Planning and Zoning Commission

Monday, June 28, 2021 at 6:00 pm

PLEASE SILENCE ALL CELL PHONES AND ELECTRONIC DEVICES. THANK YOU

1. **Meeting Information**
   207 Muegge Way, Bennett, CO 80102
   For a live stream of the meeting use the information below:

   https://us02web.zoom.us/j/81018092097?pwd=NmRzTFlWWTZkSGFFT3l6OVkzSVlFUT09

   Meeting ID: 810 1809 2097

   Passcode: 002949

   One tap mobile
   +12532158782

2. **Call to Order**
   Chair, Wayne Clark
   a. **Roll Call**
3. **Approval of Agenda**
   Chair, Wayne Clark
4. **Consent Agenda**
   Chair, Wayne Clark
   a. **May 17, 2021 - Regular Meeting Minutes**

      Attachments:

      - **May 17, 2021 - Regular Meeting Minutes** (May_17__2021.pdf)

Public Comments on Items Not on the Agenda

The Planning and Zoning Commission welcomes you. Thank you for joining us for our Town of Bennett Planning and Zoning Meeting. If you are not speaking, we ask that you please mute your microphone. For public comment please sign up on the provided sheet or in the chat box. If you are on the phone, once we get through the sign-up sheet and chat box we will call for any other comments for items not on the agenda.

Your comments will be limited to three (3) minutes. The Commission may not respond to your comments this evening, rather they may take your comments and suggestions under advisement and provide direction to the appropriate member of Town staff for follow-up. Thank you.

Regular Business

5. **Public Hearing(s)**
   Steve Hebert, Planning and Economic Development Manager

   Taeler Houlberg, Assistant to the Town Administrator

   a. **Proposed Changes to the Lighting Standards in the Bennett Municipal Code**
      Resolution 2021-06 - A Resolution of the Bennett Planning and Zoning Commission Recommending Approval of an Ordinance Amending Chapter 16 of the Bennett Municipal Code Regarding Lighting Standards

      Attachments:

      - **Public Hearing Script** (0-Public_Hearing_Script.pdf)
      - **Staff Report Proposed Changes to the Lighting Standards in the Bennett Municipal Code** (1-LightingStandards_Staff_Report.pdf)
      - **PowerPoint Presentation Proposed Changes to the Lighting Standards in the Bennett Municipal Code** (2-Lighting_Code_PZ_06_21_2021_Final.pdf)
      - **Track Changes Version of Proposed Amendments** (3-Sec._16_2_810._Lighting__Proposed_Changes.pdf)
      - **Proposed Ordinance No. 728-21 - An Ordinance Amending Chapter 16 of the Bennett Municipal Code Regarding Lighting Standards** (4-Ordinance_728-21_Amendment_to_Chapter_16_Lighting_Standards.pdf)
      - **Resolution 2021-06 - A Resolution of the Bennett Planning and Zoning Commission Recommending Approval of an Ordinance Amending Chapter 16 of the Bennett Municipal Code Regarding Lighting Standards** (5-Resolution_2021-06_Amendment_Chapter_16_Lighting_Standards.pdf)
      - **Suggested Motion** (6-suggested_motion.pdf)

6. **Action/Discussion Item**
   a. **Case No. 21.10 Bennett Ranch Phase 2 Single-Family Detached Sketch Plan**
      Steve Hebert, Planning and Economic Development Manager

      Attachments:

      - **Staff Report Bennett Ranch Phase 2 Single-Family Detached Sketch Plan** (0-Staff_Report_Bennett_Ranch_Phase2_SFD_P_Z_Sketch_Plan.pdf)
      - **PowerPoint Presentation Bennett Ranch Phase 2 Single-Family Detached Sketch Plan** (1-PowerPoint_Presentation_Bennett_Ranch_Phase2_SFD_S

ketchPlan.pdf)
- **Application** (2-Bennett_Ranch_-_Phase_2_Detached_-_Land_Use_Application__Signed_.pdf)
- **Letter of Intent** (3-Bennett_Ranch_-_Phase_2_Detached_-_Letter_of_Intent.pdf)
- **Phase 2 Single-Family Detached (SFD) Sketch Plan** (4-Bennett_Ranch_-_Phase_2_Detached_-_Sketch_Plan__Color_.pdf)
- **2018 Sketch Plan** (5-Sketch_Plan_11-30-18.pdf)
- **Town Engineer's Memo** (6-Bennett_Ranch_Phase_2_SFD_Sketch_TE_Revu_Memo_6-7-2021.pdf)
- **Town Traffic Engineer's Memo** (8-Bennett_Ranch_Phase_2_Sketch_Plan_Review_-_Traffic_GCR_05262021.pdf)
- **Bennett School District 29J** (9-Bennett_School_District_-_Bennett_Ranch_Ph2_SFD.pdf)
- **Bennett-Watkins Fire Rescue Letter** (10-BWFRLetterhead.Comments.BennettRanchPh2SketchPlan.04.15.21.pdf)
- **Intermountain Rural Electric Association (IREA) Redline Comments** (11-IREA_COMMENTS_BENNETT_RANCH_PH_2_4-28-21.pdf)
- **Traffic Impact Analysis** (12-Bennett_Ranch_-_Traffic_Impact_Analysis.pdf)

b. Case No. 21.12 Bennett Ranch North R-3 Townhome Sketch Plan
Steve Hebert, Planning and Economic Development Manager

Attachments:

- **Staff Report Bennett Ranch North R-3 Townhome Sketch Plan** (0-_Staff_Report_Bennett_Ranch_North_R-3_P_Z_Sketch_Plan.pdf)
- **PowerPoint Presentation Bennett Ranch North R-3 Townhome Sketch Plan** (1-PowerPoint_Presentation_Bennett_Ranch_North_R-3_SketchPlan_P_Z.pdf)
- **Application** (2-Bennett_Ranch_-_Phase_1_Attached_-_Land_Use_Application__Signed_.pdf)
- **Letter of Intent** (3-Bennett_Ranch_-_Phase_1_Attached_-_Letter_of_Intent.pdf)
- **Bennett Ranch North R-3 Townhome Sketch Plan** (4-Bennett_Ranch_-_Phase_1_Attached_-_Sketch_Plan__Color_.pdf)
- **2018 Sketch Plan** (5-Sketch_Plan_11-30-18.pdf)
- **Town Engineer's Memo** (6-Bennett_Ranch_North_R-3_TH_Sketch_TE_Revu_Memo_6-7-2021.pdf)
- **Town Traffic Engineer's Memo** (7-Bennett_Ranch_Townhomes_Review_-_Traffic_GCR_06032021.pdf)
- **Colorado Department of Transportation (CDOT) Memo** (8-CDOT_6-5-21 Comments__Bennett_Ranch_N_R-3_Townhome_Sketch_Plan.pdf)
- **Bennett School District 29J** (9-School_District_Bennett_Ranch_R-3_06032021.pdf)
- **Bennett-Watkins Fire Rescue Letter** (10-BWFRLetterhead.Comments.BennettRanchR-3NorthTownhomesSketchPlan.06.03.21.pdf)
- **Intermountain Rural Electric Association (IREA) Comments** (11-IREA-_RE__Bennett_Ranch_North_R-3_Townhome_Sketch_Plan_Referral.pdf)

- **Traffic Impact Analysis** (12-Bennett_Ranch_-_Traffic_Impact_Analysis.pdf)

7. **Commissioner Comments/Reports**
8. **Adjournment**

Contact: Christina Hart (chart@bennett.co.us 1-303-644-3249 X1001) | Agenda published on 06/18/2021 at 8:26 AM

TOWN OF BENNETT, COLORADO
PLANNING & ZONING COMMISSION
Regular Meeting
May 17, 2021

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1. CALL TO ORDER

The Planning & Zoning Commission of the Town of Bennett met in regular session on Monday, May 17, 2021, via hybrid meeting. Chair Wayne Clark called the meeting to order at 6:00 p.m. The following persons were present upon the call of the roll:

Chair:	Wayne Clark
Commissioners:	Rachel Connor - *excused* Grider Lee Martin Metsker Scott Smith
Staff Present:	Steve Hebert, *Planning and Economic Development Manager* Taeler Houlberg, *Assistant to the Town Administrator* Adam Meis, *Finance and Technology Coordinator* Dan Giroux, *Town Engineer* Gabrielle Renner, *Town Traffic Engineer* Christina Hart, Town Clerk - *excused*
Public Present:	Paul Worthman, Barry Moore, Karen Henry, John Cheney, Chad Ellington

1. APPROVAL OF AGENDA

COMMISSIONER METSKER MOVED, COMMISSIONER LEE SECONDED to approve the agenda as presented. Voting was as follows:

YES:	Lee, Metsker, Smith, Clark
NO:	None
EXCUSED:	Connor

Chairman Clark declared the motion carried by unanimous vote.

2. APPROVAL OF CONSENT AGENDA

COMMISSIONER METSKER MOVED, COMMISSIONER LEE SECONDED to approve the agenda as presented. Voting was as follows:

YES:	Lee, Metsker, Smith, Clark
NO:	None
EXCUSED:	Connor

Chairman Clark declared the motion carried by unanimous vote.

Action: Approval of March 15, 2021 Regular Meeting Minutes

3. PUBLIC COMMENTS ON ITEMS NOT ON THE AGENDA

There were no public comments on items not on the agenda presented.

4. REGULAR BUSINESS

A. Public Hearing(s)

1. Case No. 21.11 – Bennett Village (Worthman) Rezoning

Resolution No. 2021-05 - A Resolution Recommending Approval of the Rezoning of the Bennett Village Property, Case No. 21.11

Chair Wayne Clark opened the public hearing on Case No. 21.11 at 6:04 p.m., a public hearing on the approval of a Resolution recommending approval of the Rezoning of the Bennett Village Property, Case No. 21.11.

Town Clerk Pro Tem, Taeler Houlberg, stated for the record the Notice of Public Hearing was posted in accordance with State Statue and published in the Eastern Colorado News, April 30, 2021 as Legal Number 2473.

There were no disclosures from the Planning & Zoning Commission.

Steve Hebert, Town Planning and Economic Development Manager, reported to the Commission, the 21.4-acre property known as Bennett Village, previously the Worthman Property, is currently zoned MH – Mobile Home District. A final plat for the property was reviewed by the Planning and Zoning Commission on March 15, 2021, to create 133 lots for single-family detached homes. The Bennett Village Final Plat was approved by the Town Board of Trustees on April 13, 2021.

The property is located immediately east of the Brothers Four subdivision, bounded on the north by Kiowa Street, on the south by Bennett Avenue and on the east by the Custer Street alignment.

The applicant has applied for rezoning of the property to R-2 – Mid-Density Residential District because the prospective homebuilder wants to build two-story houses. The current MH – Mobile Home District has a maximum building height for the principal structure of twenty (20) feet, which will accommodate a single-story mobile home; but, will not accommodate a two-story single-family detached house. The R-2 District has a maximum height limitation for the principal structure of thirty-five (35) feet, which will accommodate a two-story house.

The table below summarizes the zoning of the immediately adjacent properties.

Direction	Adjacent Zone District	Land Use
North	C – General Commercial	Commercial and Residential
East	C – General Commercial	Vacant
South	PD – Planned Development	Residential, Bennett Crossing (LGI)
West	R-1 – Low Density Residential	Brothers Four Neighborhood

In the proposed R-2 zone district, the following land uses are Permitted Uses as "uses-by-right." Uses-by-right do not require further review and approval by the Board of Trustees.

1. Elementary and secondary education school
2. Religious institutions
3. Group home for elderly, developmentally disabled or mentally ill persons
4. Home occupations
5. Manufactured homes
6. Single-family dwelling
7. Public utilities, minor
8. Eligible telecommunications facilities request

There are several other land uses allowed as Conditional Uses requiring additional Board of Trustees approval, including but not limited to day care centers, parks, recreation centers, fire or police stations and bed and breakfast establishments. For a full list of Permitted and Conditional Uses, are listed in the table below:

The table below summarizes the lot and building standards for the existing MH District and the proposed R-2 District.

Lot and Building Standards – Comparing the MH District to R-2 District		
	MH	R-2
Minimum Lot Area	3,250 sq. ft.	3,500 sq. ft.
Minimum Lot Width	40 feet	25 feet
Maximum Lot Coverage	75%	70%
Maximum Height (Principal Structure)	20 feet	35 feet

Note the minimum lot size in the R-2 District is 250 square feet larger than in the MH District.

The previously approved Bennett Village Final Plat was designed to be consistent with both the existing MH District and the proposed R-2 District. All lots in the approved final plat meet the 3,500 sq. ft. minimum lot size of R-2.

Public services and utilities is consistent with a similar discussion for the previously approved Bennett Village Final Plat. The referenced attachments are the same as those in the staff report for the final plat application.

Water

Water will be provided by the Town of Bennett. See the attached Town Engineer's memorandum.

Sanitary Sewer

Sanitary sewer will be provided by the Town of Bennett. See the attached Town Engineer's memorandum.

Stormwater Management

Stormwater will be collected and conveyed in accordance with Town standards to prevent any on-site or off-site flooding. See the attached Town Engineer's memorandum.

Access, Traffic and Streets

Local access is provided by Bennett Avenue and Kiowa Street, as well as a network of interior streets. Alleys will serve rear lot garages. All streets will be built to Town standards. The final plat dedicated right-of-way for all public streets to be constructed at the developer's expense. Rezoning from MH to R-2 will not result in an increase in traffic on local streets. See the attached Traffic Impact Study.

Fire and Rescue

All streets, turn-a-rounds, fire hydrants and water pressure must meet the Bennett-Watkins Fire and Rescue design standards. The development is subject to further hydrant location design review by the Fire District, which must occur prior to issuance of building permits. See the attached Bennett-Watkins Fire and Rescue response.

Gas, Electricity and Telecommunications

Natural gas is available from Colorado Natural Gas, electricity from IREA and telecommunications from Eastern Slope Technologies (ESRTA) or Comcast. Appropriate easements for these providers were identified on the final plat.

The criteria for reviewing a rezoning proposal come from two different sections of the code, both of which refer to the Town's Comprehensive Plan.

Sec. 16-1-90. - Conformity with Comprehensive Plan.

"All applications for development approval, including, but not limited to, site plans, conditional use permits and subdivision plats, shall be evaluated in relation to its conformance with the policies and embodied within the Comprehensive Plan and all applicable special area plans or master plans. "

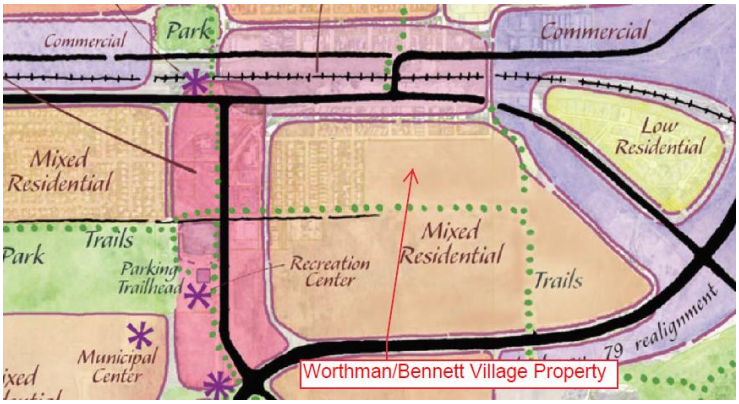
Sec. 16-2-360. - Rezoning.

"The Board of Trustees has determined that the Zoning Map should not be amended (rezoning of property approved) unless the rezoning is consistent with the goals and policies of the Comprehensive Plan and promotes the general welfare of the community. If a proposed rezoning is inconsistent with the Comprehensive Plan, 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, in the Town in general or that the rezoning is necessary to correct a manifest error in the existing zone classification."

Staff finds the proposed rezoning is consistent with, or will promote, the goals and policies of the Town of Bennett 2015 Comprehensive Plan as required by Sections 16-1-90 and 16-2-360 of the Municipal Code, including the following:

1. Proposal Conforms with the Comprehensive Plan Map Recommendation

The illustration below is an excerpt from the 2015 Comprehensive Plan. The subject property is within an area designated in the Town Centre Land Use Concept area as Mixed Residential. See the full copy of the Town Center concept attached.



Per the Comprehensive Plan: *"Mixed Residential neighborhoods will contain a variety of housing types, combined with non-residential secondary land uses that are complementary and supportive. These areas should meet a wide variety of every-day living needs, encourage walking to gathering places and services, and integrate into the larger community. Other supporting land uses, such as parks and recreation areas, religious institutions, and schools may be included in Mixed Residential areas."*

Staff Finding: The proposed rezoning is consistent with the Mixed Residential designation for the subject property.

1. <u>Proposal Conforms with Comprehensive Plan Principles</u>

Below is a list of the principles of the Comprehensive Plan that apply to this application.

a. *"Develop town and neighborhood centers with mixed land use and greater land density to shorten distances between homes, workplaces, schools, shopping, places of worship, cultural facilities, and recreation and social activities;"* **(Development on this infill parcel will result in new homes within walking distance of commercial development along 1st Street and Colfax Ave., the Bennett School District campus and other land uses.)**
b. *"Ensure that affordable housing and access to healthy living is available for people of all ages and income levels;"* **(Accommodation of a variety of housing types, including alley-loaded garage neighborhoods on smaller lots, helps address affordability of housing in Bennett.)**
c. *"Offer access to open space, trails and parks to provide more opportunities for walking, biking, recreation, and contact with nature;"* **(The approved Bennett Village Final Plat includes a park site as well as sidewalks and trails, which will benefit Bennett Village and the surrounding neighborhoods.)**
d. *"Foster a distinctive, attractive community that retains our young people to support future community governance;"* **(The accompanying site plan, with the park and common landscaped areas, propose a neighborhood with attractive amenities.)**
e. "New development should be contiguous, or nearly so, to existing infrastructure and services;" **(The Bennett Village property is considered an infill parcel surrounded on three sides by existing development with public infrastructure in the immediate vicinity.)**
f. *"Provide a variety of transportation choices including bicycle trails; sidewalks; and mass transit to reduce the dependence upon automobiles; and create streets that are safe for use by automobiles, pedestrians, and bicyclists;"* **(As**

noted above, the final plat and site plan propose internal sidewalks and trails, along with vehicular connections.)

Staff Finding: The proposed rezoning complies with the 2015 Comprehensive Plan principles.

2. Proposal Conforms to the Neighborhoods Section of the Comprehensive Plan

The following is language from the discussion of neighborhoods in the 2015 Comprehensive Plan:

"There currently is not a wide variety of housing options within the planning area and an increase in housing diversity is needed to accommodate future growth. A guiding principle of this plan is to develop neighborhood centers that allow for a mix of land uses with increases in densities, which is a departure from the historic growth pattern in the corridor. Benefits of concentrated mixed use development include an efficient land use pattern that increases transportation choices, reduces energy consumption, promotes water conservation, and offers more opportunities for social interaction."

The 2015 Comprehensive Plan has a stated goal: *"To provide a diversity of housing types at various densities."*

Staff Finding: The proposed R-2 zoning, and the housing type and density that it allows, is consistent with the 2015 Comprehensive Plan.

3. Proposal Conforms with the Comprehensive Plan's Preferred Scenario

The Comprehensive Plan outlines a Preferred Scenario. The Preferred Scenario includes a series of planning tiers (Tier One through Tier Four). The Preferred Scenario envisions a healthy, sustainable community where residents can live, work, and play locally, setting Bennett and its proximity to the I-70 corridor, apart from a conventional development pattern.

Staff Finding: Bennett Village is within Tier One, being a part of the Stable Urban area, and development would be consistent with the vision of the Preferred Scenario.

1. **Staff finds the proposed rezoning is consistent with the purpose of the Bennett Land Use Code outlined in Section 16-1-50, including to:**

- Maintain and enhance a quality residential environment in the Town
- Provide a diversity of housing types at various densities
- Promote logical extensions of and efficient use of the Town's infrastructure

Notice of the Planning and Zoning Commission and Board of Trustees hearings has been posted on the property consistent with the municipal code. All property owners within 300 feet have also been notified by mail. No public comments have been submitted to date.

Based upon the above findings, staff recommends the Planning and Zoning Commission recommend to the Board of Trustees approval of Case No. 21-11 to rezone the subject property from MH – Mobile Home District to R-2 - Mid Density Residential District. See the attached draft resolution for the Commission's consideration.

APPLICANT PRESENTATION

John Cheney, Lennar representative, 9193 S. Jamaica St., Englewood, Colorado, expressed his gratitude to Town staff for their assistance.

PUBLIC COMMENTS

No comments were presented by the public.

Chairman Clark closed the public hearing on Case No. 21.11 Bennett Village (Worthman) Rezoning at 6:27 p.m.

Commissioner Metsker, stated that all zoning requirements are in compliance with Town Code Zoning and Comprehensive Plan, therefore he is in support of the rezoning application. Commissioner Metsker also reported the rezoning from MH to R2 is favorable with the desires of the neighborhood.

COMMISSIONER METSKER MOVED, COMMISSIONER LEE SECONDED to approve Resolution No. 2021-05 – A Resolution recommending approval to the Bennett Board of Trustees of the Rezoning of the Bennett Village Property, Case No. 21.11. Voting was as follows:

YES:	Metsker, Smith, Clark, Lee
NO:	None
EXCUSED:	Connor

Chair Clark declared the motion passed unanimously.

COMMISSIONER COMMENTS/REPORTS

There were no reports from the commissioners.

5. ADJOURNMENT

COMMISSIONER METSKER MOVED, COMMISSIONER SMITH SECONDED to adjourn the meeting. The Chair declared the motion carried by unanimous vote. The meeting was adjourned at 6:35 p.m.

_____
Wayne Clark, Chairman

_____
Christina Hart, Secretary

QUASI-JUDICIAL PUBLIC HEARING SCRIPT
(PLANNING COMMISSION)

CHAIR: I will now open the public hearing on the following: Proposed Changes to the Lighting Standards in the Bennett Municipal Code.

The purpose of the hearing is to provide a public forum for all interested parties who wish to comment on the proposed changes before the Commission. If you wish to speak please write your name and address on the sign-up sheet or in the chat box and you will be called on.

The Procedure for the public hearing will be as follows:

FIRST, there will be a presentation by the Town staff.

After this presentation we will allow people who signed up on the sign-up sheet or in the chat box speak for up to 3 minutes each. Please DO NOT REPEAT points made by others. It is fine to say, "I agree with the previous speaker's comments". Please direct your comments to the Commission, not Town staff.

After receiving public comments, we will allow Town staff an opportunity to respond.

NEXT, the Planning Commission members may ask questions of anyone who testified.

I will then close the public hearing and no further testimony or other evidence will be received. The Planning Commission will discuss the matter and may take some kind of action.

Public hearings are recorded for the public record. All testimony must be presented, after you give your full name and address.

CHAIR: Do we have proper notification?

[Town Clerk to confirm on record notice has been provided]

Do any Commission members have any disclosures?

[Commissioners to disclose conflicts of interests, ex parte contacts, etc.]

Mr. Hebert and Ms. Houlberg, please provide your staff report.

[Staff presentation]

Do any of the Commissioners have questions of Town staff?

[Question and Answer]

CHAIR: I will now open the public comment portion of the public hearing. For those wishing to speak, please clearly state your name and address for the record.

Has anyone signed up to speak at this public hearing?

[If more than one person has signed in, call them in order.]

Is there any interested party in the audience that has not signed up but who wishes to speak regarding the application?

[Additional public comment]

If there is no more public comment, I will now close the public comment portion of the public hearing.

CHAIR: Does Town staff wish to respond to any of the comments?

[Opportunity for applicant to provide any rebuttal evidence]

CHAIR: Before we turn to Commissioner questions and deliberation, I want to state that the documents included within the record for this public hearing include all materials submitted by Town staff; all materials included in the Planning Commission packets; any PowerPoint or other presentations given tonight; all written referral and public comments received regarding the application; the public comment sign-up sheet; the public posting log and photographs of the notice, and the Town's subdivision and zoning ordinances and other applicable regulations. Does anyone have any objection to inclusion of these items in the record?

CHAIR: I will now close the public hearing and the Planning Commission members will deliberate on the evidence presented. During deliberations, Commission members may ask questions of Town staff, but no further public comment or other testimony or evidence will be received.

Who would like to begin?
Who is next?
Any other questions or comments

[If anyone believes the applicable criteria have not been met, then please explain why so we have those reasons for the record.]

CHAIR: We have a draft Resolution in front of us and I would entertain a motion.

We have a motion on the floor by Commissioner _____ and a second by Commissioner_____to approve Planning and Zoning Commission Resolution No. 2021-06.

May we have a Roll-Call vote?

Motion carries/fails.

STAFF REPORT

TO: Planning and Zoning Commission

FROM: Steve Hebert, Planning and Economic Development Manager

Taeler Houlberg, Assistant to the Town Administrator

DATE: June 21, 2021

SUBJECT: Proposed Changes to the Lighting Standards in the Bennett Municipal Code

Background

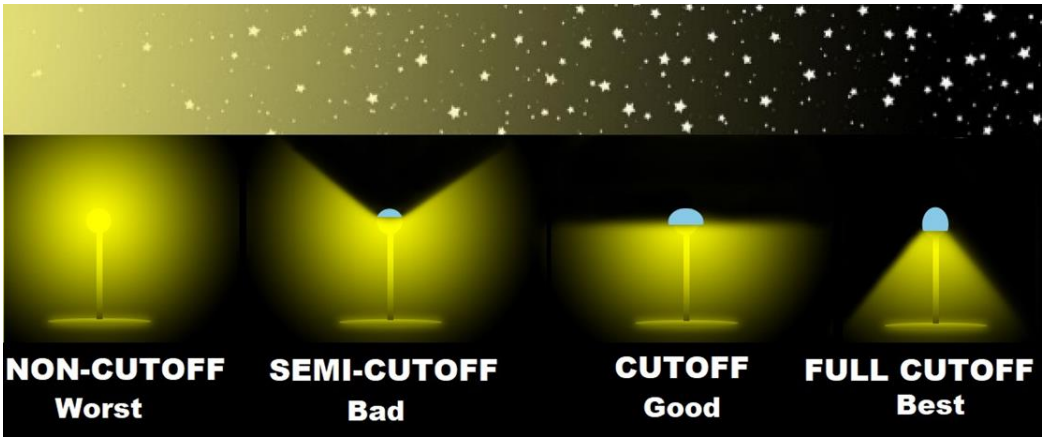
Trustee Pulliam presented to staff several proposed changes to the lighting standards in Chapter 16, Division 8 of the Bennett Municipal Code. Staff presented the proposed changes to the Town Board of Trustees in a study session in January 2020 and again in December 2020. During the second study session, the Board indicated general support of the changes as long as certain fixture installations were exempt and staff solicited input from the community. That exemption and community input are described later in this report.

The purpose of the Town's lighting standards is to:

1. Provide adequate lighting for safety and security;
2. Reduce light pollution, light trespass, glare, sky glow impacts and offensive light sources;
3. Prevent inappropriately aimed or poorly designed or installed exterior lighting;
4. Encourage quality lighting design, light fixture shielding, uniform light intensities and lighting controls; and
5. Promote efficient and cost-effective lighting to conserve energy.

The primary approach to reducing light pollution, light trespass and offensive lighting is to use full cut-off fixtures that conceal the light source, so it is not visible from adjacent properties and public rights-of-way (streets).

The image below illustrates the concept of cut-off fixtures. Also, see the PowerPoint presentation for more illustrations:



The current lighting standards were adopted in 2014. For various reasons, including the complexity of measuring the brightness (lumens) of light sources, the lack of public education and outreach, and the number of lights in our residential, commercial and industrial neighborhoods, enforcement has not been effective. Staff conducted a windshield survey, driving Bennett neighborhoods in late November, and found 342 homes with non-compliant light fixtures. Many have motion-detector security lights with an unshielded light source. Given the limited scope of the survey, there are likely many more non-compliant fixtures.

Summary of Proposed Changes

Cut-off Fixtures and Single-Family Home Exemptions

The current code requires all exterior lights greater than 900 lumens (approximately 70 watts) to be shielded from view from adjacent properties and public rights-of-way. The code requires a full cut-off fixture to prevent the direct view of the light source, i.e., the bulb. A full cut-off fixture is designed so that light is aimed downward and the direct light source is shielded from view. (See examples attached to this staff report.)

For single-family detached dwellings, the code currently exempts light fixtures of sixty (60) watts or less from the full cut-off requirement; however, these fixtures must have a translucent or frosted lens. Clear unfrosted bulbs within clear fixtures are prohibited.

The proposed amendments would eliminate the 900 lumens threshold noted above and eliminate the exemption for a single-family home light fixture of 60 watts or less. The effect would require almost all light fixtures in residential and commercial areas to use full cut-off fixtures. The reference to translucent or frosted lenses would be eliminated because they would no longer be necessary.

A provision has been included in the proposed lighting standards that states that a replacement of an existing fixture to meet compliance is only required if an electrical permit is also required for the project or installation. If an electrical permit is not required, then the fixture does not have to conform to the provisions of the code. This was added based on the recommendation from the Board.

Exemption for Ornamental Lighting

The current code exempts ornamental landscape lighting fixtures that do not exceed fifteen (15) watts from the lighting standards. The proposed amendment would eliminate this exemption and require all ornamental landscape lighting to use the full cut-off fixture. Holiday lights are currently exempt on residential and non-residential properties. No change is proposed for holiday lights. All exterior lighting, except for holiday lights, aviation lighting and public safety lighting, would be subject to the Town's lighting standards.

Miscellaneous Clean-up Amendments

Several proposed updates clean-up the language to make it internally consistent if the ordinance is amended.

Public Input

The proposed updates to the lighting standards were presented to the public at Engage.Shape.Build. on Wednesday, May 19, 2021, and were well-received by those in attendance.

Staff Review

By removing the exemption for single-family residential lighting and requiring all light fixtures, regardless of brightness, to be full cut-off fixtures, light pollution will be reduced.

Also, the requirement for full cut-off fixtures, regardless of the lumens of the light source, would make enforcement easier. No longer will interpretation of the code depend on the brightness of the light source. A visual inspection will be simplified. If the light source is directly visible, it will be considered non-compliant.

The added provision, of only requiring a new light fixture to be a full cut-off fixture if an electrical permit is required for the installation, also alleviates the concerns associated with financially burdening residents if the proposed amendments to Chapter 16 are approved.

Staff Recommendation

Staff recommends that the Planning and Zoning Commission approve Resolution 2021-06, a resolution recommending approval of an ordinance amending Chapter 16 of the Bennett Municipal Code regarding lighting standards.

Attachments

1. Track Changes Version of Proposed Amendments
2. Proposed Ordinance No. 728-21
3. Proposed Resolution No. 2021-06

Proposed Changes to Lighting Standards

Town of Bennett
Planning and Zoning Commission

June 21, 2021

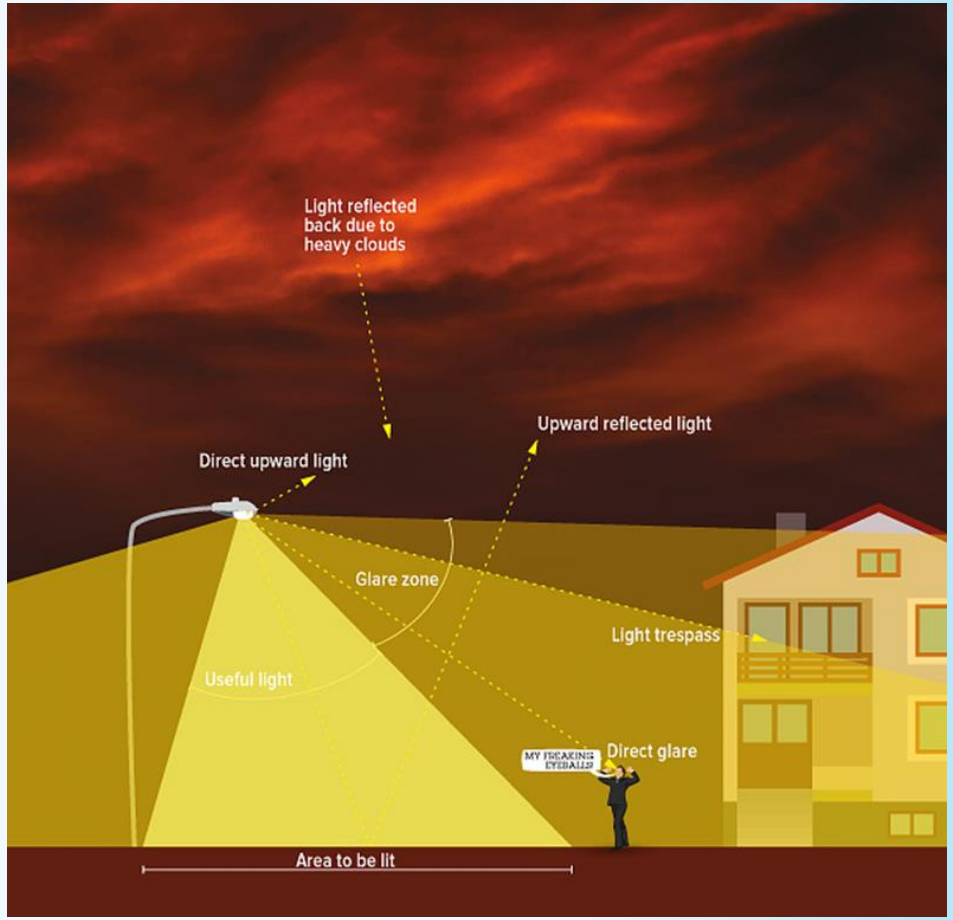
Steve Hebert, Planning & Economic Development Manager
Taeler Houlberg, Assistant to the Town Administrator

Purpose of the Lighting Standards in the Municipal Code

(Chapter 16, Division 8)

1. Provide adequate lighting for safety and security;
2. Reduce light pollution, light trespass, glare, sky glow impacts and offensive light sources;
3. Prevent inappropriately aimed or poorly designed or installed exterior lighting;
4. Encourage quality lighting design, light fixture shielding, uniform light intensities and lighting controls; and
5. Promote efficient and cost-effective lighting to conserve energy.

Concept of Light Trespass – Only Light Where Needed



Concept of Light Trespass – Only Light Where Needed

Key Provisions of Current Standards

1. Prohibit blinking, pulsating, flashing, changing intensity, strobe, beacon and laser lights
2. The illumination from an exterior lamp that emits more than nine hundred (900) lumens shall be a full cut-off fixture and fully shielded from view from adjacent properties and public rights-of-way
3. For single-family detached residences, full cut-off fixtures are not required if 60 watts or less, but, they must have a frosted or translucent cover
4. Ornamental landscape lighting exempt from cut-off fixture if 15 watts or less

Measuring the Brightness of Lights

Lumens Comparison Chart

MORE LUMENS = MORE LIGHT
MORE WATTS = MORE ENERGY USED

Refer to wattage of a common incandescent bulb to find desired lumens.

Lumens		Incandescent Watts	Halogen Watts	CFL Watts	LED Watts
240	=	25	19	9	5
450	=	40	30	12	8
800	=	60	44	17	12
1100	=	75	53	21	15
1600	=	100	70	27	20
2000	=	125	87	33	25
2600	=	150	102	39	30
EST ENERGY SAVED		0%	20%	60%	80%

The lumens, wattage and energy savings is estimated. Actual output will vary by product.

BELLACOR.

Examples of Full Cut-off Fixtures

Residential

Commercial/Public

Proposed Amendments to the Town of Bennett Lighting Standards

Exemption for Minor Fixture Replacement

Sec. 16-2-810. – Purpose and applicability.

(4) Existing lighting systems. All existing, legally installed and operative nonconforming lighting systems may be continued;~~, but if~~ provided, however, that compliance with the requirements of this Division is required when a luminaire~~, lamp~~ or any other lighting equipment or part of a lighting system is replaced and an electrical permit is required for such replacement. ~~is removed, it shall only be replaced in a manner that complies with the requirements of this Division.~~

Eliminate Exemption for Ornamental Lighting

Exemptions. The standards of this Division shall not apply to the following types of exterior lighting:

a. ~~Ornamental lighting: Ornamental landscape lighting where the maximum wattage of any single light fixture does not exceed the equivalent of fifteen-watt incandescent or one hundred (100) lumens and is not used from 12:00 a.m. to dusk.~~

Require Shielding Regardless of Lumens

Sec. 16-2-840. - Design standards.

(2) Shielding requirements: The illumination from an exterior lamp ~~that emits more than nine hundred (900) lumens[B1~~] shall be a full cut-off fixture and fully shielded from view from adjacent properties and public rights-of-way, except as otherwise permitted herein. Fixtures shall meet the definitions for fully shielded and full cut-off as defined in Division 2 of this Article.

Note: 900 lumens = 60 watts incandescent, 15 watts fluorescent/LED

Delete Light Source Requirements

~~Light source requirements: All exterior light fixtures should utilize one (1) of the following bulb types: metal halide, compact fluorescent, incandescent (including tungsten-halogen), high pressure sodium or LED. Alternative bulb types may be approved by the Zoning Administrator in accordance with Section 16-2-880.~~

Eliminate Reference to Metal Halide for Flag Poles

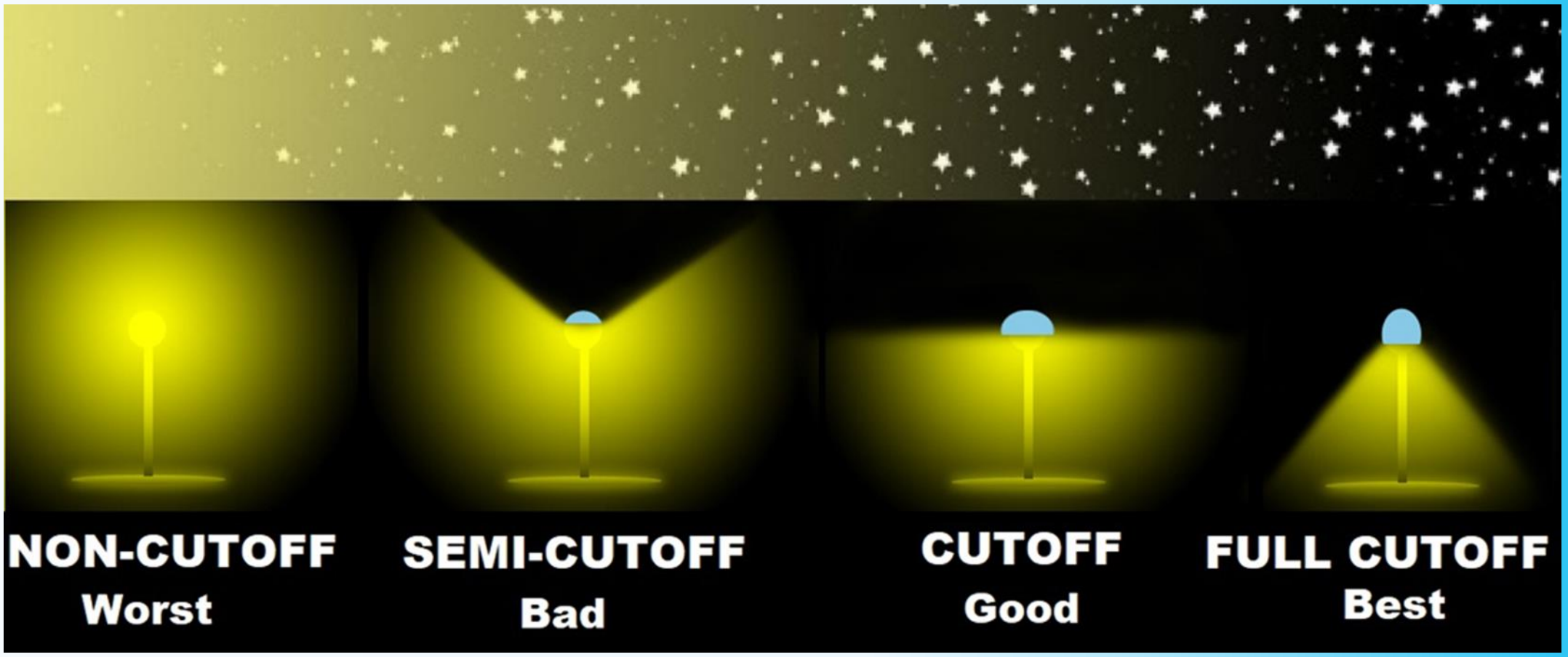
Flag poles: A flag may be illuminated by one (1) upward or downward aimed and shielded spotlight light fixture which shall not exceed 1000 lumens. ~~forty-watt metal halide or its equivalent.~~ Flag pole lighting is exempt from the curfew limitations set forth in Section 16-2-850. The light source from the fixture, whether aimed upward or downward, must be shielded such that it is not visible from adjacent properties.

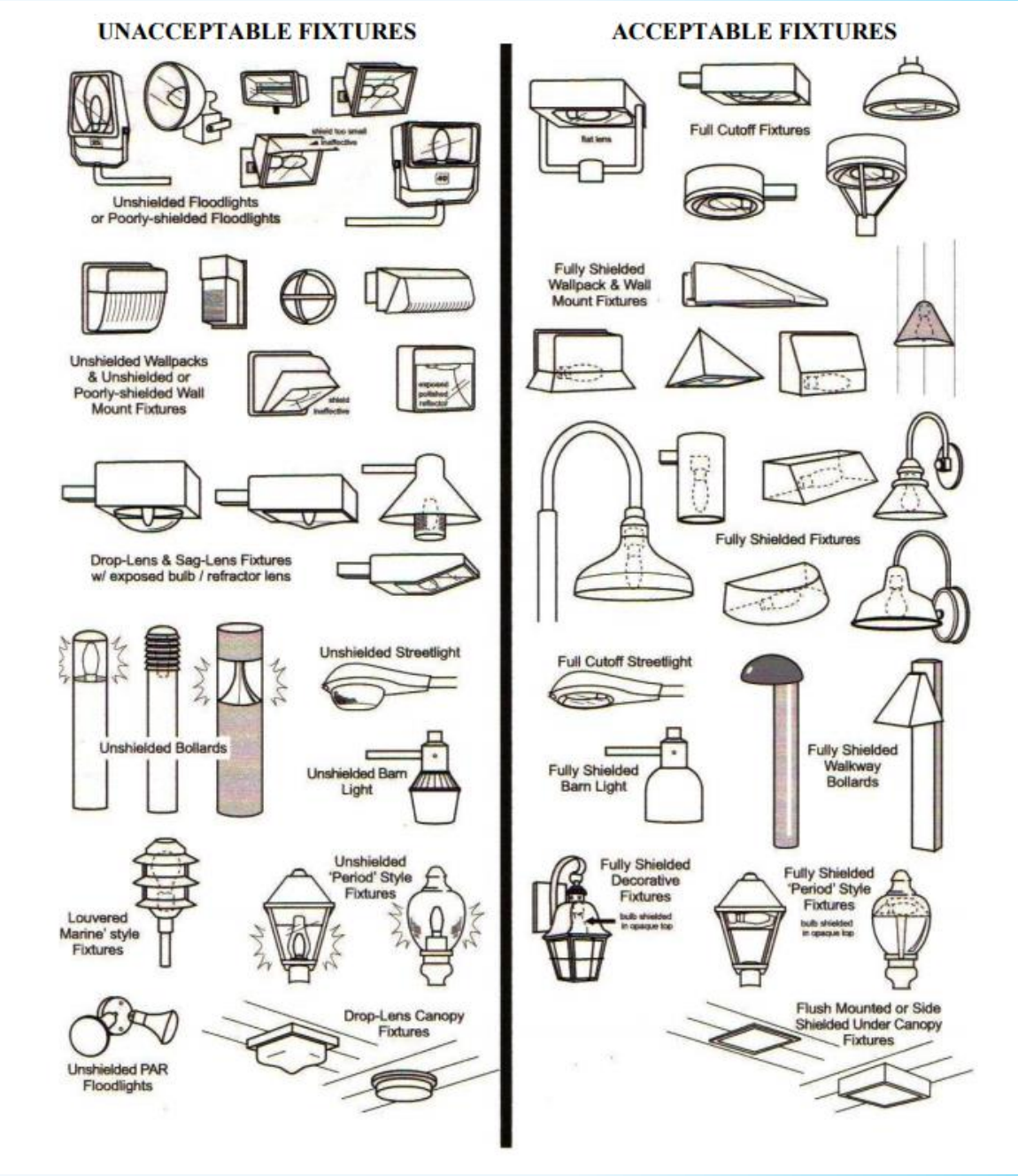
Amend Requirements for Single-family Detached Dwellings

Single-family detached dwellings:

a. ~~Unless the total fixture wattage is sixty (60) watts or less,~~ full cut-off fixtures must be utilized for exterior lighting of single-family detached dwellings in order to direct light emissions down onto the site and not shine direct illumination or glare onto adjacent properties. ~~In order to reduce glare, fixtures at sixty (60) watts or less must be made of translucent materials or have a translucent or frosted lens to reduce glare. Clear unfrosted bulbs within clear fixtures are prohibited. For lighting technology that includes LED, light source emission shall meet the equivalent of a sixty-watt incandescent bulb~~ .

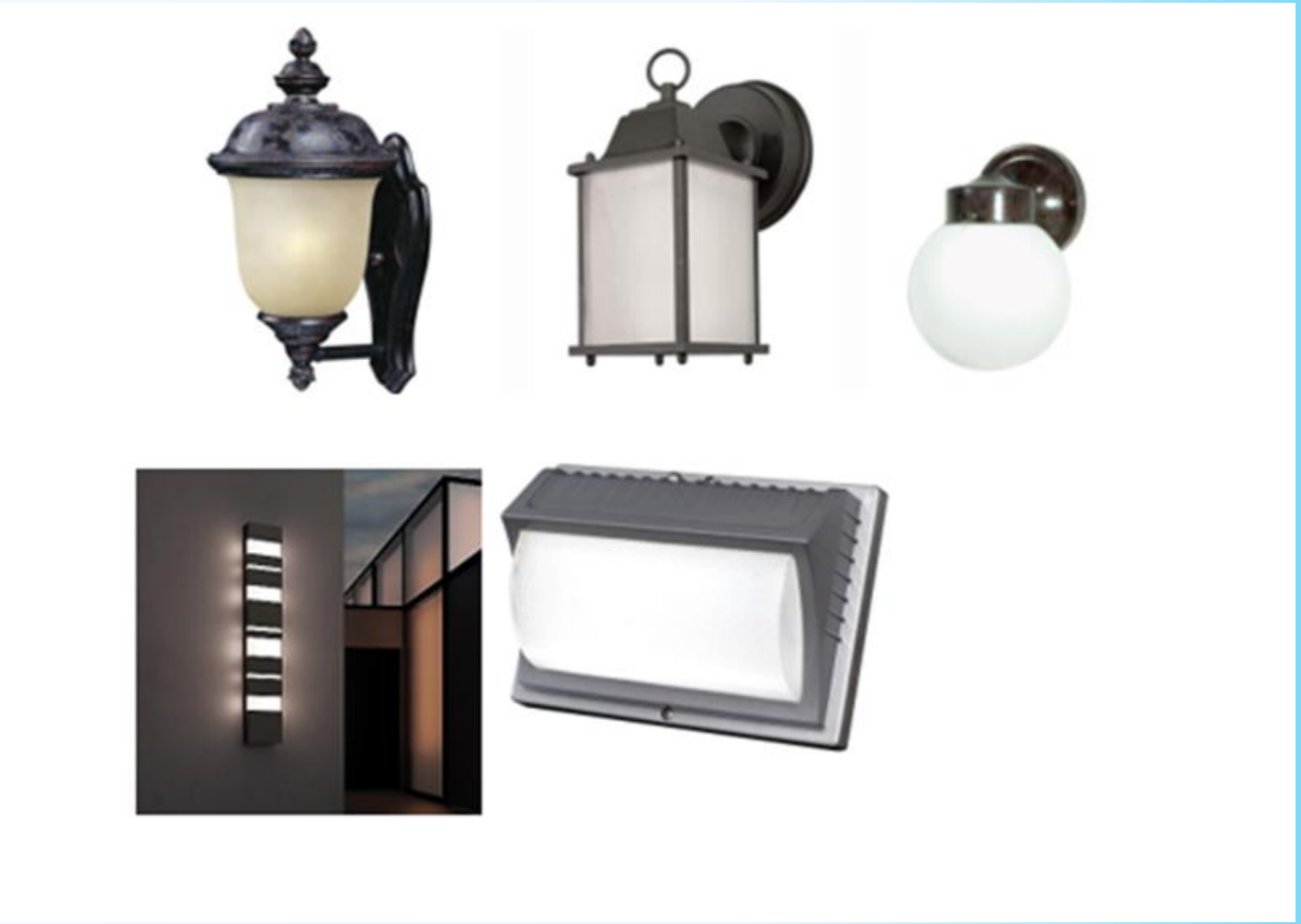
Cut-off Fixture Comparisons




UNACCEPTABLE FIXTURES
Unshielded Floodlights
or Poorly-shielded Floodlights
Unshielded Wallpacks
& Unshielded or
Poorly-shielded Wall
Mount Fixtures
Drop-Lens & Sag-Lens Fixtures
w/ exposed bulb / refractor lens
Unshielded Streetlight
Unshielded Bollards
Unshielded Barn
Light
Louvered
Marine' style
Fixtures
Unshielded
'Period' Style
Fixtures
Drop-Lens Canopy
Fixtures
Unshielded PAR
Floodlights
ACCEPTABLE FIXTURES
Full Cutoff Fixtures
Fully Shielded
Wallpack & Wall
Mount Fixtures
Fully Shielded Fixtures
Full Cutoff Streetlight
Fully Shielded
Barn Light
Fully Shielded
Walkway
Bollards
Fully Shielded
Decorative
Fixtures
Fully Shielded
'Period' Style
Fixtures
Flush Mounted or Side
Shielded Under Canopy
Fixtures

Fixtures Not Permitted Under Current Code

Currently Permitted if 60 Watts or Less



Full Cut-off Fixtures

Examples of Cut-off Fixtures for Landscaping/Ornamental

Commercial and Public Applications

Benefits of Proposed Amendments

- Light pollution will be reduced over time
- Determining compliance would be more straightforward (every fixture must be a full cut-off fixture)
- Exemption for minor fixture replacement alleviates financial burden for residents associated with replacing current fixture.
- Public Input
  - Presented at Engage.Shape.Build. on Wednesday, May 19, 2021
  - Suggested updates to lighting standards were well-received

Questions, Comments and Discussion

Division 8 - Lighting Standards

Sec. 16-2-810. - Purpose and applicability.

(a) Purpose. The purpose of these lighting standards is to:

(1) Provide adequate lighting for safety and security;

(2) Reduce light pollution, light trespass, glare, sky glow impacts and offensive light sources;

(3) Prevent inappropriately aimed or poorly designed or installed exterior lighting;

(4) Encourage quality lighting design, light fixture shielding, uniform light intensities and lighting controls; and

(5) Promote efficient and cost-effective lighting to conserve energy.

(b) Applicability. The lighting standards contained herein shall apply to all exterior lighting, including illumination from outdoor signs, and any interior lighting from buildings or structures that affect the outdoor environment, unless otherwise exempted herein. The following uses shall conform to the requirements of this Division:

(1) New development. All new development that requires Town approval of a site plan or planned development plan shall conform to the lighting standards set forth in this Division and shall submit a lighting plan in accordance with Section 16-2-830.

(2) New construction or remodeling. All new construction for which a building permit is required and any remodeling of an existing building or structure for which a building permit is required shall conform to the lighting standards set forth in this Division; provided, however, that compliance with the requirements of this Division is required for a remodel of an existing building or structure only with respect to the remodeled portion of the existing building or structure. The requirements of this Division shall be met prior to a final inspection for any building permit.

(3) New lighting. All new exterior lighting and interior lighting from buildings or structures that affect the outdoor environment shall conform to the lighting standards set forth in this Division.

(4) Existing lighting systems. All existing, legally installed and operative nonconforming lighting systems may be continued, but if a luminaire, lamp or any other lighting equipment or part of a lighting system is removed, it shall only be replaced in a manner that complies with the requirements of this Division.

(6) Exemptions. The standards of this Division shall not apply to the following types of exterior lighting:

a. ~~Ornamental lighting: Ornamental landscape lighting where the maximum wattage of any single light fixture does not exceed the equivalent of fifteen-watt incandescent or one hundred (100) lumens and is not used from 12:00 a.m. to dusk.~~

b. Holiday lights: Holiday lights on residential and nonresidential properties.

c. Aviation lighting: Lighting used exclusively for aviation purposes. All heliport lighting shall be turned off when the heliport is not in use.

d. Public safety lighting. Lighting required for public safety which includes: lighting within the right-of-way; emergency repairs within the right-of-way; and lighting installed by a governmental entity for the purposes of health, safety and welfare.

(Ord. 646-14 §1(Exh. A), 12-9-2014)

Sec. 16-2-820. - Prohibited lighting.

Search, blinking, pulsating, flashing, changing intensity, strobe, beacon and laser lights are all prohibited from use.

(Ord. 646-14 §1(Exh. A), 12-9-2014)

Sec. 16-2-830. - Lighting plan.

When a lighting plan is required as part of a site plan or final development plan, an applicant shall comply with submittal requirements for those plans as set forth in the Applicant Guide. When an application is not part of a formal subdivision or zoning application and is being processed through the site plan process, the applicant must submit a light plan that complies with the requirements set forth in the Applicant Guide. If the Zoning Administrator determines that the proposed lighting plan does not comply with this Section, the plan shall not be approved and the building permit shall not be issued.

(Ord. 646-14 §1(Exh. A), 12-9-2014)

Sec. 16-2-840. - Design standards.

Lighting shall meet the following design standards:

(1) Lighting zones: Pursuant to Section 16-2-860, all zoning districts within the Town are placed within one (1) of two (2) lighting zones. Lighting within the lighting zones shall comply with the allowable light levels, light trespass levels, light pole heights and curfew requirements set forth in Table 2-16.

(2) Shielding requirements: The illumination from an exterior lamp ~~that emits more than nine hundred (900) lumens~~ shall be a full cut-off fixture and fully shielded from view from adjacent properties and public rights-of-way, except as otherwise permitted herein. Fixtures shall meet the definitions for fully shielded and full cut-off as defined in Division 2 of this Article.

Commented [B1]: Strike – There are plenty of full-cut-off choices available.

(3) Side shields: Any exterior light fixture located within fifteen (15) feet of a property line of a residential zoning district or an existing residential use or within ten (10) feet of a public right-of-way shall provide side shields on the sides facing the property line, residential use, or public right-of-way, as applicable.

(4) ~~Light source requirements: All exterior light fixtures should utilize one (1) of the following bulb types: metal halide, compact fluorescent, incandescent (including tungsten-halogen), high pressure sodium or LED. Alternative bulb types may be approved by the Zoning Administrator in accordance with Section 16-2-880.~~

Commented [B2]: What is the purpose of this section? This doesn't limit high power consumption technologies.

(5) Light from buildings: The luminance levels at building entrances and windows may exceed the maximum allowed (see Table 2-16) by one hundred percent (100%) of the site lighting to a distance of five (5) feet from the building in order to accommodate light spillage from within the building and light from window signage (example: a convenience store).

(6) Illuminating signs: In addition to compliance with Article III of this Chapter, all signs shall comply with the following lighting standards:

a. Internally illuminated signs:

i. Luminous intensity shall be limited to a maximum of 0.3 foot candles between dusk to dawn as measured from the sign's face.

b. Externally illuminated signs:

i. All light must be aimed directly onto the sign. No sign shall be illuminated with fixtures that provide unshielded upward transmission of light.

ii. The total initial horizontal luminance level from external light sources shining on a sign shall not exceed eighty (80) lumens per square foot of sign face.

(7) Canopy lighting: Lighting fixtures mounted on canopies are permitted in non-residential zoning districts only and shall be installed such that the bottom of the light fixture or its lens, whichever is lower, is recessed or mounted flush with the bottom surface of the canopy and parallel to the ground. Full cut-off light fixtures with side shields may project below the underside of a canopy. All light emitted by an under-canopy fixture shall be substantially confined to the ground surface directly beneath the perimeter of the canopy.

(8) Flag poles: A flag may be illuminated by one (1) upward *or downward* aimed and shielded spotlight light fixture which shall not exceed *1000 lumens.* ~~forty-watt metal halide or its equivalent~~. Flag pole lighting is exempt from the curfew limitations set forth in Section 16-2-850. *The light source from the fixture, whether aimed upward or downward, must be shielded such that it is not visible from adjacent properties.*

(9) Motion sensors: Motion sensor activations shall be permitted so long as the sensor is triggered by motion within the owner's property lines. The Zoning Administrator may grant exceptions to this requirement pursuant to Section 16-2-880.

(10) Architectural and landscape lighting: All light must be aimed directly onto the surface intended to receive the light source. All light fixtures shall be shielded and any uplighting on buildings may be permitted provided that no luminance escapes the facade. Building facades may be illuminated with a maximum *of 8 lumens per square foot of the area intended to receive the light source.* ~~forty-watt lamp~~.

(11) Recreational facilities: The maximum initial horizontal illumination for recreational facilities shall be the lesser of fifty (50) f.c. or the IESNA standards for the specific recreational facility. Lighting for parking lots and pedestrian areas shall be a maximum of five (5) f.c. All exterior lights shall be extinguished by 10:00 p.m. or immediately after the conclusion of the final event of the day. Lighting for security shall comply with Table 2-16.

(12) Single-family detached dwellings:

a. ~~Unless the total fixture wattage is sixty (60) watts or less,~~ full cut-off fixtures must be utilized for exterior lighting of single-family detached dwellings in order to direct light emissions down onto the site and not shine direct illumination or glare onto adjacent properties. ~~In order to reduce glare, fixtures at sixty (60) watts or less must be made of translucent materials or have a translucent or frosted lens to reduce glare. Clear unfrosted bulbs within clear fixtures are prohibited. For lighting technology that includes LED, light source emission shall meet the equivalent of a sixty-watt incandescent bulb~~.

b. The curfew requirements set forth in Section 16-2-850 do not apply to single-family detached dwellings.

(13) Right-of-way lighting: Lighting located within the public right-of-way shall comply with the definition of full cut-off as defined in Division 2 of this Article.

(14) Design Requirements. The style, color and design of the fixtures shall be compatible with the overall design concept and use of materials for the building, site and area of the lighting plan. Individual sites or projects shall use a consistent lamp source for uniformity in light color and intensity.

(Ord. 646-14 §1(Exh. A), 12-9-2014)

Sec. 16-2-850. - Hours of operation.

All nonresidential light fixtures shall be subject to the following curfew: all exterior lighting fixtures, except the minimum necessary for security, shall be extinguished by 10:00 p.m. or within one (1) hour after the close of the facility, whichever is later, and remain extinguished until dawn, or one (1) hour prior

Commented [B3]: Makes this compliant with section above.

Commented [B4]: Simplifies and clarifies

to the commencement of business, whichever is earlier. Lights during pre- and post-curfew hours shall be operated as follows:

(1) Pre-curfew: Pre-curfew light levels shall meet the standards set forth in this Division.

(2) Post-curfew: Post-curfew light levels necessary for security shall comply with the standards set forth in Table 2-16. Motion sensors may be used for lighting fixtures not needed for constant security lighting.

(Ord. 646-14 §1(Exh. A), 12-9-2014)

Sec. 16-2-860. - Lighting zones.

Lighting Zones are designated as follows:

(1) Lighting Zone 1: Low and moderate ambient lighting. Areas where lighting might adversely affect flora and fauna or disturb the character of the area. The vision of human residents and users is adapted to low to moderate light levels. Lighting may be used for safety, security, convenience, decorative or architectural detailed as described herein.

(2) Lighting Zone 2: Moderately high ambient lighting. Areas of human activity where the vision of human residents and users is adapted to moderately high light levels. Lighting is generally desired for safety, security or convenience and it is often uniform or continuous.

(3) Table 2-16 specifies the zoning districts within, and applicable to, each Lighting Zone:

Table 2.16
Lighting Zone Criteria

Standard	**Lighting Zone 1** Agricultural (A), Single-Family Residential (R-1), Two-Family Residential (R-2), Multi-Family Residential R-3) and Mobile Home District (MH, Public (P) and all applicable residential PDs	**Lighting Zone 2** Commercial (C), Employment Center (EC), Industrial (I) and applicable PDs
Maximum illumination	5 f.c. building entries and parking lots	5 f.c. building entries and parking lots; 20 f.c. under canopies for uses such as fueling stations
Maximum light level at the property line	0.5 f.c.	0.5 f.c.
Post-curfew	Entry lights may be left on. Parking lots with more than two (2) poles and pedestrian circulation lighting shall be reduced to security levels.*	Entry lights may be left on. Parking lots with more than two (2) poles and pedestrian circulation lighting shall be reduced to security levels.*

Maximum pole height	25 feet in parking lots; 12 feet for all sidewalks and pedestrian circulation routes	35 feet in parking lots; 12 feet for all sidewalks and pedestrian circulation routes

* Security levels shall mean one (1) or more of the following techniques: (a) fifty percent (50%) reduction in lighting equipment; (b) motion sensors for lighting fixtures not needed for constant security lighting; or (c) site specific lighting such as lighting a trash dumpster, pay phone, or employee entrance.

(Ord. 646-14 §1(Exh. A), 12-9-2014)

Sec. 16-2-870. - Installation and maintenance.

Light fixtures shall be installed and maintained in a manner consistent with the lighting plan approved by the Town. The property owners and occupants shall be jointly responsible for the proper maintenance of the lighting fixtures and equipment on their property. Landscaping improvements shall be maintained as required by Section 16-2-780 in order eliminate conflicts between lighting fixtures and mature landscaping.

(Ord. 646-14 §1(Exh. A), 12-9-2014)

Sec. 16-2-880. - Exceptions.

(a) Criteria: The Zoning Administrator may grant an exception from the provisions of this Division if:

(1) The proposed exception is based upon a specific hardship that is unique to the site, is not self-inflicted by the property owner and is directly attributable to existing topographical or other site conditions that do not allow the applicant to satisfy the requirements of this Division; *and*

(2) The proposed exception shall at no time allow proposed light levels to exceed maximum lumen limits; and

(3) The proposed exception does not conflict with the overall intent of this Division to eliminate glare, light pollution and light trespass.

(b) Equivalent material: The Zoning Administrator may approve any alternative design, material or method, provided that it provides an approximate equivalent method of satisfying these standards and complies with IESNA recommendations.

(c) Conditions. In granting any exception pursuant to this Section, the Zoning Administrator may impose reasonable conditions to further the purpose of this Division.

(Ord. 646-14 §1(Exh. A), 12-9-2014)

ORDINANCE NO. 728-21

AN ORDINANCE AMENDING CHAPTER 16 OF THE BENNETT MUNICIPAL CODE REGARDING LIGHTING STANDARDS

WHEREAS, the Board of Trustees of the Town of Bennett (the "Town") previously adopted Chapter 16 of the Bennett Municipal Code, which regulates land use and development in the Town; and

WHEREAS, the Board is authorized to adopt lighting standards for buildings and structures within the Town pursuant to state law, including but not limited to, Part 3 of Article 23 of Title 31, C.R.S. (concerning municipal zoning powers) and Section 31-15-103, C.R.S. (concerning municipal police powers); and

WHEREAS, the Board of Trustees desires to amend Chapter 16, Article II, Division 8 of the Bennett Municipal Code regarding lighting standards; and

WHEREAS, the Bennett Planning and Zoning Commission after notice and hearing has recommended the Board of Trustees adopt the amendments set forth in this Ordinance; and

WHEREAS, the Board of Trustees has provided notice of a public hearing on this Ordinance by publication as provided by law and held a public hearing as provided in said notice.

NOW, THEREFORE, BE IT ORDAINED BY THE BOARD OF TRUSTEES OF THE TOWN OF BENNETT, COLORADO, AS FOLLOWS:

Section 1. Section 16-2-810(b) of the Bennett Municipal Code is hereby amended to read as follows (words to be added are underlined; words to be deleted are ~~stricken through~~):

Sec. 16-2-810. – Purpose and applicability.

(b) Applicability. The lighting standards contained herein shall apply to all exterior lighting, including illumination from outdoor signs, and any interior lighting from buildings or structures that affect the outdoor environment, unless otherwise exempted herein. The following uses shall conform to the requirements of this Division:

(1) New development. All new development that requires Town approval of a site plan or planned development plan shall conform to the lighting standards set forth in this Division and shall submit a lighting plan in accordance with Section 16-2-830.

(2) New construction or remodeling. All new construction for which a building permit is required and any remodeling of an existing building or structure for which a building permit is required shall conform to the lighting standards set forth in this Division; provided, however, that compliance with the requirements of this Division is required for a remodel of an existing building or structure only with respect to the remodeled portion

of the existing building or structure. The requirements of this Division shall be met prior to a final inspection for any building permit.

(3) New lighting. All new exterior lighting and interior lighting from buildings or structures that affect the outdoor environment shall conform to the lighting standards set forth in this Division.

(4) Existing lighting systems. All existing, legally installed and operative nonconforming lighting systems may be continued;~~, but if~~ provided, however, that compliance with the requirements of this Division is required when a luminaire~~, lamp~~ or any other lighting equipment or part of a lighting system is replaced and an electrical permit is required for such replacement. ~~is removed, it shall only be replaced in a manner that complies with the requirements of this Division.~~

(5) ~~(6)~~ Exemptions. The standards of this Division shall not apply to the following types of exterior lighting:

~~a. Ornamental lighting: Ornamental landscape lighting where the maximum wattage of any single light fixture does not exceed the equivalent of fifteen-watt incandescent or one hundred (100) lumens and is not used from 12:00 a.m. to dusk.~~

~~b.~~a. Holiday lights: Holiday lights on residential and nonresidential properties.

~~c.~~b. Aviation lighting: Lighting used exclusively for aviation purposes. All heliport lighting shall be turned off when the heliport is not in use.

~~d.~~c. Public safety lighting. Lighting required for public safety which includes: lighting within the right-of-way; emergency repairs within the right-of-way; and lighting installed by a governmental entity for the purposes of health, safety and welfare.

Section 2. Section 16-2-840 of the Bennett Municipal Code is hereby amended to read as follows (words to be added are underlined; words to be deleted are ~~stricken through~~):

Sec. 16-2-840. – Design Standards.

Lighting shall meet the following design standards:

(1) Lighting zones: Pursuant to Section 16-2-860, all zoning districts within the Town are placed within one (1) of two (2) lighting zones. Lighting within the lighting zones shall comply with the allowable light levels, light trespass levels, light pole heights and curfew requirements set forth in Table 2-16.

(2) Shielding requirements: The illumination from an exterior lamp ~~that emits more than nine hundred (900) lumens~~ shall be a full cut-off fixture and fully shielded from view from adjacent properties and public rights-of-way, except as otherwise permitted herein. Fixtures shall meet the definitions for fully shielded and full cut-off as defined in Division 2 of this Article.

(3) Side shields: Any exterior light fixture located within fifteen (15) feet of a property line of a residential zoning district or an existing residential use or within ten (10) feet of a public right-of-way shall provide side shields on the sides facing the property line, residential use, or public right-of-way, as applicable.

~~(4) Light source requirements: All exterior light fixtures should utilize one (1) of the following bulb types: metal halide, compact fluorescent, incandescent (including tungsten-halogen), high pressure sodium or LED. Alternative bulb types may be approved by the Zoning Administrator in accordance with Section 16-2-880.~~

~~(5)~~(4) Light from buildings: The luminance levels at building entrances and windows may exceed the maximum allowed (see Table 2-16) by one hundred percent (100%) of the site lighting to a distance of five (5) feet from the building in order to accommodate light spillage from within the building and light from window signage (example: a convenience store).

~~(6)~~(5) Illuminating signs: In addition to compliance with Article III of this Chapter, all signs shall comply with the following lighting standards:

a. Internally illuminated signs:

i. Luminous intensity shall be limited to a maximum of 0.3 foot candles between dusk to dawn as measured from the sign's face.

b. Externally illuminated signs:

i. All light must be aimed directly onto the sign. No sign shall be illuminated with fixtures that provide unshielded upward transmission of light.

ii. The total initial horizontal luminance level from external light sources shining on a sign shall not exceed eighty (80) lumens per square foot of sign face.

~~(7)~~(6) Canopy lighting: Lighting fixtures mounted on canopies are permitted in non-residential zoning districts only and shall be installed such that the bottom of the light fixture or its lens, whichever is lower, is recessed or mounted flush with the bottom surface of the canopy and parallel to the ground. Full cut-off light fixtures with side shields may project below the underside of a canopy. All light emitted by an under-canopy fixture shall be substantially confined to the ground surface directly beneath the perimeter of the canopy.

~~(8)~~(7) Flag poles: A flag may be illuminated by one (1) upward or downward aimed and shielded spotlight light fixture which shall not exceed 1000 lumens. ~~forty-watt metal halide or its equivalent~~. Flag pole lighting is exempt from the curfew limitations set forth in Section 16-2-850. The light source from the fixture, whether aimed upward or downward, must be shielded such that it is not visible from adjacent properties.

