Letter of Intent

Application Forms

Title Commitment

Owner's Authorization

LETTER OF INTENT

Stoneridge Homes, Inc. is proposing to rezone this property from its current use as a construction storage facility to a new 38 unit residential community.

These homes will be a for sale product that will have traditional architectural elements (see attached elevations and color boards), in the price range of $300,000 to $350,000.

With this new residential development, the general public will be benefitting from the first new constructions in this South neighborhood in over 10 years. With new design and improved energy efficiency in these homes, potential buyers will be enjoying a lifestyle that is not available in some of the older dated communities.

The open space and landscaping will be professionally designed and installed to allow these residence to have an outdoor experience that will be compatible with the City of Littleton's neighborhood requirements.

This proposed zoning and site plan will create a community that will be consistent with that of the surrounding residential developments. The adjacent townhome developments have a similar zoning in place.

Our street design and guest parking will ensure that traffic patterns will create a seamless transition onto Jamison Ave., and not adversely affect the surrounding neighborhoods.

There will be no phasing of the construction of the streets, curb, gutter, water, sever, storm sewer, detention area. It's our intent to have these constructed just prior to start of the building of the units.

The sales velocity of the actual units will determine how quickly the community will be completed.

We will be creating an HOA that will be responsible for maintain the landscape and amenity areas as well as the private streets.

The C. C. and R's have yet to be established, but it's our intent to have specific guidelines that will ensure that the property is maintained to a standard that will preserve the quality of the community over time.

Gary Wanger, President

Stoneridge Homes, Inc

City of Littleton

Staff Use Only
FEE $_____
CASE NUMBER:
_____
CASE PLANNER:
_____

General Planned Development Plan
OFFICIAL APPLICATION FORM

- Applicant's submitting applications for the initial review shall submit directly to the Planning and Zoning Division in Community Development.

Project Name: JAMISON VILLAGE

Pre-application Meeting Date: _____
Property Address or General Location 101 W. JAMISON AVE
Parcel Number (if existing at this time) _____
Size of Parcel in Acres 3. ACRES

Applicant Information:
Name (print): STONERIDGE HOMES, INC.
Contact (if different): GARY WANGER
Mailing Address: 5994 So. Holly St. #261
City, State, Zip: GREENWOOD VIL., COLO, _____ Phone 303-680-1339
Cell: 303 883-3443 Fax: 303 680-1039 E-mail: BUILTBYSTONERIDGE@COMCAST.NET

Signature: Gary Wanger
Title PRESIDENT
Date: 4/1/14

Is the applicant (above) the owner of the property? Yes_____ No X (Check one)
If no, please provide a typed sheet listing the property owners names with addresses and phone numbers. ATTACH a signed and notarized statement from the owner stating that there is no objection to the application and that the applicant is authorized to act on behalf of the owner with respect to the above application type as stated in the City code

Is there a mortgage on the property? Yes_____ No X (Check one)
If yes, the applicant shall mail notice to the mortgage holder (s), if any, which summarizes the proposed zoning matter and includes the name, phone number of the City employee in charge of reviewing the matter. Said notice shall be sent by registered mail, return receipt requested. A copy of the notice and the original returned receipt shall be attached to the application.

Revised
October 2012

Data and Information Sheet

Proposed Zoning Comparison Chart

Site Information: (complete where applicable)

Zoning Requirements	Existing Zoning Dist.	Proposed Zoning Dist
	PD	PD-R
Use (s)	MIXED USE	MULTI-FAMILY
Min. Unobstructed Open Space		38%
Parking Ratios		2.58 SPACES/DU
Min. Bldg Setbacks		NORTH = 10', EAST = 8', WEST = 8', SOUTH = 15'
Max. Bldg Height		30'
Max. F.A.R (Commercial Uses)		
Max. Density (Residential Uses)		12.67 DU/Ac

	Adjacent Land Use	Adjacent Zoning
North:	FIRST REPLAT OF SOUTHBRIDGE Nº 8	PD-R
South	COMMERCIAL	PD-C
East:	FIRST REPLAT OF SOUTHBRIDGE Nº 8	PD-R
West:	FIRST REPLAT OF SOUTHBRIDGE Nº 8	PD-R

Proposed Development Details: Please provide on a separate sheet data showing the effects of development for both the existing zone district and the proposed zone district. Such data shall include projected population, school age population, traffic generation, additional park land required and availability of city services. Unless the application is accompanied by a PD Plan or PDO Plan, such data shall be based on the maximum potential development permitted under the applicable existing and proposed zone districts.

Note: This application may be subject to additional processing fees required by referral agencies such as Colorado Geological Survey and Denver Water. Please contact these agencies for information concerning their fees.

A complete application form must accompany the required materials on the attached check list. Submitting an incomplete application may cause a delay in processing. If you have any questions, please call the Community Development Department at 303-795-3748.

Owner Information:
Name (print): SOUTH SUBURBAN PARKS AND RECREATION DISTRICT Address: 6631 S. UNIVERSITY BLVD., CENTENNIAL, CO 80121
Phone: (303) 798--5131 Fax: _____
E- mail: _____

Engineering Consultant:
Name (print): PARAGON ENGINEERING CONSULTANTS Address: 7852 S. ELATI ST., SUITE 106, LITTLETON, CO 80120
Phone: (303) 794-8604 Fax: (303) 795-3072
E-mail: wendell@paragoneng.com

Architect:
Name (print): KB HOMES Address: 7807 E. PEAKVIEW AVE., SUITE 300, CENTENNIAL, CO 80111
Phone: (303) 323-1142 Fax: _____
E-mail: chunsader@kbhomes.com

South Suburban
PARKS AND RECREATION

Administrative Office
6631 S. University Blvd.
Centennial, CO 80121-2913

phone 303.798.5131
fax 303.798.3030
www.sspr.org

March 31, 2014

City of Littleton
2255 West Berry Avenue
Littleton, CO 80120

RE: 101 West Jamison Avenue

Ladies and Gentlemen:

South Suburban is the property owner of 101 West Jamison Avenue. We are under contract with Stoneridge Homes, Inc. to purchase the property. We are aware of the desire of Stoneridge Homes to rezone the property for residential development. We give our consent for Stoneridge Homes to finalize the zoning process, per our current contract.

Sincerely,

David A. Lorenz

David A. Lorenz
Executive Director
Tel. 303/798-5131

STATE OF COLORADO)
)ss.
COUNTY OF ARAPAHOE)

The foregoing letter was subscribed and affirmed before me this 31st day of March, 2014.

Donna K. Shepard
Signature of notary

My commission expires: April 15, 2018.

DONNA K. SHEPHARD
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 19984010455
MY COMMISSION EXPIRES APRIL 15, 2018

cc: Stoneridge Homes, Inc.
DAL/ds

South Suburban
PARKS AND RECREATION

Administrative Office
6631 S. University Blvd.
Centennial, CO 80121-2913

phone 303.798.5131
fax 303.798.3030
www.sspr.org

June 9, 2014

Gary Wanger
Stoneridge Homes, Inc.
5994 South Holly Street, # 261
Greenwood Village, CO 80111
builtbystoneridge@comcast.net

BY EMAIL AND US POSTAL

Dear Gary:

I want to confirm in writing to you our previous conversation regarding development of the Jamison site. South Suburban has absolutely no interest in developing the site as a park. We believe there are sufficient open space (Horseshoe Park), park land (Southbridge), and trail corridors (Lee Gulch and High Line Canal) in the area.

I have expressed our opinion to the local homeowners association representatives, who have called on several occasions over the past couple years, asking about the potential for a park on the vacated Jamison site.

We are very supportive of your proposed plans for development of the site. We believe it to be a good land use within the City of Littleton.

Sincerely,

David A. Lorenz

David A. Lorenz
Executive Director

cc: Michael Penny, Littleton City Manager by email

DAL/ds

First American Title Insurance Company - NCS
1125 17th Street, Suite 750
Denver, Colorado 80202
Phone: **(303)876-1112** Fax:**(877)235-9185**

DATE: March 10, 2014
FILE NUMBER: NCS-657170-CO
PROPERTY ADDRESS: 101 W Jamison Ave, Littleton, CO
OWNER/BUYER: /
YOUR REFERENCE NUMBER:
ASSESSOR PARCEL NUMBER: 2077-34-2-00-002

PLEASE REVIEW THE ENCLOSED MATERIAL COMPLETELY AND TAKE NOTE OF THE FOLLOWING TERMS CONTAINED THEREIN:
Transmittal:
Revision No.:
Schedule A:
Schedule B - Section 1 Requirements:
Schedule B - Section 2 Exceptions:

Should you have any questions regarding these materials, please contact First American Title Insurance Company National Commercial Services at the above phone number. We sincerely thank you for your business.

TO:	**First American Title Insurance Company National Commercial Services**	**TITLE OFFICER:**	**Shari Jacobs**
	1125 17th Street, Suite 750	**PHONE:**	**(303)876-1140**
	Denver, Colorado 80202	**FAX:**	**(877)235-9185**
		E-MAIL:	**sjacobs@firstam.com**
		DELIVERY:	**E-MAIL**

TO:	**First American Title Insurance Company National Commercial Services**	**ESCROW OFFICER:**	**Jan Jackson**
	1125 17th Street, Suite 750	**PHONE:**	**(303)876-1137**
	Denver, CO 80202	**FAX:**	**(877)235-9185**
		E-MAIL:	**jajackson@firstam.com**
		DELIVERY:	**E-MAIL**

To:	**KB Home Colorado Inc.**	**ATTN:**	**Cory Hunsader**
	7807 East Peakview Avenue, Suite 300	**PHONE:**	**(303)323-1142**
	Centennial, CO 80111	**MOBILE:**	
		FAX:	**(720)488-3860**
		E-MAIL:	**chunsader@kbhome.com**
		DELIVERY:	**E-MAIL**

ALTA Commitment Form

COMMITMENT FOR TITLE INSURANCE

Issued by

First American Title Insurance Company

First American Title Insurance Company, a California corporation ("Company"), for a valuable consideration, commits to issue its policy or policies of title insurance, as identified in Schedule A, in favor of the Proposed Insured named in Schedule A, as owner or mortgagee of the estate or interest in the land described or referred to in Schedule A, upon payment of the premiums and charges and compliance with the Requirements; all subject to the provisions of Schedules A and B and to the Conditions of this Commitment.

This Commitment shall be effective only when the identity of the Proposed Insured and the amount of the policy or policies committed for have been inserted in Schedule A by the Company.

All liability and obligation under this Commitment shall cease and terminate six (6) months after the Effective Date or when the policy or policies committed for shall issue, whichever first occurs, provided that the failure to issue the policy or policies is not the fault of the Company.

The Company will provide a sample of the policy form upon request.

IN WITNESS WHEREOF, First American Title Insurance Company has caused its corporate name and seal to be affixed by its duly authorized officers on the date shown in Schedule A.

First American Title Insurance Company

Dennis J. Gilmore
President

Timothy Kemp
Secretary

COMMITMENT FOR TITLE INSURANCE FORM

SCHEDULE A

1. Effective Date: March 04, 2014 at 5:00 p.m.

   a. ALTA Owner's Policy (06-17-06) $TBD

   Proposed Insured:
   A Purchaser To Be Determined

   b. ALTA Loan Policy (06-17-06) $None

   Proposed Insured:
   None

2. The estate or interest in the Land described or referred to in this Commitment is:

   Fee Simple

3. Title to the estate or interest in the Land is at the Effective Date vested in:

   South Suburban Park and Recreation District, a Colorado quasi-municipal corporation, who acquired title as South Suburban Metropolitan Recreation and Park District, a Colorado quasi-municipal corporation

4. The Land referred to in this Commitment is described as follows:

   See Exhibit "A" attached hereto and made a part hereof

   For informational purposes only: 101 W Jamison Ave,
   Littleton, Colorado

EXHIBIT A

Commitment No.: NCS-657170-CO

The land referred to in Schedule A is situated in the County of Arapahoe, State of Colorado and is described as follows:

A parcel of land situated in the Northwest Quarter of Section 34, Township 5 South, Range 68 West of the Sixth Principal Meridian, County of Arapahoe, State of Colorado, being more particularly described and bounded as follows:

Commencing at the Southeast corner of said Quarter Section;
Thence North 1030.9 feet along the East line of said Quarter Section;
Thence West 560.0 feet parallel to the South line of said Quarter Section to the Point of Beginning;
Thence continuing West 361.5 feet parallel to the South line of said Quarter Section;
Thence North 361.5 feet parallel to the East line of said Quarter Section;
Thence East 361.5 feet parallel to the South line of said Quarter Section;
Thence South 361.5 feet parallel to the East line of said Quarter Section to the Point of Beginning,

County of Arapahoe,
State of Colorado.

For informational purposes only: APN: 2077-34-2-00-002

COMMITMENT FOR TITLE INSURANCE FORM

SCHEDULE B

SECTION ONE

REQUIREMENTS

The following requirements must be met:

1. Pay the agreed amounts for the interest in the land and/or the mortgage to be insured.

2. Pay us the premiums, fees and charges for the policy.

3. Payment of all taxes and assessments now due and payable.

4. Recordation of a Warranty Deed satisfactory to the Company, from South Suburban Park and Recreation District, a Colorado quasi-municipal corporation, who acquired title as South Suburban Metropolitan Recreation and Park District, a Colorado quasi-municipal corporation, vesting fee simple title in and to A Purchaser To Be Determined.

5. Receipt by the Company of a Corporate Resolution executed by the officers of South Suburban Park and Recreation District, a Colorado quasi-municipal corporation, authorizing the transaction herein contemplated and setting forth the names and authority of those authorized to sign for the corporation.

6. Receipt by the Company of a satisfactory Final Affidavit and Indemnity, executed by South Suburban Park and Recreation District, a Colorado quasi-municipal corporation.

7. Receipt by the Company of an ALTA/ACSM Land Title Survey, certified to First American Title Insurance Company, and in form and content satisfactory to the Company. The Company reserves the right to make further requirements and/or exceptions upon review of this survey.

   NOTE: This commitment is subject to further requirements and/or exceptions upon disclosure to the Company of the identity of the proposed insured purchaser.

COMMITMENT FOR TITLE INSURANCE FORM

SCHEDULE B

SECTION TWO

EXCEPTIONS

Schedule B of the policy or policies to be issued will contain exceptions to the following matters unless the same are disposed of to the satisfaction of the Company:

1. Any facts, rights, interests or claims which are not shown by the Public Records, but which could be ascertained by an inspection of the Land or by making inquiry of persons in possession thereof.

2. Easements, or claims of easements, not shown by the Public Records.

3. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, and any facts which a correct survey and inspection of the Land would disclose, and which are not shown by the public records.

4. Any lien, or right to a lien, for services, labor or material heretofore or hereafter furnished, imposed by law and not shown in the Public Records.

5. Any and all unpaid taxes, assessments and unredeemed tax sales.

6. The right of a proprietor of a vein or lode to extract and remove his ore therefrom should the same be found to penetrate or intersect the premises, as reserved in United States Patent dated May 6, 1879, Certificate No. 1060.

7. The burdens of, and in accordance with, the terms, conditions, provisions, obligations, easements and agreements as set forth in the Grant of Easement recorded July 26, 1962 in Book 1358 at Page 14.

8. Terms, conditions, provisions, obligations, easements and agreements as set forth in the Agreement recorded July 30, 1975 in Book 2358 at Page 392, and recorded August 5, 1975 in Book 2359 at Page 495.

9. Reservation of all water and water rights as set forth in Deed recorded September 28, 1984 in Book 4273 at Page 272, and any and all assignments thereof or interests therein.

10. Any tax, lien, fee or assessment by reason of inclusion of subject property in the South Suburban Park and Recreation District, as evidenced by instrument recorded April 27, 1990 in Book 5914 at Page 733.

11. Existing leases and tenancies.

EXHIBIT B
Statement of Charges

ALTA 2006 Owner Policy	$ TBD
Tax Certificate	$ 25.00

CONDITIONS

1. The term mortgage, when used herein, shall include deed of trust, trust deed, or other security instrument.

2. If the proposed Insured has or acquired actual knowledge of any defect, lien, encumbrance, adverse claim or other matter affecting the estate or interest or mortgage thereon covered by this Commitment other than those shown in Schedule B hereof, and shall fail to disclose such knowledge to the Company in writing, the Company shall be relieved from liability for any loss or damage resulting from any act of reliance hereon to the extent the Company is prejudiced by failure to so disclose such knowledge. If the proposed Insured shall disclose such knowledge to the Company, or if the Company otherwise acquires actual knowledge of any such defect, lien, encumbrance, adverse claim or other matter, the Company at its option may amend Schedule B of this Commitment accordingly, but such amendment shall not relieve the Company from liability previously incurred pursuant to paragraph 3 of these Conditions and Stipulations.

3. Liability of the Company under this Commitment shall be only to the named proposed Insured and such parties included under the definition of Insured in the form of policy or policies committed for and only for actual loss incurred in reliance hereon in undertaking in good faith (a) to comply with the requirements hereof, or (b) to eliminate exceptions shown in Schedule B, or (c) to acquire or create the estate or interest or mortgage thereon covered by this Commitment. In no event shall such liability exceed the amount stated in Schedule A for the policy or policies committed for and such liability is subject to the insuring provisions and Conditions and Stipulations and the Exclusions from Coverage of the form of policy or policies committed for in favor of the proposed Insured which are hereby incorporated by reference and are made a part of this Commitment except as expressly modified herein.

4. This Commitment is a contract to issue one or more title insurance policies and is not an abstract of title or a report of the condition of title. Any action or actions or rights of action that the proposed Insured may have or may bring against the Company arising out of the status of the title to the estate or interest or the status of the mortgage thereon covered by this Commitment must be based on and are subject to the provisions of this Commitment.

5. The policy to be issued contains an arbitration clause. All arbitrable matters when the Amount of Insurance is $2,000,000 or less shall be arbitrated at the option of either the Company or the Insured as the exclusive remedy of the parties. You may review a copy of the arbitration rules at http://www.alta.org/.

First American Title

Privacy Information

We Are Committed to Safeguarding Customer Information

In order to better serve your needs now and in the future, we may ask you to provide us with certain information. We understand that you may be concerned about what we will do with such information - particularly any personal or financial information. We agree that you have a right to know how we will utilize the personal information you provide to us. Therefore, together with our subsidiaries we have adopted this Privacy Policy to govern the use and handling of your personal information.

Applicability

This Privacy Policy governs our use of the information that you provide to us. It does not govern the manner in which we may use information we have obtained from any other source, such as information obtained from a public record or from another person or entity. First American has also adopted broader guidelines that govern our use of personal information regardless of its source. First American calls these guidelines its Fair Information Values.

Types of Information

Depending upon which of our services you are utilizing, the types of nonpublic personal information that we may collect include:

- Information we receive from you on applications, forms and in other communications to us, whether in writing, in person, by telephone or any other means;
- Information about your transactions with us, our affiliated companies, or others; and
- Information we receive from a consumer reporting agency.

Use of Information

We request information from you for our own legitimate business purposes and not for the benefit of any nonaffiliated party. Therefore, we will not release your information to nonaffiliated parties except: (1) as necessary for us to provide the product or service you have requested of us; or (2) as permitted by law. We may, however, store such information indefinitely, including the period after which any customer relationship has ceased. Such information may be used for any internal purpose, such as quality control efforts or customer analysis. We may also provide all of the types of nonpublic personal information listed above to one or more of our affiliated companies. Such affiliated companies include financial service providers, such as title insurers, property and casualty insurers, and trust and investment advisory companies, or companies involved in real estate services, such as appraisal companies, home warranty companies and escrow companies. Furthermore, we may also provide all the information we collect, as described above, to companies that perform marketing services on our behalf, on behalf of our affiliated companies or to other financial institutions with whom we or our affiliated companies have joint marketing agreements.

Former Customers

Even if you are no longer our customer, our Privacy Policy will continue to apply to you.

Confidentiality and Security

We will use our best efforts to ensure that no unauthorized parties have access to any of your information. We restrict access to nonpublic personal information about you to those individuals and entities who need to know that information to provide products or services to you. We will use our best efforts to train and oversee our employees and agents to ensure that your information will be handled responsibly and in accordance with this Privacy Policy and First American's Fair Information Values. We currently maintain physical, electronic, and procedural safeguards that comply with federal regulations to guard your nonpublic personal information.

Information Obtained Through Our Web Site

First American Financial Corporation is sensitive to privacy issues on the Internet. We believe it is important you know how we treat the information about you we receive on the Internet.

In general, you can visit First American or its affiliates' Web sites on the World Wide Web without telling us who you are or revealing any information about yourself. Our Web servers collect the domain names, not the e-mail addresses, of visitors. This information is aggregated to measure the number of visits, average time spent on the site, pages viewed and similar information. First American uses this information to measure the use of our site and to develop ideas to improve the content of our site.

There are times, however, when we may need information from you, such as your name and email address. When information is needed, we will use our best efforts to let you know at the time of collection how we will use the personal information. Usually, the personal information we collect is used only by us to respond to your inquiry, process an order or allow you to access specific account/profile information. If you choose to share any personal information with us, we will only use it in accordance with the policies outlined above.

Business Relationships

First American Financial Corporation's site and its affiliates' sites may contain links to other Web sites. While we try to link only to sites that share our high standards and respect for privacy, we are not responsible for the content or the privacy practices employed by other sites.

Cookies

Some of First American's Web sites may make use of "cookie" technology to measure site activity and to customize information to your personal tastes. A cookie is an element of data that a Web site can send to your browser, which may then store the cookie on your hard drive.

FirstAm.com uses stored cookies. The goal of this technology is to better serve you when visiting our site, save you time when you are here and to provide you with a more meaningful and productive Web site experience.

Fair Information Values

Fairness We consider consumer expectations about their privacy in all our businesses. We only offer products and services that assure a favorable balance between consumer benefits and consumer privacy.

Public Record We believe that an open public record creates significant value for society, enhances consumer choice and creates consumer opportunity. We actively support an open public record and emphasize its importance and contribution to our economy.

Use We believe we should behave responsibly when we use information about a consumer in our business. We will obey the laws governing the collection, use and dissemination of data.

Accuracy We will take reasonable steps to help assure the accuracy of the data we collect, use and disseminate. Where possible, we will take reasonable steps to correct inaccurate information. When, as with the public record, we cannot correct inaccurate information, we will take all reasonable steps to assist consumers in identifying the source of the erroneous data so that the consumer can secure the required corrections.

Education We endeavor to educate the users of our products and services, our employees and others in our industry about the importance of consumer privacy. We will instruct our employees on our fair information values and on the responsible collection and use of data. We will encourage others in our industry to collect and use information in a responsible manner.

Security We will maintain appropriate facilities and systems to protect against unauthorized access to and corruption of the data we maintain.

DISCLOSURE STATEMENT

Pursuant to C.R.S 30-10-406(3)(a) all documents received for recording or filing in the Clerk and Recorder's office shall contain a top margin of at least one inch and a left, right and bottom margin of at least one-half of an inch. The Clerk and Recorder will refuse to record or file any document that does not conform to the requirements of this section.

NOTE: If this transaction includes a sale of the property and the price exceeds $100,000.00, the seller must comply with the disclosure/withholding provisions of C.R.S. 39-22-604.5 (Non-residential withholding).

NOTE: Colorado Division of Insurance Regulations 3-5-1, requires that "Every title entity shall be responsible for all matters which appear of record prior to the time of recording whenever the title entity conducts the closing and is responsible for recording or filing of legal documents resulting from the transaction which was closed." Provided that First American Title Insurance Company conducts the closing of the insured transaction and is responsible for recording the legal documents from the transaction.

Pursuant to C.R.S. 10-11-122, the company will not issue its policy or policies of title insurance contemplated by this commitment until it has been provided a Certificate of Taxes due or other equivalent documentation from the County Treasurer or the County Treasurer's authorized agent; or until the Proposed Insured has notified or instructed the company in writing to the contrary.

The subject property may be located in a special taxing district. A Certificate of Taxes due listing each taxing jurisdiction shall be obtained from the County Treasurer or the County Treasurer's authorized agent. Information regarding special districts and the boundaries of such districts may be obtained from the Board of County Commissioners, the County Clerk and Recorder, or the County Assessor.

NOTE: Pursuant to CRS 10-11-123, notice is hereby given:

This notice applies to owner's policy commitments containing a mineral severance instrument exception, or exceptions, in Schedule B, Section 2.

A. That there is recorded evidence that a mineral estate has been severed, leased, or otherwise conveyed from the surface estate and that there is a substantial likelihood that a third party holds some or all interest in oil, gas, other minerals, or geothermal energy in the property; and
B. That such mineral estate may include the right to enter and use the property without the surface owner's permission.

NOTE: Pursuant to Colorado Division of Insurance Regulations 3-5-1, Affirmative mechanic's lien protection for the Owner may be available (typically by deletion of Exception no. 4 of Schedule B, Section 2 of the Commitment from the Owner's Policy to be issued) upon compliance with the following conditions:

A. The land described in Schedule A of this commitment must be a single family residence which includes a condominium or townhouse unit.
B. No labor or materials have been furnished by mechanics or material-men for purposes of construction on the land described in Schedule A of this Commitment within the past 6 months.
C. The Company must receive an appropriate affidavit indemnifying the Company against un-filed mechanic's and material-men's liens.
D. The Company must receive payment of the appropriate premium.

E. If there has been construction, improvements or major repairs undertaken on the property to be purchased within six months prior to the Date of the Commitment, the requirements to obtain coverage for unrecorded liens will include: disclosure of certain construction information; financial information as to the seller, the builder and or the contractor; payment of the appropriate premium, fully executed Indemnity Agreements satisfactory to the company, and, any additional requirements as may be necessary after an examination of the aforesaid information by the Company.

No coverage will be given under any circumstances for labor or material for which the insured has contracted for or agreed to pay.

NOTE: Pursuant to C.R.S, 38-35-125(2) no person or entity that provides closing and settlement services for a real estate transaction shall disburse funds as a part of such services until those funds have been received and are available for immediate withdrawal as a matter of right.

NOTE: C.R.S. 39-14-102 requires that a real property transfer declaration accompany any conveyance document presented for recordation in the State of Colorado. Said declaration shall be completed and signed by either the grantor or grantee.

Nothing herein contained will be deemed to obligate the company to provide any of the coverages referred to herein unless the above conditions are fully satisfied.

NOTE: Pursuant to CRS 10-1-128(6)(a), It is unlawful to knowingly provide false, incomplete, or misleading facts or information to an insurance company for the purpose of defrauding or attempting to defraud the company. Penalties may include imprisonment, fines, denial of insurance and civil damages. Any insurance company or agent of an insurance company who knowingly provides false, incomplete, or misleading facts or information to a policyholder or claimant for the purpose of defrauding or attempting to defraud the policyholder or claimant with regard to a settlement or award payable from insurance proceeds shall be reported to the Colorado division of insurance within the department of regulatory agencies.

Justification with Comprehensive Plan

Declaration of Public Policy for Rezoning
Jamison Village GDP

101 West Jamison Avenue
City of Littleton, Colorado

The official City Code for the City of Littleton provides the following "Declaration of Public Policy for Rezoning" as the means by which an Owner of property within the City may apply to amend the zoning designation of a property:

10-12-1: Declaration of Public Policy for Rezoning:

The council has determined that the official zoning map should not be amended unless the amendment is consistent with the goals and policies of the comprehensive plan, and promotes the general welfare of the community. If a proposed amendment to the official zoning map is not consistent with the comprehensive plan, then the request may only be approved if the applicant demonstrates that the requested rezone is justified because of changed or changing conditions in the particular area, or in the city in general; or the rezone.

