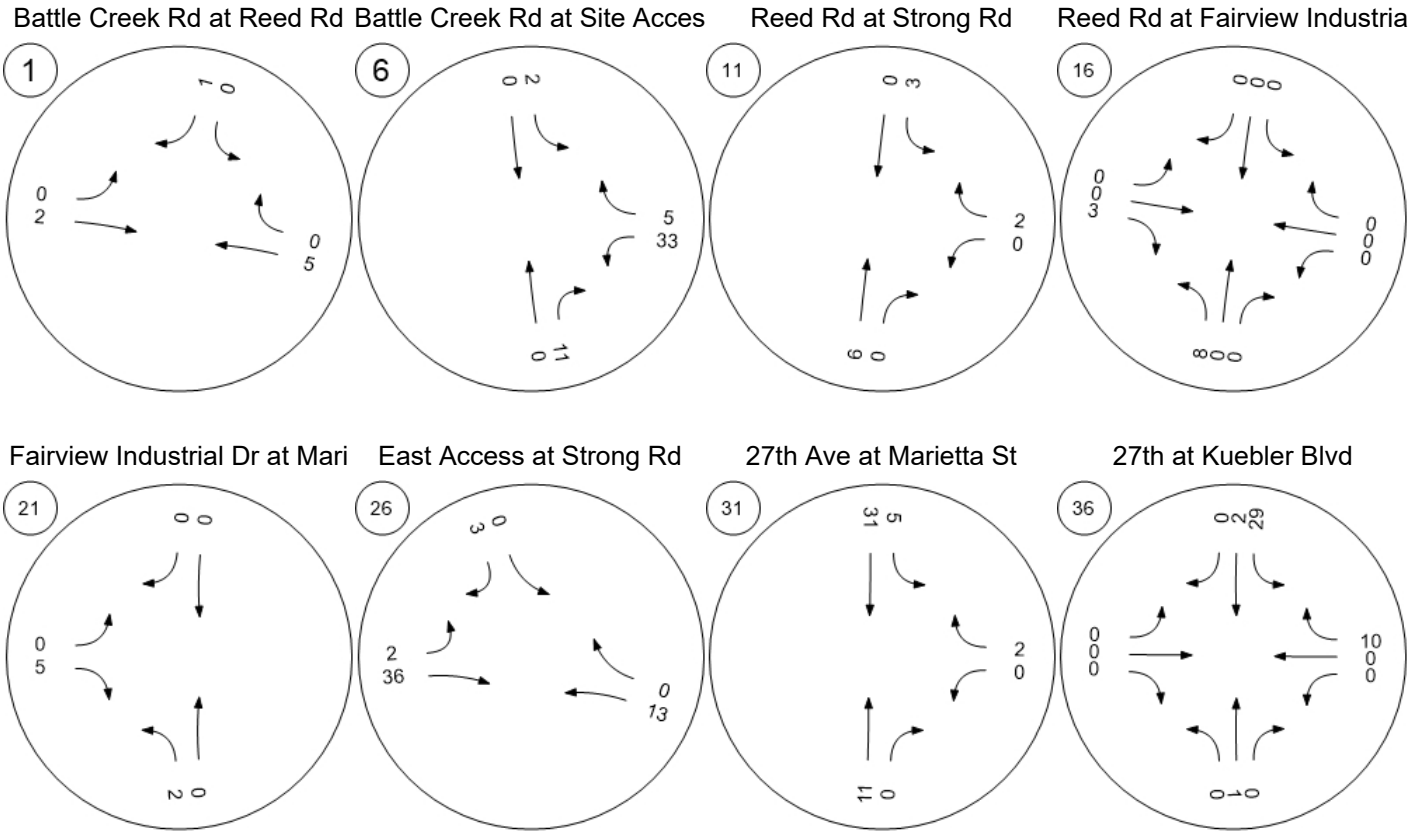


Reed at Site Access



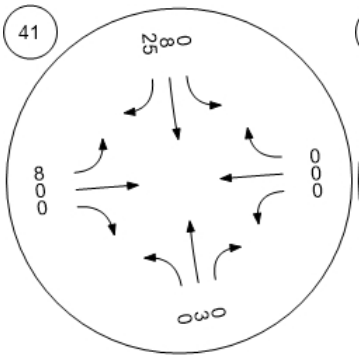
Report Figure 2d: Traffic Volume - Net New Site Trips



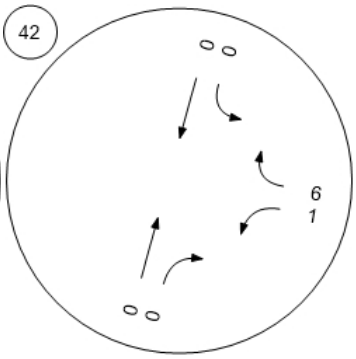


Report Figure 2d: Traffic Volume - Net New Site Trips

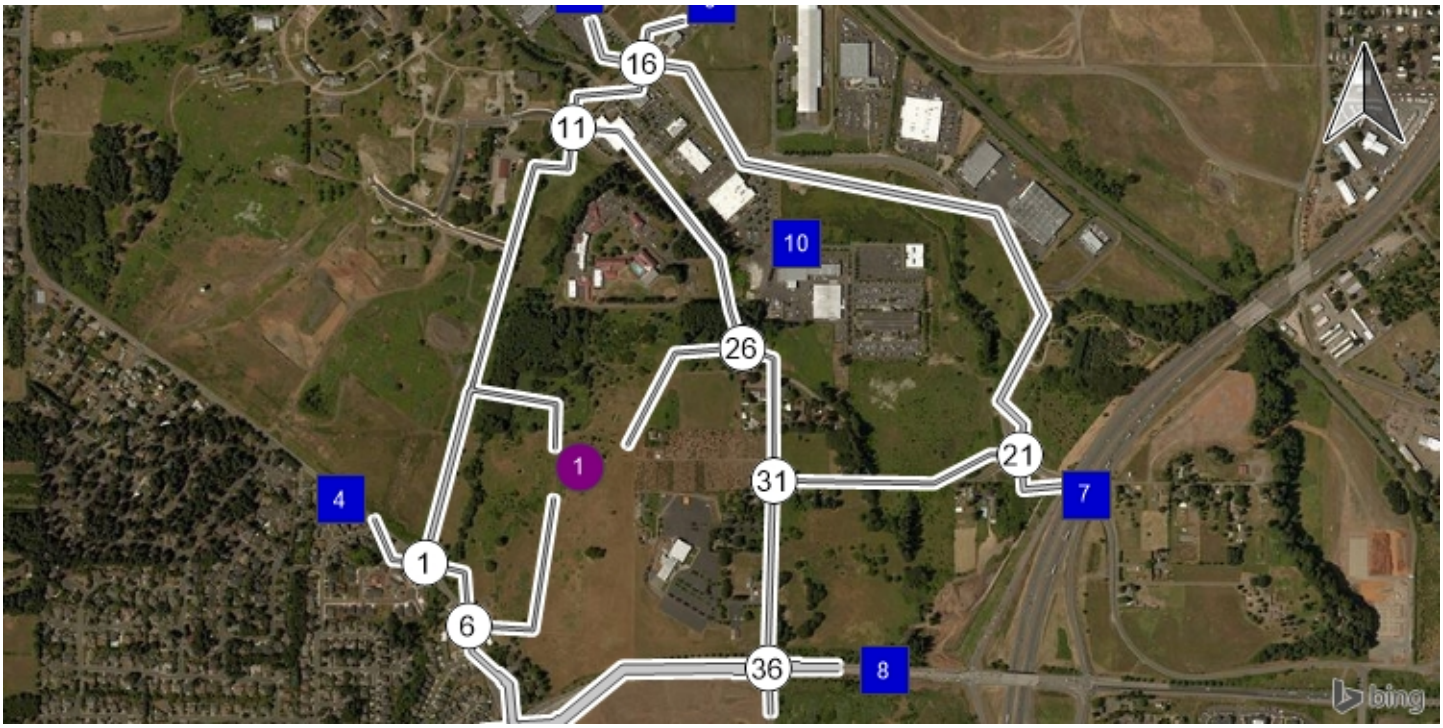
Keubler Blvd at Battle Creek



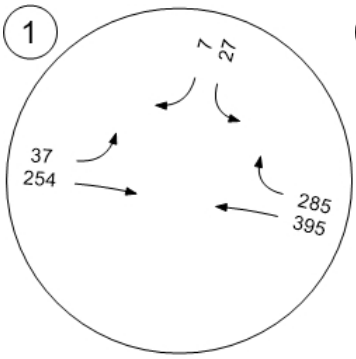
Reed at Site Access



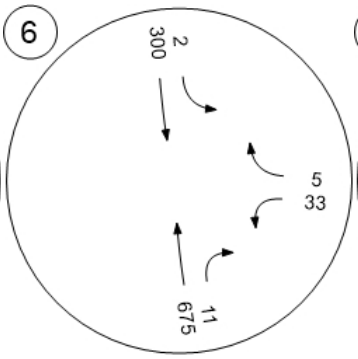
Report Figure 2f: Traffic Volume - Future Total Volume



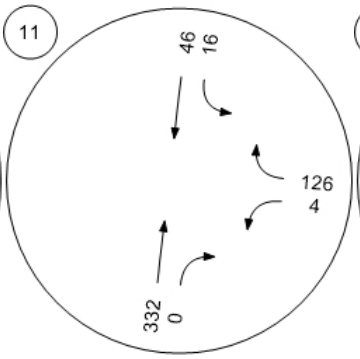
Battle Creek Rd at Reed Rd



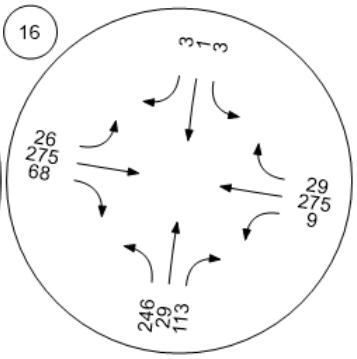
Battle Creek Rd at Site Acces



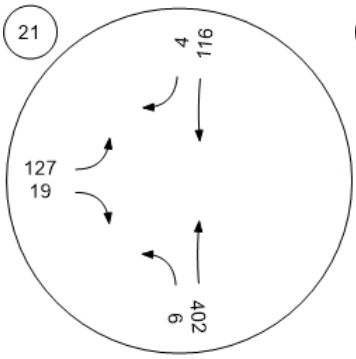
Reed Rd at Strong Rd



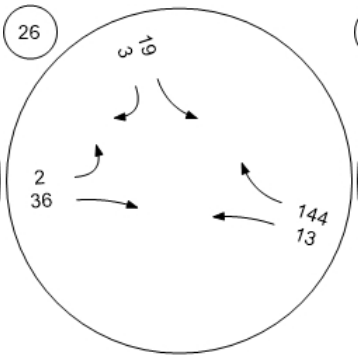
Reed Rd at Fairview Industria



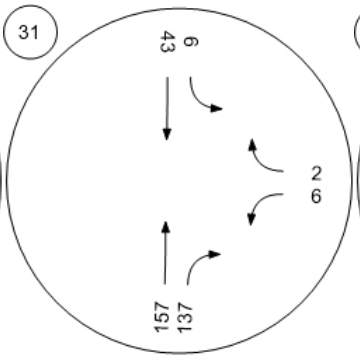
Fairview Industrial Dr at Mari



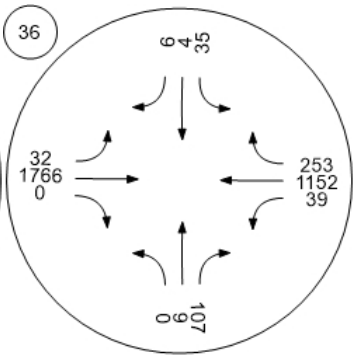
East Access at Strong Rd



27th Ave at Marietta St

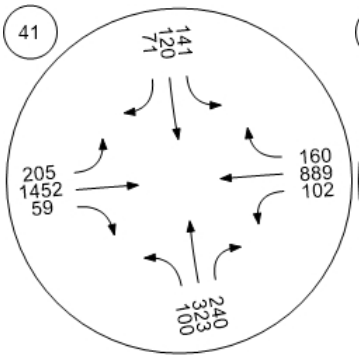


27th at Kuebler Blvd

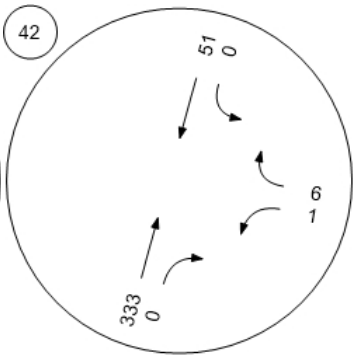


Report Figure 2f: Traffic Volume - Future Total Volume

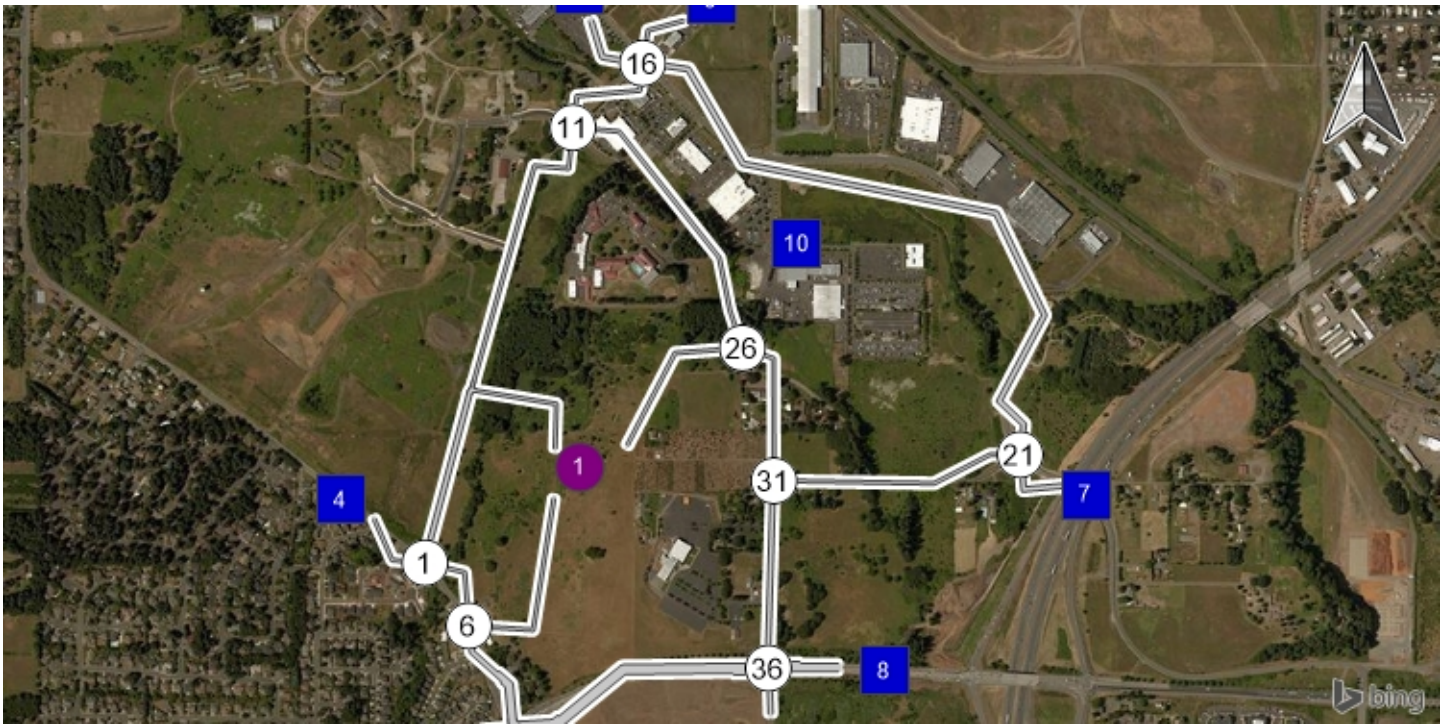
Keubler Blvd at Battle Creek

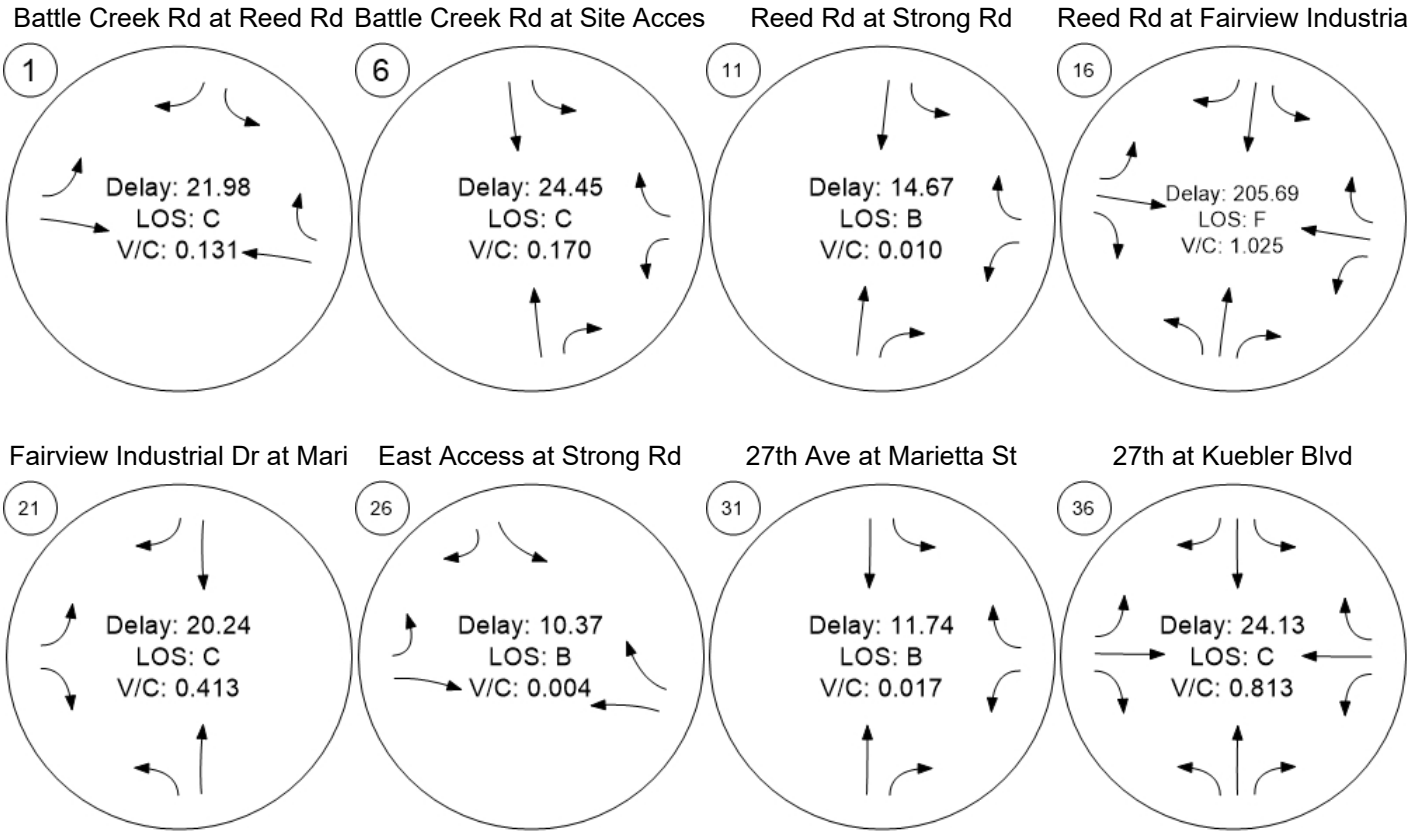


Reed at Site Access



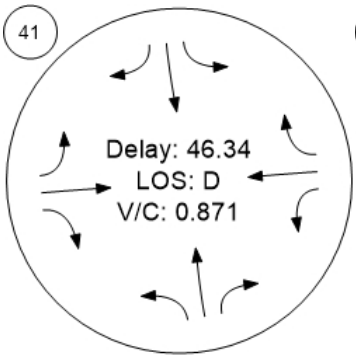
Report Figure 3: Traffic Conditions



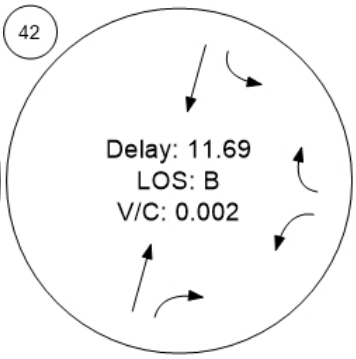


Report Figure 3: Traffic Conditions

Keubler Blvd at Battle Creek



Reed at Site Access



18-392 Strong at 27th Subdivision TIA

Vistro File: J:\...\18-392 Reed Rd Subdivision - TIA.vistro
Report File: J:\...\18-392 AM Dev Ph 3.pdf

Scenario 7 AM Dev 2026 Ph 3
6/19/2018

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Battle Creek Rd at Reed Rd	Two-way stop	HCM 6th Edition	SB Left	0.145	23.5	C
6	Battle Creek Rd at Site Access	Two-way stop	HCM 6th Edition	WB Left	0.271	29.0	D
11	Reed Rd at Strong Rd	Two-way stop	HCM 6th Edition	WB Left	0.015	15.5	C
16	Reed Rd at Fairview Industrial Dr	Two-way stop	HCM 6th Edition	NB Left	1.158	275.6	F
21	Fairview Industrial Dr at Marietta St	Two-way stop	HCM 6th Edition	EB Left	0.456	22.3	C
26	East Access at Strong Rd	Two-way stop	HCM 6th Edition	EB Left	0.009	10.7	B
31	27th Ave at Marietta St	Two-way stop	HCM 6th Edition	WB Left	0.022	12.4	B
36	27th at Kuebler Blvd	Signalized	HCM 6th Edition	SB Left	0.863	33.1	C
41	Keubler Blvd at Battle Creek Rd	Signalized	HCM 6th Edition	NB Right	0.911	57.6	E
42	Reed at Site Access	Two-way stop	HCM 6th Edition	WB Left	0.006	11.9	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Battle Creek Rd at Reed Rd

Control Type:	Two-way stop	Delay (sec / veh):	23.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.145

Intersection Setup

Name	Reed Rd		Battle Creek Rd		Battle Creek Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Reed Rd		Battle Creek Rd		Battle Creek Rd	
Base Volume Input [veh/h]	25	6	34	233	361	264
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.20	3.20	7.10	7.10	3.80	3.80
Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	2	0	3	7	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	28	9	38	266	415	298
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	3	11	78	122	88
Total Analysis Volume [veh/h]	33	11	45	313	488	351
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.15	0.02	0.06	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	23.50	13.04	9.94	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.50	0.07	2.46	2.46	0.00	0.00
95th-Percentile Queue Length [ft]	12.47	1.84	61.60	61.60	0.00	0.00
d_A, Approach Delay [s/veh]	20.88		1.25		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	1.10					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 6: Battle Creek Rd at Site Access

Control Type:	Two-way stop	Delay (sec / veh):	29.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.271

Intersection Setup

Name	Battle Creek Rd		Battle Creek Rd		Site Access	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Battle Creek Rd		Battle Creek Rd		Site Access	
Base Volume Input [veh/h]	625	0	0	278	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	17	3	0	49	7
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	706	17	3	314	49	7
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	203	5	1	90	14	2
Total Analysis Volume [veh/h]	811	20	3	361	56	8
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.27	0.02
d_M, Delay for Movement [s/veh]	0.00	0.00	9.51	0.00	29.03	21.25
Movement LOS	A	A	A	A	D	C
95th-Percentile Queue Length [veh]	0.00	0.00	2.39	2.39	1.17	1.17
95th-Percentile Queue Length [ft]	0.00	0.00	59.82	59.82	29.17	29.17
d_A, Approach Delay [s/veh]	0.00		0.08		28.06	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	1.45					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 11: Reed Rd at Strong Rd

Control Type:	Two-way stop	Delay (sec / veh):	15.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.015

Intersection Setup

Name	Reed Rd		Reed Rd		Strong Rd	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Reed Rd		Reed Rd		Strong Rd	
Base Volume Input [veh/h]	302	0	12	43	4	115
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.60	1.60	5.50	5.50	1.70	1.70
Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	8	0	4	0	0	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	349	0	18	49	5	134
Peak Hour Factor	0.7500	0.7500	0.7500	0.7500	0.7500	0.7500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	116	0	6	16	2	45
Total Analysis Volume [veh/h]	465	0	24	65	7	179
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.02	0.00	0.01	0.30
d_M, Delay for Movement [s/veh]	0.00	0.00	8.41	0.00	15.47	13.78
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh]	0.00	0.00	0.27	0.27	1.34	1.34
95th-Percentile Queue Length [ft]	0.00	0.00	6.73	6.73	33.49	33.49
d_A, Approach Delay [s/veh]	0.00		2.27		13.85	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	3.75					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 16: Reed Rd at Fairview Industrial Dr

Control Type:	Two-way stop	Delay (sec / veh):	275.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.158

Intersection Setup

Name	Reed Rd			Reed Rd			Fairview Industrial Dr			Fairview Industrial Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Reed Rd			Reed Rd			Fairview Industrial Dr			Fairview Industrial Dr		
Base Volume Input [veh/h]	220	27	105	3	1	3	24	255	60	8	255	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.30	2.30	2.30	0.00	0.00	0.00	4.70	4.70	4.70	5.20	5.20	5.20
Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	12	0	0	0	0	0	0	0	4	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	261	31	119	3	1	3	27	288	72	9	288	31
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	79	9	36	1	0	1	8	87	22	3	87	9
Total Analysis Volume [veh/h]	314	37	143	4	1	4	33	347	87	11	347	37
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.16	0.13	0.22	0.02	0.00	0.01	0.03	0.00	0.00	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	275.55	275.08	267.75	26.68	18.58	10.71	8.19	0.00	0.00	8.28	0.00	0.00
Movement LOS	F	F	F	D	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	27.52	27.52	27.52	0.10	0.10	0.10	0.09	0.00	0.00	0.03	0.00	0.00
95th-Percentile Queue Length [ft]	687.92	687.92	687.92	2.56	2.56	2.56	2.20	0.00	0.00	0.75	0.00	0.00
d_A, Approach Delay [s/veh]	273.26			18.69			0.58			0.23		
Approach LOS	F			C			A			A		
d_I, Intersection Delay [s/veh]	99.28											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 21: Fairview Industrial Dr at Marietta St

Control Type:	Two-way stop	Delay (sec / veh):	22.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.456

Intersection Setup

Name	Fairview Industrial Dr		Fairview Industrial Dr		Marietta St	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Fairview Industrial Dr		Fairview Industrial Dr		Marietta St	
Base Volume Input [veh/h]	4	372	107	4	118	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.80	4.80	13.50	13.50	0.80	0.80
Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	0	0	0	0	7
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	420	121	5	133	22
Peak Hour Factor	0.7600	0.7600	0.7600	0.7600	0.7600	0.7600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	138	40	2	44	7
Total Analysis Volume [veh/h]	11	553	159	7	175	29
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.00	0.00	0.46	0.03
d_M, Delay for Movement [s/veh]	7.60	0.00	0.00	0.00	22.32	17.01
Movement LOS	A	A	A	A	C	C
95th-Percentile Queue Length [veh]	0.02	0.00	0.00	0.00	2.61	2.61
95th-Percentile Queue Length [ft]	0.60	0.00	0.00	0.00	65.21	65.21
d_A, Approach Delay [s/veh]	0.15		0.00		21.57	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	4.80					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 26: East Access at Strong Rd

Control Type:	Two-way stop	Delay (sec / veh):	10.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.009

Intersection Setup

Name	Strong Rd		East Access		Strong Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Strong Rd		East Access		Strong Rd	
Base Volume Input [veh/h]	18	0	0	0	0	133
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	4	4	54	19	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	4	4	54	19	150
Peak Hour Factor	0.6400	0.6400	0.6400	0.6400	0.6400	0.6400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	2	2	21	7	59
Total Analysis Volume [veh/h]	31	6	6	84	30	234
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Stop	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance		No	
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.10	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	10.70	9.70	7.33	0.00
Movement LOS	A	A	B	A	A	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.36	0.36	0.60	0.60
95th-Percentile Queue Length [ft]	0.00	0.00	8.91	8.91	15.02	15.02
d_A, Approach Delay [s/veh]	0.00		9.77		0.83	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.81					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 31: 27th Ave at Marietta St

Control Type:	Two-way stop	Delay (sec / veh):	12.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.022

Intersection Setup

Name	27th Ave		Strong Rd		Marietta St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	27th Ave		Strong Rd		Marietta St	
Base Volume Input [veh/h]	135	127	1	11	6	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.80	0.80	8.30	8.30	16.70	16.70
Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	16	0	7	47	0	3
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	169	144	8	59	7	3
Peak Hour Factor	0.6400	0.6400	0.6400	0.6400	0.6400	0.6400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	66	56	3	23	3	1
Total Analysis Volume [veh/h]	264	225	13	92	11	5
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.02	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	8.50	0.00	12.37	10.84
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh]	0.00	0.00	0.34	0.34	0.09	0.09
95th-Percentile Queue Length [ft]	0.00	0.00	8.38	8.38	2.30	2.30
d_A, Approach Delay [s/veh]	0.00		1.05		11.90	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.49					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 36: 27th at Kuebler Blvd

Control Type:	Signalized	Delay (sec / veh):	33.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.863

Intersection Setup

Name	27th Ave			27th Ave			Kuebler Blvd			Kuebler Blvd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	125.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	200.00	350.00	100.00	175.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	27th Ave			27th Ave			Kuebler Blvd			Kuebler Blvd		
Base Volume Input [veh/h]	0	7	99	6	2	6	30	1635	0	36	1067	225
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	6.60	6.60	6.60	14.30	14.30	14.30	3.50	3.50	3.50	7.30	7.30	7.30
Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	0	45	2	0	0	0	0	0	0	15
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	9	112	52	4	7	34	1848	0	41	1206	269
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	3	33	15	1	2	10	544	0	12	355	79
Total Analysis Volume [veh/h]	0	11	132	61	5	8	40	2174	0	48	1419	316
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	19	0	9	19	0	34	83	0	9	58	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	15	5	20	4	79	79	5	80	80
g / C, Green / Cycle	0.00	0.13	0.04	0.17	0.03	0.66	0.66	0.04	0.67	0.67
(v / s)_i Volume / Saturation Flow Rate	0.00	0.10	0.04	0.01	0.03	0.69	0.00	0.03	0.46	0.23
s, saturation flow rate [veh/h]	1544	1394	1445	1368	1584	3166	1413	1535	3068	1370
c, Capacity [veh/h]	0	176	60	230	49	2091	934	59	2048	914
d1, Uniform Delay [s]	0.00	51.05	57.50	41.95	57.78	20.37	0.00	57.30	12.34	8.62
k, delay calibration	0.11	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	32.19	56.69	0.47	25.70	21.98	0.00	23.34	0.43	0.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.81	1.01	0.06	0.81	1.04	0.00	0.82	0.69	0.35
d, Delay for Lane Group [s/veh]	0.00	83.24	114.19	42.42	83.48	42.34	0.00	80.64	12.77	8.85
Lane Group LOS	A	F	F	D	F	F	A	F	B	A
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.00	5.76	2.78	0.36	1.56	32.29	0.00	1.83	10.92	3.42
50th-Percentile Queue Length [ft]	0.00	143.93	69.50	8.91	38.99	807.16	0.00	45.64	272.91	85.41
95th-Percentile Queue Length [veh]	0.00	9.69	5.00	0.64	2.81	43.06	0.00	3.29	16.33	6.15
95th-Percentile Queue Length [ft]	0.00	242.31	125.09	16.04	70.19	1076.39	0.00	82.16	408.37	153.73

Movement, Approach, & Intersection Results

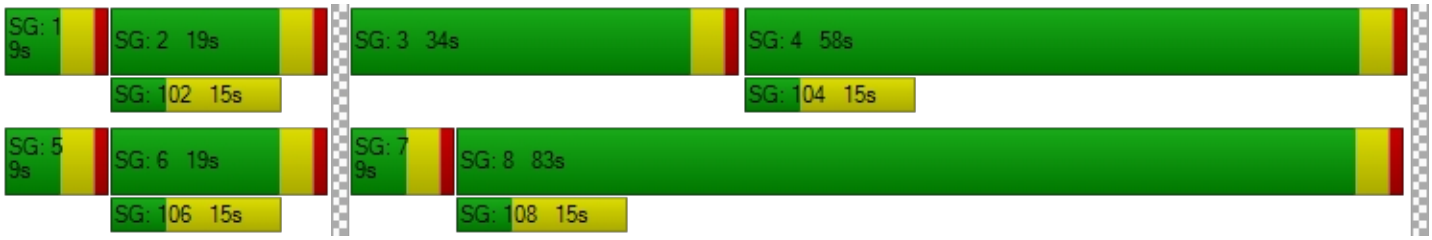
d_M, Delay for Movement [s/veh]	0.00	83.24	83.24	114.19	42.42	42.42	83.48	42.34	0.00	80.64	12.77	8.85
Movement LOS	A	F	F	F	D	D	F	F	A	F	B	A
d_A, Approach Delay [s/veh]	83.24			101.58			43.09			13.90		
Approach LOS	F			F			D			B		
d_I, Intersection Delay [s/veh]	33.13											
Intersection LOS	C											
Intersection V/C	0.863											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.019	2.099	3.060	3.142
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250	1317	900
d_b, Bicycle Delay [s]	45.94	45.94	7.00	18.15
l_b,int, Bicycle LOS Score for Intersection	1.796	1.682	3.386	3.031
Bicycle LOS	A	A	C	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 41: Keubler Blvd at Battle Creek Rd

Control Type:	Signalized	Delay (sec / veh):	57.6
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.911

Intersection Setup

Name	Battle Creek Rd			Battle Creek Rd			Kuebler Blvd			Kuebler Blvd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	150.00	275.00	100.00	275.00	350.00	100.00	350.00	250.00	100.00	250.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Battle Creek Rd			Battle Creek Rd			Kuebler Blvd			Kuebler Blvd		
Base Volume Input [veh/h]	93	296	222	131	104	43	182	1344	55	94	823	148
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.40	2.40	2.40	7.20	7.20	7.20	3.20	3.20	3.20	7.40	7.40	7.40
Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	4	0	0	12	37	13	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	105	338	251	148	130	86	219	1519	62	106	930	167
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	94	70	41	36	24	61	422	17	29	258	46
Total Analysis Volume [veh/h]	117	376	279	164	144	96	243	1688	69	118	1033	186
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	24	26	0	17	19	0	36	64	0	13	41	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	22	22	13	25	25	20	60	60	9	48	48
g / C, Green / Cycle	0.09	0.18	0.18	0.11	0.20	0.20	0.17	0.50	0.50	0.08	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.07	0.12	0.20	0.11	0.09	0.07	0.15	0.53	0.05	0.08	0.34	0.14
s, saturation flow rate [veh/h]	1598	3194	1426	1536	1613	1371	1587	3174	1417	1533	3066	1369
c, Capacity [veh/h]	141	589	263	166	330	281	270	1583	707	115	1237	552
d1, Uniform Delay [s]	53.84	45.24	48.94	53.40	41.67	40.81	48.78	30.08	15.85	55.50	32.19	24.70
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.14	0.12	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.76	5.22	72.49	28.99	4.15	3.30	12.90	33.76	0.06	45.49	1.56	0.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.64	1.06	0.99	0.44	0.34	0.90	1.07	0.10	1.02	0.83	0.34
d, Delay for Lane Group [s/veh]	65.59	50.46	121.42	82.39	45.83	44.11	61.68	63.84	15.91	100.99	33.75	25.06
Lane Group LOS	E	D	F	F	D	D	E	F	B	F	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	3.93	5.61	13.14	6.27	4.12	2.70	8.08	29.22	1.01	4.93	13.49	3.71
50th-Percentile Queue Length [ft]	98.33	140.24	328.42	156.71	102.98	67.45	201.93	730.49	25.32	123.34	337.35	92.74
95th-Percentile Queue Length [veh]	7.08	9.49	19.66	10.37	7.41	4.86	12.74	40.04	1.82	8.65	19.52	6.68
95th-Percentile Queue Length [ft]	177.00	237.34	491.58	259.36	185.36	121.41	318.45	1000.94	45.58	216.13	487.96	166.93

Movement, Approach, & Intersection Results

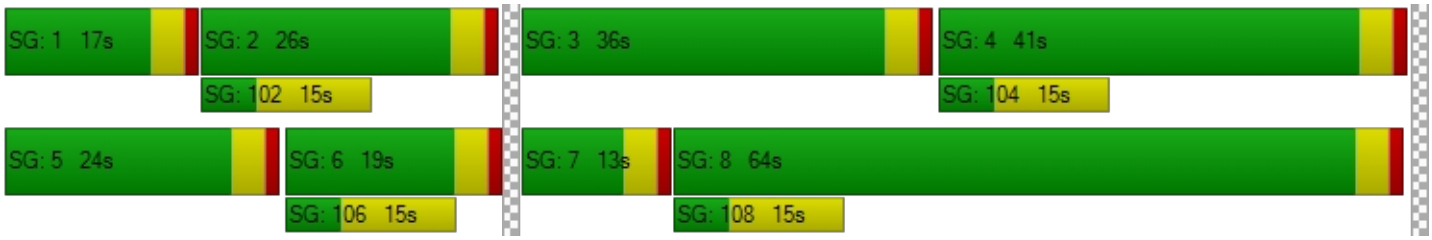
d_M, Delay for Movement [s/veh]	65.59	50.46	121.42	82.39	45.83	44.11	61.68	63.84	15.91	100.99	33.75	25.06
Movement LOS	E	D	F	F	D	D	E	F	B	F	C	C
d_A, Approach Delay [s/veh]	78.40			60.26			61.92			38.47		
Approach LOS	E			E			E			D		
d_I, Intersection Delay [s/veh]	57.64											
Intersection LOS	E											
Intersection V/C	0.911											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.530	2.551	2.996	3.032
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	367	250	1000	617
d_b, Bicycle Delay [s]	40.02	45.94	15.00	28.70
l_b,int, Bicycle LOS Score for Intersection	2.197	2.226	3.210	2.663
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 42: Reed at Site Access

Control Type:	Two-way stop	Delay (sec / veh):	11.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.006

Intersection Setup

Name	Reed Rd		Reed Rd		Site Access	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Reed Rd		Reed Rd		Site Access	
Base Volume Input [veh/h]	308	0	0	47	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	2	8
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	348	0	0	53	2	8
Peak Hour Factor	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	109	0	0	17	1	3
Total Analysis Volume [veh/h]	435	0	0	66	3	10
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.01	0.02
d_M, Delay for Movement [s/veh]	0.00	0.00	8.20	0.00	11.93	10.93
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.00	0.07	0.07
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	0.00	1.67	1.67
d_A, Approach Delay [s/veh]	0.00		0.00		11.16	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.28					
Intersection LOS	B					

18-392 Strong at 27th Subdivision TIA

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Scenario 7 AM Dev 2026 Ph 3
6/19/2018

Turning Movement Volume: Summary

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
1	Battle Creek Rd at Reed Rd	28	9	38	266	415	298	1054

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
6	Battle Creek Rd at Site Access	706	17	3	314	49	7	1096

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
11	Reed Rd at Strong Rd	349	0	18	49	5	134	555

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Reed Rd at Fairview Industrial Dr	261	31	119	3	1	3	27	288	72	9	288	31	1133

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
21	Fairview Industrial Dr at Marietta St	8	420	121	5	133	22	709

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
26	East Access at Strong Rd	20	4	4	54	19	150	251

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
31	27th Ave at Marietta St	169	144	8	59	7	3	390

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
36	27th at Kuebler Blvd	0	9	112	52	4	7	34	1848	0	41	1206	269	3582

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
41	Keubler Blvd at Battle Creek Rd	105	338	251	148	130	86	219	1519	62	106	930	167	4061

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
42	Reed at Site Access	348	0	0	53	2	8	411

18-392 Strong at 27th Subdivision TIA

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Report File: J:\...\18-392 AM Dev Ph 3.pdf

Scenario 7 AM Dev 2026 Ph 3
6/19/2018

Turning Movement Volume: Detail

ID	Intersection Name	Volume Type	Southbound		Eastbound		Westbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
1	Battle Creek Rd at Reed Rd	Final Base	25	6	34	233	361	264	923
		Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	2	0	3	7	0	12
		Other	0	0	0	0	0	0	0
		Future Total	**28**	**9**	**38**	**266**	**415**	**298**	**1054**

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
6	Battle Creek Rd at Site Access	Final Base	625	0	0	278	0	0	903
		Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	17	3	0	49	7	76
		Other	0	0	0	0	0	0	0
		Future Total	**706**	**17**	**3**	**314**	**49**	**7**	**1096**

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
11	Reed Rd at Strong Rd	Final Base	302	0	12	43	4	115	476
		Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	8	0	4	0	0	4	16
		Other	0	0	0	0	0	0	0
		Future Total	**349**	**0**	**18**	**49**	**5**	**134**	**555**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Reed Rd at Fairview Industrial Dr	Final Base	220	27	105	3	1	3	24	255	60	8	255	27	988
		Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	12	0	0	0	0	0	0	0	4	0	0	0	16
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**261**	**31**	**119**	**3**	**1**	**3**	**27**	**288**	**72**	**9**	**288**	**31**	**1133**

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
21	Fairview Industrial Dr at Marietta St	Final Base	4	372	107	4	118	13	618
		Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	3	0	0	0	0	7	10
		Other	0	0	0	0	0	0	0
		Future Total	**8**	**420**	**121**	**5**	**133**	**22**	**709**

ID	Intersection Name	Volume Type	Southbound		Eastbound		Westbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
26	East Access at Strong Rd	Final Base	18	0	0	0	0	133	151
		Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	4	4	54	19	0	81
		Other	0	0	0	0	0	0	0
		Future Total	**20**	**4**	**4**	**54**	**19**	**150**	**251**

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
31	27th Ave at Marietta St	Final Base	135	127	1	11	6	0	280
		Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	16	0	7	47	0	3	73
		Other	0	0	0	0	0	0	0
		Future Total	**169**	**144**	**8**	**59**	**7**	**3**	**390**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
36	27th at Kuebler Blvd	Final Base	0	7	99	6	2	6	30	1635	0	36	1067	225	3113
		Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	1	0	45	2	0	0	0	0	0	0	15	63
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**0**	**9**	**112**	**52**	**4**	**7**	**34**	**1848**	**0**	**41**	**1206**	**269**	**3582**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
41	Keubler Blvd at Battle Creek Rd	Final Base	93	296	222	131	104	43	182	1344	55	94	823	148	3535
		Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	4	0	0	12	37	13	0	0	0	0	0	66
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**105**	**338**	**251**	**148**	**130**	**86**	**219**	**1519**	**62**	**106**	**930**	**167**	**4061**

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
42	Reed at Site Access	Final Base	308	0	0	47	0	0	355
		Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	2	8	10
		Other	0	0	0	0	0	0	0
		Future Total	**348**	**0**	**0**	**53**	**2**	**8**	**411**

Signal Warrants Report For Intersection 1: Battle Creek Rd at Reed Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	N
1	713	304	37
2	684	292	36
3	670	286	35
4	570	243	30
5	542	231	28
6	485	207	25
7	449	192	23
8	428	182	22
9	342	146	18
10	321	137	17
11	321	137	17
12	307	131	16
13	278	119	14
14	257	109	13
15	257	109	13
16	250	106	13
17	143	61	7
18	78	33	4
19	71	30	4
20	29	12	1
21	21	9	1
22	21	9	1
23	14	6	1
24	14	6	1

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	1017	2	37	No	No	No	No	No	No	No	No	No	No
2	2	976	2	36	No	No	No	No	No	No	No	No	No	No
3	2	956	2	35	No	No	No	No	No	No	No	No	No	No
4	2	813	2	30	No	No	No	No	No	No	No	No	No	No
5	2	773	2	28	No	No	No	No	No	No	No	No	No	No
6	2	692	2	25	No	No	No	No	No	No	No	No	No	No
7	2	641	2	23	No	No	No	No	No	No	No	No	No	No
8	2	610	2	22	No	No	No	No	No	No	No	No	No	No
9	2	488	2	18	No	No	No	No	No	No	No	No	No	No
10	2	458	2	17	No	No	No	No	No	No	No	No	No	No
11	2	458	2	17	No	No	No	No	No	No	No	No	No	No
12	2	438	2	16	No	No	No	No	No	No	No	No	No	No
13	2	397	2	14	No	No	No	No	No	No	No	No	No	No
14	2	366	2	13	No	No	No	No	No	No	No	No	No	No
15	2	366	2	13	No	No	No	No	No	No	No	No	No	No
16	2	356	2	13	No	No	No	No	No	No	No	No	No	No
17	2	204	2	7	No	No	No	No	No	No	No	No	No	No
18	2	111	2	4	No	No	No	No	No	No	No	No	No	No
19	2	101	2	4	No	No	No	No	No	No	No	No	No	No
20	2	41	2	1	No	No	No	No	No	No	No	No	No	No
21	2	30	2	1	No	No	No	No	No	No	No	No	No	No
22	2	30	2	1	No	No	No	No	No	No	No	No	No	No
23	2	20	2	1	No	No	No	No	No	No	No	No	No	No
24	2	20	2	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	20.9
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:12
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	37
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	1054
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 6: Battle Creek Rd at Site Access

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	E
1	723	317	56
2	694	304	54
3	680	298	53
4	578	254	45
5	549	241	43
6	492	216	38
7	455	200	35
8	434	190	34
9	347	152	27
10	325	143	25
11	325	143	25
12	311	136	24
13	282	124	22
14	260	114	20
15	260	114	20
16	253	111	20
17	145	63	11
18	80	35	6
19	72	32	6
20	29	13	2
21	22	10	2
22	22	10	2
23	14	6	1
24	14	6	1

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	1040	1	56	No	No	No	No	No	No	Yes	Yes	No	No
2	2	998	1	54	No	No	No	No	No	No	Yes	Yes	No	No
3	2	978	1	53	No	No	No	No	No	No	Yes	Yes	No	No
4	2	832	1	45	No	No	No	No	No	No	No	Yes	No	No
5	2	790	1	43	No	No	No	No	No	No	No	Yes	No	No
6	2	708	1	38	No	No	No	No	No	No	No	No	No	No
7	2	655	1	35	No	No	No	No	No	No	No	No	No	No
8	2	624	1	34	No	No	No	No	No	No	No	No	No	No
9	2	499	1	27	No	No	No	No	No	No	No	No	No	No
10	2	468	1	25	No	No	No	No	No	No	No	No	No	No
11	2	468	1	25	No	No	No	No	No	No	No	No	No	No
12	2	447	1	24	No	No	No	No	No	No	No	No	No	No
13	2	406	1	22	No	No	No	No	No	No	No	No	No	No
14	2	374	1	20	No	No	No	No	No	No	No	No	No	No
15	2	374	1	20	No	No	No	No	No	No	No	No	No	No
16	2	364	1	20	No	No	No	No	No	No	No	No	No	No
17	2	208	1	11	No	No	No	No	No	No	No	No	No	No
18	2	115	1	6	No	No	No	No	No	No	No	No	No	No
19	2	104	1	6	No	No	No	No	No	No	No	No	No	No
20	2	42	1	2	No	No	No	No	No	No	No	No	No	No
21	2	32	1	2	No	No	No	No	No	No	No	No	No	No
22	2	32	1	2	No	No	No	No	No	No	No	No	No	No
23	2	20	1	1	No	No	No	No	No	No	No	No	No	No
24	2	20	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	3	5	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	28.1
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:26
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	56
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	1096
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 11: Reed Rd at Strong Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	67	349	139
2	64	335	133
3	63	328	131
4	54	279	111
5	51	265	106
6	46	237	95
7	42	220	88
8	40	209	83
9	32	168	67
10	30	157	63
11	30	157	63
12	29	150	60
13	26	136	54
14	24	126	50
15	24	126	50
16	23	122	49
17	13	70	28
18	7	38	15
19	7	35	14
20	3	14	6
21	2	10	4
22	2	10	4
23	1	7	3
24	1	7	3

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	416	1	139	No	No	No	Yes	No	No	No	No	No	No
2	2	399	1	133	No	No	No	Yes	No	No	No	No	No	No
3	2	391	1	131	No	No	No	Yes	No	No	No	No	No	No
4	2	333	1	111	No	No	No	No	No	No	No	No	No	No
5	2	316	1	106	No	No	No	No	No	No	No	No	No	No
6	2	283	1	95	No	No	No	No	No	No	No	No	No	No
7	2	262	1	88	No	No	No	No	No	No	No	No	No	No
8	2	249	1	83	No	No	No	No	No	No	No	No	No	No
9	2	200	1	67	No	No	No	No	No	No	No	No	No	No
10	2	187	1	63	No	No	No	No	No	No	No	No	No	No
11	2	187	1	63	No	No	No	No	No	No	No	No	No	No
12	2	179	1	60	No	No	No	No	No	No	No	No	No	No
13	2	162	1	54	No	No	No	No	No	No	No	No	No	No
14	2	150	1	50	No	No	No	No	No	No	No	No	No	No
15	2	150	1	50	No	No	No	No	No	No	No	No	No	No
16	2	145	1	49	No	No	No	No	No	No	No	No	No	No
17	2	83	1	28	No	No	No	No	No	No	No	No	No	No
18	2	45	1	15	No	No	No	No	No	No	No	No	No	No
19	2	42	1	14	No	No	No	No	No	No	No	No	No	No
20	2	17	1	6	No	No	No	No	No	No	No	No	No	No
21	2	12	1	4	No	No	No	No	No	No	No	No	No	No
22	2	12	1	4	No	No	No	No	No	No	No	No	No	No
23	2	8	1	3	No	No	No	No	No	No	No	No	No	No
24	2	8	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	3	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:32
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	139
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	555
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 16: Reed Rd at Fairview Industrial Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N, S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	N	S
1	328	387	7	411
2	315	372	7	395
3	308	364	7	386
4	262	310	6	329
5	249	294	5	312
6	223	263	5	279
7	207	244	4	259
8	197	232	4	247
9	157	186	3	197
10	148	174	3	185
11	148	174	3	185
12	141	166	3	177
13	128	151	3	160
14	118	139	3	148
15	118	139	3	148
16	115	135	2	144
17	66	77	1	82
18	36	43	1	45
19	33	39	1	41
20	13	15	0	16
21	10	12	0	12
22	10	12	0	12
23	7	8	0	8
24	7	8	0	8

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	4	715	2	418	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
2	4	687	2	402	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
3	4	672	2	393	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
4	4	572	2	335	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
5	4	543	2	317	No	Yes	Yes	Yes	No	No	No	Yes	No	No
6	4	486	2	284	No	Yes	Yes	Yes	No	No	No	No	No	No
7	4	451	2	263	No	No	Yes	Yes	No	No	No	No	No	No
8	4	429	2	251	No	No	Yes	Yes	No	No	No	No	No	No
9	4	343	2	200	No	No	No	Yes	No	No	No	No	No	No
10	4	322	2	188	No	No	No	No	No	No	No	No	No	No
11	4	322	2	188	No	No	No	No	No	No	No	No	No	No
12	4	307	2	180	No	No	No	No	No	No	No	No	No	No
13	4	279	2	163	No	No	No	No	No	No	No	No	No	No
14	4	257	2	151	No	No	No	No	No	No	No	No	No	No
15	4	257	2	151	No	No	No	No	No	No	No	No	No	No
16	4	250	2	146	No	No	No	No	No	No	No	No	No	No
17	4	143	2	83	No	No	No	No	No	No	No	No	No	No
18	4	79	2	46	No	No	No	No	No	No	No	No	No	No
19	4	72	2	42	No	No	No	No	No	No	No	No	No	No
20	4	28	2	16	No	No	No	No	No	No	No	No	No	No
21	4	22	2	12	No	No	No	No	No	No	No	No	No	No
22	4	22	2	12	No	No	No	No	No	No	No	No	No	No
23	4	15	2	8	No	No	No	No	No	No	No	No	No	No
24	4	15	2	8	No	No	No	No	No	No	No	No	No	No
Hours Met					3	6	8	9	0	0	3	5	4	1

Warrant 3 Condition A

Orientation	N	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	18.7	273.3
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:02	31:11
Delay Condition Met	No	Yes
Volume on Minor Street Approach During Same Hour	7	411
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	1133	1133
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	Yes
Warrant Met for Intersection	**Yes**	

Signal Warrants Report For Intersection 21: Fairview Industrial Dr at Marietta St

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	428	126	155
2	411	121	149
3	402	118	146
4	342	101	124
5	325	96	118
6	291	86	105
7	270	79	98
8	257	76	93
9	205	60	74
10	193	57	70
11	193	57	70
12	184	54	67
13	167	49	60
14	154	45	56
15	154	45	56
16	150	44	54
17	86	25	31
18	47	14	17
19	43	13	16
20	17	5	6
21	13	4	5
22	13	4	5
23	9	3	3
24	9	3	3

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	3	554	1	155	No	Yes	Yes	Yes	No	No	No	Yes	No	No
2	3	532	1	149	No	Yes	Yes	Yes	No	No	No	Yes	No	No
3	3	520	1	146	No	Yes	Yes	Yes	No	No	No	Yes	No	No
4	3	443	1	124	No	No	Yes	Yes	No	No	No	No	No	No
5	3	421	1	118	No	No	Yes	Yes	No	No	No	No	No	No
6	3	377	1	105	No	No	No	Yes	No	No	No	No	No	No
7	3	349	1	98	No	No	No	Yes	No	No	No	No	No	No
8	3	333	1	93	No	No	No	No	No	No	No	No	No	No
9	3	265	1	74	No	No	No	No	No	No	No	No	No	No
10	3	250	1	70	No	No	No	No	No	No	No	No	No	No
11	3	250	1	70	No	No	No	No	No	No	No	No	No	No
12	3	238	1	67	No	No	No	No	No	No	No	No	No	No
13	3	216	1	60	No	No	No	No	No	No	No	No	No	No
14	3	199	1	56	No	No	No	No	No	No	No	No	No	No
15	3	199	1	56	No	No	No	No	No	No	No	No	No	No
16	3	194	1	54	No	No	No	No	No	No	No	No	No	No
17	3	111	1	31	No	No	No	No	No	No	No	No	No	No
18	3	61	1	17	No	No	No	No	No	No	No	No	No	No
19	3	56	1	16	No	No	No	No	No	No	No	No	No	No
20	3	22	1	6	No	No	No	No	No	No	No	No	No	No
21	3	17	1	5	No	No	No	No	No	No	No	No	No	No
22	3	17	1	5	No	No	No	No	No	No	No	No	No	No
23	3	12	1	3	No	No	No	No	No	No	No	No	No	No
24	3	12	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					0	3	5	7	0	0	0	3	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	21.6
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:55
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	155
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	709
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 26: East Access at Strong Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	N	W
1	169	24	58
2	162	23	56
3	159	23	55
4	135	19	46
5	128	18	44
6	115	16	39
7	106	15	37
8	101	14	35
9	81	12	28
10	76	11	26
11	76	11	26
12	73	10	25
13	66	9	23
14	61	9	21
15	61	9	21
16	59	8	20
17	34	5	12
18	19	3	6
19	17	2	6
20	7	1	2
21	5	1	2
22	5	1	2
23	3	0	1
24	3	0	1

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	193	1	58	No	No	No	No	No	No	No	No	No	No
2	2	185	1	56	No	No	No	No	No	No	No	No	No	No
3	2	182	1	55	No	No	No	No	No	No	No	No	No	No
4	2	154	1	46	No	No	No	No	No	No	No	No	No	No
5	2	146	1	44	No	No	No	No	No	No	No	No	No	No
6	2	131	1	39	No	No	No	No	No	No	No	No	No	No
7	2	121	1	37	No	No	No	No	No	No	No	No	No	No
8	2	115	1	35	No	No	No	No	No	No	No	No	No	No
9	2	93	1	28	No	No	No	No	No	No	No	No	No	No
10	2	87	1	26	No	No	No	No	No	No	No	No	No	No
11	2	87	1	26	No	No	No	No	No	No	No	No	No	No
12	2	83	1	25	No	No	No	No	No	No	No	No	No	No
13	2	75	1	23	No	No	No	No	No	No	No	No	No	No
14	2	70	1	21	No	No	No	No	No	No	No	No	No	No
15	2	70	1	21	No	No	No	No	No	No	No	No	No	No
16	2	67	1	20	No	No	No	No	No	No	No	No	No	No
17	2	39	1	12	No	No	No	No	No	No	No	No	No	No
18	2	22	1	6	No	No	No	No	No	No	No	No	No	No
19	2	19	1	6	No	No	No	No	No	No	No	No	No	No
20	2	8	1	2	No	No	No	No	No	No	No	No	No	No
21	2	6	1	2	No	No	No	No	No	No	No	No	No	No
22	2	6	1	2	No	No	No	No	No	No	No	No	No	No
23	2	3	1	1	No	No	No	No	No	No	No	No	No	No
24	2	3	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:09
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	58
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	251
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 31: 27th Ave at Marietta St

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	67	313	10
2	64	300	10
3	63	294	9
4	54	250	8
5	51	238	8
6	46	213	7
7	42	197	6
8	40	188	6
9	32	150	5
10	30	141	5
11	30	141	5
12	29	135	4
13	26	122	4
14	24	113	4
15	24	113	4
16	23	110	4
17	13	63	2
18	7	34	1
19	7	31	1
20	3	13	0
21	2	9	0
22	2	9	0
23	1	6	0
24	1	6	0

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	380	1	10	No	No	No	No	No	No	No	No	No	No
2	2	364	1	10	No	No	No	No	No	No	No	No	No	No
3	2	357	1	9	No	No	No	No	No	No	No	No	No	No
4	2	304	1	8	No	No	No	No	No	No	No	No	No	No
5	2	289	1	8	No	No	No	No	No	No	No	No	No	No
6	2	259	1	7	No	No	No	No	No	No	No	No	No	No
7	2	239	1	6	No	No	No	No	No	No	No	No	No	No
8	2	228	1	6	No	No	No	No	No	No	No	No	No	No
9	2	182	1	5	No	No	No	No	No	No	No	No	No	No
10	2	171	1	5	No	No	No	No	No	No	No	No	No	No
11	2	171	1	5	No	No	No	No	No	No	No	No	No	No
12	2	164	1	4	No	No	No	No	No	No	No	No	No	No
13	2	148	1	4	No	No	No	No	No	No	No	No	No	No
14	2	137	1	4	No	No	No	No	No	No	No	No	No	No
15	2	137	1	4	No	No	No	No	No	No	No	No	No	No
16	2	133	1	4	No	No	No	No	No	No	No	No	No	No
17	2	76	1	2	No	No	No	No	No	No	No	No	No	No
18	2	41	1	1	No	No	No	No	No	No	No	No	No	No
19	2	38	1	1	No	No	No	No	No	No	No	No	No	No
20	2	16	1	0	No	No	No	No	No	No	No	No	No	No
21	2	11	1	0	No	No	No	No	No	No	No	No	No	No
22	2	11	1	0	No	No	No	No	No	No	No	No	No	No
23	2	7	1	0	No	No	No	No	No	No	No	No	No	No
24	2	7	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.9
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:01
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	10
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	390
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 42: Reed at Site Access

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	53	348	10
2	51	334	10
3	50	327	9
4	42	278	8
5	40	264	8
6	36	237	7
7	33	219	6
8	32	209	6
9	25	167	5
10	24	157	5
11	24	157	5
12	23	150	4
13	21	136	4
14	19	125	4
15	19	125	4
16	19	122	4
17	11	70	2
18	6	38	1
19	5	35	1
20	2	14	0
21	2	10	0
22	2	10	0
23	1	7	0
24	1	7	0

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	401	1	10	No	No	No	No	No	No	No	No	No	No
2	2	385	1	10	No	No	No	No	No	No	No	No	No	No
3	2	377	1	9	No	No	No	No	No	No	No	No	No	No
4	2	320	1	8	No	No	No	No	No	No	No	No	No	No
5	2	304	1	8	No	No	No	No	No	No	No	No	No	No
6	2	273	1	7	No	No	No	No	No	No	No	No	No	No
7	2	252	1	6	No	No	No	No	No	No	No	No	No	No
8	2	241	1	6	No	No	No	No	No	No	No	No	No	No
9	2	192	1	5	No	No	No	No	No	No	No	No	No	No
10	2	181	1	5	No	No	No	No	No	No	No	No	No	No
11	2	181	1	5	No	No	No	No	No	No	No	No	No	No
12	2	173	1	4	No	No	No	No	No	No	No	No	No	No
13	2	157	1	4	No	No	No	No	No	No	No	No	No	No
14	2	144	1	4	No	No	No	No	No	No	No	No	No	No
15	2	144	1	4	No	No	No	No	No	No	No	No	No	No
16	2	141	1	4	No	No	No	No	No	No	No	No	No	No
17	2	81	1	2	No	No	No	No	No	No	No	No	No	No
18	2	44	1	1	No	No	No	No	No	No	No	No	No	No
19	2	40	1	1	No	No	No	No	No	No	No	No	No	No
20	2	16	1	0	No	No	No	No	No	No	No	No	No	No
21	2	12	1	0	No	No	No	No	No	No	No	No	No	No
22	2	12	1	0	No	No	No	No	No	No	No	No	No	No
23	2	8	1	0	No	No	No	No	No	No	No	No	No	No
24	2	8	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.2
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:01
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	10
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	411
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

18-392 Strong at 27th Subdivision TIA

Vistro File: J:\...\18-392 Reed Rd Subdivision - TIA.vistro
Report File: J:\...\18-392 AM Dev Ph 3.pdf

Scenario 7 AM Dev 2026 Ph 3
6/19/2018

Trip Generation summary

Added Trips

Zone ID: Name	Land Use variables	Code	Ind. Var.	Rate	Quantity	% In	% Out	Trips In	Trips Out	Total Trips	% of Total Trips
1: 18-392 Reed Rd Sub	Homes	ITE 210	Home	0.740	225.000	25.00	75.00	42	124	166	100.00
					Added Trips Total			**42**	**124**	**166**	**100.00**

18-392 Strong at 27th Subdivision TIA

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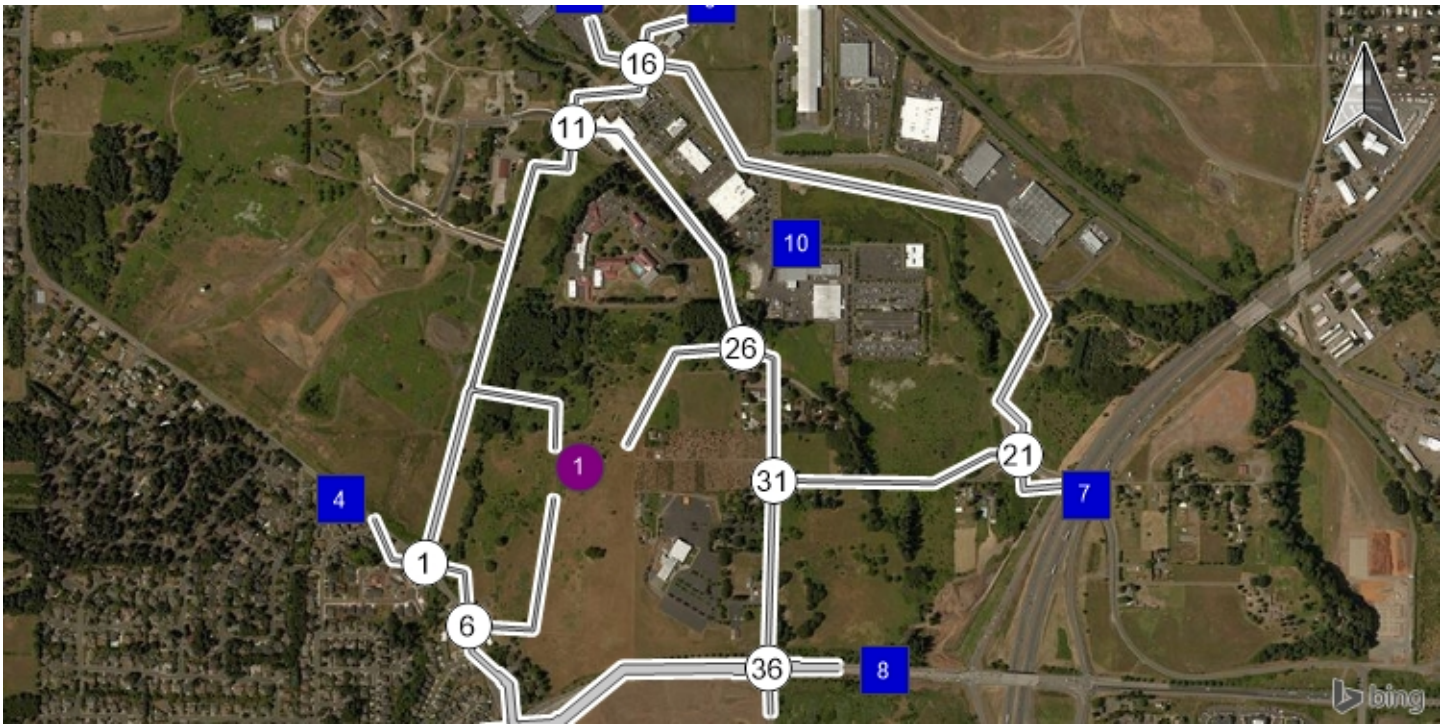
Report File: J:\...\18-392 AM Dev Ph 3.pdf