~~(9)~~(8) Motion sensors: Motion sensor activations shall be permitted so long as the sensor is triggered by motion within the owner's property lines. The Zoning Administrator may grant exceptions to this requirement pursuant to Section 16-2-880.

~~(10)~~(9) Architectural and landscape lighting: All light must be aimed directly onto the surface intended to receive the light source. All light fixtures shall be shielded and any uplighting on buildings may be permitted provided that no luminance escapes the facade. Building facades may be illuminated with a maximum of 8 lumens per square foot of the area intended to receive the light source. ~~forty-watt lamp~~.

~~(11)~~(10) Recreational facilities: The maximum initial horizontal illumination for recreational facilities shall be the lesser of fifty (50) f.c. or the IESNA standards for the

specific recreational facility. Lighting for parking lots and pedestrian areas shall be a maximum of five (5) f.c. All exterior lights shall be extinguished by 10:00 p.m. or immediately after the conclusion of the final event of the day. Lighting for security shall comply with Table 2-16.

~~(12)~~(11) Single-family detached dwellings:

a. ~~Unless the total fixture wattage is sixty (60) watts or less,~~ F~~f~~ull cut-off fixtures must be utilized for exterior lighting of single-family detached dwellings in order to direct light emissions down onto the site and not shine direct illumination or glare onto adjacent properties. ~~In order to reduce glare, fixtures at sixty (60) watts or less must be made of translucent materials or have a translucent or frosted lens to reduce glare. Clear unfrosted bulbs within clear fixtures are prohibited. For lighting technology that includes LED, light source emission shall meet the equivalent of a sixty-watt incandescent bulb~~.

b. The curfew requirements set forth in Section 16-2-850 do not apply to single-family detached dwellings.

~~(13)~~(12) Right-of-way lighting: Lighting located within the public right-of-way shall comply with the definition of full cut-off as defined in Division 2 of this Article.

~~(14)~~(13) Design Requirements. The style, color and design of the fixtures shall be compatible with the overall design concept and use of materials for the building, site and area of the lighting plan. Individual sites or projects shall use a consistent lamp source for uniformity in light color and intensity.

Section 3. This Ordinance and the amendments to the Bennett Municipal Code set forth herein shall take effect thirty days after publication.

Section 4. If any portion of this ordinance is held to be invalid for any reason, such decision shall not affect the validity of the remaining portions of this ordinance. The Board of Trustees hereby declares that it would have passed this ordinance and each part hereof irrespective of the fact that any one part be declared invalid.

Section 5. The repeal or modification of any provision of the Municipal Code of the Town of Bennett by this ordinance shall not release, extinguish, alter, modify, or change in whole or in part any penalty, forfeiture, or liability, either civil or criminal, which shall have been incurred under such provision, and each provision shall be treated and held as still remaining in force for the purpose of sustaining any and all proper actions, suits, proceedings, and prosecutions for the enforcement of the penalty, forfeiture, or liability, as well as for the purpose of sustaining any judgment, decree, or order which can or may be rendered, entered, or made in such actions, suits, proceedings, or prosecutions.

Section 6. All other ordinances or portions thereof inconsistent or conflicting with this ordinance or any portion hereof are hereby repealed to the extent of such inconsistency or conflict.

INTRODUCED, READ AND ADOPTED THIS 13TH DAY OF JULY 2021.

TOWN OF BENNETT, COLORADO

_____
Royce D. Pindell, Mayor

ATTEST:

_____
Christina Hart, Town Clerk

BENNETT PLANNING AND ZONING COMMISSION

RESOLUTION NO. 2021-06

A RESOLUTION OF THE BENNETT PLANNING AND ZONING COMMISSION RECOMMENDING APPROVAL OF AN ORDINANCE AMENDING CHAPTER 16 OF THE BENNETT MUNICIPAL CODE REGARDING LIGHTING STANDARDS

WHEREAS, there has been proposed a draft ordinance to amend certain provisions in Chapter 16 of the Bennett Municipal Code; and

WHEREAS, the Planning and Zoning Commission has held a duly-noticed public hearing to consider and hear public comments on the proposed amendments; and

WHEREAS, based on the recommendation of Town Staff, the testimony of the witnesses and the documents made a part of the record of the public hearing, the Planning and Zoning Commission finds that the proposed ordinance should be approved in essentially the same form as accompanies this Resolution.

NOW THEREFORE, BE IT RESOLVED BY THE PLANNING AND ZONING COMMISSION OF THE TOWN OF BENNETT, COLORADO, AS FOLLOWS:

Section 1. The Planning and Zoning Commission hereby recommends approval of the proposed ordinance amending Chapters 16 of the Bennett Municipal Code regarding lighting standards.

INTRODUCED, PASSED AND ADOPTED, THIS 21ST DAY OF JUNE 2021.

_____
Chairperson

ATTEST:

_____
Christina Hart, Secretary

Suggested Motion

I move to approve Resolution No. 2021-06 a resolution recommending approval to the Bennett Board of Trustees of an ordinance amending Chapter 16 of the Bennett Municipal Code regarding lighting standards.

STAFF REPORT

TO: Planning and Zoning Commission Members

FROM: Steve Hebert, Planning and Economic Development Manager

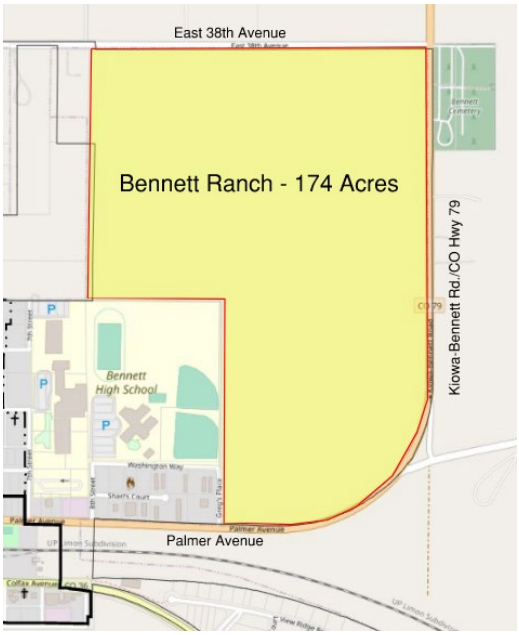
DATE: June 21, 2021

SUBJECT: Case No. 21.10 Bennett Ranch Phase 2 Single-Family Detached Sketch Plan

Background

LGI Homes, through their consultant Kimley-Horn, has submitted a sketch plan for 286 lots for single-family detached homes on 69.5 acres. The property is located immediately east of the Bennett School campus, between Palmer Avenue and East 38th Avenue, and west of Colorado Highway 79 (Kiowa-Bennett Road). The property is zoned R-2 – Mid Density Residential. As described below, the purpose of a sketch plan is to provide the subdivider (LGI Homes) with preliminary informal feedback on a conceptual lot layout.

The vicinity map below is of the entire 174-acre Bennett Ranch project.



A sketch plan for the entire 174 acres was presented to the Town in 2018 and showed several land use areas, including single-family detached, townhomes, a community park, a commercial tract and land designated for the Bennett School District, Bennett-Watkins Fire Rescue Authority and the Town of Bennett. The initial Bennett Ranch Sketch Plan is attached.

The Bennett Ranch Filing 1 Subdivision Final Plat was approved by the Board of Trustees in January 2020. The initial subdivision created 145 single-family lots, the first phase of the park site and tracts of land that have been dedicated to the Bennett School District, Bennett-Watkins Fire Rescue Authority

and the Town of Bennett. The 145 lots are considered Phase 1 of a multi-phase buildout. Construction of Phase 1 infrastructure is anticipated to begin in the summer of 2021.

Purpose of a Sketch Plan

Per Sec. 16-4-370 of the Bennett Municipal Code, "*the sketch plan is intended to provide the subdivider with preliminary informal feedback from the Town staff and the Planning Commission on format and substance. Sketch plan review assists the subdivider in understanding the Town's preliminary position on the development, prior to the effort associated with the final plat documents, and to provide the Town with an overall master plan for the proposed development.*

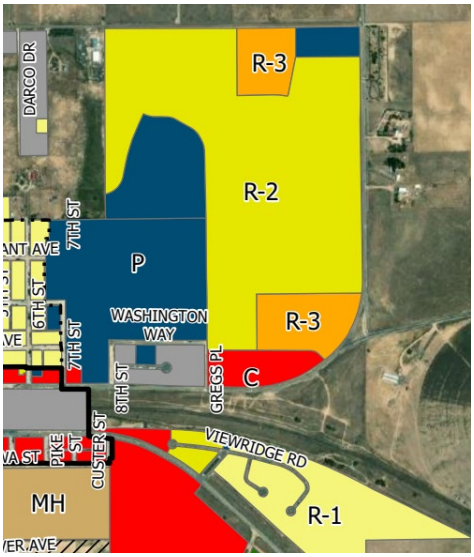
The Planning Commission shall review the sketch plan in a public meeting and provide feedback to the subdivider. The meeting is intended to be for the mutual exchange of information and development concepts. The feedback shall take the form of recommendations endorsed by a majority of the Planning Commission members present. The recommendations by the Planning Commission may include an endorsement of the sketch plan concept, suggestions for modifications to the concept, or endorsement of alternative designs and specifics necessary to accomplish the Town's goals."

Surrounding Zoning and Land Use

The table below summarizes the surrounding zoning and land use.

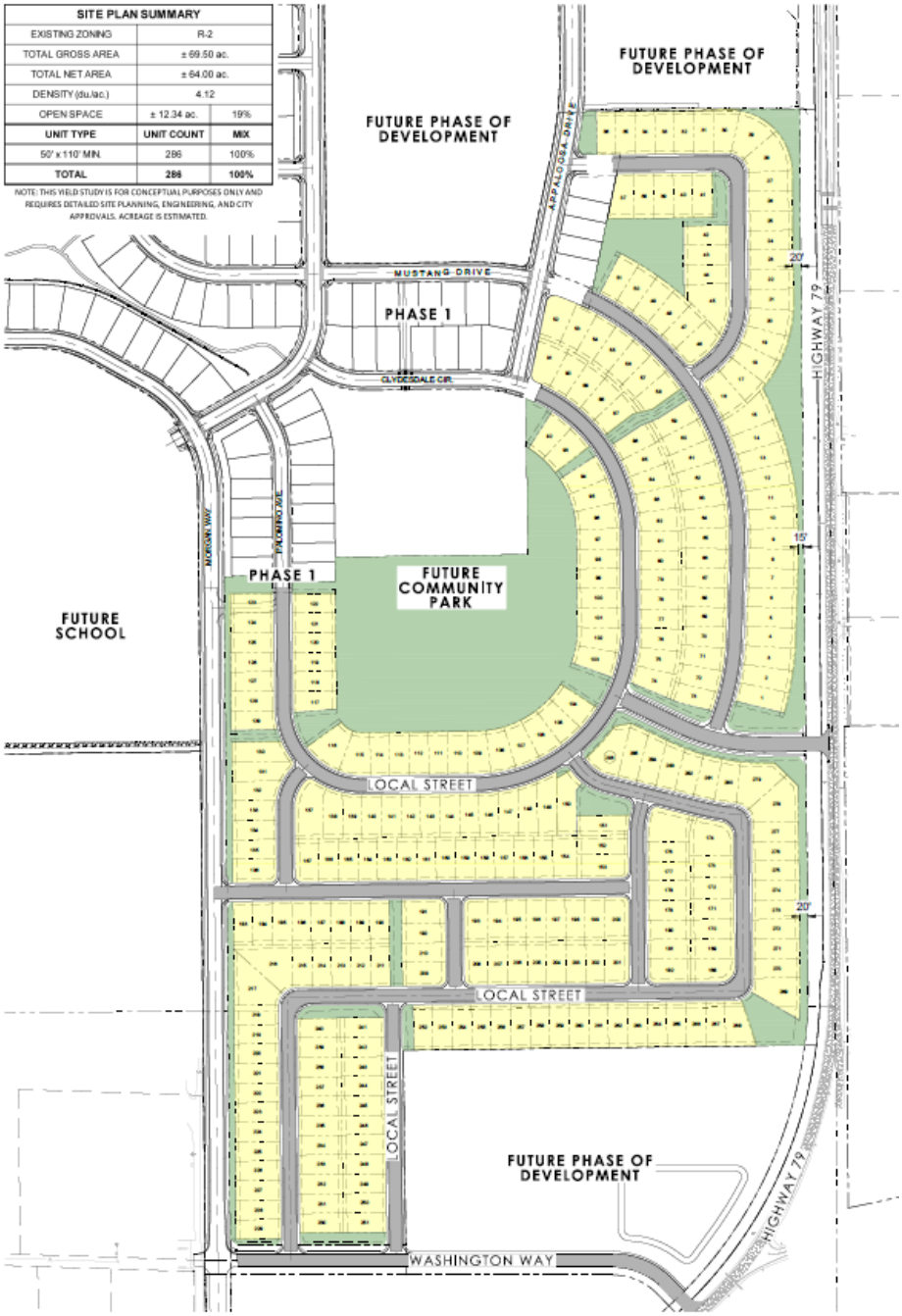
Direction	Zone District	Land Use
North	R-2 – Mid Density Residential, R-3 – High Density Residential, P - Public	Vacant
East	A -3 in Adams County	Residential, Agricultural, Cemetery
South	R- 3 – High Density Residential, C – General Commercial	Vacant
West	P - Public	School Campus

Below is a subsection of the Bennett Zoning Map showing Bennett Ranch and the surrounding area:



Proposed Sketch Plan

The Bennett Ranch Phase 2 Single-Family Detached Sketch Plan is shown below. It proposes the creation of 286 lots for single-family detached homes. The proposed street layout is consistent with the Bennett Ranch Filing 1 street network. Primary access to the subdivision will be from a new Palmer Avenue/Morgan Way intersection just south of Phase 2 as well as a new access road to and from CO Highway 79 (Kiowa-Bennett Road).



Minimum lot sizes are 5,500 square feet, consistent with the R-2 - Mid Density zoning district. The sketch plan also shows an expansion of the future community park that was created by Filing 1.

Initial Staff and Referral Agency Response

Per Sec. 16-4-370 of the Bennett Municipal Code, the Town shall use the following criteria to evaluate the applicant's sketch plan application. Initial comments and concerns are identified under each criterion.

a. The land use mix within the project conforms to the Town's Zoning District Map and furthers the goals and policies of the Comprehensive Plan.

   Staff Response: The proposed residential subdivision is consistent with the R-2 zoning and the Comprehensive Plan.

b. The sketch plan represents a functional system of land use and is consistent with the rationale and criteria set forth in Chapter 16 and the Comprehensive Plan.

   Staff Response: The sketch plan represents a functional system of land use and complements the lot layout and street network of the Bennett Ranch Phase 1 single-family subdivision.

c. The utility and transportation design is adequate, given existing and planned capacities of those systems.

   Staff Response: The Town's water supply, water distribution and sanitary sewer systems will be able to accommodate the proposed development. Adequate access is via Palmer, CO Highway 79 (Kiowa-Bennett Road) and an improved East 38th Avenue.

   Below is a brief outline of staff and referral agency comments regarding the sketch plan as proposed. See the attached referral agency responses:

   1. **The Town Engineer indicates the Town will have water system capacity, including fire flows, and sanitary sewer collection system capacity to serve the subdivision. Details regarding final water, sanitary sewer and stormwater system design will be addressed at the time of final plat. The Town Engineer also commented on the potential noise impacts and related building setbacks from CO Highway 79. Staff is working with CDOT on the eventual design and necessary right-of-way for the highway. Potential noise impacts and appropriate mitigation will be addressed at the time of final plat.**
   2. **The Town Traffic Engineer commented on the trails and pedestrian paths and the potential need for future pedestrian crosswalks. This will be addressed in more detail with the final plat.**
   3. **Bennett School District 29J will ask for cash-in-lieu of land dedication.**
   4. **Bennett-Watkins Fire Rescue has submitted several comments relative to fire protection, including reference to the International Fire Code (IFC), fire hydrant location and fire flows. These comments have been forwarded to the applicant.**
   5. **The Intermountain Rural Electric Association (IREA) has submitted comments regarding the need for utility easements. These will be placed on the final plat.**

d. Negative impacts on adjacent land uses have been identified and satisfactorily mitigated.

Staff Response: Although no negative impacts on adjacent land uses are anticipated, staff will defer a finding on this criterion until we receive and review a more detailed final plat and site plan.

e. There is a need or desirability within the community for the applicant's development and the development will help achieve a balance of land use and/or housing types.

Staff Response: Staff believes there is a need and desirability for new residential housing, as promoted by the Comprehensive Plan and as evidenced by demand in other residential subdivisions, including Bennett Crossing and SkyView.

Staff Recommendation

No formal action of recommending approval or denial is required of the Planning and Zoning Commission; but rather, discussing and providing feedback to the applicant is requested.

Attachments

1. Application
2. Letter of Intent
3. Phase 2 SFD - Sketch Plan
4. 2018 Sketch Plan
5. Town Engineer's Memo
6. Town Traffic Engineer's Memo
7. Bennett School District 29J
8. Bennett-Watkins Fire Rescue Letter
9. IREA Redline Comments

Case No. 21.10
Bennett Ranch Phase 2 Single-Family Detached Sketch Plan

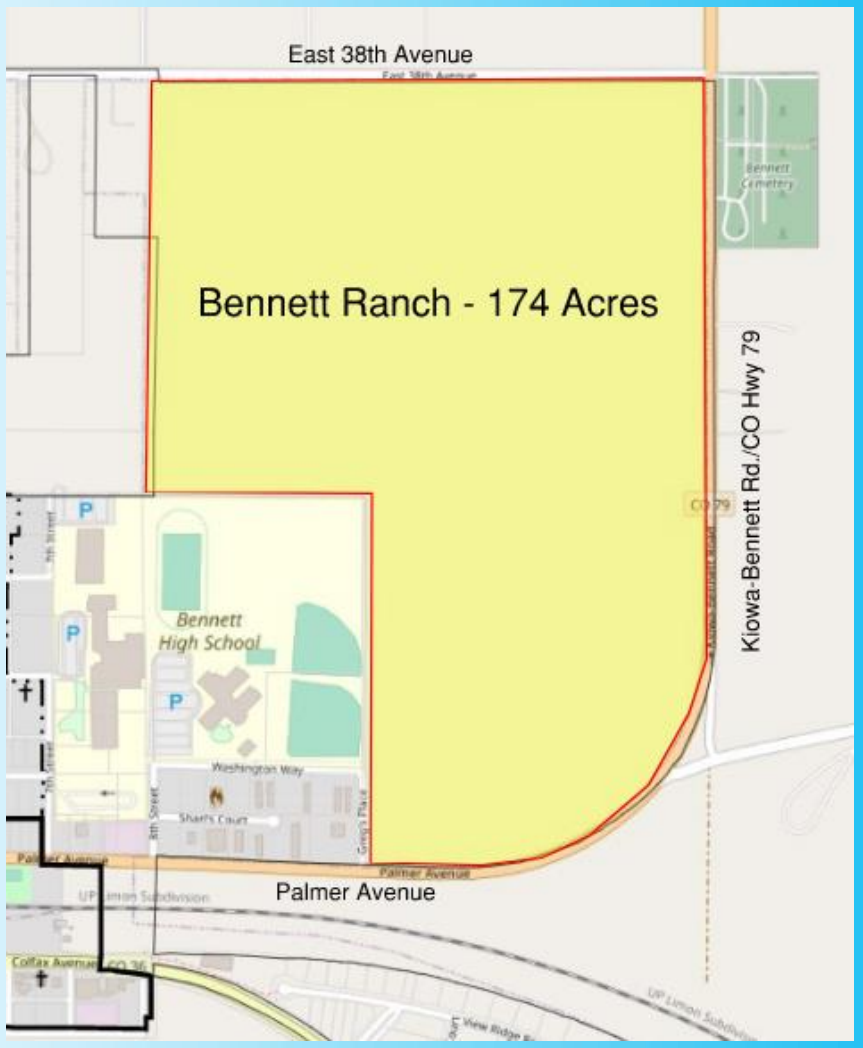
Town of Bennett
Planning and Zoning Commission

June 21, 2021

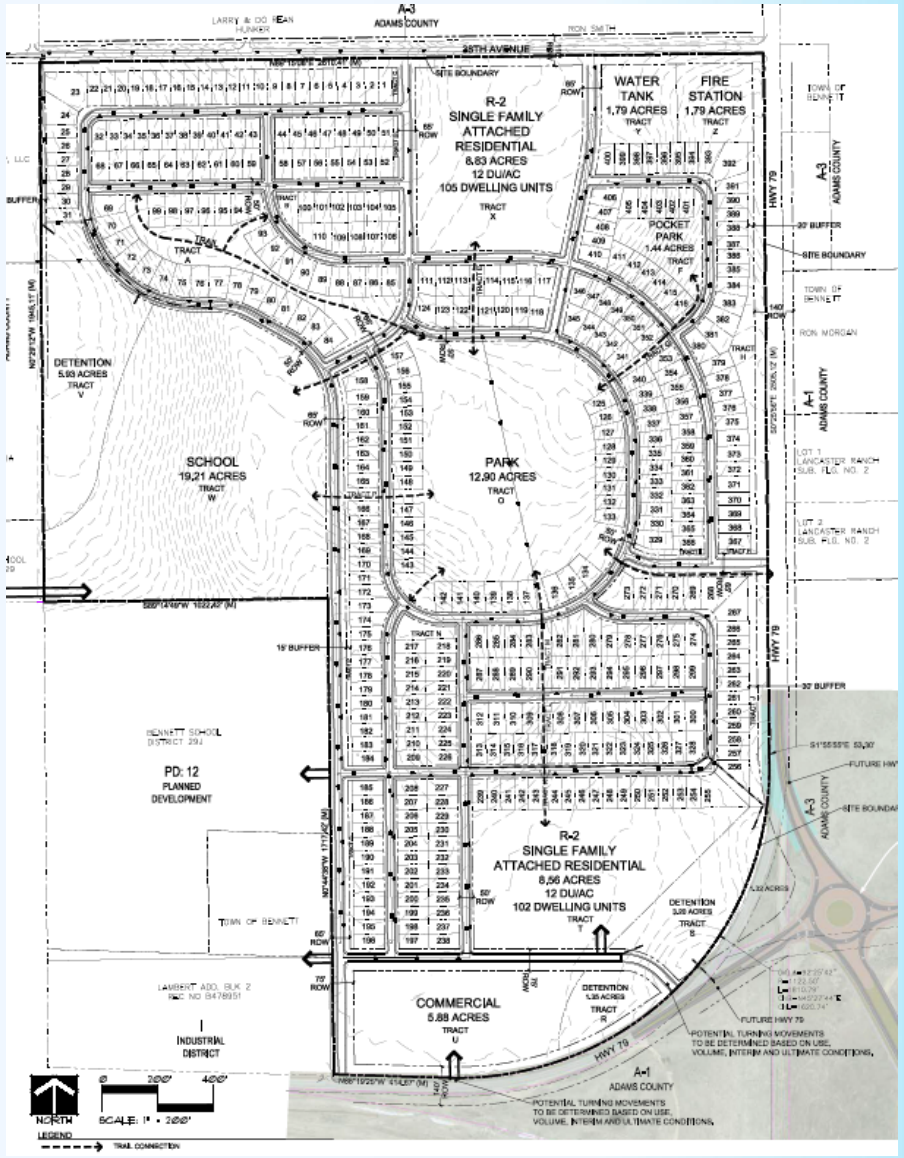
Steve Hebert, Planning & Economic Development Manager

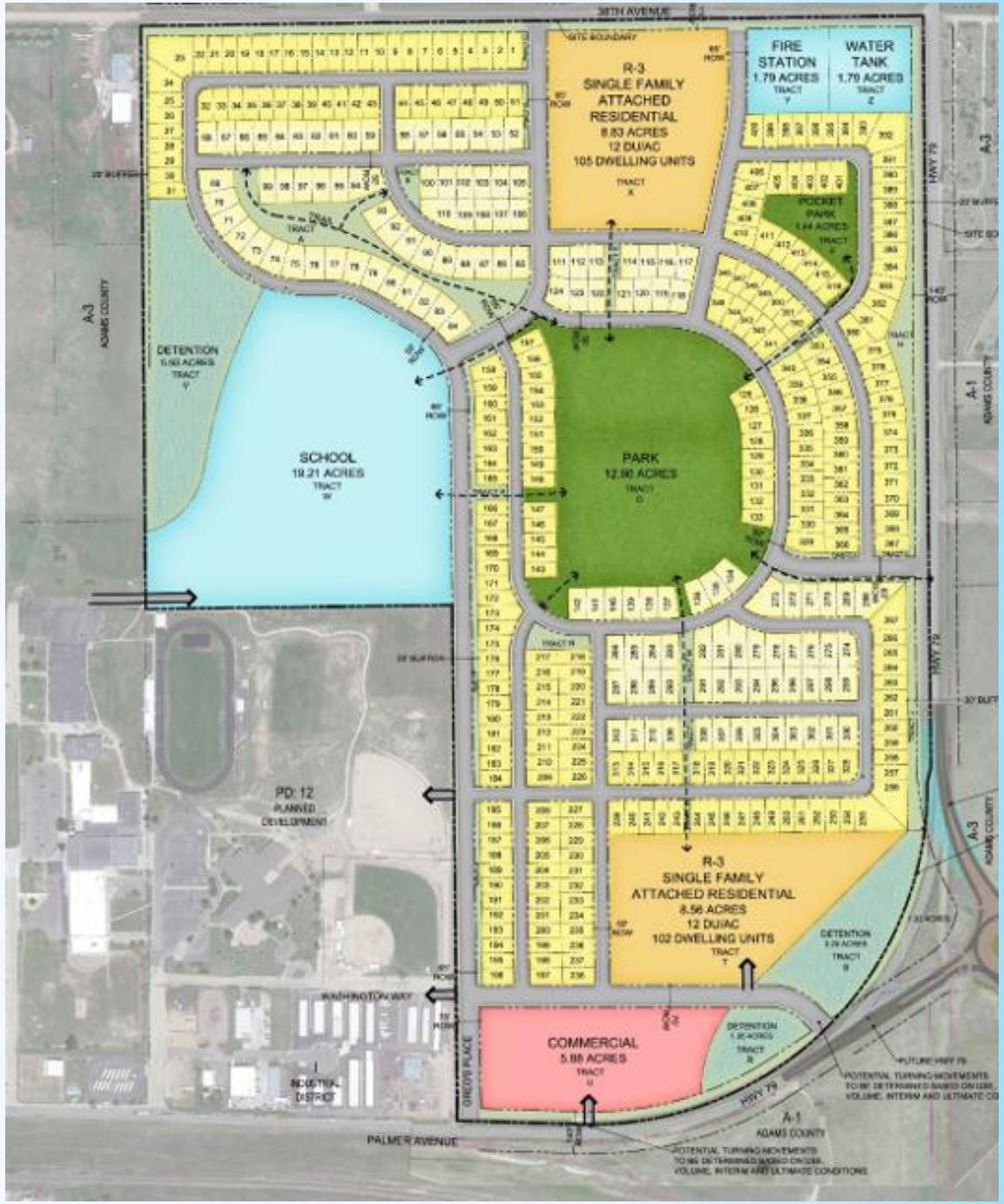
Case No. 21.10

- Original zoning approved and sketch plan reviewed in 2018 -19
- 69.5 acres zoned R-2 - Mid Density Residential
- Sketch plan is the first step in the subdivision process
- A final plat and site plan will follow



Original 2018 -19 Sketch Plan

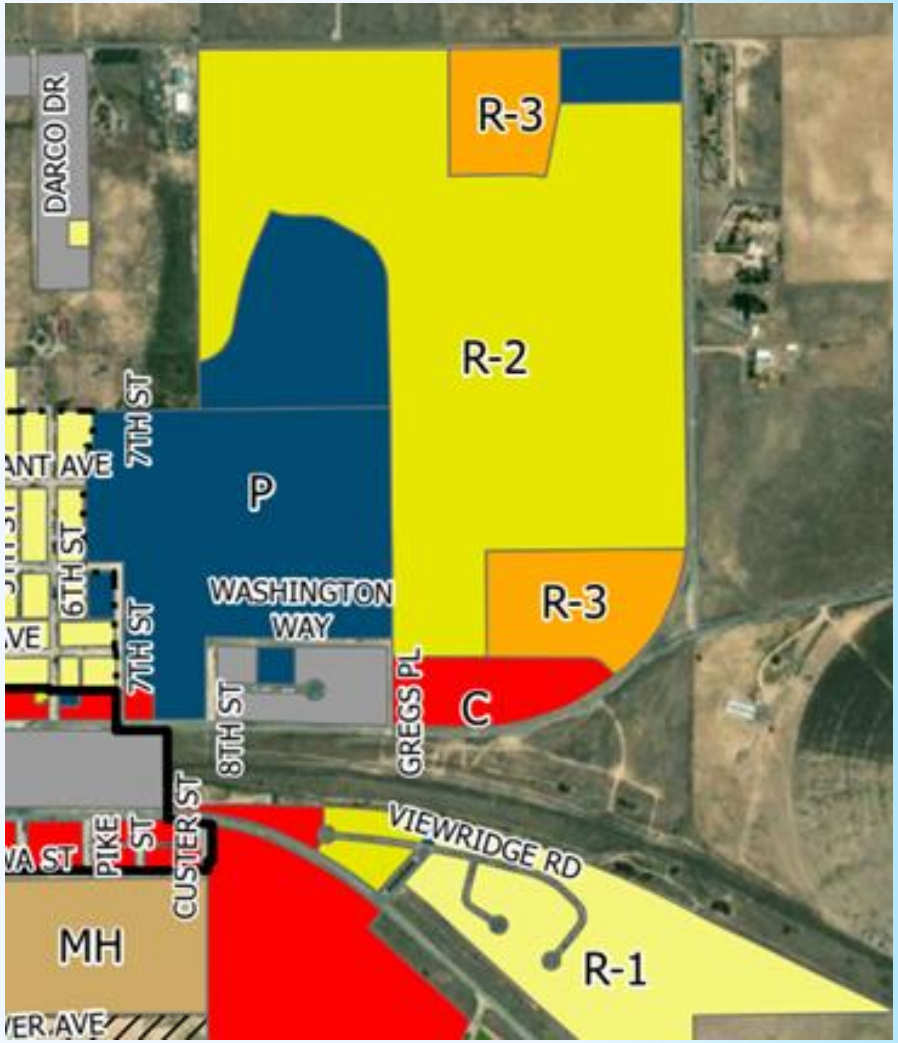



38TH AVENUE
SITE BOUNDARY
R-3
SINGLE FAMILY
ATTACHED
RESIDENTIAL
8.83 ACRES
12 DU/AC
105 DWELLING UNITS
TRACT
X
FIRE
STATION
1.79 ACRES
TRACT
Y
WATER
TANK
1.79 ACRES
TRACT
Z
POCKET
PARK
1.44 ACRES
TRACT
E
HWY 79
A-3
A-1
ADAMS COUNTY
DETENTION
5.93 ACRES
TRACT
V
SCHOOL
19.21 ACRES
TRACT
W
PARK
12.90 ACRES
TRACT
D
PD: 12
PLANNED
DEVELOPMENT
R-3
SINGLE FAMILY
ATTACHED RESIDENTIAL
8.56 ACRES
12 DU/AC
102 DWELLING UNITS
TRACT
T
DETENTION
TRACT
S
WASHINGTON WAY
COMMERCIAL
5.88 ACRES
TRACT
U
DETENTION
1.36 ACRES
TRACT
R
ONEIDA PLACE
I
INDUSTRIAL
DISTRICT
PALMER AVENUE
A-1
ADAMS COUNTY
POTENTIAL TURNING MOVEMENTS
TO BE DETERMINED BASED ON USE,
VOLUME, INTERIM AND ULTIMATE CONDITIONS

Surrounding Zoning and Land Use

Direction	Zone District	Land Use
North	R-2 – Mid Density Residential, R-3 – High Density Residential, P - Public	Vacant
East	A -3 in Adams County	Residential, Agricultural, Cemetery
South	R- 3 – High Density Residential, C – General Commercial	Vacant
West	P - Public	School Campus

Zoning

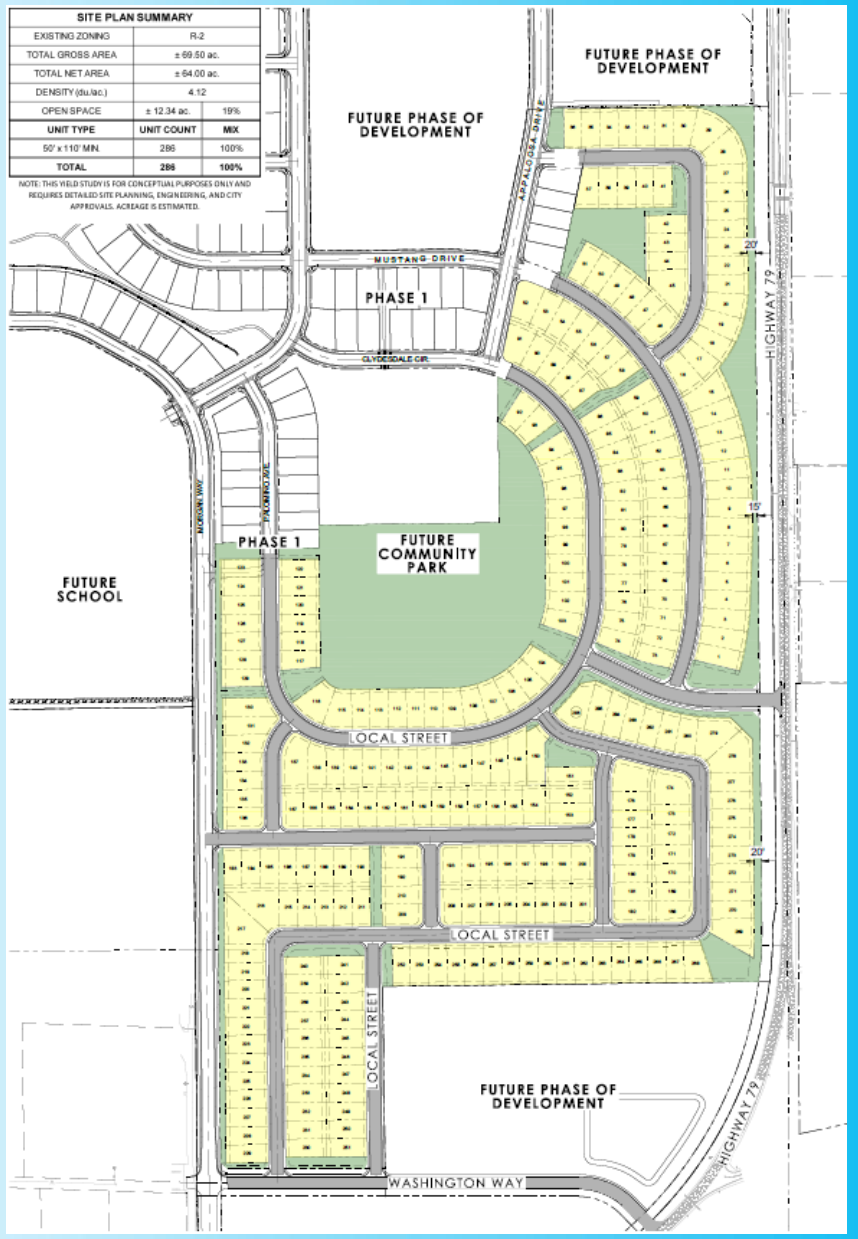

DARCO DR
ANT AVE
VE
6TH ST
7TH ST
7TH ST
WA ST
PIKE
ST
CUSTER ST
8TH ST
WASHINGTON WAY
GREGS PL
VIEWRIDGE RD
VER AVE
MH
P
C
R-1
R-2
R-3
R-3

Purpose of a Sketch Plan and the Planning and Zoning Commission's Action

- Purpose of a sketch plan is to give early feedback to the applicant
- No formal action required
- Next steps will be a final plat and site plan

Sketch Plan

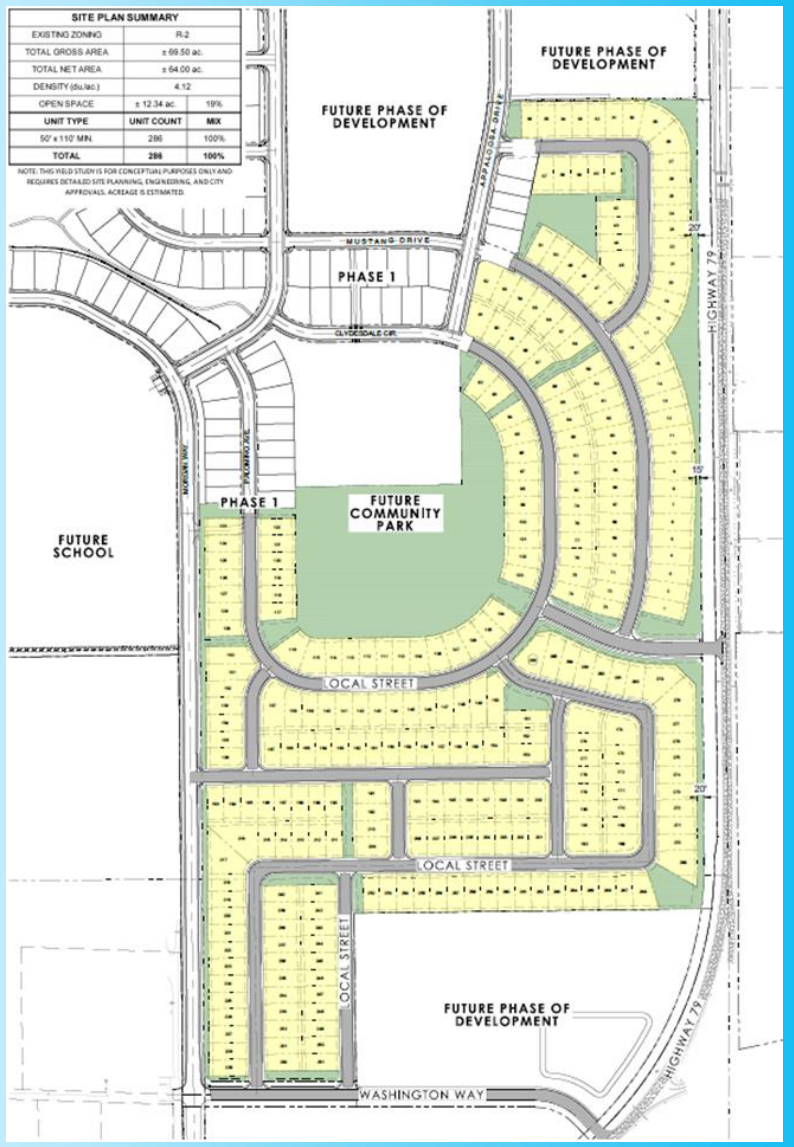
- 286 lots on 69.5 acres
- Single-family detached homes
- Minimum lot size – 5,500 sq. ft.
- 4.12 dwelling units/acre
- More than doubles future community park
- 12.34 acres open space
- Internal trail connections



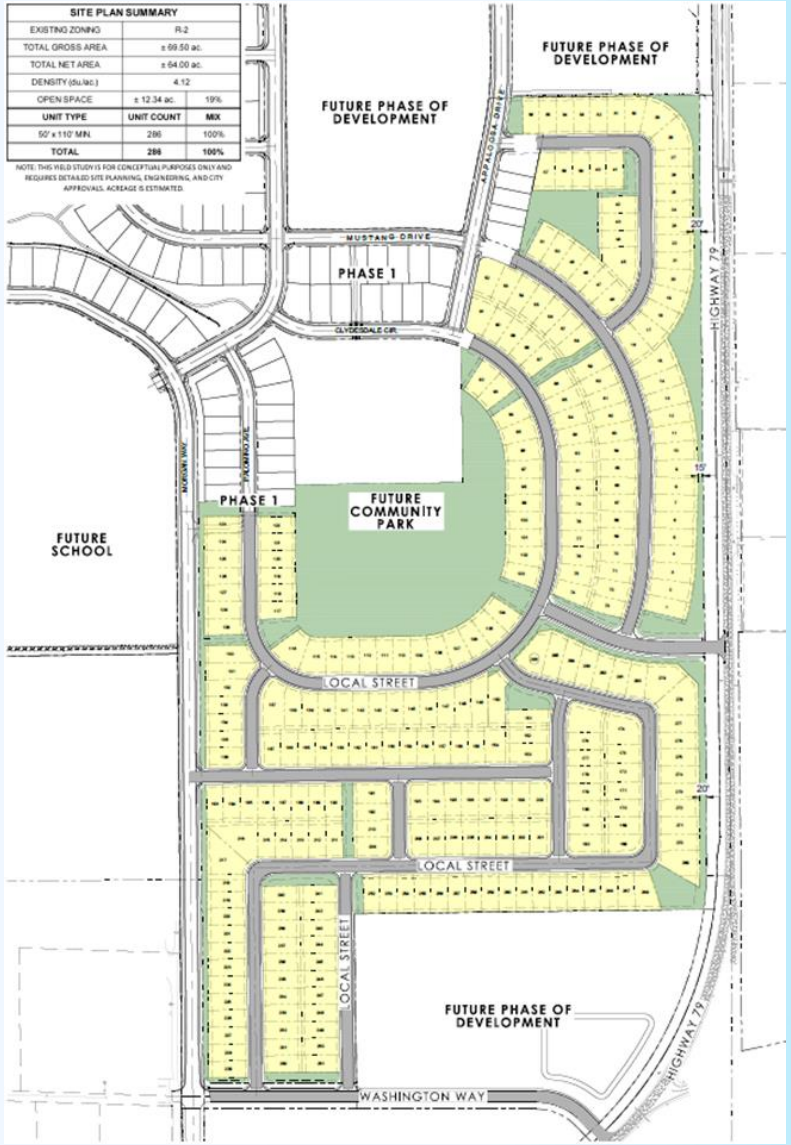
4.12
12.34 ac. 19%
NIT COUNT MIX
286 100%
286 100%
EPTUAL PURPOSES ONLY AND
G, ENGINEERING, AND CITY
IS ESTIMATED.
FUTURE PHASE OF DEVELOPMENT
APPALOOSA DRIVE
MUSTANG DRIVE
PHASE 1
CLYDESDALE CIR.
HIGHWAY 79
PALOMINO AVE.
MORGAN WAY
PHASE 1
FUTURE COMMUNITY PARK
LOCAL STREET
LOCAL STREET
LOCAL STREET
FUTURE PHASE OF DEVELOPMENT
HIGHWAY 79
WASHINGTON WAY

Available Infrastructure, Services and Utilities

- Access via new streets in Filing 1 and to CO Hwy 79
- Town water and sewer
- Integrated stormwater management
- Bennett Watkins Fire Rescue
- IREA Electric
- Colorado Natural Gas
- Bennett School District 29J



Questions and Comments?



SITE PLAN SUMMARY		
EXISTING ZONING	R-2	
TOTAL GROSS AREA	± 69.50 ac.	
TOTAL NET AREA	± 64.00 ac.	
DENSITY (du/ac.)	4.12	
OPEN SPACE	± 12.34 ac.	19%
UNIT TYPE	UNIT COUNT	MIX
50' x 110' MIN.	286	100%
TOTAL	286	100%

NOTE: THIS FIELD STUDY IS FOR CONCEPTUAL PURPOSES ONLY AND REQUIRES DETAILED SITE PLANNING, ENGINEERING, AND CITY APPROVALS. ACREAGE IS ESTIMATED.

Town of Bennett Land Use Application Form

TO BE COMPLETED BY APPLICANT

Application Type: Sketch Plan			Other _____
Primary Contact Name: Trey Farrell, PE			
Name of Firm: Kimley-Horn & Associates			
Address: 4582 South Ulster Street			
City: Denver	State: CO	Zip: 80237	Phone: 7204641861
Email: Trey.Farrell@Kimley-Horn.com			
Owner Name: LGI Homes	Applicant: Kacy Flemons, PE		
Address: 3401 Quebec St. Suite 4060			
City: Denver	State: CO	Zip: 80207	Phone: 7205637701
Email: Kacy.Flemons@lgihomes.com			
Mineral Estate Holder/Lease:			
Name of Firm:			
Address:			
City:	State:	Zip:	Phone:
Parcel#: 0181500000360	Subdivision Name: Bennett Ranch - Phase 2 SF-D		
Site Address: N/A			
Nearest Major Intersection: SWC of 38th Ave & Highway 79			
Legal Description:			
Current Zoning: R-2	Proposed # lots/units: 286		
Total Acreage: 69.50	Gross Floor Area:		
Proposed Gross Densities (du/ac): 4.12			
Additional Notes:			

All Submittal Requirements must accompany this application. All applicable fees must be paid at the time of application. Any extraordinary cost incurred by the Town of Bennett in reviewing and processing this application is the responsibility of the applicant.

An executed cost agreement must be attached to this application pursuant to Sec. 16-1-325 of the Bennett Municipal Code.

I understand this is an application only, it must be approved by the Town, and any required building permits must be obtained before the property can be used in accordance with the request. I hereby acknowledge all of the above information is correct.

Applicant's Signature: Kacy Flemons Digitally signed by Kacy Flemons Date: 2021.04.08 13:14:21 -06'00' **Date:** 4/8/21

Kimley»Horn

Bennett Ranch

Bennett, Colorado | Phase 2 SF-D Sketch Plan Application
April 6, 2021

Statement of Intent

The subject property is located along the north western corner of State Highway 79 (Kiowa-Bennett Road) and Washington Way. Situated east of Bennett High School and Bennett Middle School, this proposed neighborhood will provide a variety of housing options within walking distance to the schools and nearby amenities within the Town of Bennett.

It is intended that the Bennett Ranch Subdivision be a well-connected neighborhood of single-family detached residences with a series of trail connections and pocket parks which tie into a centralized Community Park. The site is approximately 69.5 acres and is planned for a total of 286 single-family detached homes. The single-family detached homes have a typical lot size of 50-feet wide by 110-feet in depth. The subject property is planned in accordance to the R-2 (Mid-Density Residential) Zone District. The proposed neighborhood will focus on providing quality common areas, landscape buffers, trail corridors, and community park spaces. Landscaping will be incorporated along all perimeter streets as well as enhanced entryways to accentuate the “front door” of the neighborhood. Most notably, a 15-20-foot landscape buffer will be provided along State Highway 79 to offer a physical and visual barrier between vehicular traffic and residences.

Primary vehicular access to the neighborhood will be from State Highway 79 with proposed secondary access from Washington Way and Morgan Way. Internal local streets will provide access to residences and the centralized Community Park.

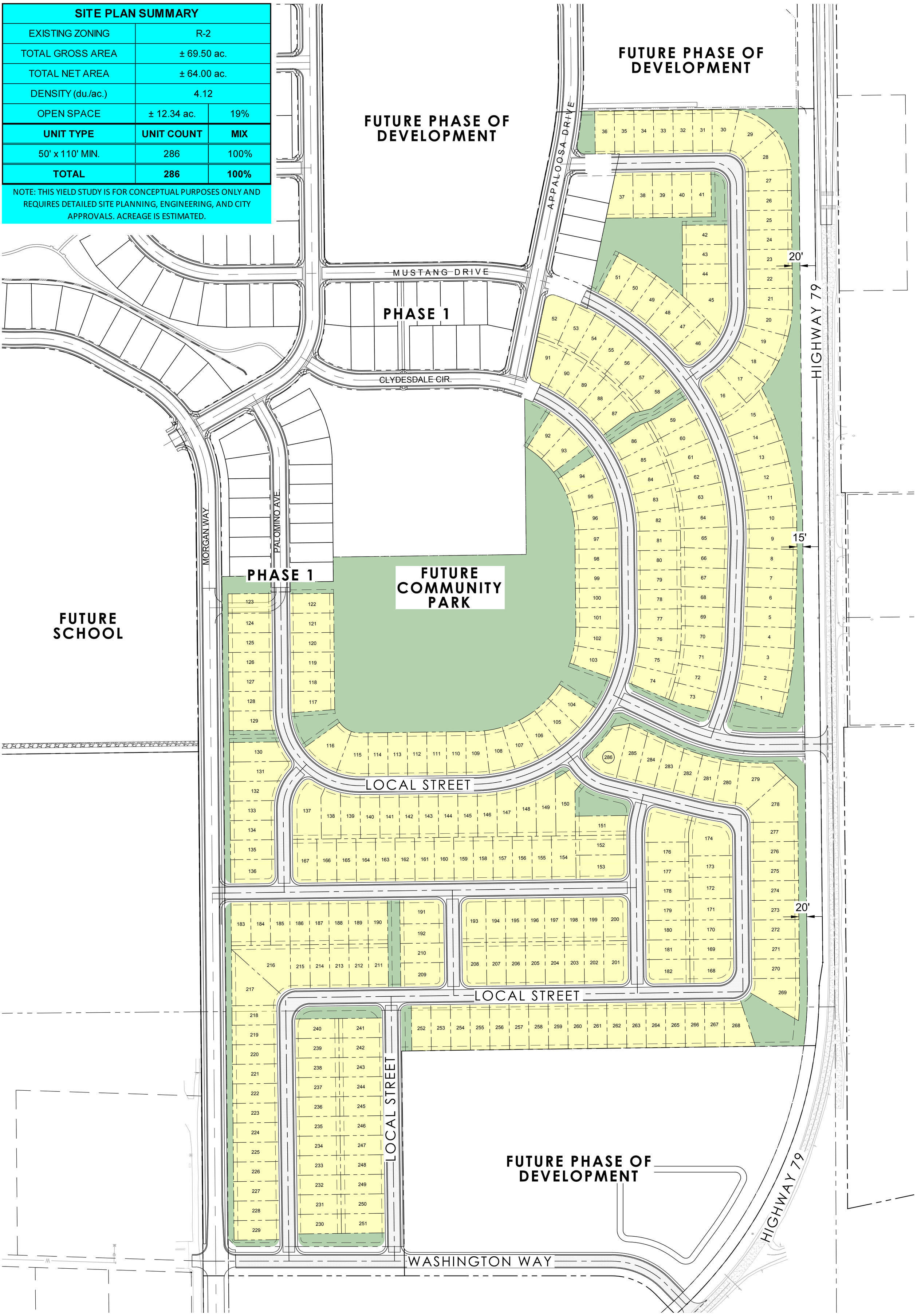
Community design elements include a centralized Community Park, connecting open space/trail corridors, vehicular and pedestrian scaled lighting, and street furniture to contribute to providing a high-quality neighborhood experience. The Community Park will provide programming elements and pedestrian scaled amenities to increase activity within the Park. The primary entrance from State Highway 79 will include entry monumentation with landscaping to enhance the presentation and arrival into the neighborhood.

Pedestrian and bicycle access will be provided along the internal street connections to help link neighborhood amenities to other developed areas within the Town. Trail linkages will also be provided within the Park and throughout the site to enhance walkability to Bennett High School and Bennett Middle School.

The intent of the architecture within Bennett Ranch is to provide a variety of quality housing options, colors, and architectural designs to complement the surrounding neighborhoods while avoiding monotony throughout the neighborhood. The homes shall relate to the street and open spaces while maintaining a sense of seclusion.

SITE PLAN SUMMARY		
EXISTING ZONING	R-2	
TOTAL GROSS AREA	± 69.50 ac.	
TOTAL NET AREA	± 64.00 ac.	
DENSITY (du./ac.)	4.12	
OPEN SPACE	± 12.34 ac.	19%
UNIT TYPE	**UNIT COUNT**	**MIX**
50' x 110' MIN.	286	100%
TOTAL	**286**	**100%**

NOTE: THIS YIELD STUDY IS FOR CONCEPTUAL PURPOSES ONLY AND REQUIRES DETAILED SITE PLANNING, ENGINEERING, AND CITY APPROVALS. ACREAGE IS ESTIMATED.



BENNETT RANCH

BENNETT, COLORADO

PHASE 2 SKETCH PLAN

04.02.2021 | SCALE: 1"=100'

N 0' 50' 100' 200'

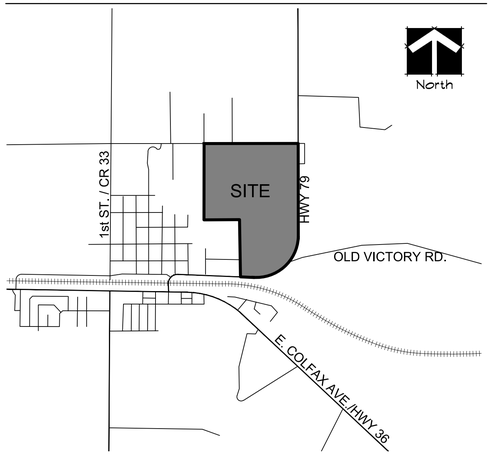
Kimley»Horn

SKETCH PLAN
BENNETT RANCH

A PARCEL OF LAND LOCATED IN THE EAST ONE-HALF OF SECTION 27, TOWNSHIP 3 SOUTH, RANGE 63 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF BENNETT, COUNTY OF ADAMS, STATE OF COLORADO
173.36 ACRES TOTAL

VICINITY MAP

SCALE: 1" = 2,000'



LEGAL DESCRIPTION

A PARCEL OF LAND LOCATED IN THE EAST ONE-HALF OF SECTION 27, TOWNSHIP 3 SOUTH, RANGE 63 WEST OF THE SIXTH PRINCIPAL MERIDIAN, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTH ONE-QUARTER CORNER OF SAID SECTION 27;

THENCE SOUTH 00°06'50" WEST ALONG THE WESTERLY LINE OF THE NORTHEAST QUARTER OF SAID SECTION 27 A DISTANCE OF 300.00 FEET TO THE **POINT OF BEGINNING;**

THENCE [NORTH] 89°59'44" EAST ALONG A LINE 30.00 FEET SOUTHERLY AND PARALLEL WITH THE NORTHERLY LINE OF SAID NORTHEAST QUARTER A DISTANCE OF 2,611.31 FEET;

THENCE SOUTH 00°03'01" WEST ALONG A LINE 30.00 FEET WESTERLY OF AND PARALLEL WITH THE EASTERLY LINE OF SAID NORTHEAST QUARTER A DISTANCE OF 2,505.12 FEET;

THENCE SOUTH 09°30'45" WEST ALONG A LINE NON-TANGENT WITH THE FOLLOWING DESCRIBED CURVE A DISTANCE OF 60.83 FEET;

THENCE SOUTHWESTERLY ALONG THE ARC OF A CURVE TO THE RIGHT HAVING A CENTRAL ANGLE OF 92°25'42", A RADIUS OF 1,122.50 FEET, A CHORD BEARING OF SOUTH 46°15'52" WEST A DISTANCE OF 1,620.74 FEET, AND AN ARC LENGTH OF 1,810.79 FEET;

THENCE NORTH 87°31'17" WEST ALONG A LINE TANGENT WITH THE LAST DESCRIBED CURVE A DISTANCE OF 414.05 FEET TO THE EASTERLY LINE OF THE PARCEL OF LAND DESCRIBED IN BOOK 2500 AT PAGE 570, ADAMS COUNTY CLERK AND RECORDER'S OFFICE;

THENCE THE FOLLOWING TWO (2) COURSES ALONG SAID PARCEL OF LAND IN BOOK 2400 AT PAGE 570;

1) NORTH 00°07'36" EAST A DISTANCE OF 1,719.74 FEET;
2) THENCE SOUTH 89°52'41" WEST A DISTANCE OF 1,022.04 FEET TO THE WESTERLY LINE OF SAID NORTHEAST QUARTER;

THENCE NORTH 00°06'50" EAST ALONG SAID WESTERLY LINE A DISTANCE OF 1,950.32 FEET TO THE **POINT OF BEGINNING.**

LAND SUMMARY CHART

	AREA (ACRES)	% OF TOTAL AREA	DWELLING UNITS
SINGLE FAMILY DETACHED RESIDENTIAL LOTS	62.07	35.8	416
R-2 SINGLE FAMILY ATTACHED	18.86	10.8	226
SCHOOL	17.59	10.2	
FIRE STATION	1.85	1.1	
WATER TANK	1.87	1.1	
COMMERCIAL	7.36	4.2	
DETENTION	9.98	5.8	
PARK	16.68	9.6	
OPEN SPACE	7.51	4.3	
RIGHT-OF-WAY	29.59	17.1	
TOTAL	173.36	100	642

SIGNATURE BLOCKS

Certificate of Ownership

Owner: _____

By: _____

State of Colorado)
) ss
County of Adams)

The foregoing certificate of ownership and maintenance was acknowledged before me by _____, acting in his capacity as _____of _____, this____ day of _____ , _____.

Witness My Hand and Seal

My commission expires: _____

Notary Public _____

Planning Commission Certificate:

Approved by the Bennett Planning Commission with Planning Commission Resolution ____-____

this _____ day of _____, _____.

_____
Chairman

_____
Planning Commission Secretary

Certificate of Approval by the Board of Trustees:

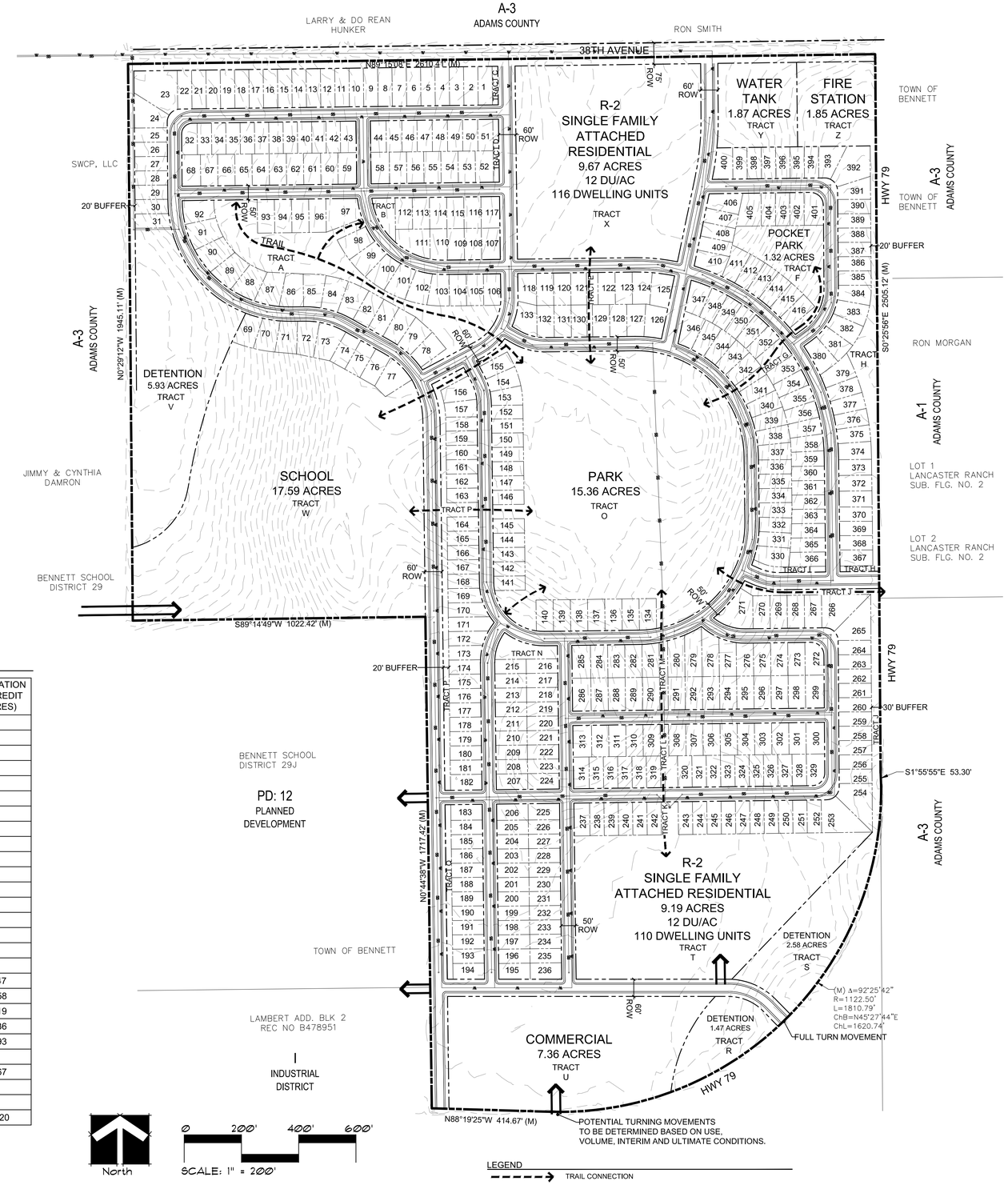
This amendment to the official zoning map for Bennett Ranch is approved and accepted by Ordinance No. _____, passed and adopted at the regular meeting of the Board of Trustees of Bennett, Colorado, held on _____, _____. All conditions, terms, and specifications designated or described herein shall be binding on the owner, its heirs, successors, and assigns.

_____
Mayor

Attest: _____
Town Clerk

TRACT SUMMARY CHART

TRACT	AREA (ACRES)	USE	OWNER	MAINTENANCE	DEDICATION CREDIT (ACRES)	DEDICATION NO CREDIT (ACRES)
A	2.72	OPEN SPACE	HOA	HOA	2.72	
B	0.18	OPEN SPACE	HOA	HOA	0.18	
C	0.06	OPEN SPACE	HOA	HOA	0.06	
D	0.10	OPEN SPACE	HOA	HOA	0.10	
E	0.15	OPEN SPACE	HOA	HOA	0.15	
F	1.32	PARK	HOA	HOA	1.32	
G	0.25	OPEN SPACE	HOA	HOA	0.25	
H	1.16	OPEN SPACE	HOA	HOA	1.16	
I	0.12	OPEN SPACE	HOA	HOA	0.12	
J	0.81	OPEN SPACE	HOA	HOA	0.81	
K	0.15	OPEN SPACE	HOA	HOA	0.15	
L	0.22	OPEN SPACE	HOA	HOA	0.22	
M	0.16	OPEN SPACE	HOA	HOA	0.16	
N	0.29	OPEN SPACE	HOA	HOA	0.29	
O	15.36	PARK	HOA	HOA	15.36	
P	0.86	OPEN SPACE	HOA	HOA	0.86	
Q	0.28	OPEN SPACE	HOA	HOA	0.28	
R	1.47	DETENTION	HOA	HOA		1.47
S	2.58	DETENTION	HOA	HOA		2.58
T	9.19	SFA RESIDENTIAL	HOA	HOA		9.19
U	7.36	COMMERCIAL	HOA	HOA		7.36
V	5.93	DETENTION	HOA	HOA		5.93
W	17.59	SCHOOL	TOWN	TOWN	17.59	
X	9.67	SFA RESIDENTIAL	HOA	HOA		9.67
Y	1.87	WATER TANK	HOA	HOA	1.87	
Z	1.85	FIRE STATION	HOA	HOA	1.85	
TOTAL					45.50	36.20



APPLICANT:

CIVIL ENGINEER:

Rocky Ridge Civil Engineering
420 21st Avenue, #101
Longmont, CO 80501
303-651-6626

PLANNER:

THE HENRY DESIGN GROUP
LAND PLANNING • LANDSCAPE ARCHITECTURE & DESIGN
1501 WAZEE STREET SUITE 1-C DENVER COLORADO 80202
Phone 303-446-2368 Fax 303-446-0958

BENNETT RANCH
Sketch Plan
Bennett, Colorado

DRAWN BY: AY
CHECK BY: KH
ISSUE DATE: 8-23-2018
REVISIONS: 11-30-2018

SHEET NUMBER
1 of 1

TERRAMAX, INC.

CONSULTING ◊ ENGINEERING

Engineering Review Memo

To:	Stephen Hebert, AICP, Bennett Planning & Economic Development Manager
From:	Dan Giroux, PE, Engineering Consultant to the Town
Date:	Monday, June 7, 2021
Case:	Bennett Ranch Phase 2 Single Family Detached (SFD) Sketch Plan
	Town of Bennett Land Use Case 21.10
Subject:	Engineering Review

Per the request of the Town of Bennett, Terramax, Inc. has reviewed the application materials for the proposed Bennett Ranch Phase 2 Single Family Detached (SFD) Sketch Plan. This review does not relieve the applicant from meeting the Town's requirement that the development comply with all Town Codes and Standards.

I have the following comments to offer on this Case and the submittal materials:

Water Distribution System

- 8-inch interior water mains would be fed from the pending Morgan Way (to the west) and Bennett Ranch Blvd (to the north/northwest) 12-inch water mains, proposed for Bennett Ranch Filing 1
    - The proposed 8-inch water mains are adequate and desired for fire protection.
- Water main looping to the Phase 1 southeast, Washington Way near SH 79, would be addressed via the Single-Family Attached (SFA) area development, the south Commercial area development, or by an advance water main through one of these areas.
- Water main extension to the southeast property line (Washington Way) will be required for future development connection and extension.
- Final fire hydrant layout to be confirmed through ensuing development applications.
- Water main and sanitary sewer main layout and offsets to be confirmed through ensuing development applications.
- The Town will have water system capability, including fire flows, to serve this proposed Sketch Plan development via the pending Bennett Ranch Filing 1 public improvements.

Sanitary Sewer System

- 8-inch interior sanitary sewer mains are proposed and desired.
- Final manhole layout to be confirmed through ensuing development applications.
- Same comment regarding water main v sanitary sewer main layout and offsets.
- Sanitary sewer extension to the southeast property line (Washington Way) will be required for future development connection and extension.
- The Town will have sanitary sewer collection system capability to serve this proposed Sketch Plan development via the Bennett Ranch Filing 1 public improvements.

Access

- The east SH 79 access location (approx. "Roosevelt" street grid location) has been coordinated with Town staff, and adjusted per staff recommendations regarding SH 79 and other area planning, and is the preferred connection alignment for the Town.
    - CDOT Access Permit and Notice-to-Proceed (NTP) approvals will be required for this access.
- The southeast SH 79/Palmer access location (Washington Way east extension) will also require CDOT Access Permit and NTP approvals.
    - The sight distance, tangent, vehicle storage and turn radius on Washington Way will also be reviewed.
- Phase 2 traffic circulation will rely on Morgan Way, Appaloosa and other pending Filing 1 street improvements.
- The residential lot offsets from future SH 79 travel lanes is of concern for noise levels.
    - The proposed offset per Sketch Plan is less than has been used at Bennett Crossing or Penrith Park (SkyView) to-date, but is greater than in place at the Centennial Addition.
- SH 79 Trail or sidewalk will be required for Phase 2 for the SH 79 frontage.
    - The SH 79 sidewalk will need to be outside the CDOT SH 79 right-of-way (ROW) in places, due to the future highway build-out section width v ROW width.
    - The SH 79 sidewalk in the stormwater pond and SFA areas will need to be considered.
    - The SH 79 sidewalk will need to consider future 79 PEL grades, as well as stormwater drainage.
- The pedestrian, emergency and possible utility corridor routes to and through the south end of the Community Park, to the school campus, and to areas east, have been addressed and improved based on Town staff comments.
- The pedestrian routes to the Community Park from the south remain indirect and circuitous, including from the SFA area to the southeast.

Stormwater Management

- The Phase 2 stormwater collection system including stormwater pond will be subject to full review in ensuing development applications.
- The Phase 2 stormwater pond outfall utilizes an existing CDOT culvert location consistent with historic/pre-project conditions.
    - The use of the existing CDOT culvert will require CDOT review and approval.
    - The culvert may require rehab or replacement in any case, dependent on condition.
    - Any stormwater use of the CDOT right-of-way, current or future, will also require CDOT review and approval.
- The applicant has cited higher allowable peak 100-year stormwater release rates than the Town's Storm Drainage Criteria provide for.
    - Use of the higher rates will be dependent upon CDOT review and approval for the existing culvert, and outfall, as well as further review of downstream historic/pre-project peak flow rates.
    - The further review may affect stormwater pond volumes.

Steve, this concludes my engineering review of the application and supporting submittal materials for the proposed Bennett Ranch Phase 2 Single Family Detached Sketch Plan by the applicant. Please let me know if you have any questions, or require additional information pertaining to the submitted information, or my review.