Guiding Document #1: CITYWIDE PLAN 2014

CITYWIDE PLAN 2014 (a section of the City of Littleton Comprehensive Plan)
The *Citywide Plan,* adopted January 21, 2014 by Littleton City Council, is comprised of two sections that guide the city's future land-use-related actions. The first – Part I: Goals and Policies – is based on values that were articulated through "*Inspire Littleton*", a two-year process of gathering community ideas and feedback. These values reflect themes that resonated throughout citizen comments on why this community is special and what they would like Littleton to become. These core values form the foundation for the neighborhood, corridor, and activity area plans that will guide development and decision-making. In this combination, future planning, development, land use, and zoning decisions should reflect the overarching Vision and Goals outlined here. **The proposed Jamison Village project advances the following Goals and Policies as set forth in the 2014 Citywide Plan.**

PART I: GOALS AND POLICIES

Goal #1: A Dynamic Littleton

- ***1.1 Generate more opportunities for residents to live, shop and play where they work and to work, shop and play where they live***
    - The proposed Jamison Village project will be located within easy walking distance to Littleton Adventist Hospital, CenturyLink, and a number of other large employers within the South Park Business Center
    - Future residents at Jamison Village will also enjoy walking access to local retail and dining options at SouthBridge Plaza, as well as easy access to the High Line Canal Trail System

- ***1.6 Encourage housing that responds to changing demands in the local housing market, allows every generation and income group to call Littleton home, and is otherwise consistent with this plan***
    - The proposed paired home (duplex) product appeals to a wide buyer demographic, with a proven track record at similar communities in Denver of attracting a variety of ages, incomes and household compositions

- ***1.7 Evaluate the redevelopment potential of blighted properties. Work with owners throughout the redevelopment process to encourage sustainable uses and structures. Design the redevelopment so that it mitigates its negative effects, if any, on adjacent uses and structures.***

    - The proposed project replaces an aging, maintenance facility which currently imposes a variety of negative externalities on the adjacent townhome community, including barbed wire fencing, aging industrial buildings and known environmental hazards.

    - These negative effects that currently impact the adjoining neighborhood will be replaced with a development that includes professional landscaping, energy-efficient structures, and many sustainability features

    - All homes within the Jamison Village community will be Energy Star Certified and designed to conserve water and energy, with future homeowners benefitting from lower utility bills.

Goal #2: An Outdoor Littleton

- ***2.3. Encourage inviting outdoor activity and gathering places in new developments***
    - The proposed project will include a small open space amenity for use as a gathering place for residents and professionally designed and maintained landscaping in all common areas
    - All homes within the proposed project will include a private side yard to promote outdoor gatherings and urban gardening
    - All homes will include a front porch and rear-loaded garages, consistent with the tenets of New Urbanism, intended to promote resident interaction and a sense of community

- ***2.6 In addition to the river and its tributaries, identify, safeguard, and enrich the city's other outdoor resources, including the High Line Canal***
    - New residents are attracted to Littleton by housing that has ready access to the city's extensive trail and park systems. Residents at Jamison Village will enjoy easy access to the Lee Gulch Trail and the High Line Canal Trail system.
    - As part of the Jamison Village development, the developer has agreed to make improvements to the regional detention area in Lee Gulch, enhancing water quality in the area.

- ***2.8 Make the healthy choice the easy choice***
    - Residents of the proposed project will enjoy a healthy lifestyle with a variety of jobs, shopping, dining, and recreation options all located within easy walking distance, as well as access to high-quality, state-of-the-art medical facilities at Littleton Adventist Hospital and within SouthPark.

Goal #3: A Connected Littleton

- ***3.2 Increase the walkability of neighborhoods and develop an inviting citywide pedestrian network***
    - The walkability of the proposed development will advance the health and safety of future residents, benefit local businesses, and lessen the traffic impact to nearby neighborhoods
    - Residents will utilize existing trails, parks, and sidewalks enhancing their civic value and adding additional stakeholders and stewards for the existing pedestrian network

- ***3.3 Provide inviting connections between commercial development and adjacent residential neighborhoods***
    - The Jamison Village site plan has been designed to promote interconnectivity with the adjacent townhome community, as well as with pedestrian and automobile traffic along Jamison Avenue, in an attempt to minimize any negative impacts of the community.
    - Building orientations, architectural elements, fencing, landscaping, and several opportunities to connect sidewalks and pathways have been added through various plan iterations to enhance the urban design quality of the project.

- ***3.6 Generate a creative and comprehensive way-finding system that reinforces Littleton's sense of place, while providing directions within the City***
    - The South Park Bridge, located just west of Broadway and spanning Jamison Avenue, will serve as an important landmark for future residents and guests, serving as part of Littleton's comprehensive way-finding system and creating a unique sense of place for the community

Goal #4: A Distinctive Littleton

- ***4.1 Build upon the assets that are unique to Littleton… and Littleton's history, schools, neighborhoods, cultural facilities, and public image***
    - The proposed project will provide quality urban design and adhere to strict, architectural design guidelines that are consistent with the characteristic style of the surrounding area
    - As an urban infill site, Jamison Village will utilize existing infrastructure, cultural facilities and schools, saving costs and increasing utility and efficiencies.

- ***4.3 Encourage high quality design, architecture, landscape architecture, and public art throughout Littleton***

PART II: TRANSFORMATIVE ACTIONS

The second section – Part II: Transformative Actions – describes strategic actions necessary to achieve the citywide Goals and Policies, which were outlined in Part I. These actions will guide all underlying plan and policy documents, as well as zoning code changes, budget decisions, and capital investments. To achieve the citizens' vision for Littleton, there must be a collaborative, long-term commitment to these strategic actions. The proposed Littleton Village project advances the following Transformative Actions as set forth in the 2014 Citywide Plan.

Action #2: Focus on Activity Areas and Corridors

- ***2.1 Identify and designate as activity areas or corridors those location or street corridors, respectively, where additional new development or redevelopment is desired and either occurring or anticipated. Designated areas should be those that will have the most transformative impacts on achieving the city's Vision. (see Activity Areas Map below excerpted from page 8 of Citywide Plan 2014)***

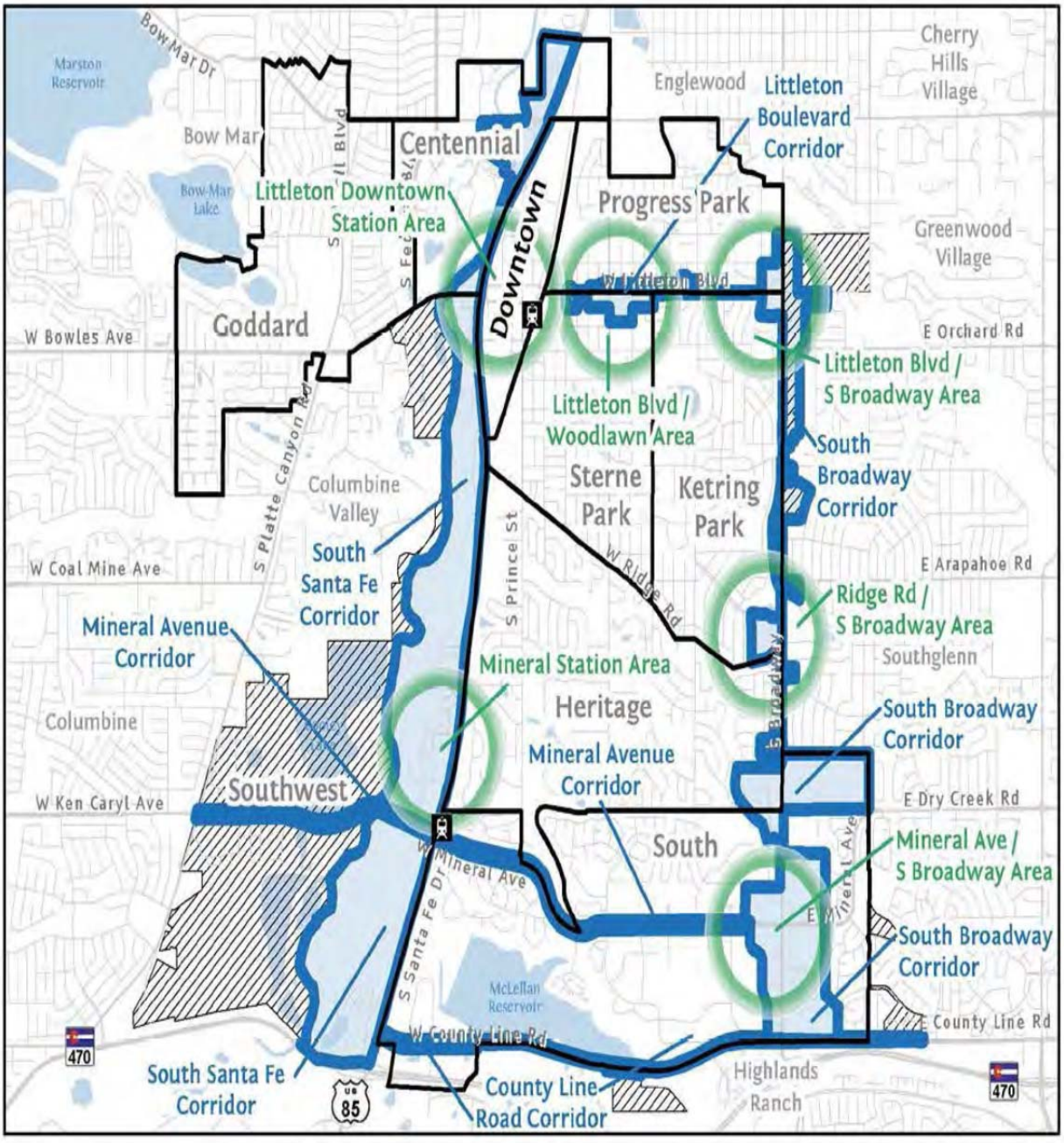
    - Activity Area: Mineral Ave/ S. Broadway Area
    - Corridor: South Broadway Corridor

- ***2.2 Use tools such as small area plans, zoning, capital improvements, and other incentives to set the stage for redevelopment and new development in designated activity areas and corridors.***

- ***2.3 Attract desired development and encourage activity areas and corridors.***
    - SouthPark is a vibrant office, retail, and residential neighborhood that continues to see new development

Action #3: Direct Littleton's Growth

- ***3.2 Use this plan as a basis for land-use related decisions***



Legend

- Neighborhood Plan Area
- Corridors
- Activity Areas
- Areas to be included in future small plan areas

Neighborhoods, Corridors, and Activity Areas

Proposed Architecture

Jamison Village – Littleton, CO
Summary of Proposed "PRAIRIE" Architectural Style and Materials

ARCHITECTURAL CONCEPT STATEMENT
THE ARCHITECTURAL DESIGN OF THIS DEVELOPMENT SHALL BE ESTABLISHED IN A MANNER THAT FITS THE CONTEXT OF THE SURROUNDING AREA. THE BUILDINGS SHALL BE SITUATED ON THE SITE SO THAT ADEQUATE LANDSCAPE SCREENING CAN BE ESTABLISHED AT EACH BUILDING.

THE SITE CONSISTS OF 19 INDIVIDUAL DUPLEX BUILDINGS FOR A TOTAL OF 38 UNITS MADE UP OF A COMBINATION OF (4) UNIQUE FLOOR PLANS, RANGING IN SIZE FROM 1,400 TO 1,900 SQUARE FEET, WITH OPTIONAL BASEMENTS ADDING UP TO AN ADDITIONAL 700 SQUARE FEET. FLOOR PLANS WILL OFFER LARGE, OPEN GREAT ROOMS, GOURMET KITCHENS WITH LARGE ISLANDS AND EATING BARS, (2-4) BEDROOMS OR (3) BEDROOMS WITH A DEN, 2-1/2 BATHS AND WITH SOME PLANS OFFERING A USABLE SITTING AREA AT THE TOP OF THE STAIRS ON THE SECOND FLOOR FOR USE AS A LOFT. EACH PLAN INCORPORATES A COVERED PORCH WITH DISTINCT PRAIRIE STYLE EAVES AND MASONRY COLUMNS WHICH MAKE IT RECOGNIZABLE AS THE ENTRY.

EACH BUILDING ELEVATION FAÇADE WAS DESIGNED USING "PRAIRIE STYLE" ELEMENTS THAT ARE CARRIED THROUGHOUT WITH REGARD FOR FOUR-SIDED ARCHITECTURE. THE PRAIRIE STYLE EMPLOYS BOTH SYMMETRICAL AND ASYMMETRICAL COMPOSITIONS OF LOW RECTANGULAR BANDS WITH FORWARD AND LATERALLY PROJECTING ELEMENTS. THE OVERALL EMPHASIS IS ON HORIZONTALITY, WITH HORIZONTAL BANDS DEFINED BY CHANGES IN COLOR AND/OR MATERIAL, EMPHASIZING THE BASE, MIDDLE AND TOP OF THE BUILDING MASS. THE TYPICAL PRIMARY ROOF IS A RELATIVELY LOW SLOPING HIP (PITCHES FROM 4:12 TO 6:12 ARE TYPICAL), WITH SECONDARY ROOFS OVER PORCHES OR PROJECTIONS FROM THE MAIN BUILDING MASS ALSO HIPPED. PORCHES ARE AN IMPORTANT ELEMENT OF THE STYLE, WHILE ORNAMENTATION IS GENERALLY RESTRAINED WITH AN EMPHASIS ON MASSING AND ANGULARITY.

EACH BUILDING WILL CONSIST OF AN EARTH TONE COLOR PALLATE MADE UP OF COLORS THAT WILL ENHANCE THE BUILDING WITHIN THE SURROUNDING AREA.

1. BUILDING FORM

a. BUILDING SIZE

(1) THE BUILDINGS SHALL NOT EXCEED 2 STORIES IN HEIGHT. MAXIMUM HEIGHT OF ANY BUILDING SHALL BE 30 FEET.

b. BUILDING MASSING

(1) THE BUILDINGS WILL HAVE A VARIETY OF MATERIALS EXHIBITING DIFFERENT, BUT COMPLEMENTARY COLORS AND TEXTURES, EXCLUSIVE OF ROOF MATERIALS AND NORMAL WINDOW AND DOOR GLAZING. A MINIMUM OF THREE (3) DIFFERENT MATERIALS/COLORS WILL BE USED ON EACH BUILDING.

(2) BUILDINGS WILL HAVE RIDGE LINE BREAKS TO VISUALLY REDUCE THE MASSING.

c. BUILDING ELEMENTS

(1) ENTRY COMPONENTS

(2) THE ENTRY COMPONENTS SHALL BE DISTINCTIVE WITH MASSING, MATERIAL PLACEMENT AND FEATURES THAT ARE RECOGNIZABLE AS BUILDING ENTRY POINTS.

(3) ENTRY POINTS ON THE GROUND FLOOR SHALL BE ARTICULATED WITH LANDSCAPING.

2. FACADES

a. THE FACADE WILL BE ENHANCED WITH ARCHITECTURAL TRIM AND DETAILS TO PROVIDE VISUAL INTEREST AND RELIEF.

b. ALL SIDES OF ALL BUILDING(S) SHALL CARRY THROUGH THE ARCHITECTURAL INTENT OF THE FRONT FACADE.

c. PERMISSIBLE BUILDING ELEMENTS INCLUDE BUT ARE NOT LIMITED TO, PATIOS, PORCHES, BALCONIES, AWNINGS, OTHER PROJECTIONS, BRACING / BRACKETS, OVERHANGS, INSETS, CANTILEVERS, POT SHELVES, DECKS, FIREPLACES, STOOPS, TRELLIS DETAILS, BAY WINDOWS, PARAPETS, SHUTTERS, SURROUNDS AND OTHER ARCHITECTURAL FEATURES AND DETAILS. SOLAR PANELS AND OTHER SOLAR ELEMENTS (WHETHER ACTIVE OR PASSIVE) ARE PERMITTED.

3. ROOFS

a. ROOFS SHALL BE DESIGNED LIKE A "FIFTH FACADE" IN AN EFFORT TO KEEP THE ROOF PLANES CLEAN AND INTERESTING. THE ROOFS MAY BE DESIGNED AS PITCHED, MANSARD OR A COMBINATION OF THESE TO PROVIDE FOR A VARIETY OF FORMS.
b. ROOFS MAY INCORPORATE ENHANCEMENTS, INCLUDING BUT NOT LIMITED TO, GABLES, SHEDS, DORMERS, VENTS, CORNICE, EAVE DETAILS, PARAPETS, PERGOLAS, AND BRACKETS.
c. ROOF PENETRATIONS SHALL BE MINIMIZED AND CLUSTERED WHERE PRACTICAL.
d. ACCEPTABLE ROOFING MATERIALS INCLUDE, BUT ARE NOT LIMITED TO, NON-REFLECTIVE METAL, CONCRETE TILES, SLATE, VITREOUS CLAY TILE, COMPOSITION ASPHALT/FIBERGLASS SHINGLES, DIMENSIONAL ASPHALT SHINGLES, COMPOSITE POLYMER SHAKES AND BUILT-UP OR “COOL ROOF” SYSTEMS, SOLAR PANELS OR SOLAR SYSTEM ELEMENTS.

4. DOORS & WINDOWS

a. ALL EXTERIOR DOORS AT THE LIVING AREA, PATIOS AND DECKS SHALL BE RESIDENTIAL IN APPEARANCE AND EASILY IDENTIFIABLE.
b. ALL WINDOWS AT THE LIVING UNITS SHALL BE RESIDENTIAL IN APPEARANCE.
c. ALL OVERHEAD GARAGE DOORS SHALL INCLUDE WINDOWS; SECONDARY GARAGE SERVICE DOORS SHALL BE RESIDENTIAL IN APPEARANCE BUT MUST NOT INCLUDE WINDOWS

5. PATIOS AND PORCHES

a. PATIOS MAY BE USED ON THE GROUND FLOOR AND BALCONIES MAY BE USED ON THE UPPER FLOORS TO BREAK DOWN THE SCALE OF THE BUILDING AND TO PROMOTE AN INVITING AND WALKABLE COMMUNITY AT THE STREET AND AT OPEN SPACE AREAS.

6. BUILDING “SURFACE” MATERIALS

a. BUILDING SURFACE MATERIALS MAY INCLUDE, BUT ARE NOT LIMITED TO, BRICK OR BRICK VENEER, SYNTHETIC STONE, CULTURED OR NATURAL STONE, PLASTER/ STUCCO, HARDI-PLANK TYPE SIDING, “BOARD AND BATTEN” SIDING, FIBER CEMENT PANELS, ORNAMENTAL METAL, WOOD AND GLASS OR COMBINATIONS OF THESE AND OTHER COMPLIMENTARY MATERIALS. THE USE OF E.I.F.S IS NOT PERMITTED.
b. BRICK AND STONE SHALL NOT BE USED TOGETHER ON THE SAME BUILDING.
c. FOR ANY SYNTHETIC OR CULTURED STONE, AN APPLICATION PATTERN SHALL BE USED TO APPEAR AS IF THE MATERIAL IS LAID UP AND LOAD BEARING.

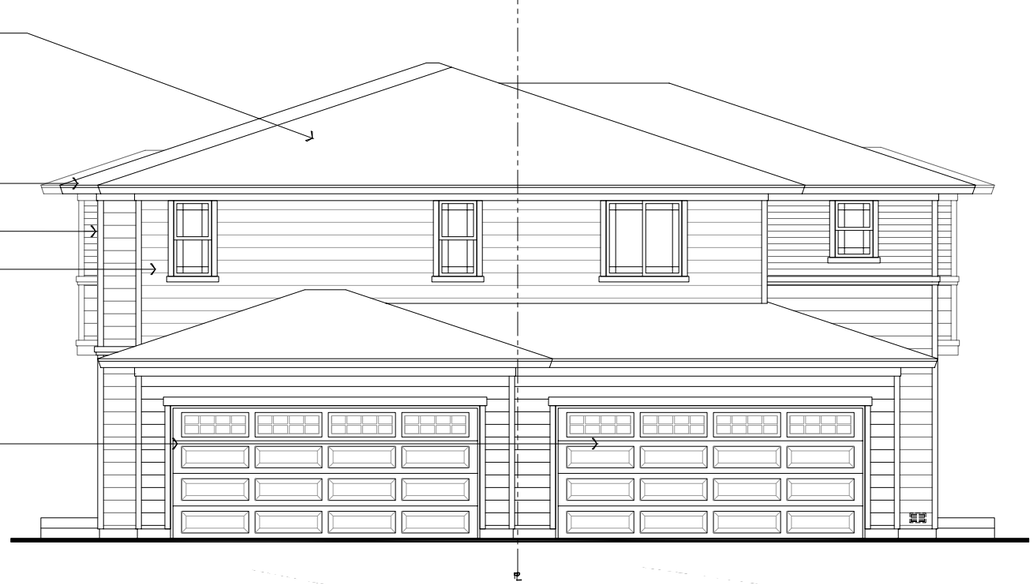
7. BUILDING COLORS

a. COLORS THAT COMPLEMENT AND ENHANCE THE SURROUNDING AREA SHALL BE USED.
b. NO BRIGHT COLORS THAT ARE NOT CONTEXTUALLY SUITED FOR THIS NEIGHBORHOOD WILL BE ALLOWED.
c. THE BUILDING SHALL CONSIST OF AN EARTH TONE COLOR PALETTE. AN EARTH TONE COLOR PALETTE IS DEFINED AS A COLOR SCHEME THAT DRAWS FROM A COLOR PALETTE OF BROWNS, TANS, GRAYS, GREENS, ORANGES, WHITES, AND SOME REDS. THE COLORS IN AN EARTH TONE PALETTE ARE MUTED AND FLAT IN AN EMULATION OF NATURAL COLORS FOUND IN SOIL, MOSS, TREES AND ROCKS.

Building 01 - Left Elevation 'A'

Building 01 - Front Elevation 'A'

Building 01 - Right Elevation 'A'



Building 01 - Rear Elevation 'A'

KB Home Colorado, Inc.
7807 E. Peakview Avenue
Centennial, CO 80111
(303) 323-1100

JAMISON VILLAGE
DUPLEX HOMES

PLAN No. : BUILDING-01
JOB No. : 840999.231
STORY: 2-STORY
August 11, 2014

BLDG 1A -Scheme 6
CO-DN Jamison Village

Building 03 - Left Elevation 'A'

Building 03 - Front Elevation 'A'

Building 03 - Right Elevation 'A'

Building 03 - Rear Elevation 'A'

KB HOME BUILT TO ORDER

KB Home Colorado, Inc.
7807 E. Peakview Avenue
Centennial, CO 80111
(303) 323-1100

JAMISON VILLAGE
DUPLEX HOMES

PLAN No. : BUILDING-03
JOB No. : 840999.231
STORY: 2-STORY
August 11, 2014

BLDG 3A -Scheme 8
CO-DN Jamison Village

Building 05 - Left Elevation 'A'

Building 05 - Front Elevation 'A'

Building 05 - Right Elevation 'A'

Building 05 - Rear Elevation 'A'

KB HOME BUILT TO ORDER

KB Home Colorado, Inc.
7807 E. Peakview Avenue
Centennial, CO 80111
(303) 323-1100

JAMISON VILLAGE
DUPLEX HOMES

PLAN No. : BUILDING-05
JOB No. : 840999.231
STORY: 2-STORY
August 11, 2014

BLDG 5 A -Scheme 10
CO-DN Jamison Village

Information about KB Homes

About KB Home...

Financial Stability

- KB Home is one of the largest and most recognized homebuilding companies in the United States. Since its founding in 1957, the company has built more than half a million quality homes.
- KB Home's signature Built to Order™ approach lets each buyer customize their new home from lot location to floor plan and design features.
- KB Home was the first homebuilder listed on the New York Stock Exchange, and trades under the ticker symbol "KBH." For more information about KB Home please visit www.kbhome.com.

Environmental Integrity

- A leader in utilizing state-of-the-art sustainable building practices, KB Home was named the #1 Green Homebuilder in the most recent study by Calvert Investments and the #1 Homebuilder on FORTUNE magazine's 2011 World's Most Admired Companies list.
- The U.S. Environmental Protection Agency (EPA) has awarded KB Home a 2012 ENERGY STAR® Sustained Excellence Award in recognition of its continued leadership in protecting our environment through energy efficiency.
- In addition to meeting strict ENERGY STAR® guidelines, all KB homes are highly energy efficient to help lower monthly utility costs for homeowners, which the company demonstrates with its proprietary KB Home Energy Performance Guide® (EPG®).
- In 2012, KB Home began offering "Net-Zero" homes in Denver, homes that produce at least as much energy as they consume
- KB Home provides an annual Sustainability Report on our business with the intent to share progress made over the previous year and to establish new goals for the coming year. You may view our most recent Sustainability Report at www.kbhome.com/sustainability.

Local Knowledge

- KB Home has a long and successful history of building excellent communities in the Denver area. We have a strong local presence, having built more than 4,000 new homes in Denver over the past 10 years and more than 300 homes in 2013.
- JD Powers recently ranked KB the #1 builder in Denver for Quality and Customer Satisfaction and every home we build in Colorado is Energy Star certified.

KB HOME

2013 SUSTAINABILITY REPORT

ABOUT KB HOME

KB Home is one of the largest and most recognized homebuilding companies in the United States and has constructed new homes in 190 communities nationwide during its most recent fiscal year. In 2013, KB Home built more than 7,100 homes in 40 major markets across 10 states. Since our founding in 1957, we have delivered the American Dream to over 555,000 families. KB Home's signature *Built to Order*™ approach means that construction on a new KB home typically doesn't start until a buyer has signed a contract and selected the homesite, floor plan, and numerous interior and exterior options to make the home their own. With a focus on providing the best combination of quality and value to first-time, move-up and active adult homebuyers, KB Home delivers a semi-custom homebuying experience at an affordable price. New KB homes are not only *Built to Order*, they are also built with our sustainability initiatives firmly in mind, with a wide variety of highly water- and energy-efficient and other environmentally conscious features and products available as standard or as options to our homebuyers.

KB Home Sustainability Report Purpose and Structure

The 2013 KB Home Sustainability Report is our seventh annual public report and follows our most recent report published on Earth Day in April 2013. In this report, we quantify our accomplishments and challenges in 2013 and seek to foster continued discussion and engagement with all of our stakeholders on the complex issues surrounding sustainability.

All information provided in this report, including financial data, is for our fiscal year ended November 30, 2013, unless otherwise noted. We also highlight in this report our top goals and priorities for 2014 and beyond. We fully intend to do our best to achieve these objectives, subject to shifts in the business climate.

As with our previous reports, we continue to follow the Global Reporting Initiative (GRI) Guidelines, which provide a widely recognized level of accountability and transparency, and are considered by many environmental experts to be the current standard for sustainability reporting. A full accounting of the GRI indicators addressed in this report and more information on the GRI's Guidelines can be found in the GRI Index of Indicators section.

We are committed to conveying our progress and goals in future sustainability reports, and pursuing sustainable practices where possible as an integral component of KB Home's business.

KB HOME'S VISION FOR SUSTAINABILITY

To become a leading environmentally conscious national company by engaging the talents of our employees and trade partners, to utilize the power of our innovative business model to minimize the impact of our business and homes on the environment, to increase positive change in the protection of our Earth and its resources, and to continue to make the dream of homeownership attainable to consumers.

KB Home's Guiding Principles for Sustainability

KB Home's sustainability initiatives have been guided by five core principles established in our inaugural 2007 Sustainability Report:

- **Offer environmentally friendly and affordably priced homes, products and features that minimize our homeowners' carbon footprint and energy usage, conserve natural resources, and create more sustainable homes and communities.**
- **Utilize our history of innovation and our process-driven approach to reduce waste and natural resource usage throughout our organization.**
- **Be an active and responsible member of the communities in which we operate.**
- **Be an environmental educator for all our employees, homebuyers and business partners regarding home energy conservation and environmental sustainability.**
- **Maintain our standards of transparency and corporate citizenship by publicly reporting on the progress in and challenges to our sustainability efforts.**

A MESSAGE FROM KB HOME'S PRESIDENT AND CHIEF EXECUTIVE OFFICER

To our customers, stockholders, employees and partners in sustainability:

Welcome to our seventh annual sustainability report. We are releasing our report on Earth Day for the third year in a row, to underscore the importance of protecting the environment. We strive every day to find ways to reduce our carbon footprint, and limit the natural resources we consume. Through our actions over the last seven years, we have made steady progress in building homes that are more environmentally friendly, and still affordable, which is good for our planet, and good for our customers. By helping us sell more homes, it is good for our stockholders as well. We believe integrating sustainable practices into our business is the right thing to do, and we continue to expand our efforts in this vital area.