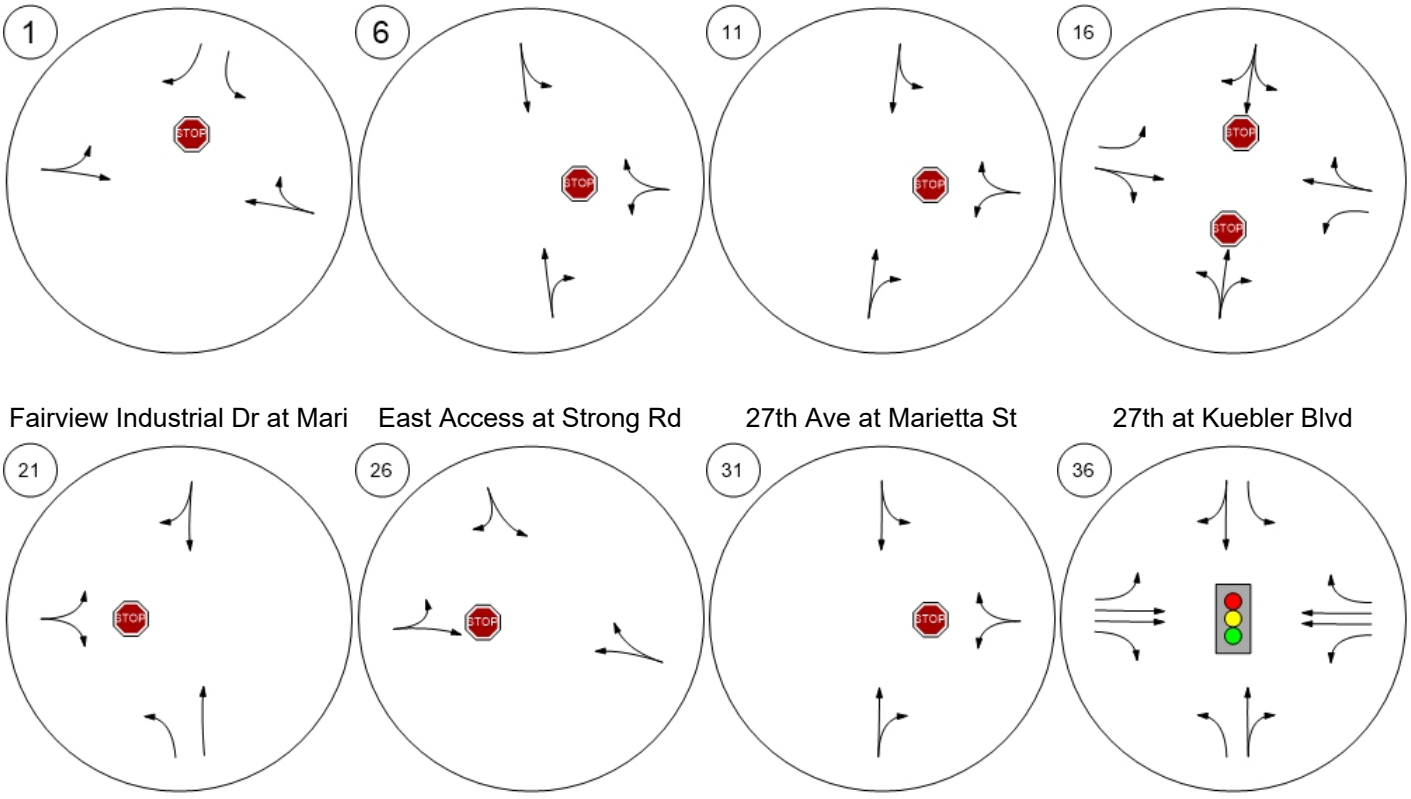
Scenario 7 AM Dev 2026 Ph 3
6/19/2018

Trip Distribution summary

Zone / Gate	Zone 1: 18-392 Reed Rd Sub			
	To 18-392 Reed Rd Sub:		From 18-392 Reed Rd Sub:	
	Share %	Trips	Share %	Trips
2: Gate	10.00	4	10.00	12
3: Gate	30.00	13	30.00	37
4: Gate	7.00	3	7.00	9
5: Gate	10.00	4	10.00	12
6: Gate	0.00	0	0.00	0
7: Gate	6.00	3	6.00	7
8: Gate	35.00	15	35.00	45
9: Gate	2.00	1	2.00	2
10: Gate	0.00	0	0.00	0
Total	**100.00**	**43**	**100.00**	**124**

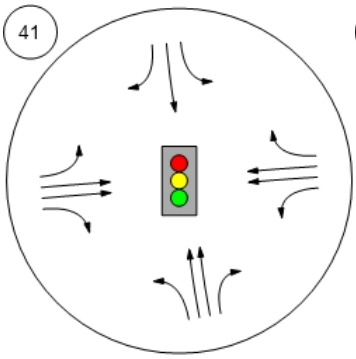
Report Figure 1: Lane Configuration and Traffic Control



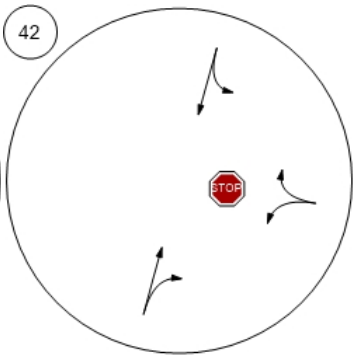


Report Figure 1: Lane Configuration and Traffic Control

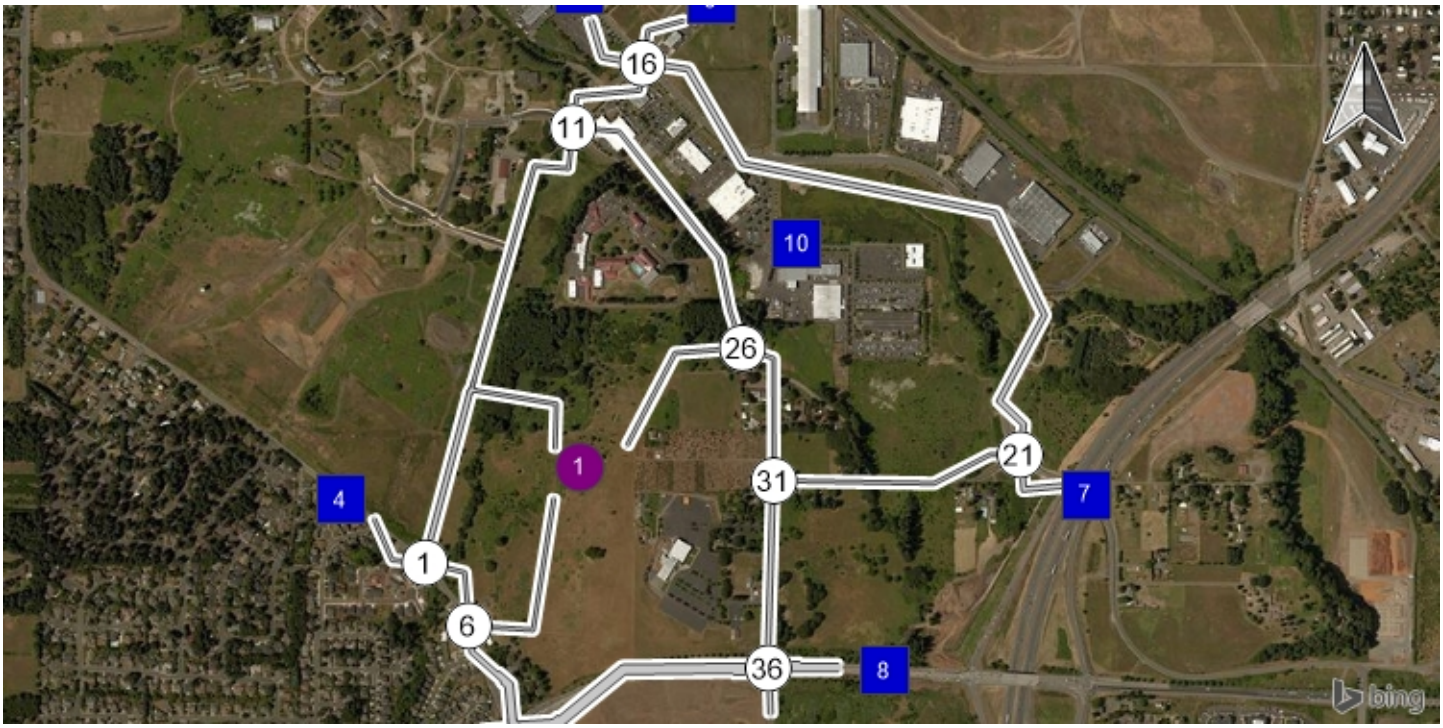
Keubler Blvd at Battle Creek



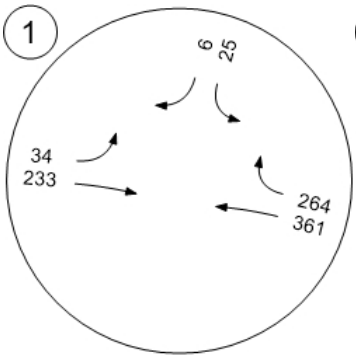
Reed at Site Access



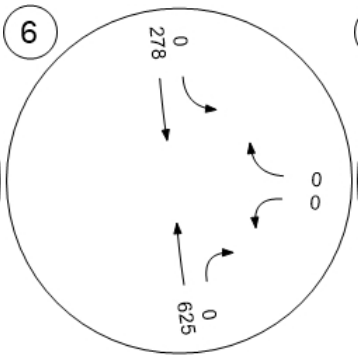
Report Figure 2a: Traffic Volume - Base Volume



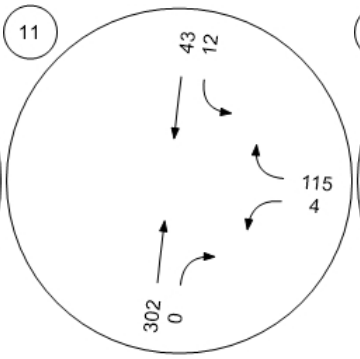
Battle Creek Rd at Reed Rd



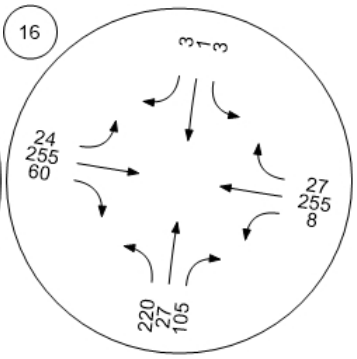
Battle Creek Rd at Site Acces



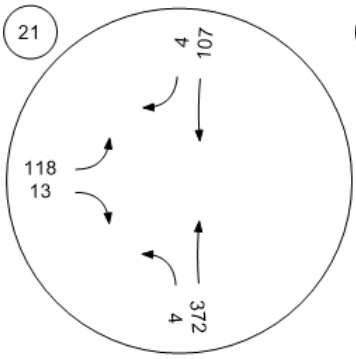
Reed Rd at Strong Rd



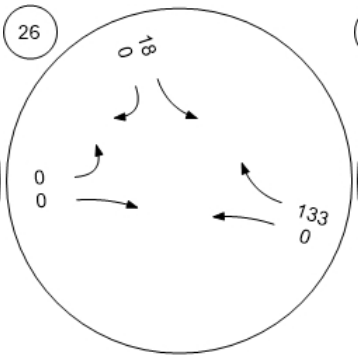
Reed Rd at Fairview Industria



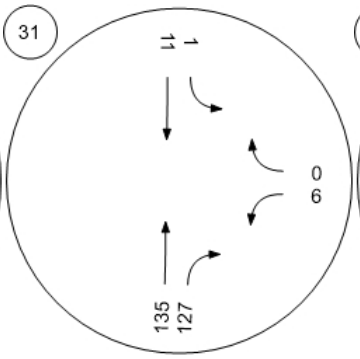
Fairview Industrial Dr at Mari



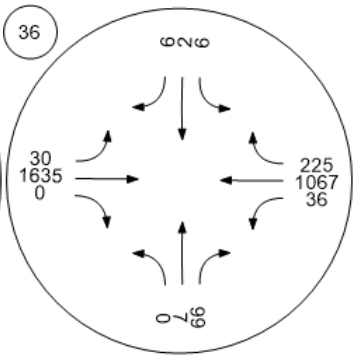
East Access at Strong Rd



27th Ave at Marietta St

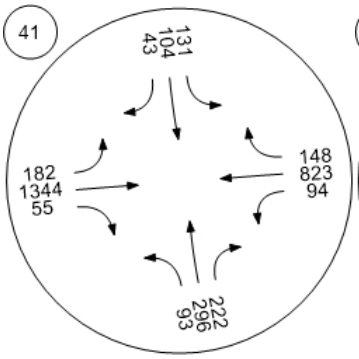


27th at Kuebler Blvd

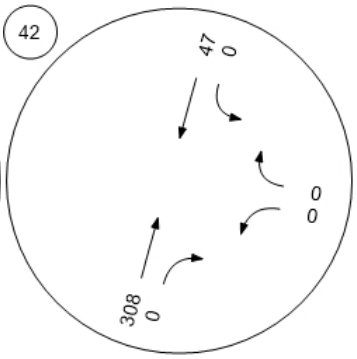


Report Figure 2a: Traffic Volume - Base Volume

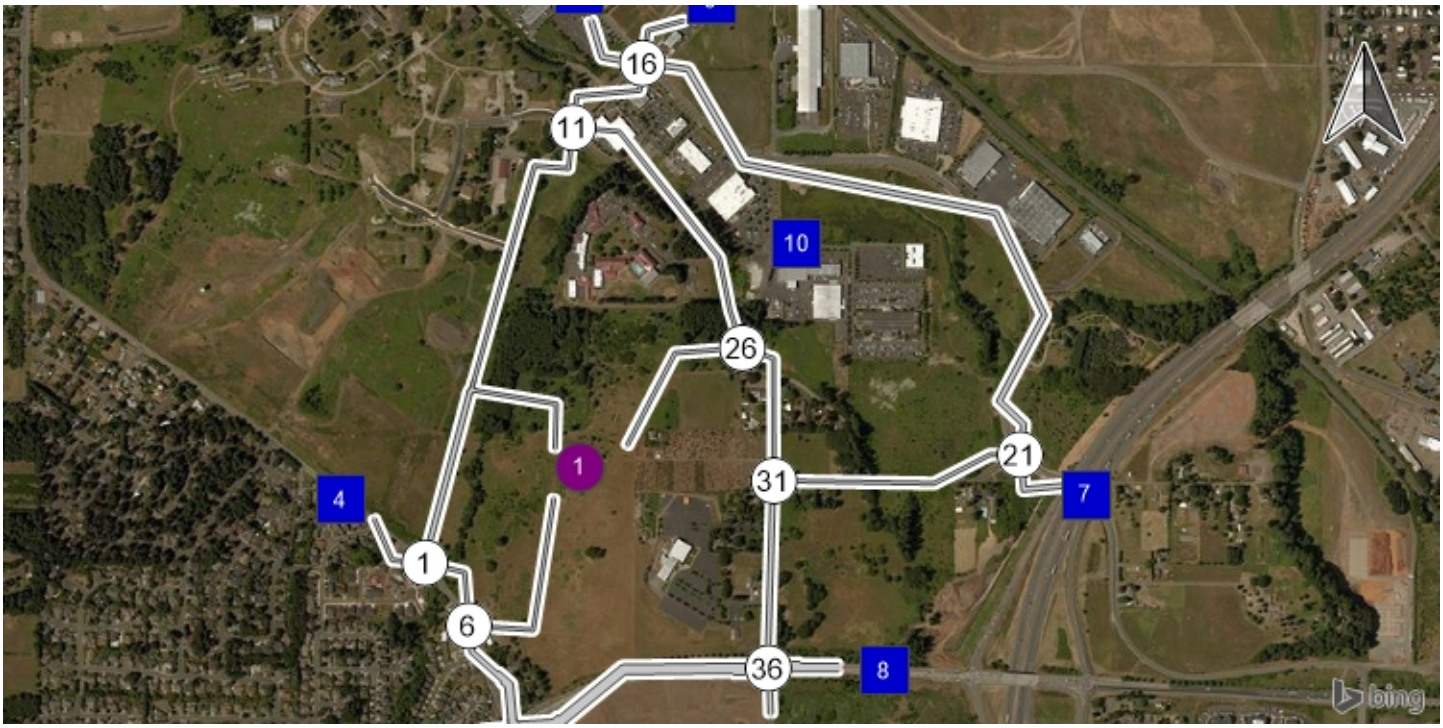
Keubler Blvd at Battle Creek



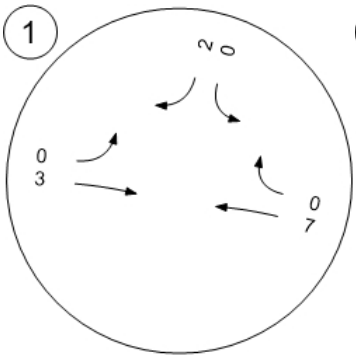
Reed at Site Access



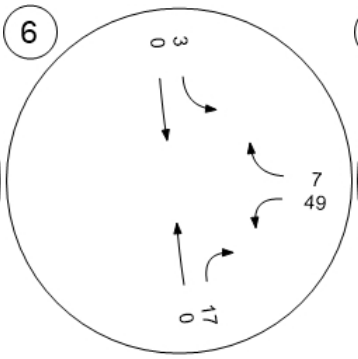
Report Figure 2d: Traffic Volume - Net New Site Trips



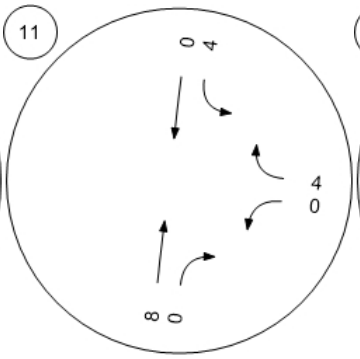
Battle Creek Rd at Reed Rd



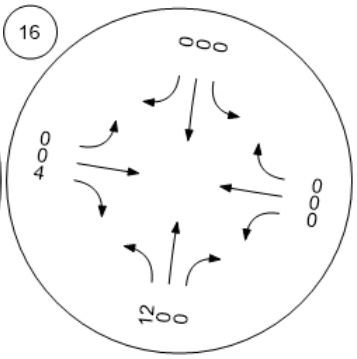
Battle Creek Rd at Site Acces



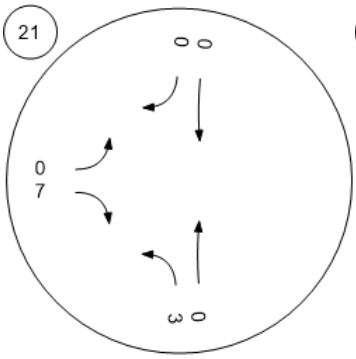
Reed Rd at Strong Rd



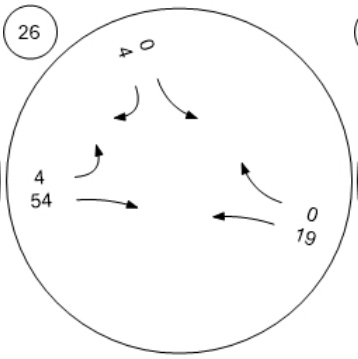
Reed Rd at Fairview Industria



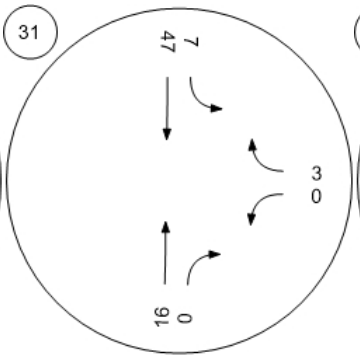
Fairview Industrial Dr at Mari



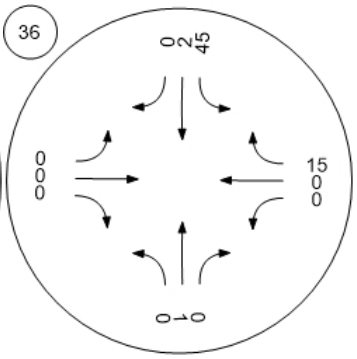
East Access at Strong Rd



27th Ave at Marietta St

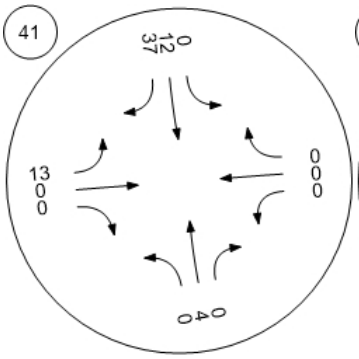


27th at Kuebler Blvd

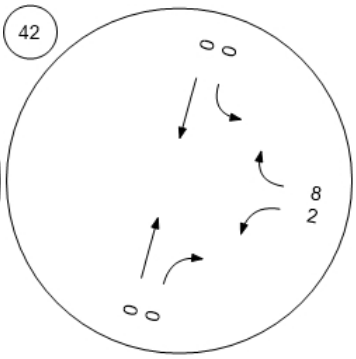


Report Figure 2d: Traffic Volume - Net New Site Trips

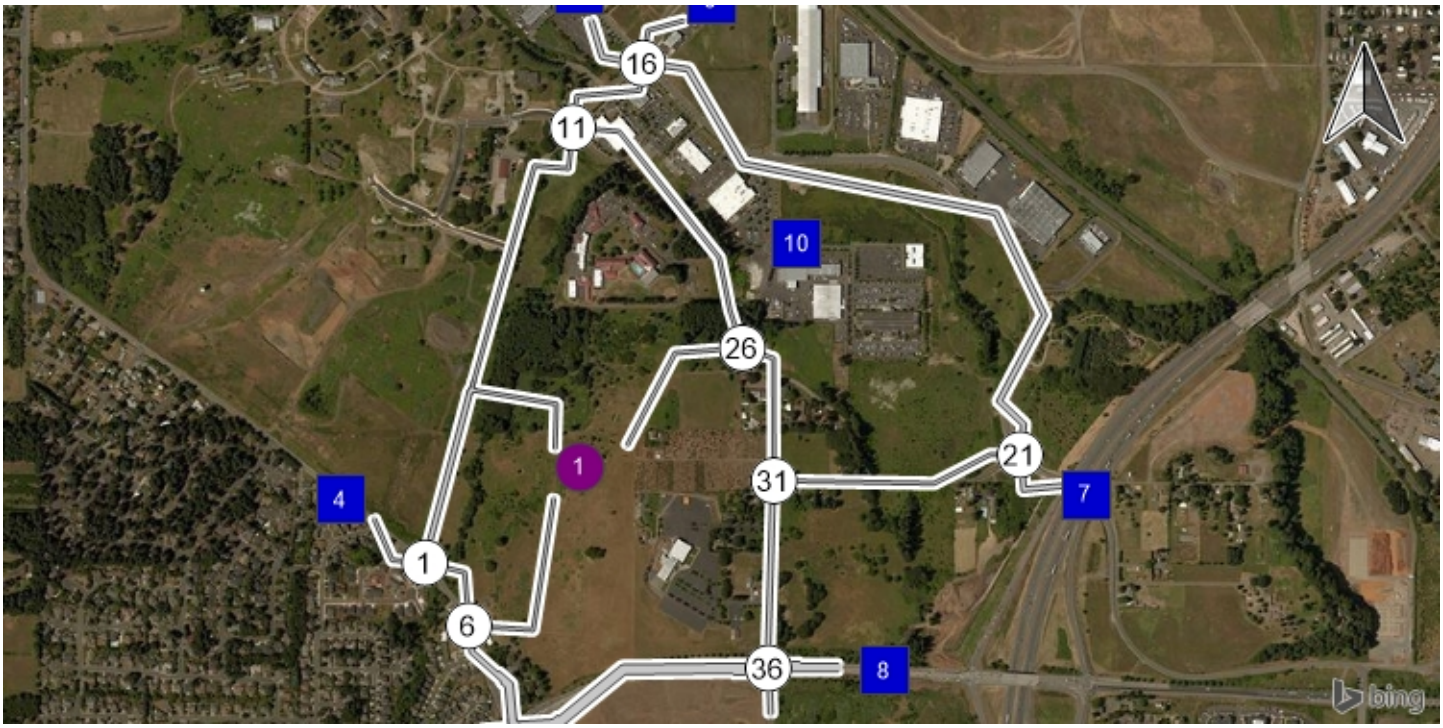
Keubler Blvd at Battle Creek



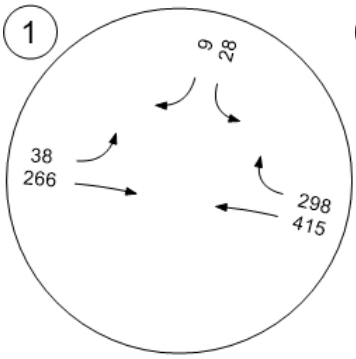
Reed at Site Access



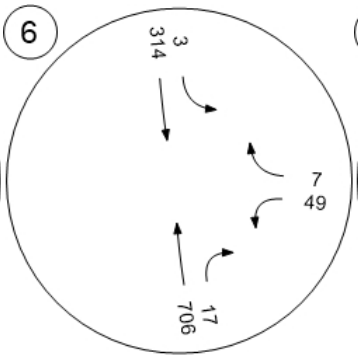
Report Figure 2f: Traffic Volume - Future Total Volume



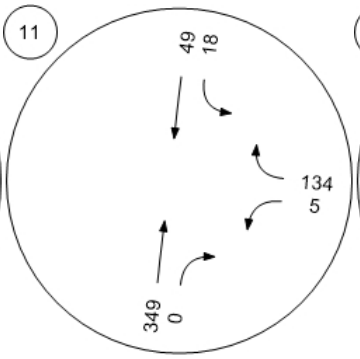
Battle Creek Rd at Reed Rd



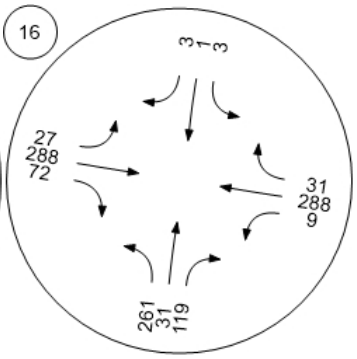
Battle Creek Rd at Site Acces



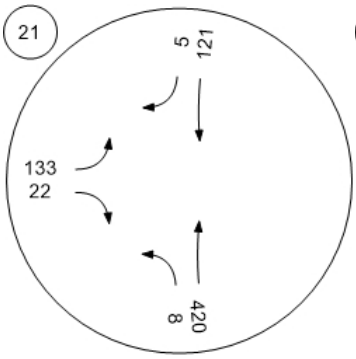
Reed Rd at Strong Rd



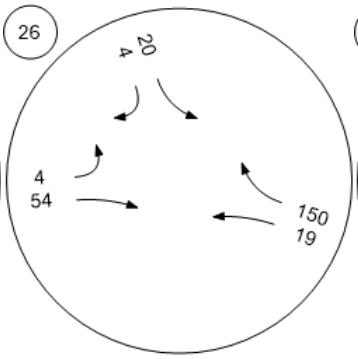
Reed Rd at Fairview Industria



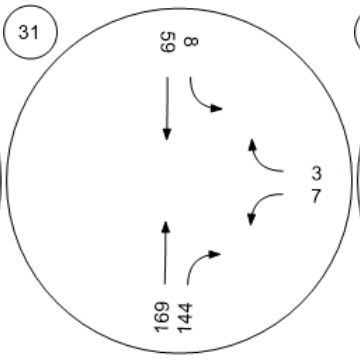
Fairview Industrial Dr at Mari



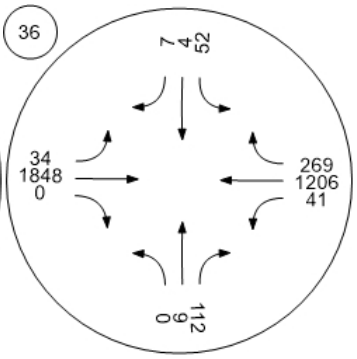
East Access at Strong Rd



27th Ave at Marietta St

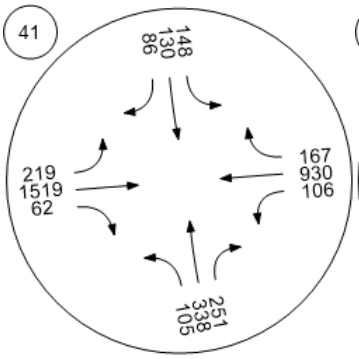


27th at Kuebler Blvd

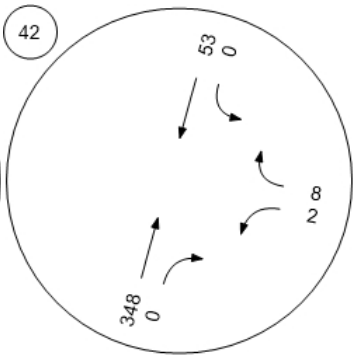


Report Figure 2f: Traffic Volume - Future Total Volume

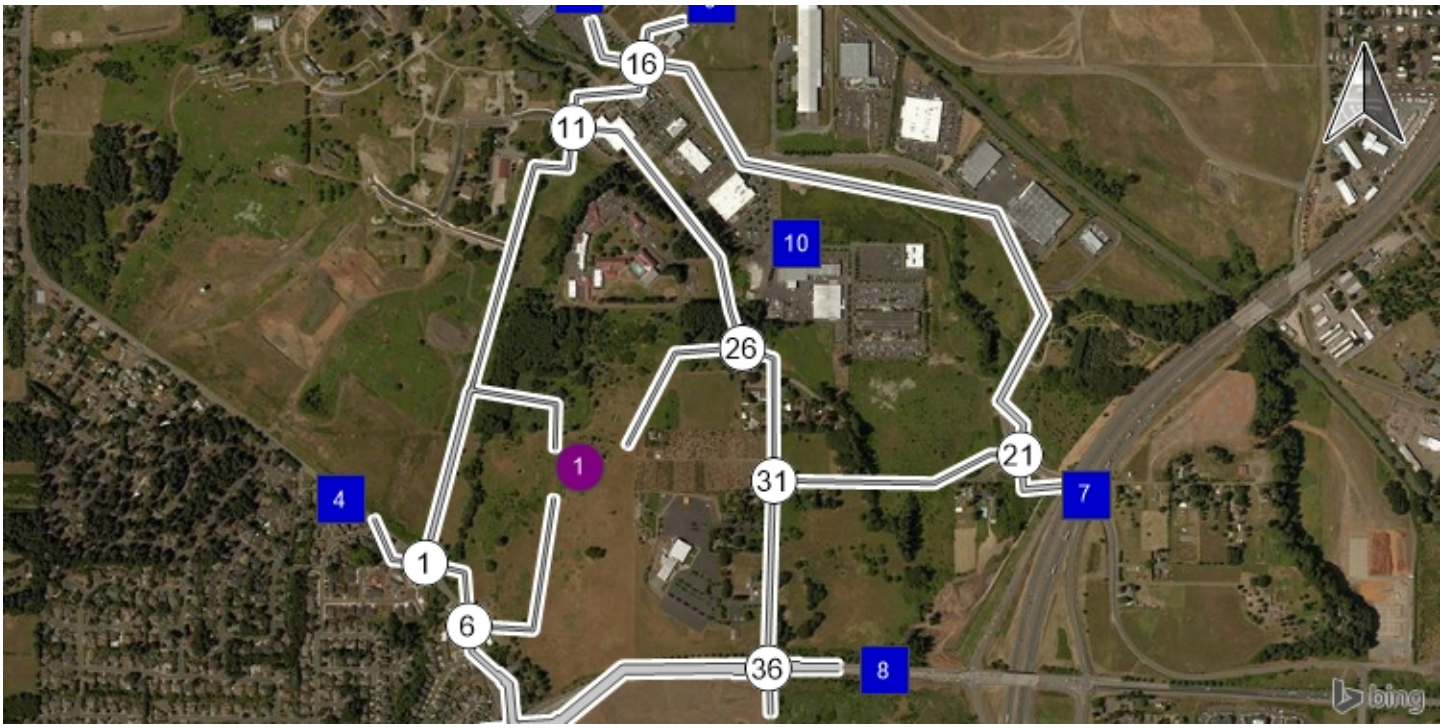
Keubler Blvd at Battle Creek

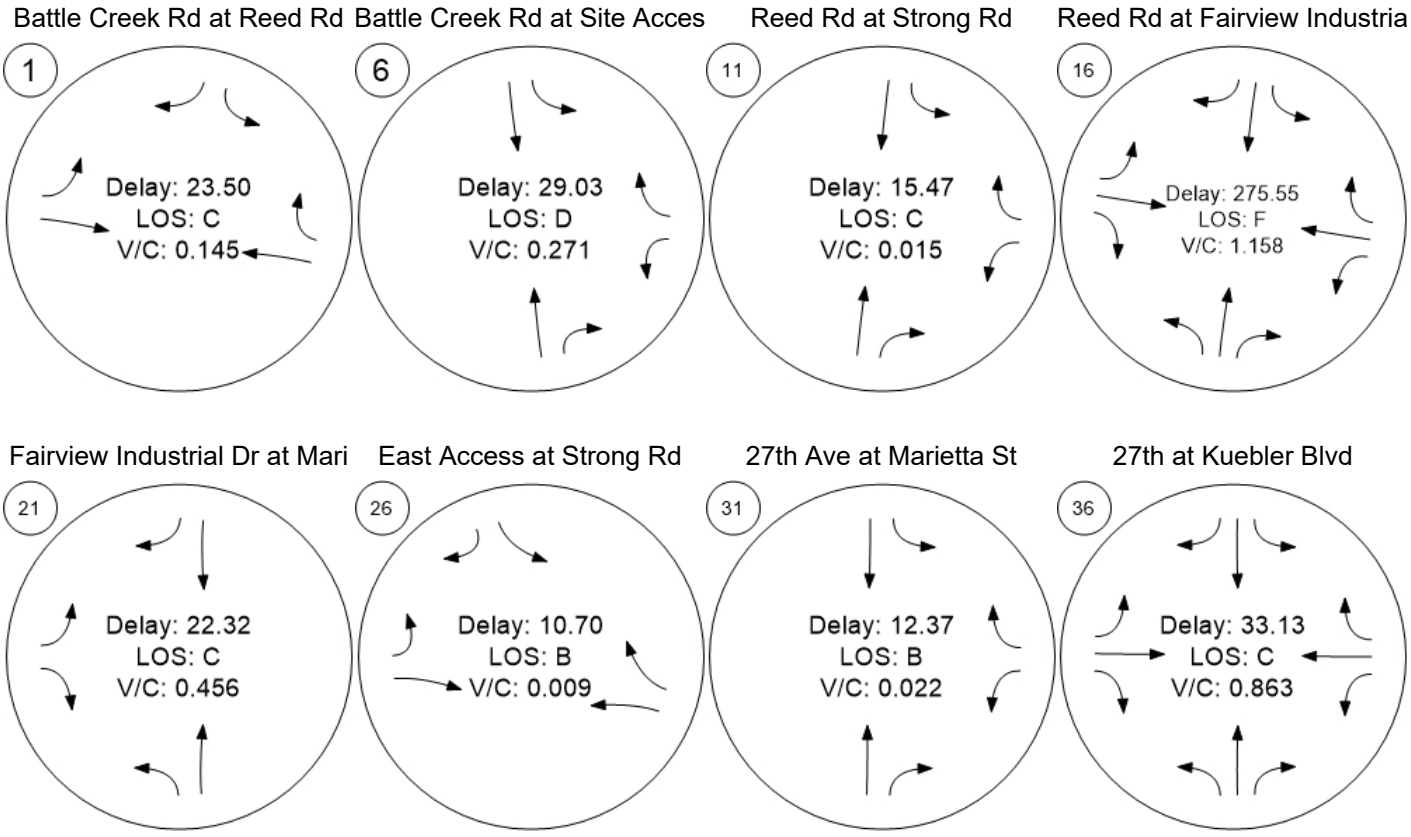


Reed at Site Access



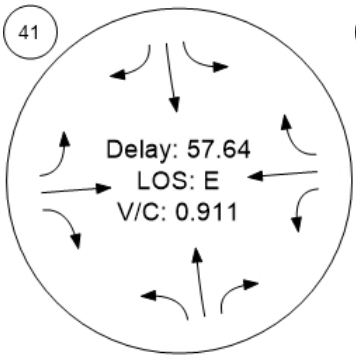
Report Figure 3: Traffic Conditions



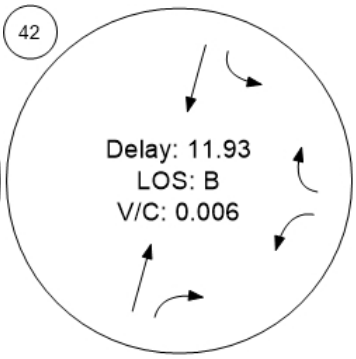


Report Figure 3: Traffic Conditions

Keubler Blvd at Battle Creek



Reed at Site Access



18-392 Strong at 27th Subdivision TIA

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Report File: J:\...\18-392 PM Existing.pdf

Scenario 2 PM Existing
6/19/2018

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Battle Creek Rd at Reed Rd	Two-way stop	HCM 6th Edition	SB Left	0.661	35.4	E
11	Reed Rd at Strong Rd	Two-way stop	HCM 6th Edition	WB Left	0.018	14.3	B
16	Reed Rd at Fairview Industrial Dr	Two-way stop	HCM 6th Edition	NB Left	0.366	34.3	D
21	Fairview Industrial Dr at Marietta St	Two-way stop	HCM 6th Edition	EB Left	0.031	14.0	B
31	27th Ave at Marietta St	Two-way stop	HCM 6th Edition	WB Left	0.079	9.9	A
36	27th at Kuebler Blvd	Signalized	HCM 6th Edition	WB Left	0.756	36.3	D
41	Keubler Blvd at Battle Creek Rd	Signalized	HCM 6th Edition	SB Thru	0.829	42.5	D

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Battle Creek Rd at Reed Rd

Control Type:	Two-way stop	Delay (sec / veh):	35.4
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.661

Intersection Setup

Name	Reed Rd		Battle Creek Rd		Battle Creek Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Reed Rd		Battle Creek Rd		Battle Creek Rd	
Base Volume Input [veh/h]	197	46	10	434	306	59
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.20	1.20	1.80	1.80	3.00	3.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	197	46	10	434	306	59
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	54	13	3	118	83	16
Total Analysis Volume [veh/h]	214	50	11	472	333	64
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.66	0.07	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	35.39	10.70	8.13	0.00	0.00	0.00
Movement LOS	E	B	A	A	A	A
95th-Percentile Queue Length [veh]	4.43	0.24	2.08	2.08	0.00	0.00
95th-Percentile Queue Length [ft]	110.63	5.92	52.02	52.02	0.00	0.00
d_A, Approach Delay [s/veh]	30.71		0.19		0.00	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	7.17					
Intersection LOS	E					

Intersection Level Of Service Report
Intersection 11: Reed Rd at Strong Rd

Control Type:	Two-way stop	Delay (sec / veh):	14.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.018

Intersection Setup

Name	Reed Rd		Reed Rd		Strong Rd	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Reed Rd		Reed Rd		Strong Rd	
Base Volume Input [veh/h]	68	1	87	241	5	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.80	5.80	1.80	1.80	6.70	6.70
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	68	1	87	241	5	10
Peak Hour Factor	0.7600	0.7600	0.7600	0.7600	0.7600	0.7600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	0	29	79	2	3
Total Analysis Volume [veh/h]	89	1	114	317	7	13
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.08	0.00	0.02	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	7.59	0.00	14.28	8.95
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.00	0.00	1.19	1.19	0.10	0.10
95th-Percentile Queue Length [ft]	0.00	0.00	29.79	29.79	2.42	2.42
d_A, Approach Delay [s/veh]	0.00		2.01		10.82	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	2.00					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 16: Reed Rd at Fairview Industrial Dr

Control Type:	Two-way stop	Delay (sec / veh):	34.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.366

Intersection Setup

Name	Reed Rd			Reed Rd			Fairview Industrial Dr			Fairview Industrial Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Reed Rd			Reed Rd			Fairview Industrial Dr			Fairview Industrial Dr		
Base Volume Input [veh/h]	59	5	22	8	9	17	9	238	212	76	268	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.70	4.70	4.70	0.00	0.00	0.00	4.10	4.10	4.10	4.00	4.00	4.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	59	5	22	8	9	17	9	238	212	76	268	2
Peak Hour Factor	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	2	7	2	3	5	3	73	65	23	82	1
Total Analysis Volume [veh/h]	72	6	27	10	11	21	11	290	259	93	327	2
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.37	0.03	0.04	0.05	0.06	0.03	0.01	0.00	0.00	0.09	0.00	0.00
d_M, Delay for Movement [s/veh]	34.27	31.67	21.72	24.56	25.11	11.80	7.98	0.00	0.00	8.92	0.00	0.00
Movement LOS	D	D	C	C	D	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	2.06	2.06	2.06	0.46	0.46	0.46	0.03	0.00	0.00	0.30	0.00	0.00
95th-Percentile Queue Length [ft]	51.47	51.47	51.47	11.51	11.51	11.51	0.68	0.00	0.00	7.58	0.00	0.00
d_A, Approach Delay [s/veh]	30.89			18.32			0.16			1.97		
Approach LOS	D			C			A			A		
d_I, Intersection Delay [s/veh]	4.37											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 21: Fairview Industrial Dr at Marietta St

Control Type:	Two-way stop	Delay (sec / veh):	14.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.031

Intersection Setup

Name	Fairview Industrial Dr		Fairview Industrial Dr		Marietta St	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Fairview Industrial Dr		Fairview Industrial Dr		Marietta St	
Base Volume Input [veh/h]	5	134	378	41	10	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.40	9.40	4.50	4.50	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	134	378	41	10	5
Peak Hour Factor	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	42	120	13	3	2
Total Analysis Volume [veh/h]	6	170	478	52	13	6
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.03	0.01
d_M, Delay for Movement [s/veh]	8.62	0.00	0.00	0.00	14.05	11.64
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh]	0.02	0.00	0.00	0.00	0.13	0.13
95th-Percentile Queue Length [ft]	0.45	0.00	0.00	0.00	3.27	3.27
d_A, Approach Delay [s/veh]	0.29		0.00		13.29	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.42					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 31: 27th Ave at Marietta St

Control Type:	Two-way stop	Delay (sec / veh):	9.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.079

Intersection Setup

Name	27th Ave		Strong Rd		Marietta St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	27th Ave		Strong Rd		Marietta St	
Base Volume Input [veh/h]	18	10	1	107	43	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	10	1	107	43	1
Peak Hour Factor	0.6800	0.6800	0.6800	0.6800	0.6800	0.6800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	4	0	39	16	0
Total Analysis Volume [veh/h]	26	15	1	157	63	1
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.08	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.28	0.00	9.89	8.83
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.33	0.33	0.26	0.26
95th-Percentile Queue Length [ft]	0.00	0.00	8.31	8.31	6.47	6.47
d_A, Approach Delay [s/veh]	0.00		0.05		9.87	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.43					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 36: 27th at Kuebler Blvd

Control Type:	Signalized	Delay (sec / veh):	36.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.756

Intersection Setup

Name	27th Ave			27th Ave			Kuebler Blvd			Kuebler Blvd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	125.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	200.00	350.00	100.00	175.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	27th Ave			27th Ave			Kuebler Blvd			Kuebler Blvd		
Base Volume Input [veh/h]	1	0	63	100	18	40	11	1307	2	103	1923	23
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.70	4.70	4.70	0.60	0.60	0.60	3.60	3.60	3.60	1.30	1.30	1.30
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	0	63	100	18	40	11	1307	2	103	1923	23
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	17	27	5	11	3	348	1	27	511	6
Total Analysis Volume [veh/h]	1	0	67	106	19	43	12	1390	2	110	2046	24
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	19	0	9	19	0	34	83	0	9	58	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	16	5	20	2	78	78	5	82	82
g / C, Green / Cycle	0.00	0.13	0.04	0.17	0.01	0.65	0.65	0.04	0.68	0.68
(v / s)_i Volume / Saturation Flow Rate	0.00	0.05	0.07	0.04	0.01	0.44	0.00	0.07	0.63	0.02
s, saturation flow rate [veh/h]	1568	1400	1621	1516	1582	3163	1412	1612	3222	1439
c, Capacity [veh/h]	2	182	68	258	22	2066	923	67	2195	980
d1, Uniform Delay [s]	59.86	47.72	57.50	43.08	58.80	12.87	7.22	57.50	16.71	6.20
k, delay calibration	0.11	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	92.03	5.67	269.63	2.19	19.56	0.39	0.00	299.48	2.26	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.43	0.37	1.57	0.24	0.55	0.67	0.00	1.63	0.93	0.02
d, Delay for Lane Group [s/veh]	151.89	53.39	327.13	45.28	78.36	13.25	7.22	356.98	18.97	6.21
Lane Group LOS	F	D	F	D	E	B	A	F	B	A
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.09	2.13	7.12	1.76	0.48	10.84	0.02	7.64	22.34	0.19
50th-Percentile Queue Length [ft]	2.25	53.13	178.08	43.99	12.04	271.10	0.44	191.05	558.55	4.78
95th-Percentile Queue Length [veh]	0.16	3.83	12.64	3.17	0.87	16.24	0.03	13.48	30.09	0.34
95th-Percentile Queue Length [ft]	4.05	95.64	316.08	79.19	21.68	406.12	0.79	336.90	752.35	8.61

Movement, Approach, & Intersection Results

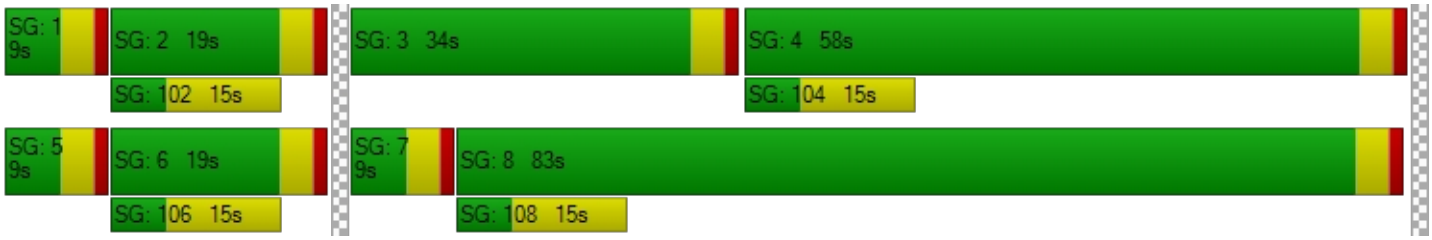
d_M, Delay for Movement [s/veh]	151.89	53.39	53.39	327.13	45.28	45.28	78.36	13.25	7.22	356.98	18.97	6.21
Movement LOS	F	D	D	F	D	D	E	B	A	F	B	A
d_A, Approach Delay [s/veh]	54.83			223.11			13.80			35.88		
Approach LOS	D			F			B			D		
d_I, Intersection Delay [s/veh]	36.34											
Intersection LOS	D											
Intersection V/C	0.756											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.020	2.022	3.036	3.076
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250	1317	900
d_b, Bicycle Delay [s]	45.94	45.94	7.00	18.15
l_b,int, Bicycle LOS Score for Intersection	1.672	1.837	2.718	3.358
Bicycle LOS	A	A	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 41: Keubler Blvd at Battle Creek Rd

Control Type:	Signalized	Delay (sec / veh):	42.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.829

Intersection Setup

Name	Battle Creek Rd			Battle Creek Rd			Kuebler Blvd			Kuebler Blvd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	150.00	275.00	100.00	275.00	350.00	100.00	350.00	250.00	100.00	250.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Battle Creek Rd			Battle Creek Rd			Kuebler Blvd			Kuebler Blvd		
Base Volume Input [veh/h]	93	157	149	127	316	171	88	1056	76	242	1592	162
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	3.00	1.10	1.10	1.10	3.90	3.90	3.90	1.50	1.50	1.50
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	93	157	149	127	316	171	88	1056	76	242	1592	162
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	41	39	33	82	45	23	275	20	63	415	42
Total Analysis Volume [veh/h]	97	164	155	132	329	178	92	1100	79	252	1658	169
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	19	0	21	28	0	12	46	0	34	68	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	21	21	12	24	24	8	51	51	21	64	64
g / C, Green / Cycle	0.07	0.17	0.17	0.10	0.20	0.20	0.07	0.42	0.42	0.17	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.06	0.05	0.11	0.08	0.19	0.12	0.06	0.35	0.06	0.16	0.52	0.12
s, saturation flow rate [veh/h]	1590	3179	1419	1614	1695	1441	1578	3156	1409	1609	3217	1436
c, Capacity [veh/h]	106	552	246	156	345	294	105	1333	595	279	1703	760
d1, Uniform Delay [s]	55.65	43.20	46.00	53.30	47.20	43.40	55.49	30.72	21.20	48.59	27.44	15.07
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.18	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	23.83	1.37	11.57	11.51	37.75	8.98	18.92	1.35	0.10	15.52	5.71	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.30	0.63	0.84	0.95	0.61	0.87	0.83	0.13	0.90	0.97	0.22
d, Delay for Lane Group [s/veh]	79.48	44.57	57.57	64.81	84.95	52.39	74.40	32.08	21.30	64.11	33.15	15.22
Lane Group LOS	E	D	E	E	F	D	E	C	C	E	C	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	3.62	2.24	5.09	4.41	13.29	5.54	3.31	14.05	1.38	8.57	23.23	2.48
50th-Percentile Queue Length [ft]	90.48	55.97	127.16	110.34	332.16	138.51	82.80	351.32	34.62	214.35	580.63	62.01
95th-Percentile Queue Length [veh]	6.51	4.03	8.79	7.86	19.26	9.40	5.96	20.20	2.49	13.38	31.13	4.46
95th-Percentile Queue Length [ft]	162.87	100.75	219.63	196.48	481.61	235.02	149.03	505.02	62.31	334.40	778.22	111.61

Movement, Approach, & Intersection Results

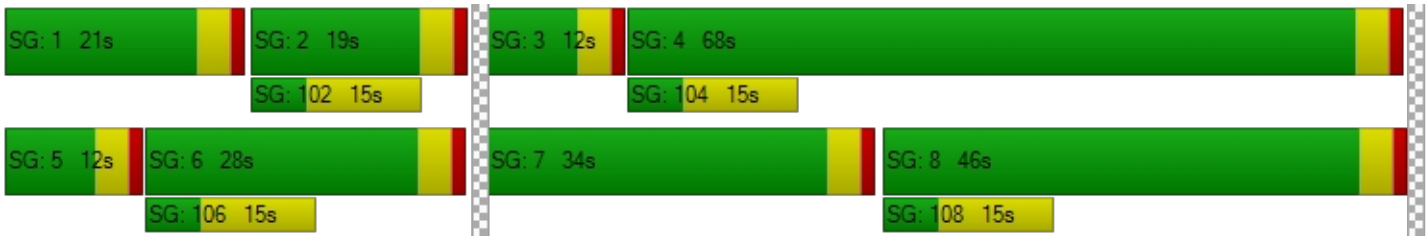
d_M, Delay for Movement [s/veh]	79.48	44.57	57.57	64.81	84.95	52.39	74.40	32.08	21.30	64.11	33.15	15.22
Movement LOS	E	D	E	E	F	D	E	C	C	E	C	B
d_A, Approach Delay [s/veh]	57.56			71.72			34.47			35.45		
Approach LOS	E			E			C			D		
d_I, Intersection Delay [s/veh]	42.52											
Intersection LOS	D											
Intersection V/C	0.829											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.525	2.523	2.989	3.031
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	400	700	1067
d_b, Bicycle Delay [s]	45.94	38.40	25.35	13.07
l_b,int, Bicycle LOS Score for Intersection	1.903	2.614	2.608	3.275
Bicycle LOS	A	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



18-392 Strong at 27th Subdivision TIA

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Scenario 2 PM Existing
6/19/2018

Turning Movement Volume: Summary

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
1	Battle Creek Rd at Reed Rd	197	46	10	434	306	59	1052

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
11	Reed Rd at Strong Rd	68	1	87	241	5	10	412

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Reed Rd at Fairview Industrial Dr	59	5	22	8	9	17	9	238	212	76	268	2	925

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
21	Fairview Industrial Dr at Marietta St	5	134	378	41	10	5	573

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
31	27th Ave at Marietta St	18	10	1	107	43	1	180

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
36	27th at Kuebler Blvd	1	0	63	100	18	40	11	1307	2	103	1923	23	3591

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
41	Keubler Blvd at Battle Creek Rd	93	157	149	127	316	171	88	1056	76	242	1592	162	4229

18-392 Strong at 27th Subdivision TIA

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Scenario 2 PM Existing
6/19/2018

Turning Movement Volume: Detail

ID	Intersection Name	Volume Type	Southbound		Eastbound		Westbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
1	Battle Creek Rd at Reed Rd	Final Base	197	46	10	434	306	59	1052
		Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		Future Total	**197**	**46**	**10**	**434**	**306**	**59**	**1052**

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
11	Reed Rd at Strong Rd	Final Base	68	1	87	241	5	10	412
		Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		Future Total	**68**	**1**	**87**	**241**	**5**	**10**	**412**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Reed Rd at Fairview Industrial Dr	Final Base	59	5	22	8	9	17	9	238	212	76	268	2	925
		Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**59**	**5**	**22**	**8**	**9**	**17**	**9**	**238**	**212**	**76**	**268**	**2**	**925**

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
21	Fairview Industrial Dr at Marietta St	Final Base	5	134	378	41	10	5	573
		Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		Future Total	**5**	**134**	**378**	**41**	**10**	**5**	**573**

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
31	27th Ave at Marietta St	Final Base	18	10	1	107	43	1	180
		Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		Future Total	**18**	**10**	**1**	**107**	**43**	**1**	**180**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
36	27th at Kuebler Blvd	Final Base	1	0	63	100	18	40	11	1307	2	103	1923	23	3591
		Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**1**	**0**	**63**	**100**	**18**	**40**	**11**	**1307**	**2**	**103**	**1923**	**23**	**3591**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
41	Keubler Blvd at Battle Creek Rd	Final Base	93	157	149	127	316	171	88	1056	76	242	1592	162	4229
		Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**93**	**157**	**149**	**127**	**316**	**171**	**88**	**1056**	**76**	**242**	**1592**	**162**	**4229**

Signal Warrants Report For Intersection 1: Battle Creek Rd at Reed Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	N
1	365	444	243
2	350	426	233
3	343	417	228
4	292	355	194
5	277	337	185
6	248	302	165
7	230	280	153
8	219	266	146
9	175	213	117
10	164	200	109
11	164	200	109
12	157	191	104
13	142	173	95
14	131	160	87
15	131	160	87
16	128	155	85
17	73	89	49
18	40	49	27
19	37	44	24
20	15	18	10
21	11	13	7
22	11	13	7
23	7	9	5
24	7	9	5

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	809	2	243	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
2	2	776	2	233	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
3	2	760	2	228	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
4	2	647	2	194	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
5	2	614	2	185	No	Yes	Yes	Yes	No	No	No	Yes	No	No
6	2	550	2	165	No	Yes	Yes	Yes	No	No	No	Yes	No	No
7	2	510	2	153	No	No	Yes	Yes	No	No	No	Yes	No	No
8	2	485	2	146	No	No	Yes	Yes	No	No	No	No	No	No
9	2	388	2	117	No	No	No	Yes	No	No	No	No	No	No
10	2	364	2	109	No	No	No	No	No	No	No	No	No	No
11	2	364	2	109	No	No	No	No	No	No	No	No	No	No
12	2	348	2	104	No	No	No	No	No	No	No	No	No	No
13	2	315	2	95	No	No	No	No	No	No	No	No	No	No
14	2	291	2	87	No	No	No	No	No	No	No	No	No	No
15	2	291	2	87	No	No	No	No	No	No	No	No	No	No
16	2	283	2	85	No	No	No	No	No	No	No	No	No	No
17	2	162	2	49	No	No	No	No	No	No	No	No	No	No
18	2	89	2	27	No	No	No	No	No	No	No	No	No	No
19	2	81	2	24	No	No	No	No	No	No	No	No	No	No
20	2	33	2	10	No	No	No	No	No	No	No	No	No	No
21	2	24	2	7	No	No	No	No	No	No	No	No	No	No
22	2	24	2	7	No	No	No	No	No	No	No	No	No	No
23	2	16	2	5	No	No	No	No	No	No	No	No	No	No
24	2	16	2	5	No	No	No	No	No	No	No	No	No	No
Hours Met					3	6	8	9	0	3	4	7	0	0

Warrant 3 Condition A

Orientation	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	30.7
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	2:04
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	243
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1052
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 11: Reed Rd at Strong Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	328	69	15
2	315	66	14
3	308	65	14
4	262	55	12
5	249	52	11
6	223	47	10
7	207	43	9
8	197	41	9
9	157	33	7
10	148	31	7
11	148	31	7
12	141	30	6
13	128	27	6
14	118	25	5
15	118	25	5
16	115	24	5
17	66	14	3
18	36	8	2
19	33	7	2
20	13	3	1
21	10	2	0
22	10	2	0
23	7	1	0
24	7	1	0

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	397	1	15	No	No	No	No	No	No	No	No	No	No
2	2	381	1	14	No	No	No	No	No	No	No	No	No	No
3	2	373	1	14	No	No	No	No	No	No	No	No	No	No
4	2	317	1	12	No	No	No	No	No	No	No	No	No	No
5	2	301	1	11	No	No	No	No	No	No	No	No	No	No
6	2	270	1	10	No	No	No	No	No	No	No	No	No	No
7	2	250	1	9	No	No	No	No	No	No	No	No	No	No
8	2	238	1	9	No	No	No	No	No	No	No	No	No	No
9	2	190	1	7	No	No	No	No	No	No	No	No	No	No
10	2	179	1	7	No	No	No	No	No	No	No	No	No	No
11	2	179	1	7	No	No	No	No	No	No	No	No	No	No
12	2	171	1	6	No	No	No	No	No	No	No	No	No	No
13	2	155	1	6	No	No	No	No	No	No	No	No	No	No
14	2	143	1	5	No	No	No	No	No	No	No	No	No	No
15	2	143	1	5	No	No	No	No	No	No	No	No	No	No
16	2	139	1	5	No	No	No	No	No	No	No	No	No	No
17	2	80	1	3	No	No	No	No	No	No	No	No	No	No
18	2	44	1	2	No	No	No	No	No	No	No	No	No	No
19	2	40	1	2	No	No	No	No	No	No	No	No	No	No
20	2	16	1	1	No	No	No	No	No	No	No	No	No	No
21	2	12	1	0	No	No	No	No	No	No	No	No	No	No
22	2	12	1	0	No	No	No	No	No	No	No	No	No	No
23	2	8	1	0	No	No	No	No	No	No	No	No	No	No
24	2	8	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:02
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	15
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	412
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 16: Reed Rd at Fairview Industrial Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N, S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	N	S
1	346	459	34	86
2	332	441	33	83
3	325	431	32	81
4	277	367	27	69
5	263	349	26	65
6	235	312	23	58
7	218	289	21	54
8	208	275	20	52
9	166	220	16	41
10	156	207	15	39
11	156	207	15	39
12	149	197	15	37
13	135	179	13	34
14	125	165	12	31
15	125	165	12	31
16	121	161	12	30
17	69	92	7	17
18	38	50	4	9
19	35	46	3	9
20	14	18	1	3
21	10	14	1	3
22	10	14	1	3
23	7	9	1	2
24	7	9	1	2

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	4	805	2	120	No	No	No	Yes	No	Yes	Yes	Yes	No	No
2	4	773	2	116	No	No	No	No	No	Yes	Yes	Yes	No	No
3	4	756	2	113	No	No	No	No	No	Yes	Yes	Yes	No	No
4	4	644	2	96	No	No	No	No	No	No	Yes	Yes	No	No
5	4	612	2	91	No	No	No	No	No	No	No	Yes	No	No
6	4	547	2	81	No	No	No	No	No	No	No	Yes	No	No
7	4	507	2	75	No	No	No	No	No	No	No	Yes	No	No
8	4	483	2	72	No	No	No	No	No	No	No	No	No	No
9	4	386	2	57	No	No	No	No	No	No	No	No	No	No
10	4	363	2	54	No	No	No	No	No	No	No	No	No	No
11	4	363	2	54	No	No	No	No	No	No	No	No	No	No
12	4	346	2	52	No	No	No	No	No	No	No	No	No	No
13	4	314	2	47	No	No	No	No	No	No	No	No	No	No
14	4	290	2	43	No	No	No	No	No	No	No	No	No	No
15	4	290	2	43	No	No	No	No	No	No	No	No	No	No
16	4	282	2	42	No	No	No	No	No	No	No	No	No	No
17	4	161	2	24	No	No	No	No	No	No	No	No	No	No
18	4	88	2	13	No	No	No	No	No	No	No	No	No	No
19	4	81	2	12	No	No	No	No	No	No	No	No	No	No
20	4	32	2	4	No	No	No	No	No	No	No	No	No	No
21	4	24	2	4	No	No	No	No	No	No	No	No	No	No
22	4	24	2	4	No	No	No	No	No	No	No	No	No	No
23	4	16	2	3	No	No	No	No	No	No	No	No	No	No
24	4	16	2	3	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	1	0	3	4	7	0	0

Warrant 3 Condition A

Orientation	N	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	18.3	30.9
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:10	0:44
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	34	86
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	925	925
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 21: Fairview Industrial Dr at Marietta St

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	139	419	15
2	133	402	14
3	131	394	14
4	111	335	12
5	106	318	11
6	95	285	10
7	88	264	9
8	83	251	9
9	67	201	7
10	63	189	7
11	63	189	7
12	60	180	6
13	54	163	6
14	50	151	5
15	50	151	5
16	49	147	5
17	28	84	3
18	15	46	2
19	14	42	2
20	6	17	1
21	4	13	0
22	4	13	0
23	3	8	0
24	3	8	0

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	3	558	1	15	No	No	No	No	No	No	No	No	No	No
2	3	535	1	14	No	No	No	No	No	No	No	No	No	No
3	3	525	1	14	No	No	No	No	No	No	No	No	No	No
4	3	446	1	12	No	No	No	No	No	No	No	No	No	No
5	3	424	1	11	No	No	No	No	No	No	No	No	No	No
6	3	380	1	10	No	No	No	No	No	No	No	No	No	No
7	3	352	1	9	No	No	No	No	No	No	No	No	No	No
8	3	334	1	9	No	No	No	No	No	No	No	No	No	No
9	3	268	1	7	No	No	No	No	No	No	No	No	No	No
10	3	252	1	7	No	No	No	No	No	No	No	No	No	No
11	3	252	1	7	No	No	No	No	No	No	No	No	No	No
12	3	240	1	6	No	No	No	No	No	No	No	No	No	No
13	3	217	1	6	No	No	No	No	No	No	No	No	No	No
14	3	201	1	5	No	No	No	No	No	No	No	No	No	No
15	3	201	1	5	No	No	No	No	No	No	No	No	No	No
16	3	196	1	5	No	No	No	No	No	No	No	No	No	No
17	3	112	1	3	No	No	No	No	No	No	No	No	No	No
18	3	61	1	2	No	No	No	No	No	No	No	No	No	No
19	3	56	1	2	No	No	No	No	No	No	No	No	No	No
20	3	23	1	1	No	No	No	No	No	No	No	No	No	No
21	3	17	1	0	No	No	No	No	No	No	No	No	No	No
22	3	17	1	0	No	No	No	No	No	No	No	No	No	No
23	3	11	1	0	No	No	No	No	No	No	No	No	No	No
24	3	11	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.3
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:03
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	15
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	573
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 31: 27th Ave at Marietta St

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	108	28	44
2	104	27	42
3	102	26	41
4	86	22	35
5	82	21	33
6	73	19	30
7	68	18	28
8	65	17	26
9	52	13	21
10	49	13	20
11	49	13	20
12	46	12	19
13	42	11	17
14	39	10	16
15	39	10	16
16	38	10	15
17	22	6	9
18	12	3	5
19	11	3	4
20	4	1	2
21	3	1	1
22	3	1	1
23	2	1	1
24	2	1	1

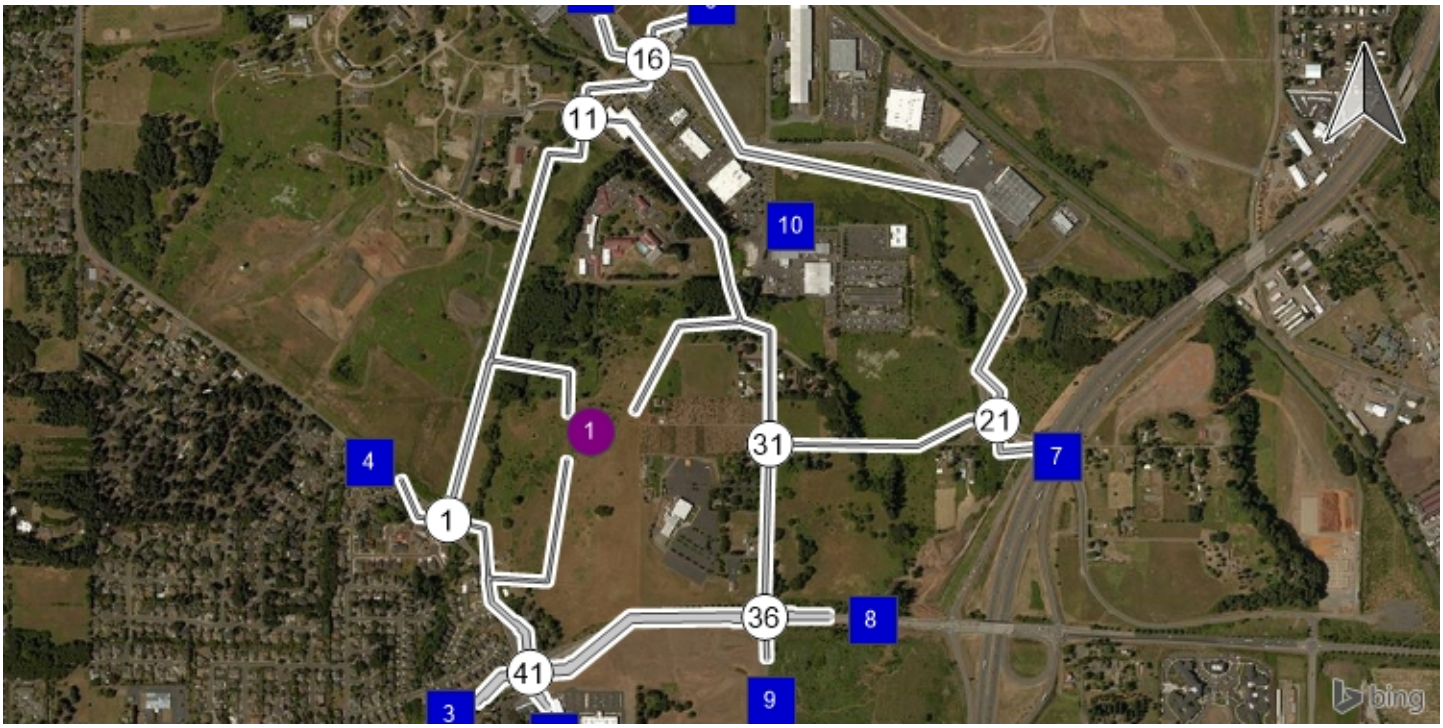
Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	136	1	44	No	No	No	No	No	No	No	No	No	No
2	2	131	1	42	No	No	No	No	No	No	No	No	No	No
3	2	128	1	41	No	No	No	No	No	No	No	No	No	No
4	2	108	1	35	No	No	No	No	No	No	No	No	No	No
5	2	103	1	33	No	No	No	No	No	No	No	No	No	No
6	2	92	1	30	No	No	No	No	No	No	No	No	No	No
7	2	86	1	28	No	No	No	No	No	No	No	No	No	No
8	2	82	1	26	No	No	No	No	No	No	No	No	No	No
9	2	65	1	21	No	No	No	No	No	No	No	No	No	No
10	2	62	1	20	No	No	No	No	No	No	No	No	No	No
11	2	62	1	20	No	No	No	No	No	No	No	No	No	No
12	2	58	1	19	No	No	No	No	No	No	No	No	No	No
13	2	53	1	17	No	No	No	No	No	No	No	No	No	No
14	2	49	1	16	No	No	No	No	No	No	No	No	No	No
15	2	49	1	16	No	No	No	No	No	No	No	No	No	No
16	2	48	1	15	No	No	No	No	No	No	No	No	No	No
17	2	28	1	9	No	No	No	No	No	No	No	No	No	No
18	2	15	1	5	No	No	No	No	No	No	No	No	No	No
19	2	14	1	4	No	No	No	No	No	No	No	No	No	No
20	2	5	1	2	No	No	No	No	No	No	No	No	No	No
21	2	4	1	1	No	No	No	No	No	No	No	No	No	No
22	2	4	1	1	No	No	No	No	No	No	No	No	No	No
23	2	3	1	1	No	No	No	No	No	No	No	No	No	No
24	2	3	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