Memorandum

WILSON & COMPANY
HIGHER RELATIONSHIPS

To: Steve Hebert, AICP, Bennett Planning & Economic Development Manager

From: Gabrielle Renner, PE PTOE RSP1

Town Traffic Engineer

Date: 5/26/2021

Re: Bennett Ranch Phase 2 Sketch Plan – Traffic Submitted Comments

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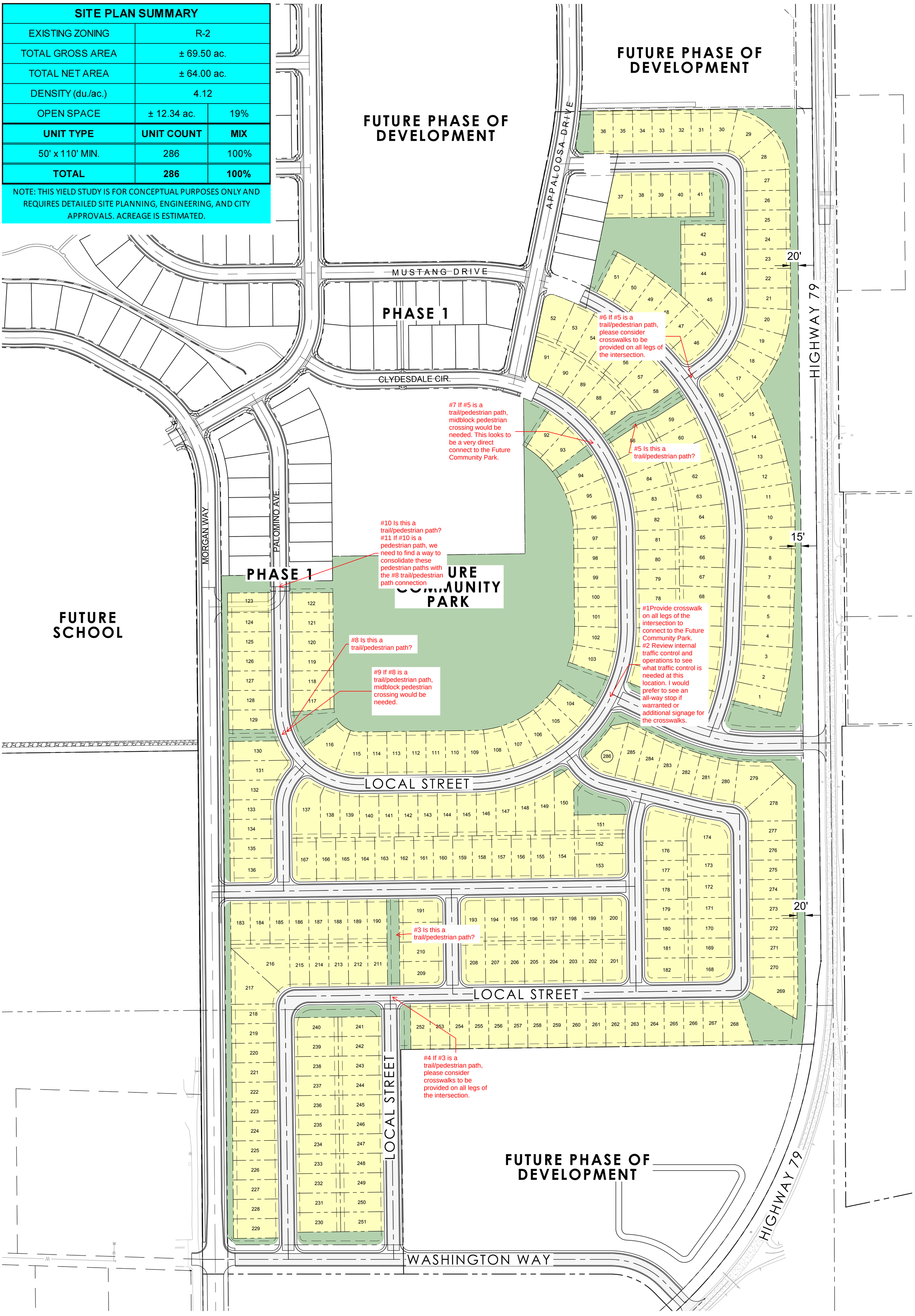
The sketch plan for Bennett Ranch Phase 2 submitted on April 15, 2021 was reviewed and the following traffic related comments have been provided on the attached Sketch Plan and below.

1. Provide crosswalk on all legs of the intersection to connect to the Future Community Park.
2. Review internal traffic control and operations to see what traffic control is needed at this location. I would prefer to see an all-way stop if warranted or additional signage for the crosswalks.
3. Is this a trail/pedestrian path?
4. If #3 is a trail/pedestrian path, please consider crosswalks to be provided on all legs of the intersection.
5. Is this a trail/pedestrian path?
6. If #5 is a trail/pedestrian path, please consider crosswalks to be provided on all legs of the intersection.
7. If #5 is a trail/pedestrian path, a midblock pedestrian crossing would be needed. This looks to be a very direct connect to the Future Community Park.
8. Is this a trail/pedestrian path?
9. If #8 is a trail/pedestrian path, please consider crosswalks to be provided on all legs of the intersection.
10. Is this a trail/pedestrian path?
11. If #10 is a trail/pedestrian path, we need to find a way to consolidate these pedestrian paths with the #8 trail/pedestrian path connection.

SITE PLAN SUMMARY		
EXISTING ZONING	R-2	
TOTAL GROSS AREA	± 69.50 ac.	
TOTAL NET AREA	± 64.00 ac.	
DENSITY (du./ac.)	4.12	
OPEN SPACE	± 12.34 ac.	19%
UNIT TYPE	**UNIT COUNT**	**MIX**
50' x 110' MIN.	286	100%
TOTAL	**286**	**100%**

NOTE: THIS YIELD STUDY IS FOR CONCEPTUAL PURPOSES ONLY AND REQUIRES DETAILED SITE PLANNING, ENGINEERING, AND CITY APPROVALS. ACREAGE IS ESTIMATED.



BENNETT RANCH

BENNETT, COLORADO

PHASE 2 SKETCH PLAN

04.02.2021 | SCALE: 1"=100'

N 0' 50' 100' 200'

Kimley»Horn

BENNETT SCHOOL DISTRICT 29J

May 4, 2021

Town of Bennett
207 Muegge Way
Bennett, CO 80102

RE: Case No. 21.10 – Bennett Ranch Ph2 SFD

Dear Steve;

Bennett School District 29J is pleased to review the sketch plan proposal for Bennett Ranch Phase 2. The application is for 69.5 acres of land being platted for 286 single family detached homes at a density of 4.12 du/acres.

The Application proposes residential development for property located within the School District's boundaries and, therefore, will have an impact on the School District's responsibility to provide adequate school facilities. Consequently, the School Dedication requirements must be met per Division 5 of the Bennett Municipal Code. If the final plat application matches with the attached plan, we calculate the following dedication requirements:

Housing Unit Type	Density	Number of Dwelling Units	Elementary		Middle		High		Total	
			Gen Rate	Students	Gen Rate	Students	Gen Rate	Students	Gen Rate	Students
SFD	0-7.49 du/ac	286	0.36	102.96	0.18	51.48	0.24	68.64	0.775	223
MF/Mid Density	7.5-14.99 du/ac		0.17		0.08		0.11		0.364	
MF/High Density	15 du/ac +		0.09		0.04		0.06		0.195	

Acres per Student	Elementary		M Middle		High		Total	
	Number Students	Acres	Number Students	Acres	Number Students	Acres	Number Students	Acres
0.0597	102.96	6.15	51.48	3.07	68.64	4.10	223.08	13.32

Phase 1&2 Contribution	Balance Due	Cash-in-lieu
Acres	Acres	
20.07	0.86	$38,700

The developer has previous contributed 20.07 acres as part of Phase 1 and 2 of the project as shown in the chart above. The balance due is 0.86 acres or $38,700 in cash-in-lieu fees. The District is requesting cash-in-lieu at the time of final plat approval. A development agreement will be drafted with the final plat approval to confirm the school dedication requirements.

615 7th Street Bennett, CO 80102 303-644-3234 PHONE 303-644-4121 FAX

Keithy@bsd29j.com www.bsd29j.com

BENNETT SCHOOL DISTRICT 29J

The District is engaged in a Master Plan update that will result in forecasting growth within the District boundaries and the approximate location of new school sites and associated facilities. We are working with the Town's and Counties to assist in the analysis and planning to ensure the best outcome for the communities moving forward. The majority of our work should be completed the first half of the year. We believe this will have a positive benefit for Bennett Ranch.

The School District respectfully requests the opportunity to amend and supplement this letter, as appropriate, to update the Town Planning Department as to the School Districts' and the Developer's agreements concerning land dedication or cash in-lieu payment as a way to mitigate the impact the development will have on the schools. The District looks forward to working with the developer to address the dedication and safe routes to school as they move through the site planning and platting process.

Sincerely,

Mrs. Robin Purdy
School Superintendent

Mr. Keith Yaich
Chief Financial Officer

615 7th Street Bennett, CO 80102 303-644-3234 PHONE 303-644-4121 FAX

Keithy@bsd29j.com www.bsd29j.com

Bennett-Watkins Fire Rescue

District Office: 303-644-3572 Fax: 303-644-3401
355 4th Street, Bennett, CO 80102
Email: LifeSafety@BennettFireRescue.org
"Striving to Preserve Life and Property"

April 15th, 2021

Steve Hebert
Town Planner
Town of Bennett
Re: Bennett Ranch Phase 2 SFD Sketch Plan – Case 21.10

Planner Hebert,

In regards to the submission for Bennett Ranch Phase 2 SFD Sketch Plan – Case 21.10, Bennett-Watkins Fire Rescue (BWFR) has the following comments and considerations:

- The developer shall confer with Bennett Fire Protection District and ensure that the proposed development conforms to adopted (IFC) fire code standards.

- The developer shall ensure the proposed municipal water systems pertaining to hydrant distribution fire suppression is adequate to protect the proposed development as well as meet design expectations of both the Town of Bennett as well as Bennett-Watkins Fire Rescue. Considerations for design requirement shall include adopted codes and standards as well as ISO distribution and fire flow requirements.

- <u>The applicant will be required to submit a separate site overview and fire hydrant model exhibit demonstrating the placement and distances of all fire hydrants throughout the development directly to the Fire District.</u> This model will be reviewed for IFC Appendix C compliance. Separate fees and submission for this review are required directly with the Fire District.

- It is recommended that the developer work directly with Bennett-Watkins Fire Rescue, ISO, and Town of Bennett Staff to provide and review information pertaining to the needed fire flows for the proposed development. This information should be vetted against International Fire Code Requirements as well as ISO requirements. It is also likely that this information will also be required by the Town to include for hydraulic system modeling.

- Fire hydrant installation shall conforming to the painting and color coding system outlined in NFPA 291. The developer/install contactor is responsible for ensuring all hydrants are painted conforming to the TOB/BWFR standards.

- Areas of the development that include wildland-urban interface, greenbelts, or other open space areas are of particular concern for the Fire District. BWFR is interested in working with the developer to ensure that adequate access is provided to these areas should there be a need for vehicle access for wildfire suppression. As each development is unique, it is recommended that the developer work directly with BWFR to examine these interface areas and determine what access and service needs exist.

- Development access requirements are based on the adopted fire code applicable to the development. Two BWFR approved access points are required after the 30th dwelling unit is

constructed. These access points are required to follow the remoteness guidelines, they shall be placed a distance apart equal to not less than one half of the length of the maximum overall diagonal dimension of the lot or area to be served, measured in a straight line between accesses. The only exception to this requirement is if all dwelling units are constructed with approved automatic sprinkler systems and approved by BWFR.

- BWFR will incur unmet capital costs associated with new development. To address the needs of this unmet capital cost, BWFR has partnered with the Town to enact a development fee policy which establishes fees due for all new types of development. It is likely that fees will apply to the new proposed development. If the developer has additional questions or concerns regarding Fire District development fees or policies, they can contact the District Office at 303-644-3572.

Thank You

Caleb J. Connor
Fire Marshal
Life Safety Division
Bennett-Watkins Fire Rescue
303-644-3572 - Headquarters / 720-893-7672 - Direct
www.BennettFireRescue.org

SITE PLAN SUMMARY		
EXISTING ZONING	R-2	
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DENSITY (du./ac.)	4.12	
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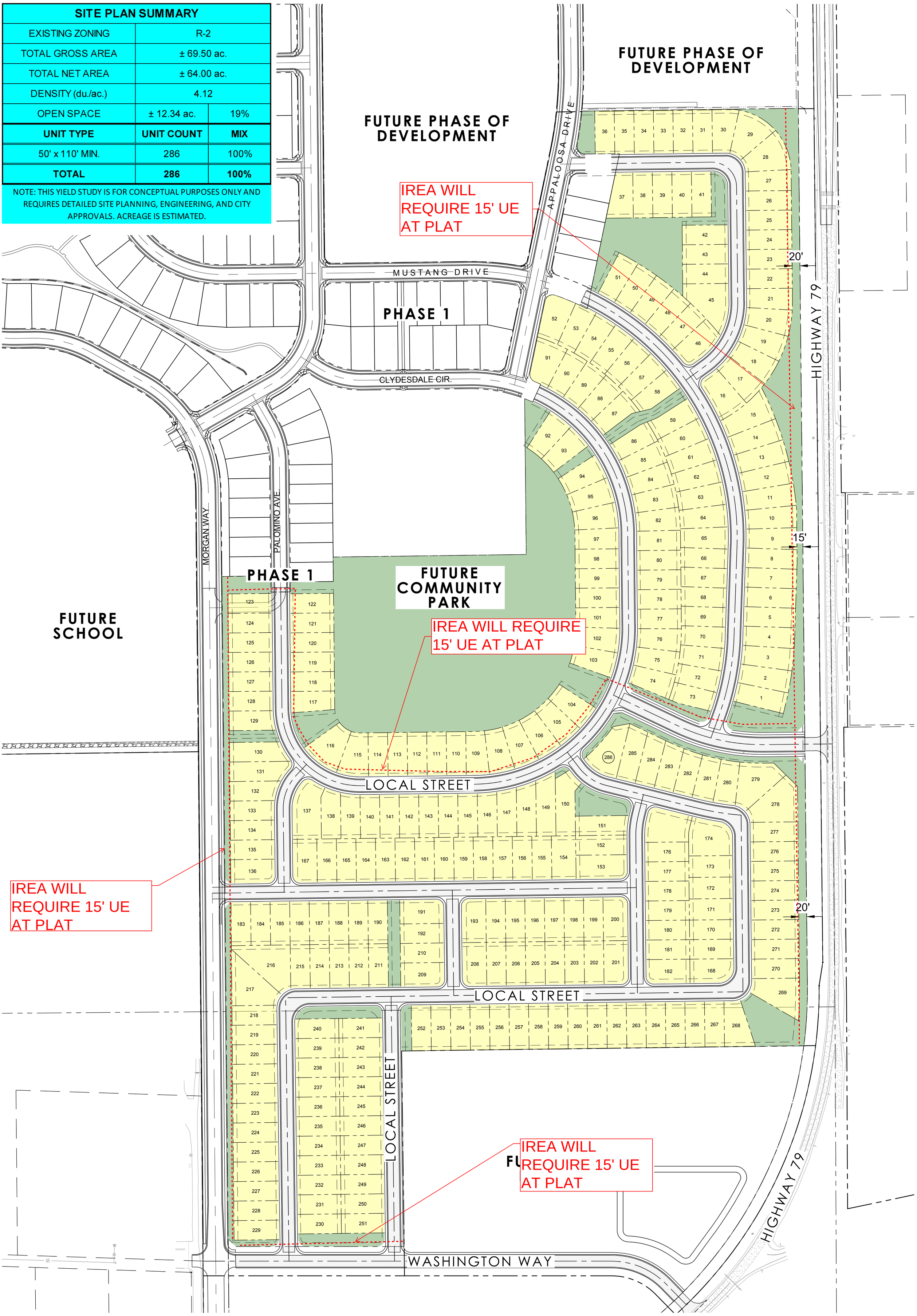


LGI HOMES

BENNETT RANCH

BENNETT, COLORADO

PHASE 2 SKETCH PLAN

04.02.2021 | SCALE: 1"=100'

N 0' 50' 100' 200'

Kimley»Horn

LSC TRANSPORTATION CONSULTANTS, INC.

1889 York Street
Denver, CO 80206
(303) 333-1105
FAX (303) 333-1107
E-mail: lsc@lscdenver.com

December 7, 2018

Mr. Michael Blumenthal
Bennett Ranch, LLC
17 Beacon Hill Lane
Greenwood Village, CO 80111

Re: Bennett Ranch
Traffic Impact Analysis
Bennett, CO
LSC #181140

Dear Mr. Blumenthal:

In response to your request, LSC Transportation Consultants, Inc. has prepared this traffic impact analysis for the proposed Bennett Ranch development. As shown on Figure 1, the site is located south of E. 38th Avenue and west of SH 79 (Kiowa-Bennett Road) in Bennett, Colorado.

REPORT CONTENTS

The report contains the following: the existing roadway and traffic conditions in the vicinity of the site including the lane geometries, traffic controls, posted speed limits, etc.; the existing weekday peak-hour traffic volumes; the existing daily traffic volumes in the area; the typical weekday site-generated traffic volume projections for the site; the assignment of the projected traffic volumes to the area roadways; the projected long-term background and resulting total traffic volumes on the area roadways; the site's projected traffic impacts; and any recommended roadway improvements to mitigate the site's traffic impacts.

LAND USE AND ACCESS

The site is proposed to include about 416 single-family dwelling units, about 231 multi-family dwelling units, a 17.68-acre area to be dedicated to the school district, a 15.36-acre park, a 20,000 square-foot fire station, and about 99,600 square feet of retail space. Full movement access points are proposed to E. 38th Avenue and SH 79 (Kiowa-Bennett Road or Palmer Avenue) as shown in the conceptual site plan in Figure 2.

ROADWAY AND TRAFFIC CONDITIONS

Area Roadways

The major roadways in the site's vicinity are shown on Figure 1 and are described below.

- **SH 79 (Kiowa-Bennett Road and/or Palmer Avenue)** is a north-south, two-lane state highway east of the site. South of E. 38th Avenue, it is classified by CDOT as NR-B (Non-Rural Arterial) and as R-B (Rural Highway) north of E. 38th Avenue. The intersection with E. 38th Avenue is stop-sign controlled. The posted speed limit in the vicinity of the site transitions from 35 to 65 mph as the roadway moves from urban to rural. The 2013 *SH 79-Kiowa Bennett Corridor PEL Study* (SH 79 PEL) shows SH 79 being realigned in the future between the site and I-70. The portion south of the site (Palmer Avenue) will likely be turned over to the Town of Bennett with the primary alignment headed south to cross E. Colfax Avenue. Both roadways are assumed to be four-lane roadways adjacent to the site by 2040. All full movement access proposed to SH 79 is consistent with the August, 2018 *SH 79 Access Control Plan* by SM Rocha, LLC.

- **E. 38th Avenue** is an east-west, two-lane gravel collector roadway north of the site. The intersection with SH 79 is stop-sign controlled. No speed limit is posted in the vicinity of the site.

Existing Traffic Conditions

Figure 3 shows the existing lane geometries, traffic controls, posted speed limits, and traffic volumes in the site's vicinity on a typical weekday. The weekday peak-hour traffic volumes and daily traffic counts are from the attached traffic counts conducted by Counter Measures in September and November, 2018.

2023 and 2040 Background Traffic

Figure 4 shows the estimated 2023 background traffic and Figure 5 shows the estimated 2040 background traffic based on an annual growth rate of 2.3 percent on SH 79 at E. 38th Avenue per the SH 79 PEL.

Existing, 2023, and 2040 Background Levels of Service

Level of service (LOS) is a quantitative measure of the level of congestion or delay at an intersection. Level of service is indicated on a scale from "A" to "F." LOS A is indicative of little congestion or delay and LOS F is indicative of a high level of congestion or delay. Attached are specific level of service definitions for unsignalized intersections.

The intersections in Figures 3, 4, and 5 were analyzed as appropriate to determine the existing, 2023, and 2040 background levels of service using Synchro. Table 1 shows the level of service analysis results. The level of service reports are attached.

- **SH 79 (Kiowa-Bennett Road)/E. 38th Avenue:** All movements at this unsignalized intersection currently operate at LOS "A" during both morning and afternoon peak-hours and are expected to operate at LOS "B" or better through 2040.

- **SH 79 (Palmer Avenue)/Old Victory Road:** All movements at this unsignalized intersection currently operate at LOS "B" or better during both morning and afternoon peak-hours and are expected to do so through 2023. This intersection is expected to be reconfigured by 2040.

- **SH 79 (Kiowa-Bennett Road)/Old Victory Road/Palmer Avenue:** All movements at this future unsignalized intersection are expected to operate at LOS "B" or better through 2040.

- **SH 79 (Palmer Avenue)/Greg's Place**: All movements at this unsignalized intersection currently operate at LOS "B" or better during both morning and afternoon peak-hours and are expected to do so through 2040.

- **SH 79 (Palmer Avenue)/8th Street**: All movements at this unsignalized intersection currently operate at LOS "C" or better during both morning and afternoon peak-hours and are expected to operate at LOS "D" or better through 2040.

TRIP GENERATION

Table 2 shows the estimated average weekday, morning peak-hour, and afternoon peak-hour trip generation for the proposed site based on the rates from *Trip Generation, 10th Edition, 2017* by the Institute of Transportation Engineers (ITE) for the proposed land use.

The site is projected to generate about 8,147 primary vehicle-trips on the average weekday, with about half entering and half exiting during a 24-hour period. During the morning peak-hour, which generally occurs for one hour between 6:30 and 8:30 a.m., about 167 vehicles would enter and about 351 vehicles would exit the site. During the afternoon peak-hour, which generally occurs for one hour between 4:00 and 6:00 p.m., about 526 vehicles would enter and about 405 vehicles would exit. This assumes 34 percent of the shopping center land use trips are pass-by trips.

TRIP DISTRIBUTION

Figure 6 shows the estimated 2023 and 2040 directional distribution of the site-generated traffic volumes on the area roadways. The estimates were based on the location of the site with respect to the regional population, employment, and activity centers; and the site's proposed land use.

TRIP ASSIGNMENT

Figure 7a shows the estimated 2023 primary site-generated traffic volumes based on the 2023 directional distribution percentages (from Figure 6) and the primary trip generation estimate (from Table 2).

Figure 7b shows the estimated 2040 primary site-generated traffic volumes based on the 2040 directional distribution percentages (from Figure 6) and the primary trip generation estimate (from Table 2).

Figures 8a and 8b show the estimated 2023 and 2040 pass-by site-generated traffic volumes.

2023 AND 2040 TOTAL TRAFFIC

Figure 9 shows the 2023 total traffic which is the sum of 2040 background traffic volumes (from Figure 4) and the 2023 site-generated traffic volumes (from Figures 7a and 8a). Figure 9 also shows the recommended 2023 lane geometry and traffic control.

Figure 10 shows the 2040 total traffic which is the sum of 2040 background traffic volumes (from Figure 5) and the 2040 site-generated traffic volumes (from Figures 7b and 8b). Figure 10 also shows the recommended 2040 lane geometry and traffic control.

PROJECTED LEVELS OF SERVICE

The intersections in Figures 9 and 10 were analyzed to determine the 2023 and 2040 total levels of service. Table 1 shows the level of service analysis results. The level of service reports are attached.

- **E. 38th Avenue/Northwest Site Access:** All movements at this future unsignalized intersection are expected to operate at LOS "A" during both morning and afternoon peak-hours through 2040.

- **E. 38th Avenue/Northeast Site Access:** All movements at this future unsignalized intersection are expected to operate at LOS "A" during both morning and afternoon peak-hours through 2040.

- **E. 38th Avenue/Fire Station Access:** All movements at this future unsignalized intersection are expected to operate at LOS "A" during both morning and afternoon peak-hours through 2040.

- **SH 79 (Kiowa-Bennett Road)/E. 38th Avenue:** All movements at this unsignalized intersection are expected to operate at LOS "C" or better during both morning and afternoon peak-hours through 2040.

- **SH 79 (Kiowa-Bennett Road)/East Site Access:** All movements at this future unsignalized intersection are expected to operate at LOS "B" or better during both morning and afternoon peak-hours through 2040.

- **SH 79 (Kiowa-Bennett Road)/Old Victory Road:** All movements at this unsignalized intersection are expected to operate at LOS "B" or better during both morning and afternoon peak-hours through 2023. This intersection is expected to be reconfigured by 2040.

- **SH 79 (Kiowa-Bennett Road)/Old Victory Road/Palmer Avenue:** All movements at this future unsignalized intersection are expected to operate at LOS "D" or better during both morning and afternoon peak-hours through 2040 with the exception of the eastbound left-turn movement which is expected to operate at LOS "F" in the 2040 afternoon peak-hour.

- **Palmer Avenue/Southeast Site Access:** All movements at this future unsignalized intersection are expected to operate at LOS "B" or better during both morning and afternoon peak-hours through 2040.

- **SH 79 (Kiowa-Bennett Road)/RIRO Commercial Access:** All movements at this unsignalized intersection are expected to operate at LOS "B" or better during both morning and afternoon peak-hours through 2023 while Palmer Avenue remains under CDOT jurisdiction.

- **SH 79 (Kiowa-Bennett Road)/Full Movement Commercial Access:** All movements at this future unsignalized intersection are expected to operate at LOS "B" or better during both morning and afternoon peak-hours in 2040 after Palmer Avenue transitions from CDOT to Town jurisdiction.

- **SH 79 (Kiowa-Bennett Road)/Gregs Place:** All movements at this unsignalized intersection are expected to operate at LOS "C" or better during both morning and afternoon peak-hours through 2040 with the following exception: The southbound left-turn movement will likely operate at LOS "E" during the 2023 afternoon peak-hour prior to SH 79 being relocated away from the Palmer Avenue alignment.

- **SH 79 (Kiowa-Bennett Road)/8th Street:** All movements at this unsignalized intersection are expected to operate at LOS "D" or better during both morning and afternoon peak-hours through 2040 with the following exception: The southbound left-turn movement will likely operate at LOS "E" during both peak-hours prior to SH 79 being relocated away from the Palmer Avenue alignment.

TRAFFIC SIGNAL WARRANT ANALYSIS

Figure 11 shows the 2040 background and total traffic volumes from Figures 5 and 10 for the SH 79/Old Victory Road/Palmer Avenue intersection plotted on a four-hour traffic signal warrant chart. It shows a traffic signal will likely be warranted by 2040.

CONCLUSIONS AND RECOMMENDATIONS

Trip Generation

1. The site is projected to generate about 8,147 primary vehicle-trips on the average weekday, with about half entering and half exiting during a 24-hour period. During the morning peak-hour, about 167 vehicles would enter and about 351 vehicles would exit the site. During the afternoon peak-hour, about 526 vehicles would enter and about 405 vehicles would exit. This assumes 34 percent of the shopping center trips are pass-by trips.

Projected Levels of Service

2. All movements at the intersections analyzed are expected to operate at LOS "D" or better during both morning and afternoon peak-hours through 2040 with the following exceptions: The southbound left-turn movements from Gregs Place and 8th Street to SH 79 (Palmer Avenue) could operate at LOS "E" by 2023 prior to SH 79 being relocated away from the Palmer Avenue alignment. The eastbound left-turn movement from Palmer Avenue to realigned SH 79 could operate at LOS "F" in the 2040 afternoon peak-hour. Traffic signal control or a left-turn acceleration lane may be needed by 2040.

Conclusions

3. The impact of the Bennett Ranch development can be accommodated by the existing roadway network with the following recommended improvements.

Recommendations

4. CDOT and the Town of Bennett coordinate to realign and widen SH 79 through Bennett as planned in the *SH 79-Kiowa Bennett Corridor PEL Study* between 2023 and 2040.

5. The recommended turn lane lengths for intersections impacted by the site are shown in Figures 9 and 10.

6. The intersection of realigned SH 79 with Old Victory Road and Palmer Avenue may require traffic signal control or an eastbound to northbound left-turn acceleration lane by 2040.

* * * * *

We trust our findings will assist you in gaining approval of the proposed Bennett Ranch development. Please contact me if you have any questions or need further assistance.

Sincerely,

LSC TRANSPORTATION CONSULTANTS, INC.

COLORADO LICENSED
CHRISTOPHER S. MCGRANAHAN
39018
PROFESSIONAL ENGINEER

By_____
Christopher S. McGranahan, PE, PTOE
Principal

12-7-18

CSM/wc

Enclosures: Tables 1 and 2
Figures 1 - 11
Traffic Count Reports
Level of Service Definitions
Level of Service Reports

Z:\LSC\Projects\2018\181140-BennettRanch\Report\BennettRanch-120718.wpd

Table 1 (Page 1 of 2)
Intersection Levels of Service Analysis
Bennett Ranch
Bennett, CO
LSC #181140; December, 2018

Intersection Location	Traffic Control	Existing Traffic Level of Service AM	Existing Traffic Level of Service PM	2023 Background Traffic Level of Service AM	2023 Background Traffic Level of Service PM	2023 Total Traffic Level of Service AM	2023 Total Traffic Level of Service PM	2040 Background Traffic Level of Service AM	2040 Background Traffic Level of Service PM	2040 Total Traffic Level of Service AM	2040 Total Traffic Level of Service PM
E. 38th Avenue/Northwest Site Access	TWSC										
NB Approach		--	--	--	--	A	A	--	--	A	A
WB Approach		--	--	--	--	A	A	--	--	A	A
Critical Movement Delay		--	--	--	--	8.7	8.9	--	--	8.9	9.0
E. 38th Avenue/Northeast Site Access	TWSC										
NB Approach		--	--	--	--	A	A	--	--	A	A
WB Approach		--	--	--	--	A	A	--	--	A	A
Critical Movement Delay		--	--	--	--	8.7	8.7	--	--	8.9	8.8
E. 38th Avenue/Fire Station Access	TWSC										
NB Approach		--	--	--	--	A	A	--	--	A	A
WB Approach		--	--	--	--	A	A	--	--	A	A
Critical Movement Delay		--	--	--	--	8.7	8.6	--	--	8.8	8.9
SH 79/E. 38th Avenue	TWSC										
NB Approach		A	A	A	A	--	--	--	--	--	--
NB Left		--	--	--	--	A	A	A	A	A	A
EB Approach		A	A	B	B	B	B	B	B	B	B
WB Approach		A	A	B	B	B	B	B	B	B	C
SB Approach		A	A	A	A	--	--	--	--	--	--
SB Left		--	--	--	--	A	A	A	A	A	A
Critical Movement Delay		9.4	9.1	10.4	11.1	11.0	12.4	11.6	12.7	12.7	15.4
SH 79/East Site Access	TWSC										
NB Left		--	--	--	--	A	A	--	--	A	A
EB Approach		--	--	--	--	B	B	--	--	B	B
Critical Movement Delay		--	--	--	--	10.1	10.1	--	--	10.2	10.0
SH 79 (Palmer Avenue)/Old Victory Road	TWSC										
WB Approach		B	B	B	B	B	B	--	--	--	--
SB Approach		A	A	A	A	A	A	--	--	--	--
Critical Movement Delay		10.5	10.7	10.6	11.5	11.6	13.1	--	--	--	--

Table 1 (Page 2 of 2)
Intersection Levels of Service Analysis
Bennett Ranch
Bennett, CO
LSC #181140; December, 2018

Intersection Location	Traffic Control	Existing Traffic Level of Service AM	Existing Traffic Level of Service PM	2023 Background Traffic Level of Service AM	2023 Background Traffic Level of Service PM	2023 Total Traffic Level of Service AM	2023 Total Traffic Level of Service PM	2040 Background Traffic Level of Service AM	2040 Background Traffic Level of Service PM	2040 Total Traffic Level of Service AM	2040 Total Traffic Level of Service PM
SH 79/Old Victory Rd./Palmer Ave.	TWSC										
NB Left		--	--	--	--	--	--	A	A	A	A
EB Left		--	--	--	--	--	--	B	B	C	F
EB Through/Right		--	--	--	--	--	--	B	B	B	B
WB Left		--	--	--	--	--	--	B	B	C	D
WB Through/Right		--	--	--	--	--	--	B	B	B	C
SB Left		--	--	--	--	--	--	A	A	A	A
Critical Movement Delay		--	--	--	--	--	--	14.4	14.4	22.0	55.5
Palmer Avenue/Southeast Site Access	TWSC										
NB Approach		--	--	--	--	--	--	A	A	B	B
EB Left		--	--	--	--	A	A	--	--	A	A
WB Left		--	--	--	--	--	--	A	A	A	A
SB Approach		--	--	--	--	B	B	--	--	B	B
Critical Movement Delay		--	--	--	--	10.7	13.3	9.6	9.5	11.6	13.3
Palmer Avenue/Commercial Access	TWSC										
EB Left	RIRO in 2023	--	--	--	--	--	--	--	--	A	A
SB Right	Full Move-	--	--	--	--	B	B	--	--	B	B
Critical Movement Delay	ment in 2040	--	--	--	--	10.2	10.4	--	--	10.4	11.4
Palmer Avenue/Greg's Place	TWSC										
EB Approach or Left		A	A	A	A	A	A	A	A	A	A
SB Approach		B	B	B	B	--	--	B	A	--	--
SB Left		--	--	--	--	C	E	--	--	B	B
SB Right		--	--	--	--	B	B	--	--	A	A
Critical Movement Delay		10.5	10.3	10.8	11.1	16.7	44.2	10.2	9.8	12.5	14.6
Palmer Avenue/8th Street	TWSC										
EB Approach or Left		A	A	A	A	B	A	A	A	A	A
SB Left		C	C	D	B	E	E	D	B	D	B
SB Right		B	B	B	B	C	B	A	A	A	A
Critical Movement Delay		23.0	15.9	26.3	14.7	46.4	43.8	26.5	12.9	28.8	14.8

Table 2
ESTIMATED TRAFFIC GENERATION
Bennett Ranch
Bennett, CO
LSC #181140; December 2018

Traffic Analysis Zone	Trip Generating Category	Quantity	Trip Generation Rates [1] Average Weekday	AM Peak-Hour In	AM Peak-Hour Out	PM Peak-Hour In	PM Peak-Hour Out	Vehicle-Trips Generated Average Weekday	AM Peak-Hour In	AM Peak-Hour Out	PM Peak-Hour In	PM Peak-Hour Out
A	Single-Family Housing [2]	117 DU [3]	9.44	0.185	0.555	0.624	0.366	1,104	22	65	73	43
B	Multi-Family Housing [4]	116 DU	7.32	0.106	0.354	0.353	0.207	849	12	41	41	24
C	Fire Station [5]	20 KSF [6]	2.40	0.341	0.139	0.139	0.341	48	7	3	3	7
D	Dedication to School District [7]	17.68 Acres	--	--	--	--	--	0	0	0	0	0
E	Park [8]	15.36 Acres	--	--	--	--	--	0	0	0	0	0
F	Single-Family Housing	103 DU	9.44	0.185	0.555	0.624	0.366	972	19	57	64	38
G	Single-Family Housing	96 DU	9.44	0.185	0.555	0.624	0.366	906	18	53	60	35
H	Single-Family Housing	100 DU	9.44	0.185	0.555	0.624	0.366	944	19	55	62	37
I	Multifamily Housing	115 DU	7.32	0.106	0.354	0.353	0.207	842	12	41	41	24
J	Shopping Center [9]	99.6 KSF	37.75	0.583	0.357	1.829	1.981	3,760	58	36	182	197
							Total =	**9,425**	**167**	**351**	**526**	**405**
							Passby Trips [10] =	1,278	16	16	64	64
							Primary Trips =	**8,147**	**151**	**335**	**462**	**341**

Notes:
(1) Source: *Trip Generation*, Institute of Transportation Engineers, 10th Edition, 2017.
(2) ITE Land Use No. 210 - Single-Family Detached Housing
(3) DU = Dwelling Unit
(4) ITE Land Use No. 220 - Multifamily Housing (Low-Rise)
(5) ITE Land Use No. 575 - Fire and Rescue Station; weekday average was assumed to be 5x the PM Peak and AM Peak is the reverse of the PM Peak
(6) KSF = 1,000 square feet
(7) Land to be dedicated to the School District to add to the overall campus to the west of the site. This estimate may need to be updated once the proposed use for the school site is more defined.
(8) Public Park
(9) ITE Land Use No. 820 - Shopping Center; a FAR of 0.30 was assumed on 7.62 acres.
(10) A passby trip rate of 34 percent was assumed for the shopping center use.

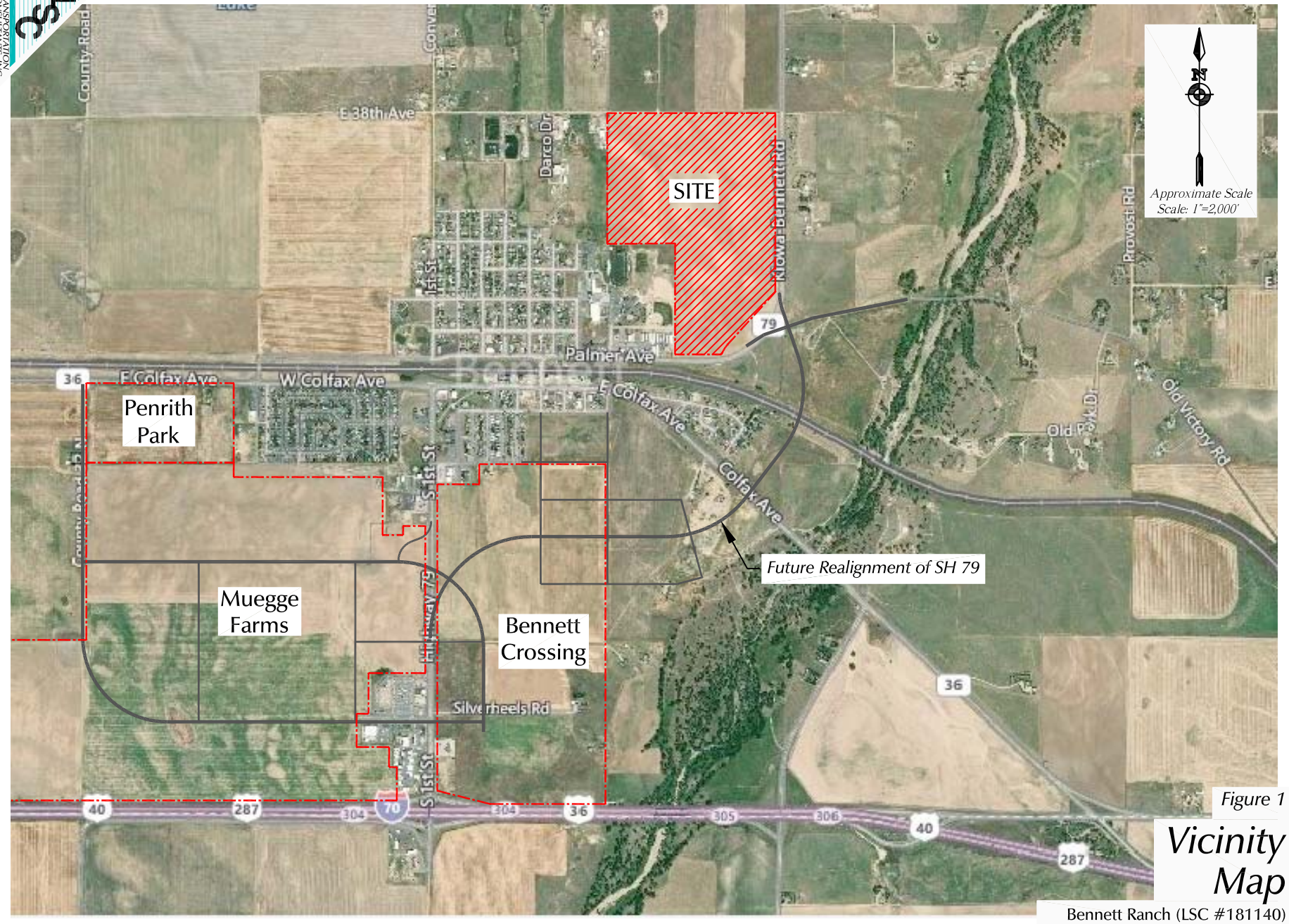


Figure 1

Vicinity Map

Bennett Ranch (LSC #181140)

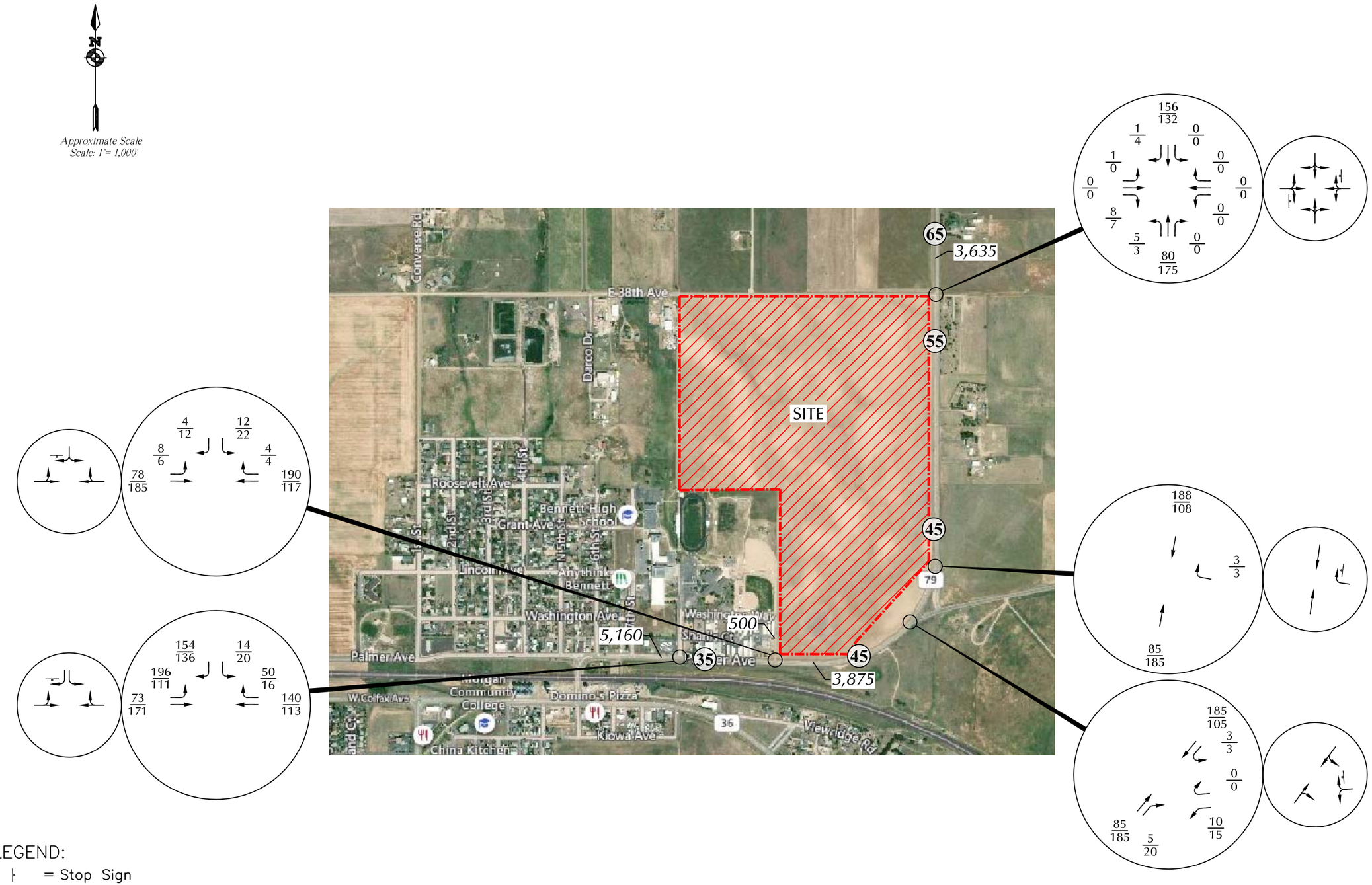
Figure 2

Site Plan

Bennett Ranch (LSC #181140)

LSC TRANSPORTATION CONSULTANTS, INC.

Note: Full Movement Access locations to SH 79 are consistent with the August, 2018 SH 79 Access Control Plan.



LEGEND:

= Stop Sign

(30) = Speed Limit

26/35 = AM Peak Hour Traffic / PM Peak Hour Traffic

1,000 = Average Daily Traffic

LSC TRANSPORTATION CONSULTANTS, INC.

Figure 3

Existing Traffic, Lane Geometry and Traffic Control

Bennett Ranch (LSC #181140)

Note: Assumes annual growth rate of 2.3 percent on SH 79 at E. 38th Avenue per the 2013 SH 79 and Kiowa-Bennett Corridor PEL Study.

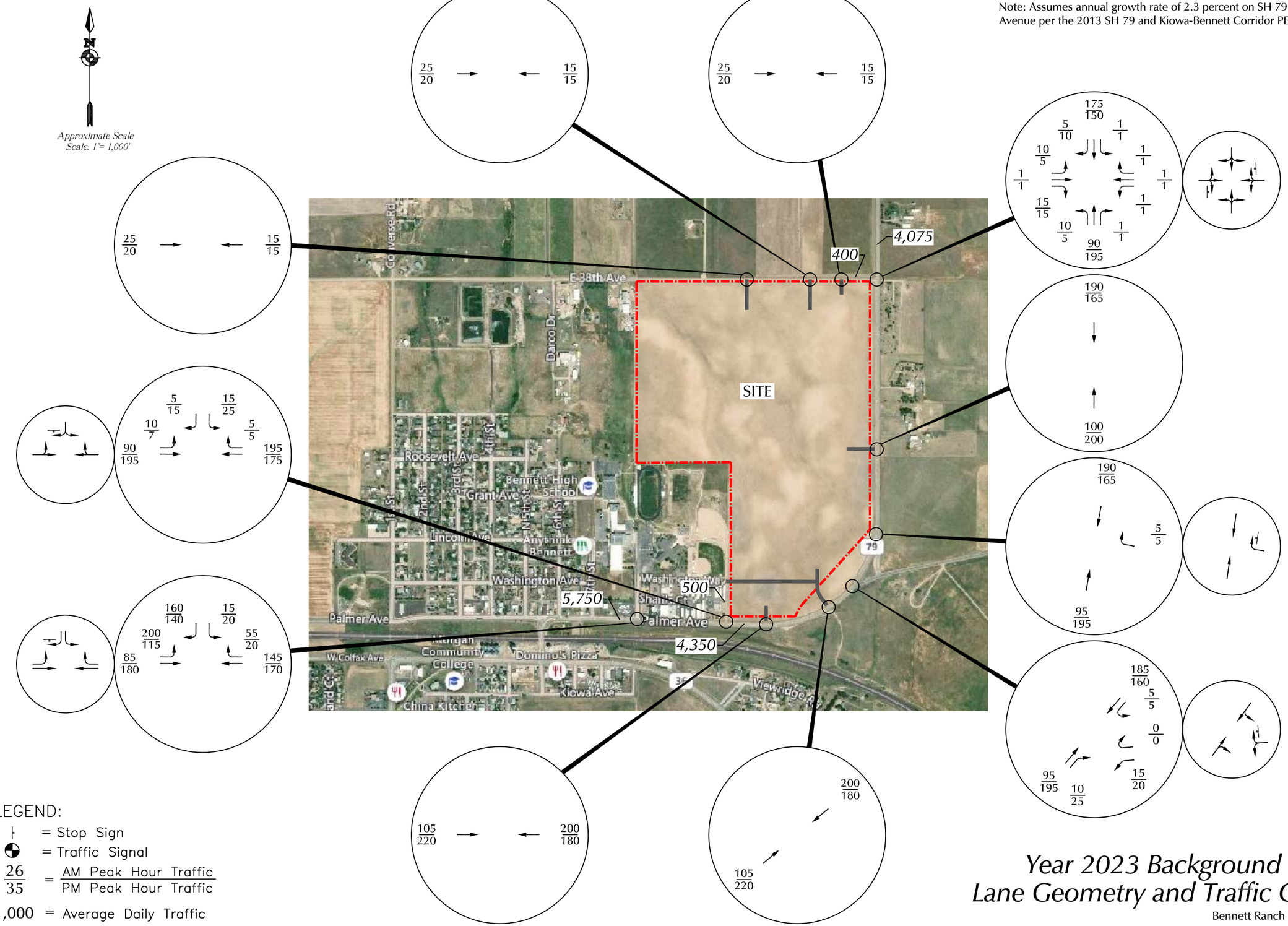
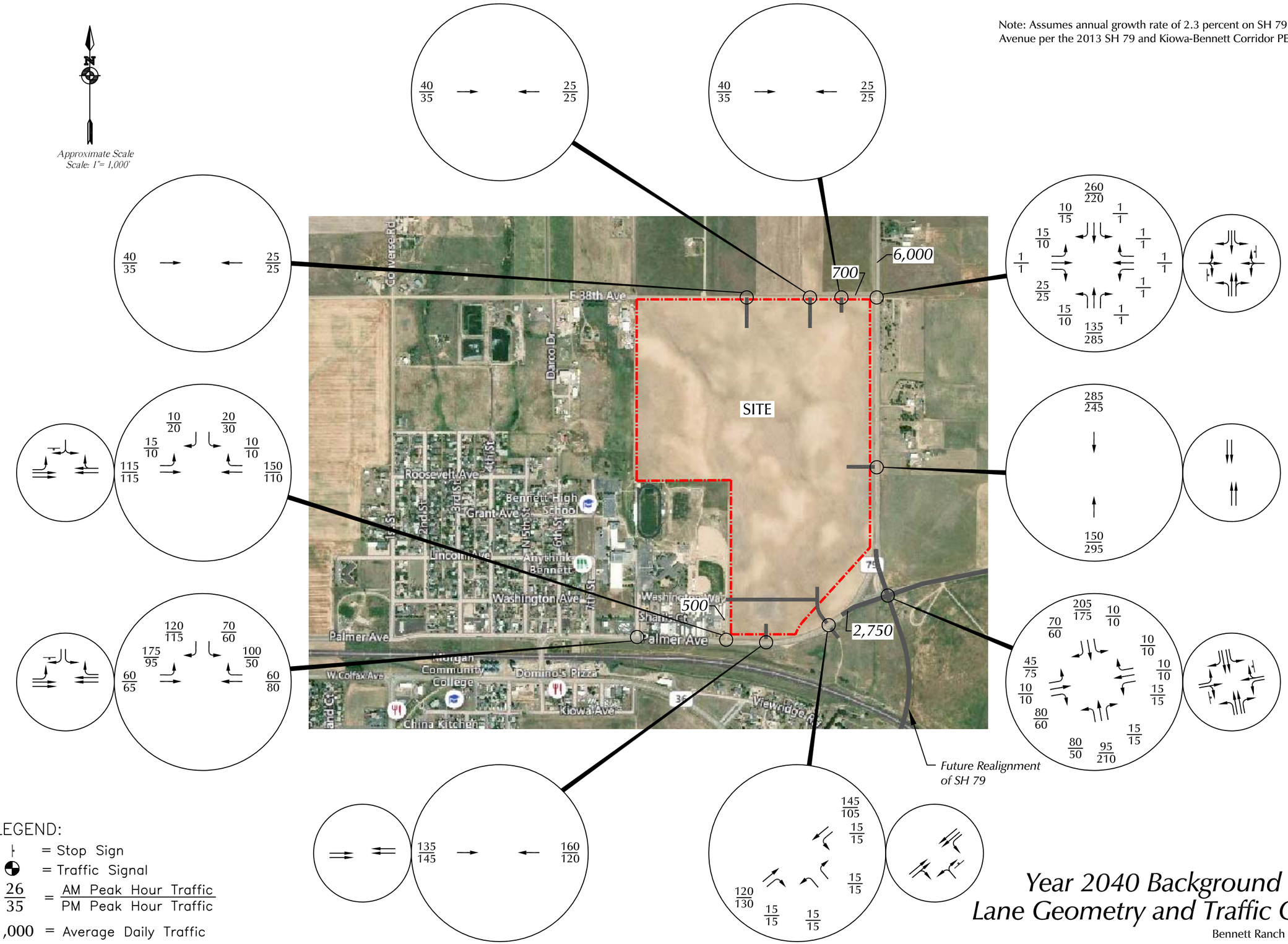


Figure 4

Year 2023 Background Traffic, Lane Geometry and Traffic Control

Bennett Ranch (LSC #181140)

Note: Assumes annual growth rate of 2.3 percent on SH 79 at E. 38th Avenue per the 2013 SH 79 and Kiowa-Bennett Corridor PEL Study.



LEGEND:

= Stop Sign

= Traffic Signal

26/35 = AM Peak Hour Traffic / PM Peak Hour Traffic

1,000 = Average Daily Traffic

LSC TRANSPORTATION CONSULTANTS, INC.

Figure 5

Year 2040 Background Traffic, Lane Geometry and Traffic Control

Bennett Ranch (LSC #181140)

Approximate Scale
Scale: 1"=1,000'

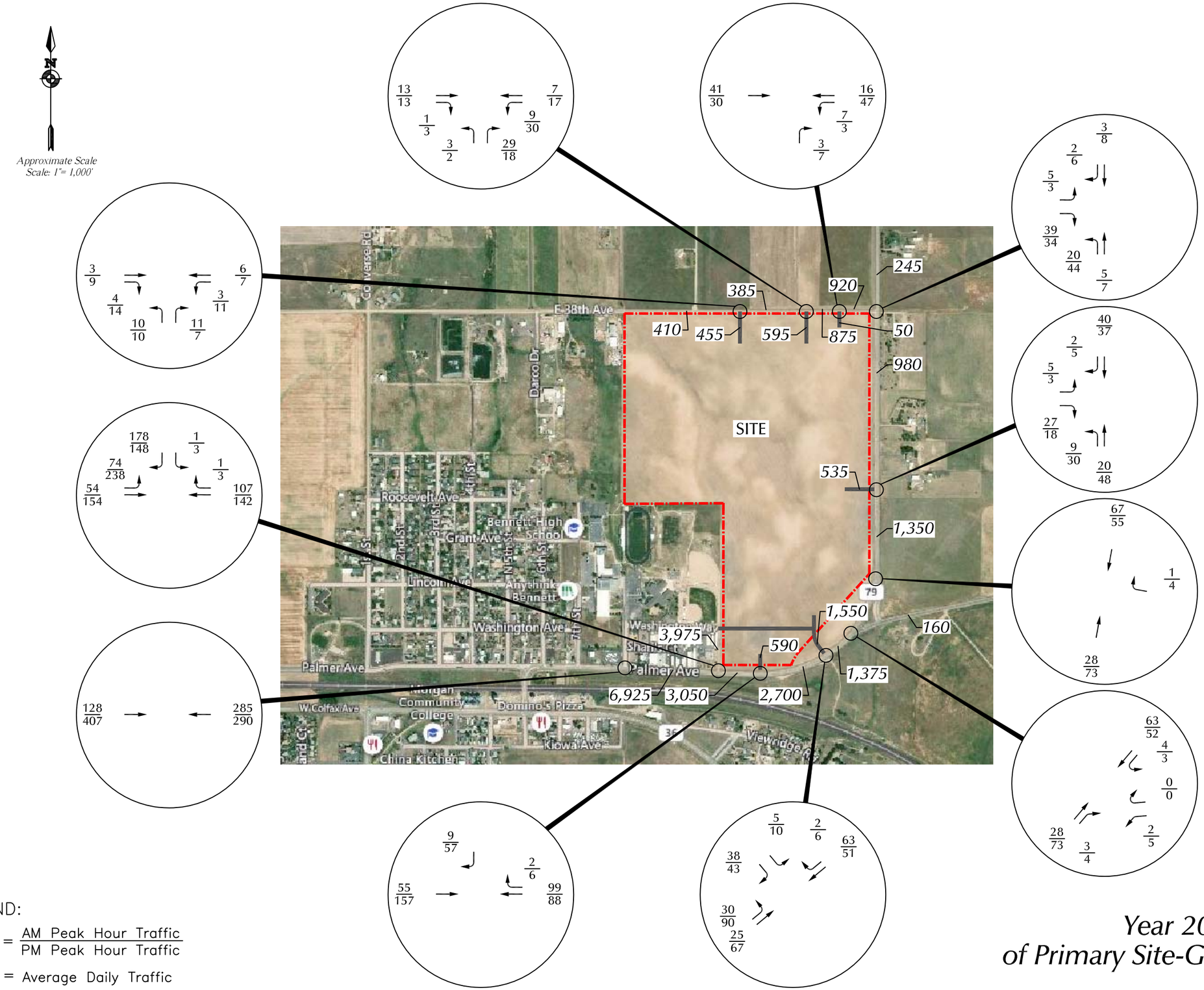
LEGEND:

$\frac{5\%}{5\%}$ = $\frac{\text{2023 Percent Directional Distribution}}{\text{2040 Percent Directional Distribution}}$

Figure 6

Directional Distribution of Site-Generated Traffic

Bennett Ranch (LSC #181140)



LEGEND:

$\frac{26}{35}$ = $\frac{\text{AM Peak Hour Traffic}}{\text{PM Peak Hour Traffic}}$

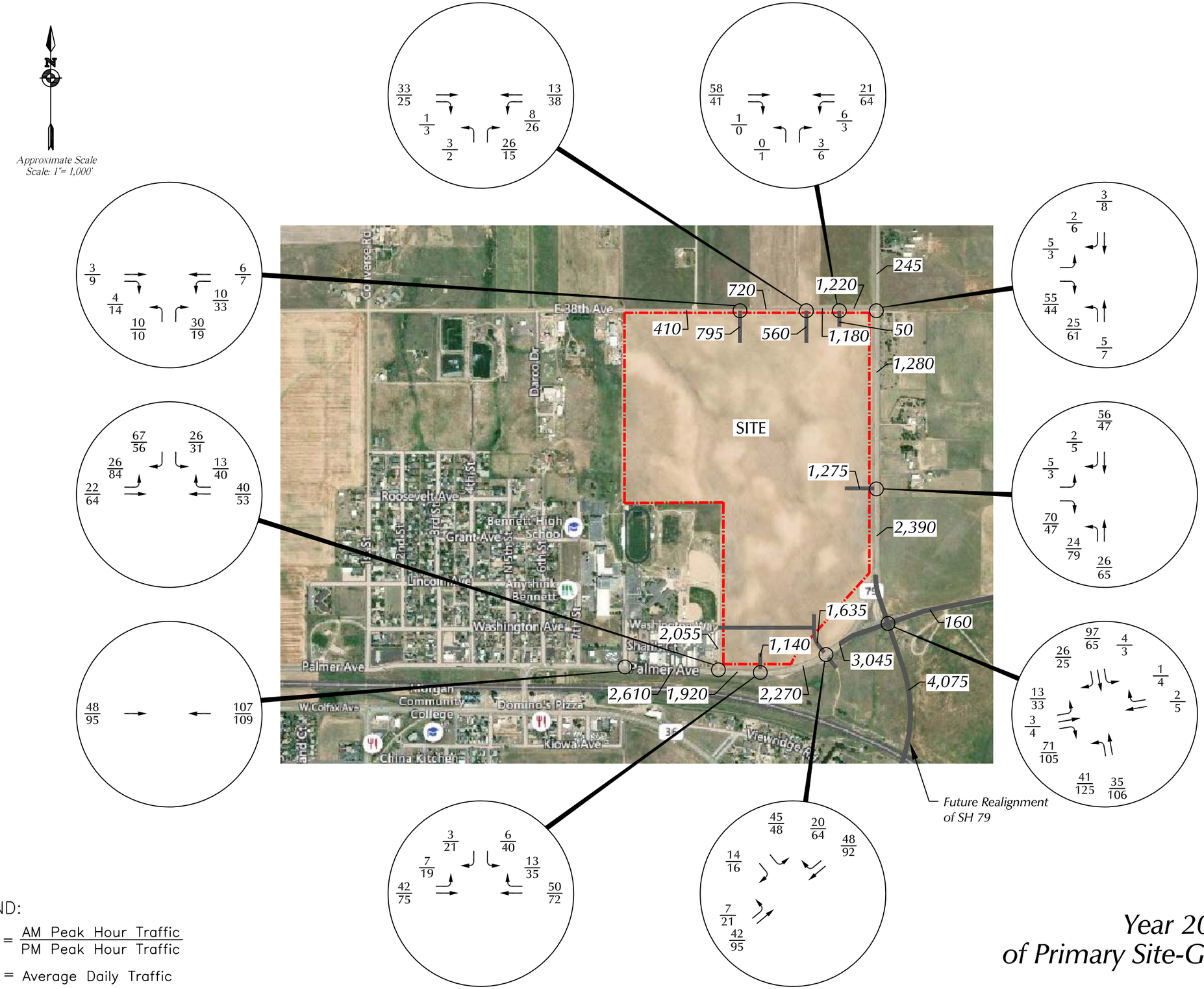
1,000 = Average Daily Traffic

LSC TRANSPORTATION CONSULTANTS, INC.

Figure 7a

Year 2023 Assignment of Primary Site-Generated Traffic

Bennett Ranch (LSC #181140)



LEGEND:

$\frac{26}{35}$ = AM Peak Hour Traffic / PM Peak Hour Traffic

1,000 = Average Daily Traffic

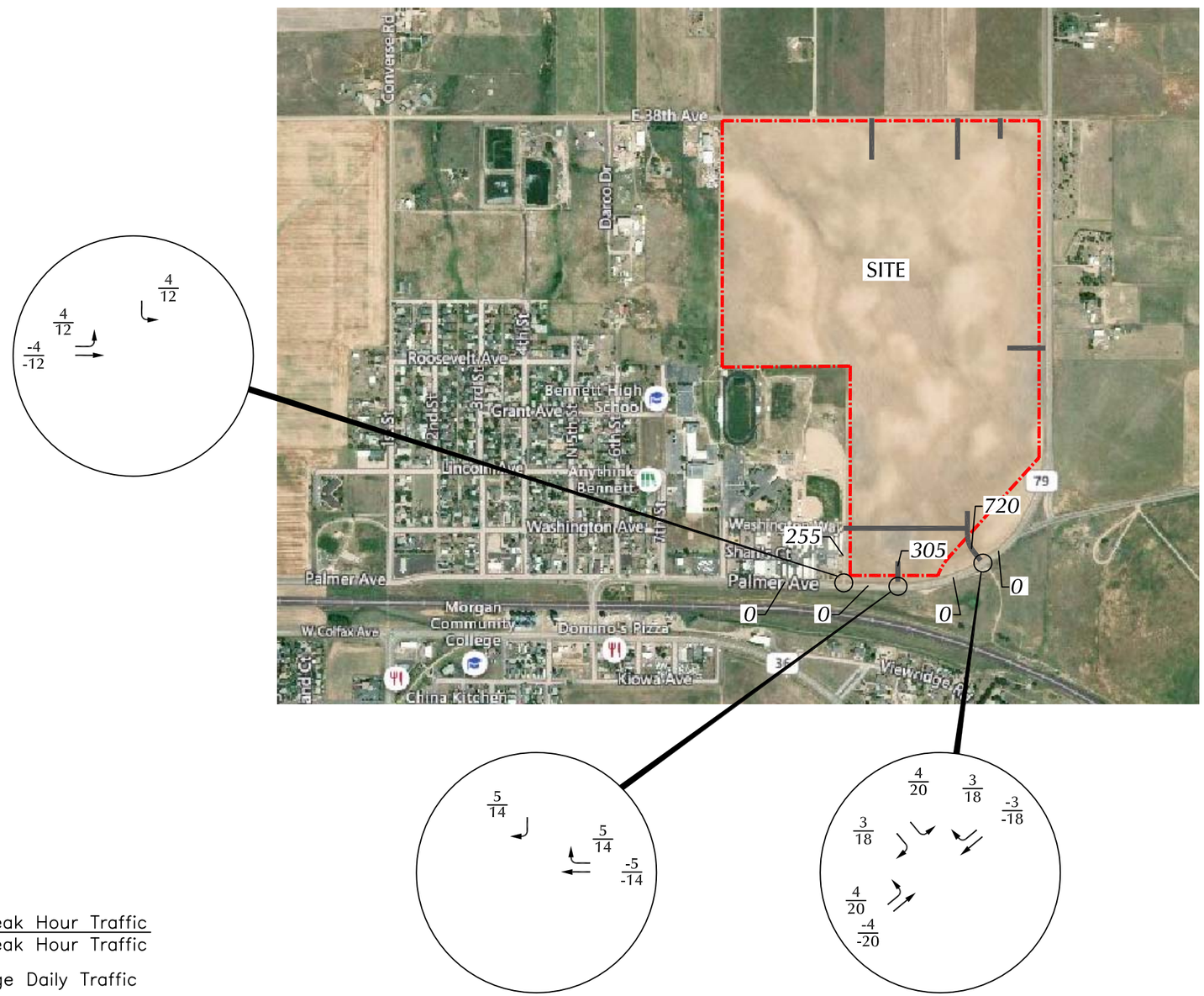
LSC TRANSPORTATION CONSULTANTS, INC.

Figure 7b

Year 2040 Assignment of Primary Site-Generated Traffic

Bennett Ranch (LSC #181140)

Approximate Scale
Scale: 1"= 1,000'



LEGEND:

$\frac{26}{35}$ = $\frac{\text{AM Peak Hour Traffic}}{\text{PM Peak Hour Traffic}}$

1,000 = Average Daily Traffic

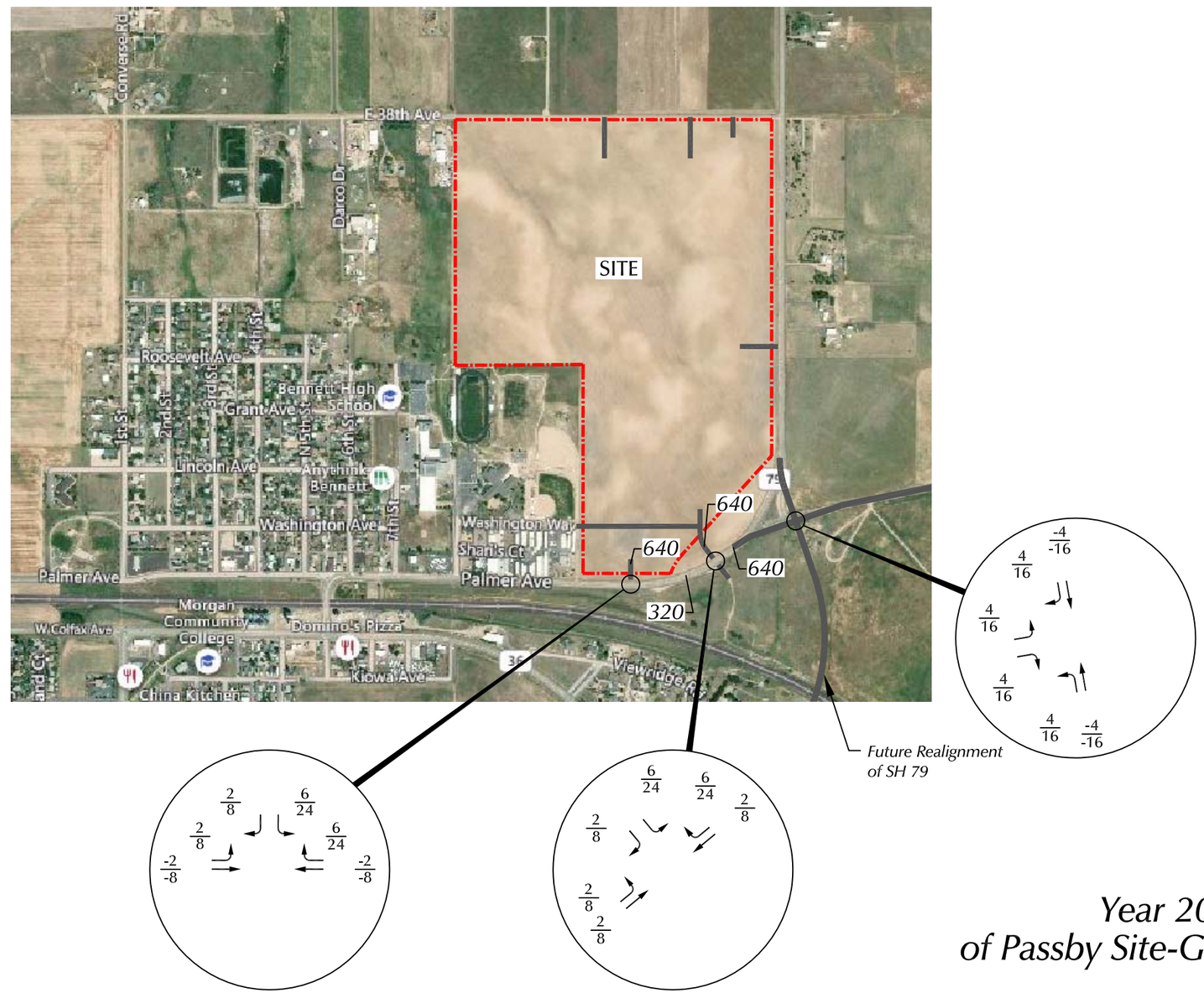
LSC TRANSPORTATION CONSULTANTS, INC.

Figure 8a

Year 2023 Assignment of Passby Site-Generated Traffic

Bennett Ranch (LSC #181140)

Approximate Scale
Scale: 1"= 1,000'



LEGEND:

$\frac{26}{35}$ = $\frac{\text{AM Peak Hour Traffic}}{\text{PM Peak Hour Traffic}}$

1,000 = Average Daily Traffic

LSC TRANSPORTATION CONSULTANTS, INC.