Since embarking on our sustainability journey, we have focused our efforts in four areas: energy efficiency, water conservation, consumer awareness and waste reduction. We seek to lower the environmental impact of each of our homes by reducing energy consumption, which also helps lower the total cost of homeownership for our customers. We have lowered energy consumption, as measured by our average HERS Index Score, for six consecutive years. New KB homes delivered today are on average 65% more energy efficient than a typical resale home and 35% more efficient than a typical new home. Water is one of our most precious and limited natural resources, and we continue to improve our product and design features to enhance water conservation. Today, we install WaterSense® features as standard, which saves up to 30,000 gallons of water per year in each home as compared to typical resale homes.

We have been educating the public about the environmental benefits and cost savings from energy and water conservation in multiple ways, from our Energy Performance Guide® (EPG®) and ZeroHouse 2.0 programs, to participating in industry conferences and utilizing our growing social media presence. Our engineering design process is focused on eliminating waste up front, and building the most efficient homes at the highest quality standards. We also utilize recycled materials wherever possible, minimize and track waste on our job sites, and motivate our trade partners and suppliers to do the same. These efforts have reduced our carbon footprint, and we are committed to further reductions in the future.

Within our Sustainability Report, you will find detailed accounts of our accomplishments in all four focus areas during 2013. Highlights of some of our accomplishments for the year include:

- We introduced the Wiser™ Home Management System as a standard feature in all new homes. Wiser empowers homeowners to monitor and control their real-time energy usage remotely. A recent survey found that homeowners who receive real-time feedback about their energy usage save as much as 12% annually. Wiser provides a platform for a connected smart home that can control additional features such as remote lighting, and a smart thermostat that adjusts a home's temperature during periods of peak energy demand. Wiser provides us the flexibility to integrate future smart home technologies as they become available.

- We added a built-in USB port in the kitchen of every home. The port eliminates the need for an adapter for charging electronic devices and conserves energy by automatically shutting down when charging is complete.

- We took advantage of our leadership position in corporate sustainability to partner with other companies in promoting energy efficient features and options. Whirlpool® chose KB Home as the first homebuilder to introduce its line of smart kitchen appliances, which can be programmed to run energy-intensive tasks at off-peak hours, and even send a text message if the refrigerator door is left open.

- We teamed with Ford Motor Company® to demonstrate how a smart home interacts with smart transportation, using new technologies such as an electric vehicle charging station that is powered by renewable energy from the home's solar panels. In the evening, the car can, in turn, provide power to assist in running the house.

- Speaking of solar, we delivered 1,025 homes with solar power systems in 2013, our most in a single year. We have now delivered 2,400-plus solar homes since 2011, offsetting the production of more than 6,200 tons of carbon dioxide, which is the equivalent of removing 942 cars from the road every year.

- Over the last several months, we showcased our newest water-saving technologies, including a first-of-its kind greywater recycling system, which reuses water from other parts of the home for landscape irrigation; a water-recycling dishwasher; and a hot water heat recovery system. These innovations are in addition to our WaterSense® Labeled and WaterSmart home programs, as well as the standard WaterSense fixtures we install in every KB home. The more than 19,000 homes with these features, which we have delivered since 2007, save a combined 3 million gallons of water every day.

For KB Home, sustainability extends beyond our energy and water initiatives to making a difference in our communities. We strive to take a leadership role in each of our served markets through participation in programs that educate consumers on the benefits of energy and water efficiency. These programs highlight the positive impact an efficient home can have on the conservation of natural resources and utility costs. We also support charitable organizations that improve the quality of life of local residents, and advocate for responsible land development and residential construction policies that minimize the impact on the planet and its natural resources. During our land acquisition process, we take into consideration the existing native trees and shrubs in our land planning, in order to preserve as many as possible on the property. We also include landscaping as part of our development to leave new communities with more trees, plants and green space than when we started.

We have made substantial progress in our sustainability journey, and I am very proud of our results thus far. Through our leadership efforts and technological advancement, items like the Wiser Home Management System that were expensive prototypes or even unheard of seven years ago are now standard features in our homes. Our commitment to using WaterSense fixtures, meanwhile, helps to conserve the most vital natural resource. As the pace of innovation in sustainable practices continues to accelerate, we intend to expand our leadership position in this critical area. This year's report captures many of our recent successes and challenges along our sustainability journey, and I look forward to sharing further accomplishments in the year ahead.

Jeffrey T. Mezger

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Las Vegas, Nevada

2013

THE YEAR IN SUSTAINABILITY AT KB HOME

KB Home's 2012 Sustainability Report outlined a number of goals for 2013 in four primary areas:

> Energy Efficiency and Building Science Innovation

> Water Efficiency and Conservation

> Consumer Benefits and Awareness

> Waste Reduction

Over the course of the report, we will highlight our progress made against these goals, identifying key accomplishments, challenges and programs underway in these four areas.

Before detailing the results of our sustainability efforts, we would like to share an objective assessment of our efforts based on some of the accolades we have received for our work in 2013. Though accolades and awards are not the reason we pursue our sustainability goals, we sincerely appreciate when others take the time to recognize us.

AWARDS AND RECOGNITION

ENERGY LEADERSHIP

ENERGY STAR® Partner of the Year – Sustained Excellence Award 2014

- four consecutive years

ENERGY STAR AWARD 2014
PARTNER OF THE YEAR
Sustained Excellence

First Homebuilder ENERGY STAR Partner of the Year – Climate Communications

- for raising awareness of the positive effects energy efficiency can have on the environment

Recipient of 17 ENERGY STAR Certified Homes Market Leader Awards

WATER LEADERSHIP

WaterSense® 2013 Builder Partner of the Year

- first and only homebuilder to receive designation
- three consecutive years

EPA WaterSense 2013 PARTNER OF THE YEAR

Build It GREEN™ MEMBER

KB Home's Bay Area division was named the Community Builder of the Year by Build It Green™. KB Home is a member of Build It Green.

U.S. DOE CHALLENGE HOME 2013 WINNER Housing Innovation Awards

Department of Energy's 2013 Housing Innovation Awards Challenge Home Winner for our San Marcos ZeroHouse 2.0 in the Production Builder category.

Antelope Valley Air Quality Management District

KB Home's Southern California division was honored with the Antelope Valley Air Quality Management District's William J. "Pete" Knight Achievement in Reducing Emissions Award, otherwise known as the AIRE Award.

2014 Silver Nugget AWARDS Las Vegas, Nevada

KB Home's Las Vegas division won Green Builder of the Year at the Southern Nevada Home Builders Association's 2014 Silver Nugget Awards for excellence in homebuilding. KB Home is a member of the Association.

RESNET® RESIDENTIAL ENERGY SERVICES NETWORK

Winner of 2014 RESNET President's Award for delivering the most homes with a HERS Index Score below 55 and the award for the Lowest HERS Index Score for a Production Builder, with a HERS Index Score of 42.

Home Innovation QUALITY CERTIFIED™

We are the first and only national homebuilder to receive Home Innovation Research Lab's "Home Innovation Quality" Certification across all divisions, and have done so for six consecutive years.

2013 PROGRESS REPORT SUMMARY

● COMPLETED ◒ IN PROGRESS OR PARTIALLY COMPLETE WITH ROOM FOR IMPROVEMENT ○ INCOMPLETE

ENERGY EFFICIENCY AND BUILDING SCIENCE INNOVATION

- ● Improve the energy efficiency of our homes by at least 3% in 2013 in order to achieve an average HERS Index Score of 66.
- ● Expand on our successful solar power initiatives by exploring broader usage of renewable energy, including installation of solar power systems in new markets or with new product lines and demonstration of other types of renewable energy.
- ● Introduce at least three new energy-efficient components as either a standard or optional feature in all new KB homes. Test and measure the results of at least two emerging building technologies or techniques.
- ● Coordinate a cost-effective transition to the new Title-24 energy code requirements in California, which will be required of all new California residential construction in 2014.

WATER EFFICIENCY AND CONSERVATION

- ● Maintain our leadership in building WaterSense® Labeled new homes by introducing WaterSense certification to new markets.
- ● Demonstrate use of a greywater recycling system and conduct research to determine if such a product can be added to the KB Home Studio. Introduced at ZeroHouse 2.0 model home in February 2014.
- ● Update and expand water-efficient product options at the KB Home Studio.

CONSUMER BENEFITS AND AWARENESS

- Provide a Wiser™ Home Management System in all our new homes so homeowners can track their energy consumption and discover opportunities to reduce consumption.
- Implement new tools for employees to use to raise awareness about the importance of water conservation and communicate the money-saving benefits of water efficiency.
- Introduce an educational campaign about the importance of keeping storm water clean.
- Expand sustainability-related content on KB Home's website, kbhome.com.
- Showcase sustainable lifestyle choices at our communities and at the KB Home Studio.

WASTE REDUCTION

- Reduce job site waste by 10% through challenging trade partners to reduce their own waste.
- Lessen the estimated environmental impact of our sales offices and model homes by reducing paper use in our sales offices and energy consumption in our model homes by an additional 2%.
- Increase internal awareness and excitement for waste reduction, particularly in our division and corporate offices, by encouraging "paperless" procedure improvements and recognizing employees with the GROW Wall of Fame program.

Irvine, California

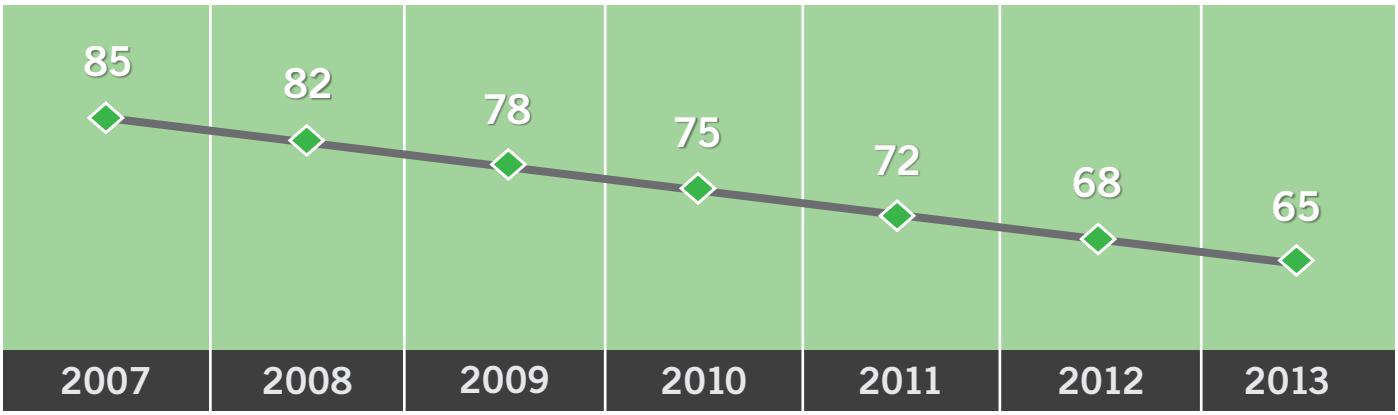
ENERGY EFFICIENCY AND BUILDING SCIENCE INNOVATION

Continuing to Lower the Cost of Homeownership

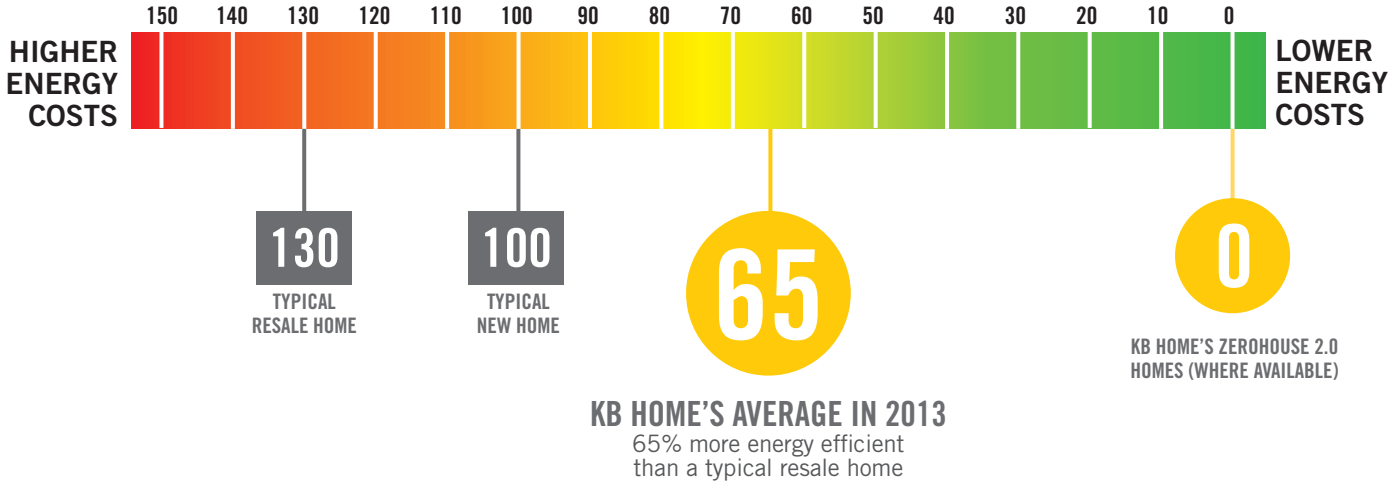
Maximizing a home's energy efficiency can lead to significant savings on utility bills and is one of the main ways we strive to lower the total cost of homeownership for our customers. We measure the energy efficiency of every home we build with a Home Energy Rating System (HERS) Index Score that is assigned upon inspection by a third-party certified home energy rater from the Residential Energy Services Network (RESNET). HERS Index Scores range from below 0 to above 150 (the lower the better) and provide a way to compare a home's energy efficiency performance to that of other homes. We have successfully lowered our average HERS Index Score for the last six years. With this progress, we believe we are well positioned to stay ahead of the higher efficiency requirements for residential construction anticipated to go into effect across our markets over the next several years.

We calculate our average annual HERS Index Score by tracking scores for every home we deliver as opposed to a sampling formula. While the average HERS Index Score for a new KB Home in 2013 was 65, earning us the President's Award from RESNET for delivering 570 homes with a HERS Index Score of 55 or less.

CONTINUOUS IMPROVEMENT IN AVERAGE HERS INDEX SCORE



RESNET HOME ENERGY RATINGS INDEX



WATER EFFICIENCY AND CONSERVATION

WHY IT MATTERS: Reducing water consumption can also lower the cost of homeownership and help conserve one of the planet's most important but limited resources. Using less water also helps lower energy and water bills. With prices for water expected to increase due to distribution and infrastructure issues in some areas, drought and other climate change impacts, those cost savings could become more substantial in the future.

Making Sense...And Cents from WaterSense®

WaterSense is an EPA program that "seeks to protect our nation's water supply by offering people simple ways to use less water" and is the platform used by KB Home to help customers lower the total cost of homeownership through savings on both their water and energy bills. We have partnered with WaterSense since 2009 to help homeowners make smart water choices and maintain high environmental standards. KB Home features a wide array of WaterSense Labeled fixtures as standard or optional features in every home we build.

The Homebuilding Industry's Leader in Water Efficiency

For the third year in a row, KB Home was the only builder to be recognized as a 2013 WaterSense Partner of the Year. We have also built the most WaterSense Labeled new homes in the country. To earn the WaterSense label, a new home must adhere to stringent criteria for indoor and outdoor water use, and the builder must educate the homeowner on optimizing water usage in the home. While our production of WaterSense Labeled homes declined in 2013 due to the closeout of several communities featuring these homes, we plan to increase our volume this year as we open several new communities offering WaterSense Labeled homes. In our Las Vegas division, we have built the most homes to the Water Smart certification standards, a program similar to WaterSense created by the Southern Nevada Water Authority.

Nearly
9,700
WaterSmart and WaterSense Labeled homes built since 2005

158,000
WaterSense fixtures installed since 2008

$300
annual savings in standard KB home with WaterSense Labeled fixtures

$600
annual savings in WaterSense Labeled KB home

Gallons of water conserved everyday by these homes and fixtures together:
3 MILLION

CONSUMER BENEFITS AND AWARENESS

Our Smart Homes Put Connectivity and Energy Savings at Homebuyers' Fingertips

KB Home's smart home technologies, energy-efficient benefits and appeal to a new generation of wired consumers were featured prominently in the media throughout the year. An August broadcast on Los Angeles television station *KTLA* and a December story in the *Los Angeles Times* highlighted the many energy-efficient and home automation options that are now possible in a KB home, including:

The Wiser™ home management system empowers homeowners to remotely monitor and control their energy usage. Wiser is directly linked to the home's electrical panel and measures electric power consumption. Homeowners can then access consumption data in realtime via a web-based portal and set goals for consumption to help save money on monthly energy bills and reduce their home's impact on the environment.

Wiser is also the platform for additional home automation features such as remote lighting, security, appliance and door lock control as well as heating and cooling control via a Wiser smart thermostat that adjusts temperatures based on peak energy demand.

Other state-of-the-art features include:

- A USB outlet in the kitchen that allow smartphones, tablets and other mobile devices to be plugged directly into the wall. The outlet automatically shuts down when charging is complete to limit excess energy usage and electric costs.
- Electric vehicle charging stations are an option that can accommodate hybrid and all-electric vehicles.

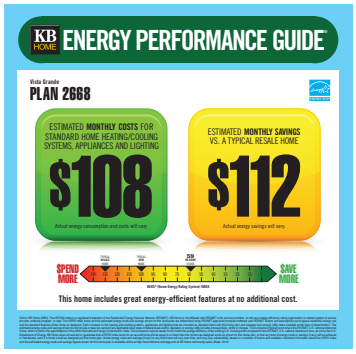
KB Home was selected this past year by Whirlpool® to exclusively launch its 6th Sense Live™ smart appliance technology as an option in our KB Home Studios. Whirlpool 6th Sense Live appliances can be operated remotely from computers and mobile devices and when used in conjunction with Wiser, enable homeowners to track energy consumption in realtime and receive energy-saving alerts, like when the refrigerator door is left open, to further optimize energy efficiency.

We introduced 6th Sense Live refrigerators and dishwashers in Southern California in 2013 and expect to make them available across all our markets in 2014. Smart washers and dryers will also be added as Studio options in the near future.

Energy Costs: How Low Can You Go?

An easy way to measure the energy savings and lower cost of homeownership in a KB home is through our proprietary Energy Performance Guide® (EPG®). Introduced in 2011, the EPG label provides an estimate of the monthly energy costs of an as-designed new KB home as well as an estimate of the monthly energy cost savings compared to a typical resale home and enables homebuyers to see the potential savings from buying an energy-efficient KB home.

Our homeowners currently save an average of $1,000 per year on energy bills compared to typical resale home, which leads to greater housing affordability. Our introduction of EPG was transformative in the housing industry, motivating more than 250 builders to market their homes' HERS Index Scores to consumers.



WASTE REDUCTION

WHY IT MATTERS: Homebuilding requires the use of a range of materials and natural resources. KB Home endeavors to utilize sustainably sourced or recycled content products whenever possible, but we find it equally important to focus on eliminating waste. By managing inventory levels to limit excess materials and keeping job sites clear of waste, we can contain collateral environmental consequences like additional transportation costs to dispose of surplus inventory. Reducing waste and conserving natural resources in our own operations is beneficial to our company performance, as well as the environment.

Small Steps Lead to Big Waste Reductions

In 2013, KB Home continued to take a multi-faceted approach to reducing waste company-wide that also enlisted the participation of our trade partners to minimize waste on job sites. We focused primarily on reducing waste from both new-home construction as well as business operations at the corporate and division levels.

We continue to make strides in reducing paper waste across the company, from electronic pay stubs and supplier payments to increased digital marketing to the roll-out of digital smart boards with touch screens in all sales offices and KB Home Studios.

We are also making great progress toward our goal of decreasing job site waste by 10%. The reductions are being achieved through a combination of a more efficient supply chain where we strive to order no more than is needed on site and work with our trade partners to keep job sites clean. Whirlpool®, for example, delivers appliances to our homes in their own trucks then takes back their own boxes once installation is complete.

In addition to physical waste reduction, KB Home is enhancing the energy savings in our more than 800 model homes through the use of energy-efficient features like high efficiency lighting, Wiser™ smart thermostats and upgraded HVAC systems. After reducing electricity consumption by 5% in 2012, we reduced electricity use by an additional 4% in 2013. These efforts not only save money but also reduce our carbon footprint and provide a good demonstration for homebuyers on how to be energy efficient.

CM
CERTIFIED
cradletocradle
SILVER

Wall to Wall All Over Again

KB Home partners with Shaw® to offer environmentally responsible carpeting in our new homes. In the last three years, we have purchased approximately 3 million square yards of Shaw's Cradle to Cradle℠ Silver Certified carpet products, which are made with highly durable Nylon 6 fiber. All of these products are fully recyclable where available and many contain recycled content. C2C products are also made with the safest raw materials and are produced in manufacturing plants that efficiently use energy and water.

Cradle to Cradle carpet products, when replaced, can be diverted from landfills and processed at Shaw's Evergreen Nylon Recycling facility.

FACES OF SUSTAINABILITY

"KB Home's extensive use of Shaw's Cradle to Cradle certified carpet and hardwood flooring in the homes it builds illustrates the company's commitment to human and environmental health. We applaud the KB Home team for its focus on building homes that are not only Built to Order,™ but built with the future in mind."

Bridgett Luther, President of the Cradle to Cradle Product Innovation Institute

WHERE WE'RE GOING:

2014 SUSTAINABILITY FOCUS

Our sustainability efforts are geared toward protecting the environment by limiting ours and our customers' consumption of natural resources. By building energy- and water-efficient homes that are affordable, we are lessening our environmental impact while also lowering the total cost of homeownership for our customers. KB homeowners are the most direct recipients of our sustainability efforts and their behaviors have the most influence on the carbon footprint each home generates. This is one of the main reasons we are motivated to increase awareness of the benefits of energy- and water-efficient living to as many potential homebuyers as possible. Our education campaigns strive to inform our customers on how they can reap longer-term results and how much their choice of a home and day-to-day living habits can impact our planet.

INTRODUCING eDIFFERENCE

To enhance our efforts to educate consumers on the importance of sustainability, demonstrate the specific features we offer in every one of our new homes, promote environmentally responsible living and help homebuyers lower their total cost of homeownership, we are introducing eDIFFERENCE™.

eDIFFERENCE is a powerful system of energy, water, environmental and building efficiency working behind the scenes in every KB home to save homeowners money and reduce their impact on the environment.

Going forward, eDIFFERENCE will also shape and guide our broad sustainability goals in the areas of energy efficiency, water conservation, healthy living environments and smart home technology. We believe focusing on these four consumer-driven elements of sustainability in every home we build, while continuing our mission of educating homebuyers, raising awareness of sustainability issues and reducing waste in our operations, create a strong foundation for the future. We anticipate that eDIFFERENCE will enable us to increase the impact we have on homebuyers, stockholders, employees, suppliers, trade partners, peer homebuilders and communities in which we do business.

ENERGY EFFICIENT

WATER WISE

HEALTHY HOME

SMART SYSTEMS

FUTURE GOALS

We anticipate that eDIFFERENCE will enable KB Home to expand our efforts and step up the impact we have on homebuyers, stockholders, employees, suppliers, trade partners, builder peers and the markets that we serve.

ENERGY EFFICIENCY

Continue to increase the energy efficiency of our homes by aiming for an average HERS Index Score of 55 in four years or less, a 10-point improvement from our current energy efficiency level.

Focus our efficiency improvements on insulation, heating, ventilation, cooling and duct systems, and water heaters. Also continue to expand on our solar/photovoltaic offerings.

WATER CONSERVATION

Expand leadership in building WaterSense® Labeled new homes by introducing them to new markets and growing our volume of these homes in existing markets

Advance use of greywater recycling system and other water recycling systems from successful demonstration to wider implementation in new homes. Continue to raise awareness of the energy-water nexus through additional demonstrations of such technologies as greywater heat recovery systems.

HEALTHY HOME

KB homes incorporate a combination of construction, materials, and equipment that will work together to deliver what we believe will be a healthier home. We will continue to focus on products that contribute to better indoor air quality.

Offer the option of a garden plot as part of new home landscaping to promote locally sourced produce.

SMART SYSTEMS

Expand intelligent efficiency initiatives by exploring the newest home automation technologies, components and systems that we can offer as a standard feature or option at KB Home Studio.

Demonstrate battery storage systems with smart software for surplus solar power, which give homeowners the option to use stored energy versus buying from the power grid.

G·R·O·W
GET RID OF WASTE

Waste is a double negative for sustainability: it consumes additional materials and if not recycled, consumes space in landfills. In addition, waste costs us money that could be better spent in positive ways.

Acknowledging the negative impact of waste, we will continue on our current initiatives of driving toward a waste-free supply chain by ordering more accurate quantities of products. We will also continue to encourage suppliers to use more recycled materials in their products or make their products recyclable at the end of their useful life (Cradle to Cradle) as well as reduce the packaging of their products.

Continue to reduce energy and water consumption in our model homes, which should reduce our utility expenses and our operational carbon footprint.

Drainage Study

JAMISON VILLAGE

DRAINAGE REPORT

LITTLETON, COLORADO

April 7, 2014

PREPARED BY:
Paragon Engineering Consultants, Inc.
7852 South Elati Street, Suite 106
Littleton, Colorado 80120
303.794.8604
Project No. 14-005

PREPARED FOR:
Stoneridge Homes, Inc.
5994 S. Holly Street, Suite 261
Greenwood Village, Colorado 80111
Attn: Gary Wanger

Engineer's Statement:

I hereby certify that this report (plan) for the drainage design of Jamison Village was prepared by me (or under my direct supervision) in accordance with the provisions of City of Littleton Storm Drainage Design and Technical Criteria for the owners thereof. I understand that the City of Littleton does not and will not assume liability for drainage facilities designed by others."

_____

James A. Gusky
Registered Professional Engineer
Colorado P.E.35754

Stoneridge Homes hereby certifies that the drainage facilities for Jamison Village shall be constructed according to the design presented in this report. I understand that the City of Littleton reviews drainage plans but cannot, on behalf of Stoneridge Homes and/or their successors and/or assigns of future liability for improper design. I further understand that approval of the Final Plat and/or Final Development Plan does not imply approval of my engineer's drainage design.

Table of Contents

APPENDIX

I. INTRODUCTION

A. Background

This report is being prepared by Paragon Engineering Consultants and is intended to satisfy the requirements of the City of Littleon for a Conceptual Drainage Report submittal for the proposed Jamison Villages development.

B. Project Location

The site is located a quarter mile west of South Broadway and north of Jamison Avenue, in the City of Littleton, Colorado. More specifically described as a parcel of land located in the Northwest Quarter of Section 34, Township 5 South, Range 68 West of the 6th P.M., County of Littleton, State of Colorado. There are no major drainage or existing irrigation facilities located within the project site limits. The project is bounded by Southbridge Filing No. 8 on the west, north and east and Jamison Avenue on the south. A vicinity map is provided in Appendix A for reference.

C. Property Description

The project site is approximately 3 acres consisting of mostly concrete and asphalt hardscape, 2 abandoned buildings and a few trees. The project site generally slopes to the northeast at approximately 1 to 2 percent. The site currently conveys storm runoff to low points where storm sewer collects and conveys the flow from the site. The outfall is to the north, into W. Jamison Circle. There are no detention facilities located on the site.

The soils of the site is predominantly classified as Renohill-Buick loams, which is in the hydrological group C defined as soils being well drained. See Appendix A for Soils information.

The proposed development of the site will be multifamily residential lots. It is anticipated that flows from storm events will be conveyed within the inverted alley sections to an existing storm sewer located in the northeast corner of the site. The existing storm sewer outfalls into West Jamison Circle where flows are conveyed to inlets located in a low point. From there, flows are conveyed to a regional detention facility located in Horseshoe Park.

D. Previous Investigations

The site was originally analyzed as part of the Southbridge Filing 8 subdivision.