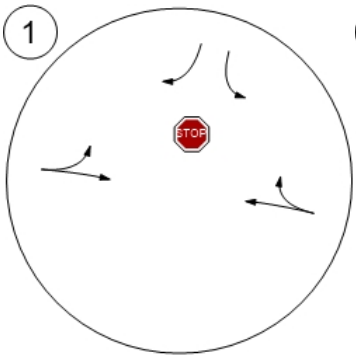
Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.9
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:07
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	44
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	180
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

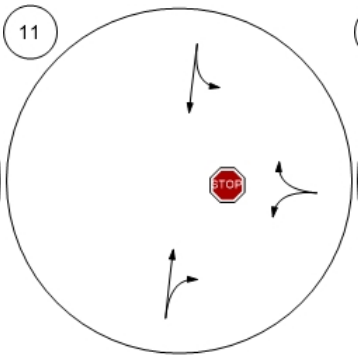
Report Figure 1: Lane Configuration and Traffic Control



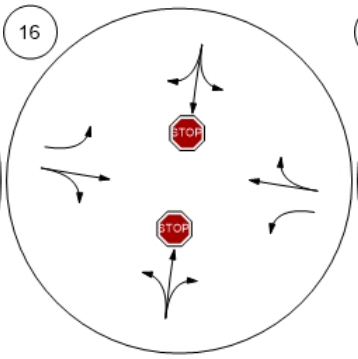
Battle Creek Rd at Reed Rd



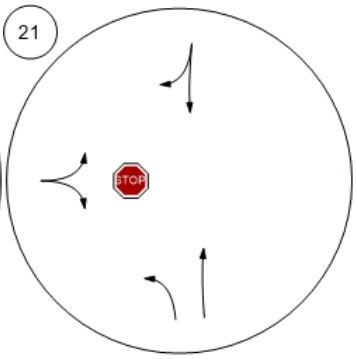
Reed Rd at Strong Rd



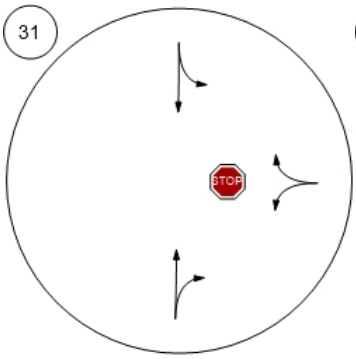
Reed Rd at Fairview Industria



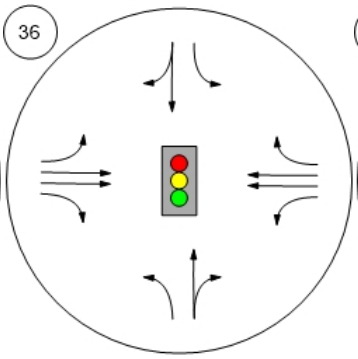
Fairview Industrial Dr at Mari



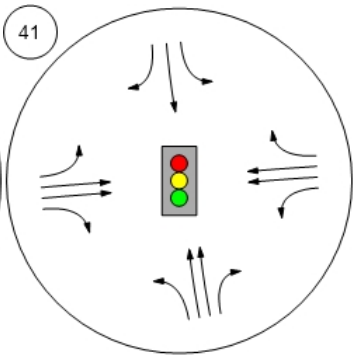
27th Ave at Marietta St



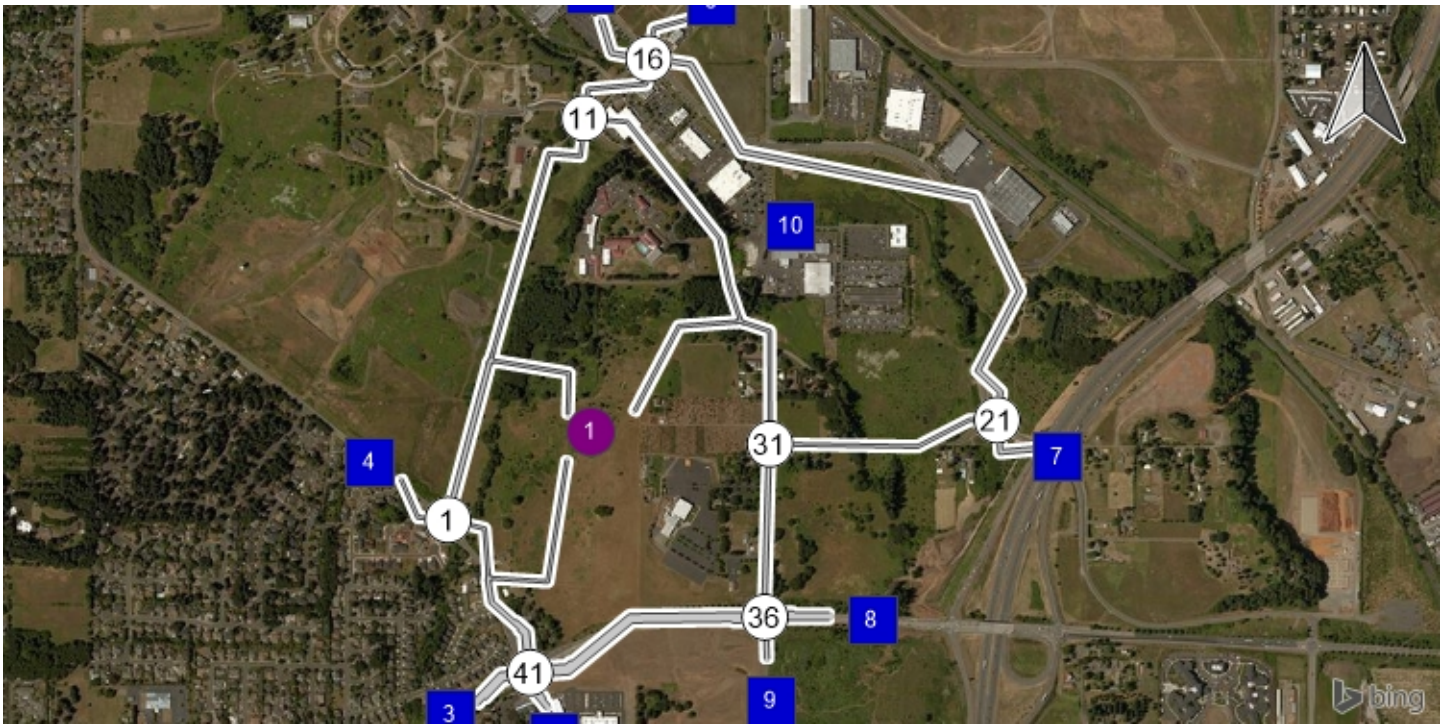
27th at Kuebler Blvd



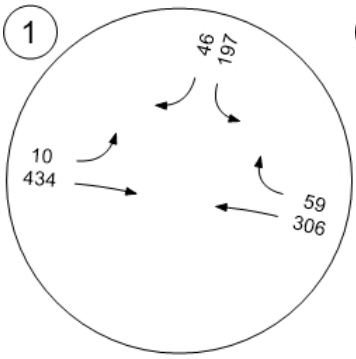
Keubler Blvd at Battle Creek



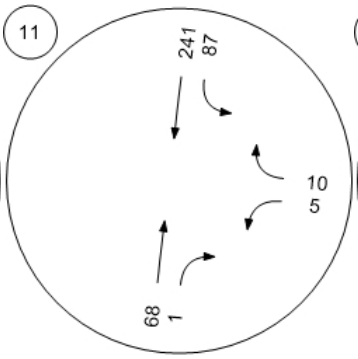
Report Figure 2a: Traffic Volume - Base Volume



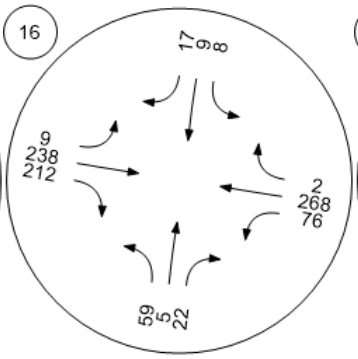
Battle Creek Rd at Reed Rd



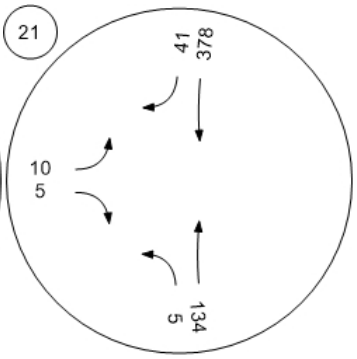
Reed Rd at Strong Rd



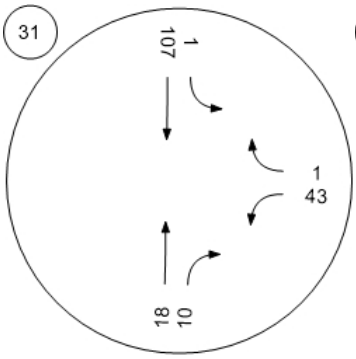
Reed Rd at Fairview Industria



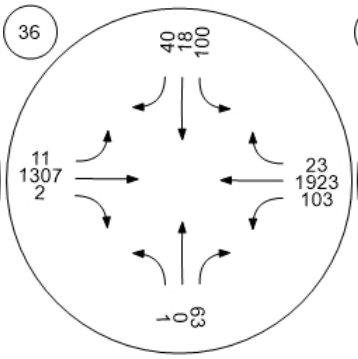
Fairview Industrial Dr at Mari



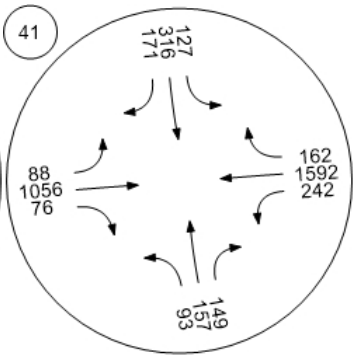
27th Ave at Marietta St



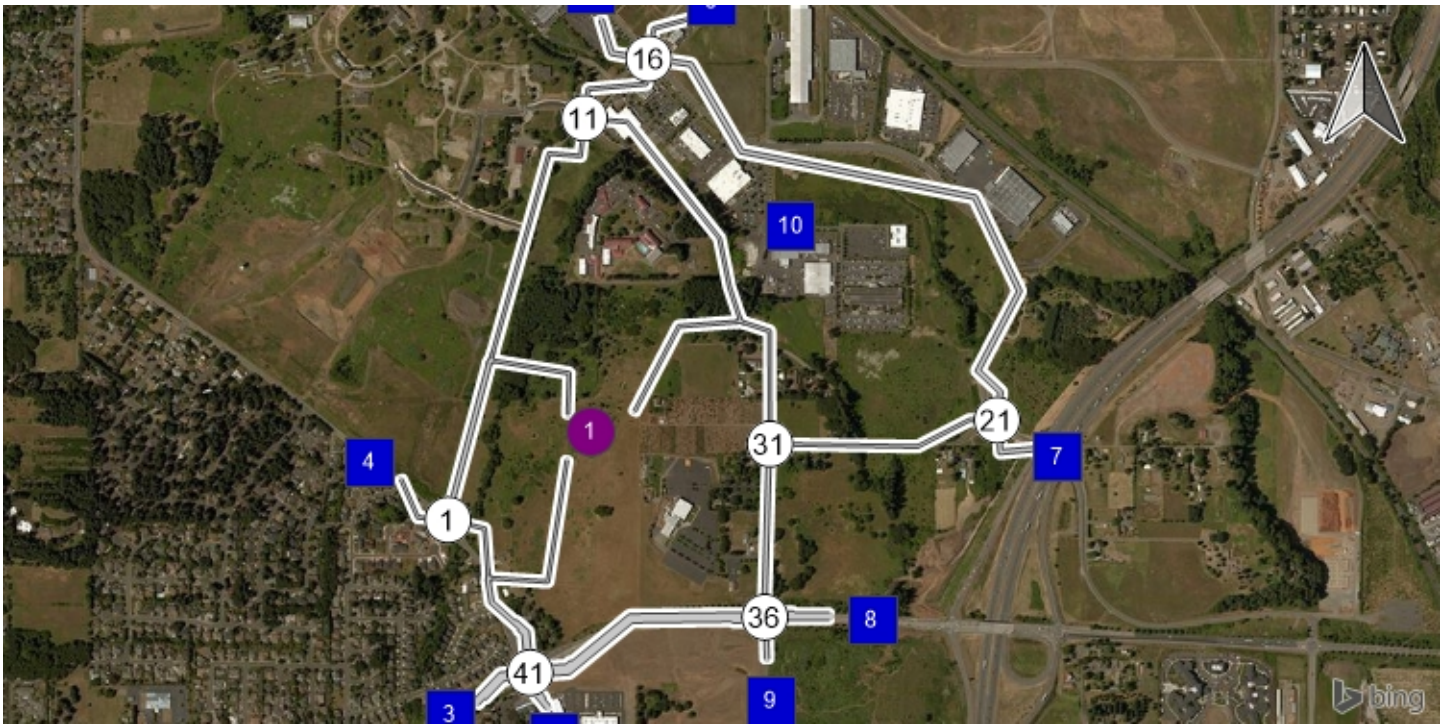
27th at Kuebler Blvd



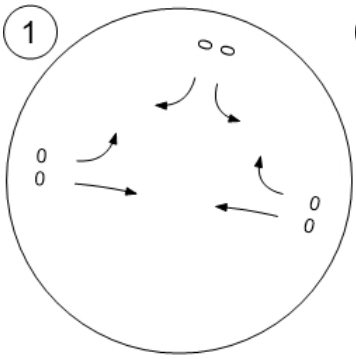
Keubler Blvd at Battle Creek



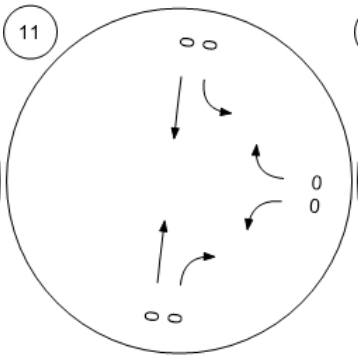
Report Figure 2d: Traffic Volume - Net New Site Trips



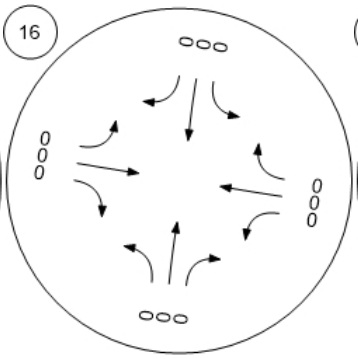
Battle Creek Rd at Reed Rd



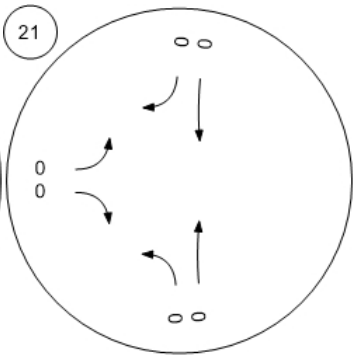
Reed Rd at Strong Rd



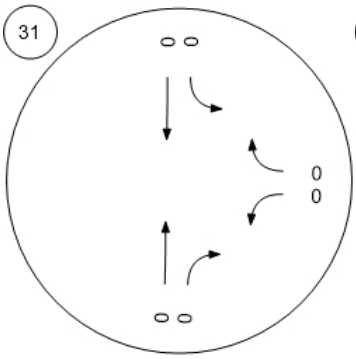
Reed Rd at Fairview Industria



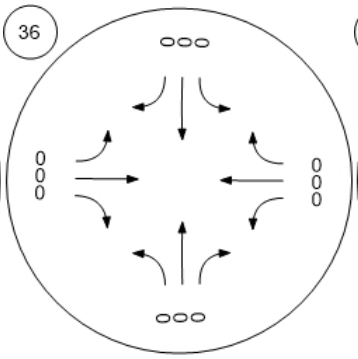
Fairview Industrial Dr at Mari



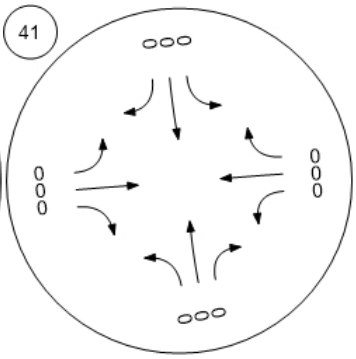
27th Ave at Marietta St



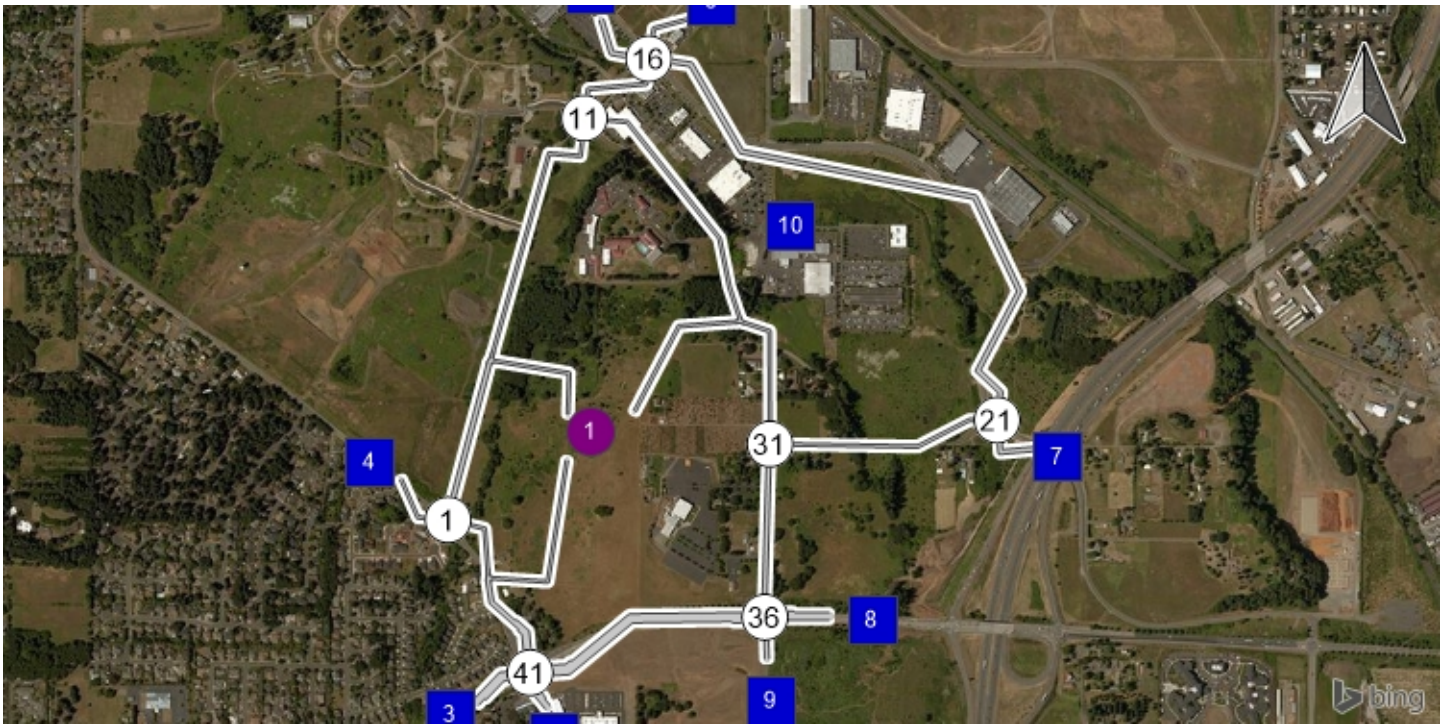
27th at Kuebler Blvd



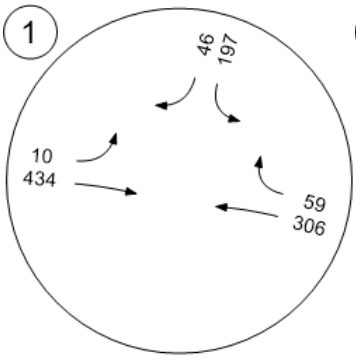
Keubler Blvd at Battle Creek



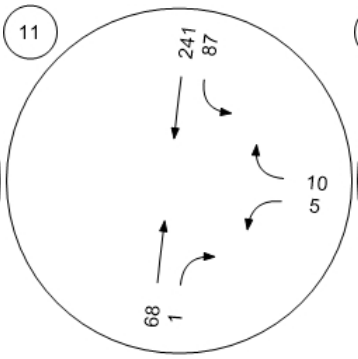
Report Figure 2f: Traffic Volume - Future Total Volume



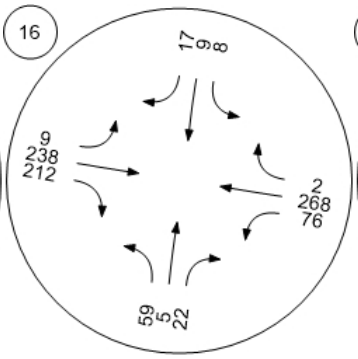
Battle Creek Rd at Reed Rd



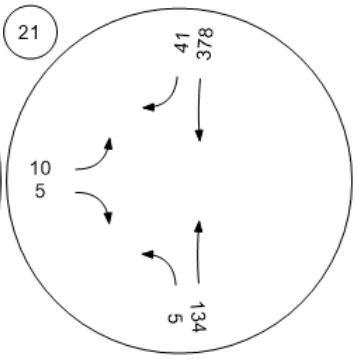
Reed Rd at Strong Rd



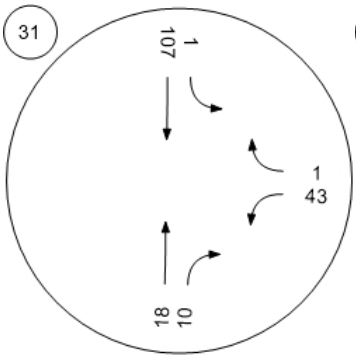
Reed Rd at Fairview Industria



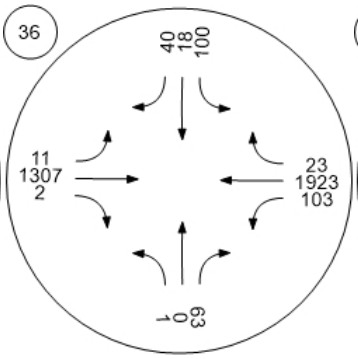
Fairview Industrial Dr at Mari



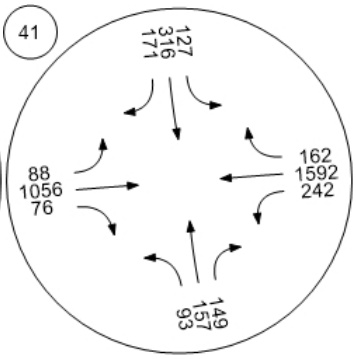
27th Ave at Marietta St



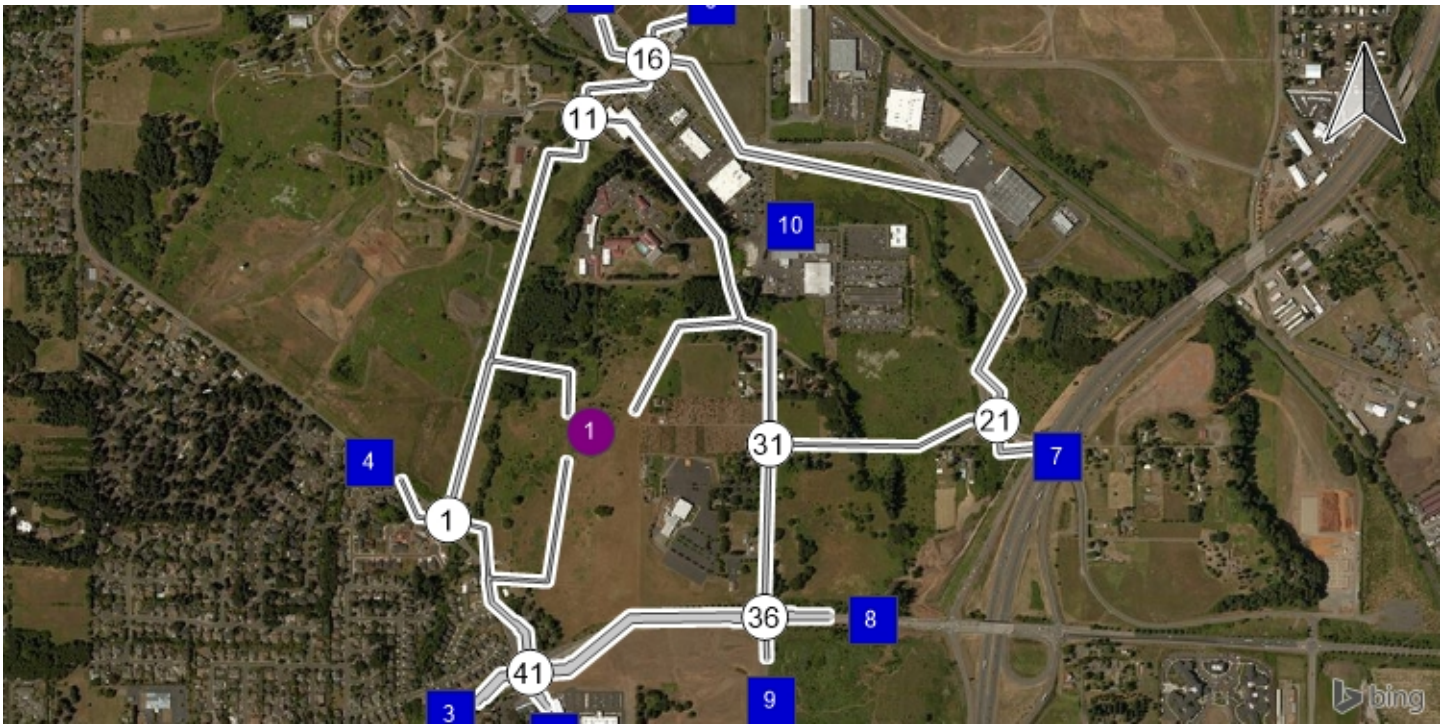
27th at Kuebler Blvd



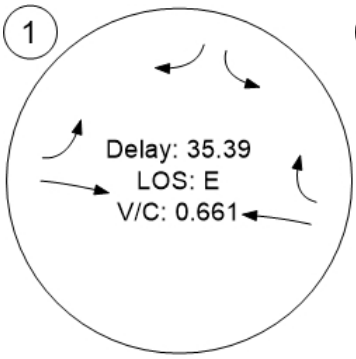
Keubler Blvd at Battle Creek



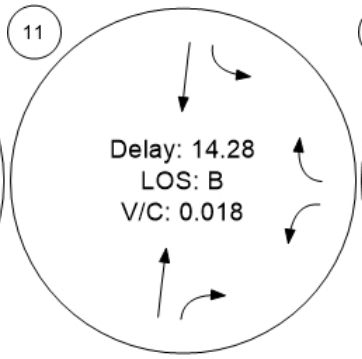
Report Figure 3: Traffic Conditions



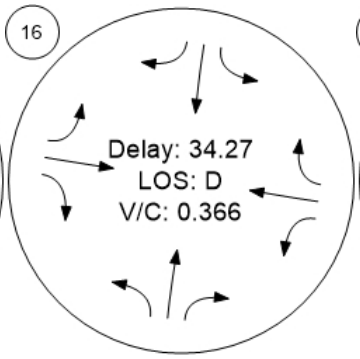
Battle Creek Rd at Reed Rd



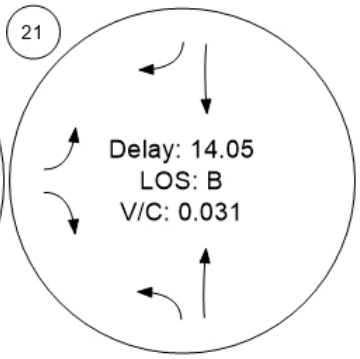
Reed Rd at Strong Rd



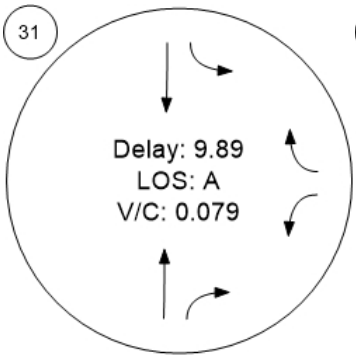
Reed Rd at Fairview Industria



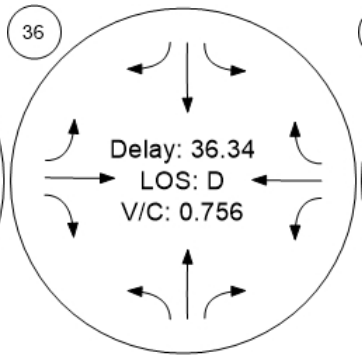
Fairview Industrial Dr at Mari



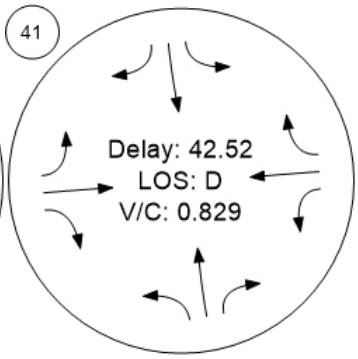
27th Ave at Marietta St



27th at Kuebler Blvd



Keubler Blvd at Battle Creek



18-392 Strong at 27th Subdivision TIA

Vistro File: J:\...\18-392 Reed Rd Subdivision - TIA.vistro
Report File: J:\...\18-392 PM Dev Ph 1.pdf

Scenario 4 PM Dev 2020 Ph 1
6/19/2018

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Battle Creek Rd at Reed Rd	Two-way stop	HCM 6th Edition	SB Left	0.711	40.7	E
6	Battle Creek Rd at Site Access	Two-way stop	HCM 6th Edition	WB Left	0.053	21.7	C
11	Reed Rd at Strong Rd	Two-way stop	HCM 6th Edition	WB Left	0.019	14.9	B
16	Reed Rd at Fairview Industrial Dr	Two-way stop	HCM 6th Edition	NB Left	0.418	38.6	E
21	Fairview Industrial Dr at Marietta St	Two-way stop	HCM 6th Edition	EB Left	0.033	14.5	B
26	East Access at Strong Rd	Two-way stop	HCM 6th Edition	EB Thru	0.029	10.4	B
31	27th Ave at Marietta St	Two-way stop	HCM 6th Edition	WB Left	0.087	10.3	B
36	27th at Kuebler Blvd	Signalized	HCM 6th Edition	SB Left	0.784	40.6	D
41	Keubler Blvd at Battle Creek Rd	Signalized	HCM 6th Edition	WB Left	0.865	81.5	F
42	Reed at Site Access	Two-way stop	HCM 6th Edition	WB Left	0.000	10.8	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Battle Creek Rd at Reed Rd

Control Type:	Two-way stop	Delay (sec / veh):	40.7
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.711

Intersection Setup

Name	Reed Rd		Battle Creek Rd		Battle Creek Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Reed Rd		Battle Creek Rd		Battle Creek Rd	
Base Volume Input [veh/h]	197	46	10	434	306	59
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.20	1.20	1.80	1.80	3.00	3.00
Growth Rate	1.03	1.03	1.03	1.03	1.03	1.03
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	3	2	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	203	47	10	450	317	61
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	55	13	3	122	86	17
Total Analysis Volume [veh/h]	221	51	11	489	345	66
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.71	0.08	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	40.69	10.81	8.16	0.00	0.00	0.00
Movement LOS	E	B	A	A	A	A
95th-Percentile Queue Length [veh]	5.09	0.25	2.25	2.25	0.00	0.00
95th-Percentile Queue Length [ft]	127.19	6.15	56.23	56.23	0.00	0.00
d_A, Approach Delay [s/veh]	35.09		0.18		0.00	
Approach LOS	E		A		A	
d_I, Intersection Delay [s/veh]	8.14					
Intersection LOS	E					

Intersection Level Of Service Report
Intersection 6: Battle Creek Rd at Site Access

Control Type:	Two-way stop	Delay (sec / veh):	21.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.053

Intersection Setup

Name	Battle Creek Rd		Battle Creek Rd		Site Access	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Battle Creek Rd		Battle Creek Rd		Site Access	
Base Volume Input [veh/h]	407	0	0	631	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	19	3	0	11	2
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	407	19	3	631	11	2
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	108	5	1	168	3	1
Total Analysis Volume [veh/h]	433	20	3	671	12	2
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.01	0.05	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	8.26	0.00	21.68	11.71
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh]	0.00	0.00	4.32	4.32	0.18	0.18
95th-Percentile Queue Length [ft]	0.00	0.00	107.98	107.98	4.42	4.42
d_A, Approach Delay [s/veh]	0.00		0.04		20.26	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.27					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 11: Reed Rd at Strong Rd

Control Type:	Two-way stop	Delay (sec / veh):	14.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.019

Intersection Setup

Name	Reed Rd		Reed Rd		Strong Rd	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Reed Rd		Reed Rd		Strong Rd	
Base Volume Input [veh/h]	68	1	87	241	5	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.80	5.80	1.80	1.80	6.70	6.70
Growth Rate	1.03	1.03	1.03	1.03	1.03	1.03
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	0	5	0	0	1
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	72	1	95	248	5	11
Peak Hour Factor	0.7600	0.7600	0.7600	0.7600	0.7600	0.7600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	0	31	82	2	4
Total Analysis Volume [veh/h]	95	1	125	326	7	14
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.08	0.00	0.02	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	7.62	0.00	14.88	9.00
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.00	0.00	1.28	1.28	0.10	0.10
95th-Percentile Queue Length [ft]	0.00	0.00	31.97	31.97	2.60	2.60
d_A, Approach Delay [s/veh]	0.00		2.11		10.96	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	2.08					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 16: Reed Rd at Fairview Industrial Dr

Control Type:	Two-way stop	Delay (sec / veh):	38.6
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.418

Intersection Setup

Name	Reed Rd			Reed Rd			Fairview Industrial Dr			Fairview Industrial Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Reed Rd			Reed Rd			Fairview Industrial Dr			Fairview Industrial Dr		
Base Volume Input [veh/h]	59	5	22	8	9	17	9	238	212	76	268	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.70	4.70	4.70	0.00	0.00	0.00	4.10	4.10	4.10	4.00	4.00	4.00
Growth Rate	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	0	0	0	0	0	0	0	5	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	5	23	8	9	18	9	245	223	78	276	2
Peak Hour Factor	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	2	7	2	3	5	3	75	68	24	84	1
Total Analysis Volume [veh/h]	78	6	28	10	11	22	11	299	272	95	337	2
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.42	0.03	0.05	0.05	0.06	0.03	0.01	0.00	0.00	0.10	0.00	0.00
d_M, Delay for Movement [s/veh]	38.64	35.73	25.18	25.72	26.28	12.04	8.01	0.00	0.00	9.01	0.00	0.00
Movement LOS	E	E	D	D	D	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	2.47	2.47	2.47	0.49	0.49	0.49	0.03	0.00	0.00	0.32	0.00	0.00
95th-Percentile Queue Length [ft]	61.83	61.83	61.83	12.24	12.24	12.24	0.69	0.00	0.00	7.92	0.00	0.00
d_A, Approach Delay [s/veh]	35.12			18.86			0.15			1.97		
Approach LOS	E			C			A			A		
d_I, Intersection Delay [s/veh]	4.86											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 21: Fairview Industrial Dr at Marietta St

Control Type:	Two-way stop	Delay (sec / veh):	14.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.033

Intersection Setup

Name	Fairview Industrial Dr		Fairview Industrial Dr		Marietta St	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Fairview Industrial Dr		Fairview Industrial Dr		Marietta St	
Base Volume Input [veh/h]	5	134	378	41	10	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.40	9.40	4.50	4.50	0.00	0.00
Growth Rate	1.03	1.03	1.03	1.03	1.03	1.03
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	0	0	0	0	2
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	138	389	42	10	7
Peak Hour Factor	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	44	123	13	3	2
Total Analysis Volume [veh/h]	10	175	492	53	13	9
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.03	0.02
d_M, Delay for Movement [s/veh]	8.68	0.00	0.00	0.00	14.47	11.82
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh]	0.03	0.00	0.00	0.00	0.15	0.15
95th-Percentile Queue Length [ft]	0.77	0.00	0.00	0.00	3.83	3.83
d_A, Approach Delay [s/veh]	0.47		0.00		13.39	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.51					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 26: East Access at Strong Rd

Control Type:	Two-way stop	Delay (sec / veh):	10.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.029

Intersection Setup

Name	Strong Rd		East Access		Strong Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Strong Rd		East Access		Strong Rd	
Base Volume Input [veh/h]	110	0	0	0	0	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.03	1.03	1.03	1.03	1.03	1.03
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	5	1	11	20	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	113	5	1	11	20	14
Peak Hour Factor	0.5600	0.5600	0.5600	0.5600	0.5600	0.5600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	50	2	0	5	9	6
Total Analysis Volume [veh/h]	202	9	2	20	36	25
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Stop	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance		No	
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.03	0.03	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	10.17	10.39	7.71	0.00
Movement LOS	A	A	B	B	A	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.10	0.10	0.14	0.14
95th-Percentile Queue Length [ft]	0.00	0.00	2.46	2.46	3.51	3.51
d_A, Approach Delay [s/veh]	0.00		10.37		4.55	
Approach LOS	A		B		A	
d_I, Intersection Delay [s/veh]	1.72					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 31: 27th Ave at Marietta St

Control Type:	Two-way stop	Delay (sec / veh):	10.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.087

Intersection Setup

Name	27th Ave		Strong Rd		Marietta St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	27th Ave		Strong Rd		Marietta St	
Base Volume Input [veh/h]	18	10	1	107	43	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.03	1.03	1.03	1.03	1.03	1.03
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	17	0	2	9	0	3
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	36	10	3	119	44	4
Peak Hour Factor	0.6800	0.6800	0.6800	0.6800	0.6800	0.6800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	4	1	44	16	1
Total Analysis Volume [veh/h]	53	15	4	175	65	6
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.09	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	7.33	0.00	10.30	9.04
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.39	0.39	0.31	0.31
95th-Percentile Queue Length [ft]	0.00	0.00	9.80	9.80	7.66	7.66
d_A, Approach Delay [s/veh]	0.00		0.16		10.19	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	2.37					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 36: 27th at Kuebler Blvd

Control Type:	Signalized	Delay (sec / veh):	40.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.784

Intersection Setup

Name	27th Ave			27th Ave			Kuebler Blvd			Kuebler Blvd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	125.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	200.00	350.00	100.00	175.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	27th Ave			27th Ave			Kuebler Blvd			Kuebler Blvd		
Base Volume Input [veh/h]	1	0	63	100	18	40	11	1307	2	103	1923	23
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.70	4.70	4.70	0.60	0.60	0.60	3.60	3.60	3.60	1.30	1.30	1.30
Growth Rate	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	0	8	1	0	0	0	0	0	0	16
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	1	65	111	20	41	11	1346	2	106	1981	40
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	17	30	5	11	3	358	1	28	527	11
Total Analysis Volume [veh/h]	1	1	69	118	21	44	12	1432	2	113	2107	43
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	19	0	9	19	0	34	83	0	9	58	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	15	5	20	2	79	79	5	82	82
g / C, Green / Cycle	0.00	0.13	0.04	0.17	0.01	0.66	0.66	0.04	0.68	0.68
(v / s)_i Volume / Saturation Flow Rate	0.00	0.05	0.07	0.04	0.01	0.45	0.00	0.07	0.65	0.03
s, saturation flow rate [veh/h]	1568	1403	1621	1520	1582	3163	1412	1612	3222	1439
c, Capacity [veh/h]	2	178	68	254	22	2076	927	67	2205	984
d1, Uniform Delay [s]	59.86	48.15	57.50	43.48	58.80	12.95	7.10	57.50	17.29	6.17
k, delay calibration	0.11	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	92.03	6.41	347.36	2.42	19.56	0.42	0.00	319.03	3.27	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.43	0.39	1.74	0.26	0.55	0.69	0.00	1.68	0.96	0.04
d, Delay for Lane Group [s/veh]	151.89	54.55	404.86	45.90	78.36	13.37	7.10	376.53	20.56	6.19
Lane Group LOS	F	D	F	D	E	B	A	F	C	A
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.09	2.25	8.58	1.86	0.48	11.31	0.02	8.01	24.20	0.34
50th-Percentile Queue Length [ft]	2.25	56.25	214.62	46.53	12.04	282.71	0.43	200.18	604.97	8.57
95th-Percentile Queue Length [veh]	0.16	4.05	14.96	3.35	0.87	16.82	0.03	14.06	32.27	0.62
95th-Percentile Queue Length [ft]	4.05	101.25	374.08	83.75	21.68	420.59	0.78	351.41	806.66	15.42

Movement, Approach, & Intersection Results

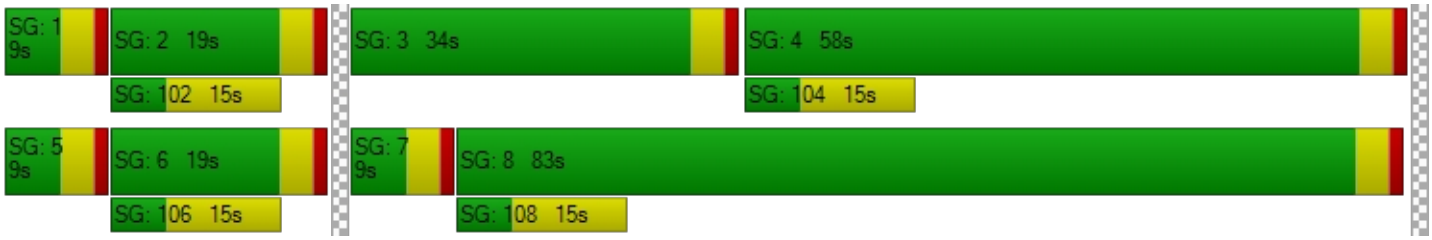
d_M, Delay for Movement [s/veh]	151.89	54.55	54.55	404.86	45.90	45.90	78.36	13.37	7.10	376.53	20.56	6.19
Movement LOS	F	D	D	F	D	D	E	B	A	F	C	A
d_A, Approach Delay [s/veh]	55.92			277.36			13.90			38.06		
Approach LOS	E			F			B			D		
d_I, Intersection Delay [s/veh]	40.62											
Intersection LOS	D											
Intersection V/C	0.784											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.023	2.033	3.053	3.099
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250	1317	900
d_b, Bicycle Delay [s]	45.94	45.94	7.00	18.15
l_b,int, Bicycle LOS Score for Intersection	1.677	1.862	2.753	3.427
Bicycle LOS	A	A	C	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 41: Keubler Blvd at Battle Creek Rd

Control Type:	Signalized	Delay (sec / veh):	81.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.865

Intersection Setup

Name	Battle Creek Rd			Battle Creek Rd			Kuebler Blvd			Kuebler Blvd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	150.00	275.00	100.00	275.00	350.00	100.00	350.00	250.00	100.00	250.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Battle Creek Rd			Battle Creek Rd			Kuebler Blvd			Kuebler Blvd		
Base Volume Input [veh/h]	93	157	149	127	316	171	88	1056	76	242	1592	162
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	3.00	1.10	1.10	1.10	3.90	3.90	3.90	1.50	1.50	1.50
Growth Rate	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	5	0	0	3	8	14	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	96	167	153	131	328	184	105	1088	78	249	1640	167
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	43	40	34	85	48	27	283	20	65	427	43
Total Analysis Volume [veh/h]	100	174	159	136	342	192	109	1133	81	259	1708	174
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	23	0	15	26	0	35	60	0	12	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	19	19	11	22	22	9	56	56	8	55	55
g / C, Green / Cycle	0.07	0.17	0.17	0.10	0.20	0.20	0.08	0.51	0.51	0.07	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.06	0.05	0.11	0.08	0.20	0.13	0.07	0.36	0.06	0.16	0.53	0.12
s, saturation flow rate [veh/h]	1590	3179	1419	1614	1695	1441	1578	3156	1409	1609	3217	1436
c, Capacity [veh/h]	116	555	248	161	341	290	134	1602	715	117	1594	712
d1, Uniform Delay [s]	50.46	39.64	42.20	48.70	43.93	40.48	49.48	20.81	14.15	51.00	27.75	15.93
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.15	0.12	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	16.73	1.47	12.09	11.44	49.18	11.30	11.20	0.58	0.07	552.89	35.78	0.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.31	0.64	0.85	1.00	0.66	0.81	0.71	0.11	2.21	1.07	0.24
d, Delay for Lane Group [s/veh]	67.19	41.11	54.29	60.14	93.11	51.77	60.68	21.40	14.22	603.89	63.53	16.11
Lane Group LOS	E	D	D	E	F	D	E	C	B	F	F	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	3.25	2.17	4.84	4.17	13.87	5.68	3.35	10.86	1.06	21.21	27.69	2.51
50th-Percentile Queue Length [ft]	81.34	54.28	120.88	104.22	346.74	142.04	83.83	271.54	26.43	530.33	692.18	62.79
95th-Percentile Queue Length [veh]	5.86	3.91	8.44	7.50	20.00	9.59	6.04	16.27	1.90	34.27	38.29	4.52
95th-Percentile Queue Length [ft]	146.42	97.70	211.04	187.60	499.95	239.77	150.90	406.66	47.58	856.66	957.30	113.02

Movement, Approach, & Intersection Results

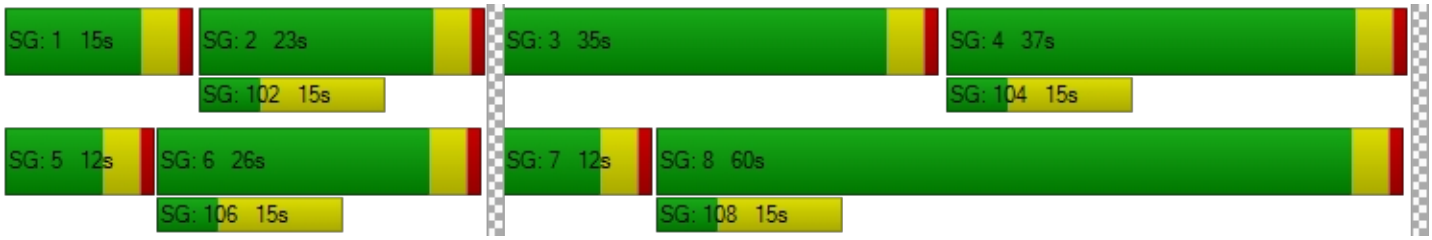
d_M, Delay for Movement [s/veh]	67.19	41.11	54.29	60.14	93.11	51.77	60.68	21.40	14.22	603.89	63.53	16.11
Movement LOS	E	D	D	E	F	D	E	C	B	F	F	B
d_A, Approach Delay [s/veh]	51.97			74.57			24.19			125.04		
Approach LOS	D			E			C			F		
d_I, Intersection Delay [s/veh]	81.50											
Intersection LOS	F											
Intersection V/C	0.865											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	46.37	46.37	46.37	46.37
l_p,int, Pedestrian LOS Score for Intersection	2.528	2.531	3.004	3.044
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	345	400	1018	600
d_b, Bicycle Delay [s]	37.64	35.20	13.25	26.95
l_b,int, Bicycle LOS Score for Intersection	1.917	2.665	2.651	3.326
Bicycle LOS	A	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 42: Reed at Site Access

Control Type:	Two-way stop	Delay (sec / veh):	10.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Reed Rd		Reed Rd		Site Access	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Reed Rd		Reed Rd		Site Access	
Base Volume Input [veh/h]	69	0	0	246	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.03	1.03	1.03	1.03	1.03	1.03
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	2
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	71	0	0	253	0	2
Peak Hour Factor	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	0	0	75	0	1
Total Analysis Volume [veh/h]	85	0	0	301	0	2
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.38	0.00	10.84	8.70
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.00	0.01	0.01
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	0.00	0.15	0.15
d_A, Approach Delay [s/veh]	0.00		0.00		8.70	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.04					
Intersection LOS	B					

18-392 Strong at 27th Subdivision TIA

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Scenario 4 PM Dev 2020 Ph 1
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Turning Movement Volume: Summary

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
1	Battle Creek Rd at Reed Rd	203	47	10	450	317	61	1088

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
6	Battle Creek Rd at Site Access	407	19	3	631	11	2	1073

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
11	Reed Rd at Strong Rd	72	1	95	248	5	11	432

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Reed Rd at Fairview Industrial Dr	64	5	23	8	9	18	9	245	223	78	276	2	960

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
21	Fairview Industrial Dr at Marietta St	8	138	389	42	10	7	594

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
26	East Access at Strong Rd	113	5	1	11	20	14	164

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
31	27th Ave at Marietta St	36	10	3	119	44	4	216

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
36	27th at Kuebler Blvd	1	1	65	111	20	41	11	1346	2	106	1981	40	3725

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
41	Keubler Blvd at Battle Creek Rd	96	167	153	131	328	184	105	1088	78	249	1640	167	4386

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
42	Reed at Site Access	71	0	0	253	0	2	326

18-392 Strong at 27th Subdivision TIA

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Report File: J:\...\18-392 PM Dev Ph 1.pdf

Scenario 4 PM Dev 2020 Ph 1
6/19/2018

Turning Movement Volume: Detail

ID	Intersection Name	Volume Type	Southbound		Eastbound		Westbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
1	Battle Creek Rd at Reed Rd	Final Base	197	46	10	434	306	59	1052
		Growth Rate	1.03	1.03	1.03	1.03	1.03	1.03	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	3	2	0	5
		Other	0	0	0	0	0	0	0
		Future Total	**203**	**47**	**10**	**450**	**317**	**61**	**1088**

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
6	Battle Creek Rd at Site Access	Final Base	407	0	0	631	0	0	1038
		Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	19	3	0	11	2	35
		Other	0	0	0	0	0	0	0
		Future Total	**407**	**19**	**3**	**631**	**11**	**2**	**1073**

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
11	Reed Rd at Strong Rd	Final Base	68	1	87	241	5	10	412
		Growth Rate	1.03	1.03	1.03	1.03	1.03	1.03	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	2	0	5	0	0	1	8
		Other	0	0	0	0	0	0	0
		Future Total	**72**	**1**	**95**	**248**	**5**	**11**	**432**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Reed Rd at Fairview Industrial Dr	Final Base	59	5	22	8	9	17	9	238	212	76	268	2	925
		Growth Rate	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	3	0	0	0	0	0	0	0	5	0	0	0	8
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**64**	**5**	**23**	**8**	**9**	**18**	**9**	**245**	**223**	**78**	**276**	**2**	**960**

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
21	Fairview Industrial Dr at Marietta St	Final Base	5	134	378	41	10	5	573
		Growth Rate	1.03	1.03	1.03	1.03	1.03	1.03	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	3	0	0	0	0	2	5
		Other	0	0	0	0	0	0	0
		Future Total	**8**	**138**	**389**	**42**	**10**	**7**	**594**

ID	Intersection Name	Volume Type	Southbound		Eastbound		Westbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
26	East Access at Strong Rd	Final Base	110	0	0	0	0	14	124
		Growth Rate	1.03	1.03	1.03	1.03	1.03	1.03	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	5	1	11	20	0	37
		Other	0	0	0	0	0	0	0
		Future Total	**113**	**5**	**1**	**11**	**20**	**14**	**164**

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
31	27th Ave at Marietta St	Final Base	18	10	1	107	43	1	180
		Growth Rate	1.03	1.03	1.03	1.03	1.03	1.03	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	17	0	2	9	0	3	31
		Other	0	0	0	0	0	0	0
		Future Total	**36**	**10**	**3**	**119**	**44**	**4**	**216**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
36	27th at Kuebler Blvd	Final Base	1	0	63	100	18	40	11	1307	2	103	1923	23	3591
		Growth Rate	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	1	0	8	1	0	0	0	0	0	0	16	26
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**1**	**1**	**65**	**111**	**20**	**41**	**11**	**1346**	**2**	**106**	**1981**	**40**	**3725**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
41	Keubler Blvd at Battle Creek Rd	Final Base	93	157	149	127	316	171	88	1056	76	242	1592	162	4229
		Growth Rate	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	5	0	0	3	8	14	0	0	0	0	0	30
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**96**	**167**	**153**	**131**	**328**	**184**	**105**	**1088**	**78**	**249**	**1640**	**167**	**4386**

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
42	Reed at Site Access	Final Base	69	0	0	246	0	0	315
		Growth Rate	1.03	1.03	1.03	1.03	1.03	1.03	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	2	2
		Other	0	0	0	0	0	0	0
		Future Total	**71**	**0**	**0**	**253**	**0**	**2**	**326**

Signal Warrants Report For Intersection 1: Battle Creek Rd at Reed Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	N
1	378	460	250
2	363	442	240
3	355	432	235
4	302	368	200
5	287	350	190
6	257	313	170
7	238	290	158
8	227	276	150
9	181	221	120
10	170	207	113
11	170	207	113
12	163	198	108
13	147	179	98
14	136	166	90
15	136	166	90
16	132	161	88
17	76	92	50
18	42	51	28
19	38	46	25
20	15	18	10
21	11	14	8
22	11	14	8
23	8	9	5
24	8	9	5

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	838	2	250	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
2	2	805	2	240	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
3	2	787	2	235	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
4	2	670	2	200	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
5	2	637	2	190	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
6	2	570	2	170	No	Yes	Yes	Yes	No	No	No	Yes	No	No
7	2	528	2	158	No	No	Yes	Yes	No	No	No	Yes	No	No
8	2	503	2	150	No	No	Yes	Yes	No	No	No	No	No	No
9	2	402	2	120	No	No	No	Yes	No	No	No	No	No	No
10	2	377	2	113	No	No	No	Yes	No	No	No	No	No	No
11	2	377	2	113	No	No	No	Yes	No	No	No	No	No	No
12	2	361	2	108	No	No	No	No	No	No	No	No	No	No
13	2	326	2	98	No	No	No	No	No	No	No	No	No	No
14	2	302	2	90	No	No	No	No	No	No	No	No	No	No
15	2	302	2	90	No	No	No	No	No	No	No	No	No	No
16	2	293	2	88	No	No	No	No	No	No	No	No	No	No
17	2	168	2	50	No	No	No	No	No	No	No	No	No	No
18	2	93	2	28	No	No	No	No	No	No	No	No	No	No
19	2	84	2	25	No	No	No	No	No	No	No	No	No	No
20	2	33	2	10	No	No	No	No	No	No	No	No	No	No
21	2	25	2	8	No	No	No	No	No	No	No	No	No	No
22	2	25	2	8	No	No	No	No	No	No	No	No	No	No
23	2	17	2	5	No	No	No	No	No	No	No	No	No	No
24	2	17	2	5	No	No	No	No	No	No	No	No	No	No
Hours Met					4	6	8	11	0	3	5	7	0	0

Warrant 3 Condition A

Orientation	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	35.1
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	2:26
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	250
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1088
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 6: Battle Creek Rd at Site Access

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	E
1	426	634	13
2	409	609	12
3	400	596	12
4	341	507	10
5	324	482	10
6	290	431	9
7	268	399	8
8	256	380	8
9	204	304	6
10	192	285	6
11	192	285	6
12	183	273	6
13	166	247	5
14	153	228	5
15	153	228	5
16	149	222	5
17	85	127	3
18	47	70	1
19	43	63	1
20	17	25	1
21	13	19	0
22	13	19	0
23	9	13	0
24	9	13	0

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	1060	1	13	No	No	No	No	No	No	No	No	No	No
2	2	1018	1	12	No	No	No	No	No	No	No	No	No	No
3	2	996	1	12	No	No	No	No	No	No	No	No	No	No
4	2	848	1	10	No	No	No	No	No	No	No	No	No	No
5	2	806	1	10	No	No	No	No	No	No	No	No	No	No
6	2	721	1	9	No	No	No	No	No	No	No	No	No	No
7	2	667	1	8	No	No	No	No	No	No	No	No	No	No
8	2	636	1	8	No	No	No	No	No	No	No	No	No	No
9	2	508	1	6	No	No	No	No	No	No	No	No	No	No
10	2	477	1	6	No	No	No	No	No	No	No	No	No	No
11	2	477	1	6	No	No	No	No	No	No	No	No	No	No
12	2	456	1	6	No	No	No	No	No	No	No	No	No	No
13	2	413	1	5	No	No	No	No	No	No	No	No	No	No
14	2	381	1	5	No	No	No	No	No	No	No	No	No	No
15	2	381	1	5	No	No	No	No	No	No	No	No	No	No
16	2	371	1	5	No	No	No	No	No	No	No	No	No	No
17	2	212	1	3	No	No	No	No	No	No	No	No	No	No
18	2	117	1	1	No	No	No	No	No	No	No	No	No	No
19	2	106	1	1	No	No	No	No	No	No	No	No	No	No
20	2	42	1	1	No	No	No	No	No	No	No	No	No	No
21	2	32	1	0	No	No	No	No	No	No	No	No	No	No
22	2	32	1	0	No	No	No	No	No	No	No	No	No	No
23	2	22	1	0	No	No	No	No	No	No	No	No	No	No
24	2	22	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	20.3
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:04
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	13
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	1073
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 11: Reed Rd at Strong Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	343	73	16
2	329	70	15
3	322	69	15
4	274	58	13
5	261	55	12
6	233	50	11
7	216	46	10
8	206	44	10
9	165	35	8
10	154	33	7
11	154	33	7
12	147	31	7
13	134	28	6
14	123	26	6
15	123	26	6
16	120	26	6
17	69	15	3
18	38	8	2
19	34	7	2
20	14	3	1
21	10	2	0
22	10	2	0
23	7	1	0
24	7	1	0

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	416	1	16	No	No	No	No	No	No	No	No	No	No
2	2	399	1	15	No	No	No	No	No	No	No	No	No	No
3	2	391	1	15	No	No	No	No	No	No	No	No	No	No
4	2	332	1	13	No	No	No	No	No	No	No	No	No	No
5	2	316	1	12	No	No	No	No	No	No	No	No	No	No
6	2	283	1	11	No	No	No	No	No	No	No	No	No	No
7	2	262	1	10	No	No	No	No	No	No	No	No	No	No
8	2	250	1	10	No	No	No	No	No	No	No	No	No	No
9	2	200	1	8	No	No	No	No	No	No	No	No	No	No
10	2	187	1	7	No	No	No	No	No	No	No	No	No	No
11	2	187	1	7	No	No	No	No	No	No	No	No	No	No
12	2	178	1	7	No	No	No	No	No	No	No	No	No	No
13	2	162	1	6	No	No	No	No	No	No	No	No	No	No
14	2	149	1	6	No	No	No	No	No	No	No	No	No	No
15	2	149	1	6	No	No	No	No	No	No	No	No	No	No
16	2	146	1	6	No	No	No	No	No	No	No	No	No	No
17	2	84	1	3	No	No	No	No	No	No	No	No	No	No
18	2	46	1	2	No	No	No	No	No	No	No	No	No	No
19	2	41	1	2	No	No	No	No	No	No	No	No	No	No
20	2	17	1	1	No	No	No	No	No	No	No	No	No	No
21	2	12	1	0	No	No	No	No	No	No	No	No	No	No
22	2	12	1	0	No	No	No	No	No	No	No	No	No	No
23	2	8	1	0	No	No	No	No	No	No	No	No	No	No
24	2	8	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	11
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:02
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	16
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	432
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 16: Reed Rd at Fairview Industrial Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N, S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	N	S
1	356	477	35	92
2	342	458	34	88
3	335	448	33	86
4	285	382	28	74
5	271	363	27	70
6	242	324	24	63
7	224	301	22	58
8	214	286	21	55
9	171	229	17	44
10	160	215	16	41
11	160	215	16	41
12	153	205	15	40
13	139	186	14	36
14	128	172	13	33
15	128	172	13	33
16	125	167	12	32
17	71	95	7	18
18	39	52	4	10
19	36	48	4	9
20	14	19	1	4
21	11	14	1	3
22	11	14	1	3
23	7	10	1	2
24	7	10	1	2

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	4	833	2	127	No	No	No	Yes	No	Yes	Yes	Yes	No	No
2	4	800	2	122	No	No	No	Yes	No	Yes	Yes	Yes	No	No
3	4	783	2	119	No	No	No	Yes	No	Yes	Yes	Yes	No	No
4	4	667	2	102	No	No	No	No	No	No	Yes	Yes	No	No
5	4	634	2	97	No	No	No	No	No	No	Yes	Yes	No	No
6	4	566	2	87	No	No	No	No	No	No	No	Yes	No	No
7	4	525	2	80	No	No	No	No	No	No	No	Yes	No	No
8	4	500	2	76	No	No	No	No	No	No	No	No	No	No
9	4	400	2	61	No	No	No	No	No	No	No	No	No	No
10	4	375	2	57	No	No	No	No	No	No	No	No	No	No
11	4	375	2	57	No	No	No	No	No	No	No	No	No	No
12	4	358	2	55	No	No	No	No	No	No	No	No	No	No
13	4	325	2	50	No	No	No	No	No	No	No	No	No	No
14	4	300	2	46	No	No	No	No	No	No	No	No	No	No
15	4	300	2	46	No	No	No	No	No	No	No	No	No	No
16	4	292	2	44	No	No	No	No	No	No	No	No	No	No
17	4	166	2	25	No	No	No	No	No	No	No	No	No	No
18	4	91	2	14	No	No	No	No	No	No	No	No	No	No
19	4	84	2	13	No	No	No	No	No	No	No	No	No	No
20	4	33	2	5	No	No	No	No	No	No	No	No	No	No
21	4	25	2	4	No	No	No	No	No	No	No	No	No	No
22	4	25	2	4	No	No	No	No	No	No	No	No	No	No
23	4	17	2	3	No	No	No	No	No	No	No	No	No	No
24	4	17	2	3	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	3	0	3	5	7	0	0

Warrant 3 Condition A

Orientation	N	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	18.9	35.1
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:11	0:53
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	35	92
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	960	960
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 21: Fairview Industrial Dr at Marietta St

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	146	431	17
2	140	414	16
3	137	405	16
4	117	345	14
5	111	328	13
6	99	293	12
7	92	272	11
8	88	259	10
9	70	207	8
10	66	194	8
11	66	194	8
12	63	185	7
13	57	168	7
14	53	155	6
15	53	155	6
16	51	151	6
17	29	86	3
18	16	47	2
19	15	43	2
20	6	17	1
21	4	13	1
22	4	13	1
23	3	9	0
24	3	9	0

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	3	577	1	17	No	No	No	No	No	No	No	No	No	No
2	3	554	1	16	No	No	No	No	No	No	No	No	No	No
3	3	542	1	16	No	No	No	No	No	No	No	No	No	No
4	3	462	1	14	No	No	No	No	No	No	No	No	No	No
5	3	439	1	13	No	No	No	No	No	No	No	No	No	No
6	3	392	1	12	No	No	No	No	No	No	No	No	No	No
7	3	364	1	11	No	No	No	No	No	No	No	No	No	No
8	3	347	1	10	No	No	No	No	No	No	No	No	No	No
9	3	277	1	8	No	No	No	No	No	No	No	No	No	No
10	3	260	1	8	No	No	No	No	No	No	No	No	No	No
11	3	260	1	8	No	No	No	No	No	No	No	No	No	No
12	3	248	1	7	No	No	No	No	No	No	No	No	No	No
13	3	225	1	7	No	No	No	No	No	No	No	No	No	No
14	3	208	1	6	No	No	No	No	No	No	No	No	No	No
15	3	208	1	6	No	No	No	No	No	No	No	No	No	No
16	3	202	1	6	No	No	No	No	No	No	No	No	No	No
17	3	115	1	3	No	No	No	No	No	No	No	No	No	No
18	3	63	1	2	No	No	No	No	No	No	No	No	No	No
19	3	58	1	2	No	No	No	No	No	No	No	No	No	No
20	3	23	1	1	No	No	No	No	No	No	No	No	No	No
21	3	17	1	1	No	No	No	No	No	No	No	No	No	No
22	3	17	1	1	No	No	No	No	No	No	No	No	No	No
23	3	12	1	0	No	No	No	No	No	No	No	No	No	No
24	3	12	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.4
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:03
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	17
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	594
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 26: East Access at Strong Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	N	W
1	34	118	12
2	33	113	12
3	32	111	11
4	27	94	10
5	26	90	9
6	23	80	8
7	21	74	8
8	20	71	7
9	16	57	6
10	15	53	5
11	15	53	5
12	15	51	5
13	13	46	5
14	12	42	4
15	12	42	4
16	12	41	4
17	7	24	2
18	4	13	1
19	3	12	1
20	1	5	0
21	1	4	0
22	1	4	0
23	1	2	0
24	1	2	0

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	152	1	12	No	No	No	No	No	No	No	No	No	No
2	2	146	1	12	No	No	No	No	No	No	No	No	No	No
3	2	143	1	11	No	No	No	No	No	No	No	No	No	No
4	2	121	1	10	No	No	No	No	No	No	No	No	No	No
5	2	116	1	9	No	No	No	No	No	No	No	No	No	No
6	2	103	1	8	No	No	No	No	No	No	No	No	No	No
7	2	95	1	8	No	No	No	No	No	No	No	No	No	No
8	2	91	1	7	No	No	No	No	No	No	No	No	No	No
9	2	73	1	6	No	No	No	No	No	No	No	No	No	No
10	2	68	1	5	No	No	No	No	No	No	No	No	No	No
11	2	68	1	5	No	No	No	No	No	No	No	No	No	No
12	2	66	1	5	No	No	No	No	No	No	No	No	No	No
13	2	59	1	5	No	No	No	No	No	No	No	No	No	No
14	2	54	1	4	No	No	No	No	No	No	No	No	No	No
15	2	54	1	4	No	No	No	No	No	No	No	No	No	No
16	2	53	1	4	No	No	No	No	No	No	No	No	No	No
17	2	31	1	2	No	No	No	No	No	No	No	No	No	No
18	2	17	1	1	No	No	No	No	No	No	No	No	No	No
19	2	15	1	1	No	No	No	No	No	No	No	No	No	No
20	2	6	1	0	No	No	No	No	No	No	No	No	No	No
21	2	5	1	0	No	No	No	No	No	No	No	No	No	No
22	2	5	1	0	No	No	No	No	No	No	No	No	No	No
23	2	3	1	0	No	No	No	No	No	No	No	No	No	No
24	2	3	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.4
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:02
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	12
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	164
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 31: 27th Ave at Marietta St

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	122	46	48
2	117	44	46
3	115	43	45
4	98	37	38
5	93	35	36
6	83	31	33
7	77	29	30
8	73	28	29
9	59	22	23
10	55	21	22
11	55	21	22
12	52	20	21
13	48	18	19
14	44	17	17
15	44	17	17
16	43	16	17
17	24	9	10
18	13	5	5
19	12	5	5
20	5	2	2
21	4	1	1
22	4	1	1
23	2	1	1
24	2	1	1

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	168	1	48	No	No	No	No	No	No	No	No	No	No
2	2	161	1	46	No	No	No	No	No	No	No	No	No	No
3	2	158	1	45	No	No	No	No	No	No	No	No	No	No
4	2	135	1	38	No	No	No	No	No	No	No	No	No	No
5	2	128	1	36	No	No	No	No	No	No	No	No	No	No
6	2	114	1	33	No	No	No	No	No	No	No	No	No	No
7	2	106	1	30	No	No	No	No	No	No	No	No	No	No
8	2	101	1	29	No	No	No	No	No	No	No	No	No	No
9	2	81	1	23	No	No	No	No	No	No	No	No	No	No
10	2	76	1	22	No	No	No	No	No	No	No	No	No	No
11	2	76	1	22	No	No	No	No	No	No	No	No	No	No
12	2	72	1	21	No	No	No	No	No	No	No	No	No	No
13	2	66	1	19	No	No	No	No	No	No	No	No	No	No
14	2	61	1	17	No	No	No	No	No	No	No	No	No	No
15	2	61	1	17	No	No	No	No	No	No	No	No	No	No
16	2	59	1	17	No	No	No	No	No	No	No	No	No	No
17	2	33	1	10	No	No	No	No	No	No	No	No	No	No
18	2	18	1	5	No	No	No	No	No	No	No	No	No	No
19	2	17	1	5	No	No	No	No	No	No	No	No	No	No
20	2	7	1	2	No	No	No	No	No	No	No	No	No	No
21	2	5	1	1	No	No	No	No	No	No	No	No	No	No
22	2	5	1	1	No	No	No	No	No	No	No	No	No	No
23	2	3	1	1	No	No	No	No	No	No	No	No	No	No
24	2	3	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.2
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:08
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	48
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	216
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 42: Reed at Site Access