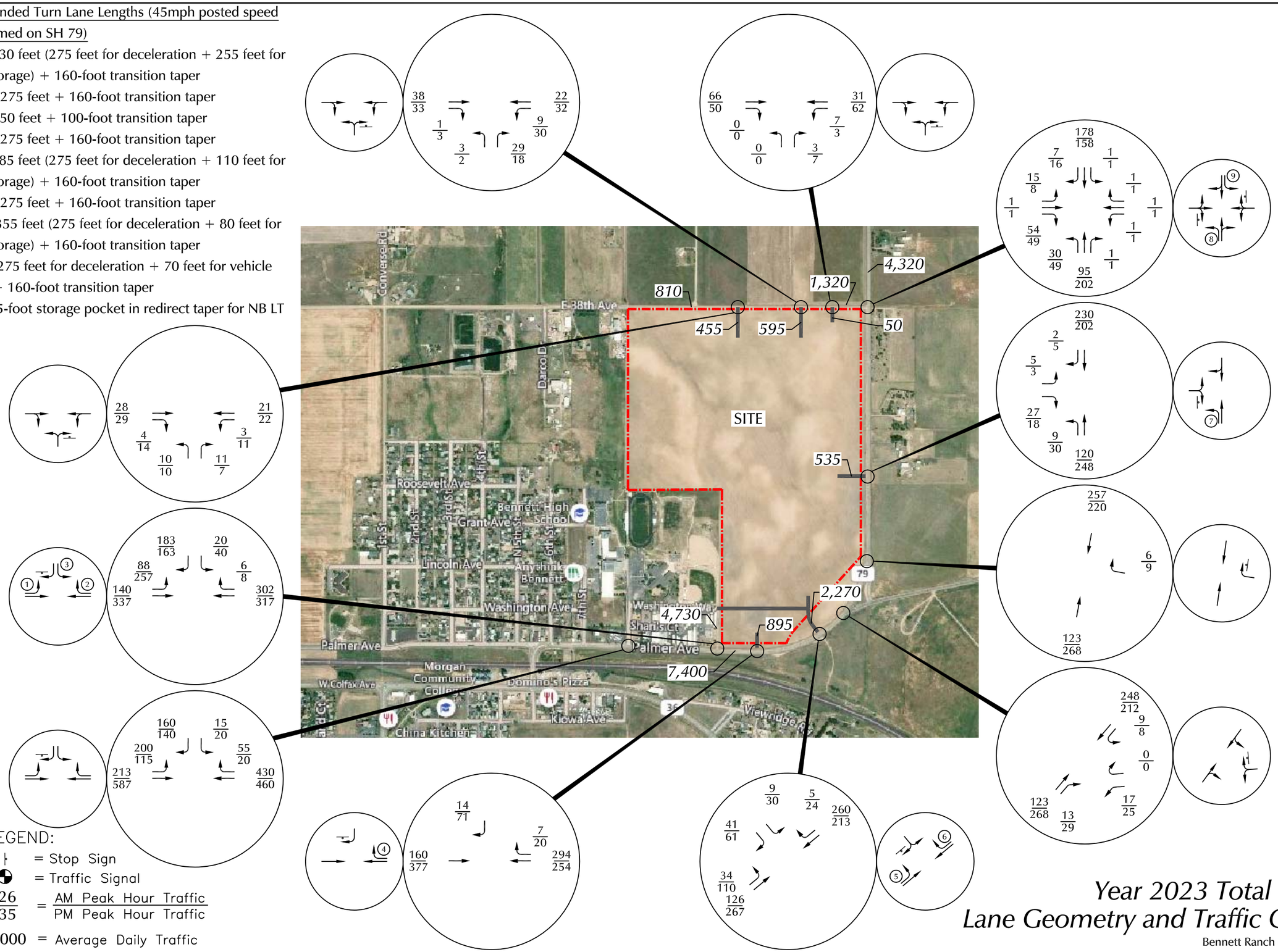
Figure 8b

Year 2040 Assignment of Passby Site-Generated Traffic

Bennett Ranch (LSC #181140)

Recommended Turn Lane Lengths (45mph posted speed limit assumed on SH 79)

① EB LT = 530 feet (275 feet for deceleration + 255 feet for vehicle storage) + 160-foot transition taper
② WB RT = 275 feet + 160-foot transition taper
③ SB LT = 150 feet + 100-foot transition taper
④ WB RT = 275 feet + 160-foot transition taper
⑤ EB LT = 385 feet (275 feet for deceleration + 110 feet for vehicle storage) + 160-foot transition taper
⑥ WB RT = 275 feet + 160-foot transition taper
⑦ NB LT = 355 feet (275 feet for deceleration + 80 feet for vehicle storage) + 160-foot transition taper
⑧ 345 feet (275 feet for deceleration + 70 feet for vehicle storage) + 160-foot transition taper
⑨ Provide 25-foot storage pocket in redirect taper for NB LT lane.



LEGEND:

= Stop Sign

= Traffic Signal

26/35 = AM Peak Hour Traffic / PM Peak Hour Traffic

1,000 = Average Daily Traffic

LSC TRANSPORTATION CONSULTANTS, INC.

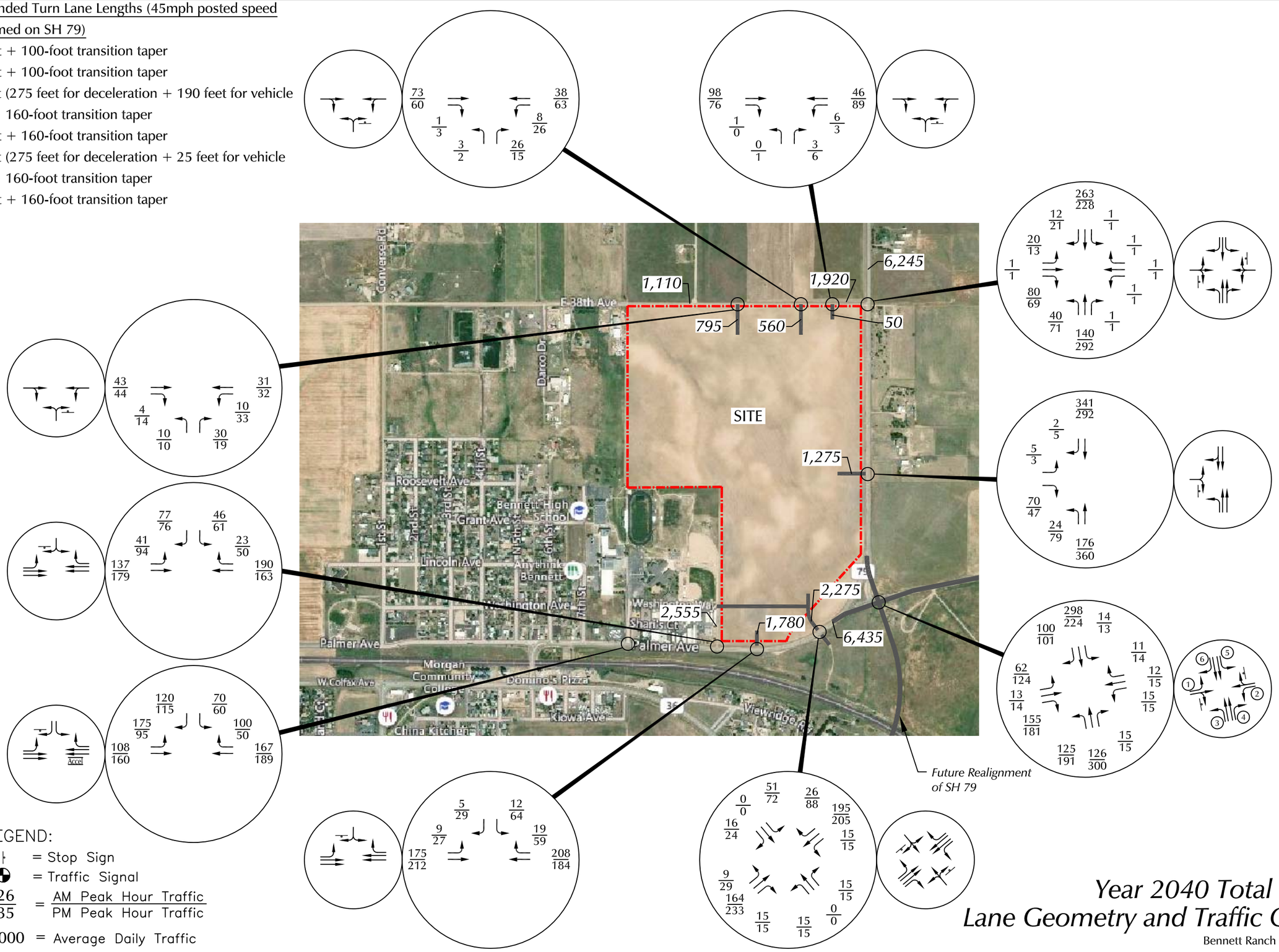
Figure 9

Year 2023 Total Traffic, Lane Geometry and Traffic Control

Bennett Ranch (LSC #181140)

Recommended Turn Lane Lengths (45mph posted speed limit assumed on SH 79)

① = 150 feet + 100-foot transition taper
② = 100 feet + 100-foot transition taper
③ = 465 feet (275 feet for deceleration + 190 feet for vehicle storage) + 160-foot transition taper
④ = 275 feet + 160-foot transition taper
⑤ = 300 feet (275 feet for deceleration + 25 feet for vehicle storage) + 160-foot transition taper
⑥ = 275 feet + 160-foot transition taper



LEGEND:

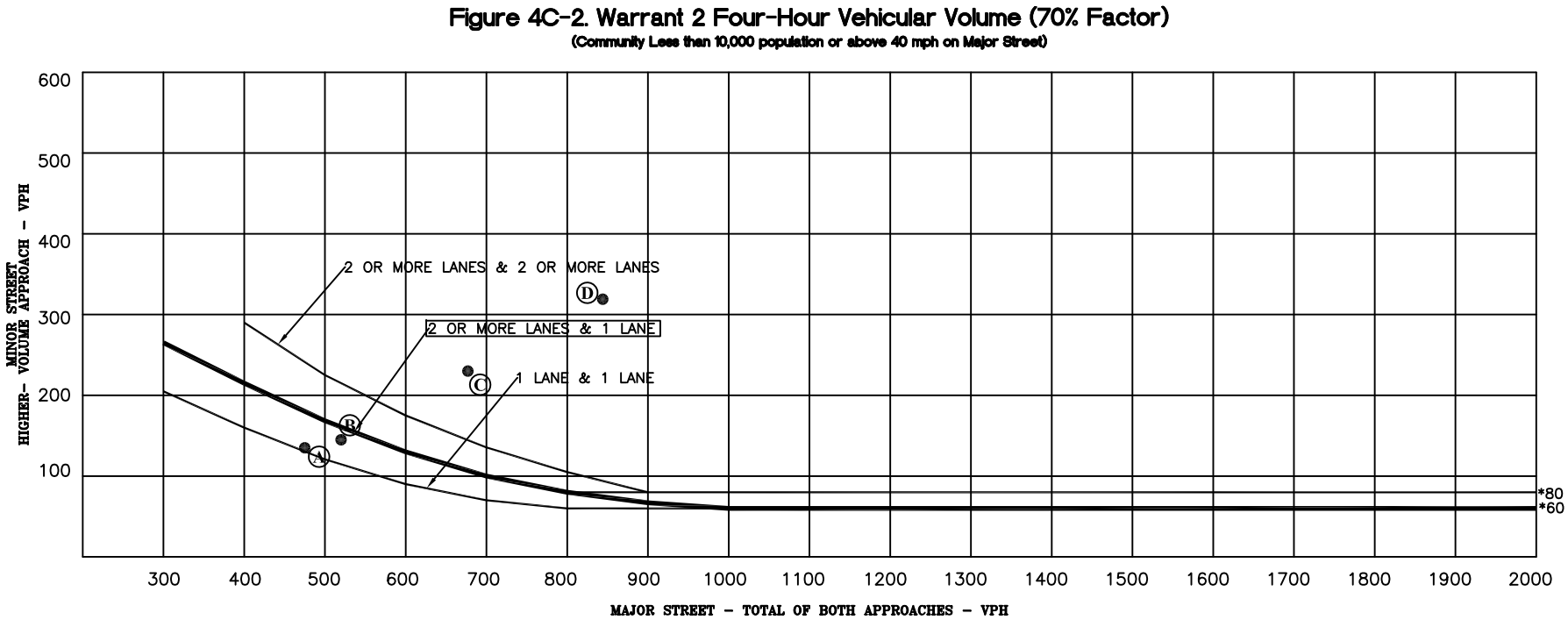
= Stop Sign
= Traffic Signal
26/35 = AM Peak Hour Traffic / PM Peak Hour Traffic
1,000 = Average Daily Traffic

LSC TRANSPORTATION CONSULTANTS, INC.

Figure 10

Year 2040 Total Traffic, Lane Geometry and Traffic Control

Bennett Ranch (LSC #181140)



* Note: 80 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane.

Data Points = (Major Street, Minor Street)

Ⓐ 2040 Background AM Peak = (475,135)
Ⓑ 2040 Background PM Peak = (520,145)
Ⓒ 2040 Total AM Peak = (677,230)
Ⓓ 2040 Total PM Peak = (844,319)

Figure 11

Warrant 2 - Four-Hour Vehicular Volume
SH 79/Old Victory Road/Palmer Avenue

Bennett Ranch (LSC #181140)

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

N/S STREET: KIOWA BENNETT RD
E/W STREET: 38TH AVE
CITY: BENNETT
COUNTY: ADAMS

File Name : KIOW38TH
Site Code : 00000020
Start Date : 9/20/2018
Page No : 1

Groups Printed- VEHICLES

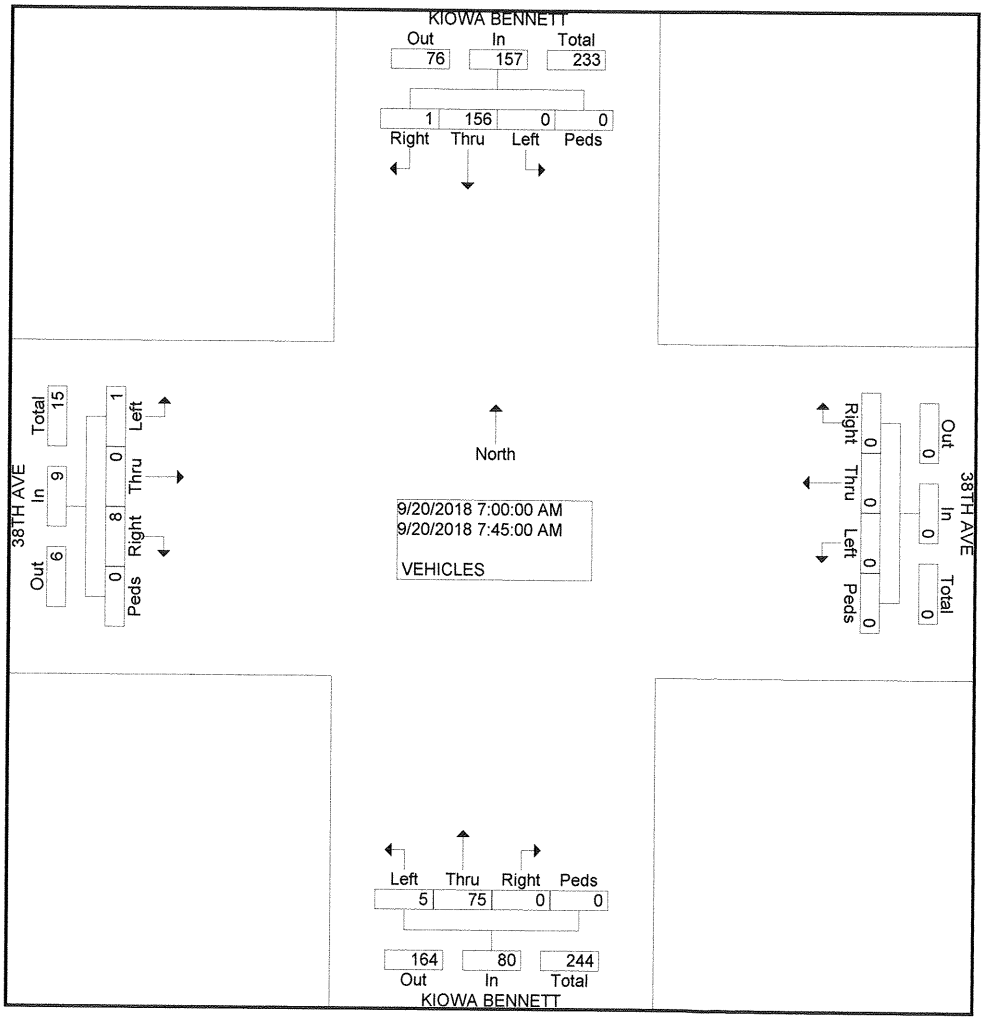
	KIOWA BENNETT Southbound				38TH AVE Westbound				KIOWA BENNETT Northbound				38TH AVE Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	0	19	0	0	0	0	0	0	1	24	0	0	1	0	2	0	47
06:45 AM	0	30	0	0	0	0	0	0	0	24	0	0	0	0	0	0	54
Total	0	49	0	0	0	0	0	0	1	48	0	0	1	0	2	0	101
07:00 AM	0	34	0	0	0	0	0	0	3	16	0	0	0	0	1	0	54
07:15 AM	0	32	0	0	0	0	0	0	0	13	0	0	0	0	4	0	49
07:30 AM	0	45	0	0	0	0	0	0	1	23	0	0	0	0	2	0	71
07:45 AM	0	45	1	0	0	0	0	0	1	23	0	0	1	0	1	0	72
Total	0	156	1	0	0	0	0	0	5	75	0	0	1	0	8	0	246
08:00 AM	0	20	0	0	0	0	0	0	0	22	0	0	0	0	1	0	43
08:15 AM	0	31	1	0	0	0	0	0	0	24	0	0	0	0	0	0	56
Total	0	51	1	0	0	0	0	0	0	46	0	0	0	0	1	0	99
04:00 PM	0	22	0	0	0	0	0	0	0	26	0	0	0	0	2	0	50
04:15 PM	0	23	0	0	0	0	0	0	3	27	0	0	1	0	2	0	56
04:30 PM	0	30	0	0	0	0	0	0	0	41	0	0	0	0	0	0	71
04:45 PM	0	34	2	0	0	0	0	0	3	55	0	0	0	0	1	0	95
Total	0	109	2	0	0	0	0	0	6	149	0	0	1	0	5	0	272
05:00 PM	0	41	2	0	0	0	0	0	0	32	0	0	0	0	4	0	79
05:15 PM	0	27	0	0	0	0	0	0	0	38	0	0	0	0	2	0	67
05:30 PM	0	31	0	0	0	0	0	0	3	35	0	0	0	0	2	0	71
05:45 PM	0	29	0	0	0	0	0	0	1	27	0	0	0	0	0	0	57
Total	0	128	2	0	0	0	0	0	4	132	0	0	0	0	8	0	274
Grand Total	0	493	6	0	0	0	0	0	16	450	0	0	3	0	24	0	992
Apprch %	0.0	98.8	1.2	0.0	0.0	0.0	0.0	0.0	3.4	96.6	0.0	0.0	11.1	0.0	88.9	0.0	
Total %	0.0	49.7	0.6	0.0	0.0	0.0	0.0	0.0	1.6	45.4	0.0	0.0	0.3	0.0	2.4	0.0	

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

N/S STREET: KIOWA BENNETT RD
E/W STREET: 38TH AVE
CITY: BENNETT
COUNTY: ADAMS

File Name : KIOW38TH
Site Code : 00000020
Start Date : 9/20/2018
Page No : 2

	KIOWA BENNETT Southbound					38TH AVE Westbound					KIOWA BENNETT Northbound					38TH AVE Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 06:30 AM to 08:30 AM - Peak 1 of 1																					
Intersection	07:00 AM																				
Volume	0	156	1	0	157	0	0	0	0	0	5	75	0	0	80	1	0	8	0	9	246
Percent	0.0	99.4	0.6	0.0		0.0	0.0	0.0	0.0		6.3	93.8	0.0	0.0		11.1	0.0	88.9	0.0		
07:45 Volume	0	45	1	0	46	0	0	0	0	0	1	23	0	0	24	1	0	1	0	2	72
Peak Factor																					0.854
High Int.	07:45 AM					6:15:00 AM					07:30 AM					07:15 AM					
Volume	0	45	1	0	46	0	0	0	0	0	1	23	0	0	24	0	0	4	0	4	
Peak Factor					0.853										0.833					0.563	



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1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: KIOWA BENNETT RD
E/W STREET: 38TH AVE
CITY: BENNETT
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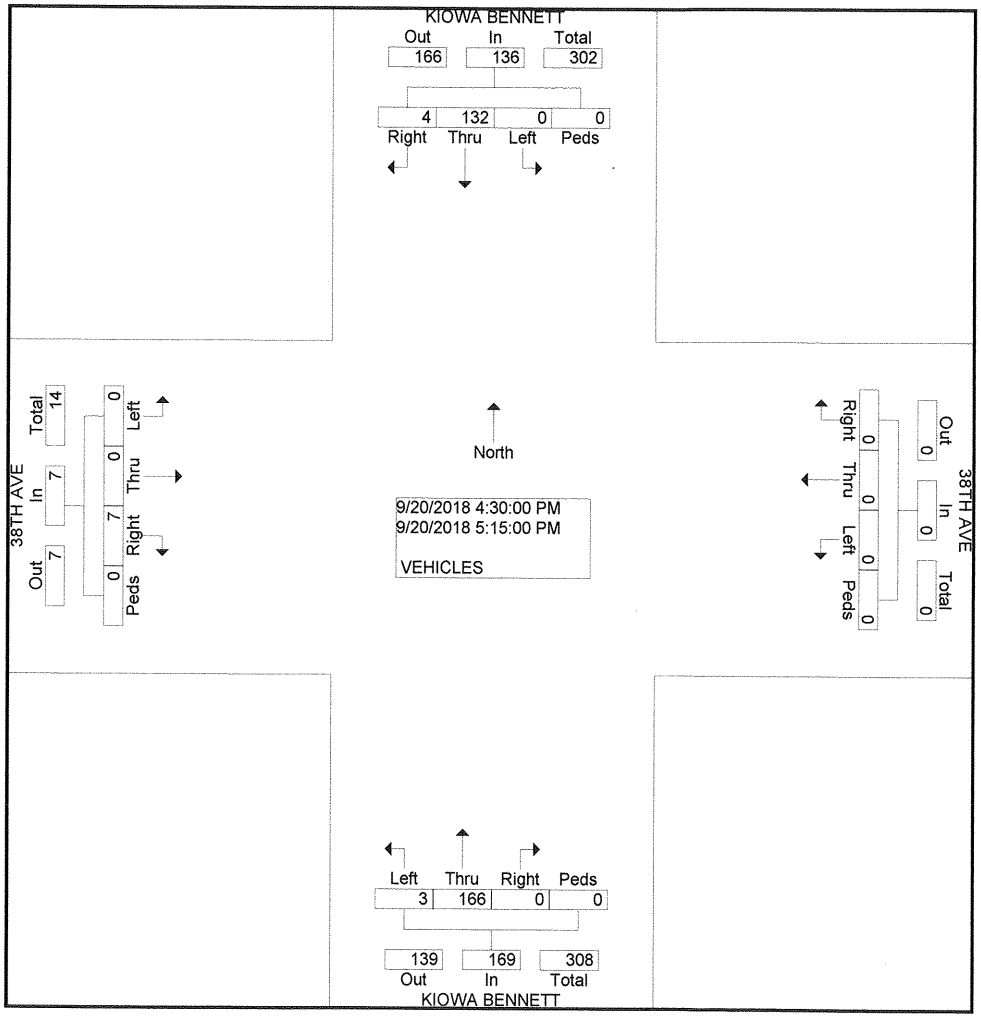
File Name : KIOW38TH
Site Code : 00000020
Start Date : 9/20/2018
Page No : 2

	KIOWA BENNETT Southbound					38TH AVE Westbound					KIOWA BENNETT Northbound					38TH AVE Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Intersection	04:30 PM																				
Volume	0	132	4	0	136	0	0	0	0	0	3	166	0	0	169	0	0	7	0	7	312
Percent	0.0	97.1	2.9	0.0		0.0	0.0	0.0	0.0		1.8	98.2	0.0	0.0		0.0	0.0	100.0	0.0		
04:45 Volume	0	34	2	0	36	0	0	0	0	0	3	55	0	0	58	0	0	1	0	1	95
Peak Factor																					0.821
High Int.	05:00 PM										04:45 PM					05:00 PM					
Volume	0	41	2	0	43	0	0	0	0	0	3	55	0	0	58	0	0	4	0	4	
Peak Factor					0.791										0.728					0.438	



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

N/S STREET: GREG'S PL
E/W STREET: PALMER AVE
CITY: BENNETT
COUNTY: ADAMS

File Name : GREGPALM
Site Code : 00000022
Start Date : 9/20/2018
Page No : 1

Groups Printed- VEHICLES

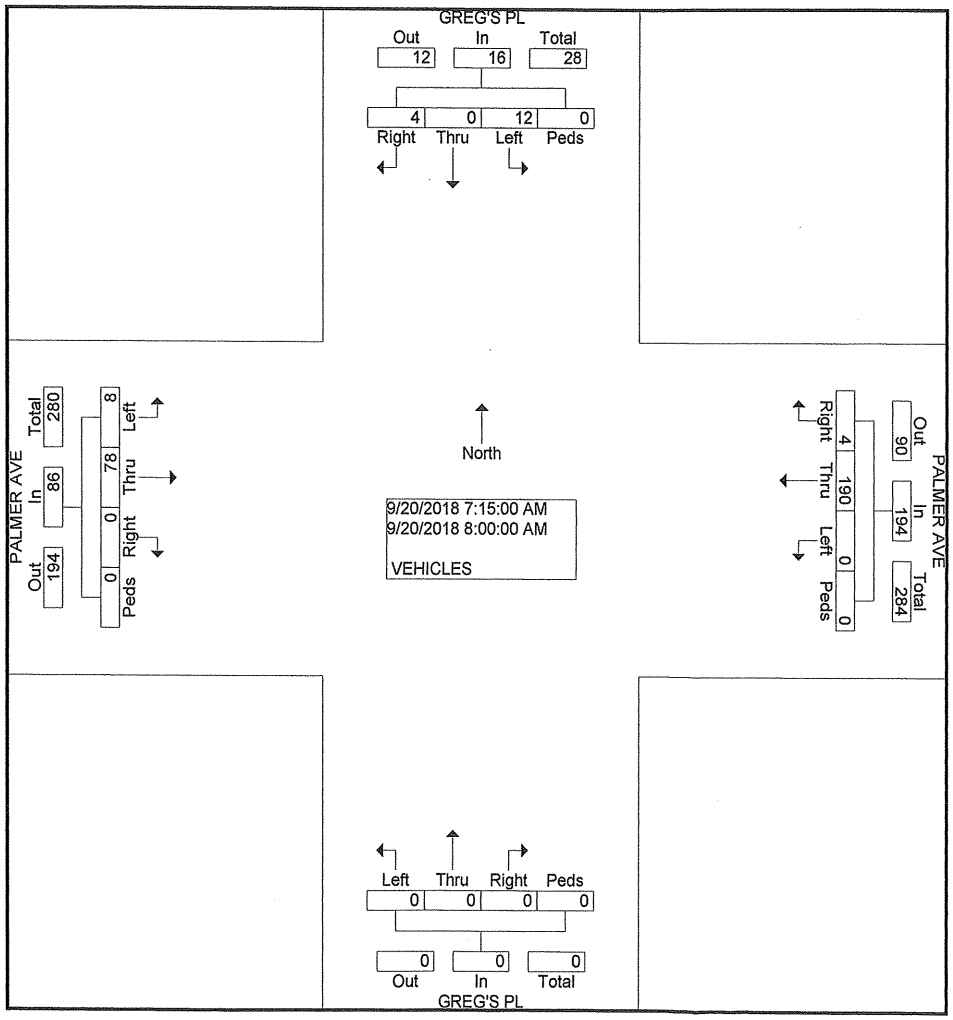
	GREG'S PL Southbound				PALMER AVE Westbound				GREG'S PL Northbound				PALMER AVE Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	0	1	0	0	0	22	0	0	0	0	0	0	1	15	0	0	39
06:45 AM	0	0	0	0	0	35	0	0	0	0	0	0	0	24	0	0	59
Total	0	1	0	0	0	57	0	0	0	0	0	0	1	39	0	0	98
07:00 AM	0	0	0	0	0	33	1	0	0	0	0	0	0	9	0	0	43
07:15 AM	1	0	0	0	0	42	1	0	0	0	0	0	0	11	0	0	55
07:30 AM	5	0	0	0	0	63	2	0	0	0	0	0	3	17	0	0	90
07:45 AM	2	0	4	0	0	52	0	0	0	0	0	0	1	26	0	0	85
Total	8	0	4	0	0	190	4	0	0	0	0	0	4	63	0	0	273
08:00 AM	4	0	0	0	0	33	1	0	0	0	0	0	4	24	0	0	66
08:15 AM	1	0	0	0	0	34	0	0	0	0	0	0	3	25	0	0	63
Total	5	0	0	0	0	67	1	0	0	0	0	0	7	49	0	0	129
04:00 PM	10	0	7	0	0	35	1	0	0	0	0	0	3	42	0	0	98
04:15 PM	7	0	5	0	0	20	1	0	0	0	0	0	1	36	0	0	70
04:30 PM	2	0	0	0	0	29	2	0	0	0	0	0	1	51	0	0	85
04:45 PM	3	0	0	0	0	33	0	0	0	0	0	0	1	56	0	0	93
Total	22	0	12	0	0	117	4	0	0	0	0	0	6	185	0	0	346
05:00 PM	1	0	1	0	0	39	0	0	0	0	0	0	1	36	0	0	78
05:15 PM	1	0	0	0	0	29	0	0	0	0	0	0	2	43	0	0	75
05:30 PM	0	0	0	0	0	33	0	0	0	0	0	0	0	39	0	0	72
05:45 PM	1	0	1	0	0	34	0	0	0	0	0	0	1	29	0	0	66
Total	3	0	2	0	0	135	0	0	0	0	0	0	4	147	0	0	291
Grand Total	38	1	18	0	0	566	9	0	0	0	0	0	22	483	0	0	1137
Apprch %	66.7	1.8	31.6	0.0	0.0	98.4	1.6	0.0	0.0	0.0	0.0	0.0	4.4	95.6	0.0	0.0	
Total %	3.3	0.1	1.6	0.0	0.0	49.8	0.8	0.0	0.0	0.0	0.0	0.0	1.9	42.5	0.0	0.0	

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

N/S STREET: GREG'S PL
E/W STREET: PALMER AVE
CITY: BENNETT
COUNTY: ADAMS

File Name : GREGPALM
Site Code : 00000022
Start Date : 9/20/2018
Page No : 2

	GREG'S PL Southbound					PALMER AVE Westbound					GREG'S PL Northbound					PALMER AVE Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 07:15 AM to 08:00 AM - Peak 1 of 1																					
Intersection	07:15 AM																				
Volume	12	0	4	0	16	0	190	4	0	194	0	0	0	0	0	8	78	0	0	86	296
Percent	75.0	0.0	25.0	0.0		0.0	97.9	2.1	0.0		0.0	0.0	0.0	0.0		9.3	90.7	0.0	0.0		
07:30 Volume	5	0	0	0	5	0	63	2	0	65	0	0	0	0	0	3	17	0	0	20	90
Peak Factor																					0.822
High Int.	07:45 AM					07:30 AM										08:00 AM					
Volume	2	0	4	0	6	0	63	2	0	65	0	0	0	0	0	4	24	0	0	28	
Peak Factor					0.667					0.746										0.768	

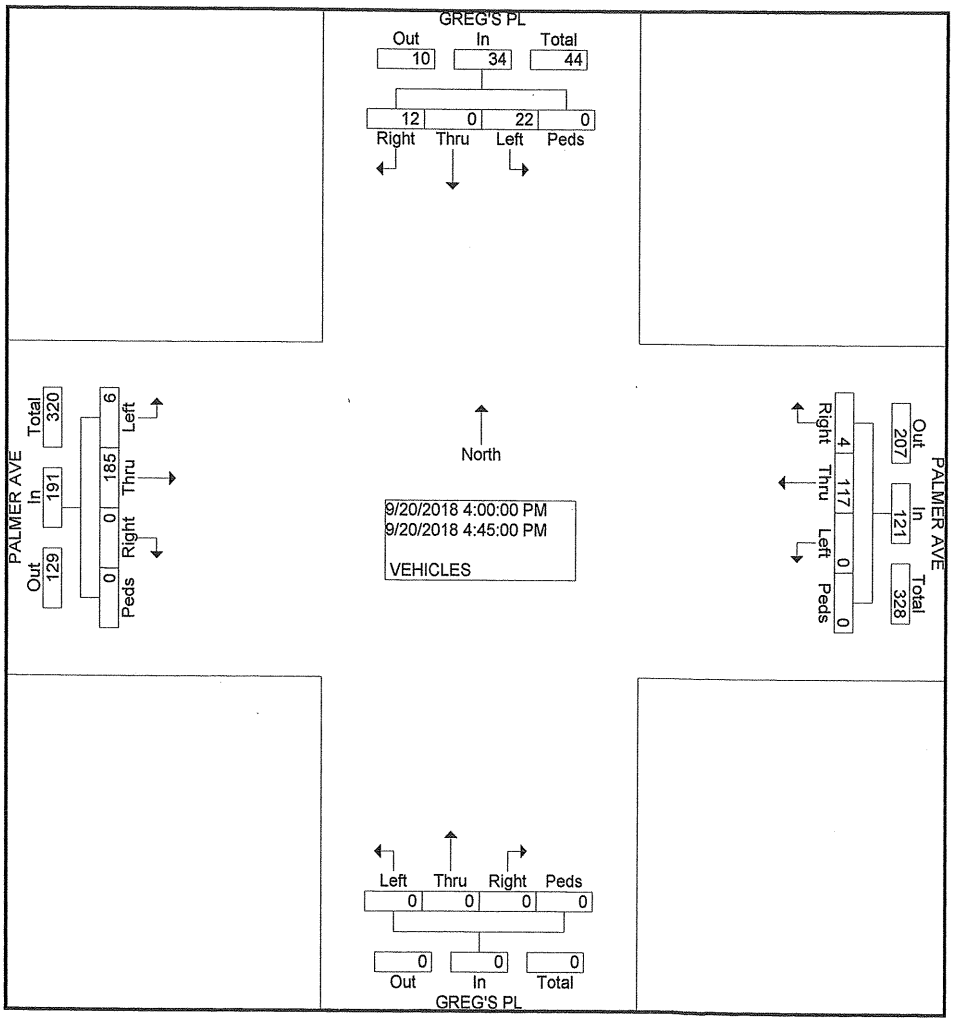


COUNTER MEASURES INC.
1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: GREG'S PL
E/W STREET: PALMER AVE
CITY: BENNETT
COUNTY: ADAMS

File Name : GREGPALM
Site Code : 00000022
Start Date : 9/20/2018
Page No : 2

	GREG'S PL Southbound					PALMER AVE Westbound					GREG'S PL Northbound					PALMER AVE Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 04:00 PM to 04:45 PM - Peak 1 of 1																					
Intersection	04:00 PM																				
Volume	22	0	12	0	34	0	117	4	0	121	0	0	0	0	0	6	185	0	0	191	346
Percent	64.7	0.0	35.3	0.0		0.0	96.7	3.3	0.0		0.0	0.0	0.0	0.0		3.1	96.9	0.0	0.0		
04:00 Volume	10	0	7	0	17	0	35	1	0	36	0	0	0	0	0	3	42	0	0	45	98
Peak Factor																					0.883
High Int.	04:00 PM					04:00 PM										04:45 PM					
Volume	10	0	7	0	17	0	35	1	0	36	0	0	0	0	0	1	56	0	0	57	
Peak Factor					0.500					0.840										0.838	



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

N/S STREET: 8THST
E/W STREET: PALMER AVE
CITY: BENNETT
COUNTY: ADAMS

File Name : 8THPALM
Site Code : 00000015
Start Date : 9/20/2018
Page No : 1

Groups Printed- VEHICLES

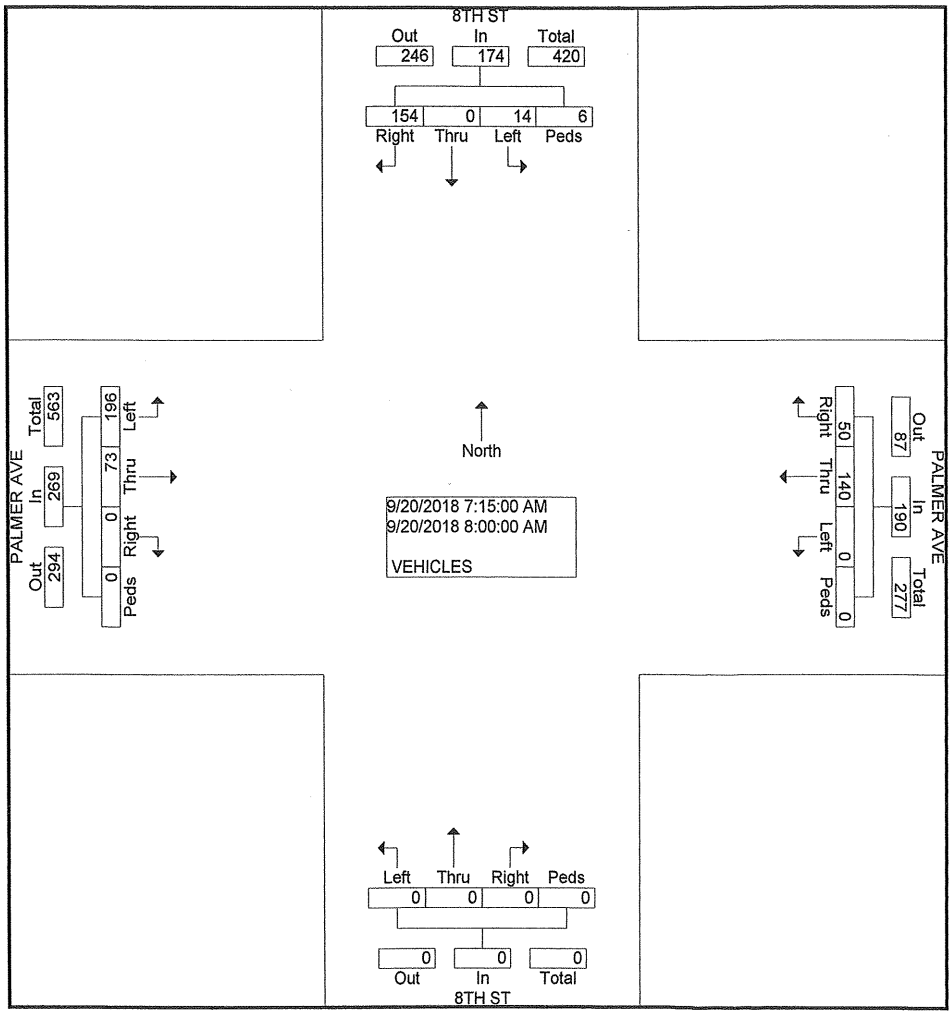
	8TH ST Southbound				PALMER AVE Westbound				8TH ST Northbound				PALMER AVE Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	0	0	3	0	0	22	0	0	0	0	0	0	2	16	0	0	43
06:45 AM	0	0	0	0	0	34	1	0	0	0	0	0	6	24	0	0	65
Total	0	0	3	0	0	56	1	0	0	0	0	0	8	40	0	0	108
07:00 AM	0	0	1	0	0	33	0	0	0	0	0	0	14	9	0	0	57
07:15 AM	1	0	8	0	0	33	9	0	0	0	0	0	29	11	0	0	91
07:30 AM	3	0	40	4	0	40	23	0	0	0	0	0	69	17	0	0	196
07:45 AM	4	0	73	2	0	39	13	0	0	0	0	0	83	23	0	0	237
Total	8	0	122	6	0	145	45	0	0	0	0	0	195	60	0	0	581
08:00 AM	6	0	33	0	0	28	5	0	0	0	0	0	15	22	0	0	109
08:15 AM	3	0	10	0	0	34	0	0	0	0	0	0	10	25	0	0	82
Total	9	0	43	0	0	62	5	0	0	0	0	0	25	47	0	0	191
04:00 PM	6	0	58	6	0	34	8	0	0	0	0	2	41	39	0	0	194
04:15 PM	3	0	38	0	0	24	1	0	0	0	0	0	27	34	0	0	127
04:30 PM	8	0	20	0	0	24	5	0	0	0	0	0	21	44	0	0	122
04:45 PM	3	0	20	0	0	31	2	0	0	0	0	0	22	54	0	0	132
Total	20	0	136	6	0	113	16	0	0	0	0	2	111	171	0	0	575
05:00 PM	3	0	15	2	0	35	5	0	0	0	0	0	16	34	0	0	110
05:15 PM	4	0	20	0	0	25	4	0	0	0	0	0	20	41	0	0	114
05:30 PM	2	0	11	0	0	33	0	0	0	0	0	0	10	37	0	0	93
05:45 PM	2	0	9	0	0	33	2	0	0	0	0	0	13	28	0	0	87
Total	11	0	55	2	0	126	11	0	0	0	0	0	59	140	0	0	404
Grand Total	48	0	359	14	0	502	78	0	0	0	0	2	398	458	0	0	1859
Apprch %	11.4	0.0	85.3	3.3	0.0	86.6	13.4	0.0	0.0	0.0	0.0	100.0	46.5	53.5	0.0	0.0	
Total %	2.6	0.0	19.3	0.8	0.0	27.0	4.2	0.0	0.0	0.0	0.0	0.1	21.4	24.6	0.0	0.0	

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

N/S STREET: 8THST
E/W STREET: PALMER AVE
CITY: BENNETT
COUNTY: ADAMS

File Name : 8THPALM
Site Code : 00000015
Start Date : 9/20/2018
Page No : 2

	8TH ST Southbound					PALMER AVE Westbound					8TH ST Northbound					PALMER AVE Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 07:15 AM to 08:00 AM - Peak 1 of 1																					
Intersection	07:15 AM																				
Volume	14	0	154	6	174	0	140	50	0	190	0	0	0	0	0	196	73	0	0	269	633
Percent	8.0	0.0	88.5	3.4		0.0	73.7	26.3	0.0		0.0	0.0	0.0	0.0		72.9	27.1	0.0	0.0		
07:45 Volume	4	0	73	2	79	0	39	13	0	52	0	0	0	0	0	83	23	0	0	106	237
Peak Factor																					0.668
High Int.	07:45 AM					07:30 AM										07:45 AM					
Volume	4	0	73	2	79	0	40	23	0	63	0	0	0	0	0	83	23	0	0	106	
Peak Factor					0.551					0.754										0.634	

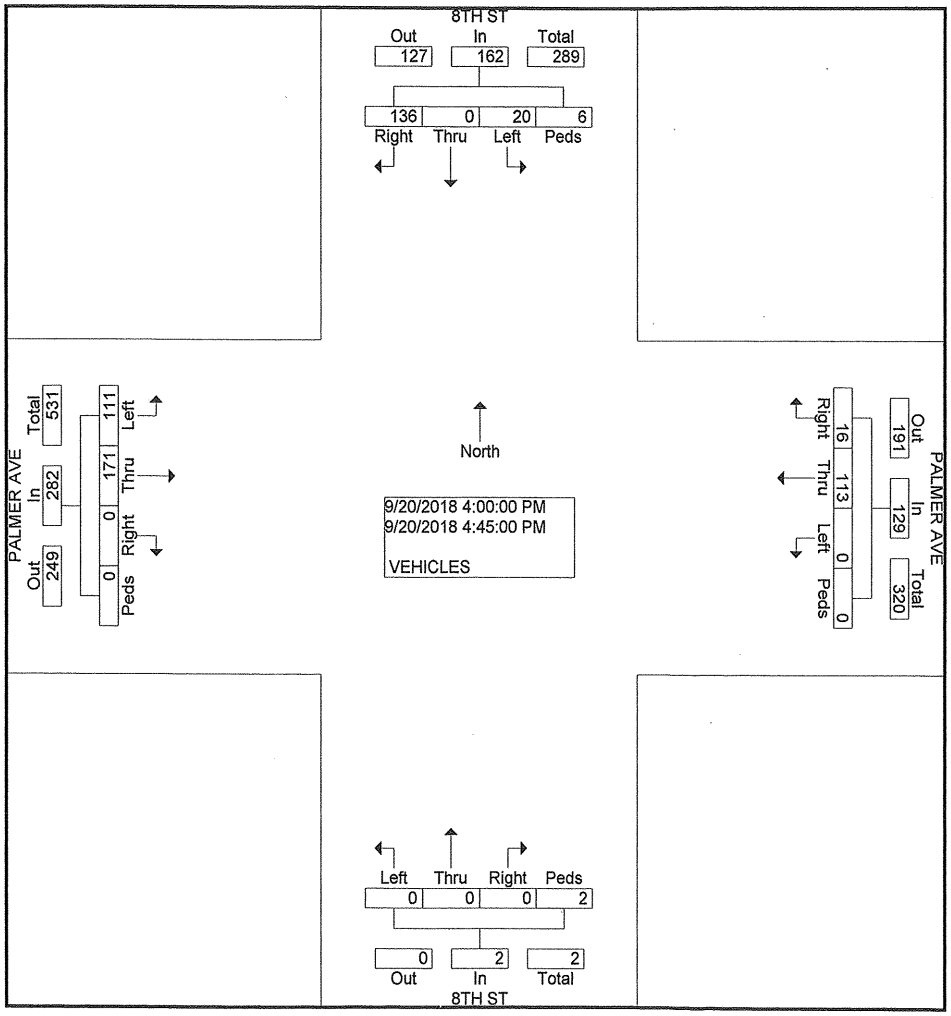


COUNTER MEASURES INC.
1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: 8THST
E/W STREET: PALMER AVE
CITY: BENNETT
COUNTY: ADAMS

File Name : 8THPALM
Site Code : 00000015
Start Date : 9/20/2018
Page No : 2

	8TH ST Southbound					PALMER AVE Westbound					8TH ST Northbound					PALMER AVE Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 04:00 PM to 04:45 PM - Peak 1 of 1																					
Intersection	04:00 PM																				
Volume	20	0	136	6	162	0	113	16	0	129	0	0	0	2	2	111	171	0	0	282	575
Percent	12.3	0.0	84.0	3.7		0.0	87.6	12.4	0.0		0.0	0.0	0.0	100.0		39.4	60.6	0.0	0.0		
04:00 Volume	6	0	58	6	70	0	34	8	0	42	0	0	0	2	2	41	39	0	0	80	194
Peak Factor																					0.741
High Int.	04:00 PM					04:00 PM					04:00 PM					04:00 PM					
Volume	6	0	58	6	70	0	34	8	0	42	0	0	0	2	2	41	39	0	0	80	
Peak Factor					0.579					0.768					0.250					0.881	



COUNTER MEASURES INC.

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

Location: KIOWA-BENNETT RD N/O 38TH AVE
City: BENNETT
County: ADAMS
Direction: NORTHBOUND-SOUTHBOUND

Site Code: 112619
Station ID: 112619

Start	26-Nov-18		Tue		Wed		Thu		Fri		Weekday Average		Sat		Sun	
Time	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
12:00 AM	*	*	18	9	*	*	*	*	*	*	18	9	*	*	*	*
01:00	*	*	4	8	*	*	*	*	*	*	4	8	*	*	*	*
02:00	*	*	6	6	*	*	*	*	*	*	6	6	*	*	*	*
03:00	*	*	10	7	*	*	*	*	*	*	10	7	*	*	*	*
04:00	*	*	5	6	*	*	*	*	*	*	5	6	*	*	*	*
05:00	*	*	18	12	*	*	*	*	*	*	18	12	*	*	*	*
06:00	*	*	40	44	*	*	*	*	*	*	40	44	*	*	*	*
07:00	*	*	63	100	*	*	*	*	*	*	63	100	*	*	*	*
08:00	*	*	94	**166**	*	*	*	*	*	*	94	**166**	*	*	*	*
09:00	*	*	**136**	135	*	*	*	*	*	*	**136**	135	*	*	*	*
10:00	*	*	112	165	*	*	*	*	*	*	112	165	*	*	*	*
11:00	*	*	117	114	*	*	*	*	*	*	117	114	*	*	*	*
12:00 PM	*	*	118	114	*	*	*	*	*	*	118	114	*	*	*	*
01:00	*	*	107	130	*	*	*	*	*	*	107	130	*	*	*	*
02:00	*	*	128	124	*	*	*	*	*	*	128	124	*	*	*	*
03:00	*	*	111	86	*	*	*	*	*	*	111	86	*	*	*	*
04:00	*	*	124	118	*	*	*	*	*	*	124	118	*	*	*	*
05:00	*	*	**194**	**140**	*	*	*	*	*	*	**194**	**140**	*	*	*	*
06:00	*	*	150	126	*	*	*	*	*	*	150	126	*	*	*	*
07:00	*	*	106	66	*	*	*	*	*	*	106	66	*	*	*	*
08:00	*	*	74	50	*	*	*	*	*	*	74	50	*	*	*	*
09:00	*	*	50	26	*	*	*	*	*	*	50	26	*	*	*	*
10:00	*	*	36	26	*	*	*	*	*	*	36	26	*	*	*	*
11:00	*	*	34	3	*	*	*	*	*	*	34	3	*	*	*	*
Total	0	0	1855	1781	0	0	0	0	0	0	1855	1781	0	0	0	0
Day	0		3636		0		0		0		3636		0		0	
AM Peak	-	-	09:00	08:00	-	-	-	-	-	-	09:00	08:00	-	-	-	-
Vol.	-	-	136	166	-	-	-	-	-	-	136	166	-	-	-	-
PM Peak	-	-	17:00	17:00	-	-	-	-	-	-	17:00	17:00	-	-	-	-
Vol.	-	-	194	140	-	-	-	-	-	-	194	140	-	-	-	-

Comb. Total	0	3636	0	0	0	3636	0	0

ADT ADT 3,636 AADT 3,636

COUNTER MEASURES INC.

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

Location:PALMER AVE E/O GREGS PL
City: BENNETT
County: ADAMS
Direction: WESTBOUND-EASTBOUND

Site Code: 112617
Station ID: 112617

Start	26-Nov-18		Tue		Wed		Thu		Fri		Weekday Average		Sat		Sun	
Time	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB
12:00 AM	*	*	9	18	*	*	*	*	*	*	9	18	*	*	*	*
01:00	*	*	8	6	*	*	*	*	*	*	8	6	*	*	*	*
02:00	*	*	6	6	*	*	*	*	*	*	6	6	*	*	*	*
03:00	*	*	4	10	*	*	*	*	*	*	4	10	*	*	*	*
04:00	*	*	8	3	*	*	*	*	*	*	8	3	*	*	*	*
05:00	*	*	12	14	*	*	*	*	*	*	12	14	*	*	*	*
06:00	*	*	58	36	*	*	*	*	*	*	58	36	*	*	*	*
07:00	*	*	98	50	*	*	*	*	*	*	98	50	*	*	*	*
08:00	*	*	**190**	98	*	*	*	*	*	*	**190**	98	*	*	*	*
09:00	*	*	142	**144**	*	*	*	*	*	*	142	**144**	*	*	*	*
10:00	*	*	154	99	*	*	*	*	*	*	154	99	*	*	*	*
11:00	*	*	137	126	*	*	*	*	*	*	137	126	*	*	*	*
12:00 PM	*	*	102	106	*	*	*	*	*	*	102	106	*	*	*	*
01:00	*	*	142	129	*	*	*	*	*	*	142	129	*	*	*	*
02:00	*	*	125	138	*	*	*	*	*	*	125	138	*	*	*	*
03:00	*	*	106	117	*	*	*	*	*	*	106	117	*	*	*	*
04:00	*	*	112	137	*	*	*	*	*	*	112	137	*	*	*	*
05:00	*	*	**149**	**232**	*	*	*	*	*	*	**149**	**232**	*	*	*	*
06:00	*	*	132	199	*	*	*	*	*	*	132	199	*	*	*	*
07:00	*	*	52	127	*	*	*	*	*	*	52	127	*	*	*	*
08:00	*	*	52	89	*	*	*	*	*	*	52	89	*	*	*	*
09:00	*	*	28	62	*	*	*	*	*	*	28	62	*	*	*	*
10:00	*	*	22	42	*	*	*	*	*	*	22	42	*	*	*	*
11:00	*	*	8	32	*	*	*	*	*	*	8	32	*	*	*	*
Total	0	0	1856	2020	0	0	0	0	0	0	1856	2020	0	0	0	0
Day	0		3876		0		0		0		3876		0		0	
AM Peak	-	-	08:00	09:00	-	-	-	-	-	-	08:00	09:00	-	-	-	-
Vol.	-	-	190	144	-	-	-	-	-	-	190	144	-	-	-	-
PM Peak	-	-	17:00	17:00	-	-	-	-	-	-	17:00	17:00	-	-	-	-
Vol.	-	-	149	232	-	-	-	-	-	-	149	232	-	-	-	-

Comb. Total	0	3876	0	0	0	3876	0	0

ADT ADT 3,876 AADT 3,876

COUNTER MEASURES INC.

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

Location: PALMER AVE W/O 8TH ST
City: BENNETT
County: ADAMS
Direction: WESTBOUND-EASTBOUND

Site Code: 112610
Station ID: 112610

Start	26-Nov-18		Tue		Wed		Thu		Fri		Weekday Average		Sat		Sun	
Time	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB
12:00 AM	*	*	12	18	*	*	*	*	*	*	12	18	*	*	*	*
01:00	*	*	8	7	*	*	*	*	*	*	8	7	*	*	*	*
02:00	*	*	6	6	*	*	*	*	*	*	6	6	*	*	*	*
03:00	*	*	5	10	*	*	*	*	*	*	5	10	*	*	*	*
04:00	*	*	8	4	*	*	*	*	*	*	8	4	*	*	*	*
05:00	*	*	13	14	*	*	*	*	*	*	13	14	*	*	*	*
06:00	*	*	54	42	*	*	*	*	*	*	54	42	*	*	*	*
07:00	*	*	110	62	*	*	*	*	*	*	110	62	*	*	*	*
08:00	*	*	214	220	*	*	*	*	*	*	214	220	*	*	*	*
09:00	*	*	**258**	**230**	*	*	*	*	*	*	**258**	**230**	*	*	*	*
10:00	*	*	164	120	*	*	*	*	*	*	164	120	*	*	*	*
11:00	*	*	152	149	*	*	*	*	*	*	152	149	*	*	*	*
12:00 PM	*	*	161	161	*	*	*	*	*	*	161	161	*	*	*	*
01:00	*	*	165	146	*	*	*	*	*	*	165	146	*	*	*	*
02:00	*	*	156	176	*	*	*	*	*	*	156	176	*	*	*	*
03:00	*	*	118	138	*	*	*	*	*	*	118	138	*	*	*	*
04:00	*	*	130	207	*	*	*	*	*	*	130	207	*	*	*	*
05:00	*	*	**298**	**366**	*	*	*	*	*	*	**298**	**366**	*	*	*	*
06:00	*	*	190	219	*	*	*	*	*	*	190	219	*	*	*	*
07:00	*	*	70	142	*	*	*	*	*	*	70	142	*	*	*	*
08:00	*	*	80	106	*	*	*	*	*	*	80	106	*	*	*	*
09:00	*	*	60	73	*	*	*	*	*	*	60	73	*	*	*	*
10:00	*	*	30	42	*	*	*	*	*	*	30	42	*	*	*	*
11:00	*	*	8	33	*	*	*	*	*	*	8	33	*	*	*	*
Total	0	0	2470	2691	0	0	0	0	0	0	2470	2691	0	0	0	0
Day	0		5161		0		0		0		5161		0		0	
AM Peak	-	-	09:00	09:00	-	-	-	-	-	-	09:00	09:00	-	-	-	-
Vol.	-	-	258	230	-	-	-	-	-	-	258	230	-	-	-	-
PM Peak	-	-	17:00	17:00	-	-	-	-	-	-	17:00	17:00	-	-	-	-
Vol.	-	-	298	366	-	-	-	-	-	-	298	366	-	-	-	-

Comb. Total	0	5161	0	0	0	5161	0	0

ADT ADT 5,161 AADT 5,161

LEVEL OF SERVICE DEFINITIONS

From *Highway Capacity Manual*, Transportation Research Board, 2010

UNSIGNALIZED INTERSECTION LEVEL OF SERVICE (LOS)

Applicable to Two-Way Stop Control, All-Way Stop Control, and Roundabouts

LOS	Average Vehicle Control Delay	Operational Characteristics
A	<10 seconds	Normally, vehicles on the stop-controlled approach only have to wait up to 10 seconds before being able to clear the intersection. Left-turning vehicles on the uncontrolled street do not have to wait to make their turn.
B	10 to 15 seconds	Vehicles on the stop-controlled approach will experience delays before being able to clear the intersection. The delay could be up to 15 seconds. Left-turning vehicles on the uncontrolled street may have to wait to make their turn.
C	15 to 25 seconds	Vehicles on the stop-controlled approach can expect delays in the range of 15 to 25 seconds before clearing the intersection. Motorists may begin to take chances due to the long delays, thereby posing a safety risk to through traffic. Left-turning vehicles on the uncontrolled street will now be required to wait to make their turn causing a queue to be created in the turn lane.
D	25 to 35 seconds	This is the point at which a traffic signal may be warranted for this intersection. The delays for the stop-controlled intersection are not considered to be excessive. The length of the queue may begin to block other public and private access points.
E	35 to 50 seconds	The delays for all critical traffic movements are considered to be unacceptable. The length of the queues for the stop-controlled approaches as well as the left-turn movements are extremely long. There is a high probability that this intersection will meet traffic signal warrants. The ability to install a traffic signal is affected by the location of other existing traffic signals. Consideration may be given to restricting the accesses by eliminating the left-turn movements from and to the stop-controlled approach.
F	>50 seconds	The delay for the critical traffic movements are probably in excess of 100 seconds. The length of the queues are extremely long. Motorists are selecting alternative routes due to the long delays. The only remedy for these long delays is installing a traffic signal or restricting the accesses. The potential for accidents at this intersection are extremely high due to motorist taking more risky chances. If the median permits, motorists begin making two-stage left-turns.

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	8	0	0	0	5	80	0	0	156	1
Future Vol, veh/h	1	0	8	0	0	0	5	80	0	0	156	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	9	0	0	0	6	94	0	0	184	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	291	291	185	295	291	94	185	0	0	94	0	0
Stage 1	185	185	-	106	106	-	-	-	-	-	-	-
Stage 2	106	106	-	189	185	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	661	619	857	657	619	963	1390	-	-	1500	-	-
Stage 1	817	747	-	900	807	-	-	-	-	-	-	-
Stage 2	900	807	-	813	747	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	658	616	857	647	616	963	1390	-	-	1500	-	-
Mov Cap-2 Maneuver	658	616	-	647	616	-	-	-	-	-	-	-
Stage 1	813	747	-	896	803	-	-	-	-	-	-	-
Stage 2	896	803	-	804	747	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.4	0	0.4	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1390	-	-	829	-	1500	-	-
HCM Lane V/C Ratio	0.004	-	-	0.013	-	-	-	-
HCM Control Delay (s)	7.6	0	-	9.4	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	-	0	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	0	85	5	3	185
Future Vol, veh/h	10	0	85	5	3	185
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	0	101	6	4	220

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	332	104	0	0	107	0
Stage 1	104	-	-	-	-	-
Stage 2	228	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	663	951	-	-	1484	-
Stage 1	920	-	-	-	-	-
Stage 2	810	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	661	951	-	-	1484	-
Mov Cap-2 Maneuver	661	-	-	-	-	-
Stage 1	917	-	-	-	-	-
Stage 2	810	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.5	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	661	1484	-
HCM Lane V/C Ratio	-	-	0.018	0.002	-
HCM Control Delay (s)	-	-	10.5	7.4	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	78	190	4	12	4
Future Vol, veh/h	8	78	190	4	12	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	95	232	5	15	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	237	0	-	0	350	235
Stage 1	-	-	-	-	235	-
Stage 2	-	-	-	-	115	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1330	-	-	-	647	804
Stage 1	-	-	-	-	804	-
Stage 2	-	-	-	-	910	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1330	-	-	-	642	804
Mov Cap-2 Maneuver	-	-	-	-	642	-
Stage 1	-	-	-	-	798	-
Stage 2	-	-	-	-	910	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	10.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1330	-	-	-	676
HCM Lane V/C Ratio	0.007	-	-	-	0.029
HCM Control Delay (s)	7.7	0	-	-	10.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	196	73	140	50	14	154
Future Vol, veh/h	196	73	140	50	14	154
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	67	67	67	67	67	67
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	293	109	209	75	21	230

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	284	0	-	0	942	247
Stage 1	-	-	-	-	247	-
Stage 2	-	-	-	-	695	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1278	-	-	-	292	792
Stage 1	-	-	-	-	794	-
Stage 2	-	-	-	-	495	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1278	-	-	-	221	792
Mov Cap-2 Maneuver	-	-	-	-	221	-
Stage 1	-	-	-	-	600	-
Stage 2	-	-	-	-	495	-

Approach	EB	WB	SB
HCM Control Delay, s	6.3	0	12.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1278	-	-	-	221	792
HCM Lane V/C Ratio	0.229	-	-	-	0.095	0.29
HCM Control Delay (s)	8.7	0	-	-	23	11.4
HCM Lane LOS	A	A	-	-	C	B
HCM 95th %tile Q(veh)	0.9	-	-	-	0.3	1.2

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	7	0	0	0	3	175	0	0	132	4
Future Vol, veh/h	0	0	7	0	0	0	3	175	0	0	132	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	9	0	0	0	4	213	0	0	161	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	385	385	164	389	387	213	166	0	0	213	0	0
Stage 1	164	164	-	221	221	-	-	-	-	-	-	-
Stage 2	221	221	-	168	166	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	573	549	881	570	547	827	1412	-	-	1357	-	-
Stage 1	838	762	-	781	720	-	-	-	-	-	-	-
Stage 2	781	720	-	834	761	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	572	547	881	563	545	827	1412	-	-	1357	-	-
Mov Cap-2 Maneuver	572	547	-	563	545	-	-	-	-	-	-	-
Stage 1	835	762	-	779	718	-	-	-	-	-	-	-
Stage 2	779	718	-	826	761	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.1	0	0.1	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1412	-	-	881	-	1357	-	-
HCM Lane V/C Ratio	0.003	-	-	0.01	-	-	-	-
HCM Control Delay (s)	7.6	0	-	9.1	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	-	0	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	0	185	20	3	105
Future Vol, veh/h	15	0	185	20	3	105
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	0	210	23	3	119

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	347	222	0	0	233	0
Stage 1	222	-	-	-	-	-
Stage 2	125	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	650	818	-	-	1335	-
Stage 1	815	-	-	-	-	-
Stage 2	901	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	649	818	-	-	1335	-
Mov Cap-2 Maneuver	649	-	-	-	-	-
Stage 1	813	-	-	-	-	-
Stage 2	901	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.7	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	649	1335	-
HCM Lane V/C Ratio	-	-	0.026	0.003	-
HCM Control Delay (s)	-	-	10.7	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	185	117	4	22	12
Future Vol, veh/h	6	185	117	4	22	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	210	133	5	25	14

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	138	0	-	0	360	136
Stage 1	-	-	-	-	136	-
Stage 2	-	-	-	-	224	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1446	-	-	-	639	913
Stage 1	-	-	-	-	890	-
Stage 2	-	-	-	-	813	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1446	-	-	-	636	913
Mov Cap-2 Maneuver	-	-	-	-	636	-
Stage 1	-	-	-	-	886	-
Stage 2	-	-	-	-	813	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	10.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1446	-	-	-	712
HCM Lane V/C Ratio	0.005	-	-	-	0.054
HCM Control Delay (s)	7.5	0	-	-	10.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	111	171	113	16	20	136
Future Vol, veh/h	111	171	113	16	20	136
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	150	231	153	22	27	184

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	175	0	-	0	695	164
Stage 1	-	-	-	-	164	-
Stage 2	-	-	-	-	531	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1401	-	-	-	408	881
Stage 1	-	-	-	-	865	-
Stage 2	-	-	-	-	590	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1401	-	-	-	358	881
Mov Cap-2 Maneuver	-	-	-	-	358	-
Stage 1	-	-	-	-	759	-
Stage 2	-	-	-	-	590	-

Approach	EB	WB	SB
HCM Control Delay, s	3.1	0	10.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1401	-	-	-	358	881
HCM Lane V/C Ratio	0.107	-	-	-	0.075	0.209
HCM Control Delay (s)	7.9	0	-	-	15.9	10.2
HCM Lane LOS	A	A	-	-	C	B
HCM 95th %tile Q(veh)	0.4	-	-	-	0.2	0.8

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	1	15	1	1	1	10	90	1	1	175	5
Future Vol, veh/h	10	1	15	1	1	1	10	90	1	1	175	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	1	17	1	1	1	11	102	1	1	199	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	330	329	202	338	332	103	205	0	0	103	0	0
Stage 1	204	204	-	125	125	-	-	-	-	-	-	-
Stage 2	126	125	-	213	207	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	623	590	839	616	588	952	1366	-	-	1489	-	-
Stage 1	798	733	-	879	792	-	-	-	-	-	-	-
Stage 2	878	792	-	789	731	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	617	584	839	598	582	952	1366	-	-	1489	-	-
Mov Cap-2 Maneuver	617	584	-	598	582	-	-	-	-	-	-	-
Stage 1	791	732	-	871	785	-	-	-	-	-	-	-
Stage 2	868	785	-	771	730	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.2	10.4	0.8	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1366	-	-	726	676	1489	-	-
HCM Lane V/C Ratio	0.008	-	-	0.041	0.005	0.001	-	-
HCM Control Delay (s)	7.7	0	-	10.2	10.4	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	0	95	10	5	185
Future Vol, veh/h	15	0	95	10	5	185
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	0	108	11	6	210

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	336	114	0	0	119	0
Stage 1	114	-	-	-	-	-
Stage 2	222	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	659	939	-	-	1469	-
Stage 1	911	-	-	-	-	-
Stage 2	815	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	656	939	-	-	1469	-
Mov Cap-2 Maneuver	656	-	-	-	-	-
Stage 1	906	-	-	-	-	-
Stage 2	815	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.6	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	656	1469	-
HCM Lane V/C Ratio	-	-	0.026	0.004	-
HCM Control Delay (s)	-	-	10.6	7.5	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	90	195	5	15	5
Future Vol, veh/h	10	90	195	5	15	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	113	244	6	19	6

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	250	0	-	0	386	247
Stage 1	-	-	-	-	247	-
Stage 2	-	-	-	-	139	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1316	-	-	-	617	792
Stage 1	-	-	-	-	794	-
Stage 2	-	-	-	-	888	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1316	-	-	-	610	792
Mov Cap-2 Maneuver	-	-	-	-	610	-
Stage 1	-	-	-	-	785	-
Stage 2	-	-	-	-	888	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	10.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1316	-	-	-	647
HCM Lane V/C Ratio	0.009	-	-	-	0.039
HCM Control Delay (s)	7.8	0	-	-	10.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	5.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	200	85	145	55	15	160
Future Vol, veh/h	200	85	145	55	15	160
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	300	-	-	300	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	286	121	207	79	21	229

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	286	0	-	0	900	207
Stage 1	-	-	-	-	207	-
Stage 2	-	-	-	-	693	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1276	-	-	-	309	833
Stage 1	-	-	-	-	828	-
Stage 2	-	-	-	-	496	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1276	-	-	-	240	833
Mov Cap-2 Maneuver	-	-	-	-	190	-
Stage 1	-	-	-	-	643	-
Stage 2	-	-	-	-	496	-

Approach	EB	WB	SB
HCM Control Delay, s	6.1	0	12.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1276	-	-	-	190	833
HCM Lane V/C Ratio	0.224	-	-	-	0.113	0.274
HCM Control Delay (s)	8.6	-	-	-	26.3	10.9
HCM Lane LOS	A	-	-	-	D	B
HCM 95th %tile Q(veh)	0.9	-	-	-	0.4	1.1

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	1	15	1	1	1	5	195	1	1	150	10
Future Vol, veh/h	5	1	15	1	1	1	5	195	1	1	150	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	1	17	1	1	1	6	222	1	1	170	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	414	413	176	422	418	223	181	0	0	223	0	0
Stage 1	178	178	-	235	235	-	-	-	-	-	-	-
Stage 2	236	235	-	187	183	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	549	529	867	542	526	817	1394	-	-	1346	-	-
Stage 1	824	752	-	768	710	-	-	-	-	-	-	-
Stage 2	767	710	-	815	748	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	545	526	867	528	523	817	1394	-	-	1346	-	-
Mov Cap-2 Maneuver	545	526	-	528	523	-	-	-	-	-	-	-
Stage 1	820	751	-	764	706	-	-	-	-	-	-	-
Stage 2	761	706	-	797	747	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10	11.1	0.2	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1394	-	-	740	596	1346	-	-
HCM Lane V/C Ratio	0.004	-	-	0.032	0.006	0.001	-	-
HCM Control Delay (s)	7.6	0	-	10	11.1	7.7	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	5	195	0	0	165
Future Vol, veh/h	0	5	195	0	0	165
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	6	222	0	0	188