II. DRAINAGE SYSTEM DESCRIPTION

A. Existing Drainage Conditions

The existing site contains approximately 3 acres of developed land with an imperviousness of 90 percent and sits within an existing residential subdivision. The project site generally slopes to the north-east at approximately 1 to 2 percent. Concrete

drain pans and storm sewer conveys the flows to the north-east corner of the site where it is collected and outfalls into Jamison Circle.

The site does not sit within a FEMA floodplain.

B. Master Drainage Plan

The site was not part of a master plan although flows from the site were used to establish a detention pond volumes.

C. Offsite Tributary Area

No offsite flows impact the site.

D. Proposed Drainage System Description

Storm flows will be conveyed in the inverted alley sections to an existing storm sewer that outfalls into West Jamison Circle. Flows are then conveyed to a low point in where inlets collect and convey the flows to a regional detention pond. Modifications to the existing outlet structure to regulate flows is proposed rather that providing detention on-site. In additions, because the imperviousness of the site will be reduced, the proposed outfall will be less that the existing.

E. Drainage Facility Maintenance

The project site will continue to flow to the existing regional detention facility located in Horseshoe Park where maintenance will continue to be performed by the City of Littleton.

III. DRAINAGE ANALYSIS AND DESIGN CRITERIA

A. Regulations

The City of Littleton Storm Drainage Design and Technical Criteria dated October 2012 and the Urban Drainage and Flood Control District's (UDFCD) Urban Storm Drainage Criteria Manual, latest online version, were used to establish the storm drainage calculations within this report.

B. Development Criteria

The site is constrained by existing developments surrounding the site. All runoff from the site must outfall to the existing curb and gutter along Jamison Circle.

C. Hydrologic Criteria

Rainfall data for the minor and major events follow the City of Littleton Storm Drainage Design and Technical Criteria Manual. The runoff coefficient for each storm event was calculated using the method established in Chapter 5 of the UDFCD manual, Volume I. The preliminary impervious percentages used were taken from Table RO-3 for multi-family attached. Runoff coefficients were obtained from Figure RO-5, Runoff Coefficients. The rainfall intensity for each basin was calculated using equation RA-3 and values from Table RA-4 in Chapter 4 of the UDFCD manual, Volume I

Both the City of Littleton Storm Drainage Design and Technical Criteria Manual and the UDFCD Manual state that if a site is relatively simple, requires minimal routing and is less than 160 acres in size, the rational method is an acceptable method to use to calculate the storm drainage flows impacting the proposed development

Based on City of Littleton criteria, the 5-year storm was established for the minor storm event and the 100-year storm was established for the major storm event. These were used to determine peak storm runoff values for the minor and major storm events.

D. Hydraulic Criteria

Based on conversations with City of Littleton representatives, modifications to the existing regional detention pond outlet structure can be done rather than providing detention on site for the development. The City would like to modify the outlet structure in the existing detention pond to provide water quality.

The existing outlet structure consists of a 36" RCP with concrete wing walls and a concrete pan. A metal orifice plate restricts the 100 year flows. Modifications would include the installation of an additional walls and a water quality restrictor plate. The Urban Drainage & Flood Control Districts detention spreadsheet will be utilized to determine hole sizes and elevations. Input information will include the existing volume, imperviousness and information obtained from the approved drainage reports.

E. Variance from Criteria

No variances are being requested.

IV. DRAINAGE FACILITY DESIGN

A. General Concept

The developed basin consists of approximately 3 acres with an approximated imperviousness of 40 percent based on City of Littleton, Table 3. Flows will be sheet flow to drainage pans or alley where they will combine with other flows. The alleys will utilize an invert section and will convey flows to the north east corner of the site where existing storm sewer will allow flows to outfall into Jamison Circle.

Flows are conveyed to an existing detention pond located north of a low point in Jamison Circle and will outfall into Horseshoe Park.

B. Specific Details

Specific details will be provided with the final drainage study.

V. CONCLUSIONS

A. Compliance with Standards

All calculations, plans and reports have been prepared in accordance with the referenced criteria and no variances are requested.

B. Design Effectiveness

The proposed drainage design should have no significant effect on the existing drainage facilities.

C. Areas in Flood Hazard Zone

The site does not lie within a flood hazard zone.

D. Variances from Criteria

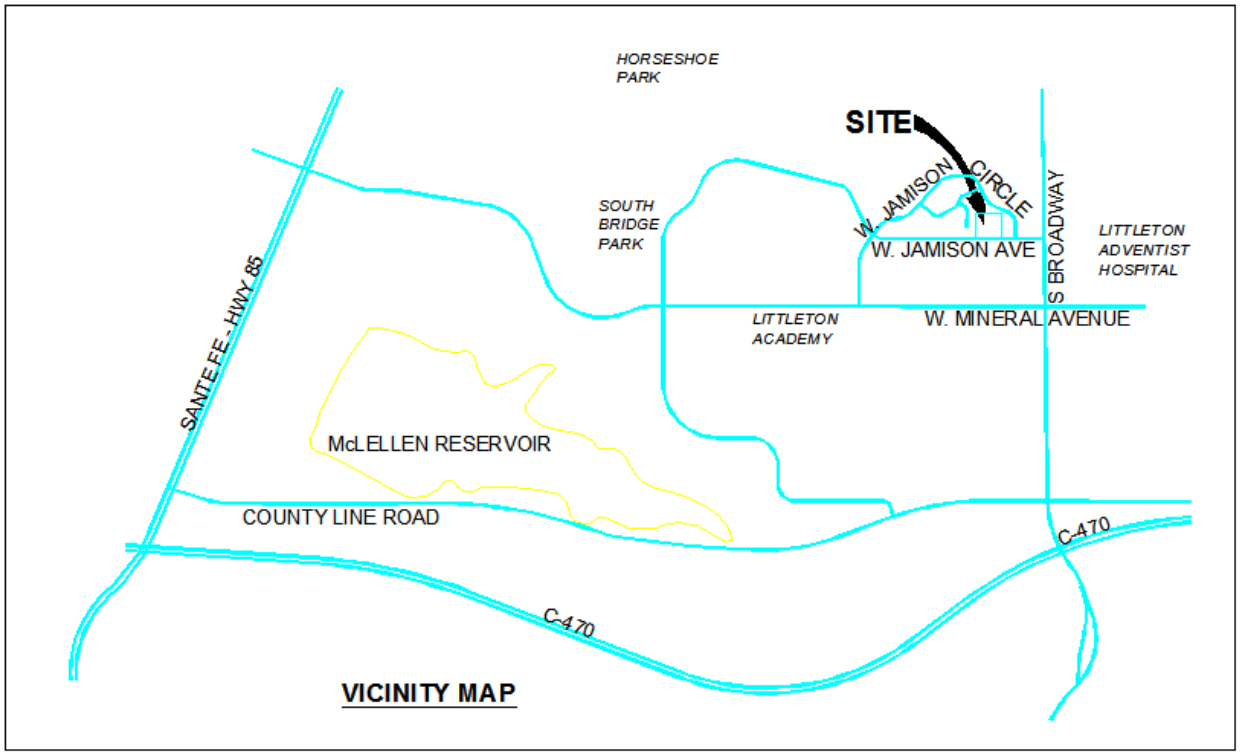
No variances are being requested.

VI. REFERENCES

- *City of Littleton Storm Drainage Design & Technical Criteria,* latest revision.
- *Urban Drainage and Flood Control District Drainage Criteria Manual (UDFCDCM*), Vol. 1, 2 and 3 prepared by Wright-McLaughlin Engineers, March 1969, with latest revisions.

APPENDIX A

Vicinity Map, Soils Map, FIRM Map



Map Scale: 1:887 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 10 20 40 60

Feet
0 40 80 160 240

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Arapahoe County, Colorado
Survey Area Data: Version 9, Dec 24, 2013

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 29, 2011—Apr 13, 2012

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Arapahoe County, Colorado (CO005)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
BxC	Buick loam, 3 to 5 percent slopes	C	0.8	24.9%
FdC	Fondis silt loam, 3 to 5 percent slopes	C	0.0	0.8%
RhD	Renohill-Buick loams, 3 to 9 percent slopes	C	2.5	74.2%
Totals for Area of Interest			**3.4**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

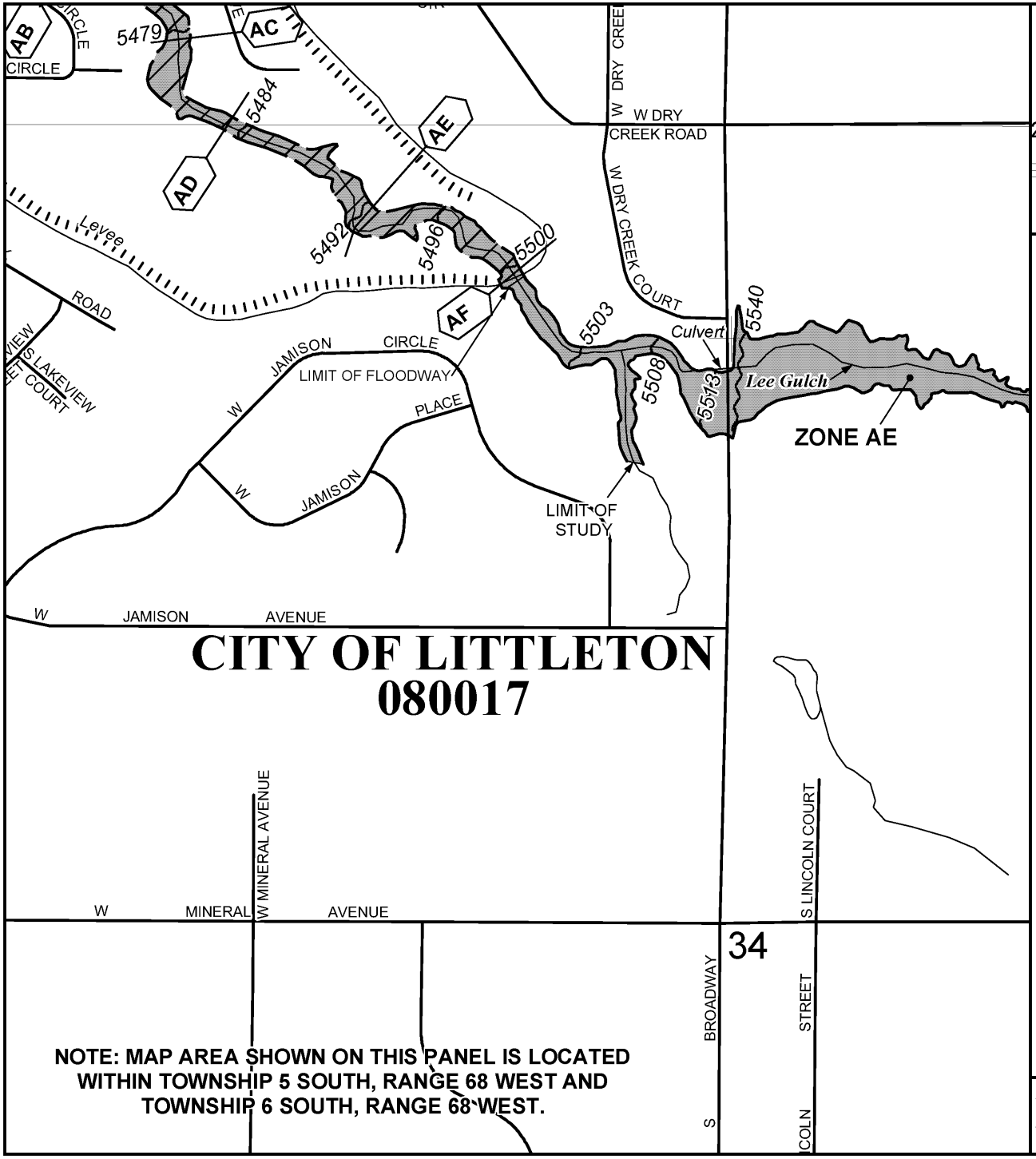
If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

Tie-break Rule: Higher



NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 5 SOUTH, RANGE 68 WEST AND TOWNSHIP 6 SOUTH, RANGE 68 WEST.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

0 150 300 METE

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0453K

FIRM

FLOOD INSURANCE RATE MAP

ARAPAHOE COUNTY, COLORADO

AND INCORPORATED AREAS

PANEL 453 OF 725

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CENTENNIAL, CITY OF	080315	0453	K
LITTLETON, CITY OF	080017	0453	K

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
08005C0453K

MAP REVISED
DECEMBER 17, 2010

Federal Emergency Management Agency

APPENDIX B

Hydrologic Calculations

Table RO-5— Runoff Coefficients, *C*

Percentage Imperviousness	Type C and D NRCS Hydrologic Soil Groups					
	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr
0%	0.04	0.15	0.25	0.37	0.44	0.50
5%	0.08	0.18	0.28	0.39	0.46	0.52
10%	0.11	0.21	0.30	0.41	0.47	0.53
15%	0.14	0.24	0.32	0.43	0.49	0.54
20%	0.17	0.26	0.34	0.44	0.50	0.55
25%	0.20	0.28	0.36	0.46	0.51	0.56
30%	0.22	0.30	0.38	0.47	0.52	0.57
35%	0.25	0.33	0.40	0.48	0.53	0.57
40%	0.28	0.35	0.42	0.50	0.54	0.58
45%	0.31	0.37	0.44	0.51	0.55	0.59
50%	0.34	0.40	0.46	0.53	0.57	0.60
55%	0.37	0.43	0.48	0.55	0.58	0.62
60%	0.41	0.46	0.51	0.57	0.60	0.63
65%	0.45	0.49	0.54	0.59	0.62	0.65
70%	0.49	0.53	0.57	0.62	0.65	0.68
75%	0.54	0.58	0.62	0.66	0.68	0.71
80%	0.60	0.63	0.66	0.70	0.72	0.74
85%	0.66	0.68	0.71	0.75	0.77	0.79
90%	0.73	0.75	0.77	0.80	0.82	0.83
95%	0.80	0.82	0.84	0.87	0.88	0.89
100%	0.89	0.90	0.92	0.94	0.95	0.96
	TYPE B NRCS HYDROLOGIC SOILS GROUP					
0%	0.02	0.08	0.15	0.25	0.30	0.35
5%	0.04	0.10	0.19	0.28	0.33	0.38
10%	0.06	0.14	0.22	0.31	0.36	0.40
15%	0.08	0.17	0.25	0.33	0.38	0.42
20%	0.12	0.20	0.27	0.35	0.40	0.44
25%	0.15	0.22	0.30	0.37	0.41	0.46
30%	0.18	0.25	0.32	0.39	0.43	0.47
35%	0.20	0.27	0.34	0.41	0.44	0.48
40%	0.23	0.30	0.36	0.42	0.46	0.50
45%	0.26	0.32	0.38	0.44	0.48	0.51
50%	0.29	0.35	0.40	0.46	0.49	0.52
55%	0.33	0.38	0.43	0.48	0.51	0.54
60%	0.37	0.41	0.46	0.51	0.54	0.56
65%	0.41	0.45	0.49	0.54	0.57	0.59
70%	0.45	0.49	0.53	0.58	0.60	0.62
75%	0.51	0.54	0.58	0.62	0.64	0.66
80%	0.57	0.59	0.63	0.66	0.68	0.70
85%	0.63	0.66	0.69	0.72	0.73	0.75
90%	0.71	0.73	0.75	0.78	0.80	0.81
95%	0.79	0.81	0.83	0.85	0.87	0.88
100%	0.89	0.90	0.92	0.94	0.95	0.96

Table RO-3—Recommended Percentage Imperviousness Values

Land Use or Surface Characteristics	Percentage Imperviousness
Business:	
Commercial areas	95
Neighborhood areas	85
Residential:	
Single-family	*
Multi-unit (detached)	60
Multi-unit (attached)	75
Half-acre lot or larger	*
Apartments	80
Industrial:	
Light areas	80
Heavy areas	90
Parks, cemeteries	5
Playgrounds	10
Schools	50
Railroad yard areas	15
Undeveloped Areas:	
Historic flow analysis	2
Greenbelts, agricultural	2
Off-site flow analysis (when land use not defined)	45
Streets:	
Paved	100
Gravel (packed)	40
Drive and walks	90
Roofs	90
Lawns, sandy soil	0
Lawns, clayey soil	0

* See Figures RO-3 through RO-5 for percentage imperviousness.

$$C_A = K_A + \left(1.31i^3 - 1.44i^2 + 1.135i - 0.12\right) \text{ for } C_A \geq 0, \text{ otherwise } C_A = 0 \qquad \text{(RO-6)}$$

$$C_{CD} = K_{CD} + \left(0.858i^3 - 0.786i^2 + 0.774i + 0.04\right) \qquad \text{(RO-7)}$$

$$C_B = \left(\mathrm{C_A} + C_{CD}\right)/2$$

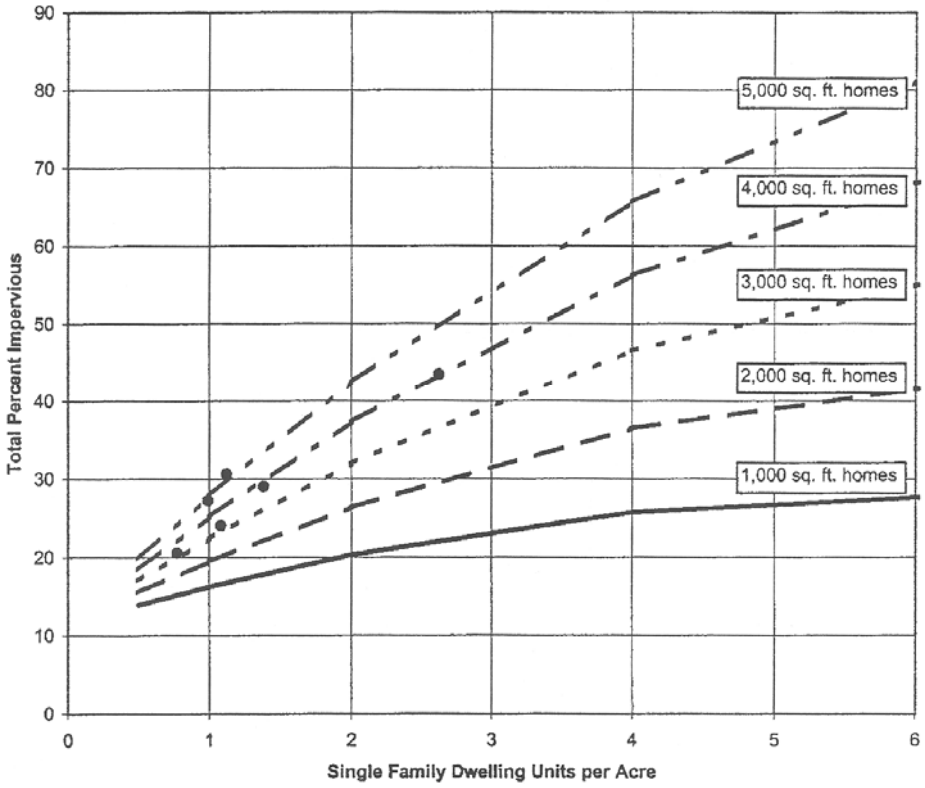


Figure RO-5—Watershed Imperviousness, Single-Family Residential Two-Story Houses

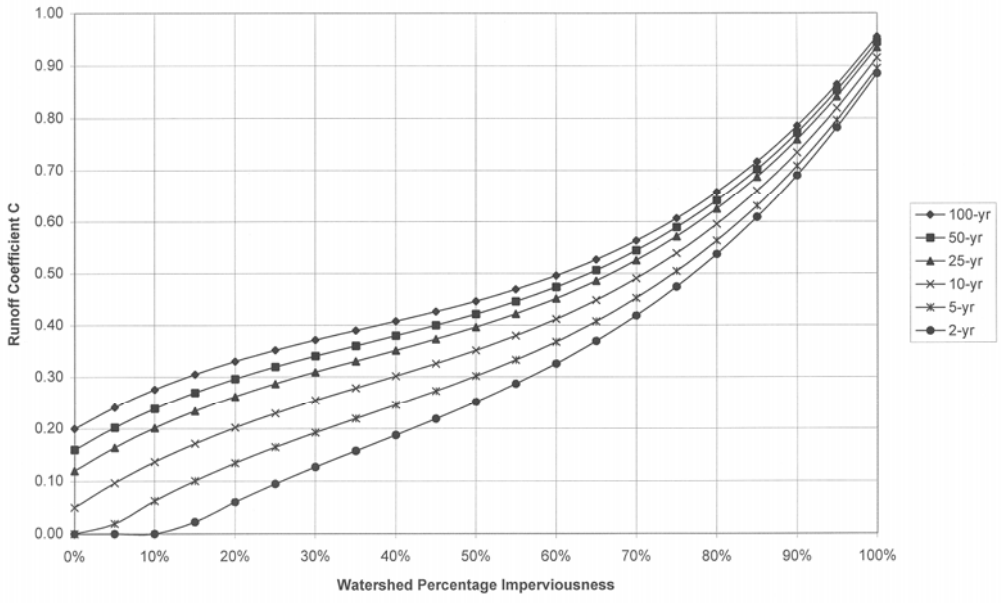


Figure RO-6—Runoff Coefficient, *C*, vs. Watershed Percentage Imperviousness NRCS Hydrologic Soil Group A

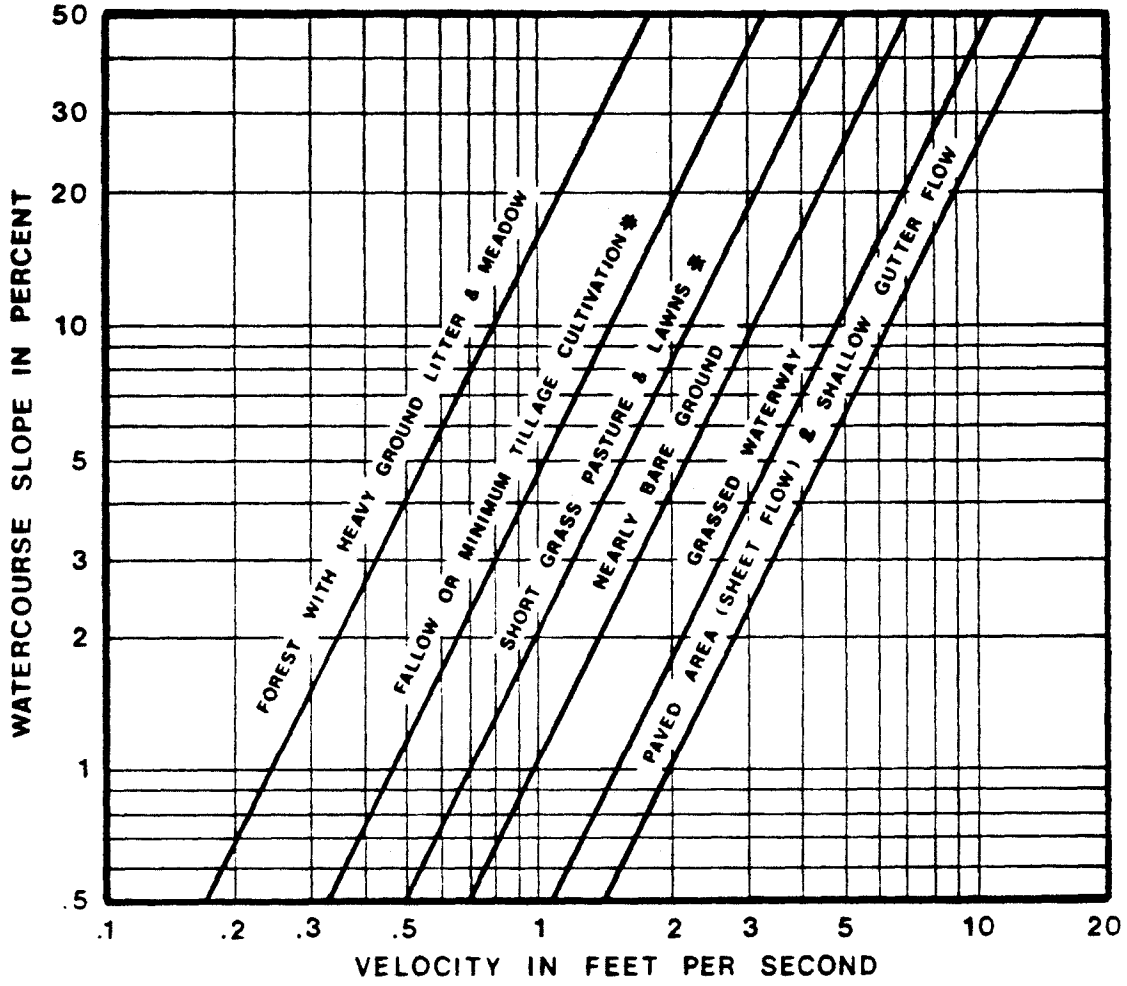


Figure RO-1—Estimate of Average Overland Flow Velocity for Use With the Rational Formula

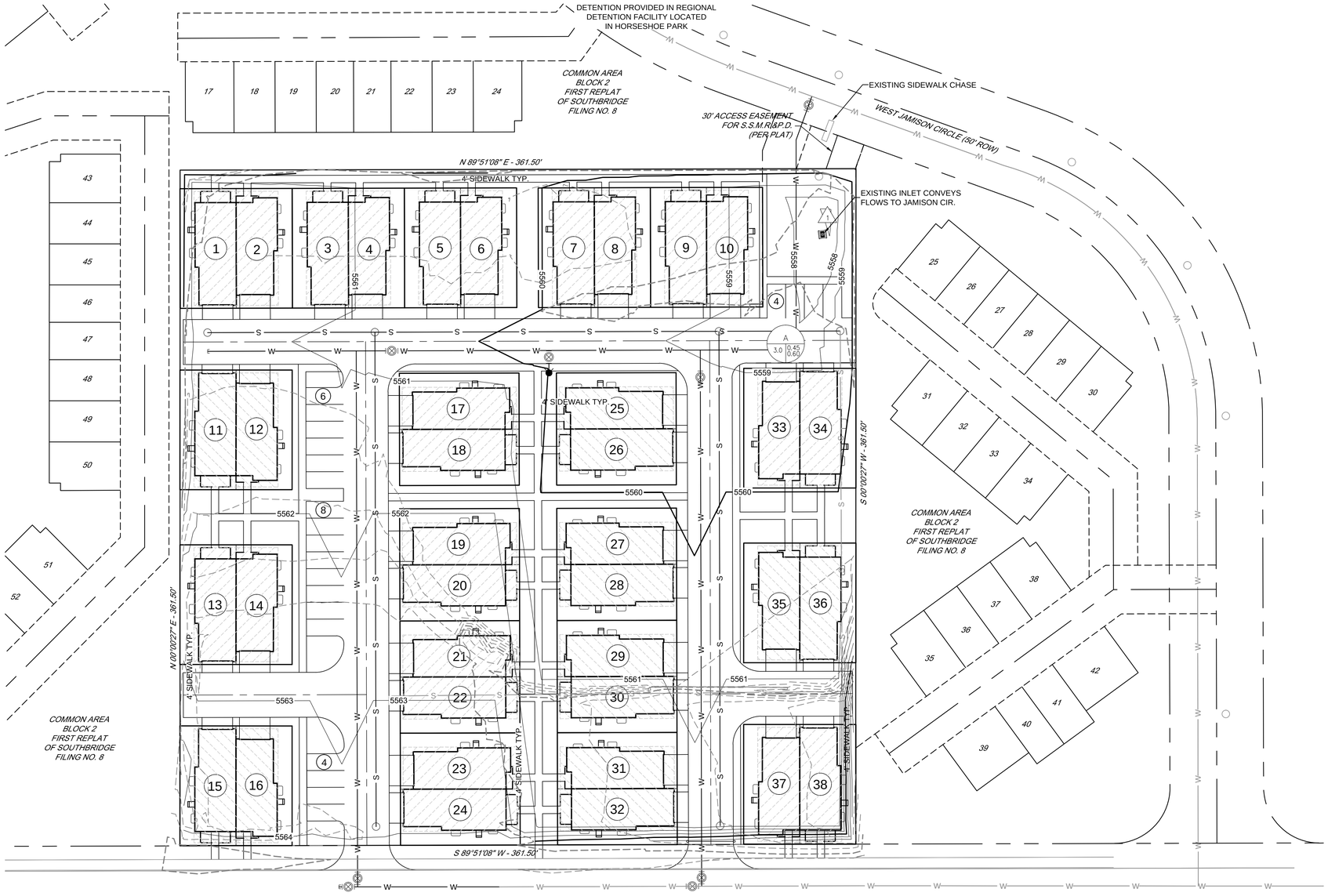
APPENDIX D

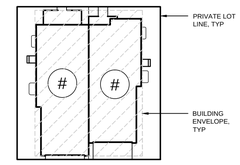
Drainage Map

JAMISON VILLAGE GENERAL PLANNED DEVELOPMENT PLAN

LOCATED IN THE NORTHWEST QUARTER OF SECTION 34, TOWNSHIP 5 SOUTH, RANGE 68 WEST OF THE 6TH P.M.
COUNTY OF ARAPAHOE, STATE OF COLORADO

LOCATED IN THE NORTHWEST QUARTER OF SECTION 34, TOWNSHIP 5 SOUTH, RANGE 68 WEST OF THE 6TH P.M.
COUNTY OF ARAPAHOE, STATE OF COLORADO





LEGEND

- EX. MAJOR CONTOUR
- EX. MINOR CONTOUR
- PR. MAJOR CONTOUR
- PR. MINOR CONTOUR
- EX. WATER
- EX. SANITARY SEWER
- EX. STORM SEWER
- EX. OVERHEAD UTILITY
- EX. ELECTRIC
- EX. GAS LINE
- EX. FIBER OPTIC LINE
- PR. WATER LINE
- PR. SANITARY SEWER
- PR. STORM SEWER
- PR. SWALE FLOWLINE

BASIN NAME
5yr C VALUE
100yr C VALUE
BASIN ACREAGE
DESIGN POINT

30 0 30 60
SCALE: 1"=30'

A. NO BUILDING,M STRUCTURE OR FILL WILL BE PLACED IN THE DETENTION AREA AND NO CHANGES OR ALTERNATIONS AFFECTING THE HYDRAULIC CHARACTERISTICS OF THE DETENTION AREAS WILL BE MADE WITHOUT THE APPROVAL OF THE CITY ENGINEER.