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	253	71	2
2	243	68	2
3	238	67	2
4	202	57	2
5	192	54	2
6	172	48	1
7	159	45	1
8	152	43	1
9	121	34	1
10	114	32	1
11	114	32	1
12	109	31	1
13	99	28	1
14	91	26	1
15	91	26	1
16	89	25	1
17	51	14	0
18	28	8	0
19	25	7	0
20	10	3	0
21	8	2	0
22	8	2	0
23	5	1	0
24	5	1	0

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	324	1	2	No	No	No	No	No	No	No	No	No	No
2	2	311	1	2	No	No	No	No	No	No	No	No	No	No
3	2	305	1	2	No	No	No	No	No	No	No	No	No	No
4	2	259	1	2	No	No	No	No	No	No	No	No	No	No
5	2	246	1	2	No	No	No	No	No	No	No	No	No	No
6	2	220	1	1	No	No	No	No	No	No	No	No	No	No
7	2	204	1	1	No	No	No	No	No	No	No	No	No	No
8	2	195	1	1	No	No	No	No	No	No	No	No	No	No
9	2	155	1	1	No	No	No	No	No	No	No	No	No	No
10	2	146	1	1	No	No	No	No	No	No	No	No	No	No
11	2	146	1	1	No	No	No	No	No	No	No	No	No	No
12	2	140	1	1	No	No	No	No	No	No	No	No	No	No
13	2	127	1	1	No	No	No	No	No	No	No	No	No	No
14	2	117	1	1	No	No	No	No	No	No	No	No	No	No
15	2	117	1	1	No	No	No	No	No	No	No	No	No	No
16	2	114	1	1	No	No	No	No	No	No	No	No	No	No
17	2	65	1	0	No	No	No	No	No	No	No	No	No	No
18	2	36	1	0	No	No	No	No	No	No	No	No	No	No
19	2	32	1	0	No	No	No	No	No	No	No	No	No	No
20	2	13	1	0	No	No	No	No	No	No	No	No	No	No
21	2	10	1	0	No	No	No	No	No	No	No	No	No	No
22	2	10	1	0	No	No	No	No	No	No	No	No	No	No
23	2	6	1	0	No	No	No	No	No	No	No	No	No	No
24	2	6	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.7
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	2
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	326
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

18-392 Strong at 27th Subdivision TIA

Vistro File: J:\...\18-392 Reed Rd Subdivision - TIA.vistro
Report File: J:\...\18-392 PM Dev Ph 1.pdf

Scenario 4 PM Dev 2020 Ph 1
6/19/2018

Trip Generation summary

Added Trips

Zone ID: Name	Land Use variables	Code	Ind. Var.	Rate	Quantity	% In	% Out	Trips In	Trips Out	Total Trips	% of Total Trips
1: 18-392 Reed Rd Sub	Homes	ITE 210	Home	0.990	75.000	63.00	37.00	47	27	74	100.00
					Added Trips Total			**47**	**27**	**74**	**100.00**

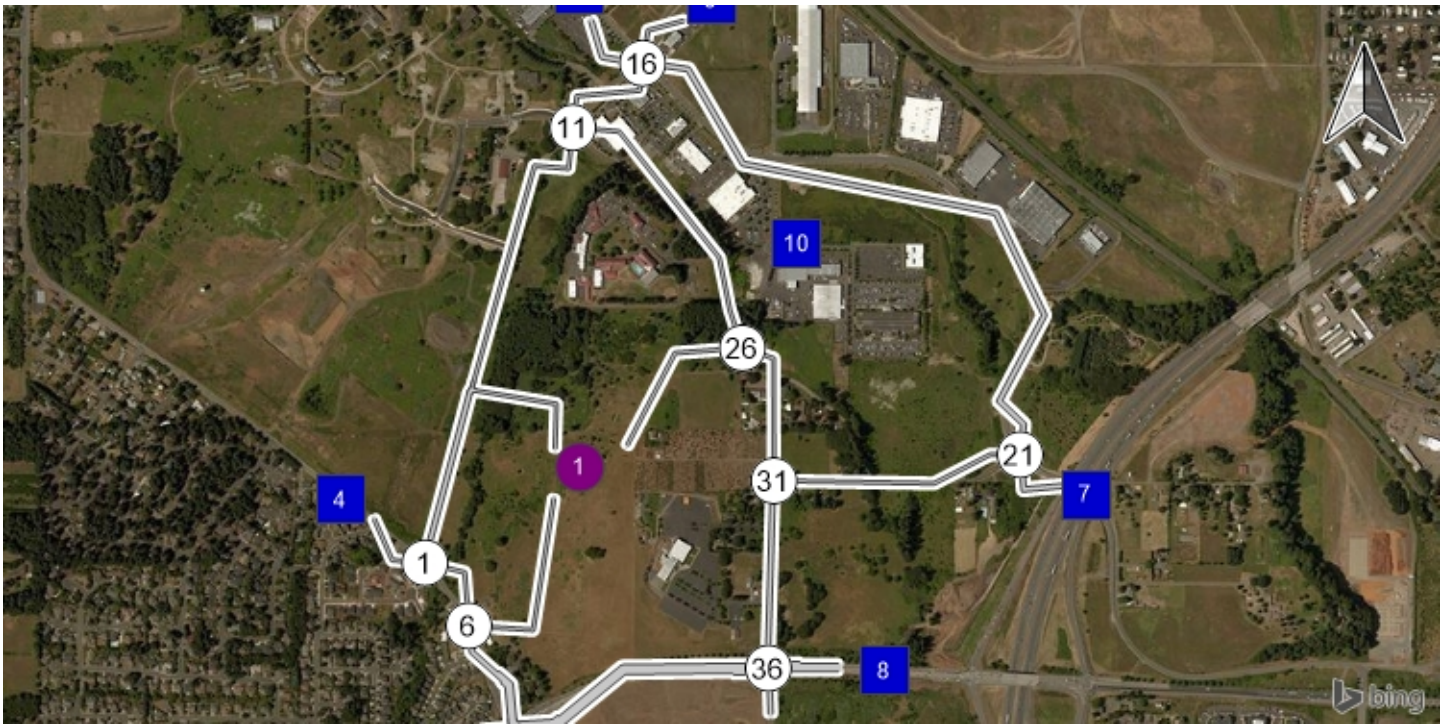
18-392 Strong at 27th Subdivision TIA

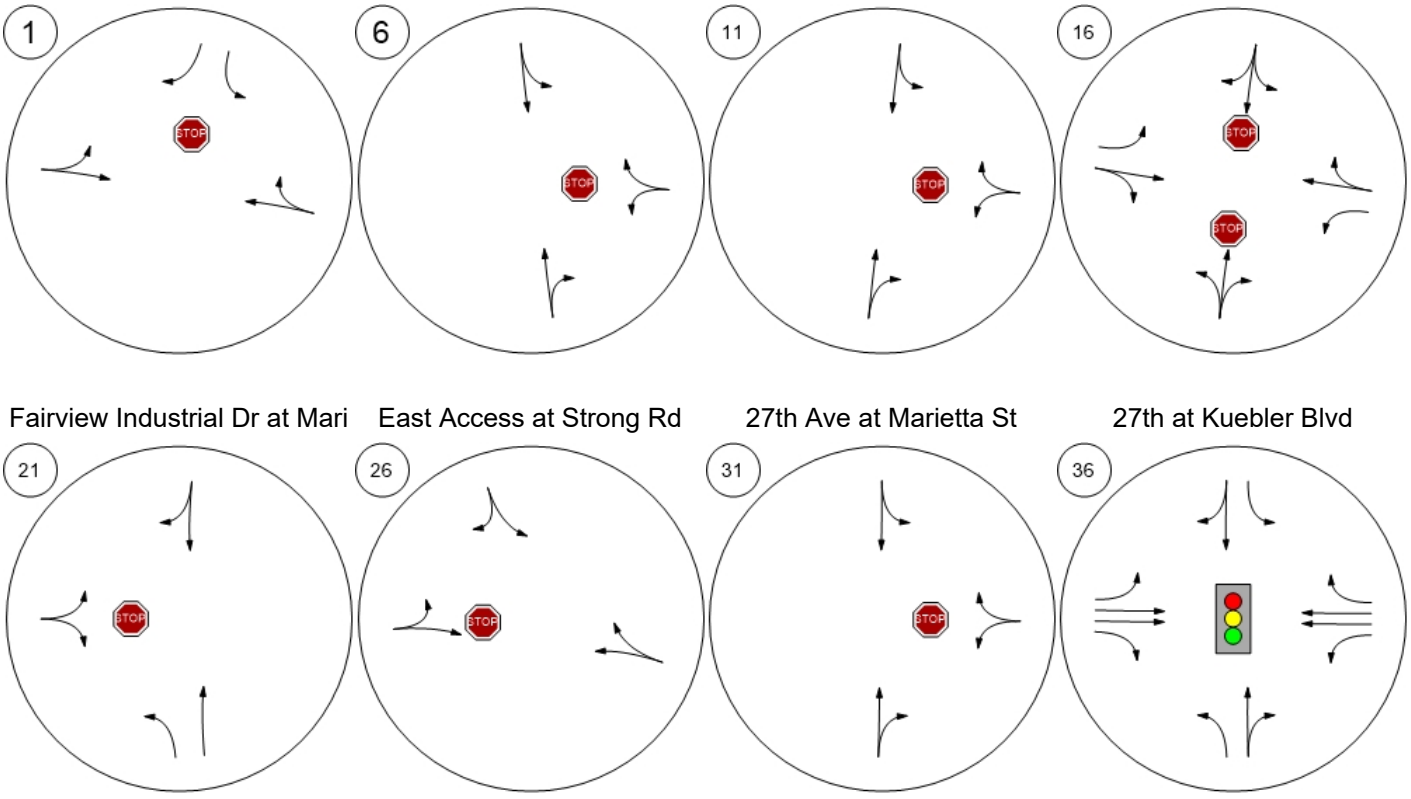
Vistro File: J:\...\18-392 Reed Rd Subdivision - TIA.vistro
Scenario 4 PM Dev 2020 Ph 1
Report File: J:\...\18-392 PM Dev Ph 1.pdf
6/19/2018

Trip Distribution summary

Zone / Gate	Zone 1: 18-392 Reed Rd Sub			
	To 18-392 Reed Rd Sub:		From 18-392 Reed Rd Sub:	
	Share %	Trips	Share %	Trips
2: Gate	10.00	5	10.00	3
3: Gate	30.00	14	30.00	8
4: Gate	7.00	3	7.00	2
5: Gate	10.00	5	10.00	3
6: Gate	0.00	0	0.00	0
7: Gate	6.00	3	6.00	2
8: Gate	35.00	16	35.00	8
9: Gate	2.00	1	2.00	1
10: Gate	0.00	0	0.00	0
Total	**100.00**	**47**	**100.00**	**27**

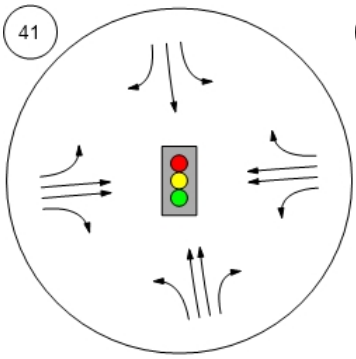
Report Figure 1: Lane Configuration and Traffic Control



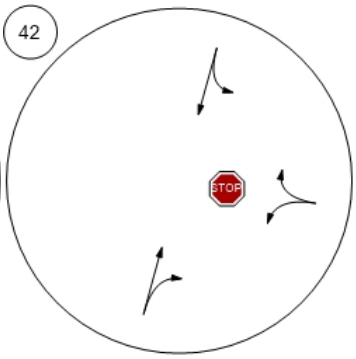


Report Figure 1: Lane Configuration and Traffic Control

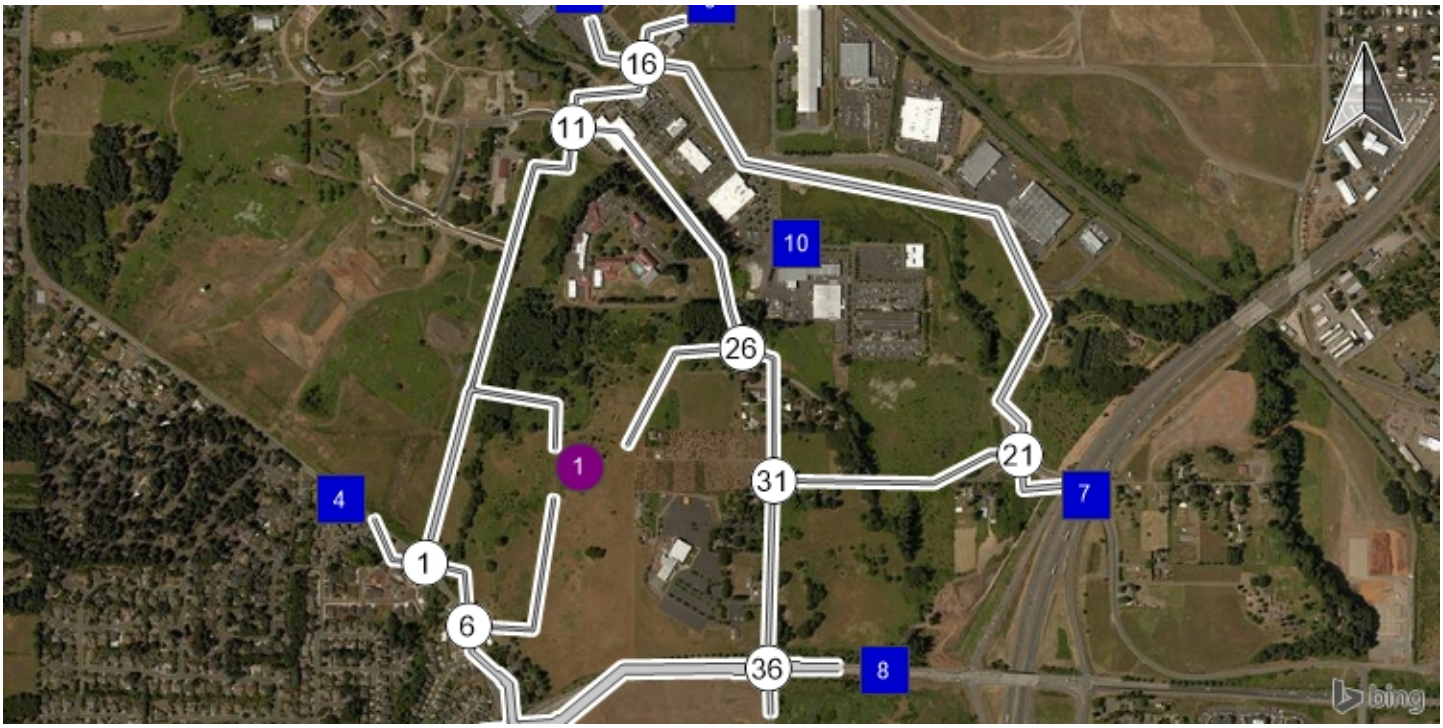
Keubler Blvd at Battle Creek



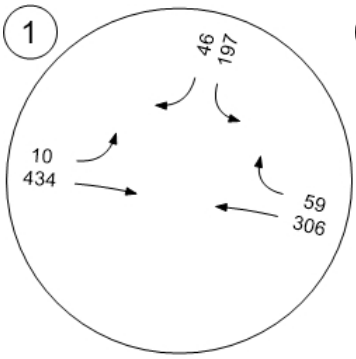
Reed at Site Access



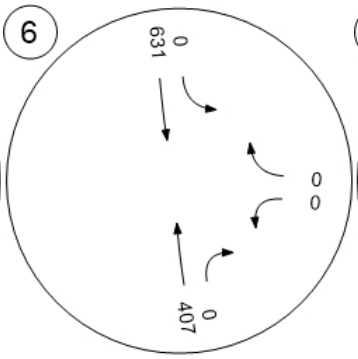
Report Figure 2a: Traffic Volume - Base Volume



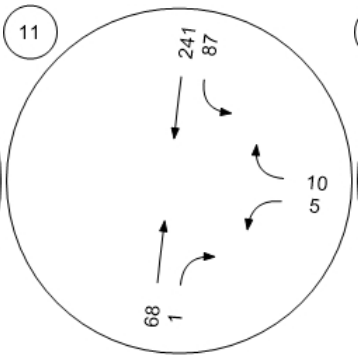
Battle Creek Rd at Reed Rd



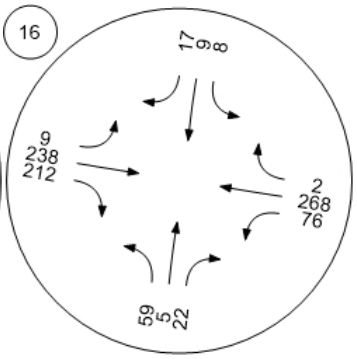
Battle Creek Rd at Site Acces



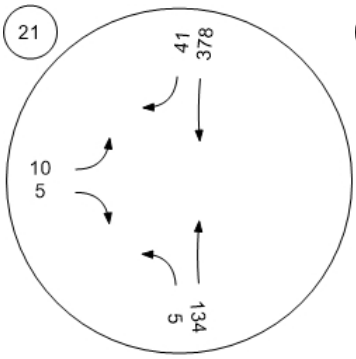
Reed Rd at Strong Rd



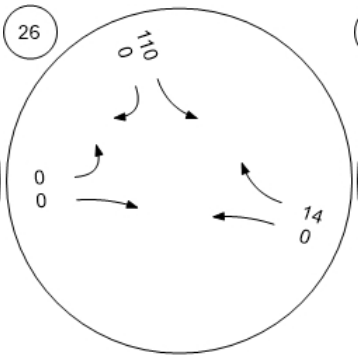
Reed Rd at Fairview Industria



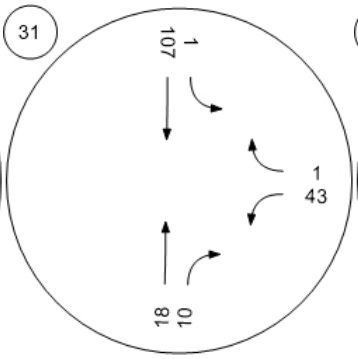
Fairview Industrial Dr at Mari



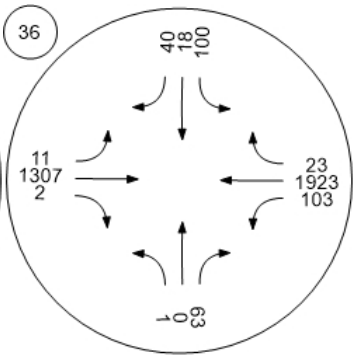
East Access at Strong Rd



27th Ave at Marietta St

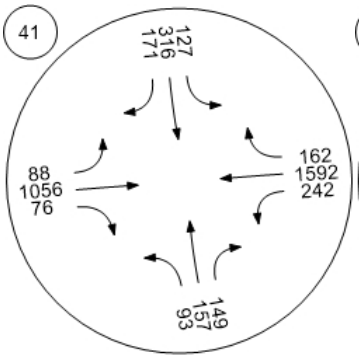


27th at Kuebler Blvd

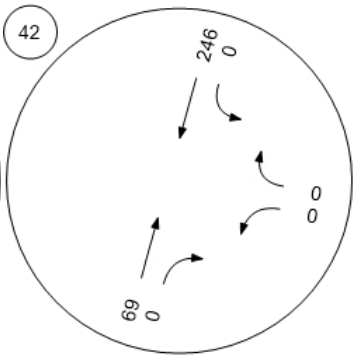


Report Figure 2a: Traffic Volume - Base Volume

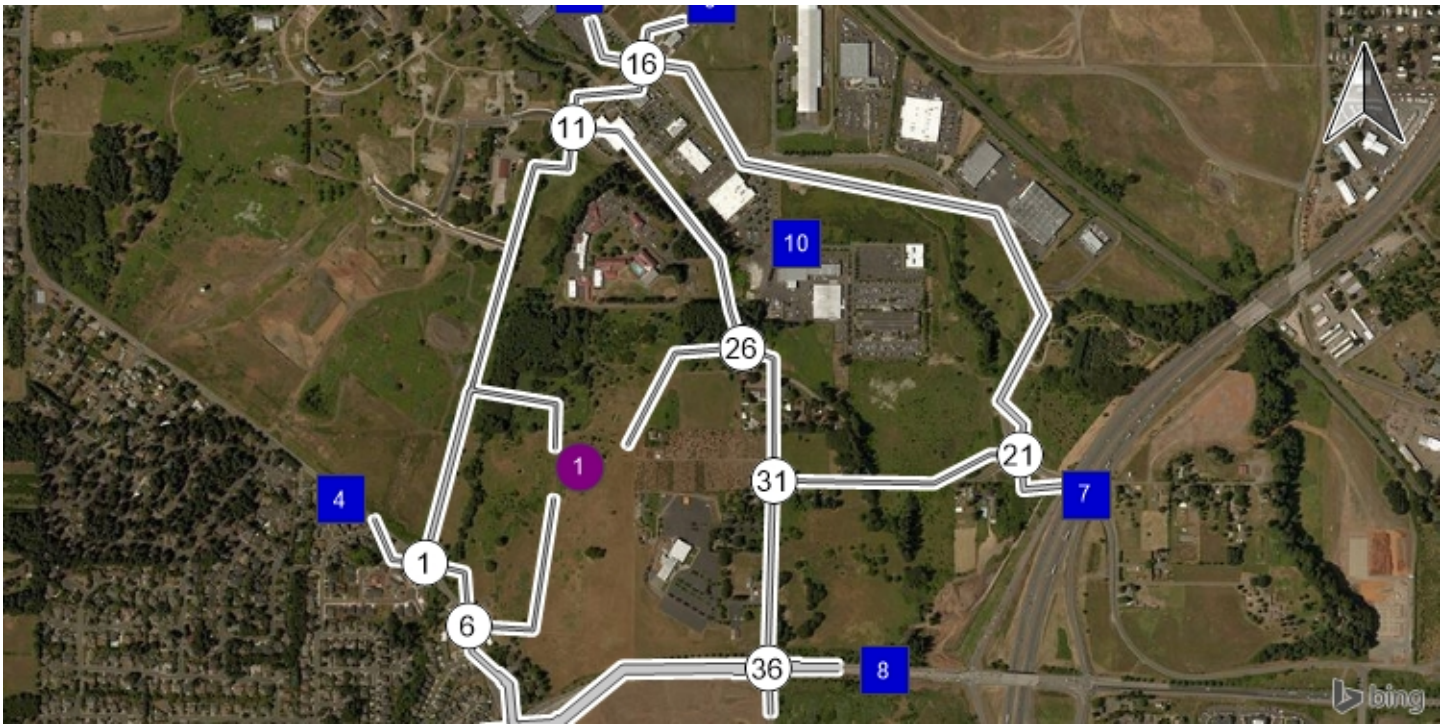
Keubler Blvd at Battle Creek



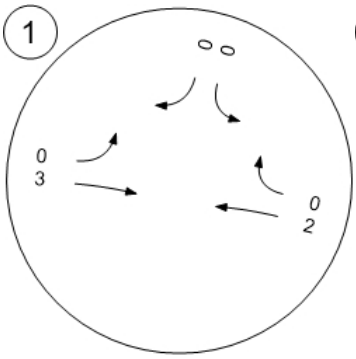
Reed at Site Access



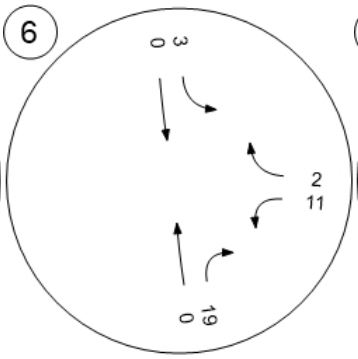
Report Figure 2d: Traffic Volume - Net New Site Trips



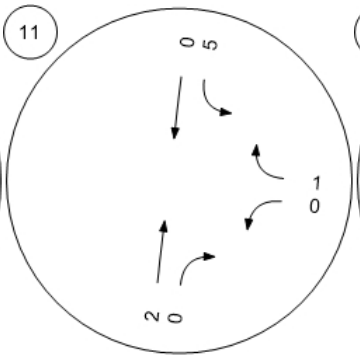
Battle Creek Rd at Reed Rd



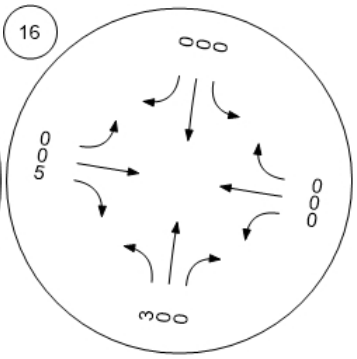
Battle Creek Rd at Site Acces



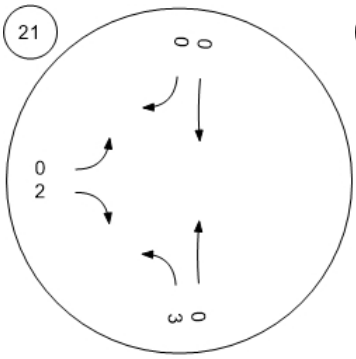
Reed Rd at Strong Rd



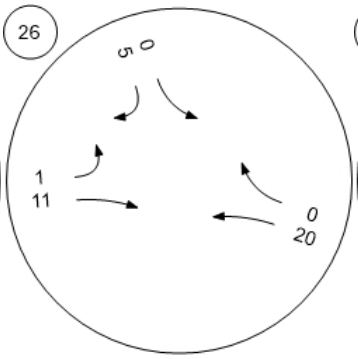
Reed Rd at Fairview Industria



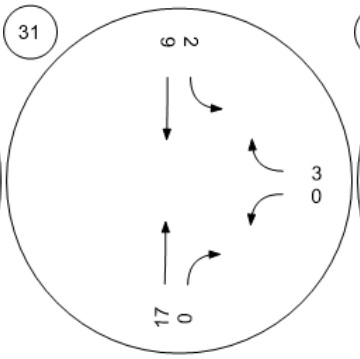
Fairview Industrial Dr at Mari



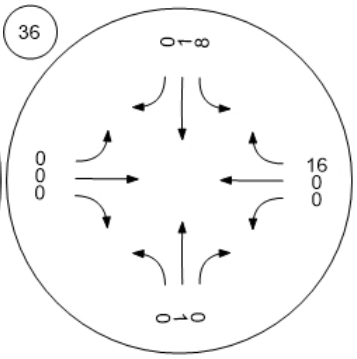
East Access at Strong Rd



27th Ave at Marietta St

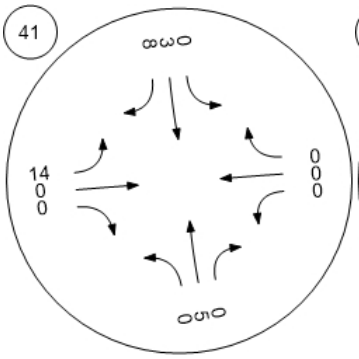


27th at Kuebler Blvd

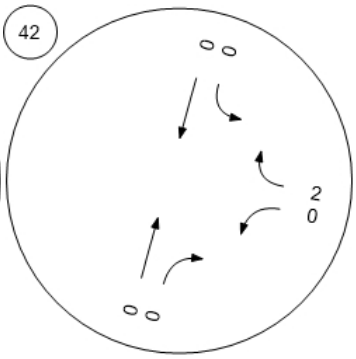


Report Figure 2d: Traffic Volume - Net New Site Trips

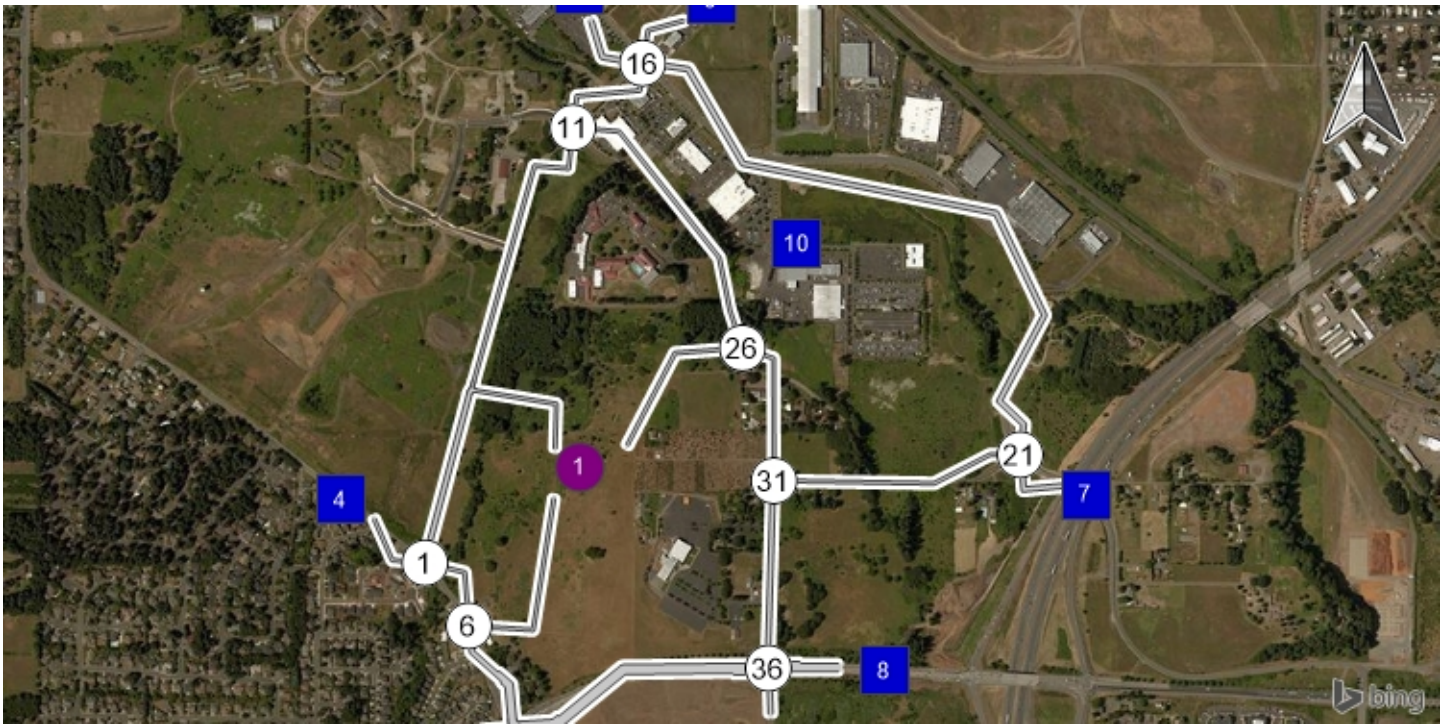
Keubler Blvd at Battle Creek



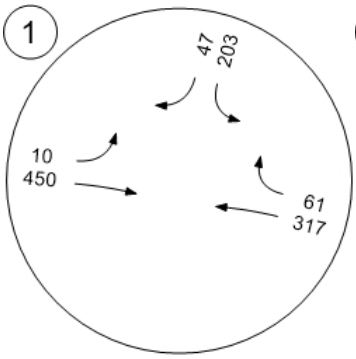
Reed at Site Access



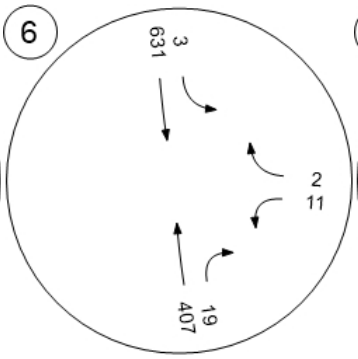
Report Figure 2f: Traffic Volume - Future Total Volume



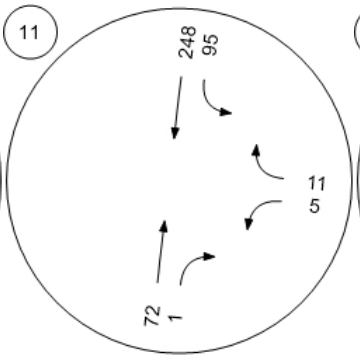
Battle Creek Rd at Reed Rd



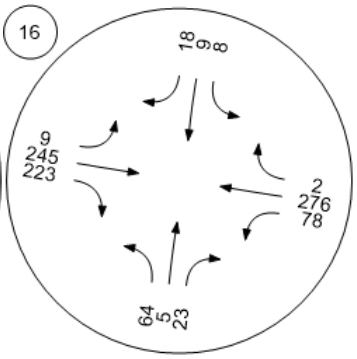
Battle Creek Rd at Site Acces



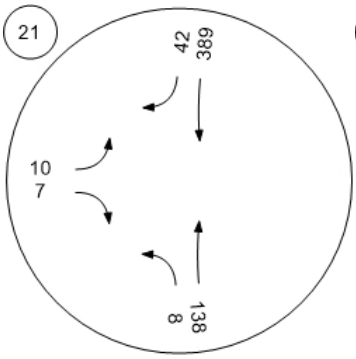
Reed Rd at Strong Rd



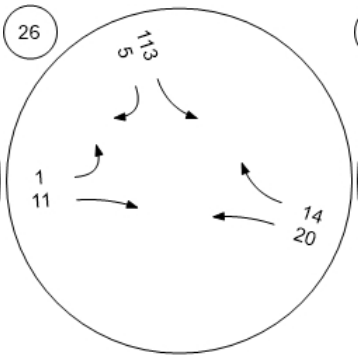
Reed Rd at Fairview Industria



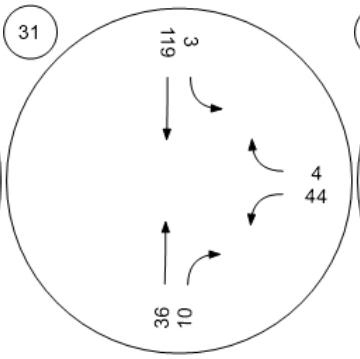
Fairview Industrial Dr at Mari



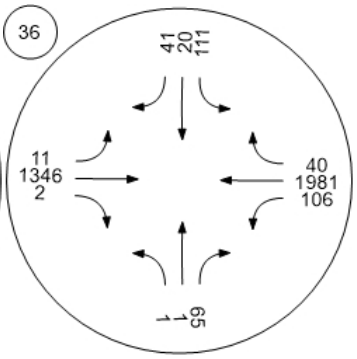
East Access at Strong Rd



27th Ave at Marietta St

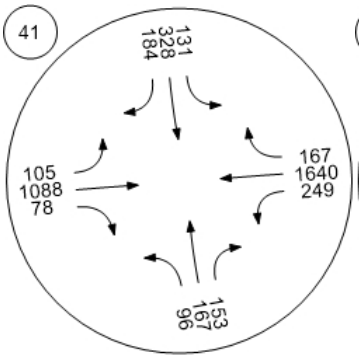


27th at Kuebler Blvd

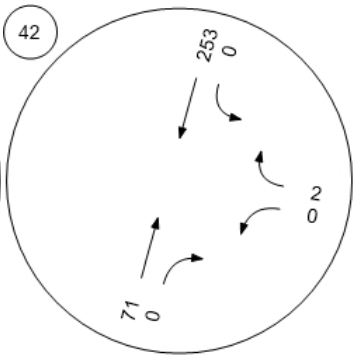


Report Figure 2f: Traffic Volume - Future Total Volume

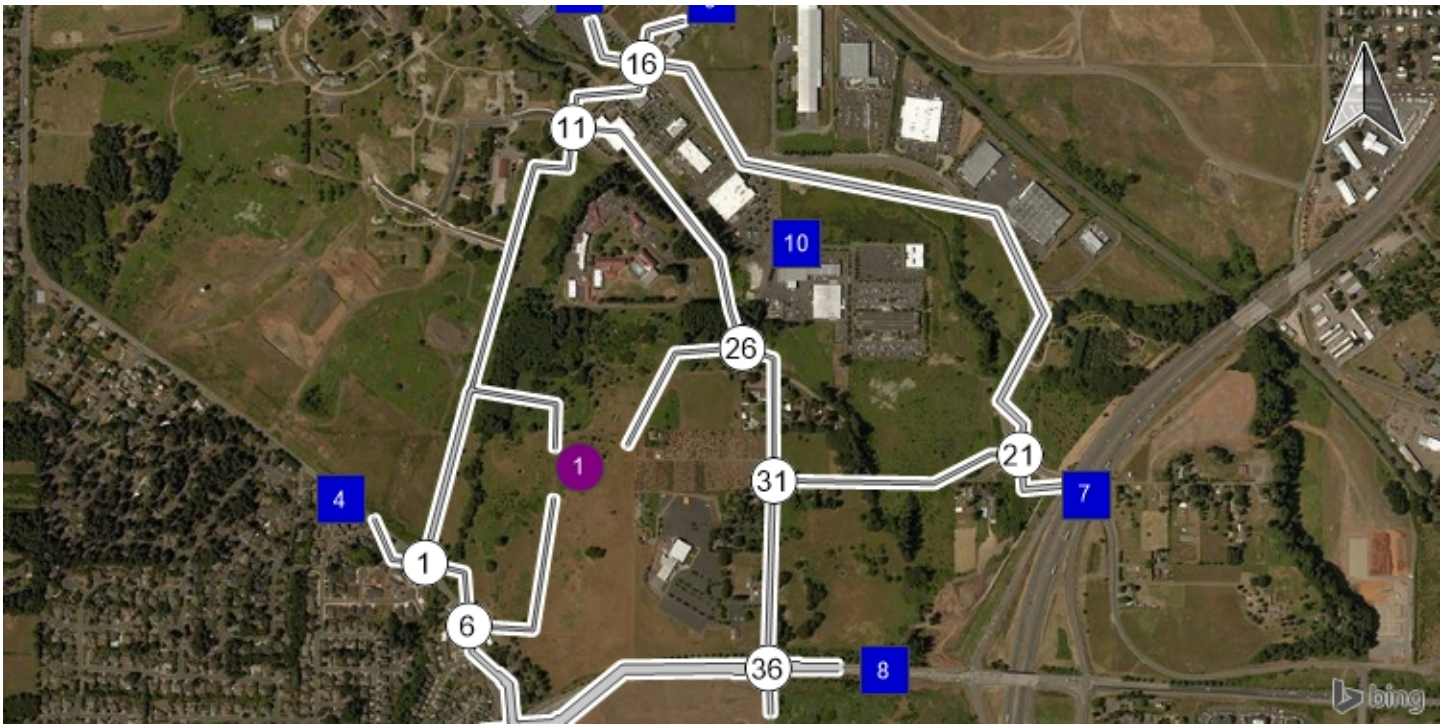
Keubler Blvd at Battle Creek

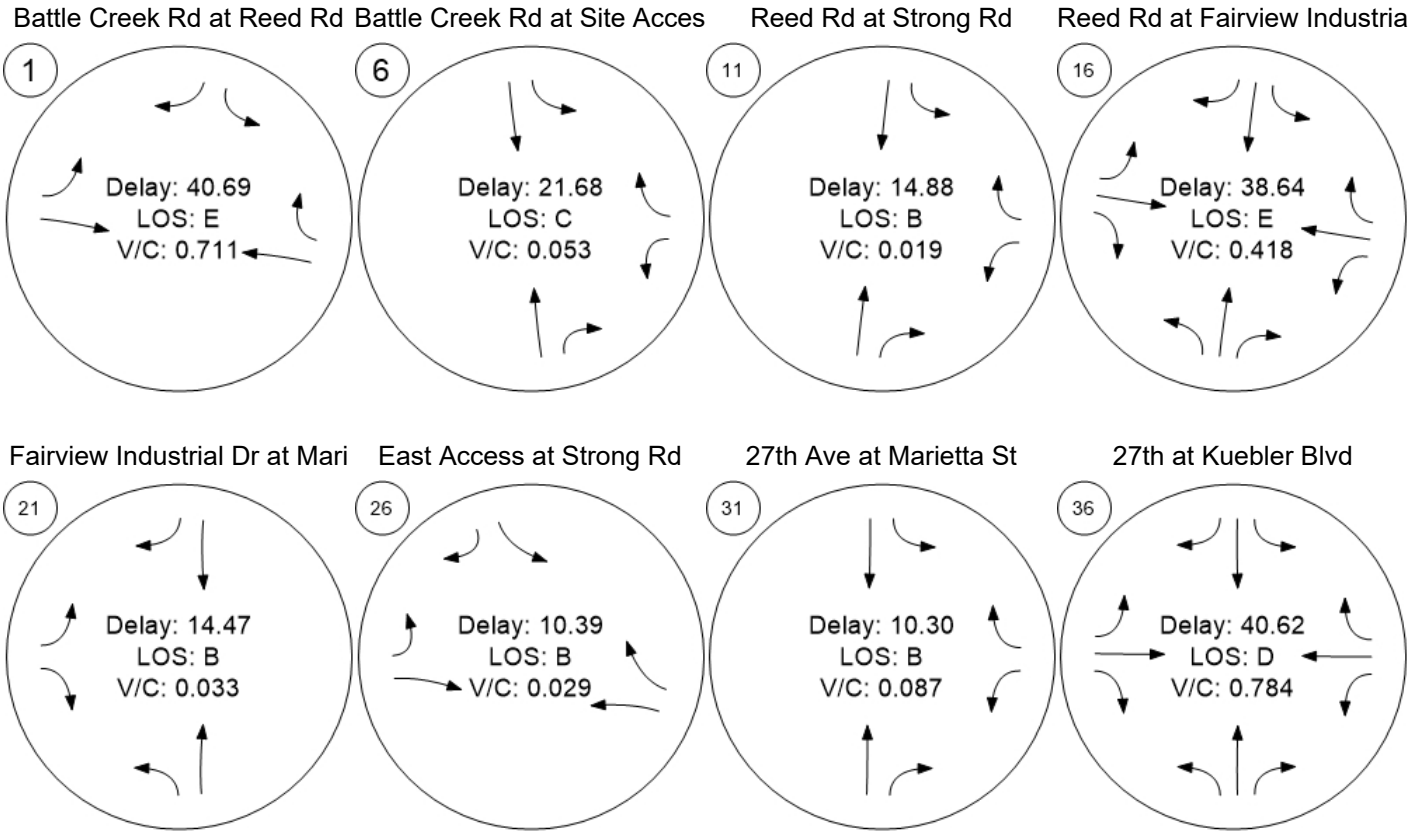


Reed at Site Access



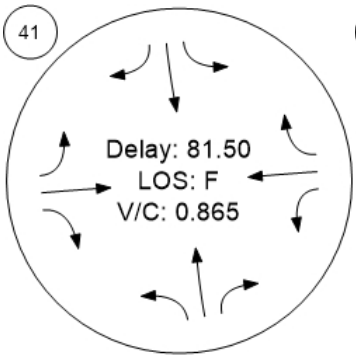
Report Figure 3: Traffic Conditions



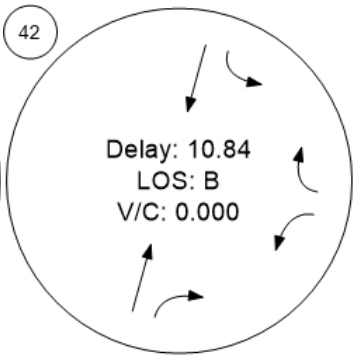


Report Figure 3: Traffic Conditions

Keubler Blvd at Battle Creek



Reed at Site Access



18-392 Strong at 27th Subdivision TIA

Vistro File: J:\...\18-392 Reed Rd Subdivision - TIA.vistro
Report File: J:\...\18-392 PM Dev Ph 2.pdf

Scenario 6 PM Dev 2023 Ph 2
6/19/2018

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Battle Creek Rd at Reed Rd	Two-way stop	HCM 6th Edition	SB Left	0.800	53.0	F
6	Battle Creek Rd at Site Access	Two-way stop	HCM 6th Edition	WB Left	0.123	25.9	D
11	Reed Rd at Strong Rd	Two-way stop	HCM 6th Edition	WB Left	0.020	15.6	C
16	Reed Rd at Fairview Industrial Dr	Two-way stop	HCM 6th Edition	NB Left	0.502	47.8	E
21	Fairview Industrial Dr at Marietta St	Two-way stop	HCM 6th Edition	EB Left	0.038	15.1	C
26	East Access at Strong Rd	Two-way stop	HCM 6th Edition	EB Left	0.006	10.7	B
31	27th Ave at Marietta St	Two-way stop	HCM 6th Edition	WB Left	0.098	10.8	B
36	27th at Kuebler Blvd	Signalized	HCM 6th Edition	SB Left	0.829	50.1	D
41	Keubler Blvd at Battle Creek Rd	Signalized	HCM 6th Edition	WB Left	0.916	99.7	F
42	Reed at Site Access	Two-way stop	HCM 6th Edition	WB Left	0.002	11.0	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Battle Creek Rd at Reed Rd

Control Type:	Two-way stop	Delay (sec / veh):	53.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.800

Intersection Setup

Name	Reed Rd		Battle Creek Rd		Battle Creek Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Reed Rd		Battle Creek Rd		Battle Creek Rd	
Base Volume Input [veh/h]	197	46	10	434	306	59
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.20	1.20	1.80	1.80	3.00	3.00
Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	0	7	3	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	213	51	11	476	333	64
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	58	14	3	129	90	17
Total Analysis Volume [veh/h]	232	55	12	517	362	70
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.80	0.08	0.01	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	53.00	11.01	8.22	0.00	0.00	0.00
Movement LOS	F	B	A	A	A	A
95th-Percentile Queue Length [veh]	6.38	0.27	2.56	2.56	0.00	0.00
95th-Percentile Queue Length [ft]	159.55	6.86	63.98	63.98	0.00	0.00
d_A, Approach Delay [s/veh]	44.95		0.19		0.00	
Approach LOS	E		A		A	
d_I, Intersection Delay [s/veh]	10.42					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 6: Battle Creek Rd at Site Access

Control Type:	Two-way stop	Delay (sec / veh):	25.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.123

Intersection Setup

Name	Battle Creek Rd		Battle Creek Rd		Site Access	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Battle Creek Rd		Battle Creek Rd		Site Access	
Base Volume Input [veh/h]	407	0	0	631	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	37	7	0	23	3
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	440	37	7	681	23	3
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	117	10	2	181	6	1
Total Analysis Volume [veh/h]	468	39	7	724	24	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.01	0.12	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	8.43	0.00	25.94	13.70
Movement LOS	A	A	A	A	D	B
95th-Percentile Queue Length [veh]	0.00	0.00	5.87	5.87	0.43	0.43
95th-Percentile Queue Length [ft]	0.00	0.00	146.68	146.68	10.82	10.82
d_A, Approach Delay [s/veh]	0.00		0.08		24.58	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.57					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 11: Reed Rd at Strong Rd

Control Type:	Two-way stop	Delay (sec / veh):	15.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.020

Intersection Setup

Name	Reed Rd		Reed Rd		Strong Rd	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Reed Rd		Reed Rd		Strong Rd	
Base Volume Input [veh/h]	68	1	87	241	5	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.80	5.80	1.80	1.80	6.70	6.70
Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	0	9	0	0	2
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	77	1	103	260	5	13
Peak Hour Factor	0.7600	0.7600	0.7600	0.7600	0.7600	0.7600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	0	34	86	2	4
Total Analysis Volume [veh/h]	101	1	136	342	7	17
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.09	0.00	0.02	0.02
d_M, Delay for Movement [s/veh]	0.00	0.00	7.66	0.00	15.63	9.05
Movement LOS	A	A	A	A	C	A
95th-Percentile Queue Length [veh]	0.00	0.00	1.40	1.40	0.12	0.12
95th-Percentile Queue Length [ft]	0.00	0.00	34.99	34.99	2.98	2.98
d_A, Approach Delay [s/veh]	0.00		2.18		10.97	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	2.16					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 16: Reed Rd at Fairview Industrial Dr

Control Type:	Two-way stop	Delay (sec / veh):	47.8
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.502

Intersection Setup

Name	Reed Rd			Reed Rd			Fairview Industrial Dr			Fairview Industrial Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Reed Rd			Reed Rd			Fairview Industrial Dr			Fairview Industrial Dr		
Base Volume Input [veh/h]	59	5	22	8	9	17	9	238	212	76	268	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.70	4.70	4.70	0.00	0.00	0.00	4.10	4.10	4.10	4.00	4.00	4.00
Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	6	0	0	0	0	0	0	0	9	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	70	5	24	9	10	18	10	257	238	82	289	2
Peak Hour Factor	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	2	7	3	3	5	3	78	73	25	88	1
Total Analysis Volume [veh/h]	85	6	29	11	12	22	12	313	290	100	352	2
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.50	0.03	0.05	0.06	0.07	0.03	0.01	0.00	0.00	0.10	0.00	0.00
d_M, Delay for Movement [s/veh]	47.82	44.28	32.59	28.13	28.73	12.77	8.05	0.00	0.00	9.16	0.00	0.00
Movement LOS	E	E	D	D	D	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	3.20	3.20	3.20	0.58	0.58	0.58	0.03	0.00	0.00	0.35	0.00	0.00
95th-Percentile Queue Length [ft]	80.00	80.00	80.00	14.51	14.51	14.51	0.76	0.00	0.00	8.64	0.00	0.00
d_A, Approach Delay [s/veh]	43.97			20.78			0.16			2.02		
Approach LOS	E			C			A			A		
d_I, Intersection Delay [s/veh]	5.85											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 21: Fairview Industrial Dr at Marietta St

Control Type:	Two-way stop	Delay (sec / veh):	15.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.038

Intersection Setup

Name	Fairview Industrial Dr		Fairview Industrial Dr		Marietta St	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Fairview Industrial Dr		Fairview Industrial Dr		Marietta St	
Base Volume Input [veh/h]	5	134	378	41	10	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.40	9.40	4.50	4.50	0.00	0.00
Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	6	0	0	0	0	3
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	145	408	44	11	8
Peak Hour Factor	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	46	129	14	3	3
Total Analysis Volume [veh/h]	14	184	516	56	14	10
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.00	0.04	0.02
d_M, Delay for Movement [s/veh]	8.79	0.00	0.00	0.00	15.14	12.13
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh]	0.04	0.00	0.00	0.00	0.18	0.18
95th-Percentile Queue Length [ft]	1.10	0.00	0.00	0.00	4.43	4.43
d_A, Approach Delay [s/veh]	0.62		0.00		13.88	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.57					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 26: East Access at Strong Rd

Control Type:	Two-way stop	Delay (sec / veh):	10.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.006

Intersection Setup

Name	Strong Rd		East Access		Strong Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Strong Rd		East Access		Strong Rd	
Base Volume Input [veh/h]	110	0	0	0	0	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	2	22	41	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	119	9	2	22	41	15
Peak Hour Factor	0.5600	0.5600	0.5600	0.5600	0.5600	0.5600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	53	4	1	10	18	7
Total Analysis Volume [veh/h]	212	16	4	39	73	27
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Stop	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance		No	
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.06	0.05	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	10.72	10.67	7.82	0.00
Movement LOS	A	A	B	B	A	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.20	0.20	0.24	0.24
95th-Percentile Queue Length [ft]	0.00	0.00	5.07	5.07	5.99	5.99
d_A, Approach Delay [s/veh]	0.00		10.67		5.71	
Approach LOS	A		B		A	
d_I, Intersection Delay [s/veh]	2.78					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 31: 27th Ave at Marietta St

Control Type:	Two-way stop	Delay (sec / veh):	10.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.098

Intersection Setup

Name	27th Ave		Strong Rd		Marietta St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	27th Ave		Strong Rd		Marietta St	
Base Volume Input [veh/h]	18	10	1	107	43	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	35	0	3	19	0	6
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	54	11	4	135	46	7
Peak Hour Factor	0.6800	0.6800	0.6800	0.6800	0.6800	0.6800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	4	1	50	17	3
Total Analysis Volume [veh/h]	79	16	6	199	68	10
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.10	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	7.39	0.00	10.79	9.29
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.47	0.47	0.36	0.36
95th-Percentile Queue Length [ft]	0.00	0.00	11.73	11.73	9.06	9.06
d_A, Approach Delay [s/veh]	0.00		0.22		10.60	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	2.30					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 36: 27th at Kuebler Blvd

Control Type:	Signalized	Delay (sec / veh):	50.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.829

Intersection Setup

Name	27th Ave			27th Ave			Kuebler Blvd			Kuebler Blvd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	125.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	200.00	350.00	100.00	175.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	27th Ave			27th Ave			Kuebler Blvd			Kuebler Blvd		
Base Volume Input [veh/h]	1	0	63	100	18	40	11	1307	2	103	1923	23
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.70	4.70	4.70	0.60	0.60	0.60	3.60	3.60	3.60	1.30	1.30	1.30
Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	2	0	18	1	0	0	0	0	0	0	33
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	2	68	126	20	43	12	1412	2	111	2077	58
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	1	18	34	5	11	3	376	1	30	552	15
Total Analysis Volume [veh/h]	1	2	72	134	21	46	13	1502	2	118	2210	62
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	19	0	9	19	0	34	83	0	9	58	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	15	5	20	2	79	79	5	82	82
g / C, Green / Cycle	0.00	0.13	0.04	0.17	0.01	0.66	0.66	0.04	0.68	0.68
(v / s)_i Volume / Saturation Flow Rate	0.00	0.05	0.08	0.04	0.01	0.47	0.00	0.07	0.69	0.04
s, saturation flow rate [veh/h]	1568	1405	1621	1518	1582	3163	1412	1612	3222	1439
c, Capacity [veh/h]	2	178	68	253	23	2078	928	67	2203	984
d1, Uniform Delay [s]	59.86	48.35	57.50	43.60	58.73	13.46	7.08	57.50	18.97	6.27
k, delay calibration	0.11	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	92.03	7.06	452.07	2.54	19.03	0.49	0.00	351.73	9.62	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.43	0.42	1.98	0.26	0.56	0.72	0.00	1.75	1.00	0.06
d, Delay for Lane Group [s/veh]	151.89	55.40	509.56	46.14	77.76	13.94	7.08	409.23	28.59	6.30
Lane Group LOS	F	E	F	D	E	B	A	F	F	A
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.09	2.40	10.55	1.93	0.52	12.34	0.02	8.62	29.54	0.50
50th-Percentile Queue Length [ft]	2.25	59.98	263.85	48.13	12.91	308.55	0.43	215.47	738.42	12.54
95th-Percentile Queue Length [veh]	0.16	4.32	18.03	3.47	0.93	18.10	0.03	15.02	38.55	0.90
95th-Percentile Queue Length [ft]	4.05	107.96	450.71	86.64	23.23	452.59	0.78	375.54	963.86	22.58

Movement, Approach, & Intersection Results

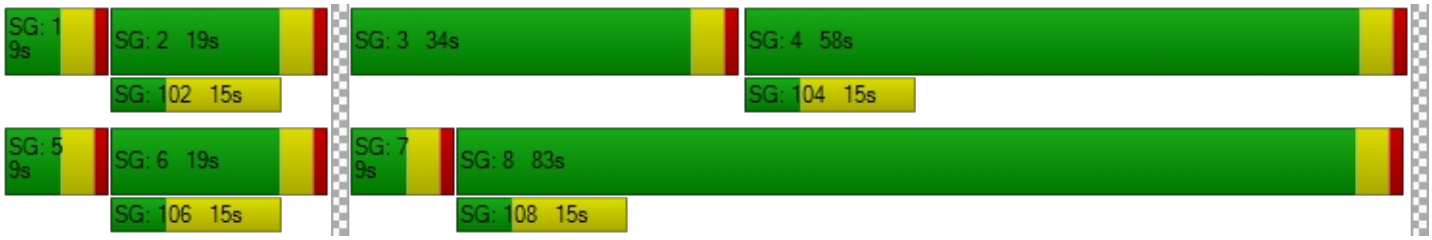
d_M, Delay for Movement [s/veh]	151.89	55.40	55.40	509.56	46.14	46.14	77.76	13.94	7.08	409.23	28.59	6.30
Movement LOS	F	E	E	F	D	D	E	B	A	F	F	A
d_A, Approach Delay [s/veh]	56.69			355.09			14.48			46.81		
Approach LOS	E			F			B			D		
d_I, Intersection Delay [s/veh]	50.07											
Intersection LOS	D											
Intersection V/C	0.829											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.026	2.046	3.081	3.134
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250	1317	900
d_b, Bicycle Delay [s]	45.94	45.94	7.00	18.15
l_b,int, Bicycle LOS Score for Intersection	1.683	1.891	2.811	3.531
Bicycle LOS	A	A	C	D

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 41: Keubler Blvd at Battle Creek Rd

Control Type:	Signalized	Delay (sec / veh):	99.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.916

Intersection Setup

Name	Battle Creek Rd			Battle Creek Rd			Kuebler Blvd			Kuebler Blvd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	150.00	275.00	100.00	275.00	350.00	100.00	350.00	250.00	100.00	250.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Battle Creek Rd			Battle Creek Rd			Kuebler Blvd			Kuebler Blvd		
Base Volume Input [veh/h]	93	157	149	127	316	171	88	1056	76	242	1592	162
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	3.00	1.10	1.10	1.10	3.90	3.90	3.90	1.50	1.50	1.50
Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	0	0	6	17	28	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	100	179	161	137	347	202	123	1140	82	261	1719	175
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	47	42	36	90	53	32	297	21	68	448	46
Total Analysis Volume [veh/h]	104	186	168	143	361	210	128	1188	85	272	1791	182
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	23	0	15	26	0	35	60	0	12	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	19	19	11	22	22	11	56	56	8	53	53
g / C, Green / Cycle	0.07	0.17	0.17	0.10	0.20	0.20	0.10	0.51	0.51	0.07	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.07	0.06	0.12	0.09	0.21	0.15	0.08	0.38	0.06	0.17	0.56	0.13
s, saturation flow rate [veh/h]	1590	3179	1419	1614	1695	1441	1578	3156	1409	1609	3217	1436
c, Capacity [veh/h]	116	553	247	162	341	290	155	1602	715	117	1552	693
d1, Uniform Delay [s]	50.60	39.87	42.58	48.88	43.94	41.09	48.70	21.37	14.18	51.00	28.46	16.87
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.17	0.15	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.49	1.64	14.16	14.49	65.06	14.61	10.57	0.69	0.07	603.65	71.69	0.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.34	0.68	0.89	1.06	0.72	0.83	0.74	0.12	2.32	1.15	0.26
d, Delay for Lane Group [s/veh]	71.09	41.51	56.74	63.36	109.00	55.70	59.27	22.07	14.26	654.65	100.16	17.07
Lane Group LOS	E	D	E	E	F	E	E	C	B	F	F	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	3.49	2.34	5.23	4.51	15.36	6.47	3.89	11.72	1.11	22.87	34.82	2.73
50th-Percentile Queue Length [ft]	87.27	58.41	130.86	112.81	383.95	161.80	97.31	292.94	27.81	571.64	870.57	68.22
95th-Percentile Queue Length [veh]	6.28	4.21	8.99	8.00	22.46	10.64	7.01	17.33	2.00	36.75	49.40	4.91
95th-Percentile Queue Length [ft]	157.09	105.14	224.67	199.90	561.53	266.11	175.15	433.29	50.07	918.78	1234.94	122.80

Movement, Approach, & Intersection Results

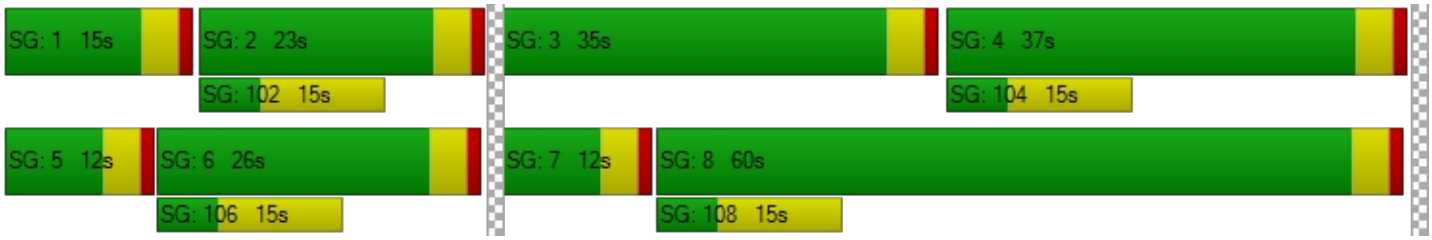
d_M, Delay for Movement [s/veh]	71.09	41.51	56.74	63.36	109.00	55.70	59.27	22.07	14.26	654.65	100.16	17.07
Movement LOS	E	D	E	E	F	E	E	C	B	F	F	B
d_A, Approach Delay [s/veh]	53.81			84.19			24.99			160.60		
Approach LOS	D			F			C			F		
d_I, Intersection Delay [s/veh]	99.69											
Intersection LOS	F											
Intersection V/C	0.916											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	46.37	46.37	46.37	46.37
l_p,int, Pedestrian LOS Score for Intersection	2.540	2.547	3.034	3.072
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	345	400	1018	600
d_b, Bicycle Delay [s]	37.64	35.20	13.25	26.95
l_b,int, Bicycle LOS Score for Intersection	1.937	2.738	2.715	3.412
Bicycle LOS	A	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 42: Reed at Site Access

Control Type:	Two-way stop	Delay (sec / veh):	11.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.002

Intersection Setup

Name	Reed Rd		Reed Rd		Site Access	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Reed Rd		Reed Rd		Site Access	
Base Volume Input [veh/h]	69	0	0	246	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	1	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	75	0	0	266	1	4
Peak Hour Factor	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	0	0	79	0	1
Total Analysis Volume [veh/h]	89	0	0	317	1	5
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	7.39	0.00	11.02	8.74
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.00	0.02	0.02
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	0.00	0.52	0.52
d_A, Approach Delay [s/veh]	0.00		0.00		9.12	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.13					
Intersection LOS	B					

18-392 Strong at 27th Subdivision TIA

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Scenario 6 PM Dev 2023 Ph 2
6/19/2018

Turning Movement Volume: Summary

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
1	Battle Creek Rd at Reed Rd	213	51	11	476	333	64	1148

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
6	Battle Creek Rd at Site Access	440	37	7	681	23	3	1191

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
11	Reed Rd at Strong Rd	77	1	103	260	5	13	459

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Reed Rd at Fairview Industrial Dr	70	5	24	9	10	18	10	257	238	82	289	2	1014

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
21	Fairview Industrial Dr at Marietta St	11	145	408	44	11	8	627

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
26	East Access at Strong Rd	119	9	2	22	41	15	208

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
31	27th Ave at Marietta St	54	11	4	135	46	7	257

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
36	27th at Kuebler Blvd	1	2	68	126	20	43	12	1412	2	111	2077	58	3932

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
41	Keubler Blvd at Battle Creek Rd	100	179	161	137	347	202	123	1140	82	261	1719	175	4626

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
42	Reed at Site Access	75	0	0	266	1	4	346

18-392 Strong at 27th Subdivision TIA

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Report File: J:\...\18-392 PM Dev Ph 2.pdf

Scenario 6 PM Dev 2023 Ph 2
6/19/2018

Turning Movement Volume: Detail

ID	Intersection Name	Volume Type	Southbound		Eastbound		Westbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
1	Battle Creek Rd at Reed Rd	Final Base	197	46	10	434	306	59	1052
		Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	1	0	7	3	0	11
		Other	0	0	0	0	0	0	0
		Future Total	**213**	**51**	**11**	**476**	**333**	**64**	**1148**

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
6	Battle Creek Rd at Site Access	Final Base	407	0	0	631	0	0	1038
		Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	37	7	0	23	3	70
		Other	0	0	0	0	0	0	0
		Future Total	**440**	**37**	**7**	**681**	**23**	**3**	**1191**

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
11	Reed Rd at Strong Rd	Final Base	68	1	87	241	5	10	412
		Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	4	0	9	0	0	2	15
		Other	0	0	0	0	0	0	0
		Future Total	**77**	**1**	**103**	**260**	**5**	**13**	**459**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Reed Rd at Fairview Industrial Dr	Final Base	59	5	22	8	9	17	9	238	212	76	268	2	925
		Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	6	0	0	0	0	0	0	0	9	0	0	0	15
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**70**	**5**	**24**	**9**	**10**	**18**	**10**	**257**	**238**	**82**	**289**	**2**	**1014**

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
21	Fairview Industrial Dr at Marietta St	Final Base	5	134	378	41	10	5	573
		Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	6	0	0	0	0	3	9
		Other	0	0	0	0	0	0	0
		Future Total	**11**	**145**	**408**	**44**	**11**	**8**	**627**

ID	Intersection Name	Volume Type	Southbound		Eastbound		Westbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
26	East Access at Strong Rd	Final Base	110	0	0	0	0	14	124
		Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	9	2	22	41	0	74
		Other	0	0	0	0	0	0	0
		Future Total	**119**	**9**	**2**	**22**	**41**	**15**	**208**

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
31	27th Ave at Marietta St	Final Base	18	10	1	107	43	1	180
		Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	35	0	3	19	0	6	63
		Other	0	0	0	0	0	0	0
		Future Total	**54**	**11**	**4**	**135**	**46**	**7**	**257**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
36	27th at Kuebler Blvd	Final Base	1	0	63	100	18	40	11	1307	2	103	1923	23	3591
		Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	2	0	18	1	0	0	0	0	0	0	33	54
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**1**	**2**	**68**	**126**	**20**	**43**	**12**	**1412**	**2**	**111**	**2077**	**58**	**3932**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
41	Keubler Blvd at Battle Creek Rd	Final Base	93	157	149	127	316	171	88	1056	76	242	1592	162	4229
		Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	9	0	0	6	17	28	0	0	0	0	0	60
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**100**	**179**	**161**	**137**	**347**	**202**	**123**	**1140**	**82**	**261**	**1719**	**175**	**4626**

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
42	Reed at Site Access	Final Base	69	0	0	246	0	0	315
		Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	1	4	5
		Other	0	0	0	0	0	0	0
		Future Total	**75**	**0**	**0**	**266**	**1**	**4**	**346**

Signal Warrants Report For Intersection 1: Battle Creek Rd at Reed Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	N
1	397	487	264
2	381	468	253
3	373	458	248
4	318	390	211
5	302	370	201
6	270	331	180
7	250	307	166
8	238	292	158
9	191	234	127
10	179	219	119
11	179	219	119
12	171	209	114
13	155	190	103
14	143	175	95
15	143	175	95
16	139	170	92
17	79	97	53
18	44	54	29
19	40	49	26
20	16	19	11
21	12	15	8
22	12	15	8
23	8	10	5
24	8	10	5