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	222	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	818	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	818	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	818	-
HCM Lane V/C Ratio	-	0.007	-
HCM Control Delay (s)	-	9.4	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	0	-

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	0	195	25	5	160
Future Vol, veh/h	20	0	195	25	5	160
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	0	222	28	6	182

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	430	236	0	0	250	0
Stage 1	236	-	-	-	-	-
Stage 2	194	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	582	803	-	-	1316	-
Stage 1	803	-	-	-	-	-
Stage 2	839	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	579	803	-	-	1316	-
Mov Cap-2 Maneuver	579	-	-	-	-	-
Stage 1	799	-	-	-	-	-
Stage 2	839	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.5	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	579	1316	-
HCM Lane V/C Ratio	-	-	0.039	0.004	-
HCM Control Delay (s)	-	-	11.5	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	7	195	175	5	25	15
Future Vol, veh/h	7	195	175	5	25	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	229	206	6	29	18

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	212	0	-	0	454	209
Stage 1	-	-	-	-	209	-
Stage 2	-	-	-	-	245	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1358	-	-	-	564	831
Stage 1	-	-	-	-	826	-
Stage 2	-	-	-	-	796	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1358	-	-	-	560	831
Mov Cap-2 Maneuver	-	-	-	-	560	-
Stage 1	-	-	-	-	820	-
Stage 2	-	-	-	-	796	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1358	-	-	-	638
HCM Lane V/C Ratio	0.006	-	-	-	0.074
HCM Control Delay (s)	7.7	0	-	-	11.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	2.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	28	4	3	21	10	11
Future Vol, veh/h	28	4	3	21	10	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	32	5	3	24	11	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	37	0	65	35
Stage 1	-	-	-	-	35	-
Stage 2	-	-	-	-	30	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1574	-	941	1038
Stage 1	-	-	-	-	987	-
Stage 2	-	-	-	-	993	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1574	-	939	1038
Mov Cap-2 Maneuver	-	-	-	-	939	-
Stage 1	-	-	-	-	985	-
Stage 2	-	-	-	-	993	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	988	-	-	1574	-
HCM Lane V/C Ratio	0.024	-	-	0.002	-
HCM Control Delay (s)	8.7	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	3.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	38	1	9	22	3	29
Future Vol, veh/h	38	1	9	22	3	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	43	1	10	25	3	33

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	44	0	89	44
Stage 1	-	-	-	-	44	-
Stage 2	-	-	-	-	45	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1564	-	912	1026
Stage 1	-	-	-	-	978	-
Stage 2	-	-	-	-	977	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1564	-	907	1026
Mov Cap-2 Maneuver	-	-	-	-	907	-
Stage 1	-	-	-	-	972	-
Stage 2	-	-	-	-	977	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.1	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1014	-	-	1564	-
HCM Lane V/C Ratio	0.036	-	-	0.007	-
HCM Control Delay (s)	8.7	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	66	0	7	31	0	3
Future Vol, veh/h	66	0	7	31	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	75	0	8	35	0	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	75	0	126	75
Stage 1	-	-	-	-	75	-
Stage 2	-	-	-	-	51	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1524	-	869	986
Stage 1	-	-	-	-	948	-
Stage 2	-	-	-	-	971	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1524	-	865	986
Mov Cap-2 Maneuver	-	-	-	-	865	-
Stage 1	-	-	-	-	943	-
Stage 2	-	-	-	-	971	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.4	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	986	-	-	1524	-
HCM Lane V/C Ratio	0.003	-	-	0.005	-
HCM Control Delay (s)	8.7	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	1	54	1	1	1	30	95	1	1	178	7
Future Vol, veh/h	15	1	54	1	1	1	30	95	1	1	178	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	300	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	1	61	1	1	1	34	108	1	1	202	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	386	385	206	416	389	109	210	0	0	109	0	0
Stage 1	208	208	-	177	177	-	-	-	-	-	-	-
Stage 2	178	177	-	239	212	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	573	549	835	547	546	945	1361	-	-	1481	-	-
Stage 1	794	730	-	825	753	-	-	-	-	-	-	-
Stage 2	824	753	-	764	727	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	560	535	835	496	532	945	1361	-	-	1481	-	-
Mov Cap-2 Maneuver	560	535	-	496	532	-	-	-	-	-	-	-
Stage 1	774	729	-	804	734	-	-	-	-	-	-	-
Stage 2	801	734	-	706	726	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.4	11	1.8	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1361	-	-	750	606	1481	-	-
HCM Lane V/C Ratio	0.025	-	-	0.106	0.006	0.001	-	-
HCM Control Delay (s)	7.7	-	-	10.4	11	7.4	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0	0	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	27	9	120	230	2
Future Vol, veh/h	5	27	9	120	230	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	31	10	136	261	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	418	262	263	0	-	0
Stage 1	262	-	-	-	-	-
Stage 2	156	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	591	777	1301	-	-	-
Stage 1	782	-	-	-	-	-
Stage 2	872	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	586	777	1301	-	-	-
Mov Cap-2 Maneuver	586	-	-	-	-	-
Stage 1	776	-	-	-	-	-
Stage 2	872	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.1	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1301	-	739	-	-
HCM Lane V/C Ratio	0.008	-	0.049	-	-
HCM Control Delay (s)	7.8	-	10.1	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	17	0	123	13	9	248
Future Vol, veh/h	17	0	123	13	9	248
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	19	0	140	15	10	282

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	450	148	0	0	155	0
Stage 1	148	-	-	-	-	-
Stage 2	302	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	567	899	-	-	1425	-
Stage 1	880	-	-	-	-	-
Stage 2	750	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	562	899	-	-	1425	-
Mov Cap-2 Maneuver	562	-	-	-	-	-
Stage 1	873	-	-	-	-	-
Stage 2	750	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.6	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	562	1425	-
HCM Lane V/C Ratio	-	-	0.034	0.007	-
HCM Control Delay (s)	-	-	11.6	7.5	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	34	126	260	5	9	41
Future Vol, veh/h	34	126	260	5	9	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	200	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	39	143	295	6	10	47

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	301	0	-	0	516	295
Stage 1	-	-	-	-	295	-
Stage 2	-	-	-	-	221	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1260	-	-	-	519	744
Stage 1	-	-	-	-	755	-
Stage 2	-	-	-	-	816	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1260	-	-	-	503	744
Mov Cap-2 Maneuver	-	-	-	-	503	-
Stage 1	-	-	-	-	732	-
Stage 2	-	-	-	-	816	-

Approach	EB	WB	SB
HCM Control Delay, s	1.7	0	10.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1260	-	-	-	685
HCM Lane V/C Ratio	0.031	-	-	-	0.083
HCM Control Delay (s)	7.9	-	-	-	10.7
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↱		↱
Traffic Vol, veh/h	0	160	294	7	0	14
Future Vol, veh/h	0	160	294	7	0	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	200	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	182	334	8	0	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	334
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	0	708
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	708
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	708
HCM Lane V/C Ratio	-	-	-	0.022
HCM Control Delay (s)	-	-	-	10.2
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.1

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	88	140	302	6	20	183
Future Vol, veh/h	88	140	302	6	20	183
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	200	0	100
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	110	175	378	8	25	229

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	386	0	-	0	773	378
Stage 1	-	-	-	-	378	-
Stage 2	-	-	-	-	395	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1172	-	-	-	367	669
Stage 1	-	-	-	-	693	-
Stage 2	-	-	-	-	681	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1172	-	-	-	333	669
Mov Cap-2 Maneuver	-	-	-	-	333	-
Stage 1	-	-	-	-	628	-
Stage 2	-	-	-	-	681	-

Approach	EB	WB	SB
HCM Control Delay, s	3.2	0	13.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1172	-	-	-	333	669
HCM Lane V/C Ratio	0.094	-	-	-	0.075	0.342
HCM Control Delay (s)	8.4	-	-	-	16.7	13.2
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.2	1.5

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	200	213	430	55	15	160
Future Vol, veh/h	200	213	430	55	15	160
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	200	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	286	304	614	79	21	229

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	693	0	-	0	1490	614
Stage 1	-	-	-	-	614	-
Stage 2	-	-	-	-	876	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	902	-	-	-	136	492
Stage 1	-	-	-	-	540	-
Stage 2	-	-	-	-	407	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	902	-	-	-	93	492
Mov Cap-2 Maneuver	-	-	-	-	108	-
Stage 1	-	-	-	-	369	-
Stage 2	-	-	-	-	407	-

Approach	EB	WB	SB
HCM Control Delay, s	5.2	0	20.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	902	-	-	-	108	492
HCM Lane V/C Ratio	0.317	-	-	-	0.198	0.465
HCM Control Delay (s)	10.8	-	-	-	46.4	18.5
HCM Lane LOS	B	-	-	-	E	C
HCM 95th %tile Q(veh)	1.4	-	-	-	0.7	2.4

Intersection	
Int Delay, s/veh	2.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	29	14	11	22	10	7
Future Vol, veh/h	29	14	11	22	10	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	16	13	25	11	8

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	49	0	92	41
Stage 1	-	-	-	-	41	-
Stage 2	-	-	-	-	51	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1558	-	908	1030
Stage 1	-	-	-	-	981	-
Stage 2	-	-	-	-	971	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1558	-	901	1030
Mov Cap-2 Maneuver	-	-	-	-	901	-
Stage 1	-	-	-	-	973	-
Stage 2	-	-	-	-	971	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.4	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	950	-	-	1558	-
HCM Lane V/C Ratio	0.02	-	-	0.008	-
HCM Control Delay (s)	8.9	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	3.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	33	3	30	32	2	18
Future Vol, veh/h	33	3	30	32	2	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	38	3	34	36	2	20

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	41	0	144	40
Stage 1	-	-	-	-	40	-
Stage 2	-	-	-	-	104	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1568	-	849	1031
Stage 1	-	-	-	-	982	-
Stage 2	-	-	-	-	920	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1568	-	830	1031
Mov Cap-2 Maneuver	-	-	-	-	830	-
Stage 1	-	-	-	-	960	-
Stage 2	-	-	-	-	920	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.6	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1007	-	-	1568	-
HCM Lane V/C Ratio	0.023	-	-	0.022	-
HCM Control Delay (s)	8.7	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	50	0	3	62	0	7
Future Vol, veh/h	50	0	3	62	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	57	0	3	70	0	8

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	57	0	133	57
Stage 1	-	-	-	-	57	-
Stage 2	-	-	-	-	76	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1547	-	861	1009
Stage 1	-	-	-	-	966	-
Stage 2	-	-	-	-	947	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1547	-	859	1009
Mov Cap-2 Maneuver	-	-	-	-	859	-
Stage 1	-	-	-	-	964	-
Stage 2	-	-	-	-	947	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1009	-	-	1547	-
HCM Lane V/C Ratio	0.008	-	-	0.002	-
HCM Control Delay (s)	8.6	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	1	49	1	1	1	49	202	1	1	158	16
Future Vol, veh/h	8	1	49	1	1	1	49	202	1	1	158	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	300	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	1	56	1	1	1	56	230	1	1	180	18

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	535	534	189	563	543	231	198	0	0	231	0	0
Stage 1	191	191	-	343	343	-	-	-	-	-	-	-
Stage 2	344	343	-	220	200	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	456	452	853	437	447	808	1375	-	-	1337	-	-
Stage 1	811	742	-	672	637	-	-	-	-	-	-	-
Stage 2	671	637	-	782	736	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	440	433	853	395	428	808	1375	-	-	1337	-	-
Mov Cap-2 Maneuver	440	433	-	395	428	-	-	-	-	-	-	-
Stage 1	778	741	-	644	611	-	-	-	-	-	-	-
Stage 2	642	611	-	729	735	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.3	12.4	1.5	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1375	-	-	744	491	1337	-	-
HCM Lane V/C Ratio	0.04	-	-	0.089	0.007	0.001	-	-
HCM Control Delay (s)	7.7	-	-	10.3	12.4	7.7	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0	0	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	18	30	248	202	5
Future Vol, veh/h	3	18	30	248	202	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	20	34	282	230	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	583	233	236	0	-	0
Stage 1	233	-	-	-	-	-
Stage 2	350	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	475	806	1331	-	-	-
Stage 1	806	-	-	-	-	-
Stage 2	713	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	463	806	1331	-	-	-
Mov Cap-2 Maneuver	463	-	-	-	-	-
Stage 1	785	-	-	-	-	-
Stage 2	713	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.1	0.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1331	-	729	-	-
HCM Lane V/C Ratio	0.026	-	0.033	-	-
HCM Control Delay (s)	7.8	-	10.1	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	9	268	0	0	220
Future Vol, veh/h	0	9	268	0	0	220
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	10	305	0	0	250

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	305	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	735	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	735	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	735	-
HCM Lane V/C Ratio	-	0.014	-
HCM Control Delay (s)	-	10	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0	-

Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	0	268	29	8	212
Future Vol, veh/h	25	0	268	29	8	212
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	0	305	33	9	241

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	581	322	0	0	338	0
Stage 1	322	-	-	-	-	-
Stage 2	259	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	476	719	-	-	1221	-
Stage 1	735	-	-	-	-	-
Stage 2	784	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	472	719	-	-	1221	-
Mov Cap-2 Maneuver	472	-	-	-	-	-
Stage 1	728	-	-	-	-	-
Stage 2	784	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.1	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	472	1221	-
HCM Lane V/C Ratio	-	-	0.06	0.007	-
HCM Control Delay (s)	-	-	13.1	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	110	267	213	24	30	61
Future Vol, veh/h	110	267	213	24	30	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	200	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	125	303	242	27	34	69

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	269	0	-	0	795	242
Stage 1	-	-	-	-	242	-
Stage 2	-	-	-	-	553	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1295	-	-	-	357	797
Stage 1	-	-	-	-	798	-
Stage 2	-	-	-	-	576	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1295	-	-	-	322	797
Mov Cap-2 Maneuver	-	-	-	-	322	-
Stage 1	-	-	-	-	721	-
Stage 2	-	-	-	-	576	-

Approach	EB	WB	SB
HCM Control Delay, s	2.4	0	13.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1295	-	-	-	536
HCM Lane V/C Ratio	0.097	-	-	-	0.193
HCM Control Delay (s)	8.1	-	-	-	13.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.7

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↱		↱
Traffic Vol, veh/h	0	377	254	20	0	71
Future Vol, veh/h	0	377	254	20	0	71
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	200	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	428	289	23	0	81

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	289
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	0	750
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	750
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	750
HCM Lane V/C Ratio	-	-	-	0.108
HCM Control Delay (s)	-	-	-	10.4
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.4

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	257	337	317	8	40	163
Future Vol, veh/h	257	337	317	8	40	163
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	200	0	100
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	286	374	352	9	44	181

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	361	0	-	0	1298	352
Stage 1	-	-	-	-	352	-
Stage 2	-	-	-	-	946	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1198	-	-	-	178	692
Stage 1	-	-	-	-	712	-
Stage 2	-	-	-	-	377	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1198	-	-	-	135	692
Mov Cap-2 Maneuver	-	-	-	-	135	-
Stage 1	-	-	-	-	542	-
Stage 2	-	-	-	-	377	-

Approach	EB	WB	SB
HCM Control Delay, s	3.9	0	18.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1198	-	-	-	135	692
HCM Lane V/C Ratio	0.238	-	-	-	0.329	0.262
HCM Control Delay (s)	8.9	-	-	-	44.2	12
HCM Lane LOS	A	-	-	-	E	B
HCM 95th %tile Q(veh)	0.9	-	-	-	1.3	1

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	1	25	1	1	1	15	135	1	1	260	10
Future Vol, veh/h	15	1	25	1	1	1	15	135	1	1	260	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	300	-	-	50	-	300
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	1	28	1	1	1	17	153	1	1	295	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	408	485	295	505	496	77	306	0	0	154	0	0
Stage 1	297	297	-	188	188	-	-	-	-	-	-	-
Stage 2	111	188	-	317	308	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.23	7.33	6.53	6.93	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	541	481	744	464	474	969	1253	-	-	1425	-	-
Stage 1	711	667	-	796	744	-	-	-	-	-	-	-
Stage 2	883	744	-	693	660	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	533	474	744	441	467	969	1253	-	-	1425	-	-
Mov Cap-2 Maneuver	533	474	-	441	467	-	-	-	-	-	-	-
Stage 1	701	666	-	785	734	-	-	-	-	-	-	-
Stage 2	869	734	-	665	659	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11	11.6	0.8	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1253	-	-	642	551	1425	-	-
HCM Lane V/C Ratio	0.014	-	-	0.073	0.006	0.001	-	-
HCM Control Delay (s)	7.9	-	-	11	11.6	7.5	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	0	-	-

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	45	10	80	15	10	10	80	95	15	10	205	70
Future Vol, veh/h	45	10	80	15	10	10	80	95	15	10	205	70
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	-	300	-	300	300	-	300
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	11	87	16	11	11	87	103	16	11	223	76

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	476	538	112	416	598	52	299	0	0	119	0	0
Stage 1	245	245	-	277	277	-	-	-	-	-	-	-
Stage 2	231	293	-	139	321	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	472	448	920	521	414	1005	1259	-	-	1467	-	-
Stage 1	737	702	-	706	680	-	-	-	-	-	-	-
Stage 2	751	669	-	850	650	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	430	414	920	436	383	1005	1259	-	-	1467	-	-
Mov Cap-2 Maneuver	430	414	-	436	383	-	-	-	-	-	-	-
Stage 1	686	697	-	657	633	-	-	-	-	-	-	-
Stage 2	680	623	-	752	645	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.5	12.6	3.4	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1259	-	-	430	810	436	555	1467	-	-
HCM Lane V/C Ratio	0.069	-	-	0.114	0.121	0.037	0.039	0.007	-	-
HCM Control Delay (s)	8.1	-	-	14.4	10.1	13.6	11.8	7.5	-	-
HCM Lane LOS	A	-	-	B	B	B	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.4	0.4	0.1	0.1	0	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	120	15	15	145	15	15
Future Vol, veh/h	120	15	15	145	15	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	130	16	16	158	16	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	146	0	249	73
Stage 1	-	-	-	-	138	-
Stage 2	-	-	-	-	111	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1434	-	718	974
Stage 1	-	-	-	-	874	-
Stage 2	-	-	-	-	901	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1434	-	710	974
Mov Cap-2 Maneuver	-	-	-	-	710	-
Stage 1	-	-	-	-	864	-
Stage 2	-	-	-	-	901	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	821	-	-	1434	-
HCM Lane V/C Ratio	0.04	-	-	0.011	-
HCM Control Delay (s)	9.6	-	-	7.5	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	115	150	10	20	10
Future Vol, veh/h	15	115	150	10	20	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	19	144	188	13	25	13

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	201	0	-	0	305	101
Stage 1	-	-	-	-	195	-
Stage 2	-	-	-	-	110	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1368	-	-	-	663	935
Stage 1	-	-	-	-	819	-
Stage 2	-	-	-	-	902	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1368	-	-	-	654	935
Mov Cap-2 Maneuver	-	-	-	-	654	-
Stage 1	-	-	-	-	808	-
Stage 2	-	-	-	-	902	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1368	-	-	-	727
HCM Lane V/C Ratio	0.014	-	-	-	0.052
HCM Control Delay (s)	7.7	-	-	-	10.2
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	7.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	175	60	60	100	70	120
Future Vol, veh/h	175	60	60	100	70	120
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	200	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	250	86	86	143	100	171

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	229	0	-	0	629	43
Stage 1	-	-	-	-	86	-
Stage 2	-	-	-	-	543	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1336	-	-	-	414	1018
Stage 1	-	-	-	-	927	-
Stage 2	-	-	-	-	546	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1336	-	-	-	337	1018
Mov Cap-2 Maneuver	-	-	-	-	266	-
Stage 1	-	-	-	-	754	-
Stage 2	-	-	-	-	546	-

Approach	EB	WB	SB
HCM Control Delay, s	6.2	0	15.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1336	-	-	-	266	1018
HCM Lane V/C Ratio	0.187	-	-	-	0.376	0.168
HCM Control Delay (s)	8.3	-	-	-	26.5	9.3
HCM Lane LOS	A	-	-	-	D	A
HCM 95th %tile Q(veh)	0.7	-	-	-	1.7	0.6

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	1	25	1	1	1	10	285	1	1	220	15
Future Vol, veh/h	10	1	25	1	1	1	10	285	1	1	220	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	300	-	-	50	-	300
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	1	28	1	1	1	11	324	1	1	250	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	437	599	250	622	616	163	267	0	0	325	0	0
Stage 1	252	252	-	347	347	-	-	-	-	-	-	-
Stage 2	185	347	-	275	269	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.23	7.33	6.53	6.93	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	516	414	788	385	405	854	1295	-	-	1233	-	-
Stage 1	751	698	-	643	634	-	-	-	-	-	-	-
Stage 2	800	634	-	730	686	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	510	410	788	368	401	854	1295	-	-	1233	-	-
Mov Cap-2 Maneuver	510	410	-	368	401	-	-	-	-	-	-	-
Stage 1	745	697	-	638	629	-	-	-	-	-	-	-
Stage 2	791	629	-	702	685	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.7	12.7	0.3	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1295	-	-	669	470	1233	-	-
HCM Lane V/C Ratio	0.009	-	-	0.061	0.007	0.001	-	-
HCM Control Delay (s)	7.8	-	-	10.7	12.7	7.9	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	0	-	-

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	75	10	60	15	10	10	50	210	15	10	175	60
Future Vol, veh/h	75	10	60	15	10	10	50	210	15	10	175	60
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	-	300	-	300	300	-	300
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	82	11	65	16	11	11	54	228	16	11	190	65

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	440	564	95	459	613	114	255	0	0	244	0	0
Stage 1	212	212	-	336	336	-	-	-	-	-	-	-
Stage 2	228	352	-	123	277	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	501	433	943	485	406	917	1307	-	-	1319	-	-
Stage 1	770	726	-	652	640	-	-	-	-	-	-	-
Stage 2	754	630	-	868	680	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	466	412	943	426	386	917	1307	-	-	1319	-	-
Mov Cap-2 Maneuver	466	412	-	426	386	-	-	-	-	-	-	-
Stage 1	738	720	-	625	614	-	-	-	-	-	-	-
Stage 2	702	604	-	789	675	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.3	12.7	1.4	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1307	-	-	466	796	426	543	1319	-	-
HCM Lane V/C Ratio	0.042	-	-	0.175	0.096	0.038	0.04	0.008	-	-
HCM Control Delay (s)	7.9	-	-	14.4	10	13.8	11.9	7.8	-	-
HCM Lane LOS	A	-	-	B	B	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.3	0.1	0.1	0	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	130	15	15	105	15	15
Future Vol, veh/h	130	15	15	105	15	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	141	16	16	114	16	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	157	0	238	79
Stage 1	-	-	-	-	149	-
Stage 2	-	-	-	-	89	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1420	-	729	965
Stage 1	-	-	-	-	863	-
Stage 2	-	-	-	-	924	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1420	-	721	965
Mov Cap-2 Maneuver	-	-	-	-	721	-
Stage 1	-	-	-	-	854	-
Stage 2	-	-	-	-	924	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	825	-	-	1420	-
HCM Lane V/C Ratio	0.04	-	-	0.011	-
HCM Control Delay (s)	9.5	-	-	7.6	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	115	110	10	30	20
Future Vol, veh/h	10	115	110	10	30	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	135	129	12	35	24

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	141	0	-	0	227	71
Stage 1	-	-	-	-	135	-
Stage 2	-	-	-	-	92	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1440	-	-	-	741	977
Stage 1	-	-	-	-	877	-
Stage 2	-	-	-	-	921	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1440	-	-	-	735	977
Mov Cap-2 Maneuver	-	-	-	-	735	-
Stage 1	-	-	-	-	870	-
Stage 2	-	-	-	-	921	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	9.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1440	-	-	-	816
HCM Lane V/C Ratio	0.008	-	-	-	0.072
HCM Control Delay (s)	7.5	-	-	-	9.8
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	95	65	80	50	60	115
Future Vol, veh/h	95	65	80	50	60	115
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	200	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	127	87	107	67	80	153

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	174	0	-	0	405	54
Stage 1	-	-	-	-	107	-
Stage 2	-	-	-	-	298	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1400	-	-	-	574	1002
Stage 1	-	-	-	-	906	-
Stage 2	-	-	-	-	727	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1400	-	-	-	522	1002
Mov Cap-2 Maneuver	-	-	-	-	533	-
Stage 1	-	-	-	-	824	-
Stage 2	-	-	-	-	727	-

Approach	EB	WB	SB
HCM Control Delay, s	4.6	0	10.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1400	-	-	-	533	1002
HCM Lane V/C Ratio	0.09	-	-	-	0.15	0.153
HCM Control Delay (s)	7.8	-	-	-	12.9	9.2
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0.3	-	-	-	0.5	0.5

Intersection	
Int Delay, s/veh	3.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	43	4	10	32	10	30
Future Vol, veh/h	43	4	10	32	10	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	49	5	11	36	11	34

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	54	0	110	52
Stage 1	-	-	-	-	52	-
Stage 2	-	-	-	-	58	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1551	-	887	1016
Stage 1	-	-	-	-	970	-
Stage 2	-	-	-	-	965	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1551	-	881	1016
Mov Cap-2 Maneuver	-	-	-	-	881	-
Stage 1	-	-	-	-	963	-
Stage 2	-	-	-	-	965	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.7	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	979	-	-	1551	-
HCM Lane V/C Ratio	0.046	-	-	0.007	-
HCM Control Delay (s)	8.9	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	73	1	8	38	3	26
Future Vol, veh/h	73	1	8	38	3	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	83	1	9	43	3	30

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	84	0	145	84
Stage 1	-	-	-	-	84	-
Stage 2	-	-	-	-	61	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1513	-	847	975
Stage 1	-	-	-	-	939	-
Stage 2	-	-	-	-	962	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1513	-	842	975
Mov Cap-2 Maneuver	-	-	-	-	842	-
Stage 1	-	-	-	-	933	-
Stage 2	-	-	-	-	962	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	959	-	-	1513	-
HCM Lane V/C Ratio	0.034	-	-	0.006	-
HCM Control Delay (s)	8.9	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	98	1	6	46	0	3
Future Vol, veh/h	98	1	6	46	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	111	1	7	52	0	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	112	0	178	112
Stage 1	-	-	-	-	112	-
Stage 2	-	-	-	-	66	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1478	-	812	941
Stage 1	-	-	-	-	913	-
Stage 2	-	-	-	-	957	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1478	-	808	941
Mov Cap-2 Maneuver	-	-	-	-	808	-
Stage 1	-	-	-	-	908	-
Stage 2	-	-	-	-	957	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	941	-	-	1478	-
HCM Lane V/C Ratio	0.004	-	-	0.005	-
HCM Control Delay (s)	8.8	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	1	80	1	1	1	40	140	1	1	263	12
Future Vol, veh/h	20	1	80	1	1	1	40	140	1	1	263	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	300	-	-	50	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	23	1	91	1	1	1	45	159	1	1	299	14

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	471	551	299	604	565	80	313	0	0	160	0	0
Stage 1	301	301	-	250	250	-	-	-	-	-	-	-
Stage 2	170	250	-	354	315	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.23	7.33	6.53	6.93	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	489	441	740	396	433	965	1246	-	-	1418	-	-
Stage 1	707	664	-	733	699	-	-	-	-	-	-	-
Stage 2	816	699	-	662	655	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	474	425	740	337	417	965	1246	-	-	1418	-	-
Mov Cap-2 Maneuver	474	425	-	337	417	-	-	-	-	-	-	-
Stage 1	682	663	-	707	674	-	-	-	-	-	-	-
Stage 2	784	674	-	579	654	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.6	12.7	1.8	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1246	-	-	662	469	1418	-	-
HCM Lane V/C Ratio	0.036	-	-	0.173	0.007	0.001	-	-
HCM Control Delay (s)	8	-	-	11.6	12.7	7.5	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0	0	-	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	70	24	176	341	2
Future Vol, veh/h	5	70	24	176	341	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	300	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	80	27	200	388	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	543	195	390	0	-	0
Stage 1	389	-	-	-	-	-
Stage 2	154	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	470	814	1165	-	-	-
Stage 1	654	-	-	-	-	-
Stage 2	858	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	459	814	1165	-	-	-
Mov Cap-2 Maneuver	459	-	-	-	-	-
Stage 1	639	-	-	-	-	-
Stage 2	858	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.2	1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1165	-	774	-	-
HCM Lane V/C Ratio	0.023	-	0.11	-	-
HCM Control Delay (s)	8.2	-	10.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	62	13	155	15	12	11	125	126	15	14	298	100
Future Vol, veh/h	62	13	155	15	12	11	125	126	15	14	298	100
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	-	300	-	300	300	-	300
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	67	14	168	16	13	12	136	137	16	15	324	109

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	701	779	162	608	872	69	433	0	0	153	0	0
Stage 1	354	354	-	409	409	-	-	-	-	-	-	-
Stage 2	347	425	-	199	463	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	325	326	854	380	287	980	1123	-	-	1425	-	-
Stage 1	636	629	-	590	594	-	-	-	-	-	-	-
Stage 2	642	585	-	784	562	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	278	283	854	264	249	980	1123	-	-	1425	-	-
Mov Cap-2 Maneuver	278	283	-	264	249	-	-	-	-	-	-	-
Stage 1	559	622	-	519	522	-	-	-	-	-	-	-
Stage 2	543	514	-	609	556	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.3	16.7	4.1	0.3
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1123	-	-	278	739	264	387	1425	-	-
HCM Lane V/C Ratio	0.121	-	-	0.242	0.247	0.062	0.065	0.011	-	-
HCM Control Delay (s)	8.6	-	-	22	11.5	19.5	14.9	7.6	-	-
HCM Lane LOS	A	-	-	C	B	C	B	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-	0.9	1	0.2	0.2	0	-	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	164	15	15	195	26	15	0	15	51	0	16
Future Vol, veh/h	9	164	15	15	195	26	15	0	15	51	0	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	178	16	16	212	28	16	0	16	55	0	17

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	240	0	0	194	0	0	336	470	89	353	458	106
Stage 1	-	-	-	-	-	-	198	198	-	244	244	-
Stage 2	-	-	-	-	-	-	138	272	-	109	214	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1324	-	-	1377	-	-	594	490	951	577	498	928
Stage 1	-	-	-	-	-	-	785	736	-	738	703	-
Stage 2	-	-	-	-	-	-	851	683	-	885	724	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1324	-	-	1377	-	-	574	480	951	559	488	928
Mov Cap-2 Maneuver	-	-	-	-	-	-	574	480	-	559	488	-
Stage 1	-	-	-	-	-	-	779	730	-	732	695	-
Stage 2	-	-	-	-	-	-	825	675	-	863	718	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.5	10.3	11.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	716	1324	-	-	1377	-	-	618
HCM Lane V/C Ratio	0.046	0.007	-	-	0.012	-	-	0.118
HCM Control Delay (s)	10.3	7.7	-	-	7.6	-	-	11.6
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.4

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	9	175	208	19	12	5
Future Vol, veh/h	9	175	208	19	12	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	300	-	-	300	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	190	226	21	13	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	247	0	-	0	341	113
Stage 1	-	-	-	-	226	-
Stage 2	-	-	-	-	115	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1316	-	-	-	629	918
Stage 1	-	-	-	-	790	-
Stage 2	-	-	-	-	897	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1316	-	-	-	624	918
Mov Cap-2 Maneuver	-	-	-	-	624	-
Stage 1	-	-	-	-	784	-
Stage 2	-	-	-	-	897	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1316	-	-	-	689
HCM Lane V/C Ratio	0.007	-	-	-	0.027
HCM Control Delay (s)	7.8	-	-	-	10.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	41	137	190	23	46	77
Future Vol, veh/h	41	137	190	23	46	77
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	300	-	-	300	0	100
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	51	171	238	29	58	96

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	267	0	-	0	426	119
Stage 1	-	-	-	-	238	-
Stage 2	-	-	-	-	188	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1294	-	-	-	557	910
Stage 1	-	-	-	-	779	-
Stage 2	-	-	-	-	825	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1294	-	-	-	535	910
Mov Cap-2 Maneuver	-	-	-	-	535	-
Stage 1	-	-	-	-	749	-
Stage 2	-	-	-	-	825	-

Approach	EB	WB	SB
HCM Control Delay, s	1.8	0	10.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1294	-	-	-	535	910
HCM Lane V/C Ratio	0.04	-	-	-	0.107	0.106
HCM Control Delay (s)	7.9	-	-	-	12.5	9.4
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4	0.4

Intersection	
Int Delay, s/veh	6.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	175	108	167	100	70	120
Future Vol, veh/h	175	108	167	100	70	120
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	300	-	-	300	0	100
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	250	154	239	143	100	171

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	382	0	-	0	816	120
Stage 1	-	-	-	-	239	-
Stage 2	-	-	-	-	577	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1173	-	-	-	315	909
Stage 1	-	-	-	-	778	-
Stage 2	-	-	-	-	525	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1173	-	-	-	248	909
Mov Cap-2 Maneuver	-	-	-	-	249	-
Stage 1	-	-	-	-	612	-
Stage 2	-	-	-	-	525	-

Approach	EB	WB	SB
HCM Control Delay, s	5.5	0	16.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1173	-	-	-	249	909
HCM Lane V/C Ratio	0.213	-	-	-	0.402	0.189
HCM Control Delay (s)	8.9	-	-	-	28.8	9.9
HCM Lane LOS	A	-	-	-	D	A
HCM 95th %tile Q(veh)	0.8	-	-	-	1.8	0.7

Intersection	
Int Delay, s/veh	3.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	44	14	33	32	10	19
Future Vol, veh/h	44	14	33	32	10	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	50	16	38	36	11	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	66	0	170	58
Stage 1	-	-	-	-	58	-
Stage 2	-	-	-	-	112	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1536	-	820	1008
Stage 1	-	-	-	-	965	-
Stage 2	-	-	-	-	913	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1536	-	800	1008
Mov Cap-2 Maneuver	-	-	-	-	800	-
Stage 1	-	-	-	-	941	-
Stage 2	-	-	-	-	913	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.8	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	925	-	-	1536	-
HCM Lane V/C Ratio	0.036	-	-	0.024	-
HCM Control Delay (s)	9	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	60	3	26	63	2	15
Future Vol, veh/h	60	3	26	63	2	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	68	3	30	72	2	17

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	71	0	202	70
Stage 1	-	-	-	-	70	-
Stage 2	-	-	-	-	132	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1529	-	787	993
Stage 1	-	-	-	-	953	-
Stage 2	-	-	-	-	894	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1529	-	771	993
Mov Cap-2 Maneuver	-	-	-	-	771	-
Stage 1	-	-	-	-	934	-
Stage 2	-	-	-	-	894	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.2	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	960	-	-	1529	-
HCM Lane V/C Ratio	0.02	-	-	0.019	-
HCM Control Delay (s)	8.8	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	76	0	3	89	1	6
Future Vol, veh/h	76	0	3	89	1	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	86	0	3	101	1	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	86	0	193	86
Stage 1	-	-	-	-	86	-
Stage 2	-	-	-	-	107	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1510	-	796	973
Stage 1	-	-	-	-	937	-
Stage 2	-	-	-	-	917	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1510	-	794	973
Mov Cap-2 Maneuver	-	-	-	-	794	-
Stage 1	-	-	-	-	935	-
Stage 2	-	-	-	-	917	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	943	-	-	1510	-
HCM Lane V/C Ratio	0.008	-	-	0.002	-
HCM Control Delay (s)	8.9	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	1	69	1	1	1	71	292	1	1	228	21
Future Vol, veh/h	13	1	69	1	1	1	71	292	1	1	228	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	300	-	-	50	-	1000
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	1	78	1	1	1	81	332	1	1	259	24

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	590	756	259	808	780	167	283	0	0	333	0	0
Stage 1	261	261	-	495	495	-	-	-	-	-	-	-
Stage 2	329	495	-	313	285	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.23	7.33	6.53	6.93	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	405	337	779	286	326	849	1278	-	-	1225	-	-
Stage 1	743	692	-	526	545	-	-	-	-	-	-	-
Stage 2	659	545	-	697	675	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	384	315	779	244	305	849	1278	-	-	1225	-	-
Mov Cap-2 Maneuver	384	315	-	244	305	-	-	-	-	-	-	-
Stage 1	696	691	-	493	511	-	-	-	-	-	-	-
Stage 2	615	511	-	625	674	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.4	15.4	1.6	0
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1278	-	-	661	351	1225	-	-
HCM Lane V/C Ratio	0.063	-	-	0.143	0.01	0.001	-	-
HCM Control Delay (s)	8	-	-	11.4	15.4	7.9	-	-
HCM Lane LOS	A	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.5	0	0	-	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	47	79	360	292	5
Future Vol, veh/h	3	47	79	360	292	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	1000	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	53	90	409	332	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	720	169	338	0	-	0
Stage 1	335	-	-	-	-	-
Stage 2	385	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	363	845	1218	-	-	-
Stage 1	697	-	-	-	-	-
Stage 2	657	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	336	845	1218	-	-	-
Mov Cap-2 Maneuver	336	-	-	-	-	-
Stage 1	645	-	-	-	-	-
Stage 2	657	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10	1.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1218	-	775	-	-
HCM Lane V/C Ratio	0.074	-	0.073	-	-
HCM Control Delay (s)	8.2	0.2	10	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-

Intersection	
Int Delay, s/veh	10

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	124	14	181	15	15	14	191	300	15	13	224	101
Future Vol, veh/h	124	14	181	15	15	14	191	300	15	13	224	101
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	-	300	-	300	300	-	300
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	135	15	197	16	16	15	208	326	16	14	243	110

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	858	1029	122	899	1123	163	353	0	0	342	0	0
Stage 1	271	271	-	742	742	-	-	-	-	-	-	-
Stage 2	587	758	-	157	381	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	251	232	906	234	204	853	1202	-	-	1214	-	-
Stage 1	712	684	-	374	420	-	-	-	-	-	-	-
Stage 2	463	413	-	829	612	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	197	190	906	148	167	853	1202	-	-	1214	-	-
Mov Cap-2 Maneuver	197	190	-	148	167	-	-	-	-	-	-	-
Stage 1	589	676	-	309	347	-	-	-	-	-	-	-
Stage 2	358	342	-	627	605	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	29	24.1	3.3	0.3
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1202	-	-	197	713	148	273	1214	-	-
HCM Lane V/C Ratio	0.173	-	-	0.684	0.297	0.11	0.115	0.012	-	-
HCM Control Delay (s)	8.6	-	-	55.5	12.2	32.3	19.9	8	-	-
HCM Lane LOS	A	-	-	F	B	D	C	A	-	-
HCM 95th %tile Q(veh)	0.6	-	-	4.2	1.2	0.4	0.4	0	-	-

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	233	15	15	205	88	15	0	15	72	0	24
Future Vol, veh/h	29	233	15	15	205	88	15	0	15	72	0	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	253	16	16	223	96	16	0	16	78	0	26

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	319	0	0	269	0	0	461	668	127	446	588	112
Stage 1	-	-	-	-	-	-	317	317	-	255	255	-
Stage 2	-	-	-	-	-	-	144	351	-	191	333	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1238	-	-	1292	-	-	484	378	900	496	420	920
Stage 1	-	-	-	-	-	-	669	653	-	727	695	-
Stage 2	-	-	-	-	-	-	844	631	-	792	642	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1238	-	-	1292	-	-	457	364	900	473	404	920
Mov Cap-2 Maneuver	-	-	-	-	-	-	457	364	-	473	404	-
Stage 1	-	-	-	-	-	-	652	636	-	708	687	-
Stage 2	-	-	-	-	-	-	810	623	-	758	625	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0.4	11.3	13.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	606	1238	-	-	1292	-	-	538
HCM Lane V/C Ratio	0.054	0.025	-	-	0.013	-	-	0.194
HCM Control Delay (s)	11.3	8	-	-	7.8	-	-	13.3
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0.7

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	27	212	184	59	64	29
Future Vol, veh/h	27	212	184	59	64	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	300	-	-	300	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	230	200	64	70	32

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	264	0	-	0	373	100
Stage 1	-	-	-	-	200	-
Stage 2	-	-	-	-	173	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1297	-	-	-	601	936
Stage 1	-	-	-	-	814	-
Stage 2	-	-	-	-	840	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1297	-	-	-	588	936
Mov Cap-2 Maneuver	-	-	-	-	588	-
Stage 1	-	-	-	-	796	-
Stage 2	-	-	-	-	840	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	11.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1297	-	-	-	665
HCM Lane V/C Ratio	0.023	-	-	-	0.152
HCM Control Delay (s)	7.8	-	-	-	11.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	94	179	163	50	61	76
Future Vol, veh/h	94	179	163	50	61	76
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	300	-	-	300	0	100
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	111	211	192	59	72	89

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	251	0	-	0	520	96
Stage 1	-	-	-	-	192	-
Stage 2	-	-	-	-	328	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1311	-	-	-	486	942
Stage 1	-	-	-	-	822	-
Stage 2	-	-	-	-	702	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1311	-	-	-	445	942
Mov Cap-2 Maneuver	-	-	-	-	445	-
Stage 1	-	-	-	-	752	-
Stage 2	-	-	-	-	702	-

Approach	EB	WB	SB
HCM Control Delay, s	2.8	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1311	-	-	-	445	942
HCM Lane V/C Ratio	0.084	-	-	-	0.161	0.095
HCM Control Delay (s)	8	-	-	-	14.6	9.2
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0.3	-	-	-	0.6	0.3

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	95	160	189	50	60	115
Future Vol, veh/h	95	160	189	50	60	115
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	300	-	-	300	0	100
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	127	213	252	67	80	153

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	319	0	-	0	613	126
Stage 1	-	-	-	-	252	-
Stage 2	-	-	-	-	361	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1238	-	-	-	424	901
Stage 1	-	-	-	-	767	-
Stage 2	-	-	-	-	676	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1238	-	-	-	380	901
Mov Cap-2 Maneuver	-	-	-	-	447	-
Stage 1	-	-	-	-	688	-
Stage 2	-	-	-	-	676	-

Approach	EB	WB	SB
HCM Control Delay, s	3.1	0	11.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1238	-	-	-	447	901
HCM Lane V/C Ratio	0.102	-	-	-	0.179	0.17
HCM Control Delay (s)	8.2	-	-	-	14.8	9.8
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0.3	-	-	-	0.6	0.6

STAFF REPORT

TO: Planning and Zoning Commission Members

FROM: Steve Hebert, Planning and Economic Development Manager

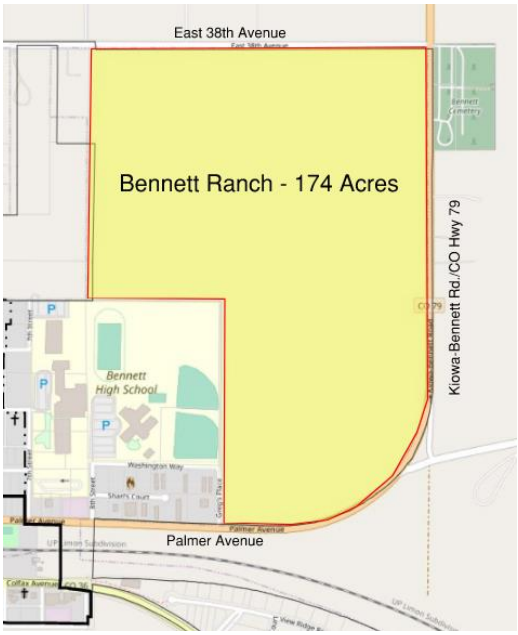
DATE: June 21, 2021

SUBJECT: Case No. 21.12 Bennett Ranch North R-3 Townhome Sketch Plan

Background

LGI Homes, through their consultant Kimley-Horn, has submitted a sketch plan for 84 single-family attached townhome lots on 8.9 acres. The property is located approximately 600 feet west of the East 38th Avenue/Colorado Highway 79 (Kiowa-Bennett Road) intersection. The property is zoned R-3 - High Density Residential. As described below, the purpose of a sketch plan is to provide the subdivider (LGI Homes) with preliminary informal feedback on a conceptual lot layout.

The vicinity map below is of the entire 174-acre Bennett Ranch project.



A sketch plan for the entire 174 acres was presented to the Town in 2018 and showed several land use areas, including single-family detached, townhomes, a community park, a commercial tract and land designated for the Bennett School District, Bennett-Watkins Fire Rescue Authority and the Town of Bennett. The initial Bennett Ranch Sketch Plan is attached.

The Bennett Ranch Filing 1 Subdivision Final Plat was approved by the Board of Trustees in January 2020. The initial subdivision created 145 single-family lots, the first phase of the park site and tracts of land that have been dedicated to the Bennett School District, Bennett-Watkins Fire Rescue Authority and the Town of Bennett. The 145 lots are considered Phase 1 of a multi-phase buildout. Construction of Phase 1 infrastructure is anticipated to begin in the summer of 2021.

Purpose of a Sketch Plan

Per Sec. 16-4-370 of the Bennett Municipal Code, "*the sketch plan is intended to provide the subdivider with preliminary informal feedback from the Town staff and the Planning Commission on format and substance. Sketch plan review assists the subdivider in understanding the Town's preliminary position on the development, prior to the effort associated with the final plat documents, and to provide the Town with an overall master plan for the proposed development.*

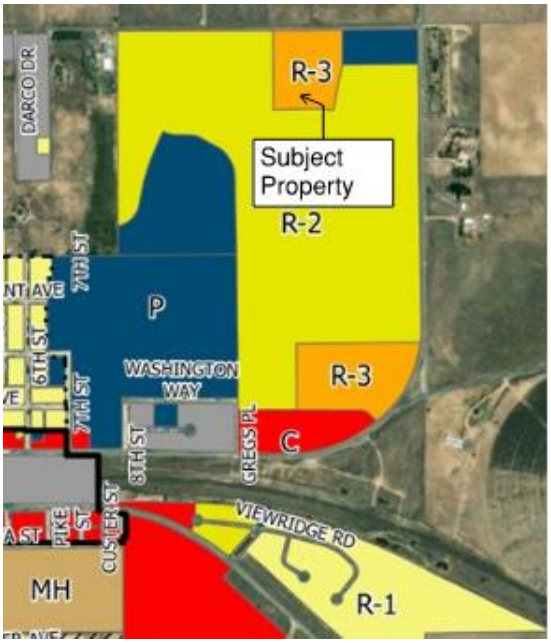
The Planning Commission shall review the sketch plan in a public meeting and provide feedback to the subdivider. The meeting is intended to be for the mutual exchange of information and development concepts. The feedback shall take the form of recommendations endorsed by a majority of the Planning Commission members present. The recommendations by the Planning Commission may include an endorsement of the sketch plan concept, suggestions for modifications to the concept, or endorsement of alternative designs and specifics necessary to accomplish the Town's goals."

Surrounding Zoning and Land Use

The table below summarizes the surrounding zoning and land use.

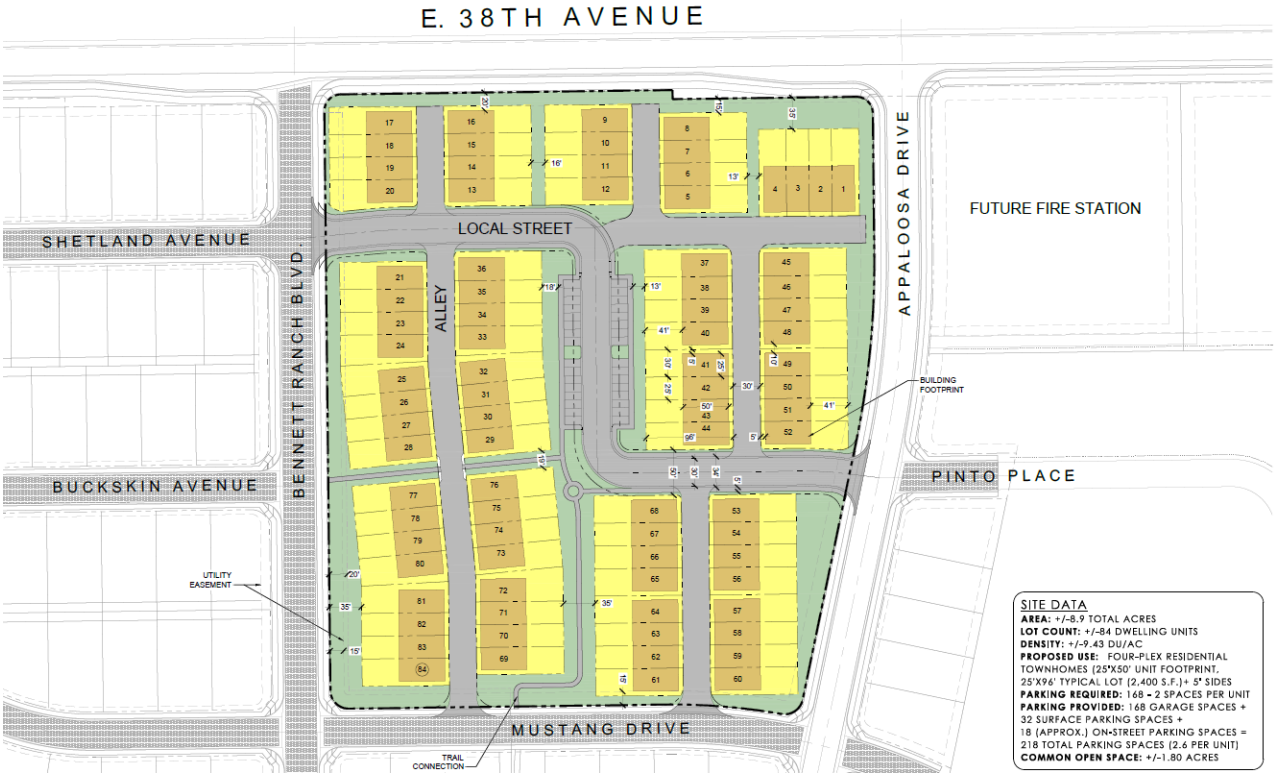
Direction	Zone District	Current Land Use
North	A-3 in Adams County	Agricultural
East	P – Public, R-2 – Mid Density Residential	Vacant
South	R-2 – Mid Density Residential	Vacant
West	R-2 – Mid Density Residential	Vacant

Below is a subsection of the Bennett Zoning Map showing Bennett Ranch and the surrounding area:



Proposed Sketch Plan

The Bennett Ranch North R-3 Townhome Sketch Plan is shown below. It proposes the creation of 84 lots for single-family attached townhomes. The proposed street layout is consistent with the Bennett Ranch Filing 1 street network. Primary access to the subdivision will be from the future Bennett Ranch Boulevard and Appaloosa Drive, which will both connect to East 38th Avenue. An image of the sketch plan is below.



Below is an enlarged version of the site data table:

SITE DATA
AREA: +/-8.9 TOTAL ACRES
LOT COUNT: +/-84 DWELLING UNITS
DENSITY: +/-9.43 DU/AC
PROPOSED USE: FOUR-PLEX RESIDENTIAL TOWNHOMES (25'X50' UNIT FOOTPRINT, 25'X96' TYPICAL LOT (2,400 S.F.)+ 5' SIDES
PARKING REQUIRED: 168 - 2 SPACES PER UNIT
PARKING PROVIDED: 168 GARAGE SPACES + 32 SURFACE PARKING SPACES + 18 (APPROX.) ON-STREET PARKING SPACES = 218 TOTAL PARKING SPACES (2.6 PER UNIT)
COMMON OPEN SPACE: +/-1.80 ACRES

Initial Staff and Referral Agency Response

Per Sec. 16-4-370 of the Bennett Municipal Code, the Town shall use the following criteria to evaluate the applicant's sketch plan application. Initial comments and concerns are identified under each criterion.

a. The land use mix within the project conforms to the Town's Zoning District Map and furthers the goals and policies of the Comprehensive Plan.

   Staff Response: The proposed residential subdivision is consistent with the R-3 zone district and the Comprehensive Plan. The proposed lots sizes of 2,400 sq. ft. and the proposed density of 9.43 dwelling units per acre conform to the R-3 zone district standards.

b. The sketch plan represents a functional system of land use and is consistent with the rationale and criteria set forth in Chapter 16 and the Comprehensive Plan.

   Staff Response: The sketch plan represents a functional system of land use and is generally consistent with the previously reviewed 2018 Bennett Ranch Sketch Plan.

c. The utility and transportation design is adequate, given existing and planned capacities of those systems.

   Staff Response: The Town's water supply, water distribution and sanitary sewer systems will be able to accommodate the proposed development. Adequate access is via future streets approved as part of the Bennett Ranch Filing 1 Final Plat, including an improved East 38th Avenue.

   Below is a brief outline of staff and referral agency comments regarding the sketch plan as proposed. See the attached referral agency responses:

   1. **Confirmation of building footprint sizes and building setbacks will be confirmed at the time of final plat and site plan.**
   2. **The Town Engineer indicates the Town will have water system capacity, including fire flows, and sanitary sewer collection system capacity to serve the subdivision. Details regarding final water, sanitary sewer and stormwater system design will be addressed at the time of final plat. In addition, local street radii will need to be confirmed by the Bennett-Watkins Fire Rescue Authority.**
   3. **Traffic from this site was accounted for in the 2018 Traffic Impact Study. The Town Traffic Engineer indicated a concern about future on-street parking on the local streets and near the intersections with the alleys. More detail will be required at time of final plat and site plan. In addition, the trail connections and pedestrian crossings of Bennett Ranch Boulevard and Mustang Drive will require appropriate traffic control and pedestrian crosswalks.**
   4. **Bennett School District 29J will ask for cash-in-lieu of land dedication at the time of final plat.**
   5. **Bennett-Watkins Fire Rescue (BWFR) recommends the developer confer with the district to ensure the proposed development conforms to adopted International Fire Code (IFC) standards. BWFR's referral response includes, but is not limited to**

comments on hydrant distribution, fire flows and access. BWFR is requesting the developer provide a modeling exhibit based on fire apparatus design criteria showing adequate widths and turning radii.

6. **The Intermountain Rural Electric Association (IREA) has indicated it will address required utility easements at the time of final plat.**

d. Negative impacts on adjacent land uses have been identified and satisfactorily mitigated.

Staff Response: No negative impacts on adjacent land uses are anticipated. However, staff will defer a finding on this criterion until we receive and review a more detailed final plat and site plan.

e. There is a need or desirability within the community for the applicant's development and the development will help achieve a balance of land use and/or housing types.

Staff Response: Staff believes there is a need and desirability for new residential housing, as promoted by the Comprehensive Plan. The proposed townhomes will increase the overall diversity of housing in Bennett consistent with the goals of the Comprehensive Plan.

Staff Recommendation

No formal action of recommending approval or denial is required of the Planning and Zoning Commission; but rather, discussing and providing feedback to the applicant is requested.

Attachments

1. Staff PowerPoint Presentation
2. Application
3. Letter of Intent
4. Bennett Ranch North R-3 Townhome Sketch Plan
5. 2018 Sketch Plan
6. Town Engineer's Memo
7. Town Traffic Engineer's Memo
8. CDOT Memo
9. Bennett School District 29J
10. Bennett-Watkins Fire Rescue Letter
11. IREA Comments
12. Traffic Impact Analysis

Case No. 21.12
Bennett Ranch North R-3 Townhome Sketch Plan

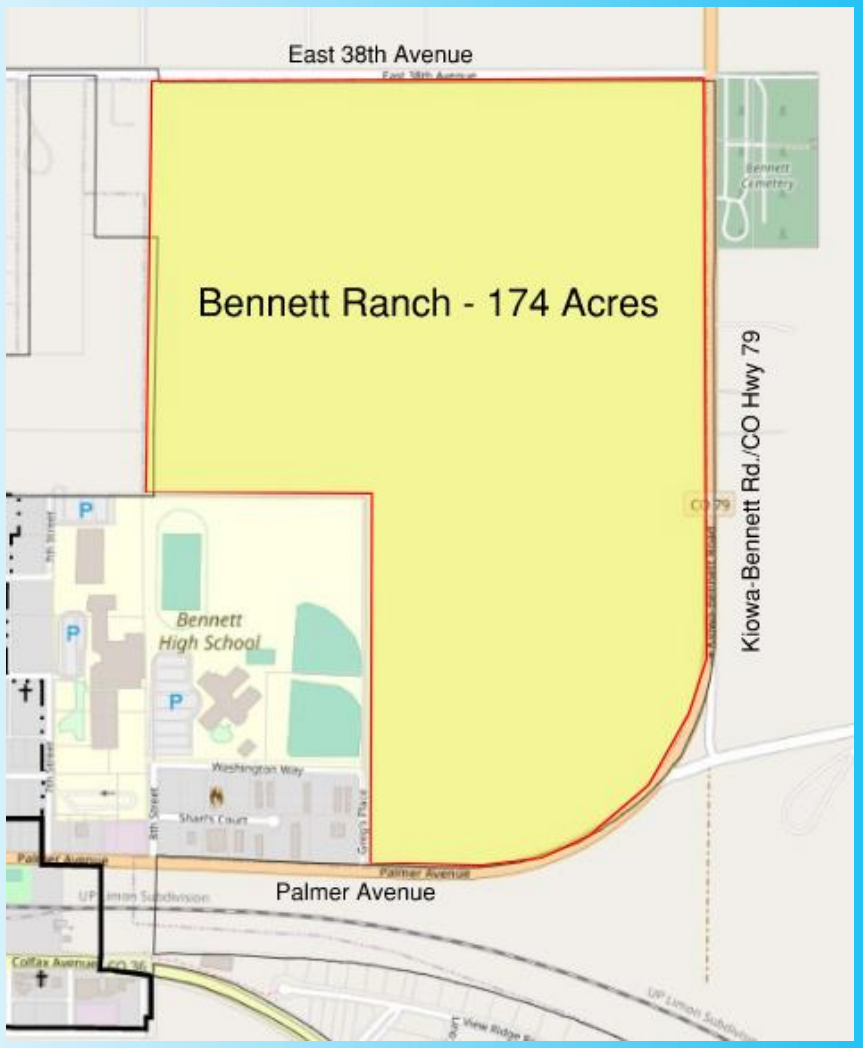
Town of Bennett
Planning and Zoning Commission

June 21, 2021

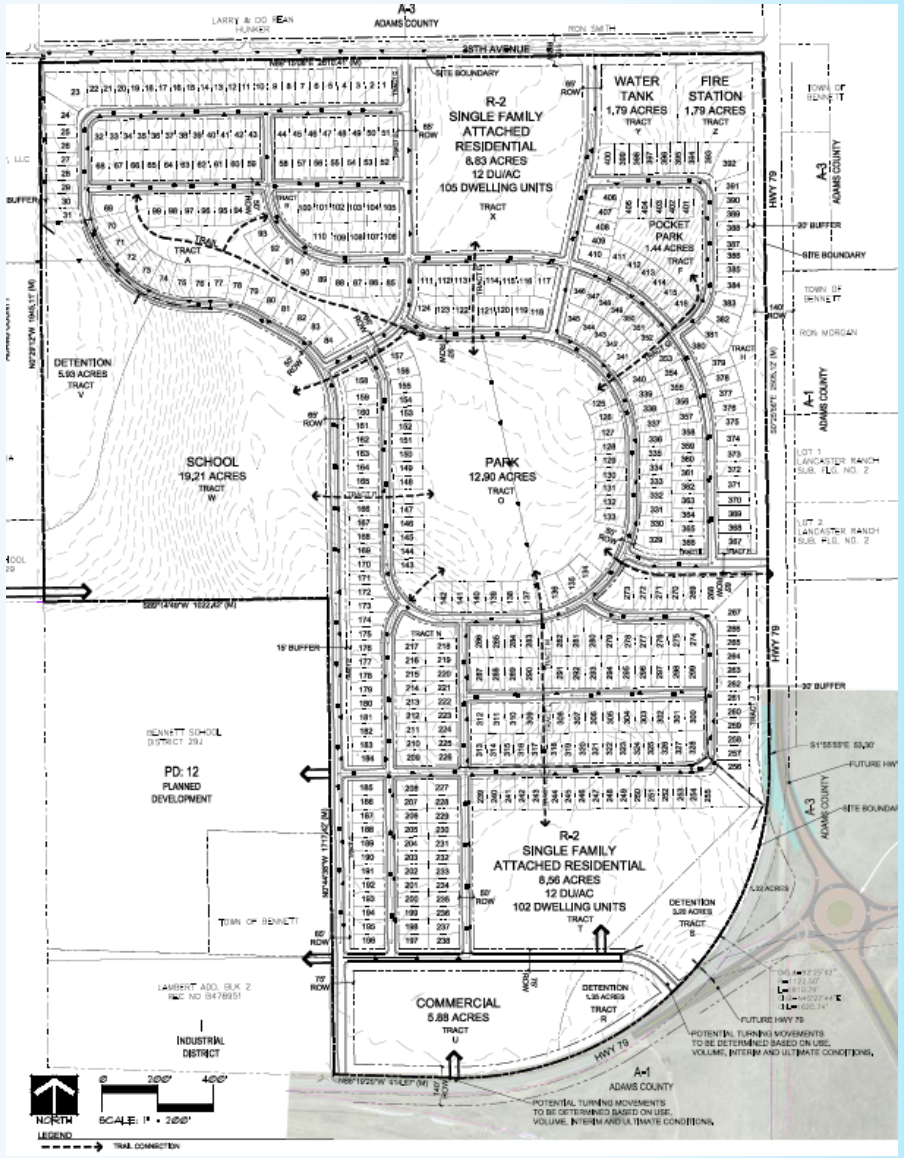
Steve Hebert, Planning & Economic Development Manager

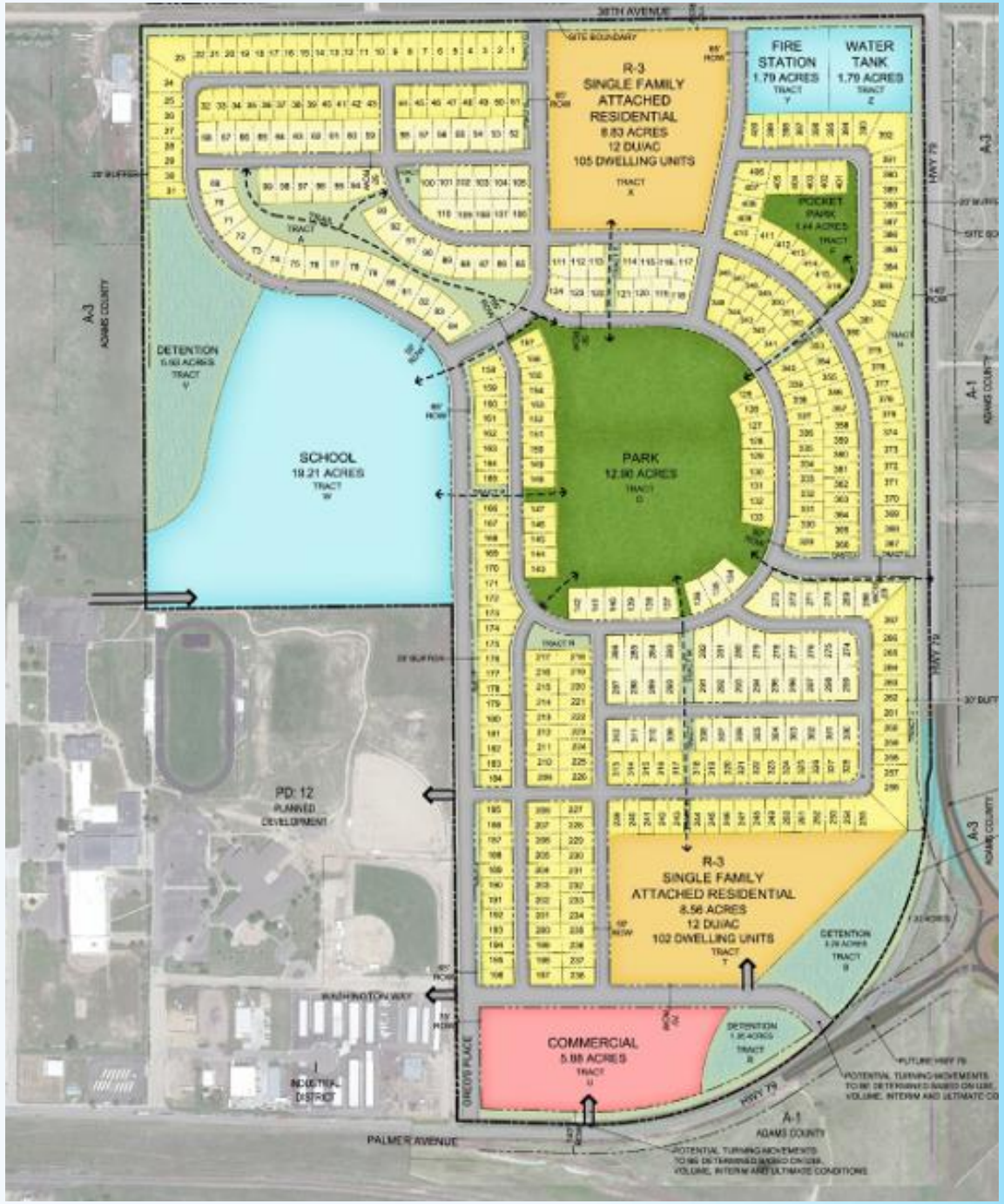
Case No. 21.12

- Original zoning approved and sketch plan reviewed in 2018 - 19
- 8.9 acres zoned R-3 - High Density Residential
- Sketch plan is the first step in the subdivision process
- A final plat and site plan will follow



Original 2018 -19 Sketch Plan

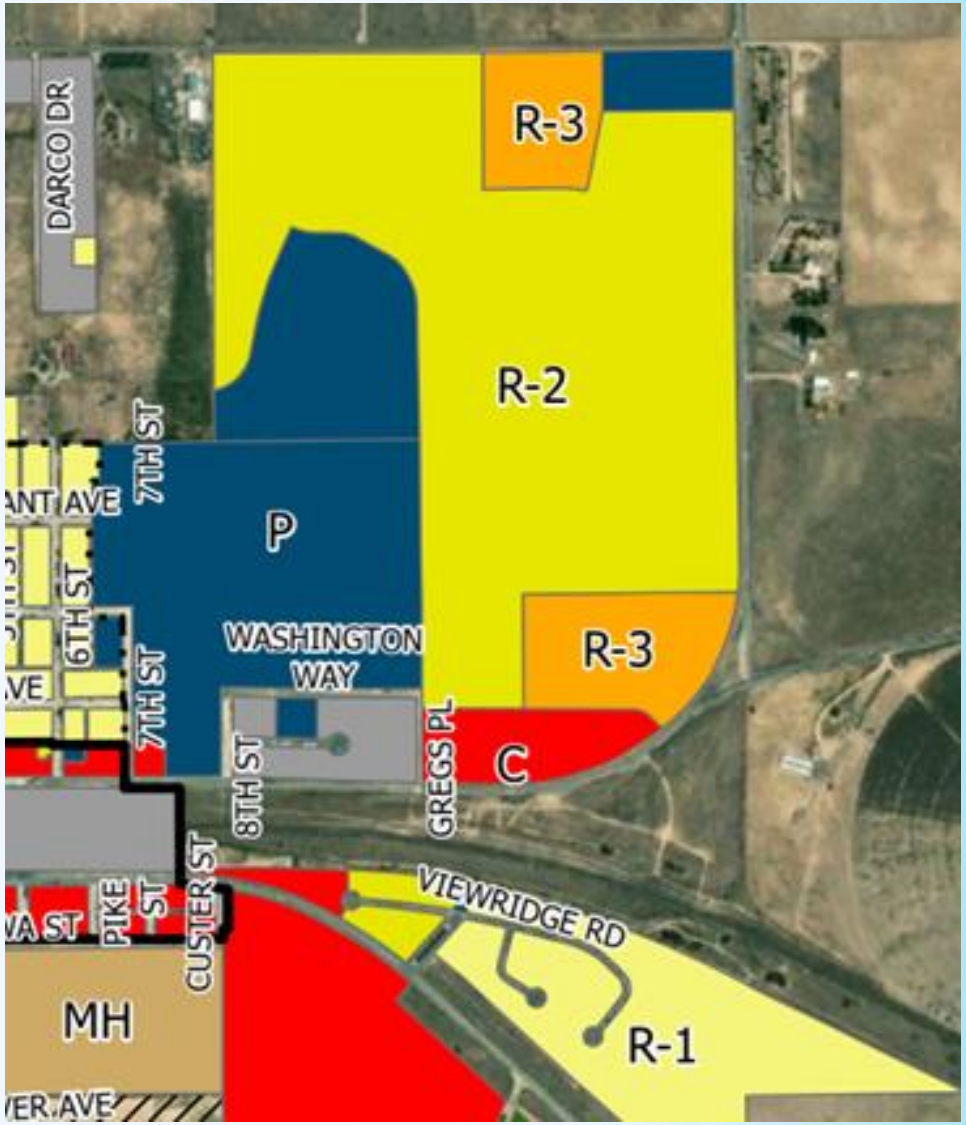



38TH AVENUE
SITE BOUNDARY
R-3
SINGLE FAMILY
ATTACHED
RESIDENTIAL
8.83 ACRES
12 DU/AC
105 DWELLING UNITS
TRACT
X
FIRE
STATION
1.79 ACRES
TRACT
Y
WATER
TANK
1.79 ACRES
TRACT
Z
POCKET
PARK
1.44 ACRES
TRACT
E
HWY 79
A-3
A-1
ADAMS COUNTY
DETENTION
5.93 ACRES
TRACT
V
SCHOOL
19.21 ACRES
TRACT
W
PARK
12.90 ACRES
TRACT
D
PD: 12
PLANNED
DEVELOPMENT
R-3
SINGLE FAMILY
ATTACHED RESIDENTIAL
8.56 ACRES
12 DU/AC
102 DWELLING UNITS
TRACT
T
DETENTION
TRACT
S
WASHINGTON WAY
COMMERCIAL
5.88 ACRES
TRACT
U
DETENTION
1.36 ACRES
TRACT
R
ONEIDA PLACE
I
INDUSTRIAL
DISTRICT
PALMER AVENUE
A-1
ADAMS COUNTY
POTENTIAL TURNING MOVEMENTS
TO BE DETERMINED BASED ON USE,
VOLUME, INTERIM AND ULTIMATE CONDITIONS

Surrounding Zoning and Land Use

Direction	Zone District	Land Use
North	A-3 in Adams County	Agricultural
East	P – Public, R-2 – Mid Density Residential	Vacant
South	R-2 – Mid Density Residential	Vacant
West	R-2 – Mid Density Residential	Vacant

Zoning


DARCO DR
R-3
R-2
7TH ST
ANT AVE
P
6TH ST
WASHINGTON WAY
R-3
VE
7TH ST
8TH ST
GREGS PL
C
CUSTER ST
VIEWRIDGE RD
VA ST
PIKE
ST
MH
R-1
VER AVE

Purpose of a Sketch Plan and the Planning and Zoning Commission's Action

- Purpose of a sketch plan is to give early feedback to the applicant
- No formal action required
- Next steps will be a final plat and site plan

Sketch Plan

- 84 lots on 8.9 acres
- Single-family attached townhomes (four-plex units)
- Minimum lot size – 2,400 sq. ft.
- 9.43 dwelling units/acre
- 1.8 acres common open space
- Internal trail connections

E. 38TH AVENUE
SHETLAND AVENUE
BUCKSKIN AVENUE
BENNETT RANCH BLVD.
LOCAL STREET
ALLEY
APPALOOSA DRIVE
FUTURE FIRE STATION
PINTO PLACE
MUSTANG DRIVE
BUILDING FOOTPRINT
UTILITY EASEMENT
TRAIL CONNECTION
SITE DATA
AREA: +/-8.9 TOTAL ACRES
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PROPOSED USE: FOUR-PLEX RESIDENTIAL TOWNHOMES (25'X50' UNIT FOOTPRINT, 25'X96' TYPICAL LOT (2,400 S.F.)+ 5' SIDES
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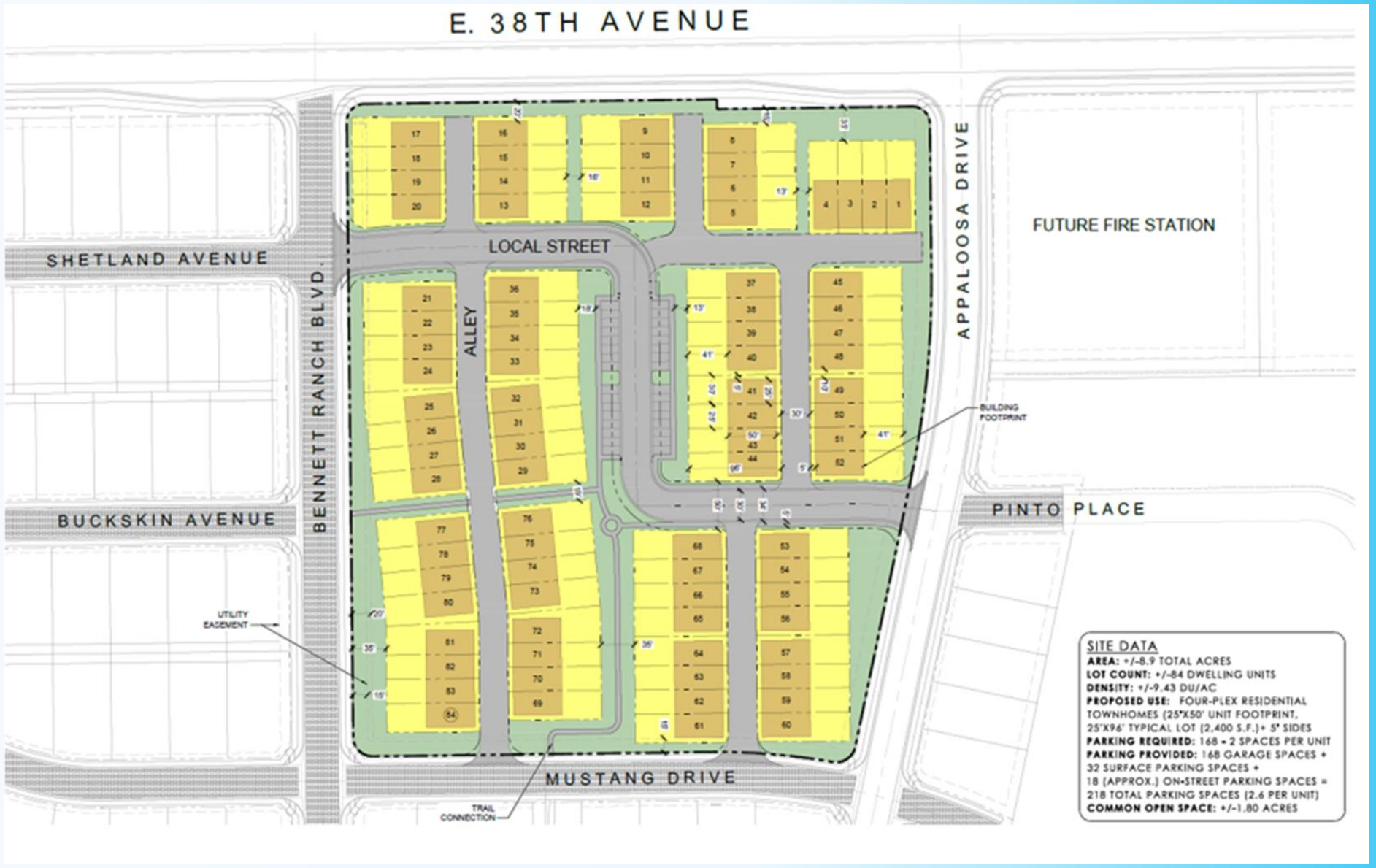
COMMON OPEN SPACE: +/-1.80 ACRES

Available Infrastructure, Services and Utilities

- Access via new streets in Filing 1 and to East 38th Avenue
- Town water and sewer
- Integrated stormwater management
- Bennett Watkins Fire Rescue
- IREA Electric
- Colorado Natural Gas
- Bennett School District 29J

Questions and Comments?