B. MAINTENANCE AND OPERATION OF THE DETENTION AND WATER QUALITY AREAS IS THE RESPONSIBILITY OF PROPERTY OWNER. IF OWNER FAILS IN THIS RESPONSIBILITY, THE CITY HAS THE RIGHT TO ENTER THE PROPERTY, MAINTAIN THE DETENTION AREAS AND BE REIMBURSED FOR COSTS INCURRED.

C. DETENTION POND VOLUMES, ALL DRAINAGE APPURTENANCES AND BASIN BOUNDARIES SHALL BE VERIFIED. AS-BUILT DRAWINGS SHALL BE PREPARED BY A REGISTERED PROFESSIONAL ENGINEER PRIOR TO ISSUANCE OF CERTIFICATE OF OCCUPANCY FOR ANY STRUCTURE WITHIN THE DEVELOPMENT.

D. PERMISSION TO REPROUCE THESE PLANS IS HEREBY FIVEN TO THE CITY OF LITTLETON FOR CITY PURPOSES ASSOCIATED WITH PLAN REVIEW, APPROVAL, PERMITTING , INSPECTION AND CONSTRUCTION OF THE WORK.

BENCHMARK:

THE SURVEY IS REFERENCED TO THE CGS VERTICAL DATUM AND ORIGINATES FROM THE FOLLOWING BENCHMARK:

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
1000	1635813.84	3134326.55	5395.24	CGS BENCHMARK DISK Q 1929 (NAVD 88)

REVISIONS

PARAGON ENGINEERING CONSULTANTS, INC.
7852 SOUTH ELATI STREET, SUITE 106
LITTLETON, CO 80120 303-794-8604

JAMISON VILLAGE
GENERAL PLANNED DEVELOPMENT PLAN

PHASE I DRAINAGE PLAN

DESIGN:	JG	DATE:	06/16/2014	SCALE:	1"=30'
DRAWN:	JG	PROJECT NO:	14-005	SHEET	DRN-1

Traffic Study

DB Enterprise, LLC
2429 So. Lima Street
Aurora, Colorado 80014

Phone: (720) 231-1947
E-Mail: druble.jr@comcast.net

April 14, 2014

Mr. Gary Wanger
Stoneridge Homes
5994 So. Holly Street, Suite 261
Greenwood Village, CO 80011

Re: Jamison Village Residential
Littleton, CO
(DBE #140040)

Dear Mr. Wanger:

I am pleased to submit my Traffic Impact Analysis for the proposed Jamison Village residential development in Littleton, Colorado. The site is located near the intersection of West Jamison Avenue and West Jamison Circle.

This study first provides a summary of the existing roadways and traffic volumes in the vicinity of the proposed residential development and a summary of planned improvements to the roadway system. Next, estimates are made of the amount and directional distribution of vehicular traffic likely to be generated. This information is then combined with projected future traffic volumes in the vicinity to evaluate the impact of the new development on the future roadway system and, where appropriate, to make recommendations for the required roadway improvements.

I trust that my findings and recommendations will assist in the planning for the proposed Jamison Village residential development. Please call me if I can be of further assistance.

Respectfully submitted,

DB Enterprise, LLC

By: _____
Dave L. Ruble Jr., P.E.

COLORADO REGISTERED
DAVID L. RUBLE, JR.
13428
PROFESSIONAL ENGINEER

DLR/bar

Traffic Impact Analysis

Jamison Village Residential Development

Littleton, Colorado

Prepared for

Stoneridge Homes
5994 So. Holly Street, Suite 261
Greenwood Village, Colorado 80111

Prepared by

DB Enterprise, LLC
20591 E. Amherst Place
Aurora, CO 80013
(720) 231-1947

April 14, 2014
(DBE #140040)

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

Section A – Executive Summary

An executive summary of the analysis presented in this report is as follows:

1. The proposed Jamison Village residential development is located in the City of Littleton. It is located near the intersection of West Jamison Avenue and West Jamison Circle. The site is bounded by West Jamison Avenue on the south, West Jamison Circle on the east, and residential development on the north and west.

2. The proposed residential development will be served by two unsiginalized accesses, Access A and Access B. Access A is the westernmost access and is located approximately 435 feet west of West Jamison Circle. Access B is the easternmost access and is located 290 feet west of West Jamison Circle. Both accesses are proposed to be unsignalized accesses with stop-controlled on Access A and Access B.

3. When completed, the proposed 3.0-acre residential development will contain 40 townhomes/condominiums. Based on this information at full build out, the site is expected to generate approximately 116 entering and 116 leaving the site on a typical weekday. Of these, approximately 18 will occur during the AM peak-hour, with three vehicles entering and 15 exiting the site and approximately 21 trips will occur during the PM peak-hour, with 14 vehicles entering and seven exiting the site.

4. The directional distribution of site-generated traffic is expected to be 90 percent from the east using West Jamison Avenue and the remaining 10 percent from the west using West Jamison Avenue. At South Broadway Street, 65 percent is expected to travel north and 25 percent is expected to travel south.

5. A total of four intersections along West Jamison Avenue are analyzed in this report – South Broadway Street, West Jamison Circle, Access A, and Access B. All of the traffic movements at the three unsignalized intersections are expected to operate at a very good Level of Service (LOS "B" or better) in the Years 2015 and 2020 either with or without the traffic from the proposed Jamison Village residential development. The signalized intersection of South Broadway and West Jamison Avenue is expected to operate at a very good Level of Service (LOS "B") in the Years 2015 and 2020 either with or without the traffic from the proposed Jamison Village residential development.

6. The queue lengths for the four intersections along West Jamison Avenue are not considered to be excessive during the AM and PM peak-hours through the Year 2020. The traffic from the proposed residential development is expected to result in an increase of about one vehicle by the Year 2020 for the eastbound through/left-turn and northbound left-turn movements at South Broadway Street and West Jamison Avenue.

7. Traffic impacts associated with the proposed Jamison Village residential development are considered to be minor and can be accommodated by the existing roadway system.

Section B – Introduction/Background

The proposed Jamison Village residential development is to be located near the intersection of West Jamison Avenue and West Jamison Circle in the City of Littleton, Colorado. The proposed residential development will contain 40 condominium units on approximately 3.0 acres of land. Two full movement accesses (Access A and Access B) along West Jamison Avenue are expected to serve the proposed site. The intersection of South Broadway Street and West Jamison Avenue is signalized and the other existing and two planned intersections are unsignalized.

DB Enterprise, LLC has been retained by Stoneridge Homes to assess the traffic impacts to the existing and proposed roadway network from the traffic generated by the proposed residential development. This report summarizes the following analysis procedures which were utilized in the evaluation:

- A review and analysis of present roadway and traffic conditions in the vicinity of the site and a review of planned and proposed roadway improvements in the general vicinity.

- A determination of the peak-hour vehicle-trip generation for the proposed residential development.

- An analysis of the estimated directional distribution of site-generated traffic and an assignment of that traffic to the adjacent street network.

- A determination of the future traffic volumes in the vicinity of the site.

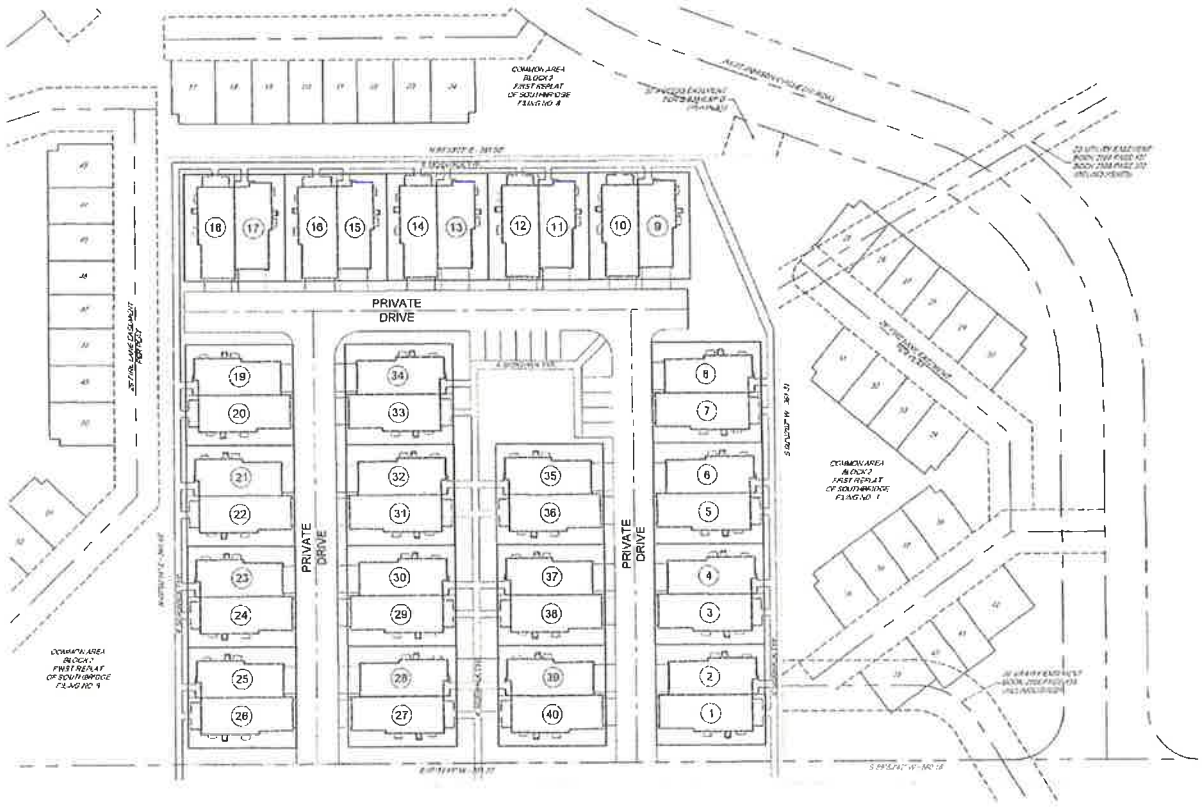
- An evaluation of the impacts of site-generated traffic expressed in terms of the development's traffic as an increment of total projected traffic on the surrounding roadway system and the resulting Levels of Service on the adjacent major roadways and intersections.

- A determination of appropriate roadway standards and improvements which will ensure optimum traffic operation for traffic entering and exiting the site.

The location of the proposed Jamison Village residential development is shown in Figure 1. As shown in this figure, the site is located northwest of the intersection of West Jamison Avenue and West Jamison Circle in the City of Littleton, Colorado. The site is bounded on the west by residential development, on the south by West Jamison Avenue, residential development on the north, and West Jamison Circle on the east.

Figure 1 also depicts the preliminary location for the accesses that are expected to serve the site. The two accesses along West Jamison Avenue (Access A and Access B) are expected to be a full movement accesses. The intersection of West Jamison Avenue and West Jamison Circle has stop control on West Jamison Circle. The intersection of South Broadway Street and West Jamison Avenue is controlled by a traffic signal. Figure 2 depicts the preliminary site plan for the proposed Jamison Village residential Development.

Figure 1
Vicinity Map



Approximate Scale
Scale: 1" = 115'

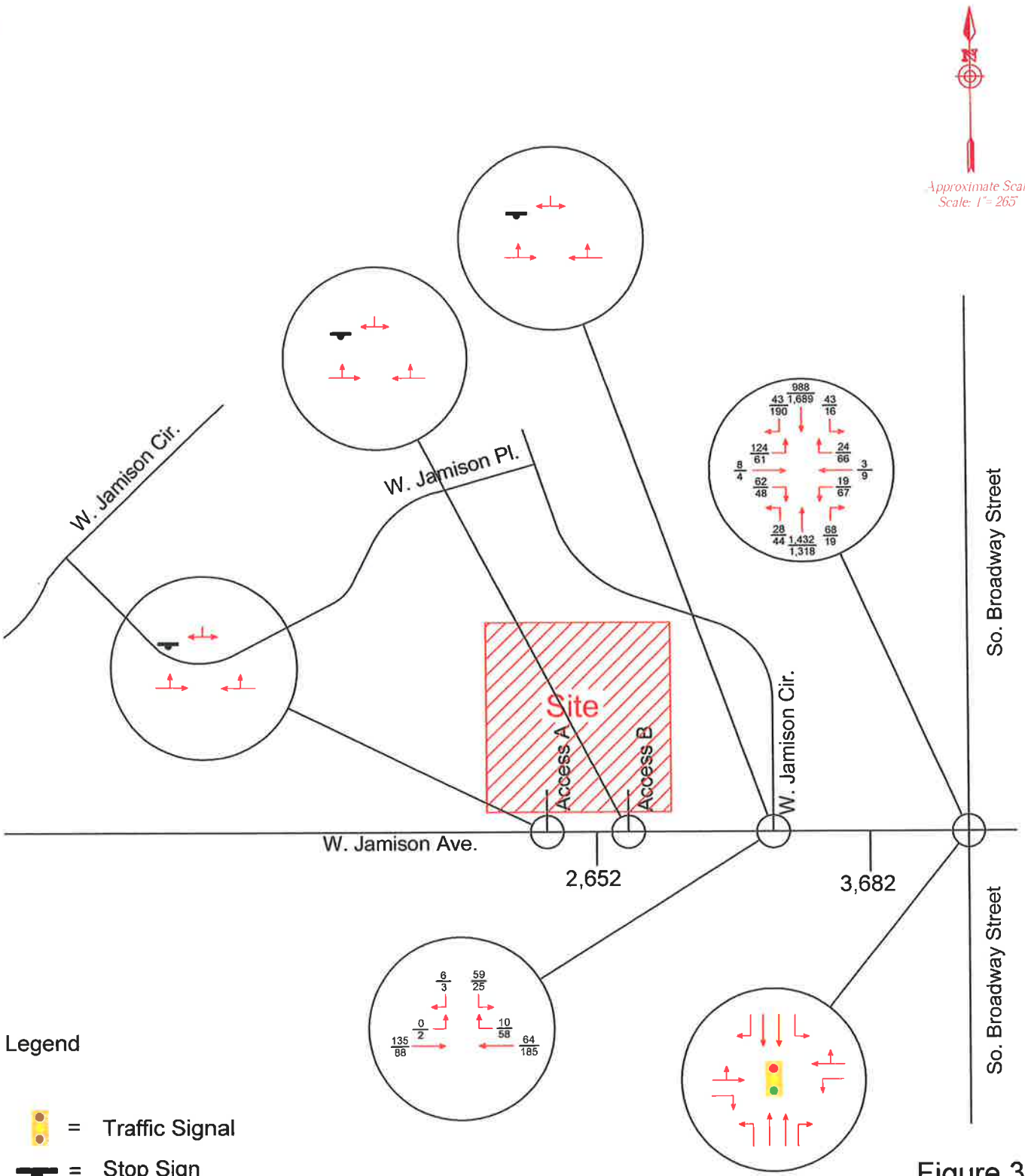
Figure 2
Site Plan

Section C – Existing Traffic Condition

Roadway Network

Major roadways in the vicinity of the site are illustrated in Figure 3 and described with a brief discussion of anticipated future roadway improvements. West Jamison Avenue is classified as a collector roadway. It currently has two lanes, one lane in each direction. There are no plans to widen this roadway. South Broadway Street runs in a north-south direction with continuity from Wildcat Reserve Parkway on the south to Brighton Boulevard on the north. It currently has four lanes, two lanes in each direction in the vicinity of the proposed residential development. There are no plans to improve this roadway. At the intersection with West Jamison Avenue, there are separate northbound left and right-turn lanes and separate southbound left and right-turn lanes. West Jamison Circle is a two-lane local roadway that begins on the east at West Jamison Avenue and ends on the west at West Jamison Avenue, approximately 2,025 feet to the west. There are no plans to widen this roadway.

Figure 3 shows existing traffic volumes, traffic control, and lane geometry for the two existing and two planned intersections along West Jamison Avenue. Turning movement traffic counts were taken at these two existing intersections and along West Jamison Avenue. These traffic counts were taken by Counter Measures, Inc. in April 2014. These counts are also shown in Figure 3. A summary of the raw count data is provided in Appendix A.



Legend

= Traffic Signal

= Stop Sign

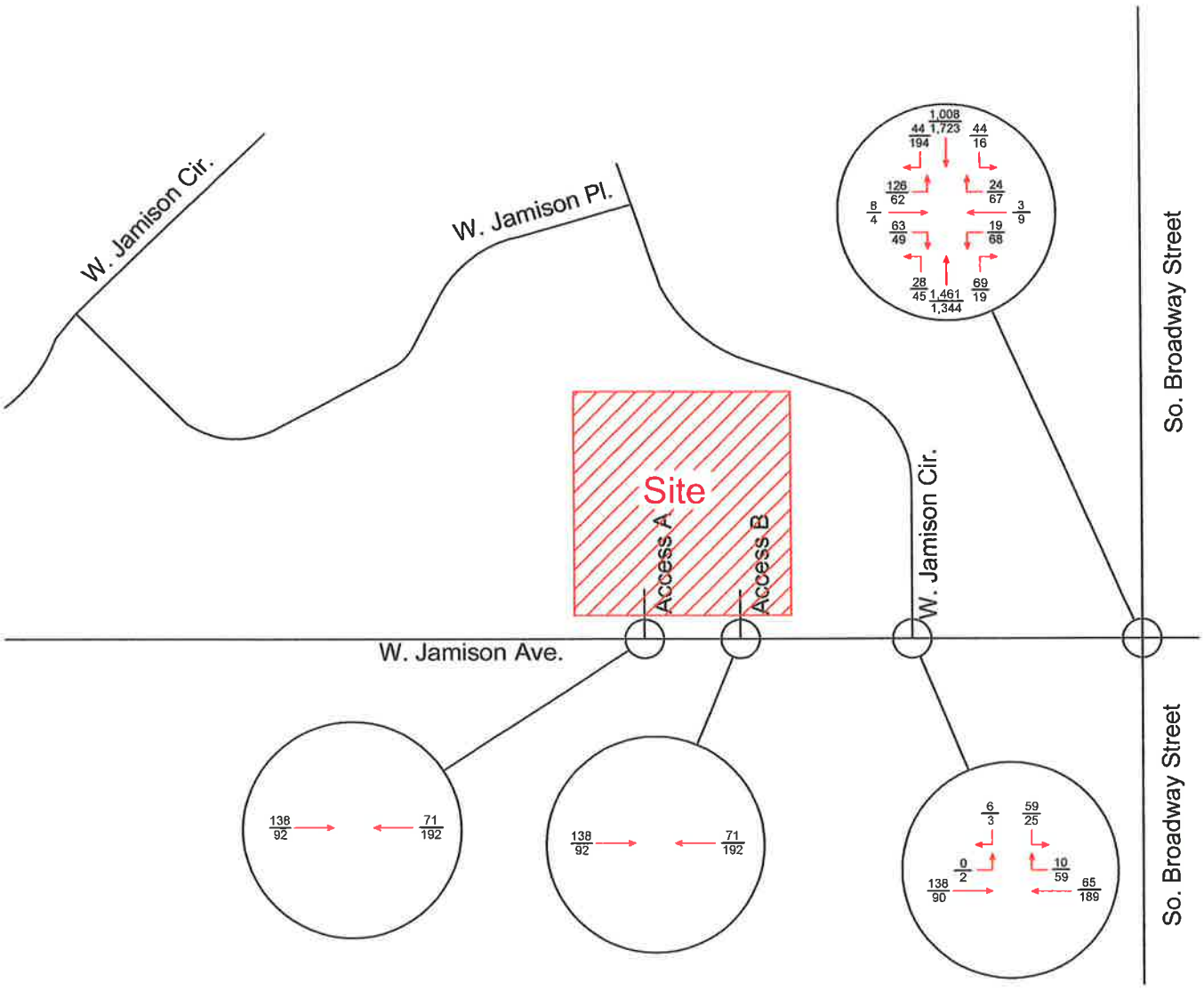
15/15 = AM Peak-Hour Traffic Volumes / PM Peak-Hour Traffic Volumes

2,000 = Daily Traffic Volume

Figure 3
Existing Traffic Volume,
Lane Geometry and Traffic Control

Section D – Future Traffic Conditions

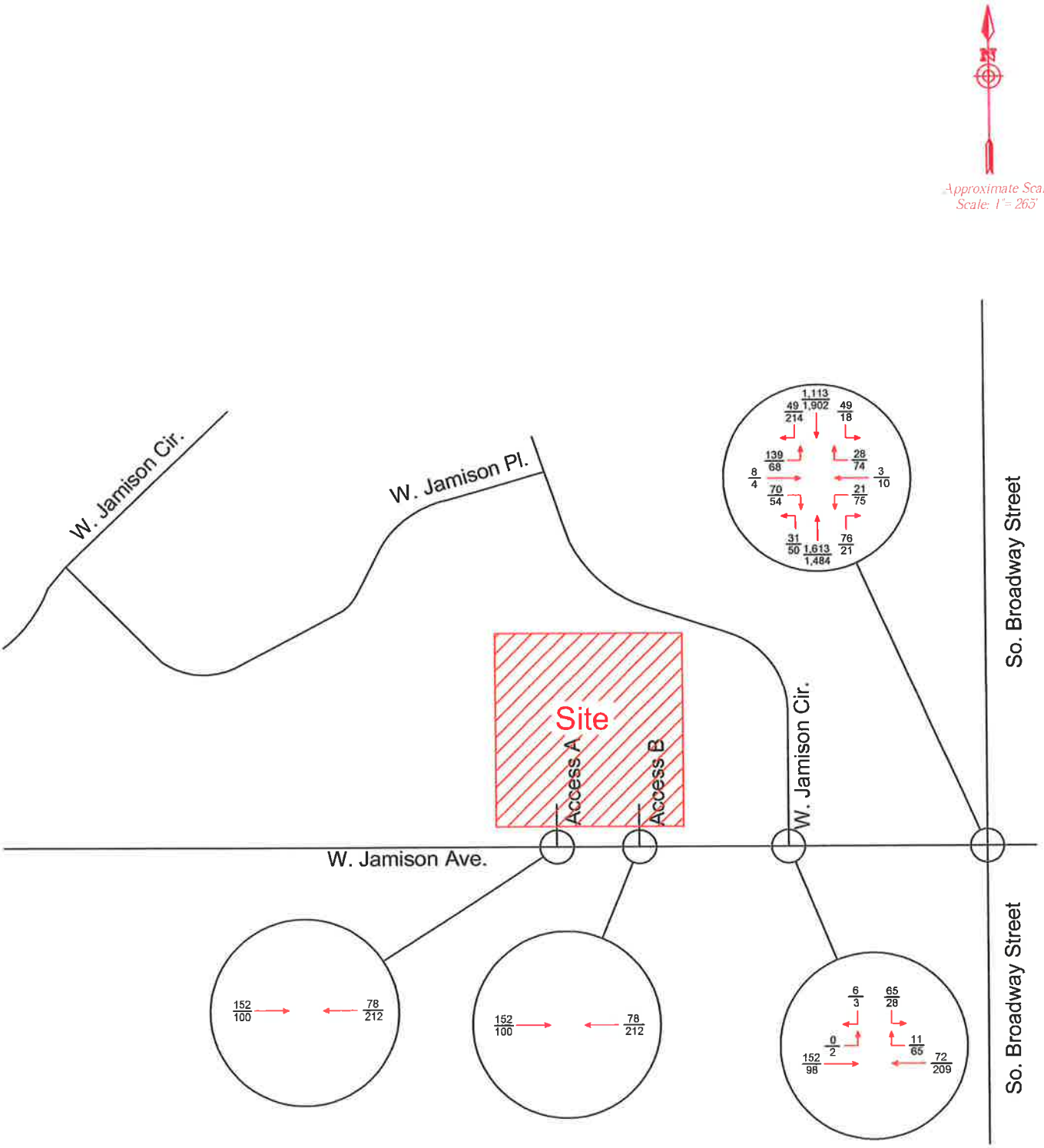
Littleton does not have long-range traffic forecasts for either South Broadway Street or West Jamison Avenue. In the absence of no official long-range forecast, a two percent annual growth rate was used for South Broadway Street and West Jamison Avenue. A growth factor of 1.02 was applied to the existing peak-hour traffic volumes depicted in Figure 3 to arrive at an estimate for the Year 2015. These peak-hour volumes are depicted in Figure 4. A growth factor of 1.10 was applied to the Year 2015 background peak-hour traffic volumes depicted in Figure 4 to arrive at an estimate for the Year 2020. These peak-hour volumes are depicted in Figure 5.



Legend

$\frac{15}{15}$ = AM Peak-Hour Traffic Volumes / PM Peak-Hour Traffic Volumes

Figure 4
Year 2015 Background Peak-Hour Traffic Volumes



Legend

$\frac{15}{15}$ = AM Peak-Hour Traffic Volumes / PM Peak-Hour Traffic Volumes

Figure 5
Year 2020 Background
Peak-Hour Traffic Volumes

Section E – Trip Generation

The proposed 3.0-acre Jamison Village residential development will contain 40 condominium/townhouse units. The amount of traffic that will be generated by the proposed residential development has been estimated based upon trip generation rates published by the Institute of Transportation Engineers (ITE) in the 8th Edition, 2008, of *Trip Generation*. The results of the analysis are shown in Table 1, giving the average number of weekday daily and morning and evening peak-hour trips expected to be generated by the proposed residential development.

As illustrated in Table 1, on an average weekday the proposed residential development at full build out will generate approximately 232 daily vehicle trips with 116 entering and 116 leaving the site on a typical weekday. Of these, approximately 18 trips will occur during the AM peak-hour, with three vehicles entering and 15 exiting the site and approximately 21 trips will occur during the PM peak-hour, with 14 vehicles entering and seven exiting the site.