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	884	2	264	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
2	2	849	2	253	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
3	2	831	2	248	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
4	2	708	2	211	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
5	2	672	2	201	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
6	2	601	2	180	No	Yes	Yes	Yes	No	No	No	Yes	No	No
7	2	557	2	166	No	Yes	Yes	Yes	No	No	No	Yes	No	No
8	2	530	2	158	No	No	Yes	Yes	No	No	No	Yes	No	No
9	2	425	2	127	No	No	No	Yes	No	No	No	No	No	No
10	2	398	2	119	No	No	No	Yes	No	No	No	No	No	No
11	2	398	2	119	No	No	No	Yes	No	No	No	No	No	No
12	2	380	2	114	No	No	No	Yes	No	No	No	No	No	No
13	2	345	2	103	No	No	No	No	No	No	No	No	No	No
14	2	318	2	95	No	No	No	No	No	No	No	No	No	No
15	2	318	2	95	No	No	No	No	No	No	No	No	No	No
16	2	309	2	92	No	No	No	No	No	No	No	No	No	No
17	2	176	2	53	No	No	No	No	No	No	No	No	No	No
18	2	98	2	29	No	No	No	No	No	No	No	No	No	No
19	2	89	2	26	No	No	No	No	No	No	No	No	No	No
20	2	35	2	11	No	No	No	No	No	No	No	No	No	No
21	2	27	2	8	No	No	No	No	No	No	No	No	No	No
22	2	27	2	8	No	No	No	No	No	No	No	No	No	No
23	2	18	2	5	No	No	No	No	No	No	No	No	No	No
24	2	18	2	5	No	No	No	No	No	No	No	No	No	No
Hours Met					5	7	8	12	0	3	5	8	1	0

Warrant 3 Condition A

Orientation	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	45
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	3:17
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	264
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1148
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 6: Battle Creek Rd at Site Access

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	E
1	477	688	26
2	458	660	25
3	448	647	24
4	382	550	21
5	363	523	20
6	324	468	18
7	301	433	16
8	286	413	16
9	229	330	12
10	215	310	12
11	215	310	12
12	205	296	11
13	186	268	10
14	172	248	9
15	172	248	9
16	167	241	9
17	95	138	5
18	52	76	3
19	48	69	3
20	19	28	1
21	14	21	1
22	14	21	1
23	10	14	1
24	10	14	1

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	1165	1	26	No	No	No	No	No	No	No	No	No	No
2	2	1118	1	25	No	No	No	No	No	No	No	No	No	No
3	2	1095	1	24	No	No	No	No	No	No	No	No	No	No
4	2	932	1	21	No	No	No	No	No	No	No	No	No	No
5	2	886	1	20	No	No	No	No	No	No	No	No	No	No
6	2	792	1	18	No	No	No	No	No	No	No	No	No	No
7	2	734	1	16	No	No	No	No	No	No	No	No	No	No
8	2	699	1	16	No	No	No	No	No	No	No	No	No	No
9	2	559	1	12	No	No	No	No	No	No	No	No	No	No
10	2	525	1	12	No	No	No	No	No	No	No	No	No	No
11	2	525	1	12	No	No	No	No	No	No	No	No	No	No
12	2	501	1	11	No	No	No	No	No	No	No	No	No	No
13	2	454	1	10	No	No	No	No	No	No	No	No	No	No
14	2	420	1	9	No	No	No	No	No	No	No	No	No	No
15	2	420	1	9	No	No	No	No	No	No	No	No	No	No
16	2	408	1	9	No	No	No	No	No	No	No	No	No	No
17	2	233	1	5	No	No	No	No	No	No	No	No	No	No
18	2	128	1	3	No	No	No	No	No	No	No	No	No	No
19	2	117	1	3	No	No	No	No	No	No	No	No	No	No
20	2	47	1	1	No	No	No	No	No	No	No	No	No	No
21	2	35	1	1	No	No	No	No	No	No	No	No	No	No
22	2	35	1	1	No	No	No	No	No	No	No	No	No	No
23	2	24	1	1	No	No	No	No	No	No	No	No	No	No
24	2	24	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	24.6
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:10
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	26
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	1191
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 11: Reed Rd at Strong Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	363	78	18
2	348	75	17
3	341	73	17
4	290	62	14
5	276	59	14
6	247	53	12
7	229	49	11
8	218	47	11
9	174	37	9
10	163	35	8
11	163	35	8
12	156	34	8
13	142	30	7
14	131	28	6
15	131	28	6
16	127	27	6
17	73	16	4
18	40	9	2
19	36	8	2
20	15	3	1
21	11	2	1
22	11	2	1
23	7	2	0
24	7	2	0

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	441	1	18	No	No	No	No	No	No	No	No	No	No
2	2	423	1	17	No	No	No	No	No	No	No	No	No	No
3	2	414	1	17	No	No	No	No	No	No	No	No	No	No
4	2	352	1	14	No	No	No	No	No	No	No	No	No	No
5	2	335	1	14	No	No	No	No	No	No	No	No	No	No
6	2	300	1	12	No	No	No	No	No	No	No	No	No	No
7	2	278	1	11	No	No	No	No	No	No	No	No	No	No
8	2	265	1	11	No	No	No	No	No	No	No	No	No	No
9	2	211	1	9	No	No	No	No	No	No	No	No	No	No
10	2	198	1	8	No	No	No	No	No	No	No	No	No	No
11	2	198	1	8	No	No	No	No	No	No	No	No	No	No
12	2	190	1	8	No	No	No	No	No	No	No	No	No	No
13	2	172	1	7	No	No	No	No	No	No	No	No	No	No
14	2	159	1	6	No	No	No	No	No	No	No	No	No	No
15	2	159	1	6	No	No	No	No	No	No	No	No	No	No
16	2	154	1	6	No	No	No	No	No	No	No	No	No	No
17	2	89	1	4	No	No	No	No	No	No	No	No	No	No
18	2	49	1	2	No	No	No	No	No	No	No	No	No	No
19	2	44	1	2	No	No	No	No	No	No	No	No	No	No
20	2	18	1	1	No	No	No	No	No	No	No	No	No	No
21	2	13	1	1	No	No	No	No	No	No	No	No	No	No
22	2	13	1	1	No	No	No	No	No	No	No	No	No	No
23	2	9	1	0	No	No	No	No	No	No	No	No	No	No
24	2	9	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	11
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:03
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	18
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	459
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 16: Reed Rd at Fairview Industrial Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N, S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	N	S
1	373	505	37	99
2	358	485	36	95
3	351	475	35	93
4	298	404	30	79
5	283	384	28	75
6	254	343	25	67
7	235	318	23	62
8	224	303	22	59
9	179	242	18	48
10	168	227	17	45
11	168	227	17	45
12	160	217	16	43
13	145	197	14	39
14	134	182	13	36
15	134	182	13	36
16	131	177	13	35
17	75	101	7	20
18	41	56	4	11
19	37	51	4	10
20	15	20	1	4
21	11	15	1	3
22	11	15	1	3
23	7	10	1	2
24	7	10	1	2

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	4	878	2	136	No	No	No	Yes	No	Yes	Yes	Yes	No	No
2	4	843	2	131	No	No	No	Yes	No	Yes	Yes	Yes	No	No
3	4	826	2	128	No	No	No	Yes	No	Yes	Yes	Yes	No	No
4	4	702	2	109	No	No	No	No	No	No	Yes	Yes	No	No
5	4	667	2	103	No	No	No	No	No	No	Yes	Yes	No	No
6	4	597	2	92	No	No	No	No	No	No	No	Yes	No	No
7	4	553	2	85	No	No	No	No	No	No	No	Yes	No	No
8	4	527	2	81	No	No	No	No	No	No	No	Yes	No	No
9	4	421	2	66	No	No	No	No	No	No	No	No	No	No
10	4	395	2	62	No	No	No	No	No	No	No	No	No	No
11	4	395	2	62	No	No	No	No	No	No	No	No	No	No
12	4	377	2	59	No	No	No	No	No	No	No	No	No	No
13	4	342	2	53	No	No	No	No	No	No	No	No	No	No
14	4	316	2	49	No	No	No	No	No	No	No	No	No	No
15	4	316	2	49	No	No	No	No	No	No	No	No	No	No
16	4	308	2	48	No	No	No	No	No	No	No	No	No	No
17	4	176	2	27	No	No	No	No	No	No	No	No	No	No
18	4	97	2	15	No	No	No	No	No	No	No	No	No	No
19	4	88	2	14	No	No	No	No	No	No	No	No	No	No
20	4	35	2	5	No	No	No	No	No	No	No	No	No	No
21	4	26	2	4	No	No	No	No	No	No	No	No	No	No
22	4	26	2	4	No	No	No	No	No	No	No	No	No	No
23	4	17	2	3	No	No	No	No	No	No	No	No	No	No
24	4	17	2	3	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	3	0	3	5	8	0	0

Warrant 3 Condition A

Orientation	N	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	20.8	44
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:12	1:12
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	37	99
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1014	1014
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 21: Fairview Industrial Dr at Marietta St

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	156	452	19
2	150	434	18
3	147	425	18
4	125	362	15
5	119	344	14
6	106	307	13
7	98	285	12
8	94	271	11
9	75	217	9
10	70	203	9
11	70	203	9
12	67	194	8
13	61	176	7
14	56	163	7
15	56	163	7
16	55	158	7
17	31	90	4
18	17	50	2
19	16	45	2
20	6	18	1
21	5	14	1
22	5	14	1
23	3	9	0
24	3	9	0

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	3	608	1	19	No	No	No	No	No	No	No	No	No	No
2	3	584	1	18	No	No	No	No	No	No	No	No	No	No
3	3	572	1	18	No	No	No	No	No	No	No	No	No	No
4	3	487	1	15	No	No	No	No	No	No	No	No	No	No
5	3	463	1	14	No	No	No	No	No	No	No	No	No	No
6	3	413	1	13	No	No	No	No	No	No	No	No	No	No
7	3	383	1	12	No	No	No	No	No	No	No	No	No	No
8	3	365	1	11	No	No	No	No	No	No	No	No	No	No
9	3	292	1	9	No	No	No	No	No	No	No	No	No	No
10	3	273	1	9	No	No	No	No	No	No	No	No	No	No
11	3	273	1	9	No	No	No	No	No	No	No	No	No	No
12	3	261	1	8	No	No	No	No	No	No	No	No	No	No
13	3	237	1	7	No	No	No	No	No	No	No	No	No	No
14	3	219	1	7	No	No	No	No	No	No	No	No	No	No
15	3	219	1	7	No	No	No	No	No	No	No	No	No	No
16	3	213	1	7	No	No	No	No	No	No	No	No	No	No
17	3	121	1	4	No	No	No	No	No	No	No	No	No	No
18	3	67	1	2	No	No	No	No	No	No	No	No	No	No
19	3	61	1	2	No	No	No	No	No	No	No	No	No	No
20	3	24	1	1	No	No	No	No	No	No	No	No	No	No
21	3	19	1	1	No	No	No	No	No	No	No	No	No	No
22	3	19	1	1	No	No	No	No	No	No	No	No	No	No
23	3	12	1	0	No	No	No	No	No	No	No	No	No	No
24	3	12	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.9
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:04
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	19
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	627
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 26: East Access at Strong Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	N	W
1	56	128	24
2	54	123	23
3	53	120	23
4	45	102	19
5	43	97	18
6	38	87	16
7	35	81	15
8	34	77	14
9	27	61	12
10	25	58	11
11	25	58	11
12	24	55	10
13	22	50	9
14	20	46	9
15	20	46	9
16	20	45	8
17	11	26	5
18	6	14	3
19	6	13	2
20	2	5	1
21	2	4	1
22	2	4	1
23	1	3	0
24	1	3	0

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	184	1	24	No	No	No	No	No	No	No	No	No	No
2	2	177	1	23	No	No	No	No	No	No	No	No	No	No
3	2	173	1	23	No	No	No	No	No	No	No	No	No	No
4	2	147	1	19	No	No	No	No	No	No	No	No	No	No
5	2	140	1	18	No	No	No	No	No	No	No	No	No	No
6	2	125	1	16	No	No	No	No	No	No	No	No	No	No
7	2	116	1	15	No	No	No	No	No	No	No	No	No	No
8	2	111	1	14	No	No	No	No	No	No	No	No	No	No
9	2	88	1	12	No	No	No	No	No	No	No	No	No	No
10	2	83	1	11	No	No	No	No	No	No	No	No	No	No
11	2	83	1	11	No	No	No	No	No	No	No	No	No	No
12	2	79	1	10	No	No	No	No	No	No	No	No	No	No
13	2	72	1	9	No	No	No	No	No	No	No	No	No	No
14	2	66	1	9	No	No	No	No	No	No	No	No	No	No
15	2	66	1	9	No	No	No	No	No	No	No	No	No	No
16	2	65	1	8	No	No	No	No	No	No	No	No	No	No
17	2	37	1	5	No	No	No	No	No	No	No	No	No	No
18	2	20	1	3	No	No	No	No	No	No	No	No	No	No
19	2	19	1	2	No	No	No	No	No	No	No	No	No	No
20	2	7	1	1	No	No	No	No	No	No	No	No	No	No
21	2	6	1	1	No	No	No	No	No	No	No	No	No	No
22	2	6	1	1	No	No	No	No	No	No	No	No	No	No
23	2	4	1	0	No	No	No	No	No	No	No	No	No	No
24	2	4	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.7
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:04
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	24
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	208
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 31: 27th Ave at Marietta St

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	139	65	53
2	133	62	51
3	131	61	50
4	111	52	42
5	106	49	40
6	95	44	36
7	88	41	33
8	83	39	32
9	67	31	25
10	63	29	24
11	63	29	24
12	60	28	23
13	54	25	21
14	50	23	19
15	50	23	19
16	49	23	19
17	28	13	11
18	15	7	6
19	14	7	5
20	6	3	2
21	4	2	2
22	4	2	2
23	3	1	1
24	3	1	1

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	204	1	53	No	No	No	No	No	No	No	No	No	No
2	2	195	1	51	No	No	No	No	No	No	No	No	No	No
3	2	192	1	50	No	No	No	No	No	No	No	No	No	No
4	2	163	1	42	No	No	No	No	No	No	No	No	No	No
5	2	155	1	40	No	No	No	No	No	No	No	No	No	No
6	2	139	1	36	No	No	No	No	No	No	No	No	No	No
7	2	129	1	33	No	No	No	No	No	No	No	No	No	No
8	2	122	1	32	No	No	No	No	No	No	No	No	No	No
9	2	98	1	25	No	No	No	No	No	No	No	No	No	No
10	2	92	1	24	No	No	No	No	No	No	No	No	No	No
11	2	92	1	24	No	No	No	No	No	No	No	No	No	No
12	2	88	1	23	No	No	No	No	No	No	No	No	No	No
13	2	79	1	21	No	No	No	No	No	No	No	No	No	No
14	2	73	1	19	No	No	No	No	No	No	No	No	No	No
15	2	73	1	19	No	No	No	No	No	No	No	No	No	No
16	2	72	1	19	No	No	No	No	No	No	No	No	No	No
17	2	41	1	11	No	No	No	No	No	No	No	No	No	No
18	2	22	1	6	No	No	No	No	No	No	No	No	No	No
19	2	21	1	5	No	No	No	No	No	No	No	No	No	No
20	2	9	1	2	No	No	No	No	No	No	No	No	No	No
21	2	6	1	2	No	No	No	No	No	No	No	No	No	No
22	2	6	1	2	No	No	No	No	No	No	No	No	No	No
23	2	4	1	1	No	No	No	No	No	No	No	No	No	No
24	2	4	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.6
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:09
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	53
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	257
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 42: Reed at Site Access

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	266	75	5
2	255	72	5
3	250	71	5
4	213	60	4
5	202	57	4
6	181	51	3
7	168	47	3
8	160	45	3
9	128	36	2
10	120	34	2
11	120	34	2
12	114	32	2
13	104	29	2
14	96	27	2
15	96	27	2
16	93	26	2
17	53	15	1
18	29	8	1
19	27	8	1
20	11	3	0
21	8	2	0
22	8	2	0
23	5	2	0
24	5	2	0

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	341	1	5	No	No	No	No	No	No	No	No	No	No
2	2	327	1	5	No	No	No	No	No	No	No	No	No	No
3	2	321	1	5	No	No	No	No	No	No	No	No	No	No
4	2	273	1	4	No	No	No	No	No	No	No	No	No	No
5	2	259	1	4	No	No	No	No	No	No	No	No	No	No
6	2	232	1	3	No	No	No	No	No	No	No	No	No	No
7	2	215	1	3	No	No	No	No	No	No	No	No	No	No
8	2	205	1	3	No	No	No	No	No	No	No	No	No	No
9	2	164	1	2	No	No	No	No	No	No	No	No	No	No
10	2	154	1	2	No	No	No	No	No	No	No	No	No	No
11	2	154	1	2	No	No	No	No	No	No	No	No	No	No
12	2	146	1	2	No	No	No	No	No	No	No	No	No	No
13	2	133	1	2	No	No	No	No	No	No	No	No	No	No
14	2	123	1	2	No	No	No	No	No	No	No	No	No	No
15	2	123	1	2	No	No	No	No	No	No	No	No	No	No
16	2	119	1	2	No	No	No	No	No	No	No	No	No	No
17	2	68	1	1	No	No	No	No	No	No	No	No	No	No
18	2	37	1	1	No	No	No	No	No	No	No	No	No	No
19	2	35	1	1	No	No	No	No	No	No	No	No	No	No
20	2	14	1	0	No	No	No	No	No	No	No	No	No	No
21	2	10	1	0	No	No	No	No	No	No	No	No	No	No
22	2	10	1	0	No	No	No	No	No	No	No	No	No	No
23	2	7	1	0	No	No	No	No	No	No	No	No	No	No
24	2	7	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.1
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	5
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	346
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

18-392 Strong at 27th Subdivision TIA

Vistro File: J:\...\18-392 Reed Rd Subdivision - TIA.vistro
Report File: J:\...\18-392 PM Dev Ph 2.pdf

Scenario 6 PM Dev 2023 Ph 2
6/19/2018

Trip Generation summary

Added Trips

Zone ID: Name	Land Use variables	Code	Ind. Var.	Rate	Quantity	% In	% Out	Trips In	Trips Out	Total Trips	% of Total Trips
1: 18-392 Reed Rd Sub	Homes	ITE 210	Home	0.990	150.000	63.00	37.00	93	55	148	100.00
					Added Trips Total			**93**	**55**	**148**	**100.00**

18-392 Strong at 27th Subdivision TIA

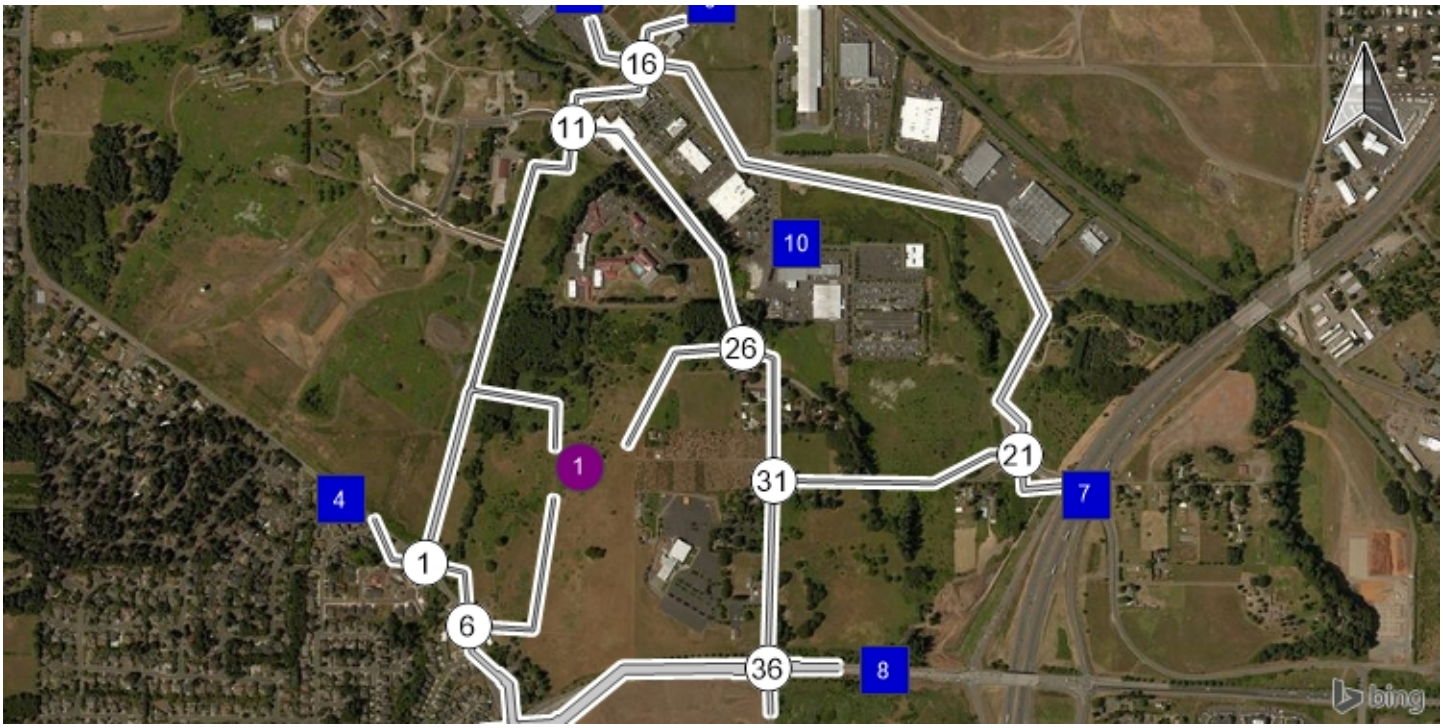
Vistro File: J:\...\18-392 Reed Rd Subdivision - TIA.vistro
Report File: J:\...\18-392 PM Dev Ph 2.pdf

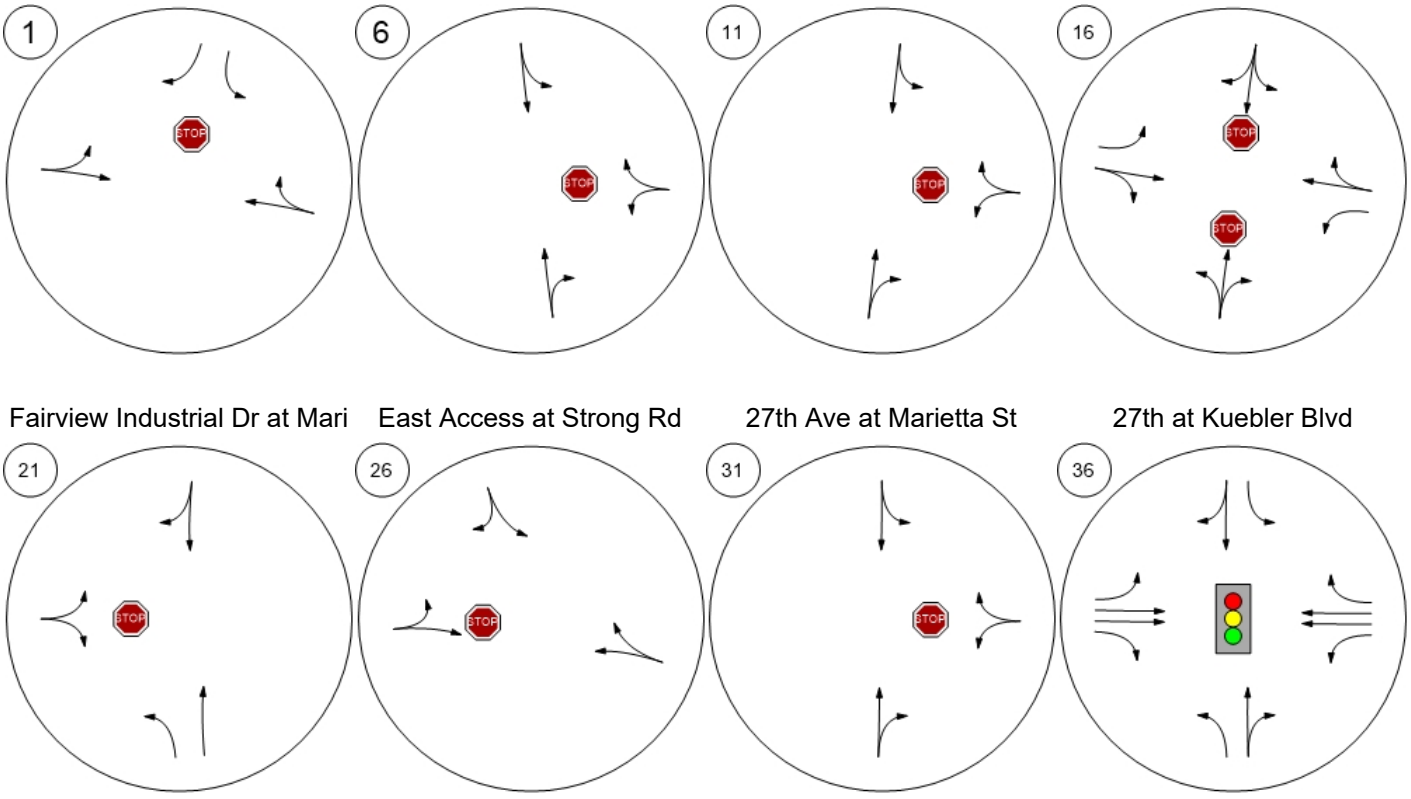
Scenario 6 PM Dev 2023 Ph 2
6/19/2018

Trip Distribution summary

Zone / Gate	Zone 1: 18-392 Reed Rd Sub			
	To 18-392 Reed Rd Sub:		From 18-392 Reed Rd Sub:	
	Share %	Trips	Share %	Trips
2: Gate	10.00	9	10.00	6
3: Gate	30.00	28	30.00	17
4: Gate	7.00	7	7.00	4
5: Gate	10.00	9	10.00	6
6: Gate	0.00	0	0.00	0
7: Gate	6.00	6	6.00	3
8: Gate	35.00	33	35.00	18
9: Gate	2.00	2	2.00	1
10: Gate	0.00	0	0.00	0
Total	**100.00**	**94**	**100.00**	**55**

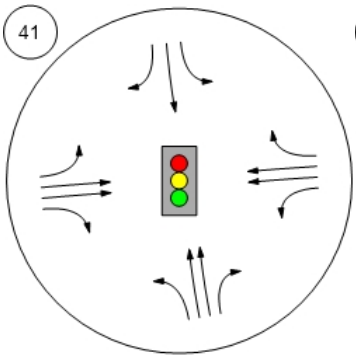
Report Figure 1: Lane Configuration and Traffic Control



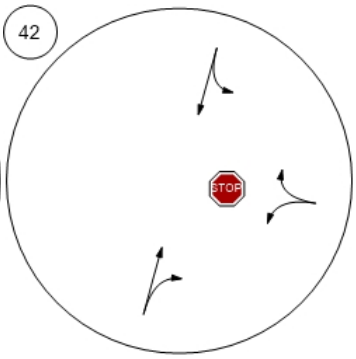


Report Figure 1: Lane Configuration and Traffic Control

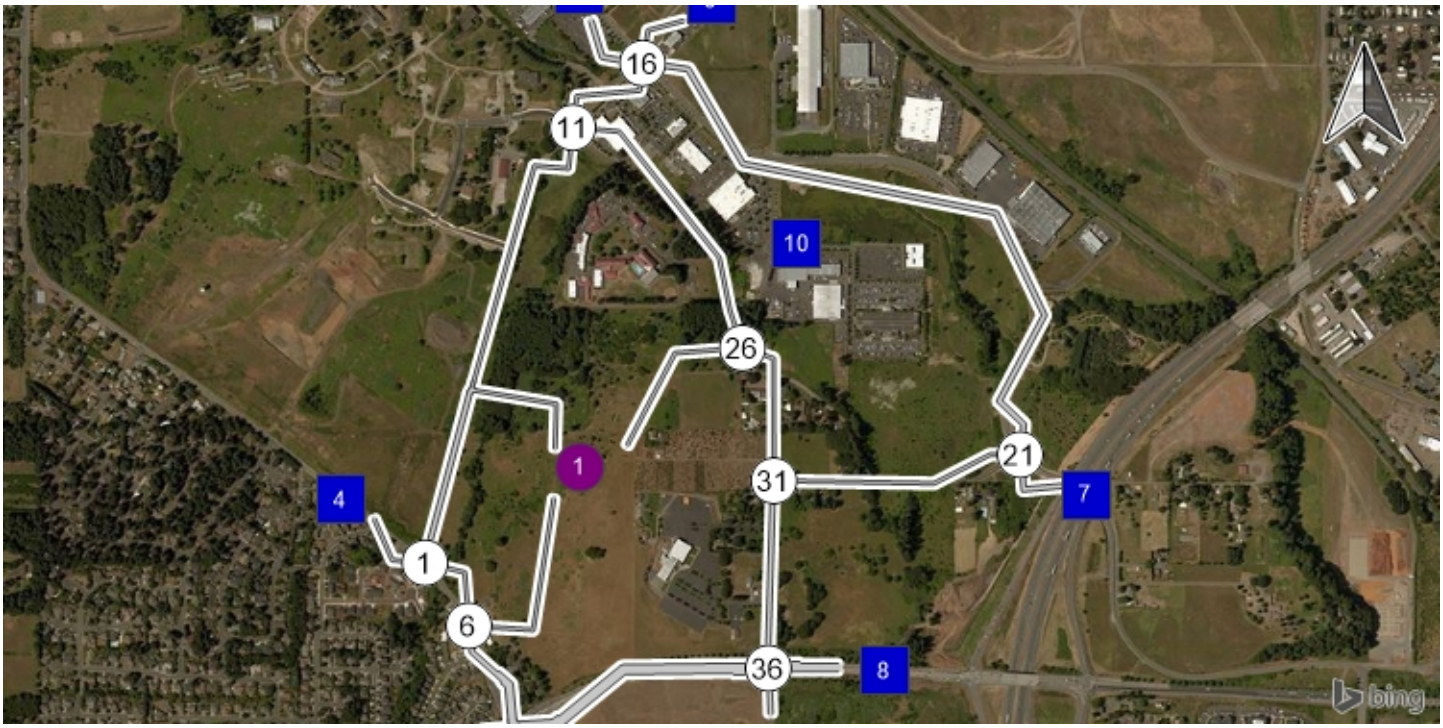
Keubler Blvd at Battle Creek



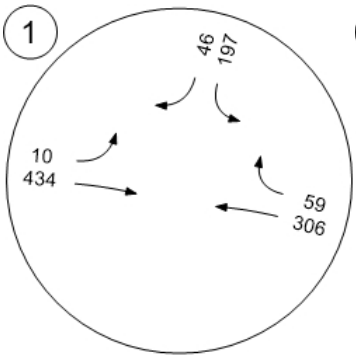
Reed at Site Access



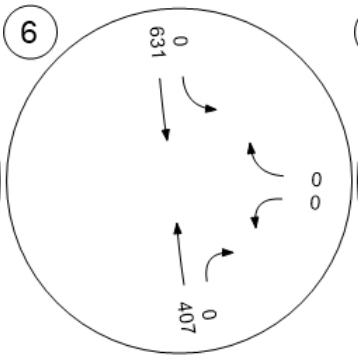
Report Figure 2a: Traffic Volume - Base Volume



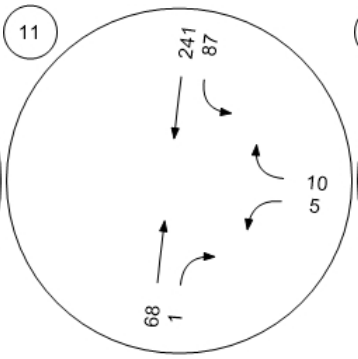
Battle Creek Rd at Reed Rd



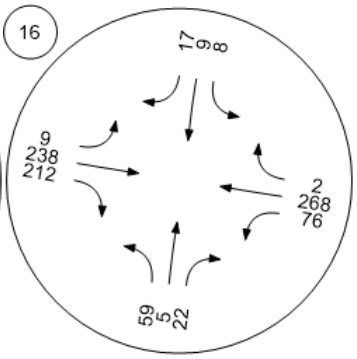
Battle Creek Rd at Site Acces



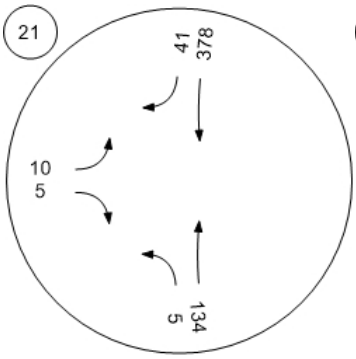
Reed Rd at Strong Rd



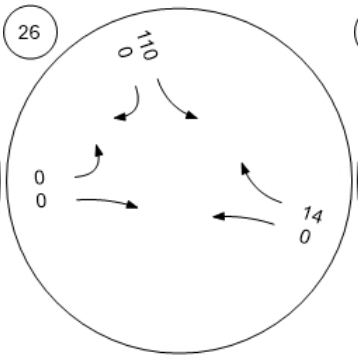
Reed Rd at Fairview Industria



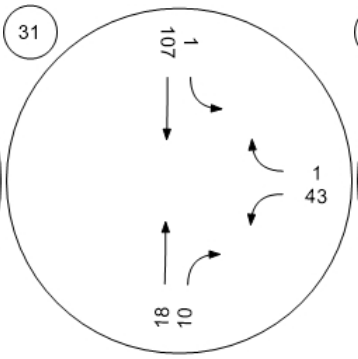
Fairview Industrial Dr at Mari



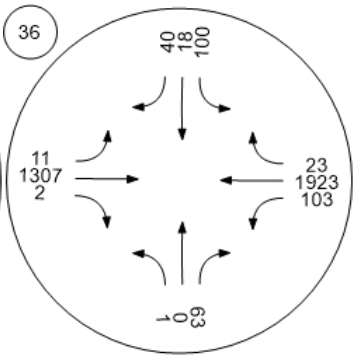
East Access at Strong Rd



27th Ave at Marietta St

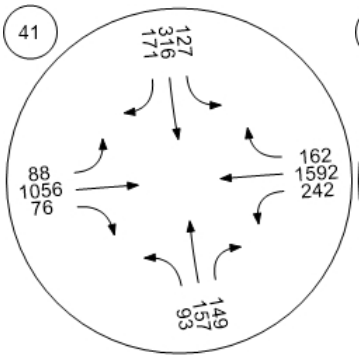


27th at Kuebler Blvd

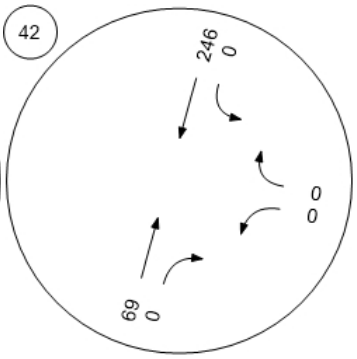


Report Figure 2a: Traffic Volume - Base Volume

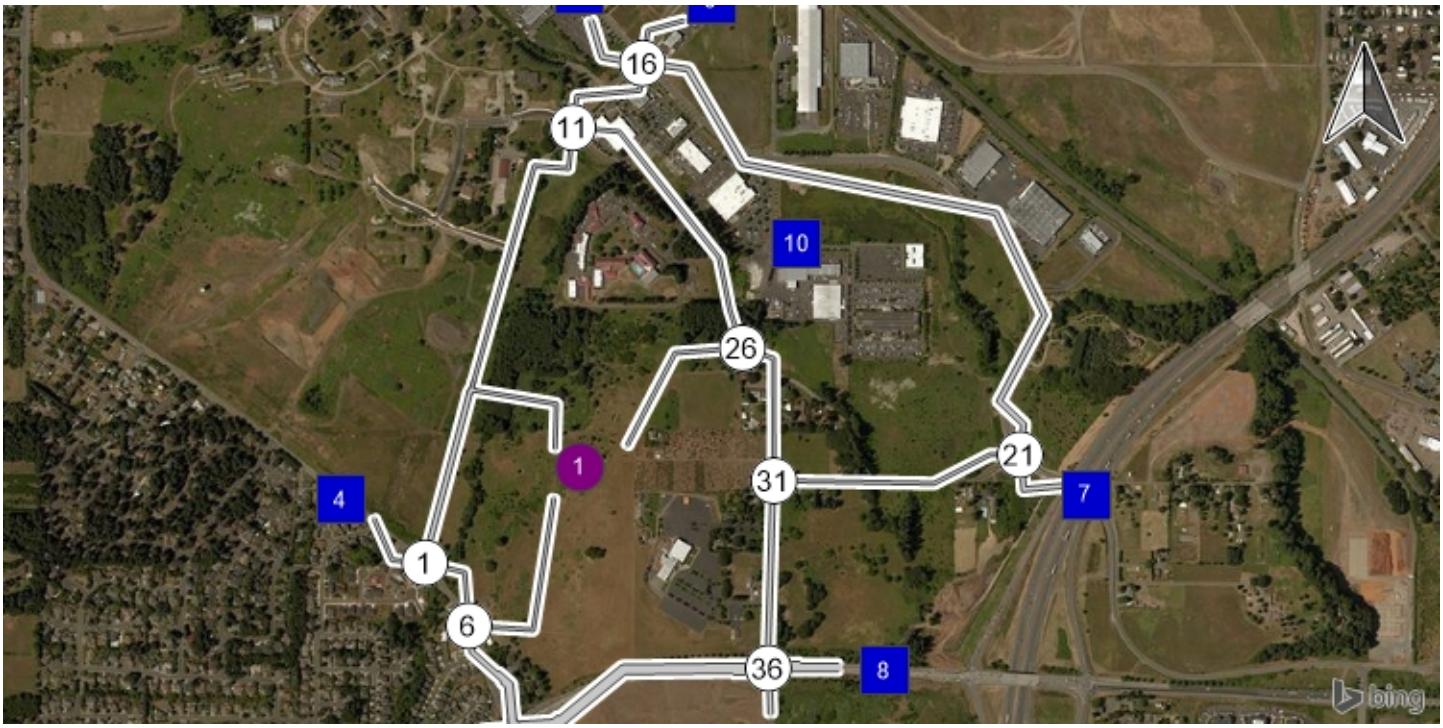
Keubler Blvd at Battle Creek



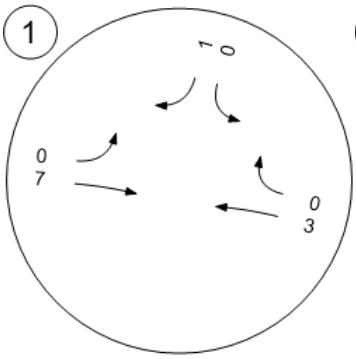
Reed at Site Access



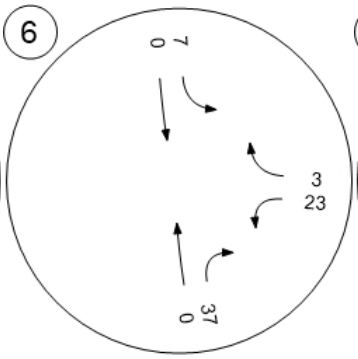
Report Figure 2d: Traffic Volume - Net New Site Trips



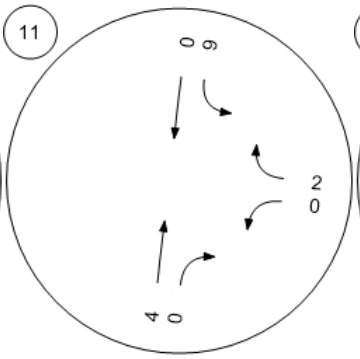
Battle Creek Rd at Reed Rd



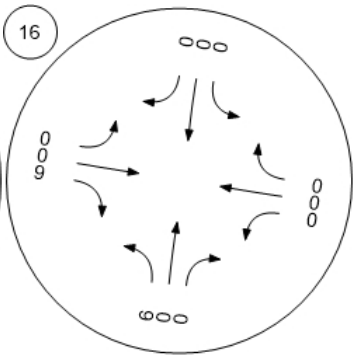
Battle Creek Rd at Site Acces



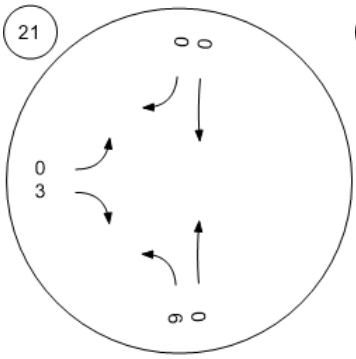
Reed Rd at Strong Rd



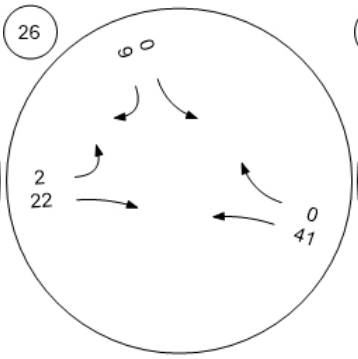
Reed Rd at Fairview Industria



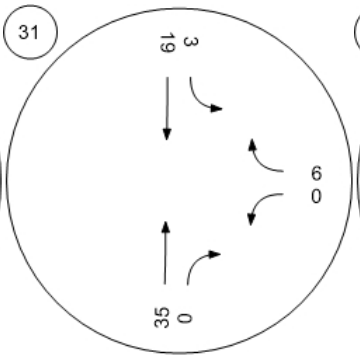
Fairview Industrial Dr at Mari



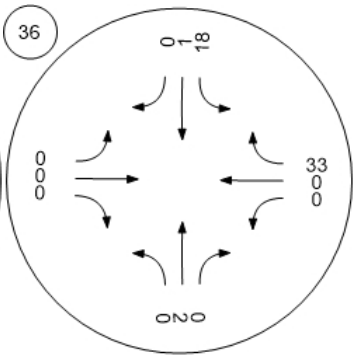
East Access at Strong Rd



27th Ave at Marietta St

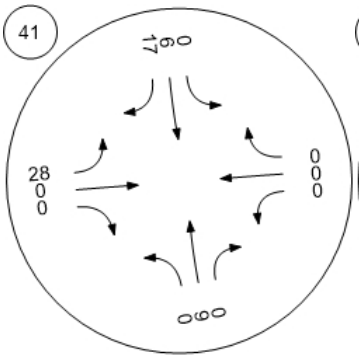


27th at Kuebler Blvd

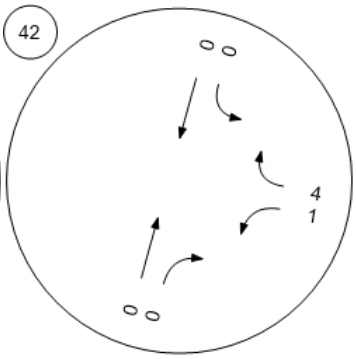


Report Figure 2d: Traffic Volume - Net New Site Trips

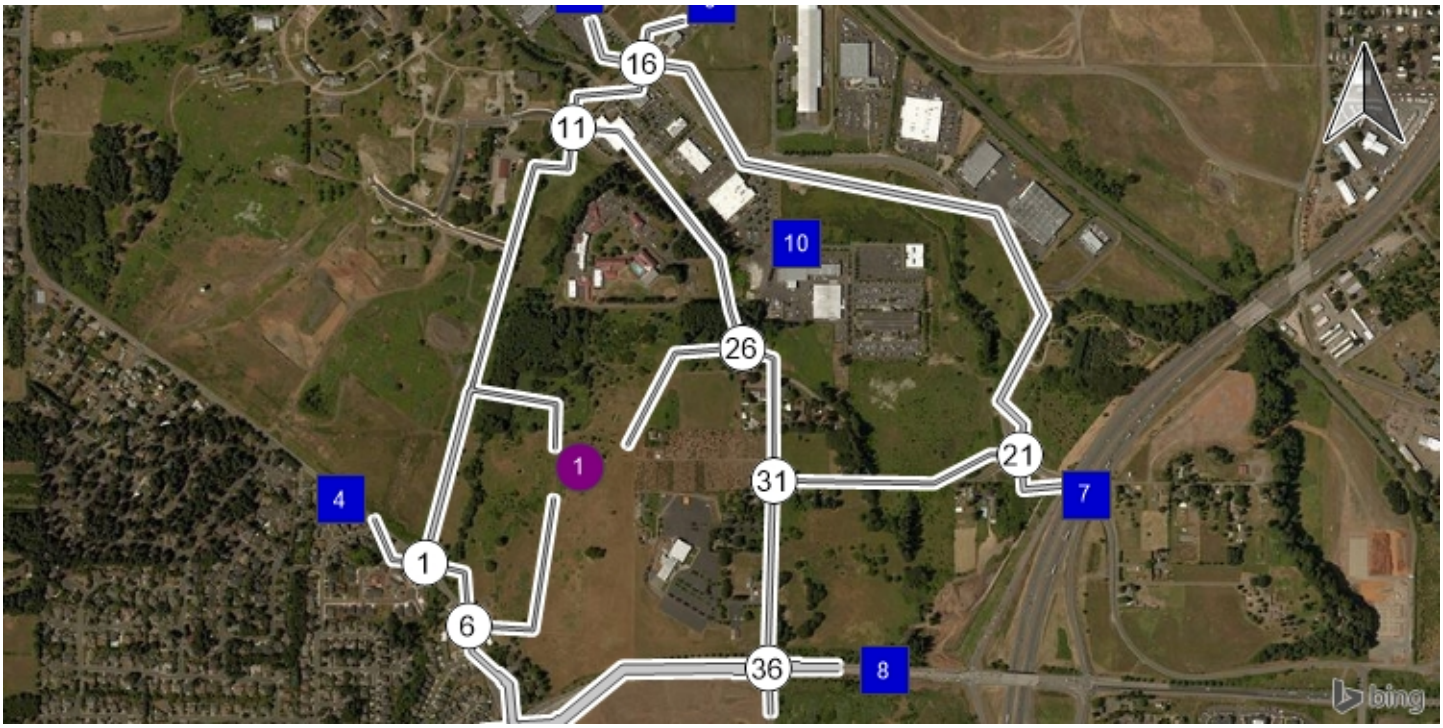
Keubler Blvd at Battle Creek



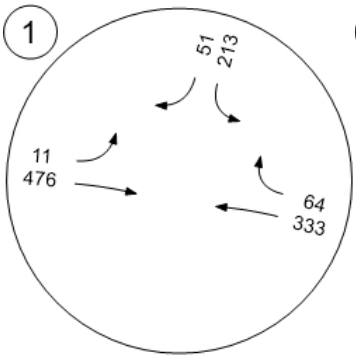
Reed at Site Access



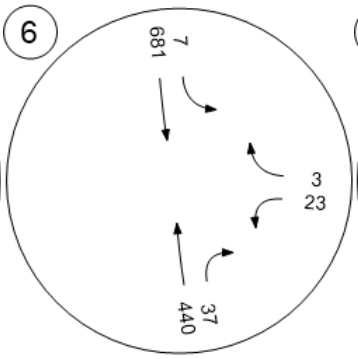
Report Figure 2f: Traffic Volume - Future Total Volume



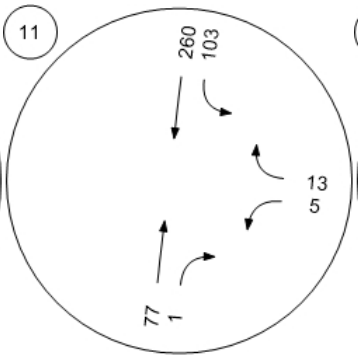
Battle Creek Rd at Reed Rd



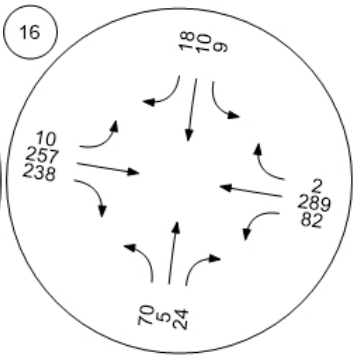
Battle Creek Rd at Site Acces



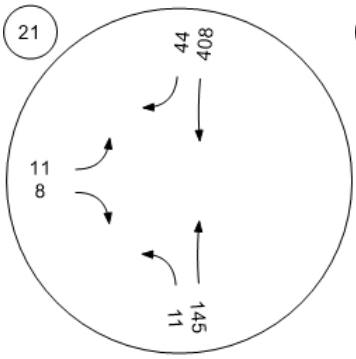
Reed Rd at Strong Rd



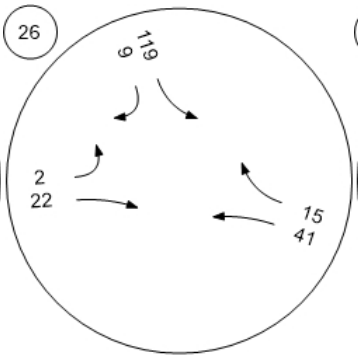
Reed Rd at Fairview Industria



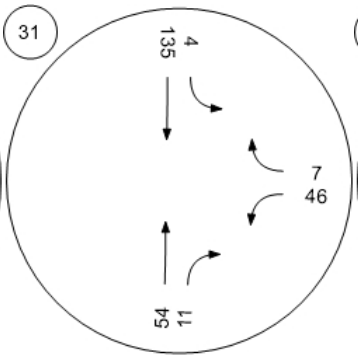
Fairview Industrial Dr at Mari



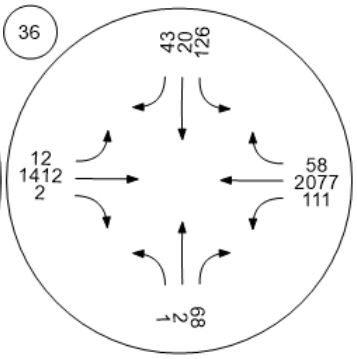
East Access at Strong Rd



27th Ave at Marietta St

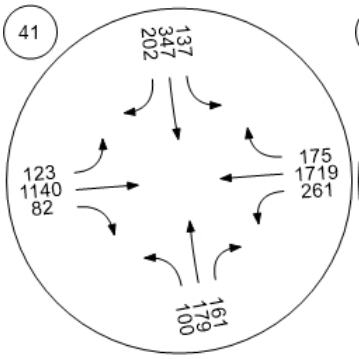


27th at Kuebler Blvd

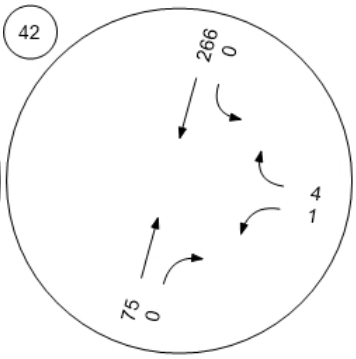


Report Figure 2f: Traffic Volume - Future Total Volume

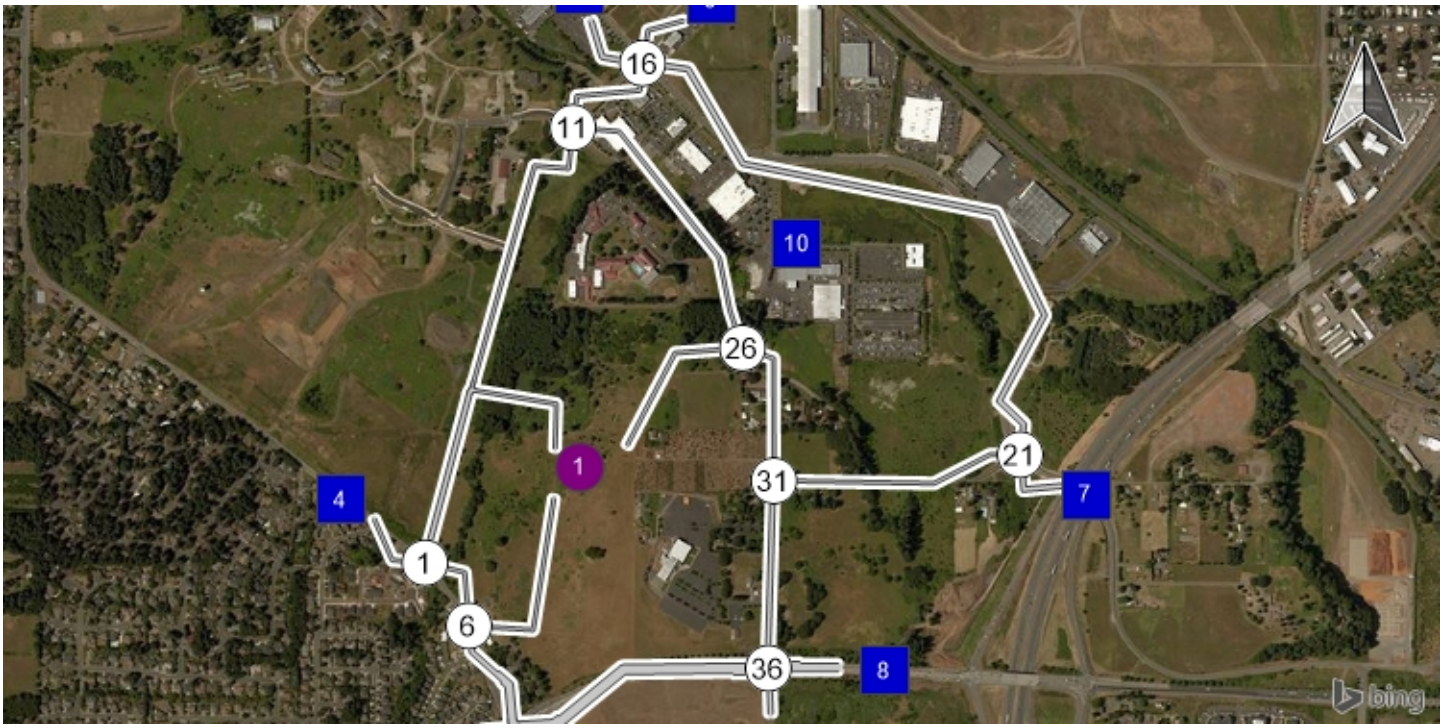
Keubler Blvd at Battle Creek

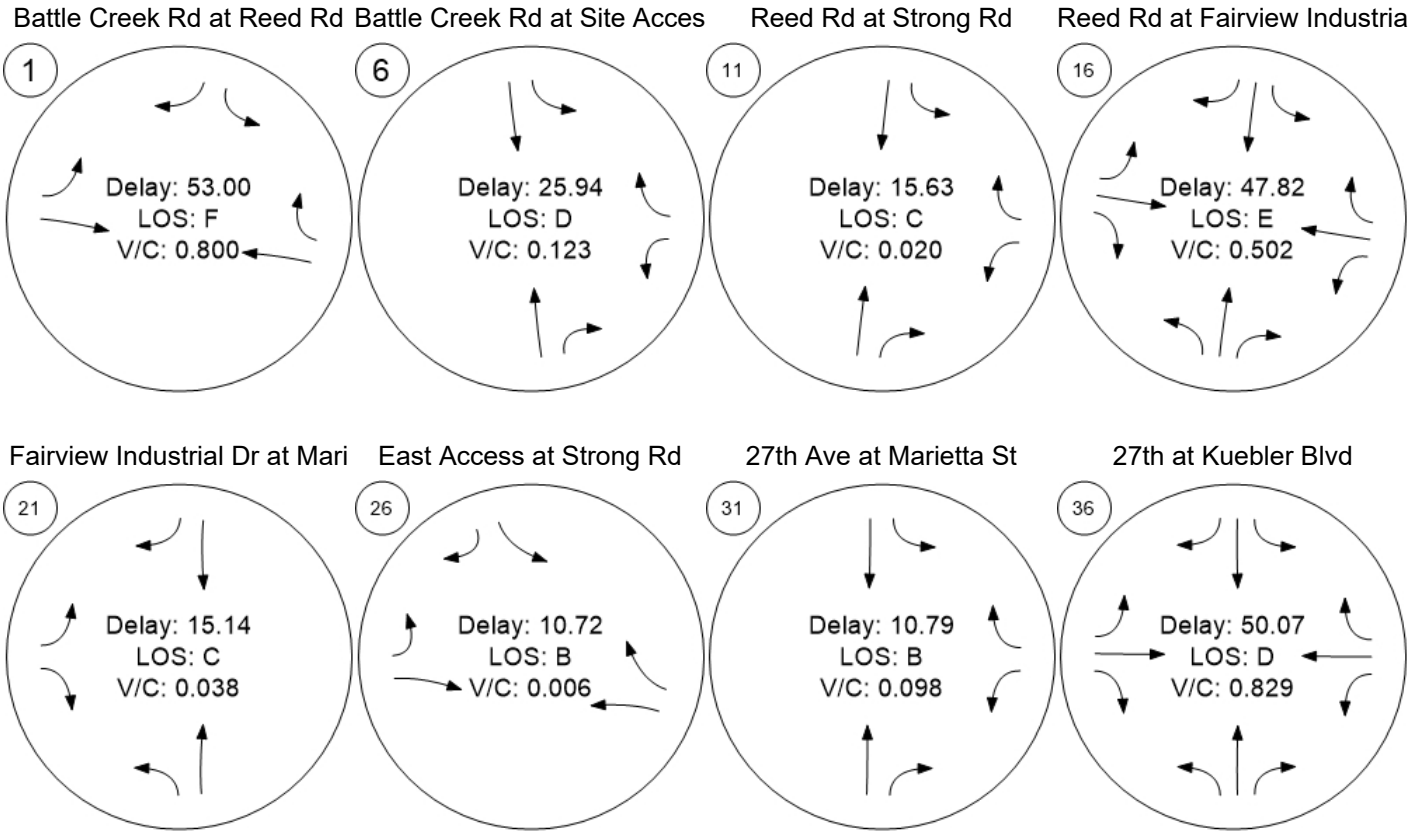


Reed at Site Access



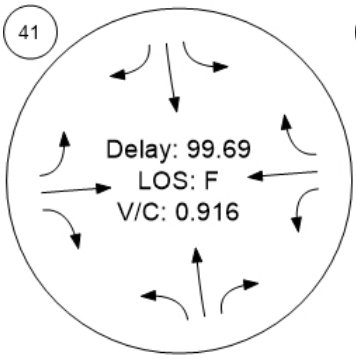
Report Figure 3: Traffic Conditions



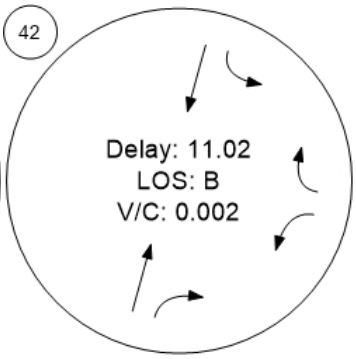


Report Figure 3: Traffic Conditions

Keubler Blvd at Battle Creek



Reed at Site Access



18-392 Strong at 27th Subdivision TIA

Vistro File: J:\...\18-392 Reed Rd Subdivision - TIA.vistro
Report File: J:\...\18-392 PM Dev Ph 3.pdf

Scenario 8 PM Dev 2026 Ph 3
6/19/2018

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Battle Creek Rd at Reed Rd	Two-way stop	HCM 6th Edition	SB Left	0.891	70.7	F
6	Battle Creek Rd at Site Access	Two-way stop	HCM 6th Edition	WB Left	0.200	30.5	D
11	Reed Rd at Strong Rd	Two-way stop	HCM 6th Edition	WB Left	0.025	16.5	C
16	Reed Rd at Fairview Industrial Dr	All-way stop	HCM 6th Edition	WB Thru	0.612	14.1	B
21	Fairview Industrial Dr at Marietta St	Two-way stop	HCM 6th Edition	EB Left	0.040	15.8	C
26	East Access at Strong Rd	Two-way stop	HCM 6th Edition	EB Left	0.006	11.3	B
31	27th Ave at Marietta St	Two-way stop	HCM 6th Edition	WB Left	0.112	11.4	B
36	27th at Kuebler Blvd	Signalized	HCM 6th Edition	SB Left	0.875	64.5	E
41	Keubler Blvd at Battle Creek Rd	Signalized	HCM 6th Edition	WB Left	0.968	118.6	F
42	Reed at Site Access	Two-way stop	HCM 6th Edition	WB Left	0.002	11.2	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Battle Creek Rd at Reed Rd

Control Type:	Two-way stop	Delay (sec / veh):	70.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.891

Intersection Setup

Name	Reed Rd		Battle Creek Rd		Battle Creek Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Reed Rd		Battle Creek Rd		Battle Creek Rd	
Base Volume Input [veh/h]	197	46	10	434	306	59
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.20	1.20	1.80	1.80	3.00	3.00
Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	0	10	5	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	223	53	11	500	351	67
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	61	14	3	136	95	18
Total Analysis Volume [veh/h]	242	58	12	543	382	73
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.89	0.09	0.01	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	70.66	11.22	8.29	0.00	0.00	0.00
Movement LOS	F	B	A	A	A	A
95th-Percentile Queue Length [veh]	7.86	0.30	2.90	2.90	0.00	0.00
95th-Percentile Queue Length [ft]	196.38	7.49	72.40	72.40	0.00	0.00
d_A, Approach Delay [s/veh]	59.17		0.18		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	13.63					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 6: Battle Creek Rd at Site Access

Control Type:	Two-way stop	Delay (sec / veh):	30.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.200

Intersection Setup

Name	Battle Creek Rd		Battle Creek Rd		Site Access	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Battle Creek Rd		Battle Creek Rd		Site Access	
Base Volume Input [veh/h]	407	0	0	631	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	56	10	0	33	5
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	460	56	10	713	33	5
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	122	15	3	190	9	1
Total Analysis Volume [veh/h]	489	60	11	759	35	5
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.01	0.20	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	8.57	0.00	30.54	16.39
Movement LOS	A	A	A	A	D	C
95th-Percentile Queue Length [veh]	0.00	0.00	7.45	7.45	0.76	0.76
95th-Percentile Queue Length [ft]	0.00	0.00	186.18	186.18	19.10	19.10
d_A, Approach Delay [s/veh]	0.00		0.12		28.78	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	0.92					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 11: Reed Rd at Strong Rd

Control Type:	Two-way stop	Delay (sec / veh):	16.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.025

Intersection Setup

Name	Reed Rd		Reed Rd		Strong Rd	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Reed Rd		Reed Rd		Strong Rd	
Base Volume Input [veh/h]	68	1	87	241	5	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.80	5.80	1.80	1.80	6.70	6.70
Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	6	0	14	0	0	2
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	83	1	112	272	6	13
Peak Hour Factor	0.7600	0.7600	0.7600	0.7600	0.7600	0.7600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	0	37	89	2	4
Total Analysis Volume [veh/h]	109	1	147	358	8	17
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.10	0.00	0.02	0.02
d_M, Delay for Movement [s/veh]	0.00	0.00	7.70	0.00	16.49	9.15
Movement LOS	A	A	A	A	C	A
95th-Percentile Queue Length [veh]	0.00	0.00	1.53	1.53	0.14	0.14
95th-Percentile Queue Length [ft]	0.00	0.00	38.31	38.31	3.38	3.38
d_A, Approach Delay [s/veh]	0.00		2.24		11.50	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	2.22					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 16: Reed Rd at Fairview Industrial Dr

Control Type:	All-way stop	Delay (sec / veh):	14.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.612

Intersection Setup

Name	Reed Rd			Reed Rd			Fairview Industrial Dr			Fairview Industrial Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Reed Rd			Reed Rd			Fairview Industrial Dr			Fairview Industrial Dr		
Base Volume Input [veh/h]	59	5	22	8	9	17	9	238	212	76	268	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.70	4.70	4.70	0.00	0.00	0.00	4.10	4.10	4.10	4.00	4.00	4.00
Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	8	0	0	0	0	0	0	0	14	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	75	6	25	9	10	19	10	269	254	86	303	2
Peak Hour Factor	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	2	8	3	3	6	3	82	77	26	92	1
Total Analysis Volume [veh/h]	91	7	30	11	12	23	12	328	310	105	370	2
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	559	564	622	711	560	609
Degree of Utilization, x	0.23	0.08	0.55	0.44	0.19	0.61

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.88	0.27	3.31	2.22	0.68	4.14
95th-Percentile Queue Length [ft]	21.92	6.64	82.66	55.51	17.10	103.58
Approach Delay [s/veh]	11.34	9.95	13.51		15.98	
Approach LOS	B	A	B		C	
Intersection Delay [s/veh]	14.08					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 21: Fairview Industrial Dr at Marietta St

Control Type:	Two-way stop	Delay (sec / veh):	15.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.040

Intersection Setup

Name	Fairview Industrial Dr		Fairview Industrial Dr		Marietta St	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Fairview Industrial Dr		Fairview Industrial Dr		Marietta St	
Base Volume Input [veh/h]	5	134	378	41	10	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.40	9.40	4.50	4.50	0.00	0.00
Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	8	0	0	0	0	5
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	151	427	46	11	11
Peak Hour Factor	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	48	135	15	3	3
Total Analysis Volume [veh/h]	18	191	541	58	14	14
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.00	0.01	0.00	0.04	0.03
d_M, Delay for Movement [s/veh]	8.89	0.00	0.00	0.00	15.85	12.47
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh]	0.06	0.00	0.00	0.00	0.21	0.21
95th-Percentile Queue Length [ft]	1.46	0.00	0.00	0.00	5.32	5.32
d_A, Approach Delay [s/veh]	0.77		0.00		14.16	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.67					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 26: East Access at Strong Rd

Control Type:	Two-way stop	Delay (sec / veh):	11.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.006

Intersection Setup

Name	Strong Rd		East Access		Strong Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Strong Rd		East Access		Strong Rd	
Base Volume Input [veh/h]	110	0	0	0	0	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	14	2	36	60	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	124	14	2	36	60	16
Peak Hour Factor	0.5600	0.5600	0.5600	0.5600	0.5600	0.5600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	55	6	1	16	27	7
Total Analysis Volume [veh/h]	221	25	4	64	107	29
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Stop	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance		No	
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.10	0.08	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	11.34	11.02	7.93	0.00
Movement LOS	A	A	B	B	A	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.34	0.34	0.34	0.34
95th-Percentile Queue Length [ft]	0.00	0.00	8.51	8.51	8.50	8.50
d_A, Approach Delay [s/veh]	0.00		11.03		6.24	
Approach LOS	A		B		A	
d_I, Intersection Delay [s/veh]	3.55					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 31: 27th Ave at Marietta St

Control Type:	Two-way stop	Delay (sec / veh):	11.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.112

Intersection Setup

Name	27th Ave		Strong Rd		Marietta St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	27th Ave		Strong Rd		Marietta St	
Base Volume Input [veh/h]	18	10	1	107	43	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	52	0	5	31	0	8
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	72	11	6	152	49	9
Peak Hour Factor	0.6800	0.6800	0.6800	0.6800	0.6800	0.6800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	4	2	56	18	3
Total Analysis Volume [veh/h]	106	16	9	224	72	13
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.11	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	7.45	0.00	11.38	9.58
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.56	0.56	0.43	0.43
95th-Percentile Queue Length [ft]	0.00	0.00	13.99	13.99	10.75	10.75
d_A, Approach Delay [s/veh]	0.00		0.29		11.10	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	2.30					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 36: 27th at Kuebler Blvd

Control Type:	Signalized	Delay (sec / veh):	64.5
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.875