Town of Bennett Land Use Application Form

TO BE COMPLETED BY APPLICANT

Application Type: Sketch Plan			Other _____
Primary Contact Name: Trey Farrell, PE			
Name of Firm: Kimley-Horn & Associates			
Address: 4582 South Ulster Street			
City: Denver	State: CO	Zip: 80237	Phone: 7204641861
Email: Trey.Farrell@Kimley-Horn.com			
Owner Name: LGI Homes	Applicant: Kacy Flemons, PE		
Address: 3401 Quebec St. Suite 4060			
City: Denver	State: CO	Zip: 80207	Phone: 7205637701
Email: Kacy.Flemons@lgihomes.com			
Mineral Estate Holder/Lease:			
Name of Firm:			
Address:			
City:	State:	Zip:	Phone:
Parcel#: 0181500000360	Subdivision Name: Bennett Ranch - Phase 1 SF-A		
Site Address: N/A			
Nearest Major Intersection: SWC of 38th Ave & Highway 79			
Legal Description:			
Current Zoning: R-3	Proposed # lots/units: 84		
Total Acreage: 8.9	Gross Floor Area:		
Proposed Gross Densities (du/ac): 9.43			
Additional Notes:			

All Submittal Requirements must accompany this application. All applicable fees must be paid at the time of application. Any extraordinary cost incurred by the Town of Bennett in reviewing and processing this application is the responsibility of the applicant.

An executed cost agreement must be attached to this application pursuant to Sec. 16-1-325 of the Bennett Municipal Code.

I understand this is an application only, it must be approved by the Town, and any required building permits must be obtained before the property can be used in accordance with the request. I hereby acknowledge all of the above information is correct.

Applicant's Signature: Kacy Flemons Digitally signed by Kacy Flemons Date: 2021.04.08 13:13:08 -06'00' **Date:** 4/8/21

Kimley»Horn

Bennett Ranch

Bennett, Colorado | Phase 1 SF-A Sketch Plan Application
April 6, 2021

Statement of Intent

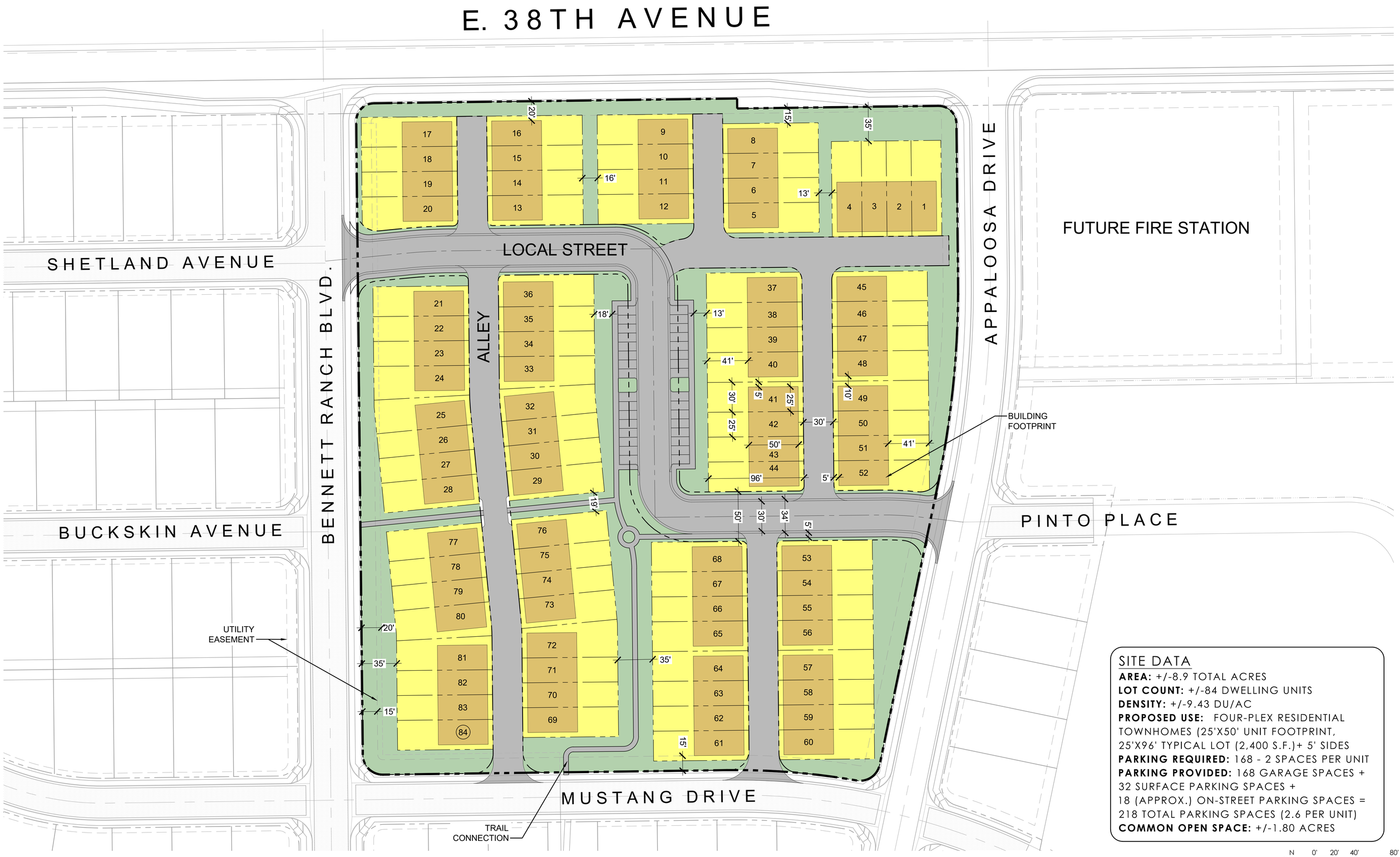
The subject property is located along the south western corner of East 38th Avenue and Appaloosa Drive. Situated northeast of Bennett High School and Bennett Middle School, this proposed neighborhood will provide a collection of townhomes within walking distance to the schools and nearby amenities within the Town of Bennett.

It is intended that the Bennett Ranch Townhomes be a well-connected neighborhood of single-family attached residences with a series of trail connections which tie into a proposed centralized Community Park to the south. The site is approximately 8.9 acres and is planned for a total of 84 single-family attached homes (townhomes). The townhomes have a typical lot size of 30-feet wide by 96-feet in depth with a building footprint of 25-feet wide by 50-feet in length. The townhomes will be a series of four attached units (four-plex) with a required parking ratio of 2 spaces per unit and a provided parking ratio of 2.7 spaces per unit. The subject property is planned in accordance to the R-2 (Mid-Density Residential) Zone District. The proposed neighborhood will focus on providing quality common areas, landscape buffers, and trail corridors. Landscaping will be incorporated along all perimeter streets as well as enhanced entryways to accentuate the “front door” of the neighborhood. Most notably, a landscape buffer will be provided along East 38th Avenue to offer a physical and visual barrier between vehicular traffic and residences.

Primary vehicular access to the neighborhood will be from Bennett Ranch Boulevard and Appaloosa Drive with proposed alley access from Mustang Drive. Internal alleys and local drives will provide access to residences and the centralized guest parking area.

Community design elements include open space/trail corridors, vehicular and pedestrian scaled lighting, and street furniture to contribute to providing a high-quality neighborhood experience. The trail corridors will provide access to a proposed Community Park to the south as well as connecting the neighborhood to nearby public amenities including Bennett High School and Bennett Middle School. Pedestrian and bicycle access will be provided along the internal street connections to help link neighborhood amenities to other developed areas within the Town.

The intent of the architecture within Bennett Ranch is to provide a variety of quality housing options, colors, and architectural designs to complement the surrounding neighborhoods while avoiding monotony throughout the neighborhood. The homes shall relate to the street and open spaces while maintaining a sense of seclusion.



SITE DATA

AREA: +/-8.9 TOTAL ACRES
LOT COUNT: +/-84 DWELLING UNITS
DENSITY: +/-9.43 DU/AC
PROPOSED USE: FOUR-PLEX RESIDENTIAL TOWNHOMES (25'X50' UNIT FOOTPRINT, 25'X96' TYPICAL LOT (2,400 S.F.)+ 5' SIDES
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LGI HOMES

BENNETT RANCH

BENNETT, CO

R-3 NORTH PARCEL - TOWNHOMES

CONCEPTUAL SKETCH PLAN

N 0' 20' 40' 80'

DATE: 02.19.2021 SCALE: APPROX.

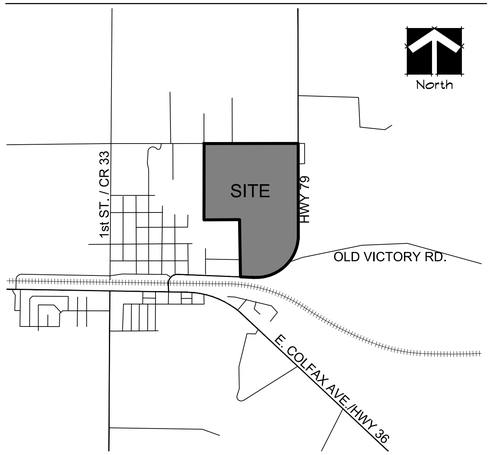
Kimley»Horn

SKETCH PLAN
BENNETT RANCH

A PARCEL OF LAND LOCATED IN THE EAST ONE-HALF OF SECTION 27, TOWNSHIP 3 SOUTH, RANGE 63 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF BENNETT, COUNTY OF ADAMS, STATE OF COLORADO
173.36 ACRES TOTAL

VICINITY MAP

SCALE: 1" = 2,000'



LEGAL DESCRIPTION

A PARCEL OF LAND LOCATED IN THE EAST ONE-HALF OF SECTION 27, TOWNSHIP 3 SOUTH, RANGE 63 WEST OF THE SIXTH PRINCIPAL MERIDIAN, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTH ONE-QUARTER CORNER OF SAID SECTION 27;

THENCE SOUTH 00°06'50" WEST ALONG THE WESTERLY LINE OF THE NORTHEAST QUARTER OF SAID SECTION 27 A DISTANCE OF 300.00 FEET TO THE **POINT OF BEGINNING;**

THENCE [NORTH] 89°59'44" EAST ALONG A LINE 30.00 FEET SOUTHERLY AND PARALLEL WITH THE NORTHERLY LINE OF SAID NORTHEAST QUARTER A DISTANCE OF 2,611.31 FEET;

THENCE SOUTH 00°03'01" WEST ALONG A LINE 30.00 FEET WESTERLY OF AND PARALLEL WITH THE EASTERLY LINE OF SAID NORTHEAST QUARTER A DISTANCE OF 2,505.12 FEET;

THENCE SOUTH 09°30'45" WEST ALONG A LINE NON-TANGENT WITH THE FOLLOWING DESCRIBED CURVE A DISTANCE OF 60.83 FEET;

THENCE SOUTHWESTERLY ALONG THE ARC OF A CURVE TO THE RIGHT HAVING A CENTRAL ANGLE OF 92°25'42", A RADIUS OF 1,122.50 FEET, A CHORD BEARING OF SOUTH 46°15'52" WEST A DISTANCE OF 1,620.74 FEET, AND AN ARC LENGTH OF 1,810.79 FEET;

THENCE NORTH 87°31'17" WEST ALONG A LINE TANGENT WITH THE LAST DESCRIBED CURVE A DISTANCE OF 414.05 FEET TO THE EASTERLY LINE OF THE PARCEL OF LAND DESCRIBED IN BOOK 2500 AT PAGE 570, ADAMS COUNTY CLERK AND RECORDER'S OFFICE;

THENCE THE FOLLOWING TWO (2) COURSES ALONG SAID PARCEL OF LAND IN BOOK 2400 AT PAGE 570;

1) NORTH 00°07'36" EAST A DISTANCE OF 1,719.74 FEET;
2) THENCE SOUTH 89°52'41" WEST A DISTANCE OF 1,022.04 FEET TO THE WESTERLY LINE OF SAID NORTHEAST QUARTER;

THENCE NORTH 00°06'50" EAST ALONG SAID WESTERLY LINE A DISTANCE OF 1,950.32 FEET TO THE **POINT OF BEGINNING.**

LAND SUMMARY CHART

	AREA (ACRES)	% OF TOTAL AREA	DWELLING UNITS
SINGLE FAMILY DETACHED RESIDENTIAL LOTS	62.07	35.8	416
R-2 SINGLE FAMILY ATTACHED	18.86	10.8	226
SCHOOL	17.59	10.2	
FIRE STATION	1.85	1.1	
WATER TANK	1.87	1.1	
COMMERCIAL	7.36	4.2	
DETENTION	9.98	5.8	
PARK	16.68	9.6	
OPEN SPACE	7.51	4.3	
RIGHT-OF-WAY	29.59	17.1	
TOTAL	173.36	100	642

SIGNATURE BLOCKS

Certificate of Ownership

Owner: _____

By: _____

State of Colorado)
) ss
County of Adams)

The foregoing certificate of ownership and maintenance was acknowledged before me by _____, acting in his capacity as _____of _____, this____ day of _____ , _____.

Witness My Hand and Seal

My commission expires: _____

Notary Public _____

Planning Commission Certificate:

Approved by the Bennett Planning Commission with Planning Commission Resolution ____-____

this _____ day of _____, _____.

_____
Chairman

_____
Planning Commission Secretary

Certificate of Approval by the Board of Trustees:

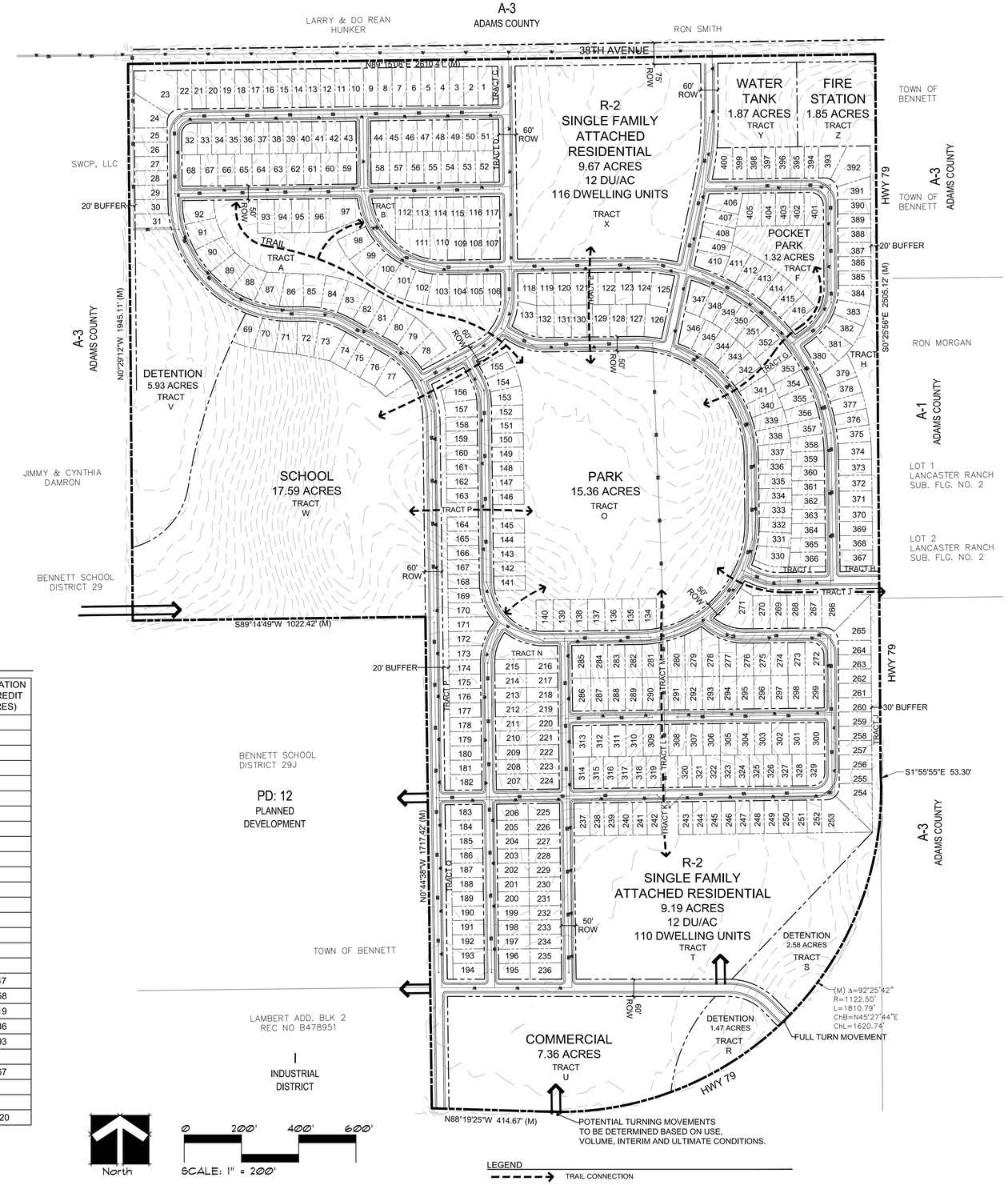
This amendment to the official zoning map for Bennett Ranch is approved and accepted by Ordinance No. _____, passed and adopted at the regular meeting of the Board of Trustees of Bennett, Colorado, held on _____, _____. All conditions, terms, and specifications designated or described herein shall be binding on the owner, its heirs, successors, and assigns.

_____
Mayor

Attest: _____
Town Clerk

TRACT SUMMARY CHART

TRACT	AREA (ACRES)	USE	OWNER	MAINTENANCE	DEDICATION CREDIT (ACRES)	DEDICATION NO CREDIT (ACRES)
A	2.72	OPEN SPACE	HOA	HOA	2.72	
B	0.18	OPEN SPACE	HOA	HOA	0.18	
C	0.06	OPEN SPACE	HOA	HOA	0.06	
D	0.10	OPEN SPACE	HOA	HOA	0.10	
E	0.15	OPEN SPACE	HOA	HOA	0.15	
F	1.32	PARK	HOA	HOA	1.32	
G	0.25	OPEN SPACE	HOA	HOA	0.25	
H	1.16	OPEN SPACE	HOA	HOA	1.16	
I	0.12	OPEN SPACE	HOA	HOA	0.12	
J	0.81	OPEN SPACE	HOA	HOA	0.81	
K	0.15	OPEN SPACE	HOA	HOA	0.15	
L	0.22	OPEN SPACE	HOA	HOA	0.22	
M	0.16	OPEN SPACE	HOA	HOA	0.16	
N	0.29	OPEN SPACE	HOA	HOA	0.29	
O	15.36	PARK	HOA	HOA	15.36	
P	0.86	OPEN SPACE	HOA	HOA	0.86	
Q	0.28	OPEN SPACE	HOA	HOA	0.28	
R	1.47	DETENTION	HOA	HOA		1.47
S	2.58	DETENTION	HOA	HOA		2.58
T	9.19	SFA RESIDENTIAL	HOA	HOA		9.19
U	7.36	COMMERCIAL	HOA	HOA		7.36
V	5.93	DETENTION	HOA	HOA		5.93
W	17.59	SCHOOL	TOWN	TOWN	17.59	
X	9.67	SFA RESIDENTIAL	HOA	HOA		9.67
Y	1.87	WATER TANK	HOA	HOA	1.87	
Z	1.85	FIRE STATION	HOA	HOA	1.85	
TOTAL					45.50	36.20



APPLICANT:

CIVIL ENGINEER:

Rocky Ridge Civil Engineering
420 21st Avenue, #101
Longmont, CO 80501
303-651-6626

PLANNER:

THE HENRY DESIGN GROUP
LAND PLANNING • LANDSCAPE ARCHITECTURE & DESIGN
1501 WAZEE STREET SUITE 1-C DENVER COLORADO 80202
Phone 303-446-2368 Fax 303-446-0958

BENNETT RANCH
Sketch Plan
Bennett, Colorado

DRAWN BY: AY
CHECK BY: KH
ISSUE DATE: 8-23-2018
REVISIONS: 11-30-2018

SHEET NUMBER
1 of 1

TERRAMAX, INC.

CONSULTING ◊ ENGINEERING

Engineering Review Memo

To: Stephen Hebert, AICP, Bennett Planning & Economic Development Manager

From: Dan Giroux, PE, Engineering Consultant to the Town

Date: Monday, June 7, 2021

Case: Bennett Ranch North R-3 Townhomes Sketch Plan

Town of Bennett Land Use Case 21.12

Subject: Engineering Review

Per the request of the Town of Bennett, Terramax, Inc. has reviewed the application materials for the proposed Bennett Ranch North R-3 Townhomes Sketch Plan. This review does not relieve the applicant from meeting the Town's requirement that the development comply with all Town Codes and Standards.

I have the following comments to offer on this Case and the submittal materials:

Water Distribution System

- 8-inch interior water mains are proposed and desired for fire protection.
- As proposed, the water mains and fire hydrants would be eligible to be accepted as public improvements, for dedication to, ownership & maintenance by the Town.
- Final fire hydrant layout to be confirmed through ensuing development applications.
- Water main v sanitary sewer main layout and offsets in alleys to be confirmed through ensuing development applications.
    - If storm sewer or other utility needs are not shown in the alleys, the Town may request the water & sanitary sewer mains to shift slightly towards center to increase building offsets.
    - Water main v sanitary sewer main orientation may be adjusted for consistent side of alley through the development, or to minimize crossings.
    - Additional looping versus dead-end north & northeast water main end treatments will be reviewed through ensuing development applications.
- The Town will have water system capability, including fire flows, to serve this proposed Sketch Plan development via the pending Bennett Ranch Filing 1 public improvements.

Sanitary Sewer System

- 8-inch interior sanitary sewer mains are proposed and desired.
- As proposed, the sanitary sewer mains and manholes would be eligible to be accepted as public improvements, for dedication to, ownership & maintenance by the Town.
- Final manhole layout to be confirmed through ensuing development applications.
    - All sanitary sewer main alignment change points will require a manhole.
- Same comment regarding water main v sanitary sewer main layout and offsets.

- The Town will have sanitary sewer collection system capability to serve this proposed Sketch Plan development via the Bennett Ranch Filing 1 public improvements.

Access

- Local street radii to be confirmed with BWFR with appropriate fire truck turn overlay templates through ensuing development applications.
- The Town has of recent practice NOT accepted alleys as public improvements, for Town ownership and maintenance, but has accepted alleys with appropriate easement for emergency (including fire) access, and maintenance access for Town utilities.
    - Alley ownership and maintenance has remained with a Metro District and/or Owners Association.

Stormwater Management

- The Filing 1 stormwater management pond will have adequate capacity for this development.
- The Filing 1 stormwater collection system has been planned and designed for adequate capacity for this development.
- The internal site stormwater collection, routing and overflow systems will be reviewed through ensuing development applications.
- Public v private improvement eligibility for the interior stormwater system is dependent upon access/easement provided, improvement extents, design, sizing & specifications, and particularly, implications regarding protection of public improvements, including streets and utilities.
- With appropriate stormwater management provided through final development design, the Town will have the capability to serve this property for the proposed Sketch Plan via the Bennett Ranch Filing 1 public improvements.

Steve, this concludes my engineering review of the application and supporting submittal materials for the proposed Bennett Ranch North R-3 Townhomes Sketch Plan by the applicant. Please let me know if you have any questions, or require additional information pertaining to the submitted information, or my review.

Memorandum

WILSON & COMPANY
HIGHER RELATIONSHIPS

To: Steve Hebert, AICP, Bennett Planning & Economic Development Manager

From: Gabrielle Renner, PE PTOE RSP1

Town Traffic Engineer

Date: 6/3/2021

Re: Bennett Ranch Phase 1 North Parcel Townhomes Sketch Plan – Traffic Submitted Comments

---

The sketch plan for Bennett Ranch Phase 1 – North Parcel Townhomes submitted on May 13, 2021 was reviewed and the following traffic related comments have been provided by the Town Traffic Engineer.

- The 2018 Traffic Impact Analysis (TIA) completed by LSC Transportation Consultants, Inc for Bennett Ranch has been accepted as sufficient traffic analysis for the Phase I Townhomes parcel.

- The Statement of Intent indicates a parking ratio of 2.7 spaces per unit was provided and the site plan indicates 2.6 spaces per unit. Please clarify and update documents.

- The parking ratio should not include on-street parking unless it is shown to see how the parking will be designated. With four alley connections along the local street, there is a concern about intersection sight distance in relation to the on-street parking.

- The trail connection that goes to the intersection of Buckskin Avenue and Bennett Ranch Boulevard should be incorporated with the traffic control and pedestrian crosswalk at that location.

- The trail connection at Mustang Drive will need pedestrian facilities to cross Mustang Drive safely.

- The local street cross-section meets the Town of Bennett's Type A (local street with attached sidewalk).

COLORADO
Department of Transportation
Region 1
Region 1 Traffic – Permits Unit
2829 W. Howard Place – Second Floor
Denver, CO 80204

MEMORANDUM

To: Steve Hebert and Sara Aragon

From: Marilyn Cross, CDOT Region 1 Access Manager

Date: June 5, 2021

Subject: CDOT Referral Comments for Bennett Ranch North R-3 Townhome Sketch Plan

Bennett Ranch North R-3 Townhomes is located south of E. 38th Ave, approximately 600 feet west of the E. 38th Ave/CO Highway 79 intersection. The Sketch plan is a concept plan to create 84 single family attached (townhome) lots on 8.9 acres.

Traffic from this site is accounted for in the 2018 Traffic Impact Study. CDOT is currently processing an Access Permit for improvements needed to 38th Avenue and SH 79 intersection for the traffic generated by Bennett Ranch.

BENNETT SCHOOL DISTRICT 29J

June 2, 2021

Town of Bennett
207 Muegge Way
Bennett, CO 80102

RE: Case No. 21.12 – Bennett Ranch North R-3 Townhomes Sketch Plan

Dear Steve;

Bennett School District 29J is pleased to review the sketch plan proposal for Bennett Ranch North R-3 Townhomes. The application is for 8.9 acres of land being platted for 84 townhomes at a density of 9.43 du/acres.

The Application proposes residential development for property located within the School District's boundaries and, therefore, will have an impact on the School District's responsibility to provide adequate school facilities. Consequently, the School Dedication requirements must be met per Division 5 of the Bennett Municipal Code. If the final plat application matches with the attached plan, we calculate the following dedication requirements:

Housing Unit Type	Density	Number of Dwelling Units	Elementary		Middle		High		Total	
			Gen Rate	Students	Gen Rate	Students	Gen Rate	Students	Gen Rate	Students
SFD	0-7.49 du/ac		0.36	0	0.18	0	0.24	0	0.775	0
MF/Mid Density	7.5-14.99 du/ac	84	0.17	14.28	0.08	6.72	0.11	9.24	0.364	30.58
MF/High Density	15 du/ac +		0.09		0.04		0.06		0.195	
Acres per Student	Elementary		Middle		High		Total		Cash-in-lieu	
	Number Students	Acres	Number Students	Acres	Number Students	Acres	Number Students	Acres		
0.0597	14.28	0.85	6.72	0.40	9.24	0.55	30.24	1.83	$82,142.42	

Based upon these above calculations, the School District is requesting a cash-in-lieu payment of $82,142.42 in one lump sum at the time of final plat approval.

The District is engaged in a Master Plan update that will result in forecasting growth within the District boundaries and the approximate location of new school sites and associated facilities. We are working with the Town's and Counties to assist in the analysis and planning to ensure the best outcome for the communities moving forward. The majority of our work should be completed the first half of the year. We believe this will have a positive benefit for Bennett Ranch.

615 7th Street Bennett, CO 80102 303-644-3234 PHONE 303-644-4121 FAX

Keithy@bsd29j.com www.bsd29j.com

BENNETT SCHOOL DISTRICT 29J

The School District respectfully requests the opportunity to amend and supplement this letter, as appropriate, to update the Town Planning Department and the Subdivision Agreement concerning cash in-lieu payment as a way to mitigate the impact the development will have on the schools. The District looks forward to working with the developer to address the dedication as they move through the site planning and plattingprocess.

Sincerely,

Mrs. Robin Purdy
School Superintendent

Mr. Keith Yaich
Chief Financial Officer

615 7th Street Bennett, CO 80102 303-644-3234 PHONE 303-644-4121 FAX
Keithy@bsd29j.com www.bsd29j.com

Bennett-Watkins Fire Rescue

District Office: 303-644-3572 Fax: 303-644-3401
355 4th Street, Bennett, CO 80102
Email: LifeSafety@BennettFireRescue.org
"Striving to Preserve Life and Property"

June 3rd, 2021

Steve Hebert
Town Planner
Town of Bennett
Re: Bennett Ranch North R-3 Townhomes Sketch Plan – 21.12

Planner Hebert,

In regards to the submission for Bennett Ranch North R-3 Townhomes Sketch Plan – 21.12, Bennett-Watkins Fire Rescue (BWFR) has the following comments and considerations:

- The developer shall confer with Bennett Fire Protection District and ensure that the proposed development conforms to adopted (IFC) fire code standards.

- The developer shall ensure the proposed municipal water systems pertaining to hydrant distribution fire suppression is adequate to protect the proposed development as well as meet design expectations of both the Town of Bennett as well as Bennett-Watkins Fire Rescue. Considerations for design requirement shall include adopted codes and standards as well as ISO distribution and fire flow requirements.

- <u>The applicant will be required to submit a separate site overview and fire hydrant model exhibit demonstrating the placement and distances of all fire hydrants throughout the development directly to the Fire District.</u> This model will be reviewed for IFC Appendix C compliance. Separate fees and submission for this review are required directly with the Fire District.

- It is recommended that the developer work directly with Bennett-Watkins Fire Rescue, ISO, and Town of Bennett Staff to provide and review information pertaining to the needed fire flows for the proposed development. This information should be vetted against International Fire Code Requirements as well as ISO requirements. It is also likely that this information will also be required by the Town to include for hydraulic system modeling.

- Fire hydrant installation shall conforming to the painting and color coding system outlined in NFPA 291. The developer/install contactor is responsible for ensuring all hydrants are painted conforming to the TOB/BWFR standards.

- Areas of the development that include wildland-urban interface, greenbelts, or other open space areas are of particular concern for the Fire District. BWFR is interested in working with the developer to ensure that adequate access is provided to these areas should there be a need for vehicle access for wildfire suppression. As each development is unique, it is recommended that the developer work directly with BWFR to examine these interface areas and determine what access and service needs exist.

- Development access requirements are based on the adopted fire code applicable to the development. Two BWFR approved access points are required after the 30th dwelling unit is

constructed. These access points are required to follow the remoteness guidelines, they shall be placed a distance apart equal to not less than one half of the length of the maximum overall diagonal dimension of the lot or area to be served, measured in a straight line between accesses. The only exception to this requirement is if all dwelling units are constructed with approved automatic sprinkler systems and approved by BWFR.

- The proposed attached development sketch plan shows streets/alleys that may include on-street parking. BWFR is requesting that the developer provide a modeling exhibit based on fire apparatus design criteria showing adequate widths and turning radius.

- BWFR will incur unmet capital costs associated with new development. To address the needs of this unmet capital cost, BWFR has partnered with the Town to enact a development fee policy which establishes fees due for all new types of development. It is likely that fees will apply to the new proposed development. If the developer has additional questions or concerns regarding Fire District development fees or policies, they can contact the District Office at 303-644-3572.

Thank You

Caleb J. Connor
Fire Marshal
Life Safety Division
Bennett-Watkins Fire Rescue
303-644-3572 - Headquarters / 720-893-7672 - Direct
www.BennettFireRescue.org

Gmail

Steve Hebert <shebert@bennett.co.us>

RE: Bennett Ranch North R-3 Townhome Sketch Plan Referral

Brooks Kaufman <BKaufman@irea.coop> Wed, Jun 2, 2021 at 8:19 AM
To: Steve Hebert <shebert@bennett.co.us>

Steve

The applicant addressed IREA comments on the sketch. IREA will address easements at plat.

Respectfully

Brooks Kaufman

Lands and Rights of Way Manager

Office 720.733.5493

Cell 303.912.0765

5496 N US Hwy 85

Sedalia, CO 80135

IREA

Intermountain Rural Electric Association

From: Town of Bennett Planning <planning@bennett.co.us>
Sent: Thursday, May 13, 2021 7:34 AM
To: Steve Hebert <shebert@bennett.co.us>; Daniel Giroux <dangiroux@terramax.us>; Gabrielle Renner <Gabrielle.Renner@wilsonco.com>; Victoria Flamini <VictoriaFlamini@bennettfirerescue.org>; Daymon Johnson <djohnson@bennett.co.us>; ksmalley@adcogov.org; Caleb Connor <calebconnor@bennettfirerescue.org>; sarah.e.zawatzki@usps.gov; robinp@bsd29j.com; kendrickplanning@gmail.com; Director@bennettrec.org; Marilyn Cross - CDOT <Marilyn.Cross@state.co.us>; David.dixon@state.co.us; JGutierrez@summitutilitiesinc.com; GVanderstraten@summitutilitiesinc.com; Patw@esrta.coop; Brooks Kaufman <BKaufman@Irea.Coop>; mculley@lightkelly.com; Julio.Iturreria@i-70reap.com; gburke@jehnwater.com; Robin Price <rprice@bennett.co.us>; Adam Peake <apeake@summitutilitiesinc.com>

Cc: Rachel Summers <rsummers@bennett.co.us>
Subject: Bennett Ranch North R-3 Townhome Sketch Plan Referral

CAUTION:

This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

All,

Below is a link to the referral package for the Bennett Ranch North R-3 Townhome Sketch Plan.

Bennett Ranch R-3 North Townhome Sketch Plan

Please have your comments back to us by June 3, 2021. You can send your comments to Planning@bennett.co.us, or mail to Town of Bennett's mailing address below. Contact Steve Hebert (Shebert@bennett.co.us) or Sara Aragon (Saragon@bennett.co.us) if you have any questions.

Thank you for your time and consideration of this matter.

town of Bennett
welcome neighbors.

Planning Department
207 Muegge Way | Bennett CO, 80102
(303)644-3249 | planning@bennett.co.us
townofbennett.colorado.gov

LSC TRANSPORTATION CONSULTANTS, INC.

1889 York Street
Denver, CO 80206
(303) 333-1105
FAX (303) 333-1107
E-mail: lsc@lscdenver.com

December 7, 2018

Mr. Michael Blumenthal
Bennett Ranch, LLC
17 Beacon Hill Lane
Greenwood Village, CO 80111

Re: Bennett Ranch
Traffic Impact Analysis
Bennett, CO
LSC #181140

Dear Mr. Blumenthal:

In response to your request, LSC Transportation Consultants, Inc. has prepared this traffic impact analysis for the proposed Bennett Ranch development. As shown on Figure 1, the site is located south of E. 38th Avenue and west of SH 79 (Kiowa-Bennett Road) in Bennett, Colorado.

REPORT CONTENTS

The report contains the following: the existing roadway and traffic conditions in the vicinity of the site including the lane geometries, traffic controls, posted speed limits, etc.; the existing weekday peak-hour traffic volumes; the existing daily traffic volumes in the area; the typical weekday site-generated traffic volume projections for the site; the assignment of the projected traffic volumes to the area roadways; the projected long-term background and resulting total traffic volumes on the area roadways; the site's projected traffic impacts; and any recommended roadway improvements to mitigate the site's traffic impacts.

LAND USE AND ACCESS

The site is proposed to include about 416 single-family dwelling units, about 231 multi-family dwelling units, a 17.68-acre area to be dedicated to the school district, a 15.36-acre park, a 20,000 square-foot fire station, and about 99,600 square feet of retail space. Full movement access points are proposed to E. 38th Avenue and SH 79 (Kiowa-Bennett Road or Palmer Avenue) as shown in the conceptual site plan in Figure 2.

ROADWAY AND TRAFFIC CONDITIONS

Area Roadways

The major roadways in the site's vicinity are shown on Figure 1 and are described below.

- **SH 79 (Kiowa-Bennett Road and/or Palmer Avenue)** is a north-south, two-lane state highway east of the site. South of E. 38th Avenue, it is classified by CDOT as NR-B (Non-Rural Arterial) and as R-B (Rural Highway) north of E. 38th Avenue. The intersection with E. 38th Avenue is stop-sign controlled. The posted speed limit in the vicinity of the site transitions from 35 to 65 mph as the roadway moves from urban to rural. The 2013 *SH 79-Kiowa Bennett Corridor PEL Study* (SH 79 PEL) shows SH 79 being realigned in the future between the site and I-70. The portion south of the site (Palmer Avenue) will likely be turned over to the Town of Bennett with the primary alignment headed south to cross E. Colfax Avenue. Both roadways are assumed to be four-lane roadways adjacent to the site by 2040. All full movement access proposed to SH 79 is consistent with the August, 2018 *SH 79 Access Control Plan* by SM Rocha, LLC.

- **E. 38th Avenue** is an east-west, two-lane gravel collector roadway north of the site. The intersection with SH 79 is stop-sign controlled. No speed limit is posted in the vicinity of the site.

Existing Traffic Conditions

Figure 3 shows the existing lane geometries, traffic controls, posted speed limits, and traffic volumes in the site's vicinity on a typical weekday. The weekday peak-hour traffic volumes and daily traffic counts are from the attached traffic counts conducted by Counter Measures in September and November, 2018.

2023 and 2040 Background Traffic

Figure 4 shows the estimated 2023 background traffic and Figure 5 shows the estimated 2040 background traffic based on an annual growth rate of 2.3 percent on SH 79 at E. 38th Avenue per the SH 79 PEL.

Existing, 2023, and 2040 Background Levels of Service

Level of service (LOS) is a quantitative measure of the level of congestion or delay at an intersection. Level of service is indicated on a scale from "A" to "F." LOS A is indicative of little congestion or delay and LOS F is indicative of a high level of congestion or delay. Attached are specific level of service definitions for unsignalized intersections.

The intersections in Figures 3, 4, and 5 were analyzed as appropriate to determine the existing, 2023, and 2040 background levels of service using Synchro. Table 1 shows the level of service analysis results. The level of service reports are attached.

- **SH 79 (Kiowa-Bennett Road)/E. 38th Avenue:** All movements at this unsignalized intersection currently operate at LOS "A" during both morning and afternoon peak-hours and are expected to operate at LOS "B" or better through 2040.

- **SH 79 (Palmer Avenue)/Old Victory Road:** All movements at this unsignalized intersection currently operate at LOS "B" or better during both morning and afternoon peak-hours and are expected to do so through 2023. This intersection is expected to be reconfigured by 2040.

- **SH 79 (Kiowa-Bennett Road)/Old Victory Road/Palmer Avenue:** All movements at this future unsignalized intersection are expected to operate at LOS "B" or better through 2040.

- **SH 79 (Palmer Avenue)/Greg's Place**: All movements at this unsignalized intersection currently operate at LOS "B" or better during both morning and afternoon peak-hours and are expected to do so through 2040.

- **SH 79 (Palmer Avenue)/8th Street**: All movements at this unsignalized intersection currently operate at LOS "C" or better during both morning and afternoon peak-hours and are expected to operate at LOS "D" or better through 2040.

TRIP GENERATION

Table 2 shows the estimated average weekday, morning peak-hour, and afternoon peak-hour trip generation for the proposed site based on the rates from *Trip Generation, 10th Edition, 2017* by the Institute of Transportation Engineers (ITE) for the proposed land use.

The site is projected to generate about 8,147 primary vehicle-trips on the average weekday, with about half entering and half exiting during a 24-hour period. During the morning peak-hour, which generally occurs for one hour between 6:30 and 8:30 a.m., about 167 vehicles would enter and about 351 vehicles would exit the site. During the afternoon peak-hour, which generally occurs for one hour between 4:00 and 6:00 p.m., about 526 vehicles would enter and about 405 vehicles would exit. This assumes 34 percent of the shopping center land use trips are pass-by trips.

TRIP DISTRIBUTION

Figure 6 shows the estimated 2023 and 2040 directional distribution of the site-generated traffic volumes on the area roadways. The estimates were based on the location of the site with respect to the regional population, employment, and activity centers; and the site's proposed land use.

TRIP ASSIGNMENT

Figure 7a shows the estimated 2023 primary site-generated traffic volumes based on the 2023 directional distribution percentages (from Figure 6) and the primary trip generation estimate (from Table 2).

Figure 7b shows the estimated 2040 primary site-generated traffic volumes based on the 2040 directional distribution percentages (from Figure 6) and the primary trip generation estimate (from Table 2).

Figures 8a and 8b show the estimated 2023 and 2040 pass-by site-generated traffic volumes.

2023 AND 2040 TOTAL TRAFFIC

Figure 9 shows the 2023 total traffic which is the sum of 2040 background traffic volumes (from Figure 4) and the 2023 site-generated traffic volumes (from Figures 7a and 8a). Figure 9 also shows the recommended 2023 lane geometry and traffic control.

Figure 10 shows the 2040 total traffic which is the sum of 2040 background traffic volumes (from Figure 5) and the 2040 site-generated traffic volumes (from Figures 7b and 8b). Figure 10 also shows the recommended 2040 lane geometry and traffic control.

PROJECTED LEVELS OF SERVICE

The intersections in Figures 9 and 10 were analyzed to determine the 2023 and 2040 total levels of service. Table 1 shows the level of service analysis results. The level of service reports are attached.

- **E. 38th Avenue/Northwest Site Access:** All movements at this future unsignalized intersection are expected to operate at LOS "A" during both morning and afternoon peak-hours through 2040.

- **E. 38th Avenue/Northeast Site Access:** All movements at this future unsignalized intersection are expected to operate at LOS "A" during both morning and afternoon peak-hours through 2040.

- **E. 38th Avenue/Fire Station Access:** All movements at this future unsignalized intersection are expected to operate at LOS "A" during both morning and afternoon peak-hours through 2040.

- **SH 79 (Kiowa-Bennett Road)/E. 38th Avenue:** All movements at this unsignalized intersection are expected to operate at LOS "C" or better during both morning and afternoon peak-hours through 2040.

- **SH 79 (Kiowa-Bennett Road)/East Site Access:** All movements at this future unsignalized intersection are expected to operate at LOS "B" or better during both morning and afternoon peak-hours through 2040.

- **SH 79 (Kiowa-Bennett Road)/Old Victory Road:** All movements at this unsignalized intersection are expected to operate at LOS "B" or better during both morning and afternoon peak-hours through 2023. This intersection is expected to be reconfigured by 2040.

- **SH 79 (Kiowa-Bennett Road)/Old Victory Road/Palmer Avenue:** All movements at this future unsignalized intersection are expected to operate at LOS "D" or better during both morning and afternoon peak-hours through 2040 with the exception of the eastbound left-turn movement which is expected to operate at LOS "F" in the 2040 afternoon peak-hour.

- **Palmer Avenue/Southeast Site Access:** All movements at this future unsignalized intersection are expected to operate at LOS "B" or better during both morning and afternoon peak-hours through 2040.

- **SH 79 (Kiowa-Bennett Road)/RIRO Commercial Access:** All movements at this unsignalized intersection are expected to operate at LOS "B" or better during both morning and afternoon peak-hours through 2023 while Palmer Avenue remains under CDOT jurisdiction.

- **SH 79 (Kiowa-Bennett Road)/Full Movement Commercial Access:** All movements at this future unsignalized intersection are expected to operate at LOS "B" or better during both morning and afternoon peak-hours in 2040 after Palmer Avenue transitions from CDOT to Town jurisdiction.

- **SH 79 (Kiowa-Bennett Road)/Gregs Place:** All movements at this unsignalized intersection are expected to operate at LOS "C" or better during both morning and afternoon peak-hours through 2040 with the following exception: The southbound left-turn movement will likely operate at LOS "E" during the 2023 afternoon peak-hour prior to SH 79 being relocated away from the Palmer Avenue alignment.

- **SH 79 (Kiowa-Bennett Road)/8th Street:** All movements at this unsignalized intersection are expected to operate at LOS "D" or better during both morning and afternoon peak-hours through 2040 with the following exception: The southbound left-turn movement will likely operate at LOS "E" during both peak-hours prior to SH 79 being relocated away from the Palmer Avenue alignment.

TRAFFIC SIGNAL WARRANT ANALYSIS

Figure 11 shows the 2040 background and total traffic volumes from Figures 5 and 10 for the SH 79/Old Victory Road/Palmer Avenue intersection plotted on a four-hour traffic signal warrant chart. It shows a traffic signal will likely be warranted by 2040.

CONCLUSIONS AND RECOMMENDATIONS

Trip Generation

1. The site is projected to generate about 8,147 primary vehicle-trips on the average weekday, with about half entering and half exiting during a 24-hour period. During the morning peak-hour, about 167 vehicles would enter and about 351 vehicles would exit the site. During the afternoon peak-hour, about 526 vehicles would enter and about 405 vehicles would exit. This assumes 34 percent of the shopping center trips are pass-by trips.

Projected Levels of Service

2. All movements at the intersections analyzed are expected to operate at LOS "D" or better during both morning and afternoon peak-hours through 2040 with the following exceptions: The southbound left-turn movements from Gregs Place and 8th Street to SH 79 (Palmer Avenue) could operate at LOS "E" by 2023 prior to SH 79 being relocated away from the Palmer Avenue alignment. The eastbound left-turn movement from Palmer Avenue to realigned SH 79 could operate at LOS "F" in the 2040 afternoon peak-hour. Traffic signal control or a left-turn acceleration lane may be needed by 2040.

Conclusions

3. The impact of the Bennett Ranch development can be accommodated by the existing roadway network with the following recommended improvements.

Recommendations

4. CDOT and the Town of Bennett coordinate to realign and widen SH 79 through Bennett as planned in the *SH 79-Kiowa Bennett Corridor PEL Study* between 2023 and 2040.

5. The recommended turn lane lengths for intersections impacted by the site are shown in Figures 9 and 10.

6. The intersection of realigned SH 79 with Old Victory Road and Palmer Avenue may require traffic signal control or an eastbound to northbound left-turn acceleration lane by 2040.

* * * * *

We trust our findings will assist you in gaining approval of the proposed Bennett Ranch development. Please contact me if you have any questions or need further assistance.

Sincerely,

LSC TRANSPORTATION CONSULTANTS, INC.

COLORADO LICENSED
CHRISTOPHER S. MCGRANAHAN
39018
PROFESSIONAL ENGINEER

By_____
Christopher S. McGranahan, PE, PTOE
Principal

12-7-18

CSM/wc

Enclosures: Tables 1 and 2
Figures 1 - 11
Traffic Count Reports
Level of Service Definitions
Level of Service Reports

Z:\LSC\Projects\2018\181140-BennettRanch\Report\BennettRanch-120718.wpd

Table 1 (Page 1 of 2)
Intersection Levels of Service Analysis
Bennett Ranch
Bennett, CO
LSC #181140; December, 2018

Intersection Location	Traffic Control	Existing Traffic Level of Service AM	Existing Traffic Level of Service PM	2023 Background Traffic Level of Service AM	2023 Background Traffic Level of Service PM	2023 Total Traffic Level of Service AM	2023 Total Traffic Level of Service PM	2040 Background Traffic Level of Service AM	2040 Background Traffic Level of Service PM	2040 Total Traffic Level of Service AM	2040 Total Traffic Level of Service PM
E. 38th Avenue/Northwest Site Access	TWSC										
NB Approach		--	--	--	--	A	A	--	--	A	A
WB Approach		--	--	--	--	A	A	--	--	A	A
Critical Movement Delay		--	--	--	--	8.7	8.9	--	--	8.9	9.0
E. 38th Avenue/Northeast Site Access	TWSC										
NB Approach		--	--	--	--	A	A	--	--	A	A
WB Approach		--	--	--	--	A	A	--	--	A	A
Critical Movement Delay		--	--	--	--	8.7	8.7	--	--	8.9	8.8
E. 38th Avenue/Fire Station Access	TWSC										
NB Approach		--	--	--	--	A	A	--	--	A	A
WB Approach		--	--	--	--	A	A	--	--	A	A
Critical Movement Delay		--	--	--	--	8.7	8.6	--	--	8.8	8.9
SH 79/E. 38th Avenue	TWSC										
NB Approach		A	A	A	A	--	--	--	--	--	--
NB Left		--	--	--	--	A	A	A	A	A	A
EB Approach		A	A	B	B	B	B	B	B	B	B
WB Approach		A	A	B	B	B	B	B	B	B	C
SB Approach		A	A	A	A	--	--	--	--	--	--
SB Left		--	--	--	--	A	A	A	A	A	A
Critical Movement Delay		9.4	9.1	10.4	11.1	11.0	12.4	11.6	12.7	12.7	15.4
SH 79/East Site Access	TWSC										
NB Left		--	--	--	--	A	A	--	--	A	A
EB Approach		--	--	--	--	B	B	--	--	B	B
Critical Movement Delay		--	--	--	--	10.1	10.1	--	--	10.2	10.0
SH 79 (Palmer Avenue)/Old Victory Road	TWSC										
WB Approach		B	B	B	B	B	B	--	--	--	--
SB Approach		A	A	A	A	A	A	--	--	--	--
Critical Movement Delay		10.5	10.7	10.6	11.5	11.6	13.1	--	--	--	--

Table 1 (Page 2 of 2)
Intersection Levels of Service Analysis
Bennett Ranch
Bennett, CO
LSC #181140; December, 2018

Intersection Location	Traffic Control	Existing Traffic Level of Service AM	Existing Traffic Level of Service PM	2023 Background Traffic Level of Service AM	2023 Background Traffic Level of Service PM	2023 Total Traffic Level of Service AM	2023 Total Traffic Level of Service PM	2040 Background Traffic Level of Service AM	2040 Background Traffic Level of Service PM	2040 Total Traffic Level of Service AM	2040 Total Traffic Level of Service PM
SH 79/Old Victory Rd./Palmer Ave.	TWSC										
NB Left		--	--	--	--	--	--	A	A	A	A
EB Left		--	--	--	--	--	--	B	B	C	F
EB Through/Right		--	--	--	--	--	--	B	B	B	B
WB Left		--	--	--	--	--	--	B	B	C	D
WB Through/Right		--	--	--	--	--	--	B	B	B	C
SB Left		--	--	--	--	--	--	A	A	A	A
Critical Movement Delay		--	--	--	--	--	--	14.4	14.4	22.0	55.5
Palmer Avenue/Southeast Site Access	TWSC										
NB Approach		--	--	--	--	--	--	A	A	B	B
EB Left		--	--	--	--	A	A	--	--	A	A
WB Left		--	--	--	--	--	--	A	A	A	A
SB Approach		--	--	--	--	B	B	--	--	B	B
Critical Movement Delay		--	--	--	--	10.7	13.3	9.6	9.5	11.6	13.3
Palmer Avenue/Commercial Access	TWSC										
EB Left	RIRO in 2023	--	--	--	--	--	--	--	--	A	A
SB Right	Full Move-	--	--	--	--	B	B	--	--	B	B
Critical Movement Delay	ment in 2040	--	--	--	--	10.2	10.4	--	--	10.4	11.4
Palmer Avenue/Greg's Place	TWSC										
EB Approach or Left		A	A	A	A	A	A	A	A	A	A
SB Approach		B	B	B	B	--	--	B	A	--	--
SB Left		--	--	--	--	C	E	--	--	B	B
SB Right		--	--	--	--	B	B	--	--	A	A
Critical Movement Delay		10.5	10.3	10.8	11.1	16.7	44.2	10.2	9.8	12.5	14.6
Palmer Avenue/8th Street	TWSC										
EB Approach or Left		A	A	A	A	B	A	A	A	A	A
SB Left		C	C	D	B	E	E	D	B	D	B
SB Right		B	B	B	B	C	B	A	A	A	A
Critical Movement Delay		23.0	15.9	26.3	14.7	46.4	43.8	26.5	12.9	28.8	14.8

Table 2
ESTIMATED TRAFFIC GENERATION
Bennett Ranch
Bennett, CO
LSC #181140; December 2018

Traffic Analysis Zone	Trip Generating Category	Quantity	Trip Generation Rates [1] Average Weekday	AM Peak-Hour In	AM Peak-Hour Out	PM Peak-Hour In	PM Peak-Hour Out	Vehicle-Trips Generated Average Weekday	AM Peak-Hour In	AM Peak-Hour Out	PM Peak-Hour In	PM Peak-Hour Out
A	Single-Family Housing [2]	117 DU [3]	9.44	0.185	0.555	0.624	0.366	1,104	22	65	73	43
B	Multi-Family Housing [4]	116 DU	7.32	0.106	0.354	0.353	0.207	849	12	41	41	24
C	Fire Station [5]	20 KSF [6]	2.40	0.341	0.139	0.139	0.341	48	7	3	3	7
D	Dedication to School District [7]	17.68 Acres	--	--	--	--	--	0	0	0	0	0
E	Park [8]	15.36 Acres	--	--	--	--	--	0	0	0	0	0
F	Single-Family Housing	103 DU	9.44	0.185	0.555	0.624	0.366	972	19	57	64	38
G	Single-Family Housing	96 DU	9.44	0.185	0.555	0.624	0.366	906	18	53	60	35
H	Single-Family Housing	100 DU	9.44	0.185	0.555	0.624	0.366	944	19	55	62	37
I	Multifamily Housing	115 DU	7.32	0.106	0.354	0.353	0.207	842	12	41	41	24
J	Shopping Center [9]	99.6 KSF	37.75	0.583	0.357	1.829	1.981	3,760	58	36	182	197
							Total =	**9,425**	**167**	**351**	**526**	**405**
							Passby Trips [10] =	1,278	16	16	64	64
							Primary Trips =	**8,147**	**151**	**335**	**462**	**341**

Notes:
(1) Source: *Trip Generation*, Institute of Transportation Engineers, 10th Edition, 2017.
(2) ITE Land Use No. 210 - Single-Family Detached Housing
(3) DU = Dwelling Unit
(4) ITE Land Use No. 220 - Multifamily Housing (Low-Rise)
(5) ITE Land Use No. 575 - Fire and Rescue Station; weekday average was assumed to be 5x the PM Peak and AM Peak is the reverse of the PM Peak
(6) KSF = 1,000 square feet
(7) Land to be dedicated to the School District to add to the overall campus to the west of the site. This estimate may need to be updated once the proposed use for the school site is more defined.
(8) Public Park
(9) ITE Land Use No. 820 - Shopping Center; a FAR of 0.30 was assumed on 7.62 acres.
(10) A passby trip rate of 34 percent was assumed for the shopping center use.

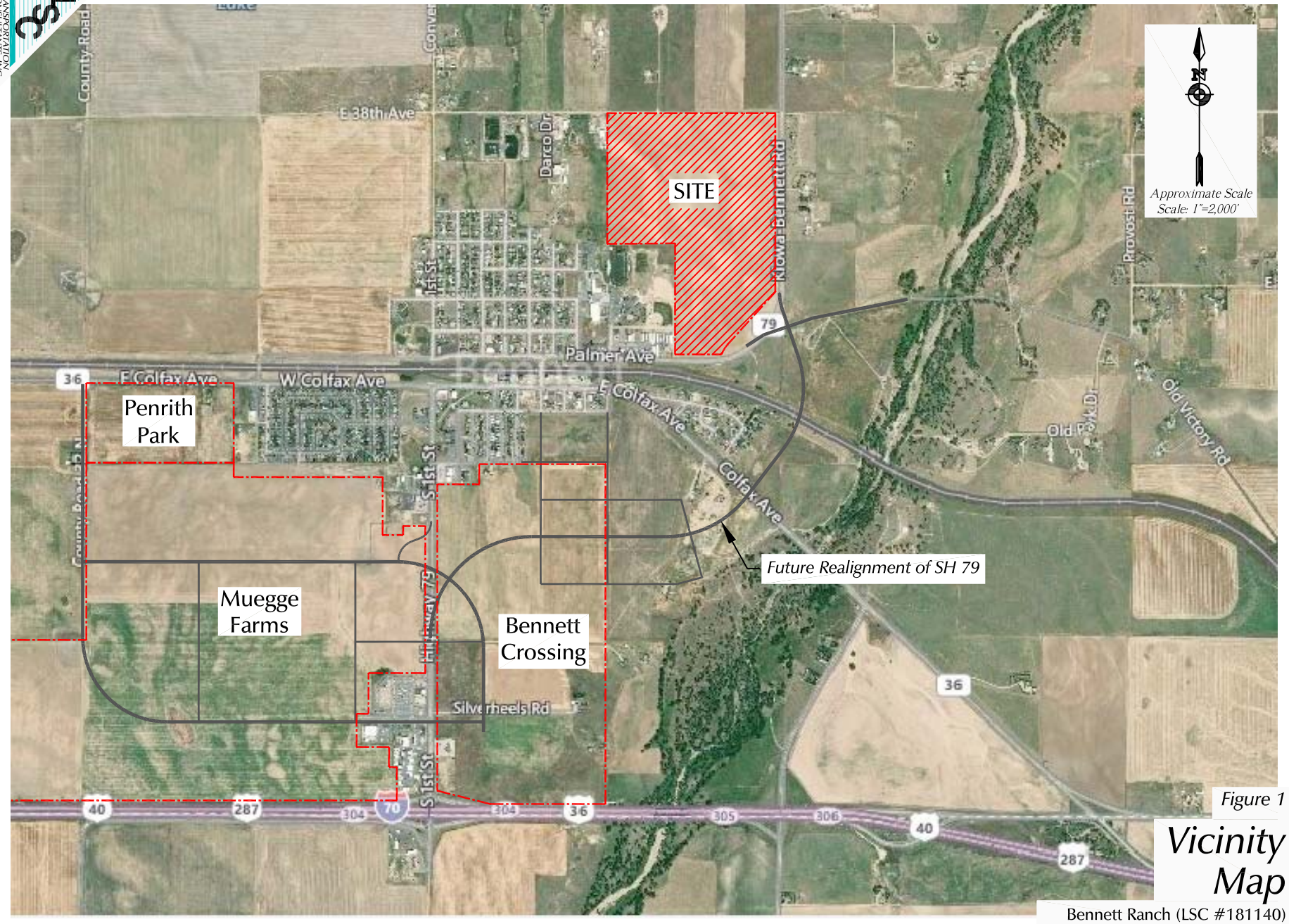


Figure 1

Vicinity Map

Bennett Ranch (LSC #181140)

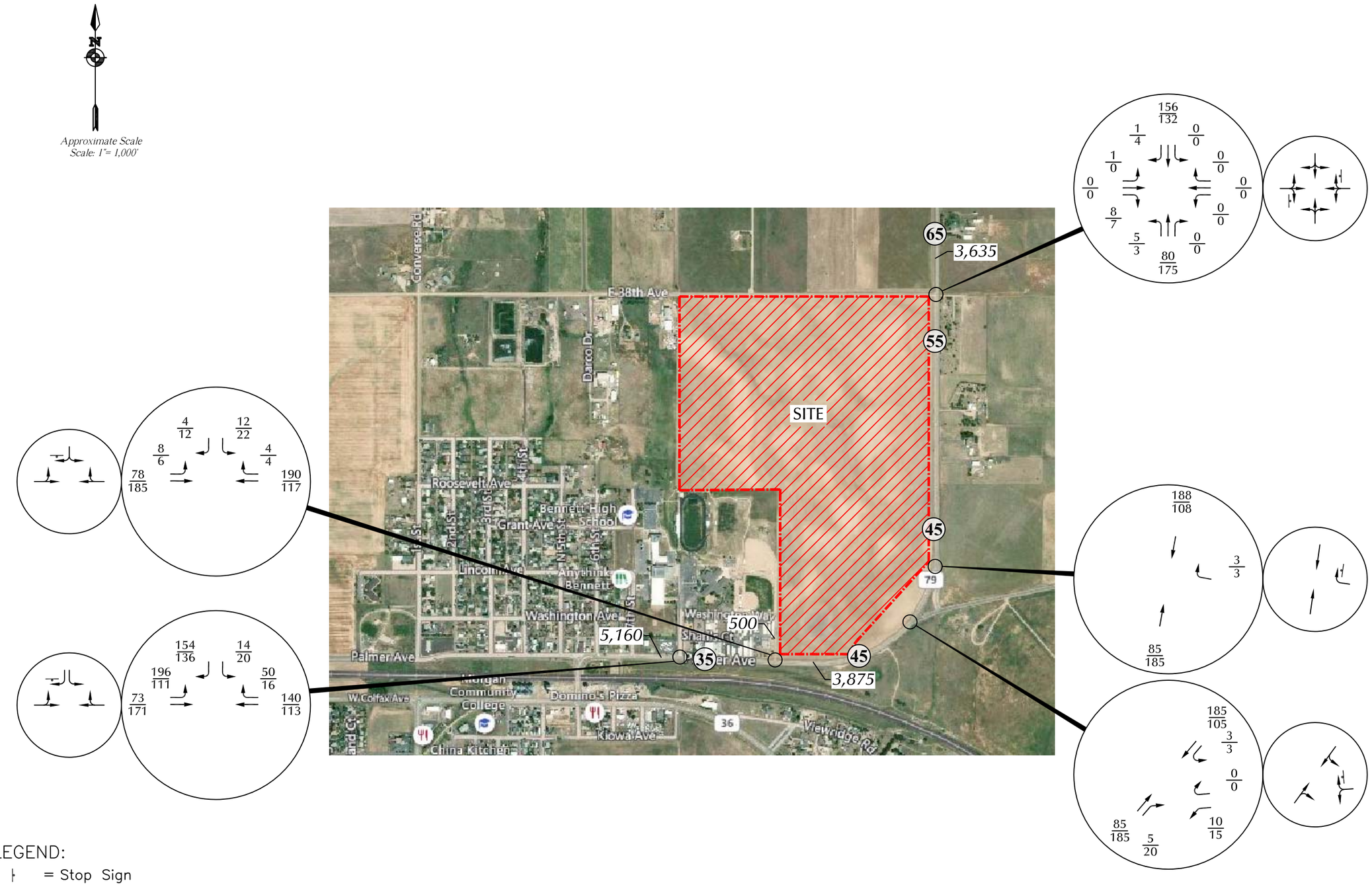
Figure 2

Site Plan

Bennett Ranch (LSC #181140)

LSC TRANSPORTATION CONSULTANTS, INC.