Table 1
Estimated Vehicle Trip Generation
Jamison Village Residential Development
Littleton, Colorado
(DBE #140040; April, 2014)

ITE Category		Quantity	Trip Generation Rates (1) Average Weekday	AM Peak-Hour In	AM Peak-Hour Out	PM Peak-Hour In	PM Peak-Hour Out	Total Vehicle Trips Generated Average Weekday	AM Peak-Hour In	AM Peak-Hour Out	PM Peak-Hour In	PM Peak-Hour Out
230	Residential Condominium/Townhouse	40 DU (2)	5.81	0.07	0.37	0.35	0.17	232	3	15	14	7

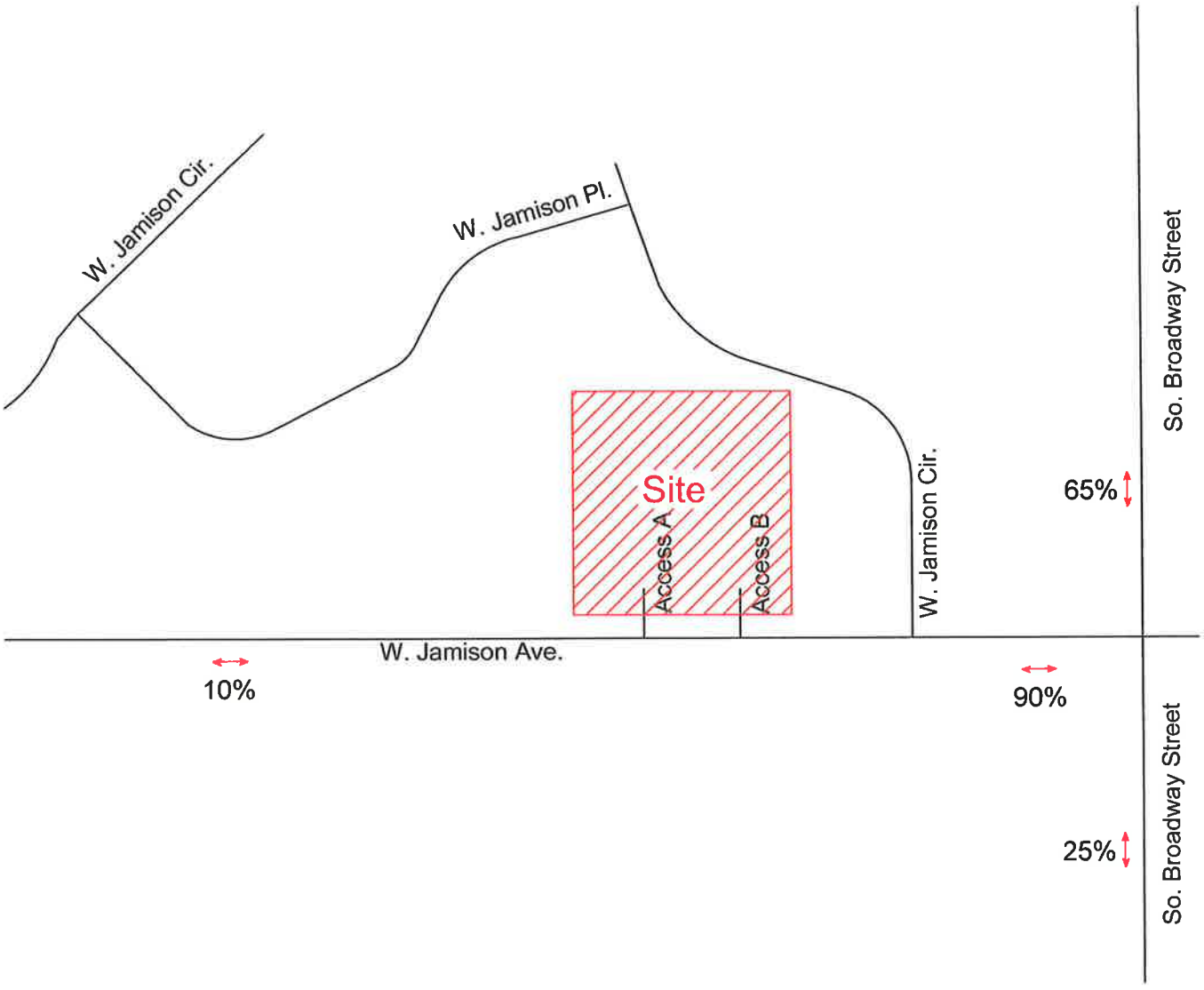
Notes:
(1) Source: "Trip Generation", Institute of Transportation Engineers, 8th Edition, 2008.
(2) DU = Dwelling Units

Section F – Trip Distribution

The directional distribution of site-generated traffic onto adjacent roadways, which provide access to and from the proposed Jamison Village residential development, is one of the most important components in the assessment of the proposed residential development's traffic impacts. Major factors which influence the traffic distribution assumptions include the location of the site relative to the surrounding roadway network, the level of access serving the site, and the type of land use proposed within the development.

The directional distribution of site-generated traffic is expected to be 90 percent from the east using West Jamison Avenue, with 65 percent going north along South Broadway Street and 25 percent going south along South Broadway Street, and the remaining 10 percent from the west using West Jamison Avenue. This distribution is based on the existing turning movements at West Jamison Avenue/West Jamison Circle and South Broadway Street/West Jamison Avenue.

Figure 6 depicts the directional distribution of site-generated traffic that is being used in this analysis.



Legend

40% = Directional Distribution of Site Generated Traffic

Figure 6
Trip Distribution of Site-Generated Traffic

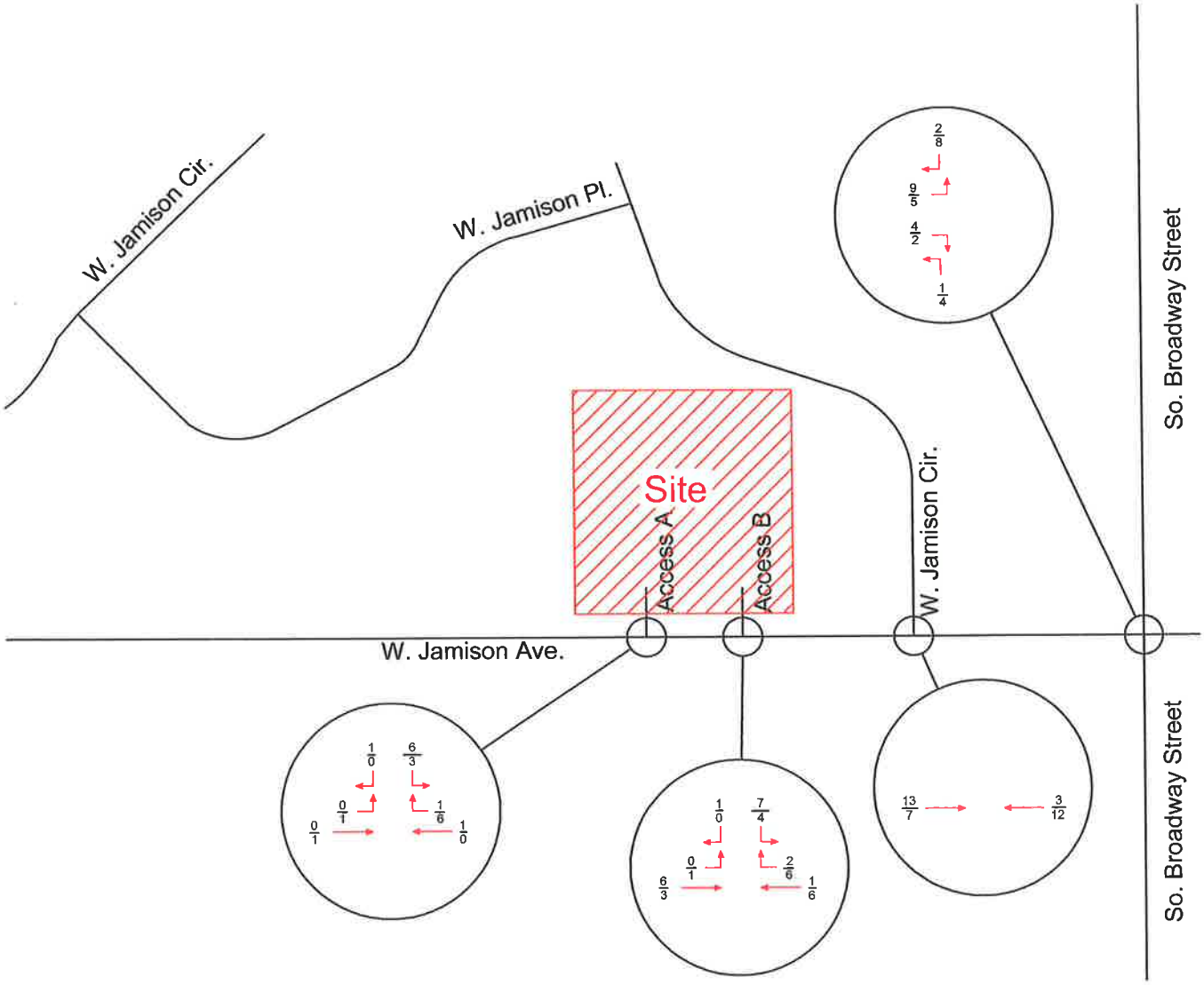
Section G – Trip Assignment and Traffic Volumes

Site-Generated Traffic

Figure 7 illustrates the assignment of site-generated peak-hour traffic on the adjacent street system for the proposed site accesses and intersections along West Jamison Avenue in the Years 2015 and 2020. The assignment of site-generated traffic is based upon the traffic distribution percentages shown in Figure 6 and the vehicle-trip generation estimates of Table 1.

Total Traffic

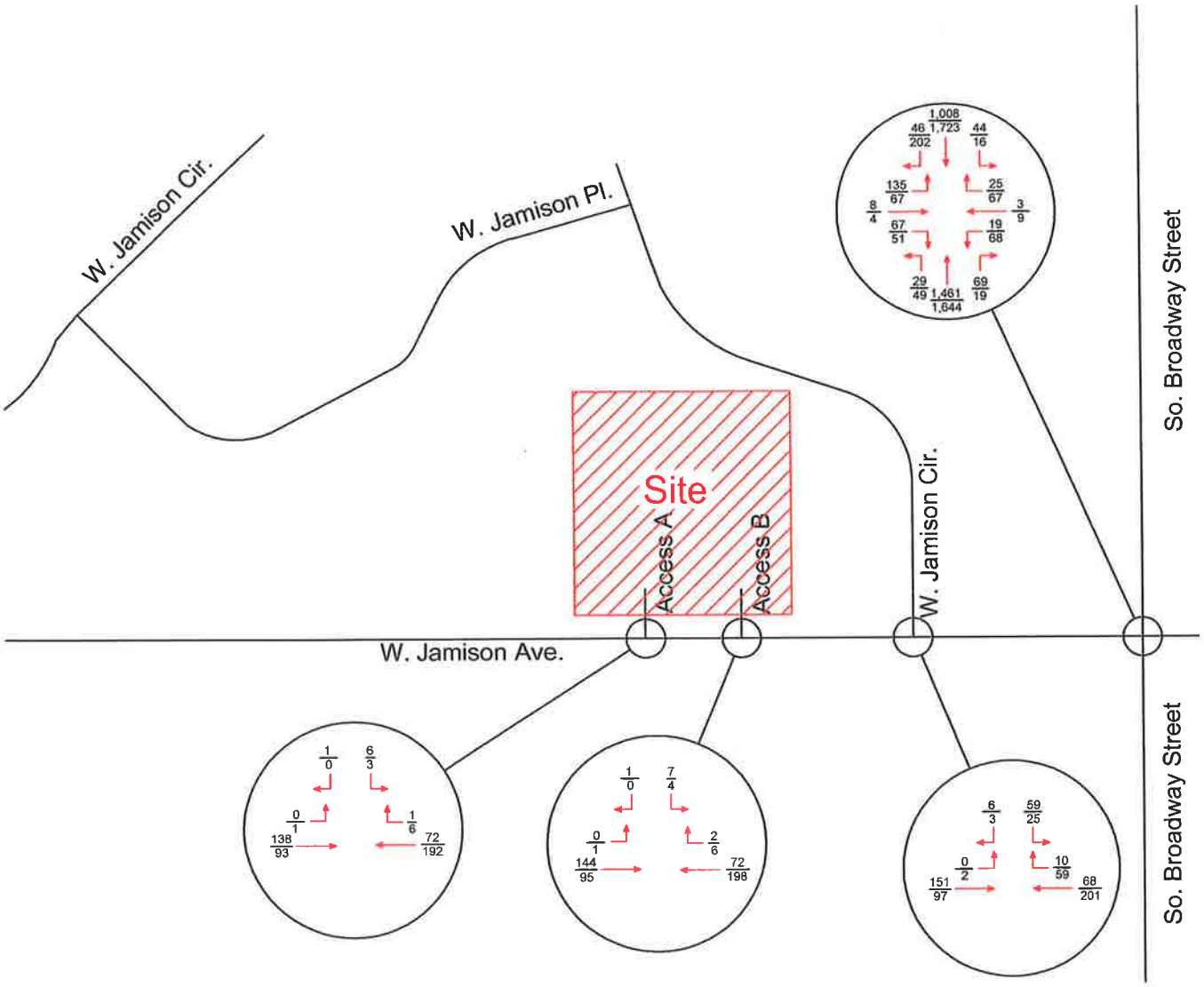
The Years 2015 and 2020 total AM and PM peak-hour traffic volumes along West Jamison Avenue are illustrated in Figures 8 and 9, respectively. For the Year 2015, these volumes were derived by adding the site-generated traffic from Figure 7 to the Year 2015 background peak-hour traffic volumes in Figure 4. For the Year 2020, these volumes were derived by adding the site-generated traffic from Figure 7 to the Year 2020 background peak-hour traffic volumes in Figure 5, respectively.



Legend

$\frac{15}{15}$ = $\frac{\text{AM Peak-Hour Traffic Volumes}}{\text{PM Peak-Hour Traffic Volumes}}$

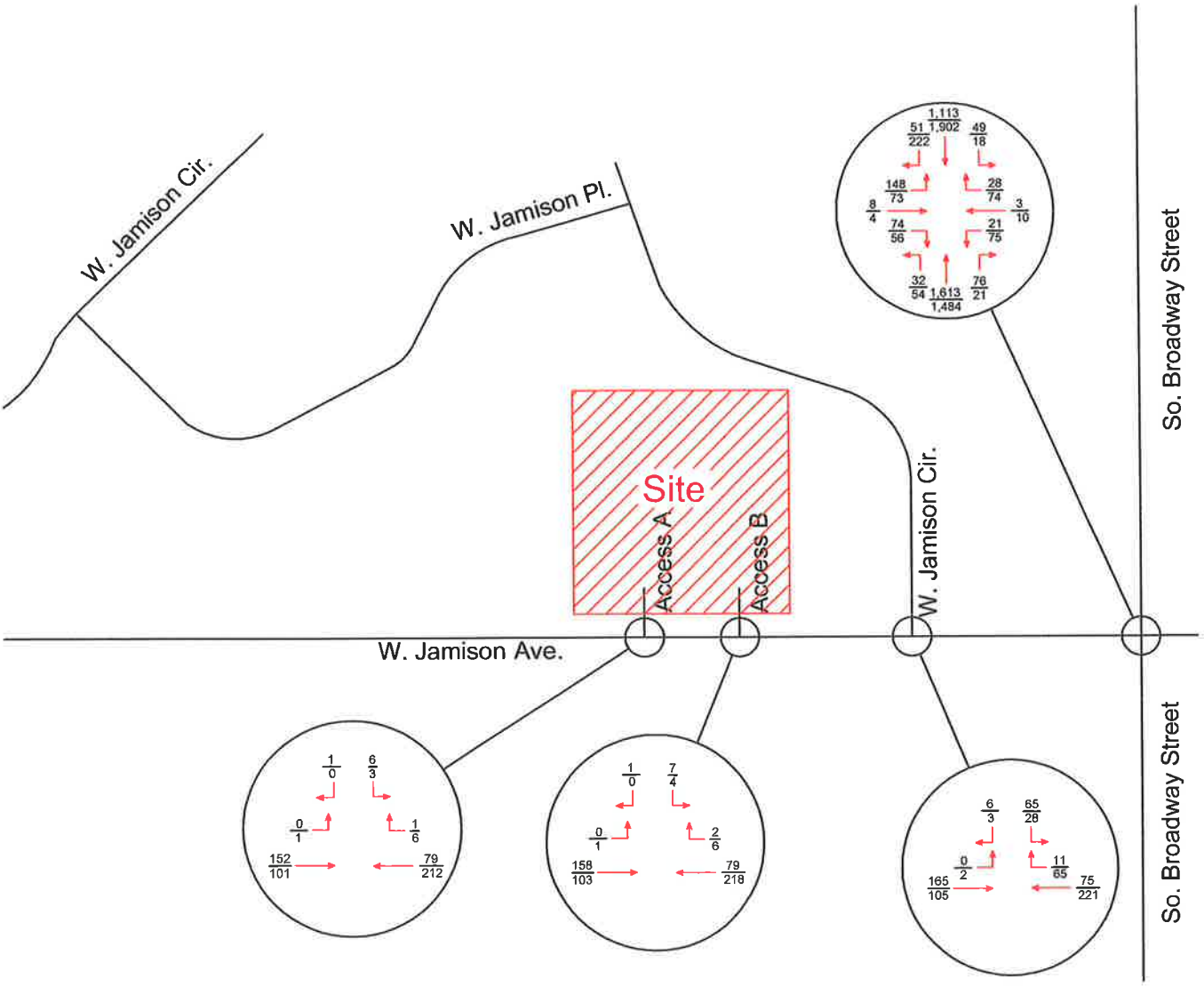
Figure 7
Assignment of
Site-Generated Traffic



Legend

$\frac{15}{15}$ = $\frac{\text{AM Peak-Hour Traffic Volumes}}{\text{PM Peak-Hour Traffic Volumes}}$

Figure 8
Year 2015 Total
Peak-Hour Traffic Volumes



Legend

$\frac{15}{15}$ = AM Peak-Hour Traffic Volumes / PM Peak-Hour Traffic Volumes

Figure 9
Year 2020 Total
Peak-Hour Traffic Volumes

Section H - Impacts

Traffic impacts associated with a development such as the proposed Jamison Village residential development are best described in terms of the resulting effects they have on the major intersections that serve the proposed residential development. In this particular case, the expected impacts are concentrated at four intersections along West Jamison Avenue – South Broadway Street, West Jamison Circle, Access A, and Access B.

Based upon the peak-hour traffic volumes shown in Figures 3, 4, 5, 8, and 9, "Signalized and Unsignalized Intersection Capacity" analyses have been performed using procedures set forth in the 2000 *Highway Capacity Manual*. The concept of Level of Service (LOS) is used as a basis for computing combinations of roadway operating conditions. By definition, six different Levels of Service are used (A, B, C, D, E, and F) with "A" being a free-flow condition and "E" representing the "capacity" of a given intersection or traffic movement. Analyses have been performed for the Year 2014 existing traffic, Year 2015 background and total traffic conditions, and the Year 2020 background and total traffic conditions.

The lane geometry and traffic control depicted in Figure 3 were used for this analysis. The results of these capacity analyses are found in Appendix B and are summarized in Table 2.

South Broadway Street/West Jamison Avenue: This signalized intersection currently operates at a very good Level of Service (LOS "B") during the AM and PM peak-hours. By the Year 2020, this intersection is expected to continue to operate at a very good Level of Service (LOS "B) during the AM and PM peak-hours either with or without the traffic from the proposed residential development.

West Jamison Avenue/West Jamison Circle: All of the traffic movements at this unsignalized intersection currently operate at a very good Level of Service (LOS "B" or better) during the AM and PM peak-hours. By the Year 2020, all of the traffic

Table 2
Intersection Level of Service Analysis Results
Jamison Village Residential Development
Littleton, Colorado
(DBE #140040; April, 2014)

Intersection Location	Traffic Control	Year 2014 Existing Traffic Level of Service AM	Year 2014 Existing Traffic Level of Service PM	Year 2015 Background Traffic Level of Service AM	Year 2015 Background Traffic Level of Service PM	Year 2015 Background plus Site-Generated Traffic Level of Service AM	Year 2015 Background plus Site-Generated Traffic Level of Service PM	Year 2020 Background Traffic Level of Service AM	Year 2020 Background Traffic Level of Service PM	Year 2020 Background plus Site-Generated Traffic Level of Service AM	Year 2020 Background plus Site-Generated Traffic Level of Service PM
South Broadway Street & West Jamison Avenue	Signalized										
Entire Intersection Delay (sec /veh)		B	B	B	B	B	B	B	B	B	B
Entire Intersection Level of Service		16.0	19.0	16.3	14.6	15.7	15.7	16.0	17.4	16.2	17.5
West Jamison Avenue & West Jamison Circle	Unsignalized										
Eastbound Approach Level of Service		--	A	--	A	--	A	--	A	--	A
Southbound Approach Level of Service		B	B	B	B	B	B	B	B	B	B
Critical Movement Delay(sec /veh)		10.1	10.6	10.1	10.6	10.2	10.8	10.3	11.0	10.4	11.1
West Jamison Avenue & Access A	Unsignalized										
Eastbound Approach Level of Service		--	--	--	--	--	A	--	--	--	A
Southbound Approach Level of Service		--	--	--	--	A	B	--	--	A	B
Critical Movement Delay(sec /veh)		--	--	--	--	9.7	10.4	--	--	9.8	10.6
West Jamison Avenue & Access B	Unsignalized										
Eastbound Approach Level of Service											
Southbound Approach Level of Service		--	--	--	--	A	B	--	--	A	B
Critical Movement Delay(sec /veh)		--	--	--	--	9.6	10.3	--	--	9.8	10.6

Notes:
Level of Service is based the methodology contained in the Highway Capacity Manual.

movements at this unsignalized intersection are expected to continue to operate at a very good Level of Service (LOS "B" or better) during the AM and PM peak-hours either with or without the traffic from the proposed residential development.

West Jamison Avenue/Access A: All of the traffic movements at this unsignalized intersection are expected are expected to operate at a very good Level of Service (LOS "B" or better) during the AM and PM peak-hours through the Year 2020 either with or without the traffic from the proposed residential development.

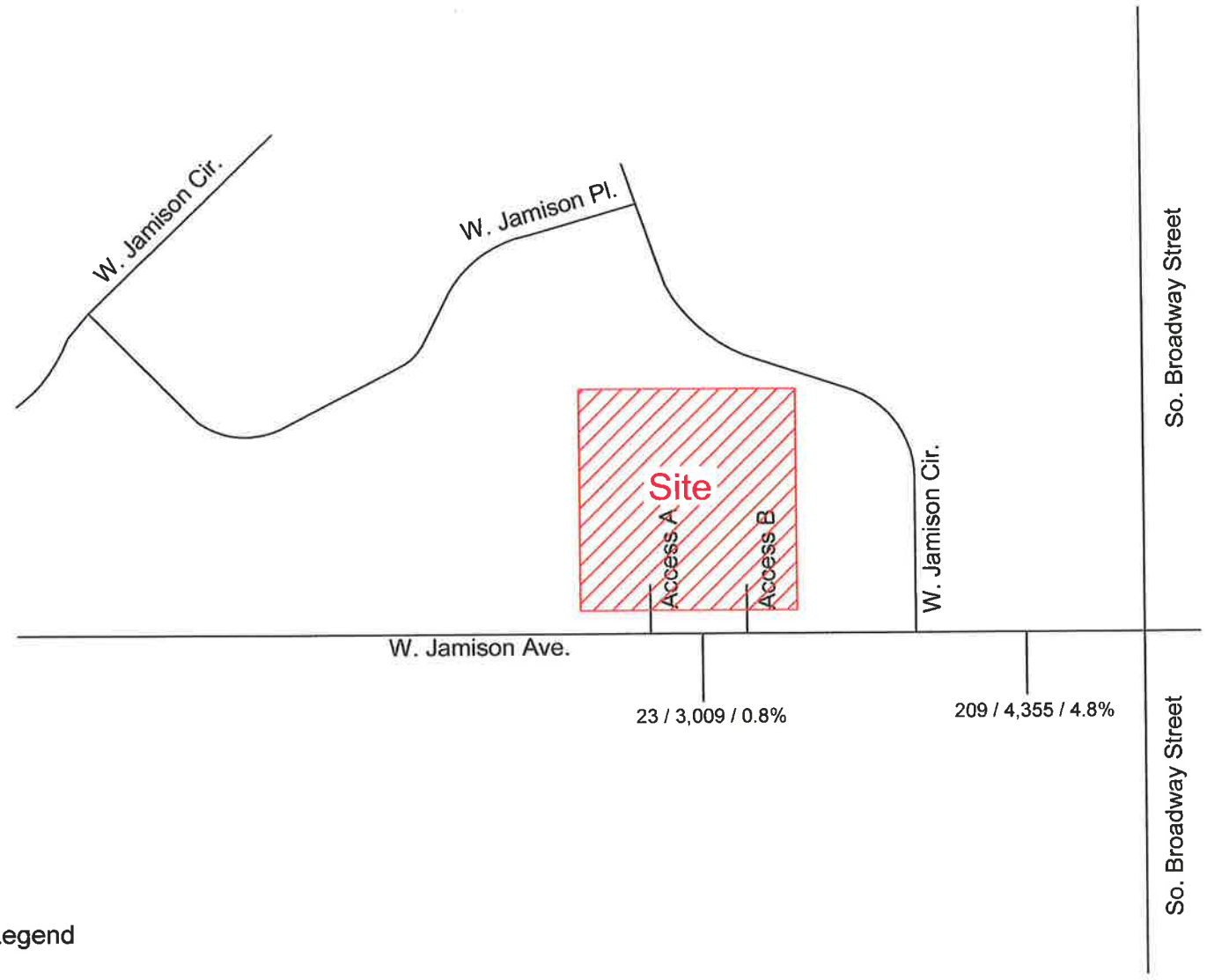
West Jamison Avenue/Access B: All of the Traffic movements at this unsignalized intersection are expected are expected to operate at a very good Level of Service (LOS "B" or better) during the AM and PM peak-hours through the Year 2020 either with or without the traffic from the proposed residential development.

Average Daily Traffic

The average daily traffic impacts of the proposed residential development can be expressed in terms of average daily traffic (ADT) volumes, in which site-generated traffic is shown as an increment of the Year 2020 total weekday traffic. This analysis was done for West Jamison Avenue. A growth factor of 1.126 was applied to the existing daily traffic volumes depicted in Figure 3 to arrive at an estimated Year 2020. Site-generated traffic is less than one percent of the daily traffic west of the site and almost five percent of the daily traffic east of the site.

Queue Length Analysis

A queue length analysis was performed for the four intersections along West Jamison Avenue (South Broadway Street, West Jamison Circle, Access A, and Access B) for the Year 2020 background and total AM and PM peak-hour traffic conditions. The software program *SimTraffic* was used to estimate these queue lengths. The queue lengths being reported for this analysis represent an average of five simulations with each simulation lasting 60 minutes.



Legend

106/40,000 = Site-Generated Traffic/Expected Roadway Demand/Percent of Total

Figure 10
Year 2020 Daily
Traffic Impacts

The eastbound through/left-turn movement at South Broadway Street and West Jamison Avenue is expected to see an increase of 17 feet during the PM peak-hour, or about one vehicle, as a result of the additional traffic from the proposed residential development. The northbound left-turn movement at South Broadway Street and West Jamison Avenue is expected to see an increase of about 29 feet, or about one vehicle, as a result of the additional traffic from the proposed residential development.

Section I - Recommendations/Conclusions

The traffic impacts from the proposed Jamison Village residential development are considered to be minor, and the existing roadway system and traffic control depicted in Figure 3 is able to accommodate the traffic from the proposed Jamison Village residential development.