Intersection Setup

Name	27th Ave			27th Ave			Kuebler Blvd			Kuebler Blvd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	125.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	200.00	350.00	100.00	175.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	27th Ave			27th Ave			Kuebler Blvd			Kuebler Blvd		
Base Volume Input [veh/h]	1	0	63	100	18	40	11	1307	2	103	1923	23
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.70	4.70	4.70	0.60	0.60	0.60	3.60	3.60	3.60	1.30	1.30	1.30
Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	3	0	29	2	0	0	0	0	0	0	49
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	3	71	142	22	45	12	1477	2	116	2173	75
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	1	19	38	6	12	3	393	1	31	578	20
Total Analysis Volume [veh/h]	1	3	76	151	23	48	13	1571	2	123	2312	80
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	19	0	9	19	0	34	83	0	9	58	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	15	5	20	2	79	79	5	82	82
g / C, Green / Cycle	0.00	0.13	0.04	0.17	0.01	0.66	0.66	0.04	0.68	0.68
(v / s)_i Volume / Saturation Flow Rate	0.00	0.06	0.09	0.05	0.01	0.50	0.00	0.08	0.72	0.06
s, saturation flow rate [veh/h]	1568	1408	1621	1520	1582	3163	1412	1612	3222	1439
c, Capacity [veh/h]	2	178	68	253	23	2078	928	67	2203	984
d1, Uniform Delay [s]	59.86	48.52	57.50	43.72	58.73	14.04	7.08	57.50	18.97	6.35
k, delay calibration	0.11	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.12	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	92.03	7.84	563.98	2.74	19.03	0.58	0.00	384.55	25.68	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.43	0.44	2.23	0.28	0.56	0.76	0.00	1.83	1.05	0.08
d, Delay for Lane Group [s/veh]	151.89	56.37	621.47	46.46	77.76	14.62	7.08	442.04	44.65	6.39
Lane Group LOS	F	E	F	D	E	B	A	F	F	A
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.09	2.59	12.66	2.05	0.52	13.48	0.02	9.23	34.45	0.66
50th-Percentile Queue Length [ft]	2.25	64.63	316.46	51.22	12.91	337.05	0.43	230.81	861.29	16.40
95th-Percentile Queue Length [veh]	0.16	4.65	21.23	3.69	0.93	19.50	0.03	15.98	46.00	1.18
95th-Percentile Queue Length [ft]	4.05	116.34	530.87	92.19	23.23	487.59	0.78	399.60	1150.11	29.53

Movement, Approach, & Intersection Results

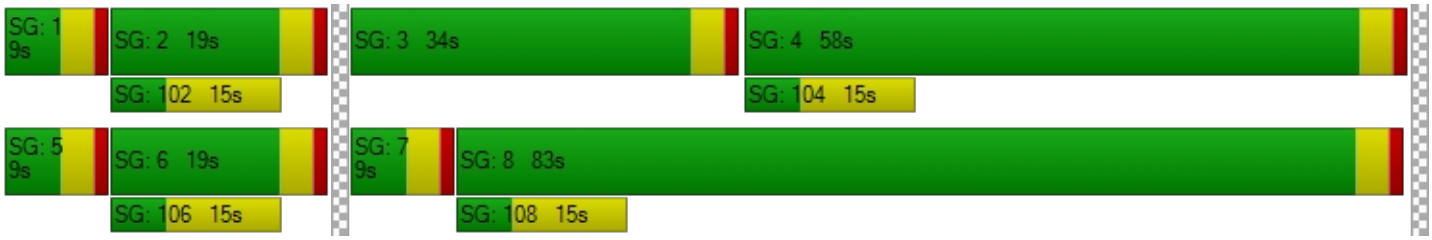
d_M, Delay for Movement [s/veh]	151.89	56.37	56.37	621.47	46.46	46.46	77.76	14.62	7.08	442.04	44.65	6.39
Movement LOS	F	E	E	F	D	D	E	B	A	F	F	A
d_A, Approach Delay [s/veh]	57.56			437.57			15.13			62.87		
Approach LOS	E			F			B			E		
d_I, Intersection Delay [s/veh]	64.47											
Intersection LOS	E											
Intersection V/C	0.875											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.030	2.059	3.109	3.169
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250	1317	900
d_b, Bicycle Delay [s]	45.94	45.94	7.00	18.15
l_b,int, Bicycle LOS Score for Intersection	1.692	1.926	2.868	3.634
Bicycle LOS	A	A	C	D

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 41: Keubler Blvd at Battle Creek Rd

Control Type:	Signalized	Delay (sec / veh):	118.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.968

Intersection Setup

Name	Battle Creek Rd			Battle Creek Rd			Kuebler Blvd			Kuebler Blvd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	150.00	275.00	100.00	275.00	350.00	100.00	350.00	250.00	100.00	250.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Battle Creek Rd			Battle Creek Rd			Kuebler Blvd			Kuebler Blvd		
Base Volume Input [veh/h]	93	157	149	127	316	171	88	1056	76	242	1592	162
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	3.00	1.10	1.10	1.10	3.90	3.90	3.90	1.50	1.50	1.50
Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	14	0	0	8	25	42	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	105	191	168	144	365	218	141	1193	86	273	1799	183
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	50	44	38	95	57	37	311	22	71	468	48
Total Analysis Volume [veh/h]	109	199	175	150	380	227	147	1243	90	284	1874	191
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	23	0	15	26	0	35	60	0	12	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	19	19	11	22	22	12	56	56	8	52	52
g / C, Green / Cycle	0.07	0.17	0.17	0.10	0.20	0.20	0.11	0.51	0.51	0.07	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.07	0.06	0.12	0.09	0.22	0.16	0.09	0.39	0.06	0.18	0.58	0.13
s, saturation flow rate [veh/h]	1590	3179	1419	1614	1695	1441	1578	3156	1409	1609	3217	1436
c, Capacity [veh/h]	116	552	247	162	341	290	175	1603	715	117	1512	675
d1, Uniform Delay [s]	50.77	40.06	42.83	49.11	43.95	41.68	47.95	21.98	14.23	51.00	29.16	17.83
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.19	0.18	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	26.79	1.82	15.91	19.47	83.55	18.86	10.22	0.83	0.08	650.49	110.08	0.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.94	0.36	0.71	0.93	1.12	0.78	0.84	0.78	0.13	2.42	1.24	0.28
d, Delay for Lane Group [s/veh]	77.56	41.88	58.74	68.58	127.50	60.54	58.17	22.81	14.31	701.49	139.24	18.06
Lane Group LOS	E	D	E	E	F	E	E	C	B	F	F	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	3.84	2.52	5.56	4.94	17.10	7.32	4.43	12.63	1.18	24.39	42.07	2.97
50th-Percentile Queue Length [ft]	95.99	62.88	138.92	123.61	427.42	183.07	110.84	315.75	29.56	609.75	1051.77	74.31
95th-Percentile Queue Length [veh]	6.91	4.53	9.42	8.59	25.28	11.76	7.89	18.46	2.13	39.03	61.15	5.35
95th-Percentile Queue Length [ft]	172.78	113.18	235.56	214.77	631.91	294.02	197.17	461.46	53.21	975.68	1528.72	133.76

Movement, Approach, & Intersection Results

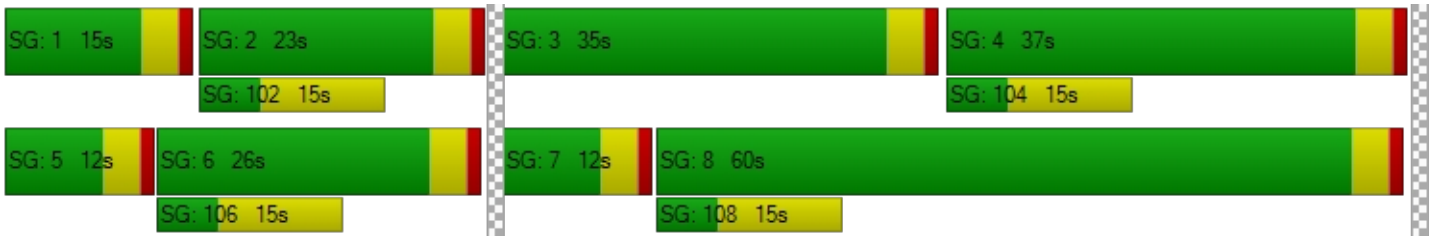
d_M, Delay for Movement [s/veh]	77.56	41.88	58.74	68.58	127.50	60.54	58.17	22.81	14.31	701.49	139.24	18.06
Movement LOS	E	D	E	E	F	E	E	C	B	F	F	B
d_A, Approach Delay [s/veh]	56.04			95.74			25.80			197.36		
Approach LOS	E			F			C			F		
d_I, Intersection Delay [s/veh]	118.63											
Intersection LOS	F											
Intersection V/C	0.968											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	46.37	46.37	46.37	46.37
l_p,int, Pedestrian LOS Score for Intersection	2.552	2.563	3.064	3.101
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	345	400	1018	600
d_b, Bicycle Delay [s]	37.64	35.20	13.25	26.95
l_b,int, Bicycle LOS Score for Intersection	1.958	2.809	2.781	3.498
Bicycle LOS	A	C	C	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 42: Reed at Site Access

Control Type:	Two-way stop	Delay (sec / veh):	11.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.002

Intersection Setup

Name	Reed Rd		Reed Rd		Site Access	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Reed Rd		Reed Rd		Site Access	
Base Volume Input [veh/h]	69	0	0	246	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	1	6
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	78	0	0	278	1	6
Peak Hour Factor	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	0	0	83	0	2
Total Analysis Volume [veh/h]	93	0	0	331	1	7
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	7.40	0.00	11.17	8.77
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.00	0.03	0.03
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	0.00	0.68	0.68
d_A, Approach Delay [s/veh]	0.00		0.00		9.07	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.17					
Intersection LOS	B					

18-392 Strong at 27th Subdivision TIA

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Scenario 8 PM Dev 2026 Ph 3
6/19/2018

Turning Movement Volume: Summary

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
1	Battle Creek Rd at Reed Rd	223	53	11	500	351	67	1205

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
6	Battle Creek Rd at Site Access	460	56	10	713	33	5	1277

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
11	Reed Rd at Strong Rd	83	1	112	272	6	13	487

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Reed Rd at Fairview Industrial Dr	75	6	25	9	10	19	10	269	254	86	303	2	1068

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
21	Fairview Industrial Dr at Marietta St	14	151	427	46	11	11	660

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
26	East Access at Strong Rd	124	14	2	36	60	16	252

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
31	27th Ave at Marietta St	72	11	6	152	49	9	299

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
36	27th at Kuebler Blvd	1	3	71	142	22	45	12	1477	2	116	2173	75	4139

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
41	Keubler Blvd at Battle Creek Rd	105	191	168	144	365	218	141	1193	86	273	1799	183	4866

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
42	Reed at Site Access	78	0	0	278	1	6	363

18-392 Strong at 27th Subdivision TIA

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Report File: J:\...\18-392 PM Dev Ph 3.pdf

Scenario 8 PM Dev 2026 Ph 3
6/19/2018

Turning Movement Volume: Detail

ID	Intersection Name	Volume Type	Southbound		Eastbound		Westbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
1	Battle Creek Rd at Reed Rd	Final Base	197	46	10	434	306	59	1052
		Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	1	0	10	5	0	16
		Other	0	0	0	0	0	0	0
		Future Total	**223**	**53**	**11**	**500**	**351**	**67**	**1205**

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
6	Battle Creek Rd at Site Access	Final Base	407	0	0	631	0	0	1038
		Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	56	10	0	33	5	104
		Other	0	0	0	0	0	0	0
		Future Total	**460**	**56**	**10**	**713**	**33**	**5**	**1277**

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
11	Reed Rd at Strong Rd	Final Base	68	1	87	241	5	10	412
		Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	6	0	14	0	0	2	22
		Other	0	0	0	0	0	0	0
		Future Total	**83**	**1**	**112**	**272**	**6**	**13**	**487**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Reed Rd at Fairview Industrial Dr	Final Base	59	5	22	8	9	17	9	238	212	76	268	2	925
		Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	8	0	0	0	0	0	0	0	14	0	0	0	22
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**75**	**6**	**25**	**9**	**10**	**19**	**10**	**269**	**254**	**86**	**303**	**2**	**1068**

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
21	Fairview Industrial Dr at Marietta St	Final Base	5	134	378	41	10	5	573
		Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	8	0	0	0	0	5	13
		Other	0	0	0	0	0	0	0
		Future Total	**14**	**151**	**427**	**46**	**11**	**11**	**660**

ID	Intersection Name	Volume Type	Southbound		Eastbound		Westbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
26	East Access at Strong Rd	Final Base	110	0	0	0	0	14	124
		Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	14	2	36	60	0	112
		Other	0	0	0	0	0	0	0
		Future Total	**124**	**14**	**2**	**36**	**60**	**16**	**252**

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
31	27th Ave at Marietta St	Final Base	18	10	1	107	43	1	180
		Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	52	0	5	31	0	8	96
		Other	0	0	0	0	0	0	0
		Future Total	**72**	**11**	**6**	**152**	**49**	**9**	**299**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
36	27th at Kuebler Blvd	Final Base	1	0	63	100	18	40	11	1307	2	103	1923	23	3591
		Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	3	0	29	2	0	0	0	0	0	0	49	83
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**1**	**3**	**71**	**142**	**22**	**45**	**12**	**1477**	**2**	**116**	**2173**	**75**	**4139**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
41	Keubler Blvd at Battle Creek Rd	Final Base	93	157	149	127	316	171	88	1056	76	242	1592	162	4229
		Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	14	0	0	8	25	42	0	0	0	0	0	89
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**105**	**191**	**168**	**144**	**365**	**218**	**141**	**1193**	**86**	**273**	**1799**	**183**	**4866**

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
42	Reed at Site Access	Final Base	69	0	0	246	0	0	315
		Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	1	6	7
		Other	0	0	0	0	0	0	0
		Future Total	**78**	**0**	**0**	**278**	**1**	**6**	**363**

Signal Warrants Report For Intersection 1: Battle Creek Rd at Reed Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	N
1	418	511	276
2	401	491	265
3	393	480	259
4	334	409	221
5	318	388	210
6	284	347	188
7	263	322	174
8	251	307	166
9	201	245	132
10	188	230	124
11	188	230	124
12	180	220	119
13	163	199	108
14	150	184	99
15	150	184	99
16	146	179	97
17	84	102	55
18	46	56	30
19	42	51	28
20	17	20	11
21	13	15	8
22	13	15	8
23	8	10	6
24	8	10	6

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	929	2	276	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
2	2	892	2	265	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
3	2	873	2	259	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
4	2	743	2	221	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
5	2	706	2	210	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
6	2	631	2	188	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
7	2	585	2	174	No	Yes	Yes	Yes	No	No	No	Yes	No	No
8	2	558	2	166	No	Yes	Yes	Yes	No	No	No	Yes	No	No
9	2	446	2	132	No	No	No	Yes	No	No	No	No	No	No
10	2	418	2	124	No	No	No	Yes	No	No	No	No	No	No
11	2	418	2	124	No	No	No	Yes	No	No	No	No	No	No
12	2	400	2	119	No	No	No	Yes	No	No	No	No	No	No
13	2	362	2	108	No	No	No	No	No	No	No	No	No	No
14	2	334	2	99	No	No	No	No	No	No	No	No	No	No
15	2	334	2	99	No	No	No	No	No	No	No	No	No	No
16	2	325	2	97	No	No	No	No	No	No	No	No	No	No
17	2	186	2	55	No	No	No	No	No	No	No	No	No	No
18	2	102	2	30	No	No	No	No	No	No	No	No	No	No
19	2	93	2	28	No	No	No	No	No	No	No	No	No	No
20	2	37	2	11	No	No	No	No	No	No	No	No	No	No
21	2	28	2	8	No	No	No	No	No	No	No	No	No	No
22	2	28	2	8	No	No	No	No	No	No	No	No	No	No
23	2	18	2	6	No	No	No	No	No	No	No	No	No	No
24	2	18	2	6	No	No	No	No	No	No	No	No	No	No
Hours Met					5	8	8	12	1	4	6	8	3	0

Warrant 3 Condition A

Orientation	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	59.2
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	4:32
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	276
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1205
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 6: Battle Creek Rd at Site Access

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	E
1	516	723	38
2	495	694	36
3	485	680	36
4	413	578	30
5	392	549	29
6	351	492	26
7	325	455	24
8	310	434	23
9	248	347	18
10	232	325	17
11	232	325	17
12	222	311	16
13	201	282	15
14	186	260	14
15	186	260	14
16	181	253	13
17	103	145	8
18	57	80	4
19	52	72	4
20	21	29	2
21	15	22	1
22	15	22	1
23	10	14	1
24	10	14	1

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	1239	1	38	No	No	No	No	No	No	No	No	No	No
2	2	1189	1	36	No	No	No	No	No	No	No	No	No	No
3	2	1165	1	36	No	No	No	No	No	No	No	No	No	No
4	2	991	1	30	No	No	No	No	No	No	No	No	No	No
5	2	941	1	29	No	No	No	No	No	No	No	No	No	No
6	2	843	1	26	No	No	No	No	No	No	No	No	No	No
7	2	780	1	24	No	No	No	No	No	No	No	No	No	No
8	2	744	1	23	No	No	No	No	No	No	No	No	No	No
9	2	595	1	18	No	No	No	No	No	No	No	No	No	No
10	2	557	1	17	No	No	No	No	No	No	No	No	No	No
11	2	557	1	17	No	No	No	No	No	No	No	No	No	No
12	2	533	1	16	No	No	No	No	No	No	No	No	No	No
13	2	483	1	15	No	No	No	No	No	No	No	No	No	No
14	2	446	1	14	No	No	No	No	No	No	No	No	No	No
15	2	446	1	14	No	No	No	No	No	No	No	No	No	No
16	2	434	1	13	No	No	No	No	No	No	No	No	No	No
17	2	248	1	8	No	No	No	No	No	No	No	No	No	No
18	2	137	1	4	No	No	No	No	No	No	No	No	No	No
19	2	124	1	4	No	No	No	No	No	No	No	No	No	No
20	2	50	1	2	No	No	No	No	No	No	No	No	No	No
21	2	37	1	1	No	No	No	No	No	No	No	No	No	No
22	2	37	1	1	No	No	No	No	No	No	No	No	No	No
23	2	24	1	1	No	No	No	No	No	No	No	No	No	No
24	2	24	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	28.8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:18
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	38
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	1277
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 11: Reed Rd at Strong Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	384	84	19
2	369	81	18
3	361	79	18
4	307	67	15
5	292	64	14
6	261	57	13
7	242	53	12
8	230	50	11
9	184	40	9
10	173	38	9
11	173	38	9
12	165	36	8
13	150	33	7
14	138	30	7
15	138	30	7
16	134	29	7
17	77	17	4
18	42	9	2
19	38	8	2
20	15	3	1
21	12	3	1
22	12	3	1
23	8	2	0
24	8	2	0

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	468	1	19	No	No	No	No	No	No	No	No	No	No
2	2	450	1	18	No	No	No	No	No	No	No	No	No	No
3	2	440	1	18	No	No	No	No	No	No	No	No	No	No
4	2	374	1	15	No	No	No	No	No	No	No	No	No	No
5	2	356	1	14	No	No	No	No	No	No	No	No	No	No
6	2	318	1	13	No	No	No	No	No	No	No	No	No	No
7	2	295	1	12	No	No	No	No	No	No	No	No	No	No
8	2	280	1	11	No	No	No	No	No	No	No	No	No	No
9	2	224	1	9	No	No	No	No	No	No	No	No	No	No
10	2	211	1	9	No	No	No	No	No	No	No	No	No	No
11	2	211	1	9	No	No	No	No	No	No	No	No	No	No
12	2	201	1	8	No	No	No	No	No	No	No	No	No	No
13	2	183	1	7	No	No	No	No	No	No	No	No	No	No
14	2	168	1	7	No	No	No	No	No	No	No	No	No	No
15	2	168	1	7	No	No	No	No	No	No	No	No	No	No
16	2	163	1	7	No	No	No	No	No	No	No	No	No	No
17	2	94	1	4	No	No	No	No	No	No	No	No	No	No
18	2	51	1	2	No	No	No	No	No	No	No	No	No	No
19	2	46	1	2	No	No	No	No	No	No	No	No	No	No
20	2	18	1	1	No	No	No	No	No	No	No	No	No	No
21	2	15	1	1	No	No	No	No	No	No	No	No	No	No
22	2	15	1	1	No	No	No	No	No	No	No	No	No	No
23	2	10	1	0	No	No	No	No	No	No	No	No	No	No
24	2	10	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.5
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:03
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	19
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	487
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 16: Reed Rd at Fairview Industrial Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N, S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	N	S
1	391	533	38	106
2	375	512	36	102
3	368	501	36	100
4	313	426	30	85
5	297	405	29	81
6	266	362	26	72
7	246	336	24	67
8	235	320	23	64
9	188	256	18	51
10	176	240	17	48
11	176	240	17	48
12	168	229	16	46
13	152	208	15	41
14	141	192	14	38
15	141	192	14	38
16	137	187	13	37
17	78	107	8	21
18	43	59	4	12
19	39	53	4	11
20	16	21	2	4
21	12	16	1	3
22	12	16	1	3
23	8	11	1	2
24	8	11	1	2

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	4	924	2	144	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
2	4	887	2	138	No	No	No	Yes	No	Yes	Yes	Yes	No	No
3	4	869	2	136	No	No	No	Yes	No	Yes	Yes	Yes	No	No
4	4	739	2	115	No	No	No	Yes	No	Yes	Yes	Yes	No	No
5	4	702	2	110	No	No	No	No	No	No	Yes	Yes	No	No
6	4	628	2	98	No	No	No	No	No	No	No	Yes	No	No
7	4	582	2	91	No	No	No	No	No	No	No	Yes	No	No
8	4	555	2	87	No	No	No	No	No	No	No	Yes	No	No
9	4	444	2	69	No	No	No	No	No	No	No	No	No	No
10	4	416	2	65	No	No	No	No	No	No	No	No	No	No
11	4	416	2	65	No	No	No	No	No	No	No	No	No	No
12	4	397	2	62	No	No	No	No	No	No	No	No	No	No
13	4	360	2	56	No	No	No	No	No	No	No	No	No	No
14	4	333	2	52	No	No	No	No	No	No	No	No	No	No
15	4	333	2	52	No	No	No	No	No	No	No	No	No	No
16	4	324	2	50	No	No	No	No	No	No	No	No	No	No
17	4	185	2	29	No	No	No	No	No	No	No	No	No	No
18	4	102	2	16	No	No	No	No	No	No	No	No	No	No
19	4	92	2	15	No	No	No	No	No	No	No	No	No	No
20	4	37	2	6	No	No	No	No	No	No	No	No	No	No
21	4	28	2	4	No	No	No	No	No	No	No	No	No	No
22	4	28	2	4	No	No	No	No	No	No	No	No	No	No
23	4	19	2	3	No	No	No	No	No	No	No	No	No	No
24	4	19	2	3	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	1	4	1	4	5	8	0	0

Warrant 3 Condition A

Orientation	N	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	10	11.3
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:06	0:20
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	38	106
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	1068	1068
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 21: Fairview Industrial Dr at Marietta St

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	165	473	22
2	158	454	21
3	155	445	21
4	132	378	18
5	125	359	17
6	112	322	15
7	104	298	14
8	99	284	13
9	79	227	11
10	74	213	10
11	74	213	10
12	71	203	9
13	64	184	9
14	59	170	8
15	59	170	8
16	58	166	8
17	33	95	4
18	18	52	2
19	17	47	2
20	7	19	1
21	5	14	1
22	5	14	1
23	3	9	0
24	3	9	0

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	3	638	1	22	No	No	No	No	No	No	No	No	No	No
2	3	612	1	21	No	No	No	No	No	No	No	No	No	No
3	3	600	1	21	No	No	No	No	No	No	No	No	No	No
4	3	510	1	18	No	No	No	No	No	No	No	No	No	No
5	3	484	1	17	No	No	No	No	No	No	No	No	No	No
6	3	434	1	15	No	No	No	No	No	No	No	No	No	No
7	3	402	1	14	No	No	No	No	No	No	No	No	No	No
8	3	383	1	13	No	No	No	No	No	No	No	No	No	No
9	3	306	1	11	No	No	No	No	No	No	No	No	No	No
10	3	287	1	10	No	No	No	No	No	No	No	No	No	No
11	3	287	1	10	No	No	No	No	No	No	No	No	No	No
12	3	274	1	9	No	No	No	No	No	No	No	No	No	No
13	3	248	1	9	No	No	No	No	No	No	No	No	No	No
14	3	229	1	8	No	No	No	No	No	No	No	No	No	No
15	3	229	1	8	No	No	No	No	No	No	No	No	No	No
16	3	224	1	8	No	No	No	No	No	No	No	No	No	No
17	3	128	1	4	No	No	No	No	No	No	No	No	No	No
18	3	70	1	2	No	No	No	No	No	No	No	No	No	No
19	3	64	1	2	No	No	No	No	No	No	No	No	No	No
20	3	26	1	1	No	No	No	No	No	No	No	No	No	No
21	3	19	1	1	No	No	No	No	No	No	No	No	No	No
22	3	19	1	1	No	No	No	No	No	No	No	No	No	No
23	3	12	1	0	No	No	No	No	No	No	No	No	No	No
24	3	12	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	14.2
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:05
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	22
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	660
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 26: East Access at Strong Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	N	W
1	76	138	38
2	73	132	36
3	71	130	36
4	61	110	30
5	58	105	29
6	52	94	26
7	48	87	24
8	46	83	23
9	36	66	18
10	34	62	17
11	34	62	17
12	33	59	16
13	30	54	15
14	27	50	14
15	27	50	14
16	27	48	13
17	15	28	8
18	8	15	4
19	8	14	4
20	3	6	2
21	2	4	1
22	2	4	1
23	2	3	1
24	2	3	1

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	214	1	38	No	No	No	No	No	No	No	No	No	No
2	2	205	1	36	No	No	No	No	No	No	No	No	No	No
3	2	201	1	36	No	No	No	No	No	No	No	No	No	No
4	2	171	1	30	No	No	No	No	No	No	No	No	No	No
5	2	163	1	29	No	No	No	No	No	No	No	No	No	No
6	2	146	1	26	No	No	No	No	No	No	No	No	No	No
7	2	135	1	24	No	No	No	No	No	No	No	No	No	No
8	2	129	1	23	No	No	No	No	No	No	No	No	No	No
9	2	102	1	18	No	No	No	No	No	No	No	No	No	No
10	2	96	1	17	No	No	No	No	No	No	No	No	No	No
11	2	96	1	17	No	No	No	No	No	No	No	No	No	No
12	2	92	1	16	No	No	No	No	No	No	No	No	No	No
13	2	84	1	15	No	No	No	No	No	No	No	No	No	No
14	2	77	1	14	No	No	No	No	No	No	No	No	No	No
15	2	77	1	14	No	No	No	No	No	No	No	No	No	No
16	2	75	1	13	No	No	No	No	No	No	No	No	No	No
17	2	43	1	8	No	No	No	No	No	No	No	No	No	No
18	2	23	1	4	No	No	No	No	No	No	No	No	No	No
19	2	22	1	4	No	No	No	No	No	No	No	No	No	No
20	2	9	1	2	No	No	No	No	No	No	No	No	No	No
21	2	6	1	1	No	No	No	No	No	No	No	No	No	No
22	2	6	1	1	No	No	No	No	No	No	No	No	No	No
23	2	5	1	1	No	No	No	No	No	No	No	No	No	No
24	2	5	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	11
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:06
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	38
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	252
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 31: 27th Ave at Marietta St

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	158	83	58
2	152	80	56
3	149	78	55
4	126	66	46
5	120	63	44
6	107	56	39
7	100	52	37
8	95	50	35
9	76	40	28
10	71	37	26
11	71	37	26
12	68	36	25
13	62	32	23
14	57	30	21
15	57	30	21
16	55	29	20
17	32	17	12
18	17	9	6
19	16	8	6
20	6	3	2
21	5	2	2
22	5	2	2
23	3	2	1
24	3	2	1

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	241	1	58	No	No	No	No	No	No	No	No	No	No
2	2	232	1	56	No	No	No	No	No	No	No	No	No	No
3	2	227	1	55	No	No	No	No	No	No	No	No	No	No
4	2	192	1	46	No	No	No	No	No	No	No	No	No	No
5	2	183	1	44	No	No	No	No	No	No	No	No	No	No
6	2	163	1	39	No	No	No	No	No	No	No	No	No	No
7	2	152	1	37	No	No	No	No	No	No	No	No	No	No
8	2	145	1	35	No	No	No	No	No	No	No	No	No	No
9	2	116	1	28	No	No	No	No	No	No	No	No	No	No
10	2	108	1	26	No	No	No	No	No	No	No	No	No	No
11	2	108	1	26	No	No	No	No	No	No	No	No	No	No
12	2	104	1	25	No	No	No	No	No	No	No	No	No	No
13	2	94	1	23	No	No	No	No	No	No	No	No	No	No
14	2	87	1	21	No	No	No	No	No	No	No	No	No	No
15	2	87	1	21	No	No	No	No	No	No	No	No	No	No
16	2	84	1	20	No	No	No	No	No	No	No	No	No	No
17	2	49	1	12	No	No	No	No	No	No	No	No	No	No
18	2	26	1	6	No	No	No	No	No	No	No	No	No	No
19	2	24	1	6	No	No	No	No	No	No	No	No	No	No
20	2	9	1	2	No	No	No	No	No	No	No	No	No	No
21	2	7	1	2	No	No	No	No	No	No	No	No	No	No
22	2	7	1	2	No	No	No	No	No	No	No	No	No	No
23	2	5	1	1	No	No	No	No	No	No	No	No	No	No
24	2	5	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.1
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:10
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	58
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	299
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 42: Reed at Site Access

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	278	78	7
2	267	75	7
3	261	73	7
4	222	62	6
5	211	59	5
6	189	53	5
7	175	49	4
8	167	47	4
9	133	37	3
10	125	35	3
11	125	35	3
12	120	34	3
13	108	30	3
14	100	28	3
15	100	28	3
16	97	27	2
17	56	16	1
18	31	9	1
19	28	8	1
20	11	3	0
21	8	2	0
22	8	2	0
23	6	2	0
24	6	2	0

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	356	1	7	No	No	No	No	No	No	No	No	No	No
2	2	342	1	7	No	No	No	No	No	No	No	No	No	No
3	2	334	1	7	No	No	No	No	No	No	No	No	No	No
4	2	284	1	6	No	No	No	No	No	No	No	No	No	No
5	2	270	1	5	No	No	No	No	No	No	No	No	No	No
6	2	242	1	5	No	No	No	No	No	No	No	No	No	No
7	2	224	1	4	No	No	No	No	No	No	No	No	No	No
8	2	214	1	4	No	No	No	No	No	No	No	No	No	No
9	2	170	1	3	No	No	No	No	No	No	No	No	No	No
10	2	160	1	3	No	No	No	No	No	No	No	No	No	No
11	2	160	1	3	No	No	No	No	No	No	No	No	No	No
12	2	154	1	3	No	No	No	No	No	No	No	No	No	No
13	2	138	1	3	No	No	No	No	No	No	No	No	No	No
14	2	128	1	3	No	No	No	No	No	No	No	No	No	No
15	2	128	1	3	No	No	No	No	No	No	No	No	No	No
16	2	124	1	2	No	No	No	No	No	No	No	No	No	No
17	2	72	1	1	No	No	No	No	No	No	No	No	No	No
18	2	40	1	1	No	No	No	No	No	No	No	No	No	No
19	2	36	1	1	No	No	No	No	No	No	No	No	No	No
20	2	14	1	0	No	No	No	No	No	No	No	No	No	No
21	2	10	1	0	No	No	No	No	No	No	No	No	No	No
22	2	10	1	0	No	No	No	No	No	No	No	No	No	No
23	2	8	1	0	No	No	No	No	No	No	No	No	No	No
24	2	8	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.1
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:01
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	7
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	363
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

18-392 Strong at 27th Subdivision TIA

Vistro File: J:\...\18-392 Reed Rd Subdivision - TIA.vistro
Report File: J:\...\18-392 PM Dev Ph 3.pdf

Scenario 8 PM Dev 2026 Ph 3
6/19/2018

Trip Generation summary

Added Trips

Zone ID: Name	Land Use variables	Code	Ind. Var.	Rate	Quantity	% In	% Out	Trips In	Trips Out	Total Trips	% of Total Trips
1: 18-392 Reed Rd Sub	Homes	ITE 210	Home	0.990	225.000	63.00	37.00	140	83	223	100.00
					Added Trips Total			**140**	**83**	**223**	**100.00**

18-392 Strong at 27th Subdivision TIA

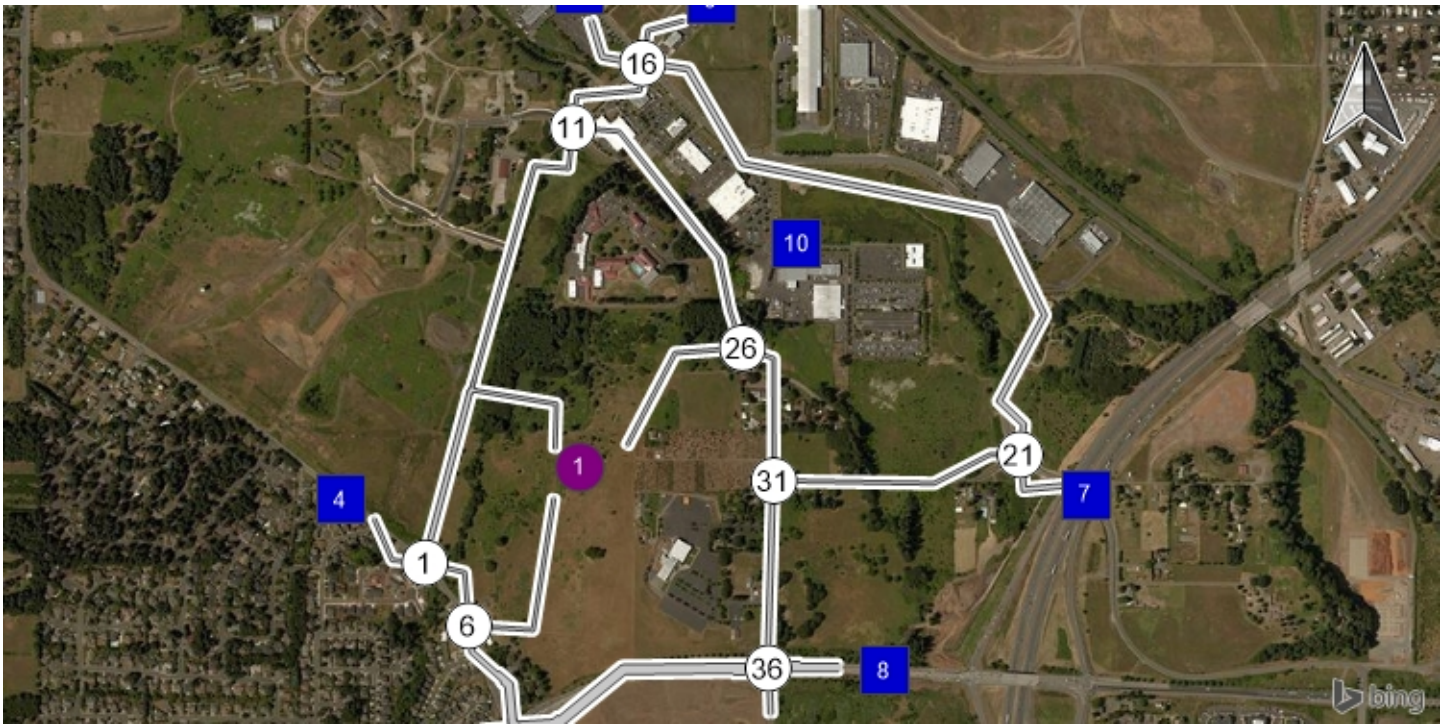
Vistro File: J:\...\18-392 Reed Rd Subdivision - TIA.vistro
Report File: J:\...\18-392 PM Dev Ph 3.pdf

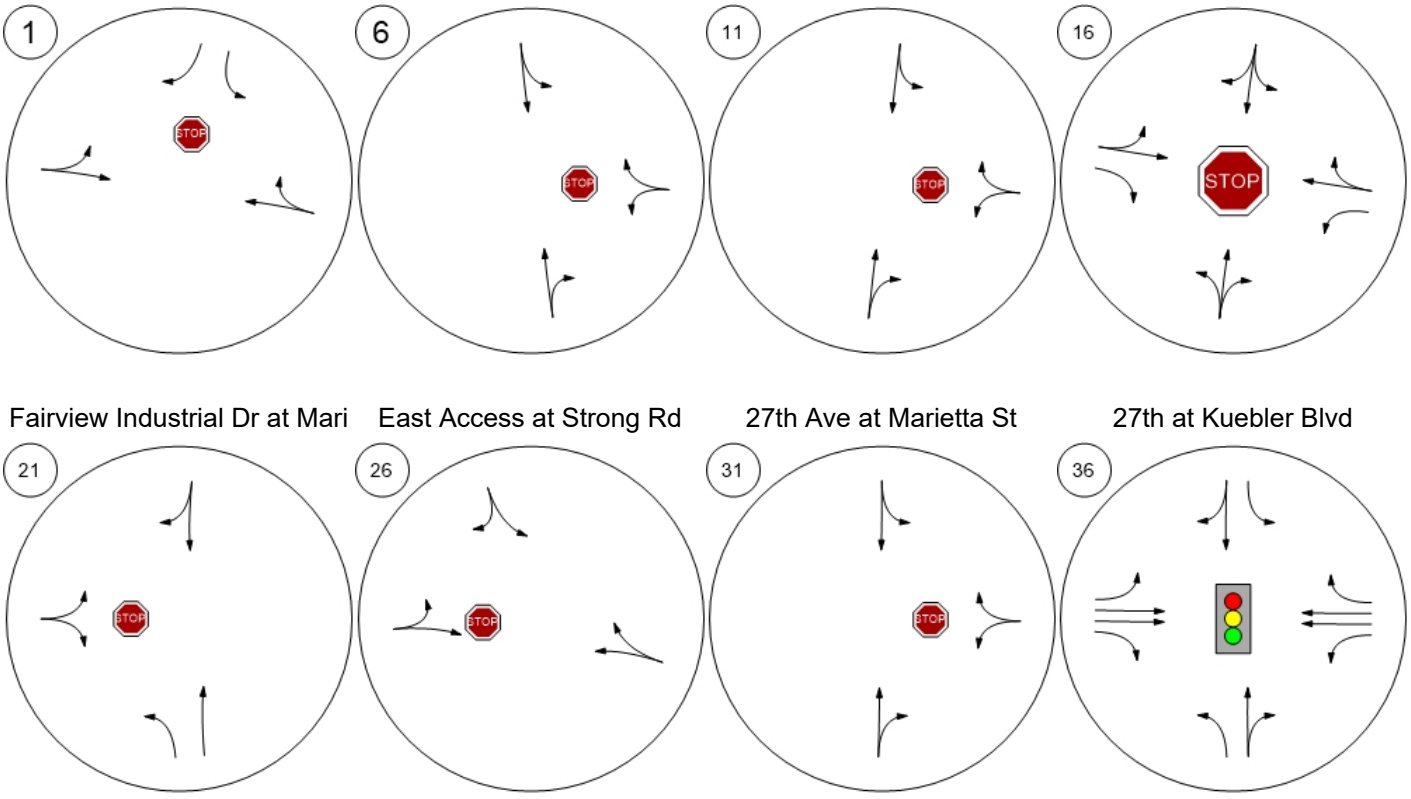
Scenario 8 PM Dev 2026 Ph 3
6/19/2018

Trip Distribution summary

Zone / Gate	Zone 1: 18-392 Reed Rd Sub			
	To 18-392 Reed Rd Sub:		From 18-392 Reed Rd Sub:	
	Share %	Trips	Share %	Trips
2: Gate	10.00	14	10.00	8
3: Gate	30.00	42	30.00	25
4: Gate	7.00	10	7.00	6
5: Gate	10.00	14	10.00	8
6: Gate	0.00	0	0.00	0
7: Gate	6.00	8	6.00	5
8: Gate	35.00	49	35.00	29
9: Gate	2.00	3	2.00	2
10: Gate	0.00	0	0.00	0
Total	**100.00**	**140**	**100.00**	**83**

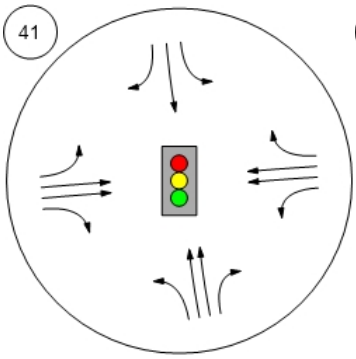
Report Figure 1: Lane Configuration and Traffic Control





Report Figure 1: Lane Configuration and Traffic Control

Keubler Blvd at Battle Creek



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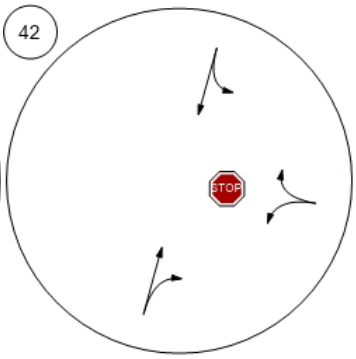
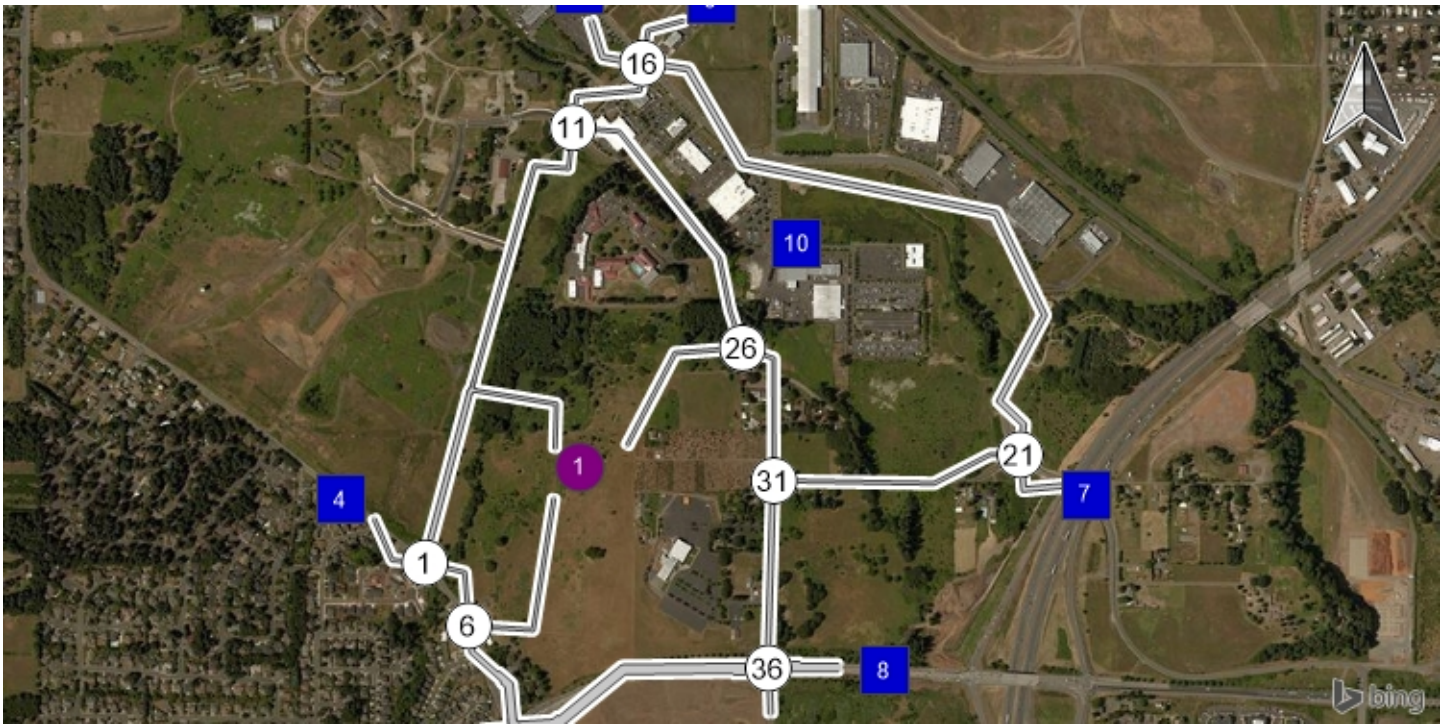
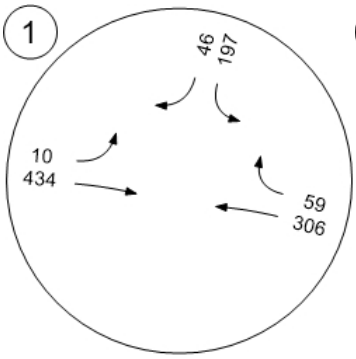


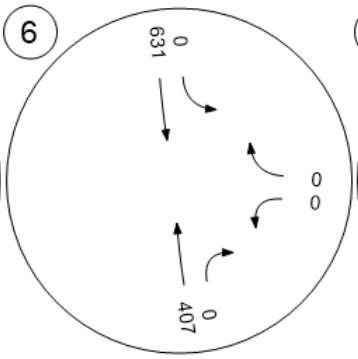
Report Figure 2a: Traffic Volume - Base Volume



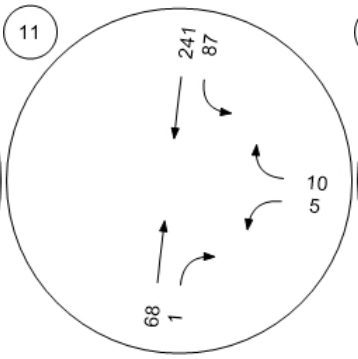
Battle Creek Rd at Reed Rd



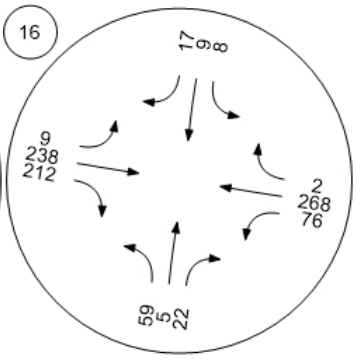
Battle Creek Rd at Site Acces



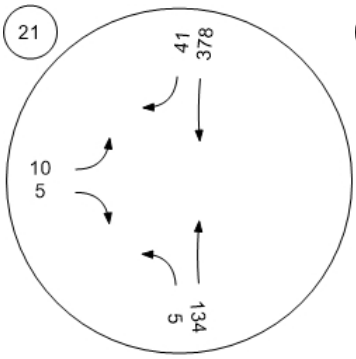
Reed Rd at Strong Rd



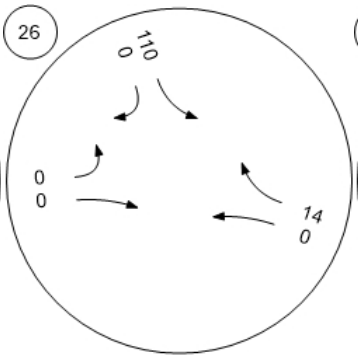
Reed Rd at Fairview Industria



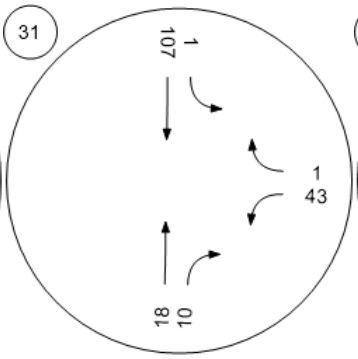
Fairview Industrial Dr at Mari



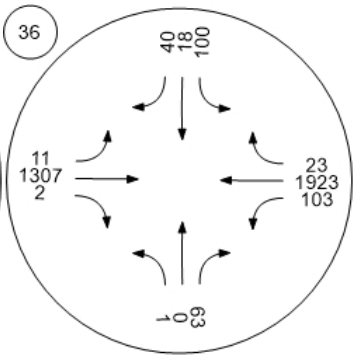
East Access at Strong Rd



27th Ave at Marietta St

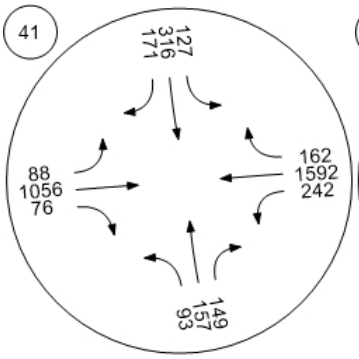


27th at Kuebler Blvd

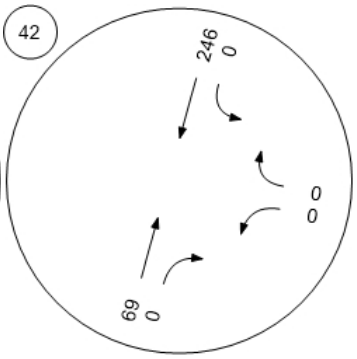


Report Figure 2a: Traffic Volume - Base Volume

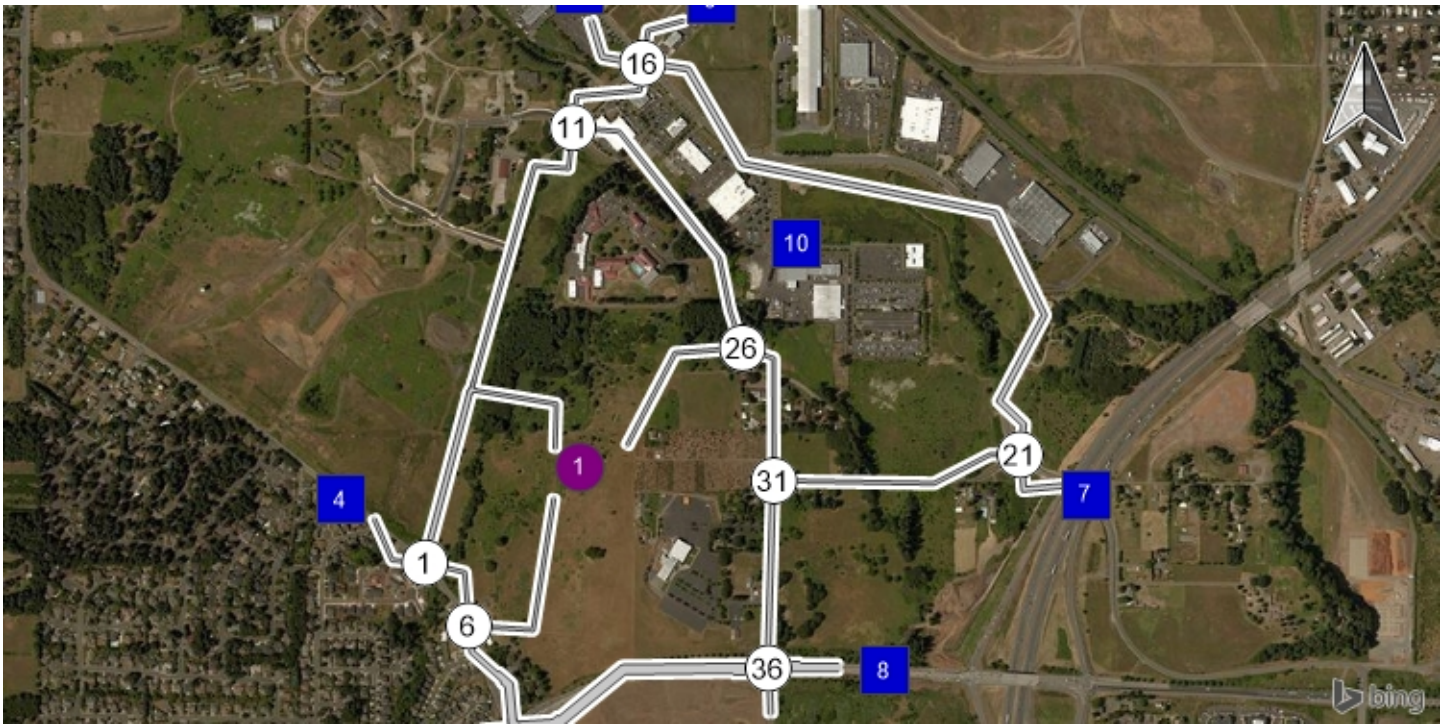
Keubler Blvd at Battle Creek

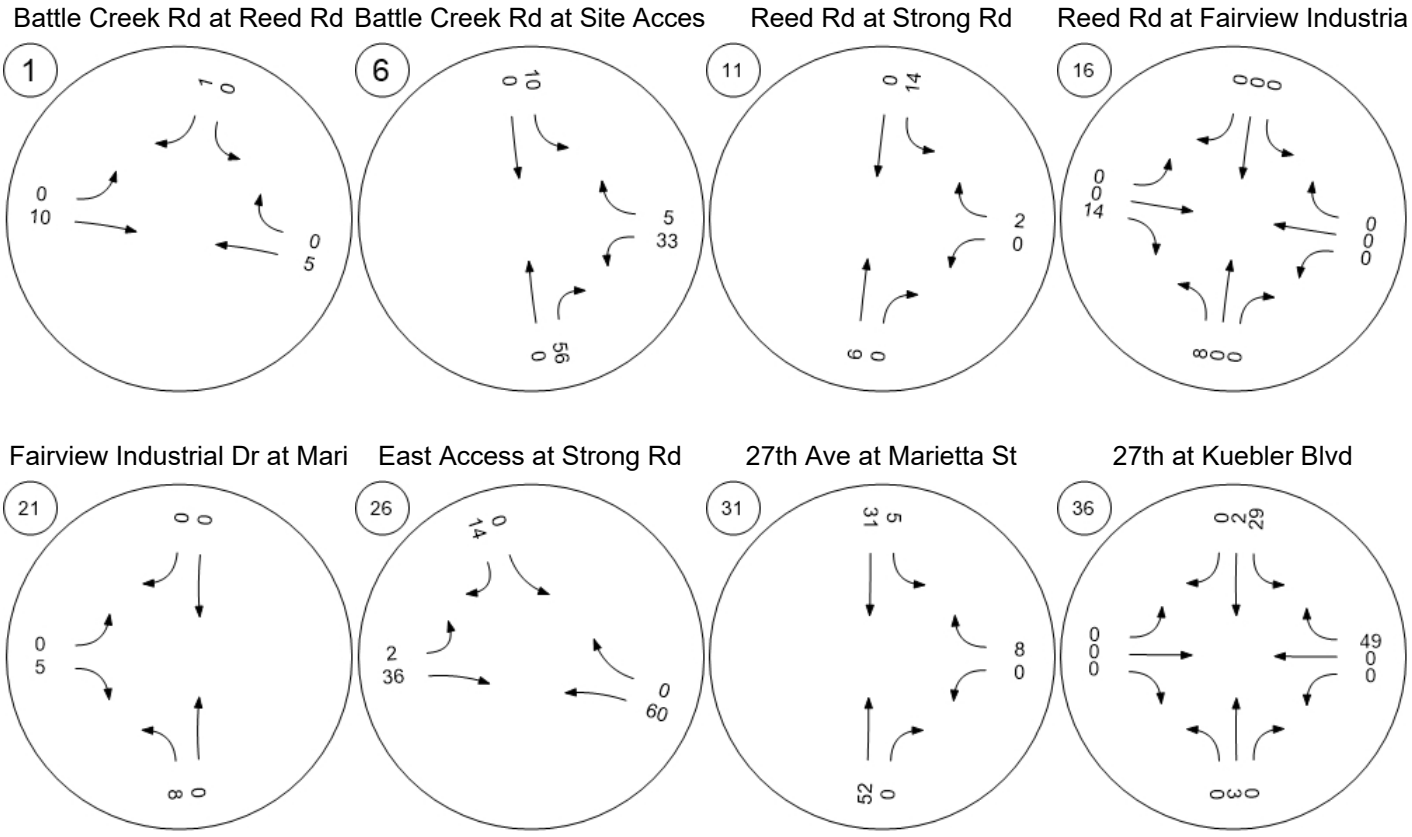


Reed at Site Access



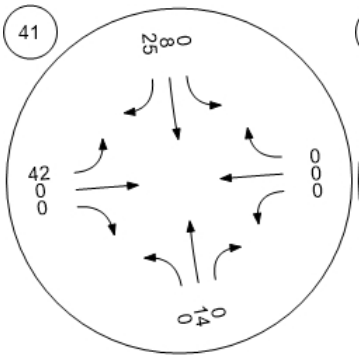
Report Figure 2d: Traffic Volume - Net New Site Trips





Report Figure 2d: Traffic Volume - Net New Site Trips

Keubler Blvd at Battle Creek



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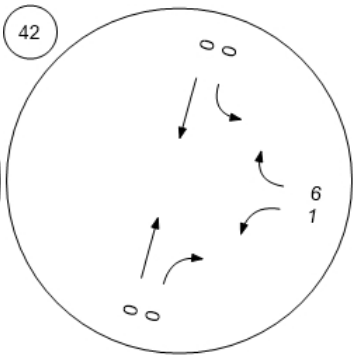
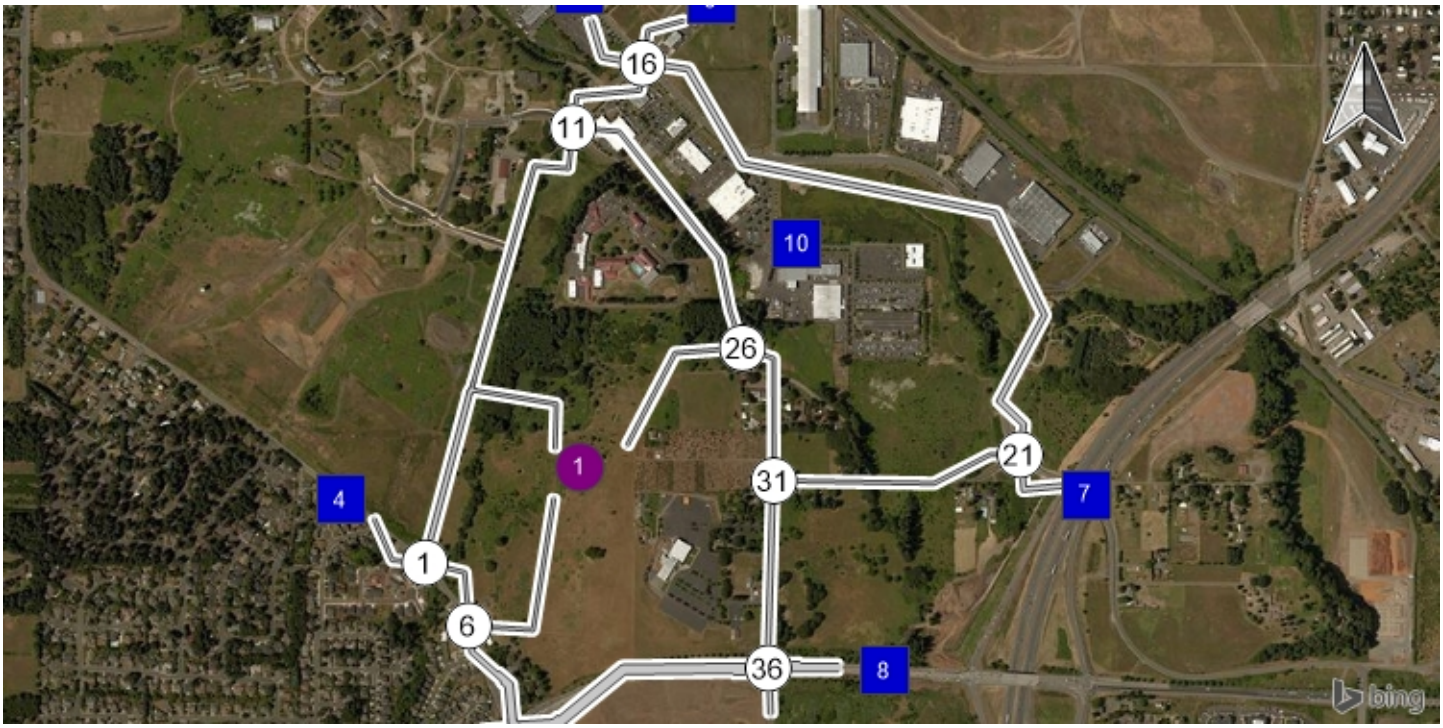
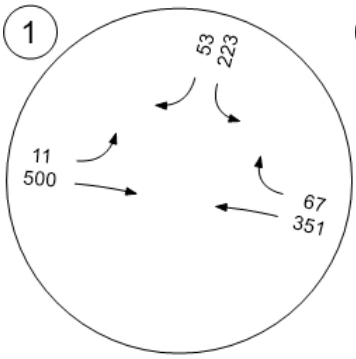


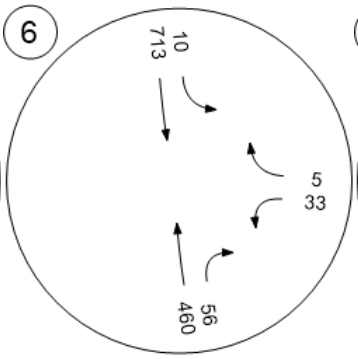
Report Figure 2f: Traffic Volume - Future Total Volume



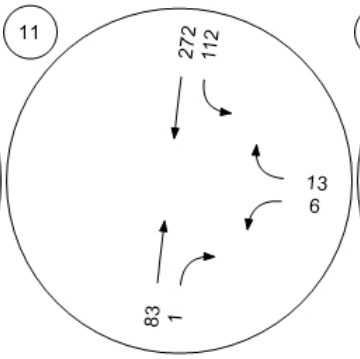
Battle Creek Rd at Reed Rd



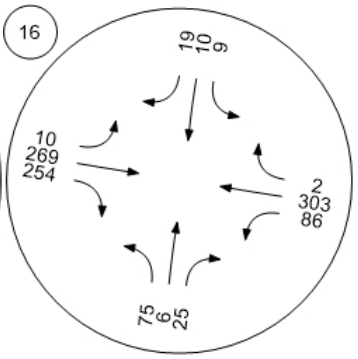
Battle Creek Rd at Site Acces



Reed Rd at Strong Rd



Reed Rd at Fairview Industria



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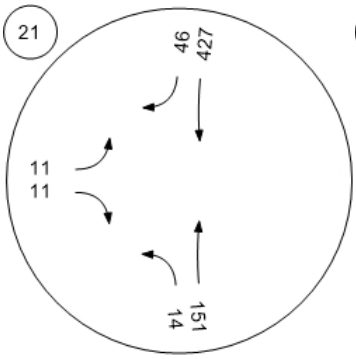

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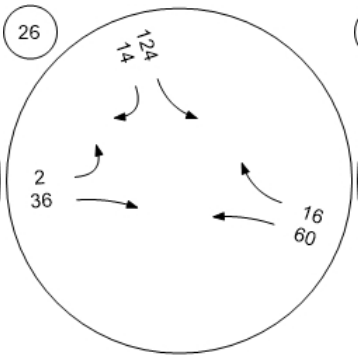

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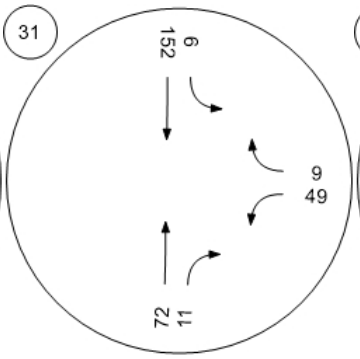

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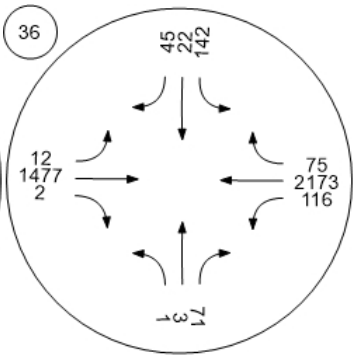
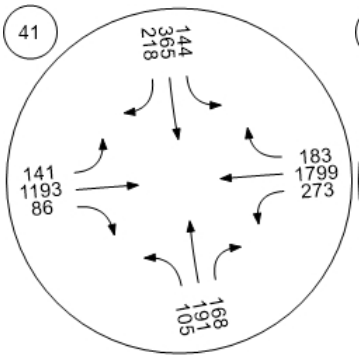
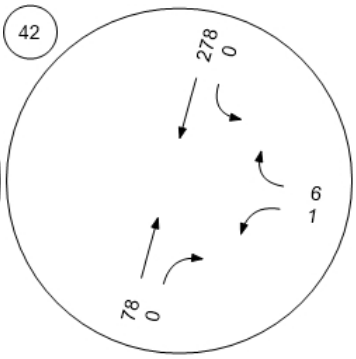


Report Figure 2f: Traffic Volume - Future Total Volume

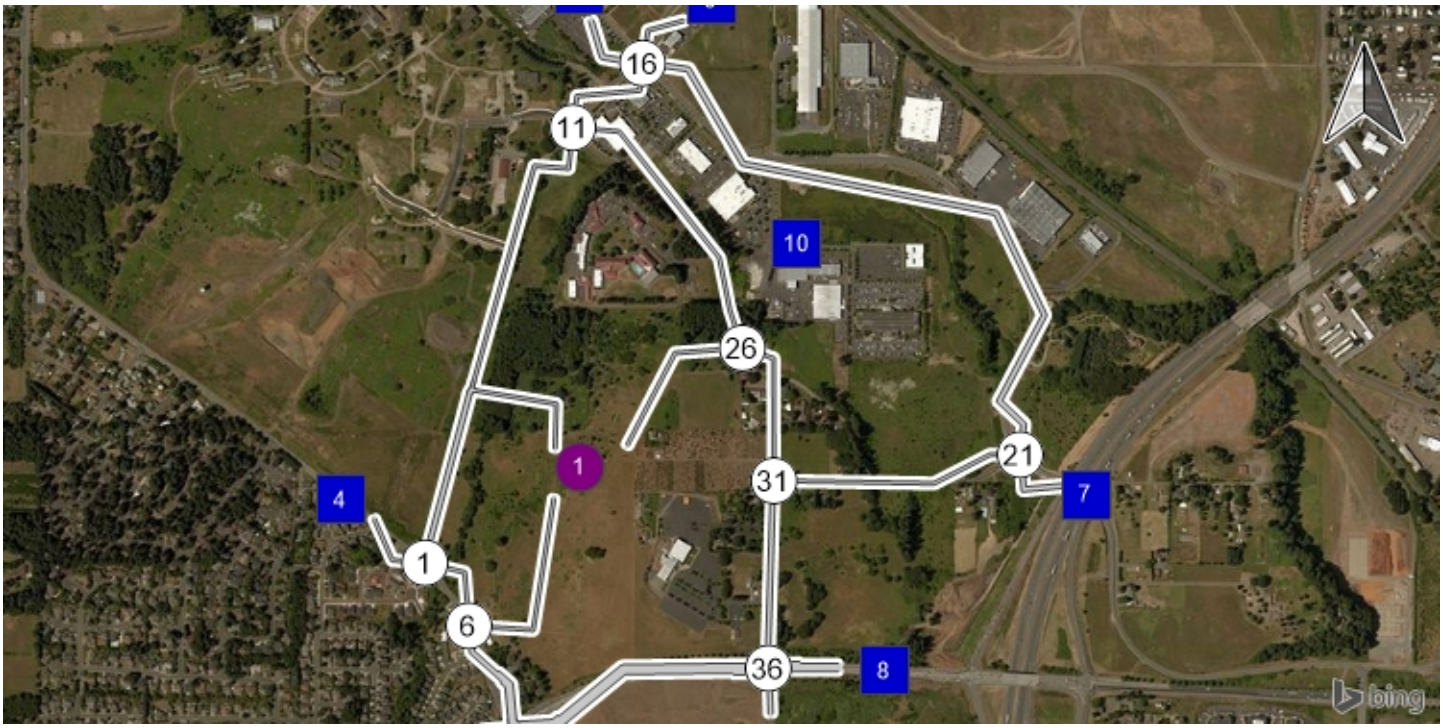
Keubler Blvd at Battle Creek

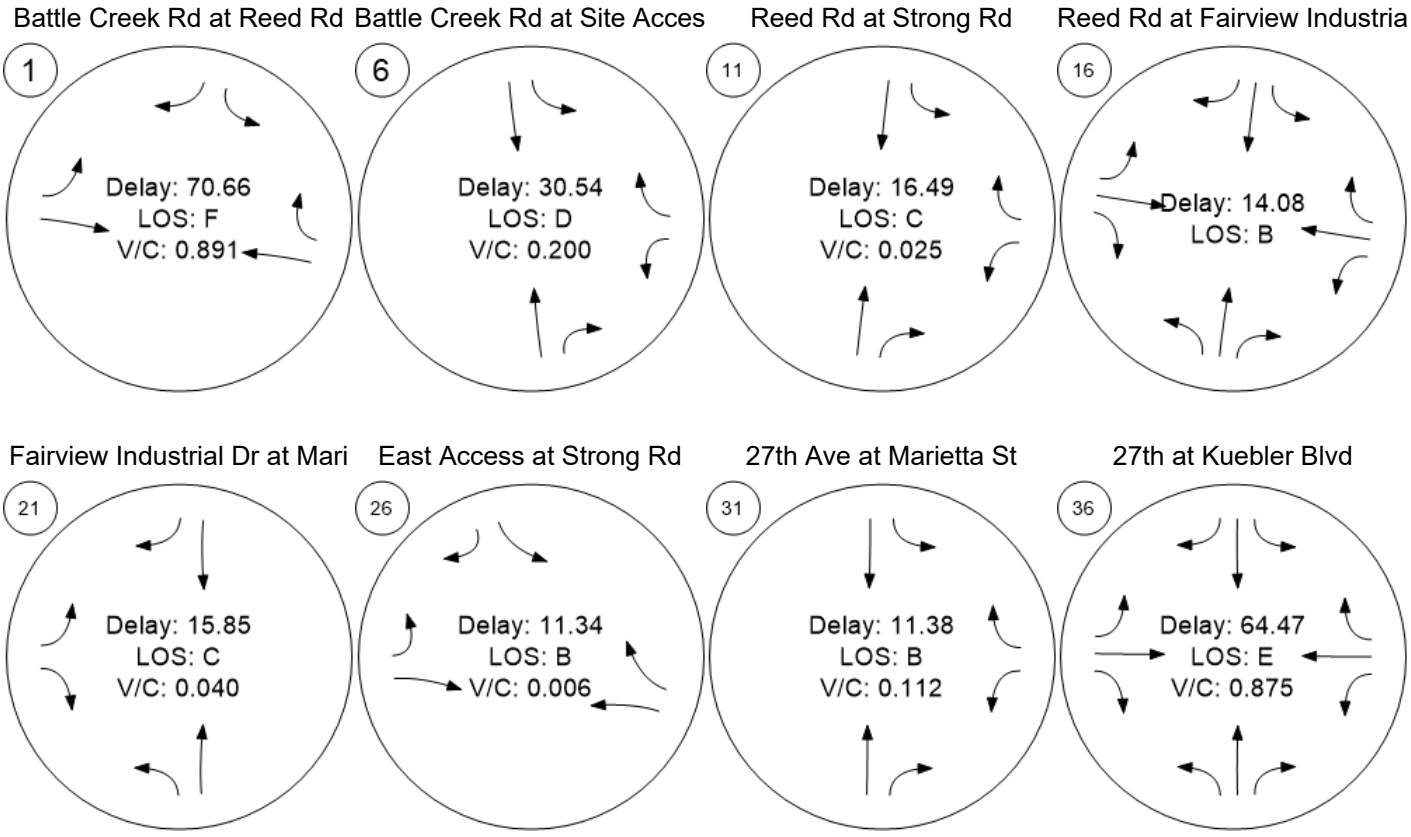


Reed at Site Access



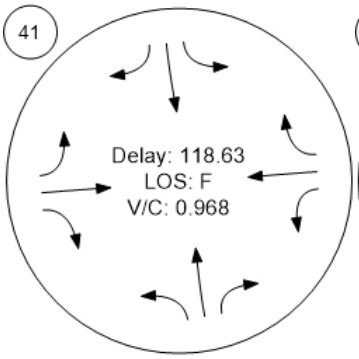
Report Figure 3: Traffic Conditions





Report Figure 3: Traffic Conditions

Keubler Blvd at Battle Creek



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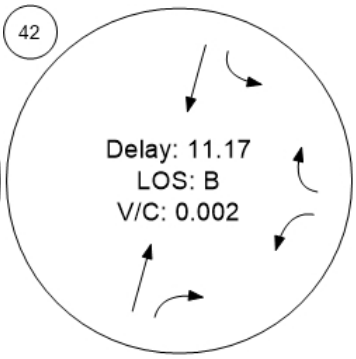


REDMOND GEOTECHNICAL SERVICES

Geotechnical Investigation and Geologic Hazard Assessment

Proposed Reed Road Residential Subdivision Site

Tax Lot No's. 100, 200, 400, 601, 1600 and 1700

Reed Road SE and Battle Creek Road SE

Salem (Marion County), Oregon

for

Multi/Tech Engineering Services, Inc.