Note: Full Movement Access locations to SH 79 are consistent with the August, 2018 SH 79 Access Control Plan.



LEGEND:

= Stop Sign

(30) = Speed Limit

26/35 = AM Peak Hour Traffic / PM Peak Hour Traffic

1,000 = Average Daily Traffic

LSC TRANSPORTATION CONSULTANTS, INC.

Figure 3

Existing Traffic, Lane Geometry and Traffic Control

Bennett Ranch (LSC #181140)

Note: Assumes annual growth rate of 2.3 percent on SH 79 at E. 38th Avenue per the 2013 SH 79 and Kiowa-Bennett Corridor PEL Study.

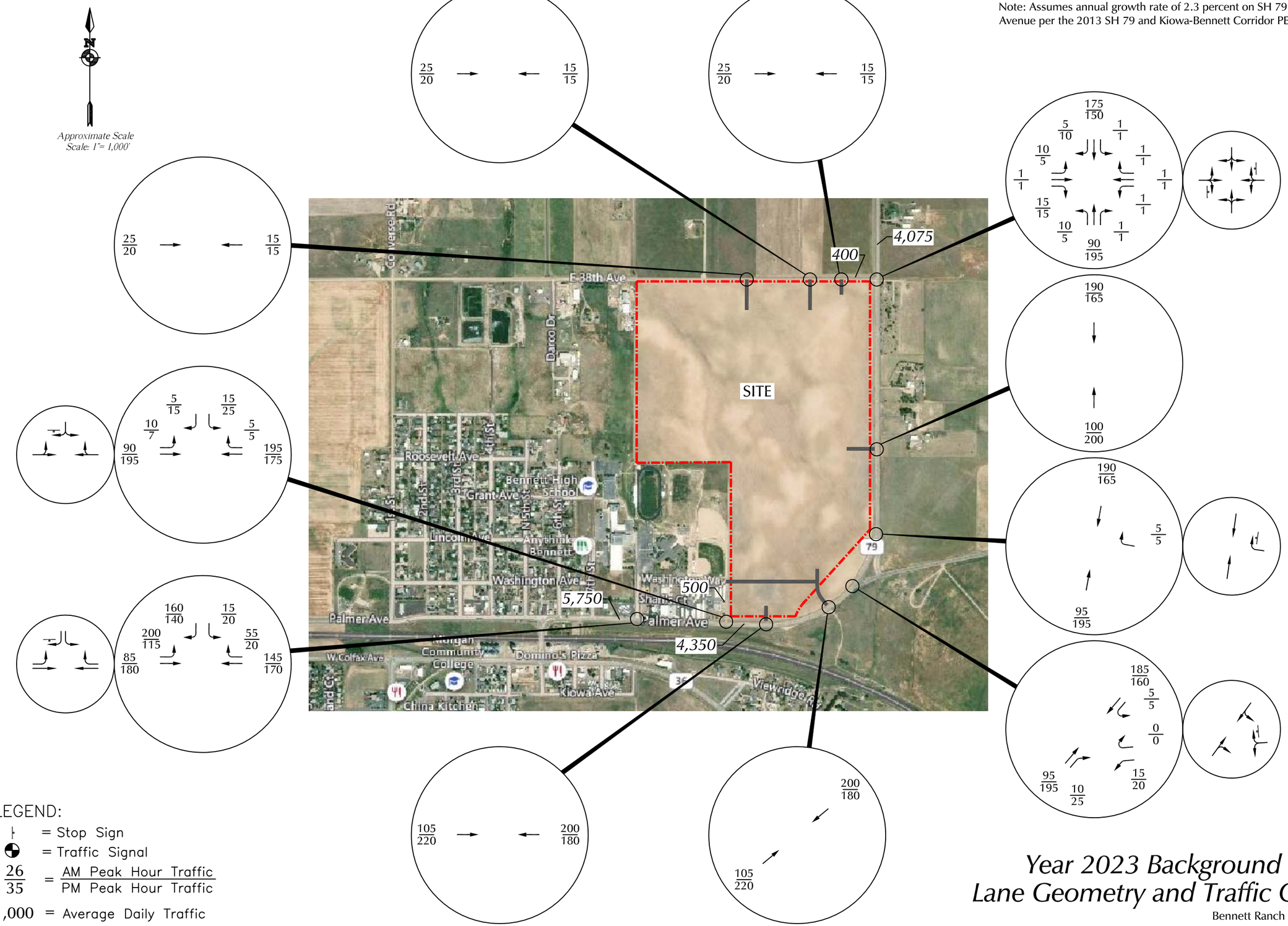
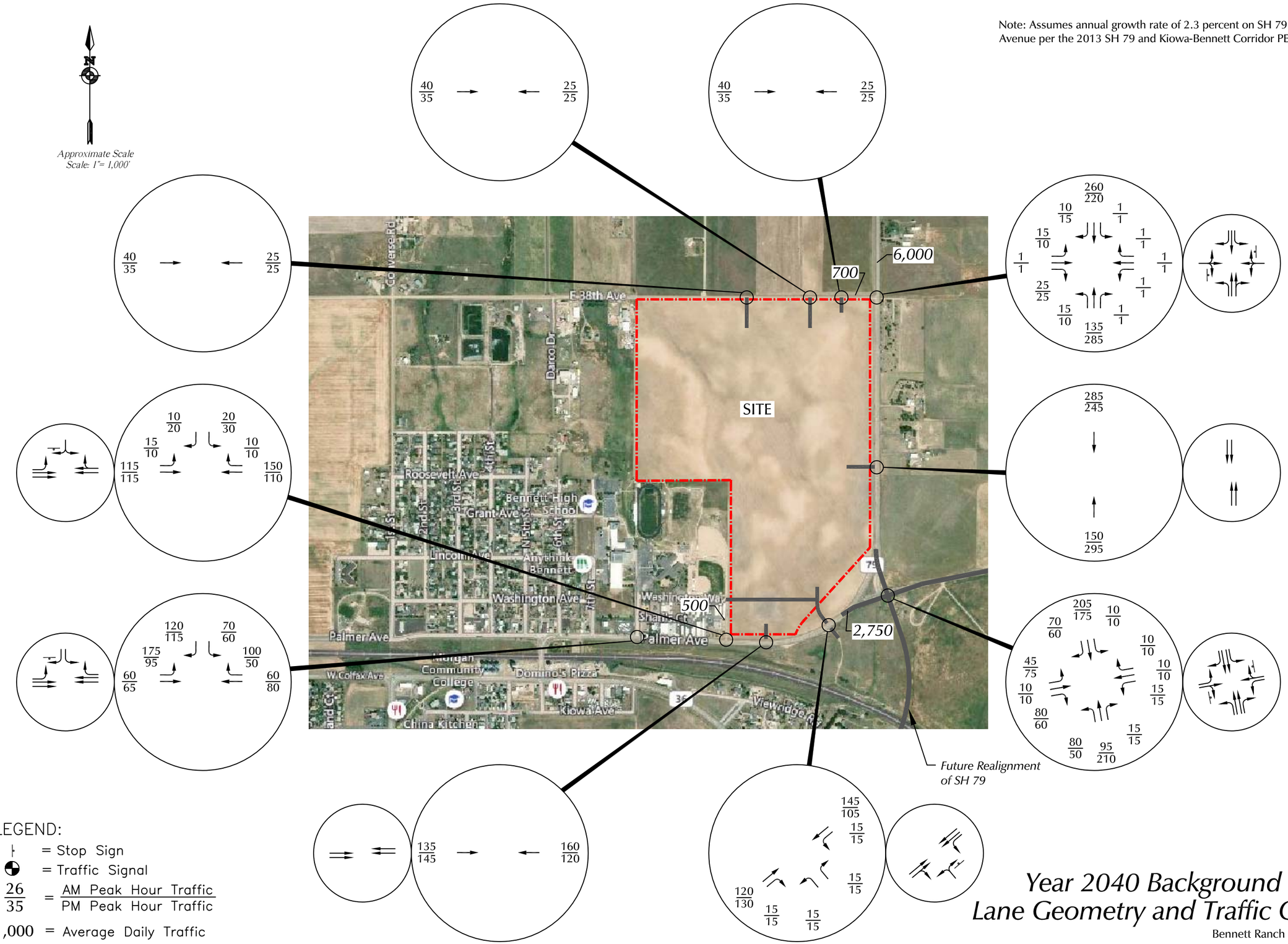


Figure 4

Year 2023 Background Traffic, Lane Geometry and Traffic Control

Bennett Ranch (LSC #181140)

Note: Assumes annual growth rate of 2.3 percent on SH 79 at E. 38th Avenue per the 2013 SH 79 and Kiowa-Bennett Corridor PEL Study.



LEGEND:

= Stop Sign

= Traffic Signal

26/35 = AM Peak Hour Traffic / PM Peak Hour Traffic

1,000 = Average Daily Traffic

LSC TRANSPORTATION CONSULTANTS, INC.

Figure 5

Year 2040 Background Traffic, Lane Geometry and Traffic Control

Bennett Ranch (LSC #181140)

Approximate Scale
Scale: 1"=1,000'

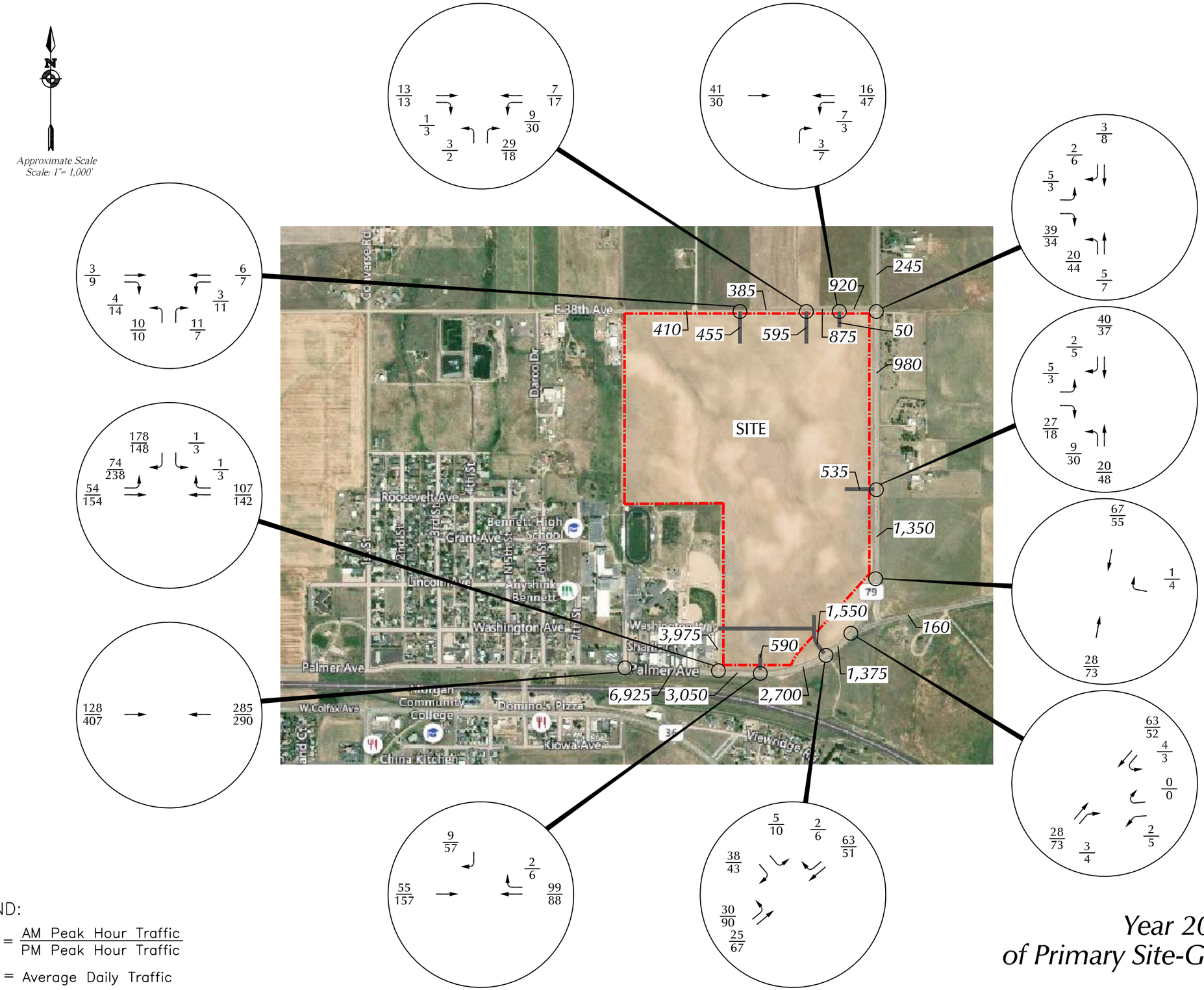
LEGEND:

$\frac{5\%}{5\%}$ = $\frac{\text{2023 Percent Directional Distribution}}{\text{2040 Percent Directional Distribution}}$

Figure 6

Directional Distribution of Site-Generated Traffic

Bennett Ranch (LSC #181140)



LEGEND:

$\frac{26}{35}$ = $\frac{\text{AM Peak Hour Traffic}}{\text{PM Peak Hour Traffic}}$

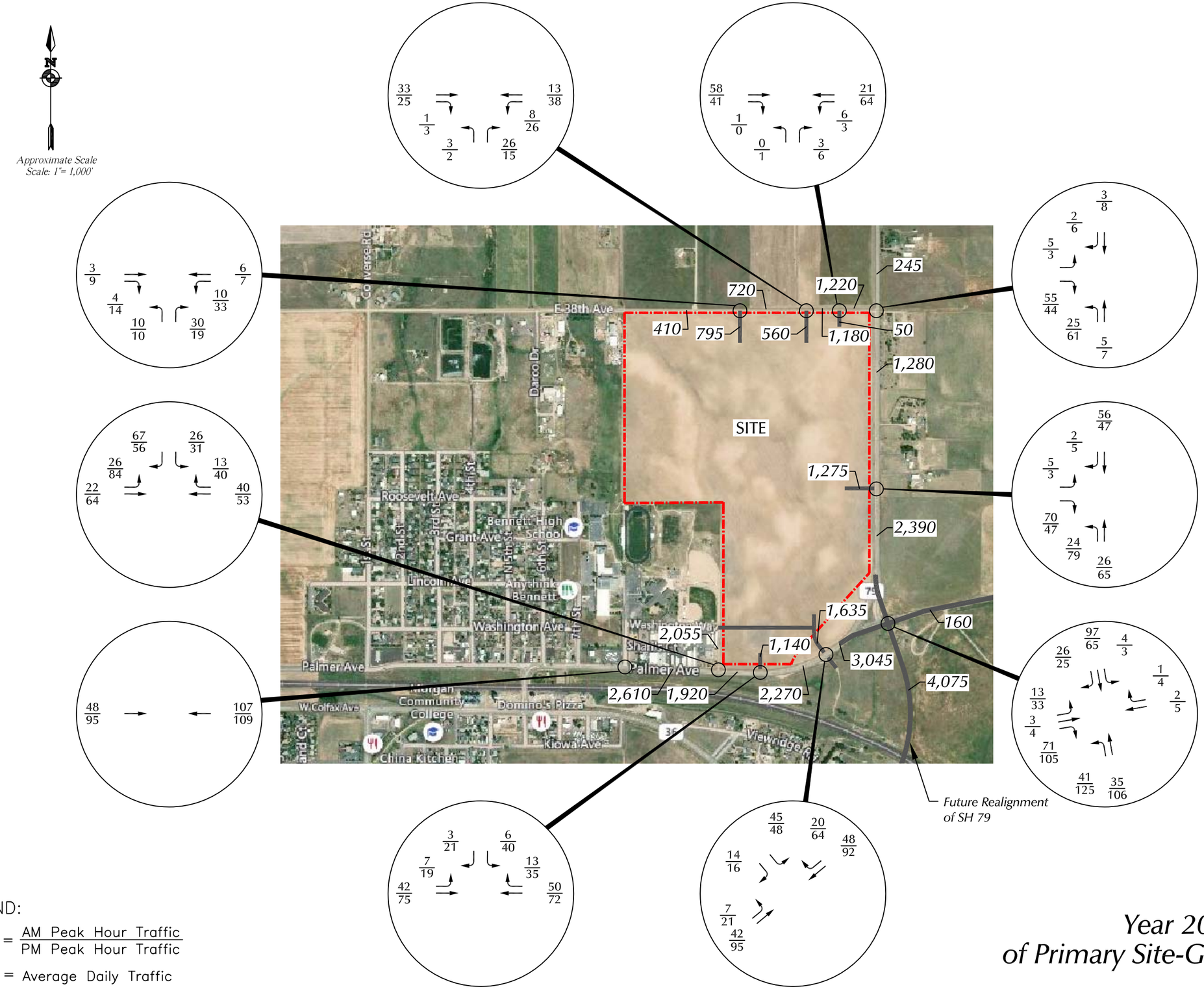
1,000 = Average Daily Traffic

LSC TRANSPORTATION CONSULTANTS, INC.

Figure 7a

Year 2023 Assignment of Primary Site-Generated Traffic

Bennett Ranch (LSC #181140)



LEGEND:

$\frac{26}{35}$ = AM Peak Hour Traffic / PM Peak Hour Traffic

1,000 = Average Daily Traffic

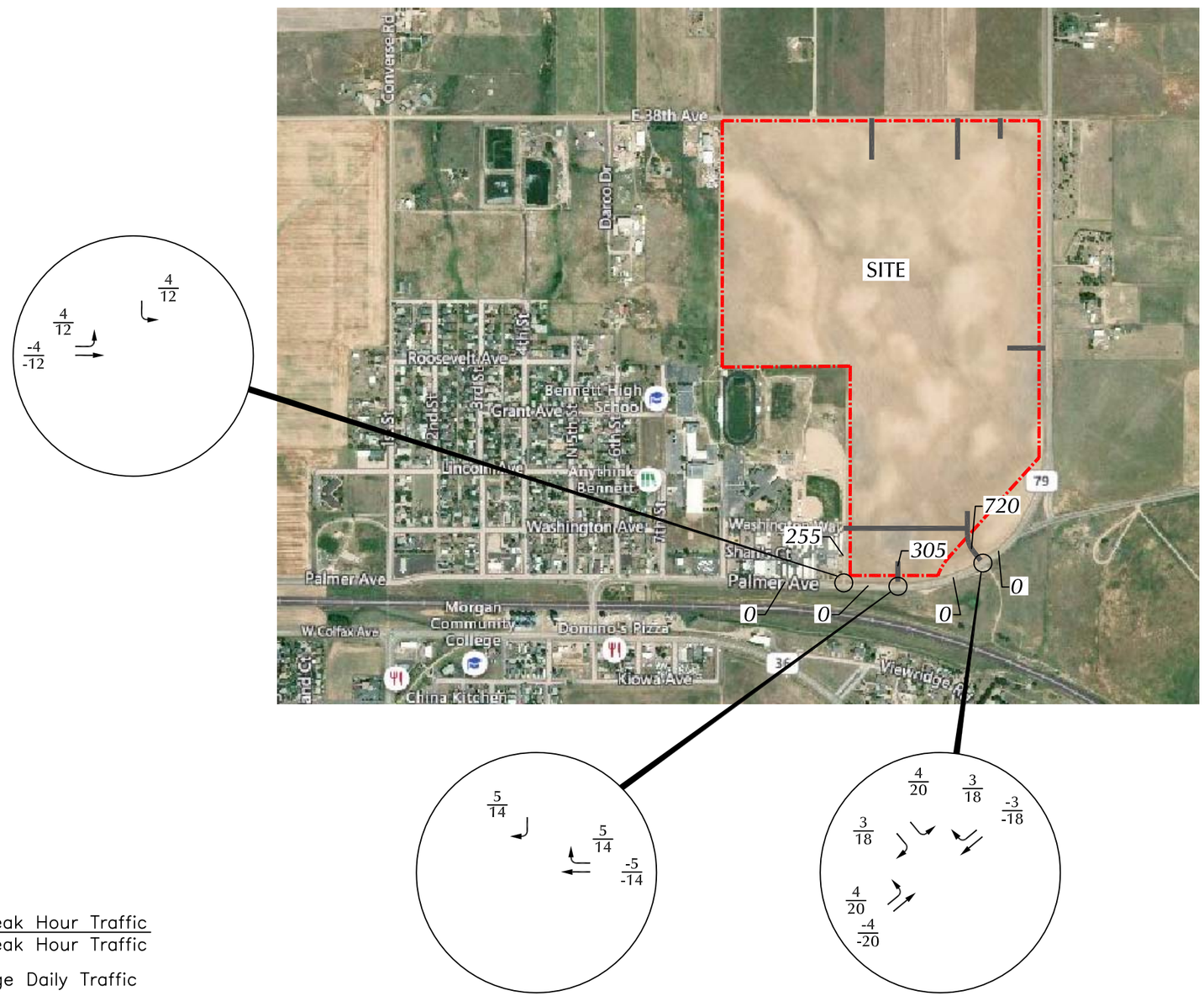
LSC TRANSPORTATION CONSULTANTS, INC.

Figure 7b

Year 2040 Assignment of Primary Site-Generated Traffic

Bennett Ranch (LSC #181140)

Approximate Scale
Scale: 1"= 1,000'



LEGEND:

$\frac{26}{35}$ = $\frac{\text{AM Peak Hour Traffic}}{\text{PM Peak Hour Traffic}}$

1,000 = Average Daily Traffic

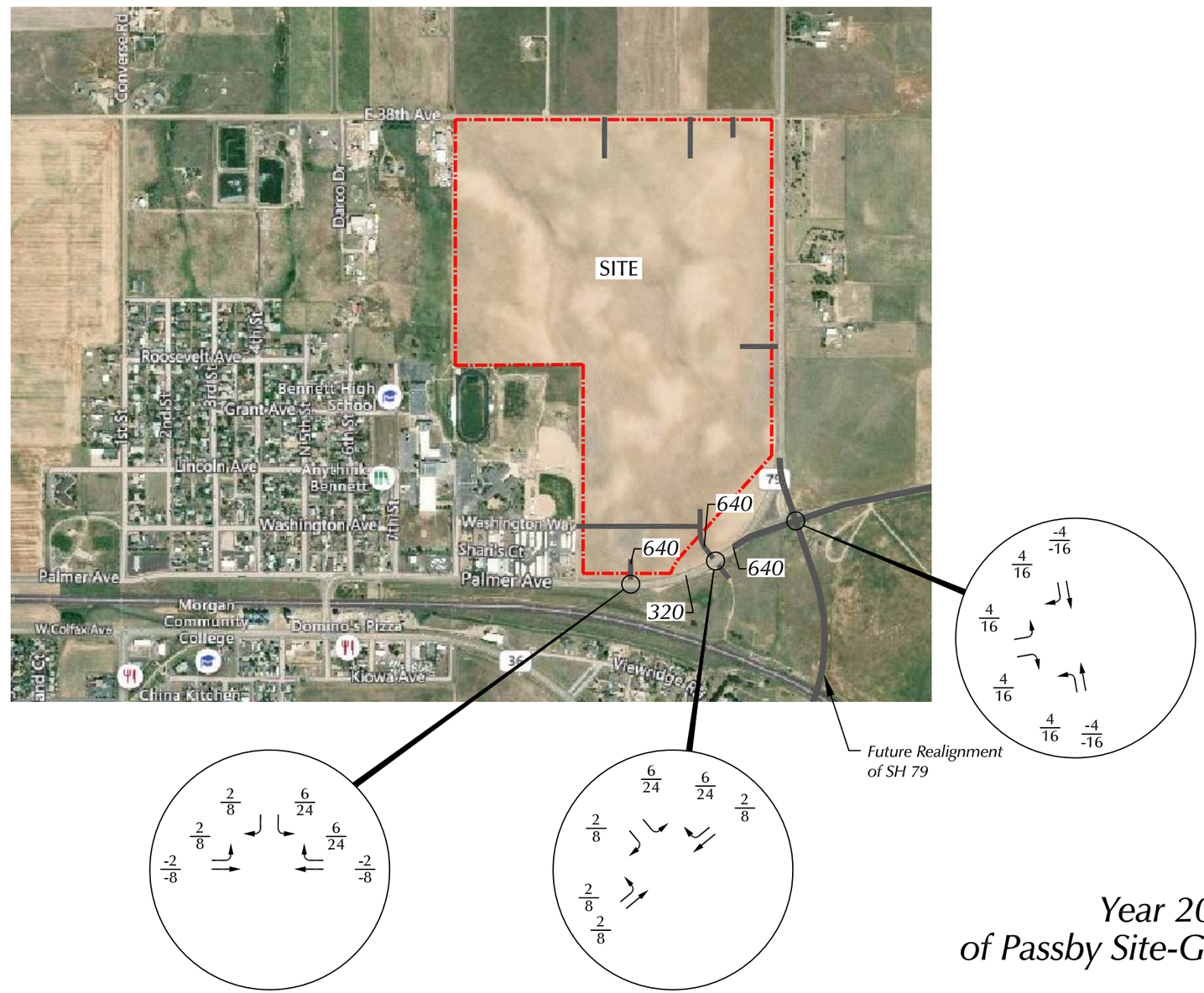
LSC TRANSPORTATION CONSULTANTS, INC.

Figure 8a

Year 2023 Assignment of Passby Site-Generated Traffic

Bennett Ranch (LSC #181140)

Approximate Scale
Scale: 1"= 1,000'



LEGEND:

$\frac{26}{35}$ = $\frac{\text{AM Peak Hour Traffic}}{\text{PM Peak Hour Traffic}}$

1,000 = Average Daily Traffic

LSC TRANSPORTATION CONSULTANTS, INC.

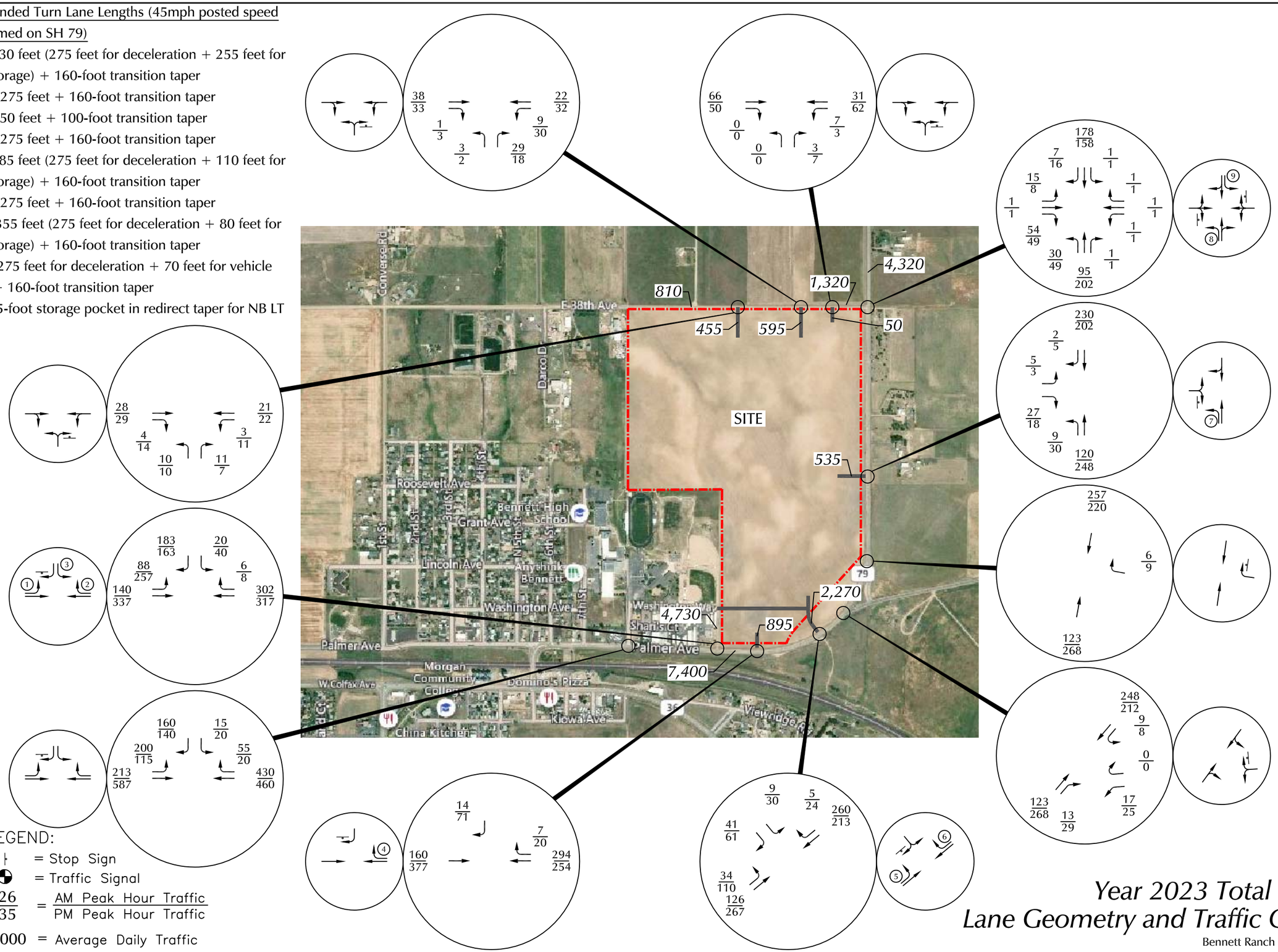
Figure 8b

Year 2040 Assignment of Passby Site-Generated Traffic

Bennett Ranch (LSC #181140)

Recommended Turn Lane Lengths (45mph posted speed limit assumed on SH 79)

① EB LT = 530 feet (275 feet for deceleration + 255 feet for vehicle storage) + 160-foot transition taper
② WB RT = 275 feet + 160-foot transition taper
③ SB LT = 150 feet + 100-foot transition taper
④ WB RT = 275 feet + 160-foot transition taper
⑤ EB LT = 385 feet (275 feet for deceleration + 110 feet for vehicle storage) + 160-foot transition taper
⑥ WB RT = 275 feet + 160-foot transition taper
⑦ NB LT = 355 feet (275 feet for deceleration + 80 feet for vehicle storage) + 160-foot transition taper
⑧ 345 feet (275 feet for deceleration + 70 feet for vehicle storage) + 160-foot transition taper
⑨ Provide 25-foot storage pocket in redirect taper for NB LT lane.



LEGEND:

= Stop Sign

= Traffic Signal

26/35 = AM Peak Hour Traffic / PM Peak Hour Traffic

1,000 = Average Daily Traffic

LSC TRANSPORTATION CONSULTANTS, INC.

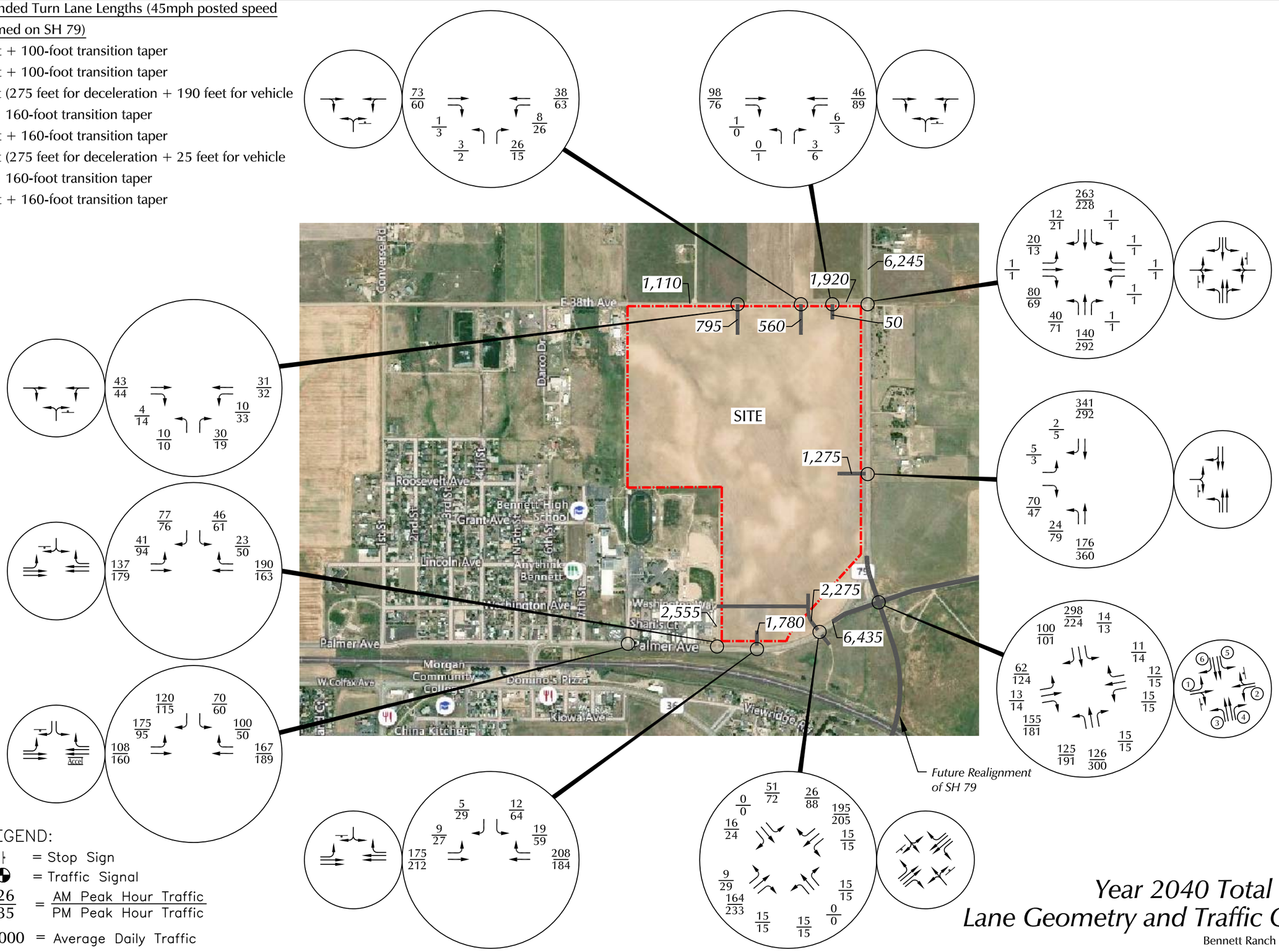
Figure 9

Year 2023 Total Traffic, Lane Geometry and Traffic Control

Bennett Ranch (LSC #181140)

Recommended Turn Lane Lengths (45mph posted speed limit assumed on SH 79)

① = 150 feet + 100-foot transition taper
② = 100 feet + 100-foot transition taper
③ = 465 feet (275 feet for deceleration + 190 feet for vehicle storage) + 160-foot transition taper
④ = 275 feet + 160-foot transition taper
⑤ = 300 feet (275 feet for deceleration + 25 feet for vehicle storage) + 160-foot transition taper
⑥ = 275 feet + 160-foot transition taper



LEGEND:

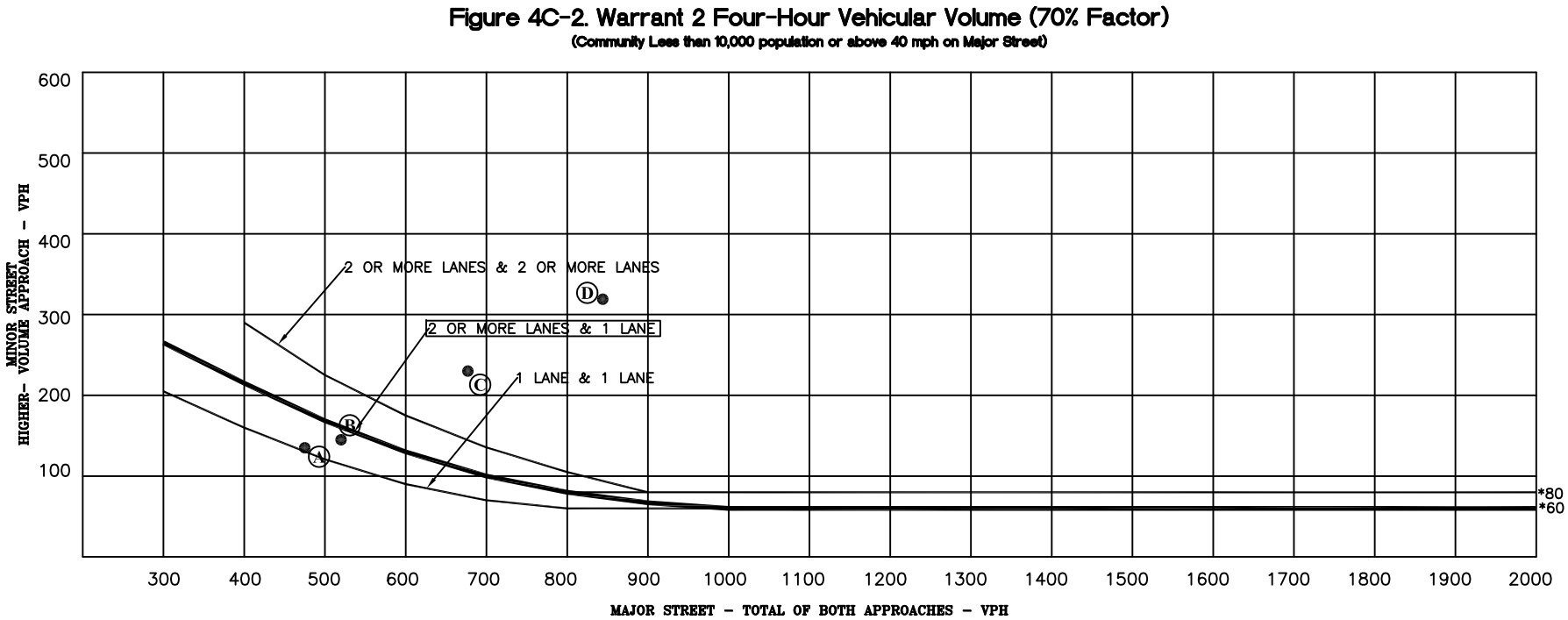
= Stop Sign
= Traffic Signal
26/35 = AM Peak Hour Traffic / PM Peak Hour Traffic
1,000 = Average Daily Traffic

LSC TRANSPORTATION CONSULTANTS, INC.

Figure 10

Year 2040 Total Traffic, Lane Geometry and Traffic Control

Bennett Ranch (LSC #181140)



* Note: 80 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane.

Data Points = (Major Street, Minor Street)

Ⓐ 2040 Background AM Peak = (475,135)
Ⓑ 2040 Background PM Peak = (520,145)
Ⓒ 2040 Total AM Peak = (677,230)
Ⓓ 2040 Total PM Peak = (844,319)

Figure 11

Warrant 2 - Four-Hour Vehicular Volume
SH 79/Old Victory Road/Palmer Avenue

Bennett Ranch (LSC #181140)

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

N/S STREET: KIOWA BENNETT RD
E/W STREET: 38TH AVE
CITY: BENNETT
COUNTY: ADAMS

File Name : KIOW38TH
Site Code : 00000020
Start Date : 9/20/2018
Page No : 1

Groups Printed- VEHICLES

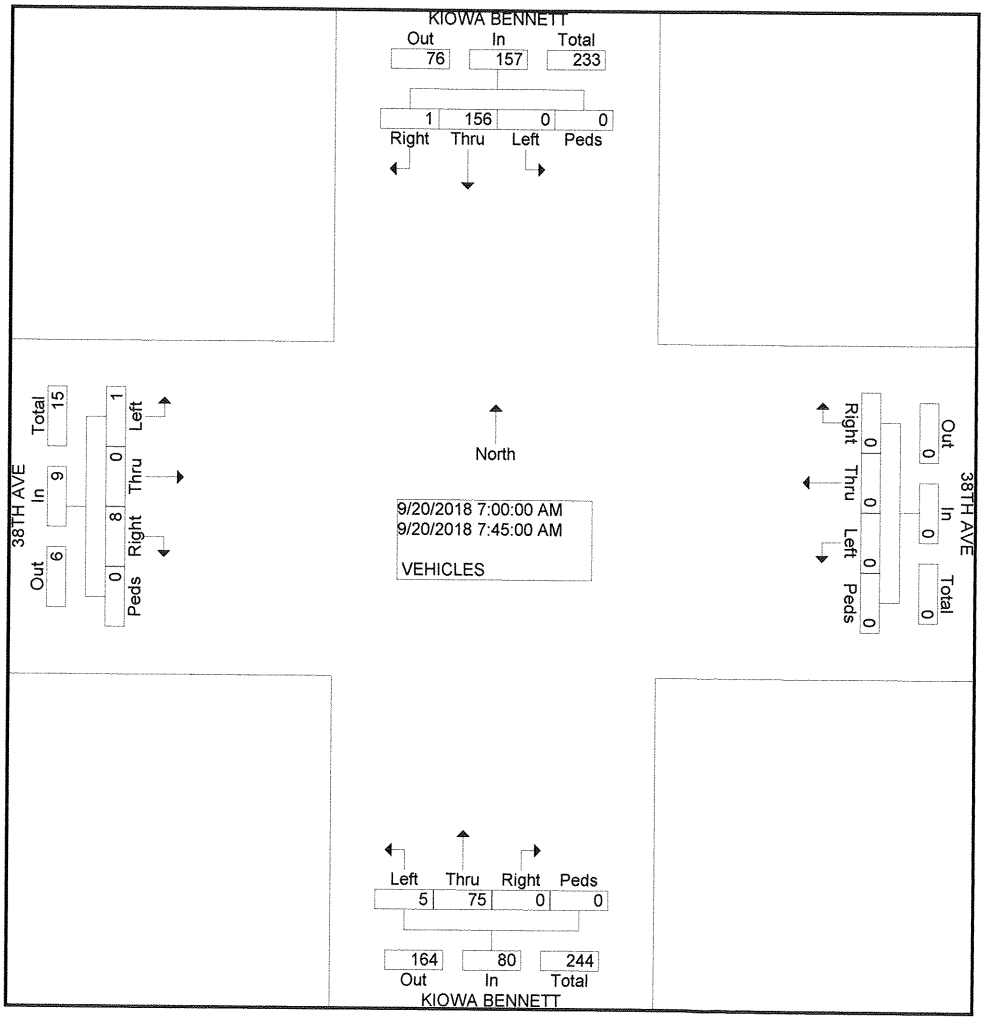
	KIOWA BENNETT Southbound				38TH AVE Westbound				KIOWA BENNETT Northbound				38TH AVE Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	0	19	0	0	0	0	0	0	1	24	0	0	1	0	2	0	47
06:45 AM	0	30	0	0	0	0	0	0	0	24	0	0	0	0	0	0	54
Total	0	49	0	0	0	0	0	0	1	48	0	0	1	0	2	0	101
07:00 AM	0	34	0	0	0	0	0	0	3	16	0	0	0	0	1	0	54
07:15 AM	0	32	0	0	0	0	0	0	0	13	0	0	0	0	4	0	49
07:30 AM	0	45	0	0	0	0	0	0	1	23	0	0	0	0	2	0	71
07:45 AM	0	45	1	0	0	0	0	0	1	23	0	0	1	0	1	0	72
Total	0	156	1	0	0	0	0	0	5	75	0	0	1	0	8	0	246
08:00 AM	0	20	0	0	0	0	0	0	0	22	0	0	0	0	1	0	43
08:15 AM	0	31	1	0	0	0	0	0	0	24	0	0	0	0	0	0	56
Total	0	51	1	0	0	0	0	0	0	46	0	0	0	0	1	0	99
04:00 PM	0	22	0	0	0	0	0	0	0	26	0	0	0	0	2	0	50
04:15 PM	0	23	0	0	0	0	0	0	3	27	0	0	1	0	2	0	56
04:30 PM	0	30	0	0	0	0	0	0	0	41	0	0	0	0	0	0	71
04:45 PM	0	34	2	0	0	0	0	0	3	55	0	0	0	0	1	0	95
Total	0	109	2	0	0	0	0	0	6	149	0	0	1	0	5	0	272
05:00 PM	0	41	2	0	0	0	0	0	0	32	0	0	0	0	4	0	79
05:15 PM	0	27	0	0	0	0	0	0	0	38	0	0	0	0	2	0	67
05:30 PM	0	31	0	0	0	0	0	0	3	35	0	0	0	0	2	0	71
05:45 PM	0	29	0	0	0	0	0	0	1	27	0	0	0	0	0	0	57
Total	0	128	2	0	0	0	0	0	4	132	0	0	0	0	8	0	274
Grand Total	0	493	6	0	0	0	0	0	16	450	0	0	3	0	24	0	992
Apprch %	0.0	98.8	1.2	0.0	0.0	0.0	0.0	0.0	3.4	96.6	0.0	0.0	11.1	0.0	88.9	0.0	
Total %	0.0	49.7	0.6	0.0	0.0	0.0	0.0	0.0	1.6	45.4	0.0	0.0	0.3	0.0	2.4	0.0	

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

N/S STREET: KIOWA BENNETT RD
E/W STREET: 38TH AVE
CITY: BENNETT
COUNTY: ADAMS

File Name : KIOW38TH
Site Code : 00000020
Start Date : 9/20/2018
Page No : 2

	KIOWA BENNETT Southbound					38TH AVE Westbound					KIOWA BENNETT Northbound					38TH AVE Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 06:30 AM to 08:30 AM - Peak 1 of 1																					
Intersection	07:00 AM																				
Volume	0	156	1	0	157	0	0	0	0	0	5	75	0	0	80	1	0	8	0	9	246
Percent	0.0	99.4	0.6	0.0		0.0	0.0	0.0	0.0		6.3	93.8	0.0	0.0		11.1	0.0	88.9	0.0		
07:45 Volume	0	45	1	0	46	0	0	0	0	0	1	23	0	0	24	1	0	1	0	2	72
Peak Factor																					0.854
High Int.	07:45 AM					6:15:00 AM					07:30 AM					07:15 AM					
Volume	0	45	1	0	46	0	0	0	0	0	1	23	0	0	24	0	0	4	0	4	
Peak Factor					0.853										0.833					0.563	



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1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: KIOWA BENNETT RD
E/W STREET: 38TH AVE
CITY: BENNETT
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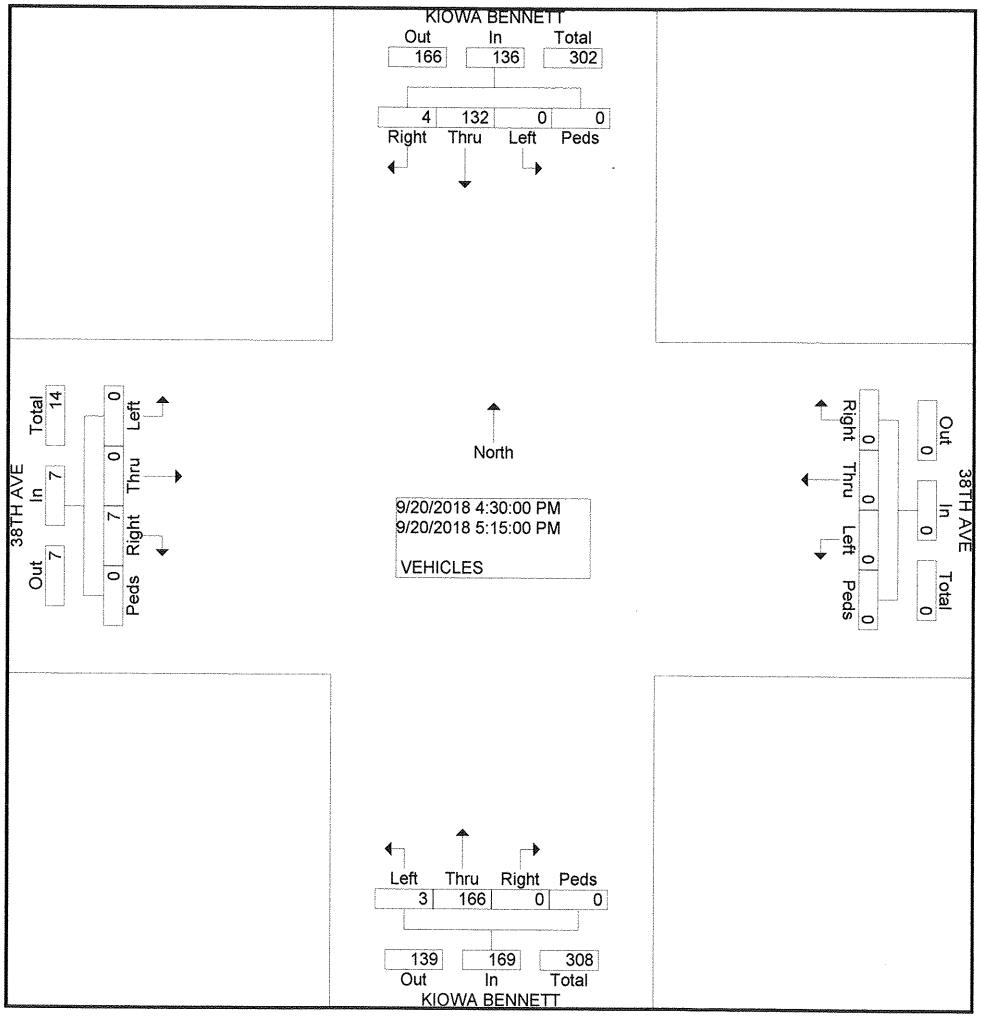
File Name : KIOW38TH
Site Code : 00000020
Start Date : 9/20/2018
Page No : 2

	KIOWA BENNETT Southbound					38TH AVE Westbound					KIOWA BENNETT Northbound					38TH AVE Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Intersection	04:30 PM																				
Volume	0	132	4	0	136	0	0	0	0	0	3	166	0	0	169	0	0	7	0	7	312
Percent	0.0	97.1	2.9	0.0		0.0	0.0	0.0	0.0		1.8	98.2	0.0	0.0		0.0	0.0	100.0	0.0		
04:45 Volume	0	34	2	0	36	0	0	0	0	0	3	55	0	0	58	0	0	1	0	1	95
Peak Factor																					0.821
High Int.	05:00 PM										04:45 PM					05:00 PM					
Volume	0	41	2	0	43	0	0	0	0	0	3	55	0	0	58	0	0	4	0	4	
Peak Factor					0.791										0.728					0.438	



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

N/S STREET: GREG'S PL
E/W STREET: PALMER AVE
CITY: BENNETT
COUNTY: ADAMS

File Name : GREGPALM
Site Code : 00000022
Start Date : 9/20/2018
Page No : 1

Groups Printed- VEHICLES

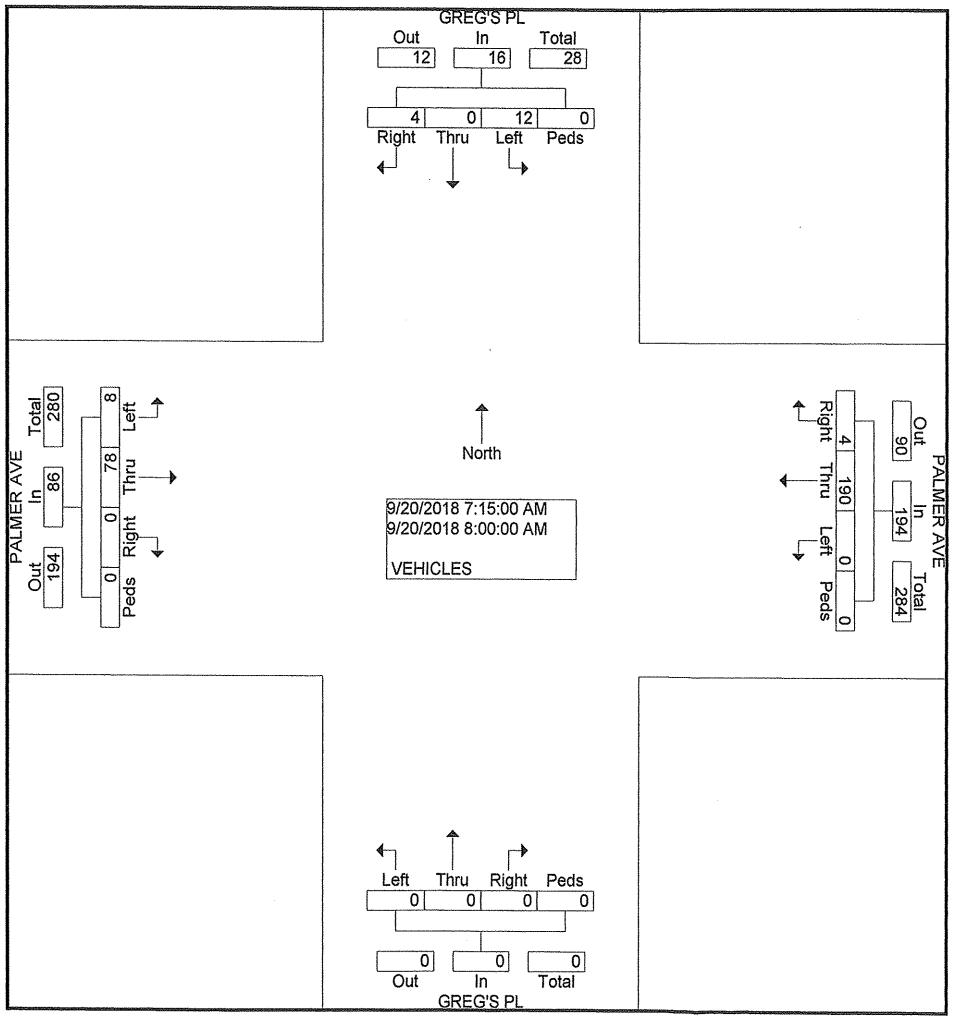
	GREG'S PL Southbound				PALMER AVE Westbound				GREG'S PL Northbound				PALMER AVE Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	0	1	0	0	0	22	0	0	0	0	0	0	1	15	0	0	39
06:45 AM	0	0	0	0	0	35	0	0	0	0	0	0	0	24	0	0	59
Total	0	1	0	0	0	57	0	0	0	0	0	0	1	39	0	0	98
07:00 AM	0	0	0	0	0	33	1	0	0	0	0	0	0	9	0	0	43
07:15 AM	1	0	0	0	0	42	1	0	0	0	0	0	0	11	0	0	55
07:30 AM	5	0	0	0	0	63	2	0	0	0	0	0	3	17	0	0	90
07:45 AM	2	0	4	0	0	52	0	0	0	0	0	0	1	26	0	0	85
Total	8	0	4	0	0	190	4	0	0	0	0	0	4	63	0	0	273
08:00 AM	4	0	0	0	0	33	1	0	0	0	0	0	4	24	0	0	66
08:15 AM	1	0	0	0	0	34	0	0	0	0	0	0	3	25	0	0	63
Total	5	0	0	0	0	67	1	0	0	0	0	0	7	49	0	0	129
04:00 PM	10	0	7	0	0	35	1	0	0	0	0	0	3	42	0	0	98
04:15 PM	7	0	5	0	0	20	1	0	0	0	0	0	1	36	0	0	70
04:30 PM	2	0	0	0	0	29	2	0	0	0	0	0	1	51	0	0	85
04:45 PM	3	0	0	0	0	33	0	0	0	0	0	0	1	56	0	0	93
Total	22	0	12	0	0	117	4	0	0	0	0	0	6	185	0	0	346
05:00 PM	1	0	1	0	0	39	0	0	0	0	0	0	1	36	0	0	78
05:15 PM	1	0	0	0	0	29	0	0	0	0	0	0	2	43	0	0	75
05:30 PM	0	0	0	0	0	33	0	0	0	0	0	0	0	39	0	0	72
05:45 PM	1	0	1	0	0	34	0	0	0	0	0	0	1	29	0	0	66
Total	3	0	2	0	0	135	0	0	0	0	0	0	4	147	0	0	291
Grand Total	38	1	18	0	0	566	9	0	0	0	0	0	22	483	0	0	1137
Apprch %	66.7	1.8	31.6	0.0	0.0	98.4	1.6	0.0	0.0	0.0	0.0	0.0	4.4	95.6	0.0	0.0	
Total %	3.3	0.1	1.6	0.0	0.0	49.8	0.8	0.0	0.0	0.0	0.0	0.0	1.9	42.5	0.0	0.0	

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

N/S STREET: GREG'S PL
E/W STREET: PALMER AVE
CITY: BENNETT
COUNTY: ADAMS

File Name : GREGPALM
Site Code : 00000022
Start Date : 9/20/2018
Page No : 2

	GREG'S PL Southbound					PALMER AVE Westbound					GREG'S PL Northbound					PALMER AVE Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 07:15 AM to 08:00 AM - Peak 1 of 1																					
Intersection	07:15 AM																				
Volume	12	0	4	0	16	0	190	4	0	194	0	0	0	0	0	8	78	0	0	86	296
Percent	75.0	0.0	25.0	0.0		0.0	97.9	2.1	0.0		0.0	0.0	0.0	0.0		9.3	90.7	0.0	0.0		
07:30 Volume	5	0	0	0	5	0	63	2	0	65	0	0	0	0	0	3	17	0	0	20	90
Peak Factor																					0.822
High Int.	07:45 AM					07:30 AM										08:00 AM					
Volume	2	0	4	0	6	0	63	2	0	65	0	0	0	0	0	4	24	0	0	28	
Peak Factor					0.667					0.746										0.768	

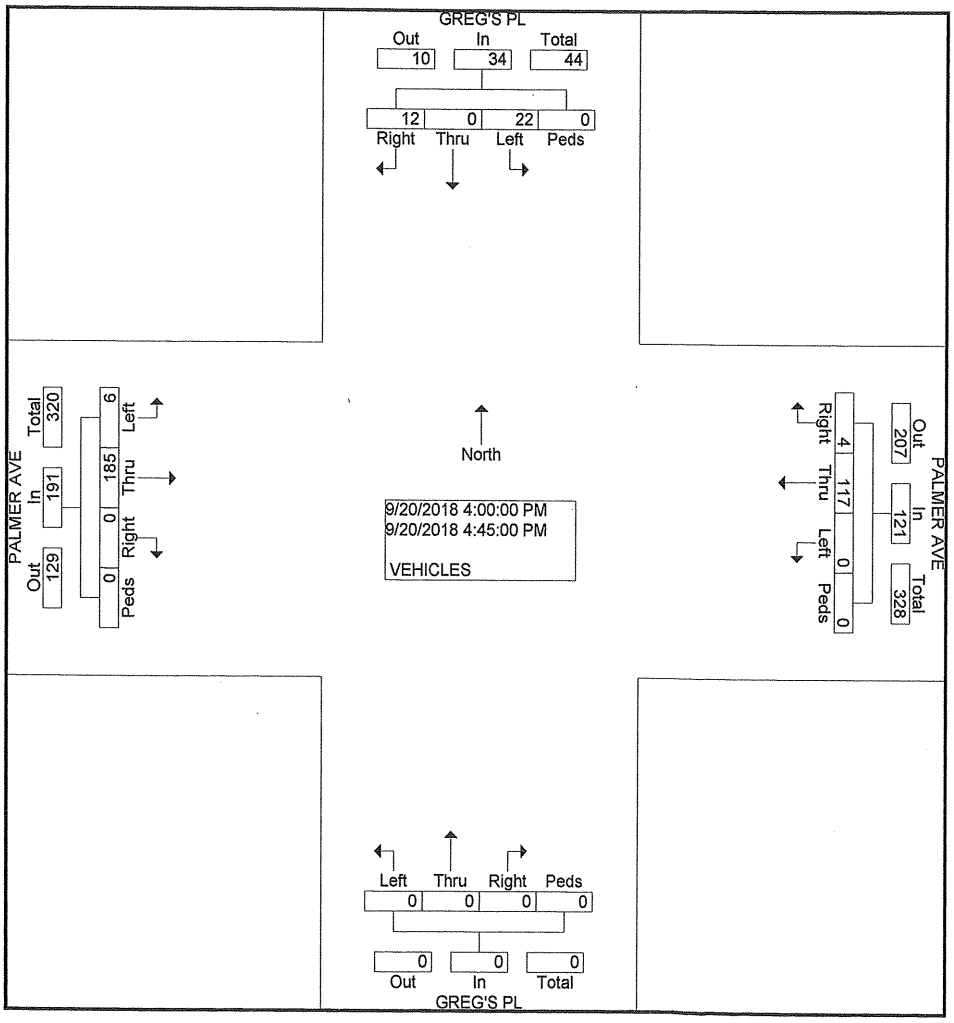


COUNTER MEASURES INC.
1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: GREG'S PL
E/W STREET: PALMER AVE
CITY: BENNETT
COUNTY: ADAMS

File Name : GREGPALM
Site Code : 00000022
Start Date : 9/20/2018
Page No : 2

	GREG'S PL Southbound					PALMER AVE Westbound					GREG'S PL Northbound					PALMER AVE Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 04:00 PM to 04:45 PM - Peak 1 of 1																					
Intersection	04:00 PM																				
Volume	22	0	12	0	34	0	117	4	0	121	0	0	0	0	0	6	185	0	0	191	346
Percent	64.7	0.0	35.3	0.0		0.0	96.7	3.3	0.0		0.0	0.0	0.0	0.0		3.1	96.9	0.0	0.0		
04:00 Volume	10	0	7	0	17	0	35	1	0	36	0	0	0	0	0	3	42	0	0	45	98
Peak Factor																					0.883
High Int.	04:00 PM					04:00 PM										04:45 PM					
Volume	10	0	7	0	17	0	35	1	0	36	0	0	0	0	0	1	56	0	0	57	
Peak Factor					0.500					0.840										0.838	



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

N/S STREET: 8THST
E/W STREET: PALMER AVE
CITY: BENNETT
COUNTY: ADAMS

File Name : 8THPALM
Site Code : 00000015
Start Date : 9/20/2018
Page No : 1

Groups Printed- VEHICLES

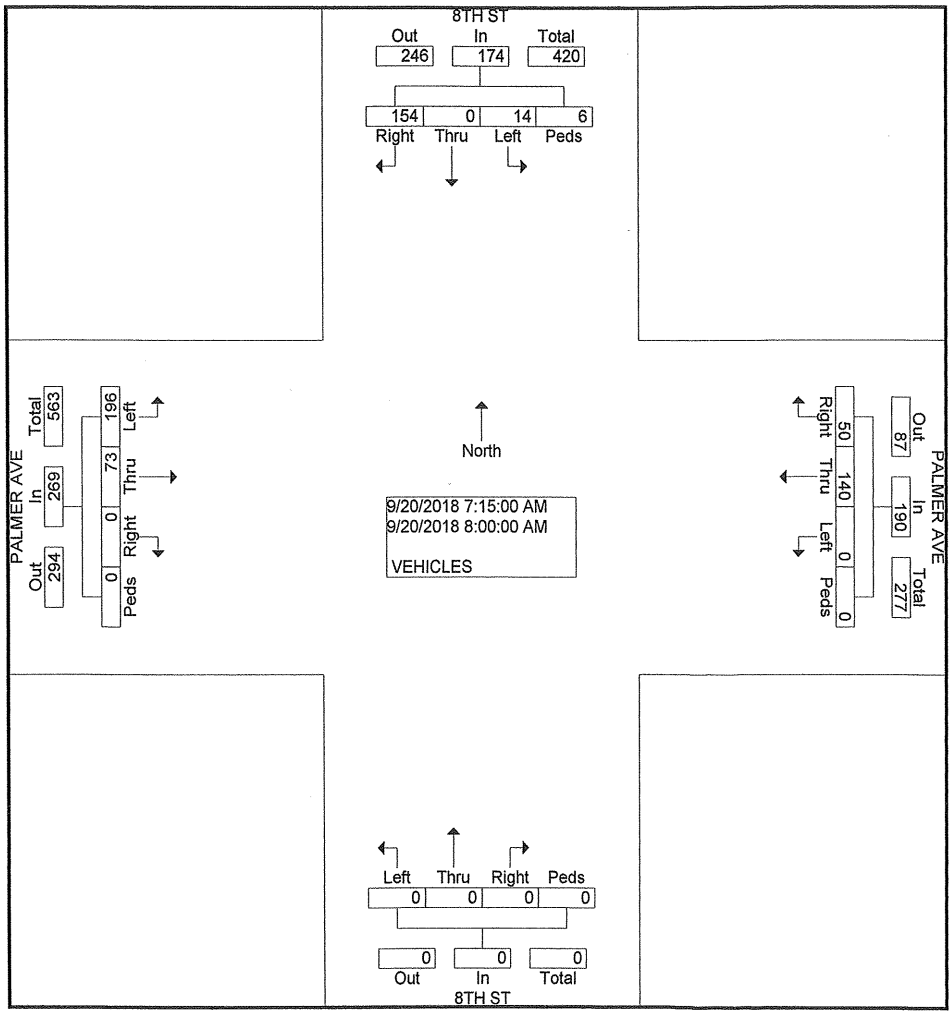
	8TH ST Southbound				PALMER AVE Westbound				8TH ST Northbound				PALMER AVE Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	0	0	3	0	0	22	0	0	0	0	0	0	2	16	0	0	43
06:45 AM	0	0	0	0	0	34	1	0	0	0	0	0	6	24	0	0	65
Total	0	0	3	0	0	56	1	0	0	0	0	0	8	40	0	0	108
07:00 AM	0	0	1	0	0	33	0	0	0	0	0	0	14	9	0	0	57
07:15 AM	1	0	8	0	0	33	9	0	0	0	0	0	29	11	0	0	91
07:30 AM	3	0	40	4	0	40	23	0	0	0	0	0	69	17	0	0	196
07:45 AM	4	0	73	2	0	39	13	0	0	0	0	0	83	23	0	0	237
Total	8	0	122	6	0	145	45	0	0	0	0	0	195	60	0	0	581
08:00 AM	6	0	33	0	0	28	5	0	0	0	0	0	15	22	0	0	109
08:15 AM	3	0	10	0	0	34	0	0	0	0	0	0	10	25	0	0	82
Total	9	0	43	0	0	62	5	0	0	0	0	0	25	47	0	0	191
04:00 PM	6	0	58	6	0	34	8	0	0	0	0	2	41	39	0	0	194
04:15 PM	3	0	38	0	0	24	1	0	0	0	0	0	27	34	0	0	127
04:30 PM	8	0	20	0	0	24	5	0	0	0	0	0	21	44	0	0	122
04:45 PM	3	0	20	0	0	31	2	0	0	0	0	0	22	54	0	0	132
Total	20	0	136	6	0	113	16	0	0	0	0	2	111	171	0	0	575
05:00 PM	3	0	15	2	0	35	5	0	0	0	0	0	16	34	0	0	110
05:15 PM	4	0	20	0	0	25	4	0	0	0	0	0	20	41	0	0	114
05:30 PM	2	0	11	0	0	33	0	0	0	0	0	0	10	37	0	0	93
05:45 PM	2	0	9	0	0	33	2	0	0	0	0	0	13	28	0	0	87
Total	11	0	55	2	0	126	11	0	0	0	0	0	59	140	0	0	404
Grand Total	48	0	359	14	0	502	78	0	0	0	0	2	398	458	0	0	1859
Apprch %	11.4	0.0	85.3	3.3	0.0	86.6	13.4	0.0	0.0	0.0	0.0	100.0	46.5	53.5	0.0	0.0	
Total %	2.6	0.0	19.3	0.8	0.0	27.0	4.2	0.0	0.0	0.0	0.0	0.1	21.4	24.6	0.0	0.0	

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

N/S STREET: 8THST
E/W STREET: PALMER AVE
CITY: BENNETT
COUNTY: ADAMS

File Name : 8THPALM
Site Code : 00000015
Start Date : 9/20/2018
Page No : 2

	8TH ST Southbound					PALMER AVE Westbound					8TH ST Northbound					PALMER AVE Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 07:15 AM to 08:00 AM - Peak 1 of 1																					
Intersection	07:15 AM																				
Volume	14	0	154	6	174	0	140	50	0	190	0	0	0	0	0	196	73	0	0	269	633
Percent	8.0	0.0	88.5	3.4		0.0	73.7	26.3	0.0		0.0	0.0	0.0	0.0		72.9	27.1	0.0	0.0		
07:45 Volume	4	0	73	2	79	0	39	13	0	52	0	0	0	0	0	83	23	0	0	106	237
Peak Factor																					0.668
High Int.	07:45 AM					07:30 AM										07:45 AM					
Volume	4	0	73	2	79	0	40	23	0	63	0	0	0	0	0	83	23	0	0	106	
Peak Factor					0.551					0.754										0.634	

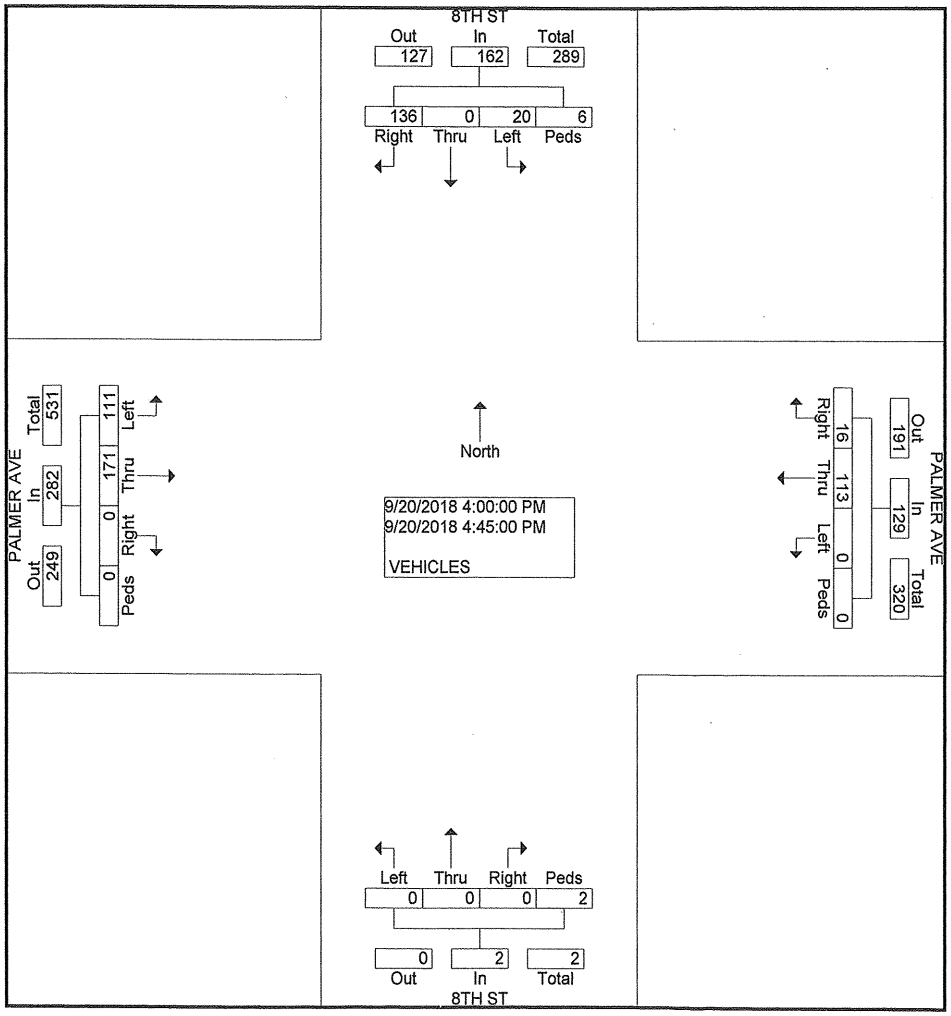


COUNTER MEASURES INC.
1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: 8THST
E/W STREET: PALMER AVE
CITY: BENNETT
COUNTY: ADAMS

File Name : 8THPALM
Site Code : 00000015
Start Date : 9/20/2018
Page No : 2

	8TH ST Southbound					PALMER AVE Westbound					8TH ST Northbound					PALMER AVE Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 04:00 PM to 04:45 PM - Peak 1 of 1																					
Intersection	04:00 PM																				
Volume	20	0	136	6	162	0	113	16	0	129	0	0	0	2	2	111	171	0	0	282	575
Percent	12.3	0.0	84.0	3.7		0.0	87.6	12.4	0.0		0.0	0.0	0.0	100.0		39.4	60.6	0.0	0.0		
04:00 Volume	6	0	58	6	70	0	34	8	0	42	0	0	0	2	2	41	39	0	0	80	194
Peak Factor																					0.741
High Int.	04:00 PM					04:00 PM					04:00 PM					04:00 PM					
Volume	6	0	58	6	70	0	34	8	0	42	0	0	0	2	2	41	39	0	0	80	
Peak Factor					0.579					0.768					0.250					0.881	



COUNTER MEASURES INC.