Appendix A
Existing Traffic Counts

COUNTER MEASURES INC.
1889 YORK STREET
DENVER,COLORADO 80206
303-333-7409

N/S STREET: BROADWAY ST
E/W STREET: JAMISON AVE
CITY: LITTLETON
COUNTY: ARAPAHOE

File Name : BROAJAMI
Site Code : 00000016
Start Date : 4/9/2014
Page No : 1

Groups Printed- VEHICLES

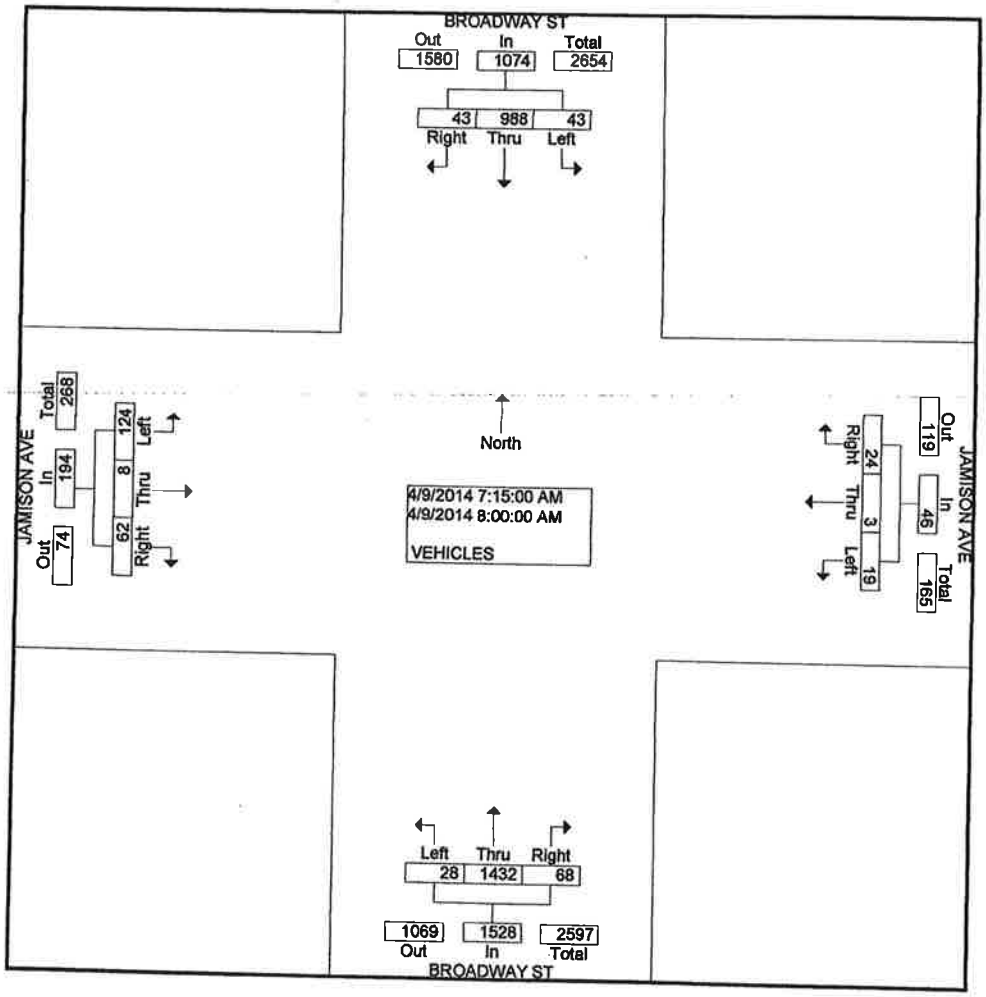
	BROADWAY ST Southbound			JAMISON AVE Westbound			BROADWAY ST Northbound			JAMISON AVE Eastbound			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	10	134	3	3	0	2	1	205	12	17	0	13	400
06:45 AM	12	164	7	2	0	3	1	229	16	28	1	13	476
Total	22	298	10	5	0	5	2	434	28	45	1	26	876
07:00 AM	5	159	5	0	0	5	2	300	9	25	1	18	529
07:15 AM	8	198	10	1	0	6	5	353	11	28	0	17	637
07:30 AM	11	243	10	4	2	4	2	374	24	45	3	21	743
07:45 AM	14	285	12	5	0	7	17	340	22	31	0	14	747
Total	38	885	37	10	2	22	26	1367	66	129	4	70	2656
08:00 AM	10	262	11	9	1	7	4	365	11	20	5	10	715
08:15 AM	8	232	14	2	0	6	6	289	23	29	0	26	635
Total	18	494	25	11	1	13	10	654	34	49	5	36	1350
04:00 PM	15	366	28	12	1	18	13	301	8	18	2	9	791
04:15 PM	7	362	28	15	2	16	9	282	13	17	0	9	760
04:30 PM	11	425	39	17	1	21	12	311	5	18	0	17	877
04:45 PM	4	411	50	13	2	21	9	333	5	17	0	13	878
Total	37	1564	145	57	6	76	43	1227	31	70	2	48	3306
05:00 PM	4	446	62	21	4	15	8	302	2	17	0	13	894
05:15 PM	6	399	35	17	0	15	13	358	5	13	0	11	872
05:30 PM	2	433	43	16	3	15	14	325	7	14	4	11	887
05:45 PM	5	384	38	13	5	10	20	299	3	19	0	18	814
Total	17	1662	178	67	12	55	55	1284	17	63	4	53	3467
Grand Total	132	4903	395	150	21	171	136	4966	176	356	16	233	11655
Apprch %	2.4	90.3	7.3	43.9	6.1	50.0	2.6	94.1	3.3	58.8	2.6	38.5	
Total %	1.1	42.1	3.4	1.3	0.2	1.5	1.2	42.6	1.5	3.1	0.1	2.0	

COUNTER MEASURES INC.
1889 YORK STREET
DENVER,COLORADO 80206
303-333-7409

N/S STREET: BROADWAY ST
E/W STREET: JAMISON AVE
CITY: LITTLETON
COUNTY: ARAPAHOE

File Name : BROAJAMI
Site Code : 00000016
Start Date : 4/9/2014
Page No : 2

	BROADWAY ST Southbound				JAMISON AVE Westbound				BROADWAY ST Northbound				JAMISON AVE Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 06:30 AM to 08:30 AM - Peak 1 of 1																	
Intersection 07:15 AM																	
Volume	43	988	43	1074	19	3	24	46	28	1432	68	1528	124	8	62	194	2842
Percent	4.0	92.0	4.0		41.3	6.5	52.2		1.8	93.7	4.5		63.9	4.1	32.0		
07:45 Volume	14	285	12	311	5	0	7	12	17	340	22	379	31	0	14	45	747
Peak Factor																	0.951
High Int.	07:45 AM				08:00 AM				07:30 AM				07:30 AM				
Volume	14	285	12	311	9	1	7	17	2	374	24	400	45	3	21	69	
Peak Factor				0.863				0.676				0.955				0.703	



COUNTER MEASURES INC.
1889 YORK STREET
DENVER,COLORADO 80206
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N/S STREET: BROADWAY ST
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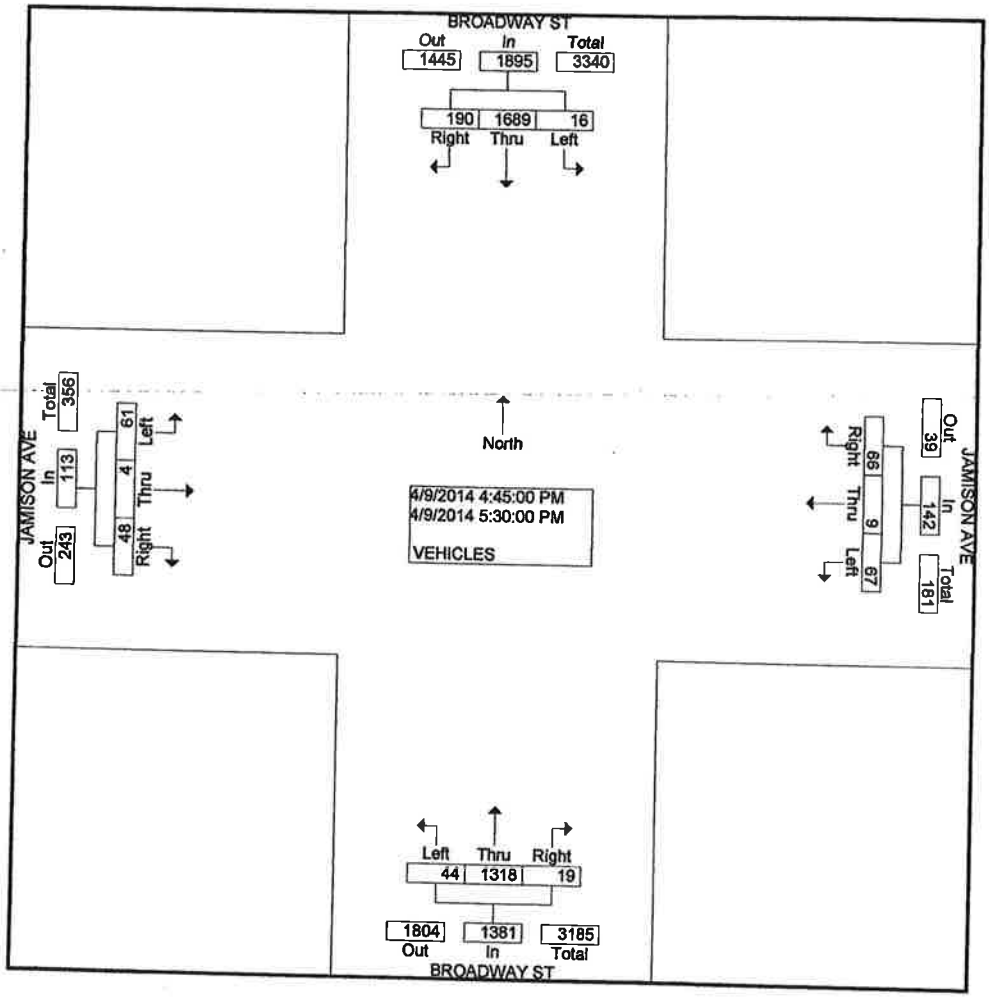
Site Code : 00000016
Start Date : 4/9/2014
Page No : 2

	BROADWAY ST Southbound				JAMISON AVE Westbound				BROADWAY ST Northbound				JAMISON AVE Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Intersection 04:45 PM																	
Volume	16	1689	190	1895	67	9	66	142	44	1318	19	1381	61	4	48	113	3531
Percent	0.8	89.1	10.0		47.2	6.3	46.5		3.2	95.4	1.4		54.0	3.5	42.5		
05:00 Volume	4	446	62	512	21	4	15	40	8	302	2	312	17	0	13	30	894
Peak Factor																	0.987
High Int.	05:00 PM				05:00 PM				05:15 PM				04:45 PM				
Volume	4	446	62	512	21	4	15	40	13	358	5	376	17	0	13	30	
Peak Factor				0.925				0.888				0.918				0.942	



COUNTER MEASURES INC.
1889 YORK STREET
DENVER,COLORADO 80206
303-333-7409

N/S STREET: JAMISON CIR
E/W STREET: JAMISON AVE
CITY: LITTLETON
COUNTY: ARAPAHOE

File Name : JAMIJAMI
Site Code : 00000021
Start Date : 4/9/2014
Page No : 1

Groups Printed- VEHICLES

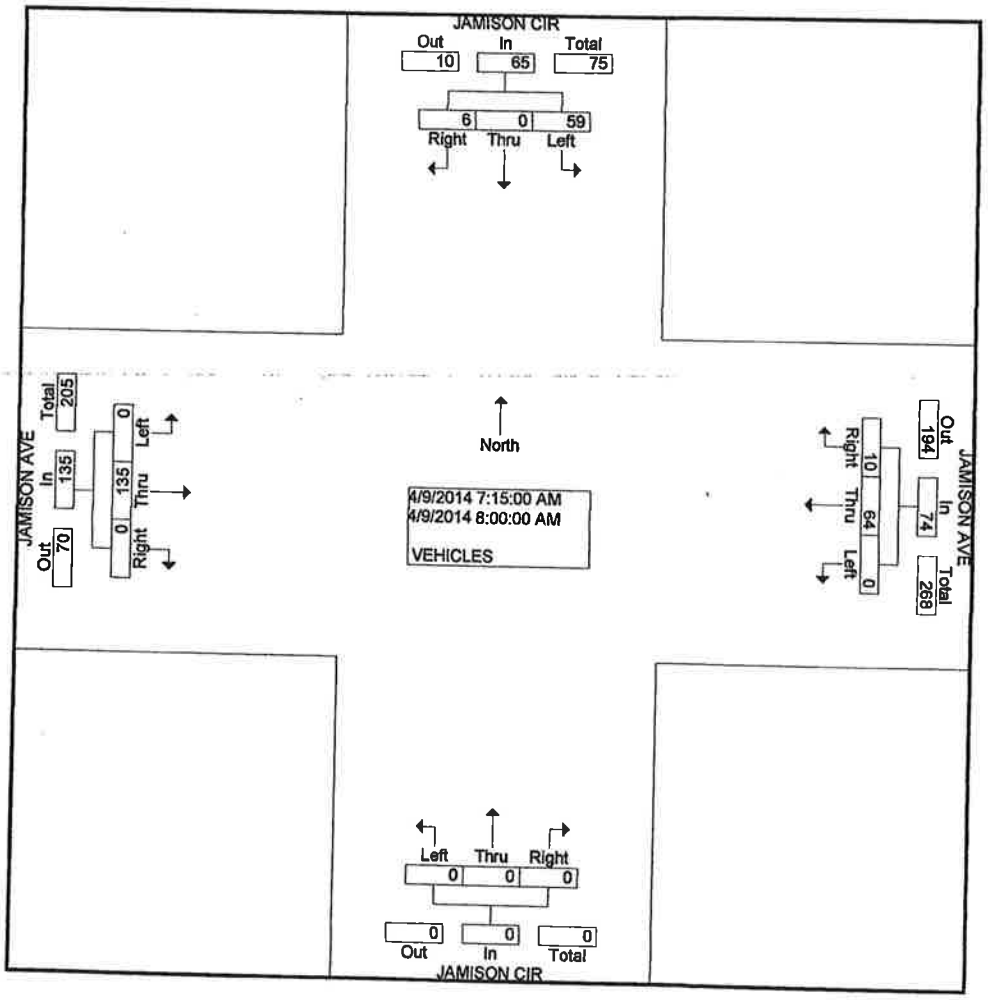
	JAMISON CIR Southbound			JAMISON AVE Westbound			JAMISON CIR Northbound			JAMISON AVE Eastbound			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	9	0	0	0	2	2	0	0	0	0	21	0	34
06:45 AM	16	0	2	0	5	3	0	0	0	2	26	0	54
Total	25	0	2	0	7	5	0	0	0	2	47	0	88
07:00 AM	15	0	0	0	5	2	0	0	0	0	29	0	51
07:15 AM	15	0	2	0	14	1	0	0	0	0	30	0	62
07:30 AM	21	0	2	0	11	3	0	0	0	0	48	0	85
07:45 AM	14	0	2	0	25	4	0	0	0	0	31	0	76
Total	65	0	6	0	55	10	0	0	0	0	138	0	274
08:00 AM	9	0	0	0	14	2	0	0	0	0	26	0	51
08:15 AM	18	0	1	0	13	7	0	0	0	0	37	0	76
Total	27	0	1	0	27	9	0	0	0	0	63	0	127
04:00 PM	7	0	1	0	32	10	0	0	0	2	22	0	74
04:15 PM	7	0	1	0	30	9	0	0	0	0	19	0	66
04:30 PM	11	0	0	0	41	11	0	0	0	0	24	0	87
04:45 PM	5	0	0	0	47	14	0	0	0	0	25	0	91
Total	30	0	2	0	150	44	0	0	0	2	90	0	318
05:00 PM	6	0	3	0	59	15	0	0	0	1	24	0	108
05:15 PM	7	0	0	0	35	13	0	0	0	1	17	0	73
05:30 PM	7	0	0	0	44	16	0	0	0	0	22	0	89
05:45 PM	8	0	0	0	50	13	0	0	0	1	29	0	101
Total	28	0	3	0	188	57	0	0	0	3	92	0	371
Grand Total	175	0	14	0	427	125	0	0	0	7	430	0	1178
Apprch %	92.6	0.0	7.4	0.0	77.4	22.6	0.0	0.0	0.0	1.6	98.4	0.0	
Total %	14.9	0.0	1.2	0.0	36.2	10.6	0.0	0.0	0.0	0.6	36.5	0.0	

COUNTER MEASURES INC.
1889 YORK STREET
DENVER,COLORADO 80206
303-333-7409

N/S STREET: JAMISON CIR
E/W STREET: JAMISON AVE
CITY: LITTLETON
COUNTY: ARAPAHOE

File Name : JAMIJAMI
Site Code : 00000021
Start Date : 4/9/2014
Page No : 2

	JAMISON CIR Southbound				JAMISON AVE Westbound				JAMISON CIR Northbound				JAMISON AVE Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Intersection 07:15 AM																	
Volume	59	0	6	65	0	64	10	74	0	0	0	0	0	135	0	135	274
Percent	90.8	0.0	9.2		0.0	86.5	13.5		0.0	0.0	0.0		0.0	100.0	0.0		
07:30 Volume	21	0	2	23	0	11	3	14	0	0	0	0	0	48	0	48	85
Peak Factor																	0.806
High Int.	07:30 AM				07:45 AM								07:30 AM				
Volume	21	0	2	23	0	25	4	29	0	0	0	0	0	48	0	48	
Peak Factor				0.707				0.638								0.703	



N/S STREET: JAMISON CIR
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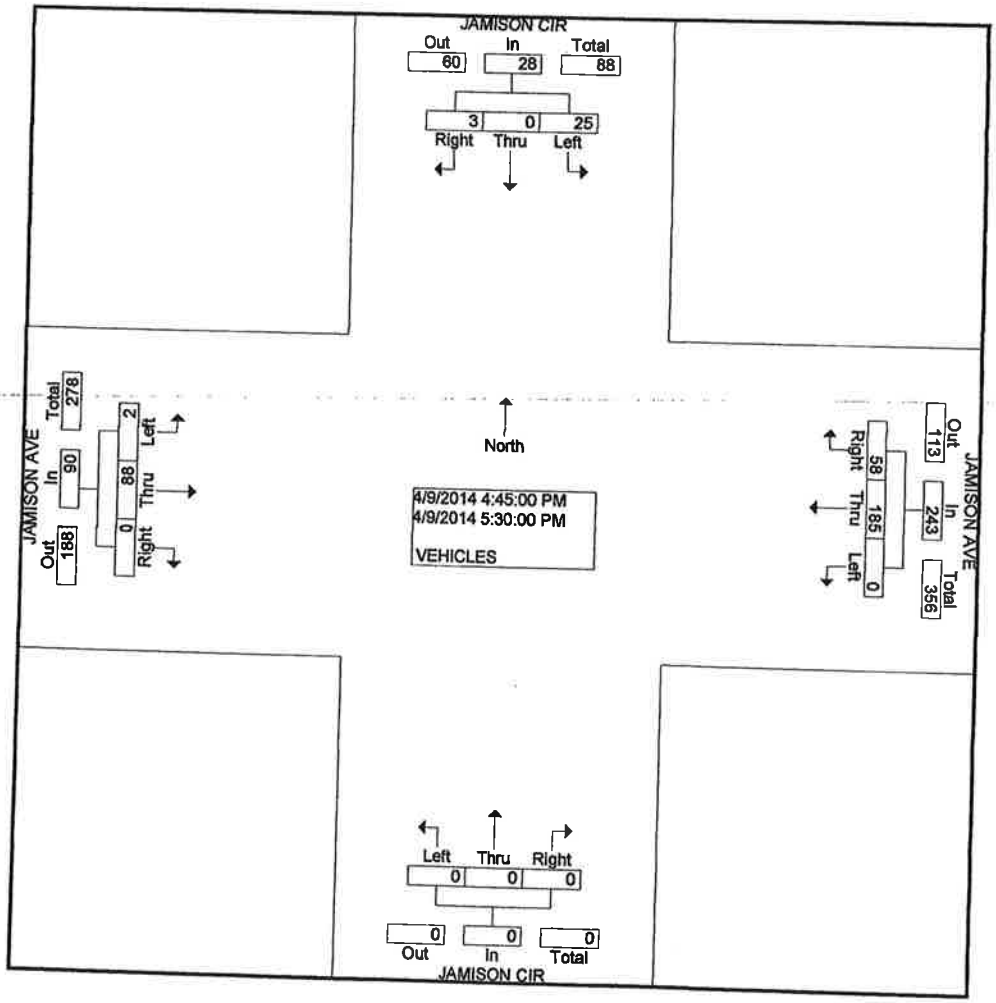
	JAMISON CIR Southbound				JAMISON AVE Westbound				JAMISON CIR Northbound				JAMISON AVE Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 04:30 PM to 05:30 PM - Peak 1 of 1																	
Intersection	04:45 PM																
Volume	25	0	3	28	0	185	58	243	0	0	0	0	2	88	0	90	361
Percent	89.3	0.0	10.7		0.0	76.1	23.9		0.0	0.0	0.0		2.2	97.8	0.0		
05:00																	
Volume	6	0	3	9	0	59	15	74	0	0	0	0	1	24	0	25	108
Peak Factor																	
High Int.	05:00 PM				05:00 PM								04:45 PM				0.836
Volume	6	0	3	9	0	59	15	74	0	0	0	0	0	25	0	25	
Peak Factor				0.778				0.821								0.900	



COUNTER MEASURES INC.

1889 YORK STREET
DENVER,COLORADO 80206
303-333-7409

Location: JAMISON AVE W/O JAMINSON CIR
City: LITTLETON
County: ARAPAHOE
Direction: EASTBOUND-WESTBOUND

Site Code: 040808

Start Time	09-Apr-14 Wed	EB	WB	Total
12:00 AM		4	4	8
01:00		0	1	1
02:00		0	0	0
03:00		1	1	2
04:00		4	1	5
05:00		23	4	27
06:00		72	14	86
07:00		142	52	194
08:00		118	54	172
09:00		82	58	140
10:00		82	76	158
11:00		76	76	152
12:00 PM		55	80	135
01:00		72	71	143
02:00		80	87	167
03:00		88	128	216
04:00		91	150	241
05:00		100	204	304
06:00		74	114	188
07:00		49	84	133
08:00		26	86	112
09:00		14	32	46
10:00		7	6	13
11:00		4	5	9
Total		1264	1388	2652
Percent		47.7%	52.3%	
AM Peak	-	07:00	10:00	07:00
Vol.	-	142	76	194
PM Peak	-	17:00	17:00	17:00
Vol.	-	100	204	304
Grand Total		1264	1388	2652
Percent		47.7%	52.3%	
ADT		ADT 2,652	AADT 2,652	

COUNTER MEASURES INC.

1889 YORK STREET
DENVER,COLORADO 80206
303-333-7409

Location: JAMISON AVE W/O BROADWAY ST
City: LITTLETON
County: ARAPAHOE
Direction: EASTBOUND-WESTBOUND

Site Code: 040804

Start Time	09-Apr-14 Wed	EB	WB	Total
12:00 AM		3	4	7
01:00		1	2	3
02:00		0	0	0
03:00		0	0	0
04:00		10	3	13
05:00		34	8	42
06:00		98	28	126
07:00		206	108	314
08:00		172	115	287
09:00		129	96	225
10:00		106	106	212
11:00		105	109	214
12:00 PM		90	118	208
01:00		100	104	204
02:00		100	115	215
03:00		114	186	300
04:00		124	206	330
05:00		128	270	398
06:00		110	182	292
07:00		66	119	185
08:00		42	118	160
09:00		29	64	93
10:00		10	12	22
11:00		4	8	12
Total		1781	2081	3862
Percent		46.1%	53.9%	
AM Peak	-	07:00	08:00	07:00
Vol.	-	206	115	314
PM Peak	-	17:00	17:00	17:00
Vol.	-	128	270	398
Grand Total		1781	2081	3862
Percent		46.1%	53.9%	
ADT		ADT 3,862	AADT 3,862	

Appendix B
Level of Service Analysis
Synchro Printouts

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85	1.00	0.87		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1779	1583	1770	1612		1770	3539	1583	1770	3539	1583
Flt Permitted		0.72	1.00	0.60	1.00		0.21	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)		1338	1583	1110	1612		382	3539	1583	141	3539	1583
Volume (vph)	124	8	62	19	3	24	28	1432	68	43	988	43
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	135	9	67	21	3	26	30	1557	74	47	1074	47
RTOR Reduction (vph)	0	0	52	0	20	0	0	0	31	0	0	19
Lane Group Flow (vph)	0	144	15	21	9	0	30	1557	43	47	1074	28
Turn Type	Perm		Perm	Perm			pm+pt		Perm	pm+pt		Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		6
Actuated Green, G (s)		20.0	20.0	20.0	20.0		57.0	52.0	52.0	59.0	53.0	53.0
Effective Green, g (s)		20.0	20.0	20.0	20.0		57.0	52.0	52.0	59.0	53.0	53.0
Actuated g/C Ratio		0.22	0.22	0.22	0.22		0.63	0.58	0.58	0.66	0.59	0.59
Clearance Time (s)		4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)		297	352	247	358		319	2045	915	201	2084	932
v/s Ratio Prot					0.02		0.01	c0.44		c0.02	0.30	
v/s Ratio Perm		c0.11	0.04	0.02			0.05		0.05	0.14		0.03
v/c Ratio		0.48	0.04	0.09	0.02		0.09	0.76	0.05	0.23	0.52	0.03
Uniform Delay, d1		30.5	27.5	27.7	27.4		7.0	14.3	8.2	10.9	10.9	7.7
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		5.6	0.2	0.7	0.1		0.6	2.7	0.1	2.7	0.9	0.1
Delay (s)		36.1	27.7	28.4	27.5		7.6	17.1	8.3	13.6	11.8	7.8
Level of Service		D	C	C	C		A	B	A	B	B	A
Approach Delay (s)		33.4			27.9			16.5			11.7	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	16.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	135	64	10	59	6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	147	70	11	64	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	80				222	75
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	80				222	75
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				92	99
cM capacity (veh/h)	1517				766	986

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	147	80	71
Volume Left	0	0	64
Volume Right	0	11	7
cSH	1517	1700	783
Volume to Capacity	0.00	0.05	0.09
Queue Length (ft)	0	0	7
Control Delay (s)	0.0	0.0	10.1
Lane LOS			B
Approach Delay (s)	0.0	0.0	10.1
Approach LOS			B

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	17.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85	1.00	0.87		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.95	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1779	1583	1770	1617		1770	3539	1583	1770	3539	1583
Flt Permitted		0.71	1.00	0.71	1.00		0.08	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)		1330	1583	1325	1617		143	3539	1583	187	3539	1583
Volume (vph)	61	4	48	67	9	66	44	1318	19	16	1689	190
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	66	4	52	73	10	72	48	1433	21	17	1836	207
RTOR Reduction (vph)	0	0	40	0	56	0	0	0	9	0	0	85
Lane Group Flow (vph)	0	70	12	73	26	0	48	1433	12	17	1836	122
Turn Type	Perm		Perm	Perm			pm+pt		Perm	pm+pt		Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		6
Actuated Green, G (s)		20.0	20.0	20.0	20.0		57.0	52.0	52.0	59.0	53.0	53.0
Effective Green, g (s)		20.0	20.0	20.0	20.0		57.0	52.0	52.0	59.0	53.0	53.0
Actuated g/C Ratio		0.22	0.22	0.22	0.22		0.63	0.58	0.58	0.66	0.59	0.59
Clearance Time (s)		4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)		296	352	294	359		181	2045	915	228	2084	932
v/s Ratio Prot					0.05		c0.01	0.40		0.00	c0.52	
v/s Ratio Perm		0.05	0.03	c0.06			0.15		0.01	0.04		0.13
v/c Ratio		0.24	0.03	0.25	0.07		0.27	0.70	0.01	0.07	0.88	0.13
Uniform Delay, d1		28.7	27.4	28.8	27.7		15.0	13.5	8.1	8.9	15.8	8.2
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		1.9	0.2	2.0	0.4		3.6	2.0	0.0	0.6	5.8	0.3
Delay (s)		30.6	27.6	30.8	28.1		18.5	15.5	8.1	9.5	21.6	8.5
Level of Service		C	C	C	C		B	B	A	A	C	A
Approach Delay (s)		29.3			29.4			15.5			20.2	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM Average Control Delay	19.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	2	88	185	58	25	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	96	201	63	27	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	264				333	233
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	264				333	233
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				96	100
cM capacity (veh/h)	1300				661	807

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	98	264	30
Volume Left	2	0	27
Volume Right	0	63	3
cSH	1300	1700	674
Volume to Capacity	0.00	0.16	0.05
Queue Length (ft)	0	0	4
Control Delay (s)	0.2	0.0	10.6
Lane LOS	A		B
Approach Delay (s)	0.2	0.0	10.6
Approach LOS			B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	23.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85	1.00	0.86		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1779	1583	1770	1611		1770	3539	1583	1770	3539	1583
Flt Permitted		0.72	1.00	0.59	1.00		0.20	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)		1336	1583	1102	1611		369	3539	1583	141	3539	1583
Volume (vph)	126	8	63	19	3	25	28	1461	69	44	1008	44
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	137	9	68	21	3	27	30	1588	75	48	1096	48
RTOR Reduction (vph)	0	0	53	0	21	0	0	0	32	0	0	20
Lane Group Flow (vph)	0	146	15	21	9	0	30	1588	43	48	1096	28
Turn Type	Perm		Perm	Perm			pm+pt		Perm	pm+pt		Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		6
Actuated Green, G (s)		20.0	20.0	20.0	20.0		57.0	52.0	52.0	59.0	53.0	53.0
Effective Green, g (s)		20.0	20.0	20.0	20.0		57.0	52.0	52.0	59.0	53.0	53.0
Actuated g/C Ratio		0.22	0.22	0.22	0.22		0.63	0.58	0.58	0.66	0.59	0.59
Clearance Time (s)		4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)		297	352	245	358		312	2045	915	201	2084	932
v/s Ratio Prot					0.02		0.01	c0.45		c0.02	0.31	
v/s Ratio Perm		c0.11	0.04	0.02			0.06		0.05	0.14		0.03
v/c Ratio		0.49	0.04	0.09	0.03		0.10	0.78	0.05	0.24	0.53	0.03
Uniform Delay, d1		30.6	27.5	27.8	27.4		7.1	14.6	8.2	11.3	11.0	7.7
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		5.7	0.2	0.7	0.1		0.6	3.0	0.1	2.8	1.0	0.1
Delay (s)		36.3	27.7	28.4	27.5		7.7	17.5	8.3	14.1	12.0	7.8
Level of Service		D	C	C	C		A	B	A	B	B	A
Approach Delay (s)		33.6			27.9			16.9			11.9	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	16.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	138	65	10	59	6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	150	71	11	64	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	82				226	76
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	82				226	76
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				92	99
cM capacity (veh/h)	1516				762	985

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	150	82	71
Volume Left	0	0	64
Volume Right	0	11	7
cSH	1516	1700	778
Volume to Capacity	0.00	0.05	0.09
Queue Length (ft)	0	0	7
Control Delay (s)	0.0	0.0	10.1
Lane LOS			B
Approach Delay (s)	0.0	0.0	10.1
Approach LOS			B

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	17.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85	1.00	0.87		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.95	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1779	1583	1770	1617		1770	3539	1583	1770	3539	1583
Flt Permitted		0.70	1.00	0.71	1.00		0.07	1.00	1.00	0.12	1.00	1.00
Satd. Flow (perm)		1296	1583	1324	1617		128	3539	1583	221	3539	1583
Volume (vph)	62	4	49	68	9	67	45	1344	19	16	1723	194
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	67	4	53	74	10	73	49	1461	21	17	1873	211
RTOR Reduction (vph)	0	0	44	0	60	0	0	0	7	0	0	75
Lane Group Flow (vph)	0	71	9	74	23	0	49	1461	14	17	1873	136
Turn Type	Perm		Perm	Perm			pm+pt		Perm	pm+pt		Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		6
Actuated Green, G (s)		16.0	16.0	16.0	16.0		62.0	58.0	58.0	62.0	58.0	58.0
Effective Green, g (s)		16.0	16.0	16.0	16.0		62.0	58.0	58.0	62.0	58.0	58.0
Actuated g/C Ratio		0.18	0.18	0.18	0.18		0.69	0.64	0.64	0.69	0.64	0.64
Clearance Time (s)		4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)		230	281	235	287		161	2281	1020	221	2281	1020
v/s Ratio Prot					0.05		c0.01	0.41		0.00	c0.53	
v/s Ratio Perm		0.05	0.03	c0.06			0.20		0.01	0.05		0.13
v/c Ratio		0.31	0.03	0.31	0.08		0.30	0.64	0.01	0.08	0.82	0.13
Uniform Delay, d1		32.2	30.6	32.2	30.9		12.4	9.7	5.7	6.7	12.1	6.2
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		3.5	0.2	3.5	0.5		4.8	1.4	0.0	0.7	3.5	0.3
Delay (s)		35.6	30.8	35.7	31.4		17.2	11.1	5.8	7.4	15.6	6.5
Level of Service		D	C	D	C		B	B	A	A	B	A
Approach Delay (s)		33.6			33.4			11.2			14.6	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	14.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	2	90	189	59	25	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	98	205	64	27	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	270				340	238
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	270				340	238
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				96	100
cM capacity (veh/h)	1294				655	801

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	100	270	30
Volume Left	2	0	27
Volume Right	0	64	3
cSH	1294	1700	668
Volume to Capacity	0.00	0.16	0.05
Queue Length (ft)	0	0	4
Control Delay (s)	0.2	0.0	10.6
Lane LOS	A		B
Approach Delay (s)	0.2	0.0	10.6
Approach LOS			B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	23.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85	1.00	0.86		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1779	1583	1770	1611		1770	3539	1583	1770	3539	1583
Flt Permitted		0.72	1.00	0.57	1.00		0.20	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)		1334	1583	1064	1611		376	3539	1583	138	3539	1583
Volume (vph)	135	8	67	19	3	25	29	1461	69	44	1008	46
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	147	9	73	21	3	27	32	1588	75	48	1096	50
RTOR Reduction (vph)	0	0	57	0	21	0	0	0	31	0	0	20
Lane Group Flow (vph)	0	156	16	21	9	0	32	1588	44	48	1096	30
Turn Type	Perm		Perm	Perm			pm+pt		Perm	pm+pt		Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		6
Actuated Green, G (s)		20.0	20.0	20.0	20.0		57.0	53.0	53.0	59.0	54.0	54.0
Effective Green, g (s)		20.0	20.0	20.0	20.0		57.0	53.0	53.0	59.0	54.0	54.0
Actuated g/C Ratio		0.22	0.22	0.22	0.22		0.63	0.59	0.59	0.66	0.60	0.60
Clearance Time (s)		4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)		296	352	236	358		300	2084	932	181	2123	950
v/s Ratio Prot					0.02		0.00	c0.45		c0.01	0.31	
v/s Ratio Perm		c0.12	0.05	0.02			0.06		0.05	0.16		0.03
v/c Ratio		0.53	0.05	0.09	0.03		0.11	0.76	0.05	0.27	0.52	0.03
Uniform Delay, d1		30.8	27.5	27.8	27.4		7.0	13.8	7.8	11.1	10.4	7.3
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		6.6	0.2	0.7	0.1		0.7	2.7	0.1	3.6	0.9	0.1
Delay (s)		37.4	27.8	28.5	27.5		7.7	16.5	7.9	14.6	11.3	7.4
Level of Service		D	C	C	C		A	B	A	B	B	A
Approach Delay (s)		34.3			27.9			15.9			11.3	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	15.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	151	68	10	59	6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	164	74	11	64	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	85				243	79
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	85				243	79
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				91	99
cM capacity (veh/h)	1512				745	981

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	164	85	71
Volume Left	0	0	64
Volume Right	0	11	7
cSH	1512	1700	762
Volume to Capacity	0.00	0.05	0.09
Queue Length (ft)	0	0	8
Control Delay (s)	0.0	0.0	10.2
Lane LOS			B
Approach Delay (s)	0.0	0.0	10.2
Approach LOS			B

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	18.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	144	72	2	7	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	157	78	2	8	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	80				236	79
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	80				236	79
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1517				752	981

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	157	80	9
Volume Left	0	0	8
Volume Right	0	2	1
cSH	1517	1700	775
Volume to Capacity	0.00	0.05	0.01
Queue Length (ft)	0	0	1
Control Delay (s)	0.0	0.0	9.7
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.7
Approach LOS			A

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	17.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	138	72	1	6	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	150	78	1	7	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	79				229	79
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	79				229	79
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1519				759	982

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	150	79	8
Volume Left	0	0	7
Volume Right	0	1	1
cSH	1519	1700	785
Volume to Capacity	0.00	0.05	0.01
Queue Length (ft)	0	0	1
Control Delay (s)	0.0	0.0	9.6
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.6
Approach LOS			A

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	17.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85	1.00	0.87		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.95	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1778	1583	1770	1617		1770	3539	1583	1770	3539	1583
Flt Permitted		0.69	1.00	0.71	1.00		0.07	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)		1283	1583	1317	1617		128	3539	1583	128	3539	1583
Volume (vph)	67	4	51	68	9	67	49	1644	19	16	1723	202
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	73	4	55	74	10	73	53	1787	21	17	1873	220
RTOR Reduction (vph)	0	0	45	0	60	0	0	0	7	0	0	78
Lane Group Flow (vph)	0	77	10	74	23	0	53	1787	14	17	1873	142
Turn Type	Perm		Perm	Perm			pm+pt		Perm	pm+pt		Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		6
Actuated Green, G (s)		16.0	16.0	16.0	16.0		62.0	58.0	58.0	62.0	58.0	58.0
Effective Green, g (s)		16.0	16.0	16.0	16.0		62.0	58.0	58.0	62.0	58.0	58.0
Actuated g/C Ratio		0.18	0.18	0.18	0.18		0.69	0.64	0.64	0.69	0.64	0.64
Clearance Time (s)		4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)		228	281	234	287		161	2281	1020	161	2281	1020
v/s Ratio Prot					0.05		c0.01	0.50		0.00	c0.53	
v/s Ratio Perm		c0.06	0.03	0.06			0.21		0.01	0.07		0.14
v/c Ratio		0.34	0.03	0.32	0.08		0.33	0.78	0.01	0.11	0.82	0.14
Uniform Delay, d1		32.4	30.6	32.2	30.9		12.5	11.5	5.7	10.1	12.1	6.2
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		4.0	0.2	3.5	0.5		5.4	2.8	0.0	1.3	3.5	0.3
Delay (s)		36.3	30.8	35.8	31.4		17.9	14.3	5.8	11.4	15.6	6.5
Level of Service		D	C	D	C		B	B	A	B	B	A
Approach Delay (s)		34.0			33.5			14.3			14.6	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	15.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	2	97	201	59	25	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	105	218	64	27	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	283				360	251
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	283				360	251
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				96	100
cM capacity (veh/h)	1280				637	788

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	108	283	30
Volume Left	2	0	27
Volume Right	0	64	3
cSH	1280	1700	651
Volume to Capacity	0.00	0.17	0.05
Queue Length (ft)	0	0	4
Control Delay (s)	0.2	0.0	10.8
Lane LOS	A		B
Approach Delay (s)	0.2	0.0	10.8
Approach LOS			B

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	24.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	1	95	198	6	4	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	103	215	7	4	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	222				324	218
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	222				324	218
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1347				669	821

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	104	222	4
Volume Left	1	0	4
Volume Right	0	7	0
cSH	1347	1700	669
Volume to Capacity	0.00	0.13	0.01
Queue Length (ft)	0	0	0
Control Delay (s)	0.1	0.0	10.4
Lane LOS	A		B
Approach Delay (s)	0.1	0.0	10.4
Approach LOS			B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	20.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	1	93	192	6	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	101	209	7	3	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	215				315	212
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	215				315	212
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1355				677	828

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	102	215	3
Volume Left	1	0	3
Volume Right	0	7	0
cSH	1355	1700	677
Volume to Capacity	0.00	0.13	0.00
Queue Length (ft)	0	0	0
Control Delay (s)	0.1	0.0	10.3
Lane LOS	A		B
Approach Delay (s)	0.1	0.0	10.3
Approach LOS			B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	20.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85	1.00	0.86		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.95	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1779	1583	1770	1609		1770	3539	1583	1770	3539	1583
Flt Permitted		0.71	1.00	0.55	1.00		0.17	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)		1330	1583	1033	1609		314	3539	1583	135	3539	1583
Volume (vph)	139	8	70	21	3	28	31	1613	76	49	1113	49
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	151	9	76	23	3	30	34	1753	83	53	1210	53
RTOR Reduction (vph)	0	0	60	0	24	0	0	0	32	0	0	21
Lane Group Flow (vph)	0	160	16	23	9	0	34	1753	51	53	1210	32
Turn Type	Perm		Perm	Perm			pm+pt		Perm	pm+pt		Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		6
Actuated Green, G (s)		19.0	19.0	19.0	19.0		59.0	55.0	55.0	59.0	55.0	55.0
Effective Green, g (s)		19.0	19.0	19.0	19.0		59.0	55.0	55.0	59.0	55.0	55.0
Actuated g/C Ratio		0.21	0.21	0.21	0.21		0.66	0.61	0.61	0.66	0.61	0.61
Clearance Time (s)		4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)		281	334	218	340		271	2163	967	161	2163	967
v/s Ratio Prot					0.02		0.01	c0.50		c0.01	0.34	
v/s Ratio Perm		c0.12	0.05	0.02			0.08		0.05	0.20		0.03
v/c Ratio		0.57	0.05	0.11	0.03		0.13	0.81	0.05	0.33	0.56	0.03
Uniform Delay, d1		31.8	28.3	28.6	28.2		6.8	13.5	7.0	12.6	10.3	6.9
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		8.1	0.3	1.0	0.1		1.0	3.4	0.1	5.4	1.1	0.1
Delay (s)		40.0	28.6	29.6	28.3		7.8	16.9	7.1	18.0	11.4	7.0
Level of Service		D	C	C	C		A	B	A	B	B	A
Approach Delay (s)		36.3			28.9			16.3			11.5	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM Average Control Delay	16.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	152	72	11	65	6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	165	78	12	71	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	90				249	84
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	90				249	84
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				90	99
cM capacity (veh/h)	1505				739	975

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	165	90	77
Volume Left	0	0	71
Volume Right	0	12	7
cSH	1505	1700	754
Volume to Capacity	0.00	0.05	0.10
Queue Length (ft)	0	0	9
Control Delay (s)	0.0	0.0	10.3
Lane LOS			B
Approach Delay (s)	0.0	0.0	10.3
Approach LOS			B

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	18.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85	1.00	0.87		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.95	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1778	1583	1770	1617		1770	3539	1583	1770	3539	1583
Flt Permitted		0.68	1.00	0.71	1.00		0.07	1.00	1.00	0.09	1.00	1.00
Satd. Flow (perm)		1271	1583	1316	1617		128	3539	1583	166	3539	1583
Volume (vph)	68	4	54	75	10	74	50	1484	21	18	1902	214
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	74	4	59	82	11	80	54	1613	23	20	2067	233
RTOR Reduction (vph)	0	0	49	0	66	0	0	0	8	0	0	83
Lane Group Flow (vph)	0	78	10	82	25	0	54	1613	15	20	2067	150
Turn Type	Perm		Perm	Perm			pm+pt		Perm	pm+pt		Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		6
Actuated Green, G (s)		16.0	16.0	16.0	16.0		62.0	58.0	58.0	62.0	58.0	58.0
Effective Green, g (s)		16.0	16.0	16.0	16.0		62.0	58.0	58.0	62.0	58.0	58.0
Actuated g/C Ratio		0.18	0.18	0.18	0.18		0.69	0.64	0.64	0.69	0.64	0.64
Clearance Time (s)		4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)		226	281	234	287		161	2281	1020	186	2281	1020
v/s Ratio Prot					0.06		c0.01	0.46		0.00	c0.58	
v/s Ratio Perm		0.06	0.04	c0.06			0.22		0.01	0.07		0.15
v/c Ratio		0.35	0.04	0.35	0.09		0.34	0.71	0.01	0.11	0.91	0.15
Uniform Delay, d1		32.4	30.6	32.4	30.9		16.9	10.5	5.7	8.0	13.7	6.3
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		4.1	0.2	4.1	0.6		5.5	1.9	0.0	1.2	6.6	0.3
Delay (s)		36.6	30.9	36.5	31.5		22.4	12.3	5.8	9.2	20.3	6.6
Level of Service		D	C	D	C		C	B	A	A	C	A
Approach Delay (s)		34.1			33.9			12.6			18.8	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	17.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	2	98	209	65	28	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	107	227	71	30	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	298				373	262
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	298				373	262
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				95	100
cM capacity (veh/h)	1263				626	776

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	109	298	34
Volume Left	2	0	30
Volume Right	0	71	3
cSH	1263	1700	638
Volume to Capacity	0.00	0.18	0.05
Queue Length (ft)	0	0	4
Control Delay (s)	0.2	0.0	11.0
Lane LOS	A		B
Approach Delay (s)	0.2	0.0	11.0
Approach LOS			B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	25.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85	1.00	0.86		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.95	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1779	1583	1770	1609		1770	3539	1583	1770	3539	1583
Flt Permitted		0.71	1.00	0.53	1.00		0.17	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)		1328	1583	993	1609		314	3539	1583	135	3539	1583
Volume (vph)	148	8	74	21	3	28	32	1613	76	49	1113	51
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	161	9	80	23	3	30	35	1753	83	53	1210	55
RTOR Reduction (vph)	0	0	63	0	24	0	0	0	32	0	0	21
Lane Group Flow (vph)	0	170	17	23	9	0	35	1753	51	53	1210	34
Turn Type	Perm		Perm	Perm			pm+pt		Perm	pm+pt		Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		6
Actuated Green, G (s)		19.0	19.0	19.0	19.0		59.0	55.0	55.0	59.0	55.0	55.0
Effective Green, g (s)		19.0	19.0	19.0	19.0		59.0	55.0	55.0	59.0	55.0	55.0
Actuated g/C Ratio		0.21	0.21	0.21	0.21		0.66	0.61	0.61	0.66	0.61	0.61
Clearance Time (s)		4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)		280	334	210	340		271	2163	967	161	2163	967
v/s Ratio Prot					0.02		0.01	c0.50		c0.01	0.34	
v/s Ratio Perm		c0.13	0.05	0.02			0.08		0.05	0.20		0.03
v/c Ratio		0.61	0.05	0.11	0.03		0.13	0.81	0.05	0.33	0.56	0.03
Uniform Delay, d1		32.1	28.3	28.7	28.2		6.8	13.5	7.0	12.6	10.3	7.0
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		9.4	0.3	1.1	0.1		1.0	3.4	0.1	5.4	1.1	0.1
Delay (s)		41.6	28.6	29.7	28.3		7.8	16.9	7.1	18.0	11.4	7.0
Level of Service		D	C	C	C		A	B	A	B	B	A
Approach Delay (s)		37.4			28.9			16.3			11.5	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM Average Control Delay	16.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	165	75	11	65	6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	179	82	12	71	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	93				267	88
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	93				267	88
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				90	99
cM capacity (veh/h)	1501				722	971

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	179	93	77
Volume Left	0	0	71
Volume Right	0	12	7
cSH	1501	1700	738
Volume to Capacity	0.00	0.05	0.10
Queue Length (ft)	0	0	9
Control Delay (s)	0.0	0.0	10.4
Lane LOS			B
Approach Delay (s)	0.0	0.0	10.4
Approach LOS			B

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	19.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	158	79	2	7	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	172	86	2	8	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	88				259	87
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	88				259	87
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1508				730	972

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	172	88	9
Volume Left	0	0	8
Volume Right	0	2	1
cSH	1508	1700	754
Volume to Capacity	0.00	0.05	0.01
Queue Length (ft)	0	0	1
Control Delay (s)	0.0	0.0	9.8
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.8
Approach LOS			A

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	18.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	152	79	1	6	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	165	86	1	7	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	87				252	86
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	87				252	86
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1509				737	972

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	165	87	8
Volume Left	0	0	7
Volume Right	0	1	1
cSH	1509	1700	763
Volume to Capacity	0.00	0.05	0.01
Queue Length (ft)	0	0	1
Control Delay (s)	0.0	0.0	9.8
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.8
Approach LOS			A

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	18.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85	1.00	0.87		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.95	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1778	1583	1770	1617		1770	3539	1583	1770	3539	1583
Flt Permitted		0.68	1.00	0.70	1.00		0.07	1.00	1.00	0.09	1.00	1.00
Satd. Flow (perm)		1260	1583	1310	1617		128	3539	1583	166	3539	1583
Volume (vph)	73	4	56	75	10	74	54	1484	21	18	1902	222
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	79	4	61	82	11	80	59	1613	23	20	2067	241
RTOR Reduction (vph)	0	0	50	0	66	0	0	0	8	0	0	86
Lane Group Flow (vph)	0	83	11	82	25	0	59	1613	15	20	2067	155
Turn Type	Perm		Perm	Perm			pm+pt		Perm	pm+pt		Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		6
Actuated Green, G (s)		16.0	16.0	16.0	16.0		62.0	58.0	58.0	62.0	58.0	58.0
Effective Green, g (s)		16.0	16.0	16.0	16.0		62.0	58.0	58.0	62.0	58.0	58.0
Actuated g/C Ratio		0.18	0.18	0.18	0.18		0.69	0.64	0.64	0.69	0.64	0.64
Clearance Time (s)		4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)		224	281	233	287		161	2281	1020	186	2281	1020
v/s Ratio Prot					0.06		c0.02	0.46		0.00	c0.58	
v/s Ratio Perm		c0.07	0.04	0.06			0.24		0.01	0.07		0.15
v/c Ratio		0.37	0.04	0.35	0.09		0.37	0.71	0.01	0.11	0.91	0.15
Uniform Delay, d1		32.6	30.6	32.5	30.9		17.0	10.5	5.7	8.0	13.7	6.3
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		4.7	0.3	4.1	0.6		6.3	1.9	0.0	1.2	6.6	0.3
Delay (s)		37.2	30.9	36.6	31.5		23.3	12.3	5.8	9.2	20.3	6.6
Level of Service		D	C	D	C		C	B	A	A	C	A
Approach Delay (s)		34.5			33.9			12.6			18.8	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	17.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	2	105	221	65	28	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	114	240	71	30	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	311				394	276
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	311				394	276
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				95	100
cM capacity (veh/h)	1250				610	763

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	116	311	34
Volume Left	2	0	30
Volume Right	0	71	3
cSH	1250	1700	622
Volume to Capacity	0.00	0.18	0.05
Queue Length (ft)	0	0	4
Control Delay (s)	0.2	0.0	11.1
Lane LOS	A		B
Approach Delay (s)	0.2	0.0	11.1
Approach LOS			B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	25.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	1	103	218	6	4	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	112	237	7	4	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	243				354	240
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	243				354	240
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1323				643	799

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	113	243	4
Volume Left	1	0	4
Volume Right	0	7	0
cSH	1323	1700	643
Volume to Capacity	0.00	0.14	0.01
Queue Length (ft)	0	0	1
Control Delay (s)	0.1	0.0	10.6
Lane LOS	A		B
Approach Delay (s)	0.1	0.0	10.6
Approach LOS			B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	21.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	1	101	212	6	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	110	230	7	3	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	237				346	234
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	237				346	234
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1330				650	805

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	111	237	3
Volume Left	1	0	3
Volume Right	0	7	0
cSH	1330	1700	650
Volume to Capacity	0.00	0.14	0.01
Queue Length (ft)	0	0	0
Control Delay (s)	0.1	0.0	10.6
Lane LOS	A		B
Approach Delay (s)	0.1	0.0	10.6
Approach LOS			B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	21.5%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix C
Queue Length Analysis
SimTraffic Printouts

Intersection: 5: W. Jamison Ave. & So. Broadway Street

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LT	R	L	TR	L	T	T	R	L	T	T	R
Maximum Queue (ft)	167	62	63	51	160	512	446	107	79	326	318	48
Average Queue (ft)	84	25	16	15	22	299	270	16	30	184	163	14
95th Queue (ft)	146	55	44	39	103	445	407	67	65	290	269	40
Link Distance (ft)	1368	1368	861	861	1762	1762	1762	1762	2334	2334	2334	2334
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)												
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 6: W. Jamison Ave. & W. Jamison Cir.

Movement	SB
Directions Served	LR
Maximum Queue (ft)	49
Average Queue (ft)	31
95th Queue (ft)	49
Link Distance (ft)	1060
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 7: W. Jamison Ave. & Access B

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 8: W. Jamison Ave. & Access A

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Nework Summary

Network wide Queuing Penalty: 0

Intersection: 5: W. Jamison Ave. & So. Broadway Street

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LT	R	L	TR	L	T	T	R	L	T	T	R
Maximum Queue (ft)	113	85	127	85	144	480	475	21	490	656	590	338
Average Queue (ft)	47	25	51	37	36	256	223	4	50	410	365	49
95th Queue (ft)	93	60	100	73	98	409	383	17	262	604	552	183
Link Distance (ft)	1368	1368	861	861	1762	1762	1762	1762	2334	2334	2334	2334
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)												
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 6: W. Jamison Ave. & W. Jamison Cir.

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	25	49
Average Queue (ft)	1	21
95th Queue (ft)	11	47
Link Distance (ft)	1194	1060
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: W. Jamison Ave. & Access B

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 8: W. Jamison Ave. & Access A

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Nework Summary

Network wide Queuing Penalty: 0

Intersection: 5: W. Jamison Ave. & So. Broadway Street

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LT	R	L	TR	L	T	T	R	L	T	T	R
Maximum Queue (ft)	183	72	43	59	262	527	510	99	78	316	297	36
Average Queue (ft)	82	25	12	17	27	315	285	15	33	188	165	13
95th Queue (ft)	147	55	36	44	132	472	448	63	66	293	266	38
Link Distance (ft)	1368	1368	861	861	1762	1762	1762	1762	2334	2334	2334	2334
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)												
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 6: W. Jamison Ave. & W. Jamison Cir.

Movement	SB
Directions Served	LR
Maximum Queue (ft)	58
Average Queue (ft)	30
95th Queue (ft)	51
Link Distance (ft)	1060
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 7: W. Jamison Ave. & Access B

Movement	SB
Directions Served	LR
Maximum Queue (ft)	32
Average Queue (ft)	7
95th Queue (ft)	29
Link Distance (ft)	868
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: W. Jamison Ave. & Access A

Movement	SB
Directions Served	LR
Maximum Queue (ft)	40
Average Queue (ft)	7
95th Queue (ft)	29
Link Distance (ft)	804
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Nework Summary

Network wide Queuing Penalty: 0

Intersection: 5: W. Jamison Ave. & So. Broadway Street

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LT	R	L	TR	L	T	T	R	L	T	T	R
Maximum Queue (ft)	144	76	118	90	82	410	391	20	564	643	616	338
Average Queue (ft)	57	26	48	35	33	238	210	4	72	403	365	50
95th Queue (ft)	110	57	93	72	67	363	330	17	347	610	571	174
Link Distance (ft)	1368	1368	861	861	1762	1762	1762	1762	2334	2334	2334	2334
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)												
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 6: W. Jamison Ave. & W. Jamison Cir.

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	11	45
Average Queue (ft)	0	21
95th Queue (ft)	5	47
Link Distance (ft)	1194	1060
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: W. Jamison Ave. & Access B

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	6	32
Average Queue (ft)	0	4
95th Queue (ft)	5	21
Link Distance (ft)	984	868
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: W. Jamison Ave. & Access A

Movement	SB
Directions Served	LR
Maximum Queue (ft)	25
Average Queue (ft)	3
95th Queue (ft)	17
Link Distance (ft)	804
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Nework Summary

Network wide Queuing Penalty: 0

JAMISON VILLAGE GENERAL PLANNED DEVELOPMENT PLAN