Project No. 1001.058.G
July 20, 2018

REDMOND GEOTECHNICAL SERVICES

July 20, 2018

Mr. Jeremy Grenz
Multi/Tech Engineering Services, Inc.
1155 13th Street SE
Salem, Oregon 97302

Dear Mr. Grenz:

Re: Geotechnical Investigation and Geologic Hazard Assessment, Proposed Reed Road Residential Subdivision Site, Tax Lot No's. 100, 200, 400, 601, 1600 and 1700, Reed Road SE and Battle Creek Road SE, Salem (Marion County), Oregon

Submitted herewith is our report entitled "Geotechnical Investigation and Geologic Hazard Assessment, Proposed Reed Road Residential Subdivision Site, Tax Lot No's. 100, 200, 400, 601, 1600 and 1700, Reed Road SE and Battle Creek Road SE, Salem (Marion County), Oregon". The scope of our services was outlined in our formal proposal to Mr. Jeremy Grenz of Multi/Tech Engineering Services, Inc. dated February 12, 2018. Written authorization of our services was provided by Mr. Mark Grenz through a formal purchase order #6234 on April 30, 2018.

During the course of our investigation, we have kept you and/or others advised of our schedule and preliminary findings. We appreciate the opportunity to assist you with this phase of the project. Should you have any questions regarding this report, please do not hesitate to call.

Sincerely,

Daniel M. Redmond, P.E., G.E.
President/Principal Engineer

PO BOX 20547 • PORTLAND, OREGON 97294 • FAX 503/286-7176 • PHONE 503/285-0598

TABLE OF CONTENTS

Table of Contents (continued)

GEOTECHNICAL INVESTIGATION AND GEOLOGIC HAZARD ASSESSMENT
PROPOSED REED ROAD RESIDENTIAL DEVELOPMENT SITE
TAX LOT NO'S. 100, 200, 400, 601, 1600 AND 1700
REED ROAD SE AND BATTLE CREEK ROAD SE
SALEM (MARION COUNTY) OREGON

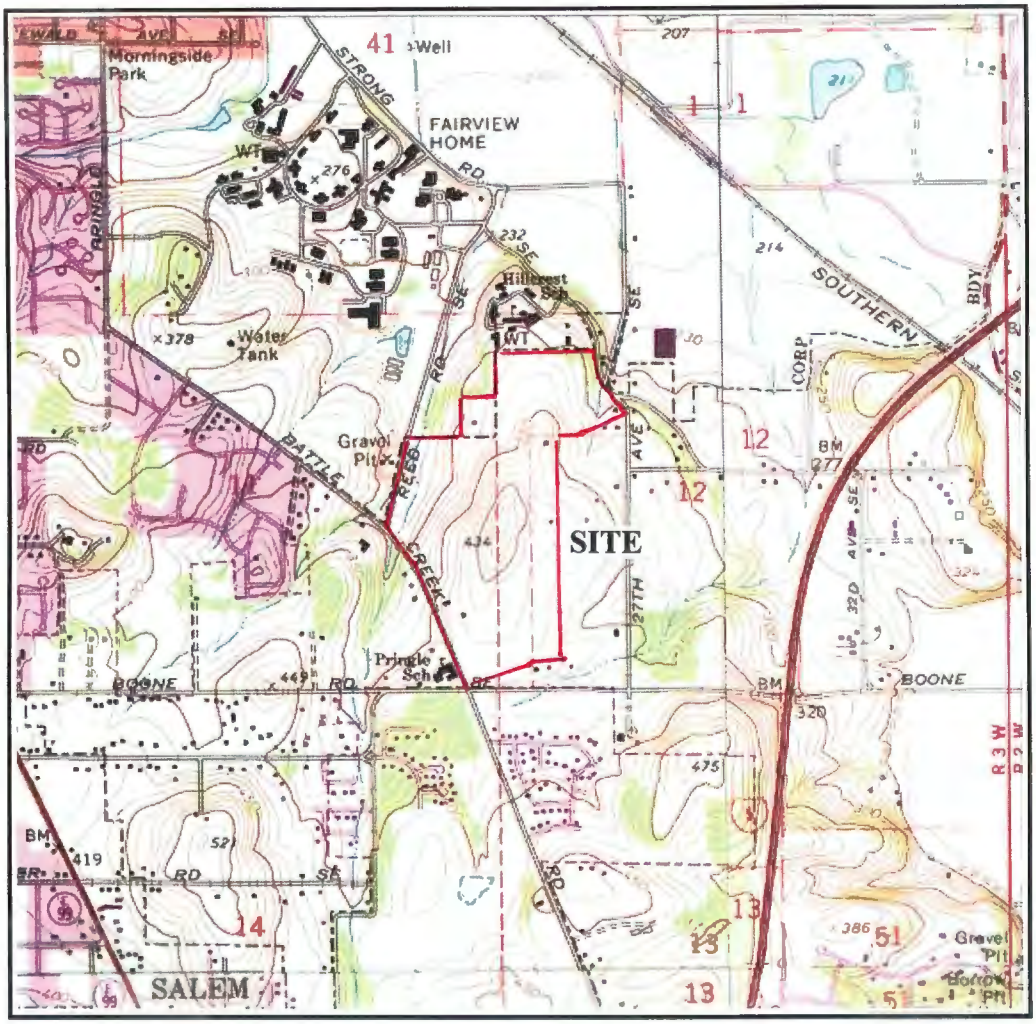
INTRODUCTION

Redmond Geotechnical Services, LLC is please to submit to you the results of our Geotechnical Investigation and Geologic Hazard Assessment at the site of the proposed new residential development located to the east of the intersection of Reed Road SE and Battle Creek Road SE in Salem (Marion County), Oregon. The general location of the subject site is shown on the Site Vicinity Map, Figure No. 1. The purpose of our geotechnical investigation and geologic hazard study services at this time was to explore the existing subsurface soils and/or groundwater conditions across the subject site and to evaluate any potential concerns with regard to potential slope failure at the site as well as to develop and/or provide appropriate geotechnical design and construction recommendations for the proposed new residential development project.

PROJECT DESCRIPTION

We understand that present plans are to develop the subject property into new single-family residential lots. Based on a review of a proposed site development plan prepared by Multi/Tech Engineering Services, Inc., we understand that the proposed new residential development will consist of the construction of approximately two hundred and twenty (220) new single-family residential lots ranging in size from about 5,000 to 10,000 square feet (see Site Exploration Plan, Figure No. 2). The new residential homes are anticipated to be of one- and/or three-story structures constructed with wood framing. Support of the new residential structures is anticipated to consist primarily of conventional shallow strip (continuous) footings although some individual (column) footings may also be required. Structural loading information, although unavailable at this time, is anticipated to be fairly typical and light for this type of wood-frame single-family residential structure and is expected to result in maximum dead plus live continuous (strip) and individual (column) footing loads on the order of about 1.5 to 3.0 kips per lineal foot (klf) and 10 to 30 kips, respectively.

Although a site grading plan is not available at this time, we understand that both cuts and fills are presently planned for the residential project. In general, both cuts and/or fills of between five (5) to ten (10) feet are generally anticipated across the proposed residential lots and will generally be located along the lot perimeters and/or site boundaries. In this regard, due to the existing and/or finish grade sloping site conditions, some of the proposed new single-family residential structures and/or lots may also include the construction of a partial below grade floor(s) and/or retaining walls.



SALEM WEST QUADRANGLE
OREGON
7.5 MINUTE SERIES (TOPOGRAPHIC)

SCALE 1:24 000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 10 FEET

DOTTED LINES CROSSING RIVER REPRESENT 5 FOOT CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

SITE VICINITY MAP

Project No. 1011.058.G

REED ROAD SUBDIVISION

Figure No. 1

Other associated site improvements for the project will include construction of new public and/or local residential streets. Additionally, the project will include the construction of new underground utility services as well as new concrete curbs and sidewalks. Further, we understand that storm water from hard and/or impervious surfaces (i.e., roofs and pavements) will be collected for on-site treatment and possible disposal.

SCOPE OF WORK

The purpose of our geotechnical and/or geologic studies was to evaluate the overall subsurface soil and/or groundwater conditions underlying the subject site with regard to the proposed new residential development and construction at the site and any associated impacts or concerns with respect to potential slope failure at the site as well as provide appropriate geotechnical design and construction recommendations for the project. Specifically, our geotechnical investigation and landslide hazard study performed as a collaboration with Northwest Geological Services, Inc. (NWGS, Inc.) included the following scope of work items:

1. Review of available and relevant geologic and/or geotechnical investigation reports for the subject site and/or area.

2. A detailed field reconnaissance and subsurface exploration program of the soil and ground water conditions underlying the site by means of eleven (11) exploratory test pit excavations. The exploratory test pits were excavated to depths ranging from about four (4) to eight (8) feet beneath existing site grades at the approximate locations as shown on the Site Exploration Plan, Figure No. 2. Additionally, field infiltration testing was also performed within various test pits excavated across the subject site.

3. Laboratory testing to evaluate and identify pertinent physical and engineering properties of the subsurface soils encountered relative to the planned site development and construction at the site. The laboratory testing program included tests to help evaluate the natural (field) moisture content and dry density, maximum dry density and optimum moisture content, gradational characteristics, Atterberg Limits and (remolded) consolidation and direct shear strength tests as well as "R"-value tests.

4. A literature review and engineering evaluation and assessment of the regional seismicity to evaluate the potential ground motion hazard(s) at the subject site. The evaluation and assessment included a review of the regional earthquake history and sources such as potential seismic sources, maximum credible earthquakes, and reoccurrence intervals as well as a discussion of the possible ground response to the selected design earthquake(s), fault rupture, landsliding, liquefaction, and tsunami and seiche flooding.

5. Engineering analyses utilizing the field and laboratory data as a basis for furnishing recommendations for foundation support of the proposed new residential structures. Recommendations include maximum design allowable contact bearing pressure(s), depth of footing embedment, estimates of foundation settlement, lateral soil resistance, and foundation subgrade preparation. Additionally, construction and/or permanent subsurface water drainage considerations have also been prepared. Further, our report includes recommendations regarding site preparation, placement and compaction of structural fill materials, suitability of the on-site soils for use as structural fill, criteria for import fill materials, and preparation of foundation, pavement and/or floor slab subgrades.

6. Flexible pavement design and construction recommendations for the proposed new public street improvements.

SITE CONDITIONS

Site Geology

The subject site and/or area is underlain by highly weathered Basalt bedrock deposits and/or residual soils of the Columbia River Basalt formation. A more detailed description of the site geology across and/or beneath the site is presented in the Geologic Hazard Study in Appendix B.

Surface Conditions

The subject proposed new residential development property consists of six (6) rectangular to irregular shaped tax lots (TL's 100, 200, 400, 601, 1600 and 1700) which encompass a total plan area of approximately 57 acres. The proposed residential development property is roughly located to the east of the intersection with Reed Road SE and Battle Creek Road SE, to the south by Kuebler Boulevard SE and to the northeast by Strong Road SE. The subject proposed residential development site is generally unimproved and consists of existing open farm land. Surface vegetation across the site generally consists of a light to moderate growth of grass, weeds and brush as well as some small to large sized trees along the northerly and westerly site boundaries. Additionally, the westerly portion of the subject property is generally low lying and contains an existing seasonal drainage basin.

Topographically, the site is characterized as gently to moderately sloping terrain (10 to 25 percent) descending downward towards the west and north with overall topographic relief estimated at about one hundred and sixty(160) feet and ranges from a low about Elevation 260 feet near Reed Road SE to a high of about Elevation 420 near the southeasterly portion of the site.

Subsurface Soil Conditions

Our understanding of the subsurface soil conditions underlying the site was developed by means of eleven (11) exploratory test pits excavated to depths ranging from about four (4) to eight (8) feet beneath existing site grades on June 1, 2018 with a John Deere 200C track-mounted excavator. The location of the exploratory test pits were located in the field by marking off distances from existing and/or known site features and are shown in relation to the proposed new residential structures and/or site improvements on the Site Exploration Plan, Figure No. 2. Detailed logs of the test pit explorations, presenting conditions encountered at each location explored, are presented in the Appendix, Figure No's. A-5 through A-10.

The exploratory test pit excavations were observed by staff from Redmond Geotechnical Services, LLC who logged each of the test pit explorations and obtained representative samples of the subsurface soils encountered across the site. Additionally, the elevation of the exploratory test pit excavations were referenced from the proposed Site Development Plan prepared by Multi/Tech Engineering Services, Inc. and should be considered as approximate. All subsurface soils encountered at the site and/or within the exploratory test pit excavations were logged and classified in general conformance with the Unified Soil Classification System (USCS) which is outlined on Figure No. A-4.

The test pit explorations revealed that the subject site is underlain by native soil deposits comprised of highly weathered bedrock and/or residual soils composed of a surficial layer of dark brown, moist to very moist, soft, organic, sandy, clayey silt topsoil materials to depths of about 6 to 12 inches. These surficial topsoil materials were inturn underlain by medium to reddish-brown, moist to very moist, medium stiff, clayey, sandy silt to sandy, clayey silt to a depth of about two (2) to seven (7) feet beneath the existing site and/or surface grades. These upper clayey, sandy silt to sandy, clayey silt subgrade soils are best characterized by relatively low to moderate strength and moderate compressibility. These upper clayey, sandy silt to sandy, clayey silt subgrade soils were inturn underlain by gray-brown, damp, dense to very dense, slightly to highly weathered and fractured bedrock deposits the maximum depth explored of about eight (8) feet beneath the existing site and/or surface grades. These slightly to highly weathered and fractured bedrock deposits are best characterized by relatively moderate to high strength and low compressibility.

Groundwater

Groundwater was generally not encountered within any of the exploratory test pit explorations (TH-#1 through TH-#11) at the time of excavation to depths of at least eight (8) feet beneath existing surface grades except. However, the westerly portion of the subject property is bounded by and/or contain an existing seasonal drainage basin and/or surface feature. In this regard, although groundwater elevations at the site may fluctuate seasonally in accordance with rainfall conditions and/or associated with runoff of the easterly and/or southerly drainage basins as well as changes in site utilization, we are generally of the opinion that the static water levels and/or surface water ponding not observed during our recent field exploration work generally reflect a high seasonal groundwater level(s) at and/or beneath the site.

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SITE EXPLORATION PLAN

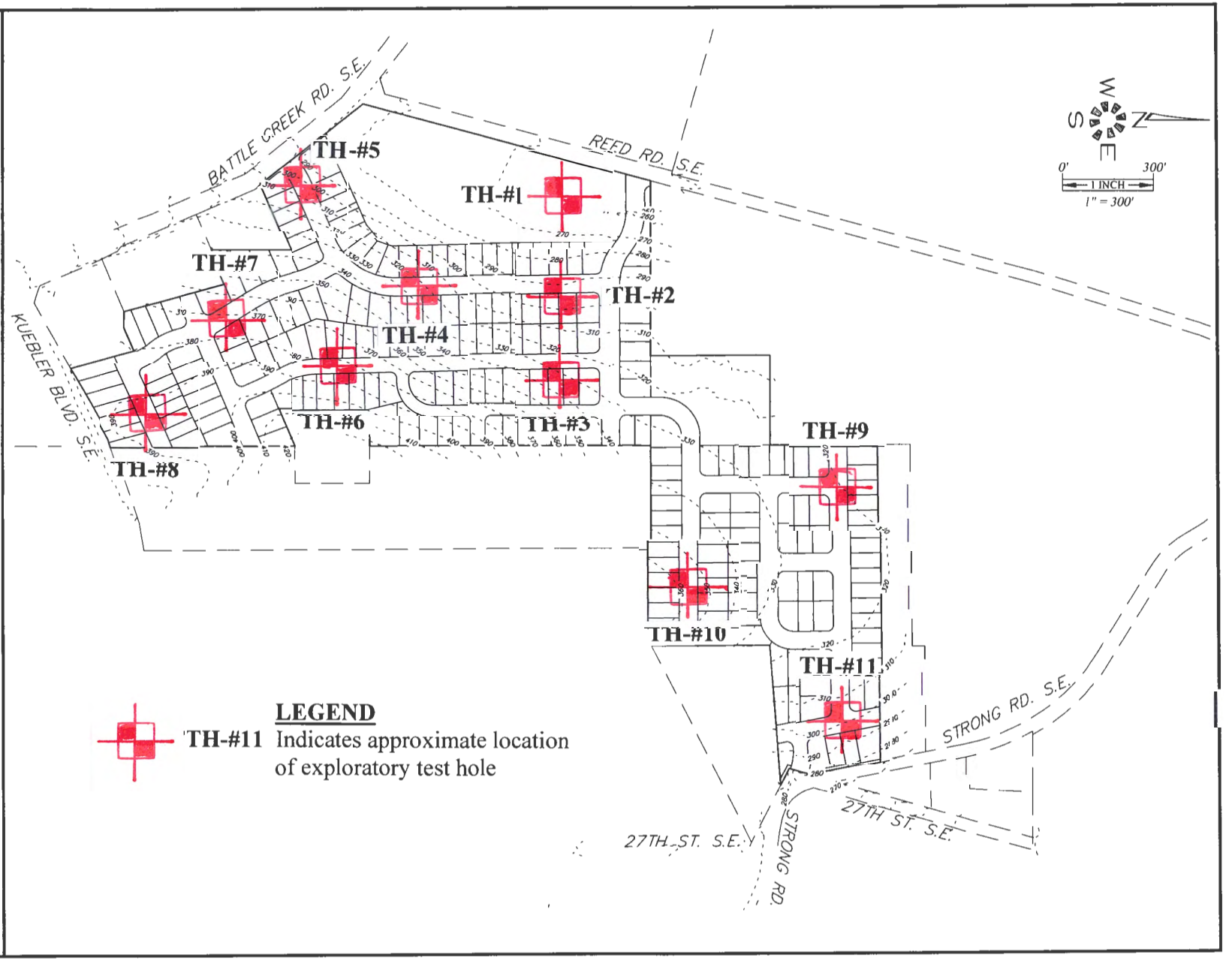


Figure No. 2

INFILTRATION TESTING

We performed four (4) field infiltration tests at the site on June 1, 2018. The infiltration tests were performed in test holes TH-#1 , TH-#5, TH-#9 and TH-#11 at depths of between two (2) to four (4) feet beneath the existing site and/or surface grades. The subgrade soils encountered in the infiltration test hole consisted of clayey, sandy silt and/or sandy, clayey silt. The infiltration testing was performed in general conformance with current EPA and/or the City of Salem Encased Falling Head test method which consisted of advancing a 6-inch diameter PVC pipe approximately 6 inches into the exposed soil horizon at each test location. Using a steady water flow, water was discharged into the pipe and allowed to penetrate and saturate the subgrade soils. The water level was adjusted over a two (2) hour period and allowed to achieve a saturated subgrade soil condition consistent with the bottom elevation of the surrounding test pit excavation. Following the required saturating period, water was again added into the PVC pipe and the time and/or rate at which the water level dropped was monitored and recorded. Each measurable drop in the water level was recorded until a consistent infiltration rate was observed and/or repeated.

Based on the results of the field infiltration testing at the site, we have found that the native sandy, clayey silt subgrade soil deposits posses an ultimate infiltration rate on the order of about 0.2 to 0.6 inches per hour (in/hr).

LABORATORY TESTING

Representative samples of the on-site subsurface soils were collected at selected depths and intervals from various test pit excavations and returned to our laboratory for further examination and testing and/or to aid in the classification of the subsurface soils as well as to help evaluate and identify their engineering strength and compressibility characteristics. The laboratory testing consisted of visual and textural sample inspection, moisture content and dry density determinations, maximum dry density and optimum moisture content, gradation analyses and Atterberg Limits as well as remolded consolidation, direct shear strength and "R"-value tests. Results of the various laboratory tests are presented in the Appendix, Figure No's. A-11 through A-17.

SEISMICITY AND EARTHQUAKE SOURCES

The seismicity of the southwest Washington and northwest Oregon area, and hence the potential for ground shaking, is controlled by three separate fault mechanisms. These include the Cascadia Subduction Zone (CSZ), the mid-depth intraplate zone, and the relatively shallow crustal zone. Descriptions of these potential earthquake sources are presented below.

The CSZ is located offshore and extends from northern California to British Columbia. Within this zone, the oceanic Juan de Fuca Plate is being subducted beneath the continental North American Plate to the east. The interface between these two plates is located at a depth of approximately 15 to 20 kilometers (km). The seismicity of the CSZ is subject to several uncertainties, including the maximum earthquake magnitude and the recurrence intervals associated with various magnitude earthquakes.

Anecdotal evidence of previous CSZ earthquakes has been observed within coastal marshes along the Washington and Oregon coastlines. Sequences of interlayered peat and sands have been interpreted to be the result of large Subduction zone earthquakes occurring at intervals on the order of 300 to 500 years, with the most recent event taking place approximately 300 years ago. A study by Geomatrix (1995) and/or USGS (2008) suggests that the maximum earthquake associated with the CSZ is moment magnitude (Mw) 8 to 9. This is based on an empirical expression relating moment magnitude to the area of fault rupture derived from earthquakes that have occurred within Subduction zones in other parts of the world. An Mw 9 earthquake would involve a rupture of the entire CSZ. As discussed by Geomatrix (1995) this has not occurred in other subduction zones that have exhibited much higher levels of historical seismicity than the CSZ. However, the 2008 USGS report has assigned a probability of 0.67 for a Mw 9 earthquake and a probability of 0.33 for a Mw 8.3 earthquake. For the purpose of this study an earthquake of Mw 9.0 was assumed to occur within the CSZ.

The intraplate zone encompasses the portion of the subducting Juan de Fuca Plate located at a depth of approximately 30 to 50 km below western Washington and western Oregon. Very low levels of seismicity have been observed within the intraplate zone in western Oregon and western Washington. However, much higher levels of seismicity within this zone have been recorded in Washington and California. Several reasons for this seismic quiescence were suggested in the Geomatrix (1995) study and include changes in the direction of Subduction between Oregon, Washington, and British Columbia as well as the effects of volcanic activity along the Cascade Range. Historical activity associated with the intraplate zone includes the 1949 Olympia magnitude 7.1 and the 1965 Puget Sound magnitude 6.5 earthquakes. Based on the data presented within the Geomatrix (1995) report, an earthquake of magnitude 7.25 has been chosen to represent the seismic potential of the intraplate zone.

The third source of seismicity that can result in ground shaking within the Vancouver and southwest Washington area is near-surface crustal earthquakes occurring within the North American Plate. The historical seismicity of crustal earthquakes in this area is higher than the seismicity associated with the CSZ and the intraplate zone. The 1993 Scotts Mills (magnitude 5.6) and Klamath Falls (magnitude 6.0), Oregon earthquakes were crustal earthquakes.

Liquefaction

Seismic induced soil liquefaction is a phenomenon in which lose, granular soils and some silty soils, located below the water table, develop high pore water pressures and lose strength due to ground vibrations induced by earthquakes. Soil liquefaction can result in lateral flow of material into river channels, ground settlements and increased lateral and uplift pressures on underground structures. Buildings supported on soils that have liquefied often settle and tilt and may displace laterally. Soils located above the ground water table cannot liquefy, but granular soils located above the water table may settle during the earthquake shaking.

Our review of the subsurface soil test pit logs from our exploratory field explorations (TH-#1 through TH-#11) and laboratory test results indicate that the site is generally underlain by medium stiff, sandy, clayey silt soils and/or dense to very dense, slightly to highly weathered bedrock deposits to depths of at least 8.0 feet beneath existing site grades. Additionally, groundwater was generally not encountered within any of the exploratory test pit excavations (TH-#1 through TH-#11) at the site during our field exploration work to depths of at least 8.0 feet. As such, due to the medium stiff and/or cohesive nature of the sandy, clayey silt subgrade soils as well as the dense to very dense nature of the underlying slightly to highly weathered bedrock deposits beneath the site, it is our opinion that the native sandy, clayey silt subgrade soil and/or slightly to highly weathered bedrock deposits located beneath the subject site have a very low potential for liquefaction during the design earthquake motions previously described.

Landslides

No ancient and/or active landslides were observed or are known to be present on the subject site. Additionally, development of the subject site into the planned residential homes sites does not appear to present a potential geologic and/or landslide hazard provided that the site grading and development activities conform with the recommendations presented within this report. A more detailed assessment of the potential landslide hazard of the subject site is presented in the Geologic Hazard Study in Appendix B.

Surface Rupture

Although the site is generally located within a region of the country known for seismic activity, no known faults exist on and/or immediately adjacent to the subject site. As such, the risk of surface rupture due to faulting is considered negligible.

Tsunami and Seiche

A tsunami, or seismic sea wave, is produced when a major fault under the ocean floor moves vertically and shifts the water column above it. A seiche is a periodic oscillation of a body of water resulting in changing water levels, sometimes caused by an earthquake. Tsunami and seiche are not considered a potential hazard at this site because the site is not near to the coast and/or there are no adjacent significant bodies of water.

Flooding and Erosion

Stream flooding is a potential hazard that should be considered in lowland areas of Marion County and Salem. The FEMA (Federal Emergency Management Agency) flood maps should be reviewed as part of the design for the proposed new residential structures and site improvements. Elevations of structures on the site should be designed based upon consultants reports, FEMA (Federal Emergency Management Agency), and Marion County requirements for the 100-year flood levels of any nearby creeks, streams and/or drainage basins.

CONCLUSIONS AND RECOMMENDATIONS

General

Based on the results of our field explorations, laboratory testing, and engineering analyses, it is our opinion that the site is presently stable and suitable for the proposed new single-family residential development and its associated site improvements provided that the recommendations contained within this report are properly incorporated into the design and construction of the project.

The primary features of concern at the site are 1) the presence of highly moisture sensitive clayey and silty subgrade soils across the site, 2) the presence of gently to moderately sloping site conditions across the proposed new residential lots and/or home sites, and 3) the relatively low infiltration rates anticipated within the near surface clayey and silty subgrade soils.

With regard to the moisture sensitive clayey and silty subgrade soils, we are generally of the opinion that all site grading and earthwork activities be scheduled for the drier summer months which is typically June through September. In regards to the gently to moderately sloping site conditions across the proposed new residential home sites and/or lots, we are of the opinion that site grading and/or structural fill placement should be minimized where possible and should generally limit cuts and/or fills of less than ten (10) feet. Additionally, where existing site slopes and/or surface grades exceed about 20 percent (1V:5H) and in order to construct the proposed new residential lots and/or improvements to the new local residential streets, benching and keying of all fills into the natural site slopes may be required. With regard to the relatively low infiltration rates anticipated within the clayey and silty subgrade soils beneath the site, we generally do not recommend any storm water infiltration within structural and/or embankment fills. However, some limited storm water infiltration may be feasible within the residential lots and/or areas of the site where the existing and/or finish slope gradients are no steeper than about 20 percent (1V:5H). In this regard, we recommend that all proposed storm water detention and/or infiltration systems for the project be reviewed and approved by Redmond Geotechnical Services, LLC.

The following sections of this report provide specific recommendations regarding subgrade preparation and grading as well as foundation and floor slab design and construction for the new Reed Road residential development project.

Site Preparation

As an initial step in site preparation, we recommend that the proposed new residential building sites and/or lots as well as their associated structural and/or site improvement area(s) be stripped and cleared of all existing improvements, any existing unsuitable fill materials, surface debris, existing vegetation, topsoil materials, and/or any other deleterious materials present at the time of construction. In general, we envision that the site stripping to remove existing vegetation and topsoil materials will generally be about 6 to 12 inches.

However, localized areas requiring deeper removals, such as any existing undocumented and/or unsuitable fill materials as well as old foundation remnants, may be encountered and should be evaluated at the time of construction by the Geotechnical Engineer. The stripped and cleared materials should be properly disposed of as they are generally considered unsuitable for use/reuse as fill materials.

Following the completion of the site stripping and clearing work and prior to the placement of any required structural fill materials and/or structural improvements, the exposed subgrade soils within the planned structural improvement area(s) should be inspected and approved by the Geotechnical Engineer and possibly proof-rolled with a half and/or fully loaded dump truck. Areas found to be soft or otherwise unsuitable should be over-excavated and removed or scarified and recompacted as structural fill. During wet and/or inclement weather conditions, proof rolling and/or scarification and recompaction as noted above may not be appropriate.

The on-site native sandy, clayey silt subgrade soil materials are generally considered suitable for use/reuse as structural fill materials provided that they are free of organic materials, debris, and rock fragments in excess of about 6 inches in dimension. However, if site grading is performed during wet or inclement weather conditions, the use of some of the on-site native soil materials which contain significant silt and clay sized particles will be difficult at best. In this regard, during wet or inclement weather conditions, we recommend that an import structural fill material be utilized which should consist of a free-draining (clean) granular fill (sand & gravel) containing no more than about 5 percent fines. Representative samples of the materials which are to be used as structural fill materials should be submitted to the Geotechnical Engineer and/or laboratory for approval and determination of the maximum dry density and optimum moisture content for compaction.

In general, all site earthwork and grading activities should be scheduled for the drier summer months (late June through September) if possible. However, if wet weather site preparation and grading is required, it is generally recommended that the stripping of topsoil materials be accomplished with a tracked excavator utilizing a large smooth-toothed bucket working from areas yet to be excavated. Additionally, the loading of strippings into trucks and/or protection of moisture sensitive subgrade soils will also be required during wet weather grading and construction. In this regard, we recommend that areas in which construction equipment will be traveling be protected by covering the exposed subgrade soils with a woven geotextile fabric such as Mirafi FW404 followed by at least 12 inches or more of crushed aggregate base rock. Further, the geotextile fabric should have a minimum Mullen burst strength of at least 250 pounds per square inch for puncture resistance and an apparent opening size (AOS) between the U.S. Standard No. 70 and No. 100 sieves.

All structural fill materials placed within the new building and/or pavement areas should be moistened or dried as necessary to near (within 3 percent) optimum moisture conditions and compacted by mechanical means to a minimum of 92 percent of the maximum dry density as determined by the ASTM D-1557 (AASHTO T-180) test procedures. Structural fill materials should be placed in lifts (layers) such that when compacted do not exceed about 8 inches.

Additionally, all fill materials placed within five (5) lineal feet of the perimeter (limits) of the proposed residential structures and/or pavements should be considered structural fill. Additionally, due to the sloping site conditions, we recommend that all structural fill materials planned in areas where existing surface and/or slope gradients exceed about 20 percent (1V:5H) be properly benched and/or keyed into the native (natural) slope subgrade soils. In general, a bench width of at least eight (8) feet and a keyway depth of at least one (1) foot is recommended. However, the actual bench width and keyway depth should be determined at the time of construction by the Geotechnical Engineer. Further, all fill slopes should be constructed with a finish slope surface gradient no steeper than about 2H:1V.

As such, settlement sensitive site and/or surface improvements (i.e., concrete curbs and sidewalks) should not be constructed until after primary consolidation and/or settlement has been completed. All aspects of the site grading, including a review of the proposed site grading plan(s), should be approved and/or monitored by a representative of Redmond Geotechnical Services, LLC.

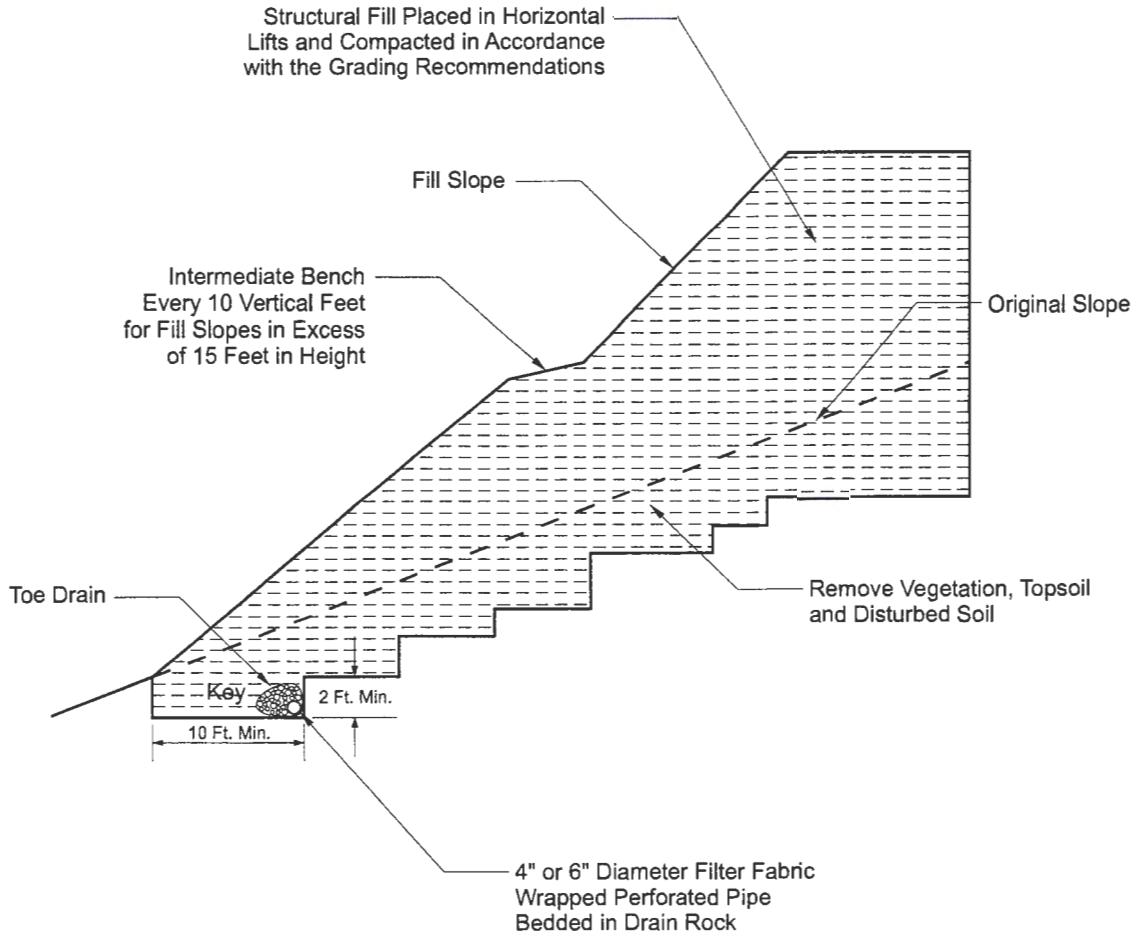
Foundation Support

Based on the results of our investigation, it is our opinion that the site of the proposed new Reed Road residential development is suitable for support of the one- and/or two-story wood-frame structures provided that the following foundation design recommendations are followed. The following sections of this report present specific foundation design and construction recommendations for the planned new residential structures.

Shallow Foundations

In general, conventional shallow continuous (strip) footings and individual (spread) column footings may be supported by approved native (untreated) subgrade soil materials and/or silty sand structural fill soils based on an allowable contact bearing pressure of about 2,000 pounds per square foot (psf). This recommended allowable contact bearing pressure is intended for dead loads and sustained live loads and may be increased by one-third for the total of all loads including short-term wind or seismic loads. In general, continuous strip footings should have a minimum width of at least 16 inches and be embedded at least 18 inches below the lowest adjacent finish grade (includes frost protection). Individual column footings (where required) should be embedded at least 18 inches below grade and have a minimum width of at least 24 inches. Additionally, if foundation excavation and construction work is planned to be performed during wet and/or inclement weather conditions, we recommend that a 3 to 4 inch layer of compacted crushed rock be used to help protect the exposed foundation bearing surfaces until the placement of concrete.

Total and differential settlements of foundations constructed as recommended above and supported by approved native subgrade soils or by properly compacted structural fill materials are expected to be well within the tolerable limits for this type of lightly loaded wood-frame structure and should generally be less than about 1-inch and 1/2-inch, respectively.



TYPICAL FILL SLOPE DETAIL

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Allowable lateral frictional resistance between the base of the footing element and the supporting subgrade bearing soil can be expressed as the applied vertical load multiplied by a coefficient of friction of 0.30 and 0.45 for native silty subgrade soils and/or import gravel fill materials, respectively. In addition, lateral loads may be resisted by passive earth pressures on footings poured "neat" against in-situ (native) subgrade soils or properly backfilled with structural fill materials based on an equivalent fluid density of 300 pounds per cubic foot (pcf). This recommended value includes a factor of safety of approximately 1.5 which is appropriate due to the amount of movement required to develop full passive resistance.

Floor Slab Support

In order to provide uniform subgrade reaction beneath concrete slab-on-grade floors, we recommend that the floor slab area be underlain by a minimum of 6 inches of free-draining (less than 5 percent passing the No. 200 sieve), well-graded, crushed rock. The crushed rock should help provide a capillary break to prevent migration of moisture through the slab. However, additional moisture protection can be provided by using a 10-mil polyolefin geo-membrane sheet such as StegoWrap.

The base course materials should be compacted to at least 95 percent of the maximum dry density as determined by the ASTM D-1557 (AASHTO T-180) test procedures. Where floor slab subgrade materials are undisturbed, firm and stable and where the underslab aggregate base rock section has been prepared and compacted as recommended above, we recommend that a modulus of subgrade reaction of 150 pci be used for design.

Retaining/Below Grade Walls

Retaining and/or below grade walls should be designed to resist lateral earth pressures imposed by native soils or granular backfill materials as well as any adjacent surcharge loads. For walls which are unrestrained at the top and free to rotate about their base, we recommend that active earth pressures be computed on the basis of the following equivalent fluid densities:

Non-Restrained Retaining Wall Pressure Design Recommendations

Slope Backfill (Horizontal/Vertical)	Equivalent Fluid Density/Silt (pcf)	Equivalent Fluid Density/Gravel (pcf)
Level	35	30
3H:1V	60	50
2H:1V	90	80

For walls which are fully restrained at the top and prevented from rotation about their base, we recommend that at-rest earth pressures be computed on the basis of the following equivalent fluid densities:

Restrained Retaining Wall Pressure Design Recommendations

Slope Backfill (Horizontal/Vertical)	Equivalent Fluid Density/Silt (pcf)	Equivalent Fluid Density/Gravel (pcf)
Level	45	35
3H:1V	65	60
2H:1V	95	90

The above recommended values assume that the walls will be adequately drained to prevent the buildup of hydrostatic pressures. Where wall drainage will not be present and/or if adjacent surcharge loading is present, the above recommended values will be significantly higher.

Backfill materials behind walls should be compacted to 90 percent of the maximum dry density as determined by the ASTM D-1557 (AASHTO T-180) test procedures. Special care should be taken to avoid over-compaction near the walls which could result in higher lateral earth pressures than those indicated herein. In areas within three (3) to five (5) feet behind walls, we recommend the use of hand-operated compaction equipment.

Pavements

Flexible pavement design for the proposed new street improvements for the residential development project was determined in accordance with the City of Salem Department of Public Works Administrative Rules Chapter 109-006 (Street Design Standards) Section 6 dated January 1, 2014.

Specifically, on June 1, 2018, samples of the subgrade soils from the proposed public streets were collected by means of test hole excavations. The subgrade soils encountered in the test holes located across the proposed residential subdivision site generally consisted of native and/or residual soils comprised of medium to reddish-brown, medium stiff, clayey, sandy silt to sandy, clayey SILT (ML).

The subgrade soil samples collected at the site were tested in the laboratory in accordance with the ASTM Vol. 4.08 Part D-2844-69 (AASHTO T-190-93) test method for the determination of the subgrade soil "R"-value and expansion pressure. The results of the "R"-value testing was then converted to an equivalent Resilient Modulus (M_{RSG}) in accordance with current AASHTO methodology. The results of the laboratory "R"-value tests revealed that the subgrade soils have an apparent "R"-value of between 24 and 28 with an average "R"-value of 26 (see Figure No's. A-16 and A-17). Using the current AASHTO methodology for converting "R"-value to Resilient Modulus (M_{RSG}), the subgrade soils have a Resilient Modulus (M_{RSG}) of about 5,291 psi which is classified a "Fair" (M_{RSG} = 5,000 psi to 10,000 psi).

In addition to the above, Dynamic Cone Penetration (DCP) tests were performed along the proposed new interior public street alignment at approximate 200-feet intervals. The results of the DCP tests found that the underlying native sandy, clayey silt subgrade soils have a DCP value of between 2 to 3 blows per 2-inches which correlates to a California Bearing Ratio (CBR) of between 5 and 12. Using current AASHTO methodology for converting CBR to Resilient Modulus (MRSG), the subgrade soils have a Resilient Modulus (MRSG) of between 5,842 and 10,637 psi with an average MRSG of 7,150 psi which is classified as "Fair" (MRSG = 5,000 psi to 10,000 psi).

Local Residential Streets

The following documents and/or design input parameters were used to help determine the flexible pavement section design for new local residential streets:

- **Street Classification:** Local Residential Street
- **Design Life:** 25 years
- **Serviceability:** 4.2 initial, 2.5 terminal
- **Traffic Loading Data:** 100,000 18-kip EAL's
- **Reliability Level:** 90%
- **Drainage Coefficient:** 1.0 (asphalt), 0.8 (aggregate)
- **Asphalt Structural Coefficient:** 0.41
- **Aggregate Structural Coefficient:** 0.10

Based on the above design input parameters and using the design procedures contained within the AASHTO 1993 Design of Pavement Structures Manual, a Structural Number (SN) of 2.6 was determined.

In this regard, we recommend the following flexible pavement section for the construction of new Local Residential Streets:

Material Type	Pavement Section (inches)
Asphaltic Concrete	4.0
Aggregate Base Rock	10.0

Wet Weather Grading and Soft Spot Mitigation

Construction of the proposed new public street improvements is generally recommended during dry weather. However, during wet weather grading and construction, excavation to subgrade can proceed during periods of light to moderate rainfall provided that the subgrade remains covered with aggregate. A total aggregate thickness of 8-inches may be necessary to protect the subgrade soils from heavy construction traffic.

Construction traffic should not be allowed directly on the exposed subgrade but only atop a sufficient compacted base rock thickness to help mitigate subgrade pumping. If the subgrade becomes wet and pumps, no construction traffic shall be allowed on the road alignment. Positive site drainage away from the street shall be maintained if site paving will not occur before the on-set of the wet season.

Depending on the timing for the project, any soft subgrade found during proof-rolling or by visual observations can either be removed and replaced with properly dried and compacted fill soils or removed and replaced with compacted crushed aggregate. However, and where approved by the Geotechnical Engineer, the soft area may be covered with a bi-axial geogrid and covered with compacted crushed aggregate.

Soil Shrink-Swell and Frost Heave

The results of the laboratory "R"-value tests indicate that the native subgrade soils possess a low to moderate expansion potential. As such, the exposed subgrade soils should not be allowed to completely dry and should be moistened to near optimum moisture content (plus or minus 3 percent) at the time of the placement of the crushed aggregate base rock materials. Additionally, exposure of the subgrade soils to freezing weather may result in frost heave and softening of the subgrade. As such, all subgrade soils exposed to freezing weather should be evaluated and approved by the Geotechnical Engineer prior to the placement of the crushed aggregate base rock materials.

Excavation/Slopes

Temporary excavations of up to about four (4) feet in depth may be constructed with near vertical inclinations. Temporary excavations greater than about four (4) feet but less than eight (8) feet should be excavated with inclinations of at least 1 to 1 (horizontal to vertical) or properly braced/shored. Where excavations are planned to exceed about eight (8) feet, this office should be consulted. All shoring systems and/or temporary excavation bracing for the project should be the responsibility of the excavation contractor. Permanent slopes should be constructed no steeper than about 2H to 1V unless approved by the Geotechnical Engineer.

Depending on the time of year in which trench excavations occur, trench dewatering may be required in order to maintain dry working conditions if the invert elevations of the proposed utilities are located at and/or below the groundwater level. If groundwater is encountered during utility excavation work, we recommend placing trench stabilization materials along the base of the excavation.

Trench stabilization materials should consist of 1-foot of well-graded gravel, crushed gravel, or crushed rock with a maximum particle size of 4 inches and less than 5 percent fines passing the No. 200 sieve. The material should be free of organic matter and other deleterious material and placed in a single lift and compacted until well keyed.

Surface Drainage/Groundwater

We recommend that positive measures be taken to properly finish grade the site so that drainage waters from the residential structures and landscaping areas as well as adjacent properties or buildings are directed away from the new residential structures foundations and/or floor slabs. All roof drainage should be directed into conduits that carry runoff water away from the residential structures to a suitable outfall. Roof downspouts should not be connected to foundation drains. A minimum ground slope of about 2 percent is generally recommended in unpaved areas around the proposed new residential structures.

Groundwater was not encountered at the site in any of the exploratory test pits (TH-#1 through TH-#11) at the time of excavation to depths of at least 7 feet beneath existing site grades. However, the northwesterly and/or westerly portion(s) of the site contains an existing seasonal drainage basin feature. Additionally, groundwater elevations in the area and/or across the subject property may fluctuate seasonally and may temporarily pond/perch near the ground surface during periods of prolonged rainfall.

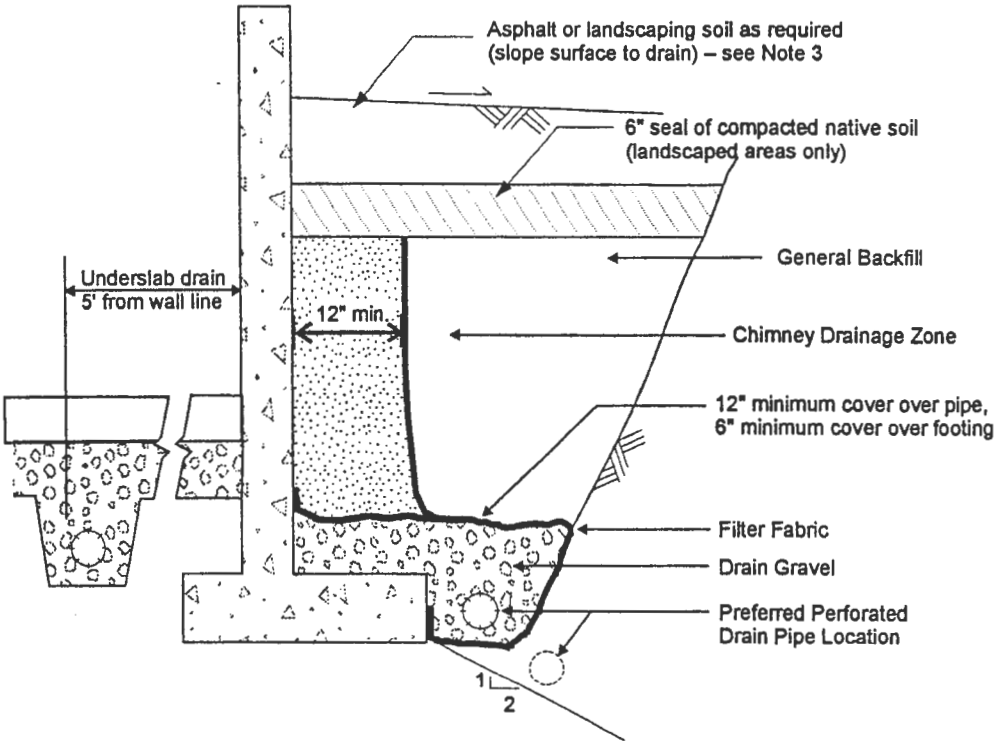
As such, based on our current understand of the possible site grading required to bring the subject site and/or residential lots to finish design grade(s), we are of the opinion that an underslab drainage system is not required for the proposed single-family residential structures. However, a perimeter foundation drain is recommended for any perimeter footings and/or below grade retaining walls. A typical recommended perimeter footing/retaining wall drain detail is shown on Figure No. 4. Further, due to our understanding that various surface infiltration ditches and/or swales may be utilized for the project as well as the relatively low infiltration rates of the near surface clayey, sandy silt and/or silty sand subgrade soils anticipated within and/or near to the foundation bearing level of the proposed residential structures, we are generally of the opinion that storm water detention and/or disposal systems should not be utilized within the residential lots and/or around the proposed residential structures unless approved by the Geotechnical Engineer.

Design Infiltration Rates

Based on the results of our field infiltration testing, we recommend using the following infiltration rate(s) to design any on-site near surface storm water infiltration systems for the project:

Subgrade Soil Type	Recommended Infiltration Rate
sandy, clayey SILT (ML)	0.1 to 0.3 inches per hour (in/hr)

Note: A safety factor of two (2) was used to calculate the above recommended design infiltration rate. Additionally, given the gradational variability of the on-site sandy, clayey sit subgrade soils beneath the site as well as the anticipation of some site grading for the project, it is generally recommended that field testing be performed during and/or following construction of any on-site storm water infiltration system(s) in order to confirm that the above recommended design infiltration rates are appropriate.



SCHEMATIC - NOT TO SCALE

NOTES:

1. Filter Fabric to be non-woven geotextile (Amoco 4545, Mirafi 140N, or equivalent)
2. Lay perforated drain pipe on minimum 0.5% gradient, widening excavation as required. Maintain pipe above 2:1 slope, as shown.
3. All-granular backfill is recommended for support of slabs, pavements, etc. (see text for structural fill).
4. Drain gravel to be clean, washed ¾" to 1½" gravel.
5. General backfill to be on-site gravels, or ¾""-0 or 1½"-0 crushed rock compacted to 92% Modified Proctor (AASHTO T-180).
6. Chimney drainage zone to be 12" wide (minimum) zone of clean washed, medium to coarse sand or drain gravel if protected with filter fabric. Alternatively, prefabricated drainage structures (Miradrain 6000 or similar) may be used.

PERIMETER FOOTING/RETAINING WALL DRAIN DETAIL

Project No. 1001.058.G	REED ROAD SUBDIVISION	Figure No. 4

Seismic Design Considerations

Structures at the site should be designed to resist earthquake loading in accordance with the methodology described in the 2014 and/or latest edition of the State of Oregon Structural Specialty Code (OSSC) and/or Amendments to the 2015 International Building Code (IBC). The maximum considered earthquake ground motion for short period and 1.0 period spectral response may be determined from the Oregon Structural Specialty Code and/or from the National Earthquake Hazard Reduction Program (NEHRP) "Recommended Provisions for Seismic Regulations for New Buildings and Other Structures" published by the Building Seismic Safety Council. We recommend Site Class "C" be used for design. Using this information, the structural engineer can select the appropriate site coefficient values (F_a and F_v) from the 2012 IBC to determine the maximum considered earthquake spectral response acceleration for the project. However, we have assumed the following response spectrum for the project:

Table 1. Recommended Seismic Design Parameters

Site Class	S_S	S_1	Fa	Fv	S_{MS}	S_{M1}	S_{DS}	S_{D1}
C	0.911	0.430	1.036	1.370	0.944	0.589	0.629	0.393

Notes: 1. S_S and S_1 were established based on the USGS 2015 mapped maximum considered earthquake spectral acceleration maps for 2% probability of exceedence in 50 years.

2. Fa and Fv were established based on IBC 2015 tables using the selected S_S and S_1 values.

CONSTRUCTION MONITORING AND TESTING

We recommend that **Redmond Geotechnical Services, LLC** be retained to provide construction monitoring and testing services during all earthwork operations for the proposed new residential development. The purpose of our monitoring services would be to confirm that the site conditions reported herein are as anticipated, provide field recommendations as required based on the actual conditions encountered, document the activities of the grading contractor and assess his/her compliance with the project specifications and recommendations. It is important that our representative meet with the contractor prior to any site grading to help establish a plan that will minimize costly over-excavation and site preparation work. Of primary importance will be observations made during site preparation and stripping, structural fill placement, footing excavations and construction as well as retaining wall backfill.

CLOSURE AND LIMITATIONS

This report is intended for the exclusive use of the addressee and/or their representative(s) to use to design and construct the proposed new single-family residential structures and their associated site improvements described herein as well as to prepare any related construction documents. The conclusions and recommendations contained in this report are based on site conditions as they presently exist and assume that the explorations are representative of the subsurface conditions between the explorations and/or at other locations across the study area. The data, analyses, and recommendations herein may not be appropriate for other structures and/or purposes. We recommend that parties contemplating other structures and/or purposes contact our office. In the absence of our written approval, we make no representation and assume no responsibility to other parties regarding this report. Additionally, the above recommendations are contingent on Redmond Geotechnical Services, LLC being retained to provide all site inspections and constriction monitoring services for this project. Redmond Geotechnical Services, LLC will not assume any responsibility and/or liability for any engineering judgment, inspection and/or testing services performed by others.

It is the owners/developers responsibility for insuring that the project designers and/or contractors involved with this project implement our recommendations into the final design plans, specifications and/or construction activities for the project. Further, in order to avoid delays during construction, we recommend that the final design plans and specifications for the project be reviewed by our office to evaluate as to whether our recommendations have been properly interpreted and incorporated into the project.

If during any future site grading and construction, subsurface conditions different from those encountered in the explorations are observed or appear to be present beneath excavations, we should be advised immediately so that we may review these conditions and evaluate whether modifications of the design criteria are required. We also should be advised if significant modifications of the proposed site development are anticipated so that we may review our conclusions and recommendations.

LEVEL OF CARE

The services performed by the Geotechnical Engineer for this project have been conducted with that level of care and skill ordinarily exercised by members of the profession currently practicing in the area under similar budget and time restraints. No warranty or other conditions, either expressed or implied, is made.

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Appendix "A"

Test Pit Logs and Laboratory Test Data

APPENDIX

FIELD EXPLORATIONS AND LABORATORY TESTING

FIELD EXPLORATION

Subsurface conditions at the site were explored by excavating eleven (11) exploratory test pits (TH-#1 through TH-#11) on June 1, 2018. The approximate location of the test pit explorations are shown in relation to the proposed new residential lots and the associated site improvements on the Site Exploration Plan, Figure No. 2.

The test pits were excavated using track-mounted excavating equipment in general conformance with ASTM Methods in Vol. 4.08, D-1586-94 and D-1587-83. The test pits were excavated to depths ranging from about 4.0 to 8.0 feet beneath existing site grades. Detailed logs of the test pits are presented on the Log of Test Pits, Figure No's. A-5 through A-10. The soils were classified in accordance with the Unified Soil Classification System (USCS), which is outlined on Figure No. A-4.

The exploration program was coordinated by a field engineer who monitored the excavating and exploration activity, obtained representative samples of the subsurface soils encountered, classified the soils by visual and textural examination, and maintained continuous logs of the subsurface conditions. Disturbed and/or undisturbed samples of the subsurface soils were obtained at appropriate depths and/or intervals and placed in plastic bags and/or with a thin walled ring sample.

Groundwater was not encountered in any of the exploratory test pits (TH-#1 through TH-#11) at the time of excavating to depths of at least 8.0 feet beneath existing surface grades.

LABORATORY TESTING

Pertinent physical and engineering characteristics of the soils encountered during our subsurface investigation were evaluated by a laboratory testing program to be used as a basis for selection of soil design parameters and for correlation purposes. Selected tests were conducted on representative soil samples. The program consisted of tests to evaluate the existing (in-situ) moisture-density, maximum dry density and optimum moisture content, gradational characteristics, and Atterberg Limits as well as consolidation, direct shear strength and "R"-value tests.

Dry Density and Moisture Content Determinations

Density and moisture content determinations were performed on both disturbed and relatively undisturbed samples from the test pit explorations in general conformance with ASTM Vol. 4.08 Part D-216. The results of these tests were used to calculate existing overburden pressures and to correlate strength and compressibility characteristics of the soils. Test results are shown on the test pit logs at the appropriate sample depths.

Maximum Dry Density

Two (2) Maximum Dry Density and Optimum Moisture Content tests were performed on representative samples of the on-site clayey, sandy silt and sandy, clayey silt subgrade soils in accordance with ASTM Vol. 4.08 Part D-1557. This test was conducted to help establish various engineering properties for use as structural fill. The test results are presented on Figure No. A-11.

Atterberg Limits

Two (2) Liquid Limit (LL) and Plastic Limit (PL) tests were performed on representative samples of the clayey, sandy silt and sandy, clayey silt subgrade soils in accordance with ASTM Vol. 4.08 Part D-4318-85. These tests were conducted to facilitate classification of the soils and for correlation purposes. The test results appear on Figure No. A-12.

Gradation Analysis

Two (2) Gradation analyses were performed on representative samples of the clayey, sandy silt and sandy, clayey silt subsurface soils in accordance with ASTM Vol. 4.08 Part D-422. The test results were used to classify the soil in accordance with the Unified Soil Classification System (USCS). The test results are shown graphically on Figure No. A-13.

Consolidation Test

One (1) Consolidation test was performed on a remolded sample of the sandy, clayey silt subgrade soil to assess the compressibility characteristics of the underlying subgrade soils in accordance with ASTM Vol. 4.08 Part D-2435-80.

Conventional loading increments of 100, 200, 400, ... 12,800 psf were applied after the 100 percent time of primary consolidation was identified for each loading increment. The samples were unloaded and allowed to rebound after the completion of the loading sequence. Deflection versus time readings were recorded for all load increments from 100 through 12,800 psf. The deflection corresponding to 100 percent primary consolidation was plotted on the consolidation strain versus consolidation pressure curve, which is presented on Figure No. A-14.

Direct Shear Strength Test

One (1) Direct Shear Strength test was performed on a undisturbed and/or remolded sample of the sandy, clayey silt subgrade soil at a continuous rate of shearing deflection (0.02 inches per minute) in accordance with ASTM Vol. 4.08 Part D-3080-79. The test results were used to determine engineering strength properties and are shown graphically on Figure No. A-15.

"R"-Value Tests

Three (3) "R"-value tests were performed on a remolded subgrade soil sample in accordance with ASTM Vol. 4.08 Part D-2844. The test results were used to help evaluate the subgrade soils supporting and performance capabilities when subjected to traffic loading. The test results are shown on Figure No's. A-16 and A-17.

The following figures are attached and complete the Appendix:

Figure No. A-4	Key To Exploratory Test Pit Logs
Figure No's. A-5 through A-10	Log of Test Pits/Dynamic Cone
Figure No. A-11	Maximum Dry Density
Figure No. A-12	Atterberg Limits Test Results
Figure No. A-13	Gradation Test Results
Figure No. A-14	Consolidation Test Results
Figure No. A-15	Direct Shear Strength Test Results
Figure No's. A-16 and A-17	Results of "R"-Value Tests
Figure No's. A-18 through A-21	Field Infiltration Test Results

PRIMARY DIVISIONS			GROUP SYMBOL	SECONDARY DIVISIONS
COARSE GRAINED SOILS — MORE THAN HALF OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVELS — MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS (LESS THAN 5% FINES)	GW	Well graded gravels, gravel-sand mixtures, little or no fines.
			GP	Poorly graded gravels or gravel-sand mixtures, little or no fines.
		GRAVEL WITH FINES	GM	Silty gravels, gravel-sand-silt mixtures, non-plastic fines.
			GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines.
	SANDS — MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS (LESS THAN 5% FINES)	SW	Well graded sands, gravelly sands, little or no fines.
			SP	Poorly graded sands or gravelly sands, little or no fines.
		SANDS WITH FINES	SM	Silty sands, sand-silt mixtures, non-plastic fines.
			SC	Clayey sands, sand-clay mixtures, plastic fines.
FINE GRAINED SOILS — MORE THAN HALF OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS — LIQUID LIMIT IS LESS THAN 50%		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
			OL	Organic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS — LIQUID LIMIT IS GREATER THAN 50%		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
			CH	Inorganic clays of high plasticity, fat clays.
			OH	Organic clays of medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS			Pt	Peat and other highly organic soils.

DEFINITION OF TERMS

U.S. STANDARD SERIES SIEVE				CLEAR SQUARE SIEVE OPENINGS			
200	40	10	4	3/4"	3"	12"	
SILTS AND CLAYS	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		

GRAIN SIZES

SANDS, GRAVELS AND NON-PLASTIC SILTS	BLOWS/FOOT†
VERY LOOSE	0 - 4
LOOSE	4 - 10
MEDIUM DENSE	10 - 30
DENSE	30 - 50
VERY DENSE	OVER 50

RELATIVE DENSITY

CLAYS AND PLASTIC SILTS	STRENGTH‡	BLOWS/FOOT†
VERY SOFT	0 - 1/4	0 - 2
SOFT	1/4 - 1/2	2 - 4
FIRM	1/2 - 1	4 - 8
STIFF	1 - 2	8 - 16
VERY STIFF	2 - 4	16 - 32
HARD	OVER 4	OVER 32

CONSISTENCY

†Number of blows of 140 pound hammer falling 30 inches to drive a 2 inch O.D. (1-3/8 inch I.D.) split spoon (ASTM D-1586).

‡Unconfined compressive strength in tons/sq. ft. as determined by laboratory testing or approximated by the standard penetration test (ASTM D-1586), pocket penetrometer, torvane, or visual observation.

REDMOND GEOTECHNICAL SERVICES
PO Box 20547 • Portland, Oregon 97294

KEY TO EXPLORATORY TEST PIT LOGS
Unified Soil Classification System (ASTM D-2487)

REED ROAD SUBDIVISION
Salem, Oregon

PROJECT NO.	DATE	Figure
1001.058.G	7/20/18	A-4

BACKHOE COMPANY: Gene S. McMurrin BUCKET SIZE: 24 inches DATE: 6/01/18

DEPTH (FEET)	BAG SAMPLE	DENSITY TEST	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	SOIL CLASS. (U.S.C.S.)	SOIL DESCRIPTION
						TEST PIT NO. TH-#1 ELEVATION 265'±
0					ML	Dark brown, very moist, soft, organic, clayey, sandy SILT (Topsoil)
	X			20.6	ML	Medium brown, very moist, medium stiff, clayey, sandy SILT
5	X			28.9		Becomes wet at 6 feet
						Total Depth = 7.0 feet No groundwater encountered at time of exploration
10						
15						
						TEST PIT NO. TH-#2 ELEVATION 295'±
0	X			17.7	ML	Dark brown, moist, soft, organic, clayey, sandy SILT (Topsoil)
					ML	Medium brown, moist to very moist, medium stiff, clayey, sandy SILT
5					RK	Gray-brown, damp, dense to very dense, slightly to moderately weathered and fractured BEDROCK
						Total Depth = 4.0 feet No groundwater encountered at time of exploration
10						
15						

LOG OF TEST PITS

PROJECT NO. 1001.058.G | REED ROAD SUBDIVISION | FIGURE NO. A-5

BACKHOE COMPANY: Gene S. McMurrin BUCKET SIZE: 24 inches DATE: 6/01/18

DEPTH (FEET)	BAG SAMPLE	DENSITY TEST	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	SOIL CLASS. (U.S.C.S.)	SOIL DESCRIPTION
						TEST PIT NO. TH-#3 ELEVATION 335'±
0					ML	Dark brown, moist to very moist, soft, organic, sandy, clayey SILT (Topsoil)
	X			28.6	ML/MH	Medium to reddish-brown, very moist, medium stiff, sandy, clayey SILT
5	X			32.2		
					ML/RK	Gray-brown, moist, dense, highly weathered and fractured BEDROCK
10						Total Depth = 8.0 feet No groundwater encountered at time of exploration
15						
						TEST PIT NO. TH-#4 ELEVATION 330'±
0					ML	Dark brown, moist, soft, organic, clayey, sandy SILT (Topsoil)
					ML	Medium brown, moist to very moist, medium stiff, clayey, sandy SILT
5					RK	Gray-brown, damp, dense to very dense, slightly to moderately weathered and fractured BEDROCK
						Total Depth = 5.0 feet No groundwater encountered at time of exploration
10						
15						

LOG OF TEST PITS

PROJECT NO. 1001.058.G REED ROAD SUBDIVISION FIGURE NO. A-6

BACKHOE COMPANY: Gene S. McMurrin BUCKET SIZE: 24 inches DATE: 6/01/18

DEPTH (FEET)	BAG SAMPLE	DENSITY TEST	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	SOIL CLASS. (U.S.C.S.)	SOIL DESCRIPTION
						TEST PIT NO. TH-#5 ELEVATION 300'±
0					ML	Dark brown, moist to very moist, soft, organic, clayey, sandy SILT (Topsoil)
	X			29.1	ML	Medium brown, moist to very moist, medium stiff, clayey, sandy SILT
5					RK	Gray-brown, damp, dense to very dense, slightly to moderately weathered and fractured BEDROCK
						Total Depth = 6.0 feet No groundwater encountered at time of exploration
10						
15						
						TEST PIT NO. TH-#6 ELEVATION 380'±
0					ML	Dark brown, moist to very moist, soft, organic, sandy, clayey SILT (Topsoil)
	X			27.7	ML/MH	Medium to reddish-brown, very moist, medium stiff, sandy, clayey SILT
5	X			29.5		
					ML/RK	Gray-brown, moist, dense, highly weathered and fractured BEDROVK
						Total Depth = 8.0 feet No groundwater encountered at time of exploration
10						
15						

LOG OF TEST PITS

PROJECT NO. 1001.058.G | REED ROAD SUBDIVISION | FIGURE NO. A-7

BACKHOE COMPANY: Gene S. McMurrin BUCKET SIZE: 24 icnhes DATE: 6/01/18

DEPTH (FEET)	BAG SAMPLE	DENSITY TEST	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	SOIL CLASS. (U.S.C.S.)	SOIL DESCRIPTION
						TEST PIT NO. TH-#7 ELEVATION 370'±
0					ML	Dark brown, moist to very moist, soft, organic, clayey, sandy SILT (Topsoil)
					ML/MH	Medium to reddish-brown, moist to very, medium stiff, sandy, clayey SILT
5						
					ML/RK	Gray-brown, moist, dense, highly weathered and fractured BEDROCK
						Total Depth = 7.0 feet No groundwater encountered at time of exploration
10						
15						
						TEST PIT NO. TH-#8 ELEVATION 395'±
0					ML	Dark brown, moist to very moist, soft, organic, sandy, clayey SILT (Topsoil)
	X			28.2	ML/MH	Medium to reddish-brown, moist to very moist, medium stiff, sandy, clayey SILT
5						
						Total Depth = 7.0 feet No groundwater encountered at time of exploration
10						
15						

LOG OF TEST PITS

PROJECT NO. 1001.058.G | REED ROAD SUBDIVISION | FIGURE NO. A-8

BACKHOE COMPANY: Gene S. McMurrin BUCKET SIZE: 24 inches DATE: 6/01/18

DEPTH (FEET)	BAG SAMPLE	DENSITY TEST	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	SOIL CLASS. (U.S.C.S.)	SOIL DESCRIPTION
						TEST PIT NO. TH-#9 ELEVATION 320'±
0					ML	Dark brown, moist to very moist, soft, organic, clayey, sandy SILT (Topsoil)
	X			23.3	ML	Medium brown, moist to very moist, medium stiff, clayey, sandy SILT
5					RK	Gray-brown, damp, dense to very dense, slightly weathered and fractured BEDROCK
						Total Depth = 6.0 feet No groundwater encountered at time of exploration
10						
15						
						TEST PIT NO. TH-#10 ELEVATION 355'±
0					ML	Dark brown, moist to very moist, soft, organic, clayey, sandy SILT (Topsoil)
					ML/MH	Medium to reddish-brown, moist to very moist medium stiff, sandy, clayey SILT
5					ML/RK	Gray-brown, moist, dense, highly weathered and fractured BEDROCK
						Total Depth = 7.0 feet No groundwater encountered at time of exploration
10						
15						

LOG OF TEST PITS

PROJECT NO. 1001.058.G | REED ROAD SUBDIVISION | FIGURE NO. A-9

BACKHOE COMPANY: Gene S. McMurrin BUCKET SIZE: 24 inches DATE: 6/01/18

DEPTH (FEET)	BAG SAMPLE	DENSITY TEST	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	SOIL CLASS. (U.S.C.S.)	SOIL DESCRIPTION
						TEST PIT NO. TH-#11 ELEVATION 300'±
0					ML	Dark brown, moist to very moist, soft, organic, sandy, clayey SILT (Topsoil)
	X			26.1	ML	Medium brown, moist to very moist, medium stiff, clayey, sandy SILT
5					RK	Gray-brown, damp, dense to very dense, slightly to moderately weathered and fractured BEDROCK
						Total Depth = 6.0 feet No groundwater encountered at time of exploration
10						
15						

TEST PIT NO. ELEVATION

0
5
10
15

LOG OF TEST PITS

PROJECT NO. 1001.058.G | REED ROAD SUBDIVISION | FIGURE NO. A-10

MAXIMUM DENSITY TEST RESULTS

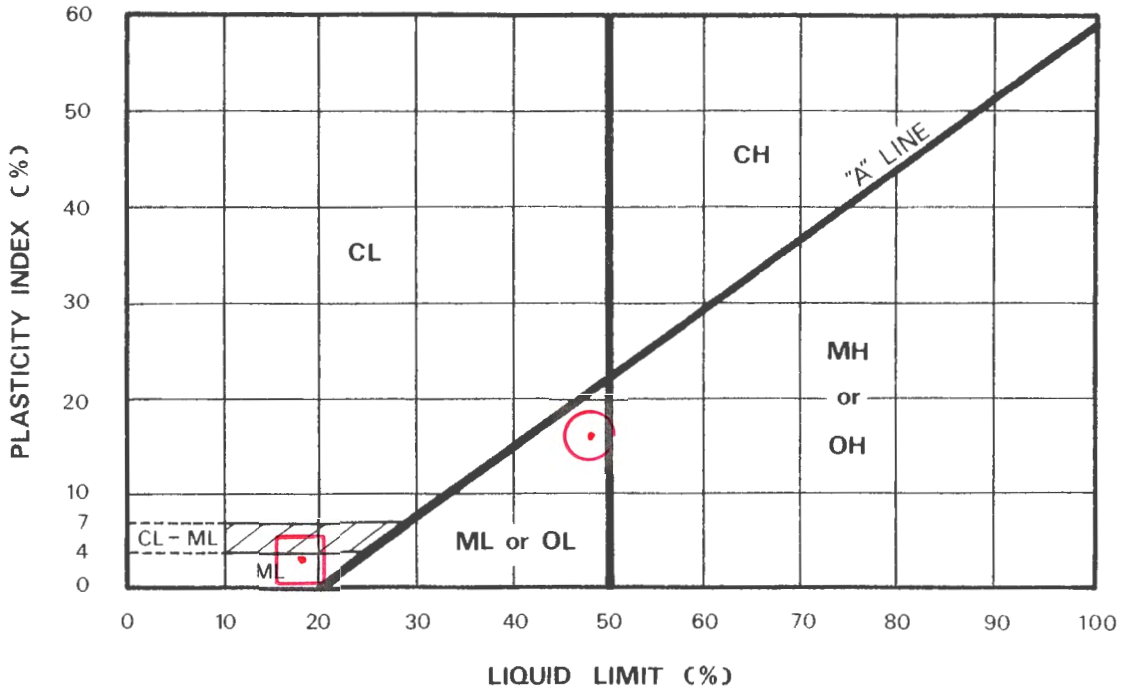
SAMPLE LOCATION	SOIL DESCRIPTION	MAXIMUM DRY DENSITY (pcf)	OPTIMUM MOISTURE CONTENT (%)
TH-#1 @ 2.0'	Medium brown, clayey, sandy SILT(ML)	110.0	17.0
TH-#3 @ 2.0'	Medium to reddish-brown, sandy, clayey SILT (ML/MH)	104.0	24.0

EXPANSION INDEX TEST RESULTS

SAMPLE LOCATION	INITIAL MOISTURE (%)	COMPACTED DRY DENSITY (pcf)	FINAL MOISTURE (%)	VOLUMETRIC SWELL (%)	EXPANSION INDEX	EXPANSIVE CLASS.

MAXIMUM DENSITY & EXPANSION INDEX TEST RESULTS

PROJECT NO.: 1001.058.G	REED ROAD SUBDIVISION	FIGURE NO.: A-11



KEY SYMBOL	BORING NO.	SAMPLE DEPTH (feet)	NATURAL WATER CONTENT %	LIQUID LIMIT %	PLASTICITY INDEX %	PASSING NO. 200 SIEVE %	LIQUIDITY INDEX	UNIFIED SOIL CLASSIFICATION SYMBOL
⊡	TH-#1	2.0	20.6	18.8	3.8	78.1		ML
⊙	TH-#3	2.0	28.6	48.3	16.4	81.7		ML

REDMOND GEOTECHNICAL SERVICES
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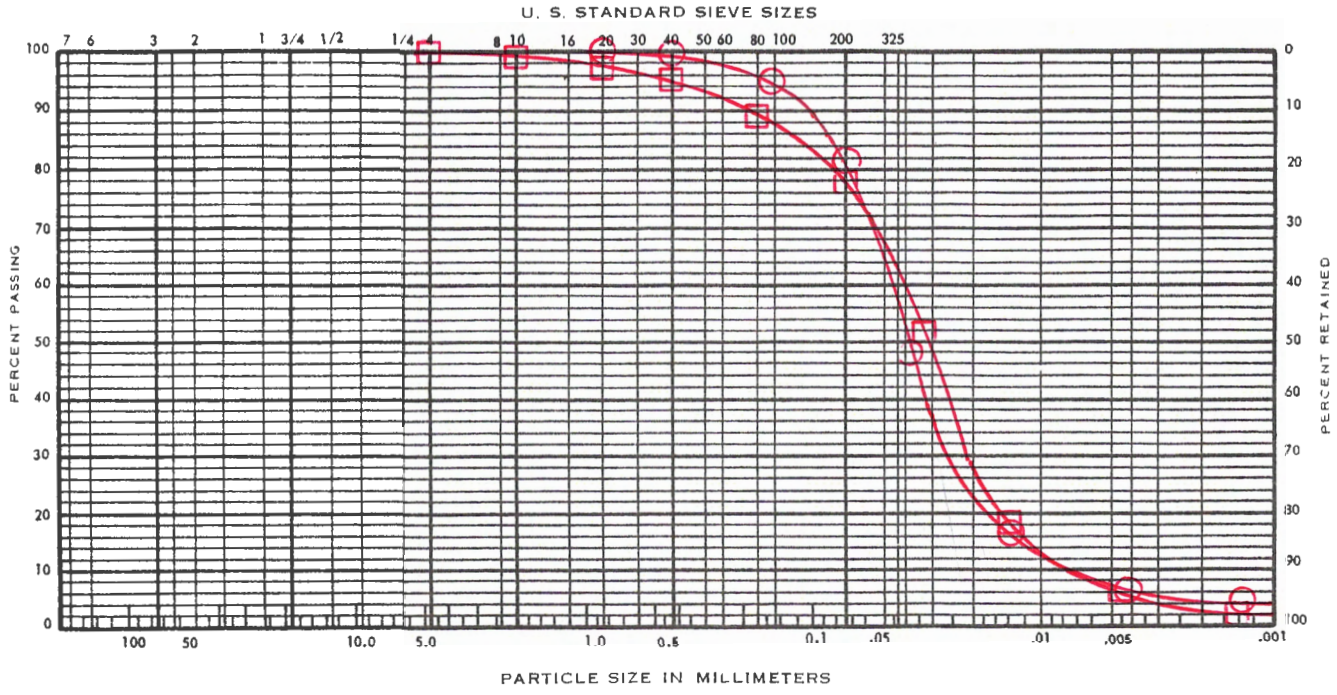
PLASTICITY CHART AND DATA

REED ROAD SUBDIVISION
Salem, Oregon

PROJECT NO.	DATE	
1001.058.G	7/20/18	Figure A-12

UNIFIED SOIL CLASSIFICATION SYSTEM

(ASTM D 422-72)



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

KEY SYMBOL	BORING NO.	SAMPLE DEPTH (feet)	ELEV. (feet)	UNIFIED SOIL CLASSIFICATION SYMBOL	SAMPLE DESCRIPTION
⊟	TH-#1	2.0		ML	Medium brown, clayey, sandy SILT
⊖	TH-#3	2.0		ML	Medium to reddish-brown, sandy, clayey SILT

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GRADATION TEST DATA

REED ROAD SUBDIVISION
Salem, Oregon

PROJECT NO.	DATE	FIGURE
1001.058.G	7/20/18	A-13

BORING	: TH-#3	DESCRIPTION	: sandy, clayey SILT (M
DEPTH (ft)	: 2.0	LIQUID LIMIT	: 48.3
SPEC. GRAVITY	: 2.5 (assumed)	PLASTIC LIMIT	: 31.9

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	24.0	94.0	86.5	
FINAL	14.2	103.3	95.6	

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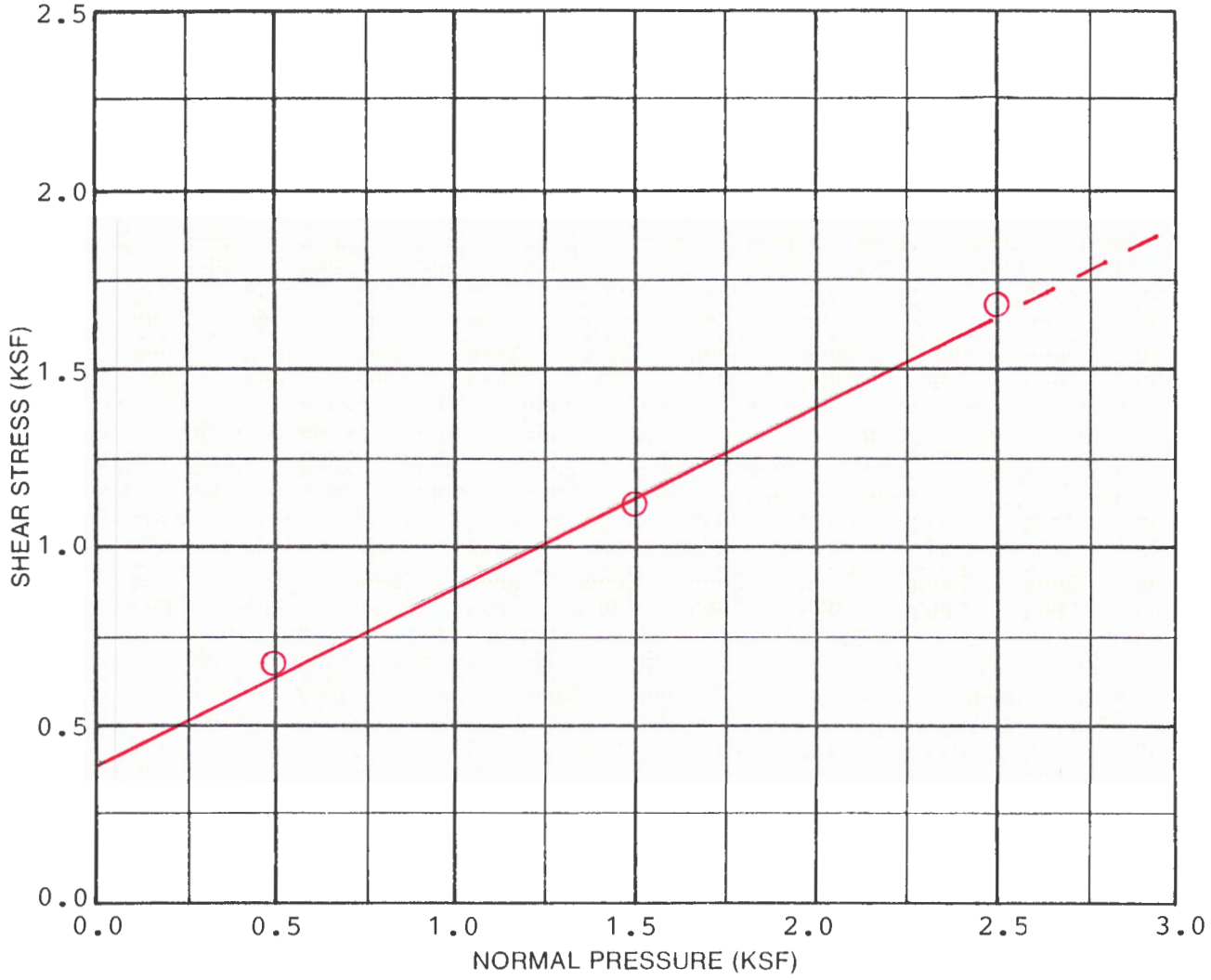
CONSOLIDATION TEST DATA

REED ROAD SUBDIVISION
Salem, Oregon

PROJECT NO.	DATE	
1001.058.G	7/20/18	Figure A-14



SAMPLE DATA	
DESCRIPTION: Medium to reddish-brown, sandy, clayey SILT (ML)	
BORING NO.: TH-#3	
DEPTH (ft.): 2.0	ELEVATION (ft):
TEST RESULTS	
APPARENT COHESION (C): 400 psf	
APPARENT ANGLE OF INTERNAL FRICTION (ϕ): 26°	

TEST DATA				
TEST NUMBER	1	2	3	4
NORMAL PRESSURE (KSF)	0.5	1.5	2.5	
SHEAR STRENGTH (KSF)	0.7	1.1	1.7	
INITIAL H_2O CONTENT (%)	24.0	24.0	24.0	
FINAL H_2O CONTENT (%)	24.7	20.1	15.6	
INITIAL DRY DENSITY (PCF)	94.0	94.0	94.0	
FINAL DRY DENSITY (PCF)	04.8	98.1	103.3	
STRAIN RATE: 0.02 inches per minute				

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DIRECT SHEAR TEST DATA

REED ROAD SUBDIVISION
Slem, Oregon

PROJECT NO.	DATE	
1001.058.G	7/20/18	Figure A-15

RESULTS OF R (RESISTANCE) VALUE TESTS

SAMPLE LOCATION: TH-#1

SAMPLE DEPTH: 2.0 feet bgs

Specimen	A	B	C
Exudation Pressure (psi)	219	329	431
Expansion Dial (o.ooo1")	0	0	1
Expansion Pressure (psf)	0	0	3
Moisture Content (%)	18.6	15.4	12.1
Dry Density (pcf)	99.4	104.2	109.6
Resistance Value, "R"	17	29	41
"R"-Value at 300 psi Exudation Pressure = 28			

SAMPLE LOCATION: TH-#7

SAMPLE DEPTH: 2.0 feet bgs

Specimen	A	B	C
Exudation Pressure (psi)	208	326	439
Expansion Dial (0.0001")	0	1	2
Expansion Pressure (psf)	0	3	8
Moisture Content (%)	27.3	22.1	16.7
Dry Density (pcf)	94.9	99.1	105.7
Resistance Value "R"	13	25	36
"R"-Value at 300 psi Exudation Pressure = 24			

RESULTS OF R (RESISTANCE) VALUE TESTS

SAMPLE LOCATION: TH-#9

SAMPLE DEPTH: 2.0 feet bgs

Specimen	A	B	C
Exudation Pressure (psi)	210	322	426
Expansion Dial (o.ooo1")	0	1	2
Expansion Pressure (psf)	0	3	8
Moisture Content (%)	26.1	21.8	16.2
Dry Density (pcf)	95.4	100.7	106.1
Resistance Value, "R"	15	27	38
"R"-Value at 300 psi Exudation Pressure = 26			

SAMPLE LOCATION:

SAMPLE DEPTH:

Specimen	A	B	C
Exudation Pressure (psi)			
Expansion Dial (0.0001")			
Expansion Pressure (psf)			
Moisture Content (%)			
Dry Density (pcf)			
Resistance Value "R"			
"R"-Value at 300 psi Exudation Pressure =			

Division 004 Appendix C - Infiltration Testing

Location: Reed Road Subdivision	**Date:** June 1, 2018	**Test Hole:** TH-#1
Depth to Bottom of Hole: 4.0 feet	**Hole Diameter:** 6 inches	**Test Method:** Encased Falling Head
Tester's Name: Daniel M. Redmond, P.E., G.E. **Tester's Company:** Redmond Geotechnical Services, LLC		**Tester's Contact Number:** 503-285-0598

Depth (feet)	Soil Characteristics
0-1.0	Dark brown Topsoil
1.0-4.0	Medium brown, clayey, sandy SILT (ML)

Time	Time Interval (Minutes)	Measurement (inches)	Drop in Water (inches)	Infiltration Rate (inches/hour)	Remarks
9:00	0	36.00	----		Filled w/12" water
9:20	20	36.50	0.50	1.50	
9:40	20	36.90	0.40	1.20	
10:00	20	37.23	0.33	0.99	
10:20	20	37.49	0.26	0.78	
10:40	20	37.72	0.23	0.69	
11:00	20	37.93	0.21	0.63	
11:20	20	38.13	0.20	0.60	
11:40	20	38.33	0.20	0.60	

Infiltration Test Data Table

Figure No. A-18

Division 004 Appendix C - Infiltration Testing

Location: Reed Road Subdivision	**Date:** June 1, 2018	**Test Hole:** TH-#5
Depth to Bottom of Hole: 3.0 feet	**Hole Diameter:** 6 inches	**Test Method:** Encased Falling Head
Tester's Name: Daniel M. Redmond, P.E., G.E. **Tester's Company:** Redmond Geotechnical Services, LLC		**Tester's Contact Number:** 503-285-0598

Depth (feet)	Soil Characteristics
0-0.5	Dark brown Topsoil
0.5-3.0	Medium brown, clayey, sandy SILT (ML)

Time	Time Interval (Minutes)	Measurement (inches)	Drop in Water (inches)	Infiltration Rate (inches/hour)	Remarks
9:30	0	24.00	----		Filled w/12" water
9:50	20	24.45	0.45	1.35	
10:10	20	24.79	0.34	1.02	
10:30	20	25.05	0.26	0.78	
10:50	20	25.25	0.20	0.60	
11:10	20	25.41	0.16	0.48	
11:30	20	25.55	0.14	0.42	
11:50	20	25.68	0.13	0.39	
12:10	20	25.81	0.13	0.39	

Infiltration Test Data Table

Division 004 Appendix C - Infiltration Testing

Location: Reed Road Subdivision	**Date:** June 1, 2018	**Test Hole:** TH-#9
Depth to Bottom of Hole: 3.0 feet	**Hole Diameter:** 6 inches	**Test Method:** Encased Falling Head
Tester's Name: Daniel M. Redmond, P.E., G.E. **Tester's Company:** Redmond Geotechnical Services, LLC		**Tester's Contact Number:** 503-285-0598

Depth (feet)	Soil Characteristics
0-0.5	Dark brown Topsoil
0.5-3.0	Medium brown, clayey, sandy SILT (ML)

Time	Time Interval (Minutes)	Measurement (inches)	Drop in Water (inches)	Infiltration Rate (inches/hour)	Remarks
9:50	0	24.00	----		Filled w/12" water
10:10	20	24.40	0.40	1.20	
10:30	20	24.72	0.32	0.96	
10:50	20	24.96	0.24	0.72	
11:10	20	25.15	0.19	0.57	
11:30	20	25.29	0.14	0.42	
11:50	20	25.41	0.12	0.36	
12:10	20	25.52	0.11	0.33	
12:30	20	25.62	0.10	0.30	

Infiltration Test Data Table

Division 004 Appendix C - Infiltration Testing

Location: Reed Road Subdivision	**Date:** June 1, 2018	**Test Hole:** TH-#11
Depth to Bottom of Hole: 2.0 feet	**Hole Diameter:** 6 inches	**Test Method:** Encased Falling Head
Tester's Name: Daniel M. Redmond, P.E., G.E. **Tester's Company:** Redmond Geotechnical Services, LLC		**Tester's Contact Number:** 503-285-0598

Depth (feet)	Soil Characteristics
0-0.5	Dark brown Topsoil
0.5-2.0	Medium brown, clayey, sandy SILT (ML)

Time	Time Interval (Minutes)	Measurement (inches)	Drop in Water (inches)	Infiltration Rate (inches/hour)	Remarks
10:10	0	12.00	----		Filled w/12" water
10:30	20	12.30	0.30	0.90	
10:50	20	12.53	0.23	0.69	
11:10	20	12.70	0.17	0.51	
11:30	20	12.83	0.13	0.39	
11:50	20	12.93	0.10	0.30	
12:10	20	13.01	0.08	0.24	
12:30	20	13.08	0.07	0.21	
12:50	20	13.15	0.07	0.21	

Infiltration Test Data Table

Appendix "B"

Geologic Hazard Assessment

NORTHWEST GEOLOGICAL SERVICES, INC.
Consulting Geologists and Hydrogeologists
2505 N.E. 42nd Avenue, Portland, Oregon 97213-1201
503-249-1093 nwgeological@gmail.com

Redmond Geotechnical Services **20 June 2018**
P. O. Box 20547
Portland, Or 97294

Attention: Dan Redmond

Geologic Hazard Assessment
Reed Rd SE Site
8S/3W– 11D TLs 100, 101, 200, 400 & 601
8S/3W - 12B TL 1600
Salem, Oregon

Dear Dan:

The purpose of this letter is to present Northwest Geological Services, Inc. (NGS) Geologic Hazard Assessment for the above referenced properties as per your verbal authorization of 2 February 2018. We understand that our services are in support of your client's effort to subdivide and develop the site.

1. Purpose and Scope of Study

The City slope hazard database indicates that the site has a hazard score of from 2 to 3 points. City of Salem Planning rules indicate that site requires a geologic hazard assessment. The purpose of this letter is to meet that requirement.

For the study we conducted the following tasks:

- Reviewed DOGAMI hazard studies and maps of the area;
- Obtained GIS survey and Hazard maps from City of Salem Public Works;
- Reviewed geologic and topographic maps for the site area;
- Reviewed aerial imagery (1944-2017);
- Observed samples from three test pits and conducted a brief site reconnaissance; and
- Prepared this letter.

2. Site Setting and Slopes

The subject property consists of six Tax lots totaling 46.28 acres located north of Kuebler Blvd and east of Battle Creek and Reed Roads SE in Salem, Oregon (Figures 1 and 2).

The highest elevations are on the NNE-SSW ridge extending across the site. Elevations range from about 426 at the east edge of TL 101 down to 260 along the creek at the north end of TL 200 and 270 at the NE corner of TL 1600 (Figure 2). The steepest natural slopes are ~12 acers of 17% – 20% in the center of TL 100 with two small (1/3 acre) patches of slope up to 24%. The steepest slopes are man-made and up to 50% for Kuebler Blvd SE and Battle Creek Rd SE. The gentlest slopes are on the alluvial terrace above the creek in TL 200 and in TL 1600 and in the summit area in TL 101.

Figure 3 shows 1967 and 2017 aerial photos of the site and adjacent area. Our review of aerial photos[1] and reconnaissance indicates that the cuts for Battle Creek Rd were made before 1944 and

[1] We reviewed photos and images from 1944 through 2014, see Section 7, References.

widened in the 1980s. The aerial photo shows the large cut for Kuebler immediately south of the site was built between 1984 and 1994. All natural and man-made cuts appear stable.

The aerial photos also indicate that the site has been fallow scrubland, pasture and/or used to grow grasses or grains since the mid 1940s. Presently the site is covered by grasses and scrub with scattered wooded areas.

3. Site Engineering Geology

According to published mapping (Foxworthy, 1970; Bella, 1981; Beeson & Tolan, 2001) and our geologic mapping for Marion County (NGS, 1997), most of the site is underlain by the Sentinel Bluffs flows of the Columbia River Basalt (Figure 4). The summit area, above about 350 ft, is underlain by the Silver Falls flow. The lowest area along Reed Rd SE is underlain by the Winter Water flows. Slopes below 400 ft were scoured by the Missoula Floods 13,000 to ~ 50,000 years ago (Waitt, 1985). Flood scour removed much of the soil below about 400 leaving generally thinner soils and/or weathered basalt.

The basalt flows are mantled by a few feet of red-brown clayey SILT and weathered to severely weathered. The severely weathered to decomposed basalt is weathered to a hard to very hard clayey silt (laterite). The Silver Falls flows are more open-textured than the older flows and thus more susceptible to weathering. Consequently, the residual soils from weathering of those flow are deeper than those at lower elevations.

Three test pits were excavated at the site to confirm the depth to basalt and the nature of the overlying soils for the geologic hazards study. Figure 5 shows the locations of the test pits. Hard decomposed basalt was found at shallow depths in test pits TP-2 and -3 (Table 1, below). Additionally, alluvial silt fills the low area along the stream paralleling Reed Rd SE[2].

Table 1 - Test Pit Data

Geologic Unit	TP-1	TP-2	TP-3
Topsoil	0 - 0.7 ft	0 - 0.7 ft	0 - 0.7 ft
Brown clayey, sandy SILT	0.7 - 8 ft		
Red brown clayey SILT		0.7 - 2 ft	0.7 - 6 ft
Weathered Basalt		2 - 6 ft	6 ft
Total Depth		6 ft	6 ft

The residual soils in TP-2 was stiff and bedrock was present below 2 ft. The silt in TP-3 was medium stiff and graded down to highly weathered basalt by 6 ft. TP-2 was dug near the bottom of the Sentinel Bluffs basalt where the basalt is generally comprised of large blocks or columns and is generally only slightly weathered. TP-3 was located within the flow top zone where the basalt is usually vesicular and moderately to severely weathered. However, even the undisturbed weathered - or even decomposed - basalt is very competent.

[2] Additional test pits were excavated for the geotechnical investigation.

4. Geologic Hazards

The available geologic mapping indicates a lack of potential geologic hazards at the site or to the proposed subdivision development (Figure 4). Our mapping and the test pits show the site is underlain by a few feet of stiff to hard soils with weathered basalt at shallow depths. However, several years ago DOGAMI estimated a “low to intermediate” relative earthquake risk for the site area (Wang & Leonard, 1996).[3] Additionally DOGAMI recently added potential landslide susceptibility ranking to its SLIDO web site. That ranking shows the site with a moderate to high susceptibility to landslides. Finally, the City of Salem shows some slopes steep enough to present a level 2 to 3 risk (on a scale of 0 to 6).

4.1 GMS-105 Estimated Earthquake Hazards

GMS-105 (Wang & Leonard, 1996) show the following relative earthquake hazard risks:

- Liquefaction susceptibility: 0 on a scale of 0 (none) to 5 (high) based on an estimated lack of potentially liquefiable soil in the subsurface.
- Amplification susceptibility: 1 to 5 depending on location across the site on a scale of 0 (low) to 5 (high). This ranking is supposedly based on an estimated presence of unconsolidated or soft soils in the subsurface.
- Landslide susceptibility: 1 to 2 on scale of 0 (low) to 5 (high) based on slopes of less than 6% up to 15%.
- Overall Relative Earthquake Hazard: Zone C (low to intermediate) for the development area on scale of D (low) to A (highest) based on combination of the above hazards. However the thicker and softer alluvial soil along the creek in TL 200 is Zone B (intermediate to high).

Our reconnaissance of the site indicates that areas shown "moderate" or “high” hazard by GMS-105 are, in fact, the man made slopes and very localized features of a few feet in amplitude. Additionally, the test pits and nearby cut slopes demonstrate a lack of soil or rock susceptible to slope failure on slopes as low as those at the site. Thus on-the-ground geologic reconnaissance indicates that there are no geologic or topographic features that create seismic induced slope failure risk beyond that of adjacent areas shown as "no risk" areas by GMS-105.

4.2 DOGAMI Landslide Susceptibility

The landslide susceptibility maps are derived from generalized digital geologic maps, evaluation of LIDAR imagery and comparison with information for existing nearby landslides (Burns and others, 2012). They are not maps of landslides. Rather, they denote areas that should be evaluated by a qualified professional Engineering Geologist. They are similar to – but more advanced – than the City of Salem risk maps that are based mainly on slope and the presence of nearby landslides.

4.3 Actual Potential for Earthquake or Water Induced Geologic Hazards

The site has gentle to moderate slopes. There are no natural slopes at the site steep enough to fail during an earthquake. Site soils below 3 to 3.5 ft depth are stiff to hard, thus limiting the potential for lateral spreading. Possibly, GMS-105 overestimated this risk because the GIS indicated a “steep slope” somewhere in an estimation cell that included the site. The City GIS map we obtained shows no steep slopes present other than the small areas associated with the man made cuts and the 2 small patches of slope >20%. However, the lack of elevated risk for seismic induced slope failure does not imply a lack of seismic risk. The site is subject to the same strong ground motions from local or

[3] The newer DOGAMI earthquake risk map (IMS-17 by Hofmeister & others, 2000) does not extend to the site.

distant earthquakes as are similar shallow bedrock sites throughout the area. The existing natural slopes appear stable with respect to saturation. However, steep cuts into them or fills place on them may be less stable than the natural slope.

5. Conclusions and Recommendations

The site is gently to moderately sloped and has a very low susceptibility to landsliding under any natural geologic circumstance, in our opinion. In our experience, the weathered basalt is not susceptible to slope spreading or liquefaction during strong ground motions from earthquakes. The basalt bedrock is at shallow depth and is not susceptible to failure during earthquakes beneath the existing site slopes. Thus, the site does not appear to be at significant risk from the forms of slope instability evaluated by GMS-105 or the DOGAMI landslide susceptibility maps. In our opinion, development of this site should not create new or exacerbate existing geologic hazards. However, we caution that any fills at the site may be subject to failure or settlement during strong ground motions. As noted above, cuts into the natural slopes may be less stable than the existing slope. Consequently, we recommend that foundations, cuts and fills should be designed by a qualified professional using recommendations from your geotechnical investigation.

In our experience, the decomposed and weathered basalt have relatively low permeability. Consequently, the thin soil overlying the basalt may become fully saturated during intense precipitation or after prolonged intervals of moderate precipitation. We recommend provision be made for on site storm water retention and off site disposal. The system should be designed by a qualified professional.

6. LIMITATIONS AND LIABILITY

We call your attention to the paragraphs on Warranty and Liability in the General Conditions (dated 1/2018) that you previously approved. Interpretations and recommendations presented herein are based on limited data and observations. Actual subsurface conditions may vary from those inferred from the limited information available to us. If site excavations for development find conditions to differ significantly from those inferred herein, you should contact us and provide an opportunity for us to review our recommendations for the site.

We thank you for the opportunity to assist you with your project. Please contact me if you have questions about the report.

Yours very truly,
Northwest Geological Services, Inc.
Clive F. (Rick) Kienle, Jr.
Principal Engineering Geologist
and Vice President

NGS Reference 235.104-1

7. References

Aerial Photographs & Imagery: US Geological Survey – 1944, 10 August 1954, 16 October 1967, 3 July 1973, 18 June 1994, 23 July 2000, 29 February 2008; USDA Farm Service Agency – 17 August 2003; WAC Corp – 28 March 1990; State of Oregon – 28 June 2005, 8 July 2010; Google, Inc. – 6 October 2017.

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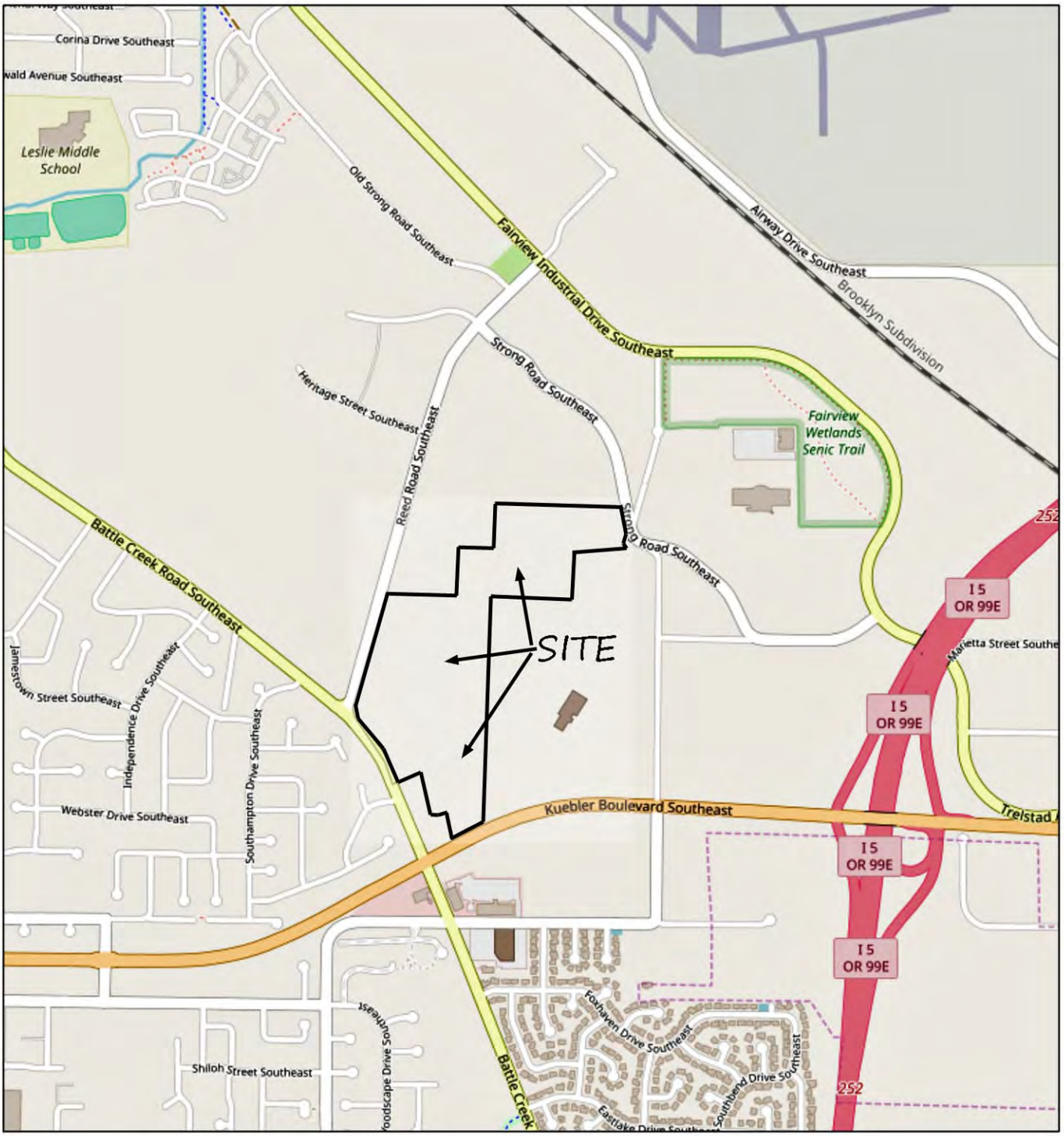
Wang, Y. and W.J. Leonard, 1996, Relative earthquake hazard maps of the Salem E. and Salem W. Quadrangles, Marion and Polk Counties, Oregon, Oregon Dept. Geology & Mineral Industries, Geologic Map Series, GMS-105.



1:19,200

0 0.1 0.2 0.4 mi

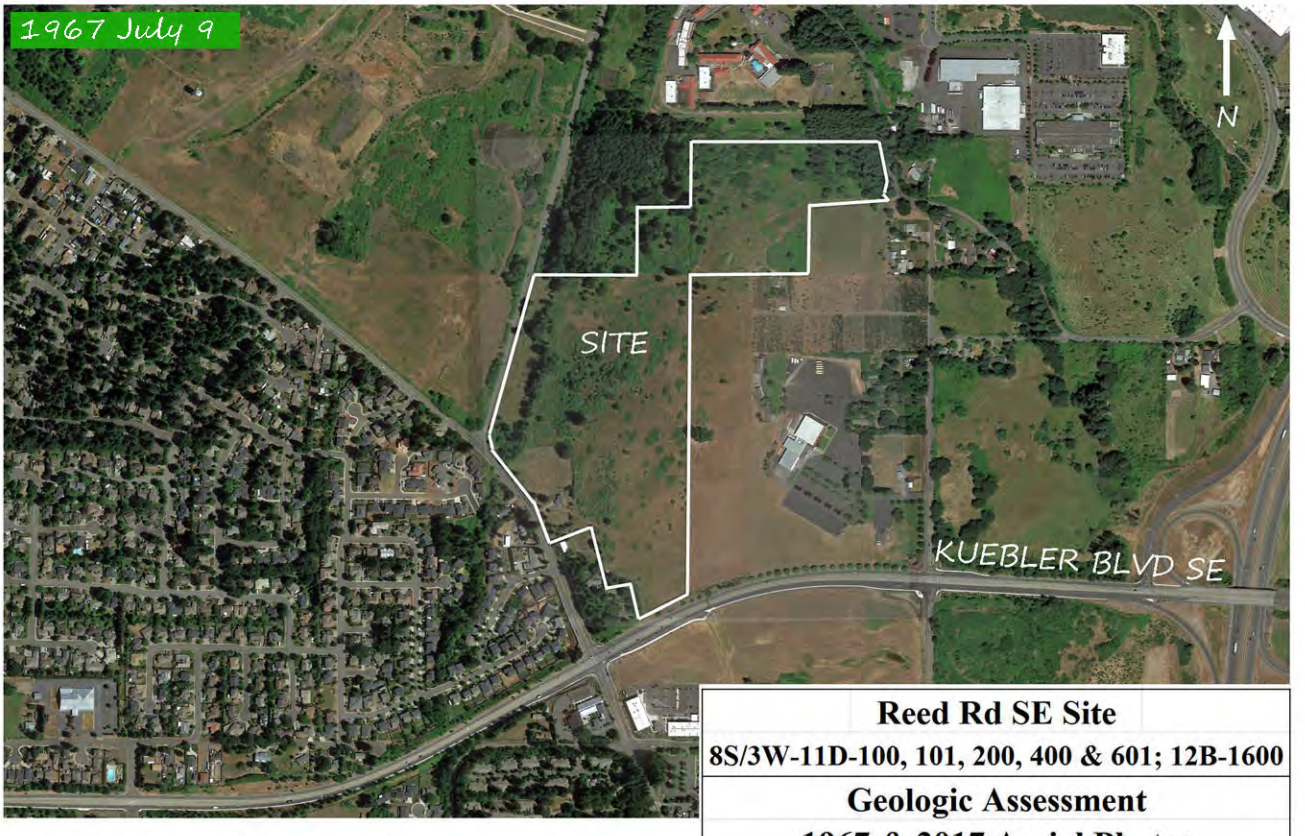
0 0.17 0.35 0.7 km

N

Reed Rd SE Site		
8S/3W-11D-100, 101, 200, 400 & 601; 12B-1600		
Geologic Assessment Site Location Map		
NGS, Inc.	June 2018	**Figure 1**

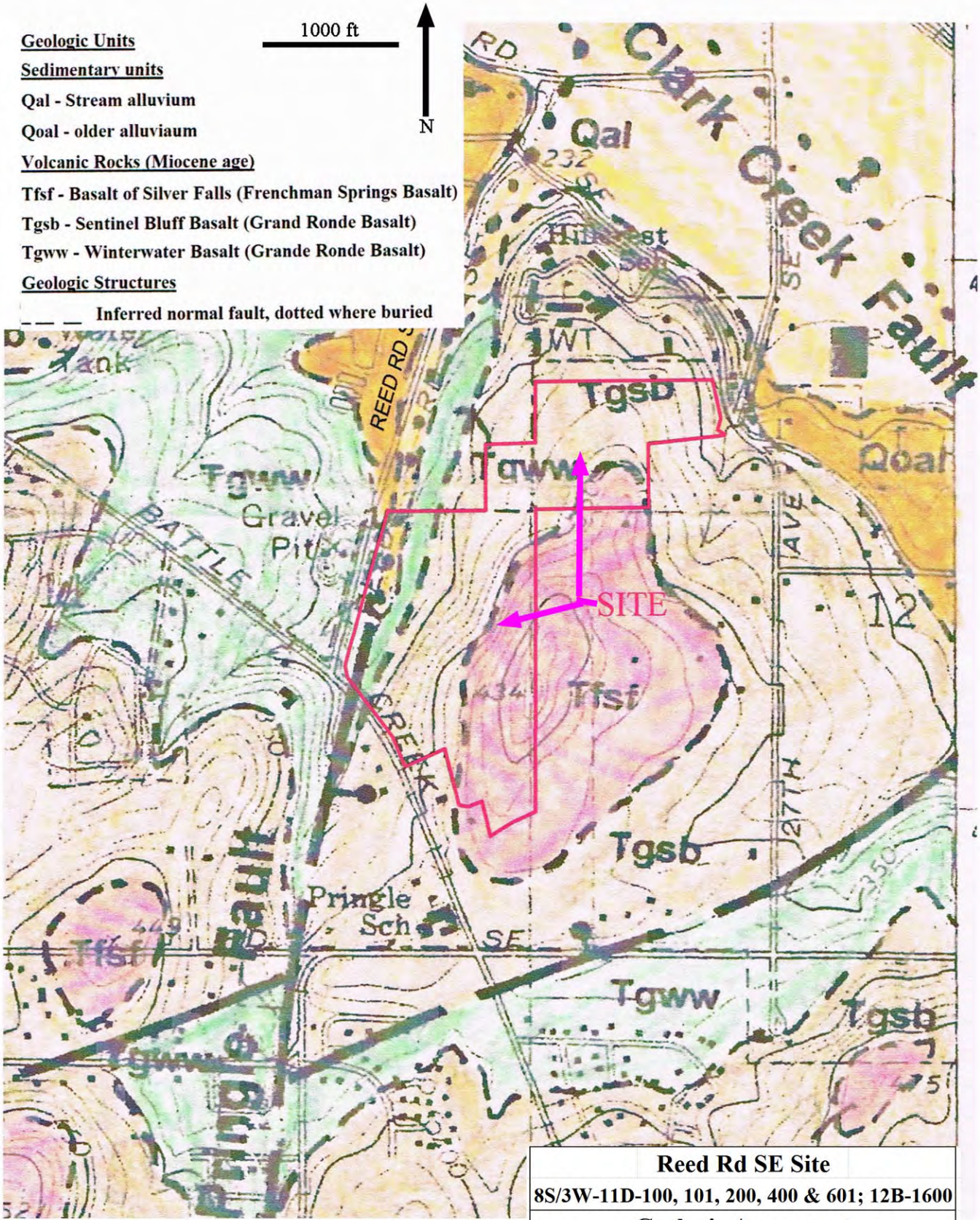
Map provided by City of Salem Public Works Dept.

Reed Rd SE Site		
8S/3W-11D-100, 101, 200, 400 & 601; 12B-1600		
Geologic Assessment		
Site LIDAR Topography Map		
NGS, Inc.	June 2018	**Figure 2**



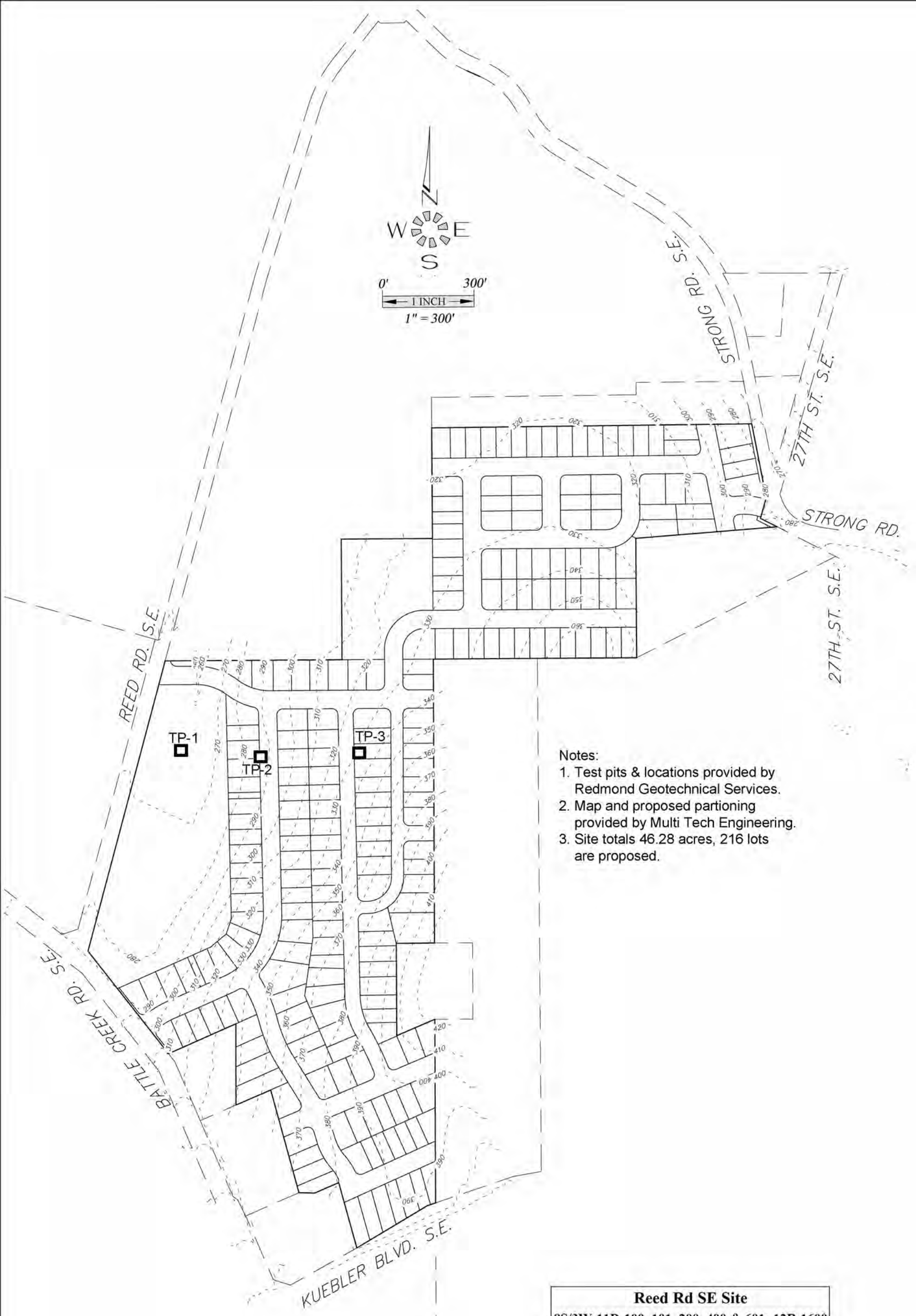
1967 photo from US Geological Survey
2017 from Digital Globe

Reed Rd SE Site		
8S/3W-11D-100, 101, 200, 400 & 601; 12B-1600		
Geologic Assessment		
1967 & 2017 Aerial Photos		
NGS, Inc.	June 2018	**Figure 3**



Geology from Beeson & Tolan (2001)

Reed Rd SE Site		
8S/3W-11D-100, 101, 200, 400 & 601; 12B-1600		
Geologic Assessment		
Site Area Geology		
NGS, Inc.	June 2018	**Figure 4**



Notes:

1. Test pits & locations provided by Redmond Geotechnical Services.
2. Map and proposed partioning provided by Multi Tech Engineering.
3. Site totals 46.28 acres, 216 lots are proposed.

Reed Rd SE Site		
8S/3W-11D-100, 101, 200, 400 & 601; 12B-1600		
Geologic Assessment Proposed Partitioning and Development		
NGS, Inc.	June 2018	**Figure 5**

Date: July 27, 2018
To: Ms. Brandie Dalton, Planner
From: Karl Birky, PE, PTOE
Re: Coburn Grand View Estates Traffic Thoughts

ASSOCIATED TRANSPORTATION ENGINEERING & PLANNING INC.
A.T.E.P., Inc.
1155 13th St. S.E.
Salem, OR. 97302
Tel.: 503-364-5066
FAX: 503-364-1260
e-mail: kbirky@atepinc.com

Brandie:

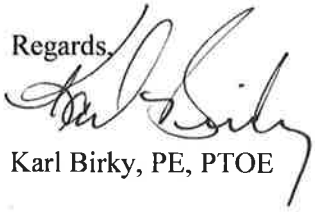
The intent of this letter is to address the question you asked about the provision of safe, orderly and efficient circulation of traffic from the Coburn Grand View Estates subdivision and the general impact of traffic from the site on the City of Salem transportation system. Building 1, 100 or 225 new homes in the City will add traffic to the transportation system when it (they) is occupied. To survive, every city needs to grow, even if that growth merely replaces existing homes. Managing growth is the very difficult responsibility of a city council, planning commission, planners and the entire citizenry. Changes like building new homes on new lots, changes the transportation system and the expectations of the community for an efficient transportation system.

The layout and design of the proposed Coburn Grand View Estates subdivision conforms to the current design standards the City of Salem has adopted for housing developments. Fire and safety equipment access is addressed and accounted for, providing multiple points to enter and leave the subdivision distributes traffic from the subdivision shortening the distance traveled on the transportation system and reducing the impact on any one part of the system. Residents can access I-5 by traveling south on Reed Rd to Battle Creek Rd to Kuebler Blvd or east to 27th St and south to Kuebler Blvd or east to Fairview Industrial Dr and south to Kuebler Blvd. Subdivision designs like Coburn Grand View Estates allow residents to choose travel routes with the least pressure and fastest travel times. But additional traffic is additional traffic and requires continually upgrading the transportation system. In fact, that is the reason the developers will pay approximately $440,000 in TSDCs (Transportation System Development Charge) to the City in addition to building the future public streets in the subdivision to City standards.

There are several intersections that are feeling the pressure of additional traffic from recently built new homes and will feel more pressure when Coburn Grand View Estates is occupied. Specifically the TIA found that the intersection of Reed Rd at Fairview Industrial Dr should be evaluated for signalization or additional lanes. Kuebler at Battle Creek is carrying a large volume of traffic and finding alternative routes to carry some of the traffic should continue to be a priority for City planners. Battle Creek at Reed Rd is a TWSC (two way stop controlled) intersection and will require improvements in the future. The purpose of the TIA is to provide data, information, a different perspective and recommendations to City staff and leaders that enable them to carry out their work efficiently and professionally. Coburn Grand View Estates is a larger sized subdivision in Salem, it will add traffic to the transportation system, but it can be completed efficiently, reasonably, safely and in an orderly fashion.

Please don't hesitate to ask if there is any additional information that might be helpful for you and/or the City.

Regards,



Karl Birky, PE, PTOE

NOTICE OF DECISION

PLANNING DIVISION
555 LIBERTY ST. SE, RM 305
SALEM, OREGON 97301
PHONE: 503-588-6173
FAX: 503-588-6005

CITY OF Salem AT YOUR SERVICE

Si necesita ayuda para comprender esta informacion, por favor llame 503-588-6173

DECISION OF THE PLANNING ADMINISTRATOR

URBAN GROWTH PRELIMINARY DECLARATION CASE NO. UGA17-03

APPLICATION NO. : 17-108503-LD

NOTICE OF DECISION DATE: AUGUST 31, 2017

REQUEST: An Urban Growth Preliminary Declaration request to determine the public facilities and infrastructure required to develop 68.14 acres northeast of the intersection of Kuebler Boulevard SE and Battle Creek Road SE for single family residential development.

The subject property consists of 8 tax lots totaling approximately 68.14 acres in size, zoned RA (Residential Agriculture), with Tax Lot 1600 being split zoned RA and PH (Public Health) and located at the 4700 Block of Battle Creek Road SE (Marion County Assessor map and tax lot numbers: 083W11D00100, 00200, 00202, 00400, 00500, 00601, 00602; 083W12B01600; and 083W12C00700).

APPLICANTS: Douglas Drager, Seth Drager, Hobbs Family Property Trust, Boulder Hill, LLC (Robert W. Nunn), Pringle Creek, LLC (Robert W. Nunn), Battle Creek, LLC (Julie Singer, Roberta Strausbaugh)

LOCATION: 4700 Battle Creek Road SE - 97302

CRITERIA: UGA Preliminary Declaration - SRC 200.025(d)(e)

FINDINGS: The Findings are in the attached Order dated August 31, 2017.

DECISION: The Planning Administrator **APPROVED** Urban Growth Preliminary Declaration UGA17-03 subject to the following conditions of approval:

Condition 1: Provide a Traffic Impact Analysis (TIA) pursuant to SRC 803.015. The following requirements for boundary street right-of-way dedication and street improvements represent the minimum necessary to meet SRC 200.055(c); additional transportation requirements may apply as specified in the TIA:

a) Convey land for dedication of right-of-way along all boundary streets to equal the following distances from street centerline:
   i) Battle Creek Road SE – 36 feet
   ii) Reed Road SE – 36 feet
   iii) Strong Road SE – 30 feet

b) Construct a 23-foot-wide half-street improvement along the entire frontage of Battle Creek Road SE and Reed Road SE.

c) Along Strong Road SE, construct a 15-foot-wide half-street improvement on the development side of centerline and a 15-foot-wide pavement widening on the opposite side of centerline along Strong Road SE.

Condition 2: Connect to the existing sewer mains in Strong Road SE and Reed Road SE. If off-site easements are needed because of topographic constraints and the applicant is unable to acquire easements from adjacent property owner(s), then the applicant shall follow the acquisition procedures established in SRC 200.050.

Condition 3: Connect to the existing stormwater facilities abutting Strong Road SE, Reed Road SE, and Kuebler Boulevard SE. If off-site easements are needed because of topographic constraints, and the applicant is unable to acquire easements from adjacent property owner(s), then the applicant shall follow the acquisition procedures established in SRC 200.050.

Condition 4: As a condition of development in the S-1 water service level, the applicant shall:

a) Reserve property for dedication of an approximately 90 foot by 252 foot area of land abutting the north line of tax lots 083W12C00701 and 083W11D00101 for future construction of Coburn Reservoir.

b) Construct a minimum 18-inch S-1 water main from the terminus of the existing S-1 water main in Marietta Street SE near Fairview Industrial Drive SE to the Coburn Reservoir site.

c) Construct Coburn Reservoir, Boone Road S-1 Pump Station, and S-1 connecting water mains as indicated in the *Water System Master Plan*; or pay a temporary access fee pursuant to SRC 200.080(a). The temporary access fee shall be $10,000 per acre of land being developed within the S-1 service area. The TAF is not due for land conveyed to the City. The TAF shall be subtracted by the following, but shall not be less than $0 (i) the market value of the land conveyed pursuant to Condition 1.a above; and (ii) the certified cost of the non-reimbursed off-site portion of the water main constructed pursuant to Condition 1.b above.

Condition 5: Reserve property for dedication of neighborhood park facility not less than 6.5 acres in size. The park facility shall be located along Pringle Creek in the vicinity of Tax Lot 083W11D00200 or in an alternate location as approved by the Public Works Director.

The rights granted by the attached decision must be exercised, or an extension granted, by **September 16, 2019**, or this approval shall be null and void.

Application Deemed Complete:	May 25, 2017
Notice of Decision Mailing Date:	August 31, 2017
Decision Effective Date:	September 16, 2017
State Mandate Date:	October 22, 2017

Case Manager: Chris Green, cgreen@cityofsalem.net

This decision is final unless written appeal from an aggrieved party is filed with the City of Salem Planning Division, Room 305, 555 Liberty Street SE, Salem OR 97301, **no later than 5:00 p.m., Friday, September 15, 2017.** The notice of appeal must contain the information required by SRC 300.1020 and must state where the decision failed to conform to the provisions of the applicable code section, SRC Chapter 200. The appeal must be filed in duplicate with the City of Salem Planning Division. The appeal fee must be paid at the time of filing. If the appeal is untimely and/or lacks the proper fee, the appeal will be rejected. The Salem City Council will review the appeal at a public hearing. After the hearing, the Salem City Council may amend, rescind, or affirm the action, or refer the matter to staff for additional information.

The complete case file, including findings, conclusions and conditions of approval, if any, is available for review at the Planning Division office, Room 305, City Hall, 555 Liberty Street SE, during regular business hours.

http://www.cityofsalem.net/planning

CITY OF Salem AT YOUR SERVICE

City of Salem, Oregon
Community Development Department
Planning Division

Permit Application Center
Phone: 503-588-6213
Fax: 503-588-6005
www.cityofsalem.net/planning
@Salem_Planning

Expedited Land Division Application Form (ORS 197.360-380)

What is an Expedited Land Division?

The expedited land division process provides an alternative to the standard procedures for certain land division requests. An applicant may choose to use the expedited land division process if their land division request meets all of the applicable requirements specified in Oregon Revised Statute (ORS) 197.360 (see reverse side). The steps in this procedure differ from the regular subdivision procedure, but still include a public review and opportunity for appeal. The steps are described in ORS 197.365-375.

Is it faster than the regular subdivision process?

The expedited land division process is intended to streamline the regular land use process that land divisions normally follow under state law, which allows up to 120 days for final city approval. In Salem, however, the typical processing time for a land division application (subdivision, partition, or replat) that meets city standards and is complete when submitted, is far less than the 120 days that state law allows. Therefore, in Salem, in many cases there is no difference in processing time between a regular land division and expedited land division.

What are the requirements to qualify for the Expedited Land Division process?

ORS 197.360 lists the requirements to qualify for an expedited land division review. These requirements are summarized below. The full text of ORS 197.360 is included on the reverse side of this form.

The proposed land division (i.e. subdivision, partition, or replat):

1. Must be on residentially zoned land and must be solely for the purposes of residential use;
2. Must not create building lots that provide for dwellings or accessory buildings within areas that contain natural resource protections, such as, but not limited to, the Willamette Greenway;
3. Must satisfy all City street standards and connectivity requirements; and
4. Must either:
    a. *Create enough lots or parcels to allow building residential units at 80 percent or more of the maximum net density permitted by the zoning designation of the site; or*
    b. *Will be sold or rented to households with incomes below 120 percent of the median family income for the county in which the project is built.*

Why am I receiving this application form for Expedited Land Division now?

The expedited land division process has existed since 1995; however, the 2015 Oregon Legislature required that all land division applicants be notified of the expedited land division option and how to apply.

Are you applying for an Expedited Land Division?

Yes ☐ **No** ☒ (If yes, then attach a written description of how the proposal satisfies ORS 197.360)

Applicant Name: Brandie J Dalton Telephone: 503-363-9227

Applicant Mailing Address: 1155 13th St. SE - Salem - OR - 97302

Site Address: Reed Rd

Brandie J Dalton Brandie J Dalton 10-30-18

(Signature) (Print Name) (Date)

#6234

MARION COUNTY
SUBDIVISION/CONDOMINIUM NAME REQUEST

Marion County Surveyor – 5155 Silverton Road NE, Salem, OR 97305
Fax 503-588-7970 Phone 503-588-5155

Proposed Subdivision Name : (Please do not use the word "Subdivision" as part of the name.)

***NOTE:** Reserved names expire 2 years from original approval date.*

Coburn Grand View Estates

Applicant Name: Dave Lucas

Address: 1800 NW 167th Place, Suite 100
Beaverton, OR
97006

Owner/Developer: Dave Lucas

Phone: 503-645-7433 Date: 7-13-18

Location: Is the subdivision in a city? Yes ✓ No_____

City Name: Salem

Section: _____ Township: _____ Range: _____
083W11D/100, 200, 202, 400, 500, 601, 602
083W12B/1600 + 083W12C/700

Office Use Only

Date Received: 7/24/2018

The Proposed Name is:

X Approved as Submitted *(approval expires in 2 years)*

_____ Not Approved for the following reason(s):

Phil R. Jones Date 7/24/2018
Marion County Surveyor

City of Salem, Oregon
Community Development Department
Planning Division

Permit Application Center
Phone: 503-588-6213
Fax: 503-588-6005
www.cityofsalem.net/planning
@Salem_Planning

Application Form: Tree Conservation Plan

Applicant Name: Brandie Dalton Telephone: 503-363-9227

If the applicant and/or property owner is a Limited Liability Company (LLC), please also provide a list of all members of the LLC with your land use application.

Applicant Mailing Address: 1155 13th St. SE, Salem, OR 97302

Site Address: Reed Rd

Proposed Use or Type of Development: Subdivision Lot Size (sq. ft.): 52.80 acres

How many trees[1] are on the property (10" or more dbh[2])? 174

How many trees are proposed for removal[3]? 122 How many trees are proposed for preservation? 52

What percentage of the total trees will be preserved? 30 %

Are any riparian corridors[4] present on the site? Yes ☐ No ☒ If yes, name of waterway? _____

Are any of the following proposed for removal?

- Oregon white oak 24" or more dbh[2] Yes ☒ No ☐ If yes, how many? 5
- Tree within a riparian corridor[4] Yes ☐ No ☒ If yes, how many? _____
- Native vegetation in a riparian corridor[4] Yes ☐ No ☒ If yes, what type? _____

Brandie Dalton (Signature) Brandie Dalton (Print Name) 7-19-18 (Date)

Submittal Requirements:

1) *Site Plan:* Of a size and form and in the number of copies meeting the standards established by the Planning Administrator, containing information found in SRC 808.035(c)(1).
2) *Written Statement:* If the proposed tree conservation plan results in removal of significant trees, trees or native vegetation in a riparian corridor or shows preservation of less than 25 percent of the trees on site, a statement shall be provided demonstrating that there are no reasonable design alternatives that would enable preservation of such trees.
3) *Additional items that may be submitted or requested:* When a riparian corridor is located on the property, the tree conservation plan shall include the information found in SRC 808.035(c)(2).

Appeal and Review:

The decision on a Tree Conservation Plan may be appealed, pursuant to SRC 300.1010. Only the applicant or the owner of the subject property have standing to appeal the decision of a Tree Conservation Plan. The decision of Hearings Officer on appeal shall be the final decision of the City.

[1]Tree means any living, woody plant that is at least 10" dbh and 15' in height, typically with one main stem (trunk) and an upright arrangement of branches & leaves.

[2]dbh means diameter at breast height. Diameter at breast height is a tree's diameter measured in inches at 4½ feet above grade.

[3]Removal means to cut down a tree or remove 30% or more of the crown, trunk, or root system of a tree; or to damage a trees so as to cause the tree to decline or die.

[4]Riparian Corridor is a boundary is measured 50 feet horizontally from the top of bank on each side of a stream with the exception of the Willamette River, which is measured 75 feet horizontally from the top of bank.