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

Location: KIOWA-BENNETT RD N/O 38TH AVE
City: BENNETT
County: ADAMS
Direction: NORTHBOUND-SOUTHBOUND

Site Code: 112619
Station ID: 112619

Start	26-Nov-18		Tue		Wed		Thu		Fri		Weekday Average		Sat		Sun	
Time	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
12:00 AM	*	*	18	9	*	*	*	*	*	*	18	9	*	*	*	*
01:00	*	*	4	8	*	*	*	*	*	*	4	8	*	*	*	*
02:00	*	*	6	6	*	*	*	*	*	*	6	6	*	*	*	*
03:00	*	*	10	7	*	*	*	*	*	*	10	7	*	*	*	*
04:00	*	*	5	6	*	*	*	*	*	*	5	6	*	*	*	*
05:00	*	*	18	12	*	*	*	*	*	*	18	12	*	*	*	*
06:00	*	*	40	44	*	*	*	*	*	*	40	44	*	*	*	*
07:00	*	*	63	100	*	*	*	*	*	*	63	100	*	*	*	*
08:00	*	*	94	**166**	*	*	*	*	*	*	94	**166**	*	*	*	*
09:00	*	*	**136**	135	*	*	*	*	*	*	**136**	135	*	*	*	*
10:00	*	*	112	165	*	*	*	*	*	*	112	165	*	*	*	*
11:00	*	*	117	114	*	*	*	*	*	*	117	114	*	*	*	*
12:00 PM	*	*	118	114	*	*	*	*	*	*	118	114	*	*	*	*
01:00	*	*	107	130	*	*	*	*	*	*	107	130	*	*	*	*
02:00	*	*	128	124	*	*	*	*	*	*	128	124	*	*	*	*
03:00	*	*	111	86	*	*	*	*	*	*	111	86	*	*	*	*
04:00	*	*	124	118	*	*	*	*	*	*	124	118	*	*	*	*
05:00	*	*	**194**	**140**	*	*	*	*	*	*	**194**	**140**	*	*	*	*
06:00	*	*	150	126	*	*	*	*	*	*	150	126	*	*	*	*
07:00	*	*	106	66	*	*	*	*	*	*	106	66	*	*	*	*
08:00	*	*	74	50	*	*	*	*	*	*	74	50	*	*	*	*
09:00	*	*	50	26	*	*	*	*	*	*	50	26	*	*	*	*
10:00	*	*	36	26	*	*	*	*	*	*	36	26	*	*	*	*
11:00	*	*	34	3	*	*	*	*	*	*	34	3	*	*	*	*
Total	0	0	1855	1781	0	0	0	0	0	0	1855	1781	0	0	0	0
Day	0		3636		0		0		0		3636		0		0	
AM Peak	-	-	09:00	08:00	-	-	-	-	-	-	09:00	08:00	-	-	-	-
Vol.	-	-	136	166	-	-	-	-	-	-	136	166	-	-	-	-
PM Peak	-	-	17:00	17:00	-	-	-	-	-	-	17:00	17:00	-	-	-	-
Vol.	-	-	194	140	-	-	-	-	-	-	194	140	-	-	-	-

Comb. Total	0	3636	0	0	0	3636	0	0

ADT ADT 3,636 AADT 3,636

COUNTER MEASURES INC.

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

Location:PALMER AVE E/O GREGS PL
City: BENNETT
County: ADAMS
Direction: WESTBOUND-EASTBOUND

Site Code: 112617
Station ID: 112617

Start	26-Nov-18		Tue		Wed		Thu		Fri		Weekday Average		Sat		Sun	
Time	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB
12:00 AM	*	*	9	18	*	*	*	*	*	*	9	18	*	*	*	*
01:00	*	*	8	6	*	*	*	*	*	*	8	6	*	*	*	*
02:00	*	*	6	6	*	*	*	*	*	*	6	6	*	*	*	*
03:00	*	*	4	10	*	*	*	*	*	*	4	10	*	*	*	*
04:00	*	*	8	3	*	*	*	*	*	*	8	3	*	*	*	*
05:00	*	*	12	14	*	*	*	*	*	*	12	14	*	*	*	*
06:00	*	*	58	36	*	*	*	*	*	*	58	36	*	*	*	*
07:00	*	*	98	50	*	*	*	*	*	*	98	50	*	*	*	*
08:00	*	*	**190**	98	*	*	*	*	*	*	**190**	98	*	*	*	*
09:00	*	*	142	**144**	*	*	*	*	*	*	142	**144**	*	*	*	*
10:00	*	*	154	99	*	*	*	*	*	*	154	99	*	*	*	*
11:00	*	*	137	126	*	*	*	*	*	*	137	126	*	*	*	*
12:00 PM	*	*	102	106	*	*	*	*	*	*	102	106	*	*	*	*
01:00	*	*	142	129	*	*	*	*	*	*	142	129	*	*	*	*
02:00	*	*	125	138	*	*	*	*	*	*	125	138	*	*	*	*
03:00	*	*	106	117	*	*	*	*	*	*	106	117	*	*	*	*
04:00	*	*	112	137	*	*	*	*	*	*	112	137	*	*	*	*
05:00	*	*	**149**	**232**	*	*	*	*	*	*	**149**	**232**	*	*	*	*
06:00	*	*	132	199	*	*	*	*	*	*	132	199	*	*	*	*
07:00	*	*	52	127	*	*	*	*	*	*	52	127	*	*	*	*
08:00	*	*	52	89	*	*	*	*	*	*	52	89	*	*	*	*
09:00	*	*	28	62	*	*	*	*	*	*	28	62	*	*	*	*
10:00	*	*	22	42	*	*	*	*	*	*	22	42	*	*	*	*
11:00	*	*	8	32	*	*	*	*	*	*	8	32	*	*	*	*
Total	0	0	1856	2020	0	0	0	0	0	0	1856	2020	0	0	0	0
Day	0		3876		0		0		0		3876		0		0	
AM Peak	-	-	08:00	09:00	-	-	-	-	-	-	08:00	09:00	-	-	-	-
Vol.	-	-	190	144	-	-	-	-	-	-	190	144	-	-	-	-
PM Peak	-	-	17:00	17:00	-	-	-	-	-	-	17:00	17:00	-	-	-	-
Vol.	-	-	149	232	-	-	-	-	-	-	149	232	-	-	-	-

Comb. Total	0	3876	0	0	0	3876	0	0

ADT ADT 3,876 AADT 3,876

COUNTER MEASURES INC.

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

Location: PALMER AVE W/O 8TH ST
City: BENNETT
County: ADAMS
Direction: WESTBOUND-EASTBOUND

Site Code: 112610
Station ID: 112610

Start	26-Nov-18		Tue		Wed		Thu		Fri		Weekday Average		Sat		Sun	
Time	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB
12:00 AM	*	*	12	18	*	*	*	*	*	*	12	18	*	*	*	*
01:00	*	*	8	7	*	*	*	*	*	*	8	7	*	*	*	*
02:00	*	*	6	6	*	*	*	*	*	*	6	6	*	*	*	*
03:00	*	*	5	10	*	*	*	*	*	*	5	10	*	*	*	*
04:00	*	*	8	4	*	*	*	*	*	*	8	4	*	*	*	*
05:00	*	*	13	14	*	*	*	*	*	*	13	14	*	*	*	*
06:00	*	*	54	42	*	*	*	*	*	*	54	42	*	*	*	*
07:00	*	*	110	62	*	*	*	*	*	*	110	62	*	*	*	*
08:00	*	*	214	220	*	*	*	*	*	*	214	220	*	*	*	*
09:00	*	*	**258**	**230**	*	*	*	*	*	*	**258**	**230**	*	*	*	*
10:00	*	*	164	120	*	*	*	*	*	*	164	120	*	*	*	*
11:00	*	*	152	149	*	*	*	*	*	*	152	149	*	*	*	*
12:00 PM	*	*	161	161	*	*	*	*	*	*	161	161	*	*	*	*
01:00	*	*	165	146	*	*	*	*	*	*	165	146	*	*	*	*
02:00	*	*	156	176	*	*	*	*	*	*	156	176	*	*	*	*
03:00	*	*	118	138	*	*	*	*	*	*	118	138	*	*	*	*
04:00	*	*	130	207	*	*	*	*	*	*	130	207	*	*	*	*
05:00	*	*	**298**	**366**	*	*	*	*	*	*	**298**	**366**	*	*	*	*
06:00	*	*	190	219	*	*	*	*	*	*	190	219	*	*	*	*
07:00	*	*	70	142	*	*	*	*	*	*	70	142	*	*	*	*
08:00	*	*	80	106	*	*	*	*	*	*	80	106	*	*	*	*
09:00	*	*	60	73	*	*	*	*	*	*	60	73	*	*	*	*
10:00	*	*	30	42	*	*	*	*	*	*	30	42	*	*	*	*
11:00	*	*	8	33	*	*	*	*	*	*	8	33	*	*	*	*
Total	0	0	2470	2691	0	0	0	0	0	0	2470	2691	0	0	0	0
Day	0		5161		0		0		0		5161		0		0	
AM Peak	-	-	09:00	09:00	-	-	-	-	-	-	09:00	09:00	-	-	-	-
Vol.	-	-	258	230	-	-	-	-	-	-	258	230	-	-	-	-
PM Peak	-	-	17:00	17:00	-	-	-	-	-	-	17:00	17:00	-	-	-	-
Vol.	-	-	298	366	-	-	-	-	-	-	298	366	-	-	-	-

Comb. Total	0	5161	0	0	0	5161	0	0

ADT ADT 5,161 AADT 5,161

LEVEL OF SERVICE DEFINITIONS

From *Highway Capacity Manual*, Transportation Research Board, 2010

UNSIGNALIZED INTERSECTION LEVEL OF SERVICE (LOS)

Applicable to Two-Way Stop Control, All-Way Stop Control, and Roundabouts

LOS	Average Vehicle Control Delay	Operational Characteristics
A	<10 seconds	Normally, vehicles on the stop-controlled approach only have to wait up to 10 seconds before being able to clear the intersection. Left-turning vehicles on the uncontrolled street do not have to wait to make their turn.
B	10 to 15 seconds	Vehicles on the stop-controlled approach will experience delays before being able to clear the intersection. The delay could be up to 15 seconds. Left-turning vehicles on the uncontrolled street may have to wait to make their turn.
C	15 to 25 seconds	Vehicles on the stop-controlled approach can expect delays in the range of 15 to 25 seconds before clearing the intersection. Motorists may begin to take chances due to the long delays, thereby posing a safety risk to through traffic. Left-turning vehicles on the uncontrolled street will now be required to wait to make their turn causing a queue to be created in the turn lane.
D	25 to 35 seconds	This is the point at which a traffic signal may be warranted for this intersection. The delays for the stop-controlled intersection are not considered to be excessive. The length of the queue may begin to block other public and private access points.
E	35 to 50 seconds	The delays for all critical traffic movements are considered to be unacceptable. The length of the queues for the stop-controlled approaches as well as the left-turn movements are extremely long. There is a high probability that this intersection will meet traffic signal warrants. The ability to install a traffic signal is affected by the location of other existing traffic signals. Consideration may be given to restricting the accesses by eliminating the left-turn movements from and to the stop-controlled approach.
F	>50 seconds	The delay for the critical traffic movements are probably in excess of 100 seconds. The length of the queues are extremely long. Motorists are selecting alternative routes due to the long delays. The only remedy for these long delays is installing a traffic signal or restricting the accesses. The potential for accidents at this intersection are extremely high due to motorist taking more risky chances. If the median permits, motorists begin making two-stage left-turns.

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	8	0	0	0	5	80	0	0	156	1
Future Vol, veh/h	1	0	8	0	0	0	5	80	0	0	156	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	9	0	0	0	6	94	0	0	184	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	291	291	185	295	291	94	185	0	0	94	0	0
Stage 1	185	185	-	106	106	-	-	-	-	-	-	-
Stage 2	106	106	-	189	185	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	661	619	857	657	619	963	1390	-	-	1500	-	-
Stage 1	817	747	-	900	807	-	-	-	-	-	-	-
Stage 2	900	807	-	813	747	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	658	616	857	647	616	963	1390	-	-	1500	-	-
Mov Cap-2 Maneuver	658	616	-	647	616	-	-	-	-	-	-	-
Stage 1	813	747	-	896	803	-	-	-	-	-	-	-
Stage 2	896	803	-	804	747	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.4	0	0.4	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1390	-	-	829	-	1500	-	-
HCM Lane V/C Ratio	0.004	-	-	0.013	-	-	-	-
HCM Control Delay (s)	7.6	0	-	9.4	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	-	0	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	0	85	5	3	185
Future Vol, veh/h	10	0	85	5	3	185
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	0	101	6	4	220

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	332	104	0	0	107	0
Stage 1	104	-	-	-	-	-
Stage 2	228	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	663	951	-	-	1484	-
Stage 1	920	-	-	-	-	-
Stage 2	810	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	661	951	-	-	1484	-
Mov Cap-2 Maneuver	661	-	-	-	-	-
Stage 1	917	-	-	-	-	-
Stage 2	810	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.5	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	661	1484	-
HCM Lane V/C Ratio	-	-	0.018	0.002	-
HCM Control Delay (s)	-	-	10.5	7.4	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	78	190	4	12	4
Future Vol, veh/h	8	78	190	4	12	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	95	232	5	15	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	237	0	-	0	350	235
Stage 1	-	-	-	-	235	-
Stage 2	-	-	-	-	115	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1330	-	-	-	647	804
Stage 1	-	-	-	-	804	-
Stage 2	-	-	-	-	910	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1330	-	-	-	642	804
Mov Cap-2 Maneuver	-	-	-	-	642	-
Stage 1	-	-	-	-	798	-
Stage 2	-	-	-	-	910	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	10.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1330	-	-	-	676
HCM Lane V/C Ratio	0.007	-	-	-	0.029
HCM Control Delay (s)	7.7	0	-	-	10.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	196	73	140	50	14	154
Future Vol, veh/h	196	73	140	50	14	154
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	67	67	67	67	67	67
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	293	109	209	75	21	230

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	284	0	-	0	942	247
Stage 1	-	-	-	-	247	-
Stage 2	-	-	-	-	695	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1278	-	-	-	292	792
Stage 1	-	-	-	-	794	-
Stage 2	-	-	-	-	495	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1278	-	-	-	221	792
Mov Cap-2 Maneuver	-	-	-	-	221	-
Stage 1	-	-	-	-	600	-
Stage 2	-	-	-	-	495	-

Approach	EB	WB	SB
HCM Control Delay, s	6.3	0	12.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1278	-	-	-	221	792
HCM Lane V/C Ratio	0.229	-	-	-	0.095	0.29
HCM Control Delay (s)	8.7	0	-	-	23	11.4
HCM Lane LOS	A	A	-	-	C	B
HCM 95th %tile Q(veh)	0.9	-	-	-	0.3	1.2

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	7	0	0	0	3	175	0	0	132	4
Future Vol, veh/h	0	0	7	0	0	0	3	175	0	0	132	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	9	0	0	0	4	213	0	0	161	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	385	385	164	389	387	213	166	0	0	213	0	0
Stage 1	164	164	-	221	221	-	-	-	-	-	-	-
Stage 2	221	221	-	168	166	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	573	549	881	570	547	827	1412	-	-	1357	-	-
Stage 1	838	762	-	781	720	-	-	-	-	-	-	-
Stage 2	781	720	-	834	761	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	572	547	881	563	545	827	1412	-	-	1357	-	-
Mov Cap-2 Maneuver	572	547	-	563	545	-	-	-	-	-	-	-
Stage 1	835	762	-	779	718	-	-	-	-	-	-	-
Stage 2	779	718	-	826	761	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.1	0	0.1	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1412	-	-	881	-	1357	-	-
HCM Lane V/C Ratio	0.003	-	-	0.01	-	-	-	-
HCM Control Delay (s)	7.6	0	-	9.1	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	-	0	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	0	185	20	3	105
Future Vol, veh/h	15	0	185	20	3	105
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	0	210	23	3	119

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	347	222	0	0	233	0
Stage 1	222	-	-	-	-	-
Stage 2	125	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	650	818	-	-	1335	-
Stage 1	815	-	-	-	-	-
Stage 2	901	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	649	818	-	-	1335	-
Mov Cap-2 Maneuver	649	-	-	-	-	-
Stage 1	813	-	-	-	-	-
Stage 2	901	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.7	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	649	1335	-
HCM Lane V/C Ratio	-	-	0.026	0.003	-
HCM Control Delay (s)	-	-	10.7	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	185	117	4	22	12
Future Vol, veh/h	6	185	117	4	22	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	210	133	5	25	14

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	138	0	-	0	360	136
Stage 1	-	-	-	-	136	-
Stage 2	-	-	-	-	224	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1446	-	-	-	639	913
Stage 1	-	-	-	-	890	-
Stage 2	-	-	-	-	813	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1446	-	-	-	636	913
Mov Cap-2 Maneuver	-	-	-	-	636	-
Stage 1	-	-	-	-	886	-
Stage 2	-	-	-	-	813	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	10.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1446	-	-	-	712
HCM Lane V/C Ratio	0.005	-	-	-	0.054
HCM Control Delay (s)	7.5	0	-	-	10.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	111	171	113	16	20	136
Future Vol, veh/h	111	171	113	16	20	136
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	150	231	153	22	27	184

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	175	0	-	0	695	164
Stage 1	-	-	-	-	164	-
Stage 2	-	-	-	-	531	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1401	-	-	-	408	881
Stage 1	-	-	-	-	865	-
Stage 2	-	-	-	-	590	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1401	-	-	-	358	881
Mov Cap-2 Maneuver	-	-	-	-	358	-
Stage 1	-	-	-	-	759	-
Stage 2	-	-	-	-	590	-

Approach	EB	WB	SB
HCM Control Delay, s	3.1	0	10.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1401	-	-	-	358	881
HCM Lane V/C Ratio	0.107	-	-	-	0.075	0.209
HCM Control Delay (s)	7.9	0	-	-	15.9	10.2
HCM Lane LOS	A	A	-	-	C	B
HCM 95th %tile Q(veh)	0.4	-	-	-	0.2	0.8

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	1	15	1	1	1	10	90	1	1	175	5
Future Vol, veh/h	10	1	15	1	1	1	10	90	1	1	175	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	1	17	1	1	1	11	102	1	1	199	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	330	329	202	338	332	103	205	0	0	103	0	0
Stage 1	204	204	-	125	125	-	-	-	-	-	-	-
Stage 2	126	125	-	213	207	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	623	590	839	616	588	952	1366	-	-	1489	-	-
Stage 1	798	733	-	879	792	-	-	-	-	-	-	-
Stage 2	878	792	-	789	731	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	617	584	839	598	582	952	1366	-	-	1489	-	-
Mov Cap-2 Maneuver	617	584	-	598	582	-	-	-	-	-	-	-
Stage 1	791	732	-	871	785	-	-	-	-	-	-	-
Stage 2	868	785	-	771	730	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.2	10.4	0.8	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1366	-	-	726	676	1489	-	-
HCM Lane V/C Ratio	0.008	-	-	0.041	0.005	0.001	-	-
HCM Control Delay (s)	7.7	0	-	10.2	10.4	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	0	95	10	5	185
Future Vol, veh/h	15	0	95	10	5	185
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	0	108	11	6	210

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	336	114	0	0	119	0
Stage 1	114	-	-	-	-	-
Stage 2	222	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	659	939	-	-	1469	-
Stage 1	911	-	-	-	-	-
Stage 2	815	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	656	939	-	-	1469	-
Mov Cap-2 Maneuver	656	-	-	-	-	-
Stage 1	906	-	-	-	-	-
Stage 2	815	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.6	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	656	1469	-
HCM Lane V/C Ratio	-	-	0.026	0.004	-
HCM Control Delay (s)	-	-	10.6	7.5	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	90	195	5	15	5
Future Vol, veh/h	10	90	195	5	15	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	113	244	6	19	6

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	250	0	-	0	386	247
Stage 1	-	-	-	-	247	-
Stage 2	-	-	-	-	139	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1316	-	-	-	617	792
Stage 1	-	-	-	-	794	-
Stage 2	-	-	-	-	888	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1316	-	-	-	610	792
Mov Cap-2 Maneuver	-	-	-	-	610	-
Stage 1	-	-	-	-	785	-
Stage 2	-	-	-	-	888	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	10.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1316	-	-	-	647
HCM Lane V/C Ratio	0.009	-	-	-	0.039
HCM Control Delay (s)	7.8	0	-	-	10.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	5.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	200	85	145	55	15	160
Future Vol, veh/h	200	85	145	55	15	160
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	300	-	-	300	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	286	121	207	79	21	229

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	286	0	-	0	900	207
Stage 1	-	-	-	-	207	-
Stage 2	-	-	-	-	693	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1276	-	-	-	309	833
Stage 1	-	-	-	-	828	-
Stage 2	-	-	-	-	496	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1276	-	-	-	240	833
Mov Cap-2 Maneuver	-	-	-	-	190	-
Stage 1	-	-	-	-	643	-
Stage 2	-	-	-	-	496	-

Approach	EB	WB	SB
HCM Control Delay, s	6.1	0	12.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1276	-	-	-	190	833
HCM Lane V/C Ratio	0.224	-	-	-	0.113	0.274
HCM Control Delay (s)	8.6	-	-	-	26.3	10.9
HCM Lane LOS	A	-	-	-	D	B
HCM 95th %tile Q(veh)	0.9	-	-	-	0.4	1.1

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	1	15	1	1	1	5	195	1	1	150	10
Future Vol, veh/h	5	1	15	1	1	1	5	195	1	1	150	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	1	17	1	1	1	6	222	1	1	170	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	414	413	176	422	418	223	181	0	0	223	0	0
Stage 1	178	178	-	235	235	-	-	-	-	-	-	-
Stage 2	236	235	-	187	183	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	549	529	867	542	526	817	1394	-	-	1346	-	-
Stage 1	824	752	-	768	710	-	-	-	-	-	-	-
Stage 2	767	710	-	815	748	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	545	526	867	528	523	817	1394	-	-	1346	-	-
Mov Cap-2 Maneuver	545	526	-	528	523	-	-	-	-	-	-	-
Stage 1	820	751	-	764	706	-	-	-	-	-	-	-
Stage 2	761	706	-	797	747	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10	11.1	0.2	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1394	-	-	740	596	1346	-	-
HCM Lane V/C Ratio	0.004	-	-	0.032	0.006	0.001	-	-
HCM Control Delay (s)	7.6	0	-	10	11.1	7.7	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	5	195	0	0	165
Future Vol, veh/h	0	5	195	0	0	165
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	6	222	0	0	188

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	222	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	818	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	818	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	818	-
HCM Lane V/C Ratio	-	0.007	-
HCM Control Delay (s)	-	9.4	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	0	-

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	0	195	25	5	160
Future Vol, veh/h	20	0	195	25	5	160
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	0	222	28	6	182

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	430	236	0	0	250	0
Stage 1	236	-	-	-	-	-
Stage 2	194	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	582	803	-	-	1316	-
Stage 1	803	-	-	-	-	-
Stage 2	839	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	579	803	-	-	1316	-
Mov Cap-2 Maneuver	579	-	-	-	-	-
Stage 1	799	-	-	-	-	-
Stage 2	839	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.5	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	579	1316	-
HCM Lane V/C Ratio	-	-	0.039	0.004	-
HCM Control Delay (s)	-	-	11.5	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	7	195	175	5	25	15
Future Vol, veh/h	7	195	175	5	25	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	229	206	6	29	18

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	212	0	-	0	454	209
Stage 1	-	-	-	-	209	-
Stage 2	-	-	-	-	245	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1358	-	-	-	564	831
Stage 1	-	-	-	-	826	-
Stage 2	-	-	-	-	796	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1358	-	-	-	560	831
Mov Cap-2 Maneuver	-	-	-	-	560	-
Stage 1	-	-	-	-	820	-
Stage 2	-	-	-	-	796	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1358	-	-	-	638
HCM Lane V/C Ratio	0.006	-	-	-	0.074
HCM Control Delay (s)	7.7	0	-	-	11.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	2.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	28	4	3	21	10	11
Future Vol, veh/h	28	4	3	21	10	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	32	5	3	24	11	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	37	0	65	35
Stage 1	-	-	-	-	35	-
Stage 2	-	-	-	-	30	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1574	-	941	1038
Stage 1	-	-	-	-	987	-
Stage 2	-	-	-	-	993	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1574	-	939	1038
Mov Cap-2 Maneuver	-	-	-	-	939	-
Stage 1	-	-	-	-	985	-
Stage 2	-	-	-	-	993	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	988	-	-	1574	-
HCM Lane V/C Ratio	0.024	-	-	0.002	-
HCM Control Delay (s)	8.7	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	3.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	38	1	9	22	3	29
Future Vol, veh/h	38	1	9	22	3	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	43	1	10	25	3	33

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	44	0	89	44
Stage 1	-	-	-	-	44	-
Stage 2	-	-	-	-	45	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1564	-	912	1026
Stage 1	-	-	-	-	978	-
Stage 2	-	-	-	-	977	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1564	-	907	1026
Mov Cap-2 Maneuver	-	-	-	-	907	-
Stage 1	-	-	-	-	972	-
Stage 2	-	-	-	-	977	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.1	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1014	-	-	1564	-
HCM Lane V/C Ratio	0.036	-	-	0.007	-
HCM Control Delay (s)	8.7	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	66	0	7	31	0	3
Future Vol, veh/h	66	0	7	31	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	75	0	8	35	0	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	75	0	126	75
Stage 1	-	-	-	-	75	-
Stage 2	-	-	-	-	51	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1524	-	869	986
Stage 1	-	-	-	-	948	-
Stage 2	-	-	-	-	971	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1524	-	865	986
Mov Cap-2 Maneuver	-	-	-	-	865	-
Stage 1	-	-	-	-	943	-
Stage 2	-	-	-	-	971	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.4	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	986	-	-	1524	-
HCM Lane V/C Ratio	0.003	-	-	0.005	-
HCM Control Delay (s)	8.7	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	1	54	1	1	1	30	95	1	1	178	7
Future Vol, veh/h	15	1	54	1	1	1	30	95	1	1	178	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	300	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	1	61	1	1	1	34	108	1	1	202	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	386	385	206	416	389	109	210	0	0	109	0	0
Stage 1	208	208	-	177	177	-	-	-	-	-	-	-
Stage 2	178	177	-	239	212	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	573	549	835	547	546	945	1361	-	-	1481	-	-
Stage 1	794	730	-	825	753	-	-	-	-	-	-	-
Stage 2	824	753	-	764	727	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	560	535	835	496	532	945	1361	-	-	1481	-	-
Mov Cap-2 Maneuver	560	535	-	496	532	-	-	-	-	-	-	-
Stage 1	774	729	-	804	734	-	-	-	-	-	-	-
Stage 2	801	734	-	706	726	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.4	11	1.8	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1361	-	-	750	606	1481	-	-
HCM Lane V/C Ratio	0.025	-	-	0.106	0.006	0.001	-	-
HCM Control Delay (s)	7.7	-	-	10.4	11	7.4	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0	0	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	27	9	120	230	2
Future Vol, veh/h	5	27	9	120	230	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	31	10	136	261	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	418	262	263	0	-	0
Stage 1	262	-	-	-	-	-
Stage 2	156	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	591	777	1301	-	-	-
Stage 1	782	-	-	-	-	-
Stage 2	872	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	586	777	1301	-	-	-
Mov Cap-2 Maneuver	586	-	-	-	-	-
Stage 1	776	-	-	-	-	-
Stage 2	872	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.1	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1301	-	739	-	-
HCM Lane V/C Ratio	0.008	-	0.049	-	-
HCM Control Delay (s)	7.8	-	10.1	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	17	0	123	13	9	248
Future Vol, veh/h	17	0	123	13	9	248
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	19	0	140	15	10	282

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	450	148	0	0	155	0
Stage 1	148	-	-	-	-	-
Stage 2	302	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	567	899	-	-	1425	-
Stage 1	880	-	-	-	-	-
Stage 2	750	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	562	899	-	-	1425	-
Mov Cap-2 Maneuver	562	-	-	-	-	-
Stage 1	873	-	-	-	-	-
Stage 2	750	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.6	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	562	1425	-
HCM Lane V/C Ratio	-	-	0.034	0.007	-
HCM Control Delay (s)	-	-	11.6	7.5	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	34	126	260	5	9	41
Future Vol, veh/h	34	126	260	5	9	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	200	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	39	143	295	6	10	47

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	301	0	-	0	516	295
Stage 1	-	-	-	-	295	-
Stage 2	-	-	-	-	221	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1260	-	-	-	519	744
Stage 1	-	-	-	-	755	-
Stage 2	-	-	-	-	816	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1260	-	-	-	503	744
Mov Cap-2 Maneuver	-	-	-	-	503	-
Stage 1	-	-	-	-	732	-
Stage 2	-	-	-	-	816	-

Approach	EB	WB	SB
HCM Control Delay, s	1.7	0	10.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1260	-	-	-	685
HCM Lane V/C Ratio	0.031	-	-	-	0.083
HCM Control Delay (s)	7.9	-	-	-	10.7
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↱		↱
Traffic Vol, veh/h	0	160	294	7	0	14
Future Vol, veh/h	0	160	294	7	0	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	200	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	182	334	8	0	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	334
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	0	708
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	708
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	708
HCM Lane V/C Ratio	-	-	-	0.022
HCM Control Delay (s)	-	-	-	10.2
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.1

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	88	140	302	6	20	183
Future Vol, veh/h	88	140	302	6	20	183
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	200	0	100
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	110	175	378	8	25	229

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	386	0	-	0	773	378
Stage 1	-	-	-	-	378	-
Stage 2	-	-	-	-	395	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1172	-	-	-	367	669
Stage 1	-	-	-	-	693	-
Stage 2	-	-	-	-	681	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1172	-	-	-	333	669
Mov Cap-2 Maneuver	-	-	-	-	333	-
Stage 1	-	-	-	-	628	-
Stage 2	-	-	-	-	681	-

Approach	EB	WB	SB
HCM Control Delay, s	3.2	0	13.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1172	-	-	-	333	669
HCM Lane V/C Ratio	0.094	-	-	-	0.075	0.342
HCM Control Delay (s)	8.4	-	-	-	16.7	13.2
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.2	1.5

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	200	213	430	55	15	160
Future Vol, veh/h	200	213	430	55	15	160
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	200	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	286	304	614	79	21	229

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	693	0	-	0	1490	614
Stage 1	-	-	-	-	614	-
Stage 2	-	-	-	-	876	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	902	-	-	-	136	492
Stage 1	-	-	-	-	540	-
Stage 2	-	-	-	-	407	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	902	-	-	-	93	492
Mov Cap-2 Maneuver	-	-	-	-	108	-
Stage 1	-	-	-	-	369	-
Stage 2	-	-	-	-	407	-

Approach	EB	WB	SB
HCM Control Delay, s	5.2	0	20.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	902	-	-	-	108	492
HCM Lane V/C Ratio	0.317	-	-	-	0.198	0.465
HCM Control Delay (s)	10.8	-	-	-	46.4	18.5
HCM Lane LOS	B	-	-	-	E	C
HCM 95th %tile Q(veh)	1.4	-	-	-	0.7	2.4

Intersection	
Int Delay, s/veh	2.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	29	14	11	22	10	7
Future Vol, veh/h	29	14	11	22	10	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	16	13	25	11	8

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	49	0	92	41
Stage 1	-	-	-	-	41	-
Stage 2	-	-	-	-	51	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1558	-	908	1030
Stage 1	-	-	-	-	981	-
Stage 2	-	-	-	-	971	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1558	-	901	1030
Mov Cap-2 Maneuver	-	-	-	-	901	-
Stage 1	-	-	-	-	973	-
Stage 2	-	-	-	-	971	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.4	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	950	-	-	1558	-
HCM Lane V/C Ratio	0.02	-	-	0.008	-
HCM Control Delay (s)	8.9	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	3.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	33	3	30	32	2	18
Future Vol, veh/h	33	3	30	32	2	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	38	3	34	36	2	20

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	41	0	144	40
Stage 1	-	-	-	-	40	-
Stage 2	-	-	-	-	104	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1568	-	849	1031
Stage 1	-	-	-	-	982	-
Stage 2	-	-	-	-	920	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1568	-	830	1031
Mov Cap-2 Maneuver	-	-	-	-	830	-
Stage 1	-	-	-	-	960	-
Stage 2	-	-	-	-	920	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.6	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1007	-	-	1568	-
HCM Lane V/C Ratio	0.023	-	-	0.022	-
HCM Control Delay (s)	8.7	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	50	0	3	62	0	7
Future Vol, veh/h	50	0	3	62	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	57	0	3	70	0	8

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	57	0	133	57
Stage 1	-	-	-	-	57	-
Stage 2	-	-	-	-	76	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1547	-	861	1009
Stage 1	-	-	-	-	966	-
Stage 2	-	-	-	-	947	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1547	-	859	1009
Mov Cap-2 Maneuver	-	-	-	-	859	-
Stage 1	-	-	-	-	964	-
Stage 2	-	-	-	-	947	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1009	-	-	1547	-
HCM Lane V/C Ratio	0.008	-	-	0.002	-
HCM Control Delay (s)	8.6	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	1	49	1	1	1	49	202	1	1	158	16
Future Vol, veh/h	8	1	49	1	1	1	49	202	1	1	158	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	300	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	1	56	1	1	1	56	230	1	1	180	18

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	535	534	189	563	543	231	198	0	0	231	0	0
Stage 1	191	191	-	343	343	-	-	-	-	-	-	-
Stage 2	344	343	-	220	200	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	456	452	853	437	447	808	1375	-	-	1337	-	-
Stage 1	811	742	-	672	637	-	-	-	-	-	-	-
Stage 2	671	637	-	782	736	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	440	433	853	395	428	808	1375	-	-	1337	-	-
Mov Cap-2 Maneuver	440	433	-	395	428	-	-	-	-	-	-	-
Stage 1	778	741	-	644	611	-	-	-	-	-	-	-
Stage 2	642	611	-	729	735	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.3	12.4	1.5	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1375	-	-	744	491	1337	-	-
HCM Lane V/C Ratio	0.04	-	-	0.089	0.007	0.001	-	-
HCM Control Delay (s)	7.7	-	-	10.3	12.4	7.7	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0	0	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	18	30	248	202	5
Future Vol, veh/h	3	18	30	248	202	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	20	34	282	230	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	583	233	236	0	-	0
Stage 1	233	-	-	-	-	-
Stage 2	350	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	475	806	1331	-	-	-
Stage 1	806	-	-	-	-	-
Stage 2	713	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	463	806	1331	-	-	-
Mov Cap-2 Maneuver	463	-	-	-	-	-
Stage 1	785	-	-	-	-	-
Stage 2	713	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.1	0.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1331	-	729	-	-
HCM Lane V/C Ratio	0.026	-	0.033	-	-
HCM Control Delay (s)	7.8	-	10.1	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	9	268	0	0	220
Future Vol, veh/h	0	9	268	0	0	220
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	10	305	0	0	250

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	305	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	735	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	735	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	735	-
HCM Lane V/C Ratio	-	0.014	-
HCM Control Delay (s)	-	10	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0	-

Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	0	268	29	8	212
Future Vol, veh/h	25	0	268	29	8	212
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	0	305	33	9	241

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	581	322	0	0	338	0
Stage 1	322	-	-	-	-	-
Stage 2	259	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	476	719	-	-	1221	-
Stage 1	735	-	-	-	-	-
Stage 2	784	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	472	719	-	-	1221	-
Mov Cap-2 Maneuver	472	-	-	-	-	-
Stage 1	728	-	-	-	-	-
Stage 2	784	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.1	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	472	1221	-
HCM Lane V/C Ratio	-	-	0.06	0.007	-
HCM Control Delay (s)	-	-	13.1	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	110	267	213	24	30	61
Future Vol, veh/h	110	267	213	24	30	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	200	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	125	303	242	27	34	69

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	269	0	-	0	795	242
Stage 1	-	-	-	-	242	-
Stage 2	-	-	-	-	553	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1295	-	-	-	357	797
Stage 1	-	-	-	-	798	-
Stage 2	-	-	-	-	576	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1295	-	-	-	322	797
Mov Cap-2 Maneuver	-	-	-	-	322	-
Stage 1	-	-	-	-	721	-
Stage 2	-	-	-	-	576	-

Approach	EB	WB	SB
HCM Control Delay, s	2.4	0	13.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1295	-	-	-	536
HCM Lane V/C Ratio	0.097	-	-	-	0.193
HCM Control Delay (s)	8.1	-	-	-	13.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.7

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↱		↱
Traffic Vol, veh/h	0	377	254	20	0	71
Future Vol, veh/h	0	377	254	20	0	71
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	200	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	428	289	23	0	81

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	289
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	0	750
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	750
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	750
HCM Lane V/C Ratio	-	-	-	0.108
HCM Control Delay (s)	-	-	-	10.4
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.4

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	257	337	317	8	40	163
Future Vol, veh/h	257	337	317	8	40	163
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	200	0	100
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	286	374	352	9	44	181

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	361	0	-	0	1298	352
Stage 1	-	-	-	-	352	-
Stage 2	-	-	-	-	946	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1198	-	-	-	178	692
Stage 1	-	-	-	-	712	-
Stage 2	-	-	-	-	377	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1198	-	-	-	135	692
Mov Cap-2 Maneuver	-	-	-	-	135	-
Stage 1	-	-	-	-	542	-
Stage 2	-	-	-	-	377	-

Approach	EB	WB	SB
HCM Control Delay, s	3.9	0	18.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1198	-	-	-	135	692
HCM Lane V/C Ratio	0.238	-	-	-	0.329	0.262
HCM Control Delay (s)	8.9	-	-	-	44.2	12
HCM Lane LOS	A	-	-	-	E	B
HCM 95th %tile Q(veh)	0.9	-	-	-	1.3	1

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	1	25	1	1	1	15	135	1	1	260	10
Future Vol, veh/h	15	1	25	1	1	1	15	135	1	1	260	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	300	-	-	50	-	300
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	1	28	1	1	1	17	153	1	1	295	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	408	485	295	505	496	77	306	0	0	154	0	0
Stage 1	297	297	-	188	188	-	-	-	-	-	-	-
Stage 2	111	188	-	317	308	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.23	7.33	6.53	6.93	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	541	481	744	464	474	969	1253	-	-	1425	-	-
Stage 1	711	667	-	796	744	-	-	-	-	-	-	-
Stage 2	883	744	-	693	660	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	533	474	744	441	467	969	1253	-	-	1425	-	-
Mov Cap-2 Maneuver	533	474	-	441	467	-	-	-	-	-	-	-
Stage 1	701	666	-	785	734	-	-	-	-	-	-	-
Stage 2	869	734	-	665	659	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11	11.6	0.8	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1253	-	-	642	551	1425	-	-
HCM Lane V/C Ratio	0.014	-	-	0.073	0.006	0.001	-	-
HCM Control Delay (s)	7.9	-	-	11	11.6	7.5	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	0	-	-

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	45	10	80	15	10	10	80	95	15	10	205	70
Future Vol, veh/h	45	10	80	15	10	10	80	95	15	10	205	70
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	-	300	-	300	300	-	300
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	11	87	16	11	11	87	103	16	11	223	76

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	476	538	112	416	598	52	299	0	0	119	0	0
Stage 1	245	245	-	277	277	-	-	-	-	-	-	-
Stage 2	231	293	-	139	321	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	472	448	920	521	414	1005	1259	-	-	1467	-	-
Stage 1	737	702	-	706	680	-	-	-	-	-	-	-
Stage 2	751	669	-	850	650	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	430	414	920	436	383	1005	1259	-	-	1467	-	-
Mov Cap-2 Maneuver	430	414	-	436	383	-	-	-	-	-	-	-
Stage 1	686	697	-	657	633	-	-	-	-	-	-	-
Stage 2	680	623	-	752	645	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.5	12.6	3.4	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1259	-	-	430	810	436	555	1467	-	-
HCM Lane V/C Ratio	0.069	-	-	0.114	0.121	0.037	0.039	0.007	-	-
HCM Control Delay (s)	8.1	-	-	14.4	10.1	13.6	11.8	7.5	-	-
HCM Lane LOS	A	-	-	B	B	B	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.4	0.4	0.1	0.1	0	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	120	15	15	145	15	15
Future Vol, veh/h	120	15	15	145	15	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	130	16	16	158	16	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	146	0	249	73
Stage 1	-	-	-	-	138	-
Stage 2	-	-	-	-	111	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1434	-	718	974
Stage 1	-	-	-	-	874	-
Stage 2	-	-	-	-	901	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1434	-	710	974
Mov Cap-2 Maneuver	-	-	-	-	710	-
Stage 1	-	-	-	-	864	-
Stage 2	-	-	-	-	901	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	821	-	-	1434	-
HCM Lane V/C Ratio	0.04	-	-	0.011	-
HCM Control Delay (s)	9.6	-	-	7.5	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	115	150	10	20	10
Future Vol, veh/h	15	115	150	10	20	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	19	144	188	13	25	13

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	201	0	-	0	305	101
Stage 1	-	-	-	-	195	-
Stage 2	-	-	-	-	110	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1368	-	-	-	663	935
Stage 1	-	-	-	-	819	-
Stage 2	-	-	-	-	902	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1368	-	-	-	654	935
Mov Cap-2 Maneuver	-	-	-	-	654	-
Stage 1	-	-	-	-	808	-
Stage 2	-	-	-	-	902	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1368	-	-	-	727
HCM Lane V/C Ratio	0.014	-	-	-	0.052
HCM Control Delay (s)	7.7	-	-	-	10.2
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	7.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	175	60	60	100	70	120
Future Vol, veh/h	175	60	60	100	70	120
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	200	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	250	86	86	143	100	171

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	229	0	-	0	629	43
Stage 1	-	-	-	-	86	-
Stage 2	-	-	-	-	543	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1336	-	-	-	414	1018
Stage 1	-	-	-	-	927	-
Stage 2	-	-	-	-	546	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1336	-	-	-	337	1018
Mov Cap-2 Maneuver	-	-	-	-	266	-
Stage 1	-	-	-	-	754	-
Stage 2	-	-	-	-	546	-

Approach	EB	WB	SB
HCM Control Delay, s	6.2	0	15.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1336	-	-	-	266	1018
HCM Lane V/C Ratio	0.187	-	-	-	0.376	0.168
HCM Control Delay (s)	8.3	-	-	-	26.5	9.3
HCM Lane LOS	A	-	-	-	D	A
HCM 95th %tile Q(veh)	0.7	-	-	-	1.7	0.6

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	1	25	1	1	1	10	285	1	1	220	15
Future Vol, veh/h	10	1	25	1	1	1	10	285	1	1	220	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	300	-	-	50	-	300
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	1	28	1	1	1	11	324	1	1	250	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	437	599	250	622	616	163	267	0	0	325	0	0
Stage 1	252	252	-	347	347	-	-	-	-	-	-	-
Stage 2	185	347	-	275	269	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.23	7.33	6.53	6.93	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	516	414	788	385	405	854	1295	-	-	1233	-	-
Stage 1	751	698	-	643	634	-	-	-	-	-	-	-
Stage 2	800	634	-	730	686	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	510	410	788	368	401	854	1295	-	-	1233	-	-
Mov Cap-2 Maneuver	510	410	-	368	401	-	-	-	-	-	-	-
Stage 1	745	697	-	638	629	-	-	-	-	-	-	-
Stage 2	791	629	-	702	685	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.7	12.7	0.3	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1295	-	-	669	470	1233	-	-
HCM Lane V/C Ratio	0.009	-	-	0.061	0.007	0.001	-	-
HCM Control Delay (s)	7.8	-	-	10.7	12.7	7.9	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	0	-	-

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	75	10	60	15	10	10	50	210	15	10	175	60
Future Vol, veh/h	75	10	60	15	10	10	50	210	15	10	175	60
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	-	300	-	300	300	-	300
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	82	11	65	16	11	11	54	228	16	11	190	65

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	440	564	95	459	613	114	255	0	0	244	0	0
Stage 1	212	212	-	336	336	-	-	-	-	-	-	-
Stage 2	228	352	-	123	277	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	501	433	943	485	406	917	1307	-	-	1319	-	-
Stage 1	770	726	-	652	640	-	-	-	-	-	-	-
Stage 2	754	630	-	868	680	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	466	412	943	426	386	917	1307	-	-	1319	-	-
Mov Cap-2 Maneuver	466	412	-	426	386	-	-	-	-	-	-	-
Stage 1	738	720	-	625	614	-	-	-	-	-	-	-
Stage 2	702	604	-	789	675	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.3	12.7	1.4	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1307	-	-	466	796	426	543	1319	-	-
HCM Lane V/C Ratio	0.042	-	-	0.175	0.096	0.038	0.04	0.008	-	-
HCM Control Delay (s)	7.9	-	-	14.4	10	13.8	11.9	7.8	-	-
HCM Lane LOS	A	-	-	B	B	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.3	0.1	0.1	0	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	130	15	15	105	15	15
Future Vol, veh/h	130	15	15	105	15	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	141	16	16	114	16	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	157	0	238	79
Stage 1	-	-	-	-	149	-
Stage 2	-	-	-	-	89	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1420	-	729	965
Stage 1	-	-	-	-	863	-
Stage 2	-	-	-	-	924	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1420	-	721	965
Mov Cap-2 Maneuver	-	-	-	-	721	-
Stage 1	-	-	-	-	854	-
Stage 2	-	-	-	-	924	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	825	-	-	1420	-
HCM Lane V/C Ratio	0.04	-	-	0.011	-
HCM Control Delay (s)	9.5	-	-	7.6	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	115	110	10	30	20
Future Vol, veh/h	10	115	110	10	30	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	135	129	12	35	24

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	141	0	-	0	227	71
Stage 1	-	-	-	-	135	-
Stage 2	-	-	-	-	92	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1440	-	-	-	741	977
Stage 1	-	-	-	-	877	-
Stage 2	-	-	-	-	921	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1440	-	-	-	735	977
Mov Cap-2 Maneuver	-	-	-	-	735	-
Stage 1	-	-	-	-	870	-
Stage 2	-	-	-	-	921	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	9.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1440	-	-	-	816
HCM Lane V/C Ratio	0.008	-	-	-	0.072
HCM Control Delay (s)	7.5	-	-	-	9.8
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	95	65	80	50	60	115
Future Vol, veh/h	95	65	80	50	60	115
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	200	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	127	87	107	67	80	153

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	174	0	-	0	405	54
Stage 1	-	-	-	-	107	-
Stage 2	-	-	-	-	298	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1400	-	-	-	574	1002
Stage 1	-	-	-	-	906	-
Stage 2	-	-	-	-	727	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1400	-	-	-	522	1002
Mov Cap-2 Maneuver	-	-	-	-	533	-
Stage 1	-	-	-	-	824	-
Stage 2	-	-	-	-	727	-

Approach	EB	WB	SB
HCM Control Delay, s	4.6	0	10.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1400	-	-	-	533	1002
HCM Lane V/C Ratio	0.09	-	-	-	0.15	0.153
HCM Control Delay (s)	7.8	-	-	-	12.9	9.2
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0.3	-	-	-	0.5	0.5

Intersection	
Int Delay, s/veh	3.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	43	4	10	32	10	30
Future Vol, veh/h	43	4	10	32	10	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	49	5	11	36	11	34

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	54	0	110	52
Stage 1	-	-	-	-	52	-
Stage 2	-	-	-	-	58	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1551	-	887	1016
Stage 1	-	-	-	-	970	-
Stage 2	-	-	-	-	965	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1551	-	881	1016
Mov Cap-2 Maneuver	-	-	-	-	881	-
Stage 1	-	-	-	-	963	-
Stage 2	-	-	-	-	965	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.7	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	979	-	-	1551	-
HCM Lane V/C Ratio	0.046	-	-	0.007	-
HCM Control Delay (s)	8.9	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	73	1	8	38	3	26
Future Vol, veh/h	73	1	8	38	3	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	83	1	9	43	3	30

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	84	0	145	84
Stage 1	-	-	-	-	84	-
Stage 2	-	-	-	-	61	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1513	-	847	975
Stage 1	-	-	-	-	939	-
Stage 2	-	-	-	-	962	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1513	-	842	975
Mov Cap-2 Maneuver	-	-	-	-	842	-
Stage 1	-	-	-	-	933	-
Stage 2	-	-	-	-	962	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	959	-	-	1513	-
HCM Lane V/C Ratio	0.034	-	-	0.006	-
HCM Control Delay (s)	8.9	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	98	1	6	46	0	3
Future Vol, veh/h	98	1	6	46	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	111	1	7	52	0	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	112	0	178	112
Stage 1	-	-	-	-	112	-
Stage 2	-	-	-	-	66	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1478	-	812	941
Stage 1	-	-	-	-	913	-
Stage 2	-	-	-	-	957	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1478	-	808	941
Mov Cap-2 Maneuver	-	-	-	-	808	-
Stage 1	-	-	-	-	908	-
Stage 2	-	-	-	-	957	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	941	-	-	1478	-
HCM Lane V/C Ratio	0.004	-	-	0.005	-
HCM Control Delay (s)	8.8	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	1	80	1	1	1	40	140	1	1	263	12
Future Vol, veh/h	20	1	80	1	1	1	40	140	1	1	263	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	300	-	-	50	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	23	1	91	1	1	1	45	159	1	1	299	14

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	471	551	299	604	565	80	313	0	0	160	0	0
Stage 1	301	301	-	250	250	-	-	-	-	-	-	-
Stage 2	170	250	-	354	315	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.23	7.33	6.53	6.93	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	489	441	740	396	433	965	1246	-	-	1418	-	-
Stage 1	707	664	-	733	699	-	-	-	-	-	-	-
Stage 2	816	699	-	662	655	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	474	425	740	337	417	965	1246	-	-	1418	-	-
Mov Cap-2 Maneuver	474	425	-	337	417	-	-	-	-	-	-	-
Stage 1	682	663	-	707	674	-	-	-	-	-	-	-
Stage 2	784	674	-	579	654	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.6	12.7	1.8	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1246	-	-	662	469	1418	-	-
HCM Lane V/C Ratio	0.036	-	-	0.173	0.007	0.001	-	-
HCM Control Delay (s)	8	-	-	11.6	12.7	7.5	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0	0	-	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	70	24	176	341	2
Future Vol, veh/h	5	70	24	176	341	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	300	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	80	27	200	388	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	543	195	390	0	-	0
Stage 1	389	-	-	-	-	-
Stage 2	154	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	470	814	1165	-	-	-
Stage 1	654	-	-	-	-	-
Stage 2	858	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	459	814	1165	-	-	-
Mov Cap-2 Maneuver	459	-	-	-	-	-
Stage 1	639	-	-	-	-	-
Stage 2	858	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.2	1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1165	-	774	-	-
HCM Lane V/C Ratio	0.023	-	0.11	-	-
HCM Control Delay (s)	8.2	-	10.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	62	13	155	15	12	11	125	126	15	14	298	100
Future Vol, veh/h	62	13	155	15	12	11	125	126	15	14	298	100
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	-	300	-	300	300	-	300
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	67	14	168	16	13	12	136	137	16	15	324	109

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	701	779	162	608	872	69	433	0	0	153	0	0
Stage 1	354	354	-	409	409	-	-	-	-	-	-	-
Stage 2	347	425	-	199	463	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	325	326	854	380	287	980	1123	-	-	1425	-	-
Stage 1	636	629	-	590	594	-	-	-	-	-	-	-
Stage 2	642	585	-	784	562	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	278	283	854	264	249	980	1123	-	-	1425	-	-
Mov Cap-2 Maneuver	278	283	-	264	249	-	-	-	-	-	-	-
Stage 1	559	622	-	519	522	-	-	-	-	-	-	-
Stage 2	543	514	-	609	556	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.3	16.7	4.1	0.3
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1123	-	-	278	739	264	387	1425	-	-
HCM Lane V/C Ratio	0.121	-	-	0.242	0.247	0.062	0.065	0.011	-	-
HCM Control Delay (s)	8.6	-	-	22	11.5	19.5	14.9	7.6	-	-
HCM Lane LOS	A	-	-	C	B	C	B	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-	0.9	1	0.2	0.2	0	-	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	164	15	15	195	26	15	0	15	51	0	16
Future Vol, veh/h	9	164	15	15	195	26	15	0	15	51	0	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	178	16	16	212	28	16	0	16	55	0	17

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	240	0	0	194	0	0	336	470	89	353	458	106
Stage 1	-	-	-	-	-	-	198	198	-	244	244	-
Stage 2	-	-	-	-	-	-	138	272	-	109	214	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1324	-	-	1377	-	-	594	490	951	577	498	928
Stage 1	-	-	-	-	-	-	785	736	-	738	703	-
Stage 2	-	-	-	-	-	-	851	683	-	885	724	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1324	-	-	1377	-	-	574	480	951	559	488	928
Mov Cap-2 Maneuver	-	-	-	-	-	-	574	480	-	559	488	-
Stage 1	-	-	-	-	-	-	779	730	-	732	695	-
Stage 2	-	-	-	-	-	-	825	675	-	863	718	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.5	10.3	11.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	716	1324	-	-	1377	-	-	618
HCM Lane V/C Ratio	0.046	0.007	-	-	0.012	-	-	0.118
HCM Control Delay (s)	10.3	7.7	-	-	7.6	-	-	11.6
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.4

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	9	175	208	19	12	5
Future Vol, veh/h	9	175	208	19	12	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	300	-	-	300	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	190	226	21	13	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	247	0	-	0	341	113
Stage 1	-	-	-	-	226	-
Stage 2	-	-	-	-	115	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1316	-	-	-	629	918
Stage 1	-	-	-	-	790	-
Stage 2	-	-	-	-	897	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1316	-	-	-	624	918
Mov Cap-2 Maneuver	-	-	-	-	624	-
Stage 1	-	-	-	-	784	-
Stage 2	-	-	-	-	897	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1316	-	-	-	689
HCM Lane V/C Ratio	0.007	-	-	-	0.027
HCM Control Delay (s)	7.8	-	-	-	10.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	41	137	190	23	46	77
Future Vol, veh/h	41	137	190	23	46	77
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	300	-	-	300	0	100
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	51	171	238	29	58	96

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	267	0	-	0	426	119
Stage 1	-	-	-	-	238	-
Stage 2	-	-	-	-	188	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1294	-	-	-	557	910
Stage 1	-	-	-	-	779	-
Stage 2	-	-	-	-	825	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1294	-	-	-	535	910
Mov Cap-2 Maneuver	-	-	-	-	535	-
Stage 1	-	-	-	-	749	-
Stage 2	-	-	-	-	825	-

Approach	EB	WB	SB
HCM Control Delay, s	1.8	0	10.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1294	-	-	-	535	910
HCM Lane V/C Ratio	0.04	-	-	-	0.107	0.106
HCM Control Delay (s)	7.9	-	-	-	12.5	9.4
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4	0.4

Intersection	
Int Delay, s/veh	6.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	175	108	167	100	70	120
Future Vol, veh/h	175	108	167	100	70	120
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	300	-	-	300	0	100
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	250	154	239	143	100	171

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	382	0	-	0	816	120
Stage 1	-	-	-	-	239	-
Stage 2	-	-	-	-	577	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1173	-	-	-	315	909
Stage 1	-	-	-	-	778	-
Stage 2	-	-	-	-	525	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1173	-	-	-	248	909
Mov Cap-2 Maneuver	-	-	-	-	249	-
Stage 1	-	-	-	-	612	-
Stage 2	-	-	-	-	525	-

Approach	EB	WB	SB
HCM Control Delay, s	5.5	0	16.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1173	-	-	-	249	909
HCM Lane V/C Ratio	0.213	-	-	-	0.402	0.189
HCM Control Delay (s)	8.9	-	-	-	28.8	9.9
HCM Lane LOS	A	-	-	-	D	A
HCM 95th %tile Q(veh)	0.8	-	-	-	1.8	0.7

Intersection	
Int Delay, s/veh	3.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	44	14	33	32	10	19
Future Vol, veh/h	44	14	33	32	10	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	50	16	38	36	11	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	66	0	170	58
Stage 1	-	-	-	-	58	-
Stage 2	-	-	-	-	112	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1536	-	820	1008
Stage 1	-	-	-	-	965	-
Stage 2	-	-	-	-	913	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1536	-	800	1008
Mov Cap-2 Maneuver	-	-	-	-	800	-
Stage 1	-	-	-	-	941	-
Stage 2	-	-	-	-	913	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.8	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	925	-	-	1536	-
HCM Lane V/C Ratio	0.036	-	-	0.024	-
HCM Control Delay (s)	9	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	60	3	26	63	2	15
Future Vol, veh/h	60	3	26	63	2	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	68	3	30	72	2	17

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	71	0	202	70
Stage 1	-	-	-	-	70	-
Stage 2	-	-	-	-	132	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1529	-	787	993
Stage 1	-	-	-	-	953	-
Stage 2	-	-	-	-	894	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1529	-	771	993
Mov Cap-2 Maneuver	-	-	-	-	771	-
Stage 1	-	-	-	-	934	-
Stage 2	-	-	-	-	894	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.2	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	960	-	-	1529	-
HCM Lane V/C Ratio	0.02	-	-	0.019	-
HCM Control Delay (s)	8.8	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	76	0	3	89	1	6
Future Vol, veh/h	76	0	3	89	1	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	86	0	3	101	1	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	86	0	193	86
Stage 1	-	-	-	-	86	-
Stage 2	-	-	-	-	107	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1510	-	796	973
Stage 1	-	-	-	-	937	-
Stage 2	-	-	-	-	917	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1510	-	794	973
Mov Cap-2 Maneuver	-	-	-	-	794	-
Stage 1	-	-	-	-	935	-
Stage 2	-	-	-	-	917	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	943	-	-	1510	-
HCM Lane V/C Ratio	0.008	-	-	0.002	-
HCM Control Delay (s)	8.9	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	1	69	1	1	1	71	292	1	1	228	21
Future Vol, veh/h	13	1	69	1	1	1	71	292	1	1	228	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	300	-	-	50	-	1000
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	1	78	1	1	1	81	332	1	1	259	24

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	590	756	259	808	780	167	283	0	0	333	0	0
Stage 1	261	261	-	495	495	-	-	-	-	-	-	-
Stage 2	329	495	-	313	285	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.23	7.33	6.53	6.93	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	405	337	779	286	326	849	1278	-	-	1225	-	-
Stage 1	743	692	-	526	545	-	-	-	-	-	-	-
Stage 2	659	545	-	697	675	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	384	315	779	244	305	849	1278	-	-	1225	-	-
Mov Cap-2 Maneuver	384	315	-	244	305	-	-	-	-	-	-	-
Stage 1	696	691	-	493	511	-	-	-	-	-	-	-
Stage 2	615	511	-	625	674	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.4	15.4	1.6	0
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1278	-	-	661	351	1225	-	-
HCM Lane V/C Ratio	0.063	-	-	0.143	0.01	0.001	-	-
HCM Control Delay (s)	8	-	-	11.4	15.4	7.9	-	-
HCM Lane LOS	A	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.5	0	0	-	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	47	79	360	292	5
Future Vol, veh/h	3	47	79	360	292	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	1000	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	53	90	409	332	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	720	169	338	0	-	0
Stage 1	335	-	-	-	-	-
Stage 2	385	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	363	845	1218	-	-	-
Stage 1	697	-	-	-	-	-
Stage 2	657	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	336	845	1218	-	-	-
Mov Cap-2 Maneuver	336	-	-	-	-	-
Stage 1	645	-	-	-	-	-
Stage 2	657	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10	1.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1218	-	775	-	-
HCM Lane V/C Ratio	0.074	-	0.073	-	-
HCM Control Delay (s)	8.2	0.2	10	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-

Intersection	
Int Delay, s/veh	10

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	124	14	181	15	15	14	191	300	15	13	224	101
Future Vol, veh/h	124	14	181	15	15	14	191	300	15	13	224	101
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	-	300	-	300	300	-	300
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	135	15	197	16	16	15	208	326	16	14	243	110

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	858	1029	122	899	1123	163	353	0	0	342	0	0
Stage 1	271	271	-	742	742	-	-	-	-	-	-	-
Stage 2	587	758	-	157	381	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	251	232	906	234	204	853	1202	-	-	1214	-	-
Stage 1	712	684	-	374	420	-	-	-	-	-	-	-
Stage 2	463	413	-	829	612	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	197	190	906	148	167	853	1202	-	-	1214	-	-
Mov Cap-2 Maneuver	197	190	-	148	167	-	-	-	-	-	-	-
Stage 1	589	676	-	309	347	-	-	-	-	-	-	-
Stage 2	358	342	-	627	605	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	29	24.1	3.3	0.3
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1202	-	-	197	713	148	273	1214	-	-
HCM Lane V/C Ratio	0.173	-	-	0.684	0.297	0.11	0.115	0.012	-	-
HCM Control Delay (s)	8.6	-	-	55.5	12.2	32.3	19.9	8	-	-
HCM Lane LOS	A	-	-	F	B	D	C	A	-	-
HCM 95th %tile Q(veh)	0.6	-	-	4.2	1.2	0.4	0.4	0	-	-

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	233	15	15	205	88	15	0	15	72	0	24
Future Vol, veh/h	29	233	15	15	205	88	15	0	15	72	0	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	253	16	16	223	96	16	0	16	78	0	26

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	319	0	0	269	0	0	461	668	127	446	588	112
Stage 1	-	-	-	-	-	-	317	317	-	255	255	-
Stage 2	-	-	-	-	-	-	144	351	-	191	333	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1238	-	-	1292	-	-	484	378	900	496	420	920
Stage 1	-	-	-	-	-	-	669	653	-	727	695	-
Stage 2	-	-	-	-	-	-	844	631	-	792	642	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1238	-	-	1292	-	-	457	364	900	473	404	920
Mov Cap-2 Maneuver	-	-	-	-	-	-	457	364	-	473	404	-
Stage 1	-	-	-	-	-	-	652	636	-	708	687	-
Stage 2	-	-	-	-	-	-	810	623	-	758	625	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0.4	11.3	13.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	606	1238	-	-	1292	-	-	538
HCM Lane V/C Ratio	0.054	0.025	-	-	0.013	-	-	0.194
HCM Control Delay (s)	11.3	8	-	-	7.8	-	-	13.3
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0.7

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	27	212	184	59	64	29
Future Vol, veh/h	27	212	184	59	64	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	300	-	-	300	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	230	200	64	70	32

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	264	0	-	0	373	100
Stage 1	-	-	-	-	200	-
Stage 2	-	-	-	-	173	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1297	-	-	-	601	936
Stage 1	-	-	-	-	814	-
Stage 2	-	-	-	-	840	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1297	-	-	-	588	936
Mov Cap-2 Maneuver	-	-	-	-	588	-
Stage 1	-	-	-	-	796	-
Stage 2	-	-	-	-	840	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	11.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1297	-	-	-	665
HCM Lane V/C Ratio	0.023	-	-	-	0.152
HCM Control Delay (s)	7.8	-	-	-	11.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	94	179	163	50	61	76
Future Vol, veh/h	94	179	163	50	61	76
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	300	-	-	300	0	100
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	111	211	192	59	72	89

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	251	0	-	0	520	96
Stage 1	-	-	-	-	192	-
Stage 2	-	-	-	-	328	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1311	-	-	-	486	942
Stage 1	-	-	-	-	822	-
Stage 2	-	-	-	-	702	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1311	-	-	-	445	942
Mov Cap-2 Maneuver	-	-	-	-	445	-
Stage 1	-	-	-	-	752	-
Stage 2	-	-	-	-	702	-

Approach	EB	WB	SB
HCM Control Delay, s	2.8	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1311	-	-	-	445	942
HCM Lane V/C Ratio	0.084	-	-	-	0.161	0.095
HCM Control Delay (s)	8	-	-	-	14.6	9.2
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0.3	-	-	-	0.6	0.3

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	95	160	189	50	60	115
Future Vol, veh/h	95	160	189	50	60	115
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	300	-	-	300	0	100
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	127	213	252	67	80	153

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	319	0	-	0	613	126
Stage 1	-	-	-	-	252	-
Stage 2	-	-	-	-	361	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1238	-	-	-	424	901
Stage 1	-	-	-	-	767	-
Stage 2	-	-	-	-	676	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1238	-	-	-	380	901
Mov Cap-2 Maneuver	-	-	-	-	447	-
Stage 1	-	-	-	-	688	-
Stage 2	-	-	-	-	676	-

Approach	EB	WB	SB
HCM Control Delay, s	3.1	0	11.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1238	-	-	-	447	901
HCM Lane V/C Ratio	0.102	-	-	-	0.179	0.17
HCM Control Delay (s)	8.2	-	-	-	14.8	9.8
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0.3	-	-	-	0.6	0